S → Speed
S → Storage
C → Consistancy
A → Accuracy

(श्री साईं केमिस्ट्री एकेडमी)

आज्ञा → I.O. → instructions only
कल्पना → No imagination
NO C.S. → No common sence
NO. Thinking → No thinking

COMPUTER

Q. What is Computer, characters, Uses.

A word computer is desire by compute (to calculate) means, computer is an electronic device which takes inform^n processing desired result'.

Characters :-

* speed : has tremendous memory. so, it can do any intellectual job with the accuracy & high speed
* Storage capacity : (memory)
* Consistancy
* Accuracy

It can never make mistakes itself.
It can perform basic, arithmatic oper^n such as add^n, substr^n, div^n, multiplic^n.
logical func^n done by it.
Can store large amt of inform^n.
Computer reads data & works a/c to instruc^n obediently.

Limit^ns:

- Computer can do work as per instruc^n only.
- Don't have common-sense.
- Can't think like humans
- Can't imagine like humans

Scanned By CamNScan

- As computer is a machine, it does not need rest nor it get tiered to do a job.
- Computer r used in almost everyfields now-a-days, computer becomes main part of our life in daily work.
- ie
  in the industrial management, Buisiness management, scientific researches, medical resedrches, whether forecast, satellite researches, satellite communicatn, for entertainments, playing games, in commisications.

Explain Input Devices

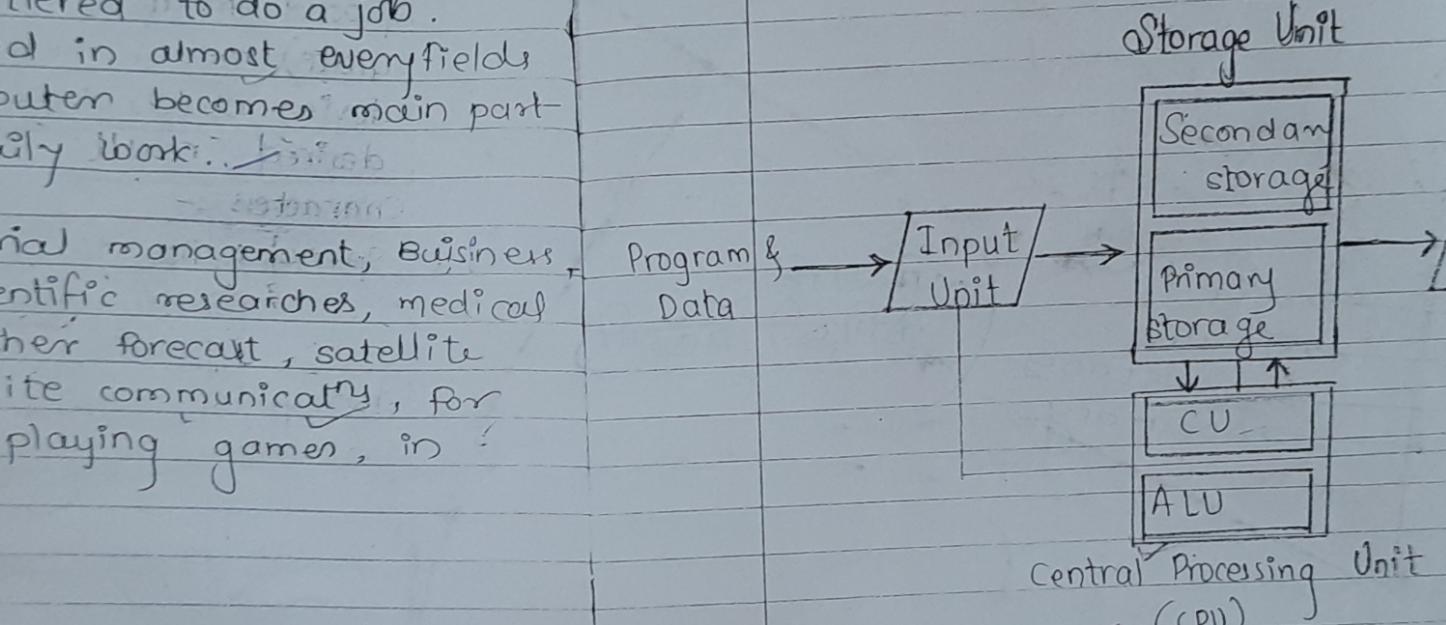


fig: Basic Computer System.

→ Input device.
→ CPU
→ Output device.

Input Device :
Is an media through which, inform^n are transfer into memory unit of computer or in to CPU, for processing. ie, media by which inform^n is transfer to

Kld : called.

memory or in CPU kld.... I/P device.
Includes / performs ;

- It accepts / read inform^n or instruc^{ns} & data from outside world.
- It converts inform^n & data in computer acceptable form, units kld... input-interface called accomplish this task.
- It supplies the converted instruc^{ns} & data to storage unit for storage & further processing.

- An I/P device is an electromechanical device that accepts data from outside, includes;

Keyboard : most commonly used
allows data entry into computer, by pressing a set of keys mounted on keyboard.

Mouse : Pointing device, very sensitive, gives movement to cursor. is an point & draw device. For selec^n, dragging it is used

Light-pen : sends laser beam on screen & character is selected used as pointing device

आईनग I ID-इनों

Joy stick :
commonly used for directing / movement for playing games.

Touch-screen :
For selec^n & texting, work on diff. med

Scanner :
captures photo & converts to language of computer, saves photo & reflects

Bar-code reader :
data coded in form of small lines. is an device which read bar-coded data

OMR :
Optical Mark Reader is scanner, recognize pre-specific type of mark made by pencil / pen.

(input नहीं) (कुमती) OMR ला बार-बार touch करून enjoy करतो)
कु → K → keyboard
म - M → mouse
ली - Li → Light pen
बार-बार → bar → bar code Reader
टच → touch → touch screen
(करतो) →
enjoy → → joy stick.

OMR ला → optical mark reader

Q. Output Devices

- An O/P device is an electro-mechanical device that accepts data from computer & translate them into a form suitable for use by outside world (user).
- Several O/P devices available now;
- O/P unit performs reverse oper^n of I/P unit.
- As computer work with Binary code, results produced r also in binary form.
- Results supplied in the form acceptable human kld..... 'Output interfaces'.

Func^{ns}:

- Accepts produced results, which r in coded form, we can't understand coded results easily.
- Converts these coded results to human acceptable form kld O/P. interfaces.
- Supplies converted results to outside world.

Monitor:
Is an out-put device used for screening for soft-copy.
display an output on TV like screen.

Printer:
popular hard copy O/D.
many types of printers such as dot-matrix, chain printer, laser, ink-jet, etc are used.

Plotter:
Used to drawing, for drawing 3-D diagram

Screen Image Projector:
With help of projector data is displayed on screen.

Voice response system:
sound box, mike works with computer

O/P devices are of 2 types;

1]. Soft-copy output :-
Is temporary, b'coz is don't appear on paper. contents displayed on terminal screen / words spoken out by a voice response system r.....

2]. Hard-copy output :-
Is permanent, b'coz is appear on a paper. output produced on paper by printers / plotters r hard-copy output

CPU

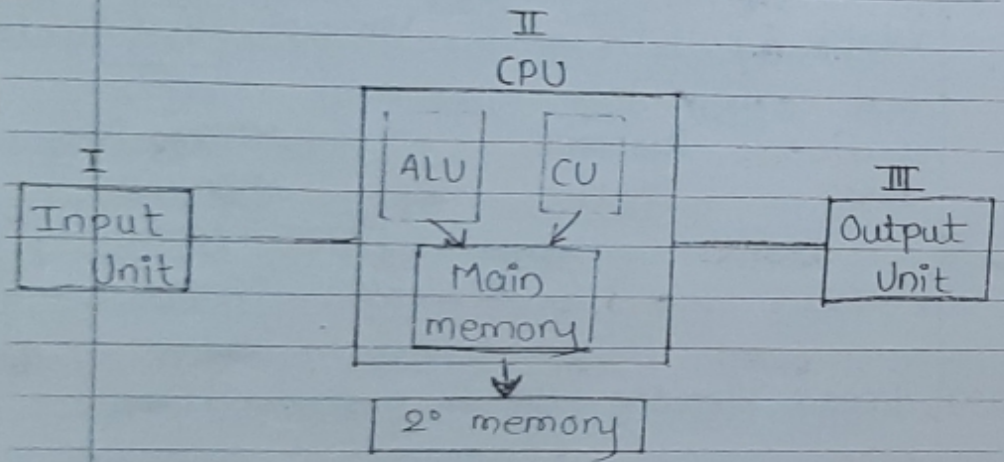
[Central Processing Unit]

consist of 3 parts :

→ 1° memory

→ ALU

→ CU



mory Unit :-

The computer programs & data are stored during processing.

Is direct access storage device.

Consist of no. of storage loc^{n} which r identified by a unique no.

This unique no. is kld..... Address. during processing diff. data may stored in given storage.

The size of computer is measure in terms of no. of storage locations in its memory & this memory is measured in ; Kilobyte or Megabyte

1 K Byte = 1024 Byte

8 Bit = 1 Byte

ALU :-

Arithmatic Logical Unit (ALU) does actual processing under programm control. as ;

→ Add^{n}, substrac^{n}.

→ Logical oper^{n} i.e. AND OR complement.

→ Resister oper^{n} shifts, load, move.

→ I/P, O/P oper^{n} & so, on.

Both AUU & CU have special purpose locations kld.... 'resisters'.

The resisters r special purpose storage resisters which a quiet stable from the loc^{n} in memory.

One of main resister of ALU is 'Accumulator' (ACC) ACC is used when, unit is performing arithmatic operns while, programing & logical operns.

when, opern is complete, results are also stored in 'accumulator'.

ontrol Unit : (CU)

- It selects interprits & carries out execut^{n} of programme instruc^{n} in their proper sequence.
- Several basic resisters r req. to perform the control, func^{n} of each resister r design to perform specific func^{n}. but, all having ability to hold inform^{n} temporarily & to pass it as an directed by CU.
- Four main resisters are oftently used;

1] Instruction Resister :
It holds instruc^{n}, which is correctly executed till it is decoded & then send for execut^{n}

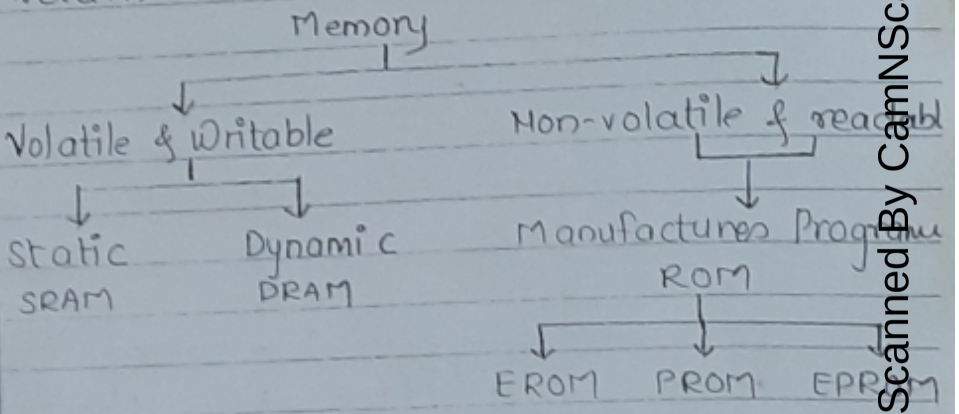
2]. Instruction address resister :
It holds address of next instruc^{n} to be executed is kld..... programme counter (PC) also kld..... Direc^{n} Indicator Resister

3]. General purpose resister :
Used for all purposes, hold data for temporary storage.

4]. Storage resisters :
Are buffers used to hold addrem / inform^{n} /data to adrem being placed into loc^{n} transfer from it.

Q. Explain Computer Memory in detail

Memory is based on their capacity to retain stored data.



Random Access Memory (RAM):

- In computer memory, usually the volatile RAM memory is needed.
- It consist of IC-chips either on mother board / on small circuit board attached to motherboard.
- A computer's motherboard is usually has flexibility
- Generally, additional RAM chips, which plug into special sockets on motherboare are kld..... Single in-line Memory modules (SIMMs)

- RAM are of 2 types;

a). Dynamic RAM (DRAM)

uses as external circuit to regenerate or refresh storage charge to retain stored data.

b). Static RAM (SRAM)

It don't need any special regenerator circuit to retain the stored data.

- SRAM is more complicated, more space for given storage capacity, faster, costlier & consumes more power than DRAM.

∵ large memories use DRAM & SRAM is used mainly in specialized app^{ln}.

- The main memory of computers uses D-RAM.

Read Only Memory (ROM):

- Is an special type of RAM, kld...... ROM.
- Is non-volatile memory, data stored - permenant.
- Usual programs can't alter this data.
- Storing data permenantly into this kind of memory is kld......"Burning in of data".

↳ b'coz, data in such memory is stored by using fuse-links. Once, we burn fuse-links for some data, is permanent.

- We can only read & use data stored in ROM. We can't change them.

∵ ROM are non-volatile, don't lose it's stored data in case of power off.

- ROMs are also kla......"field stores", "permanent stores" or "dead stores".
- System designers use ROMs mainly to store programs & data, which can't change.
- Computer manufacturers store micro-programs in ROMs. so that, users can't modify them.

eg; of micro-program is "System Boot Program".

- Computer's ROM is an ideal storage for this micro-program.
- Is of 5 main types;

PROM (Erasable)

EROM (Programmable)

EPROM (Erasable-Programable)

a 3b∞ C

1 −3 $\frac{H}{\infty}$ = 0

$\frac{1}{1}$ $\frac{1}{-3}$

a − 3b ∞ C.

$\frac{1}{1}$×3 $\frac{1}{3}$×3 $\frac{1}{\infty}$×3

3

Q. Operating System

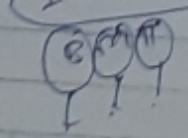
The OS is an integrated collec^n of programs which takes the control over the oper^n of the computer to extent of beings able to allow a no. of programmes to be run on computers without human interventions by the operating

facilities :

- Easy interac^n b^n users & computers.
- When power is on, starting computer oper^{ns} automatically.
- controlling I/P & O/Ps.
- controling of programme execut^n
- Managing use of main memory
- Accnt resources
- Managing & manufacturing editing files

OS having diff. types :

1. Batch os
2. Multiprogramming os
3. Time sharing os



Q. DOS Operating System

In PC, OS is designed as single user, single task os. ie, it is assumed that only one uses the machine & runs only one programme @ a time.

The OS of PC's consist of 2 parts ;

(a). BIOS (Basic Input Output System)

which is stored in ROM & programme used for this kld.... "Monitor-programe".

(b). DOS (Disk Operating System)

Is stored in flopy disk / hard-disk. A DOS kld... MS-DOS (Micro-soft DOS) is widely used. It provides many user level services.

features of DOS :-

* File Management : provides users to creat, read it, write & delete files.
* Directory Management : allows creat^n, change search & delet^n of directories.
* Memory management : allows alocat^n & deloc^n of memories.

* Command interpriter : which interprits the command issued by users & executes DOS - func^n, utility of programme / applic^n.
* Execute func^n : provides programme to load & execute users programe
* Utility programmes : that do house keeping course such as to copy, to erase, etc.

limitations :

- This OS is used for smaller IBM system, which have limited programme addressability.
- MS-DOS don't follow two programmes stored in memory to run con-currently protected from one-another.

MS-DOS having some commands such as (external & internal)

Windows Operating System

This is new advanced operating system in very powerful processor computer having memory of 32 MB main memory & Hard disk of 2 GB are MS-Windows & Windows-NT

MS-WINDOW

Micro-soft Window. It provides an easier way for user to work with PC to use full memory available in PC & uses other advanced features available in latest PC's

Features :

- The major new facilities provided by MS-Window is graphical user interface Instead of typing in command a user can pt @ a graphical icon presented on video & just click a mouse button.
- MS-Window also allows multitasking ie possibility of running one out of no. of programme stored in main memory using CPU without any disturbance
- The status of each programme can be viewed on screen of video by portioning the screen into no. of windows. Also, the process of diff. programme can be viewed on different window.

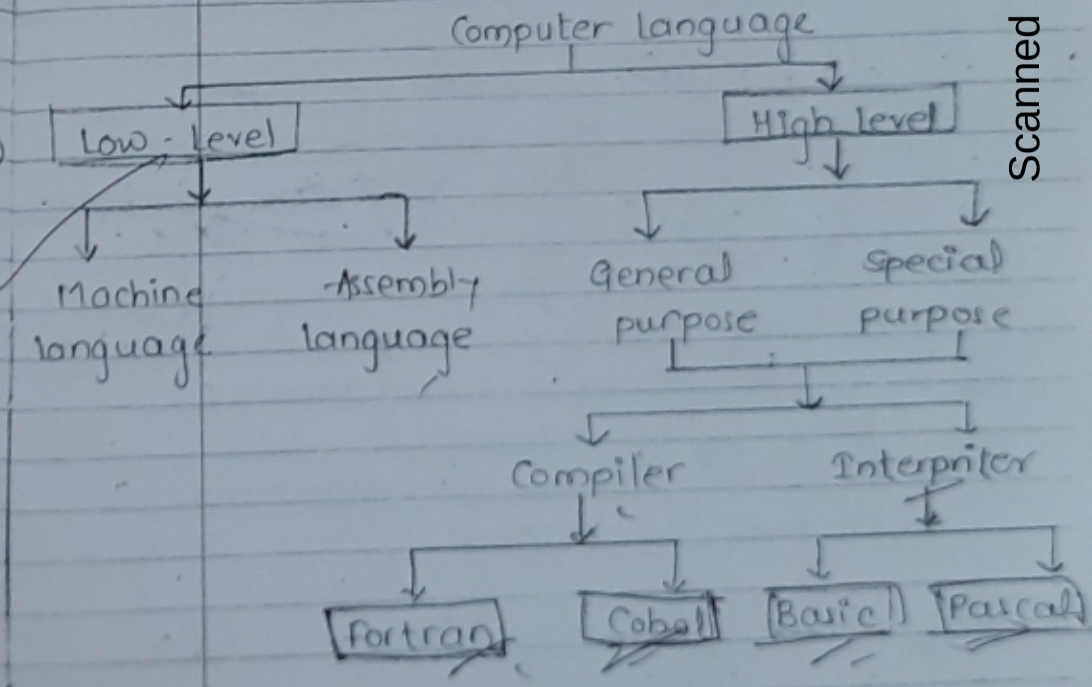
- It allows, file names, characters as well some punctuat^{n} marks, as periods, commas & semicolons
- Is an single user

WINDOW - NT :-

- ✓ Is multi-user & multitasking system.
- The portability with compilers to portable OS - interface
- ✓ Compatibility with appl^{n} written in MS-DOS & MS-WINDOWS
- ✓ Security against virus attack
- ✓ Multipurpose support.
- ✓ Easy enhancement capability
- ✓ It can run MS-Windows appl^{n} & many UNIX applic^{ns} directly.

Q. Computer language 2½

A language is useful for communication bet individual and computer. It consist of all verbal / written symbols & expr^{s} that are used to exchange ideas & inform^{ns}.



There are, basic types of languages :-

⇒ low level language
⇒ High level language

ow level language :→

- Are compatible of hardware of computer & consist of binary codes.
- so, LLL is understood by computer in better manner..
- Is difficult for programs to understand
- Is divided into 2 types;

1. Machine language :-

- This language only understood by computer.
- Almost all the programmes that r written in HLL. But,
  computer can understood only machine language.
- for performing any oper^n the instruc^n are to be given to machine in Binary system.

eg;

001010011010 code represent the 12-bit machine language instruc^n. so, coding a programme in binary form is very tideous. so, machine language is highly complicated.

mnemonics

2] Assembly language :-

The programme written in machine code is very difficult. so, a symbolic language ie. Al instruc^{ns} r written in symbolic code kld..... 'mnemonics'.

eg;

In assembly language to stop the programme the symbolic repres^n used in HOLT & symbol is 7^c & machine code for that is 0110 0110 in 8-bit form.

Rather than in screens 0 & 1 codes or mnemonics represents a particular machine language instruc^n.

eg; To move data from 1 reister to another

Mnemonics of each instruc^n are written by the users, this process of translating the programme into machine code is kld..... Hand Assembly

High level language :→

- This lang. looks similar to our english language. hence better understood by the programmes rather than the computers.
- Easier to use.
- HLL may be General purpose (or) special purpose.
- They r either compiler (or) interpriter based.

1. General Purpose :-

- These languages suitable for any purpose in any appln.

2. Special Purpose :-

COBOL, CISP are used for special applns.

All HLL are better understood for the users not for the machine. so, all these languages & then translated into machine language for understand by computer & are of 2 types;

a). Compiler :-

It reads enter programme first & then translated into machine code program & then it send for execut^{n}.

b). Interpriter :-

It reads 1 instruc^{n} @ a time translate into it in machine lang. & send the execut^{n} immed. & goes to next instruc ie transl^{n} is instruc^{n} by instruc^{n}.

(1) BASIC : Beings All Purpose Symbolic - Instruc^{ns} Code.

(2) FORTRAN : Formula Transfer.

(3) COBOL : Common Buisness oriented Languages

(4) PASCAL : Named after the french Philosopher Pascal.

Q. Explain Various Types of commands. 2½

- MS-DOS operating system has following commands such as;
  Internal & External.

Internal Commands :-

- Some DOS-commands r loaded in RAM & are frequently used tld.....IC.
- Internal DOS-commands are meant for growing day to day operating files, directory, etc.

DIR : displays list of directories files & sub-directories.
DATE : displays system data or change date.
TIME : displays current time of system.
MD : (Made Directory) for sub-directories
CD : (Copy Directory) copy of one/more files from one directory to another
REN : used to remove files in specified directory.
TYPE : used to type content of specified text
DEL : to delete specified files.

External Commands :-

- This commands are not tnt in RAM. coher PC is operated.
- This must be tnt in drive / in hard-dis

FORMAT : prepares disc in designated drive to accept DOS files.
DISC-COPY : Command used to copy entire contents discatte in source drive to discatte.
DISC COMP : compares all content upto entire dis into specified drives.
BACK UP : Used to one / more files from one di into another.
X-COPY : copies a grp including lower sub-directory.
ATTRIB : Useful to see / modify files
CHKDSK : (check Disk Command) analyse director files & file alocation table (FAT) of specified drive.

Q. What is Algorithm 2 1/2

= The sol^n of any problem involves step by step procedure such a step by step procedure of solving problem kld.....

Features :-

- Algorth. should be written in definite order.
  ie.
  set of instruc^n in algor. are to be given in order in which they r to be performed.
- Every algor must satisfy following cond^n
  (i). A no. of values which r given extremly in process are I/P
  (ii). Result produced due to procen is o/p.
  (iii). Instruc^n given must be terminate after definite
  (iv). Finiteness : algor. must be terminate after finite no. of steps
  (v). Effectiveness : every instruc^n in an algorth. must be effective.

Example :

Write an Algor. to obtain book of chemistry by P.S. KHISI from your library.

- Start
- Take library card
- Go to library
- search in catalogue for name of book
- Note down accessⁿ no. of book.
- Go to rack to find is book available
- If, not available go to reserrat^n counter & reserve for book.
- If, is not available go to issue-counter

Q. Flow Chart & it's Symbols.

- Before solving a complicated problem on computer is useful to construct a plan of sol^n. A diagrammatic repres^n of such plan is kld ..... flow-chart.

- Flow-chart is pictorial repres^n of an algorithm

Symbols :

1). Terminal Symbol :

An oval symbol is used to begin or to end of algor.

(START) OR (STOP)

2). I/P & O/P symbols :

A parallelogram is used for indicating an I/P or O/P statements.

[Read A,B]

3). Assignment symbols :

The rectangle is used for asignment statement.

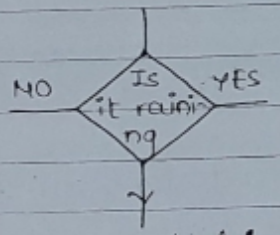
eg; for calcul^n of formula

[SUM = A + B]

4). Decision symbol :

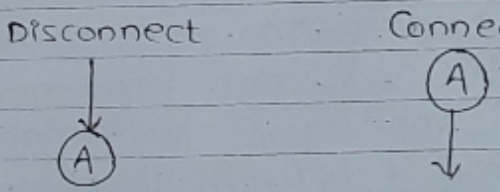
Is a diamond shaped box, it has single entry but, 2/more exists. Used for decision having multiple

eg;



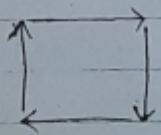
5). Connector symbol :

when, flow chart is too long then, it splits up into parts & which r connected by following symbol.



6). Paths :

The lines with arrow represents path of algorithm, flow chart.



Q/ Printers

Most popular hard-copy o/p devices used now-a-days.

Dot-Matrix:

- Are character printers that print one-character at a time.
- They form characters & all kinds of images as patterns of dots.
- It has print head that moves horizontally across paper, contains an array of pins.
- It can activate each pin indep. of others to extend & strike against linked ribbon.
- To print a character, printer activates apprp. set of pins as print head moves horiz.
- For faster printing it can print in both ways. such method is kld.... 'Bi-directional Printing'.
- It printed as pattern of dots, they can print any shape of character, of diff. size, graphics.
- These r impact printers. b'coz, they print by hammering pins on linked ribbon to leave ink-impressn on paper.
- so, we can producing multiple copies by using carbon paper
- These are noisy as compared to non-impact printers.
- Are slow. speed in range of 30-600 characters per sec., cheap in cost & opern.

ABCDEF

∵ formn of characters as pattern of dots

Ink-jet:

- Are character printers that form the characters & images by spraying small drops of ink on a paper.
- Print head of an inkjet printer contain up to 64 tiny nozzles.
- Produces higher quality o/p than dot
- High resolutn inkjet printer has as many 64-nozzles within a height of 7mm providing print resoln of around 360 dots per inch.
- Allows printer to print special characters diff. sizes of print, graphics.
- These are non-impact, they print by spraying ink on paper.
- Are both monochrome & colour.

- It can produce multi-colored o/p.
- These are slower than dot-matrix printers, with printing speed 40-300 characters /sec.
- Costlier than dot-matrix printers.
- Users prefer them for better quality o/p.

Q. Secondary Storage Devices.

Flash drive (pen-drive)

- Is a compact device of the size of pen. It comes in various shapes & stylish designs & may have different added features.
- It enables easy transport of data from one computer to another.
- A user simply plugs it into USB port of a computer. The computer detects it automatically as removable drive. Now, the user can read, write, copy, delete & move data from computer's hard disk drive to flash drive / from flash drive to disk drive.
- The user can run applns, view videos & play mp3 files from it directly.
- The user can carry it in pocket anywhere.
- A flash drive doesn't require any battery cable or software & is compatible with most PCs, desktop & laptop computers with us
- It is the most preferred external data storage for mobile people to carry / transfer data from 1 computer to another.
- Is highly durable solid-state electronic storage having data retention capability of more than 10 yrs.

Available storage capacities r 256 MB, 512 MB, 1 GB ..... 2, 4, 8, 16, 32, 64 GB

Memory Card :- (SD / MMC)

similar to flash drive, flash memory based cards available as removable storage device in diff. types of electronic equipmts Some of most popular ones are Secure Digital (SD) & Multimedia Card (MMC). Storage capacity of these cards ranges from 8 MB → 32 GB

In addⁿ to computers, various types of digital devices use these cards. Easy transfer of data from these devices to a computer for storage in the computer's hard disk / for further procesing by computer

(eg); a user can transfer photographs taken by digital camera to computer for storage or editing.

Q UNIX.

UNIX is a multi-user, time sharing OS. Ken Thompson & Dennis Ritchie developed UNIX in early 1970s. It was the first OS written in HLL, Earlier, OS were written in assembly language, which is system dependent ∴ UNIX was written in 'C-language' moving it to a new system t/a the "porting", much easier.

Structure of UNIX :-

Kernel : this layer has all modules for process memory, file, device.

Shell : this layer has the command interpreter. basically, provides command line interface; it provides large no of very useful commands, every command does a single, very specific task. To do larger, more complex tasks, users can even combine several commands in the form of a shell script to produce the result they want.

Utilities : this layer has all OS capability, enhancement software includin

language compilers, text-editors, text-processing programs & variety of utilities & tools.

This layer has grown to include the several powerful tools, which allows effective program development & system management.

Eg:-

Of these many users refers to Unix as complete programming environ not just an OS.

Q Data Processing

Data is a collec^n of facts, unorganized but able to organized into useful inform^n. A collec^n of sales, orders, employee time sheets & class attendance cards are few eg's. We can manipulate data to produce o/p such as bills, employee salary slips & student attendance reports this o/p called ..... inform^n. is organized facts that help people to make decisions. Hence, inform^n data arranged in an order & form that is useful to people.

Processing ..... general term, is a series of actions / operat^{ns} that converts some I/P → useful o/p.

In data processing.

I/P is data & useful o/p is inform^n so, data-processing is a series of actions (or) operat^{ns} that converts data → inform^n

It consist of 3 sub-activities;

→ Capturing I/P data ✓

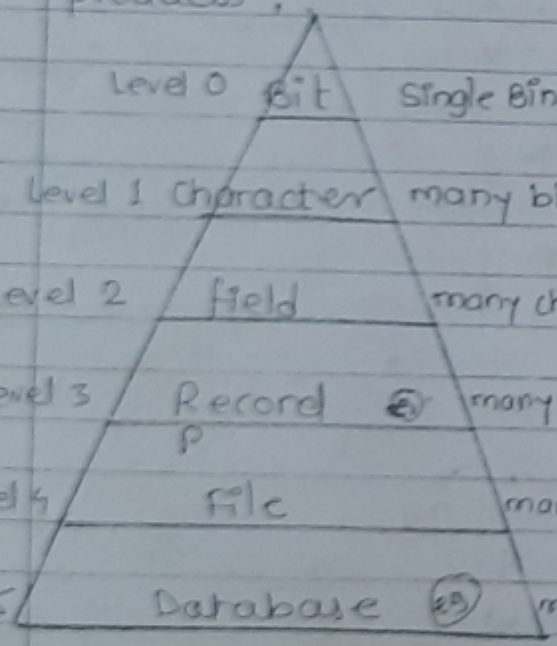
→ Manipulating it ✓

→ Producing O/P inform^n ✓

It consist of resources such as people,

procedures & devices, which it uses to process I/P data for processing.

∴ data is raw material of inform^n & just as a manufacturing process transforms raw materials into finished products.



data processing deals with operns on data, the levels form the data storage hierarchy of data processing having 6-levels.

Bit : smallest item of data is single binary digit (0/1)

Character : Byte is a comb^n of multiple related bits, A bit is basic unit of 1° & 2° storage.

Field : is comb^n of multiple related characters

Record : is comb^n of multiple related fields

(eg) : an employee record has fields containing data of an employee, such as employee's code, name, etc.

File : is comb^n of multiple related records.

Database : is integr^n of multiple related files.

(eg) : an employee database of an orgazi^n may integrate records of multiple employee files such a salary file containing details of salary & inform^n.