Date: 2002-10-18
From: Doug Mann (Rapporteur, Mann.Doug@epa.gov), and Frank Farance (frank@farance.com)
Subject: Citation Analysis Report

As per the Kona Resolution 31, the Citation Analysis Rapporteur has performed a pilot study of JTC1 standards and their citations. For this pilot study, we chose 360 published ISO/IEC standards, technical reports, etc.. The selected standards were based upon:

1. Going to the ISO catalogue page on ISO's web site (see attached screen shots).
2. Choosing ICS subject #35 (information technology, office machines).
3. Choosing the first three sub-categories:
    - 35.020 Information technology (IT) in general Including general aspects of IT equipment
    - 35.040 Character sets and information coding Including coding of audio, picture, multimedia and hypermedia information, IT security techniques, encryption, bar coding, etc.
    - 35.060 Languages used in information technology
4. Then doing a web search (via Google) on each of the standards. For example:
    - ISO/IEC 1539-1:1997 Information technology -- Programming languages -- Fortran - Part 1: Base language
    - ISO/IEC 1539-1:1997/Cor 1:2001
    - ISO/IEC 1539-1:1997/Cor 2:2002
    - ISO/IEC 1539-2:2000 Information technology -- Programming languages -- Fortran -- Part 2: Varying length character strings
    - ISO/IEC 1539-3:1999 Information technology -- Programming languages -- Fortran -- Part 3: Conditional compilation
    - ISO 1989:1985 Programming languages -- COBOL
    - ISO 1989:1985/Amd 1:1992 Intrinsic function module
    - ISO 1989:1985/Amd 2:1994 Correction and clarification amendment for COBOL
    - ISO/IEC 2382-15:1999 Information technology -- Vocabulary -- Part 15: Programming languages
    - ISO 6160:1979 Programming languages -- PL/I
    - ... and so on

    with a search query based on standard number (e.g., "ISO 1539", "ISO 1989", "ISO 2382", etc.).

The results were tabulated and sorted based on ranking and based on standards number (see attached spreadsheets). The following notes should be considered when reviewing these results:

- Regardless of the quality of the search engine, it is difficult to create a precise query that returns the exact results of the *intended query*.
- The results were not "preened" to verify each reference actually contained a complete reference to the ISO standard, e.g., a web page that contained the phrase "the lecture on the Greek word ISO will be held in Room 646" is likely to match "ISO 646".
- Standards are not just referenced by their ISO registration number, e.g., "ISO 21000" produces a different set of search results than "MPEG-21".
- Foundational and infrastructure standards that become core standards *for other standards* (e.g., ISO/IEC Guide 2, ISO/IEC 2382 Information Technology Vocabulary) become under-reported because they are, typically, only referenced within a standard, not by users or applications of the standard.

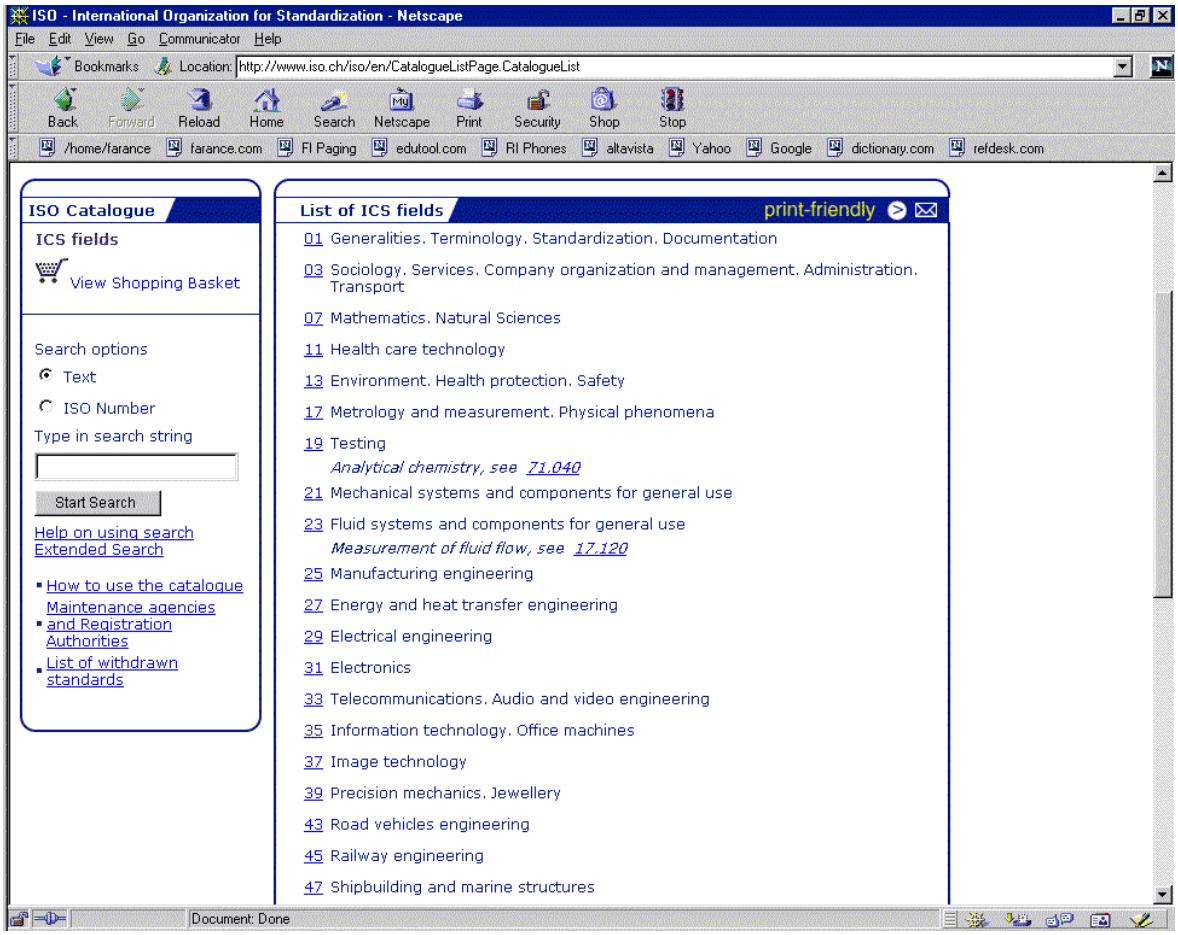
- Of the 360 standards, only 40 of them had >2000 hits. The winner was: ISO/IEC 8859 (8-bit character sets) with 1.1 million hits; second place was ISO/IEC 1989 (COBOL) with 434,000 hits.
- For the remaining 320 standards we researched, approximately 1/3 had 1000-2000 hits and the remaining 2/3 had <1000 hits.

It's clear that a good number of the low-referenced standards were important standards, but not referenced well on the web. We believe that a significant reason for the lack of referencing (both as users and as developers of standards) is because of the unfamiliarity with existing standards work. The reason citation analysis was discussed in Tromsø and Kona was to address a JTC1 marketing need: to make users and developers of standards more familiar with the JTC1 work product. The conclusion is emphasized by Kona resolution #33 (Facilitating Standards Development & Public Awareness of JTC1 Standards):

> **[Excerpt]** To facilitate standards development and public awareness of ISO/IEC JTC 1 Standards, JTC 1 recommends to the ISO Market Project Task Force that ISO and IEC permit the making publicly available on the ISO and ITTF Web sites and/or permit its P-Member bodies to make publicly available on their Web sites, the contents of the following clauses for each of the ISO/IEC JTC1 standards, namely:
>
> Clause 0 Introduction
> Clause 1 Scope
> Clause 2 Normative references
> Clause 3 Technical normative elements
> 3.1 Terms and definitions
> 3.2 Symbols and abbreviations
>
> Having such information on JTC 1 standards publicly available has several benefits including:
>
> 1. facilitating standards development work both within JTC 1 and those outside of JTC 1 standards. Having such information readily available assists in minimizing duplication work, identifying use of standards in other standards, and maximizing re-use of existing standards (e.g. existing terms and definitions) in other standards development work.
> 2. serving as a means for facilitating public awareness of JTC 1 standards by providing information deemed to be essential for access and discovery of such standards by potential users (who then hopefully will acquire them for their needs).
>
> ...

We have also done a pilot project on creating these kind of excepts (see screen shots below) and we believe this kind of except would greatly improve upon the use of JTC1's visibility (note: thanks go to ISO TC46 SC9, as implemented by Canada, for creating this kind of template). We have created the web site 'http://jtc1xref.org" ("XREF" = "cross-reference") to post these kind of documents. Unfortunately, we don't believe that Kona Resolution #33 authorizes us to make these excerpts available to the public (Resolution #33 is for National Bodies), so we have not made these excerpts public. We are unaware of any National Bodies that have implemented Resolution #33.

We recommend that either JTC1 further encourage NBs to take advantage of Resolution #33, or that JTC1 further investigate this itself — the Citation Rapporteur would be willing to volunteer to coordinate. We request that we be permitted to publish the excerpts on the jtc1xref.org web site so that (1) search engines can index these kind of materials, and (2) potential users and developers can discover JTC1 standards via usual web search capabilities. If appropriate, JTC1 should issue a press release when the web site is sufficiently usable and searchable via search engines (it takes 6-8 weeks for web crawlers to discover new web sites).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01 Generalities. Terminology. Standardization. Documentation
03 Sociology. Services. Company organization and management. Administration. Transport
07 Mathematics. Natural Sciences
11 Health care technology
13 Environment. Health protection. Safety
17 Metrology and measurement. Physical phenomena
19 Testing
Analytical chemistry, see 71.040
21 Mechanical systems and components for general use
23 Fluid systems and components for general use
Measurement of fluid flow, see 17.120
25 Manufacturing engineering
27 Energy and heat transfer engineering
29 Electrical engineering
31 Electronics
33 Telecommunications. Audio and video engineering
35 Information technology. Office machines
37 Image technology
39 Precision mechanics. Jewellery
43 Road vehicles engineering
45 Railway engineering
47 Shipbuilding and marine structures
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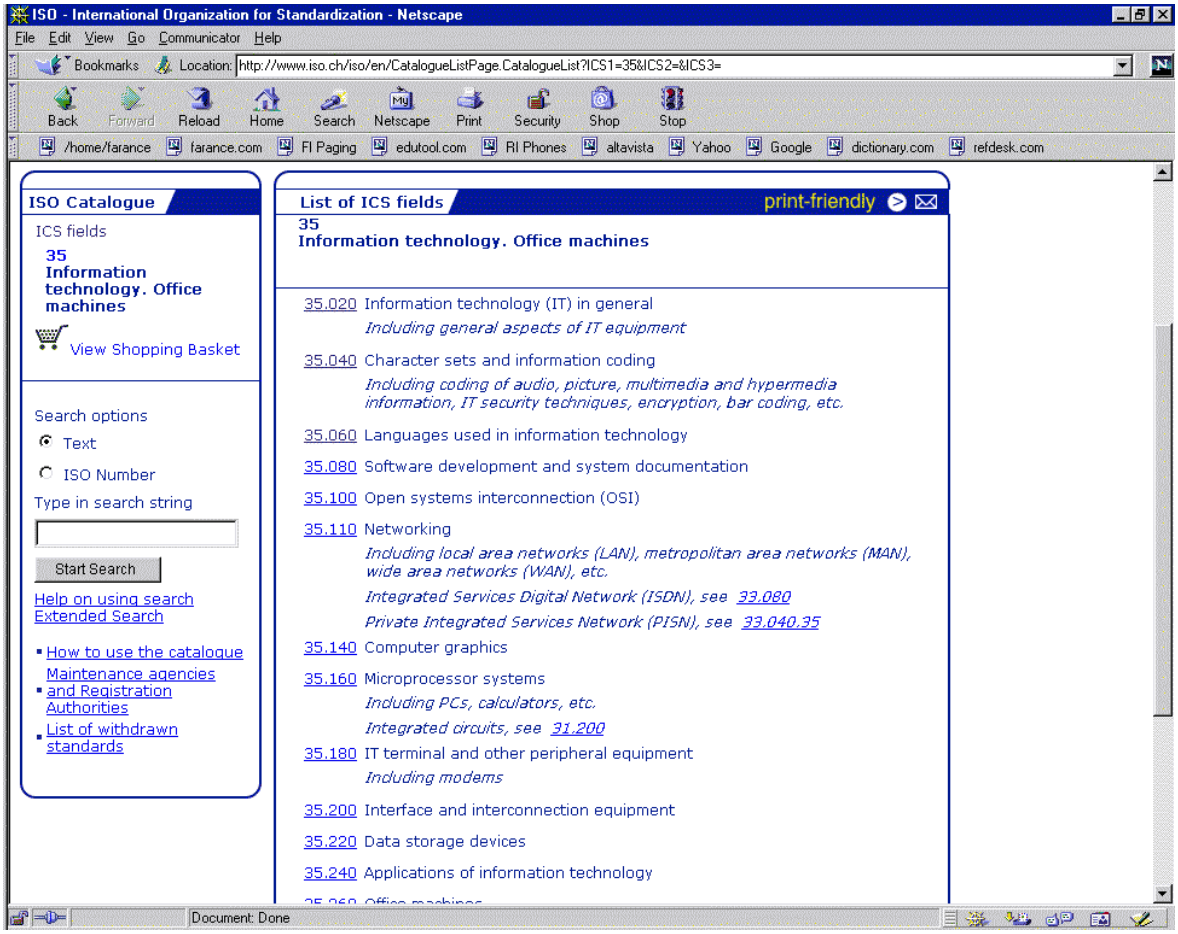
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List of withdrawn standards
List of ICS fields
print-friendly
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Information technology. Office machines
35.020 Information technology (IT) in general
Including general aspects of IT equipment
35.040 Character sets and information coding
Including coding of audio, picture, multimedia and hypermedia information, IT security techniques, encryption, bar coding, etc.
35.060 Languages used in information technology
35.080 Software development and system documentation
35.100 Open systems interconnection (OSI)
35.110 Networking
Including local area networks (LAN), metropolitan area networks (MAN), wide area networks (WAN), etc.
Integrated Services Digital Network (ISDN), see 33.080
Private Integrated Services Network (PISN), see 33.040.35
35.140 Computer graphics
35.160 Microprocessor systems
Including PCs, calculators, etc.
Integrated circuits, see 31.200
35.180 IT terminal and other peripheral equipment
Including modems
35.200 Interface and interconnection equipment
35.220 Data storage devices
35.240 Applications of information technology
Document: Done

Count	Standard	Title
68800	646	Information technology -- ISO 7-bit coded character set for information interchange
11300	1539	Information technology -- Programming languages -- Fortran
434000	1989	Programming languages -- COBOL
144400	2022	Information technology -- Character code structure and extension techniques
8660	2033	Information processing -- Coding of machine readable characters (MICR and OCR)
13700	2047	Information processing -- Graphical representations for the control characters of the 7- bit coded character set
5760	2375	Data processing -- Procedure for registration of escape sequences
5890	2832	Information technology -- Vocabulary
2230	4873	Information technology -- ISO 8-bit code for information interchange -- Structure and rules for implementation
2130	5426	Extension of the Latin alphabet coded character set for bibliographic information interchange
2320	5427	Extension of the Cyrillic alphabet coded character set for bibliographic information interchange
3160	6160	Programming languages -- PL/I
4930	6429	Information technology -- Control functions for coded character sets
2150	6522	Information technology -- Programming languages -- PL/1 general purpose subset
2730	6523	Information technology -- Structure for the identification of organizations and organization parts
2750	6630	Documentation -- Bibliographic control characters
4030	7185	Information technology -- Programming languages -- Pascal
4020	7350	Information technology -- Registration of repertoires of graphic characters from ISO/IEC 10367
2310	8807	Information processing systems -- Open Systems Interconnection -- LOTOS -- A formal description technique based on the temporal ordering of observational behaviour
1100000	8859	Information technology -- 8-bit single-byte coded graphic character sets
7140	9075	Information technology -- Database languages -- SQL
15400	9789	Information technology -- Guidelines for the organization and representation of data elements for data interchange -- Coding methods and principles
2460	9796	Information technology -- Security techniques -- Digital signature schemes giving message recovery
2630	9798	Information technology -- Security techniques -- Entity authentication
15700	9899	Programming languages -- C
8590	9945	Information technology -- Portable Operating System Interface (POSIX)
2840	10118	Information technology -- Security techniques -- Hash-functions
3080	10206	Information technology -- Progamming languages -- Extended Pascal
50500	10646	Information technology -- Universal Multiple-Octet Coded Character Set (UCS)
3900	10918	Information technology -- Digital compression and coding of continuous-tone still images
8550	11172	Information technology -- Coding of moving pictures and associated audio for digital storage media at up to about
3920	11179	Information technology -- Specification and standardization of data elements
13900	13818	Information technology -- Generic coding of moving pictures and associated audio information
3910	14496	Information technology -- Coding of audio-visual objects
8850	14651	Information technology -- International string ordering and comparison -- Method for comparing character strings and description of the common template tailorable ordering
3970	14772	Information technology -- Computer graphics and image processing -- The Virtual Reality Modeling Language
5420	14882	Programming languages -- C++
5290	15408	Information technology -- Security techniques -- Evaluation criteria for IT security
12300	17799	Information technology -- Code of practice for information security management
5170	21000	Information technology -- Multimedia framework (MPEG-21)

Count	Standard	Title
1100000	8859	Information technology -- 8-bit single-byte coded graphic character sets
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144400	2022	Information technology -- Character code structure and extension techniques
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50500	10646	Information technology -- Universal Multiple-Octet Coded Character Set (UCS)
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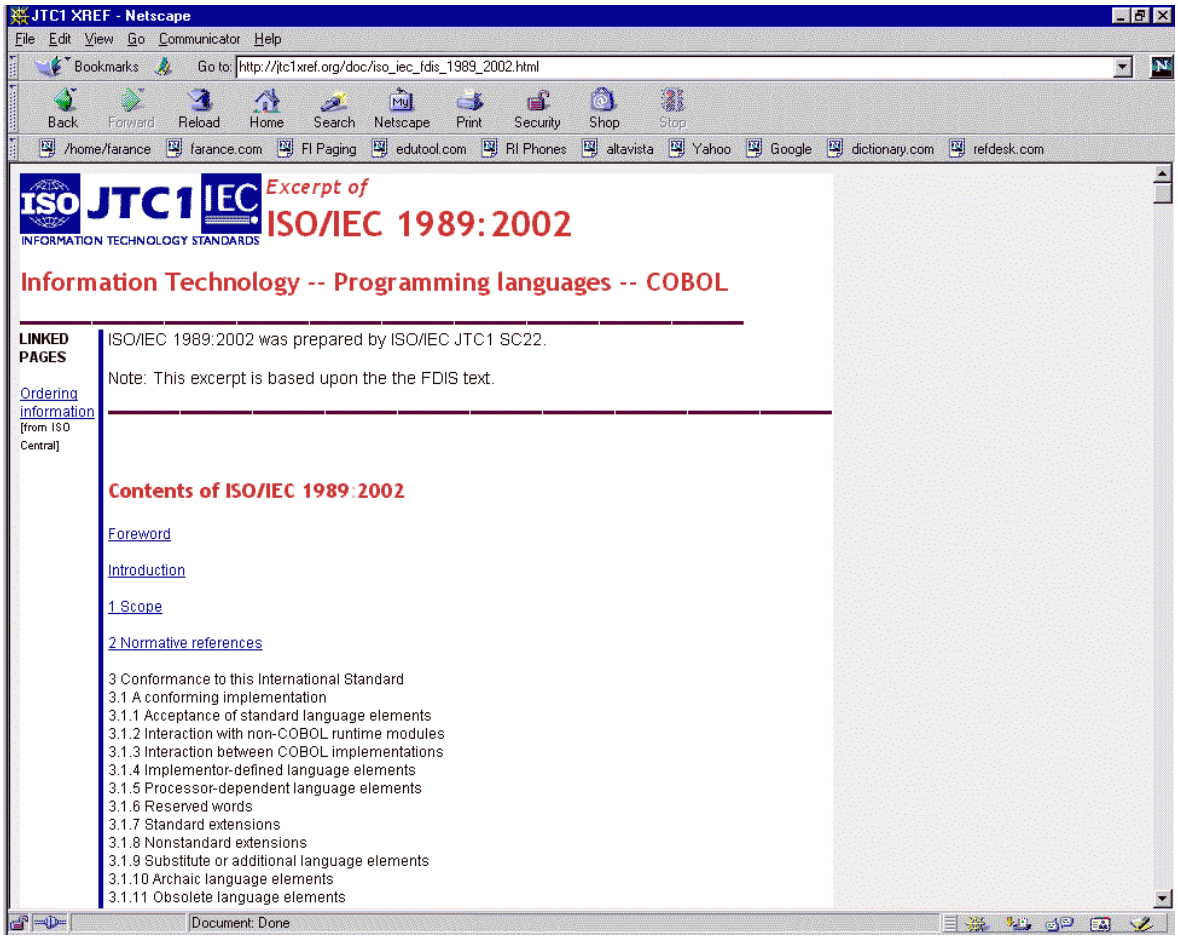
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INFORMATION TECHNOLOGY STANDARDS
Excerpt of
ISO/IEC 1989:2002
Information Technology -- Programming languages -- COBOL
LINKED PAGES
Ordering information [from ISO Central]
ISO/IEC 1989:2002 was prepared by ISO/IEC JTC1 SC22.
Note: This excerpt is based upon the the FDIS text.
Contents of ISO/IEC 1989:2002
Foreword
Introduction
1 Scope
2 Normative references
3 Conformance to this International Standard
3.1 A conforming implementation
3.1.1 Acceptance of standard language elements
3.1.2 Interaction with non-COBOL runtime modules
3.1.3 Interaction between COBOL implementations
3.1.4 Implementor-defined language elements
3.1.5 Processor-dependent language elements
3.1.6 Reserved words
3.1.7 Standard extensions
3.1.8 Nonstandard extensions
3.1.9 Substitute or additional language elements
3.1.10 Archaic language elements
3.1.11 Obsolete language elements
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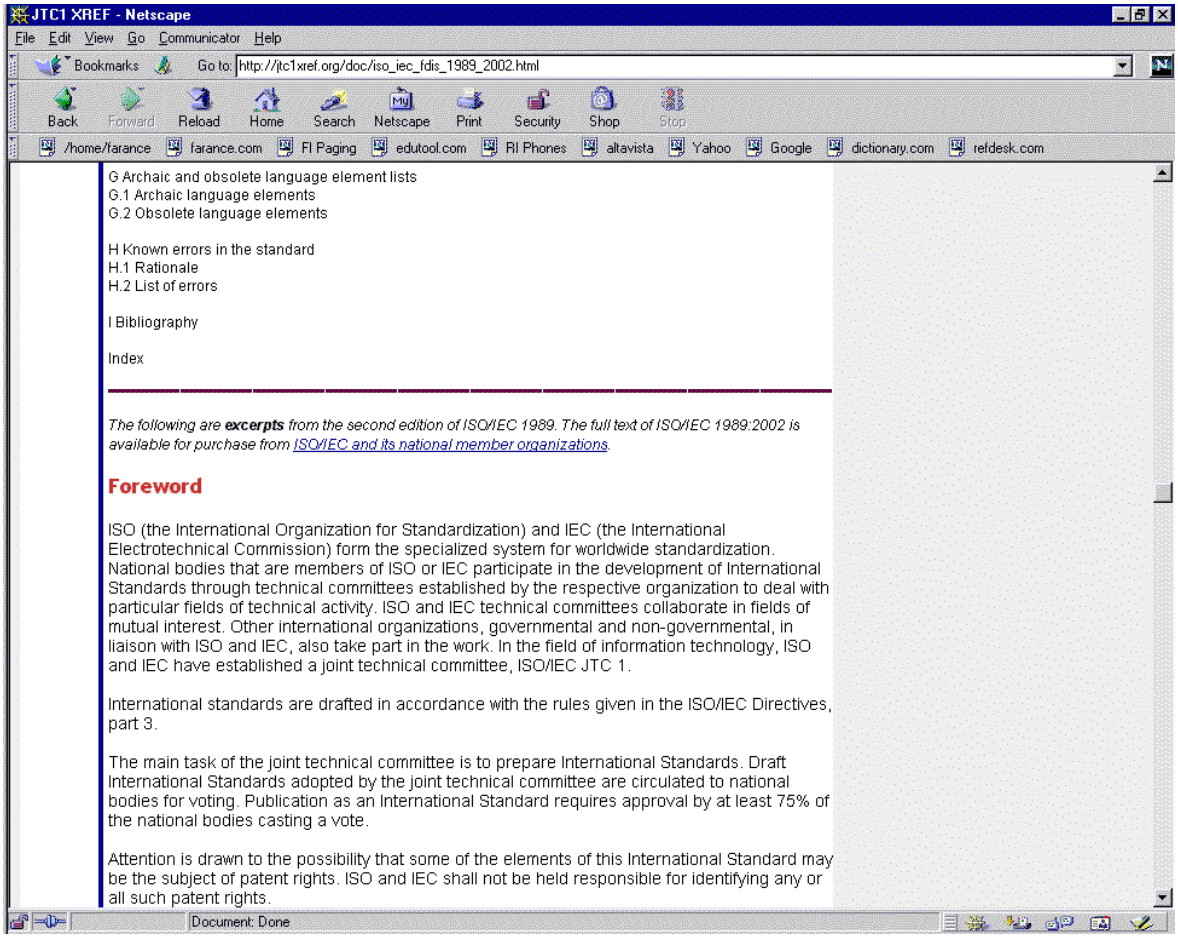
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G Archaic and obsolete language element lists
G.1 Archaic language elements
G.2 Obsolete language elements
H Known errors in the standard
H.1 Rationale
H.2 List of errors
I Bibliography
Index
The following are excerpts from the second edition of ISO/IEC 1989. The full text of ISO/IEC 1989:2002 is available for purchase from ISO/IEC and its national member organizations.
Foreword
ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.
International standards are drafted in accordance with the rules given in the ISO/IEC Directives, part 3.
The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75% of the national bodies casting a vote.
Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.
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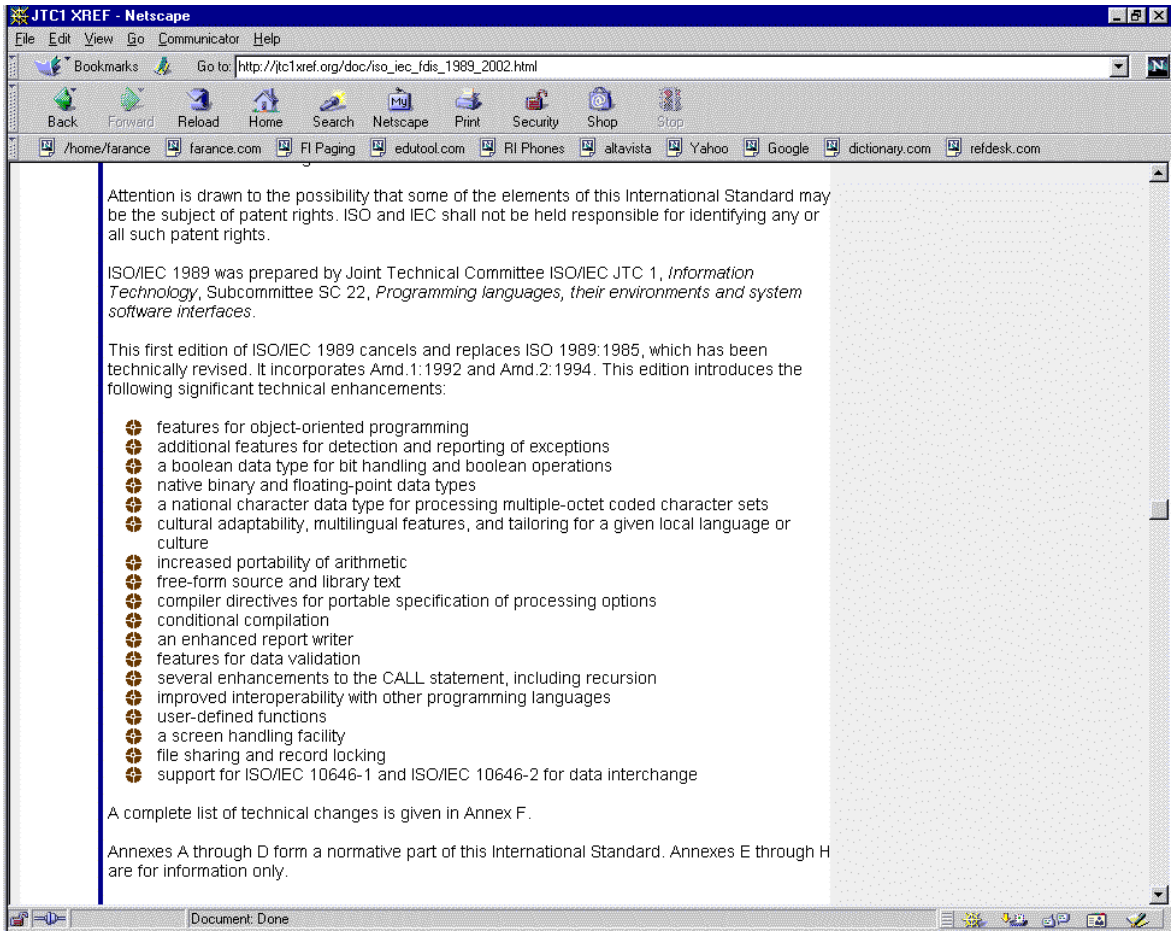
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Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.
ISO/IEC 1989 was prepared by Joint Technical Committee ISO/IEC JTC 1, Information Technology, Subcommittee SC 22, Programming languages, their environments and system software interfaces.
This first edition of ISO/IEC 1989 cancels and replaces ISO 1989:1985, which has been technically revised. It incorporates Amd.1:1992 and Amd.2:1994. This edition introduces the following significant technical enhancements:
features for object-oriented programming
additional features for detection and reporting of exceptions
a boolean data type for bit handling and boolean operations
native binary and floating-point data types
a national character data type for processing multiple-octet coded character sets
cultural adaptability, multilingual features, and tailoring for a given local language or culture
increased portability of arithmetic
free-form source and library text
compiler directives for portable specification of processing options
conditional compilation
an enhanced report writer
features for data validation
several enhancements to the CALL statement, including recursion
improved interoperability with other programming languages
user-defined functions
a screen handling facility
file sharing and record locking
support for ISO/IEC 10646-1 and ISO/IEC 10646-2 for data interchange
A complete list of technical changes is given in Annex F.
Annexes A through D form a normative part of this International Standard. Annexes E through H are for information only.
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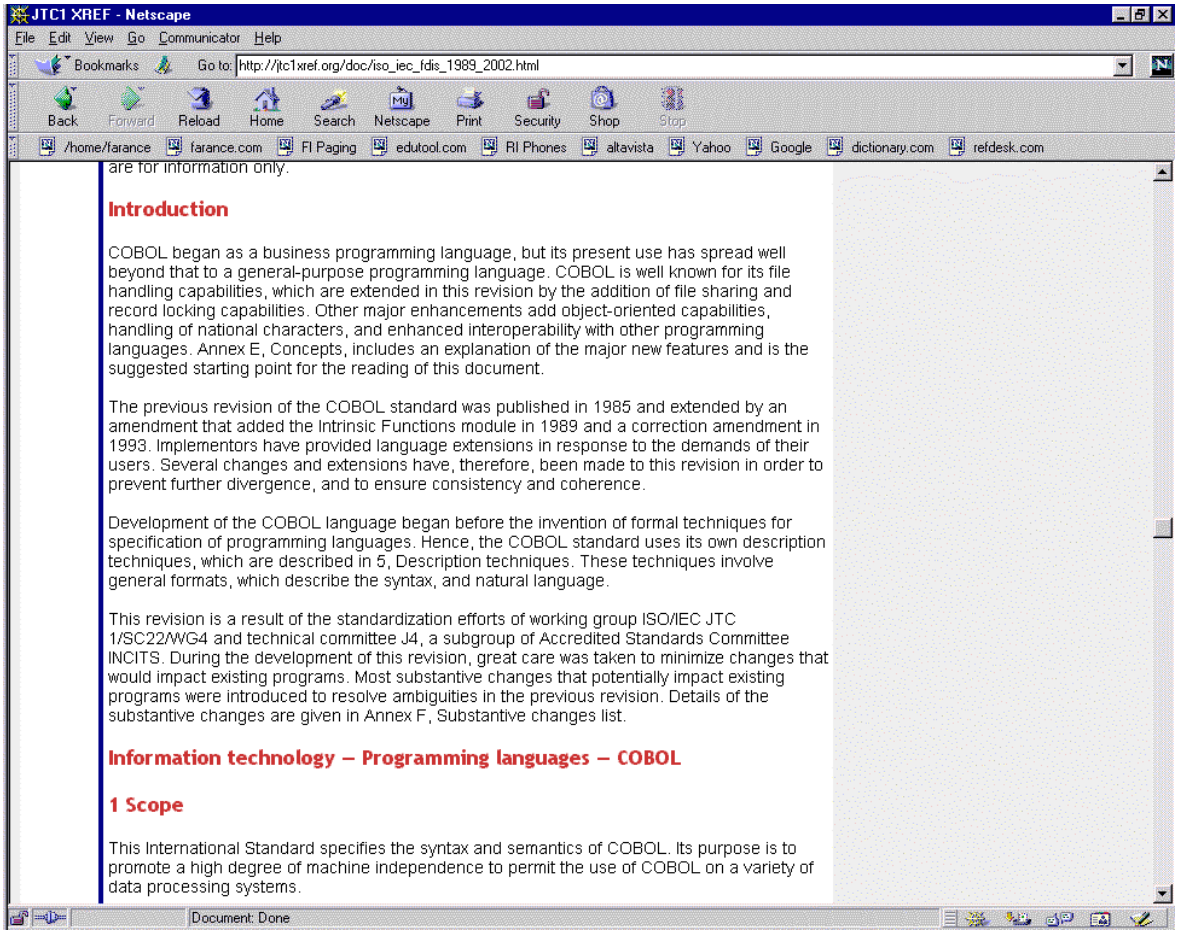
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are for information only.
Introduction
COBOL began as a business programming language, but its present use has spread well beyond that to a general-purpose programming language. COBOL is well known for its file handling capabilities, which are extended in this revision by the addition of file sharing and record locking capabilities. Other major enhancements add object-oriented capabilities, handling of national characters, and enhanced interoperability with other programming languages. Annex E, Concepts, includes an explanation of the major new features and is the suggested starting point for the reading of this document.
The previous revision of the COBOL standard was published in 1985 and extended by an amendment that added the Intrinsic Functions module in 1989 and a correction amendment in 1993. Implementors have provided language extensions in response to the demands of their users. Several changes and extensions have, therefore, been made to this revision in order to prevent further divergence, and to ensure consistency and coherence.
Development of the COBOL language began before the invention of formal techniques for specification of programming languages. Hence, the COBOL standard uses its own description techniques, which are described in 5, Description techniques. These techniques involve general formats, which describe the syntax, and natural language.
This revision is a result of the standardization efforts of working group ISO/IEC JTC 1/SC22/WG4 and technical committee J4, a subgroup of Accredited Standards Committee INCITS. During the development of this revision, great care was taken to minimize changes that would impact existing programs. Most substantive changes that potentially impact existing programs were introduced to resolve ambiguities in the previous revision. Details of the substantive changes are given in Annex F, Substantive changes list.
Information technology – Programming languages – COBOL
1 Scope
This International Standard specifies the syntax and semantics of COBOL. Its purpose is to promote a high degree of machine independence to permit the use of COBOL on a variety of data processing systems.
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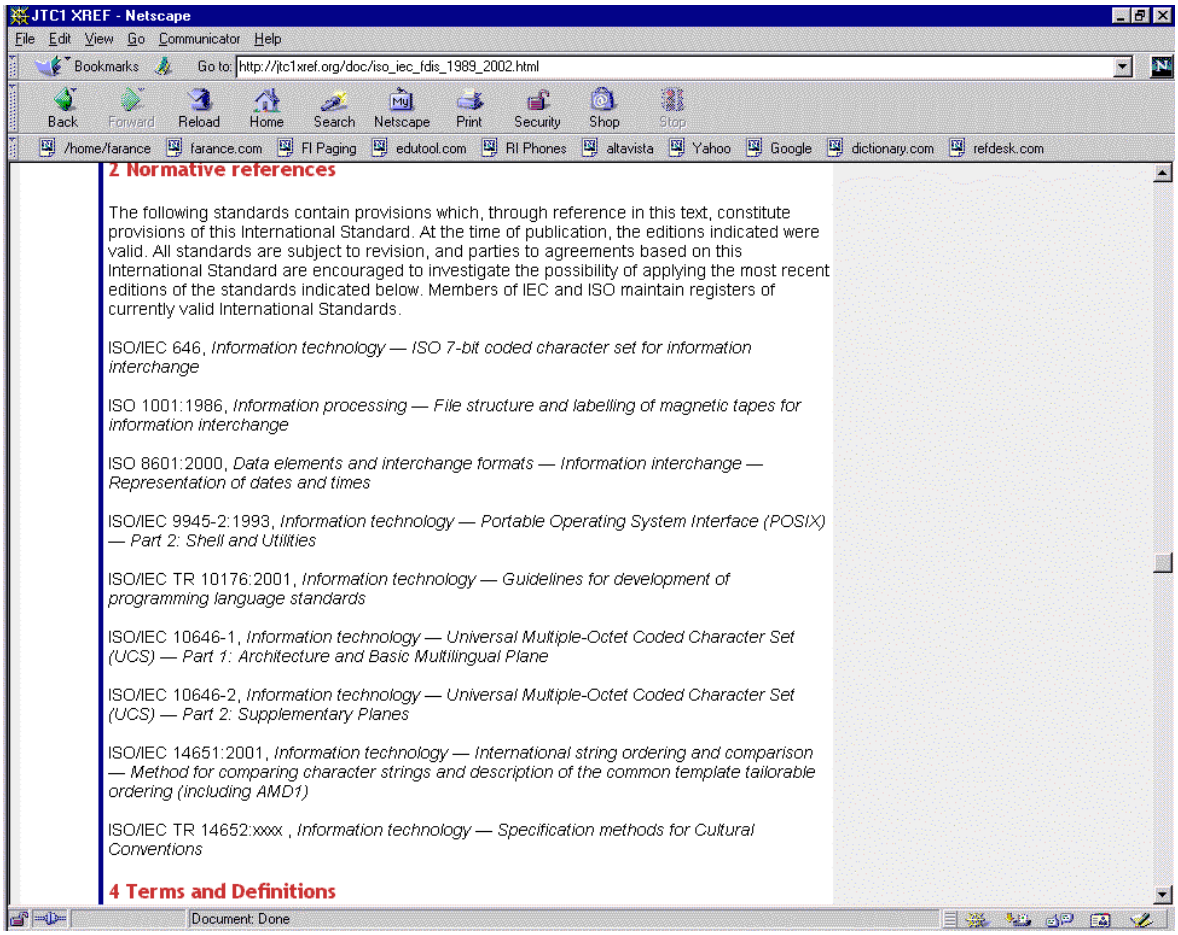
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2 Normative references
The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.
ISO/IEC 646, Information technology — ISO 7-bit coded character set for information interchange
ISO 1001:1986, Information processing — File structure and labelling of magnetic tapes for information interchange
ISO 8601:2000, Data elements and interchange formats — Information interchange — Representation of dates and times
ISO/IEC 9945-2:1993, Information technology — Portable Operating System Interface (POSIX) — Part 2: Shell and Utilities
ISO/IEC TR 10176:2001, Information technology — Guidelines for development of programming language standards
ISO/IEC 10646-1, Information technology — Universal Multiple-Octet Coded Character Set (UCS) — Part 1: Architecture and Basic Multilingual Plane
ISO/IEC 10646-2, Information technology — Universal Multiple-Octet Coded Character Set (UCS) — Part 2: Supplementary Planes
ISO/IEC 14651:2001, Information technology — International string ordering and comparison — Method for comparing character strings and description of the common template tailorable ordering (including AMD1)
ISO/IEC TR 14652:xxxx , Information technology — Specification methods for Cultural Conventions
4 Terms and Definitions
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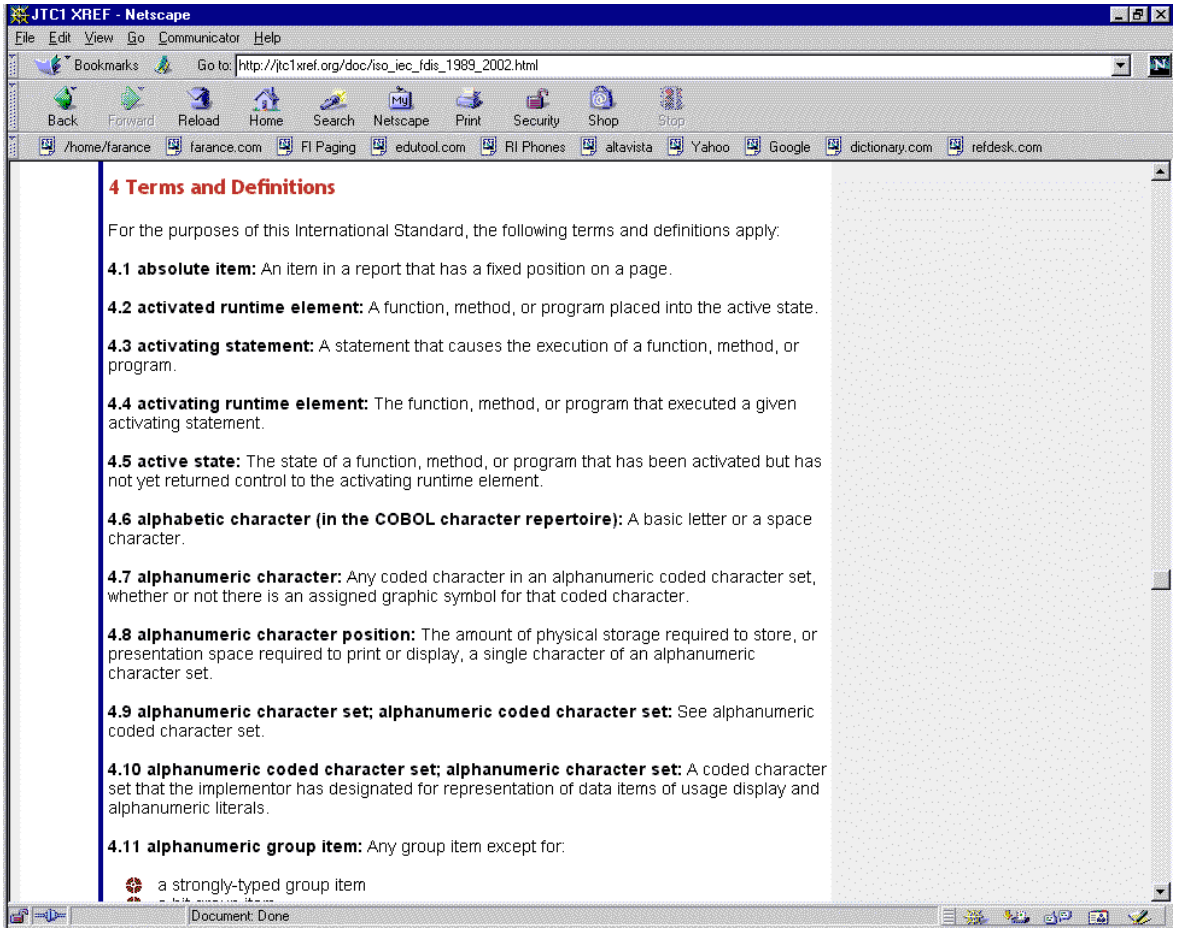
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/home/farance farance.com FI Paging edutool.com RI Phones altavista Yahoo Google dictionary.com refdesk.com
4 Terms and Definitions
For the purposes of this International Standard, the following terms and definitions apply:
4.1 absolute item: An item in a report that has a fixed position on a page.
4.2 activated runtime element: A function, method, or program placed into the active state.
4.3 activating statement: A statement that causes the execution of a function, method, or program.
4.4 activating runtime element: The function, method, or program that executed a given activating statement.
4.5 active state: The state of a function, method, or program that has been activated but has not yet returned control to the activating runtime element.
4.6 alphabetic character (in the COBOL character repertoire): A basic letter or a space character.
4.7 alphanumeric character: Any coded character in an alphanumeric coded character set, whether or not there is an assigned graphic symbol for that coded character.
4.8 alphanumeric character position: The amount of physical storage required to store, or presentation space required to print or display, a single character of an alphanumeric character set.
4.9 alphanumeric character set; alphanumeric coded character set: See alphanumeric coded character set.
4.10 alphanumeric coded character set; alphanumeric character set: A coded character set that the implementor has designated for representation of data items of usage display and alphanumeric literals.
4.11 alphanumeric group item: Any group item except for:
a strongly-typed group item
Document: Done