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INFORMATION COMMUNICATION TECHNOLOGY

Student Textbook

Grade 9

Federal Democratic Republic of Ethiopia
Ministry of Education

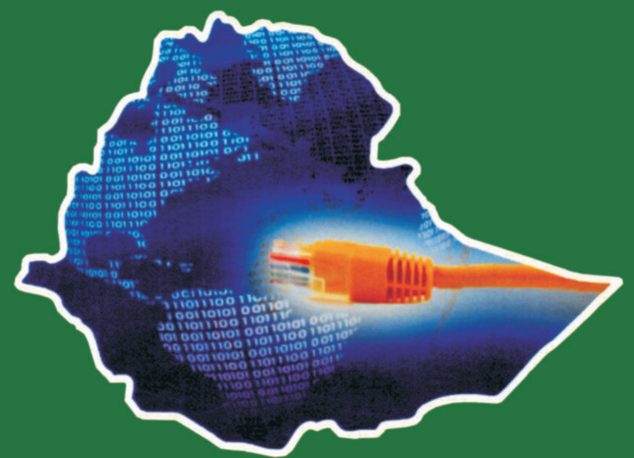
ISBN: 978-99944-2-245-6
Price: ETB 23.15



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INFORMATION COMMUNICATION TECHNOLOGY

STUDENT TEXTBOOK

Grade 9

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Acknowledgements

The development, printing and distribution of this student textbook has been funded through the General Education Quality Improvement Project (GEQIP), which aims to improve the quality of education for Grades 1–12 students in government schools throughout Ethiopia.

The Federal Democratic Republic of Ethiopia received funding for GEQIP through credit/financing from the International Development Associations (IDA), the Fast Track Initiative Catalytic Fund (FTICF) and other development partners–Finland, Italian Development Cooperation, the Netherlands and UK aid from the Department for International Development (DFID).

The Ministry of Education wishes to thank the many individuals, groups and other bodies involved–directly and indirectly–in publishing the textbook and accompanying teacher guide.

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First edition, 2002 (E.C.)

ISBN: 978 9994 -24 6

Second Edition, 2007 (E.C.), by Pitambra Books Pvt. Ltd., India

Developed, printed and distributed for the Federal Democratic Republic of Ethiopia, Ministry of Education by Laxmi Publications Pvt. Ltd., India under GEQIP Contract No. ET-MoE/GEQIP/IDA/ICB/G-20 09- D

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Printed in India.

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PREFACE

Information and Communication Technology (ICT) is so important in the world today that it makes it imperative for every person to be competent in the use of ICT for the many tasks that one will have to accomplish. This book is written to provide the basic skills in ICT for Grade 9 students of Federal Democratic Republic of Ethiopia. It is expected that the knowledge and skills gained through this book will help the students to use ICT in almost all their courses at school. The book covers selected basic topics in ICT which offer hands-on activities to help students in acquiring the required ICT skills.

The key features of this book will help the students to:

- understand the development of computers and communication technology.
- develop interest and use ICT for learning in other subjects.
- understand information and computer security
- acquire the knowledge for application of ICT in word processing, presentation and spreadsheet application.
- use the Internet to communicate effectively.
- access and share information through the Internet.
- follow basic ethics in the use of ICT.
- learn LOGO language.

The text has been designed in a simple and user friendly way. This text focuses on the fundamentals of ICT, which change slowly. This not only makes the information remain useful to a student when one graduates, but also makes the student focus on the foundation concepts on ICT. This book also illustrates the latest developments in the rapidly changing world of ICT. Review questions have also been given at the end of each unit.

Suggestions for the improvement of this book will be gratefully acknowledged.

Authors

UNIT 1

INTRODUCTION TO ICT

UNIT OUTCOME

Students will be able to:

- know the term data, information, technology and the sources of information;
- understand the differences between computers of one generation from the other;
- recognize the types of computers used today and their difference;
- understand the computer system.

1.1 OVERVIEW OF ICT

Information and Communication Technology (ICT) refers to technology that provides access to information through telecommunications (the transmission of signals over long distances). It focuses primarily on communication technologies. This includes the Internet, wireless networks, cell phones, and other communication media.

Information and Communication Technologies (ICTs) have become a major factor in social and economic development of the society. The advances in technology and reductions in costs have made ICTs suitable for less developed countries. ICTs are no longer luxury for the elite, but becoming absolute necessity for those in rural areas. Therefore, Ethiopia is not leaving ICTs as a sector for just commercial interests or free market and privatiat ion, but rather regards them as part of the general public welfare, participation, use and debate.



Fig. 1.1: Use of ICT for the general public welfare

The ability to participate in ICTs requires participation, partnership, understanding of social implication of new technologies and management of changes at national level. The immediate potential benefits of ICTs in Ethiopia include:

1. Efficient communications for manufacturing, service and tourism sector.
2. Fast response to natural disasters and effective rural health and family planning services.
3. Effective governance and administrative effectiveness.
4. Efficient education, research and communication of research results.
5. Access to global market and research information.

6. Employment opportunities for small and medium enterprises.
7. Effective and enhanced data and information gathering and distribution for better planning.
8. Enhanced national cohesion and integration of heterogeneous social composition or geographical dispersal.

Government, individuals and institutions should work hard in improving the use of ICTs in Ethiopia.

Basic Terms Related to ICT

Let us have an overview of the basic terms related to ICT:

• Data vs Information

The frequency of the use of the words data and information are very high in our daily lives. Depending on the context, the meanings and use of these words differ. Both data and information are types of knowledge or something used to attain knowledge. Though used interchangeably, there are many differences between the meanings of these two words.

Data is a collection of raw facts and figures or a raw input which when processed or arranged makes meaningful output. Data is the plural of the Latin word "*datum*". For example, students fill an admission form when they get admission in school/college. The form consists of raw facts about the students. These raw facts are student's name, father name, mother name, address, etc. The purpose of collection of this data is to maintain the records of the students during their study period in the school/college.

In computer terms, symbols, characters, images, or numbers are data. These are the inputs for the system to give a meaningful interpretation.



Users need data to create useful information.

Information is the data that is organized, meaningful and useful for making a decision. Computers process data to create information, such as the total marks for each student, which are used to decide who is the topper.

Data collected from census is used to generate different types of information. The Ethiopian government can use it to determine the literacy rate in the country. Government can use the information in making important decisions such as to improve literacy rate and implement ICTs etc.



Fig. 1.2: Census Information can be very useful for Implementing ICTs in Ethiopia

Data processing is the transformation of data into meaningful information.



The whole purpose of a computer (and communications) system is to produce (and transmit) usable information.

Figure 1.3 illustrates the processing of raw data into useful information, its recycling and its packaging in a new form so that it is easier to understand, more attractive, or more useful.

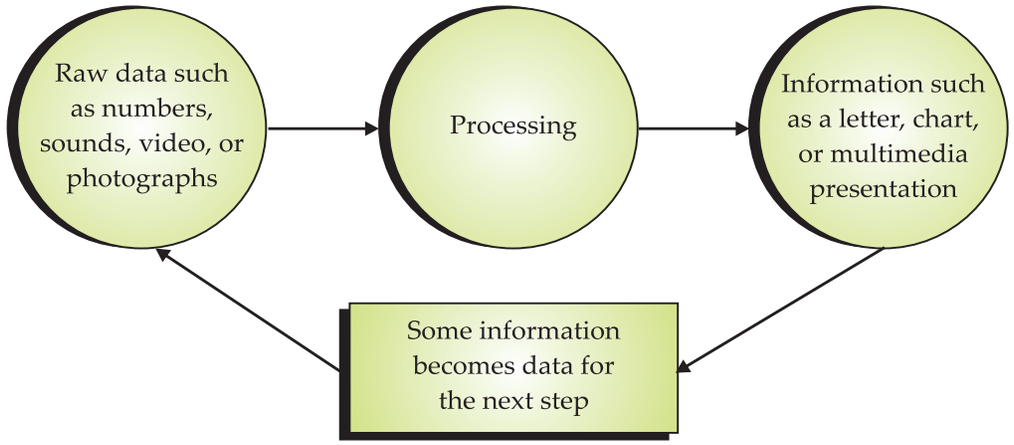


Fig. 1.3: Data versus Information

Data processing includes the following steps:

(*i*) Data Coding (*ii*) Data Input,

(*iii*) Data Editing, and (*iv*) Data Manipulation.

Table 1.1 gives the differences between data and information.

Table 1.1: Differences between Data and Information

Data	*Information*
It is a collection of facts and figures.	It is a collection of final results.
It is in an unorganized (raw) form.	It is in an organized form.
It is not in directly useful form.	It is in directly useful form.
It needs processing.	It does not need any processing.
It is also termed as input.	It is also termed as output.
It requires observations and recordings.	It requires analysis.

• Technology

Technology is the usage and knowledge of tools, crafts, techniques, or systems, or methods of organizations. Science is concerned with how and why things happen. Technology focuses on making things happen. Technology began to influence human beings as soon as people began using tools.

Now-a-days, technology is an integrated part of lives of human beings. For example, the technology in communications such as mobile phones help us to connect with the other people easily.

Technology has a simple but important role in our life now-a-days. Without it, we will not be having the connection with the other people.

• Information Technology

"Information Technology", or "IT", refers to anything related to computing technology, such as networking, hardware, software, the Internet, or the people that work with these technologies.

or

Information Technology is the study, design, development, implementation support and/or management of any computer based information systems. This relates particularly to software applications and computer hardware.

The history of IT goes back several years. In order to perform the functions associated with the field of technology, the modern field uses computers, servers, database management systems and cryptography.

Since we live in the "information age," information technology has become a part of our everyday lives. That means the term "IT," already highly overused, is here to stay.



Fig. 1.4: Information Technology has become a part of our daily lives (Courtesy: web.worldbank.org)

• Sources of Information

An information 'source' can be categorized by the type of information it contains. Sources are usually classified as primary, secondary and tertiary. Table 1.2 illustrates the various sources of information.

Table 1.2: Sources of Information

Primary Sources	*Secondary Sources*	*Tertiary Sources*
Original ideas and research	Analysis, discussion or interpretation of original ideas and research	Significant knowledge is combined, condensed and summarized
Examples: Research articles, research reports, diaries, letters, performance recordings, standards, legislation.	*Examples:* Review articles, specialist texts, textbooks, newspaper articles.	*Examples:* Encyclopedias, handbooks, dictionaries, bibliographies.

The use of information sources is influenced by the following factors:

(*i*) subject of the study,
(*ii*) nature of the information sought,
(*iii*) the attitude of the user,
(*iv*) the intensity of the need one feels, and
(*v*) working conditions.



Fig. 1.5: Use of Information Sources is Influenced by the Working Conditions

Documentary Sources

As mentioned earlier the sources of information or evidence are often categorized as primary, secondary, or tertiary material. These classifications are based on the originality of the material and the proximity of the source or origin. This informs the reader as to whether the author is reporting information that is first hand or is conveying the experiences and opinions of others which is considered second hand. Determining if a source is primary, secondary, or tertiary can be tricky. Let us describe the three categories of information and give examples to help you make a determination.

Primary Documentary

Primary sources of information are *original materials* that often convey new ideas, discoveries, or information. These sources originate from the time period under study. Examples of primary sources include:

(*i*) original research studies (often in the form of journal articles in peer-reviewed publications), also called empirical studies (*e.g.*, psychology)

(*ii*) patents, technical reports

(*iii*) original documents such as diaries, letters, e-mails, manuscripts, lab data/notes

(*iv*) newspaper articles from the time period under study

(*v*) autobiographies, first-person accounts, case studies

(*vi*) artifacts and archival material such as official documents, minutes recorded by government agencies and organiza tions, photographs, coins, fossils, natural specimens

(*vii*) works of art such as literature, music, architecture, or paintings.

Se onda y Documen ta y

Secondary sources of information are based on *primary sources*. They are generally written at a later date and provide some discussion, analysis, or interpretation of the original primary source. Examples of secondary sources include:

(*i*) review articles or analyses of research studies about the same topic (also often in peer-reviewed publications)

(*ii*) analyses of original documents or archival material

(*iii*) biographies, reviews, or critiques of an author.

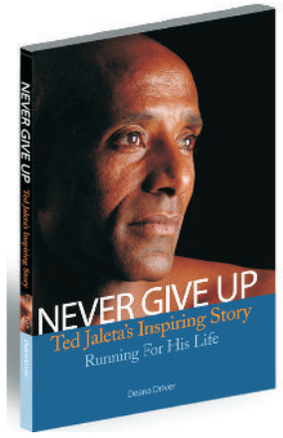


Fig. 1.6: A biography—One of the Secondary Documentary Sources of Information

Tertia y Documen ta y

Tertiary sources of information are *based on a collection of primary and secondary sources*. Examples of tertiary sources include:

(*i*) textbooks (sometimes considered as secondary sources)

(*ii*) dictionaries and encyclopedias

(*iii*) manuals, guidebooks, directories, almanacs

(*iv*) indexes and bibliographies.

How do you tell the difference?

It is not always easy to distinguish primary and secondary sources. The distinction between primary, secondary, and tertiary sources can differ between subjects and disciplines, particularly between the sciences and the humanities.

(*i*) In the sciences, research findings may be communicated informally through e-mail, then presented at meetings before being formally published as a primary source. Once published, they will be commented on by other scholars (secondary sources) and professionally indexed in a database or printed index (tertiary sources).

(*ii*) In the humanities, primary sources for the cultural history of the 19th might include the paintings, novels, and films of the period.

(*iii*) A newspaper article is a primary source if it is reporting the news or the views of the day, but may be a secondary source to the extent that it includes analysis and research based on other sources.



If a source does not fit the description of a primary source, it is most likely a secondary source.

Tip: ***Work Backwards***

1 Start with tertiary sources (reference sources, databases, etc)

Find background information on your topic by consulting reference sources and web pages for introductions and summaries, and to find bibliographies or citations for secondary and primary sources.

2 Then go to secondary sources

Find articles, books, webpages, and other sources providing more extensive and in-depth analysis of a topic. Check to see what other scholars and experts have to say about your topic.

3 Then try primary sources

Once you have some background knowledge on your topic, you will be better able to understand, interpret, and analyze the primary source of information. See if you can find primary source evidence to support or refute what other scholars and experts have said about your topic, or try an interpretation of your own and look for more primary sources to confirm or refute your thesis. When you present your conclusions, you will have produced another secondary source to assist others in their research.

Non-documentary Sources

The non-documentary sources are also called Informal Information Sources. These include government departments, research organizations, learned professional societies, industries, universities, colleagues, corridor meetings at conferences and social gatherings.

Some examples of institutes which are excellent non-documentary sources in Ethiopia are given below along with their URLs (Uniform Resource Locators).

(*i*) Addis Ababa University (URL: www.abyssiniacybergateway.net/ethiopia/)

(*ii*) Alemaya University (URL: www.alemayau.edu.et/)

(*iii*) Institute of Ethiopian Studies (URL: www.ies-ethiopia.org)

(*iv*) International Community School of Addis Ababa (URL: www.icsaddis.edu.et/)

(*v*) Jimma Institute of Health Sciences (Jimma, Ethiopia) (URL: www.ju.edu.et/)

Acquiring Information Through Non-documentary Sources

As far as non-documentary sources of information are concerned, private correspondence is still in wide use. Oral transmission of a particular topic is quite useful for acquiring information.

Agencies of non-documentary sources of information include:

1 Communication among small groups, such as:

(*i*) Suggestions from colleagues/friends,

(*ii*) Contacts with peers,

(*iii*) Off-prints from authors,

(*iv*) Journal clubs,

(*v*) Technological gatekeepers, and

(*vi*) Corridor meetings at conferences.

2 Communication among big groups, such as:

(*i*) Seminars and conferences, and

(*ii*) Invisible colleges (information exchange groups).

3 New social information exchange tools like Blogs (fun keeping journals on the Internet accessible to other users) and Twitter, such as:

(*i*) www.twitter.com
(*ii*) ethiopiatwitter.blogspot.com
(*iii*) www.ethiopianreview.com
(*iv*) www.african-safari-information.com
(*v*) twitter.com/ethiopiawire
(*vi*) green.blogs.nytimes.com



ACTIVITY 1.1

A Report on Sources of Information in Education

Information can come from many sources — personal experiences, books, articles, expert opinions, encyclopaedias, the World Wide Web — and the type of information can change depending on the situation. In recent times, Ethiopia has shown encouraging signs in the expansion of utilizing ICT for multi-purposes. ICT plays a vital role in studying the sources of information in education sector all over the world.

Sources of Information

Look at the following sources of information. Notice the similarities between them. Keep in mind the following three questions:

1. Which sources can you find online?
2. Which sources guide you to other information on your topic?
3. Which sources would you use when writing a report?

Magazines



Newspapers



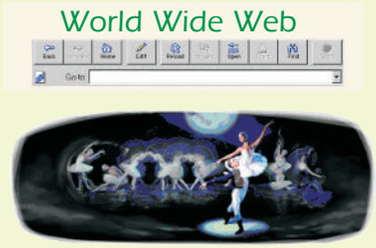
Books



Encyclopedias



World Wide Web





Library Catalogue



Fig. 1.7: Some Sources of Information

Searching Sources of Information in Education

The students can visit any school/college/institution in groups with their ICT teachers to know about the sources of information in education. There, students may find several sources of information which may be documentary (primary, secondary or tertiary sources) and non-documentary.

The students may find some sources of information in education like Periodicals, Laboratory Notebooks, Bibliographies, Reference Books, Yearbooks and Directories etc. in the school/college/institution. They may even look for some Blogs and Twitters on the World Wide Web.

Prepare a list of the sources of information in the form of a table as shown below.

Sources of Information

S.No.	*Primary Sources*	*Secondary Sources*	*Tertiary Sources*	*Non-documentary*
1.	.....	.....	.....	.....
2.	.....	.....	.....	.....
3.	.....	.....	.....	.....
4.	.....	.....	.....	.....
5.	.....	.....	.....	.....
...	.....	.....	.....	.....

Finally submit the report to your ICT teacher and get it evaluated.

KEY CONCEPTS

- Data is a collection of raw facts and figures or a raw input which when processed or arranged makes meaningful output.
- Information is the data that is organized, meaningful and useful.
- Technology is the usage and knowledge of tools, crafts, techniques, or systems, or methods of organizations.
- Information Technology (IT) refers to anything related to computing technology, such as networking, hardware, software, the Internet, or the people that work with these technologies.
- An information 'source' can be categorized by the type of information it contains. The types are primary, secondary and tertiary.

ASSESSMENT 1.1

Fill in the Blanks

1 ICT stands for ..... .

2 ..... consists of raw facts and figures that are processed into information.

3 ..... is the usage and knowledge of tools, crafts, techniques, or systems, or methods of organizat ions.

4 The sources of information are usually classified as ....., ... and ..... .

State whether True or False

1 ICT is "the study of International Crime Technology."
2 When computer and communications are combined, the result is Information and Communications Technology.
3 Information is data that has been summarized or otherwise manipulated for use in decision-making.
4 The non-documentary sources are also called Informal Information Sources.

Answer the Following

1 Define data and information.
2 Give the differences between data and information.
3 Explain the term technology and information technology.
4 Write a short note on sources of information.

Suggested Activities

1 Explain and demonstrate the terms data, information and technology.
2 Explain and demonstrate the different sources of information.

Field Trips

1 Students should visit some big educational organization in their city. Interact with faculties there and prepare a report on "Basic concepts of ICT and sources of information".
2 Students should visit some places like shopping centre, hospitals and science laboratory in their city and report on "Impact of ICT on everyday life."

1.2 GENERATION OF COMPUTERS

A computer is an electronic device that accepts, processes, stores and outputs data under the control of sets of instructions.

Computers have come across a long way to acquire the current form and capability. It took around 60 years of continuous developments to bring the computer in its present form. The evolution of computers is mainly divided into five main generations. The computers of each of these generations have different properties.

Each new generation resulted in the following changes:



• First Generation Computers (1940–1956)

The U.S. census Bureau developed the first business computer in the year 1951. This computer was called Universal Automatic Computer (UNIVAC). It used vacuum tube (see Fig. 1.3) circuits for processing. The

computers that used vacuum tube circuits were called the First Generation Computers. The vacuum tube circuits contained a filament that was heated to emit electrons.

The main features of the first generation computers were as follows:

1 They used vacuum tubes.
2 They had a very big size.
3 They consumed huge electricity.
4 They were prone to failures.
5 They generated a lot of heat.
6 They only supported machine language.



Fig. 1.8: Vacuum Tube

• Second Generation Computers (1956–1964)

Bell Labs of U.S.A. invented transistors (see Fig. 1.9) that were used instead of vacuum tubes. Transistors are electronic circuits that are small in size. They do not emit electrons and do not require any heating. The computers that used transistors were called the Second Generation Computers.

The main features of the second generation computers were as follows:

1 They used transistors instead of vacuum tubes.
2 They were smaller in size as compared to the first generation computers.
3 They generated lesser heat.
4 They were more reliable and faster than the first generation computers.
5 They used core memories, magnetic tapes and disks.
6 They used lesser electricity.
7 They could be programmed by using machine as well as assembly language.

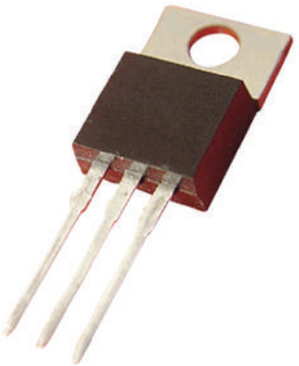


Fig. 1.9: Transistor

• Third Generation Computers (1964–1971)

The Third Generation Computers used Large Scale Integrated (LSI) circuits for processing. The LSI circuits were invented in mid 1960's. LSI circuits integrate several circuit components into a single chip.

The main features of the third generation computers were as follows:

1 They used integrated circuits (see Fig. 1.10).
2 They had a small size as compared to the second generation computers.
3 They consumed less electricity.
4 They were faster and reliable than the second generation computers.
5 They supported high level language.

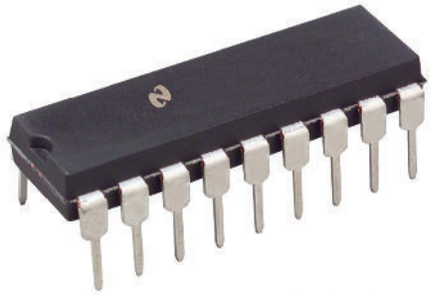


Fig. 1.10: Integrated Circuit

• Fourth Generation Computers (1971–Present)

Very Large Scale Integrated (VLSI) chips were invented in the year 1970. The computers that used VLSI chips were called the Fourth Generation Computers.

The main features of the fourth generation computers are:

1 They contain high-speed microprocessors.

2 They contain huge storage volumes in the form of magnetic and optical storage.

3 They contain main memories up to GBs (Gigabytes).

4 They are companied by great developments in the fields of networks.



Fig. 1.11: VLSI chip

• Fifth Generation Computers (Future)

Recent research has focused on developing "thinking computers." These computers are called the Fifth Generation Computers.

Fifth generation computers will have the power to learn and apply knowledge to solve a problem. They would be able to work like humans do. You can watch a movie named "AI" by Steven Spielberg to have an idea of such computers.

Table 1.3 summarizes the key technologies and features of the various generations of computers.

Table 1.3: Comparison of Generations of Computers

Generation	*Period*	*Circuitry*	*Input*	*Storage*	*Output*	*Language*	*Examples*
1st	1940	Vacuum Tubes	Punched Cards	Magnetic tapes	Punch Cards	Machine Language	Univac, IBM 650 Burroughs 220
2nd	1956	Transistors	Punched Cards, Magnetic tapes	Magnetic tapes	Punch Cards	Machine, Assembly	IBM 1401 Honeywell 200
3rd	1965	Integrated Circuits (ICs)	Keyboards	Magnetic Disks	Monitor	Pascal, Fortran, Cobol, RDBMS	IBM System-360
4th	1971 present	Very Large Scale Integration (VLSI) of circuits	Mouse, Scanners, Sound, etc.	Magnetic Disks with higher capacity	Monitor, Printers	RDBMS, etc.	IBM System 370 HP 3000
5th	Future	With Artificial intelligence					



ACTIVITY 1.2

Introduction to Artificial Intelligence

In small groups students will discuss "Introduction to Artificial Intelligence" based on the following information. The group leader from each group will give a brief presentation to the class based on the discussions.

Artificial Intelligence

Artificial Intelligence (AI) is the ability of a computer or other machines to perform those activities that are normally thought to require intelligence.

or

Artificial Intelligence is the branch of computer science concerned with making computers behave like humans.

The term was coined in 1956 by John McCarthy at the Massachusetts Institute of Technology, located in Cambridge, Massachusetts (United States).

Artificial intelligence includes:

1. **Games playing:** Programming computers to play games such as chess and checkers.



Fig. 1.12: Games Playing

2. **Expert systems:** Programming computers to make decisions in real-life situations (for example, some expert systems help doctors diagnose diseases based on symptoms).
3. **Natural language:** Programming computers to understand natural human languages.
4. **Neural networks:** Systems that simulate intelligence by attempting to reproduce the types of physical connections that occur in animal brains.
5. **Robotics:** Programming computers to *see* and *hear* and *react* to other sensory stimuli.



Fig. 1.13: A Robot — An AI tool

Currently, no computers exhibit full artificial intelligence (that is, are able to simulate the human behaviour). The greatest advances have occurred in the field of games playing.

Today, the hottest area of artificial intelligence is neural networks, which are proving successful in a number of disciplines such as voice recognition and natural-language processing.

KEY CONCEPTS

- The computers that used vacuum tube circuits were called the First Generation Computers.
- The computers that used transistors were called the Second Generation Computers.
- The Third Generation Computers used Large Scale Integration (LSI) circuits for processing.
- The computers that used Very Large Scale Integrated (VLSI) chips were called the Fourth Generation Computers.
- Recent research has focused on developing "thinking computers". These computers are called the Fifth Generation Computers. They would be able to work like humans do.

ASSESSMENT 1.2

Fill in the Blanks

1 The evolution of computers is mainly divided into ..... main generations.
2. Each new generation of computers resulted in decrease in ..... and .....
3 The computers that used ..... circuits were called the First Generation Computers.
4 ..... generation computers will have the power to learn and apply knowledge to solve a problem.

State whether True or False

1 The computers of all the five generations have different properties.
2 The computers that used transistors were called the First Generation Computers.
3 The Third Generation Computers used integrated circuits.
4 The Fourth Generation Computers are companied by great developments in the fields of networks.

Answer the Following

1 List the generation of computers.
2 Compare the differences amongst each generation of computers.

Suggested Activity

Explain and demonstrate (pictorially or physically) each generation of computers.

Field Trip

Organize a field trip to various places such as government organizations and science laboratories to find out and report on:

Different generations of computers.

1.3 TYPES OF COMPUTERS

Computers can be classified into super computers, mainframe computers, minicomputers, and microcomputers (personal computers) on the basis of the following:

1 Size
2 Cost
3 Performance
   (*i*) Speed of processing data
   (*ii*) Storage capacity
   (*iii*) Ability to handle input and output devices

Let us classify the types of computers used today:

• Super Computers

(*i*) Super computers are the largest and fastest computers. They are also the costliest computers.

(*ii*) They are used in fields like science and defence. These computers are used for designing and launching missiles, weather forecasting, biomedical research, aircraft design and automobile design.

(*iii*) There are only a few super computers throughout the world. Some examples are IBM Blue Gene/L, IBM Roadrunner and Cray Jaguar.



Fig. 1.14: Super computer

• Mainframe Computers

(*i*) Mainframe computers are more powerful than minicomputers.

(*ii*) They have high processing speeds and can store large amounts of data. They are used in wide area networks and support hundreds of users. However, these computers consume more electricity.

(*iii*) Some examples are IBM 0 series and Univac 0



Fig. 1.15: Mainframe computer

• Minicomputers

(*i*) Minicomputers are small general-purpose computers, also called *mid-range servers*. These computers can perform more complex tasks and cost more than microcomputers.

(*ii*) They are larger in size and they have small to medium storage capacity.

(*iii*) They are used for processing data and analysing results of experiments. They are also used for controlling and monitoring production processes.

(*iv*) Some examples are D P 1 2 and VAX 1 .



Fig. 1.16: Minicomputer

• Microcomputers

(*i*) Microcomputers are also called Personal Computers (s). These computers use microprocessors.

(*ii*) They are small in size. Also, they do not have large storage capacities.

(*iii*) They can perform difficult tasks. They are used mainly for desktop publishing, accounting, statistical analysis, graphics designing and project management.

(*iv*) Some examples are Apple II, IBM , /2 and Macintosh.



A desktop microcomputer



A tower microcomputer

Fig. 1.17: Two Microcomputers

Personal computer or PC s are the popular form of computers. Individuals as well as organizat ions use these computers. The classification of PCs is as:

1. ***Desktops:*** These PC s are those in which the case or main housing sits on a desk, with keyboard in front and screen (monitor) often on top.
2. ***Portables:*** These PC s are so small that they can be placed on your lap.

The difference between portables and desktops is that portables can be carried while travelling unlike desktops. The portables are classified as:

(*i*) ***Laptops:*** These are small-sized machines that have the same power of a desktop. The weight of a laptop is around 7 to 12 kg. The drawback of a laptop is that it is too bulky. *Examples*: Toshiba Sat CL and SLT/8

(*ii*) ***Notebooks:*** These are smaller than a laptop and are designed to overcome the drawbacks of a laptop. They have the size of a notebook but are as powerful as a desktop. They weigh 3 to 4 kg. *Examples*: Contura 3 02 and Acer AnyWare.

(*iii*) ***Palmtops* or *Personal Digital Assistants* (*PDAs*):** These are handheld computers which have the size of a pocket calculator. They are not as powerful as a desktop. PDA As combine personal organizat ion tools — schedule planners, address books, to-do lists — with the ability in some cases to send e-mail and faxes. *Example*: HP 95LX.



A Laptop



A Notebook



A Personal Digital Assistant (PDA)

Fig. 1.18: A laptop, a notebook and a Personal Digital Assistant (PDA)

• Characteristics of a Computer

Computers are capable of performing highly complex tasks, which human beings cannot perform efficiently. The following are the main characteristics of computers, which make them so powerful:

1. Speed

Computers work at an amazing speed without any mistakes. The work, which a normal person would complete in a few hours can be done within fractions of a second by a computer. Speed of computers is measured in terms of milliseconds (10^{-3} seconds), microseconds (10^{-6} seconds) or nanoseconds (10^{-9} seconds).

2. Accuracy

A computer performs its task with great accuracy. It never commits mistakes in processing the data. It produces errors when we enter inaccurate input, *i.e.*, Garbage In Garbage Out (GIGO).

3. Reliability

Computers are more reliable than human beings as they do not get bored of the repetitive tasks and never get tired.

4. Storage Capacity

A computer can store large amount of data. It can store various documents, articles, pictures, etc., in its memory which can be used whenever required. On the other hand, a human being can keep only a limited information in his/her mind and rest of the things, he/she forgets.

5. Versatility

A computer can perform various types of jobs. On a computer system, we can listen to songs while typing text or play games while working on any other package, do calculations, make drawings, surf the net, send e-mail, etc.

6. Reduction in Manpower

Earlier, the work in industries/factories was done by a number of persons. But with computers, it can be completed by a few persons and that too more accurately and efficiently. The advent of computer has reduced the need of manpower.

7. Paper Work can be Reduced

The use of computer reduces the burden of paper work in any organization. *For example*, record of each student of a school can be kept in the computer itself rather than keeping manual files for each student. Also, information regarding any student can be obtained easily and quickly with the help of a computer.

• Limitations of a Computer

Despite having various advantages, computers do have the following limitations that are the strengths of human beings. These are:

1. No Decision-making Ability

Computers cannot take any decisions. Human beings assist the computer to take the decisions. *For example*, suppose a street hawker is selling flowers. If such kind of flowers are already in our house, we will decide not to purchase them. Taking decision in this way, without the assistance of human beings, is not possible by a computer.

2. No Intelligence

Computers do not have intelligence of their own, they work according to the instructions given by humans.

3. No Emotions and Feelings

Computers are far away from emotions and certainly being machines, they cannot have feelings and instincts.

These limitations of computers are characteristics of human beings. Thus, computers and human beings work in collaboration to make a perfect pair.

ACTIVITY 1.3



USES OF COMPUTERS

In small groups students will discuss "Some uses of computers" based on the following information. The group leader from each group will give a brief presentation to the class based on the discussions.

Computers are everywhere. Some of the modern uses of computers are:

1. Traffic Control System

Computers are used to control the movement of people, goods, and vehicles in order to ensure their safe, orderly, and expeditious (done with speed and efficiency) flow throughout the transportation system. Each of the five areas of transportation—roadways, airports and airways, railways, coastal and inland waterways, and pipelines—have unique systems of control.

The traffic control system has improved worldwide so much that being mobile (whether walking or riding) has become a lot safer.

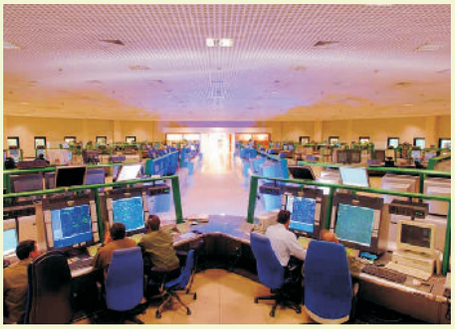


Fig. 1.19: An air traffic control system

2. Ticket Machines

The ticket machines are computerized vending machines that generate tickets. Whatever the size, the process is the same. The person chooses the ticket type and quantity from the display. After choosing the payment method, the ticket is generated.



Fig. 1.20: A ticket machine

3. Cash Machines in Banks

A cash machine or an ATM (Automated Teller Machine) is an unattended machine (outside some banks) that dispenses money when a personal coded card is used.

The central bank of Addis Ababa is known as the **National Bank of Ethiopia (NBE)**. Besides the central bank, there are many other banks in Addis Ababa. The ATM counters in Addis Ababa can be located at:

(*i*) Hilton Hotel, Ground Floor
(*ii*) Sheraton Hotel, Lounge
(*iii*) Wabe Shebelle Hotel, Ground Floor
(*iv*) Dembel Shopping Mall, Ground Floor



Fig. 1.21: A cash Machine or an ATM

KEY CONCEPTS

- Super computers are the most powerful computers among digital computers.
- Mainframe computers are designed to handle huge volumes of data and information.
- Minicomputers are small general purpose computers, also called *mid-range servers*.

- Microcomputers are also called Personal Computers (PCs). These are classified into desktops and portables.
- The main characteristics of a computer are: speed, accuracy, reliability, storage capacity, versatility, reduction in manpower and reduction in paper work.



ASSESSMENT 1.3

Fill in the Blanks

1 ..... can be classified into super computers, mainframe computers, minicomputers and microcomputers.

2 ..... are the largest and fastest computers.

3 ..... are those computers in which the case or main housing sits on a desk, with keyboard in front and screen (monitor) often on top.

4 Personal Digital Assistants (PDAs) have the size of a ..... .

State whether True or False

1 We cannot classify the computers on the basis of size.

2 Mainframe computers are more powerful than minicomputers.

3 Minicomputers cannot be called mid-range servers.

4 Laptops are small sized machines that have the same power of a desktop.

Answer the Following

1 Classify the types of computers used today.

2 List the characteristics of each type of computer.

Suggested Activity

Categorize the computers in terms of size, processing speed and capacity only.

Field Trips

1 Determine what types of computers are being used in your school. In which departments are the different types of computer used? What are they used for? How are they connected to other computers?

2 Organize a field trip to various places such as science laboratories and government organizations to find out and report on:

Types of computers and their uses.

1.4 INTRODUCTION TO DATA REPRESENTATION

A digital computer works with binary number system. The binary number system has only two digits 0 and 1. Inside the computer, binary number is represented by an electrical pulse. 1 means a pulse of electricity and 0 means no pulse.

Data is divided into three types – alphabetic data, numeric data and alphanumeric data. Alphabetic data is used to represent the alphabets. It consists of capital letters A-Z, small letters a-z and blank space etc. Alphabetic data is also called non-numeric data. Numeric data consists of ten digits

0 1, 2 3 4 5 6 7 8 9, two signs + and – and decimal point. Alphanumeric data is used to represent alphabetic data, numeric data, special characters and symbols.

One digit in binary number system is called a *bit* and combination of eight bits is called a *byte*. A byte is the basic unit that is used to represent the alphabetic, numeric and alphanumeric data.

All the data that is entered into a computer is first converted into the binary form and after processing, it is again converted to human readable form as shown in Fig. 1.22

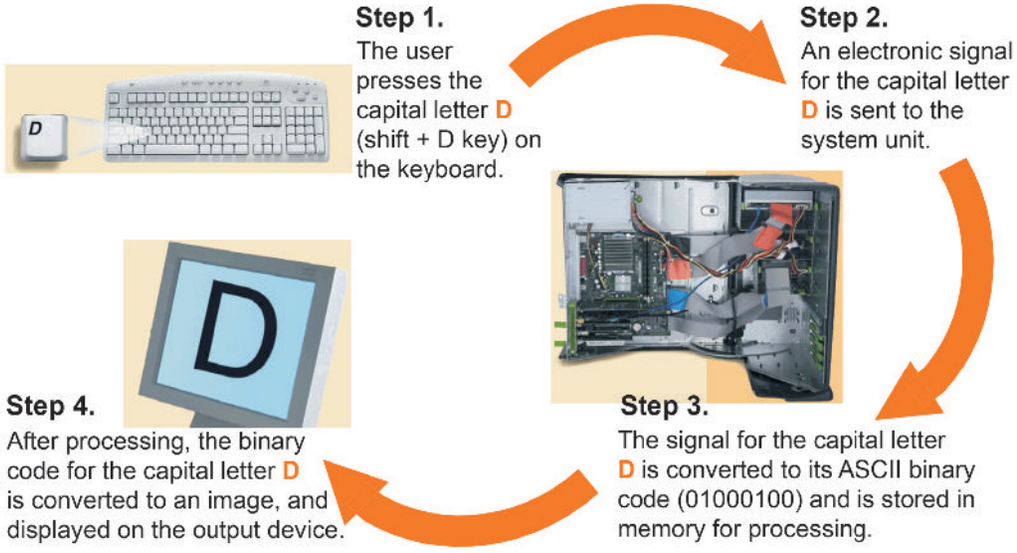


Fig. 1.22: Conversion of a letter to Binary form and back

We will learn about computer coding system later in this unit.

• Number Systems

There are different types of number systems that are used to represent data. You are already familiar with the decimal number system. The other useful number systems are binary, octal and hexadecimal. You may regard each digit as a box that can hold a number.

Let us discuss the various number systems:

Binary Number System

In the binary number system, there can only be two choices for representing datae i ther a "0 or a "1 .

The base or radix of the binary number system is 2

Octal Number System

In the octal number system, there can be eight possibilities:

"0 , "1 , "2 , "3 , "4", "5 , "6 , "7 .

The base or radix of the octal number system is 8

Hexadecimal Number System

In the hexadecimal number system, we have 6 symbols:

"0 , "1 , "2 , "3 , "4", "5 , "6 , "7 , "8 , "9", "A", "B", "C", "D", "E", and "F".

The base or radix of the hexadecimal number system is 6

As shown in Table 1.4 there is a direct correspondence between the binary system and the octal system, with three binary digits corresponding to one octal digit. Likewise, four binary digits translate directly into one hexadecimal digit. In computer usage, hexadecimal notation is especially common because it easily replaces the binary notation, which is too long and human mistakes in using the binary numbers are too easily made.

Table 1.4: Base Conversion Table

Decimal	*Binary Equivalent*	*Octal Equivalent*	*Hexadecimal Equivalent*
0	0	0	0
1	0	1	1
2	0	2	2
3	0	3	3
4	0	4	4
5	0	5	5
6	0	6	6
7	0	7	7
8	0	0	8
9	0	1	9
0	0	2	A
1	0	3	B
2	0	4	C
3	0	5	D
4	0	6	E
5	1	7	F

• Conversion of Numbers from One Number System to the Other

We can convert a number in one system to the other system by following rules specified by the number systems. Following conversions are generally performed in calculations.

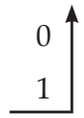
Decimal to Binary Conversion

To convert a decimal number to its equivalent binary number, follow these steps:

1. Divide the number by 2 and store the remainder.
2. Divide the quotient by 2 and store the remainder.
3. Repeat these steps until quotient becomes 0
4. Write the remainders from bottom to top order.

This arrangement of remainder digits will be the binary equivalent of the number. Let us describe this conversion process with decimal number 2

2	23	Remainder
2	11	1
2	5	1
2	2	1
2	1	0
	0	1



= 1

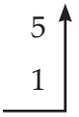
Converting Decimal to Octal

To convert a decimal number to its equivalent octal number, follow these steps:

1. Divide the number by 8 and store the remainder.
2. Divide the quotient by 8 and store the remainder.
3. Repeat these steps until quotient becomes 0
4. Write the remainders from bottom to top order.

The steps are same as in decimal to binary conversion with only one difference that the number is divided by 8 because, 8 is the base in octal number system. For example, 87 in decimal will be equal to 5 0 in octal.

8	87	Remainder
8	10	5
8	1	0
8	1	5
	0	1



=

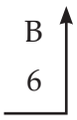
Converting Decimal to Hexadecimal

To convert a decimal number to its equivalent hexadecimal number, follow these steps:

1. Divide the number by 16 and store the remainder.
2. Divide the quotient by 16 and store the remainder.
3. Repeat these steps until quotient becomes 0
4. Write the remainders from bottom to top order.

The steps are same as in decimal to binary conversion with only one difference that the number is divided by 16 because, 16 is the base in hexadecimal number system. For example, 57 in decimal will be equal to B 3 in hexadecimal.

16	57	Remainder	Hexadecimal equivalent
16	3	3	3
16	6	1	B
	0	6	6



= B 3

Converting Binary to Decimal

You can convert a binary number back to decimal number by multiplying each digit from right side with increasing power of 2 and adding the result. This means, the first digit from right will be multiplied by 2^0, the second digit with 2^1 and so on. For example,

$$(10111)_2 = ?_{10}$$
$$= 1 \times 2^0 + 1 \times 2^1 + 1 \times 2^2 + 0 \times 2^3 + 1 \times 2^4$$
$$= 1 + 2 + 4 + 0 + 16$$
$$= 23$$

Converting Octal to Decimal

We can also convert an octal number to decimal number by multiplying each digit from right side with increasing power of 8 and adding the result. This means, the first digit from right will be multiplied by 8^0, the second digit with 8^1 and so on. For example,

$$(1505)_8 = ?_{10}$$
$$= 5 \times 8^0 + 0 \times 8^1 + 5 \times 8^2 + 1 \times 8^3$$
$$= 5 + 0 + 320 + 512$$
$$= 837$$

Converting Hexadecimal to Decimal

We can also convert an hexadecimal number to decimal number by multiplying each digit from right side with increasing power of 16 and adding the result. This means, the first digit from right will be multiplied by 16^0, the second digit with 16^1 and so on. For example,

$$(B63)_{16} = ?_{10}$$
$$(B63)_{16} = 3 \times 16^0 + 11 \times 16^1 + 6 \times 16^2 \quad \text{(Here, B = 11)}$$
$$= 3 + 176 + 1536$$
$$= 1715$$

Converting Binary to Octal

To convert a binary number to its equivalent octal number, follow these steps:

1. Divide the binary number into groups of three bits each beginning from right side.
2. Add 0 to the left, if last group is incomplete.
3. Convert each group into decimals.

For example, consider the following:

$$(101)_2 = ?_8$$
$$= (101) \quad (101)$$
$$= 5 \quad 3$$

As $(101) = 1 \times 2^0 + 0 \times 2^1 + 1 \times 2^2$
$$= 1 + 0 + 4 = 5$$

and $(011) = 1 \times 2^0 + 1 \times 2^1 + 0 \times 2^2$
$$= 1 + 2 + 0$$
$$= 3$$

Therefore, $(101)_2 = (53)_8$

Converting Octal to Binary

To convert an octal number to its equivalent binary number, follow these steps:

1 Convert each digit octal number to its equivalent three digit binary number.

2 Combine all the binary groups into a single group.

For example, consider

$$(53)_8 = (?)_2$$
$$(53)_8 = 5 \quad 3$$
$$= 101 \quad 011$$

as $101 = 5$ and $011 = 3$ in decimal (refer to Table 1.4)

Therefore, $(53)_8 = (101\ 011)_2$

Converting Binary to Hexadecimal

To convert a binary number to its equivalent hexadecimal number, follow these steps:

1 Divide the binary number into groups of four bits each beginning from right side.

2 Add 0 to the left, if last group is incomplete.

3 Convert each group into decimals.

For example, consider the following

$$(1101\ 0101)_2 = (?)_{16}$$
$$= 1101 \quad 0101$$
$$= 13 \quad 5$$

as 1101 is 13 in decimal and 0101 is 5 in decimal (refer to Table 1.4).

Therefore, $(1101\ 0101)_2 = (D5)_{16}$

Converting Hexadecimal to Binary

To convert a hexadecimal number to its equivalent binary number, follow these steps:

1 Convert every digit *i.e.*, A to F of hexadecimal number (if any) to decimal equivalent.

2 Convert every decimal number to its equivalent four digit binary number.

3 Combine all the binary groups to form a single binary number.

For example,

$$35_{16} = (?)_2$$
$$3 = (0011)_2 \quad \text{(refer to Table 1.4)}$$
$$5 = (0101)_2$$

Therefore, $(35)_{16} = (0011\ 0101)_2$



It must be remembered that whatever number system one may use, the information stored in the computer memory is always in terms of binary digits. It is only for our convenience that we use octal or hexadecimal numbers.

• Computer Coding System

We are already familiar about different types of number systems. The computers convert the information, numeric or non-numeric, into binary form. Therefore, one must know how the data/information is stored in computer memory.

A computer handles non-numeric data in addition to numerical data, that is, alphabets, punctuation marks and other special characters. Some predefined codes are used to represent the numeric and non-numeric characters. These codes are known as **alphanumeric codes**. Any data or information is represented internally using the bits 0 and 1.



A computer system's data/information storage capacity is represented by bytes, kilobytes, megabytes, gigabytes and terabytes.

1 Byte = 8 bits
1 Kilobyte (KB) = 2^{10} bytes = 1024 bytes
1 Megabyte (MB) = 1024 KB = $2^{10} \times 2^{10}$ bytes = 2^{20} bytes
1 Gigabyte (GB) = 1024 MB = $2^{10} \times 2^{20}$ bytes = 2^{30} bytes
1 Terabyte (TB) = 1024 GB = $2^{10} \times 2^{30}$ bytes = 2^{40} bytes

Let us discuss some useful codes for data representation:

BCD (Binary Coded Decimal)

Binary Coded Decimal (BCD) code is one of the early computer codes. The idea of this coding scheme is to convert each digit of a decimal number into its binary equivalent instead of converting the entire decimal value into a binary number. This makes the conversion process easier.

Table 1.5 shows BCD equivalent of each decimal digit. Since 8 and 9 require 4 bits, all decimal digits are represented in BCD by 4 bits.

Table 1.5: BCD equivalent of decimal digits

Decimal Digits	*BCD Equivalent*
0	0000
1	0001
2	0010
3	0011
4	0100
5	0101
6	0110
7	0111
8	1000
9	1001

Note that each decimal digit is independently converted to a 4 bits binary number, and hence, the conversion process is very easy. Also note that when four bits are used, altogether (16 2^4) combinations are possible (refer to hexadecimal number system). However, from Table 1.5 you can see that only the first 10 of these combinations are used to represent decimal digits. The remaining six arrangements (1010 1011 1100 1101 1110 and 1111) have decimal values from 10 to 15. These arrangements are not used in BCD coding. That is, 10 does not represent 10_{10} in BCD. Instead,

$$10_{10} = \frac{1}{1}\ \frac{0}{0} \quad \text{or} \quad 00010000 \text{ in BCD}$$

Similarly,

$$15_{10} = \frac{1}{1}\ \frac{0}{5} \quad \text{or} \quad 00010101 \text{ in BCD}$$

In the discussion above, we have used a group of four bits to represent a digit (character) in BCD. 4 bits BCD coding system can be used to represent only decimal numbers because four bits are insufficient to represent the various characters used by a computer. Hence, instead of using four bits with only 16 possible characters, computer designers commonly use six bits to represent characters in BCD code. In 6 bit BCD code, the four BCD numeric place positions are retained but two additional zone positions are added. With six bits, it is possible to represent 64 (2^6) different characters. This is sufficient to code the decimal digits (10), alphabetic letters (26 in number), and other special characters (28 in number). Table 1.6 illustrates coding of alphabetic and numeric characters in BCD.

Table 1.6: Alphabetic and numeric characters in BCD along with their Octal equivalent

Character	*BCD Code*		*Octal Equivalent*	*Character*	*BCD Code*		*Octal Equivalent*
	Zone	*Digit*			*Zone*	*Digit*	
A	11	0001	61	S	10	0010	22
B	11	0010	62	T	10	0011	23
C	11	0011	63	U	10	0100	24
D	11	0100	64	V	10	0101	25
E	11	0101	65	W	10	0110	26
F	11	0110	66	X	10	0111	27
G	11	0111	67	Y	10	1000	30
H	11	1000	70	Z	10	1001	31
I	11	1001	71				
				0	00	1010	00
J	10	0001	41	1	00	0001	01
K	10	0010	42	2	00	0010	02
L	10	0011	43	3	00	0011	03
M	10	0100	44	4	00	0100	04
N	10	0101	45	5	00	0101	05
O	10	0110	46	6	00	0110	06
P	10	0111	47	7	00	0111	07
Q	10	1000	50	8	00	1000	10
R	10	1001	51	9	00	1001	11

Example 1.1 *Write the binary digits used to record the word BASE in BCD.*

Solution. In BCD notation:

$$B = 110010 \quad A = 110001 \quad S = 010010 \quad E = 0$$

Hence, the binary digits

$$\underset{B}{0} \quad \underset{A}{0} \quad \underset{S}{0\ 0} \quad \underset{E}{0}$$

will record the word BASE in BCD.

Example 1.2 *Using Octal notation, write the BCD coding for the word DIGIT.*

Solution. In BCD notation:

$$D = 64 \quad I = 71 \quad G = 67 \quad I = 71 \quad T = 2$$

Hence, the BCD coding for the word DIGIT in octal notation will be

$$\underset{D}{4} \quad \underset{I}{7} \quad \underset{G}{7} \quad \underset{I}{7} \quad \underset{T}{2}$$

ASCII

Pronounced "ask-ee," ASCII (**A**merican **S**tandard **C**ode for **I**nformation **I**nterchange) is the binary code most widely used with microcomputers. It has replaced many of the special codes that were previously used by computer manufacturers.

ASCII 7 bit code can represent up to 128 characters. A letter, digit or special symbol is called a character. It includes upper-case and lower-case alphabets, numbers, punctuation marks, special characters and control characters.

ASCII 8 bit code can represent up to 256 characters. Table 1.7 shows ASCII 8 bit coding scheme for alphabets and digits.

Table 1.7: ASCII 8-bit Coding Scheme

Character	*Decimal*	*ASCII–8*
A	65	0 1 0 0 0 0 0 1
B	66	0 1 0 0 0 0 1 0
⋮	⋮	⋮
O	79	0 1 0 0 1 1 1 1
P	80	0 1 0 1 0 0 0 0
Q	81	0 1 0 1 0 0 0 1
⋮	⋮	⋮
Y	89	0 1 0 1 1 0 0 1
Z	90	0 1 0 1 1 0 1 0
0	48	0 0 1 1 0 0 0 0
1	49	0 0 1 1 0 0 0 1
2	50	0 0 1 1 0 0 1 0
3	51	0 0 1 1 0 0 1 1
4	52	0 0 1 1 0 1 0 0

Character	*Decimal*	*ASCII–8*
a	97	0 1 1 0 0 0 0 1
b	98	0 1 1 0 0 0 1 0
⋮	⋮	⋮
o	111	0 1 1 0 1 1 1 1
p	112	0 1 1 1 0 0 0 0
q	113	0 1 1 1 0 0 0 1
⋮	⋮	⋮
y	121	0 1 1 1 1 0 0 1
z	122	0 1 1 1 1 0 1 0
5	53	0 0 1 1 0 1 0 1
6	54	0 0 1 1 0 1 1 0
7	55	0 0 1 1 0 1 1 1
8	56	0 0 1 1 1 0 0 0
9	57	0 0 1 1 1 0 0 1

UNICODE

Unicode uses two bytes (16 bits) for each character. It can handle 65 536 character combinations. Thus, it allows almost all the written languages of the world to be represented using a single character set. Formally,

Unicode provides a unique number for every character,
no matter what the platform,
no matter what the program,
no matter what the language

Unicode standard covers the principal written languages of the America, Europe, the Middle East, Africa, India and Asia.

KEY CONCEPTS

- A digital computer works with binary number system.
- All the data that is entered into a computer is first converted into the binary form and after processing, it is again converted to human readable form.
- There are different types of number systems (binary, octal, hexadecimal) that are used to represent data.
- We can convert a number in one system to the other system by following rules specified by the number system.
- Some useful computer coding systems are BCD, ASCII and UNICODE.

ASSESSMENT 1.4

Fill in the Blanks

1 A digital computer works with ..... number system.

2 A ..... is the basic unit that is used to represent the alphabetic, numeric and alphanumeric data.

3 1 Kilobyte (KB) = ... bytes.

4 The full form of ASCII is ..... .

State Whether True or False

1 The binary number system has only one digit 1

2 We can convert a number in one system to the other system by following rules specified by the number system.

3 BCD code is one of the early computer codes.

4 UNICODE uses one byte (8 bits) for each character.

Answer the Following

1 Explain how data is represented in the computer.

2 Discuss in brief the number systems – binary, octal and hexadecimal.

3 Perform the following inter-number system conversions:

(*i*) $(\quad)_2 = (\quad)_{10}$ (*ii*) $(\quad)_{10} = (\quad)_2$

(*iii*) $(\quad)_{10} = (\quad)_8$ (*iv*) $(\quad)_8 = (\quad)_2$

(*v*) $(\quad)_{16} = (\quad)_2$ (*vi*) $(9D)_{16} = (\quad)_{10}$

(*vii*) $(\quad)_2 = (\quad)_8$ (*viii*) $(\quad)_8 = (\quad)_{10}$

(*ix*) $(\quad)_{10} = (\quad)_{16}$

4 Write short notes on the following computer coding systems:

(*i*) BCD (*ii*) ASCII (*iii*) UNICODE

Suggested Activity

Introduce an idea of the complexity of data representation in computer.

1.5 COMPUTER SYSTEM

A computer is an electronic device that can accept data and instructions, store and process it to produce the required result.



The acronym for **COMPUTER** is "**C**ommon **O**riented **M**achine **P**articularly **U**sed for **T**rade, **E**ducation and **R**esearch".

The computer mainly consists of hardware and software components. Both of these work together to process data. Figure 1.23 illustrates these two components.

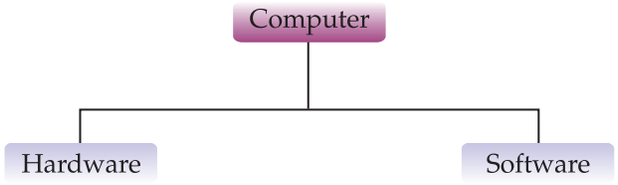


Fig. 1.23: Hardware and software

Hardware

The physical components of the computer that can be seen and touched are called as hardware. The term hardware is used to refer to all the components inside or outside the computer. In addition to this, components used to interconnect two or more components, for example, wires are also regarded as hardware. We have several hardware devices that are used at various phases of data processing cycle. The hardware that are used to supply input to computer are called as *input devices*. The hardware that are used to process the data, are called as *processing devices* and the devices that are used to present output of computer are called as *output devices*. Each of these categories has a broad variety of devices of various brands and qualities.

Software

The sets of instructions that instruct the computer to do different tasks are called as software. For example, word processing, games, painting, e-mail, spreadsheets etc.

Software is the driving force behind the working of computer. Without the presence of software, the computer is as good as a piece of plastic and metal. Hardware can be considered as organs and the software is life that moves inside these organs. Both of them cannot perform their function without the presence of each other.

• Hardware Components

Hardware consists of all the machinery and equipment in a computer system. The hardware includes, the keyboard, the monitor, the printer, and the "box" — the computer or processing device itself. Figure 1.24 illustrates hardware of a computer.



Fig. 1.24: Hardware of a computer

The hardware components are given in Fig. 1.25

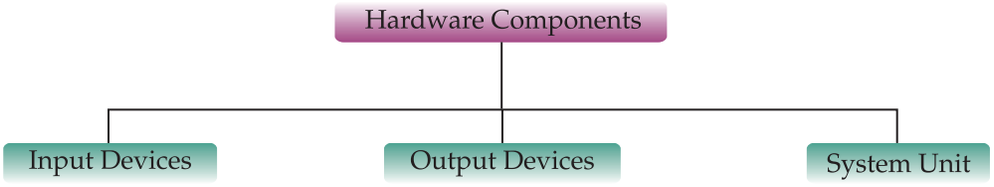


Fig. 1.25: Hardware components

Input Devices

Input devices allow people to put data into the computer in a form that the computer can use, for example, keyboard and mouse.



Keyboard Mouse

Fig. 1.26: Input devices

Output Devices

Output devices translate information processed by the computer into a form that humans can understand— print, sound, graphics, or video. For example, monitor, printer and sound speakers.



Monitor Printer Sound Speakers

Fig. 1.27: Output devices

System Unit

The system unit is also known as case. It is the box that houses the processor chip (CPU) *i.e.*, the 'brain' of computer, the memory chips, and the motherboard with power supply, as well as some secondary storage devices– floppy-disk drive, hard-disk drive, and CD or DVD drive. The case comes in desktop or tower models. It includes a power supply unit and a fan to keep the circuitry from overheating.



Fig. 1.28: Case or system cabinet

Secondary Storage Devices

Within the motherboard in the system cabinet, the secondary storage devices are connected to it. Secondary storage or permanent storage stores your data as long as you want.

Let us discuss the commonly used secondary storage devices– Compact Disk (CD) and Digital Versatile Disk (DVD):

Compact Disk (CD)

The compact disk or CD is an optical storage medium. It is relatively cheap and has a storage capacity of up to 700 Megabytes of data. There are three main types of CDs:

(*i*) *CD-ROM* (*Compact Disk—Read Only Memory*): It is an optical-disk format that is used to hold pre-recorded text, graphics and sound, for example, encyclopedias, software, games, e-books etc. It is a read-only disk. Read-only means that the disk's content is recorded at the time of manufacture and cannot be written on or erased by the user.

(*ii*) *CD-R* (*Compact Disk-Recordable*): It is an optical-disk format on which data can be recorded only once but can be read many times. It allows users to make their own CD disks, though it is a slow process. Once recorded the contents cannot be erased. CD-R is often used by companies for archiving, that is, to store vast amounts of information.

(*iii*) *CD-RW* (*Compact Disk-Rewritable*): It is an erasable disk that allows users to record and erase data, so the disk can be used over and over again. CD-RW disks are used for archiving and backing up large amounts of data or work in multimedia production or desktop publishing, however, they are relatively slow.

Digital Versatile Disk (DVD)

The digital versatile disk or digital video disk or DVD is an optical storage medium. It is a CD-style disk but is able to hold about 15 times as much information and transfer it to the computer about 20 times as fast as a CD-ROM. There are three main types of DVDs:

(*i*) *DVD-ROM* (*Digital Versatile Disk—Read Only Memory*): It is a high capacity optical disk capable of storing 4.7 Gigabytes to 17 Gigabytes. It is a powerful and versatile secondary storage medium which was originally developed for the movie industry.

(*ii*) *DVD-R* (*DVD-Recordable*): It is similar to CD-R that allows users to write on the disk only once but read it many times. Recordable DVDs offer the user yet another option for storing large amount of data.

(*iii*) *DVD-RW* (*DVD-Rewritable*): Most writable DVD drives are DVD-RW. The DVD-RW disks can be recorded on and erased more than once.

DVD technology is bringing down prices these days.

Figure 1.29 shows how to use a CD/DVD.



Fig. 1.29: How to use a CD/DVD

Some secondary storage devices are also called input and output devices. For example, CD, DVD and Pen Drive etc.

• Types of Software

Software is generally divided into two main categories: *System Software* and *Application Software*. The system software are generally concerned with the various operations of a computer system and the application software are concerned with providing various services to the users. Figure 1.30 shows the two types of software.

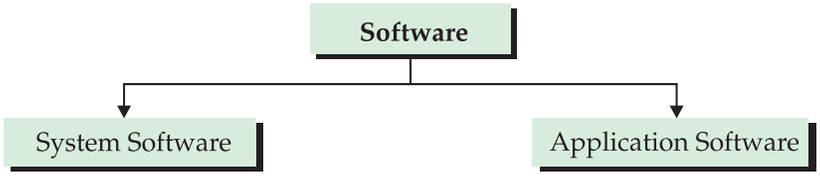


Fig. 1.30: Types of software

System Software

System software is a set of master programs that keep the computer system working.

The basic components of system software are given below:

Operating System Software

Operating system is a bridge between the computer hardware and the user. Various types of operating systems are Windows, Mac OS, Unix, Linux etc.

Operating systems perform basic tasks, such as:

1. Recognizing input from the keyboard
2. Sending output to the display screen
3. Keeping track of files and directories on the disk
4. Controlling peripheral devices such as disk devices and printers.

Language Software

A language acceptable to a computer system is called *computer language* or *programming language*. All computer languages can be classified broadly into the following three categories:

1. Machine Language
2. Assembly Language
3. High-level Language.

Low Level Language

Machine Language

Every computer understands only one language without using a translation program which is called *machine language* of the computer.

Assembly Language

A language that allows instructions and storage locations to be represented by letters and symbols instead of numbers is called *assembly language* or *symbolic language*.

Machine and assembly languages are often referred to as *low-level programming languages*.

High Level Language

High-level programming languages overcome the limitations of low-level programming languages. The main feature of high-level languages is *machine independence, i.e., portable* (can be used on different computers with or without minor changes).

Today many different high-level languages are in use because each one was designed for a different purpose. For example, LOGO, FORTRAN, COBOL, BASIC, Pascal, C, C++, C#, Java, RPG, LISP and SNOBOL.

Source Program and Object Program

Let us define source and object program:

Source Program: A computer program written in high level language by a programmer that can be converted (or translated) into machine language.

Object Program: A computer program translated from an equivalent source program into machine language by a compiler or assembler.

Compilers and Interpreters

Computers work in machine language. These need translators for converting different computer languages into machine language. Compilers and interpreters are translators which are also known as language processors.

Compiler

Compiler software translates a source program that is usually written in a high level language by a programmer into machine language. The compiler is capable of replacing single source program statement with a series of machine language instructions. For each language the machine requires a separate compiler. Figure 1.31 shows the working of a compiler.

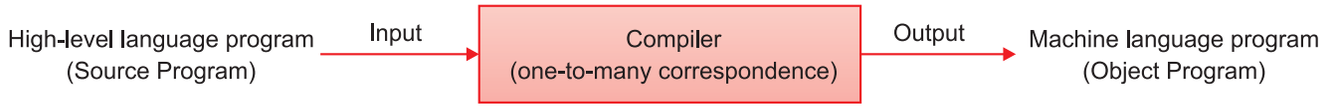


Fig. 1.31: Working of a compiler

Interpreter

Interpreter software translates each source program statement into a sequence of machine instructions and then executes these machine instructions before translating the next source language statement. Interpreter is also unique for each high level language like compiler. Figure 1.32 shows the working of an interpreter.

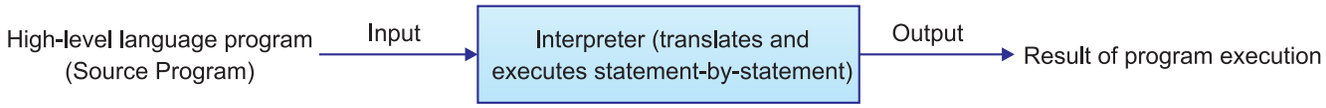


Fig. 1.32: Working of an interpreter

Others

Program Utilities

Utilities are the programs that carry out general tasks such as formatting disks, storing files, virus checking. Some examples of utilities are *text editors, backup utility, compression utility, disk defragmenter* and *antivirus software*.

You can buy the utility programs at computer stores. Some utility programs are also available free of cost on the Internet.

Device Drivers

Device drivers are programs which allow hardware devices such as the keyboard, printers to interface with the computer.

Modern operating systems have inbuilt support for a variety of input and output devices. For example, Windows XP contains drivers of hundreds of printers, scanners and other devices.

• Application Software

Application software allows the user to perform specific tasks. An application software, designed to satisfy one purpose may not be able to solve other purpose of the same user. For example, software for financial management cannot be used for designing two-dimensional graphics. Similarly, we have word processors for letter writing and presentation software for presentations. We cannot interchange the use of two application software with each other.

There are two main categories of application software: *Pre-Written* and *Customised* Application Software.

Pre-Written Application Software These are designed for common needs of various businesses. For example, Word Processing Software, Electronic Spreadsheets, Presentation Software, Database Management Systems, Communication Software, Desktop Publishing Software.

Customised Application Software These are created for a specific application of a specific environment. For example, software required by a publishing house. This type of software may not be useful for a computer assembling house who deals in the items having warranty period. Software engineers are hired to create such software. Different computer languages are used to create these software.

Types, Examples and Uses of Application Software

Application software can be classified in many ways— or productivity, speciality education/reference, entertainment, and personal uses. Figure 1.33 illustrates the types of application software.



Productivity software	Speciality software	Education/ reference software	Entertainment software	Personal software
• Word processing • Spreadsheets • Database management • Personal information management • Web browse • E-mail etc.	• Presentation graphics • Financial • Desktop publishing • Drawing & painting (image editing) • Project management • Computer aided design • Web page design • Video/audio editing etc.	• Encyclopedias • Phone books • Almanacs • Library searches etc.	• Games, etc.	• Cookbooks • Medical • Home decoration • Gardening • Home repair • Tax preparation etc.

Fig. 1.33: Types of application software

Let us discuss some of the application software in brief:

(*a*) *General purpose software*: These software are useful in controlling the general activities of organizations. For example, MS-WORD, MS-EXCEL and DTP software.

(*b*) *Speciality software*: These software are used for a special purpose. For example, Peachtree.

(*c*) *Entertainment software*: These software allow a computer to be used as an entertainment tool. For example, Solitaire and Pinball.

(*d*) *Educational software*: These software allow a computer to be used as a teaching and learning tool. For example, Microsoft Encarta, Mavis Beacon and TypingMaster Pro.

• Features of Operating System

Operating System (OS) is a bridge between the computer hardware and the user. For example, Windows, Linux, Mac OS, Solaris, UNIX etc.

Windows provides a Graphical User Interface (GUI). A graphical user interface is simple to use because any action that is performed is in the form of button clicks or selection of commands.

Some of the features of an OS are given below:

1 Manipulates the files and folders on a computer.
2 Transfers files from one folder to another.
3 Finds a file or folders using a 'search' facility.
4 Customizes the computer desktop.

Let us discuss these features using Windows XP operating system.

Creating Folders or Directories

Folder is like a container, which can store programs, files and also other folders.

(*i*) **To Create a Folder at the Desktop**

1 Right-click in an empty area of the desktop.
2 From the pop-up menu so displayed, select *New* (see Fig. 1.34).

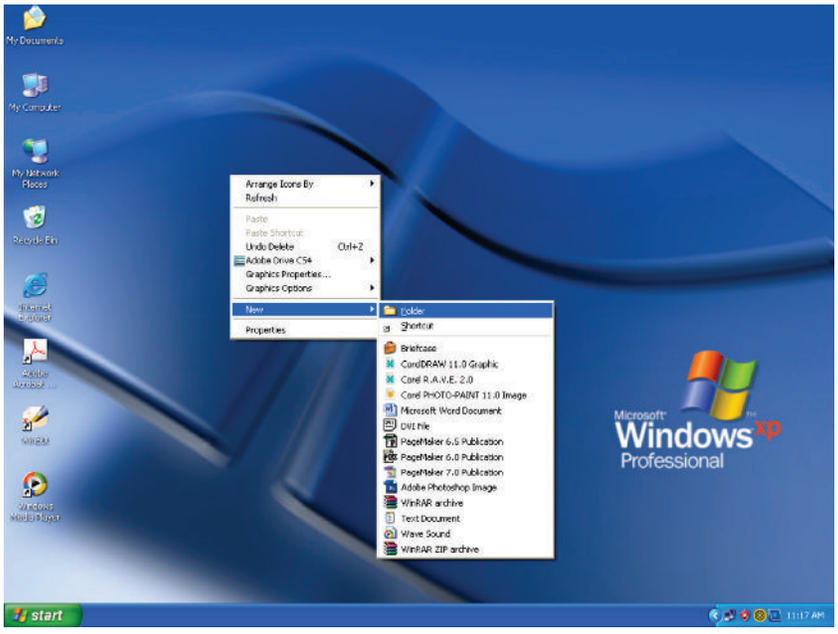


Fig. 1.34: Creating a folder at the desktop

3 From the cascading menu, select the option *Folder* (see Fig. 1.34). A folder icon appears with the name 'New Folder' highlighted.

4 Type a name for the newly created folder and press *Enter* key.

(*ii*) **To Create a Folder in a Drive/Folder**

1 In 'My Computer' navigate to the item (drive/folder) in which you wish to create a new folder.

2 Double click on this item, so that a window exhibiting its contents is opened.

3 Right-click on an empty area in the window.

4 Select *New* from the pop-up menu displayed, and *Folder* from the cascading menu (see Fig. 1.35). A folder icon appears with the name 'New Folder' highlighted.

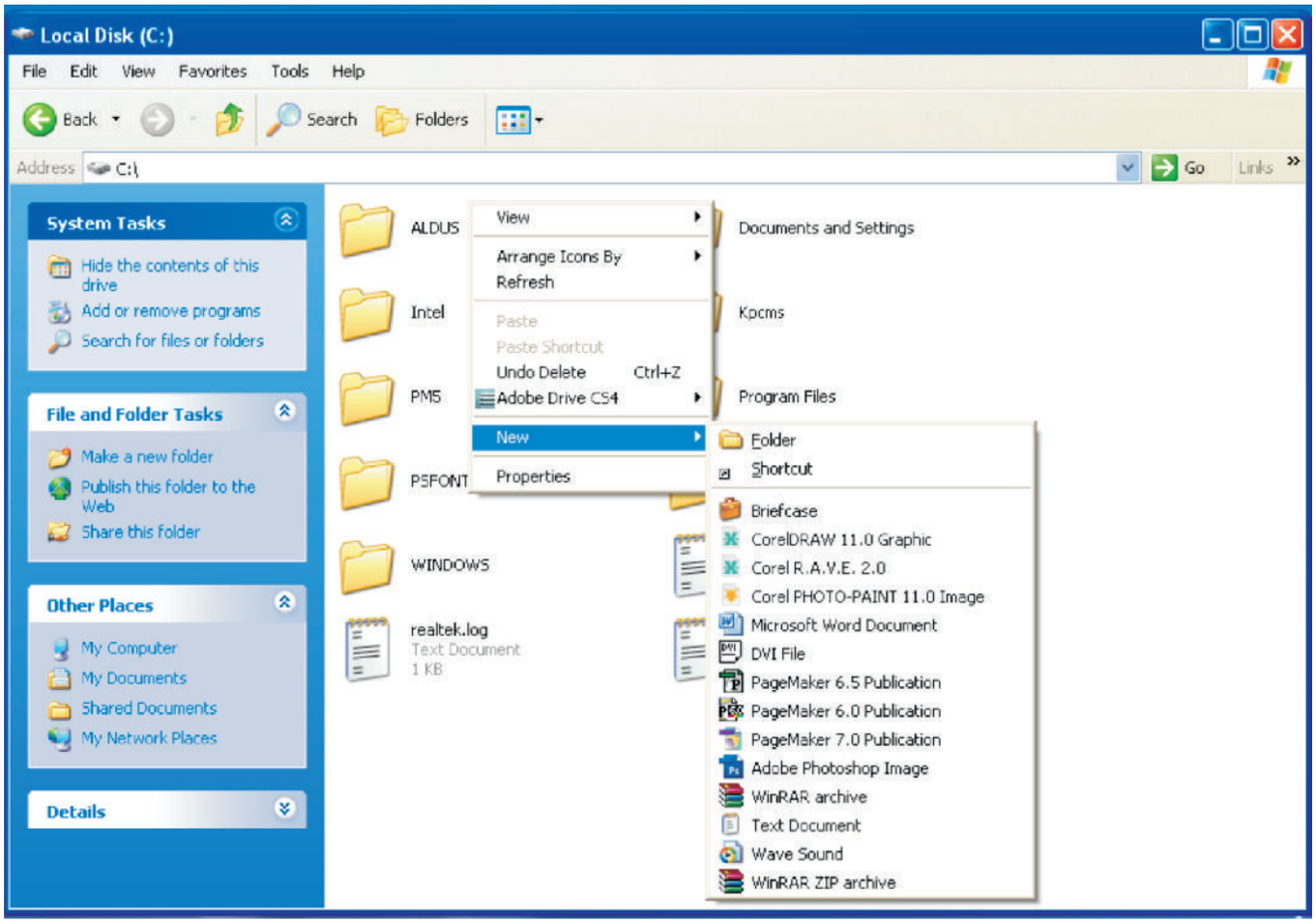


Fig. 1.35: Creating a folder in a drive/folder

5 Type a name for the newly created folder and press *Enter* key.

Say, you create a new folder called Software in the ICT folder. In this case, the ICT folder is called the parent folder and the Software folder is called the subfolder.

Copying Files and Folders

To copy a file or a folder to another folder, perform the following steps:

1 Select the file or folder.

2 Click the Edit menu.

3 Click the *Copy* option.

Alternatively, you can right-click the file or folder, click the *Copy* option from the shortcut menu or press the Ctrl and C keys simultaneously (see Fig. 1.36).



Fig. 1.36: Copying files and folders

4 Select the folder where you have to paste the file or folder.

5 Click the Edit menu.

6 Click the *Paste* option.

Alternatively, you can right-click the folder, click the Paste option from the shortcut menu or press the Ctrl and V keys simultaneously.

A quick way to move and copy files or folders is to use right mouse button to invoke the shortcut menu (a menu which gets displayed by right click of mouse).

Moving Files and Folders

To move a file or a folder completely from one folder to another, perform the following steps:

1 Select the file or folder.

2 Click the Edit menu.

3 Click the *Cut* option (see Fig. 1.37).

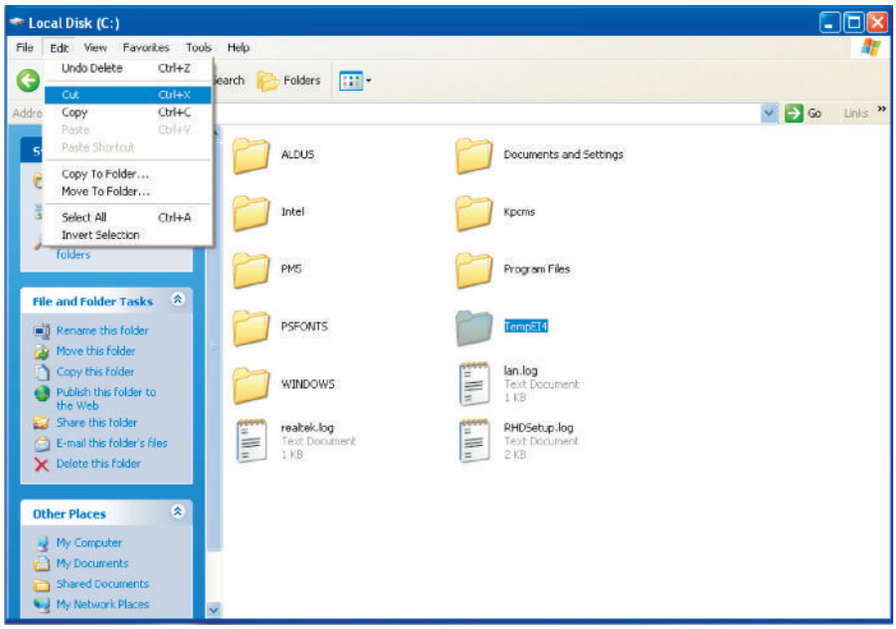


Fig. 1.37: Selecting the Cut option

Alternatively, you can right-click the file or folder, select the *Cut* option from the shortcut menu or press the Ctrl and X keys simultaneously.

4 Select the folder where you have to paste the file or folder.

5 Click the Edit menu.

6 Click the *Paste* option (see Fig. 1.38).

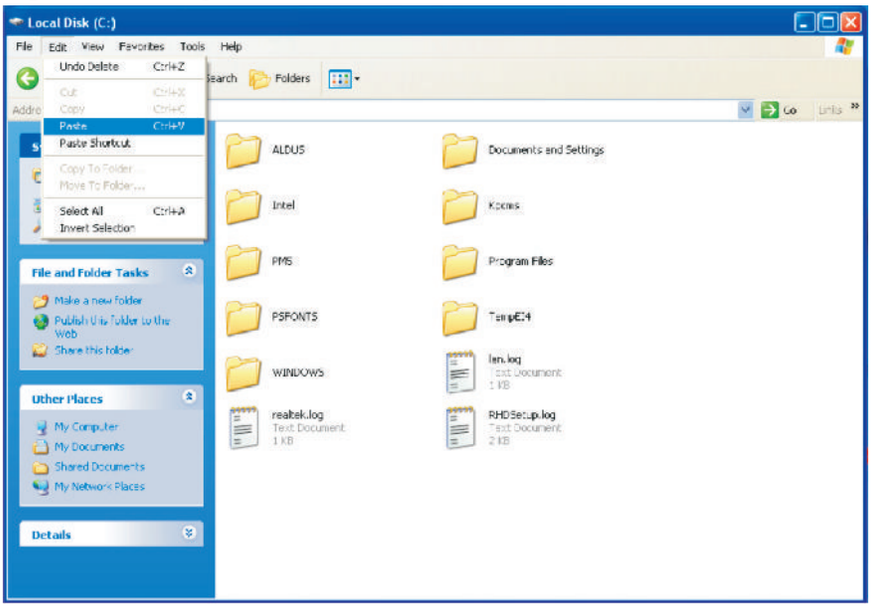


Fig. 1.38: Selecting the Paste option

If a number of files have to be copied or moved, it can be done using the Shift key or the Ctrl key. When you want to select consecutive files and folders, click the first item, hold down the <*Shift*> key and click the last item. When you want to select files that are not consecutive, hold down the <*Ctrl*> key and click each item. To select all files and folders in the window, choose *Edit*, *Select All*.

Copying an item places an exact replica of the copied item at the new location also retaining the item as the location where it is copied from. But, moving an item from a location to another erases its existence at the original location.

Renaming Files and Folders

A file or folder can be renamed immediately after it is created or later.

To rename a file,

1 Select the file or folder.

2 Click the Rename option in the File menu.

3 Type a new name and press the <*Enter*> key.

Alternatively,

1 Right-click the file or folder.

2 Click the *Rename* option in the pop-up menu (see Fig. 1.39) .

3 Type a new name and press the *Enter* key.

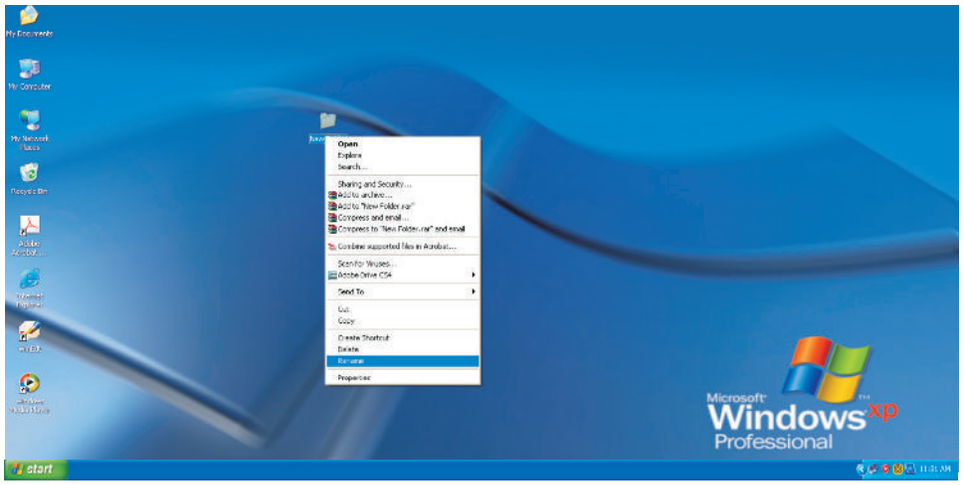


Fig. 1.39: Renaming files and folders

You can also select the file and press the F2 key to change the name.

The name of the file or folder is highlighted. Type the new name and press the *Enter* key.

Deleting a File or Folder

To delete a file or folder, perform the following steps:

1 Select the file or folder.

2 Press the *Delete* key.

Windows asks for confirmation before deleting a file or folder as shown in Fig. 1.40. Click *Yes* to delete the file or folder. Click *No* to cancel the operation.

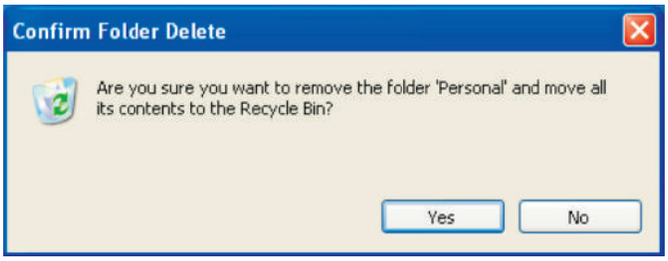


Fig. 1.40: Deleting a File or a Folder

Alternatively, you can right-click the file or folder and select the Delete option in the pop-up menu.

Deleted files and folders are stored in the Recycle Bin. If you delete any file by mistake, it can be restored by clicking the Restore option in the File menu of the

Recycle Bin window. If any file or folder has to be deleted permanently from the machine, then right click on the *Recycle Bin* and select the *Empty Recycle Bin* option.

On clicking *Empty Recycle Bin* option the following message will be displayed (see Fig. 1.41).

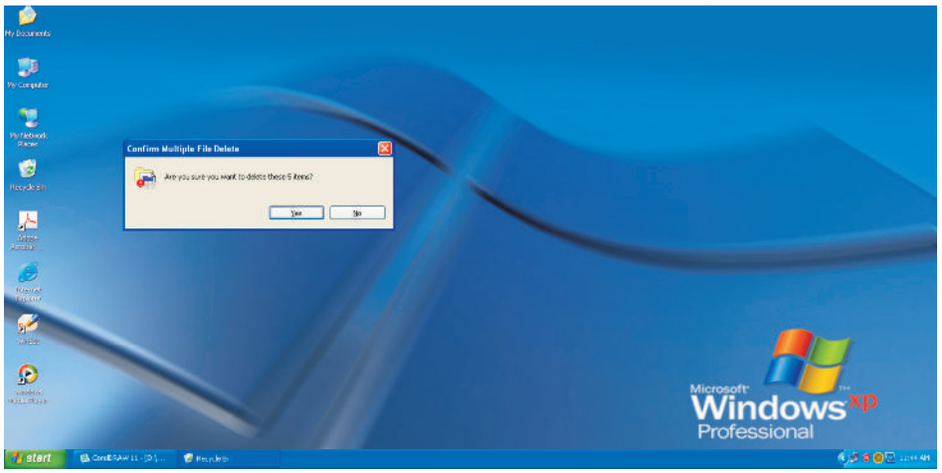


Fig. 1.41: Confirm Multiple File Delete dialog box

Click *Yes* to permanently delete the files and folders from Recycle Bin.

Searching Files and Folders

To search files and folders, perform the following steps:

1. Click the *Search* option in the *Start* menu. The *Search Results* window appears.
2. Click the 'All Files and Folders' option.
3. Specify the name of the file or the folder that has to be searched.
4. Specify the folder in which the search has to be happened.

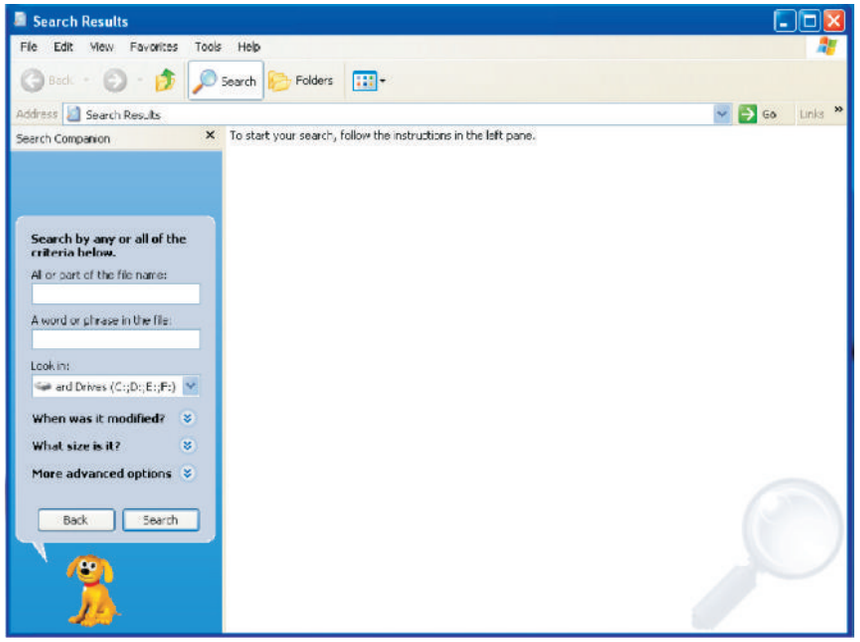


Fig. 1.42: The Search option

The results are displayed in the right pane. You can also access the Search option by pressing the Ctrl and E keys simultaneously.

Customizing Computer Desktop

Arranging Icons on the Desktop

Icons can be arranged on the desktop. These can be dragged and placed anywhere on the screen. To automatically arrange these, perform the following steps:

1 Right-click on the empty space on the desktop.

A pop-up menu appears. A menu that appears when you click the right mouse button is called a context-sensitive menu.

2 Choose the *Arrange Icons By* option from the pop-up menu.

3 Click the *Auto Arrange* option (see Fig. 1.43).

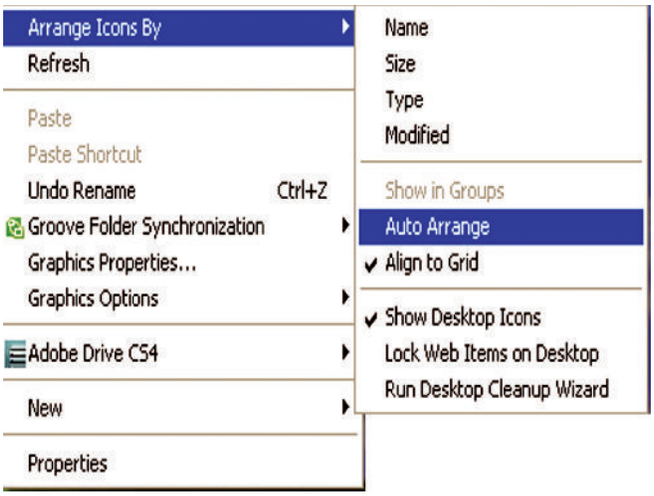


Fig. 1.43: Auto Arrange Icon option

You can also arrange the icons by Name, Size, Type, etc.

Changing the Desktop Background

The background of a desktop can be changed. To change the background of the desktop, perform the following steps:

1 Right-click on the empty space on the desktop.

2 Click the *Properties* option (see Fig. 1.44).

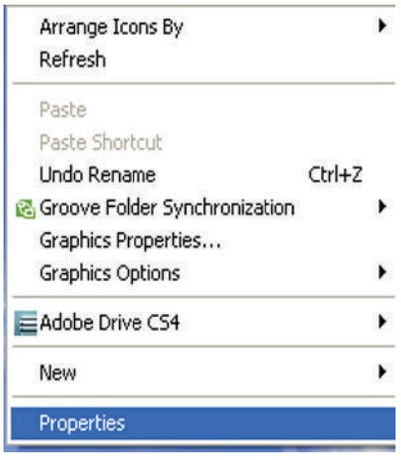


Fig. 1.44: Properties option

3 The *Display Properties* dialog box appears. Click the *Desktop* tab (see Fig. 1.45).
4 Select any option from the *Background* list box. For example, select Windows XP as the background and click the *Apply* button (see Fig. 1.45).
5 Click the *OK* button to close the dialog box.



Fig. 1.45: Changing background.

The background is also known as the wallpaper.

Changing the Screen Saver

Screen saver is a moving picture or pattern that appears on the screen when the mouse or the keyboard is not used for a specified period of time. You can set the time using the Wait spin box. To select the screen saver, perform the following steps:

1 Right-click on the empty space of the desktop.
2 Click the *Properties* option.
3 Click the *Screen Saver* tab (see Fig. 1.45).
4 Select any Screen saver from the list.

5 Click the *Apply* button.

6 Click the *OK* button to close the dialog box.

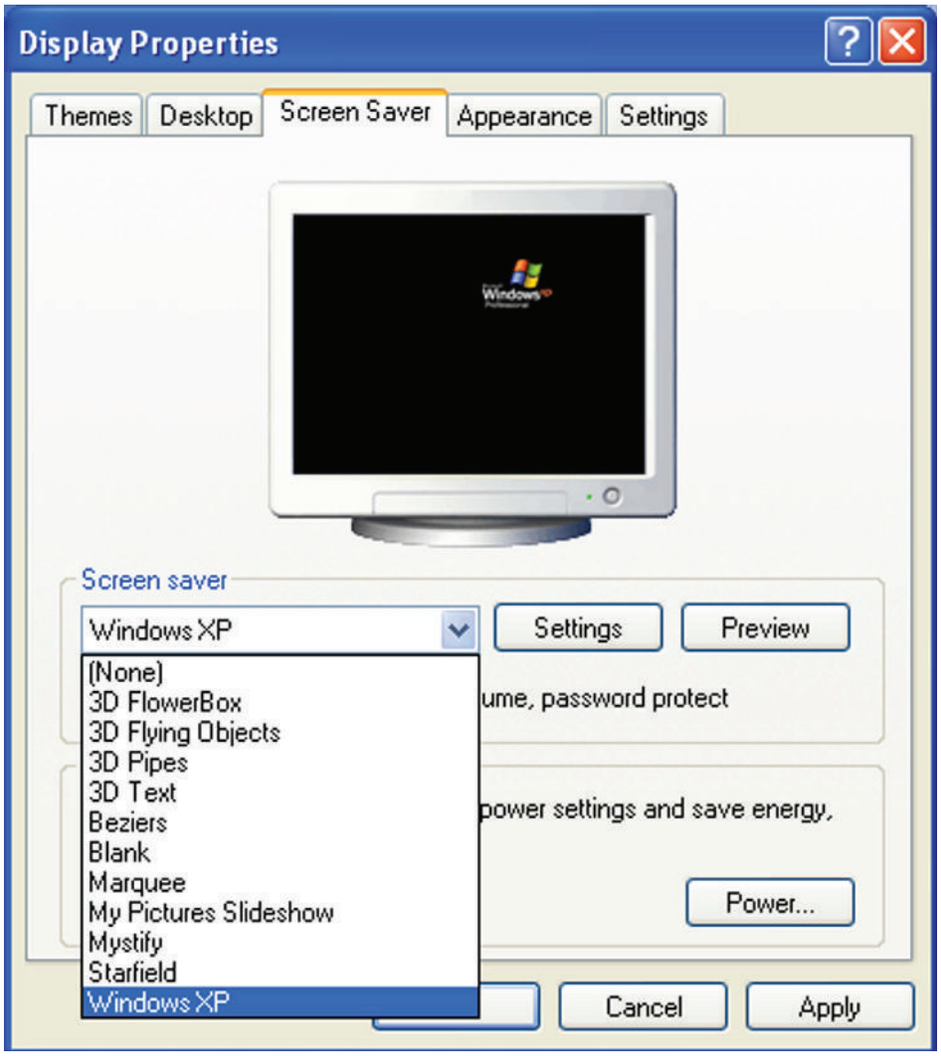


Fig. 1.46: Changing Screen Saver

Changing the Appearance

The appearance of the desktop can be changed. To change the appearance of the desktop, perform the following steps:

1 Right-click on the empty space of the desktop.

2 Click the *Properties* option.

3 Click the *Appearance* tab (see Fig. 1.47).

4 Select any option from the list box. For example, select Windows XP style from Windows and buttons.

5 Click the *Apply* button.

6 Click the *OK* button to close the dialog box.

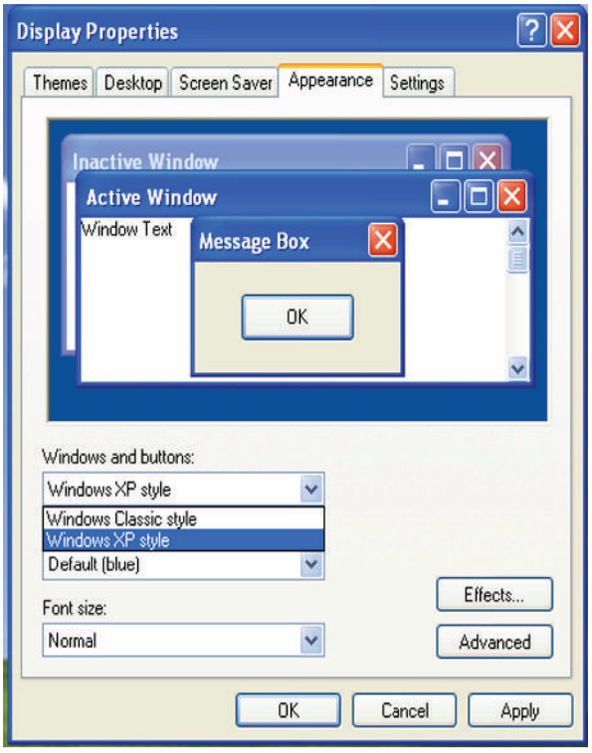


Fig. 1.47: Changing the Appearance

You can change Color scheme and Font size depending on your choice.

KEY CONCEPTS

- A computer system consists of hardware components and software components.
- Hardware are the physical parts of the computer that can be seen and touched.
- Software are the sets of instructions that instruct the computer to do different tasks for example: word processing, games, painting, email, spreadsheets.
- Software can be classified as systems and application software.
- Operating system is a bridge between the computer hardware and the user.

REVIEW QUESTIONS

Fill in the Blanks

1 A ..... consists of hardware and software components.

2 Commonly used secondary storage devices are ..... and ..... .

3 ..... software keep the computer system working.

4 ..... are programs which allow hardware devices to interface with the computer.

State Whether True or False

1 Hardware are the sets of instructions that instruct the computer to do different tasks.

2 System unit contains the motherboard, power supply and hard disk.

3 Program Utilities carry out general tasks such as formatting disks, storing files, virus checking etc.

4 An operating system cannot customize computer desktop.

Multiple Choice Questions

1 ICT focuses primarily on ..... technologies.

(*a*) Water (*b*) Communication (*c*) Research (*d*) Transportation

2 Computers can be classified on the basis of the following.

(*a*) Size (*b*) Cost (*c*) Performance (*d*) All of these

3 Which of the following coding scheme uses two bytes (16 bits) for each character?

(*a*) EBCDIC (*b*) UNICODE (*c*) ASCII (*d*) BCD

4 A program written in high level language is known as ..... .

(*a*) Main Program (*b*) Image Program (*c*) Object Program (*d*) Source program

Match the Following

Column A		Column B	
1	Social information exchange tool	(*a*)	8 KB
2	Characteristics of a computer	(*b*)	Transistor
3	Megabyte	(*c*)	Integrated Circuit
4	Entertainment Software	(*d*)	Blog
5	First generation	(*e*)	4 KB
6	Second generation	(*f*)	Versatility
7	Third generation	(*g*)	Very Large Scale Integration
8	Fourth generation	(*h*)	Vacuum Tube
		(*i*)	Solitaire

Answer the Following

1 Describe the computer system.

2 List major hardware components of a computer system.

3 Define system software and application software. Give their uses also.

4 Give the features of an operating system.

Suggested Activities

1 Demonstrate and explain in brief a computer system.

2 Define and explain the difference between system software and application software.

Field Trip

Students should visit some big educational organization in their city. Interact with faculties there and prepare a report on the latest computer system in use.

UNIT 2

APPLICATION SOFTWARE

UNIT OUTCOME

Students will be able to:

- understand how to open word processing software, and create, and save a document;
- recognize how to format a document in a desired way;
- apply any of formatting features in their document;
- understand how to open presentation software, and create and save a document;
- recognize how to create a slide show using animation and sound.

2.1 WORD PROCESSOR

Word processing software allows you to create, edit, format, print, and store text material. Word processor is the most common application software. The main advantage of a word processor is that it provides WYSIWYG (What You See Is What You Get) interface which helps you make changes quickly and easily.

The advantages of using word processor to create documents over typed documents are given in Table 2.1.

Table 2.1: Advantages of Word Processor

Typed Documents	*Documents Created Using Word Processors*
Slow creating process	Can be created quickly and easily
Difficulty in inserting pictures and images	P ctures and images can be inserted easily
Looks messy after making corrections	Error correction is simple and neat

Microsoft Word (MS-Word) is the most popularly used word processing application software that provides you with a number of useful and fabulous features to process the text.

Let us understand the word processing features using MS-Word.

• Open Word Processor

As mentioned earlier MS-W rd is a member of the MS-Office family provided by Microsoft. It is a Windows based application. Let us assume that your computer has MS-W rd installed on it.

Starting Microsoft Word 2007

To start MS-Word or Word, perform the following steps:

Click **Start → All Programs → Microsoft Office → Microsoft Office Word 2007**

This opens a blank new document (see Fig. 2.1).

The various parts of the blank document window are shown in this figure.

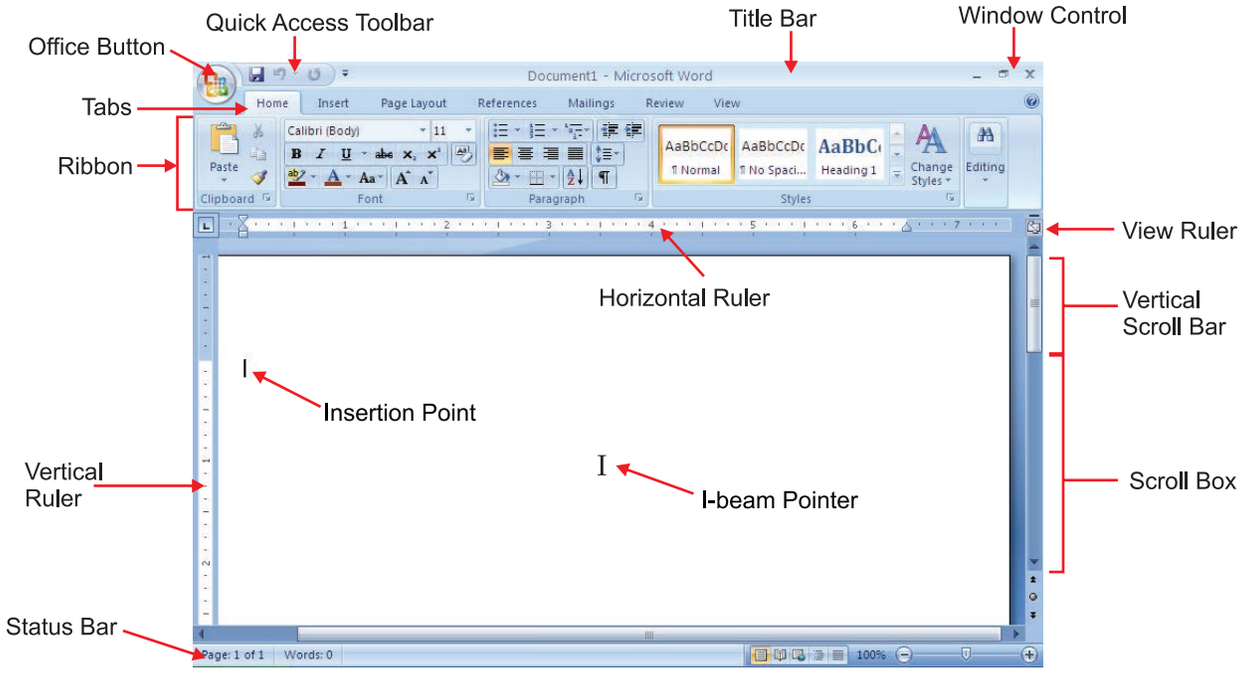


Fig. 2.1: Components of a Document window

Table 2.2 describes some of the components of a document window.

Table 2.2: Word Document Window Components

Component	*Description*
Office Button	Displays as a Microsoft Office logo and, when clicked, displays a list of options and most recently opened documents.
Quick Access Toolbar	Contains buttons for commonly used commands.
Title Bar	Displays document name followed by program name.
Tabs	Contain commands and features organized into groups.
Ribbon	Area containing the tabs and commands divided into groups.
I-beam Pointer	Used to move the insertion point or to select text.
Vertical Scroll Bar	Used to view various parts of the document.
Status Bar	Shows details about the document you are working on.

Table 2.3 shows how to move around a document using the keyboard.

Table 2.3: Moving around a document using the keyboard

Key(s)	*Function(s)*
Up arrow, Down arrow, Left arrow, Right arrow	One character up, down, left and right
Ctrl + <Right> arrow	Next word
Ctrl + <Left> arrow	Previous word
Home	Beginning of the line
End	End of the line
Ctrl + <Home>	Beginning of the document
Ctrl + <End>	End of the document
Ctrl + <Page Up>	Previous page
Ctrl + <Page Down>	Next page

• Creating a New Document

If you are already working in MS-Word and you want to create a new document, then perform the following steps:

Click **Office Button** → **New** → **Create**

It displays the newly created document (see Fig. 2.2).

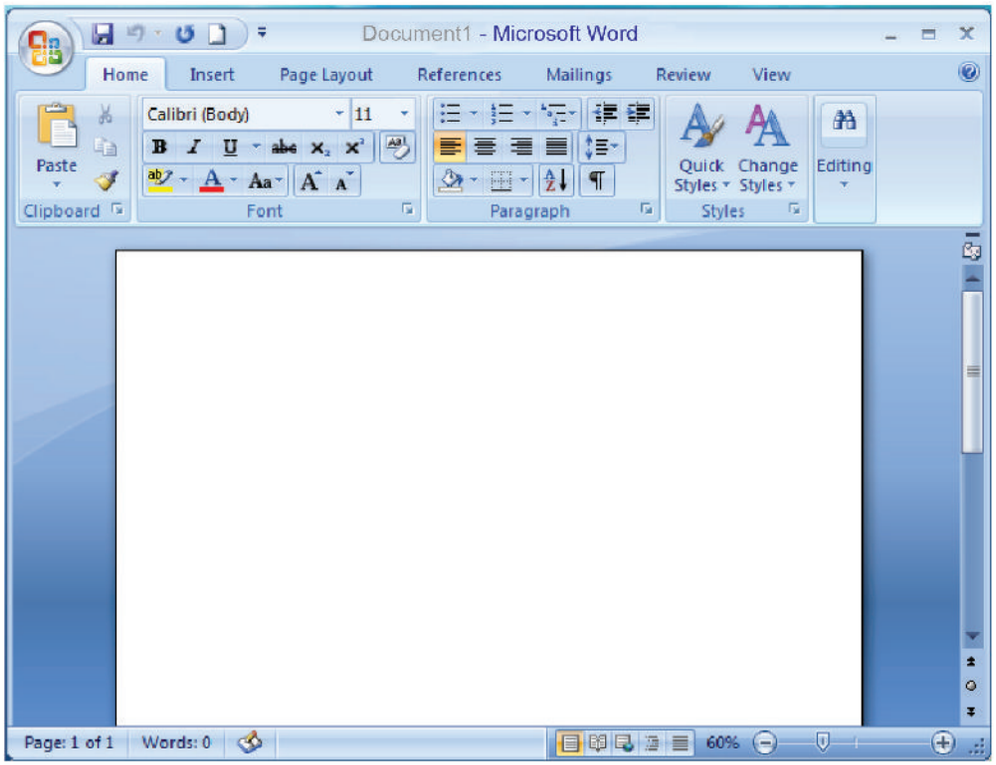


Fig. 2.2: Newly created Word document

• Saving a Document

When you type in a document, the document is stored in the internal memory of the computer. Figure 2.3 shows a typed passage in a document using MS-Word 2007.

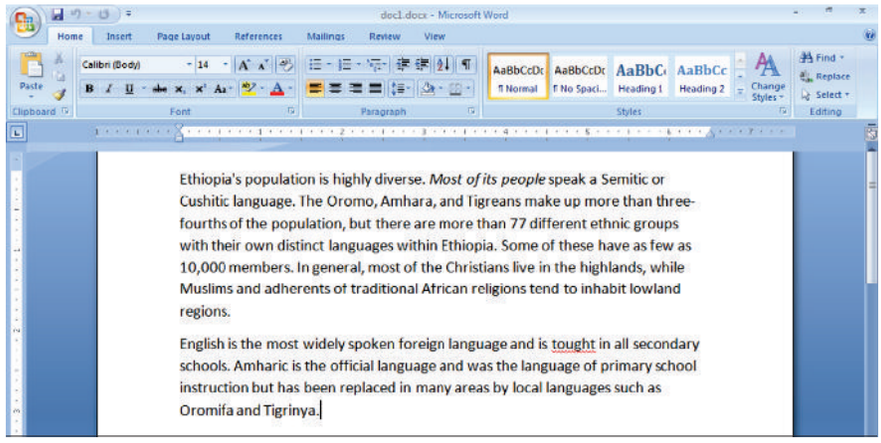


Fig. 2.3: Typing a passage in a Document using MS-Word

Once you have created a document, you have to save it for future use and you must save it on a disk. To save means to preserve the document safely for future use.

To save a word document, perform the following steps:

1. Click the *Office Button*.
2. Click the *Save option* or Press Ctrl + S.

   The '*Save As*' dialog box is displayed.

   This dialog box is displayed only under the following circumstances:

   (*i*) When you have clicked 'Save As'.

   (*ii*) If you have clicked *Save* and you are saving the document for the first time.
3. Identify the location where you want to save. You must enter the name by which you want to save the document. Here, we have selected C: drive and given the file name doc1.docx (see Fig. 2.4).

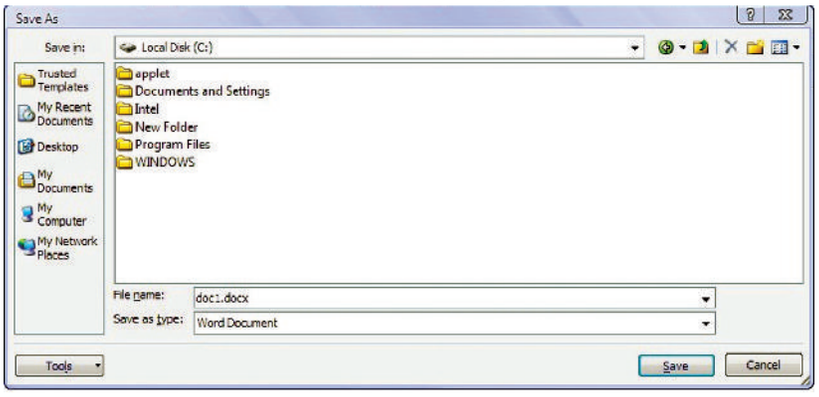


Fig. 2.4: Saving a word document

4. Click the *Save* button.



MS-Word, by default, saves all the documents in the folder 'My Documents' with extensions .docx. However, you can save them elsewhere by selecting the desired location, from the '**Save in**:' drop-down list provided in the 'Save As' dialog box.

• Closing a Document

After your work is complete you need to close the document without exiting from MS-Word. To close a document without exiting MS-Word, perform the following steps:

Click **Office Button → Close**

If you have not saved the document before closing, MS-Word gives you warning asking to save the document (see Fig. 2.5).

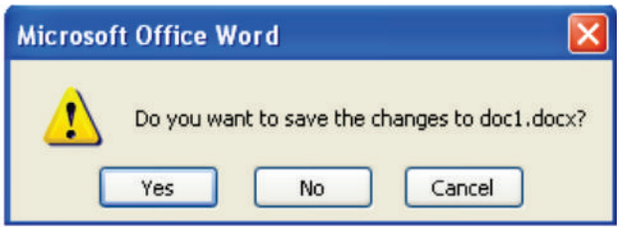


Fig. 2.5: The warning dialog box

From this dialog box:

(*i*) If you want to *Save* the document, click the *Yes* button.

(*ii*) If you do not want to *Save* the document, click the *No* button.

(*iii*) If you want to remove the message box, click the *Cancel* button.

• Editing a Document

Editing is the act of altering your document. Some Edit features are *insert* and *delete*, *undelete*, *find and replace*, *cut/copy and paste*, *spelling and grammar checker*, and *thesaurus*. All of these commands except *spelling and grammar checker* which is in the *Review* tab are in the *Home* tab.

When you edit text, you change text by either inserting text, deleting text or replacing text. To edit text, place the cursor at the required position and insert, delete or replace text.



Useful Tip

You must keep on saving document when working to avoid losing document when power goes off.

• Formatting a Document

When you wish to make a document both more attractive and easier to read, you use formats. All word processing programs have built-in format setting called defaults, which are designed such that you can easily override them.

When creating a document, formatting is usually a separate stage often completed after the document has been entered. The ease of applying and changing formats lets you play with a document's design.

MS Word works on the principle of **"FIRST SELECTION THEN ACTION"**.

Formatting text means changing the text appearance by changing the alignment, style, font and font color. To format text, you need to use the *Home* tab.

In *Home* tab you have all the formatting tools readily available (see Fig. 2.6).

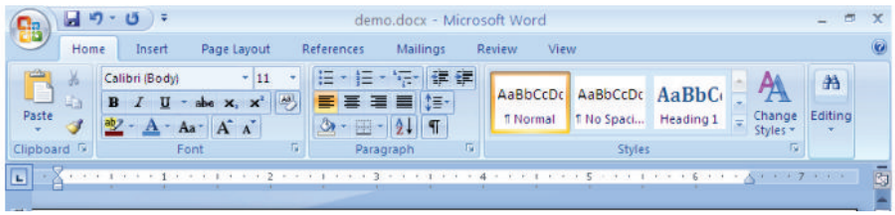


Fig. 2.6: Formatting tools in Home tab

Selecting the Text

For any text to be formatted, first it has to be selected. There are various ways of selecting the text, *i.e.*, using the keyboard by pressing shift key with arrow keys or using the mouse.

Let us discuss some useful features of formatting a document:

Character Formatting

Select the character and format it as required *i.e.*, change its appearance by changing font, style, size, color and changing font style.

We can apply the effects before typing as well as after typing the text (see Fig. 2.7).

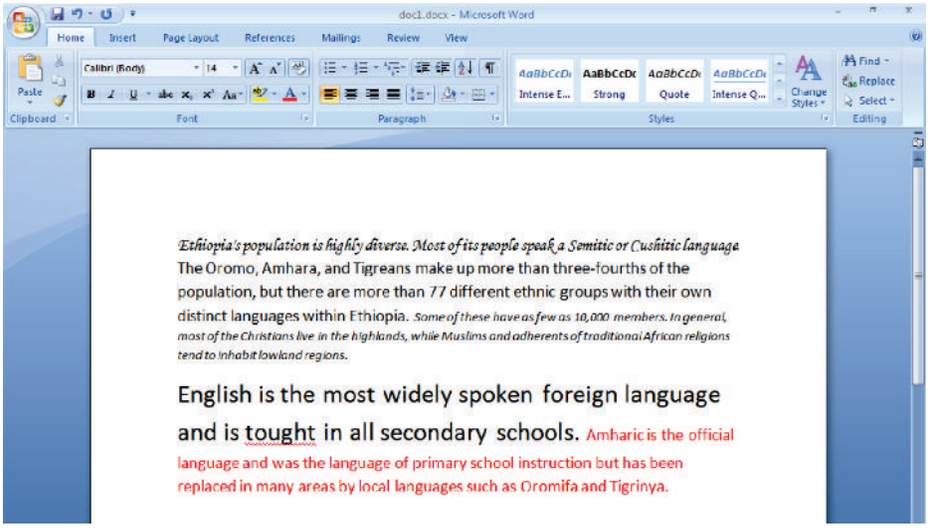


Fig. 2.7: Character formatting

Paragraph Formatting

Select the paragraph and format it as required *i.e.*, apply alignment (Left, Right, Centre and Justify), indent, line spacing, bullets and numbers, and draw boarders around it (see Fig. 2.8).

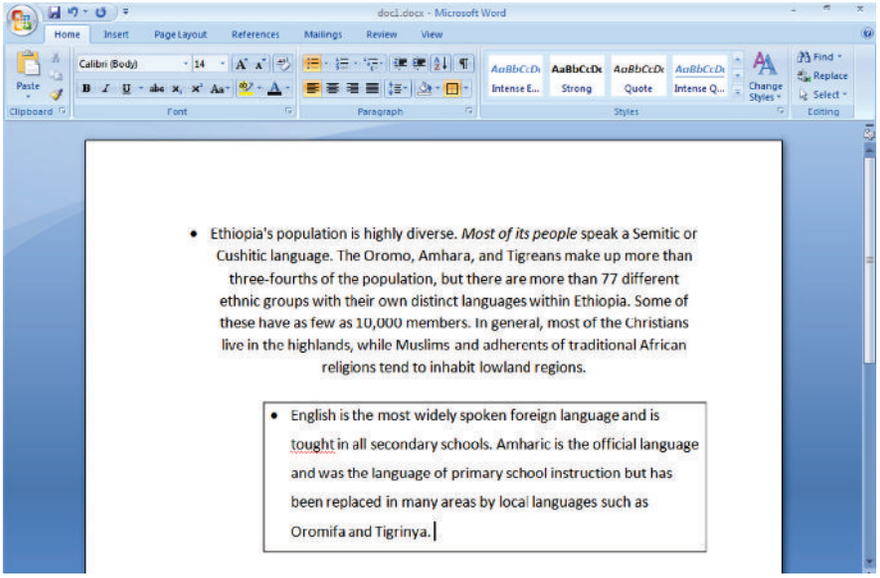


Fig. 2.8: Paragraph formatting

Page Formatting

Page formatting includes features of MS-Word that are used to improve the appearance of the page. Select the entire page or selection and format it as required *i.e.*, apply formatting features including page size, border, header and footer, margins, a page break and page numbering etc. (see Fig. 2.9) .

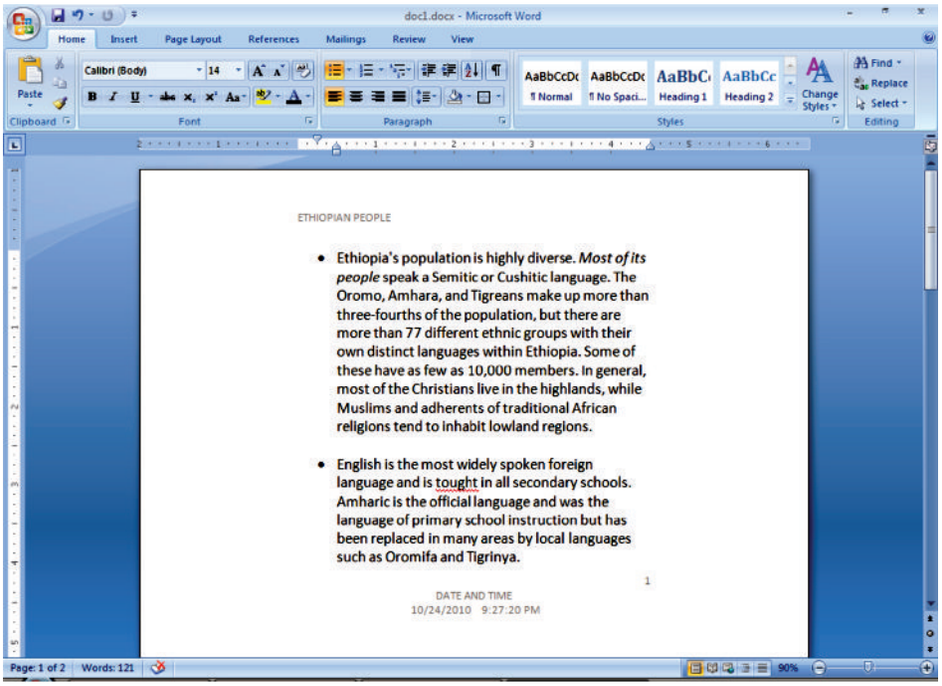


Fig. 2.9: Page formatting

Spell Checking

Spell checking is a very big plus point while talking about word processing. You can spell check your document for wrong spellings.

The red and green wavy underlines are only visible on screen. These will not appear in print out.

There are two methods of correcting these errors. One method is to correct these errors one by one, picking them up. Secondly, you can spell check the whole document.

The steps for spell check of the whole document are:

1 Place the cursor at the beginning of the text in the document (refer to Fig. 2.8) .

2 Select *Spelling & Grammar* from the Proofing Panel of *Review* tab.

OR

Press F7

This will initiate the spell checking process and will start the spell checking of the document with each word of the document being searched with the similar words available in the dictionary. If not found, it will point it out to you. Select the appropriate word from the suggestions box. Here, we will select "aught" to change the word "hought" (see Fig. 2.10) .

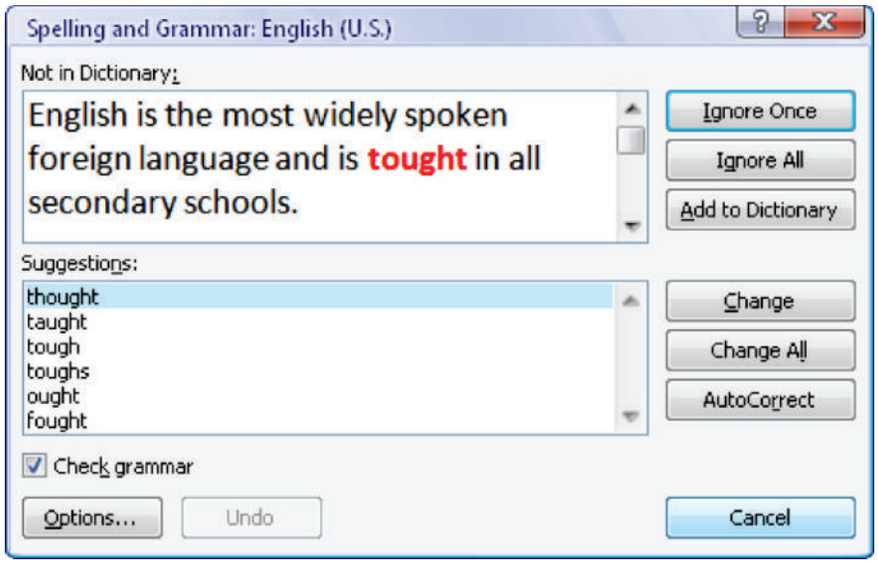


Fig. 2.10: Spell checking

3 After checking the spelling of the whole document, if there is no word left for checking, you will get the message shown in Fig. 2.11

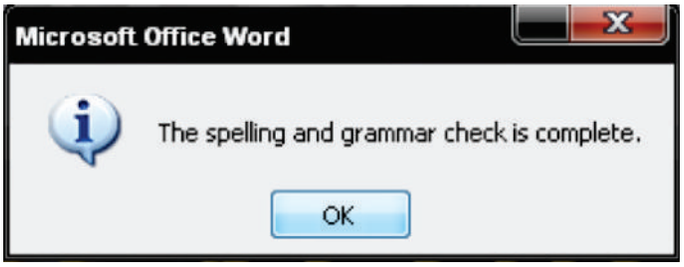


Fig. 2.11: Dialog box on completion of spelling and grammar check

4 Click *OK*.

5 Save and Close the document.

Remember, you can spell check a portion of the text or a word by just highlighting it and then clicking at *Spelling & Grammar* icon.



For protecting your document from unauthorized access you can *encrypt document*, *restrict permission* or *add a digital signature*. This can be done by performing the following steps:

Click Office Button → Prepare → Encrypt Document → Type password and Click *OK* → Reenter password → Click *OK*

Inserting Tables

Tables provide an easier and effective method of arranging the data in rows and columns. MS-word offers a set of commands for creation, modification and formatting of tables. To insert a table in your document follow these steps:

1 Open a document and enter some text in it (refer to Fig. 2.3) .

2 Select the *Insert* tab.

3 Select the *Table* option from Tables panel. On clicking the *Table* option, a list will be displayed.

4 Select the desired table size by moving the cursor on the table cells (see Fig. 2.12) . Here, we select 4 × 5 table.

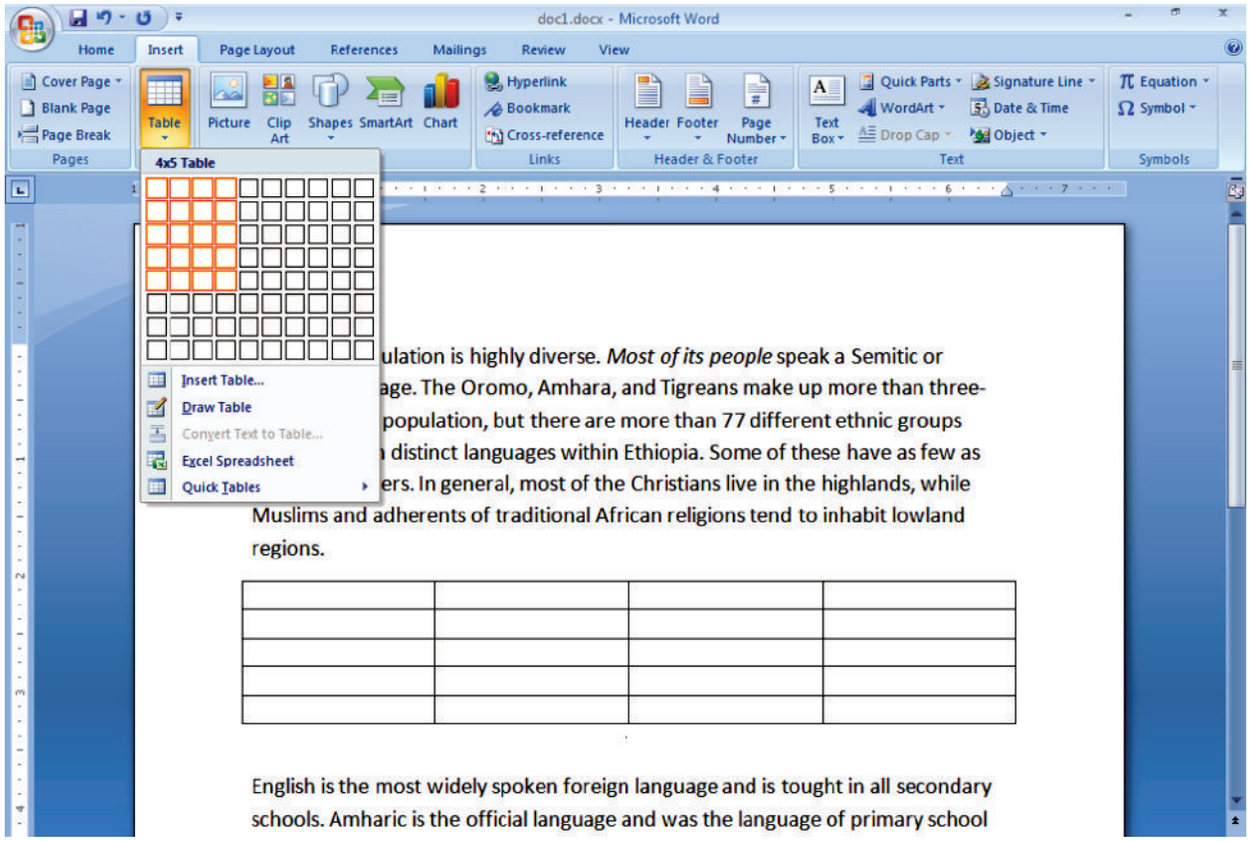


Fig. 2.12: Selecting the Table size

5 After clicking on the last cell of the selected table size, a table is inserted into the document at the insertion point below the text (see Fig. 2.13).

Now fill the table as per your requirement and save the document.

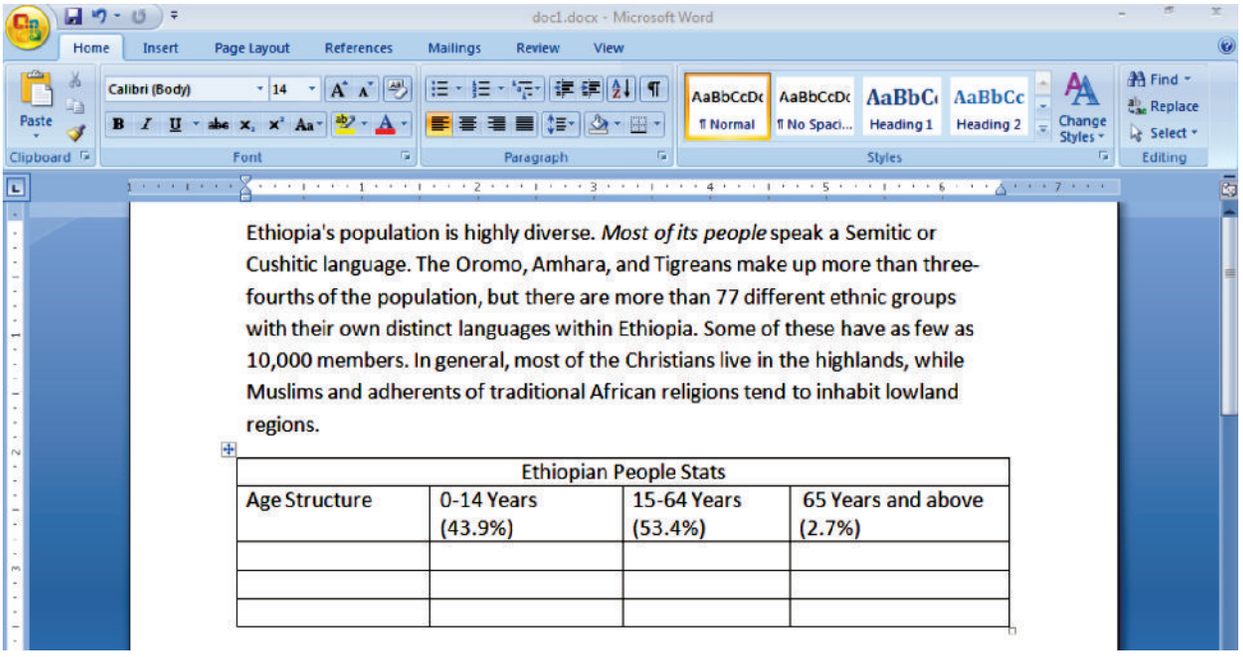


Fig. 2.13: Inserting data in the table

You can also insert table using *Draw Table* option from Insert Table list, available in *Table* option of the Tables panel under Insert tab.

Inserting Pictures

Clipart or pictures are inserted to create effective documents. MS-word supports many popular picture formats, for example .wmf (window meta files). You can insert pictures from the disk as well as cliparts from the clipart gallery of MS-OFFICE. You can also insert downloaded pictures or pictures taken by your web cam or digital camera, into your documents.

The steps for inserting a picture are given below:

1 Open a document (refer to Fig. 2.3) .

2 Click the *Insert* tab.

3 Select the *Picture* option from *Illustrations* panel (see Fig. 2.14) .

On clicking this button the *Insert Picture* dialog box will appear.

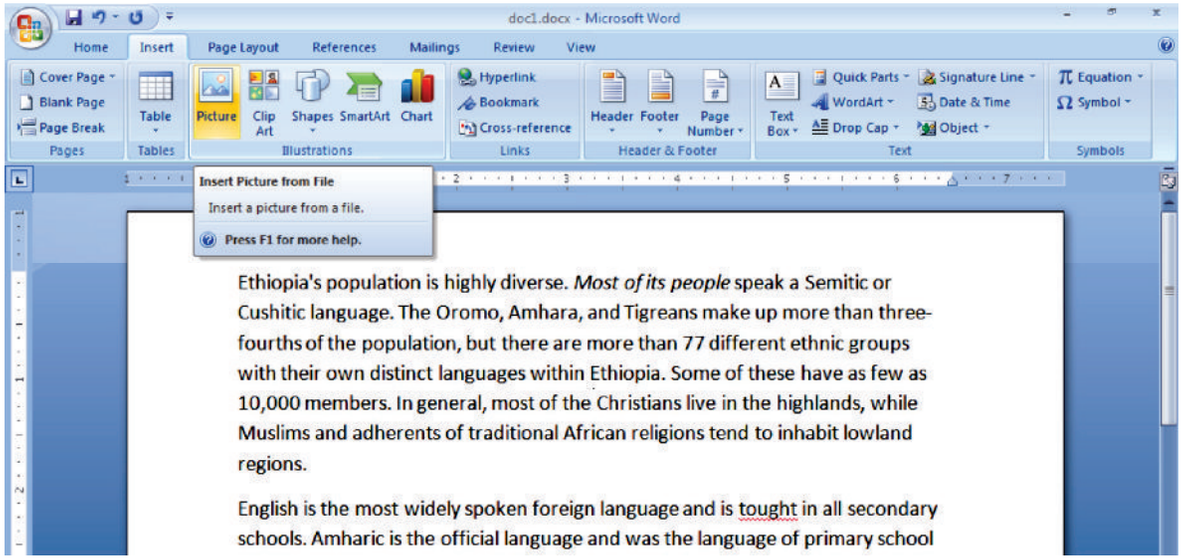


Fig. 2.14: Inserting Picture

4 Select the desired picture and click *Insert* button (see Fig. 2.15) . Here, we have selected Water lilies.jpg.

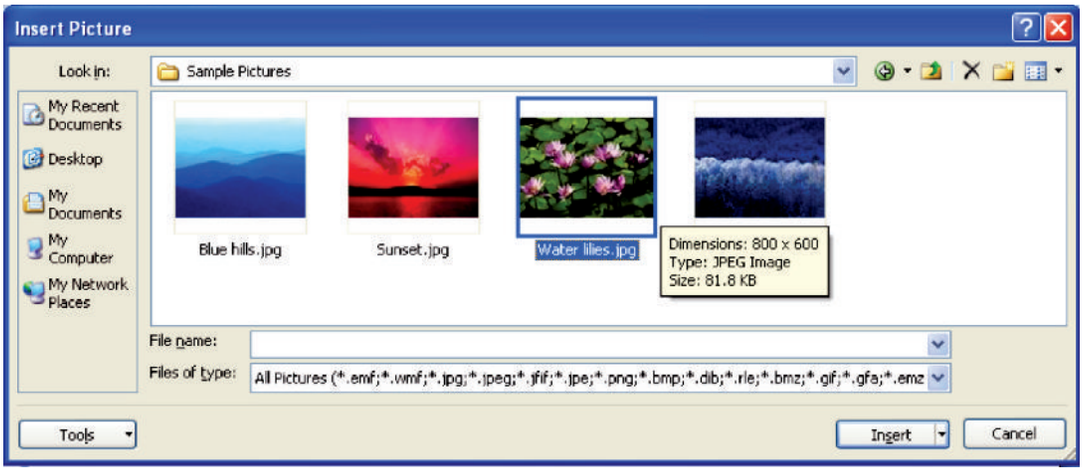


Fig. 2.15: Insert Picture dialog box

The selected picture will be inserted in the document at the insertion point (see Fig. 2.16).

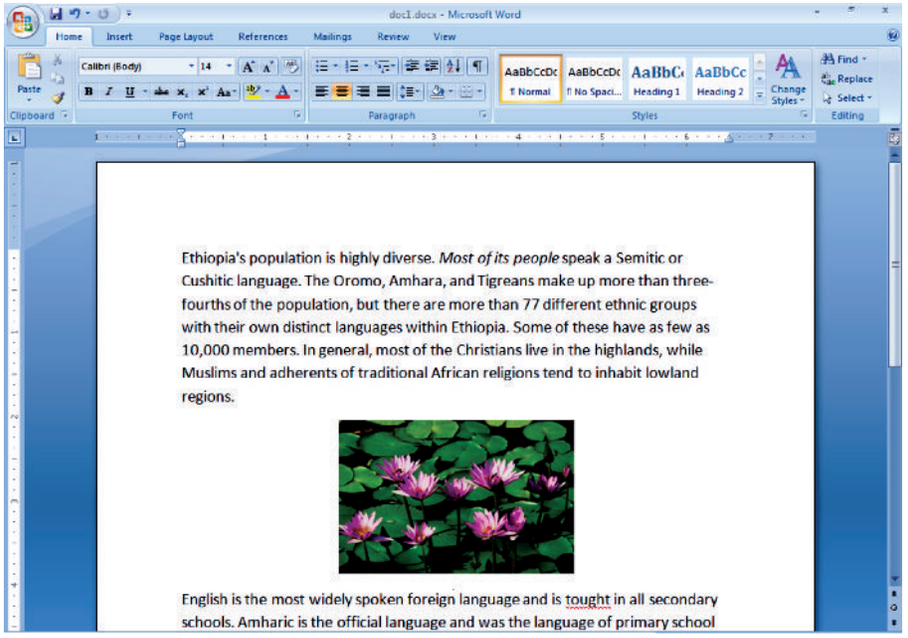


Fig. 2.16: A document after inserting a picture

5 Save and close the document.



The picture may not move properly in your document, unless you select a wrapping style. To resize a picture, always stretch or compress them from corners. This will increase or decrease the height and width proportionally.

ACTIVITY 2.1



INSERTING, REMOVING UNWANTED ITEMS AND/OR CHANGING EXISTING ONES IN THE DOCUMENT AND ALSO APPLYING UNDO AND REDO

Students will perform the following steps for doing the activity:

1. Open an existing MS-Word document as shown in Fig. 2.17.

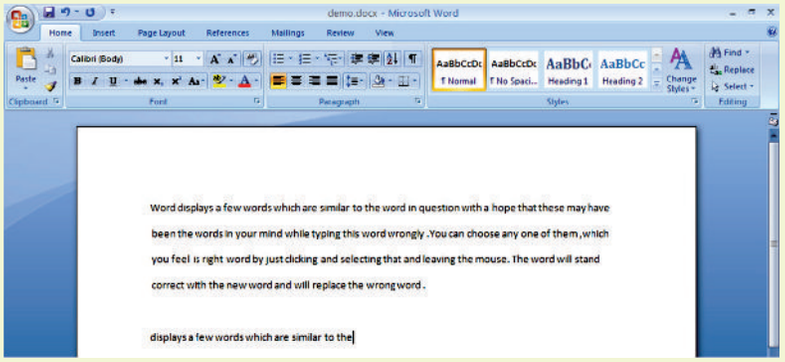


Fig. 2.17: A Word document

2. Now make changes in it. First we delete the last line of the document and then change the word "hope" to "hopr" in the first line (see Fig. 2.18).

3. To **undo** an action,

   Click the Undo icon in the title bar (see Fig. 2.18).

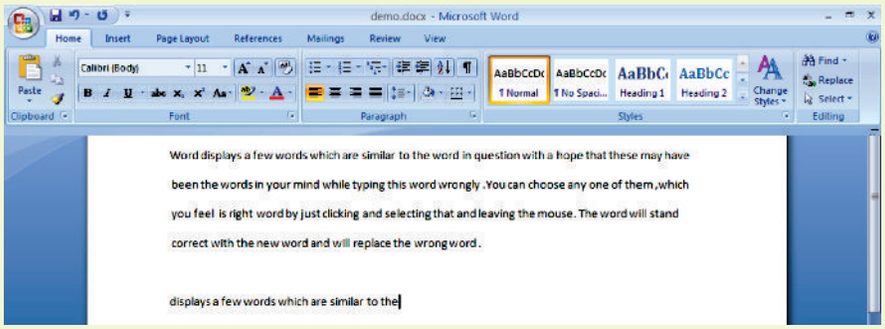


Fig. 2.18: The Undo option

After applying Undo, the document is shown in Fig. 2.19.

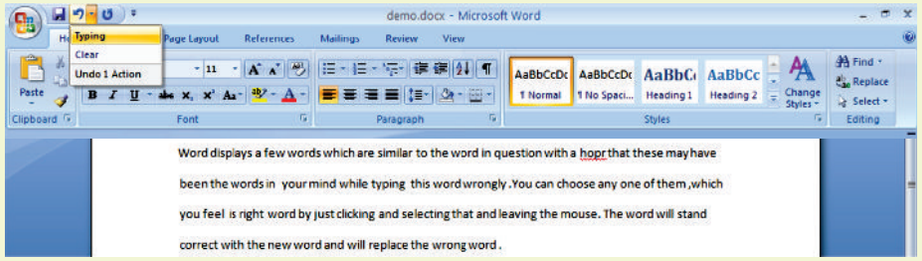


Fig. 2.19: After Applying the Undo option

You can undo the other action also if you wish to do so.

4. To **redo** an action,

   Click the Redo icon in the Quick Access Toolbar (see Fig. 2.20).

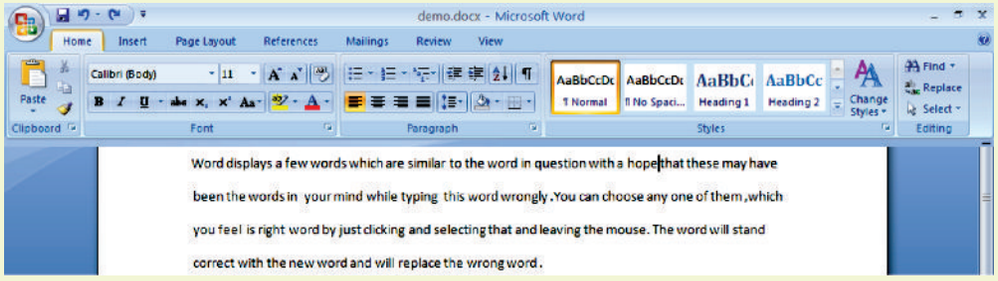


Fig. 2.20: The Redo option

After applying Redo, the document is shown in Fig. 2.21. We again get back "hopr" in place of "Hope".

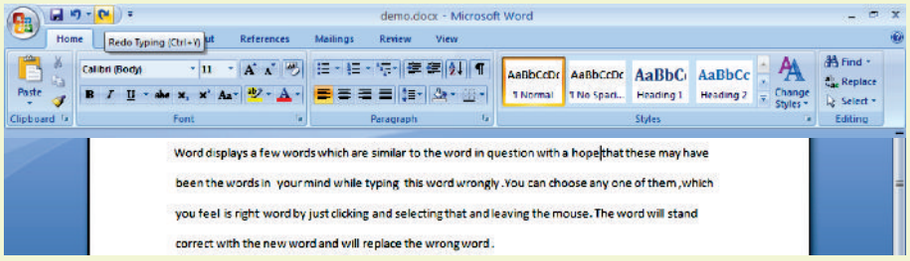


Fig. 2.21: After applying the Redo option

KEY CONCEPTS

- Word processing software allows to create, edit, format, print and store text material.
- MS-Word is a Windows based application.
- A file created using MS-Word is known as a document.
- Text can be entered anywhere in a document area by placing the cursor at that place.
- The *Undo* option is used to undo the previous action and the *Redo* option will repeat the previous *Undo* action.
- Formatting means changing the appearance of text.

ASSESSMENT 2.1

Fill in the Blanks

1 W SIW G stands for ..... .
2 W en you start MS-W rd, a ..... window appears.
3 To create a new document in MS-W rd, click the *Office Button*, *New* option and ..... button.
4 ..... is the act of altering your document.

State Whether True or False

1 MS-W rd is not a very popular word processing application software.
2 A document must be saved if it is required for future use.
3 Formatting text means changing the text appearance by changing the alignment, style, font and font color.
4 MS-W rd does not offer a set of commands for creation, modification and formatting of tables.

Answer the Following

1 Explain the steps to create and save a word processing document in MS-W rd.
2 W at do you mean by formatting? Explain the formatting commands of MS-W rd.
3 Explain spell checking in MS-W rd.
4 W ite steps to insert a table in MS-W rd.

Suggested Activities

1 Locate where the word processing software is in the computer and create, save and close the document.
2 Explain and demonstrate how to change the appearance of text changing font, style, siz, color and changing font style.
3 Explain and demonstrate powerful formatting features including header and footer, margins and the steps involved to insert and delete bullets, a page break, a header and footer, page numbers and date and time on a document you have already created.

2.2 PRESENTATION SOFTWARE AND TECHNIQUES

Presentation software is a tool used to create visual presentations. These presentations are usually delivered in a slide show format, and can be created with a variety of programs. The programs make it possible to combine text and graphic elements to convey important information to a group of people all at once.

Microsoft PowerPoint is a presentation software that is used to create on screen slide shows, overhead projector slides audience handouts and speakers notes, it is a part of MS-Office suite of software. PowerPoint is the most widely used presentation software.

• Feature of a Presentation Package

Some features of Presentation Packages are:

1. A presentation package helps both: the speaker with an easier access to his/her ideas and the participants with visual information.
2. Presentation packages can either supplement or replace the use of older visual aid technology, such as pamphlets, handouts, chalkboards, flip charts, posters, and slides etc.
3. Many presentation packages come with pre-designed images (clip art) and/or have the ability to import graphic images.
4. With the growth of digital photography and video, many presentation packages can handle these types of media to display them in a similar "slide show" format.
5. The "add ons" or plugins for presentation packages can be used to enhance their capabilities.
6. Certain presentation packages can also be used for web conferencing.

• Creating Slides using Text and Images

To start using PowerPoint:

Click **Start → All Programs → Microsoft Office → Microsoft Office PowerPoint 2007**

The PowerPoint window appears as shown in Fig. 2.22

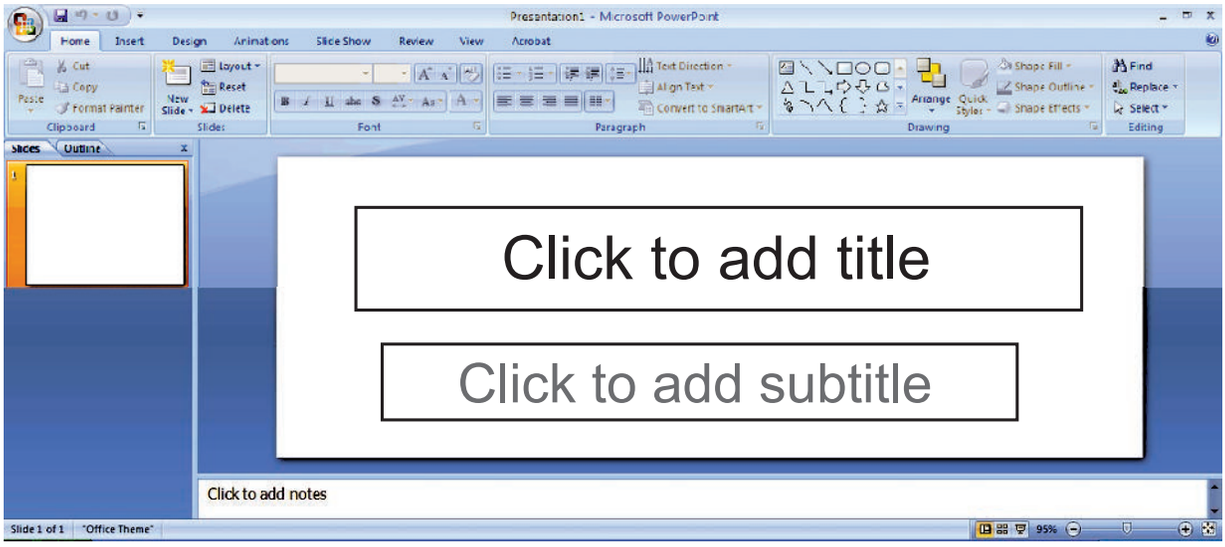


Fig. 2.22: PowerPoint window

A placeholder is a location on a slide marked with a border that holds text or an object.

Let us create a new presentation using text and an image.

1 Type the desired text in the title box.
2 To add an image click on *Insert* tab.
3 Click on the *Picture* icon in the *Illustrations* command group.
4 Select the image file you want to insert and then click *Insert* (see Fig. 2.23).

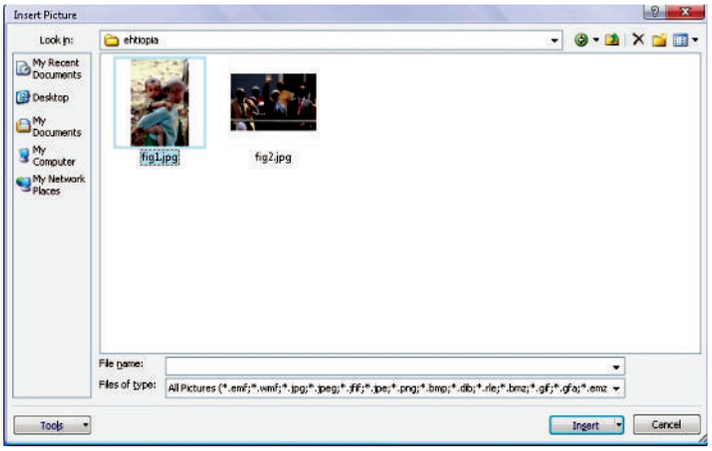


Fig. 2.23: Inserting an Image

The selected image will be inserted in the slide. Now adjust the image position as per your need (see Fig. 2.24).

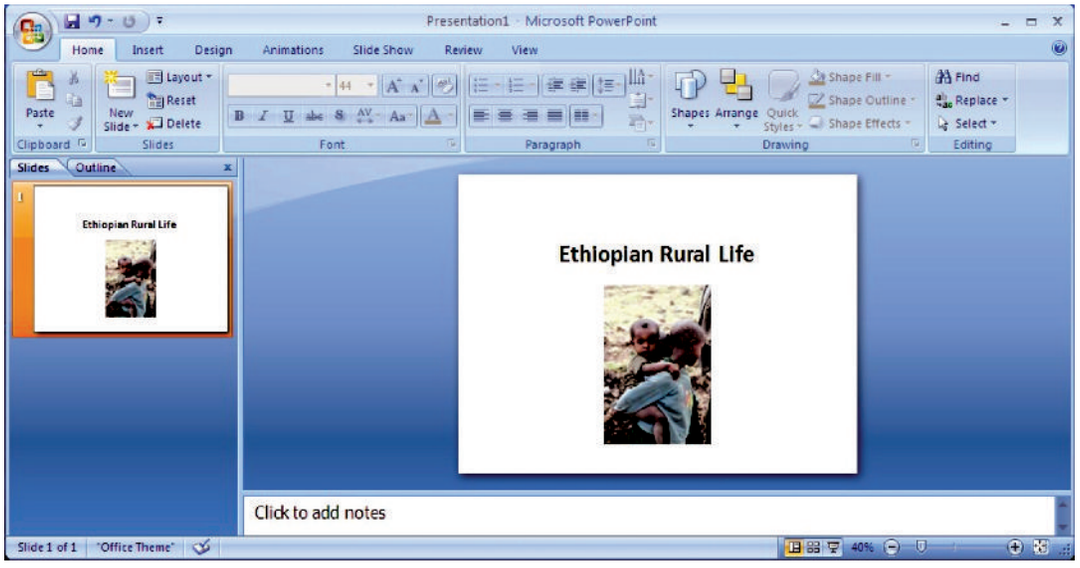


Fig 2.24: Entering Text and an Image in a slide

• Formatting Text and Background

Presentation software allows you to apply different formats to different parts of slide. Formatting refers to the act of changing the appearance of text *i.e.*, changing the way it appears on screen and paper. Formatting a slide means changing the formats of characters, words, paragraphs of a slide to provide them an effective look and feel.

We can change the appearance of text in a number of ways. We can change font, size , color, highlight and other special effects by using *Home* tab. We can apply the effects before typing as well as after typing the text. We can also change the background of slides using the *Design* tab.

To format the text and background, perform the following steps:

1. Select the placeholder that contains the text you want to format.
2. Click on the *Home* tab and select the desired font style and size from the *Font* command group.
3. Click on *Format* tab and select the desired text style from *WordArt Styles* (see Fig. 2.25).
4. For changing the background of slide, click on the *Design* tab and select appropriate theme from *Themes* command group. The background color can be changed by selecting the *Background Styles* from *Background* command group (see Fig. 2.25).

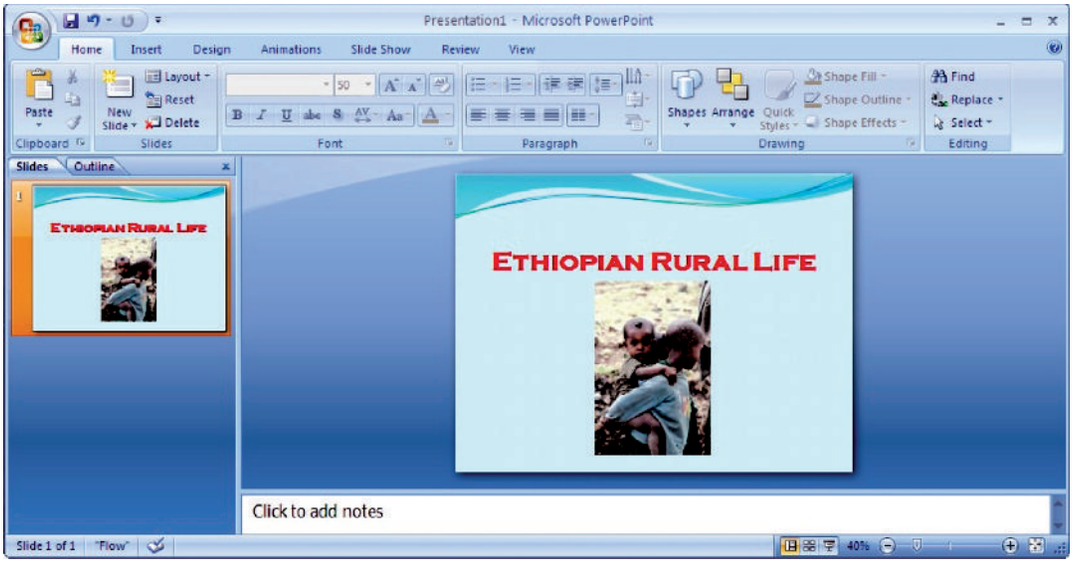


Fig. 2.25: Slide after formatting Text and Background

• Inserting and Deleting Slides

To insert a new slide, perform the following steps:

1. Right click on the *Slides* tab (see Fig. 2.26).
2. Click on *New Slide* to insert a new slide. A new slide will be inserted (see Fig. 2.27).

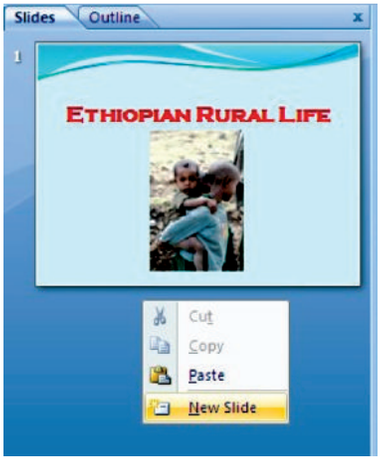


Fig. 2.26: Inserting a slide

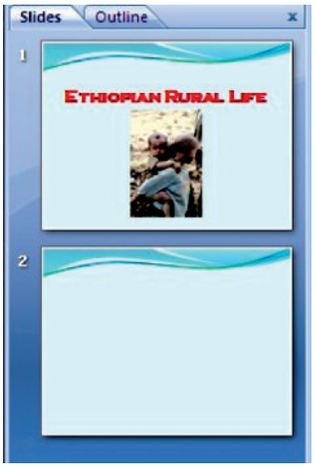


Fig. 2.27: Slide after insertion

To delete a slide, perform the following steps:

1 Right click on the slide you want to delete (see Fig. 2.28).

2 Click on the *Delete Slide* option (see Fig. 2.28). The selected slide will be deleted.



Fig. 2.28: Deleting a Slide

• Presenting a Slide Show

This is the most useful view of PowerPoint. It is used to display the slides in a desired sequence.

In this view the slides are displayed one by one from first slide to the last slide, in full screen mode.

First of all prepare a presentation on any topic of your choice. Here, we have prepared the presentation on "Ethiopian Treasures".

To start the Slide Show, perform the following steps:

1 Click *Start* → *All Programs* → *Microsoft Office* → *Microsoft Office PowerPoint 2007*.

2 Click on *Office Button* and select *Open*.

3 Select the appropriate file name and press *Enter* key or Double click on the file. The desired file will be opened.

4 Click the *Slide Show* tab.

5 Click the *From Beginning* icon in the *Start Slide Show* command group (see Fig. 2.29). PowerPoint displays the first slide of your presentation.

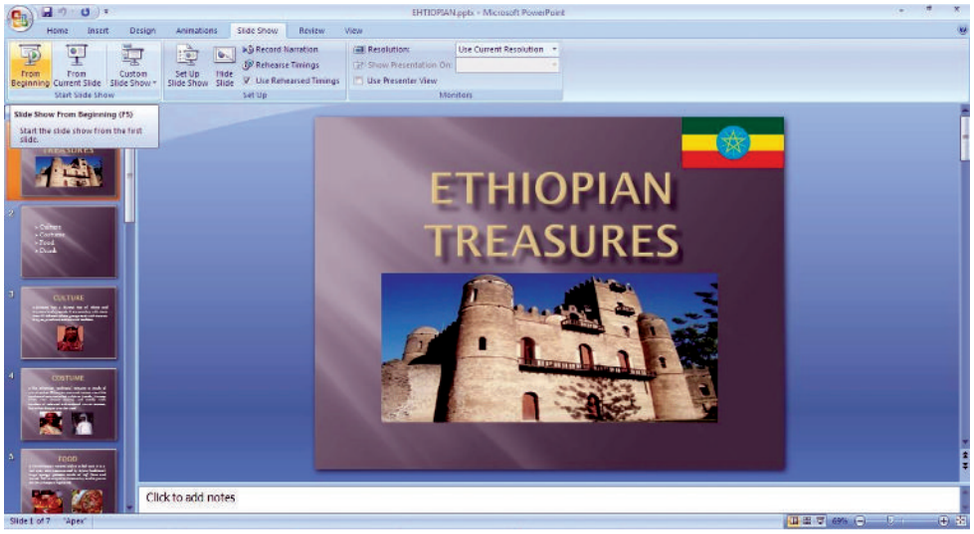


Fig. 2.29: Getting ready for presenting a Slide Show

6 Click the mouse or press the space bar to view the next slide.

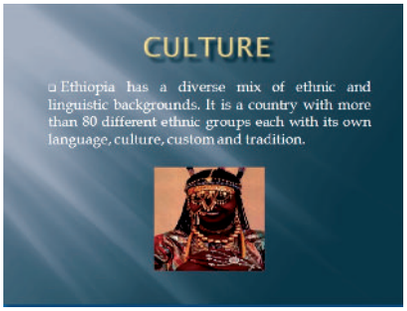
The slides in the presentation are show below:



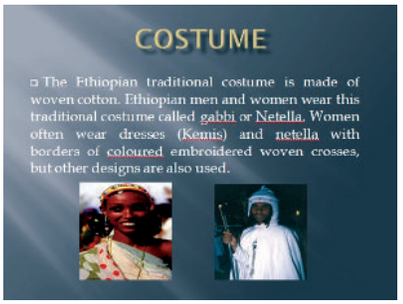
Slide 1



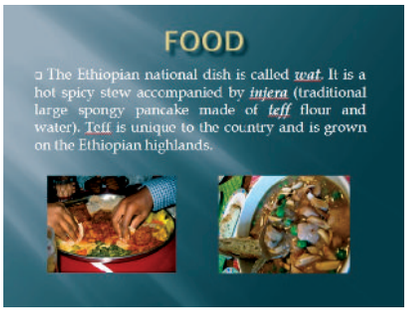
Slide 2



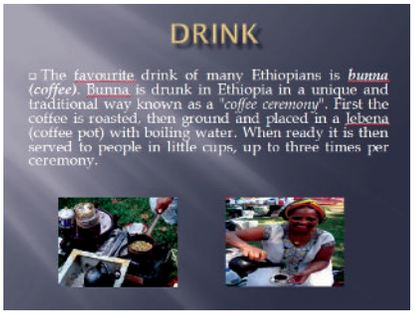
Slide 3



Slide 4



Slide 5



Slide 6



Slide 7

Fig. 2.30: Slide show

7 Press *Esc* to exit the Slide Show.

• Create a Slide Show using Animation and Sound

Presentation Software allows you to add various multimedia effects to the slides and the objects created on slides. The presentations, you have created so far, contain no animation, timings, sounds and transition effects. Professionally designed slide shows contain all these properties to grasp the attention of the audience.

Applying Animation

To apply animation to your PowerPoint slide, perform the following steps:

1 Open the slide to which you want to apply the animation.

2 Click on the *Animations* tab and select the desired transition style from the *Transition to This Slide* command group (see Fig. 2.31).

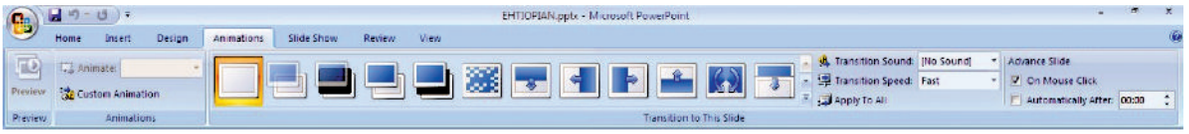


Fig. 2.31: Applying Animation

You can also apply animation to a title, a sub title, and an image in your slide individually by using *Custom Animation* from *Animations* command group (see Fig. 2.32).

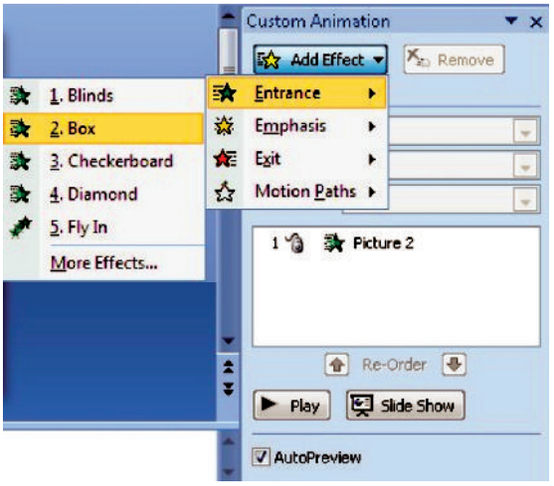


Fig. 2.32: Applying Custom Animation

3 Now select the desired effect from *Add Effect* which you want to apply for a particular image or text. The selected applied effect is shown in Fig. 2.32.

Applying Sound

You can add sound to the transition effects and to the preset animation. You can also add audio to your presentation by inserting files from Clip Art Gallery or from other folder available to you.

PowerPoint can use audio files stored in common formats such as AIFF, MIDI, MP3 and WAV file. If your audio file is stored in a different file format, such as Real Audio, you will have to convert the file before you can add it to a PowerPoint presentation.

To add an Audio File, perform the following steps:

1 Select the slide to which you want to put an audio.

2 Open the Insert tab and click on the *Sound* icon from the *Media Clips* command group. The Insert Sound dialog box appears (see Fig. 2.33).

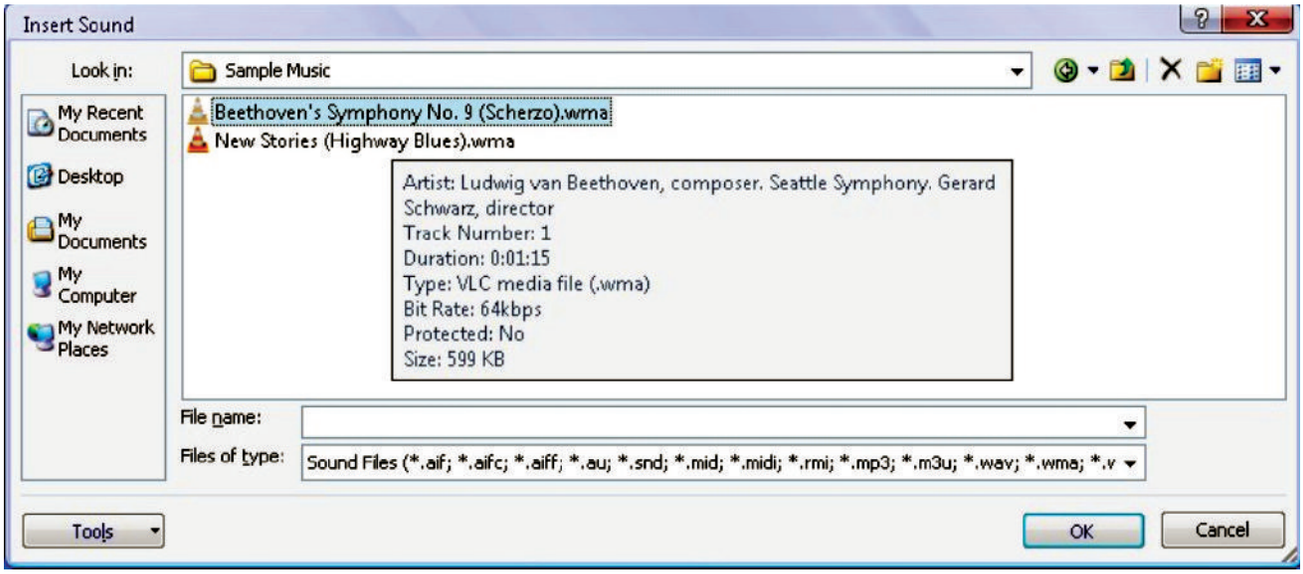


Fig. 2.33: Inserting Sound

3 Choose the desired sound file you want to add and click *OK*.

PowerPoint displays a dialog box asking whether you want to play the sound automatically or when you click the mouse (see Fig. 2.34). Choose your option. A horn icon is displayed which means that the sound has been inserted (see Fig. 2.35).

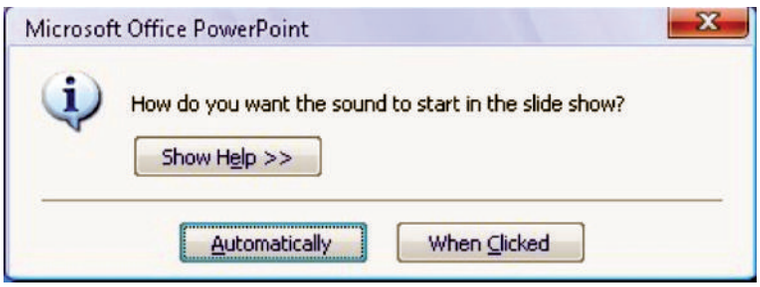


Fig. 2.34: Selecting Sound Starting Option



Fig. 2.35: Horn Icon

Sound icon is displayed on your slide. You can move it so that it does not obscure your slide (see Fig. 2.36).



Fig. 2.36: Slide after Applying Sound

A color scheme defines the font sizes, and color of title, subtitle, bullets and numberings in slide. You can select a readymade color scheme or you can customize the color scheme as you like.

• Change Slide Layout

The slide layout in PowerPoint is the arrangement of all the items that make up your slide, such as title, graphics or text boxes.

To change the layout of slide, perform the following steps:

1 Open the presentation.

2 Open the *Home* tab and click on the *Layout* button from *Slides* command group. Apex dialog box will appear (see Fig. 2.37).

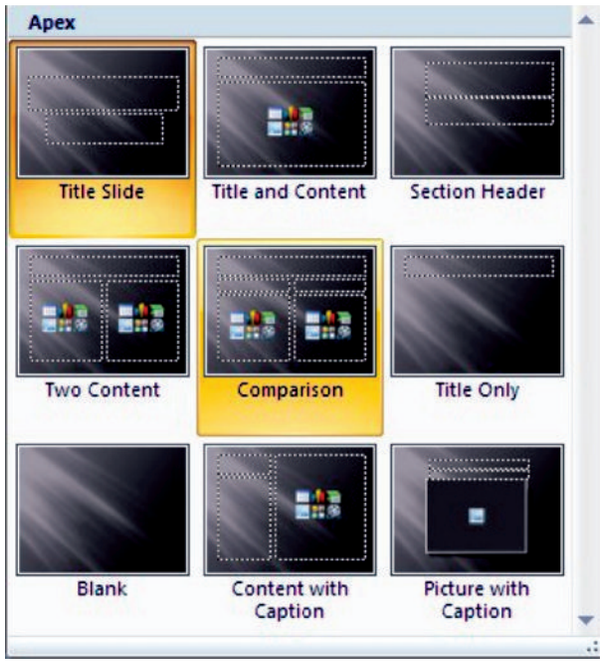


Fig. 2.37: Apex dialog box

3 Choose the desired layout style from the list. The selected layout will be applied to the current slide.

KEY CONCEPTS

- Presentation software is a tool used to create visual presentations.
- A presentation package helps both: the speaker with an easier access to his/her ideas and the participants with visual information.
- We can make slides using features such as creating slides, inserting text, formatting text, inserting clipart, formatting background, inserting slides, deleting slides and inserting images from other files.
- Presenting a slide show is the most useful view of PowerPoint. It is used to display the slides in a desired sequence.
- The slide layout in PowerPoint is the arrangement of all the items that make up your slide, such as title, graphics or text boxes.

REVIEW QUESTIONS

Fill in the Blanks

1 [illegible] werd [illegible] int is the most widely used ..... software.

2 Certain presentation packages can also be used for web ..... .

3 ..... a slide means changing the formats of characters, words, paragraphs of a slide to provide them an effective look and feel.

4 You can add ..... to the transition effects and to the present animation.

State Whether True or False

1 Microsoft [illegible] werd [illegible] int is not a part of MS-Office suite of software.

2 To start using [illegible] werd [illegible] int:
Click Start → All [illegible] ograms → Microsoft Office → Microsoft Office [illegible] werd [illegible] int [illegible]

3 The slide show cannot display the slides in a desired sequence.

4 We can change the layout of slide using presentation software.

Multiple Choice Questions

1 Microsoft [illegible] rd is a/an ..... .

(*a*) Operating System (*b*) Database software

(*c*) Spreadsheet software (*d*) Application software

2 [illegible] ich of the following is not a feature of word processing?

(*a*) Spell checker (*b*) Cell address

(*c*) Cut and Paste (*d*) Undo and Redo

3 ..... is a presentation software?

(*a*) MS-Word (*b*) MS-Excel

(*c*) MS-Power [illegible] int (*d*) MS-Access

4 Which of the following is/are included in the slide layout in PowerPoint?

(*a*) Title (*b*) Graphics

(*c*) Text boxes (*d*) All of these

Match the Following

Column A	Column B
1 Pressing Backspace key	(*a*) Encrypt Document
2 Increase the security of the document	(*b*) Deletes character to the left of the insertion point
3 Slide Show	(*c*) Used to apply the animation
4 Animations tab	(*d*) Used to display slides in a desired sequence

Answer the Following

1 Write the steps to create a presentation.

2 How will you prepare and present a slide show?

3 How will you create a presentation using design techniques?

4 Write the steps to change the layout of a slide.

Suggested Activities

1 Explain and demonstrate the slide making features such as creating slides, inserting text, formatting text, inserting clipart, formatting background, inserting slides, deleting slides and inserting images from other files.

2 Explain various design techniques such as design templates, animation scheme, color schemes and adding sound.

3 Each group of students to present their slide shows to the class, giving explanations as necessary, presentation software, spare paper, magazines, newspapers, reference books etc.

Field Trip

Organize a field trip to various historical places in Ethiopia to get useful information and present the slide shows to the class.

UNIT 3

INFORMATION AND COMPUTER SECURITY

UNIT OUTCOME

Students will be able to:

- understand the responsible behaviour in the computer laboratory;
- recognize the nature of computer virus and measure to protect.

3.1 INFORMATION AND COMPUTER SECURITY

Security of information and related computer systems is a big concern for the computer users. So, the effective methods of protection are required. In this unit, you will learn about information and computer security.

• Responsible Behaviour in the Computer Lab

A computer laboratory is a special place which contains delicate and expensive equipment (see Fig. 3.1).



Fig. 3.1: Students working in a computer lab

In order for the computer lab to maintain the equipment and an excellent learning environment you must behave in a calm manner and not damage any machines or furniture; you must not touch any electrical connection for any reason.

You need to follow some guidelines for responsible behaviour in the Computer Lab. These are:

1 Students are not allowed in the computer lab unless directly supervised by a computer teacher or any other staff member.

2 Never share your password, even with your best friend.

3 No gum, eat or drinks in the computer lab, electronic equipment does not like to get wet or sticky.

4 Listen to directions given by your computer teacher.

5 Review your notes, on-line materials and of course the HELP option in all programs.

6 Only use the Internet as instructed. Do not click on links that seem suspicious or are offers of f ree" anything.

7 Do not use the mouse or keyboard as a toy, that is, do not randomly click on the mouse or hit the keys on the keyboard without a purpose.

8 Do not change computer preference settings or endeavour to h ack" into unauthorized areas.

9. Always use print preview before you print.

0 Take permission from your computer teacher before printing.

1 Before leaving from the computer lab you should follow these procedures:

(*i*) Exit any programs you are using. The login screen should be showing on the desktop. Return supplies (if any).

(*ii*) Straighten your work area and retrieve your books from the book shelf.

(*iii*) Log Off/Turn Off your computer and push in your chair.



Do not give own or another's data to anyone. E-mail address should not be given to anyone. Always stick to safe on-line behaviour.

Sanctions

It is always expected that students will follow these rules and codes of behaviour; there may be occasions when sanctions will need to be invoked (called upon), including:

1 Temporary removal from the lesson (time out).

2 A temporary or permanent ban on **Inte net** use or even using the computers in general. (Parents would usually be informed at this stage.)

3 W en necessary, police or local authorities may have to be involved.

4 Additional disciplinary action may be added in line with existing practice on inappropriate language or behaviour.

• School ICT Policy

I nformation and Communication Technology (ICT) prepares pupils to participate in a rapidly changing world in which work and other activities are increasingly transformed by access to varied and developing technology. P pils use ICT tools to find, explore, analyz , exchange and present information responsibly, creatively and with discrimination. They learn how to employ ICT to enable rapid access to ideas and experiences from a wide range of people, communities and cultures. Increased capability in the use of ICT promotes initiative and independent learning; with pupils being able to make informed judgements about when and where to use ICT to best effect, and consider its implications for home and work both now and in the future."

Table 3.1 gives some responsibilities of the schools relating to ICT, which need to be allocated.

Table 3.1: Some Responsibilities Relating to ICT

Managing the implementation of ICT policy	Ensuring safe on-line behaviour
Ensuring staff access to ICT	Assessment of students
Ensuring attitude towards ICT	Overseeing equipment maintenance
Ensuring ICT progression	Health and safety policy and practice
Purchasing/organizing ICT resources	Reviewing the ICT policy

The following points must be included for implementing the ICT policy:

1 How does the school ensure that all students have opportunities to use ICT according to their needs?
2 How does ICT help to give students with special educational needs access to the whole curriculum?
3 How does ICT support gifted students?
4 How is the gender issue handled?
5 What account is taken of pupils' use of ICT at home?



All pupils should be given equal access to ICT within the school with appropriate arrangements being made to support individual needs, when and where necessary.

Developing a school ICT policy

The school ICT policy means the rules prepared by the school to use ICT. The ideas given here should be adapted to ensure that the policy is appropriate and relevant for your school. When deciding on the school's aims for ICT, internal, local and national factors should be considered.

The school's overall aim for ICT is to enrich learning for all students. The school management must ensure that ICT Co-ordinator and computer teachers develop confidence and competence to use ICT as a tool aiding effective teaching across the curriculum (see Fig. 3.2).



Fig. 3.2: ICT Co-ordinator addressing the students about ICT policy

The school ICT policy must identify the important issues and guide the students to live with it. Some of these include:

1 A statement defining ICT capability.
2 The aims for ICT in the school.
3 Guidance on record-keeping, assessment.
4 Guidance on health and safety.
5 Specific rules for the use of Internet and E-mail.
6 Statement of the school's position on copyright, data protection.
7 Information regarding maintenance/repair/viruses.
8 Date for review.



The day-to-day organization procedures, guidance, rules and other operational matters should be placed in a school *handbook*.

STUDENT'S ACCEPTANCE OF THE SCHOOL'S ICT POLICY

Please complete and return this form to the ICT Co-ordinator or Computer Teacher.

Student's agreement:

I have read and understood the school rules for ICT policy. I will use the computer systems and Internet in a responsible way and obey these rules at all times.

I understand that if I break these rules then I may not be allowed to use the Computer Lab.

Student's signature _ Date / / _

Parent's/Guardian's Acknowledgement:

I have read and understood the school rules for ICT policy and give permission for my son/daughter to live with it. I understand that the school will take all reasonable precautions to ensure that students cannot access inappropriate materials, although I understand that the school cannot accept liability for the material accessed, or any consequences of Internet access.

Parent's/Guardian's signature _ Date / / _

Name of Student _ _ _

Grade _

• Nature of Computer Viruses

Computer viruses are software programs like other applications. But they get attached with the general applications and use their setup or .exe file to get installed on the computer system. Computer viruses are proving to be main cause of crashing computer system. To solve or remove viruses from computer, install any updated Anti-Virus software on your PC and perform a system scan.

Let us focus on the nature, recovery and prevention of computer viruses.

Computer Viruses

A computer virus is a malicious program that is designed to corrupt or delete the information stored in the computer. You will know if you have a computer virus very quickly, because nothing will function as it should. If other computers are connected to this computer by network or e-mail, the virus can be spread very quickly because the virus replicates itself to enter and infect these computers (see Fig. 3.3).



Fig. 3.3: Computer virus can create problems on computer

These viruses do basically three types of damage to the computer it affects:

1 First is Trojans or worms which are designed to steal important personal information such as your ID's, passwords, account numbers, and other personal information found on your computer.

2 Second type is designed to gain access to your machine and then hijack it. Once it has control of the affected computer a hacker can use it for malicious purposes or as a spam machine to send thousands of unwanted e-mails.

3 Third type is sometimes referred to as macro viruses. This type of virus is designed so they can delete or overwrite the system or data files on the affected computer. This causes the computer to crash and become unbootable or non-operable. Many of the computers that get this type of virus have a crashed hard drive which is not repairable and all your data is lost permanently.

Computer Viruses are spread through transportable secondary storage devices and networks.

Measures to Protect

The best way to protect computer viruses is installing antivirus software. **Antivirus** software consists of computer programs that attempt to identify, thwart and eliminate computer viruses and other malicious software (malware).

Good antivirus software comes with features like a built-in firewall and usually offers an access to online data backup. This antivirus software has the option to deactivate the malicious viruses.

Firewalls are systems which help protect computers and computer networks from attack and subsequent intrusion (see Fig. 3.4).

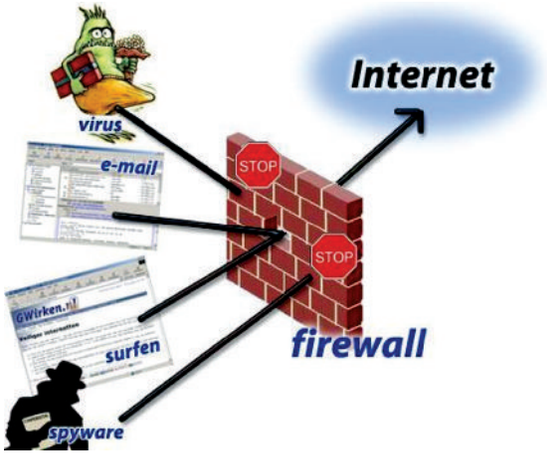


Fig. 3.4: Firewall

The antivirus software protects your computer from virus attacks in three main ways:

1 The first way is prevention which involves detecting and eliminating new viruses from your computer. They get the latest virus definitions from their server so they know what to look for and protect against.

2 The second way is cleaning infected computers. This involves detection and extermination of the virus, along with repairing the damaged files.

3 The third way is protecting your computer by monitoring e-mails, downloads and protection while Internet surfing *i.e.*, on-line. The antivirus regularly scans the computer or a preset scheduler to keep your computer virus free.

Figure 3.5 illustrates Norton and Quick Heal antivirus:

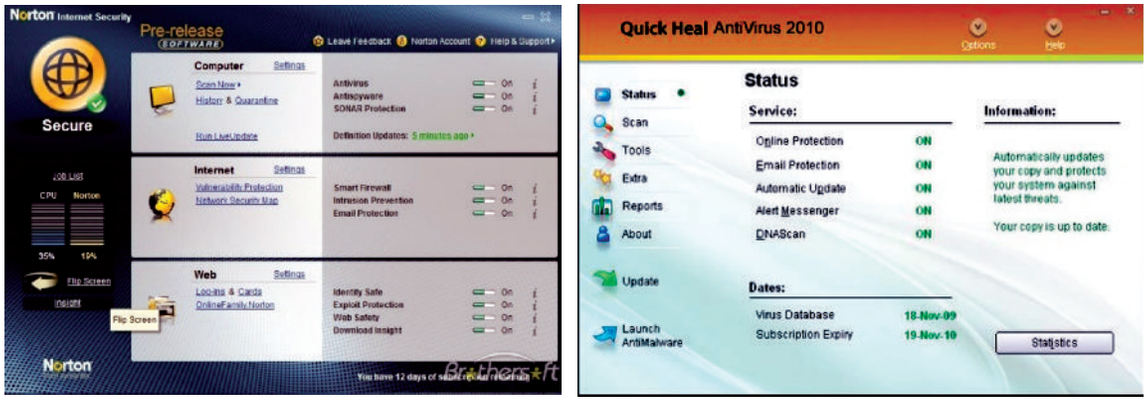


Fig. 3.5: Norton and Quick Heal Antivirus

As mentioned earlier antivirus software is very effective in finding and deleting harmful computer viruses. The computer users should follow these safety rules to protect against viruses:

1. Do not open unsolicited e-mails.
2. Never download an attachment to an e-mail without scanning it for viruses first.
3. Make sure you also use a firewall.
4. Do not download free software or music.
5. Do not use free antivirus software.
6. Search on Internet for antivirus reviews and research yourself for best antivirus software.



Microsoft Malicious Software Removal Tool protects your system from Computer Viruses. You can download and install this software from official website of Microsoft. This software is compatible with Windows 7, Vista, XP and Windows server 20. At the end of the process, you will get a thorough report about any malicious software that have been detected and removed.

Turn on Automatic updates on your system and then perform the following:

Click **Start → Control Panel → System → Automatic Updates**

ACTIVITY 3.1



RESPONSIBLE BEHAVIOUR IN THE COMPUTER LABORATORY

In small groups students will discuss "Responsible Behaviour in the Computer Laboratory". The group leader from each group will give a brief presentation to the class based on the discussions.

Computer Laboratory

A computer laboratory is a special place which contains delicate and expensive equipment.



Fig. 3.6: Computer laboratory

To keep your computer laboratory and computers in proper working condition, it is necessary to behave in a calm manner and not damage any machines or furniture. You must not touch any electrical connections for any reason.

Points to be borne in mind while working in the computer laboratory:

✓ Do's

1. Sit properly and behave in a calm manner.



Fig. 3.7: Responsible behave in computer lab

2. Only use the Internet as instructed.
3. Ensure that the power switch on the system unit, monitor and printer are in the OFF position before switching off the mains.

✘ Do nots

1. Do not shout.



Fig. 3.8: Shouting is not allowed

2. Do not damage any machines or furniture.

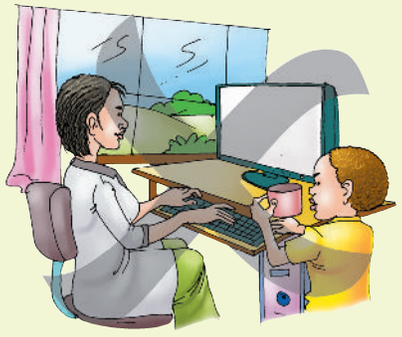


Fig. 3.9: Damaging is not allowed

3. Do not allow eating or drinking near the computer.
4. Do not touch any electrical connections.

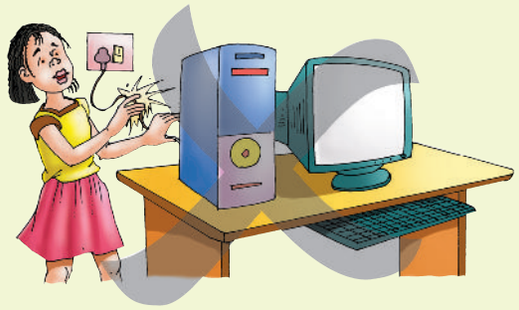


Fig. 3.10: Touching an electrical connection can be very dangerous

5. Never share your password, even with your best friend.

Always remember that responsible behaviour in the computer laboratory will help you in the ICT field forever.

KEY CONCEPTS

- Security of information and related computer systems is a big concern for the computer users.
- Computer laboratory contains delicate and expensive equipment.
- In computer lab; students must behave in a calm manner and not damage any machines or furniture; they must not touch any electrical connections for any reason.
- School ICT policy means rules prepared by the school and students must live with it.
- Computer viruses are software programs which are proving to be main cause of crashing computer system. The best way to protect computer viruses is installing antivirus software.

REVIEW QUESTIONS

Fill in the Blanks

1 Computer laboratory contains ..... and ..... equipment.
2 In computer laboratory, the students must not touch any ..... connections for any reason.
3 A ..... is a malicious program that is designed to corrupt or delete the information stored in the computer.
4 The ..... software protects your computer from virus attacks.

State Whether True or False

1 Security of information and computer systems is not a big concern for the computer users.
2 Students must have safe on-line behaviour.
3 Students may or may not live with school ICT policy.
4 Computer virus is never harmful to your computer.

Multiple Choice Questions

1 Which of the following is/are included in the responsible behavior in the Computer Lab?
   (*a*) Never share your password, even with your best friend
   (*b*) Listen to directions given by your computer teacher
   (*c*) Only use the Internet as instructed
   (*d*) All of these

2 Which of the following must be included for implementing the school ICT policy?
   (*a*) All pupils have equal access to ICT according to their needs
   (*b*) Gender issue not handled
   (*c*) No support for gifted students
   (*d*) Assessment of students not required

3 Which of the following is not an antivirus?
   (*a*) Norton (*b*) Spamming (*c*) Avast (*d*) AVG

4 Which of the following is not a safety rule to protect against viruses?
   (*a*) Do not open unsolicited e-mails
   (*b*) Never download an attachment to an e-mail without scanning it for viruses first
   (*c*) Never use a firewall
   (*d*) Do not download free software or music

Match the Following

Column A		Column B
1 Information and computer security	(*a*)	Antivirus
2 Computer Lab	(*b*)	A big concern for the computer users
3 School ICT policy	(*c*)	A place where students must behave in a calm manner
4 Quick Heal	(*d*)	Rules prepared by the school and students must live with it

Answer the Following

1 Explain about the responsible behaviour in the computer laboratory.
2 What is safe on-line behaviour? Explain.
3 What is school ICT policy? Explain.
4 Describe computer virus and the measure to protect computer virus.

Suggested Activities

1 Explain and demonstrate school ICT policy.
2 Discuss what a computer virus can do to a computer system and demonstrate the measure to protect the computer.

Field Trip

Students should visit some big educational organization in their city. Interact with faculties there and prepare a report on "Information and Computer Security." Discuss it in the class also.

UNIT 4

APPLICATION SOFTWARE

UNIT OUTCOME

Students will be able to:

- recognize the uses of spreadsheets;
- understand the screen elements in the spreadsheet window;
- recognize how to create and use simple spreadsheet using text and numbers;
- understand how to format worksheets;
- recognize to use built in functions and create custom formula.

4.1 SPREADSHEETS

• Introduction

A *spreadsheet* is a document which helps you organize data in rows and columns that intersect to form cells.

The electronic spreadsheet is the brain child of *Dan Bricklin* and *Bob Franktor*. Behind the invention of first electronic worksheet *VisiCalc* (Visible Calculator) was this duo. *Bricklin*, a Harvard Business school student, got the idea of VisiCalc while spending hours manually to solve financial-planning problems.

Purpose of a Spreadsheet

A *spreadsheet package* is a numeric data analysis tool, which not only allows us to quickly calculate and analyse numbers, but also lets us quickly explore a variety of possible outcomes. *The spreadsheet allows users to create tables and financial schedules by entering data and formulae into rows and columns arranged as a grid on a display screen*. Some examples of spreadsheets are Microsoft Excel, Corel Quattro P o, OpenOffice Calc, Google Spreadsheets, Lotus-123 etc.

• Starting Spreadsheets

MS-Excel 2007 is a GUI based spreadsheet package that is part of Microsoft Office 2007 suite of software. It is a powerful spreadsheet package that supports data of various formats, pictures, graphs and drawing objects. There are 1,048,576 rows and 16,384 columns in an Excel worksheet. It has got many user friendly features that makes it the first choice of its users.

Suppose you are having MS-Excel 2007 installed on your computer. To start MS-Excel 2007 perform the following:

Double-click on the MS-Excel 2007 icon on the desktop.

OR

Click **Start → All Programs → Microsoft Office → Microsoft Office Excel 2007** (see Fig. 4.1).

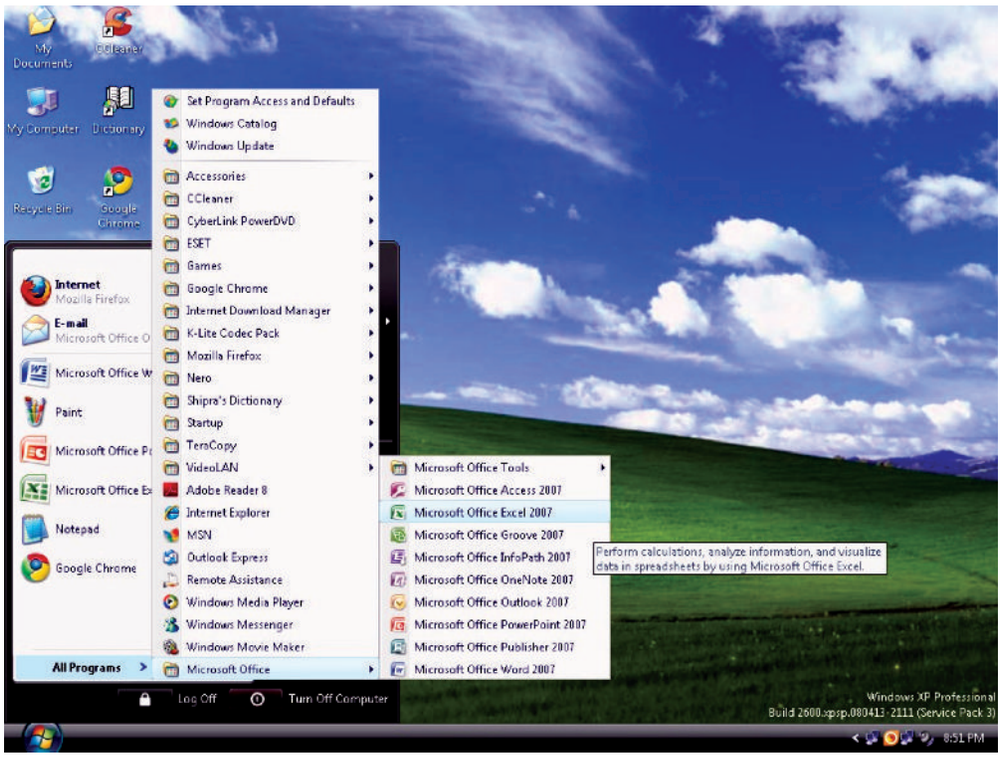


Fig. 4.1: Starting MS-Excel 2007

• Screen Elements of Spreadsheets

A spreadsheet is a collection of rows and columns. It is also known as a worksheet. A worksheet is a primary document to store data.

On starting spreadsheet *i.e.*, MS-Excel 2007, a spreadsheet window appears. Screen elements of Excel spreadsheet are shown in Fig. 4.2.

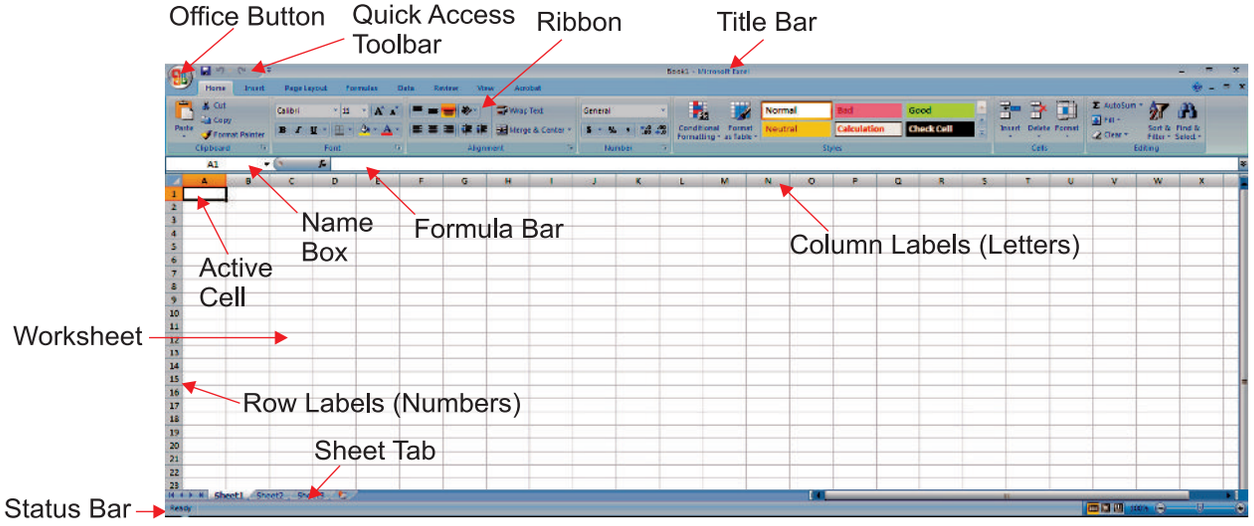


Fig. 4.2: Screen elements of Spreadsheet-Excel 2007

Some important screen elements are discussed below:

Office Button: Clicking on the Office Button displays a drop down menu containing a number of options, such as New, Open, Save, and ₱ int. The options in the Office Button menu are very similar to those found under the File menu in previous versions of Excel.

Title Bar: This shows the name of the workbook (a collection of worksheets).

Quick Access Toolbar: This customizable toolbar allows you to add frequently used commands. Click on the down arrow at the end of the toolbar to display the toolbar's options.

Formula Bar: Located above the worksheet, this area displays the contents of the active cell. It can also be used for entering or editing data and formulas in the active cell.

Name Box: Located on the left of the formula bar, the Name Box displays the cell reference or the name of the active cell.

Ribbon: The Ribbon is the strip of buttons and icons located above the work area in Excel 2007. The Ribbon replaces the menus and toolbars found in earlier versions of Excel.

Sheet Tab: Switching between worksheets in an Excel 2007 file is done by clicking on the sheet tab at the bottom of the screen.

Status Bar: This shows the status of the active worksheet.

Worksheet: This stores the data.

Active Cell: It is the cell with the black outline. Data is always entered into the active cell. The cell address is (column letter, row number)



1. There are screen similarities between MS-Excel, MS-Word and other MS products. The main differences in a spreadsheet are:
   (*i*) the formula bar which is used for operations on cells such as calculations
   (*ii*) the working area
2. Formula bar is only present in Excel. MS-Excel 2007 has panels in place of menus available in earlier versions of Excel.

• Create and Use a Simple Spreadsheet

Creating a Worksheet

To create a worksheet, perform the following steps:

1 Click the *Office Button*.

2 Click the *New* option (see Fig. 4.3 .

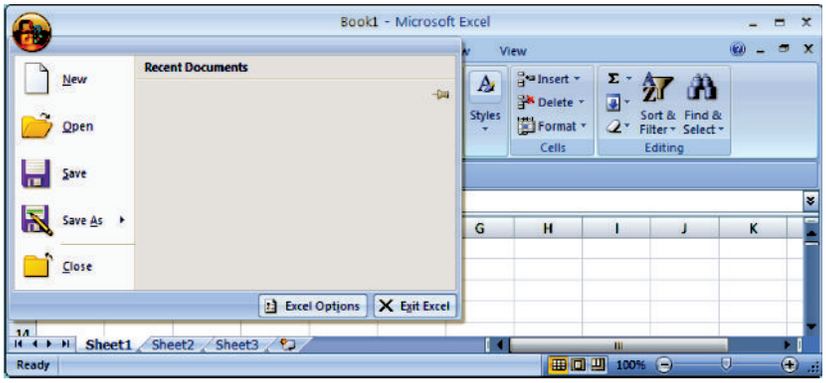


Fig. 4.3: Selecting new option

3 Double click the *Blank Workbook* or click on the *Create* button (see Fig. 4.4).

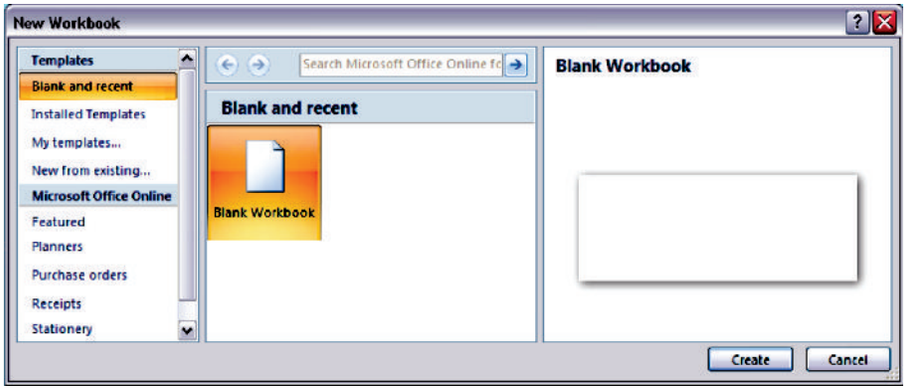


Fig. 4.4: Double clicking the blank workbook

A new worksheet is created (see Fig. 4.5).

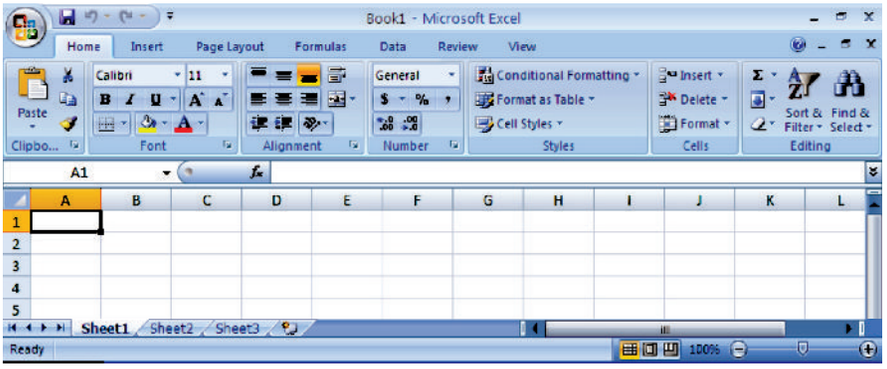


Fig. 4.5: A newly created worksheet

Cells are the basic working unit on a spreadsheet. These fall at the intersection of each column and row. They are referred to by their coordinates, or *cell address*. A cell's address is its column letter followed by its row number *i.e.*, (column letter, row number). For example, the address of the cell at the intersection of column A and row 1 is cell A1 as shown in Fig. 4.5 It is also the *active cell*.

Using a Spreadsheet

Each cell in a spreadsheet can contain words, a number, or a formula. Data is always entered in the active cell and at one time only one cell can be active. Now, you can use the spreadsheet as per your requirement.



Fill Handle is a small black dot or square in the bottom right corner of the active cell. The fill handle has a number of uses including copying a cell's contents to adjacent cells or to create a series.

If Excel recognizes the cell contents as part of a series it will *Auto Fill* other selected cells with the next items in the series. Use the fill handle by clicking on it with the mouse pointer to drag select adjacent cells.

• Entering and Editing Text

Entering Data

To enter data,

1 Select the cell where the data has to be added.

2 Type the data. To enter data in active cell, type the characters. Either press *Tab* key to go to the next cell in the same row or press *Enter* key to go to the next cell in the same column.

After entering the data, the worksheet may look as shown in Fig. 4.6

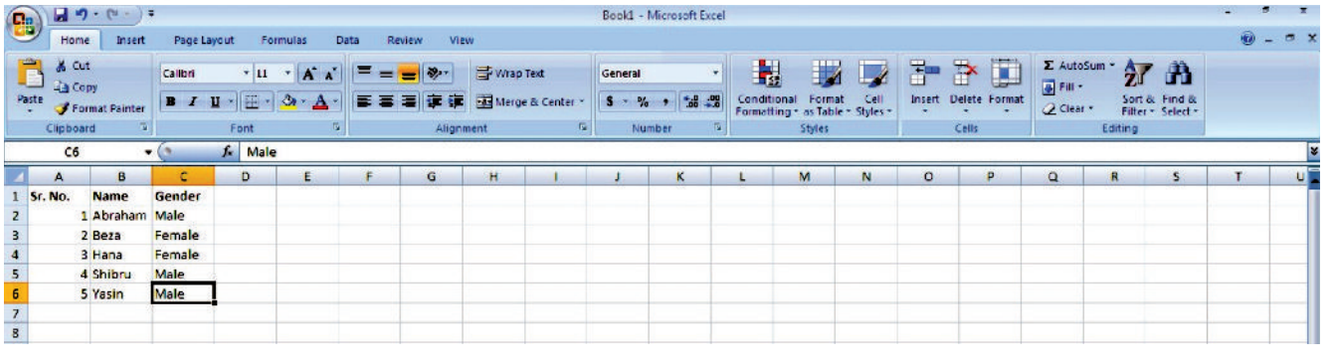


Fig. 4.6: Entering data in a worksheet

Drag Select is a method used to select a range of cells. To do so, click on a cell with the left mouse button and, without releasing the button drag the pointer over a block of cells. Release the mouse button once the correct block, or range of cells has been selected.

Editing Data

To edit data (in case we have made mistakes or some changes are required),

1. Double-click the cell, which has to be edited.
2. Use the arrow key if necessary then press Backspace or Delete key to edit the content of the cell.
3. Press the Enter key.

OR

1. Select the cell, which needs to be edited.
2. Click the Formula bar.
3. Use the Backspace or Delete key to edit the content of the cell.
4. Press the Enter key.

Formatting Spreadsheet

Formatting refers to the act of changing the appearance of data in cells. Data in MS-Excel can be grouped into two broad categories: text and numbers. Different formatting options are available for these two categories of data. Excel allows many formats for numeric data, for example, general number, positive number, decimal number and its precision, currency etc.

For textual data, Excel allows you to change fonts, colors, sizes and other features. Excel has a complete dialog box for formatting cells.

Inserting Columns, Rows and Cells

MS-Excel 2007 provides an easy way to insert columns, rows or cells.

To insert a column,

1. Open an existing worksheet (refer to Fig. 4.6). Select the cell before which you want to insert the column.
2. Select the *Insert Sheet Columns* option from *Insert* available in Cells panel of Home tab (see Fig. 4.7).

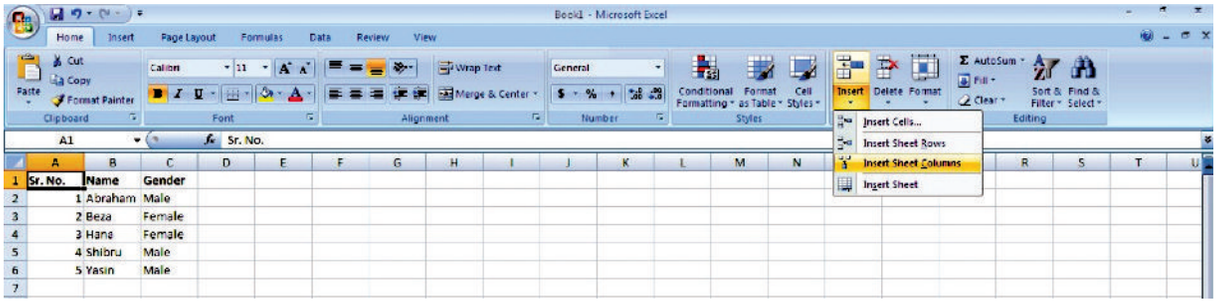


Fig. 4.7: Inserting a column

3 On clicking, a column will be inserted (see Fig. 4.8).

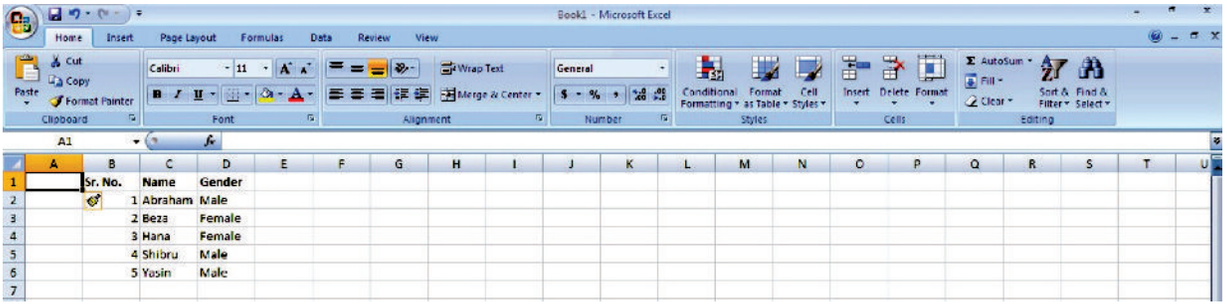


Fig. 4.8: Worksheet after inserting a column

To insert a row,

1 Open an existing worksheet (refer to Fig. 4.6). Select the cell before which you want to insert the row.

2 Select the *Insert Sheet Rows* option from *Insert* available in Cells panel of Home tab (see Fig. 4.9).

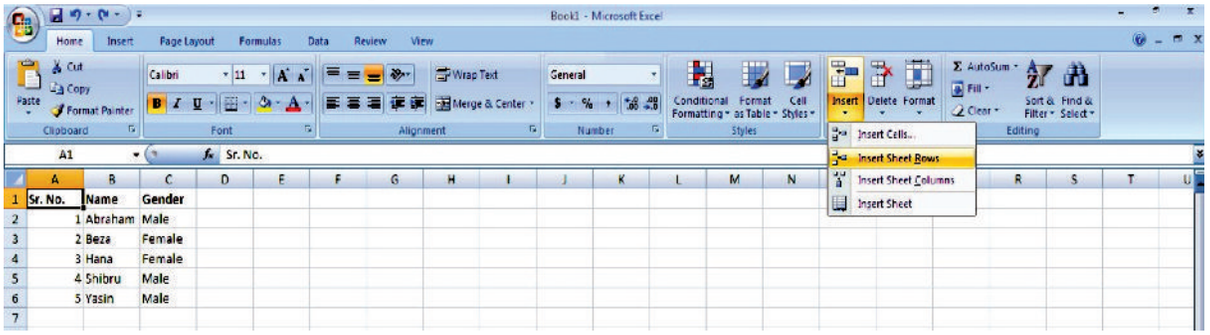


Fig. 4.9: Inserting a row

3 On clicking, a row will be inserted above the active cell (see Fig. 4.10).

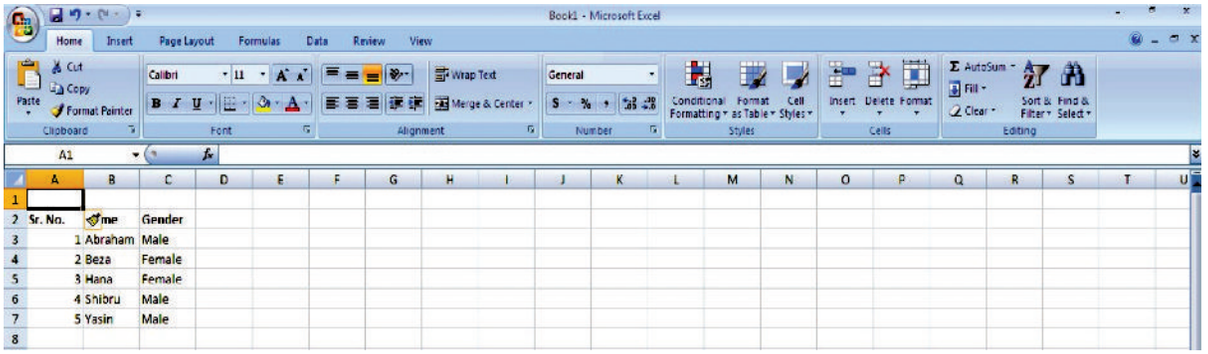


Fig. 4.10: Worksheet after inserting a row

To insert a cell,

1 Open an existing spreadsheet (refer to Fig. 4.6).

2 Select the *Insert Cells...* option from *Insert* available in Cells panel of Home tab (see Fig. 4.11).

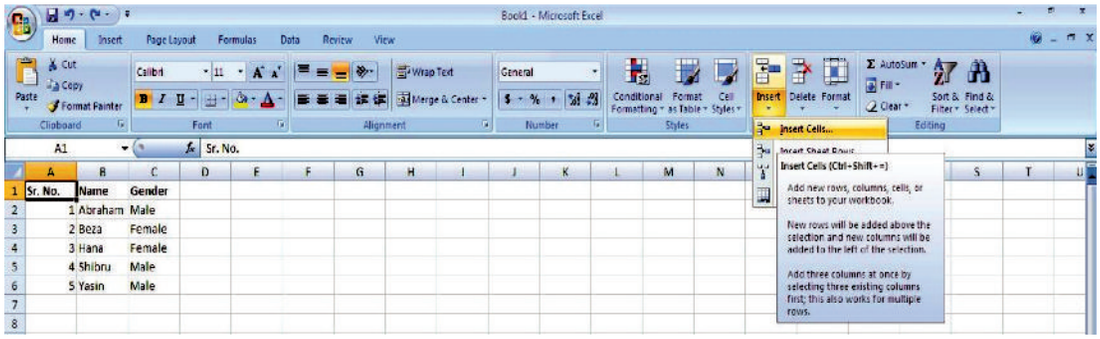


Fig. 4.11: Inserting a cell

3 On clicking, an *Insert* dialog box appears. The dialog box has 4 options out of which 2 are *Shift cells right* and *Shift cells down*. The *Shift cells right* option shifts the data of the selected cell and all cells to the right of the selected cell one position right. The *Shift cells down* option shifts the data of the selected cell and all the data of the cell below the selected cell one position down. Select the desired option (see Fig. 4.12). Here, we select the *Shift cells down* option.

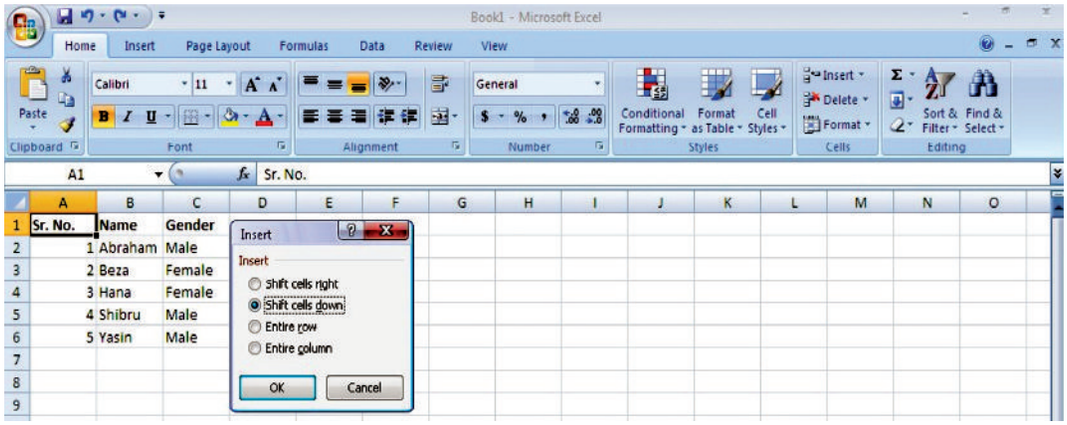


Fig. 4.12: Insert dialog box

4 Click *OK*.

5 A cell will be inserted at the applied location (see Fig. 4.13)

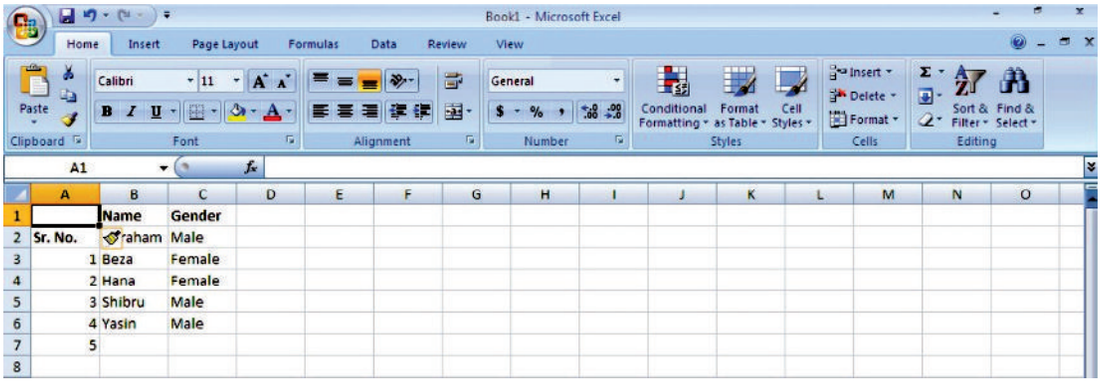


Fig. 4.13: Worksheet after inserting a cell

Deleting Columns, Rows and Cells

MS-Excel 2007 provides an easy way to delete columns, rows or cells.

To delete a column,

1 Open an existing worksheet (refer to Fig. 4.6).
2 Select the column to be deleted.
3 On right clicking the selected column, a shortcut menu appears.
4 Select the *Delete* option from the shortcut menu (see Fig. 4.14).

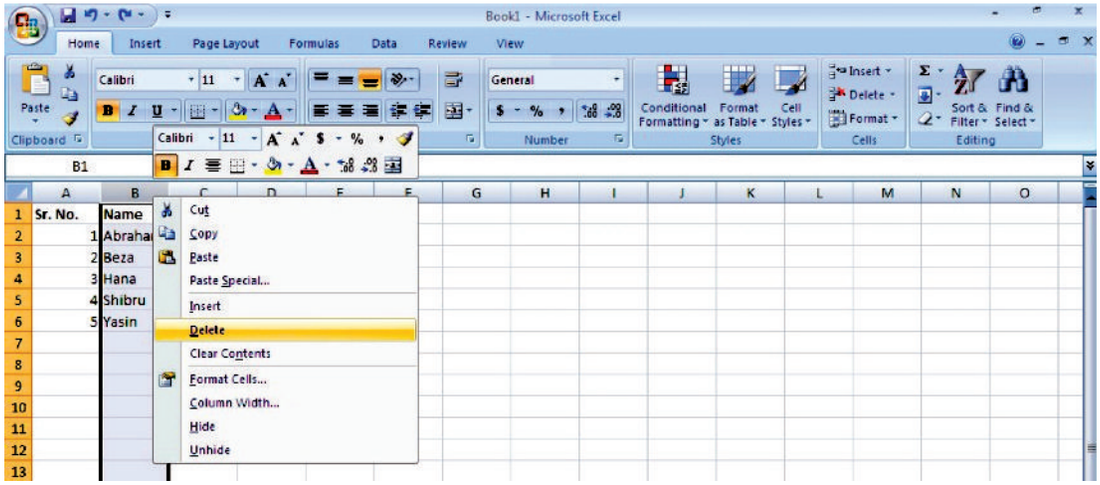


Fig. 4.14: Deleting a column

5 On clicking, the selected column will be deleted.

To delete a row,

1 Open an existing worksheet (refer to Fig. 4.6).
2 Select the row to be deleted.
3 On right clicking the selected row, a shortcut menu appears.
4 Select the *Delete* option from the shortcut menu (see Fig. 4.15).

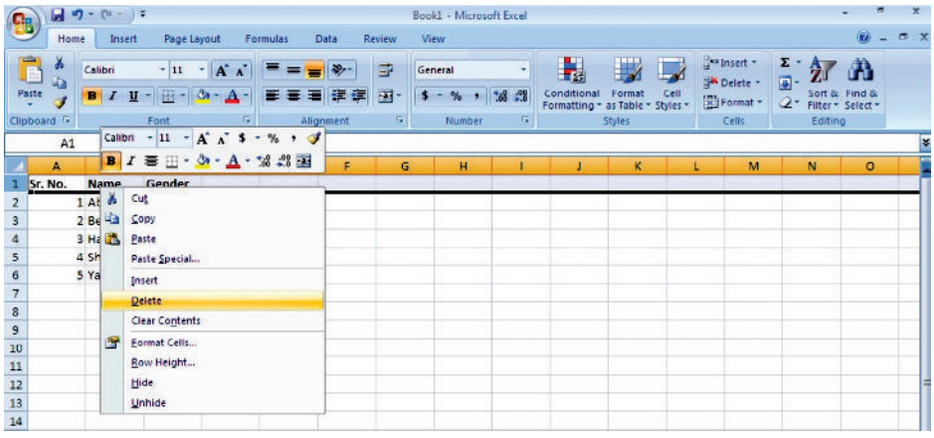


Fig. 4.15: Deleting a row

5 On clicking, the selected row will be deleted.

To delete a cell,

1 Open an existing worksheet (refer to Fig. 4.6).

2 Select the cell to be deleted.

3 Select the *Delete Cells...* option from *Delete* available in Cells panel of Home tab (see Fig. 4.16).

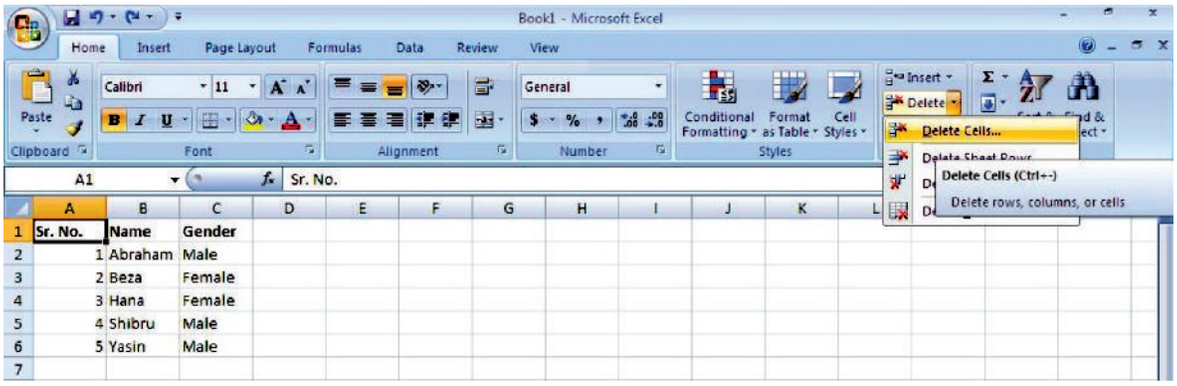


Fig. 4.16: Deleting a cell

4 On clicking, a *Delete* dialog box appears. The dialog box has 4 options out of which 2 are *Shift cells left* and *Shift cells up*. The *Shift cells left* option deletes the data of the selected cell and moves the data of the cells to its right one position left. The *Shift cells up* option deletes the data of the selected cell and moves the data of the cells below it one position up. Select the desired option (see Fig. 4.17). Here, we select the *Shift cells up* option.

5 Click OK.

6 The selected cell will be deleted.

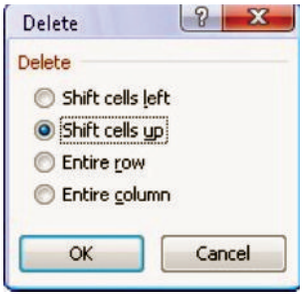


Fig. 4.17: Delete dialog box

• Saving the Worksheet

For saving a worksheet the first time,

1 Click the *Office Button*.

2 Click the *Save As* option.

3 Click the *Excel Workbook* option. A *Save As* dialog box appears (see Fig. 4.18).

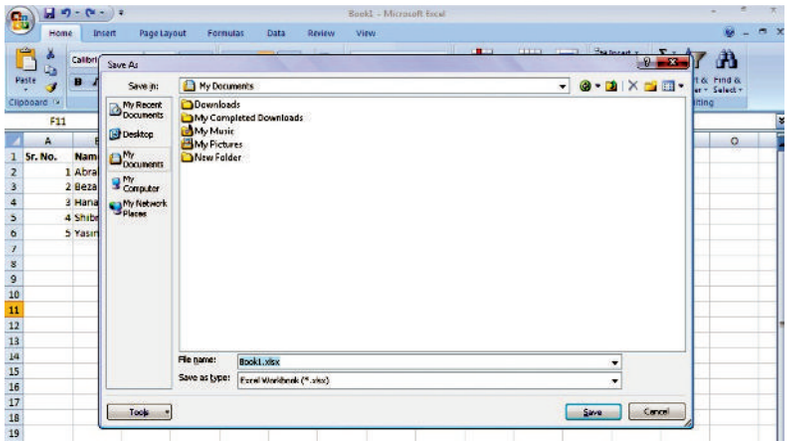


Fig. 4.18: Saving a worksheet

4 Identify the location where the file to be saved and type the name for the worksheet in the *File name* textbox.

5 Click the *Save* button.

• Using the Four Mathematical Operators on Data to Create Custom Formula

Formula

A spreadsheet formula is a simple expression created by using operators and cell addresses using algebra.

In MS-Excel, you can enter numbers and mathematical formulas into cells. Whether you enter a number or a formula, you can reference the cell when you perform mathematical calculations such as addition, subtraction, multiplication, or division. When entering a mathematical formula, precede with an equal (=) sign. Use the following four mathematical operators to indicate the type of calculation you wish to perform:

+ Addition
– Subtraction
* Multiplication
/ Division

For example, = A2 + A3 can be typed in cell A5 (where cells A2 and A3 have data to be added).

• Addition

For addition, perform the following steps:

1. Create a new worksheet.
2. Type *Add* in cell A1 Press *Enter* key.
3. Type *2* in cell A2 Press *Enter* key.
4. Type *3* in cell A3 Press *Enter* key.
5. Type = A2 + A3 in cell A5
6. Click the check mark on the Formula bar. Excel adds cell A1 to cell A2 and displays the result in cell A5 The formula is displayed on the Formula bar (see Fig. 4.19)

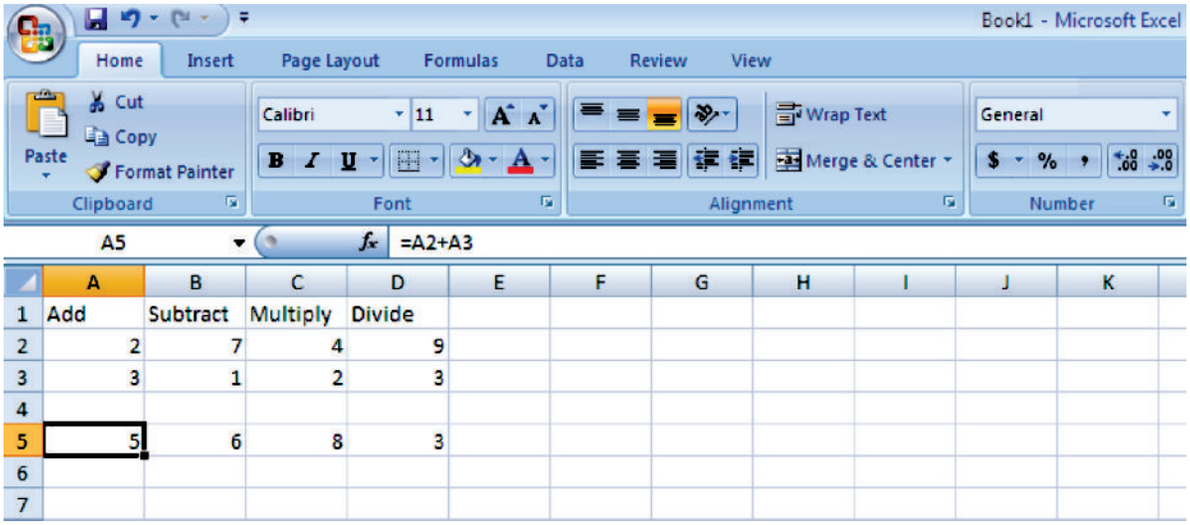


Fig. 4.19: Performing mathematical calculations

Clicking the check mark on the Formula bar is similar to pressing Enter key. Excel records your entry but does not move to the next cell.

Similarly, you can subtract, multiply and divide the data by using the proper operators (see Fig. 4.19).

• Sum (dragging)

To find sum by dragging method, perform the following steps:

1 Type your data and apply sum formula in a cell where you wish to store the result.

2 Select the cell with the sum formula.

3 Activate the formula drag corner. To drag a formula you can easily do so by using the cursor to highlight the lower right corner of the cell, where a drag box will appear.

4 Drag the formula to the new cells. To drag the sum formula across the span of other cells, left-click on this drag box and hold as you drag the box to highlight new cells. When you let go off the mouse button, the formula will appear in all of the cells that you highlighted when you used the drag box (see Fig. 4.20).

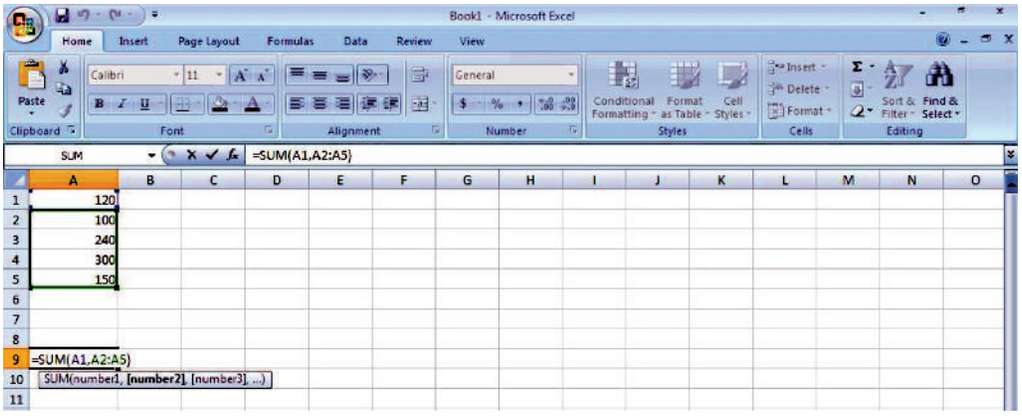


Fig. 4.20: Sum by dragging

5 On pressing *Enter* key you will get the result (see Fig. 4.21).

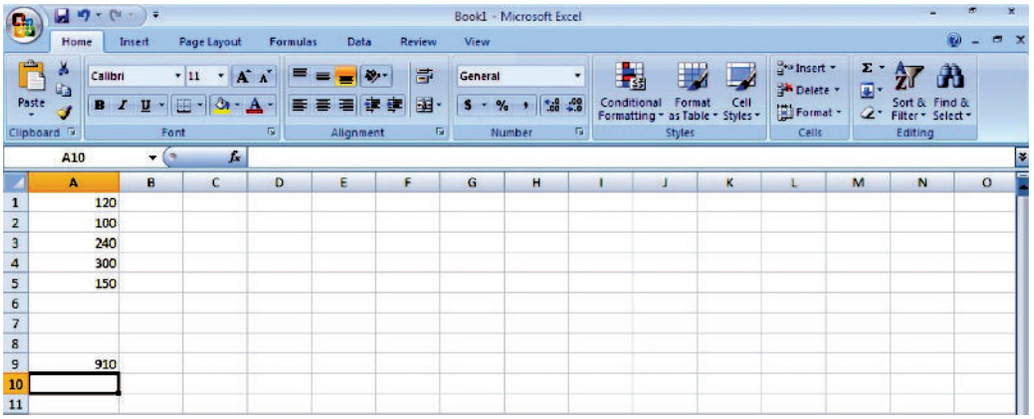


Fig. 4.21: Result after dragging

• Entering a Formula into a Cell

As explained earlier, entering a formula is as simple as the other commands of Excel. To enter the formula in a cell, click on the cell in which you want to have result of the calculation. Type = sign and write the formula using cell addresses and the operators supported by Excel.

Function

A function is a built-in formula that performs calculations on a range of values. It allows you to perform mathematical, statistical and date-time functions. For example, Sum, Average, Count, Max, Min etc.

The syntax of writing a function in Excel is:

= ₣ unction name⤐ Ł ist of arguments⤏

The following examples illustrate the use of functions:

= SUM(A₴E ⤏ will find the sum (total) of numbers

= AVERAGE(A₴E ⤏ will find the average of numbers

Figure 4₴ uses these built-in functions to calculate the total and average.

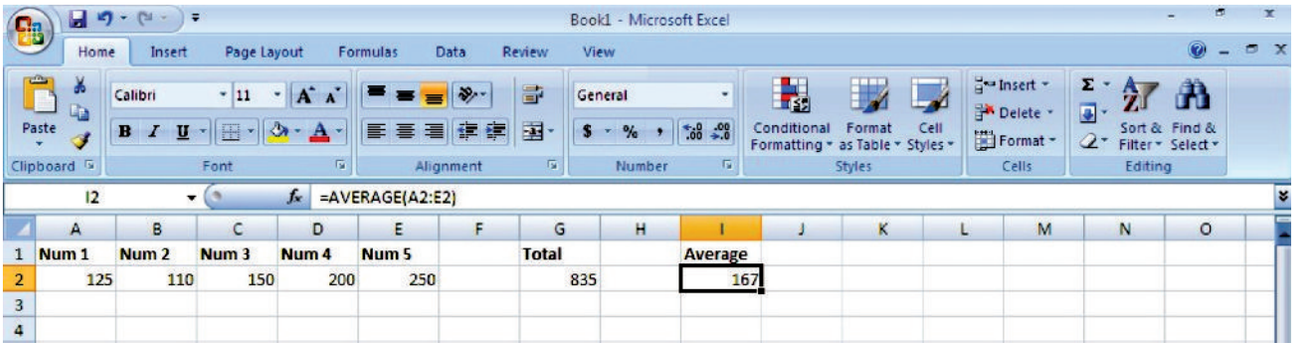


Fig. 4.22: Using built-in functions



The Auto Sum Fe ure is used to calculate the sum of the values in a range of cells. This feature adds the range of values either above the destination or in the row to the left of the destination cell. Click on Σ AutoSum in Formulas tab to use this feature.

• Copying by Using the Fill Handle

Using the fill handle, located in the bottom right corner of the active cell is a quick and easy method of copying data, formulas, and functions from one cell to another.

To copy data with the fill handle, perform the following steps:

1 Open a worksheet and type data in it. Here, we have typed *Ethiopia* in cell A1

2 Click on cell A1 to make it the *active cell*.

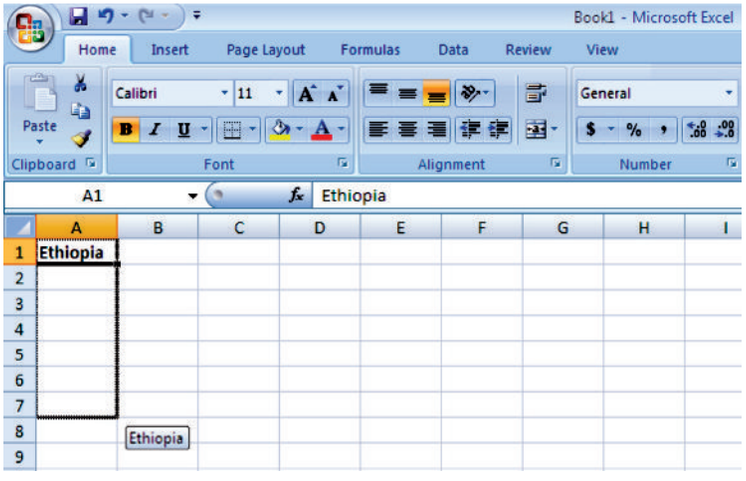


Fig. 4.23: Using fill handle for copying after applying bold to a cell

3 Add bold formatting (*Ctrl* + *B*) to the data in cell A1

4 Place the mouse pointer over the small black dot in the bottom right corner of cell A1

5 The mouse pointer will change to a small plus sign(+) when you have it over the fill handle.

6 When the mouse pointer changes to the plus sign, click and hold down the mouse button.
7 Drag the fill handle to cell A7 to copy the data and the bold formatting to cells A2, A3, A4, A5, A6 and A7 (see Fig. 4.23).
8 Cells A1 to A7 now all contain the bold formatted data *Ethiopia* (see Fig. 4.24).

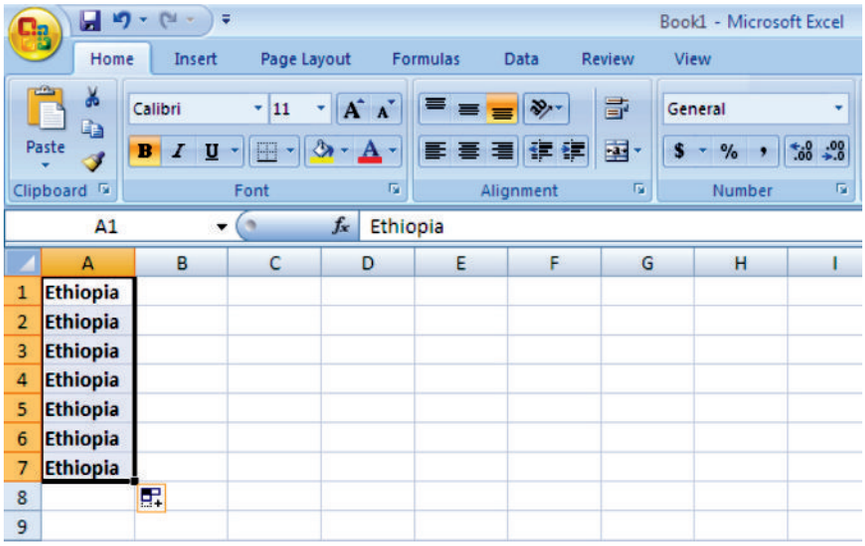


Fig. 4.24: Worksheet after copying

Similarly, you can copy formulas with the fill handle.

Copying formulas to other cells only works if the formula is created using cell references.



ACTIVITY 4.1

ADDING BACKGROUND TO A WORKSHEET, FORMATTING CELLS, NUMBERS, ALIGNMENT, FONT, BORDERS AND PATTERN

In small groups students will discuss "Formatting of Worksheet" to make screen displays more readable and attractive.

For formatting a worksheet, perform the following steps:

1. Open a worksheet.
2. Type the data you wish to format (see Fig. 4.25).

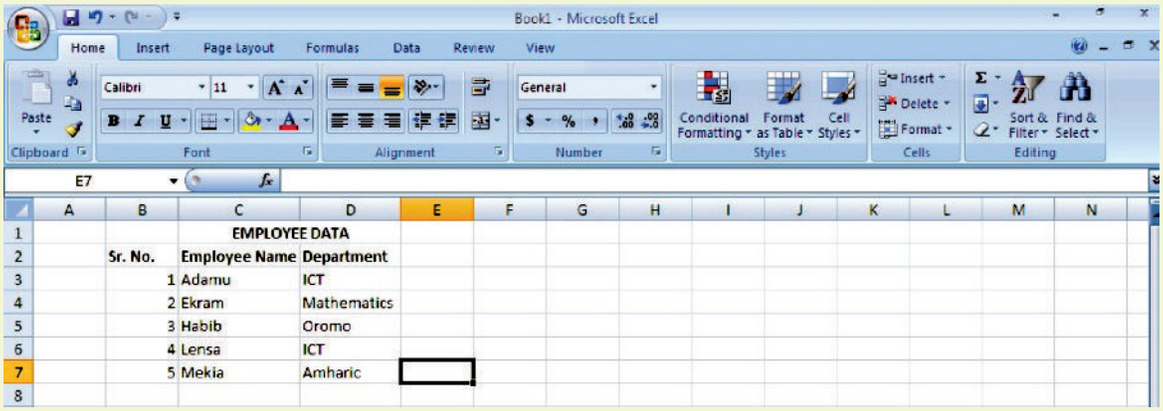


Fig. 4.25: Worksheet to be formatted

3. Now apply the formatting required *i.e.*, Adding background, Formatting cells, Numbers, Alignment, Font, Borders and Pattern. Doesn't the worksheet look really attractive! (see Fig. 4.26).

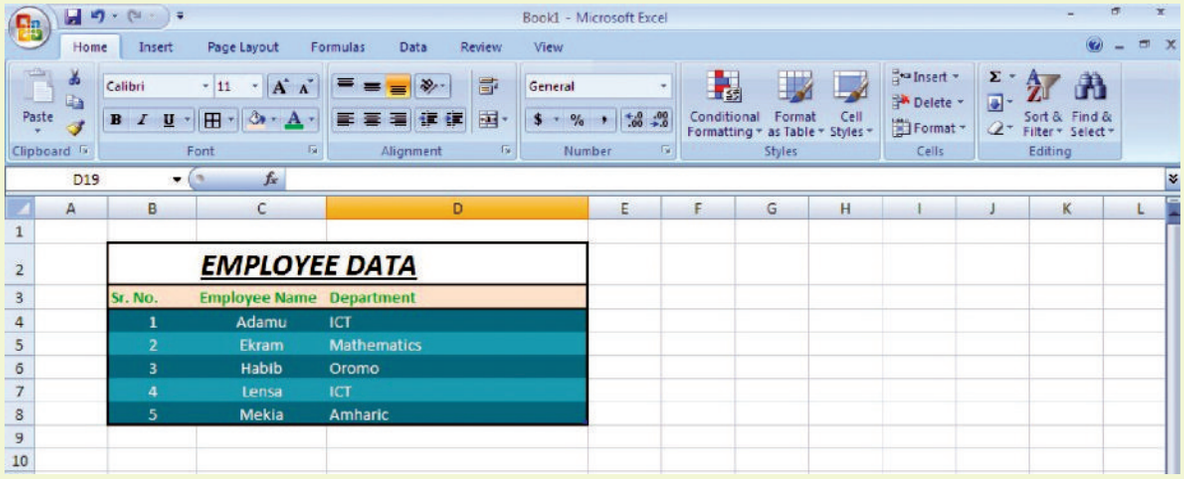


Fig. 4.26: Worksheet after formatting

KEY CONCEPTS

- A spreadsheet is a document which helps you organize data in rows and columns that intersect to form cells.
- In a spreadsheet each cell can contain words, a number, or a formula.
- Some examples of spreadsheets are Microsoft Excel, Corel Quattro Pro, OpenOffice Calc, Google Spreadsheets and Lotus–123 etc.
- MS-Excel has screen similarities with MS-Word and other MS products; main differences in a spreadsheet are
  - (*i*) the formula bar which is used for operations on cells such as calculations
  - (*ii*) the working area.
- A function is a built-in formula that performs calculations on a range of values. Some examples of functions are Sum, Average, Count, Max, Min.

REVIEW QUESTIONS

Fill in the Blanks

1. ..... is a GUI based spreadsheet package that is a part of MS-Office suite of software.
2. In Excel, Title Bar shows the name of the ..... .
3. The ..... is a small black dot or square in the bottom right corner of the active cell.
4. In MS-Excel, we can use some ..... to calculate totals and averages.

State Whether True or False

1 The electronic spreadsheet is the brain child of Dan Bricklin and Bob Franktor.

2 In a spreadsheet each cell cannot contain words, a number, or a formula.

3 In MS-Excel, we can adjust either freehand or using *Cells* panel of *Home* tab to insert rows and columns and delete rows and columns.

4 In MS-Excel we cannot apply different effects to a cell and its contents.

Multiple Choice Questions

1 Which of the following is application software?

(*a*) Operating System (*b*) Compiler (*c*) Interpreter (*d*) MS-Excel

2 Which of the following is the basic unit of data entry in MS-Excel?

(*a*) Worksheet (*b*) Workbook (*c*) Cell (*d*) Row

3 Which of the following is only found in MS-Excel?

(*a*) Formula Bar (*b*) Quick Access Toolbar (*c*) Office Button (*d*) Format Painter

4 Which of the following function will you use to calculate the average of data range?

(*a*) SUM( ) (*b*) AVERAGE( ) (*c*) MAX( ) (*d*) MIN( )

Match the Following

Column A		Column B	
1	MS-Excel 2007 worksheet	(*a*)	Adds all the numbers in a range of cells
2	Formula bar	(*b*)	Used to copy a cell's contents to adjacent cells or to create a series
3	Fill handle	(*c*)	Contains 1,048,576 rows and 16,384 columns
4	SUM( ) function	(*d*)	Displays the contents of the active cell

Answer the Following

1 What is a spreadsheet? Give its purpose and examples.

2 How will you create and save worksheet in MS-Excel? Explain the steps.

3 Explain the insertion and deletion of columns, rows and cells in Excel.

4 What are built-in functions in Excel? Explain SUM and AVERAGE functions.

Suggested Activities

1 Explain and demonstrate the features of spreadsheet.

2 Explain and demonstrate how to calculate sum(total) using auto sum.

3 Explain and demonstrate formatting text and numbers in a cell.

4 Explain and demonstrate cell reference: Absolute and Relative.

Field Trip

Using the Internet or computer magazines, look up information on MS-Excel 2007. List any features you find. List which of these features appeal to you and describe why they do.

UNIT 5

USING INTERNET

UNIT OUTCOME

Students will be able to:

- understand the Internet as a global network;
- recognize the meaning of some basic terms related to the Internet;
- recognize the work with a search engine to search for items;
- understand hotspots and hyperlinks;
- comprehend the meaning of some common e-mail terms.

5.1 USING INTERNET

A computer network is defined as an interconnected collection of computers. A network can either be a small group of two or more computers linked together or a high-end network that links hundreds or even millions of computers across the globe. Internet is a vast ocean of information. It is very useful network. You will study about the Internet in this unit.

• Definition of Internet

Internet is the network that is available to users across the globe (see Fig. 5.1). It is called "*the mother of all networks*".

OR

Internet is the network that contains other networks of computers around the globe into one seamless network (see Fig. 5.1). These networks link educational, commercial, nonprofit and military entities, as well as individuals.

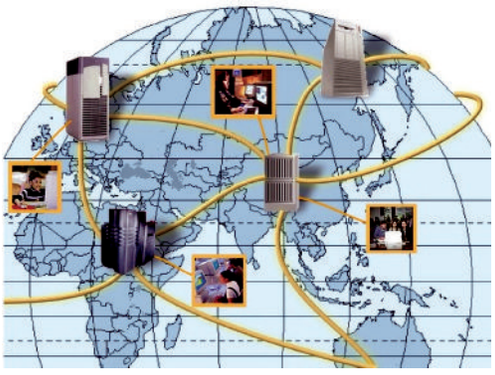


Fig. 5.1: Internet—the mother of all networks

• Uses and Services Available on the Internet

The major use of Internet is for searching the information stored in millions of computers of the Internet. Whether you are a doctor, an engineer, teacher, student or businessman; the Internet can keep you update about the latest issues in your field and the past issues already occurred. You can search for the information, take part in on-line test, audio or video conversation or you can share the information with the other users of the Internet.

The Internet has given a boom to 'Information and Communication Technology (ICT)'. Today the world of the Internet permits services hardly imaginable 20 years ago. Table 5.1 provides the uses and services provided on the Internet.

Table 5.1: The Main Uses and Services Provided on Internet

Activity	*Purpose*
Auctions	Sell old stuff, acquire more stuff, with online auctions.
Career advancement	Search job listings, post resumes, interview online.
Distance learning	Attend online lectures, have discussions, research papers.
Download files	Get software, music, and documents such as e-books.
E-mail and discussion groups	Stay in touch worldwide through electronic mail and online chat rooms.
Entertainment	Amuse yourself with Internet games, music and videos.
E-business	Connect with coworkers, buy supplies, support customers.
E-shopping	Price anything from plane tickets to cars, order anything from books to sofas.
Financial matters	Do investing, banking and bill paying online.
News	Stay current on politics, weather, entertainment, sports and financial news.
Research and information	Find information on any subject, using browsers and search tools.
Telephony and conferencing	Make inexpensive phone calls; have online meetings.



Who Governs the Internet ?

You will be surprised to know that there is no one who owns or runs the Internet. Every subnetwork of Internet is responsible for maintenance of its own part and does not bother about the other one. The Internet is coordinated by many volunteer organisations and no single organisation is having the complete control over it.

• Terms

World Wide Web (WWW) is a set of programs, standards and protocols that allows the text, images, animations, sounds, videos to be stored and accessed and linked together in the form of websites. Basically, WWW is a collection of millions of web pages stored in thousands of computers all over the world. It is a safe house for storing information on the Internet.



Fig. 5.2: Web inventor: Tim Berners-Lee

Remember that the Internet and the World Wide Web are not the same thing. The Internet is a massive network of networks, connecting millions of computers via protocols, hardware, and communications channels. The Web is a means of accessing information available on the Internet using software called a *browser*.

Let us discuss some of the important terms associated with W

Website

A computer with a domain name is called a *website* (*site*). The top-level domains are .com, .edu, .org, and .net. When you decide to buy books at the online site of a bookseller, you would visit its website. The website is the location of a web domain name in a computer somewhere on the Internet.

Each website has a unique address.

Web Page

A website is composed of a *web page* or collection of related web pages. A *web page* is a document on the World Wide Web that can include text, pictures, sound and video. The first page you see on a website is like the title page of a book. This is the *home page*, or welcome page, which identifies the website and contains links to other pages at the site.

If you have your own personal website, it might consist of just one page—the home page. Large websites have many pages.



The contents of home pages often change. Or they may disappear, and so the connecting links to them in other web pages become links to nowhere.

Browser

Browsers are software for connecting with websites. A *web browser*, or simply *browser*, is software that enables users to locate and view web pages and to jump from one page to another. It is what you use to get around the web. A web browser makes it easy to navigate (or "surf") the web and to download items. For example, Internet Explorer, Mozilla Firefox, Google Chrome, etc.

• Types of Browsers Software

To use the Web, the software you use is a browser. This is an intensely competitive field right now and browsers are undergoing very rapid changes. Some are independent software programs such as those developed by Microsoft and Mozilla. Others are integrated into application programs such as word processing programs, spreadsheets and databases.

Some of the best-known browsers are:

Internet Explorer

Internet Explorer is one of the most popular web browsers (see Fig. 5.3).



Fig. 5.3: Internet Explorer

Mozilla Firefox

Mozilla Firefox browser is coming up very fast *i.e.,* its users are increasing everyday (see Fig. 5.4).



Fig. 5.4: Mozilla Firefox browser

Google Chrome

Google Chrome is providing a tough fight to other web browsers and is very popular among users (see Fig. 5.5).

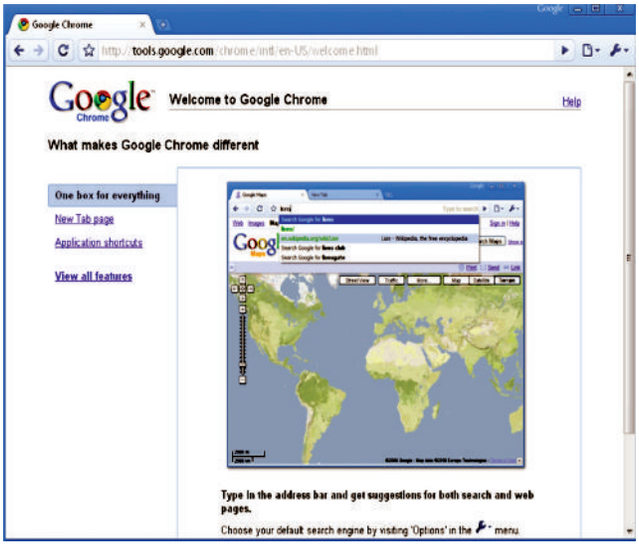


Fig. 5.5: Google Chrome

• Screen Elements of Internet Explorer

Internet Explorer (IE) is one of the most popular web browsers. Before you can use IE to browse the web, you must be connected to the Internet. When you are connected to the Internet, you are said to be *online*.

There are three ways to start Internet Explorer:

1. Choose Start, All Programs, Internet Explorer.
2. Click the Internet Explorer icon on the Quick Launch bar (on the taskbar).
3. Double-click the Internet Explorer icon on the desktop.

Figure 5.6 shows some screen elements of Internet Explorer.

When IE opens, you will see the browser interface that contains the standard Windows components: a title bar, a menu bar, a content window and a status bar. It also includes a *Standard toolbar* and *Address bar* similar to those in the Windows Explorer and My Computer windows.

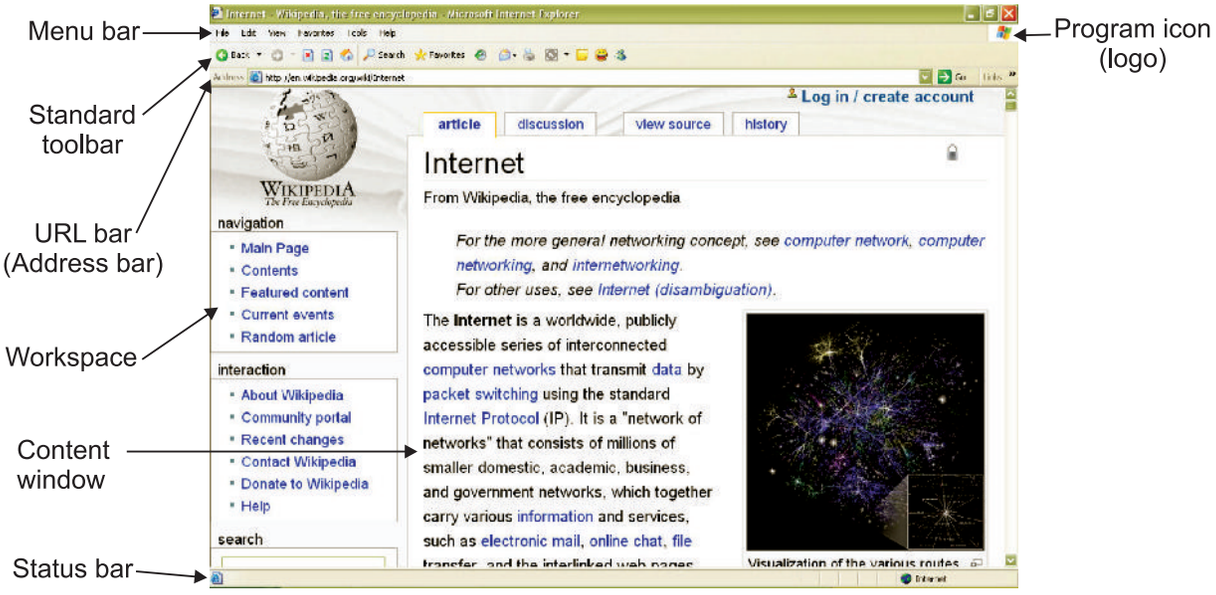


Fig. 5.6: Internet Explorer browser window

In addition to the Standard toolbar and the Address bar, IE also includes a Links bar and a Radio toolbar. Like the toolbars in other Windows programs, you can show, hide, size and arrange the IE toolbars to suit your work style.

Address Bar

The *Address bar* indicates the location of the Web page currently displayed in the content window (see Fig. 5.7). This location is also known as *Uniform Resource Locator* (URL). You can think of a URL as the Internet address of a web page. The Address bar also provides a drop-down list of the recently visited sites.



Fig. 5.7: Address bar

To access a web page, you can type its URL in the Address bar and, then, click the GO button (or press the Enter key).

Standard Toolbar

The *Standard toolbar* provides buttons to facilitate navigation, searching, printing and other common tasks. You can customise this toolbar to include other buttons such as cut, copy and paste and you can delete any of the default buttons that you do not commonly use. Figure 5.8 shows the Standard toolbar.

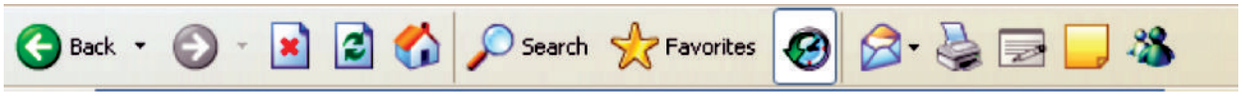


Fig. 5.8: Standard toolbar

History

The *history list* allows you to quickly return to the page you have recently visited. If you want to return to a previously viewed site using Internet Explorer, click on *History*.

Favorites

One great helper for finding your way is the favorite system, which lets you store the URL or web pages you frequently visit so that you do not have to remember and retype your favorite address.

If you are at a website you may want to visit again, you click on your *Favorites* (in Internet Explorer) button and choose *Add to Favorites*. Later, to revisit the site, you can go to the Favorites menu, and site will reappear.

• Using Internet

To connect to the Internet, we have to connect our computer to the computer server of Internet Service Provider (ISP). ISPs are companies which provide Internet related services to its users. ISPs have special computers called Internet Servers which are connected to the Internet from one end and to several users from the other end. These servers work 24 hours a day, 365 days a year to provide services to their customers. You must follow the rules and regulations in the use of Internet (netiquette). In general, netiquette has two basic rules:

1 Do not waste people's time, and

2 Do not say anything to a person online that you would not say to his/her face.

• Browsing Information

The words **"Browsing"** or **"Surfing"** are used to describe the process of looking at documents, websites and web pages on the Internet. As mentioned earlier you will need to use a Web Browser for this. Many people will use Internet Explorer, which is the Microsoft Browser that is supplied with most PCs, but there are alternative (some say better) solutions such as Firefox and Google Chrome.

Browsing behaviour differs from person to person. To access a website you can either type the domain name (the website address) of the website directly into the address bar or you can use a search engine to search for the site using the business name or some other keywords that you know can be found on the website.

• Saving Document

After browsing information, it can be saved for future use. For saving a document, perform the following steps:

1. Click on the *File* menu.
2. Select the *Save Page As* (*Ctrl* + *S*) option (see Fig. 5.9).

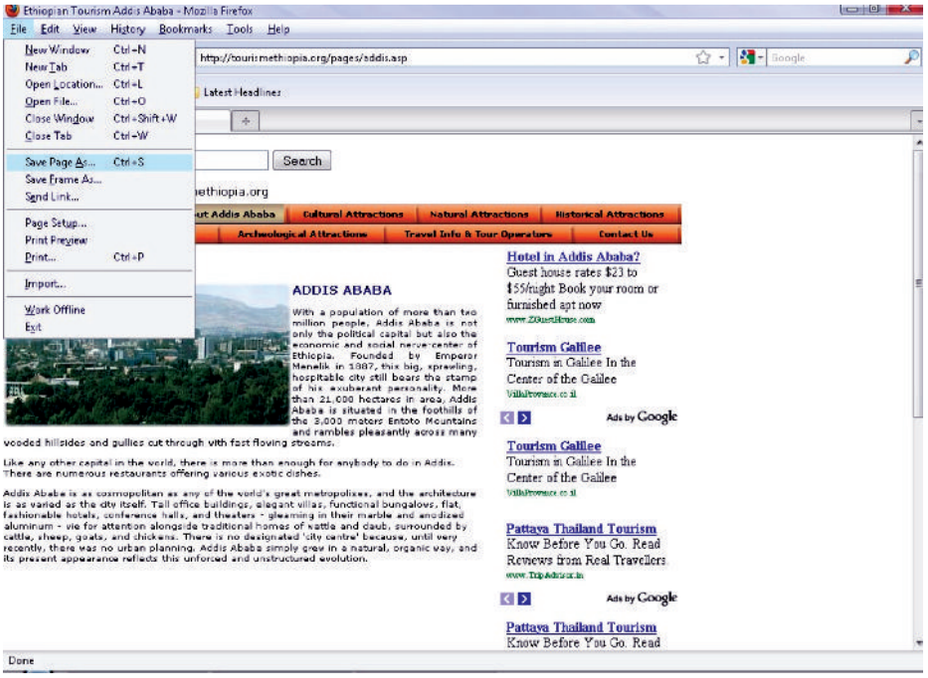


Fig. 5.9: Saving document

3. The *Save As* dialog box will appear.
4. Identify the location where the file to be saved and enter the file name and click *Save*.

• Saving Images

After getting the images, perform the following steps to save these:

1. Right click on the image.
2. A menu appears (see Fig. 5.10).

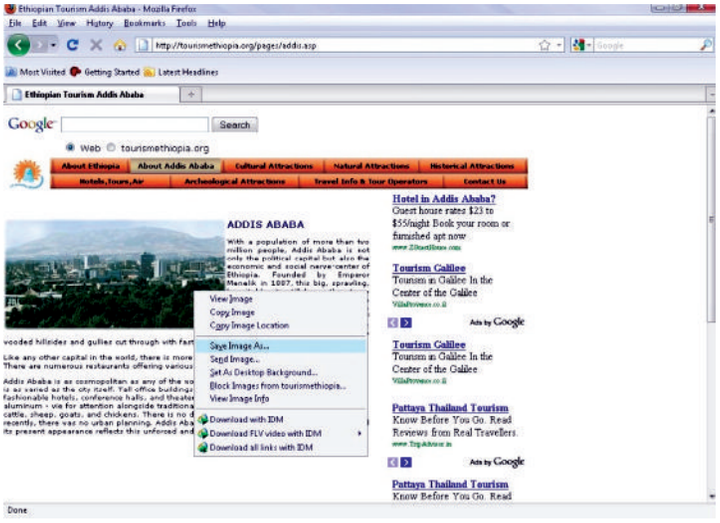


Fig. 5.10: Saving images

3 Select the *Save Image As* option.

4 The *Save Image* dialog box will appear.

5 Enter the file name and click *Save*.

• Printing Documents

For printing a document, perform the following steps:

1 Click on the *File* menu.

2 Select the *Print* (*Ctrl* + *P*) option (see Fig. 5.11).



Fig. 5.11: Printing document

3 The *Print* dialog box will appear.

4 Fill the desired options and click *OK*.

• Searching Information

In order to help you locate information easily, there are a number of websites on the Internet that provide a search engine (a program that helps to locate information on the Internet). Let us have look at a search engine and use it to locate information. First, let us go to the side http://www.google.com/, which offers a search engine.

In the space provided for the search, you need to enter the word or words that describe the item you wish to search for, specify if you want the search to be based on the World Wide Web or Ethiopia tourism (see Fig. 5.12) and then press *Enter* key.

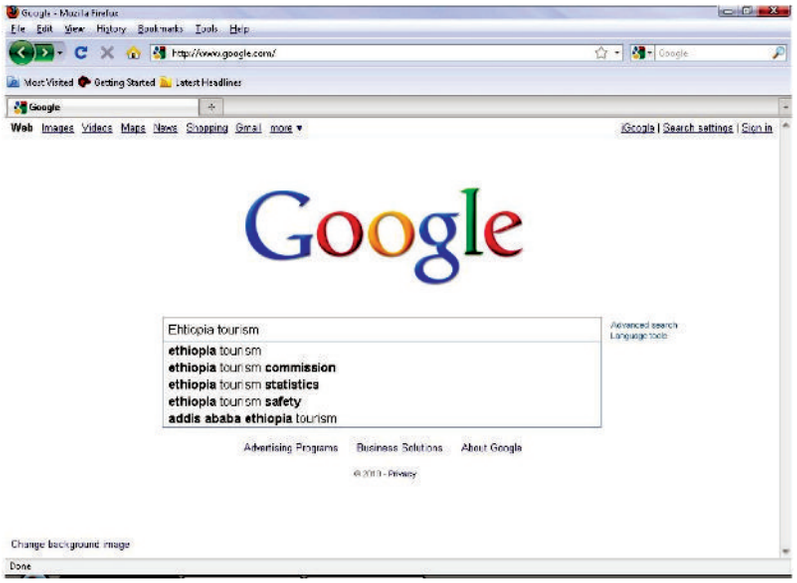


Fig. 5.12: Searching information using Google search engine

The result of the search, will be displayed as a list that contains the required information with a short description of each site (see Fig. 5.13).

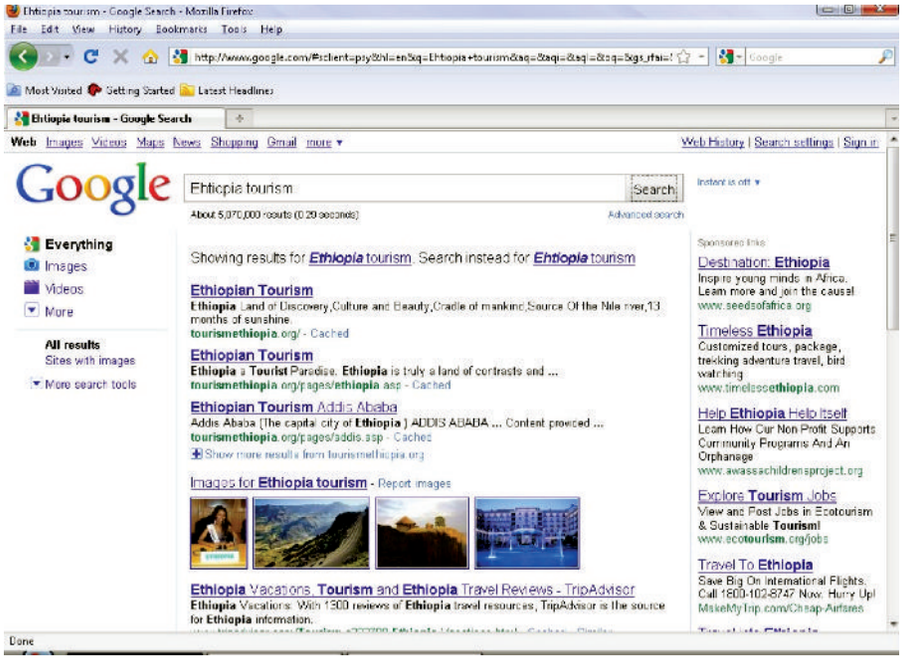


Fig. 5.13: Search Results

The names of the websites are links; you can click them to access the requried page. Now, go ahead and find the required information.



Hyperlinks enable you to navigate the Web by clicking words, icons, pictures or other graphics on a web page. When you point to a hyperlink, your mouse pointer changes to a pointing hand. At the same time, the browser status bar shows you the URL associated with the hyperlink to which you are pointing.

Text-based hyperlinks are often underlined or displayed in a different color than the rest of the text on a Web page. Graphics-based hyperlinks can be icons, logos, buttons, photographs and so on. Clicking a hyperlink is just one way to access a specific URL.



ACTIVITY 5.1

TO INVESTIGATE FOUR SEARCH ENGINES (FOR EXAMPLE ALTAVISTA, LYCOS, GOOGLE AND YAHOO), EXPLAINING THE FEATURES OF SEARCH ENGINES, AND WRITE A REPORT ON THE PREFERRED SEARCH ENGINE, GIVING REASONS OF ITS PREFERENCE.

In small groups students will investigate four search engines, explain their features and present their report in the class.

Search Engine

A **search engine** is a website that collects and organizes content from all over the Internet. Those who wish to **locate** something would enter a query about what they want to find and the engine provides links to content that matches it. For example, AltaVista, Lycos, Google and Yahoo.

Let us investigate these search engines and explain their features:

1. **AltaVista:** It is a web search engine owned by Yahoo! (see Fig. 5.14). AltaVista was once one of the most popular search engines but its popularity declined with the rise of Google.

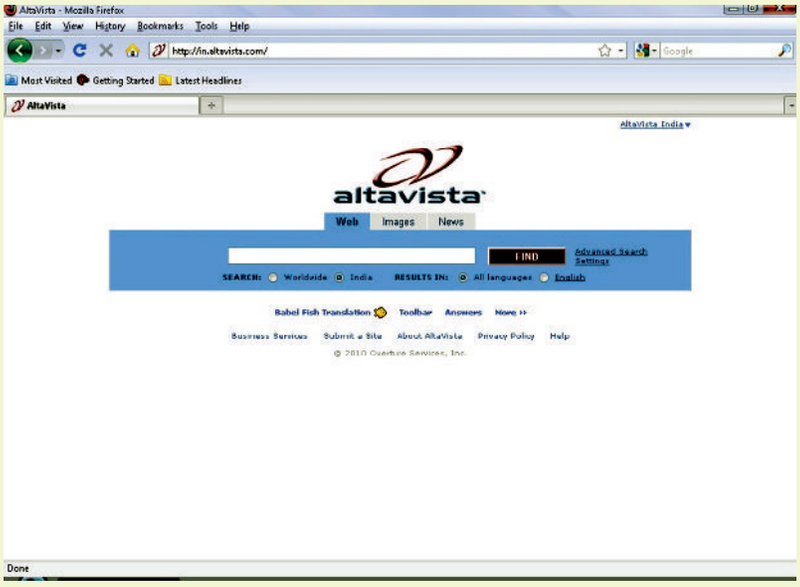


Fig. 5.14: AltaVista search engine

Key Features: AltaVista provides a free translation service, branded Babel Fish, which automatically translates text between several languages. In May 2008, this service was re-branded as a part of Yahoo!

2. **Lycos:** It is one of the oldest search engines (see Fig. 5.15). It was originally developed at Carnegie Mellon University to calculate the size of the web using a "spider" *robot* program that walked around the *Internet* from site to site through page links.

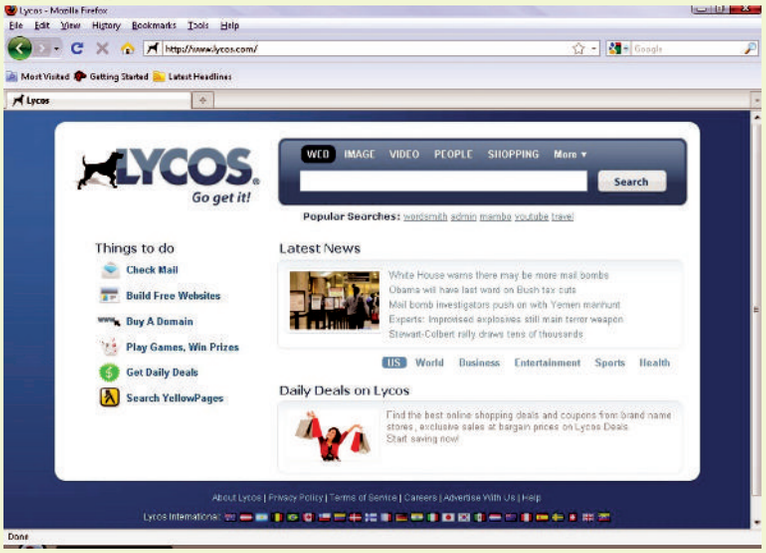


Fig. 5.15: Lycos search engine

Key Features: Probably the top reason to use Lycos would not necessarily be for its search results, but for its fun features.

3. **Google:** This search engine has a great reputation for relevant and thorough search results, and is a good first place to start when searching (see Fig. 5.16).

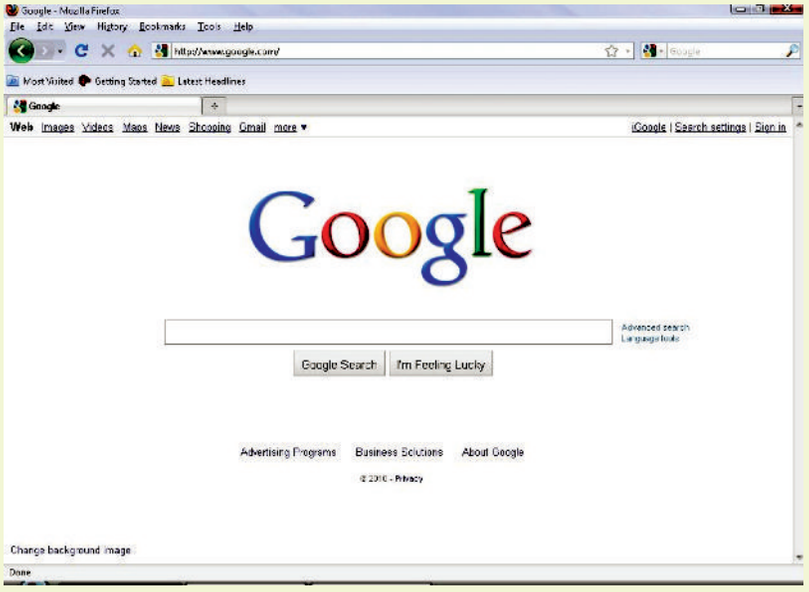


Fig. 5.16: Google search engine

Key Features: Google search engine provides at least 22 special features beyond the original word-search capability. These include synonyms, weather forecasts, time zones, stock quotes, maps, earthquake data, movie show times, airports, home listings, and sports scores.

4. **Yahoo:** This is one of the best known and most popular Internet portals. Originally a subject directory of sites, it now is a search engine, directory, and portal (see Fig. 5.17).

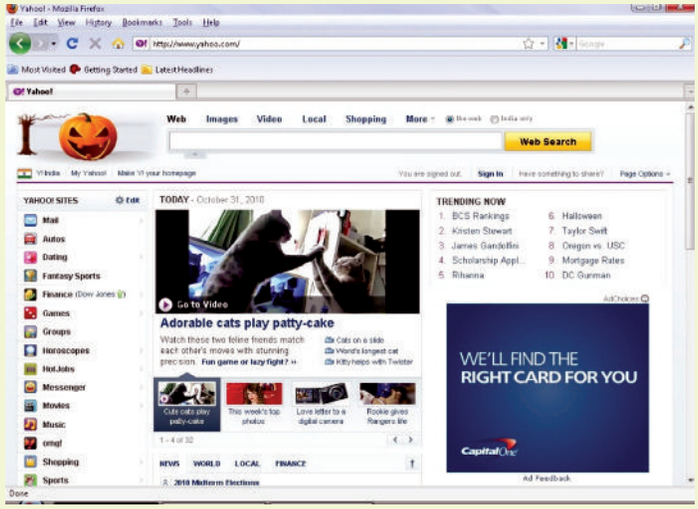


Fig. 5.17: Yahoo search engine

Key Features: Yahoo has a large and unique search engine database, includes cached copies of pages, includes links to the Yahoo! directory, supports full Boolean searching, and includes Wild Card Word in Phrase.

Preferred Search Engine

Each search engine competes with other search engines for users, just as online businesses compete with each other for customers. This creates a fierce rivalry to provide better results and services for users as they surf the Internet

On www.ketteringwebsolutions.co.uk the following definition of Google was given:

"The Internet's most popular search engine. Can be found at www.google.com".

The glossary of www.satellite-tv-hq.com/ agrees with above and gives the next Google definition:

"The world's current dominating search engine."

These both statements are proved by the next Google definition, made by the free encyclopedia "Wikipedia":

"Google is a search engine owned by Google Inc. whose mission statement is to 'organize the world's information and make it universally accessible and useful.' The largest search engine on the Web, Google, receives over 200 million queries each day through its various services". This Google definition formulates the main mission of the search engine. The efforts of Google are evident, and it is confirmed by the number of queries, over 200 million each day. Such activities illustrate this Google definition, as the most popular search engine.

KEY CONCEPTS

- Internet is the network that is available to users across the globe.
- The major use of Internet is for searching the information stored in millions of computers of the Internet.
- A web browser, or simply browser, is software that enables users to locate and view web pages and to jump from one page to another. For example, Internet Explorer, Mozilla Firefox, Google Chrome etc.
- Screen elements of Internet Explorer are: Menu bar, Address bar, Standard toolbar, Workspace, Content window, Status bar etc.
- Examples of search engines are AltaVista, Lycos, Google and Yahoo.



Assessment 5.1

Fill in the Blanks

1 ..... is called t‘ he mother of all networks.”

2 A computer with a domain name is called a ..... .

3 To use the web, the software you need is a ..... .

4 Google has a ..... engine.

State whether True or False

1 Internet is not a vast ocean of information.

2 The Internet and the W rld Wide Web are not the same thing.

3 Internet Explorer is not a very popular web browser.

4 There are a number of websites on the Internet, that provide a search engine, which help you locate information easily.

Answer the Following

1 W at is Internet? W o governs it?

2 Explain how Internet and W are used?

3 Define website, webpage and a browser.

4 List and describe some different types of browser.

Suggested Activities

1 Explain the difference between a website and web pages; show some sites and pages.

2 Explain that each website has a unique address; a website holds information; creation of websites briefly; there may be a few or many pages on the website.

3 Explain and demonstrate some hyperlinks, and returning back to the original web page.

Field Trip

Students to locate the name and telephone number of a local Internet access provider. Also, get the name, telephone number, and e-mail address of their help desk so they can help if you have any questions getting connected. Ask the following questions.

(*i*) W at is the one-time connect charge, if any?

(*ii*) W at is the monthly charge?

(*iii*) How many free hours are there?

(*iv*) W at is the cost per hour after you exceed the maximum free hours?

(*v*) Do they provide an e-mail address?

(*vi*) W at browser is required? Do you have a choice?

5.2 USING E-MAIL

E-mail or electronic mail is the exchange of messages stored on computers, through a communication channel. E-mail was one of the first uses of the Internet and is still the most popular. To send and receive e-mail, you need to create an account with an e-mail service provider. The Internet does not limit you to one e-mail address. You can create multiple e-mail addresses. There are many Internet based e-mail service providers. For example,

http://www.yahoo.com/

http://www.hotmail.com/

E-mail offers cheap, reliable, speedy communication with patience and user friendliness. It is helpful in reducing the volume of papers in offices. It has completely changed the modern communication system.

• Creating an E-mail Account

As mentioned earlier, to send and receive e-mail, you need to create an account with the e-mail service provider. The steps to create an e-mail account on different online service providers are almost similar. The process simply involves filling account and personal information. Some steps may be different in different service providers like yahoo, rediff, hotmail etc. You are advised to use common sense while creating e-mail accounts.

Let us use the site http://www.yahoo.com/ to create an E-mail account, *i.e.*, a mail ID (see Fig. 5.18). Go ahead and create your e-mail ID by accessing the site,

http://www.yahoo.com/

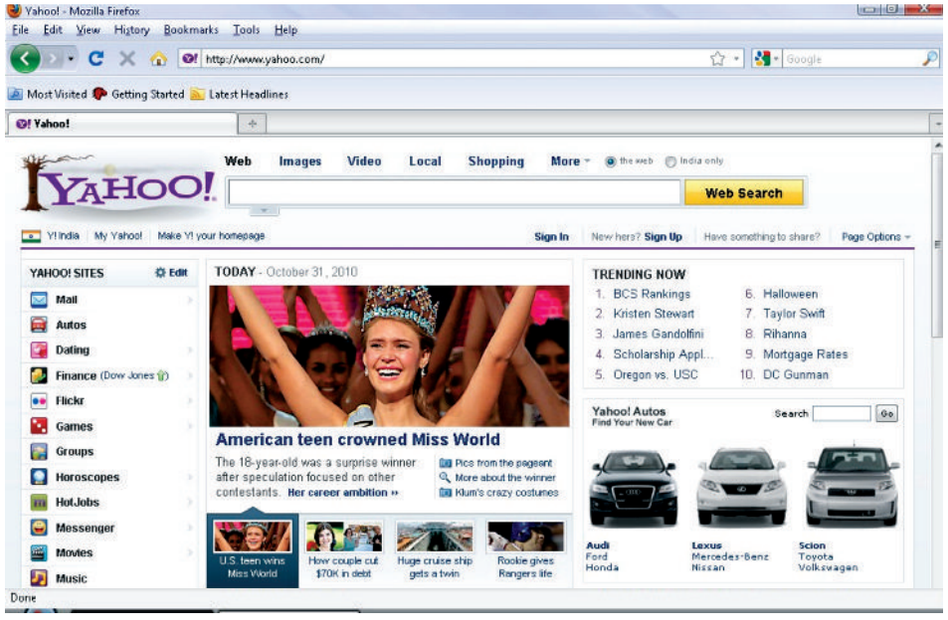


Fig. 5.18: Using the site yahoo.com

OR

You can directly open the site by typing http://www.yahoomail.com

Since you are a new user, to create a new account, select the 'Create New Account' option (see Fig. 5.19).

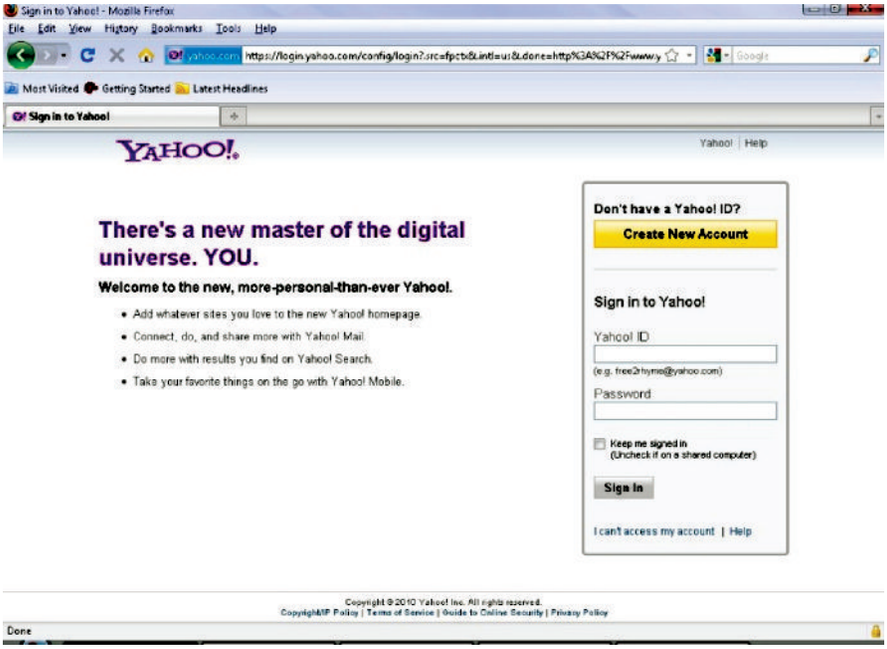


Fig. 5.19: Selecting the Create New Account option

Type in your Name, Gender, Birthday, Country etc., in the spaces provided (see Fig. 5.20).

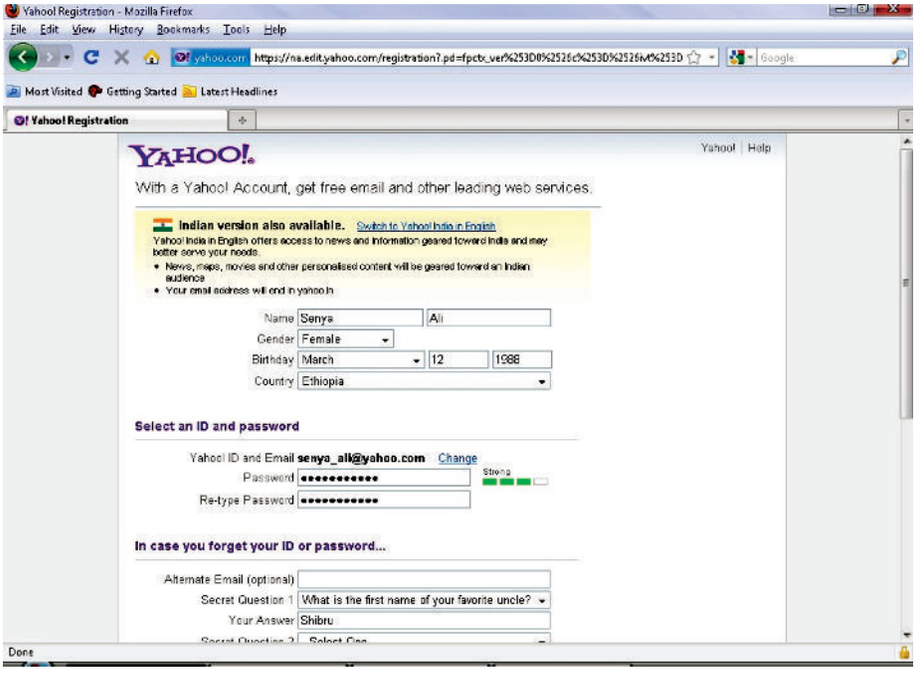


Fig. 5.20: Typing the details

The name that you enter in the Yahoo ID text box is your yahoo mail ID. You can choose any name for the ID, but it should be one that you can identify easily. It has to be unique, since two people cannot have the same ID. For example, let us assume your name is Senya Ali and you choose SenyaAli as your ID. If there is already another user with the same ID, you will be asked to choose a different ID.

Click the 'Create My Account' button (see Fig. 5.21).

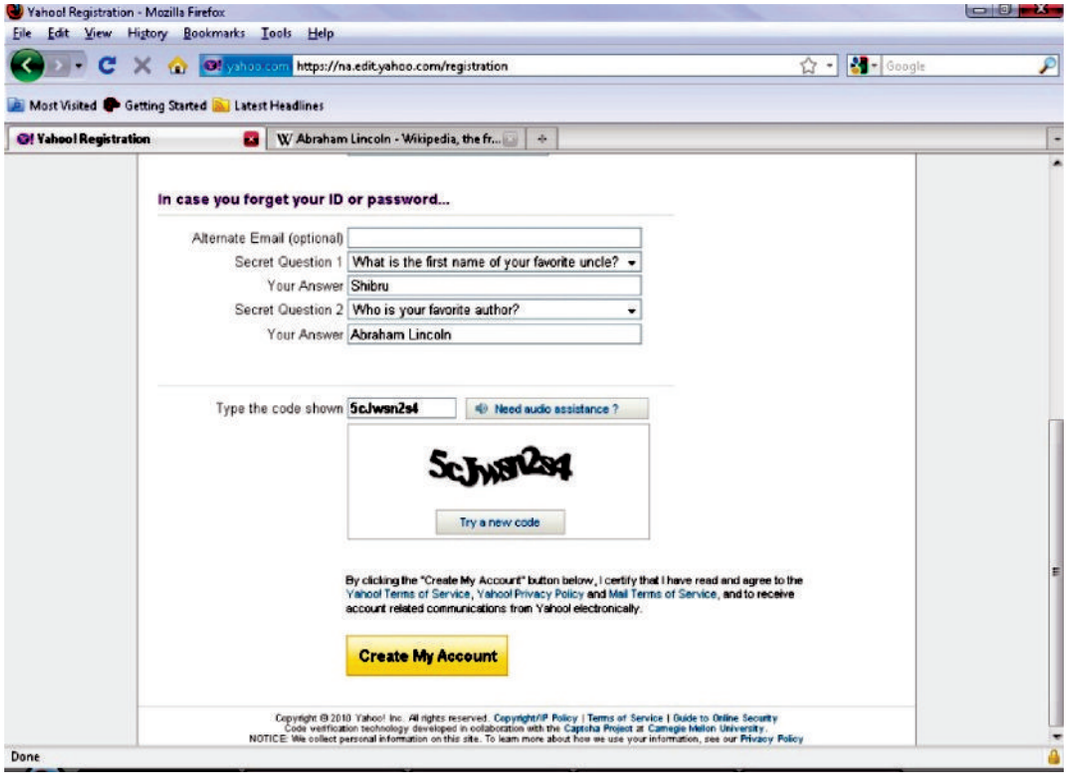


Fig. 5.21: Selecting Create My Account

On successful creation of the account, a page similar to the one shown in Fig. 5.22 will be displayed.

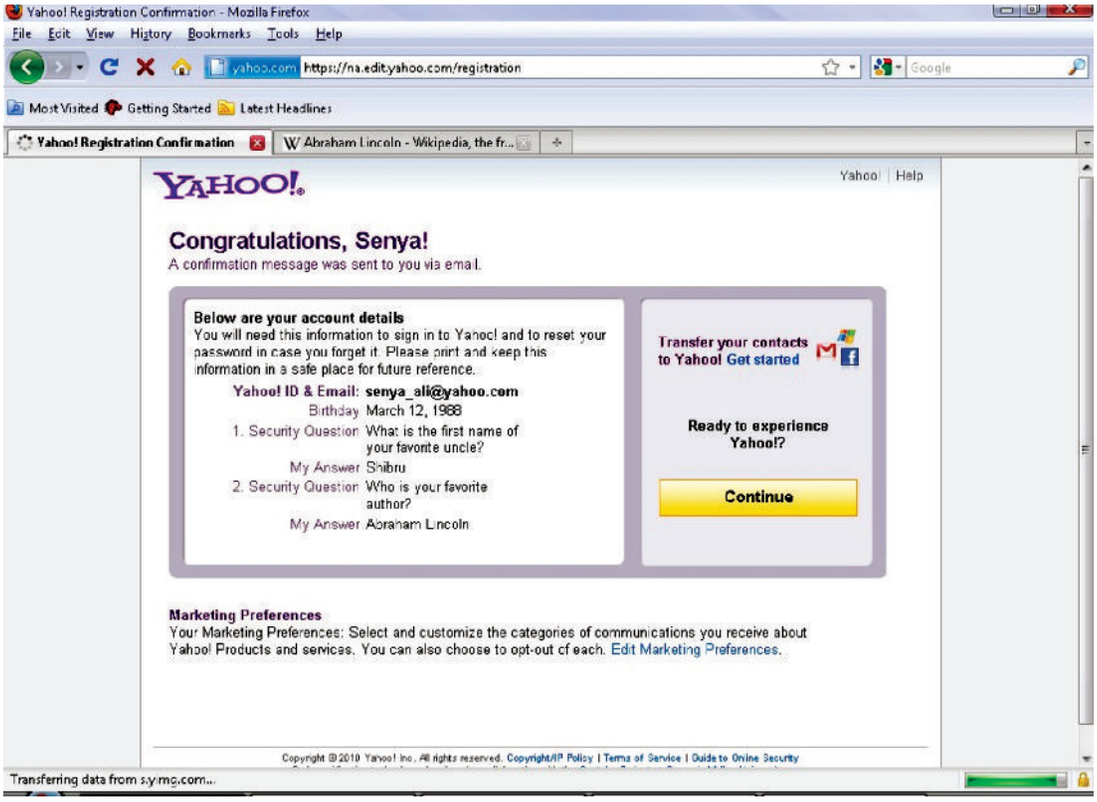


Fig. 5.22: Ready to explore the created account

Your account is created (see Fig. 5.23).

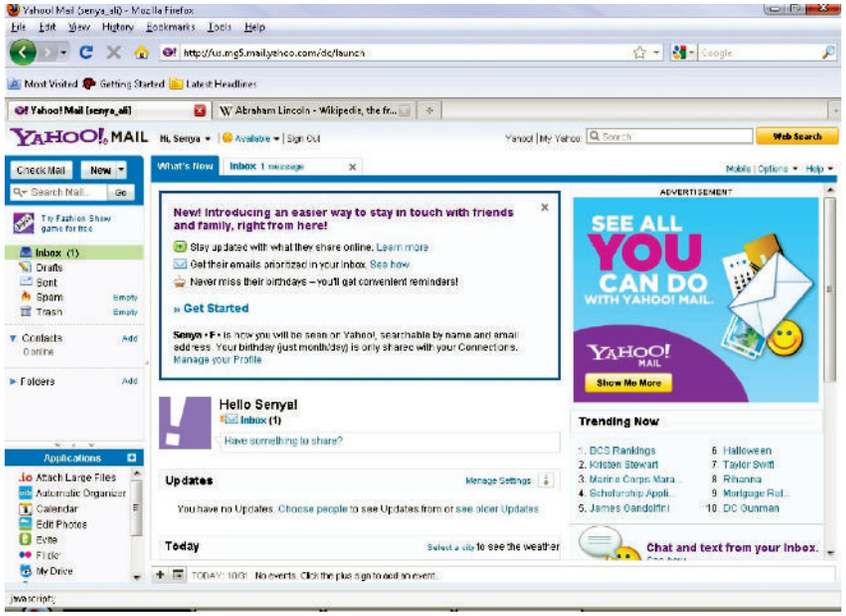


Fig. 5.23: New User Account Mail box

Now you can use your account for sending and receiving mails.

• Composing and Sending an E-mail

Composing an e-mail

Click on the 'New' link on the left side of the mail box to compose a new mail.

Composing of an e-mail message is done very much like a paper letter. It consists of three parts, the header, the body and the signature. The header, at the top of the message, is the envelope, the body is the actual message, the signature comes at the end (see Fig. 5.24).

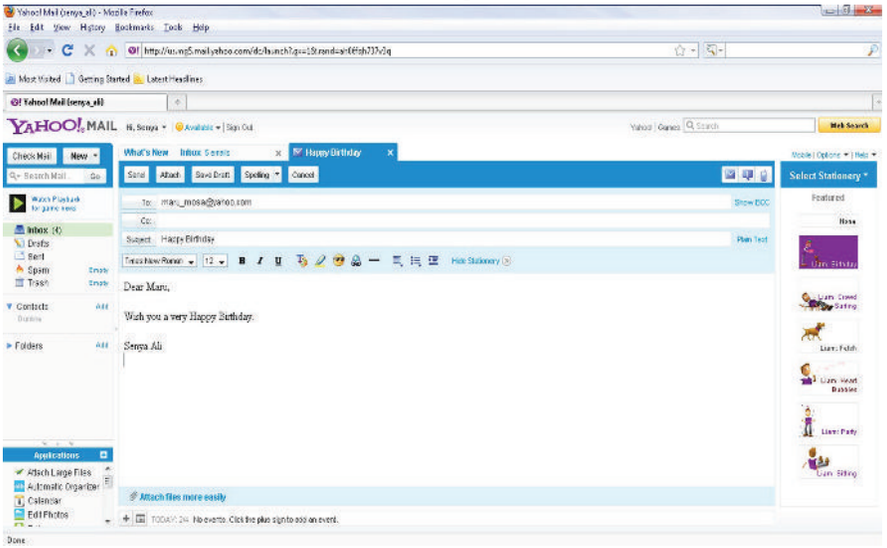


Fig. 5.24: Composing an e-mail

You do not have to be online while composing your e-mail messages. E-mail lets you write messages offline, so you can save them, then go online, and send them all at once.

Editing of an e-mail message can be done like editing of text in MS Word. Various editing features like font, font size, bold, italic, underline, text color, emoticons, text alignment, bullets, numbering etc. are available in the mail box.

Spell checking must be done before sending e-mail messages by the user. You can spell check by clicking the *Spelling* button in the mail box.

Sending an e-mail

First of all compose your e-mail. Now, enter the recipient's e-mail address in the 'To' option. You can send copies of the mail to other users by using the 'Cc' option. You can enter the contents and addresses in the appropriate places provided.

Click the 'Send' button when you have typed in the message and addresses and you are ready to send the e-mail. **Make sure that you have spell checked the message before sending it.**

From the *Sent* folder, you can view the message sent.

• Receiving and Replying to an E-mail

Receiving an e-mail

To send and receive mails, log on to the site using the Yahoo ID and the password.

To read the received mails, click on the *Inbox* shown on the left side of the screen.

On clicking the Inbox you will see the list of received mails. Select anyone of these and click to read it (see Fig. 5.25).

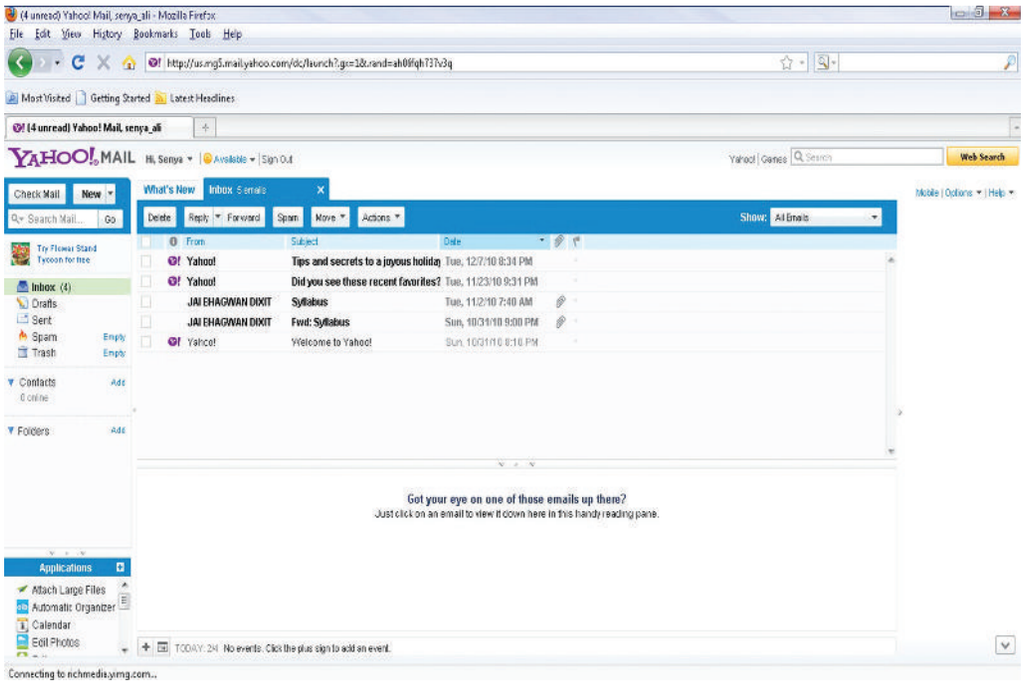


Fig. 5.25: Receiving an e-mail

Replying to an e-mail

To reply to an e-mail, use the *Reply* command icon. After clicking *Reply* button you will see a screen similar to shown in Fig. 5.26 where you can type your reply message.

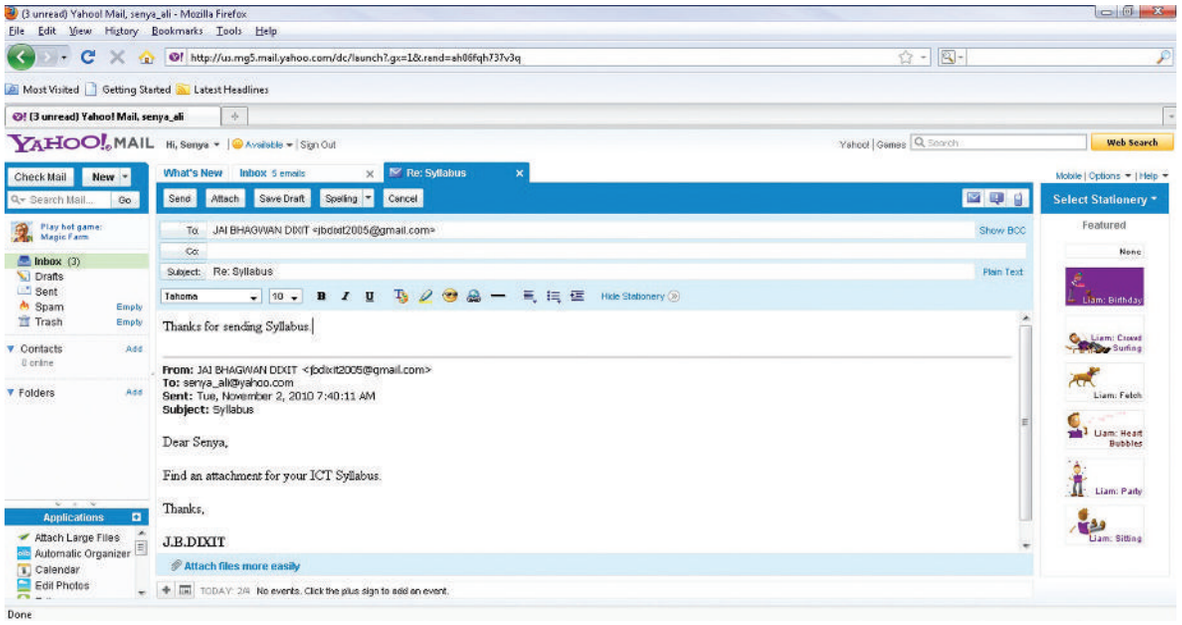


Fig. 5.26: Replying to an e-mail

• Facilities of an e-mail System

Now you are familiar with basic concepts of e-mail. So let us understand the facilities of an e-mail system. All e-mail systems have the ability to send, receive and discard mail (see Fig. 5.27).



Fig. 5.27: You can send, receive and discard an e-mail

Most systems have facilities for storing mail which is to be kept rather than discarded. It is important for you to discard mail which does not need to be kept, as it uses storage space on disks. Mailboxes can soon accumulate a large number of mail messages making it difficult to read and process new mail, in addition to wasting disk space.

There is almost always a connection between the e-mail system and the computer's standard file system which allows mail to be read from files or written to files. This enables greater flexibility in how the mail system is used. For example, a mail message may be prepared in a normal file using a familiar text editor and then sent by the e-mail system. Sections of other files may be included in the mail message as well.

Most systems have a reply facility, although some of these do not always work as expected. A great care should be taken when using this facility in e-mail, as replies do not always go back to the sender.

• Distribution List

A distribution list, also known as a mailing list, is a collection of e-mail addresses that allows you to e-mail multiple people at one time. A distribution list can contain a few addresses, or many. When you send to a distribution list, you are really sending to everyone whose address is included in the list (see Fig. 5.28).

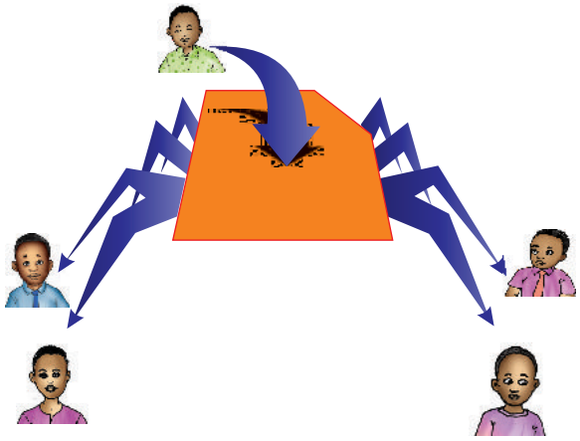


Fig. 5.28: A distribution list makes e-mailing easier

By grouping all of the e-mail addresses together, you can address one e-mail to the category name and avoid typing each individual's e-mail address.

Yahoo Mail provides a means of making distribution lists, which Yahoo refers to as "Categories."

To create a distribution list, perform the following steps:

1. Open a browser. Here, we have opened Mozilla Firefox.
2. Type the address **www.yahoomail.com** into the address bar of your web browser and press Enter key. Log into Yahoo if you are not already signed in. This takes you directly to your Yahoo Mail address book (see Fig. 5.29).

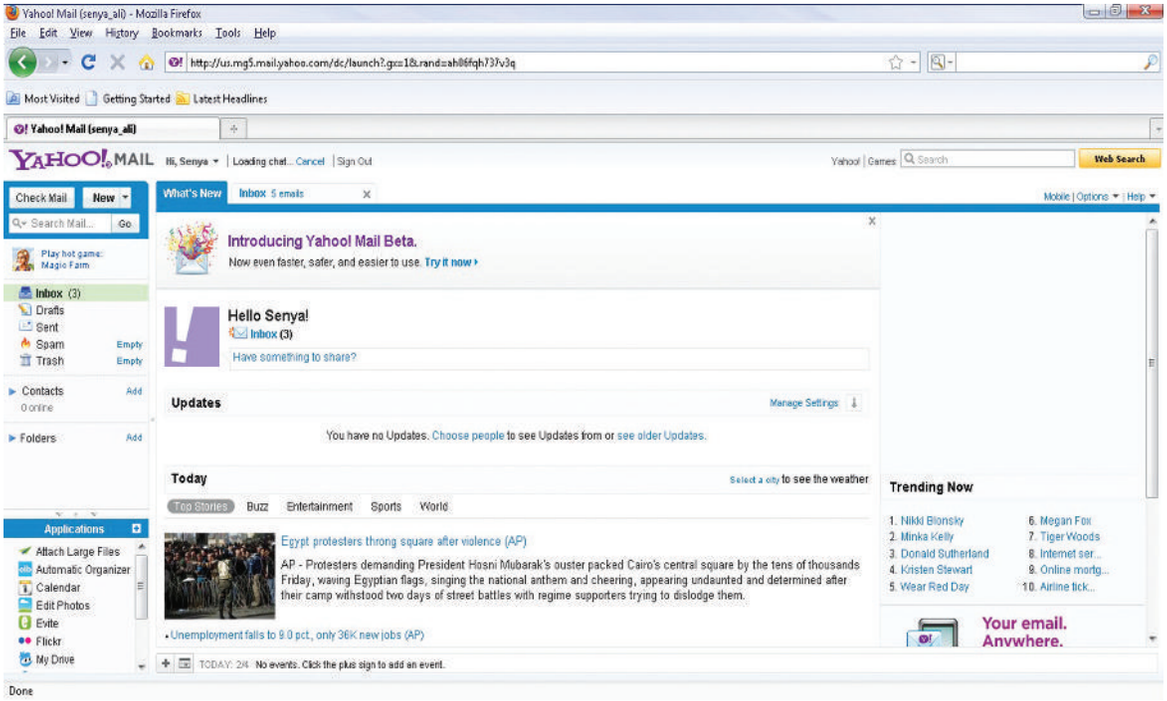


Fig. 5.29: Yahoo Mail Box

3 Click "Contacts" link in the left pane of the window if you are using "Yahoo Mail" or click the "Contacts" tab near the top of the window if you are using "Yahoo Mail Classic" (see Fig. 5.30).

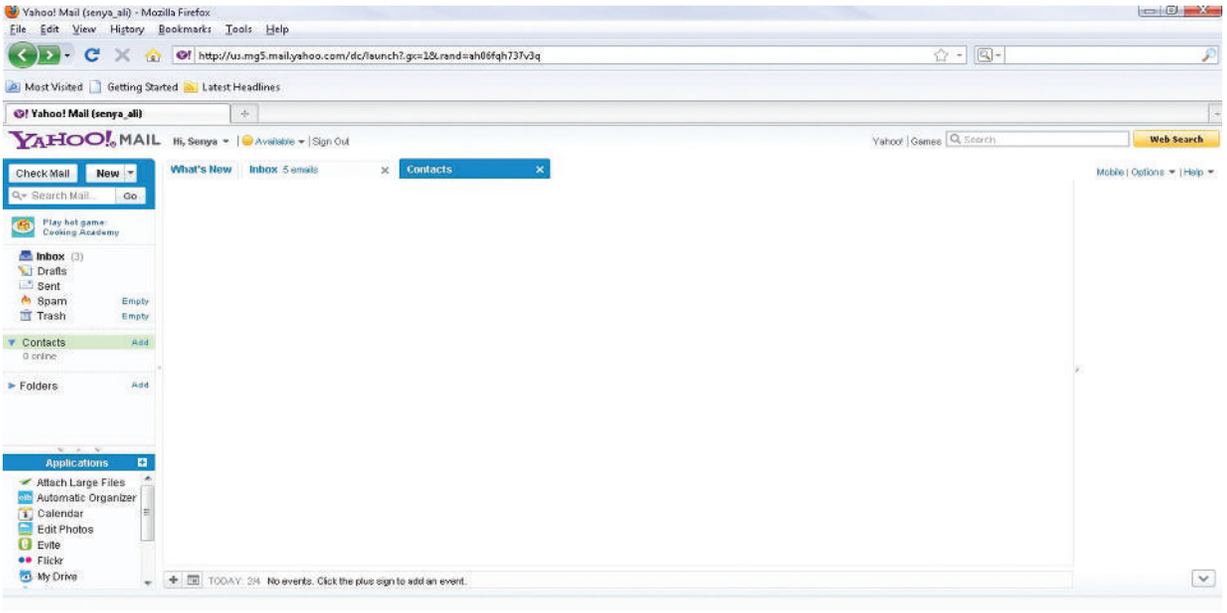


Fig. 5.30: Clicking Contacts

4 Click the "Add Category" button on the Yahoo Mail toolbar. Type a name (upto 15 alphanumeric characters, no spaces) for the distribution list into the "Category Name" box (see Fig. 5.31). You can now add contacts to the category. Click "Save."

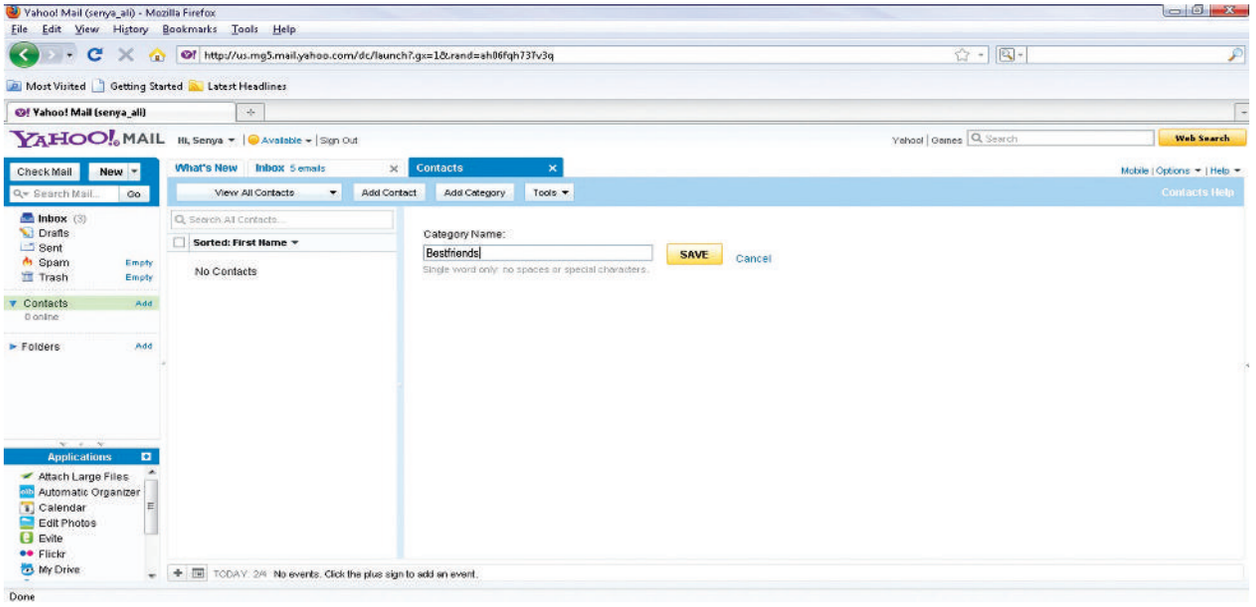


Fig. 5.31: Typing Category Name and Clicking Save

5 Select "View" and click the "All Contacts" button (see Fig. 5.32). Select the check boxes to the left of each contact whom you wish to add to the distribution list. Click "Add to Category" in the main window.

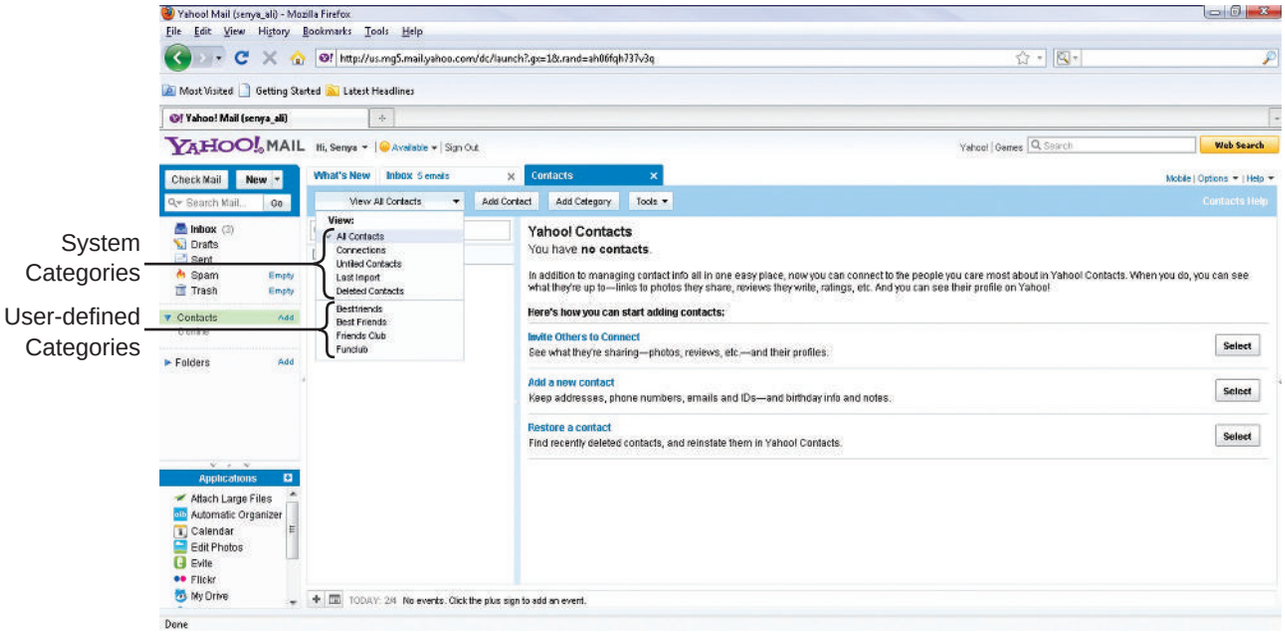


Fig. 5.32: Selecting View and Clicking All Contacts

6 Select the check box for the distribution list to which you want to add your contacts. Click the "Done" button.



1 To send an e-mail to your distribution list, click the "View" button and select the list name. Click the "Select All" check box. Click "Send e-mail" in the main window and compose your e-mail. When you send the message it will be sent to everyone in the list.

2 You can rename and delete the user-defined categories, but you cannot rename or delete system categories.

• Attachments

If a file of your matter exists in the computer from which you are sending e-mail, you can write your e-mail message, (your cover note) and then use the Attach link to attach the document. Such attached documents may be in MS Word or Excel and are called attachments.

While you could also copy your document into the main message and send it that way, some e-mail software lose formatting options such as *bold* or *italic* text or special symbols. Thus, the benefit of the attachment feature is that it preserves all such formatting, provided the recipient has the same software that you used for creating the attachment. You can also attach pictures, sounds, videos, and other files to your e-mail message.

Sending

To send an e-mail attachment,

1 Address the person who will receive the attachment.

2 Write a "cover letter" e-mail or your message advising the recipient of the attachment.

3 Click on *Attach* button on your e-mail software's toolbar.

4 Select the file you want to attach.

5 Click on *Send* to send the e-mail message and the attachment (see Fig. 5.33).

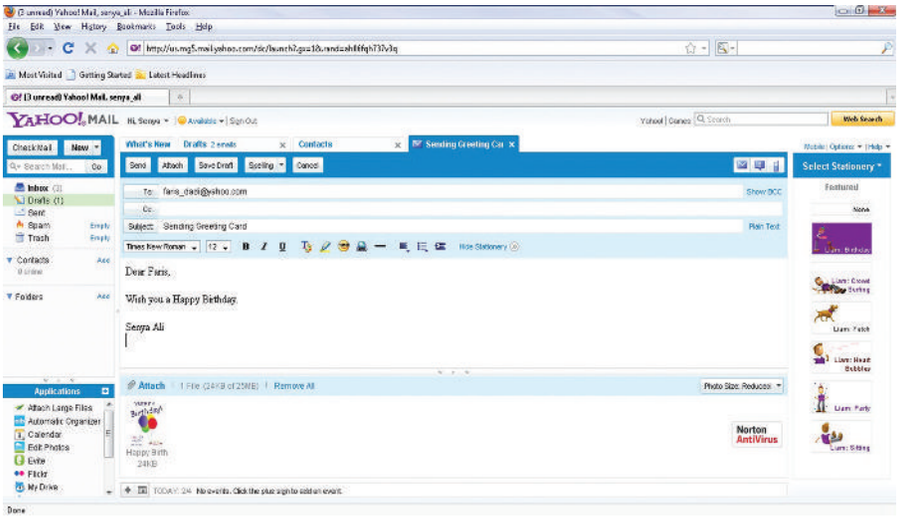


Fig. 5.33: Sending an e-mail attachment

Receiving

When you receive a file containing an attachment, you will see an icon indicating that the message contains more than just text. You can click on the icon to see the attachment. If you have the software the attached file was created in, you can open the attachment immediately to read or print, or you can save the attachment in a location of your choice (on your computer). You can also forward the attachment to another person.

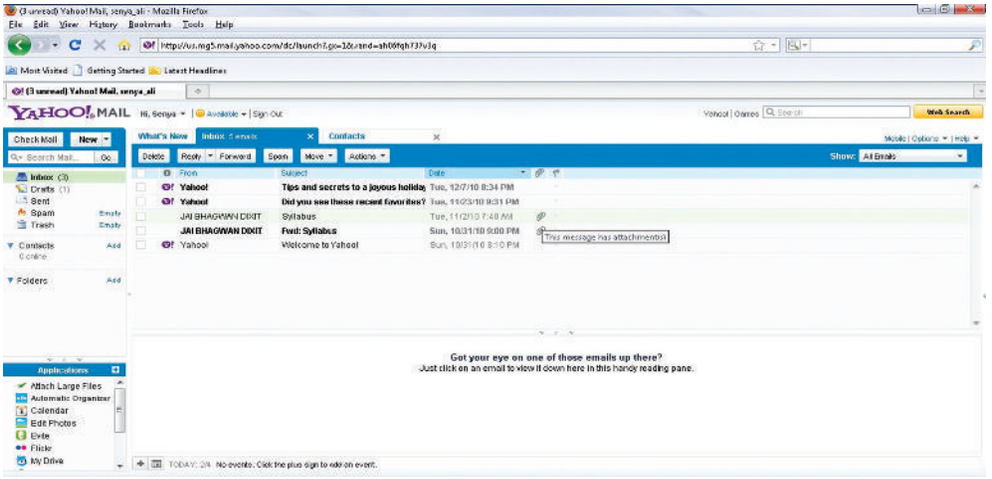


Fig. 5.34: Receiving an e-mail attachment

To exit your mailbox, click the 'Sign Out' link.



1. It is important that the persons receiving the e-mail attachment have the exact same software that created the attached file, such as Microsoft Word or have software that can read and convert the attached file.
2. Many viruses – those rogue programs that can seriously damage your PC or programs – ride along with e-mail as attached files. Thus, you should *never open an attached file from an unknown source.*

• Auto Reply

Auto Reply feature is useful when you are on holidays and want to inform people that you would not be checking your e-mail for a few days. In other words, you may also want to take holidays from e-mail and answering it.

Surely, you will read and reply to all your e-mail when you will be back. Yahoo Mail offers a nice way to tell those who send you e-mail during this period that they should not expect an immediate answer.

Auto-Reply in Yahoo Mail

To have Yahoo Mail reply to e-mails automatically, perform the following steps:

1 Select *Options* → *More Options*... in Yahoo Mail (see Fig. 5.35).

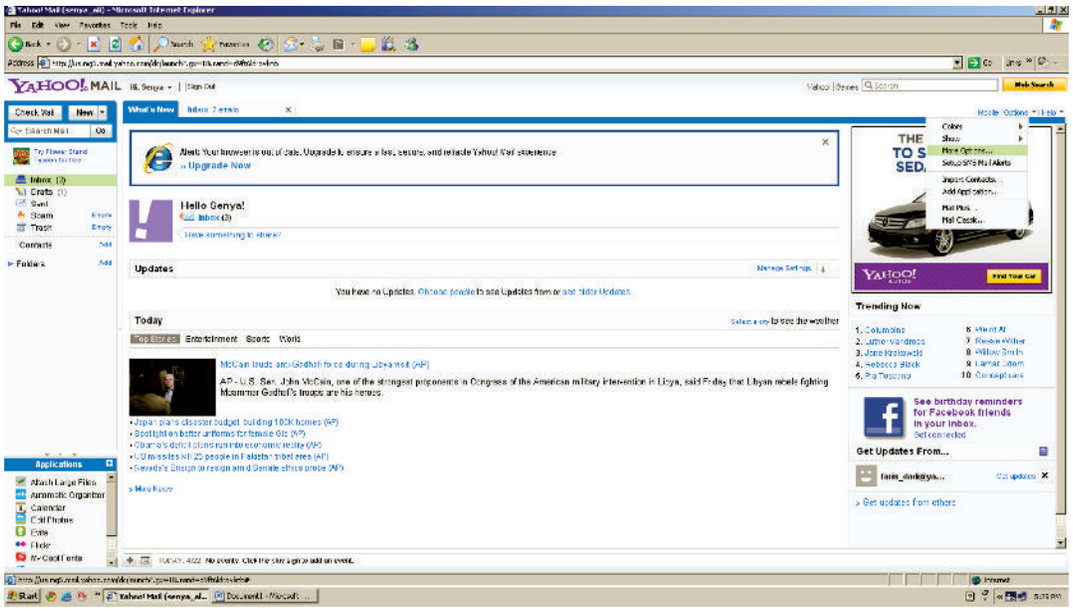


Fig. 5.35: Selecting More Options for Auto Reply

2 Go to the *Vacation Response* category.

3 Make sure *Enable auto-response during your vacation* is checked.

4 Specify your auto-responder's start and end date under *Auto-respond from* and *up until* (*and including*) respectively.

5 Type the desired response you wish to be sent to all incoming mail under *Generic Response*.

6 It is good to include a note on when you expect to be back — and be able to respond personally.

7 Click *Save Changes*.

Yahoo Mail's auto-reply system does not know to whom a holiday reply was already sent to, so all repetitive mailers will get repetitive replies. May be they deserve it.

KEY CONCEPTS

- E-mail is the exchange of messages stored on computers, through a communication channel.
- To send and receive e-mail, you need to create an account with an e-mail service provider.
- Composing of an e-mail message is done very much like a paper letter.
- All e-mail systems have the ability to send, receive and discard mail.
- Auto Reply feature is useful when you are on holidays and want to inform people that you would not be checking your e-mail for a few days.



Review Questions

Fill in the Blanks

1 E-mail was one of the first uses of the ..... .
2 You do not have to be ..... while composing your e-mail messages.
3 The attached documents (*e.g.*, in MS Word or Excel) with your e-mail message are called ..... .
4 A ..... is a collection of e-mail addresses that allows you to e-mail multiple people at one time.

State Whether True or False

1 E-mail is not very popular now a days.
2 To send and receive your e-mail, you do not require an e-mail account.
3 You can attach pictures, sounds, videos, and other files to your e-mail message.
4 Auto Reply is not a useful feature during your holidays.

Multiple Choice Questions

1 Who owns the Internet?
(*a*) No one owns the Internet (*b*) Microsoft (*c*) IBM (*d*) U.S. government
2 A location on the Internet is called a/an ..... .
(*a*) User ID (*b*) Domain (*c*) Browser (*d*) Web
3 Which of the following is/are e-mail service provider(s)?
(*a*) Yahoo (*b*) Gmail (*c*) Hotmail (*d*) All of these
4 A distribution list is also known as a ..... .
(*a*) Mailing list (*b*) Auto reply (*c*) Attachment (*d*) Item list

Match the Following

Column A	Column B
1 Browsing	(*a*) Search engine
2 AltaVista	(*b*) Also known as surfing
3 E-mail systems	(*c*) Can be used when you are on holidays
4 Auto Reply	(*d*) Have the ability to send, receive and discard mail

Answer the Following

1 What is e-mail? Give the steps to create an e-mail account.
2 Give the steps to compose and send an e-mail.
3 Give the steps to receive and open an e-mail.
4 Discuss the facilities provided in the e-mail system.

Suggested Activities

1 Explain why distribution lists are useful and demonstrate how to implement.
2 Explain and demonstrate how to attach a file to an e-mail, and how to open an attachment on an incoming mail.
3 Open a browser and indicate the following screen elements:
Menu bar, Address bar, Standard toolbar, Status bar and Workspace.

UNIT 6

CONTROL AND LEARNING WITH LOGO

UNIT OUTCOME

Students will be able to:

- understand the logo language;
- recognize to produce a variety of diagrams using the logo language.

6.1 CONTROL AND LEARNING WITH LOGO

LOGO (**L**ogic **O**riented, **G**raphics **O**riented) is a high level programming language specifically designed for its ease of use and graphics capabilities. LOGO was originally developed in 1967 by **Seymour Papert** and a team at *Massachusetts Institute of Technology* (MIT) in United States. It was originally designed to introduce children to programming concepts, and to help develop better thinking skills that could be transferred to other contexts. It is easy to learn, easy to use, easy to read, but also powerful and able to cope with complex problems.

LOGO is so easy that it can be understood by the 7 to 77 years old. LOGO's graphics language is called turtle graphics, which allows complex graphics images to be created with a minimum of coding. LOGO has evolved into a powerful computer language. LOGO is considered an interpreted language because LOGO programs are executed by an interpreter.

Some benefits of LOGO over other programming languages are:

1 It fosters (promotes) group collaborative work.

2 It allows students to visualize mathematical and geometrical concepts.

3 It teaches students that the computer is a device to be controlled, rather than one that controls.

4 It introduces students to programming structures and concepts.

5 It promotes concepts associated with the Technology and Enterprise Learning Area.

6 It is immediate. There is no waiting while the program is run.

7 It uses simple 'English' commands and is not case-sensitive.

8 It is graphical in nature.

The programming language you will be learning in this Unit is Logo. The version of LOGO that we are using is **MSW LOGO** (Windows based), which is available from **Softronics, Inc.** as freeware on the Internet (*http://www.softronix.com*).

Starting LOGO

To start LOGO, perform the following steps:

Click **Start** → **All Programs** → **Microsoft Windows Logo** → **Microsoft Windows Logo** (see Fig. 6.1).

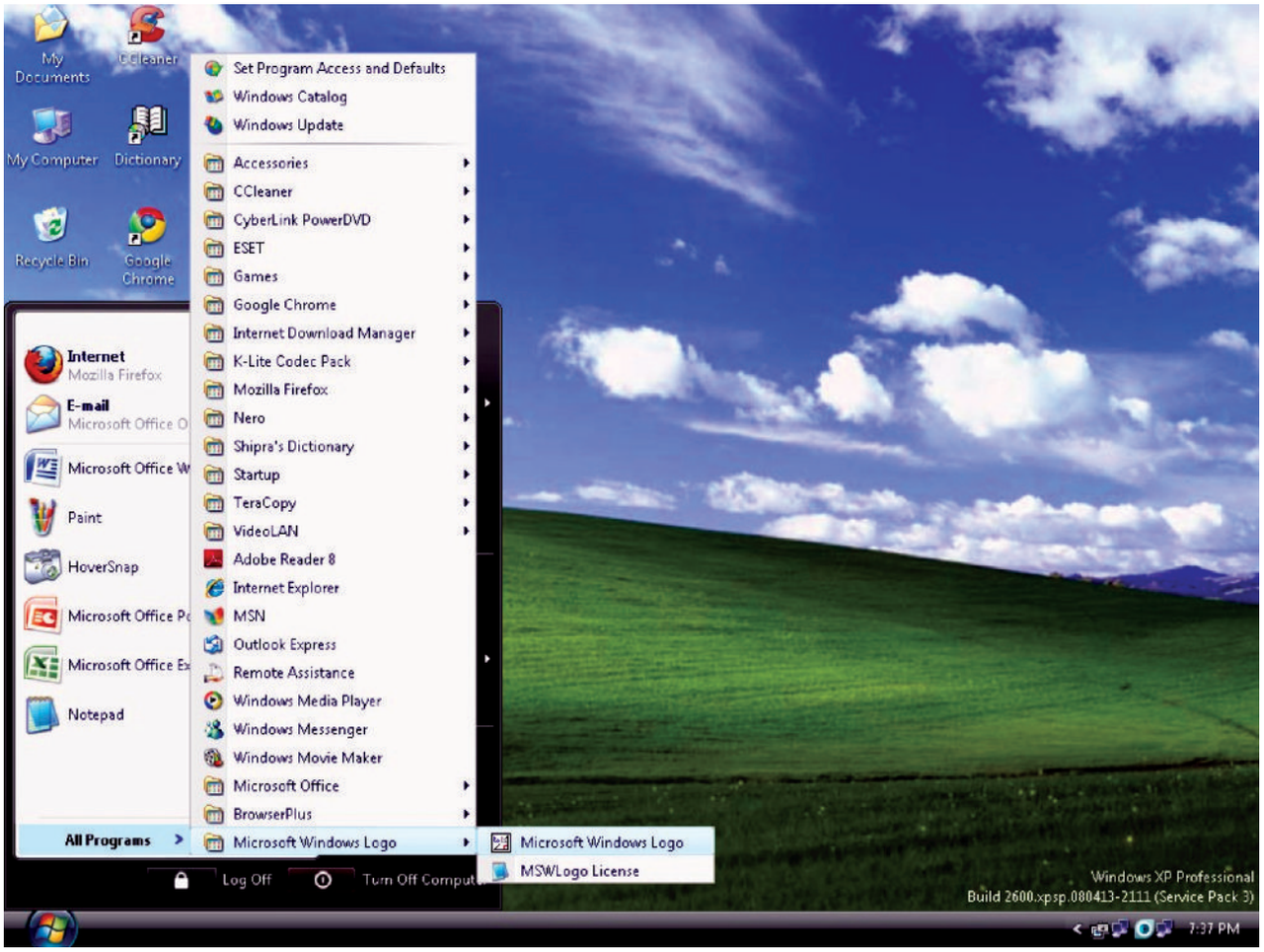


Fig. 6.1: Starting LOGO

OR

Double click on the MSW Logo shortcut icon on the desktop of your computer (see Fig. 6.2).



Fig. 6.2: MS Logo Shortcut Icon

The screen shown in Fig. 6.3 will appear:

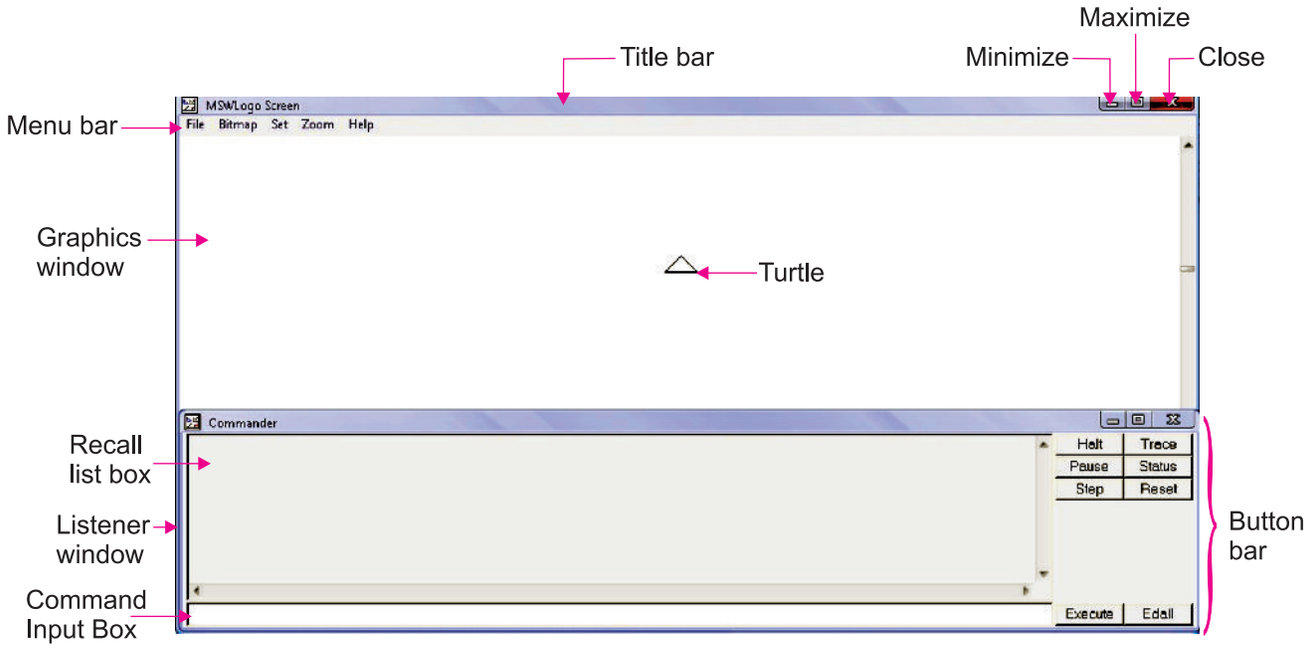


Fig. 6.3: MSW Logo Screen

Some MSW Logo screen elements are given below:

Title bar: Title bar contains the name of program (MSW Logo).

Menu bar: Menu bar contains various options for handling, editing and formatting file. Menu titles contain various sub-options which comes when these menu titles are clicked upon.

Button bar: Button bar provides additional shortcuts for Logo commands. To execute a button command, position the mouse cursor on the button and press the left mouse button.

Graphics window

Graphics window is the area where the turtle moves around and draws. The Turtle appears in this area.

Listener window

Listener window is the area where the commands are typed. You will see small question marks(?) in this area.



The turtle moves on the screen according to the commands given. It understands only LOGO commands. Centre of the screen is the home of the turtle.

• Using Primitives

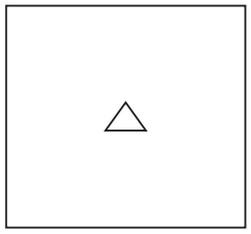
When you load LOGO, a triangular shape pointer appears at the centre of the screen called Turtle. It has a pointing tip. Turtle indicates that position on the screen, from where the drawing will start. In other words, we can say that turtle is a point of invisible pen, that helps in drawing figures. The home position of turtle is in the centre of the screen, where it appears in the beginning. The primitives are typed in the white space at the bottom left corner of the screen known as the Command Input Box.

The first step to learn any drawing is to know about drawing a line. Therefore, you will read about some primitives which are useful in drawing lines and boxes.

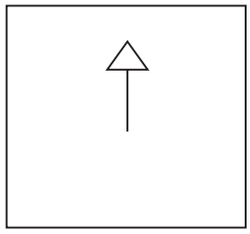
Forward (FD)

This primitive moves the turtle in the forward direction with the number of steps mentioned with the primitive. The turtle draws a line while moving. For example, to draw a line of 40 steps type the following command in the Input Box.

FD 40
or
FORWARD 40



Press Enter key to see the OUTPUT



COMMAND	RESULT
FD 20 ↵ (Here, ↵ means press Enter key)	↑ (a line of 20 steps)
FD20 ↵	I don't know how to FD20
FORWARD 50 ↵	↑ (a line of 50 steps)
FD ↵	not enough inputs to FD
FORWARD50 ↵	I don't know how to FORWARD50

Back (BK)

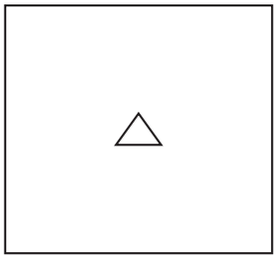
Turtle moves backward and draws a line of specified number of steps.

The turtle moves in the direction, where it has its back.

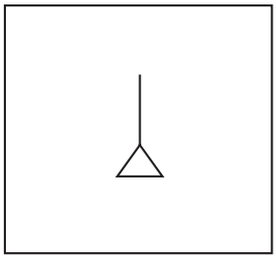
It is just like driving a car in reverse (back) gear.

For example, to draw a line of 60 steps in backward direction, type the following command in the Input Box.

BK 50
or
BACK 50



Press Enter key to see the OUTPUT



COMMAND	RESULT
BK 60 ↵ (Here, ↵ means press Enter key)	↓ (a line of 60 steps)
BACKWARD60 ↵	I don't know how to BACKWARD60
BK40 ↵	I don't know how to BK40
BK ↵	not enough inputs to BK
BK 50 ↵	↓ (a line of 50 steps)

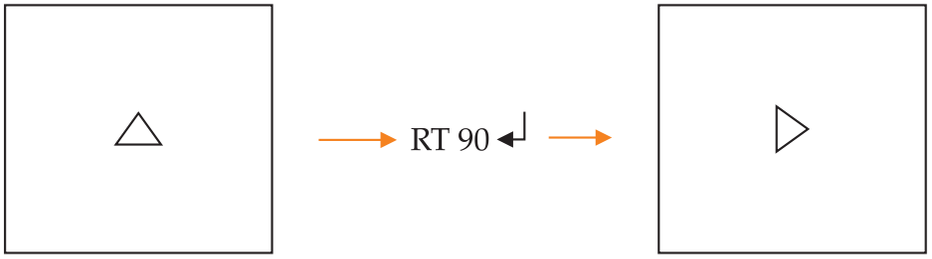
1 LOGO commands are known as the 'Ꝑ imitives'.
2 LOGO is not case-sensitive, that is, upper-case letters are not distinguished from lower-case letters.
3 BYE primitive is used to exit LOGO.

Turning the Turtle

Turtle can be turned in right (clockwise) or left (anti-clockwise) direction by using RT (Right) or LT (Left) primitives.

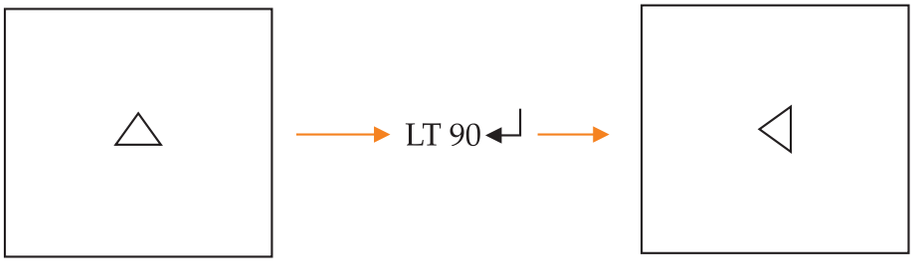
Right (RT)

To turn the Turtle in right or clockwise direction, use RT/RIGHT primitive. It needs number of degree to know the angle of turn. For example,



Lé t (LT)

To turn the Turtle towards left or in anti-clockwise direction, use LT/LEFT primitive. It needs number of degree to know the angle of turn. For example,



We can move the turtle forward, backward, right and left on the screen.

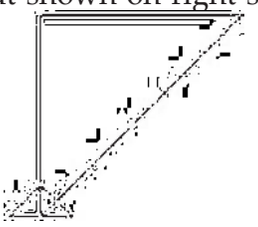
Home

Turtle always rests in the centre of the screen which is known as its home. From here, the turtle moves around the screen.

HOME primitive sends the turtle in the centre of the screen. The HOME primitive is not followed by any number. The turtle draws a line as it goes back to its home and faces upwards in its home position. For example,

Type the following commands in the Command Input Box to see the output shown on right side:

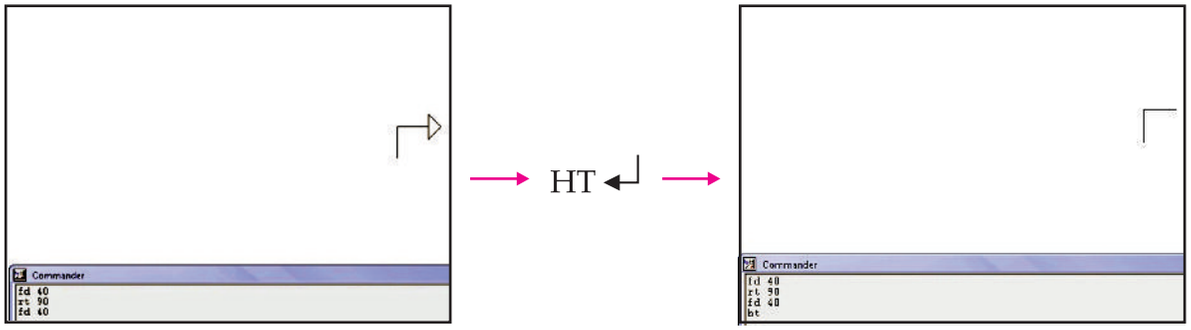
FD 0 ↵
RT 90 ↵
FD 0 ↵
HOME ↵



Hide Turtle (HT)

When this command is entered, the turtle disappears from the screen.

Turtle follows all the commands and can draw anything even though it is not seen on the screen. For example,



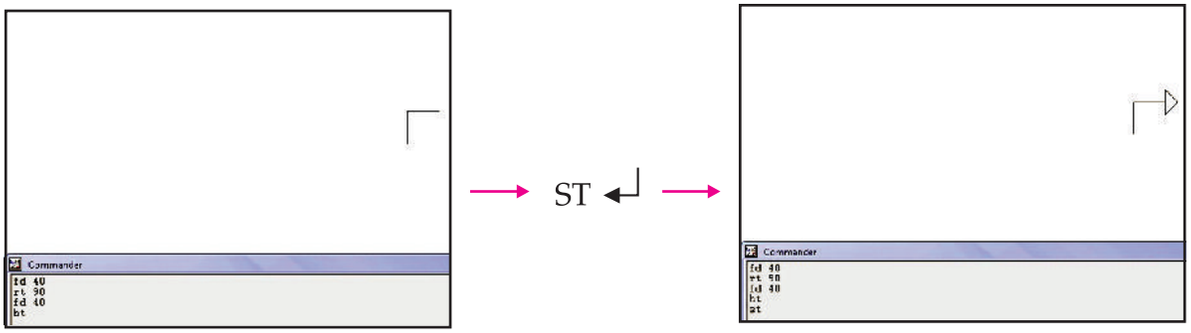
Before HT command *After HT command*

1 No space(s) is/are required within a primitive. If you give space, error message appears.

2 To use more than one primitive at a time, we must leave a space in between them.

Show Turtle (ST)

ST command brings the turtle back on the screen, which had disappeared using HT command. For example,

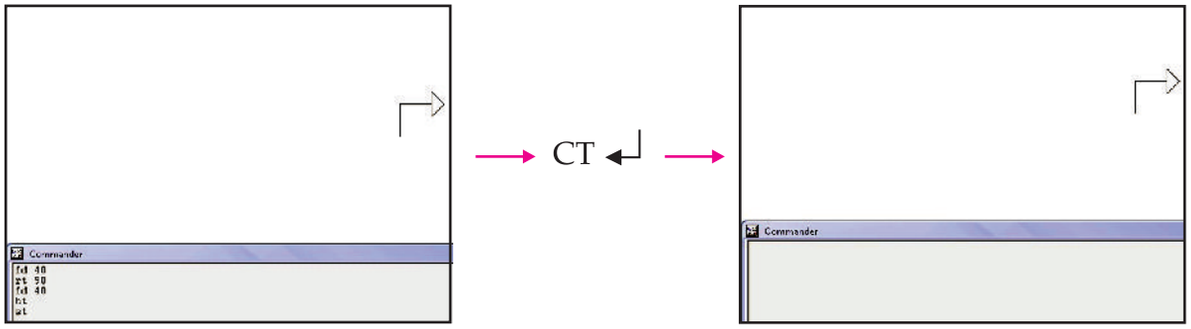


After HT command *After ST command*

Clear Text (CT)

It clears the Text Area.

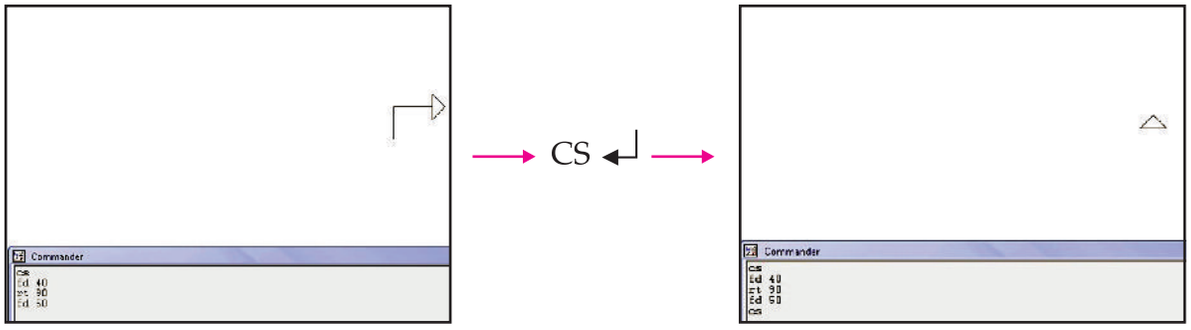
All the commands disappear from the Listener window. For example,



Before clear text *After clear text*

Cle Scre (CS)

CS command clears the Graphics area. For example,



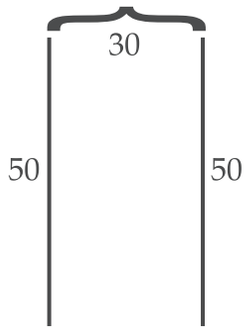
Before CS command *After CS command*

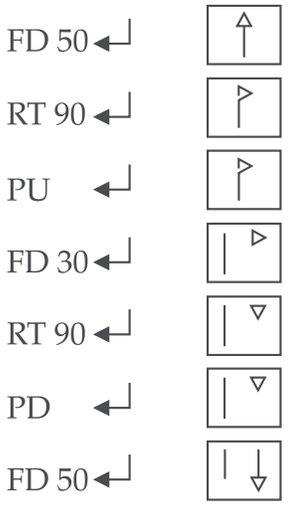
CLEAN command clears the entire drawing from the screen but leaves the turtle at its last position.

Pe Up (PU)

As you lift your pencil up when you want to leave some gap between the two words while writing, so is the case with the turtle.

To move the turtle without drawing a line E N UP primitive is used. There is no need to give any number after PEN UP command. For example, to draw the two lines shown on left, type the commands shown on right side.

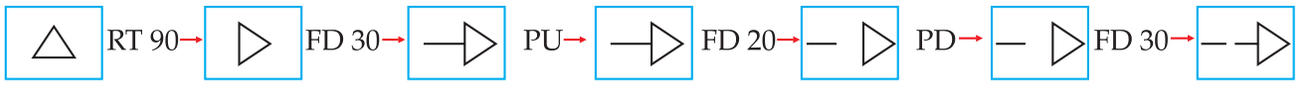




In the above example, we have used D command, let us see why this command has been given.

Pe Down (PD)

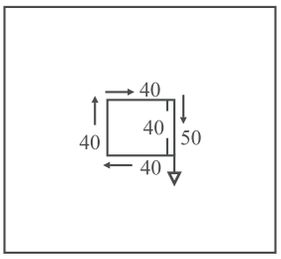
You cannot draw till you put your pencil down. The same way, turtle starts drawing again only when you give PEN DOWN (PD) command. There is no need to mention any number after PD command. For example,



Pen Erase (PE)

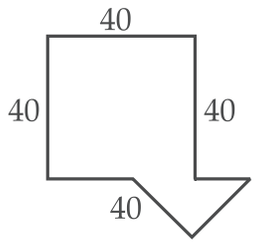
The turtle can erase a line on which it moves. For this PEN ERASE (PE) primitive is used. You need to move the turtle on the lines you want to remove/erase after giving PE command. For example,

```
LT 90
FD 40
RT 90
FD 40
RT 90
FD 40
RT 90
FD 50
```



To erase a line of 10 steps so that this figure can become a square of 40 steps, give the following commands:

```
PE
BK 10
```



To bring your turtle in the normal mode again, give PE command so that you can complete your figure after correcting the mistake.

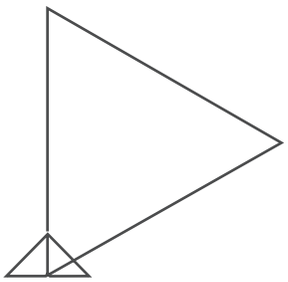
Using the LOGO primitives to draw a variety of shapes

Now, you are familiar to LOGO primitives. So, let us use these primitives to draw a variety of shapes:

Example 1 Draw an equilateral triangle of side 100 steps, using the LOGO primitives.

Type the following commands in the Command Input Box to draw an equilateral triangle of side 100 steps:

```
FD 100
RT 120
FD 100
RT 120
FD 100
RT 120
```



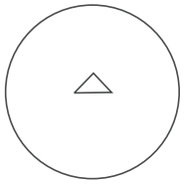
Example 2 Draw a circle of radius 80 using the LOGO primitives.

Type the following command in the Command Input Box to draw a circle of radius 80 with the turtle at the centre of the circle:

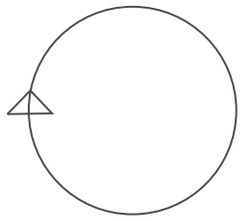
```
ARC 360 80
```

OR

```
CIRCLE 80
```



Type the following command in the Command Input Box to create a circle of radius 80 with the turtle at the edge of the circle:



CIRCLE2 80 ↵

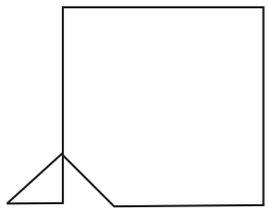
Example 3 Draw a square of side 60 steps, using the LOGO primitives.

Type the following commands to draw a square of side 60 steps:

FD 60 ↵
RT 90 ↵

→ Here, we can see that a set of two commands has been repeated four times.

FD 60 ↵
RT 90 ↵
FD 60 ↵
RT 90 ↵
FD 60 ↵
RT 90 ↵



Print Command

PRINT/PR primitive is used to display a letter, number, word or a sentence on the screen. It can also be used for doing calculations. This command takes only one input at a time and displays the output in Recall List Box. For example,

PRINT 20 ↵

will print 20 1 in the Recall List Box.

Use " before a letter/word and enclose a sentence in " " or [ ].

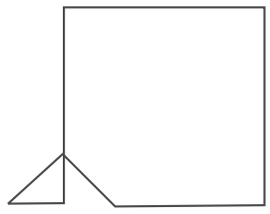
Repeat Command

REPEAT primitive is used when same set of commands are to be given again and again. Instead of typing same set of commands repeatedly, they can be clubbed up in a single line REPEAT command. For example, to draw a square of side 60 steps, type the following command:

REPEAT 4 [FD 60 RT 90] ↵

OR

REPEAT 4 [FD 60 RT 360/4] ↵



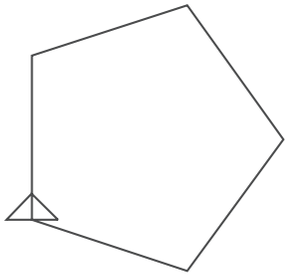
Here, the number 4 after the REPEAT primitive, tells the computer to repeat four times whatever command is given within the square bracket.

The structure of REPEAT command is:

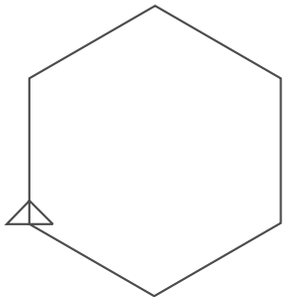
REPEAT ⟨No. of times the commands are to be repeated⟩ (No. of turtle steps in each line direction and the angle by which turtle turns each time)

Now, type the following command in the Command Input Box to draw the regular polygons (pentagon and hexagon) by using the REPEAT command:

REPEAT 5[FD 100 RT 72] ↵



REPEAT 6[FD 100 RT 60] ↵



For an N side regular polygon, the Turtle will turn by 360 ÷ N degrees.

• Writing Procedures Using RANDOM

To write a procedure in LOGO is to teach the turtle how to draw something. Let us learn about the procedures in LOGO:

Procedures

Procedures are the heart of LOGO and other programming languages. Procedures are small programs that can be called on again and again through one word and without typing them all out.

The structure of a procedure in LOGO is:

```
To Procedurename
  Steps of the procedure
End
```

A procedure must start with the word *To*, followed by a name you give. Then come all the steps you would write on the command line. A procedure must end with the word *End*.

Remember the following points while writing procedures in LOGO:

1 You must avoid use of LOGO commands as procedure names!
2 Procedure name can have letters, numbers and symbols.
3 The first character in procedure name should always be a letter.
4 Blank space and arithmetic operators are not allowed in the procedure name.
5 You can use small or capital letters or a mixture of these for a procedure name.

Commands having a semicolon (;) in front are called comments which are ignored by MSW LOGO.

Random Command

LOGO provides one of the best ways of stimulating children in their work by using the RANDOM command. The command RANDOM is usually followed by a number. For example,

RANDOM 15 ↵

would generate a random integer number less than 15

Type the following and see the output:

REPEAT 5 [SHOW RANDOM 100] ↵

How do you write a procedure in LOGO?

A LOGO procedure can be written in the following ways:

1 Using the Input Box (see Fig. 6.4), which can be opened by typing in TO followed by the Procedure Name in the Command Input Box.
2 Using the Editor window (see Fig. 6.5), which can be opened by any one of the following:
   (*i*) Clicking the *Edall* button on the Button bar
   (*ii*) Using the *Edit* option in the *File* menu
   (*iii*) Typing "Edit Procedure Name in the Command Input Box (do not forget quotation mark before Procedure Name).

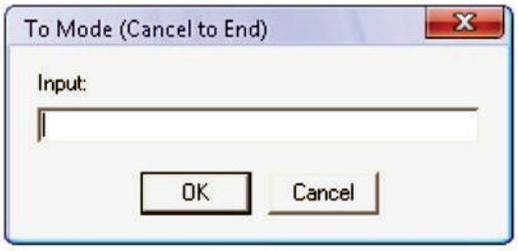


Fig. 6.4: User Input Box



Fig. 6.5: Editor window

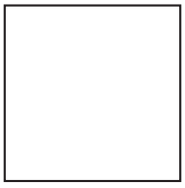
Let us write a simple procedure **SQUARE** in LOGO, using the **Input Box**, to draw a square of side of length 50.

To code, run and save the procedure, perform the following steps:

1. Click the **Input Box**.
2. Type in **TO** followed by the name of the procedure, here we type, **TO SQUARE**.
3. Press the Enter key. The user **Input Box** appears.
4. Enter the set of instructions one after other for drawing a square. Press the Enter key after each line.
5. When all the instructions have been entered, type in **END** and press the Enter key. Your Procedure **SQUARE** has been defined. The entered procedure code is shown below:

```
TO SQUARE
; Procedure SQUARE
        CS          ; Clear Screen
        REPEAT 4 [FD 50 RT 90]
        HT          ; Hide Turtle
END
```

6. To run the procedure, type **SQUARE** in the **Command Input Box** and press the Enter key. This draws a square of side length 50 on the graphics screen as shown below:



7. To save the procedure, click on the **Input Box** to make it active and type:

```
SAVE "SQUARE.
```



The file saved in LOGO will have an extension .LGO. Type LOAD "Procedure Name to recall a saved procedure.

In LOGO, you can put a procedure within REPEAT command or within another procedure. Let us write procedures to include REPEAT and RANDOM command:

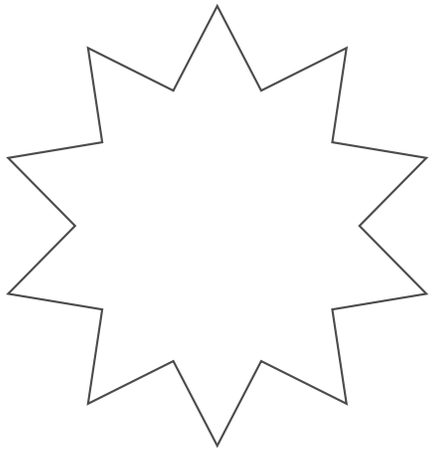
Example 1 Write a procedure to draw a simple star shape using REPEAT command.

```
TO STAR
; Procedure STAR
   CS   ; Clear Screen
   REPEAT 10 [LT 60 FD 50 RT 120 FD 50 LT 60 RT 36]
   HT   ; Hide Turtle
END
```

Type the following in the Command Input Box and press the *Enter* key to run the procedure:

```
STAR
```

This draws a star on the screen as shown below:



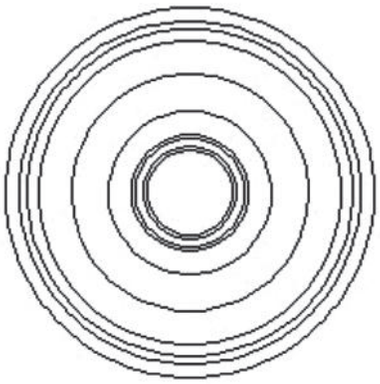
Example 2 Write a procedure to draw circles randomly using RANDOM command.

```
TO DRAW_IR
; Procedure DRAW_IR to draw circles randomly
  CS  ; Clear Screen
  REPEAT 10 [CIRCLE RANDOM 100]
  HT  ; Hide Turtle
END
```

Type the following in the Command Input Box and press the *Enter* key to run the procedure:

```
DRAW_IR
```

This will draw circles randomly on the graphics screen as shown below:



Your output may be different every time when you run the LOGO procedure(s) having RANDOM command(s).

Example 3 Write procedure(s) to draw squares randomly using RANDOM command.

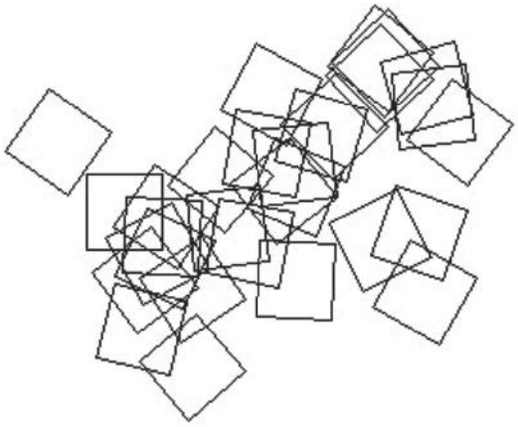
Let us write a procedure SQUARE1 first and then use it in another procedure RSQUARES to draw random squares:

```
TO SQUARE1
; Procedure SQUARE1
    REPEAT 4 [FD 40 RT 90]
        HT          ; Hide Turtle
END
TO RSQUARES
; Procedure RSQUARES
    CS ; Clear Screen
    REPEAT 30[SQUARE1 PENUP RT RANDOM 360 FD RANDOM 50 PENDOWN]
END
```

Type the following in the Command Input Box and press the *Enter* key to run the procedure:

RSQUARES

This will draw random squares on the screen, lifting the pen and moving it to a random location before drawing another square as shown below:



Type ERASE Procedure Name and press Enter key to erase a procedure. The ERASE ALL command erases all the procedures.

ACTIVITY 6.1



DRAW A VARIETY OF SHAPES USING THE LOGO PRIMITIVES AND PROCEDURES

Students in small groups will use the LOGO primitives and procedures to draw a variety of shapes. The group leader from each group will give a brief presentation to the class based on it.

LOGO Primitives

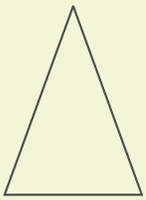
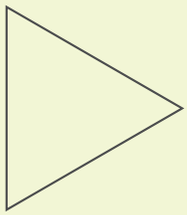
The LOGO Primitives are basic LOGO Commands.

Procedures

Procedures are small programs that can be called on again and again through one word and without typing them all out.

Drawing Shapes using Primitives and Procedures

We can draw various shapes in LOGO using the CS, FD, LT, RT, HOME, HT primitives and procedures. For example,

Shape	LOGO Procedure to Draw the Shape
A Scalene Triangle 	TO Scalene ; This procedure will draw a scalene triangle CS FD 100 RT 150 FD 50 HOME HT END
An Isosceles Triangle 	TO Isosceles ; This procedure will draw an isosceles triangle CS RT 20 FD 100 RT 140 FD 100 HOME HT END
An Equilateral Triangle 	TO Equilateral ; This procedure will draw an equilateral triangle CS FD 100 RT 120 FD 100 RT 120 FD 100 HT END
A Rectangle 	TO Rectangle ; This procedure will draw a rectangle CS REPEAT 2[FD 100 RT 90 FD 50 RT 90] HT END

A Square	TO Square ; This procedure will draw a square CS REPEAT 4[FD 100 RT 90] HT END



KEY CONCEPTS

- LOGO stands for **L**ogic **O**riented, **G**raphics **O**riented.
- MSW LOGO screen is divided in two parts—Graphics window and Listener window.
- CS primitive clears the graphics screen.
- We can write a procedure in two ways using the "Input Box" or using the "Editor window".
- Procedures are small programs that can be called on again and again through one word without typing them all out.
- The file saved in LOGO will have an extension .LGO.
- BYE primitive closes the LOGO.



REVIEW QUESTIONS

Fill in the Blanks

1 LOGO was developed by ..... and his team.
2 When you load Logo, a triangular shape pointer appears at the centre of the screen called ..... .
3 The ..... primitive moves the turtle in forward direction.
4 The ..... primitive turns turtle's face on left side.

State Whether True or False

1 Logo is a high-level programming language.
2 Logo is considered an interpreted language because Logo programs are executed by an interpreter.
3 The BK primitive turns turtle face on right side.
4 The ST primitive shows the turtle again.

Multiple Choice Questions

1 All the figures are drawn by ..... in LOGO.
(*a*) Turtle (*b*) Hand
(*c*) Bye (*d*) Print
2 Which of the following LOGO primitive moves the turtle's face in right side?
(*a*) ST (*b*) HOME
(*c*) PD (*d*) RT

3 Which of the following LOGO primitive moves the turtle in backward direction?

(*a*) FD (*b*) BK

(*c*) HT (*d*) BYE

4 A set of LOGO commands referred by a name, which is given to perform a particular task is called a ..... .

(*a*) Operator (*b*) Procedure

(*c*) Action (*d*) Random

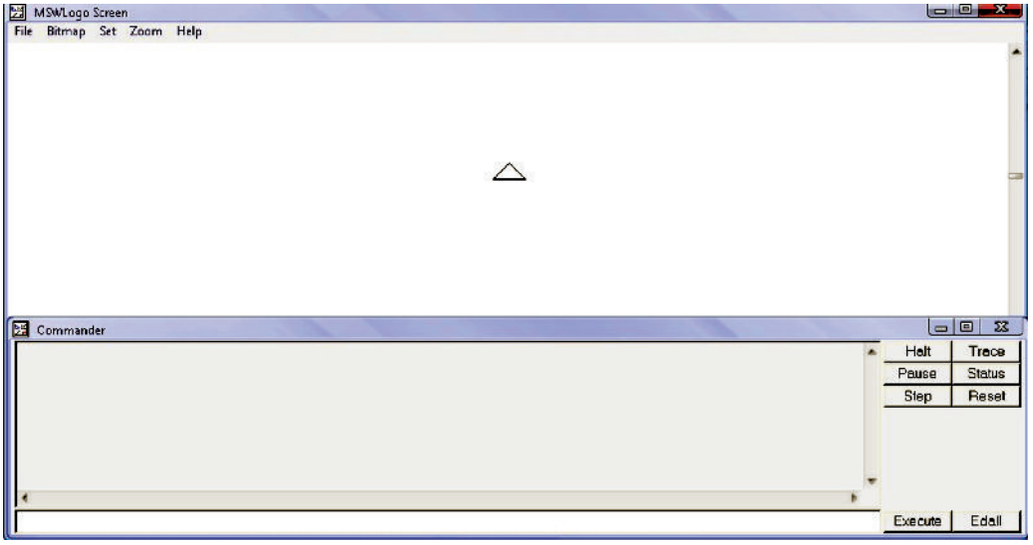
Match the Following

Column A	Column B
1 Graphics window in LOGO	(*a*) Generates a random integer number
2 Listener window in LOGO	(*b*) Used to exit LOGO
3 BYE primitive	(*c*) The area where the commands are typed
4 Random command	(*d*) The area where the turtle moves and draws

Answer the Following

1 What is LOGO? Who developed LOGO and when?

2 Label the following LOGO window.



3 What are LOGO primitives? Explain any four LOGO primitives to draw shapes.

4 Write a procedure using RANDOM command in LOGO.

Suggested Activities

1 Write a procedure to draw an equilateral triangle.

2 Write a procedure to include a random number generator *e.g.*, throwing a die.

3 Use Full version of LOGO language.

GLOSSARY

A

AI (Artificial Intelligence): It is the branch of computer science concerned with making computers behave like humans.

Analog: It is any fluctuating, evolving, or continually changing process that represents data by measurement of a continuous physical variable.

Application Software A program that is designed to perform specific tasks.

ASCII: American Standard Code for Information Interchange. It is pronounced (as-kee).

B

Backup: To copy files or data to a second source or media so as to safeguard it.

BCD: Binary Coded Decimal.

BIT (Binary DigIT): It is the smallest unit of processing of computerized data in terms of 1 or 0.

Browser: Software program that allows the user to find and read encoded information in a form suitable for display especially on World Wide Web.

Byte A combination of 8 bits to represent computer data transfer or data storage measurement.

C

CD-ROM (Compact Disc Read-Only Memory): A durable and low cost circular optical storage device widely used to store large amounts of information.

Computer: A computer is an electronic device that accepts, processes, stores and outputs data under the control of a set of instructions.

CPU (Central Processing Unit): A processor on an IC chip (called a microprocessor) that serves as the 'brain' of the computer.

D

Data A collection of raw facts and figures or a raw input which when processed or arranged makes meaningful output.

Data Communications: The moving or sharing of encoded information between two or more data sources using an electronic medium.

Distribution List: Also called a mailing list, is a collection of e-mail addresses that allows you to e-mail multiple people at one time.

DVD: Digital Versatile Disc or Digital Video Disc.

E

E-Commerce Buying and selling or business transaction conducted on the Internet.

E-Mail: Stands for Electronic Mail. This is a system of relaying messages across the Internet, from one Internet user to another.

F

Format Painter: Helps to copy the format that has been applied to text and apply it to another.

FTP (File Transfer Protocol): A software protocol for exchanging information between computers over a network.

G

Gigabyte (GB): 2 to the 30th power (1,073,741,824) bytes. One gigabyte is equal to 1,024 megabytes.

GIGO: It is an acronym that stands for Garbage In, Garbage Out.

H

Hardware: The physical equipment used in a computer system, such as the CPU, peripheral devices and memory.

Home Page The initial page of a site on the World Wide Web.

HTML (Hypertext Markup Language): It is a collection of structuring and formatting tags used to create Web pages.

HTTP (Hypertext Transport Protocol): The standard protocol for transferring hypertext documents on the World Wide Web.

Hypertext : A method of storing data through a computer program that allows a user to create and link fields of information at will and to retrieve the data non-sequentially.

I

Icon: A picture or symbol to represent a command on a computer screen.

IDE (Integrated Development Environment): A programming environment integrated into an application.

IT (Information Technology): The development, implementation, and maintenance of computer hardware and software systems to organize and communicate information electronically.

Internet : The Internet is a network of networks all of which use the same set of communications protocols.

ISP (Internet Service Provider): A company that provides access to the Internet.

J

JAVA: A high-level programming language developed by Sun Microsystems.

K

Kilobyte (KB): This is about a thousand bytes of space. In reality, it is two to the 10 h power or 1024 bytes.

L

LAN (Local Area Network): A network that links together computers and peripheral equipment within a limited area, such as a building or a group of buildings.

Language Processor: Software that converts a high level language or assembly language code into machine understandable form.

Login: To attach to a computer using the user's ID.

LOGO (Logic Oriented , Graphics Oriented): A high level programming language specifically designed for its ease of use and graphics capabilities.

M

Mainframe Second largest computer available after the supercomputer.

Megabyte (MB): About a million bytes of space. Actually it is 2 raised to the 20 h power or 1,048,576 bytes of space.

Memory: Internal storage areas in the computer.

MODEM: Stands for MOdulator and DEModulator. It is a device that changes data from digital (computer language) to analog (phone line language) and then back again.

Motherboard: The main circuit board of a microcomputer.

MPEG (Motion Picture Experts Group): A format to make, view, and transfer both digital audio and digital video files.

MS-Excel : Spreadsheet application software, provided by Microsoft.

MS-PowerPoint: Presentation software, provided by Microsoft.

MS-Word: Word processing application software, provided by Microsoft.

N

Netiquette The rules of etiquette that apply when communicating over computer networks, especially the Internet.

Network: A system containing any combination of computers and its peripherals, used to transmit or receive information.

O

Operating System : A system software program that works as a bridge between computer hardware and the user. Operating systems perform basic tasks, such as recognizing input from the keyboard, sending output to the display screen, keeping track of files and directories on the disk, and controlling peripheral devices such as disk drives and printers.

Output Device A device that translates information processed by the computer into a form that humans can understand.

P

Pen Drive A secondary storage device that can be used to easily transfer files between USB-compatible systems.

Plotter : A computer output device that draws images on paper using a pen.

Primitive : The LOGO commands are known as 'Primitives'.

Q

Query: Used to retrieve information on a certain condition from a database.

R

RAM (Random Access Memory): A volatile computer memory available to the user for the temporary storage and manipulation of data.

Relative Reference The default reference in a spreadsheet package.

ROM (Read-Only Memory): A memory in which program instructions, operating procedures, or other data are permanently stored, generally on electronic chips during manufacture, and that ordinarily cannot be changed by the user or when power is switched off.

S

Scroll Bar : A widget found in graphical user interface and used to show and control which portion of a document is currently visible in a window. A window may have a horizontal or, vertical scroll bar, or both.

Server : This is a mainframe computer that serves the other computers attached to it.

Sheet Tab : In spreadsheet applications, this refers to a tab at the bottom of a worksheet that acts as a means to identify or access different sheets within a workbook.

Slide Show: Used to display the slides in a desired sequence.

Source Code Program code written in a computer language.

Software The set of instructions used to direct the operation of a computer, as well a documentation giving instructions on how to use them.

Spreadsheet : A document which helps to organize data in rows and columns that intersect to form cells.

System : A combination of the hardware, software, and firmware. A system typically consists of components (or elements) which are connected together in order to accomplish a specific function or set of functions.

System Software It is a set of master programs that keeps the computer system working.

T

Task bar : The bar that contains the start button and appears by default at the bottom of the desktop.

Tera byte (TB): 2 to the 40 th power (1,099,511,627,776) bytes.

Trojan : A type of computer virus that is loaded into an unsuspecting users system via a host program such as a free game.

Turtle A triangular shape pointer used in LOGO that helps in drawing figures.

U

UNICODE: Binary coding scheme that uses 2 bytes (16 bits) for each character. It allows almost all the written languages of the world to be represented using a single character set.

UPS (Uninterruptible Power Supply): It is a backup power unit that provides continuous power when the normal power supply is interrupted.

Utility Program : A program developed to run within an Operating System to perform a specific service.

V

Virus: A program or piece of code that is loaded onto your computer without your knowledge and runs against your wishes.

W

WAN (Wide Area Network): A network in which computers are connected to each other over a long distance, using telephone lines and satellite communications.

Web page: A single, usually hypertext document on the World Wide Web that can incorporate text, graphics, sounds, etc.

Web server : A computer that runs specific software to serve web pages to the Internet.

Word Processor: Software that processes textual matter and creates organized documents.

WWW (World Wide Web): Series of servers or computers that are interconnected through hypertext.

WYSIWYG: What You Say Is What You Get.

X

XML (Extensible Markup Language) : It is a markup language, not limited to Web documents.

Z

Zip Disks: The disks with a special high-quality magnetic coating that have a capacity of 100 or 250 megabytes.