

TRAINING MANUAL

Introduction to Computer Applications in Educational Data Processing

IEES

Improving the
Efficiency of
Educational
Systems

Florida State University
Howard University
Institute for International Research
State University of New York at Albany

United States Agency for International Development
Bureau for Science and Technology
Office of Education
Contract No. DPE-5823-C-00-4013-00

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CHAPTER 1

INTRODUCTION

1.1 PURPOSE OF THE PACKAGE

This paper serves as an introduction to computer applications in educational data processing.

First, it introduces the basic concepts of microcomputer technology. Second, it introduces the basic applications of microcomputers in educational information management. These applications include wordprocessing, data processing, and spreadsheet and graphics. This package describes basic procedures of each of these applications.

1.2 AUDIENCE

This paper is intended for use by educational administration personnel working with the IEES to improve educational efficiency. It may be used by professionals in these countries who will be using computers as a tool in conducting basic educational research studies and analyzing educational surveys.

1.3 USE OF THE PACKAGE

1. This paper can be used individually or in workshops to provide training for educational administration personnel and researchers.
2. This paper can also be used as self-instructional material to learn basic microcomputer applications.
3. It can also be used as introductory material along with the reference books and manuals provided by hardware and software companies.

This paper contains only basic information and procedures for the programs discussed. Users are encouraged to explore beyond this introductory material.

1.4 ORGANIZATION OF THIS PAPER

This paper has five main sections.

1. The first section presents basic information about computer systems and discusses the operations of microcomputers.
2. The second section discusses using computers to process and analyze educational data with a software package called SPSS/PC+.
3. The third section examines the applications of spreadsheet and graphics as a way of data processing and presentation. The software package ENABLE is used as an example of spreadsheet/graphics. ENABLE is an integrated package, consisting of wordprocessing, spreadsheet/graphics, databases, and communications.
4. Wordprocessing is discussed in the fourth section. Again, the ENABLE package is used as an example.

5. The last section briefly describes desktop publishing programs, using Ventura Publisher software as an example.

It should be noted that the software packages discussed in this workshop are used as examples, and are not necessarily the best programs for all users. The software packages are used here because they are widely available and can serve well as examples.

CHAPTER 2

GENERAL INFORMATION ON COMPUTERS

Within the context of educational systems development, computers are used in areas such as educational planning and forecasting, resource management, educational survey and analysis, instructional materials development, and educational research. These fields are only a few examples of the multitude of applications for computers in education.

Computers can store and compute large amounts of data and are faster and more accurate compared with some traditional tools (for example, paper and pencil and hand calculators). To analyze a national education survey, for example, it takes months or even years to compute and make all the results available using paper and pencil. With computers, the results may be made available in several days or even hours. The most popular use of computers probably is simply writing, or "wordprocessing." Computers can store the documents for later revision. With a typewriter, revisions sometimes require the re-typing of the whole document. The ease of revision makes production of document and instructional materials much more efficient.

Computers can also help people do things easily that were very difficult or impossible before. For example, some educational statistics procedures such as multiple regression are very complicated and almost impossible to do with paper and pencil. With software, such as SPSS, it is not difficult to conduct a multiple regression analysis. Simple newsletters that required layout articles and commercial publishers can now be produced quickly using programs like Ventura Publisher.

Computers cannot replace people, and computers are not a panacea. The machine can only help us in solving well-defined problems. People provide data for the computers and the quality of that data may vary. People have to input all the data into the computer for analysis and they may make errors. One should be cautious, therefore, in using the results of computer analyses.

2.1 TYPES OF COMPUTERS

Computers may be divided into three broad categories by size, expense, and capability. There are mainframes, minicomputers, and microcomputers. We are concerned only with microcomputers.

The code used by a computer to receive information is called a binary code. This binary code is based on two symbols: 1 and 0, pulse and no-pulse. Each pulse or no-pulse is called a bit (binary digit). A group of eight bits is called a byte. Different combinations of eight bits are used to represent different letters and numbers. There are 256 possible ways in which the binary digits can be arranged in an eight-bit byte. Some microcomputers now use groupings made up of 16 bits which allows the machines to process a larger amount of data in a shorter period of time.

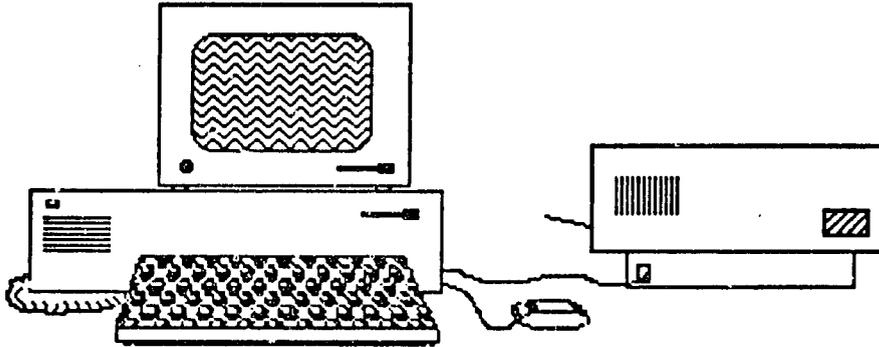
Mainframe computers usually use 32- to 64-bit bytes and are used to manipulate a great deal of information at once (1,000,000 operations/second).

Minicomputers are less powerful than the mainframes, handle smaller quantities of information and require less space. Because they usually use 16-bit bytes, they are slower: 100,000 operations/second.

Microcomputers are even smaller than minicomputers and cost much less. Though they are slower (10,000 operations/second), they are very efficient for most office and home use.

2.2 COMPONENTS OF COMPUTERS

Like the mainframe and minicomputer, the "micro" consists of four components: the input device, the central processing unit, the memory device and the output device.



Central Processing Unit (CPU)

Central Processing Unit (CPU) is the "brain" of a computer. CPU carries out all the calculations and controls the total system. In order to tie the components of the computer together a Disk Operation System (DOS) is needed. DOS is a program that also controls the use and execution of application programs such as Wordstar and dBase III. Application programs are designed to perform specific tasks.

DOS establishes the link between the application program and the computer. Also, DOS keeps track of where data and information are on the disk and retrieves the information when you request it.

Memory Devices

The memory unit of a computer stores information for manipulation by the CPU. The memory contains control function, that is, the programs (detailed sequential instruction) that tell the CPU what to do in what order. Memory and CPU are part of the microcomputer and usually built into the machine.

ROM and RAM

In microcomputers, there are two types of memory. ROM (Read-Only Memory) stores control information that is permanently built into the machine. The computer uses these control instructions, for such as programming languages and internal monitoring. The other type of memory is called RAM (Ready Access Memory). This is the flexible part of the memory. The particular program being used is stored in RAM, and will be erased when another program is used. Therefore, the user must save everything being worked before switching to another program. RAM can usually be expanded by adding memory chips to the microcomputer.

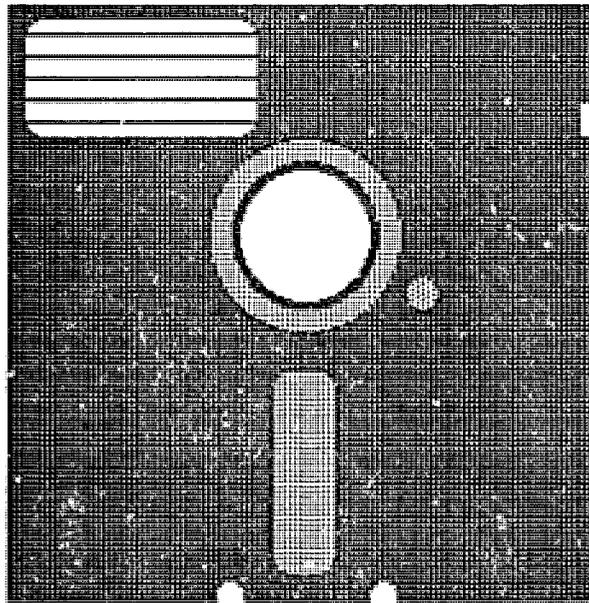
Disks and Disk Drives

In microcomputers, the machine can process only one program at a time, so programs not in use must be stored. The information is stored as a magnetic pattern in computer codes on a magnetic disk. The patterns are formed in concentric circles called tracks on the disk. The device that allows the computer to read from and to "write" to disks is called a disk drive. To locate a particular set of data, the

"head" of the disk drive unit moves over the tracks, finds the track with the file name it wants and reads the information stored there. Information can be stored on and tracked on a disk and this type of memory is called "direct access" memory.

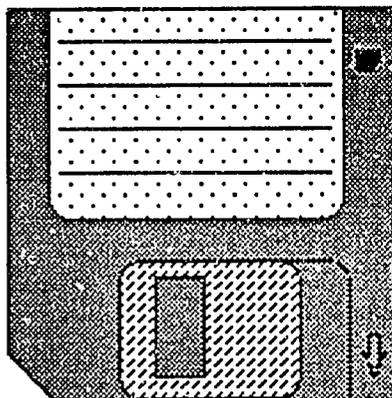
Disks commonly used with microcomputers are "floppy" disks and hard disks. The floppy disk is made of flexible plastic and is encased inside a flexible cover so that fingerprints do not damage the high-quality magnetic surface when the disk is handled. A slot in the cover allows the head of the disk drive to move over the surface without touching it.

One of the most common floppy disks is the 5 1/4-inch size.

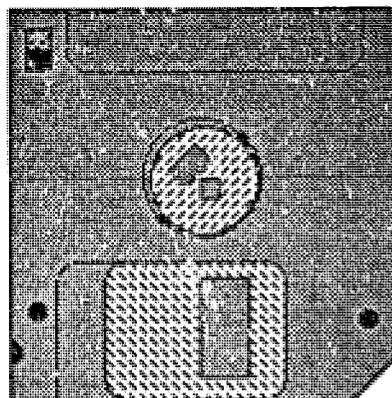


Another size of floppy disk is becoming popular. It is smaller (3 1/2") and is sealed in a strong plastic cover. It also has a metal cover to protect the access slot. The 3 1/2-inch disks can store more information (800 kilobits compared to 362 kilobits on the 5 1/4-inch disks).

Front



Back



The other type of disk for storing microcomputer information is a hard disk. Hard disks are made of aluminum, coated with a magnetic recording surface, and are built into the microcomputers. A large amount of information can be stored on a hard disk. Because it operates at very high speeds the information can be processed more quickly than on the removable disks.

Floppy disks are very fragile and must be handled carefully. Vibration or dust could prevent the heads of disk drives from reading or writing to the disks and might destroy large amounts of information. Here is a list of precautions for handling disks.

- Touch only the disk cover. Do not touch the disk surface where it shows through the read-write access slots in the disk cover.
- When not using the disk, keep it stored in the paper dust cover.
- Do not allow dust, cigarette ashes, or liquid to touch the disk surface.
- Do not take disks through X-ray scanners such as those used in airports. These scanners may alter the magnetic impressions on the disk.
- Keep disks away from electric motors such as the central processing unit (CPU) of the microcomputer. The motors could alter the magnetic impressions on the disk.
- Do not insert the disk before turning on the power. Also, do not turn off the power if the disk is still in the disk drive.
- Do not expose the disk to temperatures above 125 degrees Fahrenheit (52 Celsius) or below 40 degrees Fahrenheit (10 Celsius).
- Print on the disk label before you place the label on the disk. Do not use a ball-point pen or sharp pencil to write on the cover of the disk.

Microcomputers come with a variety of disk drive configurations. Some microcomputers have only one drive, and an external disk drive may be attached. Some have two disk drives. Others may have three drives. On the screen, colons are used to access drives. The drive on the left or above is the A: drive, and the drive on the right or bottom is the B: drive. If a hard disk is available, it is designated as C: drive.

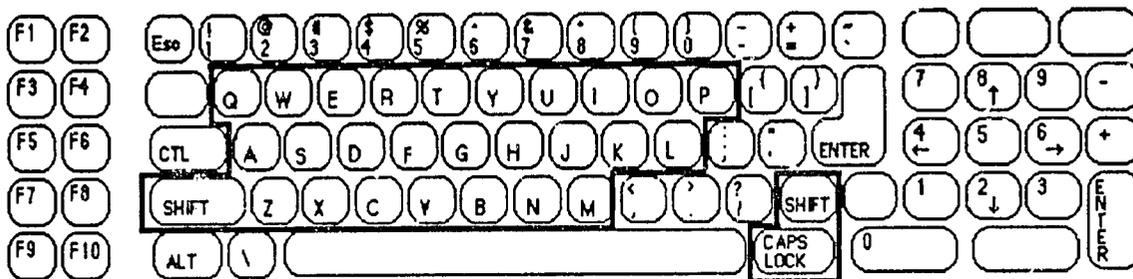
When a disk is in use, a small red light shows which drive is in use. You can see the different drives at work when you turn on the machine, store data, or print. Once the machine has completed the task assigned to that drive, the light turns off.

The microcomputer has a default drive. This is the drive to which the machine looks to read or write information unless another drive name is specified on command. The default drive for a machine with a hard disk is the C: drive. If you create a new file in a word processing program, you must designate the drive, i.e., B: followed by the file name. If you do not type in the B:, any information entered goes to the default drive and so is automatically stored on the C: drive.

Input Devices

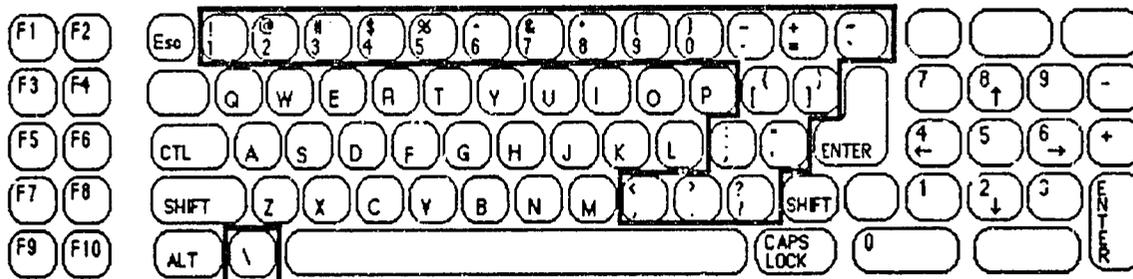
The input device is the means of getting information into the computer. The most common input device is the keyboard. The keyboard is composed of:

Alphabetic Keys: These are the standard 26 letters of the alphabet which are arranged like those on a typewriter. When you strike the keys, lower-case letters are printed. To print an upper-case letter, hold down the SHIFT key and strike the letter you wish to capitalize. When the "CAP LOCK" key is in use, all the letters typed will appear as upper-case letters.



Alphabetic Keys

Nonalphabetic Keys: These keys include the numbers 0 through 9, punctuation marks, and special characters. To print the lower symbols on the key, simply strike the key. To print the upper symbols, hold down the shift key and strike the key you wish to print. For example, to print %, press and hold down the shift key and then the 5. Special function keys (F1 to F10) are used for specific procedures by different programs.



Nonalphabetic Keys

Output Devices

This is the means of displaying the results of your program. Monitors are common output devices for microcomputers. They may be sold with the total system, or be purchased separately from the computer. Some television sets may be connected with the computer to display information from the computer. Another means of output is the printer. Printers are connected with microcomputers and produce data on continuous or separate paper sheets.

2.3 COMPUTER APPLICATIONS IN DATA PROCESSING

Since microcomputers were developed in the 1970s, some major applications of computer technology have emerged. First, computers are used to handle large amount of information. This information may be the survey results of students and teachers, the budget of the education sector in an entire nation; it may be the personnel files in the Ministry of Education or it may be a list of the books available in a library. Through SPSS/PC+, spreadsheet programs, and database programs, the computer can manage many different kinds of information, classify the information, and generate reports.

The second major application is wordprocessing. Using the computer, one can easily type, edit, revise, and print a document. Compared to a typewriter, the major advantage of wordprocessing is

that you can edit and revise a document quickly and easily. Paragraphs or sentences can be changed, the new version printed, and a copy of the original one kept. Good processing programs such as Microsoft Word 4.0, Wordstar Professional 4.0, Wordperfect 4.2, MultiMate II, and DisplayWrite4 offer many special features. All these programs have a spelling checker, all (but Display Write) have a built-in thesaurus, all have an outline function. These functions greatly enhance wordprocessing capacity.

The third major application of microcomputer is a new one: desktop publication. Producing professional documents and newsletters once required a very sophisticated publishing process: layout, typesetting, photocopying, and printing. Desktop publishing programs now combine these steps with the use of the microcomputer. The user can design and typeset the layout of reports or newsletters, even try out different typesettings, and print copies quickly.

All these applications are not possible without software programs. Thus, the hardware part of a computer system alone cannot do much. For wordprocessing, the user must have a wordprocessing program, which makes the computer understand what to do to accomplish the task. Similarly, programs are required to do spreadsheet, database management, communications, and desktop publishing. Some software packages have only one application, such as wordprocessing or spreadsheet. Other programs, such as ENABLE and Symphony, may have more than one applications. ENABLE has programs for wordprocessing, spreadsheet, database management, and communications. Once installed on the hard disk drive of a microcomputer, it can be used for all these applications.

2.4 COMPUTER STARTUP PROCEDURES

Here are the basic steps for starting to work with a microcomputer. These steps may vary for some computers.

SIGN ON

1. Turn the machine on.
2. Turn the monitor (if separately controlled) on.
3. You can override the date and time by hitting the return key twice. (You may also type in the date and time, if you wish, but you must use the format indicated.)
4. Now you are in DOS which shows the current working drive.
5. Insert program disk and data disk (or only data disk if programs are on a hard drive C:).

TO DISPLAY DIRECTORY (WITH HARD DISK DRIVE):

1. When you are in drive C: (hard disk drive) and want to check the files on the hard disk, type:

C > dir and press RETURN key.

C > dir/p and press RETURN key.

This will list the directory one page at a time.

C > dir/w and press RETURN key.

This will list the entire directory across the screen.

2. When you are in drive C: and want to check to see which files are on the disk in drive A:, you can type:

C > dir (space) a:/p (RETURN) or

C > dir (space) a:/w (RETURN) or

C > dir (space) a:

3. If you want to go from one drive to another drive, type:

A > C: (RETURN)

C > A: (RETURN)

4. If the screen indicates "bad command," it probably means that you have made a typing error. Check the command for corrections.

For example:

C > A: is wrong and must be typed as C > A:

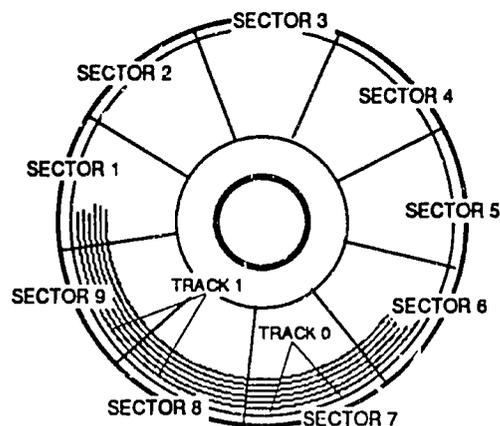
C > dir A/P is wrong and must be C > dir A:/P

2.5 FORMATTING A DISK

Format is one of the most fundamental utilities in DOS. It records information on the surface of the disk which is then used by DOS to determine where to read or write information. Every disk must be formatted before it can be used.

CAUTION: FORMAT is a powerful command. Any data stored on the disk will be removed as the disk is formatted. If any information is stored on a disk which is reformatted, the information will be permanently erased.

If the floppy format were visible, it would look like this:



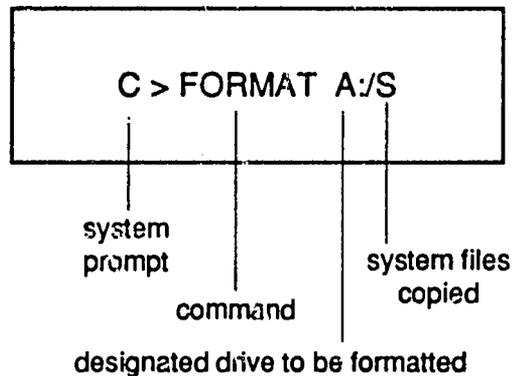
Layout of Disk Sectors and Tracks

The number of tracks per disk side depends on the type of floppy disk used. These types of disks are single-sided, double-sided, and high capacity.

Command Used to Format a Disk

At the system prompt, insert a new disk into the disk drive. Type in the following specifications (for computers with a hard drive):

- FORMAT, the command;
- the drive to be formatted (the drive holding the new disk); and
- /S This causes FORMAT to copy the system files from the disk in the default drive onto the newly formatted disk. These files are IO.SYS, DOS.SYS and COMMAND.COM. COMMAND.COM is the only system file which is visible in the directory.



If you use two-drive machines, one disk is for program (such as ENABLE), and the other is for the data files where documents and data are stored. In this case, make sure the program disk has a system file, and the data disk does not have to have the system file. When you boot the computer, insert the program disk first. If you use a computer with a hard disk drive, you need to put the system and program on the hard disk.

2.6 HOW TO REBOOT THE MICROCOMPUTER

To clear the entire microcomputer screen and go back to the system prompt (A > or C >), you must "reboot" the machine. Follow the steps below to reboot.

1. Take out the data disk from Drive A : (or B:).
2. Hold down the CTRL and ALT keys and press the DEL key.
3. The screen will display a DOS prompt. The prompt is C > (or A > if a system disk is in drive A:).
4. Now you are ready to insert the data disk into Drive A: (or B:).

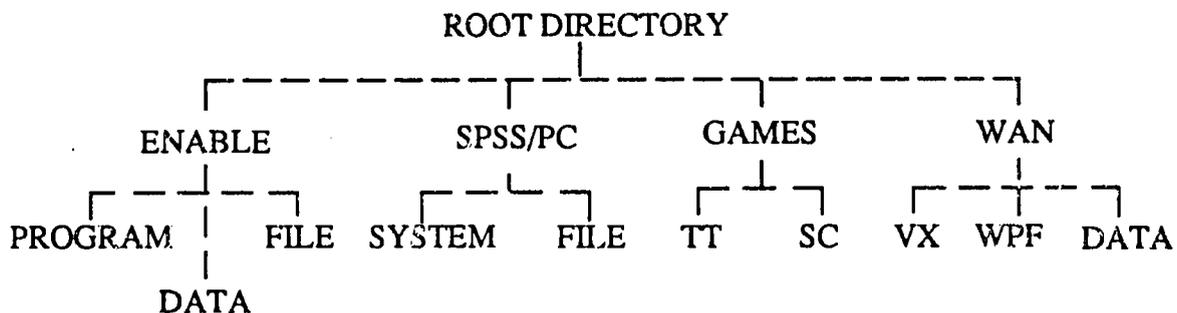
CAUTION: You should not reboot the computer unless you have no other way to get out the program.

2.7 DIRECTORIES

Personal computers generally use two types of directory structures: flat and hierarchical. The flat directory structure allows a limited number of files to be stored in a single directory per disk. The hierarchical directory structure allows a disk to contain several directories. People often use root directories and subdirectories to distinguish from the foundation directory structure.

The root directory is the directory that is automatically created when you format a disk. The directory structure grows as you create directories for groups of files that are related. With this structure you can go through the root directory to a subdirectory and get a specific file below it; you can also travel back to the root directory.

Files are created and saved by name. When a file is requested, DOS searches through the directory by looking for a file that matches the name you requested. The DIR command causes DOS to give you a list of all the files contained within a specific directory.



To move through the tree structure, you may issue commands that use a path name. A path name is a list of directories that DOS follows in order to find a given directory or file. The names of directories in a path name are separated by the backslash character [\]:

[\\][directory][\\][filename.ext]

For example:

c:\SPSS\SLFS.PRG OR c:\SPSS\SLFS.DAT

COMMANDS TO MANIPULATE THE DIRECTORY:

DIR = to view directory of the disk in a drive [DIR \p] [DIR \w]

MKDIR (MD) = to make or create a subdirectory

CHDIR (CD) = to change a directory

RMDIR (RD) = to remove a directory

TO CREATE A SUBDIRECTORY:

MKDIR C:\SPSS OR MD C:\SPSS

TO CREATE A SUBDIRECTORY:

MDDIR C:\SPSS\PROG OR MD C:\ENABLE\OUTPUT

TO COPY A FILE INTO A SUBDIRECTORY:

From drive A: to drive C: --

COPY A:SLFS.PRG C:\SPSS\PROG

From drive C: to drive A: --

COPY C:\SPSS\PROG\SLFS.PRG A:

TO SWITCH FROM DIRECTORY TO DIRECTORY:

CHDIR\ OR CD\ = to bring you back to root directory

CD C:\ENABLE\ISDATA.ASC = to go to the data file in ENABLE from SPSS or other subdirectory
or

CD\SPSS\SLFS.DAT = to get to the SLFS.DAT file from another file but in the same drive

TO ACCESS TO DIRECTORY FROM A SUBDIRECTORY:

C > . . = to get to the parent directory (FROM \SPSS\PROG TO \SPSS)

TO REMOVE A DIRECTORY:

RMDIR D:\SPSS\PROG = to delete the {PROG} subdirectory from its parent directory [\SPSS]

Note: It only operates when the directory to be removed is empty.

2.8 HOW TO COPY A FILE WITH A HARD DRIVE

To copy an entire file from one disk to another, use this two- step process.

- 1) Copy the desired file from the A: drive onto the C: drive.
- 2) Copy the file from the C: drive onto a new disk you placed in the A: drive.

Here is an example. First, at the C: prompt, place the disk with the file to be copied into drive A:

Type the command: copy A:DATA.ASC C: (or the name of the file).

This will copy DATA.ASC from the A: drive to the C: drive.

Remove the original disk from the A: drive. Place the new formatted disk into the A: drive.

Type the command: copy C:DATA.ASC A:

This will copy DATA.ASC from the C: drive to the A: drive.

Now two disks contain identical data but the data was entered only once.

REMEMBER: Any time you wish to copy onto a new disk, the new disk must be formatted before you copy.

CHAPTER 3

DATA PROCESSING

Information management includes collecting data, analyzing the data collected, and reporting the analysis results. Before collecting data, the whole process, including developing instruments and selecting samples, should be carefully planned. Data processing requires time, cost, materials, and services which should be identified and planned as early as possible. At the first stage of planning, the most important thing is to determine the purpose of data analysis. Why is it necessary to conduct a study to collect and analyze data? The purpose of the study determines the ways of collecting data and the methods of analyzing them.

After allocating the resources and determining the scope of data collection, data analysis procedures should be outlined. This outline should include information about the variables to be studied, the statistics to be run and the intended uses of the findings. Then the instruments to collect data should be designed and developed. Once the survey instrument (questionnaire) is developed, it must be precoded and piloted and, if necessary, revised. After the instruments are developed, appropriate data can be collected for analysis.

After you have collected the data, it must be coded, the coded data entered into computers, and computer programs written to analyze the data. Finally, the results must be reported. This section briefly discusses the basic steps of coding and analyzing data through a case study. Some data processing terms can be found at the end of this section.

CASE STUDY: STUDENT INFORMATION SURVEY

You have been hired as a consultant to analyze a questionnaire designed by a school district to obtain information on selected schools. The questionnaire consists of 6 questions. The first analysis you conduct should consist of frequencies on all the variables.

Several questions of importance to the district are:

1. On what level was the data collected? (school, grade, class, student)
2. How many students have two books, how many have only one, and how many have none?
3. What is the distribution of male and female students by grade level?
4. What is the average age of students in the Mountainview school?

STUDENT INFORMATION QUESTIONNAIRE

1. School Name: _____
 2. Grade Level: _____ First
 _____ Second
 _____ Third
 3. Gender: _____ Male
 _____ Female
 4. Age: _____
 5. Do you have a math book? _____ Yes _____ No
 6. Do you have an Arabic book? _____ Yes _____ No
-

We will use this questionnaire as an example and go through all the steps using SPSS/PC+ to analyze the data.

3.1 DATA-CODING

For the computers to work, they must be able to read the data you have collected. Moreover, computers are best with numbers. They cannot understand responses such as "I am teaching in a rural small school." You have to "translate" your survey results into the language that computers can understand. This processing is called "Coding." Data-coding is the procedure converting data into numerical codes which represent attributes of variables. Data coding is the first step in data analysis. Three steps are necessary to code data into machine-readable form.

Step 1: Identify each variable;

Step 2: Assign a value (code) for each attribute of the variable;

Step 3: Assign one or more columns of a data card to each variable.

Example 1:

The information below appears on the student information survey. Here are the steps required to code the information for data analysis.

Grade Level: _____ First Grade
 _____ Second Grade
 _____ Third Grade

The variable for this item is "Grade Level."

Since this is the second item on the survey, let's call this variable "variable 2 or V2."

The attributes of the variable are, "First Grade," "Second Grade," and "Third Grade."

The values (code) given to the attributes are "1" for First Grade, "2" for Second Grade, and "3" for Third Grade.

The values for this variable range from 1 to 3. Since all possible values are a single digit, variable 2 will require a single column of a data card.

Example 2:

Age: _____ (Years old)

The variable is "Age." This variable is coded as "variable 4" since it's the fourth item on the survey.

The attribute is "Years."

The value is the actual number of years of age.

We will say the values for this variable are likely within the range of 0 to 20 years. Since all possible values may have as many as two digits (i.e., 12), variable 4 will require 2 columns of a data card.

Missing Values

There will be times when a response on the survey has not been completed. This is referred to as missing data. A special number is used to code the missing value. For example, if the attributes for a survey question range from "1" to "5," the missing value could be coded as any single digit number excluding 1 through 5. A common value for missing data is 9. The value selected for missing data must be out of range of the attribute list AND maintain the appropriate column width. For example, if the value range for the variable requires 3 columns, the missing value must use 3 columns (i.e., 999). If the value range requires a single digit, only 1 column can be used (i.e., 9).

Example 3:

Gender: _____ Male
 _____ Female

The variable is "Gender." We will call this variable 3.

The attributes are "Male" and "Female."

The values given to the attributes are "1" for boys and "2" for girls.

The value range for this variable is from 1 to 2. Since all possible values are a single digit, this variable will use one column of the data field.

The missing value will also require a single digit. The missing value for variable 3 can be any number from 3 to 9. Since 9 is a common missing value, any data that is missing about gender of students will be coded as "9."

3.2 DATA CODING EXERCISE

Using the student information survey, answer the data coding questions.

THE STUDENT INFORMATION SURVEY

1. School Name: _____

2. Grade Level: _____ First
_____ Second
_____ Third

3. Gender: _____ Male
_____ Female

4. Age: _____

5. Do you have a math book? _____ yes _____ no

6. Do you have an Arabic book? _____ yes _____ no

How many variables are in question 1? _____

How many variables are in question 3? _____

How many variables are in question 5? _____

How many attributes are in question 4? _____

How many attributes are in question 2? _____

How many columns are required on the data card for question 3? _____

Do any questions require more than one column for the data field? Yes or No? _____

How should missing data be coded for question 2? _____

How should missing data be coded for question 4? _____

3.3 THE CODEBOOK

The final product of the coding process is a codebook. All survey responses must be coded into numerical responses before they can be entered into the microcomputer. The codebook is a document that describes the location of variables and the values given to the attributes composing those variables. A codebook serves two functions. First, it is a guide used in the entering the data into the computers. Second, it is a guide for locating variables and interpreting values in your data file during analysis.

A codebook is a permanent guide to how variables are entered into computers. All codebooks should include:

1. the variable identification number that was given to each survey question;
2. the location (column) of each survey question;

3. a description of the survey question; and
4. the codes (values) for each survey question.

QUESTIONS TO CONSIDER IN DEVELOPING A CODEBOOK

- o WHAT ARE THE VARIABLES?
- o HOW MANY COLUMNS ARE NEEDED FOR THE RESPONSE?
- o HOW WILL YOU CODE THE MISSING VALUES?
- o WHAT IS THE COLUMN LOCATION FOR EACH VARIABLE?

In a small study in which there are few variables and a small data set, a codebook may fit on a single sheet of paper. For large studies, the codes can be compiled into a book.

The following is an example of a code book for our case study.

CODEBOOK FOR EXERCISE

Variables	Columns	Descriptions	Values
V5	7	Math Book	1 = Yes 2 = No 9 = Missing
V6	8	Arabic Book	1 = Yes 2 = No 9 = Missing

3.4 TRANSFER OF DATA TO CODE SHEETS

The traditional method of data processing involves the coding of data and the transfer of code assignments to a code sheet. These sheets are ruled off in 80 columns corresponding to the data card columns and in rows representing individual cards.

Example:

The following is a portion of a codebook from the student information survey.

VARIABLE	COLUMNS	DESCRIPTION	VALUES
V1	1-2	School Name	01 = Mountainview School 02 = Lincoln School 99 = Missing
V2	3	Grade Level	1 = First Grade 2 = Second Grade 3 = Third Grade 9 = Missing
V3	4	Gender	1 = Male 2 = Female 9 = Missing
V4	5-6	Age	99 = Missing

The code sheet would look like this.

```
=====
| 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18.. column number
| 0 1 3 1... first case; response for variables 1-3
| 0 2 1 2... second case; response for variables 1-3
=====
```

Look in columns 1 and 2 of the first case. Variable 1 is located here. This tells us that the school surveyed is Mountainview School (coded as "01"). The School in case two is Lincoln School coded as 02.

Look in column 3 of the first case. Variable 2 is located here. It tells you that grade level of the students who responded to the survey. The number 3 of the first case tells us that the first student was a third grader.

The whole code sheet for the student information survey follows. The sheet only has data for two schools.

```
-----
1 2 3 4 5 6 7 8 9 10
0 1 3 1 0 6 1 1
0 2 1 2 0 7 1 1
0 1 1 1 2 6 1 1
0 2 1 1 0 6 1 2
0 1 1 2 0 8 1 2
0 2 1 1 0 6 1 1
0 1 1 1 0 6 2 2
0 2 1 2 0 7 2 1
0 1 2 1 0 7 1 1
0 1 2 2 0 8 1 1
0 2 2 1 0 8 1 1
0 2 2 1 0 7 1 2
0 1 2 2 0 7 2 1
0 1 2 1 0 7 1 1
0 2 2 1 0 7 2 2
0 2 3 2 0 8 2 1
0 2 3 1 0 9 2 1
0 1 3 1 0 9 1 2
0 1 3 2 0 8 1 1
0 1 3 2 1 0 2 1
-----
```

Now you can directly put the data on the code sheet into a computer file. In the next section, we will discuss how to use SPSS/PC+ to enter and analyze data.

3.5 SPSS/PC+ OVERVIEW

SPSS/PC+ is a general statistics and report package. SPSS/PC+ commands let you manipulate and manage data, produce reports, and perform simple or complex statistical analyses.

SPSS/PC+ performs these functions using three types of commands: operation, data definition and manipulation, and procedure commands.

Operation Commands

These commands affect the system and not the data. Use them to get information about the way SPSS/PC+ works or to change the way it operates.

Operation commands allow you to modify the format of SPSS/PC+ output and choose its destination. They are used to request assistance during a session or end an SPSS/PC+ session. Operation commands are executed as soon as they are entered. Examples of operation commands are HELP, SET, and INCLUDE.

Data Definition and Manipulation Commands

These commands describe, label, and transform data. They are used to tell SPSS/PC+ (1) where to find data, (2) how to read the data, and (3) how to label variables and their values.

Data definition and manipulation commands let you compute new variables, change the values of existing variables, identify values that should be treated as missing, label variables and values and select cases to use in an analysis. These commands are executed when you give a procedure command. Examples of data definition and manipulation commands are: DATA LIST, VALUE LABELS, and VARIABLE LABELS.

Procedure Commands

These commands tell SPSS/PC+ to do something with your data, such as produce reports, perform statistical analyses, and save data to a file.

When you enter a procedure command, SPSS/PC+ first executes any preceding data definition and manipulation commands. This creates an active file. The active file contains the data you tell SPSS/PC+ to read, the results of any transformations you request and a dictionary of information you have provided about each variable. The active file is the working file for the current SPSS/PC+ session. To interrupt a command while it is executed, hit the CTRL/C or CTRL/BREAK.

3.6 GETTING INTO SPSS/PC+

SPSS/PC+ should be installed on the hard disk of the PC. When it is installed, follow the procedure below to get into SPSS/PC+:

- Type in CD\SPSS and press ENTER key. You will see SPSS.
- Type in SPSSPC and press ENTER key. The computer screen shows the SPSS/PC logo, and after that it shows SPSSPC: on the top.

Now you are in SPSS/PC+. When you need to use DOS commands (such as to see the directory of a floppy drive) without leaving SPSSPC, type DOS and a period (.), and press RETURN. You can list DISK files or do wordprocessing there. When getting back to SPSSPC, type exit and press RETURN.

SPSSPC can use programs written in any wordprocessing programs. For example, in ENABLE Wordprocessing, you type the actual SPSSPC program with correct commands and structure including the periods at the end of command lines. Then you can open SPSSPC and use REVIEW or INCLUDE to review or run the program you developed in ENABLE. In this section, we will discuss how to write a program in SPSSPC.

SPSSPC programs usually have three parts. The first part is data definition, the second is the actual data, and the third part is procedures. The actual data can be a separate file saved on floppy disk.

When you write programs in SPSSPC, type REVIEW and a period and press ENTER. Then you can begin to write SPSSPC programs. The rest of this section will discuss how to enter data in SPSSPC and how to organize a SPSSPC program.

3.6.1 Defining and Entering Data

Define Data

SPSS/PC + allows you to enter data in two different formats, free format and fixed format. In the fixed format, you enter the numbers in specified locations. The first case takes the first line, the second case takes the second line. The response to V1 are in the first 2 columns, and the answers to V6 are in column 8. All these are specified and the numbers are typed in exact column and line locations.

In the free format, however, the column locations do not need to be specified, nor do the variables need to be put in exact location. You only need to indicate the length of string variables and use comma (,) or blank space to separate two values.

In either format, you begin a data file with defining the data. First, you must tell the computer whether the data you will enter is in a free or fixed format:

```
DATA LIST FREE.
```

This line shows that the data will be a free format. If the data are entered in a fixed format, you do not need the word "FIXED" after DATA LIST, but you have to specify the locations of the variables in the data file if it is in a fixed format. For example:

```
DATA LIST /V1 1-2 /V2 3 V3 4 V4 5-6 V5 7 V6 8.
```

This line indicates that the values for variable 1 is located in the first two columns, the second variable is located in column 3. When the data is entered in free format, this line becomes:

```
DATA LIST FREE/V1 V2 V3 V4 V5 V6.
```

Label Variables

The next step is to label the variables. The command is VARIABLE LABELS. Use apostrophes (') to begin and end a label. In our survey, the definitions of the variables can be specified as follows:

```
VARIABLE LABELS V1 'SCHOOL'  
/V2 'GRADE LEVEL'  
/V3 'GENDER'  
/V4 'AGE'  
/V5 'MATH BOOK'  
/V6 'ARABIC BOOK'.
```

As shown in above example, a command can take more than one line. Two things have to be observed. First, when one line is not enough for a command, use more lines but use a slash (/) to begin next lines. Second, end a command with a period (.). No period is used on each line.

The example above tells the computer what the variables 1 to 6 are.

Label Values

Now we need to indicate what the numbers entered stand for. This is to decode what we have coded in the code book. For example:

```
VALUE LABELS V1 01 'MOUNTAINVIEW SCHOOL' 02 'LINCOLN SCHOOL'  
/V2 1 'FIRST GRADE' 2 'SECOND GRADE' 3 'THIRD GRADE'  
/V3 1 'BOY' 2 'GIRL'  
/V5 V6 1 'YES' 2 'NO'.
```

If two variables have the same type of values, they can be combined (V5 and V6). These lines tell the computer what the numbers really mean.

Decimal Values

If you have data with decimal values and do not want to include the decimal points in the data file, specify them in the data list. For example, you could enter a price like \$10.99 as 1099. The following command would tell SPSS/PC that the variable (say PRICE) has two decimal places:

```
SPSS/PC: DATA LIST V7 10-13 (2).
```

Missing Values

Sometimes questionnaires or surveys have incomplete responses. For example, in our case study, students may not respond to question 4 (Age). In SPSS/PC, you could leave the spaces for this response blank and define blank as the missing value. Or you can choose the code 9 (99 for two-column value) or U to indicate the absence of an answer for the appropriate variables (using 9 for numeric variables and U for string variables). The following lines show how to specify missing values in SPSS/PC.

```
MISSING VALUES V1 V4 (99)/V2 V3 V5 V6 (9).
```

Since 99 and 9 are defined as missing values, they must be entered to represent the missing responses. For V1 and V4, 99 (not 9) has to be used and the rest variables, 9 is used.

Transforming Data

After specifying the data file, variables, and statistics procedures, the SPSS program is completed. Sometimes, you may need to transfer some of the data or recode the variables. Below are some of the data transformation commands and examples. They should be positioned before the statistics commands.

(1) COMPUTE

The COMPUTE transformation creates a new variable or modifies the values of an existing variable for each case in your active file. The variable name on the left of the equal sign is the target variable. The variables, values, and specifications on the right side of the equals sign form an assignment expression.

You can use both arithmetic operations and functions in the transformation of numeric variables. The assignment expression can include a combination of arithmetic operations, constants, and functions. Parentheses are used to indicate the order of operations and to enclose the argument for a function.

You can create and modify short string variables using COMPUTE. A variable name can be set equal to a string constant or to an existing string variable. The LAG function is available for cross-case transformation of short string variables. All other functions are available for numeric transformations only.

For example:

To add: COMPUTE V7 = V5 + V6.

To subtract: COMPUTE GRADE2 = FIRST-RETAINED.

To multiply: COMPUTE COST = SALARY*TEACHERS.

To divide: COMPUTE PERCOST = TOTAL/STUDENTS.

Suppose these are defined variables:

```
VARIABLE LABELS V7 'BOOKS INCLUDING MATH AND ARABIC'  
/GRADE2 'NUMBER OF SECOND GRADE STUDENTS'  
/FIRST 'NUMBER OF FIRST GRADE STUDENTS'  
/RETAINED 'NUMBER OF RETAINED FIRST GRADE STUDENTS'  
/COST 'TOTAL SALARY COST'  
/TEACHERS 'NUMBER OF TEACHER IN SCHOOL'  
/PERCOST 'COST PER STUDENT'  
/TOTAL 'TOTAL COST INCLUDING SALARY AND OTHER'  
/STUDENTS 'TOTAL NUMBER OF STUDENTS'.
```

(2) RECODE

The RECODE command changes the coding scheme of an existing numeric or short string variable on a value-by-value basis or for a range of values. When it can be used, RECODE is much more efficient than the series of IF commands that produce the same transformation.

- The variables to be recoded must already exist.
- Each set of value specifications is enclosed in parentheses.
- Input values are specified first (to the left of the equals sign), followed by a single output value (to the right of the equals sign).
- THRU specifies a value range, inclusive of specified end values.
- LO and HI specify the lowest and highest values encountered in the data. They include user-missing values, but not system-missing values.

Examples:

```
RECODE GRADE ('A', 'B', 'C' = 'A') ('D', 'E', 'F' = 'B')  
RECODE AGE (1 THRU 25 = 1) (26 THRU 50 = 2) (51 THRU HI = 3)
```

NOTE: each string value is enclosed within apostrophes.

(3) PROCESS IF

PROCESS IF is a temporary transformation designating cases for inclusion in the next procedure.

The specification is a simple logical expression that can be evaluated as true or false. If the logical expression is true, the case is processed. If it is false or missing, the case is not processed in the next procedure.

String values (alphanumeric values) must be enclosed in apostrophes or quotation marks and must match the length of the short string being tested.

The Six Relational Operators are: EQ (equal), NE (not equal), LT (less than), LE (less than or equal), GT (greater than), and GE (greater than or equal). Symbolic forms (=, = or < >, <, < =, >, > =) are accepted.

Examples:

```
PROCESS IF (AGE GT 50) OR (AGE = 50)
PROCESS IF (SEX EQ 'FEMALE') OR (SEX = 'FEMALE')
```

(4) SELECT IF

The SELECT IF transformation permanently selects cases for analysis based upon logical conditions found in the data. These conditions are specified in a logical expression. The logical expression can contain relational operators, logical operators, missing value functions, and arithmetic operations and functions allowed in COMPUTE transformations. For temporary selection, use PROCESS IF.

- The logical expression must be enclosed in parentheses.
- Relational operators are EQ, NE, LT, LE, GT & GE (and their symbolic equivalents shown above).
- Logical operators are AND, OR, and NOT (&, |, ~)
- The logical expression is evaluated as true or false. When true, the case is selected; if it is false or missing, the case is not selected.
- Multiple SELECT IF commands issued prior to a procedure command must all be true for a case to be selected.
- SELECT IF should be placed before other transformations for efficiency considerations.

Examples:

```
SELECT IF (SEX = 'MALE')
SELECT IF (INCOME GT 75000 OR INCOME LT 10000)
```

Other data transformation commands are IF and COUNT. For detailed information, check Section C of the SPSS/PC Manual.

Entering Data

Now the data can be entered. Type BEGIN DATA without a period (since this is not an end of the command) and press the ENTER key. The prompt will become a colon rather than SPSSPC:. Enter the data case by case. When finishing one case, press ENTER and the cursor goes to the next line with a colon (:).

```
BEGIN DATA
01310611
02120711
END DATA.
```

After finishing data entry, type END DATA with a period to indicate the lines following the numbers are not a part of the data. You can put the data in separate file. In this case, you need to remember the name of the data file (such as student.dat) and put it under the SPSS/PC directory. When you begin to work on the programming part, you just need to enter:

SPSS/PC + : REVIEW: 'STUDENT. DAT'. (The name of your data file.) Then define the data in the file as illustrated earlier.

The next step is to enter the procedures to conduct the statistical analyses.

3.6.2 Specifying Procedures

After the data file and variables are defined, the procedures for statistic analysis need to be specified. The procedure commands and subcommands need to be selected and placed in appropriate places.

After the procedure command, you put the variables which need to be analyzed. For example, the FREQUENCIES command asks for a list of all values of a variable:

```
FREQUENCIES VARIABLES = V7.
```

You can put VARIABLES = ALL to list values of all variable.

There are a number of statistics commands, we will briefly discuss some of them along with some subcommands. Look at the reference books of SPSS/PC for details of these and other commands.

(1) FREQUENCIES

The FREQUENCIES procedure produces frequency tables, bar charts (for discrete variables), histograms (for continuous variables), and various descriptive statistics (means, standard deviations, percentiles, and so forth).

FREQUENCIES operates via subcommands. Only the VARIABLES subcommand is required.

The VARIABLES subcommand names the variables to be analyzed. Simply specify the names of the variables you want to analyze.

No other specification or subcommand is needed when only frequency tables are desired. You can use the keyword ALL to name all variables in the file, and the keyword TO to refer to consecutive variables in the file.

```
FREQUENCIES VARIABLE = ALL
```

```
FREQUENCIES VARIABLES = DEPT AGE GRADE
```

```
FREQUENCIES VARIABLES = SALARY78 TO SALARY85 SEX AGE
```

In addition to frequency tables, bar charts, and histograms procedure, FREQUENCIES calculates univariate statistics for all variables named on the VARIABLES subcommand. To request statistics, use

the **STATISTIC** subcommand followed by an equals sign and the keywords that correspond to the statistics you want.

Examples:

```
FREQUENCIES VARIABLES = ALL  
/STATISTICS = ALL
```

```
FREQUENCIES VARIABLES = SALARY78 TO SALARY85 SEX AGE  
/STATISTICS = MEAN SKEWNESS RANGE SUM
```

(2) CROSSTABS

Procedure **CROSSTABS** (**XTABS**) produces tables showing (Chi-square) joint distribution of two or more variables. These variables must be categorical variables.

The minimum specification is two variables joined by the key word **BY**. The row variable comes first followed by the column variable.

Subcommand **TABLES** can be used, and more than one tables can be specified with a slash (/) between each table specification.

Procedure **CROSSTABS** can be invoked with the **XTABS** command.

Examples:

```
CROSSTABS TABLES = GRADE BY SEX BY DEPT/SEX BY SALARY  
/STATISTICS = 1. (a code number for Chi-square)
```

```
XTABS TABLES = JOBCAT BY EDCAT/SEX BY INCOME.
```

(3) ONEWAY (ONE-WAY ANALYSIS OF VARIANCE)

Procedure **ONEWAY** produces a one-way analysis of variance for an interval level dependent variable by one independent variable that defines the groups for the analysis. Other SPSS/PC+ procedures that perform analysis of variance are **MEANS**, **ANOVA**, and **MANOVA** (in Advanced Statistics). Some tests not included in the other procedures are available as options in **ONEWAY**.

By default, **ONEWAY** produces a labeled table for each dependent variable by the independent variable. The table contains the between-groups sums of squares, mean squares, and degrees of freedom. The F ratio and the probability of F for the test are displayed. Cases that are missing on both variables used in each test are excluded from the calculation of the test statistics.

The minimum specification is the **VARIABLES** subcommands with a single analysis list. The actual keyword **VARIABLES** may be omitted.

The minimum analysis list specifies a dependent variable, the keyword **BY**, and independent variable, and the minimum and maximum values of the independent variable in parentheses.

The **VARIABLES** subcommand must be specified first. Other subcommands can be specified in any order.

Subcommands must be separated by a slash.

Examples:

1. **ONEWAY VARIABLES = SALARY BY EDUC(1,6)
/STATISTICS = ALL**

2. **ONEWAY VARIABLES = EDUC BY FAMILIES
/STATISTICS = ALL**

(4) ANOVA (ANALYSIS OF VARIANCE FOR FACTORIAL DESIGNS)

Procedure ANOVA performs analysis of variance for factorial designs. The default is the full factorial model if there are five or fewer factors. Analysis of variance tests the hypothesis that the group means of the dependent variable are equal. The dependent variable is interval level, and one or more categorical variables define the groups. These categorical variables are termed factors. ANOVA also allows you to include continuous explanatory variables, termed covariates. Other SPSS/PC+ procedures that perform analysis of variance are ONEWAY and MEANS.

The minimum specification is a single VARIABLES subcommand with an analysis list. The actual keyword VARIABLES may be omitted.

The minimum analysis list specifies a list of dependent variables, the keyword BY, a list of factor variables, and the minimum and maximum integer values of the factors in parentheses.

Subcommands can be specified in any order and must be separated by slashes [/].

Examples:

1. **ANOVA VARIABLES = YVAR1, XVAR2, BY XVAR(1,3)**

2. **ANOVA PRESTIGE BY REGION(1,9) SEX, RACE(1,2) WITH EDUC
/STATISTICS = 2**

(5) CORRELATION

Procedure (CORRELATION) (alias PEARSON (CORR)) product-moment correlations with one-tailed probabilities and, optionally, univariate statistics, covariance, and cross-product deviation. Other procedures that read and write correlation matrices are FACTORS and REGRESSION.

The minimum specification is the VARIABLES subcommand with a single analysis list. The keyword VARIABLES can be omitted.

Subcommands are separated by slashes [/].

You can invoke CORRELATION with its alias, PEARSON CORR.

Examples:

1. **CORRELATION VARIABLES = SALARY WITH SEX
/STATISTICS = ALL**

2. **CORRELATION VARIABLES = WEIGHT WITH INTELLIGENCE
/STATISTICS = 1.**

The following pages contain example programs for the case study introduced in the beginning of this section.

1. This program performs frequencies on all variables.

```
SET SCREEN = ON/PRINTER = OFF/DISK = ON.  
DATA LIST FILE = 'EX.DAT' /V1 1-2 V2 V3 3-4 V4 5-6 V5 V6 7-8.  
MISSING VALUES V1 V4 (99)/ V2 V3 V5 V6 (9).  
VARIABLE LABELS V1 'SCHOOL'  
  /V2 'GRADE LEVEL'  
  /V3 'GENDER'  
  /V4 'AGE'  
  /V5 'MATH BOOK'  
  /V6 'ARABIC BOOK'.  
VALUE LABELS V1 01 'MOUNTAINVIEW SCHOOL' 02 'LINCOLN SCHOOL'  
  /V2 1 'FIRST GRADE' 2 'SECOND GRADE' 3 'THIRD GRADE'  
  /V3 1 'BOYS' 2 'GIRLS'  
  /V5 V6 1 'YES' 2 'NO'.  
FREQUENCIES VARIABLES = ALL/STATISTICS = ALL  
  
(FREQEX.PRG)
```

2. This program performs frequencies on all variables.

```
SET SCREEN = ON/PRINTER = OFF/DISK = ON.  
DATA LIST FILE = 'EX.DAT' /V1 1-2 V2 V3 3-4 V4 5-6 V5 V6 7-8.  
MISSING VALUES V1 V4 (99)/ V2 V3 V5 V6 (9).  
VARIABLE LABELS V1 'SCHOOL'  
  /V2 'GRADE LEVEL'  
  /V3 'GENDER'  
  /V4 'AGE'  
  /V5 'MATH BOOK'  
  /V6 'ARABIC BOOK'.  
VALUE LABELS V1 01 'MOUNTAINVIEW SCHOOL' 02 'LINCOLN SCHOOL'  
  /V2 1 'FIRST GRADE' 2 'SECOND GRADE' 3 'THIRD GRADE'  
  /V3 1 'BOYS' 3 'GIRLS'  
  /V5 V6 1 'YES' 2 'NO'.  
FREQUENCIES VARIABLES = ALL/STATISTICS = ALL  
  
(FREQEX.PRG)
```

3. This program performs the frequencies on variable BOOKS.

```
SET SCREEN = ON/PRINTER = OFF/DISK = ON.  
DATA LIST FILE = 'EX.DAT' /V1 1-2 V2 V3 3-4 V4 5-6 V5 V6 7-8.  
MISSING VALUES V1 V4 (99)/ V2 V3 V5 V6 (9).  
VARIABLE LABELS V1 'SCHOOL'  
  /V2 'GRADE LEVEL'  
  /V3 'GENDER'  
  /V4 'AGE'  
  /V5 'MATH BOOK'
```

```

/V6 'ARABIC BOOK'.
VALUE LABELS V1 01 'MOUNTAINVIEW SCHOOL' 02 'LINCOLN SCHOOL'
/V2 1 'FIRST GRADE' 2 'SECOND GRADE' 3 'THIRD GRADE'
/V3 1 'BOYS' 2 'GIRLS'
/V5 V6 1 'YES' 2 'NO'.
COMPUTE BOOKS = V5 + V6.
VALUE LABELS BOOKS 2 'TWO BOOKS' 3 'ONE BOOK' 4 'NO BOOKS'.
FREQUENCIES VARIABLES = BOOKS/STATISTICS = ALL

```

(COMPEX.PRG)

4. This program will calculate the distribution of male and female students by grade levels.

```

SET SCREEN = ON/PRINTER = OFF/DISK = ON.
DATA LIST FILE = 'EX.DAT' /V1 1-2 V2 V3 3-4 V4 5-6 V5 V6 7-8.
MISSING VALUES V1 V4 (99)/ V2 V3 V5 V6 (9).
VARIABLE LABELS V1 'SCHOOL'
/V2 'GRADE LEVEL'
/V3 'GENDER'
/V4 'AGE'
/V5 'MATH BOOK'
/V6 'ARABIC BOOK'.
VALUE LABELS V1 01 'MOUNTAINVIEW SCHOOL' 02 'LINCOLN SCHOOL'
/V2 1 'FIRST GRADE' 2 'SECOND GRADE' 3 'THIRD GRADE'
/V3 1 'BOYS' 2 'GIRLS'
/V5 V6 1 'YES' 2 'NO'.
CROSSTAB TABLES = V2 BY V3
/OPTIONS = 3,4,5
/STATISTICS = 1.

```

(CROSSEX.PRG)

5. This program calculates the average age of students.

```

SET SCREEN-ON/PRINTER = OFF/DISK = ON.
DATA LIST FILE = 'EX.DAT' /V1 1-2 V2 V3 3-4 V4 5-6 V5 V6 7-8.
MISSING VALUES V1 V4 (99)/ V2 V3 V5 V6 (9).
VARIABLE LABELS V1 'SCHOOL'
/V2 'GRADE LEVEL'
/V3 'GENDER'
/V4 'AGE'
/V5 'MATH BOOK'
/V6 'ARABIC BOOK'.
VALUE LABELS V1 01 'MOUNTAINVIEW SCHOOL' V2 'LINCOLN SCHOOL'
/V2 1 'FIRST GRADE' 2 'SECOND GRADE' 3 'THIRD GRADE'
/V3 1 'BOYS' 2 'GIRLS'
/V5 V6 1 'YES' 2 'NO'.
SELECT IF (V1 EQ 01).
FREQUENCIES VARIABLES = V4/STATISTICS = ALL.

```

(SELECTEX.PRG)

CHAPTER 4

SPREADSHEET/GRAPHICS

4.1 INTRODUCTION

A spreadsheet program represents the traditional data management tools: a columnar pad, pencil, and calculator. It makes data management easier, faster and more accurate. A simple example demonstrates the convenience of a spreadsheet program. Suppose that you need to project a student enrollment for all the school districts in the nation for the years 1988 to 2000. In building this forecast, you assume that the enrollment will increase at an annual rate of 5 percent. But what happens if the growth rate is 10 percent? What if the rate is 15 percent? If you use paper and pencil to do this analysis, it would take hours to compute the effects of these changes in the growth rate. With a spreadsheet, such as the one in the ENABLE package, you can change the growth rate by pressing a key.

A spreadsheet is similar to an accountant's columnar pad, but it is different in several important ways. For example, the spreadsheet is much larger than any columnar pad an accountant could have. The ENABLE spreadsheet has 255 rows and 256 columns. That is over 5 feet high and 21 feet wide.

Each row in a spreadsheet is assigned a number, and each column a letter. The intersection of the rows and columns are called cells. Cells are identified by their row-column coordinates. For example, the cell located at the intersection of column F and row 21 is called F21. Cells can be filled with text (labels) numbers, and mathematics formulas, including special spreadsheet functions.

A cell pointer (a bright rectangle) allows you to write information in the cells. The cell pointer is typically one row high and one column wide. When you change the width of a column, the size of a cell pointer will change too.

Since the spreadsheet is so large, the computer screen cannot show the entire spreadsheet at one time, but only a part of it. As you get into the spreadsheet, you only can see columns A through H and rows 1 through 20. To view the other parts of the spreadsheet, you scroll the spreadsheet up, down, left or right with cursor movement keys (i.e., the arrow keys).

In the following sections, we will discuss the simple procedures to work with the spreadsheet program in the ENABLE package. These procedures are similar in different spreadsheet programs. Mastering these procedures will help you learn other programs you may use in the future.

Suppose we have the following student enrollment data for one school district called Sana'a:

Student Enrollment in Sana'a Schools (1981-1985)

<u>Year</u>	<u>Male</u>	<u>Female</u>
1981	890	130
1982	900	180
1983	930	310
1984	1060	330
1985	1500	650

We will create a spreadsheet program, enter these numbers, and produce a graphic such as the one on the next page.

4.2 WORKING WITH A SPREADSHEET

The spreadsheet has onscreen command menus. By pressing F10 or the / key, the main command menu will show on the top of the screen. By selecting any of these commands, you will see a sub-command menu. These commands will perform all the tasks needed to work with a spreadsheet.

Starting the spreadsheet program in ENABLE.

1. Turn the computer and screen on.
2. Type in the current date and time.
3. When you see the C> : prompt, type in CD\EN200.
4. Type in ENABLE. Then you are asked to type in the date, time, and whether you use profile or not. For now, press the End key to skip this screen.

ENABLE 1.10

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5. You see the system menu. Choose "Use System" by pressing ENTER.

```
ENABLE (tm)
Select an option with the cursor and
Press [Esc] if you change your mind and [F] for help
-----
Use System  Help  MCM  Return to DOS
-----
Word Processing  Spreadsheet  Telecom  DBMS/Graphics
-----
Create  Revise  Print  Mail/Merge
```

6. You are given choices of Word Processing, Spreadsheet/Graphics, Telecom, and Databases/Graphics. The cursor is on Word Processing.

```
          ENABLE (lv)
        Select an option with the cursor and
        Press [Esc] if you change your mind and [F] for help
-----
        Use System   Help   MCM   Return to DOS
-----
        Word Processing Spreadsheet Telecom DBMS/Graphics
-----
                Create  Revise  Print  Mail/Merge
```

Choose "Spreadsheet." You can move the cursor to the Spreadsheet by pressing the right arrow key and press ENTER, or simply press S. Then you will see three options: Create, Revise, and Print. The cursor is on Create.

```
          ENABLE (tm)
        Select an option with the cursor and
        Press [Esc] if you change your mind and [F] for help
-----
        Use System   Help   MCM   Return to DOS
-----
        Word Processing Spreadsheet Telecom DBMS/Graphics
-----
                Create  Revise  Print  Mail/Merge
```

7. Choose "Create" to begin a new spreadsheet file, or "Revise" to edit an existing file. Since this is your first spreadsheet file, select "Create" by pressing ENTER.

Now you are asked to type in a name.

```
          ENABLE (tm)
        Select an option with the cursor and
        Press [Esc] if you change your mind and [F] for help
-----
        Use System   Help   MCM   Return to DOS
-----
        Word Processing Spreadsheet Telecom DBMS/Graphics
-----
                Create  Revise  Print  Mail/Merge
```

8. Type in a file name with drive name. For example:

A: DATA.SSF

"A:" designates the file to be stored on the floppy disk in the A drive; DATA is the file name; and .SSF means that the file is a spreadsheet file. You do not have to put the last part of the file name (.SSF), because it can be put on automatically by the system.

You will be asked to insert a disk in drive A and to press any key to continue. If the file name you have typed is already in use, you will be advised to type in another name, or revise the existing file.

After you finish typing the name, press ENTER. You will see a "window" of the spreadsheet.

This window is 8 columns wide (Columns A through H) and 20 rows high (Rows 1 through 20). On the top right corner of the screen, you see the word READY indicating the machine is ready to accept your data. The file name, A:DATA.SSF, is shown at the left bottom corner of the screen. The cell name A1 is shown at the left top corner. The right bottom corner of the screen shows the most right and bottom cell name. Since we have just begun the spreadsheet, the bottom and right most cell is A1, A1 is shown. If you are using capital letters, the word Cap is also shown next to the cell name in the right bottom corner.

Moving from Cell to Cell

Before you type in any data, move the cursor from a cell to another cell.

The arrow keys. You may have noticed the arrow keys on the number panel at right of your keyboard. Press the right arrow once and see the changes on the screen. You should see the bright solid rectangle move one cell to the right and the cell name, A1, on the left top corner of the screen is changed to B1 indicating the current active cell is changed to B1.

Press the right arrow once more and the cursor is in cell C1. Press the down arrow once, the cursor moves to cell C2. Press the up arrow once, the cursor goes back to cell C1. Press the up arrow once more. A beep tells you that you cannot go any further because this is the first row.

To move the cursor to row 21 or column I, hold the down arrow key or the right arrow key until the cursor moves to the cell you want.

The Tab key. Now, press the Tab key once. The screen is shifted to the right. Now the first column is Column I and the rows are not changed. Pressing Tab once more will move the cursor another screen right.

Now, press Shift and Tab at the same time. You should see the cursor moves one screen left.

The PgUp and PgDn keys. Pressing PgUp and PgDn moves the spreadsheet one page up and one page down, respectively.

The Home key. No matter where you are, you can go back to the first cell (A1) of the whole spreadsheet by pressing the Home key.

F2. You can move to a certain cell by pressing F2 and typing in the cell name. Try this. Press F2 and type in Q23. The cursor is in column Q and row 23 now.

Here is a summary of the cursor movement keys:

Keys	Cursor moves to
PgUp	one page up
PgDn	one page down
Tab	one screen right
Shift/Tab	one screen left
Up arrow	one cell up
Down arrow	one cell down
Left arrow	one cell left
Right arrow	one cell right
Home	cell A1
F2 B23	cell B23

Entering Data in Spreadsheet

Now you are familiar with moving the cursor on the spreadsheet. Type in the data of student enrollment in Sana'a District.

Student Enrollment in Sana'a Schools (1981-1985)

Year	Male	Female
1981	890	130
1982	900	180
1983	930	310
1984	1060	330
1985	1500	650

You can begin at any cell. Usually we begin at the first window (columns A through I and rows 1 through row 20).

To type in the data, first position the cursor in the cell, then type in the content.

Start with cell A1. First, position the cursor in cell A1. Second, type YEAR. As you type, you can see that the word YEAR appears on the top left corner, and that on the top right corner shows the word Label indicating the message typed in is a label.

Now, position the cursor in cell A2 and type in 1982. You can see the top right corner shows that this is a value. Since you use 1982 as a label of year rather than as a number, you can put the label symbol (^) in front of 1982. To do this, still position the cursor in A2 and type: ^1982. Now you see the word, Label, is shown on top right corner of the screen and 1982 is centered in cell A2.

What if you make a mistake? You can change the content of any cell by retyping the correct number or word. An easy way is to use the Edit mode. To edit the content of a cell, position the cursor in the cell (say, A2), then press the F4 key. On the right top corner you will see the word, Edit, indicating the edit mode. Suppose you typed in 1882 and need to change to 1982.

1. Get into the Edit mode;
2. Move the cursor to the wrong number by pressing the left arrow;

3. Retype the correct number, 9. If the Insert function is on, press Del once;
4. Press ENTER.

Now, type in the rest of the table shown above. You may have noticed that we forgot to type in the title of the table. But we can insert a row at the top of the spreadsheet and type in the title, SANA'A SCHOOL STUDENT ENROLLMENT (1982-85).

Inserting Columns and Rows

Use the following procedure to insert rows at the top of the spreadsheet. A similar procedure can be used to insert columns.

1. Position the pointer (cursor) in the cell where you want to insert column or row. Since you want to insert a row at the top of the spreadsheet, position the cursor in row 1.
2. Press F10 or / to get the top line menu.
3. Choose Worksheet by typing W.
4. Choose Insert by typing I.
5. Then ENABLE will ask you whether you want to insert a column or a row. Since you need to insert a row, press R for row.
6. ENABLE now asks you the number of rows you want to insert. You can type in any number to insert any number of rows (provided the number should not be larger than 255). The default number is 1. If you want to insert only one row, just press 1 or Enter. For now, type 2 to insert two rows.
7. You can see immediately that two rows are inserted at the top of the spreadsheet, and that YEAR is in cell A3 now.

Now, follow a similar procedure to insert a column between YEAR and MALE and one column between MALE and FEMALE.

You also can delete rows or columns by following a similar procedure. The difference is at step 4 when you are asked to choose Insert, Delete, or other options. If you need to delete some rows or columns, you should choose Delete. The rest of the procedure is the same.

Now position the cursor in A1 and type in the title of our table. You may have noticed that the title is too long. Since the other cells at the first row (B1, C1, D1,...) are empty, the title will still show on the spreadsheet. If you have a very long label or number in a table, you must change the size of the cell, or it will be overlapped by the content in adjacent cells. We will discuss how to increase the cell size below.

You have typed in labels and values. Let's summarize how to type in labels and numbers.

Labels and Text

To enter a label, type in text and press Enter. The mode indicator on the top of the screen will indicate the kind of data you are entering. If you use a value number as a label like 1985, precede the value with the ^ sign, e.g., ^1985. The labels are automatically centered in the cells.

Numbers

To enter a value, type in a number and press Enter. Soon after any number is entered, VALUE mode is indicated at the top of the screen. The numbers are automatically aligned right.

Another type of information you can enter into a spreadsheet is Formulas. You do not need to calculate and enter the results, but you need to enter the formulas and the spreadsheet will calculate and put the results in the cells you wanted.

Formulas

One begins a formula with a plus sign (+) or minus sign (-). You may use any of the following operators in a formula: +, -, / (division), * (multiplication), ** (squared). The cells with formulas will show the results of the calculation, not the formula itself. If you move the cursor to a cell with formula, however, the formula will show up on the top left screen for you to edit.

Suppose you need a sum of the enrollment for each year. Position the cursor in cell G5 (suppose the male data are in column C, female enrollment in column E, and the year 1981 data in row 5). Then type in:

+ C5 + E5

and press ENTER. You can see 1020 is in G5 but on the top left corner shows the formula you have entered.

Other examples of formulas are:

+ B3 * B4 * B8
 + B32 - 10
 + C3 * (E1/B1)

You also can enter functions. There are three basic types of functions: sum, average, and percentage. Functions must begin with an @ (ampersand) sign. For example, the above sum of male and female enrollment can be obtained by entering:

@sum (C5 . . E5)

In cell G5. Now use formulas or functions (@sum) to find the sums of years 1982 through 1985.

Functions are especially useful when you have a great number of cells to compute. The following table summarizes three basic functions.

Enter	Results in cell
@SUM (A1..A10)	Sum of cells A1 through A10
@AVG(C2..C6)	Average of the values in cells C2 through C6
@PCT(A1..A4,B1..B4)	B1 shows the percentage of the value in A1 out the sum of A1 through A4. B2 shows the percentage of A2 out the sum of A1 through A4. B3 shows the percentage of A3 out the sum of A1 through A4. B4 shows the percentage of A4 out the sum of A1 through A4.

Now try to find the average male and female enrollments in the five years by using @AVG.

One special feature about @pct is that you must enter this function in a cell not covered by the function. For example, the function @PCT(A1..A4,B1..B4) cannot be entered in any of the cells A1 through A4 or B1 through B4. Also remember that the cell names in the last half of the formula indicate that the results will be shown in these cells.

Changing the Size of a Cell

The default width of a column is 9 characters. From time to time, you may need wider columns to hold large numbers or long labels. To change the size of a column, follow the steps below.

1. Press F10 or / to get the top line menu.
2. Choose Worksheet by pressing Enter or W.
3. If you want to change the size for the whole spreadsheet, choose Global, and choose Width again in the Global menu. If you want to change the size for one column, choose Width by pressing W or moving the cursor to Width and then pressing Enter.
4. Choose Set to set a new size for the current column.
5. You can press the right arrow key to increase the width or the left arrow key to decrease the width. Or you just type in a number (up to 72) to set the width. The new width will show immediately on the screen.

Practice this procedure to change the size of column A or any other columns.

Aligning the Content in the Columns

All the values entered in the cells are aligned right, and all the labels are centered. You can change the alignment by following the steps below.

1. Press F10 or / to see the top line menu.
2. Choose Worksheet by pressing W or Enter.
3. Choose Global if you want to change the alignment of all cells, or choose Range to change the alignment setting in a few columns.
4. Choose Alignment.
5. Choose Left to align to the left edge, choose Right to align right, or choose Centered to center content in cells.
6. Type in the range you want change the alignment: A1..A20, A1..H1, or A1..D30 (From columns A through D and rows 1 through 30).

When you move the cursor into the range you have changed alignment, you will see the word (C), (L), or (R) on the top left screen indicating the content is centered, aligned left or right, respectively.

Now try to center the values in columns C and E by following the above procedure.

Copying and Moving a Cell to Another Cell

From time to time, you have the same information to input in several cells. You can copy the content of one cell to another cell.

1. Press F10 or / to get the top line menu.
2. Select Worksheet.
3. Select Copy.

4. You are asked to enter the FROM range, that is, to specify the cell or range of cells to be copied, such as G5, G5..G7.
5. You need to enter the range to copy to such as G6, G7..G8.

The Copy function is very useful in copying formulas and functions since the spreadsheet automatically changes the range in formulas and functions to corresponding ones. For example, you need to copy cell G5 to G6 and cell G5 is a function: @SUM(C5..E5). When you complete copying, the G6 is the sum of C6 and E6 rather than sum of C5 and E5.

The Move function is similar to Copy. First, get the top line menu. Then choose Worksheet and Move. Then specify the cell or range of cells to be moved, and lastly specify the cell or range of cells to move to.

Now, try to move a cell of the table to another place and then move it back.

Erasing the Content of a Cell

Sometimes, you need to erase the content of some cells. To do this, follow the following steps:

1. Press F10 or / and get the top line menu.
2. Choose Worksheet.
3. Choose Range. This option will allow to make changes within in a specified range of cells.
4. Choose Erase.
5. Enter the cell or range of cells you want to erase and press ENTER.

You will see the content in the specified cell or cells.

The difference between Erase and Delete is that Erase only works with the content, but Delete function will delete rows or columns. If you erase one cell, you still have the column, or row in the spreadsheet. But if you delete one row or column, the next row or column will take the place of the deleted one.

Saving a Spreadsheet File

Now, you have completed the spreadsheet and need to save it to your own data disk. To save a spreadsheet file, follow the following procedure.

1. Press F10 or / to get the top line menu.
2. Choose Save.
3. Now you have an option of Accept Options or Change Options. The Accept Option saves the file in ENABLE format under the current name. You will be asked to confirm the file name. Make sure the file is saved onto your data disk.

Printing a Hardcopy of the Spreadsheet

The procedure to print out the spreadsheet is similar to wordprocessing. You have to specify the range of the worksheet you need to print out and the headers as well as footer. The following is a simple procedure. You are encouraged to try different procedures.

1. Make sure that the printer is connected and its power is on.
2. Press F10 or / to get the top line menu.
3. Choose Print.

4. If you use the default options, or if you already have everything set up, choose Execute to print. Assume this is the first file you are going to print, choose Setup to specify the options in the format.
5. Specify the options in the Print Forms and the Page Form as in wordprocessing. After you finish, press the Esc key to go back to the Print menu.
6. Choose Range. Specify the range of cells whose contents are to be printed, such as A1..G10.
7. Choose Header or Footer and type in the text you want to appear on top or bottom of every page.
8. If your spreadsheet is larger than one page, you want to have some columns or rows (such as those labels of a table) on each page. Choose Borders and specify which columns or rows (or both) you want to appear on each page.
9. When you finish all these, choose Execute and Printer.

Now print out a hard copy of your spreadsheet. It should look like this:

Student Enrollment in Sana'a Schools (1981-1985)

<u>Year</u>	<u>Male</u>	<u>Female</u>	<u>SUM</u>
1981	890	130	1020
1982	900	180	1080
1983	930	310	1230
1984	1060	330	1390
1985	1500	650	2150
AVERAGE	1054	320	1374

Quitting the Spreadsheet

To quit, follow these simple steps.

1. Press F10 or / to get the top line menu.
2. Choose Quit by pressing Q or moving the cursor to Quit and pressing Enter.
3. Press Y to confirm that you want to get out.
4. The system menu will appear on the screen. If you want to work on spreadsheet/graphics again or choose to do some wordprocessing work, you can select these options. If you want to stop work on ENABLE, press R and then you are out of the ENABLE system.

4.3 GRAPHICS

To produce a graphic presentation of the data you enter, you need to make a series of selections. You are encouraged to try different selections because they will show different results in a graphic and you will understand the procedures better. In this section, we will suggest the procedures to produce a three dimension solid graphic as shown on the next page.

To produce a graphic presentation, you first need to have the spreadsheet file ready. After you have developed your spreadsheet, follow the 5 basic steps below to produce a graphic presentation.

1. Creating a graphic file;
2. Defining the data groups to be shown in the graphic;
3. Specifying the features of the graphic;
4. Specifying titles and legends; and
5. Displaying or printing out the graphic.

In the following pages, we will go through these basic steps to produce a three dimension solid graphic presentation of the Sana'a school enrollment data. You should have the shape of the graphic in your mind. For example, you may think that the graphic has an X-axis representing the years and a Y-axis representing the enrollment number. Or you may sketch the graphic on a piece of paper. These thoughts and sketching steps will help you define the graphic.

STEP ONE: Creating a graphic file

Before you do anything, you need to define a graphic file. That is, to name the graphic you are developing.

1. Get the main menu by pressing F10 or /.
2. Select Graph by typing G or placing the cursor on Graph and press the Enter key.
3. Choose Create to create a new graphic or choose Revise to revise an existing one. Since this is your first graphic, so you need to choose Create.
4. Typing a unique name for the graph: SANNAG. You can choose different names, but it should be unique and meaningful to you.

The second step is to define the data groups that you want to present in the graphic.

STEP TWO: Defining data groups

Remember, we have only two data groups: one is male enrollment and the other is female enrollment. In this step, we need to specify these groups in the graphic file.

1. Choose Options.
2. Select Data group 1 to begin defining the first group of data.
3. Select Data to specify the range for this data group.
4. Type in the range for this group: B5..B9. If you have a much longer range, you can type in the beginning cell, for example, B5, then typing a period (.). The word POINT will show up on the top right corner of the screen. You can use the PgDn or arrow keys to find the ending cell. The range will be automatically typed in.
5. Now, you need to define the legend label for this group of data. Select Legend. Type in Male and press Enter.
6. Press the Esc key to go back to the Option menu and select the second data group.
7. Select Data again to specify the range for data group 2. Type in the legend: C5..C9.
8. Type in the Legend label for this group: Female and press Enter.

You have now completed the procedures to define the two groups of data. The next step is to specify the graphic features.

STEP THREE: Specifying the graphic

To specify the features of your graphic, go back to the Option menu. Press Esc key once and now you will be in the Option menu.

1. Choose Global.
2. Choose Type to specify the type of graphic you want to produce. The spreadsheet can produce various types of graphics: Vertical bar, line, etc. You should try different types to see what they look like. For now, choose Vertical-Bar.
3. You have a choice of two-dimension or three-dimension graphic, standard or stacked. Choose 3-D Standard for this practice.
4. Press Set.

5. Press Esc to go back to the Global sub-menu and choose Grid.
6. Choose Both.
7. Choose Scale to specify the scales on Y-axis and X-axis.
8. Choose User Specified to enter the scale by yourself. You can choose the default scale.
9. Enter the lowest Y value to the graphic: 0. Press Enter.
10. Type in the highest Y value: 1500. Press Enter.
11. Enter the increment for Y-axis scale marks: 300. Press Enter.
12. Choose Axis to specify the formats of both axes.
13. Choose X-axis-format, and select Fixed.
14. Choose 0 for no decimal places. If you entered the years as label (by placing a ^ in front of the year), you can skip to these last two selections. Press Esc to go back to the Axis menu.
15. Choose 1 = X-axis-data and enter the range for this data group: A5..A9. These are labels for the X-axis.
16. Choose Y-axis-format.
17. Choose Integer.

You have now completed the procedures to specify the graphic options. You have chosen a 3-dimension standard vertical bar graphic. The Y-axis will range from 0 to 1500 with 300 increment, and the X-axis will show the years 1981 through 1985. At each year mark, you will have two 3-dimension bars, one representing the male enrollment and the other for the female enrollment. The next step is to type in the titles and headings and specify their typefaces. Now, press the Esc key to go back to the Global menu.

STEP FOUR: Defining headings

1. At the Global menu, choose Headings.
2. Choose Main to type in the main heading (title of the graphic). Type in: Sana'a School Enrollment.
3. Choose 1 = Main-sub to type in the main sub-heading. Type in (1981- 1985).
4. Choose X-axis to type in heading for X axis: Year of Enrollment.
5. Choose Y-axis and type in heading for Y axis: Number of Students.
6. Press Esc to go back to Global menu, and choose Fonts to select typeface for the titles and headings.
7. You can specify different fonts for different headings. Choose main-title.
8. Choose any of the selections. Do the same for XY-Axis-Title, Second-titles, and Label-and-Legends.
9. Choose different colors at this stage if your monitor is a color monitor.
10. Press Esc several times to go back to Option menu.

The next step is to display the graphic on the screen or print out a hard copy. The following section will demonstrate the steps to print out a hard copy.

STEP FIVE: Printing out the graphic

1. Choose Device at the Option menu.
2. Choose Printer. If you want to see the graphic on the screen, choose Display. You may not see the graphic on screen if your screen does not have graphic capacity.
3. Choose Density.
4. Choose Double.
5. Press Esc twice to go back to Option menu.
6. Choose Print. Before this stage, make sure the printer is a dot-matrix printer and is connected with the terminal.

The printer will print out a copy of the graphic you have designed. You can change the numbers in the cells in the spreadsheet, and print out the graphic again.

CHAPTER 5

WORDPROCESSING

This section discusses one of the major functions of microcomputers, wordprocessing. Wordprocessing programs allow users to create, store, edit, and revise a document. There are many wordprocessing programs for microcomputers, such as Wordstar, WordPerfect, Microsoft Word, DisplayWrite, and ENABLE. These programs all work in similar ways. Often, having learned one program, it is not difficult to quickly learn another. This section will demonstrate how to use ENABLE to create, edit, and revise a document.

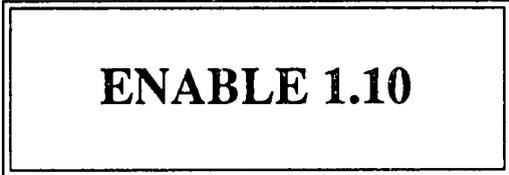
This part consists of five sections. First, you will learn how to start ENABLE for wordprocessing. Then you will learn to create and edit a short document. Next, you need to revise the document you have created using searching and replacing commands. Finally, you will learn how to print out the document you have finished. At the end of the section, you will find a list of the commands and a summary of the procedures.

ENABLE can be installed on a hard drive or on two floppy drives, but it is better to install on a hard drive (drive C:). It is assumed that you have installed the program on your hard drive. After installing the system, follow the procedures below to get started in wordprocessing.

5.1 GETTING STARTED

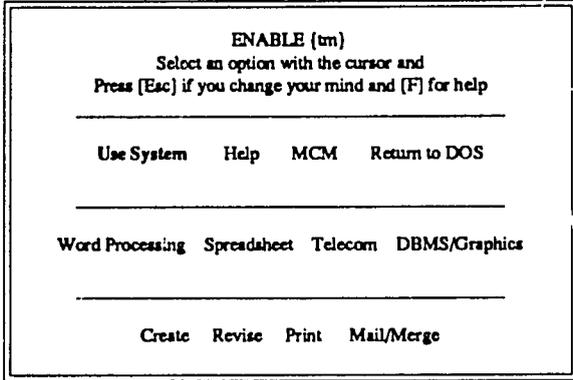
Turn the computer on. When the C: prompt occurs, type: CD\EN200 and press the ENTER key. Then type: ENABLE.

The monitor should look like this:



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Hit the END key to skip this line. The END key is located on the first key in the numberpad. A new screen is displayed on the monitor.



ENABLE (tm)
Select an option with the cursor and
Press [Esc] if you change your mind and [F] for help

Use System Help MCM Return to DOS

Word Processing Spreadsheet Telecom DBMS/Graphics

Create Revise Print Mail/Merge

5.2.3 Editing a Document

After typing in the text, check to see if there are any errors. You may also need to make some changes. In the sample paragraph, there are some misspellings and extra words. Using ENABLE, you can easily correct misspellings, delete extra letters, words, and sentences, and insert text.

5.2.3.1 Correcting Misspellings

First, correct the spelling errors. To correct the misspellings, move the cursor to the misspelled word and retype it.

For example, to change the word "deamnd" to "demand," move the cursor to line 1 and place the cursor under the "a" in the word "deamnd." Type in "ma." Now the word should read "demand."

Similarly, change the words "nationla" on line 2 to "national" and "awwali" on line 7 to "Awwali." Move the cursor to these misspelled words and correct them.

5.2.3.2 Deleting

There is an extra word "need" on line 4. Delete the extra word. To delete a word, move the cursor under the first letter of the word and press the DELETE (Del) key for each letter. The Del key is located in the bottom row of the numberpad. Now, place the cursor under the letter "n" in "need" on line 4. Hit the Del key 4 times, and you will see the extra "need" is gone. There is an extra space here, so press the Del key again to delete this space. The line should read, "...In the need for training large numbers of new...."

Now, delete the extra phrase "in 20" on line 12. Line 12 should read, "By 1980, 645 students were being trained in 20...."

5.2.3.3 Inserting Text

Another edit function is to insert text. In the paragraph the word "three" was typed as "thee." To insert the letter "r," place the cursor under the first "e" of "thee" on line 5. Hit the "insert" key (Ins) which is located under the 0 on the numberpad. The cursor now appears as a large flashing square. To insert an "r," hit the "r" key and the new word should read "three." Hit the Ins key again to cancel insert command (the flashing square).

On line 7, the phrase "Teacher Certificate" should read "First Teacher Certificate." On line 10, the phrase "for years" should read "for two years." Make these changes by moving the cursor and using the Ins key.

After changing all errors, the corrected paragraph should read:

"A high demand for formal schooling has developed since the national revolution and this has resulted in the need for training large numbers of new teachers. The first PTTI's were established in 1963. Primary graduates received three years of instruction and successful program completion was rewarded by the "First Teacher Certificate" or Diplome Awwali. Graduates were generally assigned to lower primary classes. Since their training expenses had been met by government, they were required to teach for two years. By 1980, 645 students were being trained in 20 institutions."

5.2.4 Printing a Document

You can use a function key to make a printed version (hard copy) of the file you have created or edited. Press ALT/F2 and this command will print pages in format established in the file. If you have not established the format, the file will be printed in the format set by the publisher (called default format).

The file on screen may not look like the printed copy. When you print a file, the document is in final form, that is, the document is paginated and has headers, footers, and page numbers, if you desire. Two forms are very important in printing out the file. You have to specify the options on these forms in order to have the file printed in the way you want. The first form is called Print Form, and the other is called Page Form.

5.2.5 Print Form

From time to time, you need to change the way your document is printed. For example, you use continuous pages or you want to print two copies. To change these items, select the different options on the Print Form. To get the print form:

Step 1: Press F10 to display the Top Line Menu;

Step 2: Select Print by moving the cursor to PRINT and press RETURN, or press P.

ENABLE will display the Print Form:

	Print Form		
Print:	Entire File	Selected Pages	
Number of copies:	1		
Page type:	Continuous Form	Single Sheets	
Unidirectional Print:	No	Yes	
Print a title page:	No	Yes	
Leading blank page:	No	Yes	
List print statistics:	No	Yes	
Date picture:	Standard	Military	Numerical European Numerical

Once you have selected the print options, you may print the file by pressing ALT/F2. The file will be printed in the page layout designated in the Page Form which is explained below. The print form specification selected will be used and then saved with the file.

If you decide not to print the file, press [Esc] on the left top of the keyboard. You can save these specifications with your file even if you decide not to print the file now by pressing ALT/F10.

5.2.6 Page Form

You can change the default form of the file you are creating or revising so that the document will look as you want. To display the Page Form, follow these steps:

Step 1: Press F10 to display the Top Line Menu;

Step 2: Select PRINT by moving the cursor to PRINT and pressing RETURN, or by pressing P;

Step 3: Press PGDN twice.

The following forms will be displayed on the screen:

Page Form

11.00	... Length
8.50	... Width
6	... Lines per inch
6	... Top margin (number of lines)
6	... Bottom margin (number of lines)
2	... Blank lines between header and text
2	... Blank lines between text and footer
0	... Left margin offset
0	... Right margin (0-9)

Page Form

Should pages be numbered:	Yes	No	
Place at:	Top of page	Bottom of page	
Location of page number:	Center	R = Flush right L = Flush left	
Begin with page number:	1		
Location of Footnotes:	Bottom of each page	End of document	
Font:	Pica	Elite	Compressed
Should proportional spacing be used?	Yes	No	
Should letter quality be used?	Yes	No	

To print the file in this Page Form, press ALT/F2. The Page Form specifications selected will be used and then saved with the file.

To avoid printing the file, press [Esc]. This will return you to your file. You can save these specifications with your file even if you decide not to print the file now by pressing ALT/F10.

5.2.7 Saving a Document

Suppose you have finished a document, you have to save it to make changes later. To save a document, press [F10] and the letter "s." You will be asked to accept the options or change them. Press ENTER to accept the options. This will save the work you have just completed and revise it in the future.

Now you have learned how to create a new file and to edit the document you have typed. You have also learned how to save the document. You may like to practice more to become familiar with the commands. You will soon become comfortable with wordprocessing.

5.2.8 Quitting ENABLE

To exit ENABLE, follow these steps:

Step 1: Press F10 to get the top line menu;

Step 2: Move the highlight bar to "Quit" option or simply type "Q";

Step 3: Press RETURN and type "Y" for "Yes" to quit.

Then turn off the machine.

To practice what we have discussed, turn on the computer again and get into ENABLE wordprocessing. Create a file. (You may use ENROLL as file name because it is about the school enrollment.) Set up the ruler and type in the following paragraph.

"The aggregate pattern of enrollment growth in the Yemen Arab Republic (YAR) has been dramatic over the last decade. Almost one-half of all enrollments are in the Sana'a and Taiz governorates. The estimated population for these two governorates is approximately 37 percent of the total for the YAR so that there is a degree of relative advantage in education access indicated in terms of enrollments for these regions.

The enrollment pattern is shown in the table."

Check the paragraph carefully after you finish typing. Correct all errors. Then save it, and quit ENABLE. In the next subsection, we will discuss different ways of revising a document.

5.2.9 Revising a Stored Document

This subsection provides more practice of wordprocessing skills in revising a file already stored.

5.2.10 Retrieving a Stored File

Wordprocessing allows you to edit the document you created before. Remember you typed in a paragraph about enrollment and stored it in the machine. Now you can retrieve this paragraph, add more information, or change anything you like. To edit a previously stored document, you need to retrieve it so that it is shown on the screen.

Step 1: Call up ENABLE

Step 2: Press the [End] key to bypass the prompts.

Step 3: Once a new screen appears, hit the ENTER key until you are on the line which has the choices of Create, Revise, Print, or Mail Merge.

Step 4: Move the cursor to Revise by hitting the → located on number 6 of the numberpad. Hit the ENTER key.

Step 5: Type in the disk drive name and the file name you used (such as ENROLL) or type in the question mark (by holding down the Shift key and pressing the ? key) and choose from the directory. Now you can edit this document by deleting and inserting as discussed before. Now type in the following table.

SCHOOL	MALE	FEMALE
Hodeidah	264	21
Ibb	193	4
Sana'a	481	5
Talz	82	5
Ibb	193	4
Hodeidah	264	21

A table has columns and the left and right margins are different from those of regular paragraphs, so change the existing margins. Do this by inserting another ruler.

5.2.11 Inserting a Ruler

To insert a ruler, follow the steps below:

Step 1: Move the cursor to the end of the text.

Step 2: Press F10 and the top line menu appears. Move the cursor to Layout. Hit return. The layout options are now shown on screen.

Step 3: Select the layout option you need. This would be number 1, "Insert Ruler." Hit "1" on the top row of the keyboard and the ENTER key. A ruler appears at this spot in the text.

Step 4: Set the margins. Move the cursor to certain "Insert Ruler." Hit "1" on the top row of the keyboard and the ENTER key. A ruler appears at this spot in the text.

Step 4: Set the margins. Move the cursor to certain positions and press appropriate letters:

Type an L in column 20 for the left margin

Type a T in column 30 and column 40 for tabs.

Type an R in column 50 for the right margin.

Step 5: Press ENTER and this "sets" the margins.

Now you have two tabs. Including the left margin, you can therefore type in three columns. Type in SCHOOL at the left margin. Then press tab to jump to the second column and type MALE. Press tab again and type FEMALE. Type in the rest of the table.

Now type in the title of the table. To do so, follow these steps:

Step 1: Move the cursor above the word SCHOOL. Hit [F3] three times. This adds three new lines.

Step 2: Move the cursor up three spaces. Place the cursor at the left margin. Hit the "Caps Lock" key, located under the right shift key. (Notice the word Cap at the bottom of the screen.)

Step 3: Type in the following title for the table:

SCHOOL DISTRIBUTION BY GOVERNORATE AND SEX

We have learned how to delete single letters. Sometimes, we need to delete a whole line. It would be too slow to delete a line letter by letter, so there is a command to delete a whole line.

5.2.12 Deleting Entire Lines

Step 1: Move the cursor to the line that starts with Hodeidah. Place the cursor under the H in Hodeidah.

Step 2: Hit the Alternate (ALT) key, located below the left shift key, and [F3]. This deletes the entire line.

You can practice this by deleting the whole line beginning with the word lbb.

The next unit of this section will discuss an important function of wordprocessing: finding a word and replacing it with another word.

5.2.13 Searching and Replacing

To complete this unit, type in the following two paragraphs:

"The academic pace set in the Technical Secondary Schools is a competitive one and the student's major goal seems to be to achieve high grades in the scholastic subjects, particularly in the sciences. These courses have the strongest impact on obtaining university admission. As the MOE commits itself to granting university admission to the top three students in each skill department of each TSS annually, students are highly motivated. There are few other advanced training possibilities for TSS students at this point with technical pedagogical training accounting for most of the opportunities. The remaining graduating students receive no other planned support from government. However, they have the opportunity to be hired as teachers or to join the government civil service or the private sector.

It generally is recognized that the TSS graduates who enter immediately into technical work need substantial on-the-job training. Therefore, it is not unusual to find only a perfunctory evaluation of student's work at both schools with best projects chosen for exhibition. Students are graded on these projects and long hours are spent in perfecting them."

After you type in these paragraphs, read them carefully to see if there are any errors. Use the commands you have learned to correct any errors. Follow the instructions below to try the searching and replacing functions of the wordprocessing program.

(1) Finding a word

This command allows you to quickly locate a word or sentence in your text.

Step 1. Position the cursor at the beginning of the text.

Step 2. Press F10 to display the Top Line Menu.

Step 3. Move the cursor to "Find" and press enter, or simply press "F." The following menu will appear on the screen:

Select the option you want by typing the option number.

1. Find only
 2. Find and replace
 3. Find and mark
-

Press 1. for the first option. You will see the following:

Enter string to find: _____

Type in the word you want to search. Suppose we want to find the word "students," type in "students." The following search options menu will appear:

Accept Options	Change Options
	Case: Ignore
	From: Current
	To: Bottom
	Col: All
	Occurrences: 1

Press the ENTER key to accept these options. The cursor will now move to the first occurrence of the word students.

(2) Replacing a word with another word.

- Step 1: Move the cursor back to the beginning of the text.
- Step 2: Press F10 again and select "Find" or simply press "F."
- Step 3: Press 2 for the Find and Replace option.
- Step 4: When "Enter string to find: _____" appears, type in the word you want to find, e.g.: "students."
- Step 5: Type in the word you want to replace with, e.g.: "Pupils" when the following prompt will be displayed: "Enter Replace String_____."
- Step 6: When the search options menu will appear again, move the cursor to "Change Options."
- Step 7: Press enter when "case" appears. This will select "Ignore" and all occurrences of students will be changed to pupils, regardless of whether the word is written in upper case or lower case letters.
- Step 8: Press enter when "current" is highlighted. This will begin the search from the current position of the cursor.
- Step 9: Press enter when "bottom" is highlighted. This will continue the search all the way to the end of the text.
- Step 10: When "Column" appears, type in the word all. The search will continue through all columns of the text.
- Step 11: When "occurrences" appear, type in the word all. This will change every occurrence of the word "students" to "pupils."

After you have completed the last section the Find and Replace command will begin.

You can repeat the "Find" procedure by pressing F5. After the first occurrence of the word is found, F5 will bring the cursor to the next occurrence.

You can press F6 to repeat the "Find and Replace" procedure. The cursor will move to the next occurrence of the word and replace it with the new word.

5.2.14 Copying and Moving Text

ENABLE will duplicate any portion of your file or move a section from one place to another within your file. The COPY command duplicates text and the MOVE command relocates it. To designate the text to be copied or moved, you will have to set a BLOCK.

(1) Mark a block.

Step 1: Move the cursor to the beginning of the first paragraph. Press F7 to set the beginning point of the block.

Step 2: Move the cursor to the end of the first paragraph and press F7 to set the end of the block. The entire block is highlighted on the screen.

(2) To copy and move the highlighted paragraph.

Step 1: Press F10 to display the Top Line Menu.

Step 2: Select the EDITOPTS FUNCTION to turn the automatic reformat "off." If you do not do this, any blank spaces in your text will be removed. Simply press C. and the automatic reformat is turned off.

Step 3: Move the cursor to the beginning of the first line after the second paragraph.

Step 4: Press F8. You will see the blocked text copied to the place where the cursor is positioned.

(3) To delete a block of text.

To delete a block of text, highlight the block following the steps discussed earlier. After marking the block to be deleted, follow the steps below.

Step 1: Move the cursor to the beginning of the block of highlighted text.

Step 2: Press F9.

Step 3: Press the Del key and press B.

The entire block will be deleted.

(4) Moving a block of text.

Similarly, you have to mark the block of text first in order to move the block to another place. Use the steps of marking a block to specify the block of text to move. Then use the following steps to move.

Step 1. Move the cursor to the line just below the second paragraph at the point at which you want the text to be moved.

Step 2. Press Alt F8. You will see the blocked text moved to the place where the cursor is positioned.

After you are done, you can turn on the automatic reformat function by pressing F10, selecting Editopts, and pressing C.

SUMMARY: ENABLE WORDPROCESSING PROCEDURE

To start up ENABLE wordprocessing (on the C drive):

1. Turn on the machine.
2. Bypass the date and time by hitting the return key twice.
3. You will see the drive sign, C>.
4. Enter CD\EN200 and press ENTER (suppose the directory name is EN200).
5. Type ENABLE.
6. Type in date and time or press end or the ENTER key two times to get the main menu.
7. Press ENTER or U to select "Use System."

8. Press ENTER or W to select "Wordprocessing."

To create a file:

1. Get into Wordprocessing.
2. Move highlight bar down to "Create" and hit the ENTER key.
3. Type a name for the file. Remember to begin by typing A:, then the file name.
4. The screen now shows the first page of the working file.

To set the initial ruler:

1. Once you have created a file and you are in the first screen, move cursor and press "L" at the point where you want the left margin. Then move cursor to the right and press "R" at the point where you want the right margin. Hit the return key.

To revise a file:

1. Select "Word Processing," and select "Revise" by hitting R or placing the highlight bar on "Revise" and press ENTER.
2. Type in the name of the file to be revised. If it is floppy disk, type A: filename (the name of the file). Or type A:? A directory of files of the floppy disk will appear. Choose the name of the file you want by placing the highlight bar at the file name. Hit the ENTER key.

To edit a file:

Inserting text:

1. Place the cursor at the place that needs insertion.
2. Press the Ins key.
3. Enter the text to be inserted.
4. Release the insert key by pressing the Ins key again.

Inserting an extra line(s):

1. Place the cursor above the spot where to insert a line(s).
2. Press F3.

To correct text:

1. Use backspace key to delete text to the left of the cursor.
2. Overstrike--simply type over the undesired text.
3. Use spacebar to delete text to the right of the cursor.
4. Use DEL key to delete text to the right of the cursor.
5. Use F4 to delete one word at a time.
6. Alt/F3 deletes an entire line. Hold the ALT key down and press F3.
7. Use the top line menu to delete by pressing F10.
 - select "D" to get delete option menu

To save (store) a file:

1. Press F10 to get topline menu.
2. Select "S" (save) and press return.
3. Select "Accept" using the highlight bar and press return.

To skip the top line menu and save the document:

1. Press Alt/F10.
2. Select "Accept" using the highlight bar and press return.

To print a file:

Hold Alt key and press F2 (Alt/F2).

To select format options for printing the text, e.g., single space or double space:

1. Press F10 to get top line menu.
2. Select print by pressing P or moving the highlight bar to Print and pressing ENTER.
3. Hit return to get print form and select the form.
4. Press PGDN to select the format for page printing.
5. After selecting the printing form and format, press Alt/F10 to save.
6. Press Alt/F2 to print.

To quit wordprocessing:

1. Press F10 to display the top line menu.
2. Move highlight bar to "quit" option or type "Q."
3. Press return and then "Y" for yes to quit.
4. If the file has not been saved, type "N" to stay in ENABLE and save the file before quitting.

HOW TO USE THE TOP LINE MENU

ENABLE offers many editing features that you can turn on or off while editing or creating a file. To select these options:

1. Press F10 to display the Top Line Menu and see:

EditOpts Layout Copy Delete Find MCM Print Save 1 = DBMS 2 = Spell Quit

2. Move the cursor (highlighted bar) to one of the options or press the first letter of the option and press ENTER to turn on the editing feature selection.

The following section briefly discusses two of the functions: EditOpts and Delete.

I. EditOpts (Editing Options)

The Editing Option Menu will be displayed like the following:

Select the editing option you want by typing the option number.

- a. Screen displays
- b. Draft/final
- c. Reformat on/off
- d. Reformat paragraph
- e. Attribute help on/off
- f. Insert a comment
- g. Insert a paper clip

- h. Block options
- i. Keep blanks on/off

a. Screen displays

The SCREEN DISPLAYS option turns on or off the display of the various editing options shown above. If this option is selected, the Display Option Menu will appear on the screen like this:

Select the display option you want by typing the option number.

- 1. Headers
- 2. Footers
- 3. Rulers
- 4. Comments
- 5. Footnotes
- 6. Table of Contents entry
- 7. Index entries
- 8. Line spacing
- 9. Paper clips
- 0. Page breaks

NOTE: This menu is only used to turn on or off the display of symbols.

Turning Display Options On and Off. The display options on the menu are known as toggles. If an option is off, typing its number will turn it on and display it on the screen. If an option is on, typing its number will turn it off. The symbol will not be displayed on the screen although the information will be retained in the file. For example: turning off the page break option will not remove the page breaks — but only the display of the page break symbols.

Rulers and Footnotes. Except for RULERS and FOOTNOTES, when an option is turned on, the symbol corresponding to that option will be displayed where it is first created in the file. Footnotes will be displayed where created until the document is saved or is displayed in the final mode. After that, footnotes will be shown at the top of the document. When the Ruler option is chosen (the rule is displayed), the menu will be displayed like this:

Turn ruler display off or on by typing the option number.

- 1. Top of the screen
- 2. Bottom of the screen
- 3. Within text
- 4. All rulers

If option 1 (to display the ruler at the top of the screen) or option 2 (to display the ruler at the bottom of the screen) is chosen, the ruler that will be displayed will be the one that governs the line where the cursor is located. As the cursor is moving around in the document, the ruler displayed will change accordingly. Choosing option 3 (displaying rulers within the text) will show all the rulers at the place where they were created. Option 4 will display all rulers in the location: top and bottom of screen and within text.

b. Draft/final

There are two ways to edit and view your file. In draft form, headers and page breaks will be displayed where they were inserted. Final form displays the file exactly as it will appear in print. The

DRAFT/FINAL option allows to switch from one form to the other during editing. Editing in draft form is faster because ENABLE is not continually adjusting the page breaks as text is added or deleted.

c. Reformat on/off

In editing, the Automatic Reformat function adjusts the file to the margins specified. If several words are deleted from one line, words from the line below will be moved up to take their place. Or, when a ruler is inserted, the text beneath the new ruler will be readjusted to the new margins. There may be times when this feature needs to be turned off. For example, some items are deleted in a table, but the items in the rest of the table should not be pulled up. Use the REFORMAT ON/OFF option to turn on or off the Automatic Reformat option with the letters REF.

d. Reformat paragraph

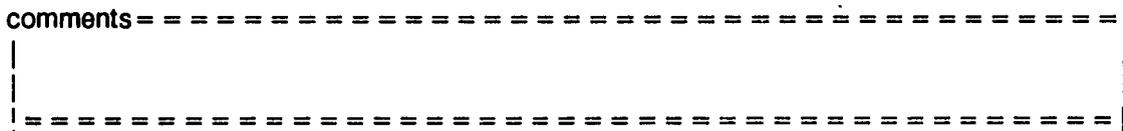
This option reformats the paragraph where the cursor is currently located.

e. Attribute help on/off

If this option is chosen, a list of these attributes along with the function keys used to activate each one will be displayed.

f. Insert a comment

This option allows adding comments to the file. The comments will be displayed in the draft form but will not be printed. If this option is selected, a comment entry space will be displayed on the screen like below:



Type the comment in the entry space. More lines will be added as the comments are typed. Move the cursor outside the space to return to the text of the document. To remove a comment:

1. Position the cursor on the line containing the word to be deleted;
2. Press ALT/F3.

The entire comment will be removed.

g. Insert a paper clip

A paper clip marks a particular spot in the file. Paper clips may be added, as many as needed. For example, a paper clip may be inserted above a portion of text that needs revision frequently. Another paper clip may be inserted to mark a table or reference material that need to be referred to later. A simple command can return the writer to a point in the file that is marked by a paper clip as described below. Paper clips will be displayed on the screen but will not be printed with the file.

If this option is selected, a number needs to be entered. The paper clip is displayed as below:

1. Line at the cursor
2. The block that is marked
3. To the end of the sentence
4. To the end of the paragraph
5. To the end of the page
6. To the beginning of the file
7. To the end of the file
8. White space between words
9. Paragraph marker
0. Undo

To select the options, press the corresponding number. After the selection is made, the following prompt will be displayed:

POSITION THE CURSOR AND PRESS RETURN

Once the cursor is moved to the beginning of the text where the deletion is to occur, press RETURN and the text will be deleted.

If the options three through seven are selected, the text to be deleted will be highlighted and the following prompt will be displayed: Do you want to delete? NO YES

This verifies that the highlighted text is really what needs to be deleted. Press N (NO) will not delete the text, and press Y (YES) will delete the text.

For example, to delete a line:

- (1) Press F10 to display the Top Line Menu;
- (2) Select DELETE by pressing RETURN or press D;
- (3) Press 1 to delete the line at the cursor.

If the text is accidentally deleted, it can be retrieved. Go into the Delete menu again and choose Undo (option 0). The prompt will appear:

Position cursor and press ENTER.

After pressing ENTER, the deleted text is back.

SUMMARY OF WORDPROCESSING COMMANDS

<u>Press</u>	<u>Function</u>
ARROWS	Move cursor
Caps Lock	Turn Caps Mode on/off
Num Lock	Turn Num Mode on/off
Ins	Turn Insert Mode on/off
Del	Delete text to the right of the cursor
F1	Display Help messages
F2	Combined with other keys to control cursor
F3	Insert line above cursor
F4	Delete a word at cursor
F5	Find function
F6	Find & Replace function

F7	Mark block
F8	Copy & Move block of text
F9	Combined with other keys to have advanced functions
F10	Display Top Line Menu

The following is the combination of ALT key with Function keys. The slash indicates holding down the ALT key first and pressing the function key sequentially to give command.

<u>Hold/Press</u>	<u>Function</u>
ALT/F1	Directory of function keys
ALT/F2	Print a file
ALT/F3	Delete line & delete ruler
ALT/F4	Center line
ALT/F5	Copy block from other window
ALT/F6	Insert ruler at cursor
ALT/F7	Clear existing block markers
ALT/F8	Move block of text
ALT/F9	Record & Execute Macros
ALT/F10	Display Save Menu
ALT/L	Set left margin at cursor
ALT/R	Set right margin at cursor
ALT/J	Right justification
ALT/T	Set tab at cursor

The following commands are pressed sequentially (one after another)

F9, S, E	Saving editing changes
F9, O, D	Change draft to final form

CHAPTER 6

DESKTOP PUBLISHING

Desktop Publishing Programs (DPP) allow the user to create a finished document such as a brochure, a newsletter, a flier, or even a textbook with multiple chapters. The major difference between a Wordprocessing Program (WPP) and a DPP lies in the latter's capacity to create a complex layout by changing style and size of text, moving text, and using graphics. In most wordprocessing programs, the user cannot insert graphics designed in other programs, cannot draw vertical lines and solid horizontal lines to produce a simple figure, and cannot change character sizes and fonts (style of letters). In DPPs, these are common features. For example, in Ventura Publisher, one popular DPP, the user can easily change fonts and sizes on the page, draw simple graphics, make rows and columns, and insert graphics. The user thus can try different layouts and choose the best. Other programs such as Page Maker can do the same. In most cases, the user types document first using a WPP, then use a DPP to design the layout of the document. In this section, we will discuss the general procedures for Xerox Ventura Publisher, a popular DPP.

6.1 SYSTEM REQUIREMENTS FOR VENTURA PUBLISHER

A DPP requires more hardware investment than an ordinary WPP does. Ventura Publisher requires an IBM XT, IBM AT, or a compatible computer. In addition, the computer must have the following:

1. A minimum of 512 kilobytes of RAM (640K is recommended);
2. A hard disk drive with one to three megabytes available space to hold software and fonts;
3. A graphics board (that enables the computer to produce and display graphics): Color Card, IBM Enhanced Graphics Adapter;
4. A high resolution monitor (full-page-size monitors are best for DPP, but are considerably more expensive);
5. A mouse (a device that enables the user freely move the cursor on screen—both vertically and horizontally);
6. MS-DOS or PC-DOS version 2.10 or higher;
7. A laser printer.

6.2 BASIC CONCEPTS OF VENTURA PUBLISHER

Ventura Publisher is basically a WYSIWYG (What You See Is What You Get) layout system. This means that what you see on screen is what you get on a printed page. However, most monitors have display limitations and there may be slight differences. What may align exactly on screen, may be different on the printed page. Adjustments have to be made due to these screen limitations.

Ventura Publisher uses two basic devices to input commands: the mouse and the keyboard keys. The keys also have special functions.

An important concept of Ventura Publisher is the preset Style Sheet. A style sheet is a set of formats designating such page features as margins, columns, and fonts. A style sheet is independent of the text and can be saved and applied to other texts so the user does not have to recreate a new style format for each new file. Ventura provides 20 different style sheets with formats ranging from book chapters to magazine pages with sample text so that the user can see how the style sheet affects the text layout.

When the user arranges a publication, an appropriate style sheet can be selected or a customized one can be created. The user can also load a style sheet by recalling a text file (designated as a chapter file). Ventura works with a number of wordprocessing files, such as WordStar, Word-Perfect, and any ASCII formats.

Since Ventura does not accept ENABLE files, the user must convert the ENABLE file to an ASCII format before using it with Ventura Publisher. To convert an ENABLE wordprocessing file, open the wordprocessing file and to save it in ASCII format. When an ENABLE file is converted to ASCII file, it must have an extension of .WPF or .TXT to be used with the Ventura Program.

The original text file (not a copy of it) is used when a document is being laid out. Any text editing changes made while using the Ventura program will be added to the file. It is wise to make a backup copy of the original text file (using a different file name) before using the Ventura Publisher.

Another concept in Ventura Publisher is frames. Frames are boxes on screen that hold text and pictures. A page is automatically a frame. The user can add smaller frames on the page to hold pictures or additional text from other files. Before inserting a picture, the user needs to create a frame. The size of the frame can be changed at any time and the picture or text will be automatically rearranged to fit the frame. Ventura also creates new pages to hold text if necessary.

Three types of picture files can be used in Ventura. A picture file is a separate file containing graphics. The first picture file that Ventura can use is line art. Line art files are pictures generated by drawing packages such as Lotus 1-2-3, and AutoCAD.

The second type of picture file is images. Images are the pictures created through an optical scanner or by using a PC Paintbrush-type programs.

The third type of picture file is graphics created using Ventura's drawing capacity. Ventura lets the user draw lines, arrows, circles, and boxes. The user can use this feature to create tables, forms, and ruling lines, and incorporate these pictures in the documents.

Chapter Files and Publication Files. When the user puts the text file and picture file together in a way specified in the style sheet, the laid-out document is saved in a chapter file. Chapter file is a special name for the file containing the completed document layout. Several chapter files can be combined into a publication file, which may be a large book. In a publication file, Ventura can generate a table of contents and an index.

6.3 HOW TO WORK WITH VENTURA

The basic procedure for laying out a document using Ventura Publisher (or any other desktop publishing program) is described below.

First, the user creates a text file using a WPP program. The user may also create a picture file using a drawing program or use an optical scanner. The user follows these steps:

1. Load the text file into Ventura Publisher;
2. Recall a style sheet or design one;
3. Apply the style sheet features to the loaded text;
4. Insert frames and load picture files in them;
5. Use the drawing feature of Ventura Publisher as needed; and finally,
6. Save the layout as a chapter file.

The following sections describe the procedures in more detail.

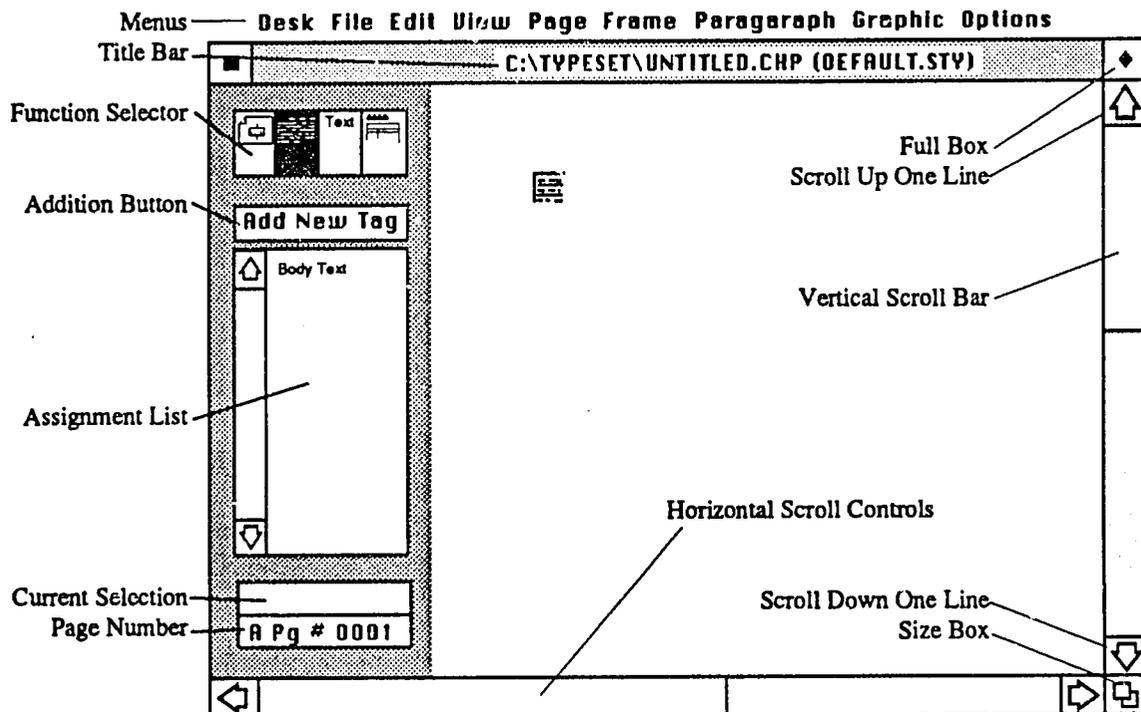
6.3.1 Starting the Program

To start Ventura Publisher, follow these steps:

1. Turn on the computer;
2. When the prompt C>: comes, type: cd\ and press the ENTER key. Then type VP (for Ventura Program) and press the ENTER key.

6.3.2 Main Screen

The main screen of Ventura Publisher looks like:



1. **Working area.** The working area is the large blank area where the text and pictures will appear.
2. **Menu line.** The menu line is located on the top of the screen. It is used to choose Ventura menus. To choose any menu, move the cursor to the desired menu and it will pull down. Then you can choose any of the available functions within the menu.
3. **Title bar.** Below the menu line is the title bar, which shows the name of the file and the style sheet you are using. For example, C:\TYPESET\UNTITLED.CHP (DEFAULT.STY) indicates that the name of the current working file is UNTITLED.CHP and the current style sheet is called Default.sty.
4. **Function boxes.** The function boxes are located on the left top of the screen. These boxes identify the operation that can be performed and indicate the active function. Four functions are available: Frame Setting, Paragraph Tagging, Text Editing, and Graphic Drawing. For example,

to draw, select the Graphic Drawing function. After selection, the box will be highlighted (turning black with white lines).

5. **Addition button.** The addition button is used to add to the current working file. For example, to put a picture on the page, the user needs to add a frame to the page. To do so, select the Frame Setting function and highlight the Addition button, which says Add New Frame.
6. **Assignment List.** Below the addition button is the assignment list. It shows the file names, tags, or text attributes depending on the function selected. For example, to load a text file, the area will show the text file names on the designated disk. If Paragraph Tagging is chosen, this area will be a list of all available features of the style sheet.
7. **Current Selection Box.** This box is located below the assignment list. It identifies the file in a frame or the tag of selected text. The one in the illustration (the main screen) is blank because no file has been loaded.
8. **Page Box.** The page box indicates the current working page and shows if the page is left or right.
9. **Scroll Bars and Arrows.** There are two scroll bars, one is at the bottom and the other is at right side of the screen. The bottom bar is used to move the page horizontally, while the right bar moves the page vertically. To scroll the page, move the mouse cursor at the arrow and click the left button on the mouse.
10. **Resize box.** This box enables the user to enlarge or reduce the page on screen.

6.3.3 Loading a Text File

At the main screen, the user is ready to load your text file and lay out the new document. Before loading the text file, however, make sure that the text file has been converted to an ASCII file, since Ventura does not accept ENABLE files. Also, be sure that the file extension is one which is compatible with the Ventura Program.

To load a text file, follow these steps:

1. **Select the A frame.** Move the mouse cursor over the frame function box at the left top of the screen and click the mouse button. Remember to click the left button if the mouse has two or more buttons. After clicking the frame box, it should turn black indicating it is selected. Also, small black boxes will appear on the outside edges of the working area to indicate the whole working area is selected.
2. **Select the File menu.** After a frame is selected, select the Frame menu to load a text file. To select the file menu, place the mouse cursor over the name File on the menu line at the top of screen. As the mouse cursor is placed over the name File, the file menu is pulled down. There are a number of options (see figure on next page).

To change or cancel the file menu, move the mouse cursor to another point in the screen and click the button. The file menu will disappear.

New
Open Chapter...

Save ^S
Save As
Abandon

Load Text/Picture
Load Diff. Style
Save As New Style

To Print...
DOS File Ops...
Quit

3. Select Load Text/Picture option. The Load Text/Picture option enables the user to load files into the frames. To select Load Text/Picture option, move the mouse cursor over it and click the mouse button. A Load Text/Picture dialogue box appears asking the user to specify the file to be loaded.

- i. Select Text by moving the mouse cursor to the Text box and click the mouse button.
- ii. Choose Text Format by moving the mouse cursor to ASCII and click the mouse button.
- iii. Select One for number of files by moving the mouse cursor to One and click the button.
- iv. Finally, select the OK box by placing the mouse cursor on it and clicking.

Now the Load Text/Picture dialogue box is replaced by an Item Selector box, which allows the user to specify the file to load.

LOAD TEXT/PICTURE

Type of File: Text Line Art Image

Text Format: Generated ASCII WordStar US MultiMate
 MS-Word Writer WordPerfect
 WordStar UK HyWrite DCA

Line-Art Format: GEM AutoCad.SLD Lotus.PIC Mentor GR
 VideoShow MAC PICT CGM PostScript
 HPGL

Image Format: GEM/HALO DPE PC-Paintbrush MAC Paint

of Files: One Several

4. Select the file to load. In the Item Selector box, the directory line shows the active drive (C:), the current directory (e.g., TYPESET), and the extension (.TXT). The .TXT extension is used for ASCII files. The directory list shows all file names with a .TXT extension. If the directory is long, scroll it by clicking on the up arrow or down arrow to see the whole directory. Place the mouse cursor at the desired file name and click the mouse button. Then place the mouse cursor at the OK box and click the button to indicate this is the right file to display.

A message will say that the file selected is being loaded and hyphenated. Then the text file is displayed in the working area.

If it is not in the right directory, change to appropriate directory. Notice the solid box at the corner of the directory box. This is called the Backup Button. This Backup Button is used to go to the previous level in the DOS subdirectory structure. The last level is a list of disk drives. To change the directory, follow this procedure:

- i. Move the mouse cursor to the backup button and click. The directory at a previous level will appear. If you need to change to another disk drive, go back to the last level.
- ii. Place the cursor on the desired directory or disk drive and click the mouse button. The directory will show in the directory box.
- iii. Change the file extension. When the word processing files have different extensions such as .WS for Wordstar files and .DOC for MS Word files, or to display the picture files, the user may change the file extension. To do so, place the mouse cursor on the Directory line after the extension TXT and click the mouse button. A typing cursor (a thin bar) appears. Press the Backspace key three times to delete the word TXT. Type the the desired extension, such as DOC or WS.
- iv. Finally, place the mouse cursor at the OK box and click. The files with extension .DOC or .WS will appear at the directory box. To see all files in the selected directory, you just need to delete the extension and type *, then select OK.

6.3.4 Adding a Picture

To put a picture into the text, have a picture file ready, or draw a picture using Ventura Publisher's drawing capacity. If the user has created a picture using other drawing programs, the first step is to create a frame to hold the picture, and the second step is to select the picture to load.

1. To create a frame, first activate the frame setting box. To enable the frame selection box, place the mouse cursor on this box at the right top corner of the screen and click the mouse button.

Second, select the Add-New-Frame box below the function selection boxes.

Third, move the cursor to the working area. The mouse cursor is changed to a frame cursor. Position the cursor at the place desired for the picture.

Fourth, while holding down the mouse button, drag the cursor across and down. The cursor is changed to a pointing finger. Move the mouse to stretch the box until it is the right size.

Fifth, release the mouse button. A frame is inserted in the document. It is marked by eight black boxes at the edges indicating it is currently selected. Delete it (by pressing the Del key), or stretch it again (by placing the cursor on a small box at the frame's edge and dragging the frame edge to a new location).

2. Loading a picture file to the frame.

- i. Be sure that the frame in the working area is still selected as marked by small boxes at the edges.**
- ii. Similar to loading a text file, select file menu and select the Load Text/Picture option. Then select the type of file to load. In this case, suppose we need to load an image file.**
- iii. Then select the right format of the picture. All pictures have to be in GEM or PC-Paintbrush format.**
- iv. Select OK. The Item Selector dialogue box displays with the last directory used (e.g., TYPESET) active and .IMG files shown.**
- v. Select the desired file such as CHANEL.IMG.**
- vi. Select OK. After several seconds, the picture is loaded into the frame.**

After the picture is loaded, the user can still change the size of the picture by selecting the picture frame by going through the Frame Menu to resize the height and width.

Sometimes the user might want to show only a part of a picture loaded. This is called "cropping a picture." To crop a picture, follow these steps:

- i. Place the cursor anywhere on the picture;**
- ii. Press and hold down the Alt key, then press and hold down the mouse button;**
- iii. Move the cursor in all four directions until you get the desired portion of the picture; and**
- iv. Release the mouse button and the Alt key.**

6.3.5 Applying a Style Sheet

A style sheet contains the page layout (margin and column settings) and tags that describe the typographic attributes for different paragraphs of text within a document. Tag attributes include typeface, point size, and interline spacing. For example, the tag for a chapter title might define the text as being centered and appearing in large 24 point Helvetica type.

Style sheets are files, so to apply a style sheet means to load an appropriate file.

- i. Select the File menu.**
- ii. Select the Load Diff. Style option. (Use the mouse to highlight and then click the button.) The Item Selector box displays all the available style files. Style sheets begin with an ampersand (&) and extensions .STY. If the style sheets are not shown in the directory, it is the wrong directory. Follow the procedure described earlier and change the directory to C:\TYPESET*.STY.**
- iii. Select the one desired.**
- iv. Select the OK box. The style sheet is loaded and the text file is reformatted according the new style sheet. All of the text has the typographic attributes of the main text in the document. The next step is to change the special paragraphs such as chapter titles and major headings.**

- v. **Tag the special paragraphs.** First, move the cursor to the paragraph tagging function box (between the frame and text function boxes) and click the mouse button to enable it.

Second, move the mouse cursor over the paragraph such as Chapter 1.

Third, click the mouse button to select the paragraph. The paragraph is highlighted.

Fourth, move the cursor to the tag Chapter Title in the assignment list at left.

Fifth, click the mouse button to apply the Chapter Title tag to the highlighted paragraph. The user can see the immediate changes on the selected paragraph (e.g., Chapter 1).

Similarly, the user can apply the Major Heading Tag to the major headings.

6.3.6 Saving a Chapter

Before quitting Ventura, save the layout to come back to at a later time. The layout will be stored in a chapter file with an extension .CHP. The chapter file contains only pointers to the text files, picture files, and the style sheet used in the document. It does not contain the actual text file or graphic files. Therefore, when deleting a chapter file, only these pointers are deleted. No style sheet files and text files will be deleted.

To save the document, follow these steps:

1. Select File Menu.
2. Select Save As... . If this is the first time working with a chapter file, Save As... enables you to enter a new name and disk drive. If the user has been worked with this file before, and is continuing unfinished work, select Save option which will save the document in the original file.

After selecting Save As..., all .CHP files are displayed. The cursor is positioned at the Select line.

3. Type in the name for this document such as MYDOC. If there are typing errors, use the back-space key to correct them. There is no need to type in the extension .CHP, because it will be automatically selected.
4. Select OK.

The chapter file is now stored on disk, though the text remains on screen. On top of the working area, the chapter name is entered in the title line.

Saving a chapter file does not clear the screen. To clear the screen, call up another chapter file, or use the New option in the file menu to create a new chapter, or select the Quit option and leave Ventura.

6.3.7 Printing a Chapter

DPPs are different from most word processing programs, where the user prints out a document file when the text is not shown on screen. In Ventura, the text must be displayed on screen in order to print out the whole document or even one page. Follow these steps to print out a page or a document:

1. Open the file. If the document is stored on disk rather than displayed on screen, the document must be displayed on screen before printing out.

2. Select the File menu.
3. Select the To Print option. The print information box displays.
4. Specify the pages to be printed: all pages, or selected pages; page numbers if selected pages are to be printed; printing order (from 1st page to last or from last page to the first); and page tray.
5. Select OK using the mouse or just press the ENTER key.

6.3.8 Quitting Ventura

The procedure to exit Ventura Publisher is simple. Open the File menu first, and select the Quit option.

DATA PROCESSING TERMINOLOGY

Attributes	Characteristics of persons or things.
Case	A unit of analysis. The letter "n" is used to designate the number of cases. If 100 schools are being studied, the unit of analysis is schools and $n = 100$.
Codebook	The document that tells the location of different data items in a data file. The codebook identifies the card and column locations of data items and the meaning of the numbers used to represent different attributes of variables.
Coding	Transformation of raw data into standardized form suitable for machine processing and analysis.
Data Field	Each measure or code recorded on the codesheet. If the measure or code uses only a single digit, it is referred to as a one-digit field.
File	The collection of data pertaining to a particular case. Thus, all the information obtained about a district would be that district's file.
Record	A file is composed of one or more records. Often, a record is a data card, and the data file for a particular subject may be recorded on one or more cards.
Response Categories	All the possible responses given to a particular item on a survey. The response categories must be mutually exclusive and exhaustive. Mutually exclusive means that the survey response can fit ONLY ONE of the categories listed, while exhaustive means that every survey response fits into one of the possible categories.
Variable	The logical grouping of attributes.