**Overview: Computers in Our World**

In the past two decades, computers have reshaped our lives at home, work, and school. The vast majority of businesses now use computerized equipment in some way, and most companies’ are networked both internally and externally. More than half of all homes in the United States have at least one computer, and most of them are connected to the Internet. Workers who once had little use for technology now interact with computers almost every minute of the workday.

This lesson examines the many types of computers that are in common use today. Although this class will focus on personal computers (the ones that seem to sit on ever}' desktop), you will first learn about the wide variety of computers that people use, and the reasons they use them. As your knowledge of computers grows, you will understand that all computers—regardless of their size or purpose—are basically similar. That is, they all operate on the same fundamental principles, are made from the same basic components, and need instructions to make them run.

**OBJECTIVES:**

In basic terms, define the word *computer.*

Discuss various ways computers can be categorized.

Identify six types of computers designed for individual use.

Identify four types of computers used primarily by organizations.

Explain the importance of computers in today's society.

Describe how computers are used in various sectors of our society.

**The Computer Defined**

In basic terms, a computer is an electronic device that processes data, converting it into information that is useful to people. Any computer—regardless of its type—is controlled by programmed instructions, which give the machine a purpose and tell it what to do. The computers discussed in this book—and which are everywhere around you— are digital computers (see Figure 1A.1). As you will team in Chapter 4, “Processing Data," digital computers are so called because they work “ by the numbers." That is, they break all types of information into tiny units, and use numbers represent those pieces of information. Digital computers also work in very strict sequences of steps, processing each unit of information individually; according to the highly organized they must follow.

A lesser-known type of computer is the analog computer; which works in a very different way from digital computers. The earliest computers were analog systems, and today's digital systems owe a great deal to their analog ancestors. Analog and digital computers differ in many respects, but the most important distinction is the way they represent data. Digital systems represent data as having one distinct value or another; with no other possibilities. Analog systems, however represent data as variable points along a continuous spectrum of values.

This makes analog computers somewhat more flexible than digital ones, but not necessarily more precise or reliable. Early analog computers were mechanical devices, weighing several tons and using motors and gears to perform calculations (see Figure l A.2). A more manageable type of analog computer is the old-fashioned slide rule (see Figure 1A3). Computers can be categorized in several ways. For example, some computers are designed for use by one person, some are meant to be used by groups of people, and some are not used by people at all. They also can be categorized by their power, which means the speed at which they operate and the types of tasks they can handle. Within a single category, computers may be subcategorized by price, the types of hardware they contain, the kinds of software they can run, and so on.

**Computers for Individual Users**

Most computers are meant to be used by only one person at a time. Such computers are often shared by several people (such as those in your school’s computer lab), but only one user can work with the machine at any given moment (see Figure 1 A.4).

The six primary types of computers in this category are:

≫ Desktop computers

≫ Workstations

≫ Notebook computers

≫ Tablet computers

≫ Handheld computers

≫ Smart phones

These systems are all examples of personal computers (PCs) — a term that refers to any computer system that is designed for use by a single person. Personal computers are also called microcomputers, because they are among the smallest computers created for people to use. Note, however, that the term personal computer or PC is most often used to describe desktop computers, which you will learn about in the following section. Although personal computers are used by individuals, they also can be connected together to create networks (see Figure 1A.5). In fact, networking has become one of the most important jobs of personal computers, and even tiny handheld computers can now be connected to networks. You will learn about computer networks in Chapter 7, “Networks."

**Desktop Computers**

The most common type of personal computer is the desktop computer—a PC that is designed to sit on (or under) a desk or table. These are the systems you see all around you, in schools, homes, and offices, and they are the main focus of this book. Today's desktop computers are far more powerful than those of just a few years ago, and are used for an amazing array of tasks. Not only do these machines enable people to do their jobs with greater ease and efficiency, but they can be used to communicate, produce music, edit photographs and videos, play sophisticated games, and much more. Used by everyone from preschoolers to nuclear physicists, desktop computers are indispensable for learning, work, and play (see Figure 1A .6).

As its name implies, a desktop computer is a full-size computer that is too big to be carried around. The main component of a desktop PC is the system unit, which is the case that houses the computer’s critical parts, such as its processing and storage devices. There are two common designs for desktop computers. The more traditional desktop model features a horizontally oriented system unit, which usually lies flat on the top of the user’s desk. Many users place their monitor on top of the system unit (see Figure 1A.7).

Vertically oriented tower models have become the more popular style of desktop system (see Figure1A.8). This design allows the user to place the system unit next to or under the desk, if desired.

**Workstations**

A workstation is a specialized; a single - user computer that typically has more power and features than a standard desktop PC (see Figure 1A.9). These machines are popular among scientists, engineers, and animators who need a system with greater-than-average speed and the power to perform sophisticated tasks. Workstations often have large, high-resolution monitors and accelerated graphics handling capabilities, making them suitable for advanced architectural or engineering design, modeling, animation, and video editing.

**Notebook Computers**

Notebook computers, as theirname implies, approximate theshape of an 8.5-by-ll-inchnotebook and easily fit inside abriefcase. Because people frequentlyset these devices ontheir lap, they are also calledlaptop computers. Notebookcomputers can operate on alternating current or special batteries.

These amazing devices generally weigh less than eight pounds, and some even weigh less than three pounds! During use, the computer’s lid is raised to reveal a thin monitor and a keyboard. When not in use, the device folds up for easy storage. Notebooks are fully functional microcomputers; the people who use them need the power of a full-size desktop computer wherever they go (see Figure I A.10). Because of their portability, notebook PCs fall into a category of device called mobile computers—systems small enough to be carried by their user. Some notebook systems are designed to be plugged into a docking station, which may include a large monitor, a full-size keyboard and mouse, or other devices (see Figure 1A.11).

Docking stations also provide additional ports that enable the notebook computer to be connected to different devices or a network in the same manner as a desktop system.

**Smart Phones**

Some cellular phones double as miniature PCs (see Figure 1A.14). Because these phones offer advanced features not typically found in cellular phones, they are sometimes

**Tablet PCs**

The tablet PC is the newest development in portable, full-featured computers (see Figure 1A.12). Tablet PCs offer a ll the functionality of a notebook PC, but they are lighter and can accept input from a special pen—called a stylus or a digital pen—that is used to tap or write directly on the screen. Many tablet PCs also have a built-in microphone and special software that accepts input from the user's voice. A few models even have a fold-out keyboard, so they can be transformed into a standard notebook PC. Tablet PCs run specialized versions of standard programs and can be connected to a network. Some models also can be connected to a keyboard and a full-size monitor.

**Handheld PCs**

Handheld personal computers are computing devices small enough to fit in your hand (see Figure 1 A. 13). A popular type of handheld computer is the personal digital assistant (PDA). A PDA is no larger than a small appointment book and is normally used for special applications, such as taking notes, displaying telephone numbers and addresses, and keeping track of dates or agendas. Many PDAs can be connected to larger computers to exchange data. Most PDAs come with a pen that lets the user write on the screen. Some handheld computers feature tiny built-in keyboards or microphones that allow voice input.

Many PDAs let the user access the Internet through a wireless connection, and several models offer features such as cellular telephones, cameras, music players, and global positioning systems.

**Smart Phones**

Some cellular phones double as miniature PCs (see Figure 1A.14). Because these phones offer advanced features not typically found in cellular phones, they are sometimes called smart phones. These features can include Web and c-mail access, special software such as personal organizers, or special hardware such as digital cameras or music players. Some models even break in half to reveal a miniature keyboard.

**Computers for Organizations**

Some computers handle the needs of many users at the same time. These powerful systems arc most often used by organizations, such as businesses or schools, and are commonly found at the heart of the organization’s network.

Generally, each user interacts with the computer through his or her own device, freeing people from having to wait their turn at a single keyboard and monitor (see Figure 1A.15). The largest organizational computers support thousands of individual users at the same time, from thousands of miles away. While some of these large-scale systems are devoted to a special purpose, enabling users to perform only a few specific tasks, many organizational computers are general purpose systems that support a wide variety of tasks.

**Network Servers**

Today, most organizations’ networks are based on personal computers. Individual users have their own desktop computers, which are connected to one o r more centralized computers, called network servers. A network server is usually a powerful personal computer with special software and equipment that enable it to function as the primary computer in the network.

PC-based networks and servers offer companies a great deal of flexibility. For example, large organizations may have dozens or hundreds of individual servers working together at the heart of their network (see Figure 1A.16). When set up in such groups—sometimes called clusters or server farms—network servers may not even resemble standard PCs. For example, they may be mounted in large racks or reduced to small units called “ blades," which can he slid in and out of a case. In these large networks, different groups of servers may have different purposes, such as supporting a certain set of users, handling printing tasks, enabling Internet communications, and so on.

A PC-based server gives users flexibility to do different kinds o f tasks (see Figure I A.17).

This is because PCs are general-purpose machines, designed to be used in many ways.

For example, some users may rely on the server for e-mail access, some may use it to perform accounting tasks, and others may use it to perform word-processing or database management jobs. The server can support these processes, and many others, while storing information and programs for many people to use.

Depending on how the network is set up, users may be able to access the server in multiple ways. O f course, most users have a standard desktop PC on their desk that is permanently connected to the network.

Mobile users, however, may be able to connect a notebook PC or a handheld device to the network by wireless means.

When they are away from the office, users may be able to use the Internet as a means of connecting to the company’s network servers (see Figure 1A.18).

**Mainframe Computers**

Mainframe computers are used in large organizations such as insurance companies and banks, where many people frequently need to use the same data. In a traditional mainframe environment, each user accesses the mainframe’s resources through a device called a terminal (see Figure 1A.19). There are two kinds of terminals.

A dumb terminal does not process or store data; it is simply an input/output (I/O ) device that functions as a window into a computer located somewhere else. An intelligent terminal can perform some processing operations, but it usually does not have any storage. In some mainframe environments, however, workers can use a standard personal computer to access the mainframe. Mainframes are large, powerful systems (see Figure 1 A.20). The largest mainframes can handle the processing needs of thousands of users at any given moment. But what these systems offer in power, they lack in flexibility.

Most mainframe systems are designed to handle only a specific set of tasks. In your state's Department of Motor Vehicles, for example, a mainframe system is probably devoted to storing information about drivers, vehicles, and driver's licenses, but little or nothing else. By limiting the number of tasks the system must perform, administrators preserve as much power as possible for required operations.

You may have interacted with a mainframe system without even knowing it. For exam pie, if you have ever visited an airline’s Web site to reserve a scat on a flight, you probably conducted a transaction with a mainframe computer.

**Minicomputers**

First released in the 1960s, minicomputers got their name because of their small size compared to other computers of the day. The capabilities of a minicomputer are somewhere between those of mainframes and personal computers. For this reason, minicomputers are often called midrange computers. Like mainframes, minicomputers can handle much more input and output than personal computers can. Although some ‘‘minis’’ arc designed for a single user, the most powerful minicomputers can serve the input and output needs of hundreds of users at a time. Users can access a central minicomputer through a terminal or a standard PC.

**Supercomputers**

Supercomputers arc the most powerful computers made, and physically they are some of the largest (see Figure I A .21). These systems can process huge amounts of data, and the fastest super computers can perform more than one trillion calculations per sccond. Some supercomputers can house thousands of processors. Supercomputers are ideal for handling large and highly complex problems that require extreme calculating power. For example, supercomputers have long been used in the mapping of the human genome, forecasting weather, and modeling complex processes like nuclear fission.

**Computers in Society**

How important are computers to our society? People often talk in fantastic terms about computers and their impact on our lives. You probably have heard or read expressions such as computers have changed our world” or “ computers have changed the way we do everything” many times. Such statements may strike you as exaggerations, and sometimes they are.

But if you stop and really think about the effect computers have had on our daily lives, you still may be astonished. One way to gauge the impact of computers is to consider the impact of other inventions. Can you imagine, for instance, the many ways in which American life

changed after the introduction of the automobile (see Figure 1A.22). Consider a few examples:

≫ Because of the cat; people were able to travel farther and cheaper than ever before, and this created huge opportunities for businesses to meet the needs of the traveling public.

≫ Because vehicles could be mass-produced, the nature of manufacturing and industry changed and throngs of people began working on assembly lines.

≫ Because of road development, suburbs became a feasible way for people to live dose to a dty without actually living in one.

≫ Because of car travel, motels, restaurants, and shopping centers sprang up in piaccs where there had previously been nothing.

**Productivity Tip**

**Choosing th**e **Right TooI for** the **Job**

Buying a computer is a lot like buying a car because there are so many models and options from which to choose! Before deciding which model is best for you, identify the type of work for which you want to use the computer. Depending on your job, you may need to use a computer

on a limited basis. A handheld system is great if you want to

≫ **Manage Your Schedule on a Daily or Hourly Basis.** Handheld computers are popular for their calendar and schedule-management capabilities, which enable you to set appointments, track projects, and record special events.

≫ **Manage a List of Contacts.** If you need to stay in touch with many people and travel frequently, personal digital assistants provide contact-management features.

≫ **Make Notes on the Fly.** Some PDAs feature small key' boards, which are handy for tapping out quick notes. Others feature pens, which enable the user to 'w rite" directly on the display screen. Many newer handheld systems also provide a built-in microphone, so you can

record notes digitally.

≫ **Send Faxes and E-Mall.** Most popular handheld PCs have fox and e-mail capabilities and a port that lets them exchange data with a PC. If your job requires you to travel but you still need a fullfeatured computer, you may consider using a laptop or notebook computer. This option is the best choice if you want to.

≫ **Carry Your Data with You.** If you need to make presentations on the road or keep up with daily work while traveling, portable PCs are ideal laptop systems offer as much RAM and storage capacity as desktop models. Many portables have built-in CD-ROM or DVD drives; others accept plug-in CD-ROM, DVD, and hard drives, which can greatly increase their capacity.

≫ **Be Able to Work Anywhere**. Portable PCs run on either rechargeable batteries or standard current.

≫ **Communicate and Share Data from Any Location.** Most portable computers have built-in modems or slots for plugging in a modem.

Think of other great inventions and discoveries, such as electricity, the telephone, or (he airplane. Each, in its own way, brought significant changes to the world, and to the ways people lived and spent their time. Today, still relatively soon after

its creation, the computer is only beginning to make its mark on society.

**Why Are Computers So Important?**

People can list countless reasons for the importance of computers {see Figure 1A.23). For someone with a disability, for example, a computer may offer freedom to communicate, learn, or work without leaving home. For a sales professional, a PC may mean the ability to communicate whenever neccessary, to track leads, and to manage an ever-changing schedule. For a researcher, a computer may be the workhorse that docs painstaking and time-consuming calculations. But if you took a ll the benefits that people derive from computers, mixed them

together, and distilled them down into a single element, what would you have?

The answer is simple: information. Computers arc important because information is so essential to our lives. And information is more than the stuff you see and hear on television. Facts in a textbook or an encyclopedia are information, bur only one kind.

Mathematical formulas and their results arc information, too, as arc the plans for a building or the recipe for a cake. Pictures, songs, addresses, games, menus, shopping lists, resumes— the list goes on and on. All these things and many others can be thought of as information, and they can a ll be stored and processed by computers.

(Actually, **If** you work in one place and need to perform various tasks, a desktop computer is the best choice. Choose a desktop computer **if** you want to

**» Work with Graphics-Intensive or Desktop Publishing Applications.**

Complex graphics and page-layout programsrequire a great deal of system resources, and adesktop system’s large monitor reduces eye fatigue.

**» Design or Use Multimedia Products.**

Even though many portable computers have multimedia features, you can get the most for your money with a desktop system. Large screens make multimedia programs easier to see,

and stereo-style speakers optimize sound quality.

**» Set Up Complex Hardware Configurations.**

A desktop computer can support multiple peripherals—including printers, sound and video sources, and various external devices—at the same time. If you want to swap components, or perform other configuration tasks, a desktop system will provide many options. computers store these things as data, not as information, but you’ll learn the difference between the two later in thb book.) So, when you consider the importance of computers in our society, think instead about the importance of information. As tools for working with information, and for creating new information, computers may be one o f humanity's most important creations.

**» Home**.

In many American homes, the family computer is nearly as important as the refrigerator or the washing machine. People cannot imagine living without it. In fact, a growing number of families have multiple PCs in their homes; in most cases, at least one of those computers has an Internet connection. Why do home users need their computers?

≫ **Communications.**

Electronic mail (e-mail) continues to be the most popular use for home computers, because it allows family members to communicate with one another and to stay in contact with friends and coworkers (see Figure 1A.24).

≫ **Business Work Done at Home.**

Thanks to computers and Internet connections, more people arc working from home than ever before. It is possible for many users to connect to their employer’s network from home and do work that could not be done during regular business hours. Computers also are making it easier for people to start their own home-based businesses.

≫ **Schoolwork.**

Today’s students are increasingly reliant on computers, and not just as a replacement for typewriters. The Internet is replacing printed books as a reference tool (see Figure 1A.25), and easy-to-use software makes it possible for even young users to create polished documents.

≫ **Entertainment.**

If you haw ever played a computer game, you know how enjoyable they can be. For this reason, the computer has replaced the television as the entertainment medium of choice for many people. As computet; audio, video, and broadcast technologies converge, the computer w ill someday be an essential component o f any home entertainment center.

≫ **Finances.**

Computers and personal finance software can make balancing your checkbook an enjoyable.experience. Well, almost. At any rate, they certainly make it easier, and home users rely on their PCs for bill paying, shopping, investing, and other financial chores (see Figure 1A.26).

**Education.**

More and more schools are adding computer technology to their curricula, not only teaching pure computer skills, but incorporating those skills into other classes. Students may be required to use a drawing program, for example, to draw a plan of the Alamo for a history class, or use spreadsheet software to analyze voter turnouts during the last century’s presidential elections. Educators see computer technology as an essential learning requirement for all students, starting as early as preschool. Even now, basic computing skills such as keyboarding are being taught in elementary school dasscs (see Figure 1A.27). In the near future, high school graduates w ill enter college not only with a general diploma, but with a certification that proves their skills in some area of computing, such as networking or programming.

**Small Business.**

Many of today’s successful small companies simply could not exist without computer technology. Each year, hundreds of thousands of individuals launch businesses based from their homes or in small-office locations. They rely on inexpensive computers and software not only to perform basic work functions, but to manage and grow their companies.

These tools enable business owners to handle tasks—such as daily accounting chores, inventory management, marketing, payroll, and many others—that once required the hiring of outside specialists (see Figure 1A.28). As a result, small businesses become more self-sufficient and reduce their operating expenses.

**Industry**

Today, enterprises use different kinds of computers in many combinations. A corporate

headquarters may have a standard PC-based network, for example, but its production facilities may use computer controlled robotics to manufacture products.

≫ **Design.**

Nearly any company that designs and makes products can use a computer-aided design or computer-aided manufacturing system in their creation (sec Figure 1A.29).

≫ **Shipping.**

Freight companies need computers to manage the thousands of ships, planes, trains, and trucks that are moving goods at any given moment. In addition to tracking vehicle locations and contents, computers can manage maintenance, driver schedules, invoices and billing, and many other activities.

≫ **Proccess Control.**

Modem assembly lines can be massive, complex systems, and a breakdown at one point can cause chaos throughout a company. Sophisticated process-control systems can oversee output, check the speed at which a machine runs, manage conveyance systems, and look at parts inventories, with very little human interaction.

**Government.**

Not only are governments big consumers o f technology, butthey help to develop it as well. As you w ill Icam in Chapter 8,“ Presenting the Internet," the U.S. government played a key

role in developing the Internet. Similarly, NASA has been involved in the development of computer technologies of all sorts. Today, computers play a crucial part in nearly every government agency.

≫ **Population.**

The U.S. Census Bureau was one o f the first organizations to use computer technology, recruiting mechanical computers known as “ difference engines" to assist in tallying the American population in the early 20th century.

≫**Taxes.**

Can you imagine trying to calculate Americans’ tax bills without the help of computers? Neither could the Internal Revenue Service. In fact, the IR S now encourages taxpayers to file their tax returns online, via the Internet.

**» Military.**

Some of the world's most sophisticated computer technology has been developed primarily for use by the military. In fact, some of the earliest digital computers were created for such purposes as calculating the trajectory of missiles. Today, from payroll management to weapons control, the armed forces use the widest array of computer hardware and software imaginable.

**» Police.**

When it comes to stocking their crime-fighting arsenals, many police forces consider computers to be just as important as guns and ammunition (see Figure 1A.30). Today’s police cruisers are equipped with laptop computers and wireless Internet connections that enable officers to search for information on criminals, crime scenes, procedures, and other kinds of

information.

**The Merging of Media and meaning**

I imagine that you have been aware of personal computers for some time. Even if you or your family has never owned a PC—and even if this course is your first opportunity to use one—you're probably at least peripherally aware of the prominent place we've given to PCs in our lives. As a matter of fact it's only been over the course of our lives, yours and mine, that PCs have earned their place on desks in homes and places of business, if earned is the right word.

Personal computers' slow start has accelerated to a staggering pace as we humans have done what we always do: Take a new tool and exploit its every possible use. For many of us, the 30-year evolution of uses for the PC has been no less revolutionary than was the introduction of electricity to the home a century ago. What began as a simple, if seemingly miraculous, light to read by has become the center of most everything we do at home. Why even many fireplaces—yesterday's reading light—ignite today by electric power. Personal computers started life similarly, as humble things, miraculous for their multipurpose ability to work with words and numbers, yet able to display virtually nothing but text in response to typed commands, barely able to print anything usefully, and closed—unable to communicate "outside of the box," as it were.

A huge industry developed to support personal computers and expand their potential use as a tool And for roughly the first five years of the PCs existence, the greatest innovations came from within the world of computing—people researching specifically to improve video performance, to reduce the cost of increasingly massive data storage, to connect computers together over worldshrinking distances. The creativity of these folks was staggering. When faced with the question, " I can talk around the world on the telephone; why cant my computer?" for example, they literally gave the computer a voice. That's what a modem does: it turns a computer's digital signals into audible sound that the plain old telephone system can handle. If

you like, you can think of this as being somewhat analogous to the early years of electricity when pioneers such as Thomas Edison and George Westing house worked tirelessly to improve the potential of their original innovation and make an arguably honest buck. Other industries automotive; electronics, and entertainment, to name a prominent fewadopted the technology developed for and made economically feasible by computing's growing popularity. Gradually, this relationship became more symbiotic and the PC started to benefit from technology originally developed for other purposes. Consider the compact disc Introduced in 1980, by 1983 it was just beginning to gain a foothold in the music world. Six years later, CD-ROMs appeared on personal computers and ushered in a second.

**Health Care**

Pay a visit to your family doctor or the local hospital, and you'll find yourself surrounded by computerized equipment of all kinds. Computers, in fact, arc making health care more efficient and accurate while helping providers bring down costs. Many different health care procedures now involve computers, from ultrasound and magnetic resonance imaging, to laser eye surgery and fetal monitoring (see Figure 1A.31).

Surgeons now can use robotic surgical devices to perform delicate operations, and even to conduct surgeries remotely. New virtual-reality technologies are being used to train new surgeons in cutting-edge techniques, without cutting an actual patient. But not all medical computers arc so hightech. Clinics and hospitals use standard computers to manage schedules, maintain patient records, and perform billings.

Many transactions between physicians, insurance companies, and pharmacies are conducted by computers, saving health care workers time to devote to more important tasks. Generation of PC possibilities. PCs by then had evolved sophisticated graphical user interfaces and detailed displays.

Combining the CD's digital sound with these visual technologies went a long way toward making computer experiences interactive—something that previously only people and unpopular toys had been. The PC world increasingly became a place where many other worlds met particularly the varied worlds of information and entertainment—an interactive, multimedia world. This is today's world. It's a world in which we expect our to toot, whistle, plunk, and boom; to speak to us an to listen when we dictate; to remember what we forget and to disrtract us so we w ill forget. Having spent much of actuall getting that a technology company must produce something useful in order to realize a profit the computing world turned back to substance with a renewed focus on the PC as the center of media. As I write this, a new generation of media PCs is appearing on the market. These systems can blend virtually every media technology in existence into a seamless, single experience. The traditional capabilities of PCs, CD and DVD players, DVD recorders, televisions, VCRs, surround-sound music systems can all be provided by one device—or two, if you add the possibilities of printing and film. What's really new about

these systems is their power—practical video editing has been the private world of a wealthy few until the latest advances in processor, memoiy, and massive storage all came together in affordable systems that put these capabilities into homes and small offices. This means that you can produce your own DVD movies with just a consumer video camera and a media PC (fasttalking agents are now entirely optional). In a band? Record and distribute albums of your music directly or through a Web site that software almost automatically designs for you. Paint? Create your own online gallery. Write? Self-publish on demand while promoting your creations through an existing onUne bookseller. Watt Disney said, “If you can dream it you can do it Technology has helped prove him right Today the "you" who can “do it” means more people from more cultures and backgrounds than ever before.

Summary

≫ A computer is an electronic device that processes data, converting it into information

that is useful to people.

≫ There are two basic types of computers: analog and digital. The computers commonly

used today are all digital computers.

≫ Computers can be categorized by the number of people who can use them simultaneously,

by their power, or by other criteria.

≫ Computers designed for use by a single person include desktop computers, workstations,

notebook computers, tablet computers, handheld computers, and smart phones.

≫ The terms personal computer (PC) and microcomputer can be used when referring

to any computer meant for use by a single person.

≫ The desktop computer is the most common type of personal computer. This computer

is designed to sit on top of a desk or table, and comes in two basic styles.

≫ A workstation is a specialized, single-user computer that typically has more power

and features than a standard desktop PC.

≫ Notebook computers are full-featured PCs that can easily be carried around.

≫ A tablet PC is another type of portable PC, but it can accept handwritten input

when the user touches the screen with a special pen.

≫ Handheld personal computers are computing devices that fit in your hand; the personal

digital assistant (POA) is an example of a handheld computer.

≫ Smart phones are digital cellular phones that have features found in personal computers,

such as Web browsers, e-mail capability, and more.

≫ Some types of computers—such as network servers, mainframes, minicomputers,

and supercomputers—are commonly used by organizations and support the computing

needs of many users.

≫ A network server is a powerful personal computer that is used as the central computer

in an organization's network.

≫ Mainframes are powerful special-purpose computers that can support the needs of

hundreds or thousands of users.

≫ Minicomputers support dozens or hundreds of users at one time.

≫ Supercomputers are the largest and most powerful computers made.

≫ Many families have at least one computer and an Internet connection in their

home and use their PC for tasks such as communication, work, schoolwoik, and personal

finances.

≫ Computer technology is playing an ever-growing role in schools, where students are

being taught computer skills at younger ages and asked to incorporate computers

into their daily work assignments.

≫ Computers enable small businesses to operate more efficiently by allowing workers

to do a wider variety of tasks.

≫ In industries of all kinds, computers play vital roles in everything from personnel

management, to product design and manufacturing, to shipping.

≫ Governments not only use a great deal of computer technology, but also contribute

to its development.

≫ Computers ate involved in nearly every aspect of the health care field, from managing

schedules and handling billing, to making patient diagnoses and performing

complex surgery.