Chapter 1 Objectives

- Explain the importance of computer literacy
- Define the term computer
- Identify the components of a computer
- Explain why a computer is a powerful tool
- Differentiate among the various categories of software
- Discuss the uses of the Internet and the World Wide Web
- Describe the categories of computers and their uses
- Identify the various types of computer users
- Understand how a user can be a Web publisher

Chapter 1 Introduction to Computers

The Digital Revolution

Where can you find computers?

Computers are everywhere

What is computer literacy?

- If you are computer literate, you have knowledge and understanding of computers and their uses

What is a Computer?

What is a computer?

- An electronic machine, operating under the control of instructions stored in its own memory
  - accepts data
  - manipulates the data according to specified rules
  - produces results
  - stores the results for future use

Data

Collection of raw unprocessed facts, figures, and symbols

Information

Data that is organized, meaningful, and useful
What is a Computer?

Who is a user?
- Someone that communicates with a computer
- Someone who uses the information it generates

What are hardware and software?

Hardware
The electric, electronic, and mechanical equipment that makes up a computer

Software
The series of instructions that tells the hardware how to perform tasks

What is the information processing cycle?

Input
Any data or instructions you enter into a computer

Process
Manipulate the input (data) to produce output (information)

Communication
The capability of communicating with other computers

Output
Data that has been processed into information

Storage
Area in a computer that can hold data and information for future use

The Components of a Computer

What are common computer hardware components?
- Printer
- Scanner
- Speaker
- PC camera
- Microphone
- Digital camera
- System unit
- Keyboard
- Monitor
- Mouse
- Modem

What is an input device?
- Any hardware component that allows a user to enter data and instructions into a computer

What is an output device?
- Any hardware component that can convey information to a user

Click to view Web Link then click Input Devices

Click to view Web Link then click Output Devices
The Components of a Computer

What is the system unit?
- Sometimes called a chassis
- A box-like case made from metal or plastic that protects the internal electronic components of the computer from damage
- Circuitry in the system unit usually is part of or is connected to a circuit board called the motherboard

What are two main components on the motherboard?
- Central Processing Unit (CPU)
  - Also called a processor
  - Electronic device that interprets and carries out the basic instructions that operate the computer
- Memory
  - Temporary holding place for data and instructions

What is a chip?
- An electronic device that contains many microscopic pathways that carry electrical currents
- Usually no bigger than one-half inch square
- Packaged so it can be attached to a motherboard

What are internal components and external devices?
- Internal Component
  - Resides inside the system unit
- External Device
  - Also called a peripheral
  - Attaches to the system unit

What is storage?
- Holds data, instructions, and information for future use

Storage Device
- Records and retrieves items to and from a storage medium
- Devices often function as source of input because they transfer items from storage into memory

Storage Medium
- Physical material on which a computer keeps the data, instructions and information

What are common storage devices or drives?
- CD-ROM or DVD-ROM drive
- ZIP® drive
- floppy disk drive
- hard disk drive
- CD-RW drive
- CD-ROM or DVD-ROM drive
- floppy disk drive
- hard disk drive
The Components of a Computer

What is a floppy disk?
• A thin, circular, flexible disk enclosed in a plastic shell
• Insert and remove a floppy disk into and from a floppy disk drive
• A Zip® disk is a higher capacity disk

What is a hard disk?
• Consists of several circular platters that store items electronically
• Disks are enclosed in an airtight, sealed case, which often is housed inside the system unit
• Provides much greater storage capacity than a floppy disk
• Some hard disks are removable

What is a compact disc?
• A flat, round portable medium that stores data using microscopic pits, which are created by a laser light
• CD-ROM
• CD-RW — rewriteable CD
• DVD-ROM — tremendous storage capacities

What is miniature storage media?
• Used in devices such as digital cameras
• One popular type is called a card

What is a communications device?
• Enables computer users to communicate and to exchange items such as data, instructions, and information with another computer
• Allows you to establish a connection between two computers and transmit items over transmission media, such as cables, telephone lines, or satellites
• One type is a modem

Why Is a Computer So Powerful?

Storage
Enormous amounts of data can be stored and made available for processing anytime it is needed

Reliability
Dependable because components have a low failure rate so they produce consistent results

Speed
Billions of operations can be carried out in a single second

Accuracy
If data is entered correctly and program works properly, the results are error-free — garbage in, garbage out (GIGO) accuracy of output depends on accuracy of input

Communications
Two connected computers can share stored data, instructions, and information
Why Is a Computer So Powerful?

What is a network?
- Two or more computers connected together via communications media and devices
- The most widely known network is the Internet

Bill Gates
- Microsoft’s chairman and chief software architect
- Co-founded Microsoft in 1975
- Regarded as the most powerful person in the computer industry
- Consistently anticipates technological developments and customer needs

What is a computer program?
- A series of instructions that tells the hardware of a computer what to do
- Allows you to input data and store it in memory
- Uses data in memory in calculations
- Displays information on monitor
- Compares values stored in memory
- Directs computer to perform alternative operations
- Prints a report
- Stores information on disk

What is software installation?
- Some programs can be loaded directly from purchased media, others must be installed
- Install means part or all of the instructions are copied from the purchased media onto the computer’s hard disk before the program can be used

What happens when you run a program from a CD-ROM?
- Insert the CD-ROM that contains the program into the CD-ROM drive.
- If necessary, install the program on the hard disk.
- Then instruct the computer to run the program.
- Instructions transfer from the CD-ROM or hard disk to memory.

What is system software?
- Programs that control the operations of the computer and its devices
- Operating System (OS)
  - Set of programs containing instructions that coordinate all the activities among computer hardware devices
- Utility program
  - Type of system software that performs a specific task, usually related to managing a computer, its devices, or its programs
Computer Software

What is the user interface?
- Determines how you interact with software
- Used to control how you enter data and instructions
- Used to control how information displays on the screen

What is a graphical user interface (GUI)?
- Allows you to interact with the software using visual images such as icons
- An icon is a small image that represents a program, an instruction, or some other object

What is application software?
- Programs that perform specific tasks for users

What is packaged software?
- Copyrighted retail software that meets the needs of a wide variety of users
- Purchase from stores or companies on the Internet

What is custom software?
- Written by a programmer
- Tailor-made program developed at a user's request to perform specific functions

What are freeware, public-domain software, and shareware?
- Freeware: Software provided at no cost to a user by an individual or company
- Copyrighted
- Cannot resell it on your own
- Public-Domain Software
- Freeware donated for public use
- No copyright restrictions
- Shareware: Copyrighted software that is distributed free for a trial period
- Send a payment to developer on honor system
**Computer Software**

What is an application service provider (ASP)?

- **Third-party company** that manages and distributes software and services on the Internet
- **You can run** the programs from the Internet
- **Both free and paid** ASPs

**Who designs and writes software?**

- **Computer programmer (or programmer)**
  - Writes software programs
- **Systems Analyst**
  - Designs a program, working with both the user and the programmer to determine the desired output of the program

**How are programs written?**

- Programmers use a programming language to write computer programs

**What is a network?**

- Collection of computers and devices connected together via communications devices and media
- When your computer connects to a network you are online

**What is a local area network (LAN)?**

- A network that connects computers in a limited geographic area such as a school computer laboratory, office or group of buildings

**Networks and the Internet**

**What are the reasons to network?**

- To share resources
- To save time and money
- Hardware devices
- Software programs
- Data
- Information
What is a wide area network (WAN)?
- A network that covers a large geographical area, such as one that connects offices across the country.

What is the Internet?
- A worldwide collection of networks that links together millions of businesses, government agencies, educational institutions, and individuals.

Why do users access the Internet?
- To send and receive e-mail, access information, shop, meet people, and entertain.

How do users connect to the Internet?

1. Use your computer to make a local telephone call to an online service provider (OSP).
2. A Web browser such as Internet Explorer displays a Web page on your screen.
3. Enter the address of the Web site you wish to visit.
4. The Web browser locates the Web site for the entered address and displays a Web page on your screen.

What is the World Wide Web (WWW)?
- Billions of documents, called Web pages, that are linked together on computers throughout the world.

**Web site**
- Collection of related Web pages

**Web page**
- Contains text, graphics, sound, or video and has connections to other Web pages

**Web browser**
- Program used to access and view Web pages

**Internet Service Provider (ISP)**
- Company that supplies connections to the Internet, usually for a monthly fee.

**Online Service Provider (OSP)**
- Provides access to the Internet, as well as a variety of other specialized content and services.
Categories of Computers

What are the categories of computers?

- Desktop
- Notebook

Microprocessor
The single chip that performs all the processing functions on a personal computer

Two major categories
- Desktop
- Notebook

Personal Computers

What is a personal computer?
- A computer that can perform all of its input, processing, output, and storage activities by itself

Contains at least
- One Input device
- One output device
- One storage device
- Memory
- A processor

Personal Computers

What are some desktop computer variations?
- Tower model
- Tall and narrow system unit that can sit on the floor vertically

Company on the Cutting Edge

Gateway

- One of the world’s leading technology manufacturers
- Manufactures built-to-order PCs
- Consumers from around the world order more than 11,000 custom systems daily

Personal Computers

What is a desktop computer?
- Designed so the system unit, input devices, output devices, and any other devices fit entirely on or under a desk or table

Personal Computers

What are the two most popular series of personal computers?
- The PC and compatibles use the Windows operating system
- The Apple Macintosh uses the Macintosh operating system (Mac OS)
What are some desktop computer variations?

- **All-in-one computer**
  - Less expensive desktop that combines the monitor and system unit into a single device

- **Workstation**
  - More expensive and powerful desktop designed for work that requires intense calculations and graphics capabilities
  - **Stand-alone**
    - Can perform the information processing cycle operations without being connected to a network

- **Server**
  - Powerful desktop that manages the resources on a network
  - **Clients or workstations**
    - Other computers on network that access the contents of the storage area on the servers

- **Notebook computer**
  - Also called a laptop
  - Portable, personal computer small enough to fit on your lap
  - Generally more expensive than a desktop computer with equal capabilities

- **Handheld computer**
  - Also called a palmtop computer
  - Small computer that fits in your hand
  - Others use a stylus
    - A stylus looks like a ballpoint pen, but uses pressure, instead of ink to write
  - Some support voice input
Handheld Computers

What is a personal digital assistant (PDA)?
- One of the most popular handheld computers in use today
- Provides personal organizer functions
  - Calendar
  - Appointment book
  - Address book
  - Calculator
  - Notepad

Handheld Computers

What are Web-enabled handheld computers?
- Allow you to access the Internet wirelessly

Internet Appliances

What is an Internet appliance or information appliance?
- Computer with limited functionality whose main purpose is to connect to the Internet from home

Internet Appliances

What is WebTV?
- An Internet appliance in the form of a set-top box
- Sits on top of or next to a television set and allows you to access the Internet on the TV

Mid-Range Servers

What is a mid-range server?
- More powerful and larger than a workstation computer
- Supports up to 4,000 users
- Often connected via a personal computer or terminal
- Once known as a minicomputer

Mid-Range Servers

What is a terminal?
- Device with a monitor and keyboard used to access a server
- Sometimes called dumb terminals
  - No processing power
  - Cannot stand alone
  - Must be connected to a server to operate
Mainframes

What is a mainframe?
- Large, expensive, very powerful computer
- Can handle hundreds or thousands of connected users simultaneously
- Stores tremendous amounts of data, instructions, and information

Company on the Cutting Edge

IBM
- International Business Machines (IBM)
- Incorporated in 1911
- The first family of computers with interchangeable software and peripherals
- World’s largest information technology company

Supercomputers

What is a supercomputer?
- Fastest, most powerful computer
- Able to process more than 12 trillion instructions per second

Elements of an Information System

What is an information system?
- For an information system to provide accurate, timely, and useful information, each element must be present and all of the elements must work together

Examples of Computer Usage

What are five categories of computer users?
- Home
- Mobile
- Small Office/Home Office
- Power
- Large Business

What software is available for a home user?
- Research
- Finance and business management
- Web access
- Entertainment
How do computer companies accommodate children?

- Many manufacturers design special hardware for children.

What is the digital divide?

- Idea that you can separate people of the world into two distinct groups.
  - Those who have access to technology with the ability to use it.
  - Those who do not have access to technology or are without the ability to use it.

Technology Trailblazer

Shawn Fanning

- As a 19-year-old freshman computer science major, he developed the Napster software and company.
- Pioneering file-sharing concept has implications for all copyrighted digital information.

What hardware and software is available for a small office/home office (SOHO) user?

- Desktop usage
- Local Area Network (Lan)
- Productivity software
- Specialty software
- Web usage

What new computer trends concern a small office/home office (SOHO) user?

- E-mail
  - Communicate with others
- E-commerce
  - Conduct financial business on the Web
- Web cam
  - Allows a SOHO user to show the world a live view of some aspect of their business.

What is a mobile user?

- Travel to and from a main office to conduct business.
- Hardware
  - Notebook computers
  - Handheld computers
  - Web-enabled cellular telephones
- Software
  - Productivity
  - Presentation

Web access spreadsheet
What are the needs of the large business user?
- Network
  - Local area network (LAN)
  - Wide Area Network (WAN)
- Sales management
- Accounting
- Desktop publishing
- Information systems department
- Productivity software
- Scheduling
- Web access

What is a kiosk?
- A freestanding computer
- Usually has multimedia capability and a touch screen
- Used by a large business to provide information to the public

What are the needs of a power user?
- Requires the capabilities of a workstation or other powerful computer
- Types of power users
  - Engineers
  - Architects
  - Desktop publishers
  - Graphic artists
- Typically work with multimedia
  - Combines text, graphics, sound, video, and other media elements into one application

What is telecommuting?
- A work arrangement in which employees work away from a company’s standard workplace
- Often communicate with the office using some communications technology

What is Web publishing?
- Making a Web page available on the Internet
- A few reasons to publish Web pages
  - Provide family information
  - Provide information about business
  - Provide a resume online
  - Provide online courses called distance-learning courses

What are other ways to use the Web?
- Photo communities
  - Allow you to create an online photo album
- Electronic storefronts
  - Allow a small business to advertise and take orders directly at a Web site
  - Communicate with others
- E-mail
- Chat rooms
- Instant messaging
Summary of Introduction to Computers

- The digital revolution
- What is a computer?
- The components of a computer
- Why is a computer so powerful?
- Computer software
- Networks and the Internet
- Categories of computers
- Personal computers

Summary of Introduction to Computers (cont.)

- Handheld computers
- Internet appliances
- Mid-range servers
- Mainframes
- Supercomputers
- Elements of an information system
- Examples of computer usage
- Computer user as a Web publisher

Chapter 1 Complete