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Information processing — Control functions for 7-bit and 8-bit coded character sets

Traitement de l'information — Fonctions de commande pour jeux de caractères codés à 7 et à 8 éléments

Reference number
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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 6429 was prepared by the European Computer Manufacturers Association (as Standard ECMA-48) and was adopted, under a special "fast-track procedure", by Technical Committee ISO/TC 97, *Information processing systems*, in parallel with its approval by the ISO member bodies.

This second edition cancels and replaces the first edition (ISO 6429 : 1983), of which it constitutes a full revision.

Annexes A, B, C, D and E of this International Standard are for information only.

Information processing — Control functions for 7-bit and 8-bit coded character sets

1 Scope

1.1 This International Standard defines control functions and their coded representations for use in a 7-bit code, an extended 7-bit code, an 8-bit code or an extended 8-bit code, if such a code is structured in accordance with ISO 2022. This International Standard specifies a C0 set, a C1 set, control functions derived therefrom and a number of independent control functions.

1.2 The control functions are intended to be used embedded in character-coded data for interchange with character-imaging devices.

A character-imaging device is a device which is capable of receiving a data stream that consists of coded control functions and graphic characters, and is capable of producing character image output, i.e. output that can be read by a human being. The character image output is, in general, produced in the form of one or more rectangular arrays of character positions and lines which are called pages.

If the device is an input/output device rather than merely an output device, it is also capable of transmitting a data stream that consists of coded control functions and graphic characters; the transmitted data stream is, in general, composed of a combination of data which have been sent to the device and data which have been entered locally into the device, for example by an associated keyboard.

In general, the control functions are defined by their effects on a character-imaging input/output device. It is, therefore, necessary to make certain assumptions about the device architecture. These assumptions are as unrestrictive as possible; they are specified in clause 6.

In addition to being performed the control functions may need to be represented by a graphic symbol.

The structure of this International Standard is open-ended, so that more control functions can be included in future editions.

Other International Standards specifying control functions may define more restricted definitions of them than those in this International Standard.

1.3 The devices to which this International Standard applies can vary greatly from each other depending on the application for which a device has been specifically designed. It is technically and economically impractical for one device to implement all the facilities specified in this International Standard. The intention is that within any type of device only a limited selection of the facilities appropriate to the application will be implemented.

2 Conformance

2.1 Types of conformance

Full conformance to a standard means that all of its requirements are met. Conformance will only have a unique meaning if the standard contains no options. If there are options within the standard they must be clearly identified, and any claim of conformance must include a statement that identifies those options that have been adopted.

This International Standard is of a different nature since it specifies a large number of facilities from which different selections may be made to suit individual applications. These selections are not identified in this International Standard, but must be identified at the time that a claim of conformance is made. Conformance to such an identified selection is known as limited conformance.

2.2 Conformance of information interchange

A CC-data-element within coded information for interchange is in conformance with this International Standard if the coded representations of control functions within that CC-data-element satisfy the following conditions:

a) a coded representation of a control function that is specified in this International Standard shall always represent that control function;

b) a control function that is specified in this International Standard shall always be represented by the coded representation that is specified in this International Standard for that control function;

c) any coded representation that is reserved for future standardization by this International Standard shall not appear.

Coded representations of control functions and modes not specified in this International Standard may appear in interchanged information subject to the above conditions (see 5.5, 5.5.1 and 7.4).

2.3 Conformance of devices

A device is in conformance with this International Standard if it conforms to the requirements of 2.3.1, and either or both 2.3.2 and 2.3.3 below. Any claim of conformance shall identify the document which contains the description specified in 2.3.1.

2.3.1 Device description

A device that conforms to this International Standard shall be the subject of a description that

a) identifies, by reference to the clauses of, or to the control functions specified in, this International Standard, the selection of coded representations that the device can originate or can receive and interpret;

b) for each such control function with selective parameters, specifies the parameter values implemented;

c) if the identified selection contains a control function for which a default value for a parameter is specified in this International Standard, includes the explicit and implicit representations of this default value;

d) identifies the means by which the user may supply the corresponding control functions or may recognize them, as specified in 2.3.2 and 2.3.3, respectively.

2.3.2 Originating devices

An originating device shall be capable of transmitting within a CC-data-element the coded representations of an identified selection of control functions conforming to this International Standard.

Such a device shall allow the user to supply any control function that he chooses from among the identified selection for the purpose of transmitting its coded representation within a CC-data-element.

2.3.3 Receiving devices

A receiving device shall be capable of receiving within a CC-data-element and interpreting the coded representations of an identified selection of control functions conforming to this International Standard. It shall be able to interpret default values in both explicit and implicit representations.

Such a device shall make available to the user any control function that is within the identified selection, and the coded representation of which is received within a CC-data-element, in such a form that the user can recognize it from among the control functions of the identified selection.

3 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 listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 1745 : 1975, *Information processing — Basic mode control procedures for data communication systems.*

ISO 2022 : 1986, *Information processing — ISO 7-bit and 8-bit coded character sets — Code extension techniques.*

ISO 2375 : 1985, *Data processing — Procedure for registration of escape sequences.*

ISO 6937 : 1983, *Information processing — Coded character sets for text communication.*

ISO 7350 : 1984, *Text communication — Registration of graphic character subrepertoires.*

ISO 8613-6 : —[1], *Information processing — Text and office systems — Office Document Architecture (ODA) and interchange format — Part 6: Character content architectures.*

ISO International Register of Coded Character Sets to be Used with Escape Sequences.

CCITT Recommendation T.61, 1984, *Character repertoire and coded character sets for the international teletex service.*

4 Notation and definitions

4.1 Notation

In this International Standard a convention has been adopted to assist the reader. Capital letters are used to refer to a specific control function, mode, mode setting, or graphic character in order to avoid confusion, for example, between the concept "space" and the character SPACE.

It is intended that this convention and the acronyms of the modes and the control functions be retained in all translations of the text. (See annex E.)

This International Standard uses the notation of the form xx/yy, where xx represents the column number 00 to 07 in a 7-bit code table or 00 to 15 in an 8-bit code table, and yy represents the row number 00 to 15.

4.2 Definitions

For the purposes of this International Standard, the following definitions apply.

4.2.1 active area: The area which contains the active position.

1) To be published.

4.2.2 active field: The field which contains the active position.

4.2.3 active line: The line which contains the active position.

4.2.4 active page: The page which contains the active position.

4.2.5 active position: The character position which is to image the graphic symbol representing the next graphic character or the next control function for which a graphic representation is required.

In general, the active position is indicated by a cursor.

4.2.6 area: A series of successive character positions that are not necessarily on the same line.

4.2.7 auxiliary device: A device connected to a character-imaging device for the purpose of inputting, storing, retrieving, or imaging data.

4.2.8 bit combination: An ordered set of bits that represents a coded character or is used as part of the representation of a coded character.

4.2.9 byte: A bit string that is operated upon as a unit.

4.2.10 to cancel: To mark data in such a way that it can be ignored in subsequent processing.

4.2.11 character: A member of a set of elements used for the organization, control or representation of data.

4.2.12 character-coded-data-element (CC-data-element): An element of interchanged information that is specified to consist of a sequence of coded representations of characters, in accordance with one or more identified standards for coded character sets.

4.2.13 character-imaging device: A device that gives a visual representation of data in the form of graphic symbols using any technology, for example cathode ray tube or printer.

4.2.14 character path: The direction of presentation of successive graphic characters along a line.

4.2.15 character position: The portion of a display that is imaging or is capable of imaging a graphic symbol.

4.2.16 to clear: To remove the display of data or the information used for the display of data, for example tabulation stops marking the boundaries between fields.

4.2.17 coded character set; code: A set of unambiguous rules that establishes a character set and the one-to-one relationship between the characters of the set and their bit combinations.

4.2.18 code extension: The techniques for the encoding of characters that are not included in the character set of a given code.

4.2.19 code table: A table showing the character allocated to each bit combination in a code.

4.2.20 control character: A control function the coded representation of which consists of a single bit combination.

4.2.21 control function: An element of a character set that effects the recording, processing, transmission, or interpretation of data, and that has a coded representation consisting of one or more bit combinations.

4.2.22 control sequence: A sequence of bit combinations starting with that representing the control character CONTROL SEQUENCE INTRODUCER (CSI), used for the coded representation of control functions with parameters.

4.2.23 control string: A delimited string of characters which may occur in the data stream as a logical entity for control purposes.

4.2.24 cursor: A special indicator used to mark the active position in a display.

4.2.25 decimal mark: A graphic symbol, usually a FULL STOP or a COMMA, used to separate the fractional part of a decimal number from the integer part of that number.

4.2.26 default: A value or a state that is to be assumed when no value or state is explicitly specified.

4.2.27 to delete: To remove the contents from character positions and closing the resulting gap by moving adjacent graphic characters into the empty positions.

4.2.28 to designate: To identify a set of characters that are to be represented, in some cases immediately and in others on the occurrence of a further control function, in a prescribed manner.

4.2.29 device: A component of information processing equipment which can transmit, and/or receive, coded information within CC-data-elements. (It may be an input/output device in the conventional sense, or a process such as an application program or gateway function.)

4.2.30 display: The region for visual presentation of data on any type of character-imaging device, including printer, cathode ray tube and similar devices.

4.2.31 editor function: Control functions used for editing, altering or transposing the visual arrangement of data.

4.2.32 eligible: The term used to denote an area considered for transmission or transfer.