

To all my loving students

Preface

I am glad to present this notes, especially designed to serve the needs of the students of Bsc Vth semester Computer Science. The notes have been written keeping in mind the general weakness in understanding the fundamental concepts of the topics. The notes are self-explanatory and adopt the "Teach Yourself" style. It is also based on question-answer pattern. The language of notes is quite easy and understandable based on scientific approach.

Thanks to the online readers for their overwhelming response to our previous notes of computer graphics, software engineering, software testing & programming based numerical methods. The feedback and the response we received, encouraged me to write to this notes.

Any further improvement in the contents of the notes by making corrections, omission and inclusion is keen to be achieved based on suggestions from the readers for which the author shall be obliged.

I acknowledge special thanks to all who involve directly and indirectly, which are the backbones and main concept provider and also have been constant source of motivation throughout this endeavour. They played an active role in coordinating the various stages of this endeavour and spearheaded the collecting work.

I look forward to receiving valuable suggestions from professors of various educational institutions, other faculty members and my loving students for improvement of the quality of the notes. The reader may feel free to send in their comments and suggestions to the under mentioned address.

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Internet Basics

What is the Internet?

Ans.

The Internet, sometimes called simply "the Net," is a worldwide system of computer networks – a network of networks in which users at any one computer can, if they have permission, get information from any other computer (and sometimes talk directly to users at other computers). The U.S. Department of Defense laid the foundation of the Internet roughly 30 years ago with a network called ARPANET. But the general public didn't use the Internet much until after the development of the World Wide Web in the early 1990s.

In 1957, the U.S. government formed the Advanced Research Projects Agency (ARPA), a segment of the Department of Defense charged with ensuring U.S. leadership in science and technology with military applications. In 1969, ARPA established ARPANET, the forerunner of the Internet.

ARPANET was a network that connected major computers at the University of California at Los Angeles, the University of California at Santa Barbara, Stanford Research Institute, and the University of Utah. Within a couple of years, several other educational and research institutions joined the network.

In response to the threat of nuclear attack, ARPANET was designed to allow continued communication if one or more sites were destroyed. Unlike today, when millions of people have access to the Internet from home, work, or their public library, ARPANET served only computer professionals, engineers, and scientists who knew their way around its complex workings.

What is the World Wide Web?

Ans.

The World Wide Web came into being in 1991, thanks to developer Tim Berners-Lee and others at the European Laboratory for Particle Physics, also known as Conseil Européen pour la Recherche Nucleure (CERN). The CERN team created the protocol based on hypertext that makes it possible to connect content on the Web with hyperlinks. Berners-Lee now directs the World Wide Web Consortium (W3C), a group of industry and university representatives that oversees the standards of Web technology.

Early on, the Internet was limited to noncommercial uses because its backbone was provided largely by the National Science Foundation, the National Aeronautics and Space Administration, and the U.S. Department of Energy, and funding came from the government. But as independent networks began to spring up, users could access commercial Web sites without using the government-funded network. By the end of 1992, the first commercial online service provider, Delphi, offered full Internet access to its subscribers, and several other providers followed.

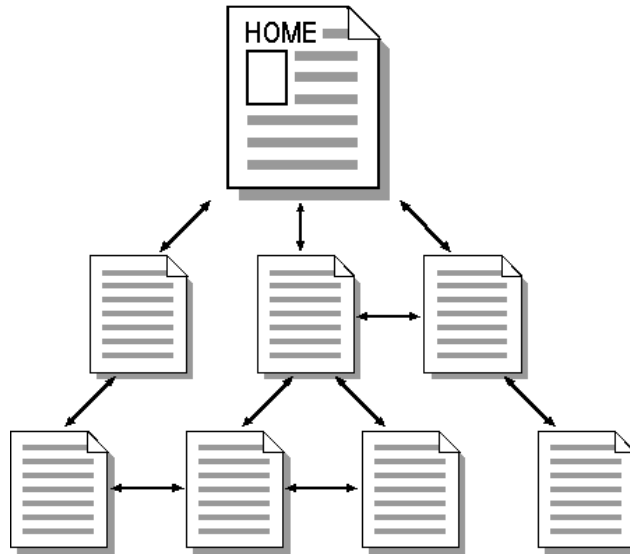
In June 1993, the Web boasted just 130 sites. By a year later, the number had risen to nearly 3,000. By April 1998, there were more than 2.2 million sites on the Web.

Today, the Internet is a public, cooperative, and self-sustaining facility accessible to hundreds of millions of people worldwide. Physically, the Internet uses a portion of the total resources of the currently existing public telecommunication networks. Technically, what distinguishes the Internet is its use of a set of protocols called **TCP/IP** (for Transmission Control Protocol/Internet Protocol). Two recent adaptations of Internet technology, the *intranet* and the *extranet*, also make use of the TCP/IP protocol.

For many Internet users, electronic mail (e-mail) has practically replaced the Postal Service for short written transactions. Electronic mail is the most widely used application on the Net. You can also carry on live "conversations" with other computer users, using Internet Relay Chat (IRC). More recently, Internet telephony hardware and software allows real-time voice conversations.

The most widely used part of the Internet is the World Wide Web (often abbreviated "WWW" or called "the Web"). Its outstanding feature is *hypertext*, a method of instant cross-referencing. In most Web sites, certain words or phrases appear in text of a different color than the rest; often this text is also underlined. When you select one of these words or phrases, you will be transferred to the site or page that is relevant to this word or phrase. Sometimes there are buttons, images, or portions of images that are "clickable." If you move the pointer over a spot on a Web site and the pointer changes into a hand, this indicates that you can click and be transferred to another site.

To view files on the Web, you need Web browsing software. You use this software to view different locations on the Web, which are known as *Web pages*. A group of Web pages is a *Web site*. The first page of a Web site is often called the *home page*.



Just as each household in the world has a unique address, each Web page in the world has a unique Internet *address*, sometimes called a **URL**. For example, the Internet address of the Windows home page is <http://www.microsoft.com/windows>.

Terms to Be Familiar With.

Browser--Contains the basic software you need in order to find, retrieve, view, and send information over the Internet.

Download--To copy data from a remote computer to a local computer.

Upload—To send data from a local computer to a remote computer.

E-mail - E-mail (electronic mail) is the exchange of computer-stored messages by telecommunication. E-mail can be distributed to lists of people as well as to individuals. However, you can also send non-text files, such as graphic images and sound files, as attachments sent in binary streams.

Filter - Software that allows targeted sites to be blocked from view. Example. X-Stop, AOL@School

Home Page - The beginning "page" of any site.

HTML (HyperText Markup Language) - The coding language used to create documents for use on the World Wide Web. There are three-letter suffixes used in coding that help to identify the type location one is viewing

HTTP (HyperText Transport Protocol) - the set of rules for exchanging files (text, graphic images, sound, video, and other multimedia files) on the World Wide Web. Relative to the TCP/IP suite of protocols (which are the basis for information exchange on the Internet), HTTP is an application protocol.

Hypertext - Generally any text that contains "links" to other text.

Search Engine - A web server that collects data from other web servers and puts it into a database (much like an index), it provides links to pages that contain the object of your search.

TCP/IP -- TCP/IP (Transmission Control Protocol/Internet Protocol) is the basic communication language or protocol of the Internet. It can also be used as a communications protocol in a private network (either an intranet or an extranet). When you are set up with direct access to the Internet, your computer is provided with a copy of the TCP/IP program just as every other computer that you may send messages to or get information from also has a copy of TCP/IP.

URL (Uniform Resource Locator) - The Internet address. The prefix of a URL indicates which area of the Internet will be accessed. URLs look differently depending on the Internet resource you are seeking.



WWW (World Wide Web) – A technical definition of the World Wide Web is: all the resources and users on the Internet that are using the Hypertext Transfer Protocol (HTTP).

What is a Web Browser?

Ans.

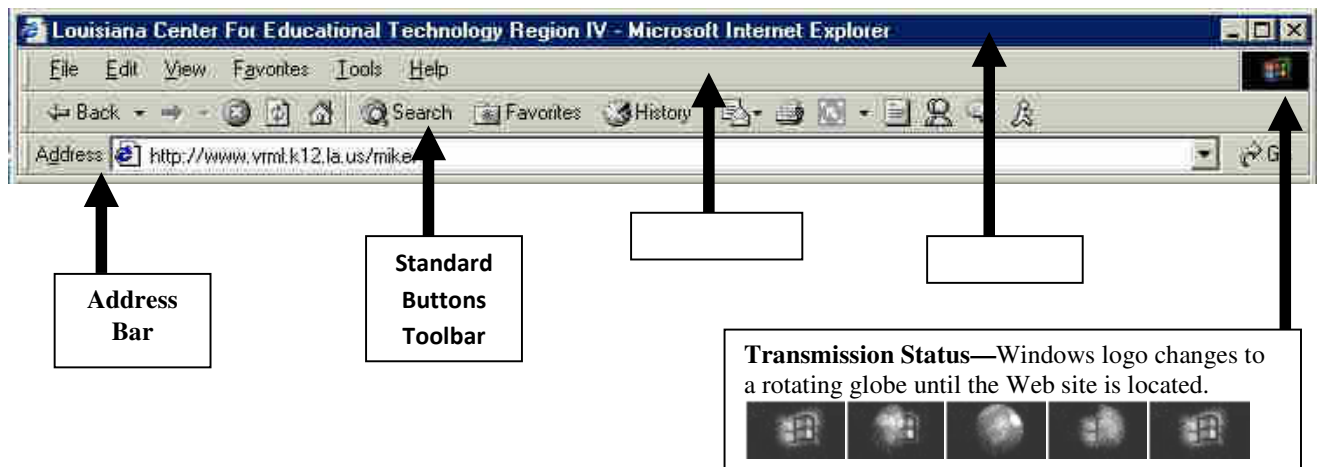
A Web browser contains the basic software you need in order to find, retrieve, view, and send information over the Internet. This includes software that lets you:

- Send and receive electronic-mail (or e-mail) messages worldwide nearly instantaneously.
- Read messages from newsgroups (or forums) about thousands of topics in which users share information and opinions.
- Browse the World Wide Web (or Web) where you can find a rich variety of text, graphics, and interactive information.

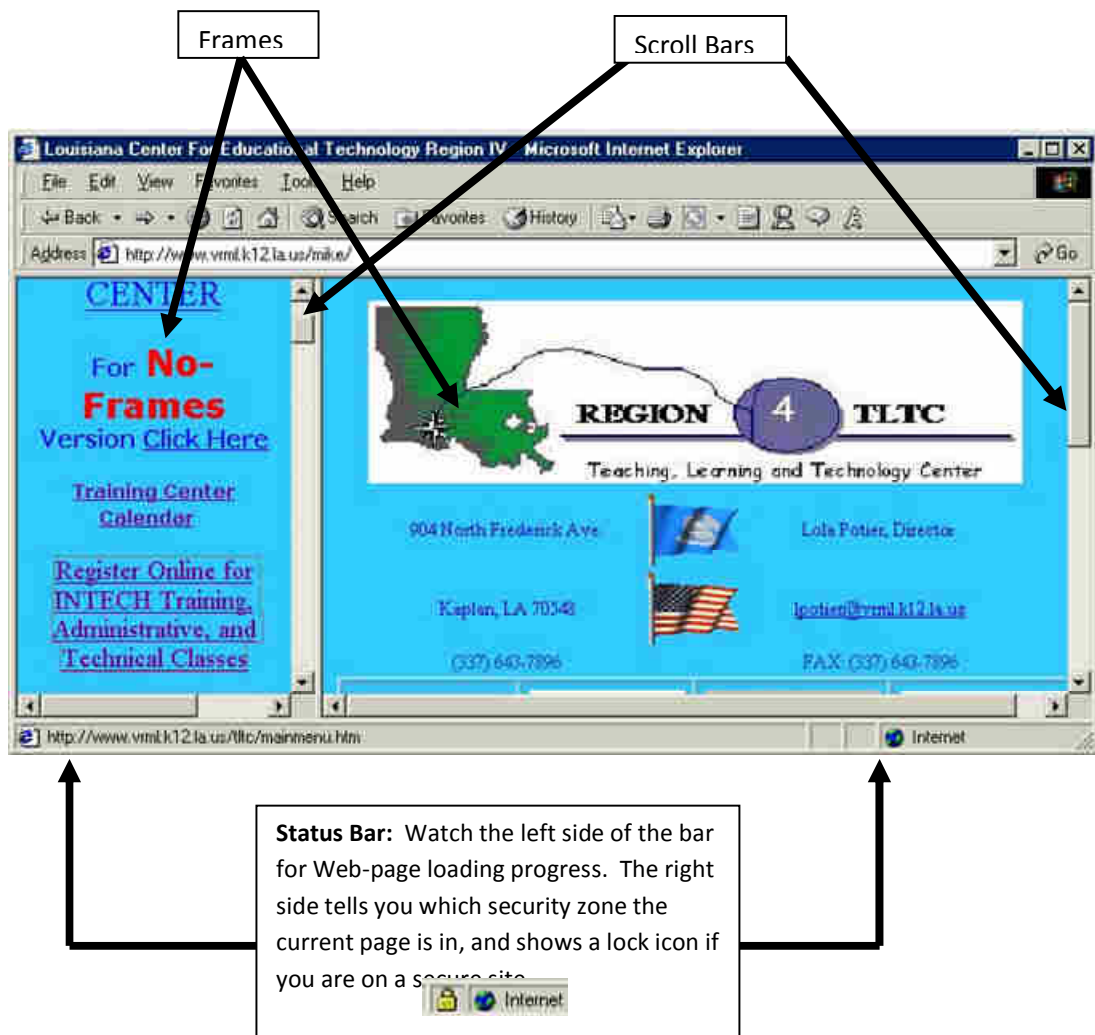
The most popular browsers are *Microsoft Internet Explorer*  and *Netscape Navigator* . The appearance of a particular Web site may vary slightly depending on the browser you use.

Exploring the Internet using Microsoft Internet Explorer

Start Internet Explorer by double-clicking the icon  on your desktop.



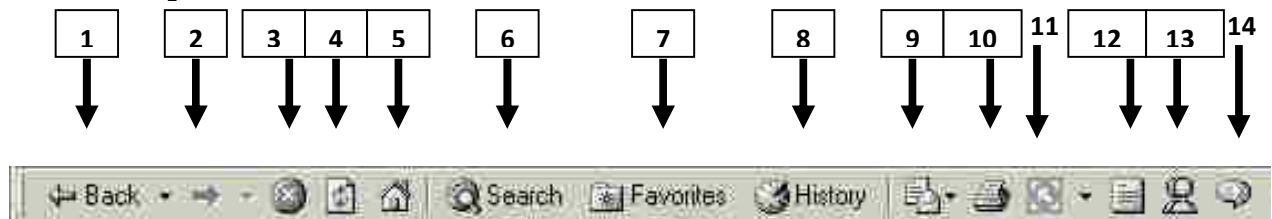
Internet Explorer opens to the homepage set as the default.



Toolbars

The Microsoft Internet Explorer toolbar consists of buttons that are shortcuts for menu commands. They make browsing faster and easier.

Internet Explorer 5.5 Standard Buttons Toolbar:



1. **Back.** Lets you return to pages you've viewed, beginning with the most recent. Right-click the *Back* button and select from a list of recently visited sites.
2. **Forward.** Lets you move forward through pages you've viewed using the *Back* button. Right-click the *Forward* button and select from a list of recently visited sites.
3. **Stop.** Halts the process of downloading a Web page. Click this if you want to stop downloading a page for any reason for example, if you're having trouble downloading it or if you don't want to wait for it to download. Then try downloading it again or browse elsewhere.
4. **Refresh.** Updates any Web page stored in your disk cache with the latest content. When you return to a page that you've visited, your browser displays the file stored in your disk cache, rather than the current page on the World Wide Web. If a web page doesn't come up the whole way or is taking abnormally long to load, try the Refresh or Reload button – sometimes this will load the page better.

5. **Home.** Returns you to your home page. You can designate any Web page as your home page.
6. **Search.** Displays a choice of popular Internet search engines in the left pane. Your search results appear in the left pane, too. When you click a link, the page appears in the right pane, so you don't lose sight of your search results.
7. **Favorites.** Displays a list of the sites you have marked. Click any item in the list to jump to it.
8. **History.** Shows a list of Web sites you've visited.
9. **Mail.** Connects you to the Microsoft Outlook Express messaging and collaboration client so you can read e-mail and newsgroup messages.
10. **Print.** Prints the page you're viewing. This is one way to save information from the Internet so that you don't have to reconnect to view it again. You can even print the URL associated with each hyperlink, making it easy to navigate to the site later.
11. **Edit.** Opens a file in the Microsoft Word word processor that contains the HTML code for the page you're viewing so you can see and even edit it.
12. **Discussion.** Access a discussion server.
13. **Messenger.** Opens Windows Messenger.

14. Media. Displays a list of audio and video media options using Real Player or the Windows Media Player.

What is a URL?

Ans.

Every server on the Internet has an IP number, a unique number consisting of 4 parts separated by dots. The IP number is the server's address.

165.113.245.2

128.143.22.55

However, it is harder for people to remember numbers than to remember word combinations. So, addresses are given "word-based" addresses called URLs. The URL and the IP number are one and the same.

The standard way to give the address of any resource on the Internet that is part of the World Wide Web (WWW). A URL looks like this:

<http://www.matisse.net/seminars.html>

<telnet://well.sf.ca.us>

<gopher://gopher.ed.gov/>

The URL is divided into sections:

transfer/transport protocol :// server (or domain). generic top level

domain/path/filename

The first part of a URL defines the transport protocol.

http:// (HyperText Transport Protocol) moves graphical, hypertext files

ftp:// (File Transfer Protocol) moves a file between 2 computers

gopher:// (Gopher client) moves text-based files

news: (News group reader) accesses a discussion group


telnet:// (Telnet client) allows remote login to another computer



Here's an example:

<http://www.vrml.k12.la.us/fltc/mainmenu.htm>

- **http** is the protocol
- **www.vrml.k12.la.us** is the server
- **fltc/** is the path
- **mainmenu.htm** is the filename of the page on the site

1. You do not have to enter **http://** , most browsers will add that information when you press **Enter** or click the  button at the end of the Address Bar.
2. To view recently visited Web sites, click the down arrow at the end of the address field.

3. When you start typing a frequently used Web address in the Address bar, a list of similar addresses appears that you can choose from. And if a Web-page address is wrong, Internet Explorer can search for similar addresses to try to find a match.

4. The URL **must** be typed correctly. If you get a “Server Does Not Have A DNS Entry” message, this message tells you that your browser can't locate the server (i.e. the computer that hosts the Web page). It could mean that the network is busy or that the server has been removed or taken down for maintenance. Check your spelling and try again later.

What are Domains?

Ans.

Domains divide World Wide Web sites into categories based on the nature of their owner, and they form part of a site's address, or uniform resource locator (URL).

Common top-level domains are:

.com —commercial enterprises	.mil —military site
.org —organization site (non-profits, etc.)	.int —organizations established by international treaty
.net —network	.biz —commercial and personal
.edu —educational site (universities, schools, etc.)	.info —commercial and personal
.gov —government organizations	.name —personal sites

Additional three-letter, four-letter, and longer top-level domains are frequently added. Each country linked to the Web has a two-letter top-level domain, for example .fr is France, .ie is Ireland.

The Basics of HTML

Welcome to Lesson ! Modifying existing web pages does not have to be difficult. There is no need to learn the entire HTML programming language as this tutorial is designed to provide a general understanding of the codes. In this lesson the following basic definitions and relevant tags are discussed.

- [What is HTML?](#)
- [What are Tags?](#)
- [Explanation of Document Structure](#)
- [Explanation of Document Structure Tags](#)

What is HTML?

HTML (Hyper Text Markup Language) is the language used to write Web pages which consists of codes (tags) embedded in the text of a document.

What are Tags?

Tags are codes in an HTML document which the browser reads and then interprets for subsequent display to a reader. Tags are not visible when an HTML document is viewed in a browser, but their effects are. Tags begin with the opening symbol "<" and end with the closing symbol ">"; and usually come in pairs, one that begins an action and one that ends it.

Below is an example of an HTML tag and its respective browser display:

HTML Code

```
I want to  
<B> emphasize </B> this!
```

Browser Display

I want to **emphasize** this!

Explanation of Document Structure

Each HTML document has a minimum number of tags. Here is the very least HTML code that can be called a "page":

```
<HTML>
```

```
<HEAD>
```

```
<TITLE>This is my page Title!</TITLE>
```

```
</HEAD>
```

```
<BODY>
```

```
This is my message to the world!
```

```
</BODY>
```

```
</HTML>
```

NOTE: HTML is not case sensitive. <title> is equivalent to <TITLE> or <TiTlE>.

Explanation of Document Structure Tags

```
<HTML>...</HTML>
```

Encloses the entire HTML document. These tags let the browser know to start reading and displaying the information presented within.

```
<HEAD>...</HEAD>
```

The <HEAD> element contains all information about the document in general. It contains HTML elements that describe the document's

usage and relationship with other documents.

`<TITLE>...</TITLE>`

The `<TITLE>` is contained in the `<HEAD>` of the document. It is displayed at the top of the browser window and on the bookmark list, so it is important to choose something descriptive, unique, and relatively short.

`<BODY>...</BODY>`

The `<BODY>` element contains all the information which is part of the document.

There are a number of different attributes for the `<BODY>` tag (attributes are the elements included within brackets that change the behavior or appearance of a tag). They are:

"BACKGROUND=" Specifies the image tile that is to appear in the document's background.

EXAMPLE:

```
<BODY BACKGROUND= "picturename.gif">
</BODY>
```

"BGCOLOR=" Sets the background color of the page. In order to do this a six digit hexadecimal number denoting a red-green-blue color value is included. Thus "000000" is black and "FFFFFF" is white and every other colour in between is described using these 6 characters in different combination. In addition to the hexadecimal system, there are sixteen color names that (other than black) that can be included in the tags. They are: Aqua, Red, Green, Blue, Violet,

Fuchsia, Gray, Lime, Maroon, Navy, Olive, Purple, Silver, Teal, White, and Yellow.

EXAMPLE:

```
<BODY BGCOLOR="#FFFFFF">
```

This page has a white background.

```
</BODY>
```

OR

EXAMPLE:

```
<BODY BGCOLOR="WHITE">
```

This page has a white background.

```
</BODY>
```

"LINK=" Sets the hexadecimal color code for links that have not yet been visited.

EXAMPLE:

```
<BODY LINK="#0C6249">
```

This page has blue links

```
</BODY>
```

VLINK= Sets the hexadecimal color code for links the user has already visited.

EXAMPLE:

```
<BODY VLINK="#800080">
```

This page has purple links after being visited

```
</BODY>
```

"ALINK=" Sets color of links that are active (ie.,

the color they turn when the link is clicked on).

EXAMPLE:

```
<BODY ALINK="#FFB50C">
```

This page has yellow active links

```
</BODY>
```

"TEXT=" Sets the hexadecimal color code for the default text color.

EXAMPLE:

```
<BODY TEXT="#00006A">
```

This page has blue text

```
</BODY>
```

The <BODY> tags for this document are as follows:

```
<BODY BACKGROUND="spiral_ruled.gif"
```

```
BGCOLOR="#FFFFFF" TEXT="#00006A"
```

```
LINK="#005A5A" VLINK="800080"
```

```
ALINK="#FFB50C">
```



A Teaching Tool

An excellent way to learn HTML is to view the coding used on other web pages. To do this in either Netscape or Internet Explorer – select "View Source" from the "View" menu. The file contents with all the HTML tags will be displayed in a new window.

Try it out!

In the Box below, type the following HTML code, then click the "View" button. The HTML document you made will be displayed in a new browser window. You may wish to experiment by changing the words within the tags.

Try typing this:

```
<HTML>
```

```
<HEAD>
```

```
<TITLE>My first Web page</TITLE>
```

```
</HEAD>
```

```
<BODY BGCOLOR="#800080" TEXT="#FFFFFF">
```

Type a message here.

```
</BODY>
```

```
</HTML>
```

What is HTML ?

Before your begin.

Before you begin, it's important that you know Windows or Unix. A working knowledge of Windows or Unix makes it much easier to learn HTML.

You should be familiar with:

- Basic word processing using any text editor.
- How to create directories and files.
- How to navigate through different directories.
- Basic understanding on internet browsing using a browser like Internet Explorer or Firefox etc.

-

Introducing HTML:

HTML stands for Hypertext Markup Language, and it is the most widely used language to write Web Pages. As its name suggests, HTML is a markup language.

- **Hypertext** refers to the way in which Web pages (HTML documents) are linked together. When you click a link in a Web page, you are using hypertext.
- **Markup Language** describes how HTML works. With a markup language, you simply "mark up" a text document with tags that tell a Web browser how to structure it to display.

Originally, HTML was developed with the intent of defining the structure of documents like headings, paragraphs, lists, and so forth to facilitate the sharing of scientific information between researchers.

All you need to do to use HTML is to learn what type of markup to use to get the results you want.

Creating HTML Document.

Creating an HTML document is easy. To begin coding HTML you need only two things: a simple-text editor and a web browser. Notepad is the most basic of simple-text editors and you will probably code a fair amount of HTML with it.

You can use our [HTML Online Editor](#) to learn HTML. Here are the simple steps to create a basic HTML document:

- Open Notepad or another text editor.
- At the top of the page type `<html>`.
- On the next line, indent five spaces and now add the opening header tag: `<head>`.
- On the next line, indent ten spaces and type `<title> </title>`.
- Go to the next line, indent five spaces from the margin and insert the closing header tag: `</head>`.
- Five spaces in from the margin on the next line, type `<body>`.
- Now drop down another line and type the closing tag right below its mate: `</body>`.
- Finally, go to the next line and type `</html>`.
- In the File menu, choose Save As.
- In the Save as Type option box, choose All Files.
- Name the file template.htm.
- Click Save.

You have basic HTML document now, to see some result put the following code in title and body tags.

```
<html>
<head>
<title>This is document title</title>
</head>
<body>
<h1>This is a heading</h1>
<p>Document description goes here.....</p>
</body>
```

`</html>`

Now you have created one **HTML page** and you can use a Web Browser to open this HTML file to see the result. Hope you understood that Web Pages are nothing but they are simple HTML files with some content which can be rendered using Web Browsers.

Here `<html>`, `<head>`,...`<p>`, `<h1>` etc. are called HTML tags. HTML tags are building blocks of an HTML document and we will learn all the HTML tags in subsequent chapters.

NOTE: One HTML file can have extension as `.htm` or `.html`. So you can use either of them based on your comfort.

HTML Document Structure:

An HTML document starts and ends with `<html>` and `>/html>` tags. These tags tell the browser that the entire document is composed in HTML. Inside these two tags, the document is split into two sections:

- The `<head>`...`</head>` elements, which contain information about the document such as title of the document, author of the document etc. Information inside this tag does not display outside.
- The `<body>`...`</body>` elements, which contain the real content of the document that you see on your screen.

HTML Tags and Elements:

HTML language is a markup language and we use many tags to markup text. In the above example you have seen `<html>`, `<body>` etc. are called HTML tags or HTML elements.

Every tag consists of a tag name, sometimes followed by an optional list of tag attributes , all placed between opening and closing brackets (`<` and `>`). The simplest tag is nothing more than a name appropriately enclosed in brackets, such as `<head>` and `<i>`. More complicated tags contain one or more attributes , which specify or modify the behavior of the tag.

According to the HTML standard, tag and attribute names are not case-sensitive. There's no difference in effect between <head>, <Head>, <HEAD>, or even <HeaD>; they are all equivalent. But with XHTML, case is important: all current standard tag and attribute names are in lowercase.

HTML is Forgiving?

A very good quality associated with all the browsers is that they would not give any error if you have not put any HTML tag or attribute properly. They will just ignore that tag or attribute and will apply only correct tags and attributes before displaying the result.

We can not say, HTML is forgiving because this is just a markup language and required to format documents.

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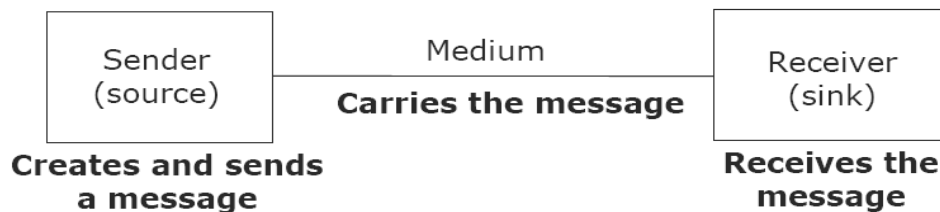
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Basic elements of a communication system

Communications is the process of transferring messages from one point to another.

There are three basic elements of any communications process are:

1. A sender (source) which creates the message to be transmitted.
2. A medium which carries the message.
3. A receiver (sink) which receives the message.



For example, when you speak to your friend on the telephone, you are the sender. The telephone line through which your voice is transmitted is the medium and your friend is the receiver. This is a simple example of voice communication. The same concept holds good for data communications also. Data communications is the function of transporting data from one point to another. In this case, the sender and the receiver are normally machines, in particular, computer devices (computers, terminals, peripheral devices like line printers etc.) and the transmission medium may be telephone lines , satellite links etc. however, the messages that are transmitted are data, not voice conversations.

Thus, the electronic systems that transfer data from one point to another are called data communication systems.

Q. Explain Data transmission modes?

Ans.

Data transmission modes

There are three ways, or modes for transmitting data from one point to another. These are simplex, half-duplex, Full duplex.

- **Simplex**

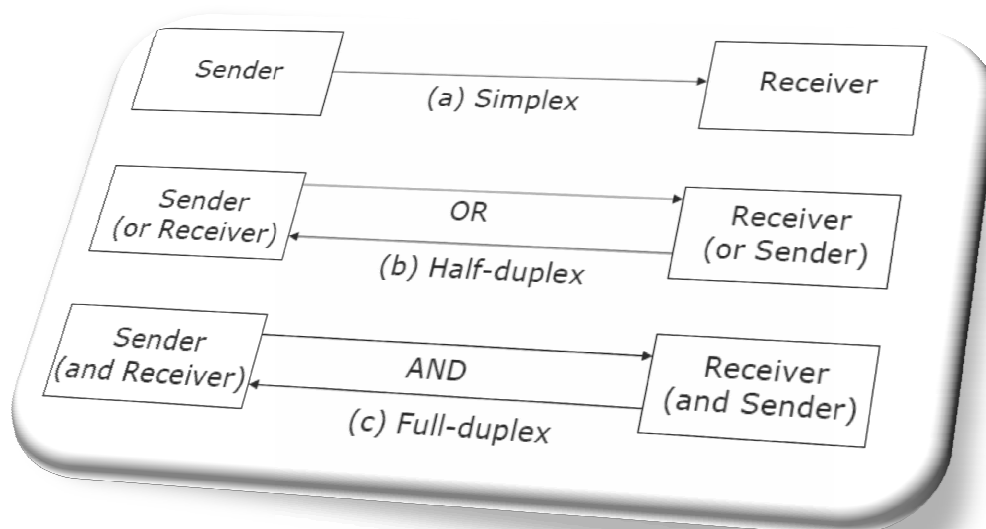
If transmission is simplex, communication can take place in only one direction. Devices connected to such a circuit is either a send only or a receive only device.

- **Half Duplex**

A half duplex system can transmit data in both directions, but only in one direction at a time. Thus a half duplex line can alternately send and receive data. It requires two wires. This is the most common type of transmission for voice communications because only one person is supposed to speak at a time.

- **Full Duplex**

In a full duplex system, the line must be “turned around” each time the direction is reversed. A full duplex system is used that allows information to flow simultaneously in both directions on the transmission path.



Q. Explain Bandwidth, Baud Narrow band, Voice band, broad band?

Ans.

§ **Bandwidth:** Range of frequencies available for data transmission. It refers to data transmission rate. Higher the bandwidth, the more data it can transmit.

§ **Baud:** Unit of measurement of data transfer rate. Measured in bits per second (bps).

§ **Narrow-band:** Sub-voice grade channels in range from 45 to 300 baud. Mainly used for telegraph lines and low-speed terminals.

§ **Voice-band:** Voice grade channels with speed up to 9600 baud. Mainly used for ordinary telephone voice communication and slow I/O devices.

§ **Broad-band:** High speed channels with speed up to 1 million baud or more. Mainly used for high-speed computer-to-computer communication or for simultaneous transmission of data.

Q. Explain Data transmission Media?

Ans.

Data Transmission Media (refer P.K.Sinha, Computer Fundamental)

The most commonly used ones are:

- **Twisted-pair wire (UTP cable)**

- Coaxial cable
- Microwave system
- Communications satellite
- Optical fibers

Twisted-pair wire (UTP cable)

It consists of two identical 1 mm thick copper wires insulated and twisted together. The twisted pair cables are twisted in order to reduce crosstalk and electromagnetic induction.

Advantages:

- (i) It is easy to install and maintain.
- (ii) It is very inexpensive

Disadvantages:

- (i) It is incapable to carry a signal over long distances without the use of repeaters.
- (ii) Due to low bandwidth, these are unsuitable for broadband applications.



Figure- Twisted-pair wire (UTP cable)

Coaxial cable

It consists of a solid wire core surrounded by one or more foil or braided wire shields, each separated from the other by some kind of plastic insulator. It is mostly used in the cable wires.

Advantages:

- (i) Data transmission rate is better than twisted pair cables.

(ii) It provides a cheap means of transporting multi-channel television signals around metropolitan areas.

Disadvantages:

- (i) Expensive than twisted pair cables.
- (ii) Difficult to manage and reconfigure.

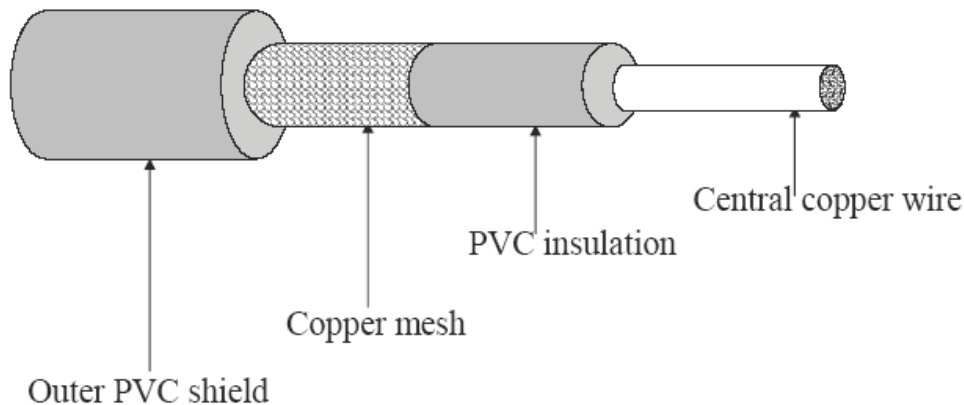


Figure-Coaxial Cable

Microwave system

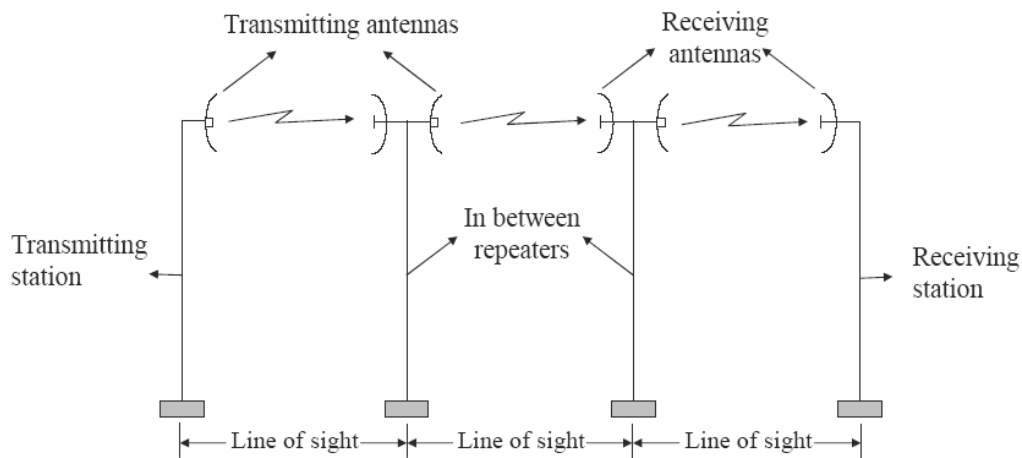
The Microwave transmission is a line of sight transmission. Microwave signals travel at a higher frequency than radio waves and are popularly used for transmitting data over long distances.

Advantages:

- (i) It is cheaper than laying cable or fiber.
- (ii) It has the ability to communicate over oceans.

Disadvantages:

- (i) Microwave communication is an insecure communication.
- (ii) Signals from antenna may split up and transmitted in different way to different antenna which leads to reduce to signal strength.
- (iii) Microwave propagation is susceptible to weather effects like rains, thunder storms etc.
- (iv) Bandwidth allocation is extremely limited in case of microwaves.



Figure–Microwave System

Satellite link

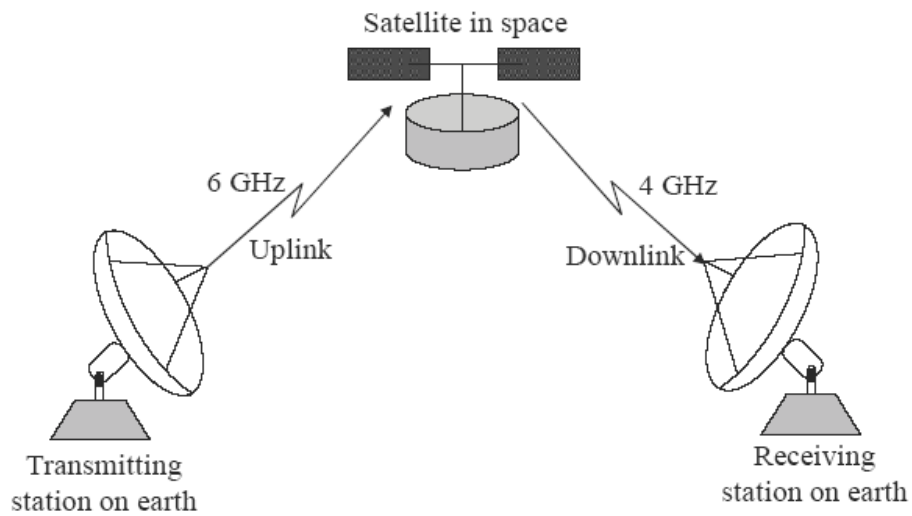
The satellite transmission is also a kind of line of sight transmission that is used to transmit signals throughout the world.

Advantages:

- (i) Area covered is quite large.
- (ii) No line of sight restrictions such as natural mountains, tall building, towers etc.
- (iii) Earth station which receives the signals can be fixed position or relatively mobile.

Disadvantages:

- (i) Very expensive as compared to other transmission mediums.
- (ii) Installation is extremely complex.
- (iii) Signals sent to the stations can be tampered by external interference.



Figure–Satellite System

Optical fiber

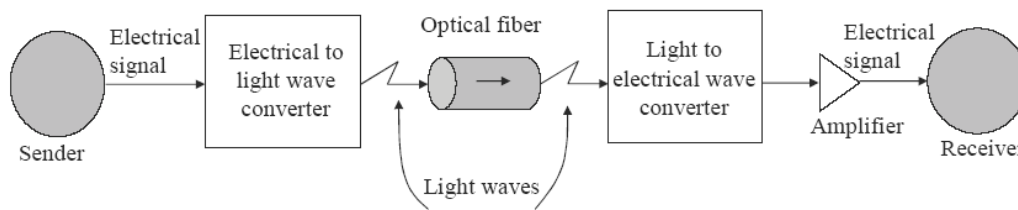
An optical fiber consists of thin glass fibers that can carry information in the form of visible light.

Advantages:

- (i) Transmit data over long distance with high security.
- (ii) Data transmission speed is high
- (iii) Provide better noise immunity
- (iv) Bandwidth is up to 10 Gbps.

Disadvantages:

- (i) Expensive as compared to other guided media.
- (ii) Need special care while installation?



Figure–Optical Fiber

Q . What is hub?

Ans. Hub is used to connect computer and other peripherals such as printers, hub or switches with other in a network. It acts as a central point for various device. It also work as a repeater. Based on their function hubs can be classified as:

- 1, Passive hub
2. Active hub
3. Intelligent hub

Q 4 What is a web browser?

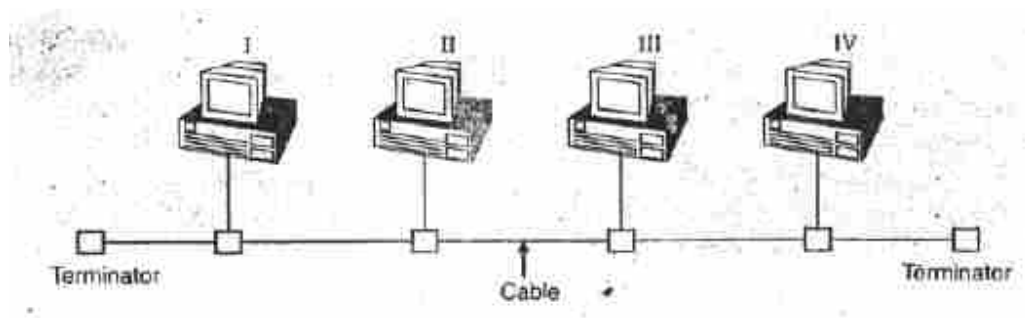
Ans. Web browsers are mainly used to access pages of the World Wide Web. By clicking on the hypertext links on a page it is possible to jump from one Internet site to another, regardless of its location. Hypertext links are usually highlighted or different colored text, images or icons. You can check for hypertext links by moving the mouse over the area; if the mouse pointer changes its shape to that of a hand then it is a hypertext link. This jumping from one site to another using the hypertext links is called ‘net surfing’ or ‘web browsing’.

With web browser you can download files, play games, send and receive mail and even chat with others.

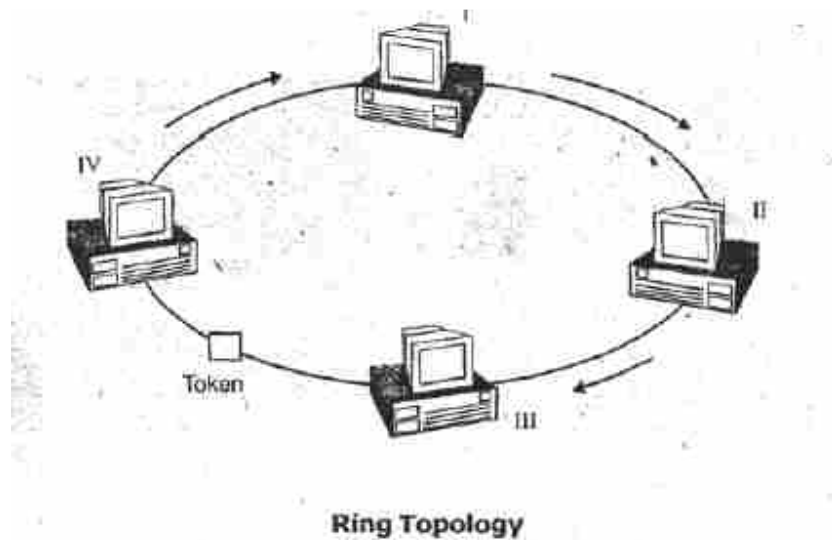
Q. What are various Topologies of connectivity computers?

Ans. Topology is & way of connecting computers in a network. The various topologies used in networking are

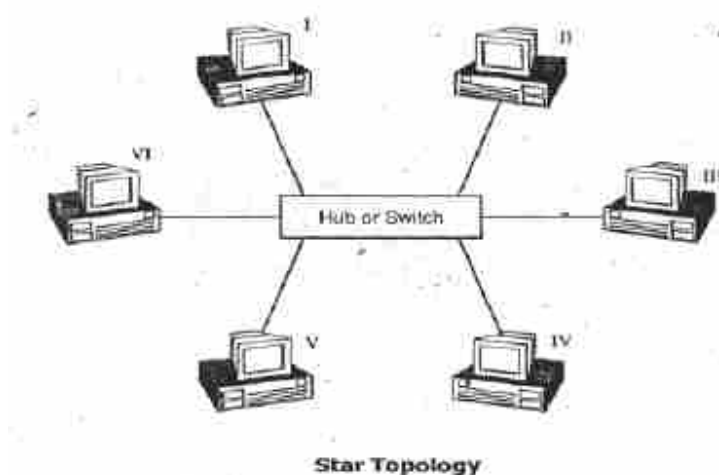
Bus Topology : In this all computers or device on the network are connected to each other through a central cable called Bus. In other words computer are connected serially. But topology is best for LAN. A single coaxial cable is issued for Bus topology.



Ring Topology: In ring topology all the computers or devices are connected to each other in a ring. In this topology no terminator is used. Signals travel in a circle, passing through each computer network. In this topology two rings are used to transmit the signal. Token passing method is used to use cables.

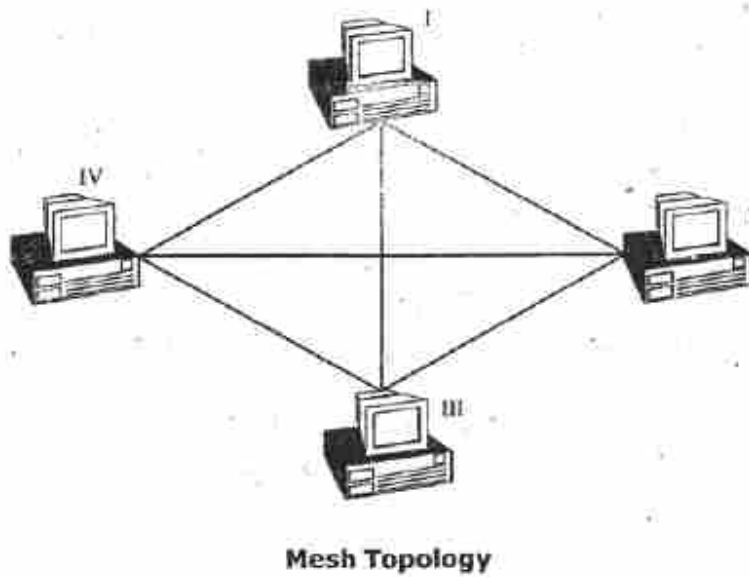


Star Topology :This is most popular topology used to connect computer and devices. In this topology all the computers or devices are connected to each other through a central concentrate or (Hub or switches). Each computer is connected directly to hub or switch. Failure of single computer does not stop the working of entire network.



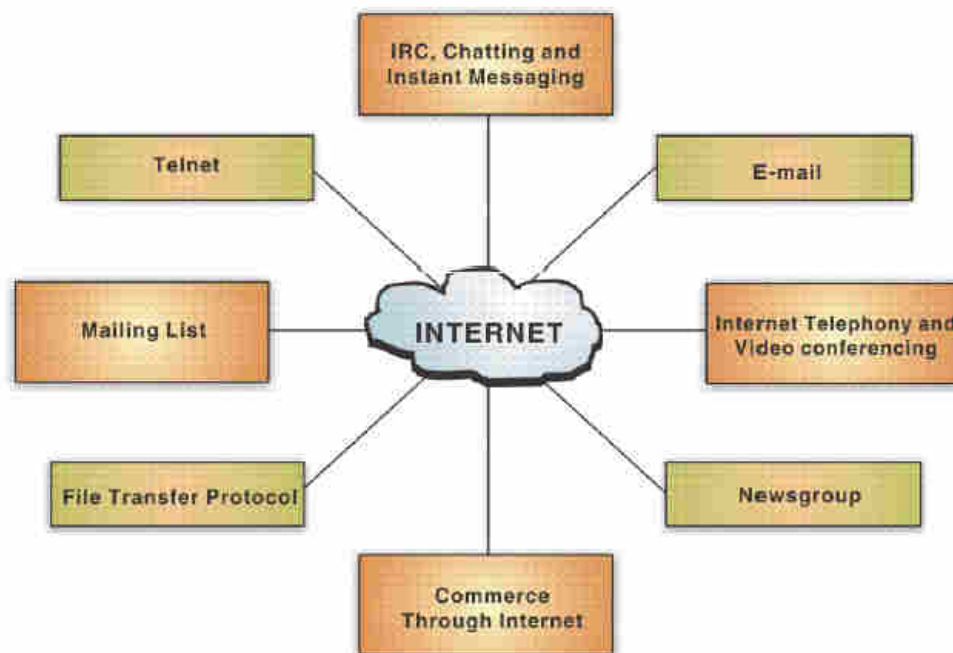
Mesh Topology: In this topology each computer or device is connected with all the computers or devices on the network by a dedicated cable. Due to heavy use of cables, this is expensive.

Any failure of link or device in network does not stop data Communication.



Q. Explain internet Applications?

Ans.



Some of the important services provided by Internet are:

World Wide Web (WWW): It is a subset of the Internet and it presents text, images, animation, video, sound, and other multimedia in a single interface. The operation of the Web relies primarily on hypertext, as it is a means of information retrieval.

Electronic Mail (E-Mail): It is the process of exchanging messages electronically, via a communications network, using the computer.

File Transfer Protocol (FTP): It is a system of rules and a software program that enables a user to log on to another computer and transfer information between it and his/her computer.

Telnet: It connects one machine to another in such a way that a person may interact with another machine as if it is being used locally.

Internet Relay Chat (IRC): This service allows people to communicate in real time and carry on conversations via the computer with one or more people. It provides

the user with the facility to engage in simultaneous (synchronous) online 'conversations' with other users from anywhere in the world.

Chatting and Instant Messaging: Chat programs allow users on the Internet to communicate with each other by typing in real time. Instant messaging allows a user on the Web to contact another user currently logged in and type a conversation.

Internet Telephony: It refers to the use of the Internet rather than the traditional telephone company infrastructure, to exchange spoken or other telephonic information.

Video Conferencing: It uses the same technology as IRC, but also provides sound and video pictures. It enables direct face-to-face communication across networks via web cameras, microphones, and other communication tools.

Commerce through Internet: It refers to buying and selling goods and services online.

Newsgroups (Usenet): It is an international discussion group that focuses on a particular topic and helps in gathering information about that topic.

Mailing Lists (List server): It refers to a large community of individuals who carry out active discussions, organized around topic-oriented forums that are distributed via e-mail and this method is known as mailing list.

Q. Explain Static & Dynamic Components?

Ans.

DATA OVER INTERNET

- The data, in terms of Internet, primarily comprises the hypertext documents containing links that connects to other documents or files.
- These documents may even include animations, and multimedia components. We can divide the displayed data into two categories:

Static Component

– Static component includes the information displayed on the browser that does not interact with the user.

Dynamic Component

– Dynamic component imparts life to a web page. This component refers to a specification by which a user can interact with a web server. Some of the programming

languages (often called scripts) used to provide dynamism to a web page are Perl, JavaScript and Jscript, VBScript, Active Server Pages (ASP), PHP, XML,

Java, and so on.

Q. What is Netiquette?

Ans.

Netiquette: Communicating online, whether by e-mail, chat rooms or message boards, is informal, quick, and easy. Netiquettes are rules that should be followed while communicating over the Internet. Dis-obeying netiquettes while sending e-mail can create trouble. Like e-mail and other online communication, the rules of netiquette are short and to the point.

Q. What is Search engine?

Ans.

SEARCH ENGINES

A search engine is a searchable database of Internet files which allows the user to enter keywords relating to particular topic and retrieve information about Internet sites containing those keywords.

Searching the Internet: Some of the well-known search engines are www.google.com, www.hotbot.com, www.lycos.com, and www.altavista.com.

Refining the Search: The major search engines allow the user to choose whether to search for the exact typed phrase, all the words in the phrase, any of the words in a phrase, and so on.

Q. How E-Mail Works?

Ans.

How E-mail Works: To send e-mail, one needs a connection to the Internet and access to a mail server, which forwards the mail. The standard protocol used for sending Internet e-mail is called SMTP (Simple Mail Transfer Protocol). It works in conjunction with POP (Post Office Protocol) and IMAP (Internet Mail Access Protocol) servers.

Working of E-Mail System

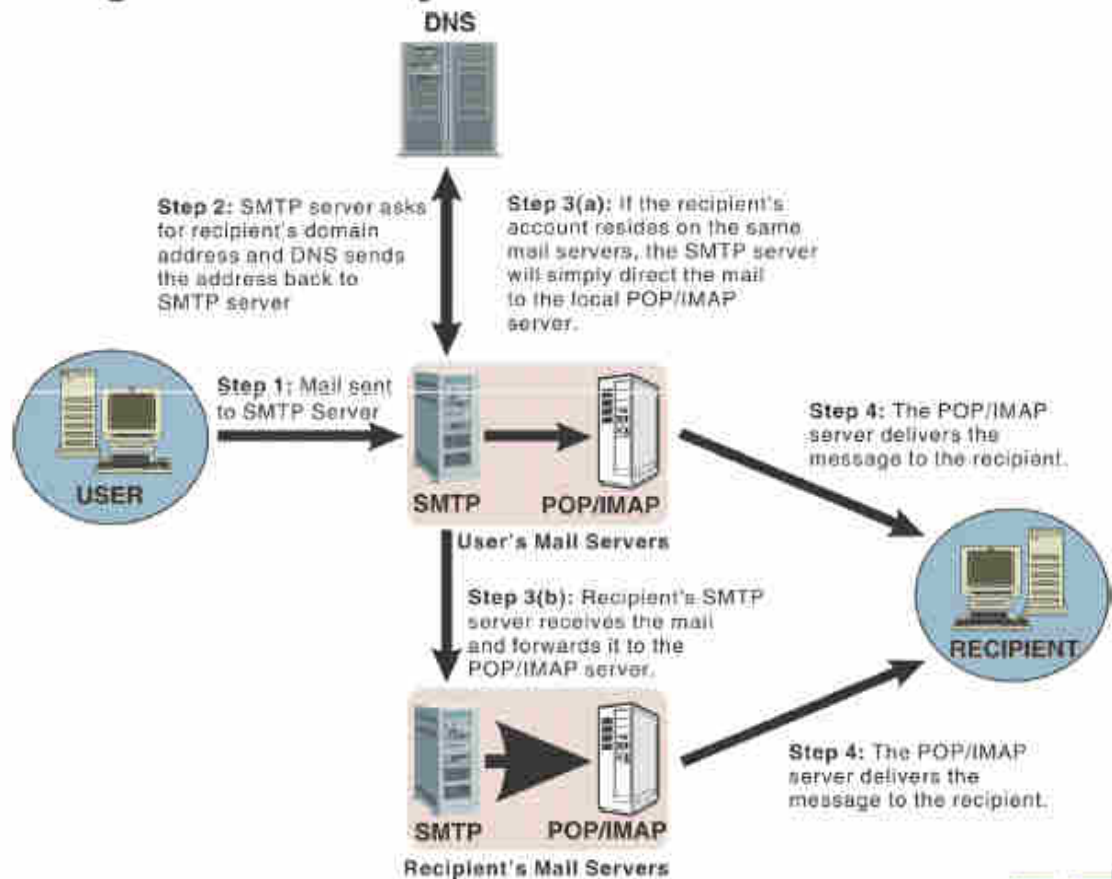


Figure-How E-mail System Works

ELECTRONIC MAIL (E-MAIL)

Electronic mail or e-mail can be defined as the process of exchanging messages electronically, through a communications network, using the computer. It provides instant delivery of information and the ability to send file attachments by using the Internet.

E-mail Address Structure: A typical e-mail address would look like:
username@website.com

Login at Mail Server

Checking E-mails. One can read received e-mails by opening his/her e-mail account.

Sending E-mails. One of the important functions of an e-mail service is to provide a platform to send e-mails. A user can reply to the received e-mail or send a new e-mail.

E-mail Attachments. To send or receive files like compressed (.ZIP) files or any executable (.EXE) files you need to 'attach' them in your e-mails.

Q. What are various types of Network explain?

Ans.

Today, when talking about networks, we are generally referring to three primary categories:

Local Area Network (LAN): LAN spans only a small geographical area such as an office, home, or building. In LAN one computer is designated as the *file server*, which stores all the software that controls the network and other computers connected are called *workstations*.

Metropolitan Area Network (MAN): MAN is a network of computers spread over a metropolitan area such as city and its suburbs. Operated by one organization (a corporate with several offices in one city), or be shared resources used by several organizations in the same city.

Wide Area Network (WAN): WAN is a system of interconnecting computers over a large geographical area such as cities, states, countries, or even the world. These

kinds of networks use telephone lines, satellite links, and other long-range communications technologies to connect.

Q. Explain Communication Protocol?

Ans.

Communication protocol

A protocol is a set of rules and procedures established to control transmission between two points so that the receiver can properly interpret the bit stream transmitted by the sender. It provides a method for orderly and efficient exchange of data by establishing rules for the proper interpretation of controls and data transmitted as raw bits and bytes.

Roles of protocol

❖ Data sequencing

It refers to breaking a long transmission into smaller blocks and maintaining control. That is, a long message is split up into smaller packets of fixed size. These packets are further fragmented into data frames. This technique is widely used in conjunction with error control techniques to reduce the amount of data that must be retransmitted in case of a detected error.

❖ Data routing

Routing algorithms are designed to find the most efficient paths between sources and destinations. They can handle varying degrees of traffic on the present network configuration with optimal time utilization. Normally, they are dynamic enough to accommodate network changes and growth.

❖ Flow control

A communication protocol also prevents a fast sender from overwhelming a slow receiver. It ensures resource sharing and protection against congestion by regulating the flow of data on the communication lines.

❖ **Error control**

Error detecting and recovering routines are also an important element of communication protocols. The most common method for correcting errors is to retransmit a block. This method requires coordination of the two stations that the block having error is discarded by the receiving station and is repeated by the transmitting station.

❖ **Precedence and order of transmission**

There are well defined rules to condition all stations about when to transmit their data and when to receive data from other stations. It is ensured that all stations get a chance to use the communication lines and other resources of the network depending upon the priorities assigned to them.

❖ **Connection establishment**

When two stations of a network want to communicate with each other, the communication protocol establishes and verifies a connection between the two.

❖ **Data security**

Providing data security and privacy is also built into most communications software packages. It prevents access of data by unauthorized users because it is relatively easy to tap a data communication line.

❖ **Log information**

Data communications software can also develop log information which consists of all jobs and data communications tasks that have taken place. Such information is normally used for financial purposes and the various users of the network are charged accordingly.

Q. Explain ISO/OSI Model?

Ans.

ISO/OSI Model

The initial computer networks had their own set of standards and conventions that were quite hardware oriented. Each manufacturer used to develop their own communications protocols for their network. thus the data communication protocols of one network were not compatible with any other network. this problem was recognized by the International Standard organization(ISO) which established a sub-committee to develop an international standard on network architectures. The result was the open system interconnection (OSI) model, which is a framework for defining standards for linking heterogeneous computers in a packet switched network.

The OSI model is also designed in a highly structured way. It is 7-layer architecture and defines a separate set of protocols for each layer.

Physical layer-

The physical layer covers the physical interface between devices. It defines the electrical and mechanical aspects of interfacing to a physical medium for transmitting data. it also defines how physical links are set up, maintained and disconnected. In other words, it deals with the mechanical, electrical, procedural and functional characteristics of transmission.

Data link layer-

The data link layer is responsible for establishing an error-free communications path between computers over the physical channel. It splits packets into data frames which are transmitted sequentially by the sender and the receiver transmits the acknowledgement.

Network layer-

Set up the logical path between the source and the destination computers of the network. The message to be transmitted is first fragmented into packets at this layer. Then it performs sequencing and error control of these packets .thus the routing decisions are taken at the network layer.

Transport layer-

Once a path is established between the sending and the receiving stations, the transport layer provides control standards for a communication session for enabling processes to exchange data reliably and sequentially.

Session layer-

The session layer provides means of establishing, maintaining and terminating a dialogue or a session between two end users.

Presentation layer-

The presentation layer provides facilities to convert encoded transmitted data into displayable form for being displayed on a printer.

Application layer-

This is a user oriented layer which provides services that directly support the end user of the network.

Q. What are important features of HTML?

Ans.

Features of HTML

1. Simple: It is simplest web developer tools. All the tags are self explanatory i.e. their meaning is clear from their name. For, example 'B' means bold, 'I' means italics and U means underline.

2. Supports all types of documents: It can support all types of documents like text documents, sound and multimedia.

3. Need no compilation: The languages like C/C++ requires compilation before doing anything with programs but HTML codes are automatically compiled and results are displayed on screen.

4. Supported by browser: All most all types of browsers supports the HTML code like Microsoft internet explorer 'and Netscape navigation' gold.

5. Compatibility with other web tools: The code written in HTML can be pasted in other web tools and run efficiently without any change. For example HTML code can be pasted in Front page 2000, flash, dream weaver etc.

6. Extendibility: adding features in it can enhance The HTML code. We can extend it using DHTML etc.

7. Internet Base: It is the first web tool and all the Internet tools are based upon the idea of HTML.

8. Developing intranet or extranet sites: HTML is commonly used to develop intranet and extranet sites, which are accessed by company people from one or more locations.

9. Developing help files: It is used to develop on-line help files and help the developers to produce help documentation that is accessible from any computer and platform.

10. Developing network applications: It is used to develop all types of applications such as training programs interactive charts or databases that are available,” from web.

11. Developing kiosk application: HTML can be used to create kiosk applications— which can run on stand-alone computers with touch-screen applications.

Q. 4. What re the different Versions of HTML?

Ans. Versions of HTML

- **HTML** is an evolving language, and each new version is given a number. The first definitive version was HTML 2.0 — this had most of the elements we know and love, but was missing some of the Netscape/ Microsoft extensions, and did not support tables, or ALIGN attributes.

- **HTML 3 (late 1995)** was an ambitious effort on the part of Dave Raggett to upgrade the features and utility of HTML. However, it was never completed or implemented although many features were integrated in the next “official” version of HTML, known as HTML 3.2.

- **HTML 3.2** was the next official version, integrating support for TABLES, image, heading and other element ALIGN attributes, and a few other finicky details. HTML 3.2 is the current “universal” dialect — essentially all browsers understand HTML 3.2. IT was however, missing some of the Netscape/Microsoft extensions, such as FRAMES, EMBED and APPLET. Support for these (after fashion) came in HTML 4.0

- **HTML 4.01** is the current official standard. it includes support for most of proprietary extension5, plus support for extra features (InternatiOfla1izel

documents, support for Cascading Style Sheets, extra TABLE, FORM, and JavaScript enhancements), that are not universally supported

Q. What do you mean by tag? What are its types? Discuss with Example.

Ans. HTML Tags:

HTML codes are referred to as tags. Tags open with a less-than sign and close with a greater-than sign. The less-than and greater-than signs are called brackets.

<Tag>

An HTML file is basically just a text file, which may contain references to other files. Angle brackets (<, >) are used to set off tags, which give information about the structure of the page. For example, the tag <p> indicates the beginning of a new paragraph.

Tags are instructions that are embedded directly into the text of a HTML document.

Each HTML tag describes that the browser should do something instead of simply displaying

Types of Tag

There are two kinds of HTML tags; paired and unpaired.

Paired Tag: A tag is said to be a paired tag if the text is placed between a tag and its companion tag. In paired tags, the first tag is referred to as Opening Tag and the second tag is referred to as Closing Tag.

Paired tags require an opening tag that turns a formatting feature on and a closing tag that turns the feature off. Paired tags must surround the text you want formatted

with that feature. For example, <title> and </title> define a page's title. You must include the slash in the closing tag in order for the pair to work. Always remember to close paired tags.

Example. <i> This text is in italics. </i>

Here <i> is called opening tag and </i> is called closing tag.

Paired Tags	Function
<html>, </html>	Indicates the page is coded in HTML.
<head>, </head>.	Indicates part of the document that contains Information about the page.
<title>, </title>	Always located in the head, the title provides the name of the document to be displayed by search engines and on browser title bars.
<body>, </body>	Indicates part of the document that contains Formatted text, images, and links.
<hn>,</hn> Where n is a number between 1 to 6.	Headings are used to arrange the contents in a systematic way.
<a href>, 	Links to another Web page or another location in the current Web page.
,	Ordered list (1, 2, 3, 4...); used with the tag.
, 	Unordered list (bullet points); used with the tag.
<P></P>	Paragraphs may consist of a single sentence or more than one sentences including punctuation marks and blank space.

All paired tags in HTML must be properly nested. This means that every closing tag must match up with the nearest preceding unmatched paired tag.

Unpaired Tag: Unpaired tags work alone, and are usually placed before the text you want formatted. An unpaired tag does not have a companion tag. Unpaired tags are also known as Singular or Stand-Alone Tags. An unpaired tag sometimes also called empty — that is, they do not affect a block of the document in some way. An example is the <HR> element, which draws a horizontal line across the page. This element would simply be entered as

Example:
 , <hr> etc. These tags does not require any companion tag.

The paired and unpaired tags are also called <tag_on> that switches the tag sequence on. For example, to bold some text add a at the beginning of the text and </tagoff> that switches the tag sequence off. The tag_on and tag_off tags are the same except the off tag has an / character in front of it.

For example, to switch off the bolding add a character sequence at the end of the text that is to be given the attribute of bolding.

Unpaired Tag	Function
	Inserts an image into your text. See below for more information.
 	Line break; moves subsequent text to the beginning of the line.
<hr>	Horizontal rule; draws a line across the width of the page.

Q. Explain Basic HTML Tags?

Ans.

Basic HTML Tags

The basic tags include `<html>`, `<title>`, `<meta>`, and `<body>`. We introduce each of the four in the following.

`<html>`

This tag is used to indicate that this is a HTML document. Most HTML documents should start and end with this tag.

`<head>`

This tag is used to indicate the header section of the HTML document, which typically includes the `<title>` and `<meta>` tags, and is not displayed in the main window of the browser.

`<title>`

This indicates the title of this HTML page. The title is what is displayed on the upper left corner of your browser when you view a web page. For example, right now you can see "Basic Tags: html, head, title, meta, body" there. That is the title of this page.

The title tag is important when it comes to search engine ranking. Many of the search engines pay special attention to the text in the `<title>` tag. This is because (logically) that words in the `<title>` tag indicate what the page content is.

`<meta>`

The `<meta>` tag information is not directly displayed when the page is rendered on the browser. Rather, this is used for the author of the HTML page to record information related to this page. Two common attributes are **name** and **content**. The `<meta>` tag used to hold great importance in search engine optimization, with authors carefully drafting what's inside the tag to gain better search engine ranking, but recently its importance has been decreasing steadily.

`<body>`

The <body> tag includes the HTML body of the document. Everything inside the <body> tag (other than those within the <script> tag) is displayed on the browser inside the main browser window.

The <body> tag may contain several attributes. The most commonly used ones are listed below:

- **bgcolor**: This is the background color of the entire HTML document, and may be specified either by the color name directly or by the six-digit hex code.
- **alink**: The color of the links.
- **vlink**: The color of the visited links.
- **topmargin**: The margin from the top of the browser window.
- **leftmargin**: The margin from the left of the browser window.

So, in general, all HTML documents have the following format:

```
<html>
```

```
<head>
```

```
<title>
```

```
Here is the title of the HTML document.
```

```
</title>
```

```
<meta name=" " content=" " />
```

```
... (there may be one or more meta tags)
```

```
</meta>
```

```
</head>
```

```
<body>
```

```
Here is the body of the HTML document.
```

```
</body>
```

```
</html>
```

More Tags

In this lesson we discuss two more attributes commonly used in the formatting of HTML documents: lists and fonts.

- [Lists](#)
- [Fonts](#)

Lists

HTML provides the means for producing two types of lists: unordered (i.e., unnumbered) and ordered (i.e., numbered) lists.

Unordered Lists:

An unordered list typically is a bulleted list of items. This is probably the most common type of list on the Web. The `` tag opens an unordered list while `` closes it. Between these tags are placed list items with an `` tag as follows:

HTML Code

```
<UL>
<LI> red
<LI> yellow
<LI> blue
</UL>
```

Browser Display

- red
- yellow
- blue

Ordered Lists:

An ordered list is formatted exactly the same as an unordered list, except that `` tags are used instead of ``. In an ordered list, sequential numbers are generated automatically, as shown below:

HTML Code

Browser Display

```
<OL>
<LI> purple
<LI> orange
<LI> green
</OL>
```

1. purple
2. orange
3. green

Note: You can "nest" lists too (ie., subdivide lists), but use this feature sparingly as too many nested items can get difficult to follow.

Fonts

The tag sets a font's size, typeface and color.

Font Sizes:

In HTML, font sizes range from 1–7, with 1 being the smallest. Font sizes 2 and 3 are the most commonly used. If a font size is not specified the default setting is 3.

- Font Size 1
- Font Size 2
- Font Size 3
- Font Size 4
- Font Size 5
- Font Size 6
- Font Size 7

Font Typefaces:

When HTML was first introduced there was only one font available. And while current versions of HTML and newer browsers allow greater flexibility in specifying preferred fonts for an HTML document to be displayed in, ultimately the choice is

limited by which fonts end-users have installed on their systems (even then users may decide to set their browsers to override preferred font settings). A few commonly supported fonts are:

- Arial
- Lucida Sans
- Times New Roman
- Verdana
- Helvetica
- Impact
- Comic Sans MS

Font Colours:

Using the tag, text can be instructed to display in any colour under the sun. One must be careful though to choose a colour that is readable on whatever background colour has been selected. Text colors are chosen either according to a hexadecimal numbering system denoting a red-green-blue color value, or by specifying one of sixteen pre-defined colour names that (other than black) can be included in the tag. These sixteen colours are:

- Aqua - Aqua
- Red - Red
- Green - Green
- Blue - Blue
- Violet - Violet
- Fuchsia - Fuchsia
- Gray - Gray
- Lime - Lime
- Maroon - Maroon
- Navy - Navy
- Olive - Olive

- Purple - **Purple**
- Silver - **Silver**
- Teal - **Teal**
- White -
- Yellow - **Yellow**

The font attributes described above are included in the tag as follows:

HTML Code	Browser Display
<pre>This is a size two font</pre>	This is a size two font
<pre>This font is Comic Sans MS</pre>	This font is Comic Sans MS
<pre> This text is Fuchsia </pre>	This text is Fuchsia

Try it out!

In the box below, type the following HTML code, then click the "View" button. The HTML document you have written will be displayed in your browser. You may wish to change some of the tags and/or attributes to experiment with some of the different items discussed in this lesson.

Try typing this:

```
<HTML>
```

```
<HEAD>
<TITLE>Why I love learning HTML - Part 2</TITLE>
</HEAD>
```

```
<BODY BGCOLOR="#FFFFFF" TEXT="#000000">
```

Colors

```
<BR>
```

My favorite colors are:

```
<BR>
```

```
<UL>
```

```
<LI><FONT SIZE=2 COLOR="NAVY" FACE="VERDANA">Navy</FONT>
```

```
<LI><FONT SIZE=2 COLOR="OLIVE" FACE="VERDANA">Olive</FONT>
```

```
<LI><FONT SIZE=2 COLOR="PURPLE" FACE="VERDANA">Purple</FONT>
```

```
<LI><FONT SIZE=2 COLOR="TEAL" FACE="VERDANA">Teal</FONT>
```

```
</UL>
```

```
</BODY>
```

```
</HTML>
```

HTML Format

This section includes the tags often used for formatting the HTML text.

The tag is used to change the format of the text on the web page. The most important attributes are as follows:

- face: The type of font. Common ones include "Time New Roman", "Verdana", and "Helvetica."
- size: This indicates the size of the text. This can be absolute (0 .. 6), or relative ("+1", "+2", ... or "-1", "-2" ...)
- color: This indicates the color of the text. Either the color name or the six-character color code may be used to specify color.

Below are some examples:

Example 1

HTML:

```
<font size=2 face="Helvetica" color=red>This illustrates the attributes of the font tag.</font>
```

Display:

This illustrates the attributes of the font tag.

Example 2

HTML:

```
<font size="+1" face="Verdana" color=AA5088>This illustrates the attributes of the font tag.</font>
```

Display:

This illustrates the attributes of the font tag.

The **** tag will **bold** the text inside the tag.

<i>

The *<i>* tag will *italicize* the text inside the tag.

`<u>`

The `<u>` tag will *underline* the text inside the tag.

Here's an example using ``, `<i>`, and `<u>`:

Example 3

HTML:

This `example` shows how `<i>important</i>` it is to use `<u>tags</u>`.

Display:

This **example** shows how *important* it is to use tags.

Header Tags

The header tags `<h1>`, ... `<h6>` allows us to place additional importance on the text within such tags. `<h1>` has the largest size, and `<h6>` the smallest. Many search engines put additional weight on the texts within the header tags.

Example 4

HTML:

```
<h1>This is h1 text.</h1>
```

```
<h2>This is h2 text.</h2>
```

```
<h3>This is h3 text.</h3>
```

```
<h4>This is h4 text.</h4>
```

```
<h5>This is h5 text.</h5>
```

```
<h6>This is h6 text.</h6>
```

Display:

This is h2 text.

This is h3 text.

This is h4 text.

This is h5 text.

This is h6 text.

<center>

The <center> tag causes all the text within the tag to be centered. An example is as follows:

Example 5

HTML:

<center>This is centered text.</center>

Display:

This is centered text.

**
**

The
 tag indicates a line break. This tag is most often used by itself, without a corresponding closing tag.

<p>

The <p> tag indicates a new paragraph. It is the same as

. This tag is most often used by itself, without a corresponding closing tag.

Rudimentary Tags

This lesson introduces a number of basic tags that allow an HTML page to be formatted – much in the same way that word processors format documents. The following topics are covered:

- [Character Formatting](#)

- [Paragraphs](#)
- [Paragraph Alignment](#)
- [Forced Line Breaks](#)
- [Spaces](#)
- [Horizontal Rules](#)

Character Formatting:

The Bold `` element specifies that the enclosed text should be displayed in boldface.

The Underlined `<U></U>` element specifies that the enclosed text should be displayed underlined.

The Italic `<I></I>` element specifies that the enclosed text should be italicized.

Below are these HTML tags beside samples of their respective browser displays:

HTML Code	Browser Display
This text is <code>bold!</code>	This text is bold!
This text is <code><I>italicized.</I></code>	This text is <i>italicized.</i>
This text is <code><U>underlined</U>.</code>	This text is <u>underlined.</u>

Paragraphs

In HTML you indicate paragraphs with the `<P>` and `</P>` elements. Without these elements the document becomes one long paragraph. Likewise, browsers ignore any indentations or blank lines in the HTML code.

Thus the examples below, although coded differently, are all displayed the same way:

HTML Code

```
<P> This is a very short  
paragraph to illustrate my  
point.</P> <P>And this is the  
second paragraph. </P>
```

```
<P> Although this  
is written differently  
with lots of carriage returns  
it still only displays  
the paragraphs when  
you put in the Paragraph  
Tag.</P> <P> Like so.</P>
```

Browser Display

This is a very short paragraph
to illustrate my point.

And this is the second
paragraph.

Although this is written
differently with lots of carriage
returns it still only displays the
paragraphs when you put in
the Paragraph Tag.

Like so.

NOTE: The `</P>` closing tag may be omitted. This is because browsers understand that when they encounter a `<P>` tag, it means that the previous paragraph has ended.

To preserve readability when composing HTML files, separate paragraphs with blank lines. As mentioned above, browsers will ignore blank spaces inserted into source code.

Paragraph Alignment

Paragraph alignment can be manipulated by including either the RIGHT, LEFT, or CENTER (note the Americanized spelling) attributes within the <P> tag as shown below:

HTML Code	Browser Display
<pre><P ALIGN=left> This paragraph is left aligned. </P></pre>	This paragraph is left aligned.
<pre><P ALIGN=CENTER> This is a centered paragraph. </P></pre>	This is a centered paragraph.
<pre><P ALIGN=RIGHT> This paragraph is right aligned. </P></pre>	This paragraph is right aligned.

Forced Line Breaks

The line break tag
 can be used to control how browsers render text. When an HTML document is viewed the text normally does a word-wrap at the end of a line. If a text break is desired before the end of a line, use the
 tag to force a line break without any extra space between lines. This element has no closing tag.

HTML Code	Browser Display
<pre>CN Tower
301 Front Street West
Penthouse
Toronto, Ontario M5V 2T6
Canada
</pre>	CN Tower 301 Front Street West Penthouse Toronto, Ontario M5V 2T6 Canada

Using the <P> tag instead of the
 tag for short lines of text, such as the above example, would have resulted in unwanted additional white space.

Horizontal Rules

The horizontal rule <HR> tag produces a horizontal line the width of the browser window. Horizontal rules are useful for separating major sections of a document. The length of a rule can be varied by using the "WIDTH=" and "SIZE=" attributes.

HTML Code

```
Horizontal Rules rule!<HR  
SIZE=3 WIDTH=80%>
```

Browser Display

Horizontal Rules rule!

There are two other attributes that can be used with the <HR> tag. They are:

ALIGN= RIGHT, LEFT, or CENTER

NOSHADE Causes the rule to appear solid black.

Try it out!

In the box below, type the following HTML code, then click the "View" button. The HTML document you have written will be displayed in your browser. You may wish to change some of the tags and/or attributes to experiment with some of the different items discussed in this lesson.

Try typing this:

```
<HTML>
```

```
<HEAD>
```

```
<TITLE>HTML</TITLE>
```

```
</HEAD>
```

```
<BODY BGCOLOR="#800080" TEXT="#FFFFFF">
```

Learning HTML is **so** much fun!

```
<P ALIGN=center>
```

And it is really *easy* once you get the hang of it.

```
</P>
```

```
<HR SIZE=3>
```

```
</BODY>
```

```
</HTML>
```

HTML Page Layouts

Web page layout is very important to give better look to your website. You should design your webpage layout very carefully.

You may have noticed that there are many websites which have put their content in multiple columns – they are formatted like a magazine or newspaper. This is easily achieved by using tables or division or span tags. Sometime you use CSS as well to position various elements or to create backgrounds or colorful look for the pages.

HTML Layout – Using Tables.

The simplest and most popular way of creating layouts is using HTML <table> tag. These tables are arranged in columns and rows, so you can utilize these rows and columns in whatever way you like.

For example, the following HTML layout example is achieved using a table with 3 rows and 2 columns – but the header and footer column spans both columns using the colspan attribute:

```
<table width="100%" border="0">

<tr>

<td colspan="2" style="background-color:#CC99FF;">

<h1>This is Web Page Main title</h1>

</td>

</tr>

<tr valign="top">

<td style="background-color:#FFCCFF;
```



```
width:100px;text-align:top;">
```

```
<b>Main Menu</b><br />
```

```
HTML<br />
```

```
PHP<br />
```

```
PERL...
```

```
</td>
```

```
<td style="background-color:#eeeeee;height:200px;
```

```
width:300px;text-align:top;">
```

```
Technical and Managerial Tutorials
```

```
</td>
```

```
</tr>
```

```
<tr>
```

```
<td colspan="2" style="background-color:#CC99FF;">
```

```
<center>
```

```
Copyright © 2007 Mytoptutorials.com
```

```
</center>
```

```
</td>
</tr>
</table>
```

This will produce following result:

This is Web Page Main title	
Main Menu HTML PHP PERL...	Technical and Managerial Tutorials
Copyright © 2007 Mytoptutorials.com	

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Multiuple Columns Layouts – Using Tables

You can design your webpage to put your web content in multiple pages. You can keep your content in middle column and you can use left column to use menu and right column can be used to put advertisement or some other stuff. It will be very similar to our site mytoptutorials.com.

Here is an example to create three column layout.

```
<table width="100%" border="0">
```

```
<tr valign="top">
```

```
<td style="background-color:#FFCCFF;width:20%;
```

```
    text-align:top;">
```

```
    <b>Main Menu</b><br />
```

```
    HTML<br />
```

```
    PHP<br />
```

```
    PERL...
```

```
</td>
```

```
<td style="background-color:#eeeeee;height:200px;
```

```
    width:60%;text-align:top;">
```

```
    Technical and Managerial Tutorials
```

```
</td>
```

```
<td style="background-color:#FFCCFF;
```

```
    width:20%;text-align:top;">
```

```
    <b>Right Menu</b><br />
```

```
    HTML<br />
```

```
    PHP<br />
```

PERL...

</td>

</tr>

<table>

This will produce following result:

Main Menu HTML PHP PERL...	Technical and Managerial Tutorials	Right Menu HTML PHP PERL...
--	------------------------------------	---

HTML Layouts – Using DIV, SPAN

The div element is a block level element used for grouping HTML elements. While the div tag is a block-level element, the HTML span element is used for grouping elements at an inline level.

Although we can achieve pretty nice layouts with HTML tables, tables weren't really designed as a layout tool. Tables are more suited to presenting tabular data.

You can achieve same result whatever you have achieved using <table> tag in previous example.

```
<div style="width:100%">
```

```
<div style="background-color:#CC99FF;">
```

```
<b style="font-size:150%">This is Web Page Main title</b>
```

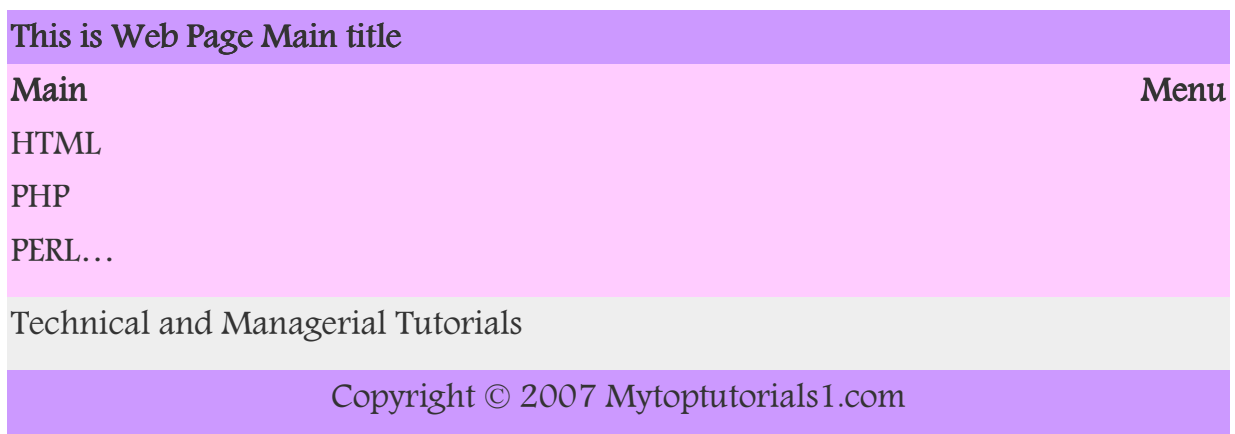
```
</div>
```

```

<div style="background-color:#FFCCFF;
height:200px;width:100px;float:left;">
<b>Main Menu</b><br />
HTML<br />
PHP<br />
PERL...
</div>
<div style="background-color:#eeeeee;
height:200px;width:300px;float:left;">
Technical and Managerial Tutorials
</div>
<div style="background-color:#CC99FF;clear:both">
<center>
Copyright © 2007 Mytoptutorials1.com
</center>
</div>
</div>

```

This will produce following result.



Better layout can be created by using DIV, SPAN and CSS. For more information on CSS, please refer CSS Tutorial.

HTML Phrase Tags

While some of these phrase elements are displayed in a similar manner to the , <i>, <pre>, and <tt> elements you have already seen, they are designed for specific purposes. For example, the and elements give text emphasis and strong emphasis respectively and there are several elements for marking up quotes.

We will see all phrase tags in this section with examples.

Emphasized Text – The Element.

The content of an element is intended to be a point of emphasis in your document, and it is usually displayed in italicized text. The kind of emphasis intended is on words such as “must” in the following sentence:

```
<p>You <em>must</em> remember to close elements in XHTML.</p>
```

This will produce following result:

You *must* remember to close elements in XHTML.

Strong Text – The Element.

The element is intended to show strong emphasis for its content; stronger emphasis than the element. As with the element, the element should be used only when you want to add strong emphasis to part of a document.

```
<p>You <strong>must</strong> remember to close elements in  
XHTML.</p>
```

This will produce following result:

You **must** remember to close elements in XHTML.

Text Abbreviation – The <abbr> Element :

You can indicate when you are using an abbreviated form by placing the abbreviation between opening <abbr> and closing </abbr> tags.

```
<p>I have a friend called <abbr title="Abhishek">Abhy</abbr>.</p>
```

This will produce following result:

I have a friend called Abhy.

Using Acronym – The <acronym> Element :

The <acronym> element allows you to indicate that the text between an opening <acronym> and closing </acronym> element is an acronym.

When possible use a title attribute whose value is the full version of the acronyms on the <acronym> element, and if the acronym is in a different language, include an xml:lang attribute in XHTML documents.

```
<p>This chapter covers marking up text in <acronym title="Extensible Hypertext Markup Language">XHTML</acronym>.</p>
```

This will produce following result:

This chapter covers marking up text in XHTML.

At present, the major browsers do not change the appearance of the content of the <acronym> element.

Special Terms – The <dfn> Element :

The <dfn> element allows you to specify that you are introducing a special term. Its use is similar to the words that are in italics in the midst of paragraphs in this book when new key concepts are introduced.

Typically, you would use the <dfn> element the first time you introduce a key term and only in that instance. Most recent browsers render the content of a <dfn> element in an italic font.

```
<p>This tutorial teaches you how mark up your documents for the web using <dfn>XHTML</dfn>.</p>
```

This will produce following result:

This tutorial teaches you how mark up your documents for the web using *XHTML*.

Quoting Text – The <blockquote> Element :

When you want to quote a passage from another source, you should use the `<blockquote>` element.

Text inside a `<blockquote>` element is usually indented from the left and right edges of the surrounding text, and sometimes uses an italicized font.

```
<p>The following description of XHTML is taken from the W3C Web site.</p><blockquote> XHTML 1.0 is the W3C's first Recommendation for XHTML, following on from earlier work on HTML 4.01, HTML 4.0, HTML 3.2 and HTML 2.0. </blockquote>
```

This will produce following result:

The following description of XHTML is taken from the W3C Web site.
XHTML 1.0 is the W3C's first Recommendation for XHTML, following on from earlier work on HTML 4.01, HTML 4.0, HTML 3.2 and HTML 2.0.

You can use the *cite* attribute on the `<blockquote>` element to indicate the source of the quote.

```
<p>The following description of XHTML is taken from the W3C Web site.</p><blockquote cite="http://www.w3.org/markup/"> XHTML 1.0 is the W3C's first Recommendation for XHTML, following on from earlier work on HTML 4.01, HTML 4.0, HTML 3.2 and HTML 2.0. </blockquote>
```

Short Quotations – The `<q>` Element :

The `<q>` element is intended to be used when you want to add a quote within a sentence rather than as an indented block on its own.

```
<p>Amita is in Spain, <q>He is their at my home. I think I am wrong</q>.</p>
```

This will produce following result:

Amita is in Spain, He is their at my home. I think I am wrong.

The `<q>` element can also carry the *cite* attribute. The value should be a URL pointing to the source of the quote.

Citations – The `<cite>` Element :

If you are quoting a text, you can indicate the source placing it between an opening `<cite>` tag and closing `</cite>` tag

As you would expect in a print publication, the content of the `<cite>` element is rendered in italicized text by default.

```
<p>This HTML Tutorial is derived from <cite>World Wide Web Standard  
for HTML</cite>.</p>
```

This will produce following result:

```
This HTML Tutorial is derived from World Wide Web Standard for HTML.
```

Computer Code – The `<code>` Element :

Any code to appear on a Web page should be placed inside a `<code>` element. Usually the content of the `<code>` element is presented in a monospaced font, just like the code in most programming books.

```
<h1> <code>This is inside code element</code></h1>
```

This will produce following result:

```
This is inside code element
```

Keyboard Text – The `<kbd>` Element :

When you are talking about computers, if you want to tell a reader to enter some text, you can use the `<kbd>` element to indicate what should be typed in, as in this example.

The content of a `<kbd>` element is usually represented in a monospaced font rather like the content of the `<code>` element.

```
<h1> <kbd>This is inside kbd element</kbd></h1>
```

This will produce following result:

This is inside kbd element

Programming Variables – The <var> Element :

This element is usually used in conjunction with the <pre> and <code> elements to indicate that the content of that element is a variable that can be supplied by a user.

```
<p><code>document.write("<var>user-name</var>")</code></p>
```

This will produce following result:

```
document.write("user-name")
```

Program Output – The <samp> Element :

The <samp> element indicates sample output from a program, script, or the like. Again, it is mainly used when documenting programming concepts. For example:

```
<p>Result produced by the program is <samp>Hello  
World</samp></p>
```

This will produce following result:

```
Result produced by the program is Hello World
```

Addresses – The <address> Element :

The <address> element is used to contain any address. For example:

```
<address>304, Menna Colony, Hyderabad – INDIA, 500032</address>
```

This will produce following result:

```
304, Menna Colony, Hyderabad – INDIA, 500032
```

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Block and Inline Elements:

We can categories all the elements into two sections:

- **Block-level elements** – Block-level elements appear on the screen as if they have a carriage return or line break before and after them. For example the <p>, <h1>, <h2>, <h3>, <h4>, <h5>, <h6>, , , <dl>, <pre>, <hr />, <blockquote>, and <address> elements are all block level elements. They all start on their own new line, and anything that follows them appears on its own new line.
- **Inline elements** – Inline elements, on the other hand, can appear within sentences and do not have to appear on a new line of their own. The , <i>, <u>, , , <sup>, <sub>, <big>, <small>, , <ins>, , <code>, <cite>, <dfn>, <kbd>, and <var> elements are all inline elements.

The elements which we have not discussed till now, will be discussed in subsequent chapters.

HTML Hyperlink

`<a>`

The essence of an HTML document lies in the first two words: (H)yper(T)ext. In other words, it is the ability to link to other documents that makes HTML unique. How do HTML documents link to other documents? It does so via the `<a>` tag. The attributes for the `<a>` tag are `href` and `name`. Below we show an example for each.

Example 1: Link to an external document.

HTML:

```
<a href="sample.html">This link</a> takes you to a document called "sample.html."
```

Display:

[This link](#) takes you to a document called "sample.html."

Example 2: Link to an anchor within the same document.

HTML:

```
<a href="#atag">This link</a> takes you to a pre-determined location on the same page.
```

Display:

[This link](#) takes to a you to a pre-determined location on the same page.

Note that you may also link to an anchor within an external document.

Images

This lesson introduces how images and other graphical elements are incorporated into an HTML document, along with some basic image attributes.

- [Images - An Introduction](#)
 - [Image Source](#)
 - [Image Size](#)
- [Image Attributes](#)
 - [Image Alignment](#)
 - [Image Alignment with Text](#)
 - [Alternate Text](#)

Images - An Introduction

The tag is used to incorporate graphics (typically icons or pictures) into an HTML document. Any image can be added to a web page, provided it is in GIF or JPEG file format. Also bear in mind that the larger an image's file size is, the longer it will take to download in a viewer's browser. "Image Source" and "Image Size" are the minimum attributes required for displaying an image.

Image Source:

The image source tag <SRC=> tells the browser where the image is physically stored so that it can retrieve and display it. It is important to remember that file names are case sensitive and must be typed correctly.

Another important point to remember is that if an image is not stored in the same directory as the HTML documents, then the directory name must be included with the file name. Programmers commonly store images in a separate directory - often aptly titled "images". Thus an image source might appear written in HTML code as SRC="images/picture.gif". If an image is incorrectly named, missing or is listed in the wrong directory, a "broken graphic" icon will be displayed.

Image Size:

Although not absolutely required, it is good practise to include HEIGHT and WIDTH information within the tag. This speeds up the downloading process by allowing faster-loading text to load around areas where images will eventually appear. HEIGHT and WIDTH values are measured in pixels. Do not try to make the image smaller or larger by adjusting these attributes as you risk distorting the image by doing so.

HTML Code

```
<IMG SRC="woman.gif"  
WIDTH=32 HEIGHT=32>
```

Browser Display



Image Attributes

Image Alignment:

Use the LEFT, RIGHT or CENTER attributes within the tag to align images relative to the browser window. See below for examples of how these attributes are used.

HTML Code

```
<IMG SRC="woman.gif"  
WIDTH=32 HEIGHT=32  
ALIGN=LEFT>
```

Browser Display



```
<CENTER><IMG  
SRC="woman.gif" WIDTH=32  
HEIGHT=32></CENTER>
```



```
<IMG SRC="woman.gif"
WIDTH=32 HEIGHT=32
ALIGN=RIGHT>
```

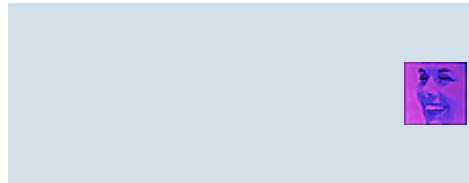


Image Alignment with Text:

By default the bottom of an image is aligned with any text that follows, as shown below:

HTML Code

```
<IMG SRC="hand.gif"
WIDTH=108
HEIGHT=79>This hand is very
big!
```

Browser Display

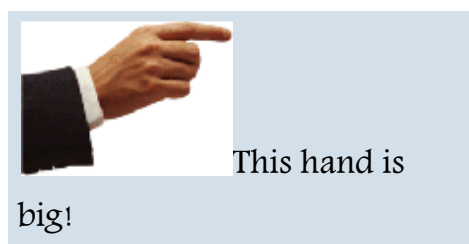


Vertical placement of text beside images can be altered from the bottom default setting by using the attributes `ALIGN=TOP` or `ALIGN=CENTER`, as shown below:

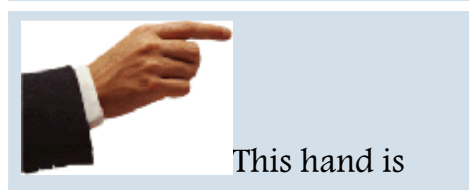
HTML Code

```
<IMG SRC="hand.gif"
WIDTH=108 HEIGHT=79
ALIGN=TOP>This hand is big!
```

Browser Display



```
<IMG SRC="hand.gif"
WIDTH=108 HEIGHT=79
```



```
ALIGN=CENTER>This hand is  
big!
```

big!

Yet another option is to force text to appear under an image rather than beside it. For this effect, use the `<BR CLEAR=ALL>` tag to place a line break after an image, which will cause the text that follows to begin on the next line.

HTML Code

```
<IMG SRC="hand.gif"  
WIDTH=108 HEIGHT=79  
ALIGN=TOP><BR  
CLEAR=ALL>This hand is big!
```

Browser Display



Alternate Text

A good rule of thumb is to include alternate text that describes the image within an `` tag.

This is done for a number of reasons -

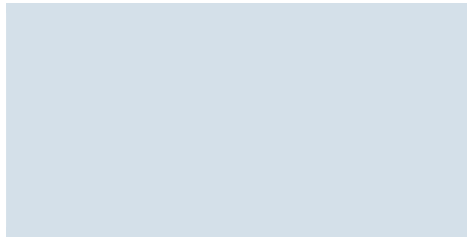
1. While the browser is still loading the viewer can still see the title or caption.
2. If the picture does not load, the viewer can still see the title or caption.
3. Users who choose to turn off image display in their browsers (a possible setting under the "preferences" menu), can still see the picture contents.

To do this the "ALT" attribute is used. See below for an example of this attribute in use.

HTML Code

```
<IMG SRC="hand.gif"  
WIDTH=108 HEIGHT=79  
ALT="Big Hand">
```

Browser Display



Try it out!

In the box below, type the following HTML code, then click the "View" button. The HTML document you have written will be displayed in your browser. You may wish to change some of the tags and/or attributes to experiment with some of the different items discussed in this lesson.

NOTE: If you would like to put one of the graphics from these lessons into your code, include the entire address. EG.

<http://www.alternetwebdesign.com/htmltutorial/imagename.gif>

Try typing this:

```
<HTML>
```

```
<HEAD>
```

```
<TITLE>Images</TITLE>
```

```
</HEAD>
```

```
<BODY BGCOLOR="#FFFFFF" TEXT="#000000">
```

```
<IMG SRC="http://www.alternetwebdesign.com/htmltutorial/hand.gif" WIDTH=200  
HEIGHT=146 ALIGN=TOP>
```

```
</BODY>
```

</HTML>

HTML Image

The tag is used to embed an image on the HTML document. The attributes are as follows:

- src: The file path to the image file.
- width: The width of the image, in pixels.
- height: The height of the image, in pixels.
- alt: The text the browser will display when visitors mouse over the image. Search engines often places more weight on the text in the alt attribute.

Links

This lesson introduces the basics of using text and images as hyperlinks within and between HTML documents.

- [Hyperlinks - An Introduction](#)
- [Text Hyperlinks](#)
- [Relative Versus Absolute Pathnames](#)
- [Image Hyperlinks](#)
- [Image Borders](#)
- [Image Maps](#)
- [E-Mail Hyperlinks](#)

[Hyperlinks - An Introduction](#)

The chief power of the Web comes from its ability to link from one web page or site to any other regardless of where (ie. which computer server) they physically reside. This can be achieved by the use of hyperlink tags. Though only text could be so tagged in earlier versions of HTML (hence the origins of the name HyperTEXT Markup Language), today any text or image can serve as a hyperlink to any another page, site or even an e-mail address, jumping to the appropriate resource when clicked on.

To add a link, the `` and `` tags are used. These tags bracket a portion of text or an image which will serve as a hyperlink, with the "HREF=" attribute identifying the destination URL.

Text Hyperlinks

To link with text simply bracket the desired word or phrase with the `` and `` tags. Typically, though not always, hyperlinked text is displayed in browsers with an underline, as illustrated below:

HTML Code

```
<A HREF=http://www.google.com>  
Check out today's!</A>
```

Browser Display

[Check out today's!](http://www.google.com)

Relative Versus Absolute Pathnames

An important point to remember when creating links is to make sure the correct URL is given. In order to provide a link to documents in other directories, the complete path from the current document to the linked document must be indicated. For example, a link to a file called "dilbert.html" located in the subdirectory "comics" would be written as:

```
<A HREF="comics/dilbert.html">Dilbert Comic</A>
```

These are called relative links because the path to the file being linked to is specified relative to the location of the current file. The absolute pathname (ie., the complete URL) of the file could also be used, but relative links are more efficient in accessing a server. They also have the advantage of making documents more "portable" -- for instance, several web pages stored in a single folder on a local computer, with relative hyperlinks between each other, could be uploaded to a web server together, where the links would continue to work just as they do within a locally stored copy.

The exception to this is when links are made to websites on other servers the absolute pathway must be given (ie., the complete URL).

Thus the relative pathway for this page is:

```
<A HREF="lesson5.htm">
```

Whereas the absolute pathway is:

```
<A HREF="www.alternetwebdesign.com/htmltutorial/lesson5.htm">
```

Image Hyperlinks

Instead of using text as hyperlinks, images may be used instead. This method of providing visual clues to links is becoming increasingly common on the Web. To do this, simply surround the image tag with hyperlink tags, in the same way a text link is tagged:

HTML Code

```
<A  
  HREF=http://www.unitedmedia.com/comics/dilbert/>  
  <IMG SRC="dilbert.gif" WIDTH=78 HEIGHT=72  
  BORDER=0></A>
```

Browser
Display



Image Maps

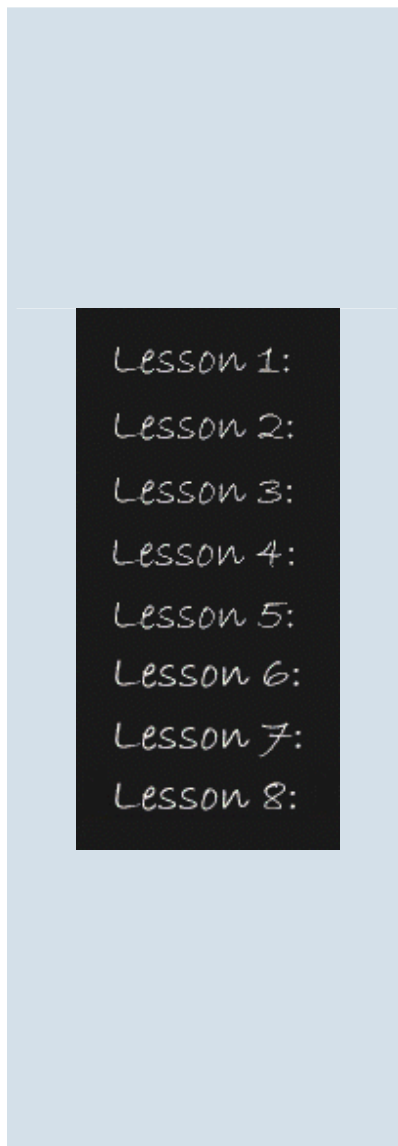
Image mapping is a method of hypertext linking different parts of an image with the use of pixel coordinates to denote the areas. With an image map, a single image can provide many links to a number of different URLs.

Below is a sample image map as it appears in HTML code and within a browser window:

HTML Code

```
<MAP NAME="links">
<AREA HREF="lesson1.htm"
SHAPE="RECT"
COORDS="10,11,121,39">
<AREA HREF="lesson2.htm"
SHAPE="RECT"
COORDS="10,48,121,73">
<AREA HREF="lesson3.htm"
SHAPE="RECT"
COORDS="10,78,121,106">
<AREA HREF="lesson4.htm"
SHAPE="RECT"
COORDS="10,114,121,137">
<AREA HREF="lesson5.htm"
SHAPE="RECT"
COORDS="10,144,121,170">
<AREA HREF="lesson6.htm"
SHAPE="RECT"
COORDS="10,172,121,201">
<AREA HREF="lesson7.htm"
SHAPE="RECT"
```

Browser Display



```
COORDS="10,205,121,235">
<AREA HREF="lesson8.htm"
SHAPE="RECT"
COORDS="10,234,121,266">
</MAP>

<IMG SRC="lessons.gif" WIDTH="135"
HEIGHT="278" usemap="#links"
BORDER=0 NAME="links">
```



E-Mail Hyperlinks

In order to create a link which launches the visitor's own e-mail program while filling in a specified address, include the "MAILTO:" tag with the desired e-mail address as shown here:

HTML Code

```
<A
  HREF="MAILTO:name@server.com">Click
  here to send e-mail.</A>
```

Browser Display



Try it out!

In the box below, type the following HTML code, then click the "View" button. The HTML document you have written will be displayed in your browser. You may wish to change some of the tags and/or attributes to experiment with some of the different items discussed in this lesson.

NOTE: If you would like to put one of the graphics from these lessons into your code, include the entire address - ie. the Absolute Pathname. EG.

<http://www.alternetwebdesign.com/htmltutorial/imagenam.gif>

Try typing this:

```
<HTML>
```

```
<HEAD>
```

```
<TITLE>Want to learn more? </TITLE>
```

```
</HEAD>
```

```
<BODY BGCOLOR="#FFFFFF" TEXT="#000000">
```

Do you want to learn more?

Click on the links below to get to some other useful HTML tutorials and reference documents:

```
<UL>
```

```
<LI><A
```

```
  HREF=http://www.ncsa.uiuc.edu/General/Internet/WWW/HTMLPrimerAll.html>NCS
```

```
  A- A Beginners Guide to HTML</A>
```

```
<LI> <A HREF=http://WWW.stars.com/Authoring/HTML/Intro/>The WDWL:
```

```
  Introduction to HTML</A>
```

```
</UL>
```

If you have any other HTML links you would recommend, please e-mail me at: info@alternetwebdesign.com

[Click on the arrow to go to the next lesson.](#)

Lesson 6

```
<A HREF="http://www.alternetwebdesign.com/htmltutorial/lesson6.htm"><IMG  
SRC="http://www.alternetwebdesign.com/htmltutorial/arrowright.gif" WIDTH=10  
HEIGHT=8 BORDER=0></A>
```

```
</BODY>
```

```
</HTML>
```


Tables

This lesson introduces the concept of tables as they are used in HTML documents.

- [Tables - An Introduction](#)
- [Explanation of Table Tags](#)
- [Explanation of Table Structure](#)

Tables - An Introduction

Tables are used two ways in HTML: to display charts (what the designers of the <TABLE> tag originally intended it for); and as a means of controlling the layout of information on a web page. Although creating tables can be challenging, because readers of this tutorial will only be modifying information on existing web pages, all that is required is a basic understanding of the key elements and attributes which make up a table.

Explanation of Table Tags

<TABLE>...</TABLE>

Encloses the table. The TABLE tag has the following variable attributes:

"BORDER=" Specifies the thickness of the border around the table. When using a table to control a page's layout, the border is usually set to zero.

"CELLPADDING=" Defines spacing within cells.

"CELLSPACING=" Defines spacing between cells.

"WIDTH=" Specifies the width of a table; typically

given as a percentage of the total browser window space available.

`<TR>...</TR>`

Specifies a table row within a table. You may define default attributes for the entire row. These are:

"ALIGN=" (either LEFT, CENTER, or RIGHT)

"VALIGN=" (either TOP, MIDDLE, or BOTTOM)

"BGCOLOR=" Sets the background color of a table row (see Lesson 1 for more information on choosing colours).

"WIDTH=" Specifies the width of a row; typically given as a percentage of the total space available.

`<TD>...</TD>`

Specifies a table data within the table row. The attributes for table data are:

"ALIGN=" (either LEFT, CENTER, or RIGHT)

"VALIGN=" (either TOP, MIDDLE, or BOTTOM)

"BGCOLOR=" Sets the background color of the TABLE cell (see Lesson 1 for more information on choosing colours).

"WIDTH=" Specifies the width of a table row. Typically given as a percentage of the available

space.

Explanation of Table Structure

Just as HTML documents have a basic structure, so too do tables.

```
<TABLE>
```

```
<TR>
```

```
<TD>This is the table data cell #1</TD>
```

```
<TD>This is the table data cell #2</TD>
```

```
</TR>
```

```
</TABLE>
```

Below are samples of the various <TABLE> tags and their respective browser display.

HTML Code

```
<TABLE BORDER=1  
CELLPADDING=2  
CELLSPACING=2>  
  
<TR>  
  
<TD>This is the table data cell  
#1</TD>  
<TD>This is the table data cell  
#2</TD>
```

Browser Display

This is the table data cell #1	This is the table data cell #2
--------------------------------------	--------------------------------------

```
</TR>
```

```
</TABLE>
```

Two further notes about the creation of tables: Firstly, tables are often "nested" within each other as a means precisely controlling the layout of information on a page. Secondly, in order to make a table cell appear empty, some form of place holder must be inserted, be it the ASCII code for a blank space () or perhaps a GIF consisting of a single pixel the same colour as the cell's background.

Try it out!

In the box below, type the following HTML code, then click the "View" button. The HTML document you have written will be displayed in your browser. You may wish to change some of the tags and/or attributes to experiment with some of the different items discussed in this lesson.

Try typing this:

```
<HTML>
```

```
<HEAD>
```

```
<TITLE>TABLE Manners</TITLE>
```

```
</HEAD>
```

```
<BODY BGCOLOR="#800080" TEXT="#FFFFFF">
```

TABLE Manners

```
<TABLE WIDTH=80% BORDER=1 CELLPADDING=2 CELLSPACING=2>
```

```
<TR>
```

```
<TD>Rule # 1</TD>
```

```
<TD>Always make sure you write all TABLE tags in the right order.</TD>
```

```
</TR>
```

```
<TR>
```

```
<TD>Rule # 2</TD>
```

```
<TD>It is inappropriate to nest too often.</TD>
```

```
</TR>
```

```
<TR>
```

```
<TD>Rule # 3</TD>
```

```
<TD>Sit up straight and do not put your elbows on the table.</TD>
```

```
</TR>
```

```
</TABLE>
```

```
</BODY>
```

```
</HTML>
```

HTML Marquees

A HTML marquee is a scrolling piece of text displayed either horizontally across or vertically down your web site page depending on the settings. This is created by using HTML tag <marquees>.

NOTE: The HTML <marquee> is an MSIE extension, but is now supported by NS 7 also. So please check if your browser supports this tag or not.

Syntax.

A simple syntax to use marquee is as follows.

<marquee attribute_name="attribute_value"....more attributes>One or more lines or text message or image</marquee>

Attributes.

A HTML marquee can have following attributes.

- **width:** how wide the marquee is. This will have a value like 10 or 20%etc.
- **height:** how tall the marquee is. This will have a value like 10 or 20% etc.
- **direction:** which direction the marquee should scroll. This will have value either *up, down, left* or *right*.
- **behavior:** what type of scrolling. This will have value *scroll, slid* and *alternate*.
- **scrolldelay:** how long to delay between each jump. This will have a value like 10 etc.
- **scrollamount:** how far to jump. This will have a value like 10 etc.
- **loop:** how many times to loop. The default value is INFINITE, which means that the marquee loops endlessly.
- **bgcolor:** background color. This will have any color name or color hex value.
- **hspace:** horizontal space around the marquee. This will have a value like 10 or 20%etc.
- **vspace:** vertical space around the marquee. This will have a value like 10 or 20%etc.

Examples:

Here are few examples to demonstrate the usage of marquee tag.

To Become more comfortable – [Do Online Practice](#)

```
<marquee>This is basic example of marquee</marquee>
```

```
<marquee width="50%">This example will take only 50% width</marquee>
```

```
<marquee direction="right">This text will scroll from left to right</marquee>
```

```
<marquee direction="up">This text will scroll from bottom to up</marquee>
```

marquee

This page contains HTML marquee code that you can copy and paste to create your own marquees.

Sometimes you might want your text or photos to continuously "scroll" across the screen. Or maybe you'd like it to zoom in from the side, then stay there. Or perhaps you'd like it to bounce back and forth across the screen. All these things are possible using HTML marquees.

HTML marquees are a piece of code that allows you to create movement on an HTML element. Usually marquees continuously scroll across the screen, but you can make it do other things too.

Scrolling Text


Here's an example of what you can do with the HTML `<marquee>` tags.

Source Code	Result
<pre><!-- Codes by HTML.am --> <marquee behavior="scroll" direction="left">This text is surrounded by HTML 'marquee' tags...</marquee></pre>	<p>This text is surrounded by HTML 'marquee' tags...</p>

In the above example, everything between the <marquee></marquee> tags scrolls across the page. In this example, we only put text into the marquee, but we could just have easily put an image into it.

Scrolling Image

Here's an example of a scrolling image. All we did was place HTML image code in between the <marquee></marquee> tags.

Source Code	Result
<pre><!-- Codes by HTML.am --> <marquee behavior="scroll" direction="left"></marquee></pre>	

Usability of Marquees

You should be careful when using marquees in HTML. Many web users dislike websites that contain scrolling text and other elements, so try to use them tastefully :)

Also note that the <marquee> tag is not part of the official HTML specification.

Having said that, it is recognized by most major browsers.

More Marquee Codes

You can do much more with HTML marquees than is covered on this page. Here's the full list of marquee codes on this website.

- [Scrolling Text](#)
- [Slide-In Text](#)
- [Bouncing Text](#)
- [Scrolling Image](#)
- [Slide-In Image](#)
- [Bouncing Image](#)

[Scrolling Text](#)

This page contains HTML code for creating scrolling text.

You can create scrolling text in HTML using `<marquee>` tags. You can make your text scroll from right to left. You can make it scroll left to right. You can make it bounce back and forth. You can make it scroll up or down. You can even make your text zoom in from the side and stay in the same place.

Right to Left

To make your text scroll left (i.e. from right to left), use `behavior="scroll"` and `direction="left"`. Like this:

Source Code	Result
<pre><!-- Codes by HTML.am --> <marquee behavior="scroll" direction="left">Here is some scrolling text... right to left!</marquee></pre>	Here is some scrolling text... right to left!

Left to Right

To make your text scroll right (i.e. from left to right), use `behavior="scroll"` and `direction="right"`. Like this:

Source Code	Result
<pre><!-- Codes by HTML.am --> <marquee behavior="scroll" direction="right">Here is some scrolling text... left to right!</marquee></pre>	Here is some scrolling text... left to right!

Scroll Up

To make your text scroll up (i.e. from bottom to top), use `behavior="scroll"` and `direction="up"`. Like this:

Source Code	Result
<pre><!-- Codes by HTML.am --> <marquee behavior="scroll" direction="up">Here is some scrolling</pre>	Here is some scrolling text... going up!

text... going up!</marquee>	
-----------------------------	--

Scroll Down

To make your text scroll down (i.e. from top to bottom), use behavior="scroll" and direction="down". Like this:

Source Code	Result
<pre><!-- Codes by HTML.am --> <marquee behavior="scroll" direction="down">Here is some scrolling text... going down!</marquee></pre>	Here is some scrolling text... going down!

Speed

You can change the scrolling speed of your marquee. For example, scrollamount="1" sets the marquee to a very slow scroll, while scrollamount="20" will make it faster. You can use whatever number you like though. Like this:

Source Code	Result
<pre><!-- Codes by HTML.am --> <marquee behavior="scroll" direction="left" scrollamount="1">Very slow...</marquee> <marquee behavior="scroll" direction="left" scrollamount="10">Faster...</marquee> <marquee behavior="scroll" direction="left" scrollamount="20">Fast...</marquee> <marquee behavior="scroll" direction="left" scrollamount="50">Lightning!</marquee></pre>	

Usability of Marquees

You should be careful when using marquees in HTML. Many web users dislike websites that contain scrolling text and other elements, so try to use them tastefully :)

Also note that the <marquee> tag is not part of the official HTML specification.

Having said that, it is recognized by most major browsers.

More Marquee Codes

You can do much more with HTML marquees than is covered on this page. Here's the full list of marquee codes on this website.

- [Scrolling Text](#)
- [Slide-In Text](#)
- [Bouncing Text](#)
- [Scrolling Image](#)
- [Slide-In Image](#)
- [Bouncing Image](#)

Slide-In Text

This page contains HTML code for creating slide-in text.

You can create slide-in text - or zoom in text - in HTML using <marquee> tags. You can make your text slide in from the left, right, top, or bottom.

Note: Due to the nature of slide-in text, you may need to refresh this page several times to catch all of the examples. This is because, once the text has slid in, it stops. If you don't see it slide in, you've missed it... unless you reload the page!

Top to Bottom

To make your text slide in from the top, use behavior="slide" direction="down". Like this:

Source Code	Result
<pre><!-- Codes by HTML.am --> <marquee behavior="slide" direction="down">Here is some slide-in text... coming from the top.</marquee></pre>	

Bottom to Top

To make your text slide in from the bottom, use behavior="slide" direction="up". Like this:

Source Code	Result
<pre><!-- Codes by HTML.am --></pre>	

<pre><marquee behavior="slide" direction="up">Here is some slide-in text... coming from the bottom.</marquee></pre>	
---	--

Right to Left

To make your text slide in from the right, use behavior="slide" direction="left". Like this:

Source Code	Result
<pre><!-- Codes by HTML.am --> <marquee behavior="slide" direction="left">Here is some slide-in text... coming from the right.</marquee></pre>	

Left to Right

To make your text slide in from the left, use behavior="slide" direction="right". Like this:

Source Code	Result
<pre><!-- Codes by HTML.am --> <marquee behavior="slide" direction="right">Here is some slide-in text... coming from the left.</marquee></pre>	

Changing the Speed

You can speed up your slide-in text - or slow it down if you prefer. To do this, just add the scrollamount attribute. For example, scrollamount="1" results in a very slow slide, while scrollamount="50" will make the text zoom-in - perhaps too fast for most people to notice it zooming in.

Some examples:

Source Code	Result
<pre><!-- Codes by HTML.am --> <marquee behavior="slide" direction="right" scrollamount="1">Here</pre>	

```

is some slide-in text... coming in nice and
slowly!</marquee>
<marquee behavior="slide"
direction="right" scrollamount="2">Here
is some slide-in text... coming in nice and
slowly!</marquee>
<marquee behavior="slide"
direction="right" scrollamount="3">Here
is some slide-in text... coming in nice and
slowly!</marquee>
<marquee behavior="slide"
direction="right" scrollamount="4">Here
is some slide-in text... coming in nice and
slowly!</marquee>
<marquee behavior="slide"
direction="right" scrollamount="5">Here
is some slide-in text... coming in nice and
slowly!</marquee>

```

bouncing text.

This page contains HTML code for creating bouncing text.

You can create bouncing text in HTML using <marquee> tags. You can make your text bounce sideways or up and down.

Note. Bouncing text has limited browser support. If you can't see the text bouncing around on this page, it could be that your browser doesn't support this feature of the <marquee> tag.

Side to Side

To make your text bounce back and forth, use behavior="alternate". Like this.

Source Code	Result
<pre> <!-- Codes by HTML.am --> <marquee behavior="alternate">Here is </pre>	

```
some bouncing text... side to  
side</marquee>
```

Note that browser support for bouncing marquees is quite limited.

Up & Down

You can make your text bounce up and down too. To do this, just add `behavior="alternate" direction="up"`. Like this:

Source Code	Result
<pre><!-- Codes by HTML.am --> <marquee behavior="alternate" direction="up">Here is some bouncing text... bouncing up and down.</marquee></pre>	

Changing the Speed

You can speed up your bouncing text - or slow it down if you prefer. To do this, just add the `scrollamount` attribute. For example, `scrollamount="1"` results in a very slow bounce, while `scrollamount="50"` will be very fast.

Some examples:

Source Code	Result
<pre><!-- Codes by HTML.am --> <marquee behavior="alternate" scrollamount="1">Slow...</marquee> <marquee behavior="alternate" scrollamount="12">Fast...</marquee> <marquee behavior="alternate" scrollamount="25">Faster...</marquee> <marquee behavior="alternate"</pre>	

```
scrollamount="55">Lightning!</marquee>
```

This page contains HTML code for creating scrolling images.


You can create a scrolling image in HTML using `<marquee>` tags. You can make your image scroll from right to left or left to right. You can also make it scroll up or down. Also, you can use any image - photos, animated gifs, icons, etc.

The easiest way to create a scrolling image in HTML is to place your `` element inside a `<marquee>` element. Although the `<marquee>` element is not part of the official HTML specification, it is widely supported by most major browsers.

Below are examples of scrolling images - code included.


Right to Left

To make your image scroll left (i.e. from right to left), use `behavior="scroll"` and `direction="left"`. Here's an example:

Source Code	Result
<pre><!-- Codes by HTML.am --> <marquee behavior="scroll" direction="left"> </marquee></pre>	


Left to Right

To make your image scroll right (i.e. from left to right), use `behavior="scroll"` and `direction="right"`. Example:

Source Code	Result
<pre><!-- Codes by HTML.am --> <marquee behavior="scroll" direction="right"> </marquee></pre>	

Scroll Up

To make your image scroll up (i.e. from bottom to top), use behavior="scroll" and direction="up". Example:

Source Code	Result
<pre><!-- Codes by HTML.am --> <marquee behavior="scroll" direction="up"> </marquee></pre>	

Scroll Down

To make your image scroll down (i.e. from top to bottom), use behavior="scroll" and direction="down". Like this:

Source Code	Result
<pre><!-- Codes by HTML.am --> <marquee behavior="scroll"</pre>	


```


direction="down">

</marquee>

```

Speed

You can change the scrolling speed of your marquee. For example, scrollamount="1" sets the marquee to a very slow scroll, while scrollamount="20" will make it faster. You can use whatever number you like though. Like this:

Source Code	Result
<pre> <!-- Codes by HTML.am --> <marquee behavior="scroll" direction="left" scrollamount="25"></marquee> <marquee behavior="scroll" direction="left" scrollamount="1"></marquee> <marquee behavior="scroll" direction="left" scrollamount="50"><img src="http://www.html.am/images/html- codes/marquees/fish-swimming.gif" </pre>	

```
width="94" height="88" alt="Swimming
fish" /></marquee>
<marquee behavior="scroll"
direction="left" scrollamount="15"></marquee>
```

Slide-In Image


This page contains HTML code for creating slide-in images.

You can create a slide-in image - or zoom in image - in HTML using `<marquee>` tags. You can make your image slide in from any direction - left, right, top, or bottom. Also, you can use any image - photos, animated gifs, icons, etc.

Note. Because slide-in images slide in and then stop, you may need to refresh this page a few times in order to view all examples on the page. This is because the images all start sliding as soon as the page loads.

Top to Bottom

To make your image slide in from the top, use `behavior="slide" direction="down"`. In this example, I've stacked the same image on top of each other in order to highlight the effect of the slide-in image. Different browsers display slide-in images differently, and it would be easy to miss the effect with only a small image.

Source Code	Result
<pre><!-- Codes by HTML.am --> <marquee behavior="slide" direction="down"> <img src="http://www.html.am/images/html-</pre>	

```


codes/marquees/arrow-down.gif"
width="32" height="32" alt="Arrow
pointing down" /><br />
<br />
<br />
<br />
<br />
</marquee>

```

Bottom to Top

To make your image slide in from the bottom, use behavior="slide" direction="up".

Example:


Source Code	Result
<pre> <!-- Codes by HTML.am --> <marquee behavior="slide" </pre>	

```
direction="up">
<br />
<br />
<br />
<br />
</marquee>
```




Right to Left

To make your image slide in from the right, use `behavior="slide" direction="left"`. Like this:

Source Code	Result
<pre><!-- Codes by HTML.am --> <marquee behavior="slide" direction="left"> </marquee></pre>	

Left to Right

To make your image slide in from the left, use behavior="slide" direction="right". Like this:

Source Code	Result
<pre><!-- Codes by HTML.am --> <marquee behavior="slide" direction="right"> <img src="http://www.html.am/images/html- codes/marquees/spinning-arrow-</pre>	

```

right.gif" width="50" height="38"
alt="Spinning arrow" />



</marquee>

```

Changing the Speed

You can speed up your slide-in image - or slow it down if you prefer. To do this, just add the scrollamount attribute. For example, scrollamount="1" results in a very slow slide, while scrollamount="50" will make the image zoom-in - perhaps too fast for most people to notice it zooming in.

Some examples:

Source Code	Result
<pre> <!-- Codes by HTML.am --> <marquee behavior="slide" direction="left" scrollamount="1"></marquee> <marquee behavior="slide" direction="left" scrollamount="2"><img </pre>	

```

src="http://www.html.am/images/html-
codes/marquees/fish-swimming.gif"
width="94" height="88" alt="Swimming
fish" /></marquee>
<marquee behavior="slide"
direction="left" scrollamount="3"></marquee>
<marquee behavior="slide"
direction="left" scrollamount="4"></marquee>
<marquee behavior="slide"
direction="left" scrollamount="5"></marquee>

```



Bouncing Image


This page contains HTML code for creating bouncing images.

You can create a bouncing image in HTML using `<marquee>` tags. You can make your image bounce sideways or up and down. You can use any image - photos, animated gifs, icons, etc.

Note. Browser support for bouncing images is limited. If you can't see the images bouncing around on this page, it could be that your browser doesn't support this feature of the `<marquee>` tag.

Side to Side


To make your image bounce back and forth, use `behavior="alternate"`. Here's an example:

Source Code	Result
<pre><!-- Codes by HTML.am --> <marquee behavior="alternate"> </marquee></pre>	

Note that browser support for bouncing marquees is quite limited.

Up & Down


You can make your image bounce up and down too. To do this, just add `behavior="alternate" direction="up"`. Example:

Source Code	Result
<pre><!-- Codes by HTML.am --> <marquee behavior="alternate" direction="up"> </marquee></pre>	

Changing the Speed

You can speed up your bouncing image - or slow it down if you prefer. To do this, add the scrollamount attribute. For example, scrollamount="1" results in a very slow bounce, while scrollamount="50" will be very fast.

Some examples:

Source Code	Result
<pre> <!-- Codes by HTML.am --> <marquee behavior="alternate" scrollamount="40"></marquee> <marquee behavior="alternate" scrollamount="15"></marquee> <marquee behavior="alternate" scrollamount="60"></marquee> <marquee behavior="alternate" scrollamount="30"></marquee> </pre>	 <p>The result shows four instances of a cartoon bee image (a yellow and black striped bee with blue wings) arranged vertically in a marquee. Each instance is shown in a different phase of a bouncing animation, illustrating the effect of the scrollamount attribute. The first instance (scrollamount="40") shows a very slow bounce. The second instance (scrollamount="15") shows a medium-speed bounce. The third instance (scrollamount="60") shows a very fast bounce. The fourth instance (scrollamount="30") shows a medium-speed bounce.</p>

Tables

This lesson introduces the concept of tables as they are used in HTML documents.

- [Tables - An Introduction](#)
- [Explanation of Table Tags](#)
- [Explanation of Table Structure](#)

Tables - An Introduction

Tables are used two ways in HTML: to display charts (what the designers of the <TABLE> tag originally intended it for); and as a means of controlling the layout of information on a web page. Although creating tables can be challenging, because readers of this tutorial will only be modifying information on existing web pages, all that is required is a basic understanding of the key elements and attributes which make up a table.

Explanation of Table Tags

<TABLE>...</TABLE>

Encloses the table. The TABLE tag has the following variable attributes:

"BORDER=" Specifies the thickness of the border around the table. When using a table to control a page's layout, the border is usually set to zero.

"CELLPADDING=" Defines spacing within cells.

"CELLSPACING=" Defines spacing between cells.

`<TR>...</TR>`

"WIDTH=" Specifies the width of a table; typically given as a percentage of the total browser window space available.

Specifies a table row within a table. You may define default attributes for the entire row. These are:

"ALIGN=" (either LEFT, CENTER, or RIGHT)

"VALIGN=" (either TOP, MIDDLE, or BOTTOM)

"BGCOLOR=" Sets the background color of a table row (see Lesson 1 for more information on choosing colours).

"WIDTH=" Specifies the width of a row; typically given as a percentage of the total space available.

`<TD>...</TD>`

Specifies a table data within the table row. The attributes for table data are:

"ALIGN=" (either LEFT, CENTER, or RIGHT)

"VALIGN=" (either TOP, MIDDLE, or BOTTOM)

"BGCOLOR=" Sets the background color of the TABLE cell (see Lesson 1 for more information on choosing colours).

"WIDTH=" Specifies the width of a table row.

Typically given as a percentage of the available space.

Explanation of Table Structure

Just as HTML documents have a basic structure, so too do tables:

```
<TABLE>
```

```
<TR>
```

```
<TD>This is the table data cell #1</TD>
```

```
<TD>This is the table data cell #2</TD>
```

```
</TR>
```

```
</TABLE>
```

Below are samples of the various <TABLE> tags and their respective browser display:

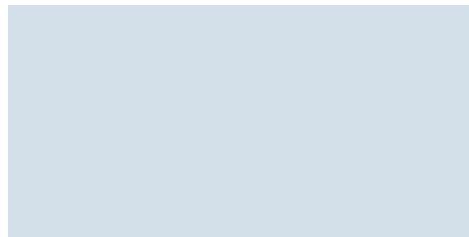
HTML Code

```
<TABLE BORDER=1  
CELLPADDING=2  
CELLSPACING=2>  
  
<TR>  
  
<TD>This is the table data cell  
#1</TD>  
<TD>This is the table data cell  
#2</TD>
```

Browser Display

This is the table data cell #1	This is the table data cell #2
--------------------------------------	--------------------------------------

```
</TR>  
  
</TABLE>
```



Two further notes about the creation of tables: Firstly, tables are often "nested" within each other as a means precisely controlling the layout of information on a page. Secondly, in order to make a table cell appear empty, some form of place holder must be inserted, be it the ASCII code for a blank space () or perhaps a GIF consisting of a single pixel the same colour as the cell's background.

Try it out!

In the box below, type the following HTML code, then click the "View" button. The HTML document you have written will be displayed in your browser. You may wish to change some of the tags and/or attributes to experiment with some of the different items discussed in this lesson.

Try typing this:

```
<HTML>
```

```
<HEAD>
```

```
<TITLE>TABLE Manners</TITLE>
```

```
</HEAD>
```

```
<BODY BGCOLOR="#800080" TEXT="#FFFFFF">
```

```
TABLE Manners
```

```
<TABLE WIDTH=80% BORDER=1 CELLPADDING=2 CELLSPACING=2>
```

```
<TR>
```

```
<TD>Rule # 1</TD>
<TD>Always make sure you write all TABLE tags in the right order.</TD>
</TR>
<TR>
<TD>Rule # 2</TD>
<TD>It is inappropriate to nest too often.</TD>
</TR>
<TR>
<TD>Rule # 3</TD>
<TD>Sit up straight and do not put your elbows on the table.</TD>
</TR>
</TABLE>

</BODY>

</HTML>
```

HTML Forms

Forms are used in HTML to pass data. On the web, data is typically passed as a key-value pair. For example, the following URL:

```
http://www.xyz.com/example?c=1&d=title
```

has two separate key-value pairs, separated by '&'. The key for the first key-value pair is 'c', and the value is '1'. The key for the second key-value pair is 'd', and its value is 'title'.

How are key-value pair specified? They are specified by the `<form>` tag. The general format is as follows:

```
<form action=xxx>
...
[section specifying the value for each key]
...
<input type=submit value=Go>
</form>
```

The text after `action=` specifies the script to be executed after the user submits the information. `<input type=submit>` gives a button that the user clicks when she is ready to submit the information. The `value=Go` piece specifies the text appearing on the button, in this case 'Go'. This is shown below:

The following list gives the most common ways for users to specify the value:

- [Text input](#)
- [Radio button](#)
- [Checkbox](#)
- [Drop-down menu](#)

Each will be described in more detail in its own section.

Text Input

One way users can enter data into a HTML document is via text. The most common scenario is when users have to enter a username and password to enter a site. There are three common types of text input:

- **text:** In this type of input, we get a single-line text box to enter data. The texts typed appear directly on the web page.

The syntax is `<input type=text name=c>`. Here, the key for this text input value is 'c'. Below is an example:

Text example:

- **password:** In this type of input, we get a single-line text box to enter data. The text typed do not appear directly on the web page.

The syntax is `<input type=password name=pwd>`. Here, the key for this password input is 'pwd'. Below is an example:

Text example:

- **textbox:** In this type of input, we get a multi-lin text book to enter data. The texts typed appear directly on the web page.

The syntax is `<textarea rows=[row height] name=area>`. The key for this textarea input is 'area'. Below is an example, with [row height] = 2:

Text area example:

Radio Button

A second type of input is the radio button. Radio buttons are used when you want users to be able to select one and only one of the options. Below is an example.

Code:

```
<input type="radio" name="color" value="red">Red<br>  
<input type="radio" name="color" value="green">Green<br>  
<input type="radio" name="color" value="blue">Blue<br>
```

- Red
- Green
- Blue

In this case, the key is color, and the values can be either red, green, or blue, depending on the radio button selected.

If we want to pre-select a radio button, we'll specify "selected" at the end of the `<input>` tag, such as follows:

```
<input type="radio" name="color" value="red" selected>Red<br>
```

Checkbox

Another type of input is the check box. Check boxes are used when you want users to be able to select more than one of the options. Below is an example:

Code:

```
<input type="checkbox" name="color" value="red">Red<br>  
<input type="checkbox" name="color" value="green">Green<br>  
<input type="checkbox" name="color" value="blue">Blue<br>
```

- Red
- Green
- Blue

In this case, the key is color, and the values can be either red, green, or blue, depending on the check box(es) selected. If multiple check boxes are checked, the "color" key will then have multiple values.

If we want to pre-select a check box, we'll specify "checked" at the end of the <input> tag, such as follows:

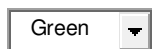
```
<input type="checkbox" name="color" value="red" checked>Red<br>
```

Drop Down Menu

Drop down menu is another common way to specify input data. For example, selecting a state is often done via a drop down menu. Users can select one or more items in a drop-down menu. Below is an example for a single-selection drop down menu:

Code:

```
<select name=color>
<option value="red">Red</option>
<option value="green">Green</option>
<option value="blue">Blue</option>
```

A single-selection drop-down menu. The text 'Green' is displayed in the box, and a small downward-pointing arrow is visible on the right side of the box.

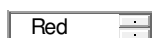
In this case, the key is color, and the values can be either red, green, or blue, depending on the item selected.

If we want to pre-select a check box, we'll specify "selected" at the end of the `<input>` tag, such as follows:

```
<input type="checkbox" name="color" value="red" selected>Red<br>
```

If we want to select multiple items, we specify "multiple" at the end of the `<select>` tag, i.e.,

```
<select name=color multiple>
```

A multiple-selection drop-down menu. The text 'Red' is displayed in the box, and a small downward-pointing arrow is visible on the right side of the box.

HTML List

This section lists the tags often used with HTML lists: ``, ``, and ``.

``

The `` tag specifies that the following list is ordered.

``

The `` tag specifies that the following list is unordered.

``

The `` tag lists each item, whether ordered or numbered. Note that each item is indented.

Example 1: ordered list.

HTML:

```
<ol>
<li>Unordered list 1.</li>
<li>Unordered list 2.</li>
</ol>
```

Display:

1. Unordered list 1.
2. Unordered list 2.

Example 2: unordered list.

HTML:

```
<ul>
<li>Unordered list 1.</li>
```

```
<li>Unordered list 2.</li>
```

```
</ul>
```

Display:

- Unordered list 1.
- Unordered list 2.

HTML Email Links

This is very easy to put an HTML email link on your page. But while doing so, you need to put your email address on your web page which can cause a spamming problem for your email account. There are many guys over the internet who can run programs to harvest these types of emails for spamming. So if you are going to put your email link on a public website then you have to be prepared for anti-spamming as well.

You can have another option to facilitate people to send you emails. This option is to use HTML forms to take user data and then use CGI script to send an email.

A simple example, check [Contact Us](#) Form. We take user feedback using this form and then we are using one CGI program which is collecting this information and sending email to one given email ID.

HTML Email Tag:

HTML `<a>` tag provides you facility to specify an email address to send an email. While using `<a>` tag as an email tag then you will use **mailto:email address** along with *href* attribute. Following is the syntax of using mailto instead of using http.

```
<a href="mailto:abc@example.com">Send Email</a>
```

This code will generate following link.

[Send Email](#)

Now if a user will click this link then it will launch one Email Client (like Lotus Notes, Outlook Express etc.) installed on your user's computer.

This is another risk to use this procedure because if users do not have email client installed on their computer then it would not be possible to send you email.

Default Email Subject and Body:

You can specify a default *email subject* and *email body* along with your email address. Following is the example to use default subject and body.

```
<a href="mailto:abc@example.com?subject=Feedback&body=Message">
```

Send Feedback

``

This code will generate following link:

[Send Feedback](#)

HTML Frames

This section introduces the tags related to HTML frames: `<frameset>` and `<frame>`.

`<frameset>`

The `<frameset>` tag specifies the number of columns/rows on a frame. Note that you may embed a frameset within another frameset. The attributes include:

- `cols`: Specifies the number of columns, as well as the width of each column. For example, `cols="30%,70%"` means that there will be two columns, the first column occupies 30% of the available space, while the second column occupies 70% of the available space.
- `rows`: Specifies the number of rows, as well as the width of each row. For example, `rows="40%,60%"` means that there will be two rows, the first row occupies 40% of the available space, while the second row occupies 60% of the available space.

`<frame>`

The `<frame>` tag specifies the properties within a particular frame. The attributes include:

- `src`: This attribute specifies the HTML document source.
- `marginwidth`: The margin on the left and right side of the frame.
- `marginheight`: The margin on the top and bottom of the frame.
- `scrolling`: This attribute specifies whether users may scroll up and down within this frame. The possible values are {yes|no|auto}.
- `noresize`: This attribute specifies whether users may resize the frame.

Note that search engines typically do not like the use of the frames. Therefore, please consider using the frame feature carefully.

Example 1

HTML:

```
<frameset cols="50%,50%">
  <frameset rows="100%">
    <frame src="frame1.html">
  </frameset>
  <frameset rows="50%,50%">
    <frame src="frame2.html">
    <frame src="frame3.html">
  </frameset>
</frameset>
```

Display:

```
-----
|           |           |
|           | frame2.html |
|           |           |
| frame1.html |-----|
|           |           |
|           | frame3.html |
|           |           |
-----
```

Frames

This lesson introduces the concept of frames as a means of organizing and displaying information within HTML documents.

- [Frames - An Introduction](#)
- [Frameset Tags](#)
- [Defining Columns](#)
- [Defining Rows](#)
- [Defining Frames](#)

Frames - An Introduction

Frames allow a browser window to be divided into multiple sections, each with an independent HTML page loaded inside it, capable of interacting with one another. Think of a browser window divided into frames (or "frameset") as a window divided into panes.

Perhaps the most common use of frames is to divide a browser window into two or more frames with specific content: one containing some form of static navigational element (text list, image map, navigation bar, etc.); another containing variable information or data which changes depending upon what is chosen in the navigation frame; and perhaps another frame containing static information relevant to the entire site such as a company logo or header.

Information about how a browser is to display frames is contained in a separate HTML document called a "frames page," a simple example of which might appear as follows:

HTML Code

```
<HTML>

<HEAD><TITLE>Frame
Test...</TITLE></HEAD>

<FRAMESET COLS="30%, 70%">

<FRAMESET ROWS="75%, 25%">
<FRAME SRC="menubar1.html"
NAME="menu">
<FRAME SRC="logo.html" NAME="logo">
</FRAMESET>

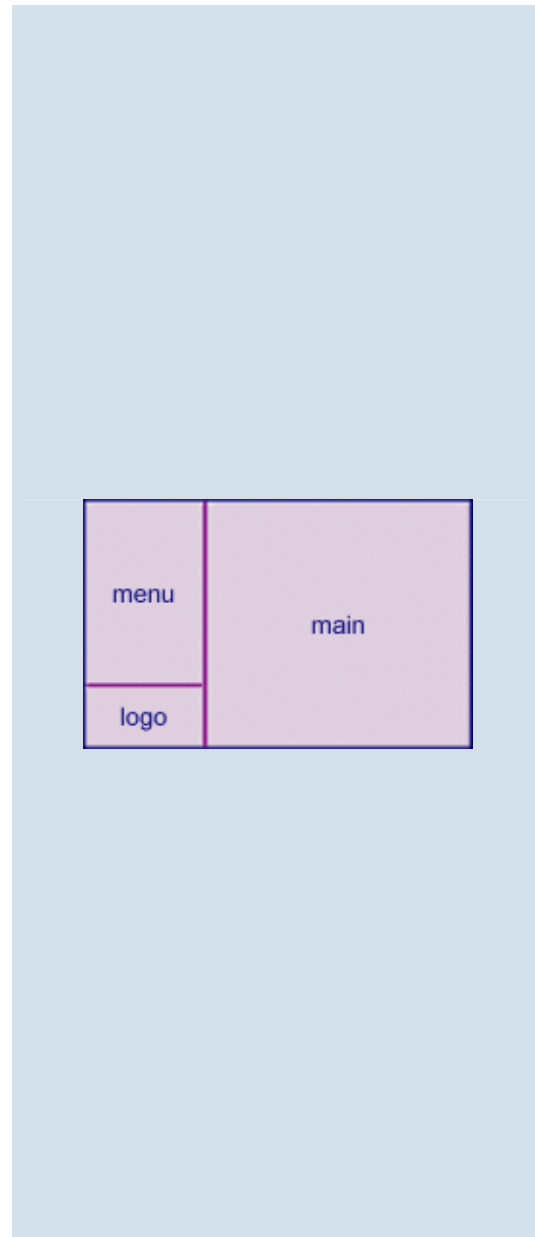
<FRAMESET ROWS="*">
<FRAME SRC="main.html"
NAME="main">
</FRAMESET>

</FRAMESET>

<NOFRAMES>This site requires a
frames-capable browser...please get
one!</NOFRAMES>

</HTML>
```

Browser Display



As the above example shows, the frames page itself in most cases does not contain any actual content, serving instead only as a description to the browser as to how the window is to be divided and where to obtain the actual pages designated to fill the frames. The addition of the `<NOFRAMES>` tag and accompanying message serves as

a warning to users with older non-frame-supporting browsers who would otherwise have nothing displayed but a blank window.

Frameset Tags

Frameset tags are used to define characteristics of individual frames.

Frameset tags (<FRAMESET> and </FRAMESET>) are used multiple times throughout a single frames page. The first frameset tags are used to define the number of separate frame columns within the browser window, and what width they will be. The next set are used to define the number of frame rows and their height.

Row attributes are set separately for each column: for example, one column may contain two frames while another only one. While technically there is no limit to the number of frames that can appear in a single browser window, realistically anything above four frames tends to appear overly crowded on most computers.

Defining Columns

A column frameset tag follows this format:

```
<FRAMESET COLS="size of column 1, size of column 2, etc.">
```

This tag will eventually be closed with a </FRAMESET> tag, but only after frameset rows are defined for each column. The "size of column" values can be expressed in one of three ways:

"x%" - whereby "x" is set to a percentage of the available browser window space

"x" - whereby "x" is set to a fixed pixel amount (generally not recommended as pixel widths vary depending upon the resolution of viewers' monitors)

"*" - whereby the column uses all remaining available space within the window

Following the above guidelines, a frameset reading `<FRAMESET COLS="20%, 80%">` would be interpreted as meaning that the first column in the browser window will take up 20% of the total window's width while the second column will occupy 80%. Similarly, `<FRAMESET COLS="120, *">` would mean to set the first column exactly 120 pixels wide with the second column occupying whatever space is left over.

Defining Rows

Within the column-defining frameset tags are the row-defining frameset tags. The number of row-defining frameset tags is directly dependant on the number of columns defined in the column-defining frameset tags. If two columns are defined, there will be two separate row-defining frameset tags; if three columns are defined, there will be three row-defining frameset tags, and so forth.

A row frameset tag follows this format:

```
<FRAMESET ROWS="size of row 1, size of row 2, etc.">
```

The "size of row" values can be expressed in exactly the same fashion as are "size of column" values; that is, as a percentage ("x%"), a fixed pixel width ("x"), or whatever remaining space is available (*).

Columns are always defined left to right.

Defining Frames

Within each row-defining frameset tag is a frame tag `<FRAME SRC="x">` (where "x" is the name of an HTML document) which tells the browser which document to load in that frame. The frame tag has the following variable attributes:

`SCROLLING="YES, NO, or AUTO"` - Defines whether or not a frame has a scroll bar. The default setting "AUTO" lets the browser determine whether a scroll bar is needed, depending upon the size of the browser's window on a viewer's monitor. "YES" means a scroll bar will always appear, "NO" never.

`NORESIZE` - The absence or presence of this tag determines whether a user can resize frames as they appear on their monitor. By default (ie., whenever this tag is not included) viewers are able to resize frames. Adding this tag allows designers some control over how their pages appear.

`NAME="x"` - Defines the name of a frame, which is useful for keeping track of frames, as well as for targeting links between pages.

HTML Embed Multimedia

You can add music or video into your web page. The easiest way to add video or sound to your web site is to include the special HTML tag called `<embed>`. This tag causes the browser itself to include controls for the multimedia automatically. You do not need to have any ActiveX, Java VM, VBscript or JavaScript to support this `<embed>` tag.

It's also a good idea to include the `<noembed>` tag to support browsers which don't recognize the `<embed>` tag. You could, for example, use `<embed>` to display a movie of your choice, and `<noembed>` to display a single JPG image.

Here is a simple example to play embed a midi file.

```
<embed src="/html/sound.mp3" width="100%" height="60" >
```

```
<noembed></noembed>
```

```
</embed>
```

You can put any media file in src attribute. You can try it yourself by giving various files.

Attributes:

Following is the list of important attributes for `<embed>` element.

- **align** – Determines how to align the object. It takes either *center*, *left* or *right*.
- **autostart** – Indicates if the media should start automatically. Netscape default is true, Internet Explorer is false.
- **loop** – Specifies if the sound should be played continuously (set loop to true), a certain number of times (a positive value) or not at all (false). This is supported by Netscape only.
- **playcount** – Specifies the number of times to play the sound. This is alternate option for *loop* if you are using IE.

- **hidden** – Defines if the object shows on the page. A false value means no and true means yes.
- **height** – Height of the object in pixels or en.
- **width** – Width of the object in pixels or en.
- **pluginspage** – Specifies the URL to get the plugin software.
- **name** – A name used to reference the object.
- **src** – URL of the object to be embedded. This can be any recognizable by the user's browser. It could be .mid, .wav, .mp3, .avi and so on).
- **volume** – Controls volume of the sound. Can be from 0 (off) to 100 (full volume). This attribute is supported by Netscape only.

HTML – Video Media Types

Flash movies (.swf), AVI's (.avi), and MOV's (.mov) file types are supported by the embed tag.

- .swf files – are the file types created by Macromedia's Flash program.
- .wmv files – are Microsoft's Window's Media Video file types.
- .mov files – are Apple's Quick Time Movie format.
- .mpeg files – are movie files created by the Moving Pictures Expert Group.

Here is a simple example to play a flash file.

```
<embed src="/html/yourfile.swf" width="100%" height="250" >
<noembed></noembed>
</embed>
```

Background Audio – The <bgsound> Element.

You can use the <bgsound> tag to play a soundtrack in the background. This tag is for Internet Explorer documents only. Other browsers ignore the tag. It downloads and plays an audio file when the host document is first downloaded by the user and displayed. The background sound file also will replay whenever the user refreshes the browser display.

This tag is having only two attributes *loop* and *src*. Both these attributes have same meaning as explained above.

Here is a simple example to play a small midi file.

```
<bgsound src="/html/sound.mp3" >
<noembed></noembed>
</bgsound>
```

This will produce blank screen. This tag does not display any component and remains hidden.

Currently, Internet Explorer can handle three different sound format files: wav, the native format for PCs; au, the native format for most Unix workstations; and MIDI, a universal music-encoding scheme.

HTML Object tag:

HTML 4 introduces the `<object>` element, which offers an all-purpose solution to generic object inclusion. The `<object>` element allows HTML authors to specify everything required by an object for its presentation by a user agent

Here are few example.

You can embed a HTML document in an HTML document itself as follows.

```
<object data="data/test.htm" type="text/html"
width="300" height="200">
alt : <a href="data/test.htm">test.htm</a>
</object>
```

Here *alt* attribute will come into picture if browser does not support *object* tag.

You can embed a PDF document in an HTML document as follows:

```
<object data="data/test.htm" type="application/pdf"
width="300" height="200">
alt : <a href="data/test.pdf">test.pdf</a>
</object>
```

You can specify some parameters related to the document with the param tag. IE sometimes needs a src parameter to understand the location. Here is an example to embed a wav file:

```
<object type="audio/x-wav" data="data/test.wav"
width="200" height="20">
<param name="src" value="data/test.wav">
<param name="autoplay" value="false">
<param name="autoStart" value="0">
alt : <a href="data/test.wav">test.wav</a>
</object>
```

You can add a flash document as follows:

```
<object classid="clsid:D27CDB6E-AE6D-11cf-96B8-444553540000"
id="penguin" codebase="someplace/swflash.cab" width="200"
```

```
height="300"><param name="movie" value="flash/penguin.swf" />
<param name="quality" value="high" />

</object>
```

You can add a java applet into HTML document as follows.

```
<object
  classid="clsid:8ad9c840-044e-11d1-b3e9-00805f499d93"
  width="200" height="200">
  <param name="code" value="applet.class">
</object>
```

The classid attribute identifies which version of Java Plug-in to use. You can use the optional *codebase* attribute to specify if and how to download the JRE.

Referencing Audio, Video, and Images.

You can reference any external document, regardless of type or format, via a conventional anchor tag.

Here is an example to reference an audio file. Similar way you can refer any world document, PDF file, zip file etc.

```
If you want to listen music then<a href="/html/yourfile.mid"
target="_blank" > Click Here </a>
```

This will produce following result.

If you want to listen music then [Click Here](#)

Just like any referenced document, the server delivers the desired multimedia object to the browser when the user selects the link. If the browser finds that the document is not HTML or XHTML but rather some other format, it automatically invokes an appropriate rendering tool to display or otherwise convey the contents of the object to the user.

Browsers identify and specially handle multimedia files from one of two different hints: either from the file's Multipurpose Internet Mail Extension (MIME) type, provided by the server, or from a special suffix in the file's name. The browser prefers MIME because of its richer description of the file and its contents, but it will infer the file's contents (type and format) from the file suffix: .gif or .jpg, for GIF and JPEG encoded images, for example, or .au for a special sound file.

Descriptive Questions

Q. What is protocol? How many types of protocols are there?

Ans.

When computers communicate each other, there needs to be a common set of rules and instructions that each computer follows. A specific set of communication rules is called a protocol. Some protocol: PPP, HTTP, SLIP, FTP, TCP/IP

Q. What is the difference between Networking and Remote Networking?

Ans.

The main difference between Networking and Remote Networking, is the network which we use in offices or other places locally such LAN or INTERNET and remote networking is one which we use TERMINAL Services to communicate with the remote users such WAN.

Q. What is point-to-point protocol?

Ans.

A communication protocol used to connect computer to remote networking services include Internet Service Providers. In networking, the Point-to-Point protocol is commonly used to establish a direct connection between two nodes. Its primary use has been to connect computers using a phone line.

Q. How gateway is different from router?

Ans.

A gateway operates at the upper levels of the OSI model and translates information between two completely different network architectures. Routers allow different networks to communicate with each other. They forward packets from one network to another based on network layer information. A gateway can interpret and translate the different protocols that are used on two distinct networks. Unlike routers that successfully connect networks with protocols that are similar, a gateway perform an application layer conversion of information from one protocol stack to another.

Q. What is the role of network administrator?

Ans.

Basic tasks for which a network administrator may be responsible.

- Setting up and configuring network hardware and software.
- Installing and configuring network media and connections.
- Connecting user nodes and peripherals of all kinds to the network.
- Adding users to and removing users from the network.
- Managing user account.
- Ensuring the security of the network.
- Provide training to the users to utilize the network's resources

Q. What is the difference between baseband and broadband transmission?

Ans.

Baseband is a bi-directional transmission while broadband is a unidirectional transmission.

No Frequency division multiplexing possible in base band but possible in broadband.

S.No	Baseband	Broadband
1	Entire bandwidth of the cable is consumed by a signal.	broadband transmission, signals are sent on multiple frequencies, allowing multiple signals to be sent simultaneously.
2	Digital signals	Analog signals
3	bi-directional transmission	unidirectional transmission
4	No Frequency division multiplexing possible	Frequency division multiplexing possible
5	Uses for short distance	Uses for long distance

Q.What are the difference between domain and workgroup?

Ans.

S.No	Domain	Workgroup
------	--------	-----------

1.	One or more computers are servers.	All Computers are peers.
2.	If you have a user account on the domain, you can logon to any computer on the domain.	Each computer has a set of accounts.
3.	There can be 100+ computers	Typically not more than 20-30 computers
4	. The computers can be on different local Network.	All computers must be on the same local network.

Q. What is the difference between POP3 and IMAP Mail Server?

Ans.

IMAP is a standard protocol for accessing e-mail from a local server. A simpler e-mail protocol is Post Office Protocol 3 (POP3), which download mail to the computer and does not maintain the mail on the server. IMAP, e-mails are stored on the server, while in POP3, the messages are transferred to the client's computer when they are read.

Q. Name different layer of the ISO /OSI Model.

Ans.

International Standard Organization – Open Systems Interconnection has seven layers;

Physical Layer, Data Link Layer, Network Layer, Transport Layer, Session Layer, Presentation Layer, Application Layer

Q. What is client server architecture?

Ans.

To designated a particular node which is well known and fixed address, to provide a service to the network as a whole. The node providing the service is known as the server and the nodes that use that services are called clients of that server. This type of network is called Client-Server Architecture.

Q. What is FDM? Give example.

Ans.

FDM-Frequency Division Multiplexing is used in analog transmission. It is often used in short distance. It is code transparent and any terminal of the same speed can use the same sub-channel after the sub-channel is established. The best example of FDM is the way we receive various stations in a radio.

Q. Describe the following in brief.

i) MOSAIC ii) USENET iii) WAIS

Ans.

- i) MOSAIC: is the program for cruising the internet. The National centre wrote this program for Super Computer application at the university of Illinois. It has a simple window interface, which creates useful hypertext links that automatically perform some of the menu bar and button functions.
- ii) USENET: is the way to meet people and share information. Usenet newsgroup is a special group set up by people who want to share common interests ranging from current topic to cultural heritages.
- iii) WAIS: is a WIDE AREA INFORMATION SERVER.

1 and 2 Marks Questions

Q(1) What do you mean by a computer network?

Ans:- Computer network is an interconnection of autonomous computers connected together using transmission media.

Q(2) What is the need for networking the computers?

Ans:- 1. Sharing of Information, 2. Reliability, 3. Reduces cost 4. Time saving

Q(3) What is the full form of ARPANET?

Ans:- Advanced Research Projects Agency Network

Q(4) What are various data transmission modes?

Ans:- There are three modes of data transmission

- Simplex
- Half-duplex
- Full-duplex

Q(5) What is the difference between Simplex and half duplex transmission?

Ans:- In simplex transmission mode, the data can be transferred in only one direction where as in half duplex transmission mode, the data can be transmitted in both directions but one at a time.

Q(6) What do you mean by MODEM?

Ans:- MODEM stands for MODulatorDEModuator. It is a device that can convert an analog signal into digital signal and vice versa.

Q(7) Define the terms Bandwidth.

Ans:- Bandwidth is the range of frequencies that is available for the transmission of data. Wider the bandwidth of a communication channel, the more data it can transmit in a given period of time.

Q(8) What are various types of transmission media?

Ans:- There are two broad categories of transmission media

- Guided media
- Unguided Media

Q(9) Explain in brief the advantages and disadvantages of Twisted pair Cable.

Ans:- Advantages

- Inexpensive
- Often available in existing phone system
- Well tested and easy to get

Disadvantages

- Susceptible to noise (sound, energy etc.)
- Not as durable as coaxial cable
- Does not support high speed

Q(10) What do you mean by communication protocol?

Ans:- A protocol is a set of rules to enable computers to connect with one another and to exchange information with minimum possible error.

Q(11) List various functions of Communication protocol.

Ans:- Data sequencing, Data Formatting, Flow control, Error Control, Connection Establishment and termination, Data Security

Q(12) List commonly used protocols.

Ans:- HTTP, TCT/IP, FTP, SLIP, PPP, SMTP, POP, ICMP

Q(13) What are the main functions of TCP

Ans:- The TCP does the following activities

- It breaks the data into packets that the network
- Verifies that all the packets arrived at the destination
- Reassembles the data

Q(14) What do you mean by network topology?

Ans:- Topology is how the nodes/computers are interconnected together.

Q(15) List various types of Networks.

Ans:- LAN, MAN, WAN

Q(16) Give names of various networking topologies in LAN.

Ans:- 1.Star Topology, 2.Ring topology, 3.Bus topology 4.Mesh Topology

Q(17) Write two advantages and two disadvantages of STAR topology.

Ans:- Advantages of STAR topology

- It is easy to modify and add new computers to a star network without disturbing the rest of the network.
- Troubleshooting a star topology network is easy

Disadvantages

- All the nodes are dependent on the central system. Hub. Failure of hub result in shutting down of whole of the system
- Long cable length is required

Q(18) What is NFS?

Ans:- NFS stands for Network File System. NFS is a protocol that allows a set of computers to access each others files.

Q.(19) Write the tags to define the following.

- (i) A text box (ii) A radio button (iii) A check box (iv) A password box
(v) Submit button

Ans. (i) `<INPUT type = "text" name = "name of text box">`

(ii) `<INPUT type = "radio" name = "rbutton" value = "radio button">`

(iii) `<INPUT type = "checkbox" name = "nameofTheCheckbox" value = "theValueTobeused">`

(iv) `<INPUT type = "password" name = "<name of password box>" >`

(v) `<INPUT type = "submit" name = "Submit" value = "Submit" />`

Q.(20) What do you understand by a (i) Web browser (ii) Web server?

Ans. A Web Browser is a WWW client that navigates through the World Wide Web and displays web pages. A Web Server is a WWW server that stores web documents and responds to the requests made by web browsers.

Q.(21) What are the major functions provided by a Web server?

Ans. Serving Web pages

Running gateway programs and returning output

Controlling access to the server

Monitoring and logging server access statistics

Q.(22) What is WWW? How does it function?

Ans. The World Wide Web is a set of programs, it is based upon clients and servers. A WWW client is called a Web browser or simply a browser, and a WWW server is called a Web server or sometimes just a server.

Q.(23) Differentiate between `<TITLE>` and `>HEAD>` tags?

Ans. The HEAD tag is used to define the document header. The <HEAD> tag contains information about the document, including its title, scripts used, style definitions and document descriptions.

The title element contains your document title and identifies its content in a global context. The title is typically displayed in the title bar at the top of the browser window.

To add <HEAD> tag, we enter it between <HTML> tags; to add <TITLE> tag, we enter in between <HEAD> tags.

Q.(24) Differentiate between container and empty elements?

Ans. Container elements require pair tags i.e., a starting as well as an ending tag e.g., <TITLE>...</TITLE>, <HEAD>...</HEAD>. Empty elements require just a starting tag and not an ending tag e.g.,
, <HR>.

Q.(25) Differentiate between
 and <P> tag.

Ans. To simply end one line and jump to the next, use a line break, or
. To end a line and also show a blank line before beginning anything else, use a paragraph marker <P>.

Q.(26) List and define different types of heading tags.

Ans. Different types of heading tags are <H1>, <H2>, <H3>, <H4>, <H5>, and <H6>, each representing different levels of headings, with <H1> being the largest.

Q.(27) List and explain the different attributes of body tag?

(i) background To load an image and using it as a background when displaying a page

(ii) bgcolor To change background color

(iii) text To change color of text

(iv) link To change color of links

(v) vlink To change color of visited links

(vi) alink To change color of active links

(vii) leftmargin To leave some blank area in the left side

(viii) topmargin To set the top margin, i.e., distance from the top edge

Q.(28) What is the difference between basefont and font tag?

Ans. The <BASEFONT> tag lets you define the basic size for the font, the browser will use to render normal document text i.e., the text for which no other font-size setting has been provided. The tag lets you change the size, style and color of text - It is generally used for changing the appearance of a short segment of text.

Q.(29) What are logical and physical text styles?

Ans. Logical Text Styles are general descriptions. Each browser handles a logical style in its own way. Logical styles render the text according to its meaning e.g., is for emphasizing something and is for strongly emphasizing some thing. Physical Text Styles indicate the specific type of appearance for a section e.g., bold, italics etc. Physical Styles are rendered in the same manner by all browsers.

Q.(30) What for are rowspan and colspan attributes used?

Ans. Sometimes, a table cell is bigger than other. Its span is spread to more rows or columns. Such cells can be created with rowspan and colspan.

Q.(31) How is form data processed when the form is submitted? Are there any pre-requisites for form-processing?

Ans. An HTML form doesn't do anything without a program to process the information. The processing program can be in form of a script in a scripting language or CGI script or any other specified action. This program must be on the server. Once we have decided on a script, we need to specify two things in order to get the form processed.

1. Where the processing program is located.
2. How it takes information i.e., whether we need to use the POST or GET method.

Q.(32) Differentiate between order and unordered lists.

Ans. The tag is used for defining unordered lists (or unnumbered lists). In these lists a special bullet symbol appears in front of every list item.

The tag, on the other hand, is used for defining ordered or numbered lists. In these lists, a number or letter appears in front by every list item.

Q.(33) What is the use of TYPE attribute in a list?

Ans. TYPE attribute in a list is used to define the style of lists. For tag, TYPE attribute changes the bullet style to "disc", "square" or "circle". For tag TYPE attribute changes numbering style to "A", "I", "i" or "1" for common Arabic numerals.

Q.(34) Write the difference between cellpadding and cell spacing.

Ans. Cellpadding attribute of <TABLE> tag gives the amount of space between the cell border and the cell contents. Whereas Cellspacing attribute of <TABLE> tag gives the amount of space between cells.

Q.(35) What is the use of START attribute in a list?

Ans. Normally, browsers automatically number ordered list items beginning with Arabic numeral 1. The START attribute for tag lets us change that beginning value.

Q.(36) What is the difference between the Submit button and Reset button of HTML form?

Ans. Submit and Reset buttons of HTML form are special buttons which have a traditional purpose to serve. When Submit button is clicked then forms data is submitted to the back-end application. When Reset button is clicked then all forms controls are reset to default state.

Q.(37) Specify the tags and attributes to Send a form to the e-mail address mymail@emaiaccount.com.

```
<FORM action = "mailto:mymail@emailaccount.com" method = "post">
```

Q.(38) Specify the tag and attributes used to create a textbox which can accept maximum of 20 characters with a default value "Enter Name".

The tag to create a textbox to accept maximum 20 characters with default value "Enter Name" is as follows:

```
<INPUT type = "text" name = "name" size = "20" value = "Enter Name">
```

EXERCISES

MULTIPLE CHOICE QUESTIONS

1. The address of a resource on the net is known as:
(a) ISP (b) HTTP
(c) URL (d) WWW
2. A program that serves requested HTML files and pages.
(a) Web Address (b) Web Page
(c) Web Server (d) None of these
3. HTML tags must be written within:
(a) < > (b) { }
(c) [] (d) ()
4. Which of the following is the correct structure of HTML tags?
(a) < HTML> </HTML> <HEAD> </HEAD> <BODY> </BODY>
(b) <HTML> <HEAD> </HEAD> </HTML> <BODY> </BODY>
(c) <HTML> <HEAD> <BODY> </BODY> </HEAD> </HTML>
(d) <HTML> <HEAD> </HEAD> <BODY> </BODY> </HTML>
5. Which of the following tags is used to specify the items in a list.
(a) (b)
(c) (d) <DL>
6. The IMAGE tag uses the _____ attribute to specify the URL of the image to be displayed.
(a) SCR (b) SRC
(c) Source (d) None of these
7. The align attribute of <Table> tag refers to _____ placement of the table in relation to the window screen.
(a) Vertical (b) horizontal
(c) Both a and b (d) None of these
8. Choose the best suitable input type to input gender from the user:
(a) Text (b) Submit
(c) checkbox (d) Radio

9. Elements, such as heading, paragraph and tables etc can be contained in the FORM element.

- (a) Holds True always (b) Holds True Sometimes
- (c) Is Never True (d) None of these

10. Data entry on a web page can be done using:

- (a) Tables (b) Formatting Tags
- (c) Forms (d) Lists

11. Which tag is used to embed an image in an HTML document.

- (a) <FIX> (b)
- (c) <IMAGE> (d) <FIX IMAGE>

12. To create a nested list we use the tag:

- (a) (b)
- (c) <NL> (d) combination of (a) and (b) as required.

13. Input type="_____" will send the form to its destination place.

- (a) Button (b) File
- (c) Submit (d) Reset

14. FACE is the attribute of which tag:

- (a) <BODY> (b)
- (c) <P> (d)

15. Radio buttons can be grouped together so that only one is selected at a time by using the attribute:

- (a) name (b) selected
- (c) checked (d) font

16. XML document is used to

- (a) Only interpret data
- (b) Store any kind of data
- (c) Store only highly structured data (like in databases)
- (d) Store only loosely structured data (like letters)

17. XML can be used to

- (a) Exchange data (b) Store data
- (c) Interpret data (d) All of these

18. Every XML document must begin with a

(a) Root element (b) Child element

(c) XML version details (d) Any of these

Know more about internet Applications (Questions and Answers form)

1 .. What is the use of IGMP protocol?

Internet Group Management Protocol: - It allows internet hosts to participate in multicasting. The IGMP messages are used to learn which hosts is part of which multicast groups. The mechanism also allow a host to inform its local router, that it wants to receive messages.

2 .. What are Ping and Tracert?

Ping and tracert are the commands used to send information to some remote computers to receive some information. Information is sent and received by packets. Ping I particularly used to check if the system is in network or not. It also gives packet lost information. In windows ping command is written as ping ip_address Tracert is called as trace route. It is used to track or trace the path the packet takes from the computer where the command is given until the destination. In windows ping command is written as tracert ip_address

3 .. Explain RSVP. How does it work?

Resource Reservation protocol is used to reserve resources across a network. It is used for requesting a specific Quality of Service (QOS) from the network. This is done by carrying the request (that needs a reservation of the resource) of the host throughout the network. It visits each node in the network. RSVP used two local modules for reservation of resources. Admission control module confirms if there are sufficient available resources while policy module checks for the permission of making a reservation. RSVP offers scalability. On a successful completion of both checks RSVP uses the packet classifier and packet scheduler for the desired QOS requested.

4 .. Explain the concept of DHCP.

Dynamic Host Configuration Protocol is used assigning IP addresses to computers in a network. The IP addresses are assigned dynamically. Certainly, using DHCP, the computer will have a different IP address every time it is connected to the network.

In some cases the IP address may change even when the computer is in network. This means that DHCP leases out the IP address to the computer for sometime. Clear advantage of DHCP is that the software can be used to manage IP address rather than the administrator.

5 :: What are the differences between a domain and a workgroup?

In a domain, one or more computer can be a server to manage the network. On the other hand in a workgroup all computers are peers having no control on each other. In a domain, user doesn't need an account to logon on a specific computer if an account is available on the domain. In a work group user needs to have an account for every computer.

In a domain, Computers can be on different local networks. In a work group all computers needs to be a part of the same local network.

6 :: Explain how NAT works.

Network Address Translation translates and IP address used in a network to another IP address known within another network. A NAT table is maintained for global to local and local to mapping of IP's. NAT can be statically defined or dynamically translate from a pool of addresses. The NAT router is responsible for translating traffic coming and leaving the network. NAT prevents malicious activity initiated by outside hosts from reaching local hosts by being dependent on a machine on the local network to initiate any connection to hosts on the other side of the router.

7 :: What is PPP protocol? Explain PPP packet format.

Point to Point protocol helps communication between 2 computers over a serial cable, phone line or other fiber optic lines. E.g. Connection between an Internet Service Provider and a host. PPP also provides authentication. PPP operates by sending Request packets and waiting for Acknowledge packets that accept, reject or try to change the request. The protocol is also used to negotiate on network address or compression options between the nodes.

Packet format:-

Flag field: 1 byte: - Indicates frames beginning or end

Address field: 1 byte: - Used for broadcast address (destination address)

Control field: 1 byte: - Used as a control byte

Protocol field: - 1 or 2 bytes: - Setting of protocol in information field (of datagram)

Information: - 0 or more bytes: - Datagram (whether it contains data or control information)

Padding: - 0 or more bytes: - optional padding

FCS: - 2 or more bytes: - error check sum

8 :: What is IP Spoofing and how can it be prevented?

IP spoofing is a mechanism used by attackers to gain unauthorized access to a system. Here, the intruder sends messages to a computer with an IP address indicating that the message is coming from a trusted host. This is done by forging the header so it contains a different address and make it appear that the packet was sent by a different machine.

Prevention:-

Packet filtering: - to allow packets with recognized formats to enter the network

Using special routers and firewalls.

Encrypting the session

9 :: Explain IP datagram, Fragmentation and MTU.

IP datagram can be used to describe a portion of IP data. Each IP datagram has set of fields arranged in an order. The order is specific which helps to decode and read the stream easily. IP datagram has fields like Version, header length, Type of service, Total length, checksum, flag, protocol, Time to live, Identification, source and destination ip address, padding, options and payload.

MTU:- Maximum Transmission Unit is the size of the largest packet that a communication protocol can pass. The size can be fixed by some standard or decided at the time of connection

Fragmentation is a process of breaking the IP packets into smaller pieces. Fragmentation is needed when the datagram is larger than the MTU. Each fragment

becomes a datagram in itself and transmitted independently from source. When received by destination they are reassembled.

10 :: What is an application gateway?

An application gateway is an application program that runs on a firewall between two networks. An application gateway is used for establishing connection between client program and destination service. The client negotiates with the gateway to communicate with the service of destination. Here, gateway can be called as a proxy. Hence, two connections are made. One between

11 :: Explain Circuit Level Gateway.

A circuit level gateway is used to find if a session in TCP handshaking is legitimate or not. It can be considered as a layer between application layer and transport layer. They protect the information of the private network they protect. Circuit level gateways do not filter packets.

12 :: What is "Gateway Of Last Resort"?

A Gateway of Last Resort or Default gateway is a route used by the router when no other known route exists to transmit the IP packet. Known routes are present in the routing table. Hence, any route not known by the routing table is forwarded to the default route. Each router which receives this packet will treat the packet the same way, if the route is known, packet will be forwarded to the known route.

13 :: What is LAN?

LAN is a computer network that spans a relatively small area. Most LANs are confined to a single building or group of buildings. However, one LAN can be connected to other LANs over any distance via telephone lines and radio waves. A system of LANs connected in this way is called a wide-area network (WAN). Most LANs connect workstations and personal computers. Each node (individual computer) in a LAN has its own CPU with which it executes programs, but it also is able to access data and devices anywhere on the LAN. This means that many users can share expensive devices, such as laser printers, as well as data. Users can also use the LAN to communicate with each other, by sending e-mail or engaging in chat sessions.

14 :: What is the difference Between an Intranet and the Internet?

There's one major distinction between an intranet and the Internet. The Internet is an open, public space, while an intranet is designed to be a private space. An intranet may be accessible from the Internet, but as a rule it's protected by a password and accessible only to employees or other authorized users.

From within a company, an intranet server may respond much more quickly than a typical Web site. This is because the public Internet is at the mercy of traffic spikes, server breakdowns and other problems that may slow the network. Within a company, however, users have much more bandwidth and network hardware may be more reliable. This makes it easier to serve high-bandwidth content, such as audio and video, over an intranet.

15 :: Define the term Protocol.

Protocol is a standard way of communicating across a network. A protocol is the "language" of the network. It is a method by which two dissimilar systems can communicate. TCP is a protocol which runs over a network.

16 :: Define File Transfer Protocol.

File Transfer Protocol (FTP), a standard Internet protocol, is the simplest way to exchange files between computers on the Internet. Like the Hypertext Transfer Protocol (HTTP), which transfers displayable Web pages and related files, and the Simple Mail Transfer Protocol (SMTP), which transfers e-mail, FTP is an application protocol that uses the Internet's TCP/IP protocols. FTP is commonly used to transfer Web page files from their creator to the computer that acts as their server for everyone on the Internet. It's also commonly used to download programs and other files to your computer from other servers.

17 :: Explain the 7 Layers of OSI.

Layer 1: Physical layer

It represents all the electrical and physical specifications for devices.

Layer 2: Data link layer

It provides the functional and procedural means to transfer data between network entities and to detect and possibly correct errors that may occur in the Physical layer.

Layer 3: Network layer

The Network layer provides the functional and procedural means of transferring variable length data sequences from a source to a destination via one or more networks.

Layer 4: Transport layer

It provides transparent transfer of data between end users.

Layer 5: Session layer

It controls the sessions between computers. It connects, manages and terminates the connections between the local and remote application.

Layer 6: Presentation layer

It transforms data to provide a standard interface for the Application layer.

Layer 7: Application layer

It provides a means for the user to access information on the network through an application.

18 :: What is a network? What are the different kinds of network? Explain them.

A network is a group of computers or nodes connected together. They are connected with each other by communication paths.

Types of Networks:

LAN – Local Area Network connects a group of nodes covering a small physical area. LAN's are most commonly seen in offices, building etc. LAN's enable higher transfer rate of data, smaller coverage of area and hence less wiring.

WAN – Wide Area Network connects a group of nodes covering a wide area. WAN typically connects and allow communication between regions or national boundaries. The most common example of WAN is internet.

VPN – Virtual Private Network connects or links nodes in some larger area by open connections or virtual circuits in some larger network (e.g., the Internet) instead of by physical wires. It is used for secure communication through the public internet. VPN alone may not support explicit security features, such as authentication or content encryption.

Intranet – It is a set of networks under the control of a single administrative person. It can be considered as an internal network of an organization. If it is large, web servers are used to provide information to the users.

Extranet – It is a network that restricts itself within a single organization. It can be categorized as WAN, MAN etc. however; it cannot have a single LAN. It must have a connection (at least one) with external network.

19 :: What are network topologies? Explain Ring, Bus and Star topology.

A network topology describes the layout of a network. It describes how different nodes and elements are connected to each other. Different types of topology:

a. Ring:-

- * All nodes connected with another in a loop.
- * Each device is connected to one or more another device on either side.

b. Bus

- * All nodes connected to a central and a common cable called as a back bone.
- * In bus topology, the server is at one end and the clients are connected at different positions across the network.

- * Easy to manage and install.
- * If the backbone fails, the entire communication fails.

c. Star

- * All nodes connected to a central hub.
- * The communication between the nodes is through the hub.
- * Relative requires more cables as compared to BUS. However if any node fails, it wont affect the entire LAN.

20 :: Explain IP, TCP and UDP.

TCP – Transmission control Protocol is used to establish communication between nodes or networks and exchange data packets. It guarantees delivery of data packets in the order they were sent. Hence it is most commonly used in all applications that require guaranteed delivery of data. It can handle both timeouts (if packets were delayed) and retransmission (if packets were lost). The stream of data is transmitted in segments. The segment header is 32 bit. it is a connectionless communication protocol at the third level (network) of the OSI model.

IP – Internet protocol is used for transmission of data over the internet. IP uses IP addresses to identity each machine uniquely. Message is sent using small packets. The packet contains both the sender and receivers address. IP does not guarantee the delivery in the same order as sent. This is because the packets are sent via different routes. It is a connectionless communication protocol at the third level (network) of the OSI model.

UDP – User Data Protocol is a communication protocol. It is normally used as an alternative for TCP/IP. However there are a number of differences between them. UDP does not divide data into packets. Also, UDP does not send data packets in sequence. Hence, the application program must ensure the sequencing. UDP uses port numbers to distinguish user requests. It also has a checksum capability to verify the data.

21 :: Explain the different classes of addresses supported by IP addressing.

Computers using the TCP/IP for communication are uniquely identified by a 32 bit address called as an IP address. The routers use the IP address information to forward the packet to the destination computer.

IP addresses are categorized as:

Private address: these IP addresses are used exclusively within a private network and not for public to see.

Public Address: these are registered IP addresses used for public.

Each IP address has a network address and a host address. IP addresses are expressed in four sets of three numbers, separated with dots. Each set is called as an octet because when converted to binary; it denotes eight binary

22 :: What is multicasting?

Multicasting allows a single message to be sent to a group of recipients. Emailing, teleconferencing, are examples of multicasting. It uses the network infrastructure and standards to send messages.

23 :: Explain the functionality of PING.

Ping Is particularly used to check if the system is in network or not. It also gives packet lost information. In windows ping command is written as ping ip_address. The output returns the data packets information. The number of packets sent, received and lost is returned by PING.

24 :: Explain the core naming mechanism, Domain Name System (DNS).

A Domain Name system is used to convert the names of the website on the internet to IP addresses. The domain names for each IP addresses are stored in a database that is distributed across different servers. A domain name space consists of a tree of domain names. The tree has zones. Zones consist of a collection of connected nodes. These nodes are served by a name server. A domain name is usually in the form of mydomain.com. Here, .com is the top level domain. Where as mydomain is the sub

domain or subdivision. A host name is a domain name that has one or more IP addresses associated with it.

25 :: Describe Application layer.

The application layer is located at the top of the TCP/IP protocol layers. This one contains the network applications which make it possible to communicate using the lower layers. The software in this layer therefore communicates using one of the two protocols of the layer below (the transport layer), i.e. TCP or UDP. In computer networking, an application layer firewall is a firewall operating at the application layer of a protocol stack.[1] Generally it is a host using various forms of proxy servers to proxy traffic instead of routing it. As it works on the application layer, it may inspect the contents of the traffic, blocking what the firewall administrator views as inappropriate content, such as certain websites, viruses, and attempts to exploit known logical flaws in client software, and so forth. An application layer firewall does not route traffic on the network layer. All traffic stops at the firewall which may initiate its own connections if the traffic satisfies the rules.

26 :: Define DNS

The DNS translates Internet domain and host names to IP addresses. DNS automatically converts the names we type in our Web browser address bar to the IP addresses of Web servers hosting those sites. DNS implements a distributed database to store this name and address information for all public hosts on the Internet.

27 :: Define Telnet

Telnet is the main Internet protocol for creating a connection to a remote server.

28 :: Define SMTP

SMTP - Short for Simple Mail Transfer Protocol, a protocol for sending e-mail messages between servers.

29 :: What Is a MAC Address?

MAC (Media Access Control) addresses are globally unique addressed that are written into hardware at the time of manufacture. The MAC address is a unique value associated with a network adapter. MAC addresses are also known as hardware addresses or physical addresses. They uniquely identify an adapter on a LAN. MAC addresses are 12-digit hexadecimal numbers (48 bits in length).

30 :: MAC vs. IP Addressing

Whereas MAC addressing works at the data link layer, IP addressing functions at the network layer (layer 3). It's a slight oversimplification, but one can think of IP addressing as supporting the software implementation and MAC addresses as supporting the hardware implementation of the network stack. The MAC address generally remains fixed and follows the network device, but the IP address changes as the network device moves from one network to another.

31 :: Define Spanning-Tree Protocol (STP)

Spanning-Tree Protocol (STP) as defined in the IEEE 802.1D is a link management protocol that provides path redundancy while preventing undesirable loops in the network. For an Ethernet network to function properly, only one active path can exist between two stations. Loops occur in networks for a variety of reasons. The most common reason you find loops in networks is the result of a deliberate attempt to provide redundancy – in case one link or switch fails, another link or switch can take over.

32 :: What is VPN?

A VPN is a service that offers secure, reliable connectivity over a shared public network infrastructure such as the Internet. VPNs maintain the same security and management policies as a private network. They are the most cost effective method of establishing a virtual point-to-point connection between remote users and an enterprise customer's network.

33 :: Define broadcast domain.

It is a logical area in a computer network where any computer connected to the network can directly transmit to any other computer in the domain without having to go through a routing device.

34 :: Bridge vs switch.

A bridge connects two different LAN networks. A switch is something like you can connect many computers to a switch and then one computer can connect to another through the switch. Switch is a unicast one to one connection

35 :: What is a Router?

A router is a device or sometimes a software in a computer which decides the next network point to which a packet should be forwarded to reach its destination on Internet. It is usually included as part of the network switch and is located at a gateway, including each point-of-presence on the Internet. The router is connected to at least two networks and determines which way

36 :: Define gateway.

A gateway is a network point that provides entrance into another network. On the Internet, a node or stopping point can be either a gateway node or a host (end-point) node. Both the computers of Internet users and the computers that serve pages to users are host nodes. The computers that control traffic within your company's network or at your local Internet service provider (ISP) are gateway nodes.

37 :: What is firewall?

A firewall is a hardware or software installed to provide security to the private networks connected to the internet. They can be implemented in both hardware and software, or a combination of both. All data entering or leaving the Intranet passes through the firewall which allows only the data meeting the administrators' rules to pass through it.

38 :: What are the types of firewalls?

Packet Filtering Firewall:

This type of Firewall detects packets and block unnecessary packets and makes network traffic release.

Screening Router Firewalls:

It's a software base firewall available in Router provides only light filtering.

Computer-based Firewall:

It's a firewall stored in server with an existing Operating System like Windows and UNIX.

Hardware base Firewall:

Its device like box allows strong security from public network. Mostly used by big networks.

Proxy Server:

Proxy server allows all clients to access Internet with different access limits. Proxy server has its own firewall which filters the all packet from web server.

39 :: What is Data encryption?

Data encryption ensures data safety and very important for confidential or critical data. It protect data from being read, altered or forged while transmission.

40 :: What is the Public Key Encryption?

Public key encryption use public and private key for encryption and decryption. In this mechanism, public key is used to encrypt messages and only the corresponding private key can be used to decrypt them. To encrypt a message, a sender has to know recipient's public key.

41 :: What is Digital Signatures?

Digital signature is an attachment to an electronic message used for security purpose. It is used to verify the authenticity of the sender.

42 :: What is Ethernet technology?

Ethernet technology is a high speed broadcast bus technology. In this type, all the station shares a single ether channel and receives every single transmitted signal.

43 :: Explain the use of network interface card, NIC.

NIC is used to connect computer to an Ethernet network.

44 :: Explain token ring technology.

In this technology, all the devices are arranged in a circle. A token moves around the circular network. A device waits for the token before it sends its frame. Once it receives token, it initiates transmission of its frame.

45 :: What is CSMA and CD concept?

In CSMA (carrier sense multiple access), presence of any digital signal in a network is checked before transmission. Data transmission occurs only when no signal is sensed.

CD, Collision detection is responsible for monitoring carrier in order to avoid signal jam.

46 :: What is NetBIOS protocol?

NetBIOS (Network Basic Input/Output System) Protocol allows applications on separate computers to communicate over a LAN. It runs over TCP/IP giving each computer in the network a NetBIOS name and IP address. E.g. It can be used for computers running Windows 2000 (or before) to join a computer network running Windows 2000 (or later).

47 :: What is IGMP protocol?

Internet Group Management Protocol, allows internet hosts to multicast. i.e. to send messages to a group of computers. There may be a group of internet hosts interested to multicast. IGMP allows router to determine which host groups have members on a given network segment. It helps to establish group memberships. It is commonly used for streamlining videos and gaming. The protocol can be implemented both as a host side and router side. The host side is responsible to notify its membership in a group. The notification is made to a local router. This local router (router side) in turn sends out queries.

48 :: Explain PPP protocol.

Point to Point protocol helps communication between 2 computers over a serial cable, phone line or other fiber optic lines. E.g. Connection between an Internet Service Provider and a host. PPP also provides authentication. PPP operates by sending Request packets and waiting for Acknowledge packets that accept, reject or try to change the request.

The protocol is also used to negotiate on network address or compression options between the nodes. PPP has a number of phases as below:

- * Link dead: - takes place when the connection fails.
- * Link Establishment Phase: - Used to establish connection. If authentication is desired, it moves to next phase.
- * Authentication Phase: - Allows the nodes to authenticate each other.
- * Network-Layer Protocol Phase: - here, the network control protocols come into play. Data transport, closing of the protocols takes place in this phase.

* Link Termination Phase: – here, the connection is terminated.

49 :: What is TCP / IP protocol?

Transmission Control Protocol / Internet Protocol: – It is a family of protocols used for communication and connection between hosts on the internet. It is the most widely used standard for transmitting data over the internet. The four layers in the protocol are (from bottom to top):- Physical layer, Data link layer, Network layer, transport layer and application layer, also called as the OSI model. In TCP/IP , IP is responsible for forwarding packets while TCP ensures the correct delivery of data from client to server. TCP detects loss of data as well.

50 :: What is FTP (File Transfer Protocol)?

FTP is File Transfer Protocol. It used to exchange files on the internet. To enable the data transfer FTP uses TCP/IP, FTP is most commonly used to upload and download files from the internet. FTP can be invoked from the command prompt or some graphical user interface. FTP also allows to update (delete, rename, move, and copy) files at a server. It uses a reserved port no 21. •

51 :: What is HTTP (Hypertext Transfer Protocol)?

HTTP or Hyper Text Transfer Protocol is provides a set of rules to transfer files, videos, images over the world wide web. When the web browser is opened, a HTTP request call is made. A web server contains a HTTP daemon. This daemon is used to wait for HTTP requests and handle them when they arrive. The web browser from where HTTP requests are made is called as a client. These requests are sent to the server. It uses a reserved port no 80.

52 :: What is NNTP (Network News Transfer Protocol)?

NNTP or Network News Transfer Protocol is used to manage the notes posted on Unset newsgroup (a collection of posted notes on a subject posted by different users). NNTP servers are responsible for managing Usenet newsgroup collected globally. A NNTP client is a part of the web browser also called as a news reader. It uses a reserver port no 119.

53 :: What is SMTP (Simple Mail Transfer Protocol)?

SMTP or Simple Mail Transfer Protocol is used to send email messages between servers. The messages are retrieved using email clients. SMTP is more commonly

used to send messages from a mail client to a mail server. And hence the email client like POP needs to be configured. Hence, SMTP is used to send emails while POP or IMAP are used to receive messages. It is usually operated on port25 on the internet.

54 :: What is POP3 (Post Office Protocol 3)?

POP3 or Post Office Box 3 is used for receiving emails. It is a client server protocol which holds the email. Once the email is downloaded from the server, POP3 deletes it from the server. Ordinal numbers are used to identify specific messages.

55 :: What is SNMP (Simple Network Management Protocol)?

SNMP or Simple Network Management Protocol is typically used for managing the network. Managing the network includes managing the nodes present in the network. These nodes may be server, routers, bridges and hubs. SNMP agents are used to achieve this. Managing the network is essential because it helps to monitor network performance, detect network faults or failures, audit network usage etc. the SNMP messages like TRAP, GET or SET may be invoked by network elements or network management system.

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