COMPUTER CLASS - 9

What is a Computer System?

A computer system is an electronic machine that accepts data, processes it, stores it, and gives useful information as output.

Example

- You type your name → **Input**
- Computer processes it → **Processing**
- Computer shows your name on screen → **Output**

Features of Computer System

1. Speed

Computer works very fast.
It can perform millions of calculations in one second.

Example:

Calculating school results quickly.

2. Accuracy

Computer gives correct results if the input is correct.

Example:

Bank calculations.

3. Storage Capacity

Computer can store large amounts of data.

Example:

Photos, videos, documents.

4. Automation

Computer can work automatically after giving instructions.

Example:

Automatic washing machine system.

5. Diligence

Computer does not get tired.

Example:

Working continuously in factories.

6. Versatility

Computer can perform many different tasks.

Example:

- Watching movies
- Playing games
- Studying online
- Typing documents

7. Reliability

Computer provides dependable results.

Application Areas of Computer System

1. Education

- Online classes
- Exams
- Preparing notes

2. Hospitals

- Patient records
- Medical reports
- X-ray scanning

3. Banking

- ATM services
- Online banking
- Money transfer

4. Business

- Billing
- Accounting
- Marketing

5. Communication

- Email
- Video calls
- Social media

6. Entertainment

- Games
- Movies
- Music

7. Science and Engineering

- Research
- Machine design
- Simulations

8. Transportation

- Air ticket booking
- Railway systems
- GPS navigation

Functions of a Computer System

A computer mainly performs four functions.

1. Input

Receiving data from the user.

Example:

Typing with keyboard.

2. Processing

Converting data into useful information.

Example:

Calculator performing addition.

3. Storage

Saving data for future use.

Example:

Saving photos in hard disk.

4. Output

Showing processed information.

Example:

Displaying result on monitor.

Input Devices

What is an Input Device?

Input devices are hardware devices used to enter data into a computer.

List of Input Devices

1. Keyboard

Used for typing text, numbers, and commands.

Example:

Typing notes.

2. Mouse

Used to move cursor and click items.

Types:

- Wired mouse
- Wireless mouse

3. Scanner

Used to scan documents and photos into computer.

4. Microphone

Used to input sound or voice.

Example:

Online classes.

5. Webcam

Used to capture photos and videos.

Example:

Video calls.

6. Joystick

Used mostly in games.

7. Touch Screen

Allows users to touch the screen directly.

Example:

Smartphones.

8. Barcode Reader

Reads barcode information.

Example:

Shopping malls.

9. Light Pen

Used to draw directly on screen.

10. Biometric Scanner

Used for fingerprint or face recognition.

Example:

Attendance systems.

Central Processing Unit (CPU)

What is CPU?

CPU is called the **brain of the computer**.

It controls all operations of the computer.

Functions of CPU

1. Processing Data

Performs calculations and logical operations.

2. Controlling Operations

Controls all computer parts.

3. Executing Instructions

Runs programs and commands.

4. Managing Memory

Controls data movement between memory and devices.

Components of CPU

1. Arithmetic Logic Unit (ALU)

Performs:

- Addition
- Subtraction
- Multiplication
- Division
- Logical comparisons

2. Control Unit (CU)

Controls all activities inside computer.

3. Registers

Temporary high-speed storage areas.

Motherboard

What is Motherboard?

Motherboard is the main circuit board of the computer.

All parts of computer are connected to it.

Roles of Motherboard

1. Connects All Components

Connects:

- CPU
- RAM
- Storage devices
- Input/output devices

2. Supplies Power

Distributes electricity to components.

3. Allows Communication

Helps all devices communicate.

Data Bus

What is Data Bus?

Data bus is a path used to transfer data between computer components.

Functions of Data Bus

1. Transfers Data

Moves data between CPU, memory, and devices.

2. Supports Communication

Helps components exchange information.

Importance of Data Bus

- Faster data transfer improves computer speed.
- Helps smooth communication inside computer.

Memory

What is Memory?

Memory is the storage area of a computer.

It stores:

- Data
- Programs
- Information

Functions of Memory

1. Stores Data

Keeps information safely.

2. Stores Instructions

Stores program instructions.

3. Helps Fast Processing

CPU quickly accesses stored data.

Units of Memory

Unit	Meaning
Bit	Smallest unit
Byte	8 bits
Kilobyte (KB)	1024 bytes
Megabyte (MB)	1024 KB
Gigabyte (GB)	1024 MB
Terabyte (TB)	1024 GB

Types of Memory

1. Primary Memory

Main memory directly accessed by CPU.

Examples:

- RAM
- ROM
- Cache memory

2. Secondary Memory

Permanent storage devices.

Examples:

- Hard disk
- SSD
- Pen drive

Features of Memory

- Stores data
- Helps processing
- Can be temporary or permanent
- Different speed and capacity

Primary Memory

1. RAM (Random Access Memory)

Features of RAM

- Temporary memory
- Fast
- Data erased when power is OFF

Uses:

Running programs and applications.

Types of RAM

a. SRAM (Static RAM)

- Faster
- Expensive
- Used in cache memory

b. DRAM (Dynamic RAM)

- Slower than SRAM
- Cheaper
- Commonly used in computers

ROM (Read Only Memory)

Features of ROM

- Permanent memory
- Data remains after power OFF
- Stores startup instructions

Types of ROM

1. PROM

Programmable only once.

2. EPROM

Can be erased using ultraviolet light.

3. EEPROM

Can be erased electrically.

Cache Memory

What is Cache Memory?

Very fast memory between CPU and RAM.

Purpose:

Speeds up processing.

Register

What is Register?

Smallest and fastest memory inside CPU.

Purpose:

Temporarily stores data during processing.

Secondary Memory

What is Secondary Memory?

Permanent storage used to save data for long time.

Types of Secondary Memory

1. Hard Disk Drive (HDD)

Features:

- Large storage
- Cheaper
- Slower

2. Solid State Drive (SSD)

Features:

- Faster
- No moving parts
- Expensive

3. Pen Drive

Portable USB storage device.

4. CD/DVD

Optical storage devices.

5. Memory Card

Used in phones and cameras.

Difference Between SSD and HDD

SSD	HDD
Faster	Slower
Expensive	Cheaper
No moving parts	Moving parts
Less noise	More noise
More durable	Less durable

Difference Between Primary and Secondary Memory

Primary Memory	Secondary Memory
Fast	Slower
Temporary	Permanent
Directly accessed by CPU	Not directly accessed
Smaller storage	Larger storage

Output Devices

What is an Output Device?

Output devices display processed information from computer.

List of Output Devices and Explanation

1. Monitor

Displays text, images, and videos.

Types:

- LCD
- LED

2. Printer

Prints documents on paper.

Types:

- Inkjet printer
- Laser printer

3. Speaker

Produces sound output.

Example:

Music and videos.

4. Headphones

Used for private listening.

5. Projector

Displays computer screen on large wall or screen.

Example:

Classroom presentations.

6. Plotter

Used for large engineering drawings and maps.

Simple Computer Working Cycle

Input → Processing → Storage → Output

Example:

- Type numbers using keyboard
- CPU processes addition
- Memory stores data

- Monitor shows answer

Advantages of Computer

- Saves time
- Reduces human effort
- Fast communication
- Large data storage
- Useful in education and business

Disadvantages of Computer

- Health problems from long use
- Cybercrime
- Addiction to games/social media
- Job reduction in some sectors