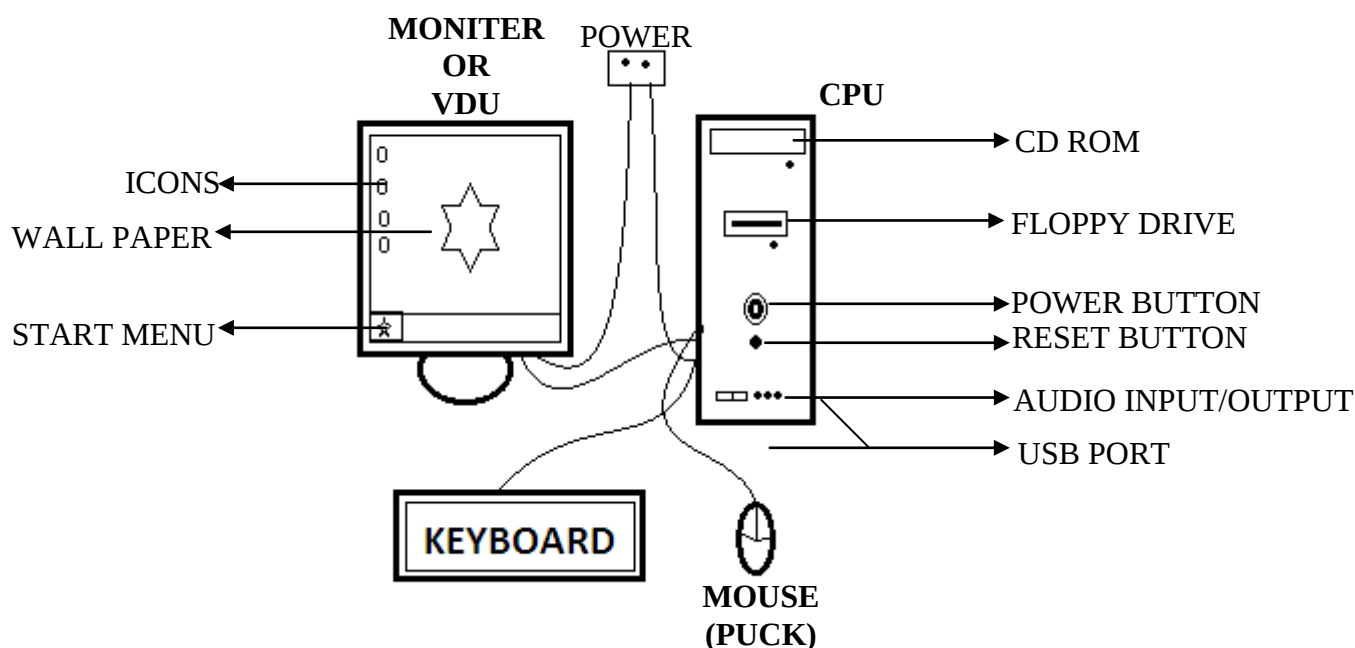


COMPUTER FUNDAMENTAL

Computer Definition: - Computer is most powerful electronic machine, man has even created. It is a basically programmable computing machine. The word computer comes from the word computer which means calculate. This is a data-processing machine that can store and retrieve data.



COMPUTER DIAGRAM

VDU – Visual Display Unit

CPU - Central Processing Unit

CD - Compact Disk

ROM – Read Only Memory

USB - Universal Serial Bus

Abbreviation of Computer: -

C = Common	सामान्य रूप से
O = Operating	संचालन करने वाला
M = Machine	यंत्र
P = Particularly	प्रायः
U = Used for	जिसका उपयोग
T = Technical or Trade	तकनीकी
E = Education	शिक्षा
R = Research	खोज

Characteristic of Computer:-

1. Speed तेज गती में
2. Accuracy शुद्धता
3. Diligence परिश्रम
- 4th Versatility अन्य विषय में विचार करना
5. No Feelings महशुस ना होना
6. Power of Remembering
7. Ability to Communicate एक-दूसरे से संचार करना

History of Development of Computer: -

1. The earliest device that qualifies as a **Digital Computer** is the **Abacus (Sorobone)**
2. Cardboard Multiplication :- **"John Nepiers Bone"**
3. First Mechanical Adding Machine invented by **"Blaise Pascal"** {1642}
4. Multiplication Calculator : - First Calculator for Multiplication. (**Boron Gottfried Leibniz**).
5. Difference Engine: - **Charles Babbage**, Cambridge University {1882} [**Father of Modern Digital Computer**]

Some Example of Earliest Computer

1. Mark – I (1937-44) [50-feet length, 8-feet width]
2. ABC – [Atanasoff Berry Computer] {1939-42}
3. ENIAC –[Electronic Numeric Integrate and Computer]{1943}
4. EDVAC –[Electronic Discrete Variable Automatic Computer]{1946}
5. EDSAC –[Electronic Delay Storage Automatic Calculator] {1947}
6. UNIVAC – I [Universal Automatic Computer] {1951}

Generation of Computer: -

Generation	Period	Technology Used	Memory Capacity (Character)	Language Used
1 st	1951-59	Vacuum Tube	10000-20000	Machine Language
2 ^{ed}	1959-63	Transistor & Diode	4000-64000	Assembly Language
3 ^{ed}	1963-75	IC [integrated Circuit]	32000-32 Millions	High Level Language
4 th	1975-Yet going on	Microprocessor Chips	512000-32 Millions	High Level Language & 4Gl [4 th Generation Language]

Classification of Computer: -

- I. Digital Computer
- II. Analog Computer
- III. Hybrid Computer

Digital Computer: -

- I. Micro Computer (Desktop & Laptop)
- II. Mini Computer
- III. Main Frame Computer
- IV. Super Computer

Advantage of computer: -

- It can draw and print graphics.
- It can provide information to the user.
- Computer can store large amount of data.
- I can perform any work and calculations easy and accurately.

Disadvantage of computer: -

- A computer has no brain of its own.
- Computer can not learn it self.
- I can only perform works as given by user.

Bit and Byte: -

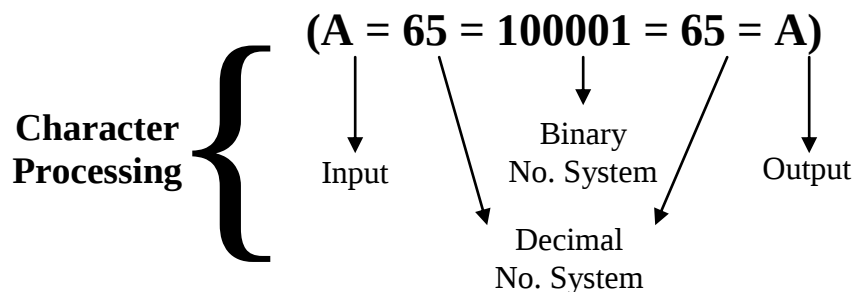
Bit is the unit for binary digit witch means one binary peace of information. This can be either 0 or 1.

Byte is a fixed number of Bits that represent a particular character or symbol.

8 Bit = 1 Byte or 1 Character

4 Bit = 1 Nibble

Bit	Bit	Bit	Bit	Bit	Bit	Bit	Bit
0	1	0	0	0	0	0	1
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-



Some Example of Memories:-

40 GB
80 GB
160 GB
250 GB
320 GB
500 GB
1 TB

} Hard Disk

1024 Byte = 1KB (Kilo Byte)
1024 KB = 1 MB (Mega Byte)
1024 MB = 1 GB (Giga Byte)
1024GB = 1 TB (Terra Byte)

128 MB
256 MB
512 MB
1 GB
2 GB

} RAM chips or ROM chips

144 MB = Floppy Disk
700 MB = Compare Disk
4.7 MB = D.V.D

Binary Number System: -

Binary number system is a system with a base of two. The binary number system uses only two digits 0 and 1.

For Example:-

$(1101)_2$, $(1000001)_2$, $(110101101)_2$

Decimal Number System:-

Decimal number system consists of ten (10) digits with the base of 10, that is – 0,1,2,3,4,5,6,7,8,9.

For Example:-

$(21)_{10}$, $(512)_{10}$, $(110)_{10}$, $(65)_{10}$

Conversion of Binary to Decimal:-

$(1\ 1\ 0\ 1\ 0\ 1\ 1)_2$

6	5	4	3	2	1	0	
							$1*2^0 = 1$
							$1*2^1 = 2$
							$0*2^2 = 0$
							$1*2^3 = 8$
							$0*2^4 = 0$
							$1*2^5 = 32$
							$1*2^6 = 64$
							TOTAL= 107

$(1101011)_2 = (107)_{10}$

Conversion of decimal to binary:-

$(107)_{10}$

		Reminder
2	107	1
2	53	1
2	26	0
2	13	1
2	6	0
2	3	1
2	1	1
	0	

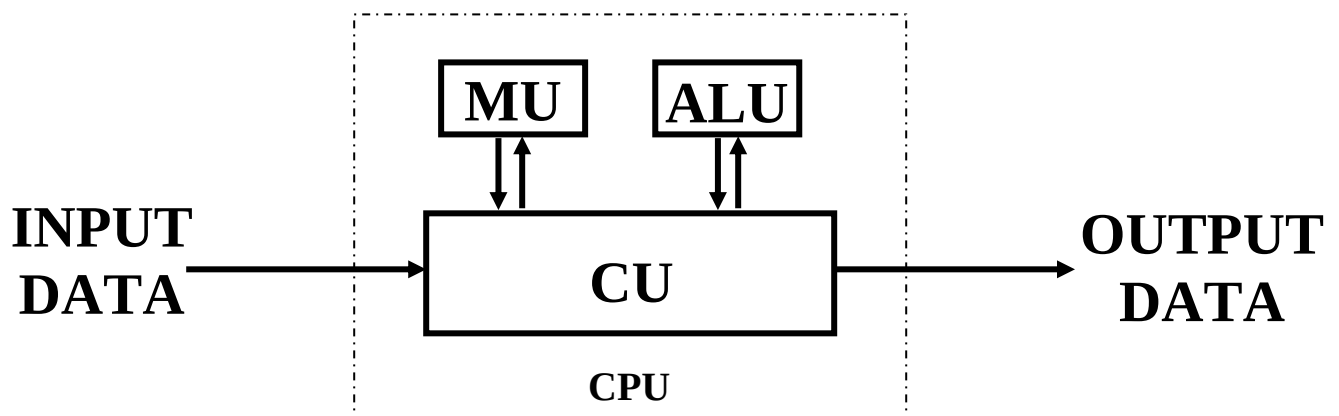
$$(107)_{10} = (1101011)_2$$

ASCII Code: - It is stand for **American standard code for information interchange**. It is a standard coding scheme that assigns numeric values to characters, numbers, marks and control characters.

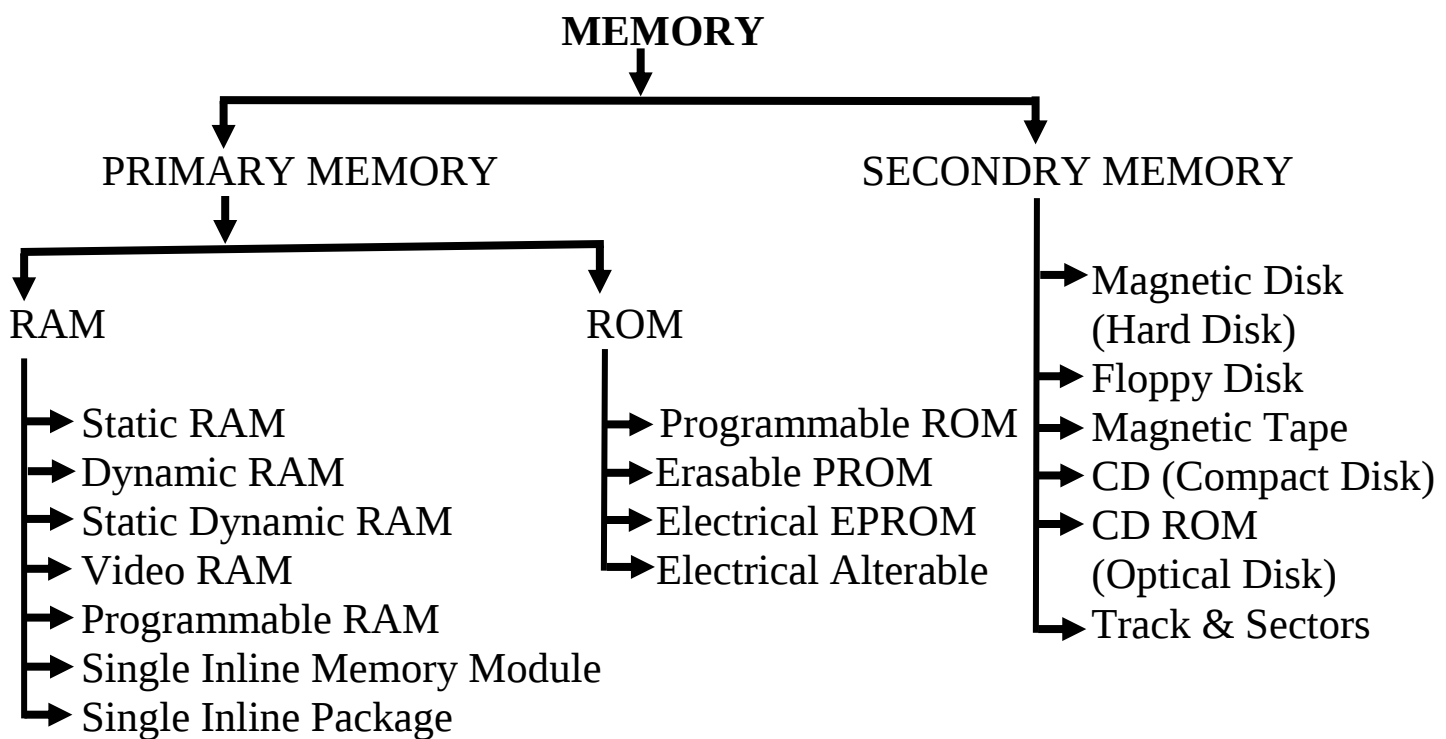
Characters	ASCII Code
A- Z	65 – 90
a- z	97 – 122
0- 9	48 – 57
Space	32
Delete	127

C.P.U. (Central Processing Unit): -The CPU is stand for central processing unit – that is brain of a computer. There is various category of CPU.

1. Control Unit (CU)
2. A.I.U. (Arithmetic Logic Unit)
3. Memory Unit (MU)



1. **Control Unit (CU):-** This unit is responsible for controlling the entire functions. It also transfers data between memory and input output devices. Control unit acts as a decision maker or as a super wiser.
2. **Arithmetic Logic Unit (A.L.U.):** - A.L.U. of a computer system is placed where the actual execution of instructions. During the processing all operation and all calculation are performed.
3. **Memory Unit (M.U.):** - Memory unit is a storage device. Memory is a most important part of computer as different size and number of programs.



Primary Memory: - Primary memory is just like a table or desk, where we temporary open books, copies, files etc. to work upon. If there is no desk or table, than it is very difficult to study or work in office.

Similarly computer also needs some spaces to keep input and output results. There are two types of Primary Memory: -

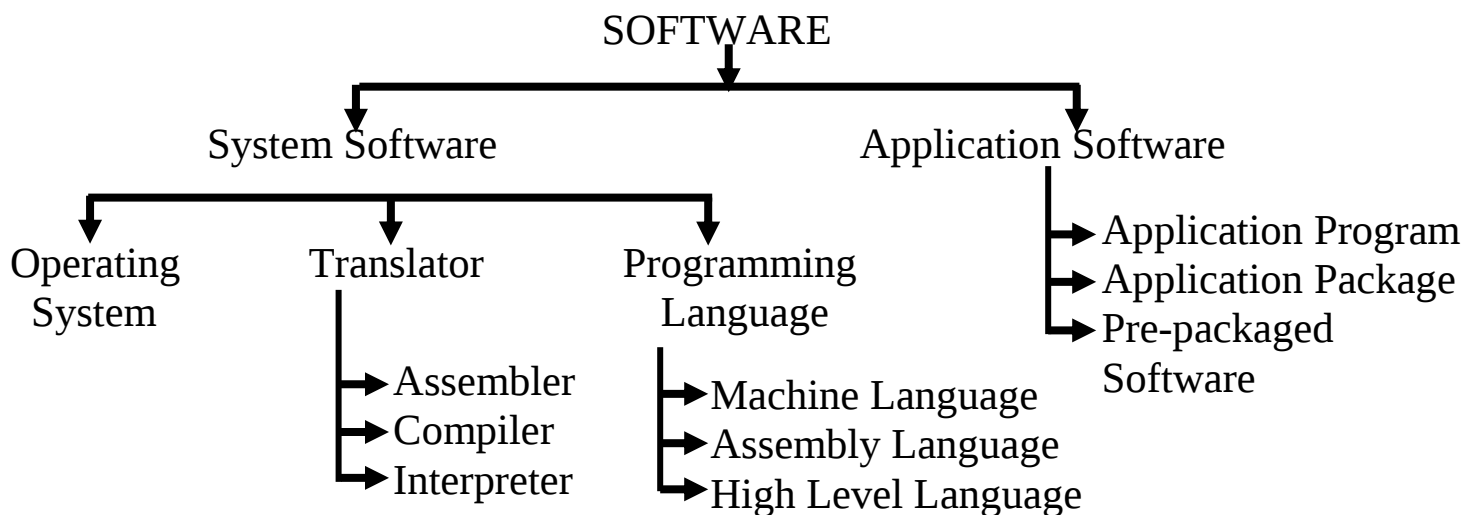
1. **RAM [Random Access Memory]:** - This is the main memory inside the computer. This types of memory can be used as read and write memory. You can write into RAM and read from a RAM. RAM is

temporary memory, It mean's when power supply to machine is switched off, the stored information in the RAM is lost.

2. ROM [Read Only Memory]: - Read only memory as the name suggest one can read the contents of ROM any number of items but can not write in-to the ROM. It is not volatile memory that means whatever information is store inside the ROM will remain, after power supply is cut off.

Secondary Memory: - This type of memory is used to store data permanently, which can be accessed whenever you want to access again after closing any work. It has much larger capacity than main memory (Primary Memory).

It stores system software, assemblers, compilers, useful packages, larger data files etc. The magnetic memory such as Hard Disk and Floppy Disk are most common used in the computer.



HARDWARE:- Your PC (Personal Computer) is a system, consisting of many components. Some of those components, like Windows XP, and all your other programs, are software. The stuff you can actually see and touch, and would likely break if you threw it out a fifth-story window, is hardware.

Software: - The component of computer system which we can not see, touch and it occupies some space on any part of the hardware of our computer system to perform work is known as software.

In other words, software is a set of instructions that are needed to exploit the hardware in a useful and meaningful manner for a given task.

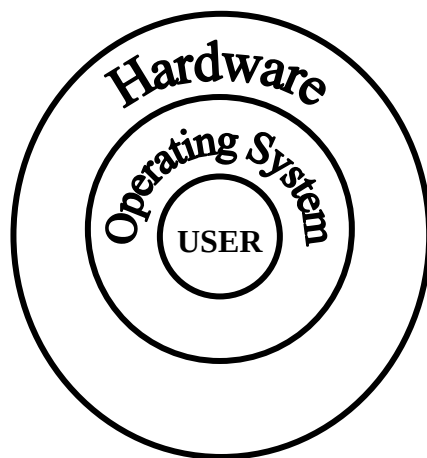
There are two types of software:-

1. System Software
2. Application Software

1. System Software: - System Software is used to control, manage and work with the hardware of computer or to convert instructions written in high level language to machine language. System Software classified in three types:-

- a) Operating System
- b) Programming Language
- c) Translator

a) Operating System: - Operating System is interface between hardware and user. EX:- DOS, LINUX, UNIX, WINDOW XP, WINDOW VISTA, WINDOW 7, WINDOW 8, WINDOW 10



b) Programming Language: - The communication between two parts whether they are machine or human being, even person needs a common language to communicate. The language used in the communication of the computer instructions is known as Programming Language. कम्प्यूटर के लिए प्रोग्राम जिन भाषाओं में लिखे जाते हैं P.L कहलाते हैं।

There are three types of programming language that are:-

- I. Machine Language
- II. Assembly Language
- III. High Level Language

I. Machine Language: - Instructions stored in binary form which a computer can access and process directly is called machine language. Binary system की language को computer की machine language कहते हैं।

II. Assembly Language(Low Level Language): - It was very difficult to remember the machine code so a symbolic language was introduced which was known as Assembly language. EX. Add-जोड़ने के लिए sub- घटाने के लिए, डाटा को मेमोरी मे लोड करने के लिए LD

हर कम्प्यूटर और साफ्टवेयर के लिए अलग भी हो सकते है।

III. High Level Language(HLL): - Though Assembly Language was better improvement over machine language. In assembly language program, it was difficult to correct errors. Writing assembly language program requires enough knowledge of working with computer. So an advance language introduced, which we use in general life is known as high level language. **HLL** मे पढना लिखना आसान हो गया इसका कम्प्यूटर और साफ्टवेयर में उपयोग आसान सा हो गया ex. **BASIC, C, C++, JAVA, LISP, etc** (HLL की खोज 1950–60 कि बिच हुई है)

c) Translator: - Translators are used to translate a language or program into machine language. Translators are of three type: -

- I. Interpreter
- II. Compiler
- III. Assembler

I. Interpreter: - Interpreter is a first set of program that converts High Level Language into Machine Level Language and executes it. संपादन में अधिक समय लेता है प्रोग्राम को एक एक लाइन कर अनुबादित करता है। गलति को हटाने मे तिब्र है।

II. Compiler: - A program which translates a High Level Program into a Machine Level Program is called a compiler. पुरे प्रोग्राम को एक साथ परिवर्तीत करता है। गलती को हटाने में धिमा है। सम्पादन में कम समय लेता है।

HLL —————> COMPILER —————> M.L

III. Assembler: - A program which translate an Assembly Language or Programs in to a Machine Language or Programs is called as Assembly.

AS.L —————> ASSEMBLER —————> M.L

2. Application Software: - Application Software consists of the programs written by the user for specific purpose such as billing, accounting, payroll (payment slip) etc.

Application software is set of one or more programs design to carry out operations for a specified application. An application s/w is classified in to the following:-

a) Application Program: - They are user written program to perform some special task.

b) Application Package: - They are the program for solving business problems. These types of program available in the market. Example: - MS Office, Adobe Photoshop, Tally etc.

c) Pre-packaged Software: - These types of software available free with the operating system.

Example:-MS Paint, WordPad, Notepad, games etc.

Anti Virus: - Anti Virus program are used to detect, repair and clear the program of the files corrupted by the virus.

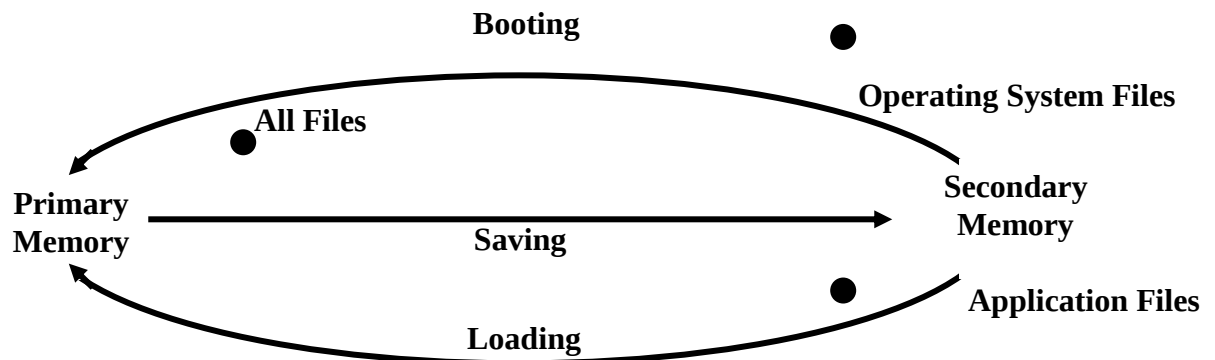
Same of the known as Anti Virus Program: -

- | | | |
|---------------|---------------|-----------------|
| 1. Norton | 5. MCA Fee | 9. Bit Defender |
| 2. Kasper Sky | 6. Quick Hell | 10. Trend Micro |
| 3. A.V.G. | 7. Avira | 11. K7 |
| 4. PANDA | 8. Avast | 12. ESET (NOD) |

Booting: - When we switch on the computer it takes same time to get ready for work, the process which goes on between this time (period) is known as Booting. In other words, the process of Transferring Operating System files from Secondary Memory to Primary Memory is known as Booting.

Loading: - Transferring of all files besides Operating System files from Secondary Memory to Primary Memory is known as Loading.

Saving: - The process of transferring of all files including Operating System files from Primary Memory to Secondary Memory is known as Saving.



Input Device: - The process of entering the data or instructions is called Input. Data and instructions are entered in to a computer through Input device. A number of Input device are as following: -

1. Mouse →
2. Key Board
3. Track Ball
4. Jay Stick
5. Light Pen
6. Voice Input and Recognition System
7. Scanner → Optical Scanner → OMR [Optical Mark Reader]
8. Web Camera →
9. Video Camera →
10. Card Reader → MICR [Magnetic Ink Character Reader]
11. Digitizer

Output Device: - Output device are used to show (display) the information, processing done by the computer to outside world.

Same output device are as following: -

1. Monitor → CRT (Cathode Ray Tube)
- LCD (Liquid Cristal Display)
- TFT (Thin Film Transistor)
- LED (Light Emitting Diode)
2. Printer → Character Printer
3. Plotter → Line Printer
- Page Printer
4. Multi Media Project
5. Speech Synthesizer
6. Terminals

KEY BOARD: - The key board looks like a typewriter; kind of input device.

MOUSE: - It is a device that is used to control the computer; kind of input device. It points & click with two buttons and wheel. Normally Left Click for select/ run and right click to generate menu.

SCANNER: - scanners are used to enter information directly in to the computer's memory. This device works like a Xerox machine. The scanner converts any type of printed or written information's including photographs into digital pulses, which can be manipulated by the computer.

TRACK BALL: - Track ball is similar to the upside- down design of the mouse. The user moves the ball directly, while the device itself remains stationary. The user spins the ball in various directions to effect the screen movements.

JOYSTICK: - Joystick is a kind of input device what is used to give an input to the computer system. That is mostly used in Game applications. As its name implies a stick to play a game that will let you feel joy. In this you use your thumb to press buttons of joystick handing the stick of the input device. There is a spherical ball in a socket at the bottom.

LIGHT PEN: - This is an input device which is used to draw lines or figures on a computer screen. It's touched to the CRT screen where it can detect raster on the screen as it passes.

OCR (OPTICAL CHARACTER READER) :- IT'S a device which detects alphanumeric characters printed or written on a paper. The text which is to be scanned is illuminated by low frequency light source. The light is absorbed by the dark areas but reflected from the bright areas. The reflected light is received by the photocells.

MICROPHONE: - It is a kind of input device which is used to take sound as input. We do connect it with the jack port of the computer system at the front or rear panel of the system and use it.

BAR CODE READER: - This device reads bar codes and coverts them into electric pulses to be processed by a computer. A bar code is nothing but

data coded in form of light and dark bars.

MICR (MAGNETIC INK CHARACTER READER/ RECOGNIZER) :- It is kind of input device which is used to read magnetic characters from a page like on a bank cheque some magnetic characters are used which can only be read by MICR.

MONITOR:- This is an output device. VDU is a Visual soft output device and used for the getting soft visual output on screen. VDU can be categorized into two types on the basis of technology the first one is CRT and second is LCD.

PRINTER:- A printer is an output device that prints text documents, images, spread sheet etc. as hard copy. Printer's quality is measured in dot per inch (DPI). The two most common types of printers are impact printer and non- impact.

DOT MATRIX:- A dot matrix printer creates characters by striking pins against ink ribbons. Each pin makes a dot and combinations of dots form characters and illustrations. This is much like a typewriter.

PROJETOR: - Projector is output device and often used in meetings presentations. It contains a lens inside which is used to flash the film to an object.

PLOTTER: - Plotter is an output device that is used to produce graphical output on papers. It uses single color or multi-color or multi-color pens to draw pictures as blue print etc. plotter are used to print the maps and architecture of infrastructure. It is used in the engineering applications.

SPEAKER: - Speaker is also kind of output devices which is used to play a sound as output. It is used in multimedia applications to play or listen to sound or music.