

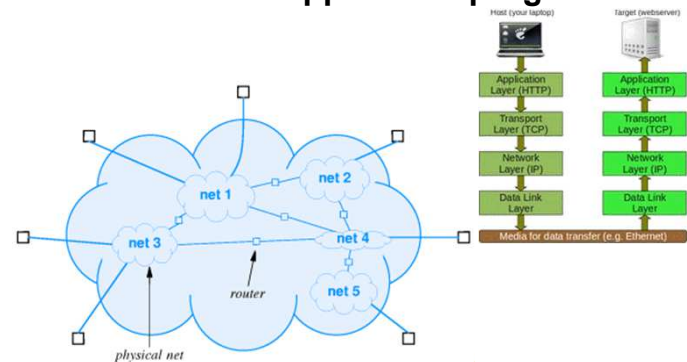
## History of the Internet

- ❖ It is desired to have a single network
  - ◆ Interconnect LANs using WAN Technology
  - ◆ Access any computer on a LAN remotely via WAN technology
- ❖ Department of Defense sponsors research
  - ◆ ARPA = Advanced Research Projects Agency
  - ◆ Systems Survivability utilizing Redundancy
  - ◆ Connect all computers on military bases worldwide
  - ◆ Research Began 1969, ARPANET operational 1985
- ❖ Specification made Available to Public
  - ◆ *Open System*=Anyone can build compatible system
  - ◆ ARPANET Internetworking Protocol = TCP/IP
- ❖ ARPANET extended to civilian use and is now called *The Internet*

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## The Internet - A Huge Virtual Network

- ❖ All details of physical networks hidden from users and application programs



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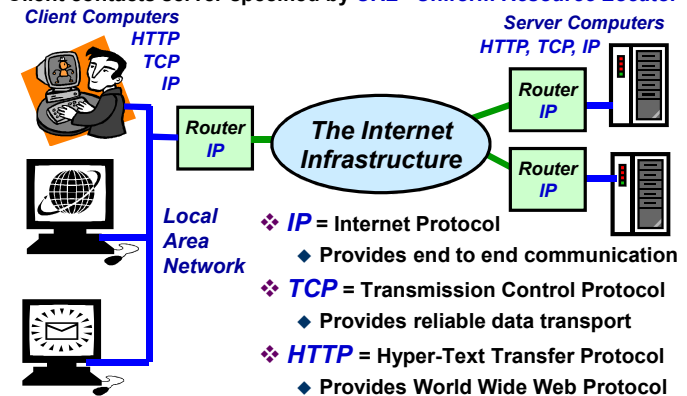
## Global Information Infrastructure

- ❖ Infrastructure = Basic Service on which society depends
  - ◆ Roads, telephones, mail, electricity, Internet
- ❖ Internet is general purpose and efficient
  - ◆ Almost any network application can use
  - ◆ Supports a wide variety of services
  - ◆ TCP/IP provides communication facilities
  - ◆ HTTP, HTTPS, and FTP provide application facilities
  - ◆ Accommodates changes in computers, networks, and services

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## Client Server Network Connectivity

Client contacts server specified by *URL =Uniform Resource Locator*



- ❖ *IP* = Internet Protocol
  - ◆ Provides end to end communication
- ❖ *TCP* = Transmission Control Protocol
  - ◆ Provides reliable data transport
- ❖ *HTTP* = Hyper-Text Transfer Protocol
  - ◆ Provides World Wide Web Protocol

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## Accessing a Web Site

- ❖ HTTP (Hyper Text Transfer Protocol) locates and accesses web sites files located on the web server
- ❖ Each web site has **URL (Uniform Resource Locator)**
  - ◆ <http://www.islandman.org>      ◆ .edu (education)
  - ◆ <http://www.umuc.edu>             ◆ .com (commercial)
  - ◆ <http://mail.yahoo.com>           ◆ .gov (government)
  - ◆ <http://maps.google.com>         ◆ .mil (military)
  - ◆ <ftp://ftp.islandman.org>         ◆ .net (network admin.)
  - ◆     ◆ .org (non-profit)

<http://www.umuc.edu/cs/courses/index.html>

Protocol
Server
Domain
TLD
Folder Path
File

- ❖ **Domain Name Server** matches URL with **IP address**
  - ◆ [www.umuc.edu](http://www.umuc.edu) → 131.171.8.112 ( Octet <= 255)
  - ◆ [www.whois.ws](http://www.whois.ws) → 69.25.212.161

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## The World Wide Web

- ❖ WWW utilizes the Internet to link all computers with **Hypertext Documents**

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## HTML –HyperText Markup Language

- ❖ HTML is a format description language
  - ◆ Web publishing file format
    - ◆ Processor Independence
    - ◆ Browser Independence
  - ◆ Provides layout information for:
    - ◆ Text, Images, Animation, Sound
    - ◆ Interaction with server forms and programs
  - ◆ HTML Element Tags
    - ◆ ASCII text based
    - ◆ Denoted by enclosing in < >
    - ◆ Not case sensitive – May use upper or lower case
- ❖ HTML is **NOT** a programming language

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## World Wide Web Consortium, or W3C

- ❖ **W3C**, created a set of standards or that all browsers should follow
  - ◆ The W3C has no enforcement power
  - ◆ Uniform approach to Web page creation beneficial
- ❖ Older HTML tags are often **Deprecated**, or phased out, by the W3C
  - ◆ Older browsers support older HTML versions, but not newer versions of HTML
  - ◆ Latest browser needed for newer HTML support
  - ◆ XHTML was the path followed by W3C but halted
  - ◆ HTML 5 is still in draft form, but good support in Chrome, FireFox, and Opera browsers
    - ◆ HTML 5 is the future but Microsoft IE is slowest to implement

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## HTML: Document Elements

- ❖ `<html>` Beginning of html code
- ❖ `<head>` Beginning of head
- ❖ `<title>My Page</title>` Document title
- ❖ `</head>` End of head closing tag
- ❖ `<body>` Beginning of body
- ❖ `</body>` End of body closing tag
- ❖ `</html>` End of html code closing tag

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## The Structure of an HTML File


- ❖ An HTML document is divided into two main sections: the head and the body
- ❖ The *head element* contains information about the document, for example the document title, character encoding, or the keywords
- ❖ The content of the *head element* is not displayed within the Web page
- ❖ The *body element* contains all of the content to appear on the Web page
- ❖ The *body element* contains HTML code that tells the browser how to render the content

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## HTML3.2: Simple Document Example

HTML Tag nesting order: Last Open is First Closed

1. `<HTML>`
2. `<HEAD>`
3. `<TITLE>`
4. `CMST385 is fun!`
5. `</TITLE>`
6. `</HEAD>`
7. `<BODY>`
8. `<H3>`
9. `My first HTML f`
10. `</H3>`
11. `</BODY>`
12. `</HTML>`

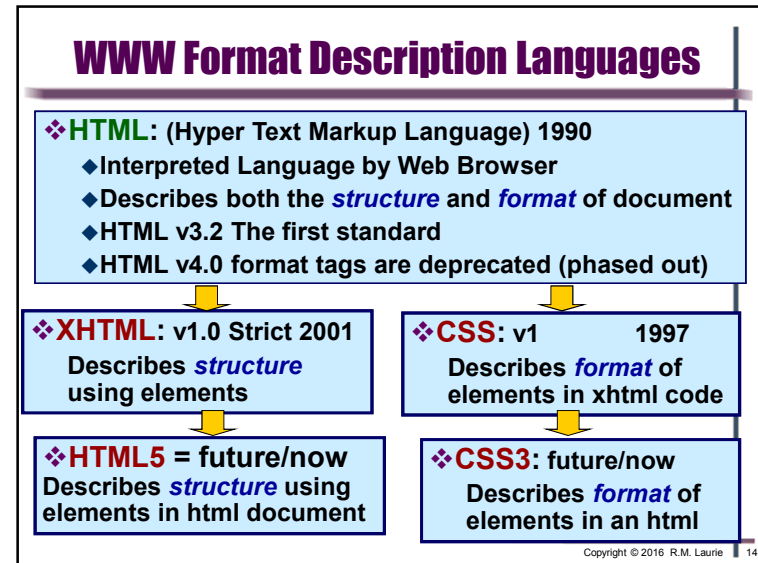
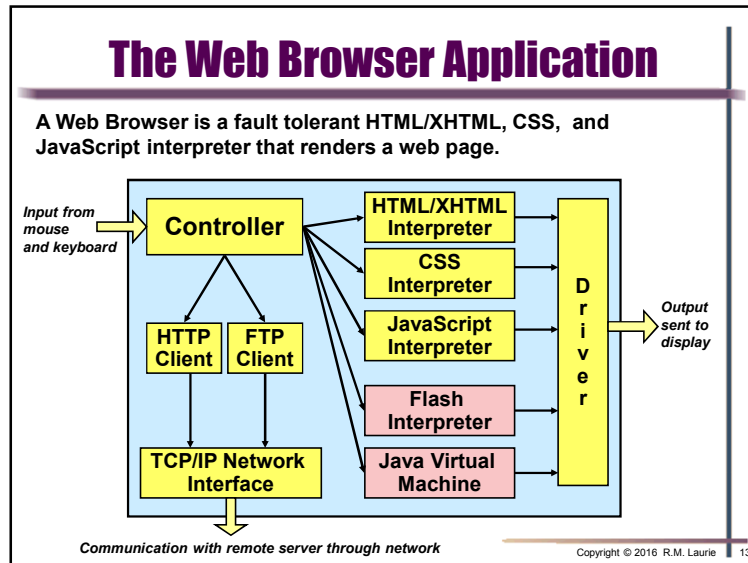


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## White Space and HTML

- ❖ HTML file documents are composed of text characters and *white space*
- ❖ *White space* is the blank space, tabs, and line breaks within the file
  - ◆ *White space* makes HTML code more readable
  - ◆ Line break text in HTML not displayed in browser
  - ◆ Multiple spaces in HTML will only display one space in browser
  - ◆ Tabs in HTML will not be displayed in browser
- ❖ `<pre>` `</pre>` preformatted element
  - ◆ Can be used to display all whitespace in browser
  - ◆ Avoid and use HTML structure elements

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- ## XHTML Requirements
1. XHTML elements contain start and end tags
  2. Elements and attributes must be *lower case*
  3. Attribute values must be enclosed in *"double quotes"* or *'single quotes'*
  4. DOCTYPE must be included  

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
```
  5. Html element must include xmlns attribute  

```
<html xmlns="http://www.w3.org/1999/xhtml">
```
  6. Nesting order: *Last Opened must be First Closed*
  7. *Empty elements* that contain only attributes and do not mark up text may end with `</>`  

```
<img /> <hr /> <br />
```
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## XHTML: First Document Example

```

1. <?xml:version="1.0" ... ← Don't use because IE goes into quirks mode
2. <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
3. "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
4. <html xmlns = "http://www.w3.org/1999/xhtml">
5. <head>
6. <title>Welcome to XHTML</title>
7. </head>
8. <body>
9. <p>
10.   What are the differences between this and HTML?
11. </p>
12. </body>
13. </html>
    
```

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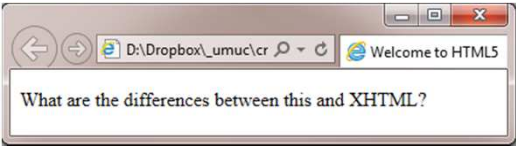
## Code Validation

- ❖ World Wide Web Consortium = W3C
  - ◆ Standards organization for the web
  - ◆ Online validation service at <http://validator.w3.org>
- ❖ XHTML version 1 comes in four flavors:
  - ◆ XHTML 1.0 Strict: Deprecated elements, attributes, frames, and link targets are not allowed in XHTML 1.0 Strict. Very similar to XHTML 1.1
  - ◆ XHTML 1.0 Transitional: Includes all elements and attributes of XHTML Strict and presentational attributes, deprecated elements, and link targets.
  - ◆ XHTML 2.0: discontinued a dead end
  - ◆ XHTML 5.0: future, improving browser support
  - ◆ HTML 5.0: informal standards, improving support

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## HTML5: Is simpler and less strict

1. `<!DOCTYPE html>`
2. `<html lang="en">` *<!-- Language attribute is English -->*
3. `<head>`
4. `<meta charset="utf-8">` *<!-- encoding is Unicode -->*
5. `<title>Welcome to HTML5</title>`
6. `</head>`
7. `<body>`
8. `<p>`
9. What are the differences between this and XHTML?
10. `</p>`
11. `</body>`
12. `</html>`



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## X/HTML: Comments

- ❖ X/HTML Comments are considered hidden text
  - ◆ Comments are ignored by the web browser rendering engine and display nothing in client area
  - ◆ Permits writing notes to those that view xhtml code
  - ◆ Can be used for debugging by disabling sections of code which may extend across multiple lines.
- ❖ Syntax:
 

```
<!-- This is a Comment -->
```

  - ◆ Can extend across multiple lines
  - ◆ Can not contain "-->" in comment
  - ◆ Can not nest comments

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## X/HTML: Block Elements

- ❖ Paragraph = Normal text
  - ◆ `<p>`This is a paragraph`</p>`
- ❖ Headings = Bold text
  - ◆ `<h1>`XX-Largest`</h1>` = XX-Large
  - ◆ `<h2>`X-Larger`</h2>` = X-Large
  - ◆ `<h3>`Large`</h3>` = Large
  - ◆ `<h4>`Medium`</h4>` = Medium
  - ◆ `<h5>`Small`</h5>` = Small
  - ◆ `<h6>`X-Small`</h6>` = X-Small
- ❖ Warning: Nesting of block level elements is not permitted!

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## X/HTML: Horizontal Rules

- ❖ The Horizontal Rule `<hr>` element draws a horizontal bar across the web page
- ❖ `<hr>` is a block level element
  - ◆ Typically used to separate document sections
  - ◆ Represents element placement not text markup
  - ◆ For XHTML, `<hr />` is an *empty element* and the shorter form may be used instead of an end tag
    - ◆ For HTML `<hr>` is also acceptable as no closing tag is required
- ❖ Avoid "sandwich" effect don't overuse
- ❖ Limit to one `<hr>` element per web page
  - ◆ **Warning: Nesting of `<hr>` within heading or paragraph elements is NOT permitted, because it is a block level element**

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## X/HTML: Block Elements

```

1. <!DOCTYPE html>
2. <html lang="en">
3.   <head>
4.     <meta charset="utf-8">
5.     <title>X/HTML Block Level Elements</title>
6.     <!-- Head section executes first -->
7.   </head>
8.   <body>
9.     <!-- Body section displayed in browser -->
10.    <p>
11.      This is a paragraph
12.    </p>
13.    <h1>This is a XX-Large heading</h1>
14.    <hr>
15.    <h2>This is a X-Large heading</h2>
16.    <h3>This is a Large heading</h3>
17.    <h4>This is normal sized text but bold</h4>
18.    <h5>Small</h5>
19.    <h6>X-Small</h6>
20.  </body>
21. </html>
    
```

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## HTML Page Structure

```

<html>
  <head>
    <title>Page title</title>
  </head>
  <body>
    <h1>This is a heading</h1>
    <p>This is a paragraph.</p>
    <p>This is another paragraph.</p>
  </body>
</html>
    
```

Only the `<body>` area (the white area) is displayed by the browser.

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## Assignment 1 - Part A: Block Level Elements

- ❖ Write the HTML code to display the following and your interpretation of Freedom with your name.
- ❖ Print the HTML valid code and the browser output.

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