CSPC57 PRELIMS

Web Development

- Is a broad term for any activity to developing a web site for the World Wide Web or an intranet.
- This can include web design, web content development, client-side/server-side scripting, web server configuration and e-commerce development.

Internet

- Is a worldwide collection of interconnected networks that links together millions of computers used by:
    a) Business
    b) Government
    c) Educational institutions
    d) Organizations
    e) And individuals using a broad array of electronic, wireless and optical networking technologies.
- It is the short-term **internetworking** which means a network between networks.

History of Internet

- Began as a US Department of Defense network called **ARPANET** (**Advanced Research Projects Agency Network**) (1960s-70s)
- Initial services: **electronic mail, file transfer**
- Opened to commercial interests in late 80s
- WWW created in 1989-91 by **Tim Berners-Lee**
- **CERN (Conseil Européen pour la Revherche Nucléaire/ European Council for Nuclear Research)** – first website
- Put online August 6, 1991
- Popular web browsers released: **Netscape** 1994, **IE (Internet Explorer)** 1995
- Amazon.com opens in 1995; Google January 1996

Key Aspects of the Internet

- Subnetworks can stand on their own
- Computers cam dynamically join and leave the network
- Built on open standards; anyone can create a new internet device
- Lack of centralized control (mostly)
- Everyone can use it with simple, commonly available software

People & Organization

Internet Engineering Task Force (IETF)
- Internet protocol standards

Internet Corporation for Assigned Names and Numbers (ICANN)
- decides too-level domain names

World Wide Web Consortium (W3C)
- web standards

Network
- A group of two or more computers that are connected together to share resources and information.

Intranet
- Group of computers that are connected locally/ privately within a company or organization.

Extranet
- Two or more computers that are connected locally or privately.

Internet Backbone
- a collection of high speed data lines that connect major computer systems around the world.

Internet Service Provider (ISP)
- A company that has a permanent connection to the Internet Backbone.

Hypertext Transfer Protocol (HTTP)
- The set of commands understood by a web server and sent from a browser
- Some HTTP commands (your browser sends these internally):
    - **GET** filename: download
    - **POST** filename: send a web form response
    - **PUT** filename: upload

HTTP Error Codes
- When something goes wrong, the web server returns a special “error code” number to the browser, possibly followed by an HTML document.

Common Error Codes:

200
- Ok

301-303
- page has moved (permanently or temporarily)

403
- you are forbidden to access this page

404
- page not found

500
- internal server error

Some Internet Services and Tools

Electronic Mail
- is the fastest and efficient way of communication that is similar to postal service wherein a person can send and receive messages to and from one or more recipient.

Instant Messaging (Chat)
- another form of comm over the internet that offers an instantaneous transmission of text-based messages from sender to receiver at almost real time.

Example of Chat Software

A. Desktop Chat Software

- Yahoo Messenger
- Windows Messenger
- Skype Messenger
- Chikka Messenger
- MSN Messenger

B. Online Chat Software

- Wireless Application Protocol (WAP)
- an open global specification that empowers mobile users with wireless devices to easily access and interact with internet information and services instantly.

- World Wide Web (WWW)
- known as WWW or simply web, is a system of interactive network of sites that offer interconnect document access or collection of linked documents.
- It presents rich contents supporting variety of data formats such as multimedia and even live radio and video.

- Online Shopping
- is a form of electronic commerce whereby consumers directly buy goods or services from a seller over the internet without an intermediary service.

- Voice Over Internet Protocol (VOIP) and Internet Protocol Television (IPTV)
- popular internet services that supports live streaming or voice and motion picture.

How The WWW Does Works?

Web Pages
- Web Content or information is stored in documents called Web Pages.

Web Sites
- Collection of related web pages are called Web Sites.

Web Servers
- Computers hardware and software that stores a web site is called Web Servers.
- A software that listens for web page request
- Example: Apache, Microsoft Internet Information Server (ISS)

Web Browsers
- Fetches/Displays documents form a web servers called Web Browsers

Popular Web Browsers
- Internet Explorer
- Mozilla Firefox
- Google Chrome
- Safari
- Opera etc.

Home Page
- Each website contains a home page, which is the first document users see when they visit a site.

URL (Uniform Resource Locator)
- The web browser fetches a web page from a web server by a request that contains a page address.

Building Blocks of the Web

HTML (Hyper Text Markup Language)
- is the language of the Web that is used to define the structure and the content of your webpage.

CSS (Cascading Style Sheets)
- define how HTML elements are displayed

Client Side Scripting
- about "programming" the behavior of an internet browser.
- JavaScript: interactive and programmable web pages.

Server Side Scripting
- about "programming" an internet server. With server side scripting, you can:
  - Dynamically edit, change, or add any content of a Web Page
  - Respond to user queries or data submitted from HTML forms
  - Access any data or database and return the results to browser
  - PHP Hypertext Preprocessor (PHP) – dynamically create pages om a web server
  - Asynchronous JavaScript and XML (Ajax): accessing data for web applications

Database Technology
- such as **The Structured Query Language (SQL)** – is the common standard for accessing databases such as SQL Server, Oracle, Sybase, and Access

Tools Needed for Developing a Website

Basic Tools

Text Editor
- which a program that allows you to edit plain text files. You'll use this to write your web pages.

Web Browser
- that's the application you use to view websites

FTP Client
- this is a utility that allows you to transfer across the Internet using the File Transfer Protocol

Advance Tools

- Web Editor
- Graphics Editor

What is HTML?

- HTML is language for describing a web page
- HTML stands for Hyper Text Markup Language
- HTML is not a programming language, it is a markup language
- A markup language is a set of **markup tags**
- HTML uses markup tags to describe web pages

HTML Tags
- HTML markup tags are usually called HTML tags
- HTML tags are keywords surrounded by **angle brackets** like **<tagname>** content **</tagname>**
- HTML tags normally come in **pairs** like and
- The first tag in a pair is the **start tag**, the second tag is the **end tag**
- Start and end tags are also called **opening tags** and **closing tags**

HTML Elements
- HTML elements are written with a start tag with an end tag, with the **content** in between: **<tagname>** content **</tagname>**
- The HTML **element** is everything from the start tag to the end tag: ** ** My First HTML Documents ** **

HTML Documents
- All HTML documents must start with a type declaration: **<!DOCTYPE html>**
- The HTML document itself begins with **<html>** and ends with **</html>**
- The visible part of the HTML document is between **<body>** and **</body>**

Basic Requirements of a Web Page

```
<!DOCTYPE html>
        <html>
                <head>
                        <title></title>
                </head>
<body>

</body>
</html>
```

<!DOCTYPE> declaration
- helps the browser to display a web page correctly

<html> tag
- defines the whole document

<head> tag
- defines the head element

<title> tag
- defines the title of a document or web page

<body> tag
- defines the document body

Web Development Life Cycle
- any software development project, a methodology should be followed to ensure project consistency completeness.
- the Web Development life cycle includes the following phases:

Website Planning
- What is the purpose of the Web site
- Who will use this Web site
- What are their computing environment
- Who owns and authors the information on the Web site

- Involves the identification of the Web site goals or purpose.
- Understanding the computing environment will allow the designer to know what type of Technologies to use.

Website Analysis
- What information is useful to the user

- Web designer needs to make decisions about the Web site content and functionality. It included a detailed analysis of the content of the Website in terms information covered, processing required, etc.

Website Design and Development
- What type of Web site layout is appropriate
- What forms of multimedia is helpful to the user

- After, the purpose of the Website has been found and the content has been defined, we need to organize the content of the Website. Many ways to organize the Website exists. Here are some general pointers:

Titles – use simple titles that clearly explain the purpose of the page
Headings – use headings to separate main topics
Horizontal rules – use horizontal rules to separate main topics
Paragraphs – use paragraphs to help divide large amount of data
Lists – utilize list. Numbered or bullet when appropriate
Page length – maintain suitable Web page lengths; about one or two pages are adequate
Information – emphasize the most important information by placing it at the top of a Web page
Other – incorporate a contact e-mail address. Include the date of the last modification

Website Layouts
- Websites are designed using any of several different types of layouts, including linear, hierarchical, and webbed. Each layout links, or connects, the Web pages in a different structure to define how users navigate through the site and view the Web pages.

Linear
- Web site layout connects Web pages in a straight line. A linear Web is appropriate if the information on the Web pages should be read in a specific order.

Hierarchical
- Web site layout connects Web pages in a tree-like structure. A hierarchical Web site layout works well on a site with a main index or table of contents page that links to all other Web pages. With this layout, the main index page would display general information and secondary pages include information that is more detailed.

Webbed

- Web site layout has no set structure. A Webbed Web site layout works best on Web sites with information that does not need to be read in a specific order and with many navigation options that users can select.

- Most Web sites are a combination of the linear, hierarchical and ebbed layouts. Some of information on the Web site might be organized hierarchically from an index page; other information might be accessible from all areas of the site while other information might be organized linearly to be read in a specific order.

Website Testing

- Is the Web site content correct
- Does the Website functions correctly
- Are users able to find the information they need
- Is the navigation easy to use?

- A Web site should be tested at various stages of the Web design and development. This testing should include a review of page content, functionality and usability. Some basic steps to test content and functionality are:
  - Reviewing for accurate spelling and proofreading content including page titles.
  - Checking links to ensure that they are not broken and are linked correctly.
  - Checking graphics to confirm they display properly and are linked correctly.
  - Testing forms and other interactive page elements.
  - Testing pages to check for speed of loading on lower speed connection.
  - Printing each page to check how page prints.
  - Testing each Web in several different browser types and versions to verify they display correctly.
- Usability is the measure of how well product, A allows users to accomplish their goals. Usability testing is a method by which users of a Web site are asked to perform certain tasks in an effort to measure the ease of use of the product.

Website Implementation and Maintenance

- How is the Web site published
- How is the Web site updated
- Who is responsible for content updates
- Will the Web site be monitored

- Once the Web site testing is complete and any required changes have been made, the Web site can be implemented. Implementation of a Web site means publishing the Web site or uploading it into a Web server.
- Once, the Web site has been implemented, its maintenance will include updating the information content by removing the outdated one and putting in the new one.
- Finally, Website monitoring is another key aspect of maintenance. Usually, the Web servers that host the Web sites keep logs about Web site usage.

Log

- is the file that lists all the Web pages that have been requested from the Web site. Analyzing the logs allows you to determine the number of visitors to your site and the browser types and versions they are using, as well as their connection speeds, most commonly requested pages.

Internet cookies

- are very small files that are downloaded from a Web server to a Web browser. Cookies are embedded in the HTML code related to downloading requested pages from a Web site.
- When a Web browser first asks for a file from a Web server, the server creates a cookie containing information about the request and sends the cookie to the browser along with the requested file.
- The next time a request is made from the browser to the server, the cookie is sent to the server along with the request. When the server returns the requested file, an updated cookie is also returned.

Cache

- a hardware or software component that stores data so that future requests for that data can be served faster; the data stored in a cache might be the result of an earlier computation or a copy of data stored elsewhere.

HTML – Formatting

- If you use a word processor, you must be familiar with the ability to make text bold, italicized, or underlined; these are just three of the ten options available to indicate how text can appear in HTML and XHTML.

Bold and Strong

- The HTML **<b>** element defines **bold** text, without any extra importance.
- The HTML **** element defines **strong** text, with added semantic "strong" importance.

Italic and Emphasized

- The HTML **<i>** element defines **italic** text, without any extra importance.
- The HTML **** element defines **emphasized** text, with added semantic importance.

Underlined Text

- Anything that appears within **<u>...</u>** element, is displayed with underline.

Smaller Text

- The HTML **<small>** element defines **small** text:
- The content of the **<small>...</small>** element is displayed one font size smaller than the rest of the text surrounding

Larger Text

- The content of the **<big>...</big>** element is displayed one font size larger than the rest of the text surrounding.

Marked Formatting
- The HTML **<mark>** element defines **marked** or highlighted text.
- Anything that appears with- in **<mark>...</mark>** element, is displayed as marked with yellow ink.

Strike Text
- Anything that appears within <strike>...</strike> element is displayed with strikethrough, which is a thin line through the text.

Subscript
- The HTML **<sub>** element defines subscripted text.
- The content of a **_{...}** element is written in subscript; the font size used is the same as the characters surrounding it, but is displayed half a character's height beneath the other characters.

Superscript
- The HTML **<sup>** element defines superscripted text.
- The content of a **^{...}** element is written in superscript; the font size used is the same size as the characters surrounding it but is displayed half a character's height above the other characters.

Inserted and Deleted Text
- Anything that appears within **<ins>...</ins>** element is displayed as inserted text.
- Anything that appears within **~~...~~** element, is displayed as deleted text.

HTML "Computer Output" Tags
<code> - Defines computer code text.
<kbd> - Defines keyboard text.
<samp> - Defines sample computer code.
<var> - Defines a variable.
<pre> - Defines preformatted text.

HTML Attributes

- An attribute is used to define the characteristics of an HTML element and is placed inside the element's opening tag.
- All attributes are made up of two parts: a **name** and a **value**:

  Name - is the property you want to set. For example, the paragraph <p> element in the example carries an attribute whose name is align, which you can use to indicate the alignment of paragraph on the page.

  Value - is what you want the value of the property to be set and always put within quotations. The below example shows three possible values of align attribute: left, center and right.
- Attribute names and attribute values are case-insensitive.

Core Attributes
- The four core attributes that can be used on the majority of HTML elements (although not all) are:

ID Attributes
- The id attribute of an HTML tag can be used to uniquely identify any element within an HTML page.

1. If an element carries an id attribute as a unique identifier, it is possible to identify just that element and its content.
2. If you have two elements of the same name within a Web page (or style sheet), you can use the id attribute to distinguish between elements that have the same name.

Title Attributes
- The title attribute gives a suggested title for the element. They syntax for the title attribute is similar as explained for id attribute:
- The behavior of this attribute will depend upon the element that carries it, although it is often displayed as a tooltip when cursor comes over the element or while the element is loading.

Class Attributes
- The class attribute is used to associate an element with a style sheet and specifies the class of element. You will learn more about the use of the class attribute when you learn Cascading Style Sheet (CSS).
- The value of the attribute may also be a space-separated list of class names.

Style Attributes
- The style attribute allows you to specify Cascading Style Sheet (CSS) rules within the element.
- The style attribute allows you to specify Cascading Style Sheet (CSS) rules within the element.

HTML – IMAGE, COLORS AND BACKGROUND

HTML Images
- Images are very important to beautify as well as to depict many complex concepts in simple way on your web page.
- HTML images are defined with **<img />** tag.
- The **<img />** tag is an empty tag, which means that, it can contain only list of attributes and it has no closing tag.
- You can use PNG, JPEG or GIF image file based on your comfort but make sure you specify correct image file name in **src** attribute. Image name is always case sensitive.
- The **alt** attribute is a mandatory attribute which specifies an alternate text for an image, if the image cannot be displayed.

Width and Height
- You can set image width and height based on your requirement using **width** and **height** attributes.

Image Border
- You can specify width and height of the image in terms of either **pixels** or **percentage** of its actual size.

HTML Background

- By default, your webpage background is white in color.
- HTML provides you following two good ways to decorate your webpage background.
    1. HTML Background with Colors
    2. HTML Background with Images

HTML Background with Colors

- The **bgcolor** attribute is used to control the background of an HTML element, specifically page body and table backgrounds.
- syntax to use **bgcolor** attribute with any HTML tag.
- <tagname bgcolor="color_value"...>

HTML Color Coding Methods

- There are following three different methods to set colors in your web page:
    1. **Color Names**
       - You can specify color names directly like green, blue, red etc.
    2. **Hex Codes**
       - A six-digit code representing the amount of red, green, and blue that makes up the color.
    3. **Color decimal or percentage values**
       - This value is specified using the rgb() property.

HTML Background with Images

- The **background** attribute can also be used to control the background of an HTML element, specifically page body and table backgrounds.
- syntax to use background attribute with any HTML tag.
- <tagname background="Image URL"...>
- Note: The background attribute is deprecated and it is recommended to use Style Sheet for background setting.
- The most frequently used image formats are JPEG, GIF and PNG images.

HTML Background using Style Attribute

- **background-color**
  - the background-color property specifies the background color of an element
- **background-image**
  - the background-color property specifies the background color of an element
  - by default, the image is repeated so it covers the entire element
  - background-image: url("paper.gif");
- **background-repeat**
  - by default, the background-image property repeats an image both horizontally and vertically
  - If the image is repeated only horizontally
  - background-repeat: repeat-x;
- **background-position**
  - to specify that the background image should be fixed (will not scroll with the rest of the page) use the background-attachment

HTML – Links

HTML Links – Hyperlinks

- A webpage can contain various links that take you directly to other pages and even specific parts of a given page. These links are known as **hyperlinks**.
- Hyperlinks allow visitors to navigate between Web sites by clicking on words, phrases, and images.
- A link is specified using **HTML tag <a>**
- This tag is called **anchor tag**
- Anything between the opening <a> tag and the closing tag becomes part of the link and a user can click that part to reach to the linked document

HTML Links – Syntax

link text

- The **href** attribute specifies the destination address
- The **link text** is the visible part (Visit Facebook page)
- Clicking on the link text, will send you to the specified address

HTML Links – The target Attribute

- The **target** attribute specifies where to open the linked document.

Target Value	Description
_blank	Opens the linked document in a new window or tab
_self	Opens the linked document in the same frame as it was clicked (this is default)
_parent	Opens the linked document in the parent frame
_top	Opens the linked document in the full body of the window
framename	Opens the linked document in a named frame

HTML Links – Create a Bookmark

- HTML bookmarks are used to allow readers to jump to specific parts of a Web page.
- Bookmarks are practical if your website has long pages.
- To make a bookmark, you must first create the bookmark, and then add a link to it.
- When the link is clicked, the page will scroll to the location with the bookmark.

HTML – Tables

HTML Tables

- The HTML tables allow wed authors to arrange data like text, images, links, other tables, etc. into rows and columns of cells.
- Tables are defined with the **<table>** tag.
- Tables are divided into **table rows** with the **<tr>** tag.
- Tables rows are divided into **table data** with the **<td>** tag.
- A table row can also be divided into **table headings** with the **<th>** tag.

Note: table data <td> are the data containers of the table. They can contain all sorts of HTML elements like text, images, lists, other tables, etc.

Border Attribute
- The boarder is an attribute of <table> tag and it is used to put a border across all the cells.
- If you do not specify a border for the table, it will be displayed without borders.

Table Heading
- Table heading can be defined using <th> tag.
- This tag will be put to replace <td> tag, which is used to represent actual data cell.

Cellpadding and Cellspacing Attributes
- Use to adjust the white space in your table cells.

Cellpadding
- Attribute defines the width of the border.

Cellspacing
- represents the distance between cell borders and the content within a cell.

Colspan and Rowspan Attributes
- You will use **colspan** attribute if you want to merge two or more columns into a single column, Similar way you will use **rowspan** of you want to merge two or more rows.

Tables Backgrounds
- You can set table background using one of the following two ways:

bgcolor attribute
- You can set background color for whole table or just for one cell

background attribute
- You can set background image for whole table or just for one cell

Table Height and Width
- You can set a table width and height using **width and height attributes**. You can specify table width or height in terms of pixels or in terms of percentage of available screen area.

Table Caption
- The caption tag will serve as a title or explanation for the table and it shows up at the top of the table.

HTML Lists

HTML Lists
- HTML offers web authors three ways for specifying lists of information. All lists must contain one or more list elements. Lists may contain:

** - an unordered list**
- This will list items using plain bullets

** - an ordered list**
- This will use different schemes of numbers to list your items

<dl> - a definition list
- This arranges your items in the same way as they are arranged in a dictionary

HTML Unordered Lists
- An unordered list is a collection of related items that have no special order or sequence. This list is created by using HTML <ul> tag. Each item in the list is marked with a bullet.

The type Attribute
- You can use type attribute for <ul> tag to specify the type of bullet you like. By default, it is a disc. Following are the possible options:

<ul type="square">
<ul type="disc">
<ul type="circle">

HTML Ordered Lists
- If you are required to put your items in a numbered list instead of bulleted, them HTML ordered list will be used.
- This list is created by using ** tag**.
- The numbering starts at one and is incremented by one for each successive ordered list element tagged with <li>.

The type Attribute
- You can use type attribute for <ol> tag to specify the type of numbering you like. By default, it is a number. Following are the possible options:

<ol type="1"> - Default-Case Numerals
<ol type="I"> - Upper-Case Numerals
<ol type="i"> - Lower-Case Numerals
<ol type="a"> - Lower-Case Letters
<ol type="A"> - Upper-Case Letters

The start Attribute
- You can use type attribute for <ol> tag to specify the starting point. Following are the possible options:

<ol type="1" start="4"> - Numerals starts with 4.
<ol type="I" start="4"> - Numerals starts with IV.
<ol type="i" start="4"> - Numerals starts with iv.
<ol type="a" start="4"> - Numerals starts with d.
<ol type="A" start="4"> - Numerals starts with D.

HTML Definition Lists
- HTML and XHTML supports a list style which is called definition lists where entries are listed like in a dictionary or encyclopedia.
- Definition List makes use of following three tags.
<dl> - Defines the start of the list
<dt> - A term
<dd> - Term definition
</dl> - Defines the end of the list

Good luck, CS 1-2!