

PRENTICE COMPUTER CENTRE

UNIVERSITY OF QUEENSLAND, ST. LUCIA, QUEENSLAND, AUSTRALIA. 4067.



MINI-MICRO NEWSLETTER

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1.0 OBJECTIVES OF THE MINI-MICRO NEWSLETTER

After the somewhat spasmodic production of this newsletter, it is worthwhile to restate its objectives. They are as follows:

- (a) To provide information on mini/micro computer support services offered by the Prentice Computer Centre;
- (b) to advise users of available software, new software releases, and software problems;
- (c) to provide information, and where possible, assessments of new products including items from other manufacturers;
- (d) to provide a forum for users to advise of their applications and items of interest to other users of mini/micro computers.

As such, the more interaction we have with users, the more successful this newsletter will be. I urge all users, therefore, to participate in your newsletter. All articles will be gratefully accepted. These articles can cover a wide range of topics, for example

- what your department is doing with mini/micro computers,
- pertinent software bugs,
- helpful hints for other users,
- useful programs that you have written,
- suggestions on topics,
- requests to other users on certain hardware or of approaches to solving problems.

The staff at the Prentice Computer Centre are willing to provide a service for distribution to the departments of programs that you would like to circulate.

Please address all correspondence and other articles to:

The Editor
Mini-Micro Newsletter
Prentice Computer Centre.

Noela Meier
extension 3023

2.0 RT-11 AND TSX-PLUS NEWS

2.1 Autopatch Revision F

Autopatch Revision F is now available for those wishing to upgrade their RT-11 systems. Particular problems fixed, together with the revision and the relevant software dispatch article are as follows:

- * MONITOR
 - Corrections to the monitor (Rev E, Jan 82)
- * LS.MAC
 - LS Handler set "nohang" problem (Rev E, Jan 82)
- * SYSTEM UTILITIES
 - COPY/BINARY stops processing after encountering an OBJ library file (Rev E, Nov 81)
 - ALLOCATE and DELETE work incorrectly with COPY operations (Rev F, Feb 82)
- * DUP.SAV
 - Output error during COPY/DEVICE to magtape causes system error (Rev E, Oct 81)
 - Use of COPY/DEV/FILE without file spec (Rev E, Nov 81)
 - Problems with COPY/DEVICE using /END (Rev F, Apr 82)
- * LINK.SAV
 - Link upgrade (Rev E, Nov 81)
 - Link error in library module transfer address processing (Rev E, Jan 82)
 - Link module placement error (Rev E, Jan 82)
- * LIBR.SAV
 - Libr error in generating entry point table (Rev E, Jan 82)
- * BINCOM.SAV
 - Bincom places tab character after offset in SIPP command file (Rev E, Jan 82)
- * SYSTEM SUBROUTINE LIBRARY (SYSLIB)
 - Virtual overlay handler correction (Rev E, Feb 82)
- * SYSTEM MACRO LIBRARY
 - Incorrect expansion of .DRSET macro (Rev F, Apr 82)
- * K52
 - Repeated use of the "append" function crashes K52 (Rev E, Dec 81)
- * FORTRAN IV V2.5 COMPILER
 - The compiler incorrectly interprets comments with tabs (Rev E, Nov 81)
 - Missing END in main program can cause compiler crash (Rev E, Nov 81)
 - Compiler incorrectly optimizes array elements passed as arguments (Rev E, Dec 81)
 - Compiler incorrectly parses parentheses in quoted strings (Rev E, Jan 82)
 - Compiler crashes while accessing an odd address (Rev E, Jan 82)
 - Correction for continuation lines preceded by comments (Rev F, Apr 82)

* FORTRAN IV V2.5 OTS SYSTEM

- Correction for unit closing (Rev E, Nov 81)
- List directed input conversion error (Rev E, Dec 81)
- Boundary condition on formatted I/O corrupts I/O
(Rev F, Feb 82)
- Boundary condition on formatted I/O backspace corrupts I/O
(Rev F, Feb 82)
- Correction of assign filename handling when ICNT equals 0
(Rev F, Feb 82)
- Conversion error while reading complex number from file
(Rev F, Apr 82)

However, please do not request a system with these new patches unless you have problems that these patches will cure.

Noela Meier
extension 3023

2.2 Changing HELP messages under RT-11

Many users would like to have help messages on the system for their own programs. Some users have done this by creating a help file for each program that they write. This can be messy as you end up with lots of files and you're not sure which program they refer to. A simple solution is to add all your help messages into the system help file. It is very easy to do. The procedure is as follows:

To add new help messages or change existing help messages you must first edit the file HELP.MLB.

Make sure that you back up a copy of the file first in case of accidents.

When you edit HELP.MLB, you must follow a specific format, as follows:

1. Give each topic in the file an alphabetic name
2. The name you give must be unique within the first six characters
3. Place each topic on a page, delimited by form feeds (see example following)
4. Place topics in alphabetic order within the file
5. Leave the dummy topic 999999 at the end of the file

The following is an example of a topic, properly formatted, on a page.

```
(form feed)
.MACRO(tab)TOPICNAME(return)
TOPICNAME(tab)ONE LINE DESCRIPTION OF THE TOPIC(return)
(return)
(space)(space)SUBTOPICNAME(return)
(tab)TEXT ABOUT THE SUBTOPIC(return)
(tab)MORE TEXT (ANY NUMBER OF LINES)(return)
(space)(space)(space)SUBTOPIC ITEMNAME(return)
(tab)DESCRIPTION OF THE SUBTOPIC ITEM (USUALLY ONLY FOR(return)
(tab)THE SUBTOPIC 'OPTION'), ANY NUMBER OF LINES(return)
[ANOTHER SUBTOPIC, STARTING FROM THE BLANK LINE ABOVE]
.ENDM(return)
(form feed)
```

When you have completed all the changes that you wish to make to the file, create the help text library file by processing HELP.MLB with the librarian. Use the following command:

```
.LIBR/MACRO HELP.TXT HELP.MLB
```

You must now merge the HELP.TXT file with the HELP.EXE file as follows.

```
.COPY HELP.(EXE+TXT) HELP.SAV
```

Then, to invoke HELP, type:

```
.HELP
```

2.2.1 Summary of procedure -

1. Edit HELP.MLB and make all necessary changes
2. Create the library text file (HELP.TXT)
3. Combine HELP.TXT with HELP.EXE to form HELP.sav

For further information please refer to section 2-36 in the System Generation Manual.

2.2.2 Updating a new HELP file -

When a new HELP file is distributed by DEC, you will want to insert all the changes that you made to the old HELP file into the new HELP file. You do this by using the SLP editor. The next issue of the newsletter will explain this operation in detail. Basically what it involves is merely creating a SLP file (like a command file) which contains all your editing instructions. You then run the SLP editor and apply the SLP file you created to the new HELP.MLB file and bingo! all the changes are done.

You must then create the HELP.TXT and HELP.SAV in the usual way. For further information please refer to the section on SLP in the Utilities Manual.

Amelia Shanahan
extension 2836

2.3 TSX-PLUS Overview

TSX-PLUS is a package produced by S & H Computer Systems Inc., in the USA, which enables multi-user access under the RT-11 operating system.

Its timesharing capabilities allow a number of users to be logged in to the system simultaneously without being aware of the other users. Although the system runs slightly slower, it is not significantly so. For doing tasks such as editing the user would not notice any difference.

The number of users that you can have on your system at one time is limited by the number of physical lines on your system, the amount of memory that you have, and the amount of disk space that you have available for a swapping file.

TSX-PLUS has many features which speed up processing and give you greater utilization of your machine. Some of these are described below.

2.3.1 Virtual Lines -

TSX-PLUS provides a facility known as "virtual lines" that allows one timesharing user to control several simultaneously running programs from a single terminal. Virtual lines are quite useful in situations where the user wishes to start a long "number crunching"

job without tying up a line. Once the long job is started, the user can switch to another line. TSX-PLUS will inform the user when a virtual job is finished or waiting for input or output by ringing the bell on the terminal. The user can then return to that job and take appropriate action.

2.3.2 Detached Lines -

The TSX-PLUS detached job facility is very similar to the virtual line facility; they both allow a timesharing user to initiate execution of several simultaneously executing jobs. The major difference between detached jobs and virtual jobs is that virtual lines allow a user to switch terminal communications between several running tasks, whereas detached jobs do not. All terminal input for a detached job must come from a command file. Any terminal output generated by a detached job is discarded.

2.3.3 File Access Security -

TSX-PLUS provides a number of system security options that allow the site manager to control access to the system by timesharing users. By selecting the appropriate combination of options the system manager can control who can log onto the system, which files or devices each user can access, and can also restrict users to executing only particular applications programs.

TSX-PLUS also provides a use account facility that keeps track of a number of timesharing sessions and the total connect time that each user uses.

2.3.4 Device Spooling -

Device spooling is an optional feature of TSX-PLUS. This is very useful especially for line printer spooling since terminals no longer have to be tied up waiting for files to print.

2.3.5 Some Problems Encountered -

We have been running TSX-PLUS on our system at the Centre with no major problems. There are, however, a few restrictions of which you should be aware.

1. NOT ENOUGH MEMORY

As the TSX-PLUS system requires slightly more memory to run in, you may find some very large programs will not run. You will have to return to RT-11 to run them. There are also some difficulties with virtual arrays in FORTRAN. We will be looking into these as soon as possible.

2. RT-11 COMMANDS NOT SUPPORTED

A few RT-11 commands such as FORMAT, DEPOSIT, EXAMINE, LOAD, UNLOAD, etc. are not supported by TSX-PLUS. If the user has occasion to use any of these, he can return to RT-11 to do so.

2.3.6 Cost -

A sub-licence can be obtained for a cost of \$500. This does not include the cost of the manual which is \$50. The manual is very well written, easy to understand, and it is recommended that you buy it with your system.

2.3.7 Demonstrations -

We have TSX-PLUS up and running on our system at the Centre. If you are interested in a demonstration of it or having a play around with it yourself, please ring us to arrange a time. I'm sure you will like what you see.

2.3.8 Availability -

As long as you have put in an order form for the licence, we could go ahead and generate your system with probably only one or two weeks delay. The manuals have to come from the States and will take longer.

Amelia Shanahan
extension 2836

2.4 TSX-PLUS Pseudo Device Package

(Written by Ray Di Marco, SEQEB)

The Pseudo device package allows a disk to be divided into a number of files. Each user could then be assigned a unique file that he can use as his pseudo device. The pseudo device package allows these devices to be used in exactly the same manner as true TSX-Plus (or RT-11) devices - they may be INITIALIZEd, have files copied into or out of, assigned as the user's default work volume (ie. DK:), and even SQUEEZEd. The only function that may not be performed on a pseudo device is the BOOT operation. For access security, the pseudo devices may also be mounted in one of three modes - Read/Write, read only, or write only. Essentially this package allows for each user to have his own area on the disk for file storage and this area is treated as though it were a separate device.

Noela Meier
extension 3023

3.0 RSX11M NEWS

3.1 Announcing Version 4.0

The most dramatic news for RSX11M users is that Version 4.0 has arrived. This version has the major advantage of supporting "true" DCL and talking the VAX language - but for the purists, MCR is still available!

To standardize RSX systems on campus, we have been investigating the possibility of generating a basic system to suit the majority of needs. The specific drivers are then loaded into the basic system. This essentially means that equipment additions will no longer require a new sysgen and a new netgen for them to be incorporated, and consulting problems can be tested on our system (since all systems will have the same executive). However, for this arrangement to be successful, I need the system generation options to be agreeable to all the departments. Please examine the following options and let me know if they are not suitable or if you are not sure about them. If I do not hear from you by November 11th, I will assume that these options suit your system needs.

TARGET CONFIGURATION SECTION

- * processor type - 11/23
This is applicable to both 11/23 and 11/34 processors.
- * include switch register
But if you don't have a switch register, you cannot use the GSSW\$ directive.
- * Maximum memory size is 124K-words
- * Include K-series device support
- * NO EAE
- * Include floating point processor support
Systems without the floating point processor will still function correctly.
- * NO FIS
- * Include EIS support
- * Do NOT use KW11-P as the system clock
- * Line frequency is 50Hz
- * Do NOT include KW11-Y watchdog timer support
- * Include memory parity support
Executive support can detect parity errors.
- * NO cache memory
- * Set highest interrupt vector to 774

EXECUTIVE OPTIONS

- * Do NOT include support for DBMS-11
- * Include support for FILES-11 ACP
- * Include RMS locking and placement control
- * Include non-resident tasks (task loader)
- * Include loadable task loader

- * Include Executive Common support
Much of the executive's directive support will be set in external memory-resident commons rather than being resident in the executive itself. These memory-resident commons free more of the executive's address space, which can then be used as additional pool space.
The Executive commons are two 4K-word partitions. However, the potential space available for the Executive Commons is not totally utilized. Generally, VMR allocates about 5.5K-words as the combined size of both Executive commons. The cost of choosing the Executive commons is that the Executive commons occupy the equivalent amount of memory that they would otherwise occupy in the Executive.
- * Include memory management (PLAS) directives
- * Include Send/Receive by Reference directives
- * Include Get mapping context directive
- * Address checking automatically included
- * I/O rundown automatically included
- * Include multi-user protection
- * Include ansi magtape ACP support
- * Include online formatting (FMT) and diagnostic QIO's
- * Include support for loadable device drivers
- * Default for all applicable drivers is loadable
- * Include support for Asynchronous system traps (AST)
- * Include support for Cancel Selective Marktime
- * Include task terminator and device not ready messages (TKTN)
- * Include power fail recovery
- * Include install, request, and remove on exit
- * Use the small (16K) Executive
- * Include logical device assignment
- * Include support for error logging
- * Include user-written driver support
- * Routine \$GTWRD automatically included
- * Routine \$PTWRD automatically included
- * Include disk writecheck support
This feature can then be enabled or disabled with the MCR SET command.
- * Include software write-lock support
- * Include Executive debugging tool (XDT)
- * NO support for rotating pattern in data lights
- * Include support for communications products
- * Include support for system-controlled partitions
- * Include support for the shuffler
- * Include queue manager and queued print spooler support
- * Include support for group global event flags
- * Include ALL the directives
- * Number of preallocated QIO packets = 5
- * Size of data transfer vector in words = 33.
- * Round robin scheduling interval in ticks = 5
- * Highest priority class for round robin scheduling = 150.
- * Lowest priority class for round robin scheduling = 1
- * Executive level disk swapping interval = 30.
- * Swapping priority = 5

- * Size of pool in words = 1024.
This size is modified in VMR.
- * Seconds between printer not ready messages = 255.
- * Seconds between card reader not ready messages = 255.
- * System crash register and stack dump device = 177564
This is the console terminal.
- * Checkpointing is with system checkpoint file
- * Include Crash dump analysis support (CDA)
- * CDA output notification device CSR = 177564
- * CDA memory dump device mnemonic = DK2:
- * CDA memory dump device CSR = 177404

TERMINAL DRIVER OPTIONS

- * Full duplex terminal driver desired.
These options are then automatically included:
 - pass form feeds directly to the terminal
 - automatic carriage return/line feed
 - task checkpointable during terminal input
 - write with CTRL/O cancellation
 - hold screen mode
 - transparent read/write
 - settable case conversion for input
 - read with no echo
 - read with special terminator
 - terminal-host synchronization
 - user terminal input buffering
 - variable-length terminal input buffering
 - LA30P support
- * Unsolicited input timeout value in seconds = 120.
- * Include unsolicited input character AST
- * Include breakthrough write
- * Include CTRL/R retype support
- * Include escape sequence handling
- * Include get multiple characteristics support
- * Include set multiple characteristics support
- * Include get terminal driver options support
- * Include read after prompt support
- * Include CRT rubout support
- * Include hardware unrecoverable input error notification support
- * Include device independent cursor positioning support

SYSTEM OPTIONS

- * Do NOT include ANSLIB.OLB to support big buffering
- * Do NOT build library of ISA FORTRAN industrial/lab routines
- * Build the PLAS resident FCS
FCSRES is 6K but is overlaid and uses only 1 APR.
- * Use MIDDLE version of FCP (FCPMDL)
- * Build post mortem dump program (PMD)
- * Build resource monitoring display task (RMD)
- * Do NOT build non-queue manager print spooler
Previously support for queue manager was selected.
- * Include DIGITAL command language (DCL)

- * Number of user-written CLIs included = 2
A CLI (Command Language Interpreter) is a task that receives all unsolicited input from user terminals. The function of a CLI is to interpret and execute the unsolicited input as commands. The commands are predefined as the CLI. MCR, DCL, and DECnet are system CLIs.
- * Include pool monitoring and low pool recovery
PMT is a 1K-2Kw privileged task that runs at least once a minute to monitor pool fragmentation. It also takes recovery action when pool is at a critical level.
- * Name to give to your system = RSX11M

LOADABLE DRIVER TASK-BUILD

- * Build all selected loadable drivers into DRVPAR

**** This ends the common information ****

PERIPHERAL OPTIONS

This information is specific to each department. If possible, please supply details of all devices - number of controllers, number of units, unit number of first drive, CSR, vector, and any other device specific information as indicated in the sysgen manual. For terminal devices, indicate also the number of local and the number of remote lines, and whether or not your devices include modem support.

SYSTEM IMAGE FILE

A copy of the SYSVMR.COM file that will be used to build your system image (RSX11M.SYS) is as follows:

```
SET /MAIN=CEXPAR:1143:35:COM
SET /POOL=*
SET /MAIN=EXCOM1:*:200:COM
INS EXCOM1
SET /MAIN=EXCOM2:*:200:COM
INS EXCOM2
SET /MAIN=LDRPAR:*:26:TASK
INS LDR
FIX LDR...
SET /MAIN=TTPAR:*:400:TASK
LOA TT:
SET /MAIN=DRVPAR:*:*:SYS
    your device drivers will be loaded in here
LOA CO:
SET /TOP=DRVPAR:-*
SET /MAIN=SYSPAR:*:101:TASK
SET /MAIN=FCSRES:*:241:COM
SET /MAIN=FCPPAR:*:240:SYS
SET /MAIN=GEN:*:*:SYS
INS FCPMDL ! INSTALL FILE SYSTEM
INS [1,1]FCSRES ! INSTALL FCSRES
INS COT ! INSTALL CO DRIVER
```

```
INS QMG
INS QMGCLI
INS QMGCLI/TASK=...PRI/CKP=NO
INS QMGPRT
INS LPP
INS RMD ! USER AVAILABLE RMDemo
INS ACS ! INS ALLOCATE CHECKPOINT FILE
INS BOO ! INSTALL BOOT
INS DMO ! INSTALL DISMOUNT
INS ERL ! INSTALL ERROR LOG TASK
INS ELI ! INSTALL ERROR LOG COMMAND INTERFACE
INS ICP ! INSTALL FULL CAPACITY INDIRECT COMMAND PROCESSOR
INS INI ! INSTALL INITVOL
INS INS ! INSTALL INSTALL
INS PMT ! INSTALL POOL MONITORING TASK
INS PMD ! INSTALL POST-MORTEM DUMPER
INS LOA ! INSTALL LOAD
INS MCRMU ! INSTALL MULTI-USER MCR
INS DCL/CLI=YES ! INSTALL DCL
INS HEL ! INSTALL LOGIN PROCESSOR
INS BYE ! INSTALL LOGOUT PROCESSOR
INS BRO ! INSTALL BROADCAST TASK
INS MOU ! INSTALL MOUNT
INS SAV ! INSTALL SAVE
INS SHF ! INSTALL SHUFFLER
INS SYS ! INSTALL SYSTEM DISPLAY PART OF MCR
INS TKN ! INSTALL TASK TERMINATION TASK
INS UFD ! INSTALL USER FILE DIRECTORY BUILDER
INS UNL ! INSTALL UNLOAD
;
ins tdx/task=...ca./ckp=yes ! install catchall task
ins mac
ins tkb
ins pip
ins tec
ins tec/task=...mak
ins cmp ! install source compare
ins dmp ! install dump
ins crf
ins shutup
;
SET /UIC=[200,200_ :TT0:
;
SET /POOL
;
```

The easiest method of tailoring your system would be to insert any additional commands for your system image into another file (eg. MYVMR.COMD). These characteristics may be additional tasks to be installed, tasks to be removed, lines speed to be initialized, and so on. When your new system arrives, simply apply this command file to the supplied system image file and your system will be tailored to your needs.

Noela Meier
extension 3023

3.2 FORTRAN-77

For departments wishing to purchase FORTRAN-77, the costs involved are currently \$800.00 for the license, and \$61.00 for the documentation kit (Ref QJ668GZ).

Noela Meier
extension 3023

4.0 DECNET PHASE III OVERVIEW

The perfect gift for the programmer with a new
RSX V4 system . . . DECnet Phase III!!

There's a few new, exciting, interesting (and great fun, too!)
facilities coming with DECnet III. Here's a quick description of
them.

For use by everyone -

- (1) NFT - the Network File Transfer utility. It sends and receives files to/from other nodes in the network.
- (2) TLK - allows you to conduct a dialog with any DECnet node in the network.
- (3) FTS - a File Transfer Spooler acts just like a printer spooler. It means that you can ask for a file to be transferred to another DECnet node, and you can then continue with other work.
- (4) NED - a Network Editor, based on the EDI editor. It allows you to edit a file on a remote DECnet node.
- (5) LOG - yes, it's still the same program that gives you a Virtual Terminal on the PDP-10.
- (6) RMT - lets you become a Remote Terminal on somebody else's RSX system!
- (7) RVT - gives you a Remote VAX Terminal.

And facilities for the System Manager -

- (8) NTD - the Network Demo program allows you to look at the instantaneous usage of the network. It's similar to RMD, and shows which nodes are accessible, how many network connections are in use, etc.
- (9) DTS - Data Test Sender - will run a two minute test of communications to a remote RSX system, and report back on the effective baud rate and throughput.
- (10) NCP - The Network Command Program has more maintenance facilities allowing you to perform loop-back tests through the network, to give information on where problems are occurring.
- (11) NETLPT - you've always had it, this program will print a

file on your line printer which a PDP-10 user has directed to your machine.

Phew! that's quite a bit - and there's more detail on each!

OK, so you're not interested. You just want to do exactly what you've always done. YOU CAN! There will be one difference - when initiating a file transfer from the PDP-10, you run NETACC instead of ACCESS, and tell it your account and password when asked for them.

As your new systems arrive, we'll be supplying you with instructions on the precise manner of using these utilities. For those who want to make full use of their networks, we would suggest the following manuals -

- (i) Introduction to DECnet - a good overview for all users.
- (ii) RSX DECnet user's Guide. Volume I has utilities, volume II has DECnet subroutines for use from user programs, and volume III has appendices. Volume I should be read by network users who want to do anything more than very basic use of the network.
- (iii) RSX DECnet System Managers Guide - for system managers or interested users. It tells you about all the facilities you never dreamed were there.

We have one copy of these manuals at the Centre, which you can peruse, or order your own from DEA. There are many more facilities available than can be squashed into a newsletter article - such as down-line load tasks into another system, run or abort tasks on another system, submit command files, and so on. We'll be happy to answer any queries you may have, to let you make the most of your network.

Mark Williams
extension 3018

5.0 SOFTWARE NEWS

5.1 Runoff

We now have a new version of Runoff that runs under RSX and RT-11. Guaranteed to be much improved on the old version.

Some features include:

1. Indexing - It will create an index of words that you flag in your file. The index appears at the end of your output.
2. Hyphenation - It will optionally hyphenate words in order to fit more on a line.
3. Autoparagraphing - It will take any line beginning with a space or a tab to be a new paragraph.
4. Spacing - Allows line spacing of up to 5 lines (ie. double spacing, triple spacing etc.)
5. Appendixes - does automatic appendixing.

Also does footnotes, page titling, chapter titling etc.

Please ring me if you are interested in it.

Amelia Shanahan
extension 2836

5.2 Ordering of Software

Please contact us if there is additional software from DECUS that your department requires. Depending on the demand, we may be able to make some arrangements for purchase of such software.

Noela Meier
extension 3023

5.3 Ordering of manuals

We will be putting in an order soon for some RT-11 pocket guides. The cost is a mere \$2 so anyone interested in getting one of these or any other manuals please ring us within the next couple of days to let us know.

Amelia Shanahan
extension 2836

6.0 SPECIAL ARTICLES

6.1 EDITORS AVAILABLE

Some of you may be unaware of all the editors that are available for your machine and may not be using the one most suitable for your applications. Below is a summary of what is available.

6.1.1 TECO - available under RSX, RT-11, and TSX-PLUS -

This is a very powerful text editor. Every character from Control-A through rubout is legal in TECO data. It is a character oriented editor; one or more characters in a line can be modified without retyping the rest of the line.

TECO doesn't display anything on the terminal unless requested to do so. For this reason and also because the commands are rather cryptic and very powerful, it is not recommended for beginners.

However, the advanced user will probably want to make use of it's powerful features. Most editing can be accomplished using a few simple commands; or the user can select any of a large set of sophisticated commands, such as character string searching, command repetition, conditional commands, programmed editing, and text block movement.

TECO is a very useful editor to learn since it is available on all the machines (ie the VAX, the KL10, the KA10, and the PDP-11's running RSX, RT-11, and TSX-PLUS).

6.1.2 KED & K52 - available under RSX, RT-11, and TSX-PLUS -

These are visual keypad editors designed to run on VT100 and VT52 terminals respectively. Provided you have the right terminal, this is excellent for beginners to use as well as experienced programmers. For more details see our discussion of KED in this issue.

6.1.3 QEDIT - available under RSX only -

This is a line-oriented editor. Versions of this editor are also running on the VAX and the KL10. Some of you may be familiar with these. The version that we have running under RSX is more like the VAX version in that it operates on a block of text at a time rather than the whole file and some of the more sophisticated edit functions available on the KL10 such as SPLIT, CONCAT, and PREPEND have not been programmed into this version.

QEDIT is also good for beginners as the commands are more meaningful than TECO commands and it always displays the current line. Although not as powerful as TECO it allows you to perform all the usual editing commands such as insert, delete, change, and search commands, as well as commands that allow you to store and recall blocks of text.

6.1.4 EDI - available under RSX only -

This is also a line-oriented editor very similar to QEDIT. It has all the common editing functions such as insert, delete, change, and search commands, as well as macro commands to store and recall text. You can also use macro commands to perform a sequence of EDI commands.

For more information please refer to Section 2-1 of the Utilities Manual.

6.1.5 EDT - available under RSX only -

This editor is very unusual in that it is both a visual keypad editor (similar to KED) that will run on a VT100 or a VT52 terminal and also a line editor (similar to EDI) which runs on any terminal. So in this case you're getting the best of both worlds.

For more information please refer to the EDT Editor Manual. We will be doing a feature on this editor in our next issue so if you are interested be sure not to miss it.

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6.2 KED (RSX, RT-11, and TSX-PLUS)

The PDP-11 Keypad Editor is a text file editor that Digital has designed for use with VT100 terminals that have special function keypads. A version of the Keypad Editor can also be used with VT52 and V55 terminals. The Keypad Editor is suitable as the first editor for a new user.

KED and K52 provide the same basic features. Any editing that you can do with KED you can also do with K52. The Keypad Editing versions are different only because of the different hardware features of VT100's and VT52's.

You can use the Keypad Editor to inspect a file, create a new file or edit an existing file. It operates on ASCII files and uses special symbols to show where non-printing characters such as the Escape character, are located.

The keypad editor uses the screen on your terminal like a window to show you 24 screen lines of your file. When you start editing a file, you see the first 24 lines. By using the keypad editor functions you can make the editor scroll the file upward and downward on the screen so that you can see different 24-line segments of the file. By using other functions and commands, you can change the file by inserting and erasing material.

The editor always displays a special blinking symbol on the screen called the cursor. The cursor marks the location in your file where the editor will insert a character if you type one. Therefore, to insert new material in your file, you need only use the editor functions to advance or back up the cursor to the location where you want the insertion to take place, and then type the insertion.

The cursor also shows where the editor will begin processing the other functions and commands. For example, to erase something in your file, move the cursor to the correct location and then use the appropriate functions.

Function keys are set up to do such things as, delete a character, a word or a line, to search for a text string either forward or backward in your file, to substitute one text string for another, to remove text from your file and store it in a buffer, to retrieve text from a buffer, etc. The "command" function key allows you to do things such as change the settings on your terminal (eg width of output), write your file back to disk etc.

This editor really is great to use. So all you people out there who have VT100's, VT52's, VT55's or even VS100's and are not currently using the Keypad Editor, ring us up and we'll come and install it. You'll find editing a dream with this.

For more information please refer to the Keypad Editor's User Guide.

Next issue we will be looking at EDT - another great editor. So keep tuned.

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