

COMPUTER APPLICATION

[TH-1]

2nd SEM MECHANICAL
ENGG.

Under SCTE&VT, Odisha

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Computer organisation

Introduction to computer - Computer is an electronics machine that takes data as input, process it & gives output as information.
(input) ~~Process~~ (output)

components of computer

① Hardware

- Input devices
- output devices
- Storage devices
- CPU
- UPS

software

- Application s/w
- System s/w

characteristic of computer

- * Speed
- * Accuracy
- * Storage
- * Quick decision
- * Repeated capability
- * full-form

- * CPU - Central Processing unit
- * RAM - Random access Memory
- * ROM - Read only Memory
- * CPU - Central Processing unit
- * UPS - uninterrupted Power supply

5th generation - It based on Artificial Intelligence, are still in develop ment

- The goal of 5th generation computing is to develop devices that respond to natural language input & are capable of learning & self organization.

* Classification of computers

All Modern computers are classified into 3 categories

* Analog * Digital * Hybrid

↳ It works on analog data such as variation in temp, pressure, speed, voltage etc.

- They are specific to a particular area of application. It used to measure physical quantities.

* Digital Computers - These are general purpose computers, which works on digital data/binary data.

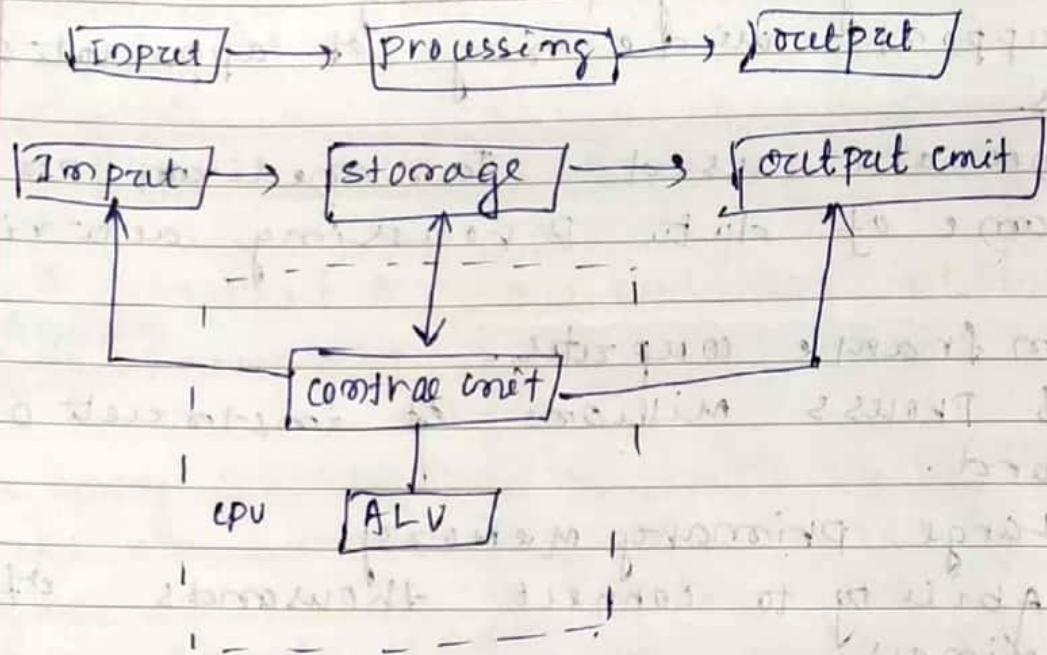
→ speed and accuracy are very high.

* Hybrid computers - It having features which are common to both analog & digital computers.

such compute control entire process.

→ Analog feature measure physical quantities like temp, pressure, voltage & convert them to digital data by digital processing capability.

① Basic organization of computer (functional block diagram)



① Input unit * CPU * Memory unit * Output unit

① Input unit

computer need to receive data as input in order to solve any problem so we need input device to feed data to computer

— mostly commonly used i/p device is keyboard, others are mouse, punch card reader, magnetic tape reader

* CPU - The main unit of computer called CPU i.e. the brain of computer

- * It performs all calculations
- * It takes all decisions
- * It controls all units of computer

* These are used for medium or large volume of data processing activity.

* Tools for manufacturing & testing product
Main frame computer.

* It process millions of instructions per second.

* Large primary memory.

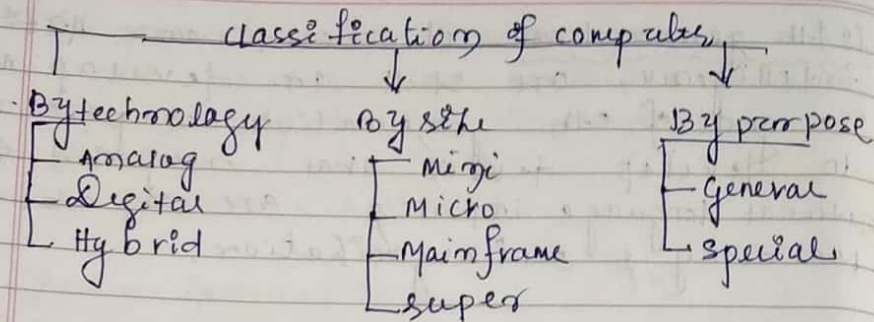
* Ability to connect thousands of terminals.

* Banking, healthcare & financial
super computer - It is most powerful computer.

It is designed to maximize the processing of floating point instructions.

This is possible because of parallel processing technique which implement multiple processor to work in parallel manner.

The speed of processing of super computer are measured in GFLOPS - Giga floating



Analog computers-

- * The analog computers work on a continuous signal
- * Analog computers slower in speed.
- * It provides with less accuracy as compared to digital computers
- * Analog computer is difficult to use

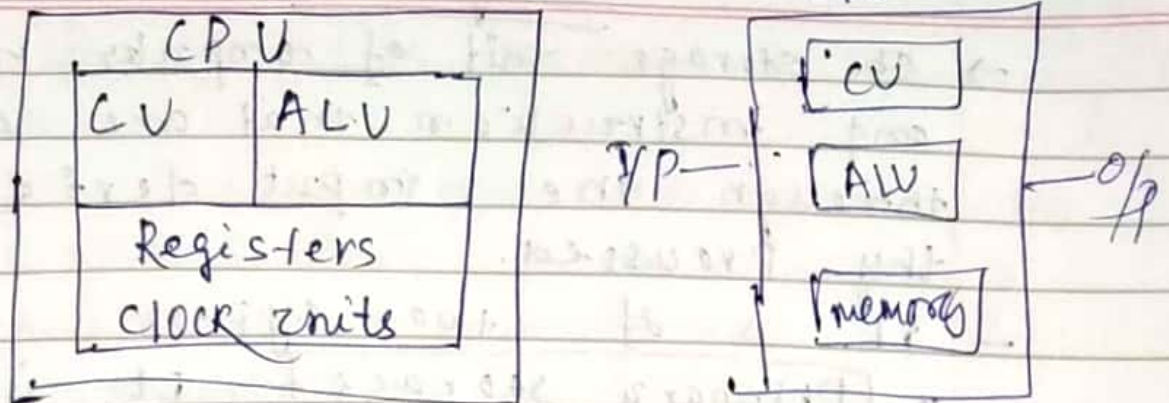
Digital Computers

- * It works on discrete signal
- * It is so fast
- * 100% accuracy
- * It is not so difficult to use.

By size

① Micro Personal computers

- The smallest & less expensive computers are micro PC.
- These are portable
- They require minimum power
- Processing power & memory capacity are sufficient for handling most of task.
- Ease of use & support various types of o/s & s/w.



CU/ control unit - It is responsible for co-ordinating all the activities like transfer of data, instructions betⁿ various sub units.

It issues control signal to various units to carry out the co-ordination job.

ALU - Here actual calculation take place. It is responsible for performing all arithmetic & logical operation that take place.

Storage unit

→ The storage unit of computers holds data and instructions that are entered through the input device, before they are processed.

- It is of two types

* Primary storage - it is also called main memory of computers.

- It is temporary or volatile memory used by the computer while processing data.

- This memory is generally used to hold the program being currently executed in the comp. The data is lost when the computer switches off.

→ In order to store data permanently the data has to be transferred to the secondary memory.

- The cost of primary storage is more than secondary storage.

* It is of two types RAM & ROM

RAM

- Random Access memory
- It is volatile in nature.

- It is read/write memory.

ROM

→ Read only memory
- It is non-volatile in nature

- It is only read type memory

LCD - liquid crystal display
It is more expensive than CRTs.
less than LED
It is expensive than CRT
It has clear picture than CRT

LED - light emitting diode.
it is more costly.
It has more clear picture than
all.

Printer -
A printer is an output device that
produce a hard copy of data.
The resolution of printer output is
expressed as DPI.
There are different printers like,
Serial printer -> also called a character
printer. These characters at a time.

* Magnetic Ink Character Recognition
It enables special characters printed in magnetic ink to be read and input rapidly to a computer.

- MICR is mainly used by banking system & other organisations for identification purpose.

* Microphone - It is used to record sound. Then it saved as sound file.

* Joystick - It is used to move cursor from place to place.

- It is used for computer game.

* Touch screen - A screen that we can enter data by touching.

ex - ATM machine, smartboard etc.

* Output device - An output device converts machine readable information into people readable form.

→ Soft copy output device is monitor or VDU
hard copy output device is printer.

Monitor -

- The monitor also called VDU (visual display unit)

- There are different types of monitors like CRT, LCD & LED.

CRT - Cathode ray tube.

→ It less expensive than LCD & LED

→ It has not much clear picture than LCD & LED.

→ Now it is not used

* Input device - In put device is required to feed data to computer to get required information.

* Key board - The key board is a way to input letters or numbers in to different appen or page.
- It contains four types of keys like generic, alphabets, special symbols, function key, control key (shift, alt, del, ctrl)

* Mouse - It is a pointing device of easily interact with graphical user interface system.
- It controls movement of cursor on the screen & make selection from screen.

* OMR - optical mark Reader is a i/p device which is used to

contact between Print head and paper while printing.
ex - Dot matrix printer, Daisy wheel printer etc.

* Non impact Printers - Non impact printers are those printers which does not have a physical contact between the print head & paper during printing.

- It has no hammer & not to hit.

ex - Inkjet printer, Laser printer etc.

* Bit mapped printer - Images are formed from group of dots & can be placed anywhere on the page.

* Character based printer - Printer prints characters row to row & column of a page.

* Dot Matrix printer - Dot matrix printer write characters & form graphic images using one or two column of tiny dots on a print head.

- The dot hammer moving vertically across the paper strikes on inked-ribbon and creates images on paper.

- DMP is not suitable for printing graphics & images.

- The cost of DMP is low but quality is not as good as non impact printer.

* Daisy wheel printer - Daisy wheel printer operate same as type writer.

- A hammer strikes a wheel with petal, each petal containing a letter form at its tip.

- The letter form's strikes a ribbon of ink, depositing the ink on the page & thus printing a character.

Ink Jet Printer: The ink jet printer is a non impact page printer which prints page by page. The print head contains tiny nozzles through which different coloured inks can be sprayed on to the paper to form the characters or graphics images.

Advantages of this printer is to print variety of colour printing at a relatively low cost. It prints 2 to 6 page per minute (PPM).

Laser printer - It is a printer uses the electro photographic method used in a copy machine. It uses a laser beam light

- The plotter is a graphics printer for making so it is adopted in applications requiring high quality o/p.

There are two types of plotters like

* Drum plotter - This is a plotter that has a drum. A paper wraps the drums that rotate to produce plots. pens in a drum plotter moves across the paper while the drum is turning.

- A drum plotter is capable of plotting on a drawing sheet & used in commercial applications.

* Flat bed plotter - This is a plotter that has a bed. This is called also table plotter.

- The plotter draws graphics on the paper

need a request for data from main memory, during the execution process. When the processor need to read from or write to a location in main memory, it first checks whether a copy of that data is in the cache. If so, the processor immediately reads from or writes to the cache, which is much faster.

There are two types of memory RAM & ROM

- The RAM is volatile memory i.e. Random Access memory i.e. when the power goes off the data stored in RAM is automatically erased.
- The memory used for both read & write options.
- There are two types of RAM i.e. Static RAM & dynamic RAM.
- The ROM is mainly used to store small system program permanently. This is non-volatile is nature, that means stored data in ROM remains even after the power goes off.
- There are different ROM like PROM, EPROM, EEPROM, EEPROM etc.
- EPROM - Erasable Programmable ROM
- EEPROM - Electrically Erasable Programmable ROM.

Hard disk - It is the most common form of secondary storage, which is permanently installed in the computer. A hard disk is flat, circular oxide coated disc, which rotates continuously.

CD - It is very widely used auxiliary medium. It is based on optical mechanism for storing data. It consists of a plastic disk coated with a plastic reflective material. Bits are recorded on pits & lands on this surface, by focusing a high power laser beam on the surface.

Floppy disk - It is the first auxiliary storage device to be fitted to a computer. It is a magnetic storage medium mainly used for laptop & computers. Floppy drive is the most common...