B.E.

Sixth Semester Examination, Dec-2008

Web Development (CSE-307-E)

Note : Attempt any ***FIVE*** questions.

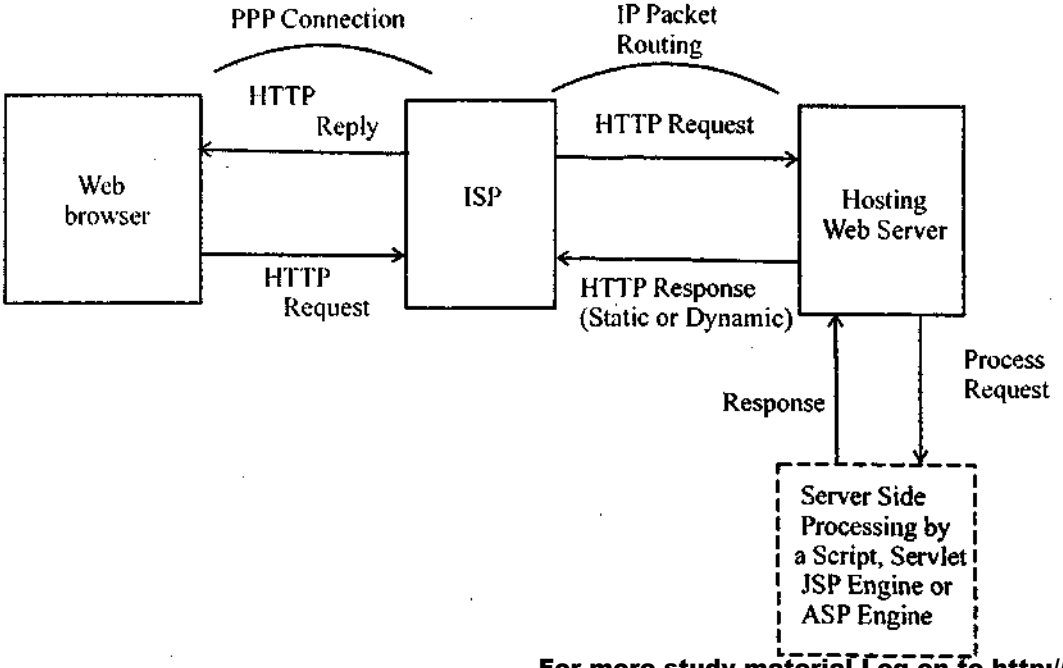
Q. 1. (a) What is internet and WWW? Explain in detail how web works?

Ans. Internet : The Internet is a global and grand computer network, called the net vork of networks. No organization owns and controls it. The Internet is a global TCP/IP based network. It operates in the public domain. It links a large number of autonomous systems, intranets, inter-nets, LANs, MANs and WANs. One way to define the Internet is as a large group of irregularly connected autonomous systems.

The Internet can also be defined as a network of a huge number of connected packet-switched networks. Each packet-switched network uses a common routing protocol, called the Internet Protocol (IP).

WWW : WWW stands for World Wide Web. The World Wide Web is a continuously expanding large collection of hypertext documents. This collection now forms a grand the Internet over the globe. A document has one or more pages. A page links to another page by a URL. The home page is the first page that has URLs to the subsequent pages in a document. An individual website may have multiple documents. Website service is presently the most important service. It has currently about 45% usage of the Internet. There has been an Internet revolution because of the web. It is creating social change in the way people interact with each other. It is changing the way in which we get information. It provides an information superhighly.

Working : To access the web, the requirements are that we have a PPP account with an appropriate ISP and a web Browser. Web browser is a front end tool required to access the net. The process of accessing the internet or we can say the working of the web is shown in the figure below :



Q. 1. (b) Discuss in brief HTTP protocol.

Ans. HTTP : HTTP stands for Hyper Text Transfer Protocol. HTTP is the standard protocol for requesting for a URL defined web page resource and for sending a response. The response may be with or without applying a process. The HTTP client requests an HTTP server on the Internet and the server responds by sending a response.

HTTP is a stateless protocol. This is because for an HTTP request, the protocol assumes a fresh request. It means there is no session or sequence number field or no field that is retained in the next exchange. From HTTP 1.0 and 1.1 version onwards, the following features have been included :

* Multimedia file access is feasible due to provision for the MIME type file definition.
* Status codes in the response.
* Caching of a resource provided at server.
* Byte range specification helps in large response in parts.
* Length specification helps in presentation in chunks.

Q. 2. Write short note on the following :

(a) Event handling in Java Script

(b) Cookies

(c) Form handling in Java Script.

Ans. (a) Event Handling in Java Script : A JavaScript can directly create at the HTML document editor. A Javascripts script saves along with the documents as a name with a 'htm' or 'html'. It uploads like an HTML document to a server.

Events that are handled are :

* OnMouseOver', 'OnMouseOut', 'OnMouseDown' and 'OnMouseUp' in a page, link, image, text element, 'OnReset' and 'OnSubmit.'
* 'OnLoad' and 'OnUnload' a window or image.
* Onclick' to a link or button and 'OnDblClick' to a link or button, image or page, 'OnBlur' and 'OnFocus' on a window or form text element.
* 'OnChange' of text input element.
* OnSelect', 'OnKeyPress'.
* OnKeyDown' and 'OnKeyup', 'OnError'.
* 'OnAbort' an image.

(b) Cookies : A cookie at the client is for identifying a visitor to a document by the server and for processing the request as required for the client. The browser receives the server cookies along with the document visited at the web. At the Browser, the cookies save as the document cookie.

Some important applications of the server side cookies are as follows ;

*** Visitor Count Cookie :** This updates the count for the number of times a site has been visited and the visitor is sent this information. These counts then reflect the site's popularity.

***The Fortune Cookie :** A fortune cookie returns by UNIX function 'fortune'. A fortune cookie is for returning randomly a quote of the day or a tip to a user.

*** Cookies for Ticklers :** The text tickles at the intervals.

(c) Form handling in Java Script : Java script is a special language that Netscape originally designed for embedding the script in an HTML page so that the display occurs after required processing. Web designers

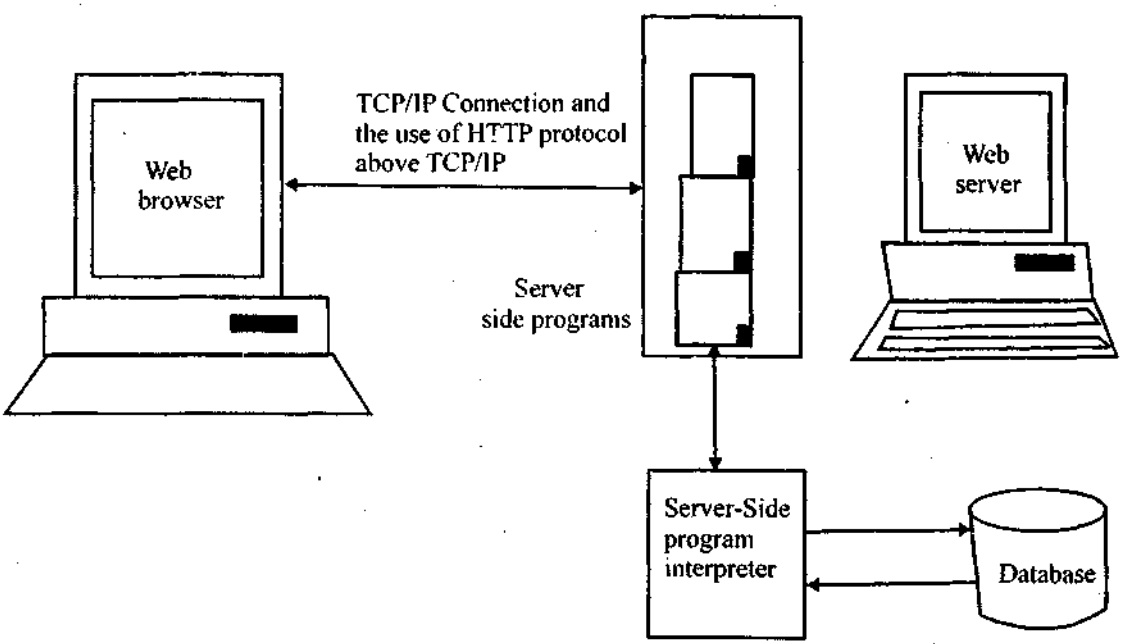
find it very useful in imbibing processing capabilities in web pages and introducing DHTML features. Some applications of JavaScript are as follows :

* Enhancement of the Web HTML document–alerts, cookies, banners, tickers, prompts, status bar enhancements and new external windows.
* Web HTML document creation-menus, frames and for sending the SSIs.
* Server side JavaScript in place of shell script or perl.

The processing of an event at the text entry field, text area field, button, checkbox, radio, field for a fileupload, hidden field, option item from a selectable list, a drop-down menu or list for a selection, reset button and submit button falls under the form handling.

Q. 3. (a) What do you mean by server side programming and give examples?

Ans.



Server-side programming also known as web server dynamic means that in addition to the usual static web pages on the hard disk of the web server, we would store programs that produce the output and convert it in the HTML format dynamically. These programs are called server-side scripts. Here the term script refers to a program and the term scripting refers to programming of course, it can also contain static text. For example, header, page titles, etc., would be hardcoded in the web pages, although as a whole, the web page is dynamic. Server side dynamic web page contains logic for database access and business rules. Server-side dynamic web pages are extremely useful in almost all such e-commerce applications.

The advantage of server-side programming are many, the most important being the following :

* The applications logic resides at a single place (the server). It need not be sent to every client (web browser). Every browser request would invoke the same program at the server side.
* This approach ensures secrity. Since the client does not have access to the actual logic of arriving at the dynamic contents, it is a safer approach.

Typically, Active Server Pages (ASP), Java Servlets and Server Pages (JSP) and Common Gateway Interface (CGI) are examples of server-side scripting. Earlier, NSAPI (from Netscape) and ISAPI (from Microsoft) were also used.

NSAPI and ISAPI are no longer popular because they are platform-specific technologies. This is because both depend on the Application Programming Interfaces (APIs) or calls provided by the native operating system, thus becoming non-portable. Also, they are not as powerful as some of the technologies today. The latter have all the necessary tools for creating secure transactional e-commerce web pages, which are missing from NSAPI and ISAPI.

Q. 3. (b) How will you perform form processing using pert?

Ans. Form Processing in Perl : The cgi-lib.pl library makes CGI scripting in Perl easy enough for anyone to process forms and create dynamic web contents. The following scripts work equally well under Perl 4 and Perl 5 :

* **Simple Form :** A plain HTML file which produces a form with a variety of input elements and the source code to a script which processes its results.

* **Comboform :** It is often convenient to conflate the form and the script. This can be done by having one script file which acts differently depending upon whether it is given parameters or not. The source code to this example creates a combo-form which unifies the form and script from the previous example.

* **File Upload :** This is a simple form and script demonstrating how to use cgi-lib.pl to receive a file upload. The script's source doesnot need to do anything special to deal with uploaded files because everything special to deal with uploaded files because everything is handled by cgi-lib.pl. The perl 5 version spool the files to disk.

* **Minimalist Comboform :** A minimalist form and script of whose source contains only six lines. Note that the script does not really produce entirely valid html but it will work on virtually every browser.

Q. 4. Differentiate between Applets and Servelets and how both of these contribute to web development?

Ans. A Java servlet contains HTML tags written within Java statements, unlike a Java applet, where Java code is embedded in the HTML tags. A servlet is written in Java & compiled on the server into its byte-code file & stored on the server. When a client requests for a servlet, the Java byte code (i.e., the code resulted from the servlet complication) for that sevlet is executed by the JVM residing in the web server. This produces some output, which is converted to produce HTML statements by the servlet. The resulting final output is thus plain HTML, which the web server sends back to the client.

The life cycle of a servlet is very straight forward. The servlet needs to be first compiled into the Java bytecode. For this, when the web server receives the very first request for the execution of a particular servlet (from any client), the web server locates the servlet file, loads it in its memory & gives it to the servlet compiler. The servlet compiler compiles it into Java bytecode. This bytecode is loaded by the web server in its memory & is interpreted by the Java Virtual Machine (JVM) for this as well as for any future requests for this servlet. Thus, the servlet is compiled only once–when it is called for the very first time. Once the bytecode file of the servlet is loaded in the memory of the web server, the following things happen :

1. A servlet is firstly initialized.
2. It then services one or more clients until the servlet application is no longer required.
3. At this point, the servlet is destroyed.

This, unlike CGI, a servlet (i.e., its compiled bytecode) is loaded in the memory only once & it stays resident in memory until it is destroyed.

Every Java servlet has three methods : init( ), service( ) & destroy( ). The web server invokes these methods at specific times.

An applet is a windows-based program. Applets are event-driven-similar to the way an operating system has Interrupt Service Routines (ISR). An applet waits until a specific event happens. When such an event occurs, the applet happens. When such an event occurs, the applet receives intimation from the Java Virtual Machine (JVM) inside the browser. The applet then has to take an appropriate action & upon completion, give control back to the JVM.

For example, when the user moves the mouse inside an applet window, the applet is informed that there is a mouse-move envent. The applet may or may not take an action, depending on the purpose it was written for & also depending its code.

Here are the typical stages on the life cycle of an applet :

1. When an applet needs to be executed for the first time, the init( ), start( ) & point( ) methods of the applet are called in the said sequence.
   (a) The init( ) method is used to initialize variables or for doing any other start up processing. It is called only once during the lifetime of an applet.
   (b) The start( ) method is called after init( ). It is also called to restart an applet after it has been stopped. Whereas init() is called only once, start( ) is called everytime the web page open containing the applet is displayed on the screen. Therefore, if a user leaves a web page open & comes back to it, the applet resumes execution at start( ).
   (c) The point( ) method is called each time the applet's output must be redrawn. This can happen for a variety of reasons. For instance, windows of other applications can overwrite the window in which the applet is running or the user might minimize & then restore the applet window. It also gets called when the applet begins execution for the very first time.
2. The stop( ) method is called when the user leaves the web page containing the the applet. This can happen when the user selects or types the URL of another web page, for instance. The stop( ) method is used to suspend all the threads that are running for the applet. As we have seen, they can be restarted using the start( ) method if the user visits the web page again.
3. The destroy( ) method is called when the environment determines that the applet needs to be removed completely from the client's memory. This method should then free all the resources used by the applet.

As in the case of a servlet, an applet need not use all these methods. The applet can use only the methods that are useful to it–others get inherited from the various Java classes anyway, & need not be overridden. So, one applet may use just the point( ) method & leave everything else to the other default methods that are inherited from the applet's super classes.

The drawback of applets is that they make the overall execution slow. First, they need to be downloaded from the web server, & then interpreted by the JVM installed in the web browser. Therefore, the key is to keep them as small as possible. Applets do not have an exact equivalent in micro-soft technologies-however, Microsoft's Active X control come the closest.

Q. 5. (a) Differentiate between ASP and JSP?

Ans. ASP stands for microsofts Active Server Pages. It combines all the good features of previous attempts made to make web pages interactive. It allows easy programming, database access, operating system access and speed. ASP is server-side scripting technology that makes web pages dynamic.

Unlike CGI, an ASP program is dynamically loaded in the memory of the server only when called for the first time. This means that only for the first time, a new process is created for an ASP request. For all future request, a separate thread within the process is created. This reduces the number of processes to be managed.

this saves valuable resources. In the case of CGI, for every page request, a new process is created. ASP scripts can be written in VBScript or JavaScript. ASP runs on only Microsoft's Web server, the name of which is Internet Information Server (IIS). It cannot execute on other operating systems or web servers such as Apache and Java Web server without additional libraries.

JSP : JSP stands for Java Server Pages. JSP is one step ahead of servlets. A JSP page contains Java statements within HTML tags. This is the traditional scripting method, which makes the code look a lot simpler as well as easier to to test and maintain. This is similar to ASP, which allows writing VBScript and JavaScript in HTML tags.

For instance, we need to write tags such as <HTML> etc., <B> within Java code, in the case of a servlet. The resulting code is not easy to understand or debug. The normal scripting practice is the other way round : that of embedding scripting code within HTML tags. This makes servlets very cryptic. As a result, sun Microsystems came up with JSP, which is a for more friendly technology.

Q. 5. (b) Explain VRML in detail.

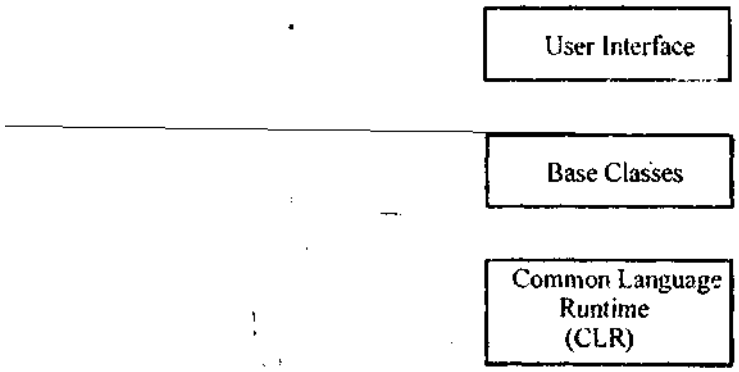
Ans. VRML : The Virtual Reality Modeling Language (VRML) is the webs way of describing three-dimensional scenes and objects. Given a VRML file, a browser can display a scene or object as it would appear from any particular viewing location. You can rotate an object or move through a scene, using the controls that a browser provides.

Like Java, VRML moves some computational burden from the network to your computer. Rather than having web servers store and transmit all the possible 2-D views of a scene, the scene is described in VRML and downloaded to your machine. Your computer then figures out what you would see if you stand in a particular place and look in a particular direction. Given the speed of most Internet connections, computing a view on your machine is much faster than downloading one from a web server. Like HTML pages, VRML scenes can contain many kinds of information.

Q. 6. Give a brief description of microsoft net technology and discus hot it is better than other technologies.

Ans. The very basic concept of .Net is that it includes all technologies that you need to develop an application for the web, such as user interface, business logic, and database processing. The second point to note is that .NET aims at blurring the distinctions between developing an application for the web versus developing an application for the desktop.

The below figure shows the major components of the .NET framework :



As the above figure shows, the .NET framework consists of three major layers : Common Language

Runtime (CLR), Base Classes and User Interface. Before examining their details, let us first have a brief overview of each one of them.

1. Common Language Runtime (CLR) : This layer is closest to the operating system, and therefore, is at the lowest of the .NET framework. It takes care of issues such as an application's memory management.

2. Base Classes : This layer includes technologies such as ADO .NET (the next version of Active X Data Objects or ADO, which is used for database interactions in ASP programs), XML support, and issues such as threading, security etc.

3. Usert Interface : This layer includes user interface technologies such as windows Forms (more commonly known as WinForms) and ASP .NET (the next version of ASP).

Advantages of .NET OVER OTHER Technologies : Both Java and C# have origins in C & C++ Java and C# are very similar in terms of features, but differ in syntax. Java runs on any platform for which a JVM is available. Although it is advertised that C# can run on any platform, it is predicated that in the foreseable future, it would run only in windows.

ASP.NET will support the syntax of visual Basic, C# & many other programming languages. Unlike ASP, it would be compiled. JSP & servlets support Java syntax only.

JVM allows Java byte code to be executed on any platform for which a JVM is available. CORBA allows code in multiple languages to use a shared set of objects on any platform for which ORB is available. It is not, therefore very, tightly integrated into the J2EE framework. On the otherhand, .NET CLR allows code in a variety of languages to use a shared set of components on windows.

Swing is used for user interface in J2EE. Win forms is used for the same purpose in .NET.

EJB, JDBC etc., can operate on top of either HTTP on RMI/JRMP/IIOP. On the other hand, ADO + operates only on top of HTTP.

Q. 7. Explain various tags in HTML and XML.

Ans. Various HTML tags are following :

(i) <HTML> : Every HTML page starts with an <HTML> tag and ends with an </HTML> tag. This tag simply denotes that the page is coded in HTML, the language of web pages.

(ii) <HEAD> : The HEAD section is reserved for tags that apply to the entire document, including the <TITLE> tag. The HEAD section can also include <META> tags, which provide keywords and other information about the page.

→ **<TITLE> :** The <TITLE> tag is required in the HEAD section. The text that you enter between the <TITLE> and </TITLE> tags is displayed on the little bar of the browser window when you view the page.

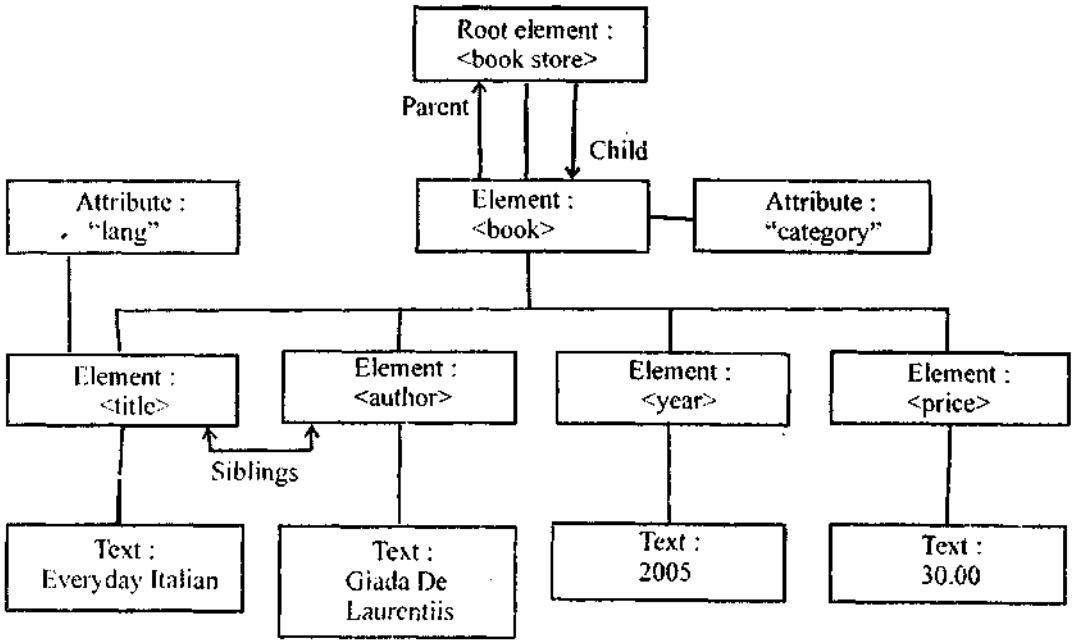
→ **<BODY> :** The BODY section, starting wtih a <BODY> tag and ending with a </BODY> tag, contains the content of your web page.

→ **<P> :** Most of the text on your web pages is formatted in paragraphs that begin with a <P> tag ang end with a </P> tag. The closing tag </P> is optional.

→ **
 :** This tag inserts a line break, so that the following text starts on a new line.

XML : eXentensible Markup Language. XML does not have any predefined tags, the user can create his/her own tags as per the requirements. This can be clear from the following example :

The figure below shows the diagram for a Bookstore :



The XML code below shows one book in the figure above :

```
<bookstore>
<book category = "COOKING">
<title lang = "en"> Everyday Italian </title>
<author> Giada De Laurentiis </author>
<year> 2005 </year>
<price> 30.00 </price>
</book>
<book category="CHILDREN">
<title lang = "en"> Harry Potter </title>
<author> J.K. Rowling </author>
<year> 2005 </year>
<price> 29.99 </price>
</book>
<book category ="WEB">
<title lang = "en"> Learning XML </title>
<author> Erik T. Ray </author>
<year> 2003 </year>
<price> 39.95 </price>
```

</book>

</boostore>

The root element in the example is <bookstore>. All <book> elements in the document are contained within <bookstore>.

The <book> element has 4 children : <title>, <author>, <year>, <price>.

An XML-based application, and in particular a web service application, may consume or produce XML documents, and such an application may implement three distinct processing phases :

* The application consumes an XML document.
* The application applies its business logic on information retrieved from the document.
* The application produces an XML document for response.

Generally, speaking, an XML-based application exposes an interface that is defined in terms of the schemas for the XML documents that it consumes and produce as well as by the communication or interaction policies of the application. In the case of a web service, a Web Service Description Langauge {WSDL} document describes this interface, and this document refers to the XML schemas to which the exchanged documents conforms.

Q. 8. Write notes on following :

(a) Creating table using HTML

(b) Ordered and unordered lists.

(c) Embedding images and controlling appearance.

Ans. (a) Creating Table Using HTML : Tables can be created in HTML by using the following tags :

<Table> and </Table> : Indicate the beginning and end of the table. All the rest of the tags and text in the table must be between these two tags.

<TR> and </TR> : Mark the beginning and end of a row. All the headers and cells in the row come between these two tags.

<TH> and </TH> : Mark the beginning and end of a table heading.

<TD> and </TD> : Mark the beginning and end of a data cell.

Example :

```
<TABLE BORDER>
<TR>
<TH> Members Name </TH>
<TH> Host Dates </TH>
</TR>
<TR>
<TD> Ellen </TD>
<TD> Not Applicable </TD>
</TR>
</TABLE>
```

(b) Ordered and Unordered Lists : Ordered list shows a progression of steps in sequence. Numbered list use the (OL) tag at the beginning of the list, the <LI> tag at the beginning of each list item and the </OL> tag at the end of the text.

Example:

```
<OL>
<LI> Select the book.
<LI> Write a brief summary of book.
</LI> Send your recommendations.
</OL>
```

Unordered list highlight short sentences, or present a series of items that can be read quickly. **Bulleted** lists use the <UL> tag at the beginning of the list, <LI> for each list item, and </UL> at the end of the list.

```
<UL>
<LI> Computer Networks
<LI> Multimedia Technologies
<LI> Web Development
</UL>
```

(c) Embedding Images and Controlling Appearance : We can add or embedd image to HTML page by using <IMG> tag.

Example:

```
<IMG SRC = "picture.jpg">
```

There are two types of path names : An absolute pathname includes the full pathname of the life. This means that if you move your files or if you change your directory names, you have to edit every <IMG> tag in every HTML file that contains the absolute pathname.

A relative pathname indicates the pathname of the image file relative to the pathname of the HTML file. This is the recommended naming convention for graphics files.