

Unit-1-Introduction to Computers.

* Full form of Computer -

C Commonly

O Operating

M Machine

P Particularly / purposely

U uses for

T technological

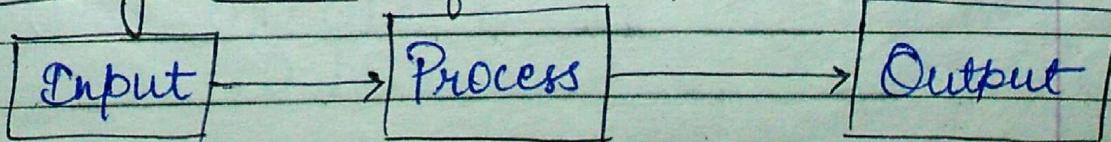
E Educational

R Research.

Computer is a programmable electronic device. It accepts data for the process and produce the information.

- Programmable - computer works on the basis of program (set of instructions).
- Electronic devices - Such as AC, DC \rightarrow comp.
- Data - The raw facts and figures given to the computer is called data.
Eg - [A-Z, a-z, 0-9]
- Information - The final result given by computer after process.
- Process - The working of computer on data for result.
- Data - It is a single piece of information.
- Information - It is the computer form of data.
- Process - Transformation of data into information.

* Working Steps of Computer -



1. Input - Accept data from the user.
2. Process - Process data according to instructions
3. Output - Give the result or information.

* Difference b/w Hardware & Software

Hardware

1. Physical part of computer are called hardware.
2. You can touch, see, and feel hardware.
3. Hardware is constructed using physical material.
4. Hardware is not affected by computer virus.
5. If hardware is damaged, it is replaced with new one.
6. Hardware cannot be transferred from one place to another electronically through network.

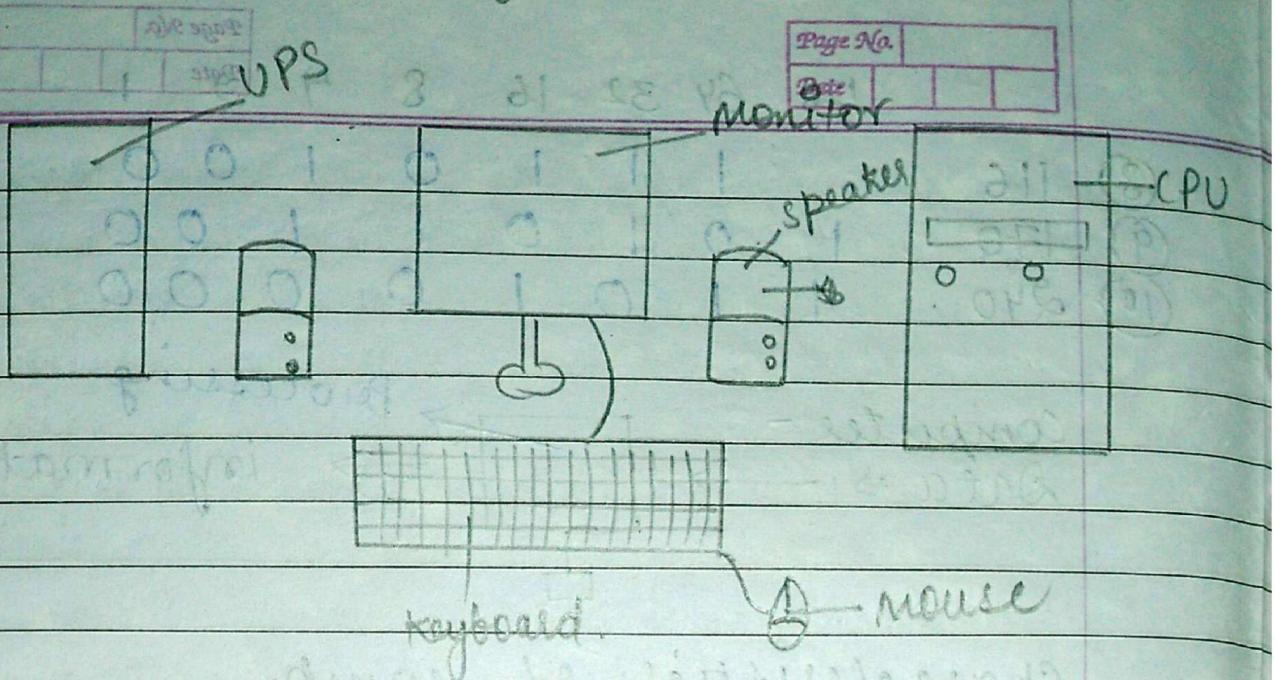
Software

- A set of instructions given to the computer is called software.
- You cannot touch and feel software.
- Software is developed by writing instructions in programming language.
- Software is affected by computer virus.
- If software is damaged or corrupted, its backup copy can be reinstalled.
- Software can be transferred from one place to another electronically through network.

Characteristics of comp.

1. Speed - The comp. can process data very fast, at the rate of millions of instructions per second. Some calculation that would have taken hours and days to complete otherwise, can be completed in a few seconds using the computer for eg - calculations.
 2. Accuracy - Computer provides a high degree of accuracy for eg - The comp. can accurately give the result of division of any two numbers upto 10 decimal places.
 3. Storage capacity capability - Large volumes of data and information can be stored in computer and also retrieved when ever required.
 4. Versatility Computer is versatile in nature. It can perform different type of tasks with the same ease.
- All rounder*
- Performing different type of tasks with the same ease.*

Computer System



* Types of Computers - Computer can be generally classified by size and power as follows; though their ease considerable overlaps

1. Personal Computer - A small, single user computer based on a microprocessor. In addition to the microprocessor, a personal comp. has a keyboard for entering data, a monitor for displaying information and storage device for saving data.
2. Work station - A powerful, single user computer. A work station is like a personal computer, but it has a more powerful microprocessor and a higher quality of monitor.
3. mini computers - A multi user computer capable of supporting from 10 to 100s of users simultaneously.
4. Main frame - A powerful multi user computer capable of supporting many

100s or 1000s of users simultaneously.

5. Super Computer - An extremely fast computer that can perform 100s of millions of instructions per second.

* Types of Programming language-

1. Low level programming lang.
2. High level.

Low

- ① Machine
- ② Assembly

High

- ① Procedural
- ② Problem oriented
- ③ Natural language

- ① Machine lang - It consists of strings of binary numbers (0s & 1s). It is the only one language, the processor directly understand.
- ② Fast execution speed and efficient use of primary memory.
- ③ assembly language - It uses codes/mnemonics codes in 0s and 1s. The program is converted into machine code by assembler.

Types of Memory-

1. Primary memory - RAM - Random access memory, ROM - Read only memory.

RAM - RAM is the memory within the computer system responsible for storing data in a temporary basis, so that it can be promptly accessed by the processor as and when needed. It is not volatile in nature which means the data will be erased once supplied to the storage device is turned off.

ROM - It is a memory in permanent form of storage. ROM stays active regardless of whether power supply to its turned on or off. ROM devices do not allow data stored on them to be modified.

2. Secondary Memory-

1. Hard drive - A hard disk is a part of unit often called disk drive. Hard drive or hard disk drive that store and provides relatively quick access to large amount of data on an electro-magnetically charged surface or set of surfaces.

2. Optical disk - Optical disk drive is disk drive that uses laser lights as part of the process of reading or writing data to or from optical disk. Eg- CDs, DVDs, blue ray

are common types of optical media which can be read, recorded by such drives.

Limits - CD - CD can store data upto 700 MB.

DVD can store data upto 8.4 GB.

Double Blue ray store data upto 50 GB.

* Bit = 0 or 1

* Bytes = 8 bits

* Kilo bytes = 2^{10} bytes.

* Mega bytes = 2^{20} kilo bytes.

* Giga bytes = 2^{30} Mega bytes.

* Terabytes = 2^{40} Giga bytes.

3. Flash Disk - A storage module made of flash memory chips. A flash disk have no mechanical platters.

or access arms but the term disk is used because the data are accessed as if they were on a hard drive.

* Input / Output Devices - These are used to enter information and instructions in a computer for storage and processing to deliver the process data to the user.

Input / output devices are required for the user to communicate with the computer. This

* Input devices - These devices provides input to the computer. for eg:- keyboard, mouse, joystick, scanner, barcode reader, touch screen etc.

Keyboard - Keyboard is used to insert

data and instructions into computer. It has multiple keys. It has basic functions. We enter data and instruction in computer by typing them on keyboard.

~~It has multiple keys~~

Touch screen - It allows the user to operate or selection by simply touching the display screen, the display is sensitive to the touch of finger.

Barcode reader - They are photoelectric scanners that read the barcode, which are printed on product container. These devices are generally used in supermarket, book stores etc.

Scanner - It is a input that can scan catch images which are printed on paper and translate the information into the form that can use.

Mouse - It is the device that control the movement of cursor or pointer on display screen. A mouse is a small obj, we can optical roll it on hard and flat surface.

Joystick - It is a handle like structure used to point something objects on screen. It works for moving the cursor or an object to a specific direction.

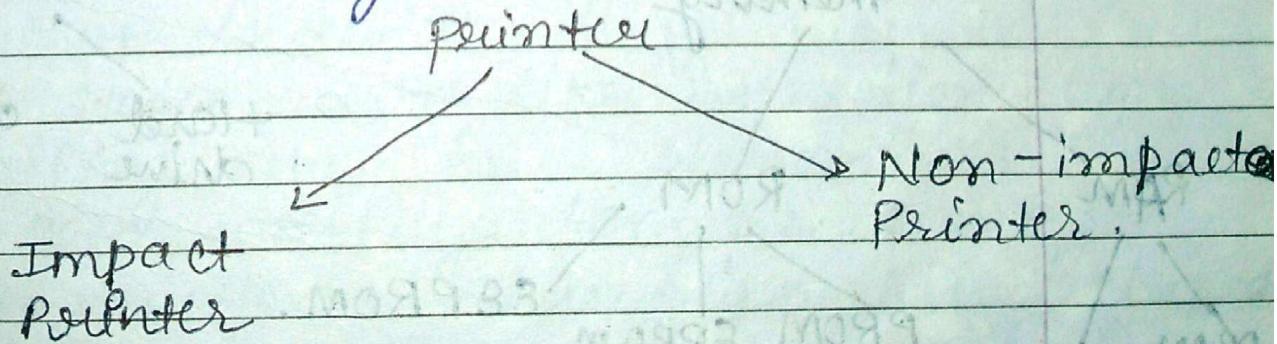
~~It~~ Optical Mark Recognition/OMR - The device send presence of a mark such as a pencil or a pen mark. It is widely used in aptitude test.

Output Devices - It receives information from the CPU and presenting to the user in desired form. Output devices shows the processed data which it is get from CPU. Ex - Monitor, Printer, Speakers, Projector etc.

Monitor monitor is the output device that resemble the T.V. screen. It is used to display information.

- * The monitor is associated with the keyboard for manual input or characters and display the information as it is keyed.
- * It also display the program or application output.

1 Printer - Printers are used to produce paper output. Based on the technology used they can specified classified into 2 categories -



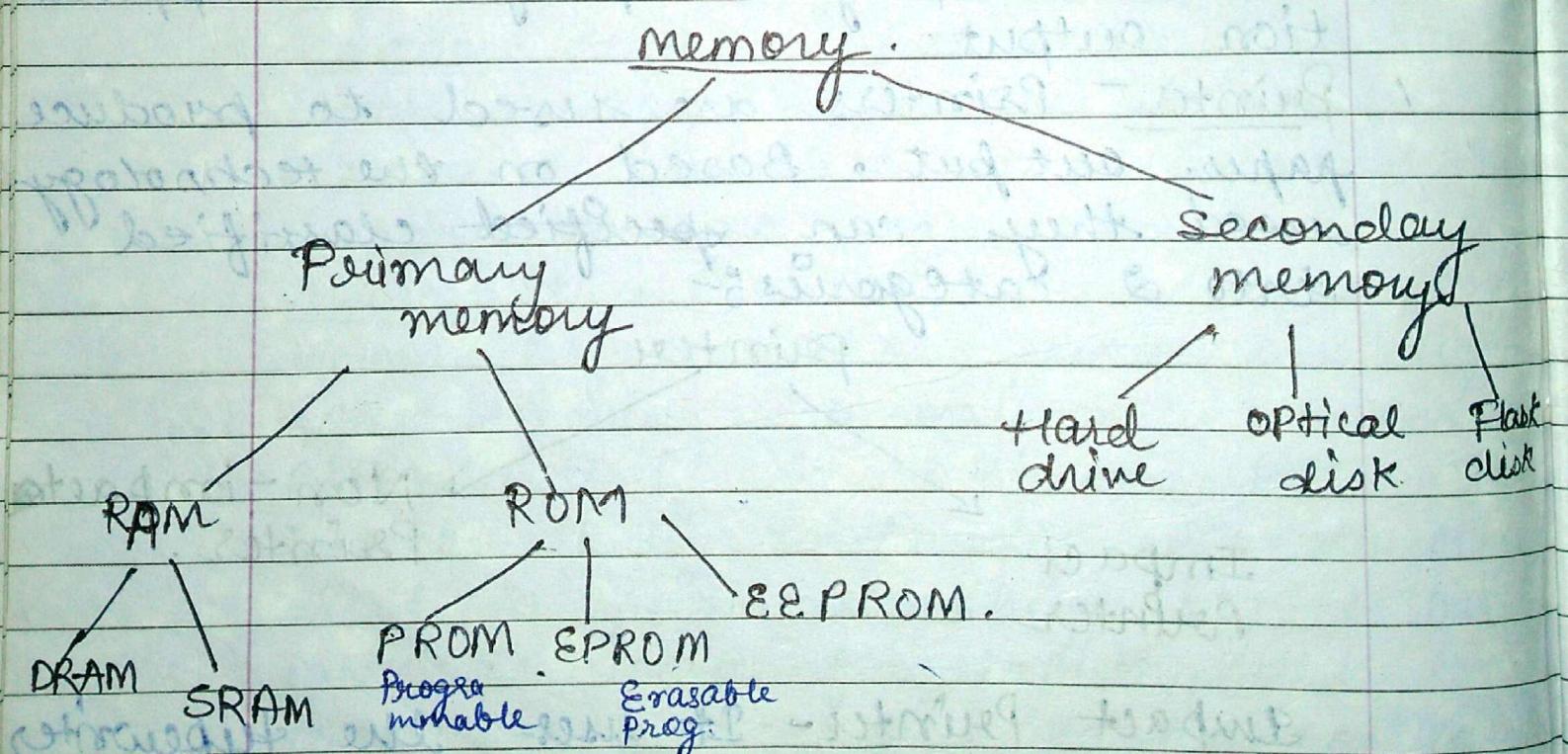
Impact Printer - It uses the typewriter printing mechanism. Where ink hammer strikes the paper through a ribbon in order to produce output. dot matrix and characters. Printers are of all under entry.

this category.

Non impact - Do not touch the paper while printing. The use of chemical, heat, electrical signals, to print the symbols on the paper
For eg - ~~Impact~~^{jet}, Lazer, Thermal printer are fall under this category.

Speakers - speakers are output devices which are use to listen audio output

Flowchart of memory.



Primary Memory -

- Directly accessible by CPU.
- Internal memory.
- Totalite Volatile / ~~Non~~ Non-volatile in nature.

- 4) Hold data and instructions before & after processing.
- 5) Provide more processing speed.
- 6) Expensive.
- 7) It will also store intermediate result of processing awaiting transfer to the output devices.
- 8) Primary memory is categorized into 2 parts. :- RAM & ROM. (Random access memory & Read only memory).

RAM can be further classified into 2 categories.

- 1- DRAM (Dynamic random access memory). - variations
- 2- SRAM. (Static random access memory). - constant

- * DRAM \Rightarrow It stores data which is given by a user.
 - * It also stores intermediate result of processing awaiting transfer to the output devices.
 - * It stores data like instructions are waiting to be obeyed.
 - * Data waiting for processing
 - * Instructions currently being obeyed.
 - * Data currently being processed.
 - * Data is waiting for output devices
- * SRAM \Rightarrow ① Static ram - is static memory which act as a ~~cache~~ cache memory.

- * It is an intermediate memory between main memory & CPU.
- * It is fast as compared to DRAM.
- * It forms a bridge for data between main memory and CPU.
- * It holds the data which is more accessed by the user.
- * It increases the processing speed of CPU.
- * When a user request for a particular data to read, CPU first search that data in cache memory. Then, if it is not found in cache memory.

ROM.

- ① It is the part of main memory in computer.
- ② It is used for storing the program permanently.
- ③ It is non-volatile in nature.
- ④ From this memory, CPU only reads any information for user.

* ROM can be divided into 3 categories -

- | | | |
|--------------------------------------|--|--|
| ① PROM - | ② EEPROM | ③ EEPROM. |
| Programmable
Read only
memory. | Erasable Progr-
ammable read
only memory | Electric Erasabl-
e Programmable
Read only
memory |
| (UV rays) | | (electricity) |

- ① PROM - ① They are designed blank. The programmer write the program at once in ROM.
- ② It is a permanent storage device that can be program by the device manufacturer (programmer).
- ③ The content of ROM cannot be delete or update by the user.

- ② EPRDM - ① It is the type of computer memory that can use to store data permanently.
- ② Programmers can ^{the} data, information, programmes which are present in ROM with ultraviolet rays in industries.
- ③ It is non-volatile.

- ③ EEPROM - ① It is used to store data permanently.
- ② It is non-volatile.
- ③ Content only eraser in industry
- ④ Programmers can eraser the data, information, programmes through electricity.

* High Level Program

- ① These languages are user-friendly languages which are similar to english words and symbols.
- ② These are easier to learn and required less time to write.

- (3) They are problem oriented rather than machine oriented.
- (4) They are used in business.

* Storage Devices -

- (1) compact Disk (CD) - A form of digital media on a plastic disk read by a laser in a CD drive. It comes in several varieties including CD ROM.
- (2) Pen Drives - It is a small storage device shaped like a pen with built-in data storage that connects to a computer by a USB port.
- (3) Flash drive - A flash drive is a device used for data storage that includes a flash memory and an integrated universal serial bus (USB) interface.