WEB SERVER , URL AND HTML

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Recap Lecture 2

- Requirement
- Requirement Engineering Activities
- Requirement Categories
- Representing Requirements

Lecture 3

- Web Server
- Web Server Components
- Web Server Workflow
- URL(Uniform Resource Locator)
- HTML (Hyper Text Markup Language)
- HTML Concepts
- HTML Tags
- HTML Elements
- HTML vs XHTML
- HTML Tags Details

Web Server

- It is a computing server that enables HTTP access to a web site.

- A web server runs many additional services behind the scene, e.g., a database, a server application framework, authentication, etc.

- Web server refer to either the hardware (the computer) or the software (the computer application) that helps to deliver web content that can be accessed through the Internet.
The term web server or webserver can mean one of two things:

  - A computer program that accepts HTTP requests and return HTTP responses with optional data content.

  - A computer that runs a computer program as described above.
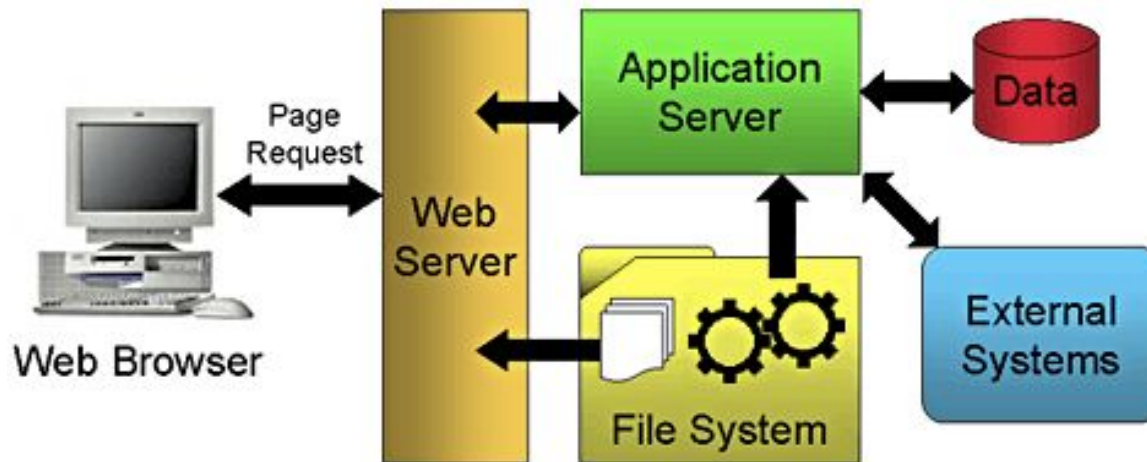
Web Server Components

A web server typically include the following major components:

- **networking support** : sending responses and receiving requests over the network;
- **address/domain resolution** : analyzing the correct IP address for the requested (virtual) domain, authenticating if necessary;
- **request processing** : serving static or dynamic content as appropriate;
- **response generation** : building the response and passing it to the networking component.
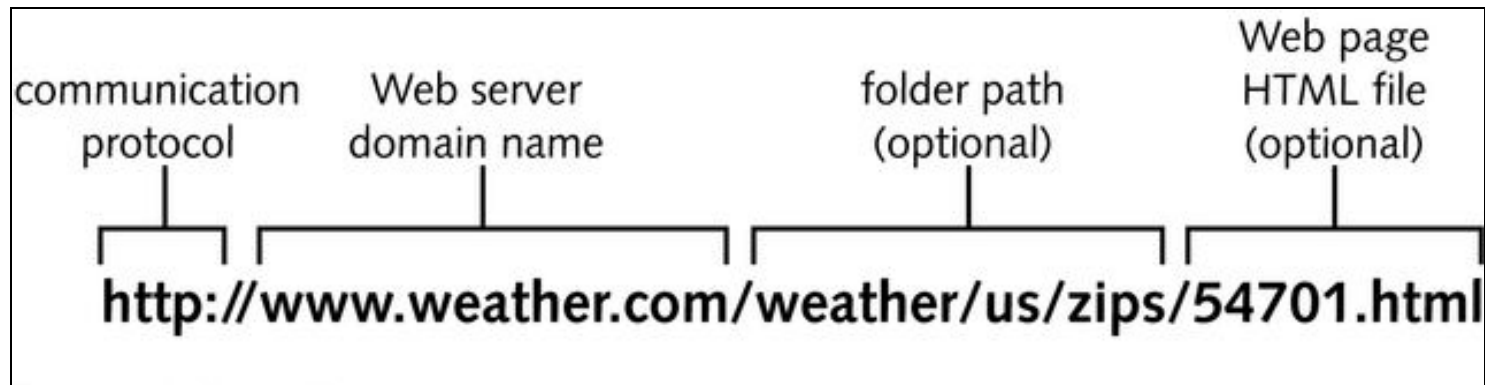
Web Server Workflow

A web server has the following workflow steps:

1. receive a HTTP request;
2. translate the resource "path" based on the requesting URL;
3. check access based on the requested information;
4. validate the user id and authenticate the user if necessary;
5. determine the *MIME* (Multi-purpose Internet Mail Extensions) type of the requested resource;
6. generate the dynamic response if needed, i.e., running local scripts;
7. send response back
8. log the request.

URL(Uniform Resource Locator)

- It contains four distinct parts: the protocol type, the machine name, the directory path and the file name.

- URI stands for Uniform Resource Identifier. URI is a text which is used to identify any resource or name in Internet.

communication protocol	Web server domain name	folder path (optional)	Web page HTML file (optional)

http://www.weather.com/weather/us/zips/54701.html

HTML (Hyper Text Markup Language)

- A markup language for describing web pages using tags
- The tags describe document content
- HTML documents are text documents that contain:
  - formatting instructions, called tags
  - the text that is to be displayed on a Web page

Markup Language

- It is a set of markup tags or set of characters or symbols
- Define a document's logical structure or how a document should be printed or displayed

HTML Concepts

HTML Documents
- HTML documents contain HTML tags and plain text
- HTML documents are also called web pages

HyperText
- A method by which you move around on the web - by clicking on special text called hyperlinks which bring you to the next page.
- You can go to any place on the Internet whenever you want by clicking on links
- There is no set order to do things in.

Markup
- It is what HTML tags do to the text inside them. They mark it as a certain type of text .

HTML Tags

- HTML **markup tags** are usually called HTML tags

- HTML tags are keywords (tag names) surrounded by **angle brackets** like <html>

- HTML tags range from formatting commands to controls that allow user input

- 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**
  - The end tag is written like the start tag, with a **forward slash** before the tag name
  - Start and end tags are also called **opening tags** and **closing tags**

- Example

         content

HTML ELEMENTS

- "HTML tags" and "HTML elements" are often used to describe the same thing.

- But strictly speaking, an HTML element is everything between the start tag and the end tag, including the tags

- Example:
    <p>This is a paragraph.</p>

HTML vs XHTML

HTML
- HTML is an application of SGML (Standard Generalized Markup Language)
- Allows an author to omit certain tags and use attribute minimization

XHTML
- The Extensible HyperText Markup Language, or XHTML, is an application of XML (Extensible Markup Language)
- It doesn't permit the omission of any tags or the use of attribute minimization

- Basically, XHTML is HTML (all the html tags are found in XHTML) that follows the rules of XML (because it is a family of XML).
- For example, while <br> is valid in HTML, it would be required to write <br /> in XHTML.

XHTML

- All tags must be in **lower case**
- All documents must have a **doctype**
- All documents must be **properly formed**
- All **tags must be closed**
- All **attributes** must be added properly
- Attributes **cannot be shortened**
- All tags **must be properly nested**

The <!DOCTYPE> Declaration

- The **<!DOCTYPE>** declaration tells browser that this is an HTML page.

- There are many different documents on the web, and a browser can only display an HTML page 100% correctly if it knows the HTML type and version used.

- HTML5 Example:

<p style="color:red; text-align:center;"><!DOCTYPE html></p>

```
HTML 4.01

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
```

Basic HTML Syntax

- All HTML documents begin with **<html>** and end with **</html>**

- Two other important HTML tags are the **<head>** tag and the **<body>** tag

- The **<head>** tag contains information that is used by the Web browser, and you place it at the start of an HTML document, after the opening **<html>** tag

- The **<head>** tag pair and the tags it contains are referred to as the **document head**

- Following the document head is the <body> tag, which contains the **document body**

Head Tags

Tag	Description
<head>	Defines information about the document
<title>	Defines the title of a document
<base>	Defines a default address or a default target for all links on a page
<link>	Defines the relationship between a document and an external resource
<meta>	Defines metadata about an HTML document
<script>	Defines a client-side script
<style>	Defines style information for a document

Head Tags

Title

- The <title> element is required in all HTML/XHTML documents.
- The <title> element:
  - Defines a title in the browser toolbar
  - Provides a title for the page when it is added to favorites
  - Displays a title for the page in search-engine results

Base

- The <base> tag specifies the base URL/target for all relative URLs in a page:

Head Tags

- The <base> tag specifies the base URL/target for all relative URLs in a page:

The HTML <base> Element

The <base> tag specifies the base URL/target for all relative URLs in a page:

```
<head>
<base href="http://www.w3schools.com/images/" target="_blank">
</head>
```

Link

- Link include a information e.g stylesheet in a pag
- <link href="style.css" rel="stylesheet" type="text/css" media="all">

Head Tags

META

- Another tag that can be added in the head is a <META> tag. It is used to help search engines index a page. There are several different meta names.
- The author meta:

  <META NAME="author" CONTENT="Nongjian Zhou">

Style

- Contains style information for a document, or a part of document. The specific style information is contained inside of this element, usually in the CSS. E.g

  <style type="text/css"> body { color:red; } </style>

Script

- <script language="javascript" type="text/javascript"> function myFunction()
- { alert('Hello world'); }
- </script>

HTML Attributes

- You use various parameters, called **attributes**, to configure many HTML tags

- You place an attribute before the closing bracket of the starting tag, and separate it from the tag name or other attributes with a space

Basic HTML Syntax

```
<html>
<head>
<title>Hello World</title>
</head>
<body>
<h1>Hello World (this is the heading 1 tag)</h1>
<h2>This line is formatted with the heading 2 tag</h2>
<center>This line is centered</center>
<p>This body text line contains several character formatting tags including
<i>italics</i>, <b>bold</b>, and <u>underline</u>. The following code line
creates a line break followed by a horizontal rule:</p>
<hr>
<img src="teddybear.gif">This line contains an image.
</body>
</html>
```

Figure 1-3   A simple HTML document

Text layout

```
<html>
<!-- page02.html    -->
<!-- Demo web page   -->

<head>
  <title>Title for Page</title>
</head>

<body>
 This is a whole lot of text that
 goes on   and   on   and
 on
 and

 on
 .
 .
 .
</body>

</html>
```

•the BODY can contain multiple lines of text

– text layout and spacing is pretty much ignored by the browser

– every sequence of whitespace is interpreted as a single space

– browser automatically wraps the text to fit the window size

Overriding default layouts

```
<html>
<!-- page03.html    -->
<!-- Demo web page   -->
<head>
 <title>Title for Page</title>
</HEAD>
<body>
<p>
               This paragraph is
    indented to show the use of tags.
    </p>
    <p>
    This is a paragraph of text<br/>
    made up of two lines.
    </p>
    <p>
    This is another paragraph with a
      GAP   between
    some of the words.
    </p>
    <p>
       This paragraph is<br/>
    indented on the first line<br/>
    but not on subsequent lines.
    </p>
</body>

</html>
```

- for the most part, layout of the text must be left to the browser

- can override some text layout

  – can cause a line break using the <br/> tag (no closing tag)

  – can specify a new paragraph (starts on a new line, preceded by a blank line) using <p>...</p>

  – can force a space character using the symbol for a non-breaking space:

Separating blocks of text

```
<html>
<!-- page04.html   -->
<!-- Demo web page  -->

<head>
  <title>Title for Page</title>
</head>

<body>
 <h1>Major heading 1</h1>
 <p>
 Here is some text.
 </p>

 <h2>Subheading</h2>
 <p>
 Here is some subtext.
 </p>

 <hr/>

 <h1>Major heading 2</h1>
 <p>
 Here is some more text.
 </p>
</body>

</html>
```

- •can specify headings for paragraphs or blocks of text
  - <h1>…</h1> tags produce a large, bold heading
  - <h2>…</h2> tags produce a slightly smaller heading
    - …
  - <h6>…</h6> tags produce a tiny heading

- •can insert a horizontal rule to divide sections
  - <hr/> draws line across window
  - <hr width="50%" /> sets width
  - <hr size=10 /> sets thickness

Aligning text

```
<html>
<!-- page05.html   -->
<!-- Demo web page -->

<head>
 <title>Title for Page</title>
</head>

<body>
 <h1 style="text-align:center">Centered Heading</h1>
 <p>
 Here is some left-justified text
 (which is the default in HTML).
 </p>

 <p style="text-align:center">
 Here is some centered text.
 </p>

 <div style="text-align:right">
 <h2>Right-justified Heading</h2>
 <p>Here is some right-justified text.</p>
 </div>
</body>

</html>
```

- can specify how elements should be aligned (default is left-justified)
  - utilize STYLE attribute of tag

- to justify more than one element as a group, use DIV tags
  - all elements enclosed in DIV are formatted similarly

Text styles

```
<html>
<!-- page06.html    -->
<!-- Demo web page   -->

<head>
 <title>Title for Page</title>
</head>

<body>
 <p>
 Text can be emphasized using
 <b>bold</b>, <i>italics</i>, or even
 <big>resizing</big>.  <br/>
 <u>Underlining</u> text is not
 generally recommended since it looks
 too much a like a hyperlink.  <br/>
 The typewriter font is good for
 displaying code:
 <small><tt>sum = sum + i;</tt></small>
 </p>
</body>

</html>
```

•can specify styles for fonts

–   … specify bold

–   <i>… </i> specify italics

–   <u>… </u> specify underlined

–   <tt>… </tt> specify typewriter-like (fixed-width) font

–   <big>… </big> increase the size of the font

–   <small>… </small> decrease the size of the font

Note: if elements are nested, the order of opening/closing is important!
- *(must be LIFO)*

More text styles

```
<html>
<!-- page07.html    -->
<!-- Demo web page   -->

<head>
 <title>Title for Page</title>
</head>

<body>
 <p>
 <span style="color:red">Subscripts</span>
 (e.g., x<sub>1</sub>) and
 <span style="color:blue">superscripts
 </span> (e.g., 2<sup>10</sup>)
 can be embedded directly in text.
 </p>

 <p>
 In order to avoid affecting line
 spacing, usually it should be made
 smaller (e.g.,
 <small>2<sup>10</sup></small>).
 </p>
</body>

</html>
```

- <sub>… </sub> specify a subscript

- <sup>… </sup> specify a superscript

- <p style="color:red"> …</p> for paragraphs

- … for inline text

The <span> tag is used to group inline-elements in a document.

More text grouping

```
<html>
<!-- page08.html  -->

<head>
 <title>Title for Page</title>
</head>

<body>
 <p>
 <tt><pre>
   for (i = 0; i < 10; i++) {
      sum = sum + i;
   }
 </pre></tt>
 </p>

 <p>
 Eagleson's Law states that:
 <blockquote>
 Any code of your own that you haven't
 looked at for six or more months
 might as well have been written by
 someone else.
 </blockquote>
 </p>
</body>

</html>
```

– <pre>…</pre> specify text that is to be displayed as is (line breaks and spacing are preserved)

  •*useful for code or whenever you want text to fit a specific layout*

– <blockquote>…</blockquote> specify text that is to be indented on both margins

  •*useful for quotations or for indenting text in subsections*

Lists

```
<html>
<!-- page09.html  -->

<head>
 <title>Title for Page</title>
</head>

<body>
 <p>
 <ol>
  <li>First thing</li>.
  <li>Second thing</li>.
  <li>Third thing</li>.
 </ol>
 </p>

 <p>
 <dl>
  <dt>HTML</dt>
  <dd>HyperText Markup Language</dd>
  <dt>HTTP</dt>
  <dd>HyperText Transfer Protocol</dd>
 </dl>
 </p>
</body>

</html>
```

• there are 3 different types of list elements

– … specifies an ordered list (using numbers or letters to label each list item)
  • identifies each list item

  • *can set type of ordering, start index*

– … specifies unordered list (using a bullet for each)
  • identifies each list item

– <dl>…</dl> specifies a definition list
  • <dt> identifies each term
  • <dd> identifies its definition

Hyperlinks

```
<html>
<!-- page10.html  -->

<head>
  <title>Title for Page</title>
</head>

<body>
<p>
 <a href="http://www.imsciences.edu.pk">
 Imsciences Peshawar</a>
 </p>
</p><a href="http://uop.edu.pk" target="_blank">
 UOP</a>
</p>
</body>

</html>
```

- •perhaps the most important HTML element is the hyperlink, or ANCHOR

  – …

    •where URL is the Web address of the page to be displayed when the user clicks on the link

    •*if the page is accessed over the Web, must start with* http://

    •*if not there, the browser will assume it is the name of a local file*

  – …

    •causes the page to be loaded in a new window

Hyperlinks (cont.)

```
<html>
<!-- page11.html -->

<head>
 <title>Title for Page</title>
</head>

<body>
 <p align="center">
 [ <a href="#HTML">HTML</a> |
  <a href="#HTTP">HTTP</a> |
  <a href="#IP">IP</a> |
  <a href="#TCP">TCP</a> ]
 </p>
 <p>
 Computer acronyms:
 <dl>
  <a name="HTML"></a><dt>HTML
  <dd>HyperText Markup Language
  <a name="HTTP"></a><dt>HTTP
  <dd>HyperText Transfer Protocol
  <a name="IP"></a><dt>IP
  <dd>Internet Protocol
  <a name="TCP"></a><dt>TCP
  <dd>Transfer Control Protocol
 </p>
</body>
</html>
```

• for long documents, you can even have links to other locations in that document

- …

  • where ident is a variable for identifying this location

- …

  • will then jump to that location within the file

- …

  • can jump into the middle of another file just as easily

Thanks. Any Questions?