

Introduction =

Fullform of Computer.

C Commonly
O Operate
m Machine
P Particularly
U Used for
T Technology
E Education
R Research.

Digital Computer.

1. Computer is an electronic machine.
2. Digital Computer takes input in digital formate like digits (0's and 1's)
3. A computer is very usfull machine which is found at defrent places such as school, collages, office, home and shope.
4. It helps us to perform variose tasks such as drawing, picture, sending and receiving message, solving mathematics operation and playing Games.

Relation between Computer and Man.

Computer.

Man.

- 1 It can work very fast. Human can not work as fast as computer.
- 2 It do not get tired. Human can get tired after working.
- 3 It store everything. Human store something in the memory.
- 4 It can not take decision on their own. Human can take decision on their own.
Computer do not have feeling. They feel sad, happy, Angree, Human do not need electricity to work.

Characteristics of Computer.

Speed.

As you know Computer can work very fast. It takes only few second for calculation that we take hours to complete.

Accuracy

The degree of accuracy of computer is very high and every calculation is performed with the same equal accuracy.

Intelligence.

A computer is free from tiredness, lack of concentration etc. It can work for hours without creating any errors.

Versatility =

It means the capacity to perform completely different type of work.

Power of remembering.

Computer has the power of store any amount of information or data. Any information can be stored and recalled as long as you require it for any number of years.

No 5. Q =

Computer is a dumb machine it can not do any work without instruction from the user.

No Feeling.

If does not have feeling or emotions, taste, knowledge and experience.

Storage

A Computer has an in built memory where it can store a large amount of data.

Capabilities of and Limitation of Computer.

Capabilities of Computer.

Capabilities of Computer System or the qualities the computer that put in a positive side and make the users experience more efficient Speed, Accuracy Relibilities.

Reliability-

If it is the quality due to which the user can stay dependable on the computer.

Adaptability-

It means the quality of It to complete a different types of task.

Limitation of Computer.

Limitation are the track drawbacks of the computer system in which human out perform them.

Lack of Common Sence-

No matter how efficient fast and neable computer system might be but yet do not have any common sence.

Lack of decision Making.

Decision making is a complicated process involving information, knowledge, wisdom and ability to judge.

"The computer system does not have the abilities to make decision on their own" Because they possess all the ~~function~~ of ~~function~~ of decision making.

Generation of Computer.

~~First Generation~~

First Generation (1942-1954)

They are using vacuum tube as main component.

Internal storage electrostatic tubes.

External storage paper tape, punch card and magnetic tape.

Speed of operation (Addition and Subtraction) 900-3 thousand.

Second Generation :-

They are using transistor as main component of internal storage magnetic core and magnetic drum

External storage magnetic disk and magnetic tape.

Speed of operation 3000-30,000

Third Generation:-

They are using IC as main component
In Internal Storage magnetic core.
External storage is similar to
second generation.

Speed of operation 3000 - 300000

Fourth Generation:-

They are using micro processor
(VLSI) as main component.
Internal storage Semiconductor
memory.

External storage floppy, CD (Compact
Disk) and pendrive.

Speed of operation is higher
than third generation.

Fifth Generation

They are using artificial intelligent
as main component
It under development state.
Used prolog language

Classification of computer on their size.

Micro Computer:-

Smallest General purpose processing system.

Self connected unit and designed for use by one person at a time.

For a very important segment of the ^{corporate} information system.

Mini Computer:-

Medium size and more powerful than a micro computer.

More costly than a micro computer.

Processing speed is high in compare to micro computer.

Storage capacity is large and popular data processing system.

Mainframe Computer.

Support a large number of terminals for use by a variety of users simultaneously.

Storage capacity is large in compare to mini and micro computer. processing speed is high in compare with mini and micro computer. These ~~suites~~ are near about room size.

Super Computer:-

Storage capacity is extremely large in compare with other computers. Computing speed at least ten times faster than other computer and measures in terms of MOPS (millions of operating Per Second.)

It used in weather forecasting, Aerodynamic System, Scientific research and medicine department.

Ex:- Cray 1, Cray 2, PARAM, Anugraha etc.

Computer Hardware component and their function.

Hardware is a physical component of a computer like as keyboard, mouse, monitor etc.

Hardware is also called device.

Device :-

A device is a part or tools that does a particular job.
A computer have following devices:

Input device.

Output device

Processing.

Storage

Input device :-

The device that help us to give input or data to a computer are called input device.

Input can be in the form of symbol, letters, numbers, picture or sound.

Ex:-

Keyboard, mouse, light pen, microphone, scanner, framcamera etc.

Keyboard :-

A Keyboard is an input device that can consist of many buttons called keys. We used it for typing letters, numbers and symbols. giving commands and playing games the keys of keyboard have Alphabets keys, Numbers Keys, specials Keys and enter, shift lock, delete, backspace function etc.

Mouse :-

A mouse is a small input device it is also called pointing device It helps us to point out on selection on the monitor.

When we move the mouse an arrow like pointer then cursors on the monitor also move.

There are different types of mouse

Roller Ball mouse

Optical mouse.

Output Device :-

When the computer completes the processing work we get the final result this result is called the output.

It can be in the form of symbol text, maze etc.

The part of Computer which helps us to give output are called Output devices such as monitor, printer, speaker etc.

Monitor:-

A monitor looks like television screen. It is also called a visual display unit (VDU).

It displays the work of done by us on a computer. It also displays pictures, cartoons, movies, and television programs.

There are different types of monitor.

CRT:- Cathode Ray tube.

TFT:- Thin film transistor.

LCD:- Liquid Crystal Display.

LED:- Light Emitting Diode.

Printer :-

Printer is an output device which is used to print information on page.

There are two types of Printer.

- 1 Impact Printer.
- 2 Nonimpact Printer.

Impact Printer :-

It prints the character by striking them on the ribbon, which is pre-pressed on the paper. Characteristics of impact printers are following:

Very low consumable cost.

Very noisy.

Useful for bulk printing due to low cost.

There is physical contact with the paper to produce an image.

These printers are two types.

1. Character Printer.
2. Line printer.

Character Printer :-

It print one character at a time
These are further divided into two types

1. Dot Matrix.
2. Daisy wheel.

Dot Matrix:-

These printers are popular because of their ease of printing and economical price. Each character printed in the form of pattern of dots and holes consists a matrix of pins.

Its advantage is that it is expensive, widely used and other language characters can be printed.

Its disadvantage is that slow speed and poor quality.

Daisy wheel.

Daisywheel :-

Head lying on a wheel and pins corresponding to characters. These printers were generally used for word processing in office that requires a few letters of to be change send here and their with very nice quality advantage is that better quality more available than matrix and font of character can be easily changed. Disadvantage is that slower than dot matrix, noisy and more expensive than dot matrix.

None impact printers :-

None impact printers prints the characters without using the ribbon. These printers print a complete page at a time. Thus they are also called as page printers. These printers are two types.

1. Laser printers.
2. Inkjet printers.

Characteristics of the None impact printers :-

Faster than impact printer.

They are not noisy.

~~High~~ are High quality of printing.

Support many fonts and different character size.

Laser printer :-

These are none impact page printers, they use laser light to produce the dots needed from the characters to be printed on page.

Advantage

Very speed High speed

High quality output than impact printer.

Good graphics quality

Disadvantage

Expensive

Can not be use to produce multiple copy's of a document in a single printer.

Inkjet Printer:-

Inkjet printers are none Impact Character printer based upon a relatively new technology. They print characters by spraying small drop of ink on to paper.

Inkjet printers produce high quality output with present day features. They make less noisy because no hammering is done. And there are many styles of printing model available. Color printing is also possible. Some models of inkjet printers can produce multipal copy of printing also.

Advantage

High quality printing more reliable

Disadvantage

Expensive as the cost per page is high

Slow as compared to laser printer.

Application area of Computer;

Banking :-

Maintaining ledger, entry in passbook, check and crops preparation money transfer Cheking balance, maintaining records, related with consumers. And employs all possible by using computer within a few minutes or second.

E-Ticketing :-

Reservation of aira line and railway tickets are possible by using internate on our company.

Email, Chatting, voice mail, sending and receiving any information from one place to another place by using internate one computer is called e-mail Chatting or and voice mail.

Research and weather for Costing.

Research and weather for costing is the application of science and technology to predict the condition without making for a given location on time.

ALU :-

The ALU performs the required micro operations for execution the instructions.

ALU allows arithmatic (Addition, Subtraction, multiplication etc.) and logic (AND, OR, NOT) operations to be carried out.

Control Unit (C.U) :-

The CU of the computer system controls the operation of components. It consists of a program counter that contains the address of the instructions to fetched and an instructions are fetched from memory for execution.

Registers :-

It refers to high speed storage area in the CPU. The data processed by the CPU are fetch from the register.

Operating System Concept:-

Operating System:-

An operating system is a system software that manages computer hardware and software resources and provides common service for computer program.

Ex:-

Linux, Unix, windows 95, XP, 7, 8, 10 etc.
It act as interface between hardware and users.

Component of Operating System:-

Operating system has some component.

1. Basic input output system.
- Basic disk operating system.
- Console command processor.

The bio directory control hardware component other than CPU and main memory. The BDOS implement the process management.

Memory management.

I/O management.

File system management.

Types of OS.

Linux, Unix, windows 95, XP, 7, 8, 9, 10, etc

Multiprogramming :-

Multiprogramming is a rudimentary form of parallel processing in which several programs run at the same time on a uniprocessor system.

Multitasking and Time Sharing.

The Time Sharing operating System is a type of operating System in which the user can perform more than one task and each task gets the same time amount of time to execute.

File :-

A file is a container in a computer system for storing information file used in computer are similar in feature to that of paper document used in library and office.

Directory:-

A directory is a location for storing file on your computer. Directory is found in a ^{जटिल} hierarchy file system. Search os windows, ms dos, unix.

DOS Operating System:-

It stand for disk operating system.
It is single user operating system.
It provides a number of external and internal command which can be used for different purpose.

The command interpreter for dos runs when ~~it~~ no application programs are running.

Some commands are internal and built into command.com file.
Others are external command stored on a disk.

Windows operating System:-

It can be used for GUI environment.

It is a single user system but perform multiple task at a time.

It contains menu bar and tool bar for software activity control.
It contains the following elements menu bar, tool bar, minimized and maximized button, restart and closed button, Horizontal and vertical scroll button bar,
It contains different version like - windows 95, 98, 2000, xp, 7, etc.

Unix Operating System:-

It is based upon command line environment.

It uses a number of command for software activity.

Less administration and maintenance is needed.

Unix provide more powerful and flexibility than windows.

It is more reliable and secure.

unit III Software

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Software :-

Software is a part of a computer system that consists of data or computer instructions. Computer software include computer program libraries and related non-executable data.

Software is a collection of data or computer instruction that tells the computer how to work.

Need of Software :-

Software enable the user to interact with a computer its hardware or perform tasks. Without software most computer would be useless.

Types of Software :-

Computer Software can be divided into

1. Application Software
2. System Software

Application Software :-

That uses the computer to perform special function or provide - entertainment function beyond the basic operation of the computer itself.

There are many different type of application software because the range of task that can be performed with a model is so high.

System Software:-

That directly operates the computer hardware to provide basic functionality needed by user and other software and to provide a platform for running application software system included operating system device driver and utility.

Device Driver :-

Which operators are controls a particular type of device that is attached to a computer each device needed at least one corresponding device driver

because a computer definitely has at minimum atleast one input device and at least one output device.

Utilities:-

Which are computer program design to assists users in the maintainers and care of their computers.

Programming language:-

Machine language is a collection of binary digits or bits that the computers read interprets.

Machine language is the only language a computer is capable of understanding.

Ex:-

$$A = 1000000$$

$$B = 100001$$

$$C = 100010$$

Assembly language :-

A programming language that consists of instructions that are mnemonic codes for corresponding machine language instruction.

Assembly language is a low level programming language design for a specific type of processor. It can be converted into machine code using an assembler.

Ex:- MOV
ADD
JMP
JNT

High level language :-

It is any programming language that enables development of program in a much more user friendly programming context and is generally independent of the computer hardware architecture. High level language are designed to be used by the human operator or the programmer.

Unit IV

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Data communication and network.

Data is a distinct pieces of information.

Data means computer information that is transmitted or stored.

The act of sharing or exchanging information. Idea for feeding from one place person or group to another.

When two or more than two computers are connected to each other for sharing resources exchange file or electronic communication that is called computer network.

A computer network is a digital telecommunication network with allows nodes to share resources.

In computer network computing devices exchange data with each other using connection between nodes.

Local Area Network (LAN) :-

Computer are connected within a small graphical area.

It uses co-axial cable or fiber optics cable to connect computer with each other.

It can transfer data in digital form at very high speed and at a low implementation cost. LAN is classified according to their data transmission speed. Speed is ten to hundred mega bit per second (Mbps).

Security is high in compare to other network.

Metropolitan Area Network (MAN)

It covers more area in compare with LAN. It may cover an area like a city.

It uses distributed queue dual bus (DQDB).

The DQDB consist of the unidirectional buses (cable) to which all the computer are connected.

The DQDB helps in transmission of data in both direction simultaneously.

Wide Area Network (WAN) :-

There is no limitation of geographical area. The Node between which communication is to be established are called hosts.

For the connected computers may be connect with cable or Not. Co-axial Co-axial or fiber optics cable can be use as the transmission line.

Data transmission speed low as compare to other network.

When a data packet from host arrive at a router. It is stored in router until the output transmission line is free and it transmitted to destination Node.

Difference between LAN and MAN.

Internet :-

1. It is a global system of interconnected computer network that use the standard internet protocol to serve billion of users world wide.
2. Network about networks are called internet.
3. Any information on the internet is available in the form of website. ~~ISP~~ ISP (Internet Service Provider) provide internet facility to any users.
4. WWW (World wide web) is an architecture from work to access internet.
5. DNS (Domain Name System) can be used to launch any website on the internet.

Intranet :-

An intranet is a computer network that uses IP technology to share information or computing ~~system~~ service an organization.

An intranet can be understood as a private internet.

An intranet is a private network accessible only to an organisation.

Topology of LAN :-

The way in which devices are interconnected to form a network is called network topology.

A physical representation of network is called network topology.

BUS Topology :-

All nodes are connected with a single cable called backbone cable.

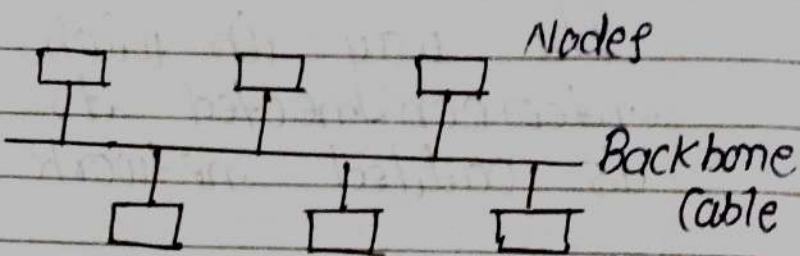
Bus topology has a linear transmission cable.

Advantage :-

Easy to install and maintain.
Can be expanded easily.
Very reliable because of single transmission line.

Disadvantage :-

If backbone cable is damage all network will be damaged stopped.



Tree Topology :-

Tree topology has a group of star network connected to a single backbone cable.

It combines features of both star and bus topology.

Tree topology also called hierarchical topology.

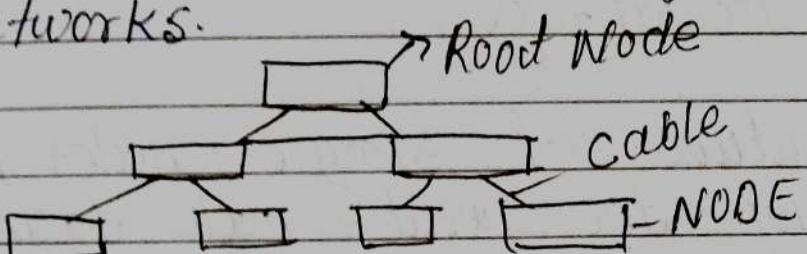
Advantage :-

Existing network can be easily expanded.

Easier installing, installation and maintaining.

Disadvantage:-

Failure of backbone cable (Root NODE) brings down inter net network. Maintenance difficult for large networks.



Ring topology:-

In ring topology each terminal (NODE) is connected to exactly two nodes giving the network a circular shape.

Data travel in only one pre-determine Transmet uit to the neawring node with the transmuted uit to the next one.

Before further transmission data may be amplified

Advantage:-

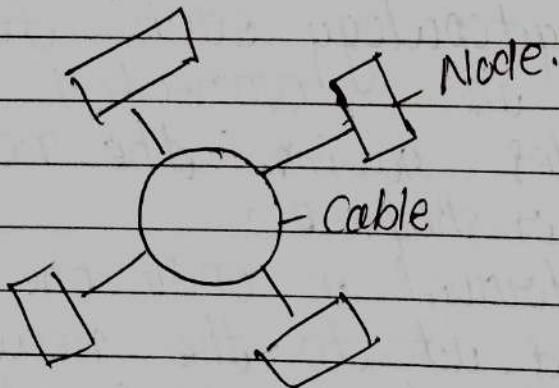
Small cable segments are needed to connects two nodes.

Ideal for optical fibers as data travels in only one direction.

Very high transmission speed is possible.

Disadvantage :-

failure of single nodes bring down the entire network transmitted. Difficult to remove one or more nodes while keeping the rest of the network intact.



Star topology :-

In star topology server is connected to each node individually. Server is also called central node / Hub.

Any exchange of data between two nodes must take place through the server.

It is most popular topology for information and voice network as information and central node can process data recalled from source node before sending it to the destination node.

Advantage :-

Failure of one node does not affect the network.

Truble shooting is easy as faulty node can be detected from central node immidiately.

Simple access protocol required as one of the communicating node is always the central node.

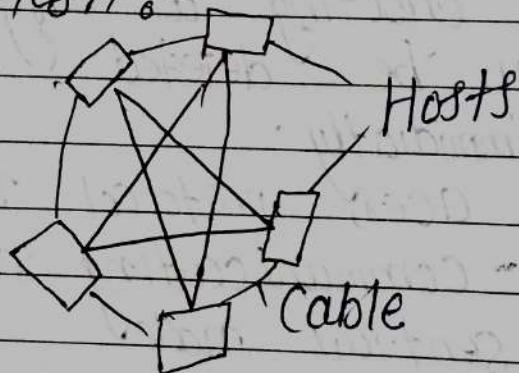
Disadvantage :-

Failure of central node brings down the hole network.

Mesh topology :-

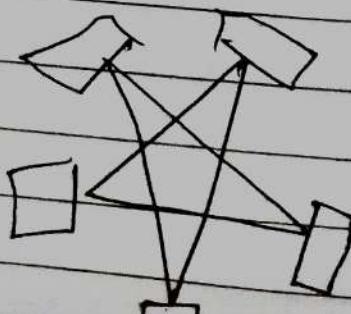
In this type of topology a host is connected to one or multiple hosts. This topology has hosts in point to point connection with every other host or may also have hosts which are in point to point links. Mesh Topology come into two topology :-

Full Mesh :-



All hosts have a point to point connection to every other host in the network. It provide the most reliable network architecture among all network topology.

Partially :-



All hosts have to point-to-point connection to every other hosts.
Hosts connect to each other in some arbitrarily function.

Unit II

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Algorithm :-

Algorithm is a step by step process which defines a set of instructions to be executed in a certain order to get the desired output.

An algorithm is a sequence of steps to solve a problem.

Set of steps for solving a particular problem.

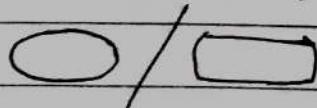
Algorithm can be expressed in any language from natural language like English.

Flowchart :-

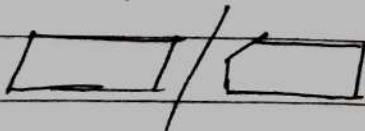
A flowchart is a graphical representation of any problem situation.

It is tool for representing algorithm and programming logic.

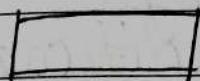
Flowchart Symbol :-



Start / Stop



Input / Output



Process



Condition



One page connector

Rule for making flowchart or
Guideline for developing flowchart.

- Flowchart can have only one start and stop symbol.
- On page connectors are refrenced using number.
- General. flow of process are top to bottom or left to right.
- Arrow should not cross each other.

Advantage :-

Easy communication

Effective analysis

Proper documentation.

Efficient program mentinens.

Disadvantage :-

Same time the program logic is quite

Complicated complete logic.
Alteration and modification
is difficult.

Pseudo code :-

Some time the program logic is

Pseudo code is an informal way to express the design of a computer program. The aim is to get the idea quickly and also easy to read without details.

It is like a young child putting sentence together without any grammer. It can be written how you want.

Programming techniques

The objective of program design are -

Replace old system.

Dimond of organisation.

Productivity

Comptition

Mentinense.

Top down :-

The large program is divided into many small module or sub program or function or procisor from top to bottom.

Main modules are divided into sub modules and sub modules also divided into sub modules.

Top modules is tested first and the sub modules are combined one by one and tested.

Types of Flowchart

Decision flowchart :-

It helps to explain steps that are taken to justify a decision.

Logic flowchart :-

It is applied to uncover loop holes bottleneck contain in the process which could cause disruption all issues.

System flowchart :-

It represents out data flow in a system

Product flowchart :-

Visualises the product creation process and order of sequences.

Process flowchart :-

It displays out a process will achieve a certain outcome.

1
23
4

5

6
7

8.

Unit Compiler :-

Compiler is a translator which translate high level language to its corresponding machine level language. It translate whole code at a time. It is also called language translator.

Interpreter :-

It is also known as language translator. It works is similar to compiler but difference is that It convert high level language into machine level language line by line of source code.

Unix Command :-

- | | | |
|----|--------|---|
| 1 | NK DIR | |
| 2 | RN DIR | Remove |
| 3 | LS | Directory Display |
| 4 | CHMOD | Change Font |
| 5 | GREP | It is used to search string in a particular file. |
| 6 | PWD | It display present working directory |
| 7 | DIFF | Comparison of two file. |
| 8. | KILL | If terminate any process with process ID. |