GOVERNMENT OF TAMILNADU

HIGHER SECONDARY FIRST YEAR

COMPUTER APPLICATIONS

VOLUME-II

A publication under Free Textbook Programme of Government of Tamil Nadu

Department of School Education

Untouchability is Inhuman and a Crime

Government of Tamil Nadu

First Edition - 2018

NOT FOR SALE

Content Creation

State Council of Educational Research and Training

Printing & Publishing

Tamil NaduTextbook and Educational Services Corporation

www.textbooksonline.tn.nic.in

PREFACE

Human civilization achieved the highest peak with the development of computer known as "Computer era". Literate are those who have the knowledge in using the computer whereas others are considered illiterate inspite of the other degrees obtained.

The growth of the nation at present lies in the hands of the youth, hence the content of this book is prepared in such a way so as to attain utmost knowledge considering the future needs of the youth.

HOW TO USE THE BOOK

- This book does not require prior knowledge in computer Technology
- Each unit comprises of simple activities and demonstrations which can be done by the teacher and also students.
- Technical terminologies are listed in glossary for easy understanding
- The " Do you know?" boxes enrich the knowledge of reader with additional information
- Workshops are introduced to solve the exercises using software applications
- QR codes are used to link supporting additional
- materials in digital form

How to get connected to QR Code?

- Download the QR code scanner from the google play store/ apple app store into your smartphone
- Open the QR code scanner application
- Once the scanner button in the application is clicked, camera opens and then bring it closer to the QR code in the textbook.
- Once the camera detects the QR code, a URL appears in the screen. Click the URL and go to the content page.

CAREER GUIDANCE AFTER 12TH

COURSES	COLLEGES/ UNIVERSITIES	PROFESSION
B.E / B.Tech	All University and their affiliated Colleges and Self financing Colleges in India and Abroad.	Software Engineer, Hardware Engineer, Software Development, Healthcare Section, IT & ITEs
Science and Humanities		
B.Sc (Computer Science) BCA B.Sc (Maths, Physics, Chemistry, Bio-Chemistry, Geography, journalism, Library Sciences, Political Science, Travel and Tourism)	All University and their affiliated Colleges and Self financing Colleges in India and Abroad.	Government Job and Private Company BPO, Geologist, Journalist
LAW		
LLB B.A+LLB B.Com BBM+LLB BBA+LLB	All University and their affiliated Colleges and Self financing Colleges in India and Abroad.	Lawyer, Legal Officer, Govt Job
CA	The Institute of Chartered Accountant of India (ICAI)	CA Private and Govt.
Diploma	Government Polytechnic and Self-financing colleges	Junior Engineer (Government and Private)
Commerce Courses		
B.com-Regular, B.com-Taxation & Tax Procedure, B.com-Travel &Tourism, B.com-Bank Management, B.com-Professional, BBA/BBM-Regular, BFM- Bachelors in Financial Markets, BMS-Bachelors in Management Studies, BAF- Bachelors in Accounting & Finance, Certified Stock Broker & Investment Analysis, Certified Financial Analyst, Certified Financial Planner, Certified Investment Banker	All University and their affiliated Colleges and Self financing Colleges in India and Abroad.	Private Organization , Government ,Banking sectors and prospects for self – employment.

COURSES	COLLEGES/ UNIVERSITIES	PROFESSION
Management Courses		
Business Management Bank Management Event Management Hospital Management Human Resource Management Logistics Management	All University and their affiliated Colleges and Self financing Colleges in India and Abroad.	Private Organization , Government ,Banking sectors and prospects for self – employment.
Science and Humanities		
B.Sc.Botany B.Sc.Zoology B.Sc.Dietician & Nutritionist B.Sc.Home Science B.Sc.Food Technology B.Sc.Dairy Technology B.Sc. Hotel Management B.Sc. Fashion Design B.Sc. Mass Communication B.Sc. Multimedia B.Sc. -3D Animation	All University and their affiliated Colleges and Self financing Colleges in India and Abroad	Government Job and Private Company BPO, Geologist, Journalist

Table of Contents

E - book

Assessment

DIGI links

Lets use the QR code in the text books ! How ?

- Download the QR code scanner from the Google PlayStore/ Apple App Store into your smartphone
- Open the QR code scanner application
- Once the scanner button in the application is clicked, camera opens and then bring it closer to the QR code in the text book.
- Once the camera detects the QR code, a url appears in the screen.Click the url and goto the content page.

CHAPTER 9

Introduction to Internet and Email

Learning Objectives

To know the

- Necessity of Internet in Commerce
- Types of Network available
- Services available in Internet
- Applications of Internet
- Difference between Internet, Intranet and extranet
- Difference between Webpage and Website
- Difference between Static and Dynamic Webpage
- Difference between Browser and Search engine
- Do's and don't of safe Surfing on Internet

9.1 Necessity of Internet

It is important to understand what a network is and the importance of network. Simply put, a network is a collection of interconnected devices (such as computers, printers, etc.). To understand the importance of networks, let us look at how things worked before networks were created. For this, consider a large multinational company that sells food products in a time when networks did not exist.

Let us call this company Sri Mother International Ltd. Imagine the amount of information such as sales, inventory, etc. required by the management of the company to make everyday decisions. To get this information they will need to call their local offices. Their local offices will need to mail or fax printed reports or even send media (floppies!) through the postal service. By the time the mail is received, the data is already days old. Even if reports are faxed, it will be a cumbersome task to consolidate all reports. This task also increases chance of human error since large numbers of reports are manually collated. This is just one part of the equation. You also need to consider the information required by the local offices. They also need various data from the head office and other offices around the world.

Now consider the same company, but in the present time with all their offices interconnected. They would use a single application around the world that takes advantage of their global network. The data from all offices would be instantly stored at the central location and with a single click, the management team can see data from around the world in any format they like. This data would also be real-time. This means that they see it, as its happening. Since the data is centralized, any office location can see data pertaining to any location.

As you can see, the cost, time and effort involved in transferring data was

much higher without networks. So networks decrease cost, time, and effort and thereby increase productivity. They also help in resource optimization by helping to share resources. A simple example of resource sharing is a printer, shared between many different computers in a typical office.

Now that you know how beneficial networks are, its time to look at different types of network.

9.2 Types of Network

Depending upon geographical area covered by a network, it is classified as:

1.Local Area Network (LAN)

2. Metropolitan Area Network (MAN)

3.Wide Area Network (WAN)

4. Personal Area Network(PAN)

5. Campus Area Network (CAN)

6. Wireless Local Area Network (W-LAN)

1. LAN – LOCAL AREA NETWORK

Range : Upto 10 Km

Location : Refers to same office, same building, same company and in same schools

Speed : Upto 10-100 Mbps

Advantages : Low Cost, Resource Sharing, Security

Disadvantages : Area Covered Limited When number of nodes increases, performance Decreases

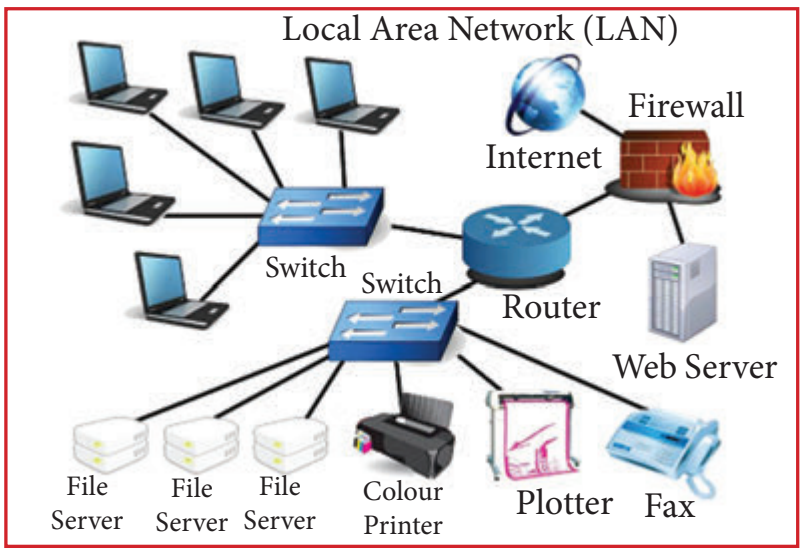


Figure 9.1

2. MAN – Metropolitan Area Network

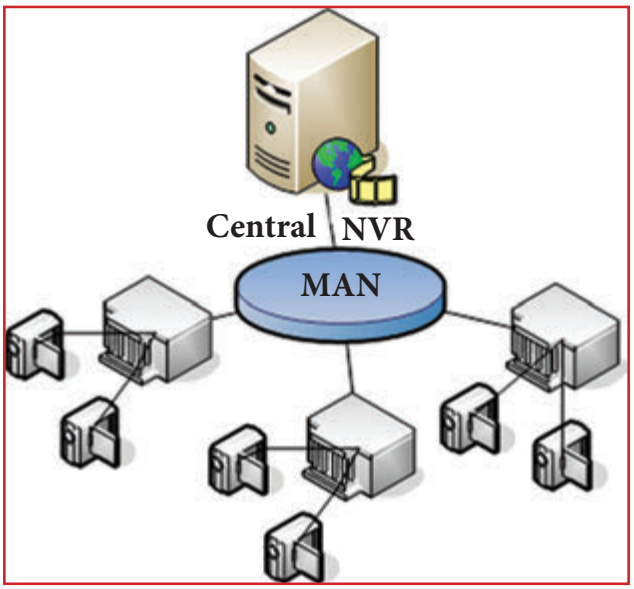


Figure 9.2

Range : 10 to 15 Miles

Location : MAN is a network designed to extend over an entire city

Speed : Upto 5 – 10 Mbps

Advantages : Wider than LAN

Disadvantages : Data rate is slow compared to LAN Cost higher than LAN

3. WAN – WideArea Network

Range : Above 1000 Kms

Location : It Span entire countries and continents

Speed : Upto256 Kbps to 2 Mbps

Advantages : Large geographical Area

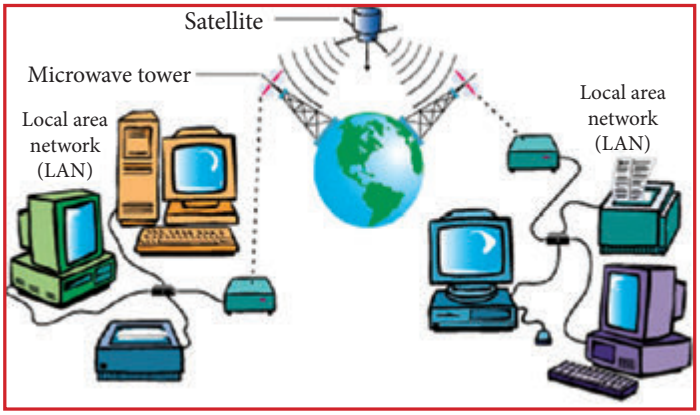


Figure 9.3

Disadvantages : Complicated and Complex.High Cost. Requires high Performance.Devices. Low security. Cost higher than LAN

4. PAN – Personal Area Network

PERSONAL AREA NETWORK (PAN)

Figure 9.4

Range :Upto 100 meters

Location : Used for shorter distance, controlled by a single person within a single building

Speed : up to 250 Kbps

Advantages : Efficient, Cost effective and convenient. Controlled by a single person Hotspot may connect upto 8 devices

Disadvantages : Shorter distance upto 10 meters only. Data rate is low compared to other network

5 CAN – CampusArea Network

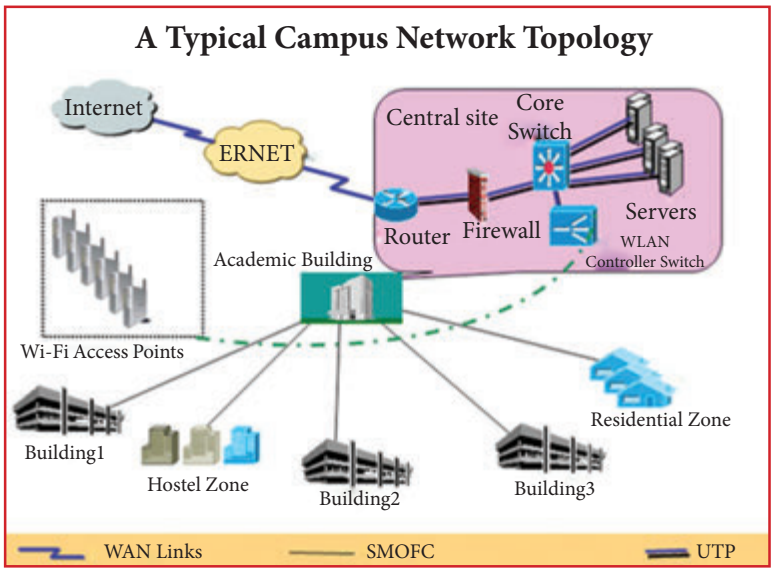


Figure 9.5

Range : Upto 5 Kms

Location : Larger than LAN, but smaller than MAN. University, school or small business,

enterprise

Speed : 40 KB/s TO 1 MB/s

Advantages : Cost effective ,Wired or Wired Network, High BandwithMulti-departmental Network access

Disadvantages : Difficult to manage

6. WLAN – Wireless Local Area Network

Range : Upto 50 Kms

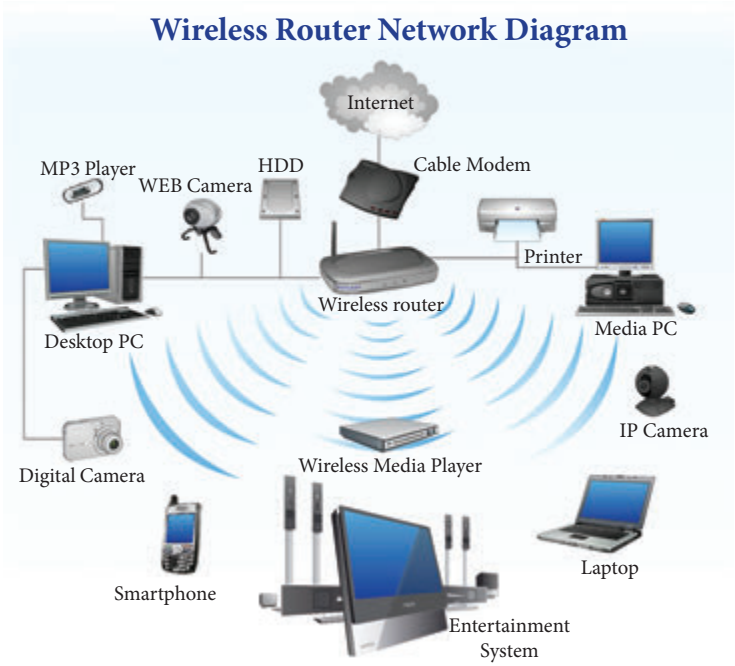


Figure 9.6

Location : Ranges from a single room to an entire campus Uses Wifi or Bluetooth, Radio waves

Speed : 1 Mbps to 54 Mbps

Advantages : Portable Installation is quick and easy

Disadvantages : Low Bandwith due to interference

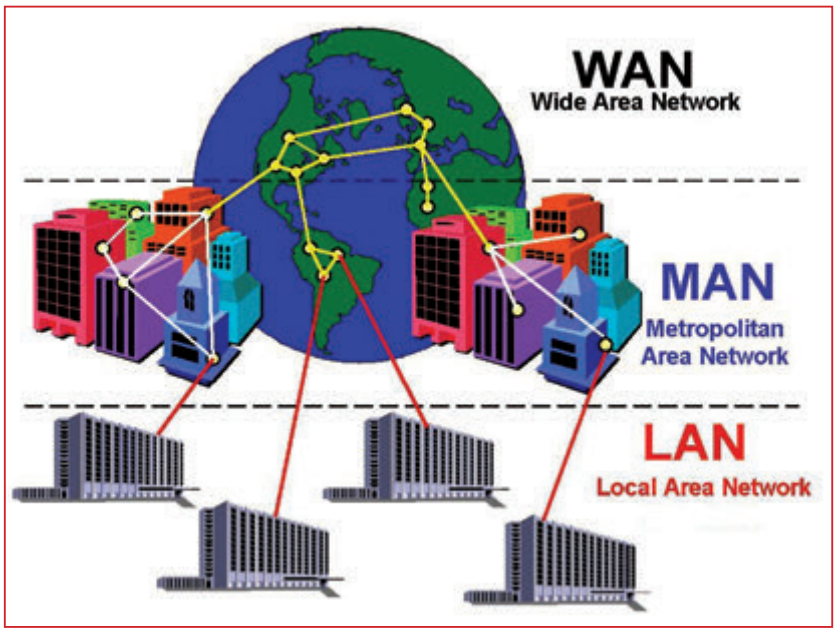


Figure 9.7

9.3 INTERNET And WWW

Several networks, small and big all over the world, are connected together to form a Global network called the internet. The internet uses TCP/IP(Transmission Control Protocol/ Internet Protocol) to transmit data via various types of media. TCP/IP is not a single networking protocol – it is a suite of protocols named after the two most important protocols or layers within it – TCP and IP. As with any form of communication, two things are needed: a message to transmit and the means to reliably transmit the message.The internet protocol (IP) addressing system is used to keep track of the millions of users. Each computer on net is called as **host**. The internet is the most cost-effective method of communications in the world. Examples of few services available are:

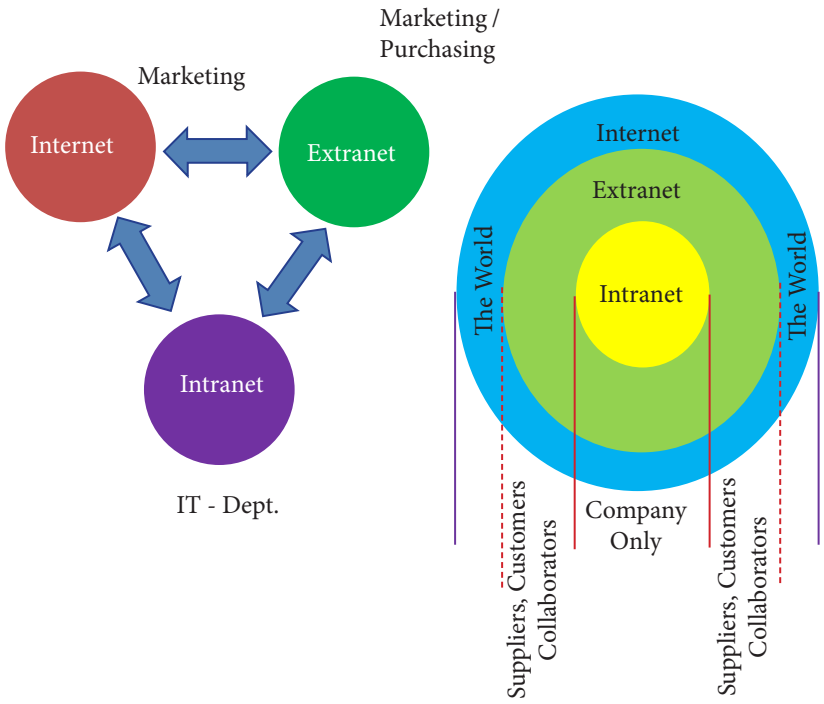


Figure 9.8

The **Internet** works by using a protocol called TCP/IP. TCP/IP allows one computer to talk to another computer via the Internet through compiling packets of data and sending them to right location.

An extranet is a private network that uses Internet technology and the public telecommunication system to securely share part of a business's information or operations with suppliers, vendors, partners, customers, or other businesses.

An Intranet is a website used by organizations to provide a place where employees can access company information (eg policies, procedures, staff, directory, department info), tools (quick links to common apps, forms etc.) and (collaborate (to social sharing tools similar facebook).

- Email
- Web-enabled audio/video conferencing services
- Online movies and gaming
- Data transfer/file-sharing, often through File Transfer Protocol (FTP)
- Instant messaging
- Internet forums
- Social networking
- Online shopping
- Financial services

Vinton Gray Cerf (1943) an American Computer Scientist, is widely known as "Father of the Internet" shares this title with TCP/IP co-inventor Bob Kahn. He was also involved in the formation of ICANN

9.3.1 Domain Name

It is a name or an identity which become a online identity and can be access by the web browser when connected to internet.

Table: 9.1

Generic Domain Name	Description
.com	Commercial Organisation
.gov	Government institution
,org	Non-profit Organisation
.net	Network Support Group
.edu	Educational Institution

The heart of intranets and the internet is called as the **Domain Name System(DNS)**, the way computers can contact each other and do things such as exchange electronic mail or display Web pages. The Internet Protocol (IP) uses this Internet address information and the DNS to deliver mail and other information from computer to computer

Table: 9.2

Country Level Domain Name	Description
.in	India
.au	Australia
.us	United States of America
.jp	Japan
.ru	Russia
.sg	Singapore

9.3.2 What is URL?

Every server on the internet has an IP number, a unique number consisting of four parts separated by dots. The IP number is the server's address

165.113.245.2

128.143.22.55

At times the number keeps changing hence it is harder for people to remember number than to remember

Figure 9.9

word combinations. So, addresses are given “word-based” addresses called URL. The URL and the IP number are one and the same.

A URL is an address that shows where a particular page can be found on the World Wide Web. URL is an abbreviation for **'Uniform Resource Locator (URL)'.**

9.3.3 Who Governs the Internet?

One of the most frequently asked questions about the internet is, “ Who runs it?” The truth is that no centralized management of the internet exists.

ICANN was created on September 18, 1998, and incorporated on September 30, 1998, in the US State of California. It is headquartered in the Playa Vista neighborhood of Los Angeles.

The internet as a whole does not have a single controller. But the internet society, which is a voluntary membership organization, takes the responsibility to promote global information exchange through the internet technology. Internet Corporation for Assigned Names and Numbers(ICANN) administers the domain name registration. It helps to avoid a name which is already registered.

9.3.4 What is W3C?

W3C stands for "World Wide Web Consortium." The W3C is an international community that includes a full-time staff, industry experts, and several member organizations. These groups work together to develop standards for the World Wide Web.


Tim Berners-Lee

The World Wide Web Consortium (W3C) is an international organization committed to improving the web. It is made up of several hundred member organizations from a variety of related IT industries. W3C sets standards for the World Wide Web (WWW) to facilitate better communication ability and cooperation among all web stakeholders. It was established in 1994 by the **creator of the WWW,** Tim Berners-Lee.

9.4 Types of Internet Service

Here are some common types of Internet service.

Wireless

Radio frequency bands are used in place of telephone or cable networks. One of the greatest advantages of wireless Internet connections is the "always-on" connection that can be accessed from any location that falls within network coverage. Wireless connections are made

possible through the use of a modem, which picks up Internet signals and sends them to other devices.

Mobile

Many cell phone and smartphone providers offer voice plans with Internet access. Mobile Internet connections provide good speeds and allow you to access the Internet.

Hotspots

Hotspots are sites that offer Internet access over a wireless local area network (WLAN) by way of a router that then connects to an Internet service provider. Hotspots utilize Wi-Fi technology, which allows electronic devices to connect to the Internet or exchange data wirelessly through radio waves. Hotspots can be phone-based or free-standing, commercial or free to the public.

Broadband

This high-speed Internet connection is provided through either cable or telephone companies. One of the fastest options available, broadband Internet uses multiple data channels to send large quantities of information. The term broadband is shorthand for broad bandwidth. Broadband Internet connections such as DSL and cable are considered high-bandwidth connections. Although many DSL connections can be considered broadband, not all broadband connections are DSL.

DSL

DSL, which stands for Digital Subscriber Line, uses existing 2-wire copper telephone line connected to one's home so service is delivered at the same time as landline telephone service. Customers can still place calls while surfing the Internet.

Cable

Cable Internet connection is a form of broadband access. Through use of a cable modem, users can access the Internet over cable TV lines. Cable modems can provide extremely fast access to the Internet.

Satellite

In certain areas where broadband connection is not yet offered, a satellite Internet option may be available. Similar to wireless access, satellite connection utilizes a modem.

ISDN

ISDN (Integrated Services Digital Network) allows users to send data, voice and video content over digital telephone lines or standard telephone wires. The installation of an ISDN

adapter is required at both ends of the transmission—on the part of the user as well as the Internet access provider.

Dongles / Data Card

Today, many dongles provide wireless capabilities. For example, USB Wi-Fi adapters are often called dongles. Since most computers now have built-in Wi-Fi chips, mobi data adapters, such as 3G and 4G dongles, are more prevalent. These types of dongles allows to connect to the Internet even when Wi-Fi is not available.

Comparison between Data Card and Dongle

Dongle	Data Card
Refers to any removable component used for enabling extra security. USB Dongles can be divided into • WiFi Dongles • BlueTooth Dongle • Memory Dongle	It is a removable electronic card which is used for storing for data. Types of datacard are • Expansion Card • Memory Card or Flash Card • Identification Card

9.4.1 Internet Connection and Access Methods

There are several ways or methods of connecting to the Internet.

There are two access methods direct and Indirect and these can be either fixed or mobile.

9.4.1.1 Indirect Access

This is most common method used in home and office networks.

The device e.g. computer connects to a network using Ethernet or WiFi and the network connects to the Internet using Asymmetric digital subscriber lineADSL(cable or fibre.)

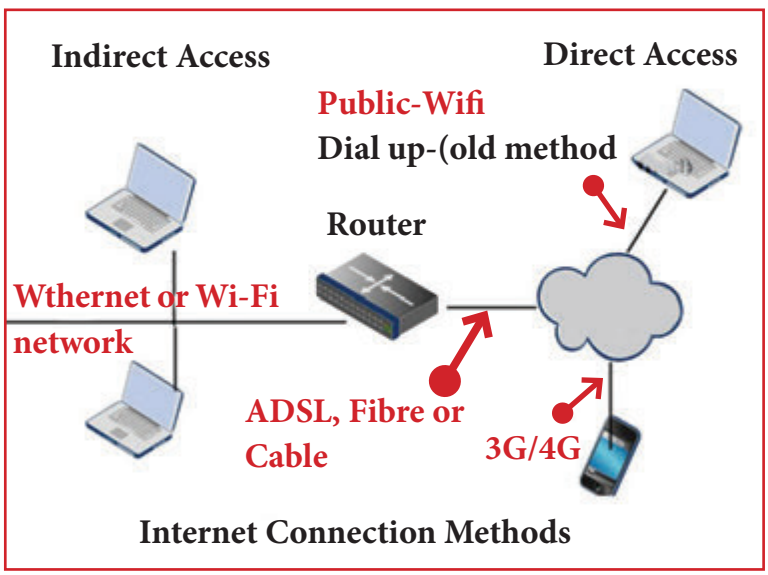


Figure 9.10

9.4. 1.2 Direct Access

This is most common method used when travelling.

The device e.g. smart phone connects directly to the Internet using 3G/4G mobile networks or public Wi-Fi.

There are two ways to look for the information on the web.

1. If the URL of the website is known, enter it on the address bar.

2. If is the URL is not known, then "Search Engines" will help us to get the information.

A search engine is a software system that is designed to search for information on the World Wide Web.

Examples of popular search engines are Yahoo, Lycos, Altavista, Hotbot, Google and Askjeeves.

1. A browser is used to access websites and web pages whereas a search engine isused to search for particular information.

2. Internet Explorer, Chrome, Firefox, Safari, and are the most popular web browsers while Google and Yahoo are the most popular search engines.

3. A browser is used to access the Internet whereas in order to open a search engine you need a browser.

The list of content returned via a search engine to a user is known as a search engine results page (SERP).

9.5 Internet Applications

1. Internet telephony

Internet telephony (e.g. Skype) is another common communications service made possible by the creation of the Internet. VoIP stands for Voice-over-Internet Protocol, referring to the protocol that underlies all Internet communication.

2. Job search

Nowadays, many people search for their jobs online as it is quicker and there is a larger variety of job vacancies present. People can publish resume online for prospective job. Some of the web sites providing this service are naukri.com, monster.com, summerjob.com, recuritmentindia.com etc.

3. Online Shopping

The internet has also facilitated the introduction of a new market concept consisting of virtual shops. They provide information about products or services for sale through www servers. Using the internet services customers can submit specific product queries and request

specific sales quotes. For example amazon.com is a www based bookshop on the internet where information on all types of international books can be found and books can be ordered online.

4. Stock market updates

Selling or buying shares sitting on computer through internet. Several websites like ndtvprofit.com, moneypore.com, provide information regarding investment

5. Travel:

One can use internet to gather information about various tourist place .it can be used for booking Holiday tours, hotels, train, bus, flights and cabs. Some of the web sites providing this service are goibibo.com, makemytrip.com, olacabs.com.

6. Research

Research papers are present online which helps in the researcher doing aliterature review

7. Video conferencing

It enables direct face-to-face communication across networks via web cameras, microphones, and other communication tools. Video conferencing can enable individuals in distant locations to participate in meetings on short notice, with time and money savings. The technology is also used for telecommuting, in which employees work from home. When video Conferencing is used in education, it is easier to have interactive classes between teacher to teacher, teacher to classroom, or classroom to classroom with students in different places.

8. e–commerce

e–commerce (electronic commerce or EC) is the buying and selling of goods and services, or the transmitting of funds or data, over an electronic network, primarily the Internet. These business transactions occur either business-to-business, business-to-consumer, consumer-to-consumer or consumer-to-business. Largest e-commerce companies in India are Flipkart, Snapdeal, Amazon India, Paytm.

9. Online payments

The rising boom of online payments in India has given way to many new entrants in the industry such as Paytm etc who are majorly wallet driven payment companies. This growth has been driven by rapid adoption led by the increasing use of smartphones, tablets and speedy access to internet through broadband, 4G etc

10. Social Networking

Social networking is the use of internet-based social media programs to make connections with friends, family, classmates, customers and clients. Social networking can

be done for social purposes, business purposes or both. The programs show the associations between individuals and facilitate the acquisition of new contacts. Examples of social networking includes Facebook

11. Voicemail

Voicemail is a system of sending messages over the phone. Calls are answered by a machine which connects you to the person you want to leave a message for, and they canlisten to their messages later.

12. Chatting

On the Internet, chatting is talking to other people who are using the Internet at the same time you are. Usually, this "talking" is the exchange of typed-in messages and a group of users who take part from anywhere on the Internet.. Chats can be ongoing or scheduled for a particular time and duration. Most chats are focused on a particular topic of interest and some involve guest experts or famous people who "talk" to anyone joining the chat. Transcripts of a chat can be archived for later reference.

13. e-banking

e-banking (Online banking) , also known as internet banking, it is an electronic payment system that enables customers of a bank or other financial institution to conduct a range of financial transactions through the financial institution's website. The online banking system will typically connect to or be part of the core banking system operated by a bank and is in contrast to branch banking which was the traditional way customers accessed banking services.

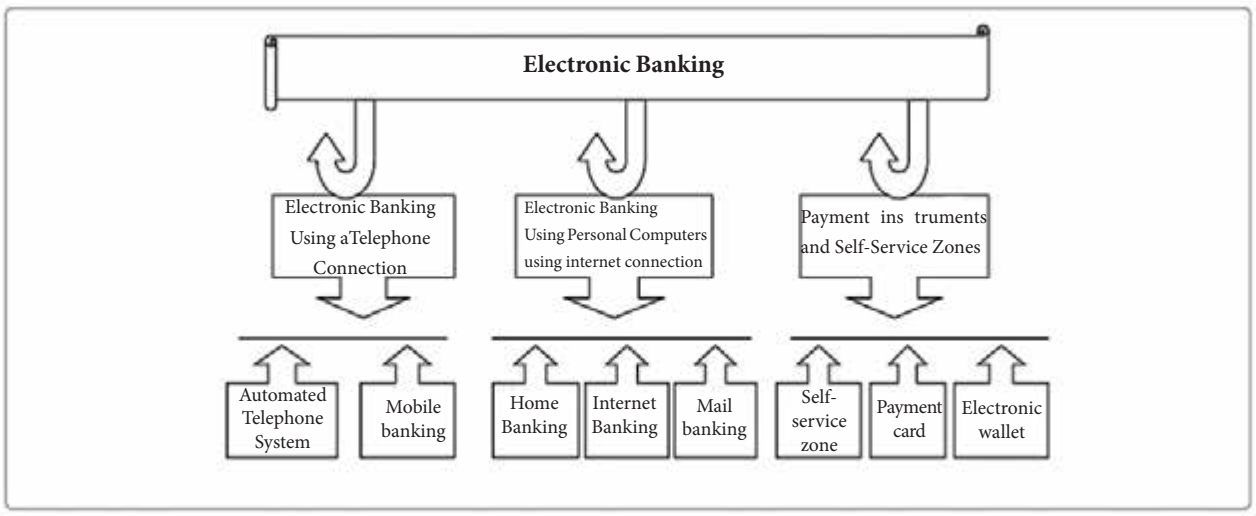


Figure 9.11

14. e-learning

e-Learning are courses that are specifically delivered via the internet to somewhere other than the classroom where the professor is teaching. It is not a course delivered via a DVD

or CD-ROM, video tape or over a television channel

e-learning is utilizing electronic technologies to access educational curriculum outside of a traditional classroom. It is a program delivered completely online. E-learning is interactive in that you can also communicate with teachers, professors or other students in a class. Sometimes it is delivered live, where you can "electronically" raise your hand and interact in real time and sometimes it is a lecture that is prerecorded. There is always a teacher/ professor interacting/ communicating, grading participation, giving assignments and conducting tests.

9.6 Email

Electronic mail or email is information stored on a computer that is exchanged between two users over telecommunications. Email is a message that may contain text, files, images or any other attachments sent through a network to a specified individual or group of individuals

The **first mail** was sent by **Ray Tomlinson** in 1971 as a test e-mailmessage containing the text like "QWERTYUIOP"

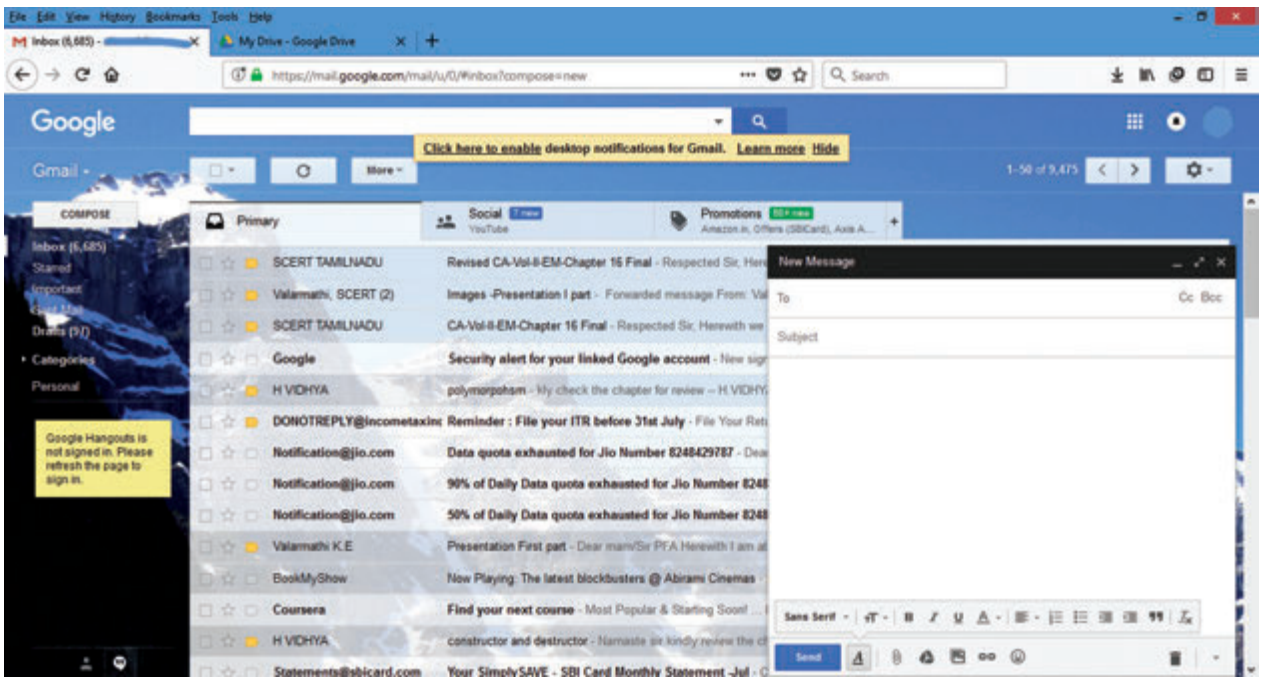


Fig 9.12

9.6.1 Structure of email

Click the **Compose** button and then writing an e-mail contents

When sending an e-mail message, several fields are required to be filled:

- The **To** field is where you type the e-mail address of the person who is the recipient of your message.

- The **From** field should contain your e-mail address.
- If you are replying to a message, the To and From fields are automatically filled out; if it's a new message, you'll need to enter them manually.
- The **Subject** should consist of a few words describing the e-mail's contents. The Subject lets the recipient see what the e-mail is about, without opening and reading the full e-mail. This field is optional.
- The **CC (Carbon Copy)** field allows you to specify recipients who are not direct addressees (listed in the "To" field). This field is optional.
- The **BCC (Blind Carbon Copy)** field is similar to **CC**, except the recipients are secret. Each **BCC** recipient will receive the e-mail, but will not see who else received a copy. The addressees (anyone listed in the "To" field) remain visible to all recipients. This field is optional.

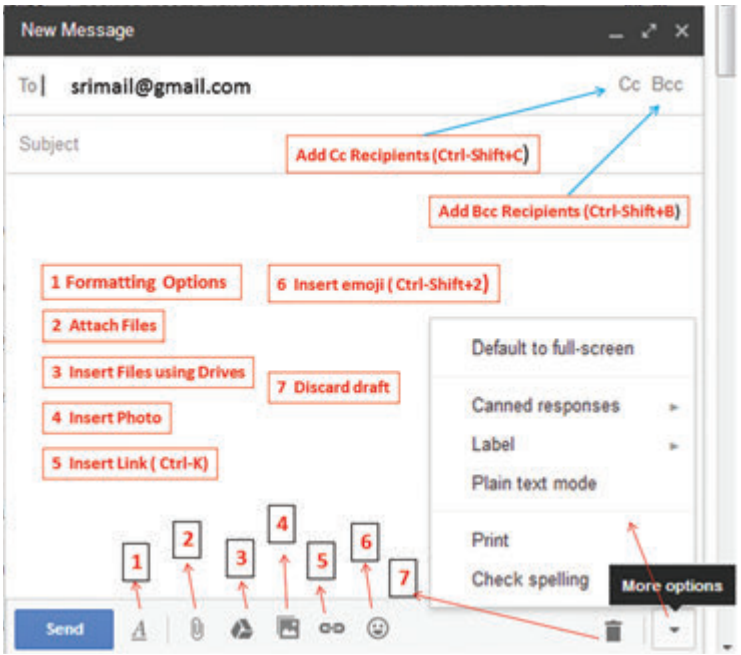


Figure 9.13 (a)

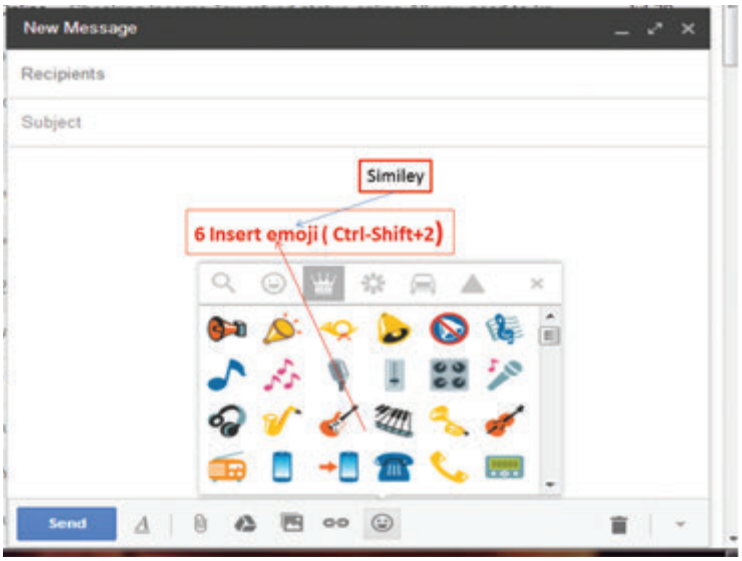


Figure 9.13 (b)

- Finally, the **Message Body** is the location you type your main message. It often contains your signature at the bottom; similar to a hand-written letter.

9.6.2 Advantages of email

Some of the main advantages of email are listed below.

- **Free delivery** - Sending an e-mail is virtually free, outside the cost of Internet service. There is no need to buy a postage stamp to send a letter.
- **Global delivery** - E-mail can be sent to nearly anywhere around the world, to any country.

- **Instant delivery** - An e-mail can be instantly sent and received by the recipient over the Internet.
- **File attachment** - An e-mail can include one or more file attachments, allowing a person to send documents, pictures, or other files with an e-mail.
- **Long-term storage** - E-mails are stored electronically, which allows for storage and archival over long periods of time.
- **Environmentally friendly** - Sending an e-mail does not require paper (Paperless)), cardboard, or packing tape, conserving paper resources.

9.6.3 What is sent in an email

In addition to text messages being sent over e-mail, it is also possible to attach a file or other data in an e-mail. For example, an attachment could be a picture, PDF,word processor document,, or any file stored on the computer.

9.7 Internet Threat

It's a dangerous world out there in the World Wide Web. Just as your mother may have told you to never talk to strangers, the same advice holds true for the virtual world. You may know to be wary of giving strangers your business bank account details. But can you be sure the website you're logging into is that of your bank and not a forgery created by a cybercriminal?Cybercriminals use many different methods to lure you into parting with your confidential personal or business information. Hence you ought to be aware of the issues and be extra vigilant when online and offline..

Computer virus: A computer virus is a small piece of software that can spread from one infected computer to another. The virus could corrupt, steal, or delete data on your computer—even erasing everything on your hard drive. A virus could also use other programs like your email program to spread itself to other computers.

Malware: Malware is short for "malicious software." Malware is used to mean a "variety of forms of hostile, intrusive, or annoying software or program code." Malware could be computer viruses, worms, Trojan horses, dishonest spyware, and malicious rootkits—all of which are defined below.

Trojan horse: Users can infect their computers with Trojan horse software simply by downloading an application they thought was legitimate but was in fact malicious. Once it enters inside the computer, a Trojan horse can do anything from recording your passwords by logging its keystrokes, hijacking your webcam to watch and record every movement.

Malicious spyware: Malicious spyware is used to describe the Trojan application that was

created by cybercriminals to spy on their victims. An example would be keylogger software that records a victim's every keystroke on his or her keyboard. The recorded information is periodically sent back to the originating cybercriminal over the Internet. Keylogging software is widely available and is marketed to parents or businesses that want to monitor their kids' or employees' Internet usage.

Computer worm: A computer worm is a software program that can copy itself from one computer to another, without human interaction. Worms can replicate in great volume and with great speed. For example, a worm can send copies of itself to every contact in your email address book and then send itself to all the contacts in your contacts' address books.

Because of their speed of infection, worms often gain notoriety overnight infecting computers across the globe as quickly as victims around the world and switch them on to open their email.

Botnet: A botnet is a group of computers connected to the Internet that have been compromised by a hacker using a computer virus or Trojan horse. An individual computer in the group is known as a "zombie" computer.

Spam: Spam in the security context is primarily used to describe email spam. Unwanted messages in your email inbox. Spam, or electronic junk mail, is a nuisance as it can clutter your mailbox as well as potentially take up space on your mail server. However, spam messages can contain links that when clicked on could go to a website that installs malicious software onto your computer.

Phishing: Phishing scams are fraudulent attempts by cybercriminals to obtain private information. Phishing scams often appear in the guise of email messages designed to appear as though they are from legitimate sources. For example, the message would try to lure you into giving your personal information by pretending that your bank or email service provider is updating its website and that you must click on the link in the email to verify your account information and password details.

Rootkit: **A** rootkit is a collection of tools that are used to obtain administrator-level access to a computer or a network of computers. A rootkit could be installed on your computer by a cybercriminal exploiting a vulnerability or security hole in a legitimate application on your PC and may contain spyware that monitors and records keystrokes.

9.8. Browsers

Looking for information on the internet is called **surfing or browsing**. To browse the internet, a software called the **web browser or browser** is used.

E-commerce, social media, and many other things we take for granted today would be impossible without internet browsers.Web browsers translates HTML documents of the

website and allows to view it on the screen.

9.8.1 Familiar Internet Browser

1. **Google Chrome** is a freeware familiar web browser **developed by Google Inc**. It is best for its speed, simplicity, security, privacy and customization features. Google Chrome supports on Android 4.0 or higher, iOS 6.0 or higher, Mac OSX 10.6 or higher and Windows (XP sp2 or higher) and Linux system.

2. **Mozila Firefox** is a free and open source web browser **developed by Mozilla Foundationand Mozilla Corporation**. FireFox is **default browser in Ubuntu** . It supports Windows, Mac OS X, Linux and Android system.

3. **Internet Explorer** commonly known as Microsoft Internet Explorer or Windows Internet Explorer is the first or default browser for a Windows PC. It is **developed by Microsoft.**

4. **Safari** is a web browser **developed by Apple Inc.** and comes with OS X and iOS. Some version of safari browser also supports in Windows Operating System. **Exclusively used in Apple Mac system.**

9.9 Web Page Vs Web Site

Websites

A website is a collection of webpages. For example if there is a company that owns sricompany.com then this website will have several Webpages like Home, About Us, Contact Us, Testimonials, Products, Services, FAQ's, and others. The first page of the website is called a Home Page. All of these pages together make up a Website.

Web Pages

A webpage is apage of a Website. A web page can be accessed by a URL in a browser and that page can be copied and or send to a friend for review whereas websites are collections of multiple page that must be navigated to view other content

A webpage is a page of a Website. Every page has a unique address called the Uniform Resource Locator (URL). The URL locates the pages on the internet.

Difference between Webpage and Website

Webpage	Website
Consists of a Single document displayed by a browser	A collection of multiple documents displayable by a browser
Shares a unique domain name	Has its own unique domain name
Makes up a website	Contains one or more webpages

9.10 Static and Dynamic Web Pages

Web pages are classified as Static and Dynamic Webpages

Web pages are called Static websites as they remain the same whenever it is visited. Examples of static Websites are website owned by Small business organizations, School websites etc.

Websites that displays marks of Public Examinations and Entrance Examinations changes when different register numbers are given. Such websites are called as Dynamic Websites. Eg,. Websites of Government and Entrance Exams.

Comparison of Static and Dynamic Web Pages

Static Web Page	Dynamic Web Page
The content and layout of a web page is fixed	The content and layout may change during run time
Static Web pages never use databases	Databases is used to generate dynamic content through queries
Static web pages directly run on the browser and do not require any server side application program	Dynamic web pages runs on the server side application programs and displays the results
Static Web pages are easy to develop	Dynamic web page development requires programming skills

9.11 Web –Applications

E-commerce is the activity of buying or selling of products on online services or over the Internet. Electronic commerce draws on technologies such as mobile commerce, electronic funds transfer, supply chain management, Internet marketing, online transaction processing, electronic data interchange (EDI), inventory management systems, and automated data collection systems.

9.11.1 E-commerce

Classifying ecommerce according to the parties involved

1. **Business to consumer (B2C)** – Transactions happen between businesses and consumers. In B2C ecommerce, businesses are the ones selling products or services to end-users (i.e. consumers).
2. **Business to business (B2B)** – As its name states, B2B ecommerce pertains to transactions conducted between two businesses. Any company whose customers are other businesses operate on a B2B model.
3. **Consumer to business (C2B)** – Consumer to business ecommerce happens when a consumer sells or contributes monetary value to a business. Many crowdsourcing campaigns fall under C2B ecommerce.

4. **Consumer to consumer (C2C)** – As you might have guessed, C2C ecommerce happens when something is bought and sold between two consumers. C2C commonly takes place on online marketplaces such as eBay, in which one individual sells a product or service to another.
5. **Government to business (G2B)** – G2C transactions take place when a company pays for government goods, services, or fees online. Examples could be a business paying for taxes using the Internet.
6. **Business to government (B2G)** – When a government entity uses the Internet to purchases goods or services from a business, the transaction may fall under B2G ecommerce. Let's say a city or town hires a web design firm to update its website. This type of deal may be considered a form of B2G.
7. **Consumer to government (G2C)** – Consumers can also engage in B2C ecommerce. People paying for traffic tickets or paying for their car registration renewals online may fall under this category.

9.11.2 E-governance

Electronic governance or e-governance is the application of information and communication technology (ICT) for delivering government services.

Benefits of E-governance

- Reduced corruption
- High transparency
- Increased convenience
- Reduction in overall cost.
- Expanded reach of government

Figure 9.14

Types of Interactions in e-Governance

1. **G2G (Government to Government):** When the exchange of information and services is within the periphery of the government, is termed as G2G interaction. This can be both horizontal, i.e. among various government entities and vertical, i.e. between national, state and local government entities and within different levels of the entity.
2. **G2C (Government to Citizen):** The interaction amidst the government and general public is G2C interaction. Here an interface is set up between government and citizens, which enables citizens to get access to wide variety of public services. The citizens has the freedom to share their views and grievances on government policies anytime, anywhere.
3. **G2B (Government to Business):** In this case, the e-governance helps the business class to interact with the government seamlessly. It aims at eliminating red-tapism, saving time, cost and establish transparency in the business environment, while interacting with

government.

4. **G2E (Government to Employees):** The government of any country is the biggest employer and so it also deals with employees on a regular basis, as other employers do. ICT helps in making the interaction between government and employees fast and efficient, along with raising their level of satisfaction by providing perquisites and add-on benefits.

E-governance has a great role to play, that improves and supports all tasks performed by the government department andagencies, because it simplifies the task on the one hand and increases the quality of work on the other.

9.12 Safe Surfing on Internet

As a great reminder that Internet security is something that needs constant vigilance. It's also a great reminder that a lot of things can happen on the Internet if you don't properly take precautions against them. With that in mind, be sure to have a safe and happy Safer Internet Day.

SAFER INTERNET DAY

Safer Internet Day (SID) 2018 iscelebrated around the world in February of every year with a theme of "Create, connect and share respect: A better internet starts with you".

Following is the do's and don't of safe Surfing on Internet

1. Don't give out your personal information – Don't put personal details such as your home address, telephone numbers or parent's work address online as cybercriminals can use this information to create a fake profile with your details
2. What goes online, stays online – Use privacy settings to make sure only your friends and family can see photos you post. Avoid posting holiday plans as criminals have been known to track your movements
3. Check your security and privacy settings – Make sure your social network privacy settings are secured so only your friends can see your personal information and use your privacy settings to restrict who can see your posts, videos and photos
4. Password safety – Sharing your password with your parents is a sensible idea, but avoid sharing your password with your friends, even if they promise they won't tell anyone! Also, when setting your password, make sure it isn't something people may guess such as your pet's name. Use a mixture of letters, numbers and upper and lower case characters
5. Always protect your mobile device – Make sure your mobile phone is pin-protected so all your personal information stored on it is safe. Download a security app which allows you to remotely wipe any personal data, should your mobile be lost or stolen
6. Don't talk to strangers online or offline – Don't meet up with strangers and let your parents know if a stranger has tried to get in contact with you online.
7. Listen to the adults who know – Adults will always be worried about you. Help set their mind at rest and avoid chatting online with strangers.

8. Be wary of unsecured or unknown websites – When shopping online, use reputable and known retailers.
9. Be careful what links you click on – Avoid clicking links in an email, Instant Message or on your social network unless you are sure the message is from someone you know.

Now that we have come to the end of this chapter, the next chapter introduces you to create a web page using html tags.

Sandboxing is a software managing techinque through which programs that are suspected to be infected with avirus can be run. The programs are run is a separated memory area and therefore cannot damage the operating systems.

The Internet of Things (IoT) is the network of physical devices, such as vehicles, home appliances, and other items embedded with electronics, software, sensors, actuators and connetivity which enables these things to connect and exchanges data creating opportunities for more direcct integration of the physical world into computer - based systems, resulting in effficiency improvements, economic benefits, and reduced human exertions.

Points to Remember:

- The different type of network are LAN, MAN, WAN, PAN, CAN and WLAN
- Two things required for TCP/IP needed are
  a) Message to transmit
  b) Means to reliably transmit the message
- Each computer on net is called as host
- Examples of internet are 1) email
  2) instant Messaging
  3) Social Networking
  4) Online Shopping
- Internet Corporation for Assigned Names and Numbers (ICANN) administers the domain registration to avoid name already registered.
- W3C stands for world wide web consortium. It sets standards for the www to facilitate better communication ability. It was established in 1994 by the creator of www, Tim Berners Lee.
- The internet is a globally connected network system that uses TCP/IP (Transmission Control Protocol / Internet Protocol) to transmit data via various types of media

- Hotspots are sites that offer internet access over wireless local network.(WLAN) by way of a router that then connects to an internet service provider.
- Internet telephony (e.g. Skype) is another common communications service made possible by the creation of the Internet. VoIP stands for Voice-over-Internet Protocol
- Video conferencing enables direct face-to-face communication across networks via web cameras, microphones, and other communication tools. Video conferencing can enable individuals in distant locations to participate in meetings on short notice, with time and money savings.
- E–commerce (electronic commerce or EC) is the buying and selling of goods and services, or the transmitting of funds or data, over an electronic network, primarily the Internet.
- Social networking is the use of internet-based social media programs to make connections with friends, family, classmates, customers and clients.
- Voicemail is a system of sending messages over the phone. Calls are answered by a machine which connects you to the person you want to leave a message for, and they canlisten to their messages later.
- Email is short for 'electronic mail' similar to a letter, it is sent via the internet to a recipient
- An internet browser, also known as a web browser, is a software program that you can use to access the internet and view web pages on your computer.
- A website is a collection of webpages. For example if there is a company that owns sricompany.com then this website will have several Webpages like Home, About Us, Contact Us, Testimonials, Products, Services, FAQ's, and others. All of these pages together make up a Website.
- Dongle refers to removable component used for enabling software protection. E.g. USB, WiFi
- A webpage is a page of a Website. A web page can be accessed by a URL in a browser and that page can be copied and or send to a friend for review whereas websites are collections of multiple page that must be navigated to view other content.
- E-commerce is the activity of buying or selling of products on online services or over the Internet.
- Electronic governance or e-governance is the application of information and communication technology (ICT) for delivering government services.

Evaluation

FKHSV9

PART – I

Choose the correct answer:

1. What is the expansion of WLAN?
   a)Wireless Local Area Network b) Wired local Area Network
   c) Wireless Local Area Netware d) Wireless Area Netbande

2. Range of Campus Network is
   a) 10 KM b) 5 KM c) 25 KM d) 20 KM

3. Each computer on net is called
   a) host b) server c) workstation d) node

4. The internet is governed by
   a) ICANM b) ICANN c) ICMA d) ICNNA

5. Expansion of W3C
   a) World Wide Web Consortium b) Wide World Web Consortium
   c) World Web Wide Consortium d) World Wide Web Consortum

6. W3C was established in 1994 by
   a) Tim Berners-Lee b) Tim Burnard Lee
   c) Kim Berners d) Kim Bernard Lee

7. Hotspot uses which type of network services?
   a) LAN b) PAN c) WLAN d) CAN

8. USB WiFi adapters are often called as
   a) Data Card b) Pen Drive c) Dongles d) Memory Card

9. Looking for information on the internet is called
   a) Surfing b) Searching c) Finding d) glancing

10. Safari web browser was developed by
    a) Google b) Apple c) Microsoft d) Linux Corpn.

11. How many types of websites are available?
    a) 3 b) 2 c) 4 d) 6

PART –II

Answer to the following questions (2 Marks):

1. List any four types of available networks?
2. Name the two important protocols for internet?
3. What is a network?
4. What is the role of ICANN ?
5. What is a search engine?
6. What is a browser?
7. What are the components of url addressing ?
8. What is a website?
9. What is CC and BCC in an email?
10. What is a Static web Page?
11. What is a Dynamic web page?
12. What are the benefits of e-governance?
13. What is Phishing ?

PART-III

Answer to the following questions (3 Marks):

1. Differentiate PAN and CAN network.
2. What is TCP/IP ?
3. Write a note on Hotspot internet service.
4. Differentiate Data Card and Dongles.
5. Write a note on two access methods of connecting to internet.
6. Differentiate browser and a search engine with suitable examples.
7. Differentiate Website and Webpage.
8. What is the difference between Static and dynamic web page.
9. Write a note on W3C?
10. What are Advantages of email.

PART IV

Answer to the following questions (5 Marks):

1. Compare the different geographical types of Network.
2. Explain any five types of internet services.
3. Explain any five internet applications with suitable examples.
4. Write a note on any five Internet browsers other than that given in the book.an
5. Classify and explain any five e-commerce parties with suitable examples.
6. Explain the different types of interactions in e-governance.

Activity

Student Activity

Explain the different types of network.

Mention a few internet services you know.

Mention a few Internet Applications other than that is given in the textbook

List some browsers not given in the text book

Teacher Activity

Students is taught to develop Static and Dynamic Websites as workshop.

GLOSSARY

No.	*Acronym*	*Description*
1	*LAN*	*Local Area Network*
2	*MAN*	*Metropolitan Area Network*
3	*WAN*	*Wide Area Network*
4	*PAN*	*Personal Area Network*
5	*CAN*	*Campus Area Network*
6	*WLAN*	*Wireless Local Area Network*
7	*VSNL*	*Videsh Sanchar Nigam Ltd*
8	*TCP*	*Transmission Control Protocol*
9	*IP*	*Internet Protocol*
10	*Host*	*A host is a computer connected to a computer network*
11	*ICANN*	*Internet Corporation for Assigned Names and Numbers*
12	*W3C*	*World Wide Web Consortium*
13	*WWW*	*World Wide Web*
14	*Tim Berners-Lee*	*Creator of WWW*
15	*DSL*	*Digital Subscriber Line*
16	*ISDN*	*Integrated Services Digital Network*
17	*URL*	*Uniform Resource Locator*
18	*Dongle*	*A sbmall device able to be connected to and used with a computer, allowing access to wireless broadband or use of protected software.*

19	*ADSL*	*Asymmetric Digital Subscriber Line*
20	*Browser*	*A browseris software that is used to access the internet Eg. Chrome, FireFox*
21	*Search Engine*	*A search engine is a web-based tool that enables users to locate information on WWW. Eg. Google*
22	*SERP.*	*The list of content returned via a search engine to a user is known as a search engine results page.*
23	*Phishing*	*Phishing scams are fraudulent attempts by cybercriminals to obtain private information*
24	*WebSite*	*Collection of Webpages*
25	*WebPage*	*It is page of Website.*
26	*EDI*	*Electronic Data Interchange*
27	*ICT*	*Information and Communication Technology*
28	*SID*	*Safer Internet Day. February every year.*
29	*Voice mail*	*System of sending messages over the phone.*
30	*e-commerce*	*Electronic Commerce, Buying and selling goods and services over an electronic network.*
31	*e-governance*	*Electronic governance. Application of information and communication technology for delivering government services.*
32	*Internet*	*Several networks, small and big all over the world, are connected together to form a Global network called the internet.*
33	*Intranet*	*It is a website used by organizations to provide a place where employees can access company related information.*
34	*Extranet*	*It is a private network using internet technology to share part of business information with suppliers partners and customers.*

References:

1. Mastering HTML, CSS & JavaScript Web Publishing – Laura Lemay, Rafe Colburn, Jennifer Kyrnin – BPB Publications.
2. Informatics Practices, A text book for CBSE class XII – Sumita Arora – Dhanpat Rai & Co.

FKRNHH

HTML - Structural Tags

Learning Objectives:

The students will learn the following:

- How to create web pages using HTML.
- What are the various structural tags available to create an HTML document.
- What are the various page formatting tags available and how to use them.

DO YOU KNOW?

HTML was originally derived from SGML (Standard Generalized Markup Language) a larger, complicated document processing language. To learn HTML, no need to know about SGML.

10.1 Introduction to HTML

In the previous sections you learnt about Internet and web pages, whatever you have seen on the web is a document written in **HTML (Hyper Text Markup Language).** HTML is a special markup language used to create web pages. This language tells the browsers, how to display the text, images, animations and other contents of a hypertext document on the screen. The language also tells how to make a document interactive through special hyper links.

HTML is not a word processing tool or a programming language. It is only a markup or page layout and hyperlink specification language. It describes the structure of a document.

10.2 Writing HTML document

HTML is a markup language. Writing in a markup language is very simple, directly you start the text of your web document and add special tags around words and paragraphs. The tags are coded by HTML commands or keywords that indicate how web browser should format and display the content.

HTML is made up of tags and its attributes. Tags are known as elements of HTML. Additional information such as colour, alignment etc., can be included with an HTML tag is known as attribute. Attributes are used to improve the appearance of an HTML document. You cannot create your own tags to create a new style or feature.

All HTML tags should be specified within angle brackets (< >). For example, <HTML> is a tag. HTML is not case sensitive that means you can write an HTML tag in lower case or in upper case (Small letter or Capital letter). Browser treats both of them in the same manner. For example, you can write <HTML> as <html>; both are same.

10.2.1 HTML Document Structure

An HTML document contains the text of the page itself and HTML tags, which defined the structure and appearance of the document. It also contains hyperlinks to other pages or to include multimedia elements such as audio, video, animations etc. Entire HTML document is bounded within a pair of <html> and </html> tags.

All HTML documents should follow this general format

```
<html>
<head>
        <title> My First Web Page </title>
</head>
<body>
        This is my First Web Page
</body>
</html>
```

HTML tags are generally have an opening and closing tag surrounding the text they affect. Opening tag turn-on a feature such as heading, bold, center etc., and closing tag turn-off its features. Opening and closing tags are the same name, but closing tag name preceded by a slash (/). For example, <html> is an opening tag, </html> is a closing tab.

Every web document has two sections viz. **Heading Section** and **Body Section.** The heading section is used to show the title of a webpage in title bar or tab heading in browser. The head section should begins with **<head>** tag and end with **</head>** tag. The tag **<title>** is used to specify the title of the webpage.

The body section is used to display the main content on the browser window. The body section should defined within **<body>** and **</body>** tags. Whatever the text you specify between these tags will display on the browser window. **(Refer Figure 10.1)**

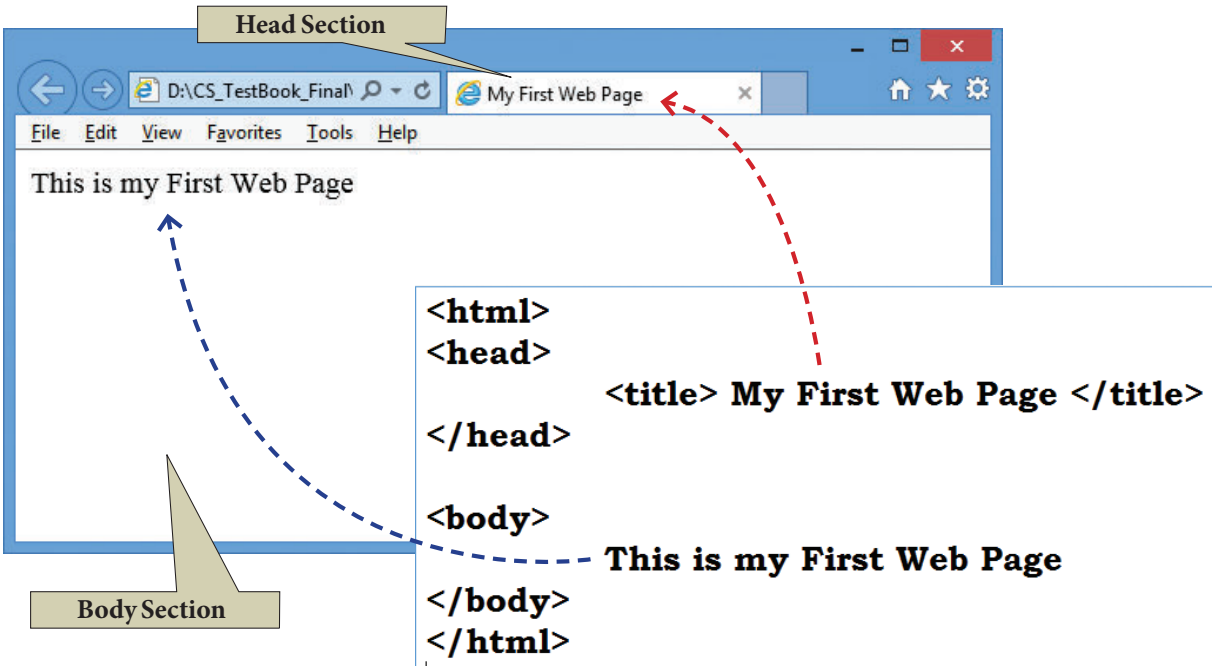


Figure 10.1 – Internet Explorer with my first web page

10.2.2. Structural Tags of HTML:

<html>, <head>, <title> and <body> these four tags are known as structural tags. These tags are basic essential elements to construct a web page.

Table: 10.1

Opening Tag	Closing Tag	Description
<html>	</html>	The <html> tag identified the document as an HTML document. All HTML documents should begins with <html> and end with </html>.
<head>	</head>	The <head> tag contains information about the document, including its title, scripts used, style definition and document descriptions.
<title>	</title>	The <title> tag contains the title of the document. The title specified between opening and closing tags appears in the title bar / page tab of the browser. <title> tag should be placed within <head> tag.
<body>	</body>	The <body> tag encloses all the tags, attributes and information to be displayed in the web page. <body> tag should be entered below the </head> tag.

10.2.3. HTML Writing Tools

To get started writing HTML, there is no need of web server, web hosting or even internet connection. You can write, test and link web pages without a network. To create and

testing a HTML document i.e. web page need an application (text editor) to write HTML code and a browser to view them. Using a simple text editor (Notepad for Windows or getit for Linux) is a good way to learn HTML coding.

10.2.3.1 Creating a Webpage

Step 1: Open a text editor

Windows7 : Start → All Programs →Accessories → Notepad

Linux : Applications → Accessories → Text Editor

Step 2: In the appearing Note pad / Text Editor, type the HTML document.

(Refer Figure 10.2)

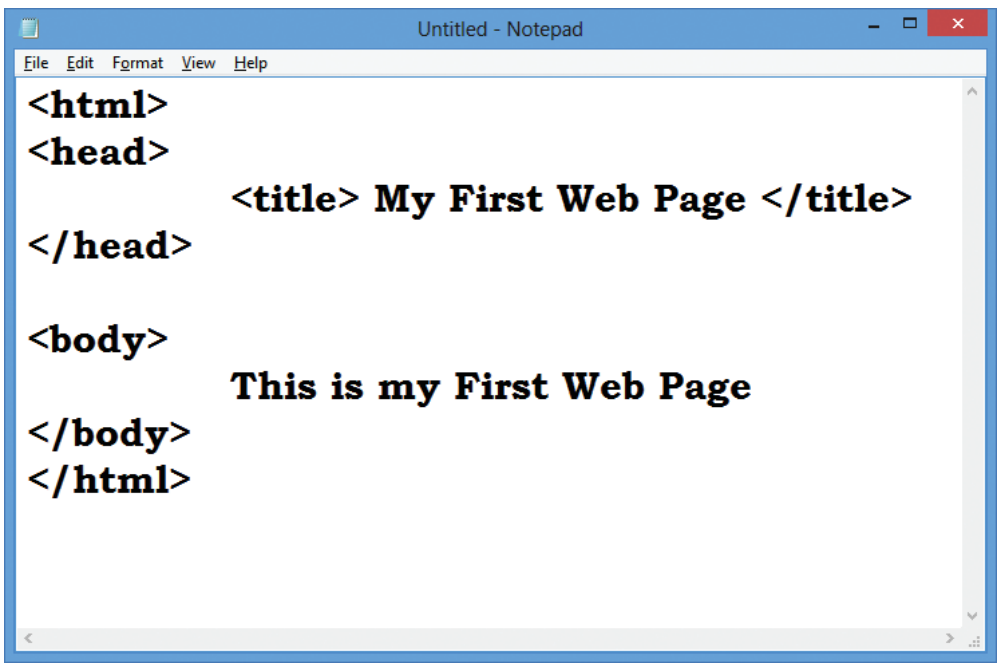


Figure 10.2 – Notepad with HTML code

Step 3: Save the file as HTML

- Click File → Save (or) Press Ctrl + S
- Save as dialog box appears as shown in the Figure 10.3
- In "File Name" text box, type a file name with .htm or .html extension.
- Select "All Files" from "Save as type" list box.
- Click "Save" button.

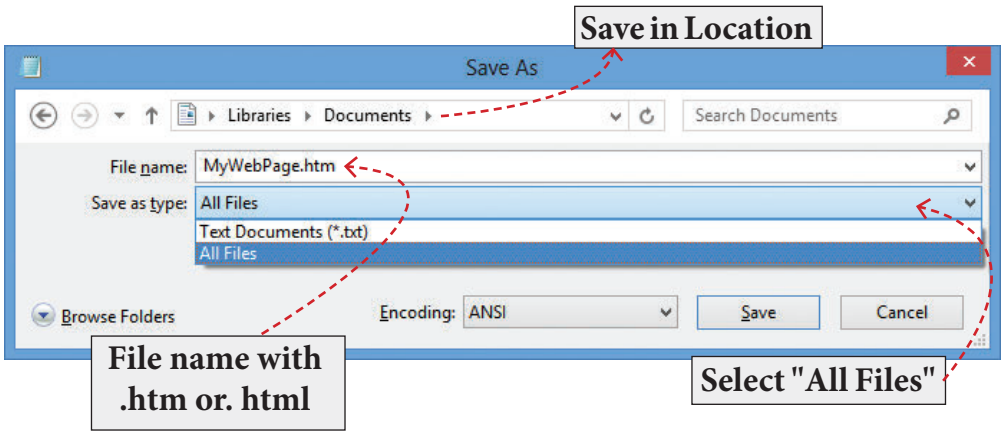


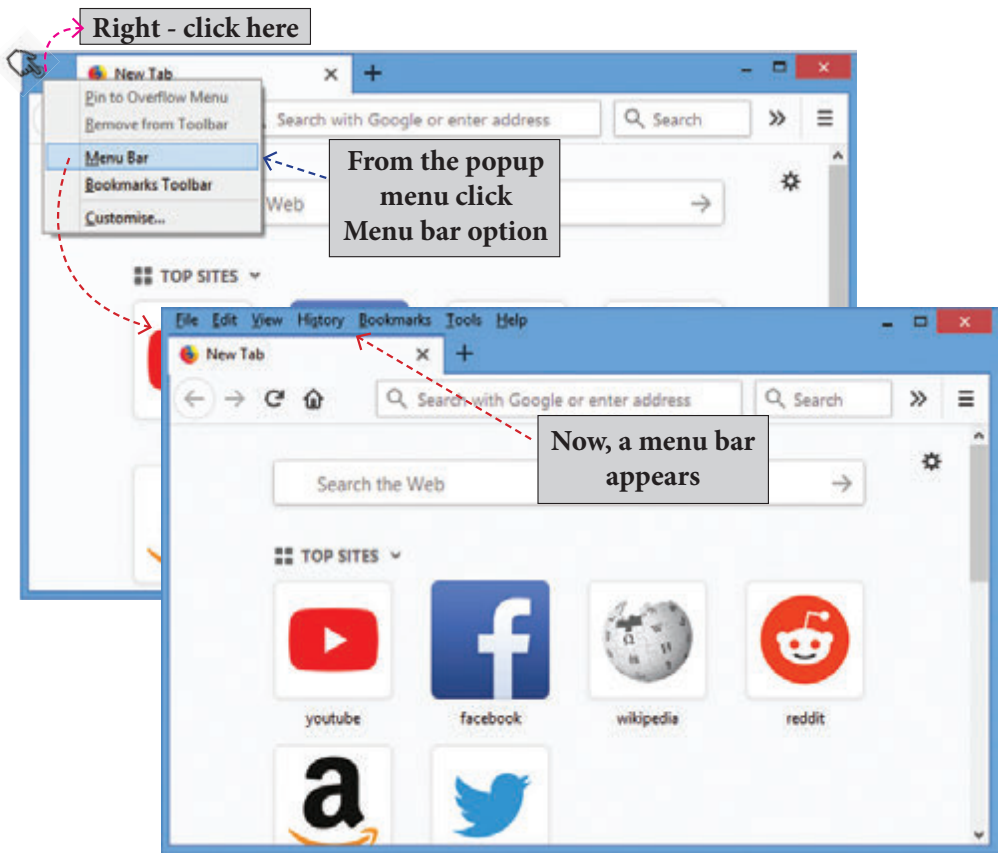
Figure 10.3 Save As dialog box

10.2.3.2. Viewing Webpage in a Browser:

Step 1: Open a Browser (Internet Explorer / Mozilla Firefox or any)

Step 2: Click **File** → **Open File** (or) Press **Ctrl + O**

- If menu bar is not visible in your browser refer Figure 10.4



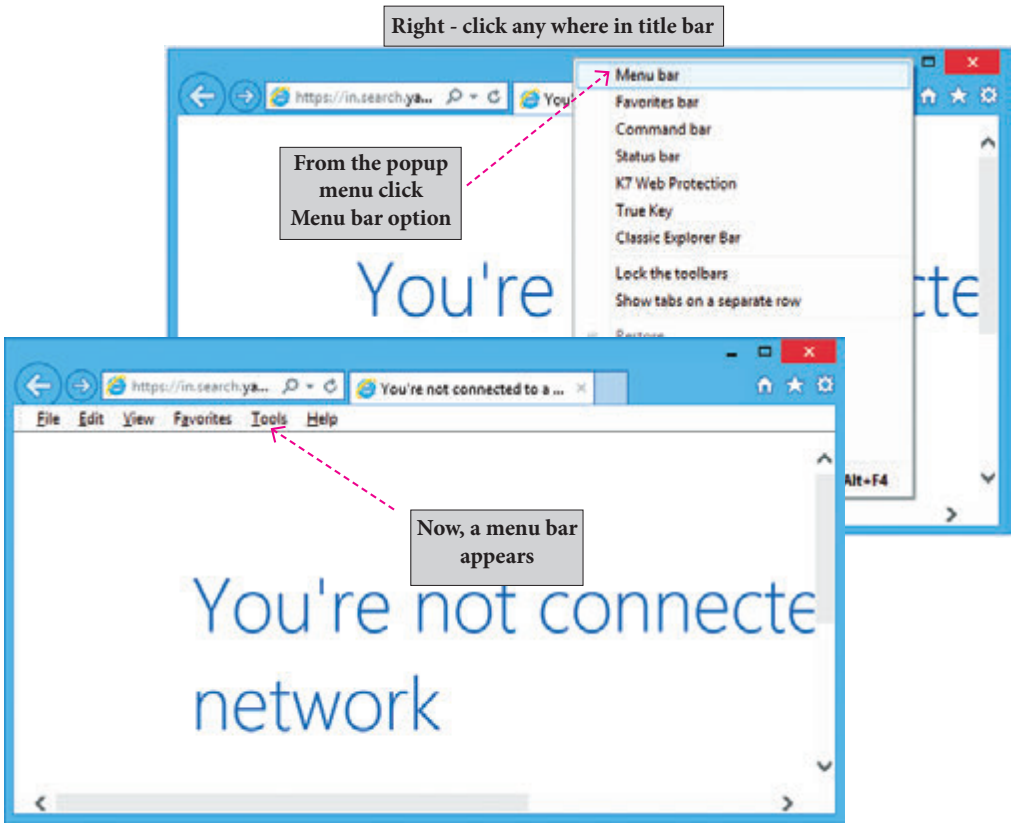


Figure 10.4 Mozilla Firefox and Internet Explorer with Menu bar

Step 3: From the "Open" dialog box, browse the folder in which the HTML document is saved. Choose the File name and click "Open" button. (Refer Figure 10.5)

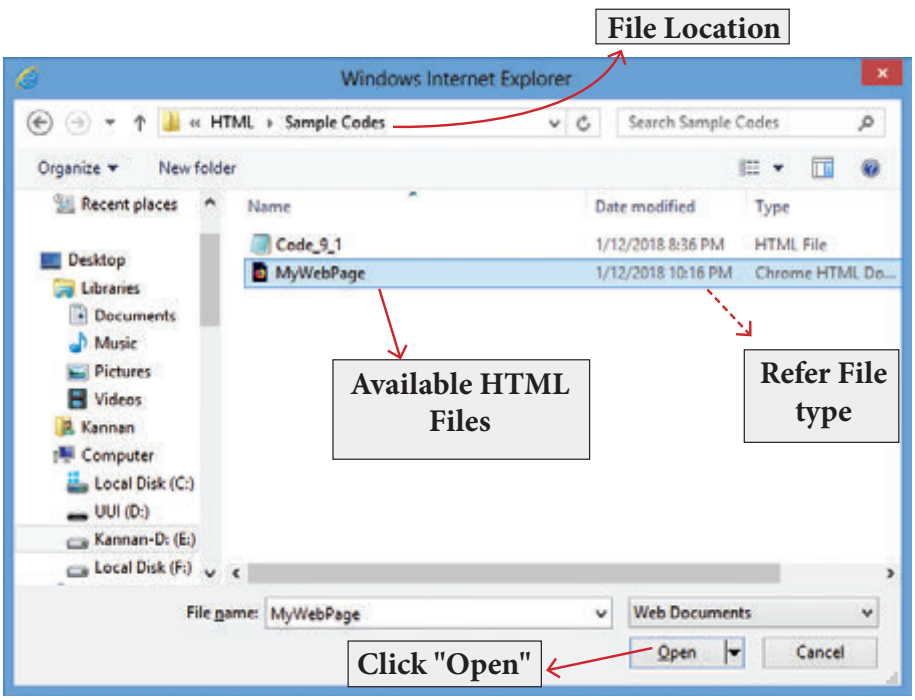


Figure 10.5 Open Dialog box to open an HTML document

Now, your web page is displayed in the browser. (Refer Figure 10.6)

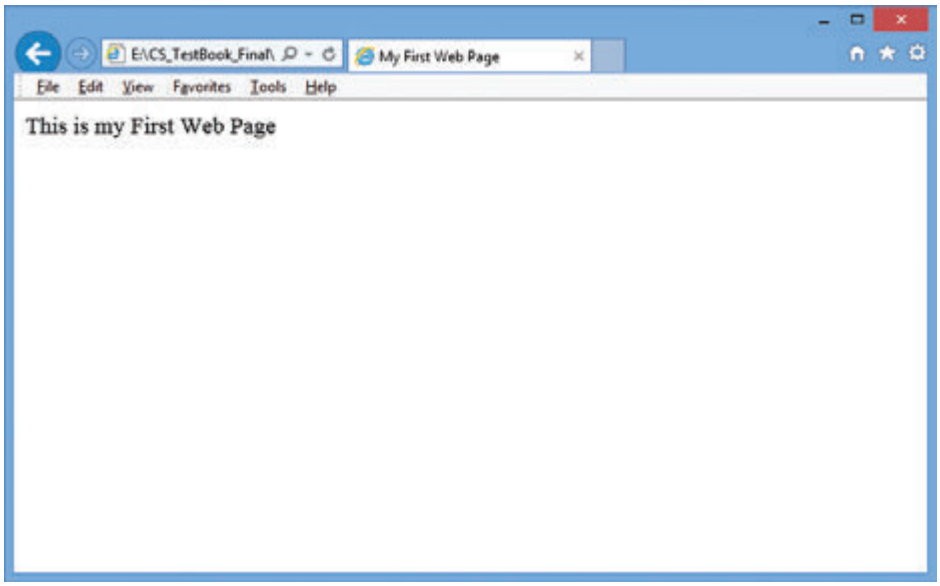


Figure 10.6 Internet Explorers with "My First Web Page"

10.2.3.3 Viewing Source file

Source file is an HTML document, what you actually type in text editor (Notepad or getit). You can view your original source file in the browser. The following steps are to be followed to view a source file.

- Right click on the browser
- Select **View Page Source (Firefox and Chrome) / View Source (Internet Explorer)** or Press **Ctrl + U** (all browser)
- Source file will be displayed.
- In Internet Explorer, **View → Source** is also used to open source file.

Remember that, you cannot edit the source file opened using the methods you learnt above.

10.2.3.4 Edit and Reload the source file

Source file can be edit only through the text editor. So, to edit the source file, open the source file with a text editor. **When you edit a source file, no need to close browser in which displaying the HTML document.** The following steps are to be followed to open a source file.

- Go to the folder in which your source files are located.
- According to you default browser, your source file icon is displayed. (Refer Figure 10.7)

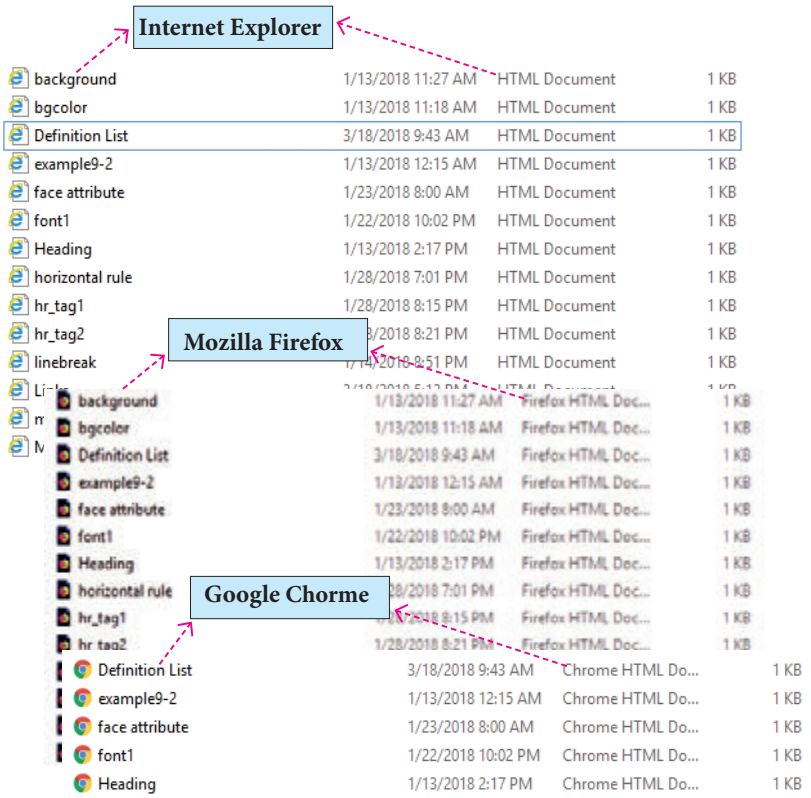


Figure 10.7 Source files in different browsers

- Right click on the source file that you want to edit
- From the pop-up menu, select **Open With → Notepad**
- Source file will be opened in text editor
- Make the changes and save the file using **File → Save** or **Ctrl + S.**

Reload / Refresh the changes:

- After modify and save the source file, minimize your source file.
- Go to the browser.
- Click **Refresh** (Internet Explorer) / **Reload Current Page** (Firefox) / **Reload this page** (Chrome) icons on the address bar.
- Press **Ctrl + R** or **F5** will be used to refresh / reload the modifications.

10.3 HTML Attributes

Attributes are special words used inside a tag to specify additional information to a tag. Attributes should be placed within the opening tag. Most of the tags support specialized attributes and there are also a few global elements that can be used with any tag. Global elements are common to all HTML elements; they can be used on all elements.

10.3.1 Attributes for Structural Tags

1. Attributes of <html> tag

The **<html>** tag is used to specify the beginning and closing of an HTML document. This tag does not have any effect on appearance of document. This is only used to make browsers and other programs, known that this is an HTML document.

<html> tag has two attributes viz. **dir** and **lang** to specify the **text direction** and **language setting** respectively.

attribute	Value to be set to attribute	Description
dir	ltr (align left-to-right) rtl (align right-to-left)	dir attribute specifies the direction of the text to be aligned within the entire document. It is global attribute. • ltr is the default value • rtl is used for Arabian languages.
lang	Predefined language code English – en Tamil – ta Telugu – te	lang attribute specify the language used with in the document. Predefined language code will be used for this purpose. Malayalam – ml; Kannada – kn; Hindi – hi; French – fr; German – de;

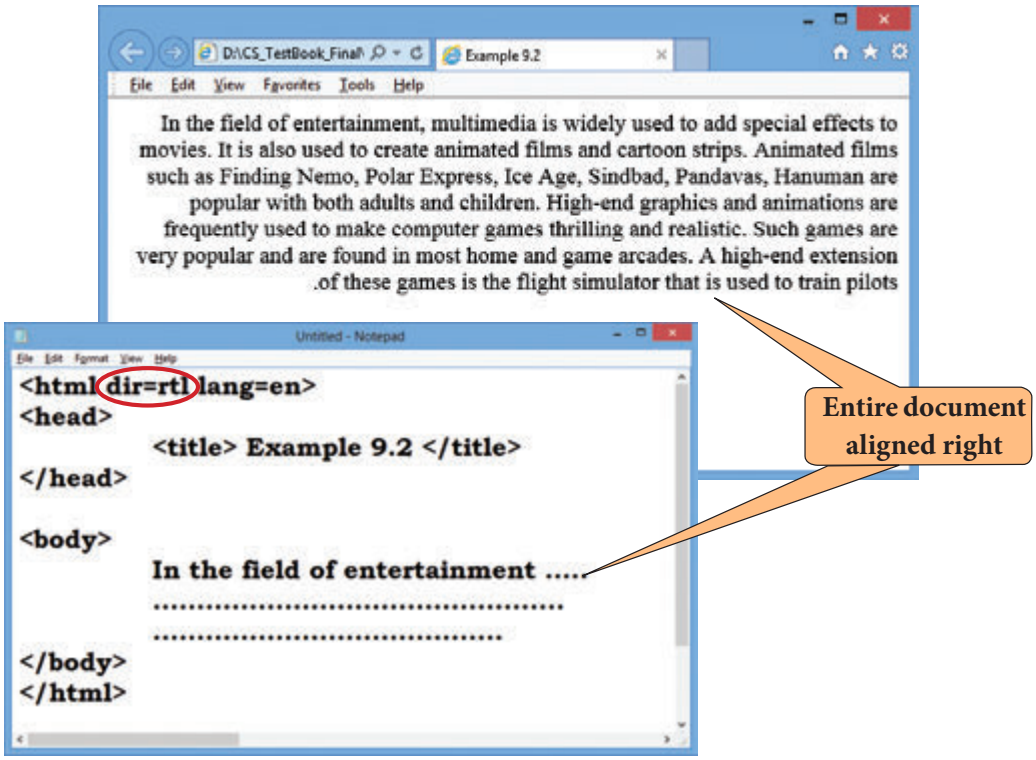


Figure 10.8 Webpage with HTML Attributes

2. Attributes of <body> tag

The <body> tag defines the document's body. The contents of an HTML page reside within the <body> tag. <body> tag contains several attributes.

(i) Background Colour: **bgcolor = color**

` By default all the browsers display the text on white background. However, the background color of the browser can be changed by using bgcolor tag.

The tag to change background colour:

<body bgcolor = color_name/color_code>

Illustration 10.1 – HTML code to change background colour of a browser

```
<html>
<head>
        <title> Background Colour change </title>
</head>
        <body bgcolor = yellow>
                This is my browser with different colour
</body>
</html>
```

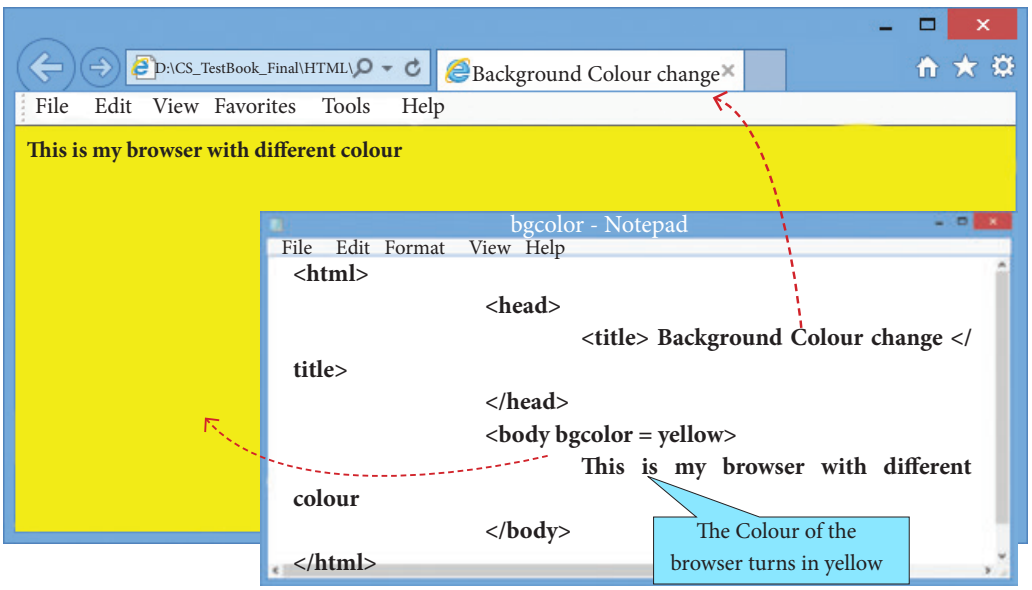


Figure 10.9 Internet Explorer with Yellow background

In the above HTML code, colour name has been used to change the background colour of the browser's body section. Generally colors in HTML are represented as six digit hexadecimal values. Colour name can be used for only few colors. But, color code (hexadecimal value) will be more flexible to handle colors.

The six digit hexadecimal value is the combinations of three, two digit number sequence represent a color. First two digits represent Red, next two digits for Green and last two digits for Blue (RGB) in the range of 00 – FF. For example, 000000 is black and FFFFFF is white. FF0000 is bright red. You can try out different combinations of these values to get variety of colors.

You can use some basic color names or color code to handle colors in HTML elements. Modern browsers support nearly 140 colors. Color code should be prefixed with #. The following table shows some basic colors with their hexadecimal code.

Table 10.2 – Some basic Color names with code

Color Name	Hexadecimal value	Color Name	Hexadecimal value
Red	#FF0000	Olive	#808000
Blue	#0000FF	White	#FFFFFF
Green	#008000	Black	#000000
Yellow	#FFFF00	Maroon	#800000
Lime	#00FF00	Grey	#808080
Purple	#800080	Aqua	#00FFFF
Silver	#C0C0C0	Brown	#A52A2A

To know the complete color code visit:

https://www.w3schools.com/tags/ref_colornames.asp

The above illustration 10.1 can be re-written as follows to get the result

```
<html>
    <head>
        <title> Background Colour change </title>
    </head>
    <body bgcolor = #FFFF00>
        This is my browser with different colour
    </body>
</html>
```

(ii) Body text Colour: text = color

The default text colour of body section is "black", it is often called as automatic color. text attribute within body tag is used to change the text colour.

The tag to change body text colour:

<body text = color_name/color_code>

Illustration 10.2 – HTML code to change background and text color of a browser's body

```
<html>
    <head>
        <title> Background Colour change </title>
    </head>
    <body bgcolor = #FFFF00>
        This is my browser with different colour
    </body>
</html>
```

To the above code, text will be displayed in Red color on yellow background. You can also use colour code instead of colour name.

(iii) Background image: background=image

An image or picture can be applied as background to a webpage. When you insert an image as background, the text will be displayed on top of the image. Background images can be a texture or bitmap or even a photo.

When you insert a small image, the browser takes the image and repeats it across and down to fill browser window. Inserting animated images (GIF images) creates more interesting.

The tag to apply an image as background:

<body background = "image_name_with_extenstion">

Illustration 10.3 – HTML code to apply an image as background

```
<html>
<head>
        <title> Image as background </title>
</head>
        <body background = “flower01.gif”>
        This is my browser with an image as background
</body>
</html>
```

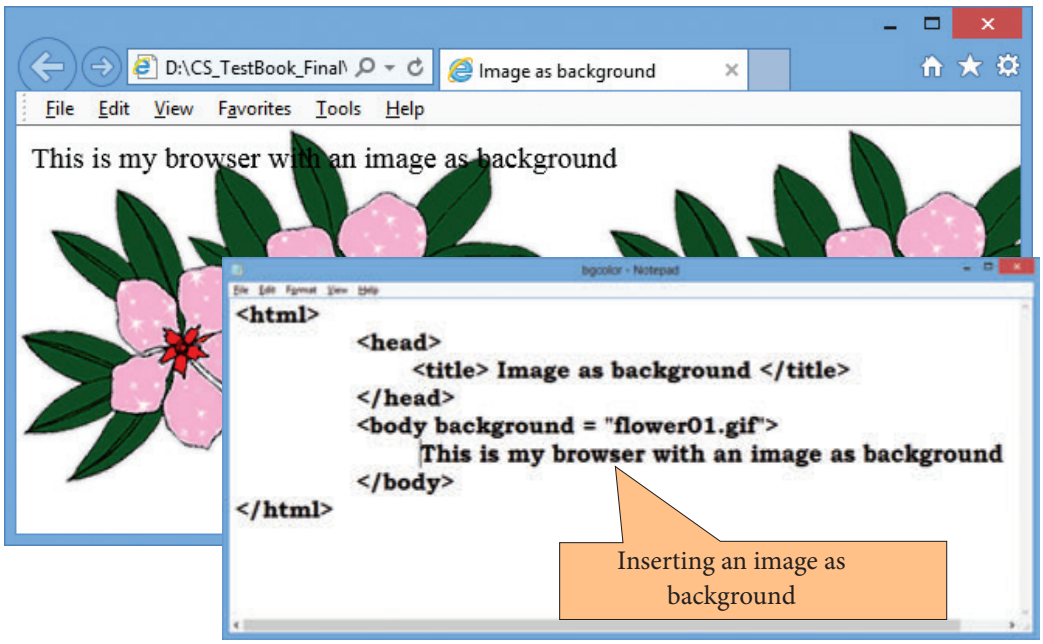


Figure 10.10 Internet Explorer with an image as background

While including an image as background, the image file name is not required to be in double quotes. The code **<body background = flower01.gif>** can also produce the same result.

If your image file name is long or split as two more words or along with path, should be specify within double quotes.

Remember that, if the image file and HTML source are located in different locations i.e. in different folder or drive, file path should be clearly specified along with image file name. In the above case, image file and HTML source file both are located within the same folder. So, path name is not mentioned.

For example, If the image file is somewhere in a folder (say Images folder in E: drive), you must specify its full path within double quotes as given below.

<body background = “E:\Images\ flower01.gif">

(iv) Setting Margins: **margin = value**

The margin refers the blank area from left or top edge of the browser window. Generally there is no default margin setting in any browser. If you want to leave some space as margin to left or top; **leftmargin** or **topmargin** attributes will be used respectively.

The tag to specify the left and top margin:

<body leftmargin = value topmargin = value>

The Value is referred as pixels (72 pixels to an inch)

Illustration 10.4 – HTML code to set left and top margins

```
<html>
<head>
        <title> Setting Margins </title>
</head>
        <body leftmargin = 50  topmargin = 50>
        This is my Web page with top and left margin
</body>
</html>
```

The statement <body leftmargin = 50 topmargin = 50> will intent the body text 50 pixels away from the left as well as from top edge of the browser. The output will be as in Figure 10.11

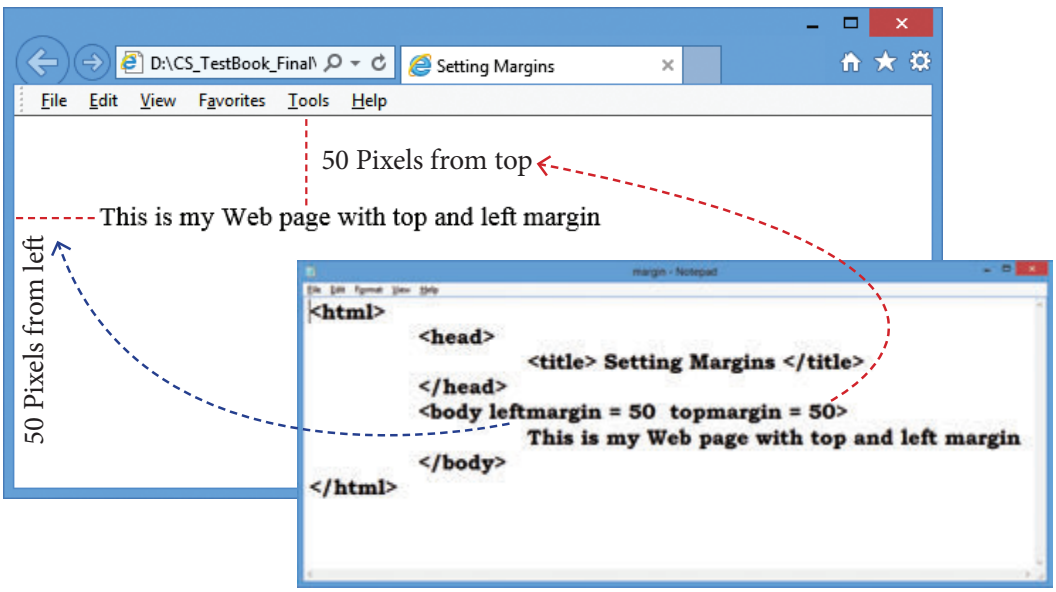


Figure 10.11 – Internet Explorer with left and top Margin

Illustration 10.5 – Create a web page (HTML document) to the following specification.

- Title: My First Web Page
- Text to be display: Welcome to Computer Applications
- Background color: Lime
- Body text color: Blue
- Margin: from left and top 1 inch

```
<html>
        <head>
                <title> My First Web Page </title>
        </head>
        <body bgcolor = Lime text = blue  leftmargin = 72  topmargin = 72>
                Welcome to Computer Applications
        </body>
</html>
```

Remember that, when you use more than one attribute within an HTML element (Tag) space is used as separator.

10.4 Headings

Headings are used to include titles to sections of a web page. HTML has six levels of headings viz. **<h1>** to **<h6>**. The number with **h** indicates the level of heading. Header tags are display the body text as bolder and larger in size according to its level.

The syntax of heading tags:

<h…> Heading text </h…>

Illustration 10.6 – HTML code with Headings

```
<html>
        <head>
                <title> Heading </title>
</head>
<body>
        <h1> Welcome to Computer Application</h1>
        <h2> Welcome to Computer Application</h2>
        <h3> Welcome to Computer Application</h3>
        <h4> Welcome to Computer Application</h4>
        <h5> Welcome to Computer Application</h5>
        <h6> Welcome to Computer Application</h6>
</body>
</html>
```

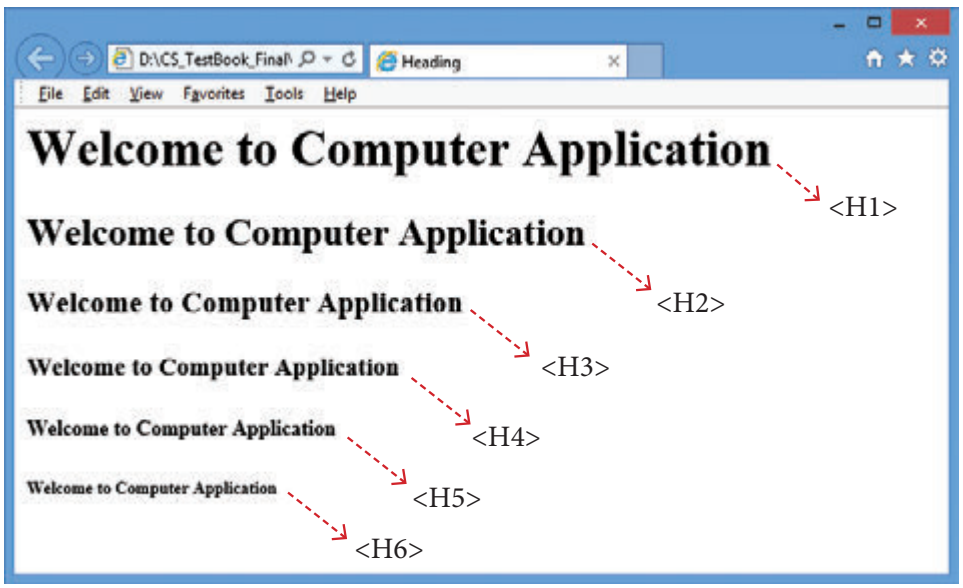


Figure10.12 – Different levels of Headings

10.4.1 Attribute of Headings tag

Align is an attribute to set right, center and justify alignment to headings. Left if the default alignment, so that it is not supported in latest version of HTML. Justify alignment is not supported by older browsers.

The tag is to specify the alignment to headings:

<h# align = value>

Where # is the level number, value may be Right, Center or Justify. Justify alignment only used for paragraphs. The meaning of alignment is similar what you learnt from Word processor.

Illustration 10.7 – HTML code with Heading and align attributes

```
<html>
        <head>
                <title> Heading </title>
</head>
<body>
        <h1 align=center> Welcome to Computer Application </h1>
        <h2 align=right> Welcome to Computer Application </h2>
</body>
</html>
```

Output will be as follows

Figure 10.13 Heading align attribute

10.5 Line Breaks and Paragraphs

Browser applications are having some special rules for displaying text. They do not recognize returns, tabs or even more than one space between words. If you create an HTML document with multiple lines of text, browser will display it as a single line. (Refer Figure 10.14)

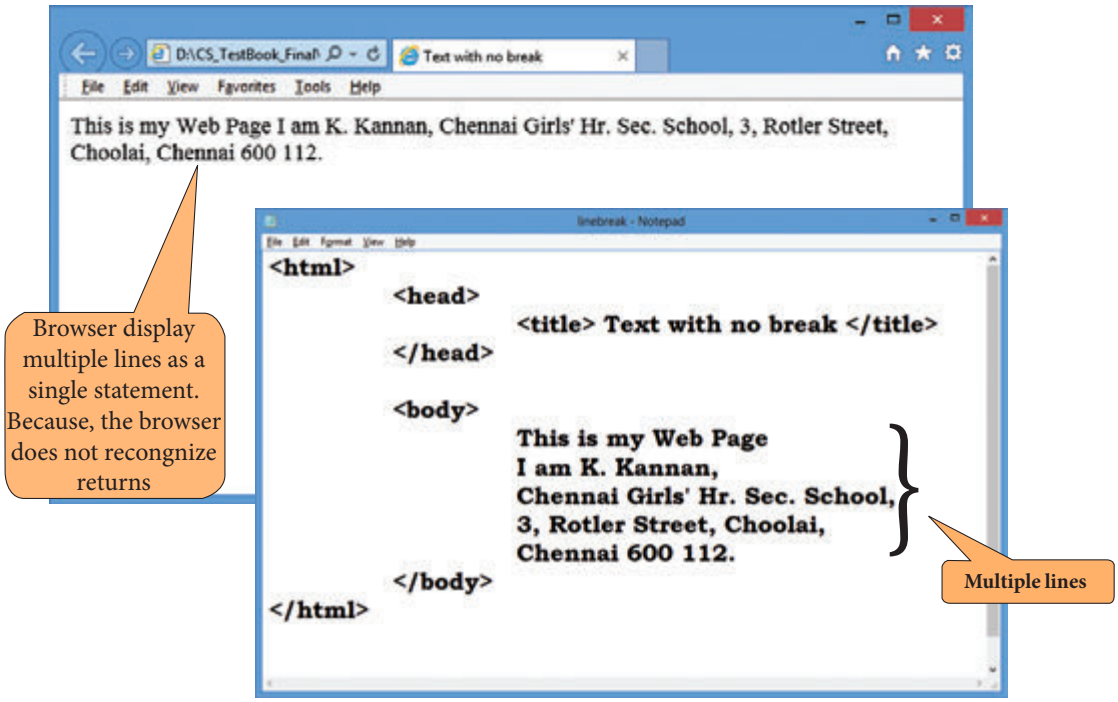


Figure 10.14 Multiline statement displayed as Single line

The
 tag is used for line break. The
 is an empty tag, does not have close tag and attribute. It should be placed at the end of a line. (Refer Figure 10.15)

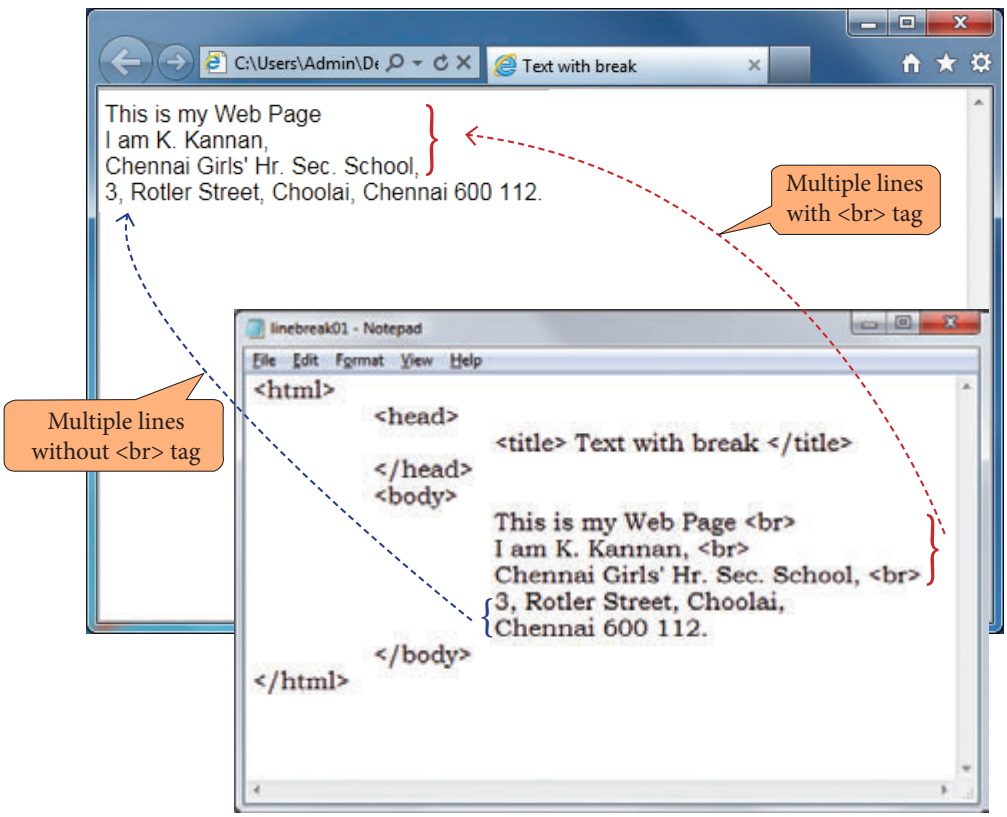


Figure 10.15 Usage of
 tag

In HTML, paragraphs are created using the ** ** tag. The content what you type between ** ** and ** ** is identified as a paragraph and display as a paragraph by the browser. Because, the browser does not recognize returns (Pressing "Enter" Key). Remember that in word processors, pressing "Enter" key is identifying a paragraph.

Illustration 10.8 HTML code to create a paragraph

```
<html>
        <head>
                <title> Paragraph </title>
</head>
<body>
        <h1 align=center> Business </h1>
<p> Business may be defined as any activity in which a man is very much interested and these activities bring him profit, money, prestige and power. </p> <p> In economic sense, the term business means works, efforts and acts of people, which are connected with the production of wealth and activities, which are directed with the object of making profit.</p> <p> Production and distribution of goods to consumers for a profit constitute business. </p>
</body>
</html>
```

In the above illustration, the contents specified between and considered as paragraph. Each paragraph displayed separately (Refer Figure 10.16).

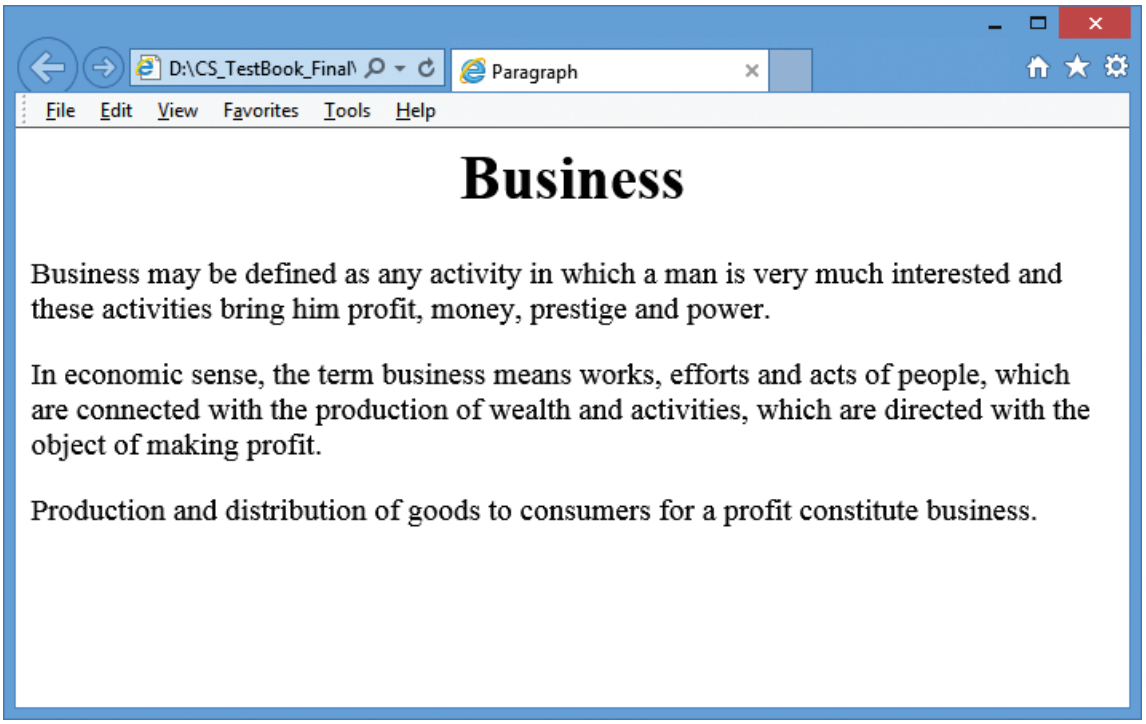


Figure 10.16 Browser with Paragraphs

Changing Paragraph alignment

You know already that the types of paragraph alignments in Word processor. In HTML documents more are four paragraph alignments viz. Left, Right, Center and Justify. The text that you type between ** ** and ** ** is by default aligned to left. To change the alignment of a paragraph **align** attribute can be used with ** ** tag.

The tag to specify the alignment to paragraphs:

Where alignment can either be **Right, Center or Justify**. Remember that, left is the default alignment.

If you re-write the code in Illustration it will produce the following output. (Refer Figure 10.17)

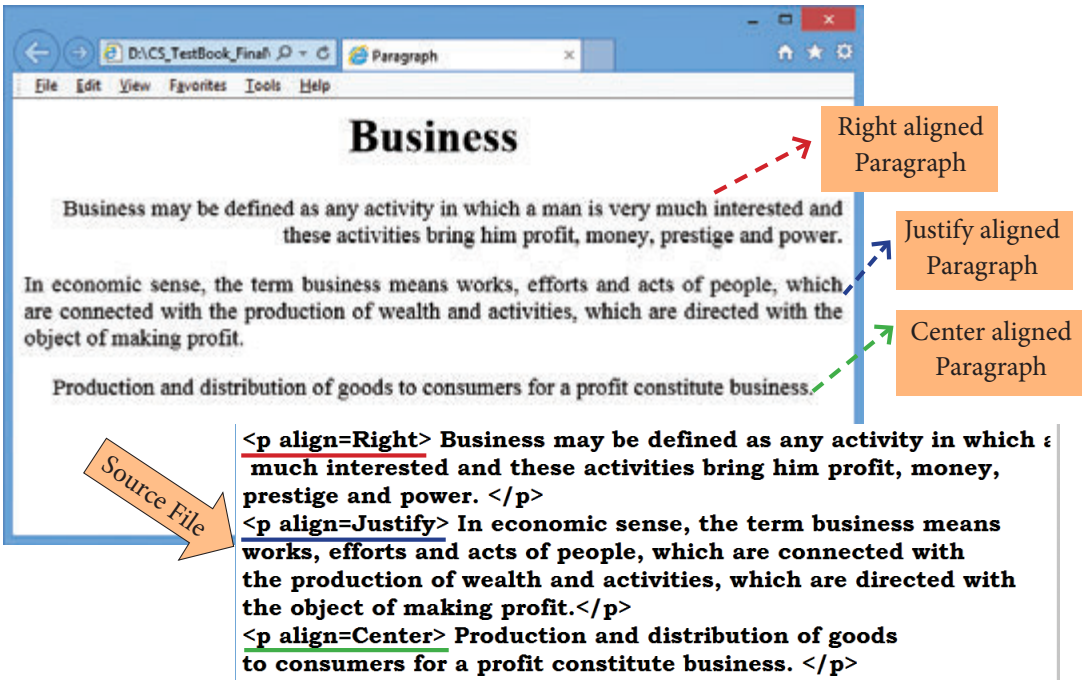


Figure 10.17 Paragraph with align attribute

Remember that, the keyboard shortcut to change paragraph alignment in word processor is not working in HTML.

10.6 Comments

Comments are used to describe the page or provide some kind of indication of the status of the page. The tag <!> is used to create comments. In HTML, the text what you type within this tag is considered as comments and it is ignored by the browser. Comments never show up onscreen. Comments can be placed anywhere in HTML document.

The general form of comments:

<! comments >

10.7 Container and Empty Elements

The HTML elements (Tags) can be classified as two types – (1) Container elements (2) Empty elements.

Container Elements:

- The tags which are required opening and closing is known as container elements or tags. For example: <html>, <body>, <title>, <p> etc.,

Empty Elements:

- The tags which are required only opening tag is known as empty elements or tags. For example:

Points to Remember:

- HTML (Hyper Text Markup Language) is a special markup language used to create web pages
- HTML is not a word processing tool or a programming language.
- HTML is made up of tags and its attributes.
- Tags are known as elements of HTML.
- Attribute is special word used inside tag to specify additional information to the tag such as color, alignment etc.
- Every web document has two sections viz. Heading Section and Body Section.
- <html>, <head>, <title> and <body> these four tags are known as structural tags
- List of HTML tags from Section-I

Table 10.3

Opening Tag	Closing Tag	Type	Function	Attributes	Contains	Used inside
<html>	</html>	Container	Delimits a complete HTML document	Dir, Lang	<head>, <body>	
<head>	</head>	Container	Defines the function header	--	<title>	<html>
<title>	</title>	Container	Defines the document title	--	Text	<head>

<body>	</body>	Container	Defines the document body	Background, Bgcolor, Text, Leftmargin, Topmargin	All tags that controls the appearance of body of the web page	<html>
< h 1 > , <h2>.... < h 6 >	</h1>, </h2>, ... </h 6>	Container	Defines one of six levels of headings	Align	Text	<body>
		Container	Defines a paragraph of text	Align	Text	<body>
 	--	Empty	Insert a line break	---	---	Text

Workshop - 1

Type the following code in a text editor, save it as an html file and open in a browser. Observe and study their functions by viewing them in your browser. Then, make the required changes and look what happens.

```
<html>
<body>
<h1> Thai Pongal </h1>
<p> Pongal is a harvest festival dedicated to the Sun. It is a four-day festival which according to the Tamil calendar is usually celebrated from 14 January to 17 January. </p>
<p> Thai Pongal is one of the most important festivals celebrated by Tamil people in Tamil Nadu, Puducherry and the country of Sri Lanka, as well as Tamils worldwide, including those in Malaysia, Mauritius, South Africa, the United States, Singapore, Canada, Myanmar (Burma) and the UK. </p>
<p> Thai Pongal corresponds to Makara Sankranthi, the harvest festival celebrated throughout India. </p>
</body>
</html>
```

Carry over the following changes:

(a) Add a suitable title

(b) Center the heading

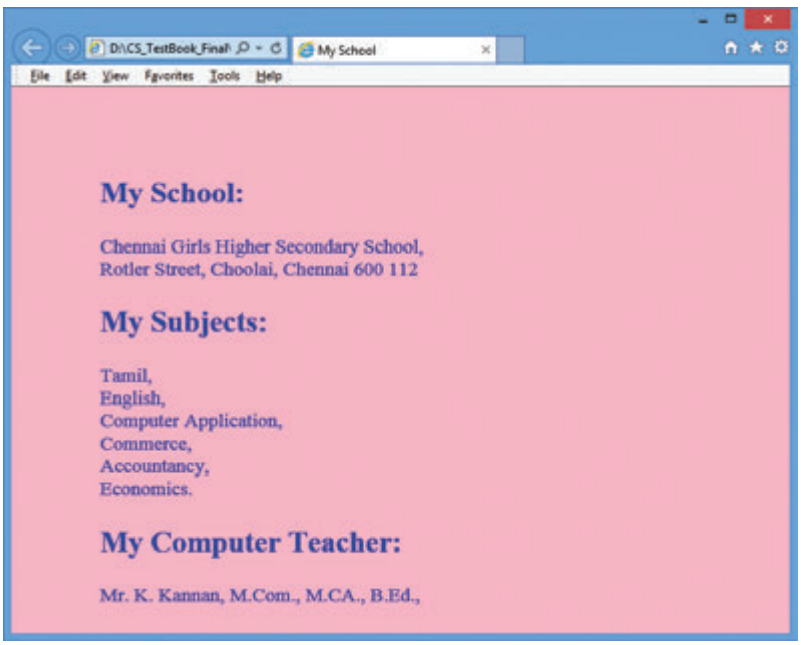
(c) Change the different alignment setting for each paragraph

Workshop - 2

Type the following code in a text editor, save it as an html file and open in a browser. Observe and study their functions by viewing them in your browser. Then, make the required changes and look what happens.

```
<html>
<head>
<title> My School </title>
</head>
<body>
My School:
        Chennai Girls Higher Secondary School,
        Rotler Street, Choolai, Chennai 600 112
My Subjects:
        Tamil,
        English,
        Computer Application,
        Commerce,
        Accountancy,
        Economics
My Computer Teacher:
        Mr. K. Kannan, M.Com., M.CA., B.Ed.,
</body>
</html>
```

Re-Write the above HTML code to get the following output:



Evaluation

FL1JYJ

Part – I

Choose the Correct Answer:

1. HTML is acronym for
   (a) Hyper Transfer Markup Language (b) Hyper Text Markup Language
   (c) Hyper Transfer Makeup Language (d) Hyper Text Makeup Language

2. The coded HTML keywords that indicates how web browser should format and display the content is called…….
   (a) Tags (b) Attributes (c) Headings (d) Body

3. Which of the following is a special word used inside tag to specify additional information to the tag?
   (a) Tags (b) Attributes (c) Headings (d) Body

4. HTML tags should be specified within:
   (a) [ ] (b) { } (c) ( ) (d) < >

5. An HTML document is bounded within a pair of ….. tags
   (a) <body> ……. </body> (b) <title> ……. </title>
   (c) <html> ……. </html> (d) <head> …… </head>

6. Which of the following symbol is used to define a closing tag?
   (a) < > (b) % (c) / (d) \

7. Which section of the browser window displays the main contents?
   (a) Head (b) Body (c) Title (d) Heading

8. Which of the following tag is a structural tag?
   (a) <html> (b) <h1> (c)
 (d) <p>

9. In HTML, colours are represented as
   (a) Binary values (b) Octal values (c) Decimal values (d) Hexadecimal values

10. Which of the following symbol is used to prefix with hexadecimal value representing colour in HTML?
    (a) % (b) # (c) @ (d) &

11. Which of the following attribute is used to change text colour within body tag?
    (a) bgcolor (c) background (c) text (d) color

12. Within body section, which of the following attribute is used to set top margin?
    (a) margin (b) top (c) topmargin (d) leftmargin

13. How many levels of heading tags available in HTML?
(a) 6 (b) 4 (c) 8 (d) 3

14. The tag used to insert a line break:
(a) <h1> (b)
 (c) <html> (d) <p>

15. The tag used to define a paragraph in HTML:
(a) <para> (b) <p> (c) <q> (d)

Part – II

Answer to the following questions (2 Marks):

1 Sandhiya is creating a webpage. She is entering HTML code on her computer. In between, she keeps pressing "Refersh" / "Reload" button on her browser. What is the purpose?

2. Explain with the help of an example the difference between container and empty elements of HTML.

3. What is the wrong in the following coding?

```
<html>
<my web page>
<title> Welcome to my web page
</head>

</title>
```

4. How do you define comments in HTML?

5. How do you include an image as your web page background?

Part – III

Answer to the following questions (3 Marks):

1. Explain the attributes available with <body> tag.

2. What are the attributes available in <html> tags?

3. How do you view the source file?

4. How do you save a file as HTML file?

GLOSSARY

HTML	–	*Hyper Text Markup Language used to create web pages.*
Tag	–	*A coded HTML command. It is also called as element.*
Attribute	–	*Special word, carrying special meaning used inside on HTML tag.*
Heading Section	–	*Refers title bar of a browser.*
Body Section	–	*Refers main client area of a browser.*
Browser	–	*An application to view web pages or web sites.*
Web Page	–	*An Online page contains hypertext.*
Hypertext	–	*Text which contains links to other texts.*
Text Editor	–	*An application used to type and modifies text contents, but it is not a word processor.*
Word Processor	–	*An application used to create and manipulate text documents.*
Notepad	–	*A default text editor available with Windows.*
Getit	–	*A default text editor available with Linux.*
Windows	–	*Familiar GUI Operating system developed by Microsoft.*
Linux	–	*Familiar Open Source operating system.*
Internet Explorer	–	*A browser available with Windows.*
Mozilla Firefox	–	*A default browser available with Linux. Open Source Third party browser can be installed in windows.*
Chrome	–	*A familiar web browser developed by Google.*

References:

1. Mastering HTML, CSS & JavaScript Web Publishing – Laura Lemay, Rafe Colburn, Jennifer Kyrnin – BPB Publications.
2. Informatics Practices, A text book for CBSE class XII – Sumita Arora – Dhanpat Rai & Co.
3. Computer Application (Commerce) – Text book of XII – Department of Education – SCERT, Kerala.
4. https://www.w3schools.com/html/default.asp

CHAPTER 11

HTML - Formatting text, Creating Tables, List and Links

Learning Objectives:

The students will learn the following:

- How to formatting text contents of an HTML document with variety of tags and attributes.
- How to create and manipulate tables in HTML.
- How to create different types of List.
- What is Link and how to create internal and external links.

11 Text Formatting Tags of HTML

In the previous section you learn how to create a web page with basic elements. In this section, you are going to learn about how to format the text such making bold, italic, underline, changing font style, font size, font color and more. Formatting text is very important as well as interesting task in creating web pages. Formatting is purely based on your imagination and creativity.

11.1 Text Formatting Tags of HTML

In the previous chapter you learnt how to create a web page with basic elements. In this section, you are going to learn about how to format the text such as making bold, italic, underline, changing font style, font size, font color and more. Formatting text is very important as well as interesting task in creating web pages. Formatting is purely based on your imagination and creativity.

11.1.1 Bold, Italics, Underline

<b>, <i>, <u> are the tags to make the text as bold, italic and underline. These are all container tags. You know well about container tags. All container tags required a closing tag. These tags are otherwise known as **"Physical Style"** tags.

Table 11.1 Physical Style Tags

Opening Tag	Closing Tag	Description
		Text will be bold
		Text will be italics
<u>	</u>	Text will be Underlined
<tt>	</tt>	Text will be old type writer style i.e. fixed width font

Illustration 11.1 Text Formatting

```
<html>
<head>
        <title> Text Formatting </title>
</head>
<body>
        <h1 align = center>  Kancheepuram </h1>
        <b> Kanchipuram is part of Tondaimandalam </b> <br>
        <i> Kanchipuram is 72 km away from Chennai </i>  <br>
        <u> It is the administrative headquarters of Kancheepuram District. </u>
<br>
        <b><i> Kanchipuram is well-connected by road and rail. </i> </b>
    <p> Chennai <b> International Airport </b> is the nearest domestic and
    international airport to the town, which is located at Tirusulam in Kanchipuram
    district. </p>
</body>
</html>
```

Output will be:

11.1.2 and tags

In addition to bold and italic tags i.e. <b> and <i>, HTML provides , tags to make the text as bold and italics. These tags are container tags.

** Important text**

The tag is a phrase tag. It is used to define important text. This tag displays the text as bold.

** - Emphasized text**

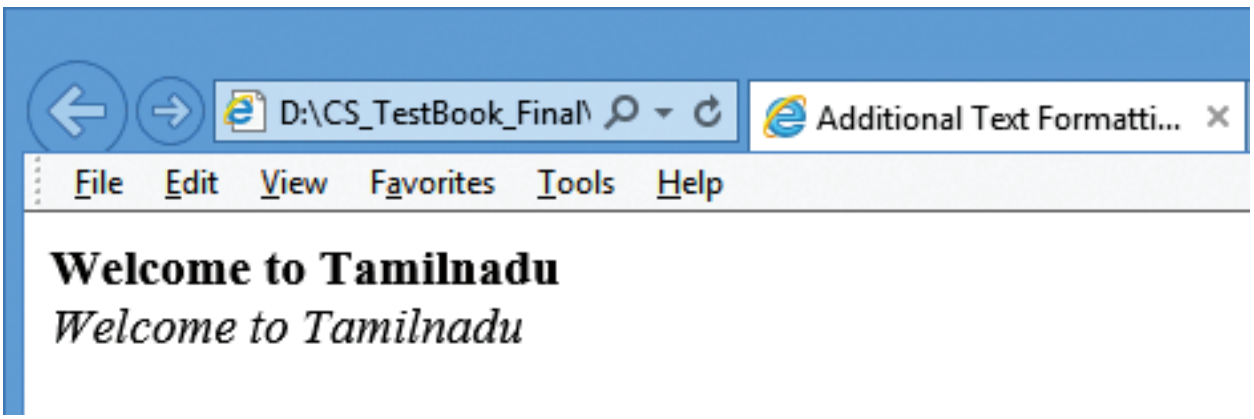
The tag is used to emphasize the text. That means, when you use this tag, the text will be in italics.

Visually these two tags display the contents as very similar as <b> and <i> respectively. But, technically the meaning of and is "Important" not just bold and italics.

Illustration 11.2 Usage of and tags

```
<html>
    <head>
        <title> Additional Text Formatting Tags </title>
    </head>
    <body>
        <strong> Welcome to Tamilnadu  </strong> <br>
        <em> Welcome to Tamilnadu </em>
    </body>
    </html>
```

Output will be:



11.1.3 <big> and <small> tags

The **<big>** tag is used to define the text bigger in size than the normal size. It is often used to call attention a text.

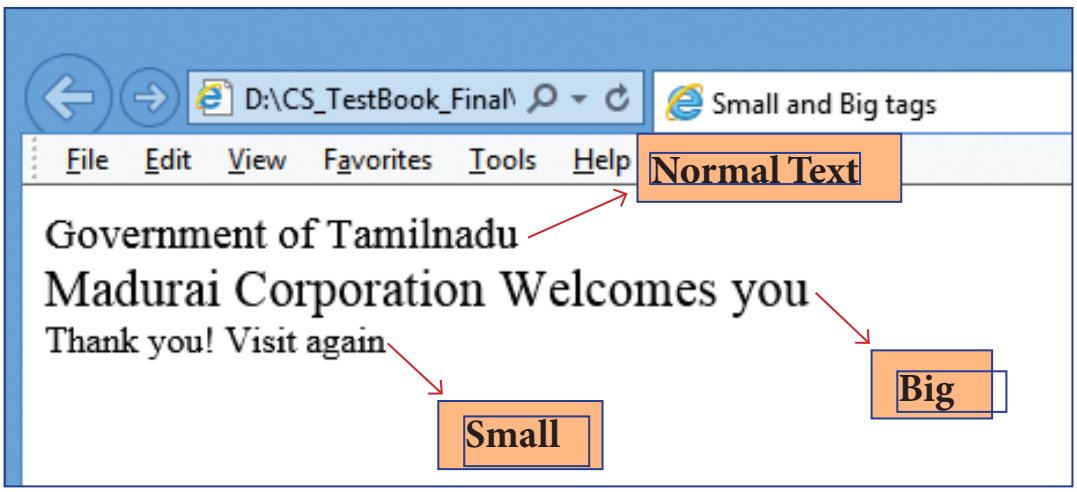
The **<small>** tag is used to define the text smaller than the current size.

These two tags are container tags.

Illustration 11.3 Usage of <big> and <small>

```
<html>
<head>
<title> Small and Big tags </title>
</head>
<body>
        Govenment of Tamilnadu <br>
        <big>  Madurai Corporation welcomes you </big> <br>
        <small> Thank you! Visit again </small>
</body>
</html>
```

Output will be:



11.1.4 Highlighting text

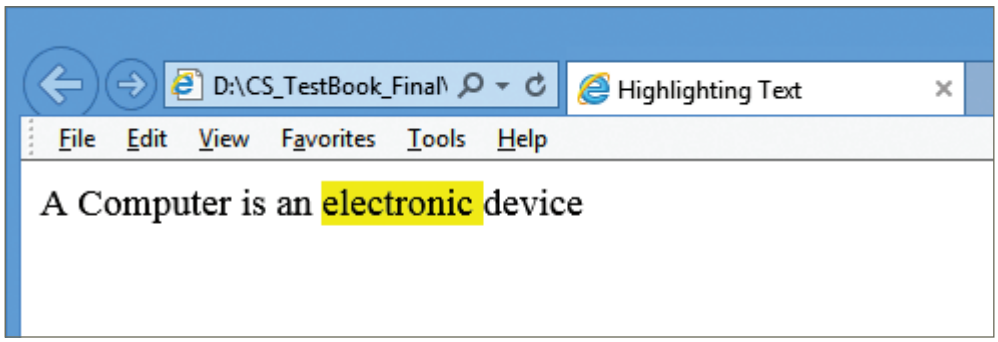
Highlighting is an important formatting feature is used to call attention to the reader. The **<mark>** tag is used to highlight the text in HTML. This is also a container tag. Whatever

the text given between <mark> and </mark> will be displayed as highlighting with default color (mostly yellow).

Illustration 11.4 Usage of <mark>

```
<html>
<head>
<title> Highlighting text </title>
</head>
<body>
        A Computer is an <mark> electronic </mark> device
</body>
</html>
```

Output will be:



11.1.5 Subscript and Superscript

A Subscript is a way to display a character or a number below the normal line of type. For example: The scientific notation for water is H_2O. It should be written as H_2O. Here, 2 is appearing below the normal line. This is called subscript.

A Superscript is also a way to show a character or a number above the normal line of type. For example: The familiar algebra equation "a plus b the whole square" should be written as $(a+b)^2$. Here, the square value 2 is appearing above the normal line. This is called superscript.

Usually, the subscript and the superscript character or number is smaller than the rest of the text.

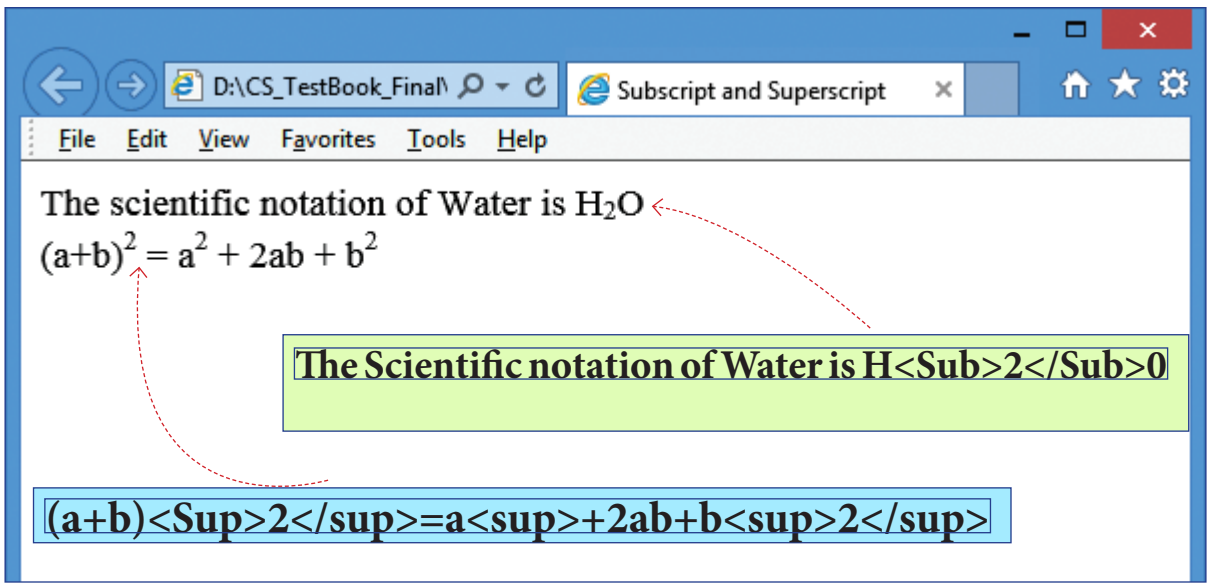
In HTML, the **<sub>** and **<sup>** tags are used to create subscript and superscripts respectively. As like as other formatting tags, this is also a container tag.

The text or number given between **_{** and **}** will be displayed as subscript. Same as subscript, the text or number given between **^{** and **}** will be displayed as superscript.

Illustration: 11.5 Usage of <sub> and <sup>

```
<html>
<head>
<title> Subscript and Superscript </title>
</head>
<body>
        The scientific notation of Water is H<sub>2</sub>O <br>
        (a+b)<sup>2</sup> = a<sup>2</sup> + 2ab + b<sup>2</sup>
</body>
</html>
```

The output will be:



11.1.6 Inserting and Deleting

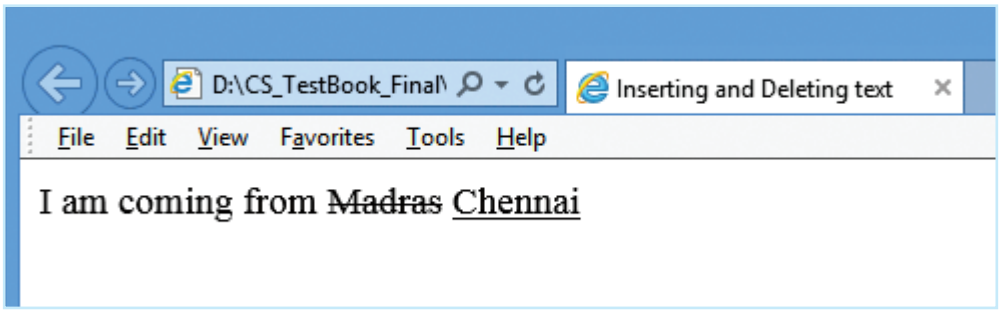
The text what you see on browser cannot delete or insert. But you can show a text as deleted or inserted. **<del>** and **<ins>** tags are used to markup a segment of text as deleted or inserted respectively. These two tags are container tags.

The text what you specify between **~~** and **~~** will be displayed as strike through. The text you specify between **<ins>** and **</ins>** will be shown as underlined.

Illustration: 11.6 Usage of <del> and <ins>

```
<html>
<head>
<title> Inserting and Deleting text </title>
</head>
<body>
                I am coming from <del> Madras</del>  <ins> Chennai </ins>
</body>
</html>
```

The output will be:



11.1.7 Strike through:

To display a text as wrong text, the **<s>** tag can be used to show the text as strike through style. The **<s>** and **<del>** tags are display the text in similar way. This is also a container tag. The text you specify between **<s>** and **</s>** will be display in strike through style.

11.1.8 Comparison of tags:

A few tags do the same things you have learned so far. For example, **<b>** and ****, **<i>** and **, <u>** and **<ins>** and so on. These tags may be shows the same output, but the usage of tags are varying. The following table shows the usage of this kind of tags.

Table: 11.2

Tag	Usage	Tag	Usage	Final Output
<b>	To show the text in bold	****	To show important text	Bold
<i>	To show the text as italics	****	To Call attention	Italics
<u>	To show the text as underlined	**<ins>**	To insert a text	Underline
<s>	To show the wrong text	**<del>**	To replaced or deleted text	Strike through

While writing HTML document, you should use the appropriate tags according to its usage. If you want show a text as underlined use <**u**> instead of <ins>.

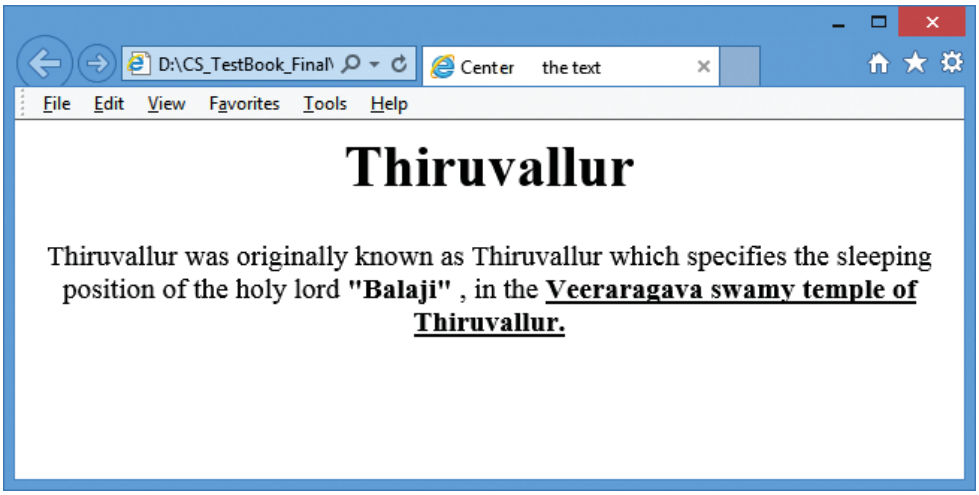
11.1.9 The Center Tag

Paragraphs can be centered with Align attribute with <p> tag. But for non-paragraph text contents can be centered with tag. The tag is used to centralize a segment of text. It is a container tag. That means, what you type between and will be displayed in the center of the browser.

Illustration 11.7 Center the text

```
<html>
    <head>
        <title> Center the text </title>
    </head>
    <body>
        <h1 align = center> Thiruvallur </h1>
    <center> Thiruvallur was originally known as Thiruvallur which specifies the
    sleeping position of the holy lord <b> "Balaji" <b>, in the
    <b> <u> Veeraragava swamy temple of Thiruvallur. </b> </u> </center>
</body>
</html>
```

Output will be



11.2 Changing font style, size and color

The <**font**> tag is used to change the style, size and color of text. It is also a container tag. It is generally used for changing the appearance of a short segment of text. Before using

****, you should have the knowledge about fonts.

A font is a named set of certain style of character and number. Each font looks different from other fonts. Generally some fonts are used for specific purpose. For example, Times New Roman is a style of font usually used for preparing office documents. Arial is another font style which is used for publishing work. Variety of fonts available in internet at free of cost.

Generally, a browser shows the contents as default system font setting. Every system has different font setting with another system.

The general form of tag with attributes:

****

Text to be displayed

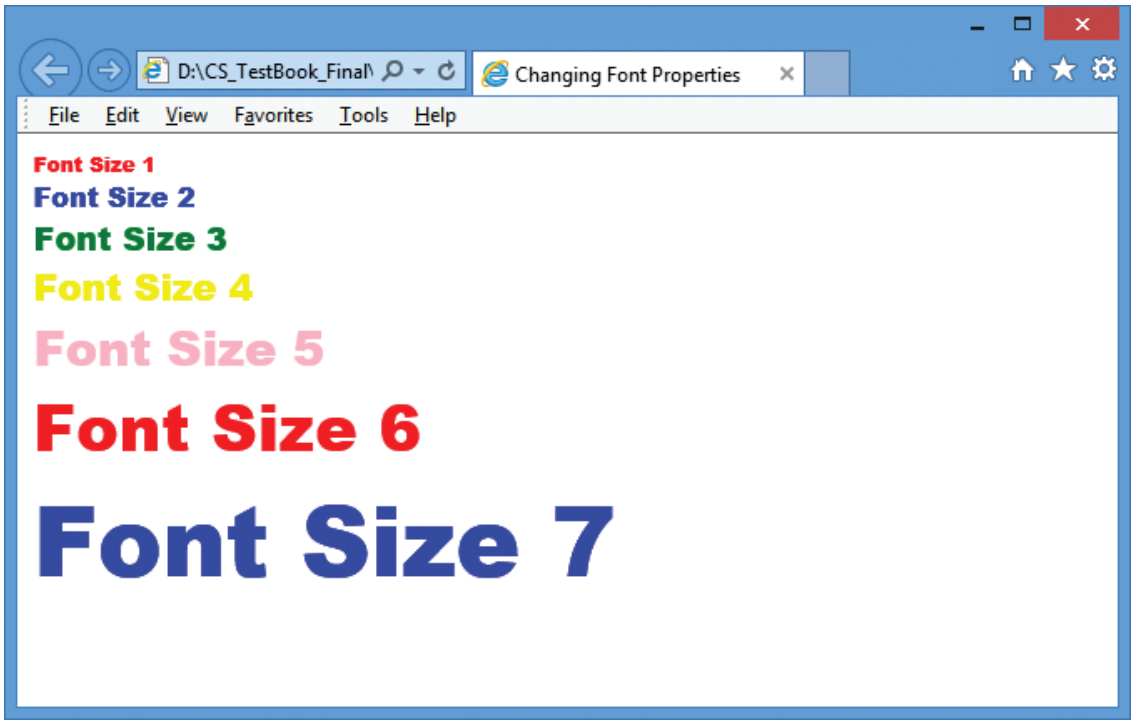
****

- The **face** is an attribute to set different font style. The name of a font has multiple words it should be specified within double quote.
- The size attribute is used to set size of the text. The size can have an absolute value from 1 to 7. These predefined sizes are known as virtual size. Each virtual size is successively 20% larger than the previous one.
- The color attribute is used to set the color to the text. As you leant earlier color name or color code in hexadecimal may be used.

Illustration 11.8 HTML code to change font properties

```
<html>
<head>
<title> Changing Font Properties </title>
</head>
<body>
        <font face="Arial Black" size=1 color=red> Font Size 1 </font> <br>
        <font face="Arial Black" size=2 color=blue> Font Size 2 </font> <br>
        <font face="Arial Black" size=3 color=green> Font Size 3 </font> <br>
        <font face="Arial Black" size=4 color=yellow> Font Size 4 </font> <br>
        <font face="Arial Black" size=5 color=pink> Font Size 5 </font> <br>
        <font face="Arial Black" size=6 color=red> Font Size 6 </font> <br>
        <font face="Arial Black" size=7 color=blue> Font Size 7 </font> <br>
</body>
</html>
```

The output will be:



Note: The tag is not supported by HTML5.

Multiple fonts with face attribute:

As you learnt already, the face attribute of font tag is used to change font style of a segment of text. In face attribute, you can assign more than one font-name at a time within double quotes with comma. For example,

****

Welcome to HTML

****

Browser first tries to find out whether the font-name in the list is supported or not. If the first font is not supported by the browser, then it displays the text in second font, otherwise it will display next one. If no font in the list is supported, then the browser display the in the default font.

In the above code, consider the font names “Bookman old style1” and “Broadway1” are not supported by any browser. (Because, the names has been changed). So, the text “Welcome to HTML” will be displayed in “Forte” style. If your browser not supported “Forte” font, the text will be displayed in “Arial” font, otherwise the browser shows the text as in default font setting. In the case of Internet explorer, the “Times New Roman” is the default font to display the contents.

11.3 Section Break

The **<hr>** (Horizontal Rules) tag, which is known as "Thematic Breaks" separate sections of an HTML document visually. It produces a horizontal line spread across the width of the browser. This is an empty tag, which means the tag has no closing tag.

Illustration 11.9 An HTML code to demonstrate Horizontal rules tag - <hr>

```
<html>
    <head>
        <title> Horizontal Tag </title>
    <head>
    <body>
    <h1 align=center> Tamil Language </h1>
    <font face = "Arial Black" size = 5 color="Red">
    Tamil is a Dravidian language predominantly spoken by the Tamil people of
    </font>
    <hr>
    <font face = "Copperplate Gothic Bold" size = 6 color="Blue">
        India, Sri Lanka, Singapore, Malaysia, Mauritius and South Africa
    </font>
    <hr>
    <font face = "Verdana" size = 6 color="Green">
        Tamil is an official language of India (Tamilnadu and Puducherry),
        Sri Lanka and Singapore.
</body>
</html>
```

The output will be:

Attributes of <hr> tag

The **<hr>** tag having four attributes viz. **size, width, noshade** and **color**. These attributes are used to set size, width, 3D appearance and color to the horizontal line respectively.

The general syntax of **<hr>** tag with attributes:

<hr size=value width=value noshade, color=color_name/code>

Size:

Thickness of the horizontal line can be changed with size attribute. The size is given in terms of pixels. A pixel is one of the tiny dots that make up the display on computer. Generally, 72 pixels equal to an inch. Pixel is usually referred as points. For example: The code **<hr size = 72>** display a horizontal line with 1 inch thickness. The default size is 3 pixels.

Width:

The width attribute specifies the horizontal width of the rule line. The default rule is drawn across the full width of the browser. The value of the width attribute may be the exact width of the rule in pixel or a certain percentage. Usually, the value of the width is specified as percentage. 100% is the default width.

For example:

<hr width = 50%> display an half of a horizontal rule line on the browser window.

Noshade:

The default view of a horizontal rule line is 3D. So, no need to specify the term "noshade" as an attribute with <hr> tag. If you specify the attribute "noshade" turn off 3D view, turns on 2D view. Noshade is a Boolean type attribute.

Color:

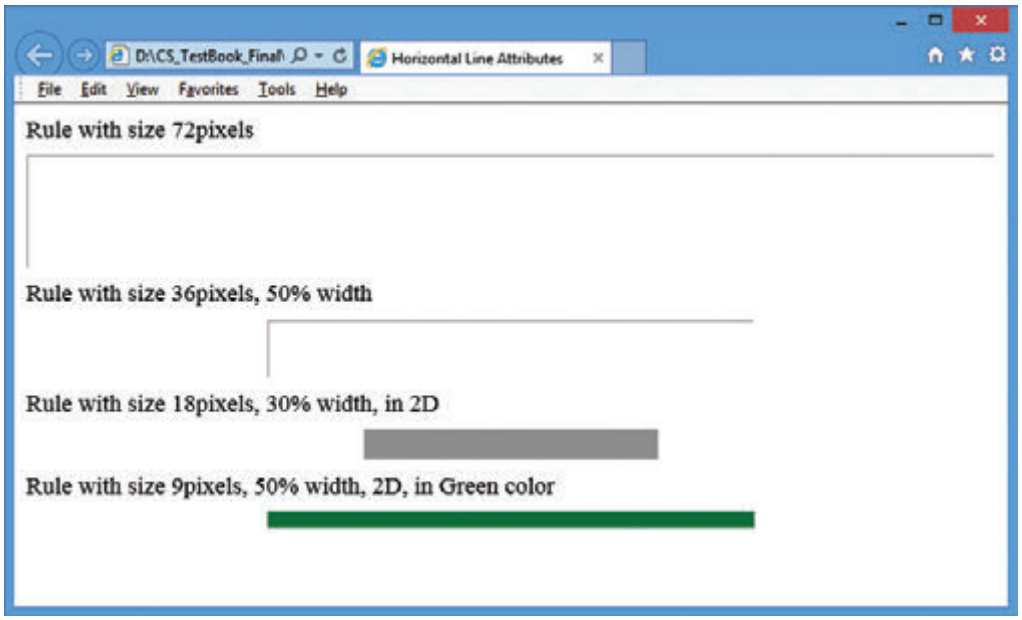
The horizontal line is displayed in gray color by default. The color attribute is used to change is default color to desired color. As you leant already, the value of color either is a color name or color code.

Note: All attributes of <hr> tag is not supported by HTML5

Illustration 11.10: An HTML code to demonstrate Horizontal rules with Attributes.

```
<html>
<head>
        <title> Horizontal Line Attributes </title>
</head>
<body>
        Rule with size 72pixels
        <hr size = 72>
        Rule with size 36pixels, 50% width
        <hr size = 36 width=50%>
        Rule with size 18pixels, 30% width, in 2D
        <hr size = 18 width=30% noshade>
        Rule with size 9pixels, 50% width, 2D, in Green color
        <hr size = 9 width = 50% noshade color=Green>
</body>
</html>
```

The output will be



11.4 Tables in HTML

Table is grid of rows and columns. Remember, what you learnt about tables in OpenOffice Writer. Creating a table in HTML is not as easy as created in OpenOffice writer. The tables were officially introduced with HTML 3.2. Tables are useful for the general display of tabular data. Representing table in HTML is heavy on tags.

11.4.1 Tags to create table elements

There are five core tags are used to create a table in HTML. They are,

- **<table>** tag is used to create a table.
- **<tr>** tag defines table rows
- **<th>** tag defined table columns
- **<td>** tag is used to specify the data in a cell
- **<caption>** tag defines title for the table
- Apart from these five core tags, **<tbody>, <thead>** and **<tfoot>** tags are also used to define and control whole sections of table. All the above tags are container tags.

11.4.2 Creating Table

With the following illustration, you can learn how to create a table in HTML.

Illustration 11.11: An HTML code to Table tags

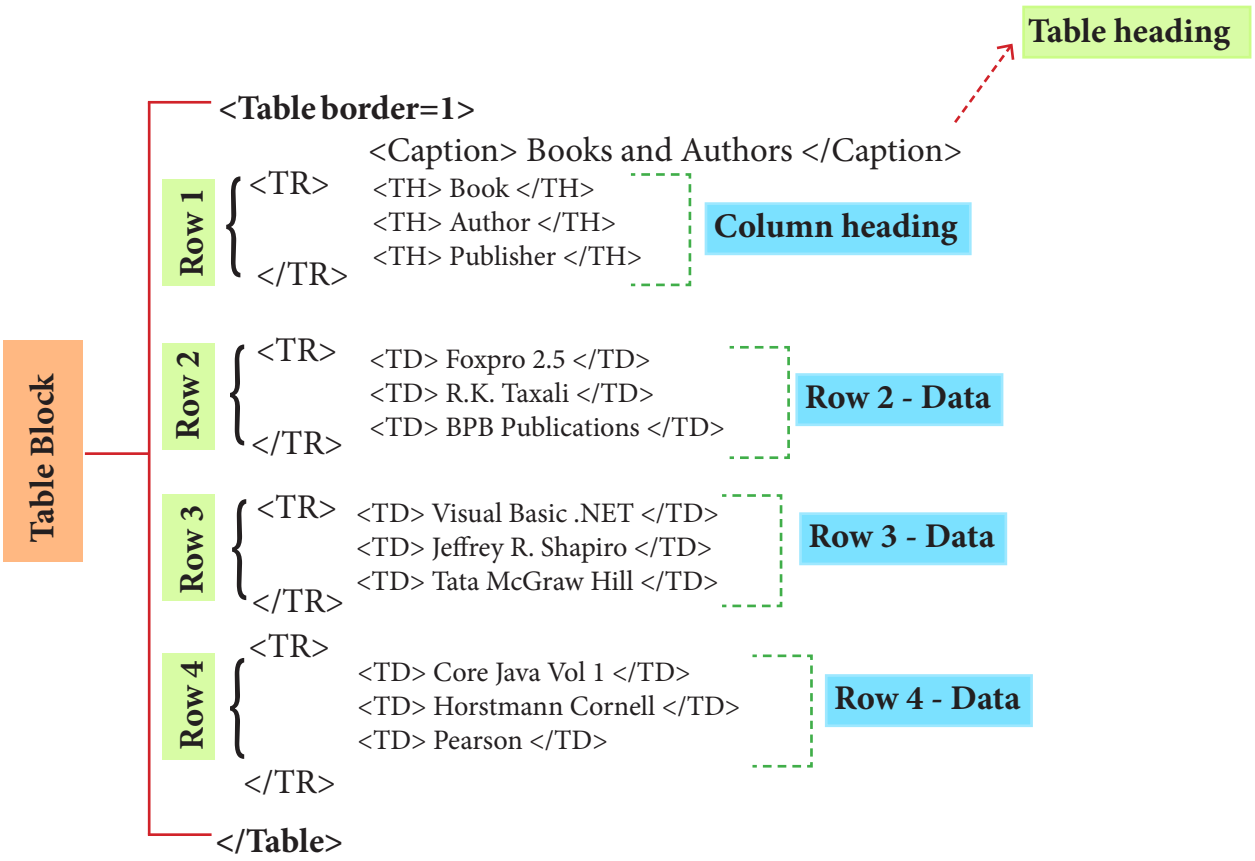
```
<html>
<head>
        <title> Creating Table </title>
</head>
        <body bgcolor="PaleGoldenRod">
        <Table border=1>
        <Caption> Books and Authors </Caption>
<TR>
        <TH> Book </TH>
        <TH> Author </TH>
        <TH> Publisher </TH>
</TR>
<TR>
        <TD> Foxpro 2.5 </TD>
        <TD> R.K. Taxali </TD>
        <TD> BPB Publications </TD>
</TR>
<TR>
        <TD> Visual Basic .NET </TD>
        <TD> Jeffrey R. Shapiro </TD>
        <TD> Tata McGraw Hill </TD>
</TR>
<TR>
        <TD> Core Java Vol 1 </TD>
        <TD> Horstmann Cornell </TD>
        <TD> Pearson </TD>
</TR>
</Table>
</body>
<html>
```

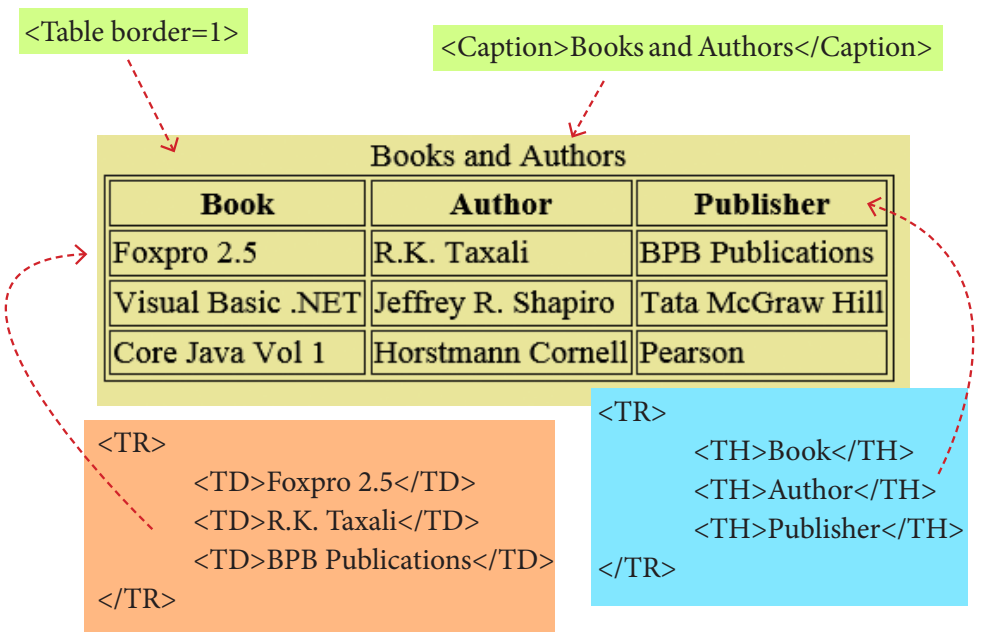
In the above HTML code, the **<Table border=1>** tag creates a table structure with border. The code **<Caption> Books and Authors </Caption>** display the text specified between <Caption> as title to the table.

The above code contains four set of **<tr>** blocks. First block of **<tr>** creates a table row with three column headings with the help of **<th>** tag. When you use **<th>** tag, the column heading were aligned center and text becomes bold by default.

Rest of the **<tr>** blocks display the contents what you specify within **<td>** tags. All the tags used with table were container tags. So, each and every tag should be closed with their closing tag. The following Figure is more useful to understand the same code given above.

The output will be:





11.4.3 Attributes of table

The <table> is a container tag. There are several attributes to improve the layout of the table. They are listed below:

1. Cellspacing

It is used to set the space between cells in a table. The value should be in pixels

2. Cellpadding

It is used to set the space between the contents of a cell and its border. the value should be in pixels.

3. Border:

Border attribute with <table> tag is used to specify the thickness of the border lines around the table. The value of the border attribute should be a non zero value in pixels. If its value is zero, HTML displays the table without border. The default value is Zero in most the browsers.

4. Bordercolor:

It is used to apply the colour to the border lines.

5. Align:

It is used to set the position of the table within the browser window. Left is the default position. Right or center may be the value of align attribute.

6. BGcolor

It is used to apply background colour to the table.

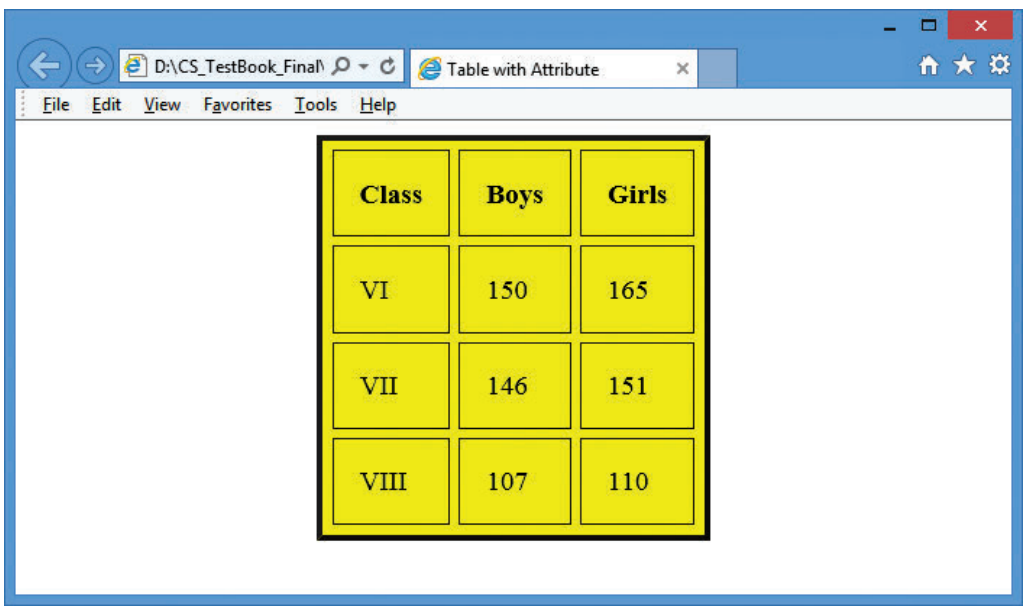
7. Height and Width

These two attributes are used to specify the height and width of a table in terms of pixels or percentage.

Illustration 11.12: An HTML code to demonstrate the attributes of Table

```
<html>
<head>
<title> Table with Attribute </title>
</head>
<body>
<table cellspacing=5 cellpadding=15 border=4 bordercolor=blue align=center
bgcolor=yellow>
<TR>
        <TH> Class </TH>
        <TH> Boys </TH>
        <TH> Girls </TH>
</TR>
<TR>
        <TD> VI </TD>
        <TD> 150 </TD>
        <TD> 165 </TD>
</TR>
<TR>
        <TD> VII </TD>
        <TD> 146 </TD>
        <TD> 151 </TD>
</TR>
<TR>
        <TD> VIII </TD>
        <TD> 107 </TD>
        <TD> 110 </TD>
</TR>
</table>
</body>
</html>
```

The output will be:



Attributes of <TD>, <TH> and <TR> tags:

1. Align

Used to specify the horizontal alignment of content within a cell. Left is the default alignment. Possible values are Right and Center.

2. VAlign

Used to specify the vertical alignment of the contents within a cell. Bottom is the default alignment. Possible values are Top and Middle

3. Width

Used to specify the width of a cell in terms of pixels or percentage.

4. BGcolor and Background

Bgcolor attribute is used to apply a particular colour to the background of a cell.

Background attribute is used to apply an image or picture as background of a cell.

5. Rowspan and Colspan

Rowspan attribute is used to merge two or more cells in a row as a single cell.

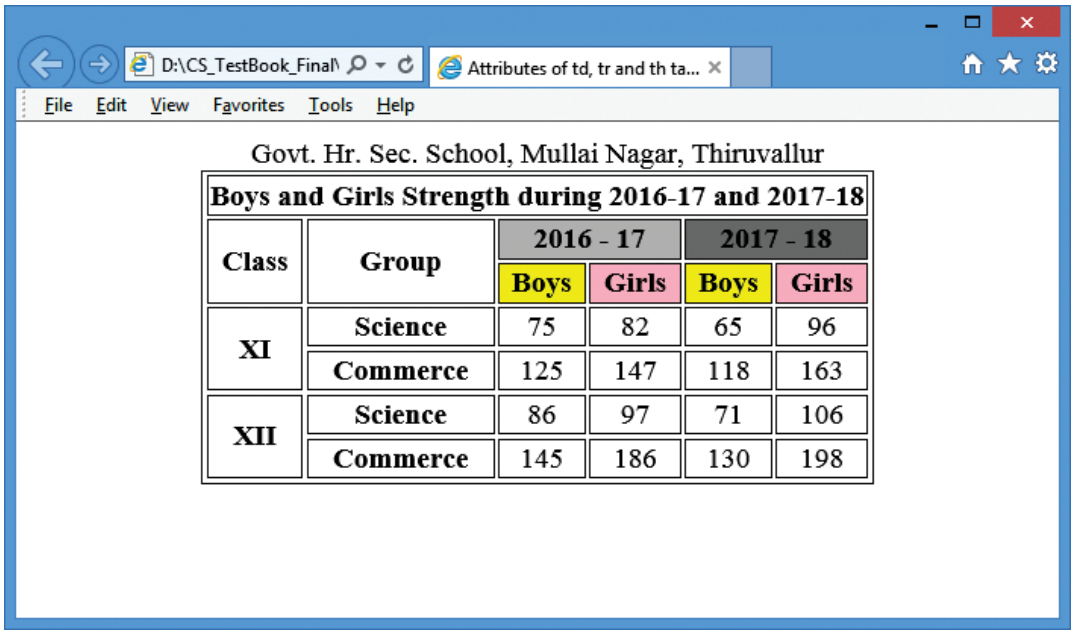
Colspan attribute is used to merge to two or more cells in a column as a single cell.

Illustration 11.13: An HTML code to demonstrate the attributes of <td>, <th> and <td> tags.

```
<html>
<head>
<title> Attributes of td, tr and th tags </title>
</head>
<body>
<table border align=center>
<Caption> Govt. Hr. Sec. School, Mullai Nagar, Thiruvallur
<tr>
<th colspan=6> Boys and Girls Strength during 2016-17 and 2017-18 </th>
</tr>
<tr align=center>
<th rowspan=2> Class </th>
<th rowspan=2> Group </th>
<th colspan=2 bgcolor=silver> 2016 - 17 </th>
<th colspan=2 bgcolor=gray> 2017 - 18 </th>
</tr>
<tr>
```

```
<th bgcolor=yellow> Boys </th>
<th bgcolor=pink> Girls </th>
<th bgcolor=yellow> Boys </th>
<th bgcolor=pink> Girls </th>
</tr>
<tr align=center>
<th rowspan=2> XI </th>
<th> Science </th>
<td> 75 </td>
<td> 82 </td>
<td> 65</td>
<td> 96 </td>
</tr>
<tr align=center>
<th> Commerce </th>
<td> 125 </td>
<td> 147 </td>
<td> 118 </td>
<td> 163 </td>
</tr>
<tr align=center>
<th rowspan=2> XII </th>
<th> Science </th>
<td> 86</td>
<td> 97 </td>
<td> 71</td>
<td> 106 </td>
</tr>
<tr align=center>
<th> Commerce </th>
<td> 145 </td>
<td> 186 </td>
<td> 130 </td>
<td> 198 </td>
</tr>
</table>
</body>
</html>
```

The output will be:



Lists in HTML

HTML supports three types of lists viz. numbered, unnumbered and definition. These lists are called as Ordered List, Unordered List and Definition List respectively.

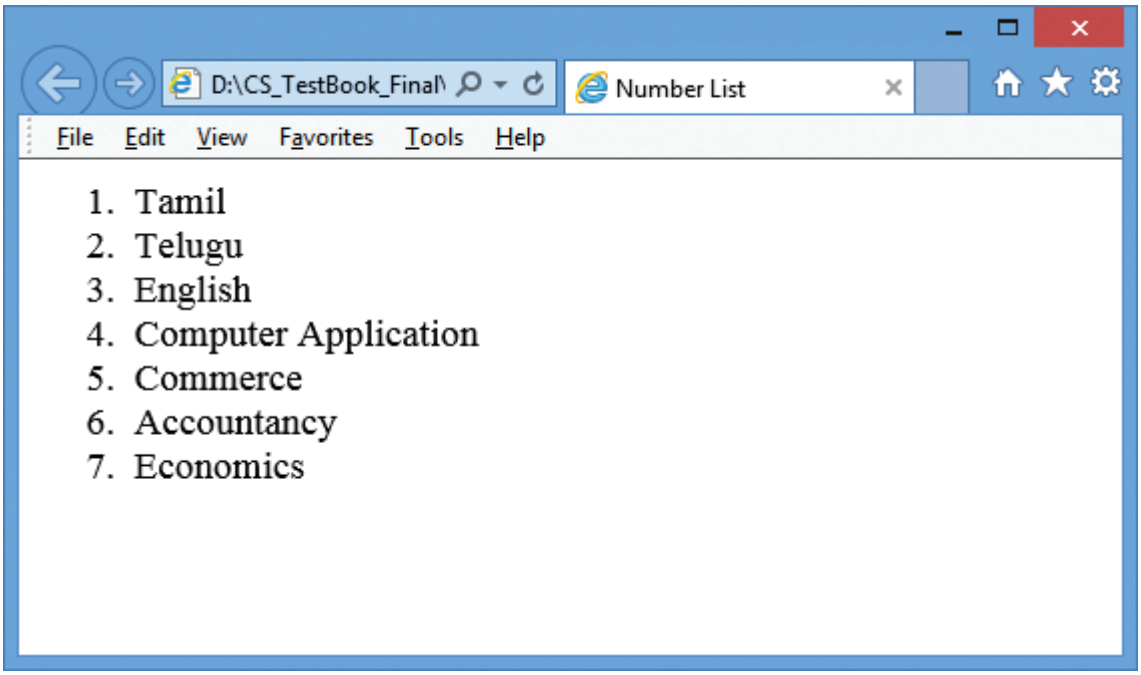
1. Numbered List / Ordered List

Numbered list is created within the tag pair **<OL> ….. </OL>** tag. The tag **<LI>** is used to present the list item in the list. Ordered list displays items in a numerical or alphabetical order. Both **<OL>** and **<LI>** tags are container tags. But the usual the practice, closing tag **</LI>** never be used.

Illustration 11.14: An HTML code to demonstrate Numbered list

```
<html>
<head>
<title> Number List </title>
</head>
<body>
<OL>
        <LI> Tamil
        <LI> Telugu
        <LI> English
        <LI> Computer Application
        <LI> Commerce
        <LI> Accountancy
        <LI> Economics
</OL>
</body>
</html>
```

The output will be:



Attributes of Ordered List:

There are two attributes can be used to customize ordered list, they are

(1) Type - changing numbering style

(2) Start - changing numbering order.

Type – is used to change the number style. The default number style is standard Arabic numerals (1,2,3,……).

Table: 11.3

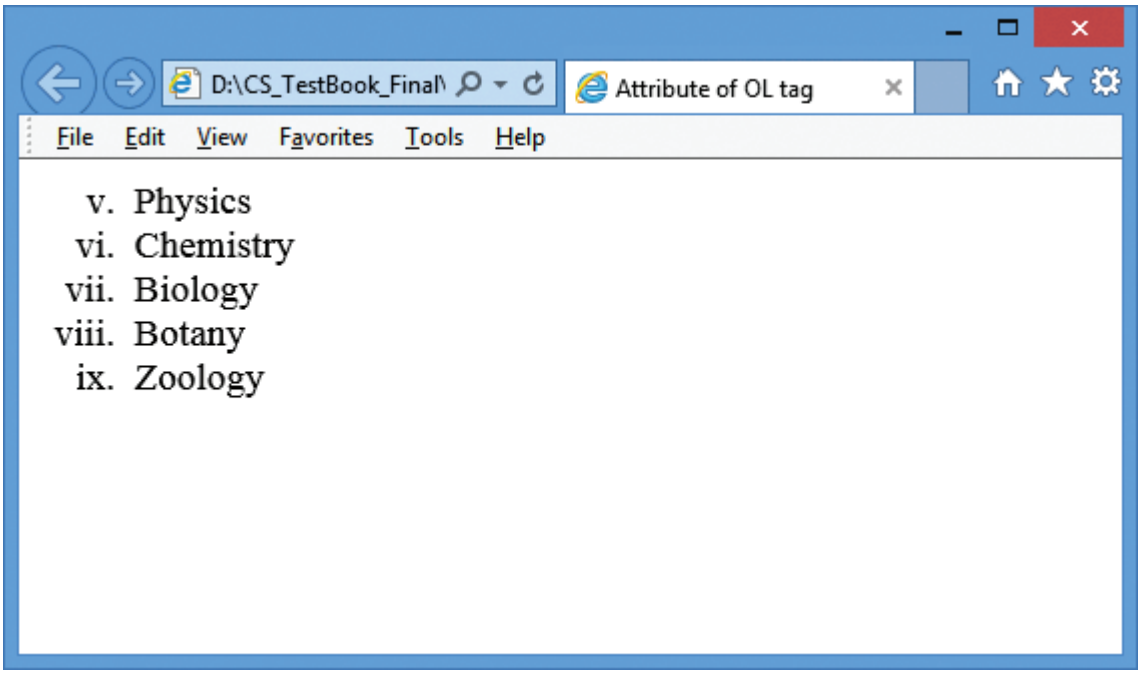
Type value	Numbering style
1	Standard Arabic Numerals 1,2,3,4,……
a	Lowercase letters a, b, c, d, ……
A	Uppercase letter A, B, C, D ……..
i	Lowercase Roman numerals i, ii, iii, iv, v ……
I	Uppercase Roman numerals I, II, III, IV, V ……..

Start – is used to specify the number of letter with which start the list. The default starting point is 1. The value of the start attribute should be a decimal number, regardless of the numbering style being used.

Illustration 11.15: An HTML code to demonstrate attribute of OL tag

```
<html>
<head>
<title> Attribute of OL tag </title>
</head>
<body>
        <OL type=i start=5>
                <LI> Physics
                <LI> Chemistry
                <LI> Biology
                <LI> Botany
                <LI> Zoology
        </OL>
</body>
</html>
```

The output will be:



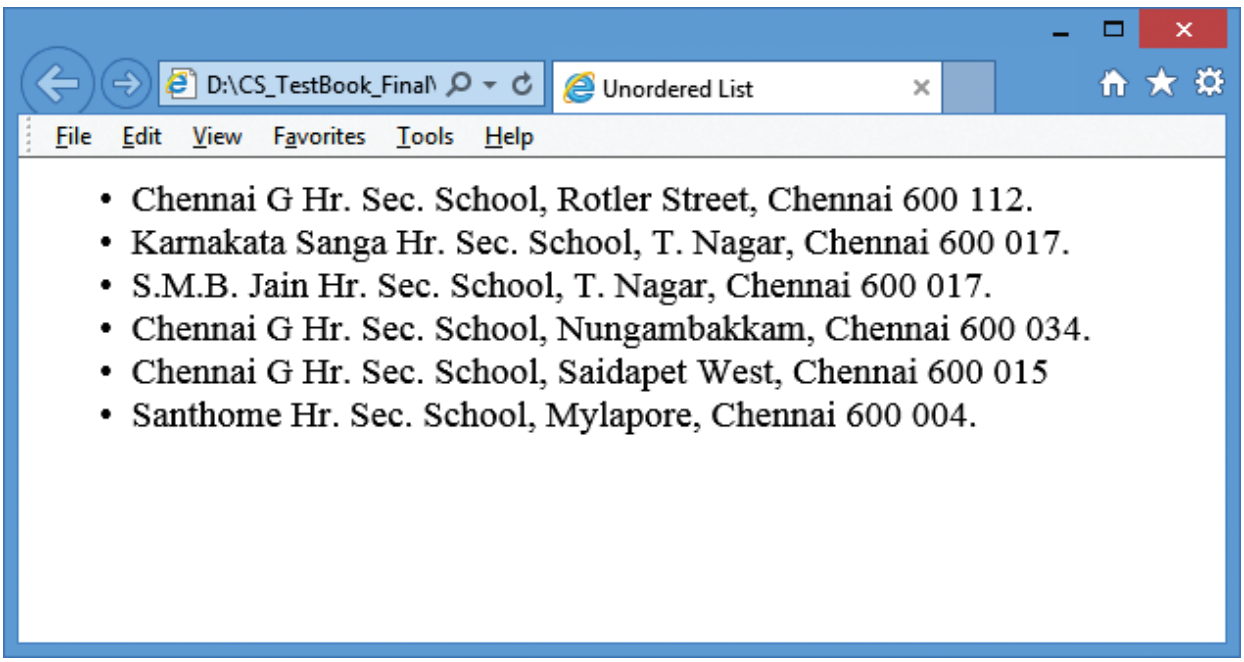
2. Un-numbered List / Unordered List

Unordered lists are often referred as bulleted lists. Instead of numbers, each element in the list has prefixed with a special bullet symbol. Unordered list is surrounded within <UL> …… </UL> tags. As discussed above, each list element is defined by <LI> tag.

Illustration 11.16: An HTML code to demonstrate Unordered list

```
<html>
<head>
<title> Unordered List </title>
</head>
<body>
        <UL>
                <LI> Chennai G Hr. Sec. School, Rotler Street, Chennai 600 112.
                <LI> Karnakata Sanga Hr. Sec. School, T. Nagar, Chennai 600 017.
                <LI> S.M.B. Jain Hr. Sec. School, T. Nagar, Chennai 600 017.
                <LI> Chennai G Hr. Sec. School, Nungambakkam, Chennai 600 034.
                <LI> Chennai G Hr. Sec. School, Saidapet West, Chennai 600 015
                <LI> Santhome Hr. Sec. School, Mylapore, Chennai 600 004.
        </UL>
</body>
</html>
```

The output will be:



Attribute of Unordered List:

Like ordered list, **type** attribute is used to customize bullet style for the list of elements. By default, a solid circle is used as bullets.

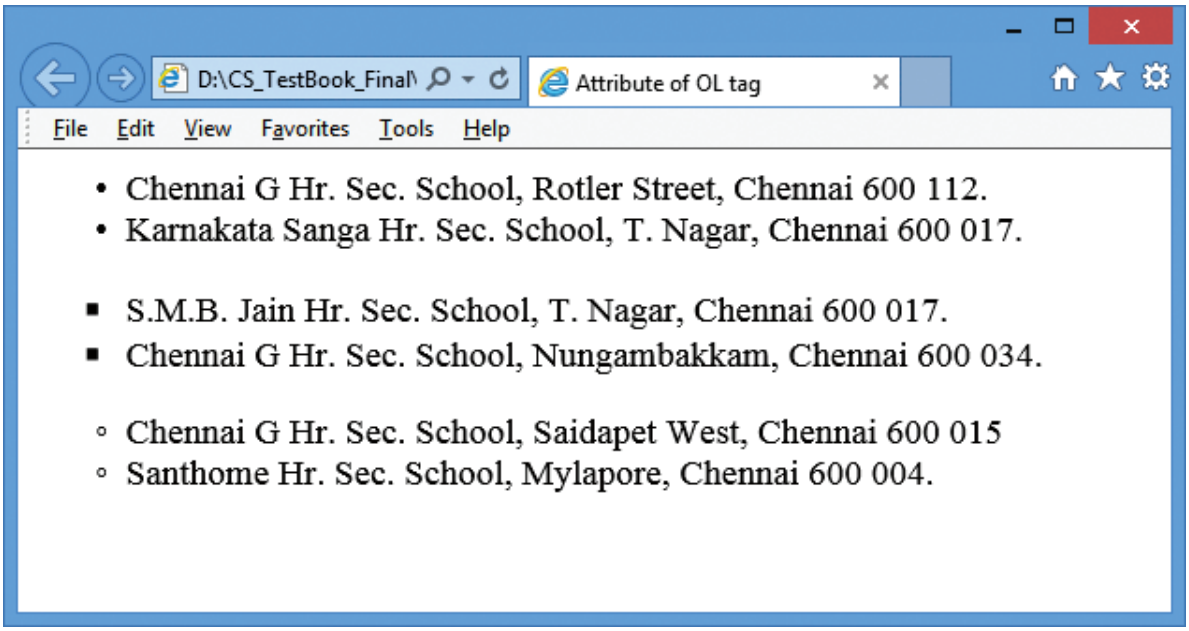
Table: 11.4

Type value	Numbering style
Disc	• A solid circle
Square	■ A solid square
Circle	oAn unfilled circle

Illustration 11.17: An HTML code to demonstrate Unordered list

```
<html>
<head>
<title> Attribute of UL tag </title>
</head>
<body>
        <UL>
                <LI> Chennai G Hr. Sec. School, Rotler Street, Chennai 600 112.
                <LI> Karnakata Sanga Hr. Sec. School, T. Nagar, Chennai 600 017.
        </UL>
        <UL type=square>
                <LI> S.M.B. Jain Hr. Sec. School, T. Nagar, Chennai 600 017.
                <LI> Chennai G Hr. Sec. School, Nungambakkam, Chennai 600 034.
        </UL>
        <UL type=circle>
                <LI> Chennai G Hr. Sec. School, Saidapet West, Chennai 600 015
                <LI> Santhome Hr. Sec. School, Mylapore, Chennai 600 004.
        </UL>
</body>
</html>
```

The output will be:



3. Definition List

Definition list is different from other two types of list. No bullet or number is provided for the list items. In this list type, the list element has two parts.

(1) A definition term

(2) The definition description

Definition list is surrounded within <DL> ……. </DL> tags.

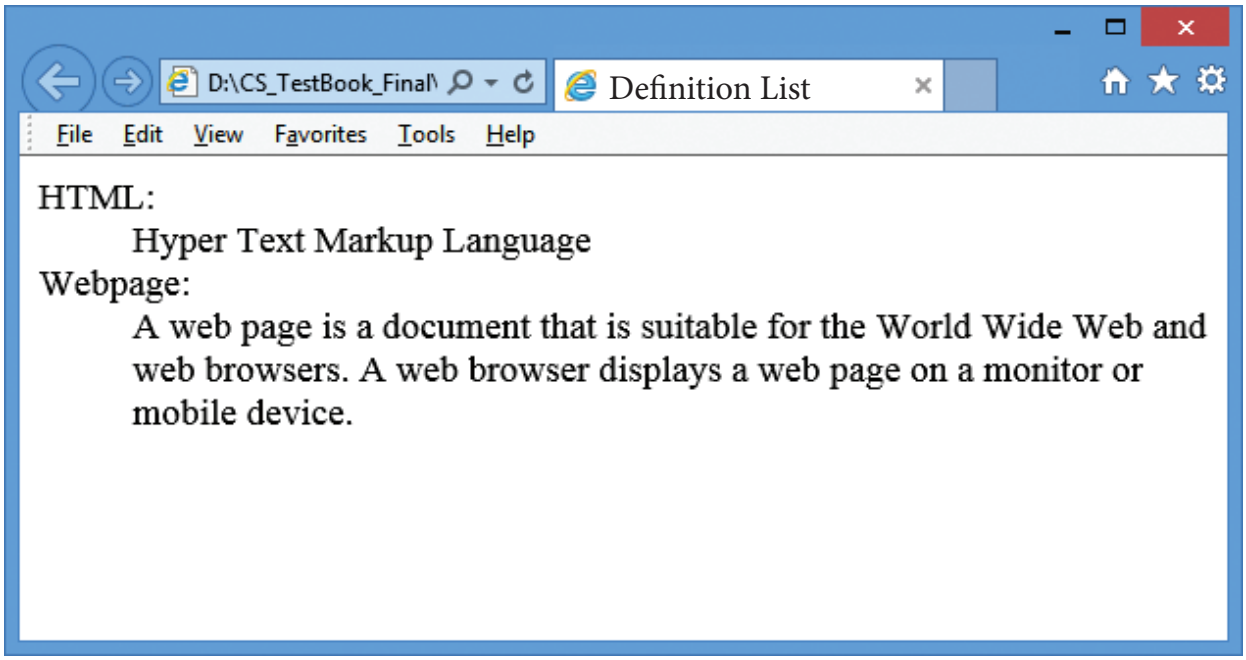
Definition term is presented in between <DT> ….. </DT> tag and

Definition description should be surrounded within <DD> …… </DD> tag.

Illustration 11.18: An HTML code to demonstrate Definition list

```
<html>
<head>
<title> Definition List </title>
</head>
<body>
        <DL>
        <DT> HTML: </DT>
                <DD> Hyper Text Markup Language </DD>
        <DT> Webpage:
<DD> A web page is a document that is suitable for the World Wide Web and
web browsers. A web browser displays a web page on a monitor or mobile device.
</DD>
        </DL>
</body>
<html>
```

The output will be:



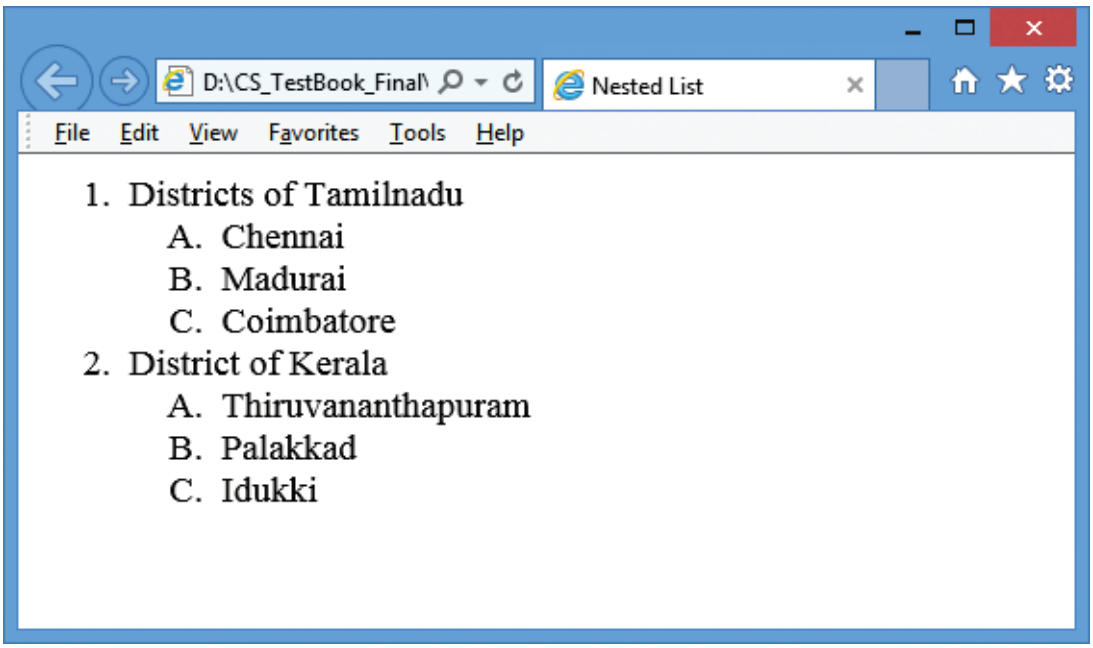
Nested Lists:

A list block can be defined inside another list is called as nested list.

Illustration 11.19: An HTML code to demonstrate Nested lists

```
<html>
<head>
<title> Nested List </title>
</head>
<body>
<OL>
        <LI> Districts of Tamilnadu
        <UL type=A>
                <LI> Chennai
                <LI> Madurai
                <LI> Coimbatore
        </UL>
        <LI> District of Kerala
        <UL type=A>
                <LI> Thiruvananthapuram
                <LI> Palakkad
                <LI> Idukki
        <UL>
        </OL>
<body>
<html>
```

The output will be:



Links:

Link is an important feature of HTML to connect web resources. Link in HTML is used to create hyperlinks to web content. Web content may be an HTML document or an external webpage or any multimedia content such as an image, video, audio, animation etc., or even a part of the current document.

There are two important things needs to create a link in HTML,

(1) The name of the file or URL to which you want to link

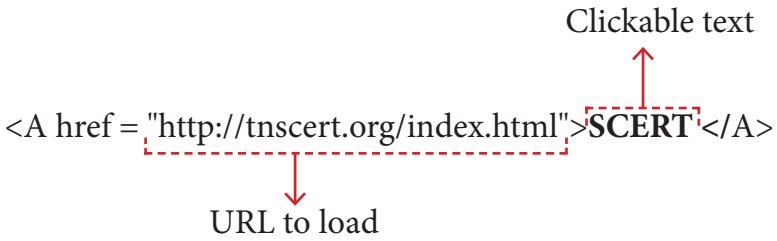
(2) The text that will serve as the clickable link.

The anchor tag **<A>** is used to create links along with HREF attribute. HREF is abbreviated as "Hypertext Reference".

Structure of an anchor tag with href:

<A href = " Web content path / URL "> Text – Clickable link </A>

Example:



The above link code creates the target of the hyperlink to the website http://thscert.org/index.html. At the time the user clicks the link, the browser opens the home page of the URL.

Internal Links:

Creating a link to a particular section of the same document is known as Internal Link. To create an internal like, the attribute Name is used along with **<A>** tag. The Name attribute of **<A>** tag establish the link to the content within the document.

Illustration 11.20: An HTML code to demonstrate Internal Linking:

```
<html>
<head>
<title> South India </title>
</head>
<body>
<h1 align = center> South India </h1>
<p> South India is the area encompassing the Indian states of
<A href = #AP> Andhra Pradesh, </A>
<A href = #KR> Karnataka, </A>
<A href = #KL> Kerala, </A>
<A href = #TN> Tamil Nadu </A> and Telangana as well as the union territories of Lakshadweep, Andaman and Nicobar Islands and Puducherry, occupying 19% of India's area (635,780 km2 or 245,480 sq mi). </p>
<A Name = AP><B> Andhra Pradesh </B> </A>
<p> Andhra Pradesh is one of the 29 states of India.  Situated in the south-east of the country, it is the eighth-largest state in India. The largest city in Andhra Pradesh is Visakhapatnam. </p>
<A Name = KR> <B> Karnataka </B> </A>
<p> Karnataka is a state in the south western region of India. It was formed on 1 November 1956, with the passage of the States Reorganisation Act. Originally known as the State of Mysore, it was renamed Karnataka in 1973. The capital and largest city is Bangalore (Bengaluru). </p>
<A Name = KL> <B> Kerala </B> </A>
<p> Kerala is a state in South India on the Malabar Coast. It was formed on 1 November 1956 following the States Reorganisation Act by combining Malayalam-speaking regions. It is divided into 14 districts with the capital being Thiruvananthapuram.</p>
<A Name = TN> <B> Tamilnadu </B> </A>
<p> Tamil Nadu literally 'The Land of Tamils' or 'Tamil Country' is one of the 29 states of India. Its capital and largest city is Chennai (formerly known as Madras). </p>
</body>
</html>
```

	HTML Link Colors
	A link will appear in all browsers by default as in the following colour: • An unvisited link is underlined and blue • A visited link is underlined and purple • An active link is underlined and red We can change the default colours, by using CSS will be discussed later.

External Link:

Establish link with an external web page in known as external linking. It is made possible by providing the URL of the external file in the HREF attribute of <A> tag of the current page.

Illustration 11.21: An HTML code to demonstrate Linking with an external website/ webpage

```
<html>
<head>
<title> Links </title>
</head>
<body>
        <h1 align=center>
                Welcome to <br>
                <A href = "http://www.tnscert.org">
                State Council of Educational Research and Training, Tamilnadu </A>
        </h1>
</body>
</html>
```

Illustration 11.22: An HTML code to demonstrate Linking with multiple pages: <! Master.htm >

```
<html>
<head>
<title> Linking two pages </title>
</head>
<body>
        <h2> Applications of OpenOffice </h2>
                <ul>
                        <LI> <A href=writer.htm> OpenOffice Writer </A>
                        <LI> <A href=calc.htm> OpenOffice Calc </A>
                        <LI> <A href=impress.htm> OpenOffice Impress </A>
                        </ul>
</body>
</html>
```

<! Writer.htm>

```
<html>
<head>
<title> OpenOffice Writer </title>
</head>
<body>
<h2> OpenOffice Writer </h2>
<p> Writer has everything you would expect from a modern, fully equipped word processor. </p>
<p> It is simple enough for a quick memo, yet powerful enough to create complete books with contents, diagrams, indexes, etc. You're free to concentrate on your ideas while Writer makes them look great. </p>
<A href=master.htm> Back to Home </A>
</body>
</html>
```

<! calc.htm>

```
<html>
<head>
<title> OpenOffice Calc </title>
</head>
<body>
<h2> OpenOffice Calc </h2>
<p> Calc is the spreadsheet application you've always wanted.
Newcomers find it intuitive and easy to learn; professional data miners and number crunchers will appreciate the comprehensive range of advanced functions. </p>
<p> DataPilot is an advanced technology that makes it easy to pull in raw data from corporate databases; cross-tabulate, summarize, and convert it into meaningful information. </p>
<A href=master.htm> Back to Home </A>
</body>
</html>
```

<! Impress.htm>

```
<html>
<head>
<title> OpenOffice Impress</title>
</head>
<body>
<h2> OpenOffice Impress </h2>
<p> Impress is a truly outstanding tool for creating effective multimedia presentations.
Your presentations will stand out with 2D and 3D clip art, special effects, animation, and high-impact drawing tools.</p>
<A href=master.htm> Back to Home </A>
</body>
</html>
```

Points to Remember:

- <b>, <i>, <u> are the tags to make the text as bold, italic and underline. These tags are otherwise known as "Physical Style" tags.
- Highlighting is an important formatting feature is used to call attention to the reader. The <mark> tag is used to highlight the text in HTML.
- The <sub> and <sup> tags are used to create subscript and superscripts respectively.
- The <font> tag is used to change the style, size and color of text.
- A font is a named set of certain style of character and number.
- The <hr> (Horizontal Rules) tag, which is known as "Thematic Breaks" separate sections of an HTML document visually.
- Table is grid of rows and columns.
- The tables were officially introduced with HTML 3.2.
- There are five core tags are used to create a table in HTML.
- HTML supports three types of lists viz. numbered, unnumbered and definition. These lists are called as Ordered List, Unordered List and Definition List respectively.
- Link is an important feature of HTML to connect web resources. Link in HTML is used to create hyperlinks to web content.
- Hyperlinks are considered either Internal or External links depends on their target.

Workshop:

1. Write an HTML code for a webpage of your school with the following specifications:

   o A heading followed by a paragraph about your school in 10 lines using text formatting tags and attributes.

   o Include an ordered list with the subjects taught your school.

2. Write an HTML code for a webpage of your district with the following details and features:

   o A heading followed by a paragraph of 15 sentences about the district using text formatting tags and attributes.

   o A list of the tourist places in the district. (Use Unordered list)

3. Write an HTML code to show the following table in a webpage:

Students studying Computer Subjects				
SN	School	No. of Students		
		Comp. Science	Comp. Application	Comp. Technology
1	Govt. HSS, M.K.B. Nagar, Chennai 39	25	62	--
2	Chennai G HSS, M.H. Road, Chennai 11	123	141	87
3	Dr. GMTTV HSS, Amman Koil St., Chennai 79	45	76	23
4	Chennai G HSS, Rotler St, Chennai 112	18	63	43
5	Chennai B HSS, G.Koil St., Chennai 84	31	52	15

4. Write HTML codes to create four web pages about Population of Tamilnadu with the following description.

   o In main page write about "Population" (Refer XI Economics text book, Page No: 228-229. Para 11.5) and create list with the following terms:

   o "Density", "Urbanisation" and "Sex ratio".

   o Write separate pages for "Density", "Urbanisation" and "Sex ratio" (For contents, refer XI Economics text book, Page No: 229. Para 11.5.1, 11.5.2 and 11.5.3).

   o In main page, create link with respective pages to the list items.

Evaluation

Part – I

Choose the correct answer:

1. Which of the following tags are called as physical style tags?
   (A) <html>, <b>,
  B) <b>,
, <u>
   (C) <A>, <b>, <i> (D) <b>, <i>, <u>

2. Which feature is used to call attention to the reader?
   (A) Highlight (B) Bold (C) Italics (D) Underline

3. The tags <sub> and <sup> used for:
   (A) Subject and Super (B) Subscript and Super
   (C) Subject and Superscript (D) Subscript and Superscript

4. A named set of certain style of character and number is:
   (A) Style (B) Character (C) Font (D) List

5. Pick odd one from the list
   (A) <tr> (B) <th> (C) <dh> (D) <td>

6. Match the following:

(a) tfoot	-	(1) Order list
(b) start	-	(2) Hyperlink
(c) href	-	(3) Highlight
(d) mark	-	(4) Table

	(a)	(b)	(c)	(d)
(A)	4	1	2	3
(B)	1	4	3	2
(C)	4	3	2	1
(D)	1	2	4	3

7. Definition list has how many parts?
   (A) 5 (B) 4 (C) 3 (D) 2

8. A list block can be defined inside another list is:

   (A) Inner List (B) Nested List (C) Outer List (D) Listing List

9. Read the following statement and choose the correct statement(s):
   (I) Link in HTML is used to create hyperlinks to web content.
   (II) HREF is abbreviated as Hypertext Markup File
   (A) I is correct (B) II is correct
   (C) I and II is correct (D) Both are wrong

10. To create internal link, which of the following attribute should be used?
    (A) link (B) name (C) local (D) Inter

Part – II

Answer to the following questions (2 Marks):

1. Write a short note on (i) (ii)
2. What is the use of <mark> tag?
3. Write the following equation as HTML notation:

   Pd = 25 – Q2

4. Write about any two attributes of font tag.
5. What is thematic break?
6. What is pixel?
7. What are the types of list in HTML?
8. How will you define numbered list?

Part – III

Answer to the following questions (3 Marks):

1. Write an HTML code to display the following text in exactly the same way as given below.

   I am studying Computer Science Application.

2. Briefly explain the attributes of <hr> tag.
3. What are the core tags used to create table in HTML?
4. Write an HTML code to provide hyperlink to https://www.w3schools.com

5. Difference between <UL> and <OL> tags.

6. Write HTML code to produce the following table:

<table>
<tr><td rowspan="2">A</td><td>B</td></tr>
<tr><td>C</td></tr>
</table>

Part – IV

Answer to the following questions (5 Marks):

1. Write an HTML code the show the following text:

MODERN ATOMIC THEORY

The findings of modern atomic theory are given as follows:

- An atom is the smallest particle which takes part in chemical reaction.
- An atom is considered to be a divisible particle.
- The atoms of the same element may not be similar in all respects.
  eg: Isotopes ($_{17}Cl^{35}$, $_{17}Cl^{37}$)
- The atoms of different elements may be similar in some respects.
  eg. Isobars ($_{18}Ar^{40,}$ $_{20}Ca^{40}$)

2. Explain the attributes used with <table> tag in HTML.

3. Explain the types of list with suitable HTML code.

4. What is Link and explain the types of links.

5. Write HTML code to create the following table:

<table>
<tr><td rowspan="3">A</td><td colspan="4">B</td></tr>
<tr><td>C</td><td>D</td><td>E</td><td rowspan="2">G</td></tr>
<tr><td colspan="3">F</td></tr>
</table>

GLOSSARY

Text Formatting	–	*Showing text with different style and colour.*
Font	–	*Named set of certain style of character and numbers.*
Table	–	*A Structure of rows and columns or grid of cells.*
Cell	–	*An individual box in a table.*
Border	–	*A line surrounded by cells.*
Column	–	*Vertical structure of a table.*
Row	–	*Horizontal structure of a table.*
Ordered List	–	*Indents lists having numbers or letters in front of every list item.*
Unordered List	–	*Indents lists having a bullet symbol in front of every list item.*
Definition List	–	*Lists showing definition terms and definition descriptions.*
Link	–	*Make connection with a part of content of same document or an external document.*
Hyperlink	–	*A link from a hypertext document.*
Internal Link	–	*Connecting with another part of the same document.*
Local Link	–	*Internal Link*
External Link	–	*Connection with another hypertext document.*

References:

1. Mastering HTML, CSS & JavaScript Web Publishing – Laura Lemay, Rafe Colburn, Jennifer Kyrnin – BPB Publications.
2. Informatics Practices, A text book for CBSE class XII – Sumita Arora – Dhanpat Rai & Co.
3. Computer Application (Commerce) – Text book of XII – Department of Education – SCERT, Kerala.
4. https://www.w3schools.com/html/default.asp

CHAPTER 12

HTML - Adding multimedia elements and Forms

Learning Objectives:

The students will learn the following:

- How to insert images with HTML document.
- How to insert music and movies in web pages.
- What is Forms and how to create forms and controls within an HTML document

12.1 Inserting Images

Images are essential element to make an HTML presentation as more attractive manner. Moreover images are used to depict many complex concepts in simple way. To make more attractive and communicative web pages, images should be added in the appropriate places.

Images displayed on the web page should be converted to universally supported format. Most of the browsers supports, GIF, JPEG and PNG images formats. HTML-5 introduces SVG images. One format of image can be converted to another format by using Image editing applications such as Photoshop, Picasa, GIMP etc.,

12.1.1 Familiar Image Formats

GIF (Graphical Interchange Format)

This format is one of the popular format for animated images. It was developed by CompuServe. Usually this image format is suitable for presenting tiny animated images, logos, icons, line art etc., It is not suitable for photographic work, because it uses maximum of 256 colours. Animated GIF do not support sound or playback control.

JPEG (Joint Photographic Experts Group)

JPEG is the most popular image format supported by all web browsers. This format is suitable for photographic images. Unlike GIF, JPEG can include any number of colours.

PNG (Portable Network Graphics)

PNG is designed as a replacement for GIF. It is also supported by all browsers.

SVG (Scalable Vector Graphics)

SVG is a graphics format that was developed for web. It was standardized by World Wide Web Consortium (W3C) in 2001. All current web browsers supports basic features of SVG.

12.1.2 Inserting Images with HTML document

The **<IMG>** tag along with the attribute src (Source) is used to add images in HTML document.

General format:

<img src = image_name_with_extension>

(OR)

<img src = URL>

Example:

<img src = image1.gif>

Src attribute is the main attribute used to specify the file name of the image to be inserted. If the image is not in the current working folder, the image file name should clearly specify with the path of the file or URL, where the file is available.

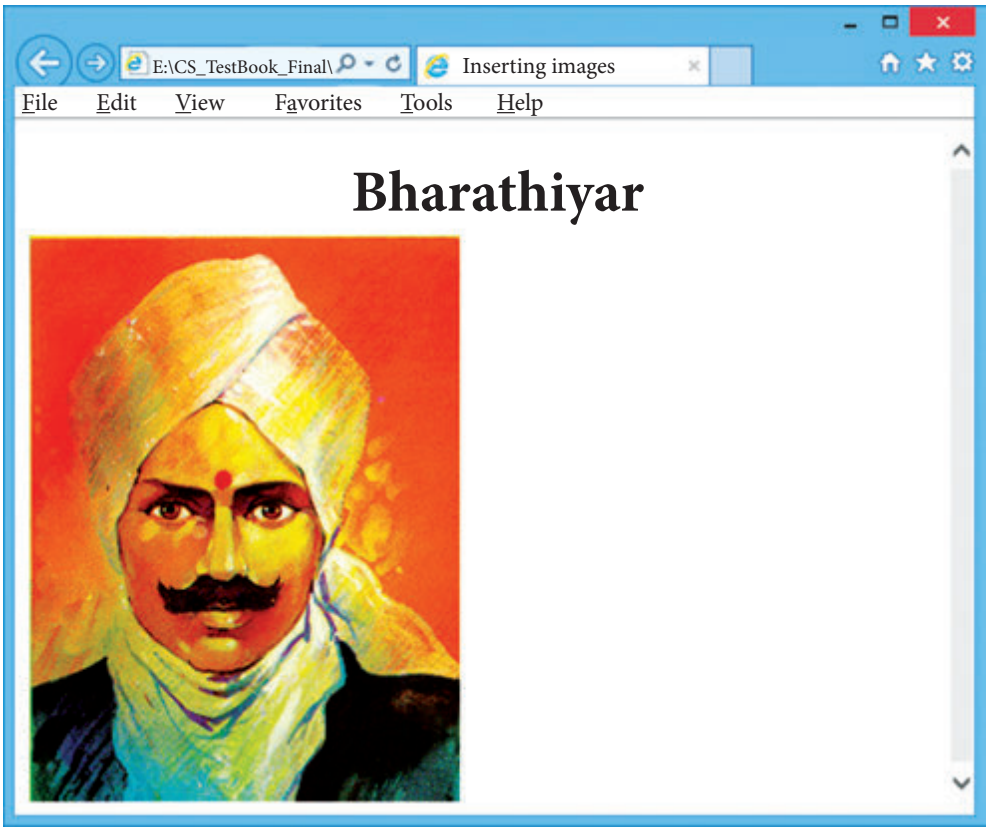
Example:

<img src = "D:\images\animals\cat.jpeg">

Illustration 12.1: An HTML code to insert an inline image

```
<html>
<head>
<title> Inserting Images </title>
</head>
<body>
        <h1 align = center> Bharathiyar </h1>
        <img src = bharathiyar.gif>
</body>
</html>
```

The output will be:



12.1.3 Other Attributes of <img> tag:

Other than src, the <img> tag has many attributes the enable to control how the image is presented on the page.

Alt (Alternative Text)

The alt attribute within <img> tag is used to describe the image, so that some text is conveyed even when the image cannot be displayed.

Example:

<img src = bharathiyar.gif alt = "National Poet of India">

Width and **Height**:

Width and **Height** attributes are used to set the width and height of an image. The values of these attributes should be either pixels or percentage of its actual size. If these attributes are not specified, the browser displays the image in its original size.

Vspace (Vertical Space) and **Hspace** (Horizontal Space):

Vspace and Hspace attributes are used to set Vertical and Horizontal space between the images.

Illustration 12.2: An HTML code to demonstrate <img> attributes

```
<html>
<head>
<title> Inserting Images </title>
</head>
<body>
<h1 align = center> Mahakavi Bharathi </h1>
<img src = bharathiyar.gif alt = "National Poet of India" Width = 20%  Height = 25%
vpace = 20  Hspace = 20>
<img src = bharathiyar.gif alt = "National Poet of India" Width = 20%  Height = 25%
vpace = 20  Hspace = 20>
<img src = bharathiyar.gif alt = "National Poet of India" Width = 20%  Height = 25%
vpace = 20  Hspace = 20> <br>
<img src = bharathiyar.gif alt = "National Poet of India" Width = 20%  Height = 25%
vpace = 20  Hspace = 20>
<img src = bharathiyar.gif alt = "National Poet of India" Width = 20%  Height = 25%
vpace = 20  Hspace = 20>
<img src = bharathiyar.gif alt = "National Poet of India" Width = 20%  Height = 25%
vpace = 20  Hspace = 20> <br>
</body>
</html>
```

The output will be:

Align:

The align attribute used to aligns the image with respect to the base line of the text. This attribute has the following values.

- Bottom – Aligns the bottom of the image with the baseline of the text. This is the default setting.
- Middle – Aligns the middle of the image with the baseline of the text.
- Top – Aligns the top of the image with the baseline of the text.

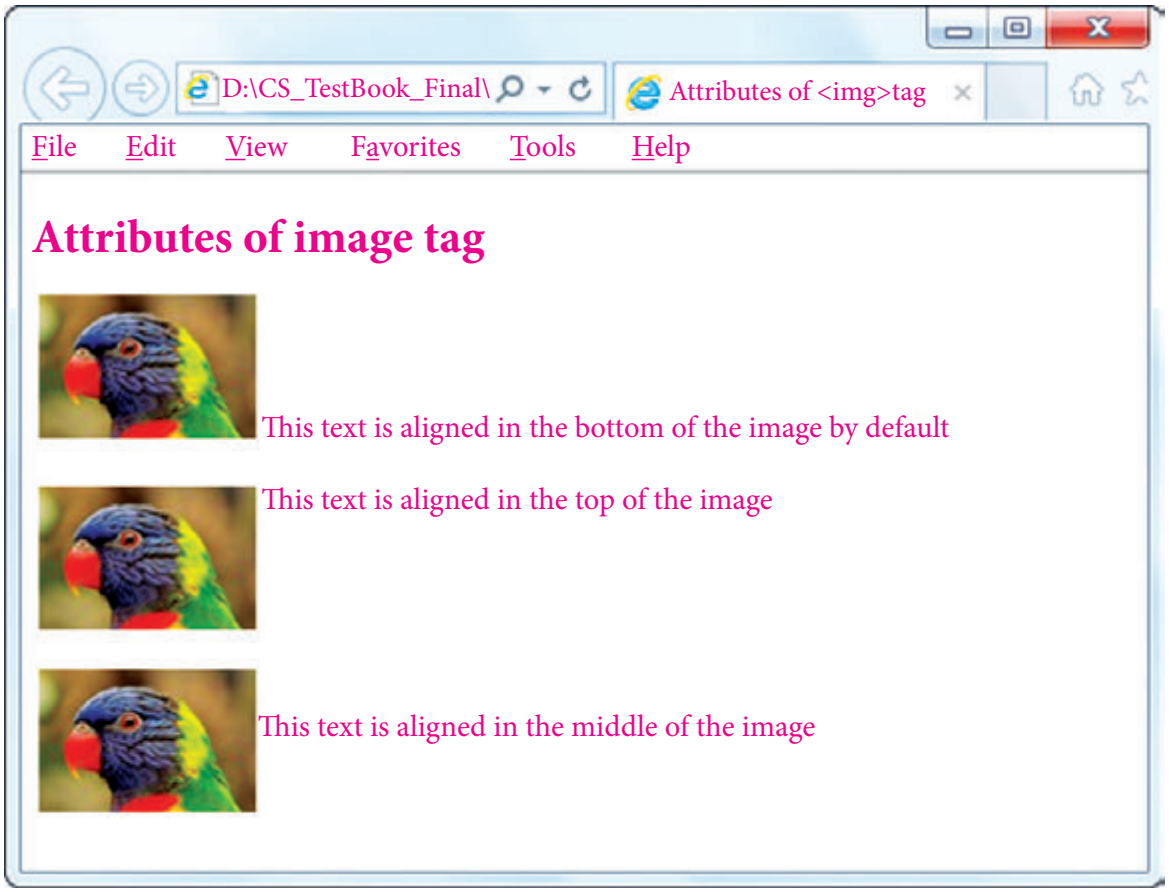
Left and Right values of Align attribute:

Using left and right values with align attribute, displayed the image on the left and right side of the text.

Illustration 12.3: An HTML code to demonstrate baseline of text

```
<html>
<head>
        <title> Attributes of <img> tag </title>
</head>
<body>
<h2> Attributes of image tag </h2>
        <img src="D:\Images\Bird.jpg" alt="Parrot Image">
        This text is aligned in the bottom of the image by default  <br> <br> <br>
        <img src="D:\Images\Bird.jpg" alt="Parrot Image" align=top>
        This text is aligned in the top of the image <br><br>
        <img src="D:\Images\Bird.jpg" alt="Parrot Image" align=middle>
        This text is aligned on the middle of the image
</body>
</html>
```

The output will be:



12.2 Scrolling text using <Marquee>

In HTML, a piece of text or image can be moved horizontally or vertically by using <marquee> tag. This feature makes a web page as more attractive.

General format:

<marquee> Text or image to be scroll </marquee>

Attributes of <marquee>

Height and Width

These attributes are used to set height and width of the marquee. The values should be either in pixels or in percentage of browser window.

Direction

This is used to specify the direction of the movement of text or image. The text or image will move towards right to left by default. So, the default direction is left. The Possible values are 'up', 'down', 'left' or 'right'.

Behaviour:

This attribute is used to specify the type of scrolling. The values are 'scroll', 'slide' and 'alternate'.

Scrolldelay:

This attribute is used to define the time delay between each jump. The time unit should be in seconds.

Scrollamount:

This is used to define the speed of the scroll.

Loop:

This is for defining how many times the marquee element should repeat on the screen. The default value is 'infinite', which means the marquee element scrolls endlessly.

Bgcolor:

This is used to specify the background color to the marquee elements.

Hspace and Vspace:

This is for defining the horizontal and vertical space around the marquee. The value can be in pixels or percentage.

Illustration 12.4: An HTML code to demonstrate marquee

```
<html>
<head>
<title> Marquee </title>
</head>
<body>
    <marquee> <b> The Government of Tamilnadu </b>, Directorate of School Education </marquee>
    <marquee direction=right> Welcome to <b> The State Council of Educational Research and Training </b>, Tamilnadu </marquee>
</body>
</html>
```

12.3 Adding Video and Sound

Video and Sound are the core part of the modern web pages. In HTML, a video or audio content may be included as Inline or external data. The inline refers to audio or video files are handled as part of the page. These media files play the audio or video when the page is visible in the browser window. The external refers, linking external audio or video files as url.

The **<embed>** tag is used to attach an audio or video file easily within webpage. This tag includes the controls of the multimedia automatically in the browser. The **<noembed>** tag may be used as an alternate to display some other media file, in the case of the browser does not support <embed> tag.

Src is the primary attribute used with <embed> tag. The src attribute used to specify the name of the media file with its source location. Other attributes such as alt, height, width and align are used as it is used with <img>.

General Format:

<embed src = audio / video file name with location> </embed>

Illustration 12.5: An HTML code to demonstrate adding audio and video files (internal source)

```
<html>
<head>
<title> Adding Multimedi Files </title>
</head>
<body>
<img src="D:\Images\TN_Logo.png" alt="Govt. of Tamilnadu Logo" height=25% width=15%>
<marquee> Welcome to <b> The State Council of Educational Research and Traning </b>, Tamilnadu </marquee>
<embed src="D:\CS_Videos\CS_Video.mp4" width=50% height=50%> </embed>
</body>
</html>
```

The output will be:

12.3.1 Background music:

Music can be played in the background to a webpage, while the page is viewed. This is known as 'inline' sound or movie. The <bgsound> tag is used to attach an inline sound file in HTML. The src attribute is used to define the location of the media file. Volume attribute used to adjust volume control. The loop attribute defines the duration of play. The 'infinite' value causes the audio play as long as the page is in view.

General Format:

<bgsound src=music file name with location>

Illustration 12.6: An HTML code to demonstrate inline sound

```
<html>
<head>
<title> Inline Sound </title>
</head>
<body>
    <img src="D:\Images\TN_Logo.png" alt="Govt. of Tamilnadu Logo" height=25%
    width=15%>
    <marquee> Welcome to <b> The State Council of Educational Research and
    Training </b>, Tamilnadu </marquee>
    <bgsound src="D:\CS_Videos\Tamil Thai Vazhthu.mp3" loop=infinite>
</body>
</html>
```

12.4 Working with Forms

Forms are used to receive information from the user. Forms are commonly used to allow users to register on a Web site, to log in to a Web site, to order a product, and to send feedback. In search engines, forms are used to accept the keywords for search.

The <form> tag is used to create a form. An HTML from starts with <form> and ends with </form> tag. Forms contain many types of form elements, such as text boxes, radio buttons, check boxes, buttons and drop-down lists.

The form has a special element, which is **submit** button, which will submit the entries of a form to a server application to process the entries. Each element in the form is assigned a name using the **name** attribute. Users enter values into the text boxes, or make selections from the radio buttons, check boxes, and drop down lists. The values they enter or select are passed with the name of the corresponding form element to the Web server.

12.4.1 Attributes frequently used with <form> tag

The important attributes used with the <form> tag are method and action attributes.

Method

The method attribute of the **form** tag is used to identify how the form element names and values will be sent to the server. The **get** method will append the names of the form elements and their values to the URL. The **post** method will send the names and values of the form elements as packets.

Action

The **action** attribute identifies the server side program or script that will process the form. The action will be the name of a Common Gateway Interface (CGI) program written in programming languages like Perl, JavaScript, PHP or Active Server Pages (ASP). (This will be discussed with JavaScript in this book).

General Format of <form> tag

<Form method=get/post action= "back_end_server_script">

Form elements

</Form>

12.4.2 Form Controls:

In HTML, there are different types of form controls are used to collect data. They are Text box, Password, Checkbox, Radio buttons, Text area, Select box, Submit and Reset Button.

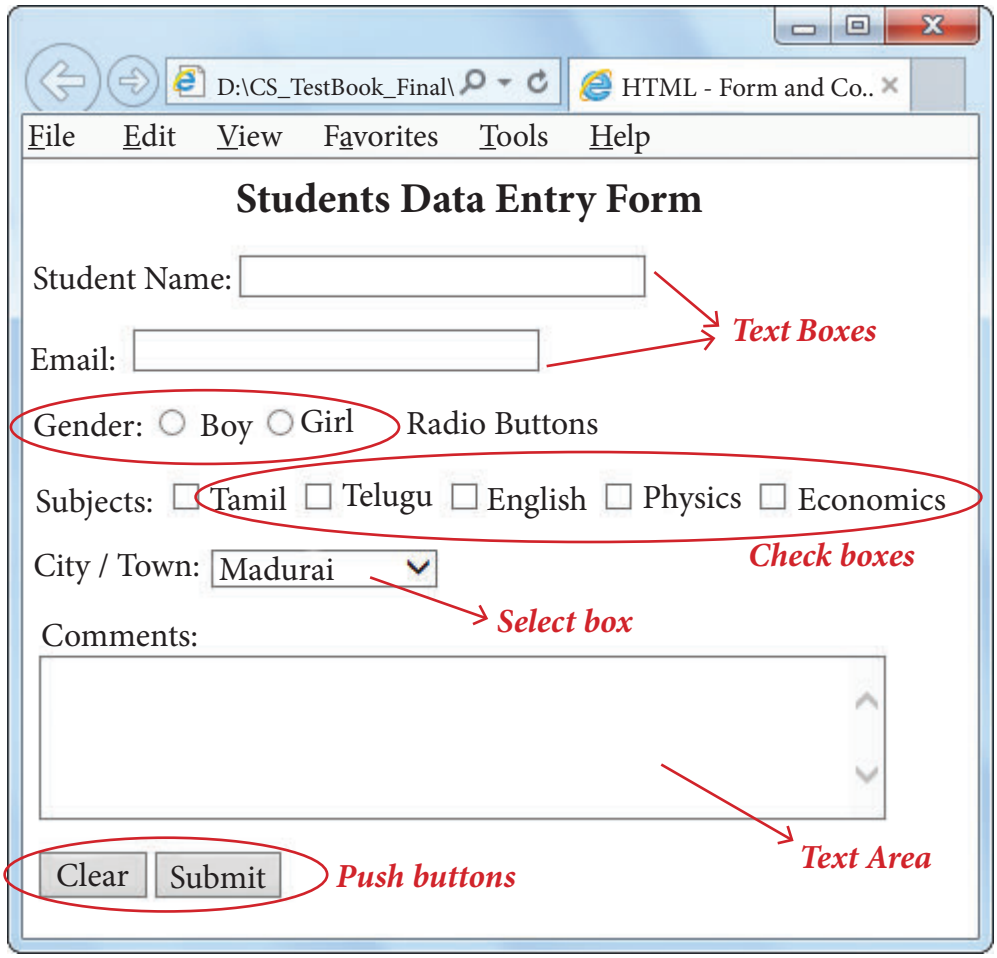


Figure 12.1 HTML Form Controls

12.4.2.1 <Input> Tag

Most of the form controls are created by using <input> tag. The <input> is an empty tag used to create different form elements or controls such as text box, radio buttons so on.

Attributes of <input> tag:

Type:

This attribute is used define the type of control to be created by <input> tag. The values of type attribute is listed below:

Table: 12.1

Value of type attribute	Description
Text	Create a Text Box. The element used to get all kind of text input such as name, address etc.,
Password	Similar as Text box. But, while entering data, the characters are appearing as coded symbols such as asterisk.
Checkbox	Check box is an element appearing like a small square box. When the user click on the square a tiny tick mark will appear inside the square. This element is used to select multiple options.
Radio Button	Radio button is used to select any one of the multiple options from the list. This element looks like a small circle, when the user select an item, a tiny dot will appear within the circle. If the user selects another option, previously selected option will be deselected. This means, user can select any one of the given option form a group.
Reset	It is a special command button used to clear all the entries made in the form.
Submit	It is also a special command button used to submit all the entries made in the form to the backend server.
Button	This is a standard graphical button on the form used to call functions on click.

Name:

This attribute of <input> tag is used to assign a name to the input controls. When the form is submitted, the data values are passed to the server along with the names of the controls.

Value:

This attribute is used to define default value to some controls.

Size:

This is used to set the width of the input text in terms of characters. It is applicable only for textbox and password boxes.

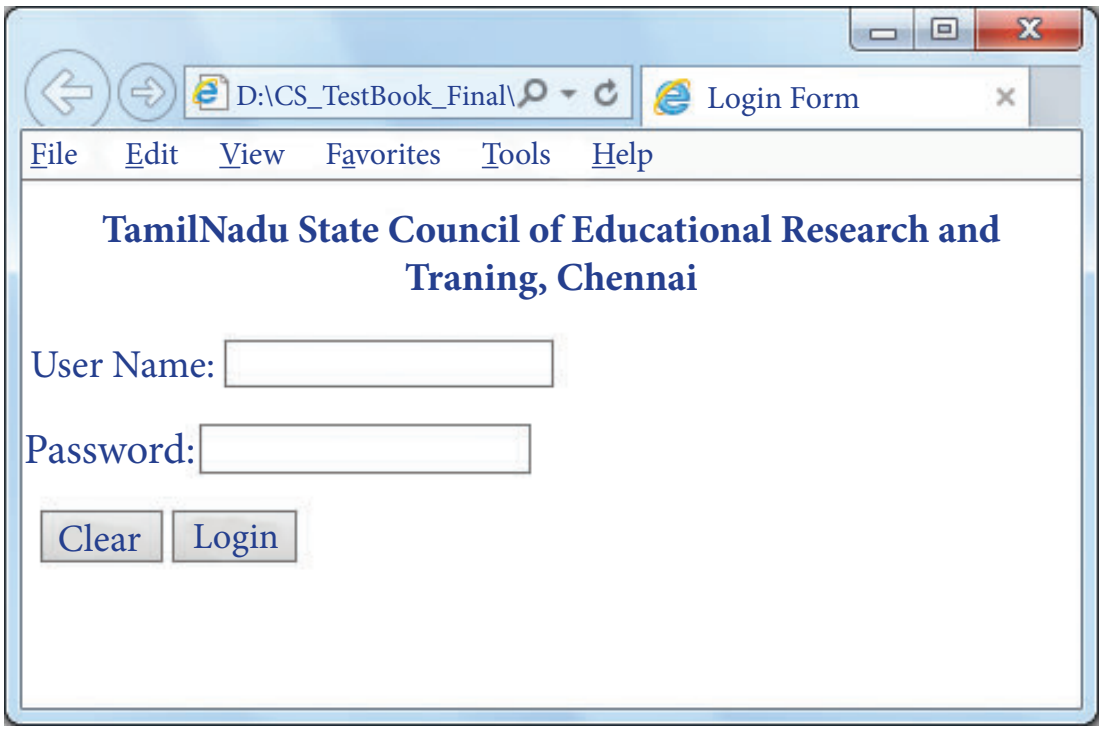
Maxlength:

This attribute of <input> tag is used to set the length of the input character (number of characters to be inputted) to the textbox and password boxes.

Illustration 12.7: An HTML code to demonstrate Form and Form controls (Login form)

```
<html>
<head>
        <title> Login Form </title>
<body>
<h3 align=center> TamilNadu State Council of Educational Research and Training, Chennai </h3>
<Form Action = "mailto:abcd.xyz@com" method=post>
        <p> User Name:
        <Input type = text  name="user_name"  size = 20  maxlength = 15> </p>
        <p> Password:
        <Input type = password  name="pass"  size = 20  maxlength = 15> </p>
        <Input type = reset  value = "Clear">
        <Input type = submit  value = "Login">
</Form>
</body>
</html>
```

The output will be:

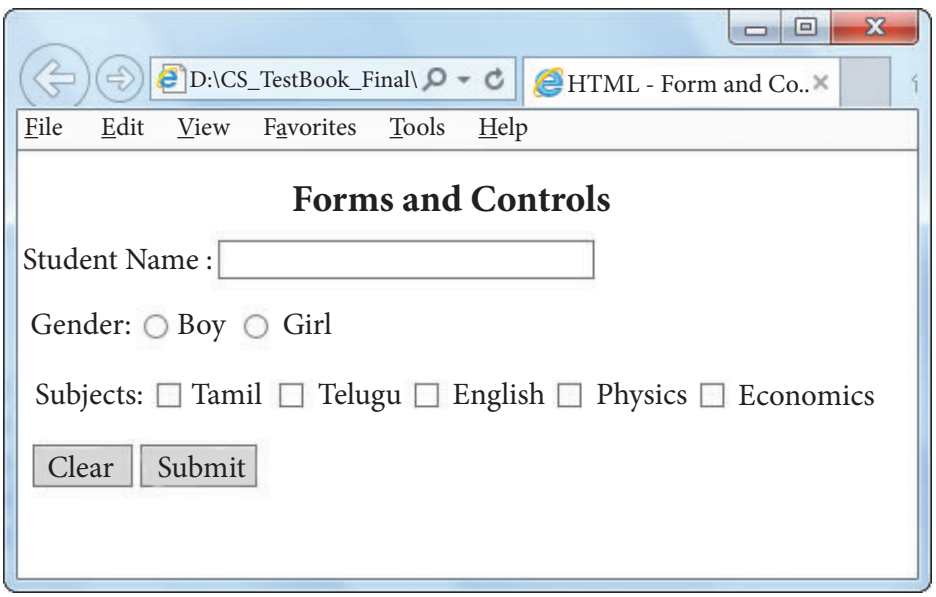


Note: Data received from the user can send to receiver through mail using "mailto" action.

Illustration 12.8: An HTML code to demonstrate Form and Form controls (Text box, checkbox and radio buttons)

```
<html>
<head>
        <title> HTML - Form and Controls </title>
</head>
<body>
<h3 align=center> Forms and Controls </h3>
<Form action="mailto:abcd.xyz@com" method=post>
        <p> Student Name:
        <Input type=text  name=name size=30  maxlength=25></p>
        <p> Gender:
<input type=radio  name=gender  value=boy> Boy
        <input type=radio  name=gender  value=girl> Girl
        </p>
        <p> Subjects:
        <input type=checkbox  name=sub  value=Tam> Tamil
        <input type=checkbox  name=sub  value=Tel> Telugu
        <input type=checkbox  name=sub  value=Eng> English
        <input type=checkbox  name=sub  value=Phy> Physics
        <input type=checkbox  name=sub  value=Eco> Economics
        </p>
        <input type=reset  name=reset  value="Clear">
        <input type=submit  name=submit  value="Submit">
</Form>
</body>
</html>
```

The output will be:



12.4.2.2 <Select> Tag

The <select> tag is used to create dropdown list box in HTML. It provides a list of various options as a dropdown list. This element is more helpful when a number of options are to be displayed in a limited space. The <option> tag is used to specify list items.

Attributes of <Select> tag:

Name – Provide the name to the control, which is sent to the server.

Size – Determine the style of dropdown list box.

Size = 1 dropdown list box

Size = 2 List box

Multiple – Allows user to select multiple values.

Attributes of <Option> tag:

Selected – Indicate default selection

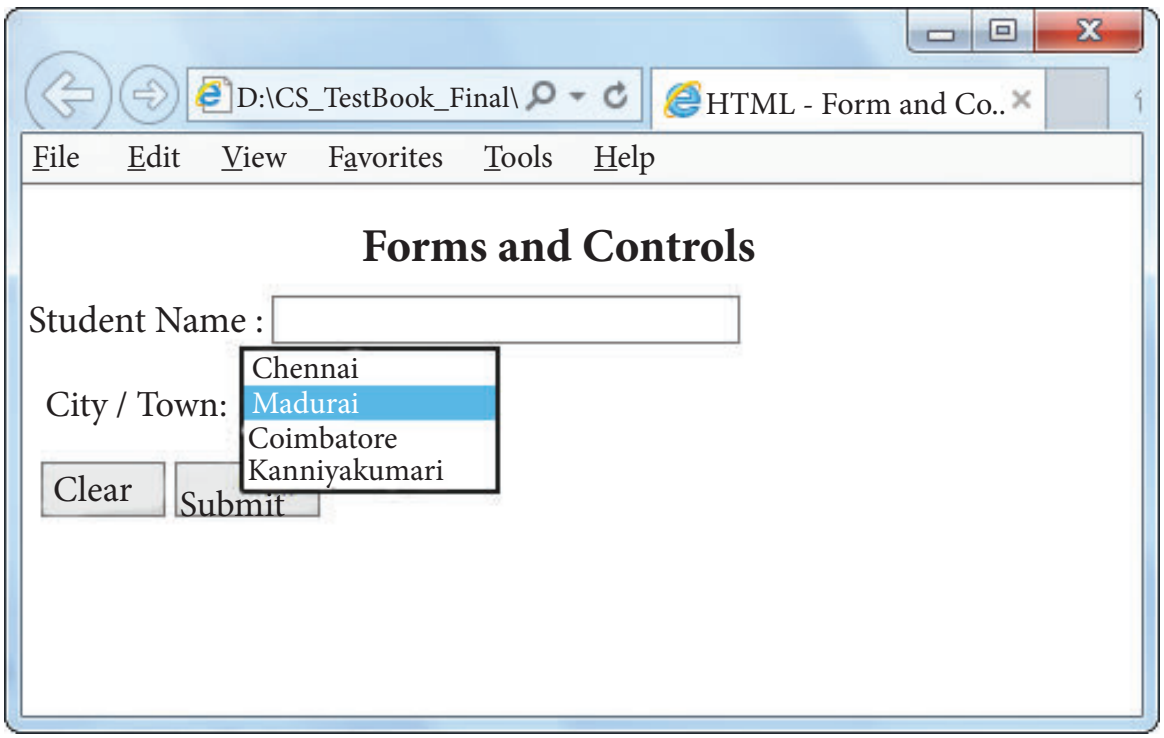
Value – Value to be submitted to server

Illustration 12.9: An HTML code to demonstrate Form and Form controls (Dropdown List box)

```
<html>
<head>
        <title> HTML - Form and Controls </title>
</head>
<body>
<h3 align=center> Forms and Controls </h3>
<Form action="mailto:abcd.xyz@com" method=post>
<p> Student Name:
<Input type=text  name=name size=30  maxlength=25></p>
<p> City / Town:
```

```
<Select name = area  size= 1>
        <option value = CHN> Chennai </option>
        <option value = MDR selected> Madurai </option>
        <option value = CBO> Coimbatore </option>
        <option value = KKM> Kanyakumari </option>
</Select> </p>
<input type=reset name=reset value="Clear">
<input type=submit name=submit value="Submit">
</Form>
</body>
</html>
```

The output will be



12.4.2.3 <Textarea> tag

The <Textarea> tag used to receive multi line text data as input. It is a container tag. The main attributes of <Textarea> are

Name – Used to define name to the control

Rows – Specifies the number of rows in the text area control

Cols – Specifies the number of columns in the text area. (number of characters in a line)

Illustration 12.10: An HTML code to demonstrate Form and Form controls (Text Area – Multiline input)

```
<html>
<head>
        <title> HTML - Form and Controls </title>
</head>
<body>
<h3 align=center> Forms and Controls </h3>
<Form action="mailto:abcd.xyz@com" method=post>
        <p> Student Name:
        <Input type=text  name=name size=30  maxlength=25></p>
        <p> Email:
        <input type=text name=mail size=30 maxlength=25> </p>
        <p> Comments: <br>
        <Textarea rows=5  cols=50  name=comments> </Textarea>
        </p>
        <input type=reset name=reset  value="Clear">
        <input type=submit  name=submit  value="Submit">
</Form>
</body>
</html>
```

The output will be:

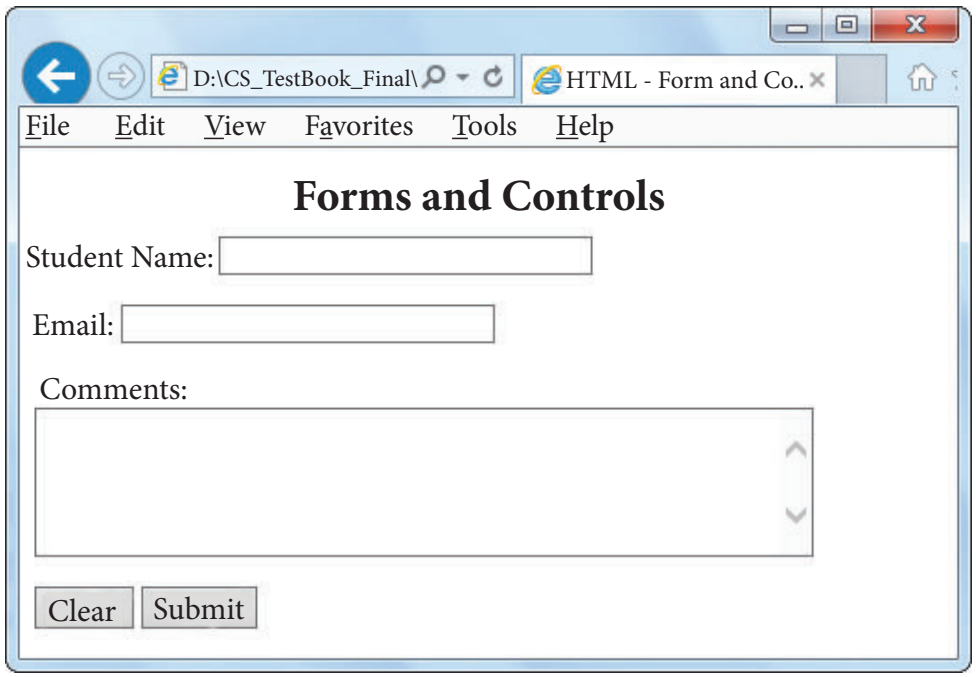
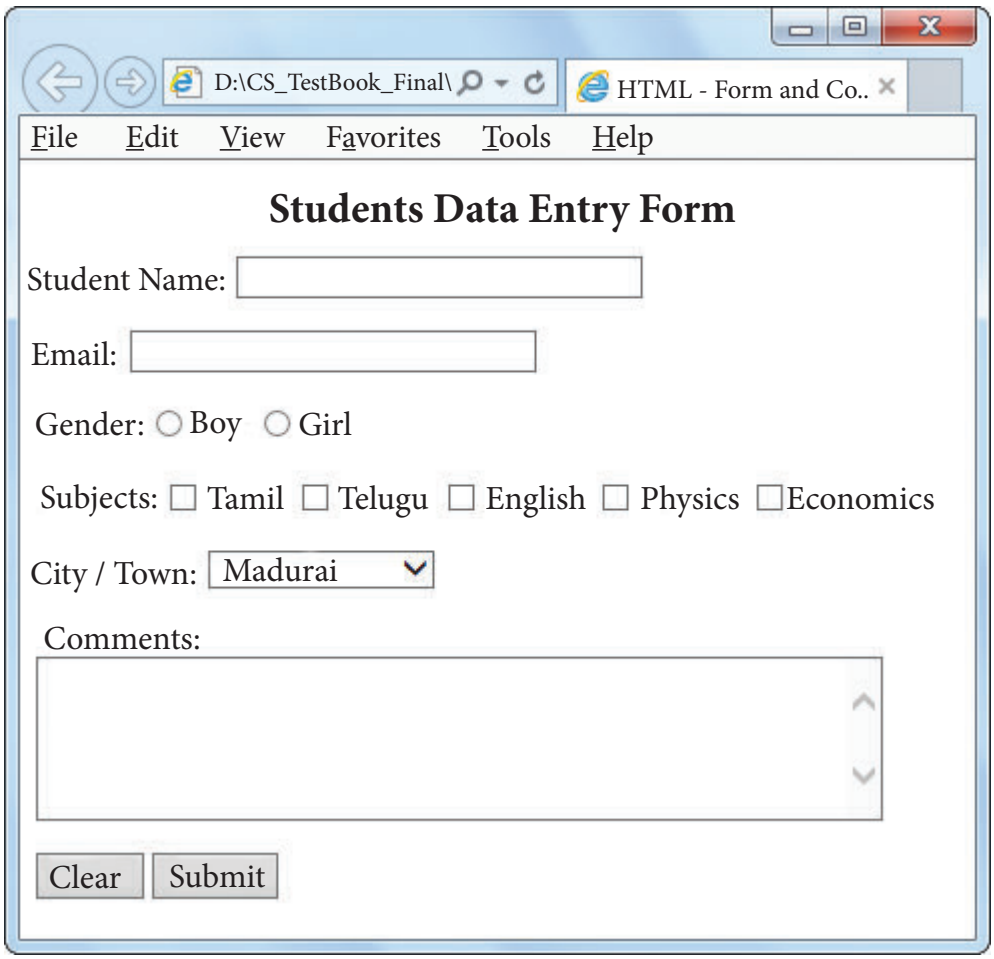


Illustration 12.11: An HTML code to demonstrate All Form controls discussed in this chapter

```
<html>
<head>
        <title> HTML - Form and Controls </title>
</head>
<body>
<h3 align=center> Students Data Entry Form </h3>
<Form action="mailto:abcd.xyz@com" method=post>
<p> Student Name:
<Input type=text  name=name size=30  maxlength=25></p>
<p> Email:
<input type=text name=mail size=30 maxlength=25> </p>
<p> Gender:
<input type=radio  name=gender  value=boy> Boy
<input type=radio  name=gender  value=girl> Girl
</p>
<p> Subjects:
<input type=checkbox  name=sub  value=Tam> Tamil
<input type=checkbox  name=sub  value=Tel> Telugu
<input type=checkbox  name=sub  value=Eng> English
<input type=checkbox  name=sub  value=Phy> Physics
<input type=checkbox  name=sub  value=Eco> Economics
</p>
<p> City / Town:
<Select name = area>
        <option value = CHN> Chennai </option>
        <option value = MDR selected> Madurai </option>
        <option value = CBO> Coimbatore </option>
        <option value = KKM> Kanyakumari </option>
```

```
</Select> </p>
<p> Comments: <br>
<Textarea rows=5  cols=50  name=comments> </Textarea>
</p>
<input type=reset  name=reset  value="Clear">
<input type=submit  name=submit  value="Submit">
</Form>
</body>
</html>
```

The output will be:

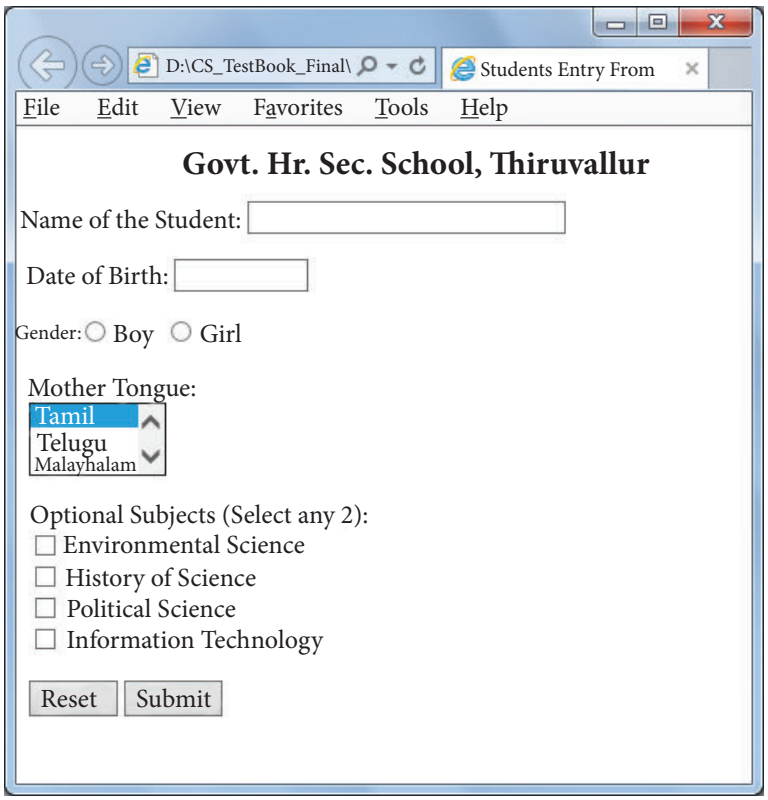


Points to Remember:

- Images are essential element to make an HTML presentation as more attractive manner.
- Most of the browsers supports, GIF, JPEG and PNG images formats.
- The <IMG> tag along with the attribute src (Source) is used to add images in HTML document.
- In HTML, a piece of text or image can be move horizontally or vertically by using <marquee> tag.
- In HTML, a video or audio content may be included as Inline or external data.
- The <embed> tag is used to attach an audio or video file easily within webpage.
- Music can be played in the background to a webpage, while the page is viewed.
- The <bgsound> tag is used to attach an inline sound file in HTML.
- Forms are used to receive information from the user.
- An HTML from starts with <form> and ends with </form> tag.
- Most of the form controls are created by using <input> tag.
- The <select> tag is used to create dropdown list box in HTML.
- The <Textarea> tag used to receive multi line text data as input.

Workshop:

1. Write an HTML code insert Image, Music and Video elements
2. Write an HTML code to display an application for as shown below:



Evaluation

FM3465

Part – I

Choose the correct answer:

1. Which image format was standardize by W3C?
   (A) JPEG (B) SVG (C) GIF (D) PNG

2. The tag used to insert an image in HTML:
   (A) Image (B) Picture (C) Img (D) Pic

3. In HTML, a piece of text or image can be moved horizontally or vertically by using:
   (A) <marquee> (B) <img> (C) <embed> (D) <text>

4. Inline sound can be inserted using which of the following tag?
   (A) <inline> (B) <backgroundsound> (C) <bgsound> (D) <sound>

5. Which value causes the audio play as long as the page is in view?
   (A) Stop (B) Never Stop (C) Continue (D) Infinite

6. The important attributes used with the <form> tag are
   (A) method and action (B) name and size
   (C) post and get (D) type and name

7. The tag is used to create dropdown list box in HTML is:
   (A) <dropdown> (B) <select> (C) <listbox> (D) <input>

8. Match the following:

(a) <textarea>	-	(1) inline
(b) <input>	-	(2) Video
(c) <bgsound>	-	(3) Multiline input
(d) <embed>	-	(4) Password

	(a)	(b)	(c)	(d)
(A)	3	1	4	2
(B)	3	4	1	2
(C)	2	3	4	1
(D)	2	1	3	4

Part – II

Answer to the following questions (2 Marks):

1. List out the popular image formats.
2. Write down the general format of marquee
3. What is inline sound or movie?
4. What is the purpose of <input> tag?
5. Which tag is used to specify the list of items in dropdown list box?
6. What are the major attributes are available in <textarea> tag?

Part – III

Answer to the following questions (3 Marks):

1. Write a short note on familiar images format.
2. How will you scroll the text in HTML?
3. Explain the main attributes used with <form> tag.
4. Explain the values of <input> tag's type attribute.
5. Explain the attributes of <select> and <option> tags.

Case study:

Create a website of your own interest which includes all the features learned from these chapters for your school

GLOSSARY

GIF	*Graphical Interchange Format.*
JPEG	*Joint Photographic Experts Group.*
PNG	*Portable Network Graphics.*
SVG	*Scalable Vector Graphics.*
Photoshop	*Familiar Photo editing tool developed by adobe.*
Picasa	*Free image organizer and editing tool developed by Lifescape.*
GIMP	*Open source image editing tool.*
HTML 5	*Latest version of HTML authorized by w3c*
W3C	*The World Wide Web Consortium; an International standards organization for the www.*

References:

1. Mastering HTML, CSS & JavaScript Web Publishing – Laura Lemay, Rafe Colburn, Jennifer Kyrnin – BPB Publications.

2. Informatics Practices, A text book for CBSE class XII – Sumita Arora – Dhanpat Rai & Co.

3. Computer Application (Commerce) – Text book of XII – Department of Education – SCERT, Kerala.

4. https://www.w3schools.com/html/default.asp

CHAPTER 13

CSS - Cascading Style Sheets

Learning Objectives:

After learning this chapter, the student will be able to

- Understand the uses of CSS
- How to create separate CSS Files to format various elements of HTML
- How to use a CSS file in HTML 9.1 Necessity of Internet

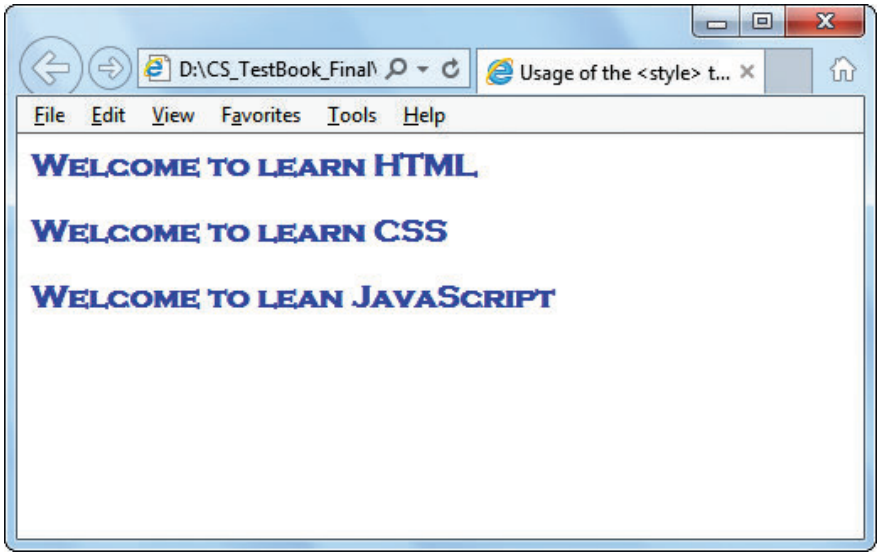
Introduction:

In the previous chapters we discussed about the variety of HTML tags and the attributes to design a webpage. As you already know about the formatting tags and its attributes, in some situations, you may need to use a tag uniformly in the entire document. To do so, we can use <style> tag. A style tag is used to change the default characteristics of a particular tag inthe entire web document wherever that tag is used.

For example, if you want to display **<h3>** tag in a particular font style and size with blue colour in the entire page,You can use **<style>** tag to define its properties in head section as follows.

```
<html>
<head>
<title> Usage of the <style> tag </title>
<style>
        h3
        { color:blue;
        font-family: "Copperplate Gothic Bold";
        font-size:14pt; }
</style>
</head>
<body>
<h3> Welcome to learn HTML </h3>
<h3> Welcome to learn CSS </h3>
<h3> Welcome to lean JavaScript </h3>
</body>
<html>
```

In the above code segment, the style of **<h3>** header tag is clearly defined. So, hereafter, the content between **<h3>** and **</h3>** will be displayed as per its definition.The output of the above code is shown as below:



The **<style>** tag controls the presentation styles of a particular HTML document. If you want to use a particular tag with the same style applied in one HTML document to another is not possible. Thus, the <style> tags are called as **"Page-Level Styles"** or "**Internal Style sheets".**

The "Internal Style sheet" is defined and implemented only within an HTML document. If you want use the same style to multiple pages, you should define styles as a separate style file. These separate style files are known as **"Sitewide Style sheets" or "External Style Sheets".** Professional web developers do not use internal styles.

There is another style method called **"Inline style"** ,which is used to define style for a particular tag anywhere in an HTML document. You can define styles for any tag within an HTML document. But it is applicable only on that line where it is defined . If you use the same tag, again in the same document, it does not reflect the new style.

In this chapter, we are going to discuss about External Style Sheets or Sitewide Style Sheets that is about CSS.

Sitewide Style Sheets:

Cascading Style Sheets (CSS) are also called as Sitewide Style sheets or external style. CSS is a style sheet language used for describing the formatting of a document written in HTML. Using CSS, you can control the font colour, font style, spacing between pages, columns size, border colour, background image or colour and various other effects in a web page. In external styles, you can store all style information in a separate file and include it in your web pages using an HTML tag. The separate file should be saved with the extension .css

Advantages of CSS

Maintainability -CSS are also defined and stored as separate files. So, the style and appearance of a web page can be dynamically changed and maintain with less effort.

Reusability - The styles defined in CSS can be reused in multiple HTML pages.

Easy to understand - The tags in web pages are well organized with style specifications and therefore it is easy to understand.

HakonWium Lie

CSS was invented by **HakonWium Lie** on October ,10 1994 and maintained through a group of people within the W3C called the CSS Working Group.

CSS – Style definition rules

The body of the style sheet consists of a series of rules.

Selector	Declaration
HTML Tag	{ Properties : Values; }

CSS style declaration consists of two major parts; Selector and Declaration. The Selector refers an HTML tag in which you want to apply styles. The Declaration is a block of code contains style definition. It should be surrounded by curly braces. You can include any number of properties for each selector, and they must be separated by semicolons. The property name and its value should be separated by a colon. Each declaration should be terminated by a semicolon (;).

Example:

Selector	Declaration of properties and values
P	{ Font-size : 16pt; color : red; font-weight : bold; }

In the above example, the style properties are defined to **<p>** tag. Hereafter, whenever you use the <p>, the contents will be displayed with modified properties. If you want to use the above style definition as an internal style then it should be specified within **<style> ..... ,</style>** block in head section. If you want store the above definition for using all your web pages, you should save the above code as a separate file with extension .css

CSS – Frequently using Text formatting Properties and Values

Table: 13.1

Formatting	Properties	Values	Example

Text Colour	Color	Predefined_Color_Name	P
			{
			color:pink;
			}
			H1
			{
			color : MediumSeaGreen;
			}

Text Alignment	Text-align	Center / Left / Right / Justify	P
			{
			Text-align : center;
			}

Font type	Font-family	Font_name	P
			{
			Font-family : “Times New Roman”;
			}

Font Style	Font-style	Normal / Italic	P
			{
			Font-family : “Times New Roman”;
			Font-style : Italic;
			}

Font Style (Bold)	Font-weight	Normal / Bold	P
			{
			Font-family : “Times New Roman”;
			Font-style : Italic;
			Font-weight : bold;
			}

Font size	Font-size	Size in pixels	P
			{
			Font-family : “Times New Roman”;
			Font-style : Italic;
			Font-size : 14px;
			}

Background Colour	Background Colour	Predefined_Color_Name	Body
			{
			background-color : violet;
			}

Border Colour	Border	Border thickness <space> border style <space>Predefined_ borderColor_Name	H2 { border : 2px solid red; }
HTML supports nearly 140 color names.			

Formatting	Properties	Values	Example

Background Image	Background-image	URL (“image name with extension”)	Body
			{
			background-image : url (**“Flower.gif”**);
			}

	Background-repeat	norepeat	Body
			{
			background-image : url (**“Flower.gif”**);
			background-repeat : norepeat;
			}

	Background-position	Direction	Body
			{
			background-image : url (**“Flower.gif”**);
			background-repeat : norepeat;
			background-position : right top;
			}

Paragraph Margin	Margin-top
	Margin-bottom
	Margin-left
	Margin-right
		Margin size in pixels	P
			{
			Margin-top : 50px;
			Margin-left : 50px;
			}

Creating CSS style sheets:

- Open an empty **notepad.**
- Type the style properties and their values as given in the table given above.
- Save the file with extension **.css**

Illustration 13.1 My First CSS file

```
P {
font-style : Italic;
color :MediumSeaGreen;
}
H1
{
border:2px solid red;
}
```

The above code should be saved with extension .css

Linking CSS with HTML

The **<link>** tag is used to add CSS file with HTML in head section. While using **<link>** tag, the following attributes are also included along with standard values.

rel = "stylesheet"

type = "text/css"

The href attribute is used to link the .css file.

General format of <Link> tag

<Link rel = "stylesheet" type = "text/css" href = CSS_File_Name_with_Extension>

Illustration 13.2 Formatting HTML element through CSS

Mystyle.css

```
H1
{
        font-family : "Comic Sans MS";
        Font-weight : Bold;
        border:2px solid blue;
}
P {
        font-style : Italic;
        color :MediumSeaGreen;
}
```

--- CSS_Test.htm ---

```
<html>
<head>
<title> Demonstration of using CSS </title>
<link rel="stylesheet" type="text/css" href="mystyle.css">
</head>
<body>
<H1> Welcome to CSS </H1>
<P>
    CSS was invented by HakonWium Lie on October 10, 1994 and maintained through
    a group of people within the W3C called the CSS Working Group. The CSS Working
    Group creates documents called specifications. When a specification has been
    discussed and officially ratified by W3C members, it becomes a recommendation.
</P>
<body>
<html>
```

Output will be:

Illustration 13.3 Changing background color of browser using CSS

--- Back_Color.css ---

```
body
{
  background-color : pink;
}
```

--- Background_CSS.htm ---

```
<html>
        <head>
                <title> Changing Background using CSS </title>
                <link rel = "stylesheet"  type="text/css"  href="Body_Color.css">
        </head>
        <body>
                <H1> Welcome to CSS </H1>
        </body>
</html>
```

CSS Comments

Many times, you may need to put additional comments in your style sheet blocks. So, it is very easy to comment any part in style sheet. You can simplyput your comments inside **/*.....this is a comment in style sheet.....*/.**

CSS - Workshop

- Develop a web page about your school with CSS.
- Develop a web page describing about your district. Use CSS to format HTML structural tags.

Points to Remember:

- The <style> tag controls the presentation styles of a particular HTML document.
- The <style> tags are called as "Page-Level Styles" or "Internal Style sheets".
- Professional web developers do not use internal styles.
- The separate style files are known as "Sitewide Style sheets" or "External Style Sheets" or CSS
- CSS is easy to learn and understand but it provides powerful control over the presentation of an HTML document.
- Most commonly, CSS is combined with the markup languages HTML or XHTML.
- There is another style method called "Inline style" which is used to define style for a particular tag anywhere in an HTML document.
- Electronic governance or e-governance is the application of information and communication technology (ICT) for delivering government services.

Evaluation

FMKV9F

Part – I

Choose the correct answer:

1. Expansion of CSS

   (A) Cascading Style Schools (B) Cascading Style Scheme

   (C) Cascading Style Sheets (D) Cascading Style Shares

2. Which of the following is the page level style?

   (A) <Page> (B) <Style> (C) <Link> (D) <H>

3. CSS is also called as:

   (A) Sitewide Style Sheets (B) Internal Style Sheets

   (C) Inline Style Sheets (D) Internal Inline Sheets

4. The extension of CSS file is

   (A) .ssc (B) .css (C) .csc (D) .htm

5. What is selector?

   (A) Property (B) Value (C) HTML tag (D) name

6. The Declaration block of CSS is surrounded by

   (A) ( ) (B) [ ] (C) { } (D) <>

7. The declaration should be terminated by

   (A) : (B) ; (C) . (D) ,

8. What is the property to set text as bold?

   (A) Font-Style (B) Font-Weight (C) Font-Property (D) Font-Bold

9. Which of the following indicates that the text included is a comment ?

   (A) /* */ (B) !* *! (C) <* *> (D) * *\

10. Which of the following ways below is correct to write a CSS?

    (A) p{color:red; text-align:center}; (B) p {color:red; text-align:center}

    (C) p {color:red; text-align:center;} (D) p (color:red;text-align:center;)

Part – II

Answer to the following questions (2 Marks):

1. What is the use of <style> tag?
2. What is CSS?
3. Write the general format of linking CSS with HTML.
4. What is Inline Style?
5. Write down general format of CSS declaration.

Part – III

Answer to the following questions (3 Marks):

1. What are the advantages of using CSS?
2. Write a short note on rule of CSS.
3. Write a CSS file to define text color and alignment to <p> tag.
4. Write a CSS file to define font type, style and size to <h1> tag.

Part – IV

Answer to the following questions (5 Marks):

1. Write an HTML document to display the following paragraph as per the given description Using CSS:
   - Font Name : Cooper Black
   - Style : Bold Italics
   - Color : Blue

   "The State Institute of Education (SIE) was established in 1965 to provide for systematic study of problems relating to School Education under the administration of Directorate of School Education."
2. List and explain the Font and text element properties and values used CSS.

Style Sheet	-	A separate file contains the style of appearance.
Selector	-	An HTML element
Property	-	Attribute of an HTML tag
Link	-	Connecting with another file

References:

- Mastering HTML, CSS & JavaScript Web Publishing – Laura Lemay, Rafe Colburn, Jennifer Kyrnin – BPB Publications.
- Informatics Practices, A text book for CBSE class XII – SumitaArora – DhanpatRai& Co.
- Computer Application (Commerce) – Text book of XII – Department of Education – SCERT, Kerala.
- https://www.w3schools.com/html/default.asp

Introduction to JavaScript

Learning Objectives:

- To understand about JavaScript Language and advantages of JavaScript
- To understand the importance of Client side code, Steps to follow to JavaScript Programs.
- To understand JavaScript Variables, Declaring Variables and Rules for naming Variables – Scope of Variables and assigning values to variables.
- To develop the skills of Web page development using HTML and CSS
- To acquire the skills of web scripting using JavaScript
- To develop the skills of Internet and Online applications

14.1 Introduction to JavaScript:

On December 4, 1995, Netscape and Sun Inc. jointly introduced JavaScript 1.0. JavaScript had truly bridged the gap between the simple world of HTML and the more complex Common Gateway Interface (CGI) programs on the Server. It provides a common scripting language for Web developers to design, test and deploy Internet Applications.

The JavaScript client-side technology provides many advantages over traditional CGI Server-side scripts. For example, JavaScript code can be used to check if the user has entered a valid e-mail address in a form field. The JavaScript code is executed when the user click **Submit** button in the form, and only if all the entries are valid, they would be submitted to the Web Server.

14.2 Advantages of JavaScript Programming Language

- In HTML chapter we have learnt how to develop static web pages. But in real life web pages must be interactive. So to develop such interactive pages (Dynamic Web page) JavaScript programming language is used.
- User entered data in the Dynamic Web page can be validated before sending it to the server. This saves server traffic, which means less load on your server.

- JavaScript includes such items as Textboxes, Buttons, drag-and-drop components and sliders to give a Rich Interface to site visitors. For example Creating a New email account in any service provider.

14.3 Using JavaScript in HTML page with <script> tag :

JavaScript can be implemented using <script>... </script> tags. The <script> tag containing JavaScript can be placed anywhere within in the web page, but it is normally recommended that should be kept it within the <head> tags. The <script> tag alerts the browser program to start interpreting all the text between these tags as a script commands.

The syntax of JavaScript segment in Hyper Text Markup Language (HTML) or Dynamic Hyper Text Markup Language (DHTML) is as follows:

<script language="javascript" type="text/javascript">

JavaScript code

</script>

The <SCRIPT> tag takes two important attributes –

Language – This attribute specifies that the scripting language. Typically, its value will be **javascript**. Although recent versions of HTML (EXtensible HyperText Markup Language - XHTML, its successor) have phased out the use of this attribute is optional.

Type – This attribute is used to indicate the scripting language and its value should be set to "text/javascript".

14.3.1 Steps to follow to code JavaScript Language

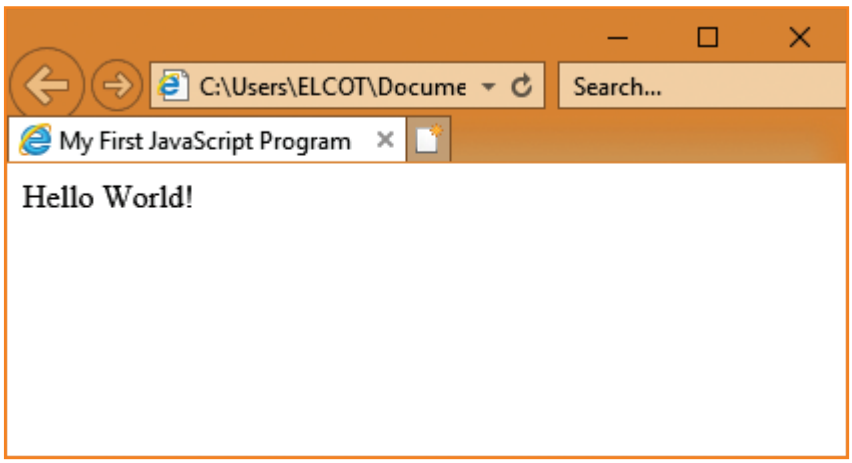
- Enter HTML and JavaScript code using any text editor.
- Save the latest version of this code.
- Use any browser to see the result. For example : Internet Explorer, Google Crome, etc.,
- If this is a new document, open the file via browser's **Open Menu.** If the document is already loaded in the Memory, to reload the file into the browser use **"Refresh"** or press **F5** button.

14.3.2 First JavaScript Program

Illustration 14.1 Simple JavaScript Program

```
<Html>
        <Head>
        <Title>My First JavaScript Program</Title>
        <script language="javascript" type="text/javascript">
        document.write("Hello World!")
</script>
</Head>
<Body>
</Body>
</Html>
```

Output:



14.4 Lexical Structure of a JavaScript Program

The lexical structure of a programming language is the set of elementary rules that specifies how to write programs in that language. It is the lowest-level syntax of a language. The Lexical structure specifies variable names, the delimiter characters for comments, and how one program statement is separated from the next.

- Though JavaScript is a case-sensitive language. It is good programming practice to type the command in lowercase.
- JavaScript ignores spaces that appear between tokens (identifiers, operators, punctuator, constants and keywords) in programs.

- JavaScript supports two styles of comments. Any text follow a "//" and the end of a line is treated as a single line comment and is ignored by JavaScript. Any text between the characters " /* */" is also treated as a multiline comment.

- JavaScript uses the semicolon (;) to separate statements. Many JavaScript programmers use semicolons to explicitly mark the ends of statements.

- A literal is a data value for variable that appears directly in a program.

- An identifier is simply a name. In JavaScript, identifiers are used to name variables, functions and to provide labels for certain loops in JavaScript code.

- In JavaScript certain **keywords** are used as reserved words, These words cannot used as identifiers in the programs

14.5 JavaScript Variables:

Variable is a memory location where value can be stored. Variable is a symbolic name for a value. Variables are declared with the **var** keyword in JavaScript. Every variable has a name, called identifier.

14.5.1 Basic Data types and Declaring variables:

Every variable has a data type that indicates what kind of data the variable holds. The basic data types in JavaScript are Strings, Numbers, and Booleans.

- A **string** is a list of characters, and a string literal is indicated by enclosing the characters in single or double quotes. Strings may contain a single character or multiple characters, including whitespace and special characters such as **\n** (the newline).

- **Numbers** can be integer or floating-point numerical value and numeric literals are specified in the natural way.

- **Boolean** can be any one of two values: **true** or **false**. Boolean literals are indicated by using true or false directly in the source code.

Variables are declared in JavaScript using var keyword that allocates storage space for new data and indicates to the interpreter that a new identifier is in use. Declaring a variable in JavaScript as follows:

```
var no;
var no1,no2;
```

The **var no;** statement tells the interpreter that a new variable **no** is about to be used and **var no1,no2**; tells the interpreter that **no1** and **no2** are variables.

14.5.2 Rules for naming variable

1. The first character must be a letter or an underscore (_). Number cannot be as the first character.

2. The rest of the variable name can include any letter, any number, or the underscore. You can't use any other characters, including spaces, symbols, and punctuation marks.

3. JavaScript variable names are case sensitive. That is, a variable named **RegisterNumber** is treated as an entirely different variable than one named **registernumber.**

4. There is no limit to the length of the variable name.

5. JavaScript's reserved words cannot be used as a variable name. All programming languages have a supply of words that are used internally by the language and that cannot be used for variable names.

14.5.3 Scope of variables

The scope of a variable is the life time of a variable of source code in which it is defined.

- A global variable has global scope; it can be defined everywhere in the JavaScript code.

- Variables declared within a function are defined only within the body of the function. They are local variables and have local scope.

14.5.4 Assigning values to variables

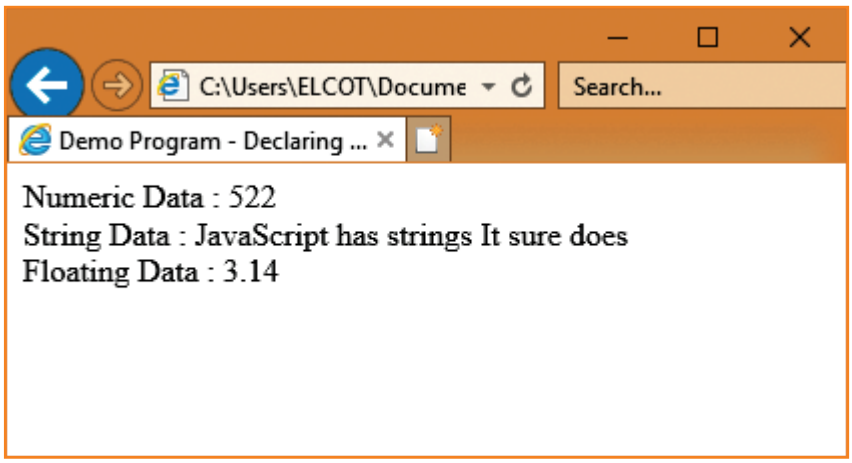
Variables can be assigned initial values when they are declared as follows:

```
var numericData1 = 522;

var stringData = "JavaScript has strings\n It sure does";

var numericData = 3.14;

var booleanData = true;
```

Illustration 14.2 Declaring Variables

```
<Html>
<Head>
        <Title>Demo Program - Declaring Variables in JavaScript </Title>
        </Head>
        <Body>
        <script language="javascript" type="text/javascript">
        var numericData1 = 522;
        var stringData = " JavaScript has strings\n It sure does";
        var numericData = 3.14;
        var booleanData = true;
        document.write("Numeric Data : "+numericData1);
        document.write("<br> String  Data   :  "+stringData);
        document.write("<br> Floating  Data : "+numericData);
        </script>
        </Body>
</Html>
```

Output



In addition, multiple variables can be declared with one **var** statement, if the variables are separated by commas:

var no1=50, no2=5065;

JavaScript allows the implicit declaration of variables by using them on the left-hand side of an assignment. In JavaScript there is no need to indicate data type during variable

declarations. JavaScript variables are untyped and it is dynamically datatyped which means initially you can assign a value of any data type to a variable and later you can assign a value of different data type to the same variable. For example:

var value=100;

var value=”JavaScript”;

14.5.5 JavaScript Literals

A literal is a fixed value given to a variable in source code. Literals are often used to initialize variables. Values may be Integer, Floating point, Character, String and Boolean. For Example,

var int_const=250; //Integer constant//

var float_const=250.85; //Floating point constant//

var char_const=’A’; //Character constant//

var string_const=”Raman”; //String constant//

var boolean_const=true; //Boolean constant//

write statement:

General Syntax:

document write ("string " + var);

14.5.6 Type casting in JavaScript.

Type conversion is the act of converting one data type into a different data type which is also called as casting. In JavaScript there are two type of **casting,**

- Implicit casting and
- Explicit casting

Implicit casting occurs automatically in JavaScript when you change the data stored in a variable:

14.6 JavaScript Operators and Expressions

An operator combines the values of its operands in some way and evaluates to a new value. Operators are used for JavaScript’s arithmetic expressions, comparison expressions, logical expressions, assignment expressions.

An expression is a phrase of JavaScript that a JavaScript interpreter can evaluate to produce a value. The data types are used directly as literals or within variables in combination with simple operators, such as addition, subtraction, and so on, to create an expressions. An expression is a code fragment that can be evaluated to some data type the language supports. An expression is simply one or more variables and/or constants joined by operators. An expression is evaluated and produces a result. The result of all expressions may be either an integer or floating-point value or Boolean value. There are three types of expressions as follows,

- Arithmetic expressions
- Relational expressions
- Logical expressions

14.6.1 Arithmetic Operators

JavaScript supports all the basic arithmetic operators like addition (+), subtraction (–), multiplication (*), division (/), and modulus (%, also known as the remainder operator).

Table: 14.1 – Arithmetic Operators

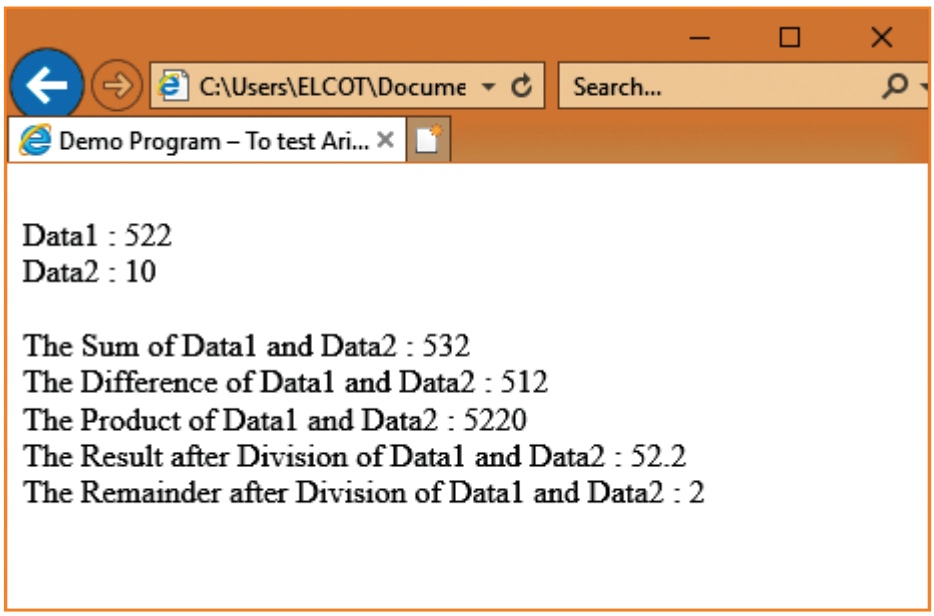
Arithmetic Operator	Meaning	Example	Result
+	Addition	var sum = 20 + 120	Variable sum = 140
-	Subtraction	var diff = 20 – 120	Variable diff = 100
*	Multiplication	var prod = 10 * 100	Variable prod = 1000
/	Division	var res = 100/522	Variable res = 5.22
%	Modulus operator	var rem = 100 % 522	Variable rem = 22 (remainder)

Illustration 14.3 Using Arithmetic Operators

```
<Html>
<Head>
        <Title>Demo Program – To test Arithmetic Operators in JavaScript
</Title>
</Head>
<Body>
        <script language="javascript" type="text/javascript">
```

```
        var value1 = 522, value2=10;
        document.write("<br>Data1 : "+value1);
        document.write("<br>Data2 : "+value2);
        var sum = value1+value2;
        var diff = value1-value2;
        var prod = value1*value2;
        var res = value1/value2;
        var rem = value1%value2;
        document.write("<br><br>The Sum of Data1 and Data2 : "+sum);
        document.write("<br>The  Difference of Data1 and Data2 : "+diff);
        document.write("<br>The Product of Data1 and Data2 : "+prod);
        document.write("<br>The Result after Division of Data1 and Data2 : "+res);
        document.write("<br>The Remainder after Division of Data1 and Data2 : "+rem);
</script>
</Body>
</Html>
```

Output:



14.6.2 Assignment Operator

An assignment operator is the operator used to assign a new value to a variable. Assignment operator can also be used for logical operations such as bitwise logical operations or operations on integral operands and Boolean operands.

In JavaScript = is an assignment operator, which is used to assign a value to a variable. Often this operator is used to set a variable to a literal value, for example,

var number1=10;

var number2=number1;

var name=”Computer Science”;

var booleanvar=true;

The assignment operator is used to assign a value to a single variable, but it is possible to perform multiple assignments at once by stringing them together with the = operator. For example, the statement

var m = n = z = 25; // sets all three variables to a value of 25//

The assignment operator can also be used to set a variable to hold the value of an expression. For example,

var x = 102 + 5 - 50; // x set to 57 //

JavaScript supports some shorthand arithmetic operators like +=, -=, *=, /= and %= to evaluate arithmetic calculations.

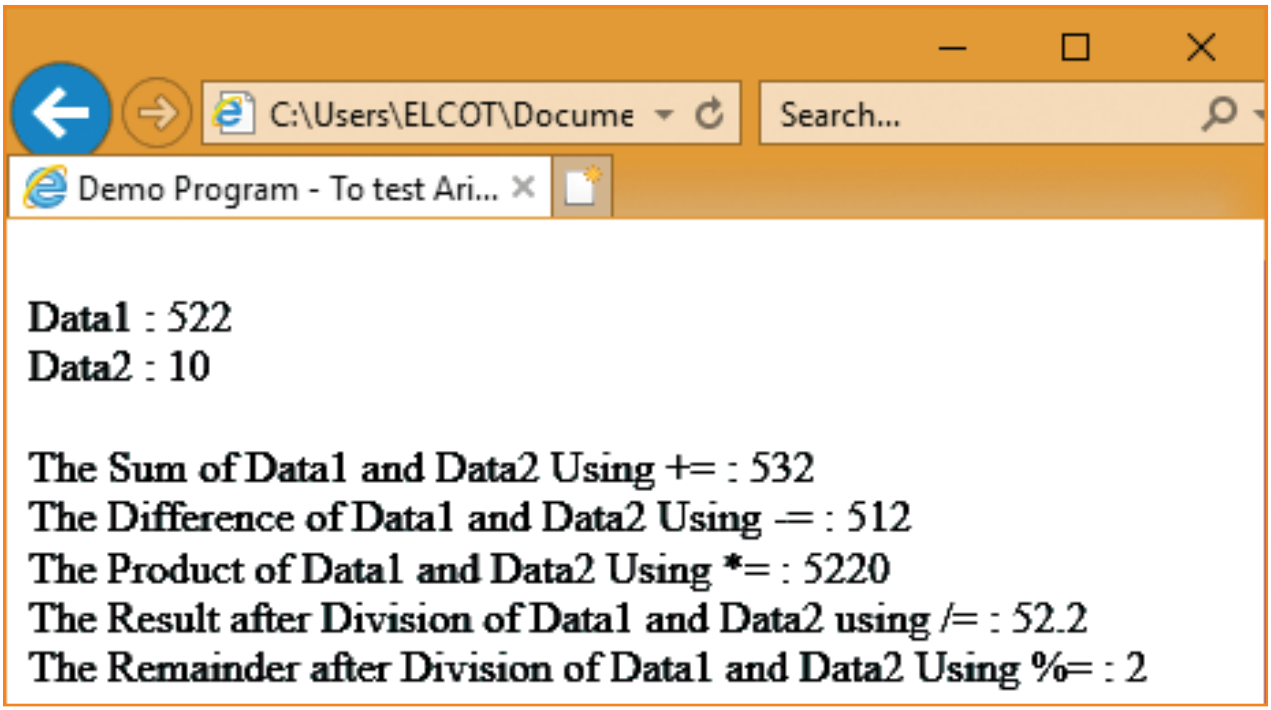
Table: 14.2 Shorthand Arithmetic operators

Shorthand Arithmetic Operator	Meaning	Example	Result
+=	Add and assign	var sum = 120; sum += 20;	Variable sum = 140
-=	Subtract and assign	var diff = 120; diff –= 20;	Variable diff = 100
*=	Multiply and assign	var prod = 100; prod *=10;	Variable prod = 1000
/=	Division	Var res = 522; Res/=100	Variable res = 5.22
%=	Modulus operator	Var rem = 522; rem %= 100	Variable rem = 22 (remainder)

Illustration 14.4 Using Arithmetic Shorthand Operators

```
<Html>
        <Head>
                <Title>Demo Program - To test Arithmetic Shorthand Operators in JavaScript
</Title>
        </Head>
<Html>
        <Head>
                <Title>Demo Program - To test Arithmetic Shorthand Operators in JavaScript
</Title>
        </Head>
<Body>
        <script language="javascript" type="text/javascript">
        var value1 = 522, value2=10;
        document.write("<br>Data1 : "+value1);
        document.write("<br>Data2 : "+value2);
        var sum = value1; sum+=value2;
        var diff = value1; diff-=value2;
        var prod = value1; prod*=value2;
        var res = value1; res/=value2;
        var rem = value1; rem%=value2;
        document.write("<br><br>The Sum of Data1 and Data2 Using += : "+sum);
        document.write("<br>The  Difference of Data1 and Data2 Using -= : "+diff);
        document.write("<br>The Product of Data1 and Data2  Using *= : "+prod);
        document.write("<br>The Result after Division of Data1 and Data2 using /= : "+res);
document.write("<br>The Remainder after Division of Data1 and Data2 Using %= : "+rem);
</script>
</Body>
</Html>
```

Output:



Assignment:

Develop JavaScript code for the following:

1. To find Simple Interest for the given Principle, Number of years and Rate of interest.
2. To find Compund Interest for the given Principle, Number of years and Rate of interest.
3. To find difference between Simple Interest and Compound Interst.

14.6.3 Relational or Comparison Operators:

Relational operators are also called as Comparison operators, they compares two values and the result is true or false. JavaScript provides a rich set of relational operators including == (equal to), != (not equal to), < (less than), > (greater than), <= (less than or equal to), and >= (greater than or equal to). Using a relational operator in an expression causes the expression to evaluate as true if the condition holds or false if otherwise.

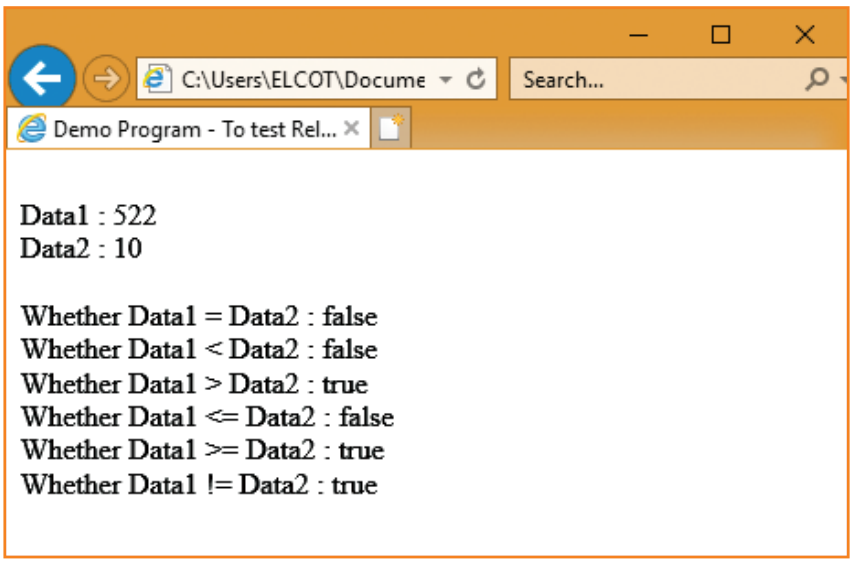
Table: 14.3 Relational or Comparison operators

Relational (Comparison) Operator	Meaning	Example	Result
Assume x=10 and y=20			
==	Equality	x==y	False
!=	In-equality	x!=y	True
<	Less-than	x<y	True
>	Greater-than	x>y	False
<=	Less-than or equal to	x<=y	True
>=	Greater-than or equal to	x>=y	False

Illustration 14.5 Using Relational Operators

```
<Html>
<Head>
<Title>Demo Program - To test Relational(Comparison) Operators in JavaScript </Title>
</Head>
<Body>
        <script language="javascript" type="text/javascript">
        var value1 = 522, value2=10;
        document.write("<br>Data1 : "+value1);
        document.write("<br>Data2 : "+value2);
        document.write("<br><br>Whether Data1 = Data2 : "+(value1==value2));
        document.write("<br>Whether Data1 < Data2 : "+(value1<value2));
        document.write("<br>Whether Data1 > Data2 : "+(value1>value2));
        document.write("<br>Whether Data1 <= Data2 : "+(value1<=value2));
        document.write("<br>Whether Data1 >= Data2 : "+(value1>=value2));
        document.write("<br>Whether Data1 != Data2 : "+(value1!=value2));
        </script>
</Body>
</Html>
```

Output:



14.6.4 Logical Operators:

Logical operators perform logical (boolean) operations. Logical operators combine or invert boolean values. Once comparisons are made, the logical operators && (AND), || (OR) and ! (NOT) can be used to create more complex conditions.

Table: 14.4 Logical or Boolean operators

Logical Operator	Example	Meaning	Result
&&	((4<5) && (10>5)) ((expr1) && (expr2))	(Logical AND) Returns true if expr1 and expr2 both true.	True
||	((4<5) || (10>5)) ((expr1) || (expr2))	(Logical OR) Returns true if either expr1 or expr2 is true, or both are true.	True
!	!(10>5) !(expr1)	(Logical NOT) Returns true if expr1 is false; otherwise, returns false.	False

Usage :

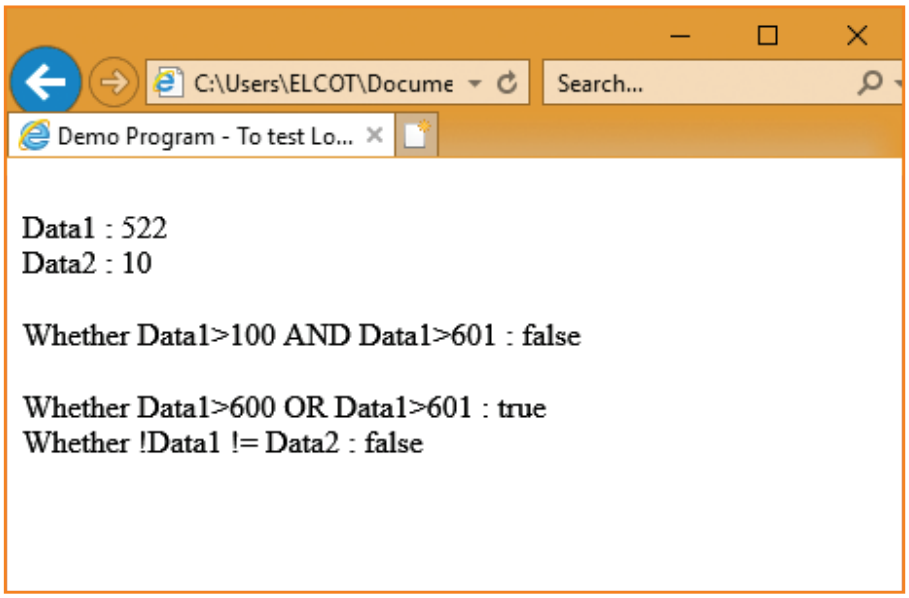
Best practice is to use logical operators on boolean operands. However, operands of any type can be combined. The strict rules are as follows:

- For && (AND) the result is false if the first operand is false; otherwise, the result is the Boolean value of the second operand.
- For || (OR) the result is true if the first operand is true; otherwise, the result is the Boolean value of the second operand.
- For ! (NOT) the result is true if the operand is false; otherwise, the result is true.

Illustration 14.6 Using Logical Operators

```
<Html>
<Head>
        <Title>Demo Program - To test Logical Operators in JavaScript </Title>
</Head>
<Body>
<script language="javascript" type="text/javascript">
        var value1 = 522, value2=10;
        document.write("<br>Data1 : "+value1);
        document.write("<br>Data2 : "+value2);
        var res1=((value1>100) && (value1>601));
        var res2=((value1>100) || (value1>601));
        var res3=(!(value1!=value2));
        document.write("<br><br>Whether Data1>100 AND Data1>601 : "+res1);
        document.write("<br><br>Whether Data1>600 OR  Data1>601 : "+res2);
        document.write("<br>Whether !Data1 != Data2 : "+res3);
</script>
</Body>
</Html>
```

Output:



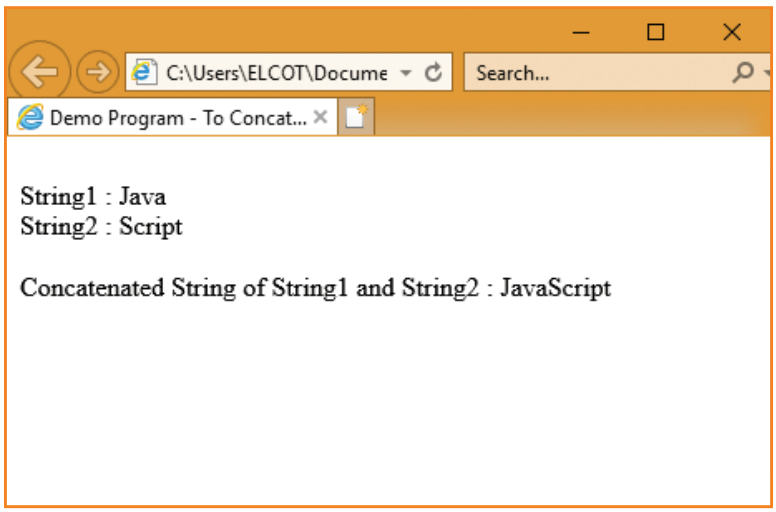
14.6.5 String Operators:

One of the built-in features of JavaScript is the ability to concatenate strings. The + operator performs addition on numbers but also serves as the concatenation operator for strings. Because string concatenation has precedence over numeric addition, + will be interpreted as string concatenation if any of the operands are strings. + operator which is also called as the string concatenation operator. For example:

Illustration 14.7 Using + Operator for concatenating String

```
<Html>
<Head>
        <Title>Demo Program - To Concatenating (+) Operators in JavaScript </Title>
</Head>
<Body>
        <script language="javascript" type="text/javascript">
        var String1 = "Java";
        var  String2 = "Script";
        var String3=String1+String2;
        document.write("<br>String1 : "+String1);
        document.write("<br>String2 : "+String2);
        document.write("<br><br>Concatenated String of String1 and String2 : "+String3);
</script>
</Body>
</Html>
```

Output:



14.6.6 Increment and Decrement Operators:

The ++ operator increments its single operand. The operator converts its operand to a number, adds 1 to that number, and assigns the incremented value back into the variable. The return value of the ++ operator depends on its position relative to the operand. When ++ is used before the operand, where it is known as the pre-increment operator, it increments the operand and evaluates to the incremented value of that operand. When used after the operand, where it is known as the post-increment operator, it increments its operand but evaluates to the un-incremented value of that operand. Consider the difference between these two lines of

code:

var m = 1, n = ++m; // m and n are both 2

var m = 1, n = m++; // m is 2, n is 1

The -- operator decrements its single operand. It converts the value of the operand to a number, subtracts 1, and assigns the decremented value back to the operand. Like the ++ operator, the return value of -- depends on its position relative to the operand. When used before the operand, it decrements and returns the decremented value. When used after the operand, it decrements the operand but returns the undecremented value.

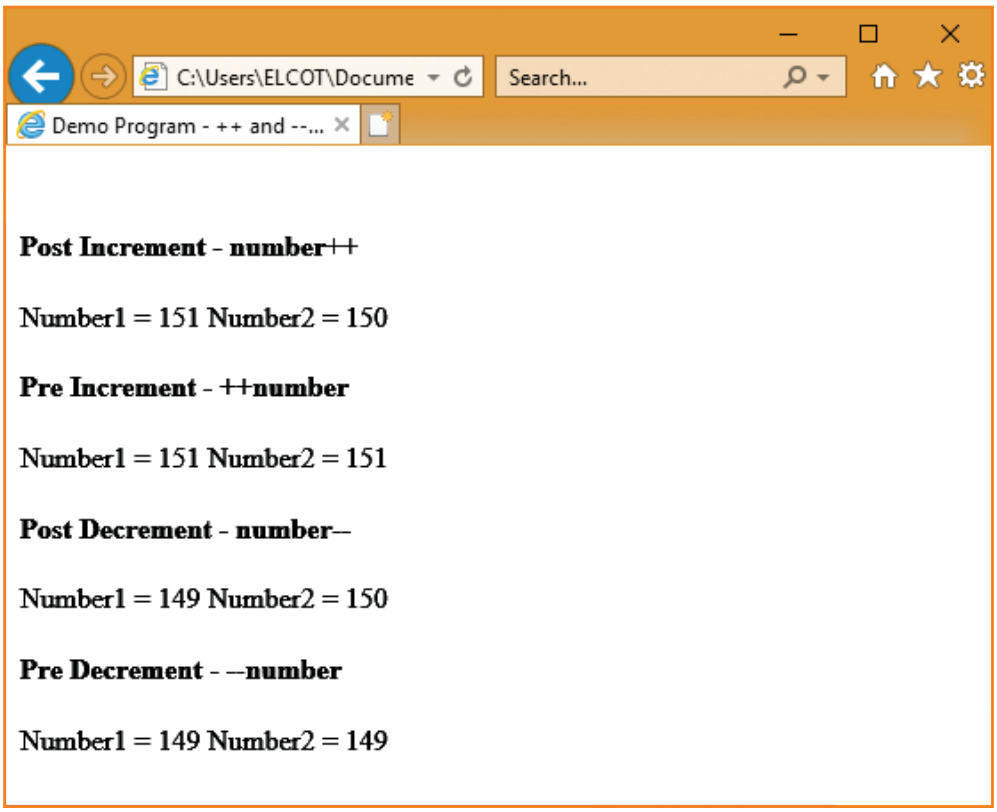
var m = 2, n = --m; // m and n are both 1

var m = 2, n = m--; // n is 2, n is 1

Illustration 14.8 Using ++ and -- Operator – both Prefix and Suffix

```
<Html>
<Head>
        <Title>Demo Program - ++ and -- Operators in JavaScript </Title>
</Head>
<Body>
        <script language="javascript" type="text/javascript">
        var number1 = 150;
        var number2 = number1++;
        document.write("<br><h4>Post Increment - number++</h4>");
        document.write("Number1 = "+number1+" Number2 = "+number2);
        document.write("<br><h4>Pre Increment - ++number</h4>");
        var number1 = 150;
        var number2 = ++number1;
        document.write("Number1 = "+number1+" Number2 = "+number2);
        var number1 = 150;
        var number2 = number1--;
        document.write("<br><h4>Post Decrement - number--</h4>");
        document.write("Number1 = "+number1+" Number2 = "+number2);
        document.write("<br><h4>Pre Decrement - --number</h4>");
        var number1 = 150;
        var number2 = --number1;
        document.write("Number1 = "+number1+" Number2 = "+number2);
</script>
</Body>
</Html>
```

Output:



14.6.7 Unary + and - Operator:

+ has no effect on numbers but causes non-numbers to be converted into numbers

– Negation (changes the sign of the number or converts the expression to a number and then changes its sign)

14.6.8 typeof Operator:

The **typeof** operator is used to get the data type (returns a string) of its operand. The operand can be either a literal or a data structure such as a variable, a function, or an object. The operator returns the data type.

Syntax

typeof operand

or

typeof(operand)

typeof returns: boolean, function, number, string, and undefined. The following table summarizes possible values returned by the typeof operator.

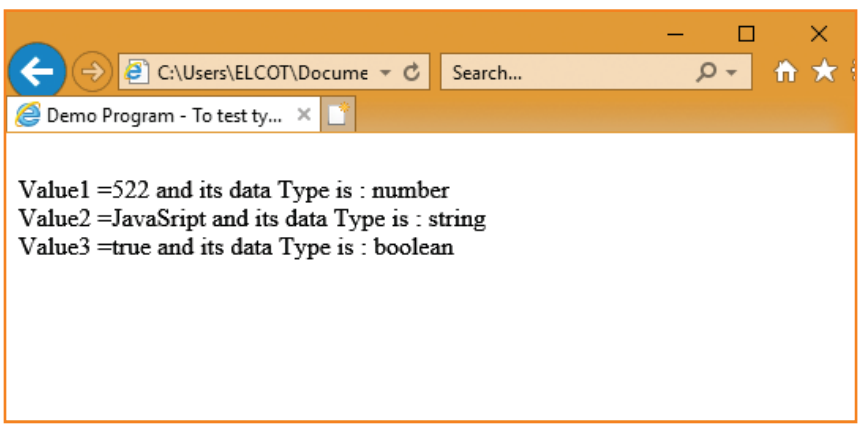
Table: 14.5

Type of Operand	Result
Number	“number”
Boolean	“Boolean”
String	“string”
Functions	“function”
Undefined	“undefined”

Illustration 14.9 typeof operator

```
<Html>
<Head>
        <Title>Demo Program - To test typeof Operator in JavaScript </Title>
</Head>
<Body>
        <script language="javascript" type="text/javascript">
        var value1 = 522, value2="JavaSript"; value3=true;
document.write("<br>Value1 ="+value1+" and its data Type is : "+typeof(value1));
document.write ("<br>Value2 ="+value2+" and its data Type is : "+typeof(value2));
document.write ("<br>Value3 ="+value3+" and its data Type is : "+typeof(value3));
</script>
</Body>
</Html>
```

Output:



14.6.9 Conditional Operator (?:)

The ?: is the conditional operator in JavaScript, which requires three operands, hence it is called the ternary operator. The syntax is

var variablename=(condition) ? value1 : value2;

In the syntax condition may be relational expression or logical expression. First condition will be evaluated, if the condition returns true then the value of the left side of the colon is assigned to the variable otherwise the value of the right side of the colon will be assigned the variable. For example,

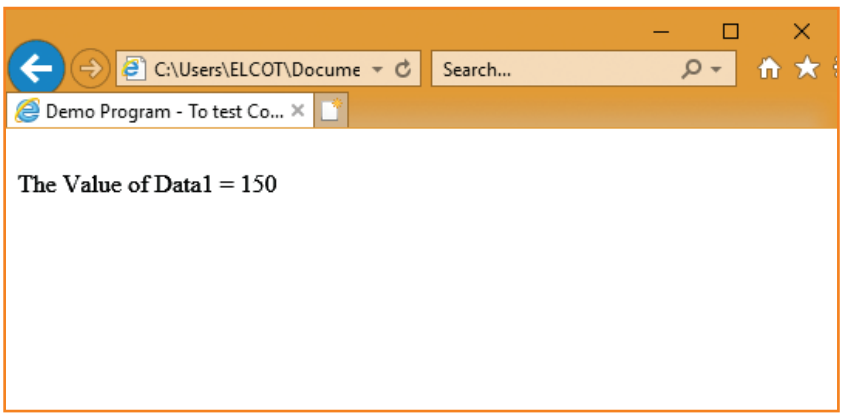
var result=(10>15) ?100 :150;

In the above example, since the condition returns false the value 150 will be assigned to result.

Illustration 14.10 Condtional Operator

```
<Html>
<Head>
        <Title>Demo Program - To test Conditional Operator in JavaScript </Title>
</Head>
<Body>
        <script language="javascript" type="text/javascript">
        var value1 = 522, value2=150, value3;
        value3=(value1<value2) ? value1: value2;
        document.write("<br>The Value of Data1 = "+value3);
</script>
</Body>
</Html>
```

Output:



14.7 JavaScript Popup or Dialog Boxes:

JavaScript supports three important types of dialog boxes. Dialog boxes are also called as Popup Boxes. These dialog boxes can be used to raise an alert, or to get confirmation on any input or to have a kind of input from the users. JavaScript supports three kind of popup boxes: Alert box, Confirm box, and Prompt box.

14.7.1 Alert Dialog Box:

An **alert dialog box** is mostly used to give a warning message to the users. For example, if one input field requires to enter some text but the user does not provide any input, then as a part of validation, you can use an alert box to give a warning message. Alert box gives only one button **"OK"** to select and proceed.

The syntax of alert box is

Alert("Message");

(or) Window.alert("Message");

Example:

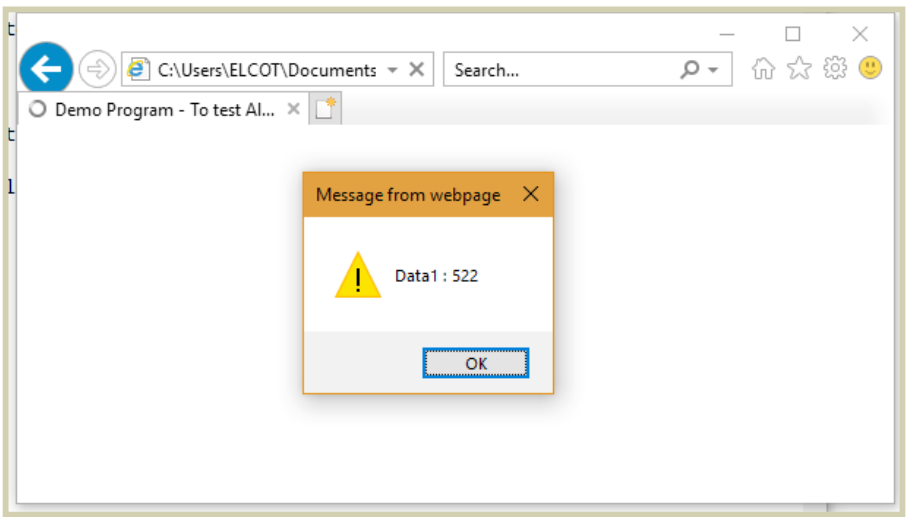
alert("Name is compulsory entry");

(or) window.alert("Name is compulsory entry");

Illustration 14.11 Alert Dialog Box

```
<Html>
<Head>
        <Title>Demo Program - To test Alert Dialog Box in JavaScript </Title>
</Head>
<Body>
        <script language="javascript" type="text/javascript">
        var value1 = 522, value2=10;
         window.alert("Data1 : "+value1);
        alert("Data1 :"+value2);
</script>
</Body>
</Html>
```

Output:



14.7.2 Confirm Dialog Box:

A confirmation dialog box is mostly used to take user's consent on any option. It displays a dialog box with two buttons: **OK** and **Cancel**. If the user clicks on the **OK** button, the confirm() will return true. If the user clicks on the Cancel button, then confirm() returns false.

The syntax of confirm dialog box is

confirm("message");

(or)

window.confirm("message");

Example:

confirm("Hai Do you want to continue:");

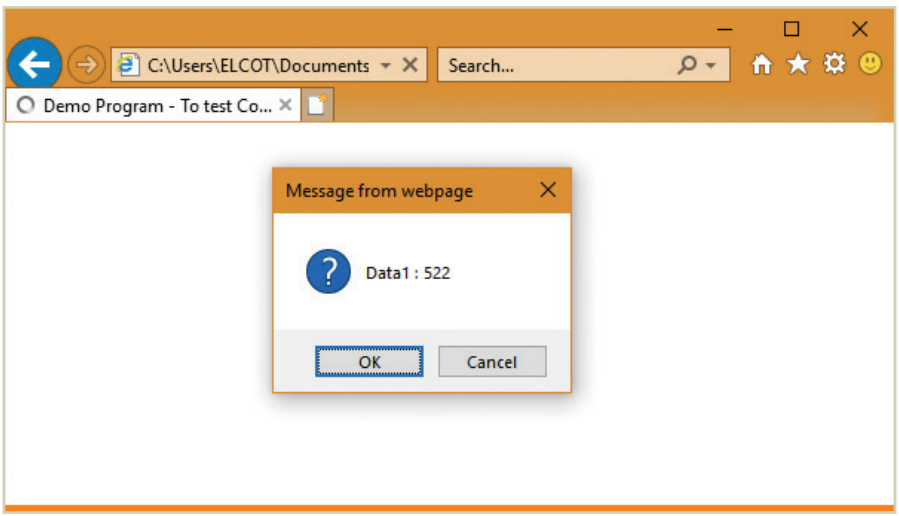
(or)

window.confirm("Hai Do you want to continue:");

Illustration 14.12 Confirm Dialog Box

```
<Html>
<Head>
        <Title>Demo Program - To test Confirm Dialog Box in JavaScript </Title>
</Head>
<Body>
        <script language="javascript" type="text/javascript">
        var value1 = 522, value2=10;
        window.confirm("Data1 : "+value1);
        confirm("Data2 :"+value2);
</script>
</Body>
</Html>
```

Output:



14.7.3 Prompt Dialog Box:

The prompt dialog box is very useful when the user want to pop-up a text box to get user input. Thus, it enables you to interact with the user. The user needs to fill in the text box field and then click OK.

The prompt dialog box is displayed using a method called prompt() which takes two parameters: (i) a label which you want to display in the text box and (ii) a default string to display in the text box. This dialog box has two buttons: OK and Cancel. If the user clicks the OK button, the prompt() will return the entered value from the text box. If the user clicks the Cancel button, the prompt() returns null. The Syntax of prompt dialog box is,

Prompt("Message","defaultValue");

(or)

window.prompt("sometext","defaultText");

Example:

prompt("Enter Your Name:","Name");

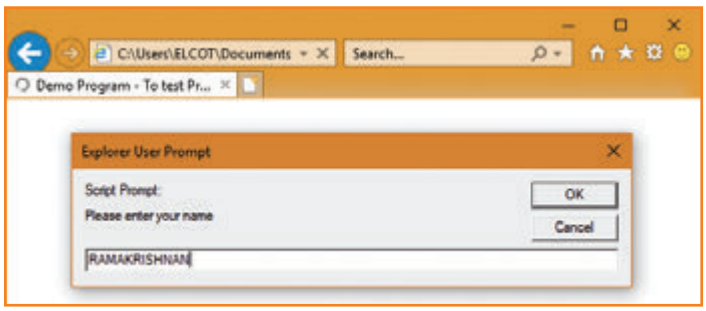
(or)

window.prompt("Enter Your Name:","Name");

Illustration 14.13 Prompt Dialog Box

```
<Html>
<Head>
        <Title>Demo Program - To test Prompt Dialog Box in JavaScript </Title>
</Head>
<Body>
        <script language="javascript" type="text/javascript">
        var sname = prompt("Please enter your name", "Name");
</script>
</Body>
</Html>
```

Output:



14.8 Comments in JavaScript:

Very important aspect of good programming style is to insert remarks and commentary directly in source code, making it more readable to yourself as well as to others. Any comments you include will be ignored by the JavaScript interpreter. There are two types of comments, **Single line** and **Multiple lines** comments. Single-line comments begin with a double slash (//), causing the interpreter to ignore everything from that point to the end of the line. Multiple line comments begins with /* and ends with */.

For example:

```
// JavaScript single line comment//
```

Multiple line comments begins with /* and ends with */

Points to Remember:

- The <script> tag alerts the browser program to start interpreting all the text between these tags as a script
- JavaScript is a case sensitive language
- The scope of a variable is the life time of a variable of source code in which it is defined
- A literal is a fixed value given to a variable in source code.
- An expression is a code fragment that can be evaluated to some data type the language supports.
- Java Script supports all basic arithmetic operators like +, - , *, / & %
- Java scripts has an in built feature of concatenating strings.
- The types of operator is used to get the data type of a variable.
- JavaScript supports important types of dialog boxes also called as pop up boxes, alert box, confirm dialog box and prompt dialog box.
- ?: is the conditional operator in Java Script also called as ternary operator.

Evaluation

FN4MCQ

Part-I

Choose the correct answer:

1. Which provided a common scripting language to web developers to design, test and deploy Internet Application
   A) C B) C++ C) Java D) JavaScript

2. Expand CGI
   A) Common Gateway Interface B) Complex Gateway Information
   C) Common Gateway Information D) Complex Gateway Interface

3. JavaScript programming language is used to develop the
   A) Dynamic Web Page B) Window C) Web Page D) Home Page

4. The Dynamic Web Page help to save server's
   A) Work B) Route C) Traffic D) Pvath

5. User entered data, is validated before sending it to server is called
   A) Server traffic B) Dynamic Web Page
   C) Server Route D) Web server

6. Java Scripts can be implemented using which statements?
   A) <head> B) <Java> C) <script> D) <text>

7. Expand
   A) Distance Hyper Text Markup language B) Dynamic Hyper Text Markup language
   C) Distance High Text Markup language D) Dynamic High Text Markup language

8. How many attributes specifies that <script> tag in the scripting
   A) 2 B) 3 C) 4 D) 5

9. Which attribute is used to indicate the scripting language and its value should be sent to " Text/JavaScript"
   A) Language B) Text1 C) Type D) Body

10. The file reload into the browser use the shortcut key is
    A) F2 B) F3 C) F4 D) F5

11. JavaScript ignores spaces that appear between
    A) Command B) Scripts C) Tokens D) Text

12. A Data value for variable that appears directly in a program by using a
    A) loop B) Literal C) Statement D) Text

13. Which is mostly used to give a warning message to users?

A) Alert Dialog Box B) Confirm box

C) Prompt box D) Display box

14. In the below snippet, value of x is var x = 250 + 2 – 200;

A) 50 B) 52 C) 48 D) 42

Part-II

Answer to the following questions (2 Marks):

1. Write a syntax of <script> tag
2. What is scope of variables and types of scope variable?
3. Write a notes to type casting in JavaScript
4. How many Literals in JavaScript and mention its types.
5. What is conditional operator give suitable example.
6. What are the comments in Java Script?
7. Write note on types of Operator.
8. Write the role of variable in JavaScript.
9. What is the uses of prompt dialog box?

Part-III

Answer to the following question (3 Marks)::

1. What are the advantages of programming language?
2. Brief the basic data types in Java Scripts.
3. Write note on string Operator.
4. Write about <script> tag
5. What are the uses of Logical Operators?
6. Difference between the increment and Decrement operator.

Part –IV

Answer to the following questions (5 Marks):

1. Explain about the popup dialog boxes in JavaScript.
2. Explain about the Arithmetic operator with suitable example.

Case study:

Develop a program for online registration form with some of the client side validation features

Reference :

1. Title - Pure JavaScript Author : R.Allen Wyke, Jason D. Gilliam and Charlton Ting, Publisher : Techmedia
2. Computer Application Text Book – Govt. of Kerala

Control Structure in JavaScript

Learning Objectives:

- To learn about control structures
- To learn about logical operators in JavaScript
- To learn about loops and their types
- To acquire knowledge of developing JavaScript programs.

15.1 Conditional Statements in JavaScript:

Statements are executed in the order they are found in a script. Conditional statements execute or skip one or set of statements depending on the value of a specified conditional expression. There are two types of controls,

- Branching / Selection
- Looping / repetitive

15.1.1 Branching Statements:

JavaScript supports branching statements which are used to perform different actions based on different conditions. Branching is a transfer of control from the current statement to another statement or construct in the program unit. A branch alters the execution sequence. There are different branching statements. They are,

- **if** statement
- **if … else** statement
- **else if** statement
- **switch** statement

15.1.1.1 if and if..else Statement:

The **if** statement is the fundamental control statement that allows JavaScript to make decisions to execute statements conditionally. This statement has two forms. The form is for only true condition. The syntax is

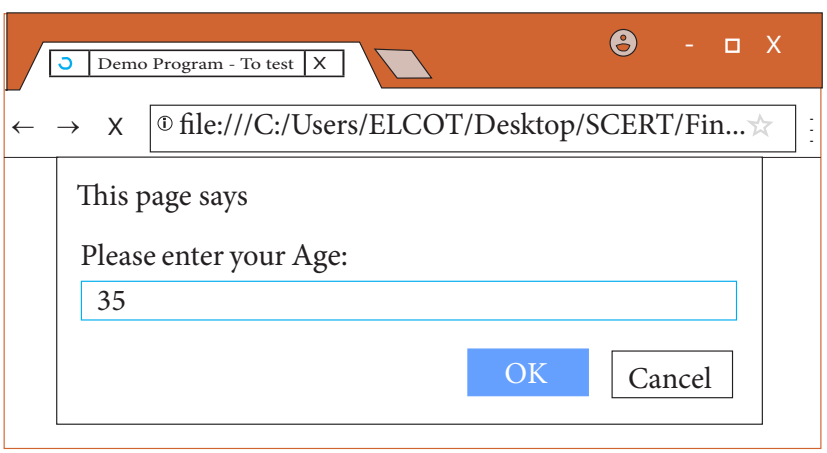
```
if (condition)
{
        True block;
}
```

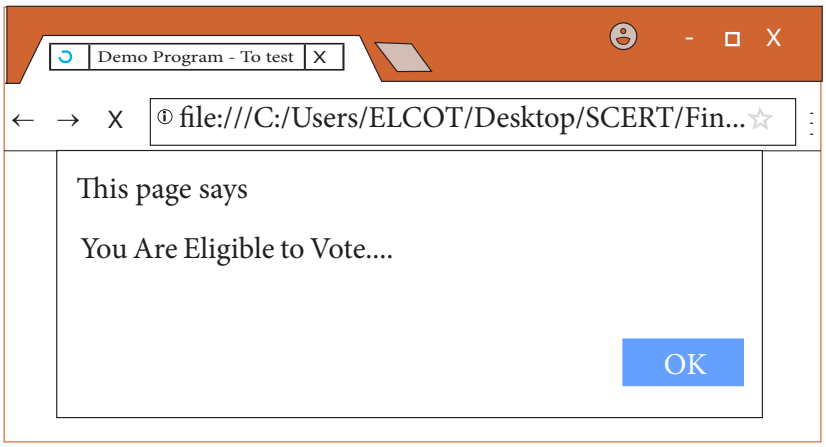
In the **if** form, condition contains relational/logical expression is evaluated. If the resulting value is true the true block is executed. True block may contain one or more than one statement. For example

Illustration 15.1 Demo to Test if command

```
<Html>
<Head>
        <Title>Demo Program - To test if command in JavaScript </Title>
</Head>
<Body>
        <script language="javascript" type="text/javascript">
        var age = prompt("Please enter your Age :", "0");
        if(age>=16)
{
        alert("You Are Eligible to Vote ....");
}
</script>
</Body>
</Html>
```

The output will be





The second form of the **if** statement is an **else** clause that is the program to follow either of two branches depending on the condition. In the simple if construction, no special processing is performed when the condition evaluates to false. But if processing must follow one of two paths, hence need to use **if...else** format. Its **syntax** is:

if (expression)

{

statements if true

}

else

{

statements if false

}

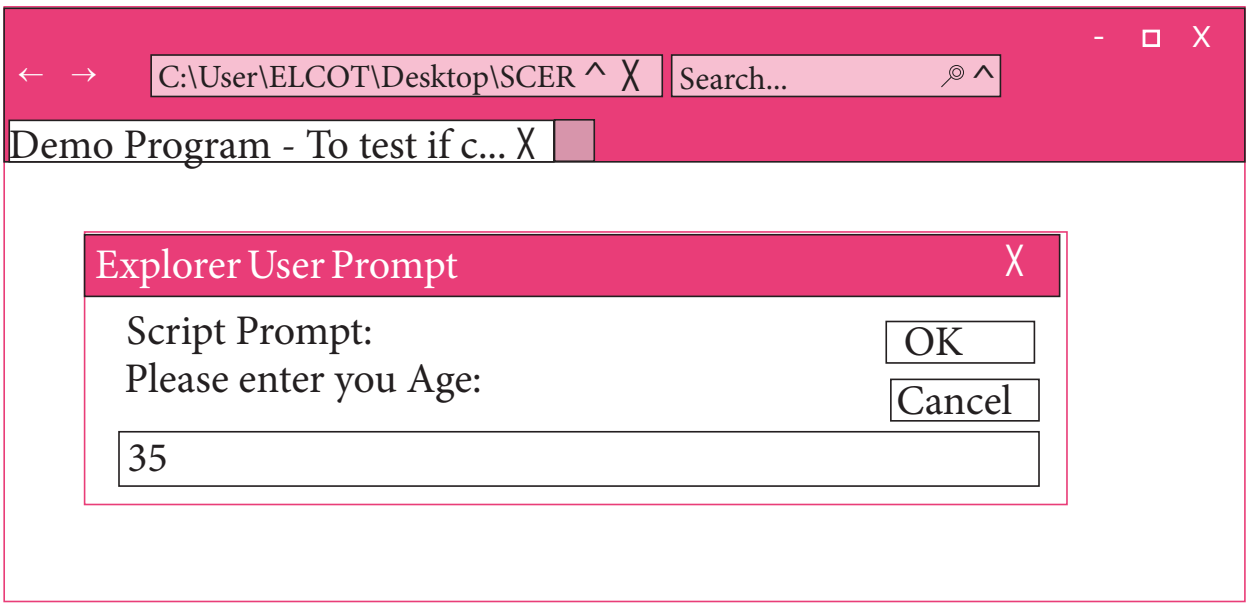
This form is similar to if statement but the only difference is the **else** keyword, which provides an alternate path for execution to follow if the condition evaluates to false.

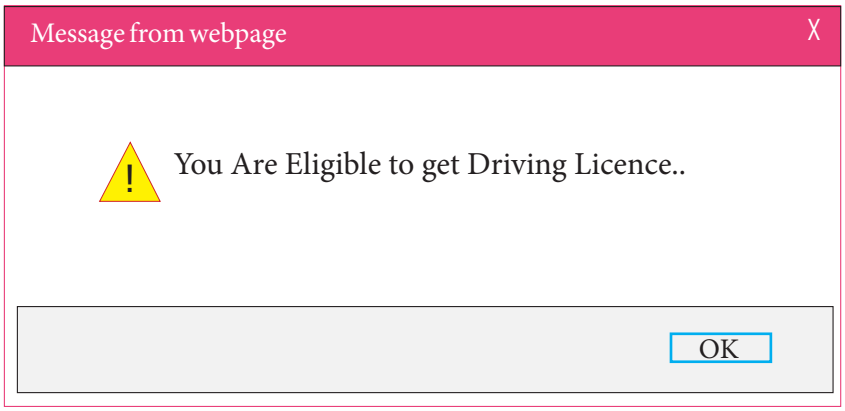
Illustration 15.2 Using if.. else statement

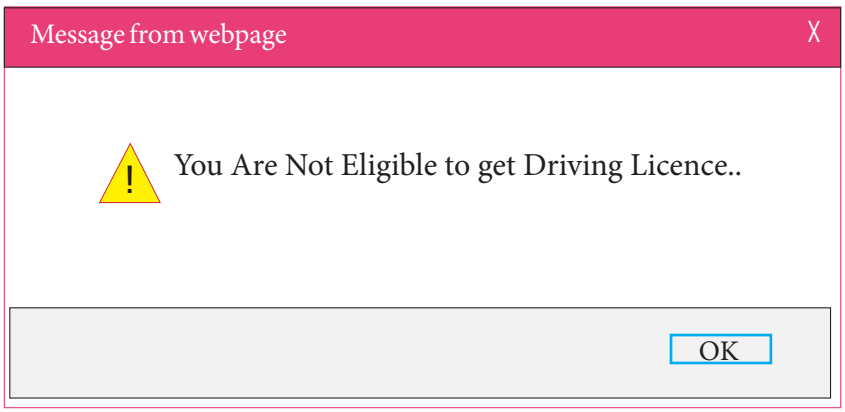
```
<Html>
<Head>
        <Title>Demo Program - To test if..else command in JavaScript </Title>
</Head>
<Body>
        <script language="javascript" type="text/javascript">
        var age = prompt("Please enter your Age :", "0");
```

```
        if(age>=18)
        {
                alert("You Are Eligible to get Driving Licence..");
        }
        else
        {
                alert("You Are Not Eligible to get Driving Licence..");
        }
</script>
</Body>
</Html>
```

The output will be







15.1.1.2 else if Statement:

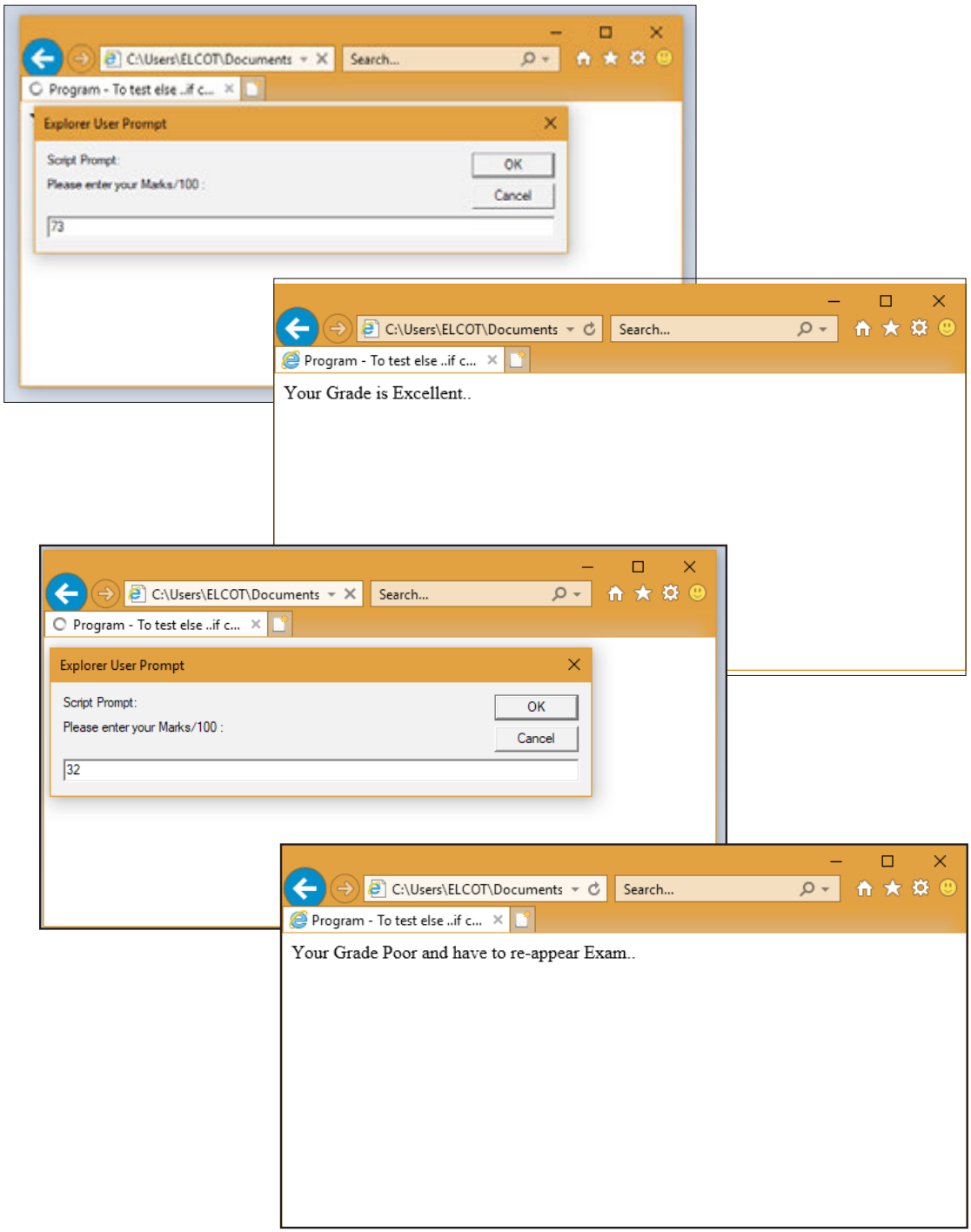
The **if ... else** statement evaluates an expression and executes one of two pieces of code, depending on the outcome. The **else if** statement to specify a new condition if the first condition is false.

```
if (n == 10)
{
        // Execute code block #1
}
else if (n == 20)
{
        // Execute code block #2
}
else if (n == 30)
{
        // Execute code block #3
}
else
{
        // If all else fails, execute block #4
}
```

Illustration 15.3 Using Logical Operators and else if Statement

```
<Html>
<Head>
        <Title>Program - To test else ..if command in JavaScript </Title>
</Head>
<Body>
        <script language="javascript" type="text/javascript">
        var marks = prompt("Please enter your Marks/100 :", "0");
        if(marks>90)
{
        document.write("Your Grade is Outstanding..");
}
        else if((marks>70) && (marks<=90))
{
        document.write("Your Grade is Excellent..");
}
        else if((marks>50) && (marks<=70))
{
        document.write("Your Grade is Good..");
}
        else if((marks>40) && (marks<=50))
{
        document.write("Your Grade is Satisfectory..");
}
else
{
        document.write("Your Grade Poor and  have to re-appear Exam..");
}
</script>
</Body>
</Html>
```

The output will be



There is nothing special about this code. It is just a series of **if** statements, where each following **if** is a part of the **else** clause of the previous statement. Using the else if idiom is preferable to, and more legible than, writing these statements out in their syntactically equivalent, fully nested form:

```
if (n == 10)

{
```

```
        // Execute code block #1
}
else
{
if (n == 20)
{
        // Execute code block #2
}
else
{
if (n == 30)
{
        // Execute code block #3
}
else
{
        // If all else fails, execute block #4
}
}
}
```

15.1.1.3 switch case Statement:

JavaScripts offers the **switch** statement as an alternate to using **if...else** structure. The switch statement is especially useful when testing all the possible results of an expression. The syntax of a switch structure as the following:

```
switch(expression)
{
`       case label1:
                statements1;
                break;
        case label2:
                statements2;
                break;
        case labeln;
                statements - N;
                break;
        default:
                statements;
}
```

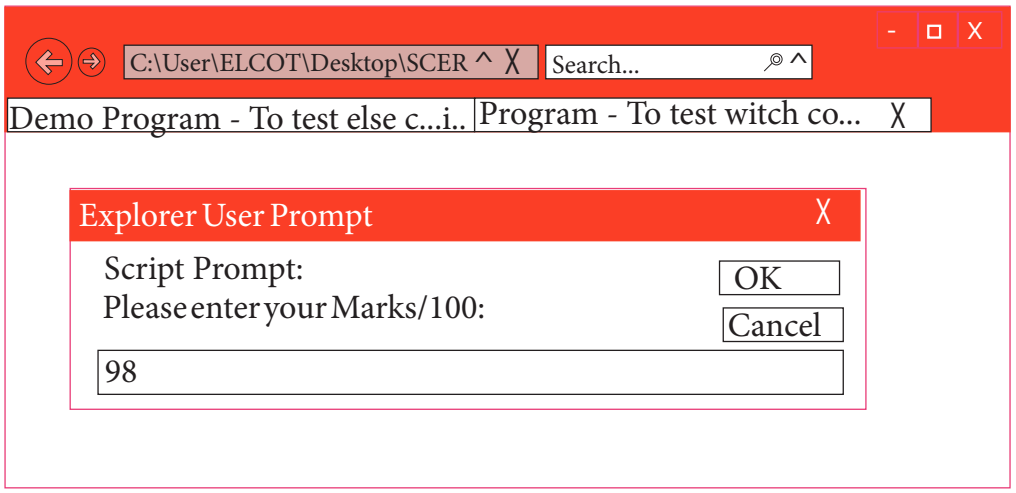
15.1.1.4 Break and Default Statement

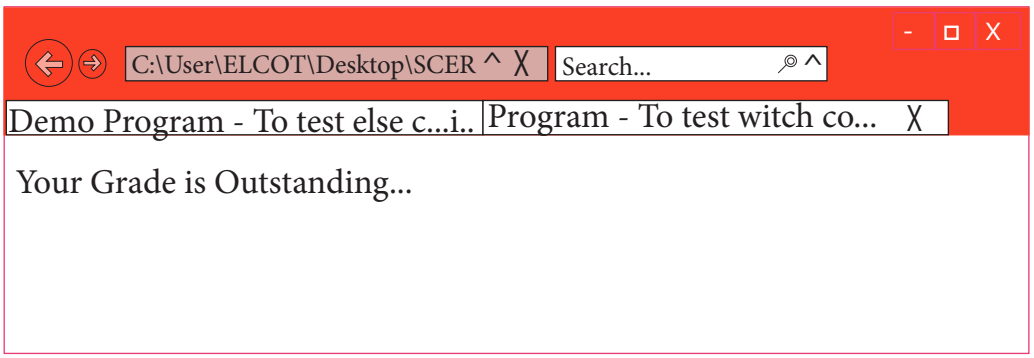
The switch statement begins by evaluating an expression placed between parenthesis, much like the if statement. The result compared to labels associated with case structure that follow the switch statement. If the result is equal to a label, the statements in the corresponding case structure are executed. The **default** structure is can be at the end of a switch structure if the result of the expression that do not match any of the case labels. The **break** statement is also used commonly within switch to exit the statement once the appropriate choice is found.

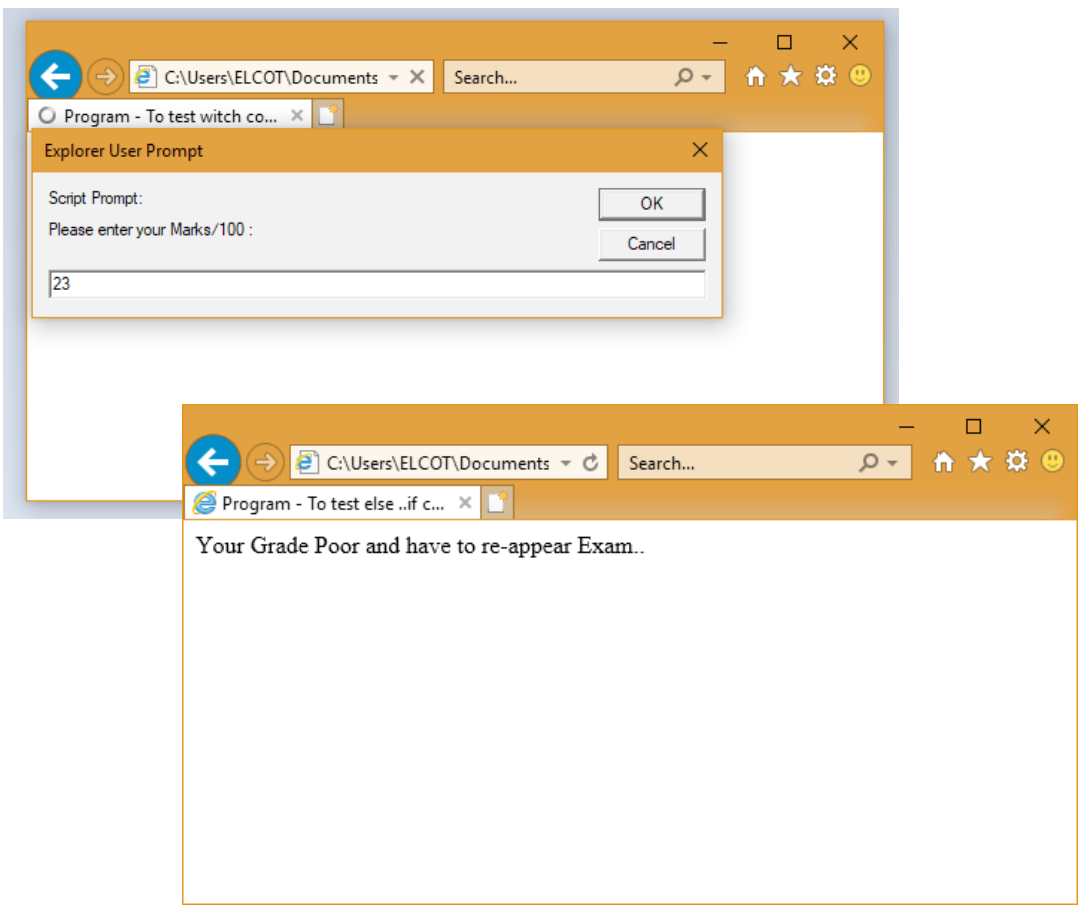
Illustration 15.4 Using Switch Statement

```
<Html>
        <Head>
        <Title>Program - To test witch command in JavaScript </Title>
        </Head>
    <Body>
    <script language="javascript" type="text/javascript">
    var grade=0;
    var marks=prompt(“Please enter your marks/100:””0”);
    if(marks>90)
    {grade=1;}
    else if(marks>70)&&(marks<=90)
    {grade=2;}
    else if(marks>50)&&(marks<=70)
    {grade=3;}
    else if(marks>40)&&(marks<=50)
    {grade=4;}
    else
    {grade=5;}
    switch(grade)
    {
    case 1:
    document.write("Your Grade is Outstanding..");
        break;
        case 2:
    document.write("Your Grade is Excellent..");
        break;
        case 3:
    document.write("Your Grade is Good..");
    break;
    case 4:
    document.write("Your Grade is Satisfectory..");
        break;
    default:
    document.write("Your Grade Poor and  have to re-appear Exam..");
    }
    </script>
    </Body>
    </Html>
```

The output will be







15.2 Looping / repetitive

In JavaScript there are times when the same portion of code needs to be executed many times with slightly different values is called Loops. JavaScript supports three kinds of looping statements. They are

- **for** loop
- **while** loop
- **do..while** loop

15.2.1 for loop

The **for** loop is a very rigid structure that loops for a pre-set number of times. In JavaScript **for** structure is very flexible, which makes this type is very useful. The syntax of the **for** loop looks like the following:

```
for(initialization; condition; increment/decrement)
{
        Body of the loop;
}
```

The for structure within parenthesis there are three parts each separated by semicolon. They are,

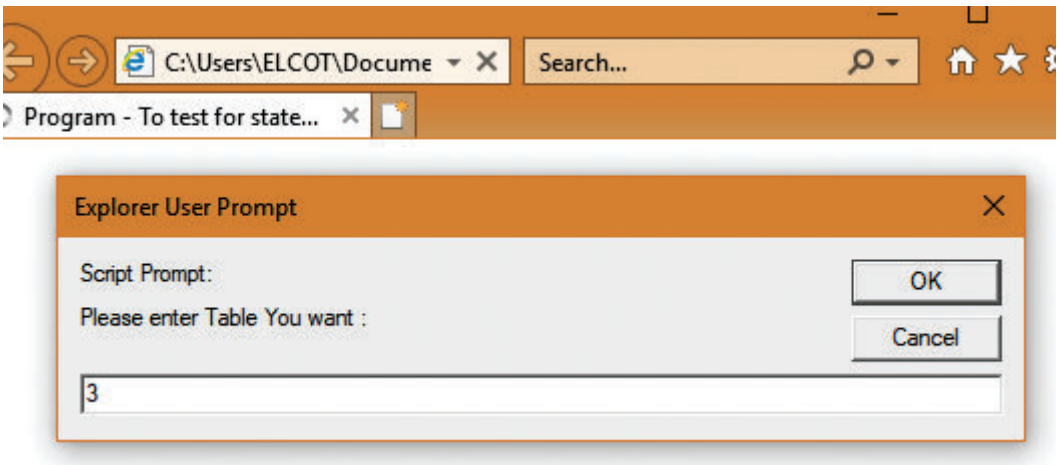
1. The first part of the loop initialize a variable which is also called as control variable. In most case the control variable is declared as well as initialized.

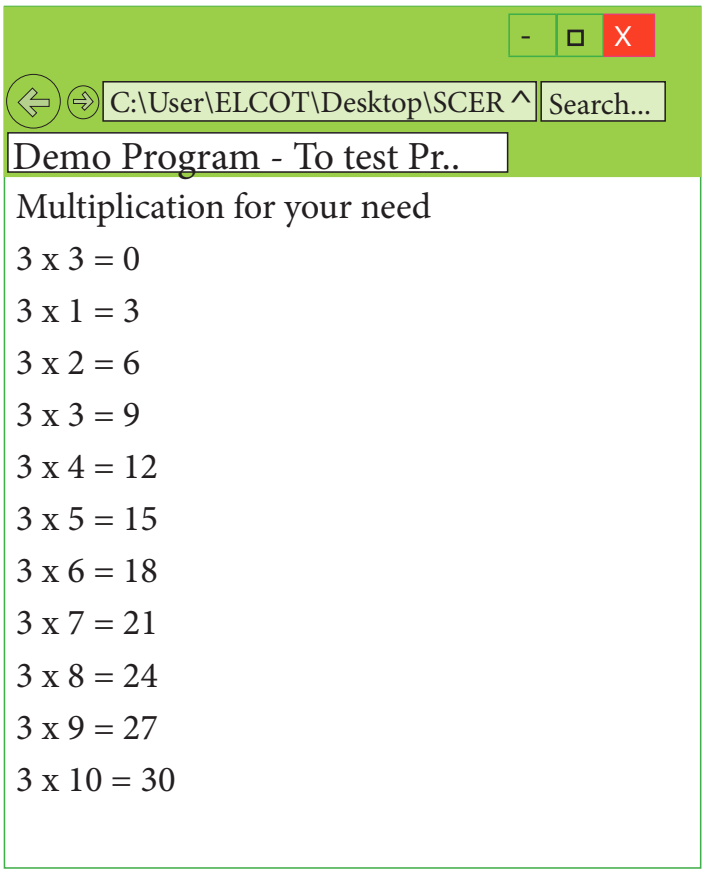
2. The second part is the conditional statement that determines how many times the loop will be iterated.

3. The third and final part determines how the value of control variable is changed (Incremented/Decremented)

Illustration 15.5 Using for loop

```
<Html>
<Head>
        <Title> Program - To test for statement in JavaScript </Title>
</Head>
<Body>
        <script language="javascript" type="text/javascript">
        var no1 = prompt("Please enter Table You want :", "0");
        document.write("<h2> Multiplication for your need </h2>");
        for( var no2=0;no2<=10;no2++)
{
        document.write(no1+" x "+no2+" = "+no1*no2+"<br>");
}
</script>
</Body>
</Html>
```





15.2.2 break and continue statement

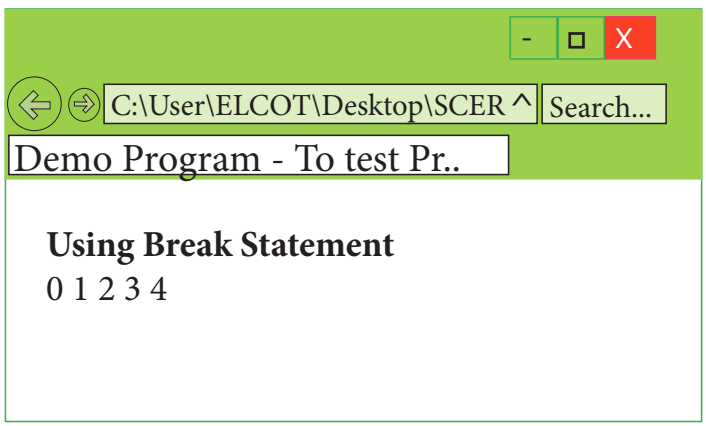
JavaScript also supports statements used to modify flow control, specifically **break** and **continue**. The **break** statement will terminate the loop early. For example,

```
for(var n=0;n<=10;n++)
{
        if(n==5)
{
break;
}
        document.write(n+"<br>");
}
```

In the above example, which writes out the value of n starting from 0, when n is equal to 5 the break statement is executed and the loop is terminated and the output is as follows,

Illustration 15.6 Using break statement

```
<Html>
  <Head>
     <Title>Demo Program - To test Break command in JavaScript </Title>
  </Head>
 <Body>
   <script language="javascript" type="text/javascript">
   document.write("<h2> Using Break Statement </h2>");
    for( var no2=0;no2<=10;no2++)
    {
     if(no2==5)
     {break;}
     document.write(no2+" ");
    }
    </script>

 </Body>
</Html>
```



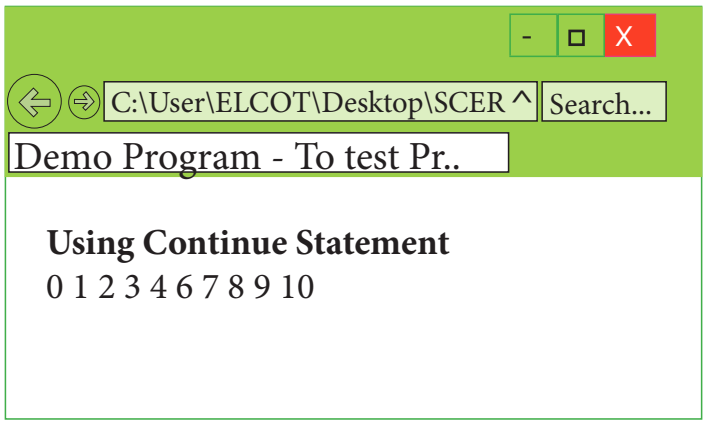
The **continue** statement will skip back to the loop condition check. When the **continue** statement is executed, the current iteration of the enclosing loop is terminated, and the next iteration begins. For example,

```
for(var n=0;n<=10;n++)
{
        if(n==5)
{
continue;
}
        document.write(n+"<br>");
}
```

In the above example, which writes out the value of n starting from 0, when n is equal to 5 the continue statement is executed and the **continue** statement continues the loop without printing the value 5 and the output is as follows,

Illustration 15.7 Using continue statement

```
<Html>
<Head>
<Title>Demo Program - To test Continue command in JavaScript </Title>
</Head>
<Body>
<script language="javascript" type="text/javascript">
document.write("<h2> Using continue Statement </h2>");
for( var no2=0;no2<=10;no2++)
{
if(no2==5)
{continue;}
document.write(no2+" ");
}
</script>

</Body>
</Html>
```



15.2.3 while loop

In JavaScript **while** loop is another most basic loop. The purpose of a **while** loop is to execute a statement /block of statement repeatedly as long as an expression is true.

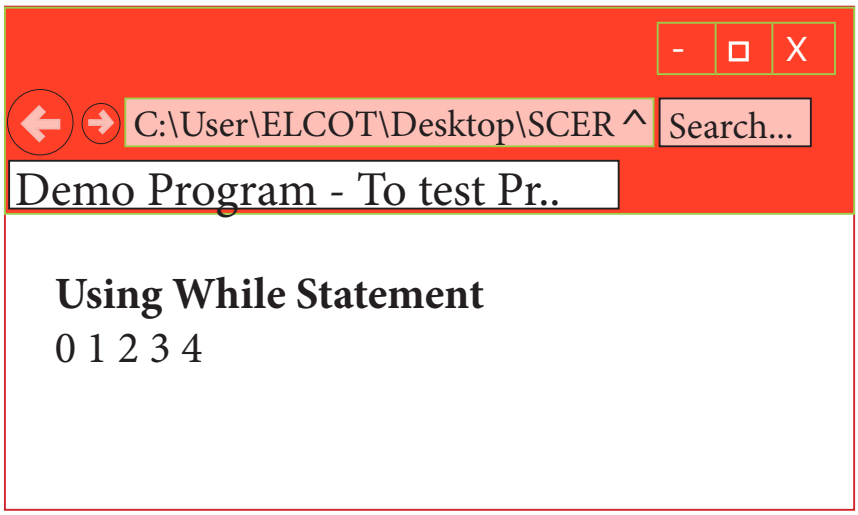
The while statement creates a loop that executes a specified statement as long as the test condition evaluates to true. The condition is evaluated before executing the statement.

The syntax is:

```
while (condition)
{
        body of the loop
}
```

Illustration 15.8 Using while loop

```
<Html>
<Head>
        <Title>Program - To test while statement in JavaScript </Title>
</Head>
<Body>
        <script language="javascript" type="text/javascript">
        document.write("<h2> Using while Statement </h2>");
        var no2=0;
        while(no2<=5)
{
        document.write(no2+" ");
        no2=no2+1;
}
</script>
</Body>
</Html>
```



To execute a while statement, the interpreter first evaluates expression. If the value of the expression is true the interpreter executes the statement and repeats, jumping back to the top of the loop and evaluating expression again. In the above example let us see how the while command is executed,

1. Initial value of the variable no2 is set to 0

2. The expression in the while statement is executed

3. If the condition is true then body of the loop will be executed once otherwise body of the loop will be skipped and control will jump to next statement to end of the loop.

4. Then the value of the control variable is executed and control jumps to condition again go to step 3

15.2.4 do .. while loop

The **do..while** loop is like a while loop, except that the loop expression is tested at the end of the loop rather than at the beginning. This means that the body of the loop is always executed at least once. The syntax is:

do

{

body of the loop

} while (expression);

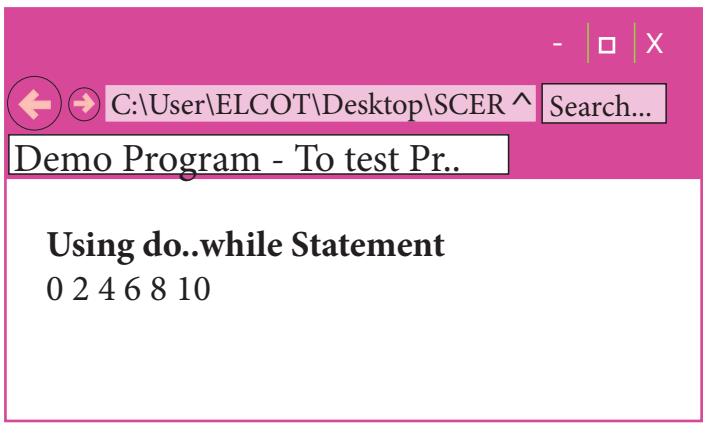
An important difference between while and do..while statement is in the do..while loop body of the loop always executed at least once before the condition can be executed. In a while

loop, first condition will be evaluated and then only based on the result of the condition the body of the loop will be executed or not.

Illustration 15.9 Using do..while loop

```
<Html>
<Head>
        <Title>Program - To test do..while statement in JavaScript </Title>
</Head>
<Body>
        <script language="javascript" type="text/javascript">
        document.write("<h2> Using do..while Statement </h2>");
        var no2=0;
        do
{
document.write(no2+" ");
no2=no2+2;
}while(no2<=10);
</script>
</Body>
</Html>
```

Output:



Exercise

Write a JavaScript Program for the following:

a) To display Odd number from 1 to N numbers.
b) To display any Multiplication table as the user required.
c) To display as 10,9,8,……0

Points to Remember:

- Conditional Statements help to alter the normal sequence of execution of a program by two types of controls - Branching and Looping.
- The three logical operators in Jave Script are &&, !! & !.
- The break statement is commonly used to exit the statement once the appropriate choice is found.
- The for is a very rigid, flexible structure that loops for a pre set number of times.
- The break statement terminates the loop irrespective of the condition and the continue statement executes the next iteration of the loop.

Evaluation

FNMEG1

Part - I

Choose the correct answers:

1. Which conditional statement is used to transfer control from current statement to another statement? (LOT)

   (a) Branching (b) Sequencing (c) Looping (d) Interating

2. _____ statement can be used as alterative to if-else statement. (LOT)

   (a) While (b) If (c) Else-if (d) Switch

3. Which statement in switch case is used to exit the statement once the appropriate choice is found? (MOT)

   (a) Exit (b) Default (c) Case (d) Break

4. Which of the following is not a looping statement? (LOT)

   (a) Switch (b) While (c) Do-While (d) For

5. Which part of the loop statement determines the number of times, the loop will be iterated? (MOT)

   (a) First (b) Second (c) Third (d) Final

6. Which of the following is not a branching statement? (LOT)

   (a) Loop (b) If-else (c) Switch (d) For

7. What will be the output for the following snippet: (HOT)

```
For (var n=0; n<10; n+1)
{
if (n==3)
{
break;
}
```

document write (n+"
");
}
(a) 0 1 2 (b) 0 1 2 3 (c) 0 1 2 3 4 (d) 0, 1, 3

8. In which loop the condition is evaluated, before executing a statement? (MOT)
(a) While (b) Do while (c) Break (d) Continue

9. The _____ statement is especially useful when testing all the possible results of an expression. (LOT)
(a) While (b) Do while (c) Switch (d) If

10. In the _____ loop, body of the loop always executed at least once before the condition can be executed. (LOT)
(a) For (b) While (c) If (d) Do while

11. <script type = "text / javascript">
x = 6 + "3";
document write (x);
<'script> what will be the output?
(a) 6 (b) 9 (c) 63 (d) Error

Part - II

Answer to the following questions (2 Marks):

1. What are the different types of control statement used in JavaScript?
2. What is meant by conditional statements in JavaScript?
3. List out the various branching statements in JavaScript?
4. Write the general syntax for switch statement
5. Differentiate the break and continue statement.

Part - III

Answer to the following questions (3 Marks):

1. What if if statement and write its types.
2. Write the syntax for else-if statement.
3. What is called a loop and what are its types?
4. Differentiate between while and do while statements

5. What message will be displayed, if the input for age is given as 20, for the following snippet.

```
if (age> = 18 )
{
alert ("you are eligible to get Driving licence"}
}
else
alert ("you are not eligible to get driving licence");
}
```

Part - IV

Answer to the following questions (5 Marks):

1. Explain for loop with example
2. Explain switch case statement with example
3. Write the output for the following program

```
<Html>
<Head>
<Title> for statement</title>
<Head>
<Body>
<script language= "java Script" type = "text / javaScript")
var no1= prompt ("please enter table you want:", "0" );
document write ("<h2> multiplication for your need </h2>")
for (Var no2= 0; no2<=10; no2++)
{
document write (no1+ "x" + no2+ "=" + no1+no2+ "<br>);
}
</script>
</body>
</Html>
```

4. Write a Java Script program using while statement to display 10 numbers.

JavaScript Functions

Learning Outcomes

The students will learn the following:

- How to implement the function in JavaScript
- How to use Pre-defined functions
- How to create and use user-defined functions
- To create an Online application

16.1 Introduction

A function is a block of JavaScript code that is defined once but may be executed or invoked any number of times. Functions are used to encapsulate code that performs a specific task. Sometimes functions are defined for commonly required tasks to avoid the repetition entailed in typing the same statements over and over. More generally, they are used to keep code that performs a particular job in one place in order to enhance reusability and program clarity.

JavaScript functions are parameterized or non-parameterized. A parameterized function definition may include a list of identifiers, known as parameters that work as local variables for the body of the function. Function invocations provide values or arguments for the function's parameters. Functions often use their argument values to compute a return value that becomes the value of the function invocation expression.

JavaScript supports two types functions. They are

- Pre-defined or Library Functions
- User-defined Functions

16.2 Some common pre-defined functions.

Pre-defined functions are already defined in the JavaScript library which are also called Library functions. For example isNaN(), toUpperCase(), toLowerCase(), length(), alert(), prompt(),write() etc., are pre-defined functions.

Table: 16.1 Predefined functions

Function	Description	Example	Result
toUpperCase()	Used to convert given string into uppercase	x=”java” x.toUpperCase();	JAVA
toLowerCase()	Used to convert given string into lowercase	x=”JAVA” x.toLowerCase();	java
length	Used to find length of the given string	x=”JAVA” x.length();	4
parseInt()	Used to convert the given float value into an integer	parseInt(34.234);	34
parseFloat()	Used to convert the given string into a integer	parseInt(“34.23”);	34.23

16.3 User defined functions

User-defined functions allow the programmer to modularize a program. Most computer programs that solve real-world problems are much large, occupy more space in the computer memory and takes more time to execute. Hence such large programs are divided into small programs are called **modules.**

Function Definition

The format of a function definition is

Function function-name(parameters list)

{

Declaration of variable
Executable statements;

Function Body

}

Note:

- The function-name is any valid identifier.

  For Example: sum

- The parameter list contains one or more valid variable name.

- Parameter list contains more than one variable then comma must be there between the

variable. For example: function sum(x,y)

- The function body must be enclosed by braces.

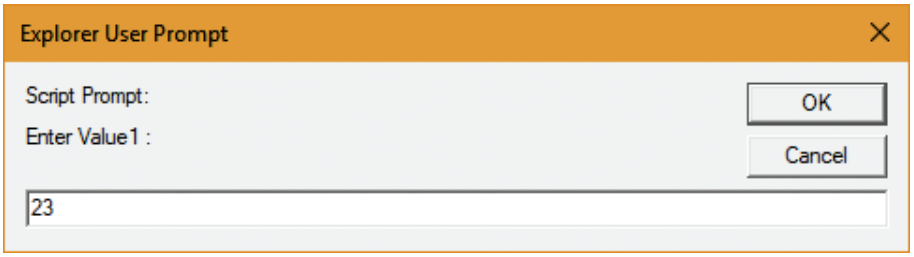
Example:

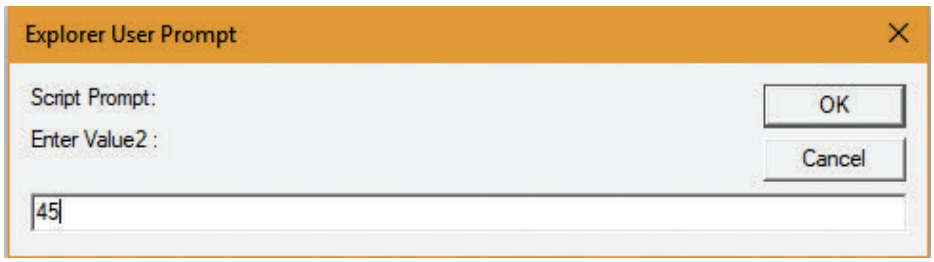
```
function sum(x,y)
        {
                var m=x+y;
                return m;
        }
```

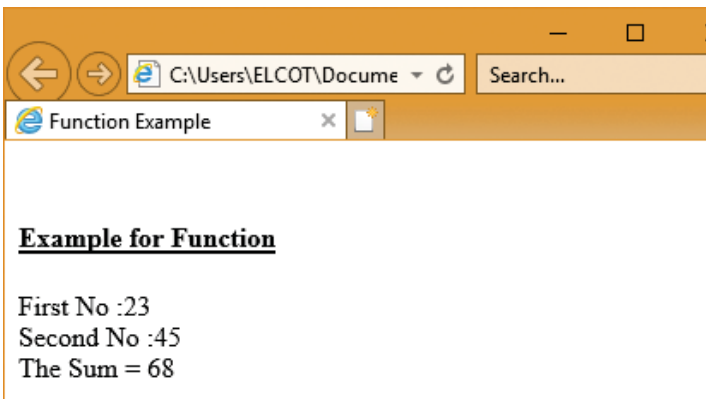
Listing 16.1 Using Function

```
<html>
<head>
<title>Function  Example</title>
<script type="text/JavaScript">
<!--
var input1=window.prompt("Enter Value1 :", "0");
var input2=window.prompt("Enter Value2 :", "0");
var v1=parseInt(input1);
var v2=parseInt(input2);
var s=sum(v1,v2);
document.writeln("<br><h4><u>Example for Function</u></h4>");
document.writeln("First No :" + v1 + " <br>Second No :" + v2 + "<br> The Sum = " + s);
function sum(x, y)
{
var s=x+y;
return s;
}
//-->
</script>
</head>
<body>
</body>
</html>
```

Output:







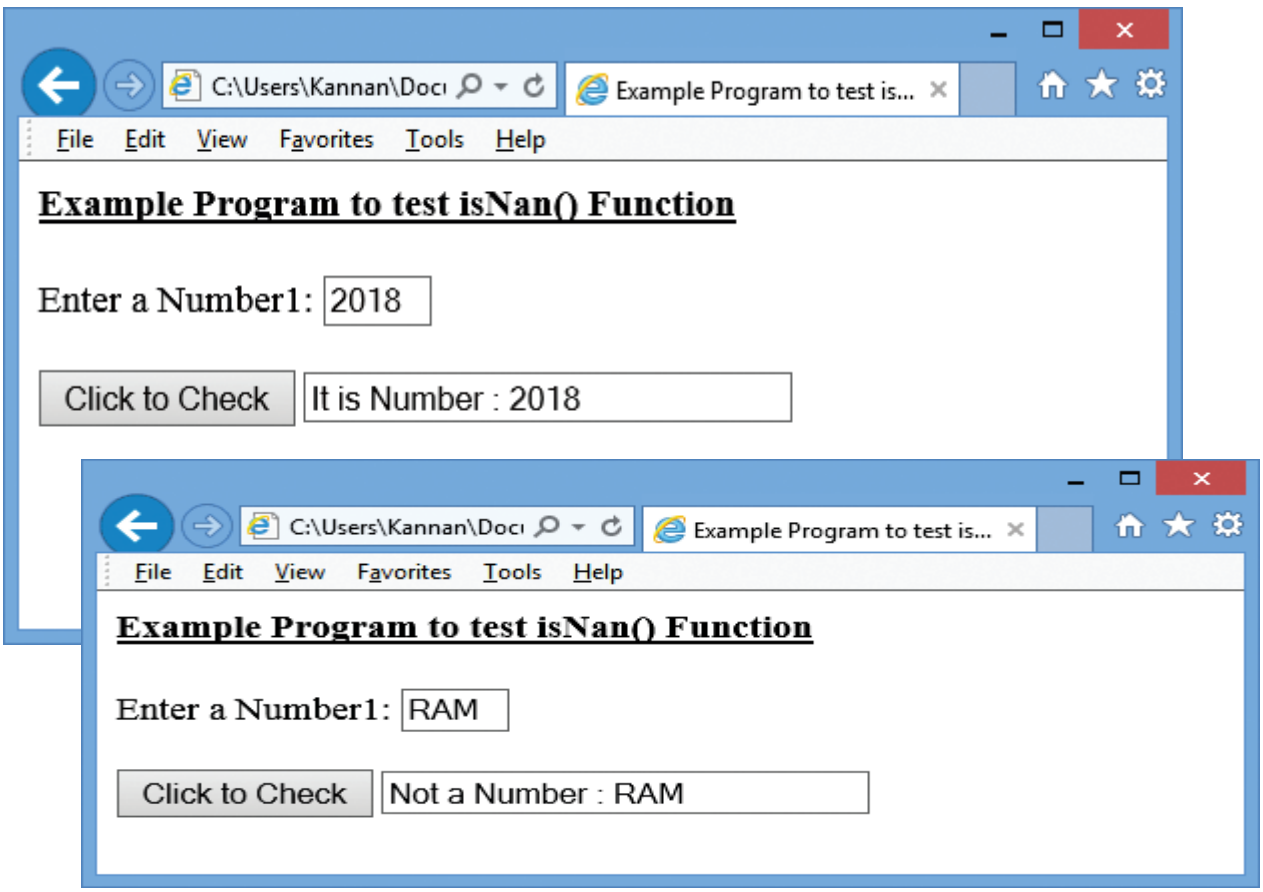
The isNaN() function is used to check whether the given value or variable is valid number. This function returns true if the given value is not a number. For example isNaN("12"), isNaN("A").

Listing 16.2 Using isNaN() Function

```
<html>
<title>Example Program to test isNan() Function</title>
<head> </head>
<body>
<h4><u>Example Program to test isNan() Function</u></h4>
<script language="JavaScript">
function checknum()
{
 var n=document.form1.text1.value;
 if(isNaN(n)==true)
  {
  document.form1.text2.value="Not a Number : "+n;
```

```
    }
else
 {
  document.form1.text2.value="It is Number : "+n;
    }
}
</script>
<form name="form1">
Enter a Number1:
<input type="text" name="text1" size=3>

<br><br>
<input type="button" value="Click to Check" onClick="checknum()">
<input type="text" name="text2" size=30>
<br>
</form>
</body>
</html>
```

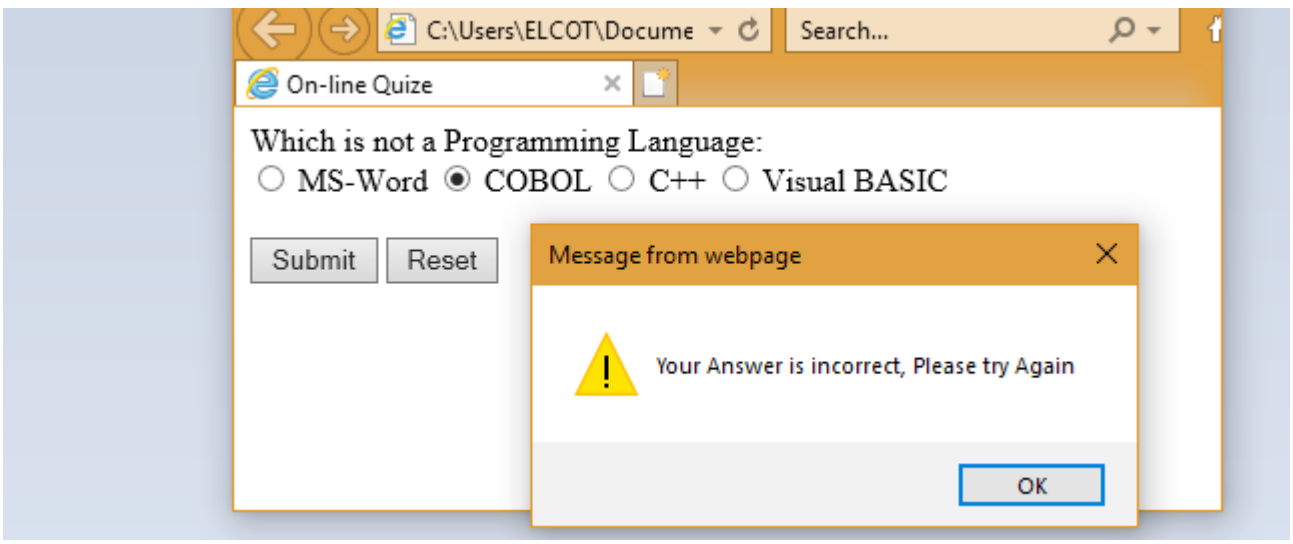
Output:

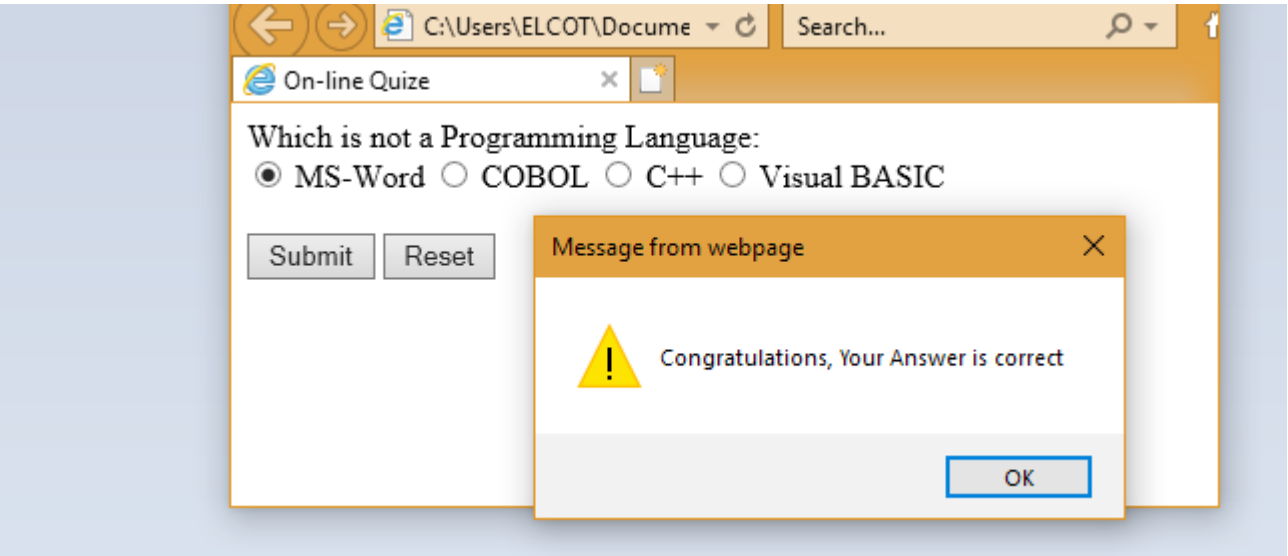


Listing 16.3 Using Function (on-line quiz)

```
<html>
<head>
<title>On-line Quize</title>
<script type="text/JavaScript">
function checkAnswer()
{
        //var myQuiz=document.getElementById("myQuiz");
        if ( document.getElementById("myQuiz").elements[0].checked)
        alert("Congratulations, Your Answer is correct");
        else
        alert("Your Answer is incorrect, Please try Again");
}
</script>
</head>
<body>
<form id="myQuiz"  action="JavaScript:checkAnswer()">
<p> Which is not a Programming Language: <br>
<input type="radio" name="radiobutton" value="Word" />
<label> MS-Word</label>
<input type="radio" name="radiobutton" value="Cobol" />
<label> COBOL</label>
<input type="radio" name="radiobutton" value="CPP" />
<label> C++</label>
<input type="radio" name="radiobutton" value="VB" />
<label>Visual BASIC</label><br><br>
<input type="submit" name="submit" value="Submit" />
<input type="reset" name="reset" value="Reset" />
</p>
</form>
</body>
</html>
```

Output:





Note:

- The **getElementById()** method returns the element that has the ID attribute with the specified value. (In this example, ID is received from form tag).
- **elements[0]** indicates the first option given in the question (Ms-word)

Points to Remember:

- A function is a block of JavaScript code that is defined once but can be invoked for any number of times.
- There are 2 types of functions predefined and user defined functions
- Predefined functions are also called Library function
- User defined functions allow the programmer to modularize a program
- Larger programs divided into smaller are called modules.

Evaluation

FP66JB

Part-I

Choose the correct answer:

1. The parameters work as
   A) Local variable B) Global Variable
   C) File variable D) block variable
2. Predefined functions are also called as
   A)Library functions B) storage functions
   C) instructions D) commands
3. Larger programs are divided into smaller are called
   A) modules B) block
   C) sets D) Group
4. Which of the following is used to enhance reusability and program clarity.
   A) functions B) modules
   C) sets D) instructions
5. Which of the following allow the programmer to modu/arize a program
   A) Library functions B) user defined functions
   C) Normal functions D) Ordinary functions

Part-II

Answer to the following questions (2 Marks):

1. What is a function in JavaScript?
2. What is the use of function?
3. Write a note on Library functions.
4. Write a note on user defined functions.
5. Write the syntax of functions.

Part III

Answer to the following questions (3 Marks):

1. Write a program in JavaScript to find the cube of a number using function
2. Write a program in JavaScript to find the sum of 10 numbers using function.

Case study

Display a menu as web page, Accept the choice as input and display the result using function.

The menu to be displayed is

1. Sum of numbers upto a given limit
2. Sum of numbers from a starting limit to ending limit.

COMPUTER ETHICS AND CYBER SECURITY

Learning Outcomes

- To know about cyber-crimes.
- To understand the guidelines and need for ethics in cyber-world.
- To understand issues related to cyber-crimes.
- To know the functionality of firewalls and proxy servers.
- To learn aboutencryption and decryption.
- To gain knowledge on the IT Act.

17.1 INTRODUCTION

Internet is a communication media which is easily accessible and open to all. Information Technology iswidespread through computers, mobile phones and internet. There is a lot of scope and possibility for misuse of Information Technology.

Computer systems in general are vulnerable. They play an important role in the daily lives of individuals and businesses. Special care must be taken explicitly in order to ensure that the valuable data do not get into wrong hands. Hence, the data need to be protected.

A cyber-crime is a crime which involves computer and network.This is becoming a growing threat to society and is caused by criminals or irresponsible action of individuals who are exploiting the widespread use of Internet. It presents a major challenge to the ethical use of information technologies. Cyber-crime also poses threats to the integrity, safety and survival of most business systems.

Figure. 17.1 presents the types of cyber-crimes that happen across the world.

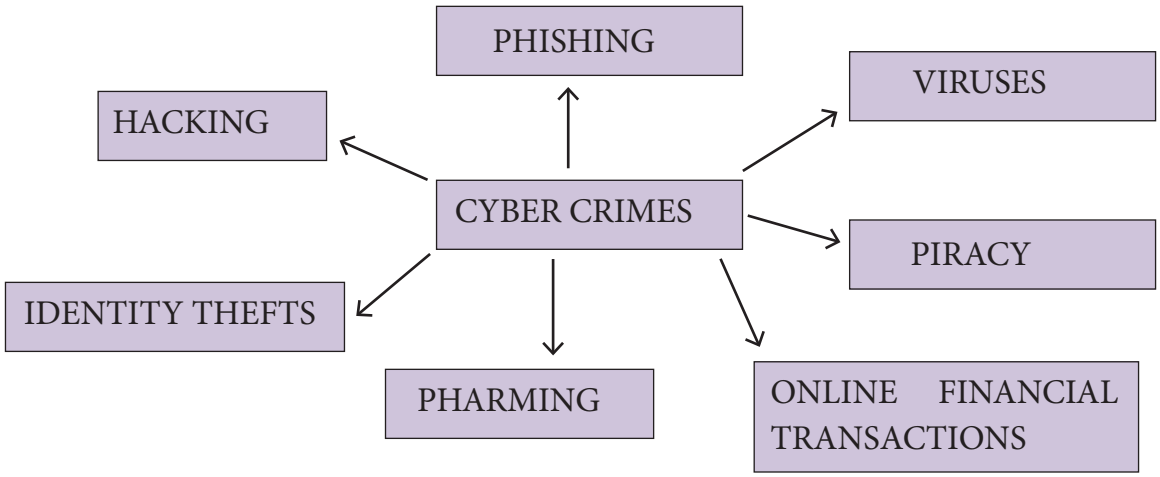


Figure 17.1 Types of cyber – crimes

ETHICS

Ethics means "What is wrong and What is Right". It is a set of moral principles that rule the behavior of individuals who use computers. An individual gains knowledge to follow the right behavior, using morals that are also known as ethics. Morals refer to the generally accepted standards of right and wrong in the society. Similarly, in cyber-world, there are certain standards such as

- Do not use pirated software
- Do not use unauthorized user accounts
- Do not steal others' passwords
- Do not hack

The core issues in computer ethics are based on the scenarios arising from the use of internet such as privacy, publication of copyrighted content, unauthorized distribution of digital content and user interaction with web sites, software and related services.

COMPUTER ETHICS

With the help of internet, world has now become a global village. Internet has been proven to be a boon to individuals as well as various organizations and businesses. e-Commerce is becoming very popular among businesses as it helps them to reach a wide range of customers faster than any other means.

Computer ethics deals with the procedures, values and practices that govern the process of consuming computer technology and its related disciplines without damaging or violating the moral values and beliefs of any individual, organization or entity.

GUIDELINES OF ETHICS

Generally, the following guidelines should be observed by computer users:

1. Honesty:Users should be truthful while using the internet.
2. Confidentiality: Usersshould not share any important information with unauthorized people.
3. Respect: Each user should respect the privacy of other users.

4. Professionalism: Each user should maintain professional conduct.

5. Obey The Law: Users should strictly obey the cyber law in computer usage.

6. Responsibility: Each user should take ownership and responsibility for their actions

Ethics is a set of moral principles that govern the behavior of an individual in a society, and Computer ethics is set of moral principles that regulate the use of computers by users.

17.2 ETHICAL ISSUES

An Ethical issue is a problem or issue that requires a person or organization to choose between alternatives that must be evaluated as right (ethical) or wrong (unethical). These issues must be addressed and resolved to have a positive influence in society.

Some of the common ethical issues are listed below:

- Cyber crime
- Software Piracy
- Unauthorized Access
- Hacking
- Use of computers to commit fraud
- Sabotage in the form of viruses
- Making false claims using computers

CYBER CRIME

Cybercrime is an intellectual, white-collar crime. Those who commit such crimes generallymanipulate the computer system in an intelligent manner.

For example – illegal money transferviainternet.

Examples of some Computer crimes and their functions are listed below in Table 17.1:

Table 17.1

Crime	Function
Crime Function	Hacking, threats, and blackmailing towards a business or a person.
Cyber stalking	Harassing through online.
Malware	Malicious programs that can perform a variety of functions including stealing, encrypting or deleting sensitive data, altering or hijacking core computing functions and monitoring user's computer activity without their permission.
Denial of service attack	Overloading a system with fake requests so that it cannot serve normal legitimate requests.
Fraud	Manipulating data, for example changing the banking records to transfer money to an unauthorized account.
Harvesting	A person or program collects login and passwordinformation from a legitimate user to illegally gainaccess to others' account(s).
Identity theft	It is a crime where the criminals impersonate individuals, usually for financial gain.
Intellectual property theft	Stealing practical or conceptual information developed by another person or company.
Salami slicing	Stealing tiny amounts of money from each transaction.
Scam	Tricking people into believing something that isnot true.
Spam	Distribute unwanted e-mail to a large number ofinternet users.
Spoofing	It is a malicious practice in which communication is send from unknown source disguised as a source known to the receiver.

SOFTWARE PIRACY

Software Piracy is about the copyright violation of software created originally by an individual or an institution. It includes stealing of codes / programs and other information illegally and creating duplicate copies by unauthorized means and utilizing this data either for one's own benefit or for commercial profit.

In simple words,Software Piracy is "unauthorized copying of software".Figure 17. 3 shows a diagrammatical representation of software piracy.

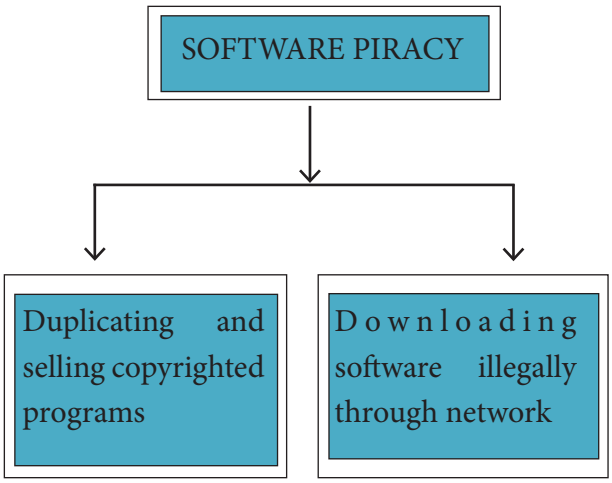


Figure 17.2- Diagrammatic representation of Software piracy

Most of the commercial software is licensed for use at a single computer site or for use by only one user at any time. When a user buysany software, he becomes a licensed user for that software. He is allowed to make copies of the program for backup purposes, but it is against the law to distributeduplicate copies to others. Such illegal copying and distribution of commercial software should not be practiced.

An entirely different approach to software piracy is called shareware, acknowledges the futility of trying to stop people from copying software and instead relies on people's honesty. Shareware publishers encourage users to give copies of programs to friends and colleagues but ask everyone who uses that program regularly to pay a registration fee to the program's author directly. Commercial programs that are made available to the public illegally are often called warez.

UNAUTHORIZED ACCESS

Unauthorized access is when someone gains access to a website, program, server, service, or other system by breaking into a legitimate user account. For example, if someone tries guessing a password or username for an account that was not theirs until they gained access, it is considered an unauthorized access.

To prevent unauthorized access, Firewalls, Intrusion Detection Systems (IDS), Virus and Content Scanners, Patches andHot fixes are used.

HACKING

Hacking is intruding into a computer system to steal personal data without the owner'spermission or knowledge (liketo steal a password). It is also gaining unauthorized access to a computer system, and altering its contents. It may be done in pursuit of a criminal activity or it may be a hobby. Hacking may be harmless if the hacker is only enjoying the challenge of breaking systems' defenses, but such ethical hacking should be practiced only as controlled experiments. Figure 17.4 shows a diagrammatic representation of Hacking.

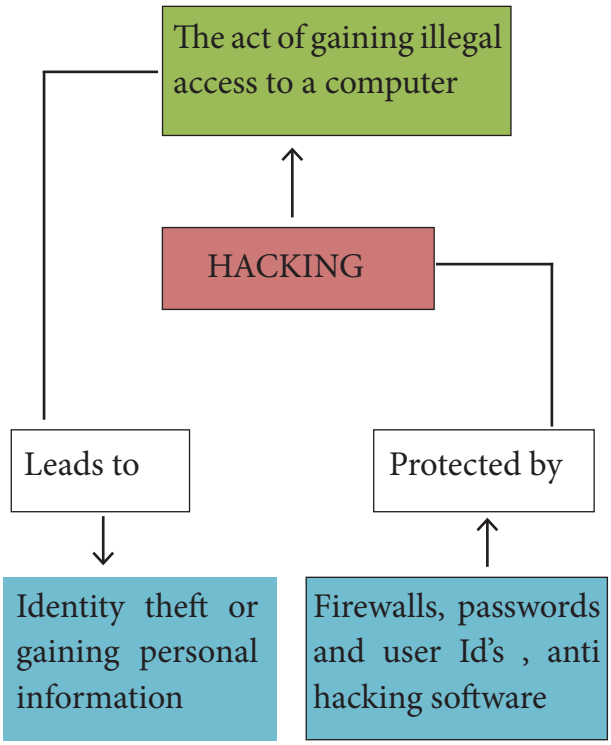


Figure 17.3 Diagramatic representation of Hacking

CRACKING

Cracking is where someone edits a program source so that the code can be exploited or modified. A cracker (also called a black hat or dark side hacker) is a malicious or criminal hacker. "Cracking" means trying to get into computer systems in order to steal, corrupt, or illegitimately view data.

A cracker is someone who breaks into someone else's computer system, often on a network, bypassing passwords or licenses in computer programs.

Software cracking is the most often used type of cracking which is nothing but removing the encoded copy protection. There is another type of cracking called password cracking. This is mainly used to crack the passwords. Password cracking can be performeither by using an automatedprogram or can be manually realized.

One more interesting fact about cracking is social engineering. It is a method of getting passwords and information using human weakness. These crackers trick people, not software. They can use just the phone for getting information, they can pretend being your friend and talk to you on Internet Relay Chat(IRC) or by Instant messenger. e-mail can also be a source for them. They may send official e-mail requesting some sensitive information. It may look like a legitimate e-mail from bank or other official institution.

The other method that uses social engineering crackers is password guessing. They find your personal information from some personal data/facts and try to guess a password.

Usually a cracker maintains knowledge of the vulnerabilities he or she finds and exploits them for personal advantage, not revealing them to either to the general public or to the manufacturer.

17.3 Cyber Security and Threats

Cyberattacks are launched primarily for causing significant damage to a computer system or for stealing important information from an individual or from an organization. Cyber security is a collection of various technologies, processes and measures that reduces the risk of cyber attacks and protects organizations and individuals from computer based threats.

TYPES OF CYBER ATTACKS

Malware is a type of software designed through which the criminals gain illegal access to software and cause damage. Various types of cyber-attacks and their functions are given inTable 17.2.

Table 17.2 – Cyber Attacks and Functions

S.No.	Cyber Attack	Function
1.	Virus	A virus is a small piece of computer code that can repeat itself and spreads from one computer to another by attaching itself to another computer file. One of the most common virus is Trojan. **Trojan** A Trojan virus is a program that appears to perform one function (for example, virus removal) but actually performs malicious activity when executed.
2.	Worms	Worms are self- repeating and do not require a computer program to attach themselves. Worms continually look for vulnerabilities and report back to the author of the worm when weaknesses are discovered.
3.	Spyware	Spyware can be installed on the computer automatically when the attachments are open, by clicking on links or by downloading infected software.
4.	Ransomware	Ransomware is a type of malicious program that demands payment after launching a cyber-attack on a computer system. This type of malware has become increasingly popular among criminals and costs the organizations millions each year.

Cyber Security Threats

In recent years, most of the individuals and enterprises are facing problems due to the weaknesses inherent in security systems and compromised organizational infrastructures. Different types of Cyber Security Threats are categorized as below:

Social engineering

A misuse of an individual's weakness, achieved by making them to click malicious links, or by physically accessing the computer through tricks. Phishing and pharming are examples of social engineering.

Phishing

Phishing is a type of computer crime used to attack, steal user data, including login name, password and credit card numbers. It occurs when an attacker targets a victim into opening an e-mailor an instant text message. The attacker uses phishing to distribute malicious links or attachments that can perform a variety of functions,

including the extraction of sensitive login credentials from victims.

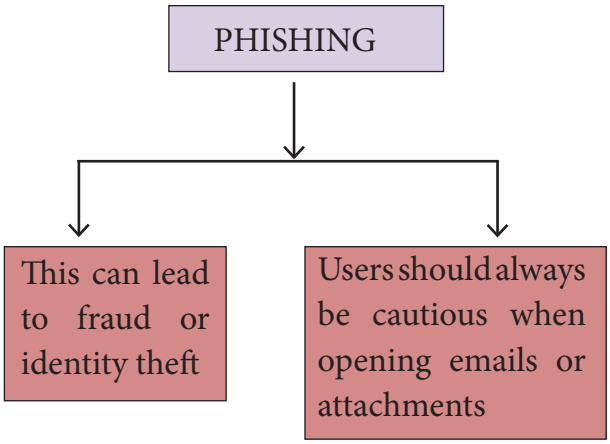


Figure 17.4 Diagrammatic representation of Phishing

Pharming

Pharming is a scamming practice in which malicious code is installed on a personal computer or server, misdirecting users to fraudulent web sites without their knowledge or permission. Pharming has been called "phishing without a trap". It is another way hackers attempt to manipulate users on the Internet. It is a cyber-attack intended to redirect a website's traffic to a fake site.

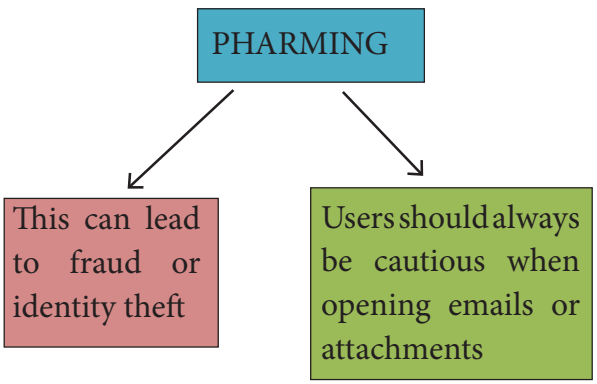


Figure 17.5 Diagrammatic representation of Pharming

Man In The Middle (MITM) :

Man-in-the-middle attack (MITM; also Janus attack) is an attack where the attacker secretly relays and possibly alters the communication between two parties who believe they are directly communicating with each other.

Example: Suppose Alice wishes to communicate with Bob. Meanwhile, Mallory wishes to intercept the conversation to overhear and optionally to deliver a false message to Bob.

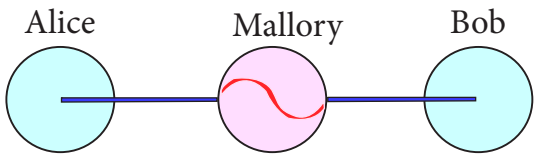


Figure 17.6 - An illustration of the man-in-the-middle attack

Cookies

A cookie (also called HTTP cookie, web cookie, Internet cookie, browser cookie, or simply cookie) is a small piece of data sent from a website and stored on the user's computer memory (Hard drive) by the user's web browser while the user is browsing internet. Cookies were designed to be a reliable mechanism for websites to remember stateful information (such as items added in the shopping cart in an online store) or to record the user's browsing activity (including clicking particular buttons, logging in etc.). They can also be used to remember arbitrary pieces of information that the user previously entered into form fields such as names, addresses, passwords, and credit card numbers. From the security point of view, if cookie data is not encrypted,

any anonymous user (hacker) can access the cookie information and misuse it.

Web sites typically use cookies for the following reasons:

- To collect demographic information about who has visited the Web site.
- Sites often use this information to track how often visitors come to the site and how long they remain on the site.
- It helps to personalize the user's experience on the Web site.
- Cookies can help store personal information about users so that when a usersubsequently returns to the site, a more personalized experience is provided.

If you ever returned to a site and have seen your name mysteriously appear on the screen, it is because on a previous visit, you gave your name to the site and it was stored in a cookie. A good example of this is the way some online shopping sites will make recommendations to users based on their previous purchases. It helps to monitor advertisements. Cookies do not act maliciously on computer system. They are merely text files that can be deleted at any time.

Cookies cannot be used to spread viruses and they cannot access your hard drive. However, any personal information that you provide to a Web site, including credit card information, will most likely be stored in a cookie unless the cookie feature is explicitly turned off in your browser. This is the way in which cookies threaten privacy.

Firewall and Proxy Servers

A firewall is a computer network security based system that monitors and controls incoming and outgoing network traffic based on predefined security rules. A firewall commonly establishes a block between a trusted internal computer network and entrusted computer outside the network. They are generally categorized as network-based or host-based. Network based firewalls are positioned on the gateway computers of LANs [local area Network], WANs [Wide Area Network] and intranets. Host-based firewalls are positioned on the network node itself. The host-based firewall may be a service as a part of the operating system or an agent application such as endpoint security or protection. Each has advantages and disadvantages. However, each has a role in layered security. Firewalls also vary in type depending on where communication originates, where it is intercepted, and the state of communication being traced. Figure 17.7 shows the working of firewall server.

A proxy server acts as an intermediary between the endusersand a web server. A client connects to the proxy server, requesting some service, such as a file, connection, web page, or other resources available from a different server. The proxy server examines the request, checks authenticity and grants the request based on that. Proxy servers typically keep the frequently visited site addresses in its cache which leads to improved response time.

Figure 17.8 shows the working of a proxy server.

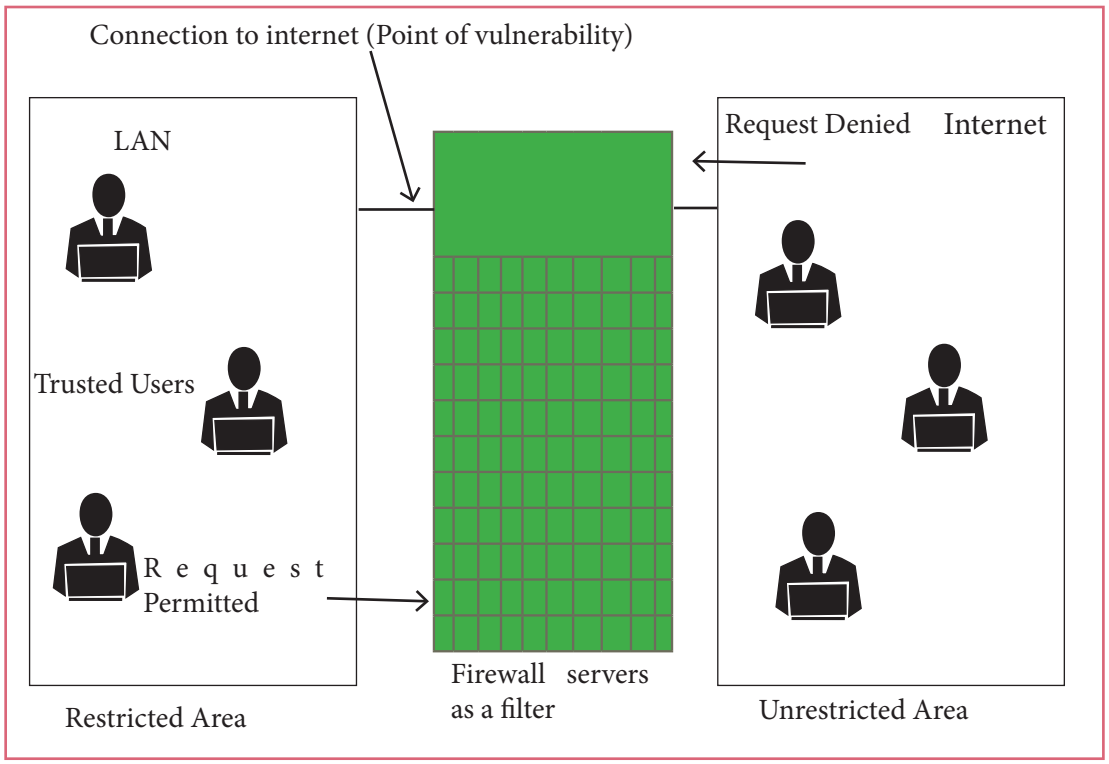


Figure 17.7 Firewall Server

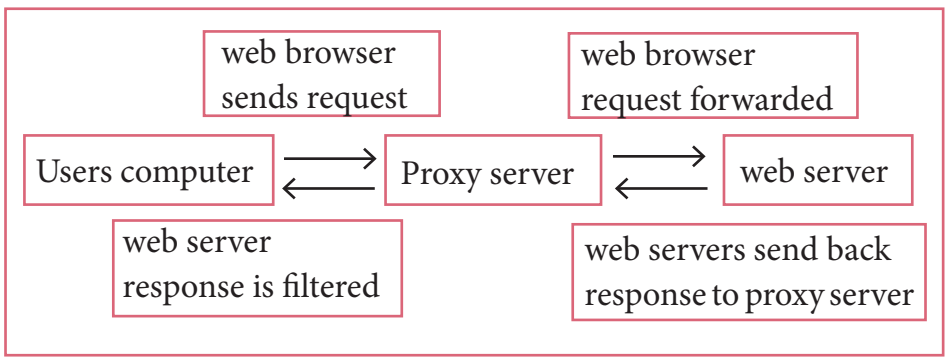


Figure 17.8 Working of Proxy server

Encryption and Decryption

Encryption and decryption are processes that ensure confidentiality that only authorized persons can access the information.

Encryption is the process of translating the plain text data (plaintext) into random and mangled data (called cipher-text).

Decryption is the reverse process of converting the cipher-text back to plaintext. Encryption and decryption are done by cryptography. In cryptography a key is a piece of information (parameter) that determines the functional output of a cryptographic algorithm.

Figure 17.10 shows the encryption and decryption process.

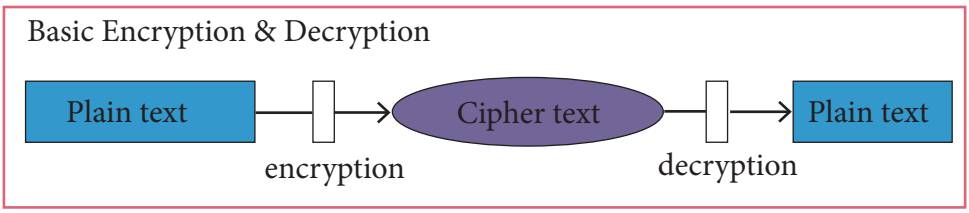


Figure 17.9 Encryption and Decryption

Encryption has been used by militaries and governments to facilitate secret communication. It is now commonly used in protecting information within many kinds of civilian systems. It is also used to protect data in communication system, for example data being transferred via networks (e.g. the Internet, ecommerce), mobile telephones, wireless microphones, wireless intercom systems, Bluetooth devices and bank automatic teller machines. There have been numerous reports of data in communication being intercepted in recent years. Data should also be encrypted when transmitted across networks in order to protect against the network traffic by unauthorized users.

TYPES OF ENCRYPTION

There are two types of encryption schemes as listed below:

- Symmetric Key encryption
- Public Key encryption

SYMMETRIC KEY ENCRYPTION

Symmetric encryption is a technique to use the same key for both encryption and decryption. The main disadvantage of the symmetric key encryption is that all authorized persons involved, have to exchange the key used to encrypt the data before they can decrypt it. If anybody intercepts the key information, they may read all message. Figure 17.10 depicts the working of symmetric key encryption.

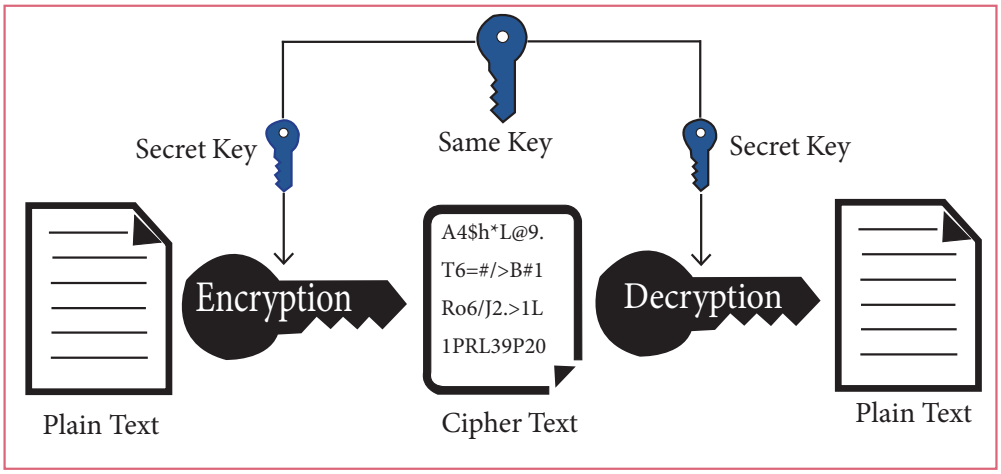


Figure 17.10 Symmetric key encryption

PUBLIC KEY ENCRYPTION

Public key encryption isalso called Asymmetric encryption. It uses the concept of a key value pair, a different key is used for the encryption and decryption process. One of the keys is typically known as the private key and the other is known as the public key.

The private key is kept secret by the owner and the public key is either shared amongst authorized recipients or made available to the public at large.

The data encrypted with the recipient's public key can only be decrypted with the corresponding private key. Figure 17.11 shows the public key encryption.

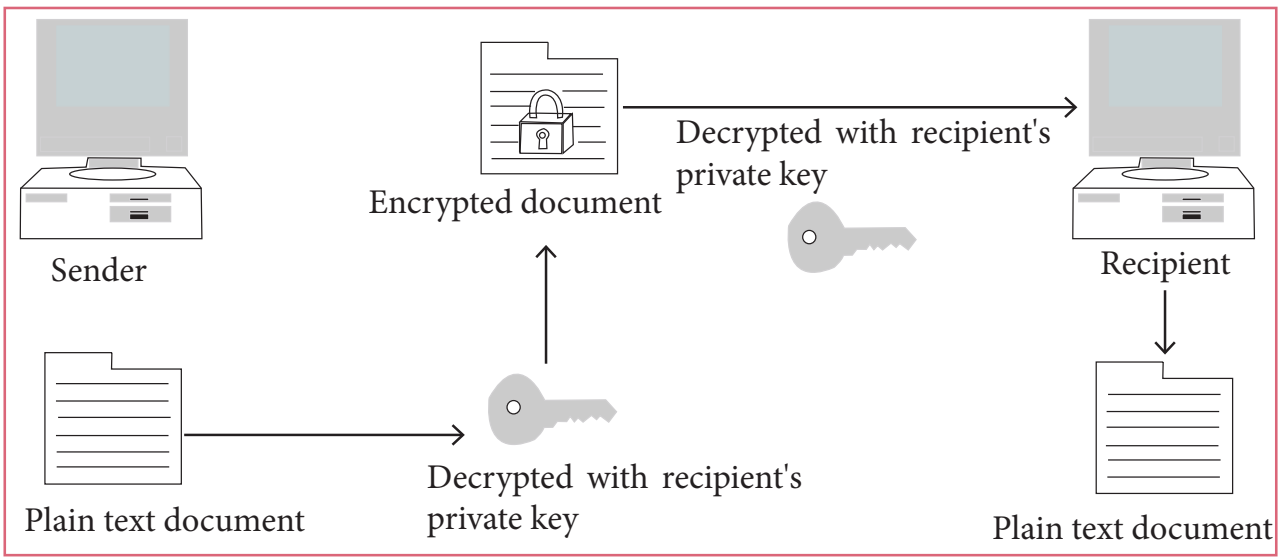


Figure 17.11 Public key encryption

Asymmetric Encryption in Digital Certificates:

A digital certificate in a client-server model of communication is one of the example of Asymmetric Encryption. A certificate is a package of information that identifies a user and a server. It contains information such as an organization's name, the organization that issued the certificate, the users' email address and country, and user's public key.

When a server and a client require a secure encrypted communication, they send a query over the network to the other party, which sends back a copy of the certificate. The other party's public key can be extracted from the certificate. A certificate can also be used to uniquely identify the holder.

Digital Signature

Digital signatures are based on asymmetric cryptography and can provide assurances of evidence to origin, identity and status of an electronic document, transaction or message, as well as acknowledging informed by the signer.

To create a digital signature, signing software (email) creates a one-way hash of the electronic data to be signed. The user's private key to encrypt the hash, returning a value that is unique to the hashed data. The encrypted hash, along with other information such as the hashing algorithm, forms the digital signature. Any change in the data, even to a single bit, results in a different hash value. This attribute enables others to validate the integrity of

the data by using the signer's public key to decrypt the hash. If the decrypted hash matches a second computed hash of the same data, it proves that the data hasn't changed since it was signed. If the two hashes don't match, the data has either been tampered with in some way (indicating a failure of integrity) or the signature was created with a private key that doesn't correspond to the public key presented by the signer (indicating a failure of authentication). Figure 17.12 shows the function of a digital signature.

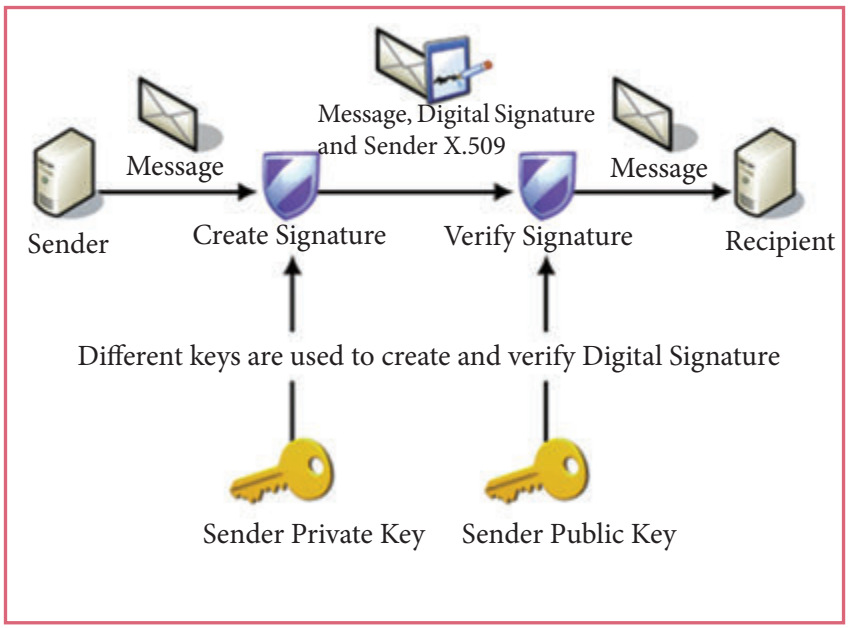


Figure 17.12 –Function of Digital Signature

17.4 INTRODUCTION TO INFORMATION TECHNOLOGY ACT

In the 21stcentury, Computer, Internet and ICT or e-revolution has changed the life style of the people. Today paper based communication has been substituted by e-communication. Accordingly we have new terminologies like cyber world, e-transaction, e-banking, e-return and e-contracts. Apart from positive side of e-revolution there is also negative side of computer, that is, the internet and ICT in the hands of criminals which has become a weapon of offence. Accordingly a new panel of members emerged to tackle the problems of cyber crimes in cyber space i.e. Cyber Law or Cyber Space Law or Information Technology Law or Internet Law.

In India Cyber law and IT Act 2000 , modified in 2008 are being articulated to prevent computer crimes. IT Act 2000 is an act to provide legal recognition for transactions carried out by means of ElectronicData Interchange(EDI) and other means of electronic communication. It is the primary law in India dealing with cybercrime and electronic commerce(e-Commerce). e-Commerce is electronic data exchange or electronic filing of information.

"Cyber law or Internet law is a term that encapsulates the legal issues related to use of the Internet.

PREVENTION

25% of cyber crime remains unsolved. To protect the information the following points to be noted:

- Complex password setting can make your surfing secured.
- When the internet is not in use, disconnect it.
- Do NOT open spam mail or emails that have an unfamiliar sender.
- When using anti-virus software, keep it up-to-date.

- Awareness is the key to security
- Information security is the immune system in the body of business.
- A check that does not bounce is called the Security Check. Do it every day before you leave!
- Do Your Part - Be Security Smart !!!
- Don't be Quick to Click… be wary when you shop online.
- Restart is Smart job
- Passwords are like toothbrushes. They are best when new and should never be shared.
- When you and your system part away, your system should be first off for the day.
- Your mind is a storage room of information, keep the door locked.
- _ a _ _word is not a PaSSword without Protect, Save and Secure!
- Link Link stop neglect….Think Think before connect…..

Evaluation

FPNXML

Part I

Choose the correct Answer:

1. Which of the following deals with procedures, practices and values?
   a. piracy b. programs c. virus d. computer ethics
2. Commercial programs made available to the public illegally are known as
   a. freeware b. warez c. free software d. software
3. Which one of the following are self-repeating and do not require a computer program to attach themselves?
   a. viruses b. worms c. spyware d. Trojans
4. Which one of the following tracks a user visits a website?
   a. spyware b. cookies c. worms d. Trojans
5. Which of the following is not a malicious program on computer systems?
   a. worms d. Trojans c. spyware d. cookies

6. A computer network security that monitors and controls incoming and outgoing traffic is
   a. Cookies b.Virus c. Firewall d. worms
7. The process of converting cipher text to plain text is called
   a. Encryption b. Decryption c. key d. proxy server
8. e-commerce means
   a. electronic commerce b. electronic data exchange
   c. electric data exchange d. electronic commercialization.
9. Distributing unwanted e-mail to others is called.
   a. scam b. spam c. fraud d. spoofing
10. Legal recognition for transactions are carried out by
   a. Electronic Data Interchange b. Electronic Data Exchange
   c. Electronic Data Transfer d. Electrical Data Interchange

Part II

Answer to the following questions (2 Marks):

1. What is harvesting?
2. What are Warez?
3. Write a short note on cracking.
4. Write two types of cyber attacks.
5. What is a Cookie?

Part III

Answer to the following questions (3 Marks):

1. What is the role of firewalls?
2. Write about encryption and decryption.
3. Explain symmetric key encryption.
4. What are the guidelines to be followed by any computer user?
5. What are ethical issues? Name some.

Part IV

Answer to the following questions (5 Marks):

1. What are the various crimes happening using computer?
2. What is piracy? Mention the types of piracy? How can it be prevented?
3. Write the different types of cyber attacks.

Reference Books :

- Computer Network Security and Cyber Ethics by Joseph MiggaKizza
- "Investigating Cyber Law and Cyber Ethics: Issues, Impacts and Practices: 1" by Alfreda Dudley and James Braman

GLOSSARY

WORD	MEANING
Vulnerability	*The possibility of being attacked or harmed.*
Ethics	*Moral principles that govern a person's behaviour or the conducting of an activity.*
Cyber	*Characteristic of the culture of computers, information technology, and virtual reality.*
Computer Crime	*Computer crime is an intellectual crime to manipulate computer system.*
Authenticity	*The quality of being real or true.*
Sabotage	*Deliberately destroy, damage, or obstruct.*
Perpetrator	*A person who carries out a harmful, illegal, or immoral act.*
Software Piracy	*Software Piracy is the copyright violation of software created originally by one person and illegally used by someone else.*
Hacking	*Hacking is gaining unauthorized access to s computer system without the owner's permission.*
Cracking	*Cracking is gaining unauthorized access to computer systems to commit a crime, such as stealing the code to make a copy-protected program run thus denying service to legitimate users.*
Malicious	*Intentionally doing harm.*
Freeware	*Freeware is a software available free of charge.*
Shareware	*Shareware is a software that is distributed free of charge on a trial basis for a limited time.*
Phishing	*Phishing is a term used to describe a malicious individual or group of individuals who scam users by sending e-mails or creating web pages that are designed to collect an individual's online bank, credit card, or other login information.*
Fraudulent	*Dishonest, cheating, swindling, corrupt, criminal, illegal, unlawful. 1*
Anonymous	*Unnamed, nameless, unidentified, unspecified.*
Cookies	*Cookies are messages that web servers pass to your web browser when you visit Internet sites*
Tampering	*Interfere in order to cause damage.*
Immune	*Resistant to a particular infection or toxin.*
Firewall	*A firewall is a network security system that monitors and controls incoming and outgoing network traffic based on predetermined security rules.*
Proxy server	*A proxy server is a gateway between a local network and a larger-scale network such as the Internet. Proxy servers provide increased performance and security.*
Encryption	*Encryption is the process of encoding a message or information so that only authorized users can decrypt it*
Decryption	*Decryption is theprocess of decoding the encrypted text by converting it back into normal text.*

Tamil Computing

18.1 Introduction

" பிறநாட்டு நல்லறிஞர் சாத்திரங்கள்
தமிழ்மொழியிற் பெயர்த்தல் வேண்டும்;
இறவாத புகழுடைய புதுநூல்கள்
தமிழ்மொழியில் இயற்றல் வேண்டும்;
மறைவாக நமக்குள்ளே பழங்கதைகள்
சொல்வதிலோர் மகிமை இல்லை;
திறமான புலமையெனில் வெளிநாட்டோர்;
அதை வணங்கஞ் செய்தல் வேண்டும்."

– மகாகவி பாரதி

Human civilization developed with the innovation of computer in the twentieth century. Computer development began as the early calculating tool that was essential ingredient for gigantic growth for the existence of human life without computers.

It is true that any language will be outdated when it does not have the ability to adapt itself to the changing technologies. Tamil is the living language for thousands of years. Development of modern technologies, does not affect the growth of classical Tamil as it is ready to adopt the growing technological changes. **Tamil is not just a language, it is our identity, our life and our sense.**

"எங்கள் வாழ்வும், எங்கள் வளமும் மங்காத தமிழென்று சங்கே முழங்கு" – புரட்சி கவி.

18.2 Tamil in Internet

We know that the internet today is a plays a vital role in every man's life. Internet is the best information technological device, through which we get know everything from Internet .

In 2017 a study conducted by KPMG a Singapore based organizationalong with google, reported that, Tamil topped the list, among the most widely used languages in India where 42% are using the Internet in Tamil

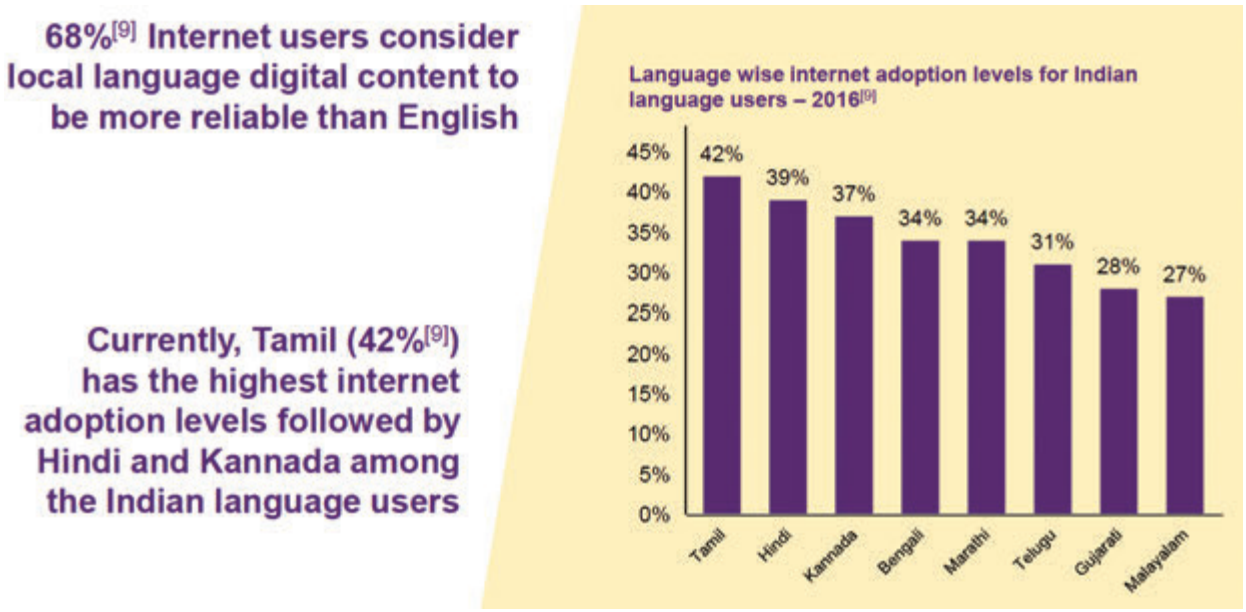


Figure: 18.1

Moreover in 2021 onwards, 74% of people in India will access internet using Tamil and it will be in the top usage of Internet in India.

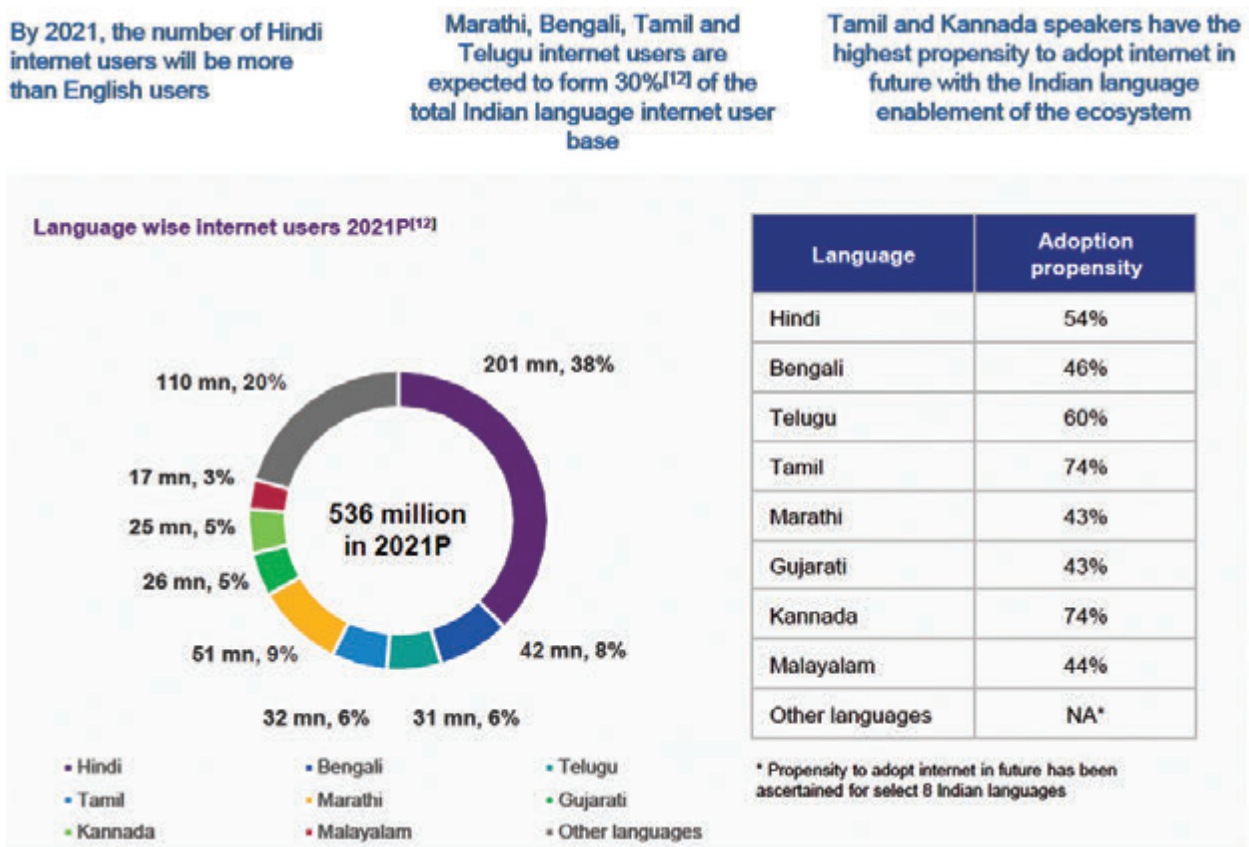


Figure: 18.2

These statistical data will be useful to improve internet services in Tamil.

18.3 Search Engines in Tamil

The "Search Engines" are used to search any information from the cyber space. Although there are many search engines, but only a few of them are frequently in use. In the top ten search engines, Google, Bing and Yahoo are takes first three places respectively. Google and Bing provide searching facilities in Tamil, which means you can search everything through Tamil. A Google search engine gives you an inbuilt Tamil virtual keyboard.

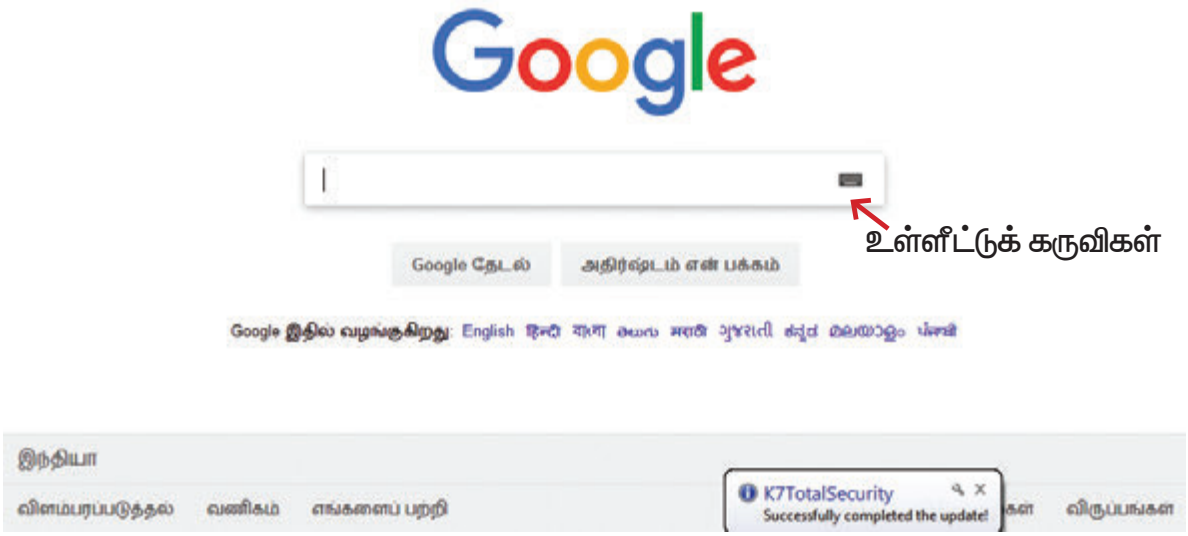


Figure: 18.3 (a) Google Search Engine (India)

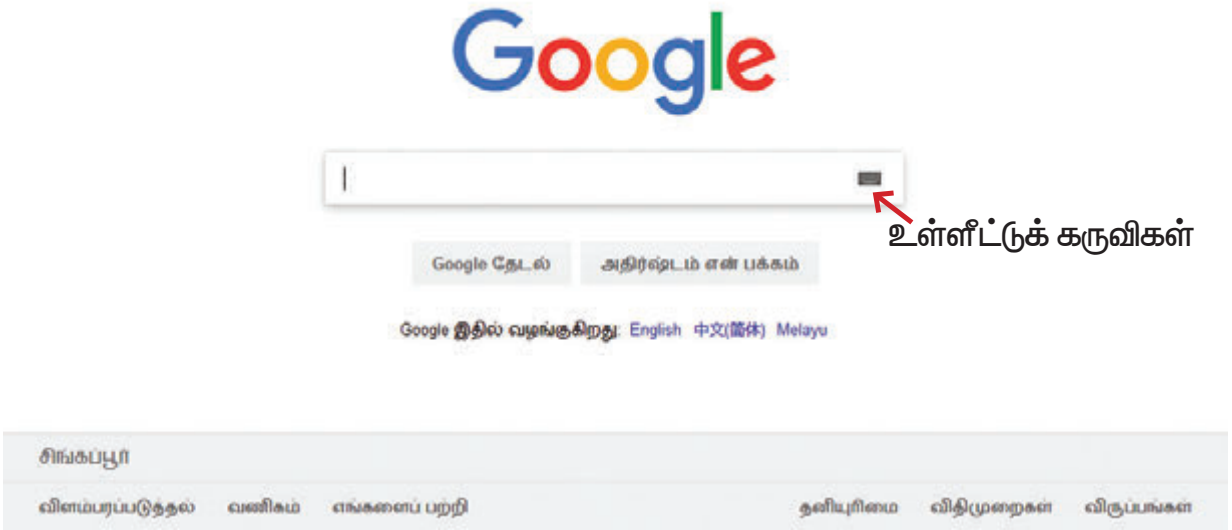


Figure 18.3(b) Google Search Engine (Singapore)

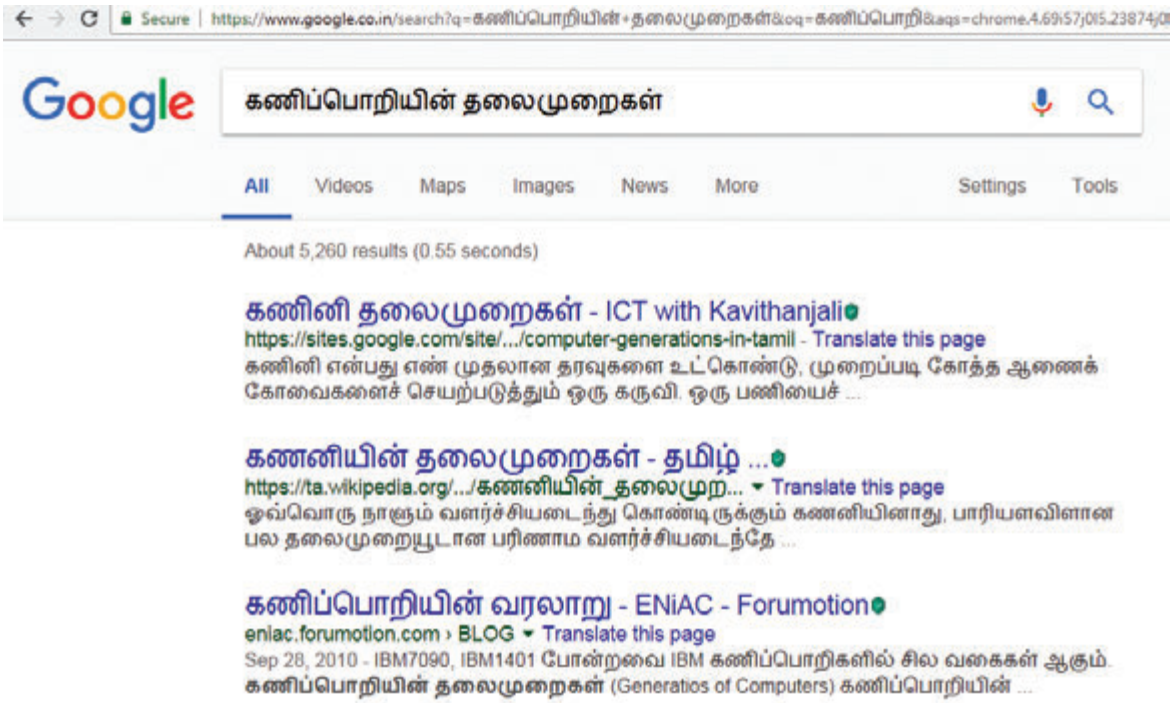


Figure: 18.4 Searching in Tamil

18.4 e – Governance:

Getting Government services through internet is known as e-Governance. Govt. of Tamilnadu has been giving its services through Internet. One can communicate with Govt. of Tamilnadu from any corner of the state. One can get important announcements, government orders, and government welfare schemes from the web portal of Govt. of. Tamilnadu.

Figure: 18.5 Official Website of Govt. of Tamilnadu

Table : 18.1

E-Governance through Tamil	Web Address
Official Website of Govt. of Tamilnadu	http://www.tn.gov.in/ta
Department of Agricultural Engineering	http://www.aed.tn.gov.in/
Department of Environment	http://www.environment.tn.nic.in/
Directorate of Govt. Examinations	http://www.dge.tn.nic.in/
Tamilnadu Health Department	http://www.tnhealth.org/
Tamilnadu Micro, Small and Medium Enterprises Department	http://www.msmeonline.tn.gov.in/
Rural Development and Panchayat Raj Department	http://www.tnrd.gov.in/
Backward, Most Backward and Minorities Welfare Department	http://www.bcmbcmw.tn.gov.in/
Tamilnadu Forest Department	https://www.forests.tn.gov.in/
Hindu Religious and Charitable Endowments Department.	http://www.tnhrce.org/
Tamil Nadu Public Service Commission (TNPSC)	http://www.tnpsc.gov.in/tamilversion/index.html
Official Website of Govt. of Srilanka	https://www.gov.lk/index.php

Outside India, Government of Srilanka provides all their services through the official website in Tamil.

18.5 e-Library

E-Libraries are portal or website of collection of e-books. Tamil e-Library services provide thousands of Tamil Books as ebooks mostly at free of cost. It is the most useful service to Tamil people who live far away from their home land.

Table : 18.2

Tamil e-Library	Website address
Tamilnadu School Education and Teacher Education Training Textbooks and Resource Books	http://www.textbooksonline.tn.nic.in/
Tamil Virtual Academy	http://www.tamilvu.org/library/libindex.htm
Connemara Public Library	http://connemarapubliclibrarychennai.com/Veettukku_oru_noolagam/index.html
Tamil Digital Library	http://tamildigitallibrary.in/
Chennai Library	http://www.chennailibrary.com/
Thamizhagam	http://www.thamizhagam.net/parithi/parithi.html

Project Madurai	http://www.projectmadurai.org/pmworks.html
Old Books and Manuscripts	http://www.tamilheritage.org/old/text/ebook/ebook.html
Noolaham	http://www.noolaham.org/wiki/index.php/
Anna Centenary Library	http://www.annacentenarylibrary.org/

18.6 Tamil Typing and Interface software

Tamil is mostly used to type documents in word processors and search information from internet. Typing Tamil using Tamil interface software is the familiar one among the different methods of typing. This is the simplest method of typing Tamil in both Computer and Smart phones.

18.6.1 Familiar Tamil Keyboard Interface:

- NHM Writer, E-Kalappai and Lippikar – are familiar Tamil keyboard interfaces software that is used for Tamil typing which works on Tamil Unicode, using phonetics.
- Sellinam and Ponmadal – are familiar Tamil keyboard layouts that works on Android operating system in Smart phone using phonetics.

Figure: 18.6 eKalappai Opening screen

18.7 Tamil Office Automation Applications

Famous Office automation software like Microsoft Office, Open Office etc., provides complete Tamil interface facility. These softwares are downloadable and installed in your computer. After installation, your office automation software environment will completely

changed to Tamil. Menu bars, names of icons, dialog boxes will be shown in Tamil. Moreover, you can save files with Tamil names and create folders with Tamil names.

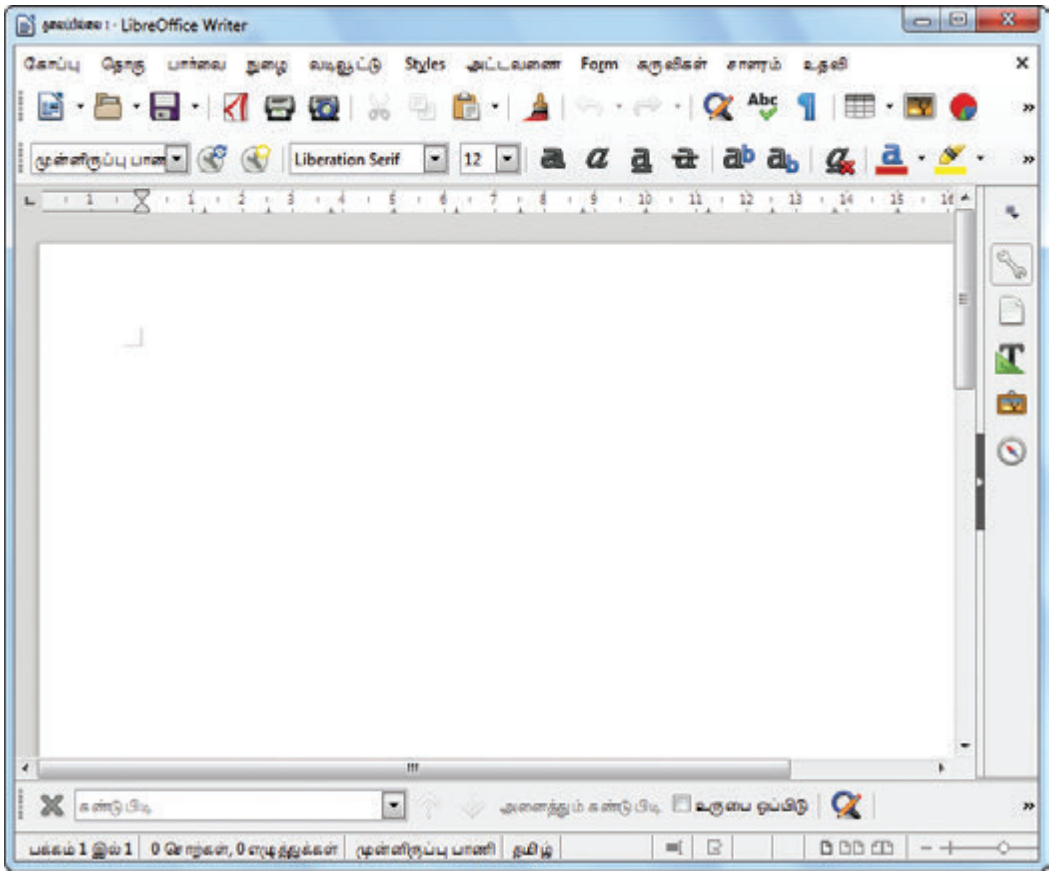


Figure 18.7: Libra Office Writer Environments in Tamil

Apart from that Tamil Libra Office, Tamil Open Office, Azhagi Unicode Editor, Ponmozhi, Menthamiz, Kamban, Vani are office automation software working exclusively for Tamil. You can these applications are designed to work completely in Tamil.

18.8 Tamil Translation Applications

Thamizpori (தமிழ்பொறி) is a Tamil translation application having more than 30000 Tamil words equalent to English words. Using this application, we can transalte small english sentences into Tamil. Google also gives an online translation facility, using this online facility we can translate from Tamil to any other language vice versa.

18.9 Tamil Programming Language

Programming languages to develop software to computers and smart phones are available only in English. Now, efforts are taken to develop programming languages in Tamil. Based on Python programming language, the first Tamil programming language "Ezhil" (எழில்) is designed. With the help of this programming language, you can write simple programs in Tamil.

18.10 Tamil Information Interchange Coding Systems

TSCII (Tamil Script Code for Information Interchange)

Computers are handle data and information as binary system. Every data should be converted into binary while it is feed into a computer system. You learnt about all these things in the first unit of this text book. Computers use ASCII encoding system to handle data and information. The ASCII encoding system is applicable only for handling English language. Therefore, TSCII (Tamil Script Code for Information Interchange) is the first coding system to handle our Tamil language in an analysis of an encoding scheme that is easily handled in electronic devices, including non-English computers. This encoding scheme was registered in IANA (Internet Assigned Numbers Authority) unit of ICANN.

ISCII (Indian Script Code for Information Interchange)

This is one of the encoding schemes specially designed for Indian languages including Tamil. It was unified with Unicode.

Unicode:

Unicode is an encoding system, designed to handle various world languages, including Tamil. Its first version 1.0.0 was introduced on October 1991. While introduction of this scheme, can be able to handle nearly 23 languages including Tamil. Among the various encoding scheme, Unicode is the suitable to handle Tamil.

18.11 Tamil Operating System

An operating system is needed to access electronic systems such as computer and smart phone. Microsoft Windows is very popular operating system for personal computers. Linux is another popular open source operating system. Operating systems are used to access a computer easily. An operating system should be easy to work and its environment should be in understandable form. Thus, all operating systems used in computers and smart phones offered environment in Tamil.

Windows Tamil Environment interface should be downloading and install from internet. It shows all windows elements such as Taskbar, desktop elements, names of icons, commands in Tamil.

18.12 Organisation and projects to develop Tamil

Tamil Virtual Academy:

With the objectives of spreading Tamil to the entire world through internet, Tamil Virtual University was established on 17th February 2001 by the Govt. of Tamilnadu. Now, this organisation functioning with the name "Tamil Virtual Academy". This organisation offers different courses regarding Tamil language, Culture, heritage etc., from kindergarten to under graduation level.

Website: http://www.tamilvu.org/index.php

Tamil Language Council, Singapore

With the objectives of promoting the awareness and greater use of Tamil among the Singaporeans, in 2001 the council of Tamil Language was formed by the ministry of Information Communications and Arts, Govt. of Singapre. The council is called as "வளர்தமிழ் இயக்கம்".

Website: http://tamil.org.sg/ta

Madurai Project

Project Madurai is an open and voluntary initiative to collect and publish free electronic editions of ancient tamil literary classics. This means either typing-in or scanning old books and archiving the text in one of the most readily accessible formats for use on all popular computer platforms.

Since its launch in 1998, Project Madurai released in Tamil script form as per TSCII encoding. Since 2004 they started releasing ebooks in Tamil unicode as well.

Web Site: http://www.projectmadurai.org/

Tamil Wikipedia:

Wikipedia is a open source encyclopedia. Any person can write article about any subject. In Tamil Wikipedia has more than 1 lacks articles.

Web Site: https://ta.wikipedia.org/

In order to make Tamil as a living language, it is the duty every Tamilian to make

participate Tamil in development of technology. Those who forgotten their values, they will be considered as "Nomads". If we learn about how many great technologies we have to add Tamil as a symbol of our race. It is our duty to combine our world's first language and language for more than five thousand years with growing technology.

Points to Remember:

- Tamil topped the list of the most widely used languages in India by the end of 2016, while 42% are using the Internet.
- Google and Bing provide searching facilities in Tamil.
- Getting Government services through internet is known as e-Governance.
- Tamil e-Library services provide thousands of Tamil Books as ebooks mostly at free of cost.
- Thamizpori (தமிழ்பொறி) is a Tamil tranlation application having more than 30000 Tamil words equalent to English words.
- The first Tamil programming language is "Ezhil" (எழில்)
- Unicode is an encoding system, designed to handle various world languages, including Tamil.
- Among the various encoding scheme, Unicode is the suitable to handle Tamil.
- Windows Tamil Environment interface should be downloading and install from internet.

Evaluation

Answer to the following questions

1. List of the search engines supporting Tamil.
2. What are the keyboard layouts used in Android?
3. Write a short note about Tamil Programming Language.
4. What TSCII?
5. Write a short note on Tamil Virtual Academy.

FQ7PQH

****

COMPUTER APPLICATIONS – XI Vol-II
List of Authors and Reviewers

Domain Experts

Mrs. Bagyalakshmi P.
Asst. Professor and Head of the Department,
Dept. of Computer Applications, Queen Mary's College, Chennai.

Reviewers

Dr. T.V. Gopal
Professor,
Dept. of Computer Science and Technology,
College of Engineering, Guindy, Anna University, Chennai.

Dr. Ranjani Parthasarathi
Professor,
Dept. of Info Science and Technology,
College of Engineering, Guindy, Anna University, Chennai.

Content Experts

Dr. Radha P
Assistant Professor,
Dept. of Information Technology,
Govt. Arts & Science College (A), Coimbatore.

Dr. Nester Jeyakumar M
Associate Professor and Head of the Department,
Dept. of Computer Science, Loyola College, Chennai.

Authors

Mr. Ramakrishnan V. G.
Post Graduate Teacher,
Karnataka Sangha Hr Sec School, T.Nagar, Chennai.

Mr. Kannan K.
Post Graduate Teacher,
Chennai Girls Hr. Sec School, Rotler Street, Chennai.

Mrs. Bindhu Mohandas
Post Graduate Teacher,
Vijayanta Model Hr. Sec. School, H.V.F Estate, Avadi, Chennai.

Mr. Gowrisankar N.V.
Post Graduate Teacher,
Chennai Girls Hr. Sec School, Nungambakkam, Chennai.

Mr. Sreenivasan R.
Post Graduate Teacher,
Santhome Hr. Sec. School, Mylapore, Chennai.

Mr. Lenin K.
Post Graduate Teacher,
Chennai Girls Hr Sec School, Saidapet, Chennai

Miss. Sangeetha A.
Post Graduate Teacher,
Govt. Hr. Sec. School, Rajanthangal, Thiruvannamalai.

Dr. Valarmathi K.E.
Post Graduate Teacher,
Academic Council, Velammal Vidhyashram, Surapet, Chennai.

Mrs. Gajalakshmi R.
Post Graduate Teacher,
Jaigopal Garodia Hindu Vidyalaya Hr. Sec School, West Mambalam, Chennai.

Mrs. Vidhya H.
Post Graduate Teacher,
DAV Boys Senior Seconary School, Gopalapuram, Chennai.

Academic Coordinators

Mr. Ravikumar Arumugam
Deputy Director,
State Council of Educational Research and Training, Chennai.

Mrs. Tamil Selvi R.
B.T. Assistant,
Government High School, Poonampalayam, Trichy Dist.

QR Code Team

R. Jaganathan,
S.G.T., PUMS, Ganesapuram- Polur, Thiruvannamalai Dist.

N. Jagan,
B.T. Asst., GBHSS, Uthiramerur, Kancheepuram Dist.

J.F. Paul Edwin Roy,
B.T. Asst., PUMS, Rakkipatti, Salem Dist.

Art and Design Team

Layout
THY Designers and Computers
Chennai

QC
Manohar Radhakrishnan
Gopu Rasuvel

Wrapper Design
Kathir Arumugham

Co-ordination
Ramesh Munisamy

Typist
T. Meena

This book has been printed on 80 G.S.M.
Elegant Maplitho paper.

Printed by offset at: