# MySQL and PHP

**Abstract**

This manual describes the PHP extensions and interfaces that can be used with MySQL.

For legal information, see the Legal Notices.

For help with using MySQL, please visit the MySQL Forums, where you can discuss your issues with other MySQL users.

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# Preface and Legal Notices

This manual describes the PHP extensions and interfaces that can be used with MySQL.

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# Chapter 1 Introduction to the MySQL PHP API

PHP is a server-side, HTML-embedded scripting language that may be used to create dynamic Web pages. It is available for most operating systems and Web servers, and can access most common databases, including MySQL. PHP may be run as a separate program or compiled as a module for use with a Web server.

PHP provides four different MySQL API extensions:

> **Note**
>
> The PHP documentation assumes PHP 7 and higher is used; functionality specific to PHP 5 and below is not documented.

- Chapter 3, *MySQL Improved Extension*: Stands for “MySQL, Improved”; this extension is available as of PHP 5.0.0. It is intended for use with MySQL 4.1.1 and later. This extension fully supports the authentication protocol used in MySQL 5.0, as well as the Prepared Statements and Multiple Statements APIs. In addition, this extension provides an advanced, object-oriented programming interface.
- Chapter 4, *MySQL Functions (PDO_MYSQL)*: Not its own API, but instead it's a MySQL driver for the PHP database abstraction layer PDO (PHP Data Objects). The PDO MySQL driver sits in the layer below PDO itself, and provides MySQL-specific functionality. This extension is available as of PHP 5.1.0.
- Chapter 5, *Mysql_xdevapi*: This extension uses MySQL's X DevAPI and is available as a PECL extension named mysql_xdevapi. For general concepts and X DevAPI usage details, see X DevAPI User Guide.
- Chapter 6, *Original MySQL API*: Available for PHP versions 4 and 5, this extension is intended for use with MySQL versions prior to MySQL 4.1. This extension does not support the improved authentication protocol used in MySQL 4.1, nor does it support prepared statements or multiple statements. To use this extension with MySQL 4.1, you will likely configure the MySQL server to set the `old_passwords` system variable to 1 (see Client does not support authentication protocol).

  > **Warning**
  >
  > This extension was removed from PHP 5.5.0. All users must migrate to either `mysqli`, `PDO_MySQL`, or `mysql_xdevapi`. For further information, see Section 2.3, “Choosing an API”.

  > **Note**
  >
  > This documentation, and other publications, sometimes uses the term `Connector/PHP`. This term refers to the full set of MySQL related functionality in PHP, which includes the three APIs that are described in the preceding discussion, along with the mysqlnd core library and all of its plugins.

The PHP distribution and documentation are available from the PHP website.

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# Chapter 2 Overview of the MySQL PHP drivers

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## 2.1 Introduction

There are several PHP APIs for accessing the MySQL database. Users can choose between the mysqli or PDO_MySQL extensions.

This guide explains the terminology used to describe each API, information about choosing which API to use, and also information to help choose which MySQL library to use with the API.

## 2.2 Terminology overview

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This section provides an introduction to the options available to you when developing a PHP application that needs to interact with a MySQL database.

*What is an API?*

An Application Programming Interface, or API, defines the classes, methods, functions and variables that your application will need to call in order to carry out its desired task. In the case of PHP applications that need to communicate with databases the necessary APIs are usually exposed via PHP extensions.

APIs can be procedural or object-oriented. With a procedural API you call functions to carry out tasks, with the object-oriented API you instantiate classes and then call methods on the resulting objects. Of the two, the latter is usually the preferred interface, as it is more modern and leads to better organized code.

When writing PHP applications that need to connect to the MySQL server there are several API options available. This document discusses what is available and how to select the best solution for your application.

*What is a Connector?*

In the MySQL documentation, the term *connector* refers to a piece of software that allows your application to connect to the MySQL database server. MySQL provides connectors for a variety of languages, including PHP.

If your PHP application needs to communicate with a database server you will need to write PHP code to perform such activities as connecting to the database server, querying the database and other database-related functions. Software is required to provide the API that your PHP application will use, and also handle the communication between your application and the database server, possibly using other

intermediate libraries where necessary. This software is known generically as a connector, as it allows your application to *connect* to a database server.

*What is a Driver?*

A driver is a piece of software designed to communicate with a specific type of database server. The driver may also call a library, such as the MySQL Client Library or the MySQL Native Driver. These libraries implement the low-level protocol used to communicate with the MySQL database server.

By way of an example, the PHP Data Objects (PDO) database abstraction layer may use one of several database-specific drivers. One of the drivers it has available is the PDO MYSQL driver, which allows it to interface with the MySQL server.

Sometimes people use the terms connector and driver interchangeably, this can be confusing. In the MySQL-related documentation the term “driver” is reserved for software that provides the database-specific part of a connector package.

*What is an Extension?*

In the PHP documentation, you will come across another term - *extension*. The PHP code consists of a core, with optional extensions to the core functionality. PHP's MySQL-related extension, `mysqli`, is implemented using the PHP extension framework.

An extension typically exposes an API to the PHP programmer, to allow its facilities to be used programmatically. However, some extensions which use the PHP extension framework do not expose an API to the PHP programmer.

The PDO MySQL driver extension, for example, does not expose an API to the PHP programmer, but provides an interface to the PDO layer above it.

The terms API and extension should not be taken to mean the same thing, as an extension may not necessarily expose an API to the programmer.

# 2.3 Choosing an API

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PHP offers different APIs to connect to MySQL. Below we show the APIs provided by the mysqli and PDO extensions. Each code snippet creates a connection to a MySQL server running on "example.com" using the username "user" and the password "password". And a query is run to greet the user.

**Example 2.1 Comparing the MySQL APIs**

```
<?php
// mysqli
$mysqli = new mysqli("example.com", "user", "password", "database");
$result = $mysqli->query("SELECT 'Hello, dear MySQL user!' AS _message FROM DUAL");
$row = $result->fetch_assoc();
echo htmlentities($row['_message']);

// PDO
$pdo = new PDO('mysql:host=example.com;dbname=database', 'user', 'password');
$statement = $pdo->query("SELECT 'Hello, dear MySQL user!' AS _message FROM DUAL");
$row = $statement->fetch(PDO::FETCH_ASSOC);
echo htmlentities($row['_message']);
```

*Feature comparison*

The overall performance of both extensions is considered to be about the same. Although the performance of the extension contributes only a fraction of the total run time of a PHP web request. Often, the impact is as low as 0.1%.

| | ext/mysqli | PDO_MySQL |
|---|---|---|
| PHP version introduced | 5.0 | 5.1 |
| Included with PHP 7.x and 8.x | Yes | Yes |
| Development status | Active | Active |
| Lifecycle | Active | Active |
| Recommended for new projects | Yes | Yes |
| OOP Interface | Yes | Yes |
| Procedural Interface | Yes | No |
| API supports non-blocking, asynchronous queries with mysqlnd | Yes | No |
| Persistent Connections | Yes | Yes |
| API supports Charsets | Yes | Yes |
| API supports server-side Prepared Statements | Yes | Yes |
| API supports client-side Prepared Statements | No | Yes |
| API supports Stored Procedures | Yes | Yes |
| API supports Multiple Statements | Yes | Most |
| API supports Transactions | Yes | Yes |
| Transactions can be controlled with SQL | Yes | Yes |
| Supports all MySQL 5.1+ functionality | Yes | Most |

# 2.4 Choosing a library

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The mysqli and PDO_MySQL PHP extensions are lightweight wrappers on top of a C client library. The extensions can either use the mysqlnd library or the `libmysqlclient` library. Choosing a library is a compile time decision.

The mysqlnd library is part of the PHP distribution. It offers features like lazy connections and query caching, features that are not available with libmysqlclient, so using the built-in mysqlnd library is highly recommended. See the mysqlnd documentation for additional details, and a listing of features and functionality that it offers.

**Example 2.2 Configure commands for using mysqlnd or libmysqlclient**

```
// Recommended, compiles with mysqlnd
$ ./configure --with-mysqli=mysqlnd --with-pdo-mysql=mysqlnd

// Alternatively recommended, compiles with mysqlnd
```

```
$ ./configure --with-mysqli --with-pdo-mysql

// Not recommended, compiles with libmysqlclient
$ ./configure --with-mysqli=/path/to/mysql_config --with-pdo-mysql=/path/to/mysql_config
```

*Library feature comparison*

It is recommended to use the mysqlnd library instead of the MySQL Client Server library (libmysqlclient). Both libraries are supported and constantly being improved.

| | **MySQL native driver (mysqlnd)** | **MySQL client server library (`libmysqlclient`)** |
|---|---|---|
| Part of the PHP distribution | Yes | No |
| PHP version introduced | 5.3.0 | N/A |
| License | PHP License 3.01 | Dual-License |
| Development status | Active | Active |
| Lifecycle | No end announced | No end announced |
| Compile default (for all MySQL extensions) | Yes | No |
| Compression protocol support | Yes | Yes |
| SSL support | Yes | Yes |
| Named pipe support | Yes | Yes |
| Non-blocking, asynchronous queries | Yes | No |
| Performance statistics | Yes | No |
| LOAD LOCAL INFILE respects the open_basedir directive | Yes | No |
| Uses PHP's native memory management system (e.g., follows PHP memory limits) | Yes | No |
| Return numeric column as double (COM_QUERY) | Yes | No |
| Return numeric column as string (COM_QUERY) | Yes | Yes |
| Plugin API | Yes | Limited |
| Automatic reconnect | No | Optional |

# 2.5 Concepts

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These concepts are specific to the MySQL drivers for PHP.

## 2.5.1 Buffered and Unbuffered queries

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Queries are using the buffered mode by default. This means that query results are immediately transferred from the MySQL Server to PHP and then are kept in the memory of the PHP process. This allows additional operations like counting the number of rows, and moving (seeking) the current result pointer. It also allows issuing further queries on the same connection while working on the result set. The downside of the buffered mode is that larger result sets might require quite a lot memory. The memory will be kept occupied till all references to the result set are unset or the result set was explicitly freed, which will automatically happen during request end at the latest. The terminology "store result" is also used for buffered mode, as the whole result set is stored at once.

> **Note**
>
> When using libmysqlclient as library PHP's memory limit won't count the memory used for result sets unless the data is fetched into PHP variables. With mysqlnd the memory accounted for will include the full result set.

Unbuffered MySQL queries execute the query and then return a resource while the data is still waiting on the MySQL server for being fetched. This uses less memory on the PHP-side, but can increase the load on the server. Unless the full result set was fetched from the server no further queries can be sent over the same connection. Unbuffered queries can also be referred to as "use result".

Following these characteristics buffered queries should be used in cases where you expect only a limited result set or need to know the amount of returned rows before reading all rows. Unbuffered mode should be used when you expect larger results.

Because buffered queries are the default, the examples below will demonstrate how to execute unbuffered queries with each API.

**Example 2.3 Unbuffered query example: mysqli**

```
<?php
$mysqli  = new mysqli("localhost", "my_user", "my_password", "world");
$uresult = $mysqli->query("SELECT Name FROM City", MYSQLI_USE_RESULT);

if ($uresult) {
   while ($row = $uresult->fetch_assoc()) {
       echo $row['Name'] . PHP_EOL;
   }
}
?>
```

**Example 2.4 Unbuffered query example: pdo_mysql**

```
<?php
$pdo = new PDO("mysql:host=localhost;dbname=world", 'my_user', 'my_pass');
$pdo->setAttribute(PDO::MYSQL_ATTR_USE_BUFFERED_QUERY, false);

$uresult = $pdo->query("SELECT Name FROM City");
if ($uresult) {
   while ($row = $uresult->fetch(PDO::FETCH_ASSOC)) {
       echo $row['Name'] . PHP_EOL;
   }
}
?>
```

## 2.5.2 Character sets

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Ideally a proper character set will be set at the server level, and doing this is described within the Character Set Configuration section of the MySQL Server manual. Alternatively, each MySQL API offers a method to set the character set at runtime.

> **The character set and character escaping**
>
> The character set should be understood and defined, as it has an affect on every action, and includes security implications. For example, the escaping mechanism (e.g., `mysqli_real_escape_string` for mysqli and `PDO::quote` for PDO_MySQL) will adhere to this setting. It is important to realize that these functions will not use the character set that is defined with a query, so for example the following will not have an effect on them:

**Example 2.5 Problems with setting the character set with SQL**

```
<?php

$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

// Will NOT affect $mysqli->real_escape_string();
$mysqli->query("SET NAMES utf8mb4");

// Will NOT affect $mysqli->real_escape_string();
$mysqli->query("SET CHARACTER SET utf8mb4");

// But, this will affect $mysqli->real_escape_string();
$mysqli->set_charset('utf8mb4');

// But, this will NOT affect it (UTF-8 vs utf8mb4) -- don't use dashes here
$mysqli->set_charset('UTF-8');
?>
```

Below are examples that demonstrate how to properly alter the character set at runtime using each API.

> **Possible UTF-8 confusion**
>
> Because character set names in MySQL do not contain dashes, the string "utf8" is valid in MySQL to set the character set to UTF-8 (up to 3 byte UTF-8 Unicode Encoding). The string "UTF-8" is not valid, as using "UTF-8" will fail to change the character set and will throw an error.

**Example 2.6 Setting the character set example: mysqli**

```
<?php
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

echo 'Initial character set: ' . $mysqli->character_set_name() . "\n";

if (!$mysqli->set_charset('utf8mb4')) {
    printf("Error loading character set utf8mb4: %s\n", $mysqli->error);
    exit;
}

echo 'Your current character set is: ' . $mysqli->character_set_name() . "\n";
```

```
?>
```

**Example 2.7 Setting the character set example: pdo_mysql**

```
<?php
$pdo = new PDO("mysql:host=localhost;dbname=world;charset=utf8mb4", 'my_user', 'my_pass');
?>
```

# Chapter 3 MySQL Improved Extension

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The mysqli extension allows you to access the functionality provided by MySQL 4.1 and above. More information about the MySQL Database server can be found at http://www.mysql.com/

An overview of software available for using MySQL from PHP can be found at Section 3.1, “Overview”

Documentation for MySQL can be found at http://dev.mysql.com/doc/.

Parts of this documentation included from MySQL manual with permissions of Oracle Corporation.

Examples use either the world or sakila database, which are freely available.

# 3.1 Overview

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This section provides an introduction to the options available to you when developing a PHP application that needs to interact with a MySQL database.

*What is an API?*

An Application Programming Interface, or API, defines the classes, methods, functions and variables that your application will need to call in order to carry out its desired task. In the case of PHP applications that need to communicate with databases the necessary APIs are usually exposed via PHP extensions.

APIs can be procedural or object-oriented. With a procedural API, you call functions to carry out tasks, with the object-oriented API you instantiate classes and then call methods on the resulting objects. Of the two, the latter is usually the preferred interface, as it is more modern and leads to better-organized code.

When writing PHP applications that need to connect to the MySQL server there are several API options available. This document discusses what is available and how to select the best solution for your application.

*What is a Connector?*

In the MySQL documentation, the term *connector* refers to a piece of software that allows your application to connect to the MySQL database server. MySQL provides connectors for a variety of languages, including PHP.

If your PHP application needs to communicate with a database server you will need to write PHP code to perform such activities as connecting to the database server, querying the database, and other database-related functions. Software is required to provide the API that your PHP application will use, and also handle the communication between your application and the database server, possibly using other intermediate libraries where necessary. This software is known generically as a connector, as it allows your application to *connect* to a database server.

*What is a Driver?*

A driver is a piece of software designed to communicate with a specific type of database server. The driver may also call a library, such as the MySQL Client Library or the MySQL Native Driver. These libraries implement the low-level protocol used to communicate with the MySQL database server.

By way of an example, the PHP Data Objects (PDO) database abstraction layer may use one of several database-specific drivers. One of the drivers it has available is the PDO MYSQL driver, which allows it to interface with the MySQL server.

Sometimes people use the terms connector and driver interchangeably, this can be confusing. In the MySQL-related documentation the term “driver” is reserved for software that provides the database-specific part of a connector package.

*What is an Extension?*

In the PHP documentation you will come across another term - *extension*. The PHP code consists of a core, with optional extensions to the core functionality. PHP's MySQL-related extensions, such as the mysqli extension, and the PDO MySQL driver extension, are implemented using the PHP extension framework.

An extension typically exposes an API to the PHP programmer, to allow its facilities to be used programmatically. However, some extensions which use the PHP extension framework do not expose an API to the PHP programmer.

The PDO MySQL driver extension, for example, does not expose an API to the PHP programmer, but provides an interface to the PDO layer above it.

The terms API and extension should not be taken to mean the same thing, as an extension may not necessarily expose an API to the programmer.

*What are the main PHP API offerings for using MySQL?*

There are two main API options when considering connecting to a MySQL database server:

- PHP's mysqli Extension
- PHP Data Objects (PDO)

Each has its own advantages and disadvantages. The following discussion aims to give a brief introduction to the key aspects of each API.

*What is PHP's mysqli Extension?*

The `mysqli` extension, or as it is sometimes known, the MySQL *improved* extension, was developed to take advantage of new features found in MySQL systems versions 4.1.3 and newer. The `mysqli` extension is included with PHP versions 5 and later.

The `mysqli` extension has a number of benefits, the key enhancements over the `mysql` extension being:

- Object-oriented interface
- Support for Prepared Statements
- Support for Multiple Statements
- Support for Transactions
- Enhanced debugging capabilities

As well as the object-oriented interface the extension also provides a procedural interface.

The `mysqli` extension is built using the PHP extension framework, its source code is located in the directory `ext/mysqli`.

For further information on the `mysqli` extension, see Chapter 3, *MySQL Improved Extension*.

*What is PDO?*

PHP Data Objects, or PDO, is a database abstraction layer specifically for PHP applications. PDO provides a consistent API for your PHP application regardless of the type of database server your application will connect to. In theory, if you are using the PDO API, you could switch the database server you used, from say Firebird to MySQL, and only need to make minor changes to your PHP code.

Other examples of database abstraction layers include JDBC for Java applications and DBI for Perl.

While PDO has its advantages, such as a clean, simple, portable API, its main disadvantage is that it doesn't allow you to use all of the advanced features that are available in the latest versions of MySQL server. For example, PDO does not allow you to use MySQL's support for Multiple Statements.

PDO is implemented using the PHP extension framework, its source code is located in the directory `ext/pdo`.

For further information on PDO, see the http://www.php.net/book.pdo.

*What is the PDO MYSQL driver?*

The PDO MYSQL driver is not an API as such, at least from the PHP programmer's perspective. In fact, the PDO MYSQL driver sits in the layer below PDO itself and provides MySQL-specific functionality. The programmer still calls the PDO API, but PDO uses the PDO MYSQL driver to carry out communication with the MySQL server.

The PDO MYSQL driver is one of several available PDO drivers. Other PDO drivers available include those for the Firebird and PostgreSQL database servers.

The PDO MYSQL driver is implemented using the PHP extension framework. Its source code is located in the directory `ext/pdo_mysql`. It does not expose an API to the PHP programmer.

For further information on the PDO MYSQL driver, see Chapter 4, *MySQL Functions (PDO_MYSQL)*.

*What is PHP's MySQL Native Driver?*

In order to communicate with the MySQL database server, `mysqli` and the PDO MYSQL driver each use a low-level library that implements the required protocol. In the past, the only available library was the MySQL Client Library, otherwise known as `libmysqlclient`.

However, the interface presented by `libmysqlclient` was not optimized for communication with PHP applications, as `libmysqlclient` was originally designed with C applications in mind. For this reason, the MySQL Native Driver, `mysqlnd`, was developed as an alternative to `libmysqlclient` for PHP applications.

Both, the `mysqli` extension and the PDO MySQL driver can each be individually configured to use either `libmysqlclient` or `mysqlnd`. As `mysqlnd` is designed specifically to be utilised in the PHP system it has numerous memory and speed enhancements over `libmysqlclient`. You are strongly encouraged to take advantage of these improvements.

The MySQL Native Driver is implemented using the PHP extension framework. The source code is located in `ext/mysqlnd`. It does not expose an API to the PHP programmer.

*Comparison of Features*

The following table compares the functionality of the main methods of connecting to MySQL from PHP:

**Table 3.1 Comparison of MySQL API options for PHP**

| | **PHP's mysqli Extension** | **PDO (Using PDO MySQL Driver and MySQL Native Driver)** |
|---|---|---|
| PHP version introduced | 5.0 | 5.0 |
| MySQL development status | Active development | Active development |
| API supports Charsets | Yes | Yes |
| API supports server-side Prepared Statements | Yes | Yes |
| API supports client-side Prepared Statements | No | Yes |

| | PHP's mysqli Extension | PDO (Using PDO MySQL Driver and MySQL Native Driver) |
|---|---|---|
| API supports Stored Procedures | Yes | Yes |
| API supports Multiple Statements | Yes | Most |
| Supports all MySQL 4.1+ functionality | Yes | Most |

# 3.2 Quick start guide

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This quick start guide will help with choosing and gaining familiarity with the PHP MySQL API.

This quick start gives an overview on the mysqli extension. Code examples are provided for all major aspects of the API. Database concepts are explained to the degree needed for presenting concepts specific to MySQL.

Required: A familiarity with the PHP programming language, the SQL language, and basic knowledge of the MySQL server.

## 3.2.1 Dual procedural and object-oriented interface

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The mysqli extension features a dual interface. It supports the procedural and object-oriented programming paradigm.

Users migrating from the old mysql extension may prefer the procedural interface. The procedural interface is similar to that of the old mysql extension. In many cases, the function names differ only by prefix. Some mysqli functions take a connection handle as their first argument, whereas matching functions in the old mysql interface take it as an optional last argument.

**Example 3.1 Easy migration from the old mysql extension**

```
<?php
$mysqli = mysqli_connect("example.com", "user", "password", "database");
$result = mysqli_query($mysqli, "SELECT 'Please do not use the deprecated mysql extension for new developme
$row = mysqli_fetch_assoc($result);
echo $row['_msg'];

$mysql = mysql_connect("example.com", "user", "password");
mysql_select_db("test");
$result = mysql_query("SELECT 'Use the mysqli extension instead.' AS _msg FROM DUAL", $mysql);
$row = mysql_fetch_assoc($result);
echo $row['_msg'];
```

The above example will output:

```
Please do not use the deprecated mysql extension for new development. Use the mysqli extension instead.
```

*The object-oriented interface*

In addition to the classical procedural interface, users can choose to use the object-oriented interface. The documentation is organized using the object-oriented interface. The object-oriented interface shows functions grouped by their purpose, making it easier to get started. The reference section gives examples for both syntax variants.

There are no significant performance differences between the two interfaces. Users can base their choice on personal preference.

**Example 3.2 Object-oriented and procedural interface**

```
<?php

$mysqli = mysqli_connect("example.com", "user", "password", "database");

$result = mysqli_query($mysqli, "SELECT 'A world full of ' AS _msg FROM DUAL");
$row = mysqli_fetch_assoc($result);
echo $row['_msg'];

$mysqli = new mysqli("example.com", "user", "password", "database");

$result = $mysqli->query("SELECT 'choices to please everybody.' AS _msg FROM DUAL");
$row = $result->fetch_assoc();
echo $row['_msg'];
```

The above example will output:

```
A world full of choices to please everybody.
```

The object-oriented interface is used for the quickstart because the reference section is organized that way.

*Mixing styles*

It is possible to switch between styles at any time. Mixing both styles is not recommended for code clarity and coding style reasons.

**Example 3.3 Bad coding style**

```
<?php

$mysqli = new mysqli("example.com", "user", "password", "database");

$result = mysqli_query($mysqli, "SELECT 'Possible but bad style.' AS _msg FROM DUAL");

if ($row = $result->fetch_assoc()) {
    echo $row['_msg'];
}
```

The above example will output:

```
Possible but bad style.
```

*See also*

`mysqli::__construct`
`mysqli::query`
`mysqli_result::fetch_assoc`
$mysqli::connect_errno
$mysqli::connect_error
$mysqli::errno
$mysqli::error
The MySQLi Extension Function Summary

## 3.2.2 Connections

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The MySQL server supports the use of different transport layers for connections. Connections use TCP/IP, Unix domain sockets or Windows named pipes.

The hostname `localhost` has a special meaning. It is bound to the use of Unix domain sockets. To open a TCP/IP connection to the localhost, `127.0.0.1` must be used instead of the hostname `localhost`.

**Example 3.4 Special meaning of localhost**

```
<?php

$mysqli = new mysqli("localhost", "user", "password", "database");

echo $mysqli->host_info . "\n";

$mysqli = new mysqli("127.0.0.1", "user", "password", "database", 3306);

echo $mysqli->host_info . "\n";
```

The above example will output:

```
Localhost via UNIX socket
127.0.0.1 via TCP/IP
```

*Connection parameter defaults*

Depending on the connection function used, assorted parameters can be omitted. If a parameter is not provided, then the extension attempts to use the default values that are set in the PHP configuration file.

**Example 3.5 Setting defaults**

```
mysqli.default_host=192.168.2.27
mysqli.default_user=root
mysqli.default_pw=""
mysqli.default_port=3306
mysqli.default_socket=/tmp/mysql.sock
```

The resulting parameter values are then passed to the client library that is used by the extension. If the client library detects empty or unset parameters, then it may default to the library built-in values.

*Built-in connection library defaults*

If the host value is unset or empty, then the client library will default to a Unix socket connection on `localhost`. If socket is unset or empty, and a Unix socket connection is requested, then a connection to the default socket on `/tmp/mysql.sock` is attempted.

On Windows systems, the host name `.` is interpreted by the client library as an attempt to open a Windows named pipe based connection. In this case the socket parameter is interpreted as the pipe name. If not given or empty, then the socket (pipe name) defaults to `\\.\pipe\MySQL`.

If neither a Unix domain socket based not a Windows named pipe based connection is to be established and the port parameter value is unset, the library will default to port `3306`.

The mysqlnd library and the MySQL Client Library (libmysqlclient) implement the same logic for determining defaults.

*Connection options*

Connection options are available to, for example, set init commands which are executed upon connect, or for requesting use of a certain charset. Connection options must be set before a network connection is established.

For setting a connection option, the connect operation has to be performed in three steps: creating a connection handle with `mysqli_init` or `mysqli::__construct`, setting the requested options using `mysqli::options`, and establishing the network connection with `mysqli::real_connect`.

*Connection pooling*

The mysqli extension supports persistent database connections, which are a special kind of pooled connections. By default, every database connection opened by a script is either explicitly closed by the user during runtime or released automatically at the end of the script. A persistent connection is not. Instead it is put into a pool for later reuse, if a connection to the same server using the same username, password, socket, port and default database is opened. Reuse saves connection overhead.

Every PHP process is using its own mysqli connection pool. Depending on the web server deployment model, a PHP process may serve one or multiple requests. Therefore, a pooled connection may be used by one or more scripts subsequently.

*Persistent connection*

If an unused persistent connection for a given combination of host, username, password, socket, port and default database cannot be found in the connection pool, then mysqli opens a new connection. The use of persistent connections can be enabled and disabled using the PHP directive mysqli.allow_persistent. The total number of connections opened by a script can be limited with mysqli.max_links. The maximum number of persistent connections per PHP process can be restricted with mysqli.max_persistent. Please note that the web server may spawn many PHP processes.

A common complain about persistent connections is that their state is not reset before reuse. For example, open and unfinished transactions are not automatically rolled back. But also, authorization changes which happened in the time between putting the connection into the pool and reusing it are not reflected. This

may be seen as an unwanted side-effect. On the contrary, the name `persistent` may be understood as a promise that the state is persisted.

The mysqli extension supports both interpretations of a persistent connection: state persisted, and state reset before reuse. The default is reset. Before a persistent connection is reused, the mysqli extension implicitly calls `mysqli::change_user` to reset the state. The persistent connection appears to the user as if it was just opened. No artifacts from previous usages are visible.

The `mysqli::change_user` call is an expensive operation. For best performance, users may want to recompile the extension with the compile flag `MYSQLI_NO_CHANGE_USER_ON_PCONNECT` being set.

It is left to the user to choose between safe behavior and best performance. Both are valid optimization goals. For ease of use, the safe behavior has been made the default at the expense of maximum performance.

*See also*

`mysqli::__construct`
`mysqli_init`
`mysqli::options`
`mysqli::real_connect`
`mysqli::change_user`
$mysqli::host_info
MySQLi Configuration Options
Persistent Database Connections

## 3.2.3 Executing statements

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Statements can be executed with the `mysqli::query`, `mysqli::real_query` and `mysqli::multi_query`. The `mysqli::query` function is the most common, and combines the executing statement with a buffered fetch of its result set, if any, in one call. Calling `mysqli::query` is identical to calling `mysqli::real_query` followed by `mysqli::store_result`.

**Example 3.6 Executing queries**

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("example.com", "user", "password", "database");

$mysqli->query("DROP TABLE IF EXISTS test");
$mysqli->query("CREATE TABLE test(id INT)");
```

*Buffered result sets*

After statement execution, results can be either retrieved all at once or read row by row from the server. Client-side result set buffering allows the server to free resources associated with the statement's results as early as possible. Generally speaking, clients are slow consuming result sets. Therefore, it is recommended to use buffered result sets. `mysqli::query` combines statement execution and result set buffering.

PHP applications can navigate freely through buffered results. Navigation is fast because the result sets are held in client memory. Please, keep in mind that it is often easier to scale by client than it is to scale the server.

**Example 3.7 Navigation through buffered results**

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("example.com", "user", "password", "database");

$mysqli->query("DROP TABLE IF EXISTS test");
$mysqli->query("CREATE TABLE test(id INT)");
$mysqli->query("INSERT INTO test(id) VALUES (1), (2), (3)");

$result = $mysqli->query("SELECT id FROM test ORDER BY id ASC");

echo "Reverse order...\n";
for ($row_no = $result->num_rows - 1; $row_no >= 0; $row_no--) {
    $result->data_seek($row_no);
    $row = $result->fetch_assoc();
    echo " id = " . $row['id'] . "\n";
}

echo "Result set order...\n";
foreach ($result as $row) {
    echo " id = " . $row['id'] . "\n";
}
```

The above example will output:

```
Reverse order...
 id = 3
 id = 2
 id = 1
Result set order...
 id = 1
 id = 2
 id = 3
```

*Unbuffered result sets*

If client memory is a short resource and freeing server resources as early as possible to keep server load low is not needed, unbuffered results can be used. Scrolling through unbuffered results is not possible before all rows have been read.

**Example 3.8 Navigation through unbuffered results**

```
<?php

$mysqli->real_query("SELECT id FROM test ORDER BY id ASC");
$result = $mysqli->use_result();

echo "Result set order...\n";
foreach ($result as $row) {
    echo " id = " . $row['id'] . "\n";
}
```

*Result set values data types*

The `mysqli::query`, `mysqli::real_query` and `mysqli::multi_query` functions are used to execute non-prepared statements. At the level of the MySQL Client Server Protocol, the command `COM_QUERY` and the text protocol are used for statement execution. With the text protocol, the MySQL server converts all data of a result sets into strings before sending. This conversion is done regardless of the SQL result set column data type. The mysql client libraries receive all column values as strings. No further client-side casting is done to convert columns back to their native types. Instead, all values are provided as PHP strings.

**Example 3.9 Text protocol returns strings by default**

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("example.com", "user", "password", "database");

$mysqli->query("DROP TABLE IF EXISTS test");
$mysqli->query("CREATE TABLE test(id INT, label CHAR(1))");
$mysqli->query("INSERT INTO test(id, label) VALUES (1, 'a')");

$result = $mysqli->query("SELECT id, label FROM test WHERE id = 1");
$row = $result->fetch_assoc();

printf("id = %s (%s)\n", $row['id'], gettype($row['id']));
printf("label = %s (%s)\n", $row['label'], gettype($row['label']));
```

The above example will output:

```
id = 1 (string)
label = a (string)
```

It is possible to convert integer and float columns back to PHP numbers by setting the `MYSQLI_OPT_INT_AND_FLOAT_NATIVE` connection option, if using the mysqlnd library. If set, the mysqlnd library will check the result set meta data column types and convert numeric SQL columns to PHP numbers, if the PHP data type value range allows for it. This way, for example, SQL INT columns are returned as integers.

**Example 3.10 Native data types with mysqlnd and connection option**

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);

$mysqli = new mysqli();
$mysqli->options(MYSQLI_OPT_INT_AND_FLOAT_NATIVE, 1);
$mysqli->real_connect("example.com", "user", "password", "database");

$mysqli->query("DROP TABLE IF EXISTS test");
$mysqli->query("CREATE TABLE test(id INT, label CHAR(1))");
$mysqli->query("INSERT INTO test(id, label) VALUES (1, 'a')");

$result = $mysqli->query("SELECT id, label FROM test WHERE id = 1");
$row = $result->fetch_assoc();

printf("id = %s (%s)\n", $row['id'], gettype($row['id']));
printf("label = %s (%s)\n", $row['label'], gettype($row['label']));
```

The above example will output:

```
id = 1 (integer)
label = a (string)
```

*See also*

mysqli::__construct
mysqli::options
mysqli::real_connect
mysqli::query
mysqli::multi_query
mysqli::use_result
mysqli::store_result

## 3.2.4 Prepared Statements

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The MySQL database supports prepared statements. A prepared statement or a parameterized statement is used to execute the same statement repeatedly with high efficiency and protect against SQL injections.

*Basic workflow*

The prepared statement execution consists of two stages: prepare and execute. At the prepare stage a statement template is sent to the database server. The server performs a syntax check and initializes server internal resources for later use.

The MySQL server supports using anonymous, positional placeholder with ?.

Prepare is followed by execute. During execute the client binds parameter values and sends them to the server. The server executes the statement with the bound values using the previously created internal resources.

**Example 3.11 Prepared statement**

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("example.com", "user", "password", "database");

/* Non-prepared statement */
$mysqli->query("DROP TABLE IF EXISTS test");
$mysqli->query("CREATE TABLE test(id INT, label TEXT)");

/* Prepared statement, stage 1: prepare */
$stmt = $mysqli->prepare("INSERT INTO test(id, label) VALUES (?, ?)");

/* Prepared statement, stage 2: bind and execute */
$id = 1;
$label = 'PHP';
$stmt->bind_param("is", $id, $label); // "is" means that $id is bound as an integer and $label as a string

$stmt->execute();
```

*Repeated execution*

A prepared statement can be executed repeatedly. Upon every execution the current value of the bound variable is evaluated and sent to the server. The statement is not parsed again. The statement template is not transferred to the server again.

**Example 3.12 INSERT prepared once, executed multiple times**

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("example.com", "user", "password", "database");

/* Non-prepared statement */
$mysqli->query("DROP TABLE IF EXISTS test");
$mysqli->query("CREATE TABLE test(id INT, label TEXT)");

/* Prepared statement, stage 1: prepare */
$stmt = $mysqli->prepare("INSERT INTO test(id, label) VALUES (?, ?)");

/* Prepared statement, stage 2: bind and execute */
$stmt->bind_param("is", $id, $label); // "is" means that $id is bound as an integer and $label as a string

$data = [
    1 => 'PHP',
    2 => 'Java',
    3 => 'C++'
];
foreach ($data as $id => $label) {
    $stmt->execute();
}

$result = $mysqli->query('SELECT id, label FROM test');
var_dump($result->fetch_all(MYSQLI_ASSOC));
```

The above example will output:

```
array(3) {
  [0]=>
  array(2) {
    ["id"]=>
    string(1) "1"
    ["label"]=>
    string(3) "PHP"
  }
  [1]=>
  array(2) {
    ["id"]=>
    string(1) "2"
    ["label"]=>
    string(4) "Java"
  }
  [2]=>
  array(2) {
    ["id"]=>
    string(1) "3"
    ["label"]=>
    string(3) "C++"
  }
}
```

Every prepared statement occupies server resources. Statements should be closed explicitly immediately after use. If not done explicitly, the statement will be closed when the statement handle is freed by PHP.

Using a prepared statement is not always the most efficient way of executing a statement. A prepared statement executed only once causes more client-server round-trips than a non-prepared statement. This is why the `SELECT` is not run as a prepared statement above.

Also, consider the use of the MySQL multi-INSERT SQL syntax for INSERTs. For the example, multi-INSERT requires fewer round-trips between the server and client than the prepared statement shown above.

**Example 3.13 Less round trips using multi-INSERT SQL**

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("example.com", "user", "password", "database");

$mysqli->query("DROP TABLE IF EXISTS test");
$mysqli->query("CREATE TABLE test(id INT)");

$values = [1, 2, 3, 4];

$stmt = $mysqli->prepare("INSERT INTO test(id) VALUES (?), (?), (?), (?)");
$stmt->bind_param('iiii', ...$values);
$stmt->execute();
```

*Result set values data types*

The MySQL Client Server Protocol defines a different data transfer protocol for prepared statements and non-prepared statements. Prepared statements are using the so called binary protocol. The MySQL server sends result set data "as is" in binary format. Results are not serialized into strings before sending. Client libraries receive binary data and try to convert the values into appropriate PHP data types. For example, results from an SQL `INT` column will be provided as PHP integer variables.

**Example 3.14 Native datatypes**

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("example.com", "user", "password", "database");

/* Non-prepared statement */
$mysqli->query("DROP TABLE IF EXISTS test");
$mysqli->query("CREATE TABLE test(id INT, label TEXT)");
$mysqli->query("INSERT INTO test(id, label) VALUES (1, 'PHP')");

$stmt = $mysqli->prepare("SELECT id, label FROM test WHERE id = 1");
$stmt->execute();
$result = $stmt->get_result();
$row = $result->fetch_assoc();

printf("id = %s (%s)\n", $row['id'], gettype($row['id']));
printf("label = %s (%s)\n", $row['label'], gettype($row['label']));
```

The above example will output:

```
id = 1 (integer)
label = PHP (string)
```

This behavior differs from non-prepared statements. By default, non-prepared statements return all results as strings. This default can be changed using a connection option. If the connection option is used, there are no differences.

*Fetching results using bound variables*

Results from prepared statements can either be retrieved by binding output variables, or by requesting a `mysqli_result` object.

Output variables must be bound after statement execution. One variable must be bound for every column of the statements result set.

**Example 3.15 Output variable binding**

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("example.com", "user", "password", "database");

/* Non-prepared statement */
$mysqli->query("DROP TABLE IF EXISTS test");
$mysqli->query("CREATE TABLE test(id INT, label TEXT)");
$mysqli->query("INSERT INTO test(id, label) VALUES (1, 'PHP')");

$stmt = $mysqli->prepare("SELECT id, label FROM test WHERE id = 1");
$stmt->execute();

$stmt->bind_result($out_id, $out_label);

while ($stmt->fetch()) {
    printf("id = %s (%s), label = %s (%s)\n", $out_id, gettype($out_id), $out_label, gettype($out_label));
}
```

The above example will output:

```
id = 1 (integer), label = PHP (string)
```

Prepared statements return unbuffered result sets by default. The results of the statement are not implicitly fetched and transferred from the server to the client for client-side buffering. The result set takes server resources until all results have been fetched by the client. Thus it is recommended to consume results timely. If a client fails to fetch all results or the client closes the statement before having fetched all data, the data has to be fetched implicitly by `mysqli`.

It is also possible to buffer the results of a prepared statement using `mysqli_stmt::store_result`.

*Fetching results using mysqli_result interface*

Instead of using bound results, results can also be retrieved through the mysqli_result interface. `mysqli_stmt::get_result` returns a buffered result set.

**Example 3.16 Using mysqli_result to fetch results**

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("example.com", "user", "password", "database");

/* Non-prepared statement */
$mysqli->query("DROP TABLE IF EXISTS test");
$mysqli->query("CREATE TABLE test(id INT, label TEXT)");
$mysqli->query("INSERT INTO test(id, label) VALUES (1, 'PHP')");

$stmt = $mysqli->prepare("SELECT id, label FROM test WHERE id = 1");
$stmt->execute();

$result = $stmt->get_result();

var_dump($result->fetch_all(MYSQLI_ASSOC));
```

The above example will output:

```
array(1) {
  [0]=>
  array(2) {
    ["id"]=>
    int(1)
    ["label"]=>
    string(3) "PHP"
  }
}
```

Using the `mysqli_result` interface offers the additional benefit of flexible client-side result set navigation.

**Example 3.17 Buffered result set for flexible read out**

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("example.com", "user", "password", "database");

/* Non-prepared statement */
$mysqli->query("DROP TABLE IF EXISTS test");
$mysqli->query("CREATE TABLE test(id INT, label TEXT)");
$mysqli->query("INSERT INTO test(id, label) VALUES (1, 'PHP'), (2, 'Java'), (3, 'C++')");

$stmt = $mysqli->prepare("SELECT id, label FROM test");
$stmt->execute();

$result = $stmt->get_result();

for ($row_no = $result->num_rows - 1; $row_no >= 0; $row_no--) {
    $result->data_seek($row_no);
    var_dump($result->fetch_assoc());
}
```

The above example will output:

```
array(2) {
```

```
  ["id"]=>
  int(3)
  ["label"]=>
  string(3) "C++"
}
array(2) {
  ["id"]=>
  int(2)
  ["label"]=>
  string(4) "Java"
}
array(2) {
  ["id"]=>
  int(1)
  ["label"]=>
  string(3) "PHP"
}
```

*Escaping and SQL injection*

Bound variables are sent to the server separately from the query and thus cannot interfere with it. The server uses these values directly at the point of execution, after the statement template is parsed. Bound parameters do not need to be escaped as they are never substituted into the query string directly. A hint must be provided to the server for the type of bound variable, to create an appropriate conversion. See the `mysqli_stmt::bind_param` function for more information.

Such a separation sometimes considered as the only security feature to prevent SQL injection, but the same degree of security can be achieved with non-prepared statements, if all the values are formatted correctly. It should be noted that correct formatting is not the same as escaping and involves more logic than simple escaping. Thus, prepared statements are simply a more convenient and less error-prone approach to this element of database security.

*Client-side prepared statement emulation*

The API does not include emulation for client-side prepared statement emulation.

*Quick comparison of prepared and non-prepared statements*

The table below compares server-side prepared and non-prepared statements.

**Table 3.2 Comparison of prepared and non-prepared statements**

| | **Prepared Statement** | **Non-prepared statement** |
|---|---|---|
| Client-server round trips, SELECT, single execution | 2 | 1 |
| Statement string transferred from client to server | 1 | 1 |
| Client-server round trips, SELECT, repeated (n) execution | 1 + n | n |
| Statement string transferred from client to server | 1 template, n times bound parameter, if any | n times and parsed every time |
| Input parameter binding API | Yes | No, manual input escaping |
| Output variable binding API | Yes | No |
| Supports use of mysqli_result API | Yes, use `mysqli_stmt::get_result` | Yes |

| | Prepared Statement | Non-prepared statement |
|---|---|---|
| Buffered result sets | Yes, use `mysqli_stmt::get_result` or binding with `mysqli_stmt::store_result` | Yes, default of `mysqli::query` |
| Unbuffered result sets | Yes, use output binding API | Yes, use `mysqli::real_query` with `mysqli::use_result` |
| MySQL Client Server protocol data transfer flavor | Binary protocol | Text protocol |
| Result set values SQL data types | Preserved when fetching | Converted to string or preserved when fetching |
| Supports all SQL statements | Recent MySQL versions support most but not all | Yes |

*See also*

`mysqli::__construct`
`mysqli::query`
`mysqli::prepare`
`mysqli_stmt::prepare`
`mysqli_stmt::execute`
`mysqli_stmt::bind_param`
`mysqli_stmt::bind_result`

## 3.2.5 Stored Procedures

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The MySQL database supports stored procedures. A stored procedure is a subroutine stored in the database catalog. Applications can call and execute the stored procedure. The `CALL` SQL statement is used to execute a stored procedure.

*Parameter*

Stored procedures can have `IN`, `INOUT` and `OUT` parameters, depending on the MySQL version. The mysqli interface has no special notion for the different kinds of parameters.

*IN parameter*

Input parameters are provided with the `CALL` statement. Please, make sure values are escaped correctly.

**Example 3.18 Calling a stored procedure**

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("example.com", "user", "password", "database");

$mysqli->query("DROP TABLE IF EXISTS test");
$mysqli->query("CREATE TABLE test(id INT)");

$mysqli->query("DROP PROCEDURE IF EXISTS p");
$mysqli->query("CREATE PROCEDURE p(IN id_val INT) BEGIN INSERT INTO test(id) VALUES(id_val); END;");

$mysqli->query("CALL p(1)");
```

```
$result = $mysqli->query("SELECT id FROM test");

var_dump($result->fetch_assoc());
```

The above example will output:

```
array(1) {
  ["id"]=>
  string(1) "1"
}
```

*INOUT/OUT parameter*

The values of `INOUT`/`OUT` parameters are accessed using session variables.

**Example 3.19 Using session variables**

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("example.com", "user", "password", "database");

$mysqli->query("DROP PROCEDURE IF EXISTS p");
$mysqli->query('CREATE PROCEDURE p(OUT msg VARCHAR(50)) BEGIN SELECT "Hi!" INTO msg; END;');

$mysqli->query("SET @msg = ''");
$mysqli->query("CALL p(@msg)");

$result = $mysqli->query("SELECT @msg as _p_out");

$row = $result->fetch_assoc();
echo $row['_p_out'];
```

The above example will output:

```
Hi!
```

Application and framework developers may be able to provide a more convenient API using a mix of session variables and databased catalog inspection. However, please note the possible performance impact of a custom solution based on catalog inspection.

*Handling result sets*

Stored procedures can return result sets. Result sets returned from a stored procedure cannot be fetched correctly using `mysqli::query`. The `mysqli::query` function combines statement execution and fetching the first result set into a buffered result set, if any. However, there are additional stored procedure result sets hidden from the user which cause `mysqli::query` to fail returning the user expected result sets.

Result sets returned from a stored procedure are fetched using `mysqli::real_query` or `mysqli::multi_query`. Both functions allow fetching any number of result sets returned by a statement, such as `CALL`. Failing to fetch all result sets returned by a stored procedure causes an error.

**Example 3.20 Fetching results from stored procedures**

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("example.com", "user", "password", "database");

$mysqli->query("DROP TABLE IF EXISTS test");
$mysqli->query("CREATE TABLE test(id INT)");
$mysqli->query("INSERT INTO test(id) VALUES (1), (2), (3)");

$mysqli->query("DROP PROCEDURE IF EXISTS p");
$mysqli->query('CREATE PROCEDURE p() READS SQL DATA BEGIN SELECT id FROM test; SELECT id + 1 FROM test; END;')

$mysqli->multi_query("CALL p()");

do {
    if ($result = $mysqli->store_result()) {
        printf("---\n");
        var_dump($result->fetch_all());
        $result->free();
    }
} while ($mysqli->next_result());
```

The above example will output:

```
---
array(3) {
  [0]=>
  array(1) {
    [0]=>
    string(1) "1"
  }
  [1]=>
  array(1) {
    [0]=>
    string(1) "2"
  }
  [2]=>
  array(1) {
    [0]=>
    string(1) "3"
  }
}
---
array(3) {
  [0]=>
  array(1) {
    [0]=>
    string(1) "2"
  }
  [1]=>
  array(1) {
    [0]=>
    string(1) "3"
  }
  [2]=>
  array(1) {
    [0]=>
    string(1) "4"
  }
}
```

*Use of prepared statements*

No special handling is required when using the prepared statement interface for fetching results from the same stored procedure as above. The prepared statement and non-prepared statement interfaces are similar. Please note, that not every MYSQL server version may support preparing the `CALL` SQL statement.

**Example 3.21 Stored Procedures and Prepared Statements**

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("example.com", "user", "password", "database");

$mysqli->query("DROP TABLE IF EXISTS test");
$mysqli->query("CREATE TABLE test(id INT)");
$mysqli->query("INSERT INTO test(id) VALUES (1), (2), (3)");

$mysqli->query("DROP PROCEDURE IF EXISTS p");
$mysqli->query('CREATE PROCEDURE p() READS SQL DATA BEGIN SELECT id FROM test; SELECT id + 1 FROM test; EN

$stmt = $mysqli->prepare("CALL p()");

$stmt->execute();

do {
    if ($result = $stmt->get_result()) {
        printf("---\n");
        var_dump($result->fetch_all());
        $result->free();
    }
} while ($stmt->next_result());
```

The above example will output:

```
---
array(3) {
  [0]=>
  array(1) {
    [0]=>
    int(1)
  }
  [1]=>
  array(1) {
    [0]=>
    int(2)
  }
  [2]=>
  array(1) {
    [0]=>
    int(3)
  }
}
---
array(3) {
  [0]=>
  array(1) {
    [0]=>
    int(2)
```

```
  }
  [1]=>
  array(1) {
    [0]=>
    int(3)
  }
  [2]=>
  array(1) {
    [0]=>
    int(4)
  }
}
```

Of course, use of the bind API for fetching is supported as well.

**Example 3.22 Stored Procedures and Prepared Statements using bind API**

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("example.com", "user", "password", "database");

$mysqli->query("DROP TABLE IF EXISTS test");
$mysqli->query("CREATE TABLE test(id INT)");
$mysqli->query("INSERT INTO test(id) VALUES (1), (2), (3)");

$mysqli->query("DROP PROCEDURE IF EXISTS p");
$mysqli->query('CREATE PROCEDURE p() READS SQL DATA BEGIN SELECT id FROM test; SELECT id + 1 FROM test; END;')

$stmt = $mysqli->prepare("CALL p()");

$stmt->execute();

do {
    if ($stmt->store_result()) {
        $stmt->bind_result($id_out);
        while ($stmt->fetch()) {
            echo "id = $id_out\n";
        }
    }
} while ($stmt->next_result());
```

The above example will output:

```
id = 1
id = 2
id = 3
id = 2
id = 3
id = 4
```

*See also*

mysqli::query
mysqli::multi_query
mysqli::next_result
mysqli::more_results

## 3.2.6 Multiple Statements

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MySQL optionally allows having multiple statements in one statement string, but it requires special handling.

Multiple statements or multi queries must be executed with `mysqli::multi_query`. The individual statements of the statement string are separated by semicolon. Then, all result sets returned by the executed statements must be fetched.

The MySQL server allows having statements that do return result sets and statements that do not return result sets in one multiple statement.

**Example 3.23 Multiple Statements**

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("example.com", "user", "password", "database");

$mysqli->query("DROP TABLE IF EXISTS test");
$mysqli->query("CREATE TABLE test(id INT)");

$sql = "SELECT COUNT(*) AS _num FROM test;
        INSERT INTO test(id) VALUES (1);
        SELECT COUNT(*) AS _num FROM test; ";

$mysqli->multi_query($sql);

do {
    if ($result = $mysqli->store_result()) {
        var_dump($result->fetch_all(MYSQLI_ASSOC));
        $result->free();
    }
} while ($mysqli->next_result());
```

The above example will output:

```
array(1) {
  [0]=>
  array(1) {
    ["_num"]=>
    string(1) "0"
  }
}
array(1) {
  [0]=>
  array(1) {
    ["_num"]=>
    string(1) "1"
  }
}
```

*Security considerations*

The API functions `mysqli::query` and `mysqli::real_query` do not set a connection flag necessary for activating multi queries in the server. An extra API call is used for multiple statements to reduce the

damage of accidental SQL injection attacks. An attacker may try to add statements such as `; DROP DATABASE mysql` or `; SELECT SLEEP(999)`. If the attacker succeeds in adding SQL to the statement string but `mysqli::multi_query` is not used, the server will not execute the injected and malicious SQL statement.

**Example 3.24 SQL Injection**

```
<?php
$mysqli = new mysqli("example.com", "user", "password", "database");
$result = $mysqli->query("SELECT 1; DROP TABLE mysql.user");
if (!$result) {
    echo "Error executing query: (" . $mysqli->errno . ") " . $mysqli->error;
}
?>
```

The above example will output:

```
Error executing query: (1064) You have an error in your SQL syntax;
check the manual that corresponds to your MySQL server version for the right syntax
to use near 'DROP TABLE mysql.user' at line 1
```

*Prepared statements*

Use of the multiple statement with prepared statements is not supported.

*See also*

`mysqli::query`
`mysqli::multi_query`
`mysqli::next_result`
`mysqli::more_results`

## 3.2.7 API support for transactions

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The MySQL server supports transactions depending on the storage engine used. Since MySQL 5.5, the default storage engine is InnoDB. InnoDB has full ACID transaction support.

Transactions can either be controlled using SQL or API calls. It is recommended to use API calls for enabling and disabling the `autocommit` mode and for committing and rolling back transactions.

**Example 3.25 Setting `autocommit` mode with SQL and through the API**

```
<?php
mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("example.com", "user", "password", "database");

/* Recommended: using API to control transactional settings */
$mysqli->autocommit(false);

/* Won't be monitored and recognized by the replication and the load balancing plugin */
$mysqli->query('SET AUTOCOMMIT = 0');
```

Optional feature packages, such as the replication and load balancing plugin, can easily monitor API calls. The replication plugin offers transaction aware load balancing, if transactions are controlled with API calls. Transaction aware load balancing is not available if SQL statements are used for setting `autocommit` mode, committing or rolling back a transaction.

**Example 3.26 Commit and rollback**

```
<?php
mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("example.com", "user", "password", "database");
$mysqli->autocommit(false);

$mysqli->query("INSERT INTO test(id) VALUES (1)");
$mysqli->rollback();

$mysqli->query("INSERT INTO test(id) VALUES (2)");
$mysqli->commit();
```

Please note, that the MySQL server cannot roll back all statements. Some statements cause an implicit commit.

*See also*

`mysqli::autocommit`
`mysqli::begin_transaction`
`mysqli::commit`
`mysqli::rollback`

## 3.2.8 Metadata

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A MySQL result set contains metadata. The metadata describes the columns found in the result set. All metadata sent by MySQL is accessible through the `mysqli` interface. The extension performs no or negligible changes to the information it receives. Differences between MySQL server versions are not aligned.

Meta data is access through the `mysqli_result` interface.

**Example 3.27 Accessing result set meta data**

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("example.com", "user", "password", "database");

$result = $mysqli->query("SELECT 1 AS _one, 'Hello' AS _two FROM DUAL");
var_dump($result->fetch_fields());
```

The above example will output:

```
array(2) {
  [0]=>
  object(stdClass)#3 (13) {
    ["name"]=>
    string(4) "_one"
```

```
    ["orgname"]=>
    string(0) ""
    ["table"]=>
    string(0) ""
    ["orgtable"]=>
    string(0) ""
    ["def"]=>
    string(0) ""
    ["db"]=>
    string(0) ""
    ["catalog"]=>
    string(3) "def"
    ["max_length"]=>
    int(1)
    ["length"]=>
    int(1)
    ["charsetnr"]=>
    int(63)
    ["flags"]=>
    int(32897)
    ["type"]=>
    int(8)
    ["decimals"]=>
    int(0)
  }
  [1]=>
  object(stdClass)#4 (13) {
    ["name"]=>
    string(4) "_two"
    ["orgname"]=>
    string(0) ""
    ["table"]=>
    string(0) ""
    ["orgtable"]=>
    string(0) ""
    ["def"]=>
    string(0) ""
    ["db"]=>
    string(0) ""
    ["catalog"]=>
    string(3) "def"
    ["max_length"]=>
    int(5)
    ["length"]=>
    int(5)
    ["charsetnr"]=>
    int(8)
    ["flags"]=>
    int(1)
    ["type"]=>
    int(253)
    ["decimals"]=>
    int(31)
  }
}
```

*Prepared statements*

Meta data of result sets created using prepared statements are accessed the same way. A suitable `mysqli_result` handle is returned by `mysqli_stmt::result_metadata`.

**Example 3.28 Prepared statements metadata**

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("example.com", "user", "password", "database");

$stmt = $mysqli->prepare("SELECT 1 AS _one, 'Hello' AS _two FROM DUAL");
$stmt->execute();
$result = $stmt->result_metadata();
var_dump($result->fetch_fields());
```

*See also*

`mysqli::query`
`mysqli_result::fetch_fields`

# 3.3 Installing/Configuring

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## 3.3.1 Requirements

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In order to have these functions available, you must compile PHP with support for the mysqli extension.

*MySQL 8*

When running a PHP version before 7.1.16, or PHP 7.2 before 7.2.4, set MySQL 8 Server's default password plugin to *mysql_native_password* or else you will see errors similar to *The server requested authentication method unknown to the client [caching_sha2_password]* even when *caching_sha2_password* is not used.

This is because MySQL 8 defaults to caching_sha2_password, a plugin that is not recognized by the older PHP (mysqlnd) releases. Instead, change it by setting `default_authentication_plugin=mysql_native_password` in `my.cnf`. The *caching_sha2_password* plugin will be supported in a future PHP release. In the meantime, the mysql_xdevapi extension does support it.

## 3.3.2 Installation

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The `mysqli` extension was introduced with PHP version 5.0.0. The MySQL Native Driver was included in PHP version 5.3.0.

### 3.3.2.1 Installation on Linux

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The common Unix distributions include binary versions of PHP that can be installed. Although these binary versions are typically built with support for the MySQL extensions, the extension libraries themselves may need to be installed using an additional package. Check the package manager that comes with your chosen distribution for availability.

For example, on Ubuntu the `php5-mysql` package installs the ext/mysql, ext/mysqli, and pdo_mysql PHP extensions. On CentOS, the `php-mysql` package also installs these three PHP extensions.

Alternatively, you can compile this extension yourself. Building PHP from source allows you to specify the MySQL extensions you want to use, as well as your choice of client library for each extension.

The MySQL Native Driver is the recommended client library option, as it results in improved performance and gives access to features not available when using the MySQL Client Library. Refer to What is PHP's MySQL Native Driver? for a brief overview of the advantages of MySQL Native Driver.

The `/path/to/mysql_config` represents the location of the `mysql_config` program that comes with MySQL Server.

**Table 3.3 mysqli compile time support matrix**

| PHP Version | Default | Configure Options: mysqlnd | Configure Options: `libmysqlclient` | Changelog |
|---|---|---|---|---|
| 5.4.x and above | mysqlnd | `--with-mysqli` | `--with-mysqli=/path/to/mysql_config` | mysqlnd is the default |
| 5.3.x | libmysqlclient | `--with-mysqli=mysqlnd` | `--with-mysqli=/path/to/mysql_config` | mysqlnd is supported |
| 5.0.x, 5.1.x, 5.2.x | libmysqlclient | Not Available | `--with-mysqli=/path/to/mysql_config` | mysqlnd is not supported |

Note that it is possible to freely mix MySQL extensions and client libraries. For example, it is possible to enable the MySQL extension to use the MySQL Client Library (libmysqlclient), while configuring the `mysqli` extension to use the MySQL Native Driver. However, all permutations of extension and client library are possible.

### 3.3.2.2 Installation on Windows Systems

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On Windows, PHP is most commonly installed using the binary installer.

#### PHP 5.3.0 and newer

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On Windows, for PHP versions 5.3 and newer, the `mysqli` extension is enabled and uses the MySQL Native Driver by default. This means you don't need to worry about configuring access to `libmysql.dll`.

#### PHP 5.0, 5.1, 5.2

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On these old unsupported PHP versions (PHP 5.2 reached EOL on '6 Jan 2011'), additional configuration procedures are required to enable `mysqli` and specify the client library you want it to use.

The `mysqli` extension is not enabled by default, so the `php_mysqli.dll` DLL must be enabled inside of `php.ini`. In order to do this you need to find the `php.ini` file (typically located in `c:\php`), and make sure you remove the comment (semi-colon) from the start of the line `extension=php_mysqli.dll`, in the section marked `[PHP_MYSQLI]`.

Also, if you want to use the MySQL Client Library with `mysqli`, you need to make sure PHP can access the client library file. The MySQL Client Library is included as a file named `libmysql.dll` in the Windows PHP distribution. This file needs to be available in the Windows system's `PATH` environment variable, so that it can be successfully loaded. See the FAQ titled "How do I add my PHP directory to the PATH on Windows" for information on how to do this. Copying `libmysql.dll` to the Windows system directory (typically `c:\Windows\system`) also works, as the system directory is by default in the system's `PATH`. However, this practice is strongly discouraged.

As with enabling any PHP extension (such as `php_mysqli.dll`), the PHP directive extension_dir should be set to the directory where the PHP extensions are located. See also the Manual Windows Installation Instructions. An example `extension_dir` value for PHP 5 is `c:\php\ext`.

> **Note**
>
> If when starting the web server an error similar to the following occurs: `"Unable to load dynamic library './php_mysqli.dll'"`, this is because `php_mysqli.dll` and/or `libmysql.dll` cannot be found by the system.

## 3.3.3 Runtime Configuration

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The behaviour of these functions is affected by settings in `php.ini`.

**Table 3.4 MySQLi Configuration Options**

| Name | Default | Changeable | Changelog |
|---|---|---|---|
| mysqli.allow_local_infile | "0" | PHP_INI_SYSTEM | Before PHP 7.2.16 and 7.3.3 the default was "1". |
| mysqli.local_infile_directory | | PHP_INI_SYSTEM | Available as of PHP 8.1.0. |
| mysqli.allow_persistent | "1" | PHP_INI_SYSTEM | |
| mysqli.max_persistent | "-1" | PHP_INI_SYSTEM | |
| mysqli.max_links | "-1" | PHP_INI_SYSTEM | |
| mysqli.default_port | "3306" | PHP_INI_ALL | |
| mysqli.default_socket | NULL | PHP_INI_ALL | |
| mysqli.default_host | NULL | PHP_INI_ALL | |
| mysqli.default_user | NULL | PHP_INI_ALL | |
| mysqli.default_pw | NULL | PHP_INI_ALL | |
| mysqli.reconnect | "0" | PHP_INI_SYSTEM | |
| mysqli.rollback_on_cached_plink | "0" | PHP_INI_SYSTEM | |

For further details and definitions of the preceding PHP_INI_* constants, see the chapter on configuration changes.

Here's a short explanation of the configuration directives.

*`mysqli.allow_local_infile`* int
: Allow accessing, from PHP's perspective, local files with LOAD DATA statements

*`mysqli.local_infile_directory`* string
: Allows restricting LOCAL DATA loading to files located in this designated directory.

| | |
|---|---|
| *mysqli.allow_persistent* int | Enable the ability to create persistent connections using `mysqli_connect`. |
| *mysqli.max_persistent* int | Maximum of persistent connections that can be made. Set to 0 for unlimited. |
| *mysqli.max_links* int | The maximum number of MySQL connections per process. |
| *mysqli.default_port* int | The default TCP port number to use when connecting to the database server if no other port is specified. If no default is specified, the port will be obtained from the `MYSQL_TCP_PORT` environment variable, the `mysql-tcp` entry in `/etc/services` or the compile-time `MYSQL_PORT` constant, in that order. Win32 will only use the `MYSQL_PORT` constant. |
| *mysqli.default_socket* string | The default socket name to use when connecting to a local database server if no other socket name is specified. |
| *mysqli.default_host* string | The default server host to use when connecting to the database server if no other host is specified. |
| *mysqli.default_user* string | The default user name to use when connecting to the database server if no other name is specified. |
| *mysqli.default_pw* string | The default password to use when connecting to the database server if no other password is specified. |
| *mysqli.reconnect* int | Automatically reconnect if the connection was lost.<br><br>**Note**<br><br>This `php.ini` setting is ignored by the mysqlnd driver. |
| *mysqli.rollback_on_cached_plink* bool | If this option is enabled, closing a persistent connection will rollback any pending transactions of this connection before it is put back into the persistent connection pool. Otherwise, pending transactions will be rolled back only when the connection is reused, or when it is actually closed. |

Users cannot set `MYSQL_OPT_READ_TIMEOUT` through an API call or runtime configuration setting. Note that if it were possible there would be differences between how `libmysqlclient` and streams would interpret the value of `MYSQL_OPT_READ_TIMEOUT`.

### 3.3.4 Resource Types

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This extension has no resource types defined.

## 3.4 The mysqli Extension and Persistent Connections

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The idea behind persistent connections is that a connection between a client process and a database can be reused by a client process, rather than being created and destroyed multiple times. This reduces the

overhead of creating fresh connections every time one is required, as unused connections are cached and ready to be reused.

Unlike the mysql extension, mysqli does not provide a separate function for opening persistent connections. To open a persistent connection you must prepend `p:` to the hostname when connecting.

The problem with persistent connections is that they can be left in unpredictable states by clients. For example, a table lock might be activated before a client terminates unexpectedly. A new client process reusing this persistent connection will get the connection “as is”. Any cleanup would need to be done by the new client process before it could make good use of the persistent connection, increasing the burden on the programmer.

The persistent connection of the `mysqli` extension however provides built-in cleanup handling code. The cleanup carried out by `mysqli` includes:

- Rollback active transactions
- Close and drop temporary tables
- Unlock tables
- Reset session variables
- Close prepared statements (always happens with PHP)
- Close handler
- Release locks acquired with `GET_LOCK`

This ensures that persistent connections are in a clean state on return from the connection pool, before the client process uses them.

The `mysqli` extension does this cleanup by automatically calling the C-API function `mysql_change_user()`.

The automatic cleanup feature has advantages and disadvantages though. The advantage is that the programmer no longer needs to worry about adding cleanup code, as it is called automatically. However, the disadvantage is that the code could *potentially* be a little slower, as the code to perform the cleanup needs to run each time a connection is returned from the connection pool.

It is possible to switch off the automatic cleanup code, by compiling PHP with `MYSQLI_NO_CHANGE_USER_ON_PCONNECT` defined.

> **Note**
>
> The `mysqli` extension supports persistent connections when using either MySQL Native Driver or MySQL Client Library.

# 3.5 Predefined Constants

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The constants below are defined by this extension, and will only be available when the extension has either been compiled into PHP or dynamically loaded at runtime.

`MYSQLI_READ_DEFAULT_GROUP` Read options from the named group from `my.cnf` or the file specified with `MYSQLI_READ_DEFAULT_FILE`

| | |
|---|---|
| MYSQLI_READ_DEFAULT_FILE | Read options from the named option file instead of from `my.cnf` |
| MYSQLI_OPT_CONNECT_TIMEOUT | Connect timeout in seconds |
| MYSQLI_OPT_READ_TIMEOUT | Command execution result timeout in seconds. Available as of PHP 7.2.0. |
| MYSQLI_OPT_LOCAL_INFILE | Enables command `LOAD LOCAL INFILE` |
| MYSQLI_OPT_INT_AND_FLOAT_NATIVE | Convert integer and float columns back to PHP numbers. Only valid for mysqlnd. |
| MYSQLI_OPT_NET_CMD_BUFFER_SIZE | The size of the internal command/network buffer. Only valid for mysqlnd. |
| MYSQLI_OPT_NET_READ_BUFFER_SIZE | Maximum read chunk size in bytes when reading the body of a MySQL command packet. Only valid for mysqlnd. |
| MYSQLI_OPT_SSL_VERIFY_SERVER_CERT | Requires MySQL 5.1.10 and up |
| MYSQLI_INIT_COMMAND | Command to execute when connecting to MySQL server. Will automatically be re-executed when reconnecting. |
| MYSQLI_CLIENT_SSL | Use SSL (encrypted protocol). This option should not be set by application programs; it is set internally in the MySQL client library |
| MYSQLI_CLIENT_COMPRESS | Use compression protocol |
| MYSQLI_CLIENT_INTERACTIVE | Allow `interactive_timeout` seconds (instead of `wait_timeout` seconds) of inactivity before closing the connection. The client's session `wait_timeout` variable will be set to the value of the session `interactive_timeout` variable. |
| MYSQLI_CLIENT_IGNORE_SPACE | Allow spaces after function names. Makes all functions names reserved words. |
| MYSQLI_CLIENT_NO_SCHEMA | Don't allow the `db_name.tbl_name.col_name` syntax. |
| MYSQLI_CLIENT_MULTI_QUERIES | Allows multiple semicolon-delimited queries in a single `mysqli_query` call. |
| MYSQLI_STORE_RESULT | For using buffered result sets. It has a value of `0`. |
| MYSQLI_USE_RESULT | For using unbuffered result sets. It has a value of `1`. |
| MYSQLI_ASSOC | Columns are returned into the array having the fieldname as the array index. |
| MYSQLI_NUM | Columns are returned into the array having an enumerated index. |
| MYSQLI_BOTH | Columns are returned into the array having both a numerical index and the fieldname as the associative index. |
| MYSQLI_NOT_NULL_FLAG | Indicates that a field is defined as `NOT NULL` |
| MYSQLI_PRI_KEY_FLAG | Field is part of a primary index |
| MYSQLI_UNIQUE_KEY_FLAG | Field is part of a unique index. |
| MYSQLI_MULTIPLE_KEY_FLAG | Field is part of an index. |

| | |
|---|---|
| MYSQLI_BLOB_FLAG | Field is defined as BLOB |
| MYSQLI_UNSIGNED_FLAG | Field is defined as UNSIGNED |
| MYSQLI_ZEROFILL_FLAG | Field is defined as ZEROFILL |
| MYSQLI_AUTO_INCREMENT_FLAG | Field is defined as AUTO_INCREMENT |
| MYSQLI_TIMESTAMP_FLAG | Field is defined as TIMESTAMP |
| MYSQLI_SET_FLAG | Field is defined as SET |
| MYSQLI_NUM_FLAG | Field is defined as NUMERIC |
| MYSQLI_PART_KEY_FLAG | Field is part of an multi-index |
| MYSQLI_GROUP_FLAG | Field is part of GROUP BY |
| MYSQLI_TYPE_DECIMAL | Field is defined as DECIMAL |
| MYSQLI_TYPE_NEWDECIMAL | Precision math DECIMAL or NUMERIC field (MySQL 5.0.3 and up) |
| MYSQLI_TYPE_BIT | Field is defined as BIT (MySQL 5.0.3 and up) |
| MYSQLI_TYPE_TINY | Field is defined as TINYINT |
| MYSQLI_TYPE_SHORT | Field is defined as SMALLINT |
| MYSQLI_TYPE_LONG | Field is defined as INT |
| MYSQLI_TYPE_FLOAT | Field is defined as FLOAT |
| MYSQLI_TYPE_DOUBLE | Field is defined as DOUBLE |
| MYSQLI_TYPE_NULL | Field is defined as DEFAULT NULL |
| MYSQLI_TYPE_TIMESTAMP | Field is defined as TIMESTAMP |
| MYSQLI_TYPE_LONGLONG | Field is defined as BIGINT |
| MYSQLI_TYPE_INT24 | Field is defined as MEDIUMINT |
| MYSQLI_TYPE_DATE | Field is defined as DATE |
| MYSQLI_TYPE_TIME | Field is defined as TIME |
| MYSQLI_TYPE_DATETIME | Field is defined as DATETIME |
| MYSQLI_TYPE_YEAR | Field is defined as YEAR |
| MYSQLI_TYPE_NEWDATE | Field is defined as DATE |
| MYSQLI_TYPE_INTERVAL | Field is defined as INTERVAL |
| MYSQLI_TYPE_ENUM | Field is defined as ENUM |
| MYSQLI_TYPE_SET | Field is defined as SET |
| MYSQLI_TYPE_TINY_BLOB | Field is defined as TINYBLOB |
| MYSQLI_TYPE_MEDIUM_BLOB | Field is defined as MEDIUMBLOB |

| | |
|---|---|
| MYSQLI_TYPE_LONG_BLOB | Field is defined as LONGBLOB |
| MYSQLI_TYPE_BLOB | Field is defined as BLOB |
| MYSQLI_TYPE_VAR_STRING | Field is defined as VARCHAR |
| MYSQLI_TYPE_STRING | Field is defined as CHAR or BINARY |
| MYSQLI_TYPE_CHAR | Field is defined as TINYINT. For CHAR, see MYSQLI_TYPE_STRING |
| MYSQLI_TYPE_GEOMETRY | Field is defined as GEOMETRY |
| MYSQLI_TYPE_JSON | Field is defined as JSON. Only valid for mysqlnd and MySQL 5.7.8 and up. |
| MYSQLI_NEED_DATA | More data available for bind variable |
| MYSQLI_NO_DATA | No more data available for bind variable |
| MYSQLI_DATA_TRUNCATED | Data truncation occurred. Available since MySQL 5.0.5. |
| MYSQLI_ENUM_FLAG | Field is defined as ENUM. |
| MYSQLI_BINARY_FLAG | Field is defined as BINARY. |
| MYSQLI_CURSOR_TYPE_FOR_UPDATE | |
| MYSQLI_CURSOR_TYPE_NO_CURSOR | |
| MYSQLI_CURSOR_TYPE_READ_ONLY | |
| MYSQLI_CURSOR_TYPE_SCROLLABLE | |
| MYSQLI_STMT_ATTR_CURSOR_TYPE | |
| MYSQLI_STMT_ATTR_PREFETCH_ROWS | |
| MYSQLI_STMT_ATTR_UPDATE_MAX_LENGTH | |
| MYSQLI_SET_CHARSET_NAME | |
| MYSQLI_REPORT_INDEX | Report if no index or bad index was used in a query. |
| MYSQLI_REPORT_ERROR | Report errors from mysqli function calls. |
| MYSQLI_REPORT_STRICT | Throw a mysqli_sql_exception for errors instead of warnings. |
| MYSQLI_REPORT_ALL | Set all options on (report all). |
| MYSQLI_REPORT_OFF | Turns reporting off. |
| MYSQLI_DEBUG_TRACE_ENABLED | Is set to 1 if mysqli_debug functionality is enabled. |
| MYSQLI_SERVER_QUERY_NO_GOOD_INDEX_USED | |
| MYSQLI_SERVER_QUERY_NO_INDEX_USED | |
| MYSQLI_SERVER_PUBLIC_KEY | |
| MYSQLI_REFRESH_GRANT | Refreshes the grant tables. |

| | |
|---|---|
| MYSQLI_REFRESH_LOG | Flushes the logs, like executing the FLUSH LOGS SQL statement. |
| MYSQLI_REFRESH_TABLES | Flushes the table cache, like executing the FLUSH TABLES SQL statement. |
| MYSQLI_REFRESH_HOSTS | Flushes the host cache, like executing the FLUSH HOSTS SQL statement. |
| MYSQLI_REFRESH_REPLICA | Alias of MYSQLI_REFRESH_SLAVE constant. Available as of PHP 8.1.0. |
| MYSQLI_REFRESH_STATUS | Reset the status variables, like executing the FLUSH STATUS SQL statement. |
| MYSQLI_REFRESH_THREADS | Flushes the thread cache. |
| MYSQLI_REFRESH_SLAVE | On a slave replication server: resets the master server information, and restarts the slave. Like executing the RESET SLAVE SQL statement. |
| MYSQLI_REFRESH_MASTER | On a master replication server: removes the binary log files listed in the binary log index, and truncates the index file. Like executing the RESET MASTER SQL statement. |
| MYSQLI_TRANS_COR_AND_CHAIN | Appends "AND CHAIN" to mysqli_commit or mysqli_rollback. |
| MYSQLI_TRANS_COR_AND_NO_CHAIN | Appends "AND NO CHAIN" to mysqli_commit or mysqli_rollback. |
| MYSQLI_TRANS_COR_RELEASE | Appends "RELEASE" to mysqli_commit or mysqli_rollback. |
| MYSQLI_TRANS_COR_NO_RELEASE | Appends "NO RELEASE" to mysqli_commit or mysqli_rollback. |
| MYSQLI_TRANS_START_READ_ONLY | Start the transaction as "START TRANSACTION READ ONLY" with mysqli_begin_transaction. |
| MYSQLI_TRANS_START_READ_WRITE | Start the transaction as "START TRANSACTION READ WRITE" with mysqli_begin_transaction. |
| MYSQLI_TRANS_START_CONSISTENT_SNAPSHOT | Start the transaction as "START TRANSACTION WITH CONSISTENT SNAPSHOT" with mysqli_begin_transaction. |
| MYSQLI_CLIENT_SSL_DONT_VERIFY_SERVER_CERT | Requires MySQL 5.6.5 and up. |
| MYSQLI_IS_MARIADB | Whether the mysqli extension has been built against a MariaDB client library. Available as of PHP 8.1.2. |

## 3.6 Notes

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Some implementation notes:

1. Support was added for MYSQL_TYPE_GEOMETRY to the MySQLi extension in PHP 5.3.
2. Note there are different internal implementations within libmysqlclient and mysqlnd for handling columns of type MYSQL_TYPE_GEOMETRY. Generally speaking, mysqlnd will allocate significantly less memory. For example, if there is a POINT column in a result set, libmysqlclient may pre-allocate up to 4GB of RAM although less than 50 bytes are needed for holding a POINT column in memory. Memory allocation is much lower, less than 50 bytes, if using mysqlnd.

# 3.7 The MySQLi Extension Function Summary

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**Table 3.5 Summary of `mysqli` methods**

| mysqli Class | | | |
|---|---|---|---|
| **OOP Interface** | **Procedural Interface** | **Alias (Do not use)** | **Description** |
| *Properties* | | | |
| $mysqli::affected_rows | `mysqli_affected_rows` | N/A | Gets the number of affected rows in a previous MySQL operation |
| $mysqli::client_info | `mysqli_get_client_info` | N/A | Returns the MySQL client version as a string |
| $mysqli::client_version | `mysqli_get_client_version` | N/A | Returns MySQL client version info as an integer |
| $mysqli::connect_errno | `mysqli_connect_errno` | N/A | Returns the error code from last connect call |
| $mysqli::connect_error | `mysqli_connect_error` | N/A | Returns a string description of the last connect error |
| $mysqli::errno | `mysqli_errno` | N/A | Returns the error code for the most recent function call |
| $mysqli::error | `mysqli_error` | N/A | Returns a string description of the last error |
| $mysqli::field_count | `mysqli_field_count` | N/A | Returns the number of columns for the most recent query |
| $mysqli::host_info | `mysqli_get_host_info` | N/A | Returns a string representing the type of connection used |
| $mysqli::protocol_version | `mysqli_get_proto_info` | N/A | Returns the version of the MySQL protocol used |
| $mysqli::server_info | `mysqli_get_server_info` | N/A | Returns the version of the MySQL server |
| $mysqli::server_version | `mysqli_get_server_version` | N/A | Returns the version of the MySQL server as an integer |
| $mysqli::info | `mysqli_info` | N/A | Retrieves information about the most recently executed query |
| $mysqli::insert_id | `mysqli_insert_id` | N/A | Returns the auto generated id used in the last query |

| mysqli Class | | | |
|---|---|---|---|
| **OOP Interface** | **Procedural Interface** | **Alias (Do not use)** | **Description** |
| $mysqli::sqlstate | mysqli_sqlstate | N/A | Returns the SQLSTATE error from previous MySQL operation |
| $mysqli::warning_count | mysqli_warning_count | N/A | Returns the number of warnings from the last query for the given link |
| *Methods* | | | |
| mysqli::autocommit | mysqli_autocommit | N/A | Turns on or off auto-committing database modifications |
| mysqli::change_user | mysqli_change_user | N/A | Changes the user of the specified database connection |
| mysqli::character_set_name | mysqli_character_set_name | N/A | Returns the default character set for the database connection |
| mysqli::close | mysqli_close | N/A | Closes a previously opened database connection |
| mysqli::commit | mysqli_commit | N/A | Commits the current transaction |
| mysqli::__construct | mysqli_connect | N/A | Open a new connection to the MySQL server [Note: static (i.e. class) method] |
| mysqli::debug | mysqli_debug | N/A | Performs debugging operations |
| mysqli::dump_debug_info | mysqli_dump_debug_info | N/A | Dump debugging information into the log |
| mysqli::get_charset | mysqli_get_charset | N/A | Returns a character set object |
| mysqli::get_connection_stats | mysqli_get_connection_stats | N/A | Returns client connection statistics. Available only with mysqlnd. |
| mysqli::get_client_info | mysqli_get_client_info | N/A | Returns the MySQL client version as a string |
| N/A | mysqli_get_client_stats | N/A | Returns client per-process statistics. Available only with mysqlnd. |
| mysqli::get_server_info | mysqli_get_server_info | N/A | Returns a string representing the version of the MySQL server that the MySQLi extension is connected to |

| mysqli Class | | | |
|---|---|---|---|
| **OOP Interface** | **Procedural Interface** | **Alias (Do not use)** | **Description** |
| mysqli::get_warnings | mysqli_get_warnings | N/A | NOT DOCUMENTED |
| mysqli::init | mysqli_init | N/A | Initializes MySQLi and returns an object for use with mysqli_real_connect. |
| mysqli::kill | mysqli_kill | N/A | Asks the server to kill a MySQL thread |
| mysqli::more_results | mysqli_more_results | N/A | Check if there are any more query results from a multi query |
| mysqli::multi_query | mysqli_multi_query | N/A | Performs a query on the database |
| mysqli::next_result | mysqli_next_result | N/A | Prepare next result from multi_query |
| mysqli::options | mysqli_options | mysqli_set_opt | Set options |
| mysqli::ping | mysqli_ping | N/A | Pings a server connection, or tries to reconnect if the connection has gone down |
| mysqli::prepare | mysqli_prepare | N/A | Prepare an SQL statement for execution |
| mysqli::query | mysqli_query | N/A | Performs a query on the database |
| mysqli::real_connect | mysqli_real_connect | N/A | Opens a connection to a mysql server |
| mysqli::real_escape_string, mysqli::escape_string | mysqli_real_escape_string | mysqli_escape_string | Escapes special characters in a string for use in an SQL statement, taking into account the current charset of the connection |
| mysqli::real_query | mysqli_real_query | N/A | Execute an SQL query |
| mysqli::refresh | mysqli_refresh | N/A | Flushes tables or caches, or resets the replication server information |
| mysqli::rollback | mysqli_rollback | N/A | Rolls back current transaction |
| mysqli::select_db | mysqli_select_db | N/A | Selects the default database for database queries |
| mysqli::set_charset | mysqli_set_charset | N/A | Sets the default client character set |

| mysqli Class | | | |
|---|---|---|---|
| **OOP Interface** | **Procedural Interface** | **Alias (Do not use)** | **Description** |
| mysqli::ssl_set | mysqli_ssl_set | N/A | Used for establishing secure connections using SSL |
| mysqli::stat | mysqli_stat | N/A | Gets the current system status |
| mysqli::stmt_init | mysqli_stmt_init | N/A | Initializes a statement and returns an object for use with mysqli_stmt_prepare |
| mysqli::store_result | mysqli_store_result | N/A | Transfers a result set from the last query |
| mysqli::thread_id | mysqli_thread_id | N/A | Returns the thread ID for the current connection |
| mysqli::thread_safe | mysqli_thread_safe | N/A | Returns whether thread safety is given or not |
| mysqli::use_result | mysqli_use_result | N/A | Initiate a result set retrieval |

**Table 3.6 Summary of mysqli_stmt methods**

| MySQL_STMT | | | |
|---|---|---|---|
| **OOP Interface** | **Procedural Interface** | **Alias (Do not use)** | **Description** |
| *Properties* | | | |
| $mysqli_stmt::affected_rows | mysqli_stmt_affected_rows | N/A | Returns the total number of rows changed, deleted, or inserted by the last executed statement |
| $mysqli_stmt::errno | mysqli_stmt_errno | N/A | Returns the error code for the most recent statement call |
| $mysqli_stmt::error | mysqli_stmt_error | N/A | Returns a string description for last statement error |
| $mysqli_stmt::field_count | mysqli_stmt_field_count | N/A | Returns the number of field in the given statement - not documented |
| $mysqli_stmt::insert_id | mysqli_stmt_insert_id | N/A | Get the ID generated from the previous INSERT operation |
| $mysqli_stmt::num_rows | mysqli_stmt_num_rows | N/A | Return the number of rows in statements result set |

| MySQL_STMT | | | |
|---|---|---|---|
| **OOP Interface** | **Procedural Interface** | **Alias (Do not use)** | **Description** |
| $mysqli_stmt::param_count | mysqli_stmt_param_count | N/A | Returns the number of parameter for the given statement |
| $mysqli_stmt::sqlstate | mysqli_stmt_sqlstate | N/A | Returns SQLSTATE error from previous statement operation |
| *Methods* | | | |
| mysqli_stmt::attr_get | mysqli_stmt_attr_get | N/A | Used to get the current value of a statement attribute |
| mysqli_stmt::attr_set | mysqli_stmt_attr_set | N/A | Used to modify the behavior of a prepared statement |
| mysqli_stmt::bind_param | mysqli_stmt_bind_param | N/A | Binds variables to a prepared statement as parameters |
| mysqli_stmt::bind_result | mysqli_stmt_bind_result | N/A | Binds variables to a prepared statement for result storage |
| mysqli_stmt::close | mysqli_stmt_close | N/A | Closes a prepared statement |
| mysqli_stmt::data_seek | mysqli_stmt_data_seek | N/A | Seeks to an arbitrary row in statement result set |
| mysqli_stmt::execute | mysqli_stmt_execute | mysqli_execute | Executes a prepared Query |
| mysqli_stmt::fetch | mysqli_stmt_fetch | N/A | Fetch results from a prepared statement into the bound variables |
| mysqli_stmt::free_result | mysqli_stmt_free_result | N/A | Frees stored result memory for the given statement handle |
| mysqli_stmt::get_result | mysqli_stmt_get_result | N/A | Gets a result set from a prepared statement. Available only with mysqlnd. |
| mysqli_stmt::get_warnings | mysqli_stmt_get_warnings | N/A | NOT DOCUMENTED |
| mysqli_stmt::more_results | mysqli_stmt_more_results | N/A | Checks if there are more query results from a multiple query |
| mysqli_stmt::next_result | mysqli_stmt_next_result | N/A | Reads the next result from a multiple query |
| mysqli_stmt::num_rows | mysqli_stmt_num_rows | N/A | See also property $mysqli_stmt::num_rows |

| MySQL_STMT | | | |
|---|---|---|---|
| **OOP Interface** | **Procedural Interface** | **Alias (Do not use)** | **Description** |
| mysqli_stmt::prepare | mysqli_stmt_prepare | N/A | Prepare an SQL statement for execution |
| mysqli_stmt::reset | mysqli_stmt_reset | N/A | Resets a prepared statement |
| mysqli_stmt::result_metadata | mysqli_stmt_result_metadata | N/A | Returns result set metadata from a prepared statement |
| mysqli_stmt::send_long_data | mysqli_stmt_send_long_data | N/A | Send data in blocks |
| mysqli_stmt::store_result | mysqli_stmt_store_result | N/A | Transfers a result set from a prepared statement |

**Table 3.7 Summary of `mysqli_result` methods**

| mysqli_result | | | |
|---|---|---|---|
| **OOP Interface** | **Procedural Interface** | **Alias (Do not use)** | **Description** |
| *Properties* | | | |
| $mysqli_result::current_field | mysqli_field_tell | N/A | Get current field offset of a result pointer |
| $mysqli_result::field_count | mysqli_num_fields | N/A | Get the number of fields in a result |
| $mysqli_result::lengths | mysqli_fetch_lengths | N/A | Returns the lengths of the columns of the current row in the result set |
| $mysqli_result::num_rows | mysqli_num_rows | N/A | Gets the number of rows in a result |
| *Methods* | | | |
| mysqli_result::data_seek | mysqli_data_seek | N/A | Adjusts the result pointer to an arbitrary row in the result |
| mysqli_result::fetch_all | mysqli_fetch_all | N/A | Fetches all result rows and returns the result set as an associative array, a numeric array, or both. Available only with mysqlnd. |
| mysqli_result::fetch_array | mysqli_fetch_array | N/A | Fetch a result row as an associative, a numeric array, or both |
| mysqli_result::fetch_assoc | mysqli_fetch_assoc | N/A | Fetch a result row as an associative array |
| mysqli_result::fetch_column | mysqli_fetch_column | N/A | Fetch a single column from the next row of a result set |

| mysqli_result | | | |
|---|---|---|---|
| **OOP Interface** | **Procedural Interface** | **Alias (Do not use)** | **Description** |
| mysqli_result::fetch_field_direct | mysqli_fetch_field_direct | N/A | Fetch meta-data for a single field |
| mysqli_result::fetch_field | mysqli_fetch_field | N/A | Returns the next field in the result set |
| mysqli_result::fetch_fields | mysqli_fetch_fields | N/A | Returns an array of objects representing the fields in a result set |
| mysqli_result::fetch_object | mysqli_fetch_object | N/A | Returns the current row of a result set as an object |
| mysqli_result::fetch_row | mysqli_fetch_row | N/A | Get a result row as an enumerated array |
| mysqli_result::field_seek | mysqli_field_seek | N/A | Set result pointer to a specified field offset |
| mysqli_result::free, mysqli_result::close, mysqli_result::free_result | mysqli_free_result | N/A | Frees the memory associated with a result |

**Table 3.8 Summary of `mysqli_driver` methods**

| MySQL_Driver | | | |
|---|---|---|---|
| **OOP Interface** | **Procedural Interface** | **Alias (Do not use)** | **Description** |
| *Properties* | | | |
| $mysqli_driver::mysqli_report | mysqli_report | N/A | Sets mysqli error reporting mode |
| *Methods* | | | |
| mysqli_driver::embedded_server_end | mysqli_embedded_server_end | N/A | NOT DOCUMENTED |
| mysqli_driver::embedded_server_start | mysqli_embedded_server_start | N/A | NOT DOCUMENTED |

> **Note**
>
> Alias functions are provided for backward compatibility purposes only. Do not use them in new projects.

# 3.8 The mysqli class

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Represents a connection between PHP and a MySQL database.

```
mysqli {
mysqli

      Properties

  public readonly int|string
```

```
    affected_rows ;

  public readonly string
    client_info ;

  public readonly int
    client_version ;

  public readonly int
    connect_errno ;

  public readonly string|null
    connect_error ;

  public readonly int
    errno ;

  public readonly string
    error ;

  public readonly array
    error_list ;

  public readonly int
    field_count ;

  public readonly string
    host_info ;

  public readonly string|null
    info ;

  public readonly int|string
    insert_id ;

  public readonly string
    server_info ;

  public readonly int
    server_version ;

  public readonly string
    sqlstate ;

  public readonly int
    protocol_version ;

  public readonly int
    thread_id ;

  public readonly int
    warning_count ;

Methods

  public mysqli::__construct(
    string hostname
        =  =ini_get("mysqli.default_host"),
    string username
        =  =ini_get("mysqli.default_user"),
    string password
        =  =ini_get("mysqli.default_pw"),
    string database
        =  ="",
    int port
        =  =ini_get("mysqli.default_port"),
    string socket
```

```
      =  =ini_get("mysqli.default_socket"));

public bool mysqli::autocommit(
  bool enable);

public bool mysqli::begin_transaction(
  int flags
      =  =0,
  string|null name
      =  =null);

public bool mysqli::change_user(
  string username,
  string password,
  string|null database);

public string mysqli::character_set_name();

public bool mysqli::close();

public bool mysqli::commit(
  int flags
      =  =0,
  string|null name
      =  =null);

public void mysqli::connect(
  string hostname
      =  =ini_get("mysqli.default_host"),
  string username
      =  =ini_get("mysqli.default_user"),
  string password
      =  =ini_get("mysqli.default_pw"),
  string database
      =  ="",
  int port
      =  =ini_get("mysqli.default_port"),
  string socket
      =  =ini_get("mysqli.default_socket"));

public bool mysqli::debug(
  string options);

public bool mysqli::dump_debug_info();

public object|null mysqli::get_charset();

public string mysqli::get_client_info();

public array mysqli::get_connection_stats();

public string mysqli::get_server_info();

public mysqli_warning|false mysqli::get_warnings();

public bool mysqli::kill(
  int process_id);

public bool mysqli::more_results();

public bool mysqli::multi_query(
  string query);

public bool mysqli::next_result();

public bool mysqli::options(
```

```
  int option,
  string|int value);

public bool mysqli::ping();

public static int|false mysqli::poll(
  array|null read,
  array|null error,
  array reject,
  int seconds,
  int microseconds
      =  =0);

public mysqli_stmt|false mysqli::prepare(
  string query);

public mysqli_result|bool mysqli::query(
  string query,
  int result_mode
      =  =MYSQLI_STORE_RESULT);

public bool mysqli::real_connect(
  string host,
  string username,
  string passwd,
  string dbname,
  int port,
  string socket,
  int flags);

public string mysqli::real_escape_string(
  string string);

public bool mysqli::real_query(
  string query);

public mysqli_result|bool mysqli::reap_async_query();

public bool mysqli::refresh(
  int flags);

public bool mysqli::release_savepoint(
  string name);

public bool mysqli::rollback(
  int flags
      =  =0,
  string|null name
      =  =null);

public bool mysqli::savepoint(
  string name);

public bool mysqli::select_db(
  string database);

public bool mysqli::set_charset(
  string charset);

public bool mysqli::ssl_set(
  string|null key,
  string|null certificate,
  string|null ca_certificate,
  string|null ca_path,
  string|null cipher_algos);

public string|false mysqli::stat();
```

```
  public mysqli_stmt|false mysqli::stmt_init();

  public mysqli_result|false mysqli::store_result(
    int mode
        =  =0);

  public bool mysqli::thread_safe();

  public mysqli_result|false mysqli::use_result();

}
```

## 3.8.1 mysqli::$affected_rows, mysqli_affected_rows

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- mysqli::$affected_rows

  mysqli_affected_rows

  Gets the number of affected rows in a previous MySQL operation

### Description

Object-oriented style

```
  int|string
    mysqli->affected_rows ;
```

Procedural style

```
  int|string mysqli_affected_rows(
    mysqli mysql);
```

Returns the number of rows affected by the last INSERT, UPDATE, REPLACE or DELETE query. Works like mysqli_num_rows for SELECT statements.

### Parameters

| | |
|---|---|
| *mysql* | Procedural style only: A mysqli object returned by mysqli_connect or mysqli_init |

### Return Values

An integer greater than zero indicates the number of rows affected or retrieved. Zero indicates that no records were updated for an UPDATE statement, no rows matched the WHERE clause in the query or that no query has yet been executed. -1 indicates that the query returned an error or that mysqli_affected_rows was called for an unbuffered SELECT query.

> **Note**
>
> If the number of affected rows is greater than the maximum int value (PHP_INT_MAX), the number of affected rows will be returned as a string.

### Examples

**Example 3.29 $mysqli->affected_rows example**

Object-oriented style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

/* Insert rows */
$mysqli->query("CREATE TABLE Language SELECT * from CountryLanguage");
printf("Affected rows (INSERT): %d\n", $mysqli->affected_rows);

$mysqli->query("ALTER TABLE Language ADD Status int default 0");

/* update rows */
$mysqli->query("UPDATE Language SET Status=1 WHERE Percentage > 50");
printf("Affected rows (UPDATE): %d\n", $mysqli->affected_rows);

/* delete rows */
$mysqli->query("DELETE FROM Language WHERE Percentage < 50");
printf("Affected rows (DELETE): %d\n", $mysqli->affected_rows);

/* select all rows */
$result = $mysqli->query("SELECT CountryCode FROM Language");
printf("Affected rows (SELECT): %d\n", $mysqli->affected_rows);

/* Delete table Language */
$mysqli->query("DROP TABLE Language");
```

Procedural style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

/* Insert rows */
mysqli_query($link, "CREATE TABLE Language SELECT * from CountryLanguage");
printf("Affected rows (INSERT): %d\n", mysqli_affected_rows($link));

mysqli_query($link, "ALTER TABLE Language ADD Status int default 0");

/* update rows */
mysqli_query($link, "UPDATE Language SET Status=1 WHERE Percentage > 50");
printf("Affected rows (UPDATE): %d\n", mysqli_affected_rows($link));

/* delete rows */
mysqli_query($link, "DELETE FROM Language WHERE Percentage < 50");
printf("Affected rows (DELETE): %d\n", mysqli_affected_rows($link));

/* select all rows */
$result = mysqli_query($link, "SELECT CountryCode FROM Language");
printf("Affected rows (SELECT): %d\n", mysqli_affected_rows($link));

/* Delete table Language */
mysqli_query($link, "DROP TABLE Language");
```

The above examples will output:

```
Affected rows (INSERT): 984
Affected rows (UPDATE): 168
Affected rows (DELETE): 815
Affected rows (SELECT): 169
```

```
```

### See Also

mysqli_num_rows
mysqli_info

## 3.8.2 mysqli::autocommit, mysqli_autocommit

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- mysqli::autocommit

  mysqli_autocommit

  Turns on or off auto-committing database modifications

### Description

Object-oriented style

```
public bool mysqli::autocommit(
  bool enable);
```

Procedural style

```
bool mysqli_autocommit(
  mysqli mysql,
  bool enable);
```

Turns on or off auto-commit mode on queries for the database connection.

To determine the current state of autocommit use the SQL command SELECT @@autocommit.

### Parameters

| | |
|---|---|
| *mysql* | Procedural style only: A mysqli object returned by mysqli_connect or mysqli_init |
| *enable* | Whether to turn on auto-commit or not. |

### Return Values

Returns true on success or false on failure.

### Examples

**Example 3.30 mysqli::autocommit example**

Object-oriented style

```
<?php

/* Tell mysqli to throw an exception if an error occurs */
mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
```

```
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

/* The table engine has to support transactions */
$mysqli->query("CREATE TABLE IF NOT EXISTS language (
    Code text NOT NULL,
    Speakers int(11) NOT NULL
    ) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4;");

/* Turn autocommit off */
$mysqli->autocommit(false);

$result = $mysqli->query("SELECT @@autocommit");
$row = $result->fetch_row();
printf("Autocommit is %s\n", $row[0]);

try {
    /* Prepare insert statement */
    $stmt = $mysqli->prepare('INSERT INTO language(Code, Speakers) VALUES (?,?)');
    $stmt->bind_param('ss', $language_code, $native_speakers);

    /* Insert some values */
    $language_code = 'DE';
    $native_speakers = 50_123_456;
    $stmt->execute();
    $language_code = 'FR';
    $native_speakers = 40_546_321;
    $stmt->execute();

    /* Commit the data in the database. This doesn't set autocommit=true */
    $mysqli->commit();
    print "Committed 2 rows in the database\n";

    $result = $mysqli->query("SELECT @@autocommit");
    $row = $result->fetch_row();
    printf("Autocommit is %s\n", $row[0]);

    /* Try to insert more values */
    $language_code = 'PL';
    $native_speakers = 30_555_444;
    $stmt->execute();
    $language_code = 'DK';
    $native_speakers = 5_222_444;
    $stmt->execute();

    /* Setting autocommit=true will trigger a commit */
    $mysqli->autocommit(true);

    print "Committed 2 row in the database\n";
} catch (mysqli_sql_exception $exception) {
    $mysqli->rollback();

    throw $exception;
}
```

Procedural style

```
<?php

/* Tell mysqli to throw an exception if an error occurs */
mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);

$mysqli = mysqli_connect("localhost", "my_user", "my_password", "world");
```

```
/* The table engine has to support transactions */
mysqli_query($mysqli, "CREATE TABLE IF NOT EXISTS language (
    Code text NOT NULL,
    Speakers int(11) NOT NULL
    ) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4;");

/* Turn autocommit off */
mysqli_autocommit($mysqli, false);

$result = mysqli_query($mysqli, "SELECT @@autocommit");
$row = mysqli_fetch_row($result);
printf("Autocommit is %s\n", $row[0]);

try {
    /* Prepare insert statement */
    $stmt = mysqli_prepare($mysqli, 'INSERT INTO language(Code, Speakers) VALUES (?,?)');
    mysqli_stmt_bind_param($stmt, 'ss', $language_code, $native_speakers);

    /* Insert some values */
    $language_code = 'DE';
    $native_speakers = 50_123_456;
    mysqli_stmt_execute($stmt);
    $language_code = 'FR';
    $native_speakers = 40_546_321;
    mysqli_stmt_execute($stmt);

    /* Commit the data in the database. This doesn't set autocommit=true */
    mysqli_commit($mysqli);
    print "Committed 2 rows in the database\n";

    $result = mysqli_query($mysqli, "SELECT @@autocommit");
    $row = mysqli_fetch_row($result);
    printf("Autocommit is %s\n", $row[0]);

    /* Try to insert more values */
    $language_code = 'PL';
    $native_speakers = 30_555_444;
    mysqli_stmt_execute($stmt);
    $language_code = 'DK';
    $native_speakers = 5_222_444;
    mysqli_stmt_execute($stmt);

    /* Setting autocommit=true will trigger a commit */
    mysqli_autocommit($mysqli, true);

    print "Committed 2 row in the database\n";
} catch (mysqli_sql_exception $exception) {
    mysqli_rollback($mysqli);

    throw $exception;
}
```

The above examples will output:

```
Autocommit is 0
Committed 2 rows in the database
Autocommit is 0
Committed 2 row in the database
Autocommit is 0
Committed 2 rows in the database
Autocommit is 0
Committed 2 row in the database
```

## Notes

> **Note**
>
> This function does not work with non transactional table types (like MyISAM or ISAM).

## See Also

mysqli_begin_transaction
mysqli_commit
mysqli_rollback

# 3.8.3 mysqli::begin_transaction, mysqli_begin_transaction

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- mysqli::begin_transaction

  mysqli_begin_transaction

  Starts a transaction

## Description

Object-oriented style

```
public bool mysqli::begin_transaction(
  int flags
      =  =0,
  string|null name
      =  =null);
```

Procedural style:

```
bool mysqli_begin_transaction(
  mysqli mysql,
  int flags
      =  =0,
  string|null name
      =  =null);
```

Begins a transaction. Requires the InnoDB engine (it is enabled by default). For additional details about how MySQL transactions work, see http://dev.mysql.com/doc/mysql/en/commit.html.

## Parameters

| | |
|---|---|
| *mysql* | Procedural style only: A mysqli object returned by mysqli_connect or mysqli_init |
| *flags* | Valid flags are:<br>• MYSQLI_TRANS_START_READ_ONLY: Start the transaction as "START TRANSACTION READ ONLY". Requires MySQL 5.6 and above.<br>• MYSQLI_TRANS_START_READ_WRITE: Start the transaction as "START TRANSACTION READ WRITE". Requires MySQL 5.6 and above. |

- MYSQLI_TRANS_START_WITH_CONSISTENT_SNAPSHOT: Start the transaction as "START TRANSACTION WITH CONSISTENT SNAPSHOT".

*name* Savepoint name for the transaction.

## Return Values

Returns true on success or false on failure.

## Changelog

| Version | Description |
|---|---|
| 8.0.0 | *name* is now nullable. |

## Examples

**Example 3.31 mysqli::begin_transaction example**

Object-oriented style

```
<?php

/* Tell mysqli to throw an exception if an error occurs */
mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);

$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

/* The table engine has to support transactions */
$mysqli->query("CREATE TABLE IF NOT EXISTS language (
    Code text NOT NULL,
    Speakers int(11) NOT NULL
    ) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4;");

/* Start transaction */
$mysqli->begin_transaction();

try {
    /* Insert some values */
    $mysqli->query("INSERT INTO language(Code, Speakers) VALUES ('DE', 42000123)");

    /* Try to insert invalid values */
    $language_code = 'FR';
    $native_speakers = 'Unknown';
    $stmt = $mysqli->prepare('INSERT INTO language(Code, Speakers) VALUES (?,?)');
    $stmt->bind_param('ss', $language_code, $native_speakers);
    $stmt->execute();

    /* If code reaches this point without errors then commit the data in the database */
    $mysqli->commit();
} catch (mysqli_sql_exception $exception) {
    $mysqli->rollback();

    throw $exception;
}
```

Procedural style

```
<?php

/* Tell mysqli to throw an exception if an error occurs */
mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);

$mysqli = mysqli_connect("localhost", "my_user", "my_password", "world");

/* The table engine has to support transactions */
mysqli_query($mysqli, "CREATE TABLE IF NOT EXISTS language (
    Code text NOT NULL,
    Speakers int(11) NOT NULL
    ) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4;");

/* Start transaction */
mysqli_begin_transaction($mysqli);

try {
    /* Insert some values */
    mysqli_query($mysqli, "INSERT INTO language(Code, Speakers) VALUES ('DE', 42000123)");

    /* Try to insert invalid values */
    $language_code = 'FR';
    $native_speakers = 'Unknown';
    $stmt = mysqli_prepare($mysqli, 'INSERT INTO language(Code, Speakers) VALUES (?,?)');
    mysqli_stmt_bind_param($stmt, 'ss', $language_code, $native_speakers);
    mysqli_stmt_execute($stmt);

    /* If code reaches this point without errors then commit the data in the database */
    mysqli_commit($mysqli);
} catch (mysqli_sql_exception $exception) {
    mysqli_rollback($mysqli);

    throw $exception;
}
```

### Notes

> **Note**
>
> This function does not work with non transactional table types (like MyISAM or ISAM).

### See Also

mysqli_autocommit
mysqli_commit
mysqli_rollback

## 3.8.4 mysqli::change_user, mysqli_change_user

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- mysqli::change_user

  mysqli_change_user

  Changes the user of the specified database connection

### Description

Object-oriented style

```
public bool mysqli::change_user(
  string username,
  string password,
  string|null database);
```

Procedural style

```
bool mysqli_change_user(
  mysqli mysql,
  string username,
  string password,
  string|null database);
```

Changes the user of the specified database connection and sets the current database.

In order to successfully change users a valid *username* and *password* parameters must be provided and that user must have sufficient permissions to access the desired database. If for any reason authorization fails, the current user authentication will remain.

## Parameters

| | |
|---|---|
| *mysql* | Procedural style only: A mysqli object returned by mysqli_connect or mysqli_init |
| *username* | The MySQL user name. |
| *password* | The MySQL password. |
| *database* | The database to change to.<br><br>If desired, the null value may be passed resulting in only changing the user and not selecting a database. To select a database in this case use the mysqli_select_db function. |

## Return Values

Returns true on success or false on failure.

## Examples

**Example 3.32 mysqli::change_user example**

Object-oriented style

```
<?php

/* connect database test */
$mysqli = new mysqli("localhost", "my_user", "my_password", "test");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

/* Set Variable a */
$mysqli->query("SET @a:=1");

/* reset all and select a new database */
```

```
$mysqli->change_user("my_user", "my_password", "world");

if ($result = $mysqli->query("SELECT DATABASE()")) {
    $row = $result->fetch_row();
    printf("Default database: %s\n", $row[0]);
    $result->close();
}

if ($result = $mysqli->query("SELECT @a")) {
    $row = $result->fetch_row();
    if ($row[0] === NULL) {
        printf("Value of variable a is NULL\n");
    }
    $result->close();
}

/* close connection */
$mysqli->close();
?>
```

Procedural style

```
<?php
/* connect database test */
$link = mysqli_connect("localhost", "my_user", "my_password", "test");

/* check connection */
if (!$link) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

/* Set Variable a */
mysqli_query($link, "SET @a:=1");

/* reset all and select a new database */
mysqli_change_user($link, "my_user", "my_password", "world");

if ($result = mysqli_query($link, "SELECT DATABASE()")) {
    $row = mysqli_fetch_row($result);
    printf("Default database: %s\n", $row[0]);
    mysqli_free_result($result);
}

if ($result = mysqli_query($link, "SELECT @a")) {
    $row = mysqli_fetch_row($result);
    if ($row[0] === NULL) {
        printf("Value of variable a is NULL\n");
    }
    mysqli_free_result($result);
}

/* close connection */
mysqli_close($link);
?>
```

The above examples will output:

```
Default database: world
Value of variable a is NULL
```

## Notes

> **Note**
>
> Using this command will always cause the current database connection to behave as if was a completely new database connection, regardless of if the operation was completed successfully. This reset includes performing a rollback on any active transactions, closing all temporary tables, and unlocking all locked tables.

## See Also

mysqli_connect
mysqli_select_db

# 3.8.5 mysqli::character_set_name, mysqli_character_set_name

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- mysqli::character_set_name

  mysqli_character_set_name

  Returns the current character set of the database connection

## Description

Object-oriented style

```
public string mysqli::character_set_name();
```

Procedural style

```
string mysqli_character_set_name(
  mysqli mysql);
```

Returns the current character set of the database connection.

## Parameters

| | |
|---|---|
| *mysql* | Procedural style only: A mysqli object returned by mysqli_connect or mysqli_init |

## Return Values

The current character set of the connection

## Examples

**Example 3.33 mysqli::character_set_name example**

Object-oriented style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
```

```
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

/* Set the default character set */
$mysqli->set_charset('utf8mb4');

/* Print current character set */
$charset = $mysqli->character_set_name();
printf("Current character set is %s\n", $charset);
```

Procedural style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = mysqli_connect("localhost", "my_user", "my_password", "world");

/* Set the default character set */
mysqli_set_charset($mysqli, 'utf8mb4');

/* Print current character set */
$charset = mysqli_character_set_name($mysqli);
printf("Current character set is %s\n", $charset);
```

The above examples will output:

```
Current character set is utf8mb4
```

### See Also

mysqli_set_charset
mysqli_real_escape_string

## 3.8.6 mysqli::close, mysqli_close

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- mysqli::close

  mysqli_close

  Closes a previously opened database connection

### Description

Object-oriented style

```
public bool mysqli::close();
```

Procedural style

```
bool mysqli_close(
  mysqli mysql);
```

Closes a previously opened database connection.

Open non-persistent MySQL connections and result sets are automatically closed when their objects are destroyed. Explicitly closing open connections and freeing result sets is optional. However, it's a good idea to close the connection as soon as the script finishes performing all of its database operations, if it still has a lot of processing to do after getting the results.

## Parameters

| | |
|---|---|
| *mysql* | Procedural style only: A mysqli object returned by mysqli_connect or mysqli_init |

## Return Values

Returns true on success or false on failure.

## Examples

**Example 3.34 mysqli::close example**

Object-oriented style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

$result = $mysqli->query("SELECT Name, CountryCode FROM City ORDER BY ID LIMIT 3");

/* Close the connection as soon as it's no longer needed */
$mysqli->close();

foreach ($result as $row) {
    /* Processing of the data retrieved from the database */
}
```

Procedural style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = mysqli_connect("localhost", "my_user", "my_password", "world");

$result = mysqli_query($mysqli, "SELECT Name, CountryCode FROM City ORDER BY ID LIMIT 3");

/* Close the connection as soon as it's no longer needed */
mysqli_close($mysqli);

foreach ($result as $row) {
    /* Processing of the data retrieved from the database */
}
```

## Notes

**Note**

mysqli_close will not close persistent connections. For additional details, see the manual page on persistent connections.

### See Also

mysqli::__construct
mysqli_init
mysqli_real_connect
mysqli_free_result

## 3.8.7 mysqli::commit, mysqli_commit

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- mysqli::commit

  mysqli_commit

  Commits the current transaction

### Description

Object-oriented style

```
public bool mysqli::commit(
  int flags
      =  =0,
  string|null name
      =  =null);
```

Procedural style

```
bool mysqli_commit(
  mysqli mysql,
  int flags
      =  =0,
  string|null name
      =  =null);
```

Commits the current transaction for the database connection.

### Parameters

| | |
|---|---|
| *mysql* | Procedural style only: A mysqli object returned by mysqli_connect or mysqli_init |
| *flags* | A bitmask of MYSQLI_TRANS_COR_* constants. |
| *name* | If provided then COMMIT/*name*/ is executed. |

### Return Values

Returns true on success or false on failure.

### Changelog

| Version | Description |
|---|---|
| 8.0.0 | *name* is now nullable. |

### Examples

See the mysqli::begin_transaction example.

### Notes

> **Note**
>
> This function does not work with non transactional table types (like MyISAM or ISAM).

### See Also

mysqli_autocommit
mysqli_begin_transaction
mysqli_rollback
mysqli_savepoint

## 3.8.8 mysqli::$connect_errno, mysqli_connect_errno

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- mysqli::$connect_errno

  mysqli_connect_errno

  Returns the error code from last connect call

### Description

Object-oriented style

```
int
  mysqli->connect_errno ;
```

Procedural style

```
int mysqli_connect_errno();
```

Returns the error code from the last connection attempt.

### Parameters

This function has no parameters.

### Return Values

An error code for the last connection attempt, if it failed. Zero means no error occurred.

### Examples

**Example 3.35 $mysqli->connect_errno example**

Object-oriented style

```
<?php

mysqli_report(MYSQLI_REPORT_OFF);
/* @ is used to suppress warnings */
$mysqli = @new mysqli('localhost', 'fake_user', 'wrong_password', 'does_not_exist');
```

```
if ($mysqli->connect_errno) {
    /* Use your preferred error logging method here */
    error_log('Connection error: ' . $mysqli->connect_errno);
}
```

Procedural style

```
<?php

mysqli_report(MYSQLI_REPORT_OFF);
/* @ is used to suppress warnings */
$link = @mysqli_connect('localhost', 'fake_user', 'wrong_password', 'does_not_exist');
if (!$link) {
    /* Use your preferred error logging method here */
    error_log('Connection error: ' . mysqli_connect_errno());
}
```

## See Also

mysqli_connect
mysqli_connect_error
mysqli_errno
mysqli_error
mysqli_sqlstate

# 3.8.9 mysqli::$connect_error, mysqli_connect_error

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- mysqli::$connect_error

  mysqli_connect_error

  Returns a description of the last connection error

## Description

Object-oriented style

```
  string|null
    mysqli->connect_error ;
```

Procedural style

```
  string|null mysqli_connect_error();
```

Returns the error message from the last connection attempt.

## Parameters

This function has no parameters.

## Return Values

A string that describes the error. null is returned if no error occurred.

## Examples

**Example 3.36 `$mysqli->connect_error` example**

Object-oriented style

```
<?php

mysqli_report(MYSQLI_REPORT_OFF);
/* @ is used to suppress warnings */
$mysqli = @new mysqli('localhost', 'fake_user', 'wrong_password', 'does_not_exist');
if ($mysqli->connect_error) {
    /* Use your preferred error logging method here */
    error_log('Connection error: ' . $mysqli->connect_error);
}
```

Procedural style

```
<?php

mysqli_report(MYSQLI_REPORT_OFF);
/* @ is used to suppress warnings */
$link = @mysqli_connect('localhost', 'fake_user', 'wrong_password', 'does_not_exist');
if (!$link) {
    /* Use your preferred error logging method here */
    error_log('Connection error: ' . mysqli_connect_error());
}
```

## See Also

mysqli_connect
mysqli_connect_errno
mysqli_errno
mysqli_error
mysqli_sqlstate

# 3.8.10 mysqli::__construct, mysqli::connect, mysqli_connect

Copyright 1997-2022 the PHP Documentation Group.

- mysqli::__construct

  mysqli::connect

  mysqli_connect

  Open a new connection to the MySQL server

## Description

Object-oriented style

```
  public mysqli::__construct(
    string hostname
        =  =ini_get("mysqli.default_host"),
    string username
```

```
      =  =ini_get("mysqli.default_user"),
  string password
      =  =ini_get("mysqli.default_pw"),
  string database
      =  ="",
  int port
      =  =ini_get("mysqli.default_port"),
  string socket
      =  =ini_get("mysqli.default_socket"));
```

```
public void mysqli::connect(
  string hostname
      =  =ini_get("mysqli.default_host"),
  string username
      =  =ini_get("mysqli.default_user"),
  string password
      =  =ini_get("mysqli.default_pw"),
  string database
      =  ="",
  int port
      =  =ini_get("mysqli.default_port"),
  string socket
      =  =ini_get("mysqli.default_socket"));
```

Procedural style

```
mysqli|false mysqli_connect(
  string hostname
      =  =ini_get("mysqli.default_host"),
  string username
      =  =ini_get("mysqli.default_user"),
  string password
      =  =ini_get("mysqli.default_pw"),
  string database
      =  ="",
  int port
      =  =ini_get("mysqli.default_port"),
  string socket
      =  =ini_get("mysqli.default_socket"));
```

Opens a connection to the MySQL Server.

## Parameters

| | |
|---|---|
| *hostname* | Can be either a host name or an IP address. The local host is assumed when passing the `null` value or the string "localhost" to this parameter. When possible, pipes will be used instead of the TCP/IP protocol. The TCP/IP protocol is used if a host name and port number are provided together e.g. `localhost:3308`.<br><br>Prepending host by `p:` opens a persistent connection. `mysqli_change_user` is automatically called on connections opened from the connection pool. |
| *username* | The MySQL user name. |
| *password* | If not provided or `null`, the MySQL server will attempt to authenticate the user against those user records which have no password only. This allows one username to be used with different permissions (depending on if a password is provided or not). |
| *database* | If provided will specify the default database to be used when performing queries. |

| | |
|---|---|
| *port* | Specifies the port number to attempt to connect to the MySQL server. |
| *socket* | Specifies the socket or named pipe that should be used. |

> **Note**
>
> Specifying the *socket* parameter will not explicitly determine the type of connection to be used when connecting to the MySQL server. How the connection is made to the MySQL database is determined by the *hostname* parameter.

## Return Values

`mysqli::__construct` always returns an object which represents the connection to a MySQL Server, regardless of it being successful or not.

`mysqli_connect` returns an object which represents the connection to a MySQL Server, or `false` on failure.

`mysqli::connect` returns `null` on success or `false` on failure.

## Errors/Exceptions

If `MYSQLI_REPORT_STRICT` is enabled and the attempt to connect to the requested database fails, a `mysqli_sql_exception` is thrown.

## Examples

**Example 3.37 `mysqli::__construct` example**

Object-oriented style

```
<?php

/* You should enable error reporting for mysqli before attempting to make a connection */
mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);

$mysqli = new mysqli('localhost', 'my_user', 'my_password', 'my_db');

/* Set the desired charset after establishing a connection */
$mysqli->set_charset('utf8mb4');

printf("Success... %s\n", $mysqli->host_info);
```

Procedural style

```
<?php

/* You should enable error reporting for mysqli before attempting to make a connection */
mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);

$mysqli = mysqli_connect('localhost', 'my_user', 'my_password', 'my_db');
```

```
/* Set the desired charset after establishing a connection */
mysqli_set_charset($mysqli, 'utf8mb4');

printf("Success... %s\n", mysqli_get_host_info($mysqli));
```

The above examples will output something similar to:

```
Success... localhost via TCP/IP
```

**Example 3.38 Extending mysqli class**

```
<?php

class FooMysqli extends mysqli {
    public function __construct($host, $user, $pass, $db, $port, $socket, $charset) {
        mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
        parent::__construct($host, $user, $pass, $db, $port, $socket);
        $this->set_charset($charset);
    }
}

$db = new FooMysqli('localhost', 'my_user', 'my_password', 'my_db', 3306, null, 'utf8mb4');
```

**Example 3.39 Manual error handling**

If error reporting is disabled, the developer is responsible for checking and handling failures

Object-oriented style

```
<?php

error_reporting(0);
mysqli_report(MYSQLI_REPORT_OFF);
$mysqli = new mysqli('localhost', 'my_user', 'my_password', 'my_db');
if ($mysqli->connect_errno) {
    throw new RuntimeException('mysqli connection error: ' . $mysqli->connect_error);
}

/* Set the desired charset after establishing a connection */
$mysqli->set_charset('utf8mb4');
if ($mysqli->errno) {
    throw new RuntimeException('mysqli error: ' . $mysqli->error);
}
```

Procedural style

```
<?php

error_reporting(0);
mysqli_report(MYSQLI_REPORT_OFF);
$mysqli = mysqli_connect('localhost', 'my_user', 'my_password', 'my_db');
if (mysqli_connect_errno()) {
```

```
    throw new RuntimeException('mysqli connection error: ' . mysqli_connect_error());
}

/* Set the desired charset after establishing a connection */
mysqli_set_charset($mysqli, 'utf8mb4');
if (mysqli_errno($mysqli)) {
    throw new RuntimeException('mysqli error: ' . mysqli_error($mysqli));
}
```

## Notes

> **Note**
>
> MySQLnd always assumes the server default charset. This charset is sent during connection hand-shake/authentication, which mysqlnd will use.
>
> Libmysqlclient uses the default charset set in the `my.cnf` or by an explicit call to `mysqli_options` prior to calling `mysqli_real_connect`, but after `mysqli_init`.

> **Note**
>
> Object-oriented style only: If the connection fails, an object is still returned. To check whether the connection failed, use either the `mysqli_connect_error` function or the mysqli->connect_error property as in the preceding examples.

> **Note**
>
> If it is necessary to set options, such as the connection timeout, `mysqli_real_connect` must be used instead.

> **Note**
>
> Calling the constructor with no parameters is the same as calling `mysqli_init`.

> **Note**
>
> Error "Can't create TCP/IP socket (10106)" usually means that the variables_order configure directive doesn't contain character `E`. On Windows, if the environment is not copied the `SYSTEMROOT` environment variable won't be available and PHP will have problems loading Winsock.

## See Also

`mysqli_real_connect`
`mysqli_options`
`mysqli_connect_errno`
`mysqli_connect_error`
`mysqli_close`

# 3.8.11 `mysqli::debug`, `mysqli_debug`

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- `mysqli::debug`

mysqli_debug

Performs debugging operations

## Description

Object-oriented style

```
public bool mysqli::debug(
  string options);
```

Procedural style

```
bool mysqli_debug(
  string options);
```

Performs debugging operations using the Fred Fish debugging library.

## Parameters

*options*

A string representing the debugging operation to perform

The debug control string is a sequence of colon separated fields as follows: <field_1>:<field_2>:<field_N> Each field consists of a mandatory flag character followed by an optional , and comma separated list of modifiers: flag[,modifier,modifier,...,modifier]

**Table 3.9 Recognized Flag Characters**

| *option* character | Description |
|---|---|
| O | MYSQLND_DEBUG_FLUSH |
| A/a | MYSQLND_DEBUG_APPEND |
| F | MYSQLND_DEBUG_DUMP_FILE |
| i | MYSQLND_DEBUG_DUMP_PID |
| L | MYSQLND_DEBUG_DUMP_LINE |
| m | MYSQLND_DEBUG_TRACE_MEMORY_CALLS |
| n | MYSQLND_DEBUG_DUMP_LEVEL |
| o | output to file |
| T | MYSQLND_DEBUG_DUMP_TIME |
| t | MYSQLND_DEBUG_DUMP_TRACE |
| x | MYSQLND_DEBUG_PROFILE_CALLS |

## Return Values

Returns true.

## Examples

**Example 3.40 Generating a Trace File**

```
<?php

/* Create a trace file in '/tmp/client.trace' on the local (client) machine: */
mysqli_debug("d:t:o,/tmp/client.trace");

?>
```

### Notes

> **Note**
>
> To use the mysqli_debug function you must compile the MySQL client library to support debugging.

### See Also

mysqli_dump_debug_info
mysqli_report

## 3.8.12 mysqli::dump_debug_info, mysqli_dump_debug_info

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- mysqli::dump_debug_info

  mysqli_dump_debug_info

  Dump debugging information into the log

### Description

Object-oriented style

```
public bool mysqli::dump_debug_info();
```

Procedural style

```
bool mysqli_dump_debug_info(
  mysqli mysql);
```

This function is designed to be executed by an user with the SUPER privilege and is used to dump debugging information into the log for the MySQL Server relating to the connection.

### Parameters

| | |
|---|---|
| *mysql* | Procedural style only: A mysqli object returned by mysqli_connect or mysqli_init |

### Return Values

Returns true on success or false on failure.

### See Also

mysqli_debug

## 3.8.13 mysqli::$errno, mysqli_errno

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- mysqli::$errno

  mysqli_errno

  Returns the error code for the most recent function call

### Description

Object-oriented style

```
int
  mysqli->errno ;
```

Procedural style

```
int mysqli_errno(
  mysqli mysql);
```

Returns the last error code for the most recent MySQLi function call that can succeed or fail.

### Parameters

| | |
|---|---|
| *mysql* | Procedural style only: A mysqli object returned by mysqli_connect or mysqli_init |

### Return Values

An error code value for the last call, if it failed. zero means no error occurred.

### Examples

**Example 3.41 $mysqli->errno example**

Object-oriented style

```
<?php
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

/* check connection */
if ($mysqli->connect_errno) {
    printf("Connect failed: %s\n", $mysqli->connect_error);
    exit();
}

if (!$mysqli->query("SET a=1")) {
    printf("Errorcode: %d\n", $mysqli->errno);
}

/* close connection */
$mysqli->close();
?>
```

Procedural style

```
```

```
<?php
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

if (!mysqli_query($link, "SET a=1")) {
    printf("Errorcode: %d\n", mysqli_errno($link));
}

/* close connection */
mysqli_close($link);
?>
```

The above examples will output:

```
Errorcode: 1193
```

### See Also

mysqli_connect_errno
mysqli_connect_error
mysqli_error
mysqli_sqlstate

## 3.8.14 mysqli::$error_list, mysqli_error_list

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- mysqli::$error_list

  mysqli_error_list

  Returns a list of errors from the last command executed

### Description

Object-oriented style

```
array
  mysqli->error_list ;
```

Procedural style

```
array mysqli_error_list(
  mysqli mysql);
```

Returns a array of errors for the most recent MySQLi function call that can succeed or fail.

### Parameters

| | |
|---|---|
| *mysql* | Procedural style only: A mysqli object returned by mysqli_connect or mysqli_init |

## Return Values

A list of errors, each as an associative array containing the errno, error, and sqlstate.

## Examples

**Example 3.42 `$mysqli->error_list` example**

Object-oriented style

```
<?php
$mysqli = new mysqli("localhost", "nobody", "");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

if (!$mysqli->query("SET a=1")) {
    print_r($mysqli->error_list);
}

/* close connection */
$mysqli->close();
?>
```

Procedural style

```
<?php
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

if (!mysqli_query($link, "SET a=1")) {
    print_r(mysqli_error_list($link));
}

/* close connection */
mysqli_close($link);
?>
```

The above examples will output:

```
Array
(
    [0] => Array
        (
            [errno] => 1193
            [sqlstate] => HY000
            [error] => Unknown system variable 'a'
        )
```

```
)
```

### See Also

mysqli_connect_errno
mysqli_connect_error
mysqli_error
mysqli_sqlstate

## 3.8.15 mysqli::$error, mysqli_error

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- mysqli::$error

  mysqli_error

  Returns a string description of the last error

### Description

Object-oriented style

```
  string
    mysqli->error ;
```

Procedural style

```
  string mysqli_error(
    mysqli mysql);
```

Returns the last error message for the most recent MySQLi function call that can succeed or fail.

### Parameters

| | |
|---|---|
| *mysql* | Procedural style only: A mysqli object returned by mysqli_connect or mysqli_init |

### Return Values

A string that describes the error. An empty string if no error occurred.

### Examples

**Example 3.43 $mysqli->error example**

Object-oriented style

```
<?php
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

/* check connection */
if ($mysqli->connect_errno) {
    printf("Connect failed: %s\n", $mysqli->connect_error);
```

```
    exit();
}

if (!$mysqli->query("SET a=1")) {
    printf("Error message: %s\n", $mysqli->error);
}

/* close connection */
$mysqli->close();
?>
```

Procedural style

```
<?php
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

if (!mysqli_query($link, "SET a=1")) {
    printf("Error message: %s\n", mysqli_error($link));
}

/* close connection */
mysqli_close($link);
?>
```

The above examples will output:

```
Error message: Unknown system variable 'a'
```

### See Also

mysqli_connect_errno
mysqli_connect_error
mysqli_errno
mysqli_sqlstate

## 3.8.16 mysqli::$field_count, mysqli_field_count

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- mysqli::$field_count

  mysqli_field_count

  Returns the number of columns for the most recent query

### Description

Object-oriented style

```
int
  mysqli->field_count ;
```

Procedural style

```
int mysqli_field_count(
  mysqli mysql);
```

Returns the number of columns for the most recent query on the connection represented by the *mysql* parameter. This function can be useful when using the mysqli_store_result function to determine if the query should have produced a non-empty result set or not without knowing the nature of the query.

## Parameters

| | |
|---|---|
| *mysql* | Procedural style only: A mysqli object returned by mysqli_connect or mysqli_init |

## Return Values

An integer representing the number of fields in a result set.

## Examples

**Example 3.44 $mysqli->field_count example**

Object-oriented style

```
<?php
$mysqli = new mysqli("localhost", "my_user", "my_password", "test");

$mysqli->query( "DROP TABLE IF EXISTS friends");
$mysqli->query( "CREATE TABLE friends (id int, name varchar(20))");

$mysqli->query( "INSERT INTO friends VALUES (1,'Hartmut'), (2, 'Ulf')");


$mysqli->real_query("SELECT * FROM friends");

if ($mysqli->field_count) {
    /* this was a select/show or describe query */
    $result = $mysqli->store_result();

    /* process resultset */
    $row = $result->fetch_row();

    /* free resultset */
    $result->close();
}

/* close connection */
$mysqli->close();
?>
```

Procedural style

```
<?php
$link = mysqli_connect("localhost", "my_user", "my_password", "test");
```

```
mysqli_query($link, "DROP TABLE IF EXISTS friends");
mysqli_query($link, "CREATE TABLE friends (id int, name varchar(20))");

mysqli_query($link, "INSERT INTO friends VALUES (1,'Hartmut'), (2, 'Ulf')");

mysqli_real_query($link, "SELECT * FROM friends");

if (mysqli_field_count($link)) {
    /* this was a select/show or describe query */
    $result = mysqli_store_result($link);

    /* process resultset */
    $row = mysqli_fetch_row($result);

    /* free resultset */
    mysqli_free_result($result);
}

/* close connection */
mysqli_close($link);
?>
```

## 3.8.17 mysqli::get_charset, mysqli_get_charset

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- mysqli::get_charset

  mysqli_get_charset

  Returns a character set object

### Description

Object-oriented style

```
public object|null mysqli::get_charset();
```

Procedural style

```
object|null mysqli_get_charset(
  mysqli mysql);
```

Returns a character set object providing several properties of the current active character set.

### Parameters

| | |
|---|---|
| *mysql* | Procedural style only: A mysqli object returned by mysqli_connect or mysqli_init |

### Return Values

The function returns a character set object with the following properties:

| | |
|---|---|
| *charset* | Character set name |
| *collation* | Collation name |

| | |
|---|---|
| *dir* | Directory the charset description was fetched from (?) or "" for built-in character sets |
| *min_length* | Minimum character length in bytes |
| *max_length* | Maximum character length in bytes |
| *number* | Internal character set number |
| *state* | Character set status (?) |

## Examples

**Example 3.45 mysqli::get_charset example**

Object-oriented style

```
<?php
  $db = mysqli_init();
  $db->real_connect("localhost","root","","test");
  var_dump($db->get_charset());
?>
```

Procedural style

```
<?php
  $db = mysqli_init();
  mysqli_real_connect($db, "localhost","root","","test");
  var_dump(mysqli_get_charset($db));
?>
```

The above examples will output:

```
object(stdClass)#2 (7) {
  ["charset"]=>
  string(6) "latin1"
  ["collation"]=>
  string(17) "latin1_swedish_ci"
  ["dir"]=>
  string(0) ""
  ["min_length"]=>
  int(1)
  ["max_length"]=>
  int(1)
  ["number"]=>
  int(8)
  ["state"]=>
  int(801)
}
```

## See Also

mysqli_character_set_name

mysqli_set_charset

## 3.8.18 mysqli::$client_info, mysqli::get_client_info, mysqli_get_client_info

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- mysqli::$client_info

  mysqli::get_client_info

  mysqli_get_client_info

  Get MySQL client info

### Description

Object-oriented style

```
string
  mysqli->client_info ;
```

```
public string mysqli::get_client_info();
```

Procedural style

```
string mysqli_get_client_info(
  mysqli|null mysql
      =  =null);
```

Returns a string that represents the MySQL client library version.

### Parameters

This function has no parameters.

### Return Values

A string that represents the MySQL client library version.

### Changelog

| Version | Description |
|---|---|
| 8.1.0 | Calling mysqli_get_client_info with the *mysql* argument has been deprecated. This function never required a parameter, but incorrectly allowed it as an optional parameter. |
| 8.1.0 | The object-oriented style mysqli::get_client_info has been deprecated. |

### Examples

**Example 3.46 mysqli_get_client_info**

```
<?php

/* We don't need a connection to determine
   the version of mysql client library */

printf("Client library version: %s\n", mysqli_get_client_info());
?>
```

### See Also

mysqli_get_client_version
mysqli_get_server_info
mysqli_get_server_version

## 3.8.19 mysqli::$client_version, mysqli_get_client_version

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- mysqli::$client_version

  mysqli_get_client_version

  Returns the MySQL client version as an integer

### Description

Object-oriented style

```
  int
    mysqli->client_version ;
```

Procedural style

```
  int mysqli_get_client_version();
```

Returns client version number as an integer.

### Parameters

This function has no parameters.

### Return Values

A number that represents the MySQL client library version in format: `main_version*10000 + minor_version *100 + sub_version`. For example, 4.1.0 is returned as 40100.

This is useful to quickly determine the version of the client library to know if some capability exists.

### Examples

**Example 3.47 mysqli_get_client_version**

```
<?php

/* We don't need a connection to determine
   the version of mysql client library */
```

```
printf("Client library version: %d\n", mysqli_get_client_version());
?>
```

### See Also

mysqli_get_client_info
mysqli_get_server_info
mysqli_get_server_version

## 3.8.20 mysqli::get_connection_stats, mysqli_get_connection_stats

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- mysqli::get_connection_stats

  mysqli_get_connection_stats

  Returns statistics about the client connection

### Description

Object-oriented style

```
public array mysqli::get_connection_stats();
```

Procedural style

```
array mysqli_get_connection_stats(
  mysqli mysql);
```

Returns statistics about the client connection.

> **Note**
>
> Available only with mysqlnd.

### Parameters

| | |
|---|---|
| *mysql* | Procedural style only: A mysqli object returned by mysqli_connect or mysqli_init |

### Return Values

Returns an array with connection stats.

### Examples

**Example 3.48 A mysqli_get_connection_stats example**

```
<?php
$link = mysqli_connect();
print_r(mysqli_get_connection_stats($link));
?>
```

The above example will output something similar to:

```
Array
(
    [bytes_sent] => 43
    [bytes_received] => 80
    [packets_sent] => 1
    [packets_received] => 2
    [protocol_overhead_in] => 8
    [protocol_overhead_out] => 4
    [bytes_received_ok_packet] => 11
    [bytes_received_eof_packet] => 0
    [bytes_received_rset_header_packet] => 0
    [bytes_received_rset_field_meta_packet] => 0
    [bytes_received_rset_row_packet] => 0
    [bytes_received_prepare_response_packet] => 0
    [bytes_received_change_user_packet] => 0
    [packets_sent_command] => 0
    [packets_received_ok] => 1
    [packets_received_eof] => 0
    [packets_received_rset_header] => 0
    [packets_received_rset_field_meta] => 0
    [packets_received_rset_row] => 0
    [packets_received_prepare_response] => 0
    [packets_received_change_user] => 0
    [result_set_queries] => 0
    [non_result_set_queries] => 0
    [no_index_used] => 0
    [bad_index_used] => 0
    [slow_queries] => 0
    [buffered_sets] => 0
    [unbuffered_sets] => 0
    [ps_buffered_sets] => 0
    [ps_unbuffered_sets] => 0
    [flushed_normal_sets] => 0
    [flushed_ps_sets] => 0
    [ps_prepared_never_executed] => 0
    [ps_prepared_once_executed] => 0
    [rows_fetched_from_server_normal] => 0
    [rows_fetched_from_server_ps] => 0
    [rows_buffered_from_client_normal] => 0
    [rows_buffered_from_client_ps] => 0
    [rows_fetched_from_client_normal_buffered] => 0
    [rows_fetched_from_client_normal_unbuffered] => 0
    [rows_fetched_from_client_ps_buffered] => 0
    [rows_fetched_from_client_ps_unbuffered] => 0
    [rows_fetched_from_client_ps_cursor] => 0
    [rows_skipped_normal] => 0
    [rows_skipped_ps] => 0
    [copy_on_write_saved] => 0
    [copy_on_write_performed] => 0
    [command_buffer_too_small] => 0
    [connect_success] => 1
    [connect_failure] => 0
    [connection_reused] => 0
    [reconnect] => 0
    [pconnect_success] => 0
    [active_connections] => 1
    [active_persistent_connections] => 0
    [explicit_close] => 0
    [implicit_close] => 0
    [disconnect_close] => 0
    [in_middle_of_command_close] => 0
    [explicit_free_result] => 0
```

```
    [implicit_free_result] => 0
    [explicit_stmt_close] => 0
    [implicit_stmt_close] => 0
    [mem_emalloc_count] => 0
    [mem_emalloc_ammount] => 0
    [mem_ecalloc_count] => 0
    [mem_ecalloc_ammount] => 0
    [mem_erealloc_count] => 0
    [mem_erealloc_ammount] => 0
    [mem_efree_count] => 0
    [mem_malloc_count] => 0
    [mem_malloc_ammount] => 0
    [mem_calloc_count] => 0
    [mem_calloc_ammount] => 0
    [mem_realloc_count] => 0
    [mem_realloc_ammount] => 0
    [mem_free_count] => 0
    [proto_text_fetched_null] => 0
    [proto_text_fetched_bit] => 0
    [proto_text_fetched_tinyint] => 0
    [proto_text_fetched_short] => 0
    [proto_text_fetched_int24] => 0
    [proto_text_fetched_int] => 0
    [proto_text_fetched_bigint] => 0
    [proto_text_fetched_decimal] => 0
    [proto_text_fetched_float] => 0
    [proto_text_fetched_double] => 0
    [proto_text_fetched_date] => 0
    [proto_text_fetched_year] => 0
    [proto_text_fetched_time] => 0
    [proto_text_fetched_datetime] => 0
    [proto_text_fetched_timestamp] => 0
    [proto_text_fetched_string] => 0
    [proto_text_fetched_blob] => 0
    [proto_text_fetched_enum] => 0
    [proto_text_fetched_set] => 0
    [proto_text_fetched_geometry] => 0
    [proto_text_fetched_other] => 0
    [proto_binary_fetched_null] => 0
    [proto_binary_fetched_bit] => 0
    [proto_binary_fetched_tinyint] => 0
    [proto_binary_fetched_short] => 0
    [proto_binary_fetched_int24] => 0
    [proto_binary_fetched_int] => 0
    [proto_binary_fetched_bigint] => 0
    [proto_binary_fetched_decimal] => 0
    [proto_binary_fetched_float] => 0
    [proto_binary_fetched_double] => 0
    [proto_binary_fetched_date] => 0
    [proto_binary_fetched_year] => 0
    [proto_binary_fetched_time] => 0
    [proto_binary_fetched_datetime] => 0
    [proto_binary_fetched_timestamp] => 0
    [proto_binary_fetched_string] => 0
    [proto_binary_fetched_blob] => 0
    [proto_binary_fetched_enum] => 0
    [proto_binary_fetched_set] => 0
    [proto_binary_fetched_geometry] => 0
    [proto_binary_fetched_other] => 0
)
```

## See Also

Stats description

## 3.8.21 mysqli::$host_info, mysqli_get_host_info

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- mysqli::$host_info

  mysqli_get_host_info

  Returns a string representing the type of connection used

### Description

Object-oriented style

```
string
  mysqli->host_info ;
```

Procedural style

```
string mysqli_get_host_info(
  mysqli mysql);
```

Returns a string describing the connection represented by the *mysql* parameter (including the server host name).

### Parameters

| | |
|---|---|
| *mysql* | Procedural style only: A mysqli object returned by mysqli_connect or mysqli_init |

### Return Values

A character string representing the server hostname and the connection type.

### Examples

**Example 3.49 $mysqli->host_info example**

Object-oriented style

```
<?php
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

/* print host information */
printf("Host info: %s\n", $mysqli->host_info);

/* close connection */
$mysqli->close();
?>
```

Procedural style

```
<?php
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

/* print host information */
printf("Host info: %s\n", mysqli_get_host_info($link));

/* close connection */
mysqli_close($link);
?>
```

The above examples will output:

```
Host info: Localhost via UNIX socket
```

### See Also

mysqli_get_proto_info

## 3.8.22 mysqli::$protocol_version, mysqli_get_proto_info

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- mysqli::$protocol_version

  mysqli_get_proto_info

  Returns the version of the MySQL protocol used

### Description

Object-oriented style

```
  int
    mysqli->protocol_version ;
```

Procedural style

```
  int mysqli_get_proto_info(
    mysqli mysql);
```

Returns an integer representing the MySQL protocol version used by the connection represented by the *mysql* parameter.

### Parameters

| | |
|---|---|
| *mysql* | Procedural style only: A mysqli object returned by mysqli_connect or mysqli_init |

### Return Values

Returns an integer representing the protocol version.

mysqli::$server_info, mysqli::get_server_info, mysqli_get_server_info

## Examples

**Example 3.50 $mysqli->protocol_version example**

Object-oriented style

```
<?php
$mysqli = new mysqli("localhost", "my_user", "my_password");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

/* print protocol version */
printf("Protocol version: %d\n", $mysqli->protocol_version);

/* close connection */
$mysqli->close();
?>
```

Procedural style

```
<?php
$link = mysqli_connect("localhost", "my_user", "my_password");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

/* print protocol version */
printf("Protocol version: %d\n", mysqli_get_proto_info($link));

/* close connection */
mysqli_close($link);
?>
```

The above examples will output:

```
Protocol version: 10
```

## See Also

mysqli_get_host_info

# 3.8.23 mysqli::$server_info, mysqli::get_server_info, mysqli_get_server_info

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- mysqli::$server_info

mysqli::get_server_info

mysqli_get_server_info

Returns the version of the MySQL server

## Description

Object-oriented style

```
string
  mysqli->server_info ;
```

```
public string mysqli::get_server_info();
```

Procedural style

```
string mysqli_get_server_info(
  mysqli mysql);
```

Returns a string representing the version of the MySQL server that the MySQLi extension is connected to.

## Parameters

| | |
|---|---|
| *mysql* | Procedural style only: A mysqli object returned by mysqli_connect or mysqli_init |

## Return Values

A character string representing the server version.

## Examples

**Example 3.51 $mysqli->server_info example**

Object-oriented style

```
<?php
$mysqli = new mysqli("localhost", "my_user", "my_password");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

/* print server version */
printf("Server version: %s\n", $mysqli->server_info);

/* close connection */
$mysqli->close();
?>
```

Procedural style

```
<?php
$link = mysqli_connect("localhost", "my_user", "my_password");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

/* print server version */
printf("Server version: %s\n", mysqli_get_server_info($link));

/* close connection */
mysqli_close($link);
?>
```

The above examples will output:

```
Server version: 4.1.2-alpha-debug
```

## See Also

mysqli_get_client_info
mysqli_get_client_version
mysqli_get_server_version

# 3.8.24 mysqli::$server_version, mysqli_get_server_version

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- mysqli::$server_version

  mysqli_get_server_version

  Returns the version of the MySQL server as an integer

## Description

Object-oriented style

```
  int
    mysqli->server_version ;
```

Procedural style

```
  int mysqli_get_server_version(
    mysqli mysql);
```

The mysqli_get_server_version function returns the version of the server connected to (represented by the *mysql* parameter) as an integer.

## Parameters

| | |
|---|---|
| *mysql* | Procedural style only: A mysqli object returned by mysqli_connect or mysqli_init |

## Return Values

An integer representing the server version.

The form of this version number is `main_version * 10000 + minor_version * 100 + sub_version` (i.e. version 4.1.0 is 40100).

## Examples

**Example 3.52 `$mysqli->server_version` example**

Object-oriented style

```
<?php
$mysqli = new mysqli("localhost", "my_user", "my_password");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

/* print server version */
printf("Server version: %d\n", $mysqli->server_version);

/* close connection */
$mysqli->close();
?>
```

Procedural style

```
<?php
$link = mysqli_connect("localhost", "my_user", "my_password");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

/* print server version */
printf("Server version: %d\n", mysqli_get_server_version($link));

/* close connection */
mysqli_close($link);
?>
```

The above examples will output:

```
Server version: 40102
```

## See Also

mysqli_get_client_info

mysqli_get_client_version
mysqli_get_server_info

## 3.8.25 mysqli::get_warnings, mysqli_get_warnings

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- mysqli::get_warnings

  mysqli_get_warnings

  Get result of SHOW WARNINGS

### Description

Object-oriented style

```
public mysqli_warning|false mysqli::get_warnings();
```

Procedural style

```
mysqli_warning|false mysqli_get_warnings(
  mysqli mysql);
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

## 3.8.26 mysqli::$info, mysqli_info

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- mysqli::$info

  mysqli_info

  Retrieves information about the most recently executed query

### Description

Object-oriented style

```
string|null
  mysqli->info ;
```

Procedural style

```
string|null mysqli_info(
  mysqli mysql);
```

The mysqli_info function returns a string providing information about the last query executed. The nature of this string is provided below:

**Table 3.10 Possible mysqli_info return values**

| Query type | Example result string |
|---|---|
| INSERT INTO...SELECT... | Records: 100 Duplicates: 0 Warnings: 0 |
| INSERT INTO...VALUES (...),(...),(...) | Records: 3 Duplicates: 0 Warnings: 0 |

| Query type | Example result string |
|---|---|
| LOAD DATA INFILE ... | Records: 1 Deleted: 0 Skipped: 0 Warnings: 0 |
| ALTER TABLE ... | Records: 3 Duplicates: 0 Warnings: 0 |
| UPDATE ... | Rows matched: 40 Changed: 40 Warnings: 0 |

**Note**

Queries which do not fall into one of the preceding formats are not supported. In these situations, `mysqli_info` will return an empty string.

## Parameters

*`mysql`* Procedural style only: A `mysqli` object returned by `mysqli_connect` or `mysqli_init`

## Return Values

A character string representing additional information about the most recently executed query.

## Examples

**Example 3.53 `$mysqli->info` example**

Object-oriented style

```
<?php
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

$mysqli->query("CREATE TEMPORARY TABLE t1 LIKE City");

/* INSERT INTO ... SELECT */
$mysqli->query("INSERT INTO t1 SELECT * FROM City ORDER BY ID LIMIT 150");
printf("%s\n", $mysqli->info);

/* close connection */
$mysqli->close();
?>
```

Procedural style

```
<?php
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

mysqli_query($link, "CREATE TEMPORARY TABLE t1 LIKE City");
```

```
/* INSERT INTO ... SELECT */
mysqli_query($link, "INSERT INTO t1 SELECT * FROM City ORDER BY ID LIMIT 150");
printf("%s\n", mysqli_info($link));

/* close connection */
mysqli_close($link);
?>
```

The above examples will output:

```
Records: 150  Duplicates: 0  Warnings: 0
```

### See Also

mysqli_affected_rows
mysqli_warning_count
mysqli_num_rows

## 3.8.27 mysqli::init, mysqli_init

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- mysqli::init

  mysqli_init

  Initializes MySQLi and returns an object for use with mysqli_real_connect()

### Description

Object-oriented style

```
public bool|null mysqli::init();
```

Procedural style

```
mysqli|false mysqli_init();
```

Allocates or initializes a MYSQL object suitable for mysqli_options and mysqli_real_connect.

> **Note**
>
> Any subsequent calls to any mysqli function (except mysqli_options and mysqli_ssl_set) will fail until mysqli_real_connect was called.

### Parameters

This function has no parameters.

### Return Values

mysqli::init returns null on success, or false on failure. mysqli_init returns an object on success, or false on failure.

### Changelog

| Version | Description |
|---|---|
| 8.1.0 | The object-oriented style mysqli::init method has been deprecated. Replace calls to parent::init with parent::__construct. |

### Examples

See mysqli_real_connect.

### See Also

mysqli_options
mysqli_close
mysqli_real_connect
mysqli_connect

## 3.8.28 mysqli::$insert_id, mysqli_insert_id

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- mysqli::$insert_id

  mysqli_insert_id

  Returns the value generated for an AUTO_INCREMENT column by the last query

### Description

Object-oriented style

```
int|string
  mysqli->insert_id ;
```

Procedural style

```
int|string mysqli_insert_id(
  mysqli mysql);
```

Returns the ID generated by an INSERT or UPDATE query on a table with a column having the AUTO_INCREMENT attribute. In the case of a multiple-row INSERT statement, it returns the first automatically generated value that was successfully inserted.

Performing an INSERT or UPDATE statement using the LAST_INSERT_ID() MySQL function will also modify the value returned by mysqli_insert_id. If LAST_INSERT_ID(expr) was used to generate the value of AUTO_INCREMENT, it returns the value of the last expr instead of the generated AUTO_INCREMENT value.

Returns 0 if the previous statement did not change an AUTO_INCREMENT value. mysqli_insert_id must be called immediately after the statement that generated the value.

### Parameters

*mysql* — Procedural style only: A mysqli object returned by mysqli_connect or mysqli_init

## Return Values

The value of the AUTO_INCREMENT field that was updated by the previous query. Returns zero if there was no previous query on the connection or if the query did not update an AUTO_INCREMENT value.

Only statements issued using the current connection affect the return value. The value is not affected by statements issued using other connections or clients.

> **Note**
>
> If the number is greater than the maximum int value, it will be returned as a string.

## Examples

**Example 3.54 `$mysqli->insert_id` example**

Object-oriented style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

$mysqli->query("CREATE TABLE myCity LIKE City");

$query = "INSERT INTO myCity VALUES (NULL, 'Stuttgart', 'DEU', 'Stuttgart', 617000)";
$mysqli->query($query);

printf("New record has ID %d.\n", $mysqli->insert_id);

/* drop table */
$mysqli->query("DROP TABLE myCity");


```

Procedural style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

mysqli_query($link, "CREATE TABLE myCity LIKE City");

$query = "INSERT INTO myCity VALUES (NULL, 'Stuttgart', 'DEU', 'Stuttgart', 617000)";
mysqli_query($link, $query);

printf("New record has ID %d.\n", mysqli_insert_id($link));

/* drop table */
mysqli_query($link, "DROP TABLE myCity");


```

The above examples will output:

```
New record has ID 1.


```

## 3.8.29 mysqli::kill, mysqli_kill

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- mysqli::kill

  mysqli_kill

  Asks the server to kill a MySQL thread

### Description

Object-oriented style

```
public bool mysqli::kill(
  int process_id);
```

Procedural style

```
bool mysqli_kill(
  mysqli mysql,
  int process_id);
```

This function is used to ask the server to kill a MySQL thread specified by the *process_id* parameter. This value must be retrieved by calling the mysqli_thread_id function.

To stop a running query you should use the SQL command KILL QUERY processid.

### Parameters

| | |
|---|---|
| *mysql* | Procedural style only: A mysqli object returned by mysqli_connect or mysqli_init |

### Return Values

Returns true on success or false on failure.

### Examples

**Example 3.55 mysqli::kill example**

Object-oriented style

```
<?php
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

/* determine our thread id */
$thread_id = $mysqli->thread_id;

/* Kill connection */
$mysqli->kill($thread_id);

/* This should produce an error */
if (!$mysqli->query("CREATE TABLE myCity LIKE City")) {
    printf("Error: %s\n", $mysqli->error);
```

```
    exit;
}

/* close connection */
$mysqli->close();
?>
```

Procedural style

```
<?php
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

/* determine our thread id */
$thread_id = mysqli_thread_id($link);

/* Kill connection */
mysqli_kill($link, $thread_id);

/* This should produce an error */
if (!mysqli_query($link, "CREATE TABLE myCity LIKE City")) {
    printf("Error: %s\n", mysqli_error($link));
    exit;
}

/* close connection */
mysqli_close($link);
?>
```

The above examples will output:

```
Error: MySQL server has gone away
```

### See Also

mysqli_thread_id

## 3.8.30 mysqli::more_results, mysqli_more_results

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- mysqli::more_results

  mysqli_more_results

  Check if there are any more query results from a multi query

### Description

Object-oriented style

```
public bool mysqli::more_results();
```

Procedural style

```
bool mysqli_more_results(
  mysqli mysql);
```

Indicates if one or more result sets are available from a previous call to mysqli_multi_query.

### Parameters

| | |
|---|---|
| *mysql* | Procedural style only: A mysqli object returned by mysqli_connect or mysqli_init |

### Return Values

Returns true if one or more result sets (including errors) are available from a previous call to mysqli_multi_query, otherwise false.

### Examples

See mysqli_multi_query.

### See Also

mysqli_multi_query
mysqli_next_result
mysqli_store_result
mysqli_use_result

## 3.8.31 mysqli::multi_query, mysqli_multi_query

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- mysqli::multi_query

  mysqli_multi_query

  Performs one or more queries on the database

### Description

Object-oriented style

```
public bool mysqli::multi_query(
  string query);
```

Procedural style

```
bool mysqli_multi_query(
  mysqli mysql,
  string query);
```

Executes one or multiple queries which are concatenated by a semicolon.

Queries are sent asynchronously in a single call to the database, but the database processes them sequentially. mysqli_multi_query waits for the first query to complete before returning control to PHP. The MySQL server will then process the next query in the sequence. Once the next result is ready, MySQL will wait for the next execution of mysqli_next_result from PHP.

It is recommended to use do-while to process multiple queries. The connection will be busy until all queries have completed and their results are fetched to PHP. No other statement can be issued on the same connection until all queries are processed. To proceed to the next query in the sequence, use `mysqli_next_result`. If the next result is not ready yet, mysqli will wait for the response from the MySQL server. To check if there are more results, use `mysqli_more_results`.

For queries which produce a result set, such as `SELECT, SHOW, DESCRIBE` or `EXPLAIN`, `mysqli_use_result` or `mysqli_store_result` can be used to retrieve the result set. For queries which do not produce a result set, the same functions can be used to retrieve information such as the number of affected rows.

> **Tip**
>
> Executing `CALL` statements for stored procedures can produce multiple result sets. If the stored procedure contains `SELECT` statements, the result sets are returned in the order that they are produced as the procedure executes. In general, the caller cannot know how many result sets a procedure will return and must be prepared to retrieve multiple results. The final result from the procedure is a status result that includes no result set. The status indicates whether the procedure succeeded or an error occurred.

## Parameters

*`mysql`* — Procedural style only: A `mysqli` object returned by `mysqli_connect` or `mysqli_init`

*`query`* — A string containing the queries to be executed. Multiple queries must be separated by a semicolon.

> **Security warning: SQL injection**
>
> If the query contains any variable input then parameterized prepared statements should be used instead. Alternatively, the data must be properly formatted and all strings must be escaped using the `mysqli_real_escape_string` function.

## Return Values

Returns `false` if the first statement failed. To retrieve subsequent errors from other statements you have to call `mysqli_next_result` first.

## Examples

**Example 3.56 `mysqli::multi_query` example**

Object-oriented style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

$query = "SELECT CURRENT_USER();";
$query .= "SELECT Name FROM City ORDER BY ID LIMIT 20, 5";
```

```
/* execute multi query */
$mysqli->multi_query($query);
do {
    /* store the result set in PHP */
    if ($result = $mysqli->store_result()) {
        while ($row = $result->fetch_row()) {
            printf("%s\n", $row[0]);
        }
    }
    /* print divider */
    if ($mysqli->more_results()) {
        printf("-----------------\n");
    }
} while ($mysqli->next_result());
```

Procedural style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

$query = "SELECT CURRENT_USER();";
$query .= "SELECT Name FROM City ORDER BY ID LIMIT 20, 5";

/* execute multi query */
mysqli_multi_query($link, $query);
do {
    /* store the result set in PHP */
    if ($result = mysqli_store_result($link)) {
        while ($row = mysqli_fetch_row($result)) {
            printf("%s\n", $row[0]);
        }
    }
    /* print divider */
    if (mysqli_more_results($link)) {
        printf("-----------------\n");
    }
} while (mysqli_next_result($link));
```

The above examples will output something similar to:

```
my_user@localhost
-----------------
Amersfoort
Maastricht
Dordrecht
Leiden
Haarlemmermeer
```

## See Also

mysqli_query
mysqli_use_result
mysqli_store_result
mysqli_next_result
mysqli_more_results

## 3.8.32 mysqli::next_result, mysqli_next_result

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- mysqli::next_result

  mysqli_next_result

  Prepare next result from multi_query

### Description

Object-oriented style

```
public bool mysqli::next_result();
```

Procedural style

```
bool mysqli_next_result(
  mysqli mysql);
```

Prepares next result set from a previous call to mysqli_multi_query which can be retrieved by mysqli_store_result or mysqli_use_result.

### Parameters

| | |
|---|---|
| *mysql* | Procedural style only: A mysqli object returned by mysqli_connect or mysqli_init |

### Return Values

Returns true on success or false on failure. Also returns false if the next statement resulted in an error, unlike mysqli_more_results.

### Examples

See mysqli_multi_query.

### See Also

mysqli_multi_query
mysqli_more_results
mysqli_store_result
mysqli_use_result

## 3.8.33 mysqli::options, mysqli_options

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- mysqli::options

  mysqli_options

  Set options

### Description

Object-oriented style

```
public bool mysqli::options(
  int option,
  string|int value);
```

Procedural style

```
bool mysqli_options(
  mysqli mysql,
  int option,
  string|int value);
```

Used to set extra connect options and affect behavior for a connection.

This function may be called multiple times to set several options.

mysqli_options should be called after mysqli_init and before mysqli_real_connect.

## Parameters

*mysql*

Procedural style only: A mysqli object returned by mysqli_connect or mysqli_init

*option*

The option that you want to set. It can be one of the following values:

**Table 3.11 Valid options**

| Name | Description |
|---|---|
| MYSQLI_OPT_CONNECT_TIMEOUT | Connection timeout in seconds |
| MYSQLI_OPT_READ_TIMEOUT | Command execution result timeout in seconds. Available as of PHP 7.2.0. |
| MYSQLI_OPT_LOCAL_INFILE | Enable/disable use of LOAD LOCAL INFILE |
| MYSQLI_INIT_COMMAND | Command to execute after when connecting to MySQL server |
| MYSQLI_SET_CHARSET_NAME | The charset to be set as default. |
| MYSQLI_READ_DEFAULT_FILE | Read options from named option file instead of my.cnf Not supported by mysqlnd. |
| MYSQLI_READ_DEFAULT_GROUP | Read options from the named group from my.cnf or the file specified with MYSQL_READ_DEFAULT_FILE. Not supported by mysqlnd. |
| MYSQLI_SERVER_PUBLIC_KEY | RSA public key file used with the SHA-256 based authentication. |
| MYSQLI_OPT_NET_CMD_BUFFER_SIZE | The size of the internal command/ network buffer. Only valid for mysqlnd. |
| MYSQLI_OPT_NET_READ_BUFFER_SIZE | Maximum read chunk size in bytes when reading the body of a MySQL command packet. Only valid for mysqlnd. |

| Name | Description |
|---|---|
| MYSQLI_OPT_INT_AND_FLOAT_NATIVE | Convert integer and float columns back to PHP numbers. Only valid for mysqlnd. |
| MYSQLI_OPT_SSL_VERIFY_SERVER_CERT | Whether to verify server certificate or not. |

*value* The value for the option.

### Return Values

Returns `true` on success or `false` on failure.

### Examples

See `mysqli_real_connect`.

### Notes

> **Note**
>
> MySQLnd always assumes the server default charset. This charset is sent during connection hand-shake/authentication, which mysqlnd will use.
>
> Libmysqlclient uses the default charset set in the `my.cnf` or by an explicit call to `mysqli_options` prior to calling `mysqli_real_connect`, but after `mysqli_init`.

### See Also

`mysqli_init`
`mysqli_real_connect`

## 3.8.34 `mysqli::ping`, `mysqli_ping`

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- `mysqli::ping`

  `mysqli_ping`

  Pings a server connection, or tries to reconnect if the connection has gone down

### Description

Object-oriented style

```
public bool mysqli::ping();
```

Procedural style

```
bool mysqli_ping(
  mysqli mysql);
```

Checks whether the connection to the server is working. If it has gone down and global option mysqli.reconnect is enabled, an automatic reconnection is attempted.

> **Note**
>
> The php.ini setting mysqli.reconnect is ignored by the mysqlnd driver, so automatic reconnection is never attempted.

This function can be used by clients that remain idle for a long while, to check whether the server has closed the connection and reconnect if necessary.

## Parameters

| | |
|---|---|
| *mysql* | Procedural style only: A mysqli object returned by mysqli_connect or mysqli_init |

## Return Values

Returns true on success or false on failure.

## Examples

**Example 3.57 mysqli::ping example**

Object-oriented style

```
<?php
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

/* check connection */
if ($mysqli->connect_errno) {
    printf("Connect failed: %s\n", $mysqli->connect_error);
    exit();
}

/* check if server is alive */
if ($mysqli->ping()) {
    printf ("Our connection is ok!\n");
} else {
    printf ("Error: %s\n", $mysqli->error);
}

/* close connection */
$mysqli->close();
?>
```

Procedural style

```
<?php
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

/* check if server is alive */
if (mysqli_ping($link)) {
    printf ("Our connection is ok!\n");
} else {
    printf ("Error: %s\n", mysqli_error($link));
```

```
}

/* close connection */
mysqli_close($link);
?>
```

The above examples will output:

```
Our connection is ok!
```

## 3.8.35 mysqli::poll, mysqli_poll

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- `mysqli::poll`

  `mysqli_poll`

  Poll connections

### Description

Object-oriented style

```
public static int|false mysqli::poll(
  array|null read,
  array|null error,
  array reject,
  int seconds,
  int microseconds
      =  =0);
```

Procedural style

```
int|false mysqli_poll(
  array|null read,
  array|null error,
  array reject,
  int seconds,
  int microseconds
      =  =0);
```

Poll connections. The method can be used as static.

> **Note**
>
> Available only with mysqlnd.

### Parameters

| | |
|---|---|
| *read* | List of connections to check for outstanding results that can be read. |
| *error* | List of connections on which an error occurred, for example, query failure or lost connection. |
| *reject* | List of connections rejected because no asynchronous query has been run on for which the function could poll results. |

| | |
|---|---|
| *seconds* | Maximum number of seconds to wait, must be non-negative. |
| *microseconds* | Maximum number of microseconds to wait, must be non-negative. |

## Return Values

Returns number of ready connections upon success, `false` otherwise.

## Examples

**Example 3.58 A `mysqli_poll` example**

```
<?php
$link1 = mysqli_connect();
$link1->query("SELECT 'test'", MYSQLI_ASYNC);
$all_links = array($link1);
$processed = 0;
do {
    $links = $errors = $reject = array();
    foreach ($all_links as $link) {
        $links[] = $errors[] = $reject[] = $link;
    }
    if (!mysqli_poll($links, $errors, $reject, 1)) {
        continue;
    }
    foreach ($links as $link) {
        if ($result = $link->reap_async_query()) {
            print_r($result->fetch_row());
            if (is_object($result))
                mysqli_free_result($result);
        } else die(sprintf("MySQLi Error: %s", mysqli_error($link)));
        $processed++;
    }
} while ($processed < count($all_links));
?>
```

The above example will output:

```
Array
(
    [0] => test
)
```

## See Also

`mysqli_query`
`mysqli_reap_async_query`

# 3.8.36 `mysqli::prepare`, `mysqli_prepare`

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- `mysqli::prepare`

  `mysqli_prepare`

  Prepares an SQL statement for execution

## Description

Object-oriented style

```
public mysqli_stmt|false mysqli::prepare(
  string query);
```

Procedural style

```
mysqli_stmt|false mysqli_prepare(
  mysqli mysql,
  string query);
```

Prepares the SQL query, and returns a statement handle to be used for further operations on the statement. The query must consist of a single SQL statement.

The statement template can contain zero or more question mark (?) parameter markers—also called placeholders. The parameter markers must be bound to application variables using `mysqli_stmt_bind_param` before executing the statement.

## Parameters

*mysql*
: Procedural style only: A `mysqli` object returned by `mysqli_connect` or `mysqli_init`

*query*
: The query, as a string. It must consist of a single SQL statement.

  The SQL statement may contain zero or more parameter markers represented by question mark (?) characters at the appropriate positions.

  > **Note**
  >
  > The markers are legal only in certain places in SQL statements. For example, they are permitted in the `VALUES()` list of an `INSERT` statement (to specify column values for a row), or in a comparison with a column in a `WHERE` clause to specify a comparison value.
  >
  > However, they are not permitted for identifiers (such as table or column names), or to specify both operands of a binary operator such as the `=` equal sign. The latter restriction is necessary because it would be impossible to determine the parameter type. In general, parameters are legal only in Data Manipulation Language (DML) statements, and not in Data Definition Language (DDL) statements.

## Return Values

`mysqli_prepare` returns a statement object or `false` if an error occurred.

## Examples

**Example 3.59 `mysqli::prepare` example**

Object-oriented style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

$city = "Amersfoort";

/* create a prepared statement */
$stmt = $mysqli->prepare("SELECT District FROM City WHERE Name=?");

/* bind parameters for markers */
$stmt->bind_param("s", $city);

/* execute query */
$stmt->execute();

/* bind result variables */
$stmt->bind_result($district);

/* fetch value */
$stmt->fetch();

printf("%s is in district %s\n", $city, $district);
```

Procedural style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

$city = "Amersfoort";

/* create a prepared statement */
$stmt = mysqli_prepare($link, "SELECT District FROM City WHERE Name=?");

/* bind parameters for markers */
mysqli_stmt_bind_param($stmt, "s", $city);

/* execute query */
mysqli_stmt_execute($stmt);

/* bind result variables */
mysqli_stmt_bind_result($stmt, $district);

/* fetch value */
mysqli_stmt_fetch($stmt);

printf("%s is in district %s\n", $city, $district);
```

The above examples will output:

```
Amersfoort is in district Utrecht
```

## See Also

mysqli_stmt_execute

mysqli_stmt_fetch
mysqli_stmt_bind_param
mysqli_stmt_bind_result
mysqli_stmt_get_result
mysqli_stmt_close

## 3.8.37 mysqli::query, mysqli_query

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- mysqli::query

  mysqli_query

  Performs a query on the database

### Description

Object-oriented style

```
public mysqli_result|bool mysqli::query(
  string query,
  int result_mode
      =  =MYSQLI_STORE_RESULT);
```

Procedural style

```
mysqli_result|bool mysqli_query(
  mysqli mysql,
  string query,
  int result_mode
      =  =MYSQLI_STORE_RESULT);
```

Performs a *query* against the database.

For non-DML queries (not INSERT, UPDATE or DELETE), this function is similar to calling mysqli_real_query followed by either mysqli_use_result or mysqli_store_result.

> **Note**
>
> In the case where you pass a statement to mysqli_query that is longer than max_allowed_packet of the server, the returned error codes are different depending on whether you are using MySQL Native Driver (mysqlnd) or MySQL Client Library (libmysqlclient). The behavior is as follows:
>
> - mysqlnd on Linux returns an error code of 1153. The error message means “got a packet bigger than max_allowed_packet bytes”.
> - mysqlnd on Windows returns an error code 2006. This error message means “server has gone away”.
> - libmysqlclient on all platforms returns an error code 2006. This error message means “server has gone away”.

### Parameters

| | |
|---|---|
| *mysql* | Procedural style only: A mysqli object returned by mysqli_connect or mysqli_init |

*query* — The query string.

> **Security warning: SQL injection**
>
> If the query contains any variable input then parameterized prepared statements should be used instead. Alternatively, the data must be properly formatted and all strings must be escaped using the `mysqli_real_escape_string` function.

*result_mode* — The result mode can be one of 3 constants indicating how the result will be returned from the MySQL server.

`MYSQLI_STORE_RESULT` (default) - returns a `mysqli_result` object with buffered result set.

`MYSQLI_USE_RESULT` - returns a `mysqli_result` object with unbuffered result set. As long as there are pending records waiting to be fetched, the connection line will be busy and all subsequent calls will return error `Commands out of sync`. To avoid the error all records must be fetched from the server or the result set must be discarded by calling `mysqli_free_result`.

`MYSQLI_ASYNC` (available with mysqlnd) - the query is performed asynchronously and no result set is immediately returned. `mysqli_poll` is then used to get results from such queries. Used in combination with either `MYSQLI_STORE_RESULT` or `MYSQLI_USE_RESULT` constant.

## Return Values

Returns `false` on failure. For successful queries which produce a result set, such as `SELECT, SHOW, DESCRIBE` or `EXPLAIN`, `mysqli_query` will return a `mysqli_result` object. For other successful queries, `mysqli_query` will return `true`.

## Examples

**Example 3.60 `mysqli::query` example**

Object-oriented style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

/* Create table doesn't return a resultset */
$mysqli->query("CREATE TEMPORARY TABLE myCity LIKE City");
printf("Table myCity successfully created.\n");

/* Select queries return a resultset */
$result = $mysqli->query("SELECT Name FROM City LIMIT 10");
printf("Select returned %d rows.\n", $result->num_rows);

/* If we have to retrieve large amount of data we use MYSQLI_USE_RESULT */
$result = $mysqli->query("SELECT * FROM City", MYSQLI_USE_RESULT);
```

```
/* Note, that we can't execute any functions which interact with the
 server until all records have been fully retrieved or the result
 set was closed. All calls will return an 'out of sync' error */
$mysqli->query("SET @a:='this will not work'");
```

Procedural style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

/* Create table doesn't return a resultset */
mysqli_query($link, "CREATE TEMPORARY TABLE myCity LIKE City");
printf("Table myCity successfully created.\n");

/* Select queries return a resultset */
$result = mysqli_query($link, "SELECT Name FROM City LIMIT 10");
printf("Select returned %d rows.\n", mysqli_num_rows($result));

/* If we have to retrieve large amount of data we use MYSQLI_USE_RESULT */
$result = mysqli_query($link, "SELECT * FROM City", MYSQLI_USE_RESULT);

/* Note, that we can't execute any functions which interact with the
 server until all records have been fully retrieved or the result
 set was closed. All calls will return an 'out of sync' error */
mysqli_query($link, "SET @a:='this will not work'");
```

The above examples will output something similar to:

```
Table myCity successfully created.
Select returned 10 rows.

Fatal error: Uncaught mysqli_sql_exception: Commands out of sync; you can't run this command now in...
```

## See Also

mysqli_real_query
mysqli_multi_query
mysqli_prepare
mysqli_free_result

# 3.8.38 mysqli::real_connect, mysqli_real_connect

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- mysqli::real_connect

  mysqli_real_connect

  Opens a connection to a mysql server

## Description

Object-oriented style

```
public bool mysqli::real_connect(
  string host,
  string username,
  string passwd,
  string dbname,
  int port,
  string socket,
  int flags);
```

Procedural style

```
bool mysqli_real_connect(
  mysqli link,
  string host,
  string username,
  string passwd,
  string dbname,
  int port,
  string socket,
  int flags);
```

Establish a connection to a MySQL database engine.

This function differs from `mysqli_connect`:

- `mysqli_real_connect` needs a valid object which has to be created by function `mysqli_init`.
- With the `mysqli_options` function you can set various options for connection.
- There is a *`flags`* parameter.

## Parameters

| | |
|---|---|
| *`mysql`* | Procedural style only: A `mysqli` object returned by `mysqli_connect` or `mysqli_init` |
| *`host`* | Can be either a host name or an IP address. Passing the `null` value or the string "localhost" to this parameter, the local host is assumed. When possible, pipes will be used instead of the TCP/IP protocol. |
| *`username`* | The MySQL user name. |
| *`passwd`* | If provided or `null`, the MySQL server will attempt to authenticate the user against those user records which have no password only. This allows one username to be used with different permissions (depending on if a password as provided or not). |
| *`dbname`* | If provided will specify the default database to be used when performing queries. |
| *`port`* | Specifies the port number to attempt to connect to the MySQL server. |
| *`socket`* | Specifies the socket or named pipe that should be used. |

> **Note**
>
> Specifying the *`socket`* parameter will not explicitly determine the type of connection to be used when connecting to the MySQL server. How the connection is made to the MySQL database is determined by the *`host`* parameter.

*flags*

With the parameter *flags* you can set different connection options:

**Table 3.12 Supported flags**

| Name | Description |
|---|---|
| MYSQLI_CLIENT_COMPRESS | Use compression protocol |
| MYSQLI_CLIENT_FOUND_ROWS | return number of matched rows, not the number of affected rows |
| MYSQLI_CLIENT_IGNORE_SPACE | Allow spaces after function names. Makes all function names reserved words. |
| MYSQLI_CLIENT_INTERACTIVE | Allow interactive_timeout seconds (instead of wait_timeout seconds) of inactivity before closing the connection |
| MYSQLI_CLIENT_SSL | Use SSL (encryption) |
| MYSQLI_CLIENT_SSL_DONT_VERIFY_SERVER_CERT | Like MYSQLI_CLIENT_SSL, but disables validation of the provided SSL certificate. This is only for installations using MySQL Native Driver and MySQL 5.6 or later. |

**Note**

For security reasons the MULTI_STATEMENT flag is not supported in PHP. If you want to execute multiple queries use the mysqli_multi_query function.

## Return Values

Returns true on success or false on failure.

## Examples

**Example 3.61 mysqli::real_connect example**

Object-oriented style

```
<?php

$mysqli = mysqli_init();
if (!$mysqli) {
    die('mysqli_init failed');
}

if (!$mysqli->options(MYSQLI_INIT_COMMAND, 'SET AUTOCOMMIT = 0')) {
    die('Setting MYSQLI_INIT_COMMAND failed');
}

if (!$mysqli->options(MYSQLI_OPT_CONNECT_TIMEOUT, 5)) {
    die('Setting MYSQLI_OPT_CONNECT_TIMEOUT failed');
}

if (!$mysqli->real_connect('localhost', 'my_user', 'my_password', 'my_db')) {
```

```
    die('Connect Error (' . mysqli_connect_errno() . ') '
            . mysqli_connect_error());
}

echo 'Success... ' . $mysqli->host_info . "\n";

$mysqli->close();
?>
```

Object-oriented style when extending mysqli class

```
<?php

class foo_mysqli extends mysqli {
    public function __construct($host, $user, $pass, $db) {
        parent::init();

        if (!parent::options(MYSQLI_INIT_COMMAND, 'SET AUTOCOMMIT = 0')) {
            die('Setting MYSQLI_INIT_COMMAND failed');
        }

        if (!parent::options(MYSQLI_OPT_CONNECT_TIMEOUT, 5)) {
            die('Setting MYSQLI_OPT_CONNECT_TIMEOUT failed');
        }

        if (!parent::real_connect($host, $user, $pass, $db)) {
            die('Connect Error (' . mysqli_connect_errno() . ') '
                    . mysqli_connect_error());
        }
    }
}

$db = new foo_mysqli('localhost', 'my_user', 'my_password', 'my_db');

echo 'Success... ' . $db->host_info . "\n";

$db->close();
?>
```

Procedural style

```
<?php

$link = mysqli_init();
if (!$link) {
    die('mysqli_init failed');
}

if (!mysqli_options($link, MYSQLI_INIT_COMMAND, 'SET AUTOCOMMIT = 0')) {
    die('Setting MYSQLI_INIT_COMMAND failed');
}

if (!mysqli_options($link, MYSQLI_OPT_CONNECT_TIMEOUT, 5)) {
    die('Setting MYSQLI_OPT_CONNECT_TIMEOUT failed');
}

if (!mysqli_real_connect($link, 'localhost', 'my_user', 'my_password', 'my_db')) {
    die('Connect Error (' . mysqli_connect_errno() . ') '
            . mysqli_connect_error());
}
```

```
echo 'Success... ' . mysqli_get_host_info($link) . "\n";

mysqli_close($link);
?>
```

The above examples will output:

```
Success... MySQL host info: localhost via TCP/IP
```

### Notes

> **Note**
>
> MySQLnd always assumes the server default charset. This charset is sent during connection hand-shake/authentication, which mysqlnd will use.
>
> Libmysqlclient uses the default charset set in the `my.cnf` or by an explicit call to `mysqli_options` prior to calling `mysqli_real_connect`, but after `mysqli_init`.

### See Also

`mysqli_connect`
`mysqli_init`
`mysqli_options`
`mysqli_ssl_set`
`mysqli_close`

## 3.8.39 `mysqli::real_escape_string`, `mysqli_real_escape_string`

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- `mysqli::real_escape_string`

  `mysqli_real_escape_string`

  Escapes special characters in a string for use in an SQL statement, taking into account the current charset of the connection

### Description

Object-oriented style

```
public string mysqli::real_escape_string(
  string string);
```

Procedural style

```
string mysqli_real_escape_string(
  mysqli mysql,
  string string);
```

This function is used to create a legal SQL string that you can use in an SQL statement. The given string is encoded to produce an escaped SQL string, taking into account the current character set of the connection.

**Security: the default character set**

The character set must be set either at the server level, or with the API function `mysqli_set_charset` for it to affect `mysqli_real_escape_string`. See the concepts section on character sets for more information.

## Parameters

| | |
|---|---|
| *`mysql`* | Procedural style only: A `mysqli` object returned by `mysqli_connect` or `mysqli_init` |
| *`string`* | The string to be escaped.<br><br>Characters encoded are `NUL (ASCII 0), \n, \r, \, ', ", and Control-Z`. |

## Return Values

Returns an escaped string.

## Examples

**Example 3.62 `mysqli::real_escape_string` example**

Object-oriented style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

$city = "'s-Hertogenbosch";

/* this query with escaped $city will work */
$query = sprintf("SELECT CountryCode FROM City WHERE name='%s'",
 $mysqli->real_escape_string($city));
$result = $mysqli->query($query);
printf("Select returned %d rows.\n", $result->num_rows);

/* this query will fail, because we didn't escape $city */
$query = sprintf("SELECT CountryCode FROM City WHERE name='%s'", $city);
$result = $mysqli->query($query);
```

Procedural style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = mysqli_connect("localhost", "my_user", "my_password", "world");

$city = "'s-Hertogenbosch";

/* this query with escaped $city will work */
$query = sprintf("SELECT CountryCode FROM City WHERE name='%s'",
 mysqli_real_escape_string($mysqli, $city));
$result = mysqli_query($mysqli, $query);
printf("Select returned %d rows.\n", mysqli_num_rows($result));
```

```
/* this query will fail, because we didn't escape $city */
$query = sprintf("SELECT CountryCode FROM City WHERE name='%s'", $city);
$result = mysqli_query($mysqli, $query);
```

The above examples will output something similar to:

```
Select returned 1 rows.

Fatal error: Uncaught mysqli_sql_exception: You have an error in your SQL syntax; check the manual that corres
```

### See Also

mysqli_set_charset

## 3.8.40 mysqli::real_query, mysqli_real_query

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- mysqli::real_query

  mysqli_real_query

  Execute an SQL query

### Description

Object-oriented style

```
public bool mysqli::real_query(
  string query);
```

Procedural style

```
bool mysqli_real_query(
  mysqli mysql,
  string query);
```

Executes a single query against the database whose result can then be retrieved or stored using the mysqli_store_result or mysqli_use_result functions.

In order to determine if a given query should return a result set or not, see mysqli_field_count.

### Parameters

| | |
|---|---|
| *mysql* | Procedural style only: A mysqli object returned by mysqli_connect or mysqli_init |
| *query* | The query string. |

> **Security warning: SQL injection**
>
> If the query contains any variable input then parameterized prepared statements should be used instead. Alternatively, the data must be properly formatted and

> all strings must be escaped using the mysqli_real_escape_string function.

### Return Values

Returns true on success or false on failure.

### See Also

mysqli_query
mysqli_store_result
mysqli_use_result

## 3.8.41 mysqli::reap_async_query, mysqli_reap_async_query

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- mysqli::reap_async_query

  mysqli_reap_async_query

  Get result from async query

### Description

Object-oriented style

```
public mysqli_result|bool mysqli::reap_async_query();
```

Procedural style

```
mysqli_result|bool mysqli_reap_async_query(
  mysqli mysql);
```

Get result from async query.

> **Note**
>
> Available only with mysqlnd.

### Parameters

| | |
|---|---|
| *mysql* | Procedural style only: A mysqli object returned by mysqli_connect or mysqli_init |

### Return Values

Returns false on failure. For successful queries which produce a result set, such as SELECT, SHOW, DESCRIBE or EXPLAIN, mysqli_reap_async_query will return a mysqli_result object. For other successful queries, mysqli_reap_async_query will return true.

### See Also

mysqli_poll

## 3.8.42 mysqli::refresh, mysqli_refresh

Copyright 1997-2022 the PHP Documentation Group.

- mysqli::refresh

  mysqli_refresh

  Refreshes

### Description

Object-oriented style

```
public bool mysqli::refresh(
  int flags);
```

Procedural style

```
bool mysqli_refresh(
  mysqli mysql,
  int flags);
```

Flushes tables or caches, or resets the replication server information.

### Parameters

| | |
|---|---|
| *mysql* | Procedural style only: A mysqli object returned by mysqli_connect or mysqli_init |
| *flags* | The options to refresh, using the MYSQLI_REFRESH_* constants as documented within the MySQLi constants documentation.<br><br>See also the official MySQL Refresh documentation. |

### Return Values

true if the refresh was a success, otherwise false

### See Also

mysqli_poll

## 3.8.43 mysqli::release_savepoint, mysqli_release_savepoint

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- mysqli::release_savepoint

  mysqli_release_savepoint

  Removes the named savepoint from the set of savepoints of the current transaction

### Description

Object-oriented style

```
public bool mysqli::release_savepoint(
  string name);
```

Procedural style:

```
bool mysqli_release_savepoint(
```

```
  mysqli mysql,
  string name);
```

This function is identical to executing `$mysqli->query("RELEASE SAVEPOINT `$name`");`. This function does not trigger commit or rollback.

### Parameters

| | |
|---|---|
| *mysql* | Procedural style only: A `mysqli` object returned by `mysqli_connect` or `mysqli_init` |
| *name* | The identifier of the savepoint. |

### Return Values

Returns `true` on success or `false` on failure.

### See Also

`mysqli_savepoint`

## 3.8.44 mysqli::rollback, mysqli_rollback

Copyright 1997-2022 the PHP Documentation Group.

- `mysqli::rollback`

  `mysqli_rollback`

  Rolls back current transaction

### Description

Object-oriented style

```
public bool mysqli::rollback(
  int flags
      =  =0,
  string|null name
      =  =null);
```

Procedural style

```
bool mysqli_rollback(
  mysqli mysql,
  int flags
      =  =0,
  string|null name
      =  =null);
```

Rollbacks the current transaction for the database.

### Parameters

| | |
|---|---|
| *mysql* | Procedural style only: A `mysqli` object returned by `mysqli_connect` or `mysqli_init` |
| *flags* | A bitmask of `MYSQLI_TRANS_COR_*` constants. |
| *name* | If provided then `ROLLBACK/*name*/` is executed. |

## Return Values

Returns `true` on success or `false` on failure.

## Changelog

| Version | Description |
|---|---|
| 8.0.0 | *`name`* is now nullable. |

## Examples

See the `mysqli::begin_transaction` example.

## Notes

> **Note**
>
> This function does not work with non transactional table types (like MyISAM or ISAM).

## See Also

`mysqli_begin_transaction`
`mysqli_commit`
`mysqli_autocommit`
`mysqli_release_savepoint`

# 3.8.45 `mysqli::savepoint`, `mysqli_savepoint`

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- `mysqli::savepoint`

  `mysqli_savepoint`

  Set a named transaction savepoint

## Description

Object-oriented style

```
public bool mysqli::savepoint(
  string name);
```

Procedural style:

```
bool mysqli_savepoint(
  mysqli mysql,
  string name);
```

This function is identical to executing `$mysqli->query("SAVEPOINT `$name`");`

## Parameters

| | |
|---|---|
| *`mysql`* | Procedural style only: A `mysqli` object returned by `mysqli_connect` or `mysqli_init` |

| | |
|---|---|
| *name* | The identifier of the savepoint. |

### Return Values

Returns `true` on success or `false` on failure.

### See Also

`mysqli_release_savepoint`

## 3.8.46 mysqli::select_db, mysqli_select_db

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- `mysqli::select_db`

  `mysqli_select_db`

  Selects the default database for database queries

### Description

Object-oriented style

```
public bool mysqli::select_db(
  string database);
```

Procedural style

```
bool mysqli_select_db(
  mysqli mysql,
  string database);
```

Selects the default database to be used when performing queries against the database connection.

> **Note**
>
> This function should only be used to change the default database for the connection. You can select the default database with 4th parameter in `mysqli_connect`.

### Parameters

| | |
|---|---|
| *mysql* | Procedural style only: A `mysqli` object returned by `mysqli_connect` or `mysqli_init` |
| *database* | The database name. |

### Return Values

Returns `true` on success or `false` on failure.

### Examples

**Example 3.63 `mysqli::select_db` example**

Object-oriented style

```
<?php
```

```
mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("localhost", "my_user", "my_password", "test");

/* get the name of the current default database */
$result = $mysqli->query("SELECT DATABASE()");
$row = $result->fetch_row();
printf("Default database is %s.\n", $row[0]);

/* change default database to "world" */
$mysqli->select_db("world");

/* get the name of the current default database */
$result = $mysqli->query("SELECT DATABASE()");
$row = $result->fetch_row();
printf("Default database is %s.\n", $row[0]);
```

Procedural style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$link = mysqli_connect("localhost", "my_user", "my_password", "test");

/* get the name of the current default database */
$result = mysqli_query($link, "SELECT DATABASE()");
$row = mysqli_fetch_row($result);
printf("Default database is %s.\n", $row[0]);

/* change default database to "world" */
mysqli_select_db($link, "world");

/* get the name of the current default database */
$result = mysqli_query($link, "SELECT DATABASE()");
$row = mysqli_fetch_row($result);
printf("Default database is %s.\n", $row[0]);
```

The above examples will output:

```
Default database is test.
Default database is world.
```

### See Also

mysqli_connect
mysqli_real_connect

## 3.8.47 mysqli::set_charset, mysqli_set_charset

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- mysqli::set_charset

  mysqli_set_charset

  Sets the client character set

## Description

Object-oriented style

```
public bool mysqli::set_charset(
  string charset);
```

Procedural style

```
bool mysqli_set_charset(
  mysqli mysql,
  string charset);
```

Sets the character set to be used when sending data from and to the database server.

## Parameters

| | |
|---|---|
| *mysql* | Procedural style only: A mysqli object returned by mysqli_connect or mysqli_init |
| *charset* | The desired character set. |

## Return Values

Returns true on success or false on failure.

## Examples

**Example 3.64 mysqli::set_charset example**

Object-oriented style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("localhost", "my_user", "my_password", "test");

printf("Initial character set: %s\n", $mysqli->character_set_name());

/* change character set to utf8mb4 */
$mysqli->set_charset("utf8mb4");

printf("Current character set: %s\n", $mysqli->character_set_name());
```

Procedural style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$link = mysqli_connect('localhost', 'my_user', 'my_password', 'test');

printf("Initial character set: %s\n", mysqli_character_set_name($link));

/* change character set to utf8mb4 */
mysqli_set_charset($link, "utf8mb4");

printf("Current character set: %s\n", mysqli_character_set_name($link));
```

The above examples will output something similar to:

```
Initial character set: latin1
Current character set: utf8mb4
```

## Notes

> **Note**
>
> To use this function on a Windows platform you need MySQL client library version 4.1.11 or above (for MySQL 5.0 you need 5.0.6 or above).

> **Note**
>
> This is the preferred way to change the charset. Using `mysqli_query` to set it (such as `SET NAMES utf8`) is not recommended. See the MySQL character set concepts section for more information.

## See Also

`mysqli_character_set_name`
`mysqli_real_escape_string`
MySQL character set concepts
List of character sets that MySQL supports

# 3.8.48 `mysqli::$sqlstate`, `mysqli_sqlstate`

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- `mysqli::$sqlstate`

  `mysqli_sqlstate`

  Returns the SQLSTATE error from previous MySQL operation

## Description

Object-oriented style

```
string
  mysqli->sqlstate ;
```

Procedural style

```
string mysqli_sqlstate(
  mysqli mysql);
```

Returns a string containing the SQLSTATE error code for the last error. The error code consists of five characters. `'00000'` means no error. The values are specified by ANSI SQL and ODBC. For a list of possible values, see http://dev.mysql.com/doc/mysql/en/error-handling.html.

> **Note**
>
> Note that not all MySQL errors are yet mapped to SQLSTATE's. The value `HY000` (general error) is used for unmapped errors.

## Parameters

| | |
|---|---|
| *mysql* | Procedural style only: A mysqli object returned by mysqli_connect or mysqli_init |

## Return Values

Returns a string containing the SQLSTATE error code for the last error. The error code consists of five characters. '00000' means no error.

## Examples

**Example 3.65 $mysqli->sqlstate example**

Object-oriented style

```
<?php
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

/* Table City already exists, so we should get an error */
if (!$mysqli->query("CREATE TABLE City (ID INT, Name VARCHAR(30))")) {
    printf("Error - SQLSTATE %s.\n", $mysqli->sqlstate);
}

$mysqli->close();
?>
```

Procedural style

```
<?php
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

/* Table City already exists, so we should get an error */
if (!mysqli_query($link, "CREATE TABLE City (ID INT, Name VARCHAR(30))")) {
    printf("Error - SQLSTATE %s.\n", mysqli_sqlstate($link));
}

mysqli_close($link);
?>
```

The above examples will output:

```
Error - SQLSTATE 42S01.
```

### See Also

mysqli_errno
mysqli_error

## 3.8.49 mysqli::ssl_set, mysqli_ssl_set

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- mysqli::ssl_set

  mysqli_ssl_set

  Used for establishing secure connections using SSL

### Description

Object-oriented style

```
public bool mysqli::ssl_set(
  string|null key,
  string|null certificate,
  string|null ca_certificate,
  string|null ca_path,
  string|null cipher_algos);
```

Procedural style

```
bool mysqli_ssl_set(
  mysqli mysql,
  string|null key,
  string|null certificate,
  string|null ca_certificate,
  string|null ca_path,
  string|null cipher_algos);
```

Used for establishing secure connections using SSL. It must be called before mysqli_real_connect. This function does nothing unless OpenSSL support is enabled.

### Parameters

| | |
|---|---|
| *mysql* | Procedural style only: A mysqli object returned by mysqli_connect or mysqli_init |
| *key* | The path name to the key file. |
| *certificate* | The path name to the certificate file. |
| *ca_certificate* | The path name to the certificate authority file. |
| *ca_path* | The pathname to a directory that contains trusted SSL CA certificates in PEM format. |
| *cipher_algos* | A list of allowable ciphers to use for SSL encryption. |

### Return Values

This function always returns true value. If SSL setup is incorrect mysqli_real_connect will return an error when you attempt to connect.

### See Also

mysqli_options
mysqli_real_connect

## 3.8.50 mysqli::stat, mysqli_stat

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- mysqli::stat

  mysqli_stat

  Gets the current system status

### Description

Object-oriented style

```
public string|false mysqli::stat();
```

Procedural style

```
string|false mysqli_stat(
  mysqli mysql);
```

mysqli_stat returns a string containing information similar to that provided by the 'mysqladmin status' command. This includes uptime in seconds and the number of running threads, questions, reloads, and open tables.

### Parameters

| | |
|---|---|
| *mysql* | Procedural style only: A mysqli object returned by mysqli_connect or mysqli_init |

### Return Values

A string describing the server status. false if an error occurred.

### Examples

**Example 3.66 mysqli::stat example**

Object-oriented style

```
<?php
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

printf ("System status: %s\n", $mysqli->stat());

$mysqli->close();
?>
```

```
```

Procedural style

```
<?php
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

printf("System status: %s\n", mysqli_stat($link));

mysqli_close($link);
?>
```

The above examples will output:

```
System status: Uptime: 272  Threads: 1  Questions: 5340  Slow queries: 0
Opens: 13  Flush tables: 1  Open tables: 0  Queries per second avg: 19.632
Memory in use: 8496K  Max memory used: 8560K
```

## See Also

mysqli_get_server_info

# 3.8.51 mysqli::stmt_init, mysqli_stmt_init

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- mysqli::stmt_init

  mysqli_stmt_init

  Initializes a statement and returns an object for use with mysqli_stmt_prepare

## Description

Object-oriented style

```
public mysqli_stmt|false mysqli::stmt_init();
```

Procedural style

```
mysqli_stmt|false mysqli_stmt_init(
  mysqli mysql);
```

Allocates and initializes a statement object suitable for mysqli_stmt_prepare.

> **Note**
>
> Any subsequent calls to any mysqli_stmt function will fail until mysqli_stmt_prepare was called.

### Parameters

| | |
|---|---|
| *mysql* | Procedural style only: A mysqli object returned by mysqli_connect or mysqli_init |

### Return Values

Returns an object.

### See Also

mysqli_stmt_prepare

## 3.8.52 mysqli::store_result, mysqli_store_result

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- mysqli::store_result

  mysqli_store_result

  Transfers a result set from the last query

### Description

Object-oriented style

```
public mysqli_result|false mysqli::store_result(
  int mode
      =  =0);
```

Procedural style

```
mysqli_result|false mysqli_store_result(
  mysqli mysql,
  int mode
      =  =0);
```

Transfers the result set from the last query on the database connection represented by the *mysql* parameter to be used with the mysqli_data_seek function.

### Parameters

| | |
|---|---|
| *mysql* | Procedural style only: A mysqli object returned by mysqli_connect or mysqli_init |
| *mode* | The option that you want to set. It can be one of the following values: |

**Table 3.13 Valid options**

| Name | Description |
|---|---|
| MYSQLI_STORE_RESULT_COPY_DATA | Copy results from the internal mysqlnd buffer into the PHP variables fetched. By default, mysqlnd will use a reference logic to avoid copying and duplicating results held in memory. For certain result sets, for example, result |

| Name | Description |
|---|---|
| | sets with many small rows, the copy approach can reduce the overall memory usage because PHP variables holding results may be released earlier (available with mysqlnd only) |

## Return Values

Returns a buffered result object or `false` if an error occurred.

> **Note**
>
> `mysqli_store_result` returns `false` in case the query didn't return a result set (if the query was, for example an INSERT statement). This function also returns `false` if the reading of the result set failed. You can check if you have got an error by checking if `mysqli_error` doesn't return an empty string, if `mysqli_errno` returns a non zero value, or if `mysqli_field_count` returns a non zero value. Also possible reason for this function returning `false` after successful call to `mysqli_query` can be too large result set (memory for it cannot be allocated). If `mysqli_field_count` returns a non-zero value, the statement should have produced a non-empty result set.

## Examples

See `mysqli_multi_query`.

## Notes

> **Note**
>
> Although it is always good practice to free the memory used by the result of a query using the `mysqli_free_result` function, when transferring large result sets using the `mysqli_store_result` this becomes particularly important.

## See Also

`mysqli_real_query`
`mysqli_use_result`

# 3.8.53 `mysqli::$thread_id`, `mysqli_thread_id`

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- `mysqli::$thread_id`

  `mysqli_thread_id`

  Returns the thread ID for the current connection

## Description

Object-oriented style

```
int
  mysqli->thread_id ;
```

Procedural style

```
int mysqli_thread_id(
  mysqli mysql);
```

The `mysqli_thread_id` function returns the thread ID for the current connection which can then be killed using the `mysqli_kill` function. If the connection is lost and you reconnect with `mysqli_ping`, the thread ID will be other. Therefore you should get the thread ID only when you need it.

> **Note**
>
> The thread ID is assigned on a connection-by-connection basis. Hence, if the connection is broken and then re-established a new thread ID will be assigned.
>
> To kill a running query you can use the SQL command `KILL QUERY processid`.

## Parameters

| | |
|---|---|
| *`mysql`* | Procedural style only: A `mysqli` object returned by `mysqli_connect` or `mysqli_init` |

## Return Values

Returns the Thread ID for the current connection.

## Examples

**Example 3.67 `$mysqli->thread_id` example**

Object-oriented style

```
<?php
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

/* determine our thread id */
$thread_id = $mysqli->thread_id;

/* Kill connection */
$mysqli->kill($thread_id);

/* This should produce an error */
if (!$mysqli->query("CREATE TABLE myCity LIKE City")) {
    printf("Error: %s\n", $mysqli->error);
    exit;
}

/* close connection */
$mysqli->close();
?>
```

Procedural style

```
<?php
```

```
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

/* determine our thread id */
$thread_id = mysqli_thread_id($link);

/* Kill connection */
mysqli_kill($link, $thread_id);

/* This should produce an error */
if (!mysqli_query($link, "CREATE TABLE myCity LIKE City")) {
    printf("Error: %s\n", mysqli_error($link));
    exit;
}

/* close connection */
mysqli_close($link);
?>
```

The above examples will output:

```
Error: MySQL server has gone away
```

### See Also

mysqli_kill

## 3.8.54 mysqli::thread_safe, mysqli_thread_safe

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- mysqli::thread_safe

  mysqli_thread_safe

  Returns whether thread safety is given or not

### Description

Object-oriented style

```
public bool mysqli::thread_safe();
```

Procedural style

```
bool mysqli_thread_safe();
```

Tells whether the client library is compiled as thread-safe.

### Parameters

This function has no parameters.

### Return Values

`true` if the client library is thread-safe, otherwise `false`.

## 3.8.55 mysqli::use_result, mysqli_use_result

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- `mysqli::use_result`

  `mysqli_use_result`

  Initiate a result set retrieval

### Description

Object-oriented style

```
public mysqli_result|false mysqli::use_result();
```

Procedural style

```
mysqli_result|false mysqli_use_result(
  mysqli mysql);
```

Used to initiate the retrieval of a result set from the last query executed using the `mysqli_real_query` function on the database connection.

Either this or the `mysqli_store_result` function must be called before the results of a query can be retrieved, and one or the other must be called to prevent the next query on that database connection from failing.

> **Note**
>
> The `mysqli_use_result` function does not transfer the entire result set from the database and hence cannot be used functions such as `mysqli_data_seek` to move to a particular row within the set. To use this functionality, the result set must be stored using `mysqli_store_result`. One should not use `mysqli_use_result` if a lot of processing on the client side is performed, since this will tie up the server and prevent other threads from updating any tables from which the data is being fetched.

### Parameters

This function has no parameters.

### Return Values

Returns an unbuffered result object or `false` if an error occurred.

### Examples

**Example 3.68 `mysqli::use_result` example**

Object-oriented style

```
<?php
```

```
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

$query  = "SELECT CURRENT_USER();";
$query .= "SELECT Name FROM City ORDER BY ID LIMIT 20, 5";

/* execute multi query */
if ($mysqli->multi_query($query)) {
    do {
        /* store first result set */
        if ($result = $mysqli->use_result()) {
            while ($row = $result->fetch_row()) {
                printf("%s\n", $row[0]);
            }
            $result->close();
        }
        /* print divider */
        if ($mysqli->more_results()) {
            printf("-----------------\n");
        }
    } while ($mysqli->next_result());
}

/* close connection */
$mysqli->close();
?>
```

Procedural style

```
<?php
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

$query  = "SELECT CURRENT_USER();";
$query .= "SELECT Name FROM City ORDER BY ID LIMIT 20, 5";

/* execute multi query */
if (mysqli_multi_query($link, $query)) {
    do {
        /* store first result set */
        if ($result = mysqli_use_result($link)) {
            while ($row = mysqli_fetch_row($result)) {
                printf("%s\n", $row[0]);
            }
            mysqli_free_result($result);
        }
        /* print divider */
        if (mysqli_more_results($link)) {
            printf("-----------------\n");
        }
    } while (mysqli_next_result($link));
}

/* close connection */
```

```
mysqli_close($link);
?>
```

The above examples will output:

```
my_user@localhost
-----------------
Amersfoort
Maastricht
Dordrecht
Leiden
Haarlemmermeer
```

### See Also

mysqli_real_query
mysqli_store_result

## 3.8.56 mysqli::$warning_count, mysqli_warning_count

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- mysqli::$warning_count

  mysqli_warning_count

  Returns the number of warnings from the last query for the given link

### Description

Object-oriented style

```
int
  mysqli->warning_count ;
```

Procedural style

```
int mysqli_warning_count(
  mysqli mysql);
```

Returns the number of warnings from the last query in the connection.

> **Note**
>
> For retrieving warning messages you can use the SQL command SHOW WARNINGS [limit row_count].

### Parameters

| | |
|---|---|
| *mysql* | Procedural style only: A mysqli object returned by mysqli_connect or mysqli_init |

### Return Values

Number of warnings or zero if there are no warnings.

## Examples

### Example 3.69 `$mysqli->warning_count` example

Object-oriented style

```
<?php
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

$mysqli->query("CREATE TABLE myCity LIKE City");

/* a remarkable city in Wales */
$query = "INSERT INTO myCity (CountryCode, Name) VALUES('GBR',
        'Llanfairpwllgwyngyllgogerychwyrndrobwllllantysiliogogogoch')";

$mysqli->query($query);

if ($mysqli->warning_count) {
    if ($result = $mysqli->query("SHOW WARNINGS")) {
        $row = $result->fetch_row();
        printf("%s (%d): %s\n", $row[0], $row[1], $row[2]);
        $result->close();
    }
}

/* close connection */
$mysqli->close();
?>
```

Procedural style

```
<?php
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

mysqli_query($link, "CREATE TABLE myCity LIKE City");

/* a remarkable long city name in Wales */
$query = "INSERT INTO myCity (CountryCode, Name) VALUES('GBR',
        'Llanfairpwllgwyngyllgogerychwyrndrobwllllantysiliogogogoch')";

mysqli_query($link, $query);

if (mysqli_warning_count($link)) {
    if ($result = mysqli_query($link, "SHOW WARNINGS")) {
        $row = mysqli_fetch_row($result);
        printf("%s (%d): %s\n", $row[0], $row[1], $row[2]);
        mysqli_free_result($result);
    }
}
```

```
/* close connection */
mysqli_close($link);
?>
```

The above examples will output:

```
Warning (1264): Data truncated for column 'Name' at row 1
```

### See Also

mysqli_errno
mysqli_error
mysqli_sqlstate

## 3.9 The mysqli_stmt class

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Represents a prepared statement.

```
mysqli_stmt {
mysqli_stmt

      Properties

  public readonly int|string
    affected_rows ;

  public readonly int|string
    insert_id ;

  public readonly int|string
    num_rows ;

  public readonly int
    param_count ;

  public readonly int
    field_count ;

  public readonly int
    errno ;

  public readonly string
    error ;

  public readonly array
    error_list ;

  public readonly string
    sqlstate ;

  public int
    id ;

Methods

  public mysqli_stmt::__construct(
```

```
    mysqli mysql,
    string|null query
        =  =null);

  public int mysqli_stmt::attr_get(
    int attribute);

  public bool mysqli_stmt::attr_set(
    int attribute,
    int value);

  public bool mysqli_stmt::bind_param(
    string types,
    mixed var,
    mixed vars);

  public bool mysqli_stmt::bind_result(
    mixed var,
    mixed vars);

  public bool mysqli_stmt::close();

  public void mysqli_stmt::data_seek(
    int offset);

  public bool mysqli_stmt::execute(
    array|null params
        =  =null);

  public bool|null mysqli_stmt::fetch();

  public void mysqli_stmt::free_result();

  public mysqli_result|false mysqli_stmt::get_result();

  public mysqli_warning|false mysqli_stmt::get_warnings();

  public bool mysqli_stmt::more_results();

  public bool mysqli_stmt::next_result();

  public int|string mysqli_stmt::num_rows();

  public bool mysqli_stmt::prepare(
    string query);

  public bool mysqli_stmt::reset();

  public mysqli_result|false mysqli_stmt::result_metadata();

  public bool mysqli_stmt::send_long_data(
    int param_num,
    string data);

  public bool mysqli_stmt::store_result();

}
```

| | |
|---|---|
| id | Stores the statement ID. |

## 3.9.1 mysqli_stmt::$affected_rows, mysqli_stmt_affected_rows

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- mysqli_stmt::$affected_rows

mysqli_stmt_affected_rows

Returns the total number of rows changed, deleted, inserted, or matched by the last statement executed

## Description

Object-oriented style

```
int|string
  mysqli_stmt->affected_rows ;
```

Procedural style

```
int|string mysqli_stmt_affected_rows(
  mysqli_stmt statement);
```

Returns the number of rows affected by INSERT, UPDATE, or DELETE query. Works like mysqli_stmt_num_rows for SELECT statements.

## Parameters

| | |
|---|---|
| *statement* | Procedural style only: A mysqli_stmt object returned by mysqli_stmt_init. |

## Return Values

An integer greater than zero indicates the number of rows affected or retrieved. Zero indicates that no records were updated for an UPDATE statement, no rows matched the WHERE clause in the query or that no query has yet been executed. -1 indicates that the query returned an error or that, for a SELECT query, mysqli_stmt_affected_rows was called prior to calling mysqli_stmt_store_result.

> **Note**
>
> If the number of affected rows is greater than maximum PHP int value, the number of affected rows will be returned as a string value.

## Examples

**Example 3.70 mysqli_stmt_affected_rows example**

Object-oriented style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

/* create temp table */
$mysqli->query("CREATE TEMPORARY TABLE myCountry LIKE Country");

$query = "INSERT INTO myCountry SELECT * FROM Country WHERE Code LIKE ?";

/* prepare statement */
$stmt = $mysqli->prepare($query);

/* Bind variable for placeholder */
$code = 'A%';
$stmt->bind_param("s", $code);

/* execute statement */
```

```
$stmt->execute();

printf("Rows inserted: %d\n", $stmt->affected_rows);
```

Procedural style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

/* create temp table */
mysqli_query($link, "CREATE TEMPORARY TABLE myCountry LIKE Country");

$query = "INSERT INTO myCountry SELECT * FROM Country WHERE Code LIKE ?";

/* prepare statement */
$stmt = mysqli_prepare($link, $query);

/* Bind variable for placeholder */
$code = 'A%';
mysqli_stmt_bind_param($stmt, "s", $code);

/* execute statement */
mysqli_stmt_execute($stmt);

printf("Rows inserted: %d\n", mysqli_stmt_affected_rows($stmt));
```

The above examples will output:

```
Rows inserted: 17
```

### See Also

mysqli_stmt_num_rows
mysqli_stmt_store_result

## 3.9.2 mysqli_stmt::attr_get, mysqli_stmt_attr_get

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- mysqli_stmt::attr_get

  mysqli_stmt_attr_get

  Used to get the current value of a statement attribute

### Description

Object-oriented style

```
  public int mysqli_stmt::attr_get(
    int attribute);
```

Procedural style

```
int mysqli_stmt_attr_get(
  mysqli_stmt statement,
  int attribute);
```

Gets the current value of a statement attribute.

### Parameters

| | |
|---|---|
| *statement* | Procedural style only: A mysqli_stmt object returned by mysqli_stmt_init. |
| *attribute* | The attribute that you want to get. |

### Return Values

Returns the value of the attribute.

## 3.9.3 mysqli_stmt::attr_set, mysqli_stmt_attr_set

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- mysqli_stmt::attr_set

  mysqli_stmt_attr_set

  Used to modify the behavior of a prepared statement

### Description

Object-oriented style

```
public bool mysqli_stmt::attr_set(
  int attribute,
  int value);
```

Procedural style

```
bool mysqli_stmt_attr_set(
  mysqli_stmt statement,
  int attribute,
  int value);
```

Used to modify the behavior of a prepared statement. This function may be called multiple times to set several attributes.

### Parameters

| | |
|---|---|
| *statement* | Procedural style only: A mysqli_stmt object returned by mysqli_stmt_init. |
| *attribute* | The attribute that you want to set. It can have one of the following values: |

**Table 3.14 Attribute values**

| Character | Description |
|---|---|
| MYSQLI_STMT_ATTR_UPDATE_MAX_LENGTH | Setting to true causes mysqli_stmt_store_result to update the metadata |

| Character | Description |
|---|---|
| | MYSQL_FIELD->max_length value. |
| MYSQLI_STMT_ATTR_CURSOR_TYPE | Type of cursor to open for statement when mysqli_stmt_execute is invoked. *value* can be MYSQLI_CURSOR_TYPE_NO_CURSOR (the default) or MYSQLI_CURSOR_TYPE_READ_ONLY. |
| MYSQLI_STMT_ATTR_PREFETCH_ROWS | Number of rows to fetch from server at a time when using a cursor. *value* can be in the range from 1 to the maximum value of unsigned long. The default is 1. |

If you use the MYSQLI_STMT_ATTR_CURSOR_TYPE option with MYSQLI_CURSOR_TYPE_READ_ONLY, a cursor is opened for the statement when you invoke mysqli_stmt_execute. If there is already an open cursor from a previous mysqli_stmt_execute call, it closes the cursor before opening a new one. mysqli_stmt_reset also closes any open cursor before preparing the statement for re-execution. mysqli_stmt_free_result closes any open cursor.

If you open a cursor for a prepared statement, mysqli_stmt_store_result is unnecessary.

*value* — The value to assign to the attribute.

### Return Values

Returns true on success or false on failure.

### See Also

Connector/MySQL mysql_stmt_attr_set()

## 3.9.4 mysqli_stmt::bind_param, mysqli_stmt_bind_param

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- mysqli_stmt::bind_param

  mysqli_stmt_bind_param

  Binds variables to a prepared statement as parameters

### Description

Object-oriented style

```
public bool mysqli_stmt::bind_param(
  string types,
  mixed var,
  mixed vars);
```

Procedural style

```
bool mysqli_stmt_bind_param(
  mysqli_stmt statement,
  string types,
  mixed var,
  mixed vars);
```

Bind variables for the parameter markers in the SQL statement prepared by `mysqli_prepare` or `mysqli_stmt_prepare`.

> **Note**
>
> If data size of a variable exceeds max. allowed packet size (max_allowed_packet), you have to specify `b` in *`types`* and use `mysqli_stmt_send_long_data` to send the data in packets.

> **Note**
>
> Care must be taken when using `mysqli_stmt_bind_param` in conjunction with `call_user_func_array`. Note that `mysqli_stmt_bind_param` requires parameters to be passed by reference, whereas `call_user_func_array` can accept as a parameter a list of variables that can represent references or values.

## Parameters

*`statement`*
: Procedural style only: A `mysqli_stmt` object returned by `mysqli_stmt_init`.

*`types`*
: A string that contains one or more characters which specify the types for the corresponding bind variables:

**Table 3.15 Type specification chars**

| Character | Description |
|---|---|
| i | corresponding variable has type integer |
| d | corresponding variable has type double |
| s | corresponding variable has type string |
| b | corresponding variable is a blob and will be sent in packets |

*`var`* , *`vars`*
: The number of variables and length of string *`types`* must match the parameters in the statement.

## Return Values

Returns `true` on success or `false` on failure.

## Examples

**Example 3.71 `mysqli_stmt::bind_param` example**

Object-oriented style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli('localhost', 'my_user', 'my_password', 'world');

$stmt = $mysqli->prepare("INSERT INTO CountryLanguage VALUES (?, ?, ?, ?)");
$stmt->bind_param('sssd', $code, $language, $official, $percent);

$code = 'DEU';
$language = 'Bavarian';
$official = "F";
$percent = 11.2;

$stmt->execute();

printf("%d row inserted.\n", $stmt->affected_rows);

/* Clean up table CountryLanguage */
$mysqli->query("DELETE FROM CountryLanguage WHERE Language='Bavarian'");
printf("%d row deleted.\n", $mysqli->affected_rows);
```

Procedural style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$link = mysqli_connect('localhost', 'my_user', 'my_password', 'world');

$stmt = mysqli_prepare($link, "INSERT INTO CountryLanguage VALUES (?, ?, ?, ?)");
mysqli_stmt_bind_param($stmt, 'sssd', $code, $language, $official, $percent);

$code = 'DEU';
$language = 'Bavarian';
$official = "F";
$percent = 11.2;

mysqli_stmt_execute($stmt);

printf("%d row inserted.\n", mysqli_stmt_affected_rows($stmt));

/* Clean up table CountryLanguage */
mysqli_query($link, "DELETE FROM CountryLanguage WHERE Language='Bavarian'");
printf("%d row deleted.\n", mysqli_affected_rows($link));
```

The above examples will output:

```
1 row inserted.
1 row deleted.
```

**Example 3.72 Using `...` to provide arguments**

The `...` operator can be used to provide variable-length argument list, e.g. in a `WHERE IN` clause.

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
```

```
$mysqli = new mysqli('localhost', 'my_user', 'my_password', 'world');

$stmt = $mysqli->prepare("SELECT Language FROM CountryLanguage WHERE CountryCode IN (?, ?)");
/* Using ... to provide arguments */
$stmt->bind_param('ss', ...['DEU', 'POL']);
$stmt->execute();
$stmt->store_result();

printf("%d rows found.\n", $stmt->num_rows());
```

The above examples will output:

```
10 rows found.
```

### See Also

mysqli_stmt_bind_result
mysqli_stmt_execute
mysqli_stmt_fetch
mysqli_prepare
mysqli_stmt_send_long_data
mysqli_stmt_errno
mysqli_stmt_error

## 3.9.5 mysqli_stmt::bind_result, mysqli_stmt_bind_result

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- mysqli_stmt::bind_result

  mysqli_stmt_bind_result

  Binds variables to a prepared statement for result storage

### Description

Object-oriented style

```
public bool mysqli_stmt::bind_result(
  mixed var,
  mixed vars);
```

Procedural style

```
bool mysqli_stmt_bind_result(
  mysqli_stmt statement,
  mixed var,
  mixed vars);
```

Binds columns in the result set to variables.

When mysqli_stmt_fetch is called to fetch data, the MySQL client/server protocol places the data for the bound columns into the specified variables *var*/*vars*.

A column can be bound or rebound at any time, even after a result set has been partially retrieved. The new binding takes effect the next time mysqli_stmt_fetch is called.

**Note**

All columns must be bound after `mysqli_stmt_execute` and prior to calling `mysqli_stmt_fetch`.

**Note**

Depending on column types bound variables can silently change to the corresponding PHP type.

**Tip**

This functions is useful for simple results. To retrieve iterable result set, or fetch each row as an array or object, use `mysqli_stmt_get_result`.

## Parameters

| | |
|---|---|
| *statement* | Procedural style only: A `mysqli_stmt` object returned by `mysqli_stmt_init`. |
| *var* | The first variable to be bound. |
| *vars* | Further variables to be bound. |

## Return Values

Returns `true` on success or `false` on failure.

## Examples

**Example 3.73 Object-oriented style**

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

/* prepare statement */
$stmt = $mysqli->prepare("SELECT Code, Name FROM Country ORDER BY Name LIMIT 5");
$stmt->execute();

/* bind variables to prepared statement */
$stmt->bind_result($col1, $col2);

/* fetch values */
while ($stmt->fetch()) {
    printf("%s %s\n", $col1, $col2);
}
```

**Example 3.74 Procedural style**

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

/* prepare statement */
$stmt = mysqli_prepare($link, "SELECT Code, Name FROM Country ORDER BY Name LIMIT 5");
```

```
mysqli_stmt_execute($stmt);

/* bind variables to prepared statement */
mysqli_stmt_bind_result($stmt, $col1, $col2);

/* fetch values */
while (mysqli_stmt_fetch($stmt)) {
    printf("%s %s\n", $col1, $col2);
}
```

The above examples will output something similar to:

```
AFG Afghanistan
ALB Albania
DZA Algeria
ASM American Samoa
AND Andorra
```

### See Also

mysqli_stmt_get_result
mysqli_stmt_bind_param
mysqli_stmt_execute
mysqli_stmt_fetch
mysqli_prepare
mysqli_stmt_prepare

## 3.9.6 mysqli_stmt::close, mysqli_stmt_close

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- mysqli_stmt::close

  mysqli_stmt_close

  Closes a prepared statement

### Description

Object-oriented style

```
public bool mysqli_stmt::close();
```

Procedural style

```
bool mysqli_stmt_close(
  mysqli_stmt statement);
```

Closes a prepared statement. mysqli_stmt_close also deallocates the statement handle. If the current statement has pending or unread results, this function cancels them so that the next query can be executed.

### Parameters

| | |
|---|---|
| *statement* | Procedural style only: A mysqli_stmt object returned by mysqli_stmt_init. |

### Return Values

Returns `true` on success or `false` on failure.

### See Also

`mysqli_prepare`

## 3.9.7 `mysqli_stmt::__construct`

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- `mysqli_stmt::__construct`

  Constructs a new `mysqli_stmt` object

### Description

```
public mysqli_stmt::__construct(
  mysqli mysql,
  string|null query
      =  =null);
```

This method constructs a new `mysqli_stmt` object.

### Parameters

| | |
|---|---|
| *`link`* | A valid `mysqli` object. |
| *`query`* | The query, as a string. If this parameter is `null`, then the constructor behaves identically to `mysqli_stmt_init`, otherwise it behaves as per `mysqli_prepare`. |

### Changelog

| Version | Description |
|---|---|
| 8.0.0 | *`query`* is now nullable. |

### See Also

`mysqli_prepare`
`mysqli_stmt_init`

## 3.9.8 `mysqli_stmt::data_seek`, `mysqli_stmt_data_seek`

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- `mysqli_stmt::data_seek`

  `mysqli_stmt_data_seek`

  Seeks to an arbitrary row in statement result set

### Description

Object-oriented style

```
public void mysqli_stmt::data_seek(
  int offset);
```

Procedural style

```
void mysqli_stmt_data_seek(
  mysqli_stmt statement,
  int offset);
```

Seeks to an arbitrary result pointer in the statement result set.

`mysqli_stmt_store_result` must be called prior to `mysqli_stmt_data_seek`.

## Parameters

| | |
|---|---|
| *`statement`* | Procedural style only: A `mysqli_stmt` object returned by `mysqli_stmt_init`. |
| *`offset`* | Must be between zero and the total number of rows minus one (0.. `mysqli_stmt_num_rows` - 1). |

## Return Values

No value is returned.

## Examples

**Example 3.75 Object-oriented style**

```
<?php
/* Open a connection */
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

$query = "SELECT Name, CountryCode FROM City ORDER BY Name";
if ($stmt = $mysqli->prepare($query)) {

    /* execute query */
    $stmt->execute();

    /* bind result variables */
    $stmt->bind_result($name, $code);

    /* store result */
    $stmt->store_result();

    /* seek to row no. 400 */
    $stmt->data_seek(399);

    /* fetch values */
    $stmt->fetch();

    printf ("City: %s  Countrycode: %s\n", $name, $code);

    /* close statement */
    $stmt->close();
}
```

```
/* close connection */
$mysqli->close();
?>
```

**Example 3.76 Procedural style**

```
<?php
/* Open a connection */
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

$query = "SELECT Name, CountryCode FROM City ORDER BY Name";
if ($stmt = mysqli_prepare($link, $query)) {

    /* execute query */
    mysqli_stmt_execute($stmt);

    /* bind result variables */
    mysqli_stmt_bind_result($stmt, $name, $code);

    /* store result */
    mysqli_stmt_store_result($stmt);

    /* seek to row no. 400 */
    mysqli_stmt_data_seek($stmt, 399);

    /* fetch values */
    mysqli_stmt_fetch($stmt);

    printf ("City: %s  Countrycode: %s\n", $name, $code);

    /* close statement */
    mysqli_stmt_close($stmt);
}

/* close connection */
mysqli_close($link);
?>
```

The above examples will output:

```
City: Benin City  Countrycode: NGA
```

## See Also

mysqli_prepare

# 3.9.9 mysqli_stmt::$errno, mysqli_stmt_errno

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- mysqli_stmt::$errno

## mysqli_stmt_errno

Returns the error code for the most recent statement call

## Description

Object-oriented style

```
int
  mysqli_stmt->errno ;
```

Procedural style

```
int mysqli_stmt_errno(
  mysqli_stmt statement);
```

Returns the error code for the most recently invoked statement function that can succeed or fail.

## Parameters

| | |
|---|---|
| *statement* | Procedural style only: A mysqli_stmt object returned by mysqli_stmt_init. |

## Return Values

An error code value. Zero means no error occurred.

## Examples

**Example 3.77 Object-oriented style**

```
<?php
/* Open a connection */
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

$mysqli->query("CREATE TABLE myCountry LIKE Country");
$mysqli->query("INSERT INTO myCountry SELECT * FROM Country");


$query = "SELECT Name, Code FROM myCountry ORDER BY Name";
if ($stmt = $mysqli->prepare($query)) {

    /* drop table */
    $mysqli->query("DROP TABLE myCountry");

    /* execute query */
    $stmt->execute();

    printf("Error: %d.\n", $stmt->errno);

    /* close statement */
    $stmt->close();
}

/* close connection */
```

```
$mysqli->close();
?>
```

**Example 3.78 Procedural style**

```
<?php
/* Open a connection */
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

mysqli_query($link, "CREATE TABLE myCountry LIKE Country");
mysqli_query($link, "INSERT INTO myCountry SELECT * FROM Country");


$query = "SELECT Name, Code FROM myCountry ORDER BY Name";
if ($stmt = mysqli_prepare($link, $query)) {

    /* drop table */
    mysqli_query($link, "DROP TABLE myCountry");

    /* execute query */
    mysqli_stmt_execute($stmt);

    printf("Error: %d.\n", mysqli_stmt_errno($stmt));

    /* close statement */
    mysqli_stmt_close($stmt);
}

/* close connection */
mysqli_close($link);
?>
```

The above examples will output:

```
Error: 1146.
```

## See Also

mysqli_stmt_error
mysqli_stmt_sqlstate

# 3.9.10 mysqli_stmt::$error_list, mysqli_stmt_error_list

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- mysqli_stmt::$error_list

  mysqli_stmt_error_list

  Returns a list of errors from the last statement executed

## Description

Object-oriented style

```
  array
    mysqli_stmt->error_list ;
```

Procedural style

```
  array mysqli_stmt_error_list(
    mysqli_stmt statement);
```

Returns an array of errors for the most recently invoked statement function that can succeed or fail.

## Parameters

| | |
|---|---|
| *statement* | Procedural style only: A mysqli_stmt object returned by mysqli_stmt_init. |

## Return Values

A list of errors, each as an associative array containing the errno, error, and sqlstate.

## Examples

**Example 3.79 Object-oriented style**

```
<?php
/* Open a connection */
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

$mysqli->query("CREATE TABLE myCountry LIKE Country");
$mysqli->query("INSERT INTO myCountry SELECT * FROM Country");


$query = "SELECT Name, Code FROM myCountry ORDER BY Name";
if ($stmt = $mysqli->prepare($query)) {

    /* drop table */
    $mysqli->query("DROP TABLE myCountry");

    /* execute query */
    $stmt->execute();

    echo "Error:\n";
    print_r($stmt->error_list);

    /* close statement */
    $stmt->close();
}

/* close connection */
$mysqli->close();
?>
```

**Example 3.80 Procedural style**

```
<?php
/* Open a connection */
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

mysqli_query($link, "CREATE TABLE myCountry LIKE Country");
mysqli_query($link, "INSERT INTO myCountry SELECT * FROM Country");


$query = "SELECT Name, Code FROM myCountry ORDER BY Name";
if ($stmt = mysqli_prepare($link, $query)) {

    /* drop table */
    mysqli_query($link, "DROP TABLE myCountry");

    /* execute query */
    mysqli_stmt_execute($stmt);

    echo "Error:\n";
    print_r(mysql_stmt_error_list($stmt));

    /* close statement */
    mysqli_stmt_close($stmt);
}

/* close connection */
mysqli_close($link);
?>
```

The above examples will output:

```
Array
(
    [0] => Array
        (
            [errno] => 1146
            [sqlstate] => 42S02
            [error] => Table 'world.myCountry' doesn't exist
        )

)
```

## See Also

mysqli_stmt_error
mysqli_stmt_errno
mysqli_stmt_sqlstate

# 3.9.11 mysqli_stmt::$error, mysqli_stmt_error

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- mysqli_stmt::$error

  mysqli_stmt_error

  Returns a string description for last statement error

## Description

Object-oriented style

```
  string
    mysqli_stmt->error ;
```

Procedural style

```
  string mysqli_stmt_error(
    mysqli_stmt statement);
```

Returns a string containing the error message for the most recently invoked statement function that can succeed or fail.

## Parameters

| | |
|---|---|
| *statement* | Procedural style only: A mysqli_stmt object returned by mysqli_stmt_init. |

## Return Values

A string that describes the error. An empty string if no error occurred.

## Examples

**Example 3.81 Object-oriented style**

```
<?php
/* Open a connection */
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

$mysqli->query("CREATE TABLE myCountry LIKE Country");
$mysqli->query("INSERT INTO myCountry SELECT * FROM Country");


$query = "SELECT Name, Code FROM myCountry ORDER BY Name";
if ($stmt = $mysqli->prepare($query)) {

    /* drop table */
    $mysqli->query("DROP TABLE myCountry");

    /* execute query */
    $stmt->execute();

    printf("Error: %s.\n", $stmt->error);

    /* close statement */
    $stmt->close();
}
```

```
/* close connection */
$mysqli->close();
?>
```

**Example 3.82 Procedural style**

```
<?php
/* Open a connection */
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

mysqli_query($link, "CREATE TABLE myCountry LIKE Country");
mysqli_query($link, "INSERT INTO myCountry SELECT * FROM Country");


$query = "SELECT Name, Code FROM myCountry ORDER BY Name";
if ($stmt = mysqli_prepare($link, $query)) {

    /* drop table */
    mysqli_query($link, "DROP TABLE myCountry");

    /* execute query */
    mysqli_stmt_execute($stmt);

    printf("Error: %s.\n", mysqli_stmt_error($stmt));

    /* close statement */
    mysqli_stmt_close($stmt);
}

/* close connection */
mysqli_close($link);
?>
```

The above examples will output:

```
Error: Table 'world.myCountry' doesn't exist.
```

## See Also

mysqli_stmt_errno
mysqli_stmt_sqlstate

# 3.9.12 mysqli_stmt::execute, mysqli_stmt_execute

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- mysqli_stmt::execute

  mysqli_stmt_execute

Executes a prepared statement

## Description

Object-oriented style

```
public bool mysqli_stmt::execute(
  array|null params
      =  =null);
```

Procedural style

```
bool mysqli_stmt_execute(
  mysqli_stmt statement,
  array|null params
      =  =null);
```

Executes previously prepared statement. The statement must be successfully prepared prior to execution, using either the `mysqli_prepare` or `mysqli_stmt_prepare` function, or by passing the second argument to `mysqli_stmt::__construct`.

If the statement is `UPDATE`, `DELETE`, or `INSERT`, the total number of affected rows can be determined by using the `mysqli_stmt_affected_rows` function. If the query yields a result set, it can be fetched using `mysqli_stmt_get_result` function or by fetching it row by row directly from the statement using `mysqli_stmt_fetch` function.

## Parameters

| | |
|---|---|
| *`statement`* | Procedural style only: A `mysqli_stmt` object returned by `mysqli_stmt_init`. |
| *`params`* | An optional list array with as many elements as there are bound parameters in the SQL statement being executed. Each value is treated as a string. |

## Return Values

Returns `true` on success or `false` on failure.

## Changelog

| Version | Description |
|---|---|
| 8.1.0 | The optional *`params`* parameter has been added. |

## Examples

**Example 3.83 Execute a prepared statement with bound variables**

Object-oriented style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

$mysqli->query("CREATE TEMPORARY TABLE myCity LIKE City");
```

```
/* Prepare an insert statement */
$stmt = $mysqli->prepare("INSERT INTO myCity (Name, CountryCode, District) VALUES (?,?,?)");

/* Bind variables to parameters */
$stmt->bind_param("sss", $val1, $val2, $val3);

$val1 = 'Stuttgart';
$val2 = 'DEU';
$val3 = 'Baden-Wuerttemberg';

/* Execute the statement */
$stmt->execute();

$val1 = 'Bordeaux';
$val2 = 'FRA';
$val3 = 'Aquitaine';

/* Execute the statement */
$stmt->execute();

/* Retrieve all rows from myCity */
$query = "SELECT Name, CountryCode, District FROM myCity";
$result = $mysqli->query($query);
while ($row = $result->fetch_row()) {
    printf("%s (%s,%s)\n", $row[0], $row[1], $row[2]);
}
```

Procedural style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

mysqli_query($link, "CREATE TEMPORARY TABLE myCity LIKE City");

/* Prepare an insert statement */
$stmt = mysqli_prepare($link, "INSERT INTO myCity (Name, CountryCode, District) VALUES (?,?,?)");

/* Bind variables to parameters */
mysqli_stmt_bind_param($stmt, "sss", $val1, $val2, $val3);

$val1 = 'Stuttgart';
$val2 = 'DEU';
$val3 = 'Baden-Wuerttemberg';

/* Execute the statement */
mysqli_stmt_execute($stmt);

$val1 = 'Bordeaux';
$val2 = 'FRA';
$val3 = 'Aquitaine';

/* Execute the statement */
mysqli_stmt_execute($stmt);

/* Retrieve all rows from myCity */
$query = "SELECT Name, CountryCode, District FROM myCity";
$result = mysqli_query($link, $query);
while ($row = mysqli_fetch_row($result)) {
    printf("%s (%s,%s)\n", $row[0], $row[1], $row[2]);
}
```

```
```

The above examples will output:

```
Stuttgart (DEU,Baden-Wuerttemberg)
Bordeaux (FRA,Aquitaine)
```

**Example 3.84 Execute a prepared statement with an array of values**

Object-oriented style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli('localhost', 'my_user', 'my_password', 'world');

$mysqli->query('CREATE TEMPORARY TABLE myCity LIKE City');

/* Prepare an insert statement */
$stmt = $mysqli->prepare('INSERT INTO myCity (Name, CountryCode, District) VALUES (?,?,?)');

/* Execute the statement */
$stmt->execute(['Stuttgart', 'DEU', 'Baden-Wuerttemberg']);

/* Retrieve all rows from myCity */
$query = 'SELECT Name, CountryCode, District FROM myCity';
$result = $mysqli->query($query);
while ($row = $result->fetch_row()) {
    printf("%s (%s,%s)\n", $row[0], $row[1], $row[2]);
}
```

Procedural style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$link = mysqli_connect('localhost', 'my_user', 'my_password', 'world');

mysqli_query($link, 'CREATE TEMPORARY TABLE myCity LIKE City');

/* Prepare an insert statement */
$stmt = mysqli_prepare($link, 'INSERT INTO myCity (Name, CountryCode, District) VALUES (?,?,?)');

/* Execute the statement */
mysqli_stmt_execute($stmt, ['Stuttgart', 'DEU', 'Baden-Wuerttemberg']);

/* Retrieve all rows from myCity */
$query = 'SELECT Name, CountryCode, District FROM myCity';
$result = mysqli_query($link, $query);
while ($row = mysqli_fetch_row($result)) {
    printf("%s (%s,%s)\n", $row[0], $row[1], $row[2]);
}
```

The above examples will output:

```
Stuttgart (DEU,Baden-Wuerttemberg)
```

## See Also

mysqli_prepare
mysqli_stmt_bind_param
mysqli_stmt_get_result

# 3.9.13 mysqli_stmt::fetch, mysqli_stmt_fetch

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- mysqli_stmt::fetch

  mysqli_stmt_fetch

  Fetch results from a prepared statement into the bound variables

## Description

Object-oriented style

```
public bool|null mysqli_stmt::fetch();
```

Procedural style

```
bool|null mysqli_stmt_fetch(
  mysqli_stmt statement);
```

Fetch the result from a prepared statement into the variables bound by mysqli_stmt_bind_result.

> **Note**
>
> Note that all columns must be bound by the application before calling mysqli_stmt_fetch.

> **Note**
>
> Data are transferred unbuffered without calling mysqli_stmt_store_result which can decrease performance (but reduces memory cost).

## Parameters

| | |
|---|---|
| *statement* | Procedural style only: A mysqli_stmt object returned by mysqli_stmt_init. |

## Return Values

**Table 3.16 Return Values**

| Value | Description |
|---|---|
| true | Success. Data has been fetched |
| false | Error occurred |
| null | No more rows/data exists or data truncation occurred |

## Examples

### Example 3.85 Object-oriented style

```
<?php
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

$query = "SELECT Name, CountryCode FROM City ORDER by ID DESC LIMIT 150,5";

if ($stmt = $mysqli->prepare($query)) {

    /* execute statement */
    $stmt->execute();

    /* bind result variables */
    $stmt->bind_result($name, $code);

    /* fetch values */
    while ($stmt->fetch()) {
        printf ("%s (%s)\n", $name, $code);
    }

    /* close statement */
    $stmt->close();
}

/* close connection */
$mysqli->close();
?>
```

### Example 3.86 Procedural style

```
<?php
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

$query = "SELECT Name, CountryCode FROM City ORDER by ID DESC LIMIT 150,5";

if ($stmt = mysqli_prepare($link, $query)) {

    /* execute statement */
    mysqli_stmt_execute($stmt);

    /* bind result variables */
    mysqli_stmt_bind_result($stmt, $name, $code);

    /* fetch values */
    while (mysqli_stmt_fetch($stmt)) {
        printf ("%s (%s)\n", $name, $code);
    }
```

```
    /* close statement */
    mysqli_stmt_close($stmt);
}

/* close connection */
mysqli_close($link);
?>
```

The above examples will output:

```
Rockford (USA)
Tallahassee (USA)
Salinas (USA)
Santa Clarita (USA)
Springfield (USA)
```

### See Also

mysqli_prepare
mysqli_stmt_errno
mysqli_stmt_error
mysqli_stmt_bind_result

## 3.9.14 mysqli_stmt::$field_count, mysqli_stmt_field_count

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- mysqli_stmt::$field_count

  mysqli_stmt_field_count

  Returns the number of columns in the given statement

### Description

Object-oriented style

```
  int
    mysqli_stmt->field_count ;
```

Procedural style

```
  int mysqli_stmt_field_count(
    mysqli_stmt statement);
```

Returns the number of columns in the prepared statement.

### Parameters

| | |
|---|---|
| *statement* | Procedural style only: A mysqli_stmt object returned by mysqli_stmt_init. |

### Return Values

Returns an integer representing the number of columns.

## Examples

**Example 3.87 Object-oriented style**

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

$code = 'FR';

$stmt = $mysqli->prepare("SELECT Name FROM Country WHERE Code=?");
$stmt->bind_param('s', $code);
$stmt->execute();
$row = $stmt->get_result()->fetch_row();
for ($i = 0; $i < $stmt->field_count; $i++) {
    printf("Value of column number %d is %s", $i, $row[$i]);
}
```

**Example 3.88 Procedural style**

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = mysqli_connect("localhost", "my_user", "my_password", "world");

$code = 'FR';

$stmt = mysqli_prepare($mysqli, "SELECT Name FROM Country WHERE Code=?");
mysqli_stmt_bind_param($stmt, 's', $code);
mysqli_stmt_execute($stmt);
$result = mysqli_stmt_get_result($stmt);
$row = mysqli_fetch_row($result);
for ($i = 0; $i < mysqli_stmt_field_count($stmt); $i++) {
    printf("Value of column number %d is %s", $i, $row[$i]);
}
```

The above examples will output something similar to:

```
Value of column number 0 is France
```

## See Also

mysqli_stmt_num_rows

# 3.9.15 mysqli_stmt::free_result, mysqli_stmt_free_result

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- mysqli_stmt::free_result

  mysqli_stmt_free_result

  Frees stored result memory for the given statement handle

### Description

Object-oriented style

```
public void mysqli_stmt::free_result();
```

Procedural style

```
void mysqli_stmt_free_result(
  mysqli_stmt statement);
```

Frees the result memory associated with the statement, which was allocated by mysqli_stmt_store_result.

### Parameters

| | |
|---|---|
| *statement* | Procedural style only: A mysqli_stmt object returned by mysqli_stmt_init. |

### Return Values

No value is returned.

### See Also

mysqli_stmt_store_result

## 3.9.16 mysqli_stmt::get_result, mysqli_stmt_get_result

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- mysqli_stmt::get_result

  mysqli_stmt_get_result

  Gets a result set from a prepared statement as a mysqli_result object

### Description

Object-oriented style

```
public mysqli_result|false mysqli_stmt::get_result();
```

Procedural style

```
mysqli_result|false mysqli_stmt_get_result(
  mysqli_stmt statement);
```

Retrieves a result set from a prepared statement as a mysqli_result object. The data will be fetched from the MySQL server to PHP. This method should be called only for queries which produce a result set.

> **Note**
>
> Available only with mysqlnd.

> **Note**
>
> This function cannot be used together with mysqli_stmt_store_result. Both of these functions retrieve the full result set from the MySQL server.

## Parameters

| | |
|---|---|
| *statement* | Procedural style only: A mysqli_stmt object returned by mysqli_stmt_init. |

## Return Values

Returns false on failure. For successful queries which produce a result set, such as SELECT, SHOW, DESCRIBE or EXPLAIN, mysqli_stmt_get_result will return a mysqli_result object. For other successful queries, mysqli_stmt_get_result will return false. The mysqli_stmt_errno function can be used to distinguish between the two reasons for false; due to a bug, prior to PHP 7.4.13, mysqli_errno had to be used for this purpose.

## Examples

**Example 3.89 Object-oriented style**

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

$query = "SELECT Name, Population, Continent FROM Country WHERE Continent=? ORDER BY Name LIMIT 1";

$stmt = $mysqli->prepare($query);
$stmt->bind_param("s", $continent);

$continentList = array('Europe', 'Africa', 'Asia', 'North America');

foreach ($continentList as $continent) {
    $stmt->execute();
    $result = $stmt->get_result();
    while ($row = $result->fetch_array(MYSQLI_NUM)) {
        foreach ($row as $r) {
            print "$r ";
        }
        print "\n";
    }
}
```

**Example 3.90 Procedural style**

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

$query = "SELECT Name, Population, Continent FROM Country WHERE Continent=? ORDER BY Name LIMIT 1";

$stmt = mysqli_prepare($link, $query);
mysqli_stmt_bind_param($stmt, "s", $continent);

$continentList= array('Europe', 'Africa', 'Asia', 'North America');

foreach ($continentList as $continent) {
    mysqli_stmt_execute($stmt);
    $result = mysqli_stmt_get_result($stmt);
    while ($row = mysqli_fetch_array($result, MYSQLI_NUM)) {
        foreach ($row as $r) {
```

```
            print "$r ";
        }
        print "\n";
    }
}
```

The above examples will output something similar to:

```
Albania 3401200 Europe
Algeria 31471000 Africa
Afghanistan 22720000 Asia
Anguilla 8000 North America
```

### See Also

mysqli_prepare
mysqli_stmt_result_metadata
mysqli_stmt_fetch
mysqli_fetch_array
mysqli_stmt_store_result

## 3.9.17 mysqli_stmt::get_warnings, mysqli_stmt_get_warnings

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- mysqli_stmt::get_warnings

  mysqli_stmt_get_warnings

  Get result of SHOW WARNINGS

### Description

Object-oriented style

```
public mysqli_warning|false mysqli_stmt::get_warnings();
```

Procedural style

```
mysqli_warning|false mysqli_stmt_get_warnings(
  mysqli_stmt statement);
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

## 3.9.18 mysqli_stmt::$insert_id, mysqli_stmt_insert_id

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- mysqli_stmt::$insert_id

  mysqli_stmt_insert_id

  Get the ID generated from the previous INSERT operation

### Description

Object-oriented style

```
int|string
  mysqli_stmt->insert_id ;
```

Procedural style

```
int|string mysqli_stmt_insert_id(
  mysqli_stmt statement);
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

## 3.9.19 mysqli_stmt::more_results, mysqli_stmt_more_results

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- `mysqli_stmt::more_results`

  `mysqli_stmt_more_results`

  Check if there are more query results from a multiple query

### Description

Object-oriented style

```
public bool mysqli_stmt::more_results();
```

Procedural style:

```
bool mysqli_stmt_more_results(
  mysqli_stmt statement);
```

Checks if there are more query results from a multiple query.

> **Note**
>
> Available only with mysqlnd.

### Parameters

| | |
|---|---|
| *`statement`* | Procedural style only: A `mysqli_stmt` object returned by `mysqli_stmt_init`. |

### Return Values

Returns `true` if more results exist, otherwise `false`.

### See Also

`mysqli_stmt::next_result`
`mysqli::multi_query`

## 3.9.20 mysqli_stmt::next_result, mysqli_stmt_next_result

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- mysqli_stmt::next_result

  mysqli_stmt_next_result

  Reads the next result from a multiple query

### Description

Object-oriented style

```
public bool mysqli_stmt::next_result();
```

Procedural style:

```
bool mysqli_stmt_next_result(
  mysqli_stmt statement);
```

Reads the next result from a multiple query.

> **Note**
>
> Prior to PHP 8.1.0, available only with mysqlnd.

### Parameters

| | |
|---|---|
| *statement* | Procedural style only: A mysqli_stmt object returned by mysqli_stmt_init. |

### Return Values

Returns true on success or false on failure.

### Changelog

| Version | Description |
|---|---|
| 8.1.0 | Now also available when linking against libmysqlclient. |

### See Also

mysqli_stmt::more_results
mysqli::multi_query

## 3.9.21 mysqli_stmt::$num_rows, mysqli_stmt::num_rows, mysqli_stmt_num_rows

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- mysqli_stmt::$num_rows

  mysqli_stmt::num_rows

  mysqli_stmt_num_rows

  Returns the number of rows fetched from the server

## Description

Object-oriented style

```
int|string
  mysqli_stmt->num_rows ;
```

```
public int|string mysqli_stmt::num_rows();
```

Procedural style

```
int|string mysqli_stmt_num_rows(
  mysqli_stmt statement);
```

Returns the number of rows buffered in the statement. This function will only work after `mysqli_stmt_store_result` is called to buffer the entire result set in the statement handle.

This function returns `0` unless all rows have been fetched from the server.

## Parameters

| | |
|---|---|
| *`statement`* | Procedural style only: A `mysqli_stmt` object returned by `mysqli_stmt_init`. |

## Return Values

An int representing the number of buffered rows. Returns `0` in unbuffered mode unless all rows have been fetched from the server.

> **Note**
>
> If the number of rows is greater than `PHP_INT_MAX`, the number will be returned as a string.

## Examples

**Example 3.91 Object-oriented style**

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

$query = "SELECT Name, CountryCode FROM City ORDER BY Name LIMIT 20";
$stmt = $mysqli->prepare($query);
$stmt->execute();

/* store the result in an internal buffer */
$stmt->store_result();

printf("Number of rows: %d.\n", $stmt->num_rows);
```

**Example 3.92 Procedural style**

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$link = mysqli_connect("localhost", "my_user", "my_password", "world");
```

```
$query = "SELECT Name, CountryCode FROM City ORDER BY Name LIMIT 20";
$stmt = mysqli_prepare($link, $query);
mysqli_stmt_execute($stmt);

/* store the result in an internal buffer */
mysqli_stmt_store_result($stmt);

printf("Number of rows: %d.\n", mysqli_stmt_num_rows($stmt));
```

The above examples will output:

```
Number of rows: 20.
```

### See Also

mysqli_stmt_store_result
mysqli_stmt_affected_rows
mysqli_prepare

## 3.9.22 mysqli_stmt::$param_count, mysqli_stmt_param_count

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- mysqli_stmt::$param_count

  mysqli_stmt_param_count

  Returns the number of parameters for the given statement

### Description

Object-oriented style

```
int
  mysqli_stmt->param_count ;
```

Procedural style

```
int mysqli_stmt_param_count(
  mysqli_stmt statement);
```

Returns the number of parameter markers present in the prepared statement.

### Parameters

| | |
|---|---|
| *statement* | Procedural style only: A mysqli_stmt object returned by mysqli_stmt_init. |

### Return Values

Returns an integer representing the number of parameters.

### Examples

**Example 3.93 Object-oriented style**

```
```

```
<?php
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

if ($stmt = $mysqli->prepare("SELECT Name FROM Country WHERE Name=? OR Code=?")) {

    $marker = $stmt->param_count;
    printf("Statement has %d markers.\n", $marker);

    /* close statement */
    $stmt->close();
}

/* close connection */
$mysqli->close();
?>
```

**Example 3.94 Procedural style**

```
<?php
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

if ($stmt = mysqli_prepare($link, "SELECT Name FROM Country WHERE Name=? OR Code=?")) {

    $marker = mysqli_stmt_param_count($stmt);
    printf("Statement has %d markers.\n", $marker);

    /* close statement */
    mysqli_stmt_close($stmt);
}

/* close connection */
mysqli_close($link);
?>
```

The above examples will output:

```
Statement has 2 markers.
```

## See Also

mysqli_prepare

# 3.9.23 mysqli_stmt::prepare, mysqli_stmt_prepare

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- mysqli_stmt::prepare

  mysqli_stmt_prepare

  Prepares an SQL statement for execution

## Description

Object-oriented style

```
public bool mysqli_stmt::prepare(
  string query);
```

Procedural style

```
bool mysqli_stmt_prepare(
  mysqli_stmt statement,
  string query);
```

Prepares a statement for execution. The query must consist of a single SQL statement.

The statement template can contain zero or more question mark (?) parameter markers—also called placeholders. The parameter markers must be bound to application variables using mysqli_stmt_bind_param before executing the statement.

> **Note**
>
> In the case where you pass a statement to mysqli_stmt_prepare that is longer than max_allowed_packet of the server, the returned error codes are different depending on whether you are using MySQL Native Driver (mysqlnd) or MySQL Client Library (libmysqlclient). The behavior is as follows:
>
> - mysqlnd on Linux returns an error code of 1153. The error message means “got a packet bigger than max_allowed_packet bytes”.
> - mysqlnd on Windows returns an error code 2006. This error message means “server has gone away”.
> - libmysqlclient on all platforms returns an error code 2006. This error message means “server has gone away”.

## Parameters

*statement*
: Procedural style only: A mysqli_stmt object returned by mysqli_stmt_init.

*query*
: The query, as a string. It must consist of a single SQL statement.

  The SQL statement may contain zero or more parameter markers represented by question mark (?) characters at the appropriate positions.

  > **Note**
  >
  > The markers are legal only in certain places in SQL statements. For example, they are permitted in the VALUES() list of an INSERT statement (to specify column values for a row),

or in a comparison with a column in a WHERE clause to specify a comparison value.

However, they are not permitted for identifiers (such as table or column names), or to specify both operands of a binary operator such as the = equal sign. The latter restriction is necessary because it would be impossible to determine the parameter type. In general, parameters are legal only in Data Manipulation Language (DML) statements, and not in Data Definition Language (DDL) statements.

## Return Values

Returns true on success or false on failure.

## Examples

**Example 3.95 mysqli_stmt::prepare example**

Object-oriented style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

$city = "Amersfoort";

/* create a prepared statement */
$stmt = $mysqli->stmt_init();
$stmt->prepare("SELECT District FROM City WHERE Name=?");

/* bind parameters for markers */
$stmt->bind_param("s", $city);

/* execute query */
$stmt->execute();

/* bind result variables */
$stmt->bind_result($district);

/* fetch value */
$stmt->fetch();

printf("%s is in district %s\n", $city, $district);
```

Procedural style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

$city = "Amersfoort";

/* create a prepared statement */
$stmt = mysqli_stmt_init($link);
```

```
mysqli_stmt_prepare($stmt, "SELECT District FROM City WHERE Name=?");

/* bind parameters for markers */
mysqli_stmt_bind_param($stmt, "s", $city);

/* execute query */
mysqli_stmt_execute($stmt);

/* bind result variables */
mysqli_stmt_bind_result($stmt, $district);

/* fetch value */
mysqli_stmt_fetch($stmt);

printf("%s is in district %s\n", $city, $district);
```

The above examples will output:

```
Amersfoort is in district Utrecht
```

### See Also

mysqli_stmt_init
mysqli_stmt_execute
mysqli_stmt_fetch
mysqli_stmt_bind_param
mysqli_stmt_bind_result
mysqli_stmt_get_result
mysqli_stmt_close

## 3.9.24 mysqli_stmt::reset, mysqli_stmt_reset

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- mysqli_stmt::reset

  mysqli_stmt_reset

  Resets a prepared statement

### Description

Object-oriented style

```
public bool mysqli_stmt::reset();
```

Procedural style

```
bool mysqli_stmt_reset(
  mysqli_stmt statement);
```

Resets a prepared statement on client and server to state after prepare.

It resets the statement on the server, data sent using mysqli_stmt_send_long_data, unbuffered result sets and current errors. It does not clear bindings or stored result sets. Stored result sets will be cleared when executing the prepared statement (or closing it).

To prepare a statement with another query use function mysqli_stmt_prepare.

### Parameters

| | |
|---|---|
| *statement* | Procedural style only: A mysqli_stmt object returned by mysqli_stmt_init. |

### Return Values

Returns true on success or false on failure.

### See Also

mysqli_prepare

## 3.9.25 mysqli_stmt::result_metadata, mysqli_stmt_result_metadata

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- mysqli_stmt::result_metadata

  mysqli_stmt_result_metadata

  Returns result set metadata from a prepared statement

### Description

Object-oriented style

```
public mysqli_result|false mysqli_stmt::result_metadata();
```

Procedural style

```
mysqli_result|false mysqli_stmt_result_metadata(
  mysqli_stmt statement);
```

If a statement passed to mysqli_prepare is one that produces a result set, mysqli_stmt_result_metadata returns the result object that can be used to process the meta information such as total number of fields and individual field information.

> **Note**
>
> This result set pointer can be passed as an argument to any of the field-based functions that process result set metadata, such as:
>
> - mysqli_num_fields
> - mysqli_fetch_field
> - mysqli_fetch_field_direct
> - mysqli_fetch_fields
> - mysqli_field_count
> - mysqli_field_seek
> - mysqli_field_tell

- mysqli_free_result

The result set structure should be freed when you are done with it, which you can do by passing it to mysqli_free_result

**Note**

The result set returned by mysqli_stmt_result_metadata contains only metadata. It does not contain any row results. The rows are obtained by using the statement handle with mysqli_stmt_fetch.

## Parameters

| | |
|---|---|
| *statement* | Procedural style only: A mysqli_stmt object returned by mysqli_stmt_init. |

## Return Values

Returns a result object or false if an error occurred.

## Examples

**Example 3.96 Object-oriented style**

```
<?php
$mysqli = new mysqli("localhost", "my_user", "my_password", "test");

$mysqli->query("DROP TABLE IF EXISTS friends");
$mysqli->query("CREATE TABLE friends (id int, name varchar(20))");

$mysqli->query("INSERT INTO friends VALUES (1,'Hartmut'), (2, 'Ulf')");

$stmt = $mysqli->prepare("SELECT id, name FROM friends");
$stmt->execute();

/* get resultset for metadata */
$result = $stmt->result_metadata();

/* retrieve field information from metadata result set */
$field = $result->fetch_field();

printf("Fieldname: %s\n", $field->name);

/* close resultset */
$result->close();

/* close connection */
$mysqli->close();
?>
```

**Example 3.97 Procedural style**

```
<?php
$link = mysqli_connect("localhost", "my_user", "my_password", "test");

mysqli_query($link, "DROP TABLE IF EXISTS friends");
mysqli_query($link, "CREATE TABLE friends (id int, name varchar(20))");
```

```
mysqli_query($link, "INSERT INTO friends VALUES (1,'Hartmut'), (2, 'Ulf')");

$stmt = mysqli_prepare($link, "SELECT id, name FROM friends");
mysqli_stmt_execute($stmt);

/* get resultset for metadata */
$result = mysqli_stmt_result_metadata($stmt);

/* retrieve field information from metadata result set */
$field = mysqli_fetch_field($result);

printf("Fieldname: %s\n", $field->name);

/* close resultset */
mysqli_free_result($result);

/* close connection */
mysqli_close($link);
?>
```

### See Also

mysqli_prepare
mysqli_free_result

## 3.9.26 mysqli_stmt::send_long_data, mysqli_stmt_send_long_data

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- mysqli_stmt::send_long_data

  mysqli_stmt_send_long_data

  Send data in blocks

### Description

Object-oriented style

```
public bool mysqli_stmt::send_long_data(
  int param_num,
  string data);
```

Procedural style

```
bool mysqli_stmt_send_long_data(
  mysqli_stmt statement,
  int param_num,
  string data);
```

Allows to send parameter data to the server in pieces (or chunks), e.g. if the size of a blob exceeds the size of max_allowed_packet. This function can be called multiple times to send the parts of a character or binary data value for a column, which must be one of the TEXT or BLOB datatypes.

### Parameters

| | |
|---|---|
| *statement* | Procedural style only: A mysqli_stmt object returned by mysqli_stmt_init. |

| | |
|---|---|
| *param_num* | Indicates which parameter to associate the data with. Parameters are numbered beginning with 0. |
| *data* | A string containing data to be sent. |

### Return Values

Returns `true` on success or `false` on failure.

### Examples

**Example 3.98 Object-oriented style**

```
<?php
$stmt = $mysqli->prepare("INSERT INTO messages (message) VALUES (?)");
$null = NULL;
$stmt->bind_param("b", $null);
$fp = fopen("messages.txt", "r");
while (!feof($fp)) {
    $stmt->send_long_data(0, fread($fp, 8192));
}
fclose($fp);
$stmt->execute();
?>
```

### See Also

`mysqli_prepare`
`mysqli_stmt_bind_param`

## 3.9.27 mysqli_stmt::$sqlstate, mysqli_stmt_sqlstate

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- `mysqli_stmt::$sqlstate`

  `mysqli_stmt_sqlstate`

  Returns SQLSTATE error from previous statement operation

### Description

Object-oriented style

```
  string
    mysqli_stmt->sqlstate ;
```

Procedural style

```
  string mysqli_stmt_sqlstate(
    mysqli_stmt statement);
```

Returns a string containing the SQLSTATE error code for the most recently invoked prepared statement function that can succeed or fail. The error code consists of five characters. `'00000'` means no error. The values are specified by ANSI SQL and ODBC. For a list of possible values, see http://dev.mysql.com/doc/mysql/en/error-handling.html.

## Parameters

| | |
|---|---|
| *statement* | Procedural style only: A mysqli_stmt object returned by mysqli_stmt_init. |

## Return Values

Returns a string containing the SQLSTATE error code for the last error. The error code consists of five characters. '00000' means no error.

## Examples

**Example 3.99 Object-oriented style**

```
<?php
/* Open a connection */
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

$mysqli->query("CREATE TABLE myCountry LIKE Country");
$mysqli->query("INSERT INTO myCountry SELECT * FROM Country");


$query = "SELECT Name, Code FROM myCountry ORDER BY Name";
if ($stmt = $mysqli->prepare($query)) {

    /* drop table */
    $mysqli->query("DROP TABLE myCountry");

    /* execute query */
    $stmt->execute();

    printf("Error: %s.\n", $stmt->sqlstate);

    /* close statement */
    $stmt->close();
}

/* close connection */
$mysqli->close();
?>
```

**Example 3.100 Procedural style**

```
<?php
/* Open a connection */
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

mysqli_query($link, "CREATE TABLE myCountry LIKE Country");
mysqli_query($link, "INSERT INTO myCountry SELECT * FROM Country");
```

```
$query = "SELECT Name, Code FROM myCountry ORDER BY Name";
if ($stmt = mysqli_prepare($link, $query)) {

    /* drop table */
    mysqli_query($link, "DROP TABLE myCountry");

    /* execute query */
    mysqli_stmt_execute($stmt);

    printf("Error: %s.\n", mysqli_stmt_sqlstate($stmt));

    /* close statement */
    mysqli_stmt_close($stmt);
}

/* close connection */
mysqli_close($link);
?>
```

The above examples will output:

```
Error: 42S02.
```

### Notes

> **Note**
>
> Note that not all MySQL errors are yet mapped to SQLSTATE's. The value HY000 (general error) is used for unmapped errors.

### See Also

mysqli_stmt_errno
mysqli_stmt_error

## 3.9.28 mysqli_stmt::store_result, mysqli_stmt_store_result

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- mysqli_stmt::store_result

  mysqli_stmt_store_result

  Stores a result set in an internal buffer

### Description

Object-oriented style

```
public bool mysqli_stmt::store_result();
```

Procedural style

```
bool mysqli_stmt_store_result(
  mysqli_stmt statement);
```

This function should be called for queries that successfully produce a result set (e.g. SELECT, SHOW, DESCRIBE, EXPLAIN) only if the complete result set needs to be buffered in PHP. Each subsequent mysqli_stmt_fetch call will return buffered data.

> **Note**
>
> It is unnecessary to call mysqli_stmt_store_result for other queries, but if you do, it will not harm or cause any notable performance loss in all cases. You can detect whether the query produced a result set by checking if mysqli_stmt_result_metadata returns false.

## Parameters

| | |
|---|---|
| *statement* | Procedural style only: A mysqli_stmt object returned by mysqli_stmt_init. |

## Return Values

Returns true on success or false on failure.

## Examples

**Example 3.101 Object-oriented style**

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

$query = "SELECT Name, CountryCode FROM City ORDER BY Name LIMIT 20";
$stmt = $mysqli->prepare($query);
$stmt->execute();

/* store the result in an internal buffer */
$stmt->store_result();

printf("Number of rows: %d.\n", $stmt->num_rows);
```

**Example 3.102 Procedural style**

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

$query = "SELECT Name, CountryCode FROM City ORDER BY Name LIMIT 20";
$stmt = mysqli_prepare($link, $query);
mysqli_stmt_execute($stmt);

/* store the result in an internal buffer */
mysqli_stmt_store_result($stmt);

printf("Number of rows: %d.\n", mysqli_stmt_num_rows($stmt));
```

The above examples will output:

```
Number of rows: 20.
```

### See Also

mysqli_prepare
mysqli_stmt_result_metadata
mysqli_stmt_fetch

## 3.10 The mysqli_result class

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Represents the result set obtained from a query against the database.

```
mysqli_result {
mysqli_result

        IteratorAggregate

      Properties

  public readonly int
    current_field ;

  public readonly int
    field_count ;

  public readonly array|null
    lengths ;

  public readonly int|string
    num_rows ;

  public int
    type ;

Methods

  public mysqli_result::__construct(
    mysqli mysql,
    int result_mode
        =  =MYSQLI_STORE_RESULT);

  public bool mysqli_result::data_seek(
    int offset);

  public array mysqli_result::fetch_all(
    int mode
        =  =MYSQLI_NUM);

  public array|null|false mysqli_result::fetch_array(
    int mode
        =  =MYSQLI_BOTH);

  public array|null|false mysqli_result::fetch_assoc();

  public null|int|float|string|false mysqli_result::fetch_column(
    int column
        =  =0);

  public object|false mysqli_result::fetch_field_direct(
```

```
    int index);

  public object|false mysqli_result::fetch_field();

  public array mysqli_result::fetch_fields();

  public object|null|false mysqli_result::fetch_object(
    string class
        =  ="stdClass",
    array constructor_args
        =  =[]);

  public array|null|false mysqli_result::fetch_row();

  public bool mysqli_result::field_seek(
    int index);

  public void mysqli_result::free();

  public void mysqli_result::close();

  public void mysqli_result::free_result();

  public Iterator mysqli_result::getIterator();

}
```

`type` Stores whether the result is buffered or unbuffered as an int (`MYSQLI_STORE_RESULT` or `MYSQLI_USE_RESULT`, respectively).

| Version | Description |
|---|---|
| 8.0.0 | `mysqli_result` implements `IteratorAggregate` now. Previously, `Traversable` was implemented instead. |

## 3.10.1 `mysqli_result::__construct`

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- `mysqli_result::__construct`

  Constructs a `mysqli_result` object

### Description

```
  public mysqli_result::__construct(
    mysqli mysql,
    int result_mode
        =  =MYSQLI_STORE_RESULT);
```

This method constructs a new `mysqli_result` object.

It can be used to create the `mysqli_result` object after calling the `mysqli_real_query` or `mysqli_multi_query` function. Constructing the object manually is equivalent to calling the `mysqli_store_result` or `mysqli_use_result` function.

### Parameters

*`mysql`* Procedural style only: A `mysqli` object returned by `mysqli_connect` or `mysqli_init`

*result_mode*

The result mode can be one of 2 constants indicating how the result will be returned from the MySQL server.

MYSQLI_STORE_RESULT (default) - creates a mysqli_result object with buffered result set.

MYSQLI_USE_RESULT - creates a mysqli_result object with unbuffered result set. As long as there are pending records waiting to be fetched, the connection line will be busy and all subsequent calls will return error Commands out of sync. To avoid the error all records must be fetched from the server or the result set must be discarded by calling mysqli_free_result. The connection must remain open for the rows to be fetched.

## Examples

**Example 3.103 Creation of a mysqli_result object**

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

/* Select queries return a result set */
$mysqli->real_query("SELECT Name FROM City LIMIT 10");

$result = new mysqli_result($mysqli);
printf("Select returned %d rows.\n", $result->num_rows);
```

The above examples will output something similar to:

```
Select returned 10 rows.
```

## See Also

mysqli_multi_query
mysqli_real_query
mysqli_store_result
mysqli_use_result

# 3.10.2 mysqli_result::$current_field, mysqli_field_tell

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- mysqli_result::$current_field

  mysqli_field_tell

  Get current field offset of a result pointer

## Description

Object-oriented style

```
int
  mysqli_result->current_field ;
```

Procedural style

```
int mysqli_field_tell(
  mysqli_result result);
```

Returns the position of the field cursor used for the last mysqli_fetch_field call. This value can be used as an argument to mysqli_field_seek.

## Parameters

| | |
|---|---|
| *result* | Procedural style only: A mysqli_result object returned by mysqli_query, mysqli_store_result, mysqli_use_result or mysqli_stmt_get_result. |

## Return Values

Returns current offset of field cursor.

## Examples

**Example 3.104 Object-oriented style**

```
<?php
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

$query = "SELECT Name, SurfaceArea from Country ORDER BY Code LIMIT 5";

if ($result = $mysqli->query($query)) {

    /* Get field information for all columns */
    while ($finfo = $result->fetch_field()) {

        /* get fieldpointer offset */
        $currentfield = $result->current_field;

        printf("Column %d:\n", $currentfield);
        printf("Name:     %s\n", $finfo->name);
        printf("Table:    %s\n", $finfo->table);
        printf("max. Len: %d\n", $finfo->max_length);
        printf("Flags:    %d\n", $finfo->flags);
        printf("Type:     %d\n\n", $finfo->type);
    }
    $result->close();
}

/* close connection */
$mysqli->close();
?>
```

**Example 3.105 Procedural style**

```
<?php
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

$query = "SELECT Name, SurfaceArea from Country ORDER BY Code LIMIT 5";

if ($result = mysqli_query($link, $query)) {

    /* Get field information for all fields */
    while ($finfo = mysqli_fetch_field($result)) {

        /* get fieldpointer offset */
        $currentfield = mysqli_field_tell($result);

        printf("Column %d:\n", $currentfield);
        printf("Name:     %s\n", $finfo->name);
        printf("Table:    %s\n", $finfo->table);
        printf("max. Len: %d\n", $finfo->max_length);
        printf("Flags:    %d\n", $finfo->flags);
        printf("Type:     %d\n\n", $finfo->type);
    }
    mysqli_free_result($result);
}

/* close connection */
mysqli_close($link);
?>
```

The above examples will output:

```
Column 1:
Name:     Name
Table:    Country
max. Len: 11
Flags:    1
Type:     254

Column 2:
Name:     SurfaceArea
Table:    Country
max. Len: 10
Flags:    32769
Type:     4
```

## See Also

mysqli_fetch_field
mysqli_field_seek

# 3.10.3 mysqli_result::data_seek, mysqli_data_seek

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- mysqli_result::data_seek

mysqli_data_seek

Adjusts the result pointer to an arbitrary row in the result

## Description

Object-oriented style

```
public bool mysqli_result::data_seek(
  int offset);
```

Procedural style

```
bool mysqli_data_seek(
  mysqli_result result,
  int offset);
```

The mysqli_data_seek function seeks to an arbitrary result pointer specified by the *offset* in the result set.

## Parameters

| | |
|---|---|
| *result* | Procedural style only: A mysqli_result object returned by mysqli_query, mysqli_store_result, mysqli_use_result or mysqli_stmt_get_result. |
| *offset* | The field offset. Must be between zero and the total number of rows minus one (0..mysqli_num_rows - 1). |

## Return Values

Returns true on success or false on failure.

## Examples

**Example 3.106 mysqli::data_seek example**

Object-oriented style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

$query = "SELECT Name, CountryCode FROM City ORDER BY Name";
$result = $mysqli->query($query);

/* Seek to row no. 401 */
$result->data_seek(400);

/* Fetch single row */
$row = $result->fetch_row();

printf("City: %s  Countrycode: %s\n", $row[0], $row[1]);
```

Procedural style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

$query = "SELECT Name, CountryCode FROM City ORDER BY Name";

$result = mysqli_query($link, $query);

/* Seek to row no. 401 */
mysqli_data_seek($result, 400);

/* Fetch single row */
$row = mysqli_fetch_row($result);

printf ("City: %s  Countrycode: %s\n", $row[0], $row[1]);


```

The above examples will output:

```
City: Benin City  Countrycode: NGA


```

**Example 3.107 Adjusting the result pointer when iterating**

This function can be useful when iterating over the result set to impose a custom order or rewind the result set when iterating multiple times.

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

$query = "SELECT Name, CountryCode FROM City ORDER BY Name LIMIT 15,4";
$result = $mysqli->query($query);

/* Iterate the result set in reverse order */
for ($row_no = $result->num_rows - 1; $row_no >= 0; $row_no--) {
    $result->data_seek($row_no);

    /* Fetch single row */
    $row = $result->fetch_row();

    printf("City: %s  Countrycode: %s\n", $row[0], $row[1]);
}

/* Reset pointer to the beginning of the result set */
$result->data_seek(0);

print "\n";

/* Iterate the same result set again */
while ($row = $result->fetch_row()) {
    printf("City: %s  Countrycode: %s\n", $row[0], $row[1]);
}


```

The above examples will output:

```

City: Acmbaro  Countrycode: MEX
```

```
City: Abuja  Countrycode: NGA
City: Abu Dhabi  Countrycode: ARE
City: Abottabad  Countrycode: PAK

City: Abottabad  Countrycode: PAK
City: Abu Dhabi  Countrycode: ARE
City: Abuja  Countrycode: NGA
City: Acmbaro  Countrycode: MEX
```

## Notes

> **Note**
>
> This function can only be used with buffered results attained from the use of the mysqli_store_result, mysqli_query or mysqli_stmt_get_result functions.

## See Also

mysqli_store_result
mysqli_fetch_row
mysqli_fetch_array
mysqli_fetch_assoc
mysqli_fetch_object
mysqli_query
mysqli_num_rows

# 3.10.4 mysqli_result::fetch_all, mysqli_fetch_all

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- mysqli_result::fetch_all

  mysqli_fetch_all

  Fetch all result rows as an associative array, a numeric array, or both

## Description

Object-oriented style

```
public array mysqli_result::fetch_all(
  int mode
      =  =MYSQLI_NUM);
```

Procedural style

```
array mysqli_fetch_all(
  mysqli_result result,
  int mode
      =  =MYSQLI_NUM);
```

Returns a two-dimensional array of all result rows as an associative array, a numeric array, or both.

> **Note**
>
> Prior to PHP 8.1.0, available only with mysqlnd.

## Parameters

| | |
|---|---|
| *result* | Procedural style only: A mysqli_result object returned by mysqli_query, mysqli_store_result, mysqli_use_result or mysqli_stmt_get_result. |
| *mode* | This optional parameter is a constant indicating what type of array should be produced from the current row data. The possible values for this parameter are the constants MYSQLI_ASSOC, MYSQLI_NUM, or MYSQLI_BOTH. |

## Return Values

Returns an array of associative or numeric arrays holding result rows.

## Changelog

| Version | Description |
|---|---|
| 8.1.0 | Now also available when linking against libmysqlclient. |

## Examples

**Example 3.108 mysqli_result::fetch_all example**

Object-oriented style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

$result = $mysqli->query("SELECT Name, CountryCode FROM City ORDER BY ID LIMIT 3");

$rows = $result->fetch_all(MYSQLI_ASSOC);
foreach ($rows as $row) {
    printf("%s (%s)\n", $row["Name"], $row["CountryCode"]);
}
```

Procedural style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = mysqli_connect("localhost", "my_user", "my_password", "world");

$result = mysqli_query($mysqli, "SELECT Name, CountryCode FROM City ORDER BY ID LIMIT 3");

$rows = mysqli_fetch_all($result, MYSQLI_ASSOC);
foreach ($rows as $row) {
    printf("%s (%s)\n", $row["Name"], $row["CountryCode"]);
}
```

The above examples will output:

```
Kabul (AFG)
Qandahar (AFG)
Herat (AFG)
```

### See Also

mysqli_fetch_array
mysqli_fetch_column
mysqli_query

## 3.10.5 mysqli_result::fetch_array, mysqli_fetch_array

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- mysqli_result::fetch_array

  mysqli_fetch_array

  Fetch the next row of a result set as an associative, a numeric array, or both

### Description

Object-oriented style

```
public array|null|false mysqli_result::fetch_array(
  int mode
      =  =MYSQLI_BOTH);
```

Procedural style

```
array|null|false mysqli_fetch_array(
  mysqli_result result,
  int mode
      =  =MYSQLI_BOTH);
```

Fetches one row of data from the result set and returns it as an array. Each subsequent call to this function will return the next row within the result set, or null if there are no more rows.

In addition to storing the data in the numeric indices of the result array, this function can also store the data in associative indices by using the field names of the result set as keys.

If two or more columns of the result have the same name, the last column will take precedence and overwrite any previous data. To access multiple columns with the same name, the numerically indexed version of the row must be used.

> **Note**
>
> Field names returned by this function are *case-sensitive*.

> **Note**
>
> This function sets NULL fields to the PHP null value.

### Parameters

*result*
: Procedural style only: A mysqli_result object returned by mysqli_query, mysqli_store_result, mysqli_use_result or mysqli_stmt_get_result.

*mode*

This optional parameter is a constant indicating what type of array should be produced from the current row data. The possible values for this parameter are the constants MYSQLI_ASSOC, MYSQLI_NUM, or MYSQLI_BOTH.

By using the MYSQLI_ASSOC constant this function will behave identically to the mysqli_fetch_assoc, while MYSQLI_NUM will behave identically to the mysqli_fetch_row function. The final option MYSQLI_BOTH will create a single array with the attributes of both.

## Return Values

Returns an array representing the fetched row, null if there are no more rows in the result set, or false on failure.

## Examples

**Example 3.109 mysqli_result::fetch_array example**

Object-oriented style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

$query = "SELECT Name, CountryCode FROM City ORDER BY ID LIMIT 3";
$result = $mysqli->query($query);

/* numeric array */
$row = $result->fetch_array(MYSQLI_NUM);
printf("%s (%s)\n", $row[0], $row[1]);

/* associative array */
$row = $result->fetch_array(MYSQLI_ASSOC);
printf("%s (%s)\n", $row["Name"], $row["CountryCode"]);

/* associative and numeric array */
$row = $result->fetch_array(MYSQLI_BOTH);
printf("%s (%s)\n", $row[0], $row["CountryCode"]);
```

Procedural style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = mysqli_connect("localhost", "my_user", "my_password", "world");

$query = "SELECT Name, CountryCode FROM City ORDER by ID LIMIT 3";
$result = mysqli_query($mysqli, $query);

/* numeric array */
$row = mysqli_fetch_array($result, MYSQLI_NUM);
printf("%s (%s)\n", $row[0], $row[1]);

/* associative array */
$row = mysqli_fetch_array($result, MYSQLI_ASSOC);
printf("%s (%s)\n", $row["Name"], $row["CountryCode"]);
```

```
/* associative and numeric array */
$row = mysqli_fetch_array($result, MYSQLI_BOTH);
printf("%s (%s)\n", $row[0], $row["CountryCode"]);
```

The above examples will output something similar to:

```
Kabul (AFG)
Qandahar (AFG)
Herat (AFG)
```

### See Also

mysqli_fetch_assoc
mysqli_fetch_column
mysqli_fetch_row
mysqli_fetch_object
mysqli_query
mysqli_data_seek

## 3.10.6 mysqli_result::fetch_assoc, mysqli_fetch_assoc

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- mysqli_result::fetch_assoc

  mysqli_fetch_assoc

  Fetch the next row of a result set as an associative array

### Description

Object-oriented style

```
public array|null|false mysqli_result::fetch_assoc();
```

Procedural style

```
array|null|false mysqli_fetch_assoc(
  mysqli_result result);
```

Fetches one row of data from the result set and returns it as an associative array. Each subsequent call to this function will return the next row within the result set, or null if there are no more rows.

If two or more columns of the result have the same name, the last column will take precedence and overwrite any previous data. To access multiple columns with the same name, mysqli_fetch_row may be used to fetch the numerically indexed array, or aliases may be used in the SQL query select list to give columns different names.

> **Note**
>
> Field names returned by this function are *case-sensitive*.

> **Note**
>
> This function sets NULL fields to the PHP null value.

## Parameters

| | |
|---|---|
| *result* | Procedural style only: A mysqli_result object returned by mysqli_query, mysqli_store_result, mysqli_use_result or mysqli_stmt_get_result. |

## Return Values

Returns an associative array representing the fetched row, where each key in the array represents the name of one of the result set's columns, null if there are no more rows in the result set, or false on failure.

## Examples

**Example 3.110 mysqli_result::fetch_assoc example**

Object-oriented style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

$query = "SELECT Name, CountryCode FROM City ORDER BY ID DESC";

$result = $mysqli->query($query);

/* fetch associative array */
while ($row = $result->fetch_assoc()) {
    printf("%s (%s)\n", $row["Name"], $row["CountryCode"]);
}
```

Procedural style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = mysqli_connect("localhost", "my_user", "my_password", "world");

$query = "SELECT Name, CountryCode FROM City ORDER BY ID DESC";

$result = mysqli_query($mysqli, $query);

/* fetch associative array */
while ($row = mysqli_fetch_assoc($result)) {
    printf("%s (%s)\n", $row["Name"], $row["CountryCode"]);
}
```

The above examples will output something similar to:

```
Pueblo (USA)
Arvada (USA)
Cape Coral (USA)
Green Bay (USA)
Santa Clara (USA)
```

**Example 3.111 Comparison of `mysqli_result` `iterator` and `mysqli_result::fetch_assoc` usage**

`mysqli_result` can be iterated using foreach. The result set will always be iterated from the first row, regardless of the current position.

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

$query = 'SELECT Name, CountryCode FROM City ORDER BY ID DESC';

// Using iterators
$result = $mysqli->query($query);
foreach ($result as $row) {
    printf("%s (%s)\n", $row["Name"], $row["CountryCode"]);
}

echo "\n==================\n";

// Not using iterators
$result = $mysqli->query($query);
while ($row = $result->fetch_assoc()) {
    printf("%s (%s)\n", $row["Name"], $row["CountryCode"]);
}
```

The above example will output something similar to:

```
Pueblo (USA)
Arvada (USA)
Cape Coral (USA)
Green Bay (USA)
Santa Clara (USA)

==================
Pueblo (USA)
Arvada (USA)
Cape Coral (USA)
Green Bay (USA)
Santa Clara (USA)
```

## See Also

mysqli_fetch_array
mysqli_fetch_column
mysqli_fetch_row
mysqli_fetch_object
mysqli_query
mysqli_data_seek

# 3.10.7 `mysqli_result::fetch_column`, `mysqli_fetch_column`

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- mysqli_result::fetch_column

  mysqli_fetch_column

  Fetch a single column from the next row of a result set

## Description

Object-oriented style

```
public null|int|float|string|false mysqli_result::fetch_column(
  int column
      =  =0);
```

Procedural style

```
null|int|float|string|false mysqli_fetch_column(
  mysqli_result result,
  int column
      =  =0);
```

Fetches one row of data from the result set and returns the 0-indexed column. Each subsequent call to this function will return the value from the next row within the result set, or false if there are no more rows.

> **Note**
>
> This function sets NULL fields to the PHP null value.

## Parameters

| | |
|---|---|
| *result* | Procedural style only: A mysqli_result object returned by mysqli_query, mysqli_store_result, mysqli_use_result or mysqli_stmt_get_result. |
| *column* | 0-indexed number of the column you wish to retrieve from the row. If no value is supplied, the first column will be returned. |

## Return Values

Returns a single column from the next row of a result set or false if there are no more rows.

> **Warning**
>
> There is no way to return another column from the same row if you use this function to retrieve data.

## Examples

**Example 3.112 mysqli_result::fetch_column example**

Object-oriented style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

$query = "SELECT CountryCode, Name FROM City ORDER BY ID DESC LIMIT 5";

$result = $mysqli->query($query);
```

```
/* fetch a single value from the second column */
while ($Name = $result->fetch_column(1)) {
    printf("%s\n", $Name);
}
```

Procedural style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = mysqli_connect("localhost", "my_user", "my_password", "world");

$query = "SELECT CountryCode, Name FROM City ORDER BY ID DESC LIMIT 5";

$result = mysqli_query($mysqli, $query);

/* fetch a single value from the second column */
while ($Name = mysqli_fetch_column($result, 1)) {
    printf("%s\n", $Name);
}
```

The above examples will output something similar to:

```
Rafah
Nablus
Jabaliya
Hebron
Khan Yunis
```

### See Also

mysqli_fetch_all
mysqli_fetch_array
mysqli_fetch_assoc
mysqli_fetch_object
mysqli_fetch_row
mysqli_data_seek

## 3.10.8 mysqli_result::fetch_field_direct, mysqli_fetch_field_direct

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- mysqli_result::fetch_field_direct

  mysqli_fetch_field_direct

  Fetch meta-data for a single field

### Description

Object-oriented style

```
public object|false mysqli_result::fetch_field_direct(
  int index);
```

Procedural style

```
object|false mysqli_fetch_field_direct(
  mysqli_result result,
  int index);
```

Returns an object which contains field definition information from the specified result set.

## Parameters

| | |
|---|---|
| *result* | Procedural style only: A mysqli_result object returned by mysqli_query, mysqli_store_result, mysqli_use_result or mysqli_stmt_get_result. |
| *index* | The field number. This value must be in the range from 0 to number of fields - 1. |

## Return Values

Returns an object which contains field definition information or false if no field information for specified fieldnr is available.

**Table 3.17 Object attributes**

| Attribute | Description |
|---|---|
| name | The name of the column |
| orgname | Original column name if an alias was specified |
| table | The name of the table this field belongs to (if not calculated) |
| orgtable | Original table name if an alias was specified |
| def | The default value for this field, represented as a string |
| max_length | The maximum width of the field for the result set. |
| length | The width of the field, as specified in the table definition. |
| charsetnr | The character set number for the field. |
| flags | An integer representing the bit-flags for the field. |
| type | The data type used for this field |
| decimals | The number of decimals used (for numeric fields) |

## Examples

**Example 3.113 Object-oriented style**

```
<?php
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
```

```
    exit();
}

$query = "SELECT Name, SurfaceArea from Country ORDER BY Name LIMIT 5";

if ($result = $mysqli->query($query)) {

    /* Get field information for column 'SurfaceArea' */
    $finfo = $result->fetch_field_direct(1);

    printf("Name:     %s\n", $finfo->name);
    printf("Table:    %s\n", $finfo->table);
    printf("max. Len: %d\n", $finfo->max_length);
    printf("Flags:    %d\n", $finfo->flags);
    printf("Type:     %d\n", $finfo->type);

    $result->close();
}

/* close connection */
$mysqli->close();
?>
```

**Example 3.114 Procedural style**

```
<?php
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

$query = "SELECT Name, SurfaceArea from Country ORDER BY Name LIMIT 5";

if ($result = mysqli_query($link, $query)) {

    /* Get field information for column 'SurfaceArea' */
    $finfo = mysqli_fetch_field_direct($result, 1);

    printf("Name:     %s\n", $finfo->name);
    printf("Table:    %s\n", $finfo->table);
    printf("max. Len: %d\n", $finfo->max_length);
    printf("Flags:    %d\n", $finfo->flags);
    printf("Type:     %d\n", $finfo->type);

    mysqli_free_result($result);
}

/* close connection */
mysqli_close($link);
?>
```

The above examples will output:

```
Name:     SurfaceArea
Table:    Country
max. Len: 10
Flags:    32769
Type:     4
```

## See Also

mysqli_num_fields
mysqli_fetch_field
mysqli_fetch_fields

# 3.10.9 mysqli_result::fetch_field, mysqli_fetch_field

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- mysqli_result::fetch_field

  mysqli_fetch_field

  Returns the next field in the result set

## Description

Object-oriented style

```
public object|false mysqli_result::fetch_field();
```

Procedural style

```
object|false mysqli_fetch_field(
  mysqli_result result);
```

Returns the definition of one column of a result set as an object. Call this function repeatedly to retrieve information about all columns in the result set.

## Parameters

| | |
|---|---|
| *result* | Procedural style only: A mysqli_result object returned by mysqli_query, mysqli_store_result, mysqli_use_result or mysqli_stmt_get_result. |

## Return Values

Returns an object which contains field definition information or false if no field information is available.

**Table 3.18 Object properties**

| Property | Description |
|---|---|
| name | The name of the column |
| orgname | Original column name if an alias was specified |
| table | The name of the table this field belongs to (if not calculated) |
| orgtable | Original table name if an alias was specified |
| def | Reserved for default value, currently always "" |
| db | The name of the database |
| catalog | The catalog name, always "def" |

| Property | Description |
|---|---|
| max_length | The maximum width of the field for the result set. |
| length | The width of the field, as specified in the table definition. |
| charsetnr | The character set number for the field. |
| flags | An integer representing the bit-flags for the field. |
| type | The data type used for this field |
| decimals | The number of decimals used (for integer fields) |

## Examples

**Example 3.115 Object-oriented style**

```
<?php
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

$query = "SELECT Name, SurfaceArea from Country ORDER BY Code LIMIT 5";

if ($result = $mysqli->query($query)) {

    /* Get field information for all columns */
    while ($finfo = $result->fetch_field()) {

        printf("Name:     %s\n", $finfo->name);
        printf("Table:    %s\n", $finfo->table);
        printf("max. Len: %d\n", $finfo->max_length);
        printf("Flags:    %d\n", $finfo->flags);
        printf("Type:     %d\n\n", $finfo->type);
    }
    $result->close();
}

/* close connection */
$mysqli->close();
?>
```

**Example 3.116 Procedural style**

```
<?php
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

$query = "SELECT Name, SurfaceArea from Country ORDER BY Code LIMIT 5";

if ($result = mysqli_query($link, $query)) {
```

```
    /* Get field information for all fields */
    while ($finfo = mysqli_fetch_field($result)) {

        printf("Name:     %s\n", $finfo->name);
        printf("Table:    %s\n", $finfo->table);
        printf("max. Len: %d\n", $finfo->max_length);
        printf("Flags:    %d\n", $finfo->flags);
        printf("Type:     %d\n\n", $finfo->type);
    }
    mysqli_free_result($result);
}

/* close connection */
mysqli_close($link);
?>
```

The above examples will output:

```
Name:     Name
Table:    Country
max. Len: 11
Flags:    1
Type:     254

Name:     SurfaceArea
Table:    Country
max. Len: 10
Flags:    32769
Type:     4
```

### See Also

mysqli_num_fields
mysqli_fetch_field_direct
mysqli_fetch_fields
mysqli_field_seek

## 3.10.10 mysqli_result::fetch_fields, mysqli_fetch_fields

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- mysqli_result::fetch_fields

  mysqli_fetch_fields

  Returns an array of objects representing the fields in a result set

### Description

Object-oriented style

```
  public array mysqli_result::fetch_fields();
```

Procedural style

```
  array mysqli_fetch_fields(
```

```
    mysqli_result result);
```

This function serves an identical purpose to the mysqli_fetch_field function with the single difference that, instead of returning one object at a time for each field, the columns are returned as an array of objects.

## Parameters

*result* — Procedural style only: A mysqli_result object returned by mysqli_query, mysqli_store_result, mysqli_use_result or mysqli_stmt_get_result.

## Return Values

Returns an array of objects containing field definition information.

**Table 3.19 Object properties**

| Property | Description |
|---|---|
| name | The name of the column |
| orgname | Original column name if an alias was specified |
| table | The name of the table this field belongs to (if not calculated) |
| orgtable | Original table name if an alias was specified |
| max_length | The maximum width of the field for the result set. |
| length | The width of the field, in bytes, as specified in the table definition. Note that this number (bytes) might differ from your table definition value (characters), depending on the character set you use. For example, the character set utf8 has 3 bytes per character, so varchar(10) will return a length of 30 for utf8 (10*3), but return 10 for latin1 (10*1). |
| charsetnr | The character set number (id) for the field. |
| flags | An integer representing the bit-flags for the field. |
| type | The data type used for this field |
| decimals | The number of decimals used (for integer fields) |

## Examples

**Example 3.117 Object-oriented style**

```
<?php
$mysqli = new mysqli("127.0.0.1", "root", "foofoo", "sakila");

/* check connection */
if ($mysqli->connect_errno) {
    printf("Connect failed: %s\n", $mysqli->connect_error);
    exit();
}

foreach (array('latin1', 'utf8') as $charset) {

    // Set character set, to show its impact on some values (e.g., length in bytes)
```

```
    $mysqli->set_charset($charset);

    $query = "SELECT actor_id, last_name from actor ORDER BY actor_id";

    echo "=====================\n";
    echo "Character Set: $charset\n";
    echo "=====================\n";

    if ($result = $mysqli->query($query)) {

        /* Get field information for all columns */
        $finfo = $result->fetch_fields();

        foreach ($finfo as $val) {
            printf("Name:      %s\n",   $val->name);
            printf("Table:     %s\n",   $val->table);
            printf("Max. Len:  %d\n",   $val->max_length);
            printf("Length:    %d\n",   $val->length);
            printf("charsetnr: %d\n",   $val->charsetnr);
            printf("Flags:     %d\n",   $val->flags);
            printf("Type:      %d\n\n", $val->type);
        }
        $result->free();
    }
}
$mysqli->close();
?>
```

**Example 3.118 Procedural style**

```
<?php
$link = mysqli_connect("127.0.0.1", "my_user", "my_password", "sakila");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

foreach (array('latin1', 'utf8') as $charset) {

    // Set character set, to show its impact on some values (e.g., length in bytes)
    mysqli_set_charset($link, $charset);

    $query = "SELECT actor_id, last_name from actor ORDER BY actor_id";

    echo "=====================\n";
    echo "Character Set: $charset\n";
    echo "=====================\n";

    if ($result = mysqli_query($link, $query)) {

        /* Get field information for all columns */
        $finfo = mysqli_fetch_fields($result);

        foreach ($finfo as $val) {
            printf("Name:      %s\n",   $val->name);
            printf("Table:     %s\n",   $val->table);
            printf("Max. Len:  %d\n",   $val->max_length);
            printf("Length:    %d\n",   $val->length);
            printf("charsetnr: %d\n",   $val->charsetnr);
            printf("Flags:     %d\n",   $val->flags);
            printf("Type:      %d\n\n", $val->type);
        }
```

```
        mysqli_free_result($result);
    }
}

mysqli_close($link);
?>
```

The above examples will output:

```
======================
Character Set: latin1
======================
Name:      actor_id
Table:     actor
Max. Len:  3
Length:    5
charsetnr: 63
Flags:     49699
Type:      2

Name:      last_name
Table:     actor
Max. Len:  12
Length:    45
charsetnr: 8
Flags:     20489
Type:      253

======================
Character Set: utf8
======================
Name:      actor_id
Table:     actor
Max. Len:  3
Length:    5
charsetnr: 63
Flags:     49699
Type:      2

Name:      last_name
Table:     actor
Max. Len:  12
Length:    135
charsetnr: 33
Flags:     20489
```

### See Also

mysqli_num_fields
mysqli_fetch_field_direct
mysqli_fetch_field

## 3.10.11 mysqli_result::fetch_object, mysqli_fetch_object

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- mysqli_result::fetch_object

  mysqli_fetch_object

Fetch the next row of a result set as an object

## Description

Object-oriented style

```
public object|null|false mysqli_result::fetch_object(
  string class
      =  ="stdClass",
  array constructor_args
      =  =[]);
```

Procedural style

```
object|null|false mysqli_fetch_object(
  mysqli_result result,
  string class
      =  ="stdClass",
  array constructor_args
      =  =[]);
```

Fetches one row of data from the result set and returns it as an object, where each property represents the name of the result set's column. Each subsequent call to this function will return the next row within the result set, or `null` if there are no more rows.

If two or more columns of the result have the same name, the last column will take precedence and overwrite any previous data. To access multiple columns with the same name, `mysqli_fetch_row` may be used to fetch the numerically indexed array, or aliases may be used in the SQL query select list to give columns different names.

> **Note**
>
> This function sets the properties of the object before calling the object constructor.

> **Note**
>
> Field names returned by this function are *case-sensitive*.

> **Note**
>
> This function sets NULL fields to the PHP `null` value.

## Parameters

| | |
|---|---|
| *`result`* | Procedural style only: A `mysqli_result` object returned by `mysqli_query`, `mysqli_store_result`, `mysqli_use_result` or `mysqli_stmt_get_result`. |
| *`class`* | The name of the class to instantiate, set the properties of and return. If not specified, a `stdClass` object is returned. |
| *`constructor_args`* | An optional array of parameters to pass to the constructor for *`class`* objects. |

## Return Values

Returns an object representing the fetched row, where each property represents the name of the result set's column, `null` if there are no more rows in the result set, or `false` on failure.

## Changelog

| Version | Description |
|---|---|
| 8.0.0 | *constructor_args* now accepts [] for constructors with 0 parameters; previously an exception was thrown. |

## Examples

**Example 3.119 mysqli_result::fetch_object example**

Object-oriented style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

$query = "SELECT Name, CountryCode FROM City ORDER BY ID DESC";

$result = $mysqli->query($query);

/* fetch object array */
while ($obj = $result->fetch_object()) {
    printf("%s (%s)\n", $obj->Name, $obj->CountryCode);
}
```

Procedural style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

$query = "SELECT Name, CountryCode FROM City ORDER BY ID DESC";

$result = mysqli_query($link, $query);

/* fetch associative array */
while ($obj = mysqli_fetch_object($result)) {
    printf("%s (%s)\n", $obj->Name, $obj->CountryCode);
}
```

The above examples will output something similar to:

```
Pueblo (USA)
Arvada (USA)
Cape Coral (USA)
Green Bay (USA)
Santa Clara (USA)
```

## See Also

mysqli_fetch_array

mysqli_fetch_assoc
mysqli_fetch_column
mysqli_fetch_row
mysqli_query
mysqli_data_seek

## 3.10.12 mysqli_result::fetch_row, mysqli_fetch_row

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- mysqli_result::fetch_row

  mysqli_fetch_row

  Fetch the next row of a result set as an enumerated array

### Description

Object-oriented style

```
public array|null|false mysqli_result::fetch_row();
```

Procedural style

```
array|null|false mysqli_fetch_row(
  mysqli_result result);
```

Fetches one row of data from the result set and returns it as an enumerated array, where each column is stored in an array offset starting from 0 (zero). Each subsequent call to this function will return the next row within the result set, or null if there are no more rows.

> **Note**
>
> This function sets NULL fields to the PHP null value.

### Parameters

*result*
: Procedural style only: A mysqli_result object returned by mysqli_query, mysqli_store_result, mysqli_use_result or mysqli_stmt_get_result.

### Return Values

Returns an enumerated array representing the fetched row, null if there are no more rows in the result set, or false on failure.

### Examples

**Example 3.120 mysqli_result::fetch_row example**

Object-oriented style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

$query = "SELECT Name, CountryCode FROM City ORDER BY ID DESC";
```

```
$result = $mysqli->query($query);

/* fetch object array */
while ($row = $result->fetch_row()) {
    printf("%s (%s)\n", $row[0], $row[1]);
}
```

Procedural style

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = mysqli_connect("localhost", "my_user", "my_password", "world");

$query = "SELECT Name, CountryCode FROM City ORDER BY ID DESC";

$result = mysqli_query($mysqli, $query);

/* fetch associative array */
while ($row = mysqli_fetch_row($result)) {
    printf("%s (%s)\n", $row[0], $row[1]);
}
```

The above examples will output something similar to:

```
Pueblo (USA)
Arvada (USA)
Cape Coral (USA)
Green Bay (USA)
Santa Clara (USA)
```

### See Also

mysqli_fetch_array
mysqli_fetch_assoc
mysqli_fetch_column
mysqli_fetch_object
mysqli_query
mysqli_data_seek

## 3.10.13 mysqli_result::$field_count, mysqli_num_fields

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- mysqli_result::$field_count

  mysqli_num_fields

  Gets the number of fields in the result set

### Description

Object-oriented style

```
int
  mysqli_result->field_count ;
```

Procedural style

```
int mysqli_num_fields(
  mysqli_result result);
```

Returns the number of fields in the result set.

## Parameters

| | |
|---|---|
| *result* | Procedural style only: A mysqli_result object returned by mysqli_query, mysqli_store_result, mysqli_use_result or mysqli_stmt_get_result. |

## Return Values

An int representing the number of fields.

## Examples

**Example 3.121 Object-oriented style**

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

$result = $mysqli->query("SELECT Name, CountryCode, District, Population FROM City ORDER BY ID LIMIT 1");

/* Get the number of fields in the result set */
$field_cnt = $result->field_count;

printf("Result set has %d fields.\n", $field_cnt);
```

**Example 3.122 Procedural style**

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

$result = mysqli_query($link, "SELECT Name, CountryCode, District, Population FROM City ORDER BY ID LIMIT 1");

/* Get the number of fields in the result set */
$field_cnt = mysqli_num_fields($result);

printf("Result set has %d fields.\n", $field_cnt);
```

The above examples will output:

```
Result set has 4 fields.
```

### See Also

mysqli_fetch_field

## 3.10.14 mysqli_result::field_seek, mysqli_field_seek

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- mysqli_result::field_seek

  mysqli_field_seek

  Set result pointer to a specified field offset

### Description

Object-oriented style

```
public bool mysqli_result::field_seek(
  int index);
```

Procedural style

```
bool mysqli_field_seek(
  mysqli_result result,
  int index);
```

Sets the field cursor to the given offset. The next call to mysqli_fetch_field will retrieve the field definition of the column associated with that offset.

> **Note**
>
> To seek to the beginning of a row, pass an offset value of zero.

### Parameters

| | |
|---|---|
| *result* | Procedural style only: A mysqli_result object returned by mysqli_query, mysqli_store_result, mysqli_use_result or mysqli_stmt_get_result. |
| *index* | The field number. This value must be in the range from 0 to number of fields - 1. |

### Return Values

Returns true on success or false on failure.

### Examples

**Example 3.123 Object-oriented style**

```
<?php
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
```

```
    exit();
}

$query = "SELECT Name, SurfaceArea from Country ORDER BY Code LIMIT 5";

if ($result = $mysqli->query($query)) {

    /* Get field information for 2nd column */
    $result->field_seek(1);
    $finfo = $result->fetch_field();

    printf("Name:     %s\n", $finfo->name);
    printf("Table:    %s\n", $finfo->table);
    printf("max. Len: %d\n", $finfo->max_length);
    printf("Flags:    %d\n", $finfo->flags);
    printf("Type:     %d\n\n", $finfo->type);

    $result->close();
}

/* close connection */
$mysqli->close();
?>
```

**Example 3.124 Procedural style**

```
<?php
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

$query = "SELECT Name, SurfaceArea from Country ORDER BY Code LIMIT 5";

if ($result = mysqli_query($link, $query)) {

    /* Get field information for 2nd column */
    mysqli_field_seek($result, 1);
    $finfo = mysqli_fetch_field($result);

    printf("Name:     %s\n", $finfo->name);
    printf("Table:    %s\n", $finfo->table);
    printf("max. Len: %d\n", $finfo->max_length);
    printf("Flags:    %d\n", $finfo->flags);
    printf("Type:     %d\n\n", $finfo->type);

    mysqli_free_result($result);
}

/* close connection */
mysqli_close($link);
?>
```

The above examples will output:

```
Name:     SurfaceArea
Table:    Country
max. Len: 10
```

```
Flags:    32769
Type:     4
```

### See Also

mysqli_fetch_field

## 3.10.15 mysqli_result::free, mysqli_result::close, mysqli_result::free_result, mysqli_free_result

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- mysqli_result::free

  mysqli_result::close

  mysqli_result::free_result

  mysqli_free_result

  Frees the memory associated with a result

### Description

Object-oriented style

```
public void mysqli_result::free();
```

```
public void mysqli_result::close();
```

```
public void mysqli_result::free_result();
```

Procedural style

```
void mysqli_free_result(
  mysqli_result result);
```

Frees the memory associated with the result.

### Parameters

| | |
|---|---|
| *result* | Procedural style only: A mysqli_result object returned by mysqli_query, mysqli_store_result, mysqli_use_result or mysqli_stmt_get_result. |

### Return Values

No value is returned.

### See Also

mysqli_query
mysqli_stmt_get_result
mysqli_store_result
mysqli_use_result

## 3.10.16 mysqli_result::getIterator

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- mysqli_result::getIterator

  Retrieve an external iterator

### Description

```
public Iterator mysqli_result::getIterator();
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

## 3.10.17 mysqli_result::$lengths, mysqli_fetch_lengths

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- mysqli_result::$lengths

  mysqli_fetch_lengths

  Returns the lengths of the columns of the current row in the result set

### Description

Object-oriented style

```
array|null
  mysqli_result->lengths ;
```

Procedural style

```
array|false mysqli_fetch_lengths(
  mysqli_result result);
```

The mysqli_fetch_lengths function returns an array containing the lengths of every column of the current row within the result set.

### Parameters

| | |
|---|---|
| *result* | Procedural style only: A mysqli_result object returned by mysqli_query, mysqli_store_result, mysqli_use_result or mysqli_stmt_get_result. |

### Return Values

An array of integers representing the size of each column (not including any terminating null characters). false if an error occurred.

mysqli_fetch_lengths is valid only for the current row of the result set. It returns false if you call it before calling mysqli_fetch_row/array/object or after retrieving all rows in the result.

## Examples

### Example 3.125 Object-oriented style

```
<?php
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

$query = "SELECT * from Country ORDER BY Code LIMIT 1";

if ($result = $mysqli->query($query)) {

    $row = $result->fetch_row();

    /* display column lengths */
    foreach ($result->lengths as $i => $val) {
        printf("Field %2d has Length %2d\n", $i+1, $val);
    }
    $result->close();
}

/* close connection */
$mysqli->close();
?>
```

### Example 3.126 Procedural style

```
<?php
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

$query = "SELECT * from Country ORDER BY Code LIMIT 1";

if ($result = mysqli_query($link, $query)) {

    $row = mysqli_fetch_row($result);

    /* display column lengths */
    foreach (mysqli_fetch_lengths($result) as $i => $val) {
        printf("Field %2d has Length %2d\n", $i+1, $val);
    }
    mysqli_free_result($result);
}

/* close connection */
mysqli_close($link);
?>
```

```
```

The above examples will output:

```
Field  1 has Length  3
Field  2 has Length  5
Field  3 has Length 13
Field  4 has Length  9
Field  5 has Length  6
Field  6 has Length  1
Field  7 has Length  6
Field  8 has Length  4
Field  9 has Length  6
Field 10 has Length  6
Field 11 has Length  5
Field 12 has Length 44
Field 13 has Length  7
Field 14 has Length  3
Field 15 has Length  2
```

## 3.10.18 mysqli_result::$num_rows, mysqli_num_rows

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- mysqli_result::$num_rows

  mysqli_num_rows

  Gets the number of rows in the result set

### Description

Object-oriented style

```
int|string
  mysqli_result->num_rows ;
```

Procedural style

```
int|string mysqli_num_rows(
  mysqli_result result);
```

Returns the number of rows in the result set.

The behaviour of mysqli_num_rows depends on whether buffered or unbuffered result sets are being used. This function returns 0 for unbuffered result sets unless all rows have been fetched from the server.

### Parameters

| | |
|---|---|
| *result* | Procedural style only: A mysqli_result object returned by mysqli_query, mysqli_store_result, mysqli_use_result or mysqli_stmt_get_result. |

### Return Values

An int representing the number of fetched rows. Returns 0 in unbuffered mode unless all rows have been fetched from the server.

> **Note**
>
> If the number of rows is greater than PHP_INT_MAX, the number will be returned as a string.

## Examples

**Example 3.127 Object-oriented style**

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

$result = $mysqli->query("SELECT Code, Name FROM Country ORDER BY Name");

/* Get the number of rows in the result set */
$row_cnt = $result->num_rows;

printf("Result set has %d rows.\n", $row_cnt);


```

**Example 3.128 Procedural style**

```
<?php

mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

$result = mysqli_query($link, "SELECT Code, Name FROM Country ORDER BY Name");

/* Get the number of rows in the result set */
$row_cnt = mysqli_num_rows($result);

printf("Result set has %d rows.\n", $row_cnt);


```

The above examples will output:

```
Result set has 239 rows.


```

## Notes

> **Note**
>
> In contrast to the mysqli_stmt_num_rows function, this function doesn't have object-oriented method variant. In the object-oriented style, use the getter property.

## See Also

mysqli_affected_rows
mysqli_store_result
mysqli_use_result
mysqli_query
mysqli_stmt_num_rows

# 3.11 The mysqli_driver class

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The `mysqli_driver` class is an instance of the monostate pattern, i.e. there is only one driver which can be accessed though an arbitrary amount of `mysqli_driver` instances.

```
mysqli_driver {
final mysqli_driver

      Properties

  public readonly string
    client_info ;

  public readonly int
    client_version ;

  public readonly int
    driver_version ;

  public readonly bool
    embedded ;

  public bool
    reconnect
        =  =false;

  public int
    report_mode ;

Methods

  public void mysqli_driver::embedded_server_end();

  public bool mysqli_driver::embedded_server_start(
    int start,
    array arguments,
    array groups);

}
```

`client_info` The Client API header version

`client_version` The Client version

`driver_version` The MySQLi Driver version

> **Warning**
>
> This property has been *deprecated* as of PHP 8.1.0. Relying on this property is highly discouraged.

`embedded` Whether MySQLi Embedded support is enabled

> **Warning**
>
> This property has been *removed* as of PHP 8.0.0.

| | |
|---|---|
| reconnect | Allow or prevent reconnect (see the mysqli.reconnect INI directive) |
| report_mode | Set to MYSQLI_REPORT_OFF, MYSQLI_REPORT_ALL or any combination of MYSQLI_REPORT_STRICT (throw Exceptions for errors), MYSQLI_REPORT_ERROR (report errors) and MYSQLI_REPORT_INDEX (errors regarding indexes). See also mysqli_report. |

## 3.11.1 mysqli_driver::embedded_server_end, mysqli_embedded_server_end

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- mysqli_driver::embedded_server_end

  mysqli_embedded_server_end

  Stop embedded server

> **Warning**
>
> This function was *REMOVED* in PHP 7.4.0.

### Description

Object-oriented style

```
public void mysqli_driver::embedded_server_end();
```

Procedural style

```
void mysqli_embedded_server_end();
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

## 3.11.2 mysqli_driver::embedded_server_start, mysqli_embedded_server_start

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- mysqli_driver::embedded_server_start

  mysqli_embedded_server_start

  Initialize and start embedded server

> **Warning**
>
> This function was *REMOVED* in PHP 7.4.0.

### Description

Object-oriented style

```
public bool mysqli_driver::embedded_server_start(
```

```
  int start,
  array arguments,
  array groups);
```

Procedural style

```
bool mysqli_embedded_server_start(
  int start,
  array arguments,
  array groups);
```

**Warning**

This function is currently not documented; only its argument list is available.

## 3.11.3 mysqli_driver::$report_mode, mysqli_report

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- `mysqli_driver::$report_mode`

  `mysqli_report`

  Sets mysqli error reporting mode

### Description

Object-oriented style

```
int
  mysqli_driver->report_mode ;
```

Procedural style

```
bool mysqli_report(
  int flags);
```

Depending on the flags, it sets mysqli error reporting mode to exception, warning or none. When set to `MYSQLI_REPORT_ALL` or `MYSQLI_REPORT_INDEX` it will also inform about queries that don't use an index (or use a bad index).

As of PHP 8.1.0, the default setting is `MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT`. Previously, it was `MYSQLI_REPORT_OFF`.

### Parameters

*`flags`*

**Table 3.20 Supported flags**

| Name | Description |
|---|---|
| `MYSQLI_REPORT_OFF` | Turns reporting off |
| `MYSQLI_REPORT_ERROR` | Report errors from mysqli function calls |
| `MYSQLI_REPORT_STRICT` | Throw `mysqli_sql_exception` for errors instead of warnings |
| `MYSQLI_REPORT_INDEX` | Report if no index or bad index was used in a query |

| Name | Description |
|---|---|
| MYSQLI_REPORT_ALL | Set all options (report all) |

## Return Values

Returns true.

## Changelog

| Version | Description |
|---|---|
| 8.1.0 | The default value is now MYSQLI_REPORT_ERROR \| MYSQLI_REPORT_STRICT. Previously, it was MYSQLI_REPORT_OFF. |

## Examples

### Example 3.129 Object-oriented style

```
<?php

/* activate reporting */
$driver = new mysqli_driver();
$driver->report_mode = MYSQLI_REPORT_ALL;

try {
    /* if the connection fails, a mysqli_sql_exception will be thrown */
    $mysqli = new mysqli("localhost", "my_user", "my_password", "my_db");

    /* this query should report an error */
    $result = $mysqli->query("SELECT Name FROM Nonexistingtable WHERE population > 50000");

    /* this query should report a bad index if the column population doesn't have an index */
    $result = $mysqli->query("SELECT Name FROM City WHERE population > 50000");
} catch (mysqli_sql_exception $e) {
    error_log($e->__toString());
}
```

### Example 3.130 Procedural style

```
<?php

/* activate reporting */
mysqli_report(MYSQLI_REPORT_ALL);

try {
    /* if the connection fails, a mysqli_sql_exception will be thrown */
    $link = mysqli_connect("localhost", "my_user", "my_password", "my_db");

    /* this query should report an error */
    $result = mysqli_query($link, "SELECT Name FROM Nonexistingtable WHERE population > 50000");

    /* this query should report a bad index if the column population doesn't have an index */
    $result = mysqli_query($link, "SELECT Name FROM City WHERE population > 50000");
} catch (mysqli_sql_exception $e) {
    error_log($e->__toString());
}
```

**Example 3.131 Error reporting except bad index errors**

```
<?php

/* activate reporting */
mysqli_report(MYSQLI_REPORT_ERROR | MYSQLI_REPORT_STRICT);

try {
    /* if the connection fails, a mysqli_sql_exception will be thrown */
    $mysqli = new mysqli("localhost", "my_user", "my_password", "my_db");

    /* this query should report an error */
    $result = $mysqli->query("SELECT Name FROM Nonexistingtable WHERE population > 50000");

    /* this WILL NOT report any errors even if index is not available */
    $result = $mysqli->query("SELECT Name FROM City WHERE population > 50000");
} catch (mysqli_sql_exception $e) {
    error_log($e->__toString());
}
```

## See Also

mysqli_sql_exception
set_exception_handler
error_reporting

# 3.12 The mysqli_warning class

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Represents a MySQL warning.

```
mysqli_warning {
final mysqli_warning

      Properties

  public string
    message ;

  public string
    sqlstate ;

  public int
    errno ;

Methods

  private mysqli_warning::__construct();

  public bool mysqli_warning::next();

}
```

| | |
|---|---|
| message | Message string |
| sqlstate | SQL state |

| | |
|---|---|
| errno | Error number |

## 3.12.1 mysqli_warning::__construct

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- mysqli_warning::__construct

  Private constructor to disallow direct instantiation

### Description

```
private mysqli_warning::__construct();
```

### Parameters

This function has no parameters.

## 3.12.2 mysqli_warning::next

Copyright 1997-2022 the PHP Documentation Group.

- mysqli_warning::next

  Fetch next warning

### Description

```
public bool mysqli_warning::next();
```

Change warning information to the next warning if possible.

Once the warning has been set to the next warning, new values of properties message, sqlstate and errno of mysqli_warning are available.

### Parameters

This function has no parameters.

### Return Values

Returns true if next warning was fetched successfully. If there are no more warnings, it will return false

# 3.13 The mysqli_sql_exception class

Copyright 1997-2022 the PHP Documentation Group.

The mysqli exception handling class.

```
mysqli_sql_exception {
final mysqli_sql_exceptionextends RuntimeException

     Properties

  protected string
    sqlstate
```

```
        =  ="00000";

Inherited properties

  protected string
    message
        =  ="";

  private string
    string
        =  ="";

  protected int
    code ;

  protected string
    file
        =  ="";

  protected int
    line ;

  private array
    trace
        =  =[];

  private Throwable|null
    previous
        =  =null;

Methods

  public string mysqli_sql_exception::getSqlState();

Inherited methods

  final public string Exception::getMessage();

  final public Throwable|null Exception::getPrevious();

  final public int Exception::getCode();

  final public string Exception::getFile();

  final public int Exception::getLine();

  final public array Exception::getTrace();

  final public string Exception::getTraceAsString();

  public string Exception::__toString();

  private void Exception::__clone();

}
```

| | |
|---|---|
| sqlstate | The sql state with the error. |

## 3.13.1 mysqli_sql_exception::getSqlState

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- mysqli_sql_exception::getSqlState

  Returns the SQLSTATE error code

### Description

```
public string mysqli_sql_exception::getSqlState();
```

Returns a string containing the SQLSTATE error code for the last error. The error code consists of five characters. The values are specified by ANSI SQL and ODBC. For a list of possible values, see http://dev.mysql.com/doc/mysql/en/error-handling.html.

> **Note**
>
> Note that not all MySQL errors are yet mapped to SQLSTATE's. The value `HY000` (general error) is used for unmapped errors.

### Parameters

This function has no parameters.

### Return Values

Returns a string containing the SQLSTATE error code for the last error. The error code consists of five characters.

## 3.14 Aliases and deprecated Mysqli Functions

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## 3.14.1 `mysqli_connect`

Copyright 1997-2022 the PHP Documentation Group.

- `mysqli_connect`

  Alias of `mysqli::__construct`

### Description

This function is an alias of: `mysqli::__construct`

> **Note**
>
> If mysqli exception mode is not enabled and a connection fails, then `mysqli_connect` returns `false` instead of an object. The `mysqli_connect_error` function can be used to fetch the connection error.

## 3.14.2 `mysqli::escape_string`, `mysqli_escape_string`

Copyright 1997-2022 the PHP Documentation Group.

- `mysqli::escape_string`

  `mysqli_escape_string`

  Alias of `mysqli_real_escape_string`

### Description

This function is an alias of: `mysqli_real_escape_string`.

## 3.14.3 mysqli_execute

Copyright 1997-2022 the PHP Documentation Group.

- mysqli_execute

  Alias for mysqli_stmt_execute

### Description

This function is an alias of: mysqli_stmt_execute.

### Notes

> **Note**
>
> mysqli_execute is deprecated and will be removed.

### See Also

mysqli_stmt_execute

## 3.14.4 mysqli_get_client_stats

Copyright 1997-2022 the PHP Documentation Group.

- mysqli_get_client_stats

  Returns client per-process statistics

### Description

```
array mysqli_get_client_stats();
```

Returns client per-process statistics.

> **Note**
>
> Available only with mysqlnd.

### Parameters

### Return Values

Returns an array with client stats.

### Examples

**Example 3.132 A mysqli_get_client_stats example**

```
<?php
$link = mysqli_connect();
print_r(mysqli_get_client_stats());
?>
```

The above example will output something similar to:

```
Array
(
    [bytes_sent] => 43
    [bytes_received] => 80
    [packets_sent] => 1
    [packets_received] => 2
    [protocol_overhead_in] => 8
    [protocol_overhead_out] => 4
    [bytes_received_ok_packet] => 11
    [bytes_received_eof_packet] => 0
    [bytes_received_rset_header_packet] => 0
    [bytes_received_rset_field_meta_packet] => 0
    [bytes_received_rset_row_packet] => 0
    [bytes_received_prepare_response_packet] => 0
    [bytes_received_change_user_packet] => 0
    [packets_sent_command] => 0
    [packets_received_ok] => 1
    [packets_received_eof] => 0
    [packets_received_rset_header] => 0
    [packets_received_rset_field_meta] => 0
    [packets_received_rset_row] => 0
    [packets_received_prepare_response] => 0
    [packets_received_change_user] => 0
    [result_set_queries] => 0
    [non_result_set_queries] => 0
    [no_index_used] => 0
    [bad_index_used] => 0
    [slow_queries] => 0
    [buffered_sets] => 0
    [unbuffered_sets] => 0
    [ps_buffered_sets] => 0
    [ps_unbuffered_sets] => 0
    [flushed_normal_sets] => 0
    [flushed_ps_sets] => 0
    [ps_prepared_never_executed] => 0
    [ps_prepared_once_executed] => 0
    [rows_fetched_from_server_normal] => 0
    [rows_fetched_from_server_ps] => 0
    [rows_buffered_from_client_normal] => 0
    [rows_buffered_from_client_ps] => 0
    [rows_fetched_from_client_normal_buffered] => 0
    [rows_fetched_from_client_normal_unbuffered] => 0
    [rows_fetched_from_client_ps_buffered] => 0
    [rows_fetched_from_client_ps_unbuffered] => 0
    [rows_fetched_from_client_ps_cursor] => 0
    [rows_skipped_normal] => 0
    [rows_skipped_ps] => 0
    [copy_on_write_saved] => 0
    [copy_on_write_performed] => 0
    [command_buffer_too_small] => 0
    [connect_success] => 1
    [connect_failure] => 0
    [connection_reused] => 0
    [reconnect] => 0
    [pconnect_success] => 0
    [active_connections] => 1
    [active_persistent_connections] => 0
    [explicit_close] => 0
    [implicit_close] => 0
    [disconnect_close] => 0
    [in_middle_of_command_close] => 0
    [explicit_free_result] => 0
```

```
    [implicit_free_result] => 0
    [explicit_stmt_close] => 0
    [implicit_stmt_close] => 0
    [mem_emalloc_count] => 0
    [mem_emalloc_ammount] => 0
    [mem_ecalloc_count] => 0
    [mem_ecalloc_ammount] => 0
    [mem_erealloc_count] => 0
    [mem_erealloc_ammount] => 0
    [mem_efree_count] => 0
    [mem_malloc_count] => 0
    [mem_malloc_ammount] => 0
    [mem_calloc_count] => 0
    [mem_calloc_ammount] => 0
    [mem_realloc_count] => 0
    [mem_realloc_ammount] => 0
    [mem_free_count] => 0
    [proto_text_fetched_null] => 0
    [proto_text_fetched_bit] => 0
    [proto_text_fetched_tinyint] => 0
    [proto_text_fetched_short] => 0
    [proto_text_fetched_int24] => 0
    [proto_text_fetched_int] => 0
    [proto_text_fetched_bigint] => 0
    [proto_text_fetched_decimal] => 0
    [proto_text_fetched_float] => 0
    [proto_text_fetched_double] => 0
    [proto_text_fetched_date] => 0
    [proto_text_fetched_year] => 0
    [proto_text_fetched_time] => 0
    [proto_text_fetched_datetime] => 0
    [proto_text_fetched_timestamp] => 0
    [proto_text_fetched_string] => 0
    [proto_text_fetched_blob] => 0
    [proto_text_fetched_enum] => 0
    [proto_text_fetched_set] => 0
    [proto_text_fetched_geometry] => 0
    [proto_text_fetched_other] => 0
    [proto_binary_fetched_null] => 0
    [proto_binary_fetched_bit] => 0
    [proto_binary_fetched_tinyint] => 0
    [proto_binary_fetched_short] => 0
    [proto_binary_fetched_int24] => 0
    [proto_binary_fetched_int] => 0
    [proto_binary_fetched_bigint] => 0
    [proto_binary_fetched_decimal] => 0
    [proto_binary_fetched_float] => 0
    [proto_binary_fetched_double] => 0
    [proto_binary_fetched_date] => 0
    [proto_binary_fetched_year] => 0
    [proto_binary_fetched_time] => 0
    [proto_binary_fetched_datetime] => 0
    [proto_binary_fetched_timestamp] => 0
    [proto_binary_fetched_string] => 0
    [proto_binary_fetched_blob] => 0
    [proto_binary_fetched_enum] => 0
    [proto_binary_fetched_set] => 0
    [proto_binary_fetched_geometry] => 0
    [proto_binary_fetched_other] => 0
)
```

## See Also

Stats description

## 3.14.5 mysqli_get_links_stats

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- mysqli_get_links_stats

  Return information about open and cached links

### Description

```
array mysqli_get_links_stats();
```

mysqli_get_links_stats returns information about open and cached MySQL links.

### Parameters

This function has no parameters.

### Return Values

mysqli_get_links_stats returns an associative array with three elements, keyed as follows:

| | |
|---|---|
| *total* | An int indicating the total number of open links in any state. |
| *active_plinks* | An int representing the number of active persistent connections. |
| *cached_plinks* | An int representing the number of inactive persistent connections. |

## 3.14.6 mysqli_report

Copyright 1997-2022 the PHP Documentation Group.

- mysqli_report

  Alias of mysqli_driver->report_mode

### Description

This function is an alias of: mysqli_driver->report_mode

## 3.14.7 mysqli::set_opt, mysqli_set_opt

Copyright 1997-2022 the PHP Documentation Group.

- mysqli::set_opt

  mysqli_set_opt

  Alias of mysqli_options

### Description

This function is an alias of: mysqli_options.

# 3.15 Changelog

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The following changes have been made to classes/functions/methods of this extension.

# Chapter 4 MySQL Functions (PDO_MYSQL)

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PDO_MYSQL is a driver that implements the PHP Data Objects (PDO) interface to enable access from PHP to MySQL databases.

PDO_MYSQL uses emulated prepares by default.

*MySQL 8*

When running a PHP version before 7.1.16, or PHP 7.2 before 7.2.4, set MySQL 8 Server's default password plugin to *mysql_native_password* or else you will see errors similar to *The server requested authentication method unknown to the client [caching_sha2_password]* even when *caching_sha2_password* is not used.

This is because MySQL 8 defaults to caching_sha2_password, a plugin that is not recognized by the older PHP (mysqlnd) releases. Instead, change it by setting `default_authentication_plugin=mysql_native_password` in `my.cnf`. The *caching_sha2_password* plugin will be supported in a future PHP release. In the meantime, the mysql_xdevapi extension does support it.

> **Warning**
>
> Beware: Some MySQL table types (storage engines) do not support transactions. When writing transactional database code using a table type that does not support transactions, MySQL will pretend that a transaction was initiated successfully. In addition, any DDL queries issued will implicitly commit any pending transactions.

> **Note**
>
> The MySQL driver does not properly support `PDO::PARAM_INPUT_OUTPUT` via `PDOStatement::bindParam`; while such parameters can be used, they are not updated (i.e. the actual output is ignored).

The common Unix distributions include binary versions of PHP that can be installed. Although these binary versions are typically built with support for the MySQL extensions, the extension libraries themselves may need to be installed using an additional package. Check the package manager than comes with your chosen distribution for availability.

For example, on Ubuntu the `php5-mysql` package installs the ext/mysql, ext/mysqli, and PDO_MYSQL PHP extensions. On CentOS, the `php-mysql` package also installs these three PHP extensions.

Alternatively, you can compile this extension yourself. Building PHP from source allows you to specify the MySQL extensions you want to use, as well as your choice of client library for each extension.

When compiling, use `--with-pdo-mysql[=DIR]` to install the PDO MySQL extension, where the optional `[=DIR]` is the MySQL base library. Mysqlnd is the default library. For details about choosing a library, see Choosing a MySQL library.

Optionally, the `--with-mysql-sock[=DIR]` sets to location to the MySQL unix socket pointer for all MySQL extensions, including PDO_MYSQL. If unspecified, the default locations are searched.

Optionally, the `--with-zlib-dir[=DIR]` is used to set the path to the libz install prefix.

```
$ ./configure --with-pdo-mysql --with-mysql-sock=/var/mysql/mysql.sock
```

SSL support is enabled using the appropriate PDO_MySQL constants, which is equivalent to calling the MySQL C API function mysql_ssl_set(). Also, SSL cannot be enabled with `PDO::setAttribute` because the connection already exists. See also the MySQL documentation about connecting to MySQL with SSL.

The constants below are defined by this driver, and will only be available when the extension has been either compiled into PHP or dynamically loaded at runtime. In addition, these driver-specific constants should only be used if you are using this driver. Using driver-specific attributes with another driver may result in unexpected behaviour. `PDO::getAttribute` may be used to obtain the `PDO::ATTR_DRIVER_NAME` attribute to check the driver, if your code can run against multiple drivers.

`PDO::MYSQL_ATTR_USE_BUFFERED_QUERY` (int)

If this attribute is set to `true` on a `PDOStatement`, the MySQL driver will use the buffered versions of the MySQL API. If you're writing portable code, you should use `PDOStatement::fetchAll` instead.

**Example 4.1 Forcing queries to be buffered in mysql**

```
<?php
if ($db->getAttribute(PDO::ATTR_DRIVER_NAME) == 'mysql') {
    $stmt = $db->prepare('select * from foo',
        array(PDO::MYSQL_ATTR_USE_BUFFERED_QUERY => true));
} else {
    die("my application only works with mysql; I should use \$stmt->fetchAll()
}
?>
```

`PDO::MYSQL_ATTR_LOCAL_INFILE` (int)

Enable `LOAD LOCAL INFILE`.

Note, this constant can only be used in the *`driver_options`* array when constructing a new database handle.

`PDO::MYSQL_ATTR_LOCAL_INFILE_DIRECTORY` (string)

Allows restricting LOCAL DATA loading to files located in this designated directory. Available as of PHP 8.1.0.

Note, this constant can only be used in the *`driver_options`* array when constructing a new database handle.

`PDO::MYSQL_ATTR_INIT_COMMAND` (string)

Command to execute when connecting to the MySQL server. Will automatically be re-executed when reconnecting.

Note, this constant can only be used in the *`driver_options`* array when constructing a new database handle.

`PDO::MYSQL_ATTR_READ_DEFAULT_FILE` (int)

Read options from the named option file instead of from `my.cnf`. This option is not available if mysqlnd is used, because mysqlnd does not read the mysql configuration files.

| | |
|---|---|
| PDO::MYSQL_ATTR_READ_DEFAULT_GROUP (int) | Read options from the named group from `my.cnf` or the file specified with `MYSQL_READ_DEFAULT_FILE`. This option is not available if mysqlnd is used, because mysqlnd does not read the mysql configuration files. |
| PDO::MYSQL_ATTR_MAX_BUFFER_SIZE (int) | Maximum buffer size. Defaults to 1 MiB. This constant is not supported when compiled against mysqlnd. |
| PDO::MYSQL_ATTR_DIRECT_QUERY (int) | Perform direct queries, don't use prepared statements. |
| PDO::MYSQL_ATTR_FOUND_ROWS (int) | Return the number of found (matched) rows, not the number of changed rows. |
| PDO::MYSQL_ATTR_IGNORE_SPACE (int) | Permit spaces after function names. Makes all functions names reserved words. |
| PDO::MYSQL_ATTR_COMPRESS (int) | Enable network communication compression. |
| PDO::MYSQL_ATTR_SSL_CA (int) | The file path to the SSL certificate authority. |
| PDO::MYSQL_ATTR_SSL_CAPATH (int) | The file path to the directory that contains the trusted SSL CA certificates, which are stored in PEM format. |
| PDO::MYSQL_ATTR_SSL_CERT (int) | The file path to the SSL certificate. |
| PDO::MYSQL_ATTR_SSL_CIPHER (int) | A list of one or more permissible ciphers to use for SSL encryption, in a format understood by OpenSSL. For example: `DHE-RSA-AES256-SHA:AES128-SHA` |
| PDO::MYSQL_ATTR_SSL_KEY (int) | The file path to the SSL key. |
| PDO::MYSQL_ATTR_SSL_VERIFY_SERVER_CERT (int) | Provides a way to disable verification of the server SSL certificate.<br><br>This exists as of PHP 7.0.18 and PHP 7.1.4. |
| PDO::MYSQL_ATTR_MULTI_STATEMENTS (int) | Disables multi query execution in both `PDO::prepare` and `PDO::query` when set to `false`.<br><br>Note, this constant can only be used in the *`driver_options`* array when constructing a new database handle. |

The behaviour of these functions is affected by settings in `php.ini`.

**Table 4.1 PDO_MYSQL Configuration Options**

| Name | Default | Changeable |
|---|---|---|
| pdo_mysql.default_socket | "/tmp/mysql.sock" | PHP_INI_SYSTEM |
| pdo_mysql.debug | NULL | PHP_INI_SYSTEM |

For further details and definitions of the PHP_INI_* modes, see the http://www.php.net/manual/en/configuration.changes.modes.

Here's a short explanation of the configuration directives.

| | |
|---|---|
| *pdo_mysql.default_socket* string | Sets a Unix domain socket. This value can either be set at compile time if a domain socket is found at configure. This ini setting is Unix only. |
| *pdo_mysql.debug* bool | Enables debugging for PDO_MYSQL. This setting is only available when PDO_MYSQL is compiled against mysqlnd and in PDO debug mode. |

# 4.1 PDO_MYSQL DSN

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- PDO_MYSQL DSN

  Connecting to MySQL databases

## Description

The PDO_MYSQL Data Source Name (DSN) is composed of the following elements:

| | |
|---|---|
| DSN prefix | The DSN prefix is **mysql:**. |
| host | The hostname on which the database server resides. |
| port | The port number where the database server is listening. |
| dbname | The name of the database. |
| unix_socket | The MySQL Unix socket (shouldn't be used with host or port). |
| charset | The character set. See the character set concepts documentation for more information. |

## Examples

**Example 4.2 PDO_MYSQL DSN examples**

The following example shows a PDO_MYSQL DSN for connecting to MySQL databases:

```
mysql:host=localhost;dbname=testdb
```

More complete examples:

```
mysql:host=localhost;port=3307;dbname=testdb
mysql:unix_socket=/tmp/mysql.sock;dbname=testdb
```

## Notes

> **Unix only:**
>
> When the host name is set to "localhost", then the connection to the server is made thru a domain socket. If PDO_MYSQL is compiled against libmysqlclient

then the location of the socket file is at libmysqlclient's compiled in location. If PDO_MYSQL is compiled against mysqlnd a default socket can be set thru the pdo_mysql.default_socket setting.

# Chapter 5 Mysql_xdevapi

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This extension provides access to the MySQL Document Store via the X DevAPI. The X DevAPI is a common API provided by multiple MySQL Connectors providing easy access to relational tables as well as collections of documents, which are represented in JSON, from a API with CRUD-style operations.

The X DevAPI uses the X Protocol, the new generation client-server protocol of the MySQL 8.0 server.

For general information about the MySQL Document Store, please refer to the MySQL Document Store chapter in the MySQL manual.

# 5.1 Installing/Configuring

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## 5.1.1 Requirements

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This extension requires a MySQL 8+ server with the X plugin enabled (default).

Prerequisite libraries for compiling this extension are: Boost (1.53.0 or higher), OpenSSL, and Protobuf.

## 5.1.2 Installation

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This PECL extension is not bundled with PHP.

An example installation procedure on Ubuntu 18.04 with PHP 7.2:

```
// Dependencies
$ apt install build-essential libprotobuf-dev libboost-dev openssl protobuf-compiler liblz4-tool zstd

// PHP with the desired extensions; php7.2-dev is required to compile
$ apt install php7.2-cli php7.2-dev php7.2-mysql php7.2-pdo php7.2-xml

// Compile the extension
$ pecl install mysql_xdevapi
```

The `pecl install` command does not enable PHP extensions (by default) and enabling PHP extensions can be done in several ways. Another PHP 7.2 on Ubuntu 18.04 example:

```
// Create its own ini file
$ echo "extension=mysql_xdevapi.so" > /etc/php/7.2/mods-available/mysql_xdevapi.ini

// Use the 'phpenmod' command (note: it's Debian/Ubuntu specific)
$ phpenmod -v 7.2 -s ALL mysql_xdevapi

// A 'phpenmod' alternative is to manually symlink it
// $ ln -s /etc/php/7.2/mods-available/mysql_xdevapi.ini /etc/php/7.2/cli/conf.d/20-mysql_xdevapi.ini

// Let's see which MySQL extensions are enabled now
$ php -m |grep mysql

mysql_xdevapi
mysqli
mysqlnd
pdo_mysql
```

Information for installing this PECL extension may be found in the manual chapter titled Installation of PECL extensions. Additional information such as new releases, downloads, source files, maintainer information, and a CHANGELOG, can be located here: https://pecl.php.net/package/mysql_xdevapi.

## 5.1.3 Runtime Configuration

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The behaviour of these functions is affected by settings in `php.ini`.

**Table 5.1 Mysql_xdevapi Configure Options**

| Name | Default | Changeable | Changelog |
|---|---|---|---|
| xmysqlnd.collect_memory_statistics | 0 | PHP_INI_SYSTEM | |
| xmysqlnd.collect_statistics | 1 | PHP_INI_ALL | |
| xmysqlnd.debug | | PHP_INI_SYSTEM | |
| xmysqlnd.mempool_default_size | 16000 | PHP_INI_ALL | |
| xmysqlnd.net_read_timeout | 31536000 | PHP_INI_SYSTEM | |
| xmysqlnd.trace_alloc | | PHP_INI_SYSTEM | |

Here's a short explanation of the configuration directives.

*`xmysqlnd.collect_memory_statistics`*
int

*`xmysqlnd.collect_statistics`*
int

*`xmysqlnd.debug`* string

*`xmysqlnd.mempool_default_size`*
int

*`xmysqlnd.net_read_timeout`*
int

*xmysqlnd.trace_alloc*
string

### 5.1.4 Building / Compiling From Source

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Considerations for compiling this extension from source.

- The extension name is 'mysql_xdevapi', so use `--enable-mysql-xdevapi`.
- Boost: required, optionally use the --with-boost=DIR configure option or set the MYSQL_XDEVAPI_BOOST_ROOT environment variable. Only the boost header files are required; not the binaries.
- Google Protocol Buffers (protobuf): required, optionally use the --with-protobuf=DIR configure option or set the MYSQL_XDEVAPI_PROTOBUF_ROOT environment variable.

  Optionally use `make protobufs` to generate protobuf files (*.pb.cc/.h), and `make clean-protobufs` to delete generate protobuf files.

  Windows specific protobuf note: depending on your environment, the static library with a multi-threaded DLL runtime may be needed. To prepare, use the following options: *-Dprotobuf_MSVC_STATIC_RUNTIME=OFF -Dprotobuf_BUILD_SHARED_LIBS=OFF*
- Google Protocol Buffers / protocol compiler (protoc): required, ensure that proper 'protoc' is available in the PATH while building. It is especially important as Windows PHP SDK batch scripts may overwrite the environment.
- Bison: required, and available from the PATH.

  Windows specific bison note: we strongly recommended that bison delivered with the chosen PHP SDKis used else an error similar to "zend_globals_macros.h(39): error C2375: 'zendparse': redefinition; different linkage Zend/zend_language_parser.h(214): note: see declaration of 'zendparse'" may be the result. Also, Windows PHP SDK batch scripts may overwrite the environment.
- Windows Specific Notes: To prepare the environment, see the official Windows build documentation for the current SDK.

  We recommend using the backslash '\\' instead of a slash '/' for all paths.

## 5.2 Predefined Constants

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The constants below are defined by this extension, and will only be available when the extension has either been compiled into PHP or dynamically loaded at runtime.

`MYSQLX_CLIENT_SSL` (int)

`MYSQLX_TYPE_DECIMAL` (int)

`MYSQLX_TYPE_TINY` (int)

`MYSQLX_TYPE_SHORT` (int)

`MYSQLX_TYPE_SMALLINT` (int)

`MYSQLX_TYPE_MEDIUMINT` (int)

`MYSQLX_TYPE_INT` (int)

`MYSQLX_TYPE_BIGINT` (int)

`MYSQLX_TYPE_LONG` (int)

`MYSQLX_TYPE_FLOAT` (int)

`MYSQLX_TYPE_DOUBLE` (int)

`MYSQLX_TYPE_NULL` (int)

`MYSQLX_TYPE_TIMESTAMP` (int)

`MYSQLX_TYPE_LONGLONG` (int)

`MYSQLX_TYPE_INT24` (int)

`MYSQLX_TYPE_DATE` (int)

`MYSQLX_TYPE_TIME` (int)

`MYSQLX_TYPE_DATETIME` (int)

`MYSQLX_TYPE_YEAR` (int)

`MYSQLX_TYPE_NEWDATE` (int)

`MYSQLX_TYPE_ENUM` (int)

`MYSQLX_TYPE_SET` (int)

`MYSQLX_TYPE_TINY_BLOB` (int)

`MYSQLX_TYPE_MEDIUM_BLOB` (int)

`MYSQLX_TYPE_LONG_BLOB` (int)

`MYSQLX_TYPE_BLOB` (int)

`MYSQLX_TYPE_VAR_STRING` (int)

`MYSQLX_TYPE_STRING` (int)

`MYSQLX_TYPE_CHAR` (int)

`MYSQLX_TYPE_BYTES` (int)

`MYSQLX_TYPE_INTERVAL` (int)

`MYSQLX_TYPE_GEOMETRY` (int)

`MYSQLX_TYPE_JSON` (int)

`MYSQLX_TYPE_NEWDECIMAL` (int)

`MYSQLX_TYPE_BIT` (int)

`MYSQLX_LOCK_DEFAULT` (int)

`MYSQLX_LOCK_NOWAIT` (int)

`MYSQLX_LOCK_SKIP_LOCKED` (int)

# 5.3 Changelog

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The following changes have been made to classes/functions/methods of this extension.

## General Changelog for the ext/mysql_xdevapi extension

This changelog references the ext/mysql_xdevapi extension.

## Global ext/mysql_xdevapi changes

| Version | Description |
|---|---|
| 8.0.28 | Removed TLSv1 and TLSv1.1 support. The values "TLSv1", "TLSv1.0", and "TLSv1.1" are now considered invalid for the "tls-versions" connection attribute. |
| 8.0.26 | Deprecated TLSv1 and TLSv1.1 support. |

# 5.4 Examples

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The central entry point to the X DevAPI is the `mysql_xdevapi\getSession` function, which receives a URI to a MySQL 8.0 Server and returns a `mysql_xdevap\Session` object.

**Example 5.1 Connecting to a MySQL Server**

```
<?php
try {
    $session = mysql_xdevapi\getSession("mysqlx://user:password@host");
} catch(Exception $e) {
    die("Connection could not be established: " . $e->getMessage());
}

// ... use $session
?>
```

The session provides full access to the API. For a new MySQL Server installation, the first step is to create a database schema with a collection to store data:

**Example 5.2 Creating a Schema and Collection on the MySQL Server**

```
<?php
```

```
$schema = $session->createSchema("test");
$collection = $schema->createCollection("example");
?>
```

When storing data, typically `json_encode` is used to encode the data into JSON, which can then be stored inside a collection.

The following example stores data into the collection we created earlier, and then retrieve parts of it again.

**Example 5.3 Storing and Retrieving Data**

```
<?php
$marco = [
  "name" => "Marco",
  "age"  => 19,
  "job"  => "Programmer"
];
$mike = [
  "name" => "Mike",
  "age"  => 39,
  "job"  => "Manager"
];

$schema = $session->getSchema("test");
$collection = $schema->getCollection("example");

$collection->add($marco, $mike)->execute();

var_dump($collection->find("name = 'Mike'")->execute()->fetchOne());
?>
```

The above example will output something similar to:

```
array(4) {
  ["_id"]=>
  string(28) "00005ad66aaf0000000000000003"
  ["age"]=>
  int(39)
  ["job"]=>
  string(7) "Manager"
  ["name"]=>
  string(4) "Mike"
}
```

The example demonstrates that the MySQL Server adds an extra field named `_id`, which serves as primary key to the document.

The example also demonstrates that retrieved data is sorted alphabetically. That specific order comes from the efficient binary storage inside the MySQL server, but it should not be relied upon. Refer to the MySQL JSON datatype documentation for details.

Optionally use PHP's iterators fetch multiple documents:

**Example 5.4 Fetching and Iterating Multiple Documents**

```
<?php
$result = $collection->find()->execute();
```

```
foreach ($result as $doc) {
  echo "${doc["name"]} is a ${doc["job"]}.\n";
}
?>
```

The above example will output something similar to:

```
Marco is a Programmer.
Mike is a Manager.
```

# 5.5 Mysql_xdevapi Functions

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## 5.5.1 `expression`

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- `expression`

  Bind prepared statement variables as parameters

### Description

```
  object mysql_xdevapi\expression(
    string expression);
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

*`expression`*

### Return Values

### Examples

**Example 5.5 `mysql_xdevapi\Expression` example**

```
<?php
$expression = mysql_xdevapi\Expression("[age,job]");

$res  = $coll->find("age > 30")->fields($expression)->limit(3)->execute();
$data = $res->fetchAll();

print_r($data);
?>
```

The above example will output something similar to:

```
<?php
```

## 5.5.2 getSession

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- getSession

  Connect to a MySQL server

### Description

```
mysql_xdevapi\Session mysql_xdevapi\getSession(
  string uri);
```

Connects to the MySQL server.

### Parameters

*uri*

The URI to the MySQL server, such as mysqlx://user:password@host.

URI format:

scheme://[user[:[password]]@]target[:port][?attribute1=value1&attribute2=value2...

- scheme: required, the connection protocol

  In mysql_xdevapi it is always 'mysqlx' (for X Protocol)

- user: optional, the MySQL user account for authentication
- password: optional, the MySQL user's password for authentication
- target: required, the server instance the connection refers to:

  * TCP connection (host name, IPv4 address, or IPv6 address)

  * Unix socket path (local file path)

  * Windows named-pipe (local file path)

- port: optional, network port of MySQL server.

  by default port for X Protocol is 33060

- ?attribute=value: this element is optional and specifies a data dictionary that contains different options, including:

  - The auth (authentication mechanism) attribute as it relates to encrypted connections. For additional information, see Command Options for Encrypted Connections. The following 'auth' values are supported: plain, mysql41, external, and sha256_mem.
  - The connect-timeout attribute affects the connection and not subsequent operations. It is set per connection whether on a single or multiple hosts.

Pass in a positive integer to define the connection timeout in seconds, or pass in 0 (zero) to disable the timeout (infinite). Not defining connect-timeout uses the default value of 10.

Related, the MYSQLX_CONNECTION_TIMEOUT (timeout in seconds) and MYSQLX_TEST_CONNECTION_TIMEOUT (used while running tests) environment variables can be set and used instead of connect-timeout in the URI. The connect-timeout URI option has precedence over these environment variables.

- The optional `compression` attribute accepts these values: `preferred` (client negotiates with server to find a supported algorithm; connection is uncompressed if a mutually supported algorithm is not found), `required` (like "preferred", but connection is terminated if a mutually supported algorithm is not found), or `disabled` (connection is uncompressed). Defaults to `preferred`.

  This option was added in version 8.0.20.

- The optional `compression-algorithms` attribute defines the desired compression algorithms (and their preferred usage order): `zstd_stream` (alias: zstd), `lz4_message` (alias: lz4), or `deflate_stream` (aliases: deflate or zlib). By default, the order used (depending on system availability) is lz4_message, zstd_stream, then deflate_stream. For example, passing in compression-algorithms=[lz4,zstd_stream] uses lz4 if it's available, otherwise zstd_stream is used. If both are unavailable then behavior depends on the compression value e.g., if compression=required then it'll fail with an error.

  This option was added in version 8.0.22.

**Example 5.6 URI examples**

```
mysqlx://foobar
mysqlx://root@localhost?socket=%2Ftmp%2Fmysqld.sock%2F
mysqlx://foo:bar@localhost:33060
mysqlx://foo:bar@localhost:33160?ssl-mode=disabled
mysqlx://foo:bar@localhost:33260?ssl-mode=required
mysqlx://foo:bar@localhost:33360?ssl-mode=required&auth=mysql41
mysqlx://foo:bar@(/path/to/socket)
mysqlx://foo:bar@(/path/to/socket)?auth=sha256_mem
mysqlx://foo:bar@[localhost:33060, 127.0.0.1:33061]
mysqlx://foobar?ssl-ca=(/path/to/ca.pem)&ssl-crl=(/path/to/crl.pem)
mysqlx://foo:bar@[localhost:33060, 127.0.0.1:33061]?ssl-mode=disabled
mysqlx://foo:bar@localhost:33160/?connect-timeout=0
mysqlx://foo:bar@localhost:33160/?connect-timeout=10&compression=required
mysqlx://foo:bar@localhost:33160/?connect-timeout=10&compression=required&
```

For related information, see MySQL Shell's Connecting using a URI String.

## Return Values

A `Session` object.

## Errors/Exceptions

A connection failure throws an `Exception`.

## Examples

**Example 5.7 `mysql_xdevapi\getSession` example**

```
<?php
try {
    $session = mysql_xdevapi\getSession("mysqlx://user:password@host");
} catch(Exception $e) {
    die("Connection could not be established: " . $e->getMessage());
}

$schemas = $session->getSchemas();
print_r($schemas);

$mysql_version = $session->getServerVersion();
print_r($mysql_version);

var_dump($collection->find("name = 'Alfred'")->execute()->fetchOne());
?>
```

The above example will output something similar to:

```
Array
(
    [0] => mysql_xdevapi\Schema Object
        (
            [name] => helloworld
        )
    [1] => mysql_xdevapi\Schema Object
        (
            [name] => information_schema
        )
    [2] => mysql_xdevapi\Schema Object
        (
            [name] => mysql
        )
    [3] => mysql_xdevapi\Schema Object
        (
            [name] => performance_schema
        )
    [4] => mysql_xdevapi\Schema Object
        (
            [name] => sys
        )
)

80012

array(4) {
  ["_id"]=>
  string(28) "00005ad66abf0001000400000003"
  ["age"]=>
  int(42)
  ["job"]=>
  string(7) "Butler"
  ["name"]=>
  string(4) "Alfred"
```

```
}
```

# 5.6 BaseResult interface

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```
mysql_xdevapi\BaseResult {
mysql_xdevapi\BaseResult

      Methods

  abstract public array mysql_xdevapi\BaseResult::getWarnings();

  abstract public int mysql_xdevapi\BaseResult::getWarningsCount();

}
```

## 5.6.1 `BaseResult::getWarnings`

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- `BaseResult::getWarnings`

  Fetch warnings from last operation

### Description

```
  abstract public array mysql_xdevapi\BaseResult::getWarnings();
```

Fetches warnings generated by MySQL server's last operation.

### Parameters

This function has no parameters.

### Return Values

An array of Warning objects from the last operation. Each object defines an error 'message', error 'level', and error 'code'. An empty array is returned if no errors are present.

### Examples

**Example 5.8 `mysql_xdevapi\RowResult::getWarnings` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("CREATE DATABASE foo")->execute();
$session->sql("CREATE TABLE foo.test_table(x int)")->execute();

$schema = $session->getSchema("foo");
$table  = $schema->getTable("test_table");
```

```
$table->insert(['x'])->values([1])->values([2])->execute();

$res = $table->select(['x/0 as bad_x'])->execute();
$warnings = $res->getWarnings();

print_r($warnings);
?>
```

The above example will output something similar to:

```
Array
(
    [0] => mysql_xdevapi\Warning Object
        (
            [message] => Division by 0
            [level] => 2
            [code] => 1365
        )
    [1] => mysql_xdevapi\Warning Object
        (
            [message] => Division by 0
            [level] => 2
            [code] => 1365
        )
)
```

## 5.6.2 BaseResult::getWarningsCount

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- BaseResult::getWarningsCount

  Fetch warning count from last operation

### Description

```
abstract public int mysql_xdevapi\BaseResult::getWarningsCount();
```

Returns the number of warnings raised by the last operation. Specifically, these warnings are raised by the MySQL server.

### Parameters

This function has no parameters.

### Return Values

The number of warnings from the last operation.

### Examples

**Example 5.9 mysql_xdevapi\RowResult::getWarningsCount example**

```
<?php
```

```
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS foo")->execute();
$session->sql("CREATE DATABASE foo")->execute();
$session->sql("CREATE TABLE foo.test_table(x int)")->execute();

$schema = $session->getSchema("foo");
$table  = $schema->getTable("test_table");

$table->insert(['x'])->values([1])->values([2])->execute();

$res = $table->select(['x/0 as bad_x'])->execute();

echo $res->getWarningsCount();
?>
```

The above example will output something similar to:

```
2
```

# 5.7 Client class

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Provides access to the connection pool.

```
mysql_xdevapi\Client {
mysql_xdevapi\Client

      Methods

  public bool mysql_xdevapi\Client::close();

  public mysql_xdevapi\Session mysql_xdevapi\Client::getSession();

}
```

## 5.7.1 `mysql_xdevapi\Client::close`

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- `mysql_xdevapi\Client::close`

  Close client

### Description

```
  public bool mysql_xdevapi\Client::close();
```

Close all client connections with the server.

### Parameters

This function has no parameters.

### Return Values

`true` if connections are closed.

## 5.7.2 Client::__construct

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- `Client::__construct`

  Client constructor

### Description

```
  private mysql_xdevapi\Client::__construct();
```

Construct a client object.

### Parameters

This function has no parameters.

### Examples

**Example 5.10 `mysql_xdevapi\Client::__construct` example**

```
<?php
$pooling_options = '{
  "enabled": true,
    "maxSize": 10,
    "maxIdleTime": 3600,
    "queueTimeOut": 1000
}';
$client = mysql_xdevapi\getClient($connection_uri, $pooling_options);
$session = $client->getSession();
```

## 5.7.3 Client::getClient

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- `Client::getClient`

  Get client session

### Description

```
  public mysql_xdevapi\Session mysql_xdevapi\Client::getSession();
```

Get session associated with the client.

### Parameters

This function has no parameters.

### Return Values

A Session object.

# 5.8 Collection class

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```
mysql_xdevapi\Collection {
mysql_xdevapi\Collection

        mysql_xdevapi\SchemaObject

      Properties

  public
    name ;

Methods

  public mysql_xdevapi\CollectionAdd mysql_xdevapi\Collection::add(
    mixed document);

  public mysql_xdevapi\Result mysql_xdevapi\Collection::addOrReplaceOne(
    string id,
    string doc);

  public int mysql_xdevapi\Collection::count();

  public void mysql_xdevapi\Collection::createIndex(
    string index_name,
    string index_desc_json);

  public bool mysql_xdevapi\Collection::dropIndex(
    string index_name);

  public bool mysql_xdevapi\Collection::existsInDatabase();

  public mysql_xdevapi\CollectionFind mysql_xdevapi\Collection::find(
    string search_condition);

  public string mysql_xdevapi\Collection::getName();

  public Document mysql_xdevapi\Collection::getOne(
    string id);

  public Schema Object mysql_xdevapi\Collection::getSchema();

  public Session mysql_xdevapi\Collection::getSession();

  public mysql_xdevapi\CollectionModify mysql_xdevapi\Collection::modify(
    string search_condition);

  public mysql_xdevapi\CollectionRemove mysql_xdevapi\Collection::remove(
    string search_condition);

  public mysql_xdevapi\Result mysql_xdevapi\Collection::removeOne(
    string id);

  public mysql_xdevapi\Result mysql_xdevapi\Collection::replaceOne(
    string id,
    string doc);

}
```

name

## 5.8.1 Collection::add

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- Collection::add

  Add collection document

### Description

```
public mysql_xdevapi\CollectionAdd mysql_xdevapi\Collection::add(
  mixed document);
```

Triggers the insertion of the given document(s) into the collection, and multiple variants of this method are supported. Options include:

1. Add a single document as a JSON string.
2. Add a single document as an array as: `[ 'field' => 'value', 'field2' => 'value2' ... ]`
3. A mix of both, and multiple documents can be added in the same operation.

### Parameters

| | |
|---|---|
| *document* | One or multiple documents, and this can be either JSON or an array of fields with their associated values. This cannot be an empty array.<br><br>The MySQL server automatically generates unique `_id` values for each document (recommended), although this can be manually added as well. This value must be unique as otherwise the add operation will fail. |

### Return Values

A CollectionAdd object. Use execute() to return a Result that can be used to query the number of affected items, the number warnings generated by the operation, or to fetch a list of generated IDs for the inserted documents.

### Examples

**Example 5.11 mysql_xdevapi\Collection::add example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema = $session->getSchema("addressbook");
$create = $schema->createCollection("people");

$collection = $schema->getCollection("people");

// Add two documents
$collection->add('{"name": "Fred",  "age": 21, "job": "Construction"}')->execute();
$collection->add('{"name": "Wilma", "age": 23, "job": "Teacher"}')->execute();
```

```
// Add two documents using a single JSON object
$result = $collection->add(
  '{"name": "Bernie",
    "jobs": [{"title":"Cat Herder","Salary":42000}, {"title":"Father","Salary":0}],
    "hobbies": ["Sports","Making cupcakes"]}',
  '{"name": "Jane",
    "jobs": [{"title":"Scientist","Salary":18000}, {"title":"Mother","Salary":0}],
    "hobbies": ["Walking","Making pies"]}')->execute();

// Fetch a list of generated ID's from the last add()
$ids = $result->getGeneratedIds();
print_r($ids);
?>
```

The above example will output something similar to:

```
Array
(
    [0] => 00005b6b536100000000000000056
    [1] => 00005b6b536100000000000000057
)
```

### Notes

> **Note**
>
> A unique _id is generated by MySQL Server 8.0 or higher, as demonstrated in the example. The _id field must be manually defined if using MySQL Server 5.7.

## 5.8.2 `Collection::addOrReplaceOne`

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- `Collection::addOrReplaceOne`

  Add or replace collection document

### Description

```
  public mysql_xdevapi\Result mysql_xdevapi\Collection::addOrReplaceOne(
    string id,
    string doc);
```

Add a new document, or replace a document if it already exists.

Here are several scenarios for this method:

- If neither the id or any unique key values conflict with any document in the collection, then the document is added.
- If the id does not match any document but one or more unique key values conflict with a document in the collection, then an error is raised.
- If id matches an existing document and no unique keys are defined for the collection, then the document is replaced.

- If id matches an existing document, and either all unique keys in the replacement document match that same document or they don't conflict with any other documents in the collection, then the document is replaced.
- If id matches an existing document and one or more unique keys match a different document from the collection, then an error is raised.

### Parameters

| | |
|---|---|
| *id* | This is the filter id. If this id or any other field that has a unique index already exists in the collection, then it will update the matching document instead.<br><br>By default, this id is automatically generated by MySQL Server when the record was added, and is referenced as a field named '_id'. |
| *doc* | This is the document to add or replace, which is a JSON string. |

### Return Values

A Result object.

### Examples

**Example 5.12 `mysql_xdevapi\Collection::addOrReplaceOne` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema = $session->getSchema("addressbook");
$create = $schema->createCollection("people");

$collection = $schema->getCollection("people");

// Using add()
$result = $collection->add('{"name": "Wilma", "age": 23, "job": "Teacher"}')->execute();

// Using addOrReplaceOne()
// Note: we're passing in a known _id value here
$result = $collection->addOrReplaceOne('00005b6b536100000000000000056', '{"name": "Fred",  "age": 21, "job": "C

?>
```

## 5.8.3 `Collection::__construct`

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- `Collection::__construct`

  Collection constructor

### Description

```
  private mysql_xdevapi\Collection::__construct();
```

Construct a Collection object.

### Parameters

This function has no parameters.

### Examples

**Example 5.13 `mysql_xdevapi\Collection::getOne` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema     = $session->getSchema("addressbook");
$collection = $schema->createCollection("people");

$result = $collection->add('{"name": "Alfred", "age": 42, "job": "Butler"}')->execute();

// A unique _id is (by default, and recommended) generated by MySQL Server
// This retrieves the generated _id's; only one in this example, so $ids[0]
$ids        = $result->getGeneratedIds();
$alfreds_id = $ids[0];

// ...

print_r($alfreds_id);
print_r($collection->getOne($alfreds_id));
?>
```

The above example will output something similar to:

```
00005b6b536100000000000000b1

Array
(
    [_id] => 00005b6b536100000000000000b1
    [age] => 42
    [job] => Butler
    [name] => Alfred
)
```

## 5.8.4 `Collection::count`

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- `Collection::count`

  Get document count

### Description

```
public int mysql_xdevapi\Collection::count();
```

This functionality is similar to a `SELECT COUNT(*)` SQL operation against the MySQL server for the current schema and collection. In other words, it counts the number of documents in the collection.

### Parameters

This function has no parameters.

### Return Values

The number of documents in the collection.

### Examples

**Example 5.14 `mysql_xdevapi\Collection::count` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema = $session->getSchema("addressbook");
$create = $schema->createCollection("people");

$collection = $schema->getCollection("people");

$result = $collection
  ->add(
  '{"name": "Bernie",
    "jobs": [
      {"title":"Cat Herder","Salary":42000},
      {"title":"Father","Salary":0}
    ],
    "hobbies": ["Sports","Making cupcakes"]}',
  '{"name": "Jane",
    "jobs": [
      {"title":"Scientist","Salary":18000},
      {"title":"Mother","Salary":0}
    ],
    "hobbies": ["Walking","Making pies"]}')
  ->execute();

var_dump($collection->count());
?>
```

The above example will output:

```
int(2)
```

## 5.8.5 `Collection::createIndex`

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- `Collection::createIndex`

  Create collection index

### Description

```
  public void mysql_xdevapi\Collection::createIndex(
```

```
    string index_name,
    string index_desc_json);
```

Creates an index on the collection.

An exception is thrown if an index with the same name already exists, or if index definition is not correctly formed.

## Parameters

*index_name*

The name of the index that to create. This name must be a valid index name as accepted by the `CREATE INDEX` SQL query.

*index_desc_json*

Definition of the index to create. It contains an array of IndexField objects, and each object describes a single document member to include in the index, and an optional string for the type of index that might be INDEX (default) or SPATIAL.

A single IndexField description consists of the following fields:

- `field`: string, the full document path to the document member or field to be indexed.
- `type`: string, one of the supported SQL column types to map the field into. For numeric types, the optional UNSIGNED keyword may follow. For the TEXT type, the length to consider for indexing may be added.
- `required`: bool, (optional) true if the field is required to exist in the document. Defaults to `false`, except for `GEOJSON` where it defaults to `true`.
- `options`: integer, (optional) special option flags for use when decoding `GEOJSON` data.
- `srid`: integer, (optional) srid value for use when decoding `GEOJSON` data.

It is an error to include other fields not described above in IndexDefinition or IndexField documents.

## Return Values

## Examples

**Example 5.15 `mysql_xdevapi\Collection::createIndex` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema     = $session->getSchema("addressbook");
$collection = $schema->createCollection("people");

// Creating a text index
$collection->createIndex(
```

```
  'myindex1',
  '{"fields": [{
    "field": "$.name",
    "type": "TEXT(25)",
    "required": true}],
    "unique": false}'
);

// A spatial index
$collection->createIndex(
  'myindex2',
  '{"fields": [{
    "field": "$.home",
    "type": "GEOJSON",
    "required": true}],
    "type": "SPATIAL"}'
);

// Index with multiple fields
$collection->createIndex(
  'myindex3',
  '{"fields": [
    {
      "field": "$.name",
      "type": "TEXT(20)",
      "required": true
    },
    {
      "field": "$.age",
      "type": "INTEGER"
    },
    {
      "field": "$.job",
      "type": "TEXT(30)",
      "required": false
    }
  ],
  "unique": true
  }'
);
```

## 5.8.6 Collection::dropIndex

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- Collection::dropIndex

  Drop collection index

### Description

```
  public bool mysql_xdevapi\Collection::dropIndex(
    string index_name);
```

Drop a collection index.

This operation does not yield an error if the index does not exist, but `false` is returned in that case.

### Parameters

| | |
|---|---|
| *index_name* | Name of collection index to drop. |

### Return Values

`true` if the DROP INDEX operation succeeded, otherwise `false`.

### Examples

**Example 5.16 `mysql_xdevapi\Collection::dropIndex` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema = $session->getSchema("addressbook");
$create = $schema->createCollection("people");

// ...

$collection = $schema->getCollection("people");

$collection->createIndex(
  'myindex',
  '{"fields": [{"field": "$.name", "type": "TEXT(25)", "required": true}], "unique": false}'
);

// ...

if ($collection->dropIndex('myindex')) {
    echo "An index named 'myindex' was found, and dropped.";
}
?>
```

The above example will output:

```
An index named 'myindex' was found, and dropped.
```

## 5.8.7 `Collection::existsInDatabase`

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- `Collection::existsInDatabase`

  Check if collection exists in database

### Description

```
public bool mysql_xdevapi\Collection::existsInDatabase();
```

Checks if the Collection object refers to a collection in the database (schema).

### Parameters

This function has no parameters.

### Return Values

Returns `true` if collection exists in the database, else `false` if it does not.

A table defined with two columns (doc and _id) is considered a collection, and a third _json_schema column as of MySQL 8.0.21. Adding an additional column means existsInDatabase() will no longer see it as a collection.

### Examples

**Example 5.17 `mysql_xdevapi\Collection::existsInDatabase` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema = $session->getSchema("addressbook");
$create = $schema->createCollection("people");

// ...

$collection = $schema->getCollection("people");

// ...

if (!$collection->existsInDatabase()) {
    echo "The collection no longer exists in the database named addressbook. What happened?";
}
?>
```

## 5.8.8 `Collection::find`

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- `Collection::find`

  Search for document

### Description

```
public mysql_xdevapi\CollectionFind mysql_xdevapi\Collection::find(
  string search_condition);
```

Search a database collection for a document or set of documents. The found documents are returned as a CollectionFind object is to further modify or fetch results from.

### Parameters

*`search_condition`*

Although optional, normally a condition is defined to limit the results to a subset of documents.

Multiple elements might build the condition and the syntax supports parameter binding. The expression used as search condition must be a valid SQL expression. If no search condition is provided (field empty) then find('true') is assumed.

## Return Values

A CollectionFind object to verify the operation, or fetch the found documents.

## Examples

**Example 5.18 `mysql_xdevapi\Collection::find` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema     = $session->getSchema("addressbook");
$collection = $schema->createCollection("people");

$collection->add('{"name": "Alfred",     "age": 18, "job": "Butler"}')->execute();
$collection->add('{"name": "Bob",        "age": 19, "job": "Swimmer"}')->execute();
$collection->add('{"name": "Fred",       "age": 20, "job": "Construction"}')->execute();
$collection->add('{"name": "Wilma",      "age": 21, "job": "Teacher"}')->execute();
$collection->add('{"name": "Suki",       "age": 22, "job": "Teacher"}')->execute();

$find   = $collection->find('job LIKE :job AND age > :age');
$result = $find
  ->bind(['job' => 'Teacher', 'age' => 20])
  ->sort('age DESC')
  ->limit(2)
  ->execute();

print_r($result->fetchAll());
?>
```

The above example will output:

```
Array
(
    [0] => Array
        (
            [_id] => 00005b6b536100000000000000a8
            [age] => 22
            [job] => Teacher
            [name] => Suki
        )
    [1] => Array
        (
            [_id] => 00005b6b536100000000000000a7
            [age] => 21
            [job] => Teacher
            [name] => Wilma
        )
)
```

# 5.8.9 `Collection::getName`

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- `Collection::getName`

Get collection name

### Description

```
public string mysql_xdevapi\Collection::getName();
```

Retrieve the collection's name.

### Parameters

This function has no parameters.

### Return Values

The collection name, as a string.

### Examples

**Example 5.19 `mysql_xdevapi\Collection::getName` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema     = $session->getSchema("addressbook");
$collection = $schema->createCollection("people");


// ...

var_dump($collection->getName());
?>
```

The above example will output something similar to:

```
string(6) "people"
```

## 5.8.10 `Collection::getOne`

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- `Collection::getOne`

  Get one document

### Description

```
public Document mysql_xdevapi\Collection::getOne(
  string id);
```

Fetches one document from the collection.

This is a shortcut for: `Collection.find("_id = :id").bind("id", id).execute().fetchOne();`

### Parameters

| | |
|---|---|
| *id* | The document _id in the collection. |

### Return Values

The collection object, or `null` if the _id does not match a document.

### Examples

**Example 5.20 `mysql_xdevapi\Collection::getOne` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema     = $session->getSchema("addressbook");
$collection = $schema->createCollection("people");

$result = $collection->add('{"name": "Alfred", "age": 42, "job": "Butler"}')->execute();

// A unique _id is (by default, and recommended) generated by MySQL Server
// This retrieves the generated _id's; only one in this example, so $ids[0]
$ids        = $result->getGeneratedIds();
$alfreds_id = $ids[0];

// ...

print_r($alfreds_id);
print_r($collection->getOne($alfreds_id));
?>
```

The above example will output something similar to:

```
00005b6b536100000000000000b1

Array
(
    [_id] => 00005b6b536100000000000000b1
    [age] => 42
    [job] => Butler
    [name] => Alfred
)
```

## 5.8.11 `Collection::getSchema`

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- `Collection::getSchema`

  Get schema object

### Description

```
public Schema Object mysql_xdevapi\Collection::getSchema();
```

Retrieve the schema object that contains the collection.

### Parameters

This function has no parameters.

### Return Values

The schema object on success, or `null` if the object cannot be retrieved for the given collection.

### Examples

**Example 5.21 `mysql_xdevapi\Collection::getSchema` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema     = $session->getSchema("addressbook");
$collection = $schema->createCollection("people");

var_dump($collection->getSchema());
?>
```

The above example will output something similar to:

```
object(mysql_xdevapi\Schema)#9 (1) {
  ["name"]=>
  string(11) "addressbook"
}
```

## 5.8.12 `Collection::getSession`

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- `Collection::getSession`

  Get session object

### Description

```
public Session mysql_xdevapi\Collection::getSession();
```

Get a new Session object from the Collection object.

### Parameters

This function has no parameters.

### Return Values

A Session object.

### Examples

**Example 5.22 `mysql_xdevapi\Collection::getSession` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema     = $session->getSchema("addressbook");
$collection = $schema->createCollection("people");

// ...

$newsession = $collection->getSession();

var_dump($session);
var_dump($newsession);
?>
```

The above example will output something similar to:

```
object(mysql_xdevapi\Session)#1 (0) {
}
object(mysql_xdevapi\Session)#4 (0) {
}
```

## 5.8.13 `Collection::modify`

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- `Collection::modify`

  Modify collection documents

### Description

```
public mysql_xdevapi\CollectionModify mysql_xdevapi\Collection::modify(
  string search_condition);
```

Modify collections that meet specific search conditions. Multiple operations are allowed, and parameter binding is supported.

### Parameters

| | |
|---|---|
| *`search_condition`* | Must be a valid SQL expression used to match the documents to modify. This expression might be as simple as `true`, which matches all documents, or it might use functions and operators such as `'CAST(_id AS SIGNED) >= 10'`, `'age MOD 2 = 0 OR age MOD 3 = 0'`, or `'_id IN ["2","5","7","10"]'`. |

### Return Values

If the operation is not executed, then the function will return a Modify object that can be used to add additional modify operations.

If the modify operation is executed, then the returned object will contain the result of the operation.

### Examples

**Example 5.23 `mysql_xdevapi\Collection::modify` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema     = $session->getSchema("addressbook");
$collection = $schema->createCollection("people");

$collection->add('{"name": "Alfred", "age": 18, "job": "Butler"}')->execute();
$collection->add('{"name": "Bob",    "age": 19, "job": "Painter"}')->execute();

// Add two new jobs for all Painters: Artist and Crafter
$collection
  ->modify("job in ('Butler', 'Painter')")
  ->arrayAppend('job', 'Artist')
  ->arrayAppend('job', 'Crafter')
  ->execute();

// Remove the 'beer' field from all documents with the age 21
$collection
  ->modify('age < 21')
  ->unset(['beer'])
  ->execute();
?>
```

## 5.8.14 `Collection::remove`

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- `Collection::remove`

  Remove collection documents

### Description

```
public mysql_xdevapi\CollectionRemove mysql_xdevapi\Collection::remove(
  string search_condition);
```

Remove collections that meet specific search conditions. Multiple operations are allowed, and parameter binding is supported.

### Parameters

| | |
|---|---|
| *`search_condition`* | Must be a valid SQL expression used to match the documents to modify. This expression might be as simple as `true`, which matches all |

documents, or it might use functions and operators such as `'CAST(_id AS SIGNED) >= 10'`, `'age MOD 2 = 0 OR age MOD 3 = 0'`, or `'_id IN ["2","5","7","10"]'`.

### Return Values

If the operation is not executed, then the function will return a Remove object that can be used to add additional remove operations.

If the remove operation is executed, then the returned object will contain the result of the operation.

### Examples

**Example 5.24 `mysql_xdevapi\Collection::remove` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema     = $session->getSchema("addressbook");
$collection = $schema->createCollection("people");

$collection->add('{"name": "Alfred", "age": 18, "job": "Butler"}')->execute();
$collection->add('{"name": "Bob",    "age": 19, "job": "Painter"}')->execute();

// Remove all painters
$collection
  ->remove("job in ('Painter')")
  ->execute();

// Remove the oldest butler
$collection
  ->remove("job in ('Butler')")
  ->sort('age desc')
  ->limit(1)
  ->execute();

// Remove record with lowest age
$collection
  ->remove('true')
  ->sort('age desc')
  ->limit(1)
  ->execute();
?>
```

## 5.8.15 `Collection::removeOne`

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- `Collection::removeOne`

  Remove one collection document

### Description

```
  public mysql_xdevapi\Result mysql_xdevapi\Collection::removeOne(
    string id);
```

Remove one document from the collection with the corresponding ID. This is a shortcut for `Collection.remove("_id = :id").bind("id", id).execute()`.

### Parameters

| | |
|---|---|
| *id* | The ID of the collection document to remove. Typically this is the _id that was generated by MySQL Server when the record was added. |

### Return Values

A Result object that can be used to query the number of affected items or the number warnings generated by the operation.

### Examples

**Example 5.25 `mysql_xdevapi\Collection::removeOne` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema     = $session->getSchema("addressbook");
$collection = $schema->createCollection("people");

$result = $collection->add('{"name": "Alfred", "age": 18, "job": "Butler"}')->execute();

// Normally the _id is known by other means,
// but for this example let's fetch the generated id and use it
$ids       = $result->getGeneratedIds();
$alfred_id = $ids[0];

$result = $collection->removeOne($alfred_id);

if(!$result->getAffectedItemsCount()) {
    echo "Alfred with id $alfred_id was not removed.";
} else {
    echo "Goodbye, Alfred, you can take _id $alfred_id with you.";
}
?>
```

The above example will output something similar to:

```
Goodbye, Alfred, you can take _id 00005b6b5361000000000000000cb with you.
```

## 5.8.16 `Collection::replaceOne`

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- `Collection::replaceOne`

  Replace one collection document

### Description

```
  public mysql_xdevapi\Result mysql_xdevapi\Collection::replaceOne(
```

```
    string id,
    string doc);
```

Updates (or replaces) the document identified by ID, if it exists.

### Parameters

| | |
|---|---|
| *id* | ID of the document to replace or update. Typically this is the _id that was generated by MySQL Server when the record was added. |
| *doc* | Collection document to update or replace the document matching the `id` parameter.<br><br>This document can be either a document object or a valid JSON string describing the new document. |

### Return Values

A Result object that can be used to query the number of affected items and the number warnings generated by the operation.

### Examples

**Example 5.26 `mysql_xdevapi\Collection::replaceOne` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema     = $session->getSchema("addressbook");
$collection = $schema->createCollection("people");

$result = $collection->add('{"name": "Alfred", "age": 18, "job": "Butler"}')->execute();

// Normally the _id is known by other means,
// but for this example let's fetch the generated id and use it
$ids       = $result->getGeneratedIds();
$alfred_id = $ids[0];

// ...

$alfred = $collection->getOne($alfred_id);
$alfred['age'] = 81;
$alfred['job'] = 'Guru';

$collection->replaceOne($alfred_id, $alfred);

?>
```

## 5.9 CollectionAdd class

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```
mysql_xdevapi\CollectionAdd {
mysql_xdevapi\CollectionAdd
```

```
       mysql_xdevapi\Executable

     Methods

  public mysql_xdevapi\Result mysql_xdevapi\CollectionAdd::execute();

}
```

## 5.9.1 CollectionAdd::__construct

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- CollectionAdd::__construct

  CollectionAdd constructor

### Description

```
  private mysql_xdevapi\CollectionAdd::__construct();
```

Use to add a document to a collection; called from a Collection object.

### Parameters

This function has no parameters.

### Examples

**Example 5.27 mysql_xdevapi\CollectionAdd::__construct example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema = $session->getSchema("addressbook");
$create = $schema->createCollection("people");

$collection = $schema->getCollection("people");

// Add two documents
$collection
  ->add('{"name": "Fred",  "age": 21, "job": "Construction"}')
  ->execute();

$collection
  ->add('{"name": "Wilma", "age": 23, "job": "Teacher"}')
  ->execute();

// Add two documents using a single JSON object
$result = $collection
  ->add(
    '{"name": "Bernie",
      "jobs": [{"title":"Cat Herder","Salary":42000}, {"title":"Father","Salary":0}],
      "hobbies": ["Sports","Making cupcakes"]}',
    '{"name": "Jane",
      "jobs": [{"title":"Scientist","Salary":18000}, {"title":"Mother","Salary":0}],
      "hobbies": ["Walking","Making pies"]}')
  ->execute();

// Fetch a list of generated ID's from the last add()
$ids = $result->getGeneratedIds();
```

```
print_r($ids);

?>
```

The above example will output something similar to:

```
Array
(
    [0] => 00005b6b536100000000000000056
    [1] => 00005b6b536100000000000000057
)
```

### Notes

> **Note**
>
> A unique _id is generated by MySQL Server 8.0 or higher, as demonstrated in the example. The _id field must be manually defined if using MySQL Server 5.7.

## 5.9.2 CollectionAdd::execute

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- `CollectionAdd::execute`

  Execute the statement

### Description

```
  public mysql_xdevapi\Result mysql_xdevapi\CollectionAdd::execute();
```

The execute method is required to send the CRUD operation request to the MySQL server.

### Parameters

This function has no parameters.

### Return Values

A Result object that can be used to verify the status of the operation, such as the number of affected rows.

### Examples

**Example 5.28 `mysql_xdevapi\CollectionAdd::execute` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema = $session->getSchema("addressbook");
$create = $schema->createCollection("people");

$collection = $schema->getCollection("people");

// Add two documents
```

```
$collection
  ->add('{"name": "Fred",  "age": 21, "job": "Construction"}')
  ->execute();

$collection
  ->add('{"name": "Wilma", "age": 23, "job": "Teacher"}')
  ->execute();

// Add two documents using a single JSON object
$result = $collection
  ->add(
    '{"name": "Bernie",
      "jobs": [{"title":"Cat Herder","Salary":42000}, {"title":"Father","Salary":0}],
      "hobbies": ["Sports","Making cupcakes"]}',
    '{"name": "Jane",
      "jobs": [{"title":"Scientist","Salary":18000}, {"title":"Mother","Salary":0}],
      "hobbies": ["Walking","Making pies"]}')
  ->execute();

// Fetch a list of generated ID's from the last add()
$ids = $result->getGeneratedIds();
print_r($ids);
?>
```

The above example will output something similar to:

```
Array
(
    [0] => 00005b6b536100000000000000056
    [1] => 00005b6b536100000000000000057
)
```

# 5.10 CollectionFind class

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```
mysql_xdevapi\CollectionFind {
mysql_xdevapi\CollectionFind

        mysql_xdevapi\Executable

        mysql_xdevapi\CrudOperationBindable

        mysql_xdevapi\CrudOperationLimitable

        mysql_xdevapi\CrudOperationSortable

      Methods

  public mysql_xdevapi\CollectionFind mysql_xdevapi\CollectionFind::bind(
    array placeholder_values);

  public mysql_xdevapi\DocResult mysql_xdevapi\CollectionFind::execute();

  public mysql_xdevapi\CollectionFind mysql_xdevapi\CollectionFind::fields(
    string projection);

  public mysql_xdevapi\CollectionFind mysql_xdevapi\CollectionFind::groupBy(
```

```
    string sort_expr);

  public mysql_xdevapi\CollectionFind mysql_xdevapi\CollectionFind::having(
    string sort_expr);

  public mysql_xdevapi\CollectionFind mysql_xdevapi\CollectionFind::limit(
    int rows);

  public mysql_xdevapi\CollectionFind mysql_xdevapi\CollectionFind::lockExclusive(
    int lock_waiting_option);

  public mysql_xdevapi\CollectionFind mysql_xdevapi\CollectionFind::lockShared(
    int lock_waiting_option);

  public mysql_xdevapi\CollectionFind mysql_xdevapi\CollectionFind::offset(
    int position);

  public mysql_xdevapi\CollectionFind mysql_xdevapi\CollectionFind::sort(
    string sort_expr);

}
```

## 5.10.1 CollectionFind::bind

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- CollectionFind::bind

  Bind value to query placeholder

### Description

```
  public mysql_xdevapi\CollectionFind mysql_xdevapi\CollectionFind::bind(
    array placeholder_values);
```

It allows the user to bind a parameter to the placeholder in the search condition of the find operation. The placeholder has the form of :NAME where ':' is a common prefix that must always exists before any NAME, NAME is the actual name of the placeholder. The bind function accepts a list of placeholders if multiple entities have to be substituted in the search condition.

### Parameters

| | |
|---|---|
| *placeholder_values* | Values to substitute in the search condition; multiple values are allowed and are passed as an array where "PLACEHOLDER_NAME => PLACEHOLDER_VALUE". |

### Return Values

A CollectionFind object, or chain with execute() to return a Result object.

### Examples

**Example 5.29 mysql_xdevapi\CollectionFind::bind example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema = $session->getSchema("addressbook");
$create = $schema->createCollection("people");
```

```
$result = $create
  ->add('{"name": "Alfred", "age": 18, "job": "Butler"}')
  ->execute();

// ...

$collection = $schema->getCollection("people");

$result = $collection
  ->find('job like :job and age > :age')
  ->bind(['job' => 'Butler', 'age' => 16])
  ->execute();

var_dump($result->fetchAll());
?>
```

The above example will output something similar to:

```
array(1) {
  [0]=>
  array(4) {
    ["_id"]=>
    string(28) "00005b6b536100000000000000cf"
    ["age"]=>
    int(18)
    ["job"]=>
    string(6) "Butler"
    ["name"]=>
    string(6) "Alfred"
  }
}
```

## 5.10.2 `CollectionFind::__construct`

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- `CollectionFind::__construct`

  CollectionFind constructor

### Description

```
  private mysql_xdevapi\CollectionFind::__construct();
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Examples

**Example 5.30 CollectionFind example**

```
<?php
```

```
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema = $session->getSchema("addressbook");
$create = $schema->createCollection("people");
$result = $create
  ->add('{"name": "Alfred", "age": 18, "job": "Butler"}')
  ->execute();

// ...

$collection = $schema->getCollection("people");

$result = $collection
  ->find('job like :job and age > :age')
  ->bind(['job' => 'Butler', 'age' => 16])
  ->execute();

var_dump($result->fetchAll());
?>
```

The above example will output something similar to:

```
array(1) {
  [0]=>
  array(4) {
    ["_id"]=>
    string(28) "00005b6b536100000000000000cf"
    ["age"]=>
    int(18)
    ["job"]=>
    string(6) "Butler"
    ["name"]=>
    string(6) "Alfred"
  }
}
```

## 5.10.3 CollectionFind::execute

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- CollectionFind::execute

  Execute the statement

### Description

```
public mysql_xdevapi\DocResult mysql_xdevapi\CollectionFind::execute();
```

Execute the find operation; this functionality allows for method chaining.

### Parameters

This function has no parameters.

### Return Values

A DocResult object that to either fetch results from, or to query the status of the operation.

## Examples

**Example 5.31 CollectionFind example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema = $session->getSchema("addressbook");
$create = $schema->createCollection("people");

$create
  ->add('{"name": "Alfred", "age": 18, "job": "Butler"}')
  ->execute();

// ...

$collection = $schema->getCollection("people");

$result = $collection
  ->find('job like :job and age > :age')
  ->bind(['job' => 'Butler', 'age' => 16])
  ->execute();

var_dump($result->fetchAll());
?>
```

The above example will output something similar to:

```
array(1) {
  [0]=>
  array(4) {
    ["_id"]=>
    string(28) "00005b6b536100000000000000cf"
    ["age"]=>
    int(18)
    ["job"]=>
    string(6) "Butler"
    ["name"]=>
    string(6) "Alfred"
  }
}
```

# 5.10.4 CollectionFind::fields

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- CollectionFind::fields

  Set document field filter

## Description

```
  public mysql_xdevapi\CollectionFind mysql_xdevapi\CollectionFind::fields(
    string projection);
```

Defined the columns for the query to return. If not defined then all columns are used.

### Parameters

| | |
|---|---|
| *projection* | Can either be a single string or an array of string, those strings are identifying the columns that have to be returned for each document that match the search condition. |

### Return Values

A CollectionFind object that can be used for further processing.

### Examples

**Example 5.32 `mysql_xdevapi\CollectionFind::fields` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema = $session->getSchema("addressbook");
$create = $schema->createCollection("people");

$create
  ->add('{"name": "Alfred", "age": 18, "job": "Butler"}')
  ->execute();

// ...

$collection = $schema->getCollection("people");

$result = $collection
  ->find('job like :job and age > :age')
  ->bind(['job' => 'Butler', 'age' => 16])
  ->fields('name')
  ->execute();

var_dump($result->fetchAll());
?>
```

The above example will output something similar to:

```
array(1) {
  [0]=>
  array(1) {
    ["name"]=>
    string(6) "Alfred"
  }
}
```

## 5.10.5 `CollectionFind::groupBy`

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- `CollectionFind::groupBy`

  Set grouping criteria

### Description

```
public mysql_xdevapi\CollectionFind mysql_xdevapi\CollectionFind::groupBy(
  string sort_expr);
```

This function can be used to group the result-set by one more columns, frequently this is used with aggregate functions like COUNT,MAX,MIN,SUM etc.

### Parameters

| | |
|---|---|
| *sort_expr* | The columns or columns that have to be used for the group operation, this can either be a single string or an array of string arguments, one for each column. |

### Return Values

A CollectionFind that can be used for further processing

### Examples

**Example 5.33 `mysql_xdevapi\CollectionFind::groupBy` example**

```
<?php

//Assuming $coll is a valid Collection object

//Extract all the documents from the Collection and group the results by the 'name' field
$res = $coll->find()->groupBy('name')->execute();

?>
```

## 5.10.6 `CollectionFind::having`

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- `CollectionFind::having`

  Set condition for aggregate functions

### Description

```
public mysql_xdevapi\CollectionFind mysql_xdevapi\CollectionFind::having(
  string sort_expr);
```

This function can be used after the 'field' operation in order to make a selection on the documents to extract.

### Parameters

| | |
|---|---|
| *sort_expr* | This must be a valid SQL expression, the use of aggreate functions is allowed |

### Return Values

CollectionFind object that can be used for further processing

### Examples

**Example 5.34 `mysql_xdevapi\CollectionFind::having` example**

```
<?php

//Assuming $coll is a valid Collection object

//Find all the documents for which the 'age' is greather than 40,
//Only the columns 'name' and 'age' are returned in the Result object
$res = $coll->find()->fields(['name','age'])->having('age > 40')->execute();

?>
```

## 5.10.7 `CollectionFind::limit`

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- `CollectionFind::limit`

  Limit number of returned documents

### Description

```
public mysql_xdevapi\CollectionFind mysql_xdevapi\CollectionFind::limit(
  int rows);
```

Set the maximum number of documents to return.

### Parameters

| | |
|---|---|
| *`rows`* | Maximum number of documents. |

### Return Values

A CollectionFind object that can be used for additional processing; chain with the execute() method to return a DocResult object.

### Examples

**Example 5.35 `mysql_xdevapi\CollectionFind::limit` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema = $session->getSchema("addressbook");
$create = $schema->createCollection("people");
$create
  ->add('{"name": "Alfred", "age": 18, "job": "Butler"}')
  ->execute();
$create
  ->add('{"name": "Reginald", "age": 42, "job": "Butler"}')
  ->execute();


// ...
```

```
$collection = $schema->getCollection("people");

$result = $collection
  ->find('job like :job and age > :age')
  ->bind(['job' => 'Butler', 'age' => 16])
  ->sort('age desc')
  ->limit(1)
  ->execute();

var_dump($result->fetchAll());
?>
```

The above example will output something similar to:

```
array(1) {
  [0]=>
  array(4) {
    ["_id"]=>
    string(28) "00005b6b536100000000000000f3"
    ["age"]=>
    int(42)
    ["job"]=>
    string(6) "Butler"
    ["name"]=>
    string(8) "Reginald"
  }
}
```

## 5.10.8 CollectionFind::lockExclusive

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- CollectionFind::lockExclusive

  Execute operation with EXCLUSIVE LOCK

### Description

```
  public mysql_xdevapi\CollectionFind mysql_xdevapi\CollectionFind::lockExclusive(
    int lock_waiting_option);
```

Lock exclusively the document, other transactions are blocked from updating the document until the document is locked While the document is locked, other transactions are blocked from updating those docs, from doing SELECT ... LOCK IN SHARE MODE, or from reading the data in certain transaction isolation levels. Consistent reads ignore any locks set on the records that exist in the read view.

This feature is directly useful with the modify() command, to avoid concurrency problems. Basically, it serializes access to a row through row locking

### Parameters

*lock_waiting_option*

Optional waiting option. By default it is MYSQLX_LOCK_DEFAULT. Valid values are these constants:

- MYSQLX_LOCK_DEFAULT
- MYSQLX_LOCK_NOWAIT

- MYSQLX_LOCK_SKIP_LOCKED

### Return Values

Returns a CollectionFind object that can be used for further processing

### Examples

**Example 5.36 `mysql_xdevapi\CollectionFind::lockExclusive` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$schema     = $session->getSchema("addressbook");
$collection = $schema->createCollection("people");

$session->startTransaction();

$result = $collection
  ->find("age > 50")
  ->lockExclusive()
  ->execute();

// ... do an operation on the object

// Complete the transaction and unlock the document
$session->commit();
?>
```

## 5.10.9 CollectionFind::lockShared

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- CollectionFind::lockShared

  Execute operation with SHARED LOCK

### Description

```
public mysql_xdevapi\CollectionFind mysql_xdevapi\CollectionFind::lockShared(
  int lock_waiting_option);
```

Allows to share the documents between multiple transactions which are locking in shared mode.

Other sessions can read the rows, but cannot modify them until your transaction commits.

If any of these rows were changed by another transaction that has not yet committed,

your query waits until that transaction ends and then uses the latest values.

### Parameters

| | |
|---|---|
| *lock_waiting_option* | Optional waiting option. By default it is MYSQLX_LOCK_DEFAULT. Valid values are these constants:<br>• MYSQLX_LOCK_DEFAULT |

- MYSQLX_LOCK_NOWAIT
- MYSQLX_LOCK_SKIP_LOCKED

### Return Values

A CollectionFind object that can be used for further processing

### Examples

**Example 5.37 mysql_xdevapi\CollectionFind::lockShared example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$schema     = $session->getSchema("addressbook");
$collection = $schema->createCollection("people");

$session->startTransaction();

$result = $collection
  ->find("age > 50")
  ->lockShared()
  ->execute();

// ... read the object in shared mode

// Complete the transaction and unlock the document
$session->commit();
?>
```

## 5.10.10 CollectionFind::offset

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- CollectionFind::offset

  Skip given number of elements to be returned

### Description

```
public mysql_xdevapi\CollectionFind mysql_xdevapi\CollectionFind::offset(
  int position);
```

Skip (offset) these number of elements that otherwise would be returned by the find operation. Use with the limit() method.

Defining an offset larger than the result set size results in an empty set.

### Parameters

| | |
|---|---|
| *position* | Number of elements to skip for the limit() operation. |

### Return Values

A CollectionFind object that can be used for additional processing.

## Examples

**Example 5.38 `mysql_xdevapi\CollectionFind::offset` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema = $session->getSchema("addressbook");
$create = $schema->createCollection("people");
$create
  ->add('{"name": "Alfred", "age": 18, "job": "Butler"}')
  ->execute();
$create
  ->add('{"name": "Reginald", "age": 42, "job": "Butler"}')
  ->execute();

// ...

$collection = $schema->getCollection("people");

$result = $collection
  ->find()
  ->sort('age asc')
  ->offset(1)
  ->limit(1)
  ->execute();

var_dump($result->fetchAll());
?>
```

The above example will output something similar to:

```
array(1) {
  [0]=>
  array(4) {
    ["_id"]=>
    string(28) "00005b6b536100000000000000f3"
    ["age"]=>
    int(42)
    ["job"]=>
    string(6) "Butler"
    ["name"]=>
    string(8) "Reginald"
  }
}
```

# 5.10.11 `CollectionFind::sort`

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- `CollectionFind::sort`

  Set the sorting criteria

## Description

```
  public mysql_xdevapi\CollectionFind mysql_xdevapi\CollectionFind::sort(
```

```
    string sort_expr);
```

Sort the result set by the field selected in the sort_expr argument. The allowed orders are ASC (Ascending) or DESC (Descending). This operation is equivalent to the 'ORDER BY' SQL operation and it follows the same set of rules.

## Parameters

| | |
|---|---|
| *sort_expr* | One or more sorting expressions can be provided. The evaluation is from left to right, and each expression is separated by a comma. |

## Return Values

A CollectionFind object that can be used to execute the command, or to add additional operations.

## Examples

**Example 5.39 `mysql_xdevapi\CollectionFind::sort` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema = $session->getSchema("addressbook");
$create = $schema->createCollection("people");
$create
  ->add('{"name": "Alfred", "age": 18, "job": "Butler"}')
  ->execute();
$create
  ->add('{"name": "Reginald", "age": 42, "job": "Butler"}')
  ->execute();

// ...

$collection = $schema->getCollection("people");

$result = $collection
  ->find()
  ->sort('job desc', 'age asc')
  ->execute();

var_dump($result->fetchAll());
?>
```

The above example will output something similar to:

```
array(2) {
  [0]=>
  array(4) {
    ["_id"]=>
    string(28) "00005b6b536100000000000000106"
    ["age"]=>
    int(18)
    ["job"]=>
    string(6) "Butler"
    ["name"]=>
    string(6) "Alfred"
  }
```

```
  [1]=>
  array(4) {
    ["_id"]=>
    string(28) "00005b6b536100000000000107"
    ["age"]=>
    int(42)
    ["job"]=>
    string(6) "Butler"
    ["name"]=>
    string(8) "Reginald"
  }
}
```

# 5.11 CollectionModify class

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```
mysql_xdevapi\CollectionModify {
mysql_xdevapi\CollectionModify

       mysql_xdevapi\Executable

       mysql_xdevapi\CrudOperationBindable

       mysql_xdevapi\CrudOperationLimitable

       mysql_xdevapi\CrudOperationSkippable

       mysql_xdevapi\CrudOperationSortable

     Methods

  public mysql_xdevapi\CollectionModify mysql_xdevapi\CollectionModify::arrayAppend(
    string collection_field,
    string expression_or_literal);

  public mysql_xdevapi\CollectionModify mysql_xdevapi\CollectionModify::arrayInsert(
    string collection_field,
    string expression_or_literal);

  public mysql_xdevapi\CollectionModify mysql_xdevapi\CollectionModify::bind(
    array placeholder_values);

  public mysql_xdevapi\Result mysql_xdevapi\CollectionModify::execute();

  public mysql_xdevapi\CollectionModify mysql_xdevapi\CollectionModify::limit(
    int rows);

  public mysql_xdevapi\CollectionModify mysql_xdevapi\CollectionModify::patch(
    string document);

  public mysql_xdevapi\CollectionModify mysql_xdevapi\CollectionModify::replace(
    string collection_field,
    string expression_or_literal);

  public mysql_xdevapi\CollectionModify mysql_xdevapi\CollectionModify::set(
    string collection_field,
    string expression_or_literal);

  public mysql_xdevapi\CollectionModify mysql_xdevapi\CollectionModify::skip(
    int position);
```

```
  public mysql_xdevapi\CollectionModify mysql_xdevapi\CollectionModify::sort(
    string sort_expr);

  public mysql_xdevapi\CollectionModify mysql_xdevapi\CollectionModify::unset(
    array fields);

}
```

## 5.11.1 CollectionModify::arrayAppend

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- CollectionModify::arrayAppend

  Append element to an array field

### Description

```
  public mysql_xdevapi\CollectionModify mysql_xdevapi\CollectionModify::arrayAppend(
    string collection_field,
    string expression_or_literal);
```

Add an element to a document's field, as multiple elements of a field are represented as an array. Unlike arrayInsert(), arrayAppend() always appends the new element at the end of the array, whereas arrayInsert() can define the location.

### Parameters

| | |
|---|---|
| *collection_field* | The identifier of the field where the new element is inserted. |
| *expression_or_literal* | The new element to insert at the end of the document field array. |

### Return Values

A CollectionModify object that can be used to execute the command, or to add additional operations.

### Examples

**Example 5.40 mysql_xdevapi\CollectionModify::arrayAppend example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema     = $session->getSchema("addressbook");
$collection = $schema->createCollection("people");

$result = $collection
  ->add(
  '{"name":   "Bernie",
    "traits": ["Friend", "Brother", "Human"]}')
  ->execute();

$collection
  ->modify("name in ('Bernie', 'Jane')")
  ->arrayAppend('traits', 'Happy')
  ->execute();

$result = $collection
  ->find()
```

```
  ->execute();

print_r($result->fetchAll());
?>
```

The above example will output something similar to:

```
Array
(
    [0] => Array
        (
            [_id] => 00005b6b536100000000000010c
            [name] => Bernie
            [traits] => Array
                (
                    [0] => Friend
                    [1] => Brother
                    [2] => Human
                    [3] => Happy
                )
        )
)
```

## 5.11.2 CollectionModify::arrayInsert

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- `CollectionModify::arrayInsert`

  Insert element into an array field

### Description

```
public mysql_xdevapi\CollectionModify mysql_xdevapi\CollectionModify::arrayInsert(
  string collection_field,
  string expression_or_literal);
```

Add an element to a document's field, as multiple elements of a field are represented as an array. Unlike arrayAppend(), arrayInsert() allows you to specify where the new element is inserted by defining which item it is after, whereas arrayAppend() always appends the new element at the end of the array.

### Parameters

| | |
|---|---|
| *`collection_field`* | Identify the item in the array that the new element is inserted after. The format of this parameter is `FIELD_NAME[ INDEX ]` where FIELD_NAME is the name of the document field to remove the element from, and INDEX is the INDEX of the element within the field.<br><br>The INDEX field is zero based, so the leftmost item from the array has an index of 0. |
| *`expression_or_literal`* | The new element to insert after FIELD_NAME[ INDEX ] |

### Return Values

A CollectionModify object that can be used to execute the command, or to add additional operations

## Examples

**Example 5.41 `mysql_xdevapi\CollectionModify::arrayInsert` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema     = $session->getSchema("addressbook");
$collection = $schema->createCollection("people");

$result = $collection
  ->add(
  '{"name":   "Bernie",
    "traits": ["Friend", "Brother", "Human"]}')
  ->execute();

$collection
  ->modify("name in ('Bernie', 'Jane')")
  ->arrayInsert('traits[1]', 'Happy')
  ->execute();

$result = $collection
  ->find()
  ->execute();

print_r($result->fetchAll());
?>
```

The above example will output something similar to:

```
Array
(
    [0] => Array
        (
            [_id] => 00005b6b536100000000000010d
            [name] => Bernie
            [traits] => Array
                (
                    [0] => Friend
                    [1] => Happy
                    [2] => Brother
                    [3] => Human
                )
        )
)
```

# 5.11.3 `CollectionModify::bind`

Copyright 1997-2022 the PHP Documentation Group.

- `CollectionModify::bind`

  Bind value to query placeholder

## Description

```
  public mysql_xdevapi\CollectionModify mysql_xdevapi\CollectionModify::bind(
```

```
    array placeholder_values);
```

Bind a parameter to the placeholder in the search condition of the modify operation.

The placeholder has the form of :NAME where ':' is a common prefix that must always exists before any NAME where NAME is the name of the placeholder. The bind method accepts a list of placeholders if multiple entities have to be substituted in the search condition of the modify operation.

## Parameters

| | |
|---|---|
| *placeholder_values* | Placeholder values to substitute in the search condition. Multiple values are allowed and have to be passed as an array of mappings PLACEHOLDER_NAME->PLACEHOLDER_VALUE. |

## Return Values

A CollectionModify object that can be used to execute the command, or to add additional operations.

## Examples

**Example 5.42 `mysql_xdevapi\CollectionModify::bind` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema     = $session->getSchema("addressbook");
$collection = $schema->createCollection("people");

$result = $collection
  ->add(
  '{"name":   "Bernie",
    "traits": ["Friend", "Brother", "Human"]}')
  ->execute();

$collection
  ->modify("name = :name")
  ->bind(['name' => 'Bernie'])
  ->arrayAppend('traits', 'Happy')
  ->execute();

$result = $collection
  ->find()
  ->execute();

print_r($result->fetchAll());
?>
```

The above example will output something similar to:

```
Array
(
    [0] => Array
        (
            [_id] => 00005b6b536100000000000000110
            [name] => Bernie
            [traits] => Array
                (
```

```
                    [0] => Friend
                    [1] => Brother
                    [2] => Human
                    [3] => Happy
                )
        )
)
```

## 5.11.4 CollectionModify::__construct

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- CollectionModify::__construct

  CollectionModify constructor

### Description

```
  private mysql_xdevapi\CollectionModify::__construct();
```

Modify (update) a collection, and is instantiated by the Collection::modify() method.

### Parameters

This function has no parameters.

### Examples

**Example 5.43 mysql_xdevapi\CollectionModify::__construct example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema     = $session->getSchema("addressbook");
$collection = $schema->createCollection("people");

$result = $collection
  ->add(
  '{"name":   "Bernie",
    "traits": ["Friend", "Brother", "Human"]}')
  ->execute();

$collection
  ->modify("name in ('Bernie', 'Jane')")
  ->arrayAppend('traits', 'Happy')
  ->execute();

$result = $collection
  ->find()
  ->execute();

print_r($result->fetchAll());
?>
```

The above example will output something similar to:

```
Array
(
    [0] => Array
        (
            [_id] => 00005b6b536100000000000010c
            [name] => Bernie
            [traits] => Array
                (
                    [0] => Friend
                    [1] => Brother
                    [2] => Human
                    [3] => Happy
                )
        )
)
```

## 5.11.5 CollectionModify::execute

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- CollectionModify::execute

  Execute modify operation

### Description

```
public mysql_xdevapi\Result mysql_xdevapi\CollectionModify::execute();
```

The execute method is required to send the CRUD operation request to the MySQL server.

### Parameters

This function has no parameters.

### Return Values

A Result object that can be used to verify the status of the operation, such as the number of affected rows.

### Examples

**Example 5.44 mysql_xdevapi\CollectionModify::execute example**

```
<?php

/* ... */

?>
```

## 5.11.6 CollectionModify::limit

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- CollectionModify::limit

  Limit number of modified documents

## Description

```
  public mysql_xdevapi\CollectionModify mysql_xdevapi\CollectionModify::limit(
    int rows);
```

Limit the number of documents modified by this operation. Optionally combine with skip() to define an offset value.

## Parameters

| | |
|---|---|
| *rows* | The maximum number of documents to modify. |

## Return Values

A CollectionModify object.

## Examples

**Example 5.45 `mysql_xdevapi\CollectionModify::limit` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema     = $session->getSchema("addressbook");
$collection = $schema->createCollection("people");

$collection->add('{"name": "Fred",  "age": 21, "job": "Construction"}')->execute();
$collection->add('{"name": "Wilma", "age": 23, "job": "Teacher"}')->execute();
$collection->add('{"name": "Betty", "age": 24, "job": "Teacher"}')->execute();

$collection
  ->modify("job = :job")
  ->bind(['job' => 'Teacher'])
  ->set('job', 'Principal')
  ->limit(1)
  ->execute();

$result = $collection
  ->find()
  ->execute();

print_r($result->fetchAll());
?>
```

The above example will output something similar to:

```
Array
(
    [0] => Array
        (
            [_id] => 00005b6b536100000000000000118
            [age] => 21
            [job] => Construction
            [name] => Fred
        )
    [1] => Array
        (
            [_id] => 00005b6b536100000000000000119
```

```
            [age] => 23
            [job] => Principal
            [name] => Wilma
        )
    [2] => Array
        (
            [_id] => 00005b6b536100000000000011a
            [age] => 24
            [job] => Teacher
            [name] => Betty
        )
)
```

## 5.11.7 CollectionModify::patch

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- CollectionModify::patch

  Patch document

### Description

```
public mysql_xdevapi\CollectionModify mysql_xdevapi\CollectionModify::patch(
  string document);
```

Takes a patch object and applies it on one or more documents, and can update multiple document properties.

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

| | |
|---|---|
| *document* | A document with the properties to apply to the matching documents. |

### Return Values

A CollectionModify object.

### Examples

**Example 5.46 mysql_xdevapi\CollectionModify::patch example**

```
<?php

$res = $coll->modify('"Programmatore" IN job')->patch('{"Hobby" : "Programmare"}')->execute();

?>
```

## 5.11.8 CollectionModify::replace

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- CollectionModify::replace

Replace document field

## Description

```
public mysql_xdevapi\CollectionModify mysql_xdevapi\CollectionModify::replace(
  string collection_field,
  string expression_or_literal);
```

Replace (update) a given field value with a new one.

## Parameters

| | |
|---|---|
| *collection_field* | The document path of the item to set. |
| *expression_or_literal* | The value to set on the specified attribute. |

## Return Values

A CollectionModify object.

## Examples

**Example 5.47 `mysql_xdevapi\CollectionModify::replace` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema     = $session->getSchema("addressbook");
$collection = $schema->createCollection("people");

$result = $collection
  ->add(
  '{"name":   "Bernie",
    "traits": ["Friend", "Brother", "Human"]}')
  ->execute();

$collection
  ->modify("name = :name")
  ->bind(['name' => 'Bernie'])
  ->replace("name", "Bern")
  ->execute();

$result = $collection
  ->find()
  ->execute();

print_r($result->fetchAll());
?>
```

The above example will output something similar to:

```
Array
(
    [0] => Array
        (
            [_id] => 00005b6b5361000000000000011b
            [name] => Bern
```

```
            [traits] => Array
                (
                    [0] => Friend
                    [1] => Brother
                    [2] => Human
                )
        )
)
```

## 5.11.9 CollectionModify::set

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- CollectionModify::set

  Set document attribute

### Description

```
public mysql_xdevapi\CollectionModify mysql_xdevapi\CollectionModify::set(
  string collection_field,
  string expression_or_literal);
```

Sets or updates attributes on documents in a collection.

### Parameters

| | |
|---|---|
| *collection_field* | The document path (name) of the item to set. |
| *expression_or_literal* | The value to set it to. |

### Return Values

A CollectionModify object.

### Examples

**Example 5.48 mysql_xdevapi\CollectionModify::set example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema     = $session->getSchema("addressbook");
$collection = $schema->createCollection("people");

$result = $collection
  ->add(
  '{"name":   "Bernie",
    "traits": ["Friend", "Brother", "Human"]}')
  ->execute();

$collection
  ->modify("name = :name")
  ->bind(['name' => 'Bernie'])
  ->set("name", "Bern")
  ->execute();
```

```
$result = $collection
  ->find()
  ->execute();

print_r($result->fetchAll());
?>
```

The above example will output something similar to:

```
Array
(
    [0] => Array
        (
            [_id] => 00005b6b536100000000000000111
            [name] => Bern
            [traits] => Array
                (
                    [0] => Friend
                    [1] => Brother
                    [2] => Human
                )
        )
)
```

## 5.11.10 CollectionModify::skip

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- `CollectionModify::skip`

  Skip elements

### Description

```
public mysql_xdevapi\CollectionModify mysql_xdevapi\CollectionModify::skip(
  int position);
```

Skip the first N elements that would otherwise be returned by a find operation. If the number of elements skipped is larger than the size of the result set, then the find operation returns an empty set.

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

| | |
|---|---|
| *position* | Number of elements to skip. |

### Return Values

A CollectionModify object to use for further processing.

### Examples

**Example 5.49 `mysql_xdevapi\CollectionModify::skip` example**

```
<?php

$coll->modify('age > :age')->sort('age desc')->unset(['age'])->bind(['age' => 20])->limit(4)->skip(1)->exe

?>
```

## 5.11.11 CollectionModify::sort

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- CollectionModify::sort

  Set the sorting criteria

### Description

```
public mysql_xdevapi\CollectionModify mysql_xdevapi\CollectionModify::sort(
  string sort_expr);
```

Sort the result set by the field selected in the sort_expr argument. The allowed orders are ASC (Ascending) or DESC (Descending). This operation is equivalent to the 'ORDER BY' SQL operation and it follows the same set of rules.

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

| | |
|---|---|
| *sort_expr* | One or more sorting expression can be provided, the evaluation of these will be from the leftmost to the rightmost, each expression must be separated by a comma. |

### Return Values

CollectionModify object that can be used for further processing.

### Examples

**Example 5.50 mysql_xdevapi\CollectionModify::sort example**

```
<?php

$res = $coll->modify('true')->sort('name desc', 'age asc')->limit(4)->set('Married', 'NO')->execute();

?>
```

## 5.11.12 CollectionModify::unset

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- CollectionModify::unset

  Unset the value of document fields

### Description

```
public mysql_xdevapi\CollectionModify mysql_xdevapi\CollectionModify::unset(
  array fields);
```

Removes attributes from documents in a collection.

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

| | |
|---|---|
| *fields* | The attributes to remove from documents in a collection. |

### Return Values

CollectionModify object that can be used for further processing.

### Examples

**Example 5.51 `mysql_xdevapi\CollectionModify::unset` example**

```
<?php

$res = $coll->modify('job like :job_name')->unset(["age", "name"])->bind(['job_name' => 'Plumber'])->execute()

?>
```

## 5.12 CollectionRemove class

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```
mysql_xdevapi\CollectionRemove {
mysql_xdevapi\CollectionRemove

        mysql_xdevapi\Executable

        mysql_xdevapi\CrudOperationBindable

        mysql_xdevapi\CrudOperationLimitable

        mysql_xdevapi\CrudOperationSortable

      Methods

  public mysql_xdevapi\CollectionRemove mysql_xdevapi\CollectionRemove::bind(
    array placeholder_values);

  public mysql_xdevapi\Result mysql_xdevapi\CollectionRemove::execute();

  public mysql_xdevapi\CollectionRemove mysql_xdevapi\CollectionRemove::limit(
    int rows);

  public mysql_xdevapi\CollectionRemove mysql_xdevapi\CollectionRemove::sort(
```

```
    string sort_expr);

}
```

## 5.12.1 CollectionRemove::bind

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- CollectionRemove::bind

  Bind value to placeholder

### Description

```
public mysql_xdevapi\CollectionRemove mysql_xdevapi\CollectionRemove::bind(
  array placeholder_values);
```

Bind a parameter to the placeholder in the search condition of the remove operation.

The placeholder has the form of :NAME where ':' is a common prefix that must always exists before any NAME where NAME is the name of the placeholder. The bind method accepts a list of placeholders if multiple entities have to be substituted in the search condition of the remove operation.

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

| | |
|---|---|
| *placeholder_values* | Placeholder values to substitute in the search condition. Multiple values are allowed and have to be passed as an array of mappings PLACEHOLDER_NAME->PLACEHOLDER_VALUE. |

### Return Values

A CollectionRemove object that can be used to execute the command, or to add additional operations.

### Examples

**Example 5.52 mysql_xdevapi\CollectionRemove::bind example**

```
<?php

$res = $coll->remove('age > :age_from and age < :age_to')->bind(['age_from' => 20, 'age_to' => 50])->limit

?>
```

## 5.12.2 CollectionRemove::__construct

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- CollectionRemove::__construct

  CollectionRemove constructor

### Description

```
  private mysql_xdevapi\CollectionRemove::__construct();
```

Remove collection documents, and is instantiated by the Collection::remove() method.

### Parameters

This function has no parameters.

### Examples

**Example 5.53 `mysql_xdevapi\Collection::remove` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema     = $session->getSchema("addressbook");
$collection = $schema->createCollection("people");

$collection->add('{"name": "Alfred", "age": 18, "job": "Butler"}')->execute();
$collection->add('{"name": "Bob",    "age": 19, "job": "Painter"}')->execute();

// Remove all painters
$collection
  ->remove("job in ('Painter')")
  ->execute();

// Remove the oldest butler
$collection
  ->remove("job in ('Butler')")
  ->sort('age desc')
  ->limit(1)
  ->execute();

// Remove record with lowest age
$collection
  ->remove('true')
  ->sort('age desc')
  ->limit(1)
  ->execute();
?>
```

## 5.12.3 `CollectionRemove::execute`

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- `CollectionRemove::execute`

  Execute remove operation

### Description

```
  public mysql_xdevapi\Result mysql_xdevapi\CollectionRemove::execute();
```

The execute function needs to be invoked in order to trigger the client to send the CRUD operation request to the server.

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

Result object.

### Examples

**Example 5.54 `mysql_xdevapi\CollectionRemove::execute` example**

```
<?php

$res = $coll->remove('true')->sort('age desc')->limit(2)->execute();

?>
```

## 5.12.4 `CollectionRemove::limit`

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- `CollectionRemove::limit`

  Limit number of documents to remove

### Description

```
public mysql_xdevapi\CollectionRemove mysql_xdevapi\CollectionRemove::limit(
  int rows);
```

Sets the maximum number of documents to remove.

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

| | |
|---|---|
| *`rows`* | The maximum number of documents to remove. |

### Return Values

Returns a CollectionRemove object that can be used to execute the command, or to add additional operations.

### Examples

**Example 5.55 `mysql_xdevapi\CollectionRemove::limit` example**

```
<?php

$res = $coll->remove('job in (\'Barista\', \'Programmatore\', \'Ballerino\', \'Programmatrice\')')->limit(5)->

?>
```

## 5.12.5 CollectionRemove::sort

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- CollectionRemove::sort

  Set the sorting criteria

### Description

```
public mysql_xdevapi\CollectionRemove mysql_xdevapi\CollectionRemove::sort(
  string sort_expr);
```

Sort the result set by the field selected in the sort_expr argument. The allowed orders are ASC (Ascending) or DESC (Descending). This operation is equivalent to the 'ORDER BY' SQL operation and it follows the same set of rules.

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

| | |
|---|---|
| *sort_expr* | One or more sorting expressions can be provided. The evaluation is from left to right, and each expression is separated by a comma. |

### Return Values

A CollectionRemove object that can be used to execute the command, or to add additional operations.

### Examples

**Example 5.56 mysql_xdevapi\CollectionRemove::sort example**

```
<?php

$res = $coll->remove('true')->sort('age desc')->limit(2)->execute();

?>
```

# 5.13 ColumnResult class

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```
mysql_xdevapi\ColumnResult {
```

```
mysql_xdevapi\ColumnResult

      Methods

  public string mysql_xdevapi\ColumnResult::getCharacterSetName();

  public string mysql_xdevapi\ColumnResult::getCollationName();

  public string mysql_xdevapi\ColumnResult::getColumnLabel();

  public string mysql_xdevapi\ColumnResult::getColumnName();

  public int mysql_xdevapi\ColumnResult::getFractionalDigits();

  public int mysql_xdevapi\ColumnResult::getLength();

  public string mysql_xdevapi\ColumnResult::getSchemaName();

  public string mysql_xdevapi\ColumnResult::getTableLabel();

  public string mysql_xdevapi\ColumnResult::getTableName();

  public int mysql_xdevapi\ColumnResult::getType();

  public int mysql_xdevapi\ColumnResult::isNumberSigned();

  public int mysql_xdevapi\ColumnResult::isPadded();

}
```

## 5.13.1 ColumnResult::__construct

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- ColumnResult::__construct

  ColumnResult constructor

### Description

```
  private mysql_xdevapi\ColumnResult::__construct();
```

Retrieve column metadata, such as its character set; this is instantiated by the RowResult::getColumns() method.

### Parameters

This function has no parameters.

### Examples

**Example 5.57 mysql_xdevapi\ColumnResult::__construct example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS nonsense")->execute();
$session->sql("CREATE DATABASE nonsense")->execute();
$session->sql("CREATE TABLE nonsense.numbers (hello int, world float unsigned)")->execute();
$session->sql("INSERT INTO  nonsense.numbers values (42, 42)")->execute();
```

```
$schema = $session->getSchema("nonsense");
$table  = $schema->getTable("numbers");

$result1 = $table->select('hello','world')->execute();

// Returns an array of ColumnResult objects
$columns = $result1->getColumns();

foreach ($columns as $column) {
    echo "\nColumn label " , $column->getColumnLabel();
    echo " is type "       , $column->getType();
    echo " and is ", ($column->isNumberSigned() === 0) ? "Unsigned." : "Signed.";
}

// Alternatively
$result2 = $session->sql("SELECT * FROM nonsense.numbers")->execute();

// Returns an array of FieldMetadata objects
print_r($result2->getColumns());
```

The above example will output something similar to:

```
Column label hello is type 19 and is Signed.
Column label world is type 4  and is Unsigned.

Array
(
    [0] => mysql_xdevapi\FieldMetadata Object
        (
            [type] => 1
            [type_name] => SINT
            [name] => hello
            [original_name] => hello
            [table] => numbers
            [original_table] => numbers
            [schema] => nonsense
            [catalog] => def
            [collation] => 0
            [fractional_digits] => 0
            [length] => 11
            [flags] => 0
            [content_type] => 0
        )
    [1] => mysql_xdevapi\FieldMetadata Object
        (
            [type] => 6
            [type_name] => FLOAT
            [name] => world
            [original_name] => world
            [table] => numbers
            [original_table] => numbers
            [schema] => nonsense
            [catalog] => def
            [collation] => 0
            [fractional_digits] => 31
            [length] => 12
            [flags] => 1
            [content_type] => 0
        )
)
```

## 5.13.2 ColumnResult::getCharacterSetName

Copyright 1997-2022 the PHP Documentation Group.

- ColumnResult::getCharacterSetName

  Get character set

### Description

```
public string mysql_xdevapi\ColumnResult::getCharacterSetName();
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

### Examples

**Example 5.58 mysql_xdevapi\ColumnResult::getCharacterSetName example**

```
<?php

/* ... */

?>
```

## 5.13.3 ColumnResult::getCollationName

Copyright 1997-2022 the PHP Documentation Group.

- ColumnResult::getCollationName

  Get collation name

### Description

```
public string mysql_xdevapi\ColumnResult::getCollationName();
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

### Examples

**Example 5.59 `mysql_xdevapi\ColumnResult::getCollationName` example**

```
<?php

/* ... */

?>
```

## 5.13.4 `ColumnResult::getColumnLabel`

Copyright 1997-2022 the PHP Documentation Group.

- `ColumnResult::getColumnLabel`

  Get column label

### Description

```
public string mysql_xdevapi\ColumnResult::getColumnLabel();
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

### Examples

**Example 5.60 `mysql_xdevapi\ColumnResult::getColumnLabel` example**

```
<?php

/* ... */

?>
```

## 5.13.5 `ColumnResult::getColumnName`

Copyright 1997-2022 the PHP Documentation Group.

- `ColumnResult::getColumnName`

  Get column name

### Description

```
public string mysql_xdevapi\ColumnResult::getColumnName();
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

### Examples

**Example 5.61 `mysql_xdevapi\ColumnResult::getColumnName` example**

```
<?php

/* ... */

?>
```

## 5.13.6 `ColumnResult::getFractionalDigits`

Copyright 1997-2022 the PHP Documentation Group.

- `ColumnResult::getFractionalDigits`

  Get fractional digit length

### Description

```
public int mysql_xdevapi\ColumnResult::getFractionalDigits();
```

Fetch the number of fractional digits for column.

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

### Examples

**Example 5.62 `mysql_xdevapi\ColumnResult::getFractionalDigits` example**

```
<?php

/* ... */

?>
```

## 5.13.7 ColumnResult::getLength

Copyright 1997-2022 the PHP Documentation Group.

- ColumnResult::getLength

  Get column field length

### Description

```
public int mysql_xdevapi\ColumnResult::getLength();
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

### Examples

**Example 5.63 mysql_xdevapi\ColumnResult::getLength example**

```
<?php

/* ... */

?>
```

## 5.13.8 ColumnResult::getSchemaName

Copyright 1997-2022 the PHP Documentation Group.

- ColumnResult::getSchemaName

  Get schema name

### Description

```
public string mysql_xdevapi\ColumnResult::getSchemaName();
```

Fetch the schema name where the column is stored.

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

### Examples

**Example 5.64 `mysql_xdevapi\ColumnResult::getSchemaName` example**

```
<?php

/* ... */

?>
```

## 5.13.9 `ColumnResult::getTableLabel`

Copyright 1997-2022 the PHP Documentation Group.

- `ColumnResult::getTableLabel`

  Get table label

### Description

```
public string mysql_xdevapi\ColumnResult::getTableLabel();
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

### Examples

**Example 5.65 `mysql_xdevapi\ColumnResult::getTableLabel` example**

```
<?php

/* ... */

?>
```

## 5.13.10 ColumnResult::getTableName

Copyright 1997-2022 the PHP Documentation Group.

- `ColumnResult::getTableName`

  Get table name

### Description

```
public string mysql_xdevapi\ColumnResult::getTableName();
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

Name of the table for the column.

### Examples

**Example 5.66 `mysql_xdevapi\ColumnResult::getTableName` example**

```
<?php

/* ... */

?>
```

## 5.13.11 ColumnResult::getType

Copyright 1997-2022 the PHP Documentation Group.

- `ColumnResult::getType`

  Get column type

### Description

```
public int mysql_xdevapi\ColumnResult::getType();
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

### Examples

**Example 5.67 `mysql_xdevapi\ColumnResult::getType` example**

```
<?php
/* ... */
?>
```

## 5.13.12 `ColumnResult::isNumberSigned`

Copyright 1997-2022 the PHP Documentation Group.

- `ColumnResult::isNumberSigned`

  Check if signed type

### Description

```
public int mysql_xdevapi\ColumnResult::isNumberSigned();
```

Retrieve a table's column information, and is instantiated by the RowResult::getColumns() method.

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

`true` if a given column as a signed type.

### Examples

**Example 5.68 `mysql_xdevapi\ColumnResult::isNumberSigned` example**

```
<?php
/* ... */
?>
```

## 5.13.13 ColumnResult::isPadded

Copyright 1997-2022 the PHP Documentation Group.

- ColumnResult::isPadded

  Check if padded

### Description

```
public int mysql_xdevapi\ColumnResult::isPadded();
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

true if a given column is padded.

### Examples

**Example 5.69 mysql_xdevapi\ColumnResult::isPadded example**

```
<?php

/* ... */

?>
```

# 5.14 CrudOperationBindable interface

Copyright 1997-2022 the PHP Documentation Group.

```
mysql_xdevapi\CrudOperationBindable {
mysql_xdevapi\CrudOperationBindable

      Methods

  abstract public mysql_xdevapi\CrudOperationBindable mysql_xdevapi\CrudOperationBindable::bind(
    array placeholder_values);

}
```

## 5.14.1 CrudOperationBindable::bind

Copyright 1997-2022 the PHP Documentation Group.

- `CrudOperationBindable::bind`

  Bind value to placeholder

### Description

```
abstract public mysql_xdevapi\CrudOperationBindable mysql_xdevapi\CrudOperationBindable::bind(
  array placeholder_values);
```

Binds a value to a specific placeholder.

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

*`placeholder_values`* The name of the placeholders and the values to bind.

### Return Values

A CrudOperationBindable object.

### Examples

**Example 5.70 `mysql_xdevapi\CrudOperationBindable::bind` example**

```
<?php

$res = $coll->modify('name like :name')->arrayInsert('job[0]', 'Calciatore')->bind(['name' => 'ENTITY'])->
$res = $table->delete()->orderby('age desc')->where('age < 20 and age > 12 and name != :name')->bind(['nam

?>
```

## 5.15 CrudOperationLimitable interface

Copyright 1997-2022 the PHP Documentation Group.

```
mysql_xdevapi\CrudOperationLimitable {
mysql_xdevapi\CrudOperationLimitable

      Methods

  abstract public mysql_xdevapi\CrudOperationLimitable mysql_xdevapi\CrudOperationLimitable::limit(
    int rows);

}
```

### 5.15.1 `CrudOperationLimitable::limit`

Copyright 1997-2022 the PHP Documentation Group.

- `CrudOperationLimitable::limit`

Set result limit

### Description

```
  abstract public mysql_xdevapi\CrudOperationLimitable mysql_xdevapi\CrudOperationLimitable::limit(
    int rows);
```

Sets the maximum number of records or documents to return.

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

| | |
|---|---|
| *rows* | The maximum number of records or documents. |

### Return Values

A CrudOperationLimitable object.

### Examples

**Example 5.71 `mysql_xdevapi\CrudOperationLimitable::limit` example**

```
<?php

$res = $coll->find()->fields(['name as n','age as a','job as j'])->groupBy('j')->limit(11)->execute();
$res = $table->update()->set('age',69)->where('age > 15 and age < 22')->limit(4)->orderby(['age asc','name des

?>
```

## 5.16 CrudOperationSkippable interface

Copyright 1997-2022 the PHP Documentation Group.

```
mysql_xdevapi\CrudOperationSkippable {
mysql_xdevapi\CrudOperationSkippable

      Methods

  abstract public mysql_xdevapi\CrudOperationSkippable mysql_xdevapi\CrudOperationSkippable::skip(
    int skip);

}
```

### 5.16.1 `CrudOperationSkippable::skip`

Copyright 1997-2022 the PHP Documentation Group.

- `CrudOperationSkippable::skip`

  Number of operations to skip

### Description

```
abstract public mysql_xdevapi\CrudOperationSkippable mysql_xdevapi\CrudOperationSkippable::skip(
  int skip);
```

Skip this number of records in the returned operation.

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

| | |
|---|---|
| *skip* | Number of elements to skip. |

### Return Values

A CrudOperationSkippable object.

### Examples

**Example 5.72 `mysql_xdevapi\CrudOperationSkippable::skip` example**

```
<?php

$res = $coll->find('job like \'Programmatore\'')->limit(1)->skip(3)->sort('age asc')->execute();

?>
```

## 5.17 CrudOperationSortable interface

Copyright 1997-2022 the PHP Documentation Group.

```
mysql_xdevapi\CrudOperationSortable {
mysql_xdevapi\CrudOperationSortable

     Methods

  abstract public mysql_xdevapi\CrudOperationSortable mysql_xdevapi\CrudOperationSortable::sort(
    string sort_expr);

}
```

### 5.17.1 `CrudOperationSortable::sort`

Copyright 1997-2022 the PHP Documentation Group.

- `CrudOperationSortable::sort`

  Sort results

### Description

```
abstract public mysql_xdevapi\CrudOperationSortable mysql_xdevapi\CrudOperationSortable::sort(
```

```
    string sort_expr);
```

Sort the result set by the field selected in the sort_expr argument. The allowed orders are ASC (Ascending) or DESC (Descending). This operation is equivalent to the 'ORDER BY' SQL operation and it follows the same set of rules.

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

| | |
|---|---|
| *sort_expr* | One or more sorting expressions can be provided. The evaluation is from left to right, and each expression is separated by a comma. |

### Return Values

A CrudOperationSortable object.

### Examples

**Example 5.73 `mysql_xdevapi\CrudOperationSortable::sort` example**

```
<?php

$res = $coll->find('job like \'Cavia\'')->sort('age desc', '_id desc')->execute();

?>
```

## 5.18 DatabaseObject interface

Copyright 1997-2022 the PHP Documentation Group.

```
mysql_xdevapi\DatabaseObject {
mysql_xdevapi\DatabaseObject

      Methods

  abstract public bool mysql_xdevapi\DatabaseObject::existsInDatabase();

  abstract public string mysql_xdevapi\DatabaseObject::getName();

  abstract public mysql_xdevapi\Session mysql_xdevapi\DatabaseObject::getSession();

}
```

### 5.18.1 `DatabaseObject::existsInDatabase`

Copyright 1997-2022 the PHP Documentation Group.

- `DatabaseObject::existsInDatabase`

  Check if object exists in database

### Description

```
abstract public bool mysql_xdevapi\DatabaseObject::existsInDatabase();
```

Verifies if the database object refers to an object that exists in the database.

### Parameters

This function has no parameters.

### Return Values

Returns `true` if object exists in the database, else `false` if it does not.

### Examples

**Example 5.74 `mysql_xdevapi\DatabaseObject::existsInDatabase` example**

```
<?php

$existInDb = $dbObj->existsInDatabase();

?>
```

## 5.18.2 `DatabaseObject::getName`

Copyright 1997-2022 the PHP Documentation Group.

- `DatabaseObject::getName`

  Get object name

### Description

```
abstract public string mysql_xdevapi\DatabaseObject::getName();
```

Fetch name of this database object.

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

The name of this database object.

### Examples

**Example 5.75 `mysql_xdevapi\DatabaseObject::getName` example**

```
```

```
<?php

$dbObjName = $dbObj->getName();

?>
```

## 5.18.3 DatabaseObject::getSession

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- DatabaseObject::getSession

  Get session name

### Description

```
  abstract public mysql_xdevapi\Session mysql_xdevapi\DatabaseObject::getSession();
```

Fetch session associated to the database object.

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

The Session object.

### Examples

**Example 5.76 mysql_xdevapi\DatabaseObject::getSession example**

```
<?php

$session = $dbObj->getSession();

?>
```

# 5.19 DocResult class

Copyright 1997-2022 the PHP Documentation Group.

```
mysql_xdevapi\DocResult {
mysql_xdevapi\DocResult

        mysql_xdevapi\BaseResult
```

```
        Traversable

      Methods

  public array mysql_xdevapi\DocResult::fetchAll();

  public array mysql_xdevapi\DocResult::fetchOne();

  public Array mysql_xdevapi\DocResult::getWarnings();

  public int mysql_xdevapi\DocResult::getWarningsCount();

}
```

## 5.19.1 DocResult::__construct

Copyright 1997-2022 the PHP Documentation Group.

- DocResult::__construct

  DocResult constructor

### Description

```
  private mysql_xdevapi\DocResult::__construct();
```

Fetch document results and warnings, and is instantiated by CollectionFind.

### Parameters

This function has no parameters.

### Examples

**Example 5.77 A DocResult example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema = $session->getSchema("addressbook");
$create = $schema->createCollection("people");

$create->add('{"name": "Alfred", "age": 18, "job": "Butler"}')->execute();
$create->add('{"name": "Reginald", "age": 42, "job": "Butler"}')->execute();

// ...

$collection = $schema->getCollection("people");

// Yields a DocResult object
$result = $collection
  ->find('job like :job and age > :age')
  ->bind(['job' => 'Butler', 'age' => 16])
  ->sort('age desc')
  ->limit(1)
  ->execute();

var_dump($result->fetchAll());
?>
```

```
```

The above example will output something similar to:

```
array(1) {
  [0]=>
  array(4) {
    ["_id"]=>
    string(28) "00005b6b536100000000000000f3"
    ["age"]=>
    int(42)
    ["job"]=>
    string(6) "Butler"
    ["name"]=>
    string(8) "Reginald"
  }
}
```

## 5.19.2 DocResult::fetchAll

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- DocResult::fetchAll

  Get all rows

### Description

```
  public array mysql_xdevapi\DocResult::fetchAll();
```

Fetch all results from a result set.

### Parameters

This function has no parameters.

### Return Values

A numerical array with all results from the query; each result is an associative array. An empty array is returned if no rows are present.

### Examples

**Example 5.78 mysql_xdevapi\DocResult::fetchAll example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema = $session->getSchema("addressbook");
$create = $schema->createCollection("people");

$create->add('{"name": "Alfred", "age": 18, "job": "Butler"}')->execute();
$create->add('{"name": "Reginald", "age": 42, "job": "Butler"}')->execute();

// ...
```

```
$collection = $schema->getCollection("people");

// Yields a DocResult object
$result = $collection
  ->find('job like :job and age > :age')
  ->bind(['job' => 'Butler', 'age' => 16])
  ->sort('age desc')
  ->execute();

var_dump($result->fetchAll());
?>
```

The above example will output something similar to:

```
array(2) {

  [0]=>
  array(4) {
    ["_id"]=>
    string(28) "00005b6b536100000000000000123"
    ["age"]=>
    int(42)
    ["job"]=>
    string(6) "Butler"
    ["name"]=>
    string(8) "Reginald"
  }

  [1]=>
  array(4) {
    ["_id"]=>
    string(28) "00005b6b536100000000000000122"
    ["age"]=>
    int(18)
    ["job"]=>
    string(6) "Butler"
    ["name"]=>
    string(6) "Alfred"
  }

}
```

## 5.19.3 DocResult::fetchOne

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- DocResult::fetchOne

  Get one row

### Description

```
public array mysql_xdevapi\DocResult::fetchOne();
```

Fetch one result from a result set.

### Parameters

This function has no parameters.

### Return Values

The result, as an associative array or `null` if no results are present.

### Examples

**Example 5.79 `mysql_xdevapi\DocResult::fetchOne` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema = $session->getSchema("addressbook");
$create = $schema->createCollection("people");

$create->add('{"name": "Alfred", "age": 18, "job": "Butler"}')->execute();
$create->add('{"name": "Reginald", "age": 42, "job": "Butler"}')->execute();

// ...

$collection = $schema->getCollection("people");

// Yields a DocResult object
$result = $collection
  ->find('job like :job and age > :age')
  ->bind(['job' => 'Butler', 'age' => 16])
  ->sort('age desc')
  ->execute();

var_dump($result->fetchOne());
?>
```

The above example will output something similar to:

```
array(4) {
  ["_id"]=>
  string(28) "00005b6b536100000000000000125"
  ["age"]=>
  int(42)
  ["job"]=>
  string(6) "Butler"
  ["name"]=>
  string(8) "Reginald"
}
```

## 5.19.4 `DocResult::getWarnings`

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- `DocResult::getWarnings`

  Get warnings from last operation

### Description

```
  public Array mysql_xdevapi\DocResult::getWarnings();
```

Fetches warnings generated by MySQL server's last operation.

## Parameters

This function has no parameters.

## Return Values

An array of Warning objects from the last operation. Each object defines an error 'message', error 'level', and error 'code'. An empty array is returned if no errors are present.

## Examples

**Example 5.80 `mysql_xdevapi\DocResult::getWarnings` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema = $session->getSchema("addressbook");
$create = $schema->createCollection("people");

$create->add('{"name": "Alfred", "age": 18, "job": "Butler"}')->execute();
$create->add('{"name": "Reginald", "age": 42, "job": "Butler"}')->execute();

// ...

$collection = $schema->getCollection("people");

// Yields a DocResult object
$result = $collection
  ->find('job like :job and age > :age')
  ->bind(['job' => 'Butler', 'age' => 16])
  ->sort('age desc')
  ->execute();

if (!$result->getWarningsCount()) {
    echo "There was an error:\n";
    print_r($result->getWarnings());
    exit;
}

var_dump($result->fetchOne());
?>
```

The above example will output something similar to:

```


There was an error:

Array
(
    [0] => mysql_xdevapi\Warning Object
        (
            [message] => Something bad and so on
            [level] => 2
            [code] => 1365
        )
    [1] => mysql_xdevapi\Warning Object
        (
```

```
            [message] => Something bad and so on
            [level] => 2
            [code] => 1365
        )
)
```

## 5.19.5 DocResult::getWarningsCount

Copyright 1997-2022 the PHP Documentation Group.

- DocResult::getWarningsCount

  Get warning count from last operation

### Description

```
  public int mysql_xdevapi\DocResult::getWarningsCount();
```

Returns the number of warnings raised by the last operation. Specifically, these warnings are raised by the MySQL server.

### Parameters

This function has no parameters.

### Return Values

The number of warnings from the last operation.

### Examples

**Example 5.81 mysql_xdevapi\DocResult::getWarningsCount example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema = $session->getSchema("addressbook");
$create = $schema->createCollection("people");

$create->add('{"name": "Alfred", "age": 18, "job": "Butler"}')->execute();
$create->add('{"name": "Reginald", "age": 42, "job": "Butler"}')->execute();

// ...

$collection = $schema->getCollection("people");

// Yields a DocResult object
$result = $collection
  ->find('job like :job and age > :age')
  ->bind(['job' => 'Butler', 'age' => 16])
  ->sort('age desc')
  ->execute();

if (!$result->getWarningsCount()) {
    echo "There was an error:\n";
    print_r($result->getWarnings());
    exit;
}
```

```
var_dump($result->fetchOne());
?>
```

The above example will output something similar to:

```
array(4) {
  ["_id"]=>
  string(28) "00005b6b536100000000000000135"
  ["age"]=>
  int(42)
  ["job"]=>
  string(6) "Butler"
  ["name"]=>
  string(8) "Reginald"
}
```

# 5.20 Exception class

Copyright 1997-2022 the PHP Documentation Group.

```
mysql_xdevapi\Exception {
mysql_xdevapi\Exceptionextends RuntimeException

        Throwable

      }
```

# 5.21 Executable interface

Copyright 1997-2022 the PHP Documentation Group.

```
mysql_xdevapi\Executable {
mysql_xdevapi\Executable

      Methods

  abstract public mysql_xdevapi\Result mysql_xdevapi\Executable::execute();

}
```

## 5.21.1 `Executable::execute`

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- `Executable::execute`

  Execute statement

### Description

```
  abstract public mysql_xdevapi\Result mysql_xdevapi\Executable::execute();
```

Execute the statement from either a collection operation or a table query; this functionality allows for method chaining.

### Parameters

This function has no parameters.

### Return Values

One of the Result objects, such as Result or SqlStatementResult.

### Examples

**Example 5.82 execute() examples**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$result_sql = $session->sql("CREATE DATABASE addressbook")->execute();

var_dump($result_sql);


$schema     = $session->getSchema("addressbook");
$collection = $schema->createCollection("humans");

$result_collection = $collection->add(
  '{"name": "Jane",
    "jobs": [{"title":"Scientist","Salary":18000}, {"title":"Mother","Salary":0}],
    "hobbies": ["Walking","Making pies"]}');

$result_collection_executed = $result_collection->execute();

var_dump($result_collection);
var_dump($result_collection_executed);
?>
```

The above example will output something similar to:

```
object(mysql_xdevapi\SqlStatementResult)#3 (0) {
}

object(mysql_xdevapi\CollectionAdd)#5 (0) {
}

object(mysql_xdevapi\Result)#7 (0) {
}
```

# 5.22 ExecutionStatus class

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```
mysql_xdevapi\ExecutionStatus {
```

```
mysql_xdevapi\ExecutionStatus

      Properties

  public
    affectedItems ;

  public
    matchedItems ;

  public
    foundItems ;

  public
    lastInsertId ;

  public
    lastDocumentId ;

Constructor

  private mysql_xdevapi\ExecutionStatus::__construct();

}
```

`affectedItems`

`matchedItems`

`foundItems`

`lastInsertId`

`lastDocumentId`

## 5.22.1 `ExecutionStatus::__construct`

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- `ExecutionStatus::__construct`

  ExecutionStatus constructor

### Description

```
  private mysql_xdevapi\ExecutionStatus::__construct();
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Examples

**Example 5.83 `mysql_xdevapi\ExecutionStatus::__construct` example**

```
```

```
<?php

/* ... */

?>
```

# 5.23 Expression class

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```
mysql_xdevapi\Expression {
mysql_xdevapi\Expression

      Properties

  public
    name ;

Constructor

  public mysql_xdevapi\Expression::__construct(
    string expression);

}
```

`name`

## 5.23.1 `Expression::__construct`

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- `Expression::__construct`

  Expression constructor

### Description

```
  public mysql_xdevapi\Expression::__construct(
    string expression);
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

*`expression`*

### Examples

**Example 5.84 `mysql_xdevapi\Expression::__construct` example**

```
<?php
```

```
/* ... */

?>
```

# 5.24 Result class

Copyright 1997-2022 the PHP Documentation Group.

```
mysql_xdevapi\Result {
mysql_xdevapi\Result

        mysql_xdevapi\BaseResult

        Traversable

      Methods

  public int mysql_xdevapi\Result::getAffectedItemsCount();

  public int mysql_xdevapi\Result::getAutoIncrementValue();

  public array mysql_xdevapi\Result::getGeneratedIds();

  public array mysql_xdevapi\Result::getWarnings();

  public int mysql_xdevapi\Result::getWarningsCount();

}
```

## 5.24.1 `Result::__construct`

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- `Result::__construct`

  Result constructor

### Description

```
  private mysql_xdevapi\Result::__construct();
```

An object that retrieves generated IDs, AUTO_INCREMENT values, and warnings, for a Result set.

### Parameters

This function has no parameters.

### Examples

**Example 5.85 `mysql_xdevapi\Result::__construct` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();
$session->sql("
```

```
  CREATE TABLE addressbook.names
    (id INT NOT NULL AUTO_INCREMENT, name VARCHAR(30), age INT, PRIMARY KEY (id))
  ")->execute();

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

$result = $table->insert("name", "age")->values(["Suzanne", 31],["Julie", 43])->execute();
$result = $table->insert("name", "age")->values(["Suki", 34])->execute();

$ai = $result->getAutoIncrementValue();
var_dump($ai);
?>
```

The above example will output:

```
int(3)
```

## 5.24.2 Result::getAffectedItemsCount

Copyright 1997-2022 the PHP Documentation Group.

- Result::getAffectedItemsCount

  Get affected row count

### Description

```
  public int mysql_xdevapi\Result::getAffectedItemsCount();
```

Get the number of affected rows by the previous operation.

### Parameters

This function has no parameters.

### Return Values

The number (as an integer) of affected rows.

### Examples

**Example 5.86 mysql_xdevapi\Result::getAffectedItemsCount example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema = $session->getSchema("addressbook");
$create = $schema->createCollection("people");

$collection = $schema->getCollection("people");

$result = $collection->add('{"name": "Wilma", "age": 23, "job": "Teacher"}')->execute();
```

```
var_dump( $res->getAffectedItemsCount() );
?>
```

The above example will output:

```
int(1)
```

## 5.24.3 Result::getAutoIncrementValue

Copyright 1997-2022 the PHP Documentation Group.

- Result::getAutoIncrementValue

  Get autoincremented value

### Description

```
  public int mysql_xdevapi\Result::getAutoIncrementValue();
```

Get the last AUTO_INCREMENT value (last insert id).

### Parameters

This function has no parameters.

### Return Values

The last AUTO_INCREMENT value.

### Examples

**Example 5.87 mysql_xdevapi\Result::getAutoIncrementValue example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();
$session->sql("
  CREATE TABLE addressbook.names
    (id INT NOT NULL AUTO_INCREMENT, name VARCHAR(30), age INT, PRIMARY KEY (id))
  ")->execute();

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

$result = $table->insert("name", "age")->values(["Suzanne", 31],["Julie", 43])->execute();
$result = $table->insert("name", "age")->values(["Suki", 34])->execute();

$ai = $result->getAutoIncrementValue();
var_dump($ai);
?>
```

The above example will output:

```
int(3)
```

## 5.24.4 Result::getGeneratedIds

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- Result::getGeneratedIds

  Get generated ids

### Description

```
  public array mysql_xdevapi\Result::getGeneratedIds();
```

Fetch the generated _id values from the last operation. The unique _id field is generated by the MySQL server.

### Parameters

This function has no parameters.

### Return Values

An array of generated _id's from the last operation, or an empty array if there are none.

### Examples

**Example 5.88 mysql_xdevapi\Result::getGeneratedIds example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema = $session->getSchema("addressbook");
$create = $schema->createCollection("people");

$collection = $schema->getCollection("people");

$result = $collection->add(
  '{"name": "Bernie",
    "jobs": [{"title":"Cat Herder","Salary":42000}, {"title":"Father","Salary":0}],
    "hobbies": ["Sports","Making cupcakes"]}',
  '{"name": "Jane",
    "jobs": [{"title":"Scientist","Salary":18000}, {"title":"Mother","Salary":0}],
    "hobbies": ["Walking","Making pies"]}')->execute();

$ids = $result->getGeneratedIds();
var_dump($ids);
?>
```

The above example will output something similar to:

```
array(2) {
  [0]=>
```

```
  string(28) "00005b6b536100000000000000064"
  [1]=>
  string(28) "00005b6b536100000000000000065"
}
```

## 5.24.5 Result::getWarnings

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- Result::getWarnings

  Get warnings from last operation

### Description

```
  public array mysql_xdevapi\Result::getWarnings();
```

Retrieve warnings from the last Result operation.

### Parameters

This function has no parameters.

### Return Values

An array of Warning objects from the last operation. Each object defines an error 'message', error 'level', and error 'code'. An empty array is returned if no errors are present.

### Examples

**Example 5.89 mysql_xdevapi\RowResult::getWarnings example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("CREATE DATABASE foo")->execute();
$session->sql("CREATE TABLE foo.test_table(x int)")->execute();

$schema = $session->getSchema("foo");
$table  = $schema->getTable("test_table");

$table->insert(['x'])->values([1])->values([2])->execute();

$res = $table->select(['x/0 as bad_x'])->execute();
$warnings = $res->getWarnings();

print_r($warnings);
?>
```

The above example will output something similar to:

```
Array
(
    [0] => mysql_xdevapi\Warning Object
        (
            [message] => Division by 0
```

```
            [level] => 2
            [code] => 1365
        )
    [1] => mysql_xdevapi\Warning Object
        (
            [message] => Division by 0
            [level] => 2
            [code] => 1365
        )
)
```

## 5.24.6 Result::getWarningsCount

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- Result::getWarningsCount

  Get warning count from last operation

### Description

```
public int mysql_xdevapi\Result::getWarningsCount();
```

Retrieve the number of warnings from the last Result operation.

### Parameters

This function has no parameters.

### Return Values

The number of warnings generated by the last operation.

### Examples

**Example 5.90 mysql_xdevapi\RowResult::getWarningsCount example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS foo")->execute();
$session->sql("CREATE DATABASE foo")->execute();
$session->sql("CREATE TABLE foo.test_table(x int)")->execute();

$schema = $session->getSchema("foo");
$table  = $schema->getTable("test_table");

$table->insert(['x'])->values([1])->values([2])->execute();

$res = $table->select(['x/0 as bad_x'])->execute();

echo $res->getWarningsCount();
?>
```

The above example will output something similar to:

```
2
```

```
```

# 5.25 RowResult class

Copyright 1997-2022 the PHP Documentation Group.

```
mysql_xdevapi\RowResult {
mysql_xdevapi\RowResult

        mysql_xdevapi\BaseResult

        Traversable

      Methods

  public array mysql_xdevapi\RowResult::fetchAll();

  public array mysql_xdevapi\RowResult::fetchOne();

  public int mysql_xdevapi\RowResult::getColumnsCount();

  public array mysql_xdevapi\RowResult::getColumnNames();

  public array mysql_xdevapi\RowResult::getColumns();

  public array mysql_xdevapi\RowResult::getWarnings();

  public int mysql_xdevapi\RowResult::getWarningsCount();

}
```

## 5.25.1 `RowResult::__construct`

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- `RowResult::__construct`

  RowResult constructor

### Description

```
  private mysql_xdevapi\RowResult::__construct();
```

Represents the result set obtained from querying the database.

### Parameters

This function has no parameters.

### Examples

**Example 5.91 `mysql_xdevapi\RowResult::__construct` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");
```

```
$row = $table->select('name', 'age')->where('age > 18')->execute()->fetchAll();

print_r($row);
```

The above example will output something similar to:

```
Array
(
    [0] => Array
        (
            [name] => John
            [age] => 42
        )
    [1] => Array
        (
            [name] => Sam
            [age] => 33
        )
)
```

## 5.25.2 RowResult::fetchAll

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- RowResult::fetchAll

  Get all rows from result

### Description

```
  public array mysql_xdevapi\RowResult::fetchAll();
```

Fetch all the rows from the result set.

### Parameters

This function has no parameters.

### Return Values

A numerical array with all results from the query; each result is an associative array. An empty array is returned if no rows are present.

### Examples

**Example 5.92 mysql_xdevapi\RowResult::fetchAll example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();
$session->sql("CREATE TABLE addressbook.names(name text, age int)")->execute();
$session->sql("INSERT INTO addressbook.names values ('John', 42), ('Sam', 33)")->execute();
```

```
$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

$row = $table->select('name', 'age')->execute()->fetchAll();

print_r($row);
```

The above example will output something similar to:

```
Array
(
    [0] => Array
        (
            [name] => John
            [age] => 42
        )
    [1] => Array
        (
            [name] => Sam
            [age] => 33
        )
)
```

## 5.25.3 RowResult::fetchOne

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- RowResult::fetchOne

  Get row from result

### Description

```
public array mysql_xdevapi\RowResult::fetchOne();
```

Fetch one result from the result set.

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

The result, as an associative array or `null` if no results are present.

### Examples

**Example 5.93 mysql_xdevapi\RowResult::fetchOne example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
```

```
$session->sql("DROP DATABASE addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();
$session->sql("CREATE TABLE addressbook.names(name text, age int)")->execute();
$session->sql("INSERT INTO addressbook.names values ('John', 42), ('Sam', 33)")->execute();

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

$row = $table->select('name', 'age')->where('age < 40')->execute()->fetchOne();

print_r($row);
```

The above example will output something similar to:

```
Array
(
    [name] => Sam
    [age] => 33
)
```

## 5.25.4 RowResult::getColumnsCount

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- `RowResult::getColumnsCount`

  Get column count

### Description

```
  public int mysql_xdevapi\RowResult::getColumnsCount();
```

Retrieve the column count for columns present in the result set.

### Parameters

This function has no parameters.

### Return Values

The number of columns; 0 if there are none.

### Changelog

| Version | Description |
|---|---|
| 8.0.14 | Method renamed from getColumnCount() to getColumnsCount(). |

### Examples

**Example 5.94 `mysql_xdevapi\RowResult::getColumnsCount` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
```

```
$session->sql("DROP DATABASE addressbook")->execute();
$session->sql("CREATE DATABASE foo")->execute();
$session->sql("CREATE TABLE foo.test_table(x int)")->execute();
$session->sql("INSERT INTO addressbook.names values ('John', 42), ('Sam', 33)")->execute();

$sql = $session->sql("SELECT * from addressbook.names")->execute();

echo $sql->getColumnsCount();
```

The above example will output something similar to:

```
2
```

## 5.25.5 RowResult::getColumnNames

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- RowResult::getColumnNames

  Get all column names

### Description

```
public array mysql_xdevapi\RowResult::getColumnNames();
```

Retrieve column names for columns present in the result set.

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

A numerical array of table columns names, or an empty array if the result set is empty.

### Examples

**Example 5.95 mysql_xdevapi\RowResult::getColumnNames example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE addressbook")->execute();
$session->sql("CREATE DATABASE foo")->execute();
$session->sql("CREATE TABLE foo.test_table(x int)")->execute();
$session->sql("INSERT INTO addressbook.names values ('John', 42), ('Sam', 33)")->execute();

$sql = $session->sql("SELECT * from addressbook.names")->execute();

$colnames = $sql->getColumnNames();
```

```
print_r($colnames);
```

The above example will output something similar to:

```
Array
(
    [0] => name
    [1] => age
)
```

## 5.25.6 RowResult::getColumns

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- RowResult::getColumns

  Get column metadata

### Description

```
  public array mysql_xdevapi\RowResult::getColumns();
```

Retrieve column metadata for columns present in the result set.

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

An array of FieldMetadata objects representing the columns in the result, or an empty array if the result set is empty.

### Examples

**Example 5.96 mysql_xdevapi\RowResult::getColumns example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE addressbook")->execute();
$session->sql("CREATE DATABASE foo")->execute();
$session->sql("CREATE TABLE foo.test_table(x int)")->execute();
$session->sql("INSERT INTO addressbook.names values ('John', 42), ('Sam', 33)")->execute();

$sql = $session->sql("SELECT * from addressbook.names")->execute();

$cols = $sql->getColumns();

print_r($cols);
```

The above example will output something similar to:

```
Array
(
    [0] => mysql_xdevapi\FieldMetadata Object
        (
            [type] => 7
            [type_name] => BYTES
            [name] => name
            [original_name] => name
            [table] => names
            [original_table] => names
            [schema] => addressbook
            [catalog] => def
            [collation] => 255
            [fractional_digits] => 0
            [length] => 65535
            [flags] => 0
            [content_type] => 0
        )
    [1] => mysql_xdevapi\FieldMetadata Object
        (
            [type] => 1
            [type_name] => SINT
            [name] => age
            [original_name] => age
            [table] => names
            [original_table] => names
            [schema] => addressbook
            [catalog] => def
            [collation] => 0
            [fractional_digits] => 0
            [length] => 11
            [flags] => 0
            [content_type] => 0
        )
)
```

## 5.25.7 RowResult::getWarnings

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- RowResult::getWarnings

  Get warnings from last operation

### Description

```
public array mysql_xdevapi\RowResult::getWarnings();
```

Retrieve warnings from the last RowResult operation.

### Parameters

This function has no parameters.

### Return Values

An array of Warning objects from the last operation. Each object defines an error 'message', error 'level', and error 'code'. An empty array is returned if no errors are present.

## Examples

**Example 5.97 `mysql_xdevapi\RowResult::getWarnings` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("CREATE DATABASE foo")->execute();
$session->sql("CREATE TABLE foo.test_table(x int)")->execute();

$schema = $session->getSchema("foo");
$table  = $schema->getTable("test_table");

$table->insert(['x'])->values([1])->values([2])->execute();

$res = $table->select(['x/0 as bad_x'])->execute();
$warnings = $res->getWarnings();

print_r($warnings);
?>
```

The above example will output something similar to:

```
Array
(
    [0] => mysql_xdevapi\Warning Object
        (
            [message] => Division by 0
            [level] => 2
            [code] => 1365
        )
    [1] => mysql_xdevapi\Warning Object
        (
            [message] => Division by 0
            [level] => 2
            [code] => 1365
        )
)
```

# 5.25.8 `RowResult::getWarningsCount`

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- `RowResult::getWarningsCount`

  Get warning count from last operation

## Description

```
public int mysql_xdevapi\RowResult::getWarningsCount();
```

Retrieve the number of warnings from the last RowResult operation.

## Parameters

This function has no parameters.

### Return Values

The number of warnings generated by the last operation.

### Examples

**Example 5.98 `mysql_xdevapi\RowResult::getWarningsCount` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS foo")->execute();
$session->sql("CREATE DATABASE foo")->execute();
$session->sql("CREATE TABLE foo.test_table(x int)")->execute();

$schema = $session->getSchema("foo");
$table  = $schema->getTable("test_table");

$table->insert(['x'])->values([1])->values([2])->execute();

$res = $table->select(['x/0 as bad_x'])->execute();

echo $res->getWarningsCount();
?>
```

The above example will output something similar to:

```
2
```

## 5.26 Schema class

Copyright 1997-2022 the PHP Documentation Group.

```
mysql_xdevapi\Schema {
mysql_xdevapi\Schema

        mysql_xdevapi\DatabaseObject

      Properties

  public
    name ;

Methods

  public mysql_xdevapi\Collection mysql_xdevapi\Schema::createCollection(
    string name,
    string validate);

  public bool mysql_xdevapi\Schema::dropCollection(
    string collection_name);

  public bool mysql_xdevapi\Schema::existsInDatabase();

  public mysql_xdevapi\Collection mysql_xdevapi\Schema::getCollection(
```

```
    string name);

  public mysql_xdevapi\Table mysql_xdevapi\Schema::getCollectionAsTable(
    string name);

  public array mysql_xdevapi\Schema::getCollections();

  public string mysql_xdevapi\Schema::getName();

  public mysql_xdevapi\Session mysql_xdevapi\Schema::getSession();

  public mysql_xdevapi\Table mysql_xdevapi\Schema::getTable(
    string name);

  public array mysql_xdevapi\Schema::getTables();

}
```

`name`

## 5.26.1 `Schema::__construct`

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- `Schema::__construct`

  constructor

### Description

```
  private mysql_xdevapi\Schema::__construct();
```

The Schema object provides full access to the schema (database).

### Parameters

This function has no parameters.

### Examples

**Example 5.99 Schema::__construct example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS food")->execute();
$session->sql("CREATE DATABASE food")->execute();
$session->sql("CREATE TABLE food.fruit(name text, rating text)")->execute();

$schema = $session->getSchema("food");
$schema->createCollection("trees");

print_r($schema->gettables());
print_r($schema->getcollections());
```

The above example will output something similar to:

```
Array
```

```
(
    [fruit] => mysql_xdevapi\Table Object
        (
            [name] => fruit
        )
)
Array
(
    [trees] => mysql_xdevapi\Collection Object
        (
            [name] => trees
        )
)
```

## 5.26.2 Schema::createCollection

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- Schema::createCollection

  Add collection to schema

### Description

```
public mysql_xdevapi\Collection mysql_xdevapi\Schema::createCollection(
  string name,
  string validate);
```

Create a collection within the schema.

### Parameters

| | |
|---|---|
| *name* | Collection name. |
| *validate* | Validation definition, as a JSON object. |

### Return Values

The Collection object.

### Changelog

| Version | Description |
|---|---|
| 8.0.20 | Added the optional validate parameter. |

### Examples

**Example 5.100 Schema::createCollection example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS food")->execute();
$session->sql("CREATE DATABASE food")->execute();
$session->sql("CREATE TABLE food.fruit(name text, rating text)")->execute();

$schema = $session->getSchema("food");
```

```
$schema->createCollection("trees");

print_r($schema->gettables());
print_r($schema->getcollections());
```

The above example will output something similar to:

```
Array
(
    [fruit] => mysql_xdevapi\Table Object
        (
            [name] => fruit
        )
)
Array
(
    [trees] => mysql_xdevapi\Collection Object
        (
            [name] => trees
        )
)
```

**Example 5.101 Schema::createCollection validate parameter example**

```
 <?php
 $collection = $schema->createCollection("mycollection", '{
 "validation": {
  "level": "strict",
  "schema": {
   "id": "http://json-schema.org/geo",
   "description": "A geographical coordinate",
   "type": "object",
   "properties": {
    "latitude": {
     "type": "number"
    },
    "longitude": {
     "type": "number"
    }
   },
   "required": ["latitude", "longitude"]
  }
 }
}');
// Succeeds
$collection->add('{"latitude": 10, "longitude": 20}')->execute();

// Fails, invalid types (not numbers)
$collection->add('{"latitude": "lat", "longitude": "long"}')->execute();
```

## 5.26.3 Schema::dropCollection

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- Schema::dropCollection

  Drop collection from schema

### Description

```
public bool mysql_xdevapi\Schema::dropCollection(
  string collection_name);
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

*collection_name*

### Return Values

### Examples

**Example 5.102 Schema::dropCollection example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS food")->execute();
$session->sql("CREATE DATABASE food")->execute();
$session->sql("CREATE TABLE food.fruit(name text, rating text)")->execute();

$schema = $session->getSchema("food");

$schema->createCollection("trees");
$schema->dropCollection("trees");
$schema->createCollection("buildings");

print_r($schema->gettables());
print_r($schema->getcollections());
```

The above example will output something similar to:

```
Array
(
    [fruit] => mysql_xdevapi\Table Object
        (
            [name] => fruit
        )
)
Array
(
    [buildings] => mysql_xdevapi\Collection Object
        (
            [name] => buildings
        )
)
```

## 5.26.4 Schema::existsInDatabase

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- Schema::existsInDatabase

  Check if exists in database

## Description

```
public bool mysql_xdevapi\Schema::existsInDatabase();
```

Checks if the current object (schema, table, collection, or view) exists in the schema object.

> **Warning**
>
> This function is currently not documented; only its argument list is available.

## Parameters

This function has no parameters.

## Return Values

`true` if the schema, table, collection, or view still exists in the schema, else `false`.

## Examples

**Example 5.103 Schema::existsInDatabase example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS food")->execute();
$session->sql("CREATE DATABASE food")->execute();
$session->sql("CREATE TABLE food.fruit(name text, rating text)")->execute();

$schema = $session->getSchema("food");
$schema->createCollection("trees");

// ...

$trees = $schema->getCollection("trees");

// ...

// Is this collection still in the database (schema)?
if ($trees->existsInDatabase()) {
    echo "Yes, the 'trees' collection is still present.";
}
```

The above example will output something similar to:

```
Yes, the 'trees' collection is still present.
```

# 5.26.5 Schema::getCollection

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- Schema::getCollection

Get collection from schema

### Description

```
public mysql_xdevapi\Collection mysql_xdevapi\Schema::getCollection(
  string name);
```

Get a collection from the schema.

### Parameters

| | |
|---|---|
| *name* | Collection name to retrieve. |

### Return Values

The Collection object for the selected collection.

### Examples

**Example 5.104 Schema::getCollection example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS food")->execute();
$session->sql("CREATE DATABASE food")->execute();

$schema = $session->getSchema("food");
$schema->createCollection("trees");

// ...

$trees = $schema->getCollection("trees");

var_dump($trees);
```

The above example will output something similar to:

```
object(mysql_xdevapi\Collection)#3 (1) {
  ["name"]=>
  string(5) "trees"
}
```

## 5.26.6 Schema::getCollectionAsTable

Copyright 1997-2022 the PHP Documentation Group.

- Schema::getCollectionAsTable

  Get collection table object

### Description

```
public mysql_xdevapi\Table mysql_xdevapi\Schema::getCollectionAsTable(
  string name);
```

Get a collection, but as a Table object instead of a Collection object.

### Parameters

| | |
|---|---|
| *name* | Name of the collection to instantiate a Table object from. |

### Return Values

A table object for the collection.

### Examples

**Example 5.105 Schema::getCollectionAsTable example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema  = $session->getSchema("addressbook");
$collect = $schema->createCollection("people");
$collect->add('{"name": "Fred",  "age": 21, "job": "Construction"}')->execute();
$collect->add('{"name": "Wilma", "age": 23, "job": "Teacher"}')->execute();

$table      = $schema->getCollectionAsTable("people");
$collection = $schema->getCollection("people");

var_dump($table);
var_dump($collection);
```

The above example will output something similar to:

```
object(mysql_xdevapi\Table)#4 (1) {
  ["name"]=>
  string(6) "people"
}

object(mysql_xdevapi\Collection)#5 (1) {
  ["name"]=>
  string(6) "people"
}
```

## 5.26.7 Schema::getCollections

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- Schema::getCollections

  Get all schema collections

### Description

```
  public array mysql_xdevapi\Schema::getCollections();
```

Fetch a list of collections for this schema.

### Parameters

This function has no parameters.

### Return Values

Array of all collections in this schema, where each array element value is a Collection object with the collection name as the key.

### Examples

**Example 5.106 `mysql_xdevapi\Schema::getCollections` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema  = $session->getSchema("addressbook");
$collect = $schema->createCollection("people");
$collect->add('{"name": "Fred",  "age": 21, "job": "Construction"}')->execute();
$collect->add('{"name": "Wilma", "age": 23, "job": "Teacher"}')->execute();

$collections = $schema->getCollections();
var_dump($collections);
?>
```

The above example will output something similar to:

```
array(1) {
  ["people"]=>
  object(mysql_xdevapi\Collection)#4 (1) {
    ["name"]=>
    string(6) "people"
  }
}
```

## 5.26.8 `Schema::getName`

Copyright 1997-2022 the PHP Documentation Group.

- `Schema::getName`

  Get schema name

### Description

```
public string mysql_xdevapi\Schema::getName();
```

Get the name of the schema.

### Parameters

This function has no parameters.

### Return Values

The name of the schema connected to the schema object, as a string.

### Examples

**Example 5.107 `mysql_xdevapi\Schema::getName` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();

$schema  = $session->getSchema("addressbook");

// ...

var_dump($schema->getName());
?>
```

The above example will output something similar to:

```
string(11) "addressbook"
```

## 5.26.9 `Schema::getSession`

Copyright 1997-2022 the PHP Documentation Group.

- `Schema::getSession`

  Get schema session

### Description

```
  public mysql_xdevapi\Session mysql_xdevapi\Schema::getSession();
```

Get a new Session object from the Schema object.

### Parameters

This function has no parameters.

### Return Values

A Session object.

### Examples

**Example 5.108 `mysql_xdevapi\Schema::getSession` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();
```

```
$schema  = $session->getSchema("addressbook");

// ...

$newsession = $schema->getSession();

var_dump($session);
var_dump($newsession);
?>
```

The above example will output something similar to:

```
object(mysql_xdevapi\Session)#1 (0) {
}

object(mysql_xdevapi\Session)#3 (0) {
}
```

## 5.26.10 Schema::getTable

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- Schema::getTable

  Get schema table

### Description

```
  public mysql_xdevapi\Table mysql_xdevapi\Schema::getTable(
    string name);
```

Fetch a Table object for the provided table in the schema.

### Parameters

| | |
|---|---|
| *name* | Name of the table. |

### Return Values

A Table object.

### Examples

**Example 5.109 mysql_xdevapi\Schema::getTable example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();
$session->sql("CREATE TABLE addressbook.names(name text, age int)")->execute();
$session->sql("INSERT INTO addressbook.names values ('John', 42), ('Sam', 33)")->execute();

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");
```

```
$row = $table->select('name', 'age')->execute()->fetchAll();

print_r($row);
?>
```

The above example will output something similar to:

```
Array
(
    [0] => Array
        (
            [name] => John
            [age] => 42
        )
    [1] => Array
        (
            [name] => Sam
            [age] => 33
        )
)
```

## 5.26.11 Schema::getTables

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- Schema::getTables

  Get schema tables

### Description

```
  public array mysql_xdevapi\Schema::getTables();
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

Array of all tables in this schema, where each array element value is a Table object with the table name as the key.

### Examples

**Example 5.110 mysql_xdevapi\Schema::getTables example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
```

```
$session->sql("CREATE DATABASE addressbook")->execute();

$session->sql("CREATE TABLE addressbook.names(name text, age int)")->execute();
$session->sql("INSERT INTO addressbook.names values ('John', 42), ('Sam', 33)")->execute();

$session->sql("CREATE TABLE addressbook.cities(name text, population int)")->execute();
$session->sql("INSERT INTO addressbook.names values ('Portland', 639863), ('Seattle', 704352)")->execute()

$schema = $session->getSchema("addressbook");
$tables = $schema->getTables();

var_dump($tables);
?>
```

The above example will output something similar to:

```
array(2) {
  ["cities"]=>
  object(mysql_xdevapi\Table)#3 (1) {
    ["name"]=>
    string(6) "cities"
  }

  ["names"]=>
  object(mysql_xdevapi\Table)#4 (1) {
    ["name"]=>
    string(5) "names"
  }
}
```

# 5.27 SchemaObject interface

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```
mysql_xdevapi\SchemaObject {
mysql_xdevapi\SchemaObject

        mysql_xdevapi\DatabaseObject

      Methods

  abstract mysql_xdevapi\Schema mysql_xdevapi\SchemaObject::getSchema();

}
```

## 5.27.1 `SchemaObject::getSchema`

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- `SchemaObject::getSchema`

  Get schema object

### Description

```
  abstract mysql_xdevapi\Schema mysql_xdevapi\SchemaObject::getSchema();
```

Used by other objects to retrieve a schema object.

### Parameters

This function has no parameters.

### Return Values

The current Schema object.

### Examples

**Example 5.111 `mysql_xdevapi\Session::getSchema` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$schema  = $session->getSchema("addressbook");

print_r($schema);
```

The above example will output something similar to:

```
mysql_xdevapi\Schema Object
(
    [name] => addressbook
)
```

## 5.28 Session class

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```
mysql_xdevapi\Session {
mysql_xdevapi\Session

      Methods

  public bool mysql_xdevapi\Session::close();

  public Object mysql_xdevapi\Session::commit();

  public mysql_xdevapi\Schema mysql_xdevapi\Session::createSchema(
    string schema_name);

  public bool mysql_xdevapi\Session::dropSchema(
    string schema_name);

  public string mysql_xdevapi\Session::generateUUID();

  public string mysql_xdevapi\Session::getDefaultSchema();

  public mysql_xdevapi\Schema mysql_xdevapi\Session::getSchema(
    string schema_name);

  public array mysql_xdevapi\Session::getSchemas();
```

```
  public int mysql_xdevapi\Session::getServerVersion();

  public array mysql_xdevapi\Session::listClients();

  public string mysql_xdevapi\Session::quoteName(
    string name);

  public void mysql_xdevapi\Session::releaseSavepoint(
    string name);

  public void mysql_xdevapi\Session::rollback();

  public void mysql_xdevapi\Session::rollbackTo(
    string name);

  public string mysql_xdevapi\Session::setSavepoint(
    string name);

  public mysql_xdevapi\SqlStatement mysql_xdevapi\Session::sql(
    string query);

  public void mysql_xdevapi\Session::startTransaction();

}
```

## 5.28.1 Session::close

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- Session::close

  Close session

### Description

```
  public bool mysql_xdevapi\Session::close();
```

Close the session with the server.

### Parameters

This function has no parameters.

### Return Values

true if the session closed.

### Examples

**Example 5.112 mysql_xdevapi\Session::close example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

$session->close();
```

## 5.28.2 Session::commit

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- Session::commit

  Commit transaction

### Description

```
public Object mysql_xdevapi\Session::commit();
```

Commit the transaction.

### Parameters

This function has no parameters.

### Return Values

An SqlStatementResult object.

### Examples

**Example 5.113 mysql_xdevapi\Session::commit example**

```
<?php
$session    = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$collection = $session->getSchema("addressbook")->getCollection("friends");

$session->startTransaction();

$collection->add('{"John":42, "Sam":33}')->execute();
$savepoint = $session->setSavepoint();

$session->commit();
$session->close();
```

## 5.28.3 Session::__construct

Copyright 1997-2022 the PHP Documentation Group.

- Session::__construct

  Description constructor

### Description

```
private mysql_xdevapi\Session::__construct();
```

A Session object, as initiated by getSession().

### Parameters

This function has no parameters.

### Examples

**Example 5.114 `mysql_xdevapi\Session::__construct` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$session->close();
?>
```

## 5.28.4 `Session::createSchema`

Copyright 1997-2022 the PHP Documentation Group.

- `Session::createSchema`

  Create new schema

### Description

```
public mysql_xdevapi\Schema mysql_xdevapi\Session::createSchema(
  string schema_name);
```

Creates a new schema.

### Parameters

| | |
|---|---|
| *`schema_name`* | Name of the schema to create. |

### Return Values

A Schema object on success, and emits an exception on failure.

### Examples

**Example 5.115 `mysql_xdevapi\Session::createSchema` example**

```
<?php
$uri  = 'mysqlx://happyuser:password@127.0.0.1:33060/';
$sess = mysql_xdevapi\getSession($uri);

try {

    if ($schema = $sess->createSchema('fruit')) {
        echo "Info: I created a schema named 'fruit'\n";
    }

} catch (Exception $e) {

   echo $e->getMessage();

}
?>
```

The above example will output something similar to:

```
```

```
Info: I created a schema named 'fruit'
```

## 5.28.5 Session::dropSchema

Copyright 1997-2022 the PHP Documentation Group.

- Session::dropSchema

  Drop a schema

### Description

```
public bool mysql_xdevapi\Session::dropSchema(
  string schema_name);
```

Drop a schema (database).

### Parameters

| | |
|---|---|
| *schema_name* | Name of the schema to drop. |

### Return Values

true if the schema is dropped, or false if it does not exist or can't be dropped.

An E_WARNING level error is generated if the schema does not exist.

### Examples

**Example 5.116 mysql_xdevapi\Session::dropSchema example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$session->dropSchema("addressbook");

$session->close();
?>
```

## 5.28.6 Session::generateUUID

Copyright 1997-2022 the PHP Documentation Group.

- Session::generateUUID

  Get new UUID

### Description

```
public string mysql_xdevapi\Session::generateUUID();
```

Generate a Universal Unique IDentifier (UUID) generated according to RFC 4122.

### Parameters

This function has no parameters.

### Return Values

The UUID; a string with a length of 32.

### Examples

**Example 5.117 `mysql_xdevapi\Session::generateUuid` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$uuid = $session->generateUuid();

var_dump($uuid);
```

The above example will output something similar to:

```
string(32) "484B18AC7980F8D4FE84613CDA5EE84B"
```

## 5.28.7 `Session::getDefaultSchema`

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- `Session::getDefaultSchema`

  Get default schema name

### Description

```
  public string mysql_xdevapi\Session::getDefaultSchema();
```

Retrieve name of the default schema that's typically set in the connection URI.

### Parameters

This function has no parameters.

### Return Values

Name of the default schema defined by the connection, or `null` if one was not set.

### Examples

**Example 5.118 `mysql_xdevapi\Session::getSchema` example**

```
<?php
$uri = "mysqlx://testuser:testpasswd@localhost:33160/testx?ssl-mode=disabled";
$session = mysql_xdevapi\getSession($uri);

$schema = $session->getDefaultSchema();
echo $schema;
?>
```

```
```

The above example will output:

```
testx
```

## 5.28.8 Session::getSchema

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- Session::getSchema

  Get a new schema object

### Description

```
public mysql_xdevapi\Schema mysql_xdevapi\Session::getSchema(
  string schema_name);
```

A new Schema object for the provided schema name.

### Parameters

| | |
|---|---|
| *schema_name* | Name of the schema (database) to fetch a Schema object for. |

### Return Values

A Schema object.

### Examples

**Example 5.119 mysql_xdevapi\Session::getSchema example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$schema  = $session->getSchema("addressbook");

print_r($schema);
```

The above example will output something similar to:

```
mysql_xdevapi\Schema Object
(
    [name] => addressbook
)
```

## 5.28.9 Session::getSchemas

Copyright 1997-2022 the PHP Documentation Group.

- Session::getSchemas

Get the schemas

### Description

```
public array mysql_xdevapi\Session::getSchemas();
```

Get schema objects for all schemas available to the session.

### Parameters

This function has no parameters.

### Return Values

An array containing objects that represent all of the schemas available to the session.

### Examples

**Example 5.120 `mysql_xdevapi\Session::getSchemas` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$schemas  = $session->getSchemas();

print_r($schemas);
```

The above example will output something similar to:

```
Array
(
    [0] => mysql_xdevapi\Schema Object
        (
            [name] => addressbook
        )
    [1] => mysql_xdevapi\Schema Object
        (
            [name] => information_schema
        )
    ...
```

## 5.28.10 `Session::getServerVersion`

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- `Session::getServerVersion`

  Get server version

### Description

```
public int mysql_xdevapi\Session::getServerVersion();
```

Retrieve the MySQL server version for the session.

### Parameters

This function has no parameters.

### Return Values

The MySQL server version for the session, as an integer such as "80012".

### Examples

**Example 5.121 `mysql_xdevapi\Session::getServerVersion` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$version = $session->getServerVersion();

var_dump($version);
```

The above example will output something similar to:

```
int(80012)
```

## 5.28.11 `Session::listClients`

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- `Session::listClients`

  Get client list

### Description

```
  public array mysql_xdevapi\Session::listClients();
```

Get a list of client connections to the session's MySQL server.

### Parameters

This function has no parameters.

### Return Values

An array containing the currently logged clients. The array elements are "client_id", "user", "host", and "sql_session".

### Examples

**Example 5.122 `mysql_xdevapi\Session::listClients` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
```

```
$ids = $session->listClients();

var_dump($ids);
?>
```

The above example will output something similar to:

```
array(1) {
  [0]=>
  array(4) {
    ["client_id"]=>
    int(61)
    ["user"]=>
    string(4) "root"
    ["host"]=>
    string(9) "localhost"
    ["sql_session"]=>
    int(72)
  }
}
```

## 5.28.12 Session::quoteName

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- Session::quoteName

  Add quotes

### Description

```
  public string mysql_xdevapi\Session::quoteName(
    string name);
```

A quoting function to escape SQL names and identifiers. It escapes the identifier given in accordance to the settings of the current connection. This escape function should not be used to escape values.

### Parameters

| | |
|---|---|
| *name* | The string to quote. |

### Return Values

The quoted string.

### Examples

**Example 5.123 mysql_xdevapi\Session::quoteName example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$first = "MySQL's test";
var_dump($first);
var_dump($session->quoteName($first));
```

```
$second = 'Another `test` "like" `this`';
var_dump($second);
var_dump($session->quoteName($second));
?>
```

The above example will output something similar to:

```
string(12) "MySQL's test"
string(14) "`MySQL's test`"

string(28) "Another `test` "like" `this`"
string(34) "`Another ``test`` "like" ``this```"
```

## 5.28.13 Session::releaseSavepoint

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- Session::releaseSavepoint

  Release set savepoint

### Description

```
public void mysql_xdevapi\Session::releaseSavepoint(
  string name);
```

Release a previously set savepoint.

### Parameters

| | |
|---|---|
| *name* | Name of the savepoint to release. |

### Return Values

An SqlStatementResult object.

### Examples

**Example 5.124 mysql_xdevapi\Session::releaseSavepoint example**

```
<?php
$session    = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$collection = $session->getSchema("addressbook")->getCollection("friends");

$session->startTransaction();
$collection->add( '{"test1":1, "test2":2}' )->execute();

$savepoint = $session->setSavepoint();

$collection->add( '{"test3":3, "test4":4}' )->execute();

$session->releaseSavepoint($savepoint);
$session->rollback();
?>
```

## 5.28.14 Session::rollback

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- Session::rollback

  Rollback transaction

### Description

```
public void mysql_xdevapi\Session::rollback();
```

Rollback the transaction.

### Parameters

This function has no parameters.

### Return Values

An SqlStatementResult object.

### Examples

**Example 5.125 mysql_xdevapi\Session::rollback example**

```
<?php
$session    = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$collection = $session->getSchema("addressbook")->getCollection("names");

$session->startTransaction();
$collection->add( '{"test1":1, "test2":2}' )->execute();

$savepoint = $session->setSavepoint();

$collection->add( '{"test3":3, "test4":4}' )->execute();

$session->releaseSavepoint($savepoint);
$session->rollback();
?>
```

## 5.28.15 Session::rollbackTo

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- Session::rollbackTo

  Rollback transaction to savepoint

### Description

```
public void mysql_xdevapi\Session::rollbackTo(
  string name);
```

Rollback the transaction back to the savepoint.

### Parameters

| | |
|---|---|
| *name* | Name of the savepoint to rollback to; case-insensitive. |

### Return Values

An SqlStatementResult object.

### Examples

**Example 5.126 `mysql_xdevapi\Session::rollbackTo` example**

```
<?php
$session    = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$collection = $session->getSchema("addressbook")->getCollection("names");

$session->startTransaction();
$collection->add( '{"test1":1, "test2":2}' )->execute();

$savepoint1 = $session->setSavepoint();

$collection->add( '{"test3":3, "test4":4}' )->execute();

$savepoint2 = $session->setSavepoint();

$session->rollbackTo($savepoint1);
?>
```

## 5.28.16 `Session::setSavepoint`

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- `Session::setSavepoint`

  Create savepoint

### Description

```
public string mysql_xdevapi\Session::setSavepoint(
  string name);
```

Create a new savepoint for the transaction.

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

| | |
|---|---|
| *name* | The name of the savepoint. The name is auto-generated if the optional `name` parameter is not defined as 'SAVEPOINT1', 'SAVEPOINT2', and so on. |

### Return Values

The name of the save point.

### Examples

**Example 5.127 `mysql_xdevapi\Session::setSavepoint` example**

```
<?php
$session    = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$collection = $session->getSchema("addressbook")->getCollection("names");

$session->startTransaction();
$collection->add( '{"test1":1, "test2":2}' )->execute();

$savepoint = $session->setSavepoint();

$collection->add( '{"test3":3, "test4":4}' )->execute();

$session->releaseSavepoint($savepoint);
$session->rollback();
?>
```

## 5.28.17 `Session::sql`

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- `Session::sql`

  Execute SQL query

### Description

```
public mysql_xdevapi\SqlStatement mysql_xdevapi\Session::sql(
  string query);
```

Create a native SQL statement. Placeholders are supported using the native "?" syntax. Use the `execute` method to execute the SQL statement.

### Parameters

| | |
|---|---|
| *`query`* | SQL statement to execute. |

### Return Values

An SqlStatement object.

### Examples

**Example 5.128 `mysql_xdevapi\Session::sql` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("CREATE DATABASE addressbook")->execute();
?>
```

## 5.28.18 `Session::startTransaction`

Copyright 1997-2022 the PHP Documentation Group.

- `Session::startTransaction`

  Start transaction

### Description

```
public void mysql_xdevapi\Session::startTransaction();
```

Start a new transaction.

### Parameters

This function has no parameters.

### Return Values

An SqlStatementResult object.

### Examples

**Example 5.129 `mysql_xdevapi\Session::startTransaction` example**

```
<?php
$session    = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$collection = $session->getSchema("addressbook")->getCollection("friends");

$session->startTransaction();
$collection->add( '{"test1":1, "test2":2}' )->execute();

$savepoint = $session->setSavepoint();

$collection->add( '{"test3":3, "test4":4}' )->execute();

$session->releaseSavepoint($savepoint);
$session->rollback();
?>
```

## 5.29 SqlStatement class

Copyright 1997-2022 the PHP Documentation Group.

```
mysql_xdevapi\SqlStatement {
mysql_xdevapi\SqlStatement

      Constants

  const int
    mysql_xdevapi\SqlStatement::EXECUTE_ASYNC
        =  =1;

  const int
    mysql_xdevapi\SqlStatement::BUFFERED
        =  =2;

Properties

  public
```

```
    statement ;

Methods

  public mysql_xdevapi\SqlStatement mysql_xdevapi\SqlStatement::bind(
    string param);

  public mysql_xdevapi\Result mysql_xdevapi\SqlStatement::execute();

  public mysql_xdevapi\Result mysql_xdevapi\SqlStatement::getNextResult();

  public mysql_xdevapi\Result mysql_xdevapi\SqlStatement::getResult();

  public bool mysql_xdevapi\SqlStatement::hasMoreResults();

}
```

`statement`

`mysql_xdevapi\SqlStatement::EXECUTE_ASYNC`

`mysql_xdevapi\SqlStatement::BUFFERED`

## 5.29.1 `SqlStatement::bind`

Copyright 1997-2022 the PHP Documentation Group.

- `SqlStatement::bind`

  Bind statement parameters

### Description

```
  public mysql_xdevapi\SqlStatement mysql_xdevapi\SqlStatement::bind(
    string param);
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

*`param`*

### Return Values

### Examples

**Example 5.130 `mysql_xdevapi\SqlStatement::bind` example**

```
<?php

/* ... */
```

```
?>
```

## 5.29.2 SqlStatement::__construct

Copyright 1997-2022 the PHP Documentation Group.

- SqlStatement::__construct

  Description constructor

### Description

```
private mysql_xdevapi\SqlStatement::__construct();
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Examples

**Example 5.131 mysql_xdevapi\SqlStatement::__construct example**

```
<?php

/* ... */

?>
```

## 5.29.3 SqlStatement::execute

Copyright 1997-2022 the PHP Documentation Group.

- SqlStatement::execute

  Execute the operation

### Description

```
public mysql_xdevapi\Result mysql_xdevapi\SqlStatement::execute();
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

### Examples

**Example 5.132 `mysql_xdevapi\SqlStatement::execute` example**

```
<?php

/* ... */

?>
```

## 5.29.4 `SqlStatement::getNextResult`

Copyright 1997-2022 the PHP Documentation Group.

- `SqlStatement::getNextResult`

  Get next result

### Description

```
public mysql_xdevapi\Result mysql_xdevapi\SqlStatement::getNextResult();
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

### Examples

**Example 5.133 `mysql_xdevapi\SqlStatement::getNextResult` example**

```
<?php

/* ... */

?>
```

## 5.29.5 `SqlStatement::getResult`

Copyright 1997-2022 the PHP Documentation Group.

- `SqlStatement::getResult`

  Get result

### Description

```
public mysql_xdevapi\Result mysql_xdevapi\SqlStatement::getResult();
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

### Examples

**Example 5.134 `mysql_xdevapi\SqlStatement::getResult` example**

```
<?php

/* ... */

?>
```

## 5.29.6 SqlStatement::hasMoreResults

Copyright 1997-2022 the PHP Documentation Group.

- `SqlStatement::hasMoreResults`

  Check for more results

### Description

```
public bool mysql_xdevapi\SqlStatement::hasMoreResults();
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

`true` if the result set has more objects to fetch.

### Examples

**Example 5.135 `mysql_xdevapi\SqlStatement::hasMoreResults` example**

```
<?php

/* ... */

?>
```

# 5.30 SqlStatementResult class

Copyright 1997-2022 the PHP Documentation Group.

```
mysql_xdevapi\SqlStatementResult {
mysql_xdevapi\SqlStatementResult

        mysql_xdevapi\BaseResult

        Traversable

      Methods

  public array mysql_xdevapi\SqlStatementResult::fetchAll();

  public array mysql_xdevapi\SqlStatementResult::fetchOne();

  public int mysql_xdevapi\SqlStatementResult::getAffectedItemsCount();

  public int mysql_xdevapi\SqlStatementResult::getColumnsCount();

  public array mysql_xdevapi\SqlStatementResult::getColumnNames();

  public Array mysql_xdevapi\SqlStatementResult::getColumns();

  public array mysql_xdevapi\SqlStatementResult::getGeneratedIds();

  public String mysql_xdevapi\SqlStatementResult::getLastInsertId();

  public array mysql_xdevapi\SqlStatementResult::getWarnings();

  public int mysql_xdevapi\SqlStatementResult::getWarningCounts();

  public bool mysql_xdevapi\SqlStatementResult::hasData();

  public mysql_xdevapi\Result mysql_xdevapi\SqlStatementResult::nextResult();

}
```

## 5.30.1 SqlStatementResult::__construct

Copyright 1997-2022 the PHP Documentation Group.

- SqlStatementResult::__construct

  Description constructor

### Description

```
  private mysql_xdevapi\SqlStatementResult::__construct();
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Examples

**Example 5.136 `mysql_xdevapi\SqlStatementResult::__construct` example**

```
<?php

/* ... */

?>
```

## 5.30.2 `SqlStatementResult::fetchAll`

Copyright 1997-2022 the PHP Documentation Group.

- `SqlStatementResult::fetchAll`

  Get all rows from result

### Description

```
public array mysql_xdevapi\SqlStatementResult::fetchAll();
```

Fetch all the rows from the result set.

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

A numerical array with all results from the query; each result is an associative array. An empty array is returned if no rows are present.

### Examples

**Example 5.137 `mysql_xdevapi\SqlStatementResult::fetchAll` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$session->sql("DROP DATABASE IF EXISTS dbtest")->execute();
$session->sql("CREATE DATABASE dbtest")->execute();
$session->sql("CREATE TABLE dbtest.workers(name text, age int, job text)")->execute();
$session->sql("INSERT INTO dbtest.workers values ('John', 42, 'bricklayer'), ('Sam', 33, 'carpenter')")->execu
```

```
$schema = $session->getSchema("dbtest");
$table  = $schema->getTable("workers");

$rows = $session->sql("SELECT * FROM dbtest.workers")->execute()->fetchAll();

print_r($rows);
?>
```

The above example will output something similar to:

```
Array
(
    [0] => Array
        (
            [name] => John
            [age] => 42
        )
    [1] => Array
        (
            [name] => Sam
            [age] => 33
        )
)
```

## 5.30.3 SqlStatementResult::fetchOne

Copyright 1997-2022 the PHP Documentation Group.

- SqlStatementResult::fetchOne

  Get single row

### Description

```
public array mysql_xdevapi\SqlStatementResult::fetchOne();
```

Fetch one row from the result set.

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

The result, as an associative array. In case there is not any result, null will be returned.

### Examples

**Example 5.138 mysql_xdevapi\SqlStatementResult::fetchOne example**

```
<?php
```

```
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
$session->sql("DROP DATABASE IF EXISTS dbtest")->execute();
$session->sql("CREATE DATABASE dbtest")->execute();
$session->sql("CREATE TABLE dbtest.workers(name text, age int, job text)")->execute();
$session->sql("INSERT INTO dbtest.workers values ('John', 42, 'bricklayer'), ('Sam', 33, 'carpenter')")->execu

$schema = $session->getSchema("dbtest");
$table  = $schema->getTable("workers");

$rows = $session->sql("SELECT * FROM dbtest.workers")->execute()->fetchOne();

print_r($rows);
?>
```

The above example will output something similar to:

```
Array
(
    [name] => John
    [age] => 42
    [job] => bricklayer
)
```

## 5.30.4 SqlStatementResult::getAffectedItemsCount

Copyright 1997-2022 the PHP Documentation Group.

- SqlStatementResult::getAffectedItemsCount

  Get affected row count

### Description

```
  public int mysql_xdevapi\SqlStatementResult::getAffectedItemsCount();
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

### Examples

**Example 5.139 mysql_xdevapi\SqlStatementResult::getAffectedItemsCount example**

```
<?php

/* ... */

?>
```

## 5.30.5 SqlStatementResult::getColumnsCount

Copyright 1997-2022 the PHP Documentation Group.

- SqlStatementResult::getColumnsCount

  Get column count

### Description

```
public int mysql_xdevapi\SqlStatementResult::getColumnsCount();
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

The number of columns; 0 if there are none.

### Changelog

| Version | Description |
|---|---|
| 8.0.14 | Method renamed from getColumnCount() to getColumnsCount(). |

### Examples

**Example 5.140 mysql_xdevapi\SqlStatementResult::getColumnsCount example**

```
<?php

/* ... */

?>
```

## 5.30.6 SqlStatementResult::getColumnNames

Copyright 1997-2022 the PHP Documentation Group.

- SqlStatementResult::getColumnNames

  Get column names

### Description

```
public array mysql_xdevapi\SqlStatementResult::getColumnNames();
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

### Examples

**Example 5.141 `mysql_xdevapi\SqlStatementResult::getColumnNames` example**

```
<?php
/* ... */
?>
```

## 5.30.7 `SqlStatementResult::getColumns`

Copyright 1997-2022 the PHP Documentation Group.

- `SqlStatementResult::getColumns`

  Get columns

### Description

```
public Array mysql_xdevapi\SqlStatementResult::getColumns();
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

### Examples

**Example 5.142 `mysql_xdevapi\SqlStatementResult::getColumns` example**

```
<?php
/* ... */
?>
```

## 5.30.8 SqlStatementResult::getGeneratedIds

Copyright 1997-2022 the PHP Documentation Group.

- SqlStatementResult::getGeneratedIds

  Get generated ids

### Description

```
public array mysql_xdevapi\SqlStatementResult::getGeneratedIds();
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

An array of generated _id's from the last operation, or an empty array if there are none.

### Examples

**Example 5.143 mysql_xdevapi\SqlStatementResult::getGeneratedIds example**

```
<?php

/* ... */

?>
```

## 5.30.9 SqlStatementResult::getLastInsertId

Copyright 1997-2022 the PHP Documentation Group.

- SqlStatementResult::getLastInsertId

  Get last insert id

### Description

```
public String mysql_xdevapi\SqlStatementResult::getLastInsertId();
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

The ID for the last insert operation.

### Examples

**Example 5.144 `mysql_xdevapi\SqlStatementResult::getLastInsertId` example**

```
<?php

/* ... */

?>
```

## 5.30.10 `SqlStatementResult::getWarnings`

Copyright 1997-2022 the PHP Documentation Group.

- `SqlStatementResult::getWarnings`

  Get warnings from last operation

### Description

```
public array mysql_xdevapi\SqlStatementResult::getWarnings();
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

An array of Warning objects from the last operation. Each object defines an error 'message', error 'level', and error 'code'. An empty array is returned if no errors are present.

### Examples

**Example 5.145 `mysql_xdevapi\SqlStatementResult::getWarnings` example**

```
<?php

/* ... */

?>
```

## 5.30.11 `SqlStatementResult::getWarningsCount`

Copyright 1997-2022 the PHP Documentation Group.

- `SqlStatementResult::getWarningsCount`

  Get warning count from last operation

### Description

```
public int mysql_xdevapi\SqlStatementResult::getWarningCounts();
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

The number of warnings raised during the last CRUD operation.

### Examples

**Example 5.146 `mysql_xdevapi\SqlStatementResult::getWarningsCount` example**

```
<?php

/* ... */

?>
```

## 5.30.12 `SqlStatementResult::hasData`

Copyright 1997-2022 the PHP Documentation Group.

- `SqlStatementResult::hasData`

  Check if result has data

### Description

```
public bool mysql_xdevapi\SqlStatementResult::hasData();
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

`true` if the result set has data.

### Examples

**Example 5.147 `mysql_xdevapi\SqlStatementResult::hasData` example**

```
<?php

/* ... */

?>
```

## 5.30.13 `SqlStatementResult::nextResult`

Copyright 1997-2022 the PHP Documentation Group.

- `SqlStatementResult::nextResult`

  Get next result

### Description

```
public mysql_xdevapi\Result mysql_xdevapi\SqlStatementResult::nextResult();
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

The next Result object from the result set.

### Examples

**Example 5.148 `mysql_xdevapi\SqlStatementResult::nextResult` example**

```
<?php

/* ... */

?>
```

# 5.31 Statement class

Copyright 1997-2022 the PHP Documentation Group.

```
mysql_xdevapi\Statement {
```

```
mysql_xdevapi\Statement

      Constants

  const int
    mysql_xdevapi\Statement::EXECUTE_ASYNC
        =  =1;

  const int
    mysql_xdevapi\Statement::BUFFERED
        =  =2;

Methods

  public mysql_xdevapi\Result mysql_xdevapi\Statement::getNextResult();

  public mysql_xdevapi\Result mysql_xdevapi\Statement::getResult();

  public bool mysql_xdevapi\Statement::hasMoreResults();

}
```

mysql_xdevapi
\Statement::EXECUTE_ASYNC

mysql_xdevapi
\Statement::BUFFERED

## 5.31.1 Statement::__construct

Copyright 1997-2022 the PHP Documentation Group.

- Statement::__construct

  Description constructor

### Description

```
  private mysql_xdevapi\Statement::__construct();
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Examples

**Example 5.149 mysql_xdevapi\Statement::__construct example**

```
<?php

/* ... */

?>
```

## 5.31.2 Statement::getNextResult

Copyright 1997-2022 the PHP Documentation Group.

- Statement::getNextResult

  Get next result

### Description

```
public mysql_xdevapi\Result mysql_xdevapi\Statement::getNextResult();
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

### Examples

**Example 5.150 mysql_xdevapi\Statement::getNextResult example**

```
<?php

/* ... */

?>
```

## 5.31.3 Statement::getResult

Copyright 1997-2022 the PHP Documentation Group.

- Statement::getResult

  Get result

### Description

```
public mysql_xdevapi\Result mysql_xdevapi\Statement::getResult();
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

### Examples

**Example 5.151 `mysql_xdevapi\Statement::getResult` example**

```
<?php

/* ... */

?>
```

## 5.31.4 `Statement::hasMoreResults`

Copyright 1997-2022 the PHP Documentation Group.

- `Statement::hasMoreResults`

  Check if more results

### Description

```
public bool mysql_xdevapi\Statement::hasMoreResults();
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Return Values

### Examples

**Example 5.152 `mysql_xdevapi\Statement::hasMoreResults` example**

```
<?php

/* ... */

?>
```

# 5.32 Table class

Copyright 1997-2022 the PHP Documentation Group.

Provides access to the table through INSERT/SELECT/UPDATE/DELETE statements.

```
mysql_xdevapi\Table {
mysql_xdevapi\Table

        mysql_xdevapi\SchemaObject

      Properties

  public
    name ;

Methods

  public int mysql_xdevapi\Table::count();

  public mysql_xdevapi\TableDelete mysql_xdevapi\Table::delete();

  public bool mysql_xdevapi\Table::existsInDatabase();

  public string mysql_xdevapi\Table::getName();

  public mysql_xdevapi\Schema mysql_xdevapi\Table::getSchema();

  public mysql_xdevapi\Session mysql_xdevapi\Table::getSession();

  public mysql_xdevapi\TableInsert mysql_xdevapi\Table::insert(
    mixed columns,
    mixed more_columns);

  public bool mysql_xdevapi\Table::isView();

  public mysql_xdevapi\TableSelect mysql_xdevapi\Table::select(
    mixed columns,
    mixed more_columns);

  public mysql_xdevapi\TableUpdate mysql_xdevapi\Table::update();

}
```

`name`

## 5.32.1 `Table::__construct`

Copyright 1997-2022 the PHP Documentation Group.

- `Table::__construct`

  Table constructor

### Description

```
  private mysql_xdevapi\Table::__construct();
```

Construct a table object.

### Parameters

This function has no parameters.

### Examples

**Example 5.153 `mysql_xdevapi\Table::__construct` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");
?>
```

## 5.32.2 Table::count

Copyright 1997-2022 the PHP Documentation Group.

- Table::count

  Get row count

### Description

```
  public int mysql_xdevapi\Table::count();
```

Fetch the number of rows in the table.

### Parameters

This function has no parameters.

### Return Values

The total number of rows in the table.

### Examples

**Example 5.154 mysql_xdevapi\Table::count example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();
$session->sql("CREATE TABLE addressbook.names(name text, age int)")->execute();
$session->sql("INSERT INTO addressbook.names values ('John', 42), ('Sam', 33)")->execute();

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

var_dump($table->count());
?>
```

The above example will output:

```
int(2)
```

## 5.32.3 Table::delete

Copyright 1997-2022 the PHP Documentation Group.

- `Table::delete`

  Delete rows from table

### Description

```
public mysql_xdevapi\TableDelete mysql_xdevapi\Table::delete();
```

Deletes rows from a table.

### Parameters

This function has no parameters.

### Return Values

A TableDelete object; use the execute() method to execute the delete query.

### Examples

**Example 5.155 `mysql_xdevapi\Table::delete` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();
$session->sql("CREATE TABLE addressbook.names(name text, age int)")->execute();
$session->sql("INSERT INTO addressbook.names values ('John', 42), ('Sam', 33)")->execute();

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

$table->delete()->where("name = :name")->orderby("age DESC")->limit(1)->bind(['name' => 'John'])->execute();
?>
```

## 5.32.4 `Table::existsInDatabase`

Copyright 1997-2022 the PHP Documentation Group.

- `Table::existsInDatabase`

  Check if table exists in database

### Description

```
public bool mysql_xdevapi\Table::existsInDatabase();
```

Verifies if this table exists in the database.

### Parameters

This function has no parameters.

### Return Values

Returns `true` if table exists in the database, else `false` if it does not.

### Examples

**Example 5.156 `mysql_xdevapi\Table::existsInDatabase` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();
$session->sql("CREATE TABLE addressbook.names(name text, age int)")->execute();
$session->sql("INSERT INTO addressbook.names values ('John', 42), ('Sam', 33)")->execute();

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

if ($table->existsInDatabase()) {
  echo "Yes, this table still exists in the session's schema.";
}
?>
```

The above example will output something similar to:

```
Yes, this table still exists in the session's schema.
```

## 5.32.5 `Table::getName`

Copyright 1997-2022 the PHP Documentation Group.

- `Table::getName`

  Get table name

### Description

```
  public string mysql_xdevapi\Table::getName();
```

Returns the name of this database object.

### Parameters

This function has no parameters.

### Return Values

The name of this database object.

### Examples

**Example 5.157 `mysql_xdevapi\Table::getName` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");
```

```
$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();
$session->sql("CREATE TABLE addressbook.names(name text, age int)")->execute();
$session->sql("INSERT INTO addressbook.names values ('John', 42), ('Sam', 33)")->execute();

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

var_dump($table->getName());
?>
```

The above example will output something similar to:

```
string(5) "names"
```

## 5.32.6 Table::getSchema

Copyright 1997-2022 the PHP Documentation Group.

- Table::getSchema

  Get table schema

### Description

```
  public mysql_xdevapi\Schema mysql_xdevapi\Table::getSchema();
```

Fetch the schema associated with the table.

### Parameters

This function has no parameters.

### Return Values

A Schema object.

### Examples

**Example 5.158 mysql_xdevapi\Table::getSchema example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();
$session->sql("CREATE TABLE addressbook.names(name text, age int)")->execute();
$session->sql("INSERT INTO addressbook.names values ('John', 42), ('Sam', 33)")->execute();

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

var_dump($table->getSchema());
?>
```

```
```

The above example will output something similar to:

```
object(mysql_xdevapi\Schema)#9 (1) {
  ["name"]=>
  string(11) "addressbook"
}
```

## 5.32.7 Table::getSession

Copyright 1997-2022 the PHP Documentation Group.

- Table::getSession

  Get table session

### Description

```
  public mysql_xdevapi\Session mysql_xdevapi\Table::getSession();
```

Get session associated with the table.

### Parameters

This function has no parameters.

### Return Values

A Session object.

### Examples

**Example 5.159 mysql_xdevapi\Table::getSession example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();
$session->sql("CREATE TABLE addressbook.names(name text, age int)")->execute();
$session->sql("INSERT INTO addressbook.names values ('John', 42), ('Sam', 33)")->execute();

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

var_dump($table->getSession());
?>
```

The above example will output something similar to:

```
object(mysql_xdevapi\Session)#9 (0) {
}
```

## 5.32.8 Table::insert

Copyright 1997-2022 the PHP Documentation Group.

- Table::insert

  Insert table rows

### Description

```
public mysql_xdevapi\TableInsert mysql_xdevapi\Table::insert(
  mixed columns,
  mixed more_columns);
```

Inserts rows into a table.

### Parameters

| | |
|---|---|
| *columns* | The columns to insert data into. Can be an array with one or more values, or a string. |
| *more_columns* | Additional columns definitions. |

### Return Values

A TableInsert object; use the execute() method to execute the insert statement.

### Examples

**Example 5.160 mysql_xdevapi\Table::insert example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();
$session->sql("CREATE TABLE addressbook.names(name text, age int)")->execute();
$session->sql("INSERT INTO addressbook.names values ('John', 42), ('Sam', 33)")->execute();

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

$table ->insert("name", "age")
  ->values(["Suzanne", 31],["Julie", 43])
  ->execute();
?>
```

## 5.32.9 Table::isView

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- Table::isView

  Check if table is view

### Description

```
public bool mysql_xdevapi\Table::isView();
```

Determine if the underlying object is a view or not.

### Parameters

This function has no parameters.

### Return Values

`true` if the underlying object is a view, otherwise `false`.

### Examples

**Example 5.161 `mysql_xdevapi\Table::isView` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();
$session->sql("CREATE TABLE addressbook.names(name text, age int)")->execute();
$session->sql("INSERT INTO addressbook.names values ('John', 42), ('Sam', 33)")->execute();

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

if ($table->isView()) {
    echo "This is a view.";
} else {
    echo "This is not a view.";
}
?>
```

The above example will output:

```
int(2)
```

## 5.32.10 `Table::select`

Copyright 1997-2022 the PHP Documentation Group.

- `Table::select`

  Select rows from table

### Description

```
public mysql_xdevapi\TableSelect mysql_xdevapi\Table::select(
  mixed columns,
  mixed more_columns);
```

Fetches data from a table.

### Parameters

| | |
|---|---|
| *columns* | The columns to select data from. Can be an array with one or more values, or a string. |
| *more_columns* | Additional columns parameter definitions. |

### Return Values

A TableSelect object; use the execute() method to execute the select and return a RowResult object.

### Examples

**Example 5.162 `mysql_xdevapi\Table::count` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();
$session->sql("CREATE TABLE addressbook.names(name text, age int)")->execute();
$session->sql("INSERT INTO addressbook.names values ('John', 42), ('Sam', 33)")->execute();

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

$row = $table->select('name', 'age')->execute()->fetchAll();

print_r($row);
```

The above example will output something similar to:

```
Array
(
    [0] => Array
        (
            [name] => John
            [age] => 42
        )
    [1] => Array
        (
            [name] => Sam
            [age] => 33
        )
)
```

## 5.32.11 `Table::update`

Copyright 1997-2022 the PHP Documentation Group.

- `Table::update`

  Update rows in table

### Description

```
public mysql_xdevapi\TableUpdate mysql_xdevapi\Table::update();
```

Updates columns in a table.

### Parameters

This function has no parameters.

### Return Values

A TableUpdate object; use the execute() method to execute the update statement.

### Examples

**Example 5.163 `mysql_xdevapi\Table::update` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();
$session->sql("CREATE TABLE addressbook.names(name text, age int)")->execute();
$session->sql("INSERT INTO addressbook.names values ('John', 42), ('Sam', 33)")->execute();

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

$table->update()->set('age',34)->where('name = "Sam"')->limit(1)->execute();
?>
```

## 5.33 TableDelete class

Copyright 1997-2022 the PHP Documentation Group.

A statement for delete operations on Table.

```
mysql_xdevapi\TableDelete {
mysql_xdevapi\TableDelete

        mysql_xdevapi\Executable

      Methods

  public mysql_xdevapi\TableDelete mysql_xdevapi\TableDelete::bind(
    array placeholder_values);

  public mysql_xdevapi\Result mysql_xdevapi\TableDelete::execute();

  public mysql_xdevapi\TableDelete mysql_xdevapi\TableDelete::limit(
    int rows);

  public mysql_xdevapi\TableDelete mysql_xdevapi\TableDelete::orderby(
    string orderby_expr);

  public mysql_xdevapi\TableDelete mysql_xdevapi\TableDelete::where(
    string where_expr);

}
```

## 5.33.1 TableDelete::bind

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- TableDelete::bind

  Bind delete query parameters

### Description

```
public mysql_xdevapi\TableDelete mysql_xdevapi\TableDelete::bind(
  array placeholder_values);
```

Binds a value to a specific placeholder.

### Parameters

| | |
|---|---|
| *placeholder_values* | The name of the placeholder and the value to bind. |

### Return Values

A TableDelete object.

### Examples

**Example 5.164 mysql_xdevapi\TableDelete::bind example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();
$session->sql("CREATE TABLE addressbook.names(name text, age int)")->execute();
$session->sql("INSERT INTO addressbook.names values ('John', 42), ('Sam', 33)")->execute();

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

$table->delete()
  ->where("name = :name")
  ->bind(['name' => 'John'])
  ->orderby("age DESC")
  ->limit(1)
  ->execute();

?>
```

## 5.33.2 TableDelete::__construct

Copyright 1997-2022 the PHP Documentation Group.

- TableDelete::__construct

  TableDelete constructor

### Description

```
private mysql_xdevapi\TableDelete::__construct();
```

Initiated by using the delete() method.

### Parameters

This function has no parameters.

### Examples

**Example 5.165 `mysql_xdevapi\TableDelete::__construct` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();
$session->sql("CREATE TABLE addressbook.names(name text, age int)")->execute();
$session->sql("INSERT INTO addressbook.names values ('John', 42), ('Sam', 33)")->execute();

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

$table->delete()
  ->where("name = :name")
  ->bind(['name' => 'John'])
  ->orderby("age DESC")
  ->limit(1)
  ->execute();

?>
```

## 5.33.3 `TableDelete::execute`

Copyright 1997-2022 the PHP Documentation Group.

- `TableDelete::execute`

  Execute delete query

### Description

```
public mysql_xdevapi\Result mysql_xdevapi\TableDelete::execute();
```

Execute the delete query.

### Parameters

This function has no parameters.

### Return Values

A Result object.

### Examples

**Example 5.166 `mysql_xdevapi\TableDelete::execute` example**

```
<?php
```

```
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();
$session->sql("CREATE TABLE addressbook.names(name text, age int)")->execute();
$session->sql("INSERT INTO addressbook.names values ('John', 42), ('Sam', 33)")->execute();

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

$table->delete()
  ->where("name = :name")
  ->bind(['name' => 'John'])
  ->orderby("age DESC")
  ->limit(1)
  ->execute();

?>
```

## 5.33.4 TableDelete::limit

Copyright 1997-2022 the PHP Documentation Group.

- TableDelete::limit

  Limit deleted rows

### Description

```
public mysql_xdevapi\TableDelete mysql_xdevapi\TableDelete::limit(
  int rows);
```

Sets the maximum number of records or documents to delete.

### Parameters

| | |
|---|---|
| *rows* | The maximum number of records or documents to delete. |

### Return Values

TableDelete object.

### Examples

**Example 5.167 mysql_xdevapi\TableDelete::limit example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();
$session->sql("CREATE TABLE addressbook.names(name text, age int)")->execute();
$session->sql("INSERT INTO addressbook.names values ('John', 42), ('Sam', 33)")->execute();

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

$table->delete()
  ->where("name = :name")
```

```
  ->bind(['name' => 'John'])
  ->orderby("age DESC")
  ->limit(1)
  ->execute();

?>
```

## 5.33.5 TableDelete::orderby

Copyright 1997-2022 the PHP Documentation Group.

- TableDelete::orderby

  Set delete sort criteria

### Description

```
  public mysql_xdevapi\TableDelete mysql_xdevapi\TableDelete::orderby(
    string orderby_expr);
```

Set the order options for a result set.

### Parameters

| | |
|---|---|
| *orderby_expr* | The sort definition. |

### Return Values

A TableDelete object.

### Examples

**Example 5.168 mysql_xdevapi\TableDelete::orderBy example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

$table->delete()
  ->where("age = :age")
  ->bind(['age' => 42])
  ->orderby("name DESC")
  ->limit(1)
  ->execute();

?>
```

## 5.33.6 TableDelete::where

Copyright 1997-2022 the PHP Documentation Group.

- TableDelete::where

  Set delete search condition

### Description

```
public mysql_xdevapi\TableDelete mysql_xdevapi\TableDelete::where(
  string where_expr);
```

Sets the search condition to filter.

### Parameters

| | |
|---|---|
| *where_expr* | Define the search condition to filter documents or records. |

### Return Values

TableDelete object.

### Examples

**Example 5.169 `mysql_xdevapi\TableDelete::where` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

$table->delete()
  ->where("id = :id")
  ->bind(['id' => 42])
  ->limit(1)
  ->execute();

?>
```

## 5.34 TableInsert class

Copyright 1997-2022 the PHP Documentation Group.

A statement for insert operations on Table.

```
mysql_xdevapi\TableInsert {
mysql_xdevapi\TableInsert

        mysql_xdevapi\Executable

      Methods

  public mysql_xdevapi\Result mysql_xdevapi\TableInsert::execute();

  public mysql_xdevapi\TableInsert mysql_xdevapi\TableInsert::values(
    array row_values);

}
```

### 5.34.1 `TableInsert::__construct`

Copyright 1997-2022 the PHP Documentation Group.

- `TableInsert::__construct`

  TableInsert constructor

### Description

```
private mysql_xdevapi\TableInsert::__construct();
```

Initiated by using the insert() method.

### Parameters

This function has no parameters.

### Examples

**Example 5.170 `mysql_xdevapi\TableInsert::__construct` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();
$session->sql("CREATE TABLE addressbook.names(name text, age int)")->execute();
$session->sql("INSERT INTO addressbook.names values ('John', 42), ('Sam', 33)")->execute();

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

$table
  ->insert("name", "age")
  ->values(["Suzanne", 31],["Julie", 43])
  ->execute();
?>
```

## 5.34.2 `TableInsert::execute`

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- `TableInsert::execute`

  Execute insert query

### Description

```
public mysql_xdevapi\Result mysql_xdevapi\TableInsert::execute();
```

Execute the statement.

### Parameters

This function has no parameters.

### Return Values

A Result object.

### Examples

**Example 5.171 `mysql_xdevapi\TableInsert::execute` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();
$session->sql("CREATE TABLE addressbook.names(name text, age int)")->execute();
$session->sql("INSERT INTO addressbook.names values ('John', 42), ('Sam', 33)")->execute();

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

$table
  ->insert("name", "age")
  ->values(["Suzanne", 31],["Julie", 43])
  ->execute();
?>
```

## 5.34.3 `TableInsert::values`

Copyright 1997-2022 the PHP Documentation Group.

- `TableInsert::values`

  Add insert row values

### Description

```
public mysql_xdevapi\TableInsert mysql_xdevapi\TableInsert::values(
  array row_values);
```

Set the values to be inserted.

### Parameters

| | |
|---|---|
| *`row_values`* | Values (an array) of columns to insert. |

### Return Values

A TableInsert object.

### Examples

**Example 5.172 `mysql_xdevapi\TableInsert::values` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();
$session->sql("CREATE TABLE addressbook.names(name text, age int)")->execute();
$session->sql("INSERT INTO addressbook.names values ('John', 42), ('Sam', 33)")->execute();

$schema = $session->getSchema("addressbook");
```

```
$table  = $schema->getTable("names");

$table
  ->insert("name", "age")
  ->values(["Suzanne", 31],["Julie", 43])
  ->execute();
?>
```

# 5.35 TableSelect class

Copyright 1997-2022 the PHP Documentation Group.

A statement for record retrieval operations on a Table.

```
mysql_xdevapi\TableSelect {
mysql_xdevapi\TableSelect

        mysql_xdevapi\Executable

      Methods

  public mysql_xdevapi\TableSelect mysql_xdevapi\TableSelect::bind(
    array placeholder_values);

  public mysql_xdevapi\RowResult mysql_xdevapi\TableSelect::execute();

  public mysql_xdevapi\TableSelect mysql_xdevapi\TableSelect::groupBy(
    mixed sort_expr);

  public mysql_xdevapi\TableSelect mysql_xdevapi\TableSelect::having(
    string sort_expr);

  public mysql_xdevapi\TableSelect mysql_xdevapi\TableSelect::limit(
    int rows);

  public mysql_xdevapi\TableSelect mysql_xdevapi\TableSelect::lockExclusive(
    int lock_waiting_option);

  public mysql_xdevapi\TableSelect mysql_xdevapi\TableSelect::lockShared(
    int lock_waiting_option);

  public mysql_xdevapi\TableSelect mysql_xdevapi\TableSelect::offset(
    int position);

  public mysql_xdevapi\TableSelect mysql_xdevapi\TableSelect::orderby(
    mixed sort_expr,
    mixed sort_exprs);

  public mysql_xdevapi\TableSelect mysql_xdevapi\TableSelect::where(
    string where_expr);

}
```

## 5.35.1 `TableSelect::bind`

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- `TableSelect::bind`

  Bind select query parameters

### Description

```
public mysql_xdevapi\TableSelect mysql_xdevapi\TableSelect::bind(
  array placeholder_values);
```

Binds a value to a specific placeholder.

### Parameters

| | |
|---|---|
| *placeholder_values* | The name of the placeholder, and the value to bind. |

### Return Values

A TableSelect object.

### Examples

**Example 5.173 mysql_xdevapi\TableSelect::bind example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

$result = $table->select('name','age')
  ->where('name like :name and age > :age')
  ->bind(['name' => 'John', 'age' => 42])
  ->execute();

$row = $result->fetchAll();
print_r($row);
?>
```

The above example will output something similar to:

```
Array
(
    [0] => Array
        (
            [name] => John
            [age] => 42
        )
)
```

## 5.35.2 TableSelect::__construct

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- TableSelect::__construct

  TableSelect constructor

### Description

```
private mysql_xdevapi\TableSelect::__construct();
```

An object returned by the select() method; use execute() to execute the query.

### Parameters

This function has no parameters.

### Examples

**Example 5.174 `mysql_xdevapi\TableSelect::__construct` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();
$session->sql("CREATE TABLE addressbook.names(name text, age int)")->execute();
$session->sql("INSERT INTO addressbook.names values ('John', 42), ('Sam', 33)")->execute();

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

$result = $table->select('name','age')
  ->where('name like :name and age > :age')
  ->bind(['name' => 'John', 'age' => 42])
  ->orderBy('age desc')
  ->execute();

$row = $result->fetchAll();
print_r($row);

?>
```

The above example will output something similar to:

```
Array
(
    [0] => Array
        (
            [name] => John
            [age] => 42
        )
)
```

## 5.35.3 `TableSelect::execute`

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- `TableSelect::execute`

  Execute select statement

### Description

```
public mysql_xdevapi\RowResult mysql_xdevapi\TableSelect::execute();
```

Execute the select statement by chaining it with the execute() method.

### Parameters

This function has no parameters.

### Return Values

A RowResult object.

### Examples

**Example 5.175 `mysql_xdevapi\TableSelect::execute` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

$result = $table->select('name','age')
  ->where('name like :name and age > :age')
  ->bind(['name' => 'John', 'age' => 42])
  ->orderBy('age desc')
  ->execute();

$row = $result->fetchAll();
?>
```

The above example will output something similar to:

```
Array
(
    [0] => Array
        (
            [name] => John
            [age] => 42
        )
)
```

## 5.35.4 `TableSelect::groupBy`

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- `TableSelect::groupBy`

  Set select grouping criteria

### Description

```
  public mysql_xdevapi\TableSelect mysql_xdevapi\TableSelect::groupBy(
    mixed sort_expr);
```

Sets a grouping criteria for the result set.

### Parameters

| | |
|---|---|
| *`sort_expr`* | The grouping criteria. |

### Return Values

A TableSelect object.

### Examples

**Example 5.176 `mysql_xdevapi\TableSelect::groupBy` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();
$session->sql("CREATE TABLE addressbook.names(name text, age int)")->execute();
$session->sql("INSERT INTO addressbook.names values ('John', 42), ('Sam', 42)")->execute();
$session->sql("INSERT INTO addressbook.names values ('Suki', 31)")->execute();

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

$result = $table->select('count(*) as count', 'age')
  ->groupBy('age')->orderBy('age asc')
  ->execute();

$row = $result->fetchAll();
print_r($row);
?>
```

The above example will output something similar to:

```
Array
(
    [0] => Array
        (
            [count] => 1
            [age] => 31
        )
    [1] => Array
        (
            [count] => 2
            [age] => 42
        )
)
```

## 5.35.5 `TableSelect::having`

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- `TableSelect::having`

  Set select having condition

### Description

```
  public mysql_xdevapi\TableSelect mysql_xdevapi\TableSelect::having(
    string sort_expr);
```

Sets a condition for records to consider in aggregate function operations.

### Parameters

| | |
|---|---|
| *sort_expr* | A condition on the aggregate functions used on the grouping criteria. |

### Return Values

A TableSelect object.

### Examples

**Example 5.177 `mysql_xdevapi\TableSelect::having` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();
$session->sql("CREATE TABLE addressbook.names(name text, age int)")->execute();
$session->sql("INSERT INTO addressbook.names values ('John', 42), ('Sam', 42)")->execute();
$session->sql("INSERT INTO addressbook.names values ('Suki', 31)")->execute();

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

$result = $table->select('count(*) as count', 'age')
  ->groupBy('age')->orderBy('age asc')
  ->having('count > 1')
  ->execute();

$row = $result->fetchAll();
print_r($row);
?>
```

The above example will output something similar to:

```
Array
(
    [0] => Array
        (
            [count] => 2
            [age] => 42
        )
)
```

## 5.35.6 `TableSelect::limit`

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- `TableSelect::limit`

  Limit selected rows

### Description

```
  public mysql_xdevapi\TableSelect mysql_xdevapi\TableSelect::limit(
```

```
    int rows);
```

Sets the maximum number of records or documents to return.

### Parameters

| | |
|---|---|
| *rows* | The maximum number of records or documents. |

### Return Values

A TableSelect object.

### Examples

**Example 5.178 `mysql_xdevapi\TableSelect::limit` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

$result = $table->select('name', 'age')
  ->limit(1)
  ->execute();

$row = $result->fetchAll();
print_r($row);
?>
```

The above example will output something similar to:

```
Array
(
    [0] => Array
        (
            [name] => John
            [age] => 42
        )
)
```

## 5.35.7 `TableSelect::lockExclusive`

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- `TableSelect::lockExclusive`

  Execute EXCLUSIVE LOCK

### Description

```
  public mysql_xdevapi\TableSelect mysql_xdevapi\TableSelect::lockExclusive(
    int lock_waiting_option);
```

Execute a read operation with EXCLUSIVE LOCK. Only one lock can be active at a time.

### Parameters

| | |
|---|---|
| *lock_waiting_option* | The optional waiting option that defaults to MYSQLX_LOCK_DEFAULT. Valid values are:<br>• MYSQLX_LOCK_DEFAULT<br>• MYSQLX_LOCK_NOWAIT<br>• MYSQLX_LOCK_SKIP_LOCKED |

### Return Values

TableSelect object.

### Examples

**Example 5.179 mysql_xdevapi\TableSelect::lockExclusive example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

$session->startTransaction();

$result = $table->select('name', 'age')
  ->lockExclusive(MYSQLX_LOCK_NOWAIT)
  ->execute();

$session->commit();

$row = $result->fetchAll();
print_r($row);
?>
```

The above example will output something similar to:

```
Array
(
    [0] => Array
        (
            [name] => John
            [age] => 42
        )
    [1] => Array
        (
            [name] => Sam
            [age] => 42
        )
)
```

## 5.35.8 TableSelect::lockShared

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- TableSelect::lockShared

  Execute SHARED LOCK

## Description

```
public mysql_xdevapi\TableSelect mysql_xdevapi\TableSelect::lockShared(
  int lock_waiting_option);
```

Execute a read operation with SHARED LOCK. Only one lock can be active at a time.

## Parameters

| | |
|---|---|
| *lock_waiting_option* | The optional waiting option that defaults to MYSQLX_LOCK_DEFAULT. Valid values are:<br>• MYSQLX_LOCK_DEFAULT<br>• MYSQLX_LOCK_NOWAIT<br>• MYSQLX_LOCK_SKIP_LOCKED |

## Return Values

A TableSelect object.

## Examples

**Example 5.180 mysql_xdevapi\TableSelect::lockShared example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

$session->startTransaction();

$result = $table->select('name', 'age')
  ->lockShared(MYSQLX_LOCK_NOWAIT)
  ->execute();

$session->commit();

$row = $result->fetchAll();
print_r($row);
?>
```

The above example will output something similar to:

```
Array
(
    [0] => Array
        (
            [name] => John
            [age] => 42
        )
    [1] => Array
```

```
        (
            [name] => Sam
            [age] => 42
        )
)
```

## 5.35.9 TableSelect::offset

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- TableSelect::offset

  Set limit offset

### Description

```
  public mysql_xdevapi\TableSelect mysql_xdevapi\TableSelect::offset(
    int position);
```

Skip given number of rows in result.

### Parameters

| | |
|---|---|
| *position* | The limit offset. |

### Return Values

A TableSelect object.

### Examples

**Example 5.181 mysql_xdevapi\TableSelect::offset example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$session->sql("DROP DATABASE IF EXISTS addressbook")->execute();
$session->sql("CREATE DATABASE addressbook")->execute();
$session->sql("CREATE TABLE addressbook.names(name text, age int)")->execute();
$session->sql("INSERT INTO addressbook.names values ('John', 42), ('Sam', 42)")->execute();

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

$result = $table->select('name', 'age')
  ->limit(1)
  ->offset(1)
  ->execute();

$row = $result->fetchAll();
print_r($row);
?>
```

The above example will output something similar to:

```
Array
```

```
(
    [0] => Array
        (
            [name] => Sam
            [age] => 42
        )
)
```

## 5.35.10 TableSelect::orderby

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- TableSelect::orderby

  Set select sort criteria

### Description

```
public mysql_xdevapi\TableSelect mysql_xdevapi\TableSelect::orderby(
  mixed sort_expr,
  mixed sort_exprs);
```

Sets the order by criteria.

### Parameters

| | |
|---|---|
| *sort_expr* | The expressions that define the order by criteria. Can be an array with one or more expressions, or a string. |
| *sort_exprs* | Additional sort_expr parameters. |

### Return Values

A TableSelect object.

### Examples

**Example 5.182 mysql_xdevapi\TableSelect::orderBy example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

$result = $table->select('name', 'age')
  ->orderBy('name desc')
  ->execute();

$row = $result->fetchAll();
print_r($row);
?>
```

The above example will output something similar to:

```
```

```
Array
(
    [0] => Array
        (
            [name] => Sam
            [age] => 42
        )
    [1] => Array
        (
            [name] => John
            [age] => 42
        )
)
```

## 5.35.11 TableSelect::where

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- TableSelect::where

  Set select search condition

### Description

```
  public mysql_xdevapi\TableSelect mysql_xdevapi\TableSelect::where(
    string where_expr);
```

Sets the search condition to filter.

### Parameters

| | |
|---|---|
| *where_expr* | Define the search condition to filter documents or records. |

### Return Values

A TableSelect object.

### Examples

**Example 5.183 mysql_xdevapi\TableSelect::where example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

$result = $table->select('name','age')
  ->where('name like :name and age > :age')
  ->bind(['name' => 'John', 'age' => 42])
  ->execute();

$row = $result->fetchAll();
print_r($row);
?>
```

The above example will output something similar to:

```
Array
(
    [0] => Array
        (
            [name] => John
            [age] => 42
        )
)
```

# 5.36 TableUpdate class

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A statement for record update operations on a Table.

```
mysql_xdevapi\TableUpdate {
mysql_xdevapi\TableUpdate

        mysql_xdevapi\Executable

      Methods

  public mysql_xdevapi\TableUpdate mysql_xdevapi\TableUpdate::bind(
    array placeholder_values);

  public mysql_xdevapi\TableUpdate mysql_xdevapi\TableUpdate::execute();

  public mysql_xdevapi\TableUpdate mysql_xdevapi\TableUpdate::limit(
    int rows);

  public mysql_xdevapi\TableUpdate mysql_xdevapi\TableUpdate::orderby(
    mixed orderby_expr,
    mixed orderby_exprs);

  public mysql_xdevapi\TableUpdate mysql_xdevapi\TableUpdate::set(
    string table_field,
    string expression_or_literal);

  public mysql_xdevapi\TableUpdate mysql_xdevapi\TableUpdate::where(
    string where_expr);

}
```

## 5.36.1 `TableUpdate::bind`

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- `TableUpdate::bind`

  Bind update query parameters

### Description

```
  public mysql_xdevapi\TableUpdate mysql_xdevapi\TableUpdate::bind(
    array placeholder_values);
```

Binds a value to a specific placeholder.

### Parameters

| | |
|---|---|
| *placeholder_values* | The name of the placeholder, and the value to bind, defined as a JSON array. |

### Return Values

A TableUpdate object.

### Examples

**Example 5.184 `mysql_xdevapi\TableUpdate::bind` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

$table->update()
  ->set('status', 'admin')
  ->where('name = :name and age > :age')
  ->bind(['name' => 'Bernie', 'age' => 2000])
  ->execute();

?>
```

## 5.36.2 `TableUpdate::__construct`

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- `TableUpdate::__construct`

  TableUpdate constructor

### Description

```
  private mysql_xdevapi\TableUpdate::__construct();
```

Initiated by using the update() method.

### Parameters

This function has no parameters.

### Examples

**Example 5.185 `mysql_xdevapi\TableUpdate::__construct` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

$res = $table->update()
```

```
  ->set('level', 3)
  ->where('age > 15 and age < 22')
  ->limit(4)
  ->orderby(['age asc','name desc'])
  ->execute();

?>
```

## 5.36.3 TableUpdate::execute

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- TableUpdate::execute

  Execute update query

### Description

```
  public mysql_xdevapi\TableUpdate mysql_xdevapi\TableUpdate::execute();
```

Executes the update statement.

### Parameters

This function has no parameters.

### Return Values

A TableUpdate object.

### Examples

**Example 5.186 mysql_xdevapi\TableUpdate::execute example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

$res = $table->update()
  ->set('level', 3)
  ->where('age > 15 and age < 22')
  ->limit(4)
  ->orderby(['age asc','name desc'])
  ->execute();

?>
```

## 5.36.4 TableUpdate::limit

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- TableUpdate::limit

  Limit update row count

### Description

```
public mysql_xdevapi\TableUpdate mysql_xdevapi\TableUpdate::limit(
  int rows);
```

Set the maximum number of records or documents update.

### Parameters

| | |
|---|---|
| *rows* | The maximum number of records or documents to update. |

### Return Values

A TableUpdate object.

### Examples

**Example 5.187 `mysql_xdevapi\TableUpdate::limit` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

$res = $table->update()
  ->set('level', 3)
  ->where('age > 15 and age < 22')
  ->limit(4)
  ->orderby(['age asc','name desc'])
  ->execute();

?>
```

## 5.36.5 `TableUpdate::orderby`

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- `TableUpdate::orderby`

  Set sorting criteria

### Description

```
public mysql_xdevapi\TableUpdate mysql_xdevapi\TableUpdate::orderby(
  mixed orderby_expr,
  mixed orderby_exprs);
```

Sets the sorting criteria.

### Parameters

| | |
|---|---|
| *orderby_expr* | The expressions that define the order by criteria. Can be an array with one or more expressions, or a string. |
| *orderby_exprs* | Additional sort_expr parameters. |

### Return Values

TableUpdate object.

### Examples

**Example 5.188 `mysql_xdevapi\TableUpdate::orderby` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

$res = $table->update()
  ->set('level', 3)
  ->where('age > 15 and age < 22')
  ->limit(4)
  ->orderby(['age asc','name desc'])
  ->execute();
?>
```

## 5.36.6 `TableUpdate::set`

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- `TableUpdate::set`

  Add field to be updated

### Description

```
  public mysql_xdevapi\TableUpdate mysql_xdevapi\TableUpdate::set(
    string table_field,
    string expression_or_literal);
```

Updates the column value on records in a table.

### Parameters

| | |
|---|---|
| *`table_field`* | The column name to be updated. |
| *`expression_or_literal`* | The value to be set on the specified column. |

### Return Values

TableUpdate object.

### Examples

**Example 5.189 `mysql_xdevapi\TableUpdate::set` example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");
```

```
$res = $table->update()
  ->set('level', 3)
  ->where('age > 15 and age < 22')
  ->limit(4)
  ->orderby(['age asc','name desc'])
  ->execute();

?>
```

## 5.36.7 TableUpdate::where

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- TableUpdate::where

  Set search filter

### Description

```
  public mysql_xdevapi\TableUpdate mysql_xdevapi\TableUpdate::where(
    string where_expr);
```

Set the search condition to filter.

### Parameters

| | |
|---|---|
| *where_expr* | The search condition to filter documents or records. |

### Return Values

A TableUpdate object.

### Examples

**Example 5.190 mysql_xdevapi\TableUpdate::where example**

```
<?php
$session = mysql_xdevapi\getSession("mysqlx://user:password@localhost");

$schema = $session->getSchema("addressbook");
$table  = $schema->getTable("names");

$res = $table->update()
  ->set('level', 3)
  ->where('age > 15 and age < 22')
  ->limit(4)
  ->orderby(['age asc','name desc'])
  ->execute();

?>
```

# 5.37 Warning class

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```
mysql_xdevapi\Warning {
mysql_xdevapi\Warning

      Properties

  public
    message ;

  public
    level ;

  public
    code ;

Constructor

  private mysql_xdevapi\Warning::__construct();

}
```

`message`

`level`

`code`

## 5.37.1 `Warning::__construct`

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- `Warning::__construct`

  Warning constructor

### Description

```
  private mysql_xdevapi\Warning::__construct();
```

> **Warning**
>
> This function is currently not documented; only its argument list is available.

### Parameters

This function has no parameters.

### Examples

**Example 5.191 `mysql_xdevapi\Warning::__construct` example**

```
<?php

/* ... */

?>
```

# Chapter 6 Original MySQL API

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This extension is deprecated as of PHP 5.5.0, and has been removed as of PHP 7.0.0. Instead, either the mysqli or PDO_MySQL extension should be used. See also the MySQL API Overview for further help while choosing a MySQL API.

These functions allow you to access MySQL database servers. More information about MySQL can be found at http://www.mysql.com/.

Documentation for MySQL can be found at http://dev.mysql.com/doc/.

# 6.1 Installing/Configuring

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## 6.1.1 Requirements

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In order to have these functions available, you must compile PHP with MySQL support.

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:

## 6.1.2 Installation

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> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:

For compiling, simply use the `--with-mysql[=DIR]` configuration option where the optional `[DIR]` points to the MySQL installation directory.

Although this MySQL extension is compatible with MySQL 4.1.0 and greater, it doesn't support the extra functionality that these versions provide. For that, use the MySQLi extension.

If you would like to install the mysql extension along with the mysqli extension you have to use the same client library to avoid any conflicts.

### 6.1.2.1 Installation on Linux Systems

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Note: `[DIR]` is the path to the MySQL client library files (*headers and libraries*), which can be downloaded from MySQL.

**Table 6.1 ext/mysql compile time support matrix**

| PHP Version | Default | Configure Options: mysqlnd | Configure Options: `libmysqlclient` | Changelog |
|---|---|---|---|---|
| 4.x.x | libmysqlclient | Not Available | `--without-mysql` to disable | MySQL enabled by default, MySQL client libraries are bundled |
| 5.0.x, 5.1.x, 5.2.x | libmysqlclient | Not Available | `--with-mysql=[DIR]` | MySQL is no longer enabled by default, and the MySQL client libraries are no longer bundled |
| 5.3.x | libmysqlclient | `--with-mysql=mysqlnd` | `--with-mysql=[DIR]` | mysqlnd is now available |
| 5.4.x | mysqlnd | `--with-mysql` | `--with-mysql=[DIR]` | mysqlnd is now the default |

### 6.1.2.2 Installation on Windows Systems

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#### PHP 5.0.x, 5.1.x, 5.2.x

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MySQL is no longer enabled by default, so the `php_mysql.dll` DLL must be enabled inside of `php.ini`. Also, PHP needs access to the MySQL client library. A file named `libmysql.dll` is included in the Windows PHP distribution and in order for PHP to talk to MySQL this file needs to be available to the Windows systems `PATH`. See the FAQ titled "How do I add my PHP directory to the `PATH` on Windows" for information on how to do this. Although copying `libmysql.dll` to the Windows system directory also works (because the system directory is by default in the system's `PATH`), it's not recommended.

As with enabling any PHP extension (such as `php_mysql.dll`), the PHP directive extension_dir should be set to the directory where the PHP extensions are located. See also the Manual Windows Installation Instructions. An example extension_dir value for PHP 5 is `c:\php\ext`

> **Note**
>
> If when starting the web server an error similar to the following occurs: `"Unable to load dynamic library './php_mysql.dll'"`, this is because `php_mysql.dll` and/or `libmysql.dll` cannot be found by the system.

#### PHP 5.3.0+

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The MySQL Native Driver is enabled by default. Include `php_mysql.dll`, but `libmysql.dll` is no longer required or used.

### 6.1.2.3 MySQL Installation Notes

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> **Warning**
>
> Crashes and startup problems of PHP may be encountered when loading this extension in conjunction with the recode extension. See the recode extension for more information.

> **Note**
>
> If you need charsets other than *latin* (default), you have to install external (not bundled) libmysqlclient with compiled charset support.

## 6.1.3 Runtime Configuration

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The behaviour of these functions is affected by settings in `php.ini`.

**Table 6.2 MySQL Configuration Options**

| Name | Default | Changeable | Changelog |
|---|---|---|---|
| mysql.allow_local_infile | "1" | PHP_INI_SYSTEM | |
| mysql.allow_persistent | "1" | PHP_INI_SYSTEM | |
| mysql.max_persistent | "-1" | PHP_INI_SYSTEM | |
| mysql.max_links | "-1" | PHP_INI_SYSTEM | |
| mysql.trace_mode | "0" | PHP_INI_ALL | |
| mysql.default_port | NULL | PHP_INI_ALL | |
| mysql.default_socket | NULL | PHP_INI_ALL | |
| mysql.default_host | NULL | PHP_INI_ALL | |
| mysql.default_user | NULL | PHP_INI_ALL | |
| mysql.default_password | NULL | PHP_INI_ALL | |
| mysql.connect_timeout | "60" | PHP_INI_ALL | |

For further details and definitions of the PHP_INI_* modes, see the http://www.php.net/manual/en/configuration.changes.modes.

Here's a short explanation of the configuration directives.

*`mysql.allow_local_infile`* int
: Allow accessing, from PHP's perspective, local files with LOAD DATA statements

*`mysql.allow_persistent`* bool
: Whether to allow persistent connections to MySQL.

*`mysql.max_persistent`* int
: The maximum number of persistent MySQL connections per process.

*`mysql.max_links`* int
: The maximum number of MySQL connections per process, including persistent connections.

| | |
|---|---|
| *mysql.trace_mode* bool | Trace mode. When mysql.trace_mode is enabled, warnings for table/index scans, non free result sets, and SQL-Errors will be displayed. (Introduced in PHP 4.3.0) |
| *mysql.default_port* string | The default TCP port number to use when connecting to the database server if no other port is specified. If no default is specified, the port will be obtained from the MYSQL_TCP_PORT environment variable, the mysql-tcp entry in /etc/services or the compile-time MYSQL_PORT constant, in that order. Win32 will only use the MYSQL_PORT constant. |
| *mysql.default_socket* string | The default socket name to use when connecting to a local database server if no other socket name is specified. |
| *mysql.default_host* string | The default server host to use when connecting to the database server if no other host is specified. Doesn't apply in SQL safe mode. |
| *mysql.default_user* string | The default user name to use when connecting to the database server if no other name is specified. Doesn't apply in SQL safe mode. |
| *mysql.default_password* string | The default password to use when connecting to the database server if no other password is specified. Doesn't apply in SQL safe mode. |
| *mysql.connect_timeout* int | Connect timeout in seconds. On Linux this timeout is also used for waiting for the first answer from the server. |

### 6.1.4 Resource Types

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There are two resource types used in the MySQL module. The first one is the link identifier for a database connection, the second a resource which holds the result of a query.

## 6.2 Changelog

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The following changes have been made to classes/functions/methods of this extension.

### General Changelog for the ext/mysql extension

This changelog references the ext/mysql extension.

### Global ext/mysql changes

The following is a list of changes to the entire ext/mysql extension.

| Version | Description |
|---|---|
| 7.0.0 | This extension was removed from PHP. For details, see Section 2.3, “Choosing an API”. |

### Changes to existing functions

The following list is a compilation of changelog entries from the ext/mysql functions.

# 6.3 Predefined Constants

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The constants below are defined by this extension, and will only be available when the extension has either been compiled into PHP or dynamically loaded at runtime.

It is possible to specify additional client flags for the `mysql_connect` and `mysql_pconnect` functions. The following constants are defined:

**Table 6.3 MySQL client constants**

| Constant | Description |
|---|---|
| `MYSQL_CLIENT_COMPRESS` | Use compression protocol |
| `MYSQL_CLIENT_IGNORE_SPACE` | Allow space after function names |
| `MYSQL_CLIENT_INTERACTIVE` | Allow interactive_timeout seconds (instead of `wait_timeout`) of inactivity before closing the connection. |
| `MYSQL_CLIENT_SSL` | Use SSL encryption. This flag is only available with version 4.x of the MySQL client library or newer. Version 3.23.x is bundled both with PHP 4 and Windows binaries of PHP 5. |

The function `mysql_fetch_array` uses a constant for the different types of result arrays. The following constants are defined:

**Table 6.4 MySQL fetch constants**

| Constant | Description |
|---|---|
| `MYSQL_ASSOC` | Columns are returned into the array having the fieldname as the array index. |
| `MYSQL_BOTH` | Columns are returned into the array having both a numerical index and the fieldname as the array index. |
| `MYSQL_NUM` | Columns are returned into the array having a numerical index to the fields. This index starts with 0, the first field in the result. |

# 6.4 Examples

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## 6.4.1 MySQL extension overview example

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This simple example shows how to connect, execute a query, print resulting rows and disconnect from a MySQL database.

**Example 6.1 MySQL extension overview example**

```
<?php
// Connecting, selecting database
$link = mysql_connect('mysql_host', 'mysql_user', 'mysql_password')
```

```
    or die('Could not connect: ' . mysql_error());
echo 'Connected successfully';
mysql_select_db('my_database') or die('Could not select database');

// Performing SQL query
$query = 'SELECT * FROM my_table';
$result = mysql_query($query) or die('Query failed: ' . mysql_error());

// Printing results in HTML
echo "<table>\n";
while ($line = mysql_fetch_array($result, MYSQL_ASSOC)) {
    echo "\t<tr>\n";
    foreach ($line as $col_value) {
        echo "\t\t<td>$col_value</td>\n";
    }
    echo "\t</tr>\n";
}
echo "</table>\n";

// Free resultset
mysql_free_result($result);

// Closing connection
mysql_close($link);
?>
```

# 6.5 MySQL Functions

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> **Note**
>
> Most MySQL functions accept *`link_identifier`* as the last optional parameter. If it is not provided, last opened connection is used. If it doesn't exist, connection is tried to establish with default parameters defined in `php.ini`. If it is not successful, functions return `false`.

## 6.5.1 `mysql_affected_rows`

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- `mysql_affected_rows`

  Get number of affected rows in previous MySQL operation

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
>
> `mysqli_affected_rows`
> `PDOStatement::rowCount`

### Description

```
int mysql_affected_rows(
  resource link_identifier
      =  =NULL);
```

Get the number of affected rows by the last INSERT, UPDATE, REPLACE or DELETE query associated with *link_identifier*.

## Parameters

| | |
|---|---|
| *link_identifier* | The MySQL connection. If the link identifier is not specified, the last link opened by mysql_connect is assumed. If no such link is found, it will try to create one as if mysql_connect had been called with no arguments. If no connection is found or established, an E_WARNING level error is generated. |

## Return Values

Returns the number of affected rows on success, and -1 if the last query failed.

If the last query was a DELETE query with no WHERE clause, all of the records will have been deleted from the table but this function will return zero with MySQL versions prior to 4.1.2.

When using UPDATE, MySQL will not update columns where the new value is the same as the old value. This creates the possibility that mysql_affected_rows may not actually equal the number of rows matched, only the number of rows that were literally affected by the query.

The REPLACE statement first deletes the record with the same primary key and then inserts the new record. This function returns the number of deleted records plus the number of inserted records.

In the case of "INSERT ... ON DUPLICATE KEY UPDATE" queries, the return value will be 1 if an insert was performed, or 2 for an update of an existing row.

## Examples

**Example 6.2 mysql_affected_rows example**

```
<?php
$link = mysql_connect('localhost', 'mysql_user', 'mysql_password');
if (!$link) {
    die('Could not connect: ' . mysql_error());
}
mysql_select_db('mydb');

/* this should return the correct numbers of deleted records */
mysql_query('DELETE FROM mytable WHERE id < 10');
printf("Records deleted: %d\n", mysql_affected_rows());

/* with a where clause that is never true, it should return 0 */
mysql_query('DELETE FROM mytable WHERE 0');
printf("Records deleted: %d\n", mysql_affected_rows());
?>
```

The above example will output something similar to:

```
Records deleted: 10
Records deleted: 0
```

**Example 6.3 mysql_affected_rows example using transactions**

```
<?php
$link = mysql_connect('localhost', 'mysql_user', 'mysql_password');
if (!$link) {
    die('Could not connect: ' . mysql_error());
}
mysql_select_db('mydb');

/* Update records */
mysql_query("UPDATE mytable SET used=1 WHERE id < 10");
printf ("Updated records: %d\n", mysql_affected_rows());
mysql_query("COMMIT");
?>
```

The above example will output something similar to:

```
Updated Records: 10
```

### Notes

> **Transactions**
>
> If you are using transactions, you need to call `mysql_affected_rows` after your INSERT, UPDATE, or DELETE query, not after the COMMIT.

> **SELECT Statements**
>
> To retrieve the number of rows returned by a SELECT, it is possible to use `mysql_num_rows`.

> **Cascaded Foreign Keys**
>
> `mysql_affected_rows` does not count rows affected implicitly through the use of ON DELETE CASCADE and/or ON UPDATE CASCADE in foreign key constraints.

### See Also

`mysql_num_rows`
`mysql_info`

## 6.5.2 `mysql_client_encoding`

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- `mysql_client_encoding`

  Returns the name of the character set

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
>
> `mysqli_character_set_name`

### Description

```
string mysql_client_encoding(
  resource link_identifier
      =  =NULL);
```

Retrieves the `character_set` variable from MySQL.

### Parameters

| | |
|---|---|
| *`link_identifier`* | The MySQL connection. If the link identifier is not specified, the last link opened by `mysql_connect` is assumed. If no such link is found, it will try to create one as if `mysql_connect` had been called with no arguments. If no connection is found or established, an `E_WARNING` level error is generated. |

### Return Values

Returns the default character set name for the current connection.

### Examples

**Example 6.4 `mysql_client_encoding` example**

```
<?php
$link    = mysql_connect('localhost', 'mysql_user', 'mysql_password');
$charset = mysql_client_encoding($link);

echo "The current character set is: $charset\n";
?>
```

The above example will output something similar to:

```
The current character set is: latin1
```

### See Also

`mysql_set_charset`
`mysql_real_escape_string`

## 6.5.3 `mysql_close`

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- `mysql_close`

  Close MySQL connection

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
>
> `mysqli_close`

PDO: Assign the value of `null` to the PDO object

## Description

```
bool mysql_close(
  resource link_identifier
      =  =NULL);
```

`mysql_close` closes the non-persistent connection to the MySQL server that's associated with the specified link identifier. If *`link_identifier`* isn't specified, the last opened link is used.

Open non-persistent MySQL connections and result sets are automatically destroyed when a PHP script finishes its execution. So, while explicitly closing open connections and freeing result sets is optional, doing so is recommended. This will immediately return resources to PHP and MySQL, which can improve performance. For related information, see freeing resources

## Parameters

| | |
|---|---|
| *`link_identifier`* | The MySQL connection. If the link identifier is not specified, the last link opened by `mysql_connect` is assumed. If no connection is found or established, an `E_WARNING` level error is generated. |

## Return Values

Returns `true` on success or `false` on failure.

## Examples

**Example 6.5 `mysql_close` example**

```
<?php
$link = mysql_connect('localhost', 'mysql_user', 'mysql_password');
if (!$link) {
    die('Could not connect: ' . mysql_error());
}
echo 'Connected successfully';
mysql_close($link);
?>
```

The above example will output:

```
Connected successfully
```

## Notes

**Note**

`mysql_close` will not close persistent links created by `mysql_pconnect`. For additional details, see the manual page on persistent connections.

## See Also

`mysql_connect`
`mysql_free_result`

## 6.5.4 mysql_connect

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- mysql_connect

  Open a connection to a MySQL Server

  > **Warning**
  >
  > This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
  >
  > mysqli_connect
  > PDO::__construct

### Description

```
resource|false mysql_connect(
  string server
      =  =ini_get("mysql.default_host"),
  string username
      =  =ini_get("mysql.default_user"),
  string password
      =  =ini_get("mysql.default_password"),
  bool new_link
      =  =false,
  int client_flags
      =  =0);
```

Opens or reuses a connection to a MySQL server.

### Parameters

*server*
: The MySQL server. It can also include a port number. e.g. "hostname:port" or a path to a local socket e.g. ":/path/to/socket" for the localhost.

  If the PHP directive mysql.default_host is undefined (default), then the default value is 'localhost:3306'. In SQL safe mode, this parameter is ignored and value 'localhost:3306' is always used.

*username*
: The username. Default value is defined by mysql.default_user. In SQL safe mode, this parameter is ignored and the name of the user that owns the server process is used.

*password*
: The password. Default value is defined by mysql.default_password. In SQL safe mode, this parameter is ignored and empty password is used.

*new_link*
: If a second call is made to mysql_connect with the same arguments, no new link will be established, but instead, the link identifier of the already opened link will be returned. The *new_link* parameter modifies this behavior and makes mysql_connect always open a new link, even if mysql_connect was called before with the same parameters. In SQL safe mode, this parameter is ignored.

*client_flags*
: The *client_flags* parameter can be a combination of the following constants: 128 (enable LOAD DATA LOCAL

handling), MYSQL_CLIENT_SSL, MYSQL_CLIENT_COMPRESS, MYSQL_CLIENT_IGNORE_SPACE or MYSQL_CLIENT_INTERACTIVE. Read the section about Table 6.3, “MySQL client constants” for further information. In SQL safe mode, this parameter is ignored.

## Return Values

Returns a MySQL link identifier on success or false on failure.

## Examples

**Example 6.6 mysql_connect example**

```
<?php
$link = mysql_connect('localhost', 'mysql_user', 'mysql_password');
if (!$link) {
    die('Could not connect: ' . mysql_error());
}
echo 'Connected successfully';
mysql_close($link);
?>
```

**Example 6.7 mysql_connect example using hostname:port syntax**

```
<?php
// we connect to example.com and port 3307
$link = mysql_connect('example.com:3307', 'mysql_user', 'mysql_password');
if (!$link) {
    die('Could not connect: ' . mysql_error());
}
echo 'Connected successfully';
mysql_close($link);

// we connect to localhost at port 3307
$link = mysql_connect('127.0.0.1:3307', 'mysql_user', 'mysql_password');
if (!$link) {
    die('Could not connect: ' . mysql_error());
}
echo 'Connected successfully';
mysql_close($link);
?>
```

**Example 6.8 mysql_connect example using ":/path/to/socket" syntax**

```
<?php
// we connect to localhost and socket e.g. /tmp/mysql.sock

// variant 1: omit localhost
$link = mysql_connect(':/tmp/mysql', 'mysql_user', 'mysql_password');
if (!$link) {
    die('Could not connect: ' . mysql_error());
}
echo 'Connected successfully';
mysql_close($link);


// variant 2: with localhost
$link = mysql_connect('localhost:/tmp/mysql.sock', 'mysql_user', 'mysql_password');
```

```
if (!$link) {
    die('Could not connect: ' . mysql_error());
}
echo 'Connected successfully';
mysql_close($link);
?>
```

## Notes

> **Note**
>
> Whenever you specify "localhost" or "localhost:port" as server, the MySQL client library will override this and try to connect to a local socket (named pipe on Windows). If you want to use TCP/IP, use "127.0.0.1" instead of "localhost". If the MySQL client library tries to connect to the wrong local socket, the correct path should be set as mysql.default_host in `php.ini` and the server field left blank.

> **Note**
>
> The link to the server will be closed as soon as the execution of the script ends, unless it's closed earlier by explicitly calling `mysql_close`.

> **Note**
>
> Error "Can't create TCP/IP socket (10106)" usually means that the variables_order configure directive doesn't contain character `E`. On Windows, if the environment is not copied the `SYSTEMROOT` environment variable won't be available and PHP will have problems loading Winsock.

## See Also

`mysql_pconnect`
`mysql_close`

# 6.5.5 `mysql_create_db`

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- `mysql_create_db`

  Create a MySQL database

> **Warning**
>
> This function was deprecated in PHP 4.3.0, and it and the entire original MySQL extension was removed in PHP 7.0.0. Instead, use either the actively developed MySQLi or PDO_MySQL extensions. See also the MySQL: choosing an API guide. Alternatives to this function include:
>
> `mysqli_query`
> `PDO::query`

## Description

```
bool mysql_create_db(
  string database_name,
  resource link_identifier
```

```
        =  =NULL);
```

`mysql_create_db` attempts to create a new database on the server associated with the specified link identifier.

## Parameters

| | |
|---|---|
| *`database_name`* | The name of the database being created. |
| *`link_identifier`* | The MySQL connection. If the link identifier is not specified, the last link opened by `mysql_connect` is assumed. If no such link is found, it will try to create one as if `mysql_connect` had been called with no arguments. If no connection is found or established, an `E_WARNING` level error is generated. |

## Return Values

Returns `true` on success or `false` on failure.

## Examples

**Example 6.9 `mysql_create_db` alternative example**

The function `mysql_create_db` is deprecated. It is preferable to use `mysql_query` to issue an sql `CREATE DATABASE` statement instead.

```
<?php
$link = mysql_connect('localhost', 'mysql_user', 'mysql_password');
if (!$link) {
    die('Could not connect: ' . mysql_error());
}

$sql = 'CREATE DATABASE my_db';
if (mysql_query($sql, $link)) {
    echo "Database my_db created successfully\n";
} else {
    echo 'Error creating database: ' . mysql_error() . "\n";
}
?>
```

The above example will output something similar to:

```
Database my_db created successfully
```

## Notes

> **Note**
>
> For backward compatibility, the following deprecated alias may be used: `mysql_createdb`

> **Note**
>
> This function will not be available if the MySQL extension was built against a MySQL 4.x client library.

### See Also

mysql_query
mysql_select_db

## 6.5.6 mysql_data_seek

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- mysql_data_seek

  Move internal result pointer

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
>
> mysqli_data_seek
> PDO::FETCH_ORI_ABS

### Description

```
bool mysql_data_seek(
  resource result,
  int row_number);
```

mysql_data_seek moves the internal row pointer of the MySQL result associated with the specified result identifier to point to the specified row number. The next call to a MySQL fetch function, such as mysql_fetch_assoc, would return that row.

*row_number* starts at 0. The *row_number* should be a value in the range from 0 to mysql_num_rows - 1. However if the result set is empty (mysql_num_rows == 0), a seek to 0 will fail with an E_WARNING and mysql_data_seek will return false.

### Parameters

| | |
|---|---|
| *result* | The result resource that is being evaluated. This result comes from a call to mysql_query. |
| *row_number* | The desired row number of the new result pointer. |

### Return Values

Returns true on success or false on failure.

### Examples

**Example 6.10 mysql_data_seek example**

```
<?php
$link = mysql_connect('localhost', 'mysql_user', 'mysql_password');
if (!$link) {
    die('Could not connect: ' . mysql_error());
}
$db_selected = mysql_select_db('sample_db');
if (!$db_selected) {
```

```
    die('Could not select database: ' . mysql_error());
}
$query = 'SELECT last_name, first_name FROM friends';
$result = mysql_query($query);
if (!$result) {
    die('Query failed: ' . mysql_error());
}
/* fetch rows in reverse order */
for ($i = mysql_num_rows($result) - 1; $i >= 0; $i--) {
    if (!mysql_data_seek($result, $i)) {
        echo "Cannot seek to row $i: " . mysql_error() . "\n";
        continue;
    }

    if (!($row = mysql_fetch_assoc($result))) {
        continue;
    }

    echo $row['last_name'] . ' ' . $row['first_name'] . "<br />\n";
}

mysql_free_result($result);
?>
```

### Notes

> **Note**
>
> The function `mysql_data_seek` can be used in conjunction only with `mysql_query`, not with `mysql_unbuffered_query`.

### See Also

`mysql_query`
`mysql_num_rows`
`mysql_fetch_row`
`mysql_fetch_assoc`
`mysql_fetch_array`
`mysql_fetch_object`

## 6.5.7 `mysql_db_name`

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- `mysql_db_name`

  Retrieves database name from the call to `mysql_list_dbs`

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
>
> Query: `SELECT DATABASE()`

### Description

```
  string mysql_db_name(
```

```
    resource result,
    int row,
    mixed field
        =  =NULL);
```

Retrieve the database name from a call to `mysql_list_dbs`.

### Parameters

| | |
|---|---|
| *result* | The result pointer from a call to `mysql_list_dbs`. |
| *row* | The index into the result set. |
| *field* | The field name. |

### Return Values

Returns the database name on success, and `false` on failure. If `false` is returned, use `mysql_error` to determine the nature of the error.

### Examples

**Example 6.11 `mysql_db_name` example**

```
<?php
error_reporting(E_ALL);

$link = mysql_connect('dbhost', 'username', 'password');
$db_list = mysql_list_dbs($link);

$i = 0;
$cnt = mysql_num_rows($db_list);
while ($i < $cnt) {
    echo mysql_db_name($db_list, $i) . "\n";
    $i++;
}
?>
```

### Notes

> **Note**
>
> For backward compatibility, the following deprecated alias may be used:
> `mysql_dbname`

### See Also

`mysql_list_dbs`
`mysql_tablename`

## 6.5.8 `mysql_db_query`

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- `mysql_db_query`

  Selects a database and executes a query on it

> **Warning**
>
> This function was deprecated in PHP 5.3.0, and it and the entire original MySQL extension was removed in PHP 7.0.0. Instead, use either the actively developed MySQLi or PDO_MySQL extensions. See also the MySQL: choosing an API guide. Alternatives to this function include:
>
> `mysqli_select_db` then the query
> `PDO::__construct`

## Description

```
  resource|bool mysql_db_query(
    string database,
    string query,
    resource link_identifier
        =  =NULL);
```

`mysql_db_query` selects a database, and executes a query on it.

## Parameters

| | |
|---|---|
| *`database`* | The name of the database that will be selected. |
| *`query`* | The MySQL query.<br><br>Data inside the query should be properly escaped. |
| *`link_identifier`* | The MySQL connection. If the link identifier is not specified, the last link opened by `mysql_connect` is assumed. If no such link is found, it will try to create one as if `mysql_connect` had been called with no arguments. If no connection is found or established, an `E_WARNING` level error is generated. |

## Return Values

Returns a positive MySQL result resource to the query result, or `false` on error. The function also returns `true`/`false` for `INSERT`/`UPDATE`/`DELETE` queries to indicate success/failure.

## Examples

**Example 6.12 `mysql_db_query` alternative example**

```
<?php

if (!$link = mysql_connect('mysql_host', 'mysql_user', 'mysql_password')) {
    echo 'Could not connect to mysql';
    exit;
}

if (!mysql_select_db('mysql_dbname', $link)) {
    echo 'Could not select database';
    exit;
}

$sql    = 'SELECT foo FROM bar WHERE id = 42';
$result = mysql_query($sql, $link);

if (!$result) {
    echo "DB Error, could not query the database\n";
```

```
    echo 'MySQL Error: ' . mysql_error();
    exit;
}

while ($row = mysql_fetch_assoc($result)) {
    echo $row['foo'];
}

mysql_free_result($result);

?>
```

### Notes

> **Note**
>
> Be aware that this function does *NOT* switch back to the database you were connected before. In other words, you can't use this function to *temporarily* run a sql query on another database, you would have to manually switch back. Users are strongly encouraged to use the `database.table` syntax in their sql queries or `mysql_select_db` instead of this function.

### See Also

`mysql_query`
`mysql_select_db`

## 6.5.9 `mysql_drop_db`

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- `mysql_drop_db`

  Drop (delete) a MySQL database

> **Warning**
>
> This function was deprecated in PHP 4.3.0, and it and the entire original MySQL extension was removed in PHP 7.0.0. Instead, use either the actively developed MySQLi or PDO_MySQL extensions. See also the MySQL: choosing an API guide. Alternatives to this function include:
>
> Execute a `DROP DATABASE` query

### Description

```
bool mysql_drop_db(
  string database_name,
  resource link_identifier
      =  =NULL);
```

`mysql_drop_db` attempts to drop (remove) an entire database from the server associated with the specified link identifier. This function is deprecated, it is preferable to use `mysql_query` to issue an sql `DROP DATABASE` statement instead.

### Parameters

| | |
|---|---|
| *`database_name`* | The name of the database that will be deleted. |

| | |
|---|---|
| *link_identifier* | The MySQL connection. If the link identifier is not specified, the last link opened by `mysql_connect` is assumed. If no such link is found, it will try to create one as if `mysql_connect` had been called with no arguments. If no connection is found or established, an `E_WARNING` level error is generated. |

### Return Values

Returns `true` on success or `false` on failure.

### Examples

**Example 6.13 `mysql_drop_db` alternative example**

```
<?php
$link = mysql_connect('localhost', 'mysql_user', 'mysql_password');
if (!$link) {
    die('Could not connect: ' . mysql_error());
}

$sql = 'DROP DATABASE my_db';
if (mysql_query($sql, $link)) {
    echo "Database my_db was successfully dropped\n";
} else {
    echo 'Error dropping database: ' . mysql_error() . "\n";
}
?>
```

### Notes

> **Warning**
>
> This function will not be available if the MySQL extension was built against a MySQL 4.x client library.

> **Note**
>
> For backward compatibility, the following deprecated alias may be used: `mysql_dropdb`

### See Also

`mysql_query`

## 6.5.10 `mysql_errno`

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- `mysql_errno`

  Returns the numerical value of the error message from previous MySQL operation

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:

> mysqli_errno
> PDO::errorCode

## Description

```
int mysql_errno(
  resource link_identifier
      =  =NULL);
```

Returns the error number from the last MySQL function.

Errors coming back from the MySQL database backend no longer issue warnings. Instead, use `mysql_errno` to retrieve the error code. Note that this function only returns the error code from the most recently executed MySQL function (not including `mysql_error` and `mysql_errno`), so if you want to use it, make sure you check the value before calling another MySQL function.

## Parameters

| | |
|---|---|
| *link_identifier* | The MySQL connection. If the link identifier is not specified, the last link opened by `mysql_connect` is assumed. If no such link is found, it will try to create one as if `mysql_connect` had been called with no arguments. If no connection is found or established, an `E_WARNING` level error is generated. |

## Return Values

Returns the error number from the last MySQL function, or `0` (zero) if no error occurred.

## Examples

**Example 6.14 `mysql_errno` example**

```
<?php
$link = mysql_connect("localhost", "mysql_user", "mysql_password");

if (!mysql_select_db("nonexistentdb", $link)) {
    echo mysql_errno($link) . ": " . mysql_error($link). "\n";
}

mysql_select_db("kossu", $link);
if (!mysql_query("SELECT * FROM nonexistenttable", $link)) {
    echo mysql_errno($link) . ": " . mysql_error($link) . "\n";
}
?>
```

The above example will output something similar to:

```
1049: Unknown database 'nonexistentdb'
1146: Table 'kossu.nonexistenttable' doesn't exist
```

## See Also

`mysql_error`

MySQL error codes

## 6.5.11 mysql_error

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- mysql_error

  Returns the text of the error message from previous MySQL operation

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
>
> mysqli_error
> PDO::errorInfo

### Description

```
string mysql_error(
  resource link_identifier
      =  =NULL);
```

Returns the error text from the last MySQL function. Errors coming back from the MySQL database backend no longer issue warnings. Instead, use mysql_error to retrieve the error text. Note that this function only returns the error text from the most recently executed MySQL function (not including mysql_error and mysql_errno), so if you want to use it, make sure you check the value before calling another MySQL function.

### Parameters

| | |
|---|---|
| *link_identifier* | The MySQL connection. If the link identifier is not specified, the last link opened by mysql_connect is assumed. If no such link is found, it will try to create one as if mysql_connect had been called with no arguments. If no connection is found or established, an E_WARNING level error is generated. |

### Return Values

Returns the error text from the last MySQL function, or '' (empty string) if no error occurred.

### Examples

**Example 6.15 mysql_error example**

```
<?php
$link = mysql_connect("localhost", "mysql_user", "mysql_password");

mysql_select_db("nonexistentdb", $link);
echo mysql_errno($link) . ": " . mysql_error($link). "\n";

mysql_select_db("kossu", $link);
mysql_query("SELECT * FROM nonexistenttable", $link);
echo mysql_errno($link) . ": " . mysql_error($link) . "\n";
?>
```

```
```

The above example will output something similar to:

```
1049: Unknown database 'nonexistentdb'
1146: Table 'kossu.nonexistenttable' doesn't exist
```

### See Also

mysql_errno
MySQL error codes

## 6.5.12 mysql_escape_string

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- mysql_escape_string

  Escapes a string for use in a mysql_query

> **Warning**
>
> This function was deprecated in PHP 4.3.0, and it and the entire original MySQL extension was removed in PHP 7.0.0. Instead, use either the actively developed MySQLi or PDO_MySQL extensions. See also the MySQL: choosing an API guide. Alternatives to this function include:
>
> mysqli_escape_string
> PDO::quote

### Description

```
string mysql_escape_string(
  string unescaped_string);
```

This function will escape the *unescaped_string*, so that it is safe to place it in a mysql_query. This function is deprecated.

This function is identical to mysql_real_escape_string except that mysql_real_escape_string takes a connection handler and escapes the string according to the current character set. mysql_escape_string does not take a connection argument and does not respect the current charset setting.

### Parameters

| | |
|---|---|
| *unescaped_string* | The string that is to be escaped. |

### Return Values

Returns the escaped string.

### Examples

**Example 6.16 mysql_escape_string example**

```
```

```
<?php
$item = "Zak's Laptop";
$escaped_item = mysql_escape_string($item);
printf("Escaped string: %s\n", $escaped_item);
?>
```

The above example will output:

```
Escaped string: Zak\'s Laptop
```

### Notes

> **Note**
>
> `mysql_escape_string` does not escape `%` and `_`.

### See Also

`mysql_real_escape_string`
`addslashes`
The magic_quotes_gpc directive.

## 6.5.13 `mysql_fetch_array`

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- `mysql_fetch_array`

  Fetch a result row as an associative array, a numeric array, or both

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
>
> `mysqli_fetch_array`
> `PDOStatement::fetch`

### Description

```
array mysql_fetch_array(
  resource result,
  int result_type
      =  =MYSQL_BOTH);
```

Returns an array that corresponds to the fetched row and moves the internal data pointer ahead.

### Parameters

| | |
|---|---|
| *`result`* | The result resource that is being evaluated. This result comes from a call to `mysql_query`. |
| *`result_type`* | The type of array that is to be fetched. It's a constant and can take the following values: `MYSQL_ASSOC`, `MYSQL_NUM`, and `MYSQL_BOTH`. |

## Return Values

Returns an array of strings that corresponds to the fetched row, or `false` if there are no more rows. The type of returned array depends on how *`result_type`* is defined. By using `MYSQL_BOTH` (default), you'll get an array with both associative and number indices. Using `MYSQL_ASSOC`, you only get associative indices (as `mysql_fetch_assoc` works), using `MYSQL_NUM`, you only get number indices (as `mysql_fetch_row` works).

If two or more columns of the result have the same field names, the last column will take precedence. To access the other column(s) of the same name, you must use the numeric index of the column or make an alias for the column. For aliased columns, you cannot access the contents with the original column name.

## Examples

**Example 6.17 Query with aliased duplicate field names**

```
SELECT table1.field AS foo, table2.field AS bar FROM table1, table2
```

**Example 6.18 `mysql_fetch_array` with `MYSQL_NUM`**

```
<?php
mysql_connect("localhost", "mysql_user", "mysql_password") or
    die("Could not connect: " . mysql_error());
mysql_select_db("mydb");

$result = mysql_query("SELECT id, name FROM mytable");

while ($row = mysql_fetch_array($result, MYSQL_NUM)) {
    printf("ID: %s  Name: %s", $row[0], $row[1]);
}

mysql_free_result($result);
?>
```

**Example 6.19 `mysql_fetch_array` with `MYSQL_ASSOC`**

```
<?php
mysql_connect("localhost", "mysql_user", "mysql_password") or
    die("Could not connect: " . mysql_error());
mysql_select_db("mydb");

$result = mysql_query("SELECT id, name FROM mytable");

while ($row = mysql_fetch_array($result, MYSQL_ASSOC)) {
    printf("ID: %s  Name: %s", $row["id"], $row["name"]);
}

mysql_free_result($result);
?>
```

**Example 6.20 `mysql_fetch_array` with `MYSQL_BOTH`**

```
<?php
mysql_connect("localhost", "mysql_user", "mysql_password") or
    die("Could not connect: " . mysql_error());
mysql_select_db("mydb");

$result = mysql_query("SELECT id, name FROM mytable");

while ($row = mysql_fetch_array($result, MYSQL_BOTH)) {
    printf ("ID: %s  Name: %s", $row[0], $row["name"]);
}

mysql_free_result($result);
?>
```

### Notes

> **Performance**
>
> An important thing to note is that using `mysql_fetch_array` is *not significantly* slower than using `mysql_fetch_row`, while it provides a significant added value.

> **Note**
>
> Field names returned by this function are *case-sensitive*.

> **Note**
>
> This function sets NULL fields to the PHP `null` value.

### See Also

`mysql_fetch_row`
`mysql_fetch_assoc`
`mysql_data_seek`
`mysql_query`

## 6.5.14 `mysql_fetch_assoc`

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- `mysql_fetch_assoc`

  Fetch a result row as an associative array

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
>
> `mysqli_fetch_assoc`
> `PDOStatement::fetch(PDO::FETCH_ASSOC)`

### Description

```
array mysql_fetch_assoc(
```

```
    resource result);
```

Returns an associative array that corresponds to the fetched row and moves the internal data pointer ahead. `mysql_fetch_assoc` is equivalent to calling `mysql_fetch_array` with MYSQL_ASSOC for the optional second parameter. It only returns an associative array.

## Parameters

| | |
|---|---|
| *`result`* | The result resource that is being evaluated. This result comes from a call to `mysql_query`. |

## Return Values

Returns an associative array of strings that corresponds to the fetched row, or `false` if there are no more rows.

If two or more columns of the result have the same field names, the last column will take precedence. To access the other column(s) of the same name, you either need to access the result with numeric indices by using `mysql_fetch_row` or add alias names. See the example at the `mysql_fetch_array` description about aliases.

## Examples

**Example 6.21 An expanded `mysql_fetch_assoc` example**

```
<?php

$conn = mysql_connect("localhost", "mysql_user", "mysql_password");

if (!$conn) {
    echo "Unable to connect to DB: " . mysql_error();
    exit;
}

if (!mysql_select_db("mydbname")) {
    echo "Unable to select mydbname: " . mysql_error();
    exit;
}

$sql = "SELECT id as userid, fullname, userstatus
        FROM   sometable
        WHERE  userstatus = 1";

$result = mysql_query($sql);

if (!$result) {
    echo "Could not successfully run query ($sql) from DB: " . mysql_error();
    exit;
}

if (mysql_num_rows($result) == 0) {
    echo "No rows found, nothing to print so am exiting";
    exit;
}

// While a row of data exists, put that row in $row as an associative array
// Note: If you're expecting just one row, no need to use a loop
// Note: If you put extract($row); inside the following loop, you'll
//       then create $userid, $fullname, and $userstatus
while ($row = mysql_fetch_assoc($result)) {
    echo $row["userid"];
    echo $row["fullname"];
```

```
    echo $row["userstatus"];
}

mysql_free_result($result);

?>
```

## Notes

> **Performance**
>
> An important thing to note is that using `mysql_fetch_assoc` is *not significantly* slower than using `mysql_fetch_row`, while it provides a significant added value.

> **Note**
>
> Field names returned by this function are *case-sensitive*.

> **Note**
>
> This function sets NULL fields to the PHP `null` value.

## See Also

`mysql_fetch_row`
`mysql_fetch_array`
`mysql_data_seek`
`mysql_query`
`mysql_error`

# 6.5.15 `mysql_fetch_field`

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- `mysql_fetch_field`

  Get column information from a result and return as an object

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
>
> `mysqli_fetch_field`
> `PDOStatement::getColumnMeta`

## Description

```
object mysql_fetch_field(
  resource result,
  int field_offset
      =  =0);
```

Returns an object containing field information. This function can be used to obtain information about fields in the provided query result.

## Parameters

| | |
|---|---|
| *result* | The result resource that is being evaluated. This result comes from a call to mysql_query. |
| *field_offset* | The numerical field offset. If the field offset is not specified, the next field that was not yet retrieved by this function is retrieved. The *field_offset* starts at 0. |

## Return Values

Returns an object containing field information. The properties of the object are:

- name - column name
- table - name of the table the column belongs to, which is the alias name if one is defined
- max_length - maximum length of the column
- not_null - 1 if the column cannot be null
- primary_key - 1 if the column is a primary key
- unique_key - 1 if the column is a unique key
- multiple_key - 1 if the column is a non-unique key
- numeric - 1 if the column is numeric
- blob - 1 if the column is a BLOB
- type - the type of the column
- unsigned - 1 if the column is unsigned
- zerofill - 1 if the column is zero-filled

## Examples

**Example 6.22 mysql_fetch_field example**

```
<?php
$conn = mysql_connect('localhost', 'mysql_user', 'mysql_password');
if (!$conn) {
    die('Could not connect: ' . mysql_error());
}
mysql_select_db('database');
$result = mysql_query('select * from table');
if (!$result) {
    die('Query failed: ' . mysql_error());
}
/* get column metadata */
$i = 0;
while ($i < mysql_num_fields($result)) {
    echo "Information for column $i:<br />\n";
    $meta = mysql_fetch_field($result, $i);
    if (!$meta) {
        echo "No information available<br />\n";
    }
    echo "<pre>
```

```
blob:         $meta->blob
max_length:   $meta->max_length
multiple_key: $meta->multiple_key
name:         $meta->name
not_null:     $meta->not_null
numeric:      $meta->numeric
primary_key:  $meta->primary_key
table:        $meta->table
type:         $meta->type
unique_key:   $meta->unique_key
unsigned:     $meta->unsigned
zerofill:     $meta->zerofill
</pre>";
    $i++;
}
mysql_free_result($result);
?>
```

### Notes

> **Note**
>
> Field names returned by this function are *case-sensitive*.

> **Note**
>
> If field or tablenames are aliased in the SQL query the aliased name will be returned. The original name can be retrieved for instance by using `mysqli_result::fetch_field`.

### See Also

`mysql_field_seek`

## 6.5.16 `mysql_fetch_lengths`

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- `mysql_fetch_lengths`

  Get the length of each output in a result

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
>
> `mysqli_fetch_lengths`
> `PDOStatement::getColumnMeta`

### Description

```
array|false mysql_fetch_lengths(
  resource result);
```

Returns an array that corresponds to the lengths of each field in the last row fetched by MySQL.

`mysql_fetch_lengths` stores the lengths of each result column in the last row returned by `mysql_fetch_row`, `mysql_fetch_assoc`, `mysql_fetch_array`, and `mysql_fetch_object` in an array, starting at offset 0.

### Parameters

| | |
|---|---|
| *`result`* | The result resource that is being evaluated. This result comes from a call to `mysql_query`. |

### Return Values

An array of lengths on success or `false` on failure.

### Examples

**Example 6.23 A `mysql_fetch_lengths` example**

```
<?php
$result = mysql_query("SELECT id,email FROM people WHERE id = '42'");
if (!$result) {
    echo 'Could not run query: ' . mysql_error();
    exit;
}
$row     = mysql_fetch_assoc($result);
$lengths = mysql_fetch_lengths($result);

print_r($row);
print_r($lengths);
?>
```

The above example will output something similar to:

```
Array
(
    [id] => 42
    [email] => user@example.com
)
Array
(
    [0] => 2
    [1] => 16
)
```

### See Also

`mysql_field_len`
`mysql_fetch_row`
`strlen`

## 6.5.17 `mysql_fetch_object`

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- `mysql_fetch_object`

  Fetch a result row as an object

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
>
> `mysqli_fetch_object`
> `PDOStatement::fetch(PDO::FETCH_OBJ)`

## Description

```
object mysql_fetch_object(
  resource result,
  string class_name,
  array params);
```

Returns an object with properties that correspond to the fetched row and moves the internal data pointer ahead.

## Parameters

| | |
|---|---|
| *result* | The result resource that is being evaluated. This result comes from a call to `mysql_query`. |
| *class_name* | The name of the class to instantiate, set the properties of and return. If not specified, a `stdClass` object is returned. |
| *params* | An optional array of parameters to pass to the constructor for *class_name* objects. |

## Return Values

Returns an object with string properties that correspond to the fetched row, or `false` if there are no more rows.

## Examples

**Example 6.24 `mysql_fetch_object` example**

```
<?php
mysql_connect("hostname", "user", "password");
mysql_select_db("mydb");
$result = mysql_query("select * from mytable");
while ($row = mysql_fetch_object($result)) {
    echo $row->user_id;
    echo $row->fullname;
}
mysql_free_result($result);
?>
```

**Example 6.25 `mysql_fetch_object` example**

```
<?php
class foo {
    public $name;
}

mysql_connect("hostname", "user", "password");
```

```
mysql_select_db("mydb");

$result = mysql_query("select name from mytable limit 1");
$obj = mysql_fetch_object($result, 'foo');
var_dump($obj);
?>
```

## Notes

> **Performance**
>
> Speed-wise, the function is identical to `mysql_fetch_array`, and almost as quick as `mysql_fetch_row` (the difference is insignificant).

> **Note**
>
> `mysql_fetch_object` is similar to `mysql_fetch_array`, with one difference - an object is returned, instead of an array. Indirectly, that means that you can only access the data by the field names, and not by their offsets (numbers are illegal property names).

> **Note**
>
> Field names returned by this function are *case-sensitive*.

> **Note**
>
> This function sets NULL fields to the PHP `null` value.

## See Also

`mysql_fetch_array`
`mysql_fetch_assoc`
`mysql_fetch_row`
`mysql_data_seek`
`mysql_query`

# 6.5.18 `mysql_fetch_row`

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- `mysql_fetch_row`

  Get a result row as an enumerated array

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
>
> `mysqli_fetch_row`
> `PDOStatement::fetch(PDO::FETCH_NUM)`

## Description

```
  array mysql_fetch_row(
```

```
    resource result);
```

Returns a numerical array that corresponds to the fetched row and moves the internal data pointer ahead.

### Parameters

| | |
|---|---|
| *result* | The result resource that is being evaluated. This result comes from a call to mysql_query. |

### Return Values

Returns an numerical array of strings that corresponds to the fetched row, or false if there are no more rows.

mysql_fetch_row fetches one row of data from the result associated with the specified result identifier. The row is returned as an array. Each result column is stored in an array offset, starting at offset 0.

### Examples

**Example 6.26 Fetching one row with mysql_fetch_row**

```
<?php
$result = mysql_query("SELECT id,email FROM people WHERE id = '42'");
if (!$result) {
    echo 'Could not run query: ' . mysql_error();
    exit;
}
$row = mysql_fetch_row($result);

echo $row[0]; // 42
echo $row[1]; // the email value
?>
```

### Notes

> **Note**
>
> This function sets NULL fields to the PHP null value.

### See Also

mysql_fetch_array
mysql_fetch_assoc
mysql_fetch_object
mysql_data_seek
mysql_fetch_lengths
mysql_result

## 6.5.19 mysql_field_flags

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- mysql_field_flags

  Get the flags associated with the specified field in a result

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
>
> `mysqli_fetch_field_direct` [flags]
> `PDOStatement::getColumnMeta` [flags]

## Description

```
string|false mysql_field_flags(
  resource result,
  int field_offset);
```

`mysql_field_flags` returns the field flags of the specified field. The flags are reported as a single word per flag separated by a single space, so that you can split the returned value using `explode`.

## Parameters

| | |
|---|---|
| *`result`* | The result resource that is being evaluated. This result comes from a call to `mysql_query`. |
| *`field_offset`* | The numerical field offset. The *`field_offset`* starts at `0`. If *`field_offset`* does not exist, an error of level `E_WARNING` is also issued. |

## Return Values

Returns a string of flags associated with the result or `false` on failure.

The following flags are reported, if your version of MySQL is current enough to support them: `"not_null"`, `"primary_key"`, `"unique_key"`, `"multiple_key"`, `"blob"`, `"unsigned"`, `"zerofill"`, `"binary"`, `"enum"`, `"auto_increment"` and `"timestamp"`.

## Examples

**Example 6.27 A `mysql_field_flags` example**

```
<?php
$result = mysql_query("SELECT id,email FROM people WHERE id = '42'");
if (!$result) {
    echo 'Could not run query: ' . mysql_error();
    exit;
}
$flags = mysql_field_flags($result, 0);

echo $flags;
print_r(explode(' ', $flags));
?>
```

The above example will output something similar to:

```
not_null primary_key auto_increment
Array
(
    [0] => not_null
    [1] => primary_key
```

```
    [2] => auto_increment
)
```

### Notes

> **Note**
>
> For backward compatibility, the following deprecated alias may be used: `mysql_fieldflags`

### See Also

`mysql_field_type`
`mysql_field_len`

## 6.5.20 `mysql_field_len`

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- `mysql_field_len`

  Returns the length of the specified field

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
>
> `mysqli_fetch_field_direct` [length]
> `PDOStatement::getColumnMeta` [len]

### Description

```
int|false mysql_field_len(
  resource result,
  int field_offset);
```

`mysql_field_len` returns the length of the specified field.

### Parameters

| | |
|---|---|
| *`result`* | The result resource that is being evaluated. This result comes from a call to `mysql_query`. |
| *`field_offset`* | The numerical field offset. The *`field_offset`* starts at `0`. If *`field_offset`* does not exist, an error of level `E_WARNING` is also issued. |

### Return Values

The length of the specified field index on success or `false` on failure.

### Examples

**Example 6.28 `mysql_field_len` example**

```
```

```
<?php
$result = mysql_query("SELECT id,email FROM people WHERE id = '42'");
if (!$result) {
    echo 'Could not run query: ' . mysql_error();
    exit;
}

// Will get the length of the id field as specified in the database
// schema.
$length = mysql_field_len($result, 0);
echo $length;
?>
```

### Notes

> **Note**
>
> For backward compatibility, the following deprecated alias may be used: `mysql_fieldlen`

### See Also

`mysql_fetch_lengths`
`strlen`

## 6.5.21 `mysql_field_name`

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- `mysql_field_name`

  Get the name of the specified field in a result

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
>
> `mysqli_fetch_field_direct` [name] or [orgname]
> `PDOStatement::getColumnMeta` [name]

### Description

```
string|false mysql_field_name(
  resource result,
  int field_offset);
```

`mysql_field_name` returns the name of the specified field index.

### Parameters

| | |
|---|---|
| *`result`* | The result resource that is being evaluated. This result comes from a call to `mysql_query`. |
| *`field_offset`* | The numerical field offset. The *`field_offset`* starts at `0`. If *`field_offset`* does not exist, an error of level `E_WARNING` is also issued. |

### Return Values

The name of the specified field index on success or `false` on failure.

### Examples

**Example 6.29 `mysql_field_name` example**

```
<?php
/* The users table consists of three fields:
 *   user_id
 *   username
 *   password.
 */
$link = mysql_connect('localhost', 'mysql_user', 'mysql_password');
if (!$link) {
    die('Could not connect to MySQL server: ' . mysql_error());
}
$dbname = 'mydb';
$db_selected = mysql_select_db($dbname, $link);
if (!$db_selected) {
    die("Could not set $dbname: " . mysql_error());
}
$res = mysql_query('select * from users', $link);

echo mysql_field_name($res, 0) . "\n";
echo mysql_field_name($res, 2);
?>
```

The above example will output:

```
user_id
password
```

### Notes

> **Note**
>
> Field names returned by this function are *case-sensitive*.

> **Note**
>
> For backward compatibility, the following deprecated alias may be used: `mysql_fieldname`

### See Also

`mysql_field_type`
`mysql_field_len`

## 6.5.22 `mysql_field_seek`

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- `mysql_field_seek`

Set result pointer to a specified field offset

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
>
> `mysqli_field_seek`
> `PDOStatement::fetch` using the *`cursor_orientation`* and *`offset`* parameters

## Description

```
bool mysql_field_seek(
  resource result,
  int field_offset);
```

Seeks to the specified field offset. If the next call to `mysql_fetch_field` doesn't include a field offset, the field offset specified in `mysql_field_seek` will be returned.

## Parameters

| | |
|---|---|
| *`result`* | The result resource that is being evaluated. This result comes from a call to `mysql_query`. |
| *`field_offset`* | The numerical field offset. The *`field_offset`* starts at `0`. If *`field_offset`* does not exist, an error of level `E_WARNING` is also issued. |

## Return Values

Returns `true` on success or `false` on failure.

## See Also

`mysql_fetch_field`

# 6.5.23 `mysql_field_table`

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- `mysql_field_table`

  Get name of the table the specified field is in

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
>
> `mysqli_fetch_field_direct` [table] or [orgtable]
> `PDOStatement::getColumnMeta` [table]

## Description

```
string mysql_field_table(
```

```
    resource result,
    int field_offset);
```

Returns the name of the table that the specified field is in.

## Parameters

| | |
|---|---|
| *result* | The result resource that is being evaluated. This result comes from a call to mysql_query. |
| *field_offset* | The numerical field offset. The *field_offset* starts at 0. If *field_offset* does not exist, an error of level E_WARNING is also issued. |

## Return Values

The name of the table on success.

## Examples

**Example 6.30 A mysql_field_table example**

```
<?php

$query = "SELECT account.*, country.* FROM account, country WHERE country.name = 'Portugal' AND account.cou

// get the result from the DB
$result = mysql_query($query);

// Lists the table name and then the field name
for ($i = 0; $i < mysql_num_fields($result); ++$i) {
    $table = mysql_field_table($result, $i);
    $field = mysql_field_name($result, $i);

    echo  "$table: $field\n";
}

?>
```

## Notes

> **Note**
>
> For backward compatibility, the following deprecated alias may be used: mysql_fieldtable

## See Also

mysql_list_tables

# 6.5.24 mysql_field_type

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- mysql_field_type

  Get the type of the specified field in a result

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
>
> `mysqli_fetch_field_direct` [type]
> `PDOStatement::getColumnMeta` [driver:decl_type] or [pdo_type]

## Description

```
string mysql_field_type(
  resource result,
  int field_offset);
```

`mysql_field_type` is similar to the `mysql_field_name` function. The arguments are identical, but the field type is returned instead.

## Parameters

| | |
|---|---|
| *`result`* | The result resource that is being evaluated. This result comes from a call to `mysql_query`. |
| *`field_offset`* | The numerical field offset. The *`field_offset`* starts at `0`. If *`field_offset`* does not exist, an error of level `E_WARNING` is also issued. |

## Return Values

The returned field type will be one of `"int"`, `"real"`, `"string"`, `"blob"`, and others as detailed in the MySQL documentation.

## Examples

**Example 6.31 `mysql_field_type` example**

```
<?php
mysql_connect("localhost", "mysql_username", "mysql_password");
mysql_select_db("mysql");
$result = mysql_query("SELECT * FROM func");
$fields = mysql_num_fields($result);
$rows   = mysql_num_rows($result);
$table  = mysql_field_table($result, 0);
echo "Your '" . $table . "' table has " . $fields . " fields and " . $rows . " record(s)\n";
echo "The table has the following fields:\n";
for ($i=0; $i < $fields; $i++) {
    $type  = mysql_field_type($result, $i);
    $name  = mysql_field_name($result, $i);
    $len   = mysql_field_len($result, $i);
    $flags = mysql_field_flags($result, $i);
    echo $type . " " . $name . " " . $len . " " . $flags . "\n";
}
mysql_free_result($result);
mysql_close();
?>
```

The above example will output something similar to:

```
```

```
Your 'func' table has 4 fields and 1 record(s)
The table has the following fields:
string name 64 not_null primary_key binary
int ret 1 not_null
string dl 128 not_null
string type 9 not_null enum
```

### Notes

> **Note**
>
> For backward compatibility, the following deprecated alias may be used: `mysql_fieldtype`

### See Also

`mysql_field_name`
`mysql_field_len`

## 6.5.25 `mysql_free_result`

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- `mysql_free_result`

  Free result memory

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
>
> `mysqli_free_result`
> Assign the value of `null` to the PDO object, or `PDOStatement::closeCursor`

### Description

```
bool mysql_free_result(
  resource result);
```

`mysql_free_result` will free all memory associated with the result identifier *`result`*.

`mysql_free_result` only needs to be called if you are concerned about how much memory is being used for queries that return large result sets. All associated result memory is automatically freed at the end of the script's execution.

### Parameters

| | |
|---|---|
| *`result`* | The result resource that is being evaluated. This result comes from a call to `mysql_query`. |

### Return Values

Returns `true` on success or `false` on failure.

If a non-resource is used for the *`result`*, an error of level E_WARNING will be emitted. It's worth noting that `mysql_query` only returns a resource for SELECT, SHOW, EXPLAIN, and DESCRIBE queries.

## Examples

**Example 6.32 A `mysql_free_result` example**

```
<?php
$result = mysql_query("SELECT id,email FROM people WHERE id = '42'");
if (!$result) {
    echo 'Could not run query: ' . mysql_error();
    exit;
}
/* Use the result, assuming we're done with it afterwards */
$row = mysql_fetch_assoc($result);

/* Now we free up the result and continue on with our script */
mysql_free_result($result);

echo $row['id'];
echo $row['email'];
?>
```

## Notes

> **Note**
>
> For backward compatibility, the following deprecated alias may be used:
> `mysql_freeresult`

## See Also

`mysql_query`
`is_resource`

# 6.5.26 `mysql_get_client_info`

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- `mysql_get_client_info`

  Get MySQL client info

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
>
> `mysqli_get_client_info`
> `PDO::getAttribute(PDO::ATTR_CLIENT_VERSION)`

## Description

```
  string mysql_get_client_info();
```

`mysql_get_client_info` returns a string that represents the client library version.

## Parameters

This function has no parameters.

### Return Values

The MySQL client version.

### Examples

**Example 6.33 `mysql_get_client_info` example**

```
<?php
printf("MySQL client info: %s\n", mysql_get_client_info());
?>
```

The above example will output something similar to:

```
MySQL client info: 3.23.39
```

### See Also

`mysql_get_host_info`
`mysql_get_proto_info`
`mysql_get_server_info`

## 6.5.27 `mysql_get_host_info`

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- `mysql_get_host_info`

  Get MySQL host info

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
>
> `mysqli_get_host_info`
> `PDO::getAttribute(PDO::ATTR_CONNECTION_STATUS)`

### Description

```
string|false mysql_get_host_info(
  resource link_identifier
      =  =NULL);
```

Describes the type of connection in use for the connection, including the server host name.

### Parameters

| | |
|---|---|
| *`link_identifier`* | The MySQL connection. If the link identifier is not specified, the last link opened by `mysql_connect` is assumed. If no such link is found, it will try to create one as if `mysql_connect` had been called with no arguments. If no connection is found or established, an `E_WARNING` level error is generated. |

### Return Values

Returns a string describing the type of MySQL connection in use for the connection or `false` on failure.

### Examples

**Example 6.34 `mysql_get_host_info` example**

```
<?php
$link = mysql_connect('localhost', 'mysql_user', 'mysql_password');
if (!$link) {
    die('Could not connect: ' . mysql_error());
}
printf("MySQL host info: %s\n", mysql_get_host_info());
?>
```

The above example will output something similar to:

```
MySQL host info: Localhost via UNIX socket
```

### See Also

`mysql_get_client_info`
`mysql_get_proto_info`
`mysql_get_server_info`

## 6.5.28 `mysql_get_proto_info`

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- `mysql_get_proto_info`

  Get MySQL protocol info

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
>
> `mysqli_get_proto_info`

### Description

```
int|false mysql_get_proto_info(
  resource link_identifier
      =  =NULL);
```

Retrieves the MySQL protocol.

### Parameters

| | |
|---|---|
| *`link_identifier`* | The MySQL connection. If the link identifier is not specified, the last link opened by `mysql_connect` is assumed. If no such link is found, |

it will try to create one as if `mysql_connect` had been called with no arguments. If no connection is found or established, an `E_WARNING` level error is generated.

### Return Values

Returns the MySQL protocol on success or `false` on failure.

### Examples

**Example 6.35 `mysql_get_proto_info` example**

```
<?php
$link = mysql_connect('localhost', 'mysql_user', 'mysql_password');
if (!$link) {
    die('Could not connect: ' . mysql_error());
}
printf("MySQL protocol version: %s\n", mysql_get_proto_info());
?>
```

The above example will output something similar to:

```
MySQL protocol version: 10
```

### See Also

`mysql_get_client_info`
`mysql_get_host_info`
`mysql_get_server_info`

## 6.5.29 `mysql_get_server_info`

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- `mysql_get_server_info`

  Get MySQL server info

  > **Warning**
  >
  > This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
  >
  > `mysqli_get_server_info`
  > `PDO::getAttribute(PDO::ATTR_SERVER_VERSION)`

### Description

```
string|false mysql_get_server_info(
  resource link_identifier
      =  =NULL);
```

Retrieves the MySQL server version.

### Parameters

| | |
|---|---|
| *link_identifier* | The MySQL connection. If the link identifier is not specified, the last link opened by `mysql_connect` is assumed. If no such link is found, it will try to create one as if `mysql_connect` had been called with no arguments. If no connection is found or established, an `E_WARNING` level error is generated. |

### Return Values

Returns the MySQL server version on success or `false` on failure.

### Examples

**Example 6.36 `mysql_get_server_info` example**

```
<?php
$link = mysql_connect('localhost', 'mysql_user', 'mysql_password');
if (!$link) {
    die('Could not connect: ' . mysql_error());
}
printf("MySQL server version: %s\n", mysql_get_server_info());
?>
```

The above example will output something similar to:

```
MySQL server version: 4.0.1-alpha
```

### See Also

`mysql_get_client_info`
`mysql_get_host_info`
`mysql_get_proto_info`
`phpversion`

## 6.5.30 `mysql_info`

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- `mysql_info`

  Get information about the most recent query

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
>
> `mysqli_info`

### Description

```
  string mysql_info(
```

```
    resource link_identifier
        =  =NULL);
```

Returns detailed information about the last query.

## Parameters

| | |
|---|---|
| *link_identifier* | The MySQL connection. If the link identifier is not specified, the last link opened by mysql_connect is assumed. If no such link is found, it will try to create one as if mysql_connect had been called with no arguments. If no connection is found or established, an E_WARNING level error is generated. |

## Return Values

Returns information about the statement on success, or false on failure. See the example below for which statements provide information, and what the returned value may look like. Statements that are not listed will return false.

## Examples

**Example 6.37 Relevant MySQL Statements**

Statements that return string values. The numbers are only for illustrating purpose; their values will correspond to the query.

```
INSERT INTO ... SELECT ...
String format: Records: 23 Duplicates: 0 Warnings: 0
INSERT INTO ... VALUES (...),(...),(...)...
String format: Records: 37 Duplicates: 0 Warnings: 0
LOAD DATA INFILE ...
String format: Records: 42 Deleted: 0 Skipped: 0 Warnings: 0
ALTER TABLE
String format: Records: 60 Duplicates: 0 Warnings: 0
UPDATE
String format: Rows matched: 65 Changed: 65 Warnings: 0
```

## Notes

> **Note**
>
> mysql_info returns a non-false value for the INSERT ... VALUES statement only if multiple value lists are specified in the statement.

## See Also

mysql_affected_rows
mysql_insert_id
mysql_stat

# 6.5.31 mysql_insert_id

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- mysql_insert_id

Get the ID generated in the last query

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
>
> `mysqli_insert_id`
> `PDO::lastInsertId`

## Description

```
int mysql_insert_id(
  resource link_identifier
      =  =NULL);
```

Retrieves the ID generated for an AUTO_INCREMENT column by the previous query (usually INSERT).

## Parameters

| | |
|---|---|
| *link_identifier* | The MySQL connection. If the link identifier is not specified, the last link opened by `mysql_connect` is assumed. If no such link is found, it will try to create one as if `mysql_connect` had been called with no arguments. If no connection is found or established, an `E_WARNING` level error is generated. |

## Return Values

The ID generated for an AUTO_INCREMENT column by the previous query on success, `0` if the previous query does not generate an AUTO_INCREMENT value, or `false` if no MySQL connection was established.

## Examples

**Example 6.38 `mysql_insert_id` example**

```
<?php
$link = mysql_connect('localhost', 'mysql_user', 'mysql_password');
if (!$link) {
    die('Could not connect: ' . mysql_error());
}
mysql_select_db('mydb');

mysql_query("INSERT INTO mytable (product) values ('kossu')");
printf("Last inserted record has id %d\n", mysql_insert_id());
?>
```

## Notes

> **Caution**
>
> `mysql_insert_id` will convert the return type of the native MySQL C API function `mysql_insert_id()` to a type of `long` (named int in PHP). If your AUTO_INCREMENT column has a column type of BIGINT (64 bits) the conversion

> may result in an incorrect value. Instead, use the internal MySQL SQL function LAST_INSERT_ID() in an SQL query. For more information about PHP's maximum integer values, please see the integer documentation.

> **Note**
>
> Because `mysql_insert_id` acts on the last performed query, be sure to call `mysql_insert_id` immediately after the query that generates the value.

> **Note**
>
> The value of the MySQL SQL function `LAST_INSERT_ID()` always contains the most recently generated AUTO_INCREMENT value, and is not reset between queries.

### See Also

`mysql_query`
`mysql_info`

## 6.5.32 `mysql_list_dbs`

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- `mysql_list_dbs`

  List databases available on a MySQL server

> **Warning**
>
> This function was deprecated in PHP 5.4.0, and it and the entire original MySQL extension was removed in PHP 7.0.0. Instead, use either the actively developed MySQLi or PDO_MySQL extensions. See also the MySQL: choosing an API guide. Alternatives to this function include:
>
> SQL Query: `SHOW DATABASES`

### Description

```
resource mysql_list_dbs(
  resource link_identifier
      =  =NULL);
```

Returns a result pointer containing the databases available from the current mysql daemon.

### Parameters

| | |
|---|---|
| *`link_identifier`* | The MySQL connection. If the link identifier is not specified, the last link opened by `mysql_connect` is assumed. If no such link is found, it will try to create one as if `mysql_connect` had been called with no arguments. If no connection is found or established, an `E_WARNING` level error is generated. |

### Return Values

Returns a result pointer resource on success, or `false` on failure. Use the `mysql_tablename` function to traverse this result pointer, or any function for result tables, such as `mysql_fetch_array`.

## Examples

**Example 6.39 `mysql_list_dbs` example**

```
<?php
// Usage without mysql_list_dbs()
$link = mysql_connect('localhost', 'mysql_user', 'mysql_password');
$res = mysql_query("SHOW DATABASES");

while ($row = mysql_fetch_assoc($res)) {
    echo $row['Database'] . "\n";
}

// Deprecated as of PHP 5.4.0
$link = mysql_connect('localhost', 'mysql_user', 'mysql_password');
$db_list = mysql_list_dbs($link);

while ($row = mysql_fetch_object($db_list)) {
     echo $row->Database . "\n";
}
?>
```

The above example will output something similar to:

```
database1
database2
database3
```

## Notes

> **Note**
>
> For backward compatibility, the following deprecated alias may be used: `mysql_listdbs`

## See Also

`mysql_db_name`
`mysql_select_db`

# 6.5.33 `mysql_list_fields`

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- `mysql_list_fields`

  List MySQL table fields

> **Warning**
>
> This function was deprecated in PHP 5.4.0, and it and the entire original MySQL extension was removed in PHP 7.0.0. Instead, use either the actively developed MySQLi or PDO_MySQL extensions. See also the MySQL: choosing an API guide. Alternatives to this function include:

SQL Query: `SHOW COLUMNS FROM sometable`

## Description

```
  resource mysql_list_fields(
    string database_name,
    string table_name,
    resource link_identifier
        =  =NULL);
```

Retrieves information about the given table name.

This function is deprecated. It is preferable to use `mysql_query` to issue an SQL `SHOW COLUMNS FROM table [LIKE 'name']` statement instead.

## Parameters

| | |
|---|---|
| *`database_name`* | The name of the database that's being queried. |
| *`table_name`* | The name of the table that's being queried. |
| *`link_identifier`* | The MySQL connection. If the link identifier is not specified, the last link opened by `mysql_connect` is assumed. If no such link is found, it will try to create one as if `mysql_connect` had been called with no arguments. If no connection is found or established, an `E_WARNING` level error is generated. |

## Return Values

A result pointer resource on success, or `false` on failure.

The returned result can be used with `mysql_field_flags`, `mysql_field_len`, `mysql_field_name` and `mysql_field_type`.

## Examples

**Example 6.40 Alternate to deprecated `mysql_list_fields`**

```
<?php
$result = mysql_query("SHOW COLUMNS FROM sometable");
if (!$result) {
    echo 'Could not run query: ' . mysql_error();
    exit;
}
if (mysql_num_rows($result) > 0) {
    while ($row = mysql_fetch_assoc($result)) {
        print_r($row);
    }
}
?>
```

The above example will output something similar to:

```
Array
(
```

```
    [Field] => id
    [Type] => int(7)
    [Null] =>
    [Key] => PRI
    [Default] =>
    [Extra] => auto_increment
)
Array
(
    [Field] => email
    [Type] => varchar(100)
    [Null] =>
    [Key] =>
    [Default] =>
    [Extra] =>
)
```

### Notes

> **Note**
>
> For backward compatibility, the following deprecated alias may be used: `mysql_listfields`

### See Also

`mysql_field_flags`
`mysql_info`

## 6.5.34 `mysql_list_processes`

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- `mysql_list_processes`

  List MySQL processes

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
>
> `mysqli_thread_id`

### Description

```
resource|false mysql_list_processes(
  resource link_identifier
      =  =NULL);
```

Retrieves the current MySQL server threads.

### Parameters

| | |
|---|---|
| *`link_identifier`* | The MySQL connection. If the link identifier is not specified, the last link opened by `mysql_connect` is assumed. If no such link is found, |

it will try to create one as if mysql_connect had been called with no arguments. If no connection is found or established, an E_WARNING level error is generated.

### Return Values

A result pointer resource on success or false on failure.

### Examples

**Example 6.41 mysql_list_processes example**

```
<?php
$link = mysql_connect('localhost', 'mysql_user', 'mysql_password');

$result = mysql_list_processes($link);
while ($row = mysql_fetch_assoc($result)){
    printf("%s %s %s %s %s\n", $row["Id"], $row["Host"], $row["db"],
        $row["Command"], $row["Time"]);
}
mysql_free_result($result);
?>
```

The above example will output something similar to:

```
1 localhost test Processlist 0
4 localhost mysql sleep 5
```

### See Also

mysql_thread_id
mysql_stat

## 6.5.35 mysql_list_tables

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- mysql_list_tables

  List tables in a MySQL database

> **Warning**
>
> This function was deprecated in PHP 4.3.0, and it and the entire original MySQL extension was removed in PHP 7.0.0. Instead, use either the actively developed MySQLi or PDO_MySQL extensions. See also the MySQL: choosing an API guide. Alternatives to this function include:
>
> SQL Query: SHOW TABLES FROM dbname

### Description

```
resource|false mysql_list_tables(
```

```
    string database,
    resource link_identifier
        =  =NULL);
```

Retrieves a list of table names from a MySQL database.

This function is deprecated. It is preferable to use `mysql_query` to issue an SQL `SHOW TABLES [FROM db_name] [LIKE 'pattern']` statement instead.

## Parameters

| | |
|---|---|
| *`database`* | The name of the database |
| *`link_identifier`* | The MySQL connection. If the link identifier is not specified, the last link opened by `mysql_connect` is assumed. If no such link is found, it will try to create one as if `mysql_connect` had been called with no arguments. If no connection is found or established, an `E_WARNING` level error is generated. |

## Return Values

A result pointer resource on success or `false` on failure.

Use the `mysql_tablename` function to traverse this result pointer, or any function for result tables, such as `mysql_fetch_array`.

## Changelog

| Version | Description |
|---|---|
| 4.3.7 | This function became deprecated. |

## Examples

**Example 6.42 `mysql_list_tables` alternative example**

```
<?php
$dbname = 'mysql_dbname';

if (!mysql_connect('mysql_host', 'mysql_user', 'mysql_password')) {
    echo 'Could not connect to mysql';
    exit;
}

$sql = "SHOW TABLES FROM $dbname";
$result = mysql_query($sql);

if (!$result) {
    echo "DB Error, could not list tables\n";
    echo 'MySQL Error: ' . mysql_error();
    exit;
}

while ($row = mysql_fetch_row($result)) {
    echo "Table: {$row[0]}\n";
}

mysql_free_result($result);
?>
```

### Notes

> **Note**
>
> For backward compatibility, the following deprecated alias may be used: `mysql_listtables`

### See Also

`mysql_list_dbs`
`mysql_tablename`

## 6.5.36 `mysql_num_fields`

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- `mysql_num_fields`

  Get number of fields in result

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
>
> `mysqli_num_fields`
> `PDOStatement::columnCount`

### Description

```
int|false mysql_num_fields(
  resource result);
```

Retrieves the number of fields from a query.

### Parameters

| | |
|---|---|
| *`result`* | The result resource that is being evaluated. This result comes from a call to `mysql_query`. |

### Return Values

Returns the number of fields in the result set resource on success or `false` on failure.

### Examples

**Example 6.43 A `mysql_num_fields` example**

```
<?php
$result = mysql_query("SELECT id,email FROM people WHERE id = '42'");
if (!$result) {
    echo 'Could not run query: ' . mysql_error();
    exit;
```

```
}

/* returns 2 because id,email === two fields */
echo mysql_num_fields($result);
?>
```

### Notes

> **Note**
>
> For backward compatibility, the following deprecated alias may be used:
> `mysql_numfields`

### See Also

`mysql_select_db`
`mysql_query`
`mysql_fetch_field`
`mysql_num_rows`

## 6.5.37 `mysql_num_rows`

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- `mysql_num_rows`

  Get number of rows in result

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
>
> `mysqli_num_rows`
> `mysqli_stmt_num_rows`
> `PDOStatement::rowCount`

### Description

```
int|false mysql_num_rows(
  resource result);
```

Retrieves the number of rows from a result set. This command is only valid for statements like SELECT or SHOW that return an actual result set. To retrieve the number of rows affected by a INSERT, UPDATE, REPLACE or DELETE query, use `mysql_affected_rows`.

### Parameters

| | |
|---|---|
| *`result`* | The result resource that is being evaluated. This result comes from a call to `mysql_query`. |

### Return Values

The number of rows in a result set on success or `false` on failure.

### Examples

**Example 6.44 `mysql_num_rows` example**

```
<?php

$link = mysql_connect("localhost", "mysql_user", "mysql_password");
mysql_select_db("database", $link);

$result = mysql_query("SELECT * FROM table1", $link);
$num_rows = mysql_num_rows($result);

echo "$num_rows Rows\n";

?>
```

### Notes

> **Note**
>
> If you use `mysql_unbuffered_query`, `mysql_num_rows` will not return the correct value until all the rows in the result set have been retrieved.

> **Note**
>
> For backward compatibility, the following deprecated alias may be used: `mysql_numrows`

### See Also

`mysql_affected_rows`
`mysql_connect`
`mysql_data_seek`
`mysql_select_db`
`mysql_query`

## 6.5.38 `mysql_pconnect`

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- `mysql_pconnect`

  Open a persistent connection to a MySQL server

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
>
> `mysqli_connect` with `p:` host prefix
> `PDO::__construct` with `PDO::ATTR_PERSISTENT` as a driver option

### Description

```
resource mysql_pconnect(
```

```
    string server
        =  =ini_get("mysql.default_host"),
    string username
        =  =ini_get("mysql.default_user"),
    string password
        =  =ini_get("mysql.default_password"),
    int client_flags
        =  =0);
```

Establishes a persistent connection to a MySQL server.

`mysql_pconnect` acts very much like `mysql_connect` with two major differences.

First, when connecting, the function would first try to find a (persistent) link that's already open with the same host, username and password. If one is found, an identifier for it will be returned instead of opening a new connection.

Second, the connection to the SQL server will not be closed when the execution of the script ends. Instead, the link will remain open for future use (`mysql_close` will not close links established by `mysql_pconnect`).

This type of link is therefore called 'persistent'.

## Parameters

| | |
|---|---|
| *`server`* | The MySQL server. It can also include a port number. e.g. "hostname:port" or a path to a local socket e.g. ":/path/to/socket" for the localhost.<br><br>If the PHP directive mysql.default_host is undefined (default), then the default value is 'localhost:3306' |
| *`username`* | The username. Default value is the name of the user that owns the server process. |
| *`password`* | The password. Default value is an empty password. |
| *`client_flags`* | The *`client_flags`* parameter can be a combination of the following constants: 128 (enable `LOAD DATA LOCAL` handling), `MYSQL_CLIENT_SSL`, `MYSQL_CLIENT_COMPRESS`, `MYSQL_CLIENT_IGNORE_SPACE` or `MYSQL_CLIENT_INTERACTIVE`. |

## Return Values

Returns a MySQL persistent link identifier on success, or `false` on failure.

## Notes

> **Note**
>
> Note, that these kind of links only work if you are using a module version of PHP. See the Persistent Database Connections section for more information.

> **Warning**
>
> Using persistent connections can require a bit of tuning of your Apache and MySQL configurations to ensure that you do not exceed the number of connections allowed by MySQL.

### See Also

mysql_connect
Persistent Database Connections

## 6.5.39 mysql_ping

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- mysql_ping

  Ping a server connection or reconnect if there is no connection

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
>
> mysqli_ping

### Description

```
bool mysql_ping(
  resource link_identifier
      =  =NULL);
```

Checks whether or not the connection to the server is working. If it has gone down, an automatic reconnection is attempted. This function can be used by scripts that remain idle for a long while, to check whether or not the server has closed the connection and reconnect if necessary.

> **Note**
>
> Automatic reconnection is disabled by default in versions of MySQL >= 5.0.3.

### Parameters

| | |
|---|---|
| *link_identifier* | The MySQL connection. If the link identifier is not specified, the last link opened by mysql_connect is assumed. If no such link is found, it will try to create one as if mysql_connect had been called with no arguments. If no connection is found or established, an E_WARNING level error is generated. |

### Return Values

Returns true if the connection to the server MySQL server is working, otherwise false.

### Examples

**Example 6.45 A mysql_ping example**

```
<?php
set_time_limit(0);

$conn = mysql_connect('localhost', 'mysqluser', 'mypass');
$db   = mysql_select_db('mydb');

/* Assuming this query will take a long time */
```

```
$result = mysql_query($sql);
if (!$result) {
    echo 'Query #1 failed, exiting.';
    exit;
}

/* Make sure the connection is still alive, if not, try to reconnect */
if (!mysql_ping($conn)) {
    echo 'Lost connection, exiting after query #1';
    exit;
}
mysql_free_result($result);

/* So the connection is still alive, let's run another query */
$result2 = mysql_query($sql2);
?>
```

### See Also

mysql_thread_id
mysql_list_processes

## 6.5.40 mysql_query

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- mysql_query

  Send a MySQL query

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
>
> mysqli_query
> PDO::query

### Description

```
mixed mysql_query(
  string query,
  resource link_identifier
      =  =NULL);
```

mysql_query sends a unique query (multiple queries are not supported) to the currently active database on the server that's associated with the specified *link_identifier*.

### Parameters

| | |
|---|---|
| *query* | An SQL query<br><br>The query string should not end with a semicolon. Data inside the query should be properly escaped. |
| *link_identifier* | The MySQL connection. If the link identifier is not specified, the last link opened by mysql_connect is assumed. If no such link is found, |

it will try to create one as if `mysql_connect` had been called with no arguments. If no connection is found or established, an `E_WARNING` level error is generated.

## Return Values

For SELECT, SHOW, DESCRIBE, EXPLAIN and other statements returning resultset, `mysql_query` returns a resource on success, or `false` on error.

For other type of SQL statements, INSERT, UPDATE, DELETE, DROP, etc, `mysql_query` returns `true` on success or `false` on error.

The returned result resource should be passed to `mysql_fetch_array`, and other functions for dealing with result tables, to access the returned data.

Use `mysql_num_rows` to find out how many rows were returned for a SELECT statement or `mysql_affected_rows` to find out how many rows were affected by a DELETE, INSERT, REPLACE, or UPDATE statement.

`mysql_query` will also fail and return `false` if the user does not have permission to access the table(s) referenced by the query.

## Examples

### Example 6.46 Invalid Query

The following query is syntactically invalid, so `mysql_query` fails and returns `false`.

```
<?php
$result = mysql_query('SELECT * WHERE 1=1');
if (!$result) {
    die('Invalid query: ' . mysql_error());
}

?>
```

### Example 6.47 Valid Query

The following query is valid, so `mysql_query` returns a resource.

```
<?php
// This could be supplied by a user, for example
$firstname = 'fred';
$lastname  = 'fox';

// Formulate Query
// This is the best way to perform an SQL query
// For more examples, see mysql_real_escape_string()
$query = sprintf("SELECT firstname, lastname, address, age FROM friends
    WHERE firstname='%s' AND lastname='%s'",
    mysql_real_escape_string($firstname),
    mysql_real_escape_string($lastname));

// Perform Query
$result = mysql_query($query);

// Check result
```

```
// This shows the actual query sent to MySQL, and the error. Useful for debugging.
if (!$result) {
    $message  = 'Invalid query: ' . mysql_error() . "\n";
    $message .= 'Whole query: ' . $query;
    die($message);
}

// Use result
// Attempting to print $result won't allow access to information in the resource
// One of the mysql result functions must be used
// See also mysql_result(), mysql_fetch_array(), mysql_fetch_row(), etc.
while ($row = mysql_fetch_assoc($result)) {
    echo $row['firstname'];
    echo $row['lastname'];
    echo $row['address'];
    echo $row['age'];
}

// Free the resources associated with the result set
// This is done automatically at the end of the script
mysql_free_result($result);
?>
```

### See Also

mysql_connect
mysql_error
mysql_real_escape_string
mysql_result
mysql_fetch_assoc
mysql_unbuffered_query

## 6.5.41 mysql_real_escape_string

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- mysql_real_escape_string

  Escapes special characters in a string for use in an SQL statement

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
>
> mysqli_real_escape_string
> PDO::quote

### Description

```
  string mysql_real_escape_string(
    string unescaped_string,
    resource link_identifier
        =  =NULL);
```

Escapes special characters in the *unescaped_string*, taking into account the current character set of the connection so that it is safe to place it in a mysql_query. If binary data is to be inserted, this function must be used.

`mysql_real_escape_string` calls MySQL's library function mysql_real_escape_string, which prepends backslashes to the following characters: `\x00`, `\n`, `\r`, `\`, `'`, `"` and `\x1a`.

This function must always (with few exceptions) be used to make data safe before sending a query to MySQL.

> **Security: the default character set**
>
> The character set must be set either at the server level, or with the API function `mysql_set_charset` for it to affect `mysql_real_escape_string`. See the concepts section on character sets for more information.

## Parameters

| | |
|---|---|
| *`unescaped_string`* | The string that is to be escaped. |
| *`link_identifier`* | The MySQL connection. If the link identifier is not specified, the last link opened by `mysql_connect` is assumed. If no such link is found, it will try to create one as if `mysql_connect` had been called with no arguments. If no connection is found or established, an `E_WARNING` level error is generated. |

## Return Values

Returns the escaped string, or `false` on error.

## Errors/Exceptions

Executing this function without a MySQL connection present will also emit `E_WARNING` level PHP errors. Only execute this function with a valid MySQL connection present.

## Examples

**Example 6.48 Simple `mysql_real_escape_string` example**

```
<?php
// Connect
$link = mysql_connect('mysql_host', 'mysql_user', 'mysql_password')
    OR die(mysql_error());

// Query
$query = sprintf("SELECT * FROM users WHERE user='%s' AND password='%s'",
            mysql_real_escape_string($user),
            mysql_real_escape_string($password));
?>
```

**Example 6.49 `mysql_real_escape_string` requires a connection example**

This example demonstrates what happens if a MySQL connection is not present when calling this function.

```
<?php
// We have not connected to MySQL

$lastname  = "O'Reilly";
$_lastname = mysql_real_escape_string($lastname);
```

```
$query = "SELECT * FROM actors WHERE last_name = '$_lastname'";

var_dump($_lastname);
var_dump($query);
?>
```

The above example will output something similar to:

```
Warning: mysql_real_escape_string(): No such file or directory in /this/test/script.php on line 5
Warning: mysql_real_escape_string(): A link to the server could not be established in /this/test/script.php on

bool(false)
string(41) "SELECT * FROM actors WHERE last_name = ''"
```

**Example 6.50 An example SQL Injection Attack**

```
<?php
// We didn't check $_POST['password'], it could be anything the user wanted! For example:
$_POST['username'] = 'aidan';
$_POST['password'] = "' OR ''='";

// Query database to check if there are any matching users
$query = "SELECT * FROM users WHERE user='{$_POST['username']}' AND password='{$_POST['password']}'";
mysql_query($query);

// This means the query sent to MySQL would be:
echo $query;
?>
```

The query sent to MySQL:

```
SELECT * FROM users WHERE user='aidan' AND password='' OR ''=''
```

This would allow anyone to log in without a valid password.

## Notes

> **Note**
>
> A MySQL connection is required before using `mysql_real_escape_string` otherwise an error of level `E_WARNING` is generated, and `false` is returned. If *`link_identifier`* isn't defined, the last MySQL connection is used.

> **Note**
>
> If magic_quotes_gpc is enabled, first apply `stripslashes` to the data. Using this function on data which has already been escaped will escape the data twice.

> **Note**
>
> If this function is not used to escape data, the query is vulnerable to SQL Injection Attacks.

> **Note**
>
> `mysql_real_escape_string` does not escape `%` and `_`. These are wildcards in MySQL if combined with `LIKE`, `GRANT`, or `REVOKE`.

### See Also

`mysql_set_charset`
`mysql_client_encoding`
`addslashes`
`stripslashes`
The magic_quotes_gpc directive
The magic_quotes_runtime directive

## 6.5.42 `mysql_result`

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- `mysql_result`

  Get result data

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
>
> `mysqli_data_seek` in conjunction with `mysqli_field_seek` and `mysqli_fetch_field`
> `PDOStatement::fetchColumn`

### Description

```
string mysql_result(
  resource result,
  int row,
  mixed field
      =  =0);
```

Retrieves the contents of one cell from a MySQL result set.

When working on large result sets, you should consider using one of the functions that fetch an entire row (specified below). As these functions return the contents of multiple cells in one function call, they're MUCH quicker than `mysql_result`. Also, note that specifying a numeric offset for the field argument is much quicker than specifying a fieldname or tablename.fieldname argument.

### Parameters

| | |
|---|---|
| *`result`* | The result resource that is being evaluated. This result comes from a call to `mysql_query`. |
| *`row`* | The row number from the result that's being retrieved. Row numbers start at `0`. |
| *`field`* | The name or offset of the field being retrieved. |

It can be the field's offset, the field's name, or the field's table dot field name (tablename.fieldname). If the column name has been aliased ('select foo as bar from...'), use the alias instead of the column name. If undefined, the first field is retrieved.

### Return Values

The contents of one cell from a MySQL result set on success, or `false` on failure.

### Examples

**Example 6.51 `mysql_result` example**

```
<?php
$link = mysql_connect('localhost', 'mysql_user', 'mysql_password');
if (!$link) {
    die('Could not connect: ' . mysql_error());
}
if (!mysql_select_db('database_name')) {
    die('Could not select database: ' . mysql_error());
}
$result = mysql_query('SELECT name FROM work.employee');
if (!$result) {
    die('Could not query:' . mysql_error());
}
echo mysql_result($result, 2); // outputs third employee's name

mysql_close($link);
?>
```

### Notes

> **Note**
>
> Calls to `mysql_result` should not be mixed with calls to other functions that deal with the result set.

### See Also

`mysql_fetch_row`
`mysql_fetch_array`
`mysql_fetch_assoc`
`mysql_fetch_object`

## 6.5.43 `mysql_select_db`

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- `mysql_select_db`

  Select a MySQL database

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:

> mysqli_select_db
> PDO::__construct (part of dsn)

## Description

```
bool mysql_select_db(
  string database_name,
  resource link_identifier
      =  =NULL);
```

Sets the current active database on the server that's associated with the specified link identifier. Every subsequent call to mysql_query will be made on the active database.

## Parameters

| | |
|---|---|
| *database_name* | The name of the database that is to be selected. |
| *link_identifier* | The MySQL connection. If the link identifier is not specified, the last link opened by mysql_connect is assumed. If no such link is found, it will try to create one as if mysql_connect had been called with no arguments. If no connection is found or established, an E_WARNING level error is generated. |

## Return Values

Returns true on success or false on failure.

## Examples

**Example 6.52 mysql_select_db example**

```
<?php

$link = mysql_connect('localhost', 'mysql_user', 'mysql_password');
if (!$link) {
    die('Not connected : ' . mysql_error());
}

// make foo the current db
$db_selected = mysql_select_db('foo', $link);
if (!$db_selected) {
    die ('Can\'t use foo : ' . mysql_error());
}
?>
```

## Notes

> **Note**
>
> For backward compatibility, the following deprecated alias may be used:
> mysql_selectdb

## See Also

mysql_connect
mysql_pconnect

mysql_query

## 6.5.44 mysql_set_charset

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- mysql_set_charset

  Sets the client character set

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
>
> mysqli_set_charset
> PDO: Add charset to the connection string, such as charset=utf8

### Description

```
bool mysql_set_charset(
  string charset,
  resource link_identifier
      =  =NULL);
```

Sets the default character set for the current connection.

### Parameters

| | |
|---|---|
| *charset* | A valid character set name. |
| *link_identifier* | The MySQL connection. If the link identifier is not specified, the last link opened by mysql_connect is assumed. If no such link is found, it will try to create one as if mysql_connect had been called with no arguments. If no connection is found or established, an E_WARNING level error is generated. |

### Return Values

Returns true on success or false on failure.

### Notes

> **Note**
>
> This function requires MySQL 5.0.7 or later.

> **Note**
>
> This is the preferred way to change the charset. Using mysql_query to set it (such as SET NAMES utf8) is not recommended. See the MySQL character set concepts section for more information.

### See Also

Setting character sets in MySQL

List of character sets that MySQL supports
mysql_client_encoding

## 6.5.45 mysql_stat

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- mysql_stat

  Get current system status

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
>
> mysqli_stat
> PDO::getAttribute(PDO::ATTR_SERVER_INFO)

### Description

```
string mysql_stat(
  resource link_identifier
      =  =NULL);
```

mysql_stat returns the current server status.

### Parameters

| | |
|---|---|
| *link_identifier* | The MySQL connection. If the link identifier is not specified, the last link opened by mysql_connect is assumed. If no such link is found, it will try to create one as if mysql_connect had been called with no arguments. If no connection is found or established, an E_WARNING level error is generated. |

### Return Values

Returns a string with the status for uptime, threads, queries, open tables, flush tables and queries per second. For a complete list of other status variables, you have to use the SHOW STATUS SQL command. If *link_identifier* is invalid, null is returned.

### Examples

**Example 6.53 mysql_stat example**

```
<?php
$link   = mysql_connect('localhost', 'mysql_user', 'mysql_password');
$status = explode('  ', mysql_stat($link));
print_r($status);
?>
```

The above example will output something similar to:

```
```

```
Array
(
    [0] => Uptime: 5380
    [1] => Threads: 2
    [2] => Questions: 1321299
    [3] => Slow queries: 0
    [4] => Opens: 26
    [5] => Flush tables: 1
    [6] => Open tables: 17
    [7] => Queries per second avg: 245.595
)
```

**Example 6.54 Alternative `mysql_stat` example**

```
<?php
$link   = mysql_connect('localhost', 'mysql_user', 'mysql_password');
$result = mysql_query('SHOW STATUS', $link);
while ($row = mysql_fetch_assoc($result)) {
    echo $row['Variable_name'] . ' = ' . $row['Value'] . "\n";
}
?>
```

The above example will output something similar to:

```
back_log = 50
basedir = /usr/local/
bdb_cache_size = 8388600
bdb_log_buffer_size = 32768
bdb_home = /var/db/mysql/
bdb_max_lock = 10000
bdb_logdir =
bdb_shared_data = OFF
bdb_tmpdir = /var/tmp/
...
```

### See Also

`mysql_get_server_info`
`mysql_list_processes`

## 6.5.46 `mysql_tablename`

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- `mysql_tablename`

  Get table name of field

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
>
> SQL Query: `SHOW TABLES`

### Description

```
string|false mysql_tablename(
  resource result,
  int i);
```

Retrieves the table name from a *result*.

This function is deprecated. It is preferable to use mysql_query to issue an SQL SHOW TABLES [FROM db_name] [LIKE 'pattern'] statement instead.

### Parameters

| | |
|---|---|
| *result* | A result pointer resource that's returned from mysql_list_tables. |
| *i* | The integer index (row/table number) |

### Return Values

The name of the table on success or false on failure.

Use the mysql_tablename function to traverse this result pointer, or any function for result tables, such as mysql_fetch_array.

### Examples

**Example 6.55 mysql_tablename example**

```
<?php
mysql_connect("localhost", "mysql_user", "mysql_password");
$result = mysql_list_tables("mydb");
$num_rows = mysql_num_rows($result);
for ($i = 0; $i < $num_rows; $i++) {
    echo "Table: ", mysql_tablename($result, $i), "\n";
}

mysql_free_result($result);
?>
```

### Notes

> **Note**
>
> The mysql_num_rows function may be used to determine the number of tables in the result pointer.

### See Also

mysql_list_tables
mysql_field_table
mysql_db_name

## 6.5.47 mysql_thread_id

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- mysql_thread_id

  Return the current thread ID

  > **Warning**
  >
  > This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
  >
  > mysqli_thread_id

## Description

```
int|false mysql_thread_id(
  resource link_identifier
      =  =NULL);
```

Retrieves the current thread ID. If the connection is lost, and a reconnect with mysql_ping is executed, the thread ID will change. This means only retrieve the thread ID when needed.

## Parameters

| | |
|---|---|
| *link_identifier* | The MySQL connection. If the link identifier is not specified, the last link opened by mysql_connect is assumed. If no such link is found, it will try to create one as if mysql_connect had been called with no arguments. If no connection is found or established, an E_WARNING level error is generated. |

## Return Values

The thread ID on success or false on failure.

## Examples

**Example 6.56 mysql_thread_id example**

```
<?php
$link = mysql_connect('localhost', 'mysql_user', 'mysql_password');
$thread_id = mysql_thread_id($link);
if ($thread_id){
    printf("current thread id is %d\n", $thread_id);
}
?>
```

The above example will output something similar to:

```
current thread id is 73
```

## See Also

mysql_ping
mysql_list_processes

# 6.5.48 mysql_unbuffered_query

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- mysql_unbuffered_query

  Send an SQL query to MySQL without fetching and buffering the result rows

> **Warning**
>
> This extension was deprecated in PHP 5.5.0, and it was removed in PHP 7.0.0. Instead, the MySQLi or PDO_MySQL extension should be used. See also MySQL: choosing an API guide. Alternatives to this function include:
>
> See: Buffered and Unbuffered queries

## Description

```
resource mysql_unbuffered_query(
  string query,
  resource link_identifier
      =  =NULL);
```

mysql_unbuffered_query sends the SQL query *query* to MySQL without automatically fetching and buffering the result rows as mysql_query does. This saves a considerable amount of memory with SQL queries that produce large result sets, and you can start working on the result set immediately after the first row has been retrieved as you don't have to wait until the complete SQL query has been performed. To use mysql_unbuffered_query while multiple database connections are open, you must specify the optional parameter *link_identifier* to identify which connection you want to use.

## Parameters

| | |
|---|---|
| *query* | The SQL query to execute.<br><br>Data inside the query should be properly escaped. |
| *link_identifier* | The MySQL connection. If the link identifier is not specified, the last link opened by mysql_connect is assumed. If no such link is found, it will try to create one as if mysql_connect had been called with no arguments. If no connection is found or established, an E_WARNING level error is generated. |

## Return Values

For SELECT, SHOW, DESCRIBE or EXPLAIN statements, mysql_unbuffered_query returns a resource on success, or false on error.

For other type of SQL statements, UPDATE, DELETE, DROP, etc, mysql_unbuffered_query returns true on success or false on error.

## Notes

> **Note**
>
> The benefits of mysql_unbuffered_query come at a cost: you cannot use mysql_num_rows and mysql_data_seek on a result set returned from mysql_unbuffered_query, until all rows are fetched. You also have to fetch all

result rows from an unbuffered SQL query before you can send a new SQL query to MySQL, using the same *link_identifier*.

## See Also

mysql_query

# Chapter 7 MySQL Native Driver

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MySQL Native Driver is a replacement for the MySQL Client Library (libmysqlclient). MySQL Native Driver is part of the official PHP sources as of PHP 5.3.0.

The MySQL database extensions MySQL extension, `mysqli` and PDO MYSQL all communicate with the MySQL server. In the past, this was done by the extension using the services provided by the MySQL Client Library. The extensions were compiled against the MySQL Client Library in order to use its client-server protocol.

With MySQL Native Driver there is now an alternative, as the MySQL database extensions can be compiled to use MySQL Native Driver instead of the MySQL Client Library.

MySQL Native Driver is written in C as a PHP extension.

## 7.1 Overview

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*What it is not*

Although MySQL Native Driver is written as a PHP extension, it is important to note that it does not provide a new API to the PHP programmer. The programmer APIs for MySQL database connectivity are provided by the MySQL extension, `mysqli` and PDO MYSQL. These extensions can now use the services of MySQL Native Driver to communicate with the MySQL Server. Therefore, you should not think of MySQL Native Driver as an API.

*Why use it?*

Using the MySQL Native Driver offers a number of advantages over using the MySQL Client Library.

The older MySQL Client Library was written by MySQL AB (now Oracle Corporation) and so was released under the MySQL license. This ultimately led to MySQL support being disabled by default in PHP. However, the MySQL Native Driver has been developed as part of the PHP project, and is therefore released under the PHP license. This removes licensing issues that have been problematic in the past.

Also, in the past, you needed to build the MySQL database extensions against a copy of the MySQL Client Library. This typically meant you needed to have MySQL installed on a machine where you were building the PHP source code. Also, when your PHP application was running, the MySQL database extensions would call down to the MySQL Client library file at run time, so the file needed to be installed on your system. With MySQL Native Driver that is no longer the case as it is included as part of the standard distribution. So you do not need MySQL installed in order to build PHP or run PHP database applications.

Because MySQL Native Driver is written as a PHP extension, it is tightly coupled to the workings of PHP. This leads to gains in efficiency, especially when it comes to memory usage, as the driver uses the PHP memory management system. It also supports the PHP memory limit. Using MySQL Native Driver leads to comparable or better performance than using MySQL Client Library, it always ensures the most efficient use of memory. One example of the memory efficiency is the fact that when using the MySQL Client Library, each row is stored in memory twice, whereas with the MySQL Native Driver each row is only stored once in memory.

> **Reporting memory usage**
>
> Because MySQL Native Driver uses the PHP memory management system, its memory usage can be tracked with `memory_get_usage`. This is not possible with libmysqlclient because it uses the C function malloc() instead.

*Special features*

MySQL Native Driver also provides some special features not available when the MySQL database extensions use MySQL Client Library. These special features are listed below:

- Improved persistent connections
- The special function `mysqli_fetch_all`
- Performance statistics calls: `mysqli_get_client_stats`, `mysqli_get_connection_stats`

The performance statistics facility can prove to be very useful in identifying performance bottlenecks.

MySQL Native Driver also allows for persistent connections when used with the `mysqli` extension.

*SSL Support*

MySQL Native Driver supports SSL.

*Compressed Protocol Support*

MySQL Native Driver supports the compressed client server protocol. Extension `ext/mysqli`, if configured to use MySQL Native Driver, can also take advantage of this feature. Note that `PDO_MYSQL` does *NOT* support compression when used together with mysqlnd.

*Named Pipes Support*

Named pipes can be used to connect on Windows environments.

# 7.2 Installation

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*Installation on Unix*

The MySQL database extensions must be configured to use the MySQL Client Library. In order to use the MySQL Native Driver, PHP needs to be built specifying that the MySQL database extensions are compiled

with MySQL Native Driver support. This is done through configuration options prior to building the PHP source code.

For example, to build the MySQL extension, `mysqli` and PDO MYSQL using the MySQL Native Driver, the following command would be given:

```
 ./configure --with-mysql=mysqlnd \
--with-mysqli=mysqlnd \
--with-pdo-mysql=mysqlnd \
[other options]
```

*Installation on Windows*

In the official PHP Windows distributions, MySQL Native Driver is enabled by default, so no additional configuration is required to use it. All MySQL database extensions will use MySQL Native Driver in this case.

*SHA-256 Authentication Plugin support*

The MySQL Native Driver requires the OpenSSL functionality of PHP to be loaded and enabled to connect to MySQL through accounts that use the MySQL SHA-256 Authentication Plugin. For example, PHP could be configured using:

```
./configure --with-mysql=mysqlnd \
--with-mysqli=mysqlnd \
--with-pdo-mysql=mysqlnd \
--with-openssl
[other options]
```

# 7.3 Runtime Configuration

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The behaviour of these functions is affected by settings in `php.ini`.

**Table 7.1 MySQL Native Driver Configuration Options**

| Name | Default | Changeable | Changelog |
|---|---|---|---|
| mysqlnd.collect_statistics | "1" | PHP_INI_SYSTEM | |
| mysqlnd.collect_memory_statistics | "0" | PHP_INI_SYSTEM | |
| mysqlnd.debug | "" | PHP_INI_SYSTEM | |
| mysqlnd.log_mask | 0 | PHP_INI_ALL | |
| mysqlnd.mempool_default_size | 16000 | PHP_INI_ALL | |
| mysqlnd.net_read_timeout | "86400" | PHP_INI_ALL | Before PHP 7.2.0 the default value was "31536000" and the changeability was PHP_INI_SYSTEM |
| mysqlnd.net_cmd_buffer_size | "4096" | PHP_INI_SYSTEM | |
| mysqlnd.net_read_buffer_size | "32768" | PHP_INI_SYSTEM | |
| mysqlnd.sha256_server_public_key | "" | PHP_INI_PERDIR | |
| mysqlnd.trace_alloc | "" | PHP_INI_SYSTEM | |

| Name | Default | Changeable | Changelog |
|---|---|---|---|
| mysqlnd.fetch_data_copy | 0 | PHP_INI_ALL | |

For further details and definitions of the PHP_INI_* modes, see the http://www.php.net/manual/en/configuration.changes.modes.

Here's a short explanation of the configuration directives.

*mysqlnd.collect_statistics* bool
Enables the collection of various client statistics which can be accessed through `mysqli_get_client_stats`, `mysqli_get_connection_stats`, and are shown in `mysqlnd` section of the output of the `phpinfo` function as well.

This configuration setting enables all MySQL Native Driver statistics except those relating to memory management.

*mysqlnd.collect_memory_statistics* bool
Enables the collection of various memory statistics which can be accessed through `mysqli_get_client_stats`, `mysqli_get_connection_stats`, and are shown in `mysqlnd` section of the output of the `phpinfo` function as well.

This configuration setting enables the memory management statistics within the overall set of MySQL Native Driver statistics.

*mysqlnd.debug* string
Records communication from all extensions using `mysqlnd` to the specified log file.

The format of the directive is `mysqlnd.debug = "option1[,parameter_option1] [:option2[,parameter_option2]]"`.

The options for the format string are as follows:

- A[,file] - Appends trace output to specified file. Also ensures that data is written after each write. This is done by closing and reopening the trace file (this is slow). It helps ensure a complete log file should the application crash.
- a[,file] - Appends trace output to the specified file.
- d - Enables output from DBUG_<N> macros for the current state. May be followed by a list of keywords which selects output only for the DBUG macros with that keyword. An empty list of keywords implies output for all macros.
- f[,functions] - Limits debugger actions to the specified list of functions. An empty list of functions implies that all functions are selected.
- F - Marks each debugger output line with the name of the source file containing the macro causing the output.
- i - Marks each debugger output line with the PID of the current process.
- L - Marks each debugger output line with the name of the source file line number of the macro causing the output.

- n - Marks each debugger output line with the current function nesting depth
- o[,file] - Similar to a[,file] but overwrites old file, and does not append.
- O[,file] - Similar to A[,file] but overwrites old file, and does not append.
- t[,N] - Enables function control flow tracing. The maximum nesting depth is specified by N, and defaults to 200.
- x - This option activates profiling.
- m - Trace memory allocation and deallocation related calls.

Example:

```
d:t:x:O,/tmp/mysqlnd.trace
```

> **Note**
>
> This feature is only available with a debug build of PHP. Works on Microsoft Windows if using a debug build of PHP and PHP was built using Microsoft Visual C version 9 and above.

*mysqlnd.log_mask* int

Defines which queries will be logged. The default 0, which disables logging. Define using an integer, and not with PHP constants. For example, a value of 48 (16 + 32) will log slow queries which either use 'no good index' (SERVER_QUERY_NO_GOOD_INDEX_USED = 16) or no index at all (SERVER_QUERY_NO_INDEX_USED = 32). A value of 2043 (1 + 2 + 8 + ... + 1024) will log all slow query types.

The types are as follows: SERVER_STATUS_IN_TRANS=1, SERVER_STATUS_AUTOCOMMIT=2, SERVER_MORE_RESULTS_EXISTS=8, SERVER_QUERY_NO_GOOD_INDEX_USED=16, SERVER_QUERY_NO_INDEX_USED=32, SERVER_STATUS_CURSOR_EXISTS=64, SERVER_STATUS_LAST_ROW_SENT=128, SERVER_STATUS_DB_DROPPED=256, SERVER_STATUS_NO_BACKSLASH_ESCAPES=512, and SERVER_QUERY_WAS_SLOW=1024.

*mysqlnd.mempool_default_size* int

Default size of the mysqlnd memory pool, which is used by result sets.

*mysqlnd.net_read_timeout* int

`mysqlnd` and the MySQL Client Library, `libmysqlclient` use different networking APIs. `mysqlnd` uses PHP streams, whereas `libmysqlclient` uses its own wrapper around the operating level network calls. PHP, by default, sets a read timeout of 60s for streams. This is set via `php.ini`, `default_socket_timeout`. This default applies to all streams that set no other timeout value. `mysqlnd` does not set any other value and therefore

connections of long running queries can be disconnected after `default_socket_timeout` seconds resulting in an error message "2006 - MySQL Server has gone away". The MySQL Client Library sets a default timeout of 24 * 3600 seconds (1 day) and waits for other timeouts to occur, such as TCP/IP timeouts. `mysqlnd` now uses the same very long timeout. The value is configurable through a new `php.ini` setting: `mysqlnd.net_read_timeout`. `mysqlnd.net_read_timeout` gets used by any extension (`ext/mysql`, `ext/mysqli`, `PDO_MySQL`) that uses `mysqlnd`. `mysqlnd` tells PHP Streams to use `mysqlnd.net_read_timeout`. Please note that there may be subtle differences between `MYSQL_OPT_READ_TIMEOUT` from the MySQL Client Library and PHP Streams, for example `MYSQL_OPT_READ_TIMEOUT` is documented to work only for TCP/IP connections and, prior to MySQL 5.1.2, only for Windows. PHP streams may not have this limitation. Please check the streams documentation, if in doubt.

*mysqlnd.net_cmd_buffer_size*
int

`mysqlnd` allocates an internal command/network buffer of `mysqlnd.net_cmd_buffer_size` (in `php.ini`) bytes for every connection. If a MySQL Client Server protocol command, for example, `COM_QUERY` ("normal" query), does not fit into the buffer, `mysqlnd` will grow the buffer to the size required for sending the command. Whenever the buffer gets extended for one connection, `command_buffer_too_small` will be incremented by one.

If `mysqlnd` has to grow the buffer beyond its initial size of `mysqlnd.net_cmd_buffer_size` bytes for almost every connection, you should consider increasing the default size to avoid re-allocations.

The default buffer size is 4096 bytes, which is the smallest value possible.

The value can also be set using `mysqli_options(link, MYSQLI_OPT_NET_CMD_BUFFER_SIZE, size)`.

*mysqlnd.net_read_buffer_size*
int

Maximum read chunk size in bytes when reading the body of a MySQL command packet. The MySQL client server protocol encapsulates all its commands in packets. The packets consist of a small header and a body with the actual payload. The size of the body is encoded in the header. `mysqlnd` reads the body in chunks of `MIN(header.size, mysqlnd.net_read_buffer_size)` bytes. If a packet body is larger than `mysqlnd.net_read_buffer_size` bytes, `mysqlnd` has to call `read()` multiple times.

The value can also be set using `mysqli_options(link, MYSQLI_OPT_NET_READ_BUFFER_SIZE, size)`.

*mysqlnd.sha256_server_public_key*
string

SHA-256 Authentication Plugin related. File with the MySQL server public RSA key.

Clients can either omit setting a public RSA key, specify the key through this PHP configuration setting or set the key at runtime using `mysqli_options`. If not public RSA key file is given by the client, then the key will be exchanged as part of the standard SHA-256 Authentication Plugin authentication procedure.

*mysqlnd.trace_alloc* string

*mysqlnd.fetch_data_copy* int

Enforce copying result sets from the internal result set buffers into PHP variables instead of using the default reference and copy-on-write logic. Please, see the memory management implementation notes for further details.

Copying result sets instead of having PHP variables reference them allows releasing the memory occupied for the PHP variables earlier. Depending on the user API code, the actual database quries and the size of their result sets this may reduce the memory footprint of mysqlnd.

Do not set if using PDO_MySQL. PDO_MySQL has not yet been updated to support the new fetch mode.

# 7.4 Incompatibilities

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MySQL Native Driver is in most cases compatible with MySQL Client Library (`libmysql`). This section documents incompatibilities between these libraries.

- Values of `bit` data type are returned as binary strings (e.g. "\0" or "\x1F") with `libmysql` and as decimal strings (e.g. "0" or "31") with `mysqlnd`. If you want the code to be compatible with both libraries then always return bit fields as numbers from MySQL with a query like this: `SELECT bit + 0 FROM table`.

# 7.5 Persistent Connections

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*Using Persistent Connections*

If `mysqli` is used with `mysqlnd`, when a persistent connection is created it generates a `COM_CHANGE_USER` (`mysql_change_user()`) call on the server. This ensures that re-authentication of the connection takes place.

As there is some overhead associated with the `COM_CHANGE_USER` call, it is possible to switch this off at compile time. Reusing a persistent connection will then generate a `COM_PING` (`mysql_ping`) call to simply test the connection is reusable.

Generation of `COM_CHANGE_USER` can be switched off with the compile flag `MYSQLI_NO_CHANGE_USER_ON_PCONNECT`. For example:

```
shell# CFLAGS="-DMYSQLI_NO_CHANGE_USER_ON_PCONNECT" ./configure --with-mysql=/usr/local/mysql/ --with-mysq
```

Or alternatively:

```
shell# export CFLAGS="-DMYSQLI_NO_CHANGE_USER_ON_PCONNECT"
shell# configure --whatever-option
shell# make clean
shell# make
```

Note that only `mysqli` on `mysqlnd` uses `COM_CHANGE_USER`. Other extension-driver combinations use `COM_PING` on initial use of a persistent connection.

# 7.6 Statistics

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*Using Statistical Data*

MySQL Native Driver contains support for gathering statistics on the communication between the client and the server. The statistics gathered are of two main types:

- Client statistics
- Connection statistics

If you are using the `mysqli` extension, these statistics can be obtained through two API calls:

- `mysqli_get_client_stats`
- `mysqli_get_connection_stats`

> **Note**
>
> Statistics are aggregated among all extensions that use MySQL Native Driver. For example, when compiling both `ext/mysql` and `ext/mysqli` against MySQL Native Driver, both function calls of `ext/mysql` and `ext/mysqli` will change the statistics. There is no way to find out how much a certain API call of any extension that has been compiled against MySQL Native Driver has impacted a certain statistic. You can configure the PDO MySQL Driver, `ext/mysql` and `ext/mysqli` to optionally use the MySQL Native Driver. When doing so, all three extensions will change the statistics.

*Accessing Client Statistics*

To access client statistics, you need to call `mysqli_get_client_stats`. The function call does not require any parameters.

The function returns an associative array that contains the name of the statistic as the key and the statistical data as the value.

Client statistics can also be accessed by calling the `phpinfo` function.

*Accessing Connection Statistics*

To access connection statistics call `mysqli_get_connection_stats`. This takes the database connection handle as the parameter.

The function returns an associative array that contains the name of the statistic as the key and the statistical data as the value.

*Buffered and Unbuffered Result Sets*

Result sets can be buffered or unbuffered. Using default settings, `ext/mysql` and `ext/mysqli` work with buffered result sets for normal (non prepared statement) queries. Buffered result sets are cached on the client. After the query execution all results are fetched from the MySQL Server and stored in a cache on the client. The big advantage of buffered result sets is that they allow the server to free all resources allocated to a result set, once the results have been fetched by the client.

Unbuffered result sets on the other hand are kept much longer on the server. If you want to reduce memory consumption on the client, but increase load on the server, use unbuffered results. If you experience a high server load and the figures for unbuffered result sets are high, you should consider moving the load to the clients. Clients typically scale better than servers. “Load” does not only refer to memory buffers - the server also needs to keep other resources open, for example file handles and threads, before a result set can be freed.

Prepared Statements use unbuffered result sets by default. However, you can use `mysqli_stmt_store_result` to enable buffered result sets.

*Statistics returned by MySQL Native Driver*

The following tables show a list of statistics returned by the `mysqli_get_client_stats` and `mysqli_get_connection_stats` functions.

**Table 7.2 Returned mysqlnd statistics: Network**

| Statistic | Scope | Description | Notes |
|---|---|---|---|
| `bytes_sent` | Connection | Number of bytes sent from PHP to the MySQL server | Can be used to check the efficiency of the compression protocol |
| `bytes_received` | Connection | Number of bytes received from MySQL server | Can be used to check the efficiency of the compression protocol |
| `packets_sent` | Connection | Number of MySQL Client Server protocol packets sent | Used for debugging Client Server protocol implementation |
| `packets_received` | Connection | Number of MySQL Client Server protocol packets received | Used for debugging Client Server protocol implementation |
| `protocol_overhead_in` | Connection | MySQL Client Server protocol overhead in bytes for incoming traffic. Currently only the Packet Header (4 bytes) is considered as overhead. protocol_overhead_in = packets_received * 4 | Used for debugging Client Server protocol implementation |
| `protocol_overhead_out` | Connection | MySQL Client Server protocol overhead in bytes for outgoing traffic. Currently only the Packet Header (4 bytes) is considered as overhead. protocol_overhead_out = packets_sent * 4 | Used for debugging Client Server protocol implementation |
| `bytes_received_ok_packet` | Connection | Total size of bytes of MySQL Client Server protocol OK packets received. OK packets can contain a status message. The length of the status message can vary and thus the size of an OK packet is not fixed. | Used for debugging CS protocol implementation. Note that the total size in bytes includes the size of the header packet (4 bytes, see protocol overhead). |
| `packets_received_ok` | Connection | Number of MySQL Client Server protocol OK packets received. | Used for debugging CS protocol implementation. Note that the total size in bytes includes the size of the header packet (4 bytes, see protocol overhead). |
| `bytes_received_eof_packet` | Connection | Total size in bytes of MySQL Client Server protocol EOF packets received. EOF can vary in size depending on the | Used for debugging CS protocol implementation. Note that the total size in bytes includes the size of the header packet (4 bytes, see protocol overhead). |

| Statistic | Scope | Description | Notes |
|---|---|---|---|
| | | server version. Also, EOF can transport an error message. | |
| packets_received.eof | Connection | Number of MySQL Client Server protocol EOF packets. Like with other packet statistics the number of packets will be increased even if PHP does not receive the expected packet but, for example, an error message. | Used for debugging CS protocol implementation. Note that the total size in bytes includes the size of the header packet (4 bytes, see protocol overhead). |
| bytes_received.result_header_packet | Connection | Total size in bytes of MySQL Client Server protocol result set header packets. The size of the packets varies depending on the payload (`LOAD LOCAL INFILE`, `INSERT`, `UPDATE`, `SELECT`, error message). | Used for debugging CS protocol implementation. Note that the total size in bytes includes the size of the header packet (4 bytes, see protocol overhead). |
| packets_received.result_header_packet | Connection | Number of MySQL Client Server protocol result set header packets. | Used for debugging CS protocol implementation. Note that the total size in bytes includes the size of the header packet (4 bytes, see protocol overhead). |
| bytes_received.result_field_meta_packet | Connection | Total size in bytes of MySQL Client Server protocol result set meta data (field information) packets. Of course the size varies with the fields in the result set. The packet may also transport an error or an EOF packet in case of COM_LIST_FIELDS. | Only useful for debugging CS protocol implementation. Note that the total size in bytes includes the size of the header packet (4 bytes, see protocol overhead). |
| packets_received.result_field_meta_packet | Connection | Number of MySQL Client Server protocol result set meta data (field information) packets. | Only useful for debugging CS protocol implementation. Note that the total size in bytes includes the size of the header packet (4 bytes, see protocol overhead). |
| bytes_received.result_row_packet | Connection | Total size in bytes of MySQL Client Server protocol result set row data packets. The packet may also transport an error or an EOF packet. You can reverse engineer the number of error and EOF packets by subtracting `rows_fetched_from_server_normal` and `rows_fetched_from_server_ps` from `bytes_received_rset_row_packet`. | Only useful for debugging CS protocol implementation. Note that the total size in bytes includes the size of the header packet (4 bytes, see protocol overhead). |
| packets_received.result_row_packet | Connection | Number of MySQL Client Server protocol result set row data packets and their total size in bytes. | Only useful for debugging CS protocol implementation. Note that the total size in bytes includes the size of the header packet (4 bytes, see protocol overhead). |
| bytes_received.prepare_response_packet | Connection | Total size in bytes of MySQL Client Server protocol OK for Prepared Statement Initialization packets (prepared statement init packets). The packet may also transport an error. The packet size depends on the MySQL version: | Only useful for debugging CS protocol implementation. Note that the total size in bytes includes the size of the header packet (4 bytes, see protocol overhead). |

| Statistic | Scope | Description | Notes |
|---|---|---|---|
| | | 9 bytes with MySQL 4.1 and 12 bytes from MySQL 5.0 on. There is no safe way to know how many errors happened. You may be able to guess that an error has occurred if, for example, you always connect to MySQL 5.0 or newer and, `bytes_received_prepare_response_packet` != `packets_received_prepare_response` * 12. See also `ps_prepared_never_executed`, `ps_prepared_once_executed`. | |
| `packets_sent_prepare_close` | Connection | Number of MySQL Client Server protocol OK for Prepared Statement Initialization packets (prepared statement init packets). | Only useful for debugging CS protocol implementation. Note that the total size in bytes includes the size of the header packet (4 bytes, see protocol overhead). |
| `bytes_sent_change_user` | Connection | Total size in bytes of MySQL Client Server protocol COM_CHANGE_USER packets. The packet may also transport an error or EOF. | Only useful for debugging CS protocol implementation. Note that the total size in bytes includes the size of the header packet (4 bytes, see protocol overhead). |
| `packets_sent_change_user` | Connection | Number of MySQL Client Server protocol COM_CHANGE_USER packets | Only useful for debugging CS protocol implementation. Note that the total size in bytes includes the size of the header packet (4 bytes, see protocol overhead). |
| `packets_sent_command` | Connection | Number of MySQL Client Server protocol commands sent from PHP to MySQL. There is no way to know which specific commands and how many of them have been sent. At its best you can use it to check if PHP has sent any commands to MySQL to know if you can consider to disable MySQL support in your PHP binary. There is also no way to reverse engineer the number of errors that may have occurred while sending data to MySQL. The only error that is recorded is command_buffer_too_small (see below). | Only useful for debugging CS protocol implementation. |
| `bytes_received_real_data_normal` | Connection | Number of bytes of payload fetched by the PHP client from `mysqlnd` using the text protocol. | This is the size of the actual data contained in result sets that do not originate from prepared statements and which have been fetched by the PHP client. Note that although a full result set may have been pulled from MySQL by `mysqlnd`, this statistic only counts actual data pulled from `mysqlnd` by the PHP client. An example of a code sequence that will increase the value is as follows: |

```
$mysqli = new mysqli();
$res = $mysqli->query("SELECT 'abc'");
```

| Statistic | Scope | Description | Notes |
|---|---|---|---|
| | | | `$res->fetch_assoc();`<br>`$res->close();`<br><br>Every fetch operation will increase the value.<br><br>The statistic will not be increased if the result set is only buffered on the client, but not fetched, such as in the following example:<br><br>`$mysqli = new mysqli();`<br>`$res = $mysqli->query("SELECT 'abc'");`<br>`$res->close();` |
| `bytes_received_ps_bufferedata` | Connection | Number of bytes of the payload fetched by the PHP client from `mysqlnd` using the prepared statement protocol. | This is the size of the actual data contained in result sets that originate from prepared statements and which has been fetched by the PHP client. The value will not be increased if the result set is not subsequently read by the PHP client. Note that although a full result set may have been pulled from MySQL by `mysqlnd`, this statistic only counts actual data pulled from `mysqlnd` by the PHP client. See also `bytes_received_real_data_normal`. |

*Result Set*

**Table 7.3 Returned mysqlnd statistics: Result Set**

| Statistic | Scope | Description | Notes |
|---|---|---|---|
| `result_set_queries` | Connection | Number of queries that have generated a result set. Examples of queries that generate a result set: `SELECT`, `SHOW`. The statistic will not be incremented if there is an error reading the result set header packet from the line. | You may use it as an indirect measure for the number of queries PHP has sent to MySQL, for example, to identify a client that causes a high database load. |
| `non_result_set_queries` | Connection | Number of queries that did not generate a result set. Examples of queries that do not generate a result set: `INSERT`, `UPDATE`, `LOAD DATA`. The statistic will not be incremented if there is an error reading the result set header packet from the line. | You may use it as an indirect measure for the number of queries PHP has sent to MySQL, for example, to identify a client that causes a high database load. |
| `no_index_used` | Connection | Number of queries that have generated a result set but did not use an index (see also mysqld start option –log-queries-not-using-indexes). If you want these queries to be reported you can use mysqli_report(MYSQLI_REPORT_INDEX) | |

| Statistic | Scope | Description | Notes |
|---|---|---|---|
| | | to make ext/mysqli throw an exception. If you prefer a warning instead of an exception use mysqli_report(MYSQLI_REPORT_INDEX ^ MYSQLI_REPORT_STRICT). | |
| `bad_index_used` | Connection | Number of queries that have generated a result set and did not use a good index (see also mysqld start option –log-slow-queries). | If you want these queries to be reported you can use mysqli_report(MYSQLI_REPORT_INDEX) to make ext/mysqli throw an exception. If you prefer a warning instead of an exception use mysqli_report(MYSQLI_REPORT_INDEX ^ MYSQLI_REPORT_STRICT) |
| `slow_queries` | Connection | SQL statements that took more than `long_query_time` seconds to execute and required at least `min_examined_row_limit` rows to be examined. | Not reported through `mysqli_report` |
| `buffered_sets` | Connection | Number of buffered result sets returned by “normal” queries. “Normal” means “not prepared statement” in the following notes. | Examples of API calls that will buffer result sets on the client: `mysql_query`, `mysqli_query`, `mysqli_store_result`, `mysqli_stmt_get_result`. Buffering result sets on the client ensures that server resources are freed as soon as possible and it makes result set scrolling easier. The downside is the additional memory consumption on the client for buffering data. Note that mysqlnd (unlike the MySQL Client Library) respects the PHP memory limit because it uses PHP internal memory management functions to allocate memory. This is also the reason why `memory_get_usage` reports a higher memory consumption when using mysqlnd instead of the MySQL Client Library. `memory_get_usage` does not measure the memory consumption of the MySQL Client Library at all because the MySQL Client Library does not use PHP internal memory management functions monitored by the function! |
| `unbuffered_sets` | Connection | Number of unbuffered result sets returned by normal (non prepared statement) queries. | Examples of API calls that will not buffer result sets on the client: `mysqli_use_result` |
| `ps_buffered_sets` | Connection | Number of buffered result sets returned by prepared statements. By default prepared statements are unbuffered. | Examples of API calls that will buffer result sets on the client: `mysqli_stmt_store_result` |
| `ps_unbuffered_sets` | Connection | Number of unbuffered result sets returned by prepared statements. | By default prepared statements are unbuffered. |

| Statistic | Scope | Description | Notes |
|---|---|---|---|
| flushed_normal_sets | Connection | Number of result sets from normal (non prepared statement) queries with unread data which have been flushed silently for you. Flushing happens only with unbuffered result sets. | Unbuffered result sets must be fetched completely before a new query can be run on the connection otherwise MySQL will throw an error. If the application does not fetch all rows from an unbuffered result set, mysqlnd does implicitly fetch the result set to clear the line. See also rows_skipped_normal, rows_skipped_ps. Some possible causes for an implicit flush:<br>• Faulty client application<br>• Client stopped reading after it found what it was looking for but has made MySQL calculate more records than needed<br>• Client application has stopped unexpectedly |
| flushed_ps_sets | Connection | Number of result sets from prepared statements with unread data which have been flushed silently for you. Flushing happens only with unbuffered result sets. | Unbuffered result sets must be fetched completely before a new query can be run on the connection otherwise MySQL will throw an error. If the application does not fetch all rows from an unbuffered result set, mysqlnd does implicitly fetch the result set to clear the line. See also rows_skipped_normal, rows_skipped_ps. Some possible causes for an implicit flush:<br>• Faulty client application<br>• Client stopped reading after it found what it was looking for but has made MySQL calculate more records than needed<br>• Client application has stopped unexpectedly |
| ps_prepared_never_executed | Connection | Number of statements prepared but never executed. | Prepared statements occupy server resources. You should not prepare a statement if you do not plan to execute it. |
| ps_prepared_once_executed | Connection | Number of prepared statements executed only one. | One of the ideas behind prepared statements is that the same query gets executed over and over again (with different parameters) and some parsing and other preparation work can be saved, if statement execution is split up in separate prepare and execute stages. The idea is to prepare once and “cache” results, for example, the |

| Statistic | Scope | Description | Notes |
|---|---|---|---|
| | | | parse tree to be reused during multiple statement executions. If you execute a prepared statement only once the two stage processing can be inefficient compared to “normal” queries because all the caching means extra work and it takes (limited) server resources to hold the cached information. Consequently, prepared statements that are executed only once may cause performance hurts. |
| `rows_fetched_from_client_normal`, `rows_fetched_from_server_normal` | Connection | Total number of result set rows successfully fetched from MySQL regardless if the client application has consumed them or not. Some of the rows may not have been fetched by the client application but have been flushed implicitly. | See also `packets_received_rset_row` |
| `rows_buffered_from_client_normal`, `rows_buffered_from_server_normal` | Connection | Total number of successfully buffered rows originating from a "normal" query or a prepared statement. This is the number of rows that have been fetched from MySQL and buffered on client. Note that there are two distinct statistics on rows that have been buffered (MySQL to mysqlnd internal buffer) and buffered rows that have been fetched by the client application (mysqlnd internal buffer to client application). If the number of buffered rows is higher than the number of fetched buffered rows it can mean that the client application runs queries that cause larger result sets than needed resulting in rows not read by the client. | Examples of queries that will buffer results: `mysqli_query`, `mysqli_store_result` |
| `rows_fetched_from_client_normal_buffered`, `rows_fetched_from_server_normal_buffered` | Connection | Total number of rows fetched by the client from a buffered result set created by a normal query or a prepared statement. | |
| `rows_fetched_from_client_normal_unbuffered`, `rows_fetched_from_server_normal_unbuffered` | Connection | Total number of rows fetched by the client from a unbuffered result set created by a "normal" query or a prepared statement. | |
| `rows_fetched_from_client_cursor` | Connection | Total number of rows fetch by the client from a cursor created by a prepared statement. | |
| `rows_skipped_normal`, `rows_skipped_ps` | Connection | Reserved for future use (currently not supported) | |
| `copy_on_write_saved`, `copy_on_write_performed` | Process | With mysqlnd, variables returned by the extensions point into mysqlnd internal network result buffers. If you do not | |

| Statistic | Scope | Description | Notes |
|---|---|---|---|
| | | change the variables, fetched data will be kept only once in memory. If you change the variables, mysqlnd has to perform a copy-on-write to protect the internal network result buffers from being changed. With the MySQL Client Library you always hold fetched data twice in memory. Once in the internal MySQL Client Library buffers and once in the variables returned by the extensions. In theory mysqlnd can save up to 40% memory. However, note that the memory saving cannot be measured using `memory_get_usage`. | |
| `explicit_free_result`, `implicit_free_result` | Connection, Process (only during prepared statement cleanup) | Total number of freed result sets. | The free is always considered explicit but for result sets created by an init command, for example, `mysqli_options(MYSQLI_INIT_COMMAND , ...` |
| `proto_text_fetched_null`, `proto_text_fetched_bit`, `proto_text_fetched_tinyint`, `proto_text_fetched_short`, `proto_text_fetched_int24`, `proto_text_fetched_int`, `proto_text_fetched_bigint`, `proto_text_fetched_decimal`, `proto_text_fetched_float`, `proto_text_fetched_double`, `proto_text_fetched_date`, `proto_text_fetched_year`, `proto_text_fetched_time`, `proto_text_fetched_datetime`, `proto_text_fetched_timestamp`, `proto_text_fetched_string`, `proto_text_fetched_blob`, `proto_text_fetched_enum`, `proto_text_fetched_set`, `proto_text_fetched_geometry`, `proto_text_fetched_other` | Connection, Process | Total number of columns of a certain type fetched from a normal query (MySQL text protocol). | Mapping from C API / MySQL meta data type to statistics name:<br>• `MYSQL_TYPE_NULL` - proto_text_fetched_null<br>• `MYSQL_TYPE_BIT` - proto_text_fetched_bit<br>• `MYSQL_TYPE_TINY` - proto_text_fetched_tinyint<br>• `MYSQL_TYPE_SHORT` - proto_text_fetched_short<br>• `MYSQL_TYPE_INT24` - proto_text_fetched_int24<br>• `MYSQL_TYPE_LONG` - proto_text_fetched_int<br>• `MYSQL_TYPE_LONGLONG` - proto_text_fetched_bigint<br>• `MYSQL_TYPE_DECIMAL`, `MYSQL_TYPE_NEWDECIMAL` - proto_text_fetched_decimal<br>• `MYSQL_TYPE_FLOAT` - proto_text_fetched_float |

| Statistic | Scope | Description | Notes |
|---|---|---|---|
| | | | • MYSQL_TYPE_DOUBLE - proto_text_fetched_double<br>• MYSQL_TYPE_DATE, MYSQL_TYPE_NEWDATE - proto_text_fetched_date<br>• MYSQL_TYPE_YEAR - proto_text_fetched_year<br>• MYSQL_TYPE_TIME - proto_text_fetched_time<br>• MYSQL_TYPE_DATETIME - proto_text_fetched_datetime<br>• MYSQL_TYPE_TIMESTAMP - proto_text_fetched_timestamp<br>• MYSQL_TYPE_STRING, MYSQL_TYPE_VARSTRING, MYSQL_TYPE_VARCHAR - proto_text_fetched_string<br>• MYSQL_TYPE_TINY_BLOB, MYSQL_TYPE_MEDIUM_BLOB, MYSQL_TYPE_LONG_BLOB, MYSQL_TYPE_BLOB - proto_text_fetched_blob<br>• MYSQL_TYPE_ENUM - proto_text_fetched_enum<br>• MYSQL_TYPE_SET - proto_text_fetched_set<br>• MYSQL_TYPE_GEOMETRY - proto_text_fetched_geometry<br>• Any MYSQL_TYPE_* not listed before (there should be none) - proto_text_fetched_other<br>Note that the MYSQL_*-type constants may not be associated with the very same SQL column types in every version of MySQL. |
| proto_binary_fetched_null, proto_binary_fetched_bit, proto_binary_fetched_tiny, proto_binary_fetched_short, proto_binary_fetched_int24, proto_binary_fetched_int, proto_binary_fetched_bigint, | Connection | Total number of columns of a certain type fetched from a prepared statement (MySQL binary protocol). | For type mapping see proto_text_* described in the preceding text. |

| Statistic | Scope | Description | Notes |
|---|---|---|---|
| proto_binary_fetched_decimal, proto_binary_fetched_float, proto_binary_fetched_double, proto_binary_fetched_date, proto_binary_fetched_year, proto_binary_fetched_time, proto_binary_fetched_datetime, proto_binary_fetched_timestamp, proto_binary_fetched_string, proto_binary_fetched_blob, proto_binary_fetched_enum, proto_binary_fetched_set, proto_binary_fetched_geometry, proto_binary_fetched_other | | | |

**Table 7.4 Returned mysqlnd statistics: Connection**

| Statistic | Scope | Description | Notes |
|---|---|---|---|
| connect_success, connect_failure | Connection | Total number of successful / failed connection attempt. | Reused connections and all other kinds of connections are included. |
| reconnect | Process | Total number of (real_)connect attempts made on an already opened connection handle. | The code sequence `$link = new mysqli(...); $link->real_connect(...)` will cause a reconnect. But `$link = new mysqli(...); $link->connect(...)` will not because `$link->connect(...)` will explicitly close the existing connection before a new connection is established. |
| pconnect_success | Connection | Total number of successful persistent connection attempts. | Note that `connect_success` holds the sum of successful persistent and non-persistent connection attempts. The number of successful non-persistent connection attempts is `connect_success` - `pconnect_success`. |
| active_connections | Connection | Total number of active persistent and non-persistent connections. | |
| active_persistent_connections | Connection | Total number of active persistent connections. | The total number of active non-persistent connections is `active_connections` - `active_persistent_connections`. |
| explicit_close | Connection | Total number of explicitly closed connections (ext/mysqli only). | Examples of code snippets that cause an explicit close :<br>`$link = new mysqli(...); $link->close(...)`<br>`$link = new mysqli(...); $link->connect(...)` |
| implicit_close | Connection | Total number of implicitly closed connections (ext/mysqli only). | Examples of code snippets that cause an implicit close : |

| Statistic | Scope | Description | Notes |
|---|---|---|---|
| | | | • `$link = new mysqli(...); $link->real_connect(...)`<br>• `unset($link)`<br>• Persistent connection: pooled connection has been created with real_connect and there may be unknown options set - close implicitly to avoid returning a connection with unknown options<br>• Persistent connection: ping/change_user fails and ext/mysqli closes the connection<br>• end of script execution: close connections that have not been closed by the user |
| `disconnect_close` | Connection | Connection failures indicated by the C API call `mysql_real_connect` during an attempt to establish a connection. | It is called `disconnect_close` because the connection handle passed to the C API call will be closed. |
| `in_middle_of_command_close` | Process | A connection has been closed in the middle of a command execution (outstanding result sets not fetched, after sending a query and before retrieving an answer, while fetching data, while transferring data with LOAD DATA). | Unless you use asynchronous queries this should only happen if your script stops unexpectedly and PHP shuts down the connections for you. |
| `init_command_executed_count` | Connection | Total number of init command executions, for example, `mysqli_options(MYSQLI_INIT_COMMAND, ...)`. | The number of successful executions is `init_command_executed_count` - `init_command_failed_count`. |
| `init_command_failed_count` | Connection | Total number of failed init commands. | |

**Table 7.5 Returned mysqlnd statistics: COM_* Command**

| Statistic | Scope | Description | Notes |
|---|---|---|---|
| `com_quit`, `com_init_db`, `com_query`, `com_field_list`, `com_create_db`, `com_drop_db`, `com_refresh`, `com_shutdown`, `com_statistics`, `com_process_info`, `com_connect`, `com_process_kill`, `com_debug`, `com_ping`, `com_time`, `com_delayed_insert`, | Connection | Total number of attempts to send a certain COM_* command from PHP to MySQL. | The statistics are incremented after checking the line and immediately before sending the corresponding MySQL client server protocol packet. If mysqlnd fails to send the packet over the wire the statistics will not be decremented. In case of a failure mysqlnd emits a PHP warning "Error while sending %s packet. PID=%d."<br><br>Usage examples:<br>• Check if PHP sends certain commands to MySQL, for example, check if a client sends `COM_PROCESS_KILL` |

| Statistic | Scope | Description | Notes |
|---|---|---|---|
| com_change_user, com_binlog_dump, com_table_dump, com_connect_out, com_register_slave, com_stmt_prepare, com_stmt_execute, com_stmt_send_long_data, com_stmt_close, com_stmt_reset, com_stmt_set_option, com_stmt_fetch, com_daemon | | | • Calculate the average number of prepared statement executions by comparing COM_EXECUTE with COM_PREPARE<br>• Check if PHP has run any non-prepared SQL statements by checking if COM_QUERY is zero<br>• Identify PHP scripts that run an excessive number of SQL statements by checking COM_QUERY and COM_EXECUTE |

*Miscellaneous*

**Table 7.6 Returned mysqlnd statistics: Miscellaneous**

| Statistic | Scope | Description | Notes |
|---|---|---|---|
| explicit_stmt_close, implicit_stmt_close | Process | Total number of close prepared statements. | A close is always considered explicit but for a failed prepare. |
| mem_emalloc_count, mem_emalloc_ammount, mem_ecalloc_count, mem_ecalloc_ammount, mem_erealloc_count, mem_erealloc_ammount, mem_efree_count, mem_malloc_count, mem_malloc_ammount, mem_calloc_count, mem_calloc_ammount, mem_realloc_count, mem_realloc_ammount, mem_free_count | Process | Memory management calls. | Development only. |
| command_buffer_too_small | Connection | Number of network command buffer extensions while sending commands from PHP to MySQL. | mysqlnd allocates an internal command/network buffer of mysqlnd.net_cmd_buffer_size (php.ini) bytes for every connection. If a MySQL Client Server protocol command, for example, COM_QUERY (normal query), does not fit into the buffer, mysqlnd will grow the buffer to what is needed for sending the command. Whenever the buffer gets extended for one connection command_buffer_too_small will be incremented by one.<br><br>If mysqlnd has to grow the buffer beyond its initial size of mysqlnd.net_cmd_buffer_size |

| Statistic | Scope | Description | Notes |
|---|---|---|---|
| | | | (`php.ini`) bytes for almost every connection, you should consider to increase the default size to avoid re-allocations.<br><br>The default buffer size is 4096 bytes, which is the smallest value possible. The default can changed either through the `php.ini` setting `mysqlnd.net_cmd_buffer_size` or using `mysqli_options(MYSQLI_OPT_NET_CMD_BUFF int size)`. |
| `connection_reused` | | | |

# 7.7 Notes

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This section provides a collection of miscellaneous notes on MySQL Native Driver usage.

- Using `mysqlnd` means using PHP streams for underlying connectivity. For `mysqlnd`, the PHP streams documentation (http://www.php.net/manual/en/book.stream) should be consulted on such details as timeout settings, not the documentation for the MySQL Client Library.

# 7.8 Memory management

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*Introduction*

The MySQL Native Driver manages memory different than the MySQL Client Library. The libraries differ in the way memory is allocated and released, how memory is allocated in chunks while reading results from MySQL, which debug and development options exist, and how results read from MySQL are linked to PHP user variables.

The following notes are intended as an introduction and summary to users interested at understanding the MySQL Native Driver at the C code level.

*Memory management functions used*

All memory allocation and deallocation is done using the PHP memory management functions. Therefore, the memory consumption of mysqlnd can be tracked using PHP API calls, such as `memory_get_usage`. Because memory is allocated and released using the PHP memory management, the changes may not immediately become visible at the operating system level. The PHP memory management acts as a proxy which may delay releasing memory towards the system. Due to this, comparing the memory usage of the MySQL Native Driver and the MySQL Client Library is difficult. The MySQL Client Library is using the operating system memory management calls directly, hence the effects can be observed immediately at the operating system level.

Any memory limit enforced by PHP also affects the MySQL Native Driver. This may cause out of memory errors when fetching large result sets that exceed the size of the remaining memory made available by PHP. Because the MySQL Client Library is not using PHP memory management functions, it does not comply to any PHP memory limit set. If using the MySQL Client Library, depending on the deployment

model, the memory footprint of the PHP process may grow beyond the PHP memory limit. But also PHP scripts may be able to process larger result sets as parts of the memory allocated to hold the result sets are beyond the control of the PHP engine.

PHP memory management functions are invoked by the MySQL Native Driver through a lightweight wrapper. Among others, the wrapper makes debugging easier.

*Handling of result sets*

The various MySQL Server and the various client APIs differentiate between buffered and unbuffered result sets. Unbuffered result sets are transferred row-by-row from MySQL to the client as the client iterates over the results. Buffered results are fetched in their entirety by the client library before passing them on to the client.

The MySQL Native Driver is using PHP Streams for the network communication with the MySQL Server. Results sent by MySQL are fetched from the PHP Streams network buffers into the result buffer of mysqlnd. The result buffer is made of zvals. In a second step the results are made available to the PHP script. This final transfer from the result buffer into PHP variables impacts the memory consumption and is mostly noticeable when using buffered result sets.

By default the MySQL Native Driver tries to avoid holding buffered results twice in memory. Results are kept only once in the internal result buffers and their zvals. When results are fetched into PHP variables by the PHP script, the variables will reference the internal result buffers. Database query results are not copied and kept in memory only once. Should the user modify the contents of a variable holding the database results a copy-on-write must be performed to avoid changing the referenced internal result buffer. The contents of the buffer must not be modified because the user may decide to read the result set a second time. The copy-on-write mechanism is implemented using an additional reference management list and the use of standard zval reference counters. Copy-on-write must also be done if the user reads a result set into PHP variables and frees a result set before the variables are unset.

Generally speaking, this pattern works well for scripts that read a result set once and do not modify variables holding results. Its major drawback is the memory overhead caused by the additional reference management which comes primarily from the fact that user variables holding results cannot be entirely released until the mysqlnd reference management stops referencing them. The MySQL Native driver removes the reference to the user variables when the result set is freed or a copy-on-write is performed. An observer will see the total memory consumption grow until the result set is released. Use the statistics to check whether a script does release result sets explicitly or the driver is does implicit releases and thus memory is used for a time longer than necessary. Statistics also help to see how many copy-on-write operations happened.

A PHP script reading many small rows of a buffered result set using a code snippet equal or equivalent to `while ($row = $res->fetch_assoc()) { ... }` may optimize memory consumption by requesting copies instead of references. Albeit requesting copies means keeping results twice in memory, it allows PHP to free the copy contained in `$row` as the result set is being iterated and prior to releasing the result set itself. On a loaded server optimizing peak memory usage may help improving the overall system performance although for an individual script the copy approach may be slower due to additional allocations and memory copy operations.

The copy mode can be enforced by setting mysqlnd.fetch_data_copy=1.

*Monitoring and debugging*

There are multiple ways of tracking the memory usage of the MySQL Native Driver. If the goal is to get a quick high level overview or to verify the memory efficiency of PHP scripts, then check the statistics collected by the library. The statistics allow you, for example, to catch SQL statements which generate more results than are processed by a PHP script.

The debug trace log can be configured to record memory management calls. This helps to see when memory is allocated or free'd. However, the size of the requested memory chunks may not be listed.

Some, recent versions of the MySQL Native Driver feature the emulation of random out of memory situations. This feature is meant to be used by the C developers of the library or mysqlnd plugin authors only. Please, search the source code for corresponding PHP configuration settings and further details. The feature is considered private and may be modified at any time without prior notice.

## 7.9 MySQL Native Driver Plugin API

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The MySQL Native Driver Plugin API is a feature of MySQL Native Driver, or `mysqlnd`. `Mysqlnd` plugins operate in the layer between PHP applications and the MySQL server. This is comparable to MySQL Proxy. MySQL Proxy operates on a layer between any MySQL client application, for example, a PHP application and, the MySQL server. `Mysqlnd` plugins can undertake typical MySQL Proxy tasks such as load balancing, monitoring and performance optimizations. Due to the different architecture and location, `mysqlnd` plugins do not have some of MySQL Proxy's disadvantages. For example, with plugins, there is no single point of failure, no dedicated proxy server to deploy, and no new programming language to learn (Lua).

A `mysqlnd` plugin can be thought of as an extension to `mysqlnd`. Plugins can intercept the majority of `mysqlnd` functions. The `mysqlnd` functions are called by the PHP MySQL extensions such as `ext/mysql`, `ext/mysqli`, and `PDO_MYSQL`. As a result, it is possible for a `mysqlnd` plugin to intercept all calls made to these extensions from the client application.

Internal `mysqlnd` function calls can also be intercepted, or replaced. There are no restrictions on manipulating `mysqlnd` internal function tables. It is possible to set things up so that when certain `mysqlnd` functions are called by the extensions that use `mysqlnd`, the call is directed to the appropriate function in the `mysqlnd` plugin. The ability to manipulate `mysqlnd` internal function tables in this way allows maximum flexibility for plugins.

`Mysqlnd` plugins are in fact PHP Extensions, written in C, that use the `mysqlnd` plugin API (which is built into MySQL Native Driver, `mysqlnd`). Plugins can be made 100% transparent to PHP applications. No application changes are needed because plugins operate on a different layer. The `mysqlnd` plugin can be thought of as operating in a layer below `mysqlnd`.

The following list represents some possible applications of `mysqlnd` plugins.

- Load Balancing
  - Read/Write Splitting. An example of this is the PECL/mysqlnd_ms (Master Slave) extension. This extension splits read/write queries for a replication setup.
  - Failover
  - Round-Robin, least loaded
- Monitoring
  - Query Logging
  - Query Analysis
  - Query Auditing. An example of this is the PECL/mysqlnd_sip (SQL Injection Protection) extension. This extension inspects queries and executes only those that are allowed according to a ruleset.

- Performance
  - Caching. An example of this is the PECL/mysqlnd_qc (Query Cache) extension.
  - Throttling
  - Sharding. An example of this is the PECL/mysqlnd_mc (Multi Connect) extension. This extension will attempt to split a SELECT statement into n-parts, using SELECT ... LIMIT part_1, SELECT LIMIT part_n. It sends the queries to distinct MySQL servers and merges the result at the client.

*MySQL Native Driver Plugins Available*

There are a number of mysqlnd plugins already available. These include:

- *PECL/mysqlnd_mc* - Multi Connect plugin.
- *PECL/mysqlnd_ms* - Master Slave plugin.
- *PECL/mysqlnd_qc* - Query Cache plugin.
- *PECL/mysqlnd_pscache* - Prepared Statement Handle Cache plugin.
- *PECL/mysqlnd_sip* - SQL Injection Protection plugin.
- *PECL/mysqlnd_uh* - User Handler plugin.

## 7.9.1 A comparison of mysqlnd plugins with MySQL Proxy

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`Mysqlnd` plugins and MySQL Proxy are different technologies using different approaches. Both are valid tools for solving a variety of common tasks such as load balancing, monitoring, and performance enhancements. An important difference is that MySQL Proxy works with all MySQL clients, whereas `mysqlnd` plugins are specific to PHP applications.

As a PHP Extension, a `mysqlnd` plugin gets installed on the PHP application server, along with the rest of PHP. MySQL Proxy can either be run on the PHP application server or can be installed on a dedicated machine to handle multiple PHP application servers.

Deploying MySQL Proxy on the application server has two advantages:

1. No single point of failure
2. Easy to scale out (horizontal scale out, scale by client)

MySQL Proxy (and `mysqlnd` plugins) can solve problems easily which otherwise would have required changes to existing applications.

However, MySQL Proxy does have some disadvantages:

- MySQL Proxy is a new component and technology to master and deploy.
- MySQL Proxy requires knowledge of the Lua scripting language.

MySQL Proxy can be customized with C and Lua programming. Lua is the preferred scripting language of MySQL Proxy. For most PHP experts Lua is a new language to learn. A `mysqlnd` plugin can be written in C. It is also possible to write plugins in PHP using PECL/mysqlnd_uh.

MySQL Proxy runs as a daemon - a background process. MySQL Proxy can recall earlier decisions, as all state can be retained. However, a `mysqlnd` plugin is bound to the request-based lifecycle of PHP. MySQL Proxy can also share one-time computed results among multiple application servers. A `mysqlnd` plugin would need to store data in a persistent medium to be able to do this. Another daemon would need to be used for this purpose, such as Memcache. This gives MySQL Proxy an advantage in this case.

MySQL Proxy works on top of the wire protocol. With MySQL Proxy you have to parse and reverse engineer the MySQL Client Server Protocol. Actions are limited to those that can be achieved by manipulating the communication protocol. If the wire protocol changes (which happens very rarely) MySQL Proxy scripts would need to be changed as well.

`Mysqlnd` plugins work on top of the C API, which mirrors the `libmysqlclient` client. This C API is basically a wrapper around the MySQL Client Server protocol, or wire protocol, as it is sometimes called. You can intercept all C API calls. PHP makes use of the C API, therefore you can hook all PHP calls, without the need to program at the level of the wire protocol.

`Mysqlnd` implements the wire protocol. Plugins can therefore parse, reverse engineer, manipulate and even replace the communication protocol. However, this is usually not required.

As plugins allow you to create implementations that use two levels (C API and wire protocol), they have greater flexibility than MySQL Proxy. If a `mysqlnd` plugin is implemented using the C API, any subsequent changes to the wire protocol do not require changes to the plugin itself.

## 7.9.2 Obtaining the mysqlnd plugin API

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The `mysqlnd` plugin API is simply part of the MySQL Native Driver PHP extension, `ext/mysqlnd`. Development started on the `mysqlnd` plugin API in December 2009. It is developed as part of the PHP source repository, and as such is available to the public either via Git, or through source snapshot downloads.

Plugin developers can determine the `mysqlnd` version through accessing `MYSQLND_VERSION`, which is a string of the format “mysqlnd 5.0.7-dev - 091210 - $Revision: 300535”, or through `MYSQLND_VERSION_ID`, which is an integer such as 50007. Developers can calculate the version number as follows:

**Table 7.7 MYSQLND_VERSION_ID calculation table**

| Version (part) | Example |
|---|---|
| Major*10000 | 5*10000 = 50000 |
| Minor*100 | 0*100 = 0 |
| Patch | 7 = 7 |
| MYSQLND_VERSION_ID | 50007 |

During development, developers should refer to the `mysqlnd` version number for compatibility and version tests, as several iterations of `mysqlnd` could occur during the lifetime of a PHP development branch with a single PHP version number.

## 7.9.3 MySQL Native Driver Plugin Architecture

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This section provides an overview of the `mysqlnd` plugin architecture.

*MySQL Native Driver Overview*

Before developing `mysqlnd` plugins, it is useful to know a little of how `mysqlnd` itself is organized. `Mysqlnd` consists of the following modules:

**Table 7.8 The mysqlnd organization chart, per module**

| Modules Statistics | mysqlnd_statistics.c |
|---|---|
| Connection | mysqlnd.c |
| Resultset | mysqlnd_result.c |
| Resultset Metadata | mysqlnd_result_meta.c |
| Statement | mysqlnd_ps.c |
| Network | mysqlnd_net.c |
| Wire protocol | mysqlnd_wireprotocol.c |

*C Object-Oriented Paradigm*

At the code level, `mysqlnd` uses a C pattern for implementing object orientation.

In C you use a `struct` to represent an object. Members of the struct represent object properties. Struct members pointing to functions represent methods.

Unlike with other languages such as C++ or Java, there are no fixed rules on inheritance in the C object-oriented paradigm. However, there are some conventions that need to be followed that will be discussed later.

*The PHP Life Cycle*

When considering the PHP life cycle there are two basic cycles:

- PHP engine startup and shutdown cycle
- Request cycle

When the PHP engine starts up it will call the module initialization (MINIT) function of each registered extension. This allows each module to setup variables and allocate resources that will exist for the lifetime of the PHP engine process. When the PHP engine shuts down it will call the module shutdown (MSHUTDOWN) function of each extension.

During the lifetime of the PHP engine it will receive a number of requests. Each request constitutes another life cycle. On each request the PHP engine will call the request initialization function of each extension. The extension can perform any variable setup and resource allocation required for request processing. As the request cycle ends the engine calls the request shutdown (RSHUTDOWN) function of each extension so the extension can perform any cleanup required.

*How a plugin works*

A `mysqlnd` plugin works by intercepting calls made to `mysqlnd` by extensions that use `mysqlnd`. This is achieved by obtaining the `mysqlnd` function table, backing it up, and replacing it by a custom function table, which calls the functions of the plugin as required.

The following code shows how the `mysqlnd` function table is replaced:

```
/* a place to store original function table */
struct st_mysqlnd_conn_methods org_methods;

void minit_register_hooks(TSRMLS_D) {
```

```
  /* active function table */
  struct st_mysqlnd_conn_methods * current_methods
    = mysqlnd_conn_get_methods();

  /* backup original function table */
  memcpy(&org_methods, current_methods,
    sizeof(struct st_mysqlnd_conn_methods);

  /* install new methods */
  current_methods->query = MYSQLND_METHOD(my_conn_class, query);
}
```

Connection function table manipulations must be done during Module Initialization (MINIT). The function table is a global shared resource. In an multi-threaded environment, with a TSRM build, the manipulation of a global shared resource during the request processing will almost certainly result in conflicts.

> **Note**
>
> Do not use any fixed-size logic when manipulating the `mysqlnd` function table: new methods may be added at the end of the function table. The function table may change at any time in the future.

*Calling parent methods*

If the original function table entries are backed up, it is still possible to call the original function table entries - the parent methods.

In some cases, such as for `Connection::stmt_init()`, it is vital to call the parent method prior to any other activity in the derived method.

```
MYSQLND_METHOD(my_conn_class, query)(MYSQLND *conn,
  const char *query, unsigned int query_len TSRMLS_DC) {

  php_printf("my_conn_class::query(query = %s)\n", query);

  query = "SELECT 'query rewritten' FROM DUAL";
  query_len = strlen(query);

  return org_methods.query(conn, query, query_len); /* return with call to parent */
}
```

*Extending properties*

A `mysqlnd` object is represented by a C struct. It is not possible to add a member to a C struct at run time. Users of `mysqlnd` objects cannot simply add properties to the objects.

Arbitrary data (properties) can be added to a `mysqlnd` objects using an appropriate function of the `mysqlnd_plugin_get_plugin_<object>_data()` family. When allocating an object `mysqlnd` reserves space at the end of the object to hold a `void *` pointer to arbitrary data. `mysqlnd` reserves space for one `void *` pointer per plugin.

The following table shows how to calculate the position of the pointer for a specific plugin:

**Table 7.9 Pointer calculations for mysqlnd**

| Memory address | Contents |
|---|---|
| 0 | Beginning of the mysqlnd object C struct |
| n | End of the mysqlnd object C struct |

| Memory address | Contents |
|---|---|
| n + (m x sizeof(void*)) | void* to object data of the m-th plugin |

If you plan to subclass any of the `mysqlnd` object constructors, which is allowed, you must keep this in mind!

The following code shows extending properties:

```
/* any data we want to associate */
typedef struct my_conn_properties {
  unsigned long query_counter;
} MY_CONN_PROPERTIES;

/* plugin id */
unsigned int my_plugin_id;

void minit_register_hooks(TSRMLS_D) {
  /* obtain unique plugin ID */
  my_plugin_id = mysqlnd_plugin_register();
  /* snip - see Extending Connection: methods */
}

static MY_CONN_PROPERTIES** get_conn_properties(const MYSQLND *conn TSRMLS_DC) {
  MY_CONN_PROPERTIES** props;
  props = (MY_CONN_PROPERTIES**)mysqlnd_plugin_get_plugin_connection_data(
    conn, my_plugin_id);
  if (!props || !(*props)) {
    *props = mnd_pecalloc(1, sizeof(MY_CONN_PROPERTIES), conn->persistent);
    (*props)->query_counter = 0;
  }
  return props;
}
```

The plugin developer is responsible for the management of plugin data memory.

Use of the `mysqlnd` memory allocator is recommended for plugin data. These functions are named using the convention: `mnd_*loc()`. The `mysqlnd` allocator has some useful features, such as the ability to use a debug allocator in a non-debug build.

**Table 7.10 When and how to subclass**

| | When to subclass? | Each instance has its own private function table? | How to subclass? |
|---|---|---|---|
| Connection (MYSQLND) | MINIT | No | mysqlnd_conn_get_methods() |
| Resultset (MYSQLND_RES) | MINIT or later | Yes | mysqlnd_result_get_methods() or object method function table manipulation |
| Resultset Meta (MYSQLND_RES_METADATA) | MINIT | No | mysqlnd_result_metadata_get_method |
| Statement (MYSQLND_STMT) | MINIT | No | mysqlnd_stmt_get_methods() |
| Network (MYSQLND_NET) | MINIT or later | Yes | mysqlnd_net_get_methods() or object method function table manipulation |

| | When to subclass? | Each instance has its own private function table? | How to subclass? |
|---|---|---|---|
| Wire protocol (MYSQLND_PROTOCOL) | MINIT or later | Yes | mysqlnd_protocol_get_methods() or object method function table manipulation |

You must not manipulate function tables at any time later than MINIT if it is not allowed according to the above table.

Some classes contain a pointer to the method function table. All instances of such a class will share the same function table. To avoid chaos, in particular in threaded environments, such function tables must only be manipulated during MINIT.

Other classes use copies of a globally shared function table. The class function table copy is created together with the object. Each object uses its own function table. This gives you two options: you can manipulate the default function table of an object at MINIT, and you can additionally refine methods of an object without impacting other instances of the same class.

The advantage of the shared function table approach is performance. There is no need to copy a function table for each and every object.

**Table 7.11 Constructor status**

| Type | Allocation, construction, reset | Can be modified? | Caller |
|---|---|---|---|
| Connection (MYSQLND) | mysqlnd_init() | No | mysqlnd_connect() |
| Resultset(MYSQLND_RES) | Allocation:<br>• Connection::result_init()<br>Reset and re-initialized during:<br>• Result::use_result()<br>• Result::store_result | Yes, but call parent! | • Connection::list_fields()<br>• Statement::get_result()<br>• Statement::prepare() (Metadata only)<br>• Statement::resultMetaData() |
| Resultset Meta (MYSQLND_RES_METADATA) | Connection::result_meta_init() | Yes, but call parent! | Result::read_result_metadata() |
| Statement (MYSQLND_STMT) | Connection::stmt_init() | Yes, but call parent! | Connection::stmt_init() |
| Network (MYSQLND_NET) | mysqlnd_net_init() | No | Connection::init() |
| Wire protocol (MYSQLND_PROTOCOL) | mysqlnd_protocol_init() | No | Connection::init() |

It is strongly recommended that you do not entirely replace a constructor. The constructors perform memory allocations. The memory allocations are vital for the `mysqlnd` plugin API and the object logic of `mysqlnd`. If you do not care about warnings and insist on hooking the constructors, you should at least call the parent constructor before doing anything in your constructor.

Regardless of all warnings, it can be useful to subclass constructors. Constructors are the perfect place for modifying the function tables of objects with non-shared object tables, such as Resultset, Network, Wire Protocol.

**Table 7.12 Destruction status**

| Type | Derived method must call parent? | Destructor |
|---|---|---|
| Connection | yes, after method execution | free_contents(), end_psession() |
| Resultset | yes, after method execution | free_result() |
| Resultset Meta | yes, after method execution | free() |
| Statement | yes, after method execution | dtor(), free_stmt_content() |
| Network | yes, after method execution | free() |
| Wire protocol | yes, after method execution | free() |

The destructors are the appropriate place to free properties, `mysqlnd_plugin_get_plugin_<object>_data()`.

The listed destructors may not be equivalent to the actual `mysqlnd` method freeing the object itself. However, they are the best possible place for you to hook in and free your plugin data. As with constructors you may replace the methods entirely but this is not recommended. If multiple methods are listed in the above table you will need to hook all of the listed methods and free your plugin data in whichever method is called first by `mysqlnd`.

The recommended method for plugins is to simply hook the methods, free your memory and call the parent implementation immediately following this.

## 7.9.4 The mysqlnd plugin API

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The following is a list of functions provided in the `mysqlnd` plugin API:

- mysqlnd_plugin_register()
- mysqlnd_plugin_count()
- mysqlnd_plugin_get_plugin_connection_data()
- mysqlnd_plugin_get_plugin_result_data()
- mysqlnd_plugin_get_plugin_stmt_data()
- mysqlnd_plugin_get_plugin_net_data()
- mysqlnd_plugin_get_plugin_protocol_data()
- mysqlnd_conn_get_methods()
- mysqlnd_result_get_methods()
- mysqlnd_result_meta_get_methods()
- mysqlnd_stmt_get_methods()
- mysqlnd_net_get_methods()
- mysqlnd_protocol_get_methods()

There is no formal definition of what a plugin is and how a plugin mechanism works.

Components often found in plugins mechanisms are:

- A plugin manager
- A plugin API
- Application services (or modules)
- Application service APIs (or module APIs)

The `mysqlnd` plugin concept employs these features, and additionally enjoys an open architecture.

*No Restrictions*

A plugin has full access to the inner workings of `mysqlnd`. There are no security limits or restrictions. Everything can be overwritten to implement friendly or hostile algorithms. It is recommended you only deploy plugins from a trusted source.

As discussed previously, plugins can use pointers freely. These pointers are not restricted in any way, and can point into another plugin's data. Simple offset arithmetic can be used to read another plugin's data.

It is recommended that you write cooperative plugins, and that you always call the parent method. The plugins should always cooperate with `mysqlnd` itself.

**Table 7.13 Issues: an example of chaining and cooperation**

| Extension | mysqlnd.query() pointer | call stack if calling parent |
|---|---|---|
| ext/mysqlnd | mysqlnd.query() | mysqlnd.query |
| ext/mysqlnd_cache | mysqlnd_cache.query() | 1. mysqlnd_cache.query()<br>2. mysqlnd.query |
| ext/mysqlnd_monitor | mysqlnd_monitor.query() | 1. mysqlnd_monitor.query()<br>2. mysqlnd_cache.query()<br>3. mysqlnd.query |

In this scenario, a cache (`ext/mysqlnd_cache`) and a monitor (`ext/mysqlnd_monitor`) plugin are loaded. Both subclass `Connection::query()`. Plugin registration happens at `MINIT` using the logic shown previously. PHP calls extensions in alphabetical order by default. Plugins are not aware of each other and do not set extension dependencies.

By default the plugins call the parent implementation of the query method in their derived version of the method.

*PHP Extension Recap*

This is a recap of what happens when using an example plugin, `ext/mysqlnd_plugin`, which exposes the `mysqlnd` C plugin API to PHP:

- Any PHP MySQL application tries to establish a connection to 192.168.2.29
- The PHP application will either use `ext/mysql`, `ext/mysqli` or `PDO_MYSQL`. All three PHP MySQL extensions use `mysqlnd` to establish the connection to 192.168.2.29.
- `Mysqlnd` calls its connect method, which has been subclassed by `ext/mysqlnd_plugin`.

- `ext/mysqlnd_plugin` calls the userspace hook `proxy::connect()` registered by the user.
- The userspace hook changes the connection host IP from 192.168.2.29 to 127.0.0.1 and returns the connection established by `parent::connect()`.
- `ext/mysqlnd_plugin` performs the equivalent of `parent::connect(127.0.0.1)` by calling the original `mysqlnd` method for establishing a connection.
- `ext/mysqlnd` establishes a connection and returns to `ext/mysqlnd_plugin`. `ext/mysqlnd_plugin` returns as well.
- Whatever PHP MySQL extension had been used by the application, it receives a connection to 127.0.0.1. The PHP MySQL extension itself returns to the PHP application. The circle is closed.

## 7.9.5 Getting started building a mysqlnd plugin

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It is important to remember that a `mysqlnd` plugin is itself a PHP extension.

The following code shows the basic structure of the MINIT function that will be used in the typical `mysqlnd` plugin:

```
/* my_php_mysqlnd_plugin.c */

 static PHP_MINIT_FUNCTION(mysqlnd_plugin) {
  /* globals, ini entries, resources, classes */

  /* register mysqlnd plugin */
  mysqlnd_plugin_id = mysqlnd_plugin_register();

  conn_m = mysqlnd_get_conn_methods();
  memcpy(org_conn_m, conn_m,
    sizeof(struct st_mysqlnd_conn_methods));

  conn_m->query = MYSQLND_METHOD(mysqlnd_plugin_conn, query);
  conn_m->connect = MYSQLND_METHOD(mysqlnd_plugin_conn, connect);
}
```

```
/* my_mysqlnd_plugin.c */

 enum_func_status MYSQLND_METHOD(mysqlnd_plugin_conn, query)(/* ... */) {
  /* ... */
}
enum_func_status MYSQLND_METHOD(mysqlnd_plugin_conn, connect)(/* ... */) {
  /* ... */
}
```

*Task analysis: from C to userspace*

```
 class proxy extends mysqlnd_plugin_connection {
  public function connect($host, ...) { .. }
}
mysqlnd_plugin_set_conn_proxy(new proxy());
```

Process:

1. PHP: user registers plugin callback
2. PHP: user calls any PHP MySQL API to connect to MySQL
3. C: ext/*mysql* calls mysqlnd method
4. C: mysqlnd ends up in ext/mysqlnd_plugin
5. C: ext/mysqlnd_plugin
    a. Calls userspace callback
    b. Or original `mysqlnd` method, if userspace callback not set

You need to carry out the following:

1. Write a class "mysqlnd_plugin_connection" in C
2. Accept and register proxy object through "mysqlnd_plugin_set_conn_proxy()"
3. Call userspace proxy methods from C (optimization - zend_interfaces.h)

Userspace object methods can either be called using `call_user_function()` or you can operate at a level closer to the Zend Engine and use `zend_call_method()`.

*Optimization: calling methods from C using zend_call_method*

The following code snippet shows the prototype for the `zend_call_method` function, taken from `zend_interfaces.h`.

```
ZEND_API zval* zend_call_method(
  zval **object_pp, zend_class_entry *obj_ce,
  zend_function **fn_proxy, char *function_name,
  int function_name_len, zval **retval_ptr_ptr,
  int param_count, zval* arg1, zval* arg2 TSRMLS_DC
);
```

Zend API supports only two arguments. You may need more, for example:

```
enum_func_status (*func_mysqlnd_conn__connect)(
  MYSQLND *conn, const char *host,
  const char * user, const char * passwd,
  unsigned int passwd_len, const char * db,
  unsigned int db_len, unsigned int port,
  const char * socket, unsigned int mysql_flags TSRMLS_DC
);
```

To get around this problem you will need to make a copy of `zend_call_method()` and add a facility for additional parameters. You can do this by creating a set of `MY_ZEND_CALL_METHOD_WRAPPER` macros.

*Calling PHP userspace*

This code snippet shows the optimized method for calling a userspace function from C:

```
/* my_mysqlnd_plugin.c */
```

```
MYSQLND_METHOD(my_conn_class,connect)(
  MYSQLND *conn, const char *host /* ... */ TSRMLS_DC) {
  enum_func_status ret = FAIL;
  zval * global_user_conn_proxy = fetch_userspace_proxy();
  if (global_user_conn_proxy) {
    /* call userspace proxy */
    ret = MY_ZEND_CALL_METHOD_WRAPPER(global_user_conn_proxy, host, /*...*/);
  } else {
    /* or original mysqlnd method = do nothing, be transparent */
    ret = org_methods.connect(conn, host, user, passwd,
          passwd_len, db, db_len, port,
          socket, mysql_flags TSRMLS_CC);
  }
  return ret;
}
```

*Calling userspace: simple arguments*

```
/* my_mysqlnd_plugin.c */

 MYSQLND_METHOD(my_conn_class,connect)(
  /* ... */, const char *host, /* ...*/) {
  /* ... */
  if (global_user_conn_proxy) {
    /* ... */
    zval* zv_host;
    MAKE_STD_ZVAL(zv_host);
    ZVAL_STRING(zv_host, host, 1);
    MY_ZEND_CALL_METHOD_WRAPPER(global_user_conn_proxy, zv_retval, zv_host /*, ...*/);
    zval_ptr_dtor(&zv_host);
    /* ... */
  }
  /* ... */
}
```

*Calling userspace: structs as arguments*

```
/* my_mysqlnd_plugin.c */

MYSQLND_METHOD(my_conn_class, connect)(
  MYSQLND *conn, /* ...*/) {
  /* ... */
  if (global_user_conn_proxy) {
    /* ... */
    zval* zv_conn;
    ZEND_REGISTER_RESOURCE(zv_conn, (void *)conn, le_mysqlnd_plugin_conn);
    MY_ZEND_CALL_METHOD_WRAPPER(global_user_conn_proxy, zv_retval, zv_conn, zv_host /*, ...*/);
    zval_ptr_dtor(&zv_conn);
    /* ... */
  }
  /* ... */
}
```

The first argument of many `mysqlnd` methods is a C "object". For example, the first argument of the connect() method is a pointer to `MYSQLND`. The struct MYSQLND represents a `mysqlnd` connection object.

The `mysqlnd` connection object pointer can be compared to a standard I/O file handle. Like a standard I/O file handle a `mysqlnd` connection object shall be linked to the userspace using the PHP resource variable type.

*From C to userspace and back*

```
 class proxy extends mysqlnd_plugin_connection {
  public function connect($conn, $host, ...) {
    /* "pre" hook */
    printf("Connecting to host = '%s'\n", $host);
    debug_print_backtrace();
    return parent::connect($conn);
  }

  public function query($conn, $query) {
    /* "post" hook */
    $ret = parent::query($conn, $query);
    printf("Query = '%s'\n", $query);
    return $ret;
  }
}
mysqlnd_plugin_set_conn_proxy(new proxy());
```

PHP users must be able to call the parent implementation of an overwritten method.

As a result of subclassing it is possible to refine only selected methods and you can choose to have "pre" or "post" hooks.

*Buildin class: mysqlnd_plugin_connection::connect()*

```
/*  my_mysqlnd_plugin_classes.c */

 PHP_METHOD("mysqlnd_plugin_connection", connect) {
  /* ... simplified! ... */
  zval* mysqlnd_rsrc;
  MYSQLND* conn;
  char* host; int host_len;
  if (zend_parse_parameters(ZEND_NUM_ARGS() TSRMLS_CC, "rs",
    &mysqlnd_rsrc, &host, &host_len) == FAILURE) {
    RETURN_NULL();
  }
  ZEND_FETCH_RESOURCE(conn, MYSQLND* conn, &mysqlnd_rsrc, -1,
    "Mysqlnd Connection", le_mysqlnd_plugin_conn);
  if (PASS == org_methods.connect(conn, host, /* simplified! */ TSRMLS_CC))
    RETVAL_TRUE;
  else
    RETVAL_FALSE;
}
```

- `Error: Maximum Execution Time Exceeded`: This is a PHP limit; go into the `php.ini` file and set the maximum execution time up from 30 seconds to something higher, as needed. It is also not a bad idea to double the RAM allowed per script to 16MB instead of 8MB.
- `Fatal error: Call to unsupported or undefined function mysql_connect() in ...`: This means that your PHP version isn't compiled with MySQL support. You can either compile a dynamic MySQL module and load it into PHP or recompile PHP with built-in MySQL support. This process is described in detail in the PHP manual.
- `Error: Undefined reference to 'uncompress'`: This means that the client library is compiled with support for a compressed client/server protocol. The fix is to add `-lz` last when linking with `-lmysqlclient`.