

New and Changed Entries November 2008

The following selected new and changed entries are effective on November 1. The changes include updated entries for computer science and related topics in Table 1, 004-006, 025.04, 302, 621, and 629. Changes to schedule numbers are indicated only by underlining. Other changes are underlined, and deletions are marked by strikethroughs. Schedule entries without underlining or strikethroughs are old entries that are included for context. Please consult WebDewey for complete access to all updates to DDC 22, and Abridged WebDewey for complete access to all updates to Abridged Edition 14.

Edition 22

Table 1. Standard Subdivisions

—028 5 Data processing Computer applications

Class here data processing in research

Unless it is redundant, add to base number —0285 the numbers following 00 in 004–006, e.g., digital ~~microcomputers~~ personal computers —0285416, but digital computers —0285 (*not* —02854)

Class computer modeling and simulation in —0113; class interdisciplinary works on data processing in 004

See Manual at T1—0285; also at 510, T1—0151 vs. 004–006, T1—0285

—078 5 Computer-assisted instruction

Unless it is redundant, add to base number —0785 the numbers following 00 in 004–006, e.g., use of digital ~~microcomputers~~ personal computers —0785416, but digital computers —0785 (*not* —07854); interactive video —078567

Class interdisciplinary works on computer-assisted instruction in 371.334

Schedules

≥ 004–006 Computer science; computer programming, programs, data; special computer methods

Unless other instructions are given, class a subject with aspects in two or more subdivisions of 004–006 in the number coming last, e.g., external storage for personal computers 004.56 (*not* 004.16), data security in client-server computing 005.8 (*not* 004.36), natural language processing in full-text database management

systems 006.35 (not 005.759)

Class comprehensive works in 004

004 ~~Data processing~~— Computer science

Class here data processing; selection and use of computer hardware; electronic computers; electronic digital computers; computer systems (computers, their peripheral devices, their operating systems); central processing units; computer reliability; interactive, online processing; comprehensive works on hardware and programs in electronic data processing

~~Unless other instructions are given, class a subject with aspects in two or more subdivisions of 004 in the number coming last, e.g., external storage for microcomputers 004.56 (not 004.16)~~

Class computer modeling and simulation in 003.3. Class ~~data processing and~~ computer science and data processing applied to a specific subject or discipline with the subject or discipline, plus notation 0285 from Table 1, e.g., data processing in banking 332.10285

For computer programming, programs, data, see 005; for special computer methods, see 006; for engineering, manufacture, repair of computers, see 621.39

See also 025.04 for automated information storage and retrieval; also 303.4834 for computers as a cause of social change; also 343.0999 for computer law; also 364.168 for financial and business computer crimes; also 371.334 for computer-assisted instruction (CAI); also 658.05 for data processing in management; also 794.8 for computer games

See Manual at ~~004–006~~; also at 004–006 vs. 621.39; also at 004 vs. 005; also at 510, T1–0151 vs. 004–006, T1–0285

004.1 General works on specific types of computers

Class here specific types of processors, computer systems based on specific types of computers, comprehensive works on embedded computer systems

Class specific types of computers, processors, computer systems distinguished by their processing modes in 004.3; class programmable calculators in 510.28541

For a specific aspect of embedded computer systems, see the aspect, e.g., systems analysis and design of embedded computer systems 004.21, software for embedded systems 005.3

See Manual at 004.1; also at 004.1 vs. 004.24; also at 004.1 vs. 004.3

> 004.11-004.16 Digital computers

Multifunctional digital devices are classed with their predominant function, e.g., personal digital assistants (PDAs), which often include mobile phone and portable media player capabilities in addition to their baseline computing capabilities, with handheld computing devices 004.167. However, a work that focuses on a specific function other than the predominant function is classed with the specific function, e.g., audio recording using a personal computer 006.5

Class comprehensive works in 004

See Manual at 004.11-004.16

004.12 *Mainframe computers

Class here large-scale digital computers

For supercomputers, see 004.11; for ~~minicomputers~~ midrange computers, see 004.14

004.125 Specific mainframe computers

Arrange alphabetically by name of computer or processor, e.g., IBM System/390 z9[®]

004.14 *~~Minicomputers~~ Midrange computers

Class here ~~midrange computers~~ minicomputers, server class computers

Class comprehensive works on ~~digital minicomputers and microcomputers~~ midrange and personal computers in 004.16

004.145 Specific ~~minicomputers~~ midrange computers

Arrange alphabetically by name of ~~mini~~computer or processor, e.g., IBM AS/400[®] Dell PowerEdge[®] 1955

004.16 *~~Microcomputers~~ Personal computers

Class here microcomputers; laptop, notebook, ~~palmtop~~, pen, ~~personal~~, ~~pocket~~, portable, tablet, wearable computers; workstations; comprehensive works on ~~minicomputers and microcomputers~~ midrange and personal computers

For ~~minicomputers~~ midrange computers, see 004.14

004.165 Specific ~~microcomputers~~ personal computers

Arrange alphabetically by name of ~~mini~~computer or processor, e.g., Apple

iMacintosh®

Specific handheld computing devices relocated to 004.1675

004.167

*Handheld computing devices

Class here palmtop, pocket computers; personal digital assistants (PDAs)

004.167 5

Specific handheld computing devices [formerly 004.165]

Arrange alphabetically by name of computer or processor, e.g.,
BlackBerry®

004.24

*Performance evaluation

Class here performance measurement and evaluation to aid in designing or improving the performance of a computer system

Class performance evaluation as a consideration in purchasing a specific item with the item in 004, plus notation 029 from Table 1, e.g., evaluating ~~microcomputers~~ personal computers for purchase 004.16029

See also 004.0685 for management techniques to ensure quality control in data processing

See Manual at 004.1 vs. 004.24

004.25

Systems analysis and design, computer architecture, performance evaluation of specific types of electronic computers

Add to base number 004.25 the numbers following 004.1 in 004.11–004.19, e.g., architecture of ~~microcomputers~~ personal computers 004.256

For systems analysis and design, computer architecture, performance evaluation of specific types of computers distinguished by processing mode, see 004.3

004.35

*Multiprocessing

Including systems analysis and design, computer architecture, performance evaluation of ~~multiprocessor computers~~; array processing, associative processing, dataflow computation

Class here cluster computing, massively parallel supercomputers, parallel processing

Class comprehensive works on associative processing and memory in 004.5; class programming for multiprocessor computers in 005.275

- 004.36 *Distributed processing
- Including systems analysis and design, computer architecture, performance evaluation of ~~distributed computer systems~~
- Class here client-server ~~computer systems~~ computing, grid computing
- See also 004.6 for computer communications networks; also 005.758 for distributed databases*
- 004.61 Interfacing and communications for specific types of electronic computers
- 004.611–.616 *Digital computers
- Add to base number 004.61 the numbers following 004.1 in 004.11–004.16, e.g., interfacing and communications for ~~microcomputers~~ personal computers 004.616
- 004.618 *Computers distinguished by processing modes
- Add to base number 004.618 the numbers following 004.3 in 004.33–004.36, e.g., ~~distributed computers~~ 004.6186 parallel processing computers 004.6185
- 004.65 *Communications network architecture
- Class here systems analysis, design, topology (configuration) of computer communications networks
- 004.652 *Peer-to-peer (P2P) architecture
- Class here peer-to-peer (P2P) networks
- For client-server computing, see 004.36*
- 004.654 *Service-oriented architecture
- 004.678 *Internet (~~World Wide Web~~)
- Including extranets, virtual private networks
- Class here World Wide Web
- Interdisciplinary works on World Wide Web relocated to 025.042
- Class a specific regional or national network with the area served, e.g., ~~Janet~~ 004.6780941 BiblioRedes (Chilean network) 004.6780983

For Internet, (World Wide Web) as ~~an~~ information systems, see 025.042

See Manual at 004.678 vs. 006.7, 025.042, 384.33

004.69 Specific kinds of computer communications

Class computer communications in multimedia systems in ~~006.7~~ with the system, e.g., online social networks 006.754

005 Computer programming, programs, data

Class here software compatibility, portability, reliability, reusability

~~Unless other instructions are given, class a subject with aspects in two or more subdivisions of 005 in the number coming last, e.g., designing object oriented C++ programs 005.133 (not 005.117 or 005.12)~~

Class computer programming, programs, data for special computer methods in 006; class comprehensive works on hardware and programs in electronic data processing in 004

See Manual at ~~004-006; also at~~ 004-006 vs. 621.39; also at 004 vs. 005; also at 510, T1-0151 vs. 004-006, T1-0285

005.1 *Programming

Class here application programming, computer algorithms, software engineering

Class algorithms discussed solely from a theoretical perspective, without regard to computer implementation, in 518.1. Class a specific application of programming within computer science with the application in 005.4-006, e.g., programming of computer graphics 006.66

For programming for specific types of computers, for specific operating systems, for specific user interfaces, see 005.2

See Manual at 005.1-005.2 vs. 005.42; also at 005.1 vs. 005.3

005.18 †*Microprogramming and microprograms [*formerly* 005.6]

Microprogramming means writing programs in which each instruction specifies a minute operation of the computer

Including firmware viewed as microprograms, firmware development, microassembly languages, microcode

Class firmware viewed as hardware in 004; class programming for ~~microcomputers~~ personal computers in 005.26; class programs for ~~microcomputers~~ personal computers in 005.36

005.24 †*Programming for ~~minicomputers~~ midrange computers

Class here programming for minicomputers, server class computers

Add to base number 005.24 the numbers following 005.26 in 005.262–005.269, e.g., programming for the ~~IBM AS/400~~ Dell PowerEdge 1955[®] 005.245

Class comprehensive works on programming for midrange and personal computers in 005.26

005.26 †*Programming for ~~microcomputers~~ personal computers

Including programming for handheld computing devices

Class here programming for ~~personal computers~~, microcomputers; for laptop, notebook, pen, portable, tablet, wearable computers; for workstations; comprehensive works on programming for ~~minicomputers and microcomputers~~ minicomputers and microcomputers ~~midrange and personal computers~~

For programming for ~~minicomputers~~ midrange computers, see 005.24

005.265 Programming for specific computers

Class here programming for specific processors, for computer systems based on specific computers

Arrange alphabetically by name of computer, e.g., ~~IBM PC~~ Apple iMac[®]

See Manual at 005.268 vs. 005.265, 005.269

005.27 †*Programming for processing modes

005.276 †*Programming for distributed ~~computer systems~~ computing

Add to base number 005.276 the numbers following 005.26 in 005.262–005.269, e.g., programming for Unix[®] client-server ~~computer systems~~ computing 005.2768

See also 006.76 for Internet programming, web programming

005.3 *Programs

Software, firmware, middleware

Class here application programs, collections of programs, software documentation, software packages, comprehensive works on software and firmware, on applications and systems programs

General purpose application programs relocated to 005.5

Class programs for a specific application in computer science with the application in 005–006, e.g., programs for computer graphics 006.68; class collections of programs of a specific kind with the kind, e.g., collections of general purpose application software 005.5; class online help in specific kinds of programs with the kind, e.g., online help in programs for ~~microcomputers~~ personal computers 005.36

For firmware, see 005.18; for systems programs, see 005.43

See also 005.15 for preparation of program documentation

See Manual at 005.3; also at 005.1 vs. 005.3; also at 005.3, 005.5 vs. 005.43–005.45

005.302 87 Testing and measurement

Do not use for software metrics, quality assurance, reliability, testing, verification; class in 005.14

Class here usability testing, software evaluation as an aid in selection

See also 005.14 for testing and measurement in programming

005.34 *Programs for ~~minicomputers~~ midrange computers

Class here programs for minicomputers, server class computers

Add to base number 005.34 the numbers following 005.36 in 005.362–005.368, e.g., programs in ~~Fortran~~ Java[®] 005.342

Class comprehensive works on programs for midrange and personal computers in 005.36

005.36 *Programs for ~~microcomputers~~ personal computers

Including programs for handheld computing devices

Class here programs for microcomputers; for laptop, notebook, pen, portable, tablet, wearable computers; for workstations; comprehensive works on programs for midrange and personal computers

For programs for midrange computers, see 005.34

005. 365 Programs for specific computers

Class here programs for specific processors, programs for computer systems based on specific computers

Arrange alphabetically by name of computer or processor, e.g., IBM PC
Apple iMac[®]

See Manual at 005.3682 vs. 005.365, 005.3684

005.37 Programs for specific processing modes

005.376 *Programs for distributed ~~computer systems~~ computing

Class here client-server applications, web server programs, groupware

Add to base number 005.376 the numbers following 005.36 in 005.362–005.368, e.g., programs in Java[®] 005.3762

005.4 *Systems programming and programs

Class programming and programs for interfacing and data communications in 005.71; class programming and programs for internal management of data files and databases in 005.74

See Manual at 005.1 vs. 005.3

005. 434 *Process management

Including process management programming [*formerly* 005.424], job control languages

Class here comprehensive works on multiprogramming (multitasking)

Add to base number 005.434 the numbers following 005.3 in 005.31–005.39, e.g., multitasking for ~~IBM PC~~ Apple iMac[®] ~~compatible computers~~ 005.43465

Class job control languages for a specific type of computer with the type, e.g., job control languages for mainframe computers 005.4342

For hardware aspects of multiprogramming, see 004.3

005.435 *Memory management programs

Including memory management programming [*formerly* 005.425],

comprehensive works on virtual memory

Add to base number 005.435 the numbers following 005.3 in 005.31–005.39, e.g., memory managers for ~~IBM PC~~ Apple iMac[®] ~~compatible computers~~ 005.43565

For hardware aspects of virtual memory, see 004.5

005.436 *File system management programs

Including file system management programming [*formerly* 005.426]

Add to base number 005.436 the numbers following 005.3 in 005.31–005.39, e.g., file system management programs for ~~IBM PC~~ Apple iMac[®] ~~compatible computers~~ 005.43665

For data backup and recovery, see 005.86

See Manual at 005.74 vs. 005.436

005.44 Operating systems for specific types of computers

Add to base number 005.44 the numbers following 005.3 in 005.31–005.39, e.g., operating systems for ~~distributed computer systems~~ web servers 005.4476

Class specific systems functions of operating systems for specific types of computers in 005.434–005.436

See Manual at 005.3, 005.5 vs. 005.43–005.45

005.5 *General purpose application programs [*formerly* 005.3]

Programs and integrated software packages that can be used in a wide range of applications

Class here specific programs with interdisciplinary applications [*formerly* 005.3042], integrated programs

Arrange alphabetically by name of program or software package, e.g., Microsoft OpenOffice.org[®]

Class database software in 005.74

See Manual at 005.1 vs. 005.3; also at 005.3, 005.5 vs. 005.43–005.45

005.7 *Data in computer systems

For data security, see 005.8

See Manual at 005.1 vs. 005.3

005.712 Programming for specific types of computers, for specific operating systems, for specific user interfaces

Add to base number 005.712 the numbers following 005.2 in 005.21–005.29, e.g., programming ~~microcomputers~~ personal computers for data communications 005.7126

005.713 *Programs

Add to base number 005.713 the numbers following 005.3 in 005.31–005.39, e.g., communications programs for ~~microcomputers~~ personal computers 005.7136

005.72 *Data preparation and representation, record formats

Including conversion to machine-readable form, data entry and validation; error-correcting codes

Class computer input devices in 004.76; class data validation in file processing in 005.74

For data encryption and ciphers, see 005.82; for markup languages, see 006.74

005.726 *Programs

Including portable document software

005.74 *Data files and databases

Standard subdivisions are added for either or both topics in heading

Including ~~data mining~~, data validation in file processing, ~~transaction processing systems~~

Class here data file processing, data file and database management, ~~database design and architecture~~

Data mining relocated to 006.312

Class comprehensive works on data validation in 005.72; ~~class comprehensive works on data mining in 006.312~~; class interdisciplinary works on computer and information science aspects of databases in 025.04. Class data files and databases with regard to their subject content with the subject, e.g.,

encyclopedic databases 030, nonbibliographic medical databases 610

For specific types of data files and databases, see 005.75

See Manual at 005.74 vs. 005.436; also at 025.04, 025.06 vs. 005.74

005.740 151 13

Mathematical logic

Class here logic databases, deductive databases
[both formerly 006.33]

005.740 285

Data processing Computer applications

005.740 285 467 8

Internet

Class here comprehensive works on web
databases

For web databases as information
storage and retrieval systems, see
025.04

005.740 68

Management

Do not use ~~notation 068 from Table 1~~ for file management or database management in the sense of computer programs that enable operation of files or databases; class in 005.74

Class here management of organizations concerned with databases, e.g., firms that create them

005.743

*Database design and architecture

Standard subdivisions are added for either or both topics in heading

Class here data modeling, data models

005.745

*Data warehousing

Class here transaction processing systems

005.75

Specific types of data files and databases

Including centralized files and databases; flat-file databases

005.753

*Temporal, spatial, constraint databases

- ≥ 005.754-005.757 Databases based on specific data models
- Class distributed versions of databases in 005.758; class comprehensive works on databases in 005.74; class comprehensive works on data models in 005.743
- 005.754 *Network databases
- ~~Including d~~Database management systems that conform to the standards developed by CODASYL (Conference on Data Systems Languages)
- See also 005.758 for databases that run in a network*
- 005.755 *Hierarchical databases
- ~~Class hierarchical databases that run in a network in 005.758~~
- 005.756 *Relational databases
- Class here object-relational databases [formerly 005.757]
- ~~Class relational databases that run in a network in 005.758~~
- 005.756 5 Specific relational database management systems
- Arrange alphabetically by name of database management system, e.g., Microsoft Access Oracle[®]
- 005.757 *Object-oriented databases
- ~~Class object-oriented databases that run in a network in 005.758~~
- Object-relational databases relocated to 005.756
- 005.757 5 Specific object-oriented database management systems
- Arrange alphabetically by name of database management system, e.g., Oracle Objectivity/DB[®]
- 005.758 *Distributed data files and databases
- ~~Class here data files and databases used in client/server computing, data files and databases that run in a network~~
- See also 004.36 for distributed processing*
- 005.758 5 Specific distributed database management systems

Arrange alphabetically by name of database management system, e.g.,
~~SQL-server~~ IBM DB2[®]

005.8 *Data security

Including digital rights management, electronic signatures

Class here access control, computer network security, firewalls

Class electronic signatures involving encryption in 005.82

See also 658.478 for data security in management

005.82 *Data encryption

Including digital signatures (electronic signatures involving encryption)

Class here ciphers

Class comprehensive works on electronic signatures in 005.8; class interdisciplinary works on cryptography in 652.8

005.84 *~~Computer viruses~~ Malware

Including computer viruses, spyware, Trojan horses, worms

006 *Special computer methods

Not otherwise provided for

Including automatic data collection

Class here programs, programming, selection and use of hardware in relation to special computer methods

~~Unless other instructions are given, class a subject with aspects in two or more subdivisions of 006 in the number coming last, e.g., natural language processing in expert systems 006.35 (not 006.33)~~

See also 003.3 for computer modeling and simulation; also notation 0113 from Table 1 for computer modeling and simulation in a specific discipline or subject; also 004.6 for computer communications; also 005.74 for file and database management; also 005.8 for data security; also 629.89 for special methods in automatic control engineering

See Manual at ~~004-006~~; also at ~~004-006~~ vs. 621.39; also at 005.1 vs. 005.3; also at 510, T1-0151 vs. ~~004-006~~, T1-0285

006.3 *Artificial intelligence

Class here comprehensive works on artificial intelligence and cognitive science [*formerly* 153], intelligent agents, multi-agent systems, question-answering systems

Class robotics in 629.892

For cognitive science, see 153

See also 006.4 for pattern recognition not used as a tool of artificial intelligence

See Manual at 006.3 vs. 153

006.31 *Machine learning

Including genetic algorithms

For machine learning in knowledge-based systems, see 006.331

006.312 *Data mining [*formerly also* 005.74]

~~*For data mining using methods other than artificial intelligence, see the method, e.g., database management methods for data mining 005.74*~~

006.33 *Knowledge-based systems

Class here ~~deductive databases~~, expert systems

Deductive databases relocated to 005.74015113

006.7 *Multimedia systems

Including interactive video

Class here hypermedia, hypertext; information architecture, web page design, web site development; comprehensive works on computer graphics and digital audio, interactive multimedia

Class web databases in 005.7402854678; class hypertext databases in 005.759; class multimedia computer art in 776.7; class use of computers in video production in 778.590285; class interdisciplinary works on ~~the Internet~~ in 004.678; class interdisciplinary works on (World Wide Web) ~~as an information system~~ in 025.042; class interdisciplinary works on web publishing in 070.57973

For digital audio, see 006.5; for computer graphics, see 006.6

See also 384.35 for interactive videotex

See Manual at 004.678 vs. 006.7, 025.042, 384.33; also at 776 vs. 006.5–006.7

006.74 *Markup languages

Class here general document markup languages, style sheet languages

Arrange alphabetically by name of language, e.g., Cascading Style Sheets (CSS), Resource Description Framework (RDF), XML

006.75 Specific types of multimedia systems

Including wikis

006.752 *Blogs

006.754 *Online social networks

Class interdisciplinary works on online social networks in 302.30285

006.77 Programming for specific types of computers, for specific operating systems, for specific user interfaces

Add to base number 006.77 the numbers following 005.2 in 005.21–005.29, e.g., writing multimedia programs for ~~Macintosh~~ Linux[®] 006.7768

006.78 Programs

Including web services

Class here multimedia authoring programs, software; multimedia software

Add to base number 006.78 the numbers following 005.3 in 005.31–005.39, e.g., multimedia authoring software that runs on Apple iMacintosh[®] 006.7865

*Use notation 019 from Table 1 as modified at 004.019

†Do not use notation 01 from Table 1 for general discussion of logic in programming; see Manual at 005.101

025.04 Information storage and retrieval systems

Including recall, precision, relevance

Class here search and retrieval in information storage and retrieval systems; front-end systems; ~~the Internet (World Wide Web) viewed as an information~~

storage and retrieval system; bibliographies of web sites; digital libraries; comprehensive works on online catalogs integrated with information storage and retrieval systems, on automated storage, search, retrieval of information; interdisciplinary works on databases

~~Class information storage in 025.3; class interdisciplinary works on the Internet (World Wide Web) in 004.678.~~ Class aspects of information storage for specific types of retrieval systems with the aspect for the type of system, e.g., mark-up languages for web retrieval systems 006.74, record formats for bibliographic retrieval systems 025.316

For computer science aspects of information storage and retrieval systems, of databases, see 005.74; for information storage and retrieval systems, bibliographies of web sites, digital libraries devoted to specific disciplines and subjects, see 025.06. For a specific kind of information storage and retrieval system, see the kind, e.g., online catalogs 025.3132

See also 658.4038011 for management use of information storage and retrieval systems

See Manual at 004.678 vs. 006.7, 025.04, 384.33; also at 011.39 vs. 005.3029, 016.0053, 025.04; also at 025.04, 025.06 vs. 005.74

025.042

World Wide Web

Class here interdisciplinary works on World Wide Web [formerly 004.678]; digital libraries, Internet viewed as an information storage and retrieval system, Internet literacy

Class interdisciplinary works on Internet in 004.678

For specific aspects of World Wide Web, see the aspect, e.g., computer science aspects of World Wide Web 004.678

See Manual at 004.678 vs. 006.7, 025.042, 384.33

025.042 2

Web sites

Class here directories of web sites, portals

Works on web sites hosting a search engine plus other resources that treat the site comprehensively are classed here, that focus on the search engine in 025.04252

See Manual at 011.39 vs. 005.3029, 016.0053, 025.0422

025.042 5

Search and retrieval

Standard subdivisions are added for either or both topics in heading

Including recall, precision, relevance

Class here Internet searching

025.042 52

Search engines

See also 658.872 for search engine optimization

025.042 7

Semantic web

World Wide Web structured for semantic computing

302.3 Social interaction within groups

Including bullying, teasing

Class here group decision-making processes, group dynamics, negotiation, social networks

302.302 85

Data processing Computer applications

Class here online social networks

For computer science aspects of online social networks, see 006.754

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621.383-621.389 Specific communication systems

Class here specific analog, digital, electronic communications

Multifunctional digital devices are classed with their predominant function, e.g., digital audio players, treated comprehensively 006.5, from an engineering perspective 621.3893; camera phone, cellular telephone 621.38456. However, a work that focuses on a specific function other than the predominant function is classed with the specific function, e.g., picture taking with a camera phone 775. If no function predominates, class with the function coming later in 621.3, e.g., a handheld device with cellular telephone and multimedia player capabilities 621.38933, a handheld device with cellular telephone, multimedia capabilities, web browsing, and e-mail 621.39167

Class comprehensive works in 621.382

> 621.3911-621.3916 Digital computers

Multifunctional digital devices are classed with their predominant function, e.g., personal digital assistants (PDAs), which often include mobile phone and portable media player capabilities in addition to their baseline computing capabilities, with handheld computing devices 621.39167. However, a work that focuses on a specific function other than the predominant function is classed with the specific function, e.g., audio recording with a PDA 621.3893. If no function predominates, class with the function coming later in 621.3, e.g., a handheld device with cellular telephone and multimedia player capabilities 621.38933, a handheld device with cellular telephone, multimedia capabilities, web browsing, and e-mail 621.39167

Class comprehensive works in 621.39

See Manual at 004.11-004.16

621.391 2 Mainframe computers

Class here large-scale digital computers

For supercomputers , see 621.3911

621.391 4 ~~Minicomputers~~ Midrange computers

Class here minicomputers, server class computers

Class comprehensive works on ~~minicomputers and microcomputers~~ ~~minicomputers and microcomputers~~ midrange and personal computers in 621.3916

621.391 6 ~~Microcomputers~~ Personal computers

Class here ~~personal computers~~; microcomputers; laptop, notebook, pen, portable, tablet, wearable computers; workstations; comprehensive works on ~~minicomputers and microcomputers~~ midrange and personal computers

For ~~minicomputers~~ midrange computers, see 621.3914

621.391 67 Handheld computing devices

Class here palmtop, pocket computers; personal digital assistants (PDAs)

629.892 Robots

Unless it is redundant, add to base number 629.892 the numbers following 00 in 004–006, e.g., use of digital ~~microcomputers~~ personal computers 629.892416, but use of digital computers 629.892 (*not* 629.8924)

For specific kinds of robots, see 629.893

629.895 Computerized process control

Use of computers to keep conditions of continuous processes as close as possible to desired values or within a desired range by controlling continuous variables such as temperature or pressure

Unless it is redundant, add to base number 629.895 the numbers following 00 in 004–006, e.g., use of digital ~~microcomputers~~ personal computers 629.895416, but use of digital computers 629.895 (*not* 629.8954)

Manual

T1—0285

Data processing Computer applications

Use T1—0285 for comprehensive works on data processing applied to a subject. Also use T1—0285 if 004 is the interdisciplinary number for the applied concept, e.g., digital computers T1—0285. Do not use T1—02854 by itself, since the digit 4 simply repeats the meaning of notation 0285. However, it is not redundant to add to T1—0285 the notation for subdivisions of 004, e.g., digital ~~microcomputers~~ personal computers T1—0285416.

Do not add the digit 4 by itself to a number divided like 004–006 if the base number is limited to data processing and computer concepts, e.g., 651.8, 658.05.

Electronic resources and programs

Use T1—028553 for programs themselves and for works about programs, regardless of form (e.g., programs in electronic form, printed program listings bound into books). Do not use T1—0285 to indicate that a work is in electronic form, e.g., use 310 (*not* 310.285) for electronic census data.

Do not use T1—028553 for items that include both programs and data files, unless the data files are clearly of minor importance, e.g., small files intended merely to help beginners learn to use the programs.

If in doubt, do not use T1—028553.

004-006

Computer science

Here are key questions to guide in classifying works about computer science, with references to relevant Manual notes.

~~004-006 vs. other disciplines~~

~~1. Is the work (A) computer science per se (004-006), or (B) an application of computers to another discipline (T1—0285)?~~

~~A. Use 004-006 for works about computer science not applied to a specific discipline.~~

~~B. Use the number for the discipline plus notation 0285 from Table 1 for works about the application of computers in another discipline, e.g., the use of parallel computers in fluid dynamics 532.050285435.~~

~~See also discussion at T1—0285.~~

~~...~~

~~13. Does the topic in 006 have subdivisions for hardware, programming, and programs?~~

~~A. Yes: In choosing between subdivisions for hardware, programming, and programs in 006, the same distinctions are made as between 004 and 005 concepts; hence the questions about 004 and 005 are relevant to choosing between hardware and software subdivisions of 006.~~

~~B. No: Class in the appropriate topical subdivision.~~

004.0151 vs. 511.1, 511.35

Computer mathematics

Use 004.0151 for works on mathematics applied to computers ~~how mathematics is used in practice on computers~~, and for comprehensive works on computer mathematics.

Use 511.1 for works on branches of mathematics in which objects can only have discrete or finite values, and hence can be represented on digital computers. These branches are often collectively referred to as "discrete mathematics" or "finite mathematics."

Use 511.35 for works on the theory of computer mathematics, without reference to practical implementations on real computers. Use 511.35 for works on Turing machines, because Turing machines are a theoretical concept. This subject is also called automata theory or machine theory.

If in doubt, prefer in the following order: 004.0151, 511.1, 511.35.

004.1 vs. 004.24

Performance evaluation

Use 004.1 for general evaluations of computers, e.g., general evaluations of ~~microcomputers~~ personal computers 004.16, of a specific kind of ~~microcomputer~~ personal computer 004.165. Use 004.24 only for specialized works treating performance measurement and evaluation as an aid in designing or improving the performance of a computer system. If in doubt, prefer 004.1.

Add notation 029 from Table 1 to the number in 004.1 if the emphasis is on evaluation as a consideration in purchasing, e.g., evaluation and purchasing manuals for ~~microcomputers~~ personal computers 004.16029.

004.11–.16

Types of digital computers

Use 004.11–.16 and 621.3911–.3916 only for works that emphasize the specific type of computer. Use 004 and 621.39 for works that refer to a particular type as an illustration of what computers in general do. For example, use 004, not 004.12, for a general introduction to computers written at a time when the only computers were mainframes. If in doubt, prefer 004 or 621.39 without subdivision.

Specific computers

Here, "numbers for specific computers in 004–006" include 004.125, 004.145, 004.165, 005.265, and numbers in 004–006 built using these numbers, e.g., 006.7765.

Use numbers for specific computers in 004–006 for works treating more than one computer or processor only if:

1. The work treats a single series of very closely related computers or processors (e.g., the Intel Pentium[®] microprocessors 004.165); or
2. The work treats primarily one specific computer or processor but adds that it is also applicable to other similar machines (e.g., a work about programming the IBM PC[®] that says it can also be used as a guide to programming "IBM-compatible" computers 005.265).

Use numbers for specific computers in 004–006 for works that discuss a computer and its processor, e.g., a work about the Mae Apple iMac[®] series of computers and the PowerPC[®] series of microprocessors 004.165.

If in doubt, do not use numbers for specific computers in 004–006.

004.678 vs. 006.7, 025.042, 384.33

Internet and World Wide Web

The Internet and the World Wide Web (WWW) can be written about from various disciplinary viewpoints. Because the Dewey Decimal Classification is organized by disciplines, it is necessary to decide the focus of a particular work about the Internet or the WWW in order to choose the correct number.

Use 004.678 for works about the Internet or WWW if they contain a substantial amount of computer science material and at least some information about computer hardware, or if they include a comprehensive overview of the Internet as a system of hardware, software, communications protocols, and other aspects of computer communications included in 004.6.

Use 006.7 for general works about the use of HTML and XML to create hypertext documents on the World Wide Web, and works that discuss web page design or effective web pages.

Use 025.042 for:

1. Interdisciplinary works about the Internet and WWW that do not contain enough computer science material to be classified in 004.678, but that do contain some information science material
2. Information science works that emphasize search and retrieval, including use of web browsers and web search engines to facilitate search and retrieval on the Internet
3. Works that describe information resources available on the Internet or WWW, and on how to find information there

Use 384.33 for works on Internet access providers and works on economic and public policy issues concerning the Internet.

If in doubt, prefer in the following order: 004.678, 025.042, 006.7, 384.33.

005.1–.2 vs. 005.42

Application programming vs. Systems programming

Use 005.1–.2 for works on writing application programs and comprehensive works about writing both application and systems programs, including works about writing application programs that run on specific operating systems or user interfaces, e.g., writing application programs that run on the microcomputer personal computer operating system MS-DOS 005.268, writing application programs that run on the microcomputer personal computer graphical user interface Microsoft Windows 005.269. Use 005.42 for works about writing systems programs, e.g., writing operating systems 005.42, writing user interfaces 005.428. If in doubt, prefer 005.1–.2.

See also discussion at 005.3, 005.5 vs. 005.43–.45.

005.268 vs. 005.265, 005.269

Programming for specific operating systems, for specific computers, and for specific user interfaces

Numbers beginning with 005.26 are limited to microcomputers personal computers. Similar numbers for other types of computers, with instructions for building numbers by adding notation from 005.26 numbers, are found in 005.22–.24 and 005.27.

Use 005.268 (and similar numbers for other types of computers) for works on writing software that runs on specific operating systems. Use 005.265 (and similar numbers for other types of computers) for works on writing software that runs on specific computers. Use 005.269 (and similar numbers for other types of computers) for works on writing software that runs on specific user interfaces other than the native interface of the computer operating system. (Class Microsoft Windows[®] versions 3.x in 005.269; starting with Windows NT and Windows 95, class Microsoft Windows in 005.268.)

See also discussion at 005.269 and 005.284, 005.3684, 005.384.

If two or three of these numbers are applicable to the same work, follow the preference note at 005 and class with the number coming last in the schedule (with the exception specified below). For example, if a work treats writing software that runs on a specific computer, on a specific operating system, and on a specific add-on user interface, prefer 005.269. Exception: If a specific computer has only one operating system, so that all programs that run on that computer also run on the operating system, e.g., the Mac Apple iMac[®] series of computers and Mac OS X[®], class writing programs that run on that computer and operating system with the computer in 005.265. Earlier and later versions of the same operating system (e.g., Macintosh System 9[®] and Mac OS X[®])

count as one operating system, even though the differences between the earliest and the latest versions may be great.

If in doubt, prefer in the following order: 005.268 and similar numbers, 005.269 and similar numbers, 005.265 and similar numbers.

005.3

Programs

Class a program or programs designed to run on two types of computers with the predominant type if there is one, e.g., a program that runs on five mainframe computers and one ~~minicomputer~~ midrange computer 005.32. If neither of two types is predominant, class with the smaller type, e.g., a program for ~~minicomputers and microcomputers~~ midrange and personal computers 005.36.

Class programs for a specific application in computer science with the application in 005–006, but never in 004. Among the numbers most frequently used for software besides 005.3 and its subdivisions are 005.43 for systems software and operating systems, 005.5 for general purpose application software (such as word processing programs and spreadsheets), 005.713 for interfacing and data communications programs, 005.74 for database management systems, and 006.68 for computer graphics programs.

Programs applied to a particular subject or discipline are classed with the subject or discipline, plus notation 028553 from Table 1, e.g., programs for tax accounting 657.46028553.

See also discussion at T1—0285; also at 005.1 vs. 005.3.

005.3, 005.5 vs. 005.43–.45

Application programs vs. Systems programs

Use 005.3 for collections of or works about multiple kinds of application programs, and for comprehensive works on application programs and systems programs. Application programs are programs that do things users want done, for example, electronic spreadsheets, statistical packages, word processing programs, desktop publishing programs, computer games, educational programs, tax preparation programs, inventory control programs.

Use 005.5 for general purpose application programs, such as spreadsheets, statistical packages, word processing programs.

Use 001–999 for application programs employed in a specific discipline, e.g., application programs employed in library operations 025.0028553, computer games 794.8.

Use appropriate subdivisions of 005.3 for works about application programs that run on specific systems, e.g., application programs that run on a specific ~~microcomputer~~ personal computer operating system 005.3682.

Use 005.43–.45 for systems programs and works about them. Systems programs are programs that enable computers to function properly; in effect, they provide life support and housekeeping for computers. Systems programs accomplish little that interests users except to make it possible for application programs to run. Examples of systems programs are operating systems, utilities packages, user interfaces, and programming language translators.

If in doubt, prefer 005.3 and its subdivisions.

See also discussion at 005.3682 vs. 005.365, 005.3684.

005.3682 vs. 005.365, 005.3684

Programs for specific operating systems, for specific computers, and for specific user interfaces

Numbers beginning with 005.36 are limited to ~~microcomputers~~ personal computers. Similar numbers for other types of computers, with instructions for building numbers by adding notation from 005.36 numbers, are found in 005.32–.34 and 005.37.

Use 005.3682 (and similar numbers for other types of computers) for application programs that run on specific computer operating systems, and comprehensive works on application and systems programs that run on specific computer operating systems. Use 005.365 (and similar numbers for other types of computers) for application programs that run on specific computers, and comprehensive works on application and systems programs that run on specific computers. Use 005.3684 (and similar numbers for other types of computers) for application programs that run on specific user interfaces other than the native interface of the computer operating system, and comprehensive works on application and systems programs that run on specific user interfaces other than the native interface of the computer operating system. (Class Microsoft Windows[®] versions 3.x in 005.3684; starting with Windows NT and Windows 95, class Microsoft Windows in 005.3682.)

See also discussion at 005.269 and 005.284, 005.3684, 005.384.

If two or three of these numbers are applicable to the same work, follow the preference note at 005 and class with the number coming last in the schedule (with the exception specified below). For example, if a work treats application programs that run on a specific computer, on a specific operating system, and on a specific add-on user interface, prefer 005.3684. Exception: If a specific computer has only one operating system, so that all programs that run on that computer also run on the operating system, e.g., the ~~Mac~~ Apple iMac[®] series of computers and Mac OS X[®], class programs that run on that computer and operating system with the computer in 005.365. Earlier and later versions of the same operating system (e.g., Macintosh System 9[®] and Mac OS X[®])

count as one operating system, even though the differences between the earliest and the latest versions may be great.

If in doubt, prefer in the following order: 005.3682 and similar numbers, 005.3684 and similar numbers, 005.365 and similar numbers.

See also discussion at 005.3, 005.5 vs. 005.43–.45.

011.39 vs. 005.3029, 016.0053, 025.04

Bibliographies of electronic resources

Use 011.39 for general bibliographies of electronic resources *not limited to computer programs (or software)*. Use 005.3029 for annotated lists of programs with lengthy reviews that are used as buyers' guides, e.g., a collection of reviews of ~~microcomputer~~ personal computer software 005.36029. Use 016.0053 for bibliographies and lists of programs and for annotated lists if the annotations are relatively brief. Use 025.04 for bibliographies of web sites, as they are normally indistinguishable from directories of web sites. If in doubt, prefer 011.39.

See also discussion at 025.04, 025.06 vs. 005.74.

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Schedules

≥ 004–006 Computer science; computer programming, programs, data; special computer methods

Unless other instructions are given, class a subject with aspects in two or more subdivisions of 004–006 in the number coming last, e.g., external storage for personal computers 004.5 (not 004.16), data security in client-server computing 005.8 (not 004), natural language processing in full-text database management systems 006.3 (not 005.75)

Class comprehensive works in 004

004 ~~Data processing~~ Computer science

Including parallel processing, multiprocessing; distributed processing, client-server computer systems; specific types of computers, processors, computer systems distinguished by their processing modes, e.g., multiprocessors, parallel processors

Class here data processing; selection and use of computer hardware; electronic computers; electronic digital computers; computer systems (computers, their peripheral

devices, their operating systems); central processing units; computer reliability; interactive, online processing; comprehensive works on hardware and programs in electronic data processing

~~Unless other instructions are given, class a subject with aspects in two or more subdivisions of 004 in the number coming last, e.g., external storage for microcomputers 004.5 (not 004.16)~~

Class computer modeling and simulation in 003. Class ~~data processing and~~ computer science and data processing applied to a specific subject or discipline with the subject or discipline, plus notation 0285 from Table 1, e.g., data processing in banking 332.10285

For computer programming, programs, data, see 005; for special computer methods, see 006; for engineering, manufacture, repair of computers, see 621.39

See also 025.04 for automated information storage and retrieval; also 303.48 for computers as a cause of social change; also 343.09 for computer law; also 364.16 for financial and business computer crimes; also 371.33 for computer-assisted instruction (CAI); also 658 for data processing in management; also 794.8 for computer games

See Manual at ~~004–006~~; also at 004–006 vs. 621.39; also at 004 vs. 005

004.1 General works on specific types of computers

Including supercomputers, mainframe computers, ~~mini~~computers midrange computers; analog computers

Class here specific types of processors, computer systems based on specific types of computers, comprehensive works on embedded computer systems

Multifunctional digital devices are classed with their predominant function, e.g., personal digital assistants (PDAs), which often include mobile phone and portable media player capabilities in addition to their baseline computing capabilities, with handheld computing devices 004.167. However, a work that focuses on a specific function other than the predominant function is classed with the specific function, e.g., audio recording using a personal computer 006.5

Class specific types of computers, processors, computer systems distinguished by their processing modes in 004; class programmable calculators in 510.285; class comprehensive works on ~~mini~~computers and ~~micro~~computers midrange and personal computers in 004.16

For a specific aspect of embedded computer systems, see the aspect, e.g., systems analysis and design of embedded computer systems 004.2, software for embedded systems 005.3

004.16 ~~Microcomputers~~ Personal computers

Class here microcomputers; laptop, notebook, ~~palmtop~~, pen, ~~personal~~, ~~pocket~~, portable, tablet, wearable computers; workstations; comprehensive works on ~~minicomputers and microcomputers~~ midrange and personal computers

Class ~~minicomputers~~ midrange computers in 004.1

004.165 Specific ~~microcomputers~~ personal computers

Arrange alphabetically by name of ~~microcomputer~~ or ~~microprocessor~~, e.g., ~~Macintosh~~ Apple iMac[®]

Specific handheld computing devices relocated to 004.1675

See Manual at 004.165

004.167 Handheld computing devices

Class here palmtop, pocket computers; personal digital assistants (PDAs)

004.167 5 Specific handheld computing devices [formerly 004.165]

Arrange alphabetically by name of computer or processor, e.g., BlackBerry[®]

004.2 Systems analysis and design, computer architecture, performance evaluation

Including performance measurement and evaluation to aid in designing or improving performance of a computer system

Class communications network design and architecture in 004.6. Class performance evaluation as a consideration in purchasing a specific item with the item in 004, plus notation 029 from Table 1, e.g., evaluating ~~microcomputers~~ personal computers for purchase 004.16029

For software systems analysis and design, see 005.1; for database design and architecture, see 005.74

004.6 Interfacing and communications

Standard subdivisions are added for either or both topics in heading

Including communications network architecture, peer-to-peer architecture, service-oriented architecture; data transmission modes and data switching methods, e.g., packet switching, multiplexing; interfacing and communications protocols; local-area networks, e.g., baseband and broadband networks, high-speed local networks; modems, optical-fiber cable, peripheral control units

Class here data communications; internetworking, interoperability; interdisciplinary works on computer communications

Class client-server computing in 004. Class peripheral control units controlling a specific kind of peripheral with the peripheral, e.g., printer controllers 004.7; class protocols for specific aspects of interfacing and communications with the aspect, e.g., protocols for error-correcting codes 005.7

For interdisciplinary works on telecommunication, see 384; for data, programs, programming in interfacing and communications, see 005.7; for social aspects of computer communications, see 302.23; for economic and related aspects of providing computer communications to the public, see 384.3

See also 004 for distributed processing

See Manual at 004.6 vs. 005.7; also at 004.6 vs. 384.3; also at 004.6 vs. 621.382, 621.39

004.67 Wide-area networks

Including extranets, Internet, {World Wide Web}

Interdisciplinary works on World Wide Web relocated to 025.042

See Manual at 004.67 vs. 006.7, 025.042, 384.3

004.69 Specific kinds of computer communications

Including Internet telephony, videotext

Class computer communications in multimedia systems in 006.7

005 Computer programming, programs, data

Class here software compatibility, portability, reliability, reusability

~~Unless other instructions are given, class a subject with aspects in two or more subdivisions of 005 in the number coming last, e.g., writing database management programs in the C++ programming language 005.74 (not 005.13)~~

Class computer programming, programs, data for special computer methods in 006; class comprehensive works on hardware and programs in electronic data processing in 004

See Manual at ~~004-006~~; also at 004-006 vs. 621.39; also at 004 vs. 005

005.1 Programming

Including microprogramming and microprograms [*both formerly 005.6*]; firmware viewed as microprograms; microcode; software systems analysis and design, e.g., analysis of a user's problem preparatory to developing a software system to solve it; special programming techniques, e.g., object-oriented, structured, visual programming; debugging, preparation of program documentation, program maintenance

Class here application programming, computer algorithms, software engineering

Class firmware viewed as hardware in 004; class software systems analysis and design in relation to programming languages, special programming techniques in relation to programming languages (e.g., object-oriented programming with a specific program language) in 005.13; class algorithms discussed solely from a theoretical perspective, without regard to computer implementation, in 518. Class a specific application of programming within computer science with the application in 005.4–006.8, e.g., programming computer graphics 006.6

For programming for specific types of computers, for specific operating systems, for specific user interfaces, see 005.2

See Manual at 005.1–005.2 vs. 005.4; also at 005.1 vs. 005.3

005.2 Programming for specific types of computers, for specific operating systems, for specific user interfaces

Including programming for supercomputers, mainframe computers, ~~minicomputers~~ midrange computers; programming for distributed computer systems, for real-time computer systems; programming for multiprocessor computers, e.g., parallel programming

Class here specific machine and assembly languages

Class programming for ~~microcomputers~~ personal computers, for specific operating systems that run on ~~microcomputers~~ personal computers, for specific user interfaces that run on ~~microcomputers~~ personal computers in 005.26; class specific ~~microcomputer~~ personal computer machine and assembly languages, programming for specific ~~microcomputers~~ personal computers in 005.265; class comprehensive works on programming for midrange and personal computers in 005.26

See Manual at 005.1–005.2 vs. 005.4; also at 005.1 vs. 005.3

005.26 Programming for ~~microcomputers~~ personal computers

Including programming for handheld computing devices; writing programs that run on specific operating systems, e.g., Linux; writing programs that run on specific user interfaces, e.g., Microsoft Windows®

Class here programming for ~~personal computers~~ microcomputers; for laptop,

notebook, pen, portable, tablet, wearable computers; for microcomputer workstations; comprehensive works on programming for minicomputers and microcomputers midrange and personal computers

Class programming for minicomputers midrange computers in 005.2; class programming for a specific operating system where the operating system is the only operating system that runs on a specific computer in 005.265

005.265 Programming for specific computers

Class here programming for specific processors, for computer systems based on specific microcomputers personal computers

Arrange alphabetically by name of computer, e.g., IBM PC Apple iMac[®]

See Manual at 004.165

005.3 Programs

Software, firmware, middleware

Including online help; programs for supercomputers, mainframe computers, minicomputers midrange computers; programs for real-time computer systems, for multiprocessor computers; programs for distributed computer systems computing, e.g., groupware client-server applications, web server programs; programs for specific operating systems, e.g., programs that run on Unix[®]; programs for specific user interfaces, e.g., programs that run on Motif[®]; specific programs, e.g., SAS[®]

Class here application programs, collections of programs, software documentation, software packages; comprehensive works on software and firmware, on applications and systems programs

General purpose application programs relocated to 005.5

Class programs for specific operating systems that run on microcomputers personal computers, for specific user interfaces that run on microcomputers personal computers in 005.368; class comprehensive works on programs for midrange and personal computers in 005.36. Class programs for a specific application in computer science with the application in 005–006, e.g., programs for computer graphics 006.6; class online help in specific kinds of programs with the kind, e.g., online help in programs for microcomputers personal computers 005.36

For firmware, see 005.1; for systems programs, see 005.4

See also 005.1 for preparation of program documentation

See Manual at 005.3; also at 005.1 vs. 005.3; also at 005.3, 005.5 vs. 005.4

- 005.302 8 Auxiliary techniques and procedures; apparatus, equipment, materials
- ~~Do not use for testing and measurement, maintenance and repair of programs software metrics, quality assurance, reliability, testing, verification; class in 005.1~~
- Including usability testing, software evaluation as an aid in selection
- 005.36 Programs for ~~microcomputers~~ personal computers
- Including programs for handheld computing devices
- Class here programs for microcomputers; for laptop, notebook, pen, portable, tablet, wearable computers; for workstations; comprehensive works on programs for midrange and personal computers
- Class programs for midrange computers in 005.3
- 005.365 Programs for specific computers
- Class here programs for specific processors, for computer systems based on specific computers
- Arrange alphabetically by name of ~~micro~~computer or processor, e.g., ~~Maeintosh~~ Apple iMac®
- See Manual at 004.165; also at 005.368 vs. 005.365*
- 005.74 Data files and databases
- Standard subdivisions are added for either or both topics in heading
- Including data compression; data dictionaries, data directories; ~~data mining database design and architecture~~; data validation in file processing; file organization and access methods, e.g., data file formats, merging, search algorithms, sort algorithms, sorting
- Class here data file processing, data file and database management, ~~database design and architecture~~
- Data mining relocated to 006.3
- Class comprehensive works on data validation in 005.7; ~~class comprehensive works on data mining in 006.3~~; class interdisciplinary works on computer science and information science aspects of databases in 025.04. Class data files and databases related to a specific computer method with the method in 006, e.g., expert systems 006.3; class data files and databases with regard to their subject content with the subject, e.g., encyclopedic databases 030,

nonbibliographic medical databases 610

For specific types of data files and databases, see 005.75

See Manual at 005.74 vs. 005.4; also at 025.04, 025.06 vs. 005.74

005.740 2 Miscellany

005.740 285 Data processing Computer applications

Including comprehensive works on web databases

For web databases as information storage and retrieval systems, see 025.04

005.740 68 Management

Do not use ~~notation 068 from Table 1~~ for file management or database management in the sense of computer programs that enable operation of files or databases; class in 005.74

Class here management of organizations concerned with databases, e.g., firms that create them

005.75 Specific types of data files and databases

Including hierarchical, network, object-oriented, relational databases; temporal, spatial, constraint databases; distributed data files and databases; full-text database management systems

006 Special computer methods

Not otherwise provided for

Including automatic data collection

Class here programs, programming, selection and use of hardware in relation to special computer methods

~~Unless other instructions are given, class a subject with aspects in two or more subdivisions of 006 in the number coming last, e.g., computer graphics in expert systems 006.6 (not 006.3)~~

See also 003 for computer modeling and simulation; also notation 01 from Table 1 for computer modeling and simulation in a specific discipline or subject; also 004.6 for computer communications; also 005.74 for data file and database management; also 005.8 for data security; also 629.8 for special methods in automatic control engineering

See Manual at ~~004-006~~; also at 004-006 vs. 621.39

006.3 Artificial intelligence

Including data mining [*formerly also* 005.74]; computer vision; ~~data mining~~; knowledge-based systems, e.g., expert systems; machine learning; natural language processing, neural nets (neural networks), perceptrons

Class here comprehensive works on artificial intelligence and cognitive science [*formerly* 153], intelligent agents, multi-agent systems, question-answering systems

Class robotics in 629.8

For cognitive science, see 153

See also 006.4 for pattern recognition not used as a tool of artificial intelligence

See Manual at 006.3 vs. 006.4, 621.36, 621.39; also at 006.3 vs. 153

006.7 Multimedia systems

Including interactive video, markup languages; blogs, online social networks

Class here hypermedia, hypertext; information architecture, web page design, web site development; comprehensive works on computer graphics and digital audio, interactive multimedia

Class web databases in 005.740285; class hypertext databases in 005.75; class multimedia computer art in 776; class use of computers in video production in 778.590285; class interdisciplinary works on Internet in 004.67; class interdisciplinary works on ~~the Internet or the World Wide Web as an information system~~ in 025.042; class interdisciplinary works on web publishing in 070.5; class interdisciplinary works on online social networks in 302.30285

For digital audio, see 006.5; for computer graphics, see 006.6

See also 384.3 for interactive videotex

See Manual at 004.67 vs. 006.7, 025.04, 384.3; also at 776 vs. 006.5-006.7

025.04 Information storage and retrieval systems

Including recall, precision, relevance

Class here search and retrieval in information storage and retrieval systems;

front-end systems; ~~the Internet (World Wide Web) viewed as an information storage and retrieval system; bibliographies of web sites; digital libraries;~~ comprehensive works on online catalogs integrated with information storage and retrieval systems, on automated storage, search, retrieval of information; interdisciplinary works on databases

~~Class information storage in 025.3; class interdisciplinary works on the Internet (World Wide Web) in 004.67~~ aspects of information storage for specific types of retrieval systems with the aspect for the type of system, e.g., mark-up languages for web retrieval systems 006.7, record formats for bibliographic retrieval systems 025.3

For computer science aspects of information storage and retrieval systems, of databases, see 005.74; for information storage and retrieval systems, bibliographies of web sites, digital libraries devoted to specific disciplines and subjects, see 025.06. For a specific kind of information storage and retrieval system, see the kind, e.g., online catalogs 025.3

See also 658.4 for management use of information storage and retrieval systems

See Manual at ~~004.67 vs. 006.7, 025.042, 384.3; also at 011 vs. 005.3029, 016.0053, 025.04; also at~~ 025.04, 025.06 vs. 005.74

025.042

World Wide Web

Including semantic web

Class here interdisciplinary works on World Wide Web [formerly 004.67]; digital libraries, Internet viewed as an information storage and retrieval system, Internet literacy

Class interdisciplinary works on Internet in 004.67

For specific aspects of World Wide Web, see the aspect, e.g., computer science aspects of World Wide Web 004.67

See Manual at 004.67 vs. 006.7, 025.042, 384.3

025.042 2

Web sites

Class here directories of web sites; portals

Works on web sites hosting a search engine plus other resources that treat the site comprehensively are classed here, that focus on the search engine in 025.04252

See Manual at 011 vs. 005.3029, 016.0053, 025.0422

025.042 5

Search and retrieval

Standard subdivisions are added for either or both topics in heading

Including recall, precision, relevance

Class here Internet searching

025.042 52

Search engines

See also 658.8 for search engine optimization

302.3 Social interaction within groups

Including bullying, teasing; crowds, mobs; committees, gangs; friendship; bureaucracy, organizational behavior; conversation

Class here group decision-making processes, group dynamics, negotiation; social networks

Class family in 306.85

See also 362.74 for predelinquent gangs; also 364.106 for gangs engaging in crime

302.302 85

Data processing Computer applications

Class here online social networks

For computer science aspects of online social networks, see 006.7

>

621.383-621.389 Specific communication systems

Class here specific analog, digital, electronic communications

Multifunctional digital devices are classed with their predominant function, e.g., digital audio players, treated comprehensively 006.5, from an engineering perspective 621.389; camera phone, cellular telephone 621.3845. However, a work that focuses on a specific function other than the predominant function is classed with the specific function, e.g., picture taking with a camera phone 775. If no function predominates, class with the function coming later in 621.3, e.g., a handheld device with cellular telephone and multimedia player capabilities 621.389, a handheld device with cellular telephone, multimedia capabilities, web browsing, and e-mail 621.39

Class comprehensive works in 621.382

621.39 Computer engineering

Including analog computers; data communications engineering; interfacing and communications devices, e.g., modems; peripherals, e.g., terminals; memory, storage

Class here electronic digital computers, central processing units, computer reliability, general computer performance evaluation

Multifunctional digital devices are classed with their predominant function, e.g., personal digital assistants (PDAs), which often include mobile phone and portable media player capabilities in addition to their baseline computing capabilities, with computers 621.39. However, a work that focuses on a specific function other than the predominant function is classed with the specific function, e.g., audio recording with a PDA 621.389. If no function predominates, class with the function coming later in 621.3, e.g., a handheld device with cellular telephone and multimedia player capabilities 621.389, a handheld device with cellular telephone, multimedia capabilities, web browsing, and e-mail 621.39

Class selection and use of computer hardware, works treating both hardware and either programming or programs in 004; class storage of pictorial data in optical storage devices in 621.36; class Internet telephony in 621.385; class programmable calculators in 681. Class a specific application of computers with the application, e.g., use of computers in automatic control engineering 629.8

See Manual at 004–006 vs. 621.39; also at 004.6 vs. 621.382, 621.39; also at 006.3 vs. 006.4, 621.36, 621.39

Manual

004-006

Computer science

Here are key questions to guide in classifying works about computer science, with references to relevant Manual notes.

004-006 vs. other disciplines

1. Is the work (A) computer science per se (004-006), or (B) an application of computers to another discipline (T1—0285)?

~~A. Use 004-006 for works about computer science not applied to a specific discipline.~~

~~B. Use the number for the discipline plus notation 0285 from Table 1 for works about the application of computers in another discipline, e.g., the use of parallel computers in fluid dynamics 532.050285435.~~

~~See also discussion at T1—0285.~~

~~...~~

~~13. Does the topic in 006 have subdivisions for hardware, programming, and programs?~~

~~A. Yes: In choosing between subdivisions for hardware, programming, and programs in 006, the same distinctions are made as between 004 and 005 concepts; hence the questions about 004 and 005 are relevant to choosing between hardware and software subdivisions of 006.~~

~~B. No: Class in the appropriate topical subdivision.~~

004.165

Specific microcomputers personal computers

Here, "numbers for specific microcomputers personal computers in 004–005" include 004.165, 005.265, and 005.365.

Use numbers for specific microcomputers personal computers in 004–005 for works treating more than one computer or processor only if:

1. The work treats a single series of very closely related computers or processors (e.g., the Intel Pentium[®] microprocessors 004.165); or
2. The work treats primarily one specific computer or processor but adds that it is also applicable to other similar machines (e.g., a work about programming the IBM PC[®] that says it can also be used as a guide to programming "IBM-compatible" computers 005.265).

Use numbers for specific microcomputers personal computers in 004–005 for works that discuss a computer and its processor, e.g., a work about the ~~Mac~~ Apple iMac[®] series of computers and the PowerPC[®] series of microprocessors 004.165.

If in doubt, do not use numbers for specific microcomputers personal computers in 004–005.

004.67 vs. 006.7, 025.042, 384.3

Internet and World Wide Web

The Internet and the World Wide Web (WWW) can be written about from various disciplinary viewpoints. Because the Dewey Decimal Classification is organized by disciplines, it is necessary to decide the focus of a particular work about the Internet or the WWW in order to choose the correct number.

Use 004.67 for works about the Internet or WWW if they contain a substantial amount of computer science material and at least some information about computer hardware, or if they include a comprehensive overview of the Internet as a system of hardware, software, communications protocols, and other aspects of computer communications included in 004.6.

Use 006.7 for general works about the use of HTML and XML to create hypertext documents on the World Wide Web, and works that discuss web page design or effective web pages.

Use 025.042 for:

1. Interdisciplinary works about the Internet and WWW that do not contain enough computer science material to be classified in 004.67, but that do contain some information science material
2. Information science works that emphasize search and retrieval, including use of web browsers and web search engines to facilitate search and retrieval on the Internet
3. Works that describe information resources available on the Internet or WWW, and on how to find information there

Use 384.3 for works on Internet access providers and works on economic and public policy issues concerning the Internet.

If in doubt, prefer in the following order: 004.67, 025.042, 006.7, 384.3.

005.1–.2 vs. 005.4

Application programming vs. Systems programming

Use 005.1–.2 for works on writing application programs and comprehensive works about writing both application and systems programs, including works about writing application programs that run on specific operating systems or user interfaces, e.g., writing application programs that run on the ~~microcomputer~~ personal computer operating system MS-DOS, writing application programs that run on the ~~microcomputer~~ personal computer graphical user interface Microsoft Windows, both 005.26. Use 005.4 for works about writing systems programs, e.g., writing operating systems, writing user interfaces, both 005.4. If in doubt, prefer 005.1–.2.

See also discussion at 005.3, 005.5 vs. 005.4.

005.3

Programs

Class a program or programs designed to run on two types of computers with the predominant type if there is one, e.g., a program that runs on five ~~minicomputers~~ midrange computers and one ~~microcomputer~~ personal computer 005.3. If neither of two types is predominant, class with the smaller type, e.g., a program for ~~minicomputers and microcomputers~~ midrange computers and personal computers 005.36.

Class programs for a specific application in computer science with the application in 005–006, but never in 004. Among the numbers most frequently used for software besides 005.3 and its subdivisions are 005.4 for systems software and operating systems, 005.5 for general purpose application software (such as word processing programs and spreadsheets), 005.7 for interfacing and data communications programs, 005.74 for database management systems, and 006.6 for computer graphics programs.

Programs applied to a particular subject or discipline are classed with the subject or discipline, plus notation 0285 from Table 1, e.g., programs for financial management 658.150285.

See also discussion at T1—0285; also at 005.1 vs. 005.3.

005.3, 005.5 vs. 005.4

Application programs vs. Systems programs

Use 005.3 for collections of or works about multiple kinds of application programs, and for comprehensive works on application programs and systems programs. Application programs are programs that do things users want done, for example, electronic spreadsheets, statistical packages, word processing programs, desktop publishing programs, computer games, educational programs, tax preparation programs, inventory control programs.

Use 005.5 for general purpose application programs, such as spreadsheets, statistical packages, word processing programs.

Use 001–999 for application programs employed in a specific discipline, e.g., application programs employed in library operations 025.00285, computer games 794.8.

Use appropriate subdivisions of 005.3 for works about application programs that run on specific systems, e.g., application programs that run on a specific ~~microcomputer~~ personal computer operating system 005.368.

Use 005.4 for systems programs and works about them. Systems programs are programs that enable computers to function properly; in effect, they provide life support and

housekeeping for computers. Systems programs accomplish little that interests users except to make it possible for application programs to run. Examples of systems programs are operating systems, utilities packages, user interfaces, and programming language translators.

If in doubt, prefer 005.3 and its subdivisions.

See also discussion at 005.368 vs. 005.365.

005.368 vs. 005.365

Programs for specific operating systems and for specific user interfaces vs. Programs for specific computers

Use 005.368 for application programs that run on specific ~~microcomputer~~ personal computer operating systems, and comprehensive works on application and systems programs that run on specific ~~microcomputer~~ personal computer operating systems. Also use 005.368 for application programs that run on specific user interfaces other than the native interface of the computer operating system, and comprehensive works on application and systems programs that run on specific user interfaces other than the native interface of the computer operating system. Use 005.365 for application programs that run on specific computers, and comprehensive works on application and systems programs that run on specific computers.

If both 005.368 and 005.365 are applicable to the same work, follow the preference note at 005 and class with the number coming last in the schedule, i.e., 005.368 (with the exception specified below). For example, if a work treats application programs that run on a specific computer, on a specific operating system, and on a specific add-on user interface, prefer 005.368. Exception: If a specific computer has only one operating system, so that all programs that run on that computer also run on the operating system, e.g., the ~~Mac~~ Apple iMac[®] series of computers and Mac OS X[®], class programs that run on that computer and operating system with the computer in 005.365. Earlier and later versions of the same operating system (e.g., Macintosh System 9[®] and Mac OS X[®]) count as one operating system, even though the differences between the earliest and the latest versions may be great.

If in doubt, prefer 005.368.

See also discussion at 005.3, 005.5 vs. 005.4.

011 vs. 005.3029, 016.0053, 025.04

Bibliographies of electronic resources

Use 011 for general bibliographies of electronic resources *not limited to computer programs (or software)*. Use 005.3029 for annotated lists of programs with lengthy reviews that are used as buyers' guides, e.g., a collection of reviews of ~~microcomputer~~ personal computer software 005.36029. Use 016.0053 for bibliographies and lists of

programs and for annotated lists if the annotations are relatively brief. Use 025.04 for bibliographies of web sites, as they are normally indistinguishable from directories of web sites. If in doubt, prefer 011.

See also discussion at 025.04, 025.06 vs. 005.74.

658.4 vs. 651.7, 808

Communication in management vs. Communication as an office service vs. Business writing

Use 658.4 for works that focus on use of communication to achieve management goals. These works often emphasize the personal relations aspects of management communication.

Use 651.7 for works emphasizing such topics as the use of the telephone, techniques of dictation, how to use ~~microcomputer~~ personal computer software for form letters, mail-handling techniques—in short, the mechanics of communication. Do not use 651.7 for works that emphasize effective business writing style.

Use 808 for style manuals on business writing and works on how to do effective business writing, whether aimed at secretaries or executives. Use 808 for works on how to write a specific type of communication (e.g., business letters) and for model collections of a specific type intended to illustrate good writing style.

If in doubt, prefer in the following order: 658.4, 808, 651.7.