



HTML/CSS/JS

Web Development



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- ◆ HTML
- ◆ CSS/CSS3
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HTML Basics

HTML, Text, Images, Tables

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HTML 101
100

```
1<!DOCTYPE HTML PUBLIC "-//W3C//DTD
2 "http://www.w3.org/TR/html4/strict.
3 <html>
4 <head>
5 <title>Example</title>
6 <link rel="stylesheet" href="s
7 </head>
8 <body>
9 <div id="header">
10 <h1><a href="#" title="Back
11 </div>
12 <div id="toolbar">
13 <span class="left">Today <sp
14 <span class="right">
15 <span id="time">&ampnbsp</sp
16 <select id="timezone">
17 <option value="-12">(GMT
18 <option value="-11">(GMT
```

- ◆ Hypertext Markup Language
- ◆ HTML Concepts
- ◆ HTML Document Structure
- ◆ HTML Common Elements
- ◆ Section Elements
- ◆ Semantic Structural Tags



Hypertext Markup Language

```
<!DOCTYPE html>
<html>
  <head>
    <title>Welcome</title>
    <meta http-equiv="Content-Type" content="text/html; charset=UTF-8" />
    <meta name="viewport" content="width=device-width, initial-scale=1.0" />
    <link rel="stylesheet" href="style.css" />
  </head>
  <body>
    <h1>Hello World!</h1>
    <p>This is my first web page.</p>
  </body>
</html>
```

Hypertext Markup Language

- ◆ HTML – Hyper Text Markup Language
 - ◆ A notation for describing
 - ◆ document structure (semantic markup)
 - ◆ formatting (presentation markup)
 - ◆ Looks (looked?) like:
 - ◆ A Microsoft Word document
- ◆ The markup tags provide information about the page content structure
- ◆ A HTML document consists of many tags

HTML – Past, Present, Future

- ◆ 1991 – HTML first mentioned – Tim Berners-Lee – HTML tags
- ◆ 1993 – HTML (first public version, published at IETF)
- ◆ 1993 – HTML 2 draft
- ◆ 1995 – HTML 2 – W3C
- ◆ 1995 – HTML 3 draft
- ◆ 1997 – HTML 3.2 – “Wilbur”
- ◆ 1997 – HTML 4 – “Cougar” – CSS
- ◆ 1999 – HTML 4.01 (final)
- ◆ 2000 – XHTML draft
- ◆ 2001 – XHTML (final)
- ◆ 2008 – HTML5 / XHTML5 draft
- ◆ 2011 – feature complete HTML5
- ◆ 202x – HTML5 – final specification



Creating HTML Pages

- ◆ An HTML document must have an `.htm` or `.html` file extension
- ◆ HTML files can be created with text editors:
 - ◆ NotePad, NotePad ++, PSPad
- ◆ Or HTML editors (WYSIWYG Editors):
 - ◆ Microsoft Visual Studio
 - ◆ Microsoft Code
 - ◆ Others...
- ◆ Require un Browser to view ☺

Using Browser Developer Tools

- ◆ The F12 Developer Tools enables developers to:

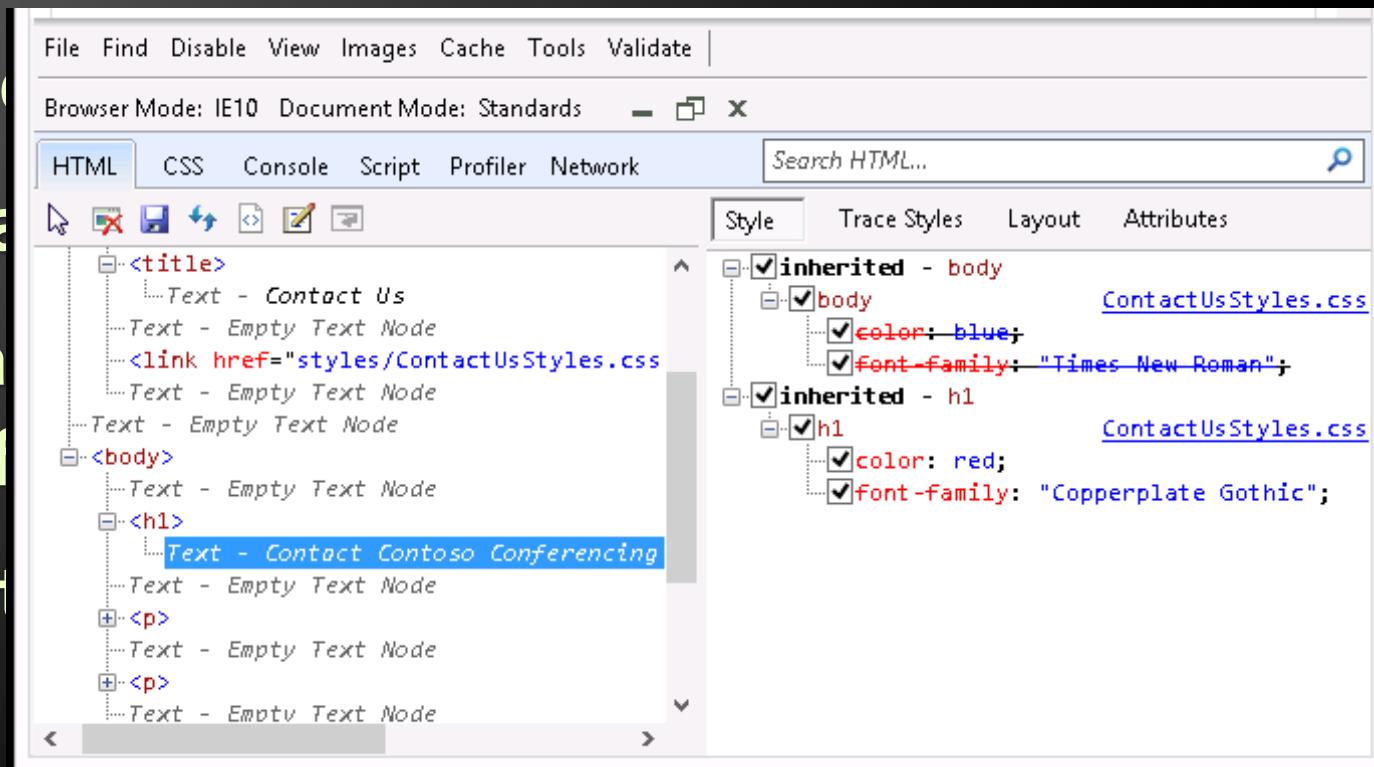
- ◆ Inspect and validate HTML and CSS

- ◆ Run and debug scripts

- ◆ Profile page performance

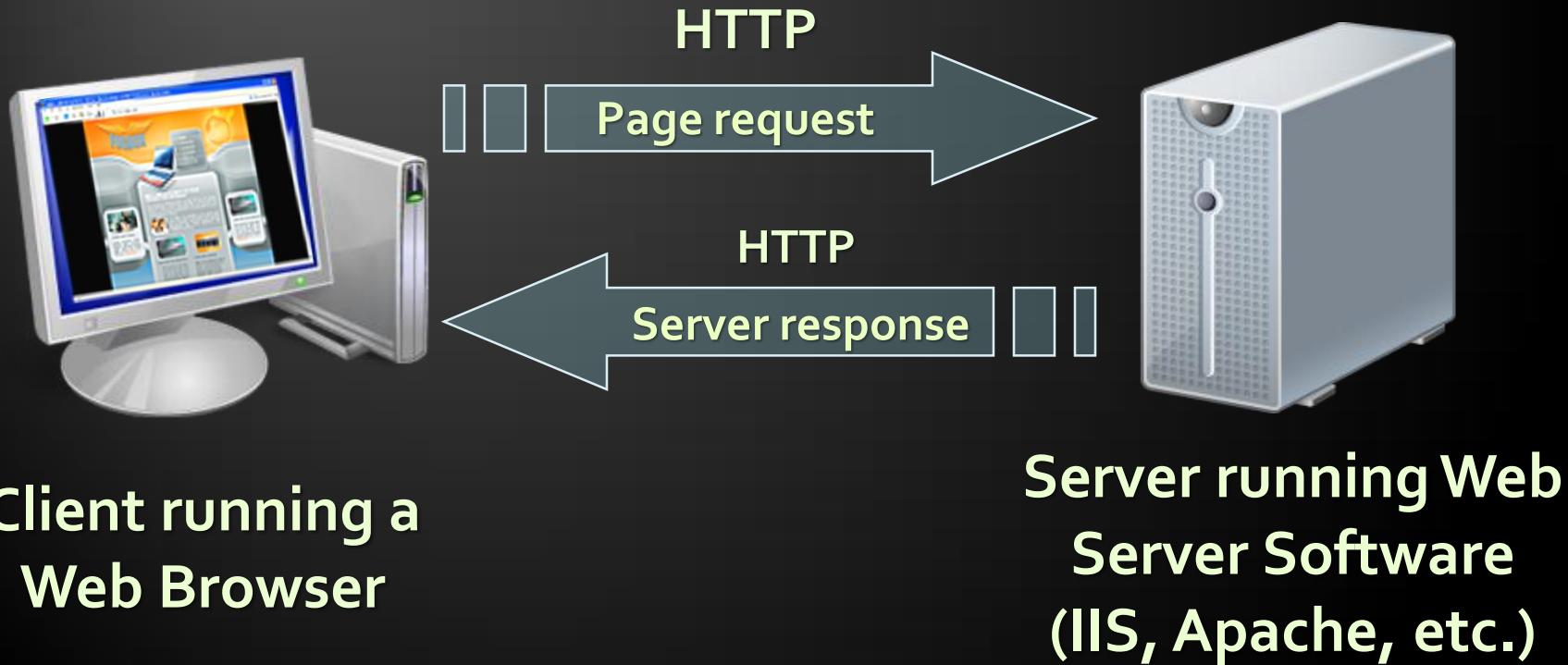
- ◆ View a page's source code and a version of the page

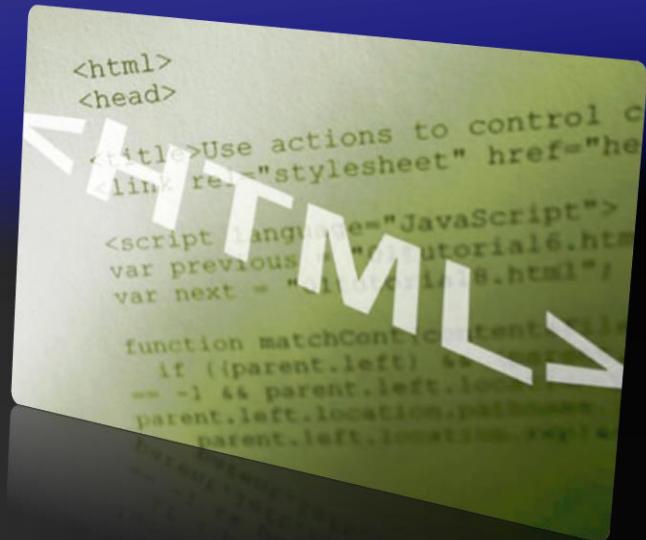
- ◆ Network traffic analysis



How the Web Works?

- ◆ WWW use classical client / server architecture
 - HTTP is text-based request-response protocol





Live Demo

F12 Browser Developer Tools



HTML Terminology

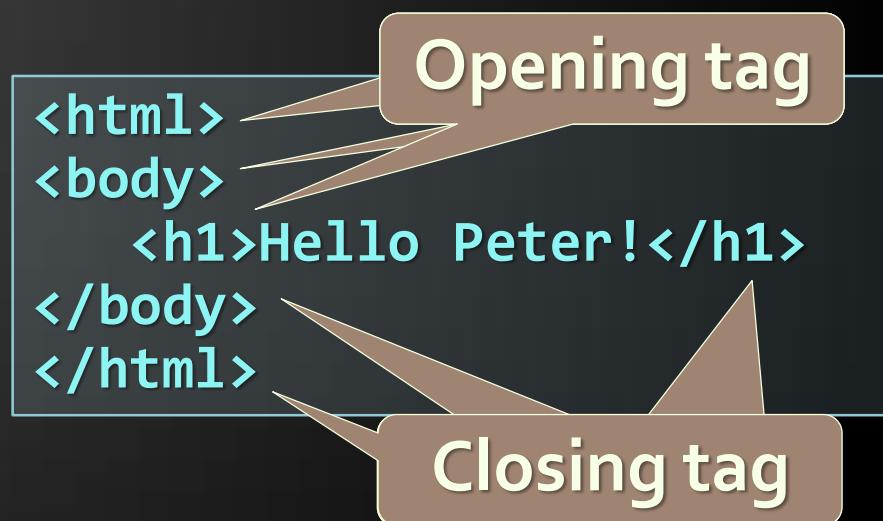
Tags, Attributes and Elements



- ◆ Concepts in HTML

- ◆ Tags
 - ◆ Opening tag and closing tag
 - ◆ The smallest piece in HTML
- ◆ Attributes
 - ◆ Properties of the tag
 - ◆ Size, color, etc...
- ◆ Elements
 - ◆ Combination of opening, closing tag and attributes

- ◆ Tags are the smallest piece in HTML Document
 - ◆ Start with "<" and end with ">"
- ◆ Two kinds of tags
 - ◆ Opening
 - ◆ Mark the start of an HTML element
 - ◆ Closing
 - ◆ Mark the end of an HTML element
 - ◆ Start in "</"



- ◆ Attributes are properties of HTML Elements
 - ◆ Used to set size, color, border, etc...
 - ◆ Put directly in the tags
 - ◆ Has value surrounded by " "
 - ◆ The value is always a string

```
<!-- makes a hyperlink to Google -->  
<a href="http://google.com"> go to Google</a>  
  
<!-- makes a horizontal line -->  
<hr width="95%" size="3px"/>  
  
<!-- adds an image in the web page -->  

```

Some tags don't have closing tag

- ◆ Tags can have attributes
 - ◆ Attributes specify properties and behavior

- ◆ Example:

Attribute alt with value "logo"

```

```

- ◆ Few attributes can apply to every element:
 - ◆ id, style, class, title
 - ◆ The id is unique in the document
 - ◆ Content of title attribute is displayed as hint when the element is hovered with the mouse
 - ◆ Some elements have obligatory attributes

- ◆ HTML Elements are combination of tags and attributes
 - ◆ Opening tag with some or none attributes and a closing tag

```
<a href="http://google.com"> go to Google</a>
```

```
<html>...</html>
```

HTML Terminology

Live Demo



HTML Document Structure

HTML Document, Doctype, Head, Body



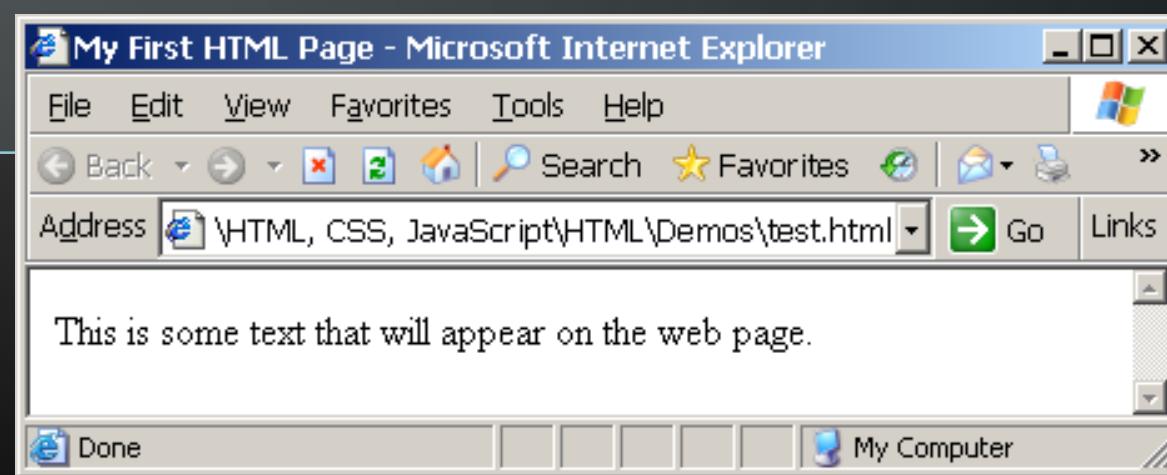
HTML Document Structure

- ◆ Some elements are essential to each HTML Document:
 - ◆ **html, head, body, doctype**
- ◆ The **html** element
 - ◆ Used to mark the beginning and ending of a HTML document
 - ◆ All the content of the web page is inside this tag

```
<html>  
  ...  
</html>
```

test.html

```
<!DOCTYPE HTML>
<html>
  <head>
    <title>My First HTML Page</title>
  </head>
  <body>
    <p>This is some text...</p>
  </body>
</html>
```



First HTML Page: Tags

```
<!DOCTYPE HTML>
<html>
  <head>
    <title>My First HTML Page</title>
  </head>
  <body>
    <p>This is some text...</p>
  </body>
</html>
```

Opening tag

Closing tag

An HTML element consists of an opening tag, a closing tag and the content inside.

First HTML Page: Header

```
<!DOCTYPE HTML>
<html>
  <head>
    <title>My First HTML Page</title>
  </head>
  <body>
    <p>This is some text...</p>
  </body>
</html>
```

HTML header

First HTML Page: Body

```
<!DOCTYPE HTML>
<html>
  <head>
    <title>My First HTML Page</title>
  </head>
  <body>
    <p>This is some text...</p>
  </body>
</html>
```

HTML body

- ◆ **Hyperlink Tags**

```
<a href="http://www.telerik.com/"  
    title="Telerik">Link to Telerik Web site</a>
```

- ◆ **Image Tags**

```

```

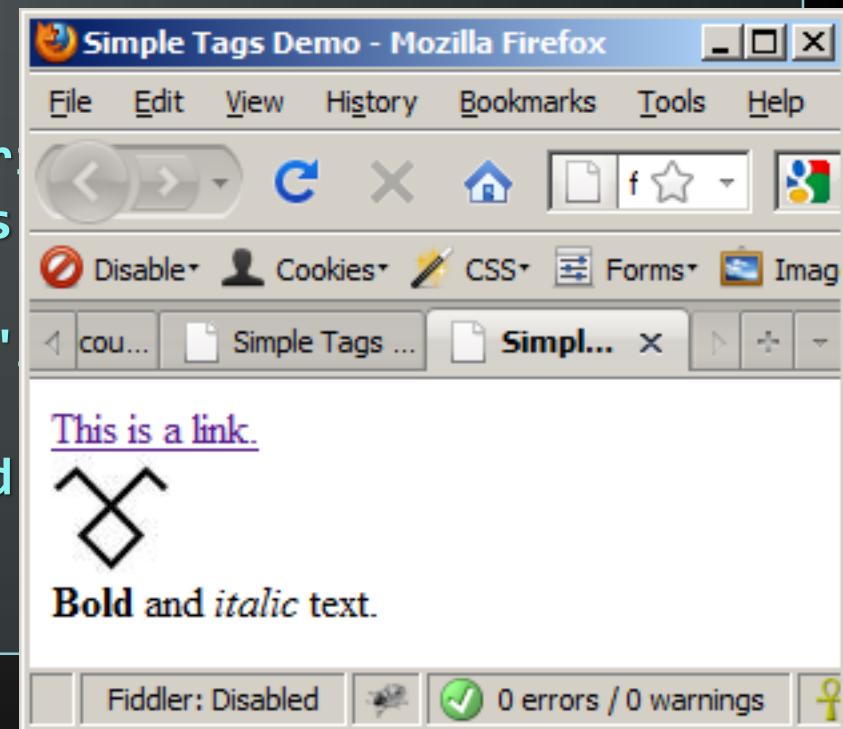
- ◆ **Text formatting tags**

```
This text is <em>emphasized.</em>  
<br />new line<br />  
This one is <strong>more emphasized.</strong>
```

Some Simple Tags – Example

some-tags.html

```
<!DOCTYPE HTML>
<html>
<head>
    <title>Simple Tags Demo</title>
</head>
<body>
    <a href="http://www.telerik.com">This is a link to the
        "Telerik site">This is a link to the Telerik site.
    <br />
    
    <br />
    <strong>Bold</strong> and <i>italic</i> text.
</body>
</html>
```



The <!DOCTYPE> Declaration

- ◆ HTML documents must start with a document type definition (DTD)
 - It tells web browsers what type is the served code
 - Possible versions: HTML 4.01, XHTML 1.0 (Transitional or Strict), XHTML 1.1, HTML 5
- ◆ Example:

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"  
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
```

- See <http://w3.org/QA/2002/04/valid-dtd-list.html> for a list of possible doctypes



- ◆ XHTML is more strict than HTML

- Tags and attribute names must be in lowercase
- All tags must be closed (`
`, ``) while HTML allows `
` and `` and implies missing closing tags (`<p>par1 <p>par2`)
- XHTML allows only one root `<html>` element (HTML allows more than one)

XHTML vs. HTML (2)

- ◆ Many element attributes are deprecated in XHTML, most are moved to CSS
- ◆ Attribute minimization is forbidden, e.g.

```
<input type="checkbox" checked>
```



```
<input type="checkbox" checked="checked" />
```

- ◆ Note: Web browsers load XHTML faster than HTML and valid code faster than invalid!

The <head> Section

- ◆ Contains information that doesn't show directly on the viewable page
- ◆ Starts after the <!doctype> declaration
- ◆ Begins with <head> and ends with </head>
- ◆ Contains mandatory single <title> tag
- ◆ Can contain some other tags, e.g.
 - <meta>
 - <script>
 - <style>
 - <!-- comments -->



<head> Section: <title> tag

- ◆ Title should be placed between <head> and </head> tags

```
<title>Telerik Academy - Winter Season 2009/2010</title>
```



- ◆ Used to specify a title in the window title bar
- ◆ Search engines and people rely on titles

<head> Section: <meta>

- ◆ Meta tags additionally describe the content contained within the page

```
<meta name="description" content="HTML  
tutorial" />
```

```
<meta name="keywords" content="html, web  
design, styles" />
```

```
<meta name="author" content="Chris Brewer" />
```

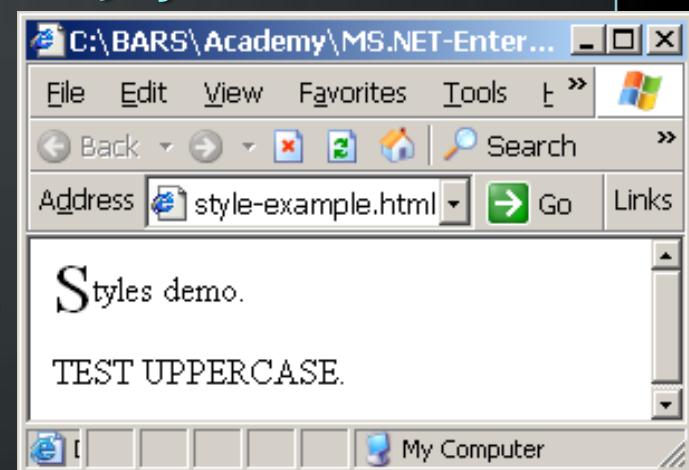
```
<meta http-equiv="refresh" content="5;  
url=http://www.telerik.com" />
```

<head> Section: <style>

- ◆ The <style> element embeds formatting information (CSS styles) into an HTML page

```
<html>
  <head>
    <style type="text/css">
      p { font-size: 12pt; line-height: 12pt; }
      p:first-letter { font-size: 200%; }
      span { text-transform: uppercase; }
    </style>
  </head>
  <body>
    <p>Styles demo.<br />
      <span>Test uppercase</span>.
    </p>
  </body>
</html>
```

style-example.html



Comments: <!-- --> Tag

- ◆ Comments can exist anywhere between the `<html></html>` tags
- ◆ Comments start with `<!--` and end with `-->`

```
<!-- Company Logo (a JPG file) -->

<!-- Hyperlink to the web site -->
<a href="http://company.com/">Company</a>
<!-- Show the news table -->
<table class="newstable">
    ...

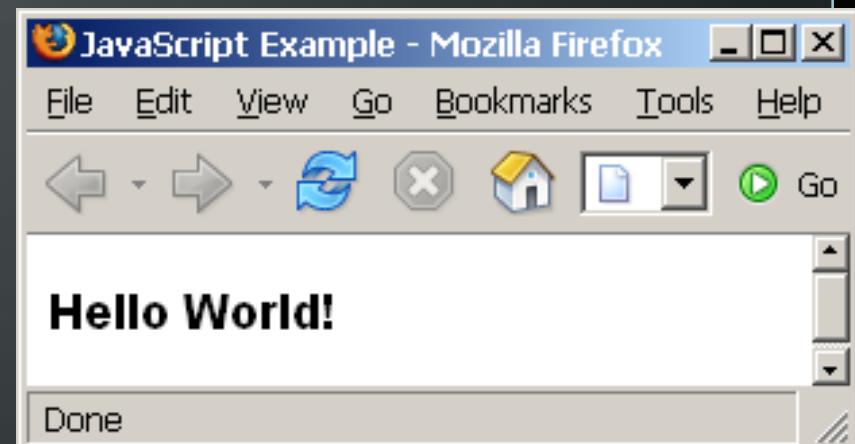
```

<head> Section: <script>

- ◆ The <script> element is used to embed scripts into an HTML document
 - ◆ Scripts are executed in the client's Web browser
 - ◆ Scripts can live in the <head> and in the <body> sections
- ◆ Supported client-side scripting languages:
 - ◆ JavaScript (it is not Java!)
 - ◆ ~~VBScript~~
 - ◆ ~~JScript~~

The <script> Tag – Example

```
<!DOCTYPE HTML>                                         scripts-example.html
<html>
  <head>
    <title>JavaScript Example</title>
    <script type="text/javascript">
      function sayHello() {
        document.write("<p>Hello World!</p>");
      }
    </script>
  </head>
  <body>
    <script type=
      "text/javascript">
      sayHello();
    </script>
  </body>
</html>
```



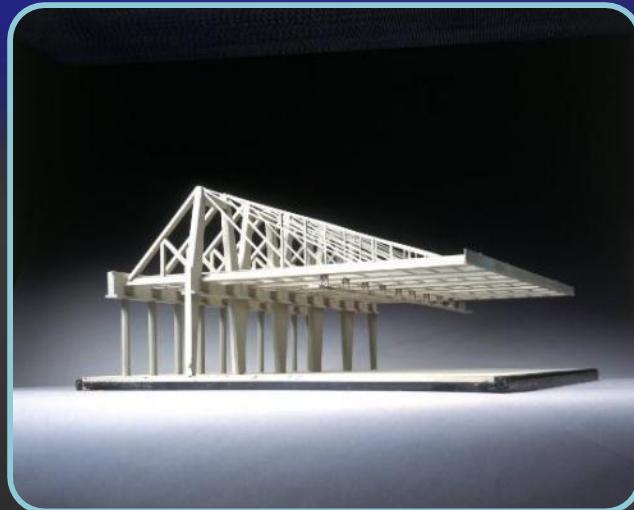
<head> Section: <noscript>

- ◆ The <noscript> tag defines an alternate content for users that have disabled scripts in their browser or have a browser that doesn't support script.
 - ◆ The <noscript> element can be used in both <head> and <body>
 - ◆ When used inside the <head> element: <noscript> must contain only <link>, <style>, and <meta> elements

<body> Section: Introduction

- ◆ The <body> section describes the viewable portion of the page
- ◆ Starts after the <head> </head> section
- ◆ Begins with <body> and ends with </body>

```
<html>
  <head><title>Test page</title></head>
  <body>
    <!-- This is the Web page body -->
  </body>
</html>
```



HTML Document Structure

Live Demo

HTML Common Elements

Used in 90% of all the sites

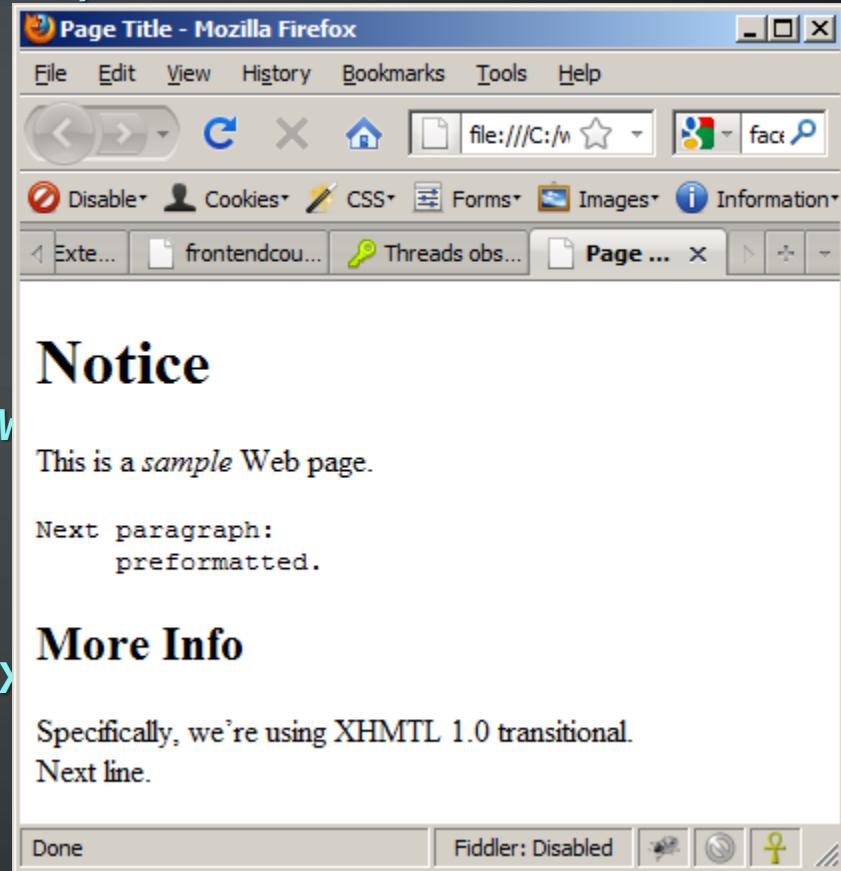
- ◆ Text formatting tags modify the text between the opening tag and the closing tag
 - ♦ Ex. **Hello** makes "Hello" bold

	bold
<i></i>	<i>italicized</i>
<u></u>	<u>underlined</u>
	Sample ^{superscript}
	Sample _{subscript}
	strong
	<i>emphasized</i>
<pre></pre>	Preformatted text
<blockquote></blockquote>	Quoted text block
	Deleted text – strike through

Text Formatting – Example

text-formatting.html

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
 "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html>
  <head>
    <title>Page Title</title>
  </head>
  <body>
    <h1>Notice</h1>
    <p>This is a <em>sample</em> Web page.
    <p><pre>Next paragraph:
      preformatted.</pre></p>
    <h2>More Info</h2>
    <p>Specifically, we're using XHMTL 1.0 transitional.
      Next line.</p>
  </body>
</html>
```



Hyperlinks: <a> Tag

- ◆ Link to a document called `form.html` on the same server in the same directory:

```
<a href="form.html">Fill Our Form</a>
```

- ◆ Link to a document called `parent.html` on the same server in the parent directory:

```
<a href="../parent.html">Parent</a>
```

- ◆ Link to a document called `cat.html` on the same server in the subdirectory `stuff`:

```
<a href="stuff/cat.html">Catalog</a>
```

Hyperlinks: <a> Tag (2)

- ◆ Link to an external Web site:

```
<a href="http://www.devbg.org" target="_blank">BASD</a>
```

- ◆ Always use a full URL, including "http://", not just "www.somesite.com"
- ◆ Using the target="_blank" attribute opens the link in a new window
- ◆ Link to an e-mail address:

```
<a href="mailto:bugs@example.com?subject=Bug+Report">  
Please report bugs here (by e-mail only)</a>
```

Hyperlinks: <a> Tag (3)

- ◆ Link to a document called `apply-now.html`
 - ◆ On the same server, in same directory
 - ◆ Using an image as a link button:

```
<a href="apply-now.html"></a>
```

- ◆ Link to a document called `index.html`
 - ◆ On the same server, in the subdirectory `english` of the parent directory:

```
<a href="../english/index.html">Switch to  
English version</a>
```

Hyperlinks and Sections

- ◆ Link to another location in the same document:

```
<a href="#section1">Go to Introduction</a>
...
<h2 id="section1">Introduction</h2>
```

- ◆ Link to a specific location in another document:

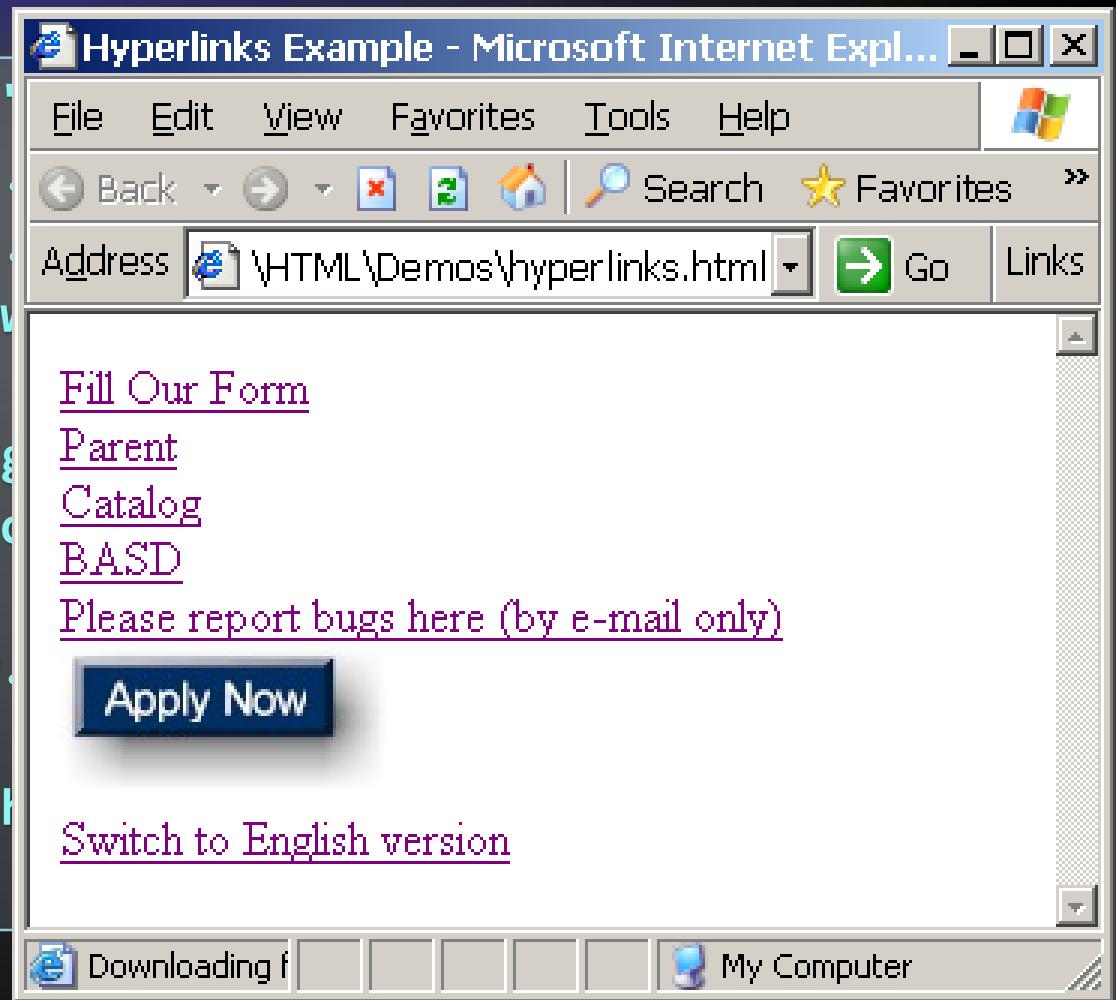
```
<a href="chapter3.html#section3.1.1">Go to Section
3.1.1</a>

<!-- In chapter3.html -->
...
<div id="section3.1.1">
    <h3>3.1.1. Technical Background</h3>
</div>
```

Hyperlinks – Example

hyperlinks.html

```
<a href="form.html">
<a href="..../parent">
<a href="stuff/catalog">
<a href="http://www.basd.com">
<br />
<a href="mailto:bug-report@basd.com">Please report bugs here (by e-mail only)
<br />
<a href="apply-now.html">Apply Now</a> <br />
<a href="..../english-version">Switch to English version</a> <br />
```



Links to the Same Document – Example

links-to-same-document.html

```
<h1>Table
```

```
<p><a href="#section1">
```

```
<a href="#section2">
```

```
...the rest
```

```
<!-- The content -->
```

```
<h2 id="section1">
```

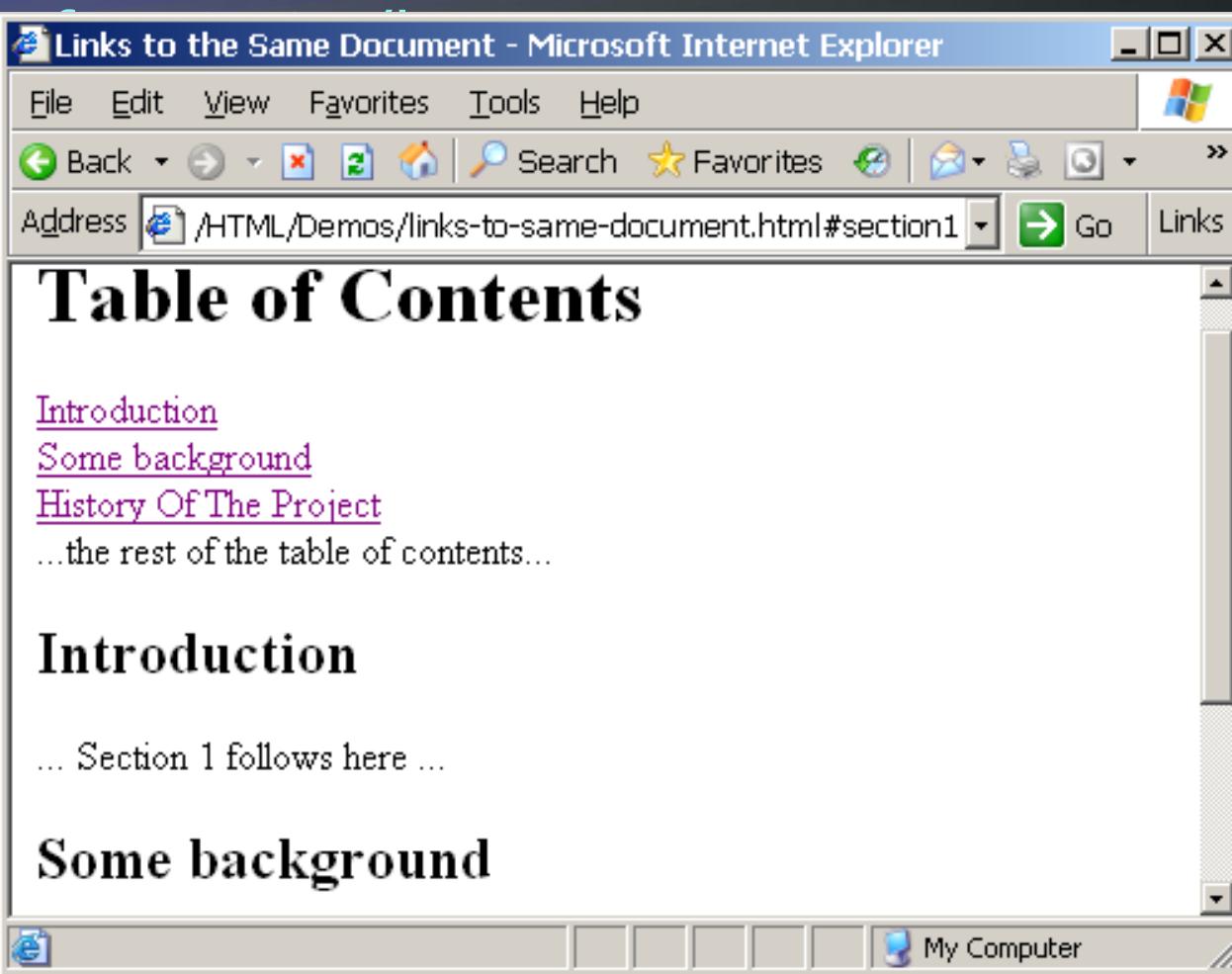
```
... Section 1
```

```
<h2 id="section2">
```

```
... Section 2
```

```
<h3 id="section3">
```

```
... Section 3
```



- ◆ Inserting an image with tag:

```

```

- ◆ Image attributes:

src	Location of image file (relative or absolute)
alt	Substitute text for display (e.g. in text mode)
height	Number of pixels of the height
width	Number of pixels of the width
border	Size of border, 0 for no border

- ◆ Example:

```

```

- ◆ <hr />: Draws a horizontal rule (line):

```
<hr size="5" width="70%" />
```

- ◆ <center></center>: Deprecated!

```
<center>Hello World!</center>
```

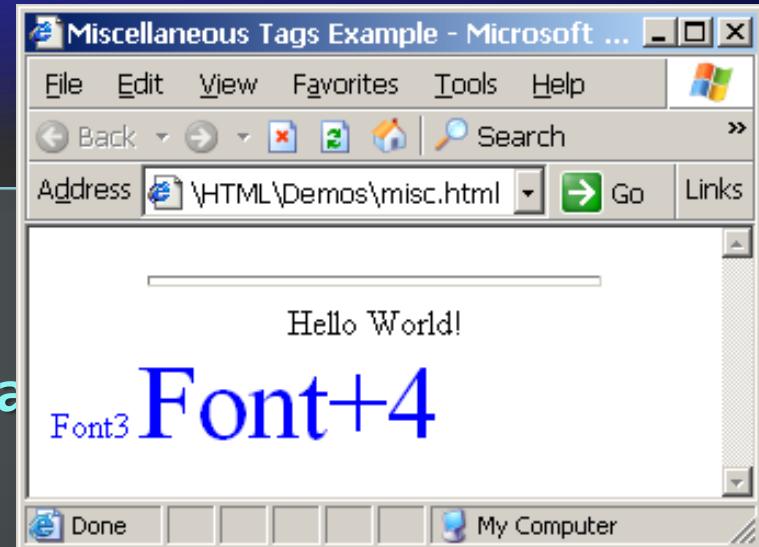
- ◆ : Deprecated!

```
<font size="3" color="blue">Font3</font>
<font size="+4" color="blue">Font+4</font>
```

Miscellaneous Tags – Example

misc.html

```
<html>
  <head>
    <title>Miscellaneous Ta
  </head>
  <body>
    <hr size="5" width="70%" />
    <center>Hello World!</center>
    <font size="3" color="blue">Font3</font>
    <font size="+4" color="blue">Font+4</font>
  </body>
</html>
```



- ◆ Heading Tags (h1 – h6)

```
<h1>Heading 1</h1>
<h2>Sub heading 2</h2>
<h3>Sub heading 3</h3>
```

- ◆ Paragraph Tags

```
<p>This is my first paragraph</p>
<p>This is my second paragraph</p>
```

- ◆ Sections: div and span

```
<div style="background: skyblue;">
    This is a div</div>
```

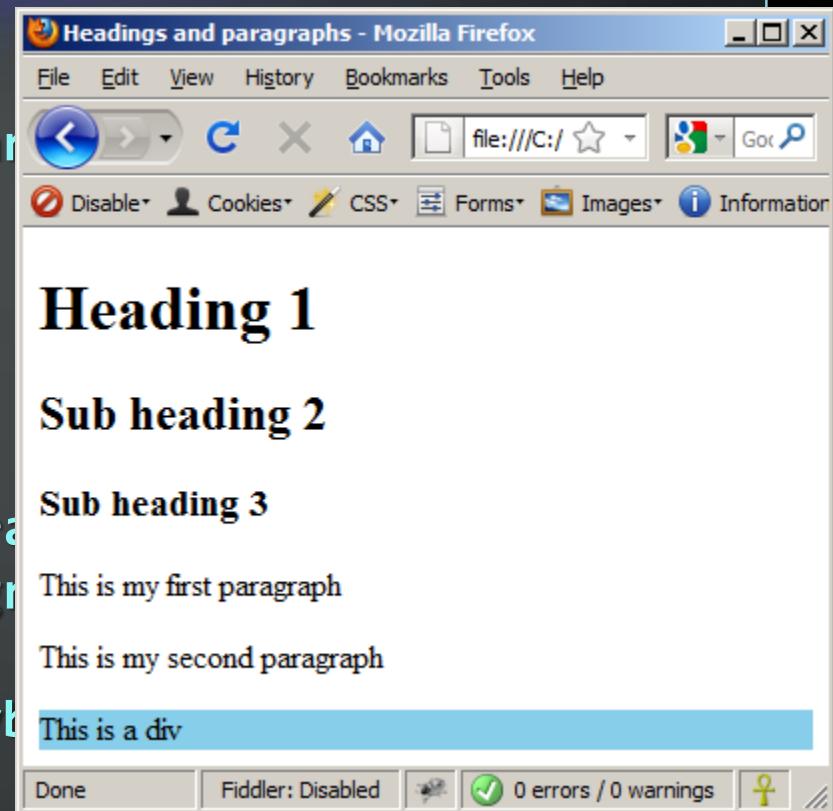
Headings and Paragraphs – Example

headings.html

```
<!DOCTYPE HTML>
<html>
  <head><title>Headings and paragraphs</title>
  <body>
    <h1>Heading 1</h1>
    <h2>Sub heading 2</h2>
    <h3>Sub heading 3</h3>

    <p>This is my first paragraph</p>
    <p>This is my second paragraph</p>

    <div style="background:skyblue">
      This is a div</div>
  </body>
</html>
```



Ordered Lists: Tag

- ◆ Create an Ordered List using :

```
<ol type="1">
  <li>Apple</li>
  <li>Orange</li>
  <li>Grapefruit</li>
</ol>
```

- ◆ Attribute values for type are 1, A, a, I, or i

1. Apple
2. Orange
3. Grapefruit

A. Apple
B. Orange
C. Grapefruit

a. Apple
b. Orange
c. Grapefruit

I. Apple
II. Orange
III. Grapefruit

i. Apple
ii. Orange
iii. Grapefruit

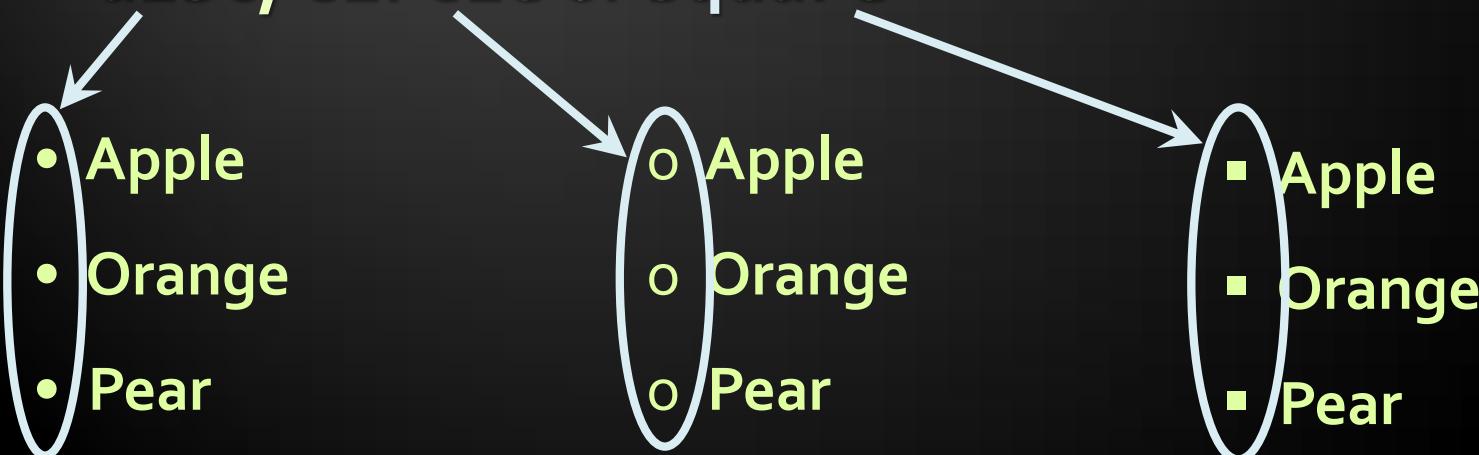
Unordered Lists: Tag

- ◆ Create an Unordered List using :

```
<ul type="disc">
  <li>Apple</li>
  <li>Orange</li>
  <li>Grapefruit</li>
</ul>
```

- ◆ Attribute values for type are:

- disc, circle or square



Definition lists: <dl> tag

- ◆ Create definition lists using <dl>
 - ◆ Pairs of text and associated definition; text is in <dt> tag, definition in <dd> tag

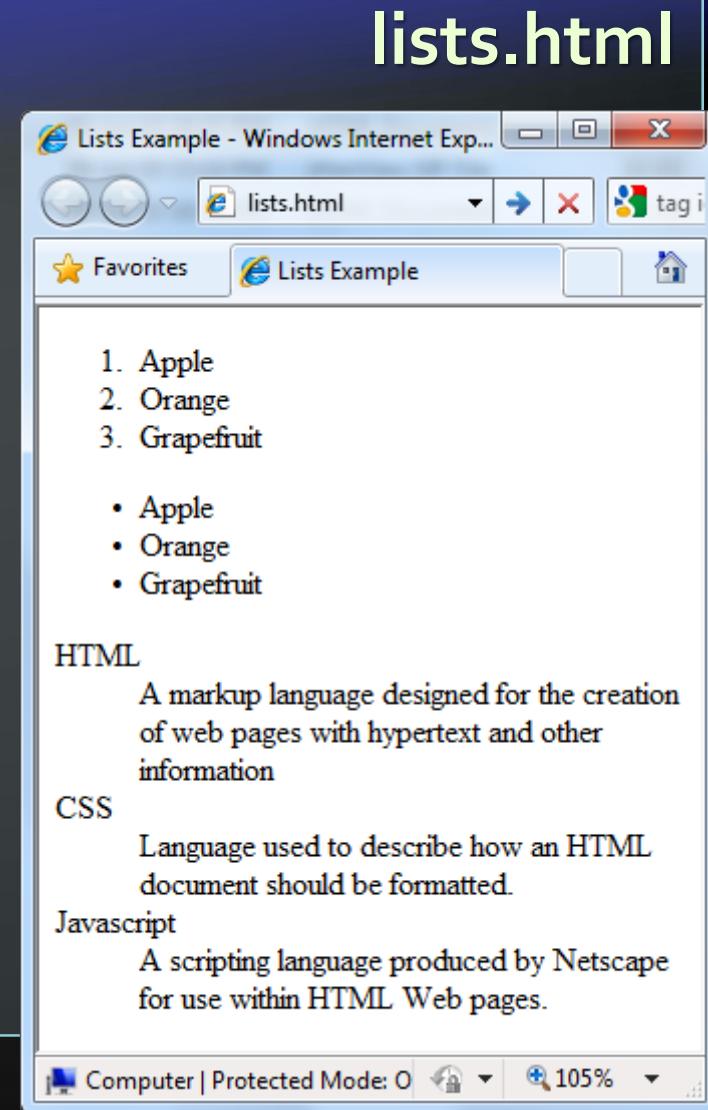
```
<dl>
  <dt>HTML</dt>
  <dd>A markup language ...</dd>
  <dt>CSS</dt>
  <dd>Language used to ...</dd>
</dl>
```

- ◆ Renders without bullets
- ◆ Definition is indented

```
<ol type="1">
  <li>Apple</li>
  <li>Orange</li>
  <li>Grapefruit</li>
</ol>

<ul type="disc">
  <li>Apple</li>
  <li>Orange</li>
  <li>Grapefruit</li>
</ul>

<dl>
  <dt>HTML</dt>
  <dd>A markup lang...</dd>
</dl>
```



HTML Special Characters

Symbol Name	HTML Entity	Symbol
Copyright Sign	©	©
Registered Trademark Sign	®	®
Trademark Sign	™	™
Less Than	<	<
Greater Than	>	>
Ampersand	&	&
Non-breaking Space	 	
Em Dash	—	—
Quotation Mark	"	"
Euro	€	€
British Pound	£	£
Japanese Yen	¥	¥

Special Characters – Example

```
<p>[&gt;&gt;&ampnbsp&ampnbspWelcome    special-chars.html  
    &ampnbsp&ampnbsp&lt;&lt;]</p>
```

```
<p>&#9824;
```

```
A&#9824;
```

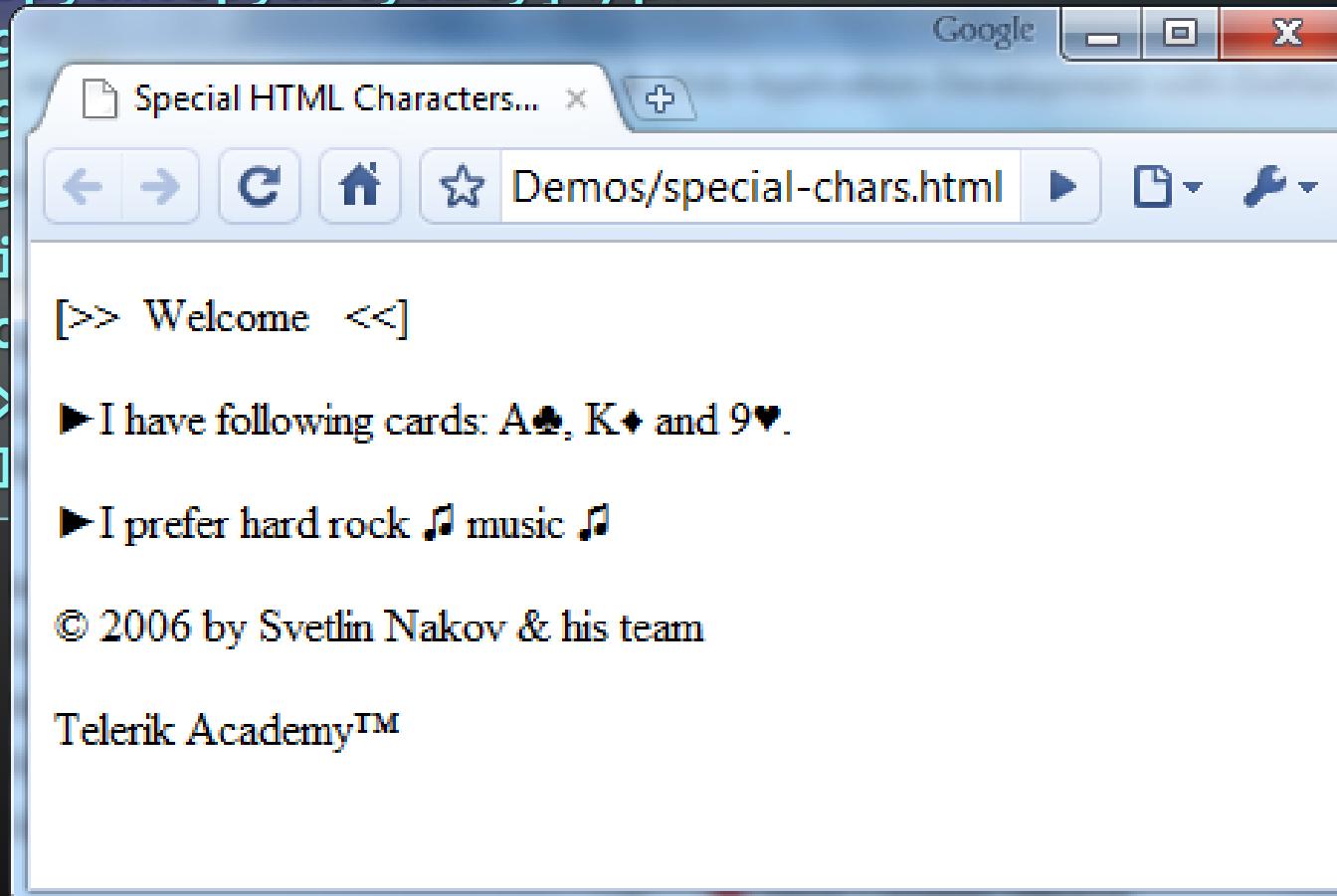
```
<p>&#9824;
```

```
musi
```

```
<p>&cc
```

```
team</p>
```

```
<p>Te]
```



HTML Common Elements

Live Demo

```
4 <head>
5 <meta http-equiv="Content-Type"
6 <title>Home</title>
7 <link rel="stylesheet" href="sty
8 <style type="text/css">
9 .style1 {
10   color: #FF0000;
11 }
12 </style>
13 </head>
```

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Section Elements

The **<div>** and The ****

Block and Inline Elements

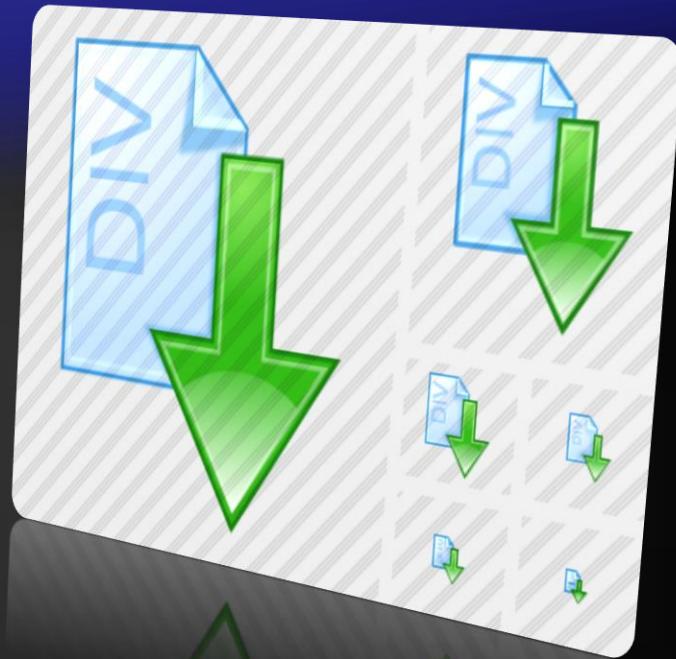
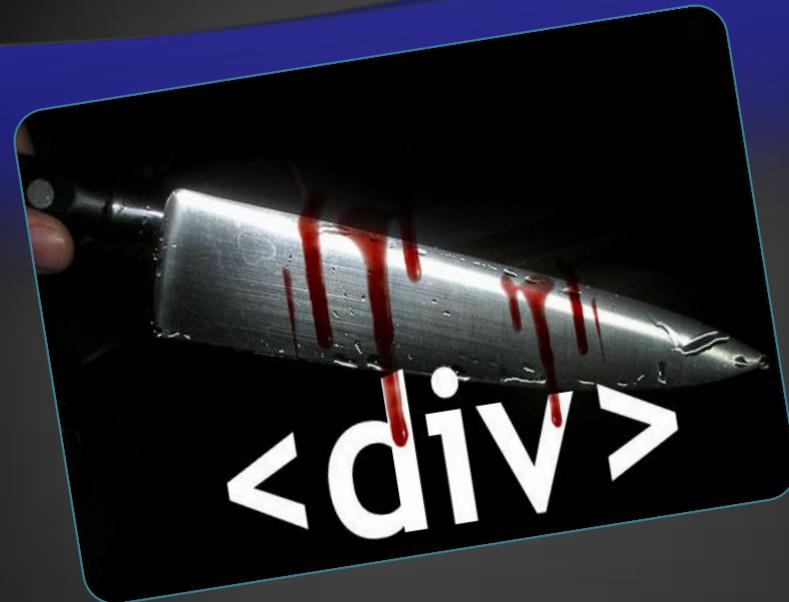
- ◆ Block elements add a line break before and after them, and expand to 100% width
 - ◆ <div>, <p>, <h1>, are block elements
- ◆ Inline elements don't break the text before and after them
 - ◆ , <a>, are inline elements
- ◆ <http://www.w3.org/TR/CSS2/visuren.html#block-boxes>

- ◆ <div> creates logical divisions within a page
 - Block style element
 - Used with CSS
- ◆ Example:

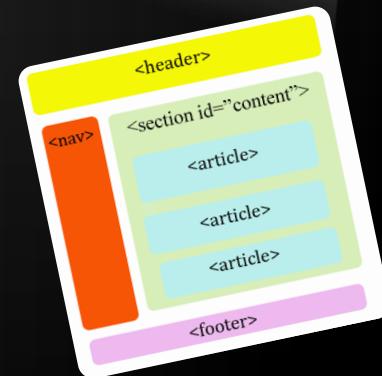
div-and-span.html

```
<div style="font-size:24px; color:red">DIV  
example</div>  
  
<p>This one is <span style="color:red; font-  
weight:bold">only a test</span>.</p>
```





<div> <DIV>
Live Demo



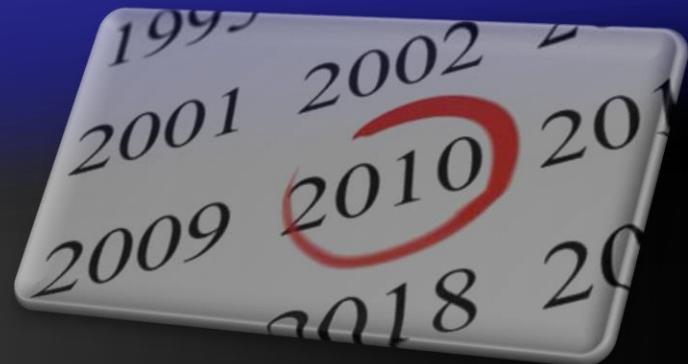
The Tag

- ◆ Inline style element
- ◆ Useful for modifying a specific portion of text
 - ◆ Don't create a separate area (paragraph) in the document
- ◆ Makes sense only with some CSS

span.html

```
<p>This one is <span style="color:red; font-weight:bold">only a test</span>.</p>  
<p>This one is another <span style="font-size:32px; font-weight:bold">TEST</span>.</p>
```





Live Demo

some text

Semantic Structural Tags

The Structure of a Web Page

- ◆ A sample layout structure of a Web Page



- ◆ Using divs with IDs
 - ◆ The IDs are needed for styling

```
<html>
<head> ... </head>
<body>
  <div id="header"> ... </div>
  <div id="navigation"> ... </div>
  <div id="sidebar"> ... </div>
  <div id="content"> ... </div>
  <div id="footer"> ... </div>
</body>
</html>
```

The HTML 4 Way

Live Demo

- ◆ In HTML 5 there are semantic tags for layout
 - ◆ <nav>, <header>, <footer>, <section>

```
<html>
<head> ... </head>
<body>
    <header> ... </header>
    <nav> ... </nav>
    <aside> ... </aside>
    <section> ... </section>
    <footer> ... </footer>
</body>
</html>
```

- ◆ Work only on newer browsers

- ◆ HTML5 provides new elements to define the structure of a web page:
- ◆ <section> to divide up main content
- ◆ <header> and <footer> for page headers and footers
- ◆ <nav> for navigation links
- ◆ <article> for stand-alone content
- ◆ <aside> for quotes and sidebar
- ◆ content



- ◆ HTML5 defines new text elements, including:

- ◆ **<hgroup>**

```
<hgroup>
  <h1>My Recipes</h1>
  <h2>Great to eat, easy to make</h2>
</hgroup>
```

- ◆ **<time>**

```
<time datetime="2012-08-08">Today</time>
```

- ◆ **<mark>**

```
<p>This text should be <mark>noted for future
use.</mark>.</p>
```

- ◆ **<small>**

```
<p>Heat your beans for five minutes. <small>Or
until they are hot enough for you.</small></p>
```

- ◆ **<figure> and <figcaption>**

```
<figure>
  
  <figcaption>A plate of beans in five minutes flat</figcaption>
</figure>
```

Semantic Structural Tags

Live Demo

HTML5
Unleashed

- ◆ It is important to have the correct vision and attitude towards HTML
 - ◆ HTML is only about structure, not appearance
 - ◆ Browsers tolerate invalid HTML code and parse errors – you should not
 - ◆ Always think about semantics

Questions?

1. Write an HTML page like the following:
 - * Use headings and divs

Hello, Stranger!

Welcome to Runners Home™

Runners Home™ is dedicated to providing you with:

- the most up-to-date information on running races
- the best resources for runners.

© 2007 Runners Home. All rights reserved.

2. Write an HTML page like the following:

Preceding Text

- I. List Item 1
 - a. Nested Item 1.1
 - b. Nested Item 1.2
- II. List Item 2
 - 1. Nested Item 2.1
 - 2. Nested Item 2.2
 - o Nested Item 2.2.1
 - o Nested Item 2.2.2
 - Nested Item 2.2.2.1
 - Nested Item 2.2.2.2
 - o Nested Item 2.2.3
 - 3. Nested Item 2.3
- III. List Item 3
 - Nested Item 3.1
 - Nested Item 3.1
 - Nested Item 3.1

3. Create an user profile Web page **Profile.html**, friends page named **Friends.html** and info page named **Info.html**. Link them to one another using **<a>** tag

