

OVERCOMING THE ANXIETIES OF A COMPUTERIZED WORLD

A Thesis
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The use of computers in our society has been one of the largest technological changes that has occurred over the last several years. More and more, we as hi technology nation are being urged to learn to use, and become competent with, computers. As we move ~~forward~~ into the latter stages of the twentieth century, and then into the ultra-technical twenty-first century, it is clear that if an individual is going to prosper in this setting he or she will need to have a basic understanding of how to use computers. This pertains not only to computer science majors or data processors, but also prospective writers, accountants, business owners, and many other careers.

Despite the obvious need for people to become comfortable with using computers, there is a problem arising that may deter the growth of a computer-based society. This problem is what I have termed computer anxiety. In other words, people with an intense dislike of computers or an apprehension about using them are being confronted by the fact that they need to become familiar with these machines that cause them so much anxiety. When I first started to use computers I experienced many of the same feelings towards computers that some people have when they begin working with them. Fortunately I was able to adapt to using computers by using the process of trial and error. Eventually I was able to overcome any anxieties I had toward computers, but I did experience count-

less frustrations while doing so. This was one of the main reasons I decided to work on the problem of "computer anxiety". The significance of the problem is that people who have computer anxiety will become frustrated and disgusted with computers and give up on them. Then they will never be able to enjoy the full benefits of a basic knowledge of using computers. For example, how many people do you know who have spent countless hours on writing a paper doing it the old-fashioned way : pencil and eraser(s). If they were comfortable using computers, then they could save plenty of time by using a word processor such as PC-write. Plus, a person who develops an anxiety towards using computers will have a hard time adjusting if their job requires the use of computers.

Having defined this problem, ^{the} ~~my~~ next step was finding out what I could do to help people overcome their computer anxiety. Since my major is computer science, I decided to write a computer program that would aid beginning computer users in overcoming any computer anxiety that they may have. To decide what exactly to accomplish in the program, I administered a survey to students here on the Pembroke State campus. I paid particular attention to students in CMA 105 classes (Composition I) since they are usually beginners at using computers. I also had people who were familiar with the word processor PC-Write answer the survey because I had the feeling from talking to people who have used it that it causes problems for them. It was possible to see from the answers

of the survey (a copy of which is in the appendix) exactly what
was caused computer anxiety in the survey participants.

From this point, I was ready to write a "help program". There are many of these help programs already in existence. Basically they are guides to aid computer users in any problems they have while operating the computer. PC-write has a help-program available while using the word processor and the IBM system has a help-program for its computers. While these programs may accomplish their goals, I wanted to design a program that would be based on the results of my survey. One of the problems that frustrated beginning computer users was using PC-write. Also many people did not find the help program on PC-write very helpful. So I decided to try to give PC-Write users a more complete description of some of the functions available to them. My help program is different from PC-Write's help program in the following manner : suppose that while working on PC-Write you decided to mark (or copy) a section of your text. PC-Write's help program gives the following instructions on the subject of marking :

To mark : F3

Yes, this gives the user the correct key to use, but then it leaves the user with no concrete explanation of how to proceed. My

general
differences?

help program handles the explanation of marking in the following way :

(appearing on screen during run of program)

Suppose you were writing the following text:

Pembroke State University is located in N.C.

If you want to mark this line move the cursor to the start of the line and press function key F8. Then move the cursor to the end of the line and press F8 again.

then what?

Hopefully, by using this detailed explanation to describe various PC-Write functions the user will better understand how to use the computer. This should make the user more comfortable, and thus relieve some computer anxiety.

My main goals for the program are to aid the computer user who needs help in three areas : 1) to become more comfortable in the computer keyboard, 2) to be able to efficiently edit text by using the arrow keys on the keyboard (delete, insert, up, down, etc.), 3) being able to create PC-Write. Again, I chose these specific areas because of the results of the survey that I administered.

To help the user become more at ease using PC-Write a part of my program prints on the screen some of the important keys and their functions. Below is an example of this :

(appearing on screen)

F1	F2
F3	F4
F5	F6
F7	F8
F9	F10

F1 : loads PC-Write help program }
enters to main menu

F2 : when on main menu, saves
text and exits to DOS;
when not on main menu,
shows ruler for margins

F3 : when on main menu, saves
text; when not on main menu,
starts marking

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.
.
.
.

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F10 : when on main menu, finds
next occurrence, and replaces
with what you specify

Another example of a part of my program that helps people having trouble with PC-Write is the following:

(appearing on screen during run)

When you have finished editing your text and you are ready to print the text onto paper

STEP 1 --> after saving your text press F1 , then press F7

STEP 2 --> you will now see this on the top line :
File to print: "A:filename";
simply press return if this is the file you wish to print out

STEP 3 --> you will now have the option of printing to a file or to the printer; press F9 to print to file; press f10 to send the text to the printer

STEP 4 --> a list of the function keys will now be given on the screen (F1-F10) to tell you what steps to take

STEP 5 --> F9 and F10 will probably be the function keys that you will use the most

The section of my program that deals with PC-Write continues in this fashion. I emphasize the most widely used functions that are available on PC-Write. For example, included in the program are instructions on printing, marking, use of margins, page numbering, and the basic uses of the main menu. The explanations that I give for these functions should enable the beginning PC-Write user to be more confident using PC-Write.

Another part of my program is designed to help the user of any AT&T computer in becoming more comfortable using the computer keyboard. Also, this section of the help program gives the user a chance to become more confident using the computer. Here the user is given a series of easy exercises that should accomplish this goal. Below are examples of these exercises:

EXERCISE 1

WRITE YOUR BIRTHDATE IN
THE FOLLOWING FORMATS:

XX/YY/ZZ
XX-YY-ZZ
MONTH, DAY, YEAR

11/24/68
11-24-68
NOVEMBER 24, 1968

Exercise 1 allows the user to get experience using the
numeric keyboard as well as the slash and hyphen keys.

EXERCISE 2

SOLVE THE FOLLOWING
MATH PROBLEM, AND
GIVE THE ANSWER IN
THE FOLLOWING FORMATS:

16 DIVIDED BY 8 = ____?

- 1) ANSWER THE PROBLEM
BY TAPPING OUT THE
CORRECT AMOUNT ON THE
SPACE BAR.

(**IN THIS CASE THE USER WOULD TAP THE SPACE BAR TWICE**)

- 2) WRITE OUT THE EQUATION
AND THE ANSWER IN
MATHEMATICAL FORM

$16/8 = 2$

Exercise 2 allows the user to get practice using the slash
key which is used for division, the equal sign, the shift
keys, and the numeric keyboard.

EXERCISE 3

THIS EXERCISE SHOWS THE USES
OF THE CAPS LOCK KEY. TO DO
THIS EXERCISE MAKE SURE THAT
THE CAPS LOCK KEY IS ON. NOW
TRY TO GET THE FOLLOWING TO
APPEAR ON SCREEN WITHOUT USING
THE SHIFT KEY:

!*##%!!#!%

YOU SHOULD NOT BE ABLE TO DO IT.
THIS IS WHAT YOU SHOULD HAVE TYPED:

!@#44511315

EVEN THOUGH THE CAPS LOCK KEY
IS IN THE CAPS MODE YOU STILL
HAVE TO USE THE SHIFT KEY TO
GET THE SYMBOLS TO APPEAR ON
SCREEN.

EXERCISE 4

TYPE THE FOLLOWING SENTENCE
IN THESE FORMATS:

(ALL CAPITAL LETTERS)

COMPUTERS CAN BE FUN ONCE
YOU GET TO KNOW THEM.

(ALL LOWER CASE LETTERS)

computers can be fun once
you get to know them.

(PROPER CAPITALIZATION)

Computers can be fun once
you get to know them.

The last section of my program deals with helping people who have trouble editing text on a computer. The most important part of editing text is being able to manipulate the text through the use of the arrow keys on the keyboard, as well as special keys such as the Delete Key and Insert Key. I include this particular subject in my program because of the responses given to question 6 in my survey which dealt with being able to correct problems in text. On a scale of 1 to 10 (with 10 meaning higher anxiety) forty percent of the respondents gave an answer of 8 or higher to question 6.

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Here is an example of the explanations of text editing that are
in my help program :

ON MINDAY THERE WILL BE NOCLASSES.

There are two mistakes in this sentence but they can be easily corrected. The spelling error in Monday can be corrected by moving the cursor to the letter 'I' and pressing the delete key. Then you can type in the letter 'O' to correctly spell the word. The second error in the sentence is the run-on words. To fix this mistake simply move the cursor to the letter 'C' in Classes and tapping the space bar.

After these corrections are made the sentence should read:

ON MONDAY THERE WILL BE NO CLASSES.

Along these same lines there will be exercises to show the users how to delete a whole word, delete a full line of text, insert words, etc.

One key aspect of my help program is that it is designed to be memory resident. This means that my help program will co-exist with the user's work at the same time. To gain access to my help program a user will have to press a pre-determined key. The following is an example of what will appear on screen my help program is running:

THE USER'S WORK
STILL VISIBLE
ON THE SCREEN

MY HELP PROGRAM RUNNING
IN THIS SPACE ON
THE SCREEN

As of this time, I have written a large part of the pseudo-code for the program. Pseudocode serves as a blueprint for the program. I have a large base of the exercises written as well as most of the explanations of the PC-write functions.

Hopefully, the actual program itself will be running early in the spring semester of 1990. With the help of Dr. John Reissner I am presently trying to find software that will enable me to incorporate the memory resident aspect of my program with as few headaches as possible. For this program to be memory resident it may have to be written in a computer language (assembly code) that I have no experience in as of yet. However, it may be possible to find software that will allow me to write the program in a familiar language and have the software translate it into the language needed for a memory resident program. As of this time I am designing the program to run on a 2-drive system, most notably AT&T computers.

This is a draft of the questionnaire used for my survey. A total of 100 people were surveyed.

This questionnaire measures your anxiety toward computers. Please try to answer as honestly as possible.

Answer each item by selecting a number from the following scale:

- 1 2 3 4 5 6 7 8 9 10
- NO YES

The more you feel an item causes anxiety for you, the larger the number you should choose.

1. I am anxious about using computers because it will be a new experience. _____
2. I am anxious about using computers because I do not like machines in general. _____
3. I am anxious about using computers because I will not be in control; the computer will control me. _____
4. I am anxious about using computers because they are too complicated. _____
5. I am uncomfortable using a computer keyboard. _____
6. I am worried that I will inadvertently strike a key on the keyboard and my data on the screen will be scrambled. _____

*****ANSWER THE FOLLOWING QUESTIONS IF YOU USE PC-WRITE*****

Use the following scale:

- 1 2 3 4 5 6 7 8 9 10
- NO YES

7. Do you have problems operating PC-write ? _____
8. Do you find it necessary to use the help program on PC-write often? _____
9. If you use the help program on PC-write, do you find it helpful? _____
10. Does the help program on PC-write ease your apprehension and/or anxiety when you are using the computer? _____

The following is a listing of the questions in my survey and the average response given for each question.

Answer each item by selecting a number from the following scale:

1 2 3 4 5 6 7 8 9 10
NO YES

The more you feel an item causes anxiety for you, the larger the number you should choose.

-
- 1. I am anxious about using computers because it will be a new experience. (5.38)
 - 2. I am anxious about using computers because I do not like machines in general. (6.13)
 - 3. I am anxious about using computers because I will not be in control; the computer will control me. (5.61)
 - 4. I am anxious about using computers because they are too complicated. (5.90)
 - 5. I am uncomfortable using a computer keyboard. (5.87)
 - 6. I am worried that I will inadvertently strike a key on the keyboard and my data on the screen will be scrambled. (5.94)

*****ANSWER THE FOLLOWING QUESTIONS IF YOU USE PC-WRITE*****

Use the following scale:

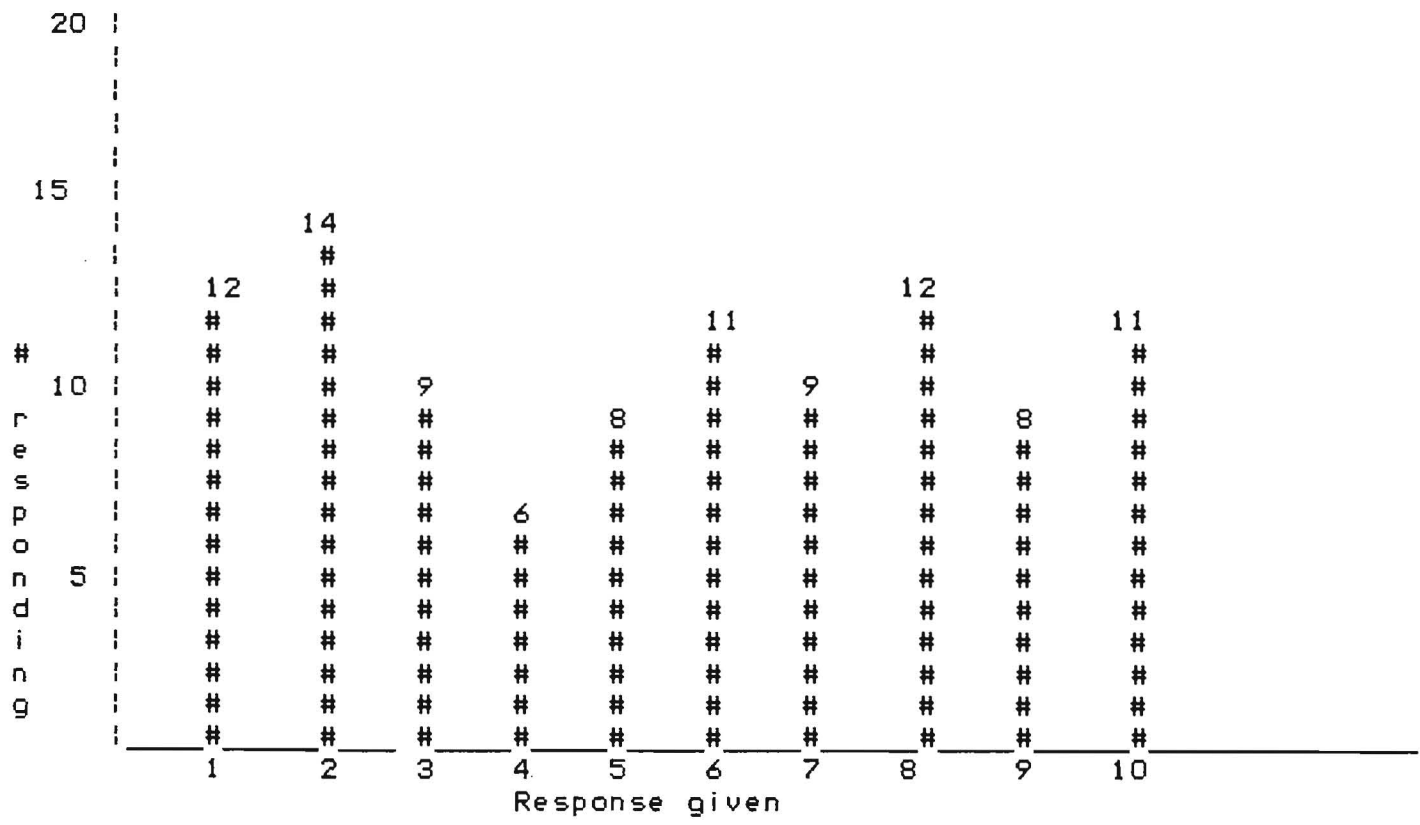
1 2 3 4 5 6 7 8 9 10
NO YES

- 7. Do you have problems operating PC-write ? (5.75)
- 8. Do you find it necessary to use the help program on PC-write often? (5.28)
- 9. If you use the help program on PC-write, do you find it helpful? (5.86)
- 10. Does the help program on PC-write ease your apprehension and/or anxiety when you are using the computer? (5.6)

The following histograms show the results of the survey. Each histogram shows the question and the number of responses that were given. The questions were answered using the following scale:

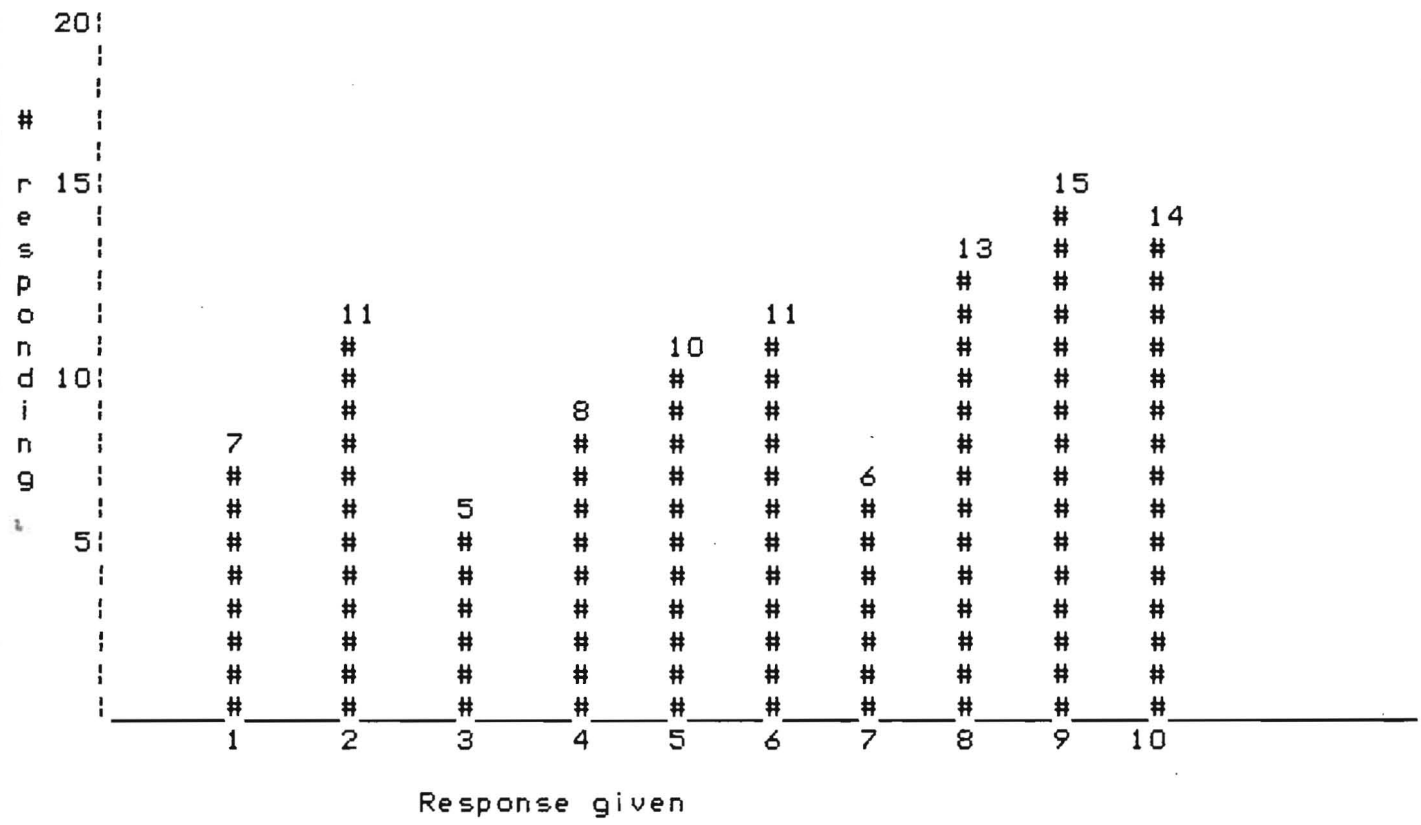
1 2 3 4 5 6 7 8 9 10
NO YES

Question 1) I am anxious about using computers because it will be a new experience. (100 responses)



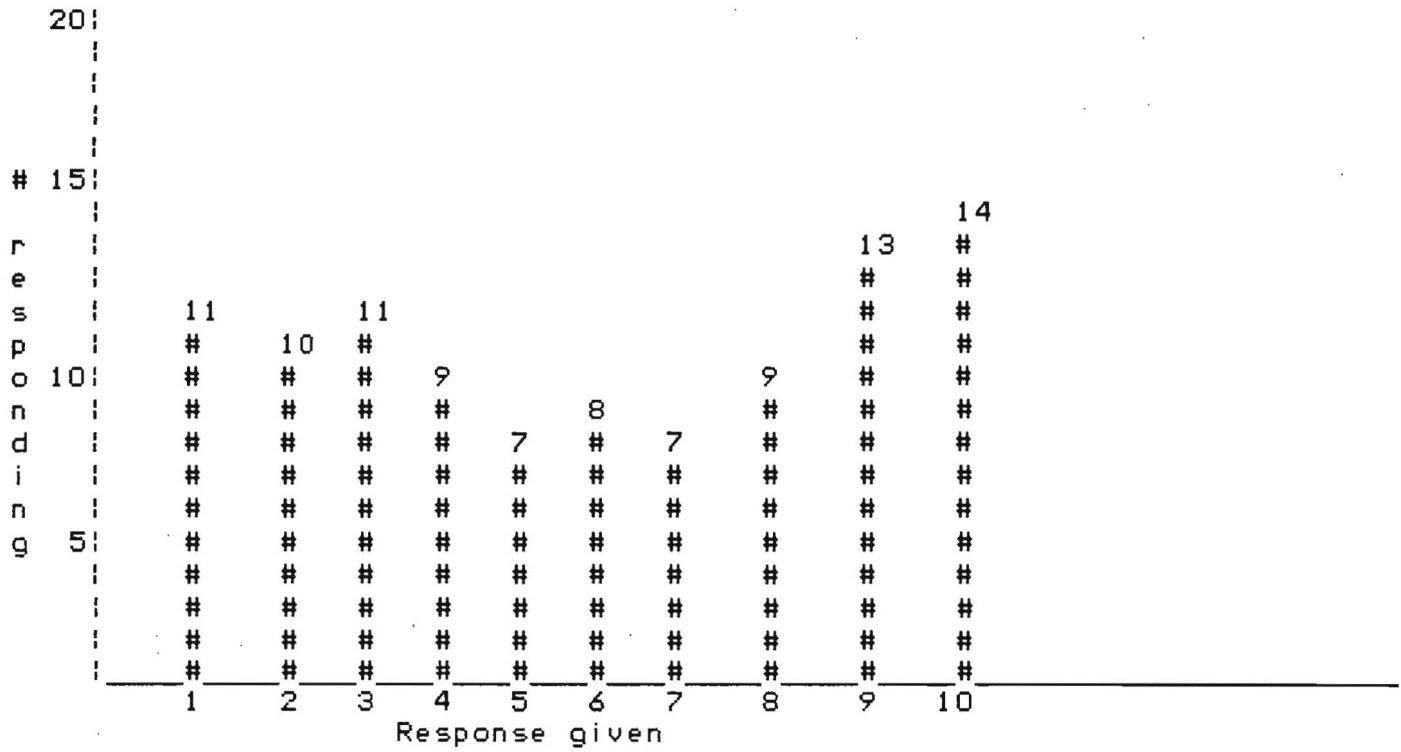
Question 2) I am anxious about using computers because I do not like machines in general. (100 responses)

1 2 3 4 5 6 7 8 9 10
NO YES



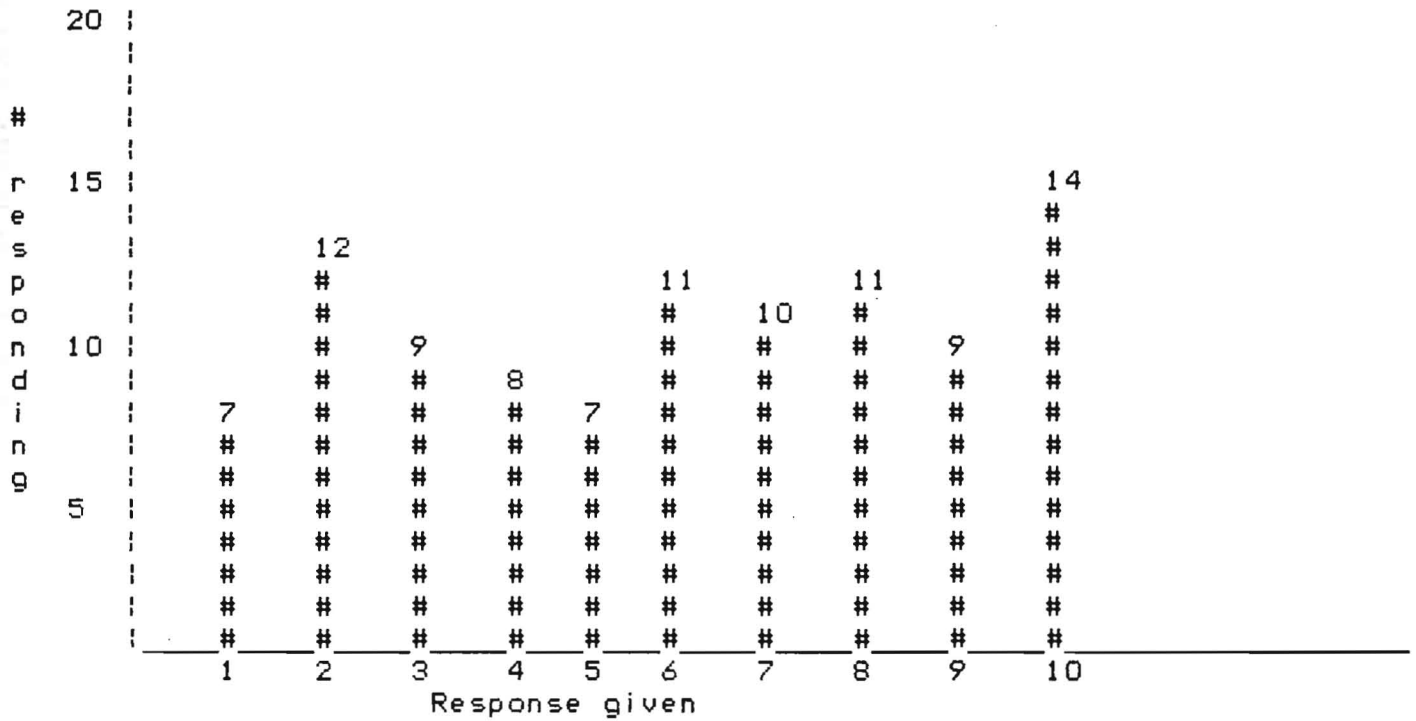
Question 3) I am anxious about using computers because I will not be in control; the computer will control me. (100 responses)

1 2 3 4 5 6 7 8 9 10
NO YES



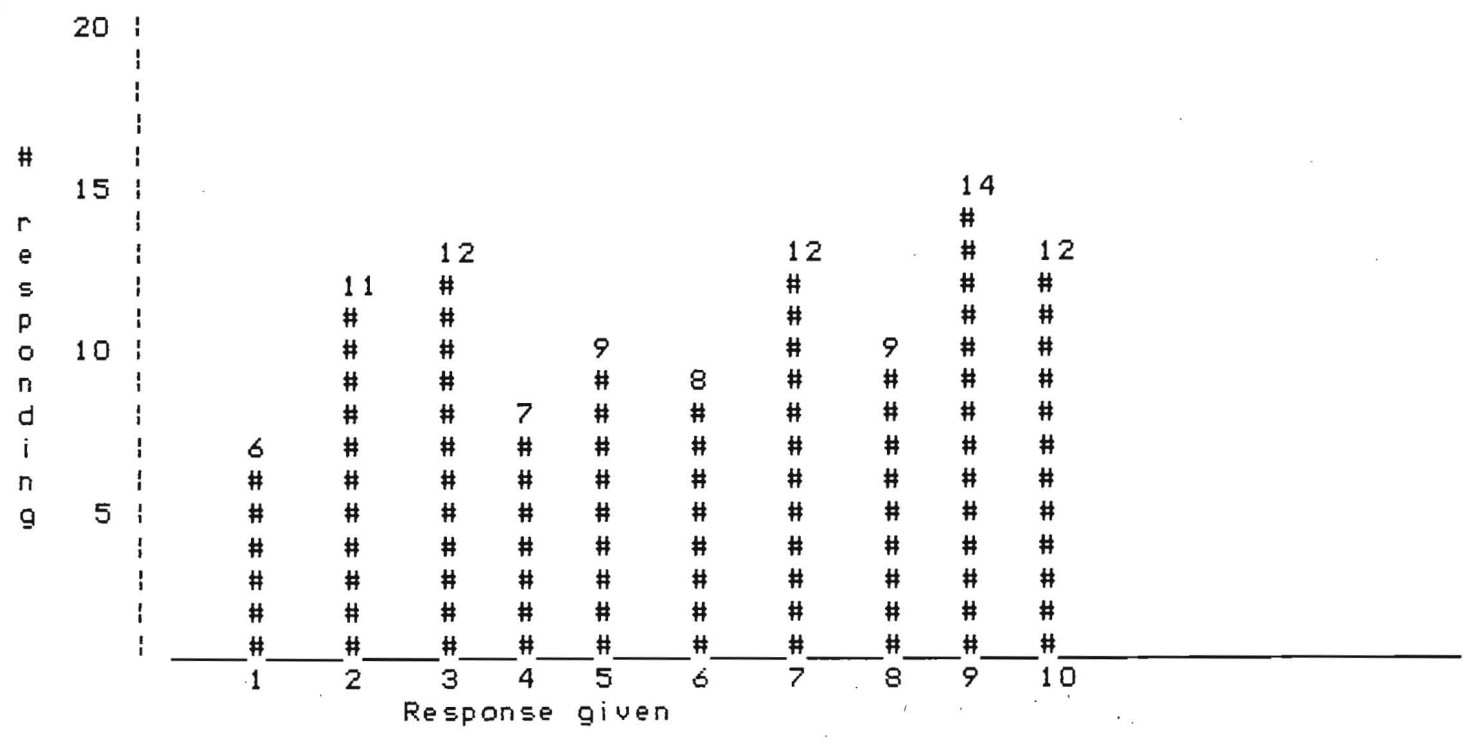
Question 4) I am anxious about using computers because they are too complicated. (100 responses)

1 2 3 4 5 6 7 8 9 10
NO YES



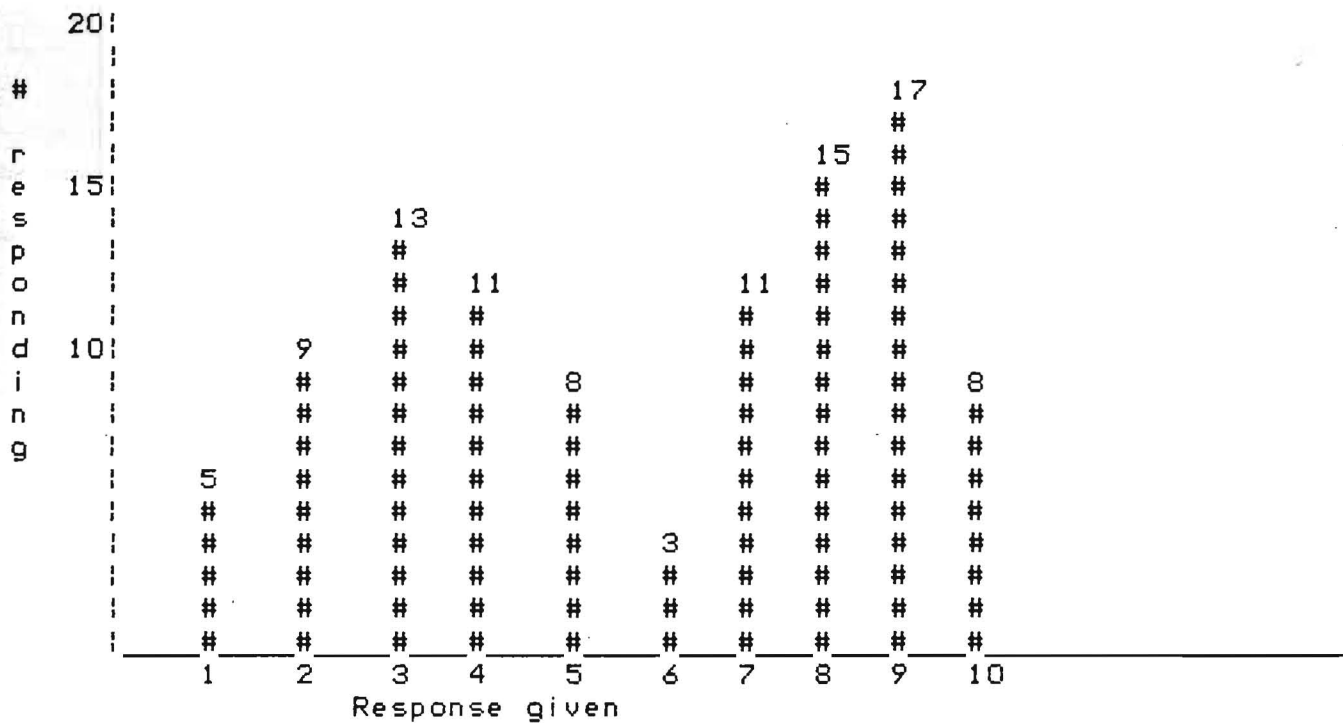
Question 5) I am uncomortable using a computer keyboard.

1 2 3 4 5 6 7 8 9 10
NO YES



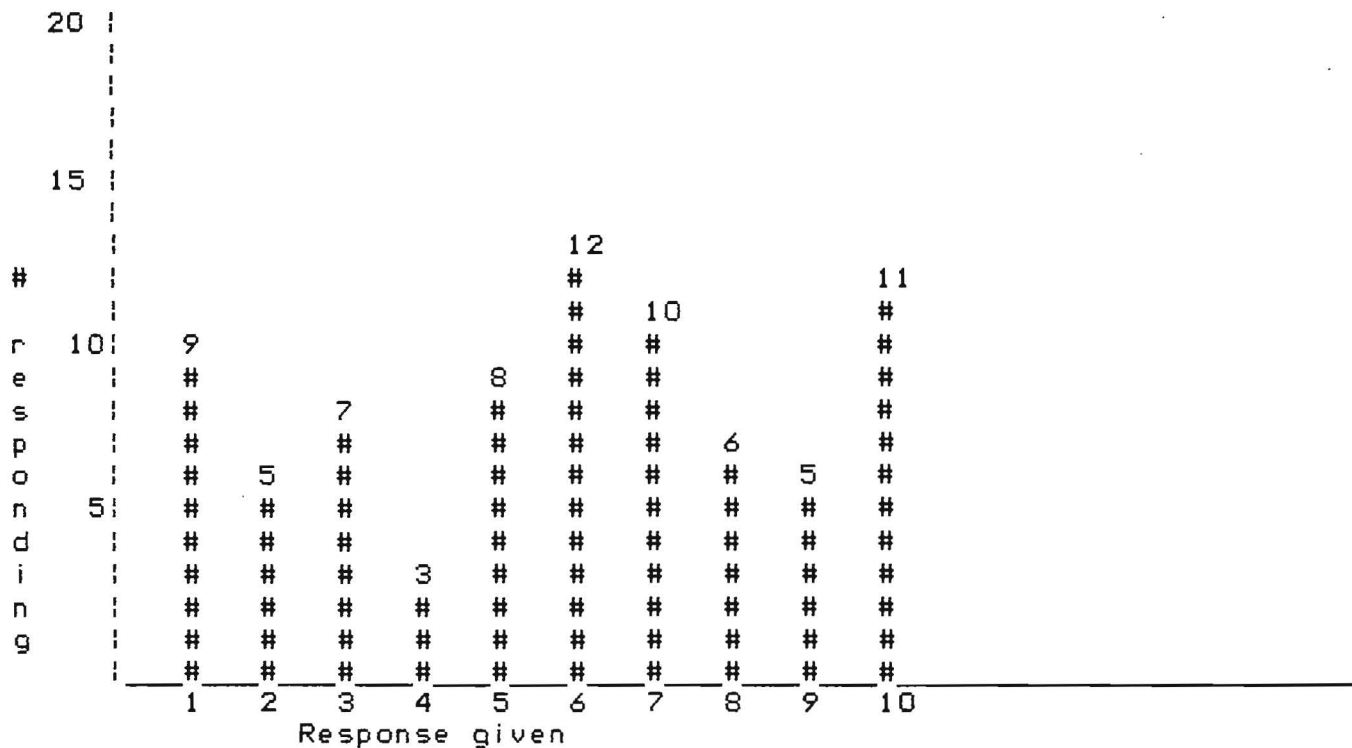
Question 6) I am worried that I will inadvertently strike a key on the keyboard and my data will be scrambled. (100 responses)

1 2 3 4 5 6 7 8 9 10
NO YES



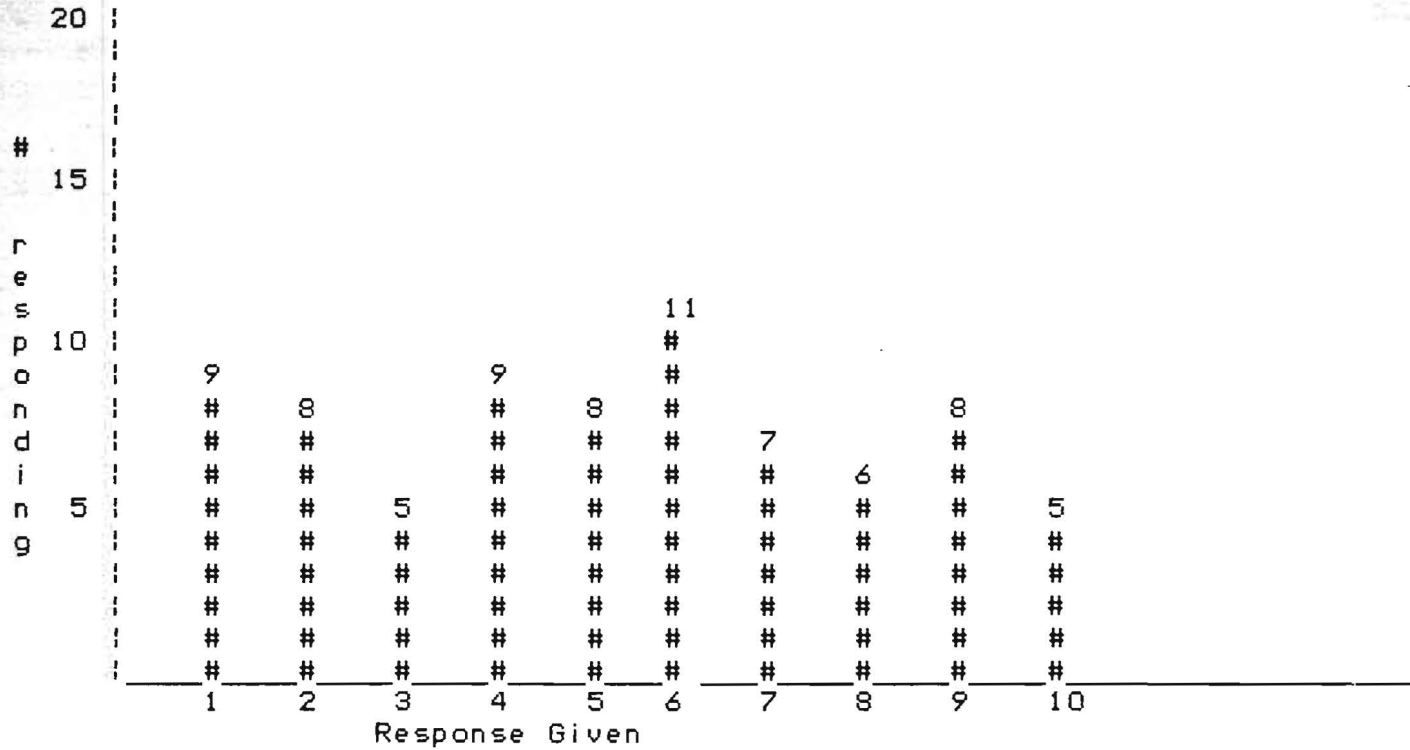
Question 7) Do you have problems operating PC-Write?
(76 responses)

1 2 3 4 5 6 7 8 9 10
NO YES



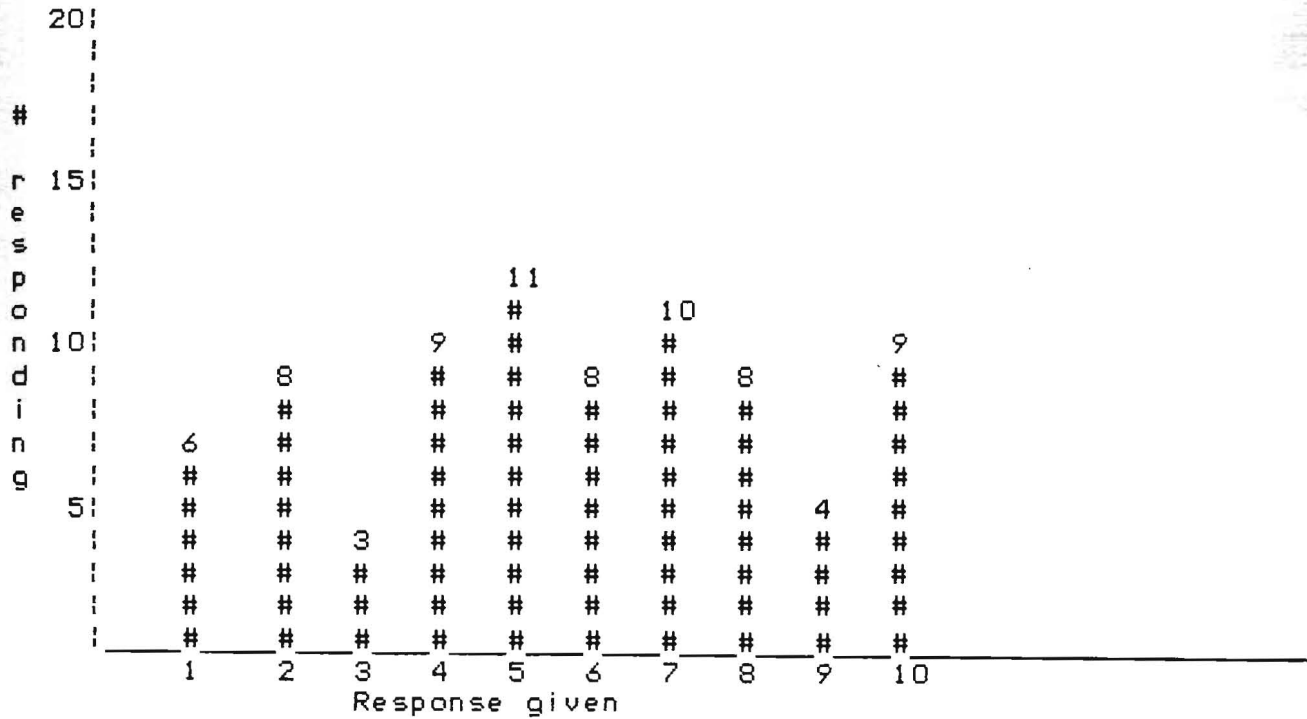
Question 8) Do you find it necessary to use the help program on PC-Write often? (76 responses)

1 2 3 4 5 6 7 8 9 10
NO YES



Question 10) Does the help program on PC-Write ease your apprehension and/or anxiety when you are using the computer? (76 responses)

1 2 3 4 5 6 7 8 9 10
NO YES



To go along with the program to help people get rid of their computer anxiety, Dr. Reissner and I have put together this pocket guide to PC-Write. Dr. Reissner has designed a comprehensive version of PC-Write's functions that is aimed for veteran users of PC-Write. I am working on a simplified version of this pocket guide that will enable beginning users of PC-Write to better understand the word processor in a written fashion as well as through my help program. The explanation of the print function that follows is an example of this simplified version. A copy of the comprehensive pocket guide follows after that.

- TO PRINT : F1 F7
- <RETURN>
- ESC : TO EXIT
- F9 : PRINT TO FILE
- F10 : PRINTER READY

- F1 : SHOWS HELP SCREEN
- F2 : EXITS TO DOS
- F3 : EXITS TO EDIT PROGRAM
- F4 : GOES TO DOS COMMAND SHELL
- F5 : FORCES END OF CURRENT INPUT FILE
- F6 : ENTERS INPUT TEXT / GUIDE LINES
- F7 : REPEATS A PAGE
- F8 : SKIPS PAGES THEN STOPS
- F9 : PRINTS ONE PAGE
- F10 : CONTINUOUS PRINTING OF PAGES
- ESC : STOPS PRINTING

bold lower case items (and bold function keys) are single key entries. <-I denotes the enter or return key. BOLD UPPER CASE items enter letter-for-letter. A period indicates immediate action, a colon access to a sub-menu. *Italic entries denote explication.* Generally, esc returns access to the previous level or turns on top-level menu display. The latter is turned off by entering esc again.

Single Drive Systems

"PGM" disk with COMMAND.COM
 ED.EXE
 ED.DEF
 PR.DEF

"TEXT" disk with WORDS.MAS

WORDS.USE (optional)
 ED.HLP
 all user word-processor text files

Boot PGM

A) ED

when the menu appears,
 remove PGM disk
 insert TEXT disk
 press F6 to start or retrieve file

after work completed, F1 F3 (save file)

To Print (if printer connected and ready)

remove TEXT disk
 insert PGM disk
 F1 F3 (save file onto PGM disk also)
 F1 F1 <-I F10 F10 (to print)
 alt F1 F1 <-I (to erase file from PGM disk)

Either F1 F2 (exit), or remove PGM and reinsert TEXT

esc.toggle unprefixed top-level menu display
 alt.turn on alt top-level menu
 ctrl.turn on ctrl top-level menu
 shf.turn on shf top-level menu
 shf F1 toggle unprefixed top-level menu

F1 second-level menu display and enable

esc.return to ed
 F1:help
 arrow keys, PgUp, PgDn
 esc.return to ed
 F2.exit ed
 F3.save file, stay in ed
 F4.access operating system
 edit command file identifier
 <-I
 enter any DOS command
 exit.return to ed

F5.Enable change of file name

edit file name
 <-I
 esc.return to edit mode
 F8:directory, with edit capability
 on path, and light-bar cursor
 access to file names

F6:Load file

esc.return to edit mode
 F8:directory, with edit capability
 on path, and light-bar cursor
 access to files to load

F7:Print

edit file name for save
 <-I
 F9:Print to disk
 F10:Printer ready
 F3.Return to ed
 F9.Print a page
 F10.Print whole file,
 Return to ed
 esc

F8:Dir

edit
 <-I
 access file by light-bar cursor
 F4:run
 F5:rename
 F6:load

F9:Turn off autosaving at F2, F6, F7

ctrl F1 load, up-date ED.DIR, annotatable directory

shf F1 toggle unprefixed top-level menu display

alt F1 operating system-like command menu and enable

esc
 F1:help
 F2:path for textfiles editing, saving
 F3:letter of default drive
 F4:change directory
 F5:rename file
 F8:directory
 F9:rename "old"
 F10:to "old"
 F6:copy current file to disk
 F9: as replace
 F10: as append

F7:erase file

F8:directory

F2.show ruler (used for setting margins, edging windows)

uparrow,downarrow.choose window
 esc
 F1
 F2.unsplit
 F4.embed
 F6.control-file
 grey, grey-.find next ruler

alt F2:spell-checker menu and enable

grey, grey-.scan forward, back for unknowns
 esc.exit to edit mode
 F2:check word at current cursor position
 if "found" move cursor to return
 if "unknown", see menu displayed

F3:guess

esc.return to ed
 F1.access general help
 cursor moves on edit line
 F10.replace by selection from edit line

F4:add

F5:load a list from disk
 F9.user list
 F10.index list
 F6:save a list to disk
 F7:toggle auto-checking

F3.toggle mark for copy

move cursor
 F3.copy copy-marked text to cursor
 F5.un-mark

ctrl F3:designate and insert file at cursor

esc.return to edit mode
 F8:directory, with edit capability
 on path, and light-bar cursor
 access to files to load

shf F3:merge menu

F5.edit merged input record
 F6.stop merge
 F7.input merge record
 F8.output merge record wwxzxo
 F9:file of merge names set
 F10.repeat next automatic

alt F3:macro capabilities

F2:assign key to recorded sequence
 enter key
 F3.Playback key sequence
 enter key
 F4.toggle recording mode on/off
 enter keystrokes
 F5:define a key
 F6.work with ED's own code
 ctrl ^.quit that
 F7:unassign a recorded key

F4.turn on marking for delete

move cursor
 F4.delete
 F5.turn off marking

ctrl F4 insert last text deleted with F4

shf F4:envelope mini-print

F8.move left margin
 F9:print typed line
 F10.print marked text

alt F4:miscellaneous menu and enable
F2.insert current "find text" (F9)
F3.count
F4.mark to match up pair (or next occurrence)
F5.insert today's date
F6:non ascii character management
esc.return to ed
F9.jump to a previous
F10.strip all
F1:repeat last keystroke
number times <-i

F5.un-mark

ctrl F5: mark all

alt F5:display and enable conversions menu
F2:convert a Wordstar file to PCW
F4:switch tabs/spaces
F9.tab->space
F10.space->tab
F5:switch/strip extra/soft spaces
F9.strip extra spaces
F10.soft spaces->space
F6:fix line boundary error
F9.execute
F7:convert page breaks
F8.->old breaks, enabling print copy
F9.strip all
F10.strip soft breaks

F6.toggle mark for move
move cursor
F6.execute move
F5.turn off marking

ctrl F6.toggle mark to write text to disk
move cursor
edit file name
<-i
F8.directory

alt F6:display and enable font-control menu
F5:delete a font character
F6:insert a font character
F7:insert page dot line
F8:insert layout dot line
F9:insert header/footer dot line
F10:insert break
F8
F9
F10

F7."reformat" (move words between margins) paragraph

shf F7.three way auto-reformat toggle
-> all text -> no text -> new text only ->

ctrl F7.enable box mode
esc.toggle box-mode menu
move cursor to diagonal opposite
F3.mark box of implied diagonal
F4.delete marked box
F5.unmark box
move cursor
F6.move box

alt F7:display and enable page-break control menu
F5:display and enable whole-file menu
F5.repage entire file
F6.auto-renumber only
F6.fill-page to end with blank lines
F7.set next page break and go there
F8.toggle hard/soft page break
PgUp.move break Up one line
shf ctrl PgDn.move to next break

F8.change the case of marked text

ctrl F8.shift line to flush right

shf F8.shift line to center

alt F8.change case to upper

F9:find text
text to find
F7.character wild-card
F8.line boundary
grey +.find next
grey -.find previous
F10.set "replace" text
text to do replacing
<-i

ctrl F9: frame in a box-marked region
F2.with !!
F3.with !
F4.remove frame

shf F9.identify cursor position in file
any key to exit

alt F9: move within file to
F7line-number
<-i
F8column-number
<-i
F9line-number on
<-i
F10page-number
<-i

F10.find next "find" and replace with "replace"
F5.un-mark

ctrl F10.swap "find" and "replace" text

alt F10.special replace
esc
F9:replace all occurrences
F10:unreplace

Special keys

home go to beginning of line
end go to end of line
alt + go to top of file
alt - go to bottom of file
alt g. special page control prefix
L:nbr number lines of page
M:nbr spacing, e.g. 2 for double
Q:font (see below); turn off font
R:font (see below); turn on font
S:nbr lines/inch to print
X:nbr spaces left margin to print
XT:nbr lines top margin
XB:nbr lines bottom margin
alt space-bar toggle font-changer display
alt a force column
alt b toggle bold
alt c toggle compressed
alt d toggle expanded
alt e toggle elite
alt h toggle superscript
alt i toggle italic
alt l toggle subscript
alt o toggle overstrike
alt p toggle pica
alt u toggle underline
alt nsequence setter
dummy number or character
tag character
alt n
force (re)start number or character
tag character
alt n
dummy number or character to repeat
tag character
ctrl y delete line
ctrl esc delete word
shf alt t page break
shf bksp transpose character and predecessor

BIBLIOGRAPHY

Bertoni, Phil. STRANGERS IN COMPUTERLAND. Lewis Publishing Co.,1983.

Bradburn, Norman M. IMPROVING INTERVIEW METHOD AND QUESTIONNAIRE DESIGN. Jossey-Bass, Inc. 1979.

Foster, Dennis L. IBM SOFTWARE 1985. DL Foster Book Company. 1985.

Matthews,Walter M. MONSTER OR MESSIAH. University Press of Mississippi. 1980.

Schement, Jorge. COMPETING VISIONS,COMPLEX REALITIES. Ablex Publishing Company. 1987.

Simmons, Geoff. SILICON SHOCK. Blackwell Incorporated. 1985.

Wilson, Ina and Marthann. WHAT COMPUTERS CANNOT DO. Auerbach Publishing, Inc. 1970.

Coovert,M.D. and Goldstein,M. "Locus of Control as a Predictor of users' Attitudes Toward Computers." PSYCHOLOGICAL REPORTS. 1980. pp.1167-1173.

Elwork, Amiran and Gotkin, Terry B. "The Behavioral Sciences in the Computer Age." COMPUTERS IN HUMAN BEHAVIOR. 1985. Volume 1,pp.3-18.

Glass, Carol R. and Knight, Luanne A. "Bibliography on Computer Anxiety and Psychological Aspect of Computer Use." PSYCHOLOGICAL DOCUMENTS. December, 1985.

"How to Conquer Fear of Computers". BUSINESS WEEK. March 29,1982. pp.176-178.

Taylor,A.L. "Dealing with Terminal Phobia". TIME. July 19,1982. P.82.

THE SOFTWARE ENCYCLOPEDIA 1988. RR Bowker Company. 1988.
(author unavailable)

NOTE The following listings are from ERIC materials.

Baumgarte, Roger. "Computer Anxiety and Instruction". 1984.

Cambra, Marjorie A. and Cook, Desmond L. "Computer Anxiety: Definitions, Measurement, and Correlates. April 24,1984.