



2018

Application of Computer

IHM BHUBANESWAR

Hand book



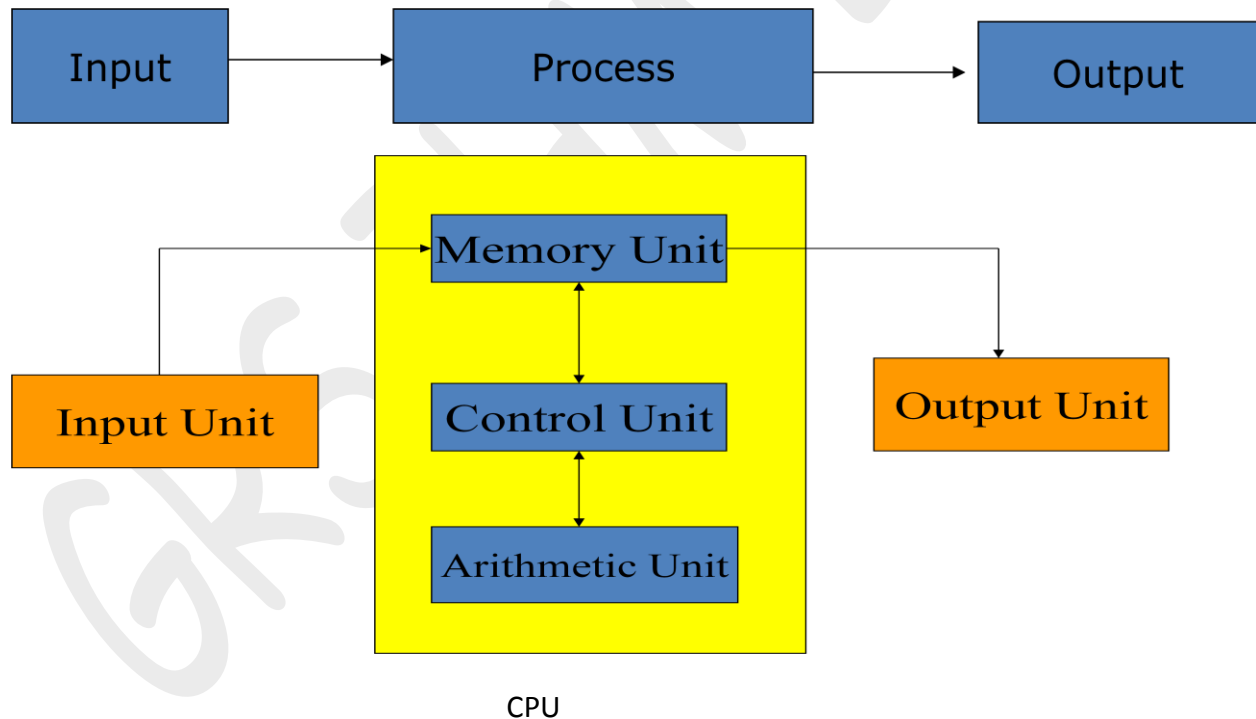
Computer Fundamentals

Definition of a Computer:

- A **computer** is an electronic device that operates under the control of a set of instructions that is stored in its memory unit.
- A computer is a collection of hardware and software components that help you complete many different tasks.
- A computer can be more accurately defined as an electronic device that takes data as input, stores and processes it and displays the output according to the given instructions.

Data processing Concept

I-P-O Cycle



- The cycle of activities performed by a computer is referred to as the *Input-Process-Output* cycle or the I-P-O cycle
- A computer consists of several components
- Each component participates in either one of the input, process, or Output phases

Data – A computer usually accepts input in the form of data. Data is the raw material. Data refers to numerical (1,2,3,4,5,6,7,8,9,0), alphabetical (A,B,C,DZ) and special characters (e.g., @,#,\$,%,^,&,!). A set of numbers could be examples of data. OR

- **Data** is a word of Latin used to describe a collection of natural phenomena like numbers, characters, images or symbols, in a very broad sense.
- **Information** – Information is the finished product (manipulation of raw facts). Information refers to data in particular context, which helps us understand facts. Example- +91(011) 2555-1212 is a telephone no. of a directory. It includes country code 91, an area code 011, a telephone exchange 2555 and a number within the exchange 1212.

Characteristics of computer

Computers of all sizes have common characteristics:-

- Speed
- Reliability
- Multitasking
- Diligence
- Accuracy
- Memory capacity

Speed

- It works in very high speeds and can much faster than human.
- It equivalent to one million mathematicians working 24 hours in a day.

Reliability

- Computers are extremely reliable as well. Most errors are caused by humans, not computers.
- Computers are capable of storing enormous amounts of data that must be located and retrieved very quickly.

Multitasking

- Modern computers can perform multiple task at once. i.e. they can perform a set of works simultaneously .
- Example – at a same time it can play a game & printing your document.

Diligence

- Unlike human, computer simply does not get bored or tired.
- Repetitive work does not affect computer.

Accuracy

- Computers rarely make mistakes.
- Most computer errors are caused by human faults

Storage capacity

- It stores huge amount of data / information

Classification of Computers

- Computers can be classified many different ways -- by size, by function, or by processing capacity.

Functionality wise 4 types

- a) Micro computer
- b) Mini Computer
- c) Mainframe Computer
- d) Super Computer

Microcomputers

- **Microcomputers** are connected to networks of other computers.
- The price of a microcomputer varies from each other depending on the capacity and features of the computer.
- Microcomputers make up the vast majority of computers.
- Single user can interact with this computer at a time.
- It is a small and general purpose computer.

Mini Computer

- Mini Computer** is a small and general purpose computer.
- It is more expensive than a micro computer.
- It has more storage capacity and speed.
- It designed to simultaneously handle the needs of multiple users.

Mainframe Computer

- Large computers are called **Mainframes**.
- Mainframe computers process data at very high rates of speed, measured in the millions of instructions per second.
- They are very expensive than micro computer and mini computer.
- Mainframes are designed for multiple users and process vast amounts of data quickly.
- Examples :- Banks, insurance companies, manufacturers, mail-order companies, and airlines are typical users.

Super Computers

- ❑ The largest computers are ***Super Computers***.
- ❑ They are the most powerful, the most expensive, and the fastest.
- ❑ They are capable of processing trillions of instructions per second.

It use governmental agencies, such as:-

- Chemical analysis in laboratory
- Space exploration
- National Defense Agency
- National Weather Service
- Bio-Medical research
- Design of many other machines

Generations of Computers

- ❑ The rapid development was characterized by the phases of growth, which have come to be called generation of computer.

First Generation

- Basic component – Vacuum Tubes 1940-1956
- Processing Speed – Slow & Unreliable Machine
- Heat Generation – Huge amount of Heat generated
- Size – Bulky & Non – Portable Machine
- Instructions – Only Machine Language was used
- User Friendly – Very Difficult to operate
- Cost – Production & Maintenance costs was very High
- Example – ENIAC , UNIVAC

ENIAC = (Electronic Numerical Integrator and Calculator)

UNIVAC = (Universal Automatic Computer)

Second Generation

- Basic component – Transistors & Diodes
- Processing Speed – More reliable than 1st one
- Heat Generation – Less amount of Heat generated
- Size – Reduced size but still Bulky
- Instructions – High level Language was used
(Like COBOL , FORTAN)
- User Friendly – Easy to operate from 1st one
- Cost – Production & Maintenance costs was < 1st
- Example – IBM 7090, NCR 304

Third Generation

- Basic component –Integrated Circuits **1964-1971**
- Processing Speed – More reliable than 1st & 2nd Machine
- Heat Generation – Lesser amount of Heat generated
- Size – Smaller than older computer
- Instructions –Expensive use of High level Language
- User Friendly – General purpose Machine used in commercial Application
- Cost – Production & Maintenance costs was Cheaper than older one
- Example – IBM 360, CDC 7600

Fourth Generation

- Basic component –: Microprocessors 1971-Present
- 8842Thousands of integrated circuits were built onto a single siliconchip.
- Processing Speed – Most reliable than older computer
- Heat Generation – Virtually no Heat generated
- Size – Smallest in size making them easily portable
- Instructions –Very sophisticated programs & Languages use

- User Friendly –Easiest to operate
- Cost – Production & Maintenance costs was Cheapest than older one
- Example – IBM 3090, VAX

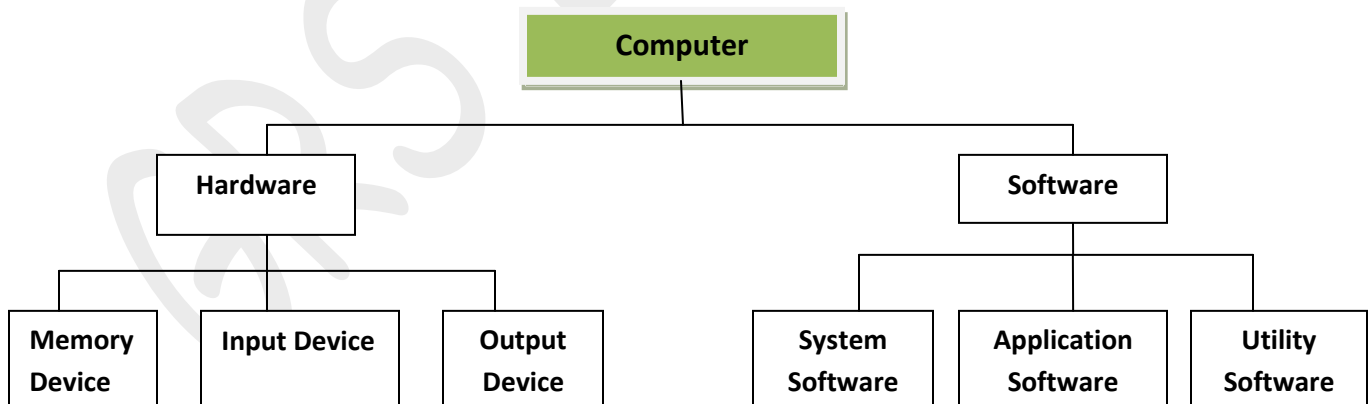
Fifth Generation

- ❑ Fifth Generation - **Present and Beyond:** (Artificial Intelligence)
- ❑ Fifth generation computing devices, based on artificial intelligence, are still in development.

Limitation of Computer

- ◆ Computer cannot take over all activities simply because they are less flexible than humans.
- ◆ They have to be told what to do.
- ◆ They cannot perform anything outside the defined scope.
- ◆ If any unexpected situation arise, computer will either produce erroneous result or discard the task altogether.

Components of a Computer



Common Input Devices

Some common input devices are:

- ◆ Mouse
- ◆ Scanner
- ◆ Microphone
- ◆ Touch screen
- ◆ Keyboard

Mouse

- Is an input device used to point and select objects on the screen.
- Moving it causes a corresponding movement of the pointer on the screen.

Following are some categories of mouse:

- ◆ **Trackball mouse:** In this, the ball is rolled at one place rolling the mouse on the table top.
- ◆ **Optical mouse:** It uses a light beam to detect movement.
- ◆ **Wireless mouse:** It is a mouse without a cable. This mouse works up to one and a half meters away from the computer.
- ◆ **Light pen mouse:** It utilizes a light-sensitive detector, requiring you to hold a pen and point it at the screen.
- ◆ **Touch pad mouse:** It is a touchpad is a small, flat, rectangular pointing device that is sensitive to pressure and motion.
- ◆ **Joysticks mouse:** It usually includes two upright sticks which are moved with the hand and a button is pressed on either stick.

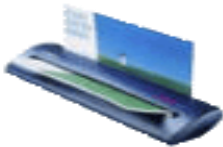
Scanner

- A scanner is a input device used to capture information, such as, photographs and documents on paper and translate the information into a computer image.
- 3 types of Scanner
 - Flatbed scanner:** It works like a copy machine except that it creates a file of the document rather than a paper copy.



← Flat-Bed Scanner

◆ **Sheetfed scanners:** These devices are more like a fax machine.



← Sheetfed Scanner

Handheld scanners: It is a scanning device where the scanning element is built into a small handheld unit.



← Handheld Scanner

Microphone

- It is an input device.
- It use to recording some voice / sound data.

Touch Screen



- It is an input device
- User can touch the screen to select an option.
- Is used in information-providing applications
- Example: airline reservation counters, stock exchanges, Railways, ATM.

Technology used:

- Screen is lined with LEDs vertically and photo detectors horizontally. When the finger breaks the light beam, the photo detectors detect the position.

Output devices (Data Output Devices)

Some common output devices are:

- Printer
- Plotter
- Monitor / Visual Display Unity (VDU)
- Speaker

Printer

It is an output device that prints the result of an operation on paper.

Impact Printer

- Characters are printed by pressing a typeface against an inked ribbon, which makes a mark on the paper.
- The most commonly-used impact printer is the Dot Matrix Printer, Drum printer and Chain printer.

Non-Impact Printer

There is no contact between the typeface and the paper while printing.

The main types of non-impact printer are:

- Laser printers
- Inkjet printer
- Thermal printer



Dot Matrix Printer



Inkjet Printer



Thermal Printer



Laser Printer

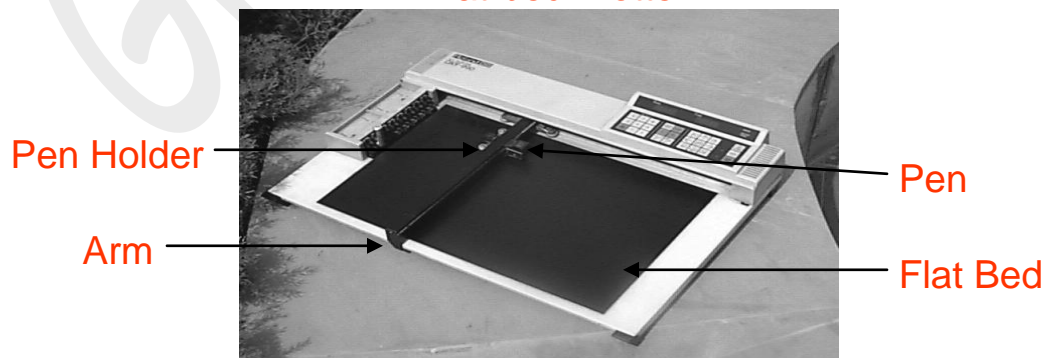
Plotter

- Is an output device
- Used to create presentation visuals, engineering drawings and other high-quality visuals.

Plotter can be divided into two types:

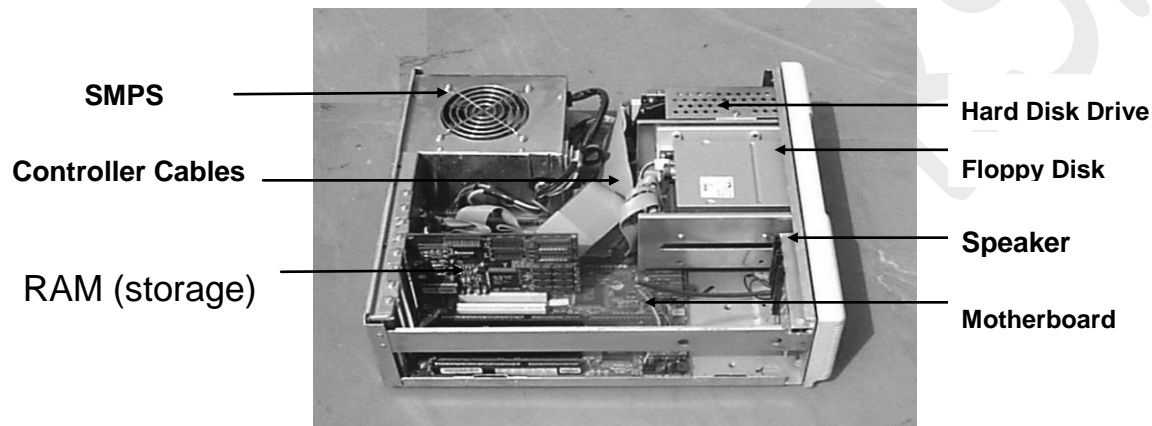
- Flat-bed Plotter
 - Paper is stationary while the pens and the arms move
- Drum plotter
 - Paper is wrapped over a drum which rotates while the pen moves laterally.

Flat-bed Plotter



Components of the System Unit

- Internal Power Supply (SMPS)
- Exhaust Fan
- Speaker
- Motherboard
- Storage Systems
- Microprocessor

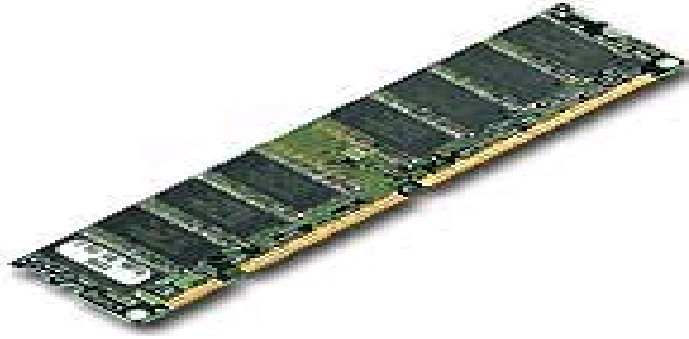


Storage Device/Media

- ◆ Data needs to be stored for later use on storage media.
- ◆ The two types of storage media are:
 - ◆ Primary storage media
 - ◆ Secondary storage media

◆ **Primary storage media**

- It is the internal storage area of the machine.
- Random Access Memory (RAM)
- This is the memory that the computer uses for storing the programs and their data while working on them.
- RAM has the following characteristics:
 - Data within the RAM can be read or modified, i.e. you can either read from the RAM or write onto it. Hence it is called read/write memory



Random Access Memory (RAM)

ROM (Read Only Memory)

- It is internal permanent storage memory.
- ROM contains permanently recorded instructions that are vital for starting the computer.
- One set of instruction in ROM is called the ROM-BIOS
- All machine-level instructions are stored in the ROM.

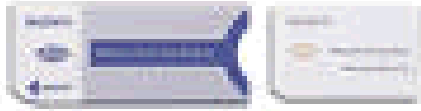
Secondary storage media

- ◆ Compact Disk (CD ROM)
- ◆ Floppy Disk
- ◆ Cartridge Tape
- ◆ Magneto-Optical Disk
- ◆ USB drive / Pen Drive
- ◆ Memory Stick
- ◆ Hard Disk

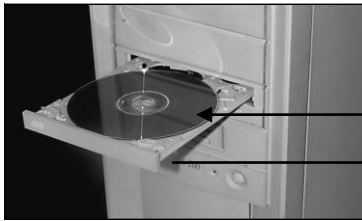
Picture of some Permanent Storage Memory



← Cartridge Tape:



← Memory Stick



CD-ROM
CD-ROM Drive

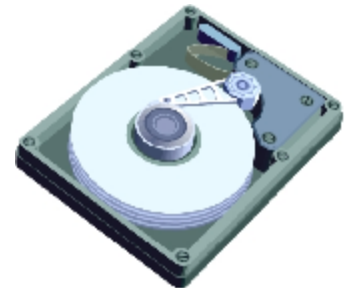


← Magneto-Optical Disk

Permanent Storage Memory

Hard Disk:

- Data store permanently
- Size may be 20GB , 40GB, 80GB,160GB, 320GB, 500GB, 1TB.



About Memory Size

1 Nibble = 4 bits

1Byte = 8 bits

1 Kilobyte (KB) = 1024 Bytes

1 Megabyte (MB) = 1024 KB

1 Gigabyte (GB) = 1024 MB

1 Terabyte (TB) = 1024 GB

1 Petabyte (PB) = 1024 TB

1 Exabyte (EB) = 1024 PB

1 Zettabyte = 1024 EB

SMPS (Switch Mode Power Supply)

- The system draws power from AC mains through a power protection device.
- This power is not directly supplied to the internal components , instead one of the components called Internal Power Supply.
- Otherwise known as Switched Mode Power Supply.
- It can convert the AC input into DC output of 5 & 12 volts.

Exhaust Fan

- The SMPS has a small fan, called exhaust fan, attached to it.
- It can rotate as long as the system switched on.
- Main function is – cool the SMPS Unit

Speaker

- The system unit has also a small audio speaker attached to it.
- It is connected with the Motherboard.
- It can create a beep sound to indicate everything is working satisfactory.
- Also used to entertainment programs to produced sound effects.

Motherboard

- When you open the system unit, a large board containing a number of tiny electronic circuits called Motherboard.
- All PC peripheral devices are connected with the Motherboard.

Microprocessor

- The microprocessor consists of ALU Unit, Control Unit, Memory unit
- It can move data from one memory location to another
- The capacity of Microprocessor is measured in the term of the number of bits it can send or receive & the number of bits it can process internally.
- Ex – 8088 --- 8 / 16 bit processor
- 80286 – 16 / 16 bit processor
- Manufacture company – Intel , Motorola
- Pentium is a 32 bit processor
- Pentium IV is a 32 bit processor with 64 data path.

Software

- A PC is incapable of performing any task with the hardware alone. It requires instruction to function as desired. Like data, instruction are entered by the input devices like keyboard, mouse etc.
- A set of instruction doing a specific task is called a program.
- A set of program written to achieve a common objective is called software.

Software can categorize into two types

- Application software
- System software
- Utility software

Application software

- Application software is software that design for a specific application.
Example – software for billing system, accounting software or software that enables the creation and storage of documents.
- General application software are database management system (DBMS), spreadsheets (Microsoft excel) and word processors (Microsoft word). Using DBMS software a user can maintain large volume of data that can be modified, updated.

System software

- Besides the application software there is a another software called system software. System software is the operating system. This is very important for the working of the PC.
- Example – windows 98, windows 95, windows XP ,Solaris, Linux, Unix, Vista etc.
- When a user wants to store any data or program, the data or the program is stored at a location that is known only to the operating system. Therefore, the operating system performs the task of storage management.

Functions of an Operating system

- Process Management
- I/O operation
- Memory management
- File management
- Data management
- Command Interpretation
- Security Management

Utility software

Utility software is system software designed to help analyze, configure, optimize or maintain a computer.

- Antivirus scan for computer viruses.
- Nero (CD write software)
- **Disk checkers** can scan operating hard drive.
- **Backup** utilities can make a copy of all information stored on a disk
-
- **Data compression** utilities output a shorter stream or a smaller file
- **Disk cleaners** can find files that are unnecessary to computer operation

Compilers

- ◆ Besides the application software and the system software, there is a third kind of software called the compiler software.
- ◆ Compiler is a system program that translates source code (user written program) into object code (binary form).
- ◆ The whole source code file is compiled in one go and a complete.
- ◆ This means that the program can only be executed once the translation is complete.
- ◆ It is 5-25 times faster than an interpreter.
- ◆ Ex- C & C++ are most popular compiled language.

Interpreter

Translate the high level language and execute the instruction before passing on to the next instruction.

- ◆ An Interpreter is contrast to a compiler, analyzes & executes the source code line- by – line without looking at the entire program.
- ◆ First it translates & executes the first line then it moves to the next line of the source code & repeats the process.
- ◆ It is a slow process.
- ◆ It is used in FORTRAN program.
- ◆ Ex- JavaScript & VBScript are interpreted language.

Language Classification

- Language is a means of communication. Normally people interact with each other through communication.
- On the same pattern, communication with computers is carried out through a language.
- The language is understood both by the user and the machine. Normally every language has its grammatical rules; similarly every computer language is bound by rules known as the **SYNTAX** of the language.

Programming language

- ❖ A **programming language** is an artificial language that can be used to write programs which control the behavior of a machine, particularly a computer.
- ❖ Programming languages are defined by rules which describe their structure and meaning respectively.
- ❖ Many programming languages have some form of written specification of their syntax. There are two level of language.

1. High level programming language
2. Low-level programming language

High-level programming language

These languages are normal, English like. Easy to understand statements to pass instruction to the computer. The languages are problem oriented. It offers:

- Readability • Easy Debugging • Portability • Easy software Development

- ✚ Example: - BASIC, COBOL, FORTRAN, PASCAL, and C.
(N.B: Full form of this languages see in page no: 31 and 32)

Low-level programming language

Low-level programming languages are sometimes divided into two categories:

1. *Machine Language*
2. *Assembly Language*

Machine Language

This is the only language understood directly by the computer. It the language of 0' and 1' i.e . Binary number. It is machine dependent. It is difficult to learn and write program in.

Assembly Language

It is uses only letters and symbols. Programming is simpler and less time consuming than machine language programming. It is easy to locate and correct errors in Assembly language.

It is also machine dependent. Programmer must have knowledge of the machine on which the program will run.

An assembler is a program that translates an assembly language program into a machine language program.

Internet

Definition

- ❖ A global network that connects million of computers together, known as the internet.
- ❖ Internet is the vast inter connection of computers across the world.
- ❖ The Internet is the fastest way of retrieving information
- ❖ It also called a network of networks in which users at any one computer can, get information from any other computer if they have permission.

World Wide Web

- ❖ The WWW is known as the World Wide Web , is a store house of information .It is a collection of several documents called web pages, which are interlinked with each other Web pages is achieved using Hypertexts.
- ❖ Hypertext connects on one web page to another web page.
- ❖ Hypertexts are the highlighted or underline text on the web page.

Internet

It was conceived by the Advanced Research Projects Agency (ARPA) of the U.S. government in 1969 and was first known as the [ARPANET](#). The original aim was to create a network that would allow users of a research computer at one university to be able to "talk to" research computers at other universities.

Network Topology

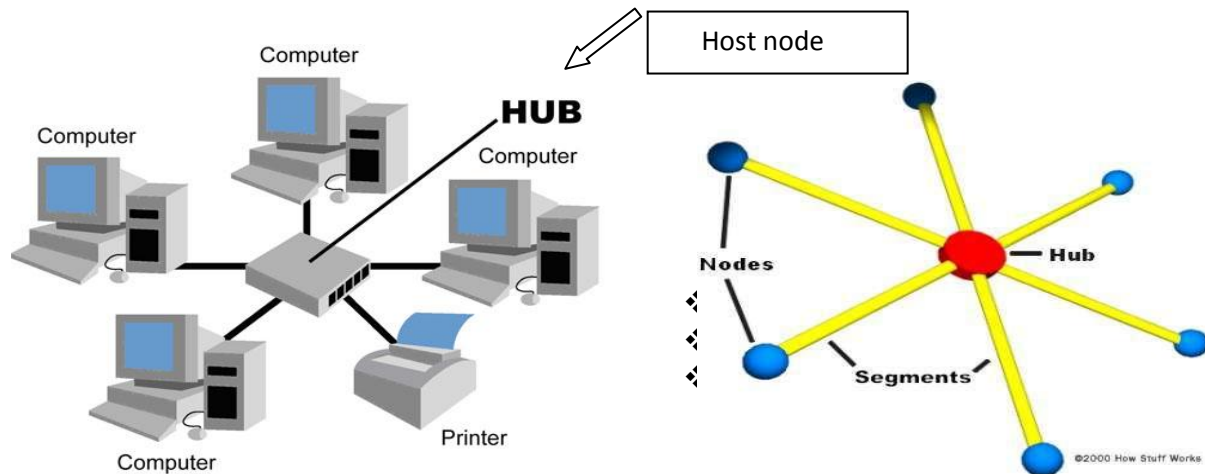
- Network topology refers to the physical layout of the network i.e. the locations of the computers and how the cable is run between them.
- To select the right topology for how the network will be used is very important.
- Each topology has its own strength and weaknesses.

Types of Network Topology

- ❖ **STAR TOPOLOGY**
- ❖ **BUS TOPOLOGY**
- ❖ **RING TOPOLOGY**

STAR TOPOLOGY

This is a form of LAN architecture in which nodes on a network are connected to a common central hub or switch, and this is done by the use of dedicated links.



- ❖ In this kind of topology all the cables run from the computers to the central location where they are all connected by a device called hub or switch (or host node).
- ❖ Each computer on a star network communicates with a central device that resends the message either to each computer or only to the destination computer, e.g. if it is a hub then it will send to all and if it is a switch then it will send to only destination computer.
- ❖ When network expansion is expected and when the greater reliability is needed, star topology is the best.

Advantages:

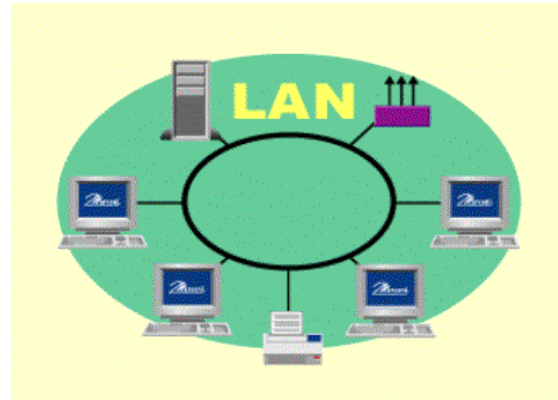
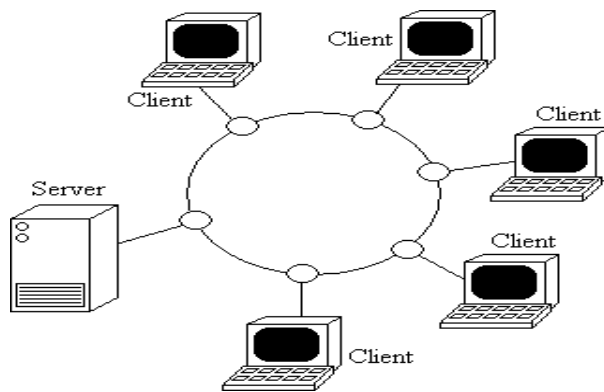
- 1) It is easy to modify and add new computers without disturbing the rest of the network.
- 2) The center of the star network is a good place to diagnose the faults.
- 3) Single computer failure does not necessarily bring down the whole star network.

Disadvantages:

- 1) If the central device (or the host node) fails the whole network fails to operate.
- 2) Star networking is expensive because all network cables must be pulled to one central point, requires more cable than other network topologies.

RING TOPOLOGY

This topology is a simple design and consists of a single cable that forms the main data path in the shape of a ring. Each device is connected to a closed loop of cable. Signals travel in one direction from one node to all other nodes around the loop.



- ❖ In this type each computer is connected to the next computer with the last one connected to the first.
- ❖ Each retransmits what it receives from the previous computer. The message flows around the ring in one direction.
- ❖ The ring network does not subject to signal loss problem as a bus network experiences.
- ❖ There is no termination because there is no end to the ring.

Advantages:

- 1) Each node has equal access.
- 2) Capable of high speed data transfer.

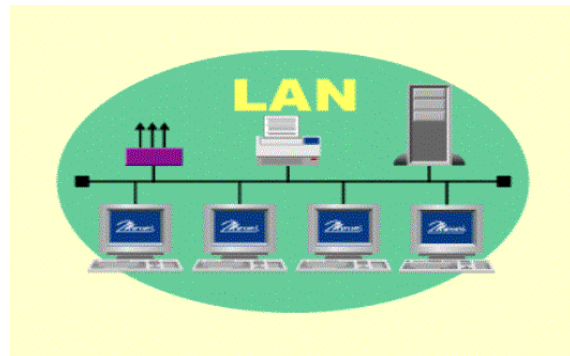
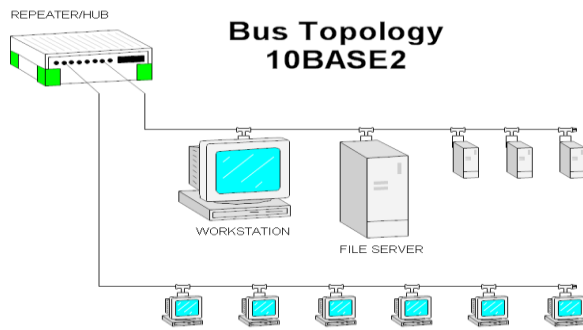
Disadvantages:

- 1) Failure of one computer on the ring can affect the whole network.
- 2) Difficult to troubleshoot the network.

BUS TOPOLOGY

In the bus topology the server is at one end, and the client PCs (devices) are connected at different points or positions along the network.

All signals pass through each of the devices. Each device has a unique identity and can recognize those signals intended for it. It is easy and simple to design and implement



Advantages

- Easy to implement and extend
- Well suited for temporary or small networks not requiring high speeds
- Cheaper than other topologies.
- Cost effective as only a single cable is used.
- Cable faults are easily identified.

Disadvantages

- Limited cable length and number of stations.
- If there is a problem with the cable, the entire network goes down.
- Maintenance costs may be higher in the long run.
- It works best with limited number of nodes.
- It is slower than the other topologies.

Types of Network

Network divided into three types:-

- LAN (Local Area Network)
- MAN (Metropolitan Area Network)
- WAN (Wide Area Network)

Local Area Network

A local-area network is a [computer network](#) covering a small geographic area, like a home, office, or group of buildings e.g. a school. The defining characteristics of LANs, in contrast to [wide-area networks \(WANs\)](#), include their much higher data-transfer rates, smaller geographic range

Metropolitan Area Network

- ✓ Metropolitan area networks, or MANs, are large [computer networks](#) usually spanning a city.
- ✓ Metropolitan area networks can span up to 50km, devices used are modem and wire/cable
- ✓ They typically use [Optical fiber](#) connections to link their sites.
- ✓ A MAN is optimized for a larger geographical area than a LAN.

Wide Area Network

- **Wide Area Network (WAN)** is a [computer network](#) that covers a broad area (i.e., any network whose communications links cross metropolitan, regional, or national boundaries)

Channel

A **Channel** can take many forms, including ones suitable for [storage](#) which can communicate a message over time as well as space.

- ❖ A connection between initiating and terminating nodes of a [circuit](#).
- ❖ A single path provided by a [transmission medium](#) via either physical separation, such as by multi pair [cable](#).

Types of Channel

- ◆ Fiber optic "cable"
- ◆ Coaxial Cable Types
- ◆ Twisted Pair

Fiber optic "cable"

- **SPEED:** Fiber optic networks operate at high speeds - up into the gigabits
- **BANDWIDTH:** large carrying capacity
- **DISTANCE:** Signals can be transmitted further without needing to be "refreshed" or strengthened.
- **RESISTANCE:** Greater resistance to electromagnetic noise such as radios, motors or other nearby cables.
- **MAINTENANCE:** Fiber optic cables costs much less to maintain.



Coaxial Cable Types

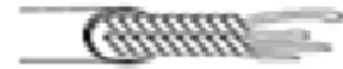
- Coaxial cable, or coax, is a cable consisting of an inner conductor, surrounded by a tubular insulating layer typically made from a flexible material, all of which is then surrounded by another conductive layer and then finally covered again with a thin insulating layer on the outside.
- The Coaxial cable is used as a [transmission line](#) for [radio frequency](#) signals, in applications such as connecting [radio transmitters](#) and [receivers](#) with their [antennas](#), carrying internet connections, and distributing [cable television](#).



Coaxial cable

Twisted Pair

- A type of cable made by intertwining two separate insulated wires together.
- There are two types of twisted pair: shielded and unshielded. [Shielded Twisted Pair \(STP\)](#) has a fine wire mesh surrounding the wires to protect the transmission;
- [Unshielded Twisted Pair \(UTP\)](#) does not. Shielded cable is used in older telephone networks, network, and data communications to reduce outside interference.



Unshielded twisted-pair cable



Shielded twisted-pair cable

Network Interface Card

- A Network Interface card, network adapter, network interface controller (NIC), network interface card, or LAN adapter is a [computer hardware](#) component designed to allow computers to communicate over a [computer network](#).
- A Network Interface Controller (NIC) is a [hardware](#) interface that handles and allows a [network](#) capable device access to a [computer network](#) such as the [internet](#)

Definitions of Server

- A computer or application, that provides a service to client software on other computers. Servers are used for web hosting and other web applications
- A high end computer with specific software that allows other computers to use its facilities for connection to data drives, email, printers, Internet or other service.

- A computer or device on a network that manages network resources. For example, a file server is a computer and storage device dedicated to storing files. Any user on the network can store files on the server.

Node (networking)

In [communication networks](#), a **node** is an active electronic device that is attached to a network, and is capable of sending, receiving, or forwarding information over a communications channel.

Hub

A network hub is a device for connecting multiple [twisted pair](#) or [fiber optic Ethernet](#) devices together and thus making them act as a single [network segment](#).

Windows NT

- **Windows NT** is a family of [operating systems](#) produced by [Microsoft](#).
- The first version of which was released in July 1993. It was originally designed to be a powerful high-level-language-based, processor-independent, multiprocessing, multiuser operating system with features comparable to [Unix](#). It was intended to complement consumer versions of Windows that were based on [MS-DOS](#). NT was the first fully 32-bit version of Windows,

ARCNET

- ✓ ARCNET is a widely-installed local area network ([LAN](#)) technology that uses a *token-bus* scheme for managing line sharing among the workstations and other devices connected on the LAN
- ✓ ARCNET can use [coaxial cable](#) or [fiber optic](#) lines.
- ✓ ARCNET is one of four major LAN technologies,

ETHERNET

- **Ethernet** is a family of [frame](#)-based [computer networking](#) technologies for [local area networks](#) (LANs).
- The name comes from the physical concept of the [ether](#).
- It defines a number of wiring and signaling standards for the [Physical Layer](#) of the [OSI](#) networking model, through means of network access at the [Media Access Control](#) (MAC) / [Data Link Layer](#), and a common addressing format
- The combination of the [twisted pair versions of Ethernet](#) for connecting end systems to the network, along with the [fiber optic versions](#) for site backbones,

TCP / IP

- ❖ (Transmission Control Protocol/Internet Protocol)
There are 2 layers to the protocol: TCP, which separates data into packets for transmission; and IP, which locates and directs the packets to their destination.
- ❖ TCP makes sure the packets have arrived and that the message is complete. These two protocols are the basic language of the Internet, and are often referred to together as TCP/IP

IP - is responsible for moving packet of data from node to node. IP forwards each packet based on a four byte destination address (the IP number).

- ❖ IP addresses consist of four numbers separated by periods (also called a 'dotted-quad') and look something like 127.0.0.1.
- ❖ **TCP** - is responsible for verifying the correct delivery of data from client to server. Data can be lost in the intermediate network. TCP adds support to detect errors until the data is correctly and completely received.
- ❖ File Transfer Protocol (FTP), a standard Internet [protocol](#), is the simplest way to exchange files between computers on the Internet.
- ❖ Like the Hypertext Transfer Protocol ([HTTP](#)), which transfers displayable Web pages and related files.
- ❖ Simple Mail Transfer Protocol ([SMTP](#)), which transfers e-mail.

Equipments needed to connect to the internet

- ◆ **Computer** – Any IBM compatible, Macintosh or Unix computer has memory of 2GB or more, and at least 16 MB RAM is needed.
- ◆ **Modems**
 - ✔ A computer needs telephone cable to connect to the Internet.
 - ✔ This cable can carry only Analog signals, unlike computer works with Digital signal.
 - ✔ A hardware device known as Modulator-Demodulator (Modem) is used to convert the digital signal from the computer to Analog signal that can be transmitted through telephone lines. At the destination end , modem reconverts the analog signals from the telephone cables to digital signals and passes the signal to the computer.
- ◆ **Telephone Line** – It is essential to have a telephone line connection to get connected to the Internet.
- ◆ **Internet Service Provider (ISP)** – Earlier in India , internet connection was available through Videsh Sanchar Nigam Limited (VSNL).
 - ✔ Now we can choose from 120 companies that have been granted ISP licenses.

- ✓ Ex: -Mahanagar Telephone Nigam Limited (MTNL), Bharat Sanchar Nigam Limited (BSNL) and Mantra online. Some private players are (i.g. Reliance, Airtel, Tata etc.)
- ◆ **Web Server** – A web server is a computer that cans various web pages and contains web server software.
 - The web pages on the server are mostly hyper text markup language (HTML) documents. The web client (i.e. the browser) makes a request to the web server.
 - The web server software running on the server accepts the request, makes a search, and then returns the result to the web client.
- ◆ **Web Browser** - A web browser is a program that allows you to view and search for information on the WWW.
 - ❖ The user type the URL of the website in the Web Browser , which is forwarded as the request to the web Server.
 - ❖ The most popular Web [browser](#) are Microsoft Internet Explorer , Netscape Navigator, Mozilla Firefox, Google chrome, Safari (for Mac computer).

Search Engine

- ✓ To getting any type of information
- ✓ Ex – GOOGLE , YAHOO , MSN
- ❖ You can retrieving information from the internet, a program known as search engine is used

Expand The Words

WWW - World Wide Web

CAD - computer aided design

VLSI = Very-large-scale integration,

(is the process of creating integrated circuits by combining thousands of transistor-based circuits into a single chip.)

HTTP - Hypertext Transfer Protocol

DBMS - database management system

LCD - Liquid Crystal Display

LED - Light emitting diodes

TFT - Thin Film Transistor

ASCII - American Standard Code for Information Interchange

FAT - File Allocation Table (is a computer file system architecture.)

GIGO - Garbage In, Garbage Out (abbreviated to **GIGO**, coined as a pun on First-In, First-Out) is a phrase in the field of computer science or Information.

Garbage In, Garbage Out. If the input data is wrong or inaccurate, the output data will be inaccurate or wrong. GIGO is often the problem with data entered by hand into computer systems

MAN- Metropolitan Area Network

LAN - Local area network

WAN - Wide Area Network

(BIOS) - Basic Input/Output System

OCR - Optical character recognition, is the mechanical or electronic translation of images of handwritten, typewritten or printed text ...

OMR - Optical Mark Recognition (also called Optical Mark Reading) is the process of capturing human-marked data from document .

BASIC - Beginners All Purpose Symbolic Instruction Code.

COBOL - Common Business Oriented Language

FORTRAN – Formula Translation

LISP – List Processing

CAM –Computer-aided manufacturing (is the use of computer-based software tools that assist engineers and machinists in manufacturing .

ALU –In computing, an **arithmetic logic unit (ALU)** is a digital circuit that performs arithmetic and logical operations.

EDP – Electronic Data Processing (EDP) can refer to the use of automated methods to process commercial data.

BCD – binary-coded decimal (sometimes called natural **binary-coded decimal**

CPU –central processing unit or processor is an electronic circuit that can execute computer programs.

MICR – Magnetic Ink Character Recognition

is the common machine language specification for the paper-based payment transfer system.

It consists of magnetic ink printed characters of a special design which can be recognized by high speed magnetic recognition equipment. This series of: check number, bank routing number, checking account number and in some cases the amount of the check.

AMD - Advanced Micro Devices

ARPA - Advanced Research Projects Agency

BASICS OF MS - DOS

MS – DOS is called Micro Soft Disk Operating System. It is an operating system which has developed by MICRO-SOFT. It can control various peripherals which can be attached to printer, Hard-Disk, Floppy- disk drive visual display terminal, Keyboard, Mouse, Plotter.

DOS COMMANDS

- Dos command help you to give instruction to the operating system in character user interface (CUI) environment.
- Using dos command , you can perform various task, such as creating and managing files and folder and monitoring your system resources.
- A command is the name of a special program that makes your computer carry out a task.

There are two types of MS-DOS command

- 1.Internal command
- 2.External command

Internal commands

- Internal commands are built in to the operating system as part of a file called COMMAND.COM
- When you type an internal command, MS-DOS perform it immediately.
Example Of Internal Command
- BREAK , REN ,CHDIR , EXIT
- CLS , RMDIR , DEL
- COPY , VOL , TYPE
- DATE , TIME
- DIR , SET
- MKDIR , PATH

Commands Use For..

- CHKDSK - Checking the condition of a disk
- FORMAT – Format a diskette
- PRINT – Printing a file
- DEL – Delete a file
- DIR – Listing the files in a directory
- REN – Renaming a file
- COPY – Copying a file

External command

- Files with extension.com or .EXE are external command.
- These commands are files, they are not built in to the operating system.

Examples of External Commands:-

- DELTREE , TREE , PRINT
- FIND , XCOPY , DISKCOMP
- FORMAT , ATTRIB
- BACKUP , DISKCOPY
- MODE , JOIN
- REPLACE , LABEL
- SORT , CHKDSK

Commands Use For..

- DISKCOMP – Comparing two diskettes
- DISKCOPY – Copying a diskette
- MD – making a directory
- CD – Changing a directory
- RD – Removing a directory
- LABEL – Assign a name to a disk
- CLS – Clear the Dos screen

Wildcards

- Wildcards are symbols that enable you to perform an MS-DOS operation on more than one file at a time
- MS-DOS searches for any file whose file name or extension matches the pattern
- There are two types of wildcards character.
- ? and *

Creating folder

- MD or MKDIR Command is used to create a folder. It stands for create directory.
 - Syntax :MD [drive:][path][directory name]
- OR

- MKDIR [drive:][path][directory name]
- (To create a new directory named Raj under D drive.)

- Ex- D:\>MD Raj
- OR D:\>MKDIR Raj

Creating text file

- COPY CON command is used to create a text file.
- Syntax:
COPY CON [File Name]

You write the text and press Ctrl-Z keys together to save the contents in the file.

Ex – D:\Raj >COPY CON India

Now write the text and press Ctrl-Z key to save.

Displaying the contents of a file

- TYPE command is use to display the contents of a file.
- Syntax:
D:\Raj >TYPE [File name]

Ex – D:\Raj >India

It show all the content of the file.

Displaying Contents of a Directory

- DIR command is used to display the contents of the directory.

- Syntax:

DIR [drive:] [path]

Or DIR [drive:] [path] [/option]

Ex – D:\ >DIR or D:\ >DIR/p

/p – pauses after each screenful of information.

/w-wide list format.

/s – looks in subdirectory.

Changing Directory

- You can change your working directory by issuing the CD command. Which is stands for change directory.

- Syntax:

CD[drive:][directory name]

To make Raj as a current directory , you can write –

D:\ >CD Raj

After you write it show D:\Raj >

Command for going to the Parent Directory

CD.. command is use for getting back to the parent directory.

- Syntax: D:\[directory name]>CD..

- Ex:- D:\Raj>CD..

CD\ command is use for getting back to the root directory.

Syntax: D:\ [directory name]>CD\

D:\ Raj>CD\

Renaming File

- REN command is used to change the name of a file.

- Syntax:

REN[drive:][path][old file name] new file name]

Ex: To change the name of the file India.txt to lhm.txt give the following command.

D:\Raj>REN India lhm

Copying Files

- COPY command is used to copy one or more files to an alternate location.
 - Syntax:
 - COPY [source] [destination]
- Ex: To copy bbsr.txt file from the current India directory to Cuttack directory.

```
D:\India>COPY bbsr.txt D:\Cuttack
```

Moving Files

- MOVE command is used to move a file or files from one location to another location.
 - Syntax:
 - MOVE [drive:] [source] [drive:] [target]
 - Ex: To move Case1.txt file from directory India to directory Orissa.
- ```
D:\India>MOVE case1.txt D:\Orissa
```

Source – specifies the path of the file you want to move.

Target - specifies the path of the destination directory.

## Deleting Files

- DEL command is used to delete file or files from the disk.
  - Syntax:
  - DEL [drive:] [path] [file name]
- Ex: To delete lhm file from India directory.

```
D:\India>DEL lhm
```

## Deleting Directory

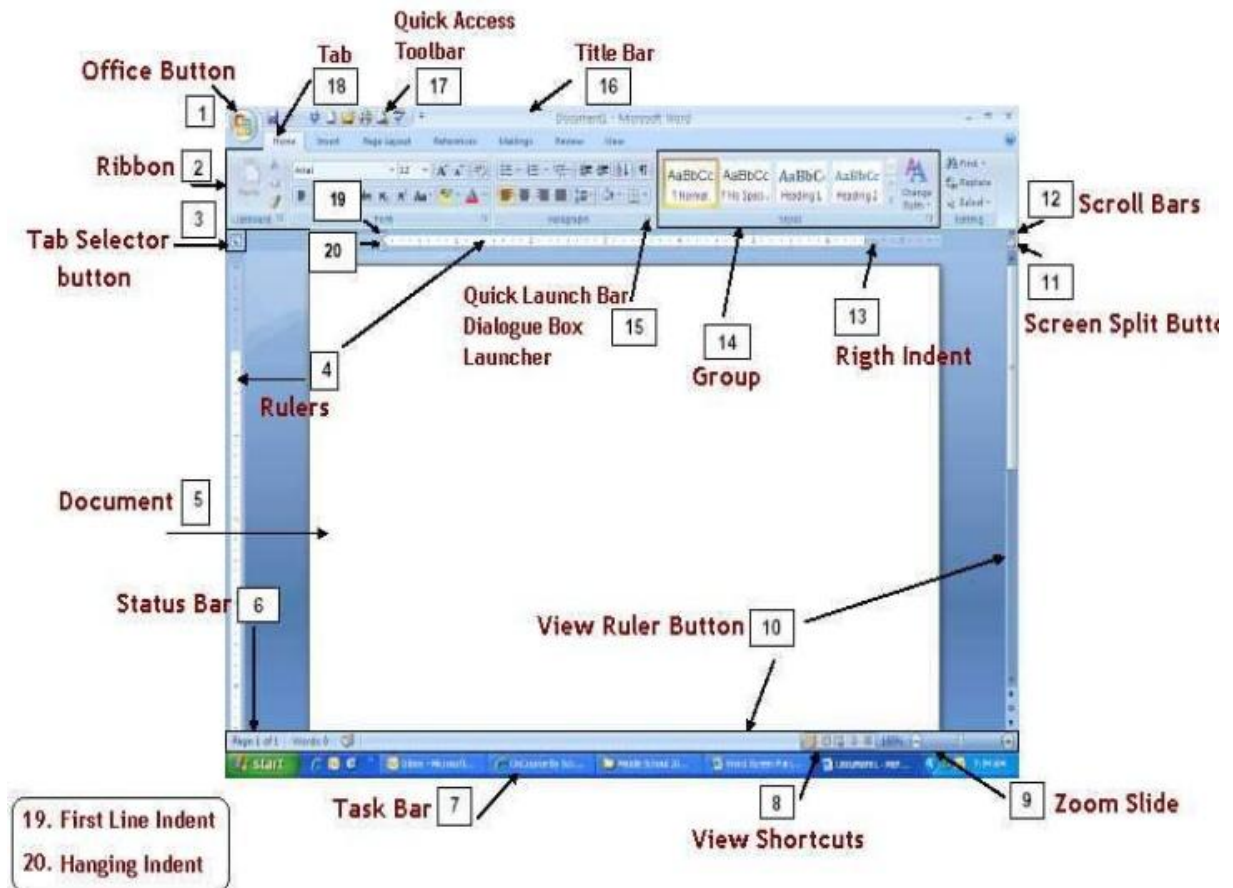
- RD command is used to remove a directory
- Syntax:
- RD [drive:] [path]
- Ex: To remove TIM directory from the D: drive.
- D:\>RD Tim

## Exiting from Command Prompt

- EXIT command is used to exit from the command prompt.
- Syntax:
- EXIT <Enter>
- When you want to close the Command Prompt window.
- D:\>Exit
- The directories are called folders in windows.

## MS-WORD 2007 - PRACTICAL

- What is MS-Word? And describe different Parts of MS-Word window - 2007 with diagram.



### **Title Bar**

- Title Bar is the bar which display the name of the current document
- Default name is Document1
- Extension name of MS-word is .docx

### **Ribbon:**

The Ribbon is the Region at the top of the user interface that provides quick access to task- specific command. It provides you with an easy to access set of commands organized onto tabs. All of the relevant commands for any particular task are placed under an individual tab that represents the main functionality.

### **Office button:**

The Microsoft office button brings together all the level features , such as new, open save , save as. It provides access to the tab , which allows you to customized the environment . It also display the list of recently open document

to enable you to quickly access the required the *document / presentation/ spread sheet program*.

### **Quick Access Toolbar**

The Quick access Toolbar is a customizable toolbar that provides easy access to any command in the application. By default ,the Quick access bar is places on top of the Ribbon and includes core commands such as Save, Undo, Redo, Open.

### **The status bar**

- ✓ The status bar at the bottom is display the page number, Line number , word count, zoom, etc.
- ✓ *Word's Status Bar* can keep track of and display statistics about your document. Statistics or features can be added, removed, or viewed simply.

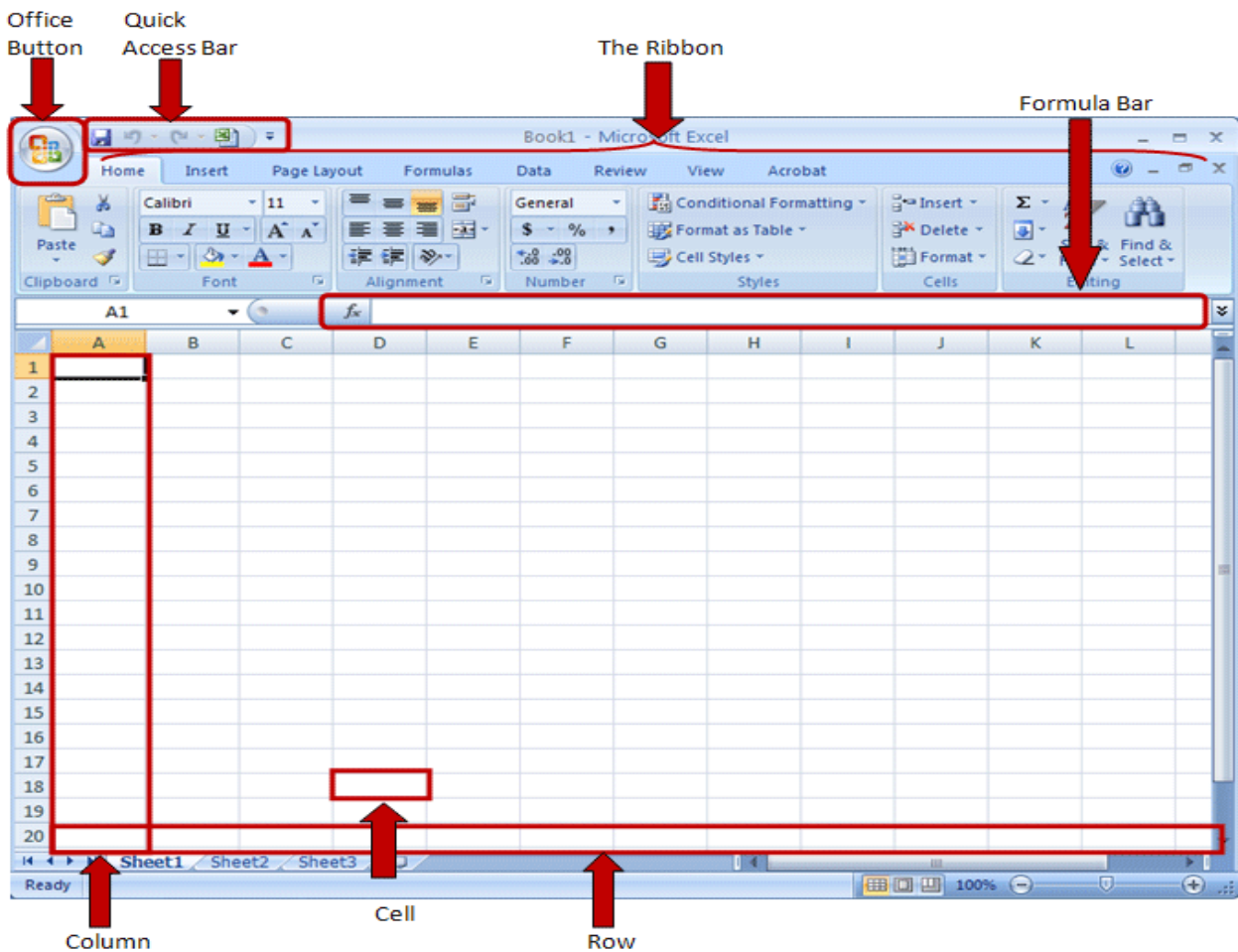
### How to open Microsoft Word -2007

➤ Start → Programs — ~~Microsoft office~~ — ~~Microsoft Word~~.

## **MS Excel- 2007**

- **What is MS-EXCEL & describe different Parts of MS-Excel window - 2007 with diagram?**
- Microsoft excel is an Application software.
- Microsoft excel is known as spreadsheet program.
- Microsoft excel is a collection of Rows and Columns.
- A spreadsheet is a program that manipulates number and string data in Rows and Columns.

- Benefits – the main advantages of using a spreadsheet program is that it enables you to perform simple row and column arithmetic.



- Excel is a collection of rows and columns.
- Rows – are referenced by the row number.  
( 1:1 is the reference to the first row )
- Columns - are referenced by the column name.  
(A:A is the reference to the first column )
- You can enter data in excel in the cell.
- Cell - A cell is an intersection of rows and columns
- In a cell you can enter various types of data. Ex- Numerical and Character
- A cell is represented by the combination of a column and row name.
- Ex - A1 is the first cell (Column A and Row 1)

## Worksheet

- A work sheet contains rows and columns of cell.
- A numbers of worksheet is called a workbook. It is the file in which you work and store data in Excel. As a workbook contains a number of worksheets.

### **Title Bar**

- Title Bar is the bar which display the name of the current document
- Default name is Book1
- Extension name of MS-Excel is .xlsx

## Features of Microsoft Excel

### ■ **Linking Worksheet**

Linking Worksheets enable you to work on a number of worksheets at a time.

### ■ **A large number of Rows and Columns**

A single Excel worksheet contains 65,536 rows and 256 columns. A single cell in excel can contain 32,767 characters.

### ■ **Charts**

Charts enables you to graphical representation data in a worksheet.

### ■ **AutoCorrect and Spell Check**

Automatically corrects common typing and spelling and grammatically errors.

### ■ **Conditional Formatting**

Apply condition in a specific cell or range of cell.

## How to open Microsoft Excel -2007

➤ Start → Programs → Microsoft office → Microsoft  
→ Excel

## Functions:-

|   | A  | B  |
|---|----|----|
| 1 | 20 | 30 |
| 2 | 15 | 40 |
| 3 | 25 | 50 |

If the values are placed in the from A1 to B3

1. The total is

= sum(Range of the cell)

= sum(A1:B3) (It display the result = 180 )

2. The maximum value

=maximum(Range of the cell)

=maximum(A1:B3) (It display the result = 50 )

3. The minimum value

=minimum(Range of the cell)

=minimum(A1:B3) (It display the result = 15 )

4. The Average value

= Average (Range of the cell)

= Average (A1:A3) (It display the result = 20 )

5. Show the date.

=Today() (It display the Current date in this format 8/4/2014 )

6. Show both date & Time

=Now() (It display the Current date in this format 8/4/2014 15:55)

## **MS Power Point – 2007**

### Presentation

- ❖ A presentation is a delivery mechanism used to deliver relevant information to specific audiences using visual aids.
- ❖ The visual aid can be in the form of overheads, slides and paper handouts.

### Power Point

- ✔ A Power point presentation is a file that contains information that can be presented to an audience as slides in a sequence
- ✔ The slides consist of placeholders in where you can insert text, pictures, graphics, table and charts.
- ✔ A presentation can also contain transitions between slides.
- ✔ Start – programs- MS Office – Ms PowerPoint

### Using Power Point you can:-

- ✔ Creating colorful Presentation
- ✔ software designed to provide you the wide range of features to custom build your presentation
- ✔ Creating Effective Presentation.

-----XXX-----

## Parts of MS window

- ◆ My Computer
- ◆ My Documents
- ◆ My Network Places
- ◆ Start Button
- ◆ Taskbar
- ◆ Recycle Bin
- ◆ Icon
- ◆ Date Time Control
- ◆ Pointer

### **My Computer**

- **My Computer** allows the user to explore the contents of their computer drives as well as manage their computer files.
- Although the name has changed this icon still acts identical to the earlier My Computer.

### **My Documents**

- My Documents is the name of a special folder on the computer's hard drive that the system commonly uses to store a user's documents, music, and pictures, downloads, and other files.

In the Microsoft Windows operating systems, My Network Places is the network browser feature in Windows Explorer from Windows XP, Windows Server 2003, Windows 2000 onwards.

### **Start Menu**

- ✓ Start is also a command that enables a user to start a separate window in Windows from the Windows command line.
- ✓ The **Start menu**, which is accessed by a button on the taskbar, contains commands that can access programs, documents, and settings.



## Taskbar

- ✓ In computing, a **taskbar** is a bar displayed on a full edge of a GUI desktop that is used to launch and monitor running applications.

## Windows Internet Explorer

- ✓ **Windows Internet Explorer** is a series of graphical web browsers developed by Microsoft and included as part of the Microsoft Windows line of operating systems, starting in 1995.
- ✓ A **web browser** is a software application for retrieving, presenting, and traversing information resources on the World Wide Web.
- ✓ An *information resource* is identified by a Uniform Resource Identifier (URI) and may be a web page, image, video, or other piece of content.
- ✓ A web browser can also be defined as an application software or program designed to enable users to access, retrieve and view documents and other resources on the Internet.

## Recycle Bin

- The Recycle Bin keeps some files that have been deleted, whether accidentally or intentionally.
- Whether a deleted file is put into the Recycle Bin depends on how it is deleted.
- Deleted files may be removed from the Recycle Bin by restoring them with a command, or by deleting them permanently.
- Recycle bin is called the Dustbin of the computer.

## Icon

- A small picture that represents an object or program. Icons are very useful in applications that use windows, because with the click of a mouse button you can shrink an entire window into a small icon.

## Question Paper

### Long Question

- 1) Define Computer. Explain the functional classification of computer with four characteristics.
- 2) Define Computer. Explain the Generation of computer with four characteristics.
- 3) What is computer Hardware? Explain briefly with examples. And give five examples of Secondary Storage Devices.
- 4) Draw and explain the parts of a MS Excel window.
- 5) What is Internet? Explain Network Topology with diagram.
- 6) Draw and explain the parts of a MS word window.
- 7) What is Network Topology? Briefly explain the different types of topology, advantages & disadvantages with diagram.

### Short Question

- a. Super Computer , 3<sup>rd</sup> Generation
- b. Components of a Computer , Main Frame Computer
- c. 2<sup>rd</sup> Generation , Characteristics of a Computer
- d. Software , Mother Board
- e. Programming Language , Application of Network
- f. External command with Examples , Internal command with Examples
- g. Networks , Modem
- h. Software , Networks
- i. Output Device , Input Device
- j. Spreadsheet Program
- k. Word processor, Recycle Bin

### **Q1. Fill in the blanks.**

1. IC was used in \_\_\_\_\_ Generation in \_\_\_\_\_ year.
2. \_\_\_\_\_ and \_\_\_\_\_ are the components of a computer.
3. Collection of file is called \_\_\_\_\_.
4. Files are contains \_\_\_\_\_.
5. Transistor was used in \_\_\_\_\_ Generation in \_\_\_\_\_ year.
6. \_\_\_\_\_ and \_\_\_\_\_ are the components of a computer.
7. Folders are contain \_\_\_\_\_.
8. Numbers of Rows in MS Excel 2007 is \_\_\_\_\_.
9. \_\_\_\_\_ and \_\_\_\_\_ are the example of High level Language.
10. \_\_\_\_\_ & \_\_\_\_\_ are the default name of MS Word & MS Excel 2007.
11. A set of Instruction in ROM is called \_\_\_\_\_.
12. IC was used in \_\_\_\_\_ Generation in \_\_\_\_\_ year.
13. \_\_\_\_\_ and \_\_\_\_\_ are the system software.
14. \_\_\_\_\_ and \_\_\_\_\_ are both the Wild card character.
15. \_\_\_\_\_ and \_\_\_\_\_ are the secondary storage device.
16. Microprocessor was used in \_\_\_\_\_ Generation in \_\_\_\_\_ year.

17. \_\_\_\_\_ And \_\_\_\_\_ are the input device of computer.
18. \_\_\_\_\_ And \_\_\_\_\_ are the Application software.
19. \_\_\_\_\_ And \_\_\_\_\_ are the Non-Impact printer.
20. \_\_\_\_\_ And \_\_\_\_\_ are the output device of computer.
21. \_\_\_ command is use to Delete & \_\_\_ command is use to create a file in MS DOS.
22. \_\_\_ command is use to show & \_\_\_ command is use to create a file in MS DOS.
23. Give two examples of search engine.
24. Give two examples of network
25. Give two examples of web browser.
26. Give two examples of Wildcard character.
27. Blinking character on the screen is known as \_\_\_\_\_.
28. \_\_\_\_\_ is the interface between the user & the hardware.
29. The Extension of MS –Word is \_\_\_\_\_.
30. The Extension of MS -Excel is \_\_\_\_\_.
31. The Extension of MS –Power point is \_\_\_\_\_.

**Q6. State True or False.**

- a) Multiple users can inter act with Micro computer at a time.
- b) A File can contain multiple Folders.
- c) ENIAC was the example of 2<sup>nd</sup> Generation computer.
- d) ROM is a volatile memory.
- e) Machine language consists zero & one.
- f) Interpreter translates instruction line by line.
- g) Multiple users can inter act with Minicomputer at a time.
- h) A File can contain single Folders.
- i) UNIVAC was the example of 1<sup>st</sup> Generation computer.

**Q3. Expand the word.**

ENIAC ,CPU ,UNIVAC ,FORTAN ,ENIAC ,COBOL ,ENIAC ,BIOS ,RAM ,MAN ,UPS ,WWW, SMPS, BASIC ,WAN ,UPS ,USB ,ARPA ,DBMS ,VDU ,ISP ,VLSI ,CAM ,EDP ,NIC ,JPEG, OCR ,

**Q5. Match the following.**

- |                   |                                        |
|-------------------|----------------------------------------|
| i. ENIAC          | a) Primary Memory                      |
| ii. Scanner       | b) Output device                       |
| iii. Plotter      | c) Transistors                         |
| iv. RAM           | d) Secondary Memory                    |
| v. Hard Disk      | e) Input Device                        |
| vi. BASIC         | f) 1 <sup>st</sup> Generation Computer |
| Vii Laser printer | g) Programming Language                |
| Viii ? & *        | h) 2 <sup>nd</sup> Generation Computer |
| Ix VER            | i) Wild card character                 |
| X. Coaxial Cable  | j) DOS Command                         |
|                   | k)Transmission Channel                 |