

Computing Fundamentals Module

Lesson 20 — Introducing Computers

Computer Literacy BASICS



Objectives

- Define a computer.
- Identify how computers are used in our daily lives.
- Compare and classify types of computers.
- List the parts of a computer system.
- Explain how computers are integrated into larger systems through networks.

Vocabulary

- Channel
- Computer
- Computer system
- Data
- Data communications
- Hardware
- Internet
- Local area network (LAN)
- Mainframe computers
- Microcomputer
- Microprocessors

Vocabulary (cont.)

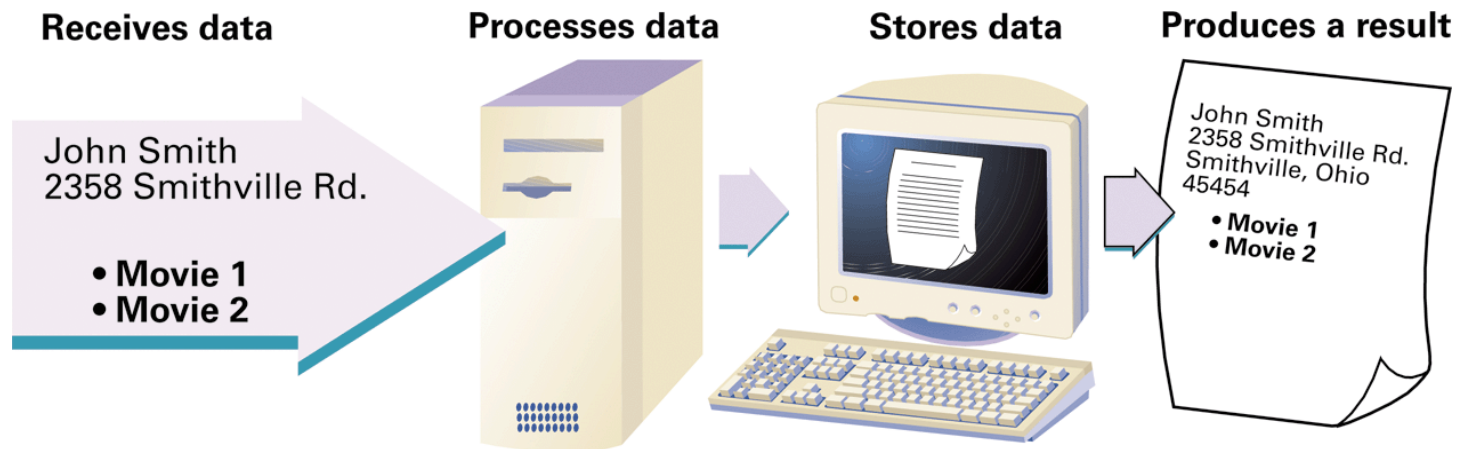
- Minicomputers
- Network
- Notebook computer
- People
- Protocol
- Receiver
- Sender
- Software
- Supercomputers
- Wide area networks (WANs)

What Makes a Computer a Computer

A computer is an electronic device that

- **Receives data:** Information, such as text, numbers, or graphic images, is entered into the computer.
- **Processes data:** The computer will change the data from what was entered into the result the user wants.
- **Stores data:** The information is stored in the computer's memory.
- **Produces a result:** A final display of the information that was entered can be printed or displayed on a monitor.

The Processing Cycle of a Computer



Computers Perform Three Operations

- **Arithmetic operations**
 - Adding, subtracting, multiplying, and dividing
- **Logical comparisons**
 - Equal to, greater than or less than, etc.
- **Storage and retrieval operations**

Why Are Computers So Popular?

- Computers perform functions very **quickly**.
- Computers produce **accurate** and reliable results.
- Computers **store** large amounts of data.
- Computers are versatile and cost-effective.
- Computers are becoming more **powerful** and more useful every day.

How Computers Are Used Today

Computers are used every day for

- **News:** Newspapers and television news stations post breaking news, and weather can be accessed on demand on the Internet.
- **Shopping:** Millions of people use the Internet every day to purchase goods and services.

How Computers Are Used Today (cont.)

- **Homework:** Students have instant access to research and information and use word-processing and other software applications for assignments.
- **Managing businesses:** Businesses use computers to maintain inventory records, print invoices, track financial information and personnel records, advertise online, and many other tasks.

Types of Computers



- **Supercomputers:** The largest and fastest computers that are used by government agencies and large corporations to process tremendous volumes of data.



- **Mainframes:**
Large, very expensive machines that can support thousands of users; used by large corporations.

Types of Computers



- **Minicomputers:** Larger than a desktop and much more expensive, but can support many users
- **Microcomputers:** Commonly called personal computers or desktop computers. Personal computers also include
 - **Notebook computers:** Smaller and more portable than a desktop; commonly called a laptop
 - **PDAs:** Personal Digital Assistants are very small and fit in the palm of your hand.

Types of Personal Computers

Macintosh desktop

PC desktop



Types of Personal Computers

Notebook



PDA



Other Computing Devices

- **Microprocessors** are computer chips that perform special functions to process information.
- These computer chips help many kinds of equipment perform more efficiently and effectively:
 - Household appliances
 - Calculators, cellular telephones, and digital cameras
 - Game systems
 - Automobiles
 - Industrial equipment

Computer Systems

- A computer system is a combination of parts working together:
 - **Hardware:** The physical devices such as keyboard, monitor, CPU, and so on
 - **Software:** Operating systems and application programs
 - **Data:** The facts entered into a computer to be processed
 - **People:** The users who enter the data and use the resulting output

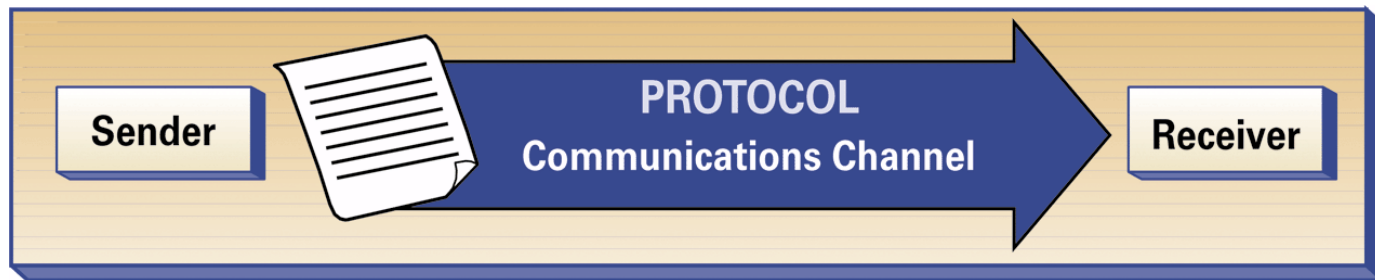
Hardware Components of a Typical Microcomputer System



Data Communications

- Data communications is the technology that enables computers to communicate.
- The four components of data communications are
 - **Sender:** The computer that is sending the message
 - **Receiver:** The computer receiving the message
 - **Channel:** The media that carries or transports the message. This could be telephone wire, coaxial cable, microwave signal, or fiber optic.
 - **Protocol:** The rules that govern the orderly transfer of the data sent

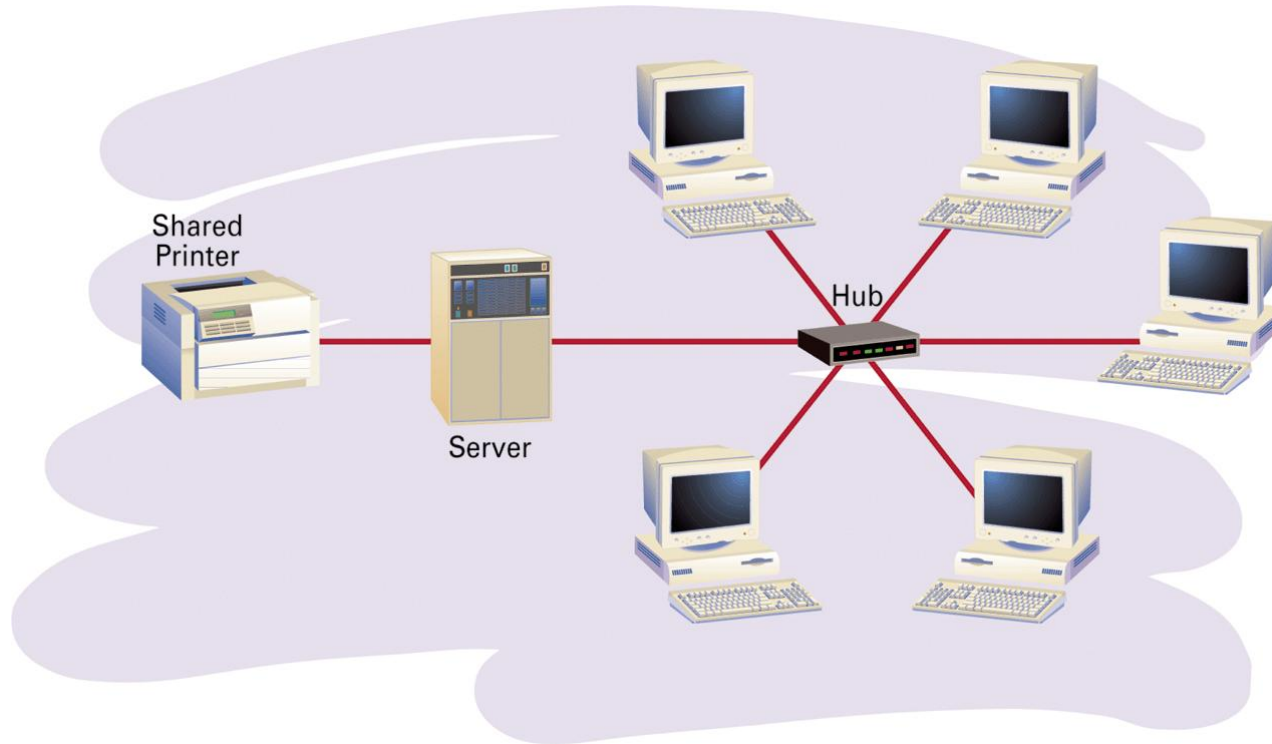
Data Communications Components



Computer Networks

- Businesses utilize a type of data communications called a network.
- A **network** consists of multiple computers connected to each other to share data and resources.
- A computer network located in a small geographical area, such as one building or department, is called a **local area network or LAN**.
- A network made up of several local networks in a city, region, or across the world is called a **wide area network or WAN**.

A Typical Network Layout



Intranets

- An **intranet** is used exclusively within an organization and contains company information such as handbooks, forms, and newsletters.
- The major advantages of using an intranet include **reliability and security** because the organization can control access to this kind of network.

Extranets

- **Extranets** are computer networks that allow **outside** organizations to access a business's internal information systems.
- Access is controlled tightly and is usually reserved for suppliers or customers.

The Internet

- The Internet was developed for government research projects to share information quickly and easily.
- Today it is the **largest network in the world**.
- It is used daily by millions of computer users.
- It has become a critical and valuable business tool used by businesses of all sizes.
- The most commonly used feature of the Internet is **electronic mail**, or e-mail.

Summary

- A computer is an electronic device that receives data, processes data, and stores data to produce a result.
- Early computers were large, expensive machines used by governments and major corporations.
- Computers can be found in almost every aspect of our lives.

Summary (cont.)

- Computers are classified by size, speed, and application.
- There are different types of computers including supercomputers, mainframe computers, minicomputers, and microcomputers.

Summary (cont.)

- Microcomputers are classified by the type of operating system they use, most commonly Windows or DOS on PCs and Mac OS on Macintosh computers.
- Notebook computers are small, portable computers that allow people to work away from their desks.

Summary (cont.)

- Other devices that incorporate computers or task-specific microprocessors include personal digital assistants, cellular phones, digital cameras, interactive books, game systems, home appliances, automobile engines, and industrial equipment.

Summary (cont.)

- A computer system consists of the following components: hardware, software, data, and people.
- Data communications is the transmission of text, numeric, voice, or video data from one machine to another.

Summary (cont.)

- The four components of data communications are the sender, the receiver, the channel, and the protocol.
- A local area network connects multiple computers within a building to share data and resources. A wide area network includes several local area networks within a city, region, country, continent, or the world.

Summary (cont.)

- The Internet was originally developed so information could be shared by government researchers around the world. E-mail is the most common experience most people have with the Internet, allowing messages to be sent from one computer to another locally and around the world.