

An Introduction

To Computing and Text Processing

On The Grinnell College

VAX Computer

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Table of Contents

I. INTRODUCTION

A. Purpose of the document.....	Page 1
B. Conventions Used in this document.....	Page 1
C. Documentation and Help.....	Page 2
D. The Grinnell College VAX System.....	Page 2
E. A Description Of The Text-Processing System On The VAX	Page 3

II. GETTING STARTED USING THE VAX SYSTEM

A. Additional Documentation on VAX Use.....	Page 5
B. Logging On the VAX.....	Page 5
C. Logging Off the VAX.....	Page 5
D. Storing Information on the VAX.....	Page 6
E. Commands on the VAX.....	Page 6
F. Getting Help on the VAX.....	Page 7
G. Changing A Password.....	Page 7
H. Using NEWS.....	Page 8

III. INTRODUCTION TO EDT ON THE VAX

A. Additional Documentation on EDT.....	Page 9
B. About EDT.....	Page 9
C. Using EDT To Enter And Edit Text.....	Page 9
D. Exiting from EDT.....	Page 10
E. Using EDT Screen Editing.....	Page 10

IV. SOME ADDITIONAL VAX COMMANDS

A. Checking a Directory.....	Page 12
B. Making a copy of a file.....	Page 12
C. Displaying a file at a terminal.....	Page 12
D. Eliminating unwanted files.....	Page 12
E. Printing a file.....	Page 13

V. USING RUNOFF TO FORMAT TEXT

A. Additional Documentation on RUNOFF Use.....	Page 16
B. What RUNOFF Does.....	Page 16
C. RUNOFF Commands.....	Page 16

VI. CHECKING SPELLING.....Page 17

VII. USING THE DREAMS/6 ELECTRONIC MAIL SYSTEM

A. Reading MAIL.....	Page 19
B. Forwarding MAIL.....	Page 19
C. Saving Mail in Files.....	Page 19
D. Sending MAIL.....	Page 19
E. Editing MAIL Messages.....	Page 20
F. Sending Existing Files Through MAIL.....	Page 20
G. Exiting From MAIL.....	Page 21

APPENDIX A: QUICK REFERENCE GUIDE TO EDT.....	Page 22
---	---------

APPENDIX B: QUICK REFERENCE GUIDE FOR RUNOFF.....	Page 24
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INTRODUCTION TO COMPUTERS AND TEXT PROCESSING
ON THE GRINNELL COLLEGE VAX COMPUTER SYSTEMS

EDIT DATE: 9/29/86

I. INTRODUCTION

A. Purposes of This Document

This document is an introduction to the use of the Grinnell College VAX time-sharing computer system, including the text-processing programs. It is intended to be used with introductory workshops. Short reference guides for the EDT editor and the RUNOFF formatting program are included in appendices.

B. Conventions Used in This Document

Throughout this document, upper-case letters are used for the names of commands typed by the user on the terminal. This is done merely for emphasis, since in nearly all cases, either upper or lower case letters can be used interchangeably in the programs and on the VAX.

Responses and prompts to the user from the computer will be displayed in bold type.

The word "filename" stands for the general name of a file, which in this document usually means a set of text material (e.g, a paper or letter).

Angle brackets (<>) placed around characters are used to indicate that the characters should be typed on the keyboard (excluding the keypad on the far right of the keyboard). For example, <P> means press the key with the letter P on it and <ESC> means press the the ESCape key.

Square brackets ([]) are used to indicate characters or selected keys located on the numeric keypad, located on the right side of the keyboard. For example, [PF1] means the PF1 key located in the upper left corner of the keypad.

The following special keys, or combinations of keys, are used frequently:

<RETURN> Press the key labeled <Return>. Pressing this key after a command has been typed causes the computer to act upon the command.

<CTRL/x> Hold the <CTRL> key down as if it were a shift key, and simultaneously press the "x" key. For example, <CTRL/Z> means hold down the <CTRL> key and then press the "Z" key.

<DELETE> This key, which is used to delete unwanted characters, is labeled DELETE on the VT100 keyboard and with an "X" in a five-sided box on the Rainbow Keyboard.

VT220 and Rainbow keyboards have a row of keys called "function keys" across the top of the keyboard. The keys are identified either by names (e.g. F17) or labels (e.g. Exit). The most commonly used function keys and their equivalents are:

F1 = Hold Screen Key	F2 = Print Screen Key
F3 = Set - Up Key	F11= ESC Key

C. Documentation and Help

In addition to this document, a VAX user can get information and help from several other sources:

1. The VAX has extensive on-line HELP messages, organized in several layers of menus. These can be read by logging on to the VAX, typing HELP, and then typing the desired menu item.
2. Computer Services has several locally-written documents describing various applications packages on the VAX. These documents are available in the distribution rack in the Younker Memorial Computing Area.
3. Copies of the most commonly used VAX manuals are kept in the documentation racks at all campus terminal sites.
4. A complete collection of vendor-supplied VAX manuals are kept at Computer Services (GCCS). These manuals are detailed and specific, but are not really intended for the novice user.
5. The User Consultants and Computer Services (GCCS) staff can answer many questions related to the VAX.

D. The Grinnell College VAX System

The academic VAX system consists of one VAX 8600 computer and two VAX 750 computers. Applications which require large processing capability (e.g. packages such as RS/1, Macsyma, SCSS, Pascal) are handled just on the VAX 8600, known as "AVAX." The two VAX 750s, known as "BCVAX", are coupled together and used as the primary central word processing system.

The terminals on the Grinnell College VAX system include Digital Equipment Company VT100's, VT102's, VT220's, and VT240's. The DEC Rainbow microcomputers can also be used as terminals. All the terminals and micros which act as terminals are connected to the VAX time-sharing computer system located in the Noyce Computer Center.

All Grinnell College students and faculty members are assigned accounts on the academic VAX system. This account gives the user access to all the VAXes in the system. Each user receives a "username" and a password, which the VAX uses to identify the user.

A "username" is a unique combination of up to 9 characters made from the user's last name and possibly part of the first and middle names. A password is some string of 6 to 32 characters which should be kept secret from all other users. Even though a user will log in on different machines for different applications, the person will have the same password on each system and will have access to all his/her stored information (directories and files) from each system.

E. A Description Of The Text-Processing System On The VAX

One of the most common applications of computing is to store and manipulate words. Text is entered into the computer memory; usually from a terminal keyboard, and is displayed on a monitor (screen). The screen is the "paper" of this electronic typewriter. After the text has been entered, edited and formatted just the way the user wants it, the text can be printed on a draft or letter quality printer.

Text, like other types of information, is stored in a computer "file" on a magnetic disk, either a diskette or a so-called "hard disk." This is important to understand, since information in the computer memory can be lost when the terminal is turned off if not stored more permanently on a magnetic disk.

Several text processing programs are available on the VAX system. These programs can be used to enter textual material, format the material, check to see if the words in the text are spelled correctly, and print the text. This document describes the use of EDT (a text editor), RUNOFF (a text formatter), and SPELL (a spelling checker).

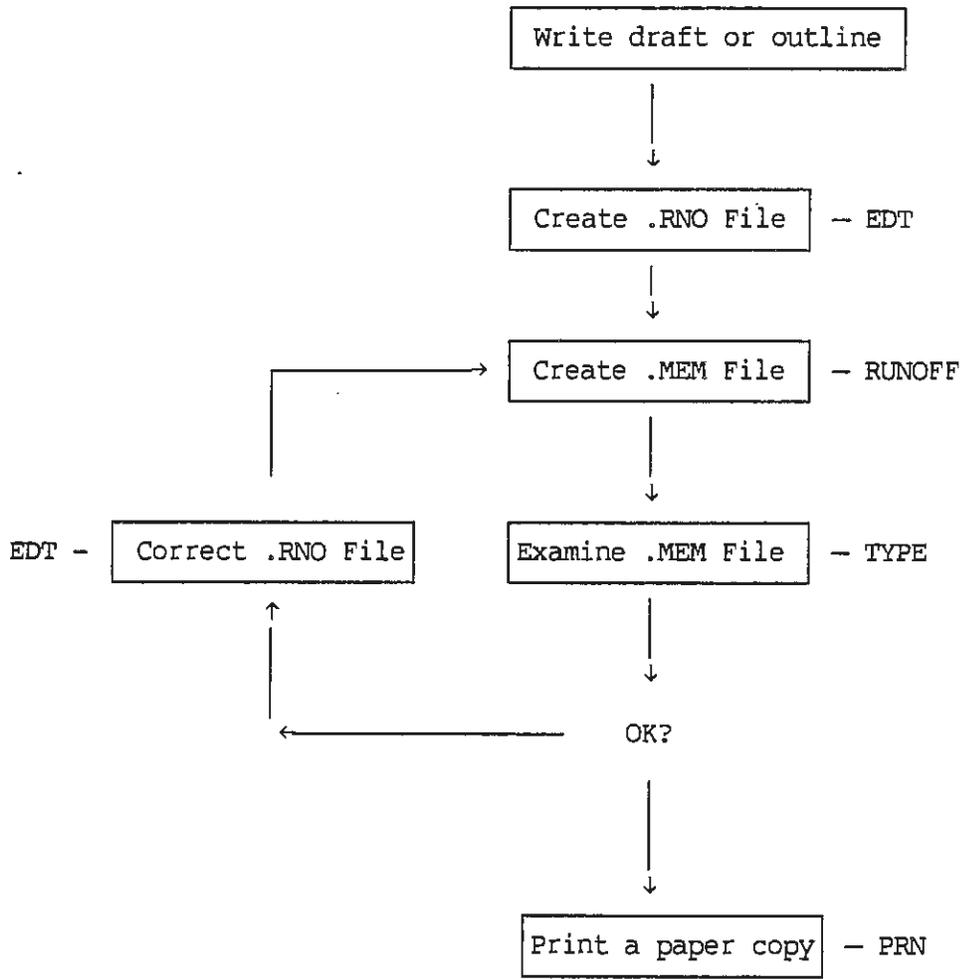
These text-processing programs are designed as tools to speed up writing. The control the computer will give you over the task will enable you to focus on the content and form of your writing, rather than the mechanics of typing and formatting. The time necessary to rewrite a paper becomes almost insignificant because, once you have entered the text into the computer, you can work with the text as a whole. For example, you might have the computer replace all occurrences of a given word with a synonym. Or you might ask the computer to find a certain word or phrase in the text. The computer can quickly move blocks of text, such a paragraph, from one section to another to improve the structure of a paper.

The computer can also check your spelling by comparing every word in your paper to the words in a dictionary. The computer notes every word that doesn't match a dictionary entry. You can see the word in context and, if the word is correct but doesn't match a dictionary entry, you can add the word to your own dictionary.

The computer is a tool for writing, but you will still have to compose the text. The computer cannot evaluate rules of grammar or usage. For example, the computer will not notice if you misuse words, such as "too" instead of "two." Likewise, such concepts as "good paragraphs" or other such abstract human ideas are up to you. The computer will simply store the text, check for spelling, and print out whatever you enter.

The series of steps that most people follow to create, edit, and print text files is diagramed on the next page.

Steps to text processing on the Grinnell VAX system:



II. GETTING STARTED USING THE VAX SYSTEMS

A. Additional Documentation on VAX Use

Additional information about use of the VAX system may be found in the following places:

1. On-line help on the VAX. A later section of this document explains how to access the on-line help feature of the VAX.
2. An Introduction to the Grinnell College VAX. This document is available in documentation racks at all campus computing areas, and is available free in the document distribution rack in the Younker Memorial Computing Area.
3. Various DEC documents related to VAX use are kept in the documentation racks at all campus computing areas.

B. Logging On the VAX

Terminals gain access to the different VAX computers through a device called a "port selector" or "switch," manufactured by Micom. Follow these steps to "log on" to one of the VAXes:

1. When the terminal is turned on, the Micom switch gives the following message:

```
***** Grinnell College Computer Services *****  
  
If you want to use:  
  The academic VAX 8600, type      AV  
  The academic VAX 750s, type     BC  
  The academic PDP 11/70, type    AC  
Which Computer?
```

To select the VAX 8600 (AVAX), type AV at the "which computer?" prompt, and press <RETURN>. If a "port" (or access line) is available on the VAX 8600, the switch will complete the connection between the terminal and the AVAX.

2. When the VAX types **User:**, enter your user number and press <RETURN>.
3. When the VAX types **Password:**, enter your password, and press <RETURN>.

Note: Your password will not be printed on the terminal when you type it.

4. If you have supplied the correct password, some messages will appear, followed by a dollar sign (\$). This is the VAX prompt to indicate that you are now "logged in" and the computer is waiting for your instructions.

C. Logging Off the VAX

To sign off the VAX, simply type LOGOUT or LO, and press <RETURN>. The Micom switch connection with your terminal will be broken automatically.

D. Storing Information on the VAX

1. General comments:

As on other computer systems, a collection of information (e.g. data, text, a program) is stored in a "file" which has a name. A collection of files is stored in a "directory", which also has a name. The VAX "directory" concept is very powerful, allowing for "subdirectories" within directories.

2. File descriptions (names):

A complete file description on the VAX consists of a disk name, a directory name, a file name, and a version number. An example of a complete file description is:

```
DISK$A:[NORMANJ]MYPAPER.DOC;2
```

This file is stored on a disk drive named DISK\$A:. The file is in the directory [NORMANJ], the file name is MYPAPER.DOC, and the version number is 2. Directory names and the first part of the file name can each be up to 32 characters long. The extension on the end of the file name (e.g., DOC) is called the "file type" and may also be up to 32 characters long. In many cases, a user need only specify the file name to indicate to the VAX which file is the one referenced. The VAX knows which directory is being used and will usually use the highest-numbered version of a file automatically.

3. Version numbers:

Whenever a user creates a new file with the same name as an existing file, the VAX creates a new file with a higher version number. In order to keep files from multiplying, a limit on versions has been set so only the three most recent versions of a file can be kept at any one time. If a file name is given without a specific version number, the VAX assumes the most recent version. Also, the most recent version of a file can be specified by giving the file name with just a semi-colon (e.g. MYPAPER.DOC;). In general, the semi-colon and version number are optional unless otherwise noted.

4. Directories:

A "directory" is the VAX structure for organizing and storing files. The directory structure on the VAX is like an inverted tree. That is, each account has a single top directory, and may have other directories (i.e., subdirectories) within (or below) it. The tree directory structure provides a powerful method of organizing information. In particular, files of similar type can be stored in the same subdirectory, making it easy for the user to keep track of the information.

Directories have names from 1 to 32 characters long, bounded by square brackets. The top directory has the same name as the account owner's username. For example, J. Norman would have username NORMANJ and top directory [NORMANJ].

E. Commands on the VAX

After logging in, the VAX user sees the dollar sign (\$) prompt. This indicates that the VAX is waiting for the user to issue a command in the Digital Command

Language (DCL) commands. A few of the commands for some of the most common computing activities are listed below and in following sections.

F. Getting Help on the VAX

The VAX provides extensive on-line information about commands, procedures, packages, syntax, etc. To run the on-line help program, type:

HELP

at the DCL prompt. A long list of possible topics will then be printed. In response to the "Topic" question, type the subject on which you want help. Most subjects are quite extensive, so a short message is printed and then a list of subtopics. At the "Subtopic" question you would type the next subject, etc. The HELP messages contain information on almost every common VAX topic, but it can be a little complicated to find the appropriate subtopic. Certain commands (e.g. SET, SHOW) are good places to start looking for information on how to do some particular operation which does not have a direct mnemonic command.

To exit HELP, press <RETURN> until you get the <\$> prompt.

G. Changing A Password

To change a VAX password, type:

SET PASSWORD

The VAX will ask the following questions:

Old password:
New password:
Verification:

Answer the questions. The password information typed will not print at the terminal (since that information is presumably secret). "Verification" means "type the new password again" to confirm that it is correct. The password that you type in must be at least 6 characters long.

It is a good idea to change your password often. This protects your account from unauthorized access by someone who might guess your password. Also, don't use a password that is easily associated with you. Yet, it should be something that is easy for you to remember.

H. Using NEWS

To read the on-line news items, on either of the VAX systems, type:

NEWS

The computer will display a menu of the current NEWS items, with one or more keywords for each item. To display the NEWS item associated with a particular keyword, type:

NEWS keyword

Other features of NEWS can be used by specifying certain descriptors or "switches". For example, to get information about the NEWS program, type:

NEWS/HELP

To display the full list of all NEWS items, type:

NEWS/ALL

To display a list of special interest "bulletin boards", type:

NEWS/LIST

To select entries from a particular bulletin board, type:

NEWS/BB:BB Name

To select items from the NEWS Archive File for a particular year specified by the last two digits, type:

NEWS/ARCH=Year

III. INTRODUCTION TO EDT ON THE VAX

A. Additional Documentation on EDT

Additional information about use of the EDT editing program may be found in the following places;

1. A Quick Reference Guide to some of the EDT commands and functions is given in Appendix A of this document.
2. On-line help on the VAX. By typing HELP EDIT/EDT, you will be able to get on-line information about using EDT.
3. Within EDT, it is possible to get on-line help by pressing the [PF2] keypad key or [PF1][PF2].
4. INTRODUCTION TO THE EDT EDITOR. This DEC document is available in documentation racks at all campus computing areas.

B. About EDT

EDT is the standard editing program on the VAX system. EDT allows you to use keypad keys to control a wide variety of editing commands, to view an entire screen full of text at a time, and to move around in the text by using the arrow keys and keypad functions. EDT has an on-line help facility which you can access at any time during an editing session.

Note: Throughout this document, angle brackets <> are used to indicate that keyboard keys are to be pressed, while square brackets [] are used to indicate that keypad keys are to be pressed.

C. Using EDT To Enter And Edit Text

EDT may be used to either create a new file to contain text, or to edit an existing text file. To enter EDT, type EDT and a file name. For example, if you want to create a new file called SAMPLE.RNO, type:

```
EDT SAMPLE.RNO
```

At this point, the screen will clear except for the "end of buffer" symbol, [EOB]. The user then types in the text, chasing the [EOB] down the page.

If the file called SAMPLE.RNO already existed, the same command (i.e., EDT SAMPLE.RNO) would be typed. However, in this case the screen would fill up with the text of that existing file.

D. Exiting from EDT

To exit from EDT, press:

[PF1]<E>

If the user has been editing a file called SAMPLE.RNO, for example, the VAX system would respond with

DISK\$A:[Username]SAMPLE.RNO:[Version Number] 25 lines

E. Using EDT Screen Editing

When you enter EDT, you may move the cursor around on the screen, entering text wherever the cursor is positioned.

1. To move around the screen, use the arrow keys near the keypad.

2. To move cursor to the top of the document, press:

[PF1][5]

3. To move cursor to end of the document, press:

[PF1][4]

4. To cut or erase text:

- a. Move cursor to the beginning of the text to be cut;
- b. Press [.] key;
- c. Move cursor to the end of the text to be cut;
- d. Press [6] on the keypad.

5. To paste previously cut text:

- a. Move cursor to desired insertion point;
- b. Press [PF1] [6].

6. To search for text:

- a. Press the [PF1] key then the [PF3] key;
- b. Enter the word for which you are searching;
- c. Press [ENTER];
- d. Press [PF3] for next use of selected word.

7. To replace a word with another word:

- a. Press [PF1] then <S>.
- b. At the prompt Search for:, type the word to be replaced;
- c. Press [ENTER];
- d. Type the new word;
- e. Press [ENTER] key.

8. To insert another file into current file:
 - a. Move cursor to place to insert file
 - b. [PF1] <I>
 - c. System prompts: Include File?:
 - d. Type filename
 - e. Press [ENTER]
 - f. System prompts: In Buffer:
 - g. Enter Main
 - h. Press [ENTER]

9. To toggle between an 80 and 132 column screen, press:
[PF1] <W>

IV. SOME ADDITIONAL VAX COMMANDS

A. Checking a Directory

The DIR command will list, on the screen, all the files stored in your account. To see the list of contents of a directory, type:

```
DIR
```

B. Making a copy of a file

To make an identical copy of a file, type:

```
COPY oldfilename newfilename
```

with spaces between the filenames. Note the order of the old and new file names. The original file is listed first and the new file is listed second.

C. Displaying a file at a terminal

To display a file at the terminal, type:

```
TYPE filename
```

D. Eliminating unwanted files

To erase a file from your directory, type:

```
DELETE filename
```

Note that with this command, you MUST include the version number in the filename. For example, to delete the highest version of the file GOOBER.DOC, type:

```
DELETE GOOBER.DOC;
```

Or, to delete all copies of the file GOOBER.DOC, type:

```
DELETE GOOBER.DOC;*
```

To rename the file, type:

```
REN oldfilename newfilename
```

E. Printing a file

A wide variety of options exist for printing files on the VAX system, using both dot-matrix and letter-quality printers. In general, the PRN command is used to print files on nearly all the printers on campus, both the ones attached directly to micros and the ones attached ("spooled") from the VAX system.

To print out a file, type:

PRN <File Name>

The screen will display:

```
PRINT CHARACTERISTICS - type HELP for help

Any or all of the following characteristics can be changes.
(Choose one at a time):

( 1 )   Choose Printer other than local LA50
( 2 )   Superscript
( 3 )   Subscript
( 4 )   Enhanced density printing
( 5 )   Horizontal pitch selection
( 6 )   Character set

Type the number corresponding to the option you wish to select.
Press <RETURN> to Print File

Option?
```

If you are working at a terminal or Rainbow microcomputer which is connected directly to a LA50 printer, press <RETURN> to accept the default values. The file will be printed on the LA50 connected to you machine.

If you wish to have you file printed by a spooled printer from the VAX, (such as the LA100 or LN03) then enter 1 and press <RETURN>. The screen will then display:

```
PRINTER QUEUE OPTIONS - type HELP for help.

The following queues are available:

( 1 )   ARH2LN03   ARH (faculty use)
( 2 )   D2LA100   Darby 202
( 3 )   D2LN03    Darby 202
( 4 )   GCCSLN03  GCCS Office Wing (Computer Services staff only)
( 5 )   STINLN03  Steiner (faculty office)
( 6 )   YMLA210   YMCA
( 7 )   YMLN03    YMCA

Type the number corresponding to the option you wish to select.
(Press <RETURN> for local LA50)

Option?
```

Choose printer which is most convenient for you and press <RETURN>.

The file will then be sent to that printer.

To get information about PRN, type:

PRN/HELP

Note: For most current information regarding printers see the document,
Printing on the Grinnell College Campus.

V. USING RUNOFF TO FORMAT TEXT

A. Additional Documentation on RUNOFF Use

Additional information about use of the RUNOFF formatting program may be found in the following places:

1. A Quick Reference Guide to some of the RUNOFF commands is given in Appendix B of this document.
2. On-line help on the VAX. By typing HELP RUNOFF, you will receive information about RUNOFF commands.
3. VAX-11 DIGITAL STANDARD RUNOFF POCKET REFERENCE GUIDE. This document is available for reference in documentation racks at all campus computing areas.

B. What RUNOFF Does

The RUNOFF program will create a formatted version of a text file, using commands which you have typed into the original text file. In general, RUNOFF expects the original text file containing RUNOFF commands to have .RNO as a file-type (extension). The file containing the formatted text produced by RUNOFF will have .MEM as a file-type. For example, if the original text file (probably created with EDT) was named SAMPLE.RNO, the formatted file created by RUNOFF will be named SAMPLE.MEM.

To use RUNOFF to format text stored in a file named SAMPLE.RNO, type:

```
RUNOFF/DOWN SAMPLE.RNO
```

C. RUNOFF Commands

RUNOFF commands are indicated by preceding each command with a period. When the RUNOFF program encounters such a command on the left margin only, it does the indicated type of formatting. For example, if the command .LM 20 is encountered on the left margin of a text file, RUNOFF will format the text, from that point on, with a left margin of 20.

A detailed list of the RUNOFF commands is included in the RUNOFF Quick Reference Guide, in Appendix B of this document.

VI. CHECKING SPELLING

Text files stored on the VAX (probably created with EDT) can be checked for spelling errors. The SPELL program will compare every word in the text file to the 33,000 words in the SPELL dictionary.

On-line help is available for the SPELL program. Simply type:

HELP SPELL.

If you are using the RUNOFF program, you may use the SPELL program to check either the original text file or the formatted version. However, it will be somewhat quicker to check the spelling in the unformatted version (with the .RNO extension), since .MEM version of the file may be reformatted later.

To have the SPELL program check your text file, type:

SPELL filename

The first time you use SPELL the screen will display:

You have no PERSONAL dictionary. Do you want one created [Y]?

If you respond by entering a "Y", the VAX will create a new personal dictionary for you.

Once a personal dictionary has been created or located, the program will highlight each word in your text file which was not found in the SPELL dictionary. For each word that does not match, you may type the first letter of the option, or use the arrow keys to select a response. The response will be displayed at the bottom of the screen.

These options, shown as they appear on the screen, are:

Global Replace Edit Ignore Add Pass Dictionary Finish Overview
Current dictionary currently selected for ADD

Help on many of these options is available by pressing [PF2] while that command is "highlighted". Use the UP and DOWN arrow keys to move between the two command lines. The HELP message will provide summaries of each of the SPELL responses:

Global Replace	Replaces all occurrences of this spelling with one of the corrections from the list.
Replace	Replace this occurrence of this spelling with one of the corrections from the list.
Edit	Allows the user to retype the word.

Ignore	Accepts the spelling as it is.
Add	Adds this spelling to the currently selected personal dictionary.
Pass	Leaves this occurrence unchanged.
Dictionary	Displays the names of the personal dictionaries being used for verification, and highlights the name of the current personal dictionary.
Finish	Exits the spelling program, giving the option of saving the spelling changes that have been made.
Overview	Displays a summary of the Spell program features.

When you have finished examining all the possibly misspelled words which SPELL found, the program will stop and give you a message telling how many errors were corrected, etc. Your file will now have all the corrections you selected.

VII. USING THE DREAMS/6 ELECTRONIC MAIL SYSTEM

A. Reading MAIL

If you have mail, you will be notified of how many messages and the date of the most recent message when you log in to the VAX. To read MAIL, type:

MAIL

If you want to read only the most recent mail (sent, but unread), type:

MAIL/NEW

If you need help remembering what commands to use in help, type:

MAIL/HELP

B. Forwarding MAIL

To forward a mail message, at the **What Action?** prompt, type:

<F> NAME

1. The program will ask for the subject of your message. Either type a word for the subject or press <Return> to leave the subject blank.
2. The program will ask for the message which will be appended at the end of the forwarded message. Type any additional text you want to append.
3. The message will be forwarded to the person specified by NAME.

C. Saving Mail in Files

When the MAIL program prompts you for the disposition of a particular message, you may "output" the message to a file called "filename" by typing:

<O> filename

Note: Make sure that is the letter O rather than 0 (zero).

D. Sending MAIL

1. To send mail to another user, type:

TELL NAME

where NAME is either the last name of the person to whom you wish to send the message.

2. The program will ask for the subject of your message. Either type a word for the subject or press <Return> to leave the subject blank.

3. The program will ask for the message. Type the message.
4. To cancel the sending of a message, press <CTRL> <C>
5. To send the message, press <CTRL/Z>.

E. Editing MAIL Messages

1. If you need help or want to use the text editor (EDT), press [PF2]. The screen will then display:

Enter the Text of your message.

The following special keys are recognized:

	VT100	VT200	VT52
Send the message	CTRL/Z	CTRL/Z	CTRL/Z
Abort the message	CTRL/C	CTRL/C	CTRL/C
Invoke the text editor	PF3	F18	Black
Invoke "edit mode"	PF1	F17	Blue

Use "@filename" to include a file in your message. Use two @'s to start a line with a commercial "at" sign.

2. To enter text editor (EDT) while in MAIL, press [PF3]. The screen will display: Invoking Text Editor.., then show the text file. You may then type in the message just as if you were editing a file with EDT outside of the MAIL program.
3. To exit EDT, press [PF1] <E>. The MAIL program will save the file, and then allow you to choose from the following options:

Please choose from the following options:

A-Abort and don't send the message
 C-Continue entering message (but not using a text editor)
 E-Use the text editor to edit the message
 M-Modify the command line (qualifiers or receivers)
 S-Send the message

Edit option <send>

F. Sending Existing Files Through MAIL

To send an existing file to another person via the MAIL system, type:

TELL NAME

At the prompt, **Subject:**, press <RETURN>, the computer will prompt:

Please enter message; press CTRL/Z to send, CTRL/C to abort

then you type:

@filename

where "filename" is the name of the file you wish to send. The existing file will then be added to the mail message.

To see the existing file, as it is being entered into the mail message, simply expand the command slightly, by typing:

@filename/v

Either of these commands to enter existing files into the mail message can be done at any time, except when in the EDT edit mode.

G. Exiting From MAIL

To exit from the MAIL program without reading all the messages, type:

EXIT

APPENDIX A: QUICK REFERENCE GUIDE TO EDT

A. Notation Conventions

Angle brackets (<>) placed around characters are used to indicate that the characters should be typed on the keyboard (excluding the keypad on the far right of the keyboard). For example, <P> means press the key with the letter P on it and <ESC> means press the the ESCape key.

Square brackets ([]) are used to indicate characters or selected keys located on the numeric keypad, located on the right side of the keyboard. For example, [PF1] means the PF1 key located in the upper left corner of the keypad.

B. Single-Key Keypad Functions in EDT

To accomplish the function stated, press the KEYPAD key indicated:

Move cursor 16 lines of text	[8]
Move cursor 1 line of text	[0]
Delete line from cursor to end of line	[PF4]
Move cursor to the end of current line	[2]
Get Help	[PF2]
Delete next word	[-]
Delete character above the cursor	[,]
Select the beginning location to "cut"	[.]
Cut selected text	[6]
Move cursor to beginning of next word	[1]

C. Double-key Functions in EDT

To accomplish the function stated, press the keys indicated. Note that the [PF1] key is sometimes called the [GOLD] key.

To get help for [PF1] commands	[PF1] [PF2]
Exit program saving changes	[PF1] <E> or [PF1] <X>
Exit program WITHOUT saving changes	[PF1] <Q> [ENTER]
Undelete last deleted line or restore deleted line starting at cursor position	[PF1] [PF4]
Move Cursor to bottom of the file	[PF1] [4]

Move cursor to top of the file	[PF1] [5]
Insert	[PF1] <I>
Show list of buffers	[PF1]
Delete contents of a buffer	[PF1] <D>
Jump to another buffer	[PF1] <J>
Write a buffer to a file	[PF1] <O>
Paste from a buffer	[PF1] <6>
Search for all occurrences of a given word or phrase	[PF1] [PF3]
For next occurrence of the word	[PF3]
Search for all occurrences of a given word or phrase and substitute another word or phrase for it	[PF1] <S>
Undelete or restore character previously deleted at the current cursor location	[PF1] [,]
Toggle between an 80 and 132 screen width	[PF1] <W>

APPENDIX B: QUICK REFERENCE GUIDE FOR RUNOFF

Function:	Command:
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A. General Commands

To enter RUNOFF with existing file	RUNOFF filename
To set left margin	.LM n [default n=0] +n or -n redefines LM relative to old LM Recommended Setting=8
To set right margin	.RM n [default n=60] Recommended Setting=73
To set page size	.PS l,m l=page length m=right margin where page number will be printed
To set paragraphs	.P n,v,t where n=spaces indented, v=vertical-spacing, t=test-page-lines.
To set spacing	.SP n
To set tabs	.TS n,m,...

B. Mode Commands

To turn on automatic paragraphing	.AP [default=OFF]
To turn off automatic paragraphing	.NAP
To turn on automatic fill	.F
To turn off automatic fill	.NF
To justify right margin	.J [default=on]
To turn off right justification	.NJ
To print literally	.LIT [default=off]

To end literal printing

.ELI

Function:	Command:
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C. Local Commands

To print n blank lines	.B n
To break a line	.BR
To center line of text	.C
To output n blank lines together	.FG n
To produce n blank lines but split them up if necessary	.FGD n
To indent n Spaces (+ OR -) relative to current left margin	.I n
Page break	.PG
To skip n times spacing blank lines	.S n

D. Header Commands

To turn on page numbering starting at page n	.NMPG n
To turn off page numbering	.NNM

E. Special Characters

To underline between signs	^& \&
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