ana unit ②

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[A] Introduction to computers and computing.

- A computer is general-purpose device that can be programmed to carry out a set of arithmatic or logical operation.

- since a sequance of operations can be readily changed the computer can solve more than one kind of problem.

- conventionally, a computer consist of at least one processing element, typically a central processing unit (CPU) and some form of memory.

- The processing element carries out arithmatic and logic operation, and a sequancing control unit can change the order of operation in responce to stored information.

Deffination of computer.

- A computer is a machine that is able to take information (I/P), do some work on or make changes to the information and to make new information (O/P).

- A word computer is device from word "compute" which means "to calculate".

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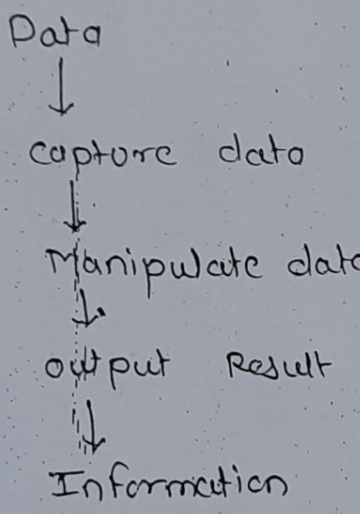
A computer is an electronic device that can perform arithmatic operations at high speed.

- computer is also called Data processor, because it can store, process, and retrieve data whenever desire.

- Data processing :-

The activity of processing data using a computer is called Data processing.



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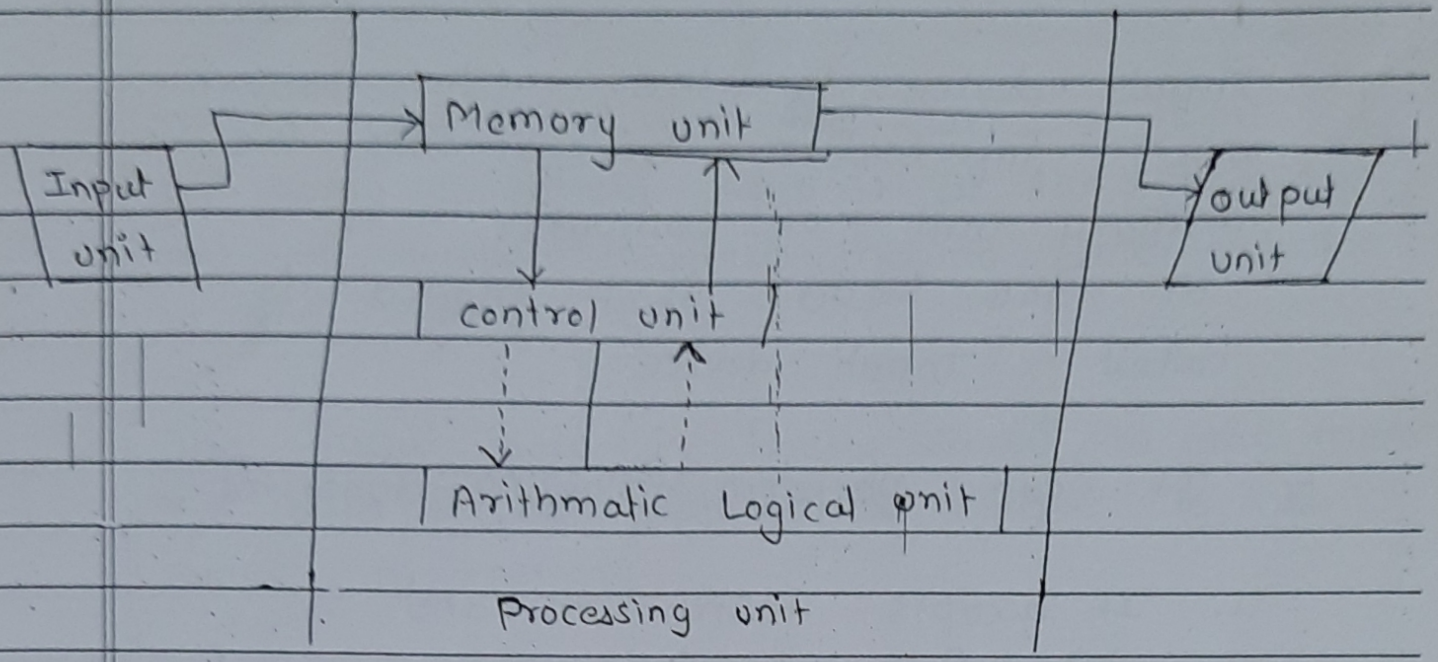
Basic organisation of a computer system.



- Every basic function of the computer system is performed by a specific hardware part.
- Various hardware parts performing some operation are collectively called UNIT.
- In this way the hardware components of computer system consist of 3 basic units as

1) Input unit
2) central processing unit
3) output unit.

<1> Input device :-

The common fonctions of all input devices includes the receiving of data and instruction from users, convert it to computer understandable form and supply to other

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units for further peocessing.

Input device is the media through which information transfor into the memory unit of computer or in the CPU that media is called Input device.

- It can perform following functions.

1. It accepts instruction and data from outside world.

2. It converts these instroction and data in computer acceptable form.

3. It supplies the converted instruct? and data to the computer system for further processing.

CPU <central processing unit> :-

It works like the brain of computer system which handles all the computing operations.

- CPU consist of 3 parts

a) memory unit
b) control unit
c) Arithmatic & logical unit.

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a) memory unit :-

- It is considered as the part of CPU. but some scientists keep it as the seperate unit of computer system having inter-relation to the control unit.

- The input data is firstly stored in the memory The data to be produced as output is also stored in memory.

- so the memory unit of the computer system is called as primory memory or main memory.

- but now-a-days, the memory unit also includes the secondary memory.

b) control unit :-

- As the name indicates, this unit controls all other units of the computer system

- It instruct the input unit to receive the data and also to store the data.

- Similarly it controls the data flow from memory to ALU and vice-versa.

- It also controls the data flow to o/p u

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- In all, we can say that the control unit works as the nervous system for the entire computer system.

c) ALU :-

- It is the unit of computer system, responcible for all calculation works, arithmatic as well as Logical.

- The control onit supplies the calculative data to ALU, so that ALU can perform the arithmatic operation (addition, substraction, multiplication, division etc) and also Logical operations (comparisons and decision making)

- After performing the calculations, the result is again stored to the memory unit by control unit.

(3) output unit :-

output data is produced for the user by many output devices.

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- After processing the data, the final result needs to be produced.

- The result is produced by the output devic the production of output by computer system is called output operation.

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Memory unit

- A memory unit is the part of CPU and so provide internal storage of data in computer.

- Basically the memory unit consist of memory chip which stores the data at primary stage.

- Every computer system has a certain amount of memory in the form of primary memory.

- If the more memory is required it is taken on demand in the form of secondary memory.

1) Primary memory :-

It is classified into two types of memory as follows.

i) RAM :- (Random access memory)

this memory is used to read and write at any part of the memory. but it stores the data temporarily till the steady flow of electricity.

- The data in RAM is lost as soon as the power supply is off.

- RAM is also called as volatile memory.

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ii) Read only memory (ROM)

This memory allows read only operation on data.

It stores the data permanently within it self, without being effected by power supply failure.

Hence it is called as non-volatile memory

b) Secondary memory :-

We have studied that pri memory is not able to store the calculations permanently for future use.

So some other type of storage technology is required to store the data permanently for a long time.

This type of storage technology is known as secondary memory or Auxillary memory

- There are various types of secondary storage devices available to store the data
- The stored data can be read in future also.
- These devices are also helpful for data

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transferring from one computer system to another, because these are easily detachable from CPU, while RAM chips are not easy to detach.

- These devices also work as the back up devices which means storing data, at one another place for safety.

- commonly used secondary storage devices are magnetic tape, magnetic disk, optical disk etc.

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Computer Language

- The program is a set of instruction performed step by step. the set of programms written by programing Language is called software

- It consist of all the verbel or written symbols and expression that are used for exchange the idea and information

- These programming Language are of two types
  1) Low Level Language
  2) High level Language

* Low level language *

→ Low level lang. are again devided into two sub-parts i.e. a) Machine Language
b) Assembly Language

a) Machine Language :-

- A set of instructions which can be directly understood by the computer without the help of translator is called Machin Language program".

- It is written in the form of '0' and '1' i.e binary codes.

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- There is a specific binary code for each instruction and differ from computer to comp.

- The machine lang. is the fundamental lang. of computer. It can also be written by using decimal digits, but it would be more complex.

- The machine lang. is useful in one aspect that the programme written in machine lango can be executed very fast because the machine instruction are directly understood by the CPU and so no translator is required.

- It has many disadvantages :-

1. This lang. is machine dependent because of diff. in internal design of computers.
2. It is very difficult to write the programme in machine lang. becoz of complex instruction code.
3. Modificⁿ o in the machine lang progr. is difficult.

b) Assembly Langoage :-

- The instruction given to the computer are mostly in numeric form and some in alphabetic form.

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- The alphabetic instruction of section is converted to numericdl form by using Assembler.

- The numerical instruction contain the operation code of the instruction and address of the memory used.

for example - Add 535
In this instruction code operation code consist of 3 letter A, d, d.

- The software program which translates the assembly language program into machine lang program is called as Assembler.

- The assembly lang. is useful for because the computation time is lesser than that of high level lang.

but there are following drawbacks.

1. programing is difficult and time consoming
2. The assembly lang. is machine dependant.
3. The programs written in assembly language are not portable.

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* High Level Language *

The high level lang looks like to our english language.
So easier to use and hence are better understood by the programs rather than the computer some of the popular high lev language are

FORTRAN : It stands for formula translation. it is very useful for scientific calculations.

BASIC : It stands for Beginners All purpose Symbolic Instruction code.
It is used for competition and data analysis.

COBOL : It stands for Common Business oriented Language. It was specially developed for business data processing.

PASCAL : It is multipurpose language suitable for business application and scientific calculation, for example - vector, matrices

PL/I : It stands for programing Language developed by IBM.
It is a multipurpose lang for scientific and business applications.

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- All high level language are better understood for the user not for machine.

- So all these language then translated into machine language for to understand by the computer.

- Translation process are of two types

Compiler - In this process compiler reads the enter program & then translate into machine code for execution of program.

Interpret - In this process interpret reads one instruction at a time translate into machine language and immediatly goes to next instruction

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Operating system

- The operating system are most important system software necessary to run the computer system.

- Every system must have an o. system because it handles other devices as well as other software programs.

- The programs written in a high level language is executed by the computer following steps are as follows.

- compiler / interpreter to translate the program.

- Translators :- The translator are the system software able to translate the instructions into computer readable form i.e binary form.

- These instructions are converted to binary form by many translator software such as assembler, compiler, interpreter etc.

Assembler - It is used to translate symbolic instruction code into machine language code i.e. translate to assembly language instruction.

Compiler :- It is used to translate the high level language program to machine language.

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Interpreter - It is used to translate high level language statement one by one and also execute that statment.

The operating system perform various data tasks as recognizing input, sending output, operat controlling peripheral devices etc.

Commonly used operating system are.
MS-DOS, unix, MS-Window.

MS-DOS or DOS

- Dos is the short form of Disk operating system. Dos is normally used for MS-Dos, the microsoft-Dos.
- Dos is 16-bit opetating system, that's why it does not support multiuser or multitasking environment.
- Dos is a single user operating system and also has limitation of 1MB memory.
- This operating system consist of two parts.

1) BIOS [ROM-BIOS] i.e. Read only memory Basic Input/output System.

- ROM-BIOS is a collection of routines that are part of hardware of the system.

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- These routines are permanently recorded and stored in ROM chips.
  they are reffered to as the firmware of the system.

- ROM - BIOS is the part of ROM. It is to provide
- It controls the computer's peripheral devices such as disk drive / keyboard, monitor etc

- The BIOS routines translate the simple command to steps required to execute the command.

2] Booting process :-

- Booting is a term means "Starting the system"
- During that process, many small routines are run and many programs are loaded in the memory.

- Booting is the system done in two ways.
  when the system is booted from beginning, it is termed as "COLD BOOT".

- The way of booting the computer is WARM BOOT, when the system is already on but Hangs up.

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features of Dos :-

1) file management :-
Which provides users to creat read it, read write and delete files.

2) Directory management :-
Which allow to creation, change, search and deletion of derectiories.

3) Memory management :-
Which allow to a location & delocation of mem

4) Command interpreter :-
which interprets commands issued by the users and executes Dos function, utility of programme or application programme.

5) Execute function :-
which programme to load and execute the users programme and redrive error codes, correct them and return programme.

6) Utility programmes :-
That do house keeping course such as to copy, to erase, dir etc.

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Internal commands :-

Some Dos commands are loaded in RAM they are frequently used called internal Dos.

- Internal Dos commands are meant used for growing day to day operation, files, directory.

- The internal 'Dos' commands are

1. DIR :- It displays the list of directories files and sub-directories.
2. DATE :- This command displays system date as or change the current syst. date.
3. TIME :- This command displays the current time of system.
4. MD :- (Made directory) This command is used to sub-divided on a specified disk.
5. CD :- (chang) It displays name of current directory or it can be used to change the current directory.
6. RD :- (Remove Directory) - This command use to remove sub-directory from the specified disk.
7. CD :- (copy directory) :- It copy the one/more files from one directory to another of same or different disk.
8. REM :- This command used to remove files in specified directory.

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9. TYPE :- It is used to type the contex of the specified text files on the screen.

10. DEL :- (to delete) it is used to delete the specified files.

External command :-

This command of Dos are not present in RAM when pc is operated.

FORMAT :- This command prepares the disk in the designated drive to accept Dos files.

Disc copy :- This command used to copy of new program disks or backup of disk containing imp. data file, progr. or bot

Disk comp :- This command compares the contents of two floppy disks to ensure they are identical

BACKUP :- This command is used to backup one or more files from disk to another.

Xcopy :- This command copies a group of files including lower sub-directory.

ATTRIB :- This command used to see & modify the attributes of files.

CHKDISK :- This command analyse the directory files alocation table of specified drive.

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