INFORMATION AND COMPUTER TECHNOLOGY

CLASS – X

CENTRAL BOARD OF SECONDARY EDUCATION

Information and Computer Technology Class X

Ist Edition: April 2014, CBSE India

Copy   : ......

Price   : ....

Paper used 80 gsm CBSE Watermark Maplitho Paper

भारत का संविधान

उद्देशिका

हम, भारत के लोग, भारत को एक सम्पूर्ण [1]प्रभुत्व-संपन्न समाजवादी पंथनिरपेक्ष लोकतंत्रात्मक गणराज्य बनाने के लिए, तथा उसके समस्त नागरिकों को:

सामाजिक, आर्थिक और राजनैतिक न्याय,

विचार, अभिव्यक्ति, विश्वास, धर्म

और उपासना की स्वतंत्रता,

प्रतिष्ठा और अवसर की समता

प्राप्त कराने के लिए

तथा उन सब में व्यक्ति की गरिमा

[2]और राष्ट्र की एकता और अखंडता

सुनिश्चित करने वाली बंधुता बढ़ाने के लिए

दृढ़संकल्प होकर अपनी इस संविधान सभा में आज तारीख 26 नवम्बर, 1949 ई॰ को एतद्द्वारा इस संविधान को अंगीकृत, अधिनियमित और आत्मार्पित करते हैं।

1. संविधान (बयालीसवां संशेधन) अधिनियम, 1976 की धारा 2 द्वारा (3.1.1977) से ''प्रभुत्व-संपन्न लोकतंत्रात्मक गणराज्य'' के स्थान पर प्रतिस्थापित।
2. संविधान (बयालीसवां संशेधन) अधिनियम, 1976 की धारा 2 द्वारा (3.1.1977) से ''राष्ट्र की एकता'' के स्थान पर प्रतिस्थापित।

भाग 4 क

मूल कर्त्तव्य

51 क. मूल कर्त्तव्य – भारत के प्रत्येक नागरिक का यह कर्त्तव्य होगा कि वह:

(क) संविधान का पालन करे और उसके आदर्शों, संस्थाओं, राष्ट्रध्वज और राष्ट्रगान का आदर करे;

(ख) स्वतंत्रता के लिए हमारे राष्ट्रीय आंदोलन को प्रेरित करने वाले उच्च आदर्शों को हृदय में संजोए रखे और उनका पालन करें;

(ग) भारत की प्रभुता, एकता और अखंडता की रक्षा करे और उसे अक्षुण्ण रखे;

(घ) देश की रक्षा करे और आह्वान किए जाने पर राष्ट्र की सेवा करे;

(ङ) भारत के सभी लोगों में समरसता और समान भ्रातृत्व की भावना का निर्माण करे जो धर्म, भाषा और प्रदेश या वर्ग पर आधारित सभी भेदभाव से परे हों, ऐसी प्रथाओं का त्याग करे जो स्त्रियों के सम्मान के विरुद हैं;

(च) हमारी सामाजिक संस्कृति की गौरवशाली परंपरा का महत्तव समझे और उसका परीक्षण करे;

(छ) प्राकृतिक पर्यावरण की जिसके अंतर्गत वन, झील, नदी, और वन्य जीव हैं, रक्षा करे और उसका संवर्धन करे तथा प्राणीमात्रा के प्रति दयाभाव रखे;

(ज) वैज्ञानिक दृष्टिकोण, मानववाद और ज्ञानार्जन तथा सुधार की भावना का विकास करे;

(झ) सार्वजनिक संपत्ति को सुरक्षित को रखे और हिंसा से दूर रहे;

(ज) व्यक्तिगत और सामूहिक गतिविधियों से सभी क्षेत्रों में उत्कर्ष की ओर बढ़ने का सतत प्रयास करे जिससे राष्ट्र निरंतर बढ़ते हुए प्रयत्न और उपलब्धि की नई ऊंचाइयों को छू ले;

[1](ट) यदि माता-पिता या संरक्षक है, छह वर्ष से चौदह वर्ष तक की आयु वाले अपने, यथास्थिति, बालक या प्रतिपाल्य के लिये शिक्षा के अवसर प्रदान करे।

1. संविधान (छयासीवां संशेधन) अधिनियम, 2000 द्वारा प्रतिस्थापित।

THE CONSTITUTION OF INDIA

PREAMBLE

WE THE PEOPLE OF INDIA, having solemnly resolved to constitute India into a [1]**SOVEREIGN SOCIALIST SECULAR DEMOCRATIC REPUBLIC** and to secure to all its citizens:

> **JUSTICE**, social, economic and political;
>
> **LIBERTY** of thought, expression, belief, faith and worship;
>
> **EQUALITY** of status and of opportunity; and to promote among them all
>
> **FRATERNITY** assuring the dignity of the individual and the[2] unity and integrity of the Nation;

IN OUR CONSTITUENT ASSEMBLY this twenty-sixth day of November, 1949, to **HEREBY ADOPT, ENACT AND GIVE TO OURSELVES THIS CONSTITUTION**.

1. Subs, by the Constitution (Forty-Second Amendment) Act. 1976, sec. 2, for "Sovereign Democratic Republic" (w.e.f.. 3.1.1977)

2. Subs, by the Constitution (Forty-Second Amendment) Act. 1976, sec. 2, for "Unity of the Nation" (w.e.f.. 3.1.1977)

Chapter IV A

FUNDAMENTAL DUTIES

ARTICLE 51A

Fundamental Duties: It shall be the duty of every citizen of India:

(a)   to abide by the Constitution and respect its ideals and institutions, the National Flag and the National Anthem;

(b)   to cherish and follow the noble ideals which inspired our national struggle for freedom;

(c)   to uphold and protect the sovereignty, unity and integrity of India;

(d)   to defend the country and render national service when called upon to do so;

(e)   to promote harmony and the spirit of common brotherhood amongst all the people of India transcending religious, linguistic and regional or sectional diversities; to renounce practices derogatory to the dignity of women;

(f)   to value and preserve the rich heritage of our composite culture;

(g)   to protect and improve the natural environment including forests, lake, rivers, wild life and to have compassion for living creatures;

(h)   to develop the scientific temper, humanism and the spirit of inquiry and reform;

(i)   to safeguard public property and to abjure violence;

(j)   to strive towards excellence in all spheres of individual and collective activity so that the nation constantly rises to higher levels of endeavour and achievement;

[1](k)   to provide opportunities for education to his/her child or, as the case may be, ward between age of 6 and 14 years.

1. Subs, by the Constitution (Eighty-Sixth Amendment) Act. 2002.

Foreword

In the 21st century, an ability to work with information and communication technologies is becoming as essential to education, life and workplace success as "reading, writing and arithmetic".

Information Communication Technology (ICT) has anextensivehorizon and includes all the technologies used for communication of information. These includedevices such as computers, internet and intranet, local and wide area networks (wired and wireless), voice mail, e-mail,audio visual systems, compact discs and video discs, broadcast receiving systems and telecommunication systems, media, printed media, virtual learning centers,instructional software, education television, satellite communication, cable TV, conventional and interactive radio used in teaching and learning.

In this century it has become mandatory that everyone must have a basic understanding of ICT and must learn to make productive use of it, in-order to be good students and employable workers.Hence it is necessary for teaching fraternity to make a conscious effort and devise curriculum to impart valuable knowledge and skills required for computing and communications devices i.e. software that operates them, applications that run on them and systems that are built with them.

Be it e-learning, blended learning or distant learning ICT has completely penetrated in school education and has brought a major transformation inteaching and learning process. It has become an integral and indispensable part of modern education system.

Recognizing the potential value of ICT in education, CBSE wants to ensure proper integration of ICT in schools and its use in pedagogy.

I am happy to release Information and communication Technology Book for Class – X. I would like to express my deep appreciation to the text book development team for their contribution. Appreciation is also due to Dr. Sadhana Parashar, Prof. and Director (Academics, Research, Training and Innovation) and Dr. KshipraVerma, Education Officer, CBSE in bringing out this publication.

It is hoped that all students and teachers will benefit by making best use of this publication. Their feedback will be highly appreciated for further improvement.

Vineet Joshi

Chairman

Acknowledgements

Content

Computer and its Components

Learning Objectives

By the end of this chapter, learner will be able to:

- List five computer applications which are used on the daily basis.
- Identify the different Input / Output devices.
- Describe the process of changing data from input to output (The IPO cycle).
- Explain the connectivity of devices through different kinds of ports.
- Differentiate between primary and secondary memory.
- State the purpose of different softwares.
- Tabulate the difference between different types of computers according to their size and processing capabilities.

INTRODUCTION

The computer is just a dead collection of plastic, silicon and metal until you press the 'Power' button. One little burst of electricity and it starts a string of events that puts life and power into the machine. But, even at this stage, the computer is unaware of the potential that it holds within itself. The computer, today, is a fundamental part of the information age.

Initially, computers were developed to perform mathematical operations, but later on, they were used to store the result of those operations, which with the time leads to the storage of other data or information.

As we are talking about data and information, now we will learn what data is and what is called as information?

Data is a collection of unprocessed facts, figures, and symbols.

e.g. Ram, age, 32, years, old

Information is a processed form of data. It is organized, meaningful, and useful.

e.g. Ram is 32 years old.   *Or*   Ram's age is 32 years.

A computer can be defined as an advanced electronic device that takes raw data as input from the user. It uses a set of instructions (called program) to process the data and give the result (output). The result can be used immediately or saved for future use.

1. HARDWARE AND SOFTWARE

In the process of converting data to information, a computer uses hardware and software. At the simplest level, all computers consist of these two basic components; the hardware and the software.

Hardware is any part of the computer that has a physical structure that can be seen and touched, though some may be so tiny that they are invisible to the naked eye.

Software is the instruction set that tells the computer how to perform tasks. Software is intangible i.e., that cannot be seen and touched, but its effect is clearly defined.

Input devices, output devices, a system unit, storage devices, and communication devices are all components of computer hardware.

1.1 Hardware components are classified into following categories

I. Input Devices

Input devices are the devices that allow a user to enter data and instructions into a computer such as keyboard, mouse, microphone, scanner, trackball, joystick, graphics tablet and digital camera.

The various functions of input devices are:

- ❖ They accept data and instructions from the user.
- ❖ They convert these instructions and data from human readable form to machine readable form.
- ❖ They supply the converted instructions and data to the CPU for further processing.

Mouse	Keyboard	Microphone	Scanner
Trackball	Joystick	Graphics Tablet	Digital Camera

II. Output Devices

Output devices are used to display the result or information to the user through monitor or VDUs, LCDs, printers, plotters and speakers.

Functions of output devices can be summed up as follows:

❖ It accepts the results produced by the computer which is in the coded form or machine readable form.

❖ It converts these coded results into human readable form.

❖ It supplies the converted results to the user.

Monitor or VDU	Printers	Plotters	Speaker

III. Storage devices

Storage devices are the devices which are used to retrieved from and saved to the data and information such as hard drives, memory sticks (pen drives), compact discs, DVDs and tape drives.

1. **Floppy disks** were developed in late 1960s. A floppy disk is made up of a circular thin plastic jacket coated with magnetic material. Its outer cover which is a hard plastic protects this plastic disk. It can hold 1.44 MB data. Nowadays, these disks are outdated.

2. **Hard Disk** is made up of a metal disk and coated with a metal oxide used to store bulk of data. These disks can store more information than floppy disks, up to tens or hundreds of gigabytes.

Base Casting

Spindle

Slider (and Head)

Actuator Arm

Actuator Axis

Actuator

SCSI Interface Connector

Jumper

Jumper Pins

Cover Mounting Holes (Cover not shown)

Case Mounting Holes

Ribbon Cable (attaches heads to Logic Board)

Platters

Power Connector
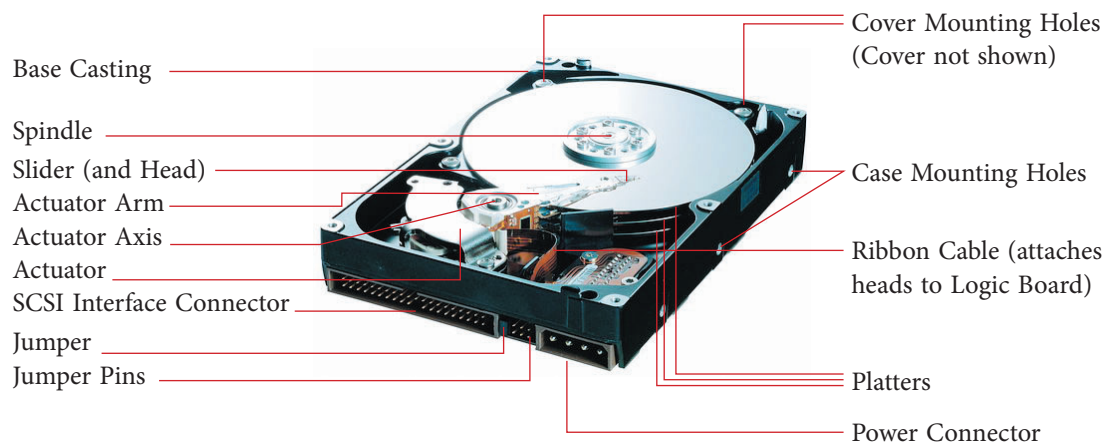
3. **Compact Disk – Read Only Memory** or CD-ROM is a read only or read-write disk. It can store large amount of data which can be distributed to large number of users. It is inexpensive and fast, but its access time is longer than that of magnetic disk.

   There are two types of CDs: CD-R and CD-RW.

   CD-R stands for Compact Disk – Recordable which can store 700 MB of data, but only once.

   CD-RW stands for Compact Disk – ReWriteable which can read, write and erase data as many times.

4. **DVD,** short for Digital Versatile Disc, is an optical storage disc similar to CD-ROM, as this is double sided with dual layer disc and can hold 4.7 GB of data.

5. **Blue-Ray Disks** are used to store more than 25 GB of data with a very high speed in less amount of time. A single layer of BD can store 13 hours of video where as double layer BD can store more than 20 hours of video.

Information and Computer Technology

6. **USB** stands for Universal Serial Bus. It is a portable memory device which is used to store data that needs to be transferred to the other device using USB port of the system.

7. **Memory Card** or flash memory card is a memory device. It is used as an easy, fast and reliable medium to store and transfer data from one device to the other. It is used in digital cameras, game consoles, mobile phones etc.

1.2. CPU (Central Processing Unit)

The **system unit** is the box that protects the internal electronic components from damage. It contains the central processing unit (CPU) and memory. The **CPU** interprets and carries out the basic instructions that operate the computer. **Memory** is where data and instructions are held.

The heart of the computer system is the processor unit. It consists of the **Arithmetic and Logic Unit (ALU)** which executes most computer operations (arithmetic and logical) and the **Control Unit** which acts as the nerve centre that sends control signal to all other units.

The control unit and ALU are usually many times faster than other devices connected to a computer system. This enables a single processor to control a number of external devices such as video terminals, magnetic tapes, disk memories, sensors, displays and mechanical controllers, since they are much slower than the processor.

1.3. Memory

There are two categories of memory, primary memory and secondary memory (or external memory).

Primary Memory is very fast as data and programs must be in the primary memory for execution. Random Access Memory (RAM) and Read Only Memory (ROM) are both primary memory.

Random Access Memory refers to memory that can be selected and used randomly. The information stored here disappears the very moment the machine is turned off. It is also referred to as volatile memory.

Read Only Memory is permanently built into the computer at the time of production. The information from this memory can only be read and it is not possible to write fresh

information into it. It permanently stores a set of instructions which instructs the computer how to work. After we switch on the computer, it uses instructions stored here to carry out a series of tasks automatically, before we can actually use the computer.

Secondary Memory or Auxiliary Memory: The content on the RAM is erased when electric power is switched off. So, it becomes necessary to store this data for future use, somewhere else. Since, primary storage is expensive too; we need a relatively cheaper form of backup storage which can store vast quantities of information. Thus, **Secondary Memory** devices become an important part of the computer.

1.3.1 Units of Memory

Memory, storage, files and folder sizes are all measured in bytes. Computers work in the base 2 system, also called binary number system, using only the digits 0 and 1. A single numeric value using either 0 or 1 is called a **bit**. A sequence of 'bits' make a **byte**. Usually eight bits make a byte (sometimes it could be sixteen, thirty two or even sixty four). Bits are grouped into bytes to increase the efficiency of the computer. To describe large capacities, the terms Kilobyte (KB), megabyte (MB), gigabyte (GB), terabyte (TB) and Petabyte (PB) are used.

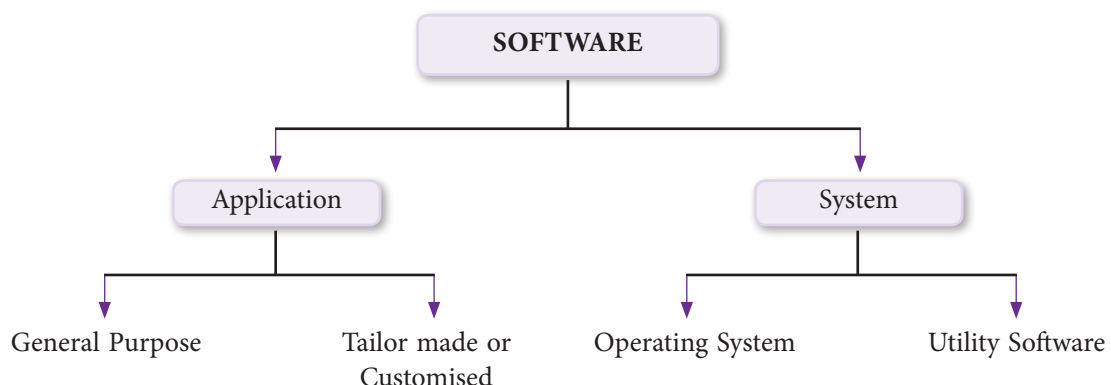|					
1 nibble	=	4 bits	1 byte	=	8 bits
1 KB	=	1024 bytes	1 MB	=	1024 KB
1 GB	=	1024 MB	1 TB	=	1024 GB
1 PB	=	1024 TB			

2. SOFTWARE

A computer system's hardware must have software to function. There are two primary types of softwares: Application software and Systems software.

Information and Computer Technology

2.1 Application software

It includes programs that direct the computer to carry out specific tasks. Often, multiple programs are integrated to create an application. For example: To write error free documents, Word Processors are used such as OpenOffice.org Writer, MS Word etc. For calculations, Spreadsheets are used such as OpenOffice.org Spreadsheet, Ms Excel etc. For making presentations, Presentation Softwares are used such as OpenOffice.org Impress, MS PowerPoint etc. For designing images, Desktop publishing softwares are used such as Gimp, Adobe Photoshop, Corel Draw, Picasa etc.

Whereas, at the same time, there are application softwares that are created to address specific needs of a group of specialized users and are, therefore, known as tailored or customized software to perform the required tasks in a specific manner. There are many packaged softwares available, addressing specific needs of small or big groups of users. You have a 'Tally' or a 'QuickBooks' to address a small businessman's accounting needs, but it can also serve a large multinational company.

2.2 System software

System software includes the programs that enable the computer's hardware to work with and run the application software. System software is the interface between user and the other programs and the computer's hardware.

2.2.1 There are two categories of system software: operating systems and system utilities.

The operating system, also referred to as the OS, is a computer program that manages all the other programs on your computer, stores files in an organized manner, and coordinates the use of the computer hardware such as the keyboard and mouse. The operating system frees one from having to interact directly with the hardware— other than clicking the mouse button or pressing keys on the keyboard— to complete tasks.

Utility software is a form of system software. It is used to analyze, configure, optimize or maintain the computer. This software performs all the housekeeping functions.

The utility softwares are categorised into the following categories:

1. **Text Editors** facilitate the creation of flawless text documents. WordPad and Notepad are the commonly used text editors.

2. **Compression Utilities** are used to compress the selected files. It helps to save the space on the disk and to transfer heavy files on a network.

3. **Disk Fragmentation** utility helps the user to arrange used and free space on the hard disk which in turn increases the processing speed of the disk.

4. **Scan Disk** utility checks for the problems on the hard disk such as bad sectors, viruses etc.

5. **Encryption or Decryption** utility is used to hide the data for secured transmission. At the source, data is encrypted and at the destination device, data is decrypted to reveal the original message. Decryption requires a secret key or password.

3. COMPUTERS CHARACTERISTICS

Speed: A computer computes problems much faster than a human being.

Accuracy: With the high computation speed, computers are able to produce accurate results. If the input is valid, only then correct output will be produced as computers follows GIGO i.e. Garbage In Garbage Out principle.

No IQ: It is programmed to carry out tasks and performs exactly as instructed, since it has no intelligence of its own.

Diligence: It can carry out tasks over and over again with exactly the same result every time, and it does so without tiring.

Data Storage: Using different kinds of storage devices, it can store huge quantities of data over long periods of time.

No Heuristics: As computer is a dumb machine, thus it never ever learns from its past experiences.

4. GENERATIONS OF COMPUTERS

The first electronic computer was designed and built at the University of Pennsylvania based on vacuum tube technology.

Computers have been divided into five generations according to the development of technologies used to fabricate the processors, memories and I/O units.

- ❖ **I Generation (1945 – 55)** Bulky, vacuum based and costly, used assembly language which was translated to machine level language for execution. These computers were used mainly for scientific calculations. *Examples:* ENIAC, EDSAC, EDVAC, UNIVAC.

❖ **II Generation (1955 – 65)** Smaller than vacuum based computers, but better performance-wise, used transistors instead of vacuum tubes. High level languages such as FORTRAN and COBOL were used. Punched cards continued to be used during this period. Computers, then, were used increasingly in business, industry and commercial organizations. *Examples:* IBM 7030, Honeywell 400.

❖ **III Generation (1965 – 75)** Small Scale Integration and Medium Scale Integration technology were implemented in CPU, I/O processors etc**.** Faster processors with magnetic core memories that were later replaced by RAM and ROM. This is when microprogramming was introduced as were operating system software. Database management, multi-user application, online systems like closed loop process control, airline reservation, interactive query systems, automatic industrial control, etc. emerged during this period. *Examples:* System 360 Mainframe from IBM, PDP-8 Mini Computer from Digital Equipment Corporation.

❖ **IV Generation (1975 – 89)** Microprocessors were introduced where complete processors and large section of main memory could be implemented in a single chip. CRT screen, laser & ink jet printers, scanners etc. were developed and so were LAN and WANS. C and UNIX were used. *Examples:* Intel's 8088,80286,80386,80486 .., Motorola's 68000, 68030, 68040, Apple II, CRAY I/2/X/MP etc.

❖ **V Generation: 1989 to present** Computers use extensive parallel processing, multiple pipelines, multiple processors etc. Portable notebook computers introduced. They also started using object oriented languages such as JAVA. Quantum mechanism and nanotechnology available here will radically change computers for all times. *Examples:* IBM notebooks, Pentium PCs-Pentium 1/2/3/4/Dual core/Quad core. SUN work stations, Origin 2000, PARAM 10000, IBM SP/2.

5. CATEGORIES OF COMPUTERS

Computers are classified into many categories depending upon their size, functioning and processing capabilities.

5.1 According to how it functions, computers can be classified into three categories

Analog: According to the Merriam Webster Dictionary, computers in which continuously variable physical quantities, such as electrical potential, fluid pressure, or mechanical motion, are used to represent (analogously) the quantities in the problem to be solved are called analog computers.

Digital: These computers deal with data in the form of numbers. They mainly operate by counting and performing arithmetic & logical operations on numeric data. Such computers are 'many problems' oriented.

Hybrid: Digital computers could not deal with very large numbers and so, a computer with characteristics of both analog and digital was created which was known as Hybrid computer.

5.2 According to the size, computers are classified into the following categories

Palmtop, better known as Personal Digital Assistants (PDAs), are small, lightweight and tightly integrated computers which usually do not have keyboards but rely on touch screen technology for user-input.

Laptops and Notebooks are portable computers. They include a battery that provides electrical backup for a period of time.

Personal computer (PC) is small in size and is designed for general use by a single person.

Desktop computer is typically set up in a permanent location and is a PC that is not portable. A desktop computer is a PC built for high performance and heavy workload. It helps in faster rendering of complex graphics, provides power for computer intensive applications and memory for large tasks. They are more reliable and have less downtime.

Micro-computers came into being with the invention of the micro-processor. They are not so expensive. The personal computer is a micro-computer.

Mini computers provide more power than micro computers in terms of speed and storage capacity. They are also less expensive. Their performance is also lower than that of mainframes.

Mainframe computers can also process data at very high speeds, but less than that of super computers. Normally, they are used in banking, airlines and railways etc. for their applications.

A supercomputer is the fastest type of computer. They are employed for specialized applications that require large amounts of mathematical calculations. A supercomputer channels all its power into executing a few programs at great speed, whereas a mainframe uses its power to execute many programs at the same time. These computers are used to solve problems involving quantum mechanical physics, weather forecasting, climate research, molecular modelling such as computing the structures and properties of chemical compounds, simulations, cryptanalysis, and many others.

6. APPLICATIONS OF COMPUTERS

Computers are used in almost all walks of life today. In medicine and health care, in education and business, in the manufacturing and service industries, for science and research; computers are the most important tool used by human beings.

7. INPUT → PROCESS → OUTPUT (IPO)

Input-Process-Output cycle or IPO refers to the stages that a set of instructions undergo to achieve the desired result. The computer is not a magic box where things get done automatically. The information, through various input devices, is fed into the system to be processed by the CPU. The information is then received as output in the *desired* format and presented in human readable form.
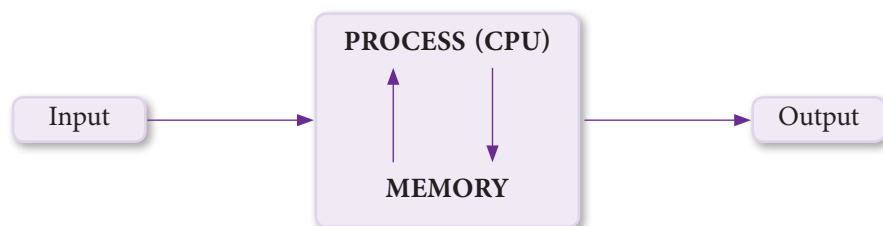
Diagram of a computer of IPO

e.g. To make a Cup of Tea:

Take Ingredients: Water, Sugar, Tea Leaves, Milk	Boil all the ingredients in a bowl & filter it	Tea is ready to serve
Input	Process	Output
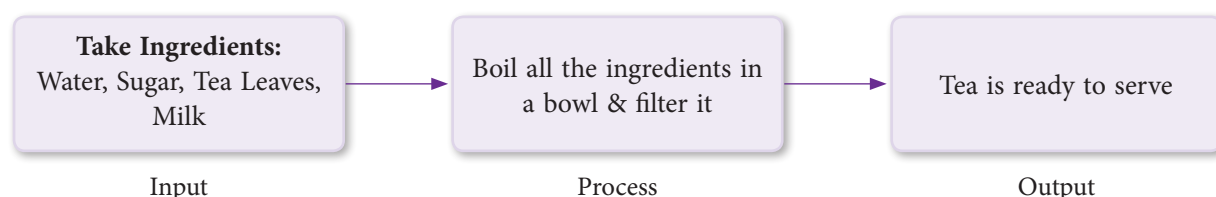
8. COMPUTER PORTS AND CABLES

8.1 PS/2 Ports

The PS/2 Ports are simple, 6-pin, low-speed serial connections commonly used to connect a keyboard and mouse. If you select to use a USB keyboard and mouse, you can disable the PS/2 ports in the system's CMOS setup and free the PS/2 system resources for other devices.

8.2 VGA Monitor Port

Video Graphics Array is used to connect the monitor to the computer. VGA offers images at higher resolutions. The standard VGA can produce as many as 256 colors at a time from a palette of 262,144 colors. The original VGA, though, had to be at a 320x400 resolution to display this amount of color. At the standard 640x480 resolution, it was only capable of 16 colors at a time. It uses color summing to translate color graphics into graphics using 64 different shades of grey. This, in effect, simulates color on a monochrome monitor. VGA requires a VGA monitor, or one capable of accepting the analog output of a VGA card.

8.3 Parallel Port

Printers and other devices are said to be either parallel or serial. Parallel means the device is capable of receiving more than one bit at a time (that is, it receives several bits in parallel). Most modern printers are parallel.

8.4 Ethernet Port

There is a built in Ethernet port on most computers to connect it to a wired network. Ethernet ports are also found on all popular broadband routers.

Information and Computer Technology

8.5 S-Video Port

Short for Super-Video, a technology for transmitting video signals over a cable by dividing the video information into two separate signals: one for color (chrominance), and the other for brightness (luminance). When sent to a television, this produces sharper images than composite video, where the video information is transmitted as a single signal over one wire. This is because televisions are designed to display separate Luminance (Y) and Chrominance (C) signals. (The terms Y/C video and S-Video are the same.)

Computer monitors, on the other hand, are designed for RGB signals. Most digital video devices, such as digital cameras and game machines, produce video in RGB format. Therefore, the images look best when output is on a computer monitor. When output is on a television, however, they look better in S-Video format than in composite format.

To use S-Video, the device sending the signals must support S-Video output and the device receiving the signals must have an S-Video input jack. Then, you need a special S-Video cable to connect the two devices.

8.6 USB Port

Universal Serial Bus, a protocol for transferring data to and from digital devices. Many digital cameras and memory card readers connect to the USB port on a computer. USB card readers are typically faster than cameras or readers that connect to the serial port, but slower than those that connect via FireWire which is an external bus standard that supports data transfer rates of 12 Mbps. A single USB port can be used to connect up to 127 peripheral devices, such as mouse, modems, and keyboards. USB also supports Plug-and-Play installation and hot plugging.

8.7 FireWire IEEE 1394 Port

FireWire is a cabling technology for transferring data to and from digital devices at high speeds. Some professional digital cameras and memory card readers connect to the computer over FireWire. FireWire card readers are typically faster than

those that connect via USB. Also known as IEEE 1394, FireWire was invented by Apple Computer, but is now commonly used with Windows-based PCs as well.

8.8 Mini Audio Jack

Audio connectors are used to affix cables to other audio equipment, providing electronic signal transference and grounding protection. Connectors may be plugs, jacks, or combinations, and may have an integral switch. Plug type audio connectors are a plug, or male, connector includes pins that can be inserted into a socket. Jack type audio connectors are a jack, or female, connector consists of sockets that are aligned to mesh with a pin-type connector. Combination plug and jack connectors are also available.

Summary

1. Data is a collection of unprocessed facts, figures and symbols.
2. Information is a data that is organised, meaningful and useful. It helps in decision making processes.
3. Hardware refers to the components that can be seen or touched. It comprises of input devices, output devices, system units, storage devices and a communication devices.
4. Software is a set of instructions that tells the computer to perform the task.
5. Primary memory helps in the fast execution of the program and it compromises of RAM and ROM.
6. Secondary memory is also known as Auxiliary Memory. It helps to store the data permanently using available storage devices such as Hard Disk, DVD, USB, etc.
7. Operating system is a computer program that manages all other programs stored on the computer.
8. IPO refers to input-process-output cycle which is followed by the computer system to achieve the desired result.
9. Most keyboards attach to the PC via PS/2 connector or USB port.
10. Pointing device such as mouse is connected to the PC via a serial port, PS/2 mouse port or USB port.
11. The process of decoding data that has been encrypted into secret format is called decryption.

Information and Computer Technology

EXERCISE

A. Multiple choice questions

1. The collection of unprocessed facts, figures and symbols is known as _____.
   - (a) Information
   - (b) Software
   - (c) Data and Information
   - (d) None of the above

2. _____ is the processed form of data which is organized meaningful and useful.
   - (a) Information
   - (b) Software
   - (c) Data
   - (d) None of the above

3. Hardware is any part of the computer that has a physical structure that can be seen and touched.
   - (a) True
   - (b) False
   - (c) Not sure
   - (d) None of the above

4. Components of computer hardware are _____.
   - (a) Input devices and output devices
   - (b) A system unit and storage devices
   - (c) Communication devices
   - (d) All of the above

5. _____ devices accept data and instructions from the user.
   - (a) Output
   - (b) Input
   - (c) Components of hardware
   - (d) Storage

6. Which disk is made up of a circular thin plastic jacket coated with magnetic material?
   - (a) Hard Disk
   - (b) Compact Disk
   - (c) DVD
   - (d) Floppy Disk

7. _____ disks are used to store more than 25 GB of data with a very high speed in less amount of time.
   - (a) Digital Versatile
   - (b) Compact
   - (c) Blue-Ray
   - (d) None of the above

8. Random Access Memory and Read Only Memory are examples of _____.
   - (a) Primary Memory
   - (b) Secondary Memory
   - (c) Auxiliary Memory
   - (d) Both primary and secondary memory

9. Which system uses only the digits 0 and 1?
   - (a) Bits
   - (b) Binary number system
   - (c) Secondary number system
   - (d) Nibbles

10. There are two primary types of softwares namely _____ and _____.
    - (a) General Purpose and tailor made
    - (b) Operating System and utility software
    - (c) Application Software and System Software
    - (d) None of the above

11. Gimp, Adobe Photoshop, Corel Draw, Picasa etc. are examples of _____ softwares.
Spreadsheets
(a) Word Processors   (b) Desktop publishing
(c) Presentation

12. Which generation computers used high level languages such as FORTRAN and COBOL and also used transistors instead of vacuum tubes?
(a) I Generation   (b) II Generation
(c) III Generation   (d) V Generation

13. IBM notebooks, Pentium PCs-Pentium 1/2/3/4/Dual core/Quad core, PARAM 10000 are examples of which generation of computers?
(a) I Generation   (b) IV Generation
(c) III Generation   (d) V Generation

14. According to the functioning of computers, they are divided into three categories namely _____, _____ and _____.
(a) Mainframe, Supercomputer and Mini computer
(b) Analog, Digital and Hybrid
(c) Palmtop, PC and Desktop
(d) Micro-computers, Digital and Hybrid

15. _____ is a cabling technology for transferring data to and from digital devices at high speeds.
(a) S-Video Port   (b) FireWire
(c) Ethernet Port   (d) PS/2 Port

16. _____ is used to connect the monitor to the computer which offers images at higher resolutions.
(a) USB Port   (b) Video Graphics Array
(c) Parallel Port   (d) None of the above

B. Answer the following questions:

1. Explain the following terms
(a) RAM   (b) Nibble
(c) Digital Computers   (d) Ethernet Port

2. Name any two utility softwares.

3. Why there is a need of Auxiliary Memory?

4. Differentiate the following
(a) Hardware vs Software
(b) RAM vs ROM
(c) Application Software vs System Software
(d) Digital vs Analog

5. Explain the functions of operating systems .

6. Explain in brief all the generations of computer .

7. Draw and explain IPO cycle .

8. Name any 4 application areas of computer .

9. How the computers are classified according to their processing capabilities .

10. Differentiate between Ethernet Port and USB .

C. Lab Session

1. State whether the following statements are true or false
   (a) The input device receives data in machine readable form
   (b) The Arithmetic and Logic Unit and the Central Processing Unit are part of the Control Unit
   (c) The plotter is an input device
   (d) RAM and the ROM storage is effected by the presence of electricity.

2. Justify the statement 'Computers are used only to collect data for science and research' as either true or false.

3. Tanya is working on a project in her school. For the same, she wants to store multimedia information in a portable storage device. Her information is subject to change as per her needs. Which storage device would you recommend? Why?

4. Prem Das is an editor and is currently working in a popular News House group. His job includes writing stories and articles for his newspaper. For writing his documents, he uses WordPad and Notepad, but is facing problems with the formatting of the document. He is also not able to check the grammatical errors. Which type of software should he be using and why?

5. Mr. Shivank works in a multinational company. He often has to travel in and out of the country in order to complete his tasks. He wants to buy a computer that is portable and can be easily carried overseas. Which kind of computer should he buy to store his important information and data?

6. Where do you store the set of instructions that gets the computer ready to receive instructions? Discuss the different tasks performed by the OS.

7. 'Without prior knowledge, a user cannot interact with the computer'. Do you agree with this statement? Justify your answer.

Advanced GIMP

Learning Objectives

After learning this chapter learner will be able to:-

- State the purpose of using Gimp software.
- List the features of Gimp.
- Use advance tools of Gimp for editing the images.
- Align different objects placed in a Layer.
- Create image by merging two or three images using Layers.
- View the images in different dimensions using Perspective tool.
- Apply different effects on image using Masking option.

INTRODUCTION

GIMP is called multi-platform photo manipulation tool. Since, GIMP is free software, it is covered by the General Public License [GPL]. The GPL provides the users with the freedom to access and alter the source code. In this chapter, you will learn advance tools of Gimp used to give different projections to the image to get the desired result.

1. REVIEW OF GIMP COVERED IN CLASS IX

GIMP is a GNU Image Manipulation Program. It is a powerful open source image editing tool that provides retouching, authoring and composition of photos. It consists of the features similar to the ones provided by the other available Photo Editing software. It is freely downloadable software, which can be downloaded from www.gimp.org site.

GNU/Linux distributions include GIMP as a standard application. The GIMP is also available for other operating systems such as Microsoft Windows™ or Apple's Mac OS X™ (Darwin).

1.1 Features of GIMP are:

❖ It can be used as a simple paint program

❖ It can be used as an expert quality photo retouching program.

❖ It can be used as an online batch processing system.

- ❖ It can be used as a mass production image producer to develop different models.
- ❖ The advanced scripting interface allows everything from the simplest task to the most complex image manipulation procedures to be easily scripted.
- ❖ It can convert and save files to many file formats such as gif, jpeg, tiff.etc
- ❖ It can load and save animations in a convenient frame as layer format.
- ❖ Virtually unlimited images can be opened at one time.
- ❖ GIMP works with numerous operating systems including Linux, Mac OS and Microsoft Windows.

2. TOOL BOX

The Basic tools were learnt in Class IX. Here we would learn some advanced tools.

2.1 Move Tool [M]

The Move Tool is used to move layers, selections, paths or guides of both the objects and the text.

2.2 Align Tool [Q]

The Align tool is useful to align the image layers with various image objects.

2.3 Scale Tool [Shift + T]

The Scale Tool is used to scale layers, selections or paths (the Object).

2.4 Shear Tool [Shift + S]

Shear tool is used to shift one selected part of an image, a layer, a selection or a path to a direction and the other part to the opposite direction. For instance, a horizontal shearing will shift the upper part to the right and the lower part to the left.

Toolbox

Left label	Right label
Rectangle Select tool	Oval select tool
Lasso too	Fuzzy select tool tool
Select by color	Scissors tool
Foreground select tool	Paths tool
Color picker tool	Zoom tool
Measure too	Move tool
Alignment too	Crop tool
Rotate tool	Scale tool
Shear tool	Rectangle Select tool
Flip tool	Cage transform
Text tool	Bucket fill tool
Blend tool	Pencil tool
Paintbrush tool	Eraser tool
Airbrush tool	Ink tool
Clone tool	Heal tool
Perspective tool	Blur/sharpen tool
Smudge tool	Dodge/Burn tool
Foreground color	Background color
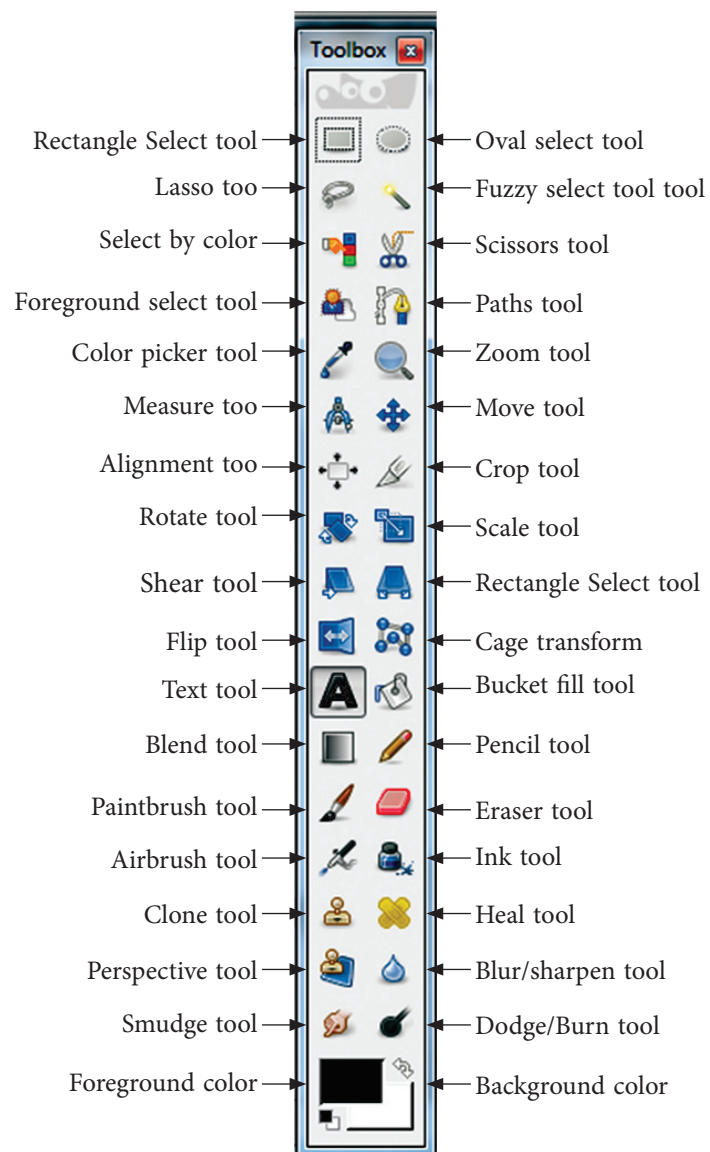
2.5 Perspective Tool

The Perspective Tool is used to view the images in different dimensions, of the active layer content.

2.6 Flip an Image

In a photo, if the face of a person is in the left side direction, this tools changes the direction of the face to the right side. It creates the mirror image of the photo.

2.7 Rotate an Image

This tool is used to rotate an image in different directions i.e. from horizontal to vertical and vice versa.

2.8 Blend Tool [L]

This tool is used to fill the selected area with a gradient blend of the foreground and background colours by default. These colours can be modified to change the colour of the gradient.

2.9 Blur/Sharpen Tool [Shift +U]

This tool is used to blur or sharpen the image using the current brush. Note that in "Sharpen" mode, the tool increases the contrast where the brush is applied.

2.10 Smudge Tool [S]

The Smudge tool uses the current brush to smudge colours on the active layer or the selection. It takes the colour and uses it to mix it with the next colour it meets.

2.11 Dodge/Burn Tool [Shift + D]

The Dodge tool uses the current brush to lighten the colors in your image.

The Burn tool uses the current brush to darken the colors in your image.

The mode will determine which types of pixels are affected.

2.12 Eraser Tool [Shift + E]

Eraser Tool works similar to a classic eraser. Simply select the tool and drag on the canvas to erase things.

2.13 Pencil tool [N]

The Pencil Tool is used as the same way that you would use a real pencil to draw. Simply select the tool and drag on the canvas to draw with the Pencil Tool.

2.14 Paintbrush tool [P]

The Paint Brush tool draws brush like strokes, as if you were painting. It lets you create special effects. Unlike the Pencil Tool, the brush tool draws both a fill and outline.

3. STEPS TO USE THE TOOLS STATED ABOVE USED IN GIMP ARE AS FOLLOWS

3.1 Move Tool [M]

The Move Tool is used to move layers, selections, paths or guides. It works also on texts.

You can access the Move Tool in different ways:

From the image menu bar Tools → Transform Tools → Move

By clicking the tool icon:

By using the keyboard shortcut M.

The Move tool is automatically activated when you create a guide.

To use this tool simply click on the canvas and drag the selection to a desired location.

> **Note:** Holding down the space bar changes the active tool to Move temporarily.

3.2 Move Tool Options

Normally, tool options are displayed in a window attached under the Toolbox as soon as you activate a tool. If they are not, you can access them from the image menu bar through

Windows → Dock able Windows → Tool Options which opens the option window of the selected tool.
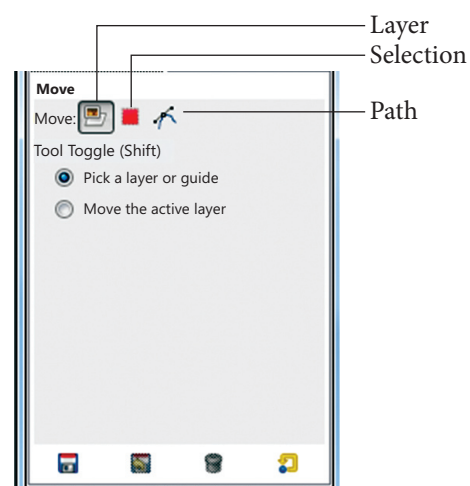
If Move is on "Layer" – Only the current Layer will be moved.

If Move is on "Selection" – The selection's outline will be moved.

If Move is on "Path" - The mouse pointer turns to a small hand when it goes over a visible path. Then you can move this path by click-and-dragging it (it will be the active path while moving.
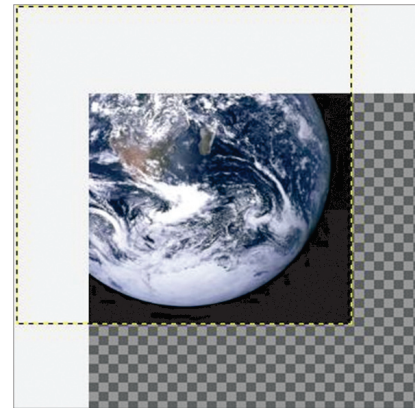
Selected part of the Image is moved

3.3 Align Tool

The Align tool is useful to align the image layers with various image objects. When this tool is selected, the mouse pointer turns to a small hand. By clicking on an element of a layer in the image, you choose the layer which will be moved (with Shift + click, you can choose several layers to be aligned), this focalised layer has small squares in corners. Various buttons in the dialog allow you to select how the layer will be moved. And you can select the image object (other layer, selection, path...) the selected layer will be aligned on. This object is called target.

You can activate the Align tool in several ways:

From the image-menu, through: Tools → Transform Tools → Align, By clicking on the tool icon: in the toolbox, By using the Q keyboard shortcut.

3.4 Align Tool Options

The options of Align Tool become active when a layer

is selected. When you click on one of these buttons, you align the selected layer with left edge, horizontal middle, right edge, top edge, vertical middle, or bottom of the target.

These options seem to differ from the "Related to " options only by the possibility to set an offset. This offset is the distance which will separate the selected layer(s) from

Information and Computer Technology
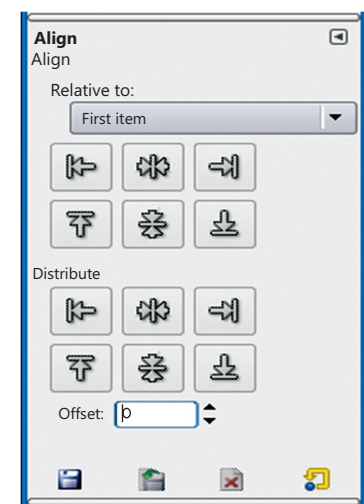
the target once the alignment is performed. Distribute add this offset to the left edges, horizontal centres, right edges, top edges, vertical centres, or bottoms of targets.
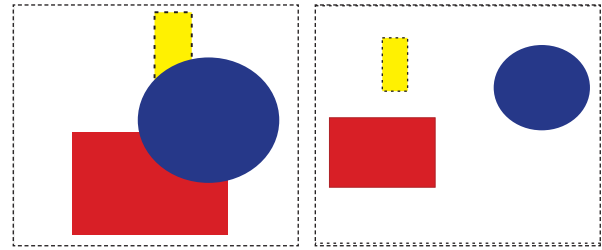
Images using different alignments

3.5 Scale Tool [Shift + T]

The Scale Image command enlarges or reduces the physical size of the image by changing the number of pixels it contains. It changes the size of the contents of the image and resizes the canvas accordingly.

You can access this command from the image menubar through Image → Scale Image.

Step 1: Click on Image → Scale Image
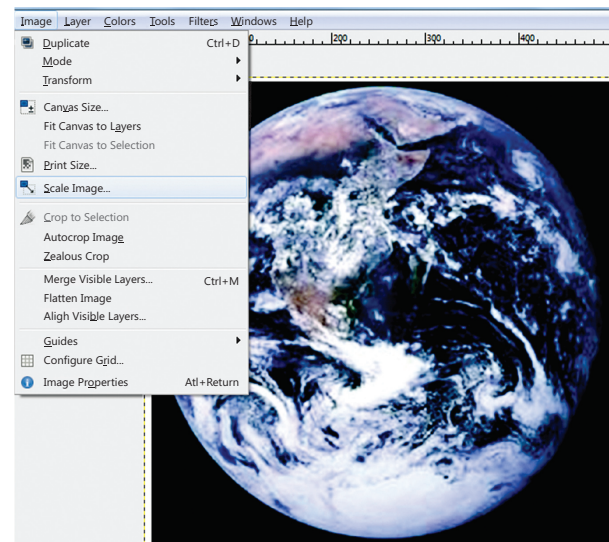
Step 2: Set the width and height and click on scale
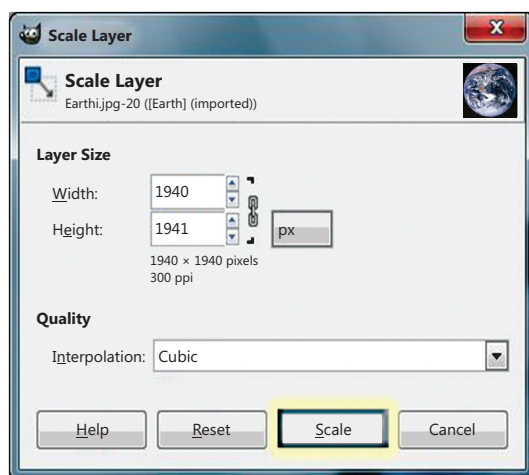
Image after scaling

3.6 Shear Tool [Shift + S]

Shear tool is used to shift one part of an image, a layer, a selection or a path to a direction and the other part to the opposite direction. For instance, a horizontal shearing will shift the upper part to the right and the lower part to the left.

You can use the shear tool in several ways:

In the image-menu through: Tools → Transform Tools → Shear,

By clicking the tool icon: in Toolbox,

Also by using the Shift+S key combination.

Before using Shear Tool	After using Shear Tool

3.7 Perspective Tool

The Perspective Tool is used to change the dimensions of the active layer content, of selection content or of a path.

You can use the Perspective tool in different ways:

By clicking the tool icon: in Toolbox, By using the Shift+P key combination.
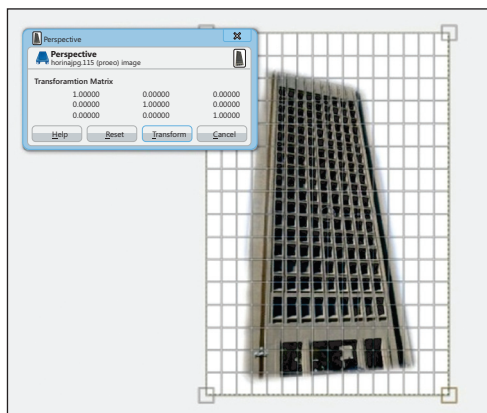
After using Perspective

3.8 Flip an Image

When you need the person in the photo looking in the other direction, or you need to top of the image to be the bottom like developing the Mirror image. Right click on the image and follow the menus Tools → Transform Tools → Flip, or use the button on the toolbox.
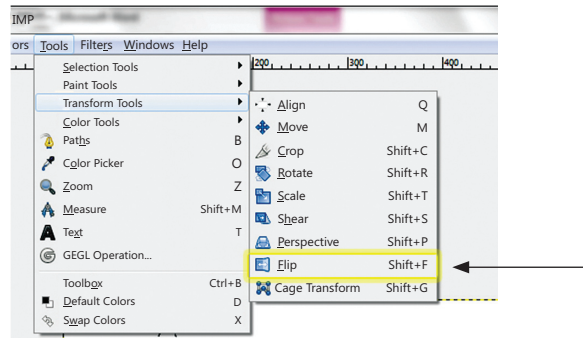
Image before flipping   Image after flipping

3.9 Rotate an image

This tool helps you to revolves the layer, paths and selected portion in the image.

It helps to spin an image in different directions.

Steps to rotate an image are as follows:

Right click on the image, and follow the menus Image → Transforms → Rotate → 90 degrees (or 270 depending on the orientation).
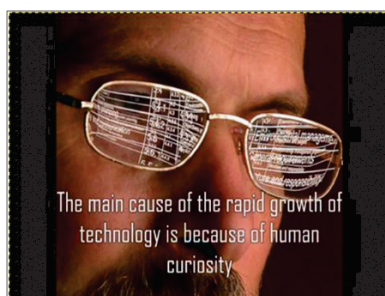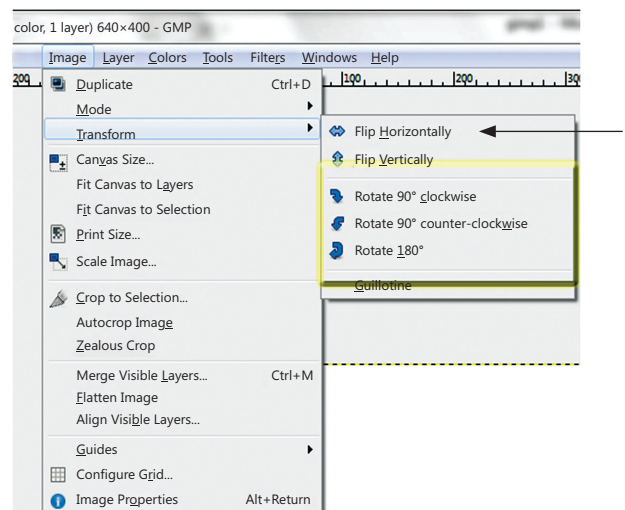
Image before Rotating   Image after Rotating
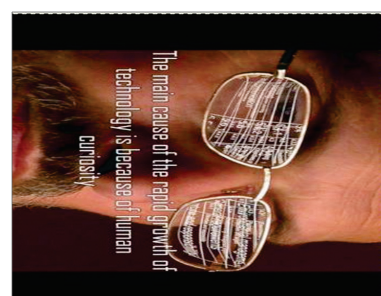
3.10 Blend Tool [L]

The Blend tool creates a new color by gradually mixing multiple colours. This tool fills the selected area with a gradient blend of the foreground and background colours. To make a blend, drag the cursor in the direction you want the gradient to go, and release the mouse button when you feel you have the right position and size of your blend. The softness of the blend depends on how far you drag the cursor. The shorter the drag distance, the sharper it will be.

There are different possibilities to activate the tool:

From the image-menu: Tools → Paint Tools → Blend.

By clicking the tool icon .

By clicking on the L keyboard shortcut.

Step 1: Select the foreground and background colour if you want to blend two colours otherwise it will take white & black colour as default.
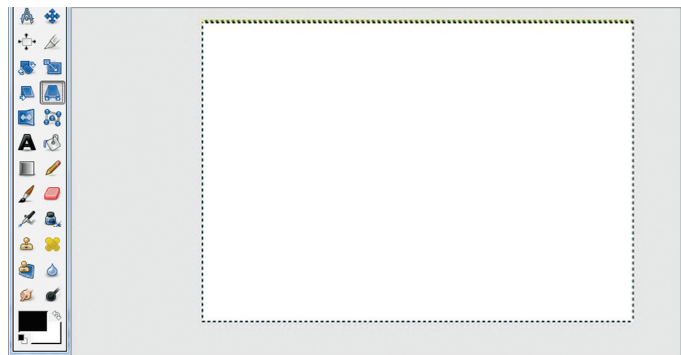
Step 2: Fill the colour using bucket tool

Step 3: Click on blend tool and select the area till where you want to have blend effect.

3.11 Blur/Sharpen Tool [Shift +U]

Blur mode causes each pixel affected by the brush to be blended with neighbouring pixels, thereby increasing the similarity of pixels inside the brushstroke area.

Sharpen mode causes each pixel to become more different from its neighbours, it increases contrast inside the brushstroke area.

There are different possibilities to activate the tool:

From the image-menu: Tools → Paint tools → Blur/Sharpen.

The Tool can also be selected by clicking the tool icon in the Toolbox.

By using the keyboard shortcut Shift+U.

Holding down the Ctrl key toggles between Blur and Sharpen modes; it reverses the setting shown in the Tool Options.

1. Set convolve type to switch between blur\ sharpen.

2. Set the rate

3. Click on the canvas area and keep on dragging the brush until the desired result is obtained.
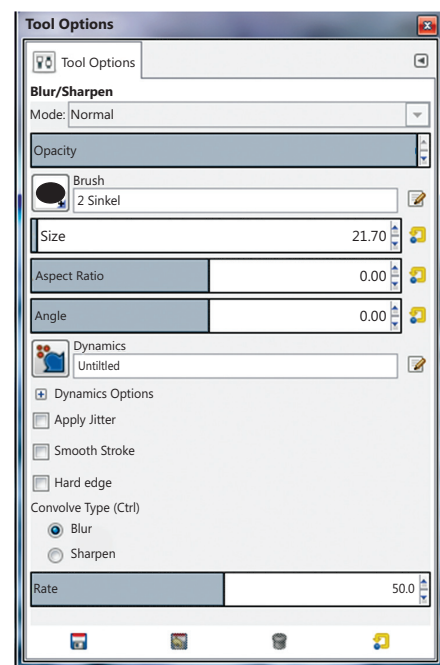
Blurring can be useful if some element of your image stands out too much, and you would like to soften it. If you want to blur a whole layer, or a large part of one, you will probably be better off using one of the Blur Filters.

Before Blurring the image   After Blurring the image

In "Sharpen" mode, the tool works by increasing the contrast where the brush is applied. Over-application of the tool will produce noise.

Before Sharpening the image

After Sharpening the image

3.12 Smudge Tool [S]

The Smudge tool uses the current brush to smudge colours on the active layer or a selection. It takes color in passing and uses it to mix it to the next colours it meets, on a distance you can set.

You can find the Smudge tool in various ways:

Through Tools → Paint Tools → Smudge. in the image menu, by clicking on the tool icon: in Toolbox, Or by pressing the S key on keyboard.

Using Ctrl with Shift, you can constrain the angle between two successive lines to vary by steps of 15°.

Before smudging the image

After smudging the image

3.13 Dodge/Burn Tool [Shift + D]

The Dodge tool uses the current brush to lighten the colours in your image.

The Burn tool uses the current brush to darken the colours in your image.

The mode will determine which types of pixels are affected.

There are different possibilities to activate the tool:

From the image-menu: Tools → Paint Tools → Dodge / Burn.

The Tool can also be called by clicking the tool icon or by using the Shift+D keyboard shortcut.

Before using the Dodge Tool

After using the Dodge Tool

Before using the Burn Tool

After using the Burn Tool

4. LAYERS

In GIMP terminology, each individual transparency is called a layer.Layer provides a variety of effects that change the appearance of the image. It allows you to work with one element of an image without disturbing the others. Layers are the transparent sheets one on top of the other. You can see through transparent areas of a layer to the layers below.

A new image in Gimp has a single layer. You can add a number of additional layers to add different elements in an image.

4.1 Adding a new layer:

To create a new layer follow the steps:

Layer menu ⟶ select new layer.

Enter the information for a new layer; transparency is good for overlapping layers or necessary for deleting portions of an image.

Give the layer a name which will help you to identify it later, such as while changing the background.

After all the information is set, click the OK button.
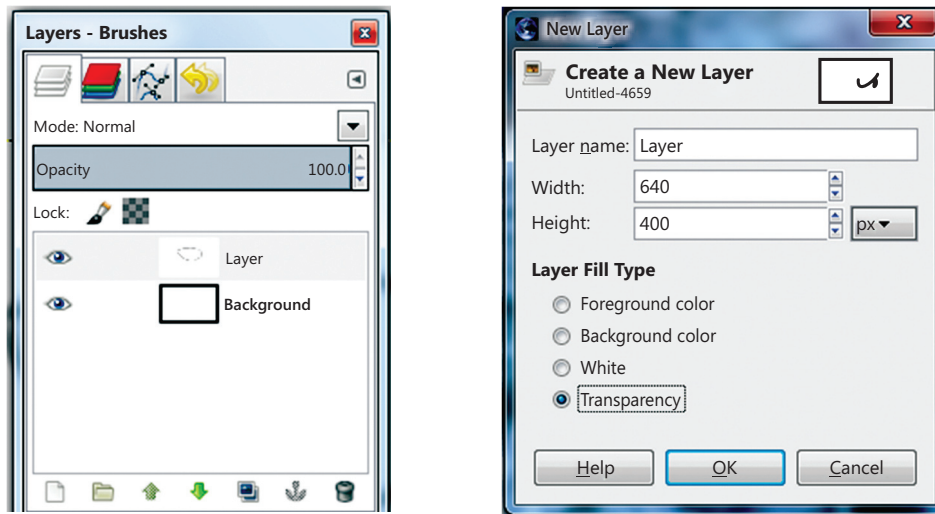
4.2 Renaming a Layer

To rename a layer after it is created, highlight the layer, right click it and select edit layer attributes, then type in a new name.

Information and Computer Technology
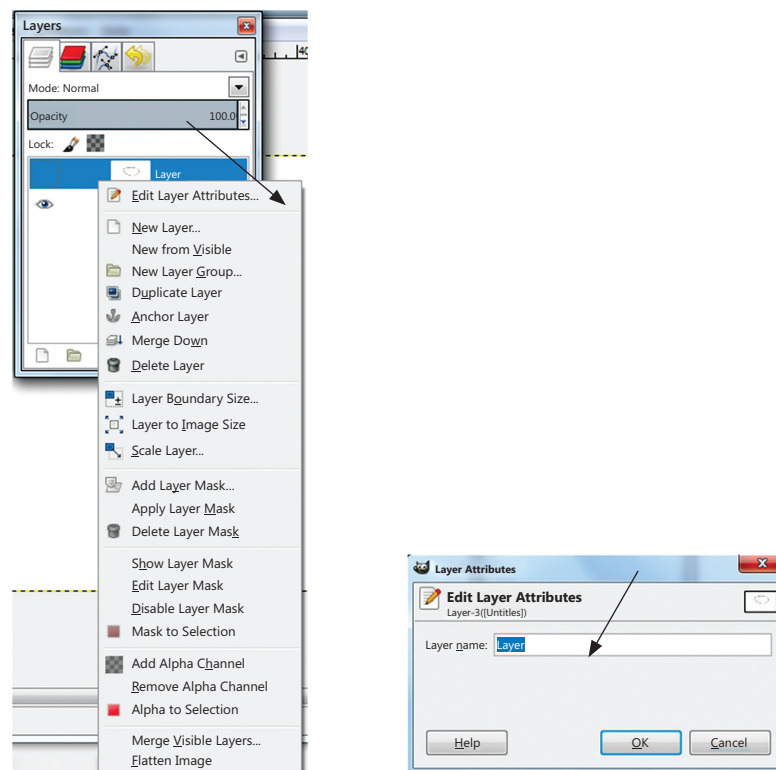
4.3 Deleting a Layer

To delete a layer, select the layer and press the bin like looking button at the bottom of layers tab.

4.4 Merging a Layer

To merge a layer,

Step 1: Open both the images as layers.
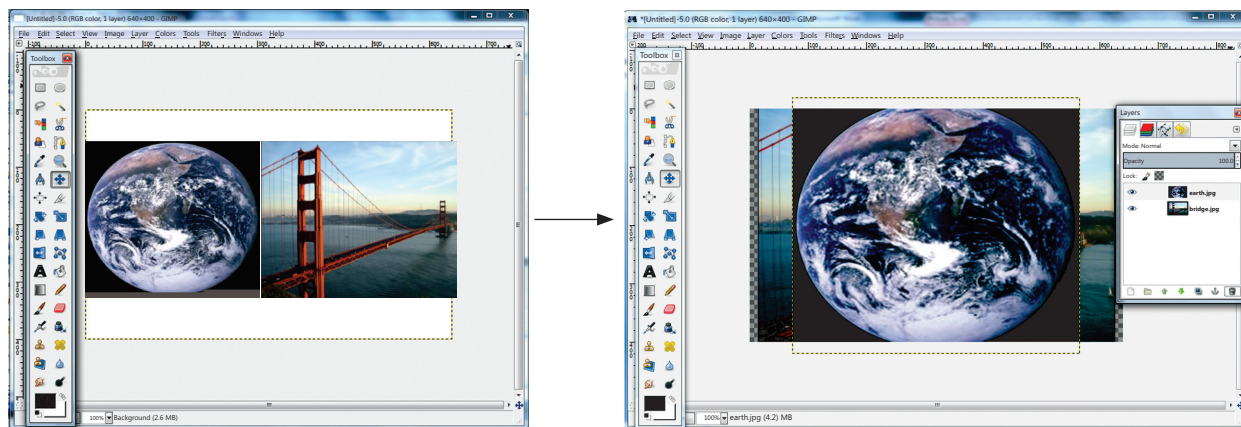
Step 2: Right-click the layer and select merge down or merge visible option available in the drop-down menu. The Merge down option merges the selected layer with the layer right below it, whereas the Merge visible option merges all the visible layers.
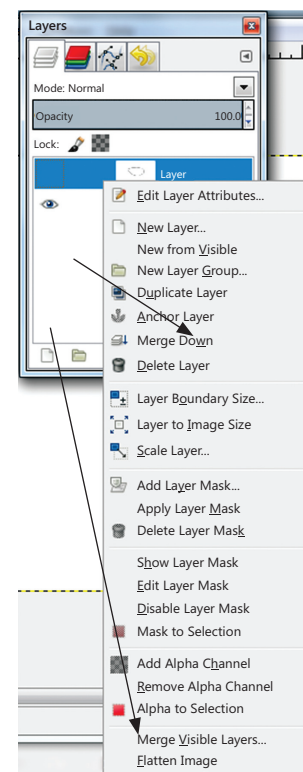
Step 3: Resultant image, after merging the two layers.
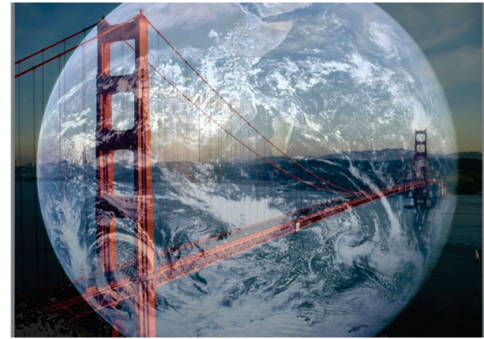
4.5 Scaling a layer

The Scale Layer command resizes the layer and its contents. The image loses some of its quality by being scaled. The command displays a dialog where you can set parameters concerning the size of the layer and the image quality.

You can access this command from the image menubar through Layer → Scale Layer.
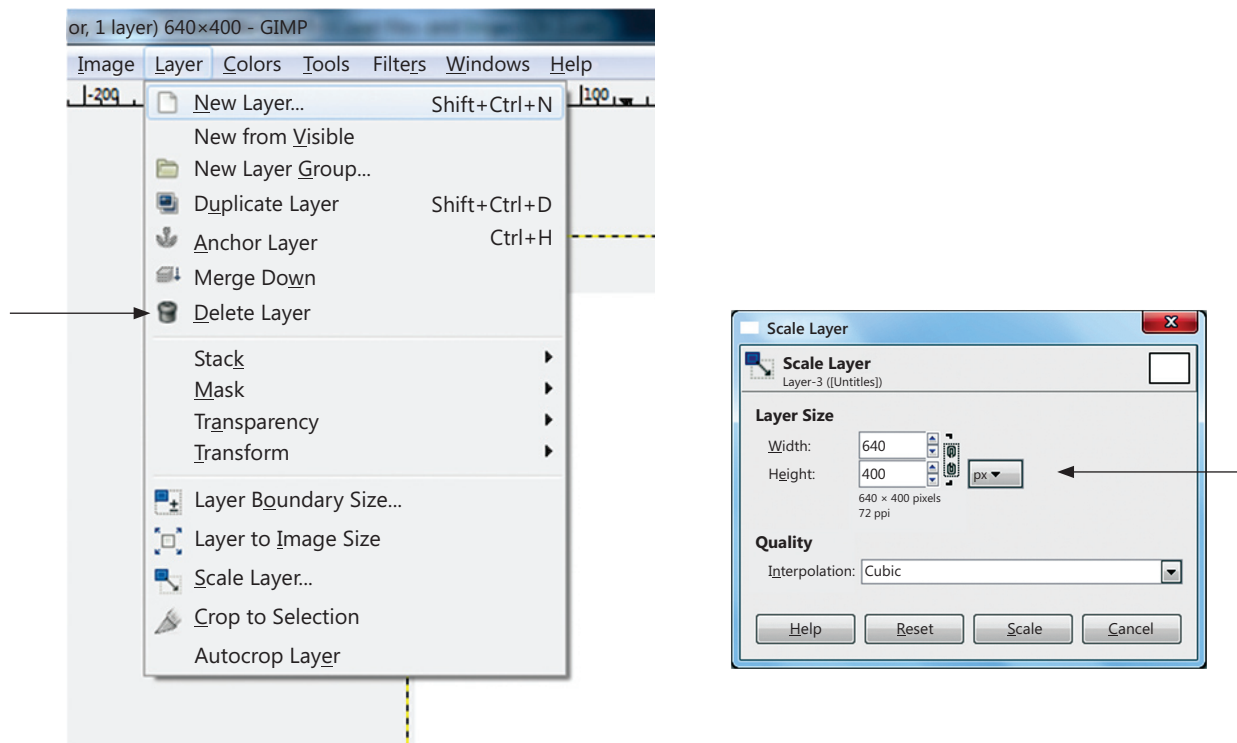
4.6 Duplicating a Layer

The Duplicate Layer command adds a new layer to the image which is identical copy of the active layer. The name of the new layer is the same as the name of the original layer, but with " copy" appended to it.

Information and Computer Technology

You can create a duplicate layer by clicking image menu→ Layer → Duplicate Layer, or from the local pop-up menu that you get by right-clicking on the Layer Dialog.
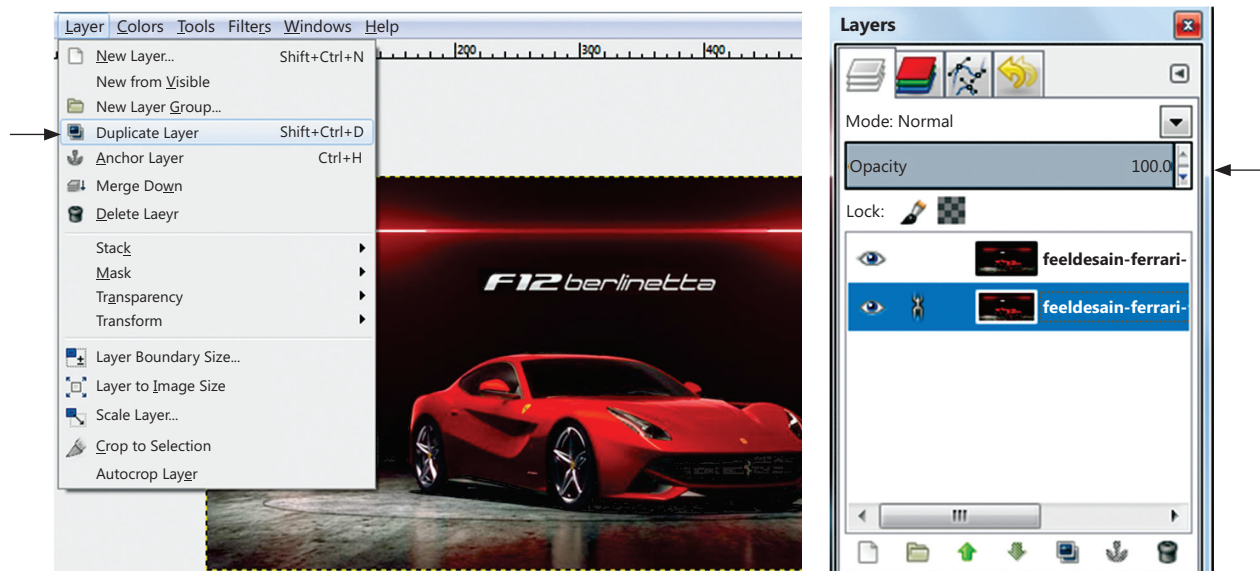
A Copy of your previous layer will be automatically made in the Layers tab.

5. MASKING

The Mask is GIMP's way of showing the full structure of the selection. Mask also provides the ability to interact with the selection in new, and substantially ways.Masking layers (similar to the fusion mask in Photoshop)which allows you to work on layers with great ease. With this method it is easy to edit corners without touching the layer.

Step 1. Click the small outlined button at the lower left of the image window to toggle Quickmask on and off. The button switches between Quickmask mode, and marching ant's mode.

You can also use Select → Toggle Quickmask, or Shift + Q, to toggle between Quickmask and marching ants mode.

In Quickmask mode, the selection is shown as a translucent screen overlying the image, whose transparency at each pixel indicates the degree to which that pixel is selected.
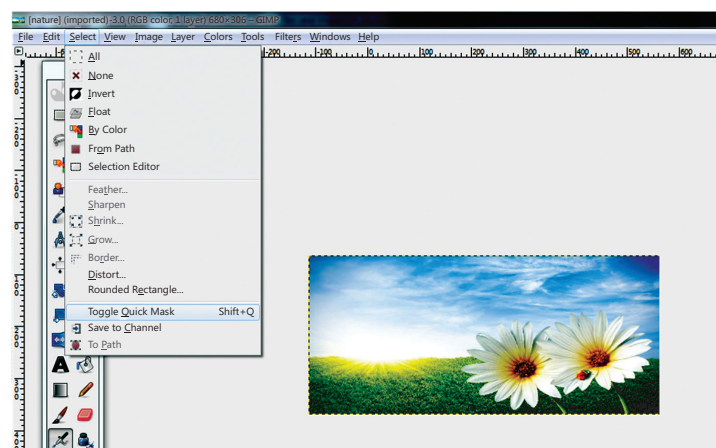
By default the mask is shown in red, but you can change this if another mask colour is more convenient.

5.1 Editing a mask

To edit a mask, go to the channels tab, select "quickmask" channel, right-click to open the drop-down menu and selectEdit channel attributes…and change the colour.

Step 1:
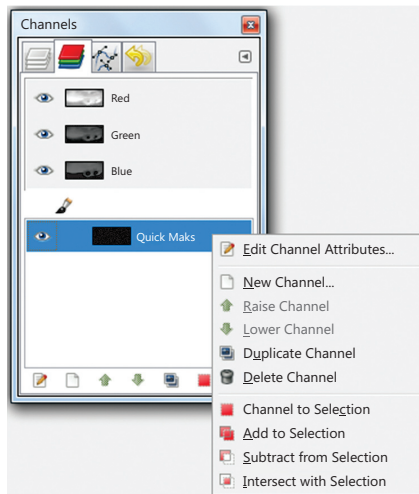
Step 2:
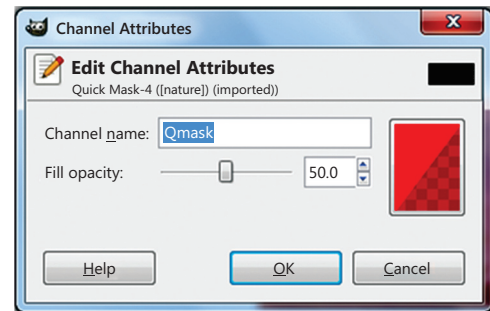
Set the settings and press OK

Step 3:
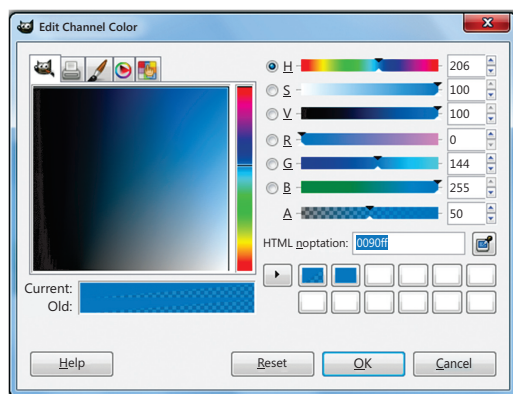
Step 4:
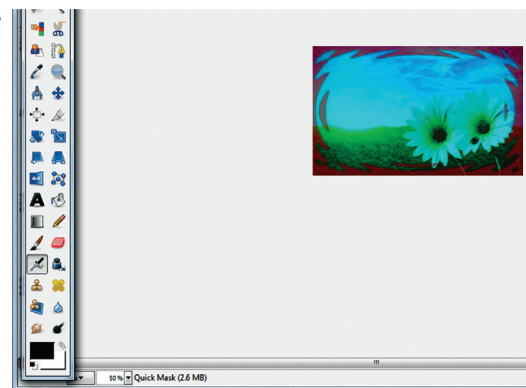
Before Masking

Before Masking

Summary 👐

1. GIMP is a GNU Image Manipulation Program is free and powerful open source image editing tool that provides retouching of photos, authoring of photos and composition of photos.
2. The Align tool is useful to align the image layers with various image objects.
3. The Scale Tool is used to scale layers, selections or paths (the Object).
4. The Shear tool is used to shift one part of an image, a layer, a selection or a path to a direction and the other part to the opposite direction.
5. The Perspective Tool is used to change the "perspective" of the active layer content, of selection content or of a path.
6. The Flip tool is used to rotate the image in the other direction to create the image.
7. The Rotate tool is used to rotate layers within an image.
8. The Blend Toolis used to fill the selected area with a gradient blend of the foreground and background colours.
9. The Sharpen tool is used to increase the contrast where the brush is applied.
10. The Blur tool is used to blur or softened the areas of an image where the brush is applied.
11. The Smudge tool uses the current brush to smudge colours on the active layer or a selection.
12. The Dodge tool uses the current brush to lightenthe colours in your image.
13. The Burn tool uses the current brush to darken the colours in your image.
14. The Eraser tool is used on the canvas to erase things.
15. The Pencil Tool is used to draw images on the canvas.
16. The Paint Brush tool lets you draws brush like strokes.
17. Layers are the transparent sheets one on top of the other.
18. Masking effect allows you to create merge effects in an image.
19. If some of your scanned photos do not look colourful enough, you can easily improve their tonal range with the "Auto" button in the Levels tool (Colours→Levels). If there are any color casts, you can correct them with the Curves tool (Colours→Curves).
20. Not all effects can be applied to all kinds of images. This is indicated by a grayed-out menu-entry. You may need to change the image mode to RGB Image→Mode→RGB), add an alpha-channel (Layer→Transparency→Add Alpha Channel) or flatten it (Image→Flatten Image).
21. Retouching tools are used for the arrangement of pixels. The following are the retouching tools available in Gimp:
22. Brush & Pencil Tool
23. Eraser Tool
24. Blend Tool
25. Blur & Sharpen Tool
26. Smudge
27. Dodge & Burn Tool

EXERCISE

A. Multiple choice questions

1. _____ tool helps you to add a new layer to the image which is identical copy of the active layer.
   - (a) Smudge Tool
   - (b) Dodge Tool
   - (c) Perspective Tool
   - (d) Duplicate Layer

2. By default the mask is shown in _____, but you can change this if another mask colour is more convenient.
   - (a) Red
   - (b) Blue
   - (c) Green
   - (d) No colour

3. In _____ mode, the selection is shown as a translucent screen overlying -the image, whose transparency at each pixel indicates the degree to which that pixel is selected.
   - (a) Default
   - (b) Quickmask
   - (c) Marching ants
   - (d) Normal

4. _____ are the transparent sheets one on top of the other.
   - (a) Masking
   - (b) Tools
   - (c) Layers
   - (d) None of the above

5. By default the extension of Gimp file is _____
   - (a) .XCf
   - (b) .BMP
   - (c) .TIFF
   - (d) .PNG

6. GPL stands for
   - (a) General Private license
   - (b) Great Pioneer License
   - (c) General Public Limited
   - (d) General Public License

7. The image loses some of its quality by being _____
   - (a) Scaled
   - (b) Merging
   - (c) Renaming
   - (d) Masking

8. _____
   - (a) Adobe
   - (b) Gimp
   - (c) After Effects
   - (d) Paint Shop Pro X5

9. In _____ mode, over-application of the tool will produce noise.
   - (a) Sharpen
   - (b) Blur
   - (c) Dodge
   - (d) Smudging

10. _____ takes colour in passing and uses it to mix it to the next colours it meets.
    - (a) Sharpen
    - (b) Blur
    - (c) Dodge
    - (d) Smudging

B. Answer the following questions:

1. Name the application areas where Gimp can be used.

2. Mention all the features of Gimp.

3. What do you understand by General Public License (GPL)?

4. Which tool is used to align the objects placed on different layers? Explain all its options.

5. Name the properties needs to be changed while scaling the image.

6. Which tool is used to lighten the pixels in an image?

7. Which tool is used to darken the colour pixels in an image?

8. Differentiate between Shear and Perspective tool.

9. What is the default background and foreground colour of image window?

10. How is blur tool different from smudge tool?

11. Name any four tools used for changing the pixel arrangement in an image.

12. What is the difference between Blur tool and Sharpen tool?

13. How is flipping an image different from rotating an image?

14. Write the steps to apply blend effect on an image?

15. What are Layers? What is the purpose of using Layers?

16. What is the need of merging the Layers?

C. Identify the tools used for the following purpose:

1. To resize the layer/image   _____

2. To move layers   _____

3. To align the layers with various objects   _____

4. To create the mirror image   _____

5. To draw free hand drawings   _____

6. To lighten the colour pixels of an image   _____

7. To give wet paint effect in an image   _____

8. To shift one part of an image/ a layer to a particular direction _____

9. To apply different colours without effecting the original image   _____

10. To remove objects from the canvas   _____

D. Application Oriented Questions

1. Shivank has collected pictures of his favourite superhero and wants to make a collage of the superhero in action. Suggest him the way to make collage.

2. Amishi wants to change the background of her class photograph with the school \ building. Help her to do the same.

3. Rudraksh has to send his photograph to the passport office for the processing of his Passport but his photograph clicked by the photographer is very dark due to insufficient light. Help him lighten the colour pixel of his photograph as per the requirement.

4. Geetanjali has got a project work in she has been given two images, where one image depicts a girl walking on the grass and other one depicts an ocean. Now she has to project as if the girl is walking on the water surface. Suggest her the way to accomplish the task.

5. Avni wants to change her coloured photograph into white/black photograph along with the borders and corners of the image without affecting the original image. Help her to do the same.

6. Bhuvi is working on her social science project work. She wants to add the image of the Minister but the image is not in the required direction. She needs the mirror image of the photograph. Suggest her the tool to perform the task.

7. Mohit has got a hazy image. He wants to increase the contrast of the image. Suggest him the tool to complete the task.

8. Vasu has inserted an image in a new file. He wants to duplicate the image on the same layer. Suggest him the tool which will fulfil his requirement.

E. Lab Session

1. Collect the photographs of your family members and make a collage of the same. Design a Birthday card for your friend.
   (a) Add image of a flower and text to the card
   (b) Fill the background with the texture format

2. Make abstract painting depicting Independence Day. Scan the image of any car and transform the image as shown below.
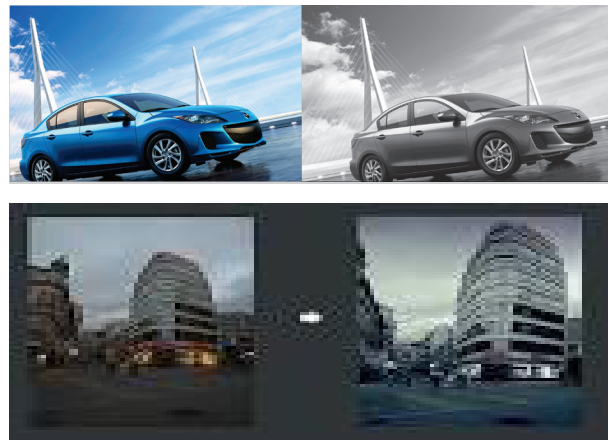
3. Make a collage depicting the different seasons such as Rainy, Summer, Autumn, Winter. Transform an image using perspective tool.

Information and Computer Technology

Tables

Learning Objectives

By the end of this chapter, learner will be able to:

• Describes the various uses of the TABLE tag and its sub elements in HTML.
• Recognize the different attributes of each tag for each of the TABLE elements.
• Use the TABLE and its sub elements to create web layout.
• Given a design use appropriate tabs from the TABLE group.
• Use Frames in the HTML page to divide the browser into different sections.
• Display data in a tabular form using table tag.

INTRODUCTION

The data on the webpage can be represented in tabular form. In HTML the format can be defined using <TABLE > tag.

The <TABLE > tag arranges the data items on the web page in rows and columns. The *basic* syntax of table tag along with the attributes is given as under:

The TABLE Element (<TABLE >) represents data in two or more dimensions.

```
<body>
<TABLE    border ="number"
          align= "left/right/center"
          width= "number%"
          bgcolor= "NameOfColor"
          background= "addressOfTheFile"
          bordercolor= "#hexadecimalNumberOfColour">
<TR>
          <TD> text 1</TD>
          <TD> text 2</TD>
</TR>
</TABLE>
</body>
```

1. STRUCTURE OF <TABLE> TAG

The structure of table is formed using the Table tag.

The rows of the table are formed using the TR tag.

The data in the cells of the rows are inserted using either the TH tag or the TD tag. The TH tag encloses the Header object and makes the data boldface and center aligned. The TD keeps the data in regular font and left aligned by default. The TH and TD tags are nested inside the TR tag and the TR tag in turn is nested within the TABLE tag.

1.1. The attributes of table tag are discussed below one by one
1.1.1. Border

This attribute is used to insert the lines on four sides of the table. The inside lines shows the rows and columns of the table and the outside lines displays the dimensions of the table. This attribute takes the value as a number starting from 1 to any number. The value one displays one pixel line on inside and outside of the table. However, the value larger than one only thickens the outer lines (giving a 3D effect) leaving the inside lines to one pixel point. When this attribute is omitted, neither inside nor outside lines are visible. Let us take the 3 cases one by one:

Case 1.1: The border attribute takes the value one, results in both inside and outside border.

In the above code, the attribute "border" takes the value as one. This displays both the inside and outside border of one point. The table row is formed using <TR> tag and the <TD> tag helps in inserting the text – "thin bordered cell" in the cells of the rows and columns of the table. The code produces the output in figure 1.

```
<HMTL>
<HEAD><TITLE> </TITLE></HEAD>
<BODY>
<TABLE border = 1>
        <TR>
                <TD> thin bordered cell 1</TD>
                <TD> thin bordered cell 2</TD>
        </TR>
        <TR>
```

```
<TD> thin bordered cell 3</TD>
            <TD> thin bordered cell 4</TD>
        </TR>
</TABLE>
</BODY>
</HTML>
```

Output produced by the above HTML code:
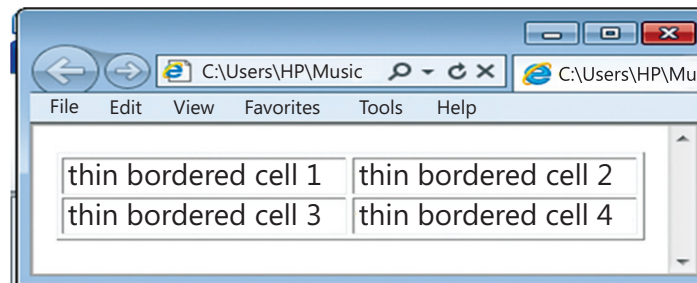
Figure 1

Case 1.2: If the value is taken to be as high as 40, the outer border width changes.

The table tag uses the border attribute with the value 40. This increases the length and the height of the entire table. The outside border thickens, giving the table a 3D effect. The <TR> tag defines the rows of the table and the <TD> tag is used to insert "thick bordered cell" in each of the cells of the two rows as shown in the output figure 2.

```
<HMTL>
<HEAD><TITLE> </TITLE></HEAD>
<BODY>
<TABLE border = 40>
        <TR>
            <TD> thick bordered cell 1</TD>
            <TD> thick bordered cell 2</TD>
        </TR>
        <TR>
            <TD> thick bordered cell 3</TD>
            <TD> thick bordered cell 4</TD>
        </TR>
</TABLE>
</BODY>
</HTML>
```

Tables

Output produced by the above HTML code:

Figure 2

Case 1.3: If the border attribute is omitted:

The output from the above code is shown in figure 3. The table is shown without the inside and outside border. Also, note in the output that the data in the first row is bolder than that in the second row. This is due to the use of <TH> element in the first row and <TD> in the second row. The <TH> tag is meant to prepare the header of the table. Since the text of header is bolder than the rest of the text, it makes the text bold but keeps the font size similar to the rest of the text.

```
<HMTL>
<HEAD><TITLE> </TITLE></HEAD>
<BODY>
<TABLE >
        <TR>
                <TH> no border cell 1</TH>
                <TH> no border cell 2</TH>
        </TR>
        <TR>
                <TD> no border cell 3</TD>
                <TD> no border cell 4</TD>
        </TR>
</TABLE>
</BODY>
</HTML>
```

The output from the above code is shown in figure 3. The table is shown without the inside and outside border. Also, note in the output that the data in the first row is bolder

than that in the second row. This is due to the use of <TH> element in the first row and <TD> in the second row. The <TH> tag is meant to prepare the header of the table. Since the text of header is bolder than the rest of the text, it makes the text bold but keeps the font size similar to the rest of the text.

Output produced by the above HTML code:
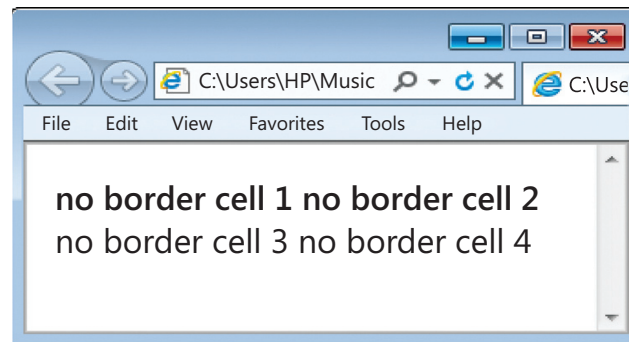
Figure 3

1.1.2. Align

The align attribute helps in placing the table on the webpage. If you want to place it in the center of the webpage, use the "center" value, for right side use "right" and for the left side of the web page, the value "left". If you omit this attribute in the <TABLE > tag, the table will be placed at its default position which is usually "left".

Case 2.1: The following code assigns the value "center" to the align attribute.

```
<HMTL>
<HEAD><TITLE> </TITLE></HEAD>
<BODY>
<TABLE Border = 1 Align="Center">
        <TR>
                <TD> center aligned1</TD>
                <TD> center aligned2</TD>
        </TR>
        <TR>
                <TD> center aligned3</TD>
                <TD> center aligned4</TD>
        </TR>
</TABLE>
</BODY>
</HTML>
```

Tables

The output from the above code positions the table in the center of the web page as below:
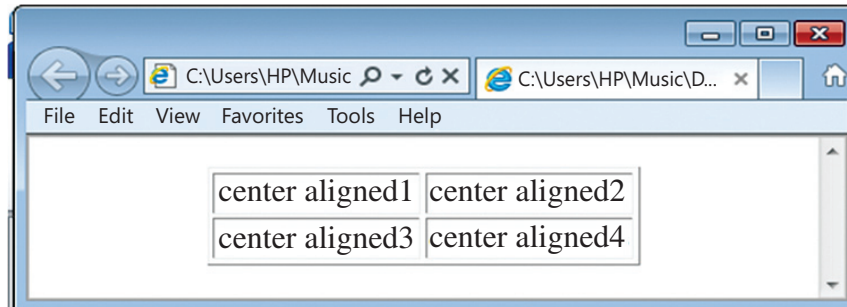
Figure 4

1.1.3. Width

The width attribute helps in identifying the breadth of the table in comparison to the webpage. It accepts the value as a number (in pixels) or in percentage (in proportion to the width of the webpage). If you omit this attribute, the width of the table is set according to the length of the characters inside the cells.

Case 3.1: Where, the width of the table is set to 30% of the web page's width.

```
<HMTL>
<HEAD><TITLE> </TITLE></HEAD>
<BODY>
<TABLE border=1 width = 30%>
        <TR>
                <TH> width of table 30% </TH>
                <TH> of width of the window </TH>
        </TR>
        <TR>
                <TD> if the size of window is small </TD>
                <TD> the width of table will be 30% of small size</TD>
        </TR>
</TABLE>
</BODY>
</HTML>
```

The above code displays the breadth of the table to be 30% of the width of the webpage as shown below:
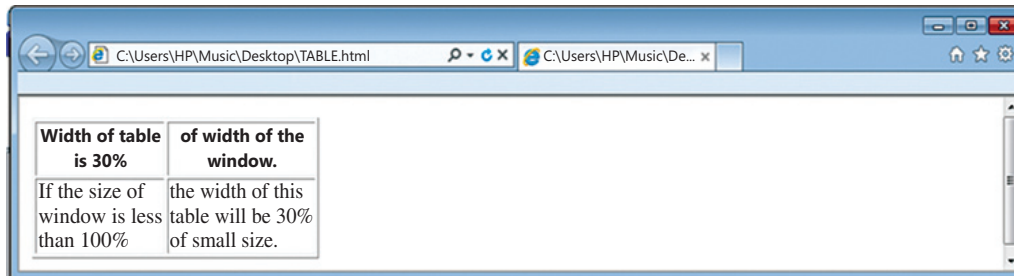
Figure 5

Case 3.2: Where, the width of the table is set to 100% of the web page's width.

```
<HMTL>
<HEAD><TITLE> </TITLE></HEAD>
<BODY>
<TABLE border=1 width = 100%>
        <TR>
                <TH>100% width of the table - cell 1</TH>
                <TH>100% width of the table - cell 2</TH>
        </TR>
        <TR>
                <TD> cell 3</TD>
                <TD> cell 4</TD>
        </TR>
</TABLE>
</BODY>
</HTML>
```

The code above displays the table with the breadth equal to the breadth of the webpage as shown in the figure 6. The table occupies 100% of the width of the web page.

Output produced by the above HTML code:
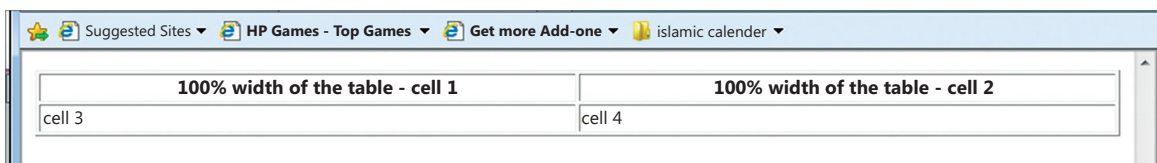
Figure 6

1.1.4. Border color

The colour of the lines inside and outside the table can also be changed using the "Border Color" attribute. It accepts the value as name of the colour. If you omit this attribute, the colour of the table border is set to its default grey.

Case 4.1: Let us set the lines of table as red in the following code:

```
<HMTL>
<HEAD><TITLE> </TITLE></HEAD>
<BODY>
<TABLE border=10 border color=red>
        <TR>
                <TD>border line thickness is set to 10</TD>
                <TD>border colour is red</TD>
        </TR>
        <TR>
                <TD>red as tomato</TD>
                <TD>red as apple</TD>
        </TR>
</TABLE>
</BODY>
</HTML>
```

The Microsoft Internet Explorer displays the output in figure 7. The table is shown with red coloured border lines on both inside and outside the table. The outside line gets its thickness from the border attribute which has the value equal to 10. This means the width of the outside border is 10 pixels wide.

Output produced by the above HTML code:

Figure 7

Information and Computer Technology
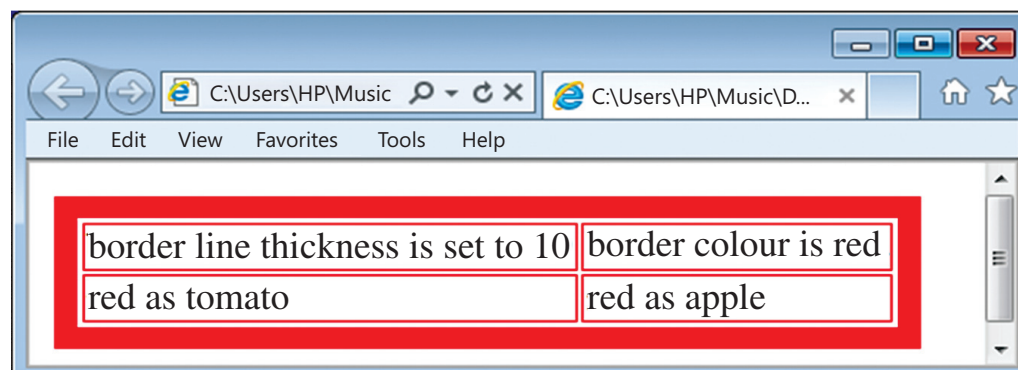
1.1.5. Bgcolor

The background color of a table can be set using the attribute bgcolor. This attribute takes the name of the colour or hexadecimal number as value.

Case 5.1:

```
<HMTL>
<HEAD><TITLE> </TITLE></HEAD>
<BODY>
<TABLE border =1 bgcolor= pink>
        <TR>
                <TH>border line point 1</TH>
                <TH> pink as lily </TH>
        </TR>
        <TR>
                <TD> background colour of the table is pink </TD>
                <TD> </TD>
        </TR>
</TABLE>
</BODY>
</HTML>
```

The above code gives a background colour to the table. Here the background is set to the colour pink as shown in figure 8. The breadth of the table is set according to the contents in the cells of the table. The last cell is formed and is empty because one character space is assigned to this cell using the special character   The special character provides the result only when used in lowercase.

Note: If you want to set individual cells of the table with different background colour, the attribute bgcolor can be used with either <TH> tag or <TD> tag.

Output produced by the above HTML code:

Figure 8

Tables

1.1.6. Background

If you want to place an image or a picture at the background of the table, you can do so using the background attribute. This attribute takes the value as the address or the path of the picture. The picture may be a bitmap or a graphic image. In the following code, the image named "yelloww.jpg" is set as background to the entire table.

```
<HMTL>
<HEAD><TITLE> </TITLE></HEAD>
<BODY>
<TABLE border ="1" background="c:\yelloww.jpg">
        <TR>
                <TH>lily</TH>
                <TH>rose</TH>
                <TH>lotus</TH>
        </TR>
        <TR>
                <TD>white, yellow</TD>
                <TD>white, yellow</TD>
                <TD>white, pink</TD>
        </TR>
</TABLE>
</BODY>
</HTML>
```

The above code displays the output in figure 9. The background of the entire table is set to the image named yelloww.jpg.

Output produced by the above HTML code:

Figure 9

Information and Computer Technology

2. THE TH OR TD ELEMENT

The TH element or <TH> tag helps in identifying a table header. Correspondingly, TD element or <TD> tag identifies the table data cell. The text inserted using the TH element is in boldface and centred by default. Compared to this, TD element or the <td> tag is aligned to the left and the text is in regular font. The attributes used with <TD> or <TH> tag are: Align, Colspan, No wrap, Rowspan, Valign.
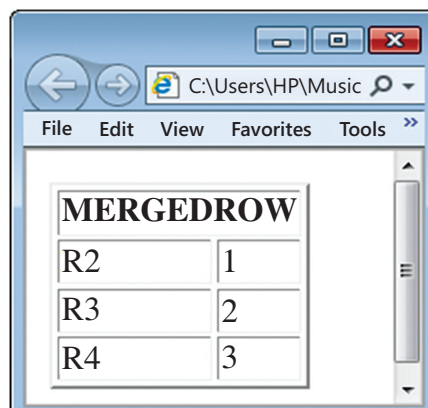
The align attribute is similar to that of table, except that it align the text inside the cell rather than the table. Valign takes the value top, middle, bottom to vertically align the text inside a cell.

The Nowrap attribute does not allow the text to flow to the next line in the cell. If the sentence is wider than the width of the cell, nowrap will show the sentence in one straight line. Let us now discuss colspan and rowspan.

3.1. COLSPAN

The colspan attribute helps in merging the columns of a row. This attribute is not used with table tag but with the <TH> or the <TD> tag.

Case Colspan: If you want to prepare the table where there are 4 rows and the all the other rows except the first row are divided into two columns. In other words, the two columns of the first row are merged into a row, use the following code:

Figure 10

```
<HMTL>
<HEAD><TITLE> </TITLE></HEAD>
<BODY>
<TABLE border=2>
        <TR>
                <TH colspan=2>MERGEDROW</TH>
        </TR>
        <TR>
                <TD>R2</TD>
                <TD>1</TD>
        </TR>
        <TR>
                <TD> R3</TD>
                <TD>2</TD>
        </TR>
        <TR>
                <TD>R4</TD>
                <TD>3</TD>
        </TR>
</TABLE>
</BODY>
</HTML>
```

Case No Colspan: If the row in the example above does not span across three columns, the code will be:

```
<HMTL>
<HEAD><TITLE> </TITLE></HEAD>
<BODY>
<TABLE border=2>
        <TR>
                <TH>MERGEDROW</TH>
        </TR>
        <TR>
                <TD>R2</TD>
                <TD>1</TD>
        </TR>
        <TR>
```

```
                    <TD>R3</TD>
                    <TD>2</TD>
            </TR><TR>
                    <TD>R4</TD>
                    <TD>3</TD>
            </TR>
</TABLE>
</BODY>
</HTML>
```

This code produces the result shown in figure 11. The table shows the empty cells, also referred to as Ghost Cells. These empty cells do not give proper presentation to the table and its contents. To display a header row followed by two columns at the bottom, colspan is the only option.
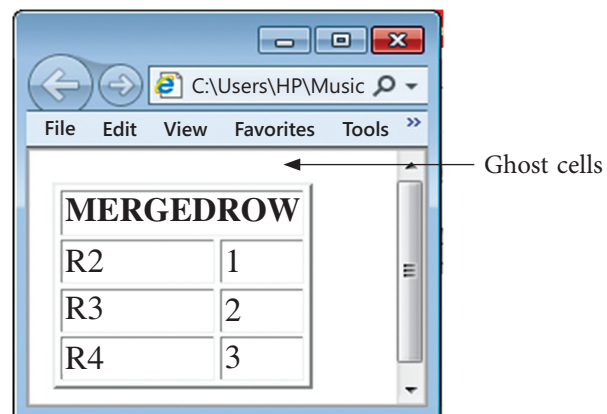
Figure 11

3.2. ROWSPAN

When the table's cells spans across more than one row, it is called ROWSPAN. If we want to give the table a nice sidebar, this attribute is used. The rowspan appears as merged cells. We use this attributes in the <TH> or <TD> tags. We have to assign a number for how many rows we wish to span downwards.

Case Rowspan: Taking the similar example as above, we have the following code:

```
<TABLE border=1>
        <TR>
                <td rowspan=2> MERGEDCOLUMN </TD>
                <TD>Col2Row1 </TD>
        </TR>
        <TR>
                <TD>Col2Row2</TD>
        </TR>
</TABLE>
```

Tables

The code here produces the output in figure 12. The output displays how rowspan merges the two rows into one to form a sidebar. In other words, this sidebar acts as a single row that gets divided into two rows in the next column of the table.
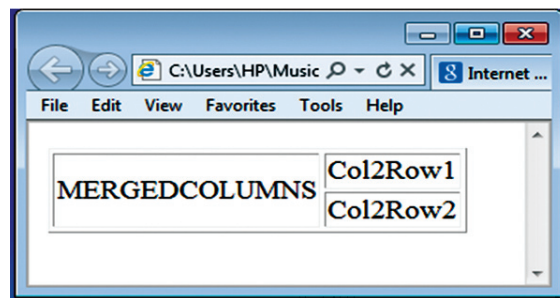
Figure 12

Case NoRowspan: In case you don't wish to use rowspan, then you might end up creating a ghost cell as shown by the following code:

```
<TABLE border=1>
<TR>       <TD> Col1Row1</TD>
           <TD>Col2Row1 </TD>
</TR>
<TR>       <TD>Col1Row2</TD>
</TR>
</TABLE>
```

The above code produces the output in figure 13:

The table does not give the clear picture as to whether the ghost cell be used for some purpose, whether the last be merged into the cell above it or cell on its left. In order to get rid of such question and to better present data, we make use of the attribute provided by HTML called **Rowspan**.

Figure 13

3. THE CAPTION TAG

The <caption> tag is used to provide a text to the table so as to explain the contents of the table. It is generally in bold, at center with respect to the table. However, the position of the caption can be on either the top or the bottom of the table using the 'align' attribute as shown below:

```
TABLE BORDER = 1>
<CAPTION align=bottom>Table with caption</CAPTION>
<TR>
        <TH> coordinates 1, 1 </TH>
        <TH> 1, 2</TH>
</TR>
<TR>
        <TD> 2, 1</TD>
        <TD> coordinates 2, 2</TD>
</TR>
</TR>
</TABLE>
```
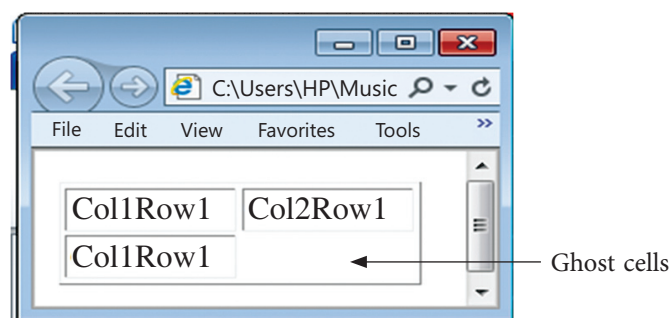
Figure 14 displays the result of the code. The bottom of the table is captioned with "Table with caption".
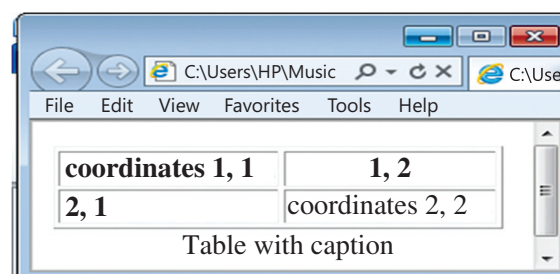
Figure 14

Let us quickly revise the list of attributes used with TABLE, TH, TD elements, before moving on to the next section on frames. The following table displays a list of function, tags, attributes and values associated with <TABLE >, <TH> and <TD> element.

S.No.	Description	Tags and Attributes	Values
1.	Define Table	<TABLE ></TABLE>	
2.	Table Border	<TABLE BORDER=?> </TABLE>	
3.	Desired Width	<TABLE WIDTH=?>	(in pixels)
4.	Width Percent	<TABLE WIDTH="%">	(percentage of page)
5.	Table Row	<TR></TR>	
6.	Alignment	<TR ALIGN=LEFT|RIGHT| CENTER|MIDDLE|BOTTOM>	
7.	Table Cell	<TD></TD>	(must appear within table rows)

8.	Table Header	<TH></TH>	(same as data, except bold & centered)
9.	Alignment	<TH or TD ALIGN=LEFT|RIGHT| CENTER|MIDDLE|BOTTOM>	
10.	No Linebreaks	<TH or TD NOWRAP>	
11.	Desired Width	<TH or TD WIDTH=?>	(in pixels)
12.	Width Percent	<TH or TD WIDTH="%">	(percentage of table)
13.	Cell Color	<TH or TD BGCOLOR="#$$$$$$">	
14.	Columns to Span	<TH or TD COLSPAN=?>	
15.	Rows to Span	<TH or TD ROWSPAN=?>	
16.	Table Caption	<CAPTION></CAPTION>	
17.	Alignment	<CAPTION ALIGN=TOP|BOTTOM>	(above/below table)

4. FRAMES

A frame divides the screen into separate windows with both vertical and horizontal scroll bars.. The windows so formed may appear to be sub-windows of the main window (the webpage). This allows the user to access different pages of a website from one screen if designed to do so. Frames are needed when you want to have menus on one side and the contents or the operations on the other side. When the user clicks on one of the menu items, the contents become visible on the other side.

A frame divides the webpage into different windows. It makes some structural changes to the main window. Hence, it is not written inside the body element, but it forms its own element, outside the head section of HTML document called the FRAMESET. A FRAMESET element is the parent element that defines the characteristics of individual frame pages. The basic *syntax* of FRAMESET element is:

```
<html>
<head> … </head>
<FRAMESET cols= "number%,number%"
 <frame src = "address of HTML document">
 <frame src = "address of HTML document">
</FRAMESET>
</html>
```

Information and Computer Technology

The attributes used with the FRAMESET element are given in the table below:

Attributes	Value accepted	Description
Rows	Number in percentage or star (*) indicating the rest of the window	Divides the main window horizontally in proportion to main window
Cols	Number in percentage or star (*) indicating the rest of the window	Divides the main window vertically in proportion to main window
Border	Number	Increases the width of the outer border.
Frame border	Number	Used with netscape navigator to surround the sub-window with a border. If value is set to zero, no outer lines appear around the frame.
Frame spacing	Number	If set to zero, it removes the ugly grey lines appearing between the two frames, otherwise it increases the width of the grey line.

The FRAMESET element works in conjunction with the FRAME tag whose attributes are discussed below:

S No	Attributes	Value	Description
1	src (mandatory attribute)	Address of the HTML document	To load the HTML webpage in the frame defined by FRAMESET element
2	scrolling	Yes/Auto/No	**Yes** will insert both the scrolls irrespective of the size of the sub-window. **Auto** will insert the scrolls only when the contents of the sub-window are not visible **No** will not insert any scrolls even when all the contents are not visible.
3	Noresize	Noresize	when used this attribute does not allow the user to adjust the size of the frame in the webpage.
4.	Name	A noun	Assign a name to the frame
	Target	The noun of name attribute	This attribute specifies the name of a frame where a document is to be opened.

If you want to make a webpage that uses two frames divided in columns, you should follow these steps:

1. Create an HTML document with the FRAMESET element as shown below.

```
<FRAMESET cols="120,*">
<frame src="menu.html" name="menu">
<frame src="main.html" name="main">
</FRAMESET>
```

In the above code, the left side of the column is 120 pixels and the Star indicates the rest of the screen. A star has been used because the screen size varies; it may be 640 pixels across, or 800 or 1024 pixels across. The 'src' attribute opens the menu.html document in left side frame and main.html gets opened in right side frame. Both the frames are given a name through the 'name' attribute. The names are used by navigational frame which has been discussed later in the chapter.

2. Create a number of HTML documents (containing the body tag) that you would like to load into the frames. (Atleast as many as the frames that are there in the FRAMESET element of step 1 here you need to have two documents; menu.html and main.html)

3. When a FRAMESET page is loaded, the browser automatically loads the HTML documents designed in step2 as requested by each of the FRAME tag within the FRAMESET.

The rest of the chapter discusses the different types of frames that you can design.

For example 1:

If you want to divide the webpage in equal sizes horizontally, and want to display a.html in first and b.html in second, you will use the following code:

```
<html>
<head>…</head>
<FRAMESET rows= "50%,50%">
<frame src = "a.html">
<frame src = "b.html">
</FRAMESET>
</html>
```

For example 2:

If you want to divide the webpage in the form of a "T", where there are two horizontal sub-windows and the second sub-window (frame) is again divided into two columns, you can use the following code:

```
<html><head>…</head>
<FRAMESET rows="20%,*">
<frame src="a.html">
<FRAMESET cols="30%,*">
<frame src="b.html">
<frame src="c.html">
</FRAMESET>
</FRAMESET>
</html>
```

For example 3:

If you want to divide the webpage in the form of an "inverted T", where there are two horizontal frames and the first frame is again divided into two columns, you can use the following code:

```
<FRAMESET rows="16%,84%">
<FRAMESET cols="50%,50%">
<frame src="a.html" name="topleft">
<frame src="b.html" name="topright">
</FRAMESET>
<frame src="secondrow.html" name="2row">
</FRAMESET>
```

The first FRAMESET divides the screen into two rows. Now since the control has come to the first row of the new screen, the second FRAMESET can divide it into two columns, open the two HTML documents, a.html and b.html, give them a name and then move the control to the second row of the new screen. Since now the control is on the second screen, SRC can now open secondrow.html as shown in figure 15.

Output produced by the above HTML code:

Figure 15

For example 4:

If you do not want to show the grey border dividing the frames and there is 50 pixels space between the two frames, you can use the following code. The output of this code is given below:

```
<html
<head>
</head>
<FRAMESET cols="120,*" frameborder=0 framespacing=50>
        <frame src ="a.html">
        <frame src ="formbutton.html">
</FRAMESET>
</html>
```

Output produced by the above HTML code:

Figure 16

For example 5:

If you want to insert scrolls in the frames when the contents of the frame are not visible, use the value "auto" as shown below:

```
<html
<head>
</head>
<FRAMESET cols="120,*" frameborder=0 framespacing=50>
        <frame src ="a.html" scrolling=auto>
        <frame src ="formbutton.html" scrolling=no>
</FRAMESET>
</html>
```

Information and Computer Technology

The difference between example 4 and example 5 is that the latter does not show horizontal scroll bars in the right side frame

Figure 17

For example 6:

If you do not want the user to adjust the frame size in the webpage, use noresize attribute. Since it takes the value "noreisize", you can omit the value and simply write the attribute as shown below:

```
<html>
<head>…</head>
<FRAMESET cols= "120,*" frameborder= "0" framespacing = "0">
<frame src = "a.html" scrolling= no noresize>
<frame src = "b.html" scrolling = auto noresize>
</FRAMESET>
</html>
```

For example 7: Jumping from one section to another

If you want to navigate from one section to another in a frame then you may have to name each section using anchor tag and use the name (S12) in **src** attribute of the <frame> tag as shown below. Notice that the name of the HTML document is followed by hash symbol (#). This symbol separates the name of the HTML file and the section within it.

```
<html>
<head>…</head>
<FRAMESET cols= "120,*">
<frame src = "a.html">
<frame src = "Jump.html#S12">
</FRAMESET>
</html>
```

Further, the HTML document named "jump.html" should contain a section with the name S12. To implement this, we prepare the body of "jump.html" as under:

```
<html>
<head> … </head>
<body>
<a name = "S1"> </a>
<h1> Section 1 </h1> This is section 1.
<h1> Section 2 </h1> This is section 2.
<h1> Section 3 </h1> This is section 3.
<h1> Section 4 </h1> This is section 4.
<h1> Section 5 </h1> This is section 5.
<h1> Section 6 </h1> This is section 6.
<h1> Section 7 </h1> This is section 7.
<h1> Section 8 </h1> This is section 8.
<h1> Section 9 </h1> This is section 9.
<h1> Section 10 </h1> This is section 10.
<h1> Section 11 </h1> This is section 11.
<a name = "S12"> </a>
<h1> Section 12 </h1> This is section 12.
<h1> Section 13 </h1> This is section 13.
<h1> Section 14 </h1> This is section 14.
<h1> Section 15 </h1> This is section 15.
</body>
</html>
```

Now when the first code is executed, it calls the HTML document i.e. jump.html. The section number S12 of jump.html becomes visible the moment it gets loaded in the second frame.

For example 8: Navigational frame

If you want to show the menu items as links on the first frame and display the content of the click on the second frame, you need to prepare a navigational frame.

First divide the webpage into frames as done earlier. Also give a name to each frame as shown below. Save this file as **b.html**.

```
<html>
<head>…</head>
<FRAMESET cols="30%,*">
          <frame src ="a.html" name="menu">
          <frame src ="b.html" name="content">
</FRAMESET>
</html>
```

Secondly, prepare **a.html** using the HTML code given below:

```
<html>
<head></head>
<body>
    <font face="Felix Titling" size="4" color="purple">
    Social Networking Sites…
    <a href= "http://www.asmallworld.net/" target= "content">
                    <h4> ASmallWorld</h4></a>
    <a href= "http://www.blogster.com/" target= "content">
                    <h4>Blogster</h4></a>
    <a href= "http://www.care2.com/" target= "content"> <h4>Care2</h4></a>
    <a href= "http://www.classmates.com/" target= "content">
                    <h4>Classmates</h4></a>
    <a href= "http://www.dailystrength.org/" target= "content">
                    <h4>DailyStrength</h4></a>
</font>
</body>
</html>
```

The output window of a.html is shown in figure 18

Figure 18

When a user clicks on one of the social networking sites like A Small World or the

Class Mates, the webpage will get opened in the second frame on the right hand site of b.html. It is this frame whose name is "content" and which is being called by **target** attribute in **anchor** tag in a.html.

The figure 19 shows a navigational frame, which means that you can navigate from one social networking site to another without changing the webpage or moving from one window to another. By remaining in the existing window, you can switch from one site to another, i.e. you can navigate from one social networking site to another. Just run the HTML document (b.html), see the output in figure 19 and enjoy the fun…

Figure 19

Information and Computer Technology

Summary 👈

1. The <TABLE > tag arranges the data items on the web page in rows and columns.

2. The TH tag encloses the Header object and makes the data boldface and center aligned.

3. The TD keeps the data in regular font and left aligned by default.

4. TR tag in turn is nested within the TABLE tag and is used to define rows in a table.

5. The colspan attribute helps in merging the columns of a row. This attribute is not used with table tag but with the <TH> or the <TD> tag.

6. When the table's cells spans across more than one row, it is called ROWSPAN. If we want to give the table a nice sidebar, this attribute is used. The rowspan appears as merged cells.

7. The <caption> tag is used to provide a text to the table so as to explain the contents of the table. It is generally in bold, at center with respect to the table.

8. A frame divides the screen into separate windows with both vertical and horizontal scroll bars.. The windows so formed may appear to be sub-windows of the main window (the webpage).

9. A FRAMESET element is the parent element that defines the characteristics of individual frame pages.

EXERCISE

A. Multiple choice questions

1. <TR> belongs to Frameset tag.
   (a) <Table>   (b) <DIV>
   (c) <Frameset>   (d) <TD>

2. _____ tag is used to add columns to a table
   (a) definition list   (b) definition list term
   (c) definition list description   (d) none of the above

3. Which attribute is used to define cell contents to left ?
   (a) VAlign   (b) Align
   (c) GAlign   (d) HAlign

4. Tag to add a row to a table.
   (a) TR   (b) TD
   (c) TH   (d) TC

5. Which of the following is used to specify the beginning of a table's row?
   (a) TROW   (b) TABLER
   (c) TR   (d) ROW

6. In order to add border to a table, BORDER tag is specified in which tag
   (a) THEAD   (b) TBORDER
   (c) TABLE   (d) TR

7. Which of these tags are called table tags?
   (a) <Thead><body ><tr>   (b) <Table><tr><td>
   (c) <Table><head><tfoot>   (d) <Table><tr><tt>

8. _____ tag is used to define the heading of a table
   (a) TABLE   (b) COLUMN
   (c) HEADING   (d) TITLE

9. Which HTML command is used to align the contents of the cell to right.
   (a) <TR align= right->   (b) <TD align = right>
   (c) <TD> align = right   (d) All of the above

10. Which of the following statements is incorrect:
    (a) < frame rows = "20% , 80 %">   (b) < frame cols = "40% , 60 %">
    (c) < frame rows = "60% , 60 %">   (d) < frame rows = "60% , 40 %">

B. Answer the following questions:

1. What attribute will be used on the CAPTION tag to put the table description at the bottom of the table?

2. Write the code to display a 'ghost cell'.

3. Name the tag that defines how to divide the window into frames.

4. Name the tag that is used to put HTML document into frames.

5. Where the text is displayed which is specified in the <caption> tag?

6. Which attribute will you use if you do not want frame windows to be resizable?

7. Differentiate between <TH> and <Caption> tags.

8. How <TD> and <TR> are different from each other?

9. What is the purpose of using Frames in HTML pages?

10. Discuss all the tags with their attributes to create a frame.

11. What does 'n' stands for in the following tags?
    (a) <Table border=n>
    (b) <table bgcolor = "n">
    (c) <td bgcolor = "n">
    (d) <td width = n>
    (e) <a href= "n">

12. Which code snippet will display the following? Explain why

MERGEDROW	
R2	1
R3	2
R4	3

Option A	Option B
| ```html
<TABLE border=2>
   <TR>
        <TH>MERGEDROW</TH>
        <TH> </TH>
   </TR>
   <TR>
        <TD>R2</TD>
        <TD>1</TD>
   </TR>
   <TR>
        <TD>R3</TD>
        <TD>2</TD>
</TR>
<TR>
        <TD>R4</TD>
        <TD>3</TD>
</TR>
</TABLE>
``` | ```html
<TABLE border=2>
   <TR>
        <TH>MERGEDROW</TH>
   <TH>&nbsp</TH>
   </TR>
   <TR>
<TD>R2</TD>
<TD>1</TD>
   </TR>
   <TR>
        <TD>R3</TD>
        <TD>2</TD>
</TR>
<TR>
   <TD>R4</TD>
   <TD>3</TD>
   </TR>
</TABLE>
``` |

C. Lab Session

Task 1: Create a website with a header area and two columns below to contain the navigation bar on the left and the content bar to the right. Given below is the task you must complete with this unit

#00FFFF	
30% #00CCCC	70% #00EEEE

Create a folder to store all your project files in one place

Create your HTML page

Define the table and the required elements to display the image given here.

The 30% and 70% define the column widths

The hash code in each area define the colour code to be used

Task 2: Make the required changes to the original file to create the following display. Save it as task2.html

My First Web Page	
Main page Photgraphs History	70% #00EEEE

More information about the TABLE element can be found at

https://developer.mozilla.org/en-US/docs/Web/HTML/Element/table

Task 3: Now create the same kind of visual effect that you did with tables but use frames instead. Save the document as task3.html

When displayed it should look like this.

> **Note:** The Frameset and Frame are not supported in HTML5.

Task 4: Write the coding in HTML to create a Table as shown below:

STUDENT MARKSHEET

Roll no.	Name	Marks		
		First Term	Second Term	Third Term
1	Arpit Kumar	140	160	175
2	Nilima Kapoor	190	180	116
3	Prerna Sharma	130	115	178

Hyperlink the names with the following files

1. Arpit Kumar: Arpit.ppt

2. Nilima Kapoor: Nilima.ppt

3. Prerna Sharma: Prerna.ppt

Forms

Learning Objectives 📖

After learning this chapter learner will be able to:-

- State the purpose of the FORM tag.
- List the attributes that can be used with the FORM tag to make web page more interactive.
- Learn to post the details filled in the form on the server.
- Differentiate the working of different controls.
- Understand the use of all the controls placed on the form.
- Assign attributes to the <input> element to create the different FORM objects

INTRODUCTION

A form is an object that is used for collecting data from the user. We generally come across such forms whenever we are creating a new account either in bank (manually) or for an email id (computerized).

In HTML, a form is a window that consists of the elements of a form called the form fields. These fields may be text field, text area, drop-down box, radio buttons, checkbox and/or a command button. HTML forms are used to pass data to a server. A form can be inserted in HTML documents using the HTML form element which acts as a container for all the input elements. All the information collected by a form can be submitted to a processing agent (a file containing a script made to process this information) that's usually specified in the "action" attribute of the Form tag.

The basic syntax is of a form is:

```
<form method = "get | post" action = "">
 <input>
 <input>
</form>
```

The above code contains both the start tag and the end tag of <form> to indicate the beginning of form object and end of form object. The <input> tag inside the form tag

does not have an end tag. There can be as many <input> tags as form fields you want in your web page.

1. METHOD ATTRIBUTE OF FORM

The method attribute specifies how to send form-data (the form-data is sent to the page specified in the action attribute). The form-data can be sent as URL variables (with method="get") or as HTTP post transaction (with method="post").

1.1 GET method:

❖ Appends form-data into the URL in name/value pairs

❖ The length of a URL is limited (about 3000 characters)

❖ Never use GET to send sensitive data! (will be visible in the URL)

❖ Useful for form submissions where a user want to bookmark the result

❖ GET is better for non-secure data, like query strings in Google

1.2 POST method:

❖ Appends form-data inside the body of the HTTP request (data is not shown is in URL)

❖ It has no size limitations

❖ Form submissions with POST cannot be bookmarked

   Syntax

   <form method="get|post" action= "address">

❖ action=address

❖ method=post or method=get

1.3 Attribute Values

Value	Description
Get	Default. Appends the form-data to the URL in name/value pairs: URL?name=value&name=value
Post	Sends the form-data as an HTTP post transaction

2. INPUT TAG

The <input> tag collects the information from the user.

The attributes are:

Attribute Name	Description
Name	takes a string of characters as internal name of the field, to be used as a reference later
Size	takes the value of a number in quotes which is equal to the width of the field.
Maxlength	takes the value of a number in quotes which is equal to the maximum number of characters that can be entered.
Type	takes the value of the field. It can take the value as "text" or "radio" or "checkbox" or "submit".

2.1 TextBox Field

If the value of the **type** attribute is "text" i.e. **<input type= "Text">,** the form will show a textbox. This textbox accepts the input in one line.

Along with this the TextBox field accepts value, size, name, maxlength, align and tabindex within the <input> tag.

Attributes of Text Field	Description
Size	It defines the width of the field. It contains no. of visible characters.
Maxlength	It defines the maximum length of the field. It contains maximum no. of characters that can be entered in the field.
Name	It adds an internal name to the field so the program that handles the form can identify the fields.
Value	It defines what will appear in the box as the default value.
Align	It defines how the text field will be aligned on the form. Valid entries are: TOP, MIDDLE, BOTTOM, RIGHT, LEFT, TEXTTOP, BASELINE, ABSMIDDLE, ABSBOTTOM.
Tabindex	It defines in which order the different fields should be activated when the visitor clicks the tab key.

For Example:

Two textboxes whose internal name (computer can understand the internal name) is "Fname" and "Mname" are created using the value "text" for the **type** attribute. The internal name is different from the label.

HTML Code:
```
<form>
Father's Name:
<input type="text" size = "20" name="FName" >
<br>
Mother's name:
<input type="text" size = "20" name="MName">
</form>
```

The above code creates two textboxes, each of which is 20 characters wide. The two textboxes are arranged vertically one below the other. The <br> tag does the work of Enter key.

Output:

2.2 Text Area

Text areas are the fields that displays several text lines at a time. Textarea field is generally used to prepare the body of the email or use it to take comment from the user. The <textarea> tag has both start and the end tag indicating from where the textarea begins and where the area where you were writing text ends.

The attributes are:

Attribute Name	Description
Cols and Rows	It takes the value as number. While cols indicate the length of the textarea, the rows indicate the number of rows with text that will be visible at a time.
Name	It provides an internal name to the textarea field as understood by the computer.
Tabindex	It defines the order number of activation of this field when the visitor clicks on the tab key.
Wrap	It helps in flowing the text to the next row in a paragraph when the text reaches the right hand border of the text area. (i) It can take three types of values as discussed below: (ii) If the text is not wrapped, i.e. its value is set to "**wrap off**", it will be placed in the first row of the text area. In such a case if the sentence doesn't get completed at the right hand border of the text area, the text after the border will not be visible. (iii) The value **Virtual** recognizes the text with line breaks when textarea is loaded on the web page. (iv) **Physical** defines the format of the text. It will appear on the webpage as inserted by the user.

For Example:

The following code displays the use of <textarea> tag.

```
<form method="post" action="mailto:youremail@gmail.com">
    <textarea rows="5" cols="30" wrap="physical" name="comments">
         Enter Comments Here
    </textarea>
<input type="submit" value="Email Yourself">
</form>
```

The above code produces the following output which displays a text area of 5 lines visible at a time and 30 characters long with a word wrap facility where the text flows to the next line if the active text area is smaller than 30 characters due to small size of the webpage opened by the user.

Output:

2.3. Radio Buttons

If the value of the **type** attribute is "radio" i.e. **<input type= "Radio">,** the form will show a radio button. This button is also called toggle button.

Radio button enables the selection of one of the options out of the many.

Attributes of Text Field	Description
Name	It adds an internal name to the field so the program that handles the form can identify the fields. To group the radio buttons so that only one could be selected at a time, same name is given to all the buttons.
Value	It defines what will be submitted if checked.
Align	It defines how the text field will be aligned on the form. Valid entries are: TOP, MIDDLE, BOTTOM, RIGHT, LEFT, TEXTTOP, BASELINE, ABSMIDDLE, ABSBOTTOM.
Tabindex	It defines in which order the different fields should be activated when the visitor clicks the tab key.
Checked	This attribute can have value (e.g., checked="checked | unchecked").

Forms

For Example:

```
<form>
What type of lighting you have in your room? <br>
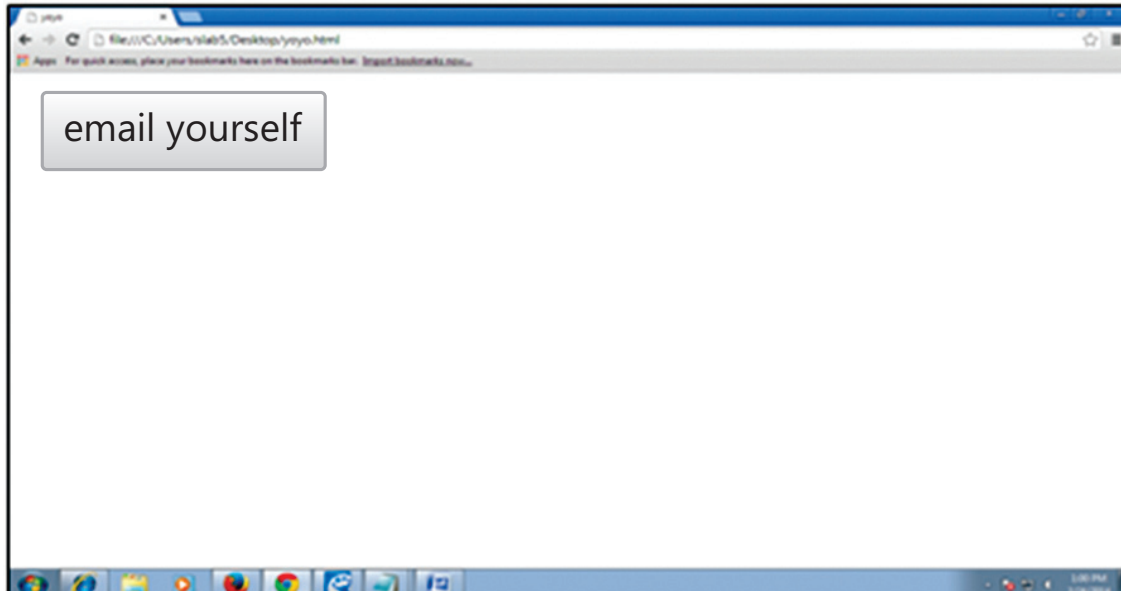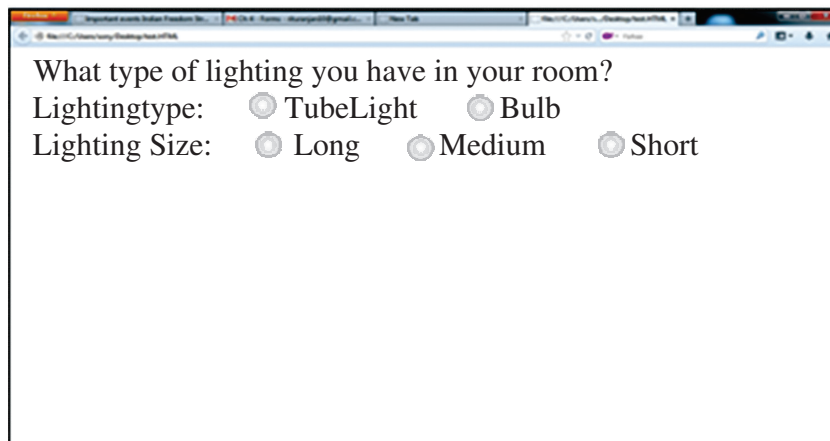
Lightingtype:
<input type="radio" name="Ltype" value="tube">TubeLight
<input type="radio" name="Ltype" value="bulb">Bulb <br>

Lighting Size:
<input type="radio" name="LSize" value="Long">Long
<input type="radio" name="LSize" value="medium">Medium
<input type="radio" name="LSize" value="short">Short <br></form>
```

The above code produces the following output:

The user is allowed to select one of the two from Lighting type i.e. either TubeLight or Bulb. Similarly, the user can select any one of the three from Lighting Size i.e. Long, Medium and Short. This is achieved by naming all options of a set the same. Here all light type has the name Ltype while all light size is name LSize. This is where the id attribute comes handy, especially if the value has to be used later on.

2.4. Checkboxes

If the value of the type attribute is "checkbox" i.e. <input type= "Checkbox">, the form will show a checkbox. As compared to radio button, a checkbox allows for multiple selections of items.

The check box's attributes namely, name, align, value and tabindex behave the same as a radio button's attributes.

Every checkbox does not get a different name, rather a collection of checkboxes get the same name so as to refer to a group as shown in the following code.

For example:

All the checkboxes have the same name i.e. "sweet", though the value for each one of them is different.

```
<form>
I love to eat Chocolate:
<input type="checkbox" name="sweet" value="Chocolate">
<br>
I love to eat Ladoo:
<input type="checkbox" name="sweet" value="Ladoo">
<br>
I love to eat Cake:
<input type="checkbox" name="sweet" value="Cake">
</form>
```

The output of the above code is shown below:

2.5. Command Button

If the value of the **type** attribute is "Submit" i.e. **<input type= "submit | reset">,** the form will show a command button.

❖ **Submit buttons**: When activated, a submit button submits a form. A form may contain more than one submit button.

❖ **Reset buttons:** When activated, a reset button resets all controls to their initial values.

This command button will perform some action when the user clicks on it. The action is defined by **action** attribute in <form> tag along with the **method** attribute as shown in the following code:

```
<form method="post" action="mailto:youremail@email.com">
<input type="submit" value="Email Yourself">
</form>
```

The above code displays the following output:

When the user click on the command button called "Email Yourself", the action specified in <form> tag is performed. It opens your email inbox in email.com.

2.6. Drop down Box

Drop down Box contains a list that prompts the user to select one item from the list. It is created by using <select> and <option> tags. Both <Select> and <option> tag have start and an end tag. A SELECT element must contain at least one OPTION element.

The attributes used are:

Attribute	Description
Name	It adds an internal name to the field so the program that handles the form can identify the fields
Size	It defines the number of items to be visible when user clicks on the drop down box
Multiple	It allows for multiple selections
Value	It defines what will be submitted to the computer when an item is selected. If the **value** attribute takes the string as "CHO", then "CHO" will only be understood by the computer when the item selected is "Chocolate".

The <option> tag is used for creating a list inside a <select> tag as shown under:

```
<select>
<option>Chocolate</option>
<option>Ladoo</option>
<option>Cake</option>
</select>
```

Information and Computer Technology

Highlighting one item in the dropdown box

You can force an item to be selected by default by adding the "selected" in the <option> tag as <option selected>.

For Example:

The following code displays the use of <select> and <option> tag to show the dropdown box in the browser. The **size attribute takes the value as number "4", specifying the dropdown box to show 4 items at a time in the list box.**

```
<form method="post" action="mailto:youremail@email.com">
Taste of food
<select multiple name="taste" size="4">
<option value="indian" selected>Indian</option>
<option value="chinese" >Chinese</option>
<option value="mexican" >Mexican</option>
<option value="italian" >Italian</option>
<option value="continental" >Continental</option>
<option value="karim" >Karim's Special</option>
<option value="japanese" >Japanese Sweets</option>
</select>
<input type="submit" value="Email Yourself">
</form>
```

The following output will display 6 items in the dropdown box, which is already open and where the first item is already selected.

Summary

1. A form is an object that is used for collecting data from the user.
2. A The method attribute specifies how to send form-data using URL variables (with method="get") or as HTTP post transaction (with method="post").
3. A The <input> tag collects the information from the user.
4. A The textfield control accepts the input in one line.
5. A Text areas are the fields that displays several text lines at a time. The <textarea> tag has both start and the end tag.
6. A Radio button enables the selection of one of the options out of the many.
7. A Checkbox allows for multiple selections of items.
8. A The command button placed on the form performs some action when the user clicks on it.
9. A Submit buttons: When activated, a submit button submits a form. A form may contain more than one submit button.
10. Reset buttons: When activated, a reset button resets all controls to their initial values.
11. Drop down Box contains a list that prompts the user to select one item from the list. It is created by using <select> and <option> tags.

EXERCISE

A. Multiple choice questions

1. A _____ can be inserted in HTML document which can act as a container for all the input elements.
   (a) Text field   (b) Teaxt area
   (c) Form   (d) Command Button

2. _____ method is used to sent form data as URL variables.
   (a) get   (b) set
   (c) post   (d) none of them

3. _____ method is used to sent form data as HTTP post.
   (a) get   (b) set
   (c) post   (d) none of them

4. What is the purpose of a web form
   (a) An outdated feature still used to help the page load faster
   (b) An useful way to send information from the user directly to the search engines
   (c) A way to input data into a website or an application
   (d) To enable the user to navigate the website with ease

5. Which element allows for the creation of groups of options in a select menu?
   (a) \<select>   (b) \<group>
   (c) \<option>   (d) \<optgroup>

6. Which of the option will be selected with the following code snippet?

   ```
   <select>
   <option selected value="Fiat">Fiat</option>
   <option value="selected">Saab</option>
   <option value="opel">selected</option>
   <option value="audi">Audi</option>
   </select>
   ```
   (a) Fiat   (b) Saab
   (c) Selected   (d) Audi

B. Answer the following questions:

1. Why forms are used in web pages?

2. Explain all the attributes of Form tag.

3. Differentiate between Get & Post methods of Form tag.

4. How text field and text area controls are different from each other?

5. Explain the use of Radio buttons in HTML forms with the help of an suitable example.

6. Mention all the attributes of Check box. Justify how it is different from Radio button.

7. State the purpose of Submit and Reset button.

8. Which attributes are necessary to insert drop down list in a HTML page?

9. Sometimes it is better to use the text area element instead of an input element of type text. Write a short note to explain when and why?

C. Lab Session

1. Write HTML code to generate the following form. Save it as task1.html

2. Write HTML code to generate the following form. Save it as task2.html

3. Generate the output by using the following code:

```
<FORM action="http://prog/user" method="post">
    <P>
    <LABEL for="firstname">First name: </LABEL>
    <INPUT type="text" id="fname"><BR>
    <LABEL for="lastname">Last name: </LABEL>
    <INPUT type="text" id="lname"><BR>
    <LABEL for="email">email: </LABEL>
    <INPUT type="text" id="mail"><BR>
    <INPUT type="radio" name="Gender" value="Male"> Male<BR>
    <INPUT type="radio" name="Gender" value="Female"> Female<BR>
    <INPUT type="submit" value="Send"> <INPUT type="reset">
    </P>
</FORM>
```

Information and Computer Technology

DHTML & CSS

Learning Objectives

By the end of this chapter, learner will be able to:

- Differentiate between HTML & DHTML
- State the purpose of using CSS.
- List different advantages and disadvantages of using CSS.
- Understand the working of all the mentioned properties of CSS.
- Create an interactive webpage using CSS.

INTRODUCTION

When we open any web page and sends it to the computer requesting it cannot get any more data from the server unless a new request is made. So to overcome this drawback we use Dynamic HTML (DHTML) which is combining HTML and a scripting language that runs on the Client's browser to bring special effects to otherwise static pages.

1. DHTML

DHTML is the combination of HTML and JavaScript. DHTML is the combination of several built-in browser features in fourth generation browsers that enable a web page to be more dynamic.

DHTML is a combination of technologies used to create dynamic and interactive Web sites.

- ❖ **HTML** - For creating text and image links and other page elements.
- ❖ **CSS** - Style Sheets for further formatting of text and html, plus other added features such as positioning and layering content.
- ❖ **JavaScript** - The programming language that allows you to accesses and dynamically control the individual properties of both HTML and Style Sheets

Dynamic" is defined as the ability of the browser to alter a web page's look and style after the document has loaded.

DHTML is not a scripting language (like JavaScript), but merely a browser feature- or enhancement- that gives your browser the ability to be dynamic.

DHTML is a collection of features that together, enable your web page to be dynamic. It is the ability of the browser to alter a web page's look and style after the document has loaded.

With DHTML you can create:

- ❖ Animation
- ❖ Pop-up menus
- ❖ Inclusion of Web page content from external data sources
- ❖ Elements that can be dragged and dropped within the Web page

Features of DHTML:

- ❖ DHTML makes documents dynamic. It allows the designer to control how the HTML displays Web pages' content.
- ❖ Web page reacts and change with the actions of the visitor.
- ❖ DHTML helps to exactly position any element in the window, and change that position after the document has loaded.
- ❖ It can hide and show content as needed.
- ❖ DHTML allows any HTML element (any object on the screen that can be controlled independently using JavaScript) in Internet Explorer to be manipulated at any time, turning plain HTML into dynamic HTML.
- ❖ With DHTML, changes occur entirely on the client-side (on the user's browser).

Components of DHTML: Dynamic HTML includes the following components:

- ❖ Conventional HTML
- ❖ Scripts – Small programs designed to manipulate Web pages.
- ❖ Document Object Model (DOM) – The road map through which you can locate any element in an HTML document and use a scripting DHTML 3 language, such as JavaScript, to change the element's properties.
- ❖ Absolute Positioning – The elements on the page are placed in a fixed location, as opposed to relative positioning, in which an element's location is relative to particular elements on the page.
- ❖ Multimedia filters – Multimedia features that create visual effects for text, images, and other objects, without imposing long download times on the user.

2. CASCADING STYLE SHEETS (CSS)

In this chapter, we will discuss CSS in detail.

Cascading Style Sheets (**CSS**) is a style sheet language used for describing the look and formatting of a document written in a markup language. It is a way to provide style to HTML. Whereas the HTML is the meaning or content, the style sheet is the *presentation* of that document.

Cascading Style Sheets (CSS) is a simple mechanism for adding style (e.g., fonts, colors, spacing) to Web documents.

The advantages of using CSS are:
- ❖ It controls layout of many documents from one single style sheet.
- ❖ It has more precise control of layout.
- ❖ It applies different layouts to different media-types.
- ❖ It has numerous advanced and sophisticated techniques to be applied on web pages.

The Limitations of CSS are: CSS is very limited in browser compatibility. When you design a web page and you want it to display exactly as you like it. The problem with CSS is that it displays webpages very differently in the different browsers.

Your webpage looks perfect in Mozilla may look different in Internet Explorer. This is a big problem for your site's success.

2.1 Methods of applying CSS to an HTML document

There are three ways you can apply CSS to an HTML document. The First method is "In-Line", Second method is "Internal" and the Third method i.e. external which is most important.

Method 1: In-line (the attribute style)

One way to apply CSS to HTML is by using the HTML attribute style.

Example 1: To apply the red background color in a webpage, it can be applied in the following manner.

```
<html>
    <head>
            <title>Example</title>
    </head>
    <body style="background-color: #FF0000;">
            <p>The background is red.</p>
    </body>
    </html>
```

The above code will produce the following output:

Method 2: Internal (the tag style)

Another way is to include the CSS codes using the HTML tag <style>. For example like this:

```
<html>
<head>
        <title>Example</title>
        <style type="text/css">
        body {background-color: #0000FF ;}
        </style>
</head>
<body>
        <p> The background is Blue.</p>
</body>
</html>
```

The above code will produce the following output:

Information and Computer Technology

The method to link html with style sheet is called external style sheet.

An external style sheet is a text file with the extension **.css**. Like other files, we can place the style sheet on your web server or hard disk.

For example, save the style sheet with the name **style.css** and place it in a folder named **style**.

To create a link from the HTML document (default.htm) to the style sheet (style.css). The following code will be inserted in the header section of the HTML code i.e. between the <head> and </head> tags. HTML file.

<link rel="stylesheet" type="text/css" **href="style/style.css"** />

The code will be as follows:
Default.htm
```
<html>
    <head>
            <title>My document</title>
            <link rel="stylesheet" type="text/css" href="style.css" />
    </head>
    <body>
            <h1>My stylesheet Page</h1>
    </body>
    </html>
```

style.css
```
    body {
       background-color: #FF0000;
    }
```

This link will display the layout from the CSS file in the browser when displaying the HTML file.

Output of the above code will be as follows:

One CSS file can be used to control the layout of many HTML documents. Using CSS, the change can be made in a few seconds just by changing one code in the central style sheet.

3. FONT

3.1 Font Properties

- ❖ FONT-FAMILY
- ❖ FONT-STYLE
- ❖ FONT-SIZE
- ❖ FONT-VARIANT
- ❖ FONT-WEIGHT

3.1.1 Font family [font-family]

The property font-family is used to apply prioritized list of fonts in a web page. If the first font of the list is not installed on the computer then the next font of the list will be displayed until a suitable font is found.

Fonts family is divided into two categories:

1. Family-name

   e.g. be "Arial", "Times New Roman" or "Tahoma".

2. Generic family

   Generic families can be described as groups of family-names with uniformed appearances.

Information and Computer Technology

Example: sans-serif, which is a collection of fonts without "feet".

Times New Roman	These three font-families belong to the genetic family **serif**. They are characterized by all having "feet".
Garamond	
Georgia	

Trebuchet	These three font-families belong to the genetic family **sans-serif**. They are all characterized by all having "feet".
Arial	
Verdana	

Courier	These three font-families belong to the genetic family **monospace**. They are all characterized by all characters having a fixed width.
Courier New	
Andele Mono	

An example of a inserting list of fonts in a web page:

    h1 {font-family: arial, comic sans-serif, "Times New Roman";}
    h2 {font-family: "Times New Roman", verdana, serif;}

Code inserted in font.html:

```
<html >
<head>
<title>Example </title>

<link rel="stylesheet" href="ex1.css" type="text/css"/>
</head>
<body>
   <h1>Heading 1 in Arial</h1>

   <h2>Heading 2 in Times New Roman</h2>

   </body>
</html>
```

Code inserted in ex1.css:

    h1 {font-family: arial, comic sans-serif, "Times New Roman";}
    h2 {font-family: "Times New Roman", verdana, serif;}

Output produced by the above code:

3.1.2 Font style

The property font-style defines the chosen font either in **normal**, **italic** or **oblique**. In the example below, all headlines marked with <h2> will be shown in italics.

    h1 {font-family: arial, verdana, sans-serif; **font-style: oblique;**}
    h2 {font-family: "Times New Roman", serif; **font-style: italic;**}

Code inserted in font.html:

```
<html >
<head>
<title>Example </title>
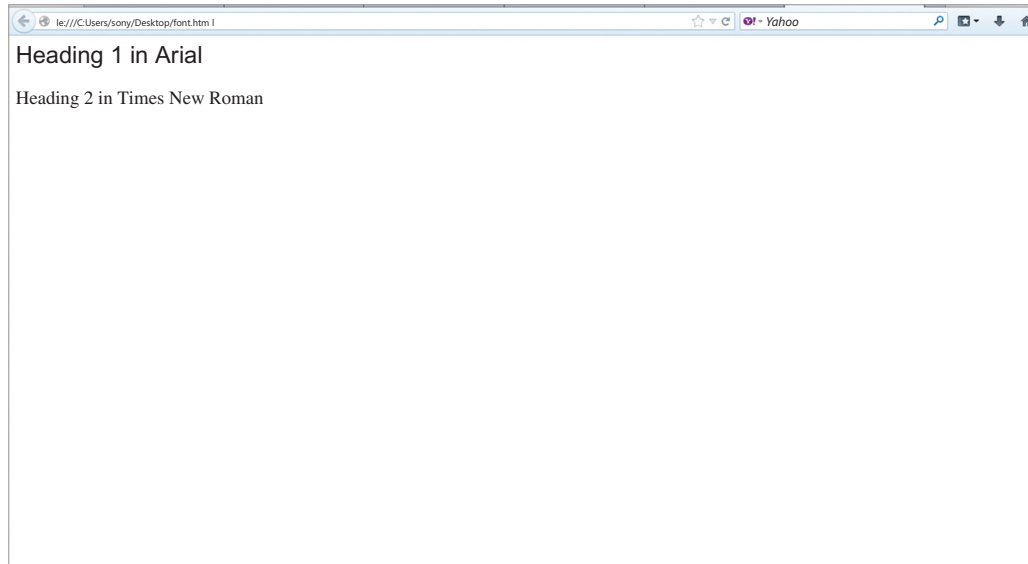
<link rel="stylesheet" href="ex1.css" type="text/css"/>
</head>
<body>
    <h1>Heading 1 in Arial</h1>

    <h2>Heading 2 in Times New Roman</h2>

    </body>
</html>
```

Information and Computer Technology

Code inserted in ex1.css:

h1 {font-family: arial, comic sans-serif, "Times New Roman"; **font-style: oblique;**}
h2 {font-family: "Times New Roman", verdana, serif; **font-style: italic;**}

Output produced by the above code:

3.1.3 Font variant

This property is used to select **normal** or **small-caps** variants of a font. A **small-caps** font display the smaller sized capitalized letters (upper case) instead of lower case letters.

Sans Book SC   Sans Bold SC   Serif Book SC   Serif Bold SC
ABCABC   ABCABC   ABCABC   ABCABC

If font-variant is set to **small-caps** and no small-caps font is available the browser will most likely show the text in uppercase instead.

h1 {font-variant: small-caps;}
h2 {font-variant: normal;}

Code inserted in font.html:

```
<html >
<head>
<title>Example </title>
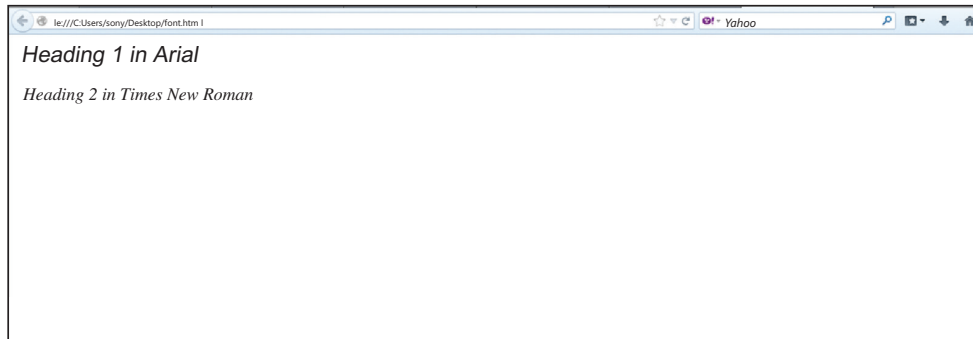
<link rel="stylesheet" href="ex1.css" type="text/css"/>
</head>
<body>
   <h1>Heading 1 in Arial</h1>

   <h2>Heading 2 in Times New Roman</h2>
   </body>
</html>
```

Code inserted in ex1.css:

h1 {font-family: arial, comic sans-serif, "Times New Roman"; **font-variant: small-caps;**}
h2 {font-family: "Times New Roman", verdana, serif; **font-style: italic; font-variant: normal;**}

Output produced by the above code:

3.1.4 Font weight

This property describes how bold or "heavy" a font should be presented. A font can either be **normal** or **bold**. Some browsers supports the use of numbers between 100-900(in hundreds) to describe the weight of a font.

```
p {font-family: arial, verdana, sans-serif; font-weight: normal;}
td {font-family: arial, verdana, sans-serif; font-weight: bold;}
```

Code inserted in font.html:

```
<html >
<head>
<title>Example </title>
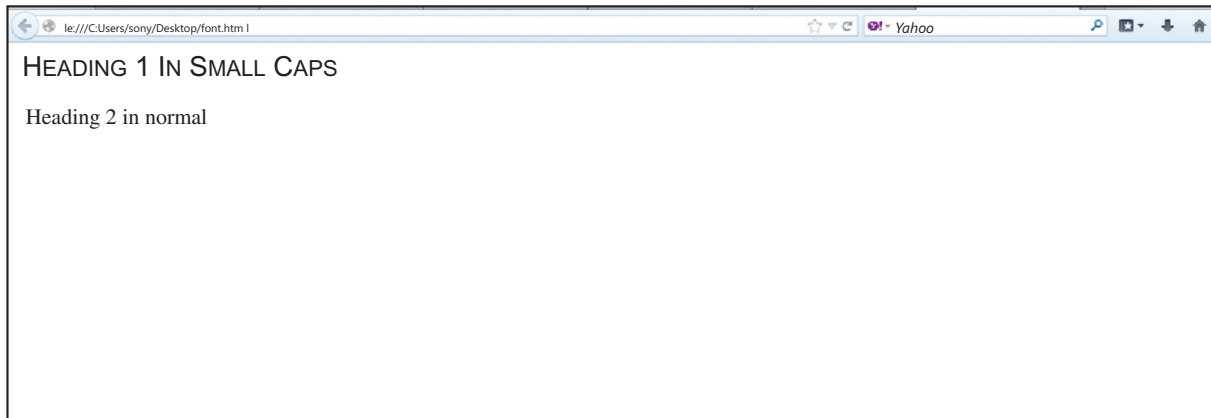
<link rel="stylesheet" href="ex1.css" type="text/css"/>
</head>
<body>
    <h1>Heading 1 in normal</h1>

    <h2>Heading 2 in bold</h2>

    </body>
</html>
```

Code inserted in ex1.css:

```
{font-family: arial, verdana, sans-serif; font-weight: normal;}
{font-family: arial, verdana, sans-serif; font-weight: bold;}
```

Output produced by the above code:

3.1.5 Font size [font-size]

The font-size property is used to set the size of a font.

There are many different units (e.g. pixels and percentages) to describe font sizes. The following example will illustrate the following effect of font size in a web page.

Code inserted in font.html:

```
<html >
<head>
<title>Example</title>
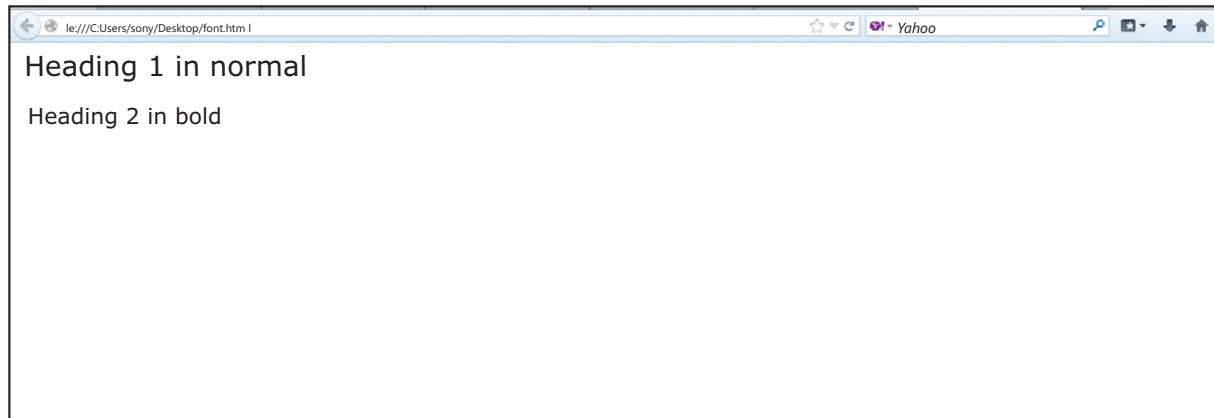
<link rel="stylesheet" href="ex1.css" type="text/css" media="all" />
</head>
<body>
    <h1>Heading 1 30px</h1>
    <h2>Heading 2 12pt</h2>
    <h3>Heading 3 120%</h3>
    <p> Heading 4 paragraph</p>

    </body>
</html>
```

Code inserted in ex1.css:

> h1 {font-size: **30px**;}
> h2 {font-size: **12pt**;}
> h3 {font-size: **120%**;}
> p {font-size: **1em**;}

Output produced by the above code:

The units '**px**' and '**pt**' make the font size absolute, while '**%**' and '**em**' allow the user to adjust the font size as he/she see fit. Some users suffer from poor vision or a monitor of bad quality. To make your website readable for everybody, you should use adjustable units such as '**%**' or '**em**'.

3.1.6 Combining [font] styles:

All the different font properties can be combined in one single property.

For example, to apply different font-properties for <p> tag following code can be used:

> p {
> **font-style: italic;**
> **font-weight: bold;**
> **font-size: 30px;**
> **font-family: arial, sans-serif;**}

The order of values for font properties is:

font-style | font-variant | font-weight | font-size | font-family

Example:

Display the content using all the font properties of font family.

Code to be inserted in Font.html

```
<html >
<head>
<title>Example </title>
<link rel="stylesheet" href="ex1.css" type="text/css" media="all" />
</head>
<body>
<p> This an example of combining all the Font properties.</p>
</body>
</html>
```

Code to be inserted in ex1.css

```
p {        font-style: italic;
           font-weight: bold;
           font-size: 30px;
           font-family: arial, sans-serif;    }
```

Output produced by the following above code:

4. COLOR PROPERTIES

❖ TEXT-INDENT

❖ TEXT-ALIGN

❖ TEXT-DECORATION

❖ LETTER-SPACING

❖ TEXT-TRANSFORM

4.1 Text indention

The text-indent property allows you to add effects to text paragraphs by applying an indent to the first line of the paragraph.

Example:

To apply **40px** indentation to all text paragraphs marked with <p>, the following code will be used:

Code to be inserted in font.html:

<html >

<head>

<title>Example</title>

<link rel="stylesheet" href="ex1.css" type="text/css" media="all" />

</head>

<body>

<p> This an example of Text Indentation.</p>

</body>

</html>

Code to be inserted in ex1.css

```
p {
        text-indent: 60px;
    }
```

Output produced by the above following code:

Information and Computer Technology

4.2 Text alignment

The text-align property gives the same effect as attribute align gives in old versions of HTML. The text can either be aligned to the **left**, to the **right** or **center** of the screen. CSS allows you to apply Justified alignment on text which is not available in HTML. The value **justify** will stretch each line so that both the right and left margins are straight.

Example:

Display the text in table headings <th> aligned to the right while the table data <td> in the centre of the browser window and normal text in paragraphs to be justified.

Code to be inserted in font.html

```
<html >
<head>
<title>Example </title>
<link rel="stylesheet" href="ex1.css" type="text/css" media="all" />
</head>
<body>
    <h1>Text alignment</h1>
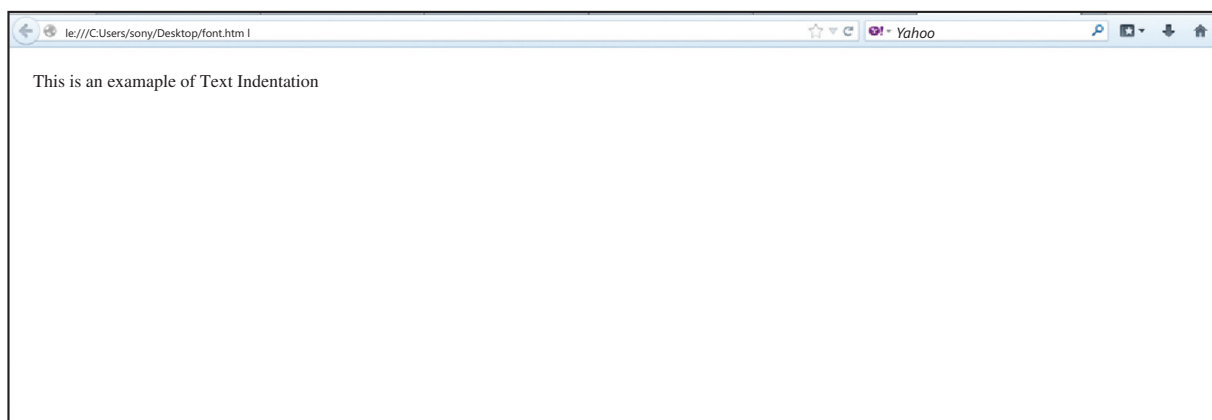
    <h2>Text alignmen in table</h2>

    <table border="1" width="100%">
    <tr>
    <th>Heading 1</th>
    <th>Heading 2</th>
    </tr>
    <tr>
    <td>Cell 1</td>
    <td>Cell 2</td>
    </tr>
    <tr>
    <td>Cell 3</td>
    <td>Cell 4</td>
    </tr>
    </table>

<h2>Justified text in paragraphs</h2>
<p>The Internet is a global system of interconnected computer networks that use the standard Internet protocol suite (TCP/IP) to serve several billion users worldwide. It is
```

a network of networks that consists of millions of private, public, academic, business, and government networks, of local to global scope, that are linked by a broad array of electronic, wireless, and optical networking technologies. The Internet carries an extensive range of information resources and services, such as the inter-linked hypertext documents of the World Wide Web (WWW), the infrastructure to support email, and peer-to-peer networks.

\</p\>

\<p\>The Internet has no centralized governance in either technological implementation or policies for access and usage; each constituent network sets its own policies. Only the overreaching definitions of the two principal name spaces in the Internet, the Internet Protocol address space and the Domain Name System, are directed by a maintainer organization, the Internet Corporation for Assigned Names and Numbers (ICANN). The technical underpinning and standardization of the core protocols (IPv4 and IPv6) is an activity of the Internet Engineering Task Force (IETF), a non-profit organization of loosely affiliated international participants that anyone may associate with by contributing technical expertise.\</p\>

\</body\>

\</html\>

Code to be inserted in ex1.css

```
th {
        text-align: right;
    }


td {
        text-align: center;
    }


p  {
        text-align: justify;
    }
```

Output produced by the following above code:

Browser window:

le:///C:/Users/sony/Desktop/font.htm l

Text alignment

Text alignment in table

Heading 1	Heading 2
Cell 1	Cell 2
Cell 3	Cell 4

Justified text in paragraphs

The Internet is a global system of interconnected computer networks that use the standard Internet protocol suite (TCP/IP) to serve several billion users worldwide. it is a network of networks that consists of millions of private, public, academic, business and government networks, of local to global scope, that are linked by a broad array of electronic, wireless, and optical new networking technologies. The Internet carries and extensive range of information resources and services, such as the inter-linked hypertext documents of the World Wide Web (WWW), the infrastructure to support email, and peer-topeer networks.

The Internet has no centralized governance in eighter technological implementation or policies for access and usage; each constituent network sets its own policies. Only the overreaching definitions of the two principla name spaces in the Internet, the Internet Protocol address space and the Domain name System, are directed by a maintainer organization, the Internet Corporation for Assigned Names and Numbers (ICANN). The technical underpinning and standardization of the core protocols (IPv4 and IPv6) is an activity of the Internet Engineering Task Force (IETF), a non-profit organization of loosely affiliated international participants that anyone may associate with by contributing technical expertise.

4.3 Text decoration

The text-decoration property makes it is possible to add different "decorations" or "effects" to text. For example, you can underline the text, have a line through or above the text, etc.

+In the following example, <h1> are underlined headlines, <h2> are headlines with a line above the text and <h3> are headlines with a line though the text.

Code to be inserted in font.html

```
<html >
<head>
<title>Example </title>
<link rel="stylesheet" href="ex1.css" type="text/css" media="all" />
</head>
<body>
    <h1>Text Underline</h1>

    <h2>Text Overline</h2>
    <h3> Text Line Through</h3>

</body>
</html>
```

Code to be inserted in ex1.css

```
h1 {
        text-decoration: underline;
    }


h2 {
        text-decoration: overline;
    }


h3 {
        text-decoration: line-through;
    }
```

Output produced by the above following code:

4.4 Letter space

This property is used to give the specified spacing between the text characters. The value of the property is simply the desired width.

Example:

To give **3px** spacing between the letters in a text paragraph <p> and **6px** between letters in headlines <h1> the following code will be used:

Code to be inserted in font.html

```
<html >
<head>
<title>Example </title>
<link rel="stylesheet" href="ex1.css" type="text/css" media="all" />
</head>
<body>
```

Information and Computer Technology

```
<h1>Example showing Letter Spacing</h1>
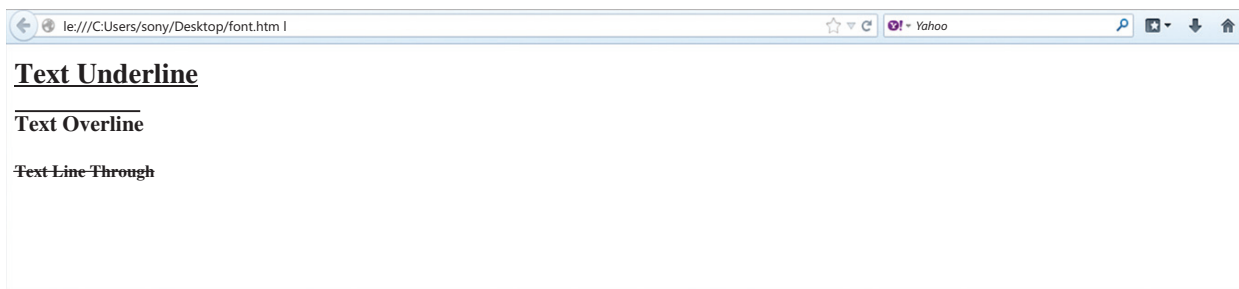
<p>The Internet is a global system of interconnected computer networks that use the standard Internet protocol suite (TCP/IP) to serve several billion users worldwide. It is a network of networks that consists of millions of private, public, academic, business, and government networks, of local to global scope, that are linked by a broad array of electronic, wireless, and optical networking technologies. The Internet carries an extensive range of information resources and services, such as the inter-linked hypertext documents of the World Wide Web (WWW), the infrastructure to support email, and peer-to-peer networks.
</p>

</body>
</html>
```

Code to be inserted in ex1.css

```
h1 {
        letter-spacing: 6px;
    }
 p  {
        letter-spacing: 3px;
    }
```

Output produced by the following above code:

4.5 Text transformation

The text-transform property controls the capitalization of a text. You can choose to **capitalize**, use **uppercase** or **lowercase** regardless of how the original text is looks in the HTML code.

An example could be the word "headline" which can be presented to the user as "HEADLINE" or "Headline". There are four possible values for text-transform:

Capitalize : Capitalizes the first letter of each word. For example: "information technology" will be "Information Technology".

Uppercase : Converts all letters to uppercase. For example: " information technology" will be "INFORMATION TECHNOLOGY".

Lowercase : Converts all letters to lowercase. For example: "INFORMATION TECHNOLOGY" will be " information technology".

None   : No transformations - the text is presented as it appears in the HTML code.

Example:

Display the heading in Capital letters and list items in uppercase.

Code to be inserted in font.html

```
<html >
<head>
<title>Example </title>
<link rel="stylesheet" href="ex1.css" type="text/css" media="all" />
</head>
<body>
<h1>Parts of Computer:</h1>
<ol>
<li> Visual Dispaly Unit</li>
<li> Keyboard </li>
<li> Mouse </li>
<li> Central Processing Unit </li>
<li> Printer </li>
</ol>
</body>
</html>
```

Code to be inserted in ex1.css

```
    h1 {
            text-transform: capitalize;
    }
```

```
li   {
        text-transform: uppercase;
}
```

Output produced by the following above code:

```
le:///C:/Users/sony/Desktop/font.htm l                          Yahoo
Parts of Computer:
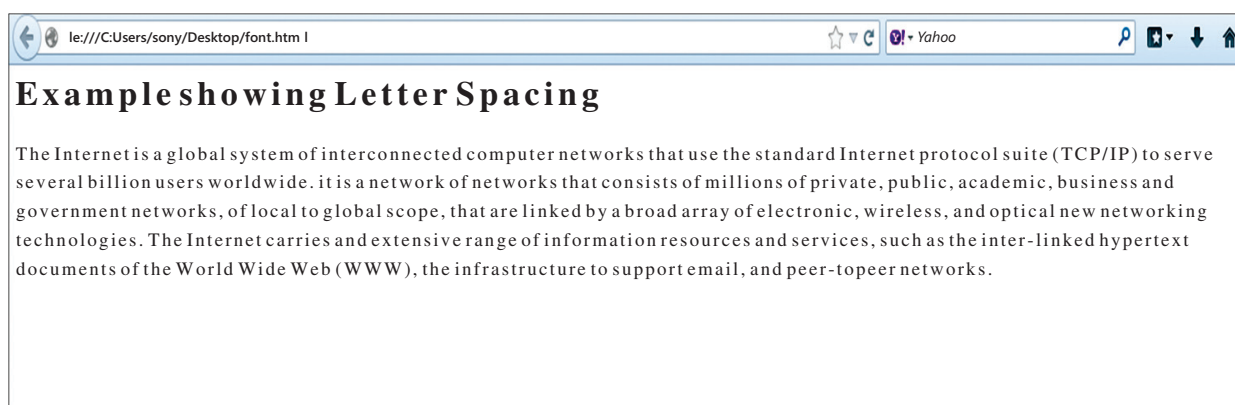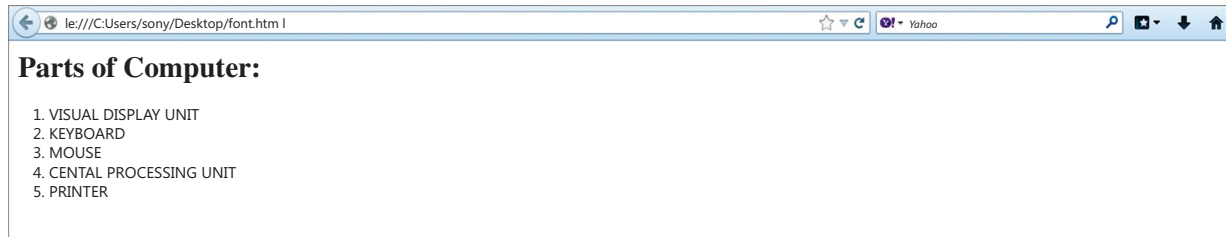
    1. VISUAL DISPLAY UNIT
    2. KEYBOARD
    3. MOUSE
    4. CENTAL PROCESSING UNIT
    5. PRINTER
```

5. BACKGROUND PROPERTIES

- ❖ FOREGROUND-COLOR
- ❖ BACKGROUND-COLOR
- ❖ BACKGROUND-IMAGE
- ❖ BACKGROUND-REPEAT

5.1 Foreground color: the 'color' property

The color property describes the foreground color of a text to be displayed in browser.

Example, display all headlines in a document to be green colour.

Code to be inserted in font.html:

```
<html >
<head>
<title>Example </title>
<link rel="stylesheet" href="ex1.css" type="text/css" media="all" />
</head>
<body>
    <h1>Parts of Computer:</h1>

    <ol>
    <li> Visual Dispaly Unit</li>
    <li> Keyboard </li>
    <li> Mouse </li>
    <li> Central Processing Unit </li>
```

```
        <li> Printer </li>
        </ol>
</body>
</html>
```

Code to be inserted in ex1.css:

```
h1 {
            color: #ff0000;
    }
```

Output produced by the following above code:

Colors can be entered as hexadecimal values as in the example above (#ff0000), or you can use the names of the colors ("red") or rgb-values (rgb(255,0,0)).

5.2. 'background-color' property

The background-color property describes the background color of browser window.

To change the background color of an entire page, the background-color property should be applied to the <body> tag. You can also apply background colors to other elements including headlines and text.

Example, apply different background colors to <body> and <h1> tags.

Code to be inserted in font.html

```
<html >
<head>
<title>Example </title>
<link rel="stylesheet" href="ex1.css" type="text/css" media="all" />
</head>
<body>
    <h1> Example displaying foreground and background colour.</h1>
</body>
</html>
```

Information and Computer Technology

Code to be inserted in ex1.css

```css
body {
        background-color: #FFCC60;
}


h1 {
        color: #990011;
        background-color: #FC9004;
}
```
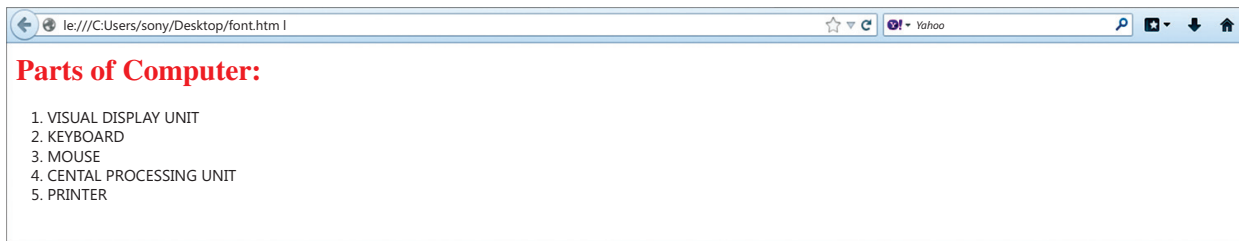
Notice that two properties have been applied to <h1> by dividing them by a semicolon.

Code produced by the following above code:
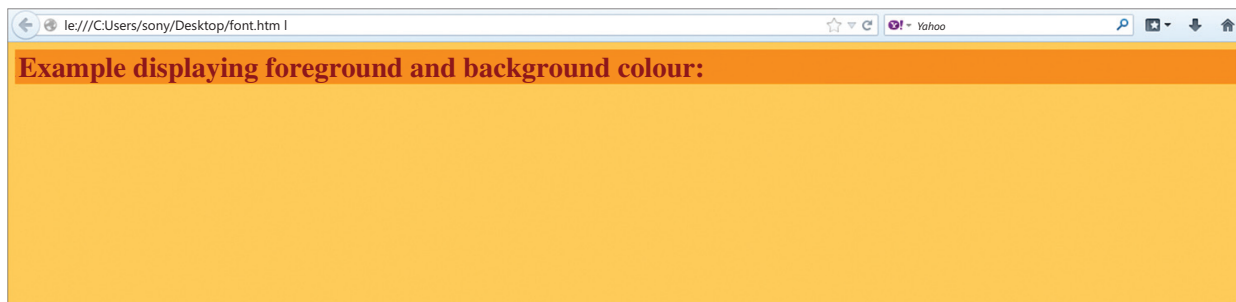
5.3 Background images [background-image]

The background-image property is used to insert a background image in a web page.

To insert the image of the butterfly as a background image for a web page, simply apply the background-image property to <body> and specify the location of the image.
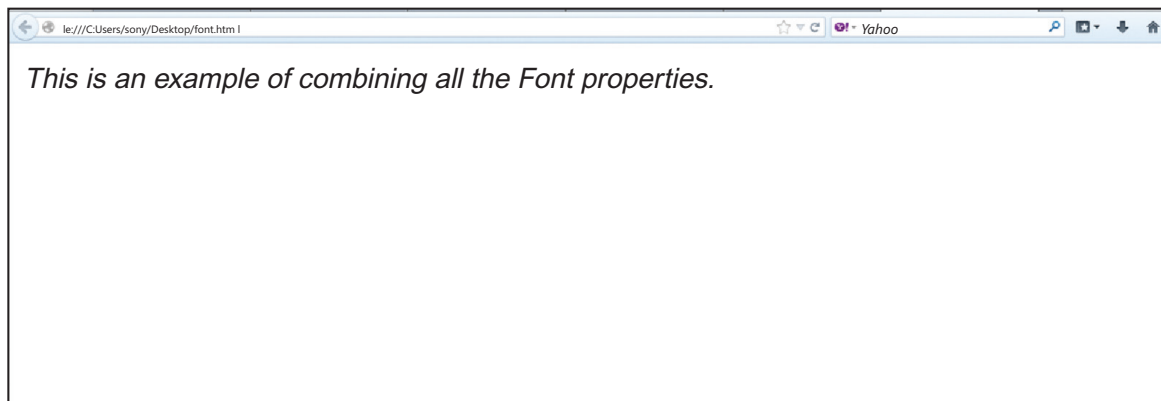
Code to be inserted in font.html

```html
<html >
<head>
<title>Example </title>
<link rel="stylesheet" href="ex1.css" type="text/css" media="all" />
</head>
<body>
   <h1> Inserting Image</h1>

</body>
</html>
```

Code to be inserted in ex1.css

```
body {
        background-color: #FFCC66;
        background-image: url("earth.gif");
}

h1 {
        color: #990000;
        background-color: #FC9804;
}
```

Output to be produced by the above following code:

Image will be inserted by giving the specified the location of the image as **url("earth.gif")**. This means that the image is located in the same folder as the style sheet. You can also refer to images in other folders using **url("../images/earth.gif")** or even on the Internet indicating the full address of the file: **url("http://www.example.net/earth.gif")**.

5.4 Repeat background image [background-repeat]

As you have seen in the example above, that by default the image of the earth was repeated both horizontally and vertically to cover the entire screen. The background-repeat property controls this behaviour.

The four different values for background-repeat are as follows:

Value	Description
background-repeat: repeat-x	The image is repeated horizontally
background-repeat: repeat-y	The image is repeated vertically
background-repeat: repeat	The image is repeated both horizontally and vertically
background-repeat: no-repeat	The image is not repeated

For example, to avoid repetition of a background image the following code can be used:

Code to be inserted in font.html

```
<html >
<head>
<title>Example </title>
<link rel="stylesheet" href="ex1.css" type="text/css" media="all" />
</head>
<body>
    <h1> Inserting Image</h1>
</body>
</html>
```

Code to be inserted in ex1.css

```
body {
        background-color: #FFCC66;
        background-image: url("earth.gif");
        background-repeat: no-repeat;
}


h1 {
        color: #990000;
        background-color: #FC9804;
}
```

Output to be produced by the following above code:
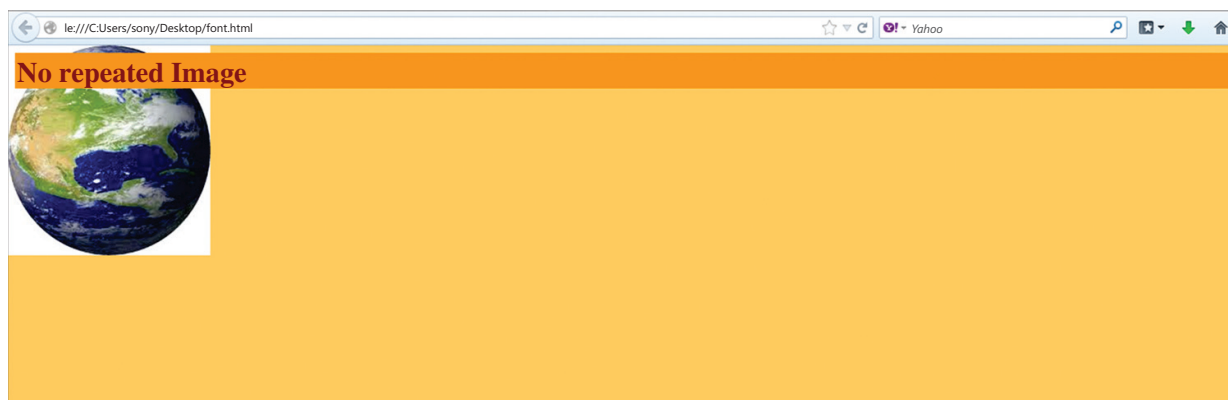
Summary 🔖

1. DHTML is the combination of several built-in browser features in fourth generation browsers that enable a web page to be more dynamic.

2. **CSS** - Style Sheets for further formatting of text and html, plus other added features such as positioning and layering content.

3. **JavaScript** - The programming language that allows you to accesses and dynamically control the individual properties of both HTML and Style Sheets.

4. There are three ways to apply CSS to an HTML document.

5. The property font-family is used to apply prioritized list of fonts in a web page.

6. The property font-style defines the chosen font either in **normal**, **italic** or **oblique**.

7. The Font-variant property is used to select **normal** or **small-caps** variants of a font.

8. The Font-weight property describes how bold or "heavy" a font should be presented. A font can either be **normal** or **bold**.

9. The font-size property is used to set the size of a font.

10. The text-indent property allows you to add effects to text paragraphs by applying an indent to the first line of the paragraph.

11. The text-align property gives the same effect as attribute align gives in old versions of HTML. The text can either be aligned to the **left**, to the **right** or **center** of the screen.

12. The text-decoration property makes it is possible to add different "decorations" or "effects" to text.

13. The Letter-spacing property is used to give the specified spacing between the text characters.

14. The text-transform property controls the capitalization of a text. You can choose to **capitalize**, use **uppercase** or **lowercase** effects to be applied on text in the HTML code.

15. The color property describes the foreground color of a text to be displayed in browser.

16. The background-color property describes the background color of browser window.

17. The background-image property is used to insert a background image in a web page.

18. The background-repeat property avoids the repetition of the image set as a background for the web page.

EXERCISE

A. Multiple choice questions

1. Which property describes how bold or "heavy" a font should be presented?
   (a) Font style   (b) Font size
   (c) Font weight   (d) Font variant

Information and Computer Technology

2. The units '___' and '___' allow the user to adjust the font size according to him/her.
   (a) '**#**' and '**me**'   (b) '**%**' and '**em**'
   (c) '**$**' and '**es**'   (d) All of the above

3. The _____ makes it is possible to add different "decorations" or "effects" to text.
   (a) Text Align property   (b) Text Indent property
   (c) Letter spacing property   (d) None of the above

4. DHTML is a combination of _____ and _____.
   (a) DOM and CSS   (b) CSS and Conventional HTML
   (c) HTML and JavaScript   (d) None of the above

5. _____ is a style sheet language used for describing the look and formatting of a document written in a markup language.
   (a) Document Object Model (DOM)   (b) Multimedia filters
   (c) Cascading Style Sheets (CSS)   (d) DHTML

6. Which property is used to give the specified spacing between the text characters?
   (a) Text Decoration   (b) Letter Spacing
   (c) Text Transform   (d) None of the above

7. The units '**px**' and '___' make the font size absolute.
   (a) 'pr'   (b) 'pn'
   (c) 'pz'   (d) 'pt'

8. The _____ repeats the image both horizontally and vertically to cover the entire screen.
   (a) Background Image property   (b) Foreground Color property
   (c) Background Color property   (d) Background Repeat property

B. Fill in the blanks:

1. Font-family style differentiates between _____,_____ and _____ font faces.

2. The font-variant property refers to the _____ variant of the font face.

3. CSS uses a numeric scale of multiples of _____ to _____.

4. The CSS specification also allows browser to render any _____ value as normal.

5. The text decoration has to rendered with _____.

6. The _____ property allows you to add effects to text paragraphs by applying an indent to the first line of the paragraph.

7. Font variant property is used to select _____ or _____ variants of a font

8. The _____ property describes the foreground color of a text to be displayed in browser.

9. The property font-style defines the chosen font either in _____, _____ or _____.

10. The property _____ is used to apply prioritized list of fonts in a web page.

11. The text-transform property controls the _____ of a text.

12. The _____ property describes the background color of browser window.

13. The _____ property is used to insert a background image in a web page.

C. Answer the following questions:

1. Explain CSS with reference to DHTML

2. List some advantages and disadvantages of CSS.

3. What is the extension of a CSS file?

4. Explain how would we embedded Style in your HTML.

5. List down the various font-family property ? Give an example of each.

6. What do you mean by font-variant? Give example of each.

7. Explain font-weight?

8. Mention the properties of CSS used to insert Letter spacing in a line.

9. How many types of text alignments can be included in a CSS page.

10. How the text in a webpage can be capitalized using CSS properties?

11. Explain the CSS properties to set the foreground and background color of the webpages.

12. Which property of CSS controls the repetition of image inserted in a web page as a background?

D. Lab Session

1. Create a web page for a company name web@Creation using attributes such as Background color along with other attribute.

2. Create a webpage for departmental store using all the listing tags with margin attributes of CSS, where they sold following items:
   (a) Furniture   (b) Electronic Items   (c) Home Appliances
   (d) Computer Books   (e) Cosmetics

3. Design a webpage where heading is placed from the left 40 using relative-position of CSS having headings A B C D.

4. Write code to develop Webpage that is having some paragraph with the different size unit.

Network Security

Learning Objectives

By the end of this chapter, learner will be able to:

- Name the different kinds of software licensing available
- Differentiate between freeware and open source software
- State how the use of shareware software is different from that of freeware software
- Differentiate between copyright and licensing
- Define cyberethics, cybersafety and cybersecurity
- State the purpose of cookies
- Tabulate the different phases of cyber ethics evolution
- List precautions that can be taken to ensure cyber safety
- Identify the different kinds of threats to cyber security
- State ethical behaviour to be followed as a cyber citizen
- Identify the different categories of cyber crime

INTRODUCTION

The world created by technology is one of machines - computers, computer systems and computer networks. Add to that the human component and one has a world of diverse cultures and social practices that is often referred to as cyberspace.

Cyberspace is a man made world that is constantly evolving. It differs from the static physical world as it has no boundaries, no geographical mass, and of course, no gravity. It is limitless, constantly changing its shape, attributes and characteristics. It exists in a form of bits and bytes; it is an information driven world. Government(s), hardware manufacturers and software application providers act as gatekeepers of cyberspace.

This medium, which is dynamic, infinite and intangible has to be regulated to prevent it from exploding. Regulating cyberspace means regulating both man and the machine. There is ethics, safety and security involved.

Ethics represents personal choice. It's the set of acceptable behaviours in a given culture. It's not just a list of rules but the code of conduct by which a society chooses to live. Safety refers to safe practices and security is the additional tasks carried out to ensure safety.

The first is a moral choice, the second a behavioural code and the third involves active participation.

In cyberspace we have

- ❖ **Cyberethics** exploring appropriate and ethical behaviours related to online environments and digital media. It includes plagiarism, bullying, and hacking to name a few.
- ❖ **Cybersafety** defining how one operates on-line. It includes rules guiding how to keep personal information safe and limited
- ❖ **Cybersecurity** involving tasks undertaken on the computer to keep it secure from people who wish to harm it or use data stored on it unlawfully. This includes installing virus software and firewalls.

Before we study these in greater detail there are certain fundamental terminology and concepts that must be understood.

1. BASIC TERMINOLOGY
1.1 Copyright and License

Copyright is about protecting original expression. Copyright arises as soon as a 'work' is created. A software copyright protects all source code, written text materials, graphic images/ designs, drawings, any linked sound, video files or films.

A copyright owner has five exclusive rights:

- ❖ Fix or store the information in a tangible form.
- ❖ Reproduce the copyrighted material.
- ❖ Sell, rent, lease, or otherwise distribute copies of the copyright work to the public.
- ❖ Publicly perform and display the copyrighted material.
- ❖ Prepare derivative works based on the copyrighted material.

License is the permission granted by the holder of a copyright to another to use an original work. It states under what circumstances and to what extent the original work can be used, changed or distributed. It may include a period of time, a geographical area, renewal provisions, and other limitations. It does not pass on the copyright.

1.2 Software Licensing

A software license is a legal agreement about an application. It is between the software producer and the end-user and is an important part of the legally binding contract between them (or rights owner) and the end-user. This is to ensure recognition of the rights of the owner on his creation. It specifies how the application may be used and defines the rights of both the producer and the user.
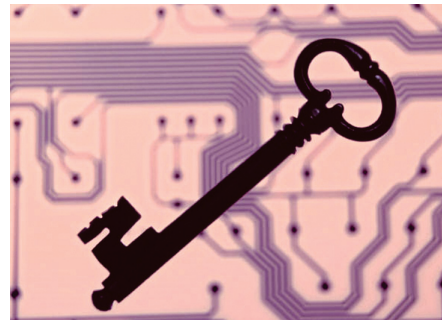
1.3 Open Source, Freeware and Shareware

Open-source software (OSS) is computer software with its source code made available. It is very often developed in a public, collaborative manner. A license for open sources software allows the end user to study, change and distribute the software for any purpose.

Some copyrighted software is made available for use, free of charge for an unlimited time. These are called **freeware**. The copyright still remains with the producer / owner for any future development.

Shareware are copyrighted software that can be shared for a limited on a trial basis with the understanding that if the user decides to use it, he will pay for it.

1.4 Types of software licenses

❖ **Proprietary license** where the copyright stays with the producer and the user is granted the right to use the software

❖ **GNU General Public Licenses**, which are agreements under which "open source" software is usually licensed. It allows end users to change the source code, but the changed code too, must also be made available under a GNU GPL license.

❖ **End User License Agreement** (EULA) indicates the terms under which the end-user may use the software.

❖ **Workstation licenses** are licenses that permit the installation of an application on a single computer. Before installing it on a different machine the software must be removed from the first machine

❖ **Concurrent use licenses** permit the installation of the software onto multiple machines as long as the number of computers using the software at the same time does not exceed the number of licenses purchased.

- **Site licenses** permit the use of software on any computer at a specified site. Unlimited site licenses allow the installation of the software on any number of computers as long as those computers are located at the specified site.
- **Perpetual licenses** come without an expiry date and allow the software to be used indefinitely
- **Non-perpetual licenses** "lease" the software for use for a specified period of time, usually annually or sometimes bi-annually. Users are required to remove the software from their computer if they cease paying the license fee.
- **License with Maintenance** offer "maintenance" or "software assurance" along with the original license fee.

1.5 Cyber Law

Cyber law is a new branch of law and is growing very fast. It establishes norms of accepted human behaviour in cyberspace. There are three basic building blocks of cyber law.

- Netizens who are the inhabitants of the internet and use it as an extension of their physical world
- Cyberspace which is a 'man made machine world' reshaping itself periodically.
- Technology
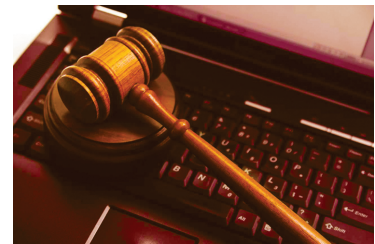
Cyber law includes all the cases, written rules and government laws that affect persons and institutions who

- control the entry to cyberspace,
- provide access to cyberspace,
- create the hardware and software which unable people to
  - access cyberspace or
  - Use devices to go 'online' and enter cyberspace.

Laws governing ecommerce, online contracts, copyright, trademark, business software patenting, eTaxation, eGovernance and cyber crimes all fall within the meaning and scope of cyber law.

1.6 Cookies

Cookies allow a visited website to store its own information about a user on the user's computer.

When a user uses a computer to visit a website, the website stores some basic information about the visit on the hard disk of the computer. It records the user's preferences while using the site. This stored information is called a 'cookie'.

1.7 Hackers and Crackers

Hackers are people with computer programming skills who use their knowledge to gain unauthorized access to data in a system or computer.

Crackers modify or disable features of a software application. They usually mean to harm the software, the hardware using this software or the end user of the software.

Both hackers and crackers can also work on the ethical side when they use their skills to prevent cyber crime and help the law keepers.

1.8 Firewall

A firewall is a program or hardware device that filters the information coming through an internet connection to a network or computer system. If incoming information does not pass the rules stored in the firewall, it is not allowed through.
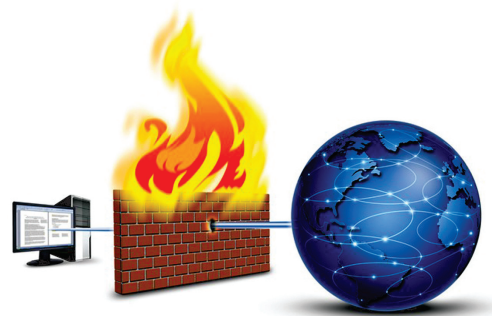
1.9 Cyber Ethics

The explosion of social networking and the common practice of sharing and posting of information online have changed the way people communicate. Users must understand their responsibilities for conducting themselves online. An important component of that is Cyber Ethics. Cyber Ethics refers to the code of responsible behaviour on the Internet. Basic Cyber ethics must be followed to be good cyber citizens.

Cyberethics began in some form in the 1940s. It examines the impact of not only the internet or computing machines but also private computer networks and interconnected communication technologies.

The evolution of cyber ethics can be categorized in four distinct phases.

Phase	Time Period	Technological features	Associated issues
I	1950s - 1960s	• Stand alone machines (Large mainframe computers)	• Artificial intelligence • Database privacy
II	1970s - 1980s	• Minicomputers • PCs • Privately owned computer networks	• Problems of Phase I • Intellectual property • Software piracy • Computer crime • Privacy and exchange of data
III	1990s – Present	• Internet • The World Wide Web (www)	• Problems of Phase I and II • Concerns about free speech • Anonymity • Legal jurisdiction • Virtual communities
IV	Present - Near Future	• Convergence of information and communication technologies • Nano technology research • Genetic and genomic research	• Problems of Phase I, II and III • Concerns about artificial electronic agents (bots) with decision making capabilities • Biochip implants

Cyber ethics must be practiced at every level of computer use—from the novice user to an information technology professional whose job requires significant use of online resources. Those who use the internet must be follow ethical practices in every aspect of its use.

Anyone can communicate at anytime, with anyone, anywhere over the internet today. This can have negative consequences. Anonymous posting to blogs, websites, and social media can encourage bad behaviour as it does not identify the person who commits the action.

With the widespread availability of mobile phones and internet access, bullying and harassment can be conducted through cyberspace. Developments in electronic media offer new platform for bullies and allow cyber bullying. Cyber bullying

uses internet service or mobile technologies - such as e-mail, chat room discussion groups, instant messaging, web pages or SMS (text messaging) - with the intention of harming another person. The actions can range from cruel or embarrassing rumours to threats, harassment, or stalking. The effects can be far-reaching and long lasting.

The same rules of right and wrong taught to a child while growing up needs to be applied to cyber space! Do not do something in cyber space that you would consider wrong or illegal in everyday life.

❖ Do not use rude or offensive language.

❖ Do not lie about people, send embarrassing pictures of them, or anything else to try to hurt them (bullying).

❖ Do not use someone else's password or break into his computer.

❖ Do not copy information from the Internet and claim it as yours (plagiarism).

❖ Obey copyright restrictions when downloading material.

❖ Do not try to make someone else's computer unusable.

1.10 Cyber Safety

Identity theft is a growing problem and a very troubling one. The concept is rather simple, though the process can be complex, and the consequences for the victim can be quite severe. The idea is simply for one person to take on the identity of another. This is usually attempted to make purchases; but identity theft can be done for other reasons, such as obtaining credit cards in the victim's name, or even a driver's licenses. If the person responsible for the theft obtains a credit card in someone else's name, then he can purchase products and the victim of this fraud is left with debts she was not aware of and did not authorize.

One of the more common ways to accomplish identity theft is via a technique called **phishing**, which is the process of trying to tempt the target to provide personal information which can be used to perform illegal actions.

Another horrifying safety threat is stalking which involves harassing or threatening behaviour that an individual engages in repeatedly. It could mean following a person, appearing at a person's home or place of business, making harassing phone calls, leaving written messages or objects, or vandalizing a person's property. Such behaviour should be treated seriously.

Cyber-safety addresses the ability to act in a safe and responsible manner on the Internet and other connected environments. These behaviours protect personal information and

reputation. They include safe practices to minimize danger from behaviour-based rather than hardware/software-based problems.

In following cyber safety guidelines a user will recognize online risks, make informed decisions, and take appropriate actions to protect himself while using technology, technology systems, digital media and information technology. He would adhere to privacy and safety guidelines, policies, and procedures.

Here are some cyber safety guidelines to follow.

❖ Set secure passwords and don't share them with anyone. Avoid using common words, phrases, or personal information and update regularly.

❖ Restrict access and make personal information secure to prevent identity theft.

❖ Be suspicious of unsolicited contact from individuals seeking internal organizational data or personal information. Verify a request's authenticity by contacting the requesting entity or company directly.

❖ Immediately report any suspect data or security breaches to your supervisor and/or authorities.

❖ Limit the amount of personal information you post. Do not post information that would make you vulnerable, such as your address or information about your schedule or routine. If your friend posts information about you, make sure the information is something that you are comfortable sharing with strangers.

❖ Be wary of strangers and cautious of potentially misleading or false information.

❖ Take advantage of privacy and security settings. Use site settings to limit the information you share with the general public online.

❖ Be suspicious of unknown links or requests sent through email or text message. Do not click on unknown links or answer strange questions sent to your mobile device, regardless of who the sender appears to be.

❖ Download only trusted applications from reputable sources or marketplaces.

1.11. Cyber Security

The media gives a lot of attention to dramatic virus attacks, hackers, and other interesting Internet phenomena. In spite of daily horror stories, however, many people lack an adequate understanding about the reality of these threats.

External threat to any system is not just hackers or crackers, but also malware and denial of service attacks. Malware includes viruses, worms, Trojan horses, and logic bombs. And there is the issue of internal problems due to misbehaviour or simple ignorance.

2. MOST ATTACKS CAN BE CATEGORIZED AS ONE OF SIX BROAD CLASSES

Malware, software that has a mischievous purpose such as virus attacks, worms, adware, Trojan horses, and spyware. This is the most prevalent danger to a system. Malware is discussed in detail later in the lesson.

Security breaches that attempt to gain unauthorized access to a system including cracking of passwords, changing privileges, breaking into a server….. in other words, hacking a computer or a computer network.

Denial of service (DoS) attacks that are designed to prevent legitimate access to a system.

Web attacks that attempts to breach a website. Two of the most common such attacks are SQL injection and cross-site scripting.

Session hijacking, where an attacker attempts to take over a session.

DNS poisoning, which seeks to compromise a DNS server so that users can be redirected to unsafe websites.

Malware

Malware is used to disrupt computer operation, gather sensitive information, or gain access to private computer systems. It can appear in the form of code, scripts, active content, and other software. 'Malware' is a general term used to refer to a variety of forms of hostile or intrusive software. Let us take a look at some of the important malwares available today.

Viruses: A computer virus is a program that replicates itself. A computer virus attaches itself to a program or file to help it spread from one computer to another. Almost all viruses are attached to an executable file, which means the virus may exist on a computer but it actually cannot infect the computer unless one runs or opens the malicious program. It is important to note that a virus cannot be spread without a human action, (such as running an infected program) to keep it going.

Generally, a virus will also have some other unpleasant function, but the self-replication and rapid spread are the distinguishing features of a virus. Often this growth, in and of itself, can be a problem for an infected network. The infamous 'I Love You' virus slowed down many networks just by the volume of emails it generated.

Worms: A worm is similar to a virus and is considered to be a sub-class of a virus. It spreads from computer to computer, as it has the capability to travel without any human action. A worm takes advantage of file or information transport features on a system, which is what allows it to travel unaided. Worms cause harm to the infected network, whereas viruses corrupt or modify files on a targeted computer. In recent worm attacks such as the much-talked-about Blaster Worm, the worm has been designed to tunnel into a system and allow malicious users to control the computer remotely.

Adware: Adware refers to computer software that is provided usually for free but contains advertisements. It automatically renders advertisements in order to generate revenue for its author.

Trojan horses: A Trojan horse is a program that looks straightforward and safe but actually has a malicious purpose. At first glance it will appear to be useful software but will actually do damage once installed or run on a computer. It is often used to deliver a virus into the system. One of the earliest and most widely known was Back Orifice.

Spyware: Spyware is simply software that literally spies on what is being done on a computer. Spyware can be as simple as a cookie used by a website to record a few brief facts about a visit to that website, or spyware could be of a more dangerous type such as a key logger, a program that records every keystroke one makes on a keyboard.

The DOs and DONTs of network security

❖ Pay close attention to website URLs. Pay attention to the URLs of websites you visit.

❖ Keep operating system, browser, anti-virus and other critical software up to date. Security updates and patches are available for free from major companies.

❖ Turn off the option to automatically download attachments from your emails

❖ Save and scan any attachments before opening them. If you have to open an attachment before you can verify the source, take the following steps:

  ✧ Be sure your anti-virus software is up to date.

  ✧ Save the file to your computer or a disk.

  ✧ Run an anti-virus scan using your computer's software.

3. CYBER CRIMES

Now that we are familiar with a number of network security concepts and vocabulary let us take a look at where all this is leading. With enhanced technology, cyber crimes are the norm today.

Cyber crime may be defined as any illegal act that involves a computer, computer system or computer network. It is any illegal act for which knowledge of computer technology is essential to execute, investigate, or implement.

3.1 Types of Cyber Crimes

Cyber crime can be categorized as given here.

- ❖ General Intrusions
  - ✧ Hacking, spyware, phishing, pharming,
  - ✧ Sending computer viruses & worms to invade computers
  - ✧ Causing denial of service attacks
  - ✧ Creating bots, Trojan horses, zombie machines
- ❖ Nuisances (usually non-violent activities)
  - ✧ Sending spam
  - ✧ Changing web page text and images
  - ✧ Redirecting websites
- ❖ Personal Identity Theft (using someone else's name or credit)
  - ✧ Phishing for private information, passwords, code numbers
  - ✧ Making unauthorized purchases with stolen credit cards or ID
  - ✧ Destroying personal reputation
  - ✧ Damaging personal credit ratings
- ❖ Theft of Intellectual Property (stealing ideas or creations of others)
  - ✧ Downloading copyrighted music & videos
  - ✧ Plagiarism, cheating
  - ✧ Software piracy
- ❖ Physical or Mental Damage
  - ✧ Cyberbullying, harassment
  - ✧ Cyberstalking
  - ✧ Sexual exploitation of minors, child pornography

❖ Terrorism

    ◇ Stealing military and private industry secrets - espionage

    ◇ Brainwashing and recruiting new followers

    ◇ Building terrorist communications network

Some of these we have already talked about in the lesson. You could find out information about the others from other sources. This is just an introduction to get you going.

General Intrusions

Case 1: **Sending Computer Virus/Worm to invade computers**

The ILOVEYOU virus comes in an e-mail note with "I LOVE YOU" in the subject line and contains an attachment that, when opened, results in the message being re-sent to everyone in the recipient's Microsoft Outlook address book and, perhaps more seriously, the loss of every JPEG, MP3, and certain other files on the recipient's hard disk. Because Microsoft Outlook is widely installed as the e-mail handler in corporate networks, the ILOVEYOU virus can spread rapidly from user to user within a corporation. On May 4, 2000, the virus spread so quickly that e-mail had to be shut down in a number of major enterprises such as the Ford Motor Company. The virus reached an estimated 45 million users in a single day.

The attachment in the ILOVEYOU virus is a VBScript program that, when opened (for example, by double-clicking on it with your mouse), finds the recipient's Outlook address book and re-sends the note to everyone in it. It then overwrites (and thus destroys) all files of the following file types: JPEG, MP3, VPOS, JS, JSE, CSS, WSH, SCT and HTA. Users who don't have a backup copy will have lost these files. (In March 1999, a virus named Melissa virus also replicated itself by using Outlook address books, but was less harmful in destroying user files.) The ILOVEYOU virus also resets the recipient's Internet Explorer start page in a way that may cause further trouble, resets certain Windows registry settings, and also acts to spread itself through Internet Relay Chat (Internet Relay Chat).

> The Creators Reomel Ramores and Onel de Guzman created this deadly virus on 5 May 2000 but were lucky to escape prosecution due to lack of rules for arresting people for writing malicious code in Philippines ! The Damage-- 50 million infections reported within 10 days.

Case 2: **Malware/Trojans**

A Trojan takes its name from the term 'Trojan Horse'. It is a type of computer virus that can be installed on your computer without you realising.

One variation of a Trojan installs a 'keystroke logger' on your computer. This records the words and numbers you type when you use your computer keyboard. If you login to your online bank account, the keystroke logger will record your login information.

More sophisticated Trojans insert a pop-up page in front of your genuine online banking page, and then try to trick you into making a payment to someone else's account.

Other types of malware are able to insert extra fields, not normally found on your online banking website.

> It is suggested that you should use **virtual keyboard** while doing net banking. Virtual Keyboard is an online application to enter password with the help of a mouse.The Virtual Keyboard is designed to protect your password from malicious "Spyware" and "Trojan Programs". Use of Virtual keyboard will reduce the risk of password theft.

Case 3: **Stealing internet user name and password**

Vivan and Arpit of a reputed Computer training Institute sent emails to different banks, offices purportedly from reputed senders like Microsoft Support Team, VSNL helpdesk etc with the subject line 'double your internet speed'.

Actually they sent some sort of trojan sniffer in the guise of these executable files.

When recipients ran the file, a software called Dialup Security became resident in the computer memory and started working whenever the user booted the computer. When the user accessed the internet, the Trojan captured the username and password fields from the dialup screen and sent a mail to the culprits in encrypted form.

Case 4: **Email Fraud**

Diploma Scam

Quick degree scams - "Get your degree in 30 days!" "No studying required", "Turn your experience into a degree". They say they are accredited and the degree is legal and meaningful. That's part of the scam.

The existence of unaccredited, substandard, and/or fraudulent post-secondary education (college, university, graduate schools) providers is a global phenomenon, as is the existence of unrecognized and/or fraudulent accreditors. The credits and degrees awarded by these unaccredited or sham diploma mills are not going to be recognized by legitimately accredited institutions, official professional licensing authorities, recognition authorities or reputable employers.

And when the scam is exposed that you purchased your degree; you'll be out on the street and no one will hire you. You may make the cover of a newspaper, exposed as the worthless hack you are for attempting to buy your degree. You may make a list of people who have purchased scam degrees, that we're working on right now.

Personal Identity theft

Spamming, Redirecting websites & Phishing

Case 5: Phishing

One financial Institute registered a crime stating that some persons ("perpetrators") have perpetrated certain acts through misleading emails ostensibly emanating from a National Bank's email ID. Such acts have been perpetrated with an intent to defraud the Customers.

The Investigation was carried out with help of those emails received by the customers of that financial Institute and arrested the accused, the place of offence at Vijaywada was searched for the evidence. There one Lap Top and Mobile Phone was seized which was used for the commission of the crime

The arrested accused had used open source code email application software for sending spam emails. He has down loaded the same software from net and then used it as it is.

He used only VSNL emails to spam the email to customers of financial Institute because VSNL email service provider do not have spam box to block the unsolicited emails.

After spamming emails to financial Institute customers he got the response from around 120 customers of which 80 are genuine and others are not correct because it do not have debit card details as required for e-banking.

The financial Institute customers those who have received his email felt that the email was originated from the financial Institute bank. When they filled the confidential information and submitted that time said information was directed to accused. This was possible because the dynamic link was given in the first page (Home page) of the fake web site. The dynamic link means when people click on the link provided in spamming email that time only the link will be activated. The dynamic link was coded by handling the Internet Explorer onclick() event and the information of the form will be submitted to the web server (Where the fake web site is hosted). Then server will send he data to configured email address and in this case email configured was to the accused email . So on submission of the confidential information the information was directed to email ID accused email .The

all the information after fishing (user name, password, Transaction password, Debit card Number and PIN, mothers maiden name) which he had received through Wi-Fi internet connectivity of Reliance.com which was available on his Acer Lap Top.

This crime has been registered u/s U/Sec. 66 of IT Act, sec 419, 420, 465, 468, 471 of I.P.C r/w Sections 51, 63 and 65 of Copyright Act, 1957 which attract the punishment of 3 years imprisonment and fine up to 2 lacs rupees which accused never thought of.

> **How does phishing happen?**
> - Phishers sets up a replica page of a known financial institution or a popular shopping website
> - Bulk e-mails are sent to users asking for their personal data like account details, passwords etc
> - When the user clicks on the link, the replica of the website will open. Or while the user is online, a form will populate through an "in-session pop-up"
> - On updation, the data goes to phishers. Post which the user is redirected to the genuine website
>
> Phishers have refined their technology to launch sophisticated attacks and use advanced social engineering techniques to dupe online banking users.

Case 6: Hacking

Mumbai police have arrested a hacker by name Kalpesh (name change) for hacking into a financial website. Although the hacker couldn't break into the main server of the financial institution, which was well secured by the financial institution. The accused person could make some addition to the home page of the financial website and has added a string of text to the news module of the home page of the website. Police were able to crack the case by following the trace left by the hacker on the web server of the financial institution. The financial institution has maintained a separate server for financial online transactions, for which utmost security has been taken by the financial institution. The website was hosted on a different server which comparatively had lesser security.

The hacker Kalpesh (name changed) is a 10th Pass youngster of 23 years old. He has done computer courses like CCNA, MCSE etc. But he is a computer addict. He sits before the computer for almost 16 to 20 times each day. He has mostly used the readymade hacking tools, to hack into any website. He goes to a particular website on the web, which facilitates him to see the entire directory structure of that website. Then using various techniques, such as obtaining a password file, he gets into the administrator's shoes and hacks the website.

A case has been registered against the hacker under section 67 of Information Technology Act – 2000 and under various sections of Indian Penal Code.

Cyberstalking, cyberbullying, Sexual exploitation

Case 7: **Cyber bullying**

In April 2001 a person from New Delhi complained to the crime branch regarding the website. Amazing.com, he claimed, carried vulgar remarks about his daughter and a few of her classmates. During the inquiry, print-outs of the site were taken and proceedings initiated.

After investigation a student of grade XI and classmate of the girl was arrested. The juvenile board in Nov 2003 refused to discharge the boy accused of creating a website with vulgar remarks about his classmate.

Case 8: **Cyberstalking**

There are a couple of reported cases, which speak of the position of the cyber stalking in India. The recent being the case of A(name) who was recently arrested by the New Delhi Police. He was talking an Indian lady, B(name) by illegally chatting on the Web site MIRC using her name. He used obscene and obnoxious language, and distributed her residence telephone number, inviting people to chat with her on the phone. As a result of which, B kept getting obscene calls from everywhere, and people promptly talked dirty with her. In a state of shock, she called the Delhi police and reported the matter. For once, the police department did not waste time swinging into action, traced the culprit and slammed a case under Section 509 of the Indian Penal Code for outraging the modesty of B (Indian child, 2005).

Both kind of Stalkers "Online & Offline" – have desire to control the victims life. Majority of the stalkers are the dejected lovers or ex-lovers, who then want to harass the victim because they failed to satisfy their secret desires. Most of the stalkers are men and victim female.

How do they Operate
a. Collect all personal information about the victim such as name, family background, Telephone Numbers of residence and work place, daily routine of the victim, address of residence and place of work, date of birth etc. If the stalker is one of the acquaintances of the victim he can easily get this information. If stalker is a stranger to victim, he collects the information from the internet resources such

as various profiles, the victim may have filled in while opening the chat or e-mail account or while signing an account with some website.

b. The stalker may post this information on any website related to relationship, posing as if the victim is posting this information and invite the people to call the victim on her telephone numbers to have services. Stalker even uses very filthy and obscene language to invite the interested persons.

c. People of all kind from nook and corner of the World, who come across this information, start calling the victim at her residence and/or work place, asking for relationships.

d. Some stalkers subscribe the e-mail account of the victim to innumerable pornographic sites, because of which victim starts receiving such kind of unsolicited e-mails.

e. Some stalkers keep on sending repeated e-mails asking for various kinds of favors or threaten the victim.

f. In online stalking the stalker can make third party to harass the victim.

g. Follow their victim from board to board. They "hangout" on the same BB's as their victim, many times posting notes to the victim, making sure the victim is aware that he/she is being followed. Many times they will "flame" their victim (becoming argumentative, insulting) to get their attention.

h. Stalkers will almost always make contact with their victims through email. The letters may be loving, threatening, or sexually explicit. He will many times use multiple names when contacting the victim.

i. Contact victim via telephone. If the stalker is able to access the victims telephon, he will many times make calls to the victim to threaten, harass, or intimidate them.

j. Track the victim to his/her home.

Case 9: Cyber Pornography

A student of a reputed public school was teased by all his classmates for having a pockmarked face. Tired of the cruel jokes, he decided to get back at his tormentors. He scanned photographs of his classmates and teachers, morphed them with nude photographs and put them up on a website that he uploaded on to a free web hosting service. It was only after the father of one of the class girls featured on the website objected and lodged a complaint with the police that any action was taken.

Cyber pornography case the first case of this kind, the Delhi Police Cyber Crime Cell registered a case under section 67 of the IT act, 2000.

Case 10: **Social Networking**

A 14-year-old girl received a Facebook friend request from an older man posing as a boy of her age. She accepted it out of curiosity.

The girl was quickly smitten by the man's smooth online flattery. She didn't realise that he was one of the growing number of sexual predators who had found a new way to exploit the increasing obsession with social media.

They exchanged phone numbers, and his attention increased with rapid-fire texts. He convinced her to meet in a mall, and she found him just as charming in person.

They agreed to meet again. After telling her mom she was going to visit a sick girlfriend, she climbed into the man's minivan near her home.

The man, a 24-year-old drove her an hour to a town .There, he locked her in a small room inside a house with at least five other girls aged 14 to 17.She came to know that she was kidnapped. She somehow managed to escape ,but everyone does not get a chance.

Ways to protect yourself on social networking sites:

Limit who can see what you post. If you don't want random users to see your contact information, you can limit the publication of that data. Just change your settings. You can also block users from having any contact with you should the need arise.

One simple and quick setting (on Facebook) you can change to increase privacy is to restrict the viewing of your profile only to users at your own college or to only your "friend" list. Most social networking sites offer similar ways to restrict access to personal information, but in all cases, the principle is the same: don't advertise to the world what you're doing or where you live.

But don't forget that even if you limit who can see what you post, there are ways others can get around it to view your profile anyway.

Limit what you post. Don't share things that would make you vulnerable to unwanted contact (such as sharing your email address, physical address, or phone number) or to stalking (such as information about your schedule or routine).

Information and Computer Technology

Also, if your friends or connections post such information about you, make sure the combined information on their pages is not more than you would be comfortable with strangers knowing.

Finally, it's important to recognize that once you publish something online, it is available to other people and to search engines. *You can't retract it.*

Even if you go back and remove the information from a site, it's always possible that someone has already seen it. And they may have saved a copy.

In addition, some search engines "cache" copies of Web pages so that they open faster; these cached copies may be available a long time after a Web page has been deleted or altered. Some Web browsers, also, maintain a cache of the Web pages a user has visited, so the original version of your posting may be stored in someone else's machine.

The bottom line? Once something is out there, there's no guarantee you can take it back.

Tracking Cyber Crimes

Case Study: Admission fraud

A girl Anita (name changed) came to cyber cell with a complaint. As per the complaint she registered her self with an admission counsellor for admission in a foreign university. After registration she received a call from a lady named Sameera (name changed)who was working as counsellor with a reputed admission consultant firm in United Kingdom, for the interview. Anita was very happy to hear that. Her interview was taken over telephone and she was given provisional admission and letter was sent through email. Another day Sameera called Anita and told her that she has been awarded scholarship and she has to start a current account in either AXIS bank or HDFC bank with current account limit upto Rs. 25,000/-. She agreed and did the same. After opening the account Anita supplied the relevant details of account to Sameera, as she was told that the university will deposit Rs. 1.90 lakh in her account and she will have to withdraw Rs. One Lakh and will have to deposit the same in six different accounts and rest amount will be her scholarship money. It happened the same way as told by Sameera. Anita checked her account and it was showing credit of Rs.1.90 Lakh.

Next day Anita approached the bank to withdraw money and deposit the same in to six different accounts but due to some technical reasons see could not withdraw the money from her HDFC account having credit of Rs 1.90 lakh. Anita was in belief that she has already received the amount hence deposited her own money in six different accounts which were from Uttrakhand and Delhi. Next day Anita went again to the bank to withdraw money but she was shocked to hear that her account has been blocked by Lucknow police and an FIR has already been lodged at Lucknow police station against her and she is the prime suspect. On receiving a complaint Cyber cell started enquiry from the emails received by Anita. The full header analysis revealed ip address and the same was sent to mobile operator which ended to a mobile number. The name and address attached to the mobile number were found to be false which were supposed to be from Mumbai. Cyber cell collected the login logs of the internet banking account of Mr Manish (name changed) and found that money was hacked and transferred from Nigerian IP.

Subsequently Cyber cell registered a FIR under section 66 IT act , 420/34 IPC

Name and address of the mobile used by Sameera were in the name of Nigerian Franklin (name changed). The address was not reachable as he shifted to new address. After that cyber cell started analysing the logs of Sameera and identified the numbers to whom call was made. Finally cyber cell had five numbers to be analyzed. After months of analysis one suspect was traced. Cyber cell had the address of a suspect, the house was raided by cyber cell at Delhi and seized 6 mobiles and a laptop but accused could not be caught. LOC was issued against suspect. During investigations the culprits were identified to be O. Addeda (name changed) and her lady co-partner. Mobiles and laptops involved in the fraud were recovered from Addeda's house but he escaped. After analysis of Addeda mobile cyber cell found the person named EMMA to be the prime suspect providing bank details to him. Documents seized also show his relation with him. Analysis of CDR revealed that EMMA (name changed) is superior in hierarchy of internet job fraud.

Cybercell has arrested EMMA and his wife from their home. Several bank details, ATM/DEBIT cards were recovered from him. At present EMMA is in CENTRAL JAIL and is facing trial. His wife co-accused in the crime has been given bail due to last stage of pregnancy. Court has issued permanent arrest warrants against the accused who are absconding. Cyber cell is trying to identify the properties owned by the suspects so that proceeds of the frauds can be recovered from them.

Summary 👌

Cyberspace is a man made world that is constantly evolving. It differs from the static physical world as it has no boundaries, no geographical mass, and of course, no gravity.

1. Cyber ethics exploring appropriate and ethical behaviours related to online environments and digital media. It includes plagiarism, bullying, and hacking to name a few.

2. Cyber safety defining how one operates on-line. It includes rules guiding how to keep personal information safe and limited.

3. Cyber security involving tasks undertaken on the computer to keep it secure from people who wish to harm it or use data stored on it unlawfully. This includes installing virus software and firewalls.

4. A software copyright protects all source code, written text materials, graphic images/ designs, drawings, any linked sound, video files or films.

License is the permission granted by the holder of a copyright to another to use an original work. It states under what circumstances and to what extent the original work can be used, changed or distributed.

1. **Open-source** software (OSS) is computer software with its source code made available. It is very often developed in a public, collaborative manner. A license for open sources software allows the end user to study, change and distribute the software for any purpose.

2. Some copyrighted software is made available for use, free of charge for an unlimited time. These are called **freeware**. The copyright still remains with the producer / owner for any future development.

3. **Shareware** are copyrighted software that can be shared for a limited on a trial basis with the understanding that if the user decides to use it, he will pay for it.

4. Cyber law is a new branch of law and is growing very fast. It establishes norms of accepted human behaviour in cyberspace.

5. Cookies allow a visited website to store its own information about a user on the user's computer.

6. A firewall is a program or hardware device that filters the information coming through an internet connection to a network or computer system.

Hackers are people with computer programming skills who use their knowledge to gain unauthorized access to data in a system or computer.

Crackers modify or disable features of a software application. They usually mean to harm the software, the hardware using this software or the end user of the software.

EXERCISE

A. Multiple choice questions

1. Which of the following is not an external threat to a computer or a computer network
   (a) Ignorance   (b) Trojan horses
   (c) Adware   (d) Crackers

2. When a person is harrassed repeatedly by being followed, called or be written to he / she is a target of
   (a) Bullying   (b) Identity theft
   (c) Stalking   (d) Phishing

3. With genetic and genomic research which of the following issues is of specific concern
   (a) Anonymity   (b) Intellectual property
   (c) Software piracy   (d) Concerns about biochip implants

4. Which of the following is a class of computer threat
   (a) Phishing   (b) DoS attacks
   (c) Soliciting   (d) Stalking

5. A lincense allows a user to use copyrighted material.
   (a) True   (b) False

6. It is a program or hardware device that filters the information coming through an internet connection to a network or computer system.
   (a) Anti virus   (b) Firewall
   (c) Cookies   (d) Cyber safety

7. It allow a visited website to store its own information about a user on the user's computer.
   (a) Spam   (b) Malware
   (c) Cookies   (d) Adware

8. It is stealing ideas or creations of others.
   (a) Plagiarism   (b) Piracy
   (c) Intellectual Property Rights   (d) All of the above

9. Hacking a computer is always illegal and punishable by law.
   (a) True   (b) False

10. Exploring appropriate and ethical behaviours related to online environments and digital media.
    (a) Cyber ethics   (b) Cyber safety
    (c) Cyber security   (d) Cyber law

11. A lincense allows a user to use copyrighted material.
    (a) In some situations this statement is correct
    (b) This statement is not true at all.
    (c) In is not necessry to use license.
    (d) All the above statements are not applicable.

B. Answer the following questions:

1. Differentiate between a workstation license and a site license.

2. Write a short note on your understanding of 'cracking' a software.

3. What are the categories of Cyber crime. Explain them.

4. Define the following terms:
   (a) Spyware   (b) Malware
   (c) Virus   (d) Worms

5. Read about ethical hacking and write a short note on your understanding of the topic.

6. Why cyber security should be taken care by the user while working on internet?

7. Discuss all the point which should be kept in mind while working on computers.

8. What is Deniel of Service attack? How it affects the systems performance?

9. What is the difference between Shareware and Freeware softwares?

10. Mention the list of the licenses used by the users.

11. What do you mean by open source softwares? How are they different from properitary softwares?

12. In groups of 4-5 discuss how software cookies can be 'helpful' to both the user of the computer and the websites that created them. Document your understanding. It could be a poster, a brochure, a poem or a skit.

13. What all do you ususally do while you are connected to the net? Make a list and then plan all the security measures that you could take to safeguard yourself. Share this list eith at least two of your peers and compare it to their lists.

C. Categorize the following under ethical / safety / security precaution

1. Do not share your password

2. Do not use foul language.

3. Immediately report any suspect data or security breaches to your supervisor and/or authorities.

4. Install firewalls and antivirus softwares

5. Do not copy information from the Internet and claim it as yours (plagiarism).

6. Be wary of strangers and cautious of potentially misleading or false information.

7. Manage your computer settings to allow only data that comes from a known or safe place

8. Do not download copyrighted materials.

9. Download only trusted applications from reputable sources or marketplaces

10. Pay attention to the URLs of websites you visit

11. Do not use someone else's password or break into his computer.

12. Restrict access and make personal information secure to prevent identity theft.

D. State whether the following statements are true or false

1. Hacking a computer is always illegal and punishable by law.

2. A lincense allows a user to use copyrighted material.

3. Software can only be licensed for a specific period of time.

4. A firewall is a virtual 'wall' that protects data on computers and computer networks.

5. Cyber law oversees only crimes that are committed by computers.

6. Crackers use physical tools to break into a computer and steal data.

7. Read about ethical hacking and write a short note on your understanding of the topic.

8. In groups of 4-5 discuss how software cookies can be 'helpful' to both the user of the computer and the websites that created them. Document your understanding. It could be a poster, a brochure, a poem or a skit.

9. What all do you ususally do while you are connected to the net? Make a list and then plan all the security measures that you could take to safeguard yourself. Share this list eith at least two of your peers and compare it to their lists.

Project

Once you have understood all the tags of HTML and the basics of GIMP, you are ready to make web applications. The following specifications must be considered while developing a web site:

1. Identify the problem.

2. Once you have analyzed the problem, you will have a clear idea about the web pages to be created.

3. When designing your site, pay attention to layout, typography and images.

4. Always use standard Font styles in your web site so that all the browsers should support them.

5. Site should exhibit strong design, user-friendly navigation, clear and consistent layout, and professional appearance.

6. Your site should exhibit proper use of background and font colours.

7. Website must include at least one image , it can be a scanned photo, a digital photograph, or a graphic/artwork created by you.

8. You may use other images, but they must not violate copyright laws.

9. All images must have alt tags, be well placed, and working correctly.

10. Each page must have an appropriate title.

11. Each page must have a consistent navigation menu containing functional links to all other main pages

12. Visit every page and check to make sure all links work correctly.

13. Test your site behaviour across multiple browsers (e.g. Internet Explorer, Firefox, Safari, etc.) and different operating systems (e.g. Windows, iOS).

After following all the instruction now you are ready to publish your website on web server.

SAMPLE CASE STUDIES

1. Create a website depicting different festivals of India. The Home page should have links of allfestivals of India . It should also offer link to the other web pages and each of these web pages should contain a link to home page and to the various html pages required in your site. Your site should have feedback form .Use Gimp software to give various effects to the images to be included in the website.

<html>
<head>
<title></title>
</head>
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```
<br>
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35 valign = "middle"><font face = "trebuchet ms" color = "maroon" size = 4><p align =
"center"> Home | <a href = "2nd page.htm">Contact Us </a>| Types of Festivals | <a href
= "Feedback.htm">Feedback</a></font></td></tr></table>
<hr>
<table height = 70 width = 100% border = 3><tr><td><font face = "trebuchet ms" size =
3 color = "maroon">Photo Gallery </font></td></tr><tr><td><marquee scrollamount =
8 behavior = "scroll" loop = 100>
<img src = "map.jpg" height = 100 width = 100>
<img src = "festival.jpg" height = 100 width = 100>
<img src = "firecrackers.jpg" height = 100 width = 100>
<img src = "flag2.jpg" height = 100 width = 100>
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<img src = "holi.jpg" height = 100 width = 100>
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<img src = "kannada.jpg" height = 100 width = 100>
<img src = "joy.jpg" height = 100 width = 100>
<img src = "food.jpg" height = 100 width = 100>
<img src = "food1.gif" height = 100 width = 100>
<img src = "food2.jpg" height = 100 width = 100>
<img src = "joy.jpg" height = 100 width = 100>
<img src = "food.jpg" height = 100 width = 100>
<img src = "food1.gif" height = 100 width = 100>
<img src = "food2.jpg" height = 100 width = 100>
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align = "center"> Live the Moments .....</font></td>
<td width = 35% height = 50% bgcolor = "#F2AC28" rowspan = 2>
<font face = "trebuchet ms" color = "maroon" size = 5>    <u>Some
Famous Festivals</u>:</font>
<ul><font face = "trebuchet ms" color = "white" size = 5><i>
<li><a href="Diwali.htm"> Diwali</a>
<li><a href="Dusshera.htm"> Dusshera</a>
<li><a href="Holi.htm"> Holi</a>
```

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<li> Eid
<li> Christmas
<li> Pongal
<li> Oman
<li> Raksha Bandhan
<li> Janamashtmi
<li> Navratri
<li> Maha Shivratri
<li> Ram Navami
</i></font></ul></td></tr>
<tr><td height=50 valign="top"><br><p align="center"><img src = "a.jpg" height = 300
width = 300 border = 3>
<br>
<br>
<br>
<font face = "trebuchet ms" color = "Blue" size = 4><p align = "justify"><i>Indian Festivals
celebrated by varied cultures and
through their special rituals add to the colours of Indian Heritage. Some festivals welcome
the seasons of the year, the
harvest, the rains, or the full moon. Others celebrate religious occasions, the birthdays of
divine beings, saints, and
gurus (revered teachers), or the advent of the New Year. A number of these festivals are
common to most parts of India,
however they are celebrated differently in different parts of the country.....</i></font>
</td></tr>
</table>
<br>
<hr><hr><p align="center"><font face = "trebuchet ms" size = 2 color = "black">
Home | Privacy Policy | Terms of Service | Feedback <br>
2010 &copy Festivals Of India | All Rights Reserved
<p align ="center"><font face="monotype corsiva size=4">
<b><i><u>By ABC<br><br>
Roll No.:- 15</u></i></b>
</font>
</body>
</html>
```

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<body link = "blue" vlink = "purple" alink = "blue">

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<table width = 100% height = 35 bgcolor = "#F2AC28"><tr><td width = 100% height = 35 valign = "middle"><p align = "center"> Home | About Us | Types of Festivals | Feedback</td></tr></table>

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<img src = "festival.jpg" height = 100 width = 100>

<img src = "firecrackers.jpg" height = 100 width = 100>

<img src = "flag2.jpg" height = 100 width = 100>

<img src = "India.png" height = 100 width = 100>

Project

137

```
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<img src = "diwali.jpg" height = 100 width = 100>
<img src = "kannada.jpg" height = 100 width = 100>
<img src = "joy.jpg" height = 100 width = 100>
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<img src = "food2.jpg" height = 100 width = 100>
<img src = "joy.jpg" height = 100 width = 100>
<img src = "food.jpg" height = 100 width = 100>
<img src = "food1.gif" height = 100 width = 100>
<img src = "food2.jpg" height = 100 width = 100>
</marquee></td></tr></table>
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p;            &n
bsp;            
  
<img src = "t.jpg" height = 200 width = 200 border = 3></td>
<td width = 50%>
<font face = "trebuchet ms" color = "maroon" size = 4><align = "right">
Contact Us at: <br>
ABC Corporations <br>
Connaught Place - 110085 <br>
Phone No. - 12345678 <br>
And know the traditions of all Festivals and their Festivities
</font></td></tr>
</table>
<br>
<hr><p align="center"><font face = "trebuchet ms" size = 2 color = "black">
Home | Privacy Policy | Terms of Service | Feedback <br>
2010 &copy Festivals Of India | All Rights Reserved
<p align ="center"><font face="monotype corsiva size=4">
<b><i><u>By ABC<br>
```

Information and Computer Technology

Class X-B
Roll No.:- 15</u></i>

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```
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<br>
<hr>
<table width = 100% cellpadding = 30><tr><td width = 65% bgcolor = "maroon"><font face = "trebuchet ms" color = "white" size = 6 valign = "middle" ><p align = "center"> Enjoy The Moments .....</font></td>
<td width = 35% height = 100% bgcolor = "Pink" rowspan = 2>
<font face = "trebuchet ms" color = "maroon" size = 5>        <u>Diwali</u>:</font>
<ul><font face = "trebuchet ms" color = "white" size = 4>
<li><img src="Diwali2.jpg" height=250 width=300>
<br><br>
<li><img src="Diwali3.jpg" height = 250 width = 300>
</font></ul></td></tr>
<tr><td height=100 valign="top"><br><p align="center"><img src = "Diwali4.jpg" height = 300 width = 300 border = 3>
<br>
<br>
<font face = "trebuchet ms" color = "Blue" size = 4><p align = "justify"><i>Deepavali or Diwali, popularly known as the "festival of lights," is primarily a five day Hindu festival which starts on Dhanteras, celebrated on thirteenth lunar day of Krishna paksha (dark fortnight) of the Hindu calendar month Ashwin and ends on Bhaubeej, celebrated on second lunar day of Shukla paksha (bright fortnight) of the Hindu calendar month Kartik. In the Gregorian calendar, Diwali falls between mid-October and mid-November. Diwali is an official holiday in India, Nepal, Sri Lanka, Myanmar, Mauritius, Guyana, Trinidad & Tobago, Suriname, Malaysia, Singapore and Fiji..</i></font>
</td></tr>
</table>
<br>
<hr><p align="center"><font face = "trebuchet ms" size = 2 color = "black">
Home | Privacy Policy | Terms of Service | Feedback <br>
2010 &copy Festivals Of India | All Rights Reserved
<p align ="center"><font face="monotype corsiva size=4">
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<b><i><u>By ABC<br></u></i></b>
</font>
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</html>
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height=100><img src = "Dusshera 4.gif" height = 100 width = 35% border = 2></td><td
width = 90% height = 100 valign = "middle"><font face = "trebuchet ms" color = "maroon"
size = 30><p align = "right"><i>Dussehra-Victory Over Evil!!!</i></font></td></tr></
table>
<br>
```

<table width = 100% height = 35 bgcolor = "#F2AC28"><tr><td width = 100% height = 35 valign = "middle"><p align = "center"> Home | About Us | Types of Festivals | Feedback</td></tr></table>

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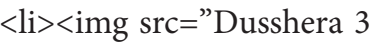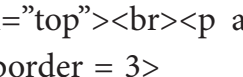
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<td width = 35% height = 100% bgcolor = "#F2AC28" rowspan = 2>

&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp; <u>Dussehra</u>:

<img src="Dusshera 2.jpg" height=250 width=300>

<img src="Dusshera 3.jpg" height = 250 width = 300>

</td></tr>

<tr><td height=100 valign="top">
<p align="center"><img src = "Dusshera 1.jpg" height = 300 width = 300 border = 3>

<p align = "justify"><i>Vijayadashami also known as Dashahara, Dussehra, Dashain (in Nepal), Navratri or Durgotsav is one of the most important Hindu festivals celebrated in various forms, across India, Nepal and Bangladesh.

The name Dussehra is derived from Sanskrit Dasha-hara literally means removal of ten referring to Lord Rama's victory over the ten-headed demon king Ravana. The day also marks the victory of Goddess Durga over the demons Mahishasur. The name Vijayadashami is also derived from the Sanskrit words "Vijaya-dashmi" literally meaning the victory on the dashmi</i>

</td></tr>

</table>

<hr><p align="center"><font face = "trebuchet ms" size = 2 color = "black">

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<p align ="center"><font face="monotype corsiva size=4">

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<b><i><u>By ABC<br></u></i></b>
</font>
</body>
</html>
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<title></title>
</head>
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= 90% height = 100 valign = "middle"><font face = "trebuchet ms" color = "maroon" size
= 30><p align = "right"><i>Holi - The Festival Of Colors</i></font></td></tr></table>
<br>
```

```
<table width = 100% height = 35 bgcolor = "#F2AC28"><tr><td width = 100% height
= 35 valign = "middle"><font face = "trebuchet ms" color = "maroon" size = 4><p align
= "center"><a href = "Main Page.htm"> Home </a>| About Us | Types of Festivals | <a
href="Feedback.htm">Feedback</a></font></td></tr></table>
<br>
<hr>
<table width = 100% cellpadding = 30><tr><td width = 65% bgcolor = "maroon"><font
face = "trebuchet ms" color = "White" size = 6 valign = "middle" ><p align = "center">
Enjoy The Moments .....</font></td>
<td width = 35% height = 100% bgcolor = "Purple" rowspan = 2>
<font face = "trebuchet ms" color = "Black" size = 5>     
   <u>Holi</u>:</font>
<ul><font face = "trebuchet ms" color = "white" size = 4>
<li><img src="Holi 2.jpg" height=250 width=300>
<br><br>
<li><img src="Holi 3.jpg" height = 250 width = 300>
</font></ul></td></tr>
<tr><td height=100 valign="top"><br><p align="center"><img src = "Holi 4.jpg" height
= 300 width = 300 border = 3>
<br>
<br>
<font face = "trebuchet ms" color = "Blue" size = 4><p align = "justify"><i>Holi is a
religious spring festival celebrated by Hindus, as a festival of colours. It is primarily observed
in India and Nepal. It is observed by the minority Hindus in Bangladesh and Pakistan
as well in countries with large Indic diaspora populations following Hinduism, such as
Suriname, Malaysia, Guyana, South Africa, Trinidad and Tobago, the United Kingdom, the
United States, Mauritius, and Fiji. It is also known as Phagwah and Festival of Colours,
or as Doajatra in Odisha and Dol Jatra or Basantotsav in West Bengal and Assam..</i></
font>
</td></tr>
</table>
<br>
<hr><p align="center"><font face = "trebuchet ms" size = 2 color = "black">
Home | Privacy Policy | Terms of Service | Feedback <br>
2010 &copy Festivals Of India | All Rights Reserved
<p align ="center"><font face="monotype corsiva size=4">
<b><i><u>By ABC<br>
```


</u></i>

</body>
</html>

<html>
<head>
<title></title>
</head>
<body link = "blue" vlink = "purple" alink = "blue" background="jj.jpg">

<u>Please Give your valuable feedback about what you feel about my webpage!!!
<hr>
<center>
Click here to go back to the main page!!!
</center>

```
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<td width= 60%>
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<ul type="disc">
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name="First Name"><br>
Last  Name:          <input  type="text"
name="Last Name"><br>
E-Mail Address: <input type="text" name="E-Mail Address"><br><br><br>
<font face="Comic Sans MS" size=4><u>Gender:</u></font><br><br><input type="radio"
name="sex" value="male">Male<br>
<input type="radio" name="sex" value="female">Female<br>
</form>
<br><br>
<u>How Would You Rate Our Website:</u><br>
<br><input type="radio" name="Excellent" value="">Excellent<br>
<input type="radio" name="Very Good" value="">Very Good<br>
<input type="radio" name="Good" value="">Good<br>
<input type="radio" name="Acceptable" value="">Acceptable<br>
<input type="radio" name="Bad" value="">Bad<br>
<center><br><br>
<form name="input" action="html_form_action.asp" method="get">
&nbsp&nbsp&nbsp&nbsp&nbsp<input type="submit" value="Submit">
</form></center></font>
</ul>
</td>
<td width=40%>
<img src = "v.png">
</td>
</table>
<hr><hr>
<p align="left"><img src="fd.jpg">
<p align="center"><font face = "trebuchet ms" size = 2 color = "yellow">
Home | Privacy Policy | Terms of Service | Feedback <br>
2010 &copy Festivals Of India | All Rights Reserved<br>
```
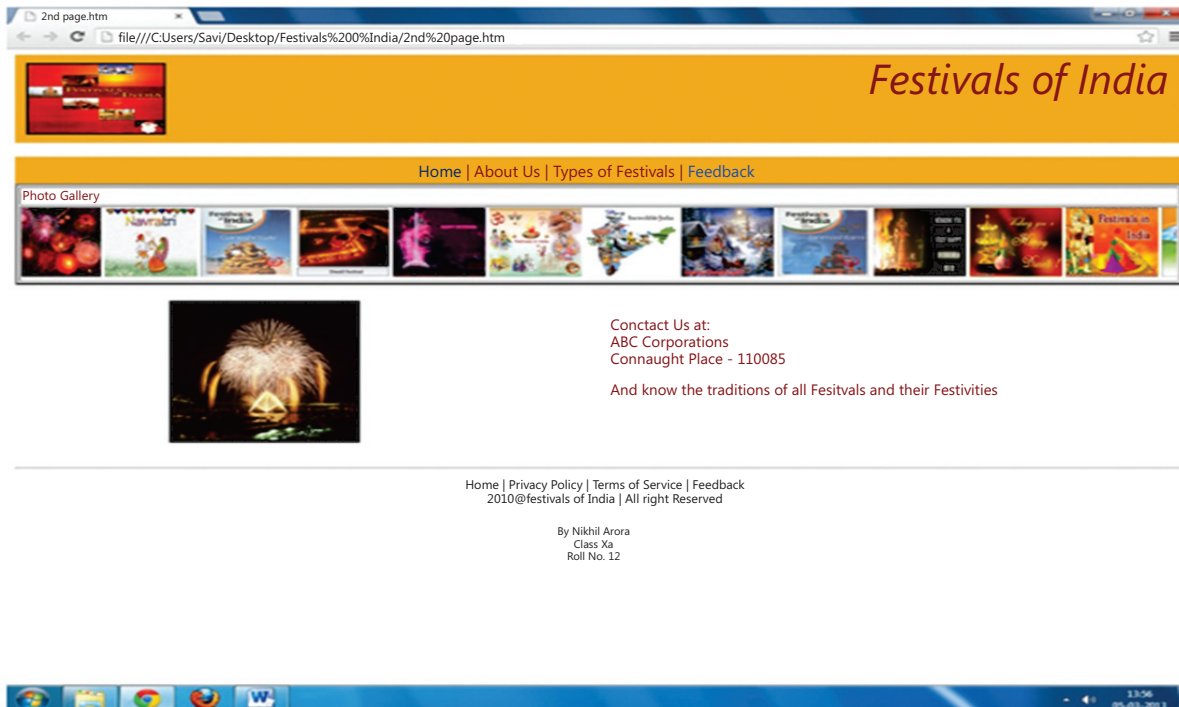
```
</font>
</body>
</html>
```

2. Create a websiteon "Global Warming- its effect & prevention". It should also offer link to the other web pages and each of these webpages should contain a link to home page and tothe various html pages required in your site. Your site should have feedback form .Use Gimp software to prepare images for web which are to be included in the website.


```
<html>
<head>
<title></title>
</head>
<body bgcolor="black">
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```html
<center><table background="g.jpg" height=100 width=100% border=1 cellpadding=10>
<tr><td align="center" width=150><img src="d.jpg" height=150 width=150></td><td align="right" valign="middle"><font face="trebuchet ms" color="maroon" size=7><b><i>GLOBAL WARMING</i></b></font></td></tr></table></center><br>
<table width = 100% height=20 cellpadding = 10><tr><td width = 100% bgcolor = "maroon"><font face = "trebuchet ms" color = "white" size = 6 valign = "middle" ><p align = "center"> Stop Polluting The Earth!!! </font></td>
<table width = 100% height=5 cellpadding = 10><tr><td width = 100% bgcolor = "#F2AC28"><font face = "trebuchet ms" color = "Maroon" size = 4 valign = "middle" ><b>
<center>
<a href="Effects.htm"> Effects</a> |
<a href="Preventions.htm">Preventions</a> |
<a href="Feedback.htm">Feedback</a></b></font>
</center>
</td></tr></table><table bgcolor="black">
<tr border=2 bordercolor="black"><td height=50 valign="top"><br><center>
<img src = "b.jpg" height = 300 width = 300>      
<img src="a.jpg" height=300 width=300>  
     
<img src="c.jpg" height=300 width=300 ></td></center></tr>
<br><hr>
<br><tr><td><hr>
<font face = "calibri" color = "yellow" size = 5>Global warming is the rise in the average temperature of Earth's atmosphere and oceans since the late 19th century and its projected continuation. Since the early 20th century, Earth's mean surface temperature has increased by about 0.8 °C (1.4 °F), with about two-thirds of the increase occurring since 1980. Warming of the climate system is unequivocal, and scientists are more than 90% certain that it is primarily caused by increasing concentrations of greenhouse gases produced by human activities such as the burning of fossil fuels and deforestation.These findings are recognized by the national science academies of all major industrialized nations.</font>
</td></tr>
</table>
<br><hr><hr>
</body>
</html>
```
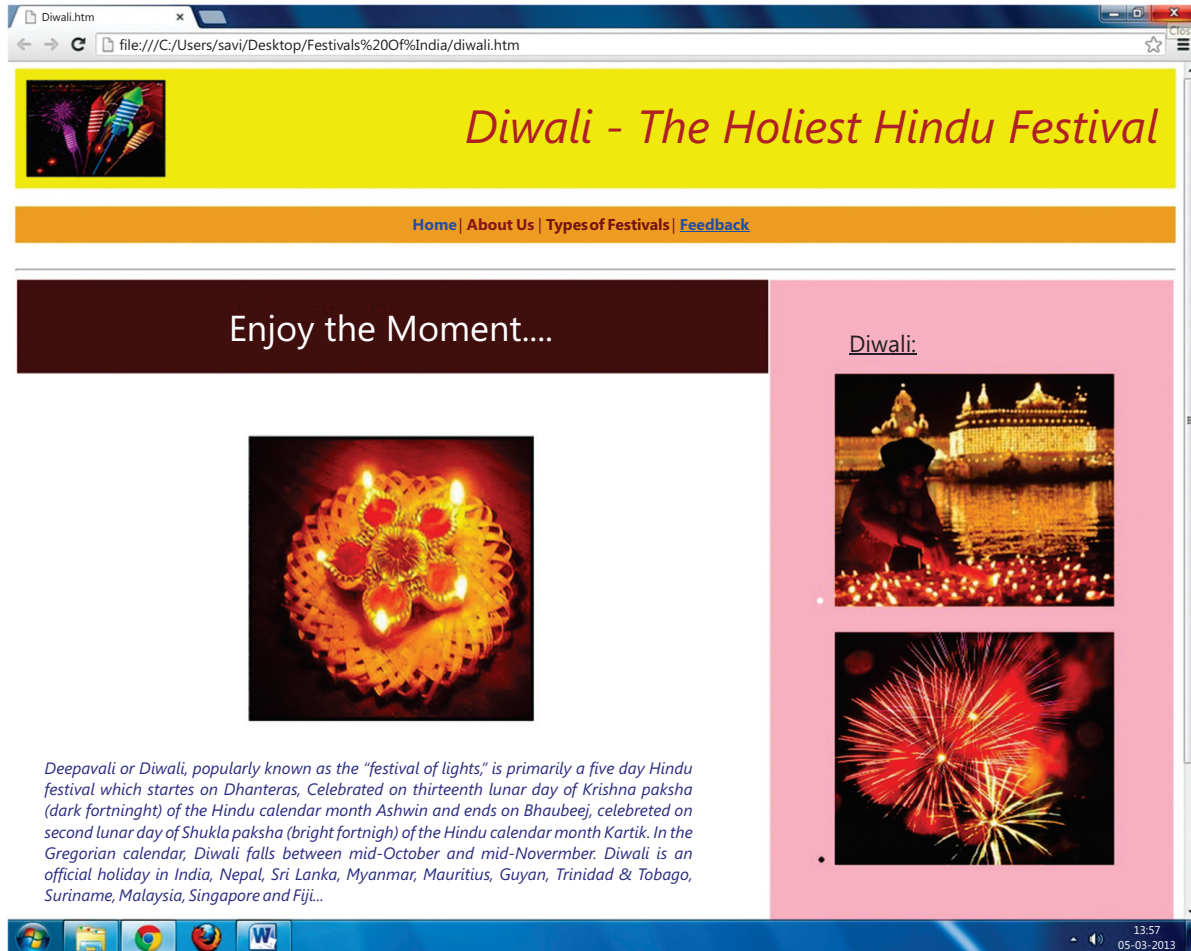
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height=100></td><td width = 90% height = 100 valign = "middle">
<font face = "trebuchet ms" color = "maroon" size = 7><center><i>Effects Of Global
Warming</i></font></td></tr></table></center>
<br>
<hr>
<br>
<table width = 100%>
<tr>
<td width = 50%>
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            &n
bsp;           &nbs
p;    
<img src = "h.png" height = 350 width = 450 border = 3></td>
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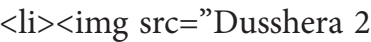
```
<td width = 50%>
<font face = "calibri" color = "white" size = 5><b><align = "right">
The effects of global warming are the ecological and social changes caused by the rise in global temperatures. There is a scientific consensus that climate change is occurring, and that human activities are the primary driver. Evidence of climate change includes the instrumental temperature record, rising sea levels, and decreased snow cover in the Northern Hemisphere. According to the Intergovernmental Panel on Climate Change (IPCC), most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in human greenhouse gas concentrations.</b>
</font></td></tr>
</table>
<br>
<hr><p align="center"><font face = "trebuchet ms" size = 2 color = "black">
Home | Privacy Policy | Terms of Service | Feedback <br>
2010 &copy Global Warming | All Rights Reserved
<p align ="center"><font face="monotype corsiva size=4">
</font><br>
<font face="trebuchet ms" size=3><a href="Main.htm"><b>Click to Go Back!!!</b></a></font>
</body>
</html>
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```html
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<title></title>
</head>
<body link = "blue" vlink = "purple" alink = "blue" background="i.jpg">
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height=100></td><td width = 100% height = 100 valign = "middle">
<font face = "trebuchet ms" color = "yellow" size = 7><p align = "center"><i>Preventions
Of Global Warming</i></font></td></tr></table>
<br>
<hr>
<br>
<table width = 100%>
<tr>
<td width = 50%>
<align = "left">
            &n
bsp;           &nbs
p;    
<img src = "j.png" height = 350 width = 450 border = 3></td>
<td width = 50%>
<font face = "calibri" color = "white" size = 5><b><align = "right">
Everybody can help to prevent global warming by not wasting energy in their homes. CFL
bulbs, which use less energy and have a longer life, can significantly reduced the amount
of electricity used. Another thing that can help is reducing the use of heaters and air
conditioners. Some very simple things, like hitting the off switch on electronic equipment
and appliances when you are not using them, and trading in old energy hog appliances
for newer, more energy efficient ones can be a contribution in the effort to prevent global
warming. Alternative power sources, like home solar energy generators, are a good way
to make sure you are getting energy from means that are better for the Earth.</b>
</font></td></tr>
</table>
<br>
<hr><p align="center"><font face = "trebuchet ms" size = 2 color = "black">
Home | Privacy Policy | Terms of Service | Feedback <br>
2010 &copy Global Warming | All Rights Reserved
</font><br><br>
```

Click to Go Back!!!
</body>
</html>

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<title></title>
</head>
<body link = "blue" vlink = "purple" alink = "blue" background="m.jpg">
<font face="Comic sans ms" size =5 color="yellow">
<u>Please Give your valuable feedback about what you feel about my webpage!!!
<hr>
<font face="comic sans ms" size=5><center>
Click here to go back to the main page!!!

Information and Computer Technology

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Last Name:         <input type="text"
name="Last Name"><br>
E-Mail Address: <input type="text" name="E-Mail Address"><br><br><br>
<font face="Comic Sans MS" size=4><u>Gender:</u></font><br><br><input type="radio"
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<input type="radio" name="sex" value="female">Female<br>
</form>
<br><br>
<h2>Comments:</h2><br>
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Home | Privacy Policy | Terms of Service | Feedback <br>
2010 &copy Festivals Of India | All Rights Reserved<br>
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</html>
```

3. Create a website on London Games. It should have linksfor the description of various games and each of these web pages should contain a link to home pagerequired in your site. Result of the games should also be included in the site. Your site should have feedback form .Use Gimp software to edit theimages to be included in the website.


```
<html>
<head>
<title>London Olympics 2012</title>
</head>
<body background ="z.jpg">
<center><img src="5.png" height="200"></center>
</head>
<body>
<div id="navbar">
<ul>
    <li><a href="mascot.htm">Mascots</a></li>
```

```html
<li><a href="countries.htm">Performance of the countries</a></li>
<li><a href="venues.htm">Venues</a></li>

</ul>
</div>
<hr size=10 noshade>
<marquee behavior="scroll" direction="left">
<img src = "volley.jpg" height="100" width="100" border="2">
<img src = "hockey.jpeg" height="100" width="100" border="2">
<img src = "logo1.jpg" height="100" width="100" border="2">
<img src = "quite.jpeg" height="100" width="100" border="2">
<img src = "wall.jpeg" height="100" width="100" border="2">
<img src = "guy.jpeg" height="100" width="100" border="2">
<img src = "india.jpeg" height="100" width="100" border="2">
<img src = "mady.jpeg" height="100" width="100" border="2">
<img src = "joker.jpeg" height="100" width="100" border="2">
<img src = "parker.jpeg" height="100" width="100" border="2">
<img src = "index.jpeg" height="100" width="100" border="2">
<img src = "chase.png" height="100" width="100" border="2">
<img src = "english.jpeg" height="100" width="100" border="2">s
</marquee>
<hr size=10 noshade>
<center><img src = "r.jpeg" height = 150 width = 150 border = 3>   <img
src="nd.jpg" height = 150 width = 150 border = 3>
<b><font face="calibri" color = "#F2AC28" size= 5><center>The 2012 Summer Olympics,
officially the Games of the XXX Olympiad, and also more generally known as London 2012,
was a major international multi-sport event, celebrated in the tradition of the Olympic
Games, as governed by the International Olympic Committee (IOC), that took place in
London, United Kingdom, from 27 July to 12 August 2012.The first event, the group stages
in women's football, began two days earlier, on 25 July.
More than 10,000 athletes from 204 National Olympic Committees (NOCs) participated.</
font></center></u></b>
<br>
<hr><hr>
</font>
</body>
</html>
```
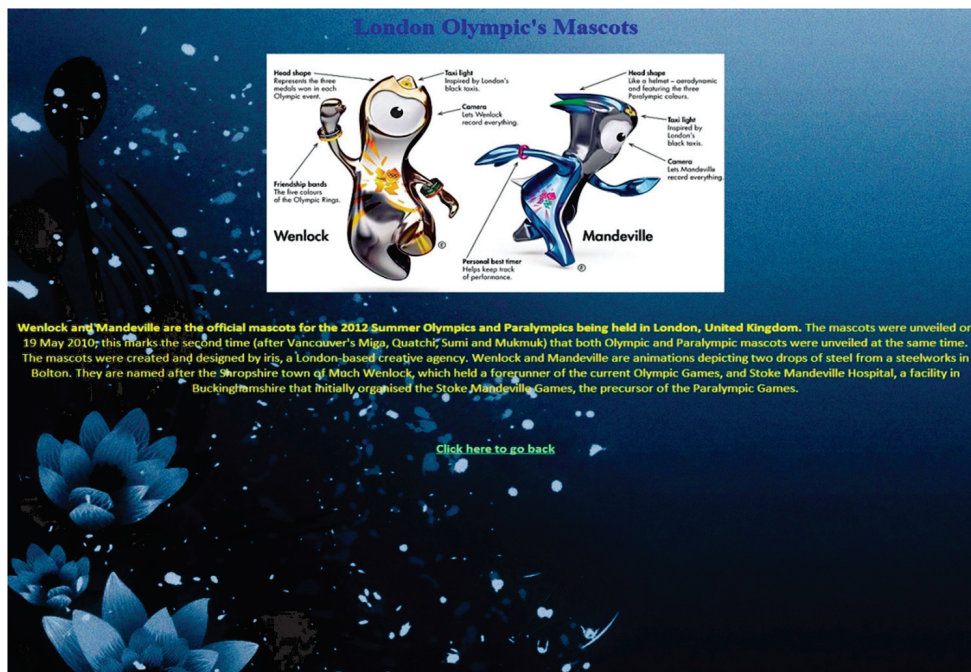
```
<html>
<body background = "z.jpg" vlink="lightgreen">
<center><Font color = blue><h1>London Olympic's Mascots</h1></font></center>
<center><img src = "mascot.jpg"><br><br><br>
<center>
<font color = yellow face="calibri" size = "4" ><b>Wenlock and Mandeville are the official
mascots for the 2012 Summer Olympics and Paralympics being held in London, United
Kingdom.</b>
The mascots were unveiled on 19 May 2010; this marks the second time
(after Vancouver's Miga, Quatchi, Sumi and Mukmuk) that both Olympic and Paralympic
mascots were unveiled at the same time.
The mascots were created and designed by iris, a London-based creative agency.
Wenlock and Mandeville are animations depicting two drops of steel from a steelworks
in Bolton.They are named after the Shropshire town of Much Wenlock, which held a
forerunner of the current Olympic Games, and Stoke Mandeville Hospital,
a facility in Buckinghamshire that initially organised the Stoke Mandeville Games, the
precursor of the Paralympic Games.</center>
</center><br><br><br><center>
<a href="website.htm"><b>Click here to go back</b></a>
</center>
</body>
</html>
```

Top Olympic medal winners
as of Sunday, August 5th

COUNTRY	G	S	B	TOTAL
China	30	17	14	61
United States	28	14	18	60
Britain	16	11	10	37
Russia	4	16	15	35
Japan	2	12	13	27

Each gold-medal is made up of 92.5 percent silver and 1.34 percent gold, with the remainder copper. The silver medal (which represents second place) is made up of 92.5 percent silver, with the remainder copper. The bronze medal is made up of 97 percent copper, 2.5 percent zinc and 0.5 percent tin. The value of the materials in the gold medal is about $644, the silver about $330, and the bronze about $4.71 on the current market.

Click here to go back

<html><html>
<body background = "z.jpg" vlink="pink">
<center><img src = "1.jpg">

<b>
<font color = "lightgreen" face = "calibri" size=5><center>Each gold medal is made up of 92.5 percent silver and 1.34 percent gold, with the remainder copper.
The silver medal (which represents second place) is made up of 92.5 percent silver, with the remainder copper.
The bronze medal is made up of 97 percent copper, 2.5 percent zinc and 0.5 percent tin.
The value of the materials in the gold medal is about $644, the silver about $330, and the bronze about $4.71 on the current market.</center>

<center>
<b>Click here to go back
</center>

</body>
</html>

```html
<html>
<body vilnk ="blue">
<img src = "stadium.jpg" height="100%" width="100%" border="3">
<font face = "calibri" size = 4>
<center><b><a href ="website.htm">Click to go back</a></font>
</center>
</body>
</html>
```

3. Create a website on the topic " Travel & Tourism" of India.Your site should contain links on the home page linked to the other web pages. Your site should have feedback form Use Gimp software to give various effects to theimages to be included in the website.
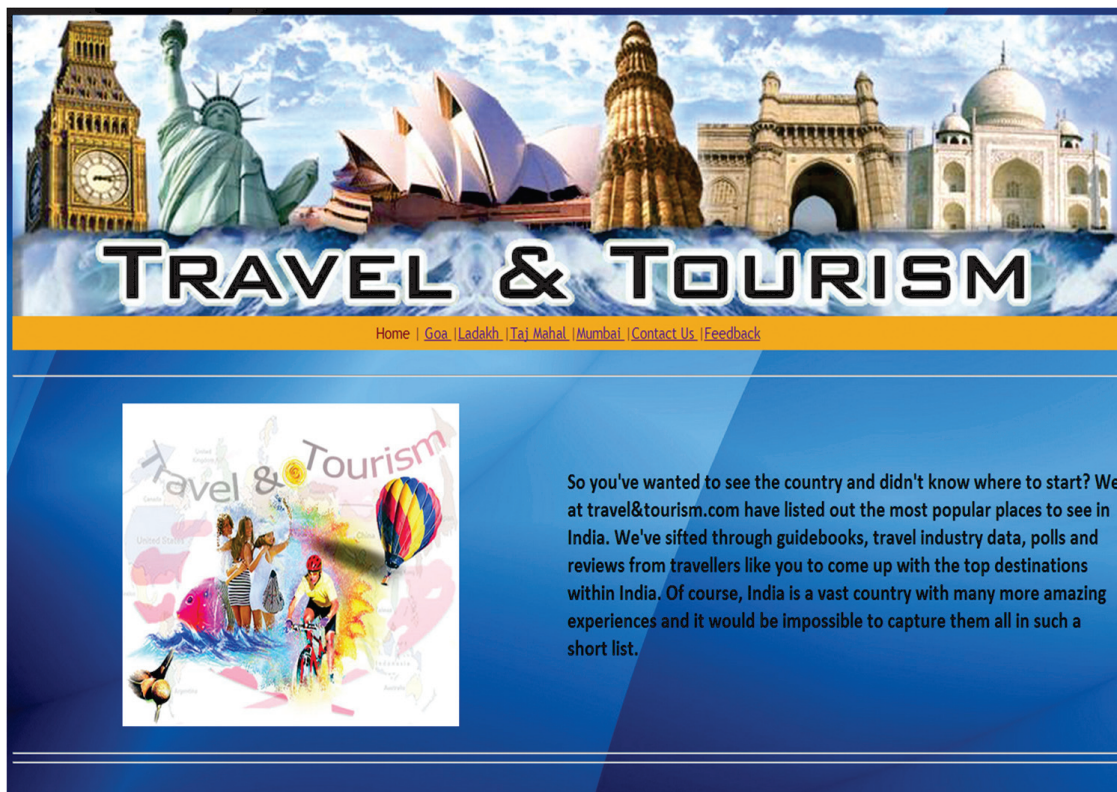
```
<html>
<head>
<title>Travel & Tourism</title>
</head>
<body background="bg.jpg">
<img src = "1.jpg" width = 100% height = 325><br>
<table width = 100% height = 35 bgcolor = "#F2AC28"><tr><td width = 100% height
= 35 valign = "middle"><font face = "trebuchet ms" color = "maroon" size = 4><p align
= "center"> Home | <a href = "Goa.html">Goa </a>|<a href = "Ladakh.html">Ladakh</
a>|<a href = "Taj Mahal.htm">TajMahal</a>|<a href = "Mumbai.htm">Mumbai </a>|<a
href = "2nd page.htm">Contact Us </a>|<a href = "Feedback.htm">Feedback</a></font></
td></tr></table><br><hr><br>
<table>
<tr>
<td width=50%>
<center>
<imgsrc="4.jpg">
</center>
</td>
```

<td align = "left">

So you've wanted to see the country and didn't know where to start? We at travel&tourism. com have listed out the most popular places to see in India.

We've sifted through guidebooks, travel industry data, polls and reviews from travellers like you to come up with the top destinations within India. Of course, India is a vast country with many more amazing experiences and it would be impossible to capture them all in such a short list.

</td></tr></table>

<hr><hr>

</body>

</html>

<html>

<head>

<title>Ladakh</title>

</head>

<body background="bg.jpg">

<imgsrc = "1.jpg" width = 100% height = 325>

```html
<table width = 100% height = 35 bgcolor = "#F2AC28"><tr><td width = 100% height = 35 valign = "middle"><font face = "trebuchet ms" color = "maroon" size = 4><p align = "center"><a href =Main.html>Home</a> | <a href = "2nd page.htm">Contact Us </a>|<a href = "Feedback.htm">Feedback</a></font></td></tr></table>
<br><br>
<table>
<tr><td width=50%>
<img src="hills.jpg" width=100%></td>
<td align = "left"><center>
<font face = "calibri" size =4>
<b>Despite 3 Idiots-inspired-package-tourists crowding the spartan tourism infrastructure, Ladakh still remains remarkably untouched - once you veer off the regular tourist haunts. Spectacularly jagged peaks enfold in this magical Buddhist ex-kingdom, with prayer flags fluttering in the wind and plenty of adventures to keep the adrenalin junkie occupied.</b>
</center>
</font>
</td></tr></table>
</body>
</html>
```

```
<html>
<head>
<title>Goa</title>
</head>
<body background="bg.jpg">
<imgsrc = "1.jpg" width = 100% height = 325>
<table width = 100% height = 35 bgcolor = "#F2AC28"><tr><td width = 100% height =
35 valign = "middle"><font face = "trebuchet ms" color = "maroon" size = 4><p align =
"center"><a href=Main.html> Home</a> | <a href = "2nd page.htm">Contact Us </a>|<a
href = "Feedback.htm">Feedback</a></font></td></tr></table>
<br><br>
<table><tr>
<td width=50%>
<img src="island.jpg" width=100%>
</td><td align = "left">
<center>
<font face = "calibri" size =4>
<b>World class beaches; excellent cuisine; amazingly warm people; feni; Goan "Port"
wine; Portuguese influence on culture and architecture; boutique guesthouses; markets;
and above all, living the local "Susegaad" life.
Goa has a unique fusion of cultures, lifestyles and cuisines, while being one of the most
easily accessible destinations from most Indian cities.</b>
</center></font>
</td></tr></table>
</body></html>
```

```
<html>
<head>
<title>TajMahal</title>
</head>
<body background="bg.jpg">
<imgsrc = "1.jpg" width = 100% height = 325>
<table width = 100% height = 35 bgcolor = "#F2AC28"><tr><td width = 100% height = 35 valign = "middle"><font face = "trebuchet ms" color = "maroon" size = 4><p align = "center"><a href=Main.html> Home</a> | <a href = "2nd page.htm">Contact Us </a>|<a href = "Feedback.htm">Feedback</a></font></td></tr></table>
<br><br>
<table>
<tr>
<td width=50%>
<img src="taj.jpg" width=100%>
</td>
<td align= "center">
<font face = "calibri" size =4>
<b>The one sight that surpasses all hype... No words can describe the experience of taking in the vision of this spectacular 'monument to love'. So we won't even try. Just go.</b>
```


</td></tr></table>
</body>
</html>

<html>
<head>
<title>Mumbai</title>
</head>
<body background="bg.jpg">
<imgsrc = "1.jpg" width = 100% height = 325>
<table width = 100% height = 35 bgcolor = "#F2AC28"><tr><td width = 100% height = 35 valign = "middle"><p align = "center"> Home | Contact Us |Feedback</td></tr></table>

<table>
<tr>
<td width=50%>

<imgsrc="India gate.jpg" width=100%>

</td>

<td>

<center>

You can love it or hate it, but we can guarantee you won't feel indifferent about the Maximum City. You may feel overwhelmed if you go for a short visit, but stay on only slightly longer and Mumbai (it's still an effort to not call it Bombay) will make you it's own.

</center>

</td></tr></table>

</body></html>

<html>

<head><title></title></head>

<body link = "blue" vlink = "purple" alink = "blue" background="bg.jpg">

<imgsrc = "1.jpg" width = 100%>

<table width = 100% height = 35 bgcolor = "#F2AC28"><tr><td width = 100% height = 35 valign = "middle"><p align

= "center"> Home | Travel & Tourism | Feedback</td></tr></table>

<table width = 100%>
<tr>
<td width = 50%>
<align = "left">

<imgsrc = "7.jpg" height = 200 width = 200 border = 3></td>
<td width = 50%>
<align = "right">
Contact Us at:
ABC Corporations
Connaught Place - 110085
Phone No. - 12345678
And know the traditions of all Festivals and their Festivities
</td></tr>
</table>

<hr><p align="center">
Home | Privacy Policy | Terms of Service | Feedback
2010 &copy Travel & Tourism | All Rights Reserved

</body>
</html>

<html><head><title></title></head>

<body link = "blue" vlink = "purple" alink = "blue" background="10.jpg">

<imgsrc = "1.jpg" width = 100% height = 325>

Home<hr>

We strive to bring the best experience to consumers around the world through our innovative idea of building a website to help you know the best places in India. We welcome your feedback on our website.

</center>

<hr>

<table height=150 width=100%>

<td width= 60%>

<ul type="disc">

<form>

First Name: <input type="text" name="First Name">

Last Name: <input type="text" name="Last Name">

E-Mail Address: <input type="text" name="E-Mail Address">

<u>Gender:</u>

<input type="radio"
name="sex" value="male">Male
<input type="radio" name="sex" value="female">Female
</form>

<u>How Would You Rate Our Website:</u>

<input type="radio" name="Excellent" value="">Excellent
<input type="radio" name="Very Good" value="">Very Good
<input type="radio" name="Good" value="">Good
<input type="radio" name="Acceptable" value="">Acceptable
<input type="radio" name="Bad" value="">Bad
<center>

<form name="input" action="html_form_action.asp" method="get">
     <input type="submit" value="Submit">
</form></center>

</td>
<td width=40%>
<imgsrc = "v.png">
</td>
</table>
<hr><hr>

</body>
</html>