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Unit-1
Introduction to Computer System.

Q. What is computer?

Ans: Computer is an electronic data processing device, which accepts & stores data, processes it & generates the output in a required format. This output is also reffered to as information.

OR,

A computer is an electronice device that can solve different problems, process data, stores & retsive data & perform any types of calculation in effective & efficient matter.

Characteristics of computer

→ Highly speed:-

Computer is a very fast deriee. It has units of speed in microsecond, nanosecond & even the pico seconds. It can perform millions of calculations in a few seconds. Speed of a computer is measured in millions ~~int~~ instructions per second (mips).

→ Accuracy:-

In addition to being very fast, computers are very accurate. The calculations are 100% error free. It gives false result only when wrong data is entered. This is known as GIGO. (Garbage In Garbage Out).

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→ Storage capacity:-

Storage is a very important characteristics of computer. It can store large amount of data. It can store any type of data such as images, vedios, texts, audios and many others. There are two types of memory in computer system.

ⓐ Primary memory ⓑ Secondary memory.

→ Diligence:-

Unlike human being a computer is free from tiredness & lack of concentration. It can work continiously without any error. In addition it can do repeated work with the same speed & accuracy.

→ Versatile:-

A computer is a versatile machine capable of peoforming almost any kind of task. This machine can be used to solve the problems related to various fields.

→ Automatic:-

Computer is an automatic machine. Automacian means ability to perform the given task automatically. Once a data & program is given to computer & stored in computer memory, the program & instructions can control the program execution without human interaction. It dresnot required any help from the user to process it.

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Application of computer:-

→ Science & engineering:-

Computers are widely used in scientific calculations & for engineering purpose. One of major areas is CAD (Computer aided design) that provide creation & modification of maps & sketches of buildings.

→ Education & Research:-

The computer has provided a lot of facilities in education & research. Computer based education involves controls, delivery & evaluation of learning. It is used to prepare manuals, prepared a database about performance of a student. Even distance learning is made productive & effective through internet & vedio based classes.

→ Business & Industry:-

A computer has a high speed of a calculation, diligence, accuracy which make it useful in all business organization. Computer is used in business organization for peyroll calculation, budgeting, sales analysis, financial forcasting, maintainance of stocks etc.

→ Entertainment:-

Computers are now the major entertainers & the primary timepass machines. We can use computers for playing games, watching movies, listening to music, drawing pictures etc.

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→ Banking:-

Today banking is totally dependent on computer. We know well that computers are being used by the financial institution like bank for different purposes. Computers are used for keeping the records of the ~~el~~ cashflow, giving the information regarding your account etc.

→ Health care:-

Computer have become important part in hospitals & labs. The computers are being used in hospitals to keep the record of patient & medicide. ECG, ultra-sound & CT-scan etc are also done by computerize machine.

~~X~~ Types of computer

→ ~~Basis of size:~~

(a) On the basis of size, speed.
(b) On the basis of working principle.

(a) ~~(a)~~ On the basis of size, speed:-

(i) Super Computer:

It is a special catagory of extremely powerful computer system ~~desig~~ specially design for high speed numeric calculation. They are capable of carrying our billions of arthametic operations per second. It has several numbers of processors in a single system. It can handles more than

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10 thousands work stations at a time. So it can be used as a server. Examples of a super computer are XMP, CYBER 205, CRAY, Param etc.

→ Application of Super Computer.

1) Scientific Research
2) Military defence system
3) Weather forcasting.
4) Aircraft design.

(ii) Mainframe Computer:-

It is smaller and less powerful as compared to the super computer. It is special type of computer. It has number of processors which process parallely. It can handle more than thousands of work stations at a time. It is used as a server for large organisation. Examples of mainframe computer are IBM 4381, UNIVAC (1100/60) etc.

Features of mainframe computers

1) Have large primary storage capacity
2) Can support more input, output & secondary storage devices
3) Large powerful computers than micros & minis.

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(iii) Mini Computer:-

These are smaller in size, have lower processing speed and are cheaper than main frame. These computers are known as mini computers because of their small size. The capabilities of mini computer are between mainframe & personal computer. It handles more than 100 work stations at a time. So it is multi user or multi terminal time sharing system. Prime series & AP3 are examples of mini computers.

(iv) Micro-Computers:-

Micro computers are the smallest but most important catagories of computer system for user. They are also refered as Personal computers.

Types of Micro computers:-

1) Desktop Computer:-

A desktop computer is the most common kind of personal computer. It is a collection of a number of different hardware devices. The common component of desktop PC are :-

* The system unit containing the processor & main memory.
* Monitor
* Keyboard
* Mouse
* Hard disk drive
* floppy disk drive
* CD/DVD drive
* speaker etc.

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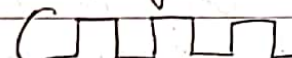
2.) Lat Laptop or Note book computer:-
A laptop computer is a small light computer that we can easily carry. It can be powered by battery or main power. A laptop computer has a keyboard & comes with specialized input devices for example: Touchpad, ~~or~~ track balls etc.

3.) Palmtop computers or Personal digital assistant :-
This type of computer is increasing in popularity & is often called a Personal digital assistant. (PDA). A palmtop computer is small enough to fit in our pocket. Palmtops have small keyboards and select icons by using a special pen.

(b.) On the basis of working Principle & logic :-

(i.) Digital Computer:- ()
A computer that performs calculations & logical operations with quantities, represented as digits usually in the binary no. system 0 & 1 is called digital computer. Meaning of 0 is off and 1 is on. Some major characteristics of these computers are:-

* These computers are based on discrete data which are not continious with time.
→ Digital computers are normally used for general purpose.
→ Digital computers are more reliable & accurate.
→ These computers are programable.

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(b) Analog Computer:-

An analog computer is a form of computer that uses continious physical phenomena such as electrical, mechanical. These computers process continious values rather than discrete binary values. Normally analog computers are special purpose computers. Thermometers, speedometers, multimeters etc are the examples of analog devices. Some of the characteristics of analog computers are:-

→ Analog computers are based on continious ~~varie~~ varying.
→ These computers measure only natural or physical values.
→ Analog computers are used for special purpose.
→ Accuracy of these computers is very low.

(c) Hybrid Computer:-

A combination of computers those are capable of inputing & outputing both digital & analog signal is called hybrid computer. It can perform the work done by analog computers as well as by digital computers. Devices used in hospitals to measure the heart beat of patient are examples of hybrid computers. Some of the major characteristics of these computers are:-

→ These computer combines good qualities of analog as well as digital computers.
→ These computers normally have high cost.
→ Normally ~~they are~~ these are special purpose machine.

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Mobile Computing:-

Mobile computing is the form of human, computer interaction by which a computer is ~~excepted~~ expected to be transported during normal uses. Mobile computing has 3 aspects

(a) Mobile communication
(b) Mobile hardware
(c) Mobile software.

Mobile computing is taking a computer & all neccessary files & software out into the field. Mobile computing being able to use a computing device even when being mobile & therefore changing location. Portability is one aspects of mobile computing.

Generation of Computer:-

Generation ~~of incomputer~~ in computer is a change in technology used for devloping computer. Generation include both hardware & software, which together make up an entire computer system. There are 5 generation of computer.

(a) First generation (1946-1959) :-

First generation computers use vacuum tube as the memory device. These generations computers were very expensive & very large in size & hence required special housing. ENIAC, MARKI, EDVAC are the example of

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First generation of computers.

Features of 1st generation:
→ They were huge in size.
→ They used vacuum tubes as main component.
→ They used machine level language.
→ There operating speed was upto milisecond.

Disadvantage of 1st generation:
→ Very unreliable.
→ Commercial production was difficult & costly.
→ Thousands of vacuum tubes were use emitted large amount of heat.
→ Air conditing was used.

(b) Second generation of computer: (1959 - 1965)

In second generation vacuum tubes were replaced by transistors. Transistors were cheaper, smaller than vacuum tube. One transistor could be replaced with thousands vacuum tubes. Thus, has 18000 vacuum tubes & can be replaced by 18 transistors. Examples of 2nd generation computers are IBM 1401 & ICL 1300.

Features of second generation of computer:
→ They used transistors as main component.
→ They used magnetic disk as secondary storage.
→ Their operating speed was increased upto microsecond.
→

Disadvantage:

→ Air conditioning was still required.
→ Assembly language was used so difficult to general users.
→ Commercial production was difficult & costly.

(c) Third generation of computer (1965-1971):-

This generation computer used IC as main component. Computers are further reduced in size than second generation. Examples of 3rd generation computers are IBM 360, ICL 1901. This generation computers used mass storage: floppy disk, hard disk, tape unit etc. Multiprocessing & multiprogramming are two main characteristics of the third generation computers.

Characteristics of third generation computer:

→ They used IC as main component.
→ Their operating speed was increased upto nanosecond.
→ They support high level languages.
→ General people can used this computers.

Disadvantage:

→ Air conditioning required in many cases.
→ Highly sophisticated technology was required for the manufacture of IC chips.

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(d.) Fourth generation of computer (1971 - 1980):

Fourth generation of computer used microchips (VLSI) as the main component. These are very cheaper, smaller & faster than other generation computer. Examples of fourth generation computers are Intel 4004, IBM PCs, Macintosh Apple etc.

Characteristic of fourth generation of computer:

→ The size of computer reduced to desktop, laptop & notebook.
→ They use object oriented programming language.
→ Their speed has been increased upto pico seconds.
→ They use IC in the form of VLSI as main component.

Disadvantage

→ Highly sophisticated technology required for manufacturing VLSI chips.

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(e) Fifth generation of computer (1980 - Present) :-

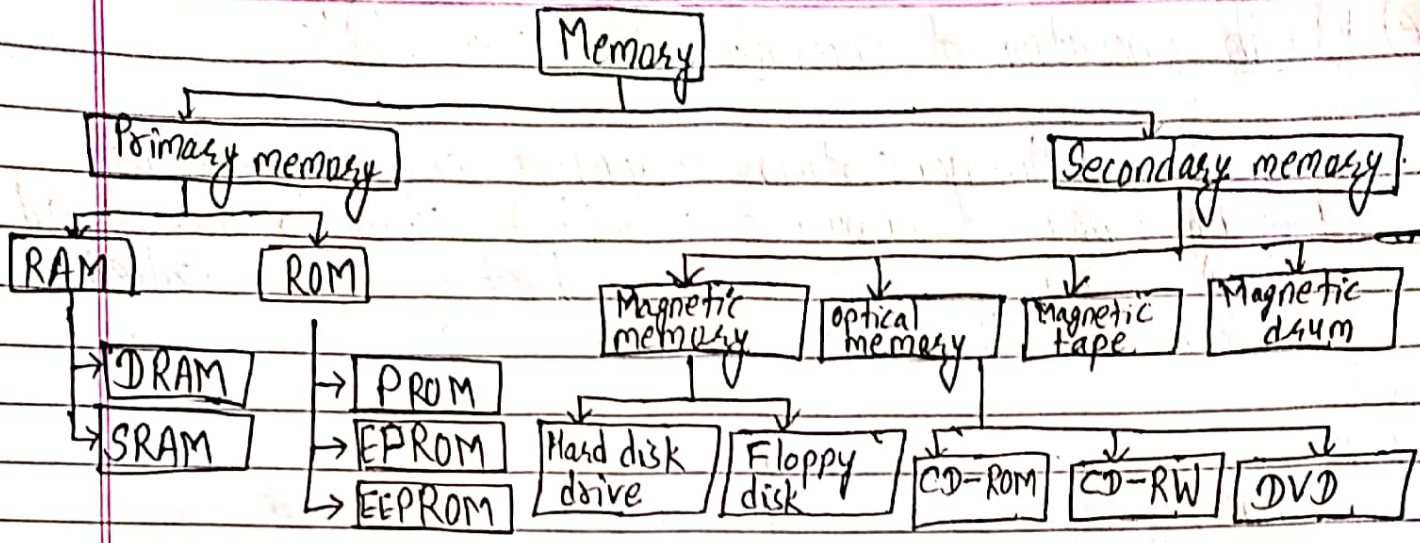
Fifth generation computers are going to use biochip. These computers will be able to understand natural language & will have thinking power called artificial intelligence.

Characteristics of fifth generation computer
→ They will have artificial intelligence
→ They will use multi-/parallel processor system.
→ Biochip will be used as main component.

Memory & it's types.

Memory refers to the electronic holding place for instruction & data where the computer, microprocessor can reach quickly. It is the hardware component used in computer system. That is a location or space to store data information, instructions & program temporarily as well as permanently. Memory can classified into two catagories. They are:

(1) Primary memory:



(1) Primary memory:-

Primary memory or main memory is the work space for the processor. It is the main storage area in a computer system where both data & instructions are stored for quickly access by the CPU of the computer. CPU continiously read instruction stored & execute from the main memory. There are four types of primary memory:

(a) Random Access Memory (RAM)
(b) Read only memory (ROM)
(c) Catche Memory.
(d) Register

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(a) RAM:-

RAM stands for Random Access Memory. It is the memory that holds instruction & data that are used frequently during processing. RAM is also called volatile memory because the data & instruction remain their only as the computer has electric power. As soon as the electricity cut off the data & instruction stored in RAM disappears. There are two types of RAM: SRAM & DRAM.

* SRAM:-

SRAM stands for Static Random Access Memory. The word static indicates that the memory retains its contains as long as power remains applied.

* DRAM:-

DRAM stands for Dynamic Random Access Memory. It is called dynamic because it is unstable & constantly be refreshed.

(b) ROM:-

ROM stands for Read Only Memory. It is a primary memory that stores from standard processing program supplied by the manufacturers to operate the personal computer. Computer can only read the content of ROM. But it cannot change the content of ROM. ROM is non-volatile memory because it doesn't lose their content on failure of power supply. There are 3 types of ROM:- PROM, EPROM, EEPROM.

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* PROM:-

It stands for Programable Read only Memory. A PROM is a memory chip on which data can written only once. Once a program has been written into a PROM, it remains theis forever.

* EPROM:-

It stands for Erasable Programmable Read only Memory. An EPROM is a special type of PROM that can ~~era~~ be erased by using ultraviolet light. To erase the content stored in EPROM, one need ~~to~~ remove the chip from the system.

* EEPROM:-

It stands for Electrically Erasable Programmable Read Only Memory. It is a type of ~~Memory~~ ROM that can be erased & reprogram musing electrical charge for electrical voltage.

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Difference between RAM & ROM.

RAM	ROM.
RAM stands for Random Access Memory which in a form of data storage that can be accessed randomly at any time.	ROM stands for Read Only Memory which is the form of data storage that cannot be erased or altered
RAM is volatile i.e. its contents are lost when the device is powered off.	ROM is non-volatile i.e. its contents are retained even when the device is powered off.
It allows reading & writting.	It allows reading only.
The instruction is written into the RAM as the time of execution.	The instruction written into ROM at the manufacturing time.
It is of 2 types; i.e. (a) SRAM (b) DRAM	It is of 3 types; i.e. (a) PROM (b) EPROM (c) EEPROM

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(2.) Secondary Memory:-

The Auxilary storage (Secondary memory) is a long term or volatile or permanent memory used in computer. It has larger storage capacity compase to primary memory. Secondary memory device such as floppy disk, hard disk are located outside the computer & CPU cannot directly access it. Some of the popular secondary memory are:

(a.) Magnetic tape (b.) Magnetic disk (c.) Optical disk.

(a) Magnetic tape:-

Magnetic tape is one of the most popular sequencal storage medium. It is a device used for storing back up information. The main drawback is that it stores information sequencally so a file or perticular information stored on magnetic tape cannot be accessed randomly.

~~Characteristic~~

(b) Magnetic disk:-

A magnetic disk is the most popular storage medium for direct access secondary storage. It is made up of a thin piece of plastic/metal circular plate which is coated with magnetic oxide layer. The data on magnetic disk can also be erased and reused. Popular magnetic disk are floppy disk & hard disk. *Floppy disk: It is a secondary storage medium which is a round, flat piece of flexible plastic coated with ferrice oxide. It is used as a back up storage memory to transfer data & information from one computer to another computer.

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* Hard-disk :-

It is a common secondary storage medium of the micro computers. It is used to store large volume of data permanantely for long time. The storage capacity of the hard disk is very high which is measured in Gigabyte (GB). It stores programs, data, operating system, application, database storage etc.

(c) Optical disk :-

An optical disk storage system consist of a rotating disk which is coated with a thin metal or some other highly reflective material. Raser beam technology is used for recording / reading of data on the disk. The most commonly used optical disk are CD-ROM & DVD-ROM.

* CD-ROM :-

It stands for Compact Disk - Read Only Memory. A CD-ROM is not erasable optical disk which is a 12cm in diameter. Data can be written on a CD-ROM only once. It can be read many times. A CD-ROM comes pre recorded & the information stored on them cannot be altered.

* DVD-ROM :-

It stands for Digital Versatile Disk. A DVD stores much more data than CD-ROM. The storage capacity range from 4.7 GB to 20 GB. DVD-ROMs are use to distributed software, music, vedios & movies.

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Input / Output Device:-

(a) Input device:-

The input devices are the hardware that allows us to put data into a computer & enable us to provide the means of communication between the computer and the outer world. These are the electromechanical devices that allow the user to feed information into the computer for analysis, storage & to give commands to the computer.

Examples:- Keyboard, Mouse, Microphone, scanner, OCR (Optical character reader), OMR (Optical Mark Reader), MICR (Magnetic Ink Character reader), Joystick, Light pen,

* **Keyboard:-** The keyboard is one of the first periferals to be used with computer & it is still the primary input device. Keyboard contains various keys that enable us to entered alpha numeric & numeric data into a computer.

* **Mouse:-** The mouse is a pointing device that lets us to control the position of a graphical pointer on the screen without using the keyboard. Mouse is a hand-held device which can be moved on a smooth surface to simulate the movement of corser on the display screen. Using mouse we can perform following operations.

i.) Pointing
ii.) Click
iii.) Right click, double click, drag & drop.

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* Light pen :-
It is an electro-optical pointing device which is used for selecting the objects on the display screen with the help of a light sensetive pen. It is generally connected to the Visual Display Unit (VDU) of the computer system.

* OCR :-
It stands for Optical ~~Character~~ character ~~Reader~~. It is used for electronically ~~recognising~~ recognising the characters written in the marked

* OCR devices :-
It stands for Optical Character reader. It is used for electronically recognising ~~the characters~~ its individual characters optically & coverig it into the editable form.

* OMR devices :-
It stands for Optical Mark Reader. It is used for electronically recognising the characters written in the marked fields only.

* MICR devices :-
It stands for Magnetic In character Reader. It is used for recognising the characters written with the help of magnetic ink.

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(b) Output devices:-

The unit consist of devices which are used to recieve the result from the CPU & provide them to the user in user understandable form is called output unit. The computer sends information to the output device in binary coded form & output devices convert them into a form which can be used by users such as printed form or display on screen. There are two types of output:

(1) Soft copy output:-

The output obtained in an electronic intangible form on a visual display, audio unit or vedio unit is called soft copy output. The soft copy allows corrections to be made, can be stored. The soft copy output requires a computer to be read or used. The devices that generate soft copy output are called soft copy devices. e.g. Monitor, VDU; ~~etc~~ speaker. etc.

(2) Hardcopy output:-

The output in non-electronic form, Obtained in a tangible form on a paper or any surface is called hard copy output. The hard copy can be stored permanently and is portable. The hard copy can be used or read without a computer. The devices that generate hard copy output are called hard copy devices. e.g. Printer, Plotter etc.

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* Printer :-

It is an external hardware device that prints computer data on paper. The most common output devices used for producing human readable output is known as printer. They are used for producing output on paper in a permanent readable form.

There are two (2) types of printer.

(1) (a) Impact printer :-

The printers which use the electro-mechanical mechanism that causes hammers or pins to strike in a ribbon & paper to print the text are called impact printers. Impact printers are slow in nature & makes lots of noise. The impact printers are classified in 3 catagories:

(a) Dot matrix printer, (b) Daisy wheel printer (c) Drum printer

(2) Non-impact printer :-

Non-impact printer prints characters & images without striking a paper. Non-impacts printer forms characters & images without making direct physical contact between printing mechanism & paper. Examples of Non-impact printers are: Ink jet printer & Laser pointer.

(3) Plotter :-

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Examples of Softcopy output:-

(a) a. **Monitor:-**

It is also called vedio display terminal or display screen. It is used to display information programs and applications in a computer. It is also called primary output device or standard output device. Pixel is the smallest unit of the monitor. There are three types of monitor:- (i) CRT (ii) LCD and (iii) LED.

(i) **CRT:-**

CRT stands for Cathode Ray Tube. In CRT, a beam of electrons emitted by an electron gun passes through focusing hits specified position on the phosphorous coated screen.

(ii) **LCD:-**

It stands for liquid Crystal Display. LCD's are commonly used in PDA's. This devices produce a picture by passing polarized light from an internal light sources through a liquid crystal material.

(iii) **LED:-**

It stands for Light Emitting Diode. It is a semi-conductor device that emits visible light when an electric current passes through it.

(b) **Speakes:**

The computer speakes is a device that connects a computer to generate sound. The signal used to produce the sound comes from a computer speakes is created by the computer's sound card. A speakes port allows us to connect speakes to the computer.

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Interface or Ports.

Interface or ports refers to the point or a connector through which data is transfered between two hardware devices, between a user and a program etc. In other word interface defines different types of devices can be connected and communication and data flow can occur between them. In computer there are different types of interfaces like user interface, software interface & hardware interface.

Types of interface:-

There are different types of interface or ports connecting different devices in computer system where data flow in & out through these port.

a) **Parallel Port :-**

A parallel port allows the transfer of all the bits of the world simultaneously such as printer.

b) **Serial Port :-**

A serial port allows serial data tranfer. In serial data transfer, one bit of data is transmitted at a time.

c) **USB Port :-**

USB stands for Universal Serial Bus. It is a high speed serial bus. Its data transfer rate is higher than serial port.

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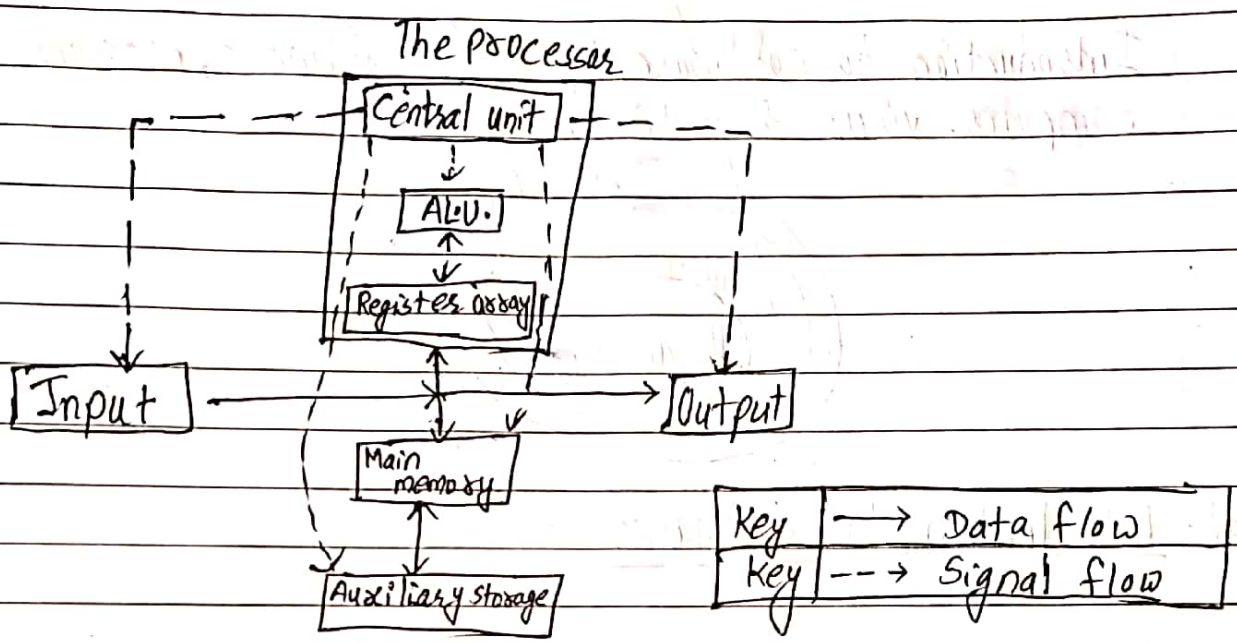
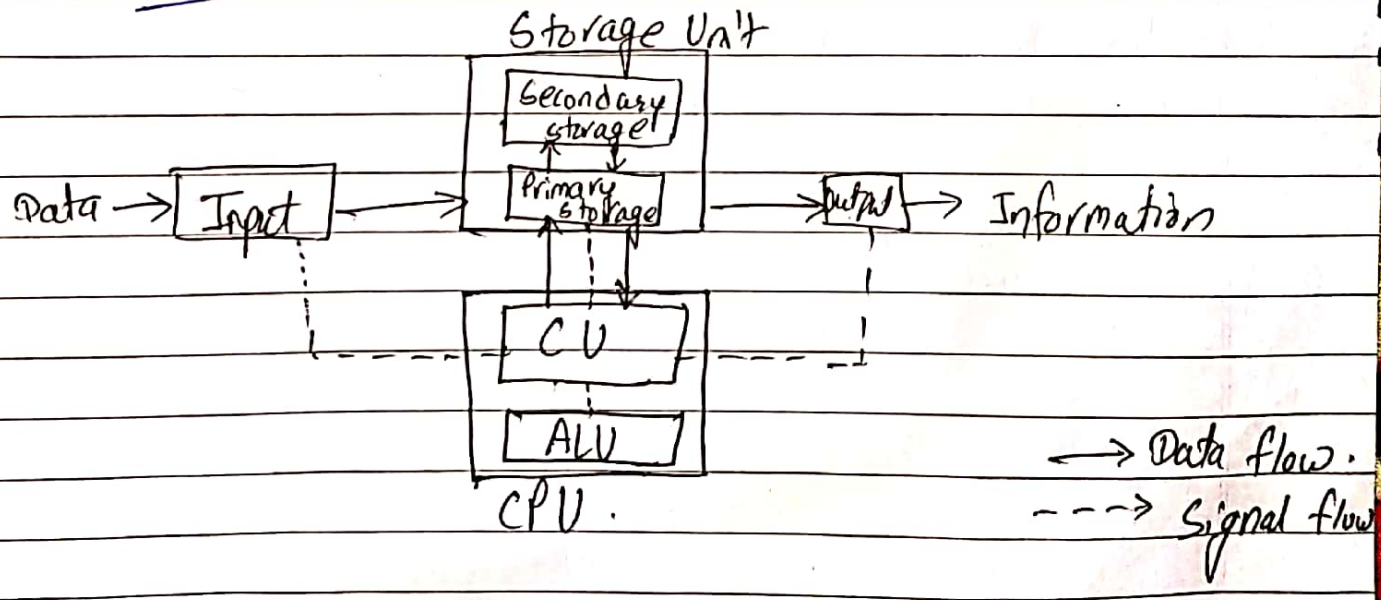
Computer system: / Architecture of a computer / Anatomy of digital computer.

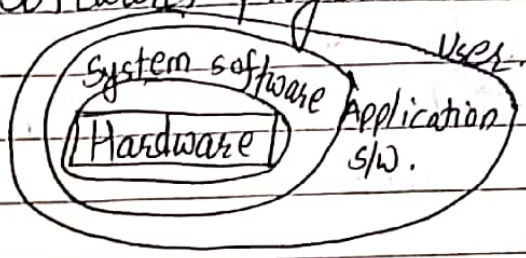


OR,



Unit-2
Computer Software

Introduction to software, types of software, program vs. software, Computer virus and antivirus.



Introduction to software:

Software is defined as a computer programs together with an associated documentation that describes the programs & how they are to be used. Software is a computer programs that tells the computer what to do & how to do. Hardware cannot do be used without software. i.e. without the software the computer cannot do anything. A computer can solve the problem only if it is stored in the form of instructions which tell the computer what to do.

There are two types of software:-

(i) System software: (ii) Application software

(i) System software:

System software provides the basic functions that are performed by the computer. It is necessary for the functioning of computer. The system software interacts with hardware at one end & with application software at the other end.

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(i) System software:-

System software is a group of programs that direct the internal operations of computer system such as controlling I/O devices, managing the storage area within the computer etc. The purpose of the system software is to make the use of computer more effident & easier. System software is usually supplied by the manufacturer with the computer.

The purpose of the system s/w are:

→ To provide basic functionality to computer,
→ To control computer hardware,
→ To act as an interface between ~~as~~ user, application s/w & computer hardware.

(ii) Application software:-

The software that is written by the user to solve a user oriented problem using the computer is known as application software. Application software may be a single program or a set of programs. Application s/w is written for different kinds of applications ~~- gra~~. For e.g. ~~graphics~~ MS-word, CAD/CAM, MS Access, Lotus 1-2-3, oracle etc.

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Difference between System s/w & Application s/w.

System software	Application s/w.
→ System s/w is a group of programs that direct the internal operations of computer system such as controlling I/O devices, managing the storage area within the computer etc.	→ The software that is written by the user to solve a user oriented problem using the computer is known as application software.
→ Generally users do not interact with system s/w.	→ Generally users interact with application s/w.
→ System s/w runs independently.	→ Application can't run without the present of system s/w.
→ System s/w performs several task.	→ Application s/w perform specific task.
→ It is of 3 types: * Operating system. * Language processor * Utility software.	→ It is of two types: * Tailored software * Packaged software
→ E.g. Windows xp, Linux.	→ E.g. Adobe, Herosoft, Microsoft.

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Program

→ The set of instruction that instruct the computer to perform the specific task & written using the progeamming language of concern is called progeam

→ A progeam is independent of its own.

→ It is created by a single progeammer.

→ Normally progeam doesn't need licenced to use.

→ Small in size & demands less memory during execution.

→ C-progeamming to display the sum of two numbers.

Software.

→ The set of computer progeams together with an associated documentation is called s/w.

→ For developing s/w, collection of progeam is needed.

→ It is developed by a group of progeammer as a team work.

→ Generally license is required for using commescial software.

→ Large in size & demands more resources during execution.

→ MS-Word, powerpoint are its examples.

Virus:

The computer virus is a computer program that replicate itself & spread from one computer to another. A computer virus is a program or piece of code that is loded unto our computer. A computer viruses are man-made.

Symptoms of computer-virus:

→ It shows error message on the screen.
→ It corrupts the system data.
→ It renames all the files with different name.
→ It increases the use of disk space & growth in file size.
→ It takes long time to load the program.

Protection from virus:

→ Install & upgrade regular antivirus software.
→ Do not use pirated software.
→ Back up your system on regular basis.
→ Check the new software for virus before installing it.
→ Use the user password system to avoid unapprized use of a computer.

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Anti-virus: (Utility Software).

Antivirus are the software that can protect from viruses & eliminate viruses so that computer system run smoothly. eg. AVG, Avast, Kaspersky etc.

~~# Application etc.~~

~~* Word processor:~~

* What is word processor?

⇒ Word processing s/w is used to manupulate a text document such as a resume or a report. Word processing includes a number of tools to format our pages. For e.g. We can organize our text into columns, at page no. An example of a text editor would be notepad, word perfect, MS-Word, etc.

* Some of the function of word processing s/w includes:

i) Creating, editing, saving & printing documents.
ii) Copying, pasting, moving & deleting text within a document.
iii) Formating text such as font type (bold, Italic, underline) etc.
iv) Creating & editing tables
v) Correcting spelling & grammer.

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* What is MS-Excel?

⇒ Microsoft Excel is an application s/w developed by Microsoft company USA. It is also called electronic spread sheet. Spread sheet consist of rows & columns. The intersection of rows & columns is called a cell. A cell accepts 4 type of data: characters, number, formula & functions.

Features:

i) It supports graphical user interface.
ii) It arranges data in order to be easy for searching.
iii) It facilate to create different type of graphs.
iv) It allows to calculate varieties of sums automatically using a formula.

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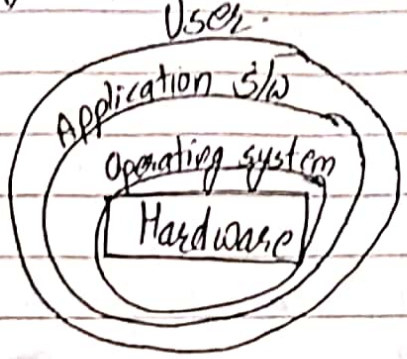
V.V.Gmp

Unit-3
Operating System

Introduction to O/s, Function of O/s, Types of O/s, Open source operating system.



Introduction to Operating system:-

An Operating system is a system software, which is set of specialized programs that are used to control the resources of a computer system. It is an organized set or collection of software that controls the overall operation of the computer system. MS-DOS, Windows XP, Vista, UNIX, LINUX are example of operating system.

Functions of O/s.

① Input-Output Management:-

Computer systems includes the wide variety of input output devices such as printer, mouse, keyboard, speaker, light pen etc. The speed, functions & designs of such devices are different from one another. The operating system handles

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such different I/O devices.

(2.) File management:-

File is a collection of data & information which is stored in computer system. Operating system is responsible for creation & delegion of files and directories. It also takes care of other file related activity such as organizing, storing, retrieving & protecting the file.

(3.) Memory management:-

Memory is a large collection of bytes: each byte has its own address. In simple ~~co~~ words memory is a space which can store data and information on computer system. Operating system manages all memory devices on the computer system. ~~The operating system~~ ~~it~~ The O/s manages all memory devices like primary memory ~~like~~ (RAM & ROM).

(4.) Protection & Security:-

The protection is the process of securing the data & information from ~~d~~unauthorized access. The O/s protects system resources & information from distruction & unauthorized used.

(5.) Process management:-

A process is an excution of sequence of instruction an program by the ~~cen~~ CPU. The process management is the module of the O/s that takes care of the:

* Creation & delegion of processes
* Providing a mechanism for communication among them.

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* Scheduling of various system resources through the different process request them.

Types of Operating system:

(a) Based on Mode of user. (b) ~~Based~~
(1) Single User
(2) Multi user.

(b) Based on processing management:
(1) (a) Batch processing
(2) b Multi-tasking / Multi programming.
(3) Time sharing.
(4) Real time O/s.
(5) Multi processing.

(c) Based on user interface.
(1) GUI (Graphical User Interface)
(2) CUI (Character User Interface).

(a) Based on Mode of Users.
(1) Single user:
Single user operating system provides enviroment where single user can access computer resources and work in an interactive mode. All the resources of the system are available to the user. If another user needs access to the computer system, they

must wait till the current user finishes what they are doing. MS-DOS is an example of single user O/s.

(2) Multi-user:-

A multiuser O/s lets more than 1 user to access the computer system at a time. Access to the computer system is normally provided via network so that user access the computer remotely using terminal at other computer. Examples of multiuser O/s are UNIX, LINUX.

(b) Based on processing Method:

(1) Batch processing:-

Batch processing operating system allowed only one program to run at a time. These kinds of O/s can still be found on some mainframe computers running batches of jobs. Batch processing O/s works on a series of programs that are held in a queue. The job with similar requirement were batched (grouped) together & run as a group is called batch processing.

(2) Multi-tasking/Multi-programming:-

Multi tasking O/s is one that allows a PC to perform more than one task at a time. For e.g. A user could be running a word processing package, printing a document, copying files to floppy disk & backing up selected files to floppy disk. Each of these task ~~user~~ the user is doing appears

to be running at same time.

(3.) Time sharing:-

If a computer allows interactive access to more than one user at one time then the opesation is called multi-access & the process of dividing the time for each user is called time sharing. A mainframe computers may support 100s of terminals (computers) user simultaneously whereas a mini computer support upto 20-30 users.

(4.) Real time Os:-

The primary objective of real time Os is to provide quick response time. Real time Os is another form of Os which monitors various input variables & process it in short time or in certain deadlines & performs its function. The Os which are dedicated to some well define job which requires very fast response, in which execution time is the most critical issue is called real time Os.

(5.) Multi-processing:-

Multi-processing is the management of multiple processes with in multiple processors. The technique of using more than 1 processor is often called parallel processing. Multiprocessing system is one inwhich more than one processors are linked together, sharing main memory & I/O devices.

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(C) Based on user interface:-

(1) CUI (Character User Interface):

The Os which provides the user with the facility of entering commands through interactive terminals for initiating programs & application is called CUI Os. CUI based Os allow user to type their commands using keyboard to get computer response. MS-DOS is an example of CUI based Os.

(2) GUI (Graphical User Interface):

The GUI provides picture oriented interface. Instead of typing commands, It provides menus and icons (small representative pictorial images) which the progeammer can select by using mouse.

Concept of Open sources Os.

Software application where the source code is available & permits users to use, change & improve the software & to re-distribute it in modified or unmodified form are called Open source software. It is a metho or approach towards the disign & development of software with the intension of giving the user access to the source code. Example of open source software are Linux server, LINUX etc.

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Benifits of open source

→ The availability of the source code and the right to modify it.

→ The right to re-distribute modification & improvement to the code.

→ The right to use the software in anyway.
→ It helps to produce reliable, high quality software quickly & inexpensively. etc.

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Unit-4

Database Management System

Introduction to DBMS, Database Models, SQL, Database design & Data security, Data warehouse, Data mining, Database Administration.

Database :

A database is an organized collection of logically related data that contains information relavent to an interprises. The database is also called the repository or container for a collection of datafiles. For e.g. University database maintains information about students, process & grades in university.

Database Management System (DBMS)

A database management system is the set of programs that is used to store, retrieve & manupulate the data in convenient and efficient way. Main goal of database management system is to hide underlaying complexities of data management from users to provide easy interface. Some common examples of DBMS softwares are :- ORACLE, Microsoft SQL server, MS Access etc. DBMS that maintains relationship between multiple datafiles is called relational database management system.

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Purpose of DBMS / Function of DBMS:-

→ Systemetic organization of information. (To store, manupulate & manage information).
→ For performing common operation (Insert, update & delete the information)
→ Quick retrieve of information (search operation).
→ To centralized the data & input the security of the data.

Models of DBMS:

(1) Implementation Model :-
(i) Hierarchical :-

In this model files are arrange in a top down structure that seems a tree. The top file is called the root, the bottom files are called leaves & intermediates files have one parent & one or several children file. This database is used for high volume transaction & MIS. (Management information system).

Advantages :-
→ It is easiest model of database.
→ Searching is fast and easy.
→ Very efficient in handling. handling

Disadvantages :-
→ It is oldest fashioned, outdated database model.
→ Can't handel many to many relationship.

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(ii) Network Database Model:→

Network model systems are still popular for high volume transaction. This model is very flexible as any relationship can implimated. Visually, a network database looks like a hierarchical database.

Advantage:-

→ More flexible than hierarchical because it accepts many to many relationship (duplicate)
→ Reduce redundancy because data shouldn't be repeated.
→ Searching as faster because of multidirectional pointers.

Disadvantage:-

→ Very complex type of database model.
→ Needs long programs to handle the relationship.
→ Pointers needed in the database model increases ~~over~~ overhead of storage.
→ Less security in comparision to hierarchical model because it is open to all.

(iii) Relational Database Model:

It is most common database model for new systems. The relational database model was developed by E.F. Codd. This model defines simple tables for each relation & many to many relationship. Primary & secondary key indexes provide rapid access to database upon qualifications.

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Advantages:-

→ Rapid database processing as possible.
→ It has very less redundancy (unnecessary data).
→ Normalization of database is possible.
→

Disadvantage:-

→ It is more complex than other models.
→ Too many rules makes database non-user friendly.
→

(iv) Object Oriented database model:-

It is a flexible database, that supports the use of abstract data types, objects & classes & that can store a wide range of data, often including sound/vedio & graphics. Some object oriented database allow data retrival procedures & rules for processing data to be stored along with data as implace of data.

Advantage

→ Redundant code can be eliminated by making use of concept called inheritance.
→ Easy upgrading of a data system from small to large system.

Disadvantage

→ Poor performance in comparision to relational database model.
→ This database model is very complex & it needs trained manpower to be operated.

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ER → Entity Relationship:

(2) Conceptual Model:-

It focuses on how the data elements in the database is to be grouped. ER model is a conceptual data model. ER model represents real world suaitation using concepts commonly used by people. ER model show the graphical representation of entities & their relationship in a database structure. The elements of ER are as follow:-

(i) Entity (ii) Attribute (iii) Relationship.

(i) Entity:-

An entity is a thing of intrest to an organization about which data is to be held. Example is costumers, employees, students, doctor. It is denoted by rectangle.

(ii) Attribute:-

It is a property or characteristics of an entity. Example: of attribute is assciated with a costumer include costumer id, costumer name, title, address etc. It is denoted by an oval symbol.

(iii) Relationship:-

A relationship is a link up association between entities. An example is the link between the doctor & patient. It is denoted by diamond symbol.

~~There are following types of relationship.~~

~~(a) One to one relationship:-~~

~~One instance of an entity~~

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Advantages of ER model

→ ER model is very well ~~integrated~~ integrated with retional database model.
→ Database main entity & their relationship are easily viewed & understood through ER model.

Disadvantages of ER model:

→ No data manupulation language or commands are available in ER model.
→ This model become crowded due to huge presence of entity.

There are following type of relationship.

(a) **One to one relationship:-**

If one instance of an entity is associated with one instance of another entity we say that their exists one to one relationship between the entities.

One driver can drive one car at a time & a car only can be driven by a driver. So here one to one relationship exists.

(b) **Many to one relationship:-**

If many instance of an entity is associated with one instance of another entity then we say that many to one relationship exists between the entities.

Here a school has many student but a student can be of only one school. Hence many to one relationship exists in the case.

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(c) Many to many relationship:-

If many instance of an entity is associated with many instance of another entity then we say that many to many relationship exists between the entities.

Many instance of employee can learn a skill & many instance of skill can be learned by employee. Hence many to many relationship exists in this case.

SQL :-

SQL stands for Structured Query Language. It is a database sub-language which is used in querying, updating & managing relational database. It was developed by IBM in 1970. SQL is not a progeamming language but a data access language.

SQL command can catagorized as:

(i) DDL such as create, alter, drop etc.
(ii) DML such as insert, updating, delete etc.

Database design :-

Database design is just a structural design which will be used to store and manage data. If a database is well design, it will facilitage data management & will become a valueable information generator.

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Database Administration:

Database Administrator is the person who manages the database. The DBA determine the content, internal structure of a database, define security & monitors performance. The DBA have to process the following:

(i) Knowledge of query language (SQL)
(ii) Knowledge of various operating system on which database server can run.
(iii) Knowledge in designing the database.
(iv) Knowledge about network architecture.

Responsibility of DBA:

→ DBA should give idea to an organization on deciding which department will be looking on maintainance & update of data in the database.

→ DBA has to assure 24 hour access to each department in the organization that needs the data.

→ DBA has to install & timely upgrade the database server.
→ DBA has to work with the developers & need to assist in designing the overall database.

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Data warehouse:

A data wirehouse is repository of information constructed by integrating data from multiple heterogeneous sources that support analytical reporting, structure, queries & decission making. Data wirehousing envolves data cleaning, data integration & data consolidation.

Application of data warehouse / Uses of data warehouse:-

- Banking industry.
- Government
- Education
- Health care
- Insurance
- Telecom industry.

Data mining:-

Data mining is define as extracting information from huge sets of data. In other words we can say that data mining is the procedure of mining knowledge from data.

Application of datamining:

- Financial data analysis.
- Biological data analysis.
- Telecom industry.
- Other scientific applications.

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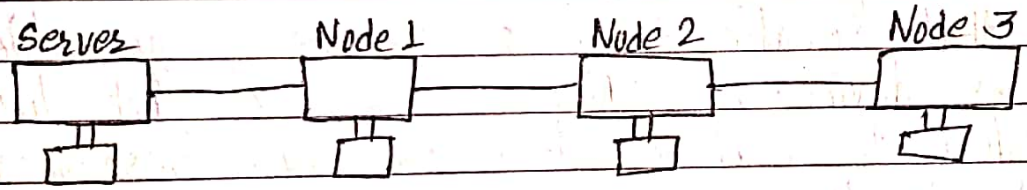
Unit-5

Data Communication & Network.

~~Introducing~~ Introduction, mode of communication, Introduction to computer network, Type of computer network, LAN Topologies, Transmission Media, Network devices, OSI reference model, Communication protocol, Centralized vs distributed system.

Computer Network:-



A computer ~~mean~~ network means two or more computer connected ~~with~~ each other to share data, hardware, software & other ~~ses~~ resources! Other resources include printers, harddisk, CD-drive etc. Telephone line, cables, satellite links, radio waves & other communication technique, interconnect computer in the network.

Advantages of Computer Network:-

→ Computers in a network can access network connected hardware devices like printers, disk drives etc.
→ Information can exchange rapidly in computer network.
→ Computers in a network system can different software packages.
→ Data in a network environment can be updated from any computer. Updated data can be access by all computers of the network.

~~LAN~~
~~MAN~~
~~WAN~~

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Disadvantage of Computer Network:

→ Failure of server stops applications being available.
→ Network failure cause loss of data.
→ System open to hackers.

Types of Network:

(1.) LAN (Local Area Network):-

A LAN is a network of computers that are relatively near ~~way~~ with each other & are connected in a way that enables them to communicate by cable & a small wireless device. A LAN can consist of just two or three computers to exchange data or share resources or it can include hundreds of computers of differents kinds. Any network that exists within a single room or within a building or within a short distance is considered as LAN.

(2.) MAN (Metropolitian Area Network):-

A MAN is a network of computers which spread over a ~~the~~ metropolitian area such as: within a city. It connects two or more LAN together. ISP (Internet Service Provider) providing network communication within a city & the network of different branches of a bank within the same city are examples of MAN.

Features of ~~MAN~~ MAN:

→ It covers a limited geographical area.
→ It may be owned by single or multiple organizations.

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→ It uses cable or wireless connection.

③ WAN (Wide Area Network):-

A wide area network is a network system of connecting two or more computers in a wide geographical area such as district & countries. This type of network uses telephone lines, satellite links, & other long range communication technologies to connect computers. Internet is an example of WAN.

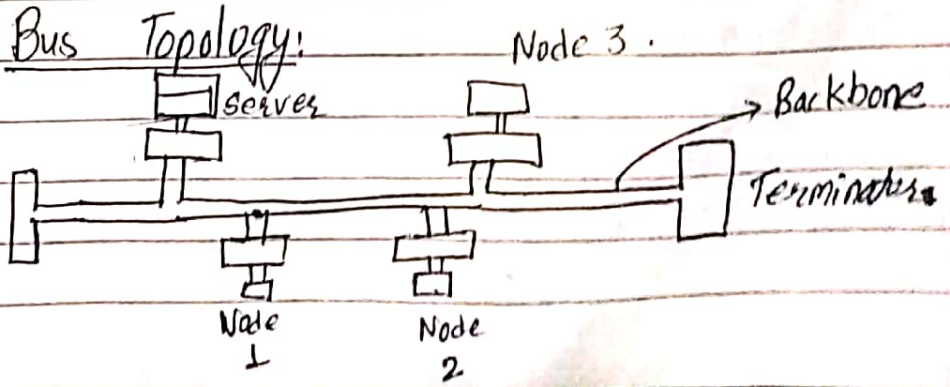
Features of WAN:-

→ It covers a large geographical area.
→ It is owned by multiple organization.
→ It uses public connection medium such as telephone lines, wireless technology etc.

Network topologies:

The arrangement or connection pattern of computers or nodes & other devices of the network is known as network topologies. Speed & performance of the computer network depends upon the topologies used. The basic topologies are:

① Bus Topology:



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In Bus Topology, computers & other devices are arranged in a linear format. It uses a common backbone or wire to connect all the computers & devices. The backbone is also called Bus. It works as a communication medium & each workstation is connected with the coaxial cable.

Advantages:

→ It is easy to set up computers & other devices in Bus topology because all the devices are connected through a single wire.

→ It requires less cable media so it is cheaper than other topologies.

→ It is easy to add a new node in the network.

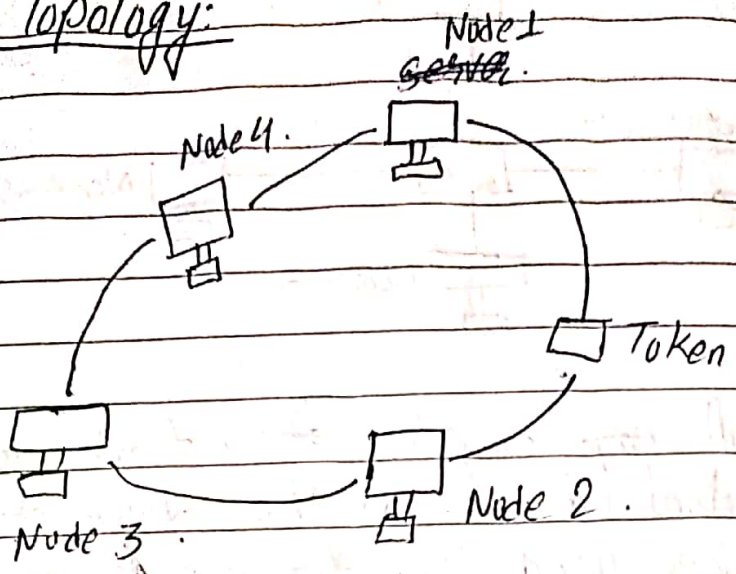
Disadvantages:

→ The whole network system collapses if the cable or backbone is damaged.

→ Difficult to detect the error.

→ The network slows down if additional computers are connected.

(b) Ring Topology:



In Ring topology, computers are connected in the shape of a circle without any end point. Each workstation contains two neighbour for communication as an input & an output connection. Ring Topology uses a token passing method to pass data from one computer to another. All computers get equal opportunity to access the token.

Advantage:

→ It is easy to set up & reconfiguration.
→ Each computer gets equal opportunity to access the network resources.

Disadvantage:

→ Failure of any cable signal, computer may effect the entire network.
→ It is difficult to detect the errors.
→ Adding or removing the devices effects the entire network.

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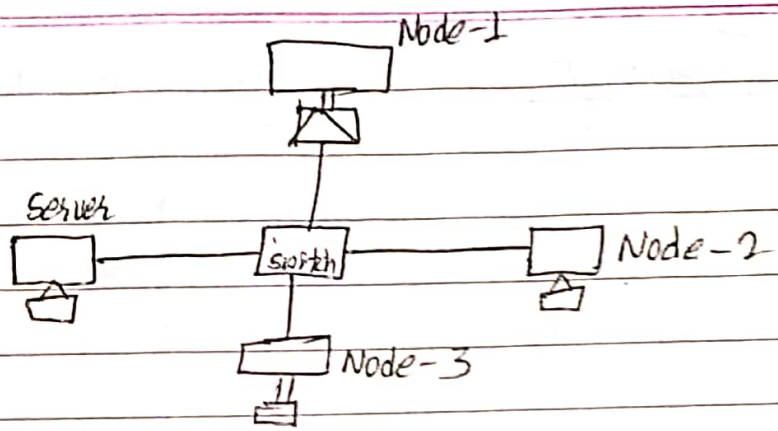
(c) Star topology:



In star topology all ~~comp~~ computer or ~~are~~ network devices ~~are~~ are connected to a central device in the shape of star structure. The common devices used for the central ~~con~~ connection are hub & switch. This is the most popular network topology used to connect computers & other devices in a network.

Advantage:-

→ It is easy to set up an computer
→ Failure of a single computer or cable doesn't affect the entire network.
→ It is easy to extend the network by attaching new devices to the central point device.

Disadvantage:

→ It's required more cables.
→ Failure of the central device (Switch/hub) break down the whole system.

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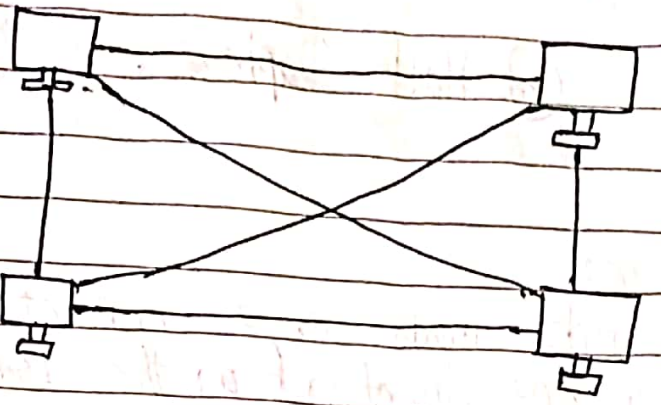
(d.) Mesh topology:-



In Mesh topology is, computer has a direct connection with every other computer. So if any one connection failed, there is another connection through which data can be transfered. The mesh topology is most expensive topology to implement due to the cost of connection links from each computer to every other computes.

Advantage:

→ Direct connection between computer shows it is more reliable.
→ Data transmission is faster.
→ Failure of one node doesn't affect the entire network.

Disadvantage:

→ More cables are required shows it is expensive.
→ Wiring is complex shows difficult to manage.

Modes of data transmission: (Mode of communication).

(a) Simplex (b) Half Duplex (c) Full Duplex.

(a) Simplex mode:

A simplex mode is a connection in which the data flows in one direction from the transmitter to the recievers. This type of connection is useful if the data do not need to flow in both direction. Data transmission transition ~~to~~ compter to printer is an example of simplex data transmission.

(b) Half Duplex mode:

Half duplex connection is sometimes also refer to as alternating connection or semi duplex connection. In this mode data flows in both direction but not at the same time. This type of connection makes it possible to have bidirectional communication using the full capacity of the line. Data transmission from RAM to CPU is an example of half duplex data transmission.

(c) Full duplex mode:

A full duplex connection is a connection in which the data flow in both direction simultaneously. Data transmission in internet is an example of full duplex transmission.

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Transmission Media: ~~(Mode of communication)~~

There are two types of transmission media:

(a) Guided (b) Unguided

(a) **Guided:**

Guided transmission media using a cabling system that guides the data signals in a specific path. Guided media is also known as bounded media.

(b) **Unguided:**

Unguided transmission media consist of a means for the data signals to travel but nothing to guide them along a ~~spef~~ specific path.

Guided ~~are~~ media are classified into 3 types:

(i) **Twisted pair:**

The wires in a twisted pair cabling are twisted together in a pairs. Each pair would consist of a wire used for the positive data signals & negetive data signal. These are two types of twisted pair:

* Unshielded Twisted pair (UTP)
* Shielded Twisted pair (STP).

(ii) **Coaxial cable:**

Coaxial cable is very common & widely used communication media. for e.g. T.V. wire is usually coaxial. The central conductor in the cable is usually copper.

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(iii) Optical fibre:

Optical fibres uses light to transmit data. A thin glass fibre is encased in a plastic jacket which allows the fibre to bend without breaking. It is very expensive & difficult to install.

Unguided media are classified into two types:

(i) Microwave transmission:

Microwave signals are similar to radio & television signals and are used to transmit data without the use of cables. The range of this transmission is limited to about 30 miles or 45 km.

(ii) Satellite transmission:

The earth station consists of a satelite dish that functions as an anteana receive data from satelites passing over head. The satelite accepts data signals transmitted from earth station, amplifies them & transmits them to another earth station.

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Protocols:-

Communication between computer would be impossible without protocols. Protocols are set of rules that the computers on the network must follow to communicate & to exchange data with each other. They are used to make a logical connection between different computers and transfer data from one computer to another.

Some of the common protocols are:

(i) TCP/IP:- Transmission Control / Internet Protocol is responsible for addressing data, converting them into packets & routing the data packets.

(ii) HTTP:- Hypertext transfer Protocol is used to transfer data & files on the internet.

(iii) FTP:- File transfer Protocol provides a method to transfer files between two computers.

(iv) SMTP:- Simple Mail Transfer Protocol is used to transfer mail & attachment on the computer.

(v) POP:- Post office Protocol is a common protocol used for fetching mails from the mail server to a user's computer.

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~~Network devices of connectors.~~

Connectors :-

* **Hub :-** Hub is a device with multiple points or ports. It acts as a central point from where different computers and other devices are connected. It also amplifies ~~amplify~~ the signals & sends them to all connected devices. Hub is mostly used in the center of physical star topology.

* **Repeater :-**

The signals transmitted become weak due to some problem in the transmission mediums or the distance between the two locations. A repeater is a device that ~~amplifies~~ amplifies the incoming signals, creates a new copy of it & transmits the signals on the network.

* **Bridge :-**

Bridge is a device that connects two or more similar types of network. It also filters the data & decides whether to forward the signals or discard them.

* **Switch :-**

A switch is identical to and often used ~~interchangeable~~ interchangeably with bridge. The main difference between the bridge & switch is the way filtering happens. With a swith, filtering & performance better than bridge.

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* Gateway:-

It is a general term used to represent and internetworking device that connects two dissimilar network. The network gateway is usually a router. A gateway accepts the packet formatted for one protocal and converted the formatted packet into another protocal.

* MODEM:-

MODEM is short form of Modulater - Demodulater. This is a device used to transfer the data of one computer to another using telephone lines. Two common types of modem are internal & external modem.

* OSI Reference model:-

OSI stands for Open Systems Interconnection. It is developed by ISO (International Standard Organization). OSI reference model is a logical framework for standard for the network communication.

OSI reference model is now considered as a primary standard for networking & inter computing. Today many network communication protocol are based on standards of OSI mode In the OSI model the network/data communication is defi into 7 layers.

1) * ~~Layer 1~~: Physical layer:

Physical layer defines card & physical aspect.

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2) Datalink layer:
The main task of the datalink layer is to transform of raw transmission facility into a line that appears free of undetected undetected transmission errors to the network layer.

3) Network layer:
It determines that how data transmits between the network devices. It also translates the logical address into the physical address.

4) Transport layer: (Contains TCP protocol).
It manages end to end message delivery in a network & also provides the error checking & hence guarenties that no duplication or errors are occuring in the data transmission during the network.

5) Session layer:
It establishes & manages the session between the two users at different ends in a network.

6) Presentation layer:
The presentation layer presents the data into a unique form & masks the differences of data format between two dissimilar systems.

7) Application layer:
The application layer defines the interfaces for communication & data transfer.

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Unit-6
Internet & its services

Internet:

The internet can be ~~as~~ ~~an~~ describe as an inter-connection of several thousands of computers of different types belonging to various networks all over the world. It is a world wide collection of networks that links together millions of businesses, government offices, educational institutions & individual.

Any computer users on the internet can make contact with another computer user on the internet anywhere in the world. The internet is an information super highway & has logically compressed the world into a cyber village. Internet is the network of networks.

Services of Internet:

(1) WWW:- (invented by Tim Berners-Lee)

It stands for world wide web. It is the most important service available on the internet. 'www' presents text, image, animation, video, sound & other media through a single interface. The 'www' is often refered to as the internet.

(2) Email:-

Electronic-mail or e-mail is one of the most popular services provided by the internet. It is now the ~~world's~~ world's largest electronic mail system. More than 25 billions

people are directly connected to the internet & can send & receive e-mails.

The main advantage of e-mail is: it is faster & cheaper than traditional mailing system. It has some disadvantages: Minor mistakes in email address may deliver the mail to wrong person. Since it passes through a vast electronic network, it may be seized in between.

③ Telnet:

Telnet is a program that allows the user to log into a remote computer on the internet as a user on that system. With telnet a user can log into a service to excess information stored on it.

Common Internet Terms

① Webpage:-

Webpage is an electronic document written using a computer language called html. The worldwide web consist of files called webpages that contain information about any person or organization. Different webpages are connected to a special link called hyperlink or links. These links are enable the user to jump from one page to another using internet.

② Website:- A website is a collection of webpages that can be published by an organization or individual. It contains

homepage and others sub pages. Each webpage is design & updated by an individual or organization.

(3) Upload:-

Upload refers to copying files or documents or programs or data from users computer to the internet. For e.g. a user can copy html documents to the internet server.

(4) Download:-

Download refers to copying files or documents or programs or data from the internet server to the user's computer. For e.g. html codes or other programs or data can be copied from the internet to the user's computer & stored in his/her harddisk.

(5) Web browser:-

A web browser is a computer program that accesses web pages & display them on the user's computer. It is a software that allows user to retrieve, view & copy information using internet. E.g. of web browser are internet explurer, net scape navigator, Opera, firefox, chrome, mozilla etc.

(6) URL:-

It stands for Uniform Resource Locator. It provides location on the internet. Web browsers uses URL to provide information to the users.

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(7) Search engine:-

The internet provides the user facility that they can search any information they need. These various information are provided by different websites. The users need to search the internet to find the information relevent to his/her requirement. Internet search engine or search engine are specific website that helps the user to find information stored on the internet. Search engine are the tools which can be used to search content or an object or websites in www. Some of the common & well known search engines are www.google.com, www.yahoo.com.

(8) Domain name:-

Domain names are names address provided to devices in the network. It is a way to identify & locate computer connected to the internet. Each domain name correspond to an IP address. The DNS server is responsible for translation of domain name to IP address. There are several domain name available. Some of them are .com, .edu, .net, .np, .au, .in, .us, etc.

(9) IP address:-

An IP address is a number address provided to computers & other devices attached to the internet to identify them uniquely. Two version of internet are in use. IP version 4 & IP version 6.

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Intranet:-

An intranet is an internal private network based on internet & www technology & standards. Excess to intranet is control through the use of internet, passwords & firewalls which are security software program that keeps users that are not membess of the orgination out of the network.

Extranet:-

An extranet is an internal private network whose limited numbess of outsidess are given access to the intranet Like intranet, extranet is also based on internet & www technology & standard. Access to extranet is control to the use of usernet, password & firewall which are security software programs that keep users that are not membess of the orginazation out of the network.

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Unit-7
Contemporary technology

Multi-media:-

The word multimedia is made up of two separate word 'multi' & 'media', which mean many and material through which information may be transmitted. This include text, graphics, animation, video, sound & computer programms.

Types of media:-

(1) Text:-

This displays alphanumeric characters on the screen to present information.

(2) Graphics:-

It is a more powerful way to illustrate information than the text.

(3) Animation:-

Animation is a simulation of movement created by displaying a series of pictures or frames.

(4) Video:-

Video deals with recording & display of a sequence of images at a reasonable speed to create an impression of movement.

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(5) (b) Sound:-

Sound is a significant aspect of exciting & successful multimedia application.

a) What is virtual reality?

Ans: Virtual reality is an artificial enviroment created with computer hardware & software and presented to the user in such a way that it appears real. This technology will inhence multimedia by supporting real time, interactive, 3-D graphics.

(6) GIS (Graphical Information System):-

A geographical information system is a computer based tool for mapping & analysising ~~image~~ events on earth & space. GIS technology ~~integrates~~ integrates common database operations such as query & statical analysis ~~wh~~ with maps. GIS ~~map~~ manages location based information & provides tools for Display & analysis of various statistics including population, characteristics, ~~inco~~ economics development. GIS allows us to link databases & maps to create dynamic displays.

Advantages of GIS.

→ Cost saving from greater ~~efficiency~~ efficiency.
→ Improve communication
→ Greater decission making.
→ Better record keeping.
→ Maping geographically/ Managing geographically.

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Hypermedia:-

Hypermedia, an extension of the term hypertext, is a non-linear medium of information that includes graphics, audio, plain text & hyperlink. The www is a example of hypermedia, whereas a non-interactive cinema presentation is arranged.

Bitcoin:- (Crypto-currency)

Bitcoin is a digital currency that is not backed by any countries, central bank or government. Bitcoins can be traded for goods or services with vendors who accept bitcoin payment. Bitcoin to bitcoin transactions are made by digitally exchanging anonymous, heavily encrypted hash code across a peer to peer network. Peer to Peer network monitors & verifies the transfer of bit coins between users.

~~E-commerce:~~

E-governance :-

E-government is the use of information & communication technology to transform the traditional goverment by making it easily accessible, transparent, effective & accountable to the general people. E-governance provides greater access to goverment information & services by making the most of the goverment services online.

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Advantages of E-governance

→ It is easy to access. data & information.
→ It become one postal for delivery goverment services.
→ The goverment services will be made available to the citizians in a convienent, efficient & transparent manner.

Artificial Intelligence (AI) :-

AI in an area of computer science that emphasis the creation of intelligent machines that work and react like human beings. AI field is generally define as the study & design of intelligent agents where an intelligent agent is a system that recognizes its environment & takes actions that maximizes its chances of success. The primary focous of AI is on speech recognition, machine learning, planning problem solving & many other knowledge based area.

Component of AI :-

→ Natural language processing.
→ Expert system.
→

Uses of AI / Application areas of AI :-

1. Game playing :-
2. Speech recognization.
3. Understanding natural language.
4. Robotics

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E-learning :- (LMS :- Learning Management system)

If the teaching & learning process is conducted by electronically is called E-learning. E-learning is essentially the computer & network enabled transfer of skills & knowledge throughout the world. E-learning refers to using electronics applications & processes to learn.

Advantages of E-learning

→ It improves performance by accessing different location.
→ It increases access by joining class at our free time.
→ Its cost is less than regular mode university.
→ Learners from all around the world can join on the same course.

Robotics :-

A branch of engineering devoted to the creation & training of robot. Robotics works within a wide range of fields such as : Mathematical, engineering, & AI. At the end of their creation they check all the features like sensor awarness, independence; Hence, robotics is the engineering science & technology of robots, their design, manufacture & application.

Application areas of Robotics / Uses

→ It is broadly used in industries where humans are at high risk.
→ It is use for accuracy cutting & finishing.

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→ It is used in vehicle & car factory automation.
→ It is broadly used in space.

Ambient Intelligence :-

Ambient Intelligence refers to electronic envisoment that are sensitive & responsive to the presence of people. Ambient Intelligence is a vision on the ~~Fati~~ future of consumer electronics telecommunication & computing that was originally developed in late 1990s. In an ambient intelligence world devices work to support people in carrying out their everyday life activity, task in an easy, natural way using information & intelligence that is hidden in the networking connecting devices.

E-Commerce :-

E-commerce is a new way of conducting managing & excecuting business transaction using modern information technology. The internet provides access 24 hours a day, 7 day a week, any time any where.

E-commerce is the commercial transaction of service in an electronic format. In general terms, E-commerce is a business methodology that address the needs of organization, traders & consumers to reduce cost while improving the quality of goods & services of increasing the speed of service delivery.

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Benifits of E-commerce:-

→ Expands companies market place to national & internal markets.
→ Decreases the cost of creating, processing, distributing, restoring, & retrieving information by digitizing the process.
→ Lowers telecommunication cost because the intesnet is much cheaper.
→ Frequently provides less expensive products & services by allowing consumers to conduct with online searches & comparisions.
→ Makes it possible for people to work & study at home.

Types of E-commerce

1. Business to Consumer (B2C)
2. Business to Business (B2B)
3. ~~Business to~~ ~~(B2B)~~ ~~(C2C)~~
3. Consumer to Consumer (C2C).

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Webserver:-

Web server refers to server software or hardware dedicated to running software, that can serve content to the world wide web. A web server processes in comming network request over http & several other related protocal. It is a program that uses http to serve files that create web pages to the users in response to their request, which is sent by their computers http connections. E.g. Apache webservers, IIS webserver (Internet Information services).

E-banking:-

Electronic banking is an umbrella term of the process by which a customer may perform banking transaction electronically without visiting institution. It is an electronic payment system that enables costumers of a bank or other financial instution to conduct a range of financial transaction through the financal institution's website.

Internet banking is a term used to discribe the process where by a client executes banking transactions electronically.

Various forms of E-banking

→ Internet banking
→ Automated teller machine (ATM)
→ Smart Card
→ Debit Card.
→ E-cheque.

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Advantages of E-banking

→ Convenience
→ Low cost banking service.
→ Higher interest rate.
→ Quality service.
→ Anytime cash facility.

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