Computers:-TYPES, I/O DEVICES, CPU, CU and ALU.

❖ *Types of Computers: -*
→Based on uses: -

1. Analog Computers: *Analog computers process data continuously varying. They are operated on mathematical variables in the form of physical quantities that are continuously varying. Analog computers are not versatile and they are not very accurate but they show the solutions in a simple and graphical manner in less time.*


2.Digital Computers: *Digital computer deal with mathematical variables which is binary, i.e. in the form of numbers 0 and 1 that represent discrete values of physical quantities. They are versatile, reprogrammable, accurate, and less affected by outside disturbances.*

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3.Hybrid Computers: *A hybrid computer is a computing system that combines both digital and analog. The digital component behaves like the controller, providing logical operations. The analog behaves like the 'solver,' computing differential equations.*
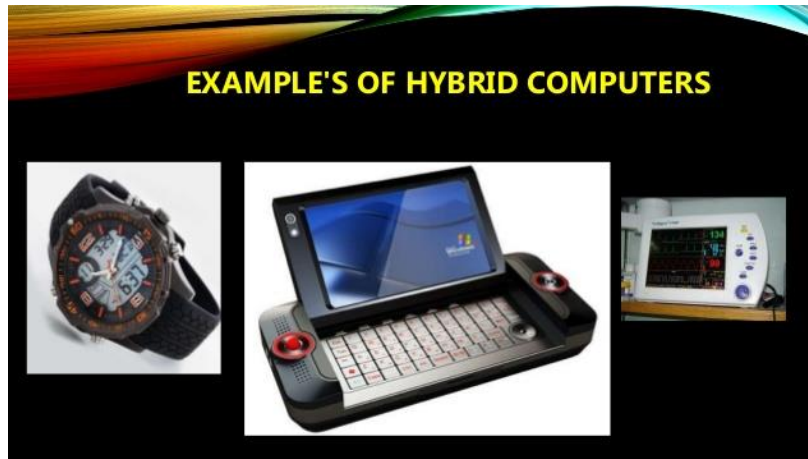
→Based on Sizes: -

➢ Smart Phone, Micro Computer, Personal computer, laptop, Minicomputer, Mainframe computer and Super computer.

❖ **Supercomputers** *are specialized devices built to perform extremely difficult calculations extremely quickly.* **Pratyush**, *India's Fastest Supercomputer, Established At Pune's IITM recently.*

❖ *India's First* **Supercomputer PARAM** *8000 made by The Centre for Development of Advanced Computing(C-DAC) was launched on July 01, 1991.*

❖ **Cray-1** *CDC 6600 (Control Data Corporation) is the world's first supercomputer and was considered to be the most powerful computer designed by Seymour Cray.*

❖ **Sunway Taihu Light** *of China is the fastest supercomputer in the world.*

❖ **Shasra T** *is considered as India's fastest super computer, manufactured by Indian institute of Science.*

❖ *INPUT AND OUTPUT DEVICES: -*

INPUT DEVICES: -*An input device is any hardware device that sends data to a computer, allowing you to interact with and control it. Examples of input devices are*


- *Keyboard.*
- *Image scanner.*
- *Microphone.*
- *Pointing device.*
- *Graphics tablet.*
- *Joystick.*
- *Light pen.*
- *Mouse.*
- *Pointing stick.*
- *Touchpad.*
- *Touchscreen.*
- *Trackball.*
- *Webcam.*

OUTPUT DEVICES: -*An output device is any device used to send data from a computer to another device or user. Most computer data output that is meant for humans is in the form of audio or video. Examples of output devices are*

- *Monitor.*
- *Printer.*
- *Plotter.*
- *Projector.*
- *Speaker.*
- *Headphones.*
- *Light / LED.*

❖ <u>CENTRAL PROCESSING UNIT (CPU)</u>
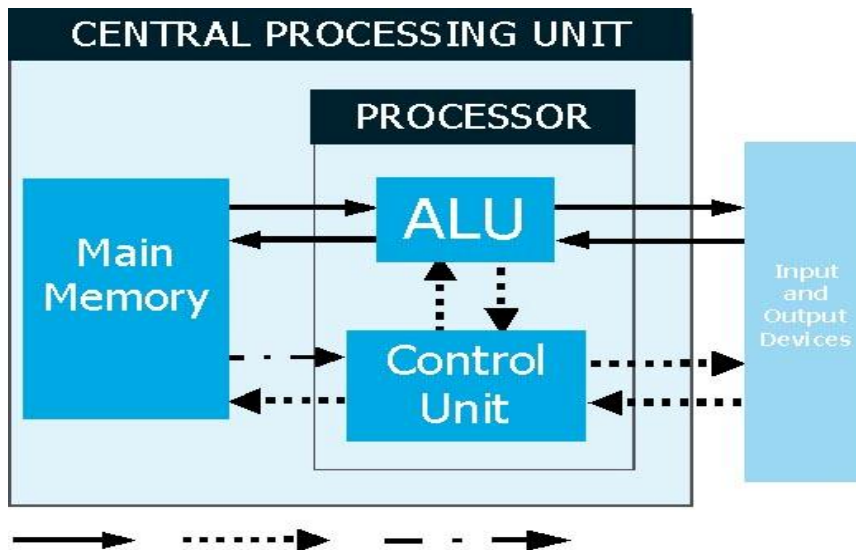
✓ *A central processing unit (CPU) is the electronic circuitry within a computer that carries out the instructions of a computer program by*

performing the basic arithmetic, logical, control and input/output (I/O) operations specified by the instructions.

✓ *Earlier CPU's were composed of many separate components but since mid-1970's CPU's have typically been constructed on a single integrated circuit called a microprocessor.*

❖ CONTROL UNIT (CU)

✓ *The Control Unit often called a control system or central controller manages the computer's various components, it reads and interprets (decodes) the program instructions, transforming them into control signals that activate other parts of computer.*

✓ *A key component common to all CPU's is the Program Counter commonly called the instruction pointer (IP), a special memory cell (a register) that keeps track of which location in memory the next instruction is to be read from.*

❖ *ARITHMETIC LOGIC UNIT(ALU)*

✓ *An arithmetic-logic unit (**ALU**) is the part of a computer processor (CPU) that carries out arithmetic and logic operations.*

✓ *It performs both bitwise and mathematical operations on binary numbers and is the last component to perform calculations in the processor.*

✓ *Superscalar computers may contain multiple ALUs, allowing them to process several instructions simultaneously. Graphics processors and computers with SIMD (Single instruction, multiple data) and MIMD (multiple instruction, multiple data) features often contain ALUs that can perform arithmetic on vectors and matrices.*