AUTOWRAP/TABS: ARE THESE PARAMETERS A LIMITATION ON IBM® TERMINALS?

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ABSTRACT

One of the most useful features of Word Processing software packages is the ability to continue to type without thinking about margins or newline decisions. It was originally reported in Usage Note V6-FSLETTER-0111 that the AUTOWRAP and TABS parameters, when used with the FSLETTER procedure of SAS/FSP®, were ignored on IBM terminals. Not wanting to believe that IBM had not addressed this issue, I pursued the subject with the IBM technicians assigned to Pennsylvania Higher Education Assistance Agency (PHEAA). As it turns out, IBM’s Entry Assist® provides improvements for display operators who enter and edit text material. Although, it is still true that the SAS parameters, AUTOWRAP and TABS, are ignored, IBM’s Entry Assist provides the same functions. In addition to working with FSLETTER, it can also be used with other IBM Host Editor programs.

This paper addresses the capabilities of the IBM Entry Assist function using Document Mode and Change Format Mode in order to get the same effect as SAS’s AUTOWRAP and TABS and to direct attention to other enhanced capabilities of this product.

INTRODUCTION

The Entry Assist function allows you (if so customized) to create and modify text material without the help of host application programs (in the case of SAS, without the help of the SAS supervisor or the FSLETTER parameters of AUTOWRAP and TABS).

This function has the following abilities:

* Display of a scale line for setting margins, tab stops, and an audible end-of-line signal position just as you can on a typewriter.
* Screen margins
* Tabbing
* Audible end-of-line signal
* Word wrap
* Forward and backward cursor movement by word (repeat-action)
* Word delete (repeat-action)
* Error-correcting backspace in Insert mode (repeat-action).

To make editing tasks easier, this function offers rapid cursor positioning and improved character/word deletes. You can instantly move the cursor to the next word, previous word, next tab stop, or previous tab stop. These functions are typematic/ repeat-action, which allows for rapid positioning of the cursor anywhere on the screen.

The Delete Word key deletes from the current cursor position to the end of the word in an input field.

The Backspace key deletes the character at the left of the current cursor position in insert mode. All characters to the right of the cursor shift left one position.

Two of the more important features of this IBM product are Word Wrap and Tabbing.

The Word Wrap feature allows you to continue typing, and if a word will not fit at the end of the current line, it will automatically move the partially-typed word to the next line. When using the Tab key to enter tabular data as the cursor moves to a tab stop, it replaces null characters with space characters and preserves the spacing between the columns of data when the data is sent to the host.

Examples where you might want to use Entry Assist to edit or enter some of the following material:

* Office correspondence, such as letters, memos, reports, lists, and schedules (such as can be applied in SAS/FSLETTER)
* Formal publications, such as books, magazines, and brochures
* Source program material, such as COBOL, FORTRAN, and assembler language source program statements
* Job control language (JCL) statements
* Other text material normally handled by the listed host editors.

The topics covered are brief descriptions of the capabilities of the Entry Assist functions when operating in the Document Mode® and using the Change-Format Mode.

SUPPORTING SOFTWARE

Since Entry Assist is not controlled by the SAS Supervisor, it can be used alone, with the SAS editor, or with these other full-screen IBM Host editor programs:

Interactive Systems Editor Programs

* Under VM/SP (5749-010 VM/370, Release 6 and beyond)
  - PROFS PRPG Editor
  - XEDIT
* Under VM/370 (5749-010 VM/370)
  - SPF, ISPF/PDF (edit functions)
* Under DOS VSE/ICCF
  - ICCF Editor
* Under TSO
  - SPF, ISPF/PDF (edit functions)

DBDC Systems Editor Programs

* Under CICS/VS, CICS/MVS, CICS/ESA
  - IPDT VSE (edit functions)
  - IPDT OS/VS (edit functions)
* Under IMS/VS
  - IPDT/OS/VS (edit functions)

8100 Systems Editor Programs

* DPPX Editor

HARDWARE SUPPORTED

Some terminals have their own version of Entry Assist. Refer to your own terminal documentation for additional information.

For technical questions on the hardware supported, keyboards, and any related books from the IBM library refer to IBM’s 3270 Information Display System Entry Assist User’s Guide (GA23-0119-03). This publication explains the Entry Assist function of the 3174 and 3274 Control Units.
On a 3174 Control Unit you do not need to do anything special to make Entry Assist work. It works automatically and requires no control unit customizing.

For a list of terminals that the 3174 provides Entry Assist support for, refer to the 3174 Introduction (GA27-3350). The 3174 Introduction does not list this capability (Entry Assist); however, any 80-column Control Unit Terminal (CUT) display listed in the Introduction can use the 3174 version of Entry Assist.

On a 3274 Control Unit you can find the procedure for making the Entry Assist function work in the IBM 3270 Information Display System: 3274 Control Unit Customizing Guide.

ENTRY ASSIST FUNCTION KEYS (See Figures 2-1 through 2-4. These figures are taken directly from the Entry Assist User’s Guide)

Doc On/Off Key
Pressing this key places the display station in Document Mode and causes DOC or the D→ to be displayed in the Operator Information Area. Pressing this key again causes the display station to exit from document mode. However, the display station retains all other settings (screen margins, the audible end-of-line signal, tabsets, home position and word-wrap mode).
(This key works as a toggle switch.)

Wrap Key
When you press this key while the display station is in Document Mode, the Word Wrap symbol disappears from the Operator Information Area and Word Wrap is turned off. Pressing it again, turns on Word Wrap. Word Wrap moves the last word on a row to the next row, if the word would otherwise overrun the right margin. (This works as a toggle switch.)

Change Format Key (CHG FMT)
When you press this key while in Document Mode, the display station enters change-format mode and a scale line appears in the Operator Information Area (the bottom row on the screen). You can use the keyboard controls to set and clear margins, tabs, and the audible end-of-line signal only when the display is in change-format mode. If an invalid keystroke is pressed, it may be necessary to press the reset key before further keystrokes will be accepted. Note that in this mode, no operator messages are displayed in the Operator Information Area. Pressing the CHG FMT key again resets the change-format mode, erases the scale line, and returns the Operator Information Area to its previous function. (This works as a toggle switch just like the Doc On/Off key.)

Delete-Word Key
The Delete-Word key, while holding down the Alt key, deletes the word the cursor is positioned under and the following space or null in an input field. If the cursor is in the middle of a word (not a first character), pressing this key deletes the characters from the current cursor position to the end of the word. All the words to the right of the deleted word (on the same line and in the same field) shift to the left. If the cursor is under a blank character, the Delete-Word key deletes the blank character. This key is a typematic/repeat-action key.

Next-Word Key/Previous-Word Key
The Next-Word key → and the Previous-Word key ←, while holding down the Alt key, provides rapid cursor positioning by moving the cursor to the next or previous word with a single keystroke. Both capabilities are typematic/repeat-action, allowing rapid positioning of the cursor anywhere on the screen.

Enhanced Cursor-Forward/Cursor-Backward Tab Keys
When you press these Tab keys, the cursor moves to the next/previous unprotected tab stop, replacing unprotected null characters with space characters. The Enhanced Cursor-Forward/ Cursor-Backward Tab functions do not wrap the cursor from the lower right to the upper left of the screen nor from the upper left to the lower right of the screen.

NOTE: The Tab keys operate differently depending on whether or not Document Mode is on.

Error-Correcting Backspace Key
Press the key to delete the character to the left of the cursor position. Your display must be in insert mode. If the cursor is at the left margin position, you cannot backspace. All characters to the right of the deleted character on the same row within the same field shift to the left to close the gap, regardless of the right margin setting. Attributes and characters to the right of the shifted characters do not change. If the cursor is at the left margin when you press this key, input is inhibited. The Error-Correcting Backspace function does not wrap the cursor from the upper left to the lower right of the screen. This is a typematic/repeat-action key.

Cursor-Position Indicator Key
Displays the current cursor position in the operator information area in r/c form. (The letters "r" represent the ROW numbers and the letters "c/c" represent the COLUMN numbers.)

FORMATTING CONTROLS (See Figure 3-7. Entry Assist Scale Line - taken from the Entry Assist User’s Guide)

Keyboard controls that set and clear screen margins, tabs, and the audible end-of-line signal work only in change-format mode. Pressing the Change Format (Chg Fmt) key while in document mode places the display station in change-format mode. The scale line appears in the Operator Information Area with a scale line cursor indicating the current cursor position.

In change-format mode, the following format control operations are available:

Set Screen Margins
This is the key to making WORD WRAP work - the setting of the left and right margins. Positioning the cursor (using the cursor left and cursor right keys) sets the margins to the desired locations on the scale line. Pressing the < key sets the left margin and the > key sets the right margin. The margins define the area where data entry can occur. Only one left and one right margin may be set for a given display.

Pressing the < key replaces the previous left margin. Pressing the > key replaces the previous right margin. The symbol > establishes the standard right margin. Positioning the cursor on the right margin symbol and pressing the Cursor-Select (Cursor Sel) key may establish an alternate right margin. A broken vertical bar replaces the standard right margin symbol >.

The standard right margin prohibits input when you try to enter a character at the right margin position when in document mode with Word Wrap off. On the contrary, the alternate right margin symbol signifies that an automatic margin release occurs at the right margin when Word Wrap is off. This alternate right margin is useful in certain power-typing situations. A second pressing of the Cursor Sel key establishes the standard margin symbol again.

Set Tab Stop
To set tab stops, position the cursor in the desired locations on the scale line and press the Tab key. An underscore symbol will
appear at the same location. The underscore symbol is not displayed when set at either a screen margin or the end-of-line signal position.

Up to twenty (20) tab stops may be set. Any attempt to set more than twenty tabs is ignored.

When using the Tab key in Document mode, as the cursor moves to the next tab stop it replaces unprinted null characters with space characters allowing for rapid entry of tabular material.

Set Audible End-Of-Line Signal
To set the end-of-line signal, position the scale-line cursor in the desired location on the scale line and press the * key. An * will appear at that position. The * does not appear when set at the screen margin. You can set the end-of-line signal at any position on the scale line including the tab stop positions. This will cause the audible alarm to sound when you enter a character at that location in the document mode.

Clear Tab Stop Or Audible End-Of-Line Signal
To clear a tab stop or the audible end-of-line signal setting, position the cursor at the tab stop or at the end-of-line signal setting and press the Delete Character key. A tab stop and end-of-line signal in the same location, causes both to be cleared. If there is no tab stop or end-of-line signal, no action is taken.

Clear All Tabs
To clear all tab stops, press the Clear key. The scale line is updated accordingly.

Change Scale-Line Origin
To change the scale-line origin, move the cursor to the first position of the scale-line and press the Cursor-Select (Cursr Sel) key. The origin will change from 0 to 1, or vice-versa. Margins, tabs, and end-of-line signal position numbers are changed by one, relative to the scale line numbers. There is no change in position relative to the actual screen columns.

ENTRY ASSIST OPERATIONS
While in document mode, the following functions (called Entry Assist functions) that were defined in change-format mode, are available:

Enhanced Tab Operation
When you press the Tab key —— the cursor moves to the next tab stop in an input field or the first input location of the next field, whichever comes first. If the cursor stops at the tab position, null characters in input fields between the previous and the current cursor positions are replaced with blank characters.

If the cursor stops at or passes over the end-of-line signal position, the audible alarm (bell) sounds. This does not allow the cursor to wrap from the lower right to the upper left of the screen.

Enhanced Cursor Backtab Operation
Similar to the enhanced cursor tab just described, the Backtab key —— moves the cursor to the previous tab stop in an input field or to the first input location of the current or previous field, whichever is closer. Null characters are not changed to blank characters during the move. If there is no input tab stop preceding the cursor and the screen is unformatted, or if there are no input fields, pressing the Backtab key moves the cursor to the first column of the top row.

This operation does not allow the cursor to wrap from the upper left to the lower right of the screen.

Enhanced Newline Operation
When you press the Newline key —— the cursor moves to the left margin of the next row, or if the left margin is not in an input field, to the first input location within the entry area. Only null characters in an input field on the new line at the left of the left margin are changed to blank characters.

The cursor will wrap, that is, if the cursor is on the last row of the screen, it will be repositioned to the first input location of the first row within the margins. If the entire screen within the margins does not contain an input field, the cursor is positioned at the left margin of the first row.

Word Wrap Operation
Pressing the Word Wrap key turns on the word wrap function and the Word Wrap symbol ↓ appears in the Operator Information Area. Word wrap automatically moves the last word on a row to the next row if the word would otherwise overrun the right margin, but only if all of the next entry area from the left margin to the right margin contains null characters or blank characters. Any word less than the total space between the margins may be wrapped. Blank characters are placed in the position formerly occupied by the wrap word.

In insert mode, with word wrap enabled, inserting a word causes the last word in the current row to be wrapped to the next row. If the wrapped word length is less than the total spaces and nulls between the last character in the next row and the right margin, the wrap occurs. Spaces at the end of the next row will be changed to nulls. If the length is greater than the total of the spaces and nulls, the keyboard locks.

Word wrap obeys margin boundaries. If any character key, except the Spacebar and the Space key, is pressed at the right margin, the whole word including that character is placed on the next row beginning at the left margin. The cursor is moved with the word. The positions that were formerly occupied by the wrapped word are replaced with blank characters. If any of the following conditions exist, word wrap does not occur:

- The current row is the bottom row.
- The left margin of the next row is not in an input field.
- There is an attribute character in the entry area of the next row.

Entering a blank character at the right margin does not cause a word wrap but causes the cursor to be positioned at the left margin of the next row.

If a word wrap occurs and the left margin on the next row is within an input field, the null characters to the left of the left margin are changed to blank characters. This keeps the document as the operator sees it on the screen.

FOOTNOTES

1 A typematic key repeats its function when pressed and held down.
2 A null character is a control character that can be inserted into or removed from a sequence of characters without affecting the meaning of the sequence; however, the control of equipment or the format may be affected by this character.
3 For converged and enhanced keyboards in "native mode," you must first place the unit in extended-select mode by pressing the EX SEL key.

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Except for the Author's comments to adapt the Entry Assist function for use with the SAS Editor and FSLETTER, the contents of this paper has been taken from the two IBM user's guides listed above.

Notes:
1. Boxed items, for example, are stick-on labels.
2. RPQ BK1038 and RPQ BK1158 keyboards. The CHG FMT function moves to the key indicated. The other Entry Assist functions remain as shown.

Figure 2-1. Keyboard Layout for Base Keyboards

Figure 2-2. Keyboard Layout for Converged Keyboards in Emulate Mode
Enhanced Cursor Tab
Entry Assist (DOC) Mode Toggle
Word Format Mode Toggle
Cursor Position Indicator

To get these functions, press the ExSel key followed by the indicated keystroke.

Error Correcting Typematic Delete Character
Typematic Move Cursor to Previous Word
Typematic Move Cursor to Next Word
Enhanced New Line
Typematic Delete Word

Note: Boxed items, for example, are stick-on labels.

Figure 2-3. Keyboard Layout for Converged Keyboards in Native Mode

Figure 2-4. Keyboard Layout for Enhanced Keyboards

First Screen Column
Left Margin
Tab Stop
End-of-Line Signal (Bell) Position

Last Screen Column
Right Margin

0 1 2 3 4 5 6 7

Area
Entry Area

Area

Figure 3-7. Entry Assist Scale Line