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# TEKEDIT - AN ENHANCED EDITOR FOR DIRECT VIEW STORAGE TUBE (DVST) GRAPHICS DISPLAY DEVICES

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20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

An overview and functional description of an editor for host files using Direct View Storage Tubes (DVST) with enhanced refresh capabilities is given. Tekedit is an editor designed to augment a system editor for creating or modifying host files using a graphics terminal as the display device. The initial implementation of Tekedit is for a Tektronix 4114 on an IBM 4341 running VM/CMS.

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## INTRODUCTION

The ability to interactively create or modify source and data files is essential in program development. An operating system provides this capability through the use of a system editor. This utility usually offers more power and flexibility than most users need. However, many capabilities are forfeited when used on display devices on which full-screen features are not supported. This is the situation when using XEDIT, which is a powerful IBM editor that is reduced to a simple line editor when used with Tektronix 4114 DVST graphics display devices. Although most commands are still available, changes are difficult to implement and cumbersome to verify. Many users executing or developing computer graphics application programs on the Tektronix terminals are forced to edit files on IBM 3270 display terminals, for which the full-screen features of XEDIT are supported. This requires disconnecting from the graphics terminal, reconnecting on the IBM terminal to modify the file, disconnecting from this device, and reconnecting to the graphics terminal to execute the program. If the changes are incorrect or insufficient, the process has to be repeated. Tekedit is an editor written to eliminate the effort of editing all graphics source or data files on alphanumeric display terminals and to eliminate the frustration of using the system editor on the graphics terminals.

## OVERVIEW

There were four primary goals in the design of Tekedit:

- Functionality
- Speed

- Modularity
- Portability

Tekedit was written in a modular, structured format so that all machine dependent routines could easily be replaced to achieve a higher degree of portability. Assembler routines were necessary to obtain the fast response time that is so critical in the design of an editor. There are no operating system dependencies, and FORTRAN using Plot-10 Terminal Control System (TCS) routines insures compatability with many target machines having graphics support.

Tekedit was designed for the Tektronix 4110-A-B series of graphics terminals, principally the 4114 DVST. These devices contain a large amount of memory and provide local segment support. The segments can be displayed in vector refresh mode, which is a feature used to show the dynamic attributes of the file being edited. An additional library of routines was written to extend the capabilities of TCS to facilitate the use of the local features of the 4114 needed in Tekedit.

## CAPABILITIES

Tekedit displays ten lines of text as a page representing a window into the file. The ten-page line restriction is imposed because of the limited refresh capability of the 4114 (3000 vectors). If additional lines of text were included, the display would begin to flicker. Users can scroll forward or backward one page, or any discrete number of lines. In addition to the current window, the dynamic file attributes are also displayed. These include the file identifiers (filename, filetype, filemode); record format (RECFM);

logical record length (LRECL); truncation column (TRUNC); zone fields (ZONE); and filesize (FSIZE). The appropriate parameters are always immediately updated during the editing session. The screen format for Tekedit is given in Figure 1, which also shows the fields reserved for status and error messages.

Tekedit is capable of creating files or modifying existing files. Lines of text can be inserted, deleted, and duplicated. Blocks of lines can be moved or copied anywhere in the file outside the range of the block. Arbitrary strings are selectively modified and located within user given zone limits that establish the columns defining the search field. Changes can affect a specified number of lines or they can be global, beginning at the current line and continuing to the end of the file.

A listing of the current format and functional description of Tekedit commands is given in the Appendix. An updated listing reflecting any additions or revisions can be requested by typing HELP.

## USING TEKEDIT

The most important concept in using Tekedit is that of the current line. All commands that modify the contents or change the structure of the file use the current line as a reference. It is defined as the first line of the current page representing the window into the file. Insertion of text begins after this line and any modifications start at this line and continue for the specified number of lines, or to the end of the file for a global change. If no value is specified, only the current line is affected by the commands. Moving or copying blocks of data requires the size of the block, including the current line, to be entered. A new current line is then defined by scrolling

or otherwise changing the window into the file, to the location where the text is to be inserted.

All interaction with the editor is through a two-line dialog area. Commands should only be entered when prompted by the string '?'. Entering commands before being prompted for input can produce unpredictable results.

Ending the editing session using either the QUIT (file is not updated) or FILE (file is updated) commands resets the Tektronix 4114 terminal parameters and deletes all local segments. In addition, dialog area is disabled and reset to its default position (0,0). If a FILE command is issued and any of the file identifiers are changed, a new file is created with the specified filename, filetype, and filemode.

USING TEKEDIT UNDER VM/CMS

Tekedit is invoked by issuing the command TEDIT filename, filetype, filemode. If the filemode is not specified, A1 is assumed.

In order to improve the response time of Tekedit when editing source code, it is highly recommended that the serialization data in columns 73 - 80 be deleted. This can be accomplished using the DELSER XEDIT macro for existing files, and by including the command SET SERIAL OFF in PROFILE XEDIT to insure new files will not contain serialization data.

In addition to modifying the contents of a file, certain file attributes can also be altered. The logical record length, record format, truncation column, zone field, and file identifiers can all be set to any legal value. Changing the logical record length of the file may result in smaller text to

insure lines of text are within the screen boundaries defined by Tekedit. Files with a logical record length of 80 or less have a larger font than those with a logical record length between 80 and 133. The truncation column is initially set to LRECL (except for FORTRAN files where TRUNC = 72), and changing it immediately results in all text being truncated to the new value.

## LIMITATIONS

Tekedit is called an enhanced line editor, not a full-screen editor because it is not possible to position the cursor at any point of the window into the file and insert or delete text. In addition, the logical record length of the file being edited cannot be greater than 133 and the size of the file cannot exceed 66,500 bytes. This imposes an 830-line limit on files with a logical record length of 80 and a 500-line limit on files with a logical record length of 133. The limit on the maximum logical record length and file size may be increased if sufficient future applications indicate the need.

## SUMMARY

Tekedit has been designed to provide users of Tekedit 4114 DVST'S with a better facility for editing files. It is intended to augment the system editor and be used for minor modifications in source and data files. It provides users with an updated display of changes in the contents and attributes of the file. Tekedit has been available to a select number of users for testing and has been well received. As its use becomes more widespread, Tekedit may be modified to include a richer instruction set and the capacity for larger files.

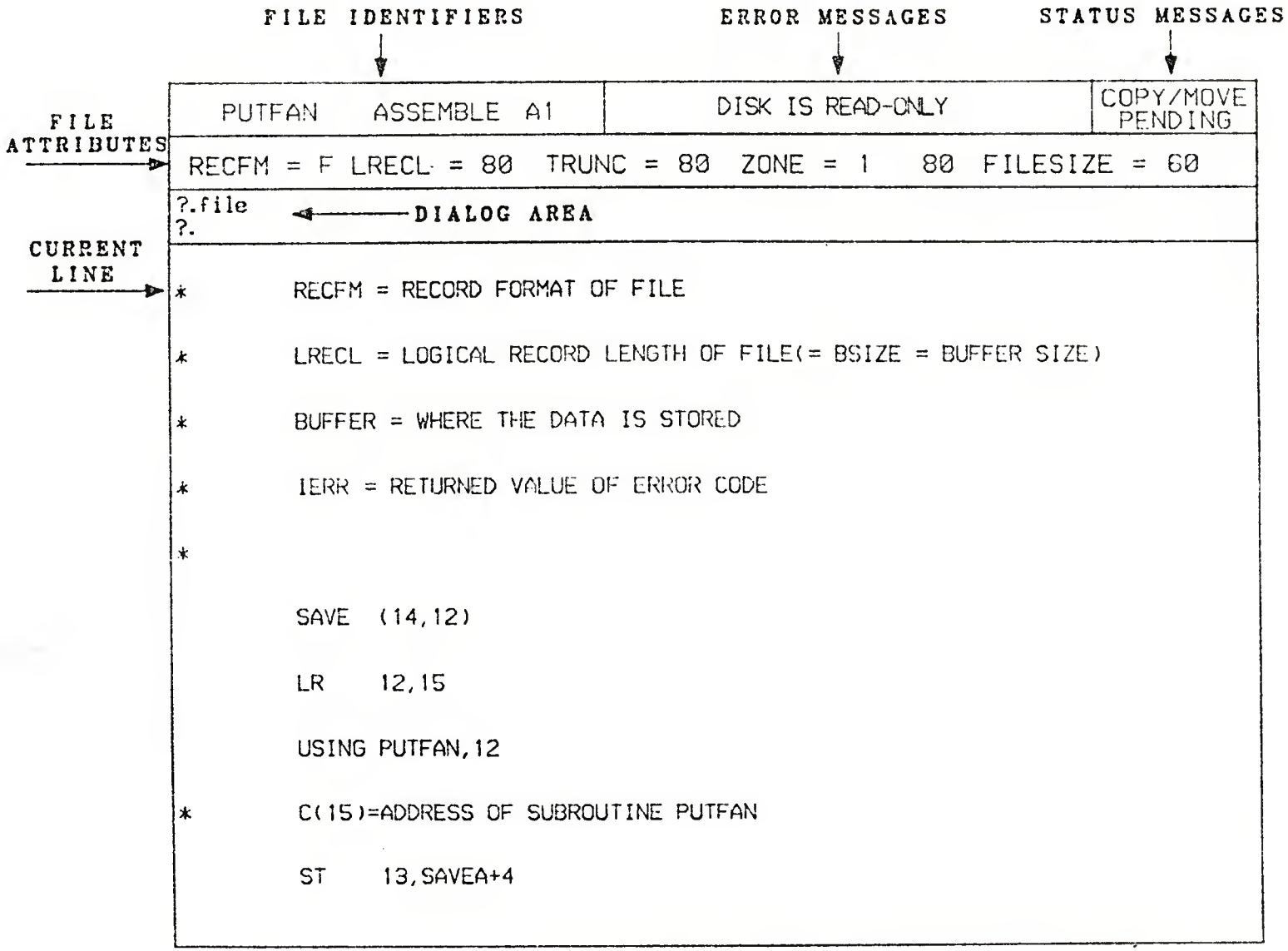


Figure 1. Tekedit Screen Format.

## APPENDIX

## TEKEDIT COMMANDS

All commands use either a slash '/' or a blank ' ' as argument delimiters. The command descriptions below use both. That part of the command within brackets '< >' is optional.

| | |
|---|---|
| +<N> | Scrolls forward N lines. If N is not specified, 10 is assumed. |
| -<N> | Scrolls back N lines. If N is not specified, 10 is assumed. |
| B<OTTOM> | Scroll to bottom of file. |
| T<OP> | Scroll to top of file. |
| CH<ANGE>/TEXT1/TEXT2/N NN | Changes NN occurrences of Text1 to Text2 in N lines of the file. If N or NN is not specified, 1 is assumed. If N or NN = *, all lines and/or occurrences are assumed. Changes only occur within the given zone limits. (See ZONE command to change these limits.) |
| L<OCATE>/TEXT | Locates the first occurrence of 'Text' within the given zone field. |
| CO<PY> N | Defines N lines to be copied including the current (TOP) line. See FOLLOW or PRECEDE command. If N is not specified, 1 is assumed. |
| M<OVE> N | Defines N lines to be moved including the current (TOP) line. See FOLLOW OR PRECEDE command. If N is not specified, 1 is assumed. |

| | |
|---|---|
| D<ELETE> N | Defines N lines to be deleted including the current (TOP) line. If N is not specified, 1 is assumed. |
| I<NSERT> TEXT | Inserts 'Text' after the current (TOP) line. |
| DU<PLICATE> N | Duplicates N copies of the current (TOP) line. If N is not specified, 1 is assumed. |
| F<OLLOW> | Defines the current line after which text is to be moved or copied (see MOVE or COPY command). |
| P<RECEDE> | Defines the current line before which text is to be moved or copied (see MOVE or COPY command). |
| Z<ONE>N NN | Establishes the zone field for locate and change commands as columns N and NN. If N or NN are not specified, 1 and LRECL are assumed. |
| TR<UNC> N | Defines truncation columns of the file as N. If N is not specified, LRECL is assumed. |
| LR<ECL> N | Defines logical record length of file as N. If N is not specified, no change is made. |
| FN<AME> TEXT | Changes the filename of the file to 'text'. |
| FT<YPE> TEXT | Changes the filetype of the file to 'text'. |
| FM<ODE> TEXT | Changes the filemode of the file to 'text'. |
| R<RECFM> TEXT | Changes the record format of the file to 'text'. 'text' = 'F' or 'V' only. |
| Q<UIT> | Ends editing session without making any permanent changes to the file. |

| | |
|---|---|
| FI<LE> | Ends editing session and updates the file with all changes made during the session. |
| H<ELP> | Displays a summary of the Tekedit commands. |

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