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Information technology — Keyboard layouts for text and office systems —

Part 1: General principles governing keyboard layouts

Technologies de l'information — Disposition des claviers conçus pour la bureautique —

Partie 1: Principes généraux pour la disposition des claviers

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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.

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 or www.iec.ch/members_experts/refdocs).

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This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 35, *User interfaces*.

This fourth edition cancels and replaces the third edition (ISO/IEC 9995-1:2009), which has been technically revised.

The main changes are as follows:

— Level 4 is allowed, albeit not recommended;

— Clause 7 is enhanced to be usable for keyboard layouts according to the state of the art, showing characters of up to four levels and of several groups.

A list of all parts in the ISO/IEC 9995 series can be found on the ISO and IEC websites.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html and www.iec.ch/national-committees.

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Introduction

The ISO/IEC 9995 series defines a framework for the layout of all alphanumeric and numeric keyboards across the widest spectrum of today's and upcoming applications using keyboards. The functions to be performed by keyboards are grouped into three categories that correspond to the main physical sections of the keyboard.

Application of the ISO/IEC 9995 series in the design of keyboards provides the user with a unified, predictable user-machine interface by dividing the keyboard into functional areas and sections and allocating functions to keys. One of the major tasks of a universal-usage keyboard is to accommodate the larger sets of characters required by the various applications for which keyboards are used today. This is achieved by permitting the allocation of more than one graphic character or control function to each of the keys of a keyboard, predominantly in the alphanumeric section.

The ISO/IEC 9995 series specifies the requirements for keyboard layouts and allocation of keycap imprints (including letters, numerals, symbols, and other markings) on alphanumeric and numeric input devices for all types of information and communication technology apparatus and systems including:

— personal computers, workstations, computer terminals, visual display terminals (VDTs);

— electronic typewriters and other machines with alphanumeric and numeric keyboards;

— mobile computer systems including ultra-mobile personal computers (UMPCs), personal digital assistants (PDAs) and multimedia devices with hardware keyboards (e.g. linear keyboards, foldable keyboards) or virtual keyboards (e.g. touchscreens, projection keyboards);

— electronic document scanners and multifunction devices incorporating alphanumeric or numeric keyboards;

— calculators, telephones and automated teller machines having alphanumeric or numeric keypads/ keyboards.

The primary layout within the alphanumeric zone is established in most countries by a national standard or by national usage. Allocation guidelines are provided in ISO/IEC 9995-2. An exemplary layout (the “Latin International” keyboard layout) is specified in ISO/lEC 9995-3.

The ISO/IEC 9995 series specifies the allocation of functions (graphic characters or control functions, or both) to keys. The graphic characters and the control functions have been given common names intended to be familiar to the users of a keyboard. In general, keyboards are not expected to generate coded control functions, but the operation of a control function key can cause a number of coded control functions to appear in data interchange to achieve the desired effect.

The effects of those keys that affect keyboard states are specified in other parts of the ISO/IEC 9995 series.

For some national standards based on the ISO/IEC 9995 series, see Annex A.

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Information technology — Keyboard layouts for text and office systems —

Part 1:
General principles governing keyboard layouts

1 Scope

This document identifies the sections of the keyboard and specifies the general shape and relative placement of the sections. Spacing of keys and physical characteristics are covered, as are the principles governing the placement of characters and symbols on keys.

It specifies a key numbering system which applies to all types of numeric, alphanumeric and composite keyboards of information technology equipment (ITE).

It specifies the principles governing the placement of characters and symbols on keys used on all types of numeric, alphanumeric and composite keyboards of ITE. Although the keyboard defined by the ISO/IEC 9995 series can be used for different languages, the specifications are written as applying to Latin languages with a character path from left to right and a line progression from top to bottom.

It defines characteristics related to interface 1 in Figure 1.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 9241-410, *Ergonomics of human-system interaction — Part 410: Design criteria for physical input devices*

ISO/IEC 9995 (all parts), *Information technology — Keyboard layouts for text and office systems*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
graphic character
character, other than a *control function* (3.8), that has a visual representation, normally handwritten, printed or displayed

3.2
primary group layout
allocation of the *graphic characters* (3.1) of group 1 to the keys of a particular keyboard, defined by a national standard or established by common usage in a particular country or group of countries

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3.3
secondary group layout
allocation of the *graphic characters* (3.1) of group 2 to the keys of a particular keyboard

3.4
key effect
effect that results when a key is actuated, depending on the active level, and possibly by the concurrent operation of a qualifier key or keys

3.5
lock state
state set by actuating a lock key, singly or in combination with a qualifier key

3.6
level lock state
state that, if activated, will result in the generation of the characters assigned to a specific *level* (3.11)

3.7
capitals lock state
state that, if activated, will result in the generation of the capital form of all *graphic characters* (3.1) on the keyboard for which such a form exists

3.8
control function
action that affects the recording, processing, transmission, or interpretation of data

3.9
group
logical state of a keyboard providing access to a collection of *graphic characters* (3.1) or elements of graphic characters whose subsets are called *levels* (3.11)

Note 1 to entry: A group gives access to one collection of characters. Typically, when more than one language is used, multiple groups are required.

Note 2 to entry: Usually these graphic characters or elements of graphic characters logically belong together and can be arranged on several levels within a group.

Note 3 to entry: The input of certain graphic characters, such as accented letters, can require access to more than one group.

Note 4 to entry: On on-screen keyboards, it is usual that a group be shown one level at a time. There is usually a button to choose the group (or language) and another button, or more, to choose the level.

3.10
section
block of keys, mostly with some functional relationship

3.11
level
logical state of a keyboard providing access to a collection of graphic characters or elements of *graphic characters* (3.1)

Note 1 to entry: Usually these graphic characters or elements of graphic characters logically belong together, such as the capital forms of letters.

Note 2 to entry: In certain cases the level selected can also affect function keys.

Note 3 to entry: On physical keyboards, levels of a same group are normally labelled in a consistent way (see Clause 7) on a key except when stated otherwise in certain situations; on on-screen keyboards, it is usual that only one level be shown per panel at a time.

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3.12
active position
character position which is to image the *graphic symbol* (3.15) representing the next *graphic character* (3.1) or relative to which the next *control function* (3.8) is to be executed

Note 1 to entry: In general, the active position is indicated in a display by a cursor.

3.13
group select
function that, if activated, will change the keyboard state to produce characters from a different *group* (3.9)

3.14
group single-select
function that, if activated, will change the keyboard state to produce characters from a different *group* (3.9) only for the input of the next character, changing to the previous state after that

3.15
graphic symbol
visual representation of a *graphic character* (3.1), a *control function* (3.8), or a combination of one or more graphic characters and/or control functions

3.16
level select
function that, if activated, will change the keyboard state to produce characters from a different *level* (3.11)

3.17
level single-select
function that, if activated, will change the keyboard state to produce characters from a different *level* (3.11) only for the input of the next character, changing to the previous state after that

3.18
associated system
system to which the keyboard is attached, probably consisting of a processor and software to handle the keyboard and to run application programs

3.19
editing key
key whose primary purpose is the input of an editing function

3.20
function key
key whose primary purpose is the input of a *control function* (3.8)

3.21
graphic key
key whose primary purpose is the input of a *graphic character* (3.1) or of an element of a graphic character

Note 1 to entry: Certain of these keys can also have a secondary purpose for input of a *control function* (3.8).

3.22
zone
part of a keyboard section defined in the ISO/IEC 9995 series

4 Divisions of the keyboard

4.1 General

For the purpose of this document, the keyboard is considered as an intermediate element between a user and an information processing system. The keyboard is specifically intended as a means for input of information by a human being, see Figure 1.

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