

GWYNNE LARSEN
VERLENE LEEBURG



FIRST LOOK AT . . .

DOS

First Look at...

DOS

Gwynne Larsen and Verlene Leeburg



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First Look at DOS

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Preface

First Look at DOS is a step-by-step, hands-on tutorial covering basic concepts of DOS. You can use this book as a self-paced guide, in a lecture class that addresses either a single operating system or a combination of systems, such as DOS, Windows, NetWare, and the like, or as a supplemental text in a variety of classes.

First Look at DOS will quickly get you “up to speed” with the program’s most useful features. Complete with a comprehensive command summary at the end of the book, reference is quick and easy.

..... ORGANIZATION

Each lesson contains the following features:

- A list of objectives followed by an overview of the lesson
- A hands-on tutorial that guides you through specific functions and commands
- Caution and Note sections that appear throughout the lesson, alerting you to common program pitfalls
- A summary of commands that includes the page number where each command was first introduced
- A self-test that reinforces learning

..... DATA DISKETTE

A data diskette that contains files and subdirectories is available for instructors through your local McGraw-Hill representative. The data diskette saves students the time it takes to create the files and subdirectories required for the tutorial. Since the diskette also contains empty subdirectories, instructors should reproduce the diskette by using either the DISKCOPY or XCOPY

commands. For example, if the data diskette is in drive A and you wish to copy it to drive B, at the command line type XCOPY A: B: /S/E. We have instructed students to perform the majority of the exercises from drive A, so that each student's directory structure will be consistent. To keep this consistency, we recommend you do not load this data diskette on your local area network.

As you work through *First Look at DOS*, you will create files that are referenced in later lessons. For this reason we suggest that you use your own data diskette for file storage and retrieval. In addition, you can use either pull-down menu commands or function key commands, which appear for every lesson.

.....
FIRST LOOK AT... SERIES

This book is part of the First Look at... series, which consists of titles designed to cover the most popular commercial software packages.

The purpose of each book in this series is to provide an inexpensive, quick, and complete learning tool that you can use for ready reference after you've completed the tutorial. At the end of each book, a comprehensive summary of commands, arranged alphabetically, makes reference easy. It is assumed that you have access to the complete software package and all its features.

In a minimum number of pages, each book covers the most commonly used features of the particular program—enough to equip students with fundamental proficiency in a short time.

.....
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Microcomputer Systems

OBJECTIVES

At the end of this lesson, you will be able to:

- Describe a microcomputer.
- Identify some of the uses of a microcomputer.
- Explain what input devices are.
- Describe how a microcomputer processes data.
- Understand the type of memory in a microcomputer.
- Describe the types of disk drives.
- Tell what the diskette capacities are.
- Explain what the correct way to handle diskettes.
- Describe a monitor.
- Differentiate among printers.
- Understand the uses of ports and expansion slots.
- Explain what a modem is.
- Understand how microcomputers accept data.
- Tell the difference between application software and system software.

.....

MICROCOMPUTERS FOR BUSINESS AND HOME USE

Microcomputers (sometimes called personal computers or PCs) are becoming extremely important in today's society. Before long, most businesses will have a microcomputer on every employee's desk. Business uses of microcomputers include preparing letters and reports with word processing, utilizing spreadsheet packages to prepare budgets and income/expense statements, making graphs and charts for presentations, and creating databases consisting of clients, customers, inventory parts, and employees.

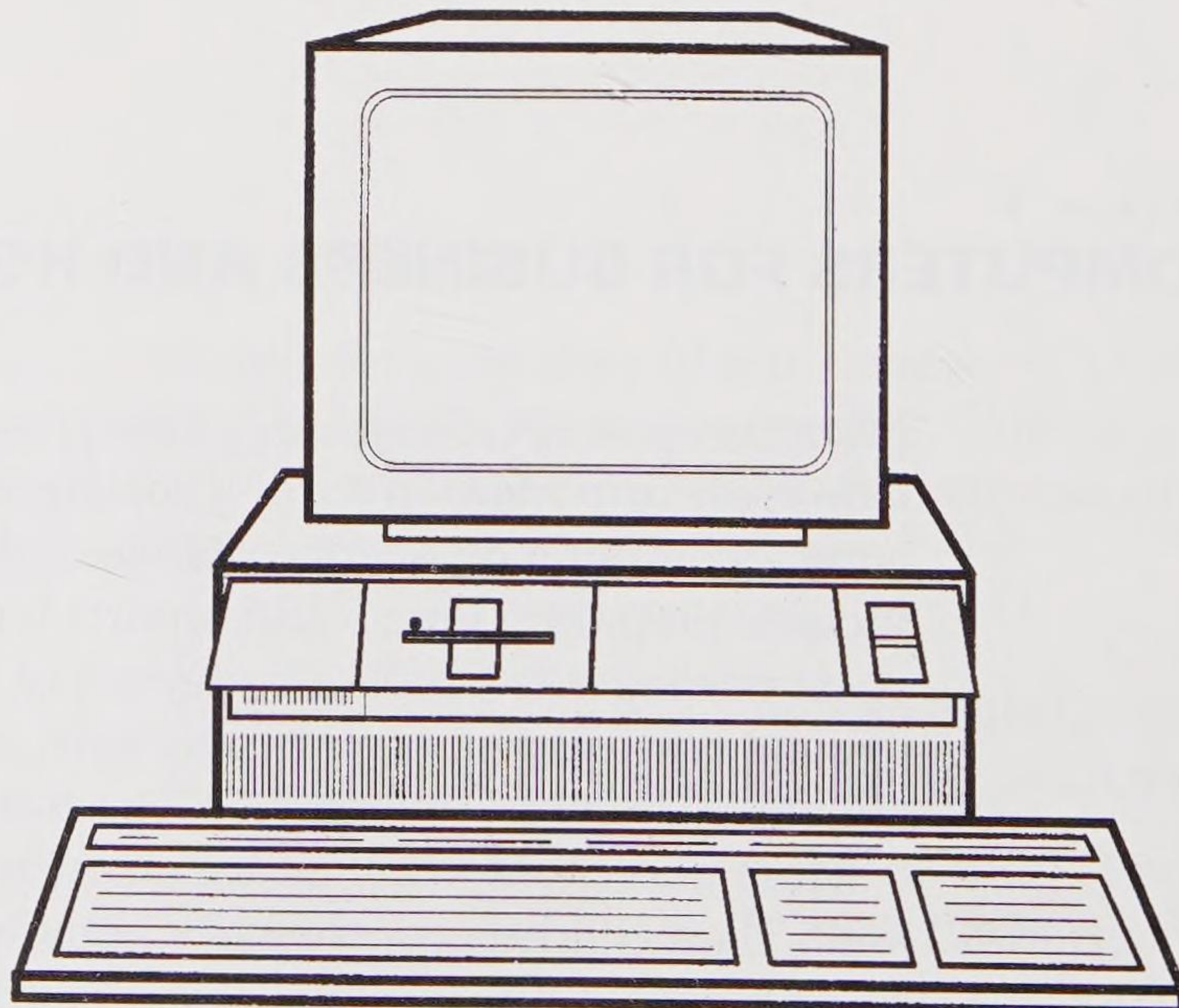
More and more families are acquiring microcomputers for home use, as well. Their children use them for homework projects, and the adults use them to prepare family budgets and income tax information. They can access

external databases (such as those on Prodigy and CompuServe) to obtain entertainment information or stock market information, to order clothes and other items, to send electronic mail messages, and to collect information from on-line databases such as encyclopedias.

On August 12, 1981, International Business Machines (IBM) introduced the Personal Computer; today, many other manufacturers produce computers that function in the same way and therefore are compatible with software packages designed to run on IBM PCs. The "PC clones" have intensified competition in the PC market. PCs (IBM or compatible) can be configured in numerous ways with various components and attachments, but a basic computer system must consist of the following components: hardware (system unit, keyboard, and monitor) and software (disk operating system—DOS). This combination represents the minimum amount of equipment needed to create a functional computer. Other components, such as a printing device (printer or plotter), a mouse, or a modem, may be attached to the basic system unit. Figure 1-1 shows a PS/2 microcomputer by IBM.

A computer system electronically processes data or produces information to solve a business problem or to meet a specific need. The three basic elements of a computer system are input, processing, and output. Data is input (entered) into the computer via various input devices (a keyboard, a scanner, or a mouse). Once the data has been entered, the processing is done in the central processing unit (CPU). Processing consists of the execution of a set of instructions given to the computer. After the data has been converted into meaningful information, the information is output to a device such as a monitor (computer screen), a printer, or a plotter (to plot graphs). The term for the physical, touchable part of the system is **hardware**; the term for the written programs that provide internal instructions for the computer is **software**.

Figure 1-1



INPUT DEVICES

Keyboard

The keyboard allows you to communicate with the computer. As keys are pressed on the keyboard, the corresponding characters appear on the monitor. Two types of keyboards are currently available for the IBM PC: the PC/XT keyboard and the AT-PS/2 keyboard. The main difference between the two keyboards is that the PC/XT has 10 function keys positioned on the left-hand side of the keyboard, whereas the AT-PS/2 has a row of 12 function keys along the top. For the most part, both keyboards function the same way a typewriter does. The PC/XT keyboard is illustrated in Figure 1-2, and the PS/2 keyboard is shown in Figure 1-3.

Special-Purpose Keys

In addition to containing alphabetic and numeric keys, the keyboard has several other keys that serve specific purposes or functions—for example the Enter key, the function keys, and the numeric keypad.

Enter Key To communicate with the computer through DOS, you must enter (type in) commands and information on the keyboard. This involves typing in the text and then pressing **Enter** to execute the command. The **Enter**

Figure 1-2

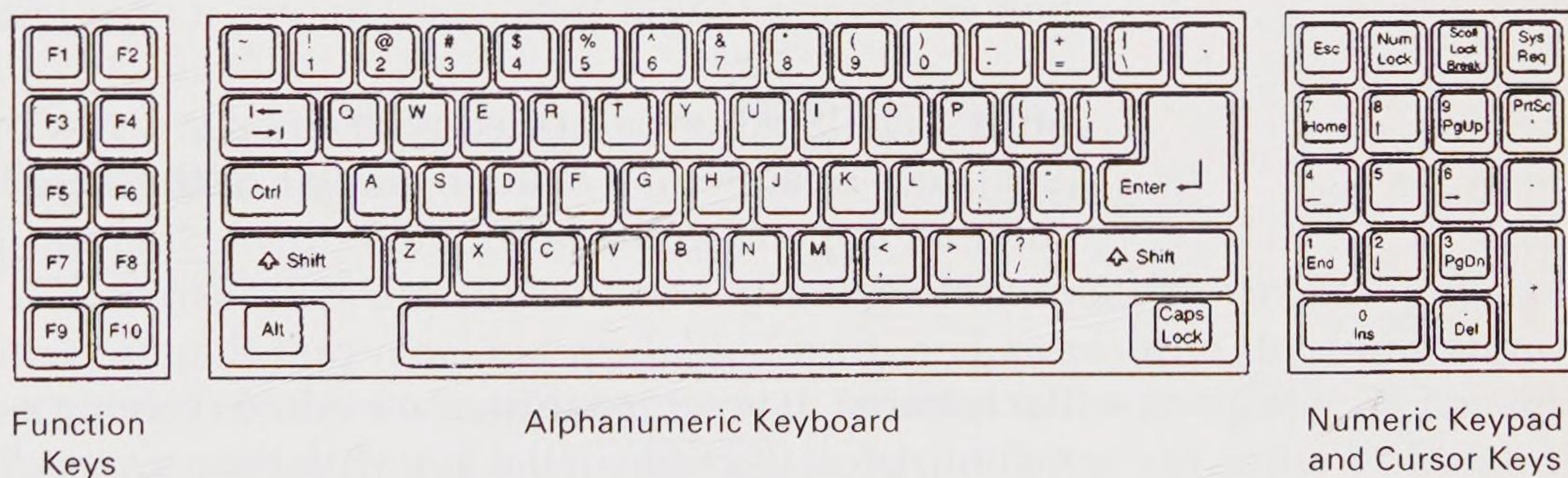
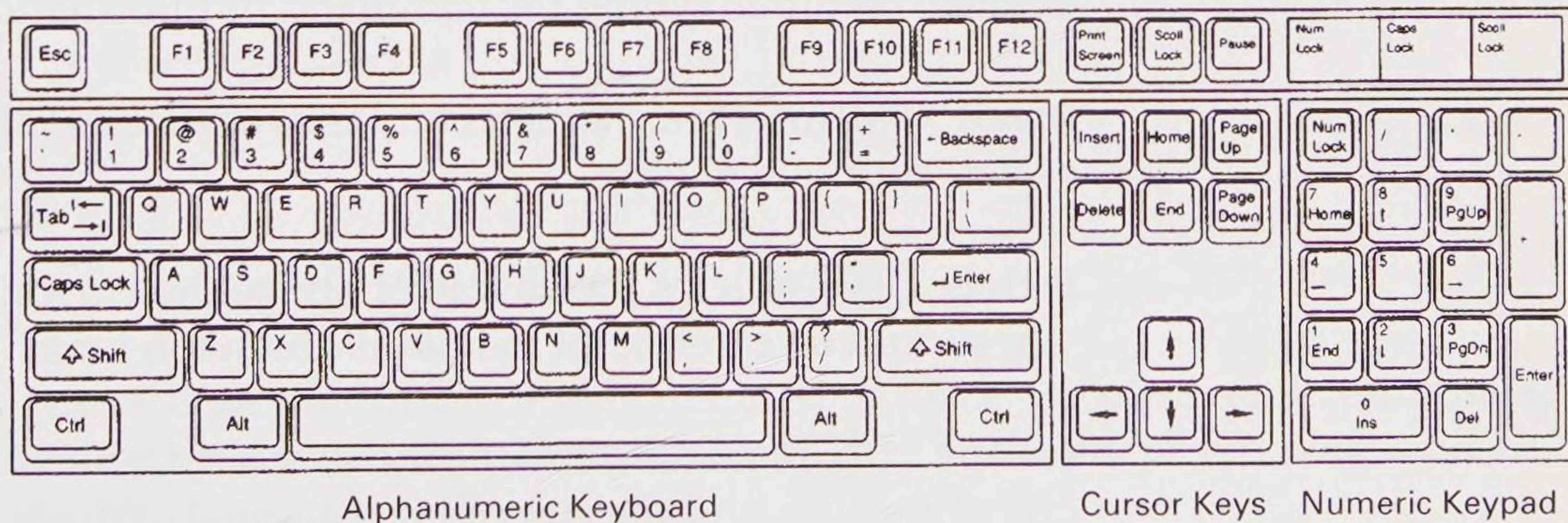


Figure 1-3



key is often referred to as the **Return** key. When it is pressed, DOS responds by processing the information or executing the command given. The **Enter** key is essentially your “yes” key. The information entered must follow the precise format given in the DOS Documentation Manual. Any misspellings or incorrect syntax in the use of commands is not acceptable and will cause an error message to appear.

Function Keys The PC/XT keyboard has 10 function keys located on the far left-hand side of the main keyboard. They are labeled **F1** through **F10**. The AT-PS/2-style keyboard has 12 function keys located along the top of the keyboard. They are labeled **F1** through **F12**. The function keys have special meanings, depending on the function involved and the software the computer is running.

Numeric Keypad When the **Num Lock** light is illuminated, the numeric keypad (located on the far right-hand side of the keyboard) can be used as a 10-key calculator pad for entering numbers. If **Num Lock** is not illuminated, the keypad can be used to move the cursor with the arrow keys.

Print Screen **Prt Sc** is used to print the information that is currently displayed on the monitor. On the PC/XT keyboard, however, you must press **Shift-Prt Sc**.

Control Print Screen Pressing the **Ctrl-Prt Sc** combination instructs DOS to begin printing every line displayed on the monitor. A printed copy of your computer work session is then produced on the printer. This key combination works as a toggle: press once to turn it on; press again to turn it off.

Shift The **Shift** key is labeled with an open arrow or the word *Shift*. The two **Shift** keys operate in a fashion similar to the **Shift** keys on a typewriter. To enter an uppercase character, hold down **Shift** and press the character to be capitalized.

Backspace If you type in an error while entering a command or other information, press **Backspace** (the key with the arrow pointing to the left) to back up one space and delete the character in that space. Once the error has been deleted, continue typing the command or information.

Insert **Ins** inserts a character and moves the next character forward as long as you continue to type.

Delete **Del** deletes the character above the cursor. It is a repeating key, so you should be careful not to hold it down too long.

Escape **Esc** cancels a typed line. A backslash (\) is then displayed at the end of the line, and the cursor is positioned at the beginning of the next line.

However, pressing **Esc** will not terminate a line if **Enter** has already been pressed. (In some software packages, **Esc** cancels the command just entered.)

Caps Lock Press **Caps Lock** to type all characters in uppercase. Press the key again to return to lowercase. Even with **Caps Lock** on, however, you must still use **Shift** to enter the characters above numbers.

Control Break Pressing **Ctrl-Break** simultaneously cancels whatever function the system is performing. Use this key combination whenever you want to discontinue the function being executed. This function can also be entered as **Ctrl-C**.

Control Number Lock Pressing **Ctrl-Num Lock** halts whatever the system is doing until another key is pressed. This function is normally used to freeze the display when the information is scrolling too fast or is off the screen. **Ctrl-S** can also be used for this purpose.

Mouse

Another input device gaining in popularity is the **mouse**—a hand-held device that is moved around on the desktop, controlling the cursor on the screen. A mouse is virtually essential for use with desktop publishing packages. Most software packages written today support a mouse.

Scanner

A **scanner** takes a picture of text, photographs, and drawings; digitizes it (transfers it into machine-readable form); and stores it in the computer. A scanner is a very fast and accurate way to input to the computer. When text is to be scanned and later edited, a software program must be used. A scanned document takes about 1 megabyte of storage per page scanned.

..... PROCESSING

The system unit of the microcomputer is made up of several components, including the central processing unit (CPU), the main memory, and disk drives.

Central Processing Unit (CPU)

The CPU is a microprocessor that performs several functions:

- It coordinates all the activities of the computer—retrieving the files from disk drives, interpreting data and commands entered from an input device, and sending information to output devices such as printers and plotters.
- It performs all the arithmetic calculations and logical operations in an area called the arithmetic/logic unit.

The CPU is sometimes referred to as the “brain” of the computer. It operates by executing a program, which is a list of instructions telling the computer exactly what to do. The **microprocessor** is a small silicon chip that resides on a large circuit board called the **motherboard**, which also contains other integrated circuits or chips.

The first microprocessors in IBM and compatible microcomputers were the Intel 8086 and 8088. These chips had a 4.77-MHz internal clock speed (explained later) and an 8-bit word length (meaning that 8 bits could be processed at a time). In 1984, the Intel 80286 chip was used in IBM’s AT computer, which had a speed ranging from 8 to 12 MHz and a 16-bit word length. The Intel 80386 chip was introduced in 1987; it had a speed ranging from 16 to 33 MHz and a 32-bit word length. Released in 1991, IBM’s 486 computer contains an 80486 microprocessor ranging from 25 to 50 MHz and a 32-bit word length. The 80586 is now on the drawing board. Obviously, microcomputers continue to get faster and more powerful.

Internal Clock Speed The internal clock speed of the computer indicates how fast the computer can process information; this value is measured in megahertz (MHz), or millions of cycles per second. The earlier microcomputers operated at 4 to 10 MHz, while newer ones are now up to 35 to 50 MHz.

Memory

The computer requires a certain amount of temporary space to store information and instructions that will be retrieved by the CPU for processing. This area of the computer is called the memory. Before a program can be executed, the program instructions and any data to be processed must first be placed in memory. The CPU retrieves both the program instructions and the data to be processed from the memory as needed.

Memory is made up of bytes. A byte is essentially the equivalent of one character. For example, if your computer has 64,000 bytes (or 64 kilobytes—64K), it can store approximately 64,000 characters in memory.

Three terms are associated with memory: **random access memory (RAM)**, **cache memory**, and **read-only memory (ROM)**. RAM is used to store and

retrieve any type of data. However, this memory is only temporary. When the computer is turned off, any information or data residing in RAM is lost. Cache memory is a form of random access memory that can be called up more quickly than RAM. The computer stores the data it has used most recently in cache memory; thus it is more readily available. ROM is not available for use. It consists of instructions programmed into the computer at the time of manufacture and contains information the computer requires when it is first turned on. Unlike RAM data, the contents of ROM are not lost when the computer is turned off.

Disk Drives

The disk drive is the device that writes and reads data, and the diskette is the medium that stores or holds the information. A disk drive can read and write information to or from a diskette. The mechanism inside the disk drive that reads information from and writes information onto the diskette is called a read/write head, and functions in much the same way as does the play/record head on a cassette tape recorder.

Two types of disk drives are available inside the computer: a hard disk drive (also referred to as a *fixed disk drive*) and a floppy disk drive. Disk drives are designated in DOS by a letter followed by a colon.

Hard Disk Drive A hard disk drive is a high-speed, large-capacity disk drive. A hard disk can hold substantially more information than can a diskette in a floppy disk drive. For example, a floppy disk drive supports mini/microfloppy diskettes that can store between 360,000 and 1.44 million bytes of information. In contrast, a 20-megabyte (20M) hard disk can hold 20 million bytes of information. A hard disk is vacuum-sealed to limit the possibility of damage to the storage media. Consequently, the risk of losing data is considerably less on a hard disk drive than on a floppy disk drive. A hard disk drive is designated in DOS as drive C.

Floppy Disk Drive When a system is configured with either one or two floppy disk drives, the first disk drive is designated as drive A and the second as drive B.

CDROM Drives CDROM (compact disk read-only memory) drives are just beginning to be used in business. Data on CDROM disks is permanently written and can only be read—not written over. Disks are purchased with information such as databases, encyclopedias, fonts, and clip-art pictures already on the disk. The compact disk stores data optically; lasers burn information onto the disk as bubbles, and these are later read by another laser. One CDROM can hold a gigabyte (one billion bytes) of information, and they are excellent for backing up information and for archival (or storage) purposes.

Diskettes

Diskettes (also called *disks*) are the magnetic medium on which programs and data are stored. The diskette must be inserted into the floppy disk drive in order for the computer to be able to access or retrieve information from it. Two types of diskettes are available: minifloppy and microfloppy.

Minifloppy Diskettes The 5¼-inch minifloppy diskette is surrounded by a stiff jacket to protect the diskette (see Figure 1-4).

Data is accessed through the read/write opening. The index hole is used to align the diskette when it is placed into the disk drive. This type of diskette comes in two capacities: a double-sided diskette that holds 360K of information, or a high-density diskette that accommodates up to 1.2M of data.

Microfloppy Diskettes The 3½-inch microfloppy diskette functions in a way similar to the 5¼-inch minifloppy diskette. The microfloppy is smaller and provides more protection for the magnetic medium, yet it stores more information (see Figure 1-5).

The 3½-inch diskette comes in both double-density and high-density formats. The double-density diskette accommodates up to 720K of data, and the high-density diskette can store 1.44M. The letters HD in the upper right-hand corner of the plastic case distinguish the high-density diskette from the double-density diskette. In addition, the high-density disk contains a square

Figure 1-4

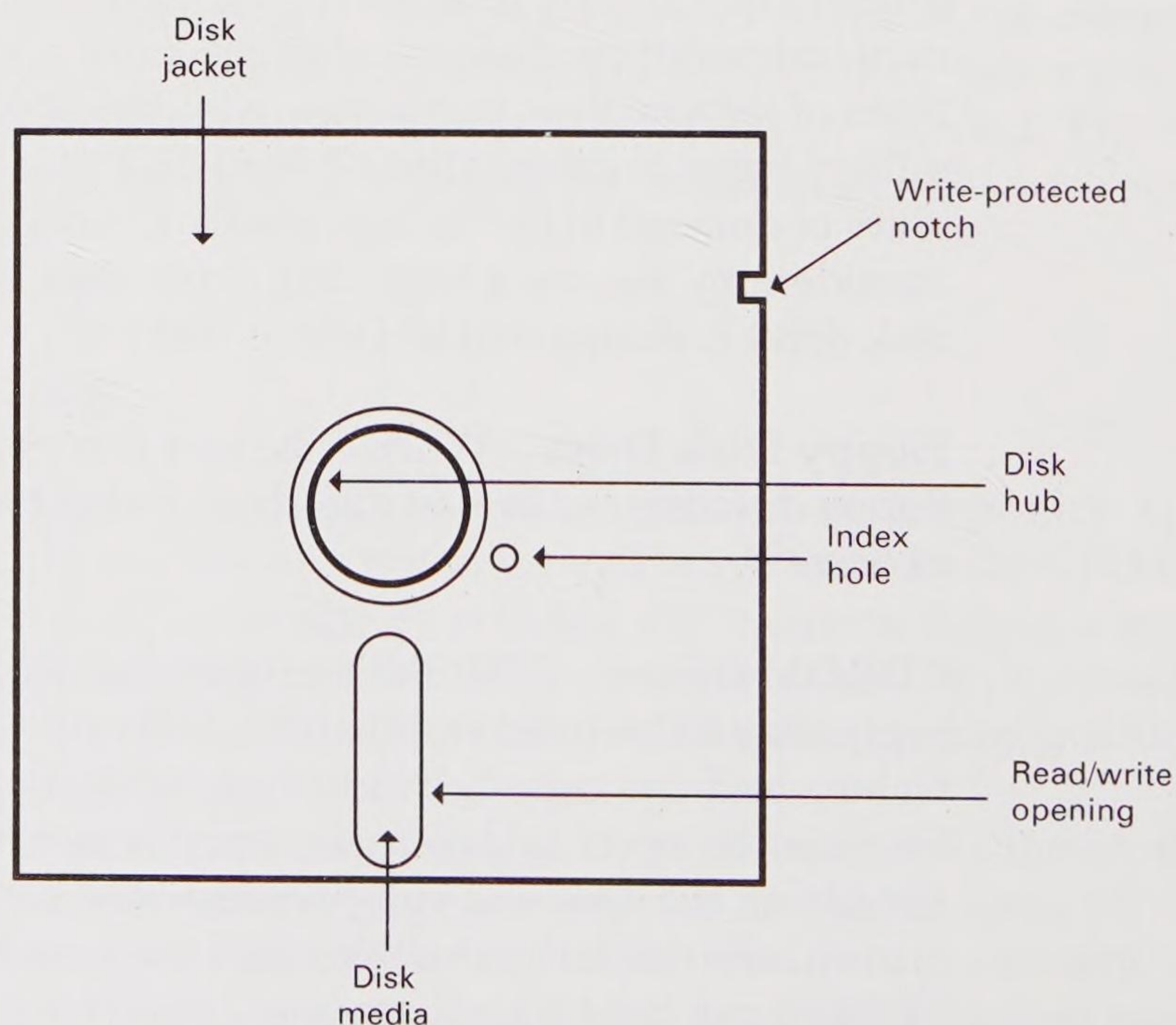
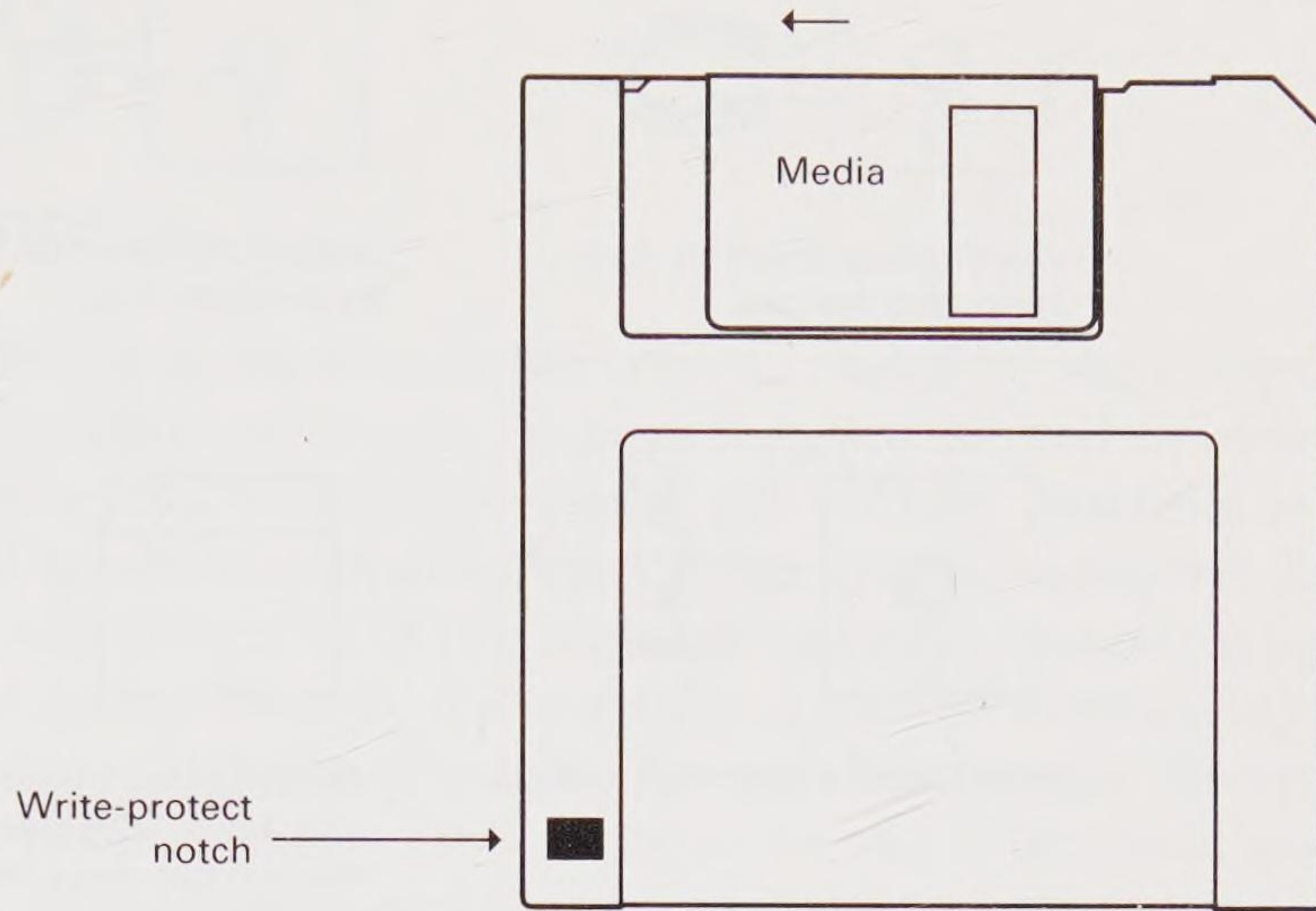


Figure 1-5



opening in both the lower right-hand and left-hand corners. The double-density diskette has only one square opening in the lower left-hand corner.

Write-Protect Notch When the write-protect notch is in its open position, data can be written and read. When it is in its closed position, information can be read only.

On a 5 1/4-inch diskette, the write-protect notch is located in the lower left-hand corner as the diskette label is facing up. When the write-protect notch is left uncovered, information can be both written to and read from the diskette. When the notch is covered with a write-protect tab (supplied in a box of diskettes), information can only be read from the diskette; writing is not possible (see Figure 1-6a).

Figure 1-6

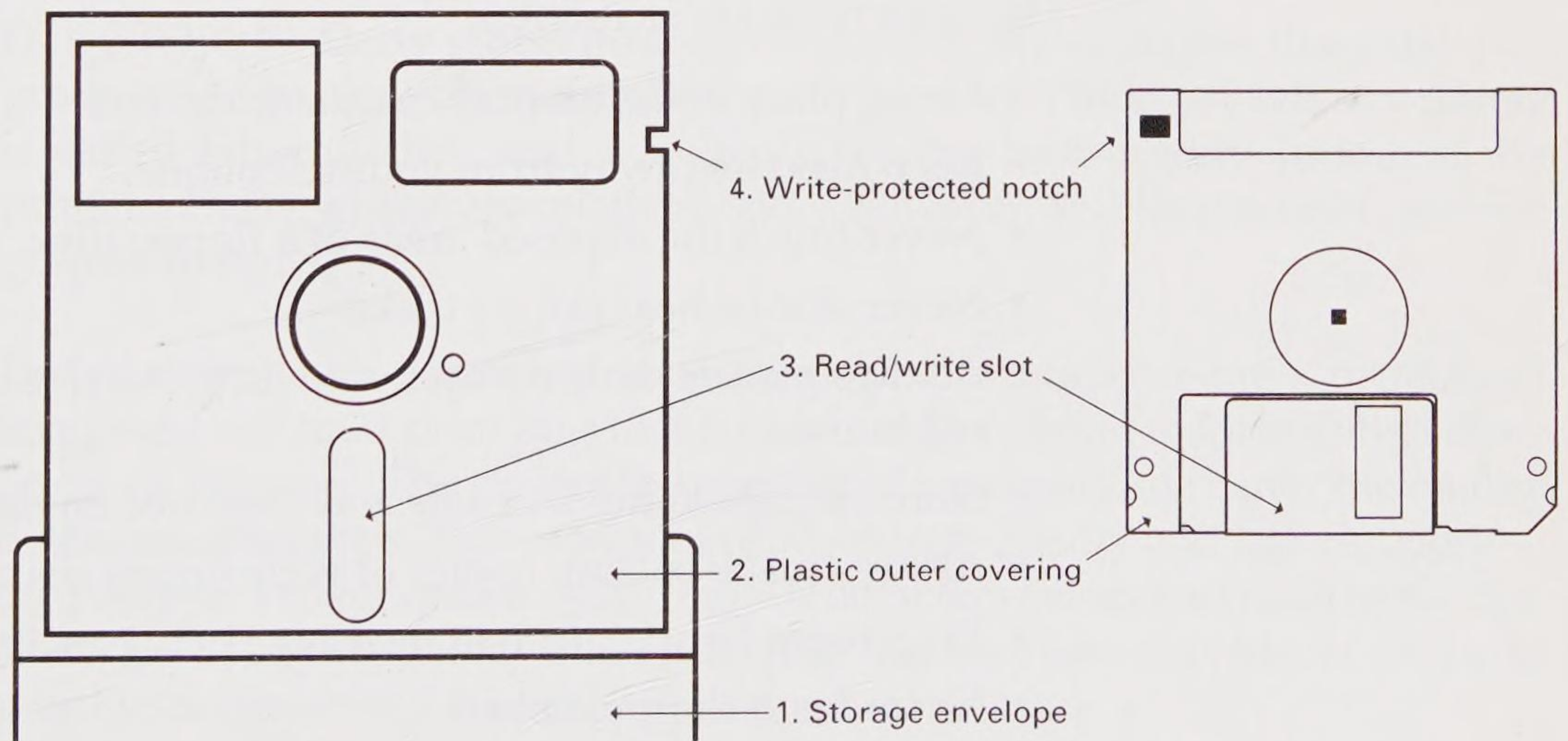
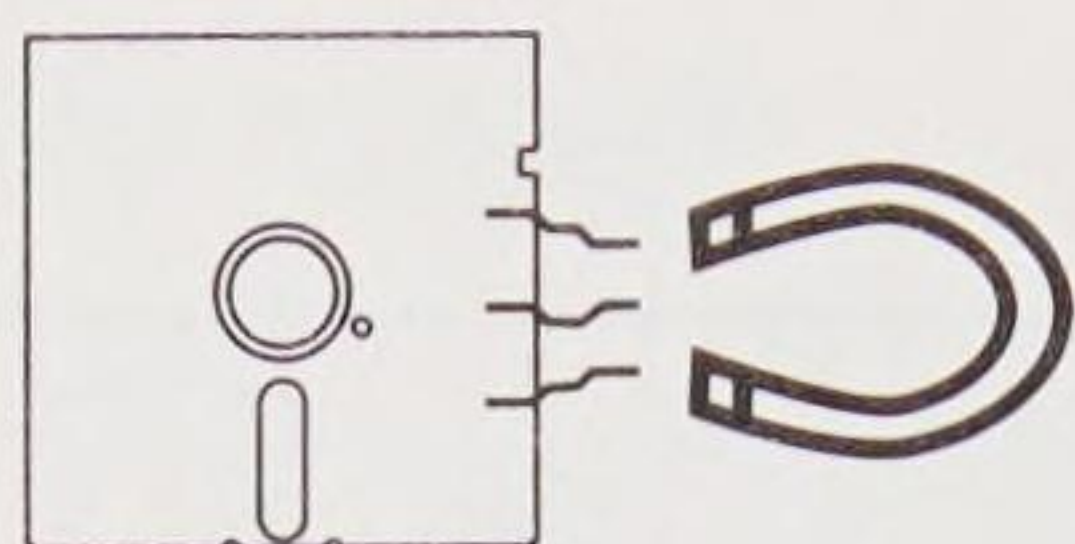
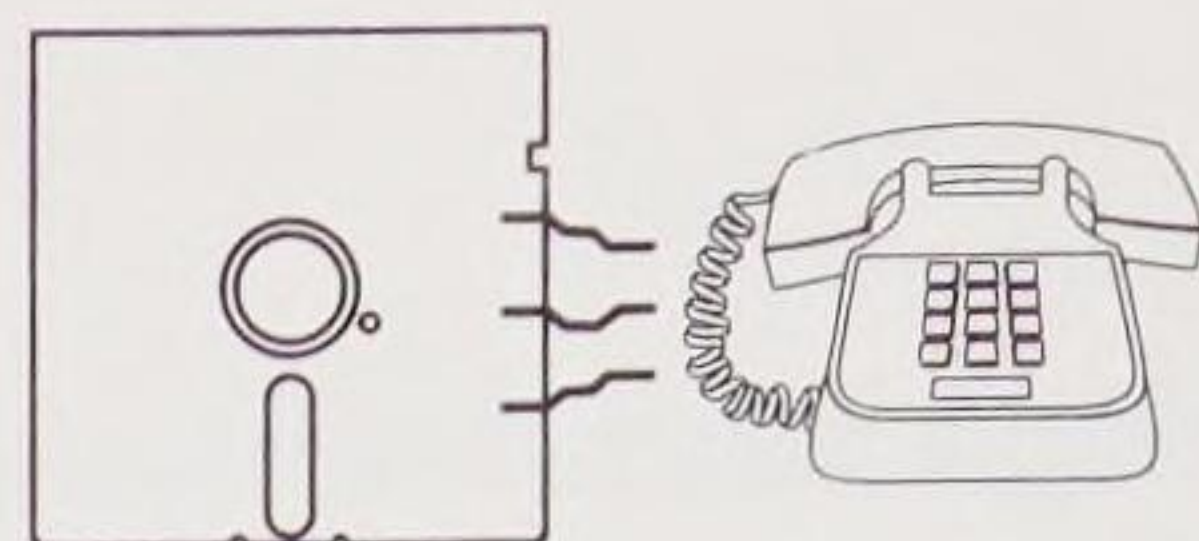


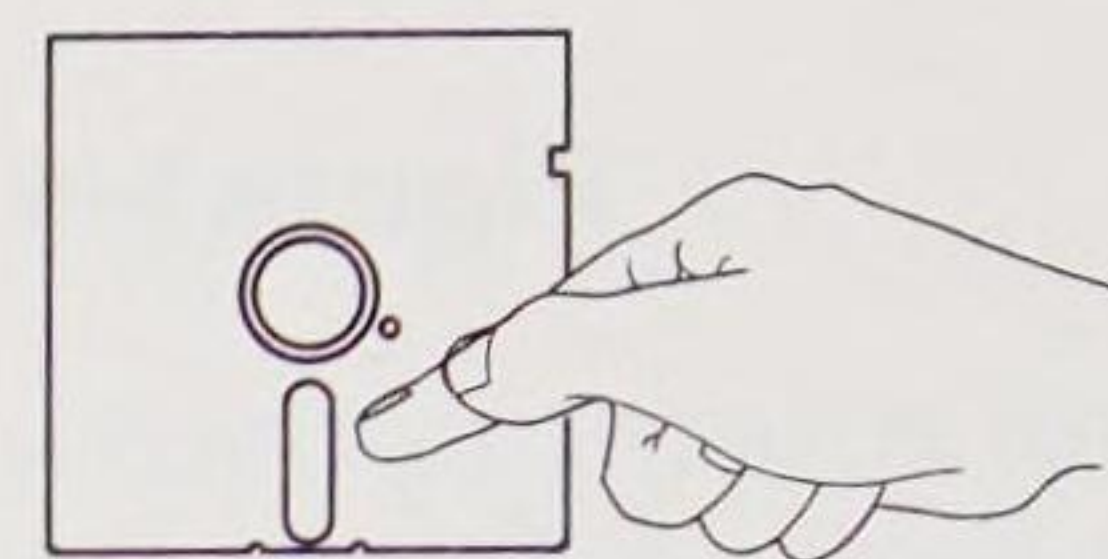
Figure 1-7



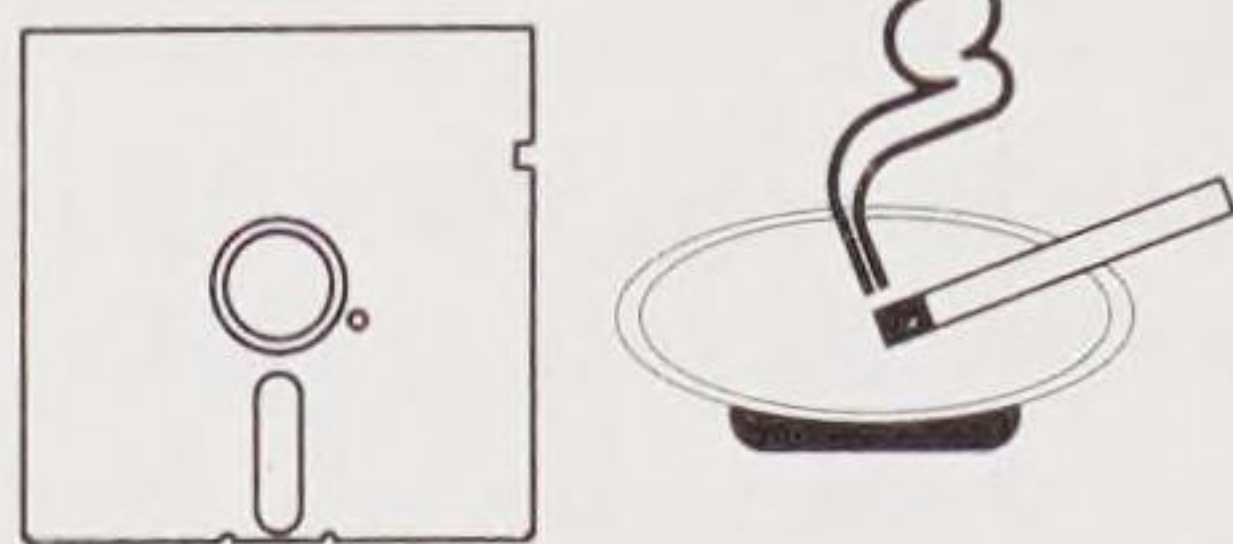
Never place diskettes near magnetic devices.



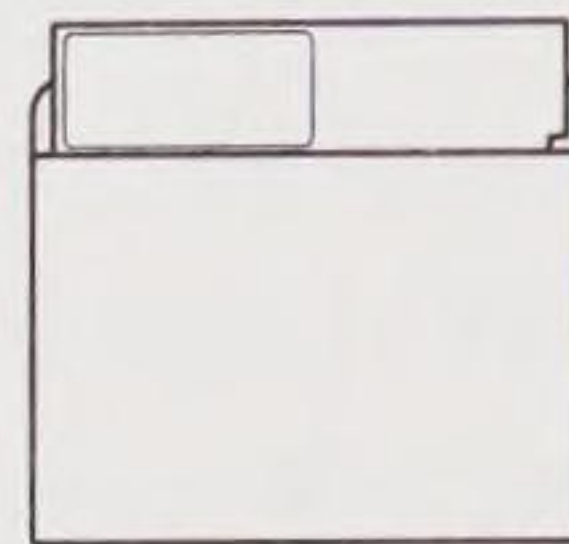
Keep diskettes away from your telephone.



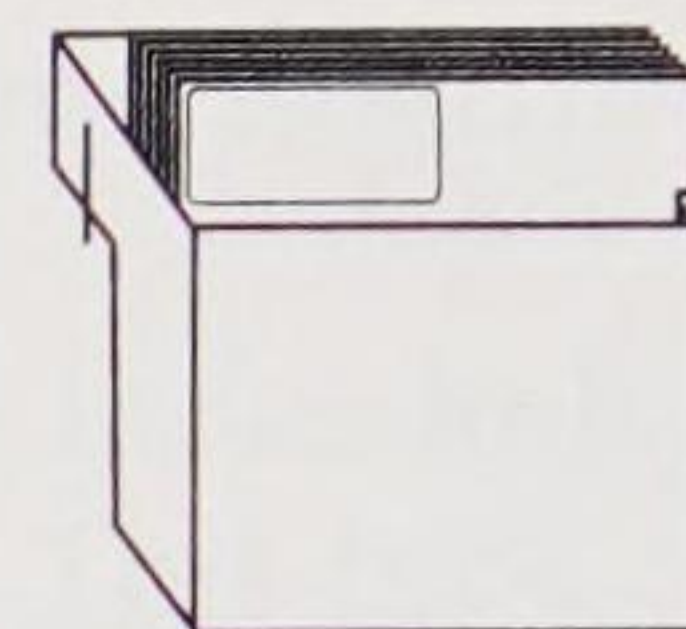
Never touch your floppy disk media.



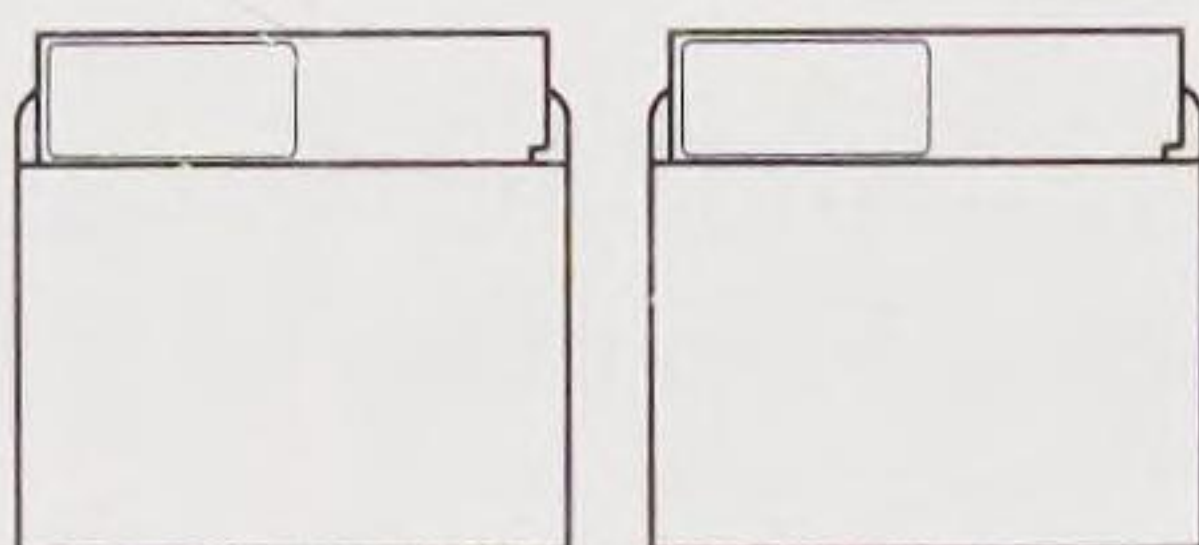
Never smoke near floppy disks.



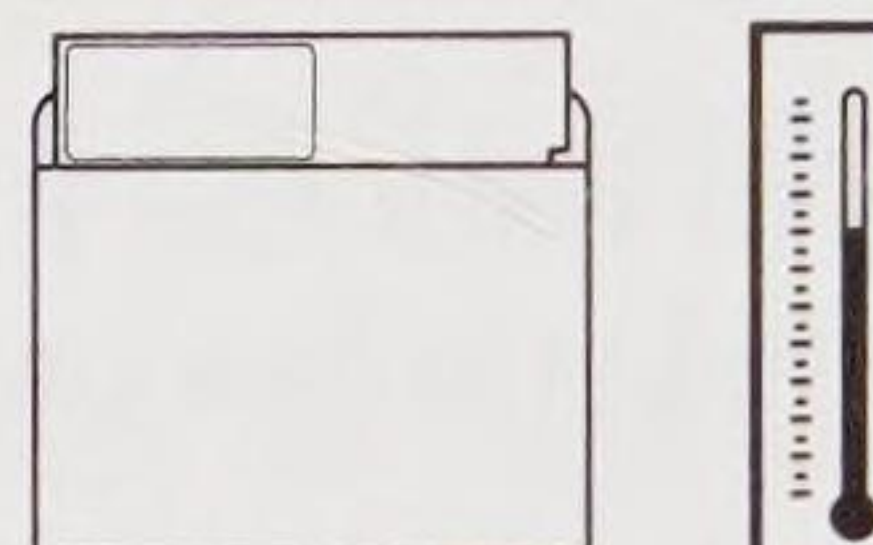
Always place diskettes back into a disk envelope when you are not using them.



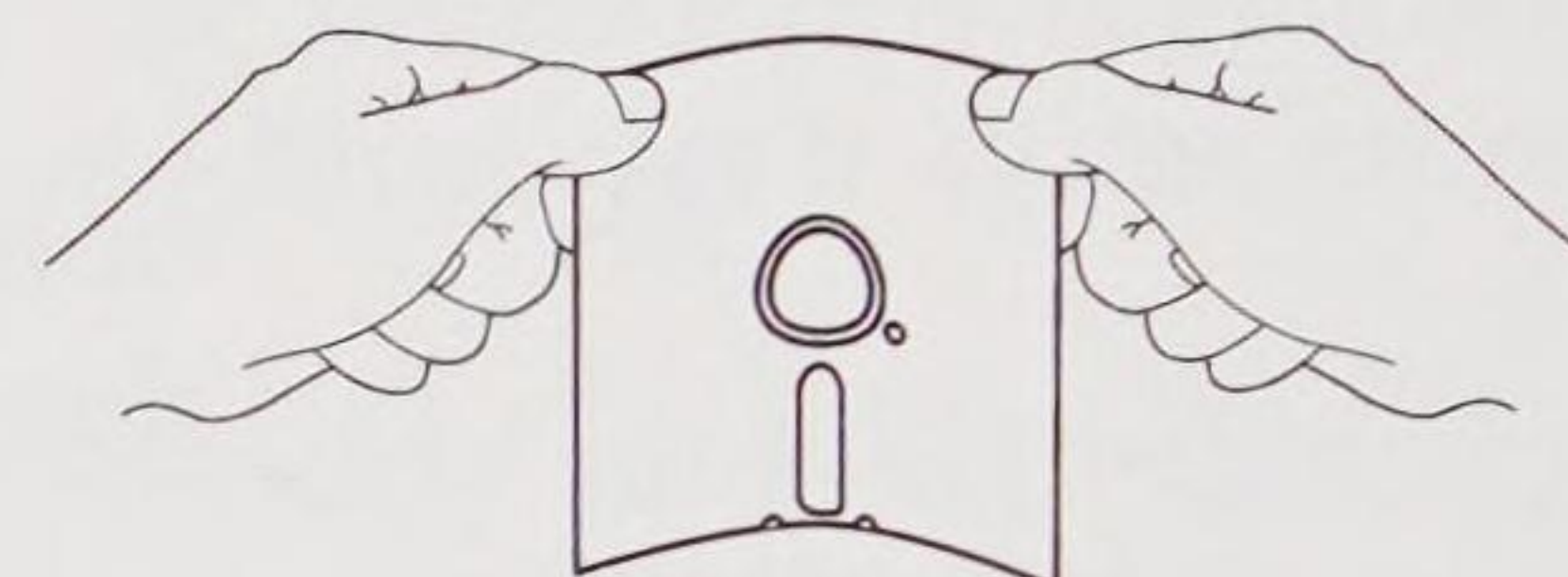
Store your diskettes in a safe location.



Always make backup copies of your floppy disks.



Keep room temperature in the range 50°F to 100°F



Never bend floppy disks.

On the 3½-inch diskette, a shutter controls the write-protect opening. The write-protect notch on this diskette is located on the back of the diskette (with the label facing down). When the shutter is in the upward position, the diskette is not write-protected. To write-protect the diskette, move the shutter to the downward position (see Figure 1-6b).

Diskette Handling Diskettes must be handled properly to maintain the integrity of the magnetic medium and to prevent loss of data (see Figure 1-7). The basic rules are as follows:

- Never place diskettes near magnetic devices.
- Keep diskettes away from your telephone.
- Never touch the exposed areas of a floppy disk.
- Never smoke near floppy disks.
- Always place a diskette back into its protective disk envelope when it is not in use.
- Store your diskettes in a safe and dust-free environment.
- Always make backup copies of your floppy disks.
- Keep room temperature in the range between 50° F and 110° F.
- Never bend floppy disks.

..... OUTPUT DEVICES

Monitors

The computer monitor or video screen is used by the computer to display information, data, and commands as they are entered from an input device. The monitor can be monochrome or color. Color monitors can meet one of three configuration standards: CGA (color graphics adapter), EGA (enhanced graphics adapter), or VGA (video graphics array). The clarity of the computer display is determined by the quantity of picture elements (pixels) or small squares into which the screen is divided. Resolution (the sharpness of the image) is determined by how many rows and columns of pixels the screen contains. The squares are lighted to display text and graphics images. Obviously, the greater number of pixels displayed, the higher the resolution. CGA monitors have 640×200 pixels; EGA monitors have 640×350 pixels, each of which can display 64 or more different colors; VGA monitors have 640×480 pixels and 264 colors, and enhanced VGA monitors have 800×600 pixels. The highest-resolution monitor at this time is IBM's 8514 monitor with 1024×768 pixels.

Printers

Printers are mainly characterized by the way in which they form characters on the page. They fall into two general classifications: impact printers and nonimpact printers. Impact printers form the character by striking the paper through a ribbon; nonimpact printers use other ways of producing the images. Two common types of impact printers are the daisy wheel printer and the dot matrix printer.

Daisy Wheel Daisy wheel printers use a print wheel shaped like a daisy to produce sharp, clear characters. The print produced by daisy wheel printers is called letter-quality, and it is probably the best quality produced by printers. Daisy wheels are relatively slow, however, and they cannot produce graphic designs.

Dot Matrix A dot matrix printer forms characters by using a print head composed of 7 to 24 print pins that strike an inked ribbon to form dotted characters on the page. The greater the number of print pins, the better the quality of the resulting type. Two modes of print—draft-quality and letter-quality—are possible. Printer speeds vary from 80 characters per second (cps) to 450 cps. They are less expensive, more versatile (as they are capable of creating graphic designs), and faster than daisy wheel printers.

Laser and Ink-Jet Laser and ink-jet printers are nonimpact printers that produce letter-quality print and graphics. The ink-jet printer shoots jets of ink onto paper to form characters. This technology has recently been perfected, and the output is of very good quality. The speed is somewhat slow (about 200 cps), but the price is relatively low compared to that of other letter-quality printers. Laser printers use xerographic technology to produce excellent-quality type and graphics. The output is about 8 to 10 pages per minute with high resolution. These printers are faster and quieter than impact printers; however, they are more expensive and more difficult to maintain.

Ports

The computer has several ports, which resemble sockets, into which external components such as modems, mice, and disk drives can be plugged. The ports are usually on the back of the computer, and they can be either serial or parallel. Serial ports transport data 1 bit at a time; therefore, they are somewhat slower than parallel ports, which transfer data 8 bits (1 byte) at a time. Printers are usually plugged into parallel ports. A modem or a mouse is most likely to be plugged into serial ports.

Expansion Slots

Peripheral components such as a graphics card, an internal disk drive, an internal modem, a facsimile, and additional memory boards are placed into expansion slots (spaces) within the computer. When purchasing a computer, you should determine whether it includes enough expansion slots for future uses.

Modem

Some devices associated with computers, such as printers and scanners, are also known as peripherals. A modem (short for modulator/demodulator), which can be placed either inside or outside the computer, is another type of peripheral. A modem enables one computer to communicate with another computer. The modem translates digital data from the computer into analog form so that it can be sent over telephone lines. The data must then be translated back into digital form at the other end via a modem before it is entered into the computer. A software package is also necessary for transmitting data. Software packages are discussed in Lesson Two.

.....
DATA PROCESSING

Computers are digital processing devices. The term digital processing refers to the way the computer processes information internally. The electronic components of microcomputers are digital logic circuits that have only two possible states: on and off. Thus, computers function on a binary number system consisting of unique combinations of only two numbers: 0's and 1's. These binary digits (or bits) represent two states, such as on/off, magnetized/unmagnetized, or bubbles/no bubbles. Eight binary digits are needed to make one byte or character. For example, the code the computer recognizes for the letter A is 01000001. To standardize the meaning of binary number combinations, the computer industry has agreed on and adopted the American Standard Code for Information Interchange, or ASCII. Most microcomputers use the ASCII code. Pressing any key on the keyboard generates a byte that is sent to the computer's microprocessor, which interprets it and displays that character on the screen. For example, if you press the letter A, the byte 01000001 is sent to the computer and an "A" is displayed on the screen. When programmers write programs, the programs must be translated into machine language (0's and 1's) from the programming language they were written in (such as BASIC, C, or Pascal).

.....
MICROCOMPUTER SOFTWARE

A computer can do nothing until it is given a set of instructions in a language it can understand. This set of instructions, written in a computer language such as BASIC, C, or Pascal, is called a program. Two kinds of software programs used by the computer are operating system programs and application programs.

The Disk Operating System (DOS)

The disk operating system is a collection of software programs that enables a computer to perform. DOS (Disk Operating System) is the operating system developed for the IBM PC and compatible computers. Its primary function is to control the use of computer resources, including memory, secondary storage, and input/output (I/O) devices. The operating system also provides a standard high-level interface to the computer's hardware that can be used by application programs and provides for continuous operation of the computer.

Application Programs

Thousands of application programs are available for use on IBM and compatible microcomputers. Application programs address specific problems or needs of the user. Major categories of application software include word processing, calendaring, electronic spreadsheets, graphics, database management, desktop publishing, communications, and PC utilities.

■ SUMMARY OF COMMANDS

<i>Function</i>	<i>Command</i>	<i>Page</i>
To use the 10-key pad as a calculator	Num Lock	4
To print information displayed on the screen	Shift-Prt Sc	4
To type uppercase letters	Shift	4
To delete the previous character	Backspace	4
To insert a character	Ins	4
To delete the character above the cursor	Del	4
To cancel a typed line	Esc	4
To continue typing in uppercase	Caps Lock	5
To cancel a function in progress	Ctrl-Break	5
To halt the system temporarily	Ctrl-Num Lock	5

■ SELF-TEST

1. What is the definition of a computer system? _____

2. What are the three elements of a computer system? _____

3. Name two commonly used input devices. _____

4. What device takes a picture of text or images and enters it into the computer? _____

5. What unit comprises the CPU, memory, and disk drives? _____

6. In what units is internal clock speed measured? _____

7. What type of memory is programmed into the computer at the time of manufacture? _____
8. What two types of disk drives are contained in a micro? _____

9. What type of disk has information permanently written on it? _____

10. What is the best-resolution monitor at the present time? _____

11. What has traditionally been the best letter-quality printer? _____

12. What two letter-quality printers also produce graphic printout? _____

13. What device is necessary to allow for communication between computers? _____
14. What composes binary or machine language? _____

15. Name two computer programming languages. _____

16. The principal function of the _____ is to coordinate and supervise microcomputer activities.
17. Name two commonly used application software packages. _____

The Disk Operating System—DOS

OBJECTIVES

At the end of this lesson, you will be able to:

- Understand the major services DOS performs.
- Understand the I/O handler's functions.
- Identify what the command processor consists of.
- Describe utility programs.
- Distinguish among the various versions of DOS.
- Describe some of the important DOS file extensions.

As was mentioned in Lesson One, all computers require an **operating system**—mandatory software that provides a basic set of computer instructions to manage hardware and the flow of information in the computer. Without an operating system your PC would not function. The operating system developed for the IBM PC and compatible computers is called DOS (Disk Operating System). The primary function of an operating system is to coordinate and supervise the activities of the computer. The operating system decides where programs and data are stored in the computer's memory; and it handles communication among the computer's components, the application software, and the user. Through the operating system, the user instructs the computer to run word-processing, spreadsheet, or database application programs; to save files on disk; to print files; and so on. Thus the function of an operating system has been equated with that of a traffic cop, a train conductor, or an interpreter.

During its development of the PC, IBM collaborated with Microsoft Corporation to develop an operating system to run on the IBM PC. As a result, Microsoft developed MS-DOS (Microsoft DOS). The agreement between IBM and Microsoft allows IBM to market MS-DOS under the name PC-DOS. The two versions are essentially the same.

.....

SERVICES DOS PERFORMS

The computer executes its operations using electrical impulses, which DOS translates into an interpretable form so that the computer can perform a variety of services. These services can be categorized as follows:

- Read information stored on a disk.
- Write information to a disk, print it on a printer, or display it on a monitor.
- Copy files and diskettes.
- Prepare diskettes to receive information.
- Keep a directory of files.
- Run application programs such as word-processing programs, spreadsheets, and databases.

DOS also has various miscellaneous functions such as setting the computer's clock and calendar so that files and application programs have access to dates and times. DOS also provides a text editor for creating text files such as memos and notes.

..... COMPONENTS OF DOS

There are three main functional components of DOS:

- I/O handler
- Command processor
- Utility programs

I/O Handler

The I/O handler consists of two files: IBMBIO.COM and IBMDOS.COM. These files can be equated to a traffic cop directing rush-hour traffic when the traffic lights have stopped working properly. The police officer manages the flow of traffic. The I/O handler's files manage the input and output of all data transferred among the user (you), the application programs, and the peripherals—keyboards, monitors, disk drives, and printers attached to the computer. They also contain procedures for preparing data to be stored on a disk, regardless of whether the information consists of a program, data, or text file. IBMBIO.COM and IBMDOS.COM are called hidden files because they are not listed in a directory. The IBMBIO.COM program coordinates all of the computer's communications with peripheral devices. The IBMDOS.COM program formats the communications in such a way that they can be recognized by each peripheral.

Command Processor

The command processor consists of a single program file that is called COMMAND.COM, which reads your command from the keyboard, prints

the DOS request on your monitor, interprets what you have typed, and processes your input so that the appropriate action can be taken. The IBMBIO.COM, IBMDOS.COM, and COMMAND.COM files are known cumulatively as the DOS system files. When your computer is turned on, all three system files are loaded into RAM (random access memory). However, only the COMMAND.COM file is visible when the directory scan is performed; the other two files are hidden.

Utility Programs

Utility programs provide you with “housekeeping” utilities for maintaining files and diskettes. Some utilities supply statistics on disk size and memory, while others allow you to copy and compare files and disks. The utility programs are files that reside on disk and are loaded into memory by COMMAND.COM when you type the appropriate DOS command.

..... DOS VERSIONS

Since its creation, DOS has been changed and enhanced numerous times. Each time this happens, a new version number is assigned. The first version of DOS was 1.0. As of the writing of this book, the latest DOS version is 5.0.

In versions of software, the number preceding the decimal point is called the major revision number. This number is changed only when major alterations in the software occur. The numbers following the decimal point are called minor revision numbers and indicate relatively slight enhancements of the previous version. Table 2-1 lists some of the improvements and changes that DOS has undergone since its inception in 1981.

Table 2-1 DOS Versions and Their Characteristics

Version	Description	Version	Description
1.0	Original version	3.2	Accommodates 3½-inch floppy disk drives
1.25	Accommodates double-sided disks	3.3	Accommodates high-density 3½-inch drives and includes new commands
2.0	Adds support for hard disk drives	4.0	Adds menus to execute commands, adds on-line help, and allows users to address hard disks with capacities larger than 32MB
2.1	Adds support for 3½-inch floppy disks used in the IBM PC portable computer	4.1	Fixes some minor bugs in the earlier release
3.0	Adds support for local area networks; uses high-density (1.2M) floppy disk drives, the RAM disk, volume names, and the ATTRIB command	5.0	Improved memory management, sophisticated full-stream editor called EDIT, and build your own memory-resident macros
3.1	Updates support for networks		

..... DOS FILE EXTENSIONS

As was stated earlier, DOS is a collection of programs and files. Over the past decade, certain file extensions have been adopted as a shorthand way to indicate the purpose of a file. Table 2-2 lists these file extensions and explains their meaning.

Table 2-2 File Extensions and Their Meaning

Extension	Sample Filenames	Description
.BAS	TIMEMAN.BAS	.BAS files are programs written in BASIC.
.BAT	NAME.BAT	.BAT (batch) files are text files containing DOS commands. DOS executes the commands listed in the file when the filename is typed at the command line.
.COM	COMMAND.COM, DISKCOPY.COM, TREE.COM	.COM file extensions identify a command or an executable program. Many of the filenames with .COM extensions are DOS external commands.
.EXE	FIND.EXE, SORT.EXE, ATTRIB.EXE	.EXE files contain executable programs, and thus are much like .COM files.
.HLP	SELECT.HLP	.HLP files display on-screen help.
.SYS	DISPLAY.SYS, KEYBOARD.SYS	.SYS files are device drivers.

Many programs assign specific extensions to the files they produce and use. These extensions help the user locate the appropriate files when searching for files on a disk.

..... THE IMPORTANCE OF KNOWING DOS

The importance of having a good working knowledge of DOS is obvious when you consider that your computer will not function without DOS. Many users, both casual and experienced, feel that they need to know only the application program(s) they will be using. But when they want to copy a file

from one drive to another or to find a file located in another directory, their limited knowledge of DOS becomes apparent, and they become extremely frustrated. Often, new users question the need to know DOS, but they soon realize that their lack of knowledge makes DOS their enemy. On the other hand, once they become familiar and comfortable with a few essential commands, that uncomfortable barrier is removed, and DOS becomes a valuable working friend.

This is true even in the “friendly environment” of Windows. The accessibility that DOS provides to the operations of the computer system sets PC-type machines apart from other major systems.

■ SUMMARY OF COMMANDS

<i>Function</i>	<i>DOS File Extension</i>	<i>Page</i>
BASIC file	.BAS	19
Batch file	.BAT	19
Command	.COM	19
Device driver	.SYS	19
Executable file	.EXE	19
Help file	.HLP	19

■ SELF-TEST

1. Name two of the services performed by DOS. _____

2. DOS provides a _____ to create text files.
3. What are the three main functional components of DOS? _____

4. What are DOS's two hidden files? _____

5. What was the first DOS version? _____
What is the latest DOS version? _____
6. What is the purpose of a file extension in DOS? _____

7. BASIC is designated by what file extension? _____
 8. Help files are denoted by what file extension? _____
 9. Files that contain DOS commands to be executed have a _____ file extension.
 10. What type of program displays statistics about the disk size? _____
-

Getting Started

OBJECTIVES

At the end of this lesson, you will be able to:

- Load DOS and start the computer.
- Describe the order in which DOS loads its system files.
- Perform a warm boot.
- Activate the DOS prompt.
- Enter the date and time.
- List DOS's rules of syntax.
- Type commands at the DOS prompt.
- Remove diskettes and turn off the computer.

.....

POWERING UP THE COMPUTER AND LOADING DOS (COLD BOOT)

Turning on your computer from the Off position is called a **cold boot**. This term is derived from the old expression "pulling oneself up by the bootstraps." After the computer has power but before you can use DOS or any application programs, the operating system must be loaded. To accomplish this, the bootstrap loader (a program located in the ROM chip) locates the three DOS system files and places a copy of these files into RAM (random access memory). (More information about RAM and ROM is given in Lesson One.)

If your computer has a hard disk drive, be sure to remove any floppy diskettes from drives A and B. When the system is turned on, the following sequence of events will occur:

1. The CPU (central processing unit) runs a diagnostic check program from ROM. If errors are detected, the booting process is terminated.
2. The computer searches for the three DOS system files. The computer starts looking for the DOS system files first in drive A, then in drive B, and then in drive C. When the computer locates these files, it places a

copy of them in RAM. If the system is unable to find the files, it will indicate this to you by displaying an error message.

3. The CPU searches the drives for a file called CONFIG.SYS, which is optional and is created by the user. If this file is located, the instructions contained in it are processed. CONFIG.SYS consists of commands that serve to customize the system.
4. The CPU then searches for a file called AUTOEXEC.BAT—another optional file that is created by the user. If AUTOEXEC.BAT is located, the programs contained in it are executed.
5. If there is no AUTOEXEC.BAT file and if the clock is not set by a command in any other batch file, the computer displays a screen prompt requesting the date and time.
6. Upon execution of the preceding items, either the DOS prompt or a menu appears indicating that the computer is ready to execute DOS commands and software applications. The screen display depends on the operating system you are using and on the contents of the AUTOEXEC.BAT file.

Now, it is time for you to power up your computer. We have listed instructions for both a hard disk computer and a floppy disk system. If your system is floppy-based, skip to the section entitled “Powering up and Loading DOS on a Floppy Disk Computer.”

Powering up and Loading DOS on a Hard Disk Computer

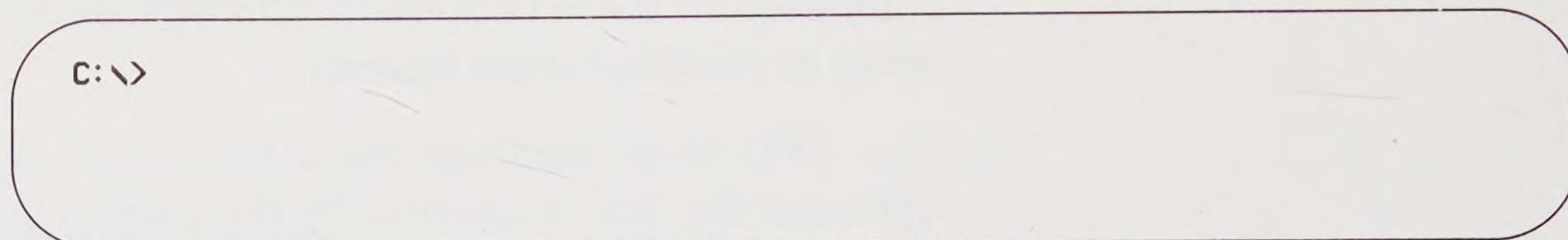
Make sure you don't have any disks in drives A and B. If you do, remove them.

1. Turn on the monitor.
2. Locate the On/Off switch on the CPU, and press it to the 1 (On) position.

At this point, the system performs a self-diagnostic test, the bootstrap loader locates the three DOS system files on your hard disk, and the loader places a copy of these files into the computer's memory. The system then looks for the CONFIG.SYS and AUTOEXEC.BAT programs; if it locates them, it processes those files.

During the boot process, you may notice some text and numbers appearing on your monitor. This is part of the diagnostics operation. Once the diagnostics stage has been completed, the light on drive A illuminates. This signals that the bootstrap loader is now looking for the three DOS system files. Since the files are not here, the bootstrap loader next looks on drive B (if your computer has one) and finally on drive C, where the files are located and from which a copy is loaded into the computer's RAM.

Depending on the configuration of your computer, you may or may not receive a prompt asking for the date and time. If you are not prompted for this information, the following DOS prompt appears as indicated in Figure 3-1.

Figure 3-1

3. Move to the section of this lesson titled "Entering the Date and Time." If you are prompted for the date and time, follow the instructions given in that section. If you are not prompted for the date and time, simply read the section.

Powering up and Loading DOS on a Floppy Disk Computer

1. Insert the DOS disk into drive A. If your version of DOS requires two diskettes, use the diskette labeled "DOS."
2. Close the drive door.
3. Turn on the monitor.
4. Locate the On/Off switch on the CPU and press it to the 1 (On) position.

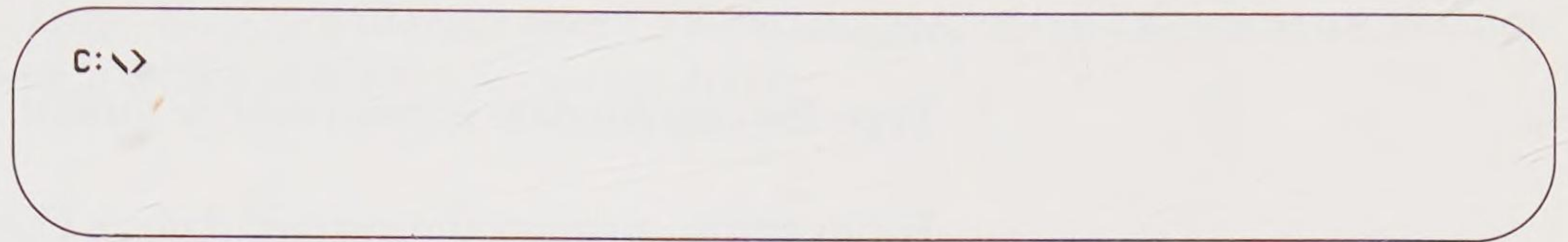
At this point, the system performs a self-diagnostic test, the bootstrap loader locates the three DOS system files on your hard disk, and the loader places a copy of these files into the computer's memory. The system then looks for the CONFIG.SYS and AUTOEXEC.BAT programs; if it locates them, it processes those files.

During the boot process, you may notice some text and numbers appearing on your monitor. This is part of the diagnostics operation. Once the diagnostics stage has been completed, the light on drive A will illuminate. This signals that the bootstrap loader is now looking for the three DOS system files. Since the files are not here, the bootstrap loader next looks on drive B (if your computer has one) and finally on drive C, where the files are located and from which a copy is loaded into the computer's RAM.

Depending on the configuration of your computer, you may or may not receive a prompt asking for the date and time. If you are not

prompted for this information, the following DOS prompt appears as indicated in Figure 3-2.

Figure 3-2

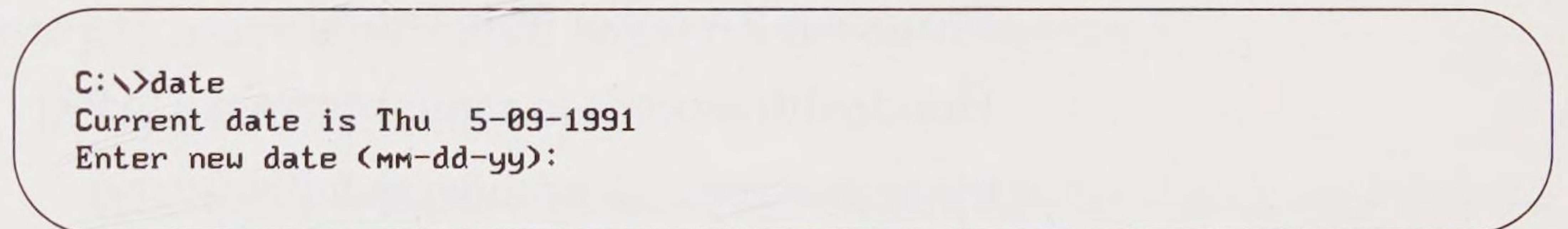


5. Move to the section of this lesson titled "Entering the Date and Time." If you are prompted for the date and time, follow the instructions given in that section. If you are not prompted for the date and time, just *read* the section.

..... ENTERING THE DATE AND TIME

If the system prompts you for the current date, your screen will appear similar to the one shown in Figure 3-3.

Figure 3-3



Entering the correct date and time is important because the resulting clock information provides a unique reference for each file, indicating when it was either created or last modified. This information will frequently assist you in finding a file. Some application programs automatically insert the current date when instructed to do so. The date inserted into your file is the date of your computer clock.

Enter the date in the format MM-DD-YY, MM/DD/YY, or MM.DD.YY. (Dashes, slashes, or periods may be used to separate the month, day and year.)

MM is a number from 1 to 12.

DD is a number from 1 to 31.

YY is a number from 80 to 99.



CAUTION: You must use a zero and not the letter "O."

To respond to the date prompt, perform the following steps:

1. Press to accept the current date.

or

1. Type the current date in mm/dd/yy format, and press

For example, to enter the current date as October 1, 1992, type **10/01/92** and press

Next the system will prompt you for the current time, and your screen should appear similar to the one in Figure 3-4.

Figure 3-4

```
C:\>time
Current time is  9:23:17.30
Enter new time:
```

Enter the time in the format hours:minutes:seconds:hundredth seconds. The seconds and hundredth seconds are optional. Some systems do not accept hundredth seconds.

Hours is a number from 0 to 23.

Minutes is a number from 0 to 59.

Seconds is a number from 0 to 59.

Hundredth seconds is a number from 0 to 99.

If the time is correct, continue as follows:

2. Press

or

2. Type the current time in hh:mm format, and press

For example, to enter the current time as 9:00 A.M., type **09:00** and press

..... THE DOS PROMPT

Once DOS has been loaded into the computer's memory, the DOS prompt appears as either A:\> or C:\>, depending on the disk drive from which DOS was loaded. This letter and symbol combination is referred to as the DOS prompt or the command line. The cursor (blinking underline or box) is positioned after the DOS prompt. The DOS prompt indicates two things at this

point. First, it identifies the active or default drive; for example, the prompt C:\> indicates your hard disk drive (drive C) is the active drive. Second, it signals that DOS is ready to accept a command or instruction from you.

Later on, you will learn about a third purpose of the DOS prompt. For now, notice which drive is your active drive.

ENTERING INFORMATION AT THE DOS PROMPT

To interface or communicate with DOS, the user types commands and information at the DOS prompt. DOS is unaware of what is being typed until the user presses the **Enter** key. Therefore, to enter any command, type the command and press the **Enter** key. DOS responds as soon as the **Enter** key is pressed. DOS requires that the information and commands be in a precise format, with no misspellings or information in the wrong syntax. If you make a typing error while entering a command, press the **Backspace** key (the key with the arrow pointing to the left) to delete the character to the left of the cursor. Once the error has been deleted, resume typing the command.

To practice giving DOS a command, you will enter the DATE command. To see how the **Backspace** key works, you will need to misspell the word *Date*. The DOS prompt is visible and the cursor is blinking to indicate that it is ready to accept a command from you. Do the following:

1. Type **DATTE** at the keyboard.

Whoops! You made a mistake. Now here's how to correct your mistake.

2. Press **Backspace** twice.

Your command line should appear as: C:\>DAT_

3. Type **E** (to complete the command DATE).

4. Press **Enter**

Your screen should appear similar to the one in Figure 3-5.

Figure 3-5

```
C:\>date
Current date is Thu 5-09-1991
Enter new date (mm-dd-yy):
```

5. Press **Enter** to accept the current date.

or

5. Type in the current date, using the mm/dd/yy format, and press **Enter**

..... GIVING DOS A COMMAND

Commands given to DOS must follow various rules of syntax, since DOS does not understand commands that do not abide by these rules. There are five key syntax rules:

- Commands may be entered in uppercase or lowercase characters.
- A space must be inserted after the command if the command requires an argument or additional information.
- Drive specification letters must be followed with a colon. Thus, for example A: designates drive A.
- DOS is ready to accept a command if the prompt is visible and the blinking cursor is positioned to the right of the prompt.
- must be pressed after the command has been entered, to instruct DOS to execute the command.

Upon completion of a command, DOS redisplay the prompt to let the user know that the task has been executed.

At this point, many of these rules may be somewhat confusing or may even sound like Greek; but as you progress through this tutorial, we will keep referring back to these rules to reinforce their importance.

Let's consider an example of how DOS responds when an incorrect or misspelled command is entered at the keyboard. Since you are familiar with the DATE command, we will focus on that one. At the DOS command line do the following:

1. Type **DATTE** at the keyboard.
2. Press

The system responds, "Bad command or file name." This indicates that DOS cannot find a command or a filename called DATTE. Therefore, it responds that it cannot locate it.

When you enter a command incorrectly, simply retype the command and press to execute the command. Many beginning users ask how they can get back up the screen to correct the command. But the DOS prompt does not function the way a word processor does: once the command is typed and is pressed, the only way to correct a mistake is to reenter the command.

..... RESTARTING DOS (WARM BOOT)

An occasion may arise when you need to reload DOS; for example, your system may lock up (not respond to key presses). When this happens, it is

not necessary to turn off the system and then turn it on again. If you hold down the **Ctrl** and **Alt** keys while pressing the **Del** key, all data in the computer's memory will be cleared and DOS will be reloaded. This way of loading DOS is called a **warm boot**. The diagnostic check that is performed during a cold boot is bypassed, and DOS immediately loads the three system files. If your system is floppy-based, be sure to insert the DOS system disk into drive A prior to executing the warm boot.

Now, try a warm boot. Remember, if you are using a floppy-based computer, to insert the DOS system disk into drive A first.

Press and hold down **Ctrl**, press and hold **Alt**, and at the same time press **Del**.

The screen will go blank for an instant; then the light on drive A will illuminate as the computer looks for the DOS system files. The boot procedure continues as before.



CAUTION: *There may be a few seconds delay before the system responds. If this command does not work, a cold boot must be used.*

..... TURNING OFF THE COMPUTER

Before turning off your system, make certain that all diskettes have been removed from the disk drives. For a fraction of a second after the power is turned off, the electricity stored in the power supply of the computer may bleed out. During this time of decreasing power, the electronics in the computer are in an unstable state. Although unlikely, it is possible for the disk drive to write random information onto the diskette at this time, destroying valuable data. Most computers have built-in safeguards to prevent this from happening, but they are not 100 percent foolproof.

If you are using an application software program, be sure to exit from the program back to the DOS prompt before turning off your computer.

Since this is the end of this lesson, it is a good time for you to practice turning off your system. This procedure has two steps:

1. Remove any disks in drives A and B, and store them in a safe place.
2. Locate the On/Off switch, and turn it to position 0.

■ SUMMARY OF COMMANDS

<i>Function</i>	<i>Command</i>	<i>Page</i>
Shows the current date	DATE	25
Shows what directory/drive is current	DOS prompt	26
Shows the current time	TIME	26
Restarts the computer	Ctrl - Alt - Del	28

■ SELF-TEST

1. What is the term for starting the computer from Off? _____

2. What keys are pressed to restart DOS in a warm boot? _____

3. The A> or C> that appears when the computer is started is called the

4. What key must be pressed after a DOS command has been typed?

5. Can DOS commands be entered in either uppercase or lowercase?

6. What is the name of the floppy drive? _____
Of the hard drive? _____
7. Is it all right to leave disks in the drive when you turn off the computer?

8. Identify one correct format to use in entering the date. _____

9. Is it possible to edit a command after you press Enter? _____

10. Is it all right to turn the computer off without first exiting the program
(if any)? _____

Using DOS Commands

OBJECTIVES

At the end of this lesson, you will be able to:

- Give DOS a command.
- List the files in the directory.
- Understand the meaning of the term *option*.
- Differentiate between internal and external DOS commands.
- Change the current disk drive.
- Display the directory using /P and /W.
- Print the directory.
- Pause or stop a DOS command temporarily.
- Cancel a DOS command.
- Determine the version of DOS on your computer.
- Clear the screen.

..... GIVING DOS A COMMAND

You issue instructions to DOS from the keyboard by entering DOS commands at the DOS prompt or command line. Remember, the keyboard is your main input device for communicating with the system. A command is a collection of keyboard characters that tells the computer what you want it to do. When issuing DOS a command, you must make the command the first item on the command line. To instruct DOS to execute the command, you then press **Enter**.

For example, DOS provides a command called DIR that allows you to view the files that reside on a disk drive. Issuing this command involves two steps:

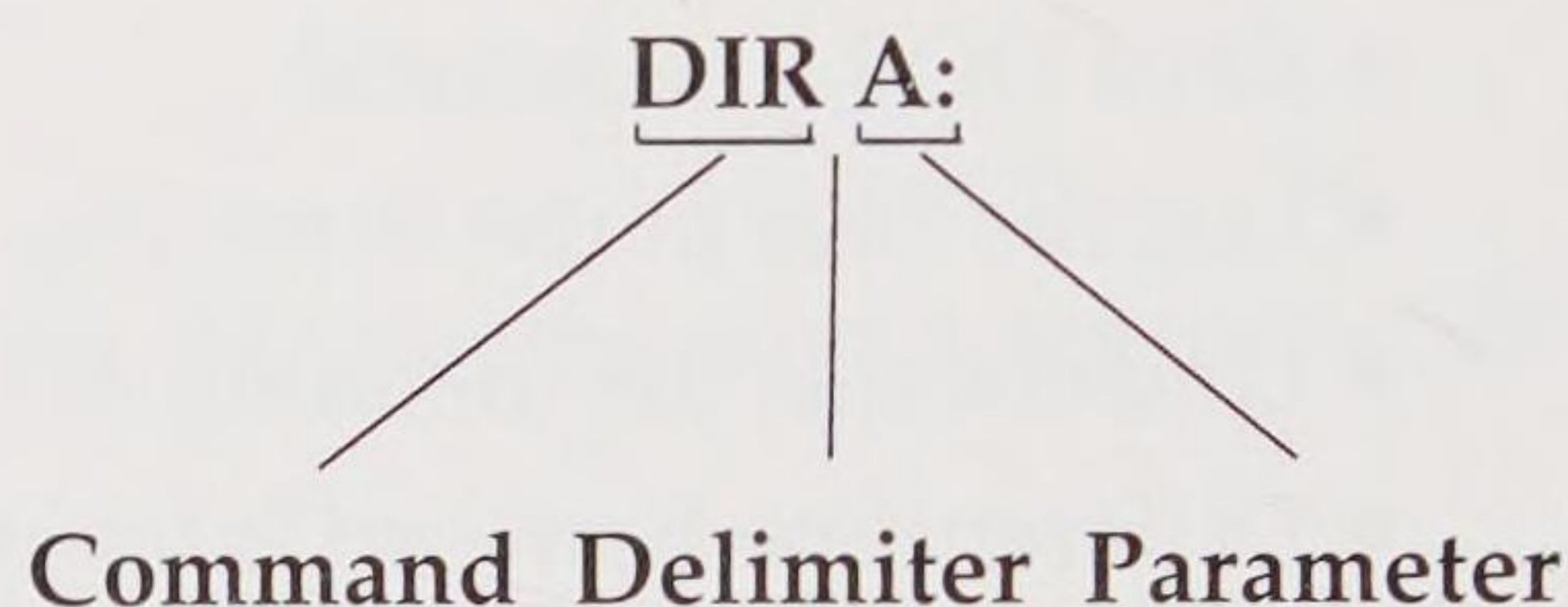
1. Type **DIR**
2. Press **Enter**

In response, DOS displays on the screen a listing of the files contained on your current directory.

Syntax

As was mentioned in Lesson Three, DOS commands must be given in a specific format or syntax. The command must be the first word on the command line. If the command requires additional instructions or information, DOS uses a delimiter to separate the command from a **parameter** (an additional instruction or piece of information expressed in the command syntax).

For example, suppose that drive C is your current drive and you want to view the directory of drive A. To instruct DOS to display the contents of drive A, you must provide some additional information besides the DIR commands. The command line will appear as follows:



Your teacher will give you a data disk to use throughout this book. At this time, you should obtain a copy of the data disk. If your system is hard disk-based, place the data disk into drive A and make sure that drive C is your active drive. If your system is floppy-based, place the data disk in drive B and substitute drive B for drive A in the exercise that follows:

1. Type **DIR A:**

The command must be the first word; the space following it separates the command from the additional information required—drive A.

Throughout this book, commands are displayed in uppercase for easy readability. However, a DOS command may be typed in either uppercase or lowercase.

2. Press

Your screen should appear as shown in Figure 4-1.

Options

DOS commands may include one or more options. An **option** is a parameter that turns on an optional feature of a command. Each option is a character preceded by a slash. Not all DOS commands have options, however, and options have different meanings when used with different commands. Most options are placed at the end of the command, after all parameters.

For example, the DIR command has a /W option, which tells DOS to display the directory's listing of filenames in columns across the width of the screen.

Figure 4-1

```

Volume in drive A has no label
Volume Serial Number is 0D56-09D7
Directory of A:\

PROPOSAL DOC      216 05-03-88   7:31a
IES      DOC      645 05-03-88   7:34a
AOP      DOC      726 05-03-88   7:33a
PROPOSAL WP       522 04-16-91   4:26p
NEWS     DOC      233 05-03-88   7:30a
INCOME87 WK1     3390 07-19-89   1:23a
INCOME88 WK1     7493 07-19-89   1:23a
INCOME89 WK1     5252 07-19-89   1:23a
INCOME   WK1     5907 07-19-89   1:23a
BIG      TXT      7982 10-16-90   2:05p
LIST     TXT      213 01-23-91  11:50a
PHONE   TXT      415 01-23-91  12:26p
WP      <DIR>     04-14-91   7:26p
ACCOUNTS <DIR>     04-14-91   7:26p
GRAPHICS <DIR>     04-14-91   7:26p
          15 File(s)  1088000 bytes free
    
```

Again, suppose that your active drive is drive C and that you wish to view the directory of files on drive A, using the /W option. The command would appear as follows:



The slash (/) is a **delimiter**, which tells DOS that an option is going to follow.

Now let's issue the DIR command to check the contents of drive A, using the /W option. Make sure that your data disk is in drive A and that your active drive is drive C. If you are using a floppy-based system, substitute drive B for drive A. Perform the following two steps:

1. Type **DIR A:/W**
2. Press Enter

Your screen should appear as shown in Figure 4-2.

Figure 4-2

```

Volume in drive A has no label
Volume Serial Number is 0D56-09D7
Directory of A:\

PROPOSAL DOC      IES      DOC      AOP      DOC      PROPOSAL WP      NEWS      DOC
INCOME87 WK1     INCOME88 WK1     INCOME89 WK1     INCOME   WK1     BIG      TXT
LIST     TXT      PHONE   TXT      WP
          15 File(s)  1088000 bytes free
    
```

INTERNAL AND EXTERNAL DOS COMMANDS

Although most users don't use more than 10 commands on a regular basis, DOS recognizes more than 50 commands. These commands are divided into two categories: internal and external. The internal commands are built into the command processor (COMMAND.COM) and remain resident in the computer's memory (RAM). They are called internal commands because they are available for instant use.

The external commands reside on the DOS system disk or on the hard disk. When an external command is needed, it is retrieved from the disk and loaded into memory. After the command has been executed, it is not retained in memory; consequently, it must be reloaded each time it is needed. **This means that, to use an external command, DOS must be on the current drive.** When external commands are used, there is a slight delay while DOS loads the command. Lists of internal and external commands follow.

Internal Commands

CHCP	CHDIR (CD)	CLS
COPY	CTTY	DATE
DEL (ERASE)	DIR	ERASE
MKDIR (MD)	PATH	PROMPT
RENAME (REN)	RMDIR (RD)	SET
TIME	TYPE	VERIFY
VOL		

External Commands

APPEND	ASSIGN	ATTRIB
BACKUP	CHKDSK	COMMAND
COMP	DISKCOMP	DISKCOPY
FASTOPEN	FDISK	FIND
FORMAT	GRAFTABL	GRAPHICS
JOIN	KEYB	LABEL
MODE	MORE	NLSFUNC
PRINT	RECOVER	REPLACE
RESTORE	SELECT	SHARE
SORT	SUBST	SYS
TREE	XCOPY	

You have given DOS the DATE and DIR commands. Notice that both of these commands are internal and, therefore, were already loaded into RAM. As you progress through the lessons in this book, you will refer repeatedly to

internal and external commands. If you have a floppy-based system, you must place your DOS system disk into drive A each time you want to issue an external command.

..... DIR (INTERNAL)

In the previous section, you had some experience using the DIR command, which is used to view the directory or listing of the names of the files residing on the active drive. The DIR command is much like the directory in the lobby of an office building, which lists the names of the companies that occupy office space.

The DIR command also provides some additional information:

- The name of the file
- The size (in bytes) of the file
- The date and time when the file was created or last changed

The DIR command also counts the number of files on a disk, displays the disk's storage capacity, and identifies the amount of available storage space on the disk (in bytes).

Entering the DIR Command

A different drive may be specified without changing the current drive. To enter the command at the DOS prompt, type **DIR**, followed by a space, and then type the letter of the desired drive and a colon; then press **Enter**. For example, to get DOS to display the directory of drive A when drive C is active, type

DIR A:

When entering the DIR command, you must use the following command syntax:

DIR /Option

Two options are available for the DIR command:

- /P** The **P** stands for *pause*. When given this command, DOS lists the directory but pauses at the end of each page for viewing. To continue to the next page, simply press any key. To execute this command, type **DIR /P** and press **Enter**.
- /W** The **W** stands for *wide*. When given this command, DOS lists the directory horizontally across the screen, but displays only the file-names. The size, date, and time information is not included. To use this function, type **DIR /W** and press **Enter**.

Now let's experiment with the /P option using the DIR command. Instructions are provided for both hard-based and floppy-based computers.

For a Hard-Based System Your DOS prompt should appear as follows:

```
C:\>
```

1. Type **DIR \DOS**

Make sure that you use the backslash (\), rather than the slash (/). This command tells DOS to show you the files that reside in the DOS directory. You will be introduced to directories in more detail in Lesson Seven.

2. Press **Enter**

Notice that the files scroll by quickly, making it very difficult to read the filenames. Using the /P option instructs DOS to display the list one screen at a time.

3. Type **DIR \DOS/P**

You must use the backslash before the word **DOS**; the forward slash after the word **DOS** instructs DOS that an option is to follow.

4. Press **Enter**

Your screen should look similar to the one in Figure 4-3.

Figure 4-3

```

.<DIR>      10-11-90   7:36a
..<DIR>      10-11-90   7:36a
COMMAND  COM      37557 11-30-88  12:00a
4201     CPI       6404 11-30-88  12:00a
4208     CPI        720 11-30-88  12:00a
5202     CPI        370 11-30-88  12:00a
ANSI     SYS       9105 11-30-88  12:00a
APPEND   EXE     11154 11-30-88  12:00a
ASSIGN   COM      5753 11-30-88  12:00a
ATTRIB   EXE     18263 11-30-88  12:00a
AUTOEXEC MJ        122 05-03-90  12:59p
BACKUP   COM     36880 11-30-88  12:00a
CHKDSK   COM     17787 11-30-88  12:00a
COMP     COM      9459 11-30-88  12:00a
CONFIG   MJ        176 05-03-90   1:31p
COUNTRY  SYS     12806 11-30-88  12:00a
DEBUG    COM     21574 11-30-88  12:00a
DISKCOMP COM      9857 11-30-88  12:00a
DISKCOPY COM    10396 11-30-88  12:00a
DISPLAY  SYS     15692 11-30-88  12:00a
DOSSHELL BAT       196 05-02-90   1:31p
DRIVER   SYS      5241 11-30-88  12:00a
EDLIN    COM     14069 11-30-88  12:00a
Press any key to continue . . .

```

At the bottom of your screen, the system prompts you with

```
Strike a key when ready...
```

5. Press any key.

DOS then displays the next screenful of filenames.

6. Continue to press any key until the DOS prompt redisplay.

For a Floppy-Based System Your DOS system disk is in drive A, and the DOS prompt appears as:

```
A: \>
```

1. Type **DIR**

This command tells DOS to show you the files that reside in the current drive.

2. Press

Notice that the files scroll by quickly, making it very difficult to read the filenames. Using the /P option instructs DOS to display the list one screen at a time.

3. Type **DIR /P**

The forward slash instructs DOS that an option is to follow.

4. Press

Your screen should look similar to the one in Figure 4-4.

Figure 4-4

COMMAND	COM	37557	11-30-88	12:00a
4201	CPI	6404	11-30-88	12:00a
4208	CPI	720	11-30-88	12:00a
5202	CPI	370	11-30-88	12:00a
ANSI	SYS	9105	11-30-88	12:00a
APPEND	EXE	11154	11-30-88	12:00a
ASSIGN	COM	5753	11-30-88	12:00a
ATTRIB	EXE	18263	11-30-88	12:00a
AUTOEXEC	MJ	122	05-03-90	12:59p
BACKUP	COM	36880	11-30-88	12:00a
CHKDSK	COM	17787	11-30-88	12:00a
COMP	COM	9459	11-30-88	12:00a
CONFIG	MJ	176	05-03-90	1:31p
COUNTRY	SYS	12806	11-30-88	12:00a
DEBUG	COM	21574	11-30-88	12:00a
DISKCOMP	COM	9857	11-30-88	12:00a
DISKCOPY	COM	10396	11-30-88	12:00a
DISPLAY	SYS	15692	11-30-88	12:00a
DOSSHELL	BAT	196	05-02-90	1:31p
DRIVER	SYS	5241	11-30-88	12:00a
EDLIN	COM	14069	11-30-88	12:00a
EGA	CPI	49068	11-30-88	12:00a
EMM386	SYS	87776	11-30-88	12:00a
Press any key to continue . . .				

At the bottom of your screen, the system prompts you with

Strike a key when ready...

5. Press any key.
DOS then displays the next screenful of filenames.
6. Continue to press any key until the DOS prompt redisplay.

Printing the DIR Command

When you request a directory listing, DOS displays the listing on the screen. This is called *standard output*, since DOS automatically reports the information on your monitor (the output device). However, you can instruct DOS to redirect the output to another device. Redirection is covered later in this book, but you may need a printed copy of your directory before then.

To redirect the directory reporting to the printer, type:

DIR >PRN or DIR >LPT1

Both commands cause DOS to send the directory to the printer for printing. Now let's practice printing the directory of the data disk. If you are using a hard-based system, make sure that the current drive is C and that the data disk is in drive A. If you are using a floppy-based system, make sure that

drive A is the current drive and that the data disk is in drive B; then substitute B for A in the following instructions.

Check to confirm that your printer is on and that the on-line light is illuminated.

1. Type **DIR A: >PRN**

The > character is accessed by holding down the **Shift** key while tapping the period key.

2. Press **Enter**

The directory listing is then printed on your printer. Notice that it is not displayed on your screen.

..... CHANGING THE CURRENT DRIVE

The letter displayed in the DOS prompt is the active or current disk drive (also known as the *logged-in drive*). To change the active drive, type the drive letter followed by a colon, and press **Enter**.

For example, suppose that drive C is the active drive and you wish to make drive A the active drive. The command that instructs DOS to make this change is:

C:\> A:

When you press **Enter**, the command will change the DOS prompt from C:\> to A:\>. This means that you are now working in drive A. When you subsequently save a file, it will be saved on drive A rather than on the hard drive (drive C). If you type **DIR** at the DOS prompt, the directory listing of drive A will appear.

If you are using a hard-drive computer, make sure that drive C is the active drive. Place the data disk in drive A. If you are using a floppy-based system, make sure that drive A is your active drive. Place the data disk in drive B, and substitute B for A in the following instructions:

1. Type **A:**
2. Press **Enter**

The DOS prompt immediately changes to appear as:

A:\>

Now, view the directory of drive A by performing the following steps:

3. Type **DIR**
4. Press **Enter**

Because drive A is the active drive, when you issue the DIR command, it automatically lists the filenames on drive A.

Now change your active drive back to C. (If your computer is floppy-based, change your active drive from B to A, and substitute A for C in the following steps.)

5. Type **C:**
6. Press **Enter**

Your DOS prompt should appear as:

```
C: \>
```

..... PAUSING A DOS COMMAND

Using the **Pause** key or **Ctrl-S** halts whatever the system is doing until another key is pressed. This function is normally used to freeze the display when the information is scrolling too fast or is moving off the screen.

In this exercise you will view the DOS directory and stop the scrolling by pressing the **Pause** key (in the upper left-hand corner of the keyboard). Be sure to locate your **Pause** key before executing the **DIR** command so that you can act quickly to pause the screen. The directory scrolls by quite rapidly, so be expeditious in pressing the **Pause** key.

1. With hard-based systems, type **DIR \DOS**

or

1. With floppy-based computers, type **DIR A:**
2. Press **Enter**
3. Press **Pause**

The screen temporarily freezes, enabling you to view the information.

4. Press any key to resume the scrolling.

..... CANCELING A DOS COMMAND

The key combination of **Ctrl-Break** cancels whatever function the system is performing. Use this key combination whenever you want to immediately discontinue the function currently being executed. This function can also be entered as **Ctrl-C**.

Let's start by displaying the directory listing of DOS. This time you will need to execute the **Ctrl-Break** key combination quickly, since the DIR command scrolls the information off the screen very rapidly.

1. With hard-based systems, type **DIR \DOS**

or

1. With floppy-based computers, type **DIR A:**
2. Press **Enter**

The filenames begin scrolling on the screen. To cancel this command and return to the DOS prompt, do the following:

3. Press **Ctrl-Break** (**Break** is the same key as **Pause**)

The DIR command is immediately canceled, and the DOS prompt redisplayed.

Let's consider another example of when you might use **Ctrl-Break**.

1. Type **DIR**

Suppose, now, that this was the wrong command; you really wanted the DATE command. Instead of pressing **Backspace** three times to delete the command, you could do the following:

2. Press **Ctrl-Break**

Immediately the DOS prompt redisplayed, indicating that DOS is ready for you to enter another command.

..... CLS (INTERNAL)

As you have been working with DOS, you may have noticed that the text on the screen keeps working its way toward the bottom of the screen. The CLS command clears the monitor's screen and redisplayed the DOS prompt in the upper left-hand corner of the screen.

The command syntax for entering the CLS command is as follows:

CLS

There are no options available for the CLS command.

Give the CLS command a try. For this exercise, it does not matter which drive is active or what type of system you have.

1. Type **CLS**
2. Press **Enter**

As soon as you press **Enter**, any text on the screen is removed, and the DOS prompt is repositioned in the upper left-hand corner of the screen.

.....
VER (INTERNAL)

In Lesson Two, we discussed the various versions of DOS. How do you know what version of DOS is loaded on your computer? The VER command causes DOS to display the manufacturer's name and the version number of DOS that is currently working on your computer.

The command syntax when entering the VER command is as follows:

VER

There are no options available for the VER command.

Let's see what version of DOS you are running on your computer.

1. Type **VER**
2. Press Enter

■ **SUMMARY OF COMMANDS**

<i>Function</i>	<i>Command</i>	<i>Page</i>
Show names of files on disk	DIR	31
Across width	/W	35
Pause	/P	35
Print to printer	PRN	38
Cancel	Ctrl - Break	40
Clear screen	CLS	41
Give DOS version in use	VER	42

■ **SELF-TEST**

1. An _____ DOS command is resident in RAM.
2. An _____ DOS command is stored on a disk.
3. List two internal commands: _____
4. List two external commands: _____
5. What is the command for printing the directory? _____
6. What does listing the directory show you about the files besides the names of the files? _____

7. What is the command for listing the files horizontally? _____

8. What would you enter to change the active drive from C to B? _____

9. What is the command for clearing the screen? _____

10. What is the command for determining the version of DOS loaded in the computer? _____
11. What is the command for stopping a command temporarily? _____

OBJECTIVES

At the end of this lesson, you will be able to:

- Name a file correctly.
- Understand special-purpose filename extensions.
- Use DOS wildcard characters.
- Copy files using the COPY CON command.
- Use the TYPE command.
- Print DOS files.
- Use the COPY, COMP, RENAME, ERASE, and ATTRIB commands.

.....

FILES AND FILENAMES

Files

A file is a collection of related information stored on magnetic media (either a floppy disk or a hard disk) in bytes. Remember that a byte is roughly the same as a character. Each time you create a magnetic file, you must give it a filename so that the computer has a way of identifying and locating the file when you wish to retrieve it. The procedure is similar in effect to placing a filing label on a paper file folder so that you can easily find and identify the file at a later date. A magnetic file resembles a paper file in that it can be copied, edited, renamed, and so on.

Filenames

Each file on a disk must have a unique name to identify it. A filename consists of two parts: the filename and the file extension.

A filename can contain up to eight characters and must adhere to the following rules:

- A filename cannot exceed eight characters.
- A filename can contain any of the letters A through Z and any of the numbers 0 through 9.
- A filename cannot contain the following symbols:

. " / \ [] : | < > + = ; ,

- A filename cannot contain spaces.
- Either uppercase or lowercase characters can be used.

Use of a file extension is optional. If you choose to add a file extension, you must separate the filename from the file extension by typing a period. The file extension may contain up to three characters. Following is an example of a filename with a file extension:

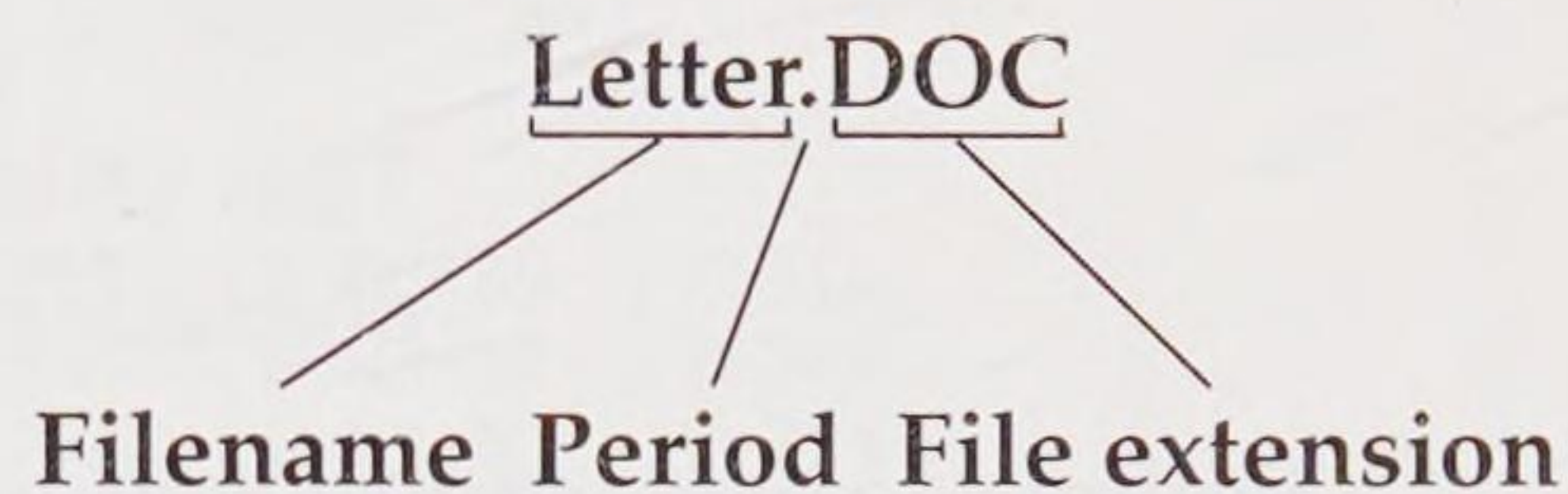


Table 5-1 lists some valid and invalid filenames.

Table 5-1

Valid and Invalid Filenames		
Valid	Invalid	Reason
I	1988INCOME	Name too long
87INCOME	INCOME.1988	Extension too long
INCOME.87	.88	No filename
INCOME.88	SALES 87	Space not allowed
BDGT(88)	2,300.75	Comma not allowed

Reserved File Extensions

DOS reserves some file extensions for special purposes:

- .BAK** Backup copy of a file
- .BAS** File written in the BASIC programming language
- .BAT** Batch-processing file that contains a sequence of commands for DOS to perform
- .COM and .EXE** Executable programs (can be executed by typing the filename without the extension)
- .SYS** System file that can be used only by DOS

When naming your files, you must refrain from using the preceding file extensions. Each has a special meaning and function in DOS, so to avoid possible malfunctions, do not use them.

Wildcard Characters

DOS recognizes two wildcard characters: the asterisk (*) and the question mark (?). **Wildcards** are simply characters that stand for one or more other characters. They are most often used with DIR, COPY, and DEL commands to save time in handling files that have similar filenames or common characters.

? This character represents any single character in a filename or extension.

* This character represents a group of characters or all characters in a filename or extension.

Following are examples of how wildcards can be used to designate files:

. All files in a directory

*.COM All files that have a .COM file extension

A*.COM Files that begin with A and have a .COM file extension.

Income8?.* Files that begin with Income8; the eighth character in the filename can be any character, and the file extension may be any one, two, or three characters.

To practice using the asterisk as a wildcard character, you are going to use the DIR command to ask for a listing of only the files that begin with the letter I. Make sure that your data disk is in drive A. (If you are using a floppy-based system, substitute drive B for drive A.) Perform the following steps:

1. Make sure drive A is the current drive.
2. Type **DIR I*.***
3. Press

This specifies all files whose filenames begin with I and are followed by any extension. Compare your screen to the one in Figure 5-1.

Now use the asterisk wildcard in only the filename, but specify .DOC as the file extension. Again make sure that drive A is the current drive. Then perform the following steps:

1. Type **DIR *.DOC**
2. Press

This specifies all files that have a file extension of .DOC. Again, compare your screen to the one in Figure 5-2.

Figure 5-1

```
A:\>dir i*.*

Volume in drive A is BACKUP 002
Directory of A:\

IES      DOC      645    5-03-88   7:34a
INCOME87 WK1     3390   7-19-89   1:23a
INCOME88 WK1     7493   7-19-89   1:23a
INCOME89 WK1     5252   7-19-89   1:23a
INCOME   WK1     5907   7-19-89   1:23a
          5 File(s)    667648 bytes free

A:\>
```

Figure 5-2

```
A:\>dir *.doc

Volume in drive A is BACKUP 002
Directory of A:\

PROPOSAL DOC      216    5-03-88   7:31a
IES      DOC      645    5-03-88   7:34a
AOP      DOC      726    5-03-88   7:33a
NEWS     DOC      233    5-03-88   7:30a
          4 File(s)    667648 bytes free

A:\>
```

Figure 5-3

```
A:\>dir i*.doc

Volume in drive A is BACKUP 002
Directory of A:\

IES      DOC      645    5-03-88   7:34a
          1 File(s)    667648 bytes free

A:\>
```

In this example, you are going to specify all files that begin with an I and have a file extension of .DOC. Perform these steps:

1. Type **DIR I*.DOC**
2. Press

Only one file should appear in the directory listing. How does your screen compare to the one in Figure 5-3?

In the final exercise, you will use the ? wildcard to specify all files that include that characters INCOME8 at the beginning of their filenames. The eighth character in the filename may be any character, and the file extension must be WK1. Perform these steps:

1. Type `DIR INCOME8?.WK1`
2. Press `[Enter]`

Compare your screen to the one in Figure 5-4.

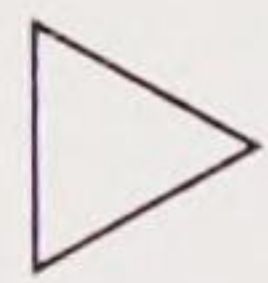
Figure 5-4

```
A:\>dir income8?.wk1

Volume in drive A is BACKUP 002
Directory of A:\

INCOME87 WK1      3390   7-19-89   1:23a
INCOME88 WK1      7493   7-19-89   1:23a
INCOME89 WK1      5252   7-19-89   1:23a
          3 File(s)    667648 bytes free

A:\>
```



CAUTION: For the last character of the file extension, be sure to type a numeral one, not an "i," or an "l."

..... MANAGING YOUR FILES

Creating a Short Text File

The COPY command copies a file or a group of files from one disk to another, or it duplicates a file on the same disk by renaming it. A special use of the COPY command is COPY CON, which instructs DOS to copy the input from the console (keyboard) and place it into a file. When creating a file by using this method, you must press `[Enter]` at the end of every line. After the entire file has been typed, press `[F6]` to inform DOS that you have reached the end of the file. This type of text file is called an ASCII file because it contains only text, punctuation, and spaces; no codes of instruction are contained in an ASCII file, in contrast to files created with application software such as WordPerfect and Lotus 1-2-3.

In this exercise, you will create a short text file by using the COPY CON command. Your command tells DOS to copy a file from the keyboard to a file named SAMPLE.DOC. DOS continues to copy until it encounters `[Ctrl]-[Z]`, which marks the end of a file. This is an easy and handy way to create short text files. Longer files should be created either through your word-processing application program or the DOS Edlin utility program.

First make certain that drive A is your active drive. (Again, if you are using a floppy-based system, substitute drive B for drive A.) Then perform these steps:

1. Type **COPY CON SAMPLE.DOC**
2. Press **Enter**
3. Type **This is a sample of a text file.**
4. Press **Enter**
5. Press **Ctrl-Z**
6. Press **Enter**

Your screen should look like this:

```
A: \>Copy CON: Sample
This is a sample of a text file.
^Z
1 File(s) copied
A: \>
```

..... TYPE (INTERNAL)

The TYPE command displays the contents of a file on the monitor, without stopping. If the file is longer than one screenful, you may press **Pause** or **Ctrl-S** to freeze the display. The TYPE command cannot be used on program files (files that have a file extension of either .COM or .EXE). If you use TYPE on files created with application software (Lotus, WordPerfect, and so on), you can usually decipher some readable characters, but you also get “funny faces” and weird symbols displayed on your screen.

The command syntax for entering the TYPE command is as follows:

TYPE Filename

No options are available for the TYPE command.

You will use the TYPE command to see the contents of the file SAMPLE.DOC. Be sure to place your data disk in drive A and make drive A the current drive. (If you are using a floppy-based system, substitute drive B where drive A is indicated.) Perform these steps:

1. Type **TYPE SAMPLE.DOC**
2. Press **Enter**

The contents of the file are displayed on the screen.

Now let's try the TYPE command with BIG.TXT, another file on your data disk. BIG.TXT is several screenfuls long, so you will need to press **Pause** immediately after you give DOS the TYPE command so that you can view the file. Are you ready?

1. Type **TYPE BIG.TXT**
2. Press **Enter**
3. Quickly press **Pause** to freeze the screen temporarily.
4. Press any key to resume scrolling the file.

To enable you to see the effect of using the TYPE command on a file created by application software, the data disk contains a file called PROPOSAL.WP. This file was created in WordPerfect. You will be able to decipher some of the text in this file, but you will also get some funny-looking characters.

1. Type **TYPE PROPOSAL.WP**
2. Press **Enter**

..... **PRINT (EXTERNAL)**

The PRINT command allows you to print a copy of a file. The Print command resembles the TYPE command in that you should not use it with a file created with an application software or a program file. Should you attempt to do this, you will get "funny faces" interspersed with text. Files can be printed while you are using the computer to do other tasks. The print requests are entered into a **print queue**, which identifies a list of files to be printed. The files are printed in the order in which they are entered. The print queue can normally hold up to 10 files. Make sure that your printer is on and on-line before you issue the PRINT command.

Because the PRINT command is an external command, it must be loaded from the DOS disk or from the hard disk.

The command syntax for entering the PRINT command is as follows:

PRINT Filename/Option

More than one file can be entered at a time by listing the filenames and separating each name with a space. For example, to print SAMPLE.DOC, BIG.TXT, and PROPOSAL.DOC, enter the following command:

PRINT SAMPLE.DOC BIG.TXT PROPOSAL.DOC

Three options are available for the PRINT command:

- /P** The **P** stands for *print*. This option instructs DOS to add the file to the print queue. This option is assumed if nothing is specified other than the filename.
- /C** The **C** stands for *cancel*. When this option is specified, the indicated filename is removed from the print queue. If the file is currently being printed, the printing is terminated and the paper is advanced to the top of the next page.
- /T** The **T** stands for *terminate*. When this option is selected, all files are removed from the print queue. (Printing may not stop immediately, because of the buffer memory of the printer: the contents of the buffer memory will print before stopping.)

If you simply type **PRINT** at the command line, with no parameters, DOS displays the list of files in the print queue.

In this exercise, you will give DOS the command to print the file named PROPOSAL.DOC. Make sure that your current drive is drive A and that your data disk is in that drive. If you are using a floppy-based system make sure that your DOS system diskette is in drive A and is the current drive. Because the PRINT command is an external command, it must be located on the current drive and then loaded into the computer's memory before it can be executed. Now perform these steps:

1. Type **PRINT PROPOSAL.DOC**

or, if you are using a floppy-based system, make sure drive A is your current drive. Then:

1. Type **PRINT B:PROPOSAL.DOC**
2. Press

When the print command begins, the screen will prompt you as follows:

Name of List device [PRN]: _

3. If your printer is attached in the standard configuration, press

If you are in doubt as to the configuration of your printer, ask your instructor.

.....
COPY (INTERNAL)

The COPY command makes a copy of a file, copying the contents of the source (original) file to the destination file. Use the COPY command to keep

an original file such as a contract or a form letter intact while you alter the copied file. The COPY command can make a copy of a file on a different disk or on the same disk. If you wish to make a copy of a file on the same disk, the destination name must be different from the source name by at least one character.

The command syntax for entering the COPY command is as follows:

COPY Source Filename Destination Filename

The Source Filename is the file to be copied (the original file). The Destination Filename is the file to receive the copy (the new file).

One option associated with the COPY command deserves special attention here:

- /V** The **V** stands for *verify*. This option confirms that the file was copied correctly. It takes a bit longer to copy the file with this option, but it is well worth it.



CAUTION: *If the destination file already exists, it will be overwritten with the contents of the source file.*

You are going to copy SAMPLE.DOC to SAMPLE1.DOC. Again, make sure that drive A is the current drive and that the data disk is in that drive. If you are using a floppy-based system, make sure that drive B is your current drive and that your data disk is in that drive. Perform these steps:

1. Type **COPY SAMPLE.DOC SAMPLE1.DOC**
2. Press **Enter**

To see the copied file listed in the directory:

3. Type **DIR**
4. Press **Enter**

You should now find two SAMPLE files listed: SAMPLE.DOC and SAMPLE1.DOC.

Now, let's copy SAMPLE.DOC to SAMPLE3.DOC:

1. Type **COPY SAMPLE.DOC SAMPLE3.DOC**
2. Press **Enter**
3. Type **DIR**
4. Press **Enter**

You should now find three SAMPLE files listed: SAMPLE.DOC, SAMPLE1.DOC, and SAMPLE3.DOC.

5. On your own, copy SAMPLE.DOC to SAMPLE4.DOC.

..... COMP (EXTERNAL)

The COMP command compares two files byte by byte and determines whether they are exactly the same. This command offers another method of confirming that a file has been accurately copied and that the two files are identical. DOS will report up to 10 inconsistencies between files. If discrepancies are found, COMP reports the location, counting from the beginning of the file. Interpreting the location may not be easy, but it is still a valuable way to determine whether the files are the same. If the files are identical, the screen will prompt you with "Files compare ok."

The command syntax for entering the COMP command is as follows:

COMP File1 File2

Now, you are going to use the COMP command to compare SAMPLE.DOC to SAMPLE3.DOC. Make sure that drive A is the current drive and that the data disk is in that drive. If you are using a floppy-based system, follow the instructions specific to your system. Because COMP is an external command, it must be located on the current drive and then loaded into the computer's memory before it can be executed.

1. Type **COMP SAMPLE.DOC SAMPLE3.DOC**

or, if you are using a floppy-based system, make sure that drive A is your current drive. Then:

1. Type **COMP B:SAMPLE.DOC B:SAMPLE3.DOC**
2. Press

The screen will prompt:

```
EOF mark not found
Files compare ok
Compare more files (Y/N)?
```

3. Press **N** and to exit the COMP function.

Are you wondering what the message "EOF mark not found" means? EOF stands for end of file. Not all files have EOF markers to indicate the end of the file. When the EOF marker is not present, DOS uses the length of the file to determine the end of the file. Because of the way the sample file was created, no EOF marker was written; therefore, COMP did not find one.

..... RENAME (INTERNAL)

Have you ever placed a filing label on a file folder and later wondered why you gave the folder such an inappropriate name? If this has happened to you

using a manila folder, the same thing is very likely to occur with your electronic files. The **RENAME** command allows you to change the name of a file. Any part of a filename, including the file extension, can be altered. The command requires two parameters: the old filename, followed by the new filename. Omission of either argument will result in an error message. If a file on the disk already has the new name, DOS will display "Duplicate filename or file not found". Remember, two files on the same disk cannot have the same filename.

The command syntax for entering the **RENAME** command is as follows:

RENAME Oldname Newname

No options are available for the **RENAME** command. You may abbreviate the **RENAME** command as **REN**.

Let's change the filename **SAMPLE3.DOC** to **SAMPLE2.DOC**. Your current drive should be drive A, and your data disk should be in that drive. If you are using a floppy-based system, drive B should be your current drive and your data disk should be in that drive. Perform these steps:

1. Type **RENAME SAMPLe3.DOC SAMPLe2.DOC**
2. Press
3. Display the directory to see the change.

..... **ERASE (INTERNAL)**

As you use your computer, you will begin to accumulate a number of files. Computer students often say they will never fill a disk—especially one that big! But in no time the disk is almost full, and they have to dedicate time to deciding whether various files should be retained or deleted. It is much easier to clean house on a regular basis, deleting files from a disk when they are no longer needed. For instance, suppose that you create a letter to a friend; once the letter has been mailed and you no longer need the file, take the time to remove it from your disk. The **ERASE** command is used to delete or remove a file from a disk. Wildcard characters may be used to delete several files at one time, but delete with care when using wildcards.

The command syntax for entering the **ERASE** command is as follows:

ERASE Filename/Option

Only one option is available for the **ERASE** command, and it is available only in DOS Version 4.0 or higher:

- /P** The **P** stands for *prompt*. This option instructs DOS to prompt you for verification before deleting the file.



CAUTION: When deleting files, consider them gone. Some third-party utilities are available to assist you in recovering a deleted file, but these utilities are not always successful. Delete with care!

Use the ERASE command to delete the file named SAMPLE4.DOC from your disk in drive A. If you are using a floppy-based system, your data disk should be in drive B. Perform these steps:

1. Type **ERASE SAMPLE4.DOC**
2. Press
3. Display the directory (using the (DIR) command) to view the results.



CAUTION: When using wildcards with the ERASE command, it is wise to use the /P option so that DOS will prompt you before deleting each file. If you don't use this option, you get no second chance, unless you specify deleting all files (*.*). If you enter the command ERASE *.* , DOS will ask you if all files are to be deleted. If you respond by entering a Y (for yes), all files will be removed.

.....

ATTRIB (EXTERNAL)

ATTRIB controls whether a file can be changed or deleted. This command lets you protect yourself from inadvertently erasing or changing a file, by making the file read-only. When a file is read-only, it can be read, but not changed or erased. Use this command on text files (such as contracts or form letters) that you do not want changed or deleted, on program files (such as the COMMAND.COM file), and on application software (such as WordPerfect). No matter how expert you feel when using a computer, there are still occasions when you may accidentally delete or change an unprotected file. The authors of this book can give you numerous occasions when we inadvertently deleted a file, but thank goodness DOS has foreseen the need to help us protect valuable files.

The command syntax for entering the ATTRIB command is as follows:

ATTRIB Attribute Filename

The Attribute can be one of the following:

- +R** This attribute tells DOS to make the file read-only.
- R** This attribute tells DOS to let the file be changed or erased.

The following exercise instructs DOS to display the attribute status of all files that begin with S and have a .DOC file extension in the current drive. Again, make sure that drive A is the current drive. (Floppy-based users, make sure that drive A is your current drive.) Since ATTRIB is an external command, it must first be located on the current drive and loaded into RAM before it can be executed. Perform these steps:

1. Type **ATTRIB S*.DOC** *or*, if you are using a floppy-based system, type **ATTRIB B:S*.DOC**
2. Press

DOS responds:

```
A  A: \Sample.DOC
A  A: \Sample1.DOC
A  A: \Sample2.DOC
```

The absence of any R indicators signifies that all files may be changed or deleted. Don't be concerned with the A indicators to the left of the filenames. This attribute denotes the file's archive status in relation to the BACKUP and RESTORE commands, and we will not be addressing this attribute further.

Now, make all the SAMPLE files read-only, as follows:

1. Type **ATTRIB +R SAMPLE*.*** *or*, if you are using a floppy-based system, type **ATTRIB +R B:SAMPLE*.***
2. Press

Now, view the attributes of all the SAMPLE files:

3. Type **ATTRIB SAMPLE*.*** *or*, if you are using a floppy-based system, type **ATTRIB B:SAMPLE*.***
4. Press

DOS responds:

```
A  R      A: \SAMPLE.DOC
A  R      A: \SAMPLE1.DOC
A  R      A: \SAMPLE2.DOC
```

The R indicates that the read-only attribute is turned on.

To check whether the ATTRIB command really works, try to delete SAMPLE.DOC. Perform these steps:

1. Type **ERASE SAMPLE.DOC** *or*, if you are using a floppy-based system, type **ERASE B:SAMPLE.DOC**
2. Press

DOS responds with the message "Access denied."

You previously instructed DOS not to change or delete the file, and therefore it is obeying your instructions.

Now, use the ATTRIB command to turn off the read-only attribute for the file SAMPLE2.DOC, as follows:

1. Type **ATTRIB -R SAMPLE2.DOC** *or*, if you are using a floppy-based system, type **ATTRIB -R B:SAMPLE2.DOC**
2. Press

Now, view the attributes of all the SAMPLE files:

3. Type **ATTRIB SAMPLE*.*** *or*, if you are using a floppy-based system, type **ATTRIB B:SAMPLE*.***
4. Press

DOS responds:

```
A R      A: \SAMPLE.DOC
A R      A: \SAMPLE1.DOC
A        A: \SAMPLE2.DOC
```

The absence of R to the left of the file SAMPLE2.DOC indicates that the read/write attribute is turned on; consequently, the file can be changed or deleted.

Again, test the ATTRIB command to see if you can delete the SAMPLE2.DOC file:

5. Type **ERASE SAMPLE2.DOC** *or*, if you are using a floppy-based system, type **ERASE B:SAMPLE2.DOC**
6. Press
7. View the directory. SAMPLE2.DOC should not be present.

■ SUMMARY OF COMMANDS

<i>Function</i>	<i>Command</i>	<i>Page</i>
Wildcard characters	* and ?	46
Copies files	COPY	48, 51
Displays contents of file on monitor	TYPE	49
Prints contents of file	PRINT	50
Compares two files	COMP	53
Changes the name of a file	RENAME	53
Deletes a file	ERASE	54
Changes the status of file (as read-only or changed)	ATTRIB	55

■ **SELF-TEST**

1. What command causes DOS to display the contents of a file on the screen? _____

2. What command causes DOS to make a copy of a file? _____

3. What command causes DOS to compare two files, byte by byte? _____

4. The _____ command can be used to change the name of a file from Report.Doc to Memo.Doc.
5. The _____ command deletes files.
6. To make a file read-only, use the ATTRIB command and _____.
7. What DOS command is used to create a short text file? _____

8. What command causes DOS to print a file named TEST.DOC? _____

9. How would you copy a file named REPORT from drive A to drive C?

10. What are DOS's two wildcard characters? _____

11. What is the maximum number of characters allowed in a DOS filename, not counting the three-letter extension? _____
12. Name two symbols that are not allowed in a filename. _____

13. Is a file extension required? _____

Managing Your Diskettes

OBJECTIVES

At the end of this lesson, you will be able to:

- Understand how files are stored on disks.
- Understand what the FORMAT command does and how to use it.
- Understand what the CHKDSK command is for.
- Use DISKCOPY to duplicate a disk.
- Compare two disks with DISKCOMP.

Diskettes are the computer's file cabinet—the place where DOS stores your files. DOS provides several utilities to assist you in maintaining and managing your diskettes. These commands deal with the entire disk, not with individual files.

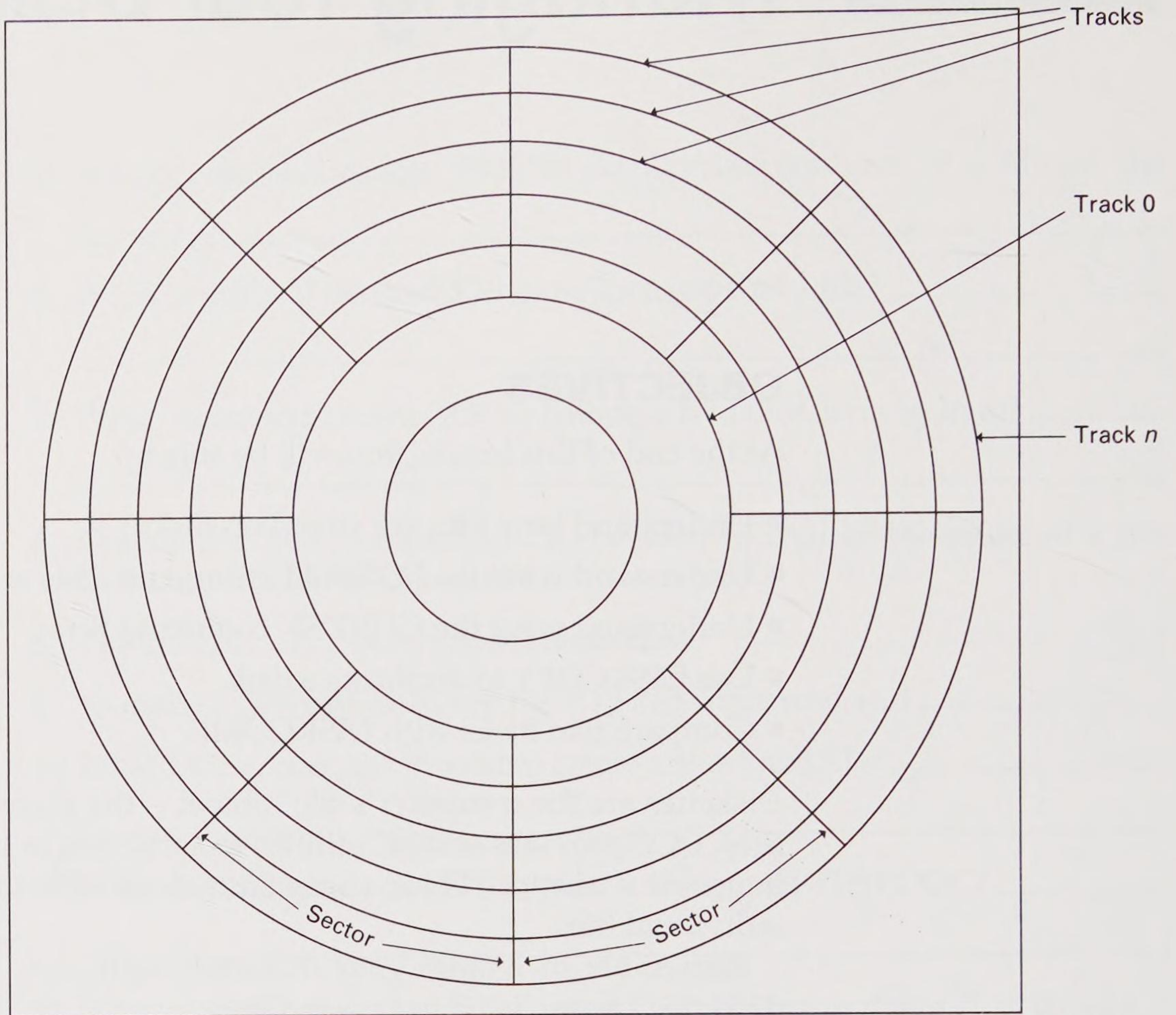
Remember to handle your diskettes with care. The do's and don'ts of diskette care are listed in Lesson One.

..... HOW DOS KEEPS TRACK OF FILES

Information is recorded on a disk in concentric circles called **tracks** (see Figure 6-1). There are 40 tracks on a standard 360K diskette and 80 tracks on high-density 5¼-inch and 3½-inch diskettes. Each track is composed of a number of **sectors**—pie-shaped wedges that radiate out from the center of the disk. Each sector can hold 512 bytes (characters). On a 5¼-inch double-density diskette, the tracks are numbered 0 through 39 and the sectors are numbered 1 through 9, for a total of 360 sectors (40 tracks times 9 sectors per track). A high-capacity 5¼-inch diskette has 80 tracks numbered 0 through 79, each of which has 15 sectors; 3½-inch diskettes have 80 tracks per side, and (depending upon the disk capacity) they have either 9 or 18 sectors per track.

When DOS stores a file on a disk, it does not necessarily use contiguous sectors and tracks. Instead, DOS may scatter a file throughout the disk's surface. A sector (holding 512 bytes) is the smallest accessible unit of storage on a disk. If a file exceeds one sector in length, DOS needs to know which

Figure 6-1



sector goes with which file. DOS accomplishes this by storing the location of the first sector of each file in the directory (you cannot see it); thereafter, each subsequent sector points to the next sector until the end of the file is reached.

.....
FORMAT (EXTERNAL)

The FORMAT command performs three functions:

- It cleans the diskette, setting every bit to zero. This cleaning process erases anything that is currently on the diskette.
- It defines the tracks and sectors on the diskette.
- It sets up an empty directory on the diskette.

A new diskette must be formatted before it can be used to store files, unless you purchase preformatted diskettes. If a diskette has existing information stored on it, the data will be erased when the disk is formatted.

To format a data disk, first insert the diskette into a floppy disk drive. If the disk drive is designed to hold a 5¼-inch diskette, close the door of the drive. The command syntax for entering the FORMAT command is as follows:

FORMAT Filename/Option

Several options are available for the FORMAT command, but we will address only four of these:

- | | |
|------------|---|
| /4 | This option formats a 5¼-inch double-density diskette in a high-capacity disk drive. |
| /N:9/T:80 | This option formats a 3½-inch double-density diskette in a high-density disk drive. |
| /V:<label> | In Version 4.0 or higher, this option assigns the label as the volume label to the formatted disk. In Versions 3.0 or higher, /V without the colon and <label> tells DOS to prompt you for a volume label when the formatting process is completed. |
| /S | This option copies the operating system files from the disk in the default drive to the newly formatted disk. This option must be the last option typed in the FORMAT command. |



CAUTION: *Formatting erases the previous contents of a disk; therefore, do not format your hard disk unintentionally.*

You are now going to format a diskette. Locate a blank diskette and follow the instructions appropriate for your system.

Hard-based system users, make drive C the current drive, and place a blank diskette into drive A. Floppy-based system users, make drive A the current drive, place a blank diskette into drive B, and in the instructions that follow, substitute drive B for drive A. Because the FORMAT command is an external command, DOS must be able to locate the file on the current drive and must load a copy of the file into the computer's memory before the command can be executed. Now perform these steps:

1. Insert the diskette into drive A, and close the disk drive door (if it is designed for a 5¼-inch disk).
2. Type **FORMAT A:**
3. Press Enter

The system will prompt you as follows:

Insert new diskette for drive A:
and strike ENTER when ready

4. Press Enter again.

If you are using Version 3.0 or higher, when the FORMAT procedure is complete, a message appears on the screen stating "Format complete." This message is followed by the number of bytes of total disk space and the number of bytes available on the disk.

You are then prompted as follows:

```
Format another (Y/N)?
```

5. Type **N** (for No).
6. Press

If you are using Version 4.0 or higher, the "Format complete" message is followed by the prompt, "Volume label (11 characters, ENTER for none)?" A **volume label** is an internal label identifying the contents of the disk. To enter a label, type descriptive text no longer than 11 characters and press . To bypass the volume label, simply press .

5. Press to enter no volume label.

DOS then reports the number of bytes on the diskette and prompts you with

```
Format another (Y/N)?
```

6. Type **N** (for No).
7. Press

..... LABEL (INTERNAL)

The LABEL command is used to display, add, change, or delete a volume label to a diskette without your having to reformat the diskette. A volume label is an internal label that describes the contents of the diskette. In Version 4.0 or higher, you are prompted at the end of the FORMAT procedure, whether or not you desire to add a volume label. This same version of DOS also offers an option (/V:label) to the FORMAT command that enables you to add a volume label automatically.

The command syntax for entering the LABEL command is as follows:

LABEL Drive: New Label

No options are available for the LABEL command.

In this exercise you are going to view the volume label for the diskette you just formatted. (If you are using a floppy-based system, remember to substitute drive B for drive A in the following instructions.) Perform these steps:

1. Type **LABEL A:**
2. Press

The screen then prompts you as follows:

```
Volume in drive A has no label
Volume Label (11 characters, ENTER for none)?
```

3. Type **TRAINING** (for the label name).
4. Press

At once, the DOS prompt returns.

Are you wondering whether the volume label was really changed? Let's use the LABEL command to view the volume label:

1. Type **LABEL A:**
2. Press

The screen prompts you with

```
Volume in drive A is TRAINING
Volume Label (11 characters, ENTER for none)?
```

3. Press

The screen prompts you with

```
Delete current volume label (Y/N)?
```

4. Type **N** (for No).

.....
VOL (INTERNAL)

The VOL command displays the internal volume label of a diskette. This is a quick way to make sure you have the correct diskette; it is faster than checking the directory.

The command syntax for entering the VOL command is as follows:

VOL Drive:

No options are available for the VOL command.

You are now going to view the volume label for the diskette you just formatted. Perform these steps:

1. Type **VOL A:**
2. Press

The screen prompts you with

Volume in drive A is TRAINING

..... CHKDSK (EXTERNAL)

The CHKDSK command gives a status report on the specified disk. This function analyzes the directory on a disk, comparing the directory entries with the locations and lengths of the files, and then reports any errors it finds. The CHKDSK command reports the total amount of space on the disk, the number of files and directories and the amount of space they occupy, the amount of available space remaining on the disk, the size of the computer's memory, and the number of bytes of memory that remain free for use.

The command syntax for entering the CHKDSK command is as follows:

CHKDSK Drive:

Two options are available for the CHKDSK command:

- /V** This option displays the name of each directory and file on the disk.
- /F** The F stands for *fix*. This option instructs DOS to correct any errors it finds in the directory.

Now, you are going to use the CHKDSK command to view the total disk space and the amount free for the newly formatted diskette in drive A. Perform these steps:

1. Type **CHKDSK A:**
2. Press

The screen displays the amount of total disk space and the amount of space available. Your screen should be similar to the one in Figure 6-2. Depending on the size and density of your diskette, the total space and amount available will vary.

Figure 6-2

```

C:\>CHKDSK A:
Volume TRAINING    created Apr 25, 1991 12:56p

1457664 bytes total disk space
      0 bytes in 1 hidden files
1457664 bytes available on disk

655360 bytes total memory
566912 bytes free

C:\>

```

Now, use the CHKDSK command to check drive C, which should be your current drive. (If you are using a floppy-based system, your current drive should be A, and you should use CHKDSK to check drive A.) Perform these steps:

1. Type **CHKDSK**
2. Press

Your screen should resemble the one shown in Figure 6-3.

Figure 6-3

```

C:\>CHKDSK
Volume HARDISK    created Apr 18, 1990 10:14a

21309440 bytes total disk space
  55296 bytes in 3 hidden files
  43008 bytes in 13 directories
17025024 bytes in 786 user files
 4186112 bytes available on disk

655360 bytes total memory
566912 bytes free

C:\>

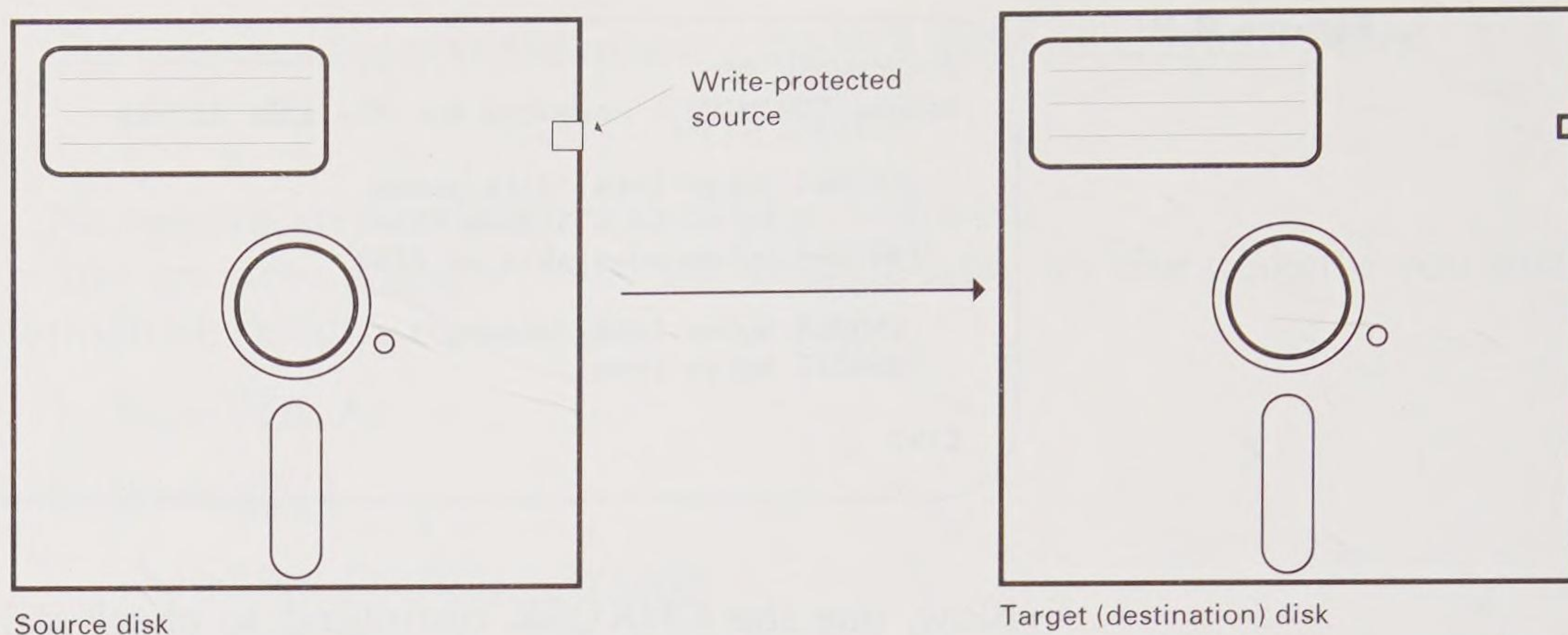
```

..... DISKCOPY (EXTERNAL)

This command allows you to make a duplicate copy of a diskette. The entire diskette is copied, sector for sector and file for file (see Figure 6-4). The result is a mirror image of the original disk. The DISKCOPY command cannot be used to copy to or from the hard disk; both the source and target diskettes must be floppy disks. Any files already contained on the target or destination diskette will be erased during the DISKCOPY procedure. DISKCOPY automatically formats the diskette before it begins to copy the files.

DISKCOPY requires that both diskettes be the same size and type. In other words, you cannot DISKCOPY a 3½-inch diskette to a 5¼-inch diskette or a 1.2MB 5¼-inch diskette to a 360K 5¼-inch diskette. If you need to copy data

Figure 6-4



from one size or type of diskette to another, use the COPY command to accomplish this task.

If you enter the command **COPY *.***, DOS will copy all the files from the source disk to the destination diskette. The destination diskette will contain the same files as the source diskette, but it will not be a sector for sector duplicate of the original. Unlike the DISKCOPY command, COPY simply adds files to the target diskette; it does not overwrite any existing files.

The command syntax for entering the DISKCOPY command is as follows:

DISKCOPY Source Drive: Target Drive:

No options are available for the DISKCOPY command.

CAUTION: When given the DISKCOPY command, DOS overwrites any files on the diskette. Any files already on the target diskette will be erased.

In this exercise, you are assumed to have only one floppy drive. Make sure that drive C is your current drive, and place the data disk in drive A. (Floppy-based system users, make sure that drive A is your current drive and that your DOS system disk is in that drive, and place the data disk in drive B. Then in the following directions, substitute drive B for drive A.) Perform these steps:

1. Type **DISKCOPY A: A:**
2. Press **Enter**

The system prompts you as follows:

Insert the SOURCE diskette in drive A:
Press any key to continue...

The source diskette should already be in drive A.

3. Press any key.

The screen will indicate the number of tracks that are being copied and in a few moments will prompt you with

Insert TARGET diskette in drive A:
Press any key when ready...

4. Place a blank diskette in drive A and press any key.

The light on drive A will illuminate, signifying that the diskette is receiving the copy sector for sector.

Depending on the density of your diskette and the available memory of your computer, you may be prompted to insert the source diskette again, followed by the target diskette. Follow the prompts on the screen to complete the DISKCOPY procedure. When the procedure is finished, the screen will prompt you with

Copy another diskette (Y/N)?

5. Type N (for No).

..... DISKCOMP (EXTERNAL)

The DISKCOMP command allows you to compare two diskettes to determine whether they are identical. It compares the two diskettes sector by sector, determining that each file is stored in the identical sector(s). Use this function to ensure that a diskette copied with the DISKCOPY command is an exact copy of the original. In Lesson Five you used the COMP command, which compares only two files. In contrast, DISKCOMP compares two entire diskettes.

The command syntax for entering the DISKCOMP command is as follows:

DISKCOMP Drive1: Drive2:

Two options are available for the DISKCOMP command:

- /1 Compare only the first side of the diskettes, even if they are double-sided.
- /8 Compare only the first eight sectors of each track, even if the diskettes have more sectors per track.

Now let's compare the diskette you just copied using the DISKCOPY command to the original diskette. Place your data disk in drive A. (Floppy-based system users, substitute drive B for drive A.) Perform these steps:

1. Type **DISKCOMP A: A:**
2. Press

The screen prompts you with

```
Insert FIRST diskette in drive A:
Press any key when ready...
```

3. Place one of the diskettes (it doesn't matter which one) in drive A.
4. Press any key.

The screen will report the tracks that are being compared. In a few seconds, the screen will prompt you with

```
Insert SECOND diskette in drive A:
Press any key when ready...
```

5. Remove the first diskette, and place the second diskette into drive A.
6. Press any key.

Depending on the density and size of the diskette, you may be prompted several times to insert the first and then the second diskette. When the DISKCOMP procedure is complete and the diskettes compare satisfactorily, the system prompts you as follows:

```
Compare OK
Compare another diskette (Y/N)?
```

7. Type **N** (for No).

■ SUMMARY OF COMMANDS

<i>Function</i>	<i>Command</i>	<i>Page</i>
Erases the disk and prepares it for data	FORMAT	60
Describes the contents of the disk	LABEL	62
Displays the volume label	VOL	63
Provides a status report of the disk	CHKDSK	64
Copies the diskette (mirror image)	DISKCOPY	65
Compares two diskettes	DISKCOMP	66

■ SELF-TEST

1. Information is recorded on disks in concentric circles called _____

2. Identify two functions performed by the FORMAT command. _____

3. What command is used to format a disk and to copy the operating system files to the new disk? _____
4. Is it possible to store information on a blank diskette that has not been formatted? _____
5. What is the purpose of a volume label? _____

6. What command is used to display the volume label of a diskette? _____

7. What command gives a status report of the designated disk? _____

8. The _____ command makes a mirror image of the original diskette on the new diskette.
9. To determine whether two disks are identical, use the _____ command.
10. When you perform a DISKCOPY command, what happens to the files previously stored on the disk? _____

Hard Disk Management

OBJECTIVES

At the end of this lesson, you will be able to:

- Understand the directory structure of the root directory and subdirectories.
- Change directories and drives.
- Copy a file from one directory to another.
- Understand and use the DOS PROMPT command.
- Create directories and subdirectories.
- Remove directories and subdirectories.
- Use the CHKDSK command.
- Use the PATH command.

.....

ROOT DIRECTORY AND SUBDIRECTORIES

One method of organizing files on a hard disk is to establish directories. A directory is simply a place to store files that pertain to the same subject. For instance, you might have one directory where you store your accounting data, another for your letters and word-processing documents, and a third for your customer database. Locating files on your hard disk drive would become very cumbersome and difficult if all of them were thrown together in a single directory. Organizing your hard disk drive is similar to organizing your files in a filing cabinet: you probably have one drawer for one topic and another drawer for another topic. If you started stacking your files in a pile without organizing them at all, you would soon have trouble finding anything. The same is true with your hard disk drive. It is important to have good organization.

A hard disk is much like an empty file drawer. It provides storage but no organization. To make finding items easier, you create directories to hold your files. The directory structure is hierarchical. The main directory or top level is called the **root directory**, and it is designated in DOS with a backslash (\). When a computer is turned on (with either a cold or a warm boot), the default or active directory is the root directory. In the DOS prompt C:\>,

the C: indicates that drive C is current, and the \ indicates that the root directory is the current directory. Unlike other user-created directories, the root directory cannot be given a name and it cannot be removed.

Other directories may be created, branching out from the root, and, in turn each one of these can have any number of subdirectories beneath it. The term **subdirectory** is used to describe the relationship between two directories. For instance, in the directory structure shown in Figure 7-1, the top level of the structure is the \ (root directory). Below the root directory are three directories: ACCOUNTS, GAMES, and WP. These three directories are thus subdirectories of the root directory. This is their relationship to the root directory. For instance, a person employed by a company has the relationship of an employee, but is still a person. A directory still functions the same, but it might have or be a subdirectory to another directory. The directory GAMES has one subdirectory called SOLITAIRE; WP has one subdirectory called REPORT; ACCOUNTS has no subdirectories.

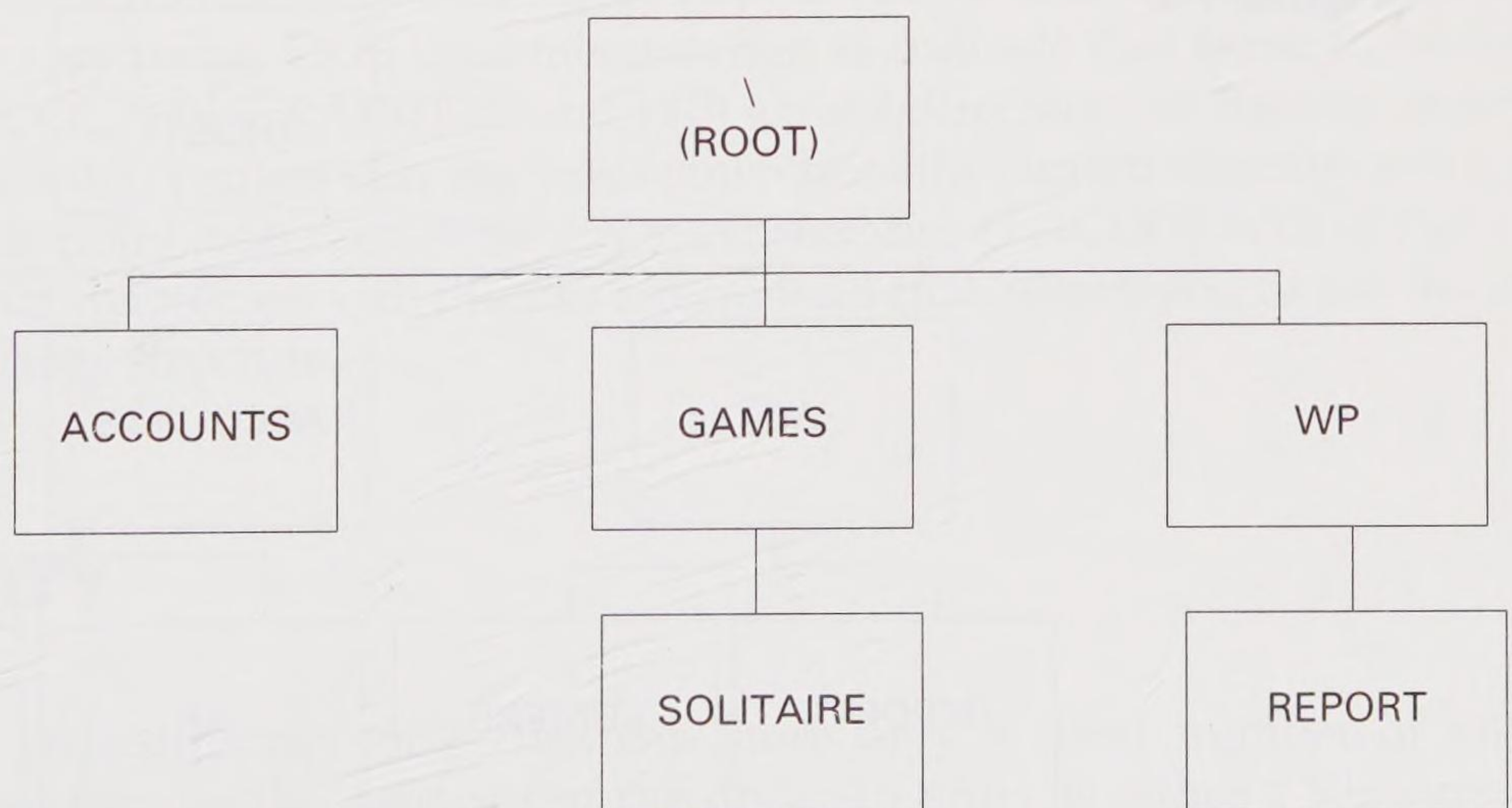
The directory that encompasses a subdirectory is called the subdirectory's **parent directory**. The only directory that does not have a parent is the root directory. In Figure 7-1, the parent of the SOLITAIRE directory is GAMES, and the parent of GAMES is the root directory. The parent of ACCOUNTS is the root directory. The parent of REPORT is WP, and the parent of WP is the root directory.

The only directory that is certain to be found on a hard disk is the root directory. Other subdirectories can be created, but these may vary from computer to computer in name and structure. After a directory has been created, files can be placed in it. This is a good method of separating or categorizing files into various applications or for different users.

There are several advantages to organizing your hard disk with directories:

- *System Organization:* Without the organizing power of directories, your software programs, data files, DOS, and utility programs would be

Figure 7-1



intermingled haphazardly; and this would make it difficult for you to locate files and to determine what was on the system.

- *Addition and Deletion of Software Programs:* Organized directories allow you to add or remove programs and data files easily.
- *Ease of Updating Software:* New releases of software can easily be updated if each software application is maintained in its own directory.
- *Keeping User Files Separate:* If more than one person uses the same computer, maintaining directories for each user eliminates confusion and helps prevent users from replacing or deleting each other's files.

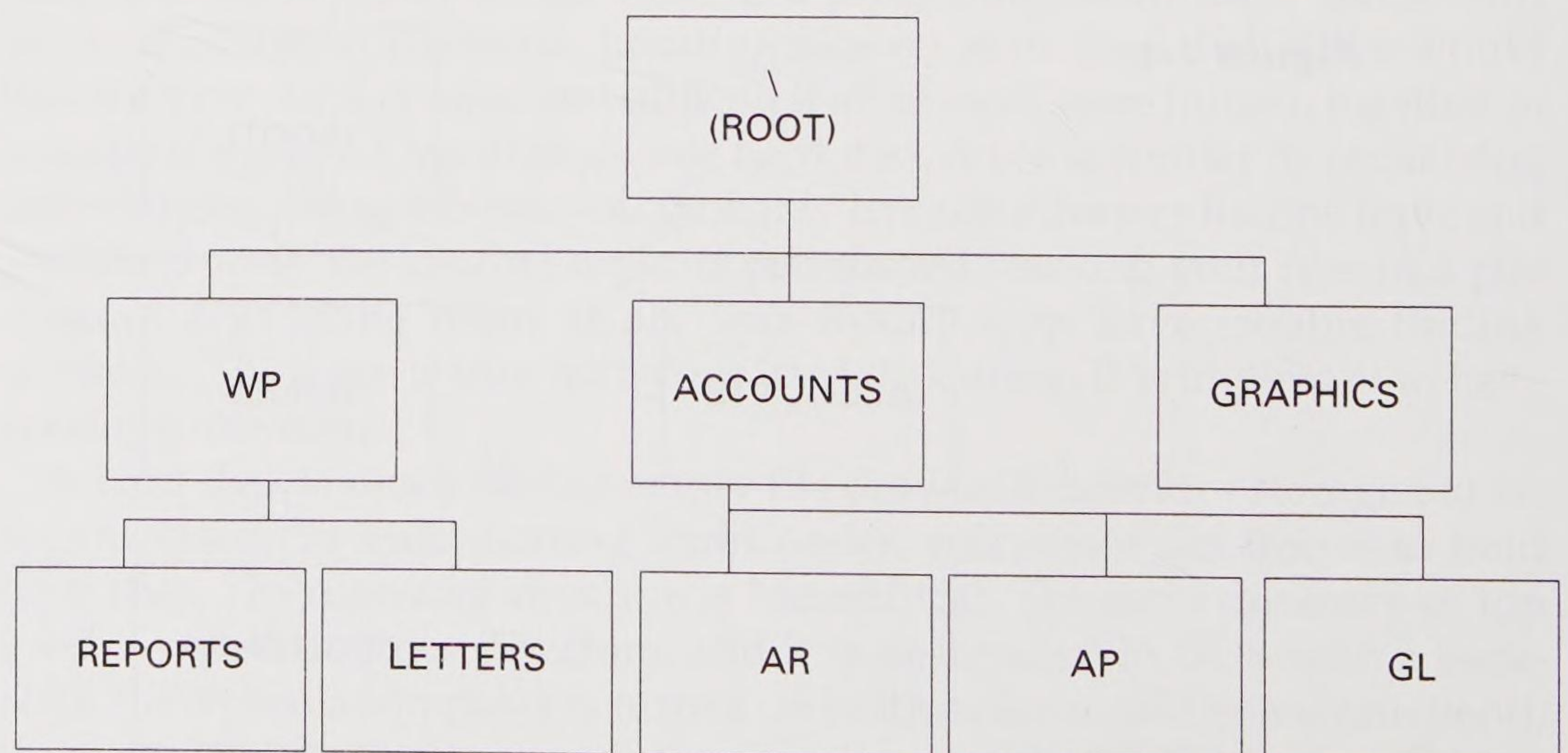
..... DIRECTORY TREE STRUCTURE

The directory structure used by DOS is called a **tree structure** because it resembles the root system of a tree. The root directory represents the main root of the tree, with directories and subdirectories branching out from it.

The rationale behind tree-structured directories is that related groups of files can be easily indexed. As you move down the tree from the root, the contents of each directory become more specialized.

In the directory structure shown in Figure 7-2, the root directory contains three subdirectories: WP, ACCOUNTS, and GRAPHICS. In turn, the WP directory contains two subdirectories: REPORTS and LETTERS. The ACCOUNTS directory contains three subdirectories: AR (Accounts Receivable), AP (Accounts Payable), and GL (General Ledger). The GRAPHICS directory has no subdirectories. Notice how, the further down the tree or directory structure you go, the more specific and distinctive the directories become.

Figure 7-2



The directory structure indicated in Figure 7-2 has been created for you on your data disk. Locate your data disk, place it in drive A, and make drive A your current drive. (Floppy-based system users, place the disk in drive B, and make drive B your current drive.)

Since the hard drive organization on each computer tends to vary, some directories have been created on your data disk so that you can easily follow the exercises in this chapter. Ordinarily you don't need to create directories on floppy diskettes, simply because of their limited storage capacity.

1. Type **DIR**
2. Press **Enter**

DOS displays the directory contents as indicated in Figure 7-3.

Figure 7-3

```

A:\>dir

Volume in drive A is BACKUP 002
Directory of A:\

PROPOSAL DOC      216   5-03-88   7:31a
IES        DOC     645   5-03-88   7:34a
AOP        DOC     726   5-03-88   7:33a
PROPOSAL  WP      522   4-16-91   4:26p
NEWS      DOC     233   5-03-88   7:30a
INCOME87  WK1    3390   7-19-89   1:23a
INCOME88  WK1    7493   7-19-89   1:23a
INCOME89  WK1    5252   7-19-89   1:23a
INCOME    WK1    5907   7-19-89   1:23a
BIG       TXT    7982  10-16-90   2:05p
LIST      TXT     213   1-23-91  11:50a
PHONE     TXT     415   1-23-91  12:26p
WP        <DIR>   10-18-90   9:55a
ACCOUNTS  <DIR>   10-18-90   9:55a
GRAPHICS  <DIR>   10-18-90   9:55a
SAMPLE   DOC      34   4-29-91  12:38p
SAMPLE1  DOC      34   4-29-91  12:38p
          17 File(s)    664576 bytes free

A:\>

```

Notice that three of the entries have a <DIR> notation to the right of the directory name. DOS uses this notation to indicate that these three entries (ACCOUNTS, GRAPHICS, and WP) are subdirectories of the root directory. Notice that you see only one level down from the current directory level; thus, at this point, you cannot see any subdirectories of ACCOUNTS or WP. Later in this chapter we will discuss a command that allows you to see the entire directory structure.

..... DIRECTORY CAPACITY

The root directory of a disk can store only a fixed number of entries, depending on the capacity of the disk. An entry is either a filename or a

subdirectory name. The root directory of a hard disk can hold a maximum of 512 entries. Unlike the root directory, subdirectories can hold as many entries as available disk space allows.

It is important to keep your root directory as clean as possible. Don't hesitate to create subdirectories when they are needed. As an illustration, imagine that you have a big filing room where you keep all of your paper files. The room contains many filing cabinets for your use; however, you always seem to be too busy to organize your files, and consequently you keep stacking them at the entrance of the room day after day. After some time, it will be impossible for you to get to the filing cabinets at all, because you have files stacked to the ceiling blocking your path to the available filing cabinets. All that filing space, and you can't get to it! The same is true of your root directory. If you keep storing files in your root directory, you will eventually be unable to get to all of the space available on your drive.

..... THE CURRENT DIRECTORY

DOS keeps track of the current drive and the current directory. If your DOS prompt is not set up to display the current directory, you can use the CD or CHDIR command to identify the current directory.

You will now use the CD command to view the current directory. Make sure that your data disk is in drive A and that drive A is the current directory. (Floppy-based system users, make sure that your data disk is in drive A and that drive B is your current drive.)

1. Type **CD**
2. Press **Enter**

DOS responds with

```
A: \
```

Drive A is the current drive, and the root directory is the current directory.

..... DIRECTORY MOVEMENT

In Lesson Four, you learned how to change the current drive. DOS has also provided you with a way to change the current directory. When you first boot your computer, DOS makes the root directory current and shows you this by displaying the DOS prompt as C:\>. There are a couple of ways to make a different directory current.

Changing Directories by Using an Absolute Path

The CD or CHDIR (internal) command is used to change the current directory. When you use the CD command, you must give DOS a **path** or road map to instruct it about where the directory is located. When using an absolute path, you always instruct DOS to begin at the root directory and follow with one or more specified subdirectories. If additional subdirectories are to be included in the path, they must be separated by a backslash. For example, the command to make WP the current directory is **CD \WP**. This instructs DOS to change the directory by using the CD command, starting with the root directory and coming down the tree structure to the WP directory.

Another example (assuming that drive A is the current drive) involves making LETTERS the current directory. Using the absolute path, you would enter **CD \WP\LETTERS**. This tells DOS to begin at the root directory, follow the path down to the WP directory, and then move on to the LETTERS subdirectory. The command is essentially a road map that tells DOS how to get to the desired directory.

The command syntax for entering the CD command is as follows:

CD Drive:Path

If you instruct DOS to use the CD command on a disk drive other than the current drive, DOS will change directories on that drive; however, you will not see the results until you make that drive current.

In this exercise, you are going to use the CD command to make the WP directory the current directory. Make sure that your data disk is in drive A and that drive A is the current directory. (If you are using a floppy-based system, make sure that your data disk is in drive B and that drive B is your current drive.) Perform these steps:

1. Type **CD \WP**

You are giving DOS a road map, instructing it to start with the root directory and to continue down the tree to the WP directory.

2. Press **Enter**

Your DOS prompt should appear as A:\WP>. (If your prompt does not identify a directory, type **CD** and press **Enter** to see your current directory.) This indicates that the WP directory is the current directory.

3. Type **DIR** and press **Enter** to display the directory.

Are there any subdirectories under WP? You should see two: REPORTS and LETTERS. Are there any files in the WP directory? No.

Now, you will use the CD command to make the REPORTS subdirectory the current directory. Perform these steps:

1. Type **CD \WP\REPORTS**

Remember, you must tell DOS to begin at the root, come down to the directory WP, and then move on to the REPORTS directory.

2. Press

Your DOS prompt should appear as `A:\WP\REPORTS>`. This indicates that the `REPORTS` directory is the current directory.

3. Type **DIR** and press to display the directory.

Are there any subdirectories under `REPORTS`? No. Are there any files in the `WP` directory? Yes, there are two: `LETTER.TXT` and `PH.DOC`.

Now, use the `CD` command to make the `AR` directory the current directory. At present, `REPORTS` is the current directory. Perform these steps:

1. Type **CD \ACCOUNTS\AR**

Notice that, even though your current directory is `\WP\REPORTS`, you must instruct DOS to begin with the root directory, come down to the `ACCOUNTS` directory, and then move on to the `AR` directory.

2. Press

Your DOS prompt should appear as `A:\ACCOUNTS\AR>`. This indicates that the `AR` directory is the current directory.

3. Type **DIR** and press to display the directory.

Are there any subdirectories under `AR`? No. Are there any files in the `AR` directory? No.

Now, make `\WP\LETTERS` the current directory, as follows:

1. Type **CD \WP\LETTERS**

2. Press

Your DOS prompt should appear as `A:\WP\LETTERS>` to indicate that the `LETTERS` directory is the current directory.

3. Type **DIR** and press to display the directory.

Are there any subdirectories under `WP`? No. Are there any files in the `WP` directory? No.

No matter what directory is active, you can always return to the root directory by typing **CD **. This command causes the root directory to become active. (Remember, the backslash (`\`) is DOS's name for the root directory.)

Now, make your root directory the current directory, as follows:

1. Type **CD **

2. Press

Your DOS prompt should appear as `A:\>`.

Changing Directories by Using a Relative Path

In the previous section, you built an absolute path for DOS, beginning with the root directory. When you use a relative path, however, you *never* begin the path by specifying the root directory. Instead, you begin it at the current directory. For instance, if your current directory is the root directory and you want to change directories to WP, you can type **CD WP**. Notice the absence of any backslash (\); this indicates that the root was not used. Here, you are simply instructing DOS to look for the subdirectory one level below the current directory. Similarly, if the current directory is WP and you want to make REPORTS the current directory, you can enter **CD REPORTS**. To locate REPORTS, DOS will look at the subdirectories below WP (the current directory). Thus, DOS only looks below the current directory for the specified subdirectory when using a relative path.

Your current directory is the root directory. You will now use a relative path to make WP the current directory. Perform these steps:

1. Type **CD WP**
2. Press

Your DOS prompt should appear as A:\WP>.

Now, you are going to make REPORTS the current directory by using a relative path. Remember, DOS only looks below the current directory for the specified subdirectory. Perform these steps:

1. Type **CD REPORTS**
2. Press

Your DOS prompt changes to A:\WP\REPORTS>.

The Dots

Two entries in each directory are indicated with dots. When you give DOS a DIR command, you might see something similar to the following display:

```
Volume in drive A: has no Label
Directory of A:\WP\LETTERS

. <DIR>      5-30-91   2:58 PM
.. <DIR>     5-30-91   2:45 PM
```

The single dot is used to identify the current directory, which means that this entry is a directory and can hold files. The double dots are used to represent the parent directory. The parent directory is one directory above the current directory. For example, the parent of REPORTS is WP. The parent of WP is the root directory.

Your current directory is REPORTS. Use the DIR command to view the dots:

1. Type **DIR**
2. Press

Your screen should resemble the following one:

```

Volume in drive A: has no Label
Directory of A:\WP\REPORTS
.                <DIR>          5-30-91    2:58 PM
..               <DIR>          5-30-91    2:45 PM
LETTER          TXT           4608      5-30-91    3:20 PM
PH              DOC           415       5-30-91    4:14 PM
4 File(s)      664576 bytes free
  
```

You can use the double dots in conjunction with the CD command to move up in the directory structure. If you enter the command **CD ..**, the parent directory of the current directory becomes the active directory. For example, suppose that REPORTS is your current directory. If you enter the CD .. command, WP becomes your current directory.

You are now going to use the CD .. command to make the WP directory current. Your current directory is REPORTS. Perform these steps:

1. Type **CD ..**
2. Press

WP becomes your current directory, and your DOS prompt appears as A:\WP>.

Now, using the dots, make the root directory the current directory:

1. Type **CD ..**
2. Press

Your root directory becomes the current directory, and the DOS prompt appears as A:\>.

Now you will use a relative path to make AR the current directory. Perform these steps:

1. Type **CD ACCOUNTS\AR**

Remember, a relative path does not begin with the root directory; instead, the path begins with a subdirectory name.

2. Press

The AR directory is now active.

The double dots representing the parent directory can be combined to move up the directory tree. In this exercise, you are going to combine the dots to move up two levels and make the root directory the current directory. Perform these steps:

1. Type **CD ..\..**
2. Press **Enter**

The Root directory is now active, and your DOS prompt appears as A:\>.

A relative path and dots can be combined to create a more elaborate path. Two examples are given in the exercises that follow. Often, however, it is easier to use an absolute path.

First, using a relative path, make REPORTS the current directory. Perform these steps:

1. Type **CD WP\REPORTS**
2. Press **Enter**

Your DOS prompt should appear as A:\WP\REPORTS.

Now, make the AR the current directory, using a relative path:

1. Type **CD ..\..\ACCOUNTS\AR**

The first double dots told DOS to move up one level to the parent directory (WP). The second double dots again told DOS to move up one level to WP's parent directory (the root directory). The next entry, "ACCOUNTS," told DOS to look for a subdirectory called ACCOUNTS of the current directory and to make that active; then to look for a subdirectory of ACCOUNTS called AR.

2. Press **Enter**

Clearly in this situation, it is easier and quicker to use the absolute path (by entering CD\ACCOUNTS\AR) than to use a relative path.

..... **COPYING A FILE FROM ONE DIRECTORY TO ANOTHER**

In Lesson Five, you used the COPY command to copy files from one disk to another and to copy files on the same disk. Using either an absolute or a relative path, you may easily copy one or more files from one directory to another. To copy a file using the COPY command, you must give DOS four instructions:

1. Type the word **COPY**, followed by a space, to give DOS the command that is to be executed.
2. Type the drive:\path location of the file to be copied, followed by a backslash (\) to separate the path from the filename.
3. Type the name of the file to be copied, followed by a space.

4. Type the drive:\path location where the new copy is to go. (If the destination filename is different from the source filename, type a backslash (\) followed by the new name after the drive:\path location.) Press **Enter** to execute.

The command format for entering the COPY command is as follows:

COPY Drive:Path\SourceFilename Drive:Path\DestinationFilename

The Source Filename is the name of the file to be copied — that is, the original file. The Destination Filename is the name of the file that is to receive the copy.

In this exercise, you are going to copy the file named SAMPLE.DOC in the root directory to the REPORTS directory. In this case the source and destination filenames are the same. Make sure that drive A is your current drive. (If you are using a floppy-based system, make sure that drive B is your current drive.) The data disk should be in your current drive. Perform these steps:

1. Type **COPY \SAMPLE.DOC \WP\REPORTS**
2. Press **Enter**

Now, view the directory to see whether you have a file with the name SAMPLE.DOC:

3. Type **DIR \WP\REPORTS**
4. Press **Enter** to display the directory.

In Lesson Five, you used wildcard characters in issuing the DIR command. Wildcard characters may also be used in commands to copy files. In this exercise, you are going to copy all files that have a file extension of .DOC from the root directory to the LETTERS subdirectory, and you are going to give each one a new file extension of .TXT. Perform these steps:

1. Type **COPY *.DOC \WP\LETTERS*.TXT**
2. Press **Enter**

Now use the DIR command to display the directory contents:

3. Type **DIR \WP\LETTERS**
4. Press **Enter**

Compare your screen to the one shown in Figure 7-4.

Now you will copy all of the INCOME files in the root directory to the ACCOUNTS directory.

1. Type **COPY \INCOME*.*\ACCOUNTS**
2. Press **Enter**

Now view the \ACCOUNTS directory, and see how many files were copied:

Figure 7-4

```

A:\>dir \wp\letters

Volume in drive A has no label
Directory of A:\WP\LETTERS

.           <DIR>      4-29-91   3:37p
..          <DIR>      4-29-91   3:37p
PROPOSAL   TXT          216   5-03-88   7:31a
IES        TXT          645   5-03-88   7:34a
AOP        TXT          726   5-03-88   7:33a
NEWS       TXT          233   5-03-88   7:30a
SAMPLE     TXT           34   4-29-91  12:38p
SAMPLE1    TXT           34   4-29-91  12:38p
           8 File(s)  1397760 bytes free

A:\>

```

3. Type **DIR \ACCOUNTS**

4. Press

Four files should have been copied: INCOME87.WK1, INCOME88.WK1, INCOME89.WK1, and INCOME.WK1.

..... PROMPT (INTERNAL)

The PROMPT command is used to change the DOS prompt. The prompt string can contain one or more of the following special format commands:

<i>Command</i>	<i>Meaning</i>
\$\$	Dollar sign
\$b	character
\$d	System date
\$e	Escape character
\$g	> character
\$h	Backspace
\$l	< character
\$n	Current drive letter
\$p	Current directory path
\$q	= character
\$t	System time
\$v	DOS version number
\$_	Carriage return/linefeed sequence

For example, one of the most popular prompts is created by the following command:

PROMPT \$p\$g

This prompt command displays the current directory, followed by the > symbol.

The command syntax for entering the PROMPT command is as follows:

PROMPT \$Command(s)

In this exercise, you will instruct DOS to show the system date, followed by the > character. Perform these steps:

1. Type **PROMPT \$d\$g**
2. Press

Notice that the system prompt is instantly changed. You cannot tell which directory is current. The prompt simply displays the system date and the > character.

Now, you will change the prompt again to display the system prompt as two lines—one showing the date and the other showing the time followed by a > character. Perform these steps:

1. Type **PROMPT \$d\$_\$t\$g**
2. Press

The date is shown on one line, and the time is shown one line below it, followed by a > character. Your screen should resemble the following one (although your time and date will be different):

```
Mon 4-29-1991
16:01:48>
```

Since you have gained expertise in using directories, using this prompt is like working with a blindfold on—don't you agree?

Now, change the prompt once again so that it displays the current directory followed by the > character. Perform these steps:

1. Type **PROMPT \$p\$g**
2. Press

..... CREATING A SUBDIRECTORY

Now that you have seen the reason for using directories and have become familiar with how they work, you need to know how to create them. A

directory can be created by typing either **MD** or **MKDIR** (internal), followed by an absolute or relative path and the directory name. A directory name must conform to the same rules as a filename, except that it cannot have an extension.

The command syntax for entering the **MD** or **MKDIR** command is as follows:

MKDIR Drive:Path

It is not necessary to include the drive as part of the path if the drive where the directory is to be created is the current drive. If the path begins with a backslash (\), the absolute path of the new subdirectory should be given. If the path is relative (and therefore doesn't begin with a backslash), the new directory will be created one level below the current directory.

There is no fixed limit to the number of levels of subdirectories you can create, but a practical limit is about four or five; beyond this, the directory structure becomes cumbersome and confusing. The maximum length a path name from the root directory has is 63 characters, including backslashes.

New DOS users often expect that the newly created directory will instantaneously be the current directory. This is not the case. Even though you have created the directory, you have not instructed DOS to make it the current directory. Remember, this instruction is issued by using the **CD** command.

You are now going to create a subdirectory (called **GAMES**) of the root directory, using a relative path. Make sure that drive **A** is your current drive. (If you are using a floppy-based system, make sure that drive **B** is your current drive.) The data disk should be in your current drive. Perform these steps:

1. Your current directory should be the root directory. If it is not, type **CD**
2. Type **MD GAMES**
3. Press

Now view the directory to see whether you have created the **GAMES** subdirectory:

4. Type **DIR GAMES**
5. Press

Do you see the subdirectory called **GAMES** of the root directory?

Now, create a subdirectory of the **ACCOUNTS** directory called **BUDGET**. In this exercise you will use an absolute path. Perform these steps:

1. Type **MD \ACCOUNTS\BUDGET**

It doesn't matter what directory is current, because you are giving DOS an absolute path.

2. Press

Now view the directory to see whether you were successful in making the directory:

3. Type **DIR \ACCOUNTS\BUDGET**
4. Press **Enter**

REMOVING A SUBDIRECTORY

On occasion, you will find that you no longer need a particular directory and the files contained in it. When this happens, you should remove the directory. To accomplish this, use the **RD** or **RMDIR** command, followed by either an absolute or a relative path and the directory name.

There are two restrictions on removing a subdirectory. First, the subdirectory must be empty; that is, it cannot contain any files or subdirectories. When the list directory (**DIR**) command is executed, the only entry listed should be as follows:

```
. <DIR>
.. <DIR>
```

Second, the directory to be removed cannot be the current directory. In other words, you cannot remove a directory that you are currently using.

If you are removing several layers of subdirectories, you must remove the lowest level first and then proceed to the next higher level, removing one level at a time.

The command syntax for entering the **RD** command is as follows:

RD Drive:Path

In this exercise, you are going to remove the **REPORTS** subdirectory. There are two files in this directory: **LETTER.TXT** and **PH.DOC**. You must first delete these files, then make sure that **REPORTS** is not the current directory, and then give the command to remove the directory. It is a good idea first to make the directory that you intend to remove the current directory, and to view the directory's contents with the **DIR** command to ensure that none of the files is important to you. If you find important files at this stage, copy them to another directory, and then proceed with the removal process. Perform these steps:

1. Type **CD \WP\REPORTS**
2. Press **Enter**

REPORTS is now the current directory.
3. Type **DIR** and press **Enter** to view the **REPORTS** directory's contents.

The two files in this directory are no longer of any value, so you are going to delete them.

4. Type **DEL *.*** and press **Enter**
5. Type **DIR** and press **Enter** again.

The directory should display the following information:

```
. <DIR>
.. <DIR>
```

Remember, this indicates that the directory is empty.

6. Type **CD ..** and press **Enter**

This command makes the parent directory (WP) the current directory.

7. Type **RD \WP\REPORTS**

8. Press **Enter**

This action instructs DOS to remove the REPORTS directory.

9. Type **DIR** and press **Enter** to view the WP directory's contents.

The subdirectory REPORTS should not be present.

..... DISPLAYING A DISK'S DIRECTORY STRUCTURE

When the DIR command is executed, DOS displays only the files contained in the current directory, together with the names of any subdirectories *one* level down in the structure. It is difficult to see the entire tree structure by using this command. Consequently, DOS provides two commands for displaying the entire directory structure of a disk: TREE and CHKDSK.

TREE (External)

The TREE command displays the names of all directories on the specified disk. In Version 4.0 or higher, the TREE command diagrams the structure of a disk, using line drawings to make the structure more visually coherent.

The command syntax for entering the TREE command is as follows:

TREE Drive:/Options

The drive-specifier is unnecessary if the disk whose structure is desired is the active disk.

Two options are available for the TREE command:

- /F The **F** stands for *files*. This option displays the files in each directory.
- /A The **A** stands for *alternate*. In Version 4.0 or higher, this option specifies that an alternate character (such as a plus sign or a hyphen) be used to draw the tree diagram so that it can be printed by printers that don't support the IBM extended character set.

You are now going to display the directories and the files in each directory of your data disk. Make sure that your data disk is in drive A and that drive A is your current drive. (Floppy-based system users, make sure that your current drive is drive A and that your data disk is in drive B.) You must be ready to press , since the tree will quickly scroll off your screen. Perform these steps:

1. Type **TREE/F** or, if you are using a floppy-based system, type **TREE B:/F**
2. Press

Having a printed copy of your directory tree as a reference is sometimes very helpful. In the following exercise, you will print the directories and files of your data disk. Make sure that you have the same drives active as you did in the preceding TREE exercise and that your printer is on and on-line.

1. Type **TREE/F >LPT1**
2. Press

You now have a printed copy of your directory tree.

CHKDSK (External)

In Lesson Six, you used the CHKDSK command to get a status report on your data disk that reported the total amount of space on the disk, the number of files and directories there, the amount of space these occupy, the amount of available space remaining on the disk, the size of the computer's memory, and the number of bytes that remain free for use. The CHKDSK command with the /V option displays a list of the directories and files on a disk, in addition to providing all the other information.

The command syntax for entering the CHKDSK command is as follows:

CHKDSK Drive:/V

You are going to use the CHKDSK/V command to display a list of the directories and files on your data disk. Make sure that your data disk is in drive A and that drive A is your current drive. (Floppy-based system users, make sure that your current drive is drive A and that your data disk is in drive B.) You must be ready to press , since the tree will quickly scroll off your screen. Perform these steps:

1. Type **CHKDSK/V** or, if you are using a floppy-based system, type **CHKDSK B:/V**
2. Press **Enter**

It is also possible to direct this command to the printer by typing **CHKDSK/V >LPT1**. Why don't you give this alternative approach a try?

..... PATH (INTERNAL)

As you create subdirectories, DOS needs a way to locate individual directories and files. The route from the root directory to a particular file in the tree structure is called a **path**.

Whenever you type a command at the DOS prompt, DOS first looks for the command in its list of internal commands in the computer's memory. If the command is there, DOS executes it. If the command is not there, DOS checks the current directory for an executable file (one with an .EXE, .COM, or .BAT file extension) that matches the command name. If DOS finds such a file, it executes the command. If DOS still cannot locate the command file, it checks to see if a search path leading to other directories and subdirectories has been defined. DOS will search along each defined path for a matching command file. If it finds the matching command file, it will execute it. If no such file can be found in any of these locations, DOS prompts you with "Bad command or file name."

The DOS **PATH** command tells DOS where to search for commands that are not in the current directory. The **PATH** command is used to display, create, and change DOS search paths.

The command syntax for entering the **PATH** command is as follows:

PATH Drive:\Path

To view the current path instructions, type **PATH** and press **Enter**.

The **PATH** command may be included in the **AUTOEXEC.BAT** file, in which case the path becomes part of the DOS environment.

In this exercise you are going to view the current path instructions. These instructions were probably set for you automatically in a file called **AUTOEXEC.BAT**—one of the command files that are executed when your computer is booted. If DOS finds this file, the list of commands on it is automatically executed. Perform these steps:

1. Type **PATH**
2. Press **Enter**

Your path statement might look something like this:

PATH=C:\;C:\DOS;C:\WP51

Now, you are going to change the path instructions to include only drive A. (Floppy-based system users, you will include only drive B.) Perform these steps:

1. Type **PATH A:** or, if you are using a floppy-based system, type **PATH B:**
2. Press **Enter**

To see how valuable the PATH command is, you are now going to execute the TREE command that resides on drive C. Make sure that drive A is your current drive. (Floppy-based system users, your TREE command file resides on drive A; therefore, your current drive should be drive B.) Perform these steps:

1. Type **TREE**
2. Press **Enter**

The system will respond, "Bad command or file name." The TREE command is located on drive C (drive A in floppy-based systems), but you told DOS to look only in the root directory of drive A (drive B in floppy-based systems).

To create a path to the root and DOS directories on drive C, make sure that drive A is your current drive. (Floppy-based system users, you are going to create a path to drive A, so make sure that drive B is your current drive.) Perform these steps:

1. Type **PATH C:\;C:\DOS** or, if you are using a floppy-based system, type **PATH A:**
2. Press **Enter**
3. Execute the TREE command, and see if it works.

■ SUMMARY OF COMMANDS

<i>Function</i>	<i>Command</i>	<i>Page</i>
Shows list of files	DIR	72
Changes the directory	CD	74
Changes to the parent directory	CD ..	77
Copies a file from one directory to another	COPY	79
Changes the DOS prompt of C:\ or A:\	PROMPT	81
Creates a subdirectory	MD	82
Removes a subdirectory	RD	84
Displays the disk's directory structure	TREE	85
Shows a status report of disk	CHKDSK	86
Lets you locate individual files and directories	PATH	87

■ SELF-TEST

1. What is the name of the main directory on the hard disk drive? _____

2. How is the main directory designated? _____
3. Name two types of programs that might be placed in subdirectories.

4. What is the maximum number of entries allowed on a hard disk? _____

5. What command is used to change the directory from WP to ACCOUNTS?

6. What command causes DOS to include the directory name with the C:\?

7. What command is used to create a new subdirectory? _____
8. What is the first step you must take when removing a directory with five files in it? _____
9. What command is used to remove an empty directory called WORKS?

10. What command lets you view the listing of all the directories and subdirectories on a disk? _____
11. If you type **CHKDSK/V**, what will happen? _____
12. What command can be used to output the preceding information to a printer? _____
13. What file contains the path for other directories and files on your disk?

14. What is the path to a file called QUIZ1 in a subdirectory called TESTS in a directory called WP51? _____

BACKUP and RESTORE

OBJECTIVES

At the end of this lesson, you will be able to:

- Use the BACKUP command.
- Use the RESTORE command.
- Add files to backup diskettes.
- Back up files with certain criteria.
- Add a log file containing special information.
- Use the RESTORE command with certain criteria.

This chapter is dedicated to the BACKUP and RESTORE commands, which are used to avoid loss of data on a hard disk drive. Floppy-based system users will be unable to perform the exercises in this chapter. Nonetheless, such users should read this chapter anyway. Then, if and when you have access to a hard-based computer, you will be aware of what these commands do and how they work.

.....

BACKUP (EXTERNAL)

The BACKUP command allows you to make a copy of all the files on the hard disk or of selected files specified on the basis of their path name, their file-name, whether they have been changed or modified since the last backup, or whether they have been changed since a certain date.

It is extremely important that you keep a current backup of your hard disk drive. Many factors can influence the loss of data, including user error by deleting or copying over the wrong file(s) and outside factors such as power surges and outages. It takes a long time to reload and retype vital files, so guard against the worst.

Students often ask how often they should back up their files. The question is, how important is your information? Would you be terribly upset if you lost a file or files? No one can judge the importance of your information better than you yourself.

Backing Up the Entire Hard Disk

It is extremely important that a periodic backup be done to ensure that all the data on the disk is copied. Before initiating this function, make sure that you have enough formatted diskettes to accommodate the amount of data on your hard disk. You don't want to have to run to the office supply store in the middle of this process. Table 8-1 offers some indication as to how many formatted diskettes your BACKUP operation may require.

Table 8-1

Floppy Diskettes Required for Backing up Hard Disks of Different Capacities

Megabytes Used	Disk Capacity			
	360K	720K	1.2M	1.44M
10M	29	15	9	8
20M	59	29	18	15
30M	83	44	27	22
40M	116	58	35	29
70M	200	100	60	50

Format the floppy disks, and number them consecutively. The BACKUP command copies disks in sequential order so that the RESTORE command can put back the files on your hard disk in the proper order. When you format your diskettes, do not use the /S option; it decreases the amount of disk space available.

The command syntax for entering the BACKUP command is as follows:

BACKUP Source Target /S

Several options are available for the BACKUP command:

- /S** The **S** stands for *subdirectories*. This option backs up all files in all subdirectories in the current directory or specified directory.
- /A** The **A** stands for *add*. This option adds the backup files to the backup disks. If the /A option is *not* used, DOS will prompt you that all files on the target disk will be erased.
- /M** The **M** stands for *modified*. This option backs up only files that have been created or modified since the last BACKUP operation.
- /F** The **F** stands for *format*. This option formats the target disk, if it has not already been formatted.
- /D:date** The **D** stands for *date*. This option backs up only files that have been modified since a specified date.

- /T:time** The T stands for *time*. This option backs up only files that have been modified since a specified time.
- /L:logfile** The L stands for *log*. This option creates a log file, which gives the time and date of the backup, the path and filename of each file backed up, and the number of the diskette that each file is on.

For example, to back up all files on the hard disk and copy these to the diskette(s) in drive A, you would enter the following command:

BACKUP C:*.* A: /S

The path \ ensures that the backup will begin with the root directory, and the /S option specifies that all subdirectories will be copied.

When the backup procedure begins, the screen will prompt you with this message:

```
Insert backup diskette 01 in Drive A:
```

```
Warning! Files in the target drive
A: \ root directory will be erased
Strike any key when ready
```

```
***Backing up files to Drive A: ***
```

As the backup continues, you will be prompted to insert additional diskettes until all the data on drive C has been copied.

To initiate the BACKUP command without having to format the diskettes first, enter the following command:

BACKUP Source Target /S /F

For example, to back up all files on the fixed disk, to copy these to the diskette(s) in drive A, and to instruct DOS to format the disk, you would enter the following command:

BACKUP C:*.* A: /S /F

Backing Up Portions of the Hard Disk

A modification of the BACKUP command can be used to back up only a specified directory. This is accomplished by stipulating the directory name as part of the source argument. If the /S option is used, all subdirectories of the selected directory will also be backed up. The command to enter in this case is as follows:

BACKUP C:\Directory Name*.* Target /S

In this exercise you are going to create a directory (called TRAIN) on drive C, and then copy all the files from your data disk to that directory. Next you

will give the BACKUP command to back up that directory. Make sure that drive C is your current drive and that your data disk is in drive A. Have a formatted empty disk ready to use for the BACKUP procedure.

Begin by making the directory on drive C. Perform these steps:

1. Type **MD \TRAIN**
2. Press **Enter**

Next, copy all the files that reside in the root directory of drive A:

3. Type **COPY A:*.* \TRAIN**
4. Press **Enter**

Now, issue the BACKUP command, after placing the empty formatted disk in drive A.

5. Type **BACKUP C:\TRAIN*.* A:/S**
6. Press **Enter**

The screen will prompt you as follows:

```
Insert backup diskette 01 in Drive A:

Warning! Files in the target drive
A:\ root directory will be erased
Strike any key when ready
```

7. Press any key to begin the BACKUP procedure.

The screen prompts you with

```
***Backing up files to drive A: ***
Diskette Number: 01
```

DOS displays the name of each file as it is backed up.

This directory is so small that it can be backed up on a single diskette. When the BACKUP procedure is complete, the DOS prompt will reappear.

Now, look at the directory contents of drive A:

8. Type **DIR A:**
9. Press **Enter**

You have only two files: BACKUP.001 and CONTROL.001. DOS stores all the backed-up files in the file named BACKUP.001, and it stores all the path names in the file named CONTROL.001. On the second backup diskette, the file extensions would be .002 and so forth for each additional diskette used.

Adding Files to Backup Diskettes

The /A option to the BACKUP command allows the user to add one or more files to an existing backup diskette without overwriting any data on it. This is extremely useful when you have created some new files and do not want to go through the lengthy process of backing up everything on the hard disk. Remember, the target diskettes are not overwritten in this case. The following command should be entered:

BACKUP C:\Pathname\Filename A: /A

DOS will prompt you to insert the last backup diskette in drive A: and to strike any key when ready.

In this exercise, you will copy the file named LETTER.TXT, which resides on your data disk in the LETTERS subdirectory of the WP directory, to the TRAIN directory on drive C. You will then issue the BACKUP command with the /A option to add this file to the backup diskette. Make sure that your data disk is in drive A and that your current drive is drive C.

1. Type **COPY A:\WP\LETTERS\LETTER.TXT \TRAIN**
2. Press
3. Remove your data disk, and place the BACKUP diskette in drive A.
4. Type **BACKUP C:\TRAIN\LETTER.TXT A: /A**
5. Press

The screen prompts you with

```
Insert last backup diskette in drive A:
Strike any key when ready.
```

6. Press any key.

The screen prompts you with

```
*** Backing up files to drive A: ***
Diskette Number: 01

\TRAIN\LETTER.TXT
```

Backing Up Files Created or Modified On or After a Specified Date

If you use the /D option of the BACKUP command, only files created or modified on or after a specified date will be backed up. The date format is

determined by the COUNTRY command. The standard U.S. date format is mm-dd-yy.



CAUTION: *The /D option does overwrite the data on the target disk. To add files with modification or creation dates that fall after a certain date, you must use the /A option on the command line.*

To copy files that have been created or modified on or after January 15, 1992, enter the following command:

```
BACKUP C:\*.* A: /S /D:1-15-92
```

To include the /A option, enter the following command:

```
BACKUP C:*.* A: /S /D:1-15-91 /A
```

Backing Up Files Created or Modified On or After a Specified Time

To copy files that have been created or modified at a time equal to or later than the time specified, use the /T option along with /D.

For example, to copy files that were created/modified after 12:00 (noon) on January 15, 1992, enter the following command:

```
BACKUP C:\*.* A: /S /D:1-15-92 /T:12:00
```

Backing Up Only Files That Have Been Newly Created or Modified

All files have an archive attribute that is either on or off. When a file is newly created or modified, DOS turns the file's archive attribute to its On position. By using the /M option, DOS will find and copy only files whose archive attribute is set to the On position. After the BACKUP procedure is complete, DOS will turn the archive attribute of the files it has copied to the Off position. To use the /M option, enter the following command:

```
BACKUP C:\*.* A: /M /S
```

Adding a Log File

The /L option creates a **log file**, which gives the time and date of the backup, the path and filename of each file backed up, and the number of the diskette

that each file is on. You can specify a filename for the log file. If none is stipulated, the name BACKUP.LOG is used and is placed in the root directory of the source drive. If the log filename already exists, the data will be appended at the end of the file. If it does not already exist, the file will be created. The following command uses the default BACKUP.LOG file:

BACKUP C:*.* A: /S /L

In this exercise you are going to use the /L option to create a log file and name it MYLOG. Make sure that drive C is your current drive and that you have inserted the backup diskette in drive A.

1. Type **BACKUP C:\TRAIN*.* A: /S /L:MYLOG**
2. Press

Again, you will be warned by DOS that the files in the root directory of the target drive will be erased.

3. Press any key to begin the backup.

When the BACKUP process is complete, the DOS prompt will redisplay.

Now, use the DIR command to view the content of the root directory of drive C:

4. Type **DIR **
5. Press

You should see a file named MYLOG. Now, use the TYPE command to view its contents. The file will show the time and date of the backup, as well as the diskette number and path of each file.

..... RESTORING FILES

If one or more files are lost on your hard disk, you can restore any of the file(s) from the backup diskettes by using the RESTORE command. During the restoration process, you will be prompted to insert the backup diskettes in consecutive order, beginning with diskette number 1.



CAUTION: *Keep in mind that restoring a file means overwriting any existing file with the same name; therefore, use the RESTORE command with care.*

Special Considerations When Using Restore

The RESTORE command does not restore the files IBMBIO.COM, IBMDOS.COM, and COMMAND.COM. You must use the SYS command for IBMBIO.COM and IBMDOS.COM and you must use the COPY command for COMMAND.COM.

To recover a file, you must begin with diskette number 1 unless a log file was created during the backup process. If so, it will indicate the specific diskette on which the desired file is located.

Files stored on backup diskettes are not the same as standard DOS files. Do not attempt to use the COPY command to restore files.

Restoring the Entire Hard Disk

To restore all the files on the hard disk, you must have the backup diskettes containing all these files. All the backup diskettes will be read in order.

The command syntax for entering the RESTORE command is as follows:

```
RESTORE A: C:\*.* /S
```

Several options are available for the RESTORE command:

- | | |
|----------------|---|
| /S | The S stands for <i>subdirectory</i> . This option restores all files and subdirectories. |
| /P | The P stands for <i>prompt</i> . This option instructs DOS to prompt for a confirmation before restoring a read-only file, a hidden file, or a file that has been changed since the last backup. |
| /B:date | The B stands for <i>before</i> . This option restores only files that were created or changed on or before the specified date. |
| /A:date | The A stands for <i>after</i> . This option restores only files that were created or changed on or after a specified date. |
| /M | The M stands for <i>modified</i> . This option restores only files that have been modified since the last backup. |
| /N | The N stands for <i>none</i> . This option restores only files that don't exist on the target disk. |
| /E:time | The E stands for <i>earlier</i> . This option restores only files that were created or modified at or earlier than the specified time. |
| /L:time | The L stands for <i>later</i> . This option restores only files that were created or changed at or later than the specified time. |

Restoring Individual Files

To restore individual files, you must specify the complete path and filenames involved. Wildcards can be used with the RESTORE command to restore groups of files.

For example, to restore files Sample1.DOC, Sample2.DOC, and Report.DOC in the WP directory, enter the following commands:

```
RESTORE A: C:\WP\Sample*.*
RESTORE A: C:\WP\Report.DOC
```

In this exercise you are going to delete all the .DOC files in the TRAIN directory. You will then use the RESTORE command to restore your deleted files. Make sure that drive C is your current drive and that your backup disk is in drive A.

First, delete all the .DOC files in the TRAIN directory, as follows:

1. Type **ERASE \TRAIN*.DOC**
2. Press **Enter**

Now, view the directory of TRAIN to confirm the deletion:

3. Type **DIR \TRAIN**
4. Press **Enter**

There should be no remaining files with a file extension of .DOC.

Now, use the RESTORE command to restore your files. Make sure that your backup disk is in drive A, and then perform these steps:

5. Type **RESTORE A: C:\TRAIN*.DOC**
6. Press **Enter**

The screen prompts you with:

```
Insert backup diskette 01 in drive A:
Strike any key when ready
```

7. Press any key.

The screen prompts you with the date the files were backed up and tells you that the files from drive A are being restored. It then lists the path and filenames.

Let's double check to make sure your files are in the TRAIN directory:

8. Type **DIR \TRAIN**
9. Press **Enter**

Six .DOC files should now reside in your TRAIN directory.

Restoring Files by Date and Time

The RESTORE command can also restore files that have been modified on or before a certain date, by using the /B option. Similarly, the /A option permits the restoration of files that have been modified on or after a designated date.

For example, entering the following command restores all files modified before 6-1-92 and after 6-1-91 (a one-year period of time):

```
RESTORE A: C:\*.* /S /B:6-1-92 /A:6-1-91
```

The /L option restores all files altered at or later than a certain time on a given date, and the /E option restores all files modified at or earlier than the specified time on a given date.

For example, entering the following command restores all files modified on 1-4-92 after 12:00 (noon) but earlier than 6:01 P.M. on the same afternoon:

```
RESTORE A: C:\*.* /S /D:1-4-92 /L:12:00 /E:18:00
```

Restoring Modified Files

The /M option restores only files that have been modified since the last backup was made. The /N option restores only files that have been deleted from the hard disk.

For example, to restore all the files on the hard disk that have been changed, enter the following command:

```
RESTORE A: C:\*.* /S /M
```

Prompted Restoration

The /P option will prompt you with the following message whenever a file on the hard disk has been modified since the last backup:

```
Warning! File X  
was changed after it was backed up  
Replace the file (Y/N)
```

■ SUMMARY OF COMMANDS

<i>Function</i>	<i>Command</i>	<i>Page</i>
Copies all files on the hard disk	BACKUP	90
Backs up modified files	BACKUP C:*.* A:/M/S	94
Adds a log file	BACKUP C:*.* A:/S/L	95
Replaces lost or damaged files	RESTORE	96
Replaces modified files	RESTORE A: C:*.* /S/M	99

■ SELF-TEST

1. What command is used to make copies of all files on your disk? _____

2. What option must be used to include all the files in all subdirectories in the BACKUP procedure? _____
3. What does the BACKUP option /L do? _____

4. What command should be used to make a directory called COLLEGE? _____

5. Is it possible to back up only a portion of the hard disk? _____
6. What command is used to replace the files from the backup diskettes? _____

7. The option to restore files modified before a certain date is _____ ;
the option to restore those modified after a designated date is _____ .
8. Give two reasons why it is extremely important to make backup copies of your files. _____

Using DOS as a Text Editor

OBJECTIVES

At the end of this lesson, you will be able to:

- Use DOS function keys **F1** through **F4**.
- Use the DOS editing keys — **ins**, **Del**, and **Esc**.
- Create a text file in Edlin, a line-oriented text editor.
- Edit a file in Edlin.
- Insert and delete lines in Edlin.
- Move lines in Edlin.

..... DOS EDITING KEYS

DOS uses an input buffer (a small region of memory) to hold the last command given. This allows the user to reuse, alter, or fix the previously entered command by using the DOS editing keys.

F1

The **F1** key displays one character from the input buffer each time it is pressed.

In this exercise, you are going to give DOS the command to format the disk in drive A. You will mistype the command so that you can practice using the **F1** key. Place a blank diskette into drive A, and make sure drive C is your current drive. (Floppy-based system users, drive A should be your current drive, and the blank diskette should be in drive B. Henceforth, you should substitute drive B for drive A in the instructions.) Perform these steps:

1. Type **FORMMAT A:**
Be sure to make the error.
2. Press **Enter**

The screen prompts you with "Bad command or file name," and the DOS prompt displays.

3. Press **F1** four times.

The command line will appear as:

```
C: \> FORM
```

Now, to complete the command, perform these steps:

4. Type **AT A:**

5. Press **Enter**

The screen prompts you to insert the new diskette in drive A and to strike **Enter** when ready.

At this point, you do not want to format the disk, so abort the command as follows:

6. Press **Ctrl-C** or **Ctrl-Break**

Del

Pressing **Del** deletes a character from the input buffer, one character at a time. You will not see the characters being deleted, so use this key carefully.

Again, you are going to give the command to format the disk in drive A. The command will be misspelled so that you can see how to use **Del**. Perform these steps:

1. Type **FORMMAT A:**

Be sure to make the error.

2. Press **Enter**

The screen prompts you with "Bad command or file name," and the DOS prompt displays.

3. Press **F1** four times.

"FORM" is displayed at the command line.

4. Press **Del** once.

The second M is deleted, although you don't actually see it being deleted.

5. Press **F1** five times to display the remainder of the input buffer.

The command line should appear as:

```
C: \> FORMAT A:
```

6. Press **Enter**
7. Press **Ctrl-C** or **Ctrl-Break** to abort the command.

F3

The **F3** key displays all characters in the input buffer. This command allows you to reexecute the previous command without retyping it.

Your command line was to format the disk in drive A. Now, use **F3** to repeat your last command:

1. Press **F3**

The command line will appear as:

```
C: \> FORMAT A:
```

2. Press **Ctrl-C** or **Ctrl-Break** to abort this command.

F2

The **F2** key displays all characters up to (but not including) a specified character in the input buffer.

Again, you are going to attempt to format the disk in drive A. Be sure to make the error when typing the command so that you can practice using **F2**. Perform these steps:

1. Type **FORMMAT A:**
2. Press **Enter**
3. Press **F2** and then type **M**

Remember that **F2** displays up to (but not including) the character specified.

The command line will appear as:

```
C: \> FOR
```

4. Press **Del** to delete the extra M.
5. Press **F3** to display the remainder of the input buffer.
6. Press **Ctrl-C** or **Ctrl-Break** to abort this command.

Ins

Pressing **Ins** inserts characters typed at the current location in the input buffer.

Be sure to misspell the **FORMAT** command as shown here so that you can use **Ins** to add the missing **M**. Perform these steps:

1. Type **FORAT A:**

2. Press **Enter**

The system responds with “Bad command or file name.”

3. Press **F2**

4. Type **A**

The command line should appear as:

```
C: \> FOR
```

Now use **Ins** to allow room for the **M**:

5. Press **Ins**

DOS allows any number of characters to be inserted at this point.

6. Type **M**

7. Press **F3**

The command line should appear as:

```
C: \> FORMAT A:
```

8. Press **Ctrl-C** or **Ctrl-Break** to abort this command.

Esc

Pressing **Esc** cancels the current line that has just been typed, if it is pressed prior to pressing **Enter**. DOS cancels whatever appears in the command line and uses a backslash (\) to indicate the cancellation. The cursor is automatically positioned on the next line, but the DOS prompt is *not* present.

You are going to enter a command to format the disk in drive **B**—which is incorrect. You actually want to format the disk in drive **A**. Then you will use

[Esc] to position the cursor to the next line so that you can reenter the command. Perform these steps:

1. Type **FORMAT B:**

The cursor should be located immediately following the : (colon) on the command line.

2. Press **[Esc]**

The command line should now appear as:

```
C: \> FORMAT B: \
```

3. Type **FORMAT A:**

4. Press **[Enter]**

5. Press **[Ctrl]-[C]** or **[Ctrl]-[Break]** to abort the command.

[F4]

The **[F4]** key deletes all characters up to (but not including) a specified character from the input buffer. Press **[F4]** first, followed by the character. DOS responds by deleting all the characters up to (but not including) the character typed.

In this exercise, type the format command as it is misspelled, and then use **[F4]** to correct your mistake. Perform these steps:

1. Type **BBFORMAT A:**

2. Press **[Enter]**

3. Press **[F4]**

4. Type **F**

5. Press **[F3]**

The command line should appear as:

```
C: \>FORMAT A:
```

6. Press **[Ctrl]-[C]** or **[Ctrl]-[Break]** to abort this command.

Table 9-1 reviews the functions of the DOS editing keys.

Table 9-1

Recap of the DOS Editing Keys

Key	Function
F1	Displays one character
F2	Displays all the characters up to (but not including) the specified character
F3	Displays all characters in the input buffer
F4	Deletes all the characters up to (but not including) the character specified
Ins	Inserts the character typed at the current position
Del	Deletes a character at the current position
Esc	Cancels the current command line, if pressed prior to pressing Enter

.....
EDLIN

Edlin is a line-oriented text editor whose primary functions are to create and modify text files on a line-by-line basis. Edlin is a very basic text editor that does not offer any sophisticated functions. The arrow keys cannot be used to move through the text, because Edlin can work with only one line at a time.

Creating a Text File

To create a file using the Edlin feature, use the following command syntax:

EDLIN Filename

The Filename is the name of the text file, and it must conform to DOS naming conventions. If no file with the specified filename exists, Edlin will create one.

You are going to create a text file called STAFF.MAG, using the Edlin feature. Make sure that your data disk is in drive A and that your current drive is drive C. (Floppy-based system users, your current data disk should be in drive B, and your current drive should be drive A. Drive B should be substituted for drive A in the following instructions.) Perform these steps:

1. Type **EDLIN A:STAFF.MAG**
2. Press **Enter**

The screen will prompt you with

```
New file
*_
```

The asterisk (*) is Edlin's prompt indicating that it is ready to accept a command. Edlin functions similarly to DOS in that it displays a prompt and then waits for a command.

Entering Text

When Edlin displays its prompt (*), it is in Command mode and is not ready to accept text. Before any text can be typed, you must first enter the I (INSERT) command and press . (All Edlin commands can be typed in either uppercase or lowercase.)

In Insert mode, Edlin tabs in, displays the current line number and an asterisk (indicating the currently active line), and waits for input. Each time is pressed, a new line number displays. Remember, the asterisk that follows the line number is not a command prompt; it simply indicates the active line.

If you make a mistake before pressing , use to delete the character to the left of the cursor. Once you have pressed , you must use special Edlin commands to make corrections.

To stop entering text, press . In response, a ^C is displayed on the screen, and Edlin's prompt reappears.

You are now ready to insert the text of a memo to your staff regarding a meeting on Tuesday. Perform these steps:

1. Press I (for INSERT).
2. Press .
3. Type the following lines of text:

All Department Managers:

There will be a staff meeting

on Tuesday morning at 9:00 a.m.

Please plan to attend. We also

appreciate your punctuality.

Joan White

P.S. Continental Breakfast will be served.

Your screen will look like this:

```
*I
 1: *All Department Managers:
 2: *
 3: *There will be a staff meeting
 4: *on Tuesday morning at 9:00 a.m.
 5: *Please plan to attend. We also
 6: *appreciate your punctuality.
 7: *
 8: *Joan White
 9: *
10: *P.S. Continental Breakfast will be served.
11: *_
```

4. Press **Ctrl-Break** or **Ctrl-C** to redisplay the Edlin prompt.

Edlin is now once again in Command mode.

Listing the File

The L (LIST LINES) command lists the contents of the file currently being edited. If you type a line number followed by L, Edlin displays a maximum of 23 lines (one screenful), starting with a specified line. If you omit the starting line number, Edlin displays one screenful of lines centered on the current line. If the current line number is less than 13, Edlin displays a total of one screenful of lines, starting at the beginning of the file.

You are now going to list the contents of STAFF.MAG, by performing these steps:

1. Type L (for LIST).
2. Press **Enter**

Your entire file will be displayed on the screen. Notice that you are still in Edlin's Command mode.

Terminating Edlin

There are two ways to terminate Edlin. The E (END EDIT) command saves the file, terminates the Edlin function, and redisplay the DOS prompt. The Q (QUIT EDIT) command exits Edlin without saving the file.

In this exercise, you will use the E command to save the STAFF.MAG file. Perform these steps:

1. Press E (for END EDIT).
2. Press **Enter**

The DOS prompt displays.

Now, you will use the DIR command to see the file on your data disk in drive A.

3. Type **DIR A:**

4. Press

The directory of drive A is displayed and your file STAFF.MAG should be listed.

Editing a File

Edlin performs differently when editing an existing file than when editing a new file. When the existing file is loaded, a screen message will appear stating "End of input file." This is Edlin's way of telling you that it has loaded the entire file into memory.

In this exercise, you are going to add a line at the beginning of your STAFF.MAG file. You want this memo to be for internal use only, and you need to specify that fact in your memo. Perform these steps:

1. Type **EDLIN A:STAFF.MAG**

2. Press

The screen will prompt you as follows:

```
End of input file
*
```

3. Press **L** (for LIST LINES).

4. Press

The file will look like this:

```
1: *All Department Managers:
2:
3: There will be a staff meeting
4: on Tuesday morning at 9:00 a.m.
5: Please plan to attend. We also
6: appreciate your punctuality.
7:
8: Joan White
9:
10: P.S. Continental Breakfast will be served.
```

Notice that the asterisk is positioned at the start of line 1. This indicates that line 1 is the current or active line. The current line determines where certain editor commands will take place. For example, the I command will begin inserting text before line 1.

5. Press **I** (for INSERT)
6. Press **Enter**
7. Type **For Internal Use Only**
8. Press **Enter**
9. Press **Ctrl-Break** or **Ctrl-C** to return to Command mode.
10. Type **L** (for LIST).
11. Press **Enter** to list the file.

The screen will appear as follows:

```

1: For Internal Use Only
2: *All Department Managers:
3:
4: There will be a staff meeting
5: on Tuesday morning at 9:00 a.m.
6: Please plan to attend. We also
7: appreciate your punctuality.
8:
9: Joan White
10:
11: P.S. Continental Breakfast will be served.

```

Inserting Text

If you place a line number in front of the I (INSERT) command, Edlin will insert text immediately before the specified line. The command syntax for this is as follows:

Line-NumI

If no line number is specified, the text is inserted before the current line. To add text to the end of the file, specify a line number greater than the last line number of the file.

In this exercise, you are going to insert a blank line between line 1 ("For Internal Use Only") and line 2 ("All Department Managers"). Perform these steps:

1. Type **2I**



CAUTION: Be sure to type an "I," and not a "one."

2. Press **Enter**
3. Press **Enter** again to insert a blank line.

4. Press **Ctrl-Break** or **Ctrl-C**
5. Type **L** and press **Enter** to list the file.

A blank line should appear between "For Internal Use Only" and "All Department Managers."

In this exercise, you will add a second paragraph to the memo. Perform these steps:

1. Type **10I**
2. Press **Enter**
3. Type the following text, and press **Enter** at the end of each line:

**This meeting will entail an
in-depth discussion of the annual
budget. Please be prepared to
present your final budget for
the upcoming year.**

4. Press **Enter** again to create a blank line.
5. Press **Ctrl-Break** or **Ctrl-C**
6. Type **L** and press **Enter** to list the file.

Deleting Lines

To delete lines of text, use the D (DELETE LINES) command. The command syntax for this command is as follows:

Start-Line, End-LineD

If a starting line is not specified, the D command will delete all lines from the current line to the ending line. This form of the command must begin with the comma. For example, to delete lines 5 and 6 when the current line is 5, you would enter the following command:

,6D

To delete one line, specify the line number and then type **D**. For example, to delete line number 1, you would enter the following command:

1D

If no line number is specified, the current line is deleted.

In this example, you have just learned that your corporation catering office is unable to provide a continental breakfast for your meeting. Therefore, you need to delete lines 17 and 18 in your memo. Perform these steps:

1. Type **17,18D**

This will delete the blank line after “Joan White” and the line stating that there will be a continental breakfast.

2. Press **Enter**
3. Type **L** and press **Enter** to list the file.

Listing the File

The L (LIST) command can be used to specify a range of lines to list on the screen. The command syntax for this command is as follows:

Start-Line,End-LineL

If the starting line number is omitted, Edlin will display 11 lines before the current line and stop at the specified ending line. A comma must be used at the start of this form of the command.

Omitting the ending line number causes Edlin to display the 23 lines that begin with the specified line.

If no line numbers are designated, 11 lines before and 11 after the current line are displayed—a total of 23 lines.

Now, list lines 3 through 8, by performing these steps:

1. Type **3,8L**
2. Press **Enter**

Compare your text to the following lines:

```
3: All Department Managers:
4:
5: There will be a staff meeting
6: on Tuesday morning at 9:00 a.m.
7: Please plan to attend. We also
8: appreciate your punctuality.
```

Editing Lines

A specific line can be modified by first entering the line number. The designated line number will be displayed, and the cursor will be positioned beneath the first character in the line. Use any of the DOS editing keys to make changes in the line.

In this exercise, suppose that the time of the meeting has been changed from 9:00 to 8:30. You will use Edlin’s E (EDIT) command and the DOS editing keys to make the change on line 6. Perform these steps:

1. Type **6** (to specify line 6).
2. Press **Enter**

The screen will display the following:

```
6: *on Tuesday morning at 9:00 a.m.  
6: _
```

3. Press **F2**
4. Type **9**

Line 6 will now display the following:

```
6: *on Tuesday morning at
```

5. Type **8** (to replace the deleted 9).
6. Press **F1** to display the next character (the :).
7. Type **3** to replace the next character (0).
8. Press **F3** to display the remainder of the line.
9. Press **Enter**

When you press **Enter**, the modifications made to the line will become part of the file. You can cancel the editing by pressing **Esc** or **Ctrl-Break**.

10. Press **L** and **Enter** to list the file.

The time has been changed as desired.

Now, one more correction needs to be made: "Joan White" should be changed to "Joan R. White" in line 16. Perform these steps:

1. Type **16** (to specify line 16).
2. Press **Enter**

The screen will appear as:

```
16: *Joan White  
16: _
```

3. Press **F2**
4. Type **W**

Line 16 will display as:

```
16: *Joan
```

5. Press **Ins**
6. Type **R**.
7. Press **Spacebar** once.

Line 16 should appear as:

```
16: *Joan R. _
```

8. Press **F3** to display the remainder of the line.
9. Press **Enter**
10. Press **L** and **Enter** to list the file.

The middle initial in Joan White name's has been inserted.

Moving Lines

The M (MOVE LINES) command allows you to move one or more lines to a specified location in your text file. The command syntax for this is as follows:

Start-Line,End-Line,Dest-LineM

In this exercise, you are going to move lines 1 and 2 to the end of your file.

1. Type **1,2,17M**
2. Press **Enter**
3. Type **L** (for list).
4. Press **Enter** to list the file.

The screen will appear as:

```
8: This meeting will entail an
9: in depth discussion of the annual
10: budget. Please be prepared to
11: present your final budget for
12: the upcoming year.
13:
14: Joan R. White
15: *For Internal Use Only
16:
```

5. On your own, add a blank line between "Joan R. White" and "For Internal Use Only," and delete the blank line at the bottom of the file (line 16).
6. Enter the **E** (END EDIT) command to save your file and exit the Edlin feature.

■ SUMMARY OF COMMANDS

<i>Function</i>	<i>Command</i>	<i>Page</i>
Displays one character	F1	101
Deletes characters from input buffer	Del	102
Displays all characters	F3	103
Displays characters up to a specific character	F2	103
Inserts characters	Ins	104
Cancels the current line	Esc	104
Deletes characters up to a specific character	F4	105
Inserts text in Edlin	I	107
Terminates text input in Edlin	Ctrl-Break or Ctrl-C	108
Lists your file in Edlin	L	108
Terminates Edlin and saves the file	E	108
Exits Edlin without saving the file	Q	108

■ SELF-TEST

1. What DOS function key is used to display all characters in a previous command up to the P? _____
2. What DOS function key is used to display all characters in the immediately preceding command? _____
3. What command is used to delete up to the first T in TYPE LETTTERS? What key do you push to delete the T? _____
4. Can you move up to a previous line while typing a file in EDLIN? _____
5. What would you type to create a file called TEACHER.CON on drive C? _____
6. What character signals that Edlin is in Command mode? _____
7. What letter must you enter before you can start typing in Edlin? _____
8. Can you make corrections while typing a line in Edlin before you press **Enter**? _____

9. What command is used to stop entering text in Edlin and return to Command mode? _____
10. In Edlin's Command mode, what letter do you type to display the contents of the file? _____
11. What keystroke terminates Edlin and saves the file? _____

12. What keystroke terminates Edlin and does not save the file? _____

13. To insert a line before line 6, what would you enter? _____

14. To delete line 7, what would you enter? _____

Creating Batch Files

OBJECTIVES

At the end of this lesson you, will be able to:

- Understand what a batch file is.
- Create a batch file.
- Use the batch file commands: PAUSE, REM, and ECHO.
- Execute a batch file.
- Take control of your system with an AUTOEXEC.BAT batch file.

.....

WHAT IS A BATCH FILE?

A batch file is simply a text file that contains DOS commands. DOS executes the commands one line at a time, treating them as though you had issued each command individually. All batch files must have a .BAT file extension. A batch file is created in the same way as any other text file—by using the Copy Con feature, the Edlin feature, or any word processor that will save files in an ASCII format. Once the batch file has been created, it can be executed by typing the batch filename at the DOS prompt. DOS executes each command in the order in which it appears in the file.

Batch files are extremely time-saving for the computer user. If you find yourself executing the same commands repeatedly, consider automating these commands by creating a batch file.

.....

CREATING A BATCH FILE

Batch files must be created as text files (also called ASCII files). The difference between text files and applications files (such as a word-processing file) is that text files do not contain any of the special formatting characters usually required by application software programs.

To create a batch file, you may use either the Edlin text editor (explained in Lesson Nine) or the COPY CON command that you used in Lesson Five. If you use the COPY CON option, be aware that DOS erases all the existing data in a file and starts fresh; you cannot modify an existing batch file with this command. Use only one command or program name per line. A batch file can be given any valid DOS filename. The extension, however, must be .BAT. This extension is extremely important because it identifies to DOS that the file is a batch file.



CAUTION: *When naming your batch file, never use a name that is also a name of a DOS internal or external command.*

..... BATCH FILE COMMANDS

Batch files can execute any command that DOS can perform at the DOS prompt, plus seven special batch commands. In this section, we are going to consider three of these special batch commands.

ECHO

The ECHO command serves two purposes. First, it is used to control whether DOS displays the commands in a batch file as they are executed. The default, ECHO On, does display each command. ECHO Off does not show the batch commands, but any output produced by the batch commands is displayed. The following command syntax is used for this command:

ECHO On/Off

The second use of ECHO is to print a message or user comments on the screen that follows the ECHO command. The command syntax in this case is as follows:

ECHO message

PAUSE

PAUSE temporarily stops a batch file until any key is pressed on the keyboard. The message "Press any key when ready" is automatically a part of the command; however, an optional message may be used. The following command syntax is used for this command:

PAUSE Message

REM

The REM command allows you to embed messages, reminders, or notes to yourself (or to others) in the batch file, to help you remember precisely what the file does. The remark may be up to 123 characters in length. No matter what characters the remark contains, it is completely ignored by DOS. The following command syntax is used for this command:

REM remark

In this exercise, you are going to create a batch file named TEST.BAT, using the COPY CON feature. The batch file will turn the echo off, clear the screen using the CLS command, display the current directory, execute a CHKDSK, pause, clear the screen again, and send a message using Echo. You are going to save and execute this batch file on drive A, so make sure that it is your current drive and that your data disk is in that drive. (Floppy-based system users, place the data disk in drive B and make certain that it is the current drive.) Perform these steps:

1. Type the following lines, and press after each line:

```
COPY CON TEST.BAT
ECHO OFF
CLS
DIR /W
PAUSE
CHKDSK
PAUSE
CLS
ECHO CONGRATULATIONS ON YOUR FIRST BATCH FILE!!!
```

2. Press

This key combination instructs DOS that this is the end of the file.

3. Press

..... BATCH FILE EXECUTION

Once the batch file has been created, it can be executed simply by typing the filename, without the extension. For example, if you created a batch file called TEST.BAT, you would type TEST to start running the batch file. If you do not specify a disk drive before the batch filename, DOS uses the current drive. If you do not identify a path, DOS searches through the current directory for the batch file. If a batch file is not in the current directory and a path did not precede the batch filename, DOS searches the directories specified in the PATH command.

Once the batch file is located, DOS begins executing its commands. DOS automatically loads and executes one line at a time. If DOS loads an instruction and is unable to interpret it, a syntax error message is displayed. To cancel a batch file command once it has been executed, press **Ctrl-Break**. DOS will prompt you with "Terminate batch job (Y/N)?"

Now, let's execute the TEST.BAT batch file. Again, make sure that drive A is your active drive. (Floppy-based system users, your active drive should be drive B.) Perform these steps:

1. Type **TEST**

Remember, when executing a batch file, you do not type the extension.

2. Press **Enter**

Did your batch file run successfully?

In this exercise, you are going to use the Edlin feature to create a batch file named CP.BAT that will automatically copy all .DOC files from the root directory of drive A to the LETTERS directory. The batch file will then compare the files. You will also use the REM command. Make sure that your data disk is in drive A and that it is the active drive. (Floppy-based system users, make sure that your data disk is in drive B and that it is the active drive. In the instructions that follow, substitute drive B for drive A.) Perform these steps:

1. Type **EDLIN CP.BAT**

2. Press **Enter**

The screen will prompt you with:

```
New file
*_  


```

Now, to insert the text of your batch file, you must instruct Edlin to be in Insert mode:

3. Press **I** (for INSERT)

4. Press **Enter**

5. Type the following text, making sure to press **Enter** at the end of every line:

```
REM This copies and compares all .DOC files from A:\ to A:\WP\LETTERS
ECHO OFF
CLS
COPY A:\*.DOC A:\WP\LETTERS
CLS
COMP A:\*.DOC A:\WP\LETTERS\*.DOC
ECHO IF FILES DO NOT COMPARE OK, DO ANOTHER COPY.
```

6. Press **Ctrl-Break** to redisplay the Edlin prompt.
7. Type **L** (for LIST).
8. Press **Enter**

Now, save your text file and exit the Edlin feature:

9. Type **E** (for END EDIT).
10. Press **Enter**

The DOS prompt displays.

To execute the CP.BAT batch file, perform the following steps:

1. Type **CP**
2. Press **Enter**

Were all your .DOC files copied, and did they compare OK?

REPLACEABLE PARAMETERS

DOS allows up to 10 replaceable parameters as placeholders in a batch file. A **replaceable parameter** is a special symbol (for example, %1) that you place in a batch file. The symbol consists of a percent sign (%) followed by a one-digit number (such as 1). You may use numbers 1 through 9 as replaceable parameters, and more than one replaceable parameter may be included in a batch file. (DOS reserves %0 as a replaceable parameter to indicate the drive, path, and filename of the batch file itself.) When the batch file is executed, DOS replaces the symbol with the argument that you included when typing the batch filename at the command line.

For example, suppose that you want to create a batch file to copy one file to another and then compare the two. To create the batch file, enter the following lines:

```
COPY CON CPFILE.BAT
```

```
COPY %1 %2
```

```
COMP %1 %2
```

```
Ctrl-Z
```

To execute the batch file and have it copy and compare TEST.TXT to TEST1.TXT, enter the following commands:

```
CPFILE TEST.TXT TEST1.TXT
```

Notice that the arguments following the batch filename must be separated by spaces.

You are now going to create a batch file similar to the one in the preceding example, instructing DOS to copy and compare two files. You will include two replaceable parameters—one for the source file, and one for the destination file. Again, make sure that your data disk is in drive A and that it is the active drive. (Floppy-based system users, drive B should be your active drive.) Perform these steps:

1. To create the batch file called CPFILE.BAT, type the following and press **Enter** at the end of each line:

```
COPY CON CPFILE.BAT
REM This batch file copies and compares two files.
ECHO OFF
CLS
COPY %1 %2
COMP %1 %2
```

2. Press **Ctrl-Z**
3. Press **Enter**

Now, to test your batch file, you are going to copy SAMPLE.DOC to TEST.DOC. Make sure that drive A is your active drive. (Floppy-based system users, your active drive should be drive B.) Remember that the arguments must be separated by spaces. Perform these steps:

1. Type **CPFILE SAMPLE.DOC TEST.DOC**
2. Press **Enter**

Use the DIR command to see whether your batch file was successful. Do you now have a file called TEST.DOC?

..... AUTOEXEC.BAT BATCH FILE

The AUTOEXEC.BAT batch file is one of the most important and most frequently used files in PC systems. As was mentioned in Lesson Three, this is the last file that DOS looks for and (if present) executes during the boot process. In Lesson Seven, we saw that the path and prompt can be set up automatically as part of the AUTOEXEC.BAT file every time you start the system.

In the following exercise, you will write an AUTOEXEC.BAT file to replace the one your system currently has. It is important to save the old file to a new name in case some of its commands are needed for proper system operation.

Many application software packages automatically revise or replace the existing AUTOEXEC.BAT file in order to optimize their performance. It is good practice to make a copy of your existing AUTOEXEC.BAT file before loading new software.

Hard-based users, make drive C your current drive. Floppy-based system users, make sure that your DOS diskette is in drive A and that it is the current drive. Perform these steps:

1. Type **RENAME AUTOEXEC.BAT MYAUTO.BAT**

2. Press **Enter**

This initial operation makes a backup copy of your current AUTOEXEC.BAT file so that you can reuse it later.

3. Type **EDLIN AUTOEXEC.BAT**

4. Press **Enter**

The screen will prompt you with:

```
New file
*_
```

5. Type **I** (for INSERT).

6. Press **Enter**

7. Type **PROMPT \$D\$_T\$G**

8. Press **Enter**

In the preceding PROMPT command, \$ designates a command, _ designates a return, D designates date, T designates time, and G designates the prompt.

9. Press **Ctrl-C**

10. Type **E** (for END).

11. Press **Enter**

The DOS prompt displays.

12. Type **autoexec**

13. Press **Enter**

The AUTOEXEC.BAT file is automatically executed every time the system is started.

Your screen will now display a prompt that resembles the following one:

```
Mon 4-29-92
16:15:45>
```

Now let's make the prompt a little more useful, and set the path automatically as well. Hard-based system users, make sure that drive C is

current drive. Floppy-based system users, drive A should be your current drive. Perform these steps:

1. Type **EDLIN AUTOEXEC.BAT**
2. Press **Enter**

The screen prompts you with:

```
End of input file
*
```

3. Type **I** (for INSERT).
4. Press **Enter**
5. Type **PATH=C:\;C:\DOS** (If you are using a floppy-based system, substitute A for C twice.)
6. Press **Enter** and then **Ctrl-C**
7. Type **L** (for LIST).

The screen will appear as follows:

```
1*PATH=C:\;C:\DOS
2*PROMPT $D$_T$G
```

8. Type **2** (to display line 2).
9. Press **F2** to edit the line.
10. Type **_** to set the starting point for the edit.

The screen will display the following line:

```
2*PROMPT $d$
```

11. Type **_\$t\$_\$p\$g**

The p designates the path.

12. Press **Enter**
13. Press **E** (for END).
14. Type **CD**

This ensures that the root directory is current. Remember, this is where your AUTOEXEC.BAT file resides.

15. Press **Enter**

16. Type **AUTOEXEC**

17. Press

The screen will display a prompt as follows:

```
Mon 4-29-92
16:38:32
C: \>
```

18. Type **PATH**

19. Press

The screen will display the following line:

```
PATH=C: \;C: \DOS
```

If you are using a floppy-based system an A will appear in place of the C, twice.

In this way you can customize your system configuration by placing a number of DOS commands in your AUTOEXEC.BAT file. Then, every time the system boots, the prompt, path, and other parameters will be set automatically.

Now, let's reactivate your AUTOEXEC.BAT file. First, you must rename the batch file you just created. Name it MY.BAT, and then rename the MYAUTO.BAT file as to AUTOEXEC.BAT. Perform these steps:

1. Type **RENAME AUTOEXEC.BAT MY.BAT**
2. Press
3. Type **RENAME MYAUTO.BAT AUTOEXEC.BAT**
4. Press

Now, to activate your old AUTOEXEC.BAT:

5. Type **AUTOEXEC**
6. Press

■ SUMMARY OF COMMANDS

<i>Function</i>	<i>Command</i>	<i>Page</i>
Displays commands as they are executed	ECHO ON	118
Does not display commands	ECHO OFF	118
Temporarily stops a batch file	PAUSE	118
Allows you to put notes in a batch file	REM	119

■ **SELF-TEST**

1. Describe the contents of a batch file. _____
2. What does DOS do to the contents of a batch file? _____

3. Describe two ways to create a batch file. _____

4. What command is used to display the lines on the screen as they are executed? _____
5. What command temporarily stops a batch file? _____

6. The _____ command lets you put messages in the contents of a file that are ignored by DOS as it runs.
7. How might you create a batch file called BOOKS.BAT? _____

8. What file would you put the date and time prompt in to get it to show when you start the system? _____

Self-Test Answers

LESSON 1

1. a system that processes data to solve problems
2. input, processing, and output
3. mouse, keyboard, scanner
4. scanner
5. system unit
6. MHz (millions of cycles per second)
7. ROM
8. hard, floppy
9. CDROM
10. IBM 8514 with a resolution of 1024×768
11. daisy wheel
12. laser, ink-jet
13. modem
14. 0's and 1's
15. BASIC, Pascal, C
16. operating system
17. word processing, spreadsheet, database, calendaring, electronic mail

LESSON 2

1. reads information stored on disk, writes information onto disk, copies files, runs application programs
2. text editor
3. input/output, command processor, utility programs
4. IBMIO.COM, IBMDOS.COM
5. 1.0, 5.0
6. to describe the purpose of a file
7. .BAS
8. .HLP
9. .BAT
10. utility

LESSON 3

1. cold boot
2. **Ctrl-Alt-Del**
3. DOS prompt
4. **Enter**
5. yes
6. A: and B:, C:
7. no
8. mm/dd/yy
9. no
10. no

LESSON 4

1. internal
2. external
3. COPY, DIR
4. CHKDSK, FORMAT
5. DIR A:>PRN
6. size, date, and time
7. DIR/W
8. B: **Enter**
9. CLS
10. VER
11. PAUSE

LESSON 5

1. TYPE
2. COPY
3. COMP
4. RENAME
5. ERASE
6. +R
7. COPY CON
8. PRINT TEST.DOC
9. COPY A:REPORT C:
10. * and ?
11. 8
12. / = + " , :
13. no

LESSON 6

1. tracks
2. sets every bit to zero, defines tracks and sectors on diskette, sets up an empty directory
3. FORMAT/S
4. no
5. to name the diskette
6. VOL
7. CHKDSK
8. DISKCOPY
9. DISKCOMP
10. They are erased.

LESSON 7

1. root directory
2. \ (backslash)
3. word processing, spreadsheet, database
4. 512
5. CD\ACCOUNTS
6. \$P\$G
7. MD
8. remove the five files
9. C:\RD \WORKS
10. TREE
11. It will give you a status report of the disk, plus a list of directories and subdirectories.
12. CHKDSK/V>LPT1
13. AUTOEXEC.BAT
14. C:\WP51\TESTS\QUIZ1

LESSON 8

1. BACKUP
2. /S
3. creates a log file
4. MD\COLLEGE
5. yes
6. RESTORE
7. /B /A
8. You may lose data on disk because of disk failure as a result of power outage or power surge; floppy disk data can be damaged or lost.

LESSON 9

1. P
2.
3. T
4. no
5. C:\> EDLIN TEACHER.CON
6. *
7. I
8. yes
9. or
10. L
11. E
12. Q
13. 6I
14. 7D

LESSON 10

1. It is a text file containing DOS commands.
2. executes the commands one line at a time
3. EDLIN or COPY CON
4. ECHO ON
5. PAUSE
6. REM
7. COPY CON BOOKS.GEL or EDLIN BOOKS.GEL
8. AUTOEXEC.BAT

DOS Command Summary

Function

BASIC File
Batch File
Color Configuration
Command
Device Driver
Executable File

DOS File Extensions

.BAS
.BAT
.CLR
.COM
.SYS
.EXE

Function

Cancel a Command
Change the DOS Prompt of C:\ or A:\
Clear Screen
Date—Show the Current Date
Printer
Restart the Computer
Time—Show the Current Time
Version of DOS in Use
Wildcard Characters

Command

Ctrl-**Break**
PROMPT
CLS
DATE
PRN
Ctrl-**Alt**-**Del**
TIME
VER
* and ?

BACKUP and RESTORE Functions

Add a Log File
Back Up Modified Files
Copy All Files on Hard Disk
Replace Modified Files
Replace Lost or Damaged Files

BACKUP C:*.* A:/S/L
BACKUP C:*.* A:/M/S
BACKUP
RESTORE A:C:*.* /S/M
RESTORE

Batch File Commands

Ability to Put Notes in Batch File
Display Commands As They Are Executed
Do Not Display Commands
Temporarily Stop Batch File

REM
ECHO ON
ECHO OFF
PAUSE

Directory Functions

Change Directory
Change to Parent Directory
Create Directory/Subdirectory

CD
CD ..
MD

130 Command Summary

Display Disk's Directory Structure	TREE
Locate Files and Directories	PATH
Remove Directory/Subdirectory	RD
Show What Directory/Drive Is Current	DOS Prompt

Disk Functions

Compare Two Diskettes	DISKCOMP
Copy Diskette (Mirror Image)	DISKCOPY
Describe Contents of Disk	LABEL
Erase Disk and Prepare for Data	FORMAT
Status Report of Disk	CHKDSK
Volume Label Display	VOL

DOS Special Keys

Cancel Current Line	<input type="text" value="Esc"/>
Delete Characters from Input Buffer	<input type="text" value="Del"/>
Delete Characters up to a Specific Character	<input type="text" value="F4"/>
Display Characters up to a Specific Character	<input type="text" value="F2"/>
Display All Characters	<input type="text" value="F3"/>
Display One Character	<input type="text" value="F1"/>
Insert Characters	<input type="text" value="Ins"/>

EDLIN Special Keys

Exit Edlin Without Saving File	Q
Insert Text in Edlin	1
List File in Edlin	L
Terminate Text Input in Edlin	<input type="text" value="Ctrl-Break"/> or <input type="text" value="Ctrl-C"/>
Terminate Edlin and Save File	E

File Functions

Change the Name of File	RENAME
Change Status of File (as Read Only or Changed)	ATTRIB
Compare Two Files	COMP
Copy Files	COPY
Display Contents of File on Monitor	TYPE
Delete File	ERASE
List Files on Disk	Dir
Across Width	/w
Pause	/P
Locate Contents of File	PATH
Print Contents of File	PRINT

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