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Information technology — Pen-Based Interfaces — Common gestures for Text Editing with Pen-Based Systems

Technologies de l'information — Interfaces basées sur une plume — Mouvements courants en édition de texte avec les systèmes basés sur une plume

Reference number
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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1. 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.

International Standard ISO/IEC 14754 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 35, *User interfaces*.

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Introduction

Many systems using pen input mode have been produced. These systems recognize gestures as commands, unfortunately these gestures vary from one system to another. In particular, the gestures conventionally used to make changes to the layout and content of text differ across systems.

This International Standard specifies a set of basic gestures which will enable the user to operate a system regardless of its country of origin or specific manufacturer. The advantage of these gestures lies in the fact that the indication of a location and the indication of an action to be performed on the object at that location can both be carried out simultaneously. The gestures chosen to indicate such functions are the most commonly used. These are essentially the kind of gestures covered by this International Standard. This International Standard consists of 8 clauses and covers commands for two types of required functions and also some optional functions.

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Information technology — Pen-Based Interfaces — Common gestures for Text Editing with Pen-Based Systems

1 Scope

This International Standard defines the basic gesture commands for text editing with pen-based systems and defines the user actions required to have the system execute these commands. The feedback to the user when a gesture command has been correctly recognized is also defined. This International Standard does not define the user actions necessary for the input of characters.

2 Conformance

A system conforms to this International Standard if it conforms to clauses 6, 7 and 8.

3 Normative references

There are no International Standards referenced.

4 Terms and definitions

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

4.1

action point

point on the *digitizer* display where a *gesture command* will be executed

4.2

digitizer

device which can detect the position touched by the pen

4.3

end point

final point of the stroke drawn by the pen

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4.4

gesture

one or a sequence of actions and strokes made by a user upon the *digitizer* that invokes a *gesture command*

4.5

gesture command

instruction to the system resulting from a *gesture* input by the user, e.g. Select, Move, Delete

4.6

lift-off

action in which the user lifts the pen off the active *digitizer* surface

4.7

pause

action where the user keeps the pen stationary for a certain time after *touchdown*

4.8

pen-based system

system consisting of a pen and *digitizer* which can detect the position touched by the pen and with which the user can input the data or commands using the pen

4.9

segment

part of a *stroke* made by moving the pen in a straight line without changing direction

4.10

selected text

continuous character string that the user has selected

4.11

start point

first point of a *stroke* drawn by the pen

4.12

stroke

continuous movement of the pen across the *digitizer* surface starting with a *touchdown* and ending at a *lift-off*

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4.13

tap

to touch the *digitizer* briefly, typically less than one second, with the pen and then *lift-off* in approximately the same position

4.14

text area

area where the text is displayed and the user can input gestures

4.15

touchdown

action in which the user touches the active surface of the *digitizer* with a pen

4.16

visible trail

path of the pen temporarily displayed by the *digitizer* until completion of the *stroke*

5 Conventions

For the purposes of this International Standard, the following conventions apply to the diagrams in clauses 6, 7 and 8.


Start point


Touchdown and pause


Tap and touchdown

Stroke with a visible trail on the screen

Stroke without a visible trail on the screen


Direction of the stroke


Area of selection

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6 Required gesture commands

Systems conforming to this International Standard shall implement the functions and the corresponding gesture commands as described in this clause.

6.1 Select

6.1.1 Function

The select function shall identify the area for subsequent editing commands, such as move or copy. The continuous string of characters (including space) from the start point to the end point becomes the selected area.

6.1.2 Gesture

The select gesture shall consist of the following elements: touchdown, pause, system feedback, continuation of the stroke in any direction and lift-off (see Figure 1). To initiate the select gesture, the user touches the screen and pauses until the system feedback is visible and then continues the stroke in any direction. The stroke does not have to be a straight line.

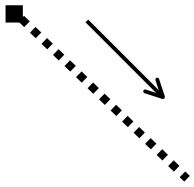
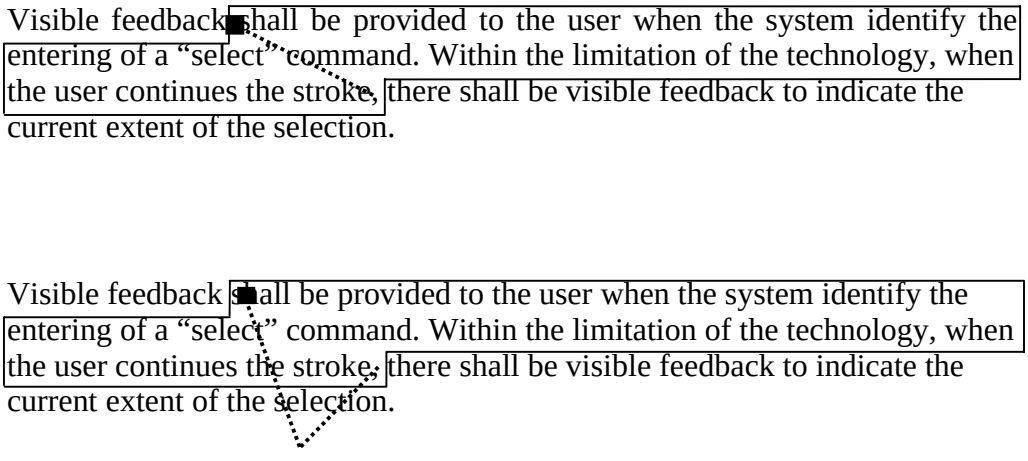


Figure 1 — Gesture for the select function

6.1.3 Feedback

Visible feedback shall be provided to the user when the system recognizes the entering of a “select” command. Within the limitations of the technology, when the user continues the stroke, there shall be visible feedback to indicate the current extent of the selection. Where possible, audible feedback should accompany this command at the “pause” point.

Examples



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6.2 Delete

6.2.1 Function

The delete function shall erase a section of the text.

6.2.2 Gesture

The delete gesture shall consist of at least one of the following sequences of elements:

a) Touchdown, a stroke of at least four segments in a zigzag manner as shown in Figure 2a and lift-off. The segments of the zigzag should be about the same length and the segments may overlap.

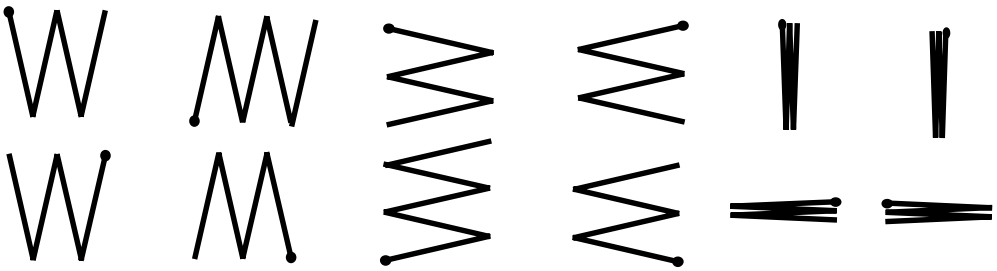


Figure 2a — Gesture for the delete function

b) Touchdown, drawing of two segments of “V” which are drawn from top downward right followed by a right upward segment as shown in Figure 2b and lift-off. The action point shall be the start point. The length of the second segment should be more than twice as the first one.

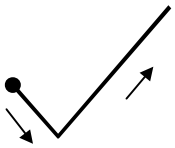


Figure 2b — Gesture for the delete function

Note1: If both gestures, a) and b), are available on the system, then the user should have the option to disable one of them.
Note2: The stroke of these gestures may have no visible trail.

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6.2.3 Feedback

If a) or b) gesture have been detected, the system shall respond by deleting text. The space left by the removed text should be filled in by the remaining text as illustrated in the following example.

1) If no text has been previously selected,
   for a), the character strings covered by the gesture shall be deleted.
   for b), the character at the action point shall be deleted.

2) If a section of text has been previously selected, then that section of text shall be deleted.

Examples

1) When no area is selected

Gesture	Result
1. He does not speak English.	He does speak English.
2. He does not speak English.	He does not speak English.
3. He does not speaks English.	He does not speak English.
4. He does not speak English.	He does not speak English.

2) When same area is pre-selected

Gesture	Result
1. He does not speak English.	He does speak English.
2. He does not speak English.	He does speak English.
3. He does not speak English.	He does speak English.
4. He does not speak English.	He does speak English.
5. He does not speak English.	He does speak English.
6. He does not speak English.	He does speak English.

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6.3 Insert space

6.3.1 Function

The insert space function shall add a space within the text.

6.3.2 Gesture

The insert space gesture shall consist of at least one of the following sequences of elements:

a) Touchdown, drawing of a downward vertical segment continuing with a horizontal segment to the right as shown in Figure 3a and lift-off. The action point shall be the start point. If insertion of several spaces is provided by the system, the number of spaces inserted shall be proportional to the length of the second segment of the stroke.

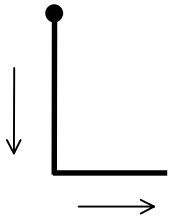


Figure 3a — Gesture for the insert space function

a) Touchdown, drawing of two segments of an inverted “V” which are drawn from bottom upwards to the right followed by a right downward segment as shown in Figure 3b and lift-off. The action point shall be the top point of the stroke (apex) where a space shall be inserted.



Figure 3b — Gesture for the insert space function

Note: If both gestures, a) and b), are available on the system, then the user should have the option to disable one of them.

6.3.3 Feedback

The system shall insert a space immediately preceding the character position that includes the action point of the gesture.

Examples

Gesture	Result
He canpeak English.	He can speak English.
He canspeak English.	He can speak English.

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6.4 Split line

6.4.1 Function

The split line function shall divide an existing line of text into two parts, leaving the first part on the existing line and putting the second part at the beginning of the following line.

6.4.2 Gesture

The split line gesture shall consist of the following sequence of elements: touchdown, a stroke of a downward vertical segment at the desired split point, continuing with a horizontal segment to the left, as shown in Figure 4 and lift-off. The action point shall be the start point.

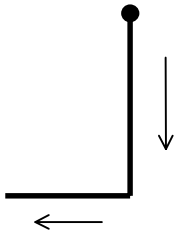


Figure 4 — Gesture for the split line function

6.4.3 Feedback

The system shall terminate an existing line at the character position immediately preceding the character position that includes the action point of the gesture. The remaining text shall be placed at the start of the new line inserted immediately after the existing line.

Example

Gesture	Result
He can speak English very well and can also speak French well. She can speak Japanese well.	He can speak English very well and can also speak French well. She can speak Japanese well.

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7 Required gesture commands for conditional functions

A conforming system without a buffer shall provide the two functions, “Move” and “Copy”.
A conforming system with a buffer shall provide at least the three functions, “Cut”, “Copy to buffer” and “Paste”.

7.1 Gesture commands not requiring a buffer

7.1.1 Move

7.1.1.1 Function

The move function shall move selected text from one area to another.

7.1.1.2 Gesture

The move gesture shall consist of the following sequence of elements: touchdown, pause within the selected text and drawing a stroke to the target position where the selected text will be inserted and lift-off (see Figure 5). The stroke may be made any direction from the start point. The action points shall be the start point and the end point.

If all other gestures specified in this International Standard, except Copy, are implemented such that the start point shall be outside the selected text, then the pause in the move gesture may be omitted.

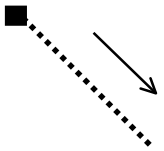


Figure 5 — Gesture for the move function

7.1.1.3 Feedback

The system shall remove the selected text from its original position and insert the selected text at the target position. It is not necessary for the system to show a visible link or trail between the selected text and its target position. The space left by the removed text should be filled in by the remaining text as illustrated in the following example.

Example

Before	Gesture	Result
The move function shall move selected text from one area to another. The gesture shall consist of the following elements:	The move function shall move selected text from one area to another. The gesture shall consist of the following elements:	The function shall move selected text from one area to another. The move gesture shall consist of the following elements:

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7.1.2 Copy

7.1.2.1 Function

The copy function shall duplicate selected text and place it in the indicated target position.

7.1.2.2 Gesture

The copy gesture shall consist of the following sequence of elements: tap, touchdown, a stroke to the target position to where the selected text will be copied as shown in Figure 6 and lift-off. The stroke may be made in any direction from the touchdown point. The action points shall be the start point and the end point.

The tap and the touchdown shall be approximately in the same position.

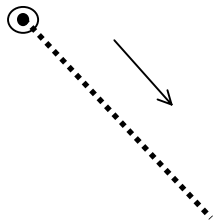


Figure 6 — Gesture for the copy function

7.1.2.3 Feedback

The system shall insert the selected text at the target position. It is not necessary for the system to show a visible link or trail between the selected text and its target position.

Example

Before	Gesture	Result
The copy function shall move selected text from one area to another. The gesture shall consist of the following elements:	The copy function shall move selected text from one area to another. The gesture shall consist of the following elements:	The copy function shall move selected text from one area to another. The copy gesture shall consist of the following elements:

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7.2 Gesture commands requiring a buffer

7.2.1 Cut

7.2.1.1 Function

The cut function shall remove a character or previously selected text and shall store it in the buffer.

7.2.1.2 Gesture

The cut gesture shall consist of the following sequence of elements: touchdown, the drawing of a counterclockwise loop, starting from the bottom and proceeding to the right and upward as shown in Figure 7 and lift-off. The action point shall be the start point unless a previous selection has been made. If text is selected, the gesture always acts upon the selected text regardless of the position of the start point.

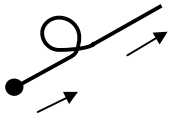


Figure 7 — Gesture for the cut function

7.2.1.3 Feedback

Either the system shall remove a character at the action point of the gesture, or if text has been previously selected, the entire selected text shall be removed. The space left by the removed text should be filled in by the remaining text as illustrated in the following example.

Examples

Gesture	Buffer	Result
1. He does not write that (#).	#	He does not write that ().
2. He does not speak English.	not	He does speak English.
3. He does not speak English.	not	He does speak English.
4. He does not speak English.	not	He does speak English.

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7.2.2 Copy to buffer

7.2.2.1 Function

The copy to buffer function shall retain a character or previously selected text at the original position and shall store a copy of it in the buffer.

7.2.2.2 Gesture

The copy to buffer gesture shall consist of the following sequence of elements: touchdown, the drawing of a single loop upwards in a counterclockwise direction, starting from the bottom, proceeding to the left and finishing at the top right as shown in Figure 8 and lift-off. The action point shall be the start point unless a previous selection has been made. If text is selected, the gesture always acts upon the selected text regardless of the position of the start point.

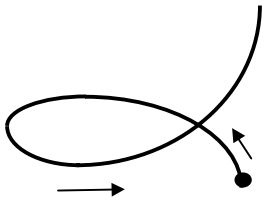


Figure 8 — Gesture for the copy to buffer function

7.2.2.3 Feedback

The system shall respond by copying a character or selected text into the buffer.

Examples

Gesture	Buffer	Result
1. He does not write that (#).	#	He does not write that (#).
2. He does not speak English.	not	He does not speak English.
3. He does not speak English.	not	He does not speak English.
4. He does not speak English.	not	He does not speak English.

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7.2.3 Paste

7.2.3.1 Function

The paste function shall retrieve cut or copied text from the buffer and place it at an indicated target position.

7.2.3.2 Gesture

The paste gesture shall consist of the following sequence of elements: touchdown, drawing two segments of an inverted “V”, from bottom upwards to the left followed by a left downward segment as shown in Figure 9 and lift-off. The action point shall be the top point of the stroke (apex) where the text from the buffer shall be inserted.



Figure 9 — Gesture for the paste function

7.2.3.3 Feedback

The system shall respond by inserting the text from buffer at the apex of the gesture stroke.

Example

Buffer	Before	Gesture	Result
move	The function shall move selected text from one area to another.	The function shall move selected text from one area to another.	The move function shall move selected text from one area to another.

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8 Conditionally required gesture commands for required functions

A conforming system provides scroll and undo functions. These functions may be implemented by hardware buttons or some other means, but if they are implemented as gestures they shall use the gestures described in this clause.

8.1 Scroll

8.1.1 Function

The scroll function shall move data on the display to enable the user to see text not presently displayed.

8.1.2 Gesture

The scroll gesture shall consist of the following sequence of elements: touchdown, drawing a vertical or horizontal segment as shown in Figure 10 and lift-off. The metaphor is to hold a paper with a pen and to slide the paper to view another part.

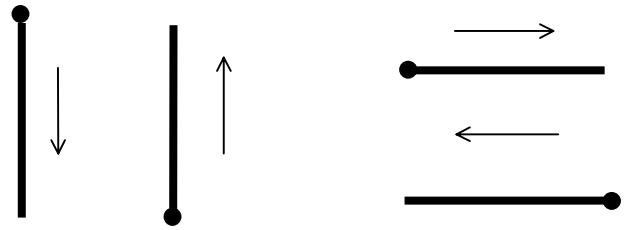
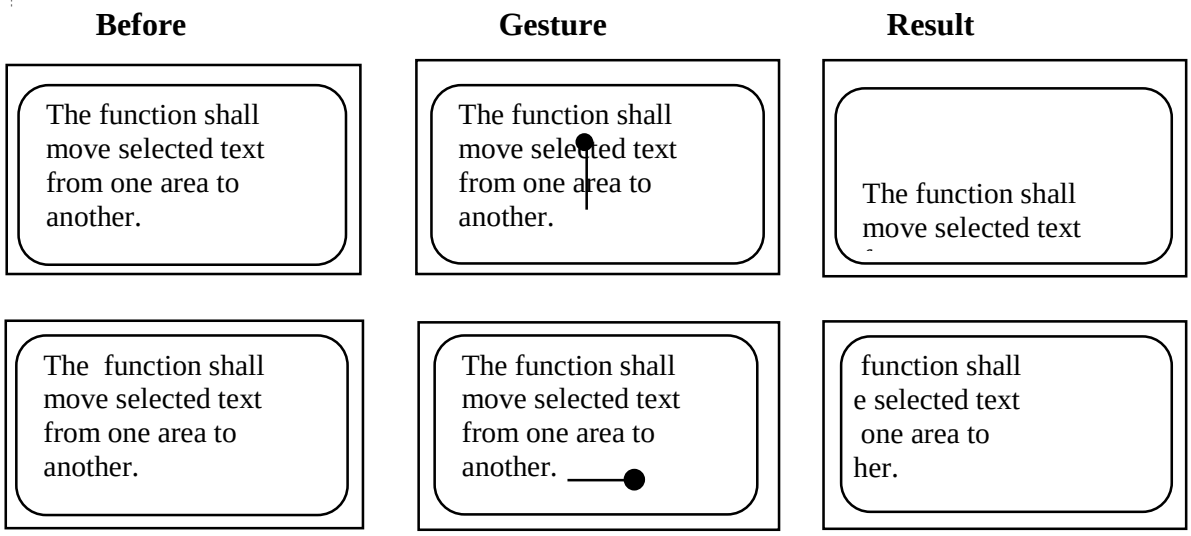


Figure 10 — Gesture for the scroll function

8.1.3 Feedback

The system shall respond by changing the contents of the display as if the pen were directly moving the text.

Examples



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8.2 Undo

8.2.1 Function

The undo function shall return the system to the state immediately prior to the previous gesture command.

8.2.2 Gesture

The undo gesture shall consist of the following sequence of elements: touchdown, drawing of a single loop downwards in a clockwise direction starting from the top and proceeding to the right and downward, finishing at the top right as shown in Figure 11 and lift-off.

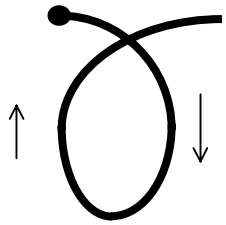


Figure 11 — Gesture for the undo function

8.2.3 Feedback

Feedback depends on the previous gesture command. The system shall restore the displayed text as it was immediately prior to the previous gesture command.

Example

Previous command	Gesture	Result
The move function shall move selected text from one area to another.	The function shall move selected text from one area to another.	The move function shall move selected text from one area to another.

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