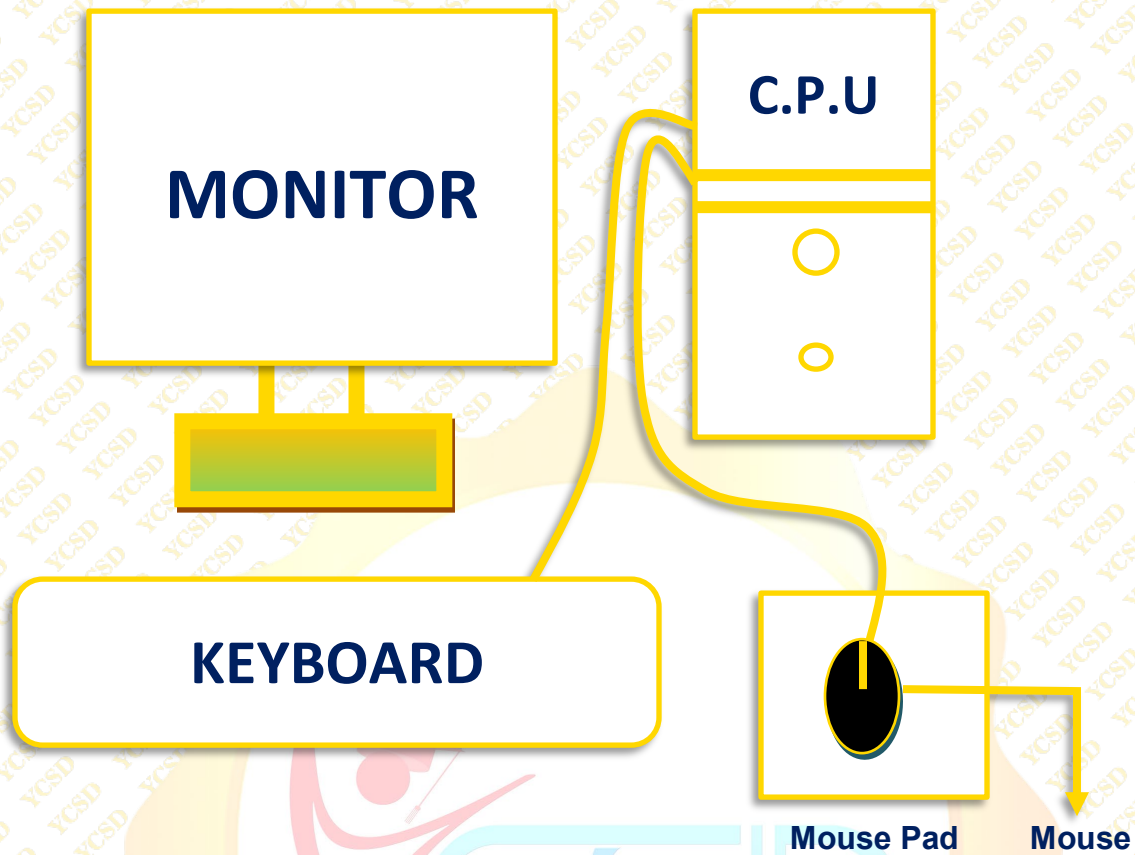


COMPUTER FUNDAMENTALS





- Input Device** : Keyboard, Mouse, Light Pen, Joy Stick, Scanner etc.
- Output Device** : Monitor, Printer, Plotter, and Speaker etc.
- Processing** : CPU (Central Processing Unit) / Processor
- Memory** : RAM, ROM, CACHE, HARD DISK, FLOPPY DISK, CD, DVD etc.

Bit & Byte

- 0 or 1** = 1 bit
- 4 bit** = 1 Nibble
- 8 bit** = 1 Byte
- 1024 Byte** = 1 KB (Kilo Byte)
- 1024 KB** = 1 MB (Mega Byte)
- 1024 MB** = 1 GB (Giga Byte)
- 1024 GB** = 1 TB (Tera Byte)
- 1024 TB** = 1 PB (Peta Byte)
- 1024 PB** = 1 EB (Exa Byte)
- 1024 EB** = 1 ZB (Zetta Byte)
- 1024 ZB** = 1 YB (Yotta Byte)

What is a computer?

A computer is an electronic machine that accepts information, stores it until the information is needed, processes the information according to the instructions provided by the user, and finally returns the results to the user.

Computer Generation

| | |
|-------------------|--------------------|
| First Generation | 1940 - 1956 |
| Second Generation | 1956 - 1963 |
| Third Generation | 1963 - 1971 |
| Fourth generation | 1971-Present |
| Fifth Generation | Present and beyond |

First Generation (1940-1956): Vacuum Tubes

- ✓ Used vacuum tubes for circuitry, magnetic drums for memory, and were often enormous, taking up entire rooms.
- ✓ Very expensive, consumed great deal of electricity, Generated a lot of heat, which was often the cause of malfunctions.
- ✓ Relied on machine language to perform operations, could solve one problem at a time.
- ✓ Input was based on punched cards and paper tape, and output was displayed On printouts.
- ✓ UNIVAC and ENIAC computers are examples of first-generation computing devices.



Second Generation (1956-1963): Transistors

- ✓ Transistors replaced vacuum tubes allowing computers to become Smaller, faster, cheaper, more energy-efficient and more reliable than their first-generation predecessors.
- ✓ Still relied on punched cards for input and printouts for output.
- ✓ Second-generation computers moved from cryptic binary machine language to symbolic, or assembly, languages, which allowed programmers to specify instructions in words.
- ✓ High-level programming languages like COBOL and FORTRAN were used.



Third Generation (1963-1971): IC (Integrated Circuit)

- ✓ IC used.
- ✓ More reliable and faster.
- ✓ Smaller size.
- ✓ Generate less heat.
- ✓ Lesser maintenance.
- ✓ Still costly.
- ✓ A.C. needed.
- ✓ Consumed lesser electricity.
- ✓ Support high-level language.



Fourth Generation (1971-Present): Microprocessors

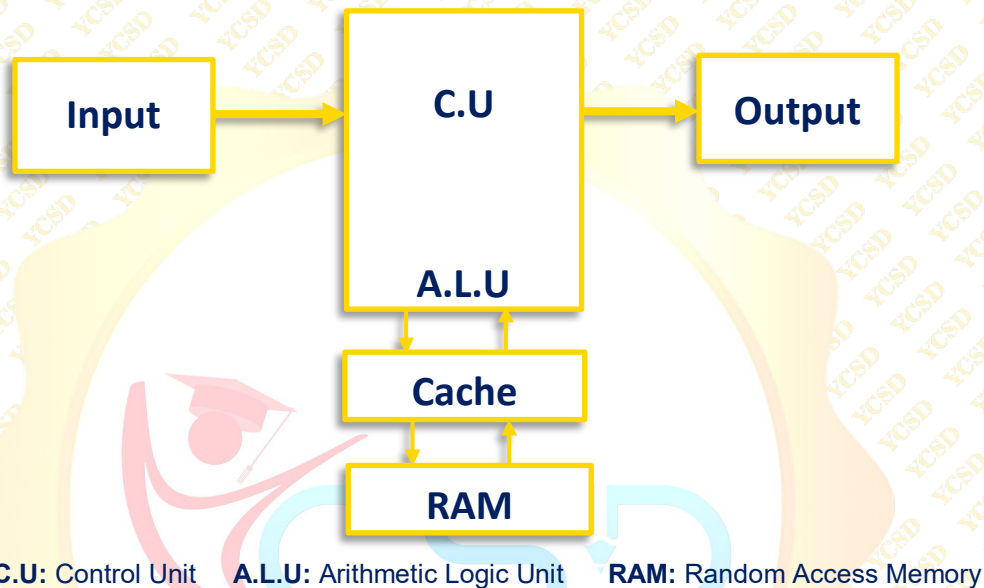
- ✓ Microprocessor were used.
- ✓ What in the first generation filled an entire room could now fit in the palm of the hand.
- ✓ In 1981 IBM introduced its first computer for the home user, And in 1984 Apple introduced the Macintosh.
- ✓ As these small computers became more powerful, they could be linked together to form networks, which eventually led to the development of the Internet.
- ✓ Fourth generation computers also saw the development of GUIs, the mouse and Hand-held devices.



Fifth Generation (Present and Beyond): Artificial Intelligence

- ✓ Fifth generation computing devices, based on artificial intelligence, are still in development, though there are some applications, such as voice recognition, that are being used today.
- ✓ The use of parallel processing and superconductors is helping to make artificial intelligence a reality.
- ✓ Quantum computation and molecular and nanotechnology will radically change the face of computers in years to come.
- ✓ The goal of fifth-generation computing is to develop devices that respond to natural language input and are capable of learning and self-organization.

Block Diagram of a Computer



Computer Parts

- ✓ Hardware
- ✓ Software

Basic Hardware of a PC System

- ✓ Central Processing Unit (CPU)
- ✓ Memory Unit
- ✓ Input Devices
- ✓ Output Devices
- ✓ Secondary Storage Devices

CPU: Central Processing Unit

- ✓ Brain of the computer.
- ✓ It directs and controls the entire computer system and performs all arithmetic and logical operations.

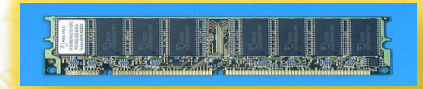
Memory Unit

- ✓ Where the programs and data are stored.



RAM

- ✓ **RANDOM ACCESS MEMORY (RAM)** is used to store the programs and data that you will run exists only when there is power.

**ROM**

- ✓ **READ ONLY MEMORY (ROM)** contains the pre-programmed computer instructions such as the Basic Input Output System (BIOS).

**Input Devices**

Allows data and programs to be sent to the CPU.

- ✓ Keyboard
- ✓ Mouse
- ✓ Joystick
- ✓ Microphone
- ✓ Webcam
- ✓ Scanner

Key Board

A computer keyboard is one of the primary input devices used with a computer. Similar to an electric typewriter, a keyboard is composed of buttons that create letters, numbers, and symbols, as well as perform other functions.

**Mouse**

The mouse, sometimes called a pointer, is a hand-operated input device used to manipulate objects on a computer screen. Whether the mouse uses a laser or ball, or is wired or wireless, a movement detected from the mouse sends instructions to the computer to move the cursor on the screen in order to interact with files, windows, and other software elements.

Even though the mouse is a peripheral device that sits outside the main computer housing, it's an essential piece of computer hardware in most systems... at least non-touch ones.

There are two types of mouse

- ✓ Mechanical Mouse
- ✓ Optical Mouse

Mechanical Mouse - A type of computer mouse that has a rubber or metal ball on its underside and it can roll in every direction.



Optical Mouse - This type uses a laser for detecting the mouse's movement.



Output Devices

Media used by the computer in displaying its responses to our requests an instruction.

- ✓ Monitor
- ✓ Audio Speakers
- ✓ Printer
- ✓ Plotter

Monitor

A monitor is an electronic visual computer display that includes a screen, circuitry the case in which that circuitry is enclosed. Older computer monitors made use of cathode ray tubes (CRT), which made them large, heavy and inefficient. Nowadays, flat-screen LCD monitors are used in devices like laptops, PDAs and desktop computers because they are lighter and more energy efficient.

A monitor is also known as a screen or a **visual display unit (VDU)**.

There are 2 Types of Monitor

- ✓ CRT Monitor
- ✓ LCD Monitor



Cathode Ray Tube (CRT)



Liquid Crystal Display (LCD)

Audio Speaker

A speaker is a term used to describe the user who is giving vocal commands to a software program. A computer speaker is an output hardware device that connects to a computer to generate sound. The signal used to produce the sound that comes from a computer speaker is created by the computer's sound card.



Printers

A printer is an external hardware output device that takes the electronic data stored on a computer or other device and generates a hard copy of it. For example, if you created a report on your computer, you could print several copies to hand out at a staff meeting. Printers are one of the most popular computer peripherals and are commonly used to print text and photos.



There are 2 types of Printer

- ✓ Impact Printer
- ✓ Non – Impact Printer

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