Information Technology

NVEQ Level 1 – Class IX

IT102-NQ2012-Fundamentals of Computer

Student's Handbook

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Preface

The National Curriculum Framework, 2005, recommends that children's life at school must be linked to their life outside the school. This principle makes a departure from the legacy of bookish learning which continues to shape our system and causes a gap between the school, home, community and the workplace.

The student workbook on **"Fundamentals of Computer (Basic)"** is a part of the qualification package developed for the implementation of National Vocational Education Qualification Framework (NVEQF), an initiative of Ministry of Human Resource Development (MHRD), Government of India to set common principles and guidelines for a nationally recognized qualification system covering Schools, Vocational Education and Training Institutions, Technical Education Institutions, Colleges and Universities. It is envisaged that the NVEQF will promote transparency of qualifications, cross-sectoral learning, student-centred learning and facilitate learner's mobility between different qualifications, thus encouraging lifelong learning.

This student workbook, which forms a part of vocational qualification package for student's who have passed Class VIII or equivalent examination, was created by a group of experts. The IT-ITeS Skill Development Council approved by the National Skill Development Corporation (NSDC) for the IT/ITeS Industry developed the National Occupation Standards (NOS). The National Occupation Standards are a set of competency standards and guidelines endorsed by the representatives of IT Industry for recognizing and assessing skills and knowledge needed to perform effectively in the workplace.

The Pandit Sunderlal Sharma Central Institute of Vocational Education (PSSCIVE), a constituent of National Council of Educational Research and Training (NCERT) in association with Wadhwani Foundation has developed modular curricula and learning materials (Units) for the vocational qualification package in IT/ITes sector for NVEQ levels 1 to 4; level 1 is equivalent to Class IX. Based on NOS, occupation related core competencies (knowledge, skills, and abilities) were identified for development of curricula and learning modules (Units).

This student workbook attempts to discourage rote learning and to bring about necessary flexibility in offering of courses, necessary for breaking the sharp boundaries between different subject areas. The workbook attempts to enhance these endeavour by giving higher priority and space to opportunities for contemplation and wondering, discussion in small groups and activities requiring hands-on-experience. We hope these measures will take us

significantly further in the direction of a child-centred system of education outlined in the National Policy of Education (1986). The success of this effort depends on the steps that school Principals and Teachers will take to encourage children to reflect their own learning and to pursue imaginative and on-the-job activities and questions. Participation of learners in skill development exercises and inculcation of values and creativity is possible if we involve children as participants in learning, and not as receiver of information. These aims imply considerable change in school routines and mode of functioning. Flexibility in the daily time-table would be a necessity to maintain the rigour in implementing the activities and the required number of teaching days will have to be increased for teaching and training.

About Your Workbook

This workbook is to assist you with completing the Unit of Competency **IT102-NQ2012: Fundamentals of Computer (Basic).** You should work through the workbook in the classroom, at the workplace or in your own time under the guidance and supervision of your teacher or trainer.

This workbook contains sessions which will help you to acquire relevant knowledge and skills (soft and hard) on various aspects of the unit of competency. Each session is small enough to be easily tackled and digested by you before you move on to the next session. Animated pictures and photographs have been included to bring about visual appeal and to make the text lively and interactive for you. You can also try to create your own illustrations using your imagination or taking the help of your teacher. Let us now see what the sections in the sessions have for you.

Section1: Introduction

This section introduces you to the topic of the Unit. It also tells you what you will learn through the various sessions covered in the Unit.

Section 2: Relevant Knowledge

This section provides you with the relevant information on the topic (s) covered in the session. The knowledge developed through this section will enable you to perform certain activities. You should read through the information to develop an understanding on the various aspects of the topic before you complete the exercise (s).

Section 3: Exercise

Each session has exercises, which you should complete on time. You will perform the activities in the classroom, at home or at the workplace. The activities included in this section will help you to develop necessary knowledge, skills and attitude that you need for becoming competent in performing the tasks at workplace. The activities should be done under the supervision of your teacher or trainer who will guide you in completing the tasks and also provide feedback to you for improving your performance. To achieve this, prepare a timetable in consultation with your teacher or trainer and strictly adhere to the stipulated norms or standards. Do not hesitate to ask your teacher or trainer to explain anything that you do not understand.

Section 4: Assessment

The review questions included in this section will help you to check your progress. You must be able to answer all the questions before you proceed to the next session.

At the end of the Unit, there is a list of learning resources which include books, journals, newsletters, websites, etc. to support your further learning.

SESSION 1: INTRODUCTION TO COMPUTERS

INTRODUCTION

Computer is an electronic device used in almost every field; even where it is most unexpected. Now we cannot imagine a world without computers. These days, computers are used extensively by engineers and scientists and also by millions of people around the world. That is why this age is called as the era of INFORMATION TECHNOLOGY (IT).

A computer is made up of two components - one is the **hardware** and the other is the **software**. All physical components of computer including keyboard, mouse, monitor, etc, are a part of the hardware. The programs and languages used by the computer are called software.

The computer has become very important now-a-days because it is *accurate*, *fast* and can *accomplish many tasks* easily. Otherwise, to complete those tasks manually much more time is required. It can do very big calculations in just a fraction of a second. Moreover, it can *store large amount of data*. We can also get a lot of information on different aspects using internet.

Today, the computer is used in different fields, which include the following:

BANKS

Almost every bank uses computers to keep the records of money transactions and financial documents. It is also used in this sector because of the speed, convenience and security that it provides.

COMMUNICATION

Communication has become very easy and simple through internet and email. Computer communicates using telephone lines, modems and satellites. Through email we can send messages in a split-second to anybody in any part of the world. On the other hand, the traditional form of communication, for example postal services takes many days to reach the recipient. So the internet has helped to make the earth a global village and above all, it saves time. Internet helps us to find information on every topic. It is the easiest and fastest way of commuincation. Computer network makes the user capable of accessing remote programs and databases of same or different organizations.

BUSINESS

Computer has now become an integral part of corporate life. Business transactions take place very easily, accurately and records of all the business transactions can be stored. Today computers can be found in every store, supermarkets, restaurants, offices etc. One can buy and sell things online, bills

and taxes can be paid online and even the future of business can be predicted using artificial intelligence software. Computers also play a very important role in the stock markets.

MEDICAL SCIENCE AND HEALTH CARE

Diseases can be easily diagnosed with the help of computer and we can also know about the cure. Almost every medical diagnostic equipment uses a computer. In the field of healthcare, computers are used to perform various tasks such as reviewing medical records of patients. Using computers, doctors can easily search information about latest drugs that are available to treat a disease. In addition, doctors use computer technology to discuss and share information about various diseases.

EDUCATION

Today computer has become an important part of one's education because we are using computers in every field. Without the knowledge of computer we cannot get a job and perform well in it. So computers can improve job prospects. Computers are used in class rooms by teachers to teach, maintain records of students, online learning and assessments, etc.

MEDIA

Almost every type of editing and audio- visual composition can be made by using special software made for the purpose. Some software can even make three dimensional figures which are mostly used in making cartoon films. Special effects for action and science fiction movies are also created on computer.

TRAVEL AND TICKETING

With the advent of computers, ticketing and reservations have become an easy task. Now-a-days, it is possible to reserve our train tickets over the internet. Reservation of tickets can be done through the Indian Railway Catering and Tourism Corporation (IRCTC) website of Indian Railways. It also allows one to check the railway seat availability and PNR status in real-time.

WEATHER PREDICTIONS

Weather predictions are also possible by the experts using supercomputers. Weather forecasting now relies on computer-based models that take many atmospheric factors into account. Ever since computers are being used, there is a greater accuracy in weather forecasting.

SPORTS

Computers are also used for umpiring decisions. Many a times, the umpire has to go for the decision of third umpire in which the recording is seen on the computer and finally an accurate and fair decision is reached. Simulation software helps the sportsman to practice and improve his skills.

ARTS AND ENTERTAINMENT

Video games are one of the most popular applications of personal computers. The constantly improving graphics and sound capabilities of personal computers have made them popular tools for artists and musicians. Personal computers can display millions of colors, can produce images far clearer than those of a television set, and can connect to various musical instruments and synthesizers. Painting and drawing programs enable artists to create realistic images and animated displays much more easily than they could with more traditional tools. "Morphing" programs allow photographers and filmmakers to transform photographic images into any size and shape they can imagine. High-speed supercomputers can insert life-like animated images into frames of a film so seamlessly that movie-goers cannot distinguish real actors from computer-generated images. Musicians can use computers to create multiple-voice compositions and to play back music with hundreds of variations.

SOCIAL MEDIA

The spreading of an idea, or of news occurring somewhere in the world is now possible through social sites on the internet. As long as one person is able to connect to the internet and express their view about a situation or simply about an idea, then the information that individual will want to share, will get out into the world. Sites such as Facebook, Twitter, YouTube and LinkedIn allow people to share ideas on not just news, but also on products and services.

MOBILE COMPUTING

Mobile computing is the human–computer interaction by which a computer is expected to be transported during normal usage. Mobile computing involves mobile communication, mobile hardware, and mobile software. It also means being able to use a computing device even when you are mobile and therefore changing location. Portability is one aspect of mobile computing. Mobile Computing is a variety of wireless devices that allow people to connect to the internet, providing wireless transmission to access data and information from where ever they are. Many types of mobile computing devices have been introduced since 1990s including the following:

- Personal digital assistant (PDA): A small, usually pocket-sized, computer with limited functionality.

- Smartphone has a wide range of features and installable applications.
- Tablet computer does not have a keyboard and is shaped like a slate or a paper notebook.

SCIENTIFIC RESEARCH

Scientists use computers for research and documentation. For example, scientists use computers to view images from space and to publish information on their recent research.

> **"Computing is not about computers anymore, it is about Living"**
>
> ***Nicholas Negroponte***

GOVERNMENT

In government organizations, you can use computers to organize information by storing and maintaining records. Computers are also used for providing services to citizens.

PUBLISHING

Computers are used to design any type of publication ranging from simple newsletters to magazines, marketing materials, books, or newspapers. Most of the publishers also have an electronic version of their magazines and newspapers. E-books have become widely prevalent.

DAILY LIFE

We operate washing machines, microwave oven and many other products using software. Moreover we can store all the information about our important work, appointments schedules and list of contacts in a computer. Computer is, therefore, playing a very important role in our lives and now we cannot imagine the world without computers.

RELEVANT KNOWLEDGE

An automobile, such as a car or a van, is available in different models and colors, but its essential components remain the same. All automobiles have an engine, a body, and wheels. Similarly, computers are available in various sizes and shapes, but they all have common components that work in the same manner. The essential components of a computer are hardware and software. In this session, you will learn about common computer terminologies, such as hardware, software, data, and network.

Hardware

Hardware refers to all the physical components of a computer. It includes all input devices, processing devices, storage devices, and output devices. The keyboard, mouse, motherboard, monitor, hard disk, cables, and printer are all examples of hardware.

You use hardware to provide input to a computer and also to get the desired output. For example, when you play a musical instrument, such as a piano, you provide input by pressing the keys and get the desired output in the form of music. Similarly, computers also need input and output devices to perform tasks. Apart from input and output devices, a computer uses processing devices to work on the input data and generate the desired output. The most important processing device is the **Central Processing Unit** (CPU). The CPU is the brain of the computer. It processes the input to perform calculations and produce output.

A **motherboard** is a large circuit board that connects input, output, and processing devices. The motherboard circuits provide pathways that allow data to pass through these various components. It also contains chips that determine how, when, and where data can flow through the computer. Depending on the task that you want your computer to perform, you can choose the appropriate hardware. You can also use expansion cards, such as video cards, to add new features or enhance the performance of your computer. All of these devices are plugged into the motherboard.

Operating System

In addition to hardware, a computer needs software to function. Software sends instructions to the hardware to perform the necessary tasks. The most important software on the computer is the *operating system*, which controls and manages the hardware connected to your computer. The operating system provides an interface that helps you to interact with the computer. Some examples of the operating systems is Windows, Linux, Android.A user interface can be either text-based or graphics-based. Most operating systems provide a graphical user interface (GUI), which displays images and pictures that allow you to interact with a computer easily.

Programs and Data

The hardware and the operating system together are referred to as a *platform*. *Programs*, also called applications, use this platform to perform tasks. There are many types of programs. Some programs allow you to perform tasks such as writing letters, doing calculations, or sending e-mail messages. For example, a

word processor, such as Microsoft Office Word 2007, is a program that helps you create a letter. Other programs allow you to create illustrations, play games, watch movies, or communicate with other computer users.

Programs process data that you provide as input to your computer. This data can be in the form of text, graphics, audio, or video depending on the type of program. For example, Calculator is a program that requires input in the form of numbers. Similarly, Sound Recorder is a program that requires input in the form of audio. When the program receives the data, it processes the data and displays the output on the screen. You can save this output in a file. Depending on the type of data that a file contains, the file is classified as an audio file, a text file, a graphics file, or a video file.

Networks

Consider a scenario where an organization has 10 employees. These employees use computers to perform daily tasks. They also need to print data frequently. Instead of giving each employee a printer, which would be expensive, all computers can be connected to a single printer. You can connect your computer to other computers to share information and hardware components. A group of computers and associated devices that are linked together to facilitate sharing information is called a network. Networks can also be used to share data and devices such as printers. You can also communicate with other computer users on the network. A typical network has the following three components:

***Server*:** The main computer on a network that provides services to other computers on the network. A server decides which computers are to be allowed to access the hardware and software on the network.

***Workstation*:** A computer connected to a network. You use a workstation to access the hardware and software on a network.

***Communication channel*:** A path or link that connects computers or peripheral devices, such as printers and disk drives, to transfer information. Cables are commonly used as communication channels in a network, but networks can also transfer information through wireless connections.

Depending upon the area covered, a network can be categorized as a local area network (LAN) or a wide area network (WAN).A LAN connects devices within a limited area, such as a home or a small group of offices. It commonly includes computers and shared resources such as printers and scanners. A WAN is a

network that connects devices in geographically separated areas. You can use the resources of a WAN to connect two or more LANs by using long wires, optical cables, and satellites. Many organizations use a WAN to connect their networks across different countries. The Internet is an example of a WAN.

Internet

The Internet is a worldwide collection of public networks that are linked to each other for information exchange. The Internet started as a network to facilitate communication between government and educational departments in the United States. When other networks were connected to this network, it became a vast medium for exchanging information and ideas.

Today, the Internet connects many commercial, government, and educational networks, as well as individual computers, which share data. The Internet offers a range of services to its users, such as file transfers between Internet users and electronic mail for sending messages.

The World Wide Web (WWW), or the Web, is another service that the Internet provides. WWW includes specially formatted documents that are interlinked and stored on servers around the world. You can use the Internet and its services to send messages to other Internet users, search and apply for jobs, watch movies, and buy and sell products.

Intranet

Many organizations use a special type of network to communicate and share information within the organization. Such a network is called an intranet. An intranet is similar to the WWW but is accessible only to authorized users of the organization. An intranet is much smaller than the Internet and can provide services such as document distribution, software distribution, access to databases, and training.

SESSION 2: PARTS OF A COMPUTER SYSTEM

RELEVANT KNOWLEDGE

A computer is an electronic device that can store and process information. Computers help perform a variety of tasks such as receiving and sending messages to family and friends, making presentations, and maintaining records. Computers are also used in education, research, broadcasting news, making weather forecasts, and for various other business and recreational activities.

Parts of a Computer:

A computer has various parts, and each part performs a specific function. The following table describes the parts of a computer.

Part	Description
Input devices	Input devices are used to provide information to a computer, such as typing a letter or giving instructions to a computer. Some examples of input devices are as follows: • **Mouse:** A standard mouse has a left and a right button. You use the left button to select items and provide instructions by clicking an active area on the screen. You use the right button to display commonly used menu items on the screen. • **Keyboard:** A set of keys that resembles a keyboard on a typewriter. You use the keyboard to type text such as letters or numbers into the computer. • **Microphone:** A device that you can use to talk to people in different parts of the world. You can record sound into a computer by using a microphone. You can also record your speech and let the computer convert it into text. • **Scanner:** A device that is similar to a photocopy machine. You can use this device to transfer an exact copy of a photograph or document into a computer. A scanner reads a page and translates it into a digital format that a computer can read. For example, you can scan photographs of your family using a scanner. • **Webcam:** A device that is similar to a video camera. It allows you to capture and send live pictures to other users. For example, a webcam allows your friends and family to see you when you are communicating with them.

	• **Stylus:** A pointing device, similar to a pen, used to make selections and enter information by tapping on a touch sensitive surface. For example, to enter information on a personal digital assistant (PDA), you use a stylus. A PDA is a lightweight, palmtop computer. • **Trackball:** A pointing device that is an alternative to a mouse. A trackball consists of a ball that is rotated to move the pointer on a computer screen. You can use a trackball when you have limited desk space.
Output devices	You use output devices to get feedback from a computer after it performs a task. Some examples of output devices are as follows: • **Monitor:** A device that is similar to a television. It is used to display information in visual form, using text and graphics. • **Printer:** A device that you use to transfer text and images from a computer to a paper or to another medium, such as a transparency film. You can use a printer to create a paper copy of whatever you see on your monitor. • **Speaker/Headphone:** A device that allows you to hear sounds. Speakers may either be external or built into the computer.
Central Processing Unit (CPU) and Memory	The Central Processing Unit (CPU) is a device that interprets and runs the commands that you give to a computer. It is the control unit of a computer. The CPU is also referred to as the processor. Memory is where information is stored and retrieved by the CPU. There are three main types of memory. • **Random access memory (RAM):** It is the main memory and allows you to temporarily store commands and data. The CPU reads data and commands from RAM to perform specific tasks. RAM is volatile, which means it is available only while the computer is turned on. The contents of RAM must be copied to a storage device if you want to save the data in the RAM. • **Read only memory (ROM):** It is the memory that retains its contents even after the computer is turned off. ROM is nonvolatile, or permanent, memory that is commonly used to store commands, such as the commands that

	check whether everything is working properly. • **Flash memory:** It is a nonvolatile memory that retains data even after a computer is turned off. Unlike in ROM, you can erase or modify stored information.
Motherboard	The motherboard is the main circuit board inside a computer. It has tiny electronic circuits and other components on it. The motherboard connects input, output, and processing devices together and tells the CPU how to run. Other components on the motherboard are the video card, the sound card, and the circuits that allow a computer to communicate with devices like a printer. The motherboard is sometimes called a system board.
Expansion Cards	An expansion card is a circuit board that can be attached to a motherboard to add features such as video display and audio capability to your computer. An expansion card improves the performance of your computer and enhances its features. Expansion cards are also called expansion boards. Some types of expansion cards are described in the following list. • **Video card:** It is connected to a computer monitor and is used to display information on the monitor. • **Network interface card (NIC):** It allows a computer to be connected to other computers so that information can be exchanged between them. • **Sound card:** It converts audio signals from a microphone, audio tape, or some other source to digital signals, which can be stored as a computer audio file. Sound cards also convert computer audio files to electrical signals, which you can play through a speaker or a headphone. You connect microphone and speakers to a sound card.
Storage Devices	You use storage devices to store computer information. Storage devices come in many forms. Some examples are hard drive or disk, CD-ROM, floppy disk, and DVD-ROM. Storage devices can be divided into two types, internal storage devices and external storage devices. Some common storage devices are as follows: • **Hard disk:** A magnetic disk that is usually the main storage device on most computers. It can be an external or an internal device.

	• **Floppy disk:** A portable storage device that allows you to store a small amount of data. A disadvantage of this disk is that it can be easily damaged by heat, dust, or magnetic fields. • **CD-ROM:** A portable storage medium that allows you to store 400 times more data than on a floppy disk. It is less prone to damage than a floppy disk. • **DVD-ROM:** A portable storage medium that is similar to a CD-ROM; however, it can store larger amounts of data than a floppy disk or a CD-ROM. A DVD-ROM is commonly used to store movies and videos.
Ports and Connections	A port is a channel through which data is transferred between input/output devices and the processor. There are several types of ports that you can use to connect a computer to external devices and networks. Some types of ports are described in the following list. • **Universal serial bus (USB) port:** You use this to connect peripheral devices such as a mouse, a modem, a keyboard, or a printer to a computer. • **FireWire:** You use this to connect devices such as a digital camera. It is faster than a USB. • **Network port:** You use this to connect a computer to other computers to exchange information between the computers. • **Parallel port and serial port:** You use these ports to connect printers and other devices to a personal computer. However, the USB port is now preferred to connect peripheral devices because it is faster and easier to use. • **Display adapter:** You connect a monitor to a display adapter on your computer. The display adapter generates the video signal received from a computer, and sends it to a monitor through a cable. The display adapter may be on the motherboard, or on an expansion card. • **Power:** A motherboard and other components inside a computer use direct current (DC). A power supply takes alternating current (AC) from a wall outlet and converts it into DC power

SESSION 3: COMPUTER FUNDAMENTALS

A computer system includes software and hardware together to make it perform the required tasks. Software is a collection of instructions and related data that tells a computer what to do and how to do. In other words, software is a conceptual entity, which contains a set of instructions (computer programs) with associated documentation related to the operations of a data processing system; whereas, computer hardware is a collection of electronic and other peripheral units, which enables software to perform desired operations. And, there is important software, known as Operating system (OS) specially designed to establish the communication between various hardware devices and software loaded on a computer system.

"A computer system is a programmable machine designed to perform arithmetic and logical operations to produce meaningful results in desired format"

RELEVANT KNOWLEDGE

A computer system is broadly divided into three units – Input Unit, Central Processing Unit (CPU) and Output Unit. Input unit helps the user to enter raw data and instructions into the computer system, central processing unit performs the required operations as per given instructions and at the end output unit produces meaningful results in the desired format for the user.

Let us understand this concept with the help of an example - What information will you require to calculate the amount to be paid to a shopkeeper for buying several pieces of a branded pen? You will require its Unit Price and Quantity procured by you – So Unit Price and Quantity will become the raw data to be entered by you through the input unit. Now, you need to multiply both these values to know the Amount to be paid to the shopkeeper – So multiplication of these two values will become the operation, which will be performed by the CPU and the Amount, which is the result will be on the Output unit of a computer system.

The CPU is further divided into three parts (i) control unit (CU), (ii) arithmetic & logic unit (ALU) and (iii) memory unit (MU). Inside CPU, Control unit acts as a receptionist and a manager of a company. It receives each and every instruction from user and coordinates between different parts to perform various operations. Arithmetic and logic unit acts as an accountant of a company, which performs all the mathematical and logical calculations. And memory unit acts as a temporary store of a company, where small amount of data is stored while other operations are being performed. In addition to these

units, a computer system also has secondary storage device to hold or store large amount of data for later use by various applications running on it. Figure 1 illustrates the interconnection of these units and secondary storage device.

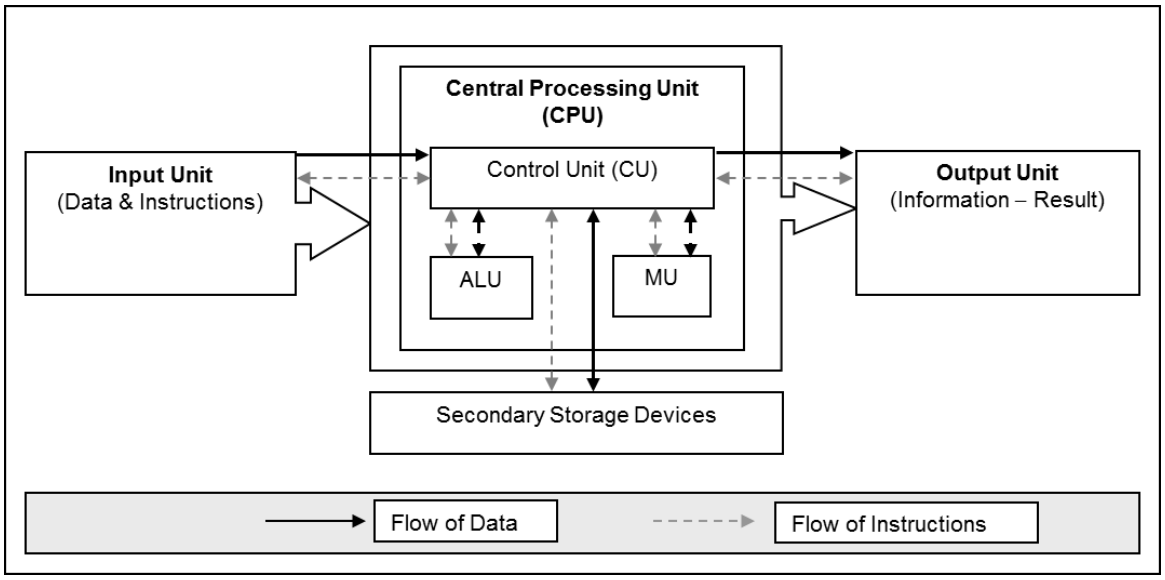


Figure 1: Block Diagram of a Computer System

Now, you must be wondering how you can recognize these units in the form of real devices in a personal computer system. You might have seen a device having several buttons (known as keys) with alphabets and numbers, this device is known as keyboard, which acts as an input device of the computer system. You might have also seen another oval shaped device with two/three buttons in front, this device is known as mouse, which is also an input device of the computer system. Further, you can see a vertically standing/horizontally places box/case with an on/off/reset button – this cabinet/case is known as CPU cabinet, which also contains place to hold secondary storage devices such as hard disk to hold large amount of data and instructions and Compact Disc (CD)/Digital Versatile Disc (DVD)/Blue Ray drive to keep data on portable discs. One of the most common output devices is LCD/LED/Monitor, which is used as output unit to display the results coming out from a computer. The computer system may also have some more additional devices connected with it to act as input and output devices as per the requirement of an individual work.

Some examples of input and output devices are given below:

Input/Output device	Purpose	Sample Requirement
Mic/mike	Used to take the audio input	To record nursery rhymes in the system
Scanner	Used to accept digital input from a paper picture/image/document.	To scan a picture that is to be included in an assignment
Camera	Used to accept image/video inputs	To take pictures of students for identity cards.
Barcode Reader	Used to read barcode	To read Barcodes present on books being issued/returned in the School library.
Printer	Used to print output on paper	To print an assignment on paper
Speaker	Used for audio output	To listen to Nursery Rhymes from the system

The memory unit of CPU is further divided into two components, one is known as **Random Access Memory (RAM)** to take care of intermediate storage of data while working on a computer system and another **Read Only Memory (ROM)** to keep the essential instructions written and stored by the manufacturer to load operating system and take care of basic input/output operations – also referred as **BIOS** i.e. Basic Input Output System.

In the computer, the data is stored in the form of Bits and Bytes. Bit (Binary Digit represented by 0 or 1) is the smallest storage unit, 8 Bits combined together form a single byte, which in turn represent a single character. Let us see an example, if the name "RAVI" is required to be stored in computer, it will need 4 bytes in the computer's memory. The following table represents other higher units of computer memory.

Memory unit	Relationship with Earlier Memory Unit	In equivalent Bytes
Kilo Byte (KB)	1 Kilo Byte = 1024 Bytes(or 210 Bytes)	1024
Mega Byte (MB)	1 Mega Byte = 1024 Kilo Byte(or 210 KB)	1024x1024
Giga Byte	1 Giga Byte = 1024 Mega Byte(or 210	1024x1024x1024

(GB)	MB)	
Tera Byte (TB)	1 Tera Byte = 1024 Giga Byte(or 210 GB)	1024x1024x1024x1024

RAM and ROM constitute the **Primary Memory**. Now, let us discuss in detail about the various **Secondary Storage Devices**. These are used to store large amount of data (with capacity in the range of 20 GB to 2 TB) permanently on computer, i.e. the data is retained even when the system is switched off. **Hard Disc** is one of the most important secondary storage devices, which is used tostore operating system, office applications, utility software and the user's data, etc. Apart from hard disk, one can always use additional (portable) secondary storage devices such as Compact Disk (CD with a storage capacity of 750 MB), Digital Versatile Disk (DVD with a capacity of around 4.5 GB), Blue-ray Disk (with a storage capacity of around 25 GB/50GB), Pen Drives (with a storage capacity of 512 MB to 32 GB), Memory Stick (with a storage capacity of 512 MB to 32 GB).

Now, let us connect/check the connections between various parts of a personal computer. Try to locate all the sockets or ports, which are present behind the CPU Cabinet as shown in Figure 2. Some of the common sockets/ports are power socket for connecting power cable, Personal System 2 (PS2) ports for connecting Mouse and Keyboard, Universal Serial Bus (USB) Port for connecting USB devices such as mouse, keyboard, printer, pen drive, etc., Video Graphic Adapter (VGA) port for connecting Monitor/Screen. Connect Monitor with VGA cable, mouse & keyboard with PS2/USB cable and power on the CPU after connecting power cable. Your computer should display some message from the manufacturer and then it should start the Operating System (boot up with the operating system). Once the booting process is over, you will see the desktop – the first screen you see in the beginning, to allow you to choose and start the application of your choice.

Figure 2: CPU Cabinet Back Panel

Some of the common ports and cables along with their pictures are described in Figure below:

Port & Cables	Firewire Port & Cables	Ethernet (RJ45) Port & Cables
A USB (Universal Serial Bus) port is a standard cable connection interface available on personal computers and some other electronic devices for data communication. USB ports allow stand-alone electronic devices to be connected with the help of cables to a computer (or to each other). USB ports can also supply electric power across the cable to devices without their own. Pins: 4 Standard: Institute of Electrical and Electronics Engineers (IEEE) Standard in 1990	FireWire® ports are forms of a serial port that make use of FireWire® technology to transfer data rapidly from one electronic device to another. The FireWire® port has the ability to interact with a number of different devices. A FireWire® port can provide an ideal way to connect a scanner and digital camera to a computer system as the data transfer is relatively faster than on USB and also results in excellent quality. Pins: 4,6,9 Standard: Institute of Electrical and Electronics Engineers (IEEE) 1394	Ethernet Port is used to connect computers and other devices to form a computer network. It uses Ethernet cables to establish efficient and effective communication between computers and other peripheral devices such as modem, router, multimedia projector etc. Pins: 8 Pins Standard: Institute of Electrical and Electronics Engineers (IEEE) Standards 802.1 to 802.10

EXERCISE

Perform the following activities till you are confident:

S.No.	Activities
1.	Identify Monitor Screen, CPU Cabinet, Keyboard, Mouse and Printer.
2.	Distinguish between common i/o ports and connectors.
3.	Connect the cables to the parts of computer
4.	Classify the given input and output devices.

ASSESSMENT

1. What is input unit of a computer system?

2. What is output unit of a computer system?

3. What is the job of Control Unit inside CPU?

4. What is the job of Arithmetic Logic Unit inside CPU?

5. Name four input devices and write the type of input that can be entered through them into a computer system.

2. Name four output devices and write the type of output that can be exhibited through them.

SESSION 4: TYPES OF COMPUTERS

Consider a situation where you want to buy a television. There are many brands and models available in the market. You need to make a decision based on the features that you want and the price of the product. Similarly, there are different types of personal computers available in the market. They differ on the basis of features such as price, size, and speed. In addition, these factors affect the overall performance of the computer.

After you buy a television, you need to choose from different kinds of channels that are available. These channels may offer entertainment, sports, or news. You can choose to view a channel based on your preferences. In the same way, after you start using a computer, there are different types of programs available that help you perform different tasks. You can use a word processor to create documents or a spreadsheet to perform mathematical calculations. Communications programs can help you talk to people at distant locations. With entertainment programs, you can watch movies, listen to music, or play games.

RELEVANT KNOWLEDGE

Different types of computers are available in the market today. The most common computer is the *Personal Computer (PC)*, typically used by individuals and small businesses. A personal computer is a computer that is designed for use by one person at a time. A personal computer is used in the workplace to create documents, manage business records, and communicate with others. It is used in schools to teach lessons, research over the Internet, and work on assignments. You can also use a personal computer to play games, view videos, and listen to music. Depending on the size and the purpose of a personal computer, it can be categorized into four different types: **desktop, laptop, handheld, or tablet.**

You select a computer depending on the tasks that you want it to perform. For example, if you want to use the computer to edit photos or play complex games, you need a computer with a fast CPU and a good display adapter. The following table describes the different types of computer in detail:

Type of Computer	Feature
Desktop computers	Desktop computers are made up of individual components such as a monitor, a keyboard, a system unit, and a printer. Desktop computers are not portable and are generally placed on the

Type of Computer	Feature
	surface of a desk or a table. The components of desktop computers can easily be replaced or upgraded. Desktop computers usually have more memory, a larger hard drive, more ports, and a bigger display than laptops and other portable computers.
Laptop computers	Laptop computers are lightweight personal computers. Laptop computers are smaller in size as compared to a desktop computer and are designed for travel. Laptop computers are also called *notebooks*. The main feature of laptop computers is that they are small and portable. As the name suggests, these can easily be placed on the lap of a user. Desktop computers run on electricity only, while laptop computers run on electricity or on batteries that can be recharged. However, laptop computers consume more power than desktop computers with a similar hardware setup.
Handheld computers	Handheld computers are devices used for specific everyday tasks, such as managing personal data. These are smaller than laptops and provide fewer features compared to desktop computers or laptops. These can also perform basic word-processing activities and help you access the Internet. You can also send and receive e-mail messages by using handheld computers. Several handheld computer models can also work as cellular phones or digital cameras.
Tablet computers	Tablet computers are fully functional computers that allow you to write directly on the screen by using a tablet pen. You can also use the tablet pen to perform mouse functions. Tablet computers, therefore, do not need a keyboard and a mouse.

Role of Memory

When a computer performs a task, it stores data in the memory. The data that is stored in the memory is internally represented in the form of 0s and 1s. Each 0 or 1 is called a *bit*. A combination of eight bits is called a *byte*. The following table explains the various terms used to measure storage or memory capacity.

Term	Description
Bit	A bit is the smallest unit of information that a computer handles. A single bit can hold only one of two values, 0 or 1. One of the two values is always present. A single bit conveys little meaningful information. However, you can obtain more meaningful information by combining consecutive bits into larger units.
Byte	A byte is a combination of eight bits arranged in a particular sequence. Each sequence represents a single character, symbol, digit, or letter. A byte forms the basic unit that is used to measure the storage capacity of a storage device.
Kilobyte	One kilobyte (KB) is equal to 1,024 bytes. Most of the user data stored in a computer, such as simple e-mail messages or a text file, occupies storage space of a few kilobytes.
Megabyte	One megabyte (MB) is equal to 1,024 KB. The amount of information contained in 1 MB is approximately equal to a complete textbook.
Gigabyte	One gigabyte (GB) is equal to 1,024 MB, which is approximately a billion bytes. Most computers today have hard disks with large capacities that are measured in gigabytes. A gigabyte denotes a huge storage capacity. For example, a video film stored on a computer can occupy more than 1 GB of space.
Terabyte	One terabyte is equal to 1,024 GB, approximately a trillion bytes. Storage devices having capacities in terabytes are generally used by organizations that need to store large volumes of data. A terabyte is so large that a few terabytes of memory space can contain the complete text of a large number of books.

Computer Performance

Whether you use your computer for business or for personal use, it is important that your computer perform efficiently. However, performance does not depend on a single factor. The following table lists some of the important factors that affect the overall performance of the computer.

Factor	Description
CPU	The CPU is the brain of the computer and its speed is an important factor that affects the overall performance of the computer. The

Factor	Description
speed	CPU speed is the rate at which the CPU can perform a task, such as moving data to and from RAM, or performing a numerical calculation. If you have two computers that are identical except for the CPU speed, the computer with the faster CPU completes a task more quickly.
Hard disk factors	Hard disks differ in storage capacities as well as their speed of data storage and retrieval. If the speed of data retrieval is fast, the computer takes less time to start and to load programs. Additionally, the speed and size of the hard disk play an important role when a program needs to process large volumes of data.
RAM	The speed of retrieving data stored on RAM is very fast and for this reason the computer uses it to store the information that is currently in use. If the amount of RAM is large enough to hold all of the information in use, this can result in faster computer performance. The RAM speed and the amount of RAM are important factors in personal computer performance. When there is not enough RAM in a computer, the computer slows down or fails to function properly.

Productivity Programs

You can use different computer programs to perform a variety of tasks. You can use computer programs to organize numbers, write letters or proposals, maintain records, create and modify images, convert text into visuals, and create magazines and brochures. The following table lists the different types of programs and describes their uses.

Program	Description
Word-processing and publishing programs	You use word-processing programs to create and modify text-based documents. You can type in and modify text, use the spelling checker and the built-in thesaurus, and format the document. By using these programs, you can also create personal and professional documents. Microsoft Office (MS) Word is a commonly used word-processing program. Publishing programs are used to combine text and graphics to create documents such as brochures, greeting cards, annual reports, books, or magazines. These programs also include word-processing and graphics features that allow you to refine parts of the document.

Program	Description
Presentation programs	You use presentation programs to present your information in the form of slides. You can add sound and pictures to these slides to make them more attractive and informative. Microsoft Office (MS) PowerPoint is a commonly used presentation program.
Spreadsheet programs	You use spreadsheet programs to create budgets, manage accounts, perform mathematical calculations, and convert numerical data into charts and graphs. Spreadsheets store information in a table, with values spread over horizontal rows and vertical columns. Each value is stored in a cell. A cell is the intersection of a row and a column. Microsoft Office (MS) Excel is an example of a spreadsheet program.
Database programs	You use database programs to store and manage data in an organized way. By using these programs, you can also sort or search for the information stored in a database. In addition, you can create simple reports from the data that you have stored. For example, you can use a database program to store customer details, create and manage inventory, and track sales. You can then create reports to target sales or plan customer services. An example of a database program is Microsoft Office (MS) Access .
Graphics programs	You use graphics programs to create and edit drawings. You can also use these programs to enhance photographs. The Paint program is an example of a graphics program that allows you to create drawings.

Communication Programs

Just as you use a telephone or postal mail to communicate with friends and family, you can also use computers to communicate with people. Computers use special programs called communication programs that allow you to send and receive messages with other people in a digital format.

E-Mail: Sending e-mail messages is the exchange of messages from one computer user to another computer user. This exchange can be within a local area or from one part of a country to another. You can send an e-mail message to or receive an e-mail message from one or several persons at any time of the

day. To send an e-mail message you must have an Internet connection and an e-mail account. This Internet connection is provided by an Internet service provider (ISP). You can use several programs, such as Windows Mail, to create an e-mail account. If you have an e-mail account, it will be similar to username@example.com, where the username is your name. The @ is the at sign and example.com is the domain name. A domain name identifies the name and type of organization with whom you have an e-mail account. After you have an e-mail account, you need to know the e-mail account of the person to whom you want to send an e-mail. You can send both text and pictures through e-mail; however, this depends on various factors, such as the type of service you have or the kind of picture you are sending.

Sending and receiving e-mail messages is an instant way of communicating with anyone. It only takes a few seconds to send and receive an e-mail. This also depends on the speed of your Internet connection.

Chat: Another type of communication is through chat programs, which allows you to send and receive messages immediately. You can use a chat program to communicate with several people at the same time. A commonly used communication program is Windows Live Messenger.

When you are chatting with someone, the person on the other end receives your messages immediately. Through chat you can also talk to the person you are chatting with. This is called voice chat. Another form of chatting allows you to also see the person you are talking to. You use a device called a webcam to do this.

SESSION 5: USING A COMPUTER

RELEVANT KNOWLEDGE

To turn on a computer, press the power button on the system unit. When you turn on the computer, lights on the keyboard may blink briefly and you may also hear a beep. This is an indication that the power-on self test (POST) has started. The computer performs a sequence of quick tests to check whether the motherboard, memory, hard drive, and other components are working. If you hear a series of beeps, the monitor may display a message indicating that a component is not functioning. For example, if the keyboard cable is not attached, an error message may report that there is no keyboard detected.

After POST, the computer starts the operating system. The operating system controls the computer's hardware and manages the different operations of the computer, such as logging on, logging off, and shutting down.

When the computer starts the operating system, a welcome screen appears. This screen displays the links to existing user accounts. To log on to Windows Vista, you need to click the link to your user account, type your password in the box, and then click the button next to the box.

After you log on to your computer, operating system prepares the desktop in a few seconds. The desktop appears and the Welcome Center opens. The Microsoft Windows Sidebar appears on the right side of the screen. The Welcome Center contains information about your computer and about using Windows.

After you log on, you can perform various tasks, such as creating a new file or modifying an existing file. Before you close the file, you need to save the changes you made to the file. You can then log off from Windows. Logging off is useful if you share your computer with other people. You can end your Windows session without affecting the sessions of other users if they did not log off from their sessions. You can also end your computer session by using the Shut Down command. If you shut down a computer when other users are logged on, they can lose unsaved data.

If you encounter problems while using the computer, you can use the Restart option to restart the computer. On most computers, you should never use the actual power button on the front of the system unit to turn off the computer unless it stops responding.

Overview of a Keyboard

The keyboard is an input device that you can use to type commands or text into a computer. Different keyboards have different key layouts. In addition, the functions of some keys such as DELETE, BACKSPACE, PAGE UP, and PAGE DOWN may vary from program to program.

1.	Keys labeled from F1 to F12 are function keys. You use them to perform specific functions. Their functions differ from program to program. The function of the F1 key in most programs is to access the help file associated with a program. Some keyboards may have fewer function keys.
2.	Keys, such as Control (CTRL), SHIFT, SPACEBAR, ALT, CAPS LOCK, and TAB, are special keys. The special keys perform special functions depending on when and where they are used. Most keyboards include a special key called Windows logo key. This key is located between the CTRL key and the ALT key. This key is used to open the Start menu, or is used in combination with a second key to perform common Windows tasks.
3.	There are keys which are used for entering letters and numbers.
4.	Punctuation keys include keys for punctuation marks, such as colon (:), semicolon (;), question mark (?), single quotation marks (‘ ’), and double quotation marks (“ ”).
5.	The label on this key can be either ENTER or RETURN, depending on the brand of computer that you are using. You use the ENTER or the RETURN key to move the cursor to the beginning of a new line. In some programs, it is used to send commands and to confirm a task on a computer.
6.	Keys such as INSERT (INS), DELETE (DEL), and BACKSPACE are command keys. When the INSERT key is turned ON, it helps you overwrite characters to the right of the cursor. When the INSERT key is OFF, it helps you enter text or characters to the right of cursor, without overwriting this text or characters. The DELETE key and the BACKSPACE key are used to remove typed text, characters, and other objects on the right and left side of the cursor, respectively.
7.	Keys such as the arrow keys, HOME, END, PAGE UP, and PAGE DOWN are navigation keys. You use the arrow keys to move the cursor up, down, right, and left. The HOME key moves the cursor to the left end of a line of text. The END key moves the cursor to the end of a line. The PAGE UP key is used to move one page up and the PAGE DOWN key is used to

	move one page down while viewing a document.
8.	Not all keyboards have a numeric keyboard. If available, this is a separate set of keys with numbers from 0 to 9, the decimal point, special characters, and navigation symbols. The NUM LOCK key on this keypad allows you to switch between the numeric and the navigation keys.

Using a Mouse

A mouse is a small device that you can use to move, select, and open items on your computer screen. The mouse is usually kept on the desk next to the keyboard. Most mouse devices have at least two buttons, left and right. Most of the actions are performed by clicking the left button. The right button is used for specific functions. Some advanced types of mouse devices provide additional buttons to speed up common tasks, such as scrolling text.

As you move the mouse on your desk, a pointer moves correspondingly on your screen. The mouse allows you to select an item on the screen. As you move the pointer over different areas of the screen, the items or the pointer change. These changes indicate that you can click an item to open it, or see more of its options. You can open an item by moving the pointer to it, and clicking the left mouse button twice. In a document, you can use the mouse to select a position to start typing. You need to position the pointer in the document, click where you want to insert text, and then use your keyboard to begin typing.

To move an item, you need to click it, and then holding the mouse button down, move the item to a different location. After you move the item to the new location, you release the mouse button. The right button on the mouse is used to display a menu. The options on this menu include the most common tasks, such as copying text from one location and pasting it to another location. These are called context-sensitive menus. These menus help you complete tasks quickly.

Most mouse devices also have a wheel that help you to scroll through documents or pages. To scroll, place your finger on the wheel and roll it back and forth. This moves the document up and down. There are different types of mouse devices available in the market. A regular mouse has a rubber or a metal ball on the underside. The mechanical movement of the mouse device moves the ball. This movement further moves the pointer on the screen. An optical mouse can be used in the same way as a regular mouse. However, it does not have a ball. It uses a laser to detect movement.

EXERCISE

Write the types of each device in the column given:

S.No.	Device	Type of Device: (Input, Output or Storage)
1	Mouse	
2	Microphone	
3	Keyboard	
4	CD-ROM	
5	Printer	
6	Stylus	
7	Floppy Disk	
8	Headphone	
9	Scanner	
10	Hard Disk	
11	Speaker	
12	Monitor	
13	DVD-ROM	

ASSESSMENT

Write the appropriate category for each of the statements given in the table:

S.No.	Statement	Category (Hardware, Operating System, Application)
1.	Helps control the physical components	
2.	Allows you to play games or watch movies	
3.	Helps provide input to a computer	
4.	Ensures reliable operation of the computer	
5.	Helps you view the output of a computer	

SESSION 6: COMPUTER OPERATING SYSTEMS

An operating system performs four primary functions. It manages and controls the hardware connected to a computer. It helps other programs running on a computer to use the hardware. It helps you organize and manage files and folders on the computer. It provides a user interface that allows you to interact with the hardware, the operating system itself, and other programs.

RELEVANT KNOWLEDGE

An operating system controls how programs work with each other and how they interact with the computer hardware. It also creates the file system that determines how your data is stored within a storage device. The performance of an operating system depends on the number of bits that it can transfer at a time. Early operating systems could transfer only 8 bits of data at a time and were called 8-bit operating systems. Operating systems, such as Windows Vista, can transfer data up to 32 bits or 64 bits at a time, depending on the hardware of the system. An operating system such as Windows Vista provides a GUI that makes it easier for you to give instructions to a computer.

As you are now, familiar with the basics of a computer system and you could now switch on your computer system, you must be curious to work on the system. Look at the screen – you will find some pictures and text present on the various parts of the screen. A sample view of the desktop and its various components are illustrated in Figure 11.

Desktop - A desktop is a computer display area of windows that contains the various objects one might find in the computer. On the desktop of your computer, you may find pictures with the following labels:(i) **My Computer** or **Computer** – it contain all the storage areas of your computer (Hard Disk, Floppy Disk, CD/DVD etc.), (ii) **Recycle Bin** – it contains all the deleted content of your computer, (iii) My Network Places or Network – it contains the information of interconnected computers (if any), (iv) My Documents or Documents – it contains a common area to store various types of files on the computer. You may find some more pictures on the desktop with self-explanatory labels.

All these pictures, which you see on screen, are known as “icons”. At the bottom of desktop, you can see a bar (known as Taskbar), left side of which may contain a Start button, right side may contain date, time and active device information and the center of the taskbar may have some shortcuts and active applications. Shortcuts are the direct links to help the user to start the

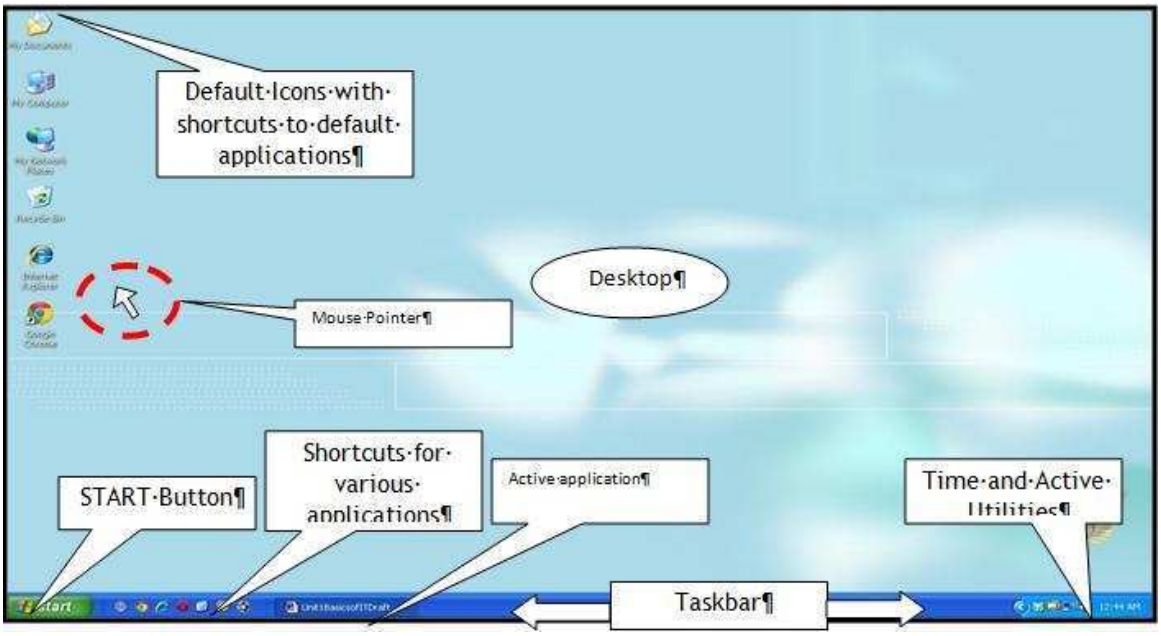


Figure 1: Desktop

application, which may be stored anywhere on the computer.

It is also important for you to know, which area of desktop will perform an operation on left click of a mouse button. You can click on any shortcut or buttons, to start an application or to perform the desired task. Now, just look at the figure 2 to view a sample menu and sub-menu display, which you will see after clicking the Start Menu. Here, you will see various options you can choose from.

The common ones are: (i) **Help and Support** to provide documented form of basic help information to work on the computer, (ii) **Search** to help you searching for an applications or a file, (iii) **Settings** to customize various settings (Display, Hardware, Software etc.) of the computer, (iv) **Documents** to provide you quick links to all recent documents, which were opened/modified recently on the computer, (v) **Programs** to display a submenu with list of various applications available on the computer to work on. The Start menu also gives you an option to Log Off/Shut Down/Turn Off the computer. These options may vary from version to version and OS to OS. You can easily identify them, as you will find similar names for them.

Let us now, discuss about some common applications, which come along with the operating system. **Notepad** is one such application, which allows you to type in the content in a text file, save it on the hard disk and print the same, if required.

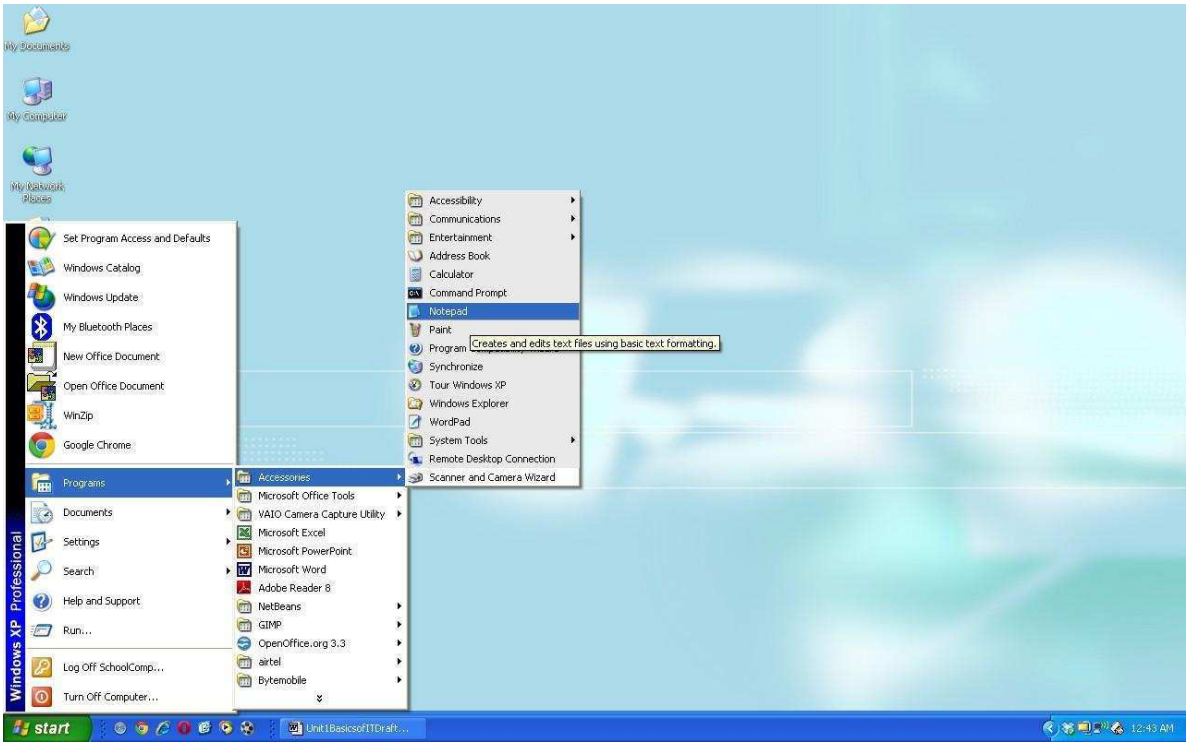


Figure 2: Start Menu and Program Menu

In **My Computer** or **Computer**, you will find a list of all the Secondary Storage device(s) available on your computer. These drives are represented in the form of alphabets (from **A:** to **Z:**). For example **C:** Drive normally represents the first hard disk present in your system, **D:** Drive may represent the second hard disk or CD/DVD Drive. **A:** and **B:** Drives normally represent Floppy Drives, last alphabets are normally used to represent Network Drives (i.e., the hard disk or DVD drive of another computer). A sample content is shown below in Figure 3:

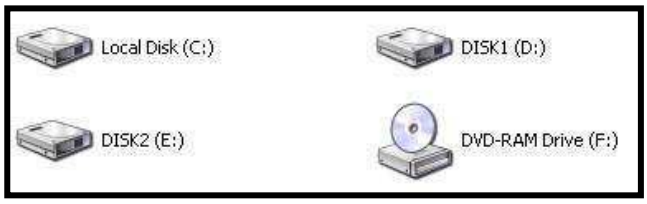


Figure 3: Drives

The data on computer can be organized in files and folders. Files are the immediate container of the content created by you using a particular tool/application. Like using Notepad, you create a Text file "REPORT.TXT" containing report of a particular program organized in your school, you might create another text file "LESSON1.TXT" containing a list of assignments to be given in a class and using paint tool, you might create a file

"MYCREATION.BMP". All these are known as "files". When you have many files loaded or stored on the computer, you would like them to be organized in separate groups to manage your files easily. You can create Folders on computer to represent these groups, where each folder can hold any number of file(s) or sub-folder(s). For example, you can create a folder as **Movies** with sub-folders as Hindi and English to contain Hindi Movie Files and English Movies Files respectively, and you may create a Folder with name **Academics** with sub-folders as School Work, Homework and Downloaded resources to hold related files. Figure below illustrates a Folder as "CBSE VOCATIONAL 2011" with its content as Files "ITBookReference.txt, Logo.JPG, Excercise1.odt, Expenses.ods, Class9Lesson1.odp, RESUME.pdf".

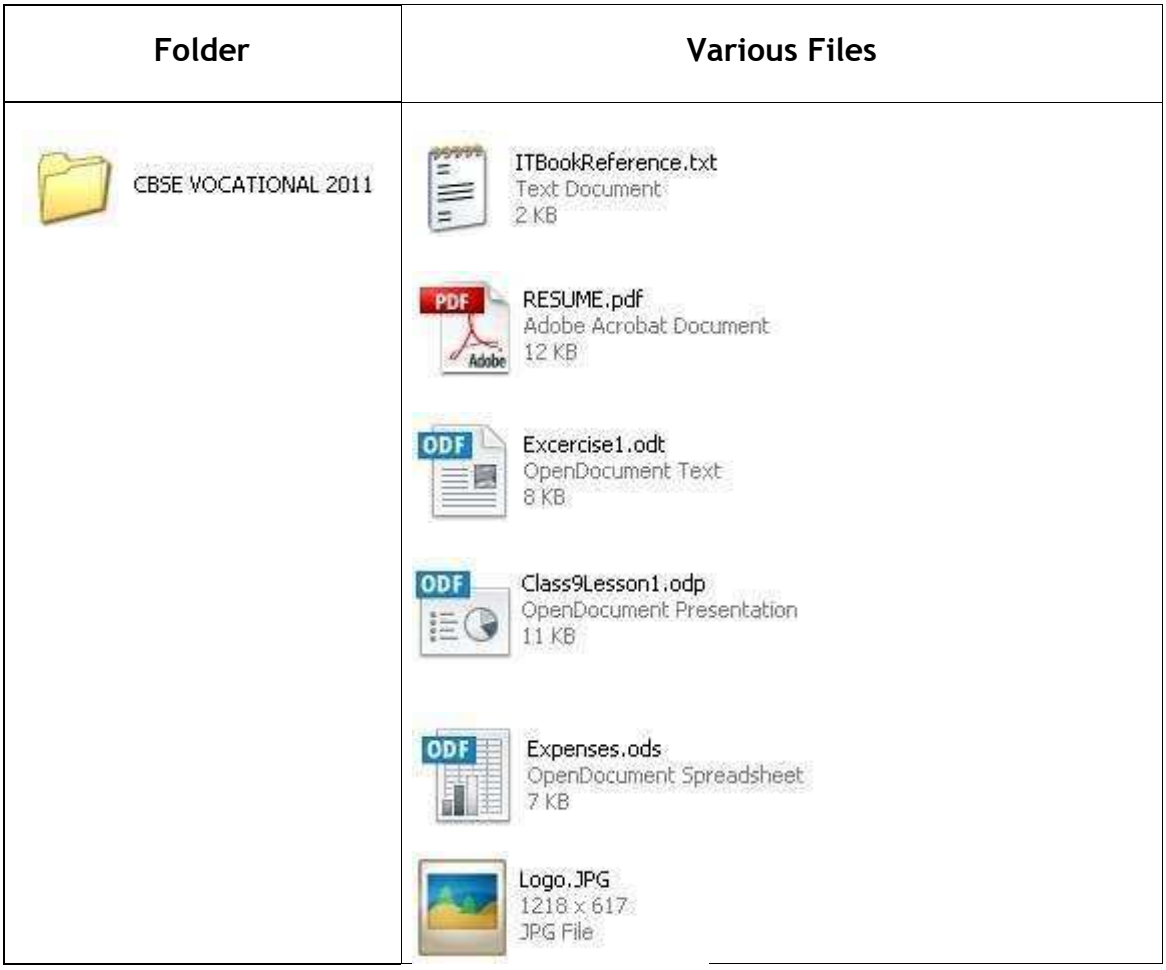


Figure 4: Files and Folders

Function	Description
Provides a user interface	Many operating systems provide visual elements, such as icons and menus, to help you interact with a computer. You can use a mouse to select icons and issue commands. For example, you can double-click a file to open it with the appropriate program.
Provides utilities to configure your system	A GUI-based operating system provides easy-to-use utilities to help you configure your computer. These utilities are small programs that help you perform specific functions, such as connecting to a network, managing resources, and adding new programs to your computer.
Helps manage computer resources	An operating system helps manage hardware. Programs communicate with the operating system to work with the required hardware, such as the CPU, to complete the required tasks.
Helps secure data by controlling user access to a computer	An operating system allows you to secure your data. It helps you specify authentication and authorization rights to control access to your computer and its resources. *Authentication* is the process by which the computer system validates a user's logon information. An operating system can help you create a username and a password, so that only those users who know the username and password can access the resources on your computer. In addition, you can associate specific permissions to each username. This is called *authorization*. For example, you can prevent users from printing documents from your computer.

Managing Files and Folders

Suppose you own a book shop. To manage it efficiently, you need to first categorize books based on their subject, such as management or fiction. You can then arrange these books in separate sections of a cabinet. You need to provide appropriate name to each section so that it is easier to locate a book. Similarly, in the Windows operating system, you use Windows Explorer to arrange files in appropriate folders. Windows Explorer is a program that helps you locate and open files and folders.

The Windows Explorer window in Windows Vista is divided into two sections, called panes. The pane on the left side, called the navigation pane, displays the structure of drives and folders on your computer. A folder is a container for programs and files in GUI interfaces. It is represented by an icon of a file folder on the screen. It can hold both files and additional folders. The pane on the right is called the content pane. It displays the contents of a drive or folder. You can select folders from the list displayed in the navigation pane to view its contents in the content pane.

In this simulated lab, you will use Windows Explorer to expand a folder, create a new folder, and rename a folder. You will also use Windows Explorer to copy a file, move a file, and delete a file from a folder. The following table contains the steps of an online simulation.

1.	To view the Activities folder, click the **Start** button, and then click **Documents**.
2.	To view the contents of the **Vacation folder** (for example), in the navigation pane, under the **Activities** folder, click the **Vacation** folder.
3.	To view the contents of the Vacation folder as a simple list, click the **Views** arrow, and then click **List**.
4.	To create a new folder in the Vacation folder, click **Organize**, and then click **New Folder,** for example.
5.	To name the new folder, for the purposes of this exercise, press SPACEBAR to have the name typed for you, and then press ENTER.
6.	To rename the Activities folder, in the navigation pane, click **Activities**, and then, for the purposes of this exercise, press SPACEBAR to have the folder right-clicked for you.
7.	On the shortcut menu, click **Rename**, for the purposes of this exercise, press SPACEBAR to have the folder name typed for you, and then press ENTER.
8.	To move a file to a new location, in the content pane, click the **Insurance Agency** file (for example), click **Organize**, and then click **Cut**.
9.	To paste the file in the Legal folder, in the navigation pane, click the **Legal** folder, click **Organize**, and then click **Paste**.

10.	To verify that the Insurance Agency file has been moved, in the navigation pane, click the **Volunteer Activities** folder (for example).
11.	To copy a file, in the content pane, click the **Notes** file (for example), click **Organize**, and then click **Copy**.
12.	To paste the file, in the navigation pane, point to the **Vacation** folder, click the arrow that is located to the left of the **Vacation** folder, and then click the **Memos** folder (for example).
13.	Click **Organize**, and then click **Paste**.
14.	To delete the **Draft Garden Report file** (for example), in the navigation pane, click the **Volunteer Activities** folder (for example).
15.	In the content pane, click the **Draft Garden Report** file, click **Organize**, and then click **Delete**.
16.	To confirm that you want to send the file to the Recycle Bin, in the Delete File message box, click **Yes**.

SESSION 7: PERFORMING BASIC FILE OPERATIONS

Every file has an associated format that defines the way data is stored in the file. The file format is identified by a period (also called a dot) appended to a file name, followed by three or four letters. The following are some of the more common file formats:

- Word documents (.doc/.docx)
- Images (.gif and .jpg)
- Executable programs (.exe)
- Multimedia files (.wma and others)

RELEVANT KNOWLEDGE

When you open a file, the operating system selects an appropriate program to display the contents of the file based on the file format.

You will now create and save a file, browse the file, delete the file, and restore the file. The following table contains the steps:

1.	To view a program that is installed on a computer, click the **Start** button, and then click **All Programs**.
2.	To open WordPad, click **Accessories**, and then click **WordPad**.
3.	To add text in the document, in the Document - WordPad window, for the purposes of this exercise, press SPACEBAR to have the text typed for you.
4.	To save the document, click the **File** menu, and then click **Save As**.
5.	To name the document, in the **Save As** dialog box, in the **File name** box, for the purposes of this exercise, press SPACEBAR to have the name typed for you, and then click **Save**.
6.	To close the Sample file, click the **Close** button.
7.	To view a different program, click the **Start** button, and then click **All Programs**.
8.	To open Windows Explorer, click **Accessories**, and then click **Windows Explorer**.
9.	To open the Sample file, double-click **Sample**.

10.	To close the file, click the **Close** button.
11.	To delete the Sample file, ensure that the **Sample** file is selected, click **Organize**, and then click **Delete**.
12.	To confirm that you want to send the file to the Recycle Bin, in the Delete File message box, click **Yes**.
13.	To close Windows Explorer, click the **Close** button.
14.	To restore the Sample file to its original location, double-click **Recycle Bin**.
15.	In the Recycle Bin window, click **Sample**, and then click **Restore this item**.

Managing/Customizing Files and Folders

A file in computer terminology can be considered as the modern counterpart of paper documents which traditionally were kept in offices and libraries. The term file is used in computers for a block of arbitrary information, or resource for storing information. Text and picture files icons are shown below for your reference with filenames Bill_Gates.jpg, Thoughtsofpranav.txt, Steve.jpg, pranav_mistry.jpg, AmoutSteveJobs.txt and Microsoft.jpg.

Here are some of the ways to rename, copy, cut and paste files.

Rename a file:
Close the file to be renamed, if opened. Locate and Select the file **[1]** click the right button of mouse **[2]** Select Rename **[3]** The filename will become editable – type the new name and press **ENTER** Key on the keyboard

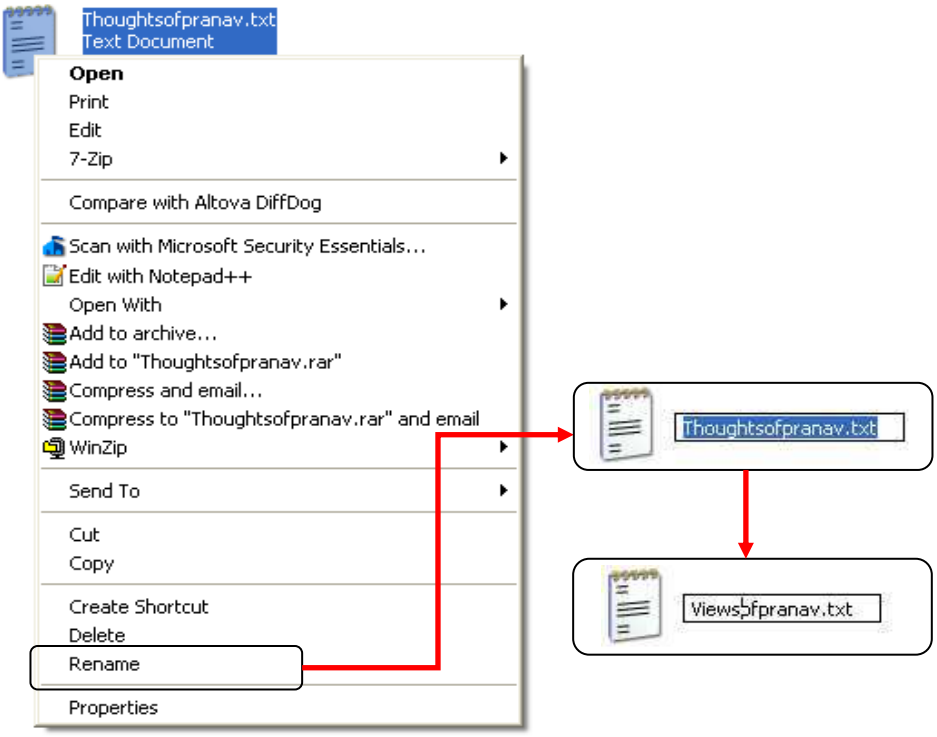


Figure 3: Renaming a File

OR

Locate and Select the file **[1]** Click F2 button of mouse **[2]** The filename will become editable – type the new name and press **ENTER** Key on the keyboard

To delete a file:

Close the file to be deleted, if opened. Locate and Select the file **[1]** Click the right button of mouse **[2]** Select Delete **[3]** Pop up will ask to confirm File Delete – Click on YES

OR

Locate and Select the file **[1]** Press Delete key on keyboard **[2]** Pop up will ask to confirm File Delete – Click on **YES**

To COPY-PASTE a file:

Locate and Select the file **[1]** Click the right button of mouse **[2]** Select Copy **[3]** Change the Drive and Folder to target location **[4]** Click the right button **[5]** Select Paste

OR

Locate and Select the file **[1]** Press **CTR&C** Keys together **[2]** Change the Drive and Folder to target location **[3]** Press **CTR&V** Keys together

Note: In Copy-Paste, the file will remain there in the original location and a copy of the same will be saved on the new location

To CUT-PASTE a file:
Close the file to be moved, if opened. Locate and Select the file **[1]** Click the right button of mouse **[2]** Select Cut **[3]** Change the Drive and Folder to target location **[4]** Click the right button **[5]** Select Paste
OR
Locate and Select the file **[1]** Press **CTR&X** Keys together **[2]** Change the Drive and Folder to target location **[3]** Press **CTR&V** Keys together

Note: In Cut-Paste, the file will be removed from the original location and will be copied in the new location

A folder is basically a container, in which the files can be organized in the computer's storage devices. We create folders to keep different kind of information separately for later use. You already have seen some icons of some files above and you can very well put those files in the appropriate folders.

To rename a folder:
Close all the applications, which are using the folder to be renamed.
Locate and Select the folder **[1]** click the right button of mouse **[2]** Select Rename **[3]** The folder name will become editable – type the new name and press **ENTER** Key on the keyboard
OR
Locate and Select the folder **[1]** Click F2 button of mouse **[2]** The folder name will become editable – type the new name and press **ENTER** Key on the keyboard
To delete a particular folder:
Close all the applications, which are using the folder to be deleted.
Locate and Select the folder **[1]** Click the right button of mouse **[2]** Select Delete **[3]** Pop up will ask to confirm Folder delete – Click on YES

OR

Locate and Select the folder **[1]** Press Delete key on keyboard **[2]** Pop up will ask to confirm File Delete – Click on YES

To COPY-PASTE a folder:
Locate and Select the folder **[1]** Click the right button of mouse **[2]** Select Copy **[3]** Change the Drive and Folder to target location **[4]** Click the right button **[5]** Select Paste
OR

Locate and Select the folder **[1]** Press **CTR&C** Keys together **[2]** Change the Drive and Folder to target location **[3]** Press **CTR&V** Keys together
Note: In Copy-Paste, the folder will remain there in the original location and a copy of the same will be saved on the new location

To CUT-PASTE a folder:
Close all the applications, which are using the folder to be deleted.
Locate and Select the folder **[1]** Click the right button of mouse **[2]** Select Cut **[3]** Change the Drive and Folder to target location **[4]** Click the right button **[5]** Select Paste
OR
Locate and Select the folder **[1]** Press **CTR&X** Keys together **[2]** Change the Drive and Folder to target location **[3]** Press **CTR&V** Keys together

Note: In Cut-Paste, the folder will be removed from the original location and will be copied in the new location.

If we wish to select all the files with in a folder in one go, we can simply go in that folder and select them by pressing **CTR&A** together as shown in the following picture – all the files in the folder are selected. After selecting the files, we can Copy or Cut these files with the help of **CTR&C** or **CTR&X**.

Figure 4: Selecting all files in a folder

We can select some of the files, which are one next to each other in a particular folder with the help of **Shift** and direction keys (Left, Right, Up and Down Keys) as shown in the following picture – the first four files in a sequence are selected.

Figure 5: Selecting files in sequence

We can also select some of the files, which are not in a sequence by holding **CTR** key and using Left button of Mouse one by one as shown in the following picture – three files selected, which are not in sequence.

Figure 6: Selecting Files (Not in sequence)

EXERCISE

Perform the following activities till you are confident:

S.No.	Activity
1.	Start and shut down computer
2.	Log on and log off
3.	Identify the key components of the desktop and recognize and use features of the window environment
4.	Identify text and picture files in folder.
5.	Use the mouse to click on the icon
6.	Scroll the mouse for various operations
7.	Create, rename and delete files, folders and subfolders
8.	Copy and Paste folder and file
9.	Cut and Paste folder and file
10.	Copy, Cut and Paste files and folders.

ASSESSMENT

1. Which two keys help you copy a file/folder?

2. What combination of keys helps you to select all the files in a folder?

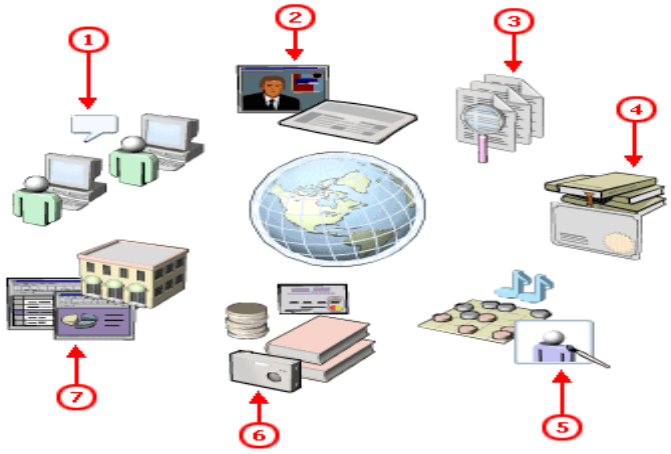
SESSION 8: THE INTERNET

The Internet has changed the way people communicate with each other. The Internet has also revolutionized the way information is made available to the world. With the help of the World Wide Web, *a popular service on the Internet*, you can now access information from a vast pool of resources in a few seconds. You can use the Internet to perform your day-to-day personal tasks or to find better jobs. For example, if you have just completed your studies and are searching for a job, you can use the Internet to create and submit your resume over the Internet. Companies use the Internet to search for potential candidates.

RELEVANT KNOWLEDGE

Uses of the Internet

Imagine a scenario where you want to communicate by using a computer on your network with a computer on another network. For this, both the networks need to be connected. The Internet is a collection of networks that are connected together for exchange of information. When the computer is connected to the Internet, it is said to be *online*. This illustration describes the various uses of the Internet



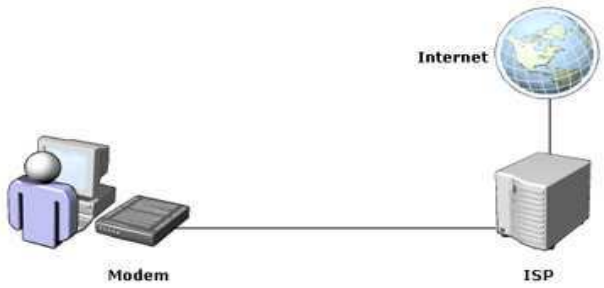
1.	You can use the Internet to communicate with people all around the world instantaneously. The messages you send over the Internet can reach any part of the world in just a few seconds.
2.	The Internet also helps you get the latest information on current events. Many leading news channels use the Internet as the medium to provide updated news.
3.	You can use the Internet to search for information on any specific topic, such as history of computers.

4.	You can take any course of your choice and register for online certification exams over the Internet.
5.	The Internet can also be used as a source of entertainment. You can listen to music, play games, watch movies, or share pictures.
6.	You can buy and sell products, such as books and electronic goods, over the Internet. You can also pay for these goods online by specifying your credit card details.
7.	You can use the Internet to perform banking transactions, such as viewing details of your bank account and transferring money from one account to another.

Requirements for an Internet Connection

To connect to the Internet, you need a computing device, a connection device, and an Internet Service Provider (ISP). The computing device can be a personal computer, a portable computer, or even a mobile device, such as a cell phone or a handheld device.

You need a connection device, such as a modem, to connect your computer to the Internet. A modem converts digital information into analog information and transmits it over a phone line. A modem can either be built-in your computer, or externally attached to it.



An ISP is a company that provides Internet connectivity to individuals, businesses, and organizations. It may also provide additional services such as the storage space to share your personal content. There are different methods by which you can connect to the Internet. When you connect to the Internet by using cables, the connection is called a physical connection.

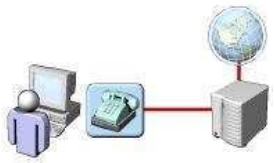
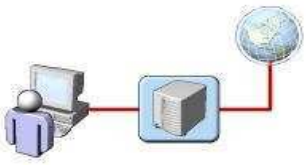
You can also connect to the Internet by using wireless technology. A computing device that supports wireless technology has a Wireless Fidelity or the Wi-Fi card that provides wireless communication between the computing device and the network. A Wi-Fi card is not physically connected to an ISP.

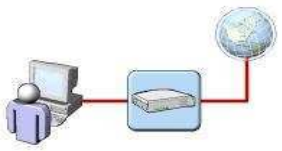
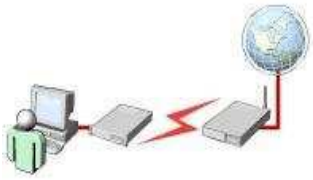
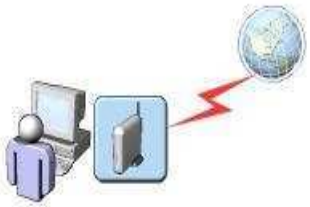
Another device you need for wireless connectivity is an access point (AP). An AP is used to connect a wireless computing device to a wired network. This wired network may belong to an ISP. You can then connect to the Internet through the ISP.

Bandwidth

Bandwidth is the amount of data that can be transmitted over a network in a certain amount of time (in layman's language, you can equate it to a pipe). The amount of water that can flow through it depends on its thickness. Similarly, the amount of data that your network can receive/send depends on its Bandwidth). Bandwidth is measured in *Mbps* (megabits per second), *Kbps* (kilobits per second), or *bps* (bits per second). If the bandwidth of a network is 1 Mbps, then 1 megabit of data can be transmitted over that network in 1 second.

The actual rate of transfer of data will vary depending on the ISP's equipment, the type of Internet connection, and the number of people using the same connection at one time. You can use various types of technologies, such as *dial-up* and *cable modem*, to connect to the Internet. Each technology supports a different bandwidth. Sometimes you might connect to the Internet by using more than one type of connection. For example, in some airports, you can use a *wireless connection* to connect to a cable modem.

Type of connection	Description	
Dial-up	Most dial-up connections offered today allow data transfer rates up to 56.6 Kbps.	
Digital Subscriber Line (DSL)	If you use a *DSL connection*, you are always connected to the Internet. A type of DSL connection is the *asymmetric digital subscriber line* (ADSL) connection. To use an ADSL connection, you must have a special ADSL modem. The date transfer rate of DSL Internet connection is 384 kbps to 8 Mbps.	

Cable modem	If you have a cable TV connection, you can get a high-speed Internet connection from the cable TV provider. Using this type of connection, you can be connected to the Internet at all times. This connection supports data transfer rates of 4 Mbps.	
T1	*T1 lines* provide a dedicated phone line connection to connect to the Internet. T1 are a popular option for businesses today. This connection supports data transfer rates of 1.544 Mbps.	
Wireless	You can connect to the Internet by using wireless technology. When you connect to the Internet by using wireless technology, it further connects to wired connections such as a cable modem. Although you may connect to a high-speed cable connection, this wireless connection might not provide you the full data transfer rates of the wired connection. The data transfer rates of wireless Internet connections can range from 11 Mbps to 45 Mbps. Some wireless connections support a bandwidth of several gigabits per second (Gbps).	

Internet Connectivity

To start with using the Internet, the computer needs to be connected with internet using an internet account. Some of the internet service providers in India are BSNL, MTNL, Reliance, Airtel, TataIndicom. There are different kinds of internet connections like a Data Card, Broadband connection, and Leased Line.

The home users normally take internet connection from the telephone connection provider. The speed of such connections varies from 256 kbps to 2 mbps. Such connections are shared with many users at the same time and so its speed varies depending on various users' internet activity at that point of time.

The corporate users prefer subscribing a leased line internet connection for faster, effective and reliable connectivity. The speed of such connections varies from 1 mbps to 100 mbps. These connections are provided with the help of dedicated connectivity with service provider's internet server.

Internet Browser is the software, which helps you to access web pages from various websites. There are various Internet browsers available such as Google Chrome, Mozilla Firefox, Safari, Opera and Internet Explorer. These browsers can be downloaded freely from their relevant websites.

Basic tips to search or information using search engines

Searching information on the internet is simple. Start the Internet Browser and just type whatever comes to mind in the search box, hit Enter or click the [Search] button, and the search engines such as Google will search the web for content that's relevant to your search. Most of the time, you will be able to find exactly what you are looking for just by typing the words in search box.

However, the following tips can help you make the most of your searches.

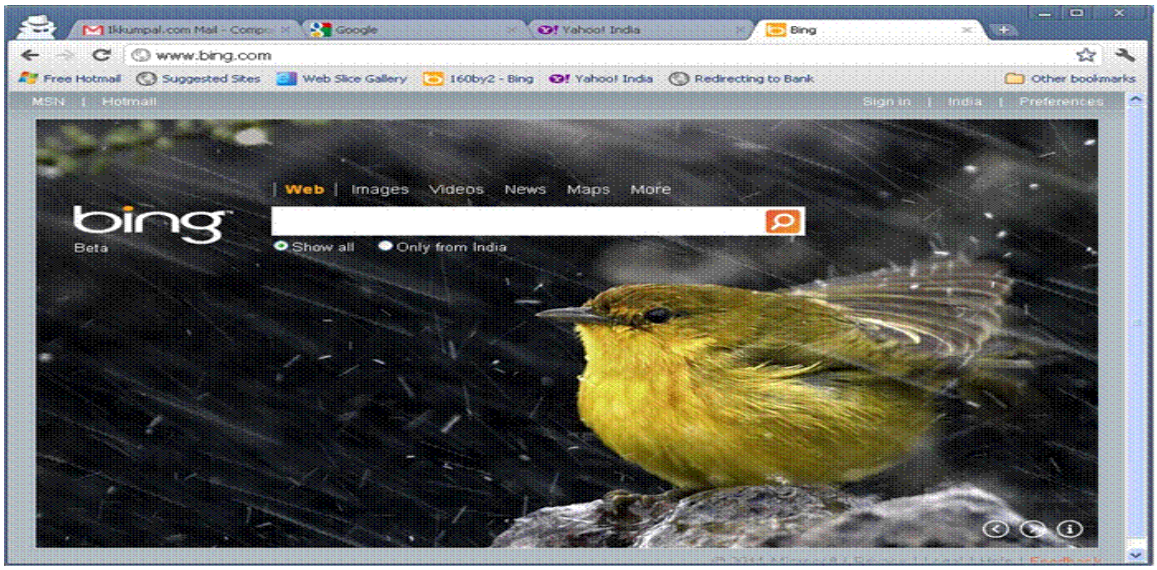
1. If you type the words [India and America] will give different results than when you type only [India] or only [America]
2. Every word, what you type as 'search word' matters. Generally, all the words you put in the query are used by the search engines.
3. Search is always case insensitive. A search for [Delhi CAPITAL of India] is the same as a search for [delhi capital of india].
4. Generally, punctuation symbols are ignored, such as @#$%^&*()=+[]\.
5. To make sure that your search engine returns the most relevant results, there are some exceptions to the rules above, which are as follows.

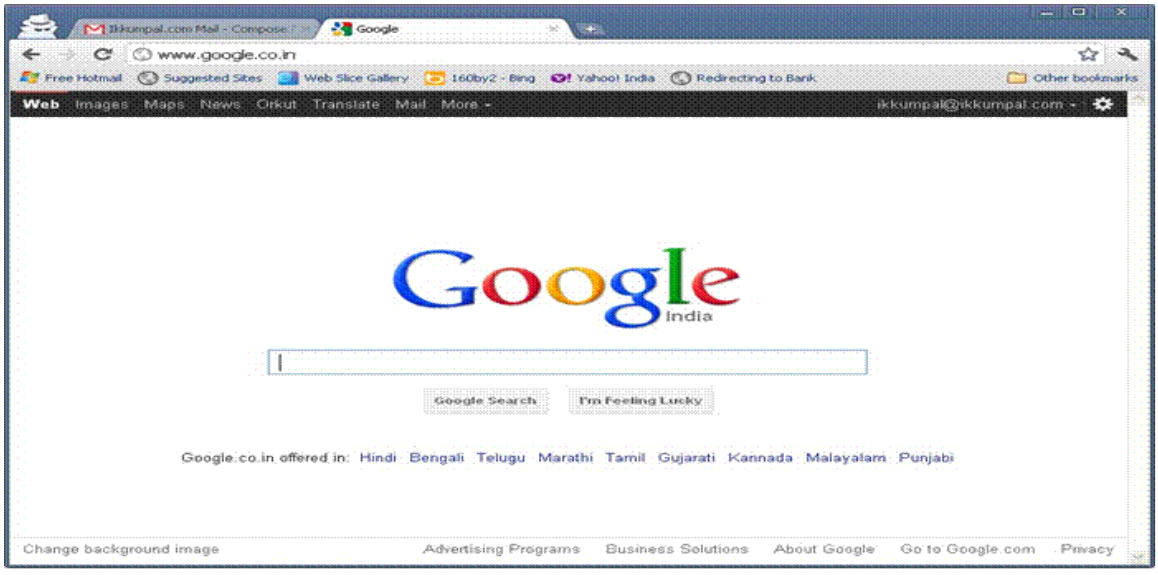
Specific tips for better searches

Keep the searching text (word or words) simple. If you are looking for a particular school, just enter its name, or as much of its name as you can recall. If you're looking for a particular product, place, or concept - start with its name. Think of some of the key words which it is likely to contain and use these words to search for the site. For example if you want to search for a recipe for preparing different kinds of soups, you could use the key words: "Soup Recipe prepare".

Remember, a search engine is a computer program, and it is not a human. It is a program that matches the words you give to pages on the World Wide Web. Use the words that are most likely to appear on the web page. For example, instead of saying [pain in my head], you should say [headache], because that's the term a medical page will use. The query [which five countries produce maximum coconuts in the world] is very clear to us, but the document that gives the answer may not have those words. Instead, use the query [Top 5

coconut producing countries], because that is probably what the right page will say.





EXERCISE

S.No.	Activity	Yes	No
1.	Establish an internet connection		
2.	Search information on the web using appropriate key words		

ASSESSMENT

1. Name any three internet service providers in India?

2. Name any three internet browsers?

3. Name any two internet search engines?

4. Which of two sets of words should be typed in search engines to get more appropriate results?

(a) [What is the capital of India?] OR [Capital of India]

(b) [Fastest Train] OR [Which train has the highest speed?]

SESSION 9: THE WORLD WIDE WEB

RELEVANT KNOWLEDGE

Imagine that you and your family have decided to go on a holiday to Bangkok, and you would like more information about the place. You will probably speak to your friends who have already visited Bangkok, or search for books that will provide the information you want. As a result, you spend a lot of time in gathering this information. By using the Web, you can quickly get information such as the hotel details or the places to visit in Bangkok.

In this session, you will learn the basic components of the Web. You will also learn to use a search engine to find information on the Web. In addition, you will learn to navigate Web sites for information and perform online transactions.

Introduction to the Web

The World Wide web or Web is a way of accessing and sharing information over the Internet by using Web browsers. It is an information-sharing model that is built on top of the Internet. The Web uses the HTTP protocol, only one of the languages used over the Internet, to transmit data. The Web also utilizes browsers, such as Internet Explorer or Firefox, to access Web documents called Web pages that are linked to each other via hyperlinks. The Web refers to the collection of information that is accessible on the Internet. The information is in the form of text, pictures, and sound, which are arranged logically and stored on computers known as Web servers. The Web is a very popular service on the Internet.

***Note**: Many people use the terms the Web and the Internet synonymously, but they are technically two different terms.*

The following table describes the components of the Web.

Element	Description	
Web browser	A Web browser is a software program that enables you to view and interact with various resources on the Web. An example of a widely used Web browser is Microsoft Internet Explorer that displays both text and graphics. Windows Internet Explorer 7 is available with Windows Vista. Some browsers, such as Internet Explorer 7, offer a new feature called *tabbed browsing* to facilitate better Web browsing. Using tabs, you	

Element	Description	
	can view multiple Web sites in a single browser window and easily switch from one Web site to another. Some Web sites may contain content in the form of animation, video, or audio files. To view these files, you need additional programs known as *add-ons*. An add-on is a software program that adds features to your browser and enhances your Internet experience. Add-ons provide added functions by allowing the Web browser to access and run files that are included in Web pages. For example, Microsoft Silverlight is a browser add-on that is required to view high-quality videos by using Web browsers.	
Web page	A Web page is a formatted text document on the Web that a Web browser can display. Most Web pages on the Internet allow you to quickly move to another Web page. You can do this by clicking a hyperlink, commonly called a *link*. Clicking a link opens the new Web page in your Web browser. You can access existing Web pages or even create and publish new Web pages on the Web. You can create Web pages by using a software language known as Hypertext Markup Language (HTML). Web browsers use HTML to display Web pages. Hypertext is a method of linking text with other text that helps you to easily browse through related non sequential topics on the same page or on other Web pages.	
Web site	A Web site is one or more Web pages that reside on a single server. This server is known as a Web server and is connected to the Internet. The first Web page that is displayed when you access a Web site is known as the home page. Every Web site has a unique home page.	

Overview of Web Addresses

Every Web site on the Web is stored on a computer that is part of a vast network. To access a Web site, you need to access the computer on which the Web site is stored. Just as every house has a unique address, each computer on the Web is identified by a unique address, known as the Internet Protocol (IP) address. The IP address is a numeric address that specifies the exact location of

a computer on the Web. You can access a computer on the Web by using an IP address, such as 192.168.0.1.

The IP address is linked to a corresponding domain name because it is easier to remember names than a string of numbers. For example, the corresponding domain name for the IP address 127.0.0.1 can be proseware.com. Web browsers can use either the domain name or the IP address to locate and display a Web page.

A Web site for a domain is accessed with the help of a unique alphanumeric address known as the Web address. The Web address is also known as the Uniform Resource Locator (URL), which specifies the protocol to be used and the exact location of the Web site. A protocol is a standard method of transferring data between different computers. In the example *http://www.ugc.ac.in/page/Annual-Report.aspx*, *http* indicates what protocol to use and*www.ugc.ac.in/page/Annual-Report.aspx* specifies the exact location of the Web page. The following table lists the components of a URL.

Element	**Description**
http://	Indicates the protocol to be used to access a file.
www	Indicates that the Web site is on the Web.
ugc	Indicates the name of the domain.
ac.in	Indicates the type of domain.
/page/Annual-Report.aspx	Indicates the path of the document.

A URL also includes a domain name suffix that indicates the type of organization to which the Web site belongs. For example, in the domain name *microsoft.com*, the domain name suffix is *.com*. The following table lists some examples of domain name suffixes.

Suffix	**Description**
.com	Indicates that the Web site is for a commercial organization.
.edu	Indicates that the Web site is for educational institutions, such as schools, colleges, and universities.
.net	Indicates that the Web site is for a network-oriented organization or for an ISP.

.org	Indicates that the Web site is for a nonprofit organization.
.info	Indicates that the Web site is informative in nature.
.museum	Indicates that the Web site is used for a museum or for an individual of the museum profession.

Note: There are country-level domains that are specifically used by a country or an independent territory. Some examples of country-level domains include .ke for Kenya, .in for India, and .jp for Japan.

Working with Internet Explorer

The Internet offers a range of services, such as file transfer between Internet users, electronic mail for sending messages, or Web sites for viewing news. You can use the Internet and its services to search and apply for jobs, send messages to other Internet users, watch movies, and buy and sell products.

In this simulated lab, you will use Internet Explorer 7 to navigate through a Web site on the Web. In addition, you will save a Web page and then open multiple Web sites in one browser window. The following table contains the steps of an online simulation.

1.	To open Internet Explorer, click **Start**, and then click **Internet**.
2.	To open a Web site, for the purposes of this exercise, press SPACEBAR to have the address typed for you in the Address bar, and then press ENTER.
3.	To view the Weather Web page, under the **Page options** button, click the **Weather** link.
4.	To view the Forecasts Web page in a new Internet Explorer 7 window, in the left column, for the purposes of this exercise, press SPACEBAR to have the hyperlink right-clicked for you, and then click **Open in New Window**.
5.	To refresh the Web page, click the **Refresh** button that is to the right of the Address bar.
6.	To search for the weather forecast for Denver city, for the purposes of this exercise, press SPACEBAR to have the keyword typed for you, and then click **Go**.
7.	To go back to the previous Web page, click the **Back** button that is to the left of the Address bar.

8.	To open a new Web page in the same window, click the **New Tab** button.
9.	To switch to another tab, click the **Quick Tabs** button, and then click the first Web page.
10.	To view the menu bar, on the **Command** bar, click **Tools**, and then click **Menu Bar**.
11.	To save the Web page, click the **File** menu, and then click **Save As**.
12.	To specify a name for the Web page, in the **Save Webpage** dialog box, in the **File name** box, for the purposes of this exercise, press SPACEBAR to have the name typed for you, and then click **Save**.
13.	To add a Web page to your Favorites list, click the **Add to Favorites** button, and then click **Add to Favorites**.
14.	To specify a name for the Web site, in the **Add a Favorite** dialog box, for the purposes of this exercise, press SPACEBAR to have the name typed for you in the **Name** box, and then click **Add**.
15.	To view a Web site that you previously visited, click the **Favorites Center** button, and then click **History**.
16.	In the Favorites Center pane, click **Today**, click **weather.msn (weather.msn.com)**, and then click the first link.
17.	To close Internet Explorer 7, on the title bar, click the **Close** button.
18.	To close all tabs of Internet Explorer 7, in the Internet Explorer message box, click **Close Tabs**.

Searching for Information

With multiple Web sites on the Web, it is possible that the information provided by a Web site is not authentic. For example, you are a broker, and you need to track the price variations in the market. The information that you get from the Web sites must be accurate to ensure a correct analysis of the price variation.

There are various guidelines that will help you evaluate a Web site.

Guideline	Description
Includes reliable content	A good Web site should state the various sources, such as other Web sites, books, or names of experts, for the content that is displayed on the Web site.
Answers your questions	The Web site should answer your questions by giving you valid and specific information.

Includes content by authors with credentials	The people who have written the content that is displayed on the Web site should preferably be writers with reliable credentials.
Includes current content	The Web site should be well organized to help you easily navigate within the Web site. All the links in the Web site should be working, and the content on the Web site should be regularly updated.

Search Engines

To search for information on a specific topic, you use a search engine. After you specify a keyword in a search engine, it displays a list of Web sites that contain information related to that keyword. This type of search is called keyword search. An example of a search engine is Windows Live Search provided by Microsoft, which helps you to quickly find Web sites that contain information relevant to your search. A search engine consists of directories, which group similar information. For example, the Weather directory on the MSN Web site contains Web pages that provide information about weather. In a search engine, you can also perform a directory search. You can browse to a specific directory and then search the directory for specific information. For example, you can browse to the Shopping directory on the MSN Web site and then search for keyboard. The results contain the links for Web pages from the shopping directory that relate to keyboard.

You can also search information with the help of portals, which are Web sites that offer information related to a specific topic in the form of a directory. The information on a portal is usually arranged in a specific order. A portal acts as a starting point to a number of resources on the Web. For example, on the MSN Web site, various Web pages are linked together to form the complete Web site. These Web pages act as gateways to a host of information on the Web. From the MSN Web site, you can access your e-mail, perform a keyword or a directory search, participate in online discussions, find the location of a movie theater, join Web communities, and get the latest news.

In this demonstration, you will see how to perform a directory and a keyword search in a search engine. The following table contains the steps and transcript of an online demonstration.

Steps

1	Searching for Information
2	To open Internet Explorer, click **Start**, and then click **Internet**.
3	To open a search engine, in the Address bar, type the address of the required Web site, and then press ENTER.
4	To browse to the required directory, click **MSN Directory**, click **View by Category** link, and then under a category, click **Encyclopedia**.
5	To perform a directory search, in the **Search Encarta** box, type the required keyword, and then click **Search Encarta**.
6	To view the required information from the list of resources, click the most appropriate link.
7	To return to the homepage, in the upper-right area, click **MSN home**.
8	To perform a keyword search, in the **Live Search** box, type the required keyword, and then click **Search Web**.

Transcript

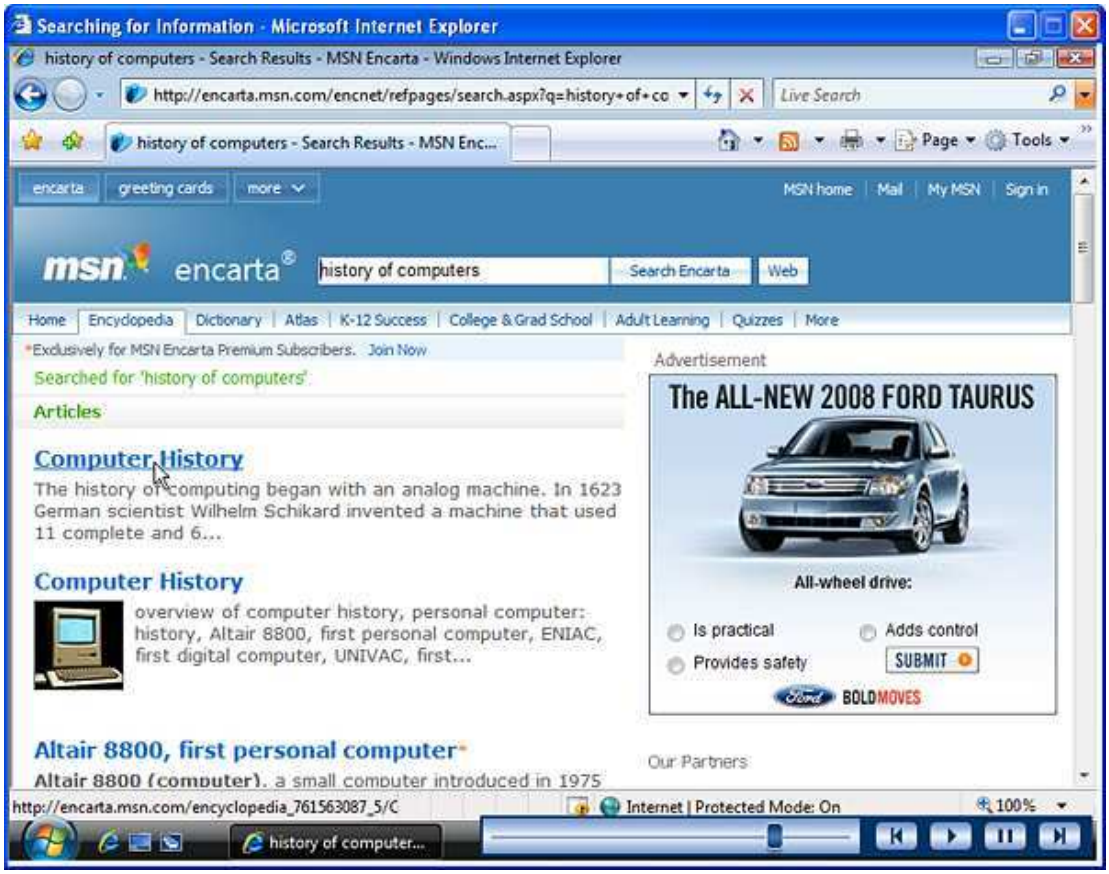
The World Wide Web is a vast collection of information. You can use a Web browser, such as Internet Explorer 7, to search for the specific information that you want.

You can locate information on the World Wide Web by using a search engine. With a search engine, you can look for specific information by performing either a keyword search or a directory search. The search engine retrieves information that matches your search criteria.

Using a directory search, you can limit your search to a specific directory on a Web site. For example, the MSN Web site includes a directory for an online encyclopedia called Encarta.

You can use Encarta to find information about a specific topic. For example,

you can search for information about the history of computers. The results page displays a list of links to the resources in the directory that provide information about the history of computers. The search results include a part of the information that is included in each retrieved Web page and a link for the Web page.



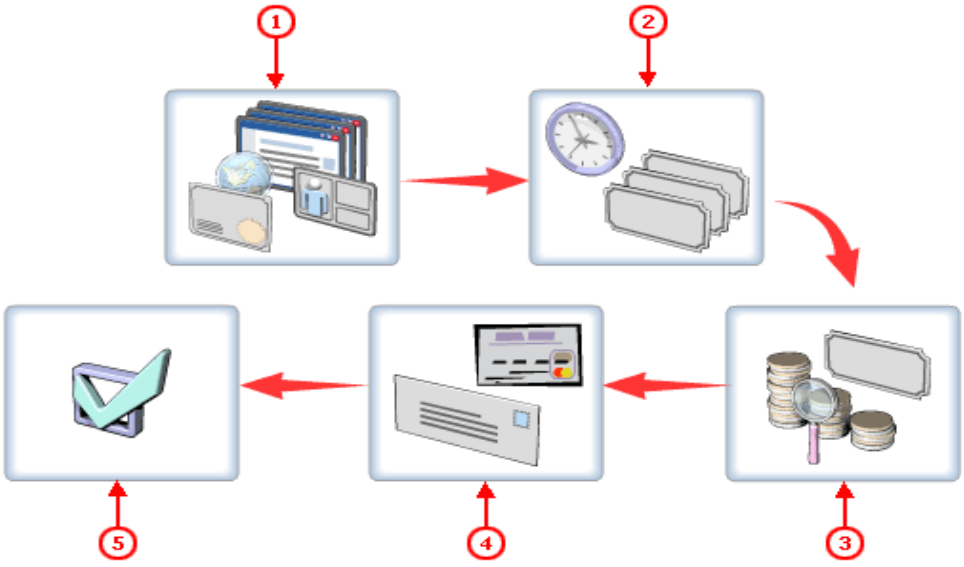
You can choose the most appropriate link from the results page.

Unlike a directory search, a keyword search returns results from various Web sites on the World Wide Web. For example, if you search for history of computers, the results page displays links from all the Web sites on the World Wide Web that have information related to your keyword.

Introduction to e-Commerce

E-commerce refers to the business transactions made over the Internet, such as buying and selling items online. The *online purchase* requires you to provide your credit card details. To ensure a secure transaction, you must provide your credit card details only to reputed Web sites. In addition to making *online transactions*, e-commerce includes *online stock trading* that gives you an opportunity to buy and sell shares in the stock market. You can also check your bank account status or insurance details online.

You can purchase online tickets to visit a museum. The illustration below describes the steps to buy online tickets to visit a museum.



1.	To purchase online tickets to visit a museum, access the museum's Web site. You need to create a new account on the Web site. While creating a new account, you need to provide details such as a user name, a password, and your address in a registration form. You will then receive an authentication to make an online transaction on the Web site.
2.	To purchase online tickets, you need to select the date and the number of tickets you want to purchase.
3.	You can also compare the prices of the tickets available.
4.	Before you complete the process of purchasing the tickets, you need to provide your credit card details along with the shipping address.

5.	After you submit these details, a Web page is displayed indicating that your online transaction is complete. It also provides you a transaction code that you can use for any further queries related to this purchase.

EXERCISE

S.No.	Activity
1.	Search for the required information on the world wide web using a search engine

ASSESSMENT

A. State whether the statement is True or False

	Statement	True/False
1.	World Wide Web IS a part of the Internet.	
2.	Internet Explorer is a Web SERVER.	
3.	IP address is also known as URL.	
4.	You can open ONLY A SINGLE WEB SITE one window of a web browser	
5.	You CAN save a Web page on your computer.	
6.	A portal IS NOT a Website.	
7.	A reliable Website includes content by authors WITHOUT credentials.	
8.	Search engines are Web BROWSERS with special technology.	

B. Tick the right answer from the options given below the statement:

1. Computer system has a unit, which displays the results from it.
   A. Central Processing Unit
   B. Memory Unit
   C. Input Unit
   D. Output unit

2. A computer system can accept textual input with the help of
   A. Mouse
   B. Video Camera
   C. Keyboard
   D. Barcode Reader

3. We can enter the audio form of data into a computer system with the help of
   A. Mike
   B. Scanner
   C. Keyboard
   D. Barcode Reader

4. One of the Internet Service provider in India
   A. CBSE
   B. BSNL
   C. Microsoft
   D. Infosys

5. Files can be organized in
   A. Printer
   B. Keyboard
   C. Folder
   D. Mouse

6. Which of the following combination of keys are used for copying a particular file in a folder?
   A. CTR+V
   B. CTR+X
   C. CTR+C
   D. CTR+A

7. Which of the following is not an Internet Browser?
   A. Google Chrome
   B. Internet Explorer
   C. Mozilla Firefox
   D. Notepad

8. Identify a valid email id out of the following.
   A. jamesmartin@james.in
   B. james_martin.james.in
   C. james@martin@in
   D. jamesmartin@james.in

9. Which of the following can be used for Audio-Video communication?
   A. Video Conferencing
   B. Chat
   C. Email
   D. IP Telephony

C. Fill in the blanks

1. Computer system has a unit, which displays _____
2. A computer system can accept textual input with the help of _____
3. _____ can help us enter the audio form of data into a computer system.
4. _____ has all the emails, which were received on an email id.
5. _____ helps in searching for information from the internet.
6. Printer is an _____ device.
7. _____ is the combination of keys, which selects the entire content with in a folder.
8. We should use _____ names for files/folders.
9. _____ provides dedicated connectivity with internet service provider's server.

SESSION 10: DIGITAL TECHNOLOGY AND MEDIA DEVICES

RELEVANT KNOWLEDGE

Today, the functions of telephones, cameras, video recorders, media players, and Internet devices are being merged into a single portable device. The table below describes how merging technologies affect some commonly used digital devices and their features.

Devices	Description
Audio and Video Players	*MPEG Audio Layer 3 (MP3) players*, CD players, and DVD players are examples of audio and video players. You can use MP3 players to play audio whereas you can use CD players and DVD players to play audio or video. If you have multipurpose CD players or DVD players, you can use them to play audio, video, and MP3 files. *MP3* is a format that helps reduce the size of the files dramatically while having a small impact on quality. You can transfer MP3 files from a computer to an MP3 player.
Mobile Phones	A *mobile phone* is a wireless device that provides the capabilities of a traditional wired phone and allows you to make a call from almost any location. You can use a Web-enabled mobile phone to connect to the Internet, check your e-mail messages, or download songs and games from the Internet. If you have a mobile phone that has camera and multimedia features, you can take pictures, record short video clips, and play music and games. You can transmit pictures and videos from one mobile phone to another or to another person by using e-mail.
Video Game Systems	Microsoft *Xbox* is an example of a video game system that is similar to a personal computer. An Xbox has a motherboard and a hard disk and supports online gaming. You play games on an Xbox by using an Xbox game disk. You can also transfer audio files from audio CDs to the hard drive of an Xbox. Therefore, you can use an Xbox as an audio player. You can also play movie DVDs by using the latest Xbox system.
Personal Digital Assistants (PDAs)	A *PDA* is a handheld computer that is used as a personal organizer. A traditional PDA includes features, such as an address book, task list, and a calculator. You can connect a PDA to a computer to transfer information. If you have a Web-enabled PDA, you can connect it to the Internet, send and

Devices	Description
	receive e-mail messages, and play multimedia files over the Internet. Some PDAs also contain a built-in digital camera. A smart phone is a mobile phone that provides the functions of a PDA in a phone. You can use a smart phone to access the Internet, play games, take pictures, and listen to songs.
Digital Cameras	A *digital camera* stores images digitally on a memory device, such as a flash memory card or a mini hard disk, whereas a traditional camera stores images on film. Some digital cameras allow you to print images by connecting your digital camera directly to a digital printer.
Digital Video Cameras	You can use a *digital video camera* to record video and store it in a digital format. Digital camcorders and webcams are examples of digital video cameras. You can use a digital camcorder to record both video and audio and store it in a digital format on a storage device, such as a recordable CD or DVD. A *webcam* is also a digital video camera that captures images and transmits the images across the Internet. The images are transferred either continuously or at regular intervals of time. Webcams can be connected to a computer, or they can be wireless.

Digital Audio

Audio is of two types, ***analog*** **and** ***digital***. When you speak, the sound you create is in the analog or wave format. The sound that you hear is also in analog format. Computers are basically digital devices. Therefore, it is necessary to convert audio from the analog format to the digital format before using it on a computer.

Digital audio technology allows you to record, edit, and play digital audio files on a computer. Digital audio technology also lets you communicate with the computer by just speaking. This lesson introduces you to digital audio technology. It also briefly describes the concepts of copying and converting digital audio.

Characteristics of Digital Audio

One of the important characteristics of digital audio is that it can be compressed. Audio files are generally large. Compressed audio files save space, allow portability, and are easier to transfer over the Internet. When you compress audio files, the quality of the audio file is generally affected.

Another important characteristic of digital audio is that it can be edited on a computer by using *audio editing software*. For example, you can use this software to move sections within an audio file or add effects. You can also use audio editing software to store an audio file in different formats on the computer. There are number of audio file formats that different programs use for different purposes. Some of the common formats that you need to be familiar with are:

- **Wave (WAV)**: This format is part of a series of standards for audio and video developed for Microsoft Windows 95 as a universal sound file format. It is used to store audio files in the wave audio format. Audio files stored in this format have good audio quality but this format is used sparingly these days. This is because the audio files in this format are larger when compared with other formats.
- **MPEG Audio Layer 3 (MP3)**: This format was developed by Motion Picture Expert Group to allow compression of audio and video for digital distribution. The MP3 format is a popular format that is used to store digital audio files. This is because MP3 files are generally smaller than WAV files.
- **Windows Media Audio (WMA)**: This format was developed by Microsoft and is used to store digital audio files.

Digital audio also allows streaming of digital audio files. With audio streaming, you do not have to wait to completely download a large audio file from the Internet to play it. Instead, you can use a streaming audio player or a browser *add-in* to play the audio file from the Internet. In this case, the audio file is sent to your computer in a continuous stream.

Overview of Copying and Converting Digital Audio

Digital recording is the technique of recording and storing audio files in a digital format. You can then copy the stored audio files to storage devices, such as recordable CDs and DVDs, in various formats, such as WAV and MP3. You can also convert audio from a CD or a DVD to a different format before you store it on your computer's hard disk. The following table describes the concepts of copying audio and converting audio.

Concept	Description
Copying audio	You can copy audio from storage devices, such as a computer's hard disk, and store it on a recordable CD or DVD. This process of copying audio and storing it on a recordable CD or DVD is referred to as *burning*. You need a

Concept	Description
	special hardware device, such as a CD writer or a DVD writer, for burning. A CD writer allows you to burn only recordable CDs whereas most DVD writers allow you to burn recordable CDs and DVDs. Along with hardware, you also need software to copy audio to a recordable CD or DVD. You can use the software to create different types of CDs. You can create data CDs, audio CDs, and mixed mode CDs. Mixed mode CDs contain audio, video, and data files. For example, you can create an audio CD and add video files and text files to it to create a mixed mode CD. Copying audio directly from the Internet and storing it on recordable CDs is illegal. It is also illegal to copy music from CDs and DVDs. Ensure that you have permission before you copy any material.
Converting audio	You can convert audio from a CD or a DVD to a different format before storing it on a computer's hard disk. For example, you can convert your favorite song from a CD to an MP3 file before storing it on the computer. You must have audio conversion software, such as Microsoft Windows Media Player 11, installed on your computer to convert audio files. The software changes the format of the audio and might also compress the audio so that the files take up less space on the hard disk. You can then transfer these audio files from the computer to a digital device, such as a PDA, a mobile phone, or an MP3 player. Converting audio from CDs and DVDs to a different format is illegal. Ensure that you have permission to convert audio to a different format before converting it.

Speech Recognition and Synthesis

Digital audio technology allows you to interact with the computer by just speaking. This helps improve productivity and empowers challenged users to expand their ability to use computers. The following table introduces two speech technologies, speech synthesis and speech recognition.

Technology	Description
Speech synthesis	Imagine a scenario. Eric Andersen has finished writing his short story. Eric wants to read the short story once before sending it to the publisher, but is tired. Therefore, he decides to use the speech

Technology	Description
	synthesis feature, also referred to as the *text-to-speech* feature in Microsoft Windows Vista, to listen to the short story. *Speech synthesis* is a technology that allows the computer to speak to you by converting text to digital audio. Windows Vista has a built-in *screen reader* called Narrator that supports speech synthesis. A screen reader is a program that reads the text on the computer screen aloud. To support speech synthesis, your computer must be equipped with a sound card and speakers. You can configure the text-to-speech feature in Windows Vista by using the Ease of Access link in Control Panel.
Speech recognition	Imagine a scenario. Eric Andersen is using Microsoft Office Word 2007 to write a short story. However, his typing speed is slow and it takes him a long time to complete the story. To solve this problem, Eric's friend advises him to use the speech recognition feature of Windows Vista. *Speech recognition* is a technology that allows you to communicate with a computer by using only your voice to enter text and to issue commands. To enable speech recognition, you need an audio input device, such as a microphone, a sound card, and speech recognition software that converts human speech into text or commands for the computer. You can use speech recognition technology to interact with various programs. For example, you can use it to browse the Internet or enter text in documents. The speech recognition feature is readily available in operating systems, such as Windows Vista. You can configure the speech recognition feature in Windows Vista by using the Ease of Access link in Control Panel.

Digital Video

Before digital technology, video was recorded, edited, and stored in the analog format on tape. After the introduction of digital technology, video was still recorded on tape, but to make editing easy, people first converted video to a digital format. Today, *digital video technology* allows you to record video in the digital format on a digital storage device, such as a CD, DVD, or flash memory card, and edit it on a computer by using digital video editing software. This has benefited both home users and professionals. Both home users and professionals, such as movie makers, use digital video technology to create

videos and films with titles, introduce transitions between scenes, and add special effects.

Characteristics of Digital Video

One of the important characteristics of digital videos is that you can edit them easily on a computer by using digital video editing software. For example, you can edit videos to include titles, add a sound track, or add special effects. You can also upload the video to a Web site and share it over the Internet. In addition, you can copy the video from a computer to a recordable CD or DVD.

Another characteristic of digital videos is that they can be compressed. *Compressed files* save space, allow more portability, and are easier to transfer over the Internet. A camcorder captures and records video. The following provides a brief description about the two types of camcorders available in the market.

Analog Camcorder

An *analog camcorder* records and stores video in an analog format on a tape. To edit the video on a computer, you need to convert it from the analog format to the digital format.

Digital Camcorder

A digital camcorder records and stores video in a digital format, which makes editing the recorded video easy. Another advantage is that a digital camcorder is generally lighter and smaller than an analog camcorder.

Digital Video Editing and Output Formats

Imagine a scenario where you have recorded your friend's birthday party by using a camcorder. You would like to add certain effects to your video to make it look better. Using digital video editing software, you can:

- Add titles and background music to your video to make it more appealing.
- Cut or remove certain scenes from the video.
- Add special effects, such as fade-in and fade-out to the video.
- Enhance video quality by adjusting its brightness, contrast, and color.
- Record audio over the video to describe certain scenes.

Digital video editing can either be *linear* or *nonlinear*. In linear editing, you have to sequentially traverse a file to edit it. For example, if you want to remove a frame that is in the middle of a video, you have to linearly traverse to that frame. However, in nonlinear editing, you can directly go to the frame and

remove it from your video. Tape is always in the linear format and has to be edited linearly. Random access devices, such as DVDs and CDs, let you read and write data in a nonlinear manner. You can edit DVDs and CDs linearly and nonlinearly.

After you edit a video, you can store it in various formats. You can use video editing software, such as Windows Movie Maker, to capture a frame from a movie and save it as a still image. For example, you can capture a frame from a video and save it as a .jpg file. You can also edit the video and save it as a video clip in the Windows Media Video (WMV) format. Saving the video in the WMV format allows you to play the video clip on the computer by using Windows Media Player. You can share the video clip or the still image with your friends by uploading it to a Web site or sending it by e-mail.

You can save the edited video clips and still images in a format that can be copied to a recordable DVD or Video CD (VCD). You can play the DVD by using a DVD player and the VCD by using a VCD player. Some DVD players also allow you to play VCDs.

Warning:

Copying video directly from the Web and storing it on CDs is illegal. Copying video directly from a video CD or DVD is also illegal. Ensure that you have permission to copy any video before you copy it.

Web Video Technology:

These days, you can view video over the Internet. Web video technologies allow you to transfer digital video files over the Internet. Some of the examples of Web video technologies are.

- Video Streaming
- Downloading Video
- Web Conferencing

Digital Photography

With digital cameras, you can transfer pictures to a computer where you can edit pictures to enhance their quality. The following table describes some of the capabilities of software that is designed for working with *digital images*.

Capability	Description
Simple photo	Sometimes, when you take pictures of your friends, their eyes appear red in the picture. This is called the *red-eye effect*.

editing	You can use *simple photo editing software* to remove this effect. Using simple photo editing software, such as Windows Photo Gallery, you can improve the appearance of a picture by adjusting the brightness, contrast, or color of the picture. You can also crop, resize, and print pictures.
Advanced photo editing	*Advanced photo editing programs* include tools for enhancing and adding special effects to a picture. For example, you can remove blemishes from a picture, change its backgrounds, and add text to it by using *advanced text design tools* built in the software.
Photo management	*Photo management software* helps you sort and organize your picture collection. Photo management capabilities are often included as part of a photo editing program, such as Windows Photo Gallery. Many photo management software packages also include tools for compressing and fine tuning pictures.

Overview of Printing Digital Images

Sometimes, you might want to share pictures with friends who do not have a computer in their homes. To share the pictures, you can either print the pictures using a personal photo printer or a professional photo printer.

Personal Photo Printers

There are various types of personal photo printers. They can be either black and white or color printers. Color inkjet printers are the most commonly used personal photo printers. Inkjet printers spray small ink drops on the paper to create a print of the picture. Dye sublimation printers are also used, but they are not as popular as inkjet printers. Dye sublimation printers use dyes to create a print on paper. Most color inkjet and dye sublimation printers can produce near-photographic quality prints on special print paper. Near-photographic quality means that the pictures do not have the very fine detail of pictures taken by using a traditional camera. However, this difference can be seen only by a professional.

Professional Photo Printers

Professional photo printers, which are used in print labs, use special imaging devices to expose regular photo paper. The paper is then developed by using normal silver photo chemicals. Professional photo printers produce true-photographic quality prints on paper. Some print labs also use laser printers,

high-end dye sublimation printers, and high-end inkjet printers.

ASSESSMENT

A. Each pair of statements contains a true statement and a false statement. For each pair of statements, indicate which statement is true by placing a mark in the True column to the right.

	Statement	True	False
1	A smart phone CANNOT organize and store information.		
2	A smart phone CAN organize and store information.		
3	An XBOX is used to organize information.		
4	A PDA is used to organize information.		
5	A CAMCORDER is used to record video.		
6	An XBOX is used to record video.		
7	You CAN edit photographs taken using a digital camera.		
8	You CANNOT edit photographs taken using a digital camera.		
9	A digital camera stores images in its MEMORY.		
10	A digital camera stores images on FILM.		
11	You CAN play games online by using an Xbox.		
12	You CANNOT play games online by using an Xbox.		
13	Videoconferencing can be held between MULTIPLE people.		
14	Videoconferencing can be held between only TWO people.		
15	A webcam IS NOT a digital video camera.		

16	A webcam IS a digital video camera.		
17	A digital camcorder records ONLY audio.		
18	A digital camcorder records BOTH audio and video.		

B. Each pair of statements contains a true statement and a false statement. For each pair of statements, indicate which statement is true by placing a mark in the True column to the right.

	Statement	True	False
1	You CANNOT change the format of audio files.		
2	You CAN change the format of some audio files.		
3	MP3 format ALLOWS compression of audio files.		
4	MP3 format DOES NOT ALLOW compression of audio files.		
5	Converting audio from CDs and DVDs to a different format is ILLEGAL.		
6	Converting audio from CDs and DVDs to a different format is LEGAL.		
7	You NEED software to convert audio from a CD.		
8	You DO NOT NEED software to convert audio from a CD.		
9	When converting audio, the audio file MAY BE compressed.		
10	When converting audio, the audio file IS NEVER compressed.		
11	When converting audio, the format IS NOT changed.		
12	When converting audio, the format IS changed.		
13	You can browse the Internet using SPEECH SYNTHESIS technology.		
14	You can browse the Internet using SPEECH RECOGNITION technology.		
15	A DVD writer can copy audio to CDs AND DVDs.		

	Statement	True	False
16	A DVD writer can copy audio to ONLY DVDs.		
17	You NEED software to copy audio to CDs and DVDs.		
18	You DO NOT NEED software to copy audio to CDs and DVDs.		

C. Each pair of statements contains a true statement and a false statement. For each pair of statements, indicate which statement is true by placing a mark in the True column to the right.

	Statement	True	False
1	A DIGITAL camera uses film to store pictures.		
2	A TRADITIONAL camera uses film to store pictures.		
3	A digital camera DOES NOT HELP you delete unwanted pictures.		
4	A digital camera HELPS you delete unwanted pictures.		
5	A SENSOR creates the image of a picture.		
6	A FLASH MEMORY CARD creates the image of a picture.		
7	You can change backgrounds using ADVANCED photo editing software.		
8	You can change backgrounds using SIMPLE photo editing software.		
9	You CAN crop a picture by using simple photo editing software.		
10	You CANNOT crop a picture by using simple photo editing software.		
11	You CAN compress pictures by using photo management software.		
12	You CANNOT compress pictures by using photo management software.		
13	Windows Photo Gallery IS a photo editing program.		
14	Windows Photo Gallery IS NOT a photo editing program.		

D. Tick the correct option given below the statement:

Question 1
Which of the following is a characteristic of audio streaming?
Select all answers that apply.
a) It sends the audio file to your computer in a continuous stream.
b) It allows you to listen to digital audio without first downloading the entire file.
c) It allows you to transfer analog audio files.
d) It needs a browser add-in or streaming audio player to play audio files.

Question 2
Which of the following is a feature of speech synthesis?
Select the one best answer.
a) It allows you to communicate with the computer by using your voice.
b) It essentially requires a microphone.
c) It allows your computer to convert text to audio.
d) It allows you to enter text in word-processing documents.

Question 3
Which of the following statements are true when copying audio to a recordable CD or DVD?
Select all answers that apply.
a) The process of copying audio to a recordable CD or DVD is also called burning.
b) You need a special hardware device such as a CD writer to copy audio to a recordable CD or DVD.
c) Copying audio directly from the Internet to a recordable CD or DVD is legal.
d) Copying audio from CDs and DVDs is illegal.

Question 4
Which of the following statements are correct about nonlinear video editing?
Select all answers that apply.
a) You go directly to a frame to edit it.

b) You can edit DVDs in a nonlinear manner.
c) You sequentially traverse to a frame to edit it.
d) You can edit tapes in a nonlinear manner.

Question 5
Which of the following statements are correct about video streaming?
Select all answers that apply.
a) The video file is received as a continuous stream.
b) Sometimes, a special program is needed on the computer to enable video streaming.
c) The quality of the video is not affected by the speed of the Internet connection.
d) It allows you to view video files over the Internet without first downloading them.

SESSION 11: COMPUTER SECURITY AND PRIVACY

Like any other electronic device, your computer is at risk from damages caused by accident or by intention. Some of these damages can be permanent. You can prevent your computer hardware, software, and the data stored on it from a number of damages by taking certain preventive measures. This session will help you to identify the various threats to your computer and the data stored on it. You will explore how to protect your computer from these threats by taking some preventive measures. If you use computers regularly, you may have a lot of information stored on the computer. This information may be in form of tax details, personal letters, or business correspondence. You need to ensure that this information is not viewed by other people without your permission. You also need to protect this information from getting damaged.

RELEVANT KNOWLEDGE

What is Computer Security and Privacy

Any factor that can damage your computer or the data on it is a computer threat. Natural events such as earthquakes or hurricanes can cause widespread physical damage. It is possible that you or someone else accidentally deletes some important files causing the computer to malfunction. When your computer is connected to a network, the computer becomes even more vulnerable to computer threats. For example, another user may use the network to gain unauthorized access to your computer. There are various measures that you can use to reduce these threats and reduce the likelihood of loss due to damage. By following basic guidelines, you can minimize the risks of damage to your computer and ensure its security and privacy.

***Computer Security*:** The computer hardware can be damaged due to human carelessness or natural causes. Also, the data and software on the computer need to be protected from accidental or intentional loss and tampering. Computer security deals with the measures that you can take to avoid such damage to the computer and its data.

Computer Privacy: You store your personal files or documents on your computer and would not want anyone to read them. Computer privacy means that your data, such as personal files and e-mail messages, is not accessible by anyone without your permission. Computer privacy deals with the measures that you can take to restrict access to your data. Computer privacy also includes being careful while giving out any personal information over the

Internet. Any such information is likely to be misused to gain access to your personal accounts, such as your e-mail and bank accounts.

Natural Threats

Natural calamities such as earthquakes, floods, hurricanes, can damage your computer at any time. Natural calamities can cause fires, extreme temperatures, and lightning strikes that lead to major physical damage to the computers and loss of data.

This table given below describes the various natural threats to computer security and privacy.

1.	Most of the components of a computer are designed to operate within a specific **temperature** range. In case of excessive heat or cold, some components may start to malfunction, and you may need to replace them. If your computer has been exposed to extreme temperatures, let it return to room temperature before you start it.
2.	**Fire** can damage your computer beyond repair. Even if the computer does not directly catch fire, the heat caused is enough to melt the delicate components inside the computer. Moreover, smoke can damage the CPU fan, which in turn can cause overheating of the CPU and damage it.
3.	**Lightning** that strikes with a huge amount of electrical charge can cause a surge. A surge or spike is a sudden increase in the supply voltage, which can permanently damage some components of your computer. For example, a sudden increase in voltage can destroy the motherboard of your computer.

Measures for Protection from Natural Threats

Natural threats can cause considerable damage to your computer. The following table explains the measures that you can take to protect your data and computer from natural threats.

Measure	Description
Back up data	Backing up data involves creating multiple copies of your data. Events like floods and earthquakes can strike without warning. Making a backup helps you recover your data in case of any data loss. To provide better recoverability, keep a copy of your important data in a physically separate location, such as in another building or city.
Install computers in secure	Install your computer in a place where it is not likely to get damaged due to natural factors. For example, avoid

locations	installing computers in rooms that are exposed to excessive dust or moisture.
Install protective electrical devices	Install devices such as an Uninterruptible Power Supply (UPS) that can provide battery backup in case of a power outage. A UPS prevents software damage caused by abrupt shutting down of your computer. A UPS also provides surge protection and line-conditioning features, which help protect your computer against spikes and surges on the power line. You can also install separate surge protectors and line conditioners. However, in case of a strong surge, caused by events such as a major storm, you should turn off the computer and unplug it from the power to avoid damage.
Insulate computers from fire	Insulate the computers from fire by housing them in fire retardant surroundings. In addition, you can install adequate fire safety equipment and procedures for quick damage control.
Maintain appropriate temperature and humidity	You should maintain an optimum temperature and humidity level to ensure the smooth functioning of your computer. You can do this by installing devices such as air conditioners and humidity controllers.

Threats from Human Actions

A type of threat to your computer is malicious human sources. A discontented employee in your office can deliberately try to tamper with or destroy the data on your computer. A *hacker* is a person who tries to illegally access your computer when you connect it to the Internet. After accessing your computer, a hacker can steal or damage the data stored on the computer. In addition to malicious human threats, human errors such as accidental deletion of data and physical damage are also a threat to your computer. The following table describes various threats from malicious human sources and human errors to your computer.

Threat	Description
Theft	Anyone can steal your computer or its components, if they have access to it. With the popularity of portable computers, such as laptops, physical theft of computers has become very common. You can also become a victim of virtual theft, when your computer is connected to the Internet. One example of virtual theft is *identity theft*, in which a hacker can steal your

Threat	Description
	personal information to assume your identity. Using this false identity, the hacker can gain access to your finances or perform an illegal activity. Another example of virtual theft is *software piracy*, which is theft of a computer design or program. It can also mean unauthorized distribution and use of a computer program and confidential documents.
Viruses, worms, and Trojan horses	*Viruses* are computer programs that can damage the data or software on your computer or steal the information stored on your computer. These viruses can reach your computer, without your knowledge, through the Internet or through storage devices, such as floppy disks and CD-ROMs. *Worms* are viruses that replicate themselves once they attack a computer, making it difficult to remove them. A common worm, known as *Trojan horse* is a kind of virus disguised as useful software. Once a Trojan horse reaches your computer, it starts acting like a virus causing damage to the computer's data.
Spyware	*Spyware* are programs that get installed on your computer without your knowledge. They can secretly send out information about your Web browsing habits or other personal details to another computer through the network.
Internet scams	While using the Internet, you might come across some attractive offers through e-mail messages or chat room communication. You should be very careful before accepting any such offers because these offers can be part of well-planned scams that can cause you a financial loss.
Online predators	*Online predators* are individuals who lure anybody online, into inappropriate and unethical relationships. You or your family members can become targets of online predators. Online predators develop contact with their targets by using e-mail or chat room communication.
Accidental deletion of data	Many times, damage to a computer is due to unintentional human errors. Accidental deletion of an important file can disrupt the integrity of data or prevent other files or programs from working. For example, you may accidentally delete an important file, causing the computer to malfunction.

Threat	Description
Accidental damage to hardware	Computer components, being delicate, run the risk of getting damaged due to carelessness. For example, if you accidentally drop your laptop computer, this might result in damage to the hardware components, such as motherboard or CD-ROM. As a result you lose the data stored on the computer. In addition, physical damage to data due to spilling of food and beverages on storage devices or peripherals can affect your computer.

Measures for Protection against Threats from Human Actions:

You can take some simple measures to minimize the risks associated with malicious human threats and human errors. The following table describes measures to protect your computer from malicious human sources and human errors.

Solution	Description
Store data safely	Keep your data in safe and secure locations that have limited access to others. This minimizes the possibility of theft or tampering of the data.
Encrypt data	The BitLocker feature of Windows Vista helps you encrypt data at the drive-level. When you encrypt data by using this feature, unauthorized users cannot access the data by removing the hard drive and attaching it to another computer.
Install antivirus and antispyware programs	Antivirus and antispyware software programs have the ability to check for viruses and spyware present in the computer's memory and also prevent new ones from entering. You must regularly update antivirus and antispyware software so that they are able to recognize new viruses and spyware. Most antivirus and antispyware software offer the automatic updates feature that automatically installs the updated version of the software on your computer. Built-in features in e-mail software, such as Windows Mail, allow you to block junk e-mail messages and provide features to check for viruses and worms. Windows Vista includes Windows Defender, a built-in antispyware program, which provides real-time protection.
Install firewall	Installing a firewall is another effective step that you can take to protect against malicious threats. A *firewall* enables you to filter the Internet traffic before it reaches your

Solution	Description
	computer or a private network. It provides additional protection against threats such as hackers and viruses. A firewall also helps to ensure computer privacy by restricting external access to your computer by any unauthorized user. Windows Firewall that is available with Windows Vista blocks unwanted access to your computer.
Back up data	Regularly back up important computer data. Creating multiple copies of data provides protection against loss of data due to accidental erasure or destruction of data.
Keep computer in safe environment	Keep the computer in an area that is dust-free, free from vibration, and out of the way of possible impact. The table or shelf housing the computer should be steady and stable to keep the computer from falling, even if the computer is bumped. Keep the computer away from any magnetic substance, water, or static discharge. For example, do not put the computer on the floor or on a rug. Avoid eating and drinking near the keyboard and use a keyboard cover to protect against any spillage.

Guidelines for Protecting your Computer

Imagine that you have saved a confidential project report on your computer. You have been working for weeks to prepare this report and now you want to share the project report with your supervisor. You have a single copy of this report on your computer and it is important to secure the report from being tampered with or deleted. However, another employee uses your computer in your absence and deletes the project report from your computer. To avoid such situations, you can take measures to secure the data on your computer. The following table explains the actions that you can take to safeguard the operating environment and data on your computer.

Guideline	Description
Implement user identification	An effective way to minimize the risk to your operating environment and data is to keep unauthorized individuals from accessing your computer. One way to achieve this is by setting up accounts for authorized users of the computer, on the basis of which each user gets an

Guideline	Description
	appropriate level of access. For example, in Windows Vista, you can set up user accounts for each member of your family or other users. You can decide to give yourself more privileges, or in the case of a child's account, you can restrict the account's capabilities.
Set username and password	You can also increase security and limit unauthorized access to your computer by setting up a username and password. In most offices, each employee has a unique username and password. The employees must provide the correct username and password to access their computers. You can set up users and passwords in Windows Vista.
Keep password secure	Your password acts like a key to your computer. Anyone who knows your password can access your computer and tamper with data. You must keep your password secure. Be careful while typing your password to prevent anyone else from seeing it. Do not share your password with others. Do not write the password and leave it on your computer or desk. If you think that the password has been compromised, change it immediately, before anyone else is able to misuse it.
Lock computer	When you leave your computer on and unattended, someone can tamper with your computer software or data. You can prevent this by temporarily locking your computer while you are away. When a computer is locked, it immediately hides the content of the screen and does not allow any operation until the computer is unlocked with the correct username and password combination. The exact steps to lock your computer depend on the operating system you are using. For example, in Windows Vista, you can lock your computer by pressing CTRL+ALT+DEL, and then clicking the Lock this computer button. Note that this feature of locking the computers is not available in all operating systems.
Install and update protective software	You need to continuously guard your computer against threats such as viruses and spyware. At times, the damage due to a virus is considerable and you may lose important data or need to reinstall the operating system and other software. You can protect your computer from viruses and spyware by installing antivirus and antispyware software. These protective software programs help you detect and

Guideline	Description
	remove viruses and spyware present in your computer. They also prevent new ones from infecting your computer. It is a good practice to install a firewall, which filters out the content that reaches your computer. Installing a firewall also protects against hackers by restricting access by other online users. As newer threats keep appearing, software companies regularly create updates that you can install on your computer. These updates make additions to the installed software or operating system in your computer to make it less vulnerable to security threats. Ensure that you regularly update the antivirus software so that it can detect the newest viruses. Windows Vista includes Windows Firewall to protect your computer against unauthorized access. In addition, Windows Defender is a built-in antispyware program that protects against pop-ups and other security threats.
Encrypt data	Converting your data to an unreadable form to protect it from unauthorized access is called encryption. An authorized user can reconvert the encrypted data into a readable and usable form. This is called decryption. Various software products today include a way to encrypt data. In Windows Vista, encryption is transparent to the user who encrypts the file. That is, you do not have to manually decrypt the encrypted file before you can use it. You can open and change the file as you usually do.
Back up data	You can also help protect your files from loss or damage by making copies of important files and storing them on a different storage media, such as CDs, DVDs, or floppy disks. This process is known as backing up data. You should keep the backups in secure locations, so that you can use the backup data in case the original data is damaged or deleted.

Best Practices for Securing Online and Network Transactions

Connecting your computer to the Internet introduces it to a world of information and entertainment. However, it also leaves your computer vulnerable to many online threats. For example, it becomes easier for viruses to transfer from an infected computer to your computer. You can reduce the

risks to your computer from these online threats by using a combination of best practices such as creating strong passwords, encrypting data, and using antivirus software. The following table explains the various actions that you can take to secure online and network transactions.

Action	Description
Use strong passwords	A strong password is a complex password, which cannot be guessed easily. The password should consist of a combination of uppercase and lowercase letters, numbers, and special characters such as *ampersand* and *number* sign, and should not contain complete words or names. A strong password is your primary defense against security and privacy threats. Strong passwords must be created for: • Local access to standalone computers • Access to networks • Access to Web sites that have sensitive information, such as personal or financial details • Access to any valuable data • Personal data stored on your computer
Protect against hacking and spyware	While you are browsing the Internet, it is possible that a software program installed on your computer is transmitting your personal information to a hacker in another country. Such software programs are examples of spyware. These programs generally get installed on your computer without your knowledge and secretly transfers confidential data from your computer to the hackers. Sometimes, employers deliberately install spyware on the computers used by the employees to track the computing activities of the employees. Windows Vista includes a built-in antispyware program called Windows Defender, which helps prevent spyware from getting secretly installed on the computer. Make use of Internet service provider (ISP) support for online security. The support can be in the form of antivirus and anti-spyware software. Some ISPs even provide firewall protection, e-mail virus screening, and spam protection.

Action	Description
Clear browsing history periodically	The Web sites and Web pages that you visit while browsing the Internet are saved in your browser's *History*. Also, while you browse the Internet, a number of files are stored in the temporary memory of your computer. This temporary memory is known as *cache memory*. The files stored in the cache memory record information about the Web pages you visit. However, some of these temporary Internet files may contain your personal information, such as your username and password, which can be accessed by hackers. To prevent hackers from accessing your personal information, regularly delete the contents present in the browser history and in the cache memory. While visiting a Web site, you may notice that it displays your name. This is made possible through the use of cookies. *Cookies* are small files that are created on your computer by previously visited Web sites to identify and track your preferences. Their purpose is to provide a more personal experience while visiting a Web site. However, cookies can also be a threat to computer privacy because they contain your personal information. For example, the cookies might contain your credit card details that you have used while shopping online. For these reasons, it is a good practice to periodically delete cookies to prevent your personal information from being misused.
Avoid sharing personal information	Some Web sites require you to fill out forms containing personal information such as your name, gender, and age. In case of e-commerce sites, you might even need to share your bank account details or credit card number. But, remember that hackers can access and misuse this information. Some companies may also use this information to send you unwanted commercial e-mail messages. Therefore, before you share any personal information on a Web site, ensure that it is a secured Web site and there is a specific need to provide the information.

Action	Description
Perform online transactions only on secure sites	While shopping online, you usually need to provide sensitive information such as your bank account number or credit card details. Therefore, it is important to ensure that you carry out online transactions only on secure Web sites. A Web site is secure if its name has the prefix *https*. The prefix indicates that the Web site implements the *Secure Sockets Layer (SSL)* protocol. SSL is an Internet security protocol that ensures secure data communication by encrypting the information transmitted. The SSL protocol certifies that the Web site is genuine and ensures that the data you provide to the site is not misused. When you enter a secure Web site, most of the Web browsers display a message to confirm that you have entered a secure Web site. The locked padlock icon that appears in the Address bar helps you identify a secure Web site. You can also check the security certificate of a Web site before performing any online transaction on that site.
Configure security components by using Windows Security Center	Windows Security Center is a feature in Windows Vista, which provides you a convenient utility to check the status of essential security settings and track the antivirus software installed on your computer. You can open Security Center from Control Panel. The Security Center has four components: • *Firewall*. In Windows Vista, Windows Firewall is automatically activated. The firewall helps prevent malicious content, such as viruses and worms, from entering your computer. • *Automatic updating*. This feature checks for relevant security-related updates available on the Microsoft Update Web site. Enabling this feature ensures that your computer remains updated and protected against the newest security threats on the Internet. • *Malware protection*. Spyware and other potentially unwanted software can install itself on your computer without appropriately obtaining your consent. Windows Defender provides real-time protection against such software while you are connected to the Internet. • *Other security settings*. Other security settings include Internet settings and User Account Control settings.

Action	Description
	Using Internet options, you can set the security level to medium, medium-high, or high. Internet Explorer 7 has higher security levels than its previous versions. User Account Control prevents unauthorized changes to your computer by asking for the password before making changes.
Disable active content	*Active content* refers to small programs that get installed on your computer while you are browsing the Internet. Their basic function is to provide you with an interactive Internet experience through videos and toolbars. However, in some cases, these programs can be used to damage the data stored on your computer or install malicious software without your consent. By using your browser settings, you can disable active content to prevent the installation of such programs.

Measures for Securing E-mail and Instant Messaging

E-mail and Instant Messaging (IM) are widely used for business and personal communication. However, hackers, online predators, and the people who create worms and viruses use e-mail and IM for malicious purposes. For example, these people can send e-mail attachments containing harmful software. These people can also use e-mail to solicit sensitive information or to lure you into fake offers. It is therefore important for you to take certain measures to ensure e-mail and IM security.

To ensure e-mail security, avoid opening e-mail with attachments, do not respond to junk mail, do not respond to unsolicited commercial mail, and protect yourself from phishing. To ensure IM security, chat with known people only and do not open attachments received over IM.

- Be cautious when opening e-mail messages with attachments
- Do not respond to unsolicited commercial mail
- Protect yourself from phishing
- Limit chat activity to people whom you know
- Avoid opening instant messenger attachments

Measures to Protect your Privacy

With the growing popularity of computers and the Internet, there are multiple ways in which your privacy is compromised. You and your family members need

to prevent these threats to privacy. You can take the following simple measures to safeguard yourself and your family members against invasion of privacy.

Shield Your Identity

Avoid sharing your personal information with anyone, unless you know the person. This is the golden rule of protecting privacy. While exchanging e-mail messages or chatting through instant messenger, ensure that you do not reveal personal details about you or others known to you. Also, use strong passwords for access to your computer and e-mail connections.

Make Regular Backups of Your Computer and Important Data

It is a good practice to back up all types of the important and sensitive data on your computer. Important data might be documents, databases, or contact information. You can use various storage media such as compact disc or another hard disk to back up your data. If you regularly back up the data stored on your computer, you can recover the data in case the original data is damaged or deleted. Also, it is advisable to store the backup data in a secure place and restrict access to it by using passwords and encryption.

Check Current Security of Your System Regularly

Check the current security level of your computer regularly. Modern operating systems have built-in features that help you track the ability of your computer to safeguard against various threats to security and privacy. For example, Windows Security Center is a component in Windows Vista, which helps you to maintain firewall settings, set up schedules for software updates, and check the validity of the antivirus software installed on your computer.

Run Virus Scans Daily

Each day when you access the Internet, there is a chance that your computer is infected by viruses. Therefore, it is important that you run a virus scan on your computer everyday. You also need to keep the antivirus software on your computer up-to-date to protect your computer from new viruses.

Use Antispyware

Spyware programs can secretly enter your computer and transmit personal information about you and your family. Use antispyware software to keep a check upon these malicious programs, and keep the software up-to-date.

Perform Online Transactions on Secure Web Sites with Reputable Vendors

When you perform an online transaction, you need to provide your personal information, such as your credit card details or bank account details, to the Web site. This information, if disclosed to others, can be misused for financial fraud. Therefore, it is important that you carry out online transactions only on secure Web sites.

Report Abuse to the ISP

Most reputable ISPs have a set of terms and conditions that does not allow its users to follow any unethical or illegal practices. You should report to the ISP whenever someone attempts to invade your online privacy by sending you spam or attempts to hack your computer. This allows the ISP to take action against such individuals.

Filter E-mail Messages from Unknown/Anonymous Senders

You may receive a number of e-mail messages from individuals unknown to you. Such e-mail messages, referred to as spam or junk mail, can often be carriers of viruses or spyware. Hackers attempting to retrieve your personal information can also send you junk mail. Therefore, it is important to be careful while dealing with them. With e-mail software programs, you can create e-mail filters that help you block the junk mail. You must also ensure never to respond to junk mail because it can lead to an increase in unwanted messages and accidental sharing of personal information.

Encrypt Sensitive E-mail Messages, If Possible

Using encryption is a simple and effective way to ensure that your e-mail communication remains confidential. Encryption is the process of encoding the e-mail message in such a manner that it appears unreadable to everyone except the intended reader. Most e-mail software, such as Windows Mail, provides this e-mail encryption feature.

Online Predators

The Internet is a popular medium of communication for people all over the world. You can get acquainted with someone while actually knowing very little about the identity and intentions of the individual. This aspect of the Internet communication can be misused by people to lure young individuals into inappropriate or dangerous relationships. The people who engage in such activities are known as online predators.

Online predators generally target children, especially adolescents. It is during adolescence that children gradually move out of parental control and look for new relationships. Online predators attempt to establish a relationship of trust

and intimacy with these children. Online predators can also target adults with the objective of financial exploitation.

Online predators trap their victims by developing contact through chat rooms, instant messaging, e-mail, or discussion boards. Among the various tools, chat rooms are the ones most commonly used by these predators. Online predators often assume a fake identity as a member of a specific chat room. For example, if the chat room belongs only to children, an online predator can easily assume the identity of a child in order to participate in that chat room.

Guidelines for Protection from Online Predators

You and your family members can become the target of online predators. These predators may try to establish contact with you or your family members to exploit you financially. The predators may also try to involve you and your family members in inappropriate relationships. The following table lists some guidelines that you can follow to protect yourself and your family from online predators.

Guideline	Description
Know the signs of predator behavior	Online predators have some predictable behaviors, which can help you identify them easily. Online predators tend to get intimate very quickly. They often express a great deal of interest and affection toward their targets. You need to ensure that you and your family members can detect such behavior to avoid contact with potential online predators.
Be cautious of offers from strangers online	Online predators usually lure their targets with gifts or other tempting offers. You should be cautious about such gifts or offers. Also, educate your family members to be suspicious about gifts offered over the Internet.
Educate your family on online safety measures	Educate your family members on appropriate chat room behavior to avoid being targeted by online predators. Tell them to use nonsuggestive and neutral screen names. The screen names must not give away their actual name, age, gender, or contact information because this information can be misused. Some Web sites try to extract information under the pretext of feedback or surveys. Tell your family not to reveal any personal information to these Web sites without your permission. Also, ensure that your family do not give out any personal details, such as name, last name, address, and phone number, in chat rooms and bulletin boards. Your family members must not share

Guideline	Description
	their username and password with anyone, including friends.
Guide children when they visit Web sites	As parents, restrict young children from visiting Web sites that are inappropriate for them, or those Web sites that bring them in contact with potential online predators. It is recommended that parents guide their young children when the children visit any Web site. As a parent, instruct your children to leave a Web site if it makes them uncomfortable or if the site contains any unpleasant content. Also, educate your children to leave a Web site that asks for excessive personal information.
Know the sites visited by children	It is important for parents to regularly check the type of Web sites their children visit. You can track the previously visited Web sites by viewing the browser history or by using software that help you track the online activity of a computer.
Block access to inappropriate Web sites	You can enable your browser's Content Advisor feature to control the type of Web sites that your family members can visit while browsing the Internet. By using this feature, you can restrict children from visiting Web sites that contain adult content. You can also install certain software programs that help you block specific Web sites.
Monitor chat activities	Specialized software can monitor chat activities and flag inappropriate information exchange on your computer. You can install these software to track the chat activities of your children.

ASSESSMENT

A. Tick the right option from the choices given below the statement

Question 1
Which one of the following statements best describes computer privacy?
Select the one best answer.
a) Securing a computer from fires and earthquakes.

b) Protecting a computer from a power surge.
c) Preventing your friend from viewing your computer data without your permission.
d) Preventing important computer files from getting accidentally deleted.

Question 2
Which of the following security measures can you adopt to help protect your computer and its data against natural threats?
Select all answers that apply.
a) Surge protection.
b) Antivirus software.
c) Firewall.
d) Humidity control.

Question 3
One of the most effective ways to protect the software and data in your computer is to restrict the use of your computer to a defined set of individuals. Which of the following methods can you use for this purpose?
Select all answers that apply.
a) Update your operating system.
b) Set up user accounts.
c) Install antivirus software.
d) Keep passwords secure.

Question 4
Various types of files are created on your computer while using the Internet. Some of these might present a threat to security, but are actually present for the benefit of the user. Which of the following are examples of such files?
Select all answers that apply.
a) Cookie.
b) Virus.
c) Active Content files.
d) Worm.

Question 5
Which of the following methods will you use to secure your e-mail and IM transactions?
Select all answers that apply.
a) Delete e-mail messages from unknown senders without opening them.
b) Forward unsolicited e-mail messages to a friend for advice.
c) Reply with personal information to an e-mail message if the sender is a bank employee.
d) Avoid opening attachments received in instant messages.

B. State whether the statement is True or False

Each pair of statements contains a true statement and a false statement. For each pair of statements, indicate which statement is true by placing a mark in the True column to the right.

	Statement	True	False
1.	Replying to junk mail CAN cause you to reveal personal information.		
2.	Replying to junk mail CANNOT cause you to reveal personal information.		
3.	Online predators GET intimate very quickly.		
4.	Online predators DO NOT GET intimate very quickly.		
5.	SPYWARE software helps you keep a check on malicious programs.		
6.	ANTISPYWARE software helps you keep a check on malicious programs.		
7.	It is POSSIBLE to monitor chat activity.		
8.	It is NOT POSSIBLE to monitor chat activity.		
9.	Encryption COMPRESSES the e-mail message so that it appears unreadable.		
10.	Encryption ENCODES the e-mail message so that it appears unreadable.		
11.	Online predators DO NOT TARGET children.		
12.	Online predators TARGET children.		
13.	Children SHOULD be allowed to visit Web sites alone.		

14.	Children SHOULD NOT be allowed to visit Web sites alone.		
15.	Online predators DO NOT LURE their targets with gifts.		
16.	Online predators LURE their targets with gifts.		
17.	The screen name used for chatting SHOULD NOT be your real name.		
18.	The screen name used for chatting SHOULD be your real name.		

C. Sort the measures for protection against various types of threats into their associated categories by writing the statement number in its corresponding option box.

	Statement
1	Surge protection and line conditioning
2	Data encryption
3	Insulation
4	Stable shelf
5	Sufficient distance from magnetic substances
6	Antivirus
7	Air conditioners and humidity controllers
8	Spyware protection
9	Keyboard cover
10	Firewall

Option 1	Option 2	Option 3
Natural Threats	Malicious Human Threats	Human Errors

GLOSSARY OF TERMS

1. Terms Related To Computer

Applications
Applications, also called programs, use the platform to perform tasks.

Bit
A bit is the smallest unit of information that a computer handles. A single bit can hold only one of two values, 0 or 1.

Byte
A byte is a combination of eight bits arranged in sequence.

Camcorder
A digital video camera used to record video.

Compact disc (CD)
A storage device used to store data in a digital format.

Central Processing Unit (CPU)
The central processing unit (CPU) is the primary hardware device that interprets and runs the commands you give to the computer.

Commands
A command is an instruction, which you give to a computer that causes an action to be carried out. Commands are either typed by using a keyboard or are chosen from a menu.

Communication Channel
A communication channel is a path or a link that connects computers or peripheral devices, such as printers and disk drives, to transfer information.

CPU speed
The CPU speed is the rate at which the CPU can perform a task, such as moving data to and from RAM, or performing a numerical calculation.

Data
Data is the plural for the Latin word datum, meaning an item of information.

Database Programs

Database programs are used to store and manage data in an organized way. You can also use these programs to sort or search for information stored in a database.

Desktop

The desktop is an on-screen work area that uses a combination of menus and icons.

Desktop Computers

Desktop computers are made up of individual components such as a monitor, a keyboard, a system unit, and a printer.

Digital camera

A camera that stores images digitally on a memory device, such as a flash memory card or a mini hard disk.

Digital versatile disc (DVD)

A storage device used to store data in a digital format.

Folder

A folder is a container for programs and files in GUI interfaces.

Gigabyte

One gigabyte (GB) is equal to 1,024 MB, which is approximately equal to one billion bytes.

Graphical User Interface (GUI)

A graphical user interface (GUI) displays images and pictures that allow a computer user to interact with a computer easily.

Graphics Programs

Graphics programs are used to create and edit drawings. You can also use these programs to enhance photographs.

Hardware

Hardware refers to all the physical components of a computer.

Home office

An arrangement that allows people to work from home.

Icon
An icon is a small image displayed on the screen to represent an object.

Input Devices
An input device is used to provide information to a computer. A keyboard is an example of an input device.

Intranet
A special type of network used to communicate and share information within an organization.

Kilobyte
One kilobyte (KB) is equal to 1,024 bytes.

Laptop Computers
Laptop computers are lightweight and portable personal computers. Laptop computers are also called notebook computers.

Local Area Network (LAN)
A LAN connects devices within a limited area, such as a home or a small group of offices.

Megabyte
One megabyte (MB) is equal to 1,024 KB.

Menu
A menu is a list of options from which a user can select an option to perform a desired action, such as choosing a command or applying a particular format to part of a document. Many programs, especially those that offer a graphical interface, use menus as a means to provide the user with an easy-to-use alternative to memorizing program commands and their appropriate usage.

Mobile phone
A wireless device that has the capabilities of a traditional wired phone and allows you to make a call from almost any location.

MPEG Audio Layer 3 (MP3)
A format developed by Motion Picture Expert Group to allow compression of audio and video for digital distribution.

Network

A network is a group of computers that are connected to share resources and exchange information.

Network Drives

A network drive is a disk drive that is shared with other computers on a network.

Online

When a computer is connected to the Internet, it is said to be online.

Operating System

The operating system controls the computer's hardware and provides services and access to the hardware to programs. It also manages the computer's operations and tasks, such as logging on, logging off, and shutting down.

Platform

The hardware and the operating system together are referred to as a platform.

Personal digital assistant (PDA)

A handheld computer that is used as a personal organizer. A traditional PDA includes features such as an address book, task list, and a calculator.

Pixels

Refers to small units that make up a picture. The higher the number of pixels, the better the quality of the picture.

Presentation Programs

Presentation programs are used to present information in the form of slides.

Processing Devices

Processing devices are used by computer users to process the input data and generate the desired output.

Programs

A program is a sequence of instructions that can be executed by a computer. A program is also known as software.

Publishing Programs

Publishing programs are used to combine text and graphics to create documents such as brochures, greeting cards, annual reports, books, or magazines.

Resolution

Refers to the clarity and sharpness of a picture.

Server

The server is the main computer on a network that provides services to other computers on the network. A server decides which computers are allowed to access the hardware and software on the network.

Setup Wizard

Setup wizards are provided by Windows Vista. They guide the user through each step of a particular task, such installing hardware or software.

Software

Software is a sequence of instructions that a computer can execute. It is also referred to as programs.

Spreadsheet Programs

Spreadsheet programs are used to create budgets, manage accounts, perform mathematical calculations, and convert numerical data into charts and graphs.

Storage Devices

Storage devices are used to store data. A hard disk is an example of a storage device.

System Unit

A system unit refers to the box that holds the processor, motherboard, disk drives, power supply, and the expansion bus.

Tablet Computer

Tablet computers are computers that allow you to write directly on the screen by using a tablet pen.

Taskbar

The taskbar is a rectangular bar that is usually located at the bottom of the screen. You can use the taskbar to select a program running on your computer.

Terabyte

One terabyte is equal to 1,024 GB, approximately equal to trillion bytes.

Wallpaper

Wallpaper is a pattern or picture on the screen background that you can choose.

Wide Area Network (WAN)

A WAN is a network that connects devices in geographically separated areas.

Window

In Windows Vista, a window is a rectangular area on the monitor that displays a program. Each program has its own window.

Word-processing Programs

Word-processing programs are used to create and modify text-based documents.

Workstation

A workstation refers to a computer connected to a network. You use a workstation to access the hardware and software on a network.

2. Terms Related to Internet

Access point

An access point is a wireless connection device. It is used to connect a wireless computing device to a wired network.

Add-ons

Add-ons are programs that help you view files, such as animation, audio, or video, which are included in Web pages.

Back Up

To make a duplicate copy of a program, a disk, or data. The duplicate copy is called a backup.

Cache Memory

Temporary memory on your computer that is sometimes used to store local copies of files opened when you browse the Internet.

Chat Program

Chat programs allow you to send and receive messages instantly. You can use a chat program to communicate with several people at the same time.

Computer Privacy

Keeping a user's data, including personal files and e-mail messages, such that the data is not accessible by anyone without appropriate permission.

Computer Security

The protection of a computer system and its data from accidental or intentional loss and tampering.

Cookie

A small file on a computer that is created when a user visits a Web site. A Web site uses cookies to identify users who visit the site, and also track the preferences of the users.

Copyright

A method of protecting the rights of an originator of a creative work, such as text, piece of music, painting, or computer program, through law.

E-commerce

E-commerce refers to the business transactions made over the Internet, such as buying and selling items online.

Electronic mail (e-mail)

The exchange of text messages and computer files over the Internet. An electronic mail (e-mail) is the electronic form of the traditional postal mail. E-mail allows you to exchange messages and files over a network.

Firewall

A filter that blocks unreliable information from the Internet before it reaches your computer or a private network. It provides additional protection against threats such as hackers and viruses. A firewall also helps to ensure computer privacy by restricting external access by any unauthorized user.

Hacker

A person who uses computer expertise to gain unauthorized access to a computer, and then misuses or tampers the programs and data stored on the computer.

Hyperlinks

An element in an electronic document that links to another place in the same document or to a different document. Generally, you clickon the hyperlink to follow the link. Hyperlinks are the most necessary element in allhypertextsystems, including theWorld Wide Web.

Internet

The Internet is a worldwide collection of public networks that are linked to each other for information exchange.

Intellectual Property

Any information available on the Internet is an intellectual property, which is legally owned by the person who created it. The owner of an intellectual property has the exclusive rights to control the use of this information.

Internet Service Provider (ISP)

An ISP is a company that provides Internet connectivity to individuals, businesses, and organizations.

IP address

An Internet Protocol (IP) address is a numeric address that specifies the exact location of a computer on the Web.

ISP

An Internet Service Provider (ISP) is a company that provides Internet connectivity to individuals, businesses, and organizations.

Modem

A modem is a connection device that allows you to connect your computer to the Internet. It converts digital information into analog information and transmits it over a phone line.

Network

A network is a group of computers that are connected to share resources and exchange information.

Online

When a computer is connected to the Internet, it is said to be online.

Online communities

Online communities are formed by groups of computer users who have common interests and purpose to communicate with each other over the Internet.

Online Predator

An individual who develops contact with Internet users, through chat rooms, online forums, or e-mail, to exploit them financially or involve them in dangerous relationships.

Password

A unique string of characters that a user types in as an identification code. It is a security measure used to restrict access to computer systems and sensitive files.

Phishing

The act of extracting personal information, such as passwords and credit card details, from computer users and then use the information for malicious purposes.

Plagiarism

The act of copying someone's work and using it as if it is your own work, without mentioning the source.

Portal

A portal is a Web site that offers information related to a specific topic in the form of a directory. A portal acts as a starting point to a number of resources on the Web.

Protocol

A protocol is a standard method of transferring data between different computers.

Search engine

A search engine is a program that allows you to search and retrieve information over the Internet.

Software Piracy

Unauthorized copying of copyrighted software without obtaining the license or permission of its copyright owner is software piracy.

Spam

An irrelevant and unsolicited e-mail message sent by an unknown sender. A spam is sent to distribute a message to many recipients at one time.

Spyware

A computer program that is installed on your computer without your knowledge. Spyware can secretly send out information about your Web browsing habits or other personal details to another computer through the network.

Username

The name by which a user is identified to a computer system or network. To access a computer protected by username and password, a user needs to enter the correct combination of username and password.

Universal serial bus (USB) cable

A cable that helps you connect digital devices to a computer without turning off the computer.

Virus

A computer program that is designed to cause malfunctioning of a computer or damage the data stored on the computer.

Worm

A computer program that propagates itself across computers, usually by creating copies of itself in each computer's memory. A worm might duplicate itself in one computer so often that it causes the computer to crash.

The Web

The Web, also known as the World Wide Web (WWW), is a collection of information that is accessible on the Internet. This information is arranged logically and stored on computers known as Web servers.

Web address

A Web address specifies the protocol to be used for transferring data between different computers and the exact location of the Web site. A Web address is also known as the Uniform Resource Locator (URL).

Web browser

A Web browser is a program that enables you to view and interact with various resources on the Web.

Web page

A Web page is a formatted text document on the Web.

Web site

A Web site is a collection of one or more Web pages that are linked together and made available through a Web server.