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Information technology — Keyboard layouts for office systems —

Part 11:
Functionality of dead keys and repertoires of characters entered by dead keys

Technologies de l'information — Dispositions de claviers bureautiques —

Partie 11: Fonctionnalité des touches mortes et répertoires de caractères entrés par touches mortes

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT), see the following URL: Foreword — Supplementary information.

The committee responsible for this document is ISO/IEC JTC 1, *Information technology*, Subcommittee SC 35, *User interfaces*.

ISO/IEC 9995 consists of the following parts, under the general title *Information technology — Keyboard layouts for office systems*:

— *Part 1: General principles governing keyboard layouts*

— *Part 2: Alphanumeric section*

— *Part 3: Complementary layouts of the alphanumeric zone of the alphanumeric section*

— *Part 4: Numeric section*

— *Part 5: Editing and function section*

— *Part 7: Symbols used to represent functions*

— *Part 8: Allocation of letters to the keys of a numeric keypad*

— *Part 9: Multilingual-usage, multiscript keyboard group layouts*

— *Part 10: Conventional symbols and methods to represent graphic characters not uniquely recognizable by their glyph on keyboards and in documentation*

— *Part 11: Functionality of dead keys and repertoires of characters entered by dead keys*

The following part has been withdrawn and the content has been included in ISO/IEC 9995-5:

— *Part 6: Function section*

Information technology — Keyboard layouts for office systems —

Part 11:
Functionality of dead keys and repertoires of characters entered by dead keys

1   Scope

Within the general scope described in ISO/IEC 9995-1, this part of ISO/IEC 9995 defines the functionality of dead keys and repertoires of characters entered by dead keys (see Clause 5).

This part of ISO/IEC 9995 is primarily intended for word-processing and text-processing applications.

2   Conformance

The layout of a keyboard conforms to this part of ISO/IEC 9995 if it contains any dead keys and if every dead key contained in this layout works as described in Clause 5. The contents of the Table 1 and Table 2 only need to be complied with for such dead keys which are actually contained in the keyboard layout.

3   Normative references

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

ISO/IEC 9995-1, *Information technology — Keyboard layouts for text and office systems — Part 1: General principles governing keyboard layouts*

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

4   Terms and definitions

For the purposes of this part of ISO/IEC 9995, the terms and definitions given in ISO/IEC 9995-1 apply.

In addition, the following terms and definitions apply.

4.1
dead key
key which, when it is actuated, produces (according to the currently active group and level) a specific graphic character but does not change the active position.

Note 1 to entry: When a key does not act as a dead key with all possible group/level combinations of a specific keyboard layout, it is called "acting as a dead key" under the precondition that a group/level combination is active where it acts according to the definition of a "dead key" given here.

Note 2 to entry: The name "dead key" originates in the naming of comparable keys present on mechanical typewriters, which did not cause a horizontal advancement of the carriage as the keys used for typing ordinary letters did.

4.2
peculiar character
graphic character listed in ISO/IEC 10646, which can be entered as a sequence of a combining character (as defined in that standard) and another character, without being the result of a canonical composition of these characters (according to Unicode normalization form C)

5 Functionality of dead keys, and relation to "combining characters" as defined in ISO/IEC 10646

The actuation of a dead key selects a graphic character, which, by the fact that the active position is not changed, shares its position with the graphic character entered subsequently. The outcome usually resembles an overlay of the graphic character entered by the dead key and the one entered by the subsequent keys. By entering sequences of dead keys, the result may be an overlay of more than two graphic characters.

This standard identifies in 5.2 and 5.3 characters which represent such results where a physical overlay is not appropriate, by enumerating single characters or special combinations of characters by identifying these by their code points given in ISO/IEC 10646, for such dead keys which are associated with "combining characters" as defined in that standard.

NOTE   This implies that dead keys usually are associated with diacritical marks, to produce an accented character by entering the basic letter subsequently.

5.1 Handling of dead keys in environments using ISO/IEC 10646

NOTE 1   A characteristic of ISO/IEC 10646, unlike e.g. ISO/IEC 6937, is that combining characters are inserted into the text stream after the basic character to which they apply, thus reverting the input sequence given by dead keys.

In environments using ISO/IEC 10646, the function of dead keys is outlined by the following algorithm:

Step 1. If a combining character is entered by a dead key, it is buffered by the keyboard functional unit (KFU; i.e. the responsible combination of hardware/ firmware/driver software/etc.).

Step 2. If a character is entered while the KFU is buffering characters, proceed as follows:

Step 2.1 If a „backspace" is entered while the KFU is buffering characters and if this „backspace" does not cancel the selection of a group or a level, the buffered character sequence is dropped, and the buffering stops.

Step 2.2 Otherwise, if the combination of the last character previously buffered and the newly entered character is enumerated in Tables 1 and 2 of this standard, or any additional table contained in the definition of the keyboard layout, the last buffered character is replaced by the result character from the list.

Step 2.3 Special case: This step only applies if the definition of a keyboard layout specifies a "combining character application character". If this character is entered, the buffered sequence is output unchanged (without the "combining character application character" itself), and the buffering stops.

NOTE 2   According to ISO/IEC 10646, this means that the buffered combining character, or the sequence of such, is applied to the character entered previously.

NOTE 3   It is recommended to select the full stop as the "combining character application character".

Step 2.4: Otherwise, the newly entered character is appended to the sequence of buffered characters.

Step 3: If the last character in the buffered sequence is no longer a combining character, proceed as follows:

Step 3.1: The last character in the buffered character sequence is moved to the beginning of this sequence.

Step 3.2: The Unicode normalization form C (canonical composition) is applied to the the buffered sequence.

Step 3.3: The resulting character sequence is output, and the buffering stops.

5.2   Combinations of dead keys with the Space character

In environments using ISO/IEC 10646, dead keys followed by a space result in the entering of a spacing clone of the combining character associated with the dead key, if such one is defined in ISO/IEC 10646.

However, if an "alternative resulting character" is specified in the 3rd column of Table 1, this is to be used rather than the spacing clone specified in the second column of Table 1:

— if this "alternative resulting character" is not associated to any key directly in the keyboard layout definition,

— or also, if the dead key is specified in the keyboard layout definition by the inclusion of a "common secondary group layout" as defined in ISO/IEC 9995-3.

For combining characters where is no such spacing clone, the definition of a keyboard layout may list specific characters which are to be used instead.

Whenever a dead key is entered following by a space where neither ISO/IEC 10646 specifies a spacing clone, nor the definition of the keyboard layout lists a specific character, the result is a space followed by the combining character, according to section 5.1.

The following Table 1 lists all combining characters contained in the character collection MLS (Multilingual Latin Subset) as specified in ISO/IEC 10646, together with the according spacing clones or similar characters if applicable.

Table 1 — Diacritical marks in MLS:

Name of the combining character	Name of spacing clone (resulting character when applied to Space)	Name of the alternative resulting character
U+0300 combining grave accent	U+02CB modifier letter grave accent	U+0060 grave accent
U+0301 combining acute accent	U+02CA modifier letter acute accent	U+00B4 acute accent
U+0302 combining circumflex accent	U+02C6 modifier letter circumflex accent	U+005E circumflex accent
U+0303 combining tilde	U+02DC small tilde	U+007E tilde
U+0304 combining macron	U+02C9 modifier letter macron	U+00AF macron
U+0306 combining breve	U+02D8 breve	
U+0307 combining dot above	U+02D9 dot above	
U+0308 combining diaeresis	U+00A8 diaeresis	
U+0309 combining hook above		
U+030A combining ring above	U+02DA ring above	
U+030B combining double acute accent	U+02DD double acute accent	
U+030C combining caron	U+02C7 caron	
U+030D combining vertical line above	U+02C8 modifier letter vertical line	
U+030E combining double vertical line above		
U+030F combining double grave accent		
U+0310 combining candrabindu		
U+0311 combining inverted breve		
U+0313 combining comma above	U+02BC modifier letter apostrophe	
U+0315 combining comma above right		
U+031B combining horn		

Table 1 *(continued)*

Name of the combining character	Name of spacing clone (resulting character when applied to Space)	Name of the alternative resulting character
U+0323 combining dot below		
U+0324 combining diaeresis below		
U+0325 combining ring below		
U+0326 combining comma below		
U+0327 combining cedilla	U+00B8 cedilla	
U+0328 combining ogonek	U+02DB ogonek	
U+0329 combining vertical line below	U+02CC modifier letter low vertical line	
U+032D combining circumflex accent below	U+A788 modifier letter low circumflex accent	
U+032E combining breve below		
U+0331 combining macron below	U+02CD modifier letter low macron	
U+0332 combining low line		
U+0335 combining short stroke overlay	U+2212 minus sign	
U+0338 combining long solidus overlay	U+2215 division slash	
U+0347 combining equals sign below		
U+0348 combining double vertical line below		
U+035C combining double breve below		
U+035D combining double breve		
U+035E combining double macron		
U+035F combining double macron below		
U+0360 combining double tilde		
U+0361 combining double inverted breve		

5.3 Combinations of dead keys with other characters, yielding peculiar characters

Table 2 lists peculiar characters which are input by a sequence of a dead key and another character. Definitions of keyboard layouts may provide a list of additional such combinations. Keyboard layouts which do not contain a dead key associated with a specific character listed in the first column of Table 2 do not need to provide alternative methods to input the peculiar characters listed for this dead key.

Table 2 — Peculiar Characters which can be entered as combinations using diacritical marks

First input character	Second input character	Resulting peculiar character
U+0300 combining grave accent	U+0300 combining grave accent	U+030F combining double grave accent
U+0302 combining circumflex accent	U+003D equals sign	U+2259 estimates
U+0302 combining circumflex accent	U+0302 combining circumflex accent	U+1DCD combining double circumflex above
U+0303 combining tilde	U+0303 combining tilde	U+0360 combining double tilde

Table 2 *(continued)*

First input character	Second input character	Resulting peculiar character
U+0304 combining macron	U+002D hyphen-minus	U+2E40 double hyphen
U+0304 combining macron	U+003D equals sign	U+2261 identical to
U+0304 combining macron	U+0304 combining macron	U+035E combining double macron
U+0306 combining breve	U+0306 combining breve	U+035D combining double breve
U+0307 combining dot above	U+0306 combining breve	U+0310 combining candrabindu
U+030D combining vertical line above	U+030D combining vertical line above	U+030E combining double vertical line above
U+0311 combining inverted breve	U+0311 combining inverted breve	U+0361 combining double inverted breve
U+0313 combining comma above	U+0313 combining comma above	U+0315 combining comma above right
U+0323 combining dot below	U+0323 combining dot below	U+0324 combining diaeresis below
U+0329 combining vertical line below	U+0329 combining vertical line below	U+0348 combining double vertical line below
U+032E combining breve below	U+032E combining breve below	U+035C combining double breve below
U+0331 combining macron below	U+003C less-than sign	U+2264 less-than or equal to
U+0331 combining macron below	U+003E greater-than sign	U+2265 greater-than or equal to
U+0331 combining macron below	U+0331 combining macron below	U+0347 combining equals sign below
U+0332 combining low line	U+0332 combining low line	U+035F combining double macron below
U+0335 combining short stroke overlay	U+002D hyphen-minus	U+2E3A two-em dash
U+0335 combining short stroke overlay	U+003A colon	U+00F7 division sign
U+0335 combining short stroke overlay	U+0062 latin small letter b	U+0180 latin small letter b with stroke
U+0335 combining short stroke overlay	U+0042 latin capital letter b	U+0243 latin capital letter b with stroke
U+0335 combining short stroke overlay	U+0063 latin small letter c	U+A793 latin small letter c with bar
U+0335 combining short stroke overlay	U+0043 latin capital letter c	U+A792 latin capital letter c with bar
U+0335 combining short stroke overlay	U+0064 latin small letter d	U+0111 latin small letter d with stroke
U+0335 combining short stroke overlay	U+0044 latin capital letter d	U+0110 latin capital letter d with stroke
U+0335 combining short stroke overlay	U+0065 latin small letter e	U+AB33 latin small letter barred e
U+0335 combining short stroke overlay	U+0066 latin small letter f	U+A799 latin small letter f with stroke
U+0335 combining short stroke overlay	U+0046 latin capital letter f	U+20A3 french franc sign
U+0335 combining short stroke overlay	U+0067 latin small letter g	U+01E5 latin small letter g with stroke
U+0335 combining short stroke overlay	U+0047 latin capital letter g	U+01E4 latin capital letter g with stroke