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Information technology — Programming languages, their environments and system software interfaces — Programming language COBOL

Technologies de l'information — Langages de programmation, leur environnement et interfaces des logiciels de systèmes — Langage de programmation COBOL

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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 2.

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 document 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*, in collaboration with INCITS PL22.4 - Programming Language COBOL.

This second edition cancels and replaces the first edition (ISO/IEC 1989:2002), which has been technically revised. It also incorporates the Technical Corrigenda ISO/IEC 1989:2002/Cor.1:2006, ISO/IEC 1989:2002/Cor.2:2006 and ISO/IEC 1989:2002/Cor.3:2009.

Introduction

COBOL began as a business programming language, but its present use has spread well beyond that to a general purpose programming language. Significant enhancements in this International Standard include:

- Dynamic-capacity tables
- Dynamic-length elementary items
- Enhanced locale support in functions
- Function pointers
- Increased size limit on alphanumeric, boolean, and national literals
- Parametric polymorphism (also known as method overloading)
- Structured constants
- Support for industry-standard arithmetic rules
- Support for industry-standard date and time formats
- Support for industry-standard floating-point formats
- Support for multiple rounding options

Annexes A, B, and C form a normative part of this International Standard. Annexes D through G are for information only.

Annex D, Concepts, includes an explanation of major features as well as the more complicated prior features and is the suggested starting point for the reading of this document.

A complete list of technical changes is given in Annex E.

The previous COBOL standard was published in 2002. Implementors have provided language extensions in response to the demands of their users. Several changes and extensions have, therefore, been made in this International Standard to prevent further divergence, and to ensure consistency among, and coherence within, various implementations.

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.

During the development of this International Standard, great care was taken to minimize changes that would affect existing programs. Most substantive changes that potentially affect existing programs were introduced to resolve ambiguities in the previous COBOL standard. Details of the substantive changes are given in Annex E, Substantive changes list.

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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.

This International Standard specifies:

- The form of a compilation group written in COBOL.
- The effect of compiling a compilation group.
- The effect of executing run units.
- The elements of the language for which a conforming implementation is required to supply a definition.
- The elements of the language for which meaning is explicitly undefined.
- The elements of the language that are dependent on the capabilities of the processor.

This International Standard does not specify:

- The means whereby a compilation group written in COBOL is compiled into code executable by a processor.
- The time at which method, function, or program runtime modules are linked or bound to an activating statement, except that runtime binding occurs of necessity when the identification of the appropriate program or method is not known at compile time.
- The time at which parameterized classes and interfaces are expanded.
- The mechanism by which locales are defined and made available on a processor.
- The form or content of error, flagging, or warning messages.
- The form and content of listings produced during compilation, if any.
- The form of documentation produced by an implementor of products conforming to this International Standard.
- The sharing of resources other than files among run units.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC/IEEE 60559: 2011, *Information technology — Microprocessor systems — Floating-Point Arithmetic.*

ISO/IEC 646, *Information technology — ISO 7-bit coded character set for information interchange.*

ISO/IEC 1001:2012, *Information technology — File structure and labelling of magnetic tapes for information interchange.*

ISO 8601:2004, *Data elements and interchange formats — Information interchange — Representation of dates and times.*

ISO/IEC/IEEE 9945:2009, *Information technology — Portable Operating System Interface (POSIX®) Base Specifications, Issue 7.*

ISO/IEC 10646, *Information technology — Universal Coded Character Set (UCS).*

ISO/IEC 14651:2011, *Information technology — International string ordering and comparison — Method for comparing character strings and description of the common template tailorable ordering.*

