

CPET 499/ITC 250 Web Systems

Lecture 3

Introduction to HTML and XHTML, Web Browsers, and Web Servers

References:

*Chapter 2 of the Text Book: Programming the World Wide Web, 8th ed, by Robert W. Sebesta, from Pearson

*Internet & World Wide Web How to Program, 5th ed, by Paul Deitel, et. al., From Pearson

*Webmaster in a Nutshell, by Stephen Spainbour & Robert Eckstein, from O'Reilly

*E-Book on Building Web Applications with HTML, 2012, by Paul I. Lin, http://www.etcs.ipfw.edu/~lin/CECourses/2_HTML/CE_02WebHhtmlindex.html

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<http://www.etcs.ipfw.edu/~lin>

A Specialty Course for
M.S. in Technology IT/Advanced Computer Applications Program
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1

Topics

- Introduction to HTML Documents
- Versions of HTML
- HTML5 Standards
- Topics on Web Browsers and Web Servers
- A Basic Web Site - Design

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2

HTML Documents

■ HTML

- A structured language defines syntax and placement of WWW document for Web browsers.
- The HTML syntax contains definitions of tags and attributes that allows the separation of the presentation and structure of a document.
- It enables the creation of machine independent WWW documents.

■ References of HTML standards

- **HTML 5 – A vocabulary and associated APIs for HTML and XHTML**, Draft 4 Sept 2014,
<http://www.w3.org/html/wg/drafts/html/CR/>

HTML Documents

■ A **HTML web page** may include the following information

- **Text** of its document with appropriate layout settings such as front, color, alignment, numbered and bulleted lists, etc; any **hypertext links** to other documents, images, and other media; tables and user feedback form
- Embedded **client-side scripts** such as JavaScript
- Embedded **images and media**
- Embedded **other objects** such as Java Applet program, ActiveX, audio, video, and VRML objects
- Embedded video, audio, and other formats via Plug Ins

Evolution of HTML Specifications

- 1993 Original version of HTML was defined with SGML (Standard Generalized Markup Language)
- HTML 2.0 - 1995, HTML 3.2 - 1997,
- HTML 4.0 - 1997, HTML 4.01 - 1999, <http://www.w3.org/TR/html4/>
- XHTML 1.0 - 2000
- XHTML2 Working Group, <http://www.w3.org/MarkUp/>
- Drop XHTML 2.0 development effort in 2009
- HTML5, A vocabulary and associated APIs for HTML and XHTML, W3C, <http://dev.w3.org/html5/spec/Overview.html>
- HTML5 and Web Standards, Apple – HTML5, <http://www.apple.com/html5/>

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5

HTML5 Semantics, Structure and APIs

- **HTML 5** – A vocabulary and associated APIs for HTML and XHTML, Draft 4 Sept 2014, <http://www.w3.org/html/wg/drafts/html/CR/>
- **Documents** elements are defined by tags
 - **Opening tag:** <name_of_the_tag>
 - Document Contents
 - **Closing tag:** </name_of_the_tag>
 - **Comments:** <!-- -->
- **Elements**
 - Content Models
 - Global Attributes

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6

HTML5 Semantics, Structure and APIs

- HTML 5, <http://www.w3.org/html/wg/drafts/html/CR/>
- The Elements of HTML
 - The **root** element: `<html>` `</html>`
 - Document **Metadata**: `<head>` `</head>`, `<title>` `</title>`, `<base>` `</base>`, `<link>` `</link>`, `<meta>` `</meta>`
 - **Sections**: `<body>`, `<article>`, `<section>`, `<nav>`, `<aside>`, `<h1>`, `<h2>`, `<h3>`, `<h4>`, `<h5>`, `<h6>`, `<header>`, `<footer>`, `<address>`
 - **Grouping** content: `<p>`, `<hr>`, `<pre>`, `<blockquote>`, `<ol>`, `<ul>`, `<li>`, `<dl>`, `<dt>`, `<dd>`, `<figure>`, `<figcaption>`, `<div>`, `<main>`
 - **Text-Level Semantics**: `<a>`, `<em>`, `<strong>`, `<small>`, `<s>`, `<cite>`, `<q>`, `<dfn>`, `<abbr>`, `<data>`, `<time>`, `<code>`, `<var>`, `<samp>`, `<kbd>`, `<sub>`, `<sup>`, `<i>`, `<b>`, `<u>`, `<mark>`, `<ruby>`, `<rb>`, `<rt>`, `<rtc>`, `<rp>`, `<dbi>`, `<bdo>`, `<span>`, `<br>`, `<wbr>`

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7

HTML5 Semantics, Structure and APIs

- HTML 5, <http://www.w3.org/html/wg/drafts/html/CR/>
- The Elements of HTML (continue)
 - **Edits**: `<ins>` `<del>`
 - **Embedded contents**: `<img>`, `<iframe>`, `<embed>`, `<object>`, `<param>`, `<video>`, `<audio>`, `<source>`, `<track>`, `<map>`, `<area>`
 - **Links**: `<a>`, `<alternate>`, `<author>`, `<bookmark>`, `<help>`, `<icon>`, `<license>`, `<nofollow>`, `<noreferrer>`, `<prefetch>`, `<search>`, `<stylesheet>`, `<tag>`, `<next>`, `<prev>`
 - **Tabular Data**: `<table>`, `<caption>`, `<colgroup>`, `<col>`, `<tbody>`, `<thead>`, `<tfoot>`, `<tr>`, `<td>`, `<th>`
 - **Forms**: `<form>`, `<label>`, `<input>`, `<type>`, `<button>`, `<select>`, `<datalist>`, `<optgroup>`, `<option>`, `<textarea>`, `<keygen>`, `<output>`, `<progress>`, `<meter>`, `<fieldset>`, `<legend>`, ...
 - **Scripting**: `<script>`, `<noscript>`, `<template>`, `<canvas>`

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8

Web Browsers and Web Pages

- HTML 5, <http://www.w3.org/html/wg/drafts/html/CR/>
- The **Window** object
 - The **WindowProxy** object
- Session History and Navigation
 - The **History** interface, The **Location** interface
- Web application APIs
 - The **ErrorEvent** interface
 - **Events: Document** objects and **Window** objects
 - **Dynamic markup insertion:** `document.write()`, `document.writeln()`
 - Timers
 - User prompts
 - System state and capabilities
 - User interaction

Standard XHTML Document Structure

- Every XHTML document must begin with:
 - <!DOCTYPE html>**
 - <html>**, **<head>**, **<title>**, and **<body>** are required in every document (in XHTML, not HTML)
- The whole document must have **<html>** as its root
- **html** must have the **lang** attribute:
 - <html lang = "en">** (this one is for English)
- A document consists of a head and a body
- The **<title>** tag is used to give the document a title,
- The meta tag is used to provide the character set used
 - <meta charset = "utf-8" />**
- UTF-8: 8-bit Unicode Transformation Format or ASCII characters

Basic Text Markup

- Paragraph elements: <p> tag

```
<!DOCTYPE html>
<!-- welcome.html -->
<html lang = "en">
  <head>
    <title> Welcome to our Web site </title>
    <meta charset = "utf-8" />
  </head>
  <body>
    <p> Greeting from all of us!
  </p>
  </body>
</html>
```

welcome.html

- Microsoft Expression Web 4 – Web page authoring software

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0
Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-
transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
  <head>
    <meta content="text/html; charset=utf-8" http-equiv="Content-
    Type" />
    <meta content="en-us" http-equiv="Content-Language" />
    <title>Greeting from all of us</title>
  </head>
  <body>
    <p>Greeting from all of us</p>
  </body>
</html>
```

URL for the Web Page: htmlstruc.html

http://www.etc.cs.ipfw.edu/~lin/CECourses/2_HTML/Lectures/3_HTMLBasics.html

```
<html>
<!-- htmlstruc.html
      Author:
      Version:
-->
<head>
<title> Basic html Document Structure/Template </title>
</head>
<body>
<!-- Contents of html Document -->
<h1> Basic html Document Structure/Template </h1>
</body>
</html>
```

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13

URL for the Web Page: htmlstruc.html

Structured Markup Tags (for overall document)

<u>Begin Tag</u>	<u>End Tag</u>	<u>Meaning</u>
<html>	</html>	Placed at the beginning and end of the document
<head>	</head>	Define the header portion
<title>	</title>	Define the title of the document
<body>	</body>	Define document body
<!--	-->	One line comment
<!-- This is a comment		-->

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14

Optional Elements

- `<base>` -- Establish the document base location
- `<meta>` -- Provide keywords, descriptions to search engines, and client pull functions
- `<link>` -- Link a document to another document or an external style sheet
- `<script>` -- Add JavaScripts and VBScripts
- `<style>` -- Add embedded style sheet

Base Tag Example,

http://www.etcs.ipfw.edu/~lin/CECourses/2_HTML/03HTMLBasicsExs/basehref.html

```
<html>
<!-- basehref.html -->
<title> BASE href testing </title>
<head>
  <base href="http://www.etcs.ipfw.edu/~lin/html/">
</head>
<body>
  <h1>
    <!-- The file "headers.html" is loacted in the <BASE
    href="http://www.etcs.ipfw.edu/~lin/html/"> -->
    <a href="headers.html"> Header Example
    <br>
  </h1>
</body>
</html>
```


Web Browsers Monitoring Tools

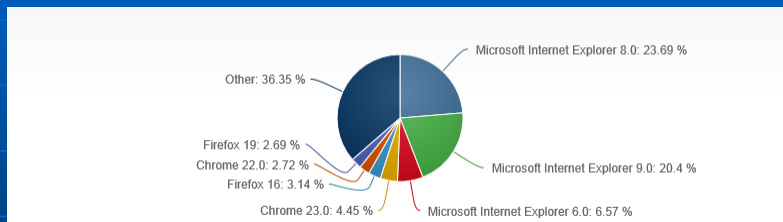
■ Employee Monitoring Software

- Program activity
- Screen shots
- Email/Webmail
- Document Tracking
- Websites visited
- Online Searches
- Chat/IM
- Detected Keywords
- Keystrokes
- Logon/Logoff

Web Browsers Market Shares

■ Web Browsers Market Share

- Net Market Share, <http://www.netmarketshare.com/browser-market-share.aspx?qprid=2&qpcustommd=0>

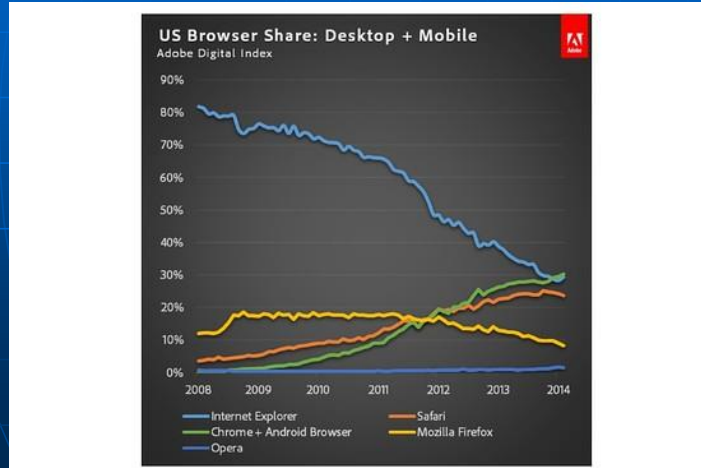


- Browser Statistics, http://www.w3schools.com/browsers/browsers_stats.asp

Web Browsers and Web Server Market Shares

■ Web Browsers Market Share

- Google Passes Microsoft in U.S. Browser Market Share, <http://blogs.wsj.com/digits/2014/06/05/google-passes-microsoft-in-u-s-browser-market-share/>

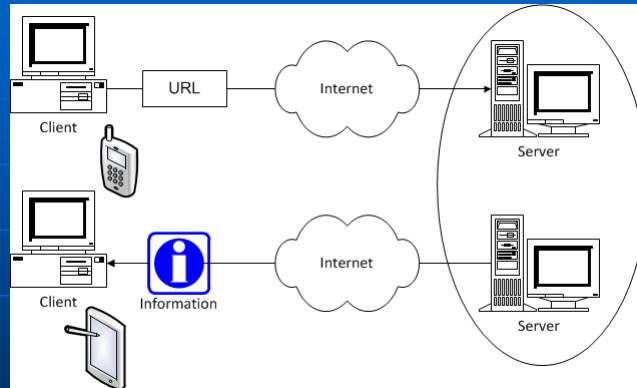


19

Web Server Market Shares

- NetCraft May 2014 Web Server Survey, <http://news.netcraft.com/archives/2014/05/07/may-2014-web-server-survey.html>
 - Microsoft threatening Apache's market lead
 - Total number of web sites
 - Web server developers: Market share of all sites
 - Web server developers: Market share of active sites
- Server Hardware Stat (4Q13), <http://www.gartner.com/newsroom/id/2671315>
 - HP 28.1%, IBM 26.5%, Dell 15.2%, Cisco 4.7%, Oracle 4.2%, other Vendors 21.3%.

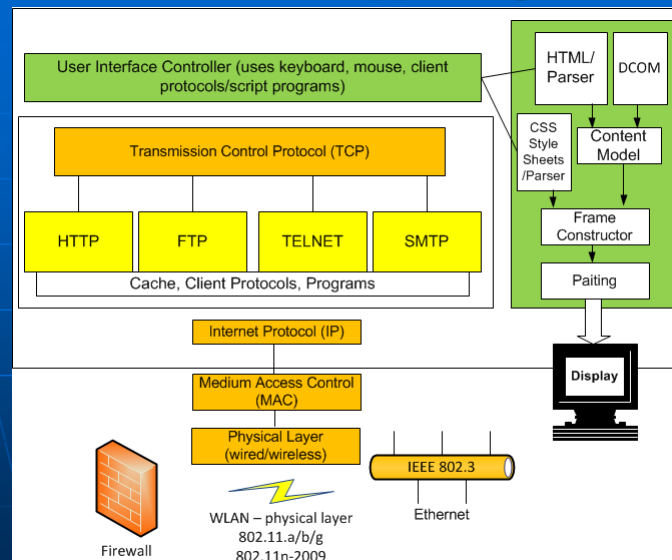
Web Client-Server Computing Model



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21

Web Browser and Supporting Protocols



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22

Design & Build A Web Site

- Web Site Design
 - Types of Web Site: E-commerce, Business and Services, Topic sites, personal sites,
 - System requirements – Analysis Phase
 - Modular Design – Design Phase
 - Presentation tier, Business logic tier, Data tier
 - Web server
 - Apache, IIS (Microsoft Internet Information Server), IBM WebSphere
 - Application server
 - Database server
 - Application authoring and Programming Tools

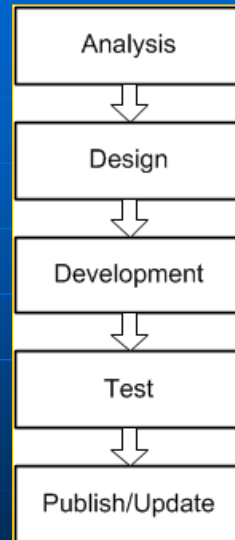
Software for Web Site Design

- HTML (HyperText Markup Language) Web page authoring
- XML (eXtensible Markup Language) page authoring
- Common Gateway Interface programming
- Generating and parsing HTML and XML
- Creating dynamic HTML pages
- HTTP clients and server Apps
- Web site management
- Databases and Apps
- Web applications

Design & Build An E-Commerce Site

■ Web Site Design

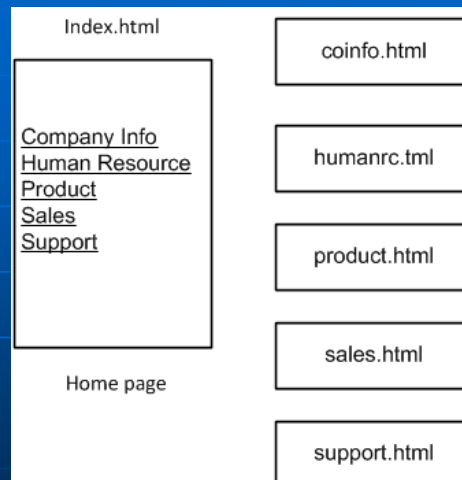
- Business and Services
- System requirements
- Modular Design
- Web server
- Database server
- Application server
- Programming Tools



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Design A Company Web Site



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26

Summary

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27