Computer I

Lecture No. 1
Introduction of computer(Hardware\Software)

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Introduction

Definition : A computer is an electronic device that can receive data, process it, store it, and provide meaningful output based on programmed instructions.

Capabilities:

Computers execute two primary types of operations:

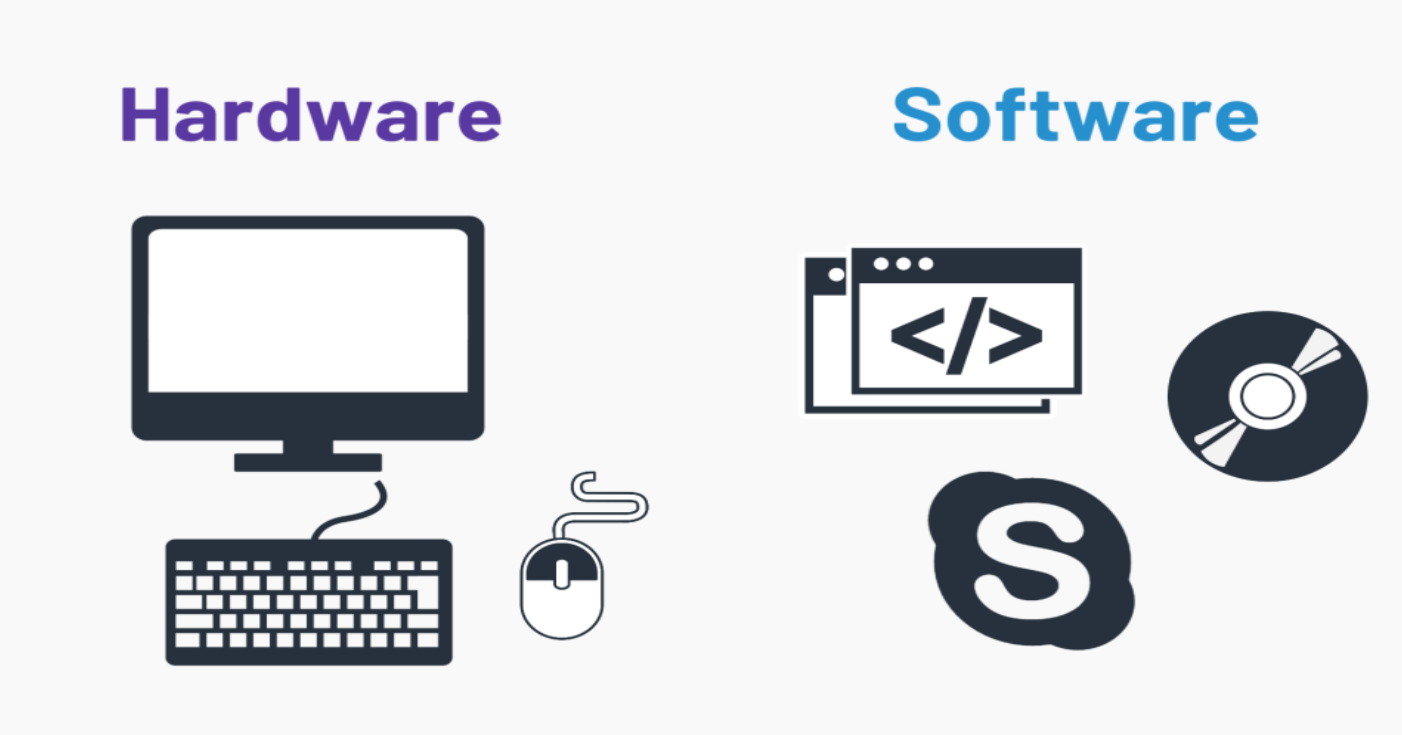
- ✓ Arithmetic operations: such as addition (+), subtraction (−), multiplication (×), and division (÷).
- ✓ Logical operations: including AND, OR, NOT, XOR, which are fundamental for decision-making and comparisons.

Note : Understanding computer components helps in effective use, maintenance, and troubleshooting.

Overview of Computer Components

Computer components are categorized into two main types:

- ✓ **Hardware:** Physical parts of the computer.
- ✓ **Software:** Programs and data that instruct the hardware how to operate.

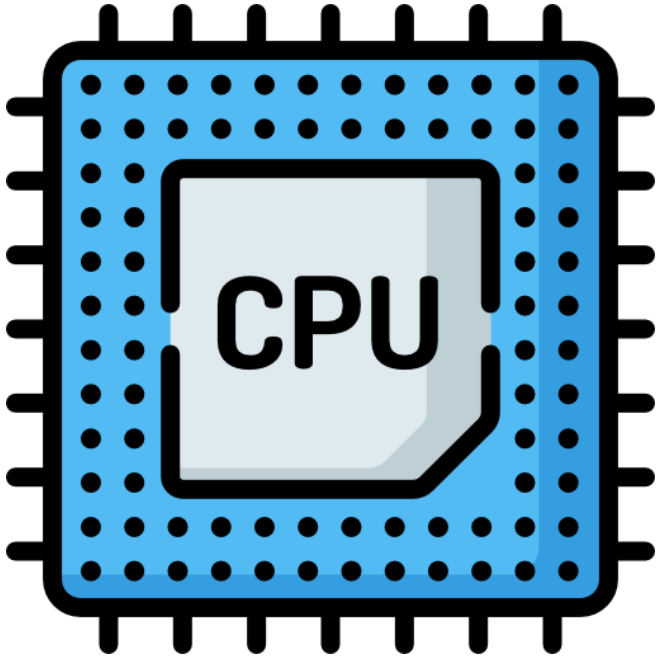


What is Hardware?

- Hardware consists of the tangible components you can physically interact with.
- Essential for the computer to function, perform operations, and interact with users.

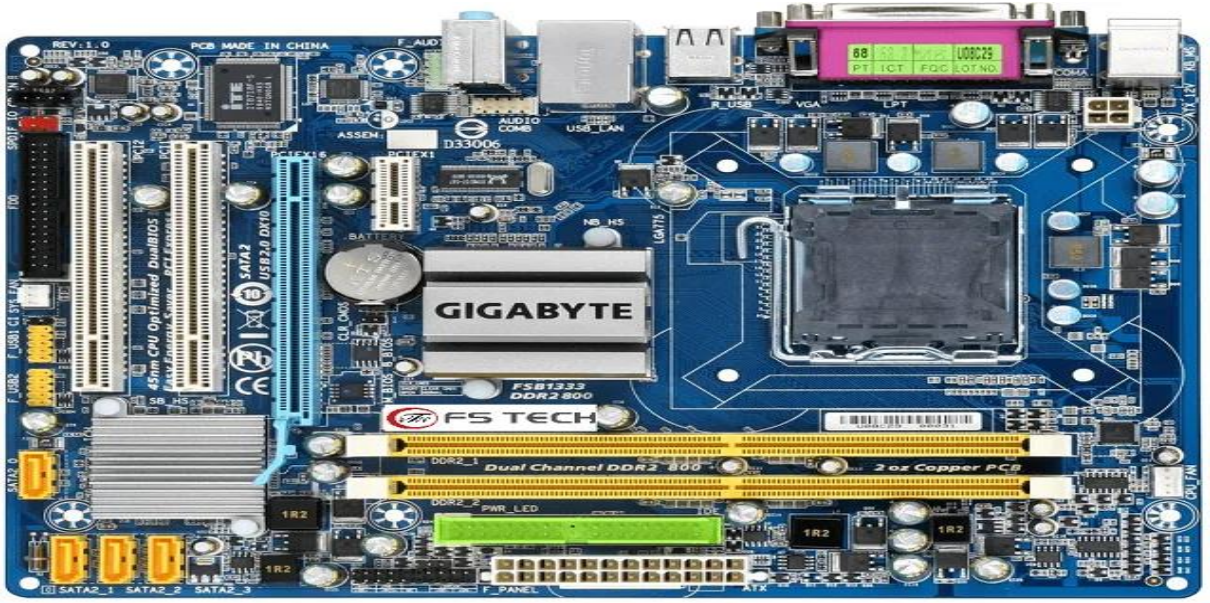
Central Processing Unit (CPU)

- Known as the "brain" of the computer.
- Responsible for executing instructions, performing calculations, and managing data processing tasks.
- Determines the overall performance and speed of the computer.



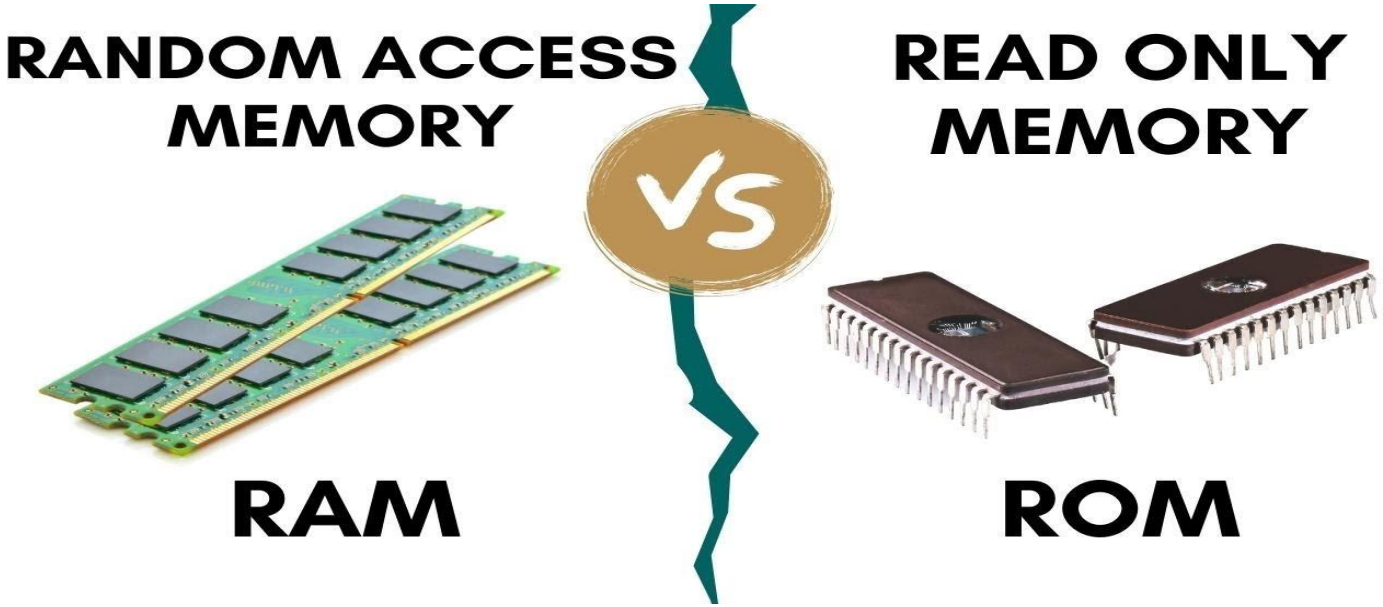
Motherboard

- Main circuit board housing the CPU, memory modules, and connectors.
- Facilitates communication and connectivity among different hardware components.
- Acts as the backbone of the computer system.



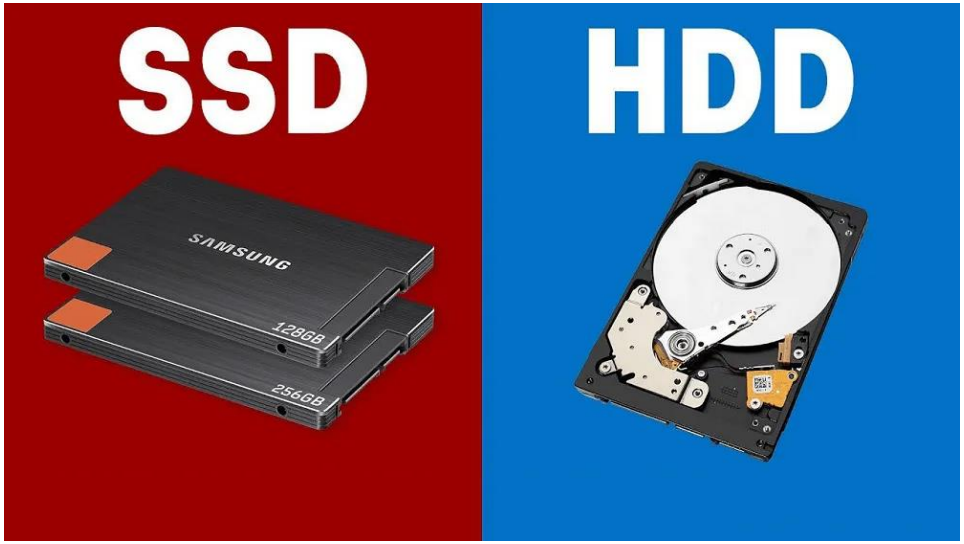
Memory

- ❑ RAM (Random Access Memory):
- ✓ Temporary, volatile storage used by the CPU to store data actively in use.
- ✓ Faster access speeds significantly improve computer performance.
- ❑ ROM (Read-Only Memory):
- ✓ Non-volatile memory that stores critical startup instructions.
- ✓ Retains data even when powered off.



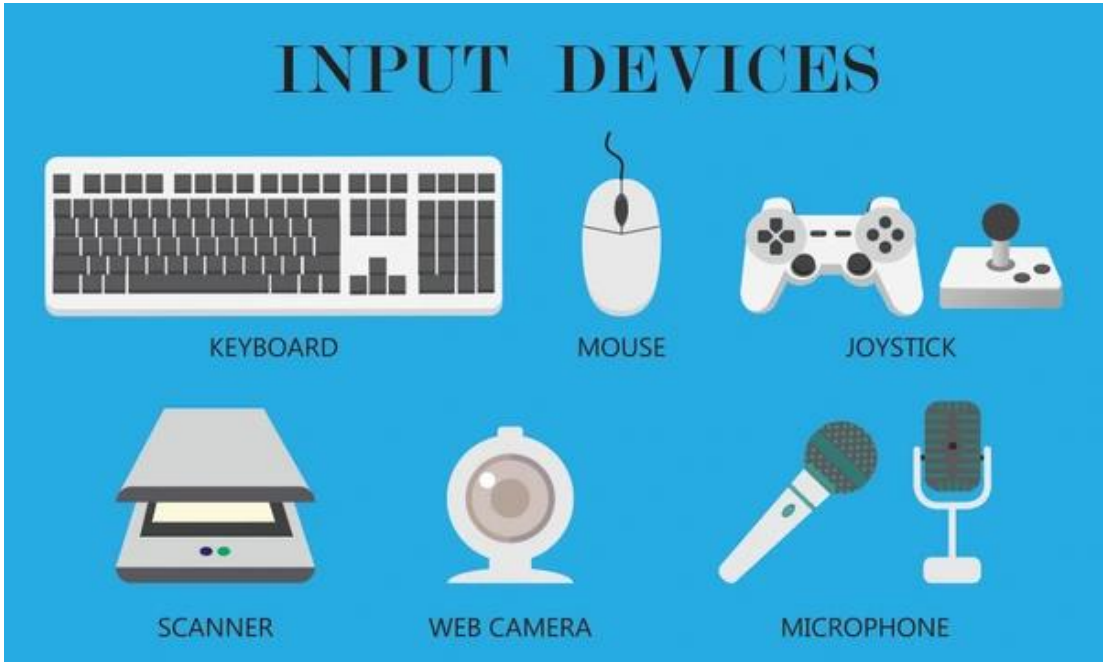
Storage Devices

- **HDD (Hard Disk Drive):**
  - ✓ Magnetic storage device.
  - ✓ Offers large storage capacities at a lower cost but slower access speeds.
- **SSD (Solid State Drive):**
  - ✓ Uses flash memory, faster data access, and improved durability.
  - ✓ Enhances overall system performance significantly.



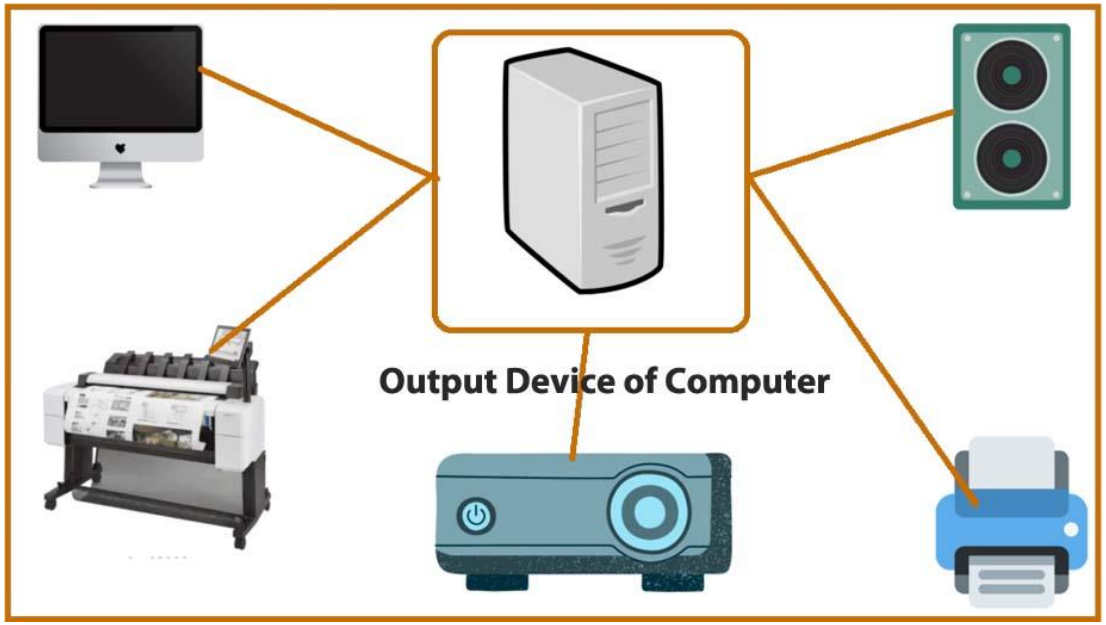
Input Devices

- Devices used to input data and instructions into a computer.
- Examples include keyboards for typing, mice for navigation, and scanners for digitizing physical documents.



Output Devices

- Devices that present processed data from the computer to users.
- Common examples include monitors (visual output), printers (physical output), and speakers (audio output).



Peripheral Devices

- External components connected to computers for additional functionality.

- Examples include USB drives (portable storage), webcams (video communication), and external printers (document printing).

What is Software?

- A collection of instructions, data, and programs that tell the computer hardware how to perform specific tasks.

- Crucial for controlling hardware components and managing various tasks.

Types of Software

❑ System Software:

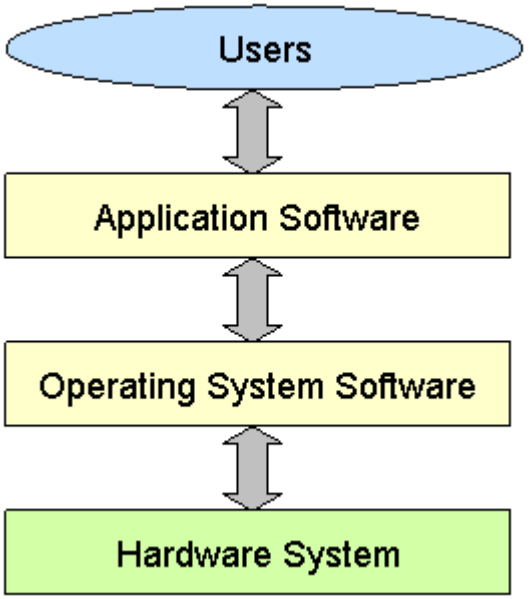
- ✓ Operating Systems such as Windows, macOS, Linux manage hardware and software resources.
- ✓ Utility software like antivirus programs or disk cleanup tools help maintain the system's performance.

❑ Application Software:

- ✓ Designed for end-users to perform specific tasks like creating documents (MS Office), editing images (Photoshop), or gaming.

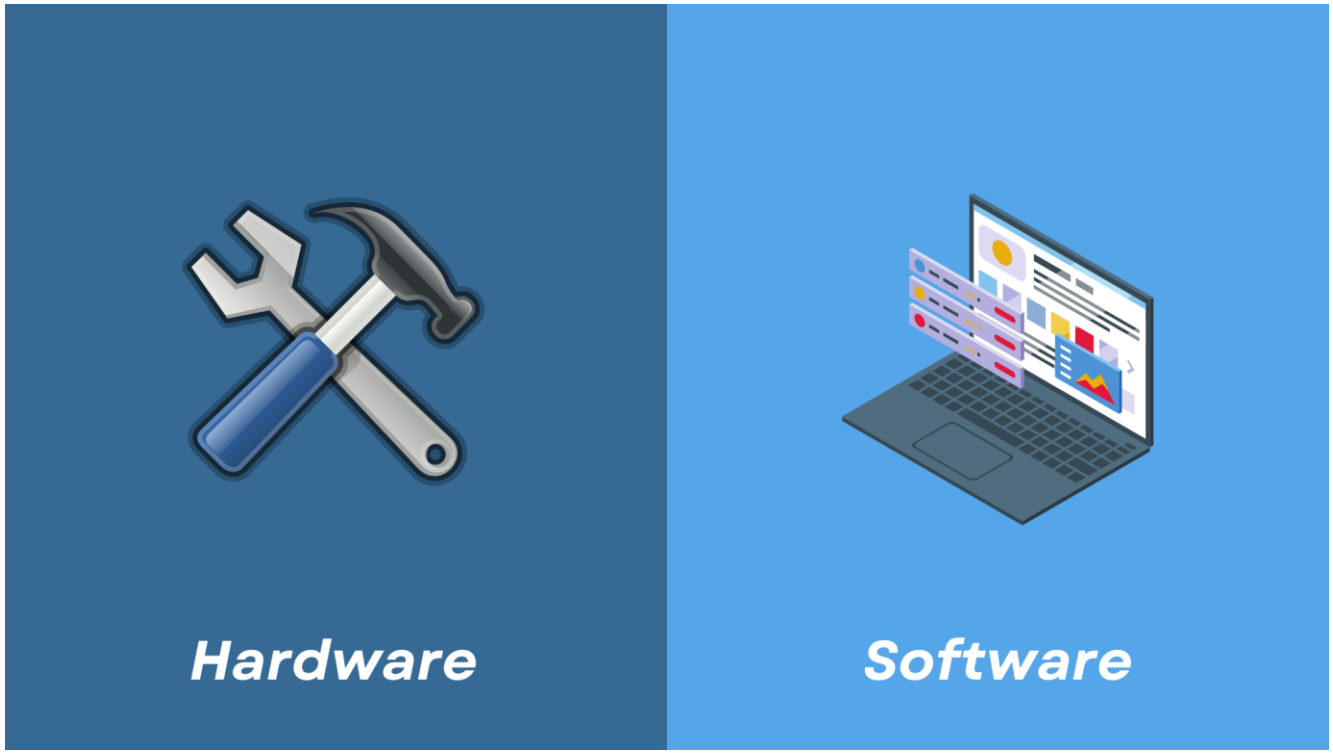
Interaction Between Hardware and Software

- Software provides instructions or commands for the hardware to execute.
- Hardware follows these instructions to perform tasks, delivering the desired outcomes and outputs.
- Effective interaction between both components ensures efficient computer functionality.



Importance of Hardware and Software

- Hardware: Provides the necessary infrastructure and physical capabilities for computing.
- Software: Offers the intelligence, control, and operations needed to utilize hardware effectively.



Thank You