

## TYPES OF COMPUTERS

There are four types of computers: supercomputers, mainframe computers, minicomputers, and microcomputers.

- **Supercomputers** are the most powerful type of computer. These machines are special high-capacity computers used by very large organizations. For example, NASA uses supercomputers to track and control space explorations.
- **Mainframe computers** occupy specially wired, air-conditioned rooms. Although not nearly as powerful as supercomputers, mainframe computers are capable of great processing speeds and data storage. (See Figure 1-6.) For example, insurance companies use mainframes to process information about millions of policyholders.
- **Minicomputers**, also known as **midrange computers**, are desk-sized machines. Medium-sized companies or departments of large companies typically use them for specific purposes. For example, production departments use minicomputers to monitor certain manufacturing processes and assembly-line operations.
- **Microcomputers** are the least powerful, yet are the most widely used and fastest-growing type of computer. Categories of microcomputer include *desktop*, *notebook*, and *personal digital assistants*. (See Figure 1-7.) **Desktop computers** are small enough to fit on top of or alongside a desk yet are too big to carry around. **Notebook computers** are portable, weigh between 4 and 10 pounds, and fit into most briefcases. **Personal digital assistants (PDAs)** are also known as **palmtop computers** or **handheld computers**. They combine pen input, writing recognition, personal organizational tools, and communications capabilities in a very small package.

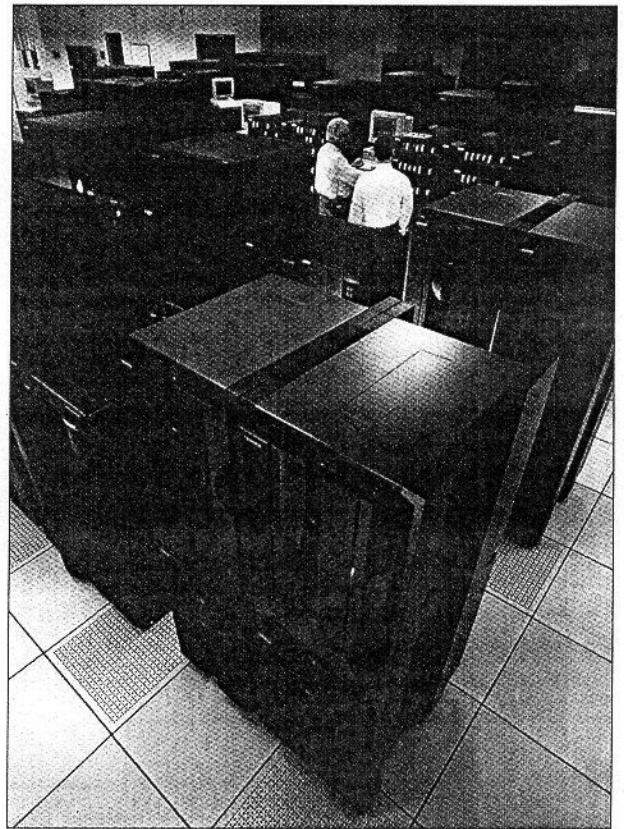


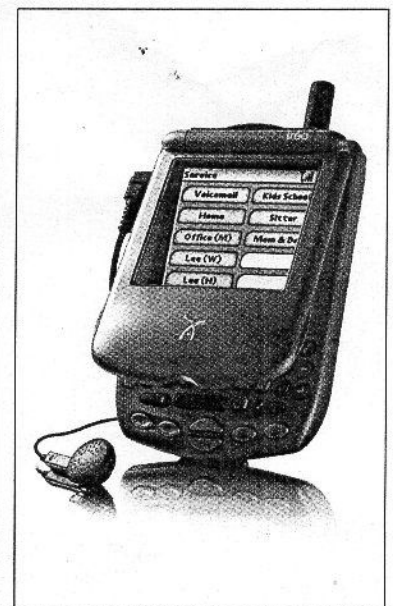
Figure 1-6 Mainframe computer



Colorful desktop computers from Apple (iMac)



Notebook computer



Personal digital assistant

Figure 1-7 Microcomputers

## On the Web Explorations

Intel is a leading manufacturer of microprocessors. To learn more about this company, visit our Web site at

<http://www.mhhe.com/oleary>.

## MICROCOMPUTER HARDWARE

Hardware for a microcomputer system consists of a variety of different devices. See Figure 1-8 for a typical desktop system. This physical equipment falls into three basic categories: system unit, input/output, and secondary storage. Because we discuss hardware in detail later in this book, we will present just a quick overview here.

- **System unit:** The **system unit**, also known as the **system cabinet** or **chassis**, is a container that houses most of the electronic components that make up a computer system. (See Figure 1-9.) Two important components

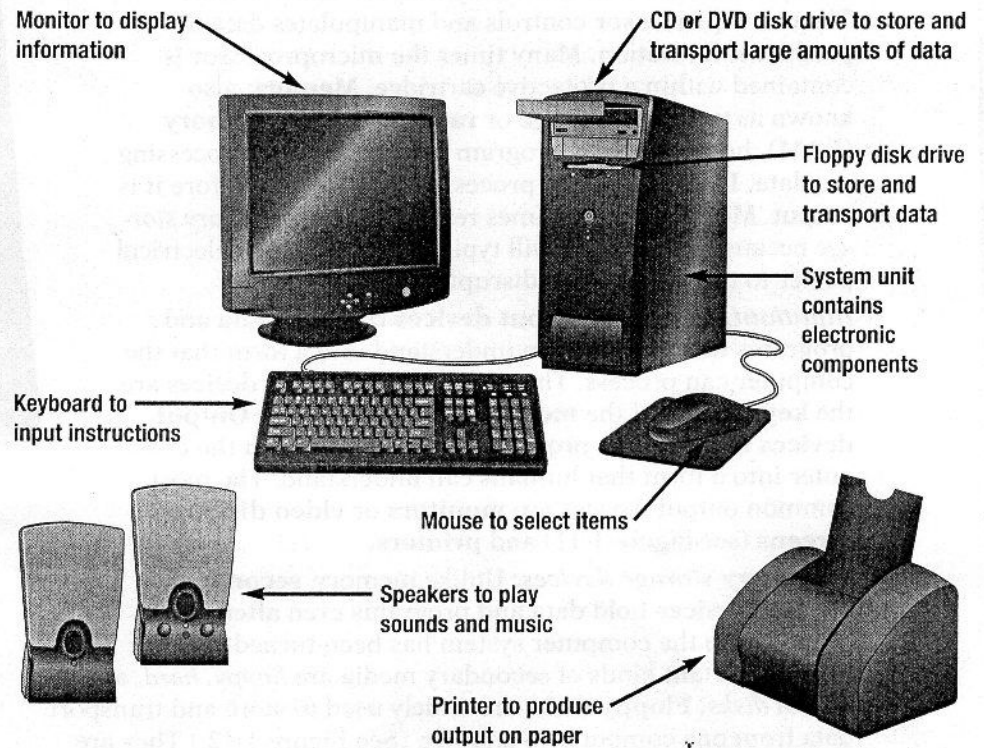


Figure 1-8 Microcomputer system

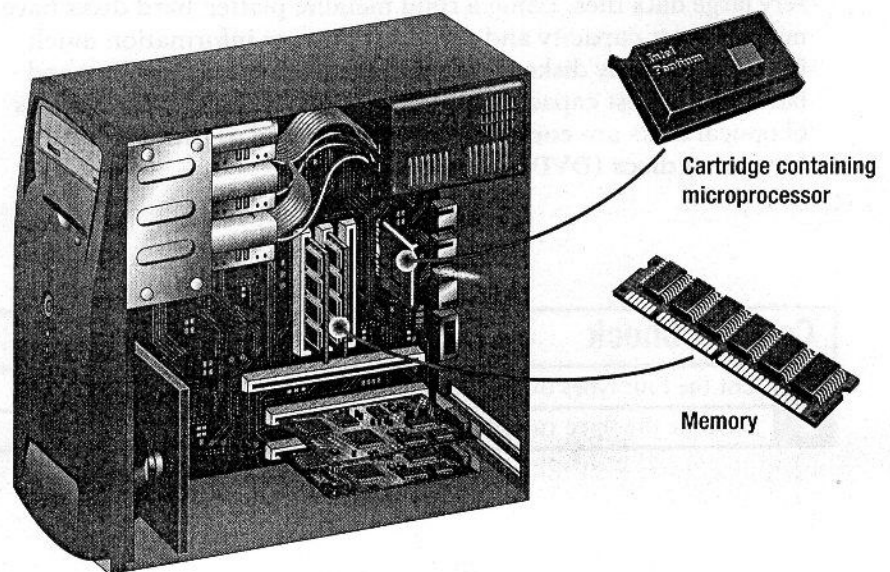


Figure 1-9 System unit

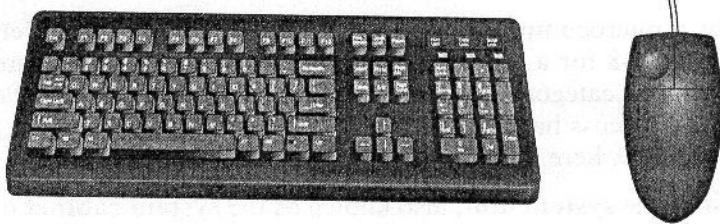


Figure 1-10 Keyboard and mouse

of the system unit are the *microprocessor* and *memory*. The **microprocessor** controls and manipulates data to produce information. Many times the microprocessor is contained within a protective cartridge. **Memory**, also known as **primary storage** or **random access memory (RAM)**, holds data and program instructions for processing the data. It also holds the processed information before it is output. Memory is sometimes referred to as *temporary storage* because its contents will typically be lost if the electrical power to the computer is disrupted.

- **Input/output devices:** **Input devices** translate data and programs that humans can understand into a form that the computer can process. The most common input devices are the **keyboard** and the **mouse**. (See Figure 1-10.) **Output devices** translate the processed information from the computer into a form that humans can understand. The most common output devices are **monitors** or **video display screens** (see Figure 1-11) and **printers**.
- **Secondary storage devices:** Unlike memory, **secondary storage devices** hold data and programs even after electrical power to the computer system has been turned off. The most important kinds of secondary media are *floppy*, *hard*, and *optical disks*. **Floppy disks** are widely used to store and transport data from one computer to another. (See Figure 1-12.) They are called floppy because data is stored on a very thin flexible, or floppy, plastic disk. **Hard disks** are typically used to store programs and very large data files. Using a rigid metallic platter, hard disks have a much greater capacity and are able to access information much faster than floppy disks. **Optical disks** use laser technology and have the greatest capacity. (See Figure 1-13.) The two basic types of optical disks are **compact discs (CDs)** and **digital versatile (or video) discs (DVDs)**.

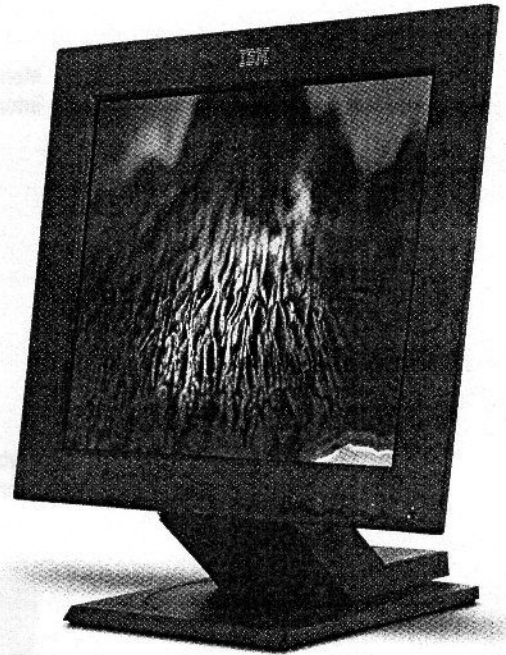


Figure 1-11 Monitor

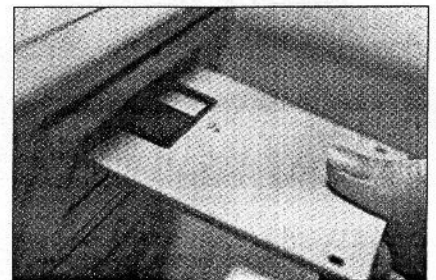


Figure 1-12 A 3 1/2-inch floppy disk

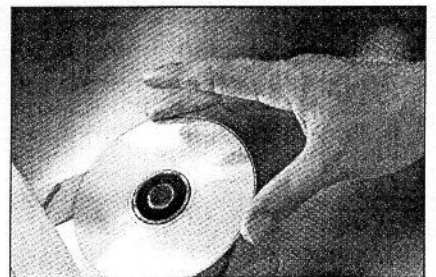


Figure 1-13 An optical disk

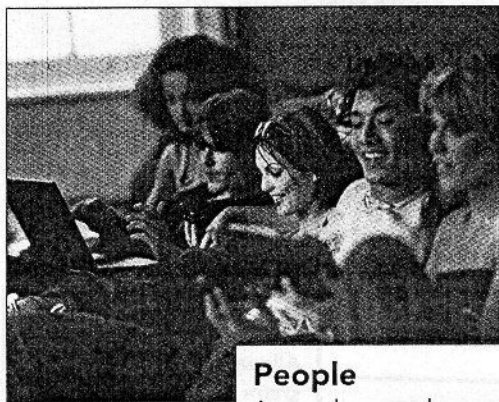
### Concept Check

- List the four types of computers.
- Describe the three categories of microcomputer hardware.

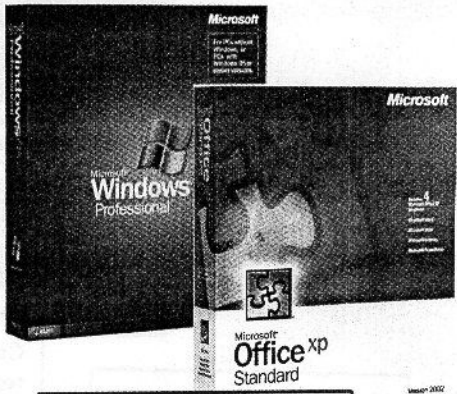
An information system has five parts: people, procedures, software, hardware, and data.

When you think of a microcomputer, perhaps you think of just the equipment itself. That is, you think of the monitor or the keyboard. Yet, there is more to it than that. The way to think about a microcomputer is as part of an information system. An **information system** has five parts: *people, procedures, software, hardware, and data*. (See Figure 1-1.)

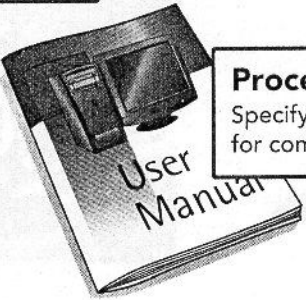
- **People:** It is easy to overlook people as one of the five parts of a microcomputer system. Yet this is what microcomputers are all about—making **people, end users** like yourself, more productive.
- **Procedures:** The rules or guidelines people follow when using software, hardware, and data are **procedures**. Typically, these procedures are documented in manuals written by computer specialists. Software and hardware manufacturers provide manuals with their products.
- **Software:** A **program** consists of the step-by-step instructions that tell the computer how to do its work. **Software** is another name for a program or programs. The purpose of software is to convert **data** (unprocessed facts) into **information** (processed facts).
- **Hardware:** The equipment that processes the data to create information is called **hardware**. It includes the keyboard, mouse, monitor, system unit, and other devices. Hardware is controlled by software.



**People**  
Are end users who use computers to make themselves more productive



**Software**  
Provides step-by-step instructions for computer hardware



**Procedures**  
Specify rules or guidelines for computer operations

Figure 1-1 The five parts of an information system

- **Data:** The raw, unprocessed facts, including text, numbers, images, and sounds are called data. Examples of raw facts are hours you worked and your pay rate. After data is processed through the computer, it is usually called information. An example of such information is the total wages owed you for a week's work.

Almost all of today's computer systems add an additional part to the information system. This part, called **connectivity**, allows computers to connect and to share information. These connections can be by telephone lines, by cable, or through the air. Connectivity allows users to greatly expand the capability and usefulness of their information systems.

In large computer systems, there are specialists who deal with writing procedures, developing software, and capturing data. In microcomputer systems, however, end users often perform these operations. To be a competent end user, you must understand the essentials of **information technology (IT)**, including software, hardware, and data.

## Concept Check

- What are the five parts of an information system?
- What is required of a competent end user?



ID	Employee	Job	Salary	Commission	Region	Year	Commission	Year	Commission
1001	John	SA	10000	0.15	FL	2001	1450	2002	1450
1002	Jane	SA	12000	0.15	FL	2001	1740	2002	1740
1003	John	SA	15000	0.15	FL	2001	2250	2002	2250
1004	Jane	SA	18000	0.15	FL	2001	2700	2002	2700
1005	John	SA	20000	0.15	FL	2001	3000	2002	3000
1006	Jane	SA	22000	0.15	FL	2001	3300	2002	3300
1007	John	SA	25000	0.15	FL	2001	3750	2002	3750
1008	Jane	SA	28000	0.15	FL	2001	4200	2002	4200
1009	John	SA	30000	0.15	FL	2001	4500	2002	4500
1010	Jane	SA	32000	0.15	FL	2001	4800	2002	4800
1011	John	SA	35000	0.15	FL	2001	5250	2002	5250
1012	Jane	SA	38000	0.15	FL	2001	5700	2002	5700
1013	John	SA	40000	0.15	FL	2001	6000	2002	6000
1014	Jane	SA	42000	0.15	FL	2001	6300	2002	6300
1015	John	SA	45000	0.15	FL	2001	6750	2002	6750
1016	Jane	SA	48000	0.15	FL	2001	7200	2002	7200
1017	John	SA	50000	0.15	FL	2001	7500	2002	7500
1018	Jane	SA	52000	0.15	FL	2001	7800	2002	7800
1019	John	SA	55000	0.15	FL	2001	8250	2002	8250
1020	Jane	SA	58000	0.15	FL	2001	8700	2002	8700
1021	John	SA	60000	0.15	FL	2001	9000	2002	9000
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1025	John	SA	70000	0.15	FL	2001	10500	2002	10500
1026	Jane	SA	72000	0.15	FL	2001	10800	2002	10800
1027	John	SA	75000	0.15	FL	2001	11250	2002	11250
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1117	John</								

## PEOPLE

People are the most important part of an information system. Examples include people in entertainment, medicine, education, and business.

Although easy to overlook, people are surely the most important part of any information system. Our lives are touched every day by computers and information systems. Many times the contact is direct and obvious, such as when we create documents using a word processing program or when we connect to the Internet. Other times, the contact is not as obvious. Nonetheless, computers and information systems touch our lives hundreds of times every day. Consider just the following four examples. (See Figure 1-2.)

People just like you are making information technology work for them every day. Throughout this book you will find a variety of features designed to make technology work for you. Three such features are Making IT Work for You Topics, Tips, and On the Web Explorations. (See pages 7 and 8.)

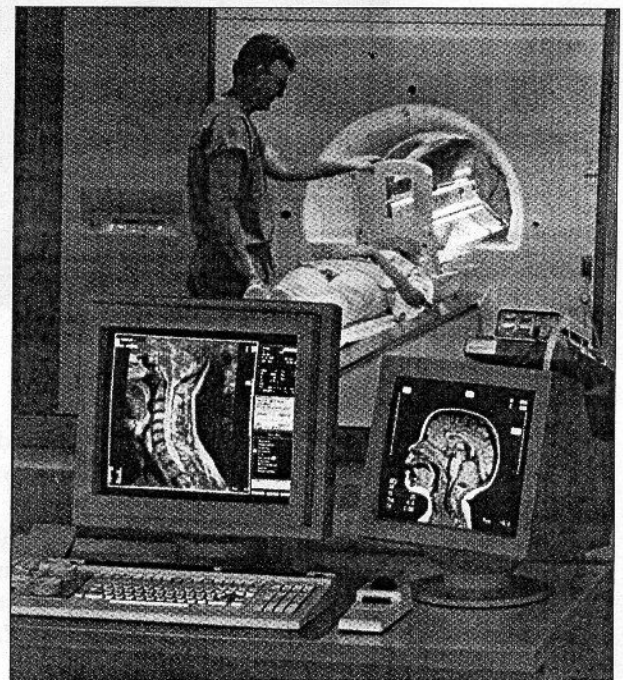
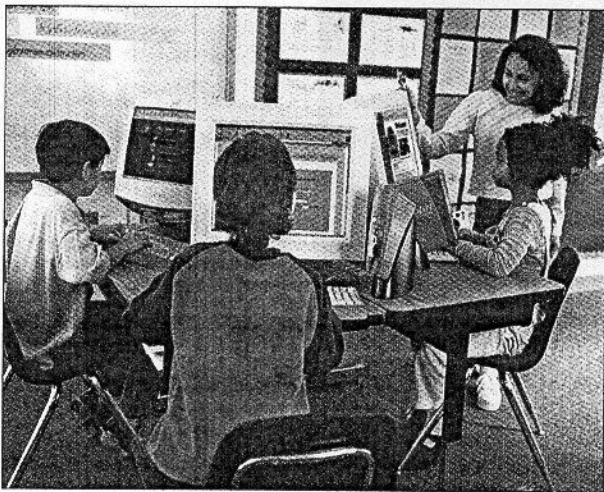
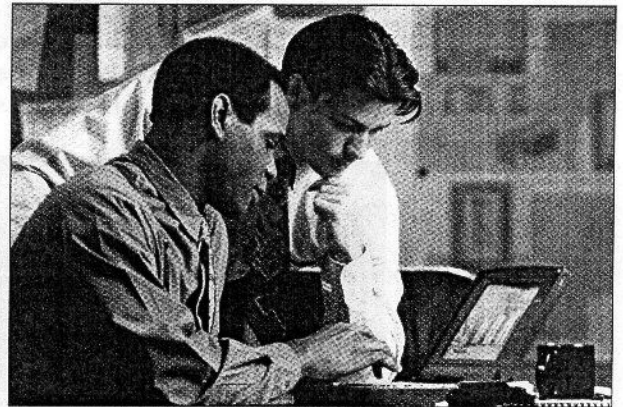
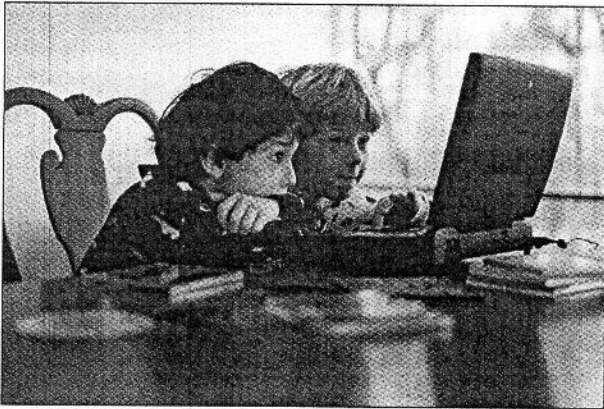


Figure 1-2 Computers in business, medicine, and education

Software is of two kinds: system software and application software.

**S**oftware, as we mentioned, is another name for programs. Programs are the instructions that tell the computer how to process data into the form you want. In most cases, the words *software* and *programs* are interchangeable.

There are two major kinds of software: *system software* and *application software*. You can think of application software as the kind you use. Think of system software as the kind the computer uses.

## SYSTEM SOFTWARE

The user interacts primarily with application software. **System software** enables the application software to interact with the computer hardware. System software is “background” software that helps the computer manage its own internal resources.

The most important system software program is the **operating system**, which interacts with the application software and the computer. The operating system handles such details as running (“executing”) programs, storing data and programs, and processing data. Windows XP is one of the best-known operating systems for today’s microcomputer users. (See Figure 1-3.)

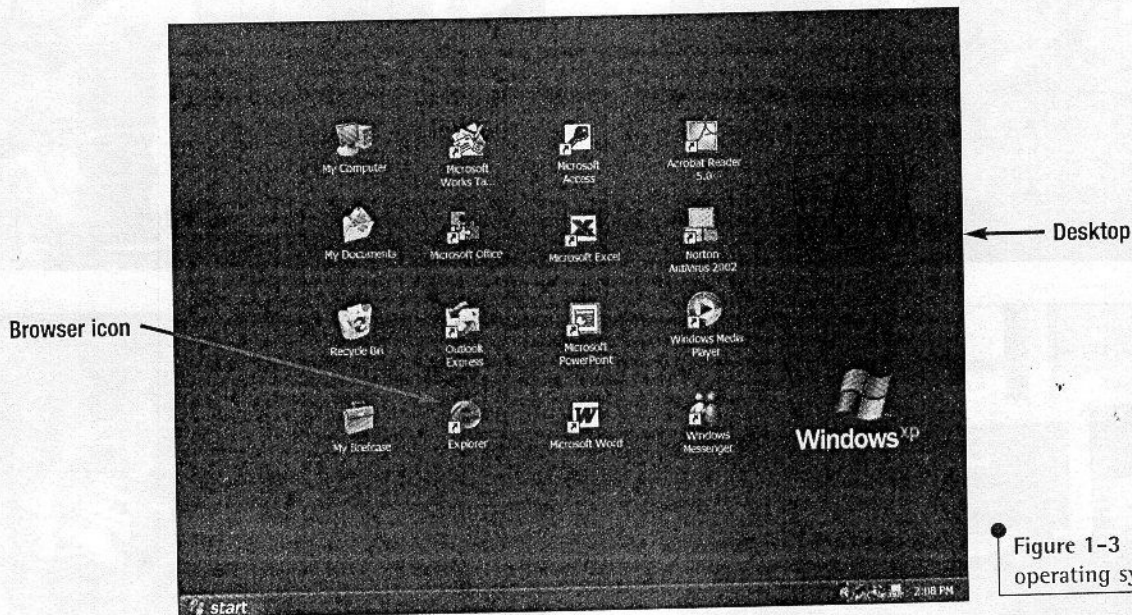


Figure 1-3 Windows XP operating system

## APPLICATION SOFTWARE

**Application software** might be described as “end-user” software. These programs are designed to address general-purpose and special-purpose applications.

General-purpose programs, or basic applications, are widely used in nearly all career areas. They are the kind of programs you have to know to be considered computer competent. One of these basic applications is a browser to navigate, explore, and find information on the Internet. (See Figure 1-4.) The two most widely used browsers are Microsoft’s Internet Explorer and Netscape’s Navigator. For a summary of the basic applications, see Figure 1-5.