COMPUTER BASICS
Corse Code : DCSA 1201
Unit 9: Internet and Designing Web Page

Diploma in Computer Science and Application Programme

SCHOOL OF SCIENCE AND TECHNOLOGY

BANGLADESH OPEN UNIVERSITY
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Introduction

This learning unit provides information on Internet, email, web browsers and basic elements of Web page design and layout. Evolution history of Internet, advantages and way to access Internet are covered in Lesson 1. World Wide Web, Some common terminologies and Email communication system has been described in Lesson 2. In particular, Lesson 3 discussed about the web browser. Introduction to some basic design ideas and elements of web page design, text, colour, graphics and assembling them as layout are described in Lesson 4. Lessons 5 of this unit are devoted to the table and frame design. Lesson 6 explains a combination of theory and practical hands-on activities.

Lesson 1: Beginning with Internet

1.1. Learning Objectives

On completion of this lesson you will be able to learn:

- what is Internet?
- history of Internet
- advantage of Internet
- how to access Internet.

1.2. What is Internet?

The Internet is a vast network that connects many independent networks spanning over 170 countries in the World. It links computers of many different types, sizes, and operating systems, and, of course, the many people of those countries that use the Internet to communicate.

The one thing all these different computers have in common is the use of the Internet Protocol, abbreviated as IP, which allows computers of different types to communicate with each other. We will often see reference to the longer abbreviation, TCP/IP, which stands for Transmission Control Protocol/Internet
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Protocol. Your own computer uses TCP/IP software to enable it to link to this service.

No organization, corporation or government owns or runs the Internet. Instead, many people and organizations voluntarily participate in task force groups who meet to develop standards for the many various technical needs of running the Internet. Decisions are made by consensus among all who choose to participate, and every point of view is heard in the long process of hashing out decisions and setting new standards.

1.3. History of Internet

The Internet was the result of some visionary thinking by people in the early 1960s who saw great potential value in allowing computers to share information on research and development in scientific and military fields. J.C.R. Licklider of MIT, first proposed a global network of computers in 1962, and moved over to the Defense Advanced Research Projects Agency (DARPA) in late 1962 to head the work to develop it.

In 1966 Lawrence Roberts of MIT developed his plan for ARPANET. These visionaries and many more left unnamed here are the real founders of the Internet. The Internet, then known as ARPANET, was brought online in 1969 under a contract let by the renamed Advanced Research Projects Agency (ARPA) which initially connected four major computers at universities in the southwestern US (UCLA, Stanford Research Institute, UCSB, and the University of Utah).

The Internet was designed in part to provide a communications network that would work even if some of the sites were destroyed by nuclear attack. If the most direct route was not available, routers would direct traffic around the network via alternate routes.

The early Internet was used by computer experts, engineers, scientists, and librarians. There was nothing friendly about it. There were no home or office personal computers in those days, and anyone who used it, whether a computer professional or an engineer or scientist or librarian, had to learn to use a very complex system.
The Internet matured in the 70's as a result of the TCP/IP architecture first proposed by Bob Kahn at BBN and further developed by Kahn and Vint Cerf at Stanford and others throughout the 70's. It was adopted by the Defense Department in 1980 replacing the earlier Network Control Protocol (NCP) and universally adopted by 1983.

1.4. Advantage of Internet

The Internet makes it possible for us to communicate in various ways and enables exchange of information and files. The most common things we can do are:

- Get information on almost any subject by searching the web. It takes some skill to search efficiently. Since anyone can publish just about anything, there is lots of misinformation on the web too.
- Send and receive email or chat or exchange messages with people all over the world. Almost as fast as the telephone, there is never a busy signal, and you never play phone tag.
- Join discussion groups about a common subject with message boards, Newsgroups and email discussion lists.
- Get or exchange software and files with the File Transfer Protocol (FTP)
- Explore the World Wide Web, which can use all of the above, and adds easy links to other resources and adds multimedia--graphics, sound, and video capabilities.
- Publish your own material on the web in blogs, message boards, or your own web pages.

1.5. How to Access Internet

Internet access refers to the means by which users connect to the Internet. Common methods of internet access include dial-up, landline (over coaxial cable, fiber optic or copper wires), T- lines, Wi-Fi, satellite and cell phones.
Typical home user connection

- Dial-up
- DSL
- Broadband wireless access
- Cable modem
- ISDN

Typical business connection

- DSL
- SHDSL
- Ethernet technologies

Dial-up modems are generally only capable of a maximum bit rate of 56 kbit/s (kilobits per second) and require the full use of a telephone line—whereas broadband technologies supply at least double this speed and generally without disrupting telephone use.

Broadband Internet access, often shortened to just "broadband", is high-speed Internet access—typically contrasted with dial-up access over a modem. Various minimum speeds have been used in definitions of broadband, ranging up from 64 kbit/s up to 1.0 Mbit/s.

An Internet service provider (abbr. ISP, also called Internet access provider or IAP) is a business or organization that provides consumers or businesses access to the Internet and related services. In the past, most ISPs were run by the phone companies. Now, ISPs can be started by just about any individual or group with sufficient money and expertise.
1.6. Exercise

1. Multiple choice questions

1. IP stands for
   a) Information Protocol
   b) Internet Protocol
   c) Information Processing
   d) Internet Processing.

2. Internet was the result of some visionary thinking in the early 1960s by
   a) Lawrence Roberts
   b) Kahn
   c) Vint Cerf
   d) J.C.R. Licklider.

3. Which of the following is not a typical home user connection to access Internet?
   a) Dial-up
   b) DSL
   c) Broadband wireless access
   d) Ethernet technologies.

4. ISP Stands for
   a) Internet Service Provider
   b) Internet Service Protocol
   c) Information Service Provider
   d) Internet Server Provider.

2. Short questions

1. What is Internet?
2. Who are the users of Internet?
3. What do you mean by Broadband Internet access?
3. **Analytical questions**

1. Write down the history of Internet.
2. State the advantages of using Internet.
3. Discuss method of Accessing Internet.
Lesson 2: World Wide Web (WWW)

2.1. Learning Objectives

On completion of this lesson you will be able to learn:

♦ common terminologies
♦ email communication.

2.2. Common Terminologies

Computer Network: A network is an interconnection of different computing devices. These may include Desktop PC's, Servers, Routers, Switches and also non traditional devices such as Personal Digital Assistants (PDA), TV's, Mobiles etc. Computer networks may be classified according to the scale: Personal area network (PAN), Local Area Network (LAN), Campus Area Network (CAN), Metropolitan area network (MAN), or Wide area network (WAN).

LAN: A local area network (LAN) is a computer network covering a small geographic area, like a home, office, or group of buildings e.g. a school. The defining characteristics of LANs, in contrast to Wide Area Networks (WANs), include their much higher data transfer rates, smaller geographic range, and lack of a need for leased telecommunication lines.

A network card: A network card, network adapter or NIC (network interface card) is a piece of computer hardware designed to allow computers to communicate over a computer network. It provides physical access to a networking medium and often provides a low-level addressing system through the use of MAC addresses. It allows users to connect to each other either by using cables or wirelessly.

Repeater: A repeater is an electronic device that receives a signal and retransmits it at a higher level or higher power, or onto the other side of an obstruction, so that the signal can cover longer distances without degradation.

Hubs: A hub contains multiple ports. When a packet arrives at one port, it is copied to all the ports of the hub. When the packets are copied, the destination
address in the frame does not change to a broadcast address. It simply copies the data to all of the Nodes connected to the hub.

**Bridge:** A network bridge connects multiple network segments at the data link layer (layer 2) of the OSI model. Bridges do not promiscuously copy traffic to all ports, as hubs do, but learn which MAC addresses are reachable through specific ports. Once the bridge associates a port and an address, it will send traffic for that address only to that port.

**Switch:** Switches may distribute traffic on load or by application content (e.g., a Web URL identifier). Switches may operate at one or more OSI layers, including physical, data link, network, or transport (i.e., end-to-end). A device that operates simultaneously at more than one of these layers is called a multilayer switch.

**Router:** Routers are the networking device that forward data packets along networks by using headers and forwarding tables to determine the best path to forward the packets. Routers work at the network layer of the TCP/IP model or layer 3 of the OSI model. A router is connected to at least two networks, commonly two LANs or WANs or a LAN and its ISP's network.

**Protocols:** Technical specifications or protocols describe how to exchange data over the network.

**OSI:** Open Systems Interconnection, a joint ISO and ITU-T standard for computer networks and communication protocols. The OSI reference model was a major advance in the teaching of network concepts. It promoted the idea of a common model of protocol layers, defining interoperability between network devices and software.

**Internet Protocol:** The Internet Protocol (IP) is a data-oriented protocol used for communicating data across a packet-switched internetwork. IP is a network layer protocol in the Internet protocol suite. As a lower layer protocol, IP provides the service of communicable unique global addressing amongst computers.

**Hyperlinks and URL:** The World Wide Web is a huge set of interlinked documents, images and other resources, linked by hyperlinks and URLs. These hyperlinks and URLs allow the web-servers and other machines that store
originals, and cached copies, of these resources to deliver them as required using HTTP.

**HTTP**: (Hypertext Transfer Protocol). HTTP is only one of the communication protocols used on the Internet.

**Web services**: Web services also use HTTP to allow software systems to communicate in order to share and exchange business logic and data.

**User Agents**: Software products that can access the resources of the Web are correctly termed user agents.

**Web Browser**: Web browsers, such as Internet Explorer and Firefox access web pages and allow users to navigate from one to another via hyperlinks. Web documents may contain almost any combination of computer data including photographs, graphics, sounds, text, video, multimedia and interactive content including games, office applications and scientific demonstrations.

**File sharing**: A computer file can be e-mailed to customers, colleagues and friends as an attachment. It can be uploaded to a Web site or FTP server for easy download by others. It can be put into a "shared location" or onto a file server for instant use by colleagues. The load of bulk downloads to many users can be eased by the use of "mirror" servers or peer-to-peer networks.

**Optical Fiber**: An optical fiber (or fibre) is a glass or plastic fiber designed to guide light along its length. Optical fibers are widely used in fiber-optic communication, which permits transmission over longer distances and at higher data rates than other forms of communications.

**Wireless LAN**: Wireless LAN technology is built to connect devices without wiring. These devices use a radio frequency to connect.

**Wiki**: In the early days, web pages were usually created as sets of complete and isolated HTML text files stored on a web server. More recently, web sites are more often created using content management system (CMS) or wiki software with, initially, very little content.
2.3 Email Communication

First e-mail message was sent in 1971 by an engineer named Ray Tomlinson. Tomlinson's breakthrough was the ability to send messages to other machines on the Internet, using the @ sign to designate the receiving machine.

Email is one of the earliest standard Internet protocols which enable people with different computers and operating systems to communicate with each other. E-mail allows one-to-one or one-to-many mailings. Mail is received and held by a mail server within an organization or by an Internet service provider until the addressee logs on to collect the mail.

An e-mail message has always been nothing more than a simple text message sent to a recipient. In the beginning and even today, e-mail messages tend to be short pieces of text, although the ability to add attachments now makes many messages quite long.

Two ways to access e-mail

1. Through browser by subscribing to free e-mail services like Hotmail or Yahoo.
2. Through Stand-alone clients like Microsoft Outlook, Outlook Express, Eudora.

Characteristics of e-mail access through browser software are as follows,

- Can be accessed anywhere at any PC.
- It is secured as user login every time to check or send mail.
- This page can be speedily opened when server response time is high and internet is available.

Characteristics of e-mail access through stand-alone software are as follows,

- Only can be configured in personal computers. Should not be used in any PC.
Once configured it checks mail in every few minutes and stores inbox in personal computer’s hard disk. Therefore user can view them in convenient time.

It alert for every incoming mail.

If email server or internet traffic is slow it is a good alternative to check mails as it checks for new mails when internet traffic is free or server response time is high.

As it keeps every copy of mails sent or received in local computer therefore, one safe to view any old mail if mail deleted or server is not responding or internet is down for some period.

All incoming or outgoing mails are scanned with local antivirus application loaded hence mails become virus free.

Any body other than the PC belongs to the person if uses computer can open outlook express and view sensitive mails. Therefore user must be more careful if he or she allowing someone else to use his or her pc for a while.

No matter which type of client you're using, it generally does four things:

Shows a list of all of the messages in your mailbox by displaying the message headers. The header shows you who sent the mail, the subject of the mail and may also show the time and date of the message and the message size.

Let’s select a message header and read the body of the e-mail message.

Let’s create new messages and send them. You type in the e-mail address of the recipient and the subject for the message, and then type the body of the message.

Let’s add attachments to messages you send and save the attachments from messages you receive.

The real e-mail system consists of two different servers running on a server machine. One is called the SMTP server, where SMTP stands for Simple Mail Transfer Protocol. The SMTP server handles outgoing mail. The other is either a POP3 server or an IMAP server, both of which handle incoming mail. POP
stands for Post Office Protocol, and IMAP stands for Internet Mail Access Protocol.

**Email Operation**

Here we will see how to access your web mail account. Web mail allows you to open your email at home or at work or from any computer connected to the internet.

For web-based email first you type the URL ([https://login.yahoo.com](https://login.yahoo.com)) in your browser window. The screenshot below shows the Yahoo mail web site.

![Yahoo mail web site](image)

You have to provide **Yahoo ID** and **password** information to access your Yahoo email account. Then press **Sign In** button.
Your Inbox is automatically opened when you log-in. You will have access to all your e-mail messages and folders that exist on the mail server at the time of log-in. If you have created folders, they will be listed on the left hand side. To access those folders, simply click the folder name.

Inbox is automatically opened when you log-in. You will have access to all your e-mail messages and folders that exist on the mail server at the time of log-in. If you have created folders, they will be listed on the left hand side. To access those folders, simply click the folder name. Note: If you are using IMAP, you will have access to all your folders and e-mail messages that you have stored on our e-mail server via this method. The same folders and e-mail messages will be visible to you in your e-mail program.

Yahoo mail saves incoming messages in the Inbox and outgoing messages in the Sent box. You will need to create a folder by clicking Add.

To write a new e-mail, click Compose.

To forward a message, open the message first and then click the Forward button.
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To delete a message(s), put a checkmark next to the message(s) and click **Delete**.

When you click the **Compose** button, you will see following screen in your browser window.

![Yahoo mail Compose window](image)

**Fig: Yahoo mail Compose window.**

Enter the recipients full e-mail address in the ‘To:’, ‘cc’, or ‘Bcc’ field.

- Enter a Subject (optional).
- Type your message.
- Click to check for any misspelled words.
- Attach a file(s) (optional).
- Click the **Send** button to send the message.

When you click the **Attach files** button, you will see following window,
By clicking the **Browse** button, select the file(s) you want to attach and then select **Attach files** button.

To read an e-mail, simply click on the message. The message will open in the browser window. From the Read Message window, you can reply, forward, delete, print, go to previous/next message in the current folder, or save senders/recipients e-mail addresses in the Webmail Address Book. Simply click the appropriate button.

To **Add New Contacts** just select a new contact in the address book, enter the person’s information.

**Logging Out:** When you are ready to log out of Webmail, click on **Sign Out** button, located on the top of the web page.
2.4. Exercise

1. Multiple choice questions

1. A local area network (LAN) is a computer network covering

   a) campus area
   b) metropolitan area
   c) a small geographic area
   d) wide area.

2. A network bridge connects multiple network segments at

   a) the network layer
   b) the data link layer
   c) the physical layer
   d) the session layer.

3. Which of the following sign is used to designate email address?

   a) //
   b) $
   c) &
   d) @.

4. Which of the following server handles outgoing mail?

   a) IMAP server
   b) POP3 server
   c) Samba server
   d) SMTP server.

2. Short questions

1. What is the function of a network card?
2. What are the functions of repeaters and hub?
3. Write down the characteristics of Bridge, Switch and router.
3. **Analytical questions**

1. State the characteristics of accessing Email through browser software.
2. State the characteristics of accessing Email through stand-alone software.
3. Write down process of sending mail from your web mail account.
Lesson 3: Web Browsers

3.1. Learning Objectives

On completion of this lesson you will be able to learn:

- web browser
- how do browsers work
- features of browsers
- microsoft Internet Explorer.

3.2. Web Browser

A web browser is a software application that enables a user to display and interact with text, images, videos, music and other information typically located on a Web page at a website on the World Wide Web or a local area network. Most commonly used web browsers are:

- Internet Explorer
- Firefox
- Safari
- Opera
- Netscape
- Mozilla

3.3. How do Browsers Work?

Web browsers communicate with Web servers primarily using HTTP (hypertext transfer protocol) to fetch WebPages. HTTP allows Web browsers to submit information to Web servers as well as fetch Web pages from them. The text document contains special instructions (usually written in HTML) that tell the browser how to display the document on the user's screen. The instructions may include references (hyperlinks) to other web pages, information about text formatting and color, and position information for images contained in the document. The most commonly used HTTP is HTTP/1.1.
Pages are located by means of a URL (uniform resource locator), which is treated as an address, beginning with http: for HTTP access. Many browsers also support a variety of other URL types and their corresponding protocols, such as gopher: for Gopher (a hierarchical hyperlinking protocol), ftp: for FTP (file transfer protocol), rtsp: for RTSP (real-time streaming protocol), and https: for HTTPS (an SSL encrypted version of HTTP).

The file format for a Web page is usually HTML (hyper-text markup language) and is identified in the HTTP protocol using a MIME content type. Most browsers natively support a variety of formats in addition to HTML, such as the JPEG, PNG and GIF image formats, and can be extended to support more through the use of plug-in. The combination of HTTP content type and URL protocol specification allows Web page designers to embed images, animations, video, sound, and streaming media into a Web page, or to make them accessible through the Web page.

Text and images on a Web page can contain hyperlinks to other Web pages at the same or different website. Web browsers allow a user to quickly and easily access information provided on many Web pages at many websites by traversing these links. Web browsers format HTML information for display, so the appearance of a Web page may differ between browsers.

### 3.4. Features of Browsers

Browsers are the software that allows you to access the World Wide Web. Most browsers contain the following features. Some of these may be presented as buttons (or icons) in a toolbar. If you don't find a button, you will find a menu item in one of the menus provided. You can usually customize the toolbar to include any or all of these features:

#### Address Field

This area is where the URL (web page address) for the web page is displayed or entered. In many browsers, there's a little downward facing arrow next to this field. When you click on the arrow you will see a list of recently visited websites. Clicking one of these URLs will take you to that website. You can also enter a URL into this field and then press enter or return to go to the website. In some browsers there is a "Go" button next to this field that initiates a server request after
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typing in a URL. By the way, you don't usually have to type in the "http://" part of the URL. Most browsers will add that information in for you when you press enter or return.

Back Button

Use this button to go back to the previous page opened in this particular browser window. In some browsers, holding the mouse down on this button produces a menu of previous pages that you can then choose from. In other browsers, there's a little arrow next to the Back button that produces this menu.

Bookmarks or Favorites

You can easily create a shortcut to your favorite web pages by using the Bookmark (or Favorites) menu or button. This is a very important feature and it works a little differently in each browser. In Internet Explorer, use the Favorites Menu to Add to Favorites. You can then use the Organize Favorites menu item to place your bookmark in a folder or particular place in the list. In Netscape, FireFox and Safari, choose Add Bookmark from the Bookmark menu. You can then choose Show All or Manage Bookmarks to create folders and/or rearrange your bookmarks. In most browsers you can also place favorite websites to an area just above the main browser window.

Close Box

This button in the upper right corner of the window will close the browser window. If there is only one browser window open, the program will exit. One way to tell if you have more than one browser window open is to look at the button bar at the bottom of the screen. If you see more than one button with the icon of the browser you are using, you can switch between the open windows by clicking on these buttons. Another way to deal with multiple windows is to minimize or Restore the window to its pre-maximized size. On the Macintosh, there's a similar button, but separate windows are more obvious and closing the last one does not quit the browser.
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Fonts or Larger or Smaller

In Internet Explorer a button called Fonts gives you a menu to choose the size of the text displayed in the browser window. Some browsers offer two buttons, Larger and Smaller to change the size of the text.

Forward Button

Like the Back button, the Forward button takes you to pages that you have previously seen in a particular browser window. The Forward button is only available if you have used the Back button and want to go forward to where you were before. In some browsers, holding the mouse down on this button produces a menu of previous pages, which you can then choose from. In other browsers, there's a little arrow next to the Forward button that produces this menu.

History Button

Most browsers offers a History button or menu item which allows you to look at the last several hundred web pages you've been to, and select one of them for an easy return path.

Home Button

This button takes you to the page that has been designated as your "home" page. You can select your "home page" in the browser's Preferences (or Internet Options) section.

Favorites, Links or Personal Toolbar

You can add your own buttons to this toolbar. In Explorer it is called Favorites or Links Toolbar and in Netscape it is called the Personal Toolbar. These toolbars can be hidden or shown by using the View menu.
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Maximize Button

In Windows you can use this button to make the browser's window enlarge to full screen. When the window is already maximized this button is replaced by the Restore button.

Menubar

In Windows the Menubar is a part of each browser window. Choices include File, Edit, View, History, Favorites or Bookmarks and Help. On the Macintosh, these Menus are always at the top of the screen.

Minimize Button

In Windows you can use this button to make the browser's window disappear from the screen. You can restore the window by clicking its button on the bottom of the screen.

Print Button

You can print any web page by clicking this button.

Reload or Refresh Button

If you suspect the contents of a browser's window may have changed since the last time you viewed it, you should click the Reload or Refresh button to update the page.

Restore Button

If the browser's window is maximized you can use this button to restore the size of the window so that it no longer fills the entire screen. This is very useful if you want to see more than one window at the same time.

Search Button or Field

In some older browsers there is a button to go to the page you have designated as your "search" page. You can select your "search page" in the browser's preferences section or by clicking the "Choose a Search
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"Engine" button in the Search window. Most browsers now have a search field, at the right end of the main button bar, which you can type into to perform Internet searches.

Security Indicators

Most browsers show a padlock icon in the lower left corner of the window to indicate a secure connection. This means that data being sent or received from that server is encrypted and would be extremely difficult for a third party to access. If this padlock is in the locked position, you know you have a secure server connection. If the padlock is unlocked, then you do not. Another way to tell is by the URL or web site address. If the URL begins with https:// then the server connection is secure.

Status Bar

The bar along the bottom of the browser's window shows you what is being loaded into the browser window at the moment or the URL of the link your mouse is over. There is usually also a progress indicator that shows how much of a file has already been downloaded.

Stop Button

Use this button if you want to stop loading the contents of a page.

Window Title

The title of the web page appears in the browser window's title. Sometimes pages don't have titles. When you bookmark a page, the window's title is used to identify the bookmark.
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3.5. Microsoft Internet Explorer

Here is a screenshot of the Microsoft Internet Explorer.

Fig: An Online Journal webpage.
3.6. Exercise

1. Multiple choice questions

1. Which of the following is not a web browser?
   a) Firefox
   b) Safari
   c) Gopher
   d) Opera.

2. FTP stands for
   a) File Transmission Protocol
   b) File Transfer Protocol
   c) File Transmission Process
   d) File Transfer Process.

3. You can easily create a shortcut to your favourite web pages by using
   a) home Button
   b) history Button
   c) refresh Button
   d) bookmark Button.

2. Short questions

1. What is the function of a Web Browser?
2. What types of information are contained in Web pages?

3. Analytical questions

1. State how browser works.
2. Write down the features of a browser.
Lesson 4: Designing HTML Pages-I

4.1. Learning Objectives

On completion of this lesson you will be able to learn:

- HTML fundamentals
- Character and page formatting elements
- Some basic tags used in the web pages.

4.2. Hyper Text Markup Language – HTML

Here you will learn how the basics of the Hyper Text Markup Language (HTML), so that you may make your own web pages. HTML is not a programming language, but rather a markup language.

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

HTML has not been around for many years. November 1990 marks the day of the first web page and back then there were little to no HTML standards to be followed. A group called the World Wide Web Consortium was then formed and has since set the standards that are widely accepted.

4.3. Why Web Pages are Used?

Web pages have many uses. Followings are some important uses of web pages.

- A cheap and easy way to spread information to a large audience.
- Another medium to market your business.
- Let the world know about you with a personal website.

4.4. HTML Code

Before starting HTML coding you need to know some common words which are:
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**Tag**- Used to specify ("mark-up") regions of HTML documents for the web browser to interpret. Tags look like this: `<tag>`

**Element**- A complete tag, having an opening `<tag>` and a closing `</tag>`.

**Attribute**- Used to modify the value of the HTML element. Elements will often have multiple attributes.

For now just know that a *tag* is a command the web browser interprets, an *element* is a complete tag, and an *attribute* customizes or modifies HTML elements.

An element consists of three basic parts: an opening tag, the element's content, and finally, a closing tag.

1. `<p>` - opening paragraph tag
2. Element Content - paragraph words
3. `</p>` - closing tag

Every webpage requires four critical elements: the *html, head, title,* and *body* elements.

**The `<html>` Element...`</html>`**

`<html>` begins and ends each and every web page. Its sole purpose is to encapsulate all the HTML code and describe the HTML document to the web browser. Remember to close your HTML documents with the corresponding `</html>` tag at the bottom of the document.

First you open up Notepad or any text editor. Then copy the following HTML code into your text editor. An example,

```
<html>
</html>
```

**Saving a HTML File**

Now save your file by selecting Menu and then Save. Click on the "Save as Type" drop down box and select the option "All Files". When asked to name
your file, name it "index.html", without the quotes. Double check that you did
everything correctly and then press save. Now open your file in a new web
browser so that you have the ability to refresh your page and see your changes.

The <head> Element

The <head> is the next element. This tags placed within the head element are
not directly displayed by web browsers. We will be placing the <title> element
here. Other elements used for scripting (Javascript) and formatting (CSS) will
eventually be introduced and you will have to place them within your head
element. An example,

<html>
<head>
<title> My First Web Page! 
</head>
</html>

The <title> Element

Place the <title> tag within the <head> element to title your page. The words
you write between the opening and closing <title></title> tags will be
displayed at the top of a viewer's browser. Here's the html code:

An example,
<html>
<head>
<title> My First Web Page! </title>
</head>
</html>

Save the file and open it in the browser. You should see "My First Web Page!"
in the upper-left, as the window's title.

The <body> Element

The <body> element is where all content is placed. (Paragraphs, pictures,
tables, etc). The body element encapsulates all of the webpage's viewable
content. We will describe these elements in detail in this lesson.
Beginning HTML Tags

There are hundreds of HTML Tags. Tables, images, lists, form, and everything else being displayed on a web page requires the use of a tag or two. A web browser does not care if you use upper or lower case.

The general format for a HTML tag is:

    <tag_name>string of text</tag_name>

header tag

Heading levels range from level 1 (Most Important) to level 6 (Least Important).

An example of a header tag:
    <h3>What are HTML tags?</h3>

Output of header tag:

<table>
<thead>
<tr>
<th>sample web page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heading Level 1</td>
</tr>
<tr>
<td>Heading Level 2</td>
</tr>
<tr>
<td>Heading Level 3</td>
</tr>
<tr>
<td>Heading Level 4</td>
</tr>
<tr>
<td>Heading Level 5</td>
</tr>
<tr>
<td>Heading Level 6</td>
</tr>
</tbody>
</table>

Paragraph tag
    <p>Paragraph Tag</p>

Bold tag
    <b>This is Bold...</b>

Italic tag
    <i>This is Italic...</i>

Underline tag
Computer Basics

<u>This is Underline...</u>

There are a few tags without closing tags. Such as a line break tag and horizontal rule tag. Let’s see the examples.

**br tag**

A line break tag tells the browser that we want to place a line break (carriage return) onto the site.

The HTML format for a horizontal rule tag is:

```html
<br />
```

**hr tag**

To separate major sections of a web page, use the horizontal rule or hr tag. This inserts a straight line like you see right above the heading for this section.

The HTML format for a horizontal rule tag is:

```html
<hr>
```

**Ordered and Unordered Lists**

Many web pages display lists of items -- these may be items preceded with a "bullet" (Unordered) or a sequentially numbered list (Ordered).

**ul tag**

HTML format for unordered list:

```html
<b>The Unordered List: </b>
<ul>
   <li> Item 1
   <li> Item 2
   <li> Item 3
</ul>
```

The `<ul>` tag marks the beginning and end of the list, and the `<li>` indicates each list item.
Output of Unordered List:

<table>
<thead>
<tr>
<th>sample web page</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Unordered List:</td>
</tr>
<tr>
<td>• Item 1</td>
</tr>
<tr>
<td>• Item 2</td>
</tr>
<tr>
<td>• Item 3</td>
</tr>
</tbody>
</table>

**ol tag**

Ordered lists are ones where the browser numbers each successive list item starting with "1." Note that the only difference is changing the ul tag to ol tag.

**HTML format for ordered list:**

```html
<b>The Ordered List: </b>
<ol>
  <li> Item 1
  <li> Item 2
  <li> Item 3
</ol>
```

Output of ordered List:

<table>
<thead>
<tr>
<th>sample web page</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Ordered List:</td>
</tr>
<tr>
<td>1. Item 1</td>
</tr>
<tr>
<td>2. Item 2</td>
</tr>
<tr>
<td>3. Item 3</td>
</tr>
</tbody>
</table>

**HTML–Attributes**

Attributes are used to amplify tags. When a web browser interprets a tag, it will also search for set attributes and then display the element (tags+attributes) in its entirety. At some point you may want to give your body element a background color or perhaps change the width of a table. All of these things and more can be achieved using Attributes.
We want to focus on a set of generic attributes that can be used with just about every HTML Tag in existence. Attributes are placed within the opening tag and they follow a precise syntax.

**Align Attribute**

If you wish to change the horizontal location of your elements you may do so using the align attribute. You may align things left, right, or center. By default most elements are automatically aligned left unless otherwise specified. For example,

```html
<h2 align="center">Centered Text</h2>
```

**Output:**

```
Centered Text
```

More examples,

```html
<h2 align="left">Left aligned text</h2>
<h2 align="center">Centered text</h2>
<h2 align="right">Right aligned text</h2>
```

**Output:**

```
Left aligned text
Centered text
Right aligned text
```

Paragraphs can be formatted in HTML much the same as you would expect to find in a word processing program. Here the align attribute is used to "justify" the paragraph.

```html
<p align="justify">For instance, let's say you had a HUGE school or work...</p>
```
Internet and Designing Web Page

**HTML Tags for Graphics**

We can add graphics in the Web page. The way a web browser displays graphics in HTML format indicates the location of a graphic file in a single format. The standard format that can display within a web page is GIF or Graphics Interchange Format. The other file format used on the web is JPEG or Joint Photographic Expert Group.

The HTML format for the inline image tag is:

```html
<img src="filename.gif">
```

**Height and Width Attributes**

Another option you may want to include in your `<img...>` tags are two attributes that give the dimensions of the image in pixels. The loading of the page can be faster if you specify these numbers in your HTML.

The format for including this option is:

```html
<img src="filename.gif" width=X height=Y >
```

where X is the width of the image and Y is the height of the image in pixels.

**HTML Color Coding System - Color Names**

There are 3 different methods to set color. However, we will use here RGB for safe web design. RGB stands for Red, Green, and Blue. Each can have a value from 0 (none of that color) to 255 (fully that color). The format for RGB is - `rgb(RED, GREEN, BLUE)`, just like the name implies.

**Red, Green, and Blue Values:**

```html
bgcolor="rgb(255,255,255)"  White
bgcolor="rgb(255,0,0)"     Red
bgcolor="rgb(0,255,0)"     Green
bgcolor="rgb(0,0,255)"     Blue
```

Here's an example of color you might see or use in an HTML document.

```html
bgcolor="#RRGGBB"
```
Font Size

Set the size of your font with size. The range of accepted values is from 1 (smallest) to 7 (largest). The default size of a font is 3.

<p>
<font size="5">Here is a size 5 font</font>
</p>

Font Color

Set the color of your font with color. An example:
<font color="#990000">This text is hexcolor #990000</font>

Font Face

Choose a different font face using any font you have installed. Be aware that if the user viewing the page doesn't have the font installed, they will not be able to see it. Instead they will default to Times New Roman. An option is to choose a few that are similar in appearance.

An example:
<p>
<font face="Bookman Old Style, Book Antiqua, Garamond">This paragraph has had its font...</font>
</p>

HTML - Links and Anchors

The web got its spidery name from the plentiful connections between web sites. These connections are made using anchor tags to create links. Text, Images, and Forms may be used to create these links.

href attribute

The href attribute defines reference that the link refers to. Basically this is where the user will be taken if they wish to click this link. Hypertext references can be Internal, Local, or Global.
Internet and Designing Web Page

Use the `<a></a>` tags to define the start and ending of an anchor. Decide what type of `href` attribute you need and place this attribute into the opening tag. The text you place between the opening and closing tags will be shown as the link on a page. For example,

```
<a href="http://www.yahoo.com/">Yahoo Home</a>
```

**Email Tag**

There actually is not a separate HTML tag for creating an HTML email link. Instead you use a standard HTML anchor tag `<a>` and set the `href` property equal to the email adddress, rather than specifying a web URL. For example,

```
<a href= "mailto:sst@yahoo.com" >Email to SST</a>
```

**List of Popular Browsers**

Followings are some of the web page browsers which are commonly used.

- Microsoft Internet Explorer
- Opera
- Netscape
- Firefox
- Safari

Many browsers are now cross-platform. Netscape, for instance, can now be used on Windows, Macintosh, and Linux machines. Internet Explorer only runs on Windows computers. Versions of Firefox can be downloaded that are suitable for Windows, Mac, and Linux, and it is available in many different languages.
4.5. Exercise

1. Short questions

1. What are HTML tags?
2. Where is the text of the title tag displayed?
3. What steps are involved in creating a simple HTML document?
4. How can you display your HTML document in a web browser?
5. What are the different levels of headings in HTML?
6. What steps did you use in placing headings in your HTML document?
7. What is the HTML tag for a paragraph break?
8. What steps did you use for inserting a paragraph break in your document?
9. How did you display and view the changes in your web browser?
10. What is a horizontal rule <hr> tag? a <br> tag?
11. How are lists valuable in a web page?
12. What is the HTML tag for an unordered list?
13. What is the tag for an ordered list?
14. What steps did you use in adding a list to your HTML document?
15. What are the two graphic formats used for the World Wide Web?
16. How can a graphic file display on different computers?
17. What type of tag must you put before an image tag to make the image appear on a separate line?
18. What does the alt="...." attribute do? What does the height="...." attribute do?
Lesson 5: Designing HTML Pages-II

5.1. Learning Objectives

On completion of this lesson you will be able to learn:

- table elements
- properties of frames
- frame-based pages.

5.2. HTML Tables

Tables are used to control the width of material presented on a Web page. Table width can be specified in either percent or pixels. Specifying table width in percent will cause the table size to change depending on what the viewer's screen size is.

The <table> tag is used to begin a table. Within a table element are the <tr> (table rows) and <td> (table columns) tags. Tables are a handy way to create a site's layout. Here's an example of creating a table.

An example:
<table border="1">
<tr><td>Row 1 Cell 1</td><td>Row 1 Cell 2</td></tr>
<tr><td>Row 2 Cell 1</td><td>Row 2 Cell 2</td></tr>
</table>

Output:

<table>
<thead>
<tr>
<th>Row 1 Cell 1</th>
<th>Row 1 Cell 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Row 2 Cell 1</td>
<td>Row 2 Cell 2</td>
</tr>
</tbody>
</table>

Content is placed within tables cells. A table cell is defined by <td> and </td>. The border attribute defines how wide the table's border will be.
**Adding Color to the Tables**

This example shows how to add a background color for an entire table using generic values of color.

An example:
```
<table bgcolor="blue" border="1"><tr>
<td>A blue colored table background </td>
</tr></table>
```

**Spanning Multiple Rows and Cells**

Use rowspan to span multiple rows and colspan to span multiple columns.

If you would like to place headers at the top of your columns, use the `<th>` tag as shown below. By default these headers are bold to set them apart from the rest of your table's content.

An example:
```
<table border="1">
<tr>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
</tr>
<tr><td rowspan="2">Row 1 Cell 1</td>
<td>Row 1 Cell 2</td><td>Row 1 Cell 3</td></tr>
<tr><td>Row 2 Cell 2</td><td>Row 2 Cell 3</td></tr>
<tr><td colspan="3">Row 3 Cell 1</td></tr>
</table>
```

**Output:**

```
<table>
<thead>
<tr>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Row 1 Cell 1</td>
<td>Row 1 Cell 2</td>
<td>Row 1 Cell 3</td>
</tr>
<tr>
<td></td>
<td>Row 2 Cell 2</td>
<td>Row 2 Cell 3</td>
</tr>
<tr>
<td>Row 3 Cell 1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```
**Cell Padding and Spacing**

With the cell padding and cell spacing attributes you will be able to adjust the white space on your tables. Spacing defines the width of the border, while padding represents the distance between cell borders and the content within.

An example:
```html
<table border="1" cell spacing="10" bgcolor="rgb(0,255,0)">
  <tr>
    <th>Column 1</th>
    <th>Column 2</th>
  </tr>
  <tr><td>Row 1 Cell 1</td><td>Row 1 Cell 2</td></tr>
  <tr><td>Row 2 Cell 1</td><td>Row 2 Cell 2</td></tr>
</table>
```

**Output:**

<table>
<thead>
<tr>
<th>Column 1</th>
<th>Column 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Row 1 Cell 1</td>
<td>Row 1 Cell 2</td>
</tr>
<tr>
<td>Row 2 Cell 1</td>
<td>Row 2 Cell 2</td>
</tr>
</tbody>
</table>

Now change the cell padding of the table and remove the cell spacing from the previous example.

An example:
```html
<table border="1" cell padding="10" bgcolor="rgb(0,255,0)">
  <tr>
    <th>Column 1</th>
    <th>Column 2</th>
  </tr>
  <tr><td>Row 1 Cell 1</td><td>Row 1 Cell 2</td></tr>
  <tr><td>Row 2 Cell 1</td><td>Row 2 Cell 2</td></tr>
</table>
```
Output:

<table>
<thead>
<tr>
<th>Column 1</th>
<th>Column 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Row 1 Cell 1</td>
<td>Row 1 Cell 2</td>
</tr>
<tr>
<td>Row 2 Cell 1</td>
<td>Row 2 Cell 2</td>
</tr>
</tbody>
</table>

The value specified for padding and spacing is interpreted by the browser as a pixel value. So a value of 10 is simply 10 pixels wide. Most attributes that use numeric values for their measurements use pixels.

5.3. HTML Frames

Frames allow for multiple ".html" documents to be displayed inside of one browser window at a time. This means that one page has no content on it, but rather tells the browser which web pages you would like to open.

Frames are most typically used to have a menu in one frame, and content in another frame. When someone clicks a link on the menu that web page is then opened on the content page. Here is an example of a basic "index" frameset with a menu on the left and content on the right.

An example:
```html
<html>
<head>
</head>
<frameset cols="30%,*">
<frame src="menu.html">
<frame src="content.html">
</frameset>
</html>
```

Frame Set:

- **frameset**: The parent tag that defines the characteristics of this frames page. Individual frames are defined inside it.
frameset cols="#%, *" - Cols(columns) defines the width that each frame will have.
frame src="" - The location of the web page to load into the frame.

A good rule of thumb is to call the page which contains this frame information "index.html" because that is typically a site's main page.

### Frame Border and Frame Spacing

You probably noticed those ugly gray lines that appear between the frames. It is possible to remove these and manipulate the spacing between frames with frameborder and framespacing. These attributes appear within the frameset tag.

frameborder="#" - A zero value shows no "window" border.
border="#" - Modifies the border width, used by Netscape.
framespacing="#" - Modifies the border width, used by Internet Explorer.

Here are two examples of the frame.

Example-1:
```html
<html>
<head><title>title here</title></head>
<frameset cols="15%,85%">
<frame src="menu_bar.htm" name="sidemenu">
<frame src="main.htm" name="mainwindow">
</frameset>
</html>
```

Example-2:
```html
<html><head></head>
<frameset border="0" frameborder="0" framespacing="0" rows="20%,*">
<frame src="title.html">
<frameset border="0" frameborder="0" framespacing="0" cols="30%,*">
<frame src="menu.html">
<frame src="content.html">
</frameset>
</html>
```
HTML Comments

A comment is a way for you as the web page developer to control what lines of code are to be ignored by the web browser. This is a great way to place little notes to you or to remind yourself what pieces of code are doing what.

As you can see comment syntax may be a little complicated, there is an opening and a closing much like tags.

<!-- Opening Comment
--> Closing Comment

An example,
<!--Note to self: This is my image-->
<img src="http://www.abc.com/personal/flower.jpg" height="100" width="200" />

blink tag

If you use blink tag, you will see blinked text on this page.

An example:
<blink> Hello! </blink>

marquee tag

marquee tag takes the text inside and displays it like a ticker tape (one letter added at a time) across the page. So if you are viewing this page in Internet Explorer, you would see this text march across the screen:

An example:
<marquee> Hello! </marquee>
5.4. Exercise

1. **Short questions**

1. What are the steps to create a table in HTML document?
2. What are the use of `<tr>` and `<td>` tag?
3. How can you use `rowspan` to span multiple rows and `colspan` to span multiple columns?
4. What are the uses of `cellpadding` and `cellspacing` attributes?
5. How do you create HTML frame?
6. What do you understand by frameset?
7. What are the uses of `frameborder` and `framespacing` attributes?
8. Why do we use `frame src` attribute?
9. How do you create a comment tag?
10. What happens when you add a `<blink>` tag and `<marquee>` tag?
Lesson 6: Hands on Practice

6.1. Learning Objectives

On completion of this lesson you will be able to learn:

- learn how to create a complete web pages
- understand design principles to create well-designed websites.

6.2. Defining A Web Site

The very first step in designing a Web site is to define it. And to properly define a site there are three questions that must be answered.

- What is the purpose of the site?
- Who will be visiting the site?
- How will the site serve the client?

The answers to these questions will guide you as you construct the site

Identify the Purpose of the Site

A Web site may have several purposes. In that case it is necessary to determine which is the primary purpose, which is secondary, and so on. A site that is intended to be strictly informative, such as a news site, is likely to look much different that a site that is designed to sell a product. On the other hand, a site for an educational institute may have some subtle similarities to a site that sells books.

Identify Who Will Visit the Site

Determining who the visitors are likely to be is crucial in deciding not only the general appearance of the site, but also the technology that might be used to build the site. If the project is likely to have visitors who log in from home, it is necessary to design the pages with the understanding that users will probably have slow modem connections.
Serving the Needs of the Client

Client of the web site can be anybody for whom a site is built, either a paying customer or not. In the case of a Web site built for a family travels, the client is the family. Will the site properly serve the need of the family by providing every detail about their travel plans, tour diary? Can the family photos be properly displayed? A client could be a Geography professor. In such an instance the message of the professor must be clearly understood. Does the site explain research projects? Who will update the site later?

6.3. Important Issues

One of the first things you need to understand when you design sites is that they will be viewed on a variety of computer platforms and browsers. Your visitors could be on a Windows PC, a Macintosh, or a UNIX system. They may be using Netscape or Microsoft browsers, or numerous others.

The platform issue is much less of a concern than the browser issue. With browser considerations, the major concern is of the version of the software, rather than the brand, at least with the two most popular browsers, Netscape’s Navigator and Microsoft’s Internet Explorer. Older versions won’t support all the new tag additions and modifications, such as fonts and table colors. But HTML was designed from the ground up realizing that there would most likely be new tags and attributes in the future. So browsers just ignore any tags and attributes they don’t recognize, without rendering it to the visitor.

Another major consideration you must take into account while designing your site is that the visitors could be in a variety of screen resolutions. The most common screen resolutions are 640 x 480 pixels, 800 x 600 pixels, and 1024 x 768 pixels. If your page is more than the browser’s width, a horizontal scrollbar will be displayed. If your page is more than the browser’s height, a vertical scrollbar will be displayed.

6.4. Lab Report

You have already learned about HTML codes and now your can try to create your first home page. A web site can be written on any subject. Some people write sites on cooking, others about musicians and bands. Some about TV
Computer Basics

shows - others about fishing or skydiving. Businesses often write sites about their products and services. You can write a site about anything you please.

Most people choose a personal home page to be their first real HTML experience. On a personal home page, you will usually see information about the author, possibly their family, their interests, and often links to some of their favorite sites. You can add any pictures in your web site.

Learners of DCSA program will perform following exercise and submit a report based on these exercise.

1. Design personal web site of yourself.
2. Design a DCSA course web site.