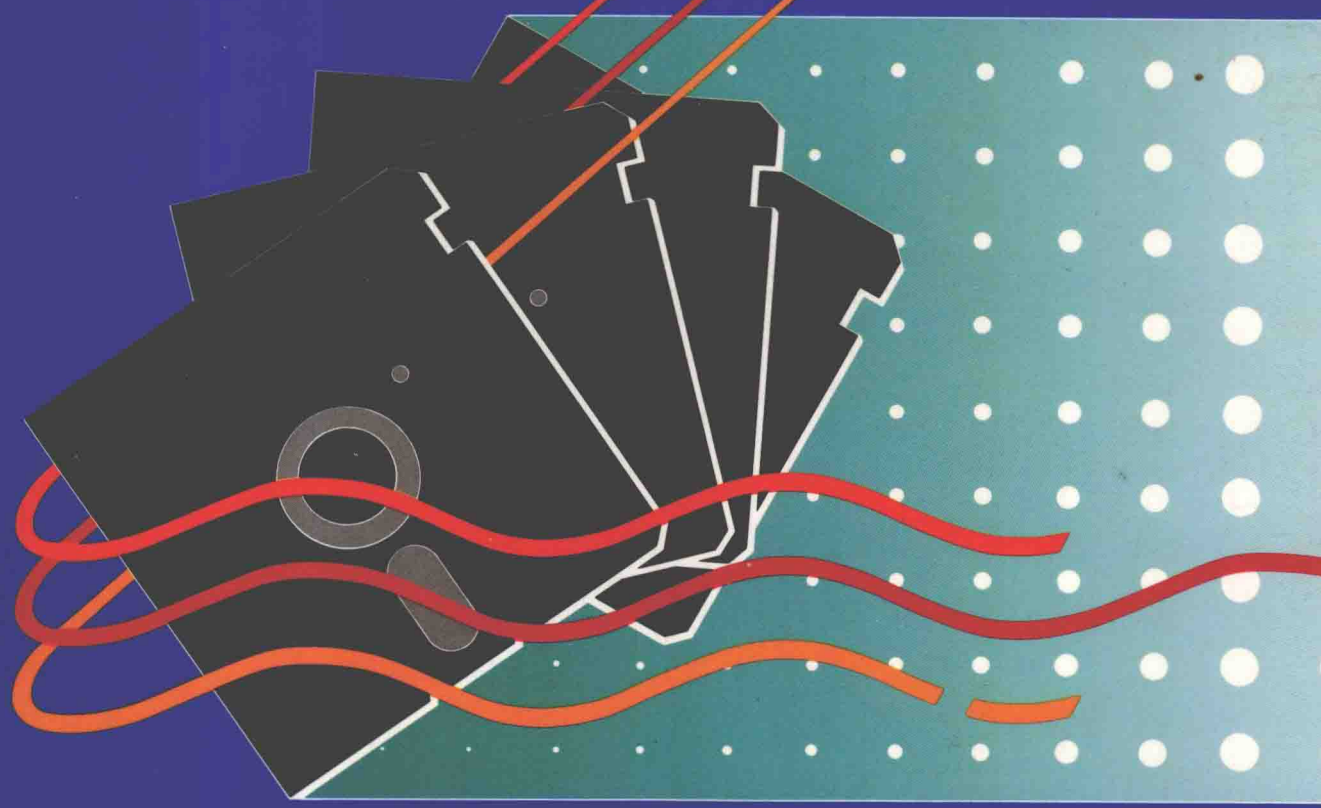
Nancy Stern Robert A. Stern

Computing Applications



Using DOS, WordPerfect® 4.2/5.0, Lotus® 1-2-3®, and dBase IV®

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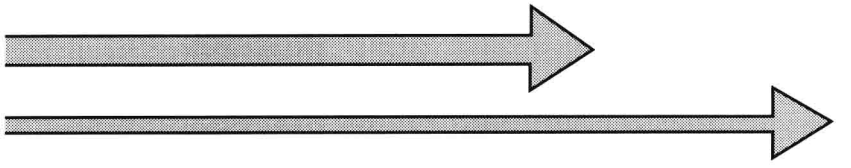

Using DOS, WordPerfect, Lotus 1-2-3, and dBASE IV

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Preface

This book differs from most software tutorials in that it allows students to practice while they learn.

Our tutorial approach simplifies learning—and teaching—applications software because it is exclusively of step-by-step, easy-to-learn instructions. In fact, you can only use this text at a computer with the tutorial disk that is available from the Publisher.

The benefits of our streamlined approach are clear; for instance, the Lotus 1-2-3 tutorial teaches Macros in only 22 pages! Our tutorial format also makes the book much more viable as a reference for students needing to look up a particular command.

A final distinguishing characteristic of this book is that it focuses completely on the latest releases of each package addressed. dBASE IV, WordPerfect 5.0, and Lotus 2.01, 2.2 and 3.0 are all the most current, fully supported versions of software available from each of the respective vendors at the time of publication.

Data Disk (Contact your Local Wiley College Representative for Ordering Information)

Available for use with tutorials included in the Stern & Stern texts, this data disk contains WordPerfect, Lotus, dBASE, and ASCII files and may be duplicated for use by students. Note: This data disk must be used when working with the tutorials. To obtain a copy, contact your local Wiley representative or write to the following address:

Stern Data Disk
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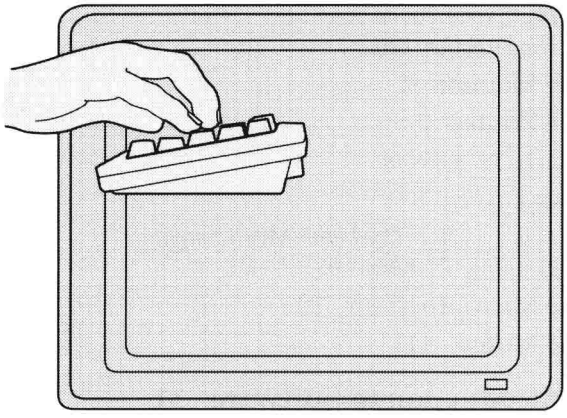
APPENDICES

CHAPTER 1

An Introduction to Hardware and Software Concepts



When you have completed this chapter, you will be able to:

- ✔ List and describe the most common components of a microcomputer and their functions.
- ✔ Describe the advantages and disadvantages of different kinds of storage devices (floppy diskettes, hard disks, and hard cards) available to a microcomputer.
- ✔ List and describe the basic forms of operating that are used on a microcomputer.
- ✔ Perform the mechanics of accessing and reaccessing, including booting and rebooting, a microcomputer.

Chapter 1

Chapter Outline

In this chapter we consider the most common components of a microcomputer, their functions, and the basic software required to run a microcomputer. You may already be aware of some of these basic aspects of computers and feel you need no further introduction to them; nevertheless, you should read the chapter carefully in order to be sure there are no gaps in your understanding of these fundamentals.

Under hardware we discuss the keyboard, the monitor, disk drives, printers, and the central processing unit, or microprocessor, and the basic functions, designs, and uses of these devices. Later we discuss the operating system programs which is the software without which computers cannot function. We also introduce the concept of applications software, which is software used to perform a basic business task. At the end we go through the step-by-step process of accessing the microcomputer and its programs and ways to "reboot" or restart your computer should the computer system fail.

An Overview of Hardware

In this section, we consider the most common components of a personal computer, also called a PC, microcomputer, or micro. We focus on the IBM family of personal computers, but IBM-compatibles or IBM-clones are similar if not almost identical to the equipment discussed here. The discussion will focus on the IBM Personal System/2 (PS/2) PC family (Figure 1.1) as well as the IBM PC.

We will assume that your computer is equipped with a keyboard, a monitor, at least one disk drive, a printer, and a microprocessor. A microprocessor, also called the central processing unit, or CPU, is the "brains" or processing unit of the computer. It stores programs and data and performs all processing. We will discuss five components mentioned above in detail in the following sections.

The Keyboard

Keyboards are not always identical, but most include the basic keys in roughly the same relative positions. Here we focus on the IBM PC and PS/2 keyboards. Figure 1.2 illustrates an IBM PC keyboard and an IBM **enhanced keyboard** used with the PS/2, or Personal System/2. If your keyboard is different, most of the following elements will apply anyway; you may need to experiment or check your manual to learn about some special features available on your computer's keyboard.

What follows is a brief introduction to some of the more important keys on the keyboard. Use Figure 1.2 as a reference for both the standard PC keyboard and the enhanced keyboard.

Using The Basic Keyboard. The basic keyboard on most microcomputers has keys similar to those on a typewriter. We call this a QWERTY keyboard because the first six letters on the top left of the basic keyboard are Q-W-E-R-T-Y. In addition to the letters, numbers, and symbols of the basic keyboard, there are a number of special keys you will need to learn. You type commands and instructions and enter data using your keyboard as if it were a typewriter. When you are ready to send a line of characters to the

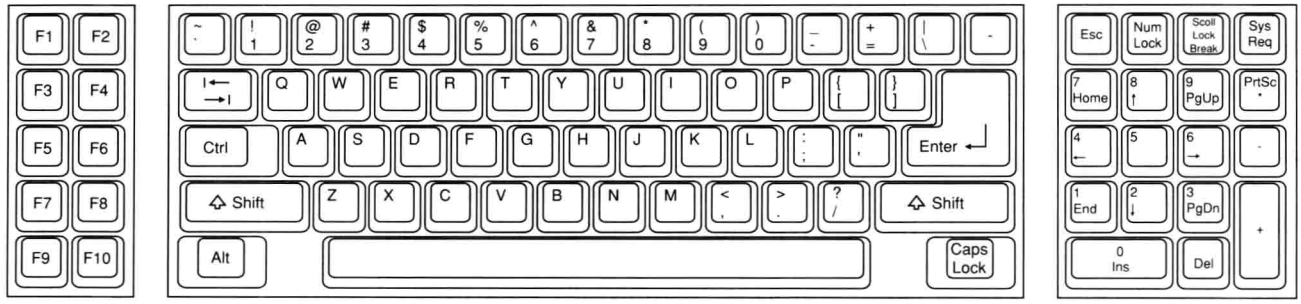
1–1 IBM Personal System/2 components.

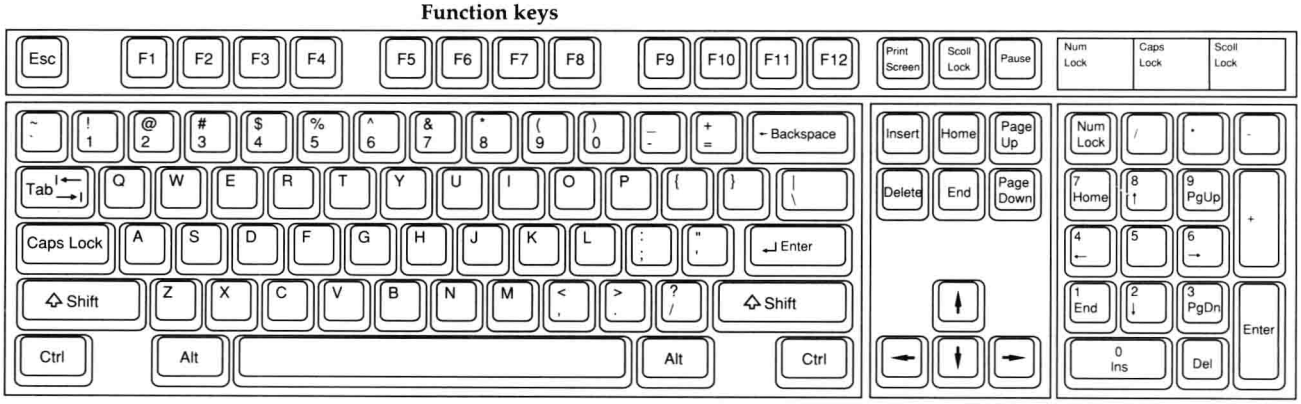
computer, press the ↵ or (ENTER) key. No data or command is transmitted to the computer until this key is depressed; thus, you can make changes to an entry before transmitting it by pressing the backspace key.

The (ENTER) key, which is on the right-hand side of the keyboard, may be marked ↵, Enter, or Return, depending on your computer. It is similar in concept to a carriage return key on a typewriter. See Figure 1.2 for an illustration of the Enter key, which on an IBM PC is marked as ↵. We will call this the (ENTER) key from this point on.

If you make a mistake while keying, use the (BACKSPACE) key to back up and erase characters. The backspace key marked as ←, is also on the right-hand side of the keyboard above the (ENTER) key (Figure 1.2). Each time you press the backspace key, the computer deletes one character to the left of the current position where you are, called the cursor point because a blinking **cursor**—a square or underline—highlights it.

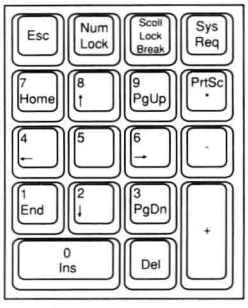
The Numeric Keypad. The numeric keypad is usually located to the right of the basic keyboard (Figure 1.3). The numeric keypad allows you to enter numbers conveniently with your right hand and without the need to use the numerals above the basic keyboard, which are more cumbersome to access when typing quickly.





1–2 The top illustration is of an IBM PC keyboard. The bottom illustration is an IBM enhanced keyboard.

Cursor control keys are used to position the pointer at a specific place on the screen. The symbols for the cursor control keys—(↓), (↑), (→), (←), (HOME), (END), (PGUP), and (PGDN)—usually appear below the numerals on the numeric keypad. If your keyboard does show cursor control characters below the numerals on the numeric keypad, this means that the control characters can be accessed in place of the numerals when you press the cursor keys; that is, if you press the 4 key, the computer will either (1) transmit the number 4 or (2) move the cursor one position, depending on whether the (NUM LOCK) key is on or off ("on" for numerals, "off" for cursor



1–3 Numeric keypad.

controls). The (NUM LOCK) key is above the numeric keypad (Figure 1.3). On IBM PCs, (NUM LOCK) is initially set to off but on the PS/2 is initially set to on. To change the setting, press the (NUM LOCK) key once. The enhanced keyboard also has a separate set of cursor keys that can be used instead of those on the numeric keypad (Figure 1.2).

The (NUM LOCK) key functions somewhat like a (SHIFT) key. Suppose (NUM LOCK) is on, so that pressing the keys types in numerals. To be able to use the control characters instead of the numbers, you would press the (NUM LOCK) key once. When pressed again, (NUM LOCK) reverts to numerals; when pressed one more time, it reverts to cursor control, and so on. Several keys on the keyboard function this way. We call them **toggle keys**. If the (NUM LOCK) key is not pressed, the IBM PC defaults to cursor control; PS/2, however, defaults to numerals. (The "default" is the position taken when the computer is turned on.) To change the default in either case, press the (NUM LOCK) key.

The (CAPS LOCK) Key. The (CAPS LOCK) key is on the lower right-hand side of the IBM PC keyboard, but on the lower left-hand side of the enhanced keyboard (Figure 1.2). Like (NUM LOCK), it is a toggle key. If you do not press it at all, lowercase letters are transmitted when the corresponding alphabetic keys are pressed. If you press the (CAPS LOCK) key once, each letter you enter is transmitted as uppercase. If you press the (CAPS LOCK) key twice, you get lowercase letters again. On enhanced keyboards, toggle keys, such as (NUM LOCK) and (CAPS LOCK), have lights to indicate more clearly whether they are "on" (pressed once) or "off" (pressed 0 or 2 or any even number of times).

The (SHIFT) Key. The (CAPS LOCK) key affects only letters; that is, it has no effect on the numbers and special symbols on the top line of the keyboard. To transmit the * above the number 8 on the basic keyboard, for example, you use the (SHIFT) key, which is marked ↑. There are two (SHIFT) keys on keyboards--one on the lower right-hand side one on the lower left-hand side of the central keyboard. These keys make available the special characters that appear above the numerals on the basic keyboard; also, if pressed with a letter, the letter is entered as uppercase. But the (SHIFT) key is *not* a toggle key because it must be held down or pressed for each special character or uppercase letter that is desired. (CAPS LOCK), on the other hand, need only be pressed once to transmit *all* letters in uppercase.

The Cursor Arrow Keys. As we have noted, cursor arrows usually appear as control characters on the numeric keypad (Figure 1.3). They are used to position the cursor or pointer at a desired point on the screen. The **cursor** is a blinking square or underline that appears on a screen specifying where you are in a program. By pressing the ↑, ↓, →, and ← cursor control characters, you can reach any point on the screen. Most programs and packages use cursor arrows in this way for designating specific commands or correcting data.

With many types of software, the (PGDN) key on the numeric keypad will scroll one page down in a program or file and (PGUP) will scroll one page up in a program or file. Similarly, the (HOME) key on the numeric keypad will

bring the cursor to the beginning of a line, screen or file, depending on the package, and the (END) key will bring the cursor to the end of a line, screen or file, depending on the package.

Note, again, that the enhanced keyboard also has a separate set of cursor control keys in addition to those on the numeric keypad (Figure 1.2).

The Function Keys. On IBM PC keyboards, the **function keys** (F1)–(F10) appear to the left of the main keyboard (Figure 1.2). On IBM PS/2 enhanced keyboards, the function keys (F1)–(F12) appear above the main keyboard (Figure 1.2). Function keys have specific meanings for each program package with which they are used. With many packages. such as Lotus and dBASE IV, for example, the (F1) function key is used to display a Help screen. Each package or program uses function keys for its own purposes. Function keys are typically numbered F1-F10 (or F1-F12). We discuss many of these keys when considering each package.

The Monitor

When you enter data using a keyboard, or when the computer responds, both the keyed data and computer response are displayed on the **monitor**. Another name for a monitor is screen, cathode ray tube (CRT), or video display terminal (VDT). Some monitors have a special "on" switch separate from the computer's "on" switch. If there is a switch or knob on the monitor marked "on/off or I/O" (I [on]/O [off]), turn it on before getting started.

Most monitors can display 25 lines of output and 80 characters per line. They usually come with a knob for adjusting the screen's color and/or brightness; you can make adjustments to suit your tastes.

Some monitors are **monochrome monitors**, which means their screens display in black and white or amber and white. Others are **color monitors**. To display graphics and/or color on your screen, the computer must have a graphics adapter that is used with the monitor.

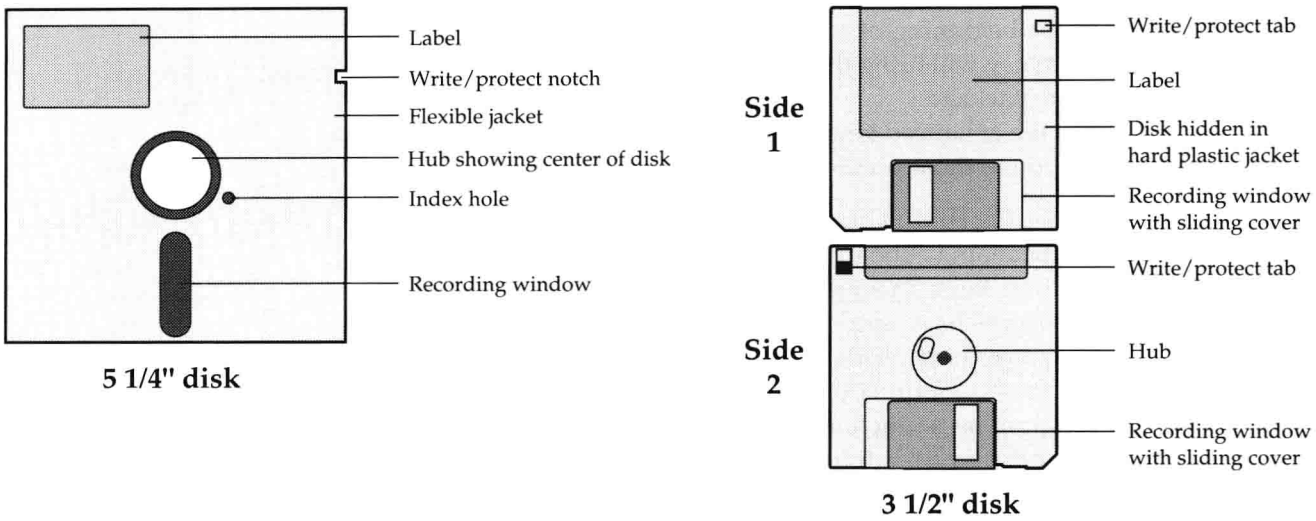
As noted, the blinking square or underline that appears on the screen when a program is running is called a cursor. It indicates where you are in the program.

The Printer

Printers are used to obtain a printed or "hard" copy of programs or data displayed on the screen. All printers can print letters, digits, and special symbols in black ink, but many can also print in color and can print graphics characters as well.

Many printers are designated as either dot-matrix or letter-quality, although many dot-matrix printers are near letter-quality in their ability to print clear characters. The highest quality printers, called laser printers, use laser technology to print letters, numbers, symbols, and graphics. They are more expensive than other printers; color versions are available but they are even more expensive.

Most printers print 80 characters per line, but some can print 100 or 120 characters per line as well. Printers have their own power switches.



1–4 The 5¼-inch and 3½-inch floppy disks have similar features. However, a sliding panel and hard case give the 3½-inch disk more protection.

Echo Printing. To obtain a printed copy of any screen display when using most software, press the (SHIFT) ((↑)) key on the left-hand side of the keyboard and, while it is depressed, press the PrtSc or Print Screen key on the right-hand side of the keyboard. When these two keys are pressed, everything that is currently on the screen will be printed on the printer. Later, we will indicate other ways to print a program or program excerpt or file.

Disk Drives

In order to be run or executed, a program file must first be entered or loaded into the microprocessor, also called the **central processing unit**, or CPU. Similarly, data files that are created, read, or updated must be read by the CPU as input before they can be processed. But these data files and program files must be stored on some auxiliary or secondary storage device so that after the power to the computer is turned off, they will be retained for future processing. We most often store data and programs as **files** on **disks** so that they can be used again.

Types of Disks Used with Microcomputers. Micros use two types of disk: (1) floppy disks or diskettes and (2) hard disks.

Diskette systems usually use two disk drives for auxiliary storage, although computers with a single disk drive are available. The terms "diskette" and "floppy disk" are used interchangeably here. Hard disk systems usually have a higher capacity fixed disk and either one or two floppy disk drives.

The disk drives may be built in as part of the microcomputer or may be completely separate units. Diskettes for most IBM PCs are 5¼-inch square; for the IBM PS/2, as well as most portables or laptops, they are 3½-inch square (Figure 1.4). Note that 3½-inch disks, surprisingly, have larger storage capacity than 5¼-inch disks. There are other sizes of diskettes also available, but the 3½-inch and 5¼-inch sizes are the most common.

Standard 5¼-inch floppy disks record data on both sides at double-density. Older drives recorded on only one side at single-density. Double-sided, double-density 5¼-inch disks store approximately 360,000 characters (des-

ignated as 360K). (Actually 1K = 1024 storage positions, thus 360K is a little more than 360,000 storage positions.) High-density 5¼-inch diskettes store approximately 1.2 MB, or four times as much as double-density disks, but can only be accessed by high-density disk drives.

As a general rule, the 1.2 MB capacity of the high-density 5¼-inch disks is well worth their additional cost, which is modest, for those who have a high-density disk drive.

The 3½-inch disk has a capacity of 720K to 1.44 MB or more. In addition to greater storage capacity, other advantages of 3½-inch disks include:

1. Because they are smaller, 3½-inch disks require less storage space.

2. Instead of the thin protective sleeve that is used to protect 5¼-inch disks, the 3½-disk has a hard plastic casing, making it more resistant to scratches.

3. The 3½-inch disk has a sliding piece of metal that covers the magnetic media. The metal automatically slides out when the disk is loaded into the drive, reducing the risk of damage.

4. The 3½-inch disk has a built-in plastic tab that can be slid from side to side to prevent users from writing on it; this is called write protection (more on this later). The 5¼-inch disk has a stick-on write-protect tab which can fall off easily. With 3½-inch disks, you slide the plastic tab to "write protect" the disk, which provides much better protection than a stick-on tab.

A storage device more versatile than either 3½- inch or 5¼-inch disk drives is a **hard disk**, which typically has a storage capacity from 10 to hundreds of megabytes or MB (one MB equals approximately one million characters). Figure 1.1 illustrates a computer with a hard disk drive. In addition to a large storage capacity, another advantage of hard disks is that they are enclosed in a casing that reduces their sensitivity to dust and mishandling. Hard disks are used to permanently store both programs and data and reduce the need of swapping diskettes in and out of the drives.

Some microcomputers use a **hard card** in place of a hard disk. This, like a microprocessor, is a board with chips capable of permanently storing data. It serves the same purpose as a hard disk and functions essentially the same way. It can be added to any microcomputer system.

As noted, data and programs are stored on either diskettes or hard disks. Each data or program file should have a **back-up** on a separate disk in case of a problem such as a power surge that ruins a disk or an accident that destroys a file.

Diskette drives are usually labelled A for the left-hand or upper drive, B for the right-hand or lower drive. The hard drive is usually referred to as the C drive.

Handling Diskettes. Diskettes, particularly the 5¼-inch versions, are relatively delicate and do not tolerate abuse well. They have a jacket to protect them, which should never be removed. Always handle diskettes by their jackets and take care not to touch the metallic portion. Keep all dis-

kettes away from magnetic fields such as televisions, telephones, and microwave ovens. Do not bend them.

Blank diskettes used for copies of programs and storing data are packaged with gummed labels for you to attach. Using a felt-tipped pen, print identifying information on the label. Diskettes should be inserted into drives with the label up, without bending them or touching the metallic portion.

To insert a diskette into the A or B diskette drive, the drive's latch or door must be open. On some drives, you must press a release to open it. Similarly, drives with doors or latches must be closed before they can be used. A disk drive is active when its red light is on. Do not insert disks into a drive when the light is on because you could damage the "heads," which read and write data.

As indicated previously, diskettes can be physically protected against accidental overwriting or erasure as follows:

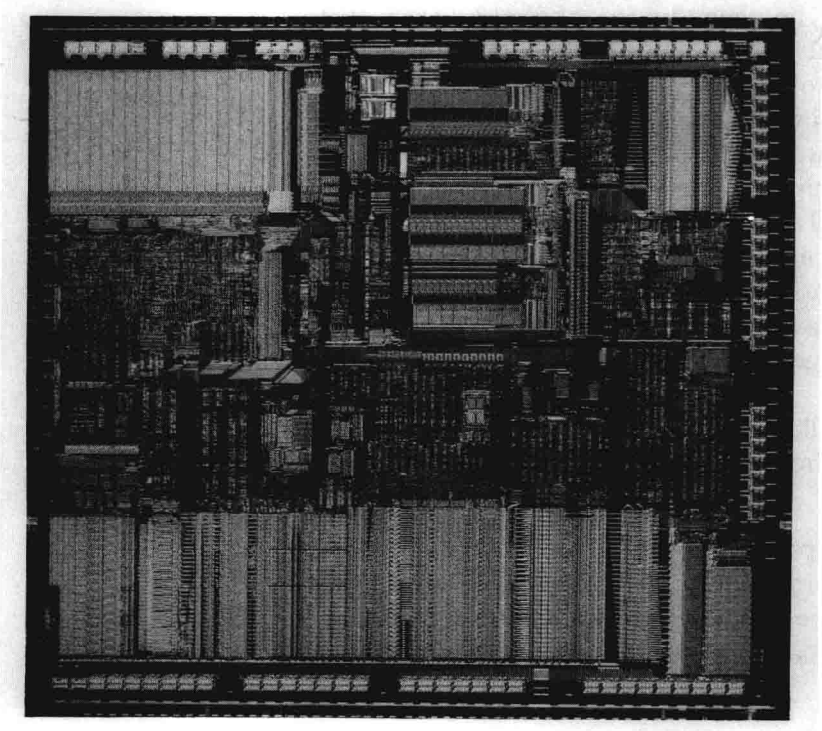
5¼-inch: A metallic label supplied with the diskette fits over the write-protect notch, protecting it from overwriting.

3½-inch: A metal tab on the diskette can be positioned over the write protect notch to prevent overwriting.

The Microprocessor

The microprocessor is the "brain" of the computer system; it is referred to as the central processing unit (CPU). It is mounted on a board or boards inside the main unit and consists of chips that contain thousands (or more) of integrated circuits (Figure 1.5).

The microprocessor stores all data and processes all instructions. It consists of two types of memory: (1) **read-only memory (ROM)** which is



1–5 An integrated circuit chip.