Class 9

Concept of Information Technology –I

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Class –IX

**BOARD OF SECONDARY EDUCATION, RAJASTHAN,
AJMER**

Concept of Information Technology –I

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2018

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Concept of Information Technology –I

Class –IX

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PREFACE

Computer needs no introduction today. Computer has become an intergral part of our life in this era of advanced Information Technology. The invention of computer is a great achievement of man. We may not have access to a computer but computer influences our daily activities somehow or the other. The application of computer is essential whether to open an account in the bank, to send some message at express speed, to buy a railway ticket or to know the result of examination instantly. Computer is proving its immense utility in the numerous fields like scientific research, business, industry, education, medicine, entertainment, communication, transport, environment, meteorology, space exploration, so its fundamental knowledge is essential for all of us.

Keeping this inevitability of computer in mind, the Board of Secondary Education Rajasthan has included computer in its syllabus. The authors have tried their best to present the relevant material in a simple, lucid, clear and easy language. Every care has been taken to make it useful. This book has originally been written for the students of class IX according to the latest syllabus. Every care has been taken to keep its originality during translation.

It is hoped that the book will meet the needs of those for whom it is meant in particular and common man in general. At the end of the chapter, important points are given. Important questions which may be asked in the examinations are also given at the end of the chapter.

Your suggestions are welcome.

Convenor

Syllabus

Class- IX

Concept of Information Technology-I

Unit -1 Introduction to Computer

Introduction to Computer – Introduction, Definition of Computer, Types of Computer , Limitation of Computer, Classification of Computer, Application of Computer, Characteristics of Computer, Computer Generation, Memory; Number System – Binary, Octal, Decimal, Hexadecimal Number System, Conversion from One system to another; Software and Hardware - Types of Software, Computer Language, Language Translator, Operating System; Storage Device - Floppy Disk, Hard Disk. CD Rom, Flash Drive/ Pen Drive, Zip Drive, Blue Ray Disk; Input/output Disk- Need of I/O device, Keyboard, Mouse, Joystick, Scanner, Web cam, Digital Camera, Light Pen, Digitizer, Microphone, Touch Screen, OCR, OMR, Monitor, 3 Printer

Unit-2 Communication and Internet Technology

Computer Network- Computer communication, requirements of communication, Communication medium, Types of data communication, Introduction to Computer Network, Categories of computer networks, Definition, Necessity of Computer Network, Network topologies, Types of Computer Network; Network devices, Internet & Internet Technology- Introduction of Internet, Internet Technology, WWW, website, webpage, web server, search engine, E-mail, URL, HTTP, domain name, IP address, FTP, downloading, uploading

Unit-3 Processing Tools

Windows – Introduction, Characteristics of Windows, Desktop, Windows Accessories, File management in Windows, Windows Taskbar, Start Menu; Microsoft Office – Introduction, Create, Save, Print Document, Formatting tool bar, Paragraph formatting, Page formatting

Undo, Redo, Insert Header and Footer, Checking Spelling and Grammar, Search and Replace, Insert Images, Create and Insert table, Page Numbering, Border

and Shading; Power Point- Introduction, Create presentation, Print presentation, Different types of presentation, Insert Animation effect, Slide layout

Unit -4 Information Communication Technology Application & Its Social Impacts

Application of ICT – Usages of information technology, Social Networking, E-Learning, Internet Banking, E-Booking, On-line Shopping, E-Governance, E-Health/ E-Medicine, E-Commerce, E-Designing, E-Mitra; Social Impacts of ICT- Effects of Social networking sites, Cyber Security, Cyber Bulling, Internet Addiction, Plagiarism, Privacy , Reliability of Information, Authenticity of Information

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Chapter-1

Introduction to Computer

1.1 Introduction

The invention of computer is the greatest achievement of the twentieth century. Today computer needs no introduction. Today there is no field or aspect of life where computer is not being used. The use of computer has become inevitable in fields like scientific research, business, industry, environment,meteorology, space research, communication, transport, medicine and health care, education, entertainment etc. Internet is a communication network with all the computers world wide connected to one another and this network has left such an enormous influence on life that it has ushered in a new era "Information Technology Era". It is impossible for us to image life without computer in this information technology era.

Computer has contributed in all the fields of development of mankind. Computer has solved many a complex problem and has made impossible things possible. Computer is absolutely essential for a developing country like India because computer can play an important role in improving the economical condition of the country

1.2 Defination of Computer

The term computer is derived from the English word 'compute' which means to calculate or count. In reality the main purpose of the invention of computer was to manufacture a machine which could claculate. But today more than 80 percent of the work done by the computer is not of mathematical or statistical nature. So to define computer as a computing machine is to ignore the 80 percent work done by computer. Besides having the capacity to calculate, computer has the storage of memory and reasoning and it follows instructions in a glimpse.

Diagram 1.1 Computer

Today the most acceptable definition of a computer is as follows :-

A computer is an automatic electronic machine in which we put raw data and by program controlling change them into meaningful and desired information.

Raw data are the inputs given to computer in the form of raw facts and figures. For example if we want to prepare marks sheets of students of a class we need Roll Number, Names, Class, Subjects, Marks Obtained etc. These are known as Raw Data.

The set of instructions written in the specific language of a computer is known as program. Computers are controlled with these programs. Here we take the example of marks-sheet. To prepare a marks-sheet a program has to be made. Assume that in this program Roll Number is to be filled in as the first instruction. After these the program without any manual efforts will find the sum total of the marks obtained, percentage, division, merit number etc. all in a glimpse.

Meaningful Information are those information which we get as a result of a computer programme and which convey proper meaning and they are useful. Meaningful information are the orderly form of the disorderly, separate and original data. For example when we get the marks-sheet and there is sum total, percentage, division, merit number etc. we call it meaningful information.

1.3 Types of Computer

Different types of computers were invented for different purposes. So generally computers are classified according to their applications, size and purposes.

1.3.1 Classification Based on Application

Computers are classified into the following three types according to their applications.

I. Analog Computer

These computers don't calculate data but directly work on physical quantities. The physical quantities are in the form of temperature, pressure, length, flow of electricity or fluids. These computers are used where the physical quantities have to be measured continuously like the fields of engineering, industries, and science. The analog signals are continuous. Analog computer is a machine with definite objective.

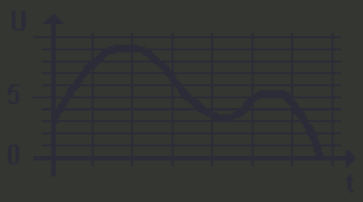


Diagram 1.2 Analog Signal

Analog computer fixed at the petrol pump not only measures petrol in liters but also calculates amount and displays on the screen. In fire alarm the computer measures the temperature of atmosphere and the alarm rings when the temperature crosses the limit .Speedometer, watches, electricity meter, thermometer, voltage meter are examples of analog computer.

II. Digital Computer

These computers work upon data. They work upon data which are in the form of the binary digits. In a digital computer all the data and instructions are entered as input and the computer calculates according to the given instructions and display the result in the form of output. They not only calculate but also perform logical operations. These computers are multipurpose and so they are used for different functions. Whenever we talk about computer we mean digital. The signals of these computers are discontinuous.

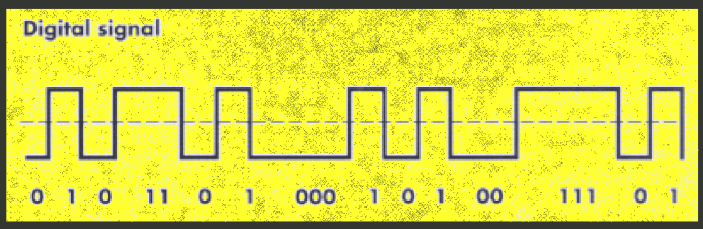


Diagram 1.3 Digital Signal

III. Hybrid Computer

These computers encompass the characteristics of both analog and digital computers. They can take continuous signals of temperature, speed, and flow as inputs and can also perform arithmetic and logic operations. The output is in the form of digits or

some other unit which can be measured. Hybrid computer is being extensively used in the field of machine where patients temperature, pulse, blood pressure etc. are received by the computer as analog signals and then they can be converted into digital signals and the result is displayed in digits.

1.3.2 Classification Based on Size

Modern computers can be classified into the following four types according to their size:

I. Micro Computer: They are small in size and less costly. They are used at homes, in schools. A micro computer consists of a single CPU. They have comparatively less memory and working speed. A single person can work on it at a given time. They are also called personal computers.They are of the following types:

(A) Desktop Computer: They are operated by placing them on the desk or table. These are slightly larger in size. It contains CPU, Monitor, Keyboard etc.

Diagram 1.4 Desktop Computer

(B) Laptop Computer: This computer looks like briefcase. It is smaller in size A person can operate it by placing it in his lap. They are portable and can be very easily shifted form one place to another. These includes CPU, Monitor, Keyboard, Mouse. Battary is use to provided the power.

Diagram 1.5 Laptop Computer

(C) Palmtop Computer: These are smaller in size of Laptop Computer. They can be operated on palm. These are light in weight and smaller in size. Battery is

used to provide the power. The working capacity of this computer is lesser than laptop.

Diagram 1.6 Palmtop Computer

(D) **Note Book Computer:** Notebook computer are similar to laptop computer. It can be operated on legs. These are eassily movable from one place to another. In these computers CPU, Keyboard, Mouse are tied together. The working capacity of these are lesser than laptop computer.

Diagram 1.7 Note Book Computer

(E) **Tablet Computer:** These are bigger than mobile and operated by fingers.

Diagram 1.8 Tablet Computer

II. Minicomputer

They are of medium size. They are more powerful, faster and more expensive than Micro Computers. They have more processing power and storage capability. They have more then one CPU. More then one person can work upon them at a given time. They are generally used in big offices, banks etc.

Diagram 1.9 Mini Computer

III. Mainframe Computer

They are very large in size. They have greater processing power and memory as compared to minicomputers. Multiple user works at a time on these computer. They are expensive. They are generally used in railway reservations, insurance companies, research institutes and professional organizations. 1BM 4300, IBM4381, UAX 8842 etc are examples of mainframe computers.

Diagram 1.10 Mainframe Computer

IV. Super Computer

Super computers are the largest in size. They are the most powerful in processing and memory. They process complex calculations with high accuracy. They are most expensive. They cost millions of rupees. They can support many users at a time .They are mainly used in scientific research centers, weather forecasting, space research laboratories, defence centers, controlling nuclear power plants, genetic engineering etc. PARAM, CRAY, X-MP, NEC, CDC etc. are examples of super computers.

Diagram 1.11 Super Computer

PARAM

This super computer has been developed in Pune, India, by C-DAC (Centre for Development of Advanced Computing). This is a completely Indian computer. Its manufacturing is a major scientific achievement of India. Many improved and better versions of PARAM like PARAM 1000, PARAM ANANT and PARAM PADAM have been developed. These computers are being used not only in India but also abroad. They are gaining popularity there. They have unique working capacity.

Diagram 1.12 PARAM Super Computer

The story of the development of PARAM is interesting. In 1980 America banned the supply of technology in the particular field and the supply of computer hardware and CRAY X-MP super computer. But it proved as a blessing in disguise. The Indian scientists took it as a challenge and the result was development of PARAM super computer, a computer with matchless features and unique capacity.

PARAM is a multipurpose super computer. It is used at a large scale in weather forecasting, medicine, designing, making nuclear models, distant communication, health care etc. Its use is also remarkable in space and nuclear program and for removing the different snags. Finding out oil and gas reservoirs in different parts of the country is also its achievement. The development of PARAM is the testimony of the capability, talent, sincerity and dedication of the scientists of India.

1.4 Uses of Computer

Immense are the uses of computer. Today the utility of computer in life is so great that the modern age is known as computer age.

With the invention of computer complex calculations, which were beyond the reach of man, have become easier. In fact the purpose of the invention of computer was to calculate in an automatic and accurate manner. In the fields where punctuality and accuracy are of paramount importance, the use of computer is indispensable. Weather predictions,processes related to space exploration and research ,monitoring of nuclear power plants are the special fields which can not be developed without computer. Man could step on the moon because of the accuracy and high speed of computer. The use of computer has brought about revolutionary changes in the fields of communication. We can contact the person sitting in any corner of the world by tapping only a few keys and touching some switches and by spending only a very small amount of money. Internet is a very powerful medium of receiving and transmitting information.It is a vast reservoir of information and knowledge from where any information can be obtained instantly. Examinees can know their results and marks through internet as soon as the result is declared.

Diagram 1.13 Website of Board of Secondary Education, Ajmer

With the help of the telephone directory available on internet we can find the telephone number of anyone. The schedule of trains, buses and aeroplanes can be known and the actual position of their running can be known. The information regarding a general passenger train of India is available on internet. All the leading newspapers of the world are available on the internet. On internet we can read the regional page of the main newspapers of Rajasthan by sitting at any corner of the world. We can get the reservation of train done sitting at home, we can have the information regarding telephone bill, bank balance etc. There is hardly any information that is not available on the internet. Internet serves as a source of resource for the researchers and writers. With E-mail

available on the internet messages can be exchanged from one computer to the other. Sending messages by using e-mail saves both time and money. The message is sent in an instant and it can be received on the other computer lying in any corner of the world the very next instant. We can carry on live conversation with other computer users using Internet Relay Chat. We can contact any phone by using net telephony. The person to be contacted may not have the computer. Conversing with a person abroad is very economical. Internet telephony is legal in India now. Video conferencing provides the facility of watching the person we are talking to.

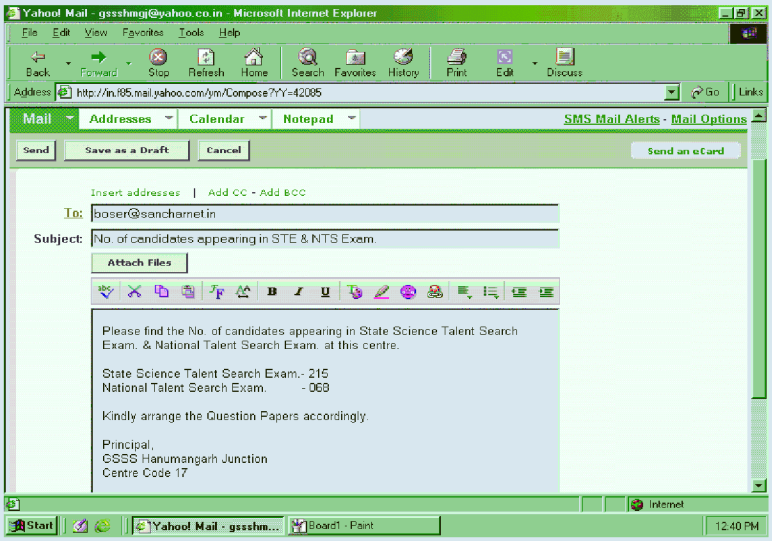


Diagram 1.14 Layout of E-mail

The use of computer has increased in the world of business. Computers are used for general official records and for managing national and international share markets. With the combination of computer and internet a new business system has come into being and it is known as e-commerce. Buying and selling of things and services through internet is called e-commerce. The producers and sellers have found world wide markets of things and services sand there is a great reduction of time and cost in exchanging trade information. Today housewives are buying the household things by sitting at home. The reservations are getting done the cinema tickets are being bought, the hotels are being booked by sitting at home. E-banking is a branch of e-commerce. The account holders can check their balance in the account and they can transfer money from one account to the other by using the internet. We can pay the bills of telephone, electricity, water and transact any business. E-banking has provided the facility of ATM (Automatic Teller Machine) to the customers. We can withdraw amount any time and anywhere. That is why ATM is also called 'Any Time Money' in the popular sense. Computer has already replaced type writer in the offices, besides that the records of the offices, details of establishment and salary records are also maintained by computer. Computer has given birth to the concept of "Paper less Office". E-Governance is being used for administration. In a library, complete details of books, the record of the members of the library, the

issuing and returning of books etc. can be done easily by using computer.

Diagram 1.15 ATM Machine

Computers are used in publication and printing. These are known as Desktop Publishing (D.T.P.). The traditional work of printing used to be very hard and tedious but computer has made it very easy.

Computers are being used extensively in the field of medicine and health care. Computers are used for diagnosing illness, curing ailments, surgery, monitoring patients. Ultrasound, CT Scan, MRI etc. tests are used to detect different diseases and malfunctionings .With the help of pictures generated by computers the diagnosing becomes easier.

Diagram 1.16 Ultrasound

Diagram 1.17 CT Scan

Pacemaker is a little computer, which is fixed inside potients having heart problems. The use of computer is indispensable in the field of Genetic Engineering where DNA structures are studied. By DNA firger printing many complex criminal cases can be solved .With the combination of Bio-Medical science and computer a branch of science-Bio-Informataics has come into being.

In the field of education computer is playing a significant role. In classrooms, computers are used to develop science projects, prepare reports, gather information and as an interactive learing pool. Computer is used as a supplement to the teacher. Under Computer Based Teaching (CBT) numerous software are available which provide information of different subjects in succeession. Multimedia (a combination of sound, graphics , animation and video) CBT software is very useful to help student understand any subject. Nowadays, online learning and training is possible through networks. A student sitting at home can speak to his/her teacher and can get response for his/her queries. Virtual classrooms are a reality these days.

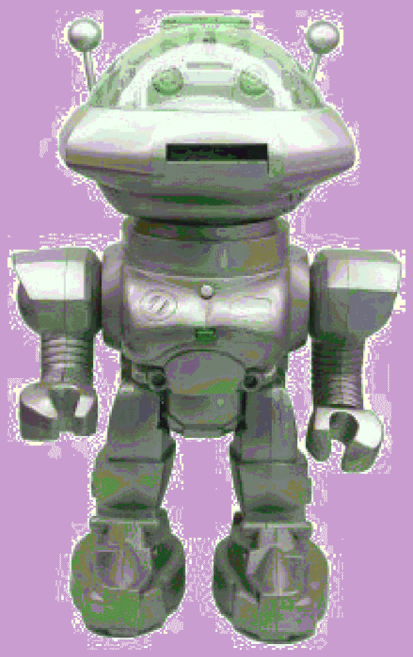


Diagram 1.18 Roboot

Computers are being extensively used in the field of engineering and architecture. Computer aided engineering is used by the designers to specify the type of material to be used in buildings, things and parts of machines and to calculate/ determine whether the part could withstand the necessary stress and temperatures. the use of CAE is essential to guaranteeing the safety of big buildings, bridges and planes. through computer aided (CAD) the interior and exterior of objects can be designed, three dimensional design can be prepared and viewed in details on the screen. with the help of the map on the paper we cannot determine how the house will look after completion. But with the help of CAD we

can have an idea of how the house will look when built. In hazardous conditions where it is dangerous for man to work, the use of robot has begun. robot is a computer controlled mechanical man.

Computers are being extensively used in the field of entertainment. Nowadays numerous computer games are available which not only provide entertainment but also increase knowledge and develop reasoning faculty of the children. The computer games are so popular that they not only attract the young ones but also the aged ones. Film industry use computers to incorporate special effects and create such scenes which have no place in reality. You must have seen Films like "Jurasic Park", "Godzilla", "Anaconda","Little Struart" etc. All these Films have used computers to create such special effects. With the help of computer the coloured versions of the old Indian Films in black version "Mugal-E-Azam" and "Naya Daur" have been prepared.

Diagram 1.19 computer generated dinosaur in "Jurasic Park"

Computers have earned a significant place in the relay of Television channels. The channels relaying programs by using computers are called digital channels. The digital channels show batter performance than general channels.

Computer is used to produce new musical notes. One computer can produce the musical notes of many musical instruments. producing musical notes by using computer is known as musical instrument digital interface (MIDI).

Computer has entered our houses today. Computers are used for education, entertainment, Writing letters, E-Mails, Chatting, getting various information from internet etc.

We see that no Field of our life has remained untouched by computer. It is not only useful for a special class but for every person.

1.5 Characteristics of Computer

Computer is playing an important role in the development of modern age. Let us see what are the characteristics that make it so important. These characteristics are:

1. **Speed :** Computer performs at a very high speed. It performs even complex operations in less than a second. A personal computer can execute millions of instructions in one second. If a computer completes a task within a minute, the same task can be completed by man in his whole life .

2. **Accuracy :** Computer performs all the tasks and calculations accurately. Once the correct instructions are given to computer it declares the results accurately. computer does not commit errors. If the error takes place it is due to human mistake. Computer commits errors if it is out of order and due to virus.

3. **Deligence :** Computer does not get tired . It can work continuously for hours together and it does not suffer lack of concentration or speed.

4. **Power of Remembering** : Like man computer has also a power to remember which is called "Memory" in which crores of data can be stored. These data can be seen when we want.

5. **Versatility :** computer can be used to perform many different jobs. Computer plays significant part in different fields in Schools, Colleges, Hospitals, Factories, Homes, Offices, Research,meteorology, Entertainment etc.

6. **Automation :** Computer has the characteristic of automation. It can perform a number of tasks automatically and thus we can save time and money.

7. **Storage :** Computer has vast capacity for storage . It can amass crores of files.

1.6 Limitations of Computer

Inspite of having the above given characteristics, computers do possess some limitations. These are :

1. Computer cannot think and decide on its own. It is a dumb machine. It works according to the instructions provided. Even a child of two years is more intelligent than a computer. Efforts are on to incorporate artificial intelligence in high quality computers today. Hopefully we may have computers that can think.

2. Computer techniques are changing fast. The old computers become less useful. The need to upgrade computers arises and it is costly.

3. Various efforts have to be made to save and secure the important files. Computers are most susceptible to virus that are very harmful for files.

4. Various cases of cheating and fraud are being reported in E-Commerce, E-Banking, A.T.M. etc.

1.7 Computer Generation

Computer entered the commercial arena about 70 years aego. Before that the use of computer was limited to the field of science, engineering and army. The commercial computer has been clasified into generations keeping in mind the evolution and new techniques. In the process of evolution, the working speed, storage capacity and new application programs have increased whereas the size and price have gone down. The production has increased and it is easily available now.

The evolution of computer has been divided into five generation.

First Generation (1942-1955)

During this generation, Vacuum Tubes were used in computers Vacuum Tubes were large in size, so the size of the computer of this generation was big. They were slow in speed, punch cards were used for input and output. Magnetic drums were used for internal memory. Machine and assembly languages were used. The main computers of this generation were: ENIAC, EDVAC.

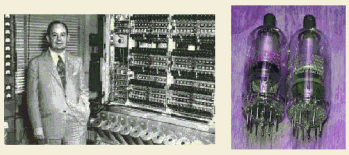


Diagram 1.20 First Generation Computer

Second Generation (1955-1964)

The second generation computers were based on transistors. Transistor was invented by Bell Laboratories in 1947. Transistor is a solid state device made of semi conductor metal. They served the same "function as was done by the vacuum tubes in the computers of the first generation. But they were much smaller in size compared to the vacuum tubes and they were comparatively more reliable and faster in working speed. They also consumed very less power.

During this generation there was improvement in memory technique. During the decade of 1960's primary memory, based completely on transistor technique, was attained. The use of magnetic tape and disks for secondary memory began which still goes on.

With the use of transistor, the size of computer became small and the problem of high temperature also decreased to a large extent. The reliability of the computer increased. Small size helped in the increase of internal memory. The working speed of the computer

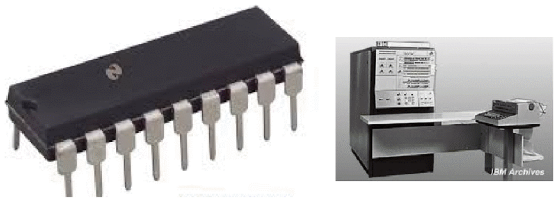
also increased and far better input-output devices than those used in the past began to be used. The cost of the computer decreased.

The main computers of this generation were: IBM-70 series, IBM1400 series, IBM-1600 series, CDC-3600 etc.

Diagram 1.21 Second Generation Computer

Third Generation (1964-1975)

In this generation the transistors in computers were replaced with integrated circuit. They were called ICs. An IC is a flat rectangular piece consisting of thousands of transistors and other electronic components. Because of their small flat shape, they are popularly called chips. With the use of ICs the size of computer decreased further, speed increased, memory increased and cost decreased. Along these their reliability also increased.

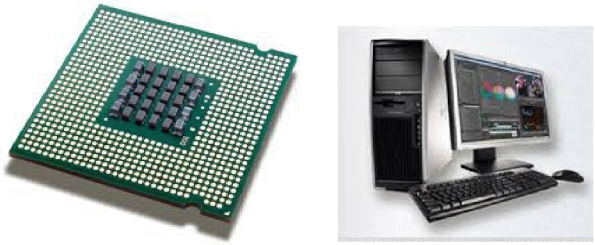


Digram 1.22 Third Generation Computer

The main computers of the generation were: IBM-360, ICL-1900, VAX-750 etc.

Fourth Generation from (1975 -1989)

In the computers of this generation Very Large Scale Integrated Circuits (VLSI) were used. In one fourth of an inch of these circuits lakhs of transistors and other electronic components are used. Hence, the circuits were called microchips. The first microchip Intel4004 was prepared by Intel Corporation in 1970. This small chip later began to be called micro processor. The computer with microprocessor is called micro computers.



Digram 1.23 Forth Generation Computer

With the use of micro processor the computers decreased in size very much. Consequently, the computers for which large rooms were needed now began to be put on a table (Desktop Computer).

The micro processor based computers of this generation have gained in speed in an un imaginable manner. They have also gained in capacity, memory and reliability in an astonishing manner.

On the basis of size the computers of this generation are classified into micro computer (Desktop, Laptop or Palmtop), mini computer, Main Frame computer and Super computer.

Fifth Generation (1989 to till date)

These computers are still in the process of evolution. It is being tried to develop in them the intellectual capacities like the power of reasoning, thinking, understanding and taking decision etc. These computers are going to be faster at speed, more reliable and can work in unfavorable conditions. The programming methods will also become simpler. "They will be able to understand human language and behavior so it will be easier for providing input and command. The mobile computers will come into vogue as the size is growing smaller.

Digram 1.24 Fift Generation Computer

1.8 Computer Block Diagram and Working Process

The group of units working to achieve one or more than one objectives is called system. Computer system means Physical parts of computer.

Units of Computer System

Computer is made up of three units: 1. System Unit, 2. Input Unit, 3. Output Unit.

1. **System Unit:** It is the main component of computer and it consists of Central Processing Unit (CPU). System unit is a box in which there are CPU, other devices and circuits and they are connected to main circuit board called Mother Board. In this way the main circuit of computer lies in system unit.

2. **Input Unit:** The devices used to feed data and program in a computer are called input unit. Key-board, Mouse, Floppy Disk are examples of input devices which will be discussed in detail later in this book.

3. **Output Unit:** The devices that help in producing results and conclusions and presenting them in human language are called Output Units. Monitor and Printer are some common output devices and they will also be discussed later.

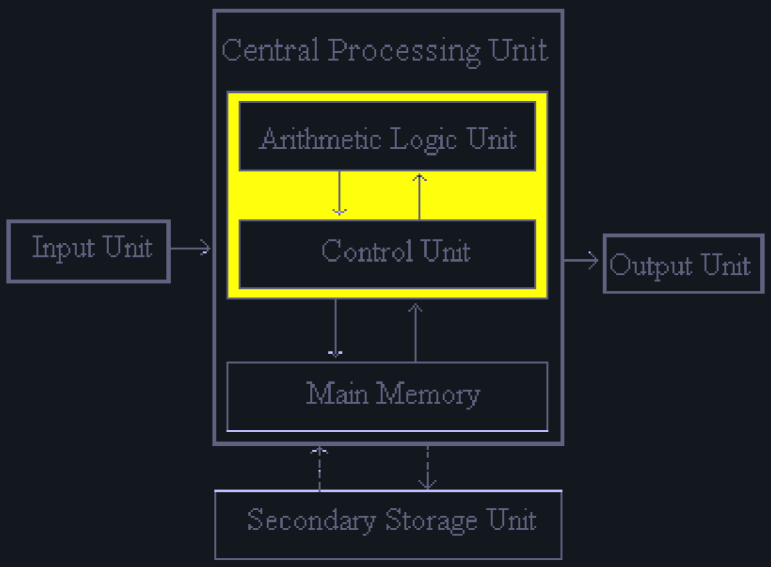


Diagram 1-25 Block Diagram of Computer

Central Processing Unit

CPU is the brain of computer. To execute instructions, it reads them, interprets them, controls and calculates. In fact whatever instructions are given to computer they

first go to CPU and CPU takes action on given instructions and shows outputs (results) on the monitor. It is not wrong to say that if there is no CPU in a computer than computer cannot do anything.

As brain controls our whole body parts, CPU controls the remaining parts of computer like- Memory, Input and Output devices etc. and makes them Function. Program and data get stored in memory under the control of CPU. Under its direction output is visible on the screen or is printed on the page through printer. CPU can perform crores of mathematical operations and decisions in seconds.

CPU has three components:

1. Control Unit (CU)
2. Arithmetic Logic Unit (ALU)
3. Memory or Storage Unit

CPU is a small micro processor in a micro computer. There can be more than one microprocessor in big computers. Microprocessor undertakes most of the functions of computer. There are the following components in the internal structure of CPU- C.U, ALU, Registers, internal bus.

Before the invention of microprocessor the circuit of computer was prepared by joining together many transistors. To make computer more dexterous, efficient and useful the number of transistors in the circuit of micro processor kept on increasing.

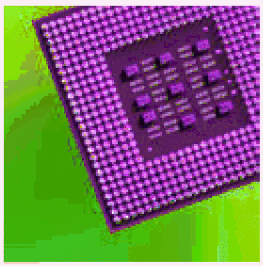


Diagram 1-26 Microprocessor

The circuits of transistors became more and more complex and the temperature of the circuit began to increase and the transistors began to develop snags. So there arose the need of a component which had a circuit equivalent to many transistors put together. This component is known as microprocessor. The first microprocessor was prepared by Intel corporation in 1970 and was named Intel 4004, it had the capacity equal to 2300 transistors. Microprocessor is a silicon metal made rectangular piece and it is fitted in an envelope with small connectors. It is flat and is also called chip. After Intel 4004 the technique of microprocessor continued to develop constantly and its capacity and power kept on increasing. Nowadays microprocessors with different speed and computing

capacity are available- Pentium IV, Core2due, I-3, I-5, AMD, Syrix are notable among these.

Control Unit (CU)

Control unit plays a significant role in C.P.U. True to its name it controls the exchange of information and other components of computer. The major functions of control unit are given below:

1. This unit controls the internal functioning of the computer.
2. It controls input output operations.
3. It reads program from memory, interprets it and instructs ALU and memory for the desired operation.
4. It tells ALU where data is lying in memory, what operation has to be done and where result has to be stored.

All these instructions are communicated to different parts of the computer in the form of electrical signals through control bus of system bus. It is known as bundle of several wires bus.

Arithmetic Logic Unit (ALU)

This unit performs arithmetic and logic operations. The arithmetic operations are addition, subtraction, multiplication and division. There is certain electronic circuit in ALU which performs arithmetic operations. ALU can compare two numbers or data in logic operations .the result of comparison is either true or false, and it helps in decision making.

ALU functions under the guidance of control unit. It receives data from memory, performs calculations on them and returns the result to the memory. ALU works at a very high speed. It can perform a million calculations within a second.

ALU comprises of millions of registers and accumulators which during calculation serve as memory for temporary storage.

After operation is done on data in ALU the result is sent for either displaying to the output devices or it is stored in memory.

1.9 Memory

Man has the capacity to remember in his brain and it is called memory. In the same way computer has the capacity to store data and information and it is known as memory of computer. Computer's memory is that location where data, information, and

programs are stored and are available when the need be. Memory is a very important part of computer. Computer cannot work without memory.

There are many locations in memory for storage memory capacity and memory size depends on the number of these locations. There is identity number of each location and it is called address.

Memory is two types: 1. Main memory 2. External memory

When term 'memory' is used it means main memory. It is also called internal memory or primary memory. It is a part of CPU. Main memory has high speed and it calculates primary facts according to the instructions given in the program. It is used to store intermediate and last results. Memory is a semiconductor chip.

Main memory is of two types:

1. **Random Access Memory (RAM):** RAM is the most important memory. The data, after having been fed by keyboard or other input devices and before process, get stored in RAM and it is retrieved from there via CPU. The data stored in RAM can be accessed anytime and can be read from as well as written to. The Information stored in RAM can be retrieved within one tenth of a second.

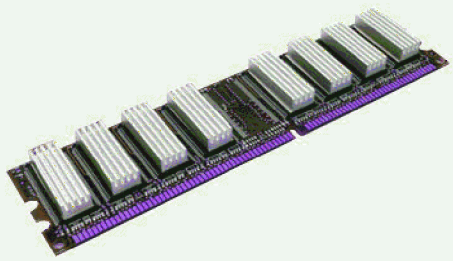


Diagram 1.27 RAM chip

Data or programs are stored temporarily in RAM. The data get erased when the computer is switched off or when electricity fails. That is why RAM is called temporary or volatile memory.

2. **Permanent Memory or Read Only Memory (ROM)**

Programs stored in this memory cannot be changed or destroyed and they can be only read. This memory is called permanent or non-volatile. It does not come to an end when electricity fails or the computer is switched off. This memory is used to store basic instructions. The best example of ROM is BIOS (Basic Input Output System) in which

the booting program is stored. When computer is turned on it gets information from ROM and starts booting. ROM is used in automatic machines, toys etc.

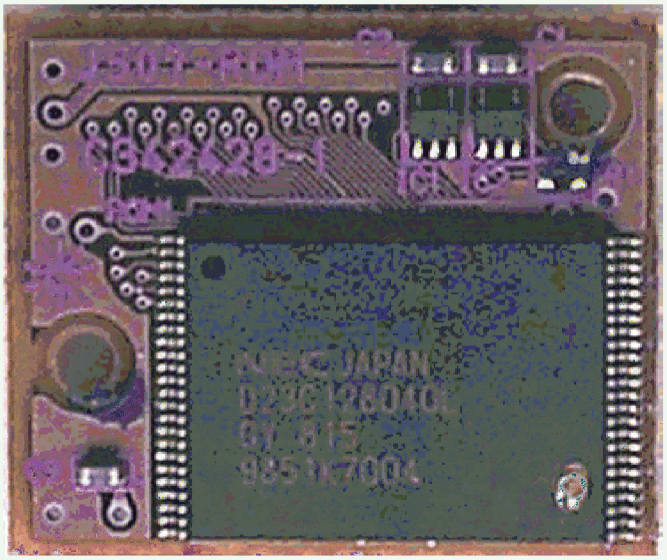


Diagram 1.28 ROM Chip

ROM is of three types:

1. **PROM: Programmable Read Only Memory:** In this memory we can write only once. But it can be read again and again.

2. **EPROM: Erasable programmable Read only Memory:** In this memory program can be erased and the new program can be fed when the need be. Its contents can be erased by exposing it to ultra-violet light.

3. **EEPROM: Electrically Erasable Programmable Read Only Memory:** In this memory the program can be erased by applying specific voltage to its input pins and new programs can be fed.

External memory

External memory is required to store data permanently. It is also called secondary memory. This memory is magnetic or optical. The data stored in it always remains safe and does not disappear when the computer is switched off. Hard disk, floppy disk, magnetic tape are the examples of secondary memory. They are also called secondary storage devices.

1.9.1 Units of Memory

In memory information is stored in the form of bits. Bit is a word which has been formed with binary digit. The entire external operation of computer is based on binary number system. There are only two digits 0 and 1 in this system. The value of a bit may be 0 or 1. In an electronic circuit if there is some potential in form of out put, it is represented as 1 and if potential is zero it is represented as 0.

In the electronic circuit of a computer '1' means pulse is present and '0' means pulse is absent.

In a computer all the data is stored in either 0 or 1. But it is very difficult for man to provide all the information using 0 or 1 So the user gives all the inputs to computer in his own language and the computer changes them into its own language (bit).When a key 'A' is pressed in the memory of the computer 1000001 is fed.

Though bit is the primary unit of memory yet it is so small that it is not used for measuring memory. Generally for measuring memory byte unit is used. Eight bits make a byte.

There is another unit nibble between bit and byte. There are four binary digits in a nibble. So it is half of a byte.

The different units of memory can be presented in the following manner.

1. **Bit:** The smallest unit of memory. In binary number system its value is either 0 or 1.

2. **Nibble:** The set of 4 bits is called nibble.

   So 1 nibble = 4 Bits

3. **Byte:** The set of 8 bits is known as a byte. Generally a character is represented through one byte.

   So 1 byte = 8 Bits

4. **Kilobyte (KB):** 1024 Bytes make 1 Kilobyte (1KB)

   So 1 Kilobyte = 1024 Bytes

5. **Megabyte (MB):** 1024 Kilobytes form 1 Megabyte.

   So 1 Megabyte = 1024 Kilobytes

   Or 1024*1024 Bites

6. **Gigabyte (GB):** 1024 Megabytes from

So 1 Gigabyte = 1024 Megabytes

Or 1024*1024 Kilobytes or

Or 1024*1024*1024 Bytes

7. **Terabytes (TB):** 1024 Gigabytes together are known as 1 Terabyte.

So 1 Terabyte = 1024 Gigabytes

= 1024*1024 Megabytes

= 1024*1024*1024 Kilobytes

= 1024*1024*1024*1024 Bytes

1.10 Number system - Introduction

Every computer stores numbers, letters, and other special characters in a coded form. Before going into the details of these codes, it is essential to have a basic understanding of number system. This chapter also introduces some of commonly used number systems by computer professionals and the relationship between them.

1.10.1 Binary number system

The Binary number system is exactly like the decimal system except that the base is 2 instead of 10. We have only two symbols or digits (0 and 1) that can be used in this number system. Note that the largest single digit is 1 (one less than base). Again, each position in a binary number represents a power of the base (2). As such, in this system, the rightmost position is the units (2^0) position, the second position from the right is the 2^0s (2^1) position and proceeding in this way we have 4' s (2^2) position, 8's (2^3) position, 16's (2^4) position, and so on. Thus, the decimal equivalent of the binary number 10101 (Written as 10101_2) is

$(1 \times 2^4) + (0 \times 2^3) + (1 \times 2^2) + (0 \times 2^1) + (1 \times 2^0)$

or $16 + 0 + 4 + 0 + 1$

or 21

In order to be specific about which system we are referring to, it is common practice to indicate the base as subscript. Thus we write

$10101_2 = 21_{10}$

"Binary digit" is often referred to by the common abbreviation bit. A binary number consisting of n bits is called an n-bit number. Table 1-1 lists all the 3-bit numbers along with their decimal equivalent.

Binary	Decimal Equivalent
000	0
001	1
010	2
011	3
100	4
101	5
110	6
111	7

Table 1-1 3-bit numbers with their Decimal values.

Remember that we have only two digits, 0 and 1, in the binary system, and hence the binary equivalent of the decimal number 2 has to be stated as 10 (read as one, zero). It may be seen that a 3-bit number can have one of the 8 values. In fact, it can be shown that any decimal number in the range 0 to 2^{n-1} can be represented in the binary form as an n-bit number.

1.10.2 Octal Number System

In the octal number system the base is 8. So in this system there are only eight symbols or digits; 0, 1, 2, 3, 4, 5, 6, 7. Here also the largest single digit is 7 (one less than the base). Again each position in an octal number represents a power of the base (8). Thus the decimal equivalent of the octal number 2057 written as 2057_8 is :

$(2 \times 8^3) + (0 \times 8^2) + (5 \times 8^1) + (7 \times 8^0)$

or $1024 + 0 + 40 + 7$

or 1071

So we have $2057_8 = 1071_{10}$

Observe that since there are only 8 digits in the octal number system, so 3 bits ($2^3 = 8$) are sufficient to represent any octal number in binary (see table 1.1).

1.10.3 Hexadecimal Number System

The hexadecimal number system is one with a base of 16. The base 16 suggests choices of 16 single character digits or symbols. The first 10 digits are the digits of decimal system 0, 1, 2, 3, 4, 5, 6, 7, 8, 9. The remaining six digits are denoted by A, B, C, D, E, F representing the decimal values 10, 11, 12, 13, 14, 15 repectively. Therefore, the letters A through F are number digits in hexadecimal number system. Thus, largest single digit is F or 15 (one less than the base). Again, each position in a hexadecimal system represents a power of the base (16). Thus the decimal equivalent of the hexadecimal number 1AF (Written as $1AF_{16}$) is :

$(1 \times 16^2) + (A \times 16^1) + (F \times 16^0)$

or $(1 \times 256) + (10 \times 16) + (15 \times 1)$

or $256 + 160 + 15$

or 431

Thus $1AF_{16} = 431_{10}$

Since there are only 16 digits in the hexadecimal number system, so 4 bits ($2^4 = 16$) are sufficient to represent any hexadecimal number in binary.

1.10.4 Converting from one Number System to another

Numbers expressed in decimal are much more meaningful to us than are values expressed in any other number system. However, any number value in one number system can be represented in any other number system. Because the input and the final output values are to be in decimal, so we are required to convert numbers in other systems to decimal and vice-versa. There are many methods or techniques that can be used to convert numbers from one base to another.

Converting to Decimal from another Base

The following three steps are used to convert to a base 10 value from any other number system:

Step 1: Determine the column (Positional) value of each digit (this depends on the position of the digit and the base of the number system).

Step 2: Multiply the obtained column values in step 1 by the digits in the corresponding columns.

Step 3: Sum the products calculated in step 2. The total is the equivalent value in decimal.

Example - 1 $(11001)_2 = (\ ?\ )_{10}$

Step 1 : Determine column values.

Column Number	Column Value (from right)
1	$2^0 = 1$
2	$2^1 = 2$
3	$2^2 = 4$
4	$2^3 = 8$
5	$2^4 = 16$

Step 2 : Multiple column values by corresponding column digits.

16	8	4	2	1
×1	×1	×0	×0	×1
16	8	0	0	1

Step 3 : Sum the products.

$16 + 8 + 4 + 0 + 1 = 25$

Thus $(11001)_2 = (25)_{10}$

Example - 2 $(4706)_8 = (\ ?\ )_{10}$

Solution :

Step 1 :

Column Number (from right)	Column Value
1	$8^0 = 1$
2	$8^1 = 8$
3	$8^2 = 64$

4 $8^3 = 512$

Step 2 :

512	64	8	1
×4	×7	×0	×6
2048	448	0	6

Step 3 :

$2048 + 448 + 0 + 6 = 2502$

Hence, $(4706)_8 = (2502)_{10}$

Example -3 $(1AC)_{16} = (\ ?\ )_{10}$

Solution :

$(1AC)_{16} = 1\times16^2 + A\times16^1 + C\times16^0$

$= 1\times256 + 10\times16 + 12\times1$

$= 256 + 160 + 12$

$= (428)_{10}$

Example - 4 $(4052)_7 = (\ ?\ )_{10}$

Solution:

$(4052)_7 = 4\times7^3 + 0\times7^2 + 5\times7^1 + 2\times7^0$

$= 4\times343 + 0\times49 + 5\times7 + 2\times1$

$= 1372 + 0 + 35 + 2$

$= (1409)_{10}$

Converting from Base 10 to a New Base (Division - Remainder Technique) The following four steps are used to convert a number from base 10 to a new base :

Step 1: Divide the decimal number to be converted by the value of the new base.

Step 2 : Record the remainder from step 1 as the rightmost digit (least significant digit) of the new base number.

Step 3: Divide the quotient of the previous divide by the new base.

Step 4: Record the remainder from step 3 as the next digits (to the left) of the new base number.

Repeat step 3 and 4, recording remainders from right to left, until the quotient becomes zero in step 3. Note that the last remainder thus obtained will be the most significant digit (MSD) of the new base number.

Example - 1 $(25)_{10} = (\ ?\ )_2$

Solution:

Step 1 & 2 : 25/2 = 12 and remainder 1

Steps 3 & 4 : 12/2 = 6 and remainder 0

Steps 3 & 4 : 6/2 = 3 and remainder 0

Steps 3 & 4 : 3/2 = 1 and remainder 1

Steps 3 & 4 : 1/2 = 0 and remainder1

Hence $(25)_{10} = (11001)_2$

Example - 2 $(42)_{10} = (\ ?\ )_2$

Solution :

		Remainder
2	42	
2	21	0
2	10	1
2	5	0
2	2	1
2	1	0
	0	1

Hence $(42)_{10} = (101010)_2$

Example - 3 $(952)_{10} = (\ ?\ )_8$

Solution:

		Remainder
8	952	

8	119	0	
8	14	7	
8	1	6	
	0	1	

Hence $(952)_{10} = (1670)_8$

Example - 4 $(428)_{10} = (\ ?\ )_{16}$

Solution: 16	428	12 = C	Remainder
16	26	10 = A	
16	1	1	
0			

Hence $(428)_{10} = (1AC)_{16}$

Example - 5 $(100)_{10} = (\ ?\ )_5$

Solution: 5	100	0	Remainder
5	20	0	
5	4	4	
	0		

Hence $(100)_{10} = (400)_5$

Converting from a Base other than 10 to a Base other than 10.

The following two steps are used to convert a number from a base other than 10 to a base other than 10.

Step 1: Convert the original number to a decimal (base 10)

Step 2: Convert the decimal number so obtained to the new base.

Example -1 : $(545)_6 = (\ ?\ )_4$

Solution :

Step 1: Convert from base 6 to a base 10

$545 = 5\times6^2 + 4\times6^1 + 5\times6^0$

$= 5\times36 + 4\times6 + 5\times1$

$= 180 + 24 + 5$

$= (209)_{10}$

Step 2: Convert $(209)_{10}$ to base 4.

4	209	1	Remainder
4	52	0	
4	13	1	
4	3	3	
	0		

Hence $(209)_{10} = (3101)_4$

So $(545)_6 = (209)_{10} = (3101)_4$

Thus, $(545)_6 = (3101)_4$

Example $(101110)_2 = (?)_8$

Solution:

Step 1: Convert $(101110)_2$ to base 10

$(101110)_2 = 1 \times 2^5 + 0 \times 2^4 + 1 \times 2^2 + 1 \times 2^1 + 0 \times 2^0$

$= 32 + 0 + 8 + 4 + 2 + 0$

$= (46)_{10}$

Step: 2 Convert $(46)_{10}$ to base 8

8	46		Remainder
8	5	6	
	0	5	

So $(46)_{10} = (56)_8$

Hence: $(101110)_2 = (56)_8$

Example -3 $(11010011)_2 = (\ ?\ )_{16}$

Step 1: Convert 11010011_2 to base 10

$(11010011)_2 = 1\times2^7 + 1\times2^6 + 0\times2^5 + 1\times2^4 + 0\times2^3 + 0\times2^2 + 1\times2^1 + 1\times2^0$

$= 1\times128 + 1\times64 + 0\times32 + 1\times16 + 0\times8 + 0\times4 + 1\times2 + 1\times1$

$= 128 + 64 + 0 + 16 + 0 + 0 + 2 + 1$

$= (211)_{10}$

Step 2 : Convert $(211)_{10}$ to base 16.

$(211)_{10} = (?)_{16}$

16	211	3	Remainder
16	13	13=D	
	0		

Hence $(211)_{10} = (D3)_{16}$

So, $(11010011)_2 = (211)_{10} = (D3)_{16}$

Thus, $(11010011)_2 = (D3)_{16}$

Shortcut Method for Binary to Octal conversion.

The following steps are used in this method:

Step 1: Divide the binary digits into groups of three (Staring from the right)

Step 2: Convert each group of three binary digits into one octal digit. Since there are only digits (0 to 7) in the octal number system, So 3 bits ($2^3 = 8$) are sufficient to represent any octal number in binary.

Example 1: $(101110)_2 = (\ ?\ )_8$

Solution :

Step 1: Divide the binary digits into groups of 3 starting from right (LSD)

101 110

Step 2 : Convert each group into one digit of octal (use binary to decimal conversion)

$(101)_2$ $= 1 \times 2^2 + 0 \times 2^1 + 1 \times 2^0$

$= 4 + 0 + 1$

$= 5_8$

$(110)_2$ $= 1 \times 2^2 + 1 \times 2^1 + 0 \times 2^0$

$= 4 + 2 + 0$

$= 6_8$

Hence $(101110)_2 = (56)_8$

Example -2: $(1101010)_2 = (\ ?\ )_8$

Solution:

$(1101010)_2 =$ 001 101 010

(Group 3 digits from Right)

$= (152)_8$

(Convert each group to an octal digit)

Hence $(1101010)_2 = (152)_8$

Shortcut Method for octal to Binary Conversion.

The following step are used in this method.

Step 1: Convert each octal digit to a 3 digit binary number (The octal digits may be treated as decimal for this conversion).

Step 2: Combine all the resulting binary groups (of 3 digits each) into a single binary number.

Example- 1: $(562)_8 = (\ ?\ )_2$

Solution:

Step 1: Convert each octal digit to 3 binary digits.

$5_8 = 101_2$

$6_8 = 110_2$

$2_8 = 010_2$

Step 2: Combine the binary groups

$(562)_8 = \underline{101} \quad \underline{110} \quad \underline{010}$

$\quad\quad\quad\quad 5 \quad\quad 6 \quad\quad 2$

Hence, $(562)_8 = (101110010)_2$

Example –2: $(6751)_8 = (\ ?)_2$

Solution:

$6751_8 = \underline{110} \quad \underline{111} \quad \underline{101} \quad \underline{001}$

$\quad\quad\quad\quad 6 \quad\quad 7 \quad\quad 5 \quad\quad 1$

$= 110111101001_2$

Hence, $(6751)_8 = (110111101001)_2$

Shortcut method for Binary to Hexadecimal conversion.

The following steps are used in this method:

Step 1: Divide the binary digits into groups of four (Staring from the right)

Step 2: Convert each group of four binary digits to one Hexadecimal digit. Remember that Hexadecimal digits 0 to 9 are equal to decimal digits 0 to 9, and hexadecimal digits A to F are equal to decimal digits 10 to 15.

Example -1 : $(11010011)_2 = (\ ?\ )_{16}$

Solution:

Step 1: Divide the binary digits into groups of 4.

$\underline{1101} \quad\quad \underline{0011}$

Step 2: Convert each group of 4 binary digits to 1 hexadecimal digit.

$(1101)_2 = 1 \times 2^3 + 1 \times 2^2 + 0 \times 2^1 + 1 \times 2^0$

$= 8 + 4 + 0 + 1$

$= 13_{10}$

$= D16$

$(0011)_2 = 0 \times 2^3 + 0 \times 2^2 + 1 \times 2^1 + 1 \times 2^0$

$= 0 + 0 + 2 + 1$

$= 3_{16}$

Hence $(11010011)_2 = (D3)_{16}$

Example -2 : $(10110101100)_2 = (\ ?\ )_{16}$

Solution:

$(10110\ 10\ 1100)_2 = \underline{0101}\quad\underline{1010}\ \ \underline{1100}$

(Group four digits from right)

$=$ 5 A C (convert each group to a hexadecimal digit)

$(10110101100)_2 = (5\ AC)_{16}$

Hence, $(10110101100)_2 = (5AC)_{16}$

Shortcut method for Hexadecimal to Binary conversion.

The following steps are used in this method:

Step 1: Convert the decimal equivalent to each Hexadecimal digit to 4 binary digit.

Step 2: Combine all the resulting binary groups (of 4 digits each into a single binary number.

Example:1 : $(2AB)_{16} = (\ ?\ )_2$

Solution:

Step 1: Convert the decimal equivalent of each hexadecimal digit to 4 binary digits.

$2_{16} = 2_{10} = 0010_2$

$A_{16} = 10_{10} = 1010_2$

$B_{16} = 11_{10} = 1011_2$

Step 2: Combine the binary groups.

$2AB_{16}$- = 0010 1010 1011

2 A B

$= (101010111100)_2$

Hence, $(2AB)_{16} = (001010101011)_2$

Example-2 $(ABC)_{16} = (?)_2$

Solution :

$(ABC)_{16}$ = 1010 1011 1100

A B C

= $(101010111100)_2$

Hence $(ABC)_{16}$ = $(101010111100)_2$

Fractional Numbers.

In binary number system, fractional numbers are formed in the same general way as in the decimal system. Just as in the decimal system.

Example:

$0.235 = (2 \times 10^{-1}) + (3 \times 10^{-2}) + (5 \times 10^{-3})$

and $68.53 = (6 \times 10^{1}) + (8 \times 10^{0}) + (5 \times 10^{-1}) + (3 \times 10^{-2})$

Similarly in binary number system.

$0.101 = (1 \times 2^{-1}) + (0 \times 2^{-2}) + (1 \times 2^{-3})$

and $10.01 = (1 \times 2^{1}) + (0 \times 2^{0}) + (0 \times 2^{-1}) + (1 \times 2^{-2})$

Thus the binary point serves the same purpose as the decimal point.

Example :1 $(110.101)_2 = (\ ?\ )_{10}$

Solution :

$(110.101)_2 = (1 \times 2^2) + (1 \times 2^1) + (0 \times 2^0)$

$= (1 \times 2^{-1}) + (0 \times 2^{-2}) + (1 \times 2^{-3})$

$= 4 + 2 + 0 + \frac{1}{2} + 0 + \frac{1}{8}$

$= 6 + 0.5 + 0.125$

$= 6.625_{10}$

Hence, $(110.101)_2 = (6.625)_{10}$

Example-2: $(127.54)_8 = (\ ?\ )_{10}$

Solution :

$(127.54)8 = (1 \times 8^2) + (2 \times 8^1) + (7 \times 8^0) + (5 \times 8^{-1}) + (4 \times 8^{-2})$

$= 64 + 16 + 7 + \frac{5}{8} + \frac{4}{64}$

$= 87 + 0.625 + 0.0625$

$= 87.6875_{10}$

Hence, $(127.54)_8 = (87.6875)_{10}$

Example 3: $(2B.C4)_{16} = (\ ?\ )_{10}$

Solution:

$(2B.C4)_{16} = 2 \times 16^1 + B \times 16^0 + C \times 16^{-1} + 4 \times 16^{-2}$

$= 32 + 11 + \frac{12}{16} + \frac{4}{256}$

$= 43 + 0.75 + 0.015625$

$= 43.765625_{10}$

1.11 Software & Hardware

Computer work is operated by two parts 1. Hardware 2. Software

A computer system consists of hardware and software. The devices, things, programs etc. which comes under the computer system are either hardware or software. So we should know both of them.

Hardware: Hardware represents the physical and tangible components of the computer i.e. the components that can be touched. CPU, keyboard, mouse, printer, speaker etc. are the examples of computer hardware. We can not only see them but also touch them.

Software: To complete the computer work we have to tell computer what it is to do. We have to instruct the computer. These instructions are called software. The set of these instructions are called program also. Software activates hardware. The hardware works when it gets instructions from the software. Software is in the electronic form which cannot be seen or touched.

1.11.1 Types of Software

Software is used to control the activities between user and computer it is used to computerised any work. Software can be classified into two categories: 1. System software 2. Application software

System Software

The software necessary to run a computer which are necessary to control and coordinate program are known as system software. They make a computer more effective and more useful. System software is a group of programs which controls the physical parts of computer and software. Without system software application software can't be used in a computer. System software is used by computer specialists. It is an essential part of computer system. It control the activities between user and computer hardware .

Works of System Software

1. System software control & execute another software
2. It works between user & Computer hardware.
3. This is used to prepare different softwares
4. It controls the resources of computer like memory, processor, Input, output divices.

The system software includes the following programs:

(A) Operating System:

(B) Utility program

(C) Programming Languages

(D) Language Translator

Application Software

Application software is a group of those programs which are written in high level language for special problems. These programs provide ability to do special work on computer. For eg. Word processing, Inventory Control, Payroll, Railway Reservation system etc. These software come under this category. This software is prepared to perform specific tasks. Depending upon the nature of tasks they can be written in any language. Doctors, Engineers, Designers, Advocates need different programs for their different needs. These professionals carry out their work in a better way by using application software. Nowadays they are being used extensively in banks, insurance, offices, factories, hospitals and engineering tasks etc. Education Boards and universities also use the software for preparing results. Pay bills are being prepared by using the software.

1.12 Computer Languages

Language means by which we can understand each other easily. The language used to complete the task with Machine or computer is called user language or computer language. The language which can be understand by computer machine is called binary or machine language. So if we want to complete the task with machine we have to provide the machine instructionss. The software which is used to translate user language in to machine language is called Translator. This also convents machine language into user language computer language is mainly categorized into three types.

1. Machine language a Low level language (LLL)

2. Assembly language or Middle level language (MLL)

3. High Level Langage (HLL)

1. Low Level Language or Machine Language

Machine Language is a computer Language which is understable by computer machine. It is also called Binary (0,1) Language. It is called machine Language because it is directly works with machine. Working in this language is very difficult.

Instruction given in machine language works very fast, because of no translation is required. Output also comes in the form of machine language.

eg- when we type 'A' then machine converts 'A' into equivalent machine code then machine works.

2. Assembly Language or Middle Level Language

Assembly Language was developed to remove the difficulties of machine language. The Mnemonic code is used in place of Binary language, which is easy to remember.

Assembler is used to converts assembly language into machine language. The working in this language is simpler than machine language. The speed is lower than machine language because of conversion from assembly to machine language. To write a program in assembly language user must know the hardware and related assembly language. This is a machine dependent language. eg. of statements HLT,ADD,CLA, SUB etc.

3. High Level Language

High level language was developed to remove the difficulties of Assembly language. In the language user provides the instructions like English language in place of mnemonic code. English like statements are used in High level language, due to this understanding and writing became simple. This language is not dependent on machine. Compiler or Interpreter is used to translate high level language into machine language. Now a day's generally high level language is used. The examples of high level language are C, C++, Java etc. Specific hardware is not required for these languages so work with these language be completed on all type of computers therefore it is independent on machine or computer.

1.13 Language Tranlator

These are the programs which accepts instructions in one language and convert the equivalent instructions in another language. Complier, Intreprete, assembler are the examples of language translators.

Compiler : It is a system Software which is used to convert high level programing language into machine language. Complier complies whole program at a time and displays the errors with their line numbers. When Complier complies the program, program need not to reside in memory.

Interpreter: The language processor which converts High level programming langage into machine language line by line is called interpreter. It shows the error in any line immediately. At the time of execution program must reside in the memory.

Assembler: It converts Assembly language program into M/C (Machine) language. It is a system software. Assembler translate one row into machine language in one time.

1.14 Operating System

It is a set of programs which operates all the works of computer known as operating system. It is a medium between user and computer. When user on the computer the operating system automatically loads into the main memory of computer then it controls all the activities of computer. Some popular operating system available in market are MS DOS, WINDOWS and LINUX.

Functions of operating System

1. **Memory Management:-** Any program and related data where to place in memory and bring from where is deiced by operating system.
2. **File Management** In file management the work of file storation by their name and

returned back from the memory is completed.

3. **Input Output Management:-** It manages the devices used to give or take data from computer.

4. **User Interface:-** Under this, operating system keeps relation with user so the work of users is simplified.

5. **Utilities:-** These programs makes distance of users from work complexities. Theses programes simplify the work for users.

Need of operating System

It is a medium between user and computer. It also works as bridge between hardware and software. Computer can not work without operating system. There is no existance of computer without operating system. System manages and controls all the resources of computers like keyboard, Monitor, CPU, Processor, Memory etc.

Types of Operating System

Single user operating System:- Those operating system which manage a single user is called single user operating system for eg. Dos, Windows.

Multi-user Operating System:- Those operating system which manages more than one user is called Multi-user operating System for eg. LINUX.

1.15 Utlity Program

These programs maintain and repair different parts of computer for eg. Disk recovery program, Data backup program etc.

By executing these special programs on system we can maintain the speed of computer and can make the hard disk to store maximum data. The required data can be backup with the help of these programs. The software provides some utility for the user so therefore called utility software. These utility software are used for the following purpose:-

1. To maintain the Hard disk i.e. scan disk.
2. To maintain the speed of hard disk i.e. disk defragmentor.
3. To make backup of files and to restore again on disk i.e. backup utility.
4. To store the maximum data in compressed mode i.e. compressing utility.
5. To scan the virus in the system and to remove the virus. i.e. anti virus programe etc.

Important Points

1. There is no field where computer is not using.
2. Computer is made from english world computer whose means is calcutation.
3. Computer is an automatic machine, by providing data and program we can convert it into useful in formation.
4. Main uses of computer are weather selated research., weather forecasting, space related, transmission, communication e-commerce, book printing & Publication, education, engineering medical, entertainment, research etc.
5. Charactership of computer (a) speed (b) Accurary (c) Diligency (d) Memory (e) Versatile utility (f) Automatic
6. Limitation of computer - can not think and understand, no mind, danger of viruses.
7. We can not think of life without computer in information technoloty.
8. The main parts of computer are: 1. System unit 2. Input unit 3. Output unit.
9. Central Processing Unit (CPU) is the brain of computer and it carries out processing.
10. **ALU:** This unit performs arithmetic and logic operations.
11. According to applications computers are of three types: 1. Analog Computers 2. Digital Computers 3. Hybrid Computers
12. According to size computers are of four types: 1. Micro Computers 2. Mini Computers 3. Mainframe Computers 4. Super Computers.
13. **PARAM:** Developed fully in India, full of positive traits and unique working capability multipurpose super computer.
14. **Memory**: It is the storage of computer where data, information and programs are stored and are available when the need be.
15. The two types of memory are: 1.Main Memory 2. External Memory
16. Main memory is of two types: 1. RAM (Temporary Memory) 2. ROM (Permanent 1Memory).
17. **Bit:** it is the smallest unit of binary number system and its value is either 0 or 1.

18. **Byte:** A unit of computer information equal to eight bits. Generally one character is represented as one byte.

19. Radix or base in number system shows total nos.

20. In binary system 1+1=10, to show the radix use the subsecript So $1_2 + 1_2 = 10_2$

21. To convert binary number into decimal number we add the position weight (1,2,4,8....) of binary number.

22. **Hardware:** All the components related to computer which can be seen and touched are called hardware.

23. **Software:** The set of instructions (Program) that we feed in to a computer when we want it to do particular jobs are called hardware.

24. The development of computer is divided quto five generations.

25. Translator is used to convert use language into machine language.

26. Computer language are mainly categorized into 1. low level language 2. Assenbly language 3. High level language.

27. Software is of two types: 1. System software 2. Application software

28. Compiler, interpreter, Assembler, operating system are examples of System Software.

Exercise

Multiple choice questions

1. The device that accepts data is:

   (A) CPU (B) CU

   (C) Input Unit (D) Output Unit ( )

2. The set of instructions written in a specific language of computer is known as:

   (A) Program (B) Data

   (C) Information (D) All of the above ( )

3. All the Physical parts of a computer which can be seen or touched are called:

(A) Software (B) Hardware

(C) Program (D) None of the above ( )

4. One byte is equal to:

(A) 4 Bits (B) 8 Bits

(C) 16 Bits (D) 32 Bits ( )

5. The computer used to measure oil at petrol pump is:

(A) Digital computer (B) Analog Computer

(C) Mainframe Computer (D) Super Computer ( )

Very short type questions

1. Name the basic units of computer system.
2. Give examples of input unit.
3. Write the functions of the Arithmetic Logic Unit (ALU).
4 Write equivalent decimal of following binary nos.
5. Write binary equivlant of decimal 23.45
6. Write fullname of ATM
7. Digital computer works on which principle?
8. Write example of super computer.
9. Write full name of ALU
10. Write the name of any two operating system.

Short type questions

1. Write the definition of computer.
2. What is program?
3. Write four characterstics of computer.
4. What are the limitation of computer.

5. Write any four uses of computer.

6. What is the difference between Hardware and software.

7. What are RAM and ROM? Write their full forms.

8. Write the functions of application software.

9. Describe the features of super computer.

10. What is the work of translator?

11. What is the importance of base in any number system.

Essay type questions

1. Write essay on the uses of computer in different fields.

2. Describe the charactestic of computer.

3. Describe in detail the various components of a computer and draw the block diagram also.

4. Write the features of Super computer (PARAM).

5. How many types of computers are there according to size? Describe each type.

6. Why is memory required in a computer? Describe the different types of computer memory.

7. Explain binary with example.

8. Convert following binary number into decimal number.

   (a) 00111 (b) 11001 (c) 1010.001 (d) 111.11

9. Convert following Hexadecimal number into binary number.

   (a) FF (b) ABC (c) CD42 (d) F329

10. Convert following binary number into Hexa decimal number.

    (a) 11101000 (b) 10101110110 (c) 11001011 (d) 1000101111010110

Chapter-2

Input/Output and Storage Divices

Input and output device use for communication between computer and human while storage use for data.

2.1 Storage Devices

The data and programs of computer are stored for present and future use. The devices which store them can be divided into two categories: 1. Primary Storage Medium 2. Secondary Storage Medium

In the primary storage medium data and programs are stored for present use. Memory is the example of primary storage medium. We have already discussed it. In the secondary storage medium those devices are included in which data, program, processed information are stored and secured permanently for present and future use. We are going to study about such devices here.

Floppy Disk

Floppy disk is a platter made of Mylar plastic and is round in shape. Its surface is coated with iron-oxide and like hard disk it has concentric tracks and sectors. Data is stored in these tracks and sectors. For its safety it is kept in a plastic jacket which saves it from rub or scrub. A part of jacket remains open so that read/write head can accept or store data on disk. This open part is called access windows.

There is a hole in the floppy disk and its envelope which is called index hole. When index hole comes under photo sensor it means read/write head is placed on the first sector of the present track. A part of the floppy is cut and it is called 'write protect notch'. This is used to save data from writing or storing in the disk when this notch is open we can read and write data but when this notch is closed with some sticker or tape we can only read and cannot write data.

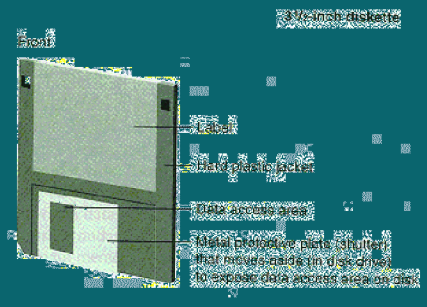


Diagram 2.1 Floppy Disk
Dorsal Surface

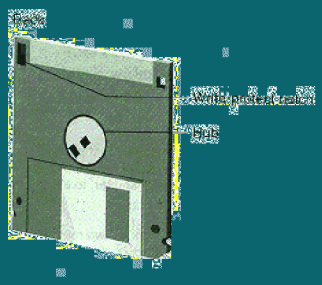


Diagram 2.2 Floppy Disk
Ventral Surface

Floppy Disk have less storage capacity. It can store 1.44 MB data. Floppy can be spoiled with water, excessive temperature, magnetic field, by throwing hard or touching with magnetic thing its data can get spoiled. So caution should be exercised while using them.

Hard Disk

Hard disk is used to store data in mini computer and Micro Computer. This stays inside the system unit. It has enormous storage capacity and for this it is known as mass storage device and because it is inside the system unit it is called online storage device. Nowadays hard disks having 160GB, 500 GB, 1 TB storage capacities are popular.

Hard disk can store numerous information permanently. Operating System, Compiler, Assembler, Database, Application program are also stored in it. So hard disk is most popular, essential and permanent storage device.

Hard disk is a pack of platters made of aluminium or some other metal. Each platter is coated with iron-oxide. On both surfaces of the platter there are concentric tracks and sectors. Data is stored in these tracks and sectors. All the disk platters are arranged in a spindle each platter consists of a read/writer head. All the read/write heads are fitted with an arm in a comb like structure. This arm is called access arm.

Diagram 2.3 Hard Disk

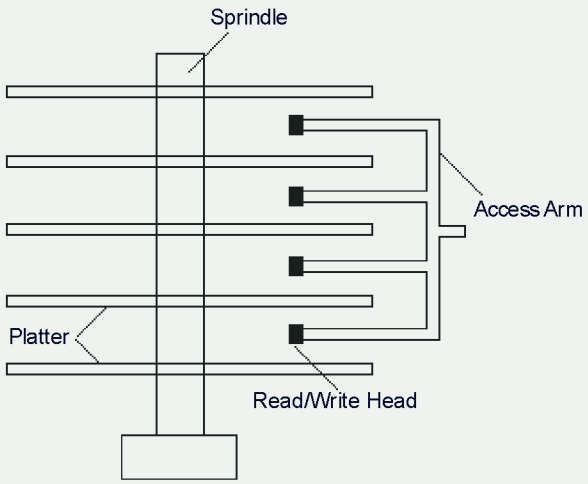


Diagram 2.4 Internal Structure and Working Mechanism of Hard Disk

Each head reaches the right track of the rotating disk. In this way the process of data read/write is straight. Each data location has a disk address. With its help access arm finds data.

Hard disk and read/write head are all fitted in the airtight chamber and they don't catch dust. This chamber looks like a lunch box in its external view.

C.D. Rom or Compact Disk

CD Rom is an optical storage device. The data stored in it can only be read, that is why it is called read only memory (ROM). Data can be read or written with laser beam. This disk is made up of resin like material- poly carbonate. Its surface is covered with aluminium compounds with which the disk reflects light. During the process of data storage on the reflected surface of CD Rom high power (25 megawatt) laser beam is aimed. The beam causes a small pit. This pit represents binary '0'. The place on the surface without pit is called land and it represents '1' of binary code.

Diagram 2.5 CD

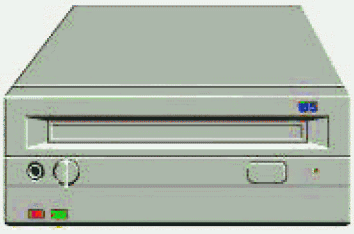


Diagram 2.6 CD Rom Drive

To read data in disk less intensity beams are aimed on the surface of CD Rom. Reflected laser beams are tested with photo detector. The beams reflected from lands don't lose their intensity but they spread in many directions exposing the exact position of pits. The difference of the reflected light is converted into binary codes 0 and 1 bits and data is clear to us.

In CD Rom tracks are used for data storage. These tracks are divided into sectors. But the tracks of CD Rom are not closed like those of floppy or hard disk but they are continuous and their length is 5 Kilometers. They are fixed in a spiral form. CD Rom has a high storage capacity. The memory of CD Rom is 650 MB. The rate of data transfer of CD Rom is high. CD Rom is used in multi media, computer games etc, nowadays CD Rom is used for different educational information, graphic collection etc.

Digital Video Disk

Digital video disk (DVD) is similar to compact disk (CD) but both are different. DVD can store 7.5 times more data than CD. one normal DVD can store approx 4.7 G.B. some DVD can store upto 17 G.B. The diameter of DVD is 4.7 inch. Similar to CD the data is stored on tracks. Tracks are divided into number of sectors but pits of DVD and distance between tracks are very small compare to C.D. Due to this capacity of DVD increases than CD. One more characteritics of DVD is that it can read data of different similar layers by changing focus of read layer. Data is written in two surfaces of DVD. Now storage capacity has increases.

The life of DVD is 10 years similar to CD to read or write DVD there is a need of DVD drive. DVD drive can read or write CD also. Humidity, temperature like environmental factors does not affect DVD similar to CD. but need to profect from scratches. Scratches can damage the whole DVD. Dust also create problems to read DVD so therefore need to kept DVD in cover.

Diagram 2.7 DVD Drive

Flash/Pen Drive

This new device has very surprising characterstions to store and transfer data. Data transfer & store using the devices like floppy, zip, disk, CD have some individual problems specially in those computer where peripheral devices are different. But intelligent stick can be used with any computer.

Diagram 2.8 Flash/Pen Drive

This is fixed on the USB Port of computer. The size of this is very small and can be put into pocket and purse easily. The size and capacity available in various range.

Zip Drive

Zip drive is second surprise in the word on magnetic media after floppy disk. Zip drive was very popular backup device, prior to CD writer. Zip drive is very cheaper than CD writer. In Zip drive zip cartridge is very reliable for movable use from one place to another. Zip cartridge can store up to 100 MB data. The size of it is 4 sq inch and thickness is approx double of floppy drive. One limitation with Zip drive is that now a day's operating system does not support zip drive.

Diagram 2.8 Zip Drive

Blue-Ray-Disk

Blue Ray Disk is an optical medium similar to CD & DVD. The physical characteristics are similar to CD and DVD. Blue ray disk can store 25 GB per single layer and 50 GB per dual layer. Blue violet laser is used to read Blue ray disk. Due to this it is known as Blue Ray Disk. The main use of it is for high definition video, video games, and data storing.

Diagram 2.9 Blue-Ray-Disk

2.2 Input Devices

With the help of input devices user feeds data, information and instructions in computer. These devices convert human language into machine language of computer. They translate character, number and other symbols into the language of computer that is 0 and 1 bits. After that the processing of data is possible. In this way Input devices execute two objectives.

1. To carry data and information to computer.

2. To convert instructions into machine language.

Input devices are as old as the computer itself but changes have taken place in them with the passage of time. Nowadays Keyboard, mouse, scanner, joystick, light pens, optical mark reader, optical character reader etc devices are in popular use some of these devices are being discussed in detail here.

Keyboard:

This is the most important input device. In a way it is an improved version of typewriter. In this device the number of keys is more than that of typewriter. Generally the number of keys is from 101 to 108. There are characters, number and other symbols on the keys by which the data is put in.

Diagram 2.10 Key-board

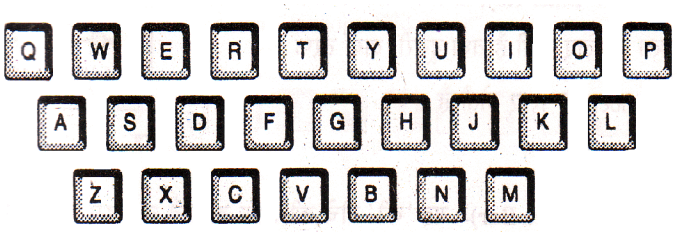
Keyboard is connected to the system with a cable. The plug of the cable is put in the socket behind the system.

There is a keyboard encoder which converts the data to 8 bit code when some key is pressed.

The keyboard keys are more easily pressed than those of the typewriter, the finger has to be lifted immediately after having pressed the key. If the key is pressed for more than 0.5 second then keyboard will keep on entering the signals of the same character again and again. The same character will get displayed on the screen repeatedly. This thing is called typematic. This activity happens at the rate of ten times in a second.

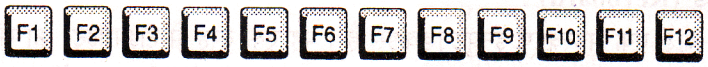
The keys can be classified in the following manner:

1. **Alphabet keys:** Like typewriter there are keys for all the 26 letters of the alphabet on the keyboard. These keys form the main part of the keyboard. They have a fixed serial number. The key bearing some letter can be pressed and it can be seen on the screen of the monitor. Today the boards with keys in other languages than English are also available.



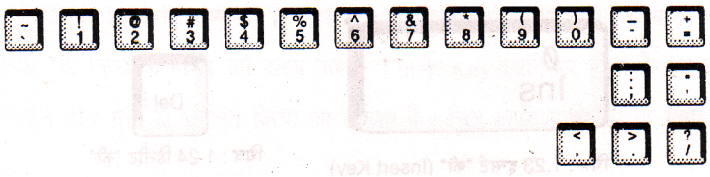
2. **Numeric keys:** These keys are fixed on the upper part of the board and they are from 0 to 9. They are fixed in the following format.

3. **Function keys:** These keys are fixed on the top part of the board and they are from F_1 to F_{12}. They perform special functions. They assign commands and display menu on the screen in the software programs. In different software function keys have different functions.



4. **Arrow keys or Cursor Control keys:** They are on the right bottom part of the board. There are arrows marked on them. Cursor is moved up, down, right and left with them. Cursor is a special character or mark to show where user is working and the user knows whatever he types will be written at this place.

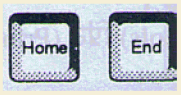
5. **Character keys:** These keys are used to write special characters or marks like- ~, !, @, #, $,%, ^, &, *, ( ), _, +, ‘, /, :, “, ”, < >, ?, etc.



6. **Special keys:** There are some special keys on the board. Their names and functions are given below:

* **Return/Enter keys:** This is the most often used keys on the board. After having written some word, sentence or instruction, this key is pressed and that goes to the memory.

* **End key:** This key moves cursor to the end of the document or line on the screen.



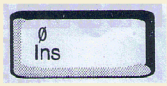
* **Home key:** This key moves the cursor to the starting of the document being made on the screen.

* **Backspace key:** It is used to move the cursor one space back deleting the character back to the cursor.

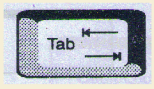
* **Spacebar key:** This is the largest key on the board. It is used to type a blank space between two words or figures.

* **Delete key:** This key deletes one character to the right side of the cursor.

* **Insert key:** This key is used for insert a character between any word.



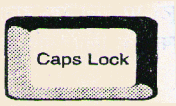
* **Tab key:** This key takes the currsor to the predetermine statement in one line or in the next line.



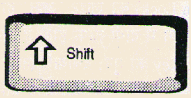
* **Esc key:** This key is located on the left top side of the board. This is used to cancel any command or entry or to go to the earlier command or entry.

* **Pause key:** This key is used to stop temporarily some processing in progress in the computer.

* **Caps Lock:** The caps lock key is used to lock the alphabetic keys in capital letters mode. You can unlock it to type in the lower case by pressing this key again. When this key gets activated caps lock indicator is lit.



* **Shift key:** Some keys have two characters on them when a key is pressed the lower character is typed to type the upper letter the shift key is pressed and then the key is pressed. It is also used to type capital letters.



* **Print Screen key:** This key is used to print the contents appearing on the screen.

* **Scroll Lock key:** This key is used to move screen up, down, left, right.

* **Page Up & Page Down Key :** The page up key is used to move to the preceding page of the document. Page down key is used to move to the next page.

7. Numeric key pad

This pad is a set of calculator like keys. There are 17 keys, there are keys form 0 to 9, there are arrows showing directions on four keys. The other keys of this pad are Num Lock, Home, Pg Up, Pg Dn, End, Ins, Del, Enter, /, *, - and + when data consist of only digits and to feed data with fast speed numeric key pad is used. Nowadays for using Internet and multimedia Internet key board and multimedia key board are becoming popular. By using these many tasks related to them can by completed by pressing the related key. Today's cordless keyboard is also in popular use.

Wireless keyboard

These type of keyboard does not use wire for connect the computer system. These required a receiver system which can use for connect the CPU.

Diagram 2.11 Wireless keyboard

Mouse

Mouse is a handy electronic input device to operate a computer. When we see the operating systems of today we feel that a computer can not be operated without a mouse. It is a small device and shaped like a mouse so it is called a mouse.

Mouse is put on a pad which is placed on a flat surface and it is moved to and fro with hand. It has two to three buttons on its top which are pressed with finger and this is knows as click. When the mouse is moved on a mouse pad the mouse pointer (Mark) is visible on the monitor and it also moves relatively. This is also called cursor.

Diagram 2.12 Mouse

Mouse is a very useful input device with its use the feeding of instructions has become easier and faster. It is very useful in graphics. Mouse is generally used in the following ways:

* **Single Click:** Single click of left button selects an object or option on the screen.

* **Double Click:** Double click of left button executes or opens an object.

* **Right Click:** Single click of right button invokes a context menu on the screen.

* **Drag and Drop:** When an object is selected by single click of left button the mouse is dragged over mouse pad by pressing left button, it moves the selected object from its original position to a new position on the screen.

Optical Mouse

This mouse is very much useful now a days. In this a ray of light emitted from the bottom on the basis of reflection it measures the speed and direction of object.

Wireless Mouse

This mouse works on frequency. It has transmitter & receiver. This provides the information of click and speed of mouse in the form of electron magnetic signals.

Diagram 2.13 Wireless Mouse

Joystick

Modern age is fast and it is age of very real looking 3D games. The people having the most suitable means can enjoy it to the full. In the beginning the games were played on computer with the help of keyboard and mouse. But nowadays many devices like joystick are available.

In a joystick a lever or handle is attached to the tracking ball which can rotate and move graphics on the screen. There is a button which is used to fire in the games.

Diagram 2.14 Joystick

Scanner

Scanner is an input device. We can take data and figures with the help of scanner into the computer. It can save photo and data of book in the form of image. we can change hard copy into soft copy with the help of scanner.

Diagram 2.15 Scanner

Web Camera

Web camera is online input device. With the help of web camera we can see the live pictures. Web camera is use in online video chatting. Video conferencing, offices, departmental stores and other places to watch the activities.

Diagram 2.16 Web Camera

Digtal Camera

The photo captured by Digital Camera is converted into digital data. Digital camera is working principal is similar to other usual cameras. In this the photo which we want to capture is focused with the help of lens. This is an offline input device. It is used to capture and store the photo. It has one screen on which we can see the captured photo, we can also move it from one place to another place easily.

Diagram 2.17 Digital Camera

Light Pen

Light pen is pen shaped and good conductor of light and it is connected to computer with a cable. It is used for writing directly on the screen. It is used mainly for graphical work, i.e. Computer aided designing. For using light pen special kind of software is required.

Diagram 2.18 Light Pen

Digitizer

Digitizing tablet is a drawing surface. One pen or mouse is attached with it. This tablet has net of thin wires. when we write by pen the signals are transmitted to computer. One scanning head is on the top of its. It is used to get the graphical position of character. With the help of of it we can draw the graph therefore it is called graph table.

Diagram 2.19 Digitizer

Micro Phone

Micro phone is an input divice which convert voice into digital form and transmitt it to the computer. It is mainly used in offices and call centres.

Diagram 2.20 Micro phone

2.3 Output Devices

The function of output device is to display the result for the user after having processed data, information and instructions. These devices translate the 0, 1 bit languages of computer into the human language and display the result on the monitor. Monitor, Speaker, Printer, Plotter etc. is the example of output devices.

The results received from computer are of mainly two types:

* **Soft Copy:** If the result can be viewed on the screen or received in the form of sound it is called soft copy. If these results are stored in Floppy, Compact Disk or Micro Film they are also called soft copy.

* **Hard Copy:** When the received results are printed on page via Printer or Plotter it is called hard copy. It is the permanent copy of result. Monitor, Speakers, Printers, Plotters etc are the examples of output device. We are going to discuss in detail about printer and monitor.

Monitor

The computer monitor is the most commonly used output device. The user interacts with a computer through monitor. It is Television shaped and is also called visual Display Unit (VDU).

There are mainly two types of monitors in a Micro Computer:

1. CRT Monitor 2. FPD Monitor

Cathode Ray Tube Monitor (CRT)

This monitor is mainly used in most of the computers. It is like a television used at home. This monitor consists of Cathode Ray Tube (CRT). Its screen is coated with phosphor. When CRT sends electrons on the screen it starts shining.

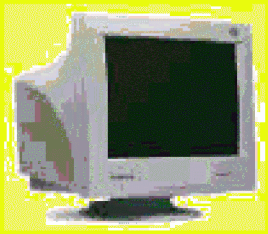


Diagram 2.21 CRT Monitor

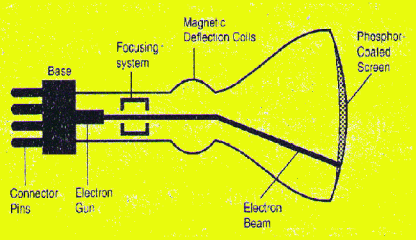


Diagram 2.22 Cathode Ray Tube

Any image on the screen is made up of tiny dots called pixels. Every pixel shines with a beam of electrons. These pixels shine and darken repeatedly and this is known as Refresh. Refresh rate is 30 times a second. When the refresh rate is low the picture keeps on moving and waving because phosphor molecules lose their glow rapidly. The shine of every pixel depends on the intensity of the electron beams and its intensity depends on the voltage of electron gun.

In a monochrome, i.e. black and white monitor, there is a single electron gun while there are three electron guns in a colored monitor to scan dots or stripes of red, green and blue color. On the screen of color CRT system three phosphor molecules coat a pixel. As a result a pixel can produce three colors with a beam of electrons. Besides red, green and blue other colors and their shades are produced by increasing and decreasing the intensity of the beam of electrons. The number of pixels in per square inch of monitor is called resolution of monitor. Resolution signifies the quality of image on the screen. The more the pixels on the screen the better the resolution. In other words the image will be clear and sound.

Diagram 2.23 LCD Monitor

Flat Panel Display Monitor (FPD)

They are based on new technology. In these monitors charged chemicals and gases are stuffed between two specially treated sheets of glass. These thin display devices are called flat panel Display F.P.D. monitors are flat, light in weight and consume less electricity. But they are expensive and have low resolution. They are mainly used in laptop computers.

F.P.D. Monitors are of three types:

1. Liquid Crystal Display Monitors (LCD)

2. Gas Plasma Display Monitor (GPD)

3. Electroluminescent Display Monitor (ELD)

LCD Monitor has low resolution and the display on the screen is of poor quality. GPD and ELD have greater resolution compared to LCD but they are far too expensive.

Printers:

Printer presents output by printing on the page. The copy of printed output on the page is called hard copy. Printer accepts digital information and converts them into human language and prints fast on the page and we can read it.

Printers can be broadly divided into two categories.

1. Impact Printers

2. Non-Impact Printers

Impact Printers

In these printers there is a small metal hammer or print head which strikes ink ribbon when print head strikes the ribbon the characters present on the print head get printed on the paper. The printers in this category are:

Dot matrix Printer (DMP): In DMP, the printer head comprises of several pins called matrix. The pins strike the paper through an inked ribbon and print a pattern of tiny dots and several dots together make a character. In the print head there is vertical set of 7, 9, 14, 18 or 24 pins. The more the number of pins, the better is the print quality. The characters keep on getting printed in a successive manner.

The speed of DMP is from 30 to 600 characters per second. There is no solid font in them and so they can print characters of different sizes, kinds and languages. Graphics, Charts etc can also be prepared with them. But the clarity of printing is less than that of solid font printers. These printers can print from left to right and from right to left. The printing cost is low so they are mostly used in printing.

Diagram 2.24 Dot Matrix Printer

Daisy Wheel Printers: This printer gives a cleaner output than that of Dot Matrix Printer. It is a printer with solid font. Its print head is made up of plastic and is wheel shaped. Its print head resembles a daisy flower and hence the printer is called daisy-wheel printer. The wheel has many spokes like the petals of flower. On each spoke the solid font of each character appears.

The hub rotates at a high speed horizontally and a hammer strikes the appropriate character when it is in position the font is printed on the page. There is a ribbon between the hub and the paper. Daisy wheel printer is a slow speed printer. Its speed is 90 characters per second. But the output quality is of high class. So it is used in typing letters and this printer is called letter quality printer. With this printer only those characters can be printed which are available on its printer head. It cannot print graphics etc. its cost of printing per page is comparatively high.

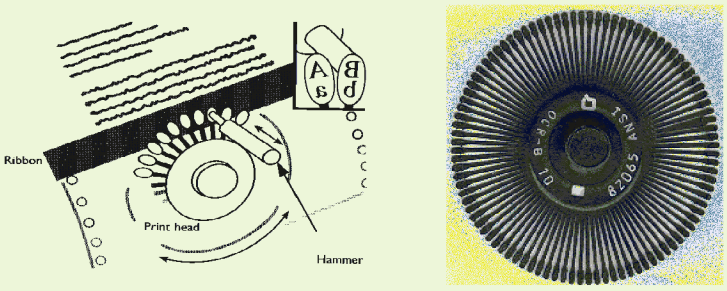


Diagram 2.25 Daisy Wheel Printer

Chain Printer: This printer consists of a chain made of metal which rotates at a fixed speed and it is called print chain. There are characters on chain. There is a font of character in each link of chain.

This chain rotates horizontally and the paper moves vertically to chain. The hammer strikes and the character gets printed on the page with this printer the entire line is printed at the same time. It is a high quality printer. Its printing speed is 300 to 3000 lines per minute.

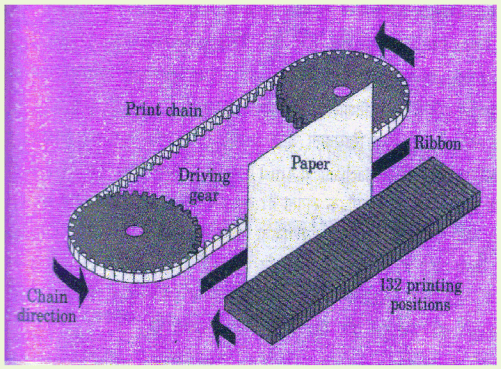


Diagram 2.26 Chain Printer

Drum Printer: This printer consists of a cylindrical drum on which characters are embossed. The drum moves fast and the hammer strikes the character and it gets printed

on the page. With one rotation of the drum a line is printed. This is also a printer with a high quality.

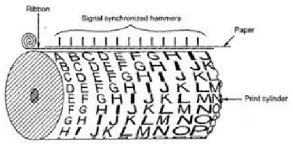


Diagram 2.27 Drum Printer

Non-Impact Printers

Non-impact printers use chemical, thermal or electronic technologies to form characters. There is no contact between printer head and paper. The quality of printing by these printers is very high. But these printers can print only one copy at a time and special and expensive software is required for this. Non-impact printers are of various types. Here three types of Non-impact printers are being discussed.

Inkjet Printer:

This printer consists of a printer head which contains of a nozzle with tiny holes and liquid ink is sprayed with nozzle on to paper and characters and images are printed on the paper. In this printer high density ink is used and it is stored in a special pack called cartridge. That the ink droplets fall on the right place on paper for this nozzle is instructed with electrode. The output of this printer gives out a clear and high quality print out because a character is made up of several dots. The print quality is 300 to 600 dots per inch (DPI). Nowadays inkjet printers with more than one printing heads are available with which printing in different colours can be done.

Diagram 2.28 Ink Jet Printer

In the beginning inkjet printers were highly expensive but nowadays their costs have come down. Their main problem is ink clogging of nozzles. Their printing cost is also comparatively high.

Laser Printer

This is the most developed computer of today. It is based on laser beam. To print a character laser beam is put on it. Toner, a special ink powder, is used to print a character. Laser printers are expensive but they are capable of performing high quality printing at a fast speed and they are the most popular nowadays. Colored laser printers give a high quality colored output. They consist of toner which has particles of different colors. These printers can print output on some plastic sheet or any other sheet.

Diagram 2.29 Laser Printer

Plotter

Plotter is used to print large map, chart, three dimensional line diagram, Design and electronic circuits. It is an output device by which we can print the graphics. It is used to make Banner, Poster.

Generally Plotter are two types. Drum Pen Plotter and Flat Bed Plotter.

Diagram 2.30 Plotter

Speaker

Speaker is an output device which converts digital signals received from computer into voice signals. Speaker is very much useful for multimedia applications. It is very useful for distribution of voice. It is mainly used in seminar and Meetings.

Diagram 2.31 Speaker

Multimedia Projector

Multimedia projector is used to show the computer screen figures and activities on large screen. So group of people can see easily.

It is used for multimedia presentation. Nowadays it is mainly using in field of education.

Diagram 2.32 Multi Media Projector

Important Points

1. Input devices are used by the user to feed data, information and instructions in the computer.
2. Key-board is the most widely used device. It is the improved version of typewriter.
3. Mouse is one of the most important devices to operate and control computer. Mouse is shaped like a mouse hence called mouse.
4. Mouse pointer or cursor is an arrow like device to show the monitoring of computer.
5. Joystick is used to move graphics or diagrams on screen. It is mainly used in computer games.

6. Light pen is used to directly write on the computer screen. It is used to draw graphics and for computer aided designs.
7. Output devices are those means which present the result to the user after processing the data,information and instructions from the user.
8. Monitors are of two types: 1. CRT Monitor 2. FPD Monitor
9. Printers are generally of two types: 1. Impact Printers 2. Non-Impact Printers
10. The examples of Non-Impact Printers are: 1. Dot-Matrix Printer 2. Daisy Wheel Printer 3. Chain Printer 4. Band Printer 5. Drum Printer
11. The examples of Non-impact Printers are: 1. Thermal Printer 2. Inkjet Printer 3. Laser Printer
12. Data, information, programs etc are stored for present and future use.
13. Memory is primary storage device.
14. Magnetic tape, Magnetic Disk, Hard Disk, Floppy Disk, CD Rom are secondary storage devices.

Exercise

Multiple choice questions

1. Numeric key pad is mainly used for-

   (A) Text processing (B) Graphic work

   (C) Banking works (D) All of the above

2. Mouse is:

   (A) Input device (B) Output device

   (C) Storage device (D) None of the above

3. Typematic rate is:

   (A) 20 times per second (B) 10 times per second

   (C) 5 times per second (D) 1 time per second

4. Output printed on some page is called:

   (A) Hard copy (B) Soft copy

   (C) Micro copy (D) Floppy

5. The interior surface of CRT is coated with:

   (A) Calcium material (B) Phosphor material

   (C) Crystal material (D) Iron-oxide

6. The technique of computer similar to that of type writer is:
   (A) Typematic printing (B) Impact printing
   (C) Non-Impact printing (D) Laser printing
7. Drum printer is a:
   (A) Character printer (B) Line printer
   (C) CD Rom (D) Magnetic tape
8. Primary storage medium is:
   (A) Hard disk (B) Memory
   (C) CD Rom (D) Magnetic Tape
9. Optical technology is used in:
   (A) Hard disk (B) Floppy disk
   (C) Inkjet printer (D) CD Rom
10. General storage capacity of micro floppy is:
   (A) 1.2 MB (B) 650 MB
   (C) 1.44 MB (D) 2.8 MB

Very short type questions

1. Who reads and writes data on disk?
2. What are the small dots on the screen of monitor called?
3. What type of printer does Dot Matrix represent?
4. What is the hole in floppy disk and its envelope called?
5. What is the radius of micro floppy?
6. How many type of memory?
7. What is the work of Monitor?
8. Write the name of two input and two output devices.
9. Which principal is used in laser printing?
10. What is the use of projector?

Short type questions

1. Explain the differences between hard copy and soft copy.
2. What is the technique of laser printer?
3. Explain the differences between Impact printers and Non-impact printers.
4. What are the different uses of mouse?
5. Write the functions of Joystick and Light pen.
6. How many type of Plotter? Give names.

Essay type questions

1. Illustrate the functioning of Dot Matrix printers with the help of a diagram.
2. What are the different types of monitors? Illustrate each with help of diagram.
3. Illustrate the structure and functioning of Hard Disk with a diagram.
4. What is CD Rom? Describe its functioning and uses.
5. Explain the types of Printer and working principal of each.

Chapter-3

Computer Communication and Network

3.1 Computer Communication

Full utilization of a computer is only, when it is connected with other computers. In modern age if a computer is not connected with other computers, in any way, it will not prove much useful. If a computer is connected with a large network or internet, then it can be proved much useful.

The exchange of information and data from one computer to another computer is known as DataCommunication. Today any one sitting at the home or even in the way can talk, make audio-video chatting and can send or receive any kind of information with the help of computers. All these are not possible without data communication. Railway reservation system, hotel reservation system, airlines etc. have thousands of terminals, by which any one can make reservation from his own place. All these processes have become possible only with data communication.

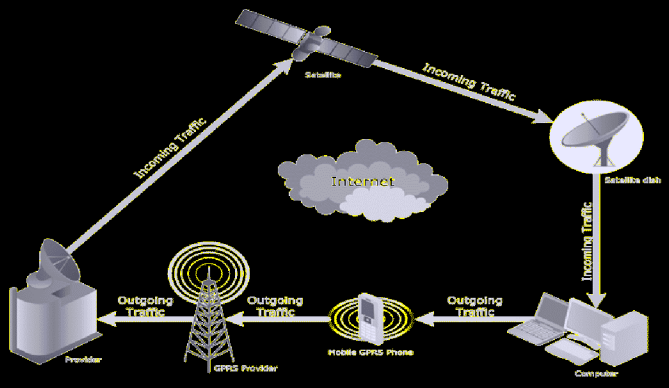


Diagram 3.1 Computer Communication

Necessity of Data Communication

It takes too much time in exchange of information using traditional means of communication, and their cost are also increasing continuously. While the communication takes place with lighting speed with the help of computers. Besides, its cost is also

decreasing continuously with compare to traditional means. Using traditional means, time and cost are increased speedily with increase in distance, but there is negligible effect of time and cost, when the communication is made with computers. As well in the data communication the data accuracy remains very good.

Transmission Media

For data communication it is necessary to have a physical medium between sender and receiver. The medium is known as transmission medium or communication channel. These media are of several types. At the time of selecting media, several things are kept in mind e.g. their cost, working efficiency, speed of data communication etc. Transmission media are generally divided into two groups: (1) Wired Media and (2) Wireless Media.

Wired Transmission Media

In these media wire or cable is used for transmission of signals from one computer to another computers. These are also known as Guided Media. On the basis of wire used, these media are of following types.

I. Twisted Pair Cable

This is oldest and cheapest means used for networking. In twisted pair cable, there are two insulated copper wires, which are twisted each other spirally or as like coil. The aim of twisting is to minimize the electrical interference. In such twisted wires electrical interference goes very low. This happens due to opposite electric interference in these twisted wires. This type of interference is known as Cross Talk. Copper is good conductor of electricity. These copper wires are generally 22 to 24 gauze in thickness.

Diagram 3.2 Twisted Pair Cable

Twisted pair cables are of two types:

1. Unshielded Twisted Pair Cable (UTP)

It is most popular twisted pair cable. In this type of cable the set of twisted pairs are covered by a simple plastic covering. These are most popular in local area network (LAN) cabling. UTP has been generally being used in telephone system cable and in

most offices already. In this type of cable possibility of cross talk is much more.

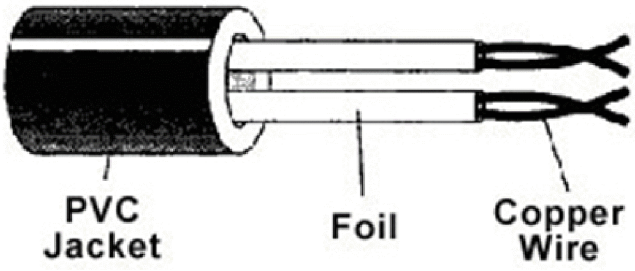


Diagram 3.3 Unshielded Twisted Pair Cable

2. Shielded Twisted Pair Cable (STP)

In this type of cable a jacket of high grade twisted copper wire is used, which is safer than UTP covering. STP wires are covered with a foil, which makes an efficient insulation and protects the data from external obstructions. It minimizes the possibility of cross talk. The cost of STP is more in compare to UTP but it is better in speed and quality of data transmission.

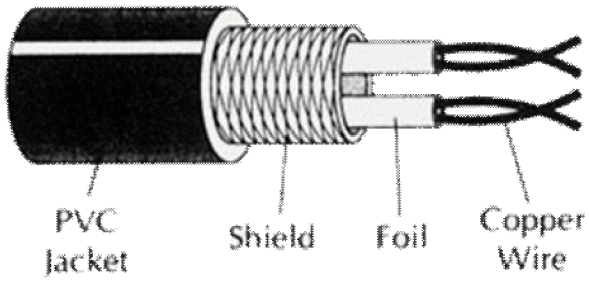


Diagram 3.4 Shielded Twisted Pair Cable

Twisted pair cable is mostly used in small distance (up to one kilometer) communication. This cable is also used in connecting computers in LAN. The data transmission speed of this cable is 1 to 2 MB per second. But with the increase of distance data transmission speed decreases. Therefore, repeaters have to be used in between.

Twisted pair cables are used in both analog and digital transmission. It is comparatively cheap and easy to use.

II. Coaxial Cable

Its main part is a copper wire which is known as core. It is covered by an

insulating plastic covering. This covering protects wire from external strokes. This covering is mainly made up of plastic substance. This covering is surrounded by a protective shield, which is made up of insulating substance. In this way coaxial cable has two conductors and two insulators. Signals are transmitted through innermost copper wire core.

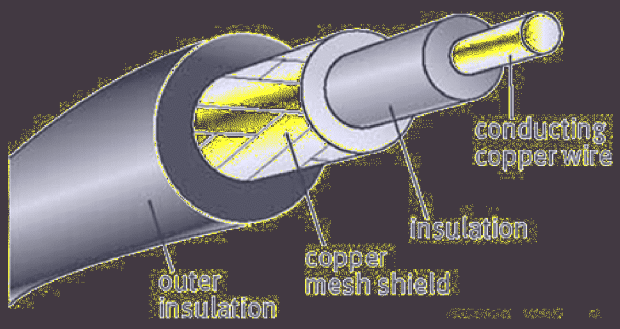


Diagram 3.5 Coaxial Cable

Their cost increases with the increase of diameter. Thin coaxial cables cost less while thick cost more. `

Coaxial cables are used in cable TV transmission, long distance telephone communication, connecting the computer devices situated on short distance and local area network. These are also used in high speed broadband network.

Coaxial cables are of two types

(I) Thinnet - These are flexible and cheap. Their installation is easy. These are mostly used in networking.

(II) Thicknet - These are thick and cannot be easily bended. Therefore it is rather difficult to use them

Coaxial cables are used in medium distance communication. Due to presence of external wire mesh, the effect of electrical interference decreases considerably. Their bandwidth are more in compare to twisted pair cable. But these are costly in compare to twisted pair cable.

III. Optical Fiber Cable

This is the latest type of cable in wired cables. In this cable light waves are transmitted in light waves in place of electric signals and this transmission is not in analog form but in digital form. A single optical fiber is thinner than a human hair. Its diameter is 2 to 125 micrometers. Its innermost part which is known as core, made up of glass or

plastic. Core is covered externally with a thin layer, which is also made up of glass. This layer is known as cladding. The refractive index of cladding is less with compare to core.

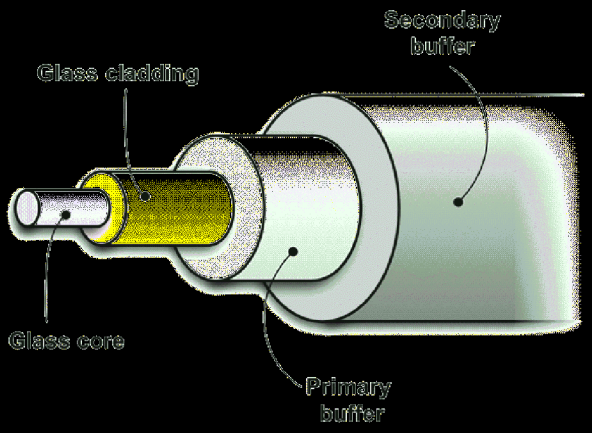


Diagram 3.6 Optic Fiber Cable

When light signals are transmitted two substances having different refraction index, the light rays are reflected in spite of refract. In this way the mechanism of OFC is based on total internal reflection. Due to this total internal reflection the optical signals are only remain in the core of fiber. That's why these do not grow weak with the transmission. Besides cladding, in optical fiber there is found another jacket, surrounding the cladding, which provides the necessary strength to fiber. As the single optic fiber is very fine, so thousands of optical fibers can be fitted into a cable of normal thickness.

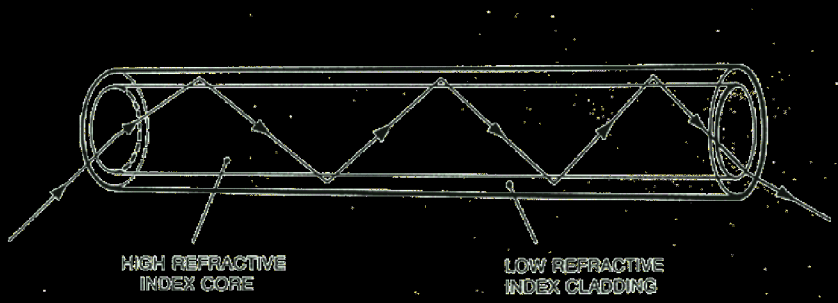


Diagram 3.7 Transmission of Light Signals through OFC

A computer always gives off electric signals, whereas only optical signals can be transmitted through optical fibers. So electric signals have to convert into optic signals with the help of a converter, before transmission.

OFC is most reliable and safe means of data communication, because data

cannot be stolen from this. OFC is most appropriate for long distance and speedy data transmission. Its data transmission rate is 100 MB to 2 GB per second. OFCs are light in weight with compare to copper cables and occupy less space. The data transmission error rate is also negligible. But the technology used in OFC is comparatively complicated and expensive, so OFC is the most costly means of data communication in wired media.

Wireless Transmission Media

In these media such electromagnetic waves are used, which does not require any media for their transmission, for transmission of signals from one computer to another computer, in spite of using wire or cable. These are also known as Unguided Media. On the basis of type of electromagnetic waves and devices used, the main wireless media are as follows:

1. Radio Waves

Radio waves can be generated easily and can travel up to long distance. These are easily passed through large buildings or other obstacles. Therefore these waves are mostly used in data transmission. Radio waves from transmitter can be transmitted in the directions, so there is no necessity of sender and receiver being in a line of sight. Radio communication was used in transmission of telegraph signals for long time. This communication was held on slow transmission speed and on low frequencies, but now a days speedy data communication has become possible by using VHF (Very High Frequency), UHH (Ultra High Frequency) and SHF (Super High Frequency) in radio transmission.

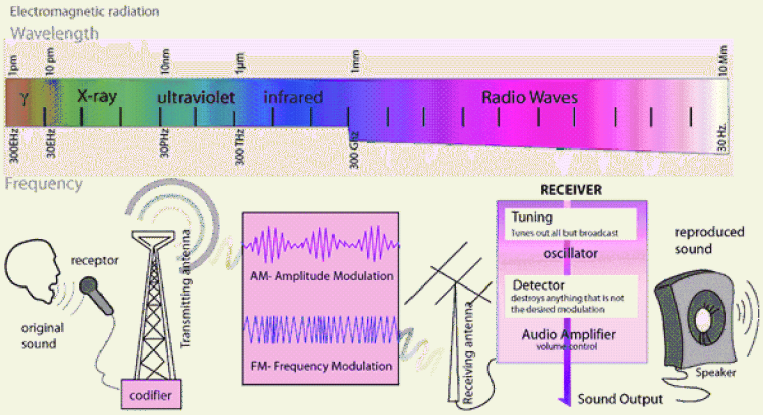


Diagram 3.8 Radio Wave Communication

2. Microwave Transmission

Microwave transmission takes place through high frequency radio waves. The problems of installing cables can be avoided by using this medium. On the places where cabling is difficult, this medium is most useful.

Microwaves can be transmitted in a straight line. These cannot pass through any large building, hill or any other physical obstacle. So it is necessary for the transmitter and receiver to been line of sight. To achieve this transmitter antenna and receiver antenna are placed on much height and in a straight direction. The tall towers installed on high places are actually microwave towers. But with the increase of distance the roundness of earth becomes obstacle. In line of sight. Therefore transmission is interrupted. This problem is resolved by installing repeaters between sender and receiver. Normally these repeaters are installed on every 25 to 30 kilometers distance. All these repeaters should also be in straight line.

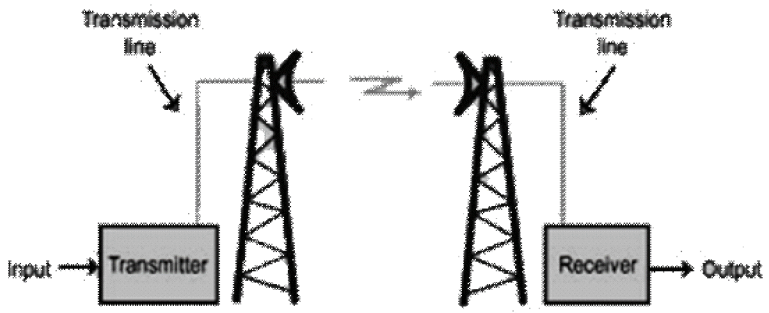


Diagram 3.9 Microwave Communication

Microwave signals also get weaker with the increase of distance. Repeaters also amplify these signals. Microwave transmission is relatively a cheap means of transmission. But it is based on weather. The quality of transmission is decreased in bad weather. Microwave transmission is mostly used in long distance telephone communication, cellular phone communication and in television transmission.

3. Satellite Communication

In this transmission also microwave signals are used but their frequencies are higher than microwave signals used on earth for transmission. Communication satellites are generally established in a geostationary orbit above equator over 36000 kilometer height. The speed of satellite moving around in geostationary orbit is synchronized with the speed of rotation of earth on its axis. Therefore the satellite remains on a constant point in relation to the earth.

Communication satellite can be considered as a microwave relay station. As the

satellite is established on more height so there is no problem of line of sight. Three satellites established on equal distance above equator can transmit the signals on whole of the earth. These signals can be received everywhere on the earth.

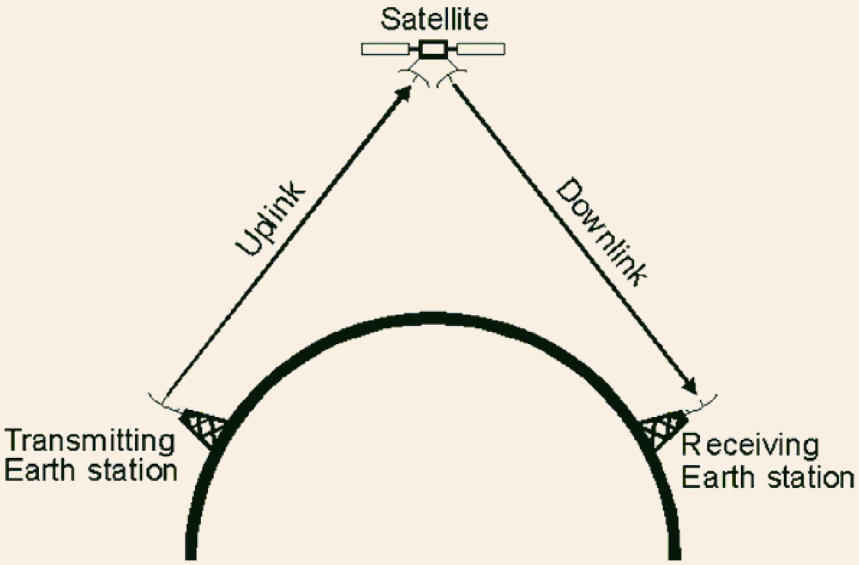


Diagram 3.10 Satellite Communication

In satellite communication the signals of 6 Giga Hertz frequency are sent to satellite from earth. These signals become weaker as they travel a long distance (36000 kilometer). So these signals are made powerful and then retransmitted to earth by transponders mounted on the satellite. As many receiver can receive these signals on earth. Different frequencies are used for sending and receiving the signals to satellite to prevent interference of each other.

The satellite communication is used in long distance telephony, transmission of TV program, international communication etc.

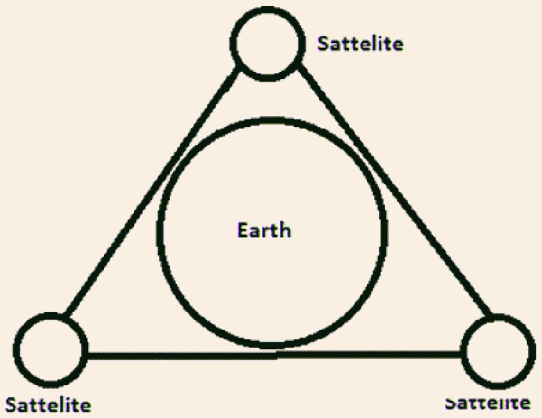


Diagram 3.11 Three satellites can transmit the signals on whole of the earth

The satellite communication is the best means of communication in remote and isolated areas, but to establish it in the orbit is too much expensive.

4. Infrared Transmission

In this transmission infrared rays are used for data communication. This is a cheap, safe and easily usable means of communication. For infrared communication there should not be any obstacle between sender and receiver. Infrared signals work on very high frequency therefore the speed of data transmission is very fast.

Diagram 3.12 Infrared Communication

Infrared rays are used in TV and music system remote for communication. It can be used for establishing LAN within a house. Computers placed in a room can also be connected through infrared media.

5. Wi-Fi (Wireless Fidelity)

Wi-Fi is the popular technique of today for connecting computers without wire to the network. Actually it is a wireless network. It is also known as WLAN (Wireless Local Area Network) which is based on IEEE (Institute of Electricals and Electronics Engineers). Wi-Fi is the trade mark of the Alliance Company.

Diagram 3.13 Symbols of Wi-Fi

Now a days Wi-Fi device is installed in most of PCs, Laptops, Palmtops, Video games, Console, Smart Phones, Printers etc. Wi-Fi enabled devices can connect with internet when it comes in the range of internet connected wireless network. Wi-Fi coverage area can be limited to few rooms to a city.

Diagram 3.14 Wi-Fi Communication

Wi-Fi uses radio waves (like cell phone, TV and radio) for communicating information. When any person wants to communicate data with this device, the data is first converted into radio signals then it is broadcasted with use of antenna. Wireless router receives signals and decodes them. Router sends information to internet using wired Ethernet connection. This action happens vice-versa too, when router receives information from internet and converts it into radio signals and sends these signals to wireless adaptor.

These radio waves used for Wi-Fi communication are same as used for cell phones and radios. But only the difference is of their frequencies are 2.4 Giga Hertz to 5 Giga Hertz, which is much higher than cell phones frequencies. Wi-Fi waves also have capacity of carrying more data. 802.11 network standards are used in Wi-Fi communication.

Wi-Fi facility is available in most of the educational institutes, offices, airports, hotels etc. These places are known as Wi-Fi hotspots. On these places any person can connect with whole of the world with the help of Wi-Fi enabled phone or laptop.

6. Bluetooth

Bluetooth is such a wireless technique by help of which various electronic apparatus can connect each other and can exchange data. Radio waves are too used for connecting them. Bluetooth was basically designed for minimize the number of cables connecting the apparatus to computer.

Diagram 3.15 Bluetooth

Generally the Bluetooth application is used for connecting headset to remote mobile phone or connecting mouse, keyboard or printers to a computer. Bluetooth provides an easy way to connecting electronic devices like PDA (Personal Digital assistant), mobile phone, tablet, laptop, PC, printer digital camera, video game console etc. and exchanging data in these devices.

Forms of Data Transmission

Generally electric signals are used for data communication. These signals are of two types: 1. Analog and 2. Digital.

1. Analog - These signals are continuously changing in relation to time. The value of an analog signal is anything in a given range. A telephone system is an example of analog data communication.

2. Digital - These signals are non-continuous or discrete. A digital signal can receive only few values in a given range. These signals are transmitted in "on" and "Off" form.

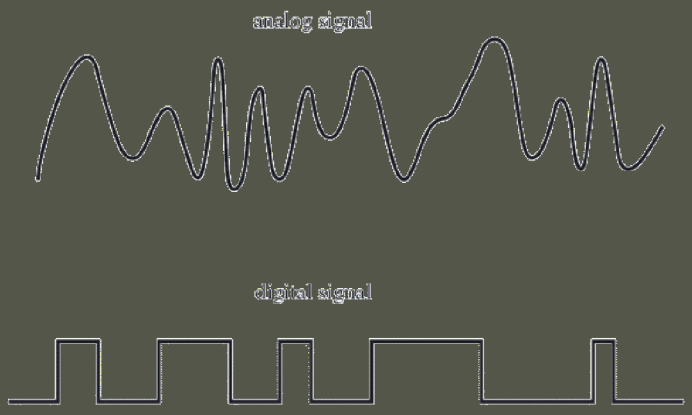


Diagram 3.16 Analog and Digital Communication

Computer uses digital data. Digital signals are also used for computer data communication. But the mostly used medium (Telephone Line) for data communication between two computers can only transmit analog signals.

Therefore the digital signals of a computer first have to change into analog signals before data communication. This process is known as modulation. In the same way the analog signals transmitting in a telephone line cannot be sent directly to the computer. Before sending to computer analog signals have to convert into digital signals. This process is known as demodulation.

Computer Network

When several independent computers are connected with each other for data communication, this arrangement is known as computer network. In other words it can be said that a computer network is interconnected collection of several independent computers. In a computer network other devices like printers, plotters etc. can also be connected besides computers. The communication media, which connects computers and other devices in a computer network is known as link.

Purposes of Computer Network

1. Resource Sharing

The main object of the network is to share and work together on all the devices within it like computer, apparatus, data and program. If any data is not available on one computer, but it is available on another computer connected to network, it can be accessed from there. On need of a high capacity computer for data processing, any remote computer connected with network can be used. If a user wants to print a drawing, but he has no plotter, he can use any plotter connected with network. All the users

connected with network can use a same printer for printing. In this way network plays an important role in maximum utilization of limited and costly devices.

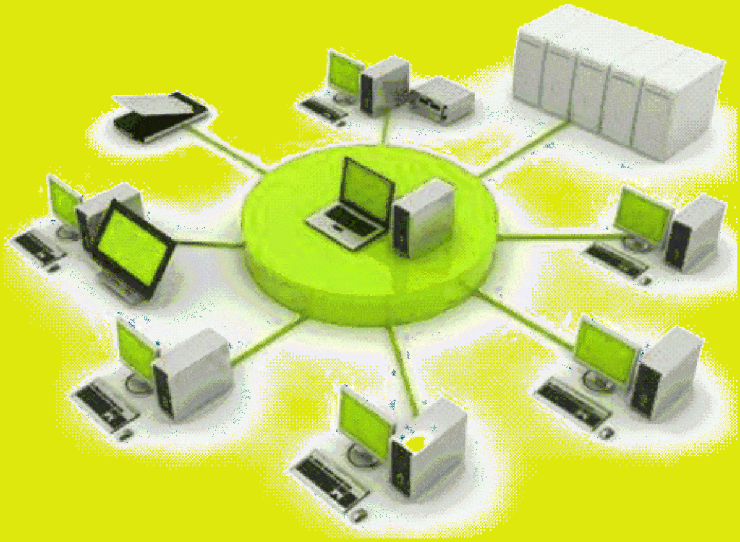


Diagram 3.17 Computer Network

2. As a Communication Media

Users can communicate each other very easily and speedily with the computers connected with network. Users can exchange all types of data and information with network.

3. Reliability and Availability

If any hardware or software become faulty (out of order) or not available for some time, other devices connected with network can be used. Important data can be stored on more than one computers so that in case of disconnecting of one computer from network or corrupting the data, data can be accessed from another computers.

4. Cost Reduction

No any user can able to purchase all the expensive computer devices. But by the help of network he can use all the devices (hardware, software), which is not available with him, whenever he needs them.

Applications of Network

1. Accessing remote databases

Any user can access data on his computer available on other computers of the network. With worldwide web information system any information regarding any subjects like arts, science, health, history, sports etc. can be accessed as well as information regarding rail, roadways, air service and their reservation can be accessed easily.

2. Fax

Fax can be sent to any computer connected with the network and can be received as well. For this fax modem and fax software must available with both the sender and receiver computers.

3. Electronic Mail or E-mail

Currently email is used widely. Messages can be sent very speedily through this, as well various documents, audio and video files can also be sent as attachment.

4. Video Conferencing

Now a days Skype, Google, WhatsApp etc. several messengers are available, which provide video conferencing facility to computers connected with network. Video conferencing has make it very easy to contact with people living on distant places with audio and video chatting.

5. Online Services

Today several online services are available on computers connected with network as like online trading, online shopping, online banking, online education, online playing etc. Online services are expanding continuously.

Categories of Computer Network

Computer network is categorized into three categories on the basis of their distance of expansion.

1. Local Area Network

This network is extended in a limited geographical area, which normally can be of few kilometers. This is used for exchange of information and resources of computers of any big office, institute or factories. This network is generally known as LAN.

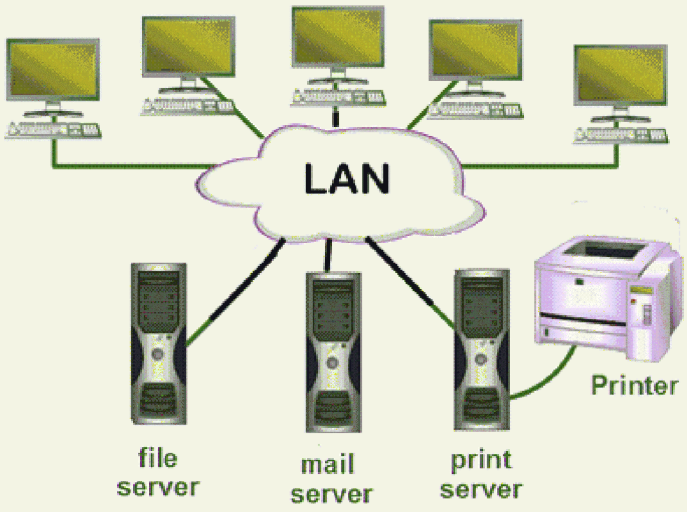


Diagram 3.18 Local Area Network

LAN generally spreads out in a small area like any large building or in campus. There is a master computer in a LAN, which is known as server and remaining are dumb computers, which are known as terminals. Server controls over all the terminals. All the computers in LAN are connected through twisted pair cable or coaxial cable. Generally not more than 100 computers are connected in a LAN.

LAN are small so it is easy to handle and maintain them. Sometimes they can be defected due to short circuits and other unwanted signals. All the terminals are connected in LAN with a single cable.

In LAN the speed of data transmission is high (10 to 100 Megabyte per second), which is the main characteristic of LAN. LAN is most flexible network, more computers can be added or removed from LAN without disturbing whole network. Due to limited area of LAN, various topologies are used in this network. In LAN persons can work independently as well the can watch others work and can edit or change them.

2. Metropolitan Area Network (MAN)

This network is expanded relatively into a large area. Its geographical range is generally a city or town. MAN, actually a large form of LAN, because it uses the technique of LAN to. But its installation is more difficult in comparison to LAN. This connects branches of different organization or institutes located in different regions of a city.

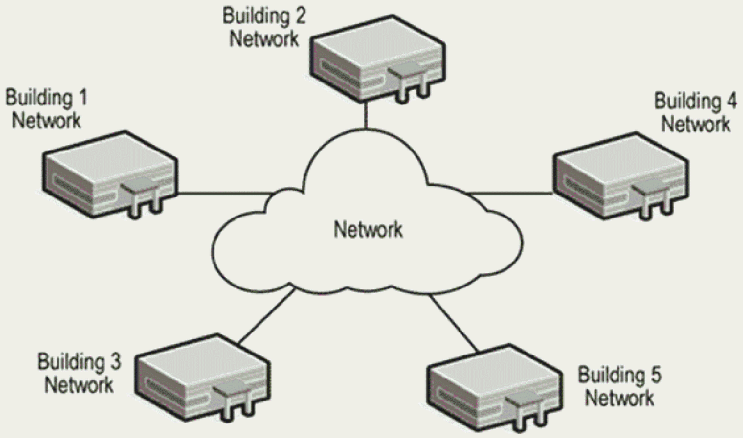


Diagram 3.19 Metropolitan Area Network

The main objective of MAN is to use software and hardware resources by sharing. In MAN whole the network is controlled by a centralized machine. Data and voice both can be transmitted through MAN.

3. Wide Area Network (WAN)

WAN's geographical range is much vast. It can be expanded in whole country, peninsula or in whole world. In WAN all the computers of countries or peninsula are connected with each other. These computers can exchange data and can make centrally controlled transmission. WAN is a highly odd type of network. In this network some of the parts can be connected through cable or some can be connected through telephone lines, optical fibers, microwaves or through satellites.

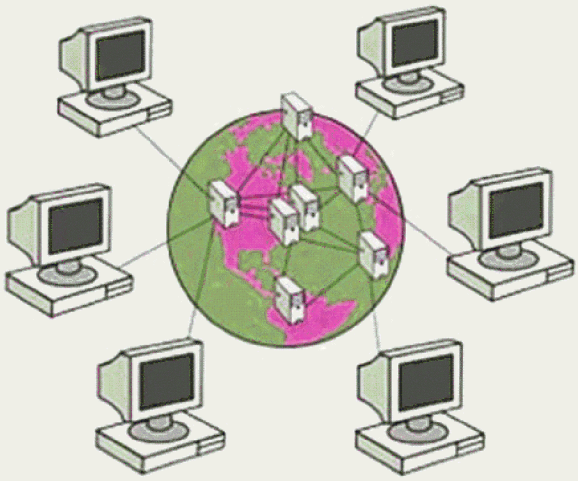


Diagram 3.20 Wide Area Network

Connecting the WAN network is a complicated task. It has more possibility of short circuits, faults arising due to breaking of wires or cables and any other circuit faults. Its data transmission speed is relatively slow in comparison to other network. Internet is the most appropriate example of WAN.

Network Topology

The method by which nodes of a network are connected each other is known as topology. It is determined by topology that which paths are available for data communication. The cost and complexity of establishing a network is mostly depended upon topology. Therefore at the time of deciding the topology it is essential to keep in mind its complexity, cost, expansion in the future etc. Some important topologies are follow.

1. Linear or Bus Topology

In this topology all the computers are connected with single cable. Generally coaxial cables are used for connecting computers. Both the ends of cable have terminators. Every computer or device is connected with network through a network interface card (NIC). Each NIC has a unique address.

Linear topology is the simplest topology. In this topology it is not essential to each computers to be in running state. If any computer gets fault, remaining network continue to work. Its expansion is also easy. New node (computer or any other device) can be connected everywhere in the bus.

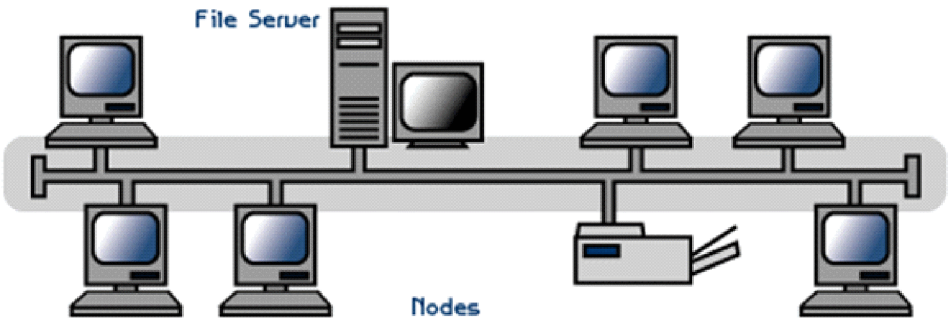


Diagram 3.21 Linear or Bus Topology

But the control of the network in this topology is not centralized. So it is hard to find out any fault which occurs somewhere. Repeaters have to be used in case of lengthy bus. Whole the network can stop working if any fault arise in cable.

2. Circular or Ring topology

In this topology all the nodes are connected in a ring. Twisted pair cable, coaxial cable or optical fiber cables are used to connect these nodes each other. Each node is connected with its two adjacent nodes and receives data from one node and transmits data to another node. Every node amplify the data signals before transmitting them to next node.

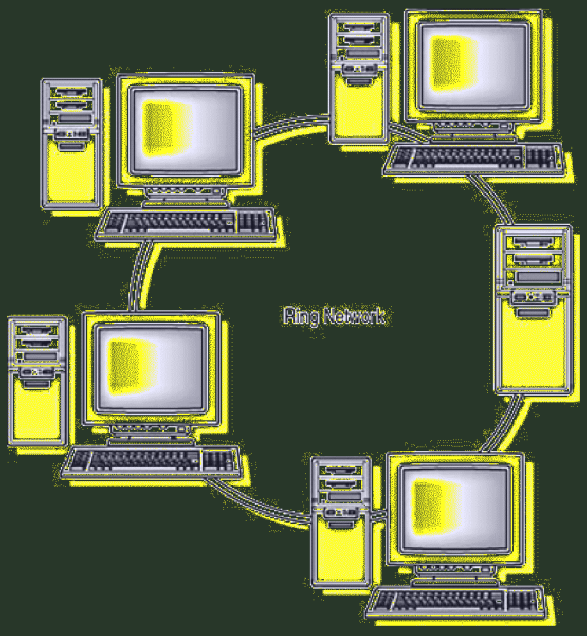


Diagram 3.22 Ring Topology

In ring topology there is no any main controller computer, so it is more suitable for peer to peer network. This is also a reliable topology, because data communication is not depended on a single computer in this topology. It has also no need of repeaters. But in this topology, if one computer stops working properly, whole of the network can be failed. All the network becomes interrupted at the time of removal or insertion of a computer.

3. Star Topology

In this topology all the nodes are connected with a central computer, which is known as hub or host. In this topology no any two nodes are connected directly. Communication between nodes takes place through central computer. This controls over all the communication between all the nodes.

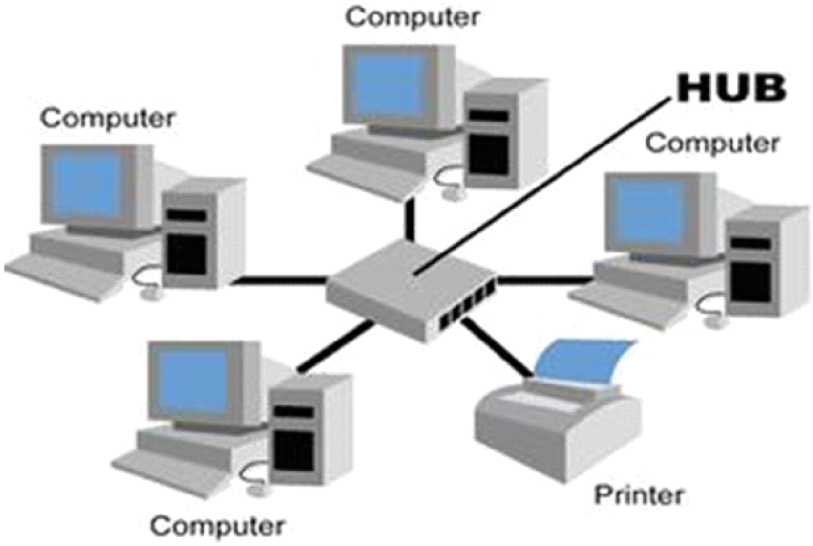


Diagram 3.23 Star Topology

The network management in this topology is relatively easy. If a node becomes defective, remaining network does not affected. But due to depending the control of whole network on the central computer, all the network stops working on the failure of it. More cable is also required in this network.

4. Tree Topology

In this topology nodes are connected in hierarchical way. The top most node in the hierarchy system is known as Root Node. Root node has sub nodes which are connected with root node in hierarchical way. Sub nodes can have several levels e.g. primary, secondary, tertiary etc.

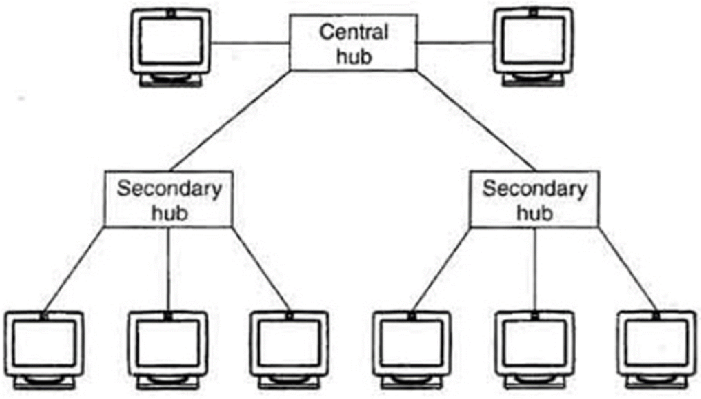


Diagram 3.24 Tree Topology

Tree topology is really a slight modified form of bus topology. The data communication in this topology takes place just like bus topology. The tree topology is more suitable for those applications in which data flows take place in several levels

5. Graph or Mesh Topology

In this topology no any special structure is used for connecting the nodes with each other. A node can be connected with any node or can also be more than one node. It is not necessary to connect all the nodes with each other in this topology.

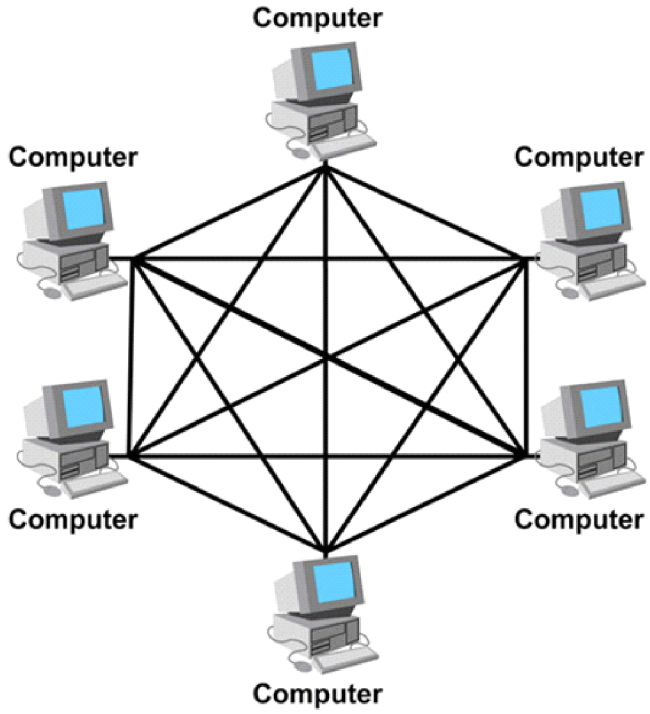


Diagram 3.25 Mesh Topology

Network Devices

Network devices are those apparatus or units which are used for exchange of data in the computer network. These are also known as Network Equipment. Details of some network devices is given below.

Diagram 3.26 Various Types of Modem

1. Modem

The main objective of a modem is to generate such a signals which can be sent from one computer to another computer with ease and less expenses. Generally we use analog phone modem, by the help of which, a computer is connected with phone line. On telephone lines, only analog signals can be sent, whereas computer understand only digital signals and produce digital signals also. So modem is required for coordination between these two, which converts analog signals into digital and digital signals into analog signals. The conversion of digital signals into analog signals is called Modulation and the conversion of analog signals into digital signals is called Demodulation. The word modem has created by adding mo and dem. Here mo has taken from modulation and dem has taken from demodulation.

2. Repeater

In all the transmission media signals become weak after covering some distance. Therefore signals can transmit up to a certain distance in each transmission media. So it is essential to amplify the weak signals, when there is much distance between two computers. The device, which amplify the signals is known as repeater. Generally repeaters are of two types - amplifiers and signal generation devices.

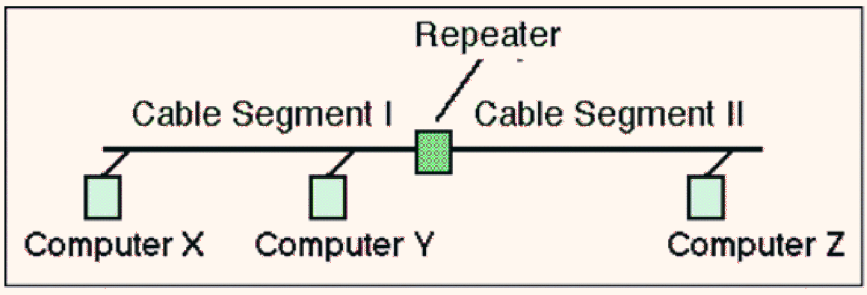


Diagram 3.27 Repeater

Amplifier - These only amplify the signals. These amplify undesired signals (Noise) too, along with main signals.

Signal Generation Device - These repeaters have the capacity of segregate undesired signals (Noise) from the main signals. These repeaters regenerate the signals after segregation the noise from signals, amplify them and then re transmit them. Complex technology is used in these repeaters. These are relatively expensive too.

3. Bridge

Bridge is such a device which connects the networks using different transmission media. When the number of nodes increases in a LAN, the effective speed of data transmission decreases, so its working capacity is affected adversely. Connecting the different LAN with each other is the solution of this problem. By this more nodes could be connected and there would expansion of geographical range of network too. Bridge is the most appropriate device for this purpose. Bridge is a cheap and fast device based on easy technology. The effective size of network increases with use of bridge. As like repeaters bridge sends signals from one part to another part and regenerates the signals.

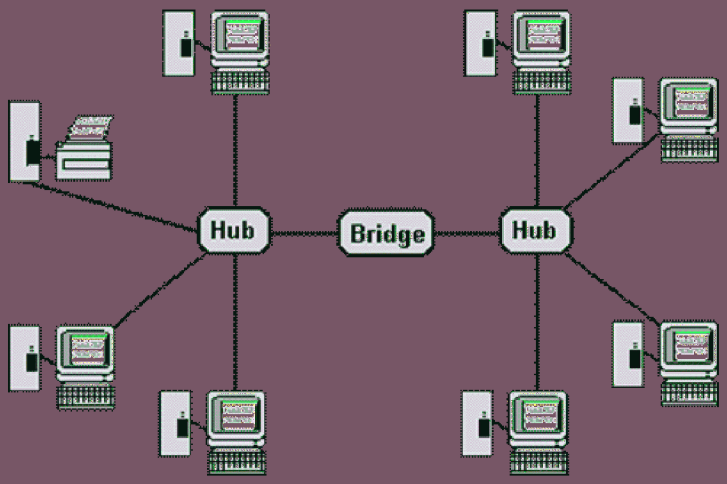


Diagram 3.28 Bridge

4. Router

Router also connects the different network like bridge, but it works more efficiently in compare to bridge. Bridge only gives the way (path) to the signals, whereas router forwards them after their rectification. Router receives data from all the networks connected with it and forwards them according to their destination addresses.

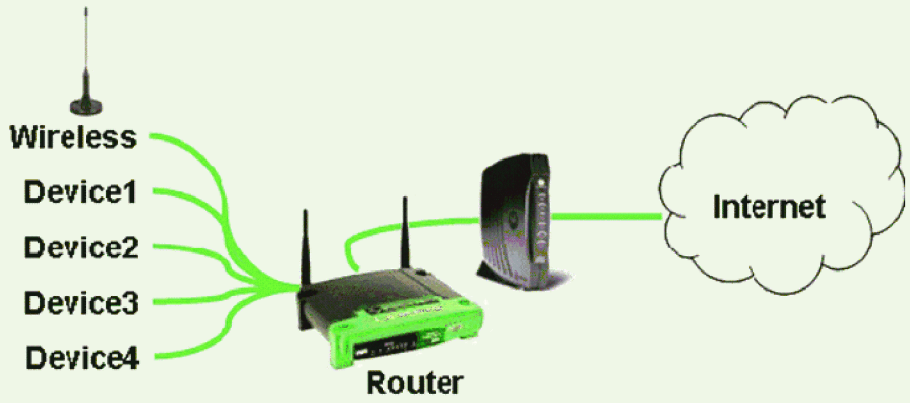


Diagram 3.29 Router

5. Gateway

This is also a device like bridge and router to connect different networks with each other. Its technique is more complex than router. Through this device two entirely different networks can be connected with. This is not possible by the bridge and router. Besides forwarding the data gateway makes necessary transformation in the data before sending it from one network to another network. The transmission protocols used in two entirely different networks are different too. The transformation of these protocols is carried by gateway. Besides this if two networks have different addressing scheme, gateway also works for address transformation.

In this way gateway is more refined device in compare to router, which provides various additional facilities. But it is relatively costly and its installation, maintenance and operation are also more complicated.

6. Host

There are so many computers are in wide area network, whose objective is to execute the programs of users. These computers are called hosts. Hosts are connected with each other through a communication subnet.

A computer can be called a host only, if it provides such a services which can be utilized by other computers or apparatus connected with the network. Generally users communicate with host through application software like e-mail messenger, file transfer protocol (FTP) etc.

7. RJ - 45 Connector

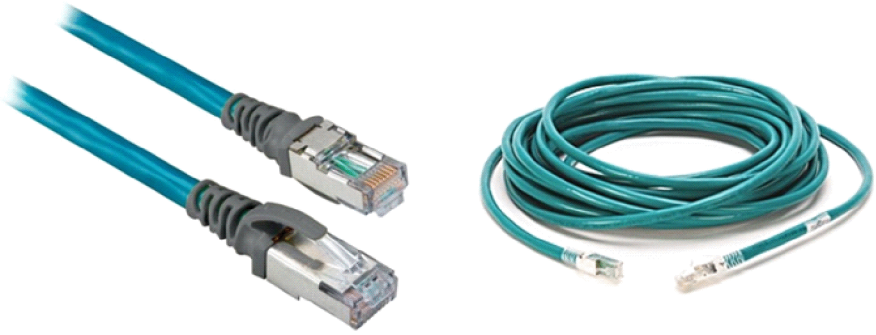


Diagram 3.30 RJ - 45 Connector

RJ - 45 (Registered Jack - 45) connector is a physical connecting device, which is like cable in appearance. It is used for connecting various tele-communication and data apparatus with each other at local or remote places. This is single line connector, which has 8 pins. RJ - 45 connector is generally used in networking cabling and in telephone applications.

8. Ethernet Card

It is also called Network Interface Card (NIC). Actually it is a LAN adaptor. It is fixed in the slot of mother board for connecting a computer with LAN. Computer is connected with LAN by connecting this card through cable.

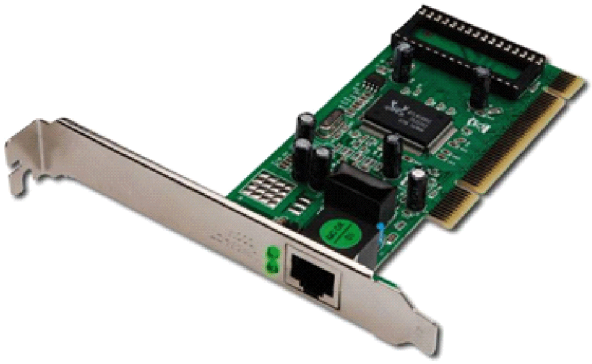


Diagram 3.31 Ethernet Card

Network Interface Card makes a physical connection between computer and network. This also amplifies the data signals.

9. Node

Any device or apparatus connected with LAN like computer, printer, plotter, modem etc. is known as node. Every node has a unique address. A node can make communication with any node within the LAN.

10. Hub

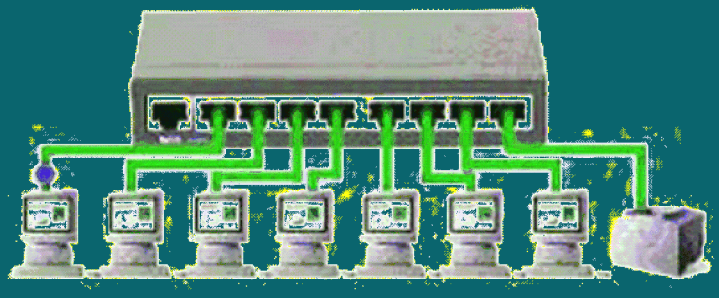


Diagram 3.32 Hub

This is an important component of LAN, which works as a central point in LAN. All the nodes of the LAN are connected with hub through cable. All the data signals in communication taking place between any two parts of the LAN, pass through hub. Hub generally are of following types.

(I) Dumb Hub - This hub only sends the signals from one node to another node.

(II) Smart Hub - This works as network management along with transmission of signals.

(III) Intelligent Hub - It has the capability of managing all kinds of network as well as can connect more than one LAN and provides the facility of more than one topology.

11. Backbone

It is a high band width link, by which several nodes and hubs can be connected. So much data can pass through this. A campus wide network can be established by connecting different LANs of a big institute or a large building through backbone. All the data transport between two networks passes through backbone.

12. Switch

Like hub, switch is such a device which connects the different nodes (computers and other devices) with each other, but its working mechanism is different from simple hub. Where in a hub data or information received from a source is sent to all the devices connected with it, in switch the data or information received from a source is only sent to destination computer or destination device according to their destination addresses.

Important Points

1. Full utilization of a computer is only when, it is connected with other computers.
2. The exchange of information and data from one computer to another computer is known as DataCommunication.
3. It takes too much time in exchange of information using traditional means of communication, and their cost are also increasing continuously. When the communication takes place with lighting speed with the help of computers and it costs less too.
4. For data communication it is necessary to have a physical medium between sender and receiver. The medium is known as transmission medium or communication channel
5. Transmission media are generally divided into two groups: (1) Wired Media and (2) Wireless Media.
6. Twisted pair cable, coaxial cable and optical fiber cable are the main wired media.
7. Radio waves, Microwaves, satellite communication, infrared rays, Wi-Fi, Bluetooth are main wireless media.
8. Generally electrical signals are used for data communication. These signals are of two types: 1. Analog and 2. Digital.
9. When several independent computers are connected with each other for data communication, this arrangement is known as computer network.

10. The main object of the network is to share and work together on all the devices within it like computer, apparatus, data and program.

11. There are three main categories of computer network: LAN, MAN and WAN.

12. The main object of the network is to share and work together on all the devices within it like computer, apparatus, data and program

Excericie

Multiple choice questions

1. Oldest and Maximum usable transmission media is -

   (a) Coaxial Cable (b) Optical Fiber Cable

   (c) Twisted Pair (d) Name of these

2. WAN Means -

   (a) Wire And Network (b) Wire Accessible Network

   (c) Widely Accessible Network (d) Wide Area Network

3. Which transmission medium is the fastest from the following?

   (a) Twisted Pair (b) Coaxial Cable

   (c) Optical Fiber Cable (d) Cellular Phone

4. Which of the following medium is not made with metal wire?

   (a) Twisted Pair (b) Coaxial Cable

   (c) Optical Fiber Cable (d) None of these

5. The surface of glass on the core of optical fiber cable is known as -

   (a) YOKE (b) Clade (c) Cap (d) Pipe

6. In which transmission the wave goes into all directions.

   (a) Radio Link Transmission (b) Microwave Transmission

   (c) Infrared Transmission (d) Satellite Transmission

7. How many minimum transmission satellite can transmit signals on whole earth?

   (a) Two (B) Three (c) Four (d) Five

8. Which medium is used to connect wireless mouse, keyboard to computer./

   (a) Bluetooth (b) Infrared

(c) Microwave (d) Radio Link Waves

9. What is the name of network spreader in the small region?

(a) LAN (b) MAN (c) WAN (d) None of these

10. Which of the following is a transmission media?

(a) Modem (b) Hub (c) Bridge (d) None of these

Very Short type of Questions

1. Which is the Oldest and Maximum usable transmission media?
2. What is the full name of WAN?
3. Give the name of fastest transmission medium?
4. The stick layer on the core of the optical fiber cable is called?
5. Write one main work of Repeater.
6. Transmission satellite is placed at what height?
7. Write the full name of Wi-Fi?
8. The device which converts Analog to Digital and Digital to Analog signal is known as?
9. Write the name of Network which is used to cover a big town.
10. In which topology the nodes are connected in hierarchical order?

Short Type Question

1. Write the names of different wi-fi transmission medium.
2. What is cross talk?
3. Where co-axial cable is used?
4. Write the uses of Bluetooth.
5. Why we placed a microwave tower on maximum height?
6. Write the difference between Analog and Digital transmission.
7. Write two characteristics of LAN.
8. Write the characteristics of Nodes in Star topology.
9. Write work and characteristics of Router.
10. What is the difference between switch and hub?

Essay type questions

1. Explain the structure and working principal of cable.
2. What is satellite transmission? Write the uses and characteristics of it.
3. Write the objectives and uses of computer network.
4. What is network topology? Write the name and characteristics of different topology.
5. Write short not on following

   1. Modem 2. WAN 3. Gateway 4. Bridge 5. Wi-fi

Chapter-4

Internet Technology

4.1 Internet

Internet is a huge network of computers which connects all the small and large computers spread around the world. It is such network which connects computers around the world with telephone lines, cables or various wireless media. Internet is also called network of networks because all the computers of globe are connected each other through internet.

Internet is largest and popular network of world. With the help of internet we can access information regarding of any field like education, medical, science, sports, politics, music, commerceand space etc. in a moment. Internet has eliminated the distances. A person connected with internet can contact with a person living in any part of the world. Internet is based on multimedia technology. Therefore through this any kind of data like text, photograph, audio, video, graphics etc. can be sent or received from one computer to another computer.

Diagram 4.1 Internet

Internet has the capability of exchange of data and information around the world. The secret of its popularity is its simplicity. There is no owner of it, which runs it. All the information in it comes through internet server. This is an example of extremely large independent cooperation. Although no any person, company, institute or government agency has its ownership and nor does it control, but some agencies become participant in its success by advising, setting the standards and providing information on other issues. The team who decides the standards and guidelines for various aspects of internet and research on internet is called World Wide Web Consortium (W3C). Certain rules are framed to run it, which are known as Protocol. There are two standard internet protocols. (1) Transmission Control Protocol - TCP and (2) Internet Protocol - IP

History of Internet

The internet was begun in decade of 1960 when the defense department of America developed it basically for scientific experiments and research. In 1969 American defense department started internet by connecting California University and Stanford Research Institute with it through network. This network was named "ARPANET". Initially it was used for only defense related requirements but later on various institutes and universities were also connected with this network.

After that in 1979 British Post office initiated a new technology by launching first international computer network. In 1986 the National Science Foundation (NSF) of America developed a new network named "NSFNET". Later on it was also connected with ARPANET. NSF works as backbone network in internet even today.

In 1989 British scientist Tim Berners Lee invented the World Wide Web (WWW) to simplify the communication on internet. This was a revolutionary invention in the history of internet. On 20 December, 1990 he launched first website of the world. This site was viewed on 6 August, 1991 around the world.

After this, several new technologies were developed, several new networks came into existence and joined with internet. In this way internet has reached in its current stage. Its evolution is still continues. People have longed to see it more advanced. It is the reason, the use of internet is increasing continuously not only in computers, but in mobile phones too.

Working of Internet

To connect with internet we have to take help from Internet Service Provider (ISP). An internet service provider is a company who provides access of internet and other services to you. These provides various ways to connect with internet in which dial up connection, cable, fiber optics and Wi-Fi are included. These different connec-

tions determine speed of your internet access. Initially there was only one Videsh Sanchar Nigam Limited (VSNL) internet service provider company in India, but now there exists several internet service provider companies, including two government, Bharat Sanchar Nigam Limited (BSNL) and Mahanagar Telephone Nigam Limited (MTNL).

Usually two types of connections are available for accessing internet services. 1. Dial up connection and 2. Direct connection.

In dial up connection subscriber has to dial a special number of his ISP from computer. A user is connected with internet as he connects with ISP. Dial up is a temporary connection because dialing has to be done to establish connection. User can terminate this connection whenever he/she wants.

In direct connection user is connected directly to ISP through a cable or a dedicated phone line. Lease line is being used for more fast speed internet. ISP can make available lease line of any band width according to need of user. Several types of internet plans are also make available by different internet service providers to users for mobile devices like laptop, tablet, smart phone etc. Currently nearly all internet service providers are providing high speed 3 G (Third Generation) internet services, while some service providers have started very high speed 4 G (Fourth Generation) internet services.

Now Wi-Fi services are available in most of the educational institutes, offices, air ports, hotels etc. These are called hotspots of Wi-Fi. In these places a person can connect with whole of the world through his Wi-Fi enabled phone or laptop. In Digital Bharat program there is plan to connect all the villages with broad band internet services and to make Wi-Fi enabled areas to all educational institutes and railway stations.

World Wide Web

People have been watching dream for nearly 50 years for such a data base which keeps all the global knowledge and information and by this data base people of the whole world could be connected. Now this dream has come true and the necessary technology has been invented for this. The name of this technology is World Wide Web. It is known as www in brief. World Wide Web is a kind of database, which is spread all over the world.

World Wide Web is an internet service based on general group of protocol which sends the documents in a standard way to any specially configured server computer through internet. It provides such convenience to programs on various standard computer platforms like LINUX, WINDOWS, MAC etc.so that it could display the information coming from the computer server in a good format. This type of program is

called Web Browser. With the help of web browser World Wide Web has make it possible for a website that it could keep the information in several pages in which text, sound, pictures and even videos and links for connecting with other pages are available. On clicking of any link, page linked to that link is opened immediately in front of user. World Wide Web (WWW) and internet, both are not similar, but these are related to each other and also dependent on each other. Actually World Wide Web is the subset of internet, which can be called as graphical interface of internet. It gives us information about new ways of accessing information.

Diagram 4.2 World Wide Web

The main purpose of the hypertext information system is that the text could be read from one end to another end easily in spite of reading in a firm and linear structure like a book. By this a user will feel convenience to go forward or backward as well as to read or watch desired contents by navigating another page. World Wide Web provides infinite information, it too provides new ways of linking, so that user could browse as he or she wants.

Now World Wide Web has the capacity of showing graphics, sound and video with text. More new version of browsers are capable of showing applications having multimedia. And the most important thing is that all these tasks are very easy - only click on and this will take you from one link to another, one site to another site and server in few moments.

Web is completely a cross platform. Cross platform means you can access web on hardware of any company with any operating system and with any kind of display. Web is infinite store of information. Information on web is spread out in hundreds and millions of websites. So it can be said that web is split. Web can be updated at any time, so it is dynamic too.

Web is interactive. The intent from interactive is its capability of interaction with its webserver. We have to select only the links for navigation or to open another page.

There can be interactive forms on pages, which can be filled out. Forms can have text boxes, where something can be typed; there can be radio buttons, in which one or more options can be chosen from several options or there can be menu items from which one or more items can be chosen. When form is submitted, all the information goes to sever, where that page has been created. Web is such a media, by help of which one can reach to people and can make conversation with people around the world.

Web Browser

As like, you go to any library for searching or 'browsing' books, in the same way you can search or explore the pages on internet using browser. Browser is a kind of software on your computer, which allows you to access internet. Browser is also known as web client or internet navigation tools. Browser works as window showing different websites, which have information. You have to only write down the web address in your browser and you immediately reach on that website.

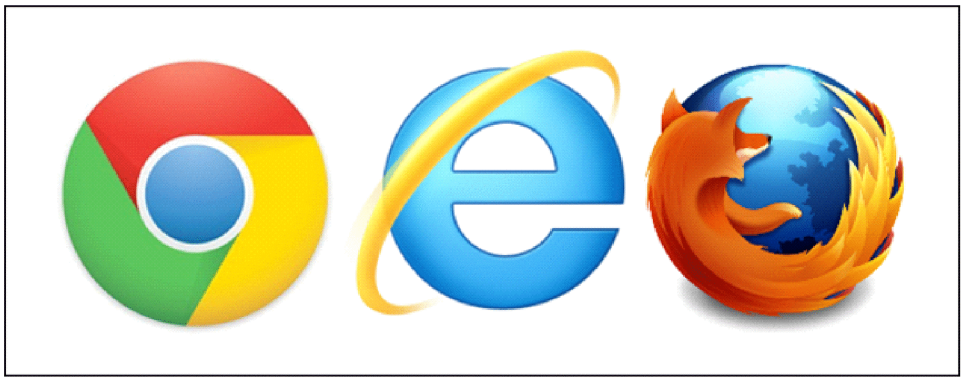


Diagram 4.3 Different Web Browser

The document located on web is called web page. The first page of any site, which contains a full series of web pages, is known as home page of that website. It is the function of browser to show these pages. So browser is that program, which is used for interface between web and user. It displays web pages and facilitates the navigation of different web pages. It does several functions like reading, saving, downloading or uploading, copying or printing of web contents; sending or receiving mail, recording the history of visited sites and book marking of any web address. A vast range of web browser is available for every type of computer system. Currently some most popular browsers are Internet Explorer, Mozilla Fire Fox, Google Chrome, Netscape Navigator, Safari etc.

Web Server

The computer which keeps web pages in form of directories and files and allows files to read, is called Server. It behaves like information provider and provides information according to need. Sever computer runs a software, which is known as Web Server.

Web server plays an important role in make available web pages and websites to browser. Web Server is such a computer and program, which is responsible for answering the requests from web browser around the world. Some large companies have their own web server, but most companies hire the server. Web server has to be accessed for watching HTML page on web. This is the function of web server that it receives the connection of web browser coming through internet and take the appropriate HTML page to client on request. This is done through the HTTP protocol. Web server is always connected with internet because we can use internet at any time. The speed of internet connection on the computer serving as server should be relatively more. At the same time this computer must be able to tackle all the requests coming together to it.

A web server mainly works the following -

1. Web site management

2. To receive requests for providing information

3. Provides information according to request of client and showing requisite page.

Some popular severs running on web server are Internet Information Server IIS), Apache Web Server, Netscape Server and Microsoft Personal Web Server.

Web Protocol

Protocol is a rule or a set of certain rules, which provide an environment of communication between different parts. For example human communication is not possible without a definite language and grammar. Protocol provides following facilities -

1. Is transmission Media in organized way or not?

2. Are network components connected with each other or not?

3. When and how much data is transferring?

The protocols which are used for exchange of information on web, are called

web protocols. Through these protocols different web pages are sent from web server to browser. Therefore web protocols play important role in establishing connection between server and browser. Some web protocols, which are used for exchange of information on web are TCP/IP, PPP, HTPP, FTP, Simple Mail Transfer Protocol (SMTP) etc.

HTTP (Hyper Text Transfer Protocol)

It is the set of rules, which transfers hypertext between two or more than two computers. HTTP is a technique, which opens related document on selecting of any hypertext link, wherever it is. Web documents are marked in HTML for formatting and linking. Web server uses HTTP for showing HTML pages. HTTP is a stateless protocol, where web browser connects with web server, downloads the needed files and after that disconnects the connection.

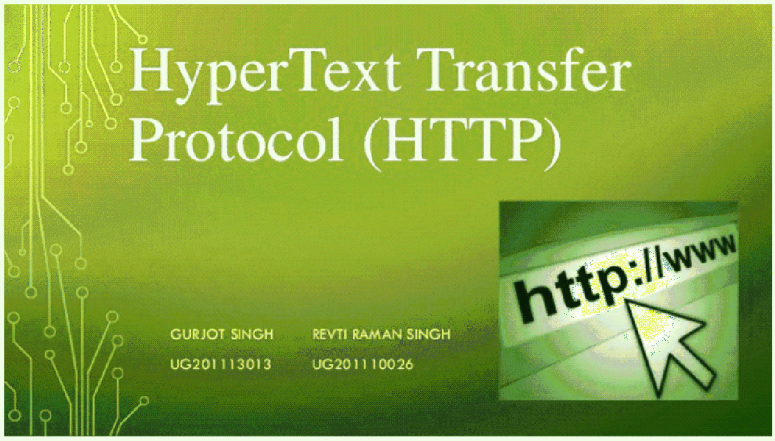


Diagram 4.4 Hypertext Transfer Protocol

It is a Non-proprietary Independent and open platform based on ISO. This works equally on single computer or on LAN, WAN and internet.

URL and IP address

URL (Universal Recourse Locator) is a web address, which is write down on browser to reach up to any website. Each website has a URL. For example the URL http://rajeduboard.rajasthan.gov.in takes the user to the web site of Board of Secondary Education, Rajasthan. URL keeps the full information about the resource. It connects any document or page on World Wide Web through web browser. You do not know the physical location of resource by it.

The first part of the URL, that is before colon (:), tells the method of accessing.

Usually it is http but it may be ftp or gopher. Its second part, which is after the colon (:), tells the resource. The text after double slashes (//) in it, tells the name of server and the text after single slash (/) tells file or directory to which user is connected. A URL is always case sensitive, therefore special attention to be taken for lower case, upper case and symbols at the time of typing the URL.

Each URL has an IP (Internet Protocol) address. IP address is a series of numbers, which tells to your computer the where about of the Information searching by you. IP address is like a telephone number but in form of a large and complicated phone number. Because the IP addresses were complicated and difficult to remember, therefore the URL were created. To access Google website,in spite of writing its IP address (45.732.34.353), only its URL www.google.com is to be insert. Usually IP addresses have the following characteristics -

1. No any two computers have the same IP addresses.

2. IP addresses are internationally and model.

3. All those computers, which are connected to internet, works under a similar plan.

Diagram 4.5 URL (Uniform Resource Locator)

Hypertext Markup Language (HTML)

The language, which is used in developing web pages, is known as Hypertext Markup Language (HTML). HTML is the language, which is understood by the browser. Web pages are also known as HTML document. HTML language for internet was also invented by Tim Berners Lee, the inventor of World Wide Web. This is a set of special codes, which is used for controlling decoration and to link the other information to script. Actually it has the same role, which has the steel and other parts in making a

motor car.

Each word of a Hypertext Markup Language has a special meaning. The word Hyper indicates that the text in HTML is not in a linear way as like in a book. That is to say,when you are working on internet, and want to access a document of your choice, you can directly reach there. This work is done by Hyper Link. This is what it means, to watch a document on internet there is no any definite order or sequence. The word Hyper is just opposite to Linear. We can see any page on World Wide Web. Here the word Text indicates that only text can be written on the files on which we are working.

Markup means, for making web page first we type text, then mark that text. In other words we can say that at the time of coding in HTML, it is to be indicated, which text to be bold and where to be place an image etc. This can be done by tagging. Tag guides to browser at the time of showing page that how to display that page.

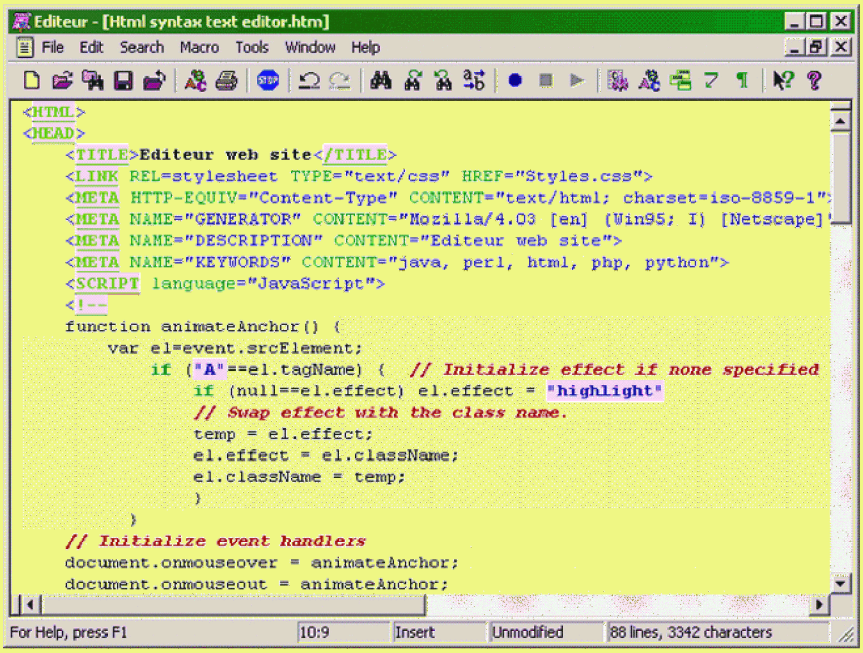


Diagram 4.6 Hypertext Markup Language (HTML)

Here Language indicates that we are using a language with its all formats. Here it is important to say that HTML is not a programing language. It is a scripting language, in which documents are controlled with marking.

Website

Website can be called a collection related to World Wide Web. Generally website

is a media, which is structured by user in his choicest format. Website is mainly a one way communication. It means that the published and stored contents in a website can only be readable or watchable. It is not possible by a user to rectify or edit it and to make any comments and reaction. In this way website can be considered as a safe house, which is absolutely self-alternative for website maker. But due to continuous evolution of the World Wide Web, in now a days the state of one way communication of the website has been changed and efforts for the continuity of communication in it, have begun.

Today every kind of contents related to education, medical, entertainment, sports, politics, science, music, commerce etc. all the subjects and topics are available on World Wide Web. Today every enterprises, organizations, institutes, establishments have their own websites. And now people have started making their own private websites. There are so many web hosting service providers, which provide free space on their server for web hosting. Currently the total number of the websites on World Wide Web is nearly one billion.

Diagram 4.7 Home Page of Website of BSER

Webpage

Webpage is a subset of any website. The way in which all the pages of a book make together a book, in the same way different web pages together make a website. The way in which any page of a book can access by its page number, in the same way any page of a website can access by its URL.

Webpages are written by the use of any language amongst HTML, DHTML, XML, Java Script, VB Script, C++ etc. A website can be made from few pages to hundreds or thousands of pages.

Domain Name

Diagram 4.8 Different Types of Domain Name

The domain system was developed for naming a computer on internet, so that it can easily be remembered and also easy to be found. It is such a way by which computers working on internet are recognized and found. There cannot two domain names of an institute.

Any domain name has two or more than two parts, which are isolated with the use of dots. For example: rajeduboard.rajasthan.gov.in, google.com etc. The last part of the domain name is a High Level Domain Name and it provides information about the institute, to which you want to connect. The main categories of the High Level Domain Names are following.

.com - Commercial organization

.edu - Educational institute

.net - Institutes operating internet

.org. - Organizations which cannot be categorized

.gov - Government or government organization

Country Codes - These provide information about the country. These are expressed with two letters. For example: .in for India, .uk for United Kingdome, .fr for France.

DNS (Domain Name System)

As there are several websites and IP addresses in internet, so browser cannot found these itself. It to be found each and every one. The role of DNS (Domain Name System) starts from here. DNS essentially, a phone book for web. DNS transforms

any URL into IP address in spite of transforming it into phone number, so that user reach on the website, to which he is searching.

Actually DNS (Domain Name System) does the work of mixing the domain names and IP addresses. It stores the data. This system provides the facility of using an easy domain to internet users, so that they do not have to remember various types of IP numbers.

Search Engine

Diagram 4.9 Different Search Engines

Such computer programs are called Search Engine, which search out the desired information from stored on any computer system. The most popular form of search engine is web search engine, which is used for searching of information on World Wide Web. These engines present the obtained result generally in an index, so that we can know the nature and location of desired information. Search engines help us to reach up to any information relatively in very short time. They also prevent us from information overload.

Search engines obtain these results by crawling and indexing all the information available online. The world information is doubling every year and to connect the people with its search is becoming more challenging. Especially for those 16 % searches, which are new every day. The engineers will have to do hard work for continuous improvement, so that businessman and customers can found each other continuously.

Currently Google, Yahoo, Bing etc. several search engines are available, on which millions and billions searches are made daily. Bing of Microsoft is such a search

engine, which make available the advertisement free searches to schools.

Electronic Mail

Electronic Mail is called E-mail in brief. It is the more popular name of its. E-mail works the exchange of messages, information and documents between users and computers. It is most used thing in internet.

Diagram 4.10 E-mail Logo

Sending an E-mail is similar to posting an electronic version of any letter. When you send any E-mail, it reaches in few seconds to destination. As like address of house, everyone has its unique E-mail address. To get E-mail facility, an E-mail account has to be created, so that mail can be sent and received. Currently Gmail, Yahoo Mail, Hotmail, and Rediffmail etc. several E-mail services are available.

Important Points

1. Internet is a huge network of computers which connects all the small and large computers spread around the world.

2. Internet is also called network of networks because all the computers of globe are connected each other through internet.

3. Internet is largest and popular network of world.

4. Internet has the capability of exchange of data and information around the world. The secret of its popularity is its simplicity. There is no owner of it, which runs it. All the information in it come through internet server.

5. Certain rules are framed to run it, which are known as Protocol.

6. There are two standard internet protocol. (1) Transmission Control Protocol - TCP and (2) Internet Protocol - IP

7. In 1969 American defense department started internet by connecting California University and Stanford Research Institute with it through network. This network was named "ARPANET".

8. In 1989 British scientist Tim Berners Lee invented the World Wide Web (WWW) to simplify the communication on internet.

9. To connect with internet we have to take help from Internet Service Provider (ISP). An internet service provider is a company who provides access of internet and other services to you.

10. Usually two types of connections are available for accessing internet services. 1. Dial up connection and 2. Direct connection.

11. World Wide Web is a kind of database, which is spread all over the world.

12. World Wide Web is such an internet service based on general group of protocol which sends the documents in a standard way to any specially configured server computer through internet.

13. Browser is a kind of software on your computer, which allows you to access internet.

14. Browser is also known as web client or internet navigation tools.

15. The computer which keeps web pages in form of directories and files and allows files to read, is called Server.

16. Web Protocol is a rule or a set of certain rules, which provide an environment of communication between different parts.

17. HTTP (Hyper Text Transfer Protocol) is the set of rules, which transfers hypertext between two or more than two computers.

18. The language, which is used in developing web pages, is known as Hypertext Markup Language (HTML).

19. Website can be called a collection related to World Wide Web.

20. Webpage is a subset of any website.

21. The domain system was developed for naming a computer on internet, so that it can easily be remembered and also easy to be found.

22. DNS essentially, a phone book for web.

23. Such computer programs are called Search Engine, which search out the desired information from stored on any computer system.

24. E-mail works the exchange of messages, information and documents between users and computers.

Excercies

Multiple Choice Questions

1. The network of networks is called.

   (A) LAN (B) MAN (C) WAN (D) Internet

2. The set which determines the standards internet, is called.

   (A) W3C (B) TCP (C) IP (D) HTTP

3. The name of first of all established internet network.

   (A) NSFNET (B) ARPANET

   (C) NICNET (D) None of the above

4. The places of Wi-Fi Hot spots.

   (A) Educational Institutes (B) Hotels

   (C) Airports (D) All of above

5. The name of the software which sends information from internet to computer.

   (A) Operating Software (B) Driver

   (C) Browser (D) None of the above

6. Which example is not of the browser?

   (A) Netscape Navigator (B) Internet Explorer

   (C) Facebook (D) MozilaFoirefox

7. .com does mean.

   (A) Commercial organization (B) Internet operating institute

   (C) Educational institute (D) Government institute

8. The Facebook of World Wide Web is -

   (A) Domain Name (B) Domain Name System

   (C) Web Page (D) Uniform Resource Locator

9. Name of the search engine, which provide facility of free and without advertisement service.

(A) Google (B) Yahoo (C) Bing (D) MSN

10. The most used internet service is -

(A) E-mail (B) Search Engine (C) Uploading (D) Downloading

Very Short Answer Type Questions

1. What is the name of first established internet network?
2. Who did invent www?
3. Write the name internet service provider companies.
4. Who does work the displaying of information coming from internet in good format?
5. Tell the full form of http.
6. Tell the name of any internet protocol.
7. What is called the subset of a website?
8. By which name does the computer known on internet?
9. What will be the domain name of a commercial institute?
10. What is the name of program, which search the desired information on internet?

Short Answer Type Questions

1. Why internet is called the network of networks?
2. What are Internet Protocols?
3. Differentiate the dial up and direct internet connections.
4. Write the definition of World Wide Web.
5. What is Hypertext?
6. What is the function of Web Browser?
7. Tell the uses of HTML?
8. What does mean by Domain Name?
9. Write the names of main search engines.

Essay Type Questions

1. What is World Wide Web? Write down its characteristics.
2. What does call Web Browser? Tell its functions.
3. What does mean by HTML? How does it useful in creating a web page?
4. Describe the importance of Domain and Domain Name Server in Internet.

5. Write down the short notes on followings -

   1. Search Engine
   2. E-mail
   3. URL
   4. IP Address
   5. Web Protocols

Chapter-5

Microsoft Windows

5.1 Windows

Nowadays, windows operating system is being used on most of the computers, whether it is Laptop or Desktop. Most common windows operating systems are Windows XP, Windows 7, Windows 8 and Windows 8.1. These operating systems are developed by American company Microsoft Corporation. Operating system is a system software which works between the user and computer hardware and run hardware devices properlyby understanding user's instructions.

Characteristics of Windows

(i) GUI Based

All windows operating systems are based on Graphical User Interface (GUI). It means, no need to remember commands for users. To get the work done by the computer, the user simply has to place the cursor on the related icon and click it. In this way, it has become very simple to work on computers.

(ii) Plug and Play

Most of the peripheral devices to be connected with computers are based on Plug-and-Play concept. It means the device comes in immediate working as it gets connected in the concerning computer port. The device driver programs of most of devices are in-built in windows operating system.

(iii) Hardware Support

Most of devices available in market like Printers, Pen Drives, Scanners, Digital Cameras, Card Reader, etc. are directly supported by windows operating systems. No need to install driver programs separately.

(iv) Multitasking

Multi means more than one. Windows operating systems provide us such an environment in which we can open more than one application in separate windows. For instance, a MS Word document is open in one window, a MS-Excel workbook is open in second window and a MP3 music file is played in the third window etc.

(v) User-friendly

Windows operating systems are user friendly. It means the title and picture of each icon are simple to understand and use. For instance, create a folder, delete, re-store, copy and paste operations are very simple.

Mouse

Mouse is an input device which also known as Pointing device. We know that the mouse is used only in GUI environment.It is not used in CLI (Command Line Inter-face) environment.

Structure of Mouse

The structure of a mouse is palm-shaped. It has two or three buttons knows as left, right and scroll button. Scroll button is placed in between left and right buttons. In earlier mouse, no scroll button was there and they had a ball to move mouse pointer in all directions. Modern mouses are known as optical mouse and they have light source instead of ball. Modern mouse is connected to USB port of computer using cable.

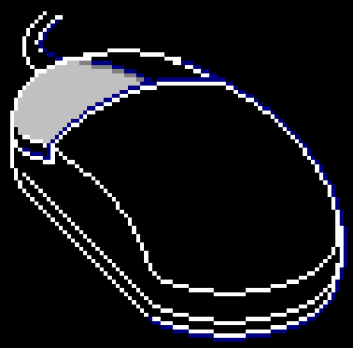


Diagram 5.1 : Mouse

Use of Mouse

To use a mouse, it is placed on an even surface or on mouse pad and then it can be moved in any direction. During its move, arrow shape mouse pointer is also moved on the computer screen. It can be placed on the desired location on the screen and then click or double clicked as needed.

To select a text, place the mouse pointer at the beginning of the text and then drag it by clicking and holding the left button up to the end of the text. Then release the left button.

To directly select a text, place the mouse pointer on the text and just double-click the left button. By using this process, we can select a window, folder and also execute programs.

To move an icon from one place to another place on the screen, simply place the mouse pointer on the icon and click and hold the left button and now move the icon in the desired direction. This is known as dragging the mouse.

Creating Shortcut

Shortcut is a process by which we can use programs frequently and easily. By using shortcut, we can make use of folders, Disk drives, Printers, Modems and Faxes etc.

To create a shortcut, following method is used. Mouse pointer is placed on the concerning object and the right button is clicked then a pop-up menu would appear. After select Create Shortcut option from this menu, a new shortcut icon of this object would appear on desktop.

Diagram 5.2: Creating Shortcut

The right mouse button is commonly used in displaying shortcut menu. To check spellings, place the mouse pointer on the word and right click it. Then spelling related many options would appear in the pop-up window. We can select the most appropriate one.

My Computer or Computer or This PC

Using this icon, we can get information about the hardware devices and installed software programs on the computer.

Working method. We can use it in two ways: either by using start menu or using icon on desktop.

1. First, open the My Computer icon using any one method.

2. Now select the disk drive, folder or file and get the desired information by double clicking it.

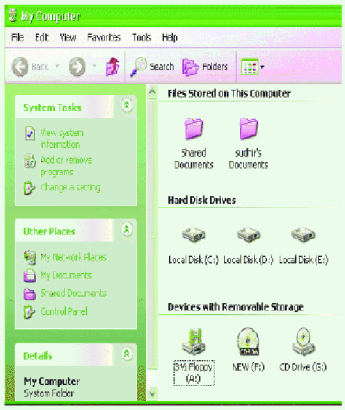


Diagram 5.3: My Computer Window

With the help of a new feature in Windows XP, the complete information of an object can be obtained by clicking the drive or program icon in the left task pane. The complete information would be displayed in the right task pane. This process is context-sensitive, that is complete information would display about the selected object only.

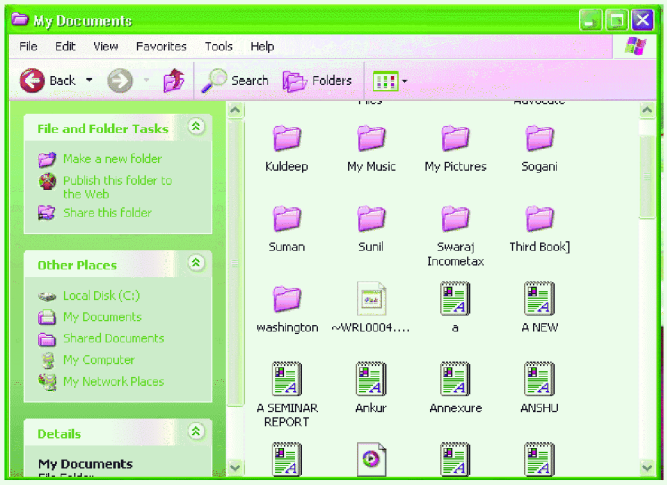


Diagram 5.4 : Task Pane

Recycle bin

It is a place in computer where deleted files get stored. These files are no longer useful. Recycle bin icon is displayed as dustbin shape on the desktop.

If, by mistake useful files are deleted, we can get back them from Recycle bin. Getting back the deleted files from Recycle bin is known as Restore. But if we delete files from the Recycle bin also, then we cannot get them back. As the time passes, Windows remove deleted files from Recycle bin.

Restoring deleted file from Recycle bin:

1. Open Recycle bin by double-clicking its icon on desktop.

2. Select file(s) to be restored. Use Ctrl or Shift keys from keyboard to select more than one file.

3. Now, right-click on the final selection and select Restore option from the pop-up menu.

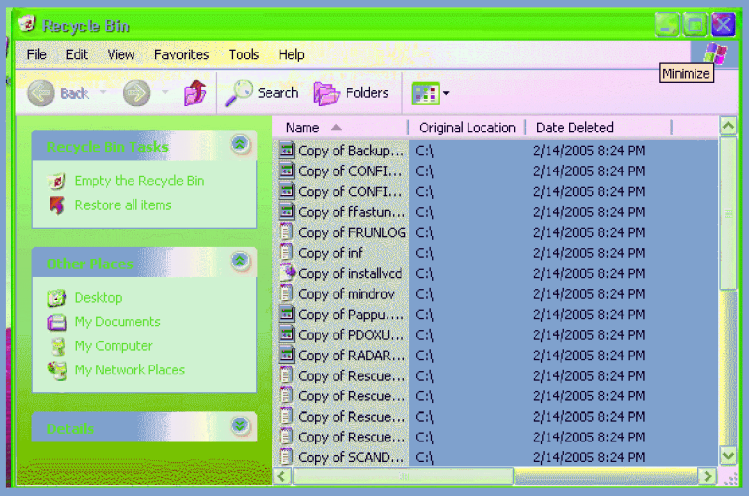


Diagram 5.5: Restore option in Recycle bin

Emptying Recycle bin

1. Open the Recycle bin by double clicking its icon.

2. Now, select Empty Recycle bin option from shortcut menu or button in window panel.

3. Or simply right click at Recycle bin icon and then select Empty Recycle bin.

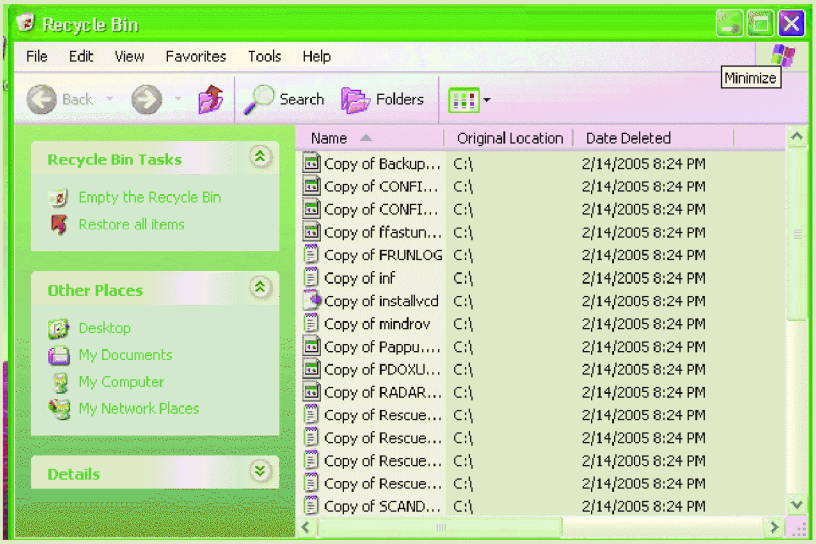


Diagram 5.6: Emptying Recycle bin

Start Menu & Menu Selection

Start Button: With the help of this, we can load any program installed in the computer. This button appears in left most corner of Taskbar. When this button is clicked, a menu comes into action which is known as start menu. Many program name options and sub options are available in start menu. Any program can be started by clicking at its option. Some other options like Search, Run, My Recent Documents and Turn-off Computer etc. They work as their names suggest.

Diagram 5.7: Start button

In Windows XP environment, control panel customization, getting Help and using various Internet related options can be done in addition to above said functions.

Running an Application

To run a desired application, simply click its icon from the start menu.

Steps:

1. Click at Start button.

2. Click at All Programs option.

3. Click at the appropriate program icon from the program list to start it.

We can also run a program from Run window by specifying the path of its executable file.

Setting System Date and Time

If we want to change date or time of our computer system, we simply click at Date/Time property icon available on the task bar or Date and Time icon in the control panel. The Date and Time properties icon would appear. Now, we can set date or time in this dialogue box.

Windows Explorer

When we click at any folder or drive name in Windows explorer, then the window appears in two parts. Drive names, folders and files appear in one part and other information about the selected drive name, folder or file is displayed in the other part.

Windows Explorer provides the complete information about various windows elements. We can also perform windows explorer work through Start menu.

Viewing files and folders

Following are the steps to view various elements of a file or folder:

Start Button - All Programs - Accessories - Windows Explorer

Or

If your keyboard has a "Windows Key", then +E brings up Windows Explorer.

Or

Right click at Start button and select the Explore option.

Or

Click on Start button, then Run, and type explorer in the box.

Diagram 5.8: Opening Windows Explorer

Using any one of above mentioned methods, we can see various elements of files or folders.

Steps to create a file using Notepad:

1. Click Start.
2. Choose All Programs Accessories Notepad.
3. Notepad opens.
4. Type, "This is my new document".
5. Choose File Save from the menu bar (Ctrl + S).
6. The Save As dialog box appears.
7. Save your file to the desktop.
8. Name your document new document.
9. In the Save as type drop-down box, be sure your document is saved as a text document.
10. Click option Save. Your file is now saved to the desktop.

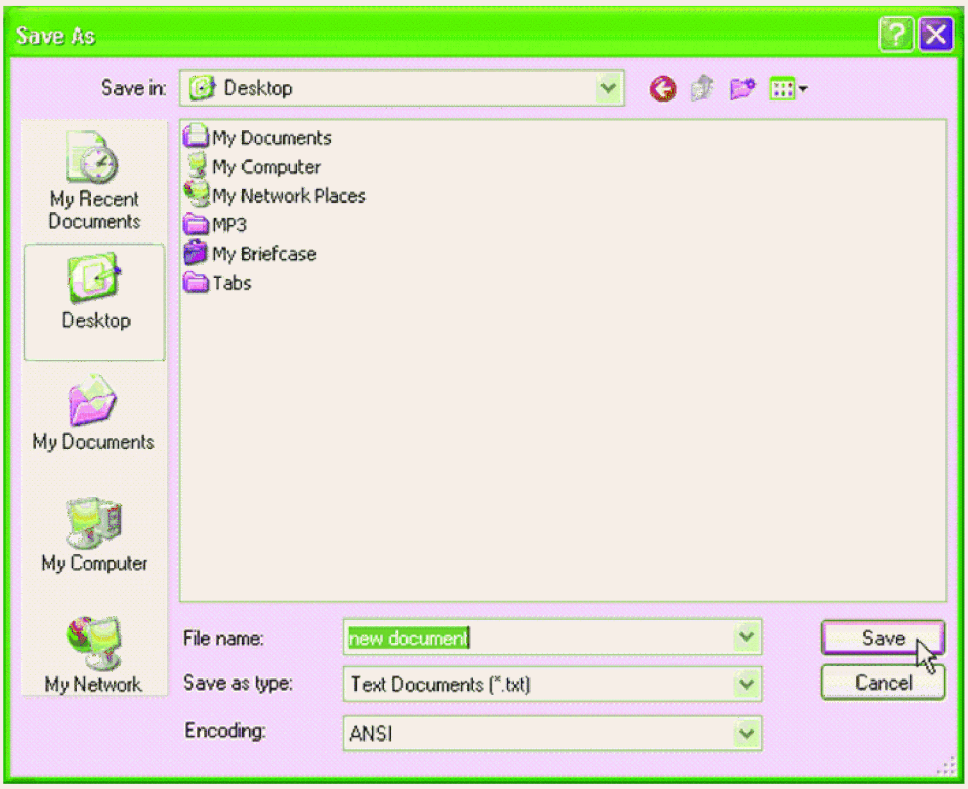


Diagram 5.9: Steps to create a file using Notepad

What is a folder?

When you first start using Windows XP, you may only create a few files. Over time, you'll create many files. To keep your files organized, create folders. Windows XP uses various folders to store and manage files. Folder is a place where we store our files.

Create a New Folder

New folders can be created anywhere in the computer, but three methods are shown below.

New Folder On Desktop

Right click anywhere on an open area of the desktop. Select New and then click Folder.

A new folder with the default name New Folder will be created on the desktop. Type a name for the folder and then press enter on the keyboard.

New Folder Using Windows Explorer in Hierarchical View

On the Menu bar select File?> New? Folder and the folder will be created in the right hand pane. The new folder will always be created as a subfolder of whatever location you have selected.

Creating New Folder Using Windows Explorer in Task View

Make sure that you are in the location where the new folder is to be created. In the File and Folder Tasks section, click the Make a New Folder selection. The New Folder is created in the right hand pane as shown in the second screen capture.

Opening and closing of Window

There are many ways to open a window. Different options are available in different ways. For instance, a window can be open in following steps:

1. Place the mouse pointer on the File or Folder icon and right click it.
2. Select 'Open', option from the pop-up menu.
3. If file was created in a particular application program, then it will open in that application automatically.

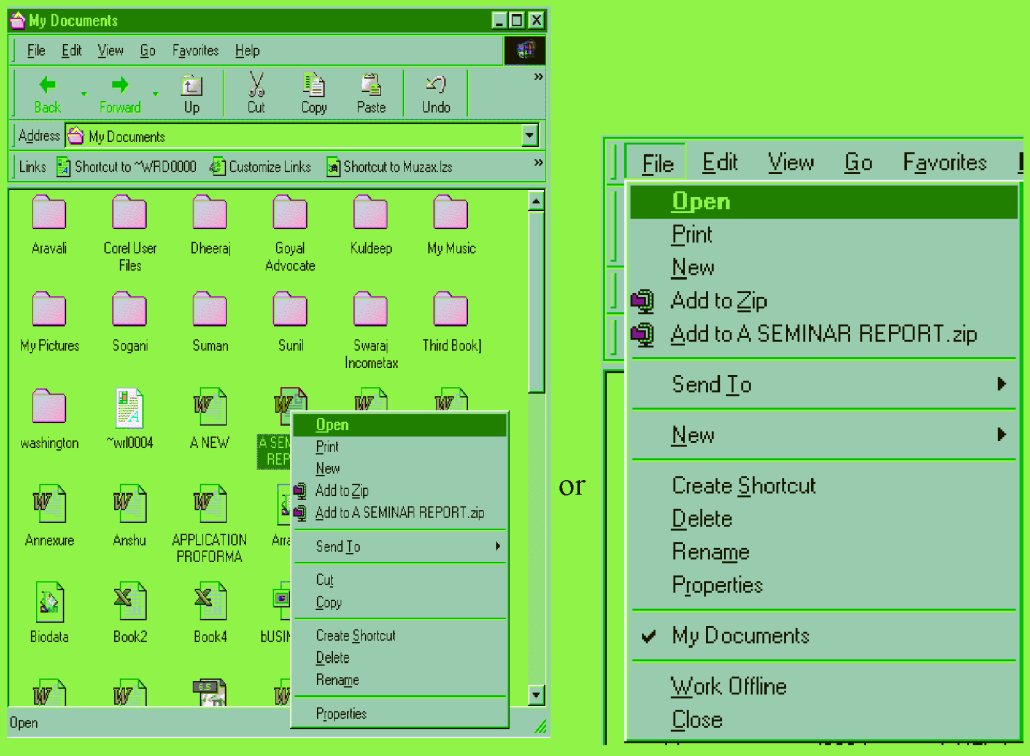


Diagram 5.10: Option for opening a window

To Minimize, Restore and Maximize Window

After you have opened a window, you can maximize it to display full-screen. You can also minimize it so that it disappears from the desktop and resides as a button on the Windows Taskbar, and you can close it completely.

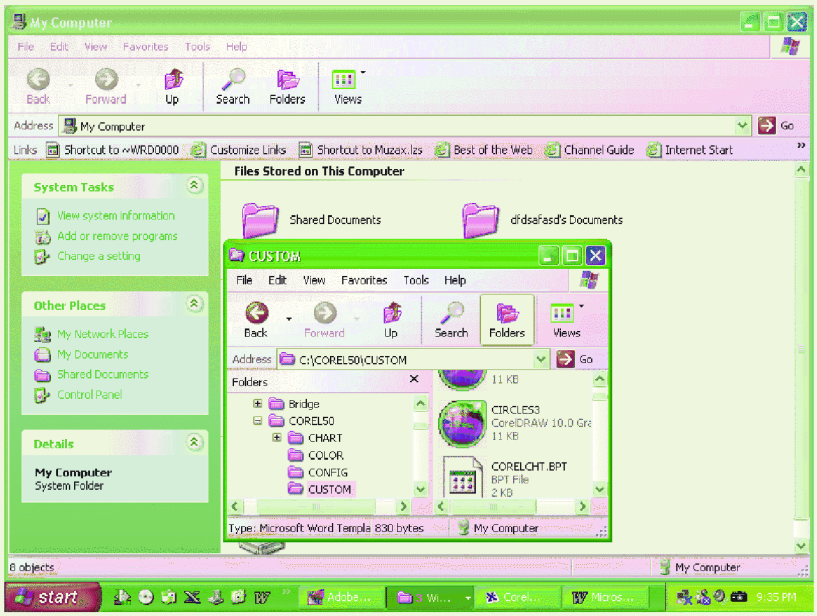


Diagram 5.11: Minimize, Maxmize & Restore Window

Restoring a Window

If a window is already maximized, the Maximize button changes to a Restore Down button. When you click the Restore Down button, the window resumes its previous (premaximized) dimensions.

Basic Components of a Window

Desktop

Diagram 5.12-A: Desktop

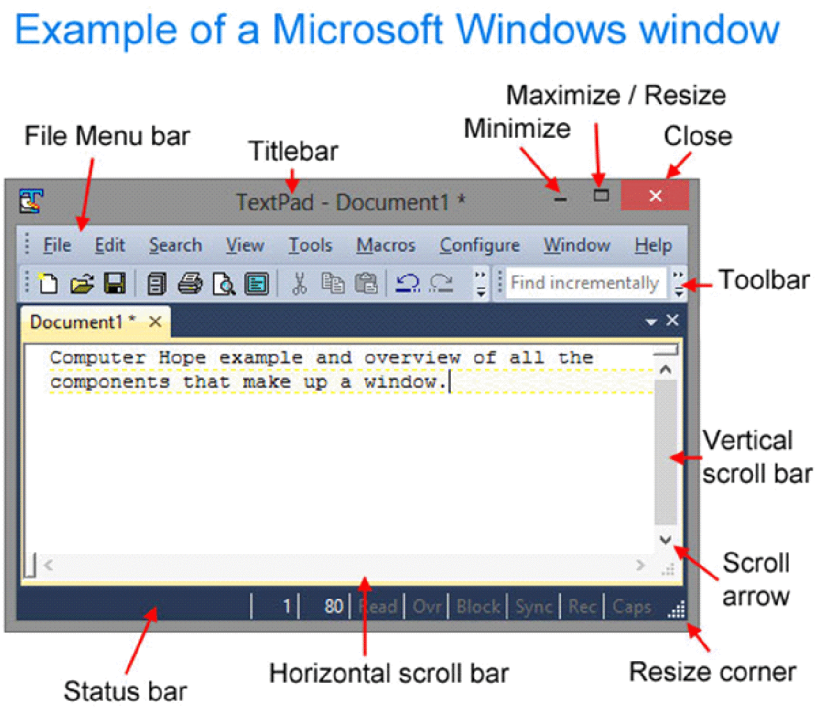
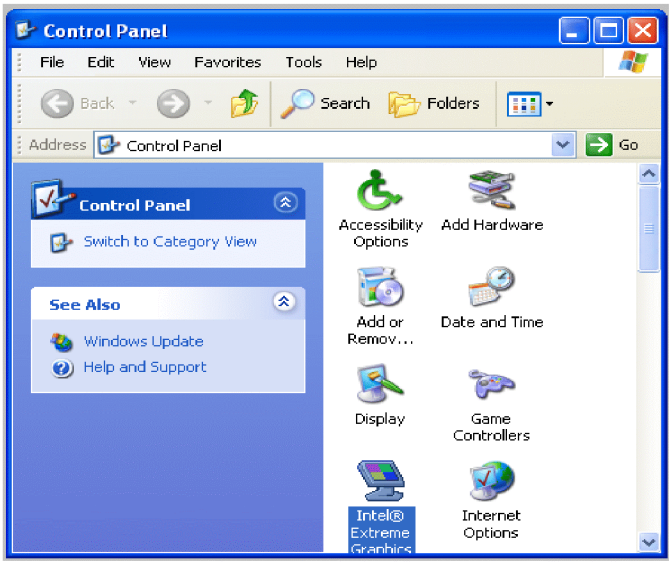


Diagram 5.12-B: Desktop

The Scroll Bar

At the right side of the window is the scroll bar, which appears only if there is information to be displayed beyond the bottom range of the current window size. Clicking and dragging on the slider in the scroll bar moves the contents of the window up or down so you can view all of the data available.



Diragram: 5.13 Scrolling

The Menu Bar

Most programs will have a menu bar visible in the upper left-hand corner of the window. The menu bar appears as text for most programs, and usually starts with "File" at the far left. Accessing the menu allows you to view various commands available to that program, including closing the program or the window.

Frame

The part that displays the outermost part of a window is called the frame of this window. All the parts of any window can make it smaller or bigger according to our requirement. When we want to make it smaller or bigger it will bring the mouse on the corresponding edge line, so that the position of the mouse pointer will look like this (⟺). From this we know that we can increase the edge of the window right or left, small. Similarly, the column at the bottom of the window can also be changed.

The task above can be moved in vertical or horizontal direction by pressing the button by bringing the mouse to the respective position.

The Title Bar

At the top of every window is the title bar. The center of the title bar displays the name of the program you are currently working in. When the window is not maximized, this is where you can click and drag to move the window to a new location on the screen.

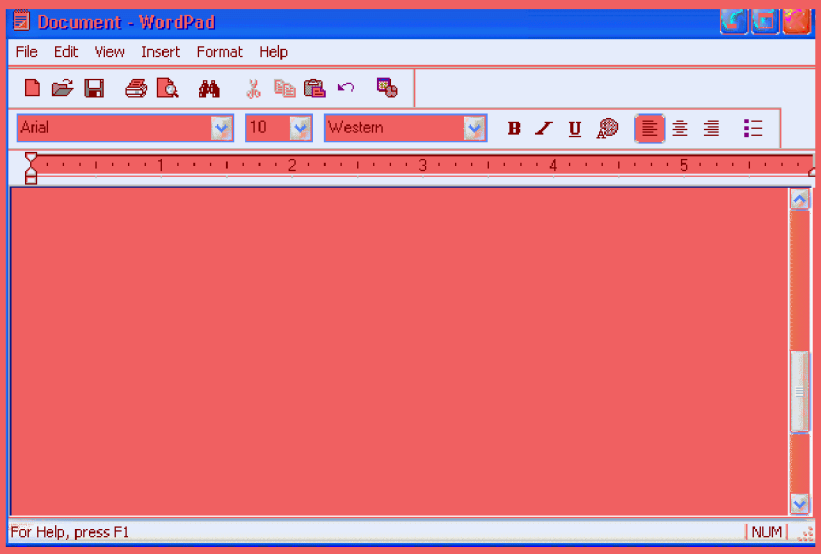


Diagram : 5.14 Title Bar

The Work Space

The work space is all of the area inside the window where data for the current program is displayed. Usually the work space will have a white background, but it is possible to customize this in all versions of Windows, and it may vary by program.

5.2 Windows Accessories

Window has several small programs grouped in the accessories folder. Some of the programs discussed in this chapter are as follows:

(1) Paint (2) Notepad (3) Wordpad (4) Calculator

5.2.1 Microsoft Paint (MS Paint)

Microsoft Paint is a drawing tool you can use to create drawings that you can save as bitmap (.bmp) files. You can also use Paint to send your drawing in email, set the image as a desktop background, and save image files using different file formats. The Paint program can be used to create simple to detailed drawings. The best thing is that these drawings can be done either in black and white in color

Steps to open Paint

Click Start button - All Programs - Accessories - Paint.

For information about using Paint, click the Help menu in Paint. Now you can draw some by holding the left mouse button down and drag inside the white work area.

MS Paint Window Various tools in MS Paint

Diagram 5.15: MS-Paint Menu and Tools

Use of various Paint Tools in Tool Box

The tool box is very useful because it contains the tools you will use in order to come up with your drawing. It contains the following tools:

1. Free-form select and select tool - for selecting a specific object which then you can copy and paste in another location, or you can opt to delete that selection.

2. Eraser/color eraser - this is for erasing your drawing or the colour you have applied.

3. Pick color - this picks a specific color you want and makes it the active color, meaning that whatever you do next will have that color.

4. Pencil - you will use it for drawing.

5. Airbrush - for spraying your object with color.

6. Line tool - for drawing a line. To make your line straight, hold down the shift key and then drag your mouse holding the left button. Select the thickness of the line below the toolbox.

7. Rectangle tool - for making rectangles. You can also draw a square by holding the shift key.

8. Ellipse - for drawing an ellipse, you can also draw a perfect circle by holding the shift key before you start dragging your mouse.

9. Fill with color - as the name suggests, you use this tool to fill an object with color at once.

10. Magnifier - this is a zoom tool, you can use to magnify a part of your drawing.

11. Brush - use this for painting, just like you would paint your house.

12. Text - you will use this for entering text.

13. Curve tool - for drawing a curve.

14. Polygon tool - for drawing a polygon but still you can draw a lot of other objects.

15. Rounded rectangle - this tool helps you to draw a rectangle with rounded corners.

Clipboard

The clipboard is a special location in your computer's memory that temporarily stores data that has been cut or copied from a document. This data can then be pasted to a new location. The clipboard will typically hold its information until you cut or copy something else, or log out of the computer. For example, a user may copy information from MS-Word and paste that information into an e-mail message.

5.2.2 Notepad

Notepad is a basic text editor included with all versions of Microsoft Windows that allows you to create, open, and read plaintext files. If the file contains special formatting or is not a plaintext file, it will not be able to be read in Microsoft Notepad.

Step to open Notepad in Windows

Click at Start button - All Programs - Accessories - Notepad

Or

Click at Start button - Run - type Notepad in box and press enter to execute this.

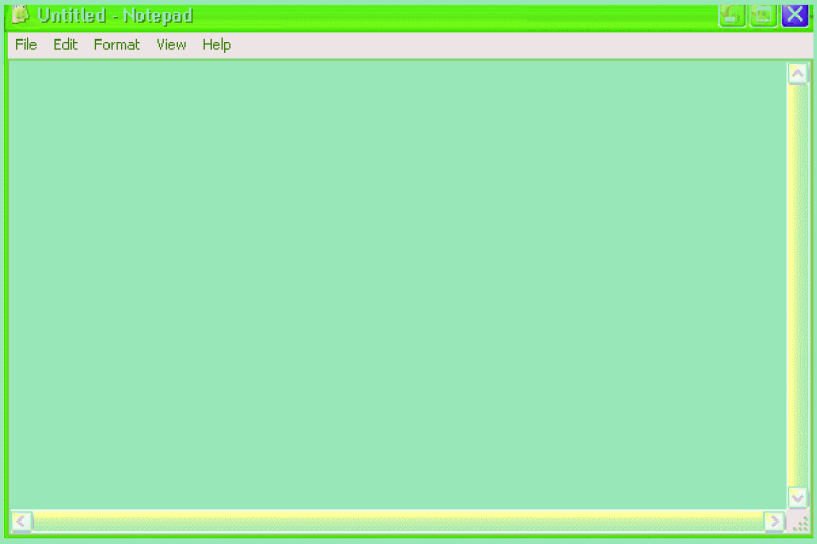


Diagram 5.16: Notepad Window

5.2.3 Wordpad

Microsoft WordPad is a free rich text editor first included with Microsoft Windows 95 and all versions since. Although capable of doing more than Notepad, WordPad is not as advanced as Microsoft Word. However, it does give you additional features, such as the capability of inserting pictures and text formatting. The picture below shows an example of Microsoft WordPad.

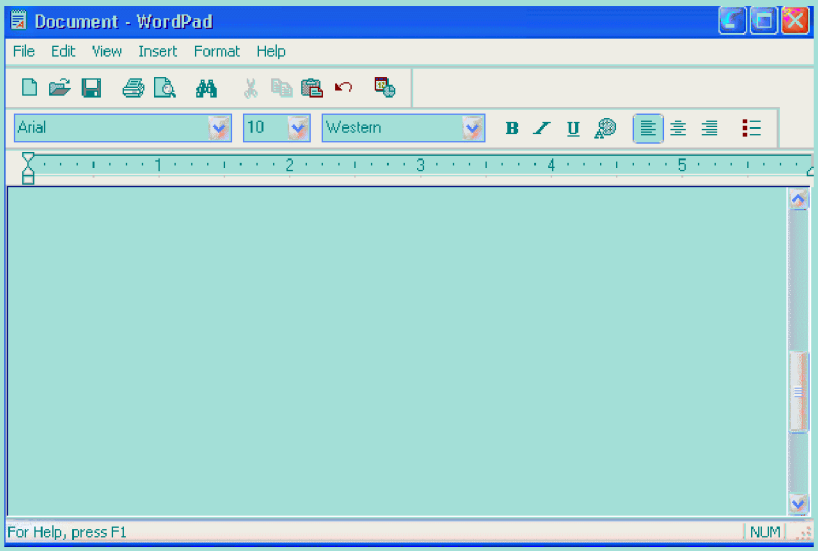


Diagram 5.17: WordPad Window

Microsoft WordPad is capable of editing and saving plain-text file (.txt), Rich Text Format (.rtf), Microsoft Word for Windows (.doc or .docx), and OpenDocument Text (.odt) format files.

Note: Not all versions of WordPad support all above formats. Windows 95, Windows 98, Windows ME, and Windows XP does not support the .docx format. Windows 7 introduced the support of .odt files, so early versions of Windows do not support this format as well.

5.2.4 Calculator

Diagram 5.18: Calculator inWindows

Windows Calculator is a calculating application included in all the versions of Windows. It can be used to perform simple calculation, scientific calculation and Programming calculation.

- Choose Start - Programs - Accessories - Calculator to start Calculator application, or
- Click Start button - Run - type Calc in the box and press enter to execute this.
- From View menu choose the required type of calculator - Standard or Scientific.

Shutdown Menu

In Windows XP, there are several ways to shutdown a computer:

- click on Start and Turn Off Computer, or
- press CTRL + ALT + DEL and choose Shut Down, or

Important Points

1 Windows: Microsoft re-designed the completer windows interface and launched Windows XP. Windows XP is more colorful and user-friendly.

2 Mouse: A computer mouse is a handheld pointing device and input device used with all Desktop computers that moves the mouse pointer on the screen.

3 Shortcut: Shortcut is a process by which we can use programs frequently and easily. By using shortcut, we can make use of folders, Disk drives, Printers, Modems and Faxes etc.

4 My Computer: Using this icon, we can get information about the hardware devices and installed software programs on the computer.

5 Taskbar: Taskbar allows us to locate and launch programs through the Start button or view any program that is currently open.

6 Start Button: The Start button allows users to access their computer programs or configure Microsoft Windows easily.

7 Running an Application: To run a desired application,

8 Click at Start button - All Programs - Click appropriate program icon.

9 Windows Explorer: It is a file browser found in every version of Microsoft Windows since Windows 95. It is used to navigate and manage the drives, folders, and files on your computer.

10 Minimize, Maximize and Restore a Windows: Minimize, Maximize, Restore, and Close buttons can be found on the right side of the Title Bar. The Minimize button is on the left and looks like a minus sign.

11 Desktop: The first screen which appears on the computer monitor after booting is known as Desktop.

12 Notepad: Notepad is a simple text editor for Microsoft Windows and a basic text-editing program which enables computer users to create simple text files.

13 Wordpad:WordPad is a basic word processor that is included with almost all versions of Microsoft Windows operating systems.

Exercises

Multiple choice questions

1. Where the file will go when it is deleted?

   (a) In Recycle bin (b) On Desktop (c) My Computer (d) All of these

2. The extension of MS-Paint file is:

   (a) .BMP (b) .DOC (c) .XLS (d) .JPG

3. Which of the following is a pointing device?

   (a) Keyboard (b) Mouse (c) C.P.U. (d) Monitor

4. Windows Explorer provides information about:

   (a) Structure of computer (b) Files and Folders

   (c) Deleted files and Folders (d) Computer Memory.

5. In which windows bar has File option?

   (a) Menu bar (b) Titlebar (c) Taskbar (d) All of these

6. How many buttons are there in the right of top most bar?

   (a) 2 (b) 3 (c) 5 (d) 9

7. The process of closing a computer is known as:

   (a) Shutdown (b) Restart (c) Booting (d) Standby

8. Which of the following is a G.U.I. based operating system?

   (a) DOS (b) UNIX (c) Windows XP (d) None of these

Very Short type questions

1. How a new icon is created on desktop?
2. How to change the size of a Window?
3. Write differences between DOS and Windows.
4. What do you mean shortcut menu?
5. What do you mean by Task pan?
6. How a file and folder are searched?
7. How a program is run?
8. How a window can be Maximized, Minimized or Closed?

Short type questions

1. Explain Cut, Copy and Paste operations.
2. What do you mean by rename operation?
3. Which one is start up menu?
4. Where Notepad, Wordpad and Paint applications are found in Windows?
5. How can we copy multiple files at the same time?
6. Explain G.U.I.
7. What is the use of Windows scrollbar?

8. Write features of Windows XP.

Essay type questions

1. Explain about windows operating systems and their uses.
2. Explain the various views of windows calculator along with their uses.
3. Explain in detail the process of printing a file.
4. Explain various tools available in the Toolbox of MS-Paint.

Chapter-6

Microsoft Office

6.1 Microsoft Office

Microsoft Company developed Microsoft office software, which is suitable for the working of any office. This software contains all kind of facilities, which requires for simple business office or other office work.

For example, in a office word processor should be there for letter writing. MS Office contains MS Word as a word processor. Similarly for accounting task, one ledger is there which is made of rows and columns. Calculations are to make after entering values in rows and columns. For these types of task numeric processor or worksheet program, this is available as MS Excel. One program must be in office to keep the complete record of workers of office that is MS Access program. Power Point program may be used to present information about office, its activities or achievements by graphical or graphs.

So, we can say that the normal work of an office can be done through with the help of available programs of MS Office.

6.2 MS Word

Introduction to word processor: In the working of any office, daily dozens of letters received as well as sent. The letters must be typed in way so it looks better as well as easy to read. Letter may have picture or graph as required. Letters must not have grammatical errors. The program or software for above task on computer is normally called as word processor. However, the word processors available in the markets have many additional features.

As the definition of word processor, word processor is the program or software, which processes the word. Following features must have in the normal word processor:

1. Capable to make a file and save
2. Capable to change the size, color, font and style of letters
3. Capable to bold, italic, underline etc. to the word
4. Capable to check the grammatical errors and correct the words
5. Capable to set header, footer, margin, increase and decrease the space between line and paragraph

6. Capable to write words as superscript (X^Y) and subscript (P_2) etc.

7. Capable to insert symbols, drawing, serial number etc.

8. Capable to print, and print preview of page

9. Capable to make table and work with table

10. Capable to remove a portion of file and put to other and simple editing

11. Mail Merge

Any word processor contains above facilities but older word processor don't have that much facility.

Creating and Saving a File

To work with Word click Start button on taskbar, then click Program and then Microsoft Word. The window appears on screen is called as Application Window. This application window contains Title Bar, Menu Bar, Standard Tool Bar, Ruler, Status Bar and Scroll Bar.

- **Title bar** shows the name of file, if user has not given a file name then word automatically gives as Document1, Document2 etc.

- Different menus are available in Menu Bar by which we can select different commands

- Different commands can be select from the various types of buttons from Standard Menu Bar.

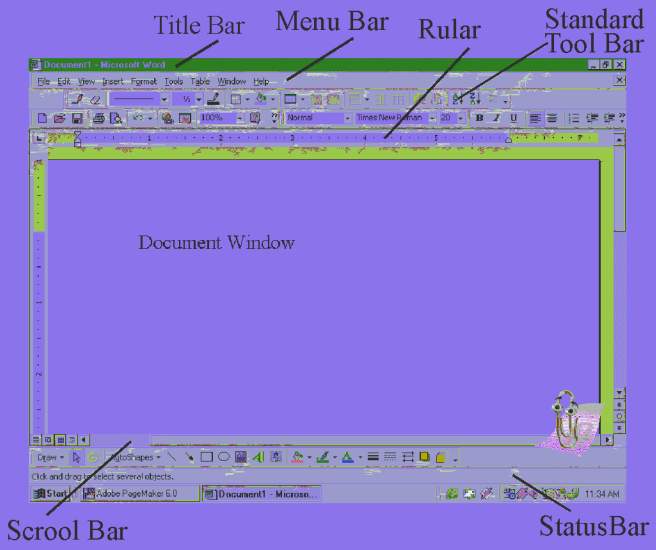


Diagram 6.1 Application window

- Different Format commands can be selected from the various buttons available on Format Bar

- Margin, Tab etc can be selected from the Ruler

- Page can be scroll up, down, left and right by the Scroll Bar

- Status Bar shows the information related to file

- On document windows, we can be type. Cursor always on document windows. On this window, we can start typing.

Creating New File

To create new file either hold down the Ctrl+N keys or select New option from File Menu. The new windows always blank. Here we can start typing.

Typing word

1. Before start typing the first line in paragraph press Tab key by which next lines of paragraph starts before the first line.

2. Now start typing. Enter key must be pressed at the end of paragraph. Cursor moves automatically to next line once previous line completes

3. Press Backspace key if wrong character typed

4. Once paragraph completed press Enter key to start a new paragraph, By this way we can type whatever we want from the keyboard.

Move cursor in file

If we want to move cursor in file after typing text then we can use directional keys, Home, End keys. Keys can be used as following:

→ or ← To move cursor left or right character by character

↓ or ↑ To move cursor one line up or down

End To move cursor at the end of line

Home To move cursor to the beginning of a line

PgUp/ PgDown Up one screen / Down one screen (scrolling)

Ctrl+PgUp To the top of the previous page

Ctrl+PgDown To the top of the next page

By using scroll bar screen can be move up down. Clicking mouse can position cursor.

Saving a File

Save file means to save on secondary memory so once required it can be available. To save file hold down the Ctrl + S keys or Select Save option from the File menu.

If file is already stored then it will save by that name only and if first time file is to be save then Save As dialogue box appears on screen. Which is as follows:

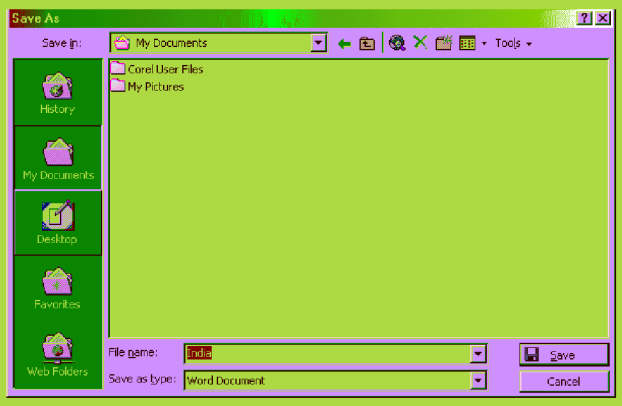


Diagram 6.2 Save as dialogue box

Here in File name text box enter the file name and then click save button. Remember file name should be meaningful so we can know what content file have.

File stored in the directory shown in save as dialogue box.

Editing and Formatting a File

Text Style: In Microsoft Word letters can be typed in different styles and if we have typed style can be changed later. Mainly four types are:

1. Regular
2. Italic
3. Bold
4. Underline

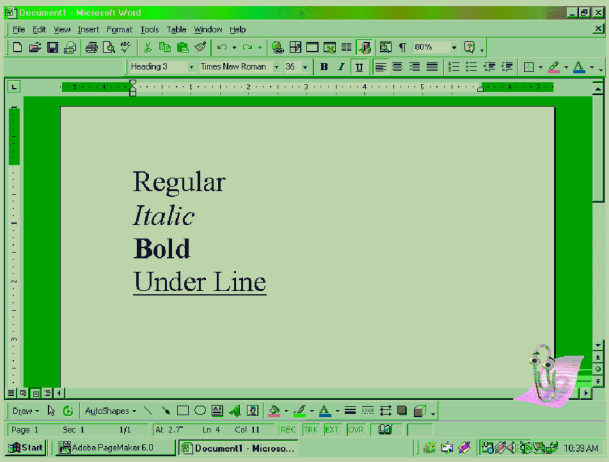


Diagram 6.3 Text Style

In addition subscript, superscript, strikeout etc types are also available. This will be discussed later.

These styles can be used as required. For example, the subject of letter can be Bold, Important points can underline to attraction.

First select the required style in which letters to be written, if letters have been written already then first select the text and then choose the style.

First move cursor from where you want to select the words. To select the words hold the shift key and use direction key and move up to last word then release the shift key. Or hold the left button of mouse and move up to last word then release the button.

Method to change letter style

1. To change the style of typed words, Select the words and then change the style. If style to be changed the new words then move cursor at end of the typed words and then change the style.

2. To apply Bold formatting then press Ctrl+B keys or click Bold option from Format menu.

3. To apply Italic formatting then press Ctrl+I keys or click Italic option from Format menu.

4. To apply Underline formatting then press Ctrl+U keys or click Underline option from the format menu.

More than one style can be used if required, for example bold and italic or bold and underline. By using above methods of style the color of options on tool bar changed.

The format tools are toggle one if we press then they become active and if we press second time they become inactive.

Diagram 6.4

Changing Font type, line, size and color

Every one has own way of writing one person writes 'A' in different way whereas other is in different manner. This depends upon the choice of individuals someone like one way whereas other likes another way. These different ways to represent is known as different font.

Microsoft word provides facility to choose different fonts to write letters means in desire fonts. We can increase and decrease the size of fonts as required. The size of fonts measures in numbers. Generally, 72 numbers is in 1-inch means if font number is 72 then size of letter is 1 inch big. Words written in different fonts and size are shown below-

Diagram 6.5 Changing Font type, line, size and color

In a file letters can be typed using different type of fonts and size. Name of font and its size displays in Format Tool Bar where cursor is located in a file and text is written.

Before typing we can decide font and size of letters by selecting the font and its size. Font and its size can be change if required.

Methods:

1. If we want to change the font and size of written text then select it. If you want to change the font and size before typing move cursor at that position.

2. On the Format Tool Bar click a font name in the Font box. Word displays the list of fonts in alphabetical order. Select the required one.

3. If want to change the size of font, write the desired point size in the Font Size box or click which shows the list of different size select one of them as required.

Alignment of Text

The meaning of align the text is that the either text is left aligned, right aligned or center. Word automatically makes letter left align. We can change as our need. Difference can be understood by following pictures. Left align means all the characters starts from the left and side in each line of text, in the right align the last letters starts at the right means symmetric in that direction. Center means letters of lines are aligned centrally.

Diagram 6.6 Alignment of Text (Left, Right, Centre & Justify)

Paragraph Formatting

The space between two paragraph or lines between paragraphs can be increased or decreased in Word. By following method the space after or before the paragraphs can be increase or decrease –

1 Select the paragraph, where space to be increase or decrease.

2 Click the Paragraph Option in Format Menu

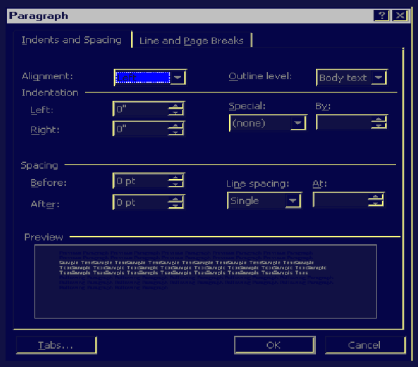


Diagram 6.7 Paragraph Formating

3 Select Indent and Spacing tab in the Paragraph dialogue box.

4 Type appropriate values in the box for after / before in the Spacing portion. The value which is written near Before option shows that how much space as a blank before paragraph and value which is written near to After option shows that how much space as a blank appears after paragraph.

5 By click at Line Spacing option one list appears. Either of the value can be selected.

The spacing between selected paragraphs can be increased and decreased by Line Spacing option. If general spacing is required then select Single, for double select Double, for 1.5 times then select 1.5 Line Spacing.

To align selected paragraph, select the option Alignment from Paragraph Dialogue box. We can align paragraph left, right and center.

By this way we can increase or decrease the space before and after paragraph.

Inserting Header and Footer

Information which appears on the top of every page in file is called as Header. Like the title or home of every chapter is written on each page of book. Similarly footer is an information which shown at bottom of every page. Like if we print the name of file on footer then early we can say these printed paper or pages belongs to a particular file.

Every or add paper may have different header and footer. Normally header and footer are not usable. Either on print preview or in page setup we can see them. To see file in page setup view, click a butter labeled by page setup view which is available on standard bar at left to come in normal views click normal view button.

Method to insert Header & Footer

Following method is use to current header & footer in a file select Header and Footer option from view menu at menu bar. Word displays header in dotted line on screen and also displays Header and Footer tool bar on screen on shown in figure.

As required we can change the words written in header and can change the font, size, color etc.

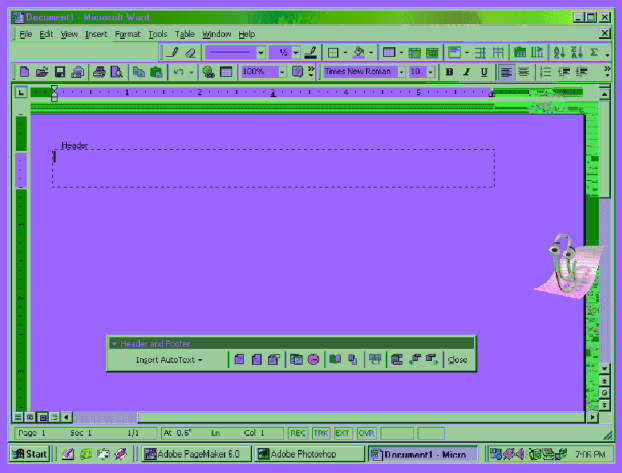


Diagram 6.8 Insert Header & Footer

To more to footer from header use header and tool bar. The uses of tools of Header & Footer are as under switch between header & footer :

1. To switch between header and footer.

2. Show previews - To move at header or footer of preview page of file.

3. Show next- To more at header or footer of next page of file.

4. Same as preview- To make some header & footer in previous part of file.

5. Insert page number - To event page number in either header or footer where cursor located.

6. Insert date - To event current date in either header footer book where cursor located.

7. Insert time - To insert current time in either header footer book where cursor located.

8. Page Setup - To display page format in page setup dialog box.

9. Show/hide document text - While working with header or footer to show/hide the center of a file.

By using header and footer tool bar we can insert time, date etc. page setup tool can be use to make header and footer different on first page and different at remaining pages or if different for odd and even pages. To do this click page setup tool either at header and footer tool bar or page setup from file menu. Then click layout tab in page setup dialog in box. Select from the two option 1. different odd and even 2. different page

on required.

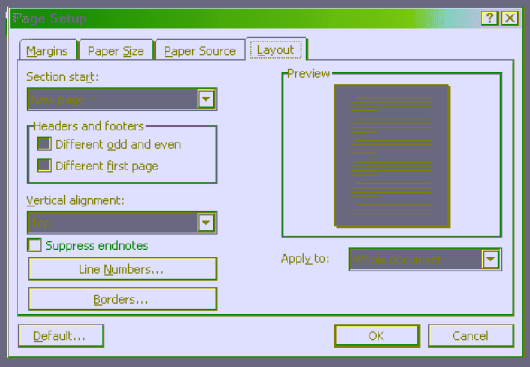


Diagram 6.9 Page Setup

Inserting page number on pages

In Microsoft Word can insert page number on each page. Which word parts automatically. Page number can be insert on header footer either using insert page number tool or by different method. Either of methods be used but page number inserted at header or footer only. To insert page number by header and footer tool bar we have incurred earlier now other method is as follows :

Method

1. Click page number option in insert menu at menu bar page number. Dialog box appears on screen.

2. Position to be deciding to insert page number from the position box in dialog box. Once click this two option appears 1. top of page (header) 2. Bottom of page (footer), we select destrable one.

3. To decide, choose either one as he wants to display page number.

4. Last Click Ok button.

Spelling and Grammar

Almost makes mistaken of spelling. Sometimes mistaken due to not knowing correct spelling or by typing mistakes tough know the correct spelling. Microsoft Word provides facility to check unwanted spelling and grammatical errors. Word automatically make red underline for misspelled word. So user can understand that spell error in there.

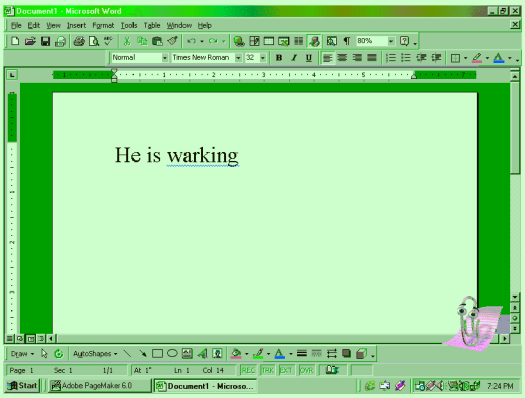


Diagram 6.10 Spelling and Grammar

As shown in above figure that underlined word is misspelled or grammatical error in there. To remove error put more pointer on that work and click right button, which display list of all possible correct words of that misspelled word. As are choose correct one misspelled will be replaced by correct one. As shown in figure if we click right button of mouse it lists correct possible words and offer choosing right one. It replaces misspelled word. If no correct match in available from Microsoft Word then we can instruct that word written by us is correct and if similar words are there in file them they showed not be treated as incorrect. To instruct in this way select Ignore all option. Word treats all spelling as in correct which are not available in its dictionary. Assume that we type Jaipur and this in not in words dictionary then always word says it is incorrect word. In this situation, we have to add this word in word's dictionary so this word is not treated in misspelled word.

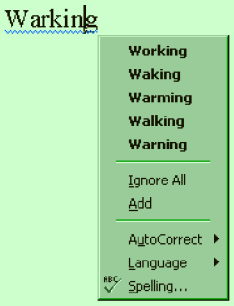


Diagram 6.11 Possible correct words

To add word in Words dictionary, click right button of mouse on that word and select add option.

If sentence in grammatically erroneous them word shows the error and provides suggestions to correct the sentence.

Suppose, If we type sentence 'the new cars rented by company' then word puts green underline. Click right button of mouse and it provides suggestion that sentence can be written as 'company rents the new cars'.

Write check the error a list shows following option:

1. One or more
2. Ignore
3. Grammar related help

Microsoft Word checks words and grammar automatically and informed about possible errors, which can be removed by word.

Subscript & Superscript

Several times letters to be written either above line or below line for example $x^2+y^2+2xy = (x+y)^2$

Here x to the power2, y to the power2 and (x+y) to the power2 written above line, which in known as superscript. Similarly

$2H_2O + +O_2 - 2H_2O$

In above equation 2 after H, after O are written below to line which in called on subscript.

It is better to type in normal manner instead of typing directly in subscript or superscript. Later change the format on subscript or superscript.

for example :- To type $x^2 + y^2 + 2xy = (x + y)^2$ first type is x2 + y2 + 2xy = (x + y)2, then select 2 after x, y and (x + y) individually and change format to superscript.

Method

1. Select character to change as superscript/subscript.
2. Select font option of format mend. Select font tab dialog box appears.
3. Select subscript or superscripts from various option available in effects.

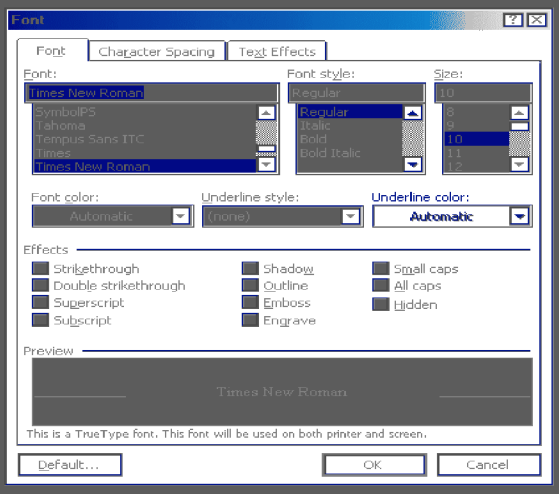


Diagram 6.12 Fone dialog box

4. Click OK button.

Above method in used to change into superscript or subscript.

Inserting Symbols

Some special symbols are used regularly in commercial or other letters. There symbols are not available on keyboard like ® copyright TM-Trademark etc. If we want there symbols in file then we are unable to type from keyboard. Some symbols can appear by the combinations of special keys etc. Alt+Ctrl+C key press given ©, but some symbols are there which cannot be formated by this method we discuss both method one after another.

First

By this method we type same symbols which are known as special character. To type there some key combinations are made which is knows as shortcut keys.

Method

1. More cursor where special character to be typed.

2. Select symbol option from insert menu, which shows symbol dialog box. Then select special character tab. This dialog box contains list of shortcut key for special characters.

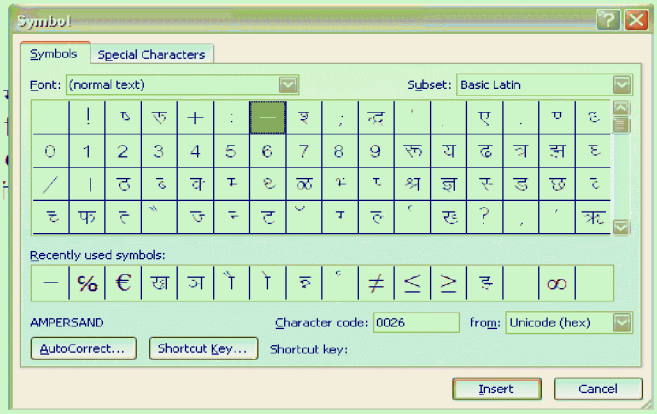


Diagram 6.13 Spacial Charecter and short cut

3. Select the required special character and then click insert button. By this way special characters can be typed where user is in file. It we can remember the shortcut keys then without using dialog box he can type special character like hold all keys together to set © Alt+Ctrl+C.

Second

It may be possible that the shortcut keys are not available for the characters as symbol which we want. So to get these character as symbol method is to be used.

Method

1. More cursor where symbol to be type in file.

2. Select symbol option from insert menu.

3. Select symbol tab in symbol dialog box.

4. Than above dialog box appears, which shows various symbols required me can be select.

5. Click ok button.

If desired symbol in not available then use font option and select different fonts and repeat the some method.

Print Preview

In order to minimize or maximize of paper in file print, file should be viewed on the screen prior to its print. The corrections can be made where ever required. Only then the print is taken on paper in the desired form.

Word offers various options by which file can be viewed. The options mainly used are of 2 types:

1. Page setup view. 2. Print preview.

1. Page setup view

Page setup view illustrates the page print of the file. Header, Footer, Column etc. are shown at their respective locations & the view show the exact replica of page as seen after it print on the paper. The corrections / modifications can be made & seen at the some time.

To View the page of file in page setup view click on the page setup view button located left hand side of horizontal scroll bar. In the page setup view one or more pages can be seen on the screen simultaneously by the use of zoom controller box.

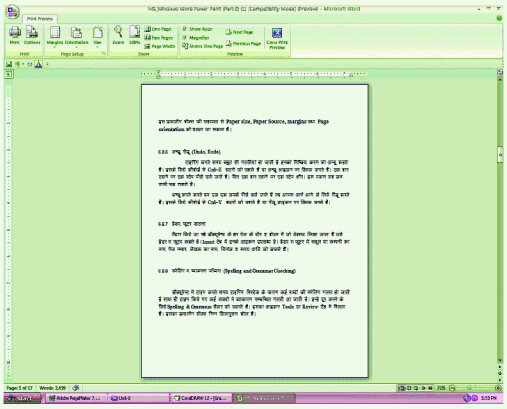


Diagram 6.14 Page setup view

Choose the appropriate option in the list & click the arrow in front of option. The options enlisted beyond zoom controller box. The options hold 10% to 2000% values that enables to view the size of file page in small or bigger from other options are:

Whole page: To view entire page on the screen.

Two pages: To view 2 pages on the screen.

To return to normal view from page setup view, click on the normal view button.

2. Print Preview

Is similar to page setup view along with additional facilities as change of margin, to pat pictures at appropriate place etc. To see the page in print preview, click print preview option at standard tool bar. By doing this page preview appears as shown in figure. If we see the figure, then we find ruler line in both horizontal and vertical which

can be use to set margin, tab, indent etc. It shares the point preview tool bar which contains various tools. There can be use for following tasks.

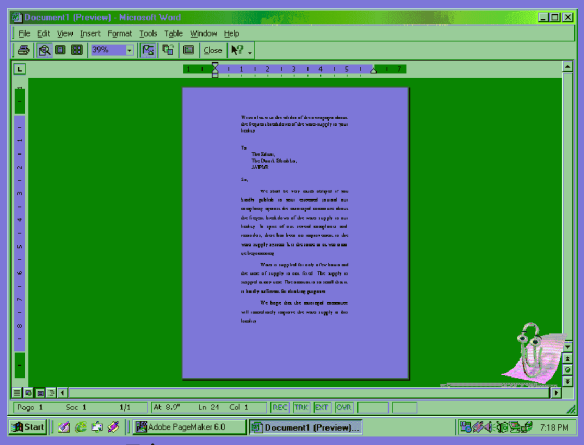


Diagram 6.15 Print Preview

Full Screen: This tool is used to display page on whole screen and tool bar other hides.

Shrink to fit: This tool is use when some matter of current page shifts to next page and we want all matter showed be on same page.

View Ruler: This tool is used to show/hide ruler.

Multiple Page: This is used to display more than one page on screen together.

One Page: To display one page at a time on screen.

Print: To print pages of files.

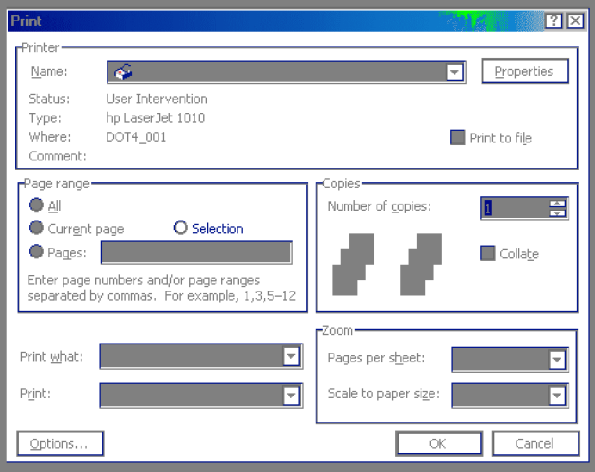
Zoom Control: To increase or decrease the size of page to view.

Close: This tool is used to return in normal view.

Printing

Printing is the process to print pages of files. Open the file for which we want prints. Then press Ctrl+P keys on keyboard or select print option from file menu. This shows the print dialogue box.

In the dialogue box we have to specify which pages to be print in the page range. This has there options:


Print
Printer
Name:
Properties
Status:
User Intervention
Type:
hp LaserJet 1010
Where:
DOT4_001
Print to file
Comment:
Page range
All
Current page
Selection
Pages:
Enter page numbers and/or page ranges separated by commas. For example, 1,3,5–12
Copies
Number of copies:
1
Collate
Print what:
Print:
Zoom
Pages per sheet:
Scale to paper size:
Options...
OK
Cancel

Insert Clip Art

If we want to insert clipart can prepared figure than first more cursor where clipart to be insert. Now click picture option in insert menu. Select clipart option. Word display clipart dialogue box as below:

Diagram6.17 clipart dialogue box

This dialogue box displays categories of clipart click- academic, Animal, Business, and Entrainment etc. Select the required category. Word shows some picture in the some dialogue box. Select required figure among there. After selection figure word again shows a tool bar which contain following options.

Figure

If select clip to be inserted than use first option insert clip. If before inserting want to see clip then use second option preview clip. If selected clip in to be insert in favorite category than use third option add clips to favorite or other category. If want to search similar clips then use fourth option fine similar clips. By this way any clip stored in clipart gallery can be insert in word file. Insert clipart dialogue box closer automatically as picture inserted click OK.

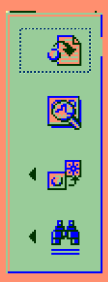


Diagram 6.18 Clipart Diolog Box

We can set colour, size, and shadow by increase by selecting picture.

Diagram 6.19 Clipart Diolog Box

Insert Word Art

Microsoft Word Art gallery has various styles to provide various size. Color and shadows to character or word. Character or words can be written in either of the style for that use picture option in insert menu. Then select word art option. Word displays following figure to show word art gallery. This dialogue box shows various styles. Select required one among there styles. Then MS Word shows edit word art text dialogue box. Type the text in this dialogue box. Fonts, size can be changed here. At last click OK button.

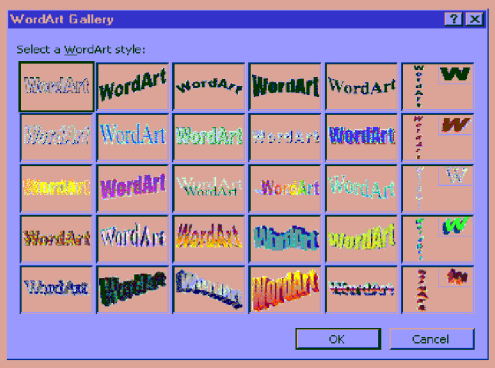


Diagram 6.20 Word Art gallery

Typed text displays in the style are selected, parallel word art tool bar shown on screen with the help of their tool bar size; color position of words can be changed.

Diagram 6.21 Word Art Text

Insert other Picture

In MS Word Pictures there than Art Gallery, Clipboard Gallery can be insert. There pictures may be scanned one or of any film. Before inserting in word they must be shared file in computation.

More curser where picture to be insert. Select Picture option from insert menu. Select from file option. It shows insert picture dialogue box. In this dialogue box, Select file where picture is saved. Dialogue box display preview of that picture; at last click OK button.

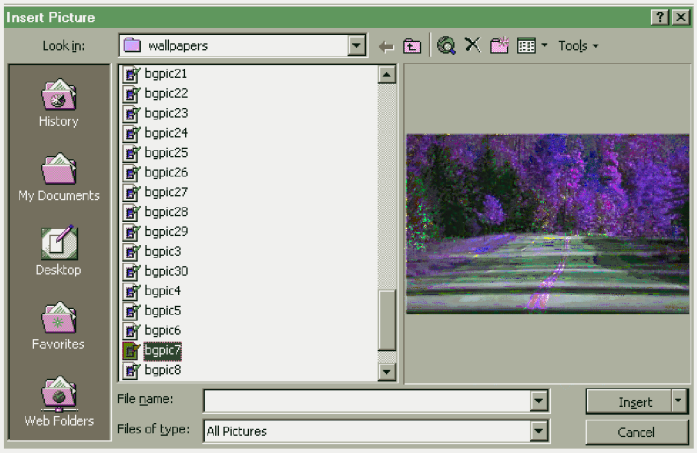


Diagram 6.22 picture dialogue box

Page Setting

Page setting mean fixing the size of paper, margin etc. whenever we create a file than first decide the page size and orientation etc. We find page setting in two parts.

1. Set Margin 2. Set page size & orientation.

Setting Margin

If margin to be change for all the pages more cursor on either of page in file.

- If on particular area margin to be change than select that.

- If margin to be change where new page starts, then more cursor to the last word of file.

1. Select page setup option from file menu.

2. Word displays page setup dialogue box. Select Margin Tab in this.

3. Type margins in inch to the respective box of the options top, bottom, left, right, header and footer etc. in dialogue box.

4. Select the desired option from apply box. If margin of entire file to be change then whole document to be select. If margin to be change for selected partitions of pages then select option selected document.

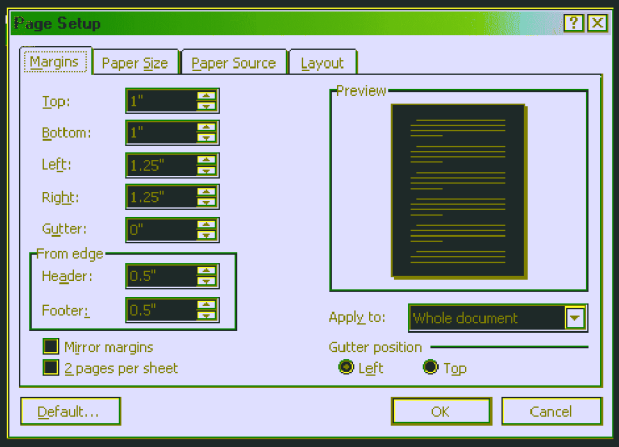


Diagram 6.23 Page setup dialogue box

5. At last click OK button.

By tins method we can charge header, footer and margin etc. in the life.

Set the paper size & orientation

Word provides facility to set page size as cm need. Apart from that page orientation can be change as need. Orientation can be of two types where as size can be of different types.

Orientation

1. **Portrait -** This orientation in small in width and more long in height, means uses are parallel to small edges.

2. **Landscape -** This orientation have more width and in height mean lines are parallel to large edges as shown in figure.

Diagram 6.24 Orientation

Method-Ist :

1. Select page setup option form file menu.
2. Select paper size tab from page setup dialogue box.
3. Slick downward arrow in the paper size box in the d dialogue box.
4. Select desired size from the listed one. If no size suits than select custom size.
5. Enter width and height in inches to respective width and height box if desired.

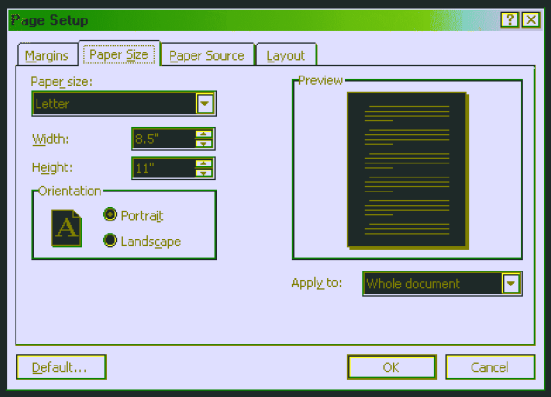


Diagram 6.25 Set Page Size

6. Select one option form given two in orientation. Dialogue box shows preview of file in the size and orientation we select.
7. Click OK button after selecting the desired option. By this way we can change size of page, orientation, its margin, size of header and footer.

Bullets and Number

Some time matter to be written in letter point wise or in list style. These points always start from new line and serial number or special symbol, like:

Microsoft Office:

1. Microsoft Word
2. Microsoft Power Point
3. Microsoft Excel
4. Microsoft Access

In the above example symbol before Microsoft Office in known as Bullet and 1, 2, 3 and 4 called Numbers.

If we write 1. before list or point then word automatically written next serial number i.e. 2. If we write A then next word writs B, C and D automatically. They are known as numbers.

Similarly if write '*' before letters than on next line automatically written '*'. These are known as Bullets.

Make list using Bullet or Number

1. If we already typed the list without Bullet or Number then select entire list.
2. To insert bullet, select Bullet tool from Format tool bar or to insert number, select Number tool from format tool bar. Word automatically inserts bullet or number before every point (paragraph).

If we want to type list Bullet or Number, then before typing click bullet or Number option. Then start typing. Word automatically insert Bullet or next Number before new points (paragraph).

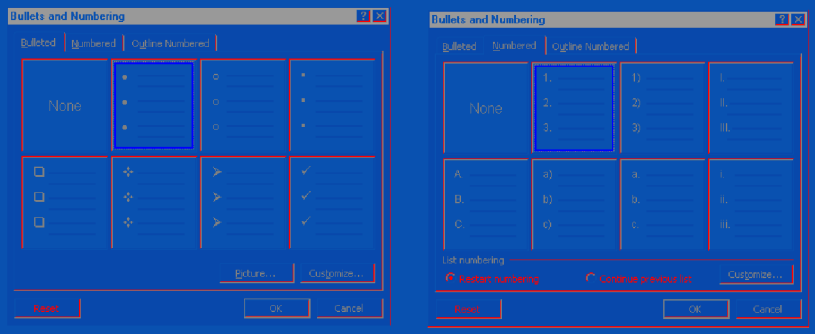
Similarly if before typing list if we write 1. (Number 1 then decimal and black space) then 2. Commas before list and B. Commas before next point. If we type I then next becomes II.

If in not necessary that Bullet in always made of * (Asterisk) or Number contain decimal point and blank space. We can change them as are requirements.

Changing format of Bullet or Format

1. Select bullet & Numbering option from format menu.

2. Click Bullet Tab if we want to change Bullet and select.



(a) Bullet (b) Number

Diagram 6.26 (A) & (B)

3. Select required format of Bullet or Number from Bullet and Number dialogue box.

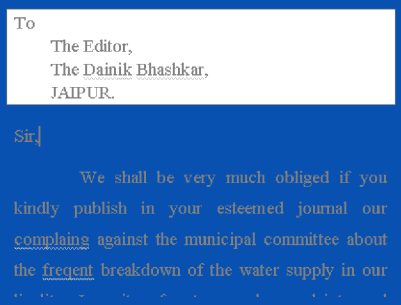
4. At last click OK button.

By this way format of Bullet Number can be charged. Once Changed item Ist have some format for Bullet/Number.

Borders and Shading

Border: Make a boundary line to a paragraph is known as Border.

Shading: To give background color to selected text or page is known as shading as shown in figure. Generally, we keep page colorless. Border and shading is used for special attention. To add border or shading Border Tool Bar is used. To show, tool bar click Format Menu.


To
The Editor,
The Dainik Bhashkar,
JAIPUR.

Sir,

We shall be very much obliged if you kindly publish in your esteemed journal our complaing against the municipal committee about the fregent breakdown of the water supply in our

Diagram 6.27 Border and Shading

Making Border

1. If add a border to one paragraph then move cursor on to paragraph. If want to add border for more than one paragraph then select all the paragraphs.

2. Now click one or more tools from Border Tool Bar.

The tools and their uses of Border Tool Bar are as follows:

(A) Out side Border - To add border over paragraph

(B) Left Border - To draw a line left to paragraph

(C) Right Border - To draw a line right to paragraph

(D) Top Border - To draw a line at top of paragraph

(E) Bottom Border - To draw a line at bottom of paragraph

(F) Inside Border - This tool activates once more than one paragraph selected. To draw line between paragraphs this tool is used.

(G) No Border - To remove borders from the paragraph.

More than one tool can be used on one paragraph. Suppose we want to add border on top and bottom of paragraph then two tools Top Border and Bottom Border to be use.

3. We can change the line of border. Generally borderline is thin but border can be made of Dotted lines, Thick line, Double line etc. To change in the style of line click Line Style box this displays the list of different style of lines. Select from list as required. By this way thickness and patter of lines can be changed.

Shading: By this command we can change the background color of paragraph. Background color is where text appears over it. Like in book letters are in black color and background color is white.

Method

1. If for single paragraph shading is to be change then move cursor on that paragraph or if more than one paragraph is there then select them.

2. Click Shading color in the Border Tool Bar, which displays different colors, as choose color the background color will be changed. If want to remove then use No Fill Color option.

Find and Replace word: Assume that we have on file, which contains information about Bombay city. After typing complete file we ask to change the Bombay with Mumbai. To replace first we have to search where Bombay is typed then replace with Mumbai. Word provides facility to find a word then replace with other word.

Method

1. Move cursor on the file from where we want to start search. If we want to search from the beginning of file then cursor must be at beginning of file.

2. Select the option Replace from the Edit Menu as shown in figure.

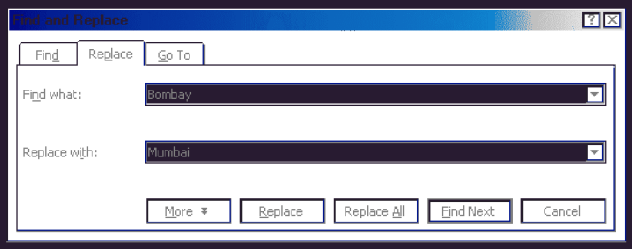


Diagram 6.28 Find and replace Dialogue box

3. Type word to search in Find what box like if want to search Bombay then type Bombay.

4. Type word with we want to replace in Replace with box, like if we want replace Bombay with Mumbai then Mumbai in the replace with box.

5. Now click Find Next button. Word stops as it finds the first occurrences of Bombay and ask user to replace or not. If want to replace then click Replace button. By this ways word stops wherever it finds Bombay and asks to replace. If we want to replace Bombay with Mumbai wherever it found then click the option Replace All.

So by this way we can search/find a word and if want to replace with other word we can replace it.

Insert Table in File: One of the features among others is capable to create table in word. With the help of table we can organize words or numbers in rows and columns. Sometimes its better to present information using table. Editing can be done easily after creating tables.

Creating Tables: At the time of creating table it is necessary to mention how many rows and columns have in table. Later the number of rows and columns can be increase and decrease.

Method

1. Move cursor a table to be created.

2. Click Insert Table option on the Standard Tool, word displays a table.

3. From the leftmost top corner by click and drag up to right and downside. Word shows the number of column and rows of selected table. Here selects the number of rows and columns as required.

4. Release the mouse button, table created where the mouse pointer is.

Initially all cells of table empty and width and height of cells are equal as shown in figure.

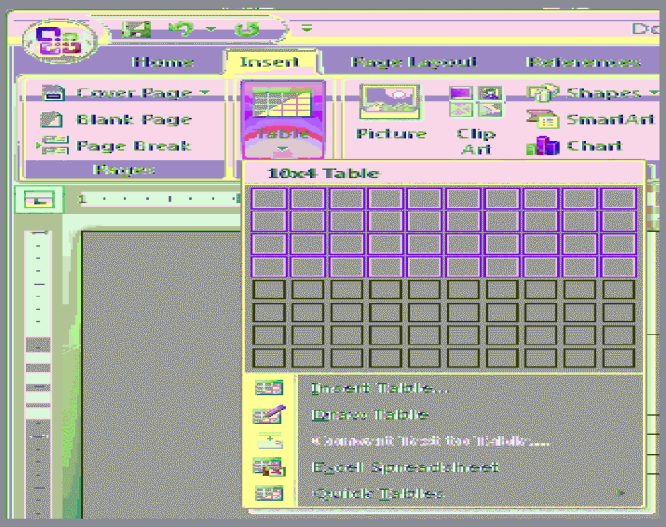


Diagram 6.29 Create Table

In above figure table contains 4 rows and 3 columns. Cells have border.

Inserting figure and editing

To enter figure move cursor on that cell where figures to be written. To move cursor from one cell to other use keys as follows:

Key/Keys	Use
Tab	To move cursor to next cell
Shift + Tab	To move cursor to previous cell
Alt + Home	To move cursor to first cell of row

Alt + End To move cursor to last cell of row

Alt + PgUp To move cursor to top cell of column

Alt + PgDn To move cursor to bottom cell of column

Deleting Row and Column: If we want to remove row and columns from table we can delete them. The contents will be deleted if we delete the row and column. If we want to delete the contents written in them then don t use this method. Deleting the row and column are different them deleting contents of row and column.

Method:

1. Move cursor on the cell that row/column to be delete

2. Choose Delete Cells option from the Table Menu, this shows Delete Cells dialogue box.

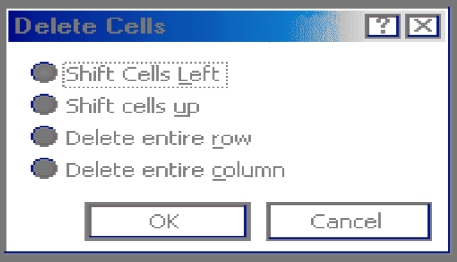


Diagram 6.30 Deleting Row and Column

3. If row to be delete then click Delete Entire Row option and if want to remove column then click Delete Entire Column option.

4. At last Click Ok button

Merging and Splitting Cells: Sometimes we have to create a table where number of cells in rows and column are not equal. It may possible that in the first row of table, we want to write name of table, which should have one cell only, or we want less cells in last row comparison to other rows, as shown in figure

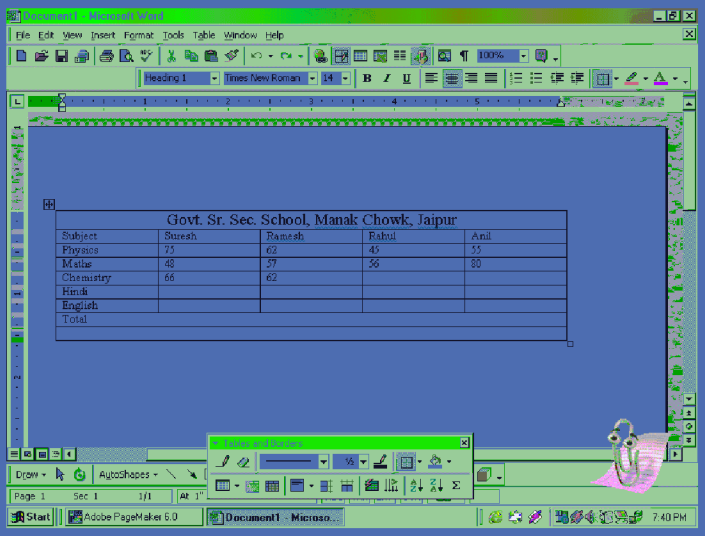


Diagram 6.31 Merge & Split Cells

To make table like this we have to combine two or more cells or split one cell in two or more cells. The combining two or more cells together is known as Merging where as dividing the cell in two or more is known as Splitting.

In MS Word, we can merge and split the cells.

Method of Merging

1. Select the cells that are to be merged.

2. Select Merge Cells tool from the Table and Border Tool Bar or select Merge Cells option from Table Menu.

Method of Splitting

1. Select the cell that is to be divided.

2. Select Split Cell option from Table Menu or from Table and Border Tool, which shows Split Cells Dialogue box.

Enter the desired value for column and rows in respective boxes and click Ok button. This splits cells into two or more cells. For example, If we enter 2 for number of columns and 2 for number of rows and click ok then selected cell split into 4 cells.

Mail Merge

In Microsoft Word, we can reorganize the information. Name, Addresses etc can be use in Word; can be organized in any order. We can combine information to other

file and have a print. To merge the figures collected, as information with other file is known as Mail Merge.

Assume that we have to send greeting letters to students of our class and we want that letter must contain the name of student and address. In this situation, we create two files. In first file we write the contents, which are common for all students, means greeting message which, is to be sent to all students. That is known as Main document. The second file contains the information, which is different for each letters, means addresses for every student. This file is known as Data Source.

Now we merge and then print. The printed letters have in manner that each letter contains the content of first file where as name of student and their addresses will be taken for different pages from the second file. After merging, each letter contains different name and addresses of students.

Mail Merge completes in three steps-

1. Create Main Document and Data Source

2. Decide the place where data appears in the Main Document.

3. Merge both files.

Diagram 6.32 Mail Marg Helper

1. Creating Main Document and Data Source file

To accomplish this task Mail Merger Helper is to be use. First select Mail Merge option from Tool Menu. Word displays the dialogue box as shown in figure below. This dialogue box contains three options.

1. Main Document

2. Get Data

3. Merge the data with the document

These three options respectively use to create main file, data source file and to merge both. First create the Main Document and then create data source file.

To create main document, click Create option of Main Document. Word asks what kind of file to be created. Select the required one from the list displays here. (Initially choose Form Letters option for easiness)

After selecting the file, Word asks to create new file or open an existing file. Open new file.

In the main document, type the information that is common for all, as our example is concern types the greeting message.

To create Data Source file again open the Mail Merger Helper dialogue box. Select Get Data Option. Select Create Data Source from list displays by Word. Word displays the Create Data Source dialogue box, which is as follows:

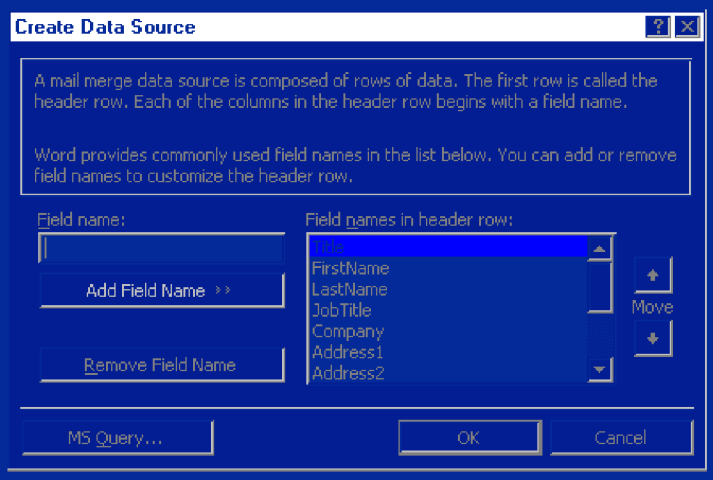


Diagram 6.33 Create Data Source dialogue box,

This box contains readymade fields. Field is name given to the data, which contain information. In our example, two fields are Name and Address. We can delete and add from readily available field. If we want to remove some field then select that field and click Remove Field Name option. If we want to add a field then type the name of field and click the option Add Field Name.

Field Name may not larger than 40 characters. Field Name must start with alphabet only and must not have any special character like , - ‘ / \ etc. By applying this

process, delete all the fields except fields which requires. In our example, we keep only two field Name and Address.

Enter data then click Ok button. Word ask for a file name to save records. Save by the suitable name.

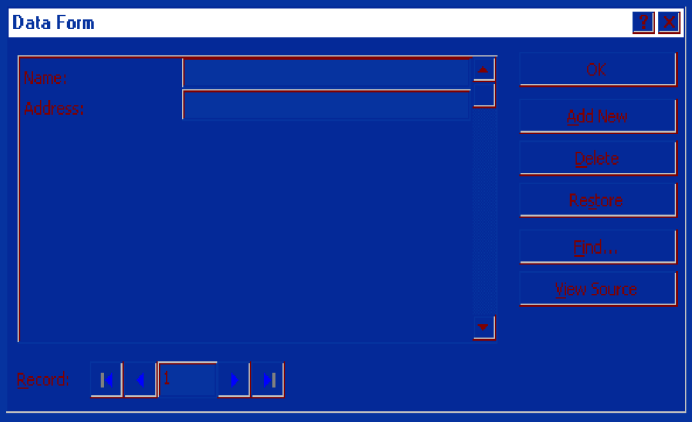


Diagram 6.34 Enter data

While save file Word displays a message that no record is in file. Do you want to add records? To enter records so select Edit the Data Source and start entering records. As our example, enter records of student one after another. Click Add New Record button as first student records entered then enter second record, third and so on. At last click Ok button.

By applying this process Main Document and Data Source can be create and records can be enter.

2. Decide the place where records to insert

Once we created the Data Source and decided what fields to be used. Now we have to decide the place where we put these records in Main Document file.

Word shows Merge Tool Bar on the screen of Main Document. One of the options is Insert Merge Field, click this it displays the list of Fields from Data Source. Move cursor where you want to insert field in the Main Document select from the list which shown by Insert Merge Field. By this way, we can insert field as required. Fields are enclosed in symbols << >>. After merging once we print the file, we get actual values of the field. In our example, after Dear word name of student appears and in the next line address appears. By this way, we can decide the place of fields in the main document.

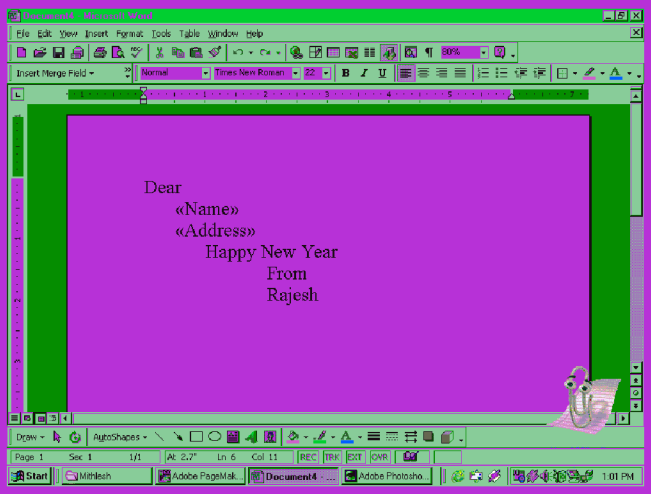


Diagram 6.35 After Merging of File

3. Merge both files

We have created Main Document and Data Source files. How both files merged? After merging where the field value printed and where the content from main document appears. Once we completed the task to merge open Mail Merger Helper dialogue box and selects the last option Merge.

Now Word merges main document and data source and creates a new file, which contains different pages for every student. These file have same sentences as main document only field values are different.

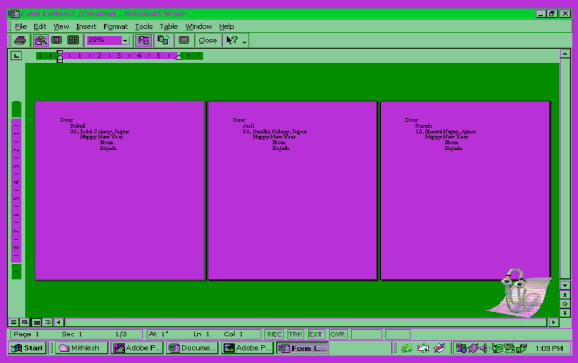


Diagram 6.36 Merge File

By this way, we can merge two files and print the same.

6.3 M.S. POWER POINT

Introduction to Presentation

The presentation of Information is very important issue in current area. Today's necessity in to presenting information. Information must be given in formal and easy way so that recipient can understand easily. One of the programs of Microsoft in completing this task easily. Program which facilities presentation in known as MS Power Point.

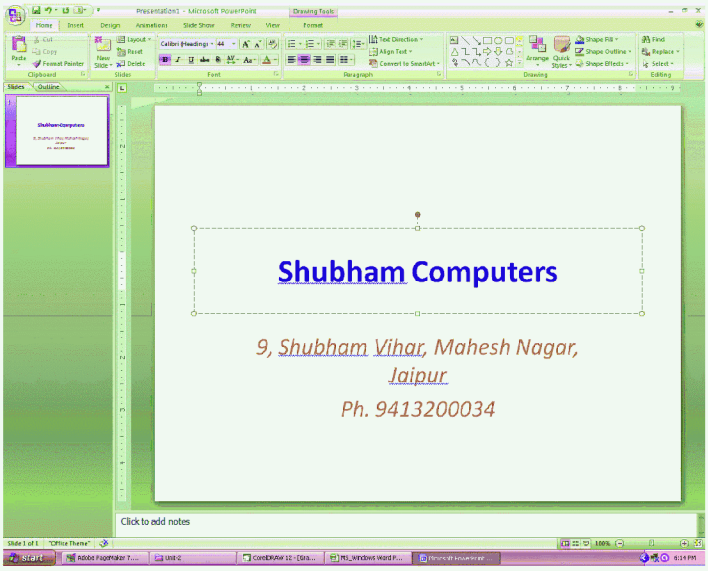


Diagram 6.37 Power Point Slide

Concepts of slide show

Slides: The first option of Power Point in slide, as we click it, complete slide displayed on screen. Titles, Text, Graphs, Drawings, Clipart etc. can be used in slide may be black & white or color. Transparencies can be made by it.

Handouts: Presentation can be simpler with the help of handouts. Before presentation handouts can be given to audience. It can contain prints of more than a slide in a single page.

Speaker Notes: With the help of this notes can be prepared for speaker. Each page contains are slide and notes are written for speaker.

Out lines: While preparing presentation one option is outline. Using this option only title and main text is displayed.

Basic Elements of Slides

User has to prepare slides for presentation. User have to present title, contents and figures, slide is made of these.

Firstly title and then content be given in slide. Contents must be given precisely.

Different type of slider layouts: Slides can be prepared differently for the different type of presentation. some of the slides contains only text where as in some slide contains text and Contents. Some times chart, Clip arts, Media Clips, Tables or organization chart to be shown. While preparing slides keep all these in mind and accordingly choose the layouts, mainly four types of slide layouts:

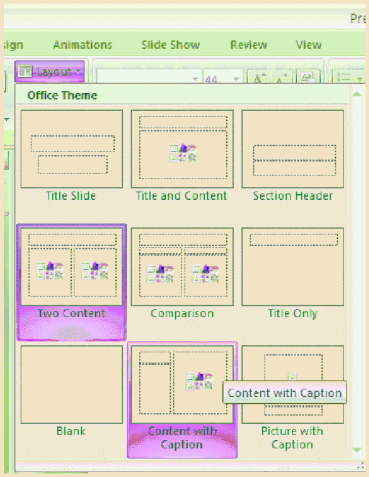


Diagram 6.38 Slide Layout

Text Layouts: If only text based slider to be prepared them choose text layout option. Text layout has other option like Title Slide, Title only, Title and Text and Title and 2 columns. Text layout can be select as per our requirements.

Content Layouts: This is an very important layout where we can use stored information. In presentation several time, we have to use table, chart, Clipart, Pictures, Diagram, Organizational Chart and Media Clips. There are prepared and can be used in per requirements, It contain other options also:

1. Blank
2. Content
3. Title and content
4. Title and 2 content
5. Title, Content and 2 content

Text and Content Layout: While preparing the slides several times we have to use content with text. For this purpose text and content layouts to be used. Variety of layouts is available in this, which can be used as per the requirement. Different layouts available are:

1. Title, text and content
2. Title, content and text
3. Title, content and 2 content
4. Title and text over content
5. Title and content over text
6. Title and 2 content over text

Other Layouts: Different kind of layouts is available where clip art, chart, media clip, table, diagram and organizational chart can be used in different manner. The available layouts are :

1. Title, text and clip arts
2. Title, clip art and text
3. Title, text and chart
4. Title, chart and text
5. Title, text and media
6. Title, media and texts
7. Title and table
8. Title, diagram and organization chart
9. Title chart

Creating and saving & Presentation

Presentation can be prepared by three ways :

1. Blank Presentation
2. From Design Template
3. Auto content wizard

Auto Content wizard: Firstly, are get information about auto content wizard. This is the simplest way to prepare presentation. You can start by working with the Auto Content wizard, by click this option available in new option. After clicking Auto Content Wizard, startup window appears on screen where next button to be click. Select the type of presentation you are going to give to give as per your heads. By click next, screen will ask to choose the type of output i.e. presentation style. We will choose the required presentation style. If on computer presentation is to be given them first option to be chooses by click, next information about presentation title to be give. Last option displays on screen by click Next button. As we click Finish button Auto Content Wizard prepares presentation. In the presentation we can make changes as our requirements.

From Design Template: Power Point contains many presentation styles on different subjects. If we want to make presentation accordingly then select presentation style among given one. As we select the presentation style it appears on screen. We can change the matter as our need for that wherever we have to make changes just click mouse. After clicking mouse Text Mode will appear where we can make necessary changes.

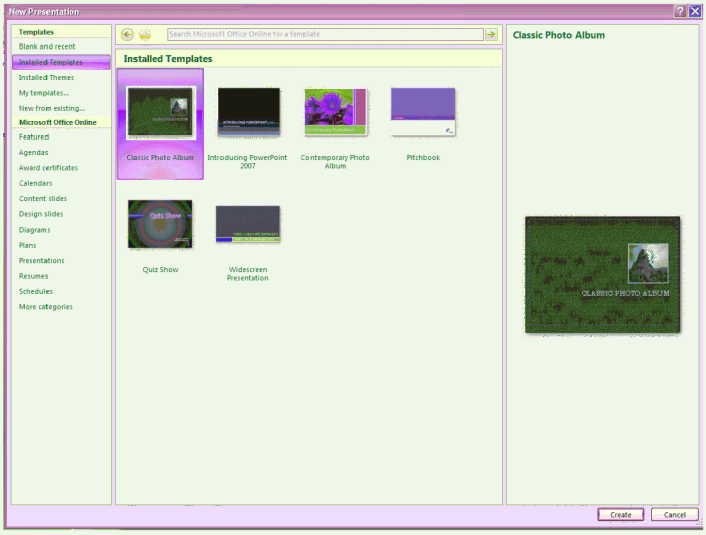


Diagram 6.39 Template View

We can make new slides in the presentation which were made by Templates, for that select New Slide option. As we select this option different slide layouts appears which discussed earlier. We select either of layouts as our convenient.

Blank Presentation: This is not necessary that we depend upon wizard. or predefined presentation. Without using wizard and template we can prepare presentation. For that we select Blank Presentation option. As we select this option different kind of slide layouts appears, one of them to be select as our need. If we select first option then Blank

Slide appears on screen which contains two boxes namely, Title and Subtitle. By the same manner we can make presentation by select slide layout as per convenient.

Saving a Presentation: After creating presentation we have to select it, so that later on it can be used any time. To save click Save option available on File menu. After click Save a window appears on screen where we have to provide Name of Presentation.

Different Views of Slide

Slide Sorter: With the help of it entire presentation displayed as miniature in order. It displays miniature version of slide complete with text and graphics. In slide sorter view we can reorder slides, add transition and animation effects. By this we can set the timing for each slide.

Note Page: This presentation is used for speaker's notes. In this view for each slide one page is displayed. Slide is displayed on this page and at bottom blank space is there, in this space we can prepare notes for speaker. At the time of slide show what speaker have to speak and in what reference is written briefly written here.

In speaker's note all the figures are given which is difficult to remember for the ease of speaker. By this speaker can present correct figure as well as necessary topics can't be left during presentation.

Slide Show: This option is used for slide show and to set the slide show. As this option select one dialogue box Show appears on screen. In this dialogue box we define how many slides to be used. If we select All option means all slide to be used in show. Click From and then type slide number which is first one in the text box then in text box which is for To type the slide number which will be the last one. Below this Advance option is there which decides how next slide come after first. In this three options are there - Manual Advance, Use Slide Timings and Rehearse New Timing. If we use Manual Advance option for slide show will move in back. Means if we are on fifth slide and here if we click right button then we will be on fourth slide. In the same manner it will work for Build. If we don't want to use mouse then space bar, right arrow key, down arrow key, page down key is used as left button of mouse and back space key, left arrow key, up arrow key, page up key can be use as right button of mouse. Use slide timings option is to be used once we have set timings for each slide. By using this option we can see the slide show, power point automatically skip slides and build according to Set Timings.

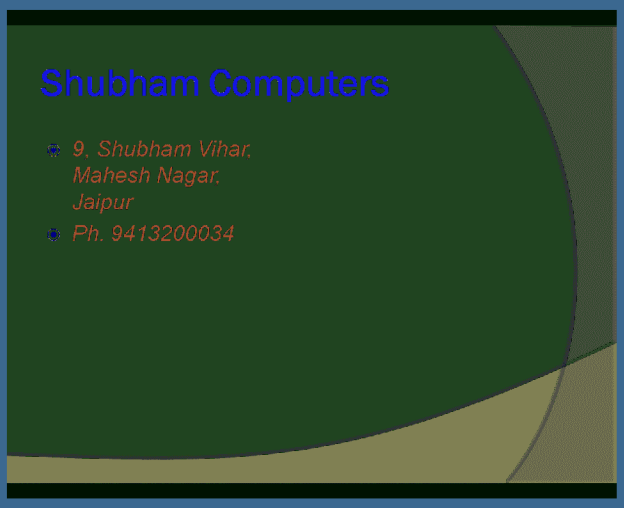


Diagram 6.40 Slide Show

Rehearse New Timing option gives a clock at left hand side on bottom side. As slide appears on screen clock starts. Now show can be forward manually. Manually we have to fix the time for slide and builds. As new slide appears again clock starts means it works like stop watch and fix the time for each slide.

Now if we starts slide show using option 'Use Slide Timings' then show will start by new timings. One option 'Run Continuously Until Esc' appears at bottom in this dialogue box. It mean slide show remain continuous until 'Esc' key is pressed.

Editing and Formatting

Slide can be change as the requirement of user. Similarly format of slide can be change as the need of user. For these tasks we have to read Edit and Format menu. They are explained below.

Edit Menu: This menu contains general option related to editing in Power Point presentation.

Undo: This option is used to undo the immediate previous task. Some tasks are there which cannot be undo at this time instead of undo can't undo appears in Edit menu. This option can be used by Ctrl+Z keys or Alt +Backspace keys. Once we undo the any task and again use undo then previous task appears.

Cut: This option use to cut selected part from slide and to copy at clip board of windows.

Copy: This option is used to paste from windows clip board to slide.

Clear: This option use to remove selected part from slide. This option can be use by Del Key.

Select All: This option means select entire content. By the use of option entire slide can be select in slide view or entire text from marked text box can be select.

Duplicate: This option is use to make a copy of selected objects for changes. The second copy can be put on desire place by mouse pointer. This option not copy on windows clipboard. If no object is selected then this option is not activated.

Delete Slide: This option is used to delete a slide which appears on screen by Slide View option.

Find: This option uses to search either word or group of words in the presentation..

Replace: This option is used to replace word or group words with other word or group words. Replace dialogue box appear once we use this option.

Link: This option uses to make changes in characteristics of the link object in the presentation. Link dialogue box appears once we opt this option. List and types of all the objects appears which used in our presentation.

One dialogue box appears on screen once change source button clicked. We can select file for that object from dialogue box and then press Ok button by this object will be linked by that file.

By click Break line the relation of object will be removed from source program and it is available on free object in our presentation. Power Point gives a warning message that if we removes link than object converted as picture and we cannot undo the task. Now by pressing Ok we can remove the link of that object from its source application program.

Object: User uses this option once a object from other application program used in the presentation. This option is use to edit the object in its source application program and if possible format can be changed.

Format Menu: This menu contains many options.

Fonts: Font, Font Size, Font Style, Font Color can be decided by this menu. This option can be used before or after typing the text. Text to be selected if changes are to be make after typing. Different types of fonts are available that can be choose as the requirement. Font Style list also appears, which contain Regular, Bold,Italic or Bold Italic options. Among these we can choose the style as we want to show our text. We can choose the size of font dialogue box. Underline, shadow, Emboss, superscript and Subscript. If text to be displayed a shadowed then Shadow option to be chooses. If some text appearance as embossed then embossed option to be opt. Selection of color is possible as desired.

Bullet: If text to be appeared a bullet then this option is to be used. Bullet can be representing by different figure. We can use either of figures as bullet.

Alignment: Text to be aligns in different ways. This option contains four sub option - left, right, center and justify. We can select as our requirement.

Line Spacing: Option is available to decide spacing between line or paragraph. We can increase or decrease the spacing between lines. Similarly distance between on paragraph and other paragraph can be increase or decrease.

Change Case: While preparing presentation we type the text. At the time of typing case error may be there for example we want all letter in upper case but by mistake we typed in small case. In this situation instead of deleting and typing again we can use the Change Case option. This option contains five sub options, which can be used as our requirements. These options are - Sentence Case, Lower Case, Upper Case, Title Case and Toggle Case.

Replace Fonts: If we want to replace one font to another in presentation then this option is to be use. One dialogue box appears on screen by using this option. It has two boxes first is known as Replace means the fonts which is to be replaced. Select here by pull down arrow. After that we choose the font which we require using Pull Down Arrow from box represented by with. By this way in entire presentation wherever font which is written in Replace founds will be replaced by font which is written in with.

Slide Design: The design of slide can be charged by this option. As we studied earlier, design templates appears on screen which can be select as per requirement.

Slide Layout: By this option the current layout of slide can be changed. The pictorial list of layouts appears on screen as we select this option, from where one layout can be choose as desired.

Slide Background: The background color of either one or all slides can be changed by this option. The one important option is fill effects. By this different type of effects can be provided. These effects are : Gradients, Texture, Pattern and Picture.

Header & Footer: At the time of preparing the presentation user wants to give information in Header(at the top of page) and Footer(at the bottom of Page), for example - The name of company for which presentation belongs to be displayed at header whereas some text, slide number,date & time at footer. For that we have to select header and footer option in View Menu and provide information accordingly. The same header & footer can be given.

File Menu: In this menu options are available to make a new presentation, Open existing presentation, Close the existing presentation, Save Presentation after editing, Page Setup, Print and Exit from Power Point.

New: To make a new presentation this option is uses. The same task can be done by click open option available on Standard tool Bar.

Open: This option is used to open an existing presentation. On using this option Open dialogue box appears on screen. Where selecting drive and directory required file can be open. The extension of presentation file is .ppt.

Close: This option is used to close current presentation. If more then one presentation are open then current one will be closed and the last become current one.

Save: Similar to all programs of MS Office this option is use to save in the memory safely the changes made in the working presentation. If we uses this option first time for any file which is not saved earlier then effect of this option we discuss in the next option.

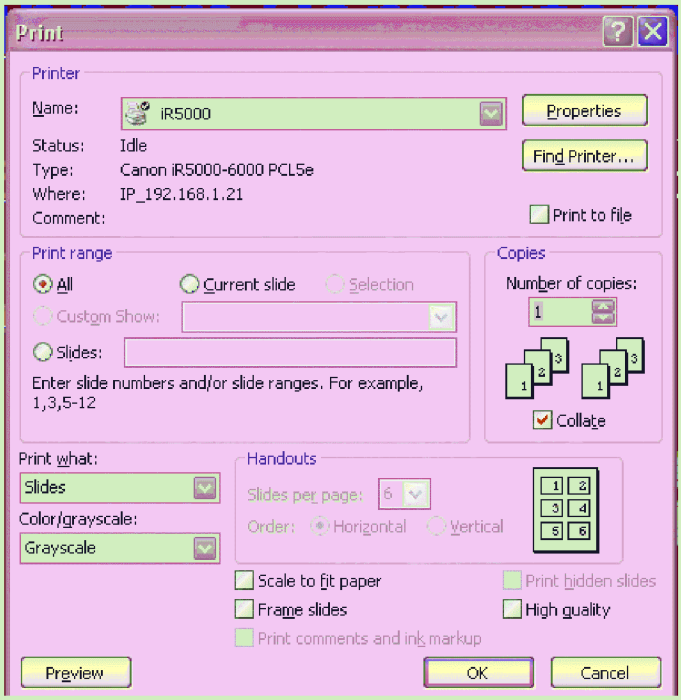


Diagram 6.41 Print Layout

Save As: This option can be use to save an existing presentation by any other name. One dialogue box appears as we click this option user has to type the file name in the text box near to File name, directory and drive can be selected where to save. A new presentation saves in the same manner if we click Save option.

Print: To print the slides of an existing presentation this option is used. Print dialogue box appears on screen as we click this option. Form this presentation what we want to print this is to be select from list from box near to Print What by click Pull Down Arrow. How many copies we require can be decide from the box near to Copies. Slide Range part decides how many slides to be print from our presentation. If we choose All option then all slide will be printed, if we select current slide then current slide will be printed and if we select Slides option then range given in the text box near to it is printed. In this

dialogue box at bottom six check boxes are given, what are the functions of them is given below:

Print to File	By selecting this check box instead of printing the presentation we can obtain in the form of file.
Print Hidden	Slides By selecting this check box we can have print of hidden slides which hidden by Hide option from tool menu.
Black & White	By selecting this check box we get black and white print of the slides which filled by color.
Collate Copies	By click this check box, if we want to print more than one copies then first it prints complete presentations then print next copy.
Scale to Fit Paper	By click this check box, it prints presentation according to size of paper sets in the Printer Setup.
Pure Black & White	The difference between this and Black & White check box is that it prints pictures into grayscale.

List of installed printers in computer can be display by click Printer pushbutton in the print dialogue box . We can select the required printer from this list.

Exit: By click this option user can come out from the M.S. Power Point. If we have not saved the changes made in open presentation then it asks for save. If want to save click Yes button otherwise No button. Save process save the file which is similar to save option of this menu or by select no we can come out from Power Point.

Insert Menu

This menu contains the options to add new slide, add slide from other files or to add other object.

New Slide: This option is use to add new slides. This can be done by click the New Slide option available on Status Bar.

By click this option a dialogue box appears on the screen. This dialogue box contains various Auto Layouts. One layout among Auto Layouts can be fixed for slide. Once user selects layout from auto Layouts then information about the format of that layout shows below the Help Button.

Date: This option can be used on the Master page only. This option is used to displays the current date on the main slide during the show.

Time: This option is used similar to above option date on master page during the slide

show. The difference between above option and this option is that / / is displayed in text box for Date whereas for Time it shows :

Page Number: This option uses to display the page number on main page during slide show. If after insert Date, Time or Page Number we insert one of these options then it comes in the same text box after present insert.

Slides from File: This option uses to insert slides from the other file into current presentation. Insert File dialogue box appears on screen as we use this option. This dialogue box is similar to dialogue box appears on use of Open option. From this dialogue box we insert slides from desired presentation file into current presentation by click mouse pointer two times or click Ok.

Slides from Outlines: This option uses to insert the layout of other presentation in the current presentation. Insert Outlines dialogue box appears after using this option. This option is used as above option.

Clip Art: This option uses to insert the any clip art from the clip art gallery in current presentation. By using this option Clip art gallery dialogue box appears. Required clip art can choose by click mouse pointer twice in the current presentation. Two button displays in the bottom part of this dialogue box. First button shows the category of selected clip art and second button shows the title of clip art. Edit Picture Information dialogue box appears as we click these option button. From this dialogue box we can change category and description of selected clip art.

Insert Picture: This option uses to insert a picture format file in the current presentation. Insert dialogue box appears after using this option. In this dialogue box we select the required picture then click Ok, then picture inserted in the current presentation.

Microsoft Word Table: This option uses to insert the Microsoft Word Table in current presentation. Insert Word Table dialogue box appears on screen as we use this option. In this dialogue box number of columns to be enter in the box below the Number of columns and number of rows to be entering box below the Number of Rows. After deciding the number of columns and rows as we click Ok button table inserted in the slide of current presentation. Now one menu Table added in the Power Point. The option given in this menu can be use similar to MS word to format the table. That you studied earlier.

Object: This option uses to insert any object from any other application program. Insert Object dialogue box appears as we use this option. This dialogue box shows list of various application programs below the Object Type part. We can insert an object of an application program from the list of the program from which a object to be inserted in the current presentation. This dialogue box contains two options Create New and Create from file. From Create New option we can create a new object by invoking that application

program. To return back in presentation press Alt + F4 keys. From Create from File option we can use required file as an object. We have to provide the information about file name and where it stored. In this to establish the relation between source file of object and application select the Link Check box.

View Menu: This menu contains the option to arrange the view as desired.

Slide: This type of view displays only one slide from the presentation. Editing can be made here means we can type text, change the layout of slide, add graphics in slide and create different art etc.

Master: Sub Menu appears on screen as we use this option. This sub menu contains four options- Slide Master, Outline Master, Handout Master and Note Master. As we use Slide Master, formatted Placeholder for title and textbox along with all background items which we want to present in the presentation displays on screen. If we want to make some change in the Master Slide then it affects all the slides. In this Master title(Tile area for Auto Layouts) part is used similar to Formatted Placeholder for slide text. Here we decide the Font, Font Size, Font Color, Alignment of Title etc. for slide text. Similarly user sets the Master page for outline view in Outline Master. We can decide the format of handout in Handout Master and Speaker's Notes in Note Master.

Animation

To make more effective presentation various animation effects can be provide for scenes and texts in the presentation By Animation option we can give various animation effect to text, clipart and picture etc. Slide show menu contains two options - Animation Scheme and Custom Animation.

Animating Pictures and Text: Presentation can be more effective by giving the animation effect to text and picture used in the presentation. Many types of effect can use to make presentation more effective. In slide show menu contain sub option Animation Scheme, Custom Animation and Slide Transition.

One list of different animation effects displays on screen as we select animation scheme. User can select either of them as need.

User can provide animation effect as required to text and picture to make presentation more effective using Custom Animation option.

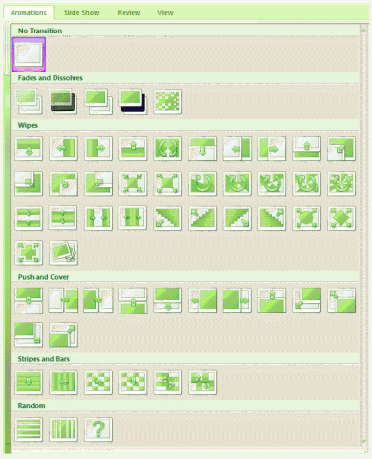


Diagram 6.42 Animation Effect

For each slide time is to decide according to audience. How long slide remains on screen, it is very important. It should not happen to recipient that he is unable to read that slide which is made for him. For each slide time can decide. User can fix the time for every slide using Rehearse Timing. One dialogue box appears on screen while fixing the time from this option. To start timing press Play button after some seconds or minute we press Stop button. Timer runs here. By this way we can fix the total time for the presentation. If equal time to be given to each slide, this is also possible.

Ungrouping and Grouping Picture from Clipart: With the help of Insert option we insert many pictures and clip arts in slide. If we want to move them here and there then before move all objects to be select with Shift key and then click right button of mouse to make the group of objects. If we don't want to keep as group we can ungroup option.

Important Points

1 **Word Processor:** Word processor is the program or software, which processes the words or text. File can be created wit Word Processor. Can change size of letters, color, style. Can insert header, footer, symbol, figure etc.

2 **To make New File:** File-New or Ctrl+N

3 **To save file:** File-Save or Ctrl+S

4 **To change style of letters:** Bold, Underline and Italic tool

5 **To Align lines:** by tools available on Format Tool

6 **Paragraph Formatting:** Selects the paragraph then Format-Paragraph

7 **Header and Footer:** Text, which appears on top of every page of file is known as header and at bottom is called as footer. We can insert page number, date etc.

8 **To insert Header & Footer:** View Menu – Header and Footer

9 **Check spelling and grammar:** Microsoft Word puts red line below the misspelled word. If grammatical error then puts green underline.

10 **Correct spelling and grammar:** Click right button of mouse on the word/sentence, which is misspelled or grammatical error, is there.

11 **Subscript and Superscript:** if letter written above line then superscript and below line then known as subscript.

12 **Change into Superscript/subscript:** Select the text then Format Menu- Font.

13 **To insert symbol:** Insert Menu – Symbol.

14 **View File before Printing:** File – Print Preview

15 **Print File:** File = Print or Ctrl+P

16 **ClipArt:** To insert figures made in windows. Insert Menu – Picture.

17 **Page Setting:** To fix the size of page, orientation, margin, header etc.

18 **For Page Setting:** File – Page Setup

19 **Bullet or Number:** Numbers or special symbols before points called numbers and bullets respectively.

20 **Insert Bullet or Number:** Format Menu – Bullet and Number

21 **Border and Shading:** To make line around the selected paragraph and fill the background color.

22 **Searching word:** Edit – Find

23 **Replacing word:** Edit – Replace

24 **Insert Table:** Insert – Table

25 **Mail Merge:** To merge two files is known as merging. One file contains records, which inserted in Main document file. The file contain records is known as Data Source.

26 The presentation of Information is very important issue in current era. Today's necessity in to presenting information

27 Slides, Handouts, Speaker's Notes and Outline can be prepared with the help of Power Point.

28 Presentation can be prepared by three types - Blank Presentation, Using Templates, Auto Content Wizard.

29 Power Point contains many presentation styles on different subjects.

30 With the help of it entire presentation displayed as miniature in order.

31 This option uses to insert the any clip art from the clip art gallery in current presentation.

32 To make more effective presentation various animation effects can be provide for scenes and texts in the presentation.

Exercises

Multiple choice questions

1. Following is the word processor

(a) Microsoft Word (b) Word Star

(c) Word Perfect (d) All of the above

2. In word processor we can

(a) Size of letters can increases and decrease

(b) Insert header and footer in page

(c) Check spelling

(d) All of the above

3. Ruler uses for

(a) To bold letters (b) To fix the margin of page

(c) To scroll page up and down

(d) All of the above

4. Place for header is

(a) Between page (b) on top of page

(c) at bottom of page (d) none of the above

5. Orientation of page may be

(a) Portrait (b) Landscape

(c) Both a and b (d) None of the above

6. For Pictorial Presentation useful

(a) Access (b) Excel

(c) Power Point (d) All of the above

7. Mainly Slide layout of ..... types

(a) 4 (b) 8

(c) 11 (d) 9

8. To create presentation form the prepared presentation

(a) Blank Presentation (b) Template

(c) both (a) and (b) (d) None of the above

9. To display the miniature of the presentation command is

(a) Slide Sorter (b) Template

(c) Slide Show (d) Wizard

10. Delete slide option available at

(a) in file menu (b) in format menu

(c) in edit menu (d) All of the above

Short type questions

1. Define word processor.
2. What is the shortcut key to save file in Microsoft Word?
3. What is superscript and subscript?
4. What is header and footer?
5. What is the use of Print Preview?
6. What is slide?
7. What types of slide layout?
8. Define the rehearse timing.
9. How can insert diagram in slide?

Essay type questions

1. What you understand by Word Processor? What are the facilities available in general word processor?
2. Discuss the method to insert header and footer.
3. Explain the method to print a page.
4. Explain the method to create table.
5. Write Short Notes on following:

   (a) Bullet and Number

   (b) Text Style

   (c) Facility to check spelling and grammar
6. What you understand by Mail Merge? Explain the method of Mail Merge.
7. What is presentation? Explain utility of presentation?
8. Explain the procedure to develop presentation for Auto Content Wizard.
9. Differentiate Title, Sub Title and Text and Explain how can use new slide in presentation with change colors?
10. Explain the animation? How can useful animation in presentation and how the effects can be inserted in slides.

Chapter-7

Applications of ICT

Information and Communication Technology

Information and Communication Technology (ICT) has brought a tremendous revolution in our lives. With the support of Information Communication technology we are proceeding towards economic prosperity. E-commerce in the form of electronic commerce, sending mail through e-mail are made possible with ICT. Information Communication Technology is growing through E-governance related to online government work, bank transactions by E-banking, E-education for online educational contents etc. New entrances of development are open due to multi-dimensional uses of Information Communication Technology.

In India, the field of Information Communication Technology is growing rapidly. In this field the pace of development has been speed up by research on its uses. Under the ICT exchange of information, data and knowledge has been spread out in every field of human life. The effect of information technology has clearly visible on our economic, political, social, cultural, educational, professional and many more fields. There are continuous experiments in this area with the help of electronic and digital apparatus. In this period of economic liberalism, the concept of global village has succeeded because of the information communication technology.

In this new era electronic media like E-commerce, E-medicine, E-education, E-governance, E-banking, E-shopping etc. are developing. Today Information Communication Technology has become symbol of power and development. Everyone needs to be meaning fully benefitted by this knowledge of science and technology.

Uses of Information Communication Technology

E-governance

E-governance is also known as E-government, Digital Government, On-line Government or Connected Government. The process of boosting of access and delivery of government services for benefit of common citizens, businessmen, and employees with the uses of technology, is known as E-governance.

E-governance is a form of E-business in government, in which process of delivery of E-services and its structure are vested. E-government incorporates the facility of accessing of desired services by interaction with government through electronic media.

The ultimate goal of E-governance is to encourage the participation of general public in governance through e-mail and internet and to make the governance simple, easy and convenient. E-governance indicates e-democracy, where all the interactions between general public and government are done in electronic form. E-governance uses innovative techniques of computer and communication technology – like internet for providing quality and value-based services to the public.

The main purpose of e-governance is to provide better facilities to the public by government through Single Point Delivery System.

The main services provided by e-governance –

E-citizen: Under this the government provides facility of issuing birth and death certificate to citizens, issuing ration cards and passport, depositing the water, electricity and mobile bills and depositing tax through Integrated Services Centers.

E-transport : Under this government provides the facility of motor vehicle registration, issuing driving license, depositing tax and fees etc. to citizens.

E-medicine : Under this government provides the better health services to citizens by establishing network of hospitals situated in different parts of country.

E-education : Providing educational facilities by radio, television etc. to citizens of different parts of country especially on distant places.

E-registration : Under this government provides the facility of registration of properties and depositing stamp duty.

E-secretariat : Establishing network between various government secretariat and government departments whereby governance process becomes easy due to exchange of information between various components of government.

E-police : Under e-police two types of databases are prepared. In first type of database information about police officers are kept, whereby at the time of necessity any person in any geographical area having any expertise in any skill can be searched out easily. The information about criminals, information regarding crimes done by them previously, ways to commit crimes and information about their identification marks etc. are kept in other type of database, whereby all the available information about criminals from any corner of country can be accessed easily, whenever it required.

Besides database e-police provides facility of entering online First Information Report (FIR) and knowing its status online.

E-court : Under this database of all the cases and appeals are prepared and make it available on internet. By this type of arrangement appeals to the High Courts and Supreme Court can be avoided, because by this judges of High Courts and Supreme Court can pronounce judgements on the basis of facts entered in district or session courts, which are available on internet. Besides this it provides the facility of entering the facts about cases and online verification of finger printing, scanning etc.

E-democracy : E-democracy is a concept of e-governance, which endeavors the citizens to change their role from informer to partner in governance.

Advantages of E-governance

E-governance has following advantages –

- It provides the opportunity of improving the quality of services provided to all citizens.
- It simplifies the facility of providing services to citizens.
- It deletes the various layers of government management.
- Make it easy to accessing information for citizens, entrepreneurs and low cadre government employees.
- Provides services to citizens and entrepreneurs within short term (few minutes or seconds) in spite of several days or weeks.
- Makes the enterprise process of government body transparent, simple and value seeker.
- Makes the internal and external processes rapid responsive to the citizens according to their needs.
- Provides capacity of executing jobs easily and skillfully to government employees.
- It ensures the participation of citizens in governance by knowing their opinions through online services.
- Makes the administration free from bribery and mediators.

In this age of information communication technology Government of India and Government of Rajasthan have, time to time, expressed their commitments of providing skilled, transparent and responsible administration to the citizens at every level of governance and are constantly trying to redefine the governance as e-governance.

Digital India Programme

'Digital India' is a new initiative of Government of India, whose purpose is to change the India digitally strong socially, economically and by knowledge.

Digital India is a comprehensive programme which covers several government ministries and departments. It incorporates different ideas and concepts in a solo and extensive vision, so that each of these ideas could be seen as part of a larger goal. Digital India programme is coordinated by the Department of Electronics and Information Technology. However, this has to be done by the entire government.

Digital India vision is centralized on three main aspects. These are – (1) A digital infrastructure for every citizen based on utility, (2) On-demand operation and (3) Digital empowerment of services and citizens.

Utility of Programme

Digital infrastructure has these facilities for every citizen – A high speed internet connection as a main utility for accessing services; such a unique, on-line and certifier for every citizen origin place,which marks the digital identification; such a facility of mobile phone and bank account by which citizens can share digital and financial matters; Easy access to shared service centers; shareable private space on public cloud and safe cyber-space.

It is the right of all the citizens that all the services related to all the departments and courts are available on-line or on mobile app at every time. Other services – Ease up in business through digitally changed services, electronic and caseless financial transactions, decision support system and taking advantage of radio for development.

Making digitally empowered to citizens along with universal digital literacy, availability of everywhere easy digital resources, and availability of digital resources services in Indian languages, making all the rights of digital platforms and portability collaborative through cloud for good governance. Citizens could be able to fill their government documents or certificates without their presence.

Plans of Digital India Programme

There are nine pillars included in Digital India Programme –

1. Broadband High-way
2. Universal access for mobile connectivity
3. Public Internet Access Programme
4. Improvement in government through e-governance technique
5. Providing e-kranti services in electronic form
6. Information for all
7. Electronic production
8. IT for services
9. Fast yield Programme

These are all mixed programmes, which are connected to all ministries and departments.

Under the Digital India Programme we have to work out with several existing plans, whose expansions have been reorganized and recentralized. To promote cloud and mobile technology, to concentrate on transformative process reconstruction and improvement in processes. This programme is based on standards of intra-operative enterprise and integrated service delivery, which will be implemented in a synchronous way. The purpose of Digital India is also to promote production of electronic devices and portfolios of producers and services and to increase the possibility of employment for youth in country.

E-Mitra

E-mitra is an e-governance plan created by Rajasthan Government to take advantages of various government schemes on-line and off-line in all the districts. Now there is no need of visiting again and again government offices, colleges or schools for obtaining birth-death, marriage, caste certificates; applying for government services; obtaining new water and electricity connections and depositing fees. These all facilities are now available on e-mitra kiosk and e-mitra mobile app. State government has connected 105 services, related to various departments, to the e-mitra portal. To use these services any citizen can go to e-mitra kiosk and can apply for obtaining the service or these services can be used by downloading the e-mitra mobile app.

E-mitra do not provide only the facility of depositing water and electricity bills,

they are providing several dozen of similar services. There are ten types of certificates including birth-death certificate, caste certificate, minority certificate, handicapped certificate, duplicate registration certificate, police clearing certificate etc. Besides these for issue of learning license and new driving license or duplicate driving license; renewal of driving license, driving license of new category and for international driving permit can be applied on e-mitra.

There are so many services including domicile certificate, medical reimbursement of pensioners, police verification, verification of domestic servants, verification of tenants, depositing monthly instalments of housing board, plans of social welfare department and duplicate registration certificate (RC) are available on e-mitra.

There are application forms for several schemes, including social welfare department, revenue, discom, and agriculture, are available on e-mitra. At e-mitra can also be applied for new water-electricity connection, Indira Aavas Yojana, work allotment in MNREGA, amendment in voter ID.

E-Commerce

The meaning of e-commerce or electronic commerce is trading through internet. E-commerce indicates, that wide range on-line trading functions, in which products and services are purchased and sold. E-commerce is related to all those commercial activities, in which two or more than two parties (Businessman or customer) interact each other with electronic media in spite of physical contact or physical exchange. E-trading, E-banking, E-shopping etc. are also part of e-commerce.

Due to infestation of global economy e-commerce or e-trade is making components of trade strategies and acting as catalyst in economic development. The use of information communication technology (ICT) in trade has brought revolutionary changes between trade organizations and between trade organization and an individual. The use of ICT in trade has increased the production capacity and customer participation while decreased the cost of product. The ICT based commerce has given new heights to constantly changing commercial environment, whereby the definition of electronic commerce has become more extensive. The comprehensive definition of electronic commerce is as below –

The E-commerce is called the origin of trade activities between trade organizations and between trade organization and an individual; and the use of electronic communication media and digital information processing techniques.

Under the e-commerce customer selects the desired product on the website of commercial concern, which manufactures and sells the product. The customer has to

make the payment of product through credit card, debit card or internet banking. For this, there is facility on seller's website, where customer provides the number of his credit card or debit card and other information. Seller makes the on-line verification of these information and determines the deal. Seller sends the item on the address told by buyer through currier or transport. The payment amount is transferred from buyer's account to seller's account.

Advantages of E-Commerce

Following are the main advantages of the e-commerce –

- Buyer can compare the specifications and rates of goods/services before selecting them by visiting the websites of different sellers or service providers. Whereby all the information about items to be purchased and many options for their selection become available to the buyer.

- From e-commerce the chain of mediators between producers and buyers becomes smaller and it reduces marketing cost. Whereby the manufactures provide the opportunity to buyers of purchasing goods/items comparatively on lesser rates.

- In e-commerce the exchange of business information is carried on-line by internet, which reduces the cost and time of exchange of business information.

- Business through e-commerce does not require expensive show rooms, commission agents and sales men. Consequently the marketing cost decreases in comparison to traditional business, and marketing becomes convenient, easy and effective.

- In e-commerce the information about products and services are available on website of commercial organization. So any body from any part of the world can get products and services through these websites. In this way a worldwide market is available to traders.

- E-commerce has made transparent the process of obtaining license, other activities pertaining to government and procurement process.

Internet Banking

If we look at history, we will find that the process of making every job/work more accessible, speedy and easy using latest technology is continuing. Now internet banking is no longer a new thing. It has been years of beginning of its use in India and millions of people daily make banking transaction through internet.

What is Internet Banking?

The services provided by any bank from any location, through computer, mobile or any other device through internet are called internet banking. For this, the Bank make website and mobile app and make them available to the customers through internet.

Internet banking is known by several names, such as online banking, mobile banking, net banking, e-banking etc., but all these mean the same. In mobile banking, we complete the bank's work on the mobile phone via internet.

What are the benefits of Internet Banking?

Internet banking gives us the freedom of the hassle of going to the bank branch for almost all of its banking transactions and services. Through this we can do all the banking activities at home or from anywhere –

- Send money from someone else's account to your account - Through internet banking, we can send money immediately to any other person's account. Nowadays, banks are providing many types of new services, in which the person receiving the money does not require to have a bank account, he can only withdraw money from any ATM using his mobile.
- Get information about the balance of your account.
- Check the bank statement of the transactions in your account.
- Open a new FD or other account.
- Mobile recharge.
- Paying electricity, water, dish TV and other bills at home.
- Downloading account statement.
- Order the Cheque Book.
- Online purchasing.
- Demand for any available banking service from the bank or filing a complaint.
- Viewing or making changes to account information.
- Make stock market and other various investment online.
- Booking bus, train and other tickets with internet.

- Making tax and other payments online.
- Filling up the form for online demand draft (DD).
- View the details of loans and other accounts.
- Buying life insurance, auto insurance and other banking services and products online.

How to use Internet Banking?

- You must contact your bank to use internet banking.
- After filling the form for this service in the bank, the bank will issue you 'User ID' and password for Internet Banking.
- After this you will go to your bank's website via internet.
- The link for 'internet banking' will be given on the bank's website, clicking on it will ask you to enter the user id and password.
- For the first time on logins / registrations, most banks ask you to set a new password, here you set a password which is difficult for others to guess, but you can easily remember it.
- After entering the correct user id and password, you will be able to access your bank account through internet and use banking services.

Precautions to be kept during the use of Internet Banking

Nowadays, through fishing by hacking techniques internet fraudsters are hurting the people by hacking their bank accounts, so it is necessary to take very precautions in the use of internet banking.

- Do not tell the password issued to you for internet banking, this password is the key to your bank account.
- Do not write your password anywhere, it increases the likelihood of getting into someone else's hands.
- Always open the internet banking link by visiting the bank's website, do not use internet banking any time with the link received from any other e-mails, SMS etc.

- Do not tell your bank account password, or other secret information when calling any person.
- During the transaction from the bank, you will also be sent a temporary password (OTP - One Time Password), which will be for one time use only. Do not tell it to anyone
- Make 'Log out' after using the internet banking account. Enter your mobile number and e-mail ID in the bank, so that you get the information about all the transactions happening in your account immediately
- Keep your debit card, ATM etc. safe, inform the bank immediately after it is lost.
- At the time of using internet banking in your browser, note that the address bar has become green, the address has https and not only the http and padlock (icon of locks) is visible or not.
- All these are essential for safe transactions. Do not conduct online transactions without them. By clicking on Padlock you can see the security certificate for that website
- Always type the correct address of your bank's website and pay attention to it. Like the State Bank of India's online banking website is https://www.onlinesbi.com/. If you type something else in its place or search for it by a search engine, then you can access any other website which is not related to that bank (like http://ww3.sbionline.com/)
- Avoid either lottery or any reward related e-mail SMS etc. Never reply to them. You can also complaint about them in the institution from whom they claim to receive e-mail.
- Minimize the use of internet cafes and shared computers for internet banking and if you are using a café or shared computer, keep changing your password regularly.
- Keep your computer or laptop with the latest anti-virus, as viruses and other malware can send information about your computer and your internet usage to the hacker.
- If there is any kind of information or suspicion, call the bank's phone number immediately and make an immediate notification.

Considering these things, full and safe benefits of Net Banking facility can be availed.

E-Learning

E-learning is also known as Electronic Learning, Distance Learning, Distance Education, Virtual Learning, On-line Learning, On-line Education and Web based Training. Rendering learning, training or education programs through electronic means is called e-learning. In e-learning, training, educational or learning material is provided by using computer or electronic device.

In E-learning, the subject is rendered by the internet, intranet / extranet, audio and video tape, satellite broadcast, interactive television, CD-ROM etc. Distance education is the basis for the development of e-learning. E-learning can be demanded. It resolve the difficulties of time, attendance and travelling.

Modes of E-Learning

Nowadays there are many ways available for e-learning. An apprentice can use one of these modes or a combination of more than one mode to enhance their knowledge, according to their requirement and convenience. Some of the modes available for e-learning are as follows:

- Purely Online – In this type of e-learning the trainee receives study material by communicating through the computer.
- Synchronous - In Synchronous Learning Trainees and instructors are physically distant, while interacting with each other in real time. Such as listening to live radio broadcasts, watching live television broadcasts, audio / video conferencing, live satellite broadcasts, online lectures etc.
- Asynchronous - Trainees and trainers are physically distant in asynchronous learning, and they do not have interaction in real-time. Such as study materials available on the Internet or CD-ROM, study materials available on audio / video tape, e-mail messages etc.
- Instructor led group
- Self-study
- Self-study with subject matter expert
- Blended E-learning

- Web based e-learning
- Computer based e-learning (CD ROM/DVD)
- E-learning through Video/Audio tape.

Advantages of E-Learning

The main advantages of e-learning are:

- As long as the trainee does not understand the subject matter, he can reconsider it.
- It is interactive and the trainee can get training at the speed of their understanding.
- Training rendering is easy and cost-effective.
- Learning is Environmental Exploratory and Collaborative.
- The trainee can receive training at any time according to his convenience.
- Training material can be accessed through any web browser software available on any platform (e.g. Windows, LINUX, Mac etc.).
- Training material can be cheaply distributed worldwide.
- Training is given on the internet so the travel time and expenses are saved.
- The instructor can easily make changes in the content.
- Access to content can be easily controlled.
- There are many easy options are available to the trainees for paying the training fees.
- Direct access to other training resources is available to the trainee.

Disadvantages of E-Learning

The main drawbacks of e-learning are:

- The trainee should have basic computer information.
- The process of training is limited due to bandwidth and browser.

- Only the limited formatting of content is possible in available browsers nowadays.
- It takes time to download training applications and content.
- The assessment and feedback of the trainee are limited.
- It takes time to prepare training material and the initial cost of preparing it is high.
- Computer knowledge is necessary for preparing the training material.

E-Designing

Development of Information and Communication Technology has provided new dimensions to designing. With the help of various software used in Computer Aided Design - CAD, all types of designs can be prepared in short time and with accurate measurements from architectural design to engineering design. Now in the fashion designing, the utility of information and communication technology has started to be abundant.

Important Points

1. Information Technology today has become a symbol of power and development. Any area of our life is no longer untouched by information technology.
2. E-government incorporates the facility of accessing of desired services by interaction with government through electronic media.
3. The ultimate goal of E-governance is to encourage the participation of general public in governance through e-mail and internet and to make the governance simple, easy and convenient.
4. E-governance uses innovative techniques of computer and communication technology – like internet for providing quality and value-based services to the public.
5. Digital India' is a new initiative of Government of India, whose purpose is to change the India digitally strong socially, economically and by knowledge.
6. Digital India is a comprehensive programme which covers several government ministries and departments. It incorporates different ideas and concepts in a solo and extensive vision, so that each of these ideas could be seen as part of a

larger goal.

7. E-mitra is an e-governance plan created by Rajasthan Government to take advantages of various government schemes on-line and off-line in all the districts.

8. State government has connected 105 services, related to various departments, to the e-mitra portal.

9. E-commerce indicates, that wide range on-line trading functions, in which products and services are purchased and sold.

10. E-trading, E-banking, E-shopping etc. are also part of e-commerce.

11. The use of ICT in trade has increased the production capacity and customer participation while decreased the cost of product.

12. The services provided by any bank from any location, through computer, mobile or any other device through internet are called internet banking.

13. Rendering learning, training or education programs through electronic means is called e-learning.

14. In E-learning, the subject is rendered by the internet, intranet / extranet, audio and video tape, satellite broadcast, interactive television, CD-ROM etc.

15. With the help of various software used in Computer Aided Design - CAD, all types of designs can be prepared in short time and with accurate measurements from architectural design to engineering design.

Exercises

Multiple choice questions

1. The service available by E-governance is:

   (a) E-citizen (b) E-transport

   (c) E-education (d) D. All of the above

2. The program initiated for providing digital services to all citizens of country.

   (a) E-governance (b) Digital Bharat

(c) E-banking (d) E-café

3. In which scheme facilities related to different departments become available on a same place?

(a) Digital Bharat (b) E-commerce

(c) E-mitra (d) E-suvidha

4. It makes the chain of mediators smaller between manufacturer and buyers.

(a) E-governance (b) E-police

(c) E-democracy (d) E-commerce

5. Which resource is not used in e-learning?

(a) Video Conferencing (b) Books

(c) Digital Study Matter (d) None of the above

Very Short Type Questions

1. What is the process of promoting access and execution of government services through ICT?

2. What is the name of the scheme launched to empower India with digital content?

3 Name the center where facilities related to different departments become available at one place.

4 What does it mean to make a purchase through the Internet?

5 What is the temporary password received from the bank during internet banking?

Short Type Questions

1. What is a single point rendering mechanism?

2. What services are provided under e-Transport?

3. What is the purpose of e-police?

4. What do you explain by digital empowerment?

5. Define e-commerce.

6. What is internet banking?

7. Why should not Internet banking be used in cyber cafe?

8. What does the correct online learning mean?

9. Name the tools used in e-learning.

10. What is Asynchronous Learning?

Essay Type Questions

1. What is E-Learning? Explain the advantages and disadvantages of e-learning.

2. What precautions must be maintained at the time of internet banking?

3. Describe the benefits and risks of internet banking.

4. What is e-commerce? Explain its benefits.

5. In the traditional way, which would you prefer in governance and e-governance? Answer with an astrike.

Chapter- 8

Social Impacts of ICT

Information and communication technology has made the whole earth a village. It has given birth to a global economy by adding different economies of the world. All activities of society have been affected by the information revolution – religion, education (e-learning), health (e-health), trade (e-commerce), administration (e-governance), industry, research and development, organization, advertisement etc. all sectors have been transformed. Today's society has started to call information society.

The effect of the information revolution can be seen clearly on our society. ICT has made our society active and aware. The way we do our work today has changed. Through internet today we have been connected by e-mail, audio-video chatting, video conferencing etc. Today we are paying bills for water, electricity, telephone etc. seating at home. While sitting at home, we are buying the goods and are doing reservation in bus, train, aero plane etc. ICT has provided many opportunities of employment to every section of the society. In this chapter we will study the social impact of ICT.

Secrecy

It can also be called privacy. Privacy or secrecy refers to the right to use the data only by the authorized person. Any person can be authorized to read or change the data. If a person has been authorized to read data only, then he cannot make any changes to the data.

Authentication

Authentication means that before you provide any information about yourself or the business deal with the person you are contacting, get all the necessary information related to it. Prior to authorizing it, it is necessary that you find out the truth about the identity of that person by a source. This is the way to protect the security. Using this method, the operating system can detect the person being the authorized user.

Because the person is difficult to identify physically, therefore the authenticity of

the person is revealed by the operating system password. The user is expected to provide such information, which is known only to the user and the operating system. The operating system assumes that the person who gives the specific information is the real user.

Integrity

Integrity means that whatever the data reaches the receiver, should be in the form it was sent to. There should be no accidental or unwarranted changes in the data transmission. The more currency exchange is on the Internet, the authenticity becomes as hard. An independent computer, which is not connected to a network, and all input and output devices related to it are kept in a safe place, then that computer can only be harmed by the unauthorized user. The risk to the security of the computer can be reduced by the proper management of the user's identity in the cell.

Plagiarism

Publication in the form of an original work by an author, mostly by imitating someone else's language, thoughts, ideas, style etc., is known as literary theft or plagiarism. Only after 18th century in Europe did such behavior be considered unethical behavior. In earlier centuries, writers and artists were encouraged to imitate the famous masters of their field.Literary theft is considered when we publish literature written by anyone without reference to him in his own name. The literature taken in this manner is considered immoral and it is called plagiarism. Today, when information technology has expanded rapidly, literary theft has increased. Plagiarism is a social effect of internet. Nowadays, various content such as articles, audio, video, presentation, photograph etc. are available on the internet abundantly and easily. It is also easy to copy, cut-paste and edit this content, because many software and tools are available for these tasks. For this reason, the trend of imitating the work of others in students, researchers, journalists, writers etc. has been encouraged.

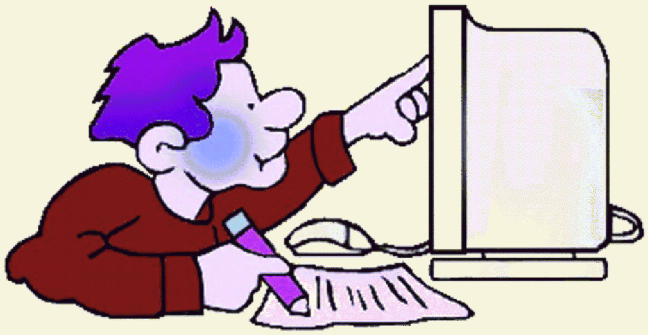


Diagram 8.1 Plagiarism

To prepare a research paper, many researchers raise study material improperly. These researchers either edit or distort this study material and attach it to the research paper and submit it. Researchers usually copy the study material from any search engine or other books or stole from there and submit it to their research paper. In addition to research, do the same in Projects and Thesis papers.

Due to the expansion of information and communication technology, the whole world has become a global village today and such unethical work has now started getting easier. Many software has now come in vogue to stop this, which can easily find out where the content is taken from. Whether it taken from a reference book or copied from any book or online material.These software are being proven to be very useful for the purpose of reinvesting plagiarism.

In the field of education, the literary theft made by a student, teacher or researcher is called Academic Dishonesty or Academic Fraud. Whereas in the field of journalism, the journalistic theft done by journalist, is said to be a violation of journalism. Plagiarism is not a crime but it is invalid on moral grounds.

Diagram 8.2 Stop plagiarism

To avoid plagiarism, the following things should always be kept in mind –

- You should be clear about what plagiarism is. This will save you unknowingly from the unethical use of someone else's thoughts, words or actions.
- You should know the source of the material you are using.
- Before making any new material, be fully aware of all the information and its sources related to it.
- If you are using any material, article, photo, audio, video etc. in your work, you should seek prior permission from the copyrighted person, the publisher or the organization, to avoid plagiarism and copyright infringement, and your work must be mentioned in this fact.

Intellectual Property Right

The right to possess intellectual property is from the legal authority obtained by a person as a result of the fundamental intellectual work done in the field of science, technology, literature or art. The art work created by an artist, music created by the composer or article or poetry written by a poet or authors is owned by a person or institution / organization, and the person or institution specializing the original skill or work done by him Has the right to take advantage of their original skill work. Therefore, creator or author has the right to decide on where and how to use its work.

Intellectual Property Right promotes fundamental and productive work and prevents tendency to imitate or steal.

To protect the intellectual property rights on international level, the United Nations established the World Intellectual Property Organization (WIPO) in Geneva in 1967. Its original work is the preservation of the worldwide Intellectual Property.

184 countries of the world are members of World Intellectual Property Organization (WIPO). India is also a member of this organization. This organization operates 24 international treaties.

In 1965 World Trade Organization was constituted. Agreement on the trade related aspect of intellectual property rights (TRIPS) is an agreement of this organization. All the countries which are members of the World Trade Organization, they have to accept it and make their laws accordingly. We are also changing the laws related to intellectual property rights due to this so that they become conformity with the trips. For many, this is to say that we are not changing the law because we need them, but that is because Trips says and because of the World Trade Organization and Trips, we have lost our sovereignty.

Diagram 8.3 of Intellectual property rights

In the trips, about seven types of intellectual property rights have been discussed. In India, intellectual property rights have been protected under the following eight acts:

1. The Biological Diversity Act, 2002

2. The Copyright Act, 1957

3. The Design Act, 2000

4. The Geographical Indications of Goods (Registration and Protection) Act, 1999

5. The Patents Act, 1970

6. The Protection of Plant Varieties and Farmers' Rights Act, 2001

7. The semiconductor Integrated circuits Layout design Act, 2000

8. The Trade Marks Act, 1999

Apart from these, two more areas are the areas under which intellectual property rights are protected.

1. Trade Secret

2. Contract Act

The open source software has a different kind of intellectual property rights. Open Source is a software whose source code is open to all. Code of such software can be modified by any person, contributing to his development or using it for free in his own work.

Careers in Information Technology

Current era is the era of information revolution. The way the information technology is being used for the upliftment and development of humanity, there will be hardly any area in the world that would have been untouched by the use of information technology. This is the reason that if a person chooses information technology as his employment to extend his life, then he has many options.

Diagram 8.4 Careers in Information Technology

To select information technology as employment, there is no restriction on selecting a particular area. Generally, people of all areas can acquire knowledge of computer according to their interest and select information technology as employment.

Some of the options available for livelihood in Information Technology are as follows:

- Animator
- Desktop Publishing
- Network Manager
- Network Administrator
- Programmer
- System Analyst
- Computer Operator
- Computer Technician
- Computer Engineer

- Software Engineer
- Database Manager
- Data Entry Operator
- Web Developer
- System Administrator
- Web Programmer
- Web Master

Social Media

To exchange dialogue with each other, letters were sent through pigeons and postmen. It took months for a letter to reach another man. The response to the letter also had to wait for months, but today people can be talked directly with the people sitting across the oceans. Sufferings and pains of each other can be shared. Can be acquainted with the happenings of the surroundings. It can be said that today the entire world is in the fist, and its full credit goes to social media.

Diagram 8.5 Symbols of various social media sites

Websites and applications that enable users to create and share content, or participate in social networking, are called social media. Social media is a social interaction between people, under which they prepare information on thevirtual community and networks, share them or exchange them. Altogether, social media or social networking sites are an electronic medium through which people can exchange views (in-

cluding photos and videos) with the members included in the said medium.

There are around 200 social networking sites in the world, including Facebook, Twitter, Arkoot, MySpace, LinkedIn, Flickr, Instagram (photo, video sharing sites) are the most popular. According to a survey, there are around 1 billion 28 million Facebook users are using Facebook worldwide. At the same time, the number of Instagram users is 15 million, the number of linked users is 20 million, the number of MySpace users is 30 million and the number of tweeter users is 9 million.

Initially these sites were away from the middle class but when these services started getting on the mobile phones, this class accepted it with heart. There are more than 10 million active Facebook users in India at this time and they have been targeted to reach 10 million in the coming times.

Social media is continuously progressing in popularity these days-in India and outside of India. Experts believe that social media is a medium for the general public, through which they can keep their views in more empowered way. In the last decade, many big news came only through the social media in Limelight. The common man has got such a tool in the form of social media, through which he can convey his views to a large population. That is why the politicians, along with the common man, have come to Facebook, Twitter.

Social media is an important medium to communicate to people. Social media has become a very important medium today. Through this medium, a large population can share their views. This medium has expanded in the last decade.

In recent years, many big movements were started by social media only. In January 2011, a tremendous movement was carried out in Egypt by Facebook itself. Even in Tunisia, the general public began to mobilize against the government through Facebook. The situation became such that the government had to ban the Facebook and Twitter accounts but the movement did not stop and the president Mubarak was forced to resign.

Facebook has also worked to meet a long-awaited father-daughter, siblings and friends.

It is said that everything has two sides-good and bad. The social media, which has gained popularity for many different types of merit, is no exception.

The criminal activities through social media have also been started. In 2013, 5212 cases were registered in the country under the provisions of the Information Technology Act and Indian Panel Code. Of these, 1203 are related to putting objectionable

material on social sites. The people of criminal tendency are hacking accounts of others and throwing objectionable pictures and other materials in their accounts.

Here, even young people have started using Facebook, which has a negative effect on them. According to a survey conducted by Assocham in the last few days, 73% of all children using Facebook are between the ages of 8 to 13 years (children under 13 years of age are prohibited from opening a Facebook account). It has been said that most of the children's families are employed and they cannot give time to their children, so these kids are beginning to struggle on Facebook and other social sites because social media gives them a society so that they share their things.

The psychological effects of the use of social sites are also dangerous. Psychiatric practitioners say that the use of social networking sites makes people addicted to it and they leave commitment to their families and stick to hours to computers or mobile phones. Social media is a virtual means. People use it virtually in connection with people but they are isolated from the real society. The effect of this is that they do not develop social qualities. On the other hand, people are much busy in social media, so they cannot do outdoor activities. Apart from this, many types of physical illnesses also occur due to sitting for long. There are also cases of social media addiction. Some such patients spend 10 to 12 hours on the Internet. This addicts grow up so much that they are unable to give time to their family. When their families oppose it, they become offensive and if the Internet does not work properly then they get angry and start breaking house hold items.

Deaddiction centers have been opened for the treatment of social media addicts in many cities. It is clear from the fact that the use of social media is now taking the form of a disease.

There are no two opinions that social media has become very necessary for the people, but the other aspect of this is to avoid it because when anything starts to misuse, it becomes a curse and not a boon.

Important Points

1. Information and communication technology has made the whole earth a village.ICT has made our society active and aware.

2. Privacy or secrecy refers to the right to use the data only by the authorized person.

3. Authentication means that before you provide any information about yourself or the business deal with the person you are contacting, get all the necessary infor-

mation related to it.

4. Integrity means that whatever the data reaches the receiver, should be in the form it was sent to.

5. Publication in the form of an original work by an author, mostly by imitating someone else's language, thoughts, ideas, style etc., is known as literary theft or plagiarism.

6. In the field of education, the literary theft made by a student, teacher or researcher is called Academic Dishonesty or Academic Fraud.

7. Intellectual Property Right promotes fundamental and productive work and prevents tendency to imitate or steal.

8. The open source software has a different kind of intellectual property rights. Open Source is a software whose source code is open to all.

9. ICT has provided many opportunities of employment to every section of the society.

10. Websites and applications that enable users to create and share content, or participate in social networking, are called social media.

Exercises

Multiple choice questions

1. An author is called the publication of another writer by his name.

(a) Privacy (b) Credentials

(c) Integrity (d) Plagiarism

2 . When established organization for intellectual Property ?

(a) 1947 (b) 1950 (c) 1967 (d) 1986

3. How many acts established in India for protected the Intellectual property right?

(a) 6 (b) 7 (c) 8 (d) 10

4. Which employment is not include in Information Technology?

(a) Database Manager (b) Web Developer

(c) System Administrator (d) All of these

5. Which social networking site is most famous?

(a) Facebook (b) Instagram (c) Twitter (d) LinkedIn

Very Short Type Questions

1. What is called the right of an authorized person to use the data?
2. Who does identify the authorized user on the computer?
3. What is called the imitation of a creation of an author by another author?
4. What is the name given to the whole world today as the expansion of ICT?
5. What is used to prevent plagiarism?
6. What is called the literary theft made by the students, teachers or researchers in the field of education?
7. When was established the Intellectual Property Association?
8. What is called the software whose source code is open to everyone?
9. Name one of the employment under ICT areas.
10. What is the name of the most popular social networking site?

Short Type Questions

1. Why has the literary theft increased due to the extension of ICT?
2. How do the investigators plagiarize?
3. What is literary theft? why is it important to know about it?
4. You want to use the content of another author in your article. What would you do?
5. What is the right to intellectual property?

6. Describe the full name of the WIPO.

7. What is TRIPS?

8. Explain the usefulness of intellectual property rights.

9. Why is there more employment potential in the field of ICT today?

10. Write the definition of social media.

Essay Type Questions

1. What is plagiarism? How can it be stopped?

2. Write essay on intellectual property rights

3. Explain the advantages and disadvantages of using social media.

4. Write articles on ICT and employment.

5. Write Comments –

    1. Privacy

    2. Authentication

    3. Integrity