What You Will Learn

- Define the word *computer* and name the four basic operations that a computer performs
- Describe the two main components of a computer system: hardware and software
What You Will Learn

- Provide examples of hardware devices that handle input, processing, output, and storage tasks
- Give an example of the information-processing cycle in action
- Discuss the two major categories and the various types of computers

What You Will Learn

- Explain the advantages and disadvantages of computer use
- Understand the risks involved in using hardware and software
- Recognize the ethical and societal impacts of computer use

What You Will Learn

- Discuss how computers affect employment
- List ways to be a responsible computer user
A computer is a device that performs the information-processing cycle. The information-processing cycle consists of four basic operations: input, processing, output, and storage.

Computer system components are categorized into two main groups:
- Hardware
- Software
Computer Fundamentals

- **Hardware** is made up of the physical parts of the computer, including such components as the system unit, monitor, keyboard, and printer.
- **Software** is made up of all the programs that instruct the computer.

Software can be grouped as **system software** or **application software**
- **System software** includes the programs that assist with the proper functioning of the computer.
- **Application software** includes the programs used to perform tasks.

**Input**, the first operation of the information-processing cycle, enables the computer to accept **data**.
- **Data** refers to facts that are raw and unorganized.
- Data is entered into the computer for processing through the use of **input devices** such as a keyboard or mouse.
**Processing**, the second operation of the information-processing cycle, converts data into **information**.

- **Information** refers to simplified, organized, processed data.
- **The central processing unit (CPU)** processes the data into information.
- **Random access memory (RAM)** temporarily stores programs and data needed by the CPU.

**Output**, the third operation of the information-processing cycle, displays processed data that users can comprehend.

- **Output devices** include monitors and printers.

**Storage**, the fourth operation of the information-processing cycle, stores the processed results so that they can be used in the future.

- **Storage devices** save both the programs and the data used by the computer system and include such devices as hard drives, CDs, and USB drives.
Communications, the moving of data within or between computers, is sometimes considered the fifth operation in the information-processing cycle.

Communication devices connect computers to a network of two or more computers.

A network shares input/output devices and other resources.

Types of Computers

Types of computers can be separated into two main categories:

- Computers for individuals are normally designed for one user at a time.
- Computers for organizations are designed to be used by many people at the same time.
Computers for individuals

- **Personal computers (PCs)** are generally either MAC (Apple’s Macintosh) systems or IBM-compatible systems.
- **Notebook computers** are small enough for easy computer mobility.
- **Subnotebooks or ultraportables** have fewer components than traditional notebooks, weigh less, and are smaller.

Computers for individuals (continued)

- **Tablet PCs** can be used to input data with a keyboard or mouse, and the user can write on the monitor with a special pen or stylus.
- **Personal digital assistants (PDAs)**, also called **handheld computers**, have many of the capabilities of a notebook but are much smaller and lighter.
- **Smartphones** are similar to PDAs and have additional mobile phone and Web capabilities.
Computers for individuals (continued)

- **All-in-one computers** provide the space-saving features of a notebook and the performance of a desktop computer.
- **Network computers (NCs)** and **Internet appliances** are mostly used for network and Internet connection.
- **Professional workstations** are intended for technical applications for which very powerful processing and output are necessary.

Computers for organizations

- **Servers** enable users connected to a computer network to have access to the network's programs, hardware, and data.
- **Clients** include the user computers connected to the network.
- A **client/server network** includes the use of client computers with centralized servers.

Computers for organizations (continued)

- **Minicomputers** or **mid-range servers** are designed to meet the needs of smaller companies or businesses.
- **Mainframes** carry out very large processing jobs to meet the needs of large companies or agencies of the government.
- **Supercomputers** are able to perform extremely high-speed processing and show underlying patterns.
There are a number of advantages and disadvantages to using computers.

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<tr>
<th>Advantages</th>
<th>Disadvantages</th>
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<tr>
<td>Speed</td>
<td>Information overload</td>
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<tr>
<td>Memory</td>
<td>Cost</td>
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<tr>
<td>Storage</td>
<td>Data inaccuracy</td>
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<tr>
<td>Hardware reliability</td>
<td>Software unreliability</td>
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When using computer hardware:
- Do not plug too many devices into electrical outlets.
- Use surge protectors.
- Place hardware where it can’t fall or be damaged.
- Provide adequate space for air circulation around hardware.
- Securely fasten computer cables, cords, and wires.

Software programs contain flaws.
- These flaws cause slower processing, performing added tasks, and miscalculations.
- The greater the number of lines of code, the harder it is to eliminate errors.
Computer ethics involve moral dilemmas relating to computer usage. Unethical behavior includes sending viruses, stealing credit card information, computer stalking, and installing illegitimate copies of software on computers.

Computers provide disabled and disadvantaged people with added support and opportunities. E-learning, through the use of computers, allows students to learn without requiring them to be at a specific location at a specific time.

Labor demand is shifting as a result of computer use. Automation is the replacement of people by machines and robots guided by computers. Computer technology is responsible for globalization and the resulting outsourcing of jobs, as well as structural unemployment, the obsolescence of certain jobs.
Computers, Society, & You

- Being a responsible computer user starts with understanding how one's manner of computer use affects others.
- Be aware of **e-waste** and the proper disposal of outdated computer hardware.

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Computers, Society, & You

- Stay informed about advances in computer technology.
  - Upgrading software will ensure that users have the latest software features.
  - Staying informed can help users protect themselves from computer viruses.

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What You’ve Learned

- A computer is a device that can perform the information-processing cycle: input, processing, output, and storage.
- A computer system is made up of hardware and software.

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What You’ve Learned

- Computers can be categorized as computers for individuals and computers for organizations.
- Responsible computer users should understand the advantages and the disadvantages of computer use.

What You’ve Learned

- Some form of risk exists when using computer hardware and software.
- Computers can be misused or used as a benefit. Computer ethics guide how a computer should be used.
- Computers are causing a shift in employment, creating new job opportunities at the same time.

What You’ve Learned

- Computer users should be responsible and concerned about the effects of their computer actions on others and the environment.