

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>

Topics

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

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** - <http://www.w3.org/TR/2014/REC-html5-20141028/>

Web Pages - HTML Documents

- A **Web page** normally includes text (content of the page) that mixed with "markup" tags for describing its structure, appearance, and function of the content.
- The HTML (**HyperText Markup Language**) language is a document-layout and hyperlink-specification language for encoding Web pages or documents, which may include text, image, and other supported media.

Web Pages - 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
- **HTML 5** - <http://www.w3.org/TR/2014/REC-html5-20141028/>

HTML5 Semantics, Structure and APIs

- **HTML 5** – A vocabulary and associated APIs for HTML and XHTML
- **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

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>, , , , <dl>, <dt>, <dd>, <figure>, <figcaption>, <div>, <main>
 - **Text-Level Semantics**: <a>, , , <small>, <s>, <cite>, <q>, <dfn>, <abbr>, <data>, <time>, <code>, <var>, <samp>, <kbd>, <sub>, <sup>, <i>, , <u>, <mark>, <ruby>, <rb>, <rt>, <rtc>, <rp>, <dbi>, <bdo>, ,
, <wbr>

HTML5 Semantics, Structure and APIs

- HTML 5, <http://www.w3.org/html/wg/drafts/html/CR/>
- The Elements of HTML (continue)
 - **Edits:** <ins>
 - **Embedded contents:** , <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>

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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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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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 located in the <BASE
    href="http://www.etcs.ipfw.edu/~lin/html/" -->
    <a href="headers.html"> Header Example
    <br>
  </h1>
</body>
</html>
```


Web Browsers and Web Pages

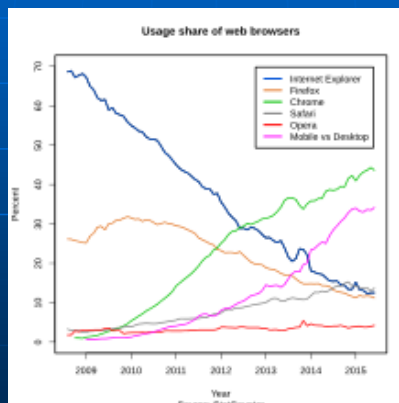
- A web browser is a software application for retrieving, presenting, and traversing information resources on the World Wide Web, (source: https://en.wikipedia.org/wiki/Web_browser)
- The major web browsers are
 - Firefox, <https://www.mozilla.org/en-US/firefox/new/>
 - Internet Explorer (IE 11), <http://windows.microsoft.com/en-us/internet-explorer/download-ie>
 - Google Chrome, <http://www.google.com/chrome/index.html>
 - Opera, www.opera.com
 - Safari, <https://support.apple.com/downloads/safari>
 - [dia.org/wiki/Web_browser](https://en.wikipedia.org/wiki/Web_browser)).

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Web Browsers and Web Pages

- 2015 Internet Browser Software Product Comparisons, <http://internet-browser-review.toptenreviews.com/>
- StatCounter – Web traffic analysis tool, <https://statcounter.com/>



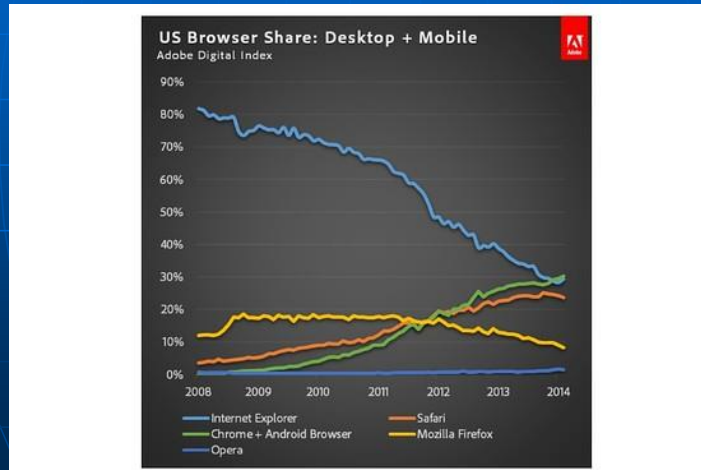
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Web Browsers and Web Server Market Shares

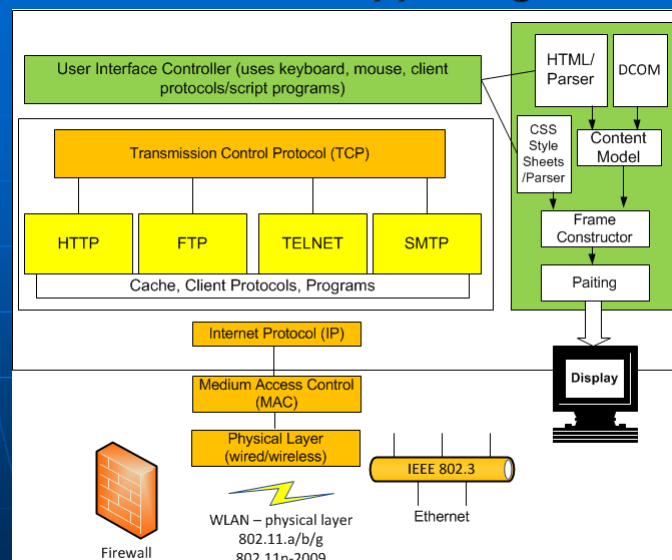
■ Web Browsers Market Share

- 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/>



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Web Browser and Supporting Protocols



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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

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

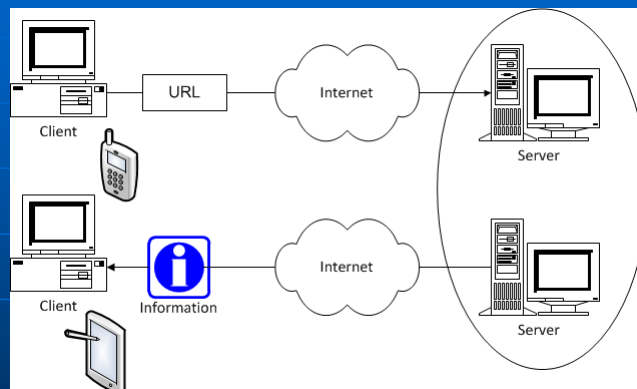
Web Server Market Shares

- April 2014 Web Server Survey,
<http://news.netcraft.com/archives/2014/04/02/april-2014-web-server-survey.html>
- 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%.

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Web Client-Server Computing Model



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Design & Build A Web Site

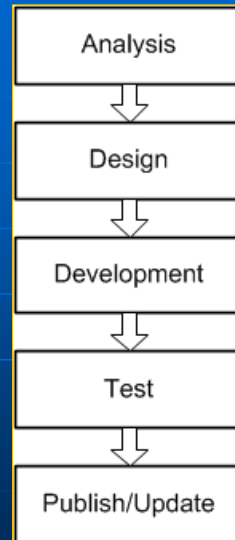
- Web Site Design
 - Types of Web Site: E-commerce, Business and Services, Topic sites, personal sites,
 - System requirements – Analysis Phase
 - Modular Design – Design Phase
 - Presentation tier, Business logic tier, Data tier
 - Web server
 - Apache, IIS (Microsoft Internet Information Server), IBM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

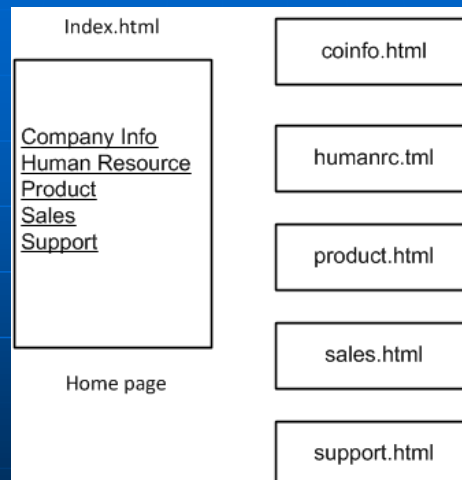
- Web Site Design
 - Business and Services
 - System requirements
 - Modular Design
 - Web server
 - Database server
 - Application server
 - Programming Tools



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Design A Company Web Site



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Summary

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