* **Short notes**
* **Computer**
* **computer** = electronic device = programmed to accept data (input) -> process it -> generate result (output) -> store the information
* **Computer System**
* **Computer system** = computer + additional hardware + additional software

= CPU + memory + I/O devices + storage devices -> work as a single unit -> to deliver the desired output

* **CPU - Central Processing Unit**
* **CPU = Central Processing Unit** = known -> Brain of the computer, Processor, Micro-processor
  + - electronic circuitry of a computer -> carries out the actual processing
    - Receives instructions & data through programs
    - fetches program & data from memory -> performs arithmetic & logic operations -> stores result into memory
* **IC - Integrated Circuits**
* **IC = Integrated Circuits =** semiconductor materials = CPU -> placed on one or more microchips
* **Main component of CPU**
* **Main component of CPU =** 3 main component = Registers, ALU, CU
* **Register**
* **Register =** local memory = CPU stores the data & instructions -> during processing = limited in size and number = Used for storing data & instructions or immediate results
  + - = modern ALU has Registers = because accessed faster than main memory
* **ALU - Arithmetic Logic Unit**
* **ALU = Arithmetic Logic Unit =** performs arithmetic & logic operations -> done as per the instruction in a program
* **CU - Control Unit**
* **CU = Control Unit =** Organizes -> the computer -> to work as single unit **=** Generates control signals = Controls -> sequential instruction execution, interprets instructions , guides data flow through memory, ALU, I/O devices
* **Input Devices**
* **Input Device =** control signals -> sent to a computer = convert -> input data into a digital form -> acceptable by the computer system
* **Some examples of input devices** :- keyboard, braille keyboards, Scanner, OCR, Microphone, Web cam, Graphics tablets, Barcode reader, Game pad, Voice search, mouse, OMR, MICR, joystick, touch screen,
* **Main Memory = Ram** = Data from input device = temporarily stored -> in the main memory
* **secondary memory =** permanent storage = for store the data => ex:- hdd , sdd , micro sd …
* **Output Devices**
* **Output Device =** receives data -> from a computer system -> for display, physical production, etc = convert -> digital information into human-understandable form
* **Some examples of Output devices :-** Printer, Monitor, Braille Display Monitor, Speakers, Projector, USB drive, Facsimile, Modems, CD raw drives, Touch Screens, Headsets
* **Evolution Of Computer**
* **Pascaline** (mechanical calculator) = Blaize Pascal = in 1642 = airthmetic calculations
* **analytical engine** (mechanical computing device) = Charles Babbage = in 1834 = inputting , processing , storing and displaying the output = form the basis of modern computers
* **tabulating machine** (programmable machine) = Herman Hollerith = in 1890 = the data stored on the punched card = first step towards programming
* **concept of stored program computer** = John Von Neumann = in 1945 = capable of storing data & program in memory = developed based on this concept -> EDVAC -> then ENIAC
* **Von Neumann architecture** = consist CPU (for airthmetic & logical ops..) , memory (to store data) , I/O device, communication channels (to send or receive the output data) .
* **ENIAC** = Electronic Numerical Integrator and Computer = first binary programmable computer = based on Von Neumann architecture
* **Vacuum tubes** = replaced by transistors = in 1947 = developed at Bell Labs = using semiconductor materials
* **Integrated Circuit (IC)** = silicon chip = which contains entire electronic circuit on a very small area
* **LSI** = Large Scale Integration = integration of complete CPU =on a single chip
* **Moore’s Law =** predicted = exponential growth in the number of transistors = assembled in a single microchip
* **VLSI** = Very Large Scale Integration = integrating around 3 million components =on a small-sized chip
* **SLSI =** Super Large Scale Integration = fabricate high density of transistors and other components (approx 106 components) = on a single IC
* **first personal computer (PC)** = IBM -> in 1981 = Apple -> Macintosh machines -> in 1984
* **Memory**
* **Memory =**
* Memory is used to store the data and instructions for processing in a computer system.
* Whenever we talk about the ‘memory’ of a computer system,
  + we usually talk about the “main or primary memory”.
* The secondary memory (also called storage device) is
  + used to store data, instructions and results permanently for future use.
* **Units Of Memory**
* 1KB = 1024Bytes 1PB = 1024TB 1MB = 1024KB 1EB = 1024PB
* 1GB = 1024MB 1ZB = 1024EB 1TB = 1024GB 1YB = 1024ZB
* KB=Kilobyte, PB=Petabyte, MB=Megabyte, EB=Exabyte,
* GB=Gigabyte, ZB=Zettabyte, TB= Terabyte , YB=Yottabyte