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Decimal Classification Division

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Decimal Classification Editorial Policy Committee

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Via: Joan S. Mitchell, Editor in Chief
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Re: 004-006 Computer science

Relocations

From	To	
005.757	005.756	
006.33	005.7401513	Deductive databases

Expansions

From	To	Topic
004.65	004.652	Peer-to-peer architecture
004.65	004.654	Service-oriented architecture
005.72	005.726	Data preparation and representation, record formats programs
005.75	005.753	Temporal, spatial, constraint databases
006.75	006.754	Online social networks

The question was raised at EPC Meeting 128 whether the Manual note for 004–006, structured as a set of “key questions” and intended originally as an orientation to a major new development, is still needed. The ensuing discussion noted, on the one hand, that the current note can be more confusing than helpful and does not accord with the general style of other Manual notes. On the other hand, there are “some really problematic areas” in 004–006 in need of clarification. This exhibit presents recommendations for replacing the entire current Manual note.

Additionally, the exhibit addresses specific topic areas highlighted by classifiers at the Library of Congress or issues that have arisen in the course of our Weekly List mappings.

Manual note

The current 004–006 Manual note appears in the appendix. Since it is mostly redundant with notes already in the schedules, our intent is to delete the Manual note in its entirety and to make the changes necessary to bring its intentions into the schedules. (See table below.) Because the Manual note is affected in its entirety, no strikethroughs are shown in the appendix. However, schedule and manual entries given below include the usual underlining and strikethroughs.

The current Manual note for 004-006 is structured as a set of thirteen key questions. Two key questions concern the relationship between hardware, programming, and programs classes and are not readily handled by existing notes or simple modifications: #11 and #13 (which is based on #11). The four-part answer (to #11) reads:

- A. Use 004 if the 004 and 005 concepts together constitute a single system, e.g., local-area networking, including both hardware and software aspects, with a specific computer program for distributed computing 004.68 (not 005.4476).
- B. Use 005 if the information on the 004 concept is a brief supplement or background for the 005 concept, e.g., a work on microcomputer software with only brief treatment of hardware 005.36 (not 004.16).
- C. Use 005 if the 005 concept is applied to the 004 concept, e.g., data security in client-server computing 005.8 (not 004.36).
- D. Use 005 if the 004 concept is applied to the 005 concept. If the topic of the work approximates the whole of the class number, add T1—0285, e.g., a microprocessor for data encryption 005.8202854165 (not 004.165).

Principle A is covered by a note at 004; principles B and D implement standard principles. Only principle C, which goes counter to the rule of application, needs special treatment. At the same time, there is a preference note at each of 004, 005, and 006, which, if generalized over 004–006, would accomplish the desired result. We therefore propose to add a centered entry at 004–006 with a preference note to replace the preference notes at the individual numbers.

Key question	Topic	Schedule status/ Action taken
1	CS vs. computer application	Note already at 004
2	CS vs. computers in society	Note already at 004
3	CS vs. computer engineering	Amplified note already at 004
4	CS vs. computer mathematics	Manual note already exists
5	CS vs. LIS (for information systems)	Note already at 005.74
6	Computer communications	Note already at 004.6
7-9	Hardware vs. software vs. special computer method	Notes already at 004, 005
10	Multiple 004 concepts?	Note already at 004 + standard operating procedure
11	004 + 005 concepts	Added preference note at new 004–006 centered entry

12	Multiple 005 concepts?	Added preference note at new 004–006 centered entry
13	Multiple 006 concepts?	Added preference note at new 004–006 centered entry

≥ 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 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 personal computers 004.56 (not 004.16)~~

Class computer modeling and simulation in 003.3. Class 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

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

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

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

*Use notation 019 from Table 1 as modified at 004.019

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.

Specific topics

- SOA (service-oriented architecture): Service-oriented architecture is the network architecture that makes web services possible, which should be classed in 004.65. There is ample literary warrant to give SOA its own number (as well as to give peer-to-peer architecture, which has been editorially mapped to 004.65, its own number).

004.65 *Communications network architecture

Class here systems analysis, design, topology (configuration) of computer communications networks; ~~peer-to-peer (P2P) 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

*Use notation 019 from Table 1 as modified at 004.019

- Computer software development is a commonly used LCSH qualifier that should be indexed to 005.1 Programming. Additionally, iterative development, an overall software engineering methodology, should be indexed to 005.1. At the same time, rule-based programming should be added as an index term at 005.115.

- The intended use of 005.14 (Programming) Verification, testing, measurement, debugging vs. 005.30287 (Programs) Testing and measurement is unclear. The Manual note at 005.1 vs. 005.3 gives the instruction that 005.14 is to be used for “works on testing and measurement as part of program development,” while 005.30287 is to be used for “works that discuss ways for users to test or measure programs as an aid in selection.” The schedules indicate that software metrics are included in 005.14. The overall picture—which is reinforced by displacing testing and measurement from 005.0287 to 005.14—is that more material is intended to be classed in 005.14 than in 005.30287. And this is indeed the case: 005.14 is home for 765 WorldCat records, while 005.30287 is home for only 64. However, most of the material classed at 005.30287 is indistinguishable from the material classed at 005.14. This probably results from insufficient instruction at 005.30287 on the kinds of program testing and measurement that has, in effect, been relocated to 005.14.

What needs to be made clear is that 005.14 is to be used for material on testing and measurement not only of the process of programming, but also for material on testing and measurement of programs that feed back into the programming process writ large. For example, it should be made clear at 005.30287 that software metrics (which are more likely to feed back into software engineering than into programming per se) are classed in 005.14.

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

- Adobe Acrobat: The LCSH PDF (Computer file format) has been mapped to 005.72 Data preparation and representation, record formats, but the LCSH Portable document software has not been mapped. The software that produces a PDF should be in the same number as its output. Literary warrant is sufficient to expand for Programs underneath 005.72: Over 100 WorldCat records classed in 005.72 carry the subject heading Portable document software.

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

Including portable document software

*Use notation 019 from Table 1 as modified at 004.019

- Databases: Databases are organized into types by virtue of their properties. For many types of databases, the relevant property is how they store their data, as is the case with network, hierarchical, relational, and object-oriented databases. But in other cases, the relevant property is the semantic nature of the data that are stored or the kinds of querying and processing that are available, as is the case with deductive (logic), temporal, spatial, and statistical databases. Currently several important types of databases are implicitly in standing room at 005.75 Specific types of data files and databases simply because they have not been provided for. Some of these can be handled adequately by existing classes and just need notes and/or indexing:
 - Deductive databases, currently classed in 006.33 Knowledge-based systems, are better treated with other databases and can be handled via a standard subdivision: 005.74015113.
 - Temporal, spatial, and constraint databases form a reasonably cohesive group, in that temporal and spatial databases deal (conceptually at least) with continuous data, while constraint databases offer a mechanism for dealing efficiently with such data. That is, constraint databases are likely to handle spatial and/or temporal data, but it is not the case (so far as I know) that most spatial and temporal databases are constraint databases. Currently, there is literary warrant to expand for temporal databases, but not (yet) for spatial or constraint databases. Perhaps these are bullets that can be dodged: Works on spatial data are often concerned as well with temporal data or geographic information systems. The literature on constraint databases is thin and does not appear to have gathered momentum. While there is little room for expansion in 005.75 Specific types of data files and databases, we propose to expand for Temporal, spatial, constraint databases at 005.753 now, recognizing that we will likely need to reorganize the development for databases in the foreseeable future.
 - Web databases have been editorially mapped to 025.04, which is fine for works about the database as an information system to be queried. But if the focus of the work is about the development of web databases, an appropriate class is 005.7402854678. This diverges from the recommendation given in EPC Exhibit 128-12 to class web databases in 005.758, extrapolating from the client-server architecture of the WWW to databases accessed via the web. But it is not the case that web databases themselves are distributed, but only that they operate in a networked/distributed environment. Well over 150 works on web databases have already been classed in 005.758, where they are not in good company. Comprehensive works for web databases should go in 005.7402854678, as it is with respect to development that web databases differ from other databases more than with respect to search and retrieval.

005.74 *Data files and databases

005.740 151 13 Mathematical logic

Class here logic databases, deductive databases
[formerly 006.33]

...

005.740 285 467 8 Web databases

Class here comprehensive works on web
databases

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

005.753 *Temporal, spatial, constraint databases

006.33 *Knowledge-based systems

Class here ~~deductive databases~~, expert systems

Deductive databases relocated to 005.74015113

*Use notation 019 from Table 1 as modified at 004.019

- o Oracle as an object-oriented database management system: Oracle is an object-relational database management system; that is, it supports object-oriented programming, but the data are stored as relations, not as objects. The form in which data are stored governs how the database is to be classified. Oracle therefore should be classed in 005.7565 Specific relational database management systems. Unfortunately, Oracle stands in DDC 22 as the example at 005.7575 Specific object-oriented database management systems. This has been corrected in the updated examples for 004–006 approved in EPC Meeting 128. However, the correction should include an explicit relocation and should probably also include giving Oracle as the example at 005.7565. [The underlining and strikethroughs are given relative to the previous exhibit.]

005.75 Specific types of data files and databases

Including centralized files and databases; flat-file databases

005.756 *Relational databases

Class here object-relational databases [formerly 005.757]

- 005.756 5 Specific relational database management systems
- Arrange alphabetically by name of database management system, e.g.,
MySQL Oracle®
- 005.757 *Object-oriented databases
- ~~Class object relational databases in 005.756~~
- 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.,
Objectivity/DB®

*Use notation 019 from Table 1 as modified at 004.019

- Digital rights management: Digital rights management involves the use of access control technologies to protect/restrict use of digital media, thus belonging with access control in 005.8. (Virtual goods will also be used as an index term.)
- Digital signatures use cryptography to simulate the properties of a handwritten signature in a digital context; the digital signature helps ensure data security, thus belonging to 005.82.
- Malware: Malware is a generic term that includes everything at 005.84. Another common form of malware with ample literary warrant, but missing from 005.84, is spyware. We propose to use malware for the class caption, to move computer viruses from the caption to the including note, and to add spyware to the including note. While the term “malware” is not so very familiar, the use of the more specific term “computer viruses” at 005.84 has resulted in works on spyware being classed in 005.8 rather than in 005.84.

005.8 *Data security

Including digital rights management

Class here access control, computer network security, firewalls

See also 658.478 for data security in management

005.82 *Data encryption

Including digital signatures

Class here ciphers

Class interdisciplinary works on cryptography in 652.8

005.84 *~~Computer viruses~~ Malware

Including computer viruses, spyware, Trojan horses, worms

*Use notation 019 from Table 1 as modified at 004.019

- Multi-agent systems: The class-here note at 006.3 includes intelligent agents, but lacks the equally relevant multi-agent systems, which should be supplied.
- Description logics should be added as an index term for 006.332 Knowledge engineering.
- Robotics: Although certain aspects of robotics are firmly planted in computer science, more particularly in artificial intelligence, the topic is treated in its entirety at 629.892. A class-elsewhere note should be added at 006.3 Artificial intelligence.

006.3 *Artificial intelligence

Class here comprehensive works on artificial intelligence and cognitive science, 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

*Use notation 019 from Table 1 as modified at 004.019

- Web site development: While web page design is in the class-here note at 006.7, the equally relevant topic of web site development (widely used as an LCSH qualifier) is missing and needs to be supplied.
- Computer science aspects of social networking, e.g., how to use online social networking software: EPC has previously approved expanding under 006.7 Multimedia systems for Specific types of multimedia systems at 006.75 (with Blogs at 006.752). We propose to further develop this expansion by providing for Online social networks (an LCSH) at 006.754. In addition to the literature on how to use these sites (e.g., *Facebook for Dummies*), which would class under 006.754, there is also considerable literature on the social aspects of online social networking, to which 006.754 should point. (The number for the social aspects of online social networking would be the interdisciplinary number.)

004.69 Specific kinds of computer communications

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

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 Internet in 004.678; class interdisciplinary works on World Wide Web 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

006.75 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

*Use notation 019 from Table 1 as modified at 004.019

302.3 Social interaction within groups

Including teasing

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

302.302 85

Online social networks

For computer science aspects of online social networks, see 006.754

- Windows as user interface vs. Windows as operating system: The earliest versions of Microsoft Windows® are often regarded as being a graphical user interface—merely a front-end to MS-DOS—instead of being an operating system. While it is the case that Windows 1.0, for instance, could only function on top of MS-DOS, it is also the case that it incorporated functionality typical of an operating system: (primitive) multitasking, its own executable file format, memory management, device drivers. Microsoft labeled Windows 1.0 as an “operating environment.” That said, the distinction made between operating systems and user interfaces in 005.268 Programming for specific operating systems and 005.269 Programming for specific user interfaces is based on whether a user interface is the “native interface of the computer operating system.” As long as Windows required some other full-blown operating system underneath (typically MS-DOS), it was not the native interface. Thus, versions of Windows through Windows 3.x can be seen as user interfaces, while Windows NT, Windows 95, and their successors can be seen as full-blown operating systems. Clarification will be added to the Manual note at 005.268 vs. 005.265, 005.269. (A similar change will be made at the Manual note at 005.3682 vs. 005.365, 005.3684.)

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 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 through 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[®] 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.

Appendix

Current Manual note for 004–006 (to be deleted in its entirety)

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.

2. Is the work (A) predominantly about computer science (004–006), or (B) predominantly about the role of computers in society (300)?

A. Use 004–006 for works that are predominantly about computer science. Such works often have a chapter about the role of computers in society.

B. Use 300 for works about the role of computers in society, e.g., computers and social change 303.4834, computers and the right of privacy 323.448.

See also discussion at 303.483 vs. 306.45, 306.46.

3. If the work covers hardware topics, is it about (A) computer engineering (621.39), or (B) use of computer hardware (004), or hardware and software combined (004)?

A. Use 621.39 for works that discuss the engineering, manufacture or repair of computer hardware and say nothing about software.

B. Use 004–006 for works that discuss use of computers, or that discuss both hardware and software.

See also discussion at 004–006 vs. 621.39.

4. If the work is highly mathematical, is it (A) mathematics (510), or (B) mathematics applied to computer science (004–006 + T1—0151)?

A. Use 510 for mathematics per se, e.g., Turing machines 511.35.

B. Use 004–006 plus notation 0151 from Table 1 for mathematics applied to computers, e.g., the role of mathematical logic in computer science 004.015113.

See also discussion at 004.0151 vs. 511.1, 511.35; also at 005.101; also at 510, T1—0151 vs. 004–006, T1—0285.

5. If the work is about databases or information systems, is it (A) computer science (005.74–.75) or (B) information science (025.04–.06)?

A. Use 005.74 for computer science aspects of databases and information systems.

B. Use 025.04–.06 for information science aspects of databases and information systems.

6. If the work is about computer communications, is it about (A) computer science aspects (004–005) or (B) economic and related aspects (384.3)?

A. Use 004–005 for computer science aspects of computer communications, e.g., the Internet and how it works 004.678.

B. Use 384.3 for economic and related aspects, e.g., Internet access providers 384.33.

See also discussion at 004.6 vs. 384.3; also at 004.678 vs. 006.7, 025.042, 384.33.

Within 004–006

Once you have determined that the work belongs in 004–006 rather than in one of the alternative class numbers discussed above, you must decide whether the work is about a special computer method only (006); programming, programs, and data only (005); hardware only (004); or hardware plus programming, programs, data (004). Use 006 for both software (programming, programs, data) and hardware aspects of special computer methods.

The best way to approach the computer science schedule is to start at the end (006.8) and work backward toward 004. At 004, 005, and 006, there are instructions to class complex subjects with aspects in two or more subdivisions in the subdivision coming last in the schedule. Many works in computer science treat complex subjects to which these preference instructions apply.

The key questions are:

7. Is the work limited to a special computer method (006)?

A. Yes: Go to question 13.

B. No: Go to question 8.

8. Does the work cover 005 concepts only (programming, programs, data)?

A. Yes: Go to question 12.

B. No: Go to question 9.

9. Does the work cover both hardware (004) and computer programming, programs, data (005)?

A. Yes: Go to question 11.

B. No: Go to question 10.

Within 004

These questions apply only to works limited to 004 concepts.

10. Does the work cover more than one 004 concept?

A. Yes: Are all the 004 concepts aspects of a single complex subject?

i. Yes: Use the last number in 004 for a covered topic (following second note at 004), e.g., standards and protocols for local-area networks 004.68 (not 004.62).

ii. No: Unless there are notes to the contrary, follow the first-of-two rule, e.g., distributed and parallel computing 004.35 (not 004.36).

B. No: Use the appropriate subdivision of 004.

See also discussion at 004.1; also at 004.1 vs. 004.24; also at 004.1 vs. 004.3; also at 004.11–.16.

Within 004–005

This key question applies only to works that cover concepts expressed in both 004 (computer hardware) and 005 (computer programming, programs, data).

11. What is the relationship between the 004 concept(s) and the 005 concept(s)?

A. Use 004 if the 004 and 005 concepts together constitute a single system, e.g., local-area networking, including both hardware and software aspects, with a specific computer program for distributed computing 004.68 (not 005.4476).

B. Use 005 if the information on the 004 concept is a brief supplement or background for the 005 concept, e.g., a work on microcomputer software with only brief treatment of hardware 005.36 (not 004.16).

C. Use 005 if the 005 concept is applied to the 004 concept, e.g., data security in client-server computing 005.8 (not 004.36).

D. Use 005 if the 004 concept is applied to the 005 concept. If the topic of the work approximates the whole of the class number, add T1—0285, e.g., a microprocessor for data encryption 005.8202854165 (not 004.165).

See also discussion at 004 vs. 005; also at 004.6 vs. 005.71.

Within 005

This key question applies only to works limited to 005 concepts (computer programming, programs, data).

12. Are all the 005 concepts aspects of a single complex subject?

A. Yes: Use the last number in 005 for a covered aspect, following the second note at 005, e.g., structured programming using a specific programming language on a specific microcomputer 005.265 (not 005.133 or 005.113).

B. No: Unless there are notes to the contrary, follow the first-of-two rule, e.g., operating systems for parallel and distributed computing 005.4475 (not 005.4476).

See also discussion at 004 vs. 005; also at 004.6 vs. 005.71; also at 005.1–2 vs. 005.42; also at 005.1 vs. 005.3; also at 005.3; also at 005.3, 005.5 vs. 005.43–45.

Within 006

This question applies only to works limited to special computer methods.

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.