Lecture 1-2

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Introducing the World Wide Web

- In 1969, the first transmission over the Internet took place
- Web pages are the basic unit of a website, and every website is a collection of one or more pages

Introducing HTML: The Language of the Web

- Web pages are written in HTML (HyperText Markup Language)
- A markup language is a set of **markup tags**
- It tells browsers how to display the contents of a web page, using special instructions (called tags) that instruct the browser when to start a paragraph, italicize a word, or display a picture

Creating an HTML File

- Fire up your favorite text editor
- Start writing HTML content.
- When you finish your web page, save the document. In the Encoding list, choose UTF-8.
- When you name your file, use the extension .htm or .html

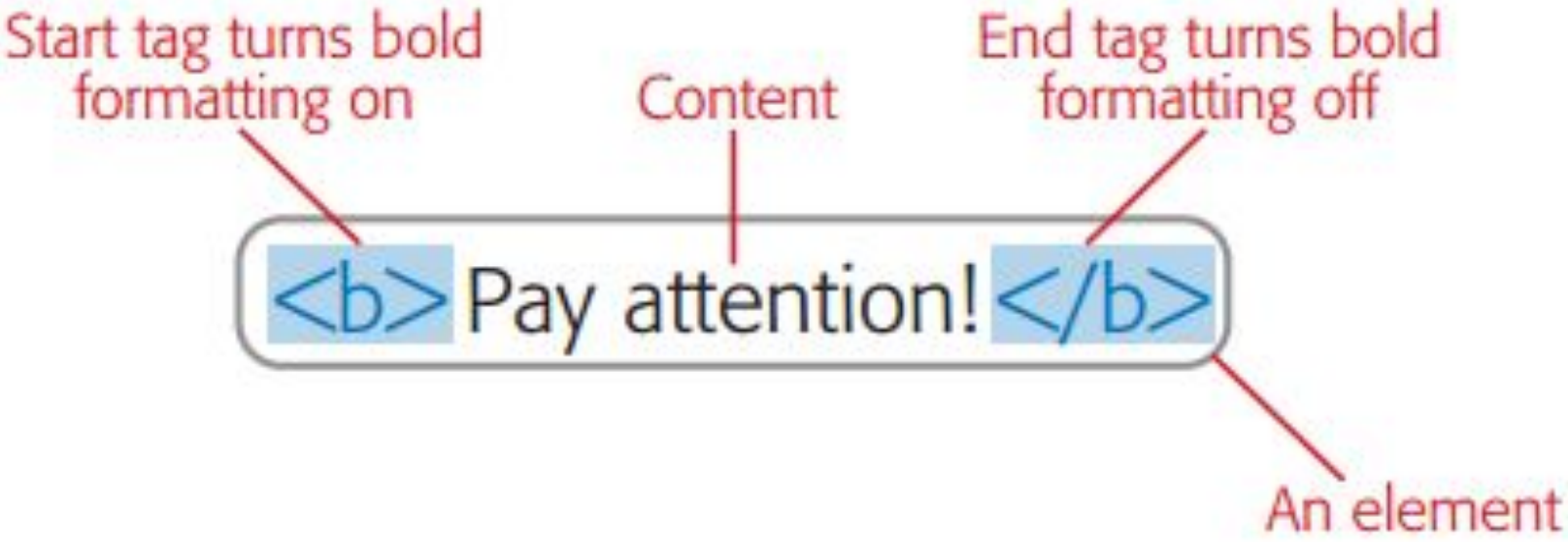
HTML Tags

- HTML tags are formatting instructions that tell a browser how to transform ordinary text into something visually appealing. If you were to take all the tags out of an HTML document, the resulting page would consist of nothing more than plain, unformatted text.

What's in a Tag

- To create a tag, you type HTML code between the brackets. (look like this: < >)
- For example, one simple tag is the **tag, which stands for "bold" (tag names are always lowercase).**
- As you've seen, tags come in pairs. When you use a start tag (like **for bold), you have to include an end tag (like **). This combination of start and end tags and the text in between them makes up an HTML element.

Example 1


Start tag turns bold formatting on
Content
End tag turns bold formatting off
 Pay attention!
An element

Types of elements:

- **Container elements** are, by far, the most common type. They apply formatting to the content nestled between the start and end tags.
- **Standalone elements** don't turn formatting on or off. Instead, they insert something, like an image, into a page. One example is the
  element, which inserts a line break in a page. Standalone elements don't come in pairs, as container elements do, and you may hear them referred to as *empty* elements because you can't put any text inside them.

Nesting Elements

- Nesting elements is one of the basic building block techniques of web pages.
- You can also nest elements to create more complicated page components, like bulleted lists.

Example 3

- This <b><i>*word* </*i*></*b*> has italic and bold formatting.

- This ***word*** has italic and bold formatting

DOCTYPE element

- **DOCTYPE –** tells process Web files - such as validators, Web browsers, etc. about the HTML specification used in the file's source.
- The document type definition (DTD) is the first piece of information in an HTML file. Always on the first line of a file, before beginning <HTML> tag.
- It tells the browser what markup standard you used to write the page.

Main HTML Components

- Any HTML document begins with the following tag pair
- <*html*> - This element wraps everything (other than the doctype) in your web page.
- <*head*> - This element designates the header portion of your document. The header can include some optional information about your web page, including the required title, optional search keywords, and an optional style sheet
- <*body*> - This element holds the meat of your web page, including the actual content you want to display to the world.
- <title> </title> -element of the title
- - paragraph tag
- <!--and --> - comments tag

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>
```

Physical Styles

- Certain styles can be enforced to the browser by using following tags.
- <B> </B> **Bold**
- <I></I> *Italics*
- <TT></TT> Monospace (fixed width)
- <U></U> <u>Underline</u>
- Subscript
- Superscript

Logical Style

- Certain styles allow browser to decide the display of text using following tags.
  - <EM> </EM> *Emphasized text*
  - <STRONG> </STRONG> **Strongly emphasized text**
  - <CITE> </CITE> *Text in citation*
  - <SAMP> </SAMP> Text in a computer screen output sample
- Logical Styles vary from browser to browser
- Example:

  The following is <STRONG> strongly emphasized text </STRONG>.

  would display like this in Internet Explorer

  The following is strongly emphasized text.

Size and Color

- Background color of web page can be set by including in body tag like following.

```
<BODY BGCOLOR=RED>
```

- Font Size can be set as follows.

```
<FONT SIZE=7>
```

- Font color can be set as follows.

```
<FONT COLOR=RED>
```

Color of the font would then remain RED until </FONT>

- Colors can also be chosen using hexadecimal RGB color codes. For example, background color for red can be set as follows.

```
<BODY BGCOLOR="#FF0000">
```

Other elements

Element	Name	Type of Element	Description
<p>	Paragraph	Container	As your high school English teacher probably told you, the paragraph is the basic unit for organizing text. When you use more than one paragraph element in a row, a browser inserts a certain amount of space between the two paragraphs—just a bit more than a full blank line. Complete details appear in Chapter 5.
<h1>,<h2>, <h3>,<h4>, <h5>,<h6>	Heading	Container	Heading elements are a good way to add structure to your web page and make titles stand out. They display text in large, boldfaced letters. The lower the number, the larger the text, so <h1> produces the largest heading. By the time you get to <h5>, the heading has dwindled to the same size as normal-size text, and <h6>, although bold, is actually smaller than normal text.
<hr>	Horizontal Line	Standalone	A horizontal line can help you separate one section of your web page from another. The line automatically matches the width of the browser window. (Or, if you put the line inside another element, like a cell in a table, it takes on the width of its container.)
,	Unordered List, List Item	Container	These elements let you build basic bulleted lists. The browser automatically puts individual list items on separate lines and indents each one. For a quick change of pace, you can substitute with to get an automatically *numbered* list instead of a

Other elements

Element	Name	Type	Description
<b>, <i>	Bold and Italic	Container	These two elements apply character styling—either bold or italic text. (Technically, <i> means "text in an alternate voice" and <b> means "stylistically offset text," and there are tricks to change the formatting they apply, as you'll see in Chapter 6. But in the real world, almost all web developers expect that <i> means italics and <b> means bold.)
 	Line Break	Standalone	Sometimes, all you want is text separated by simple line breaks, not separate paragraphs. This keeps subsequent lines of text closer together than when you use a paragraph. You ll learn more about text layout in Chapter 5.
<img>	Image	Standalone	To display an image inside a web page, use this element. Make sure you specify the *src* attribute to indicate the file name of the picture you want the browser to show.
<a>	Anchor	Container	The anchor element is the starting point for creating hyperlinks that let website visitors jump from one page to another. You ll learn about this indispensable element in

Horizontal Lines

- <HR> used to create shaded horizontal lines across width of the web page
- Line's size is adjusted with page's width by the browser.
- Attributes supported are as follows.
  - SIZE=5 : SIZE sets the line's thickness in terms of pixels—5 pixels in this example
  - WIDTH=50: sets the line width in terms of a percent of the width of the Web page displayed—50% in this example
  - ALIGN=LEFT: justifies the line against either the right or the left margin (as in this example) or centers it in the window
  - ALIGN=RIGHT: justifies the line against the right margin
  - ALIGN=CENTER: centers the line in the window
  - NOSHADE: removes the line's default shading

Preformatted Text

- <PRE> and </PRE> tags used when you do not want browsers to decide how to display text
- Text then displayed as formatted within the <PRE> tags, without considering logical styles
- This might not be true always, hence you need to verify the web page.

Example:

```
<PRE>
Type this #$&**$&($**
Be sure to type exactly this.
</PRE>
```

Lists

- Two kinds of lists: ordered and unordered
- Ordered lists requires <OL> and </OL>, and automatically numbers list starting at 1.
- Unordered list created using <UL> and </UL>
- Every item in the list created using <LI> tag in front

Linking other pages

- Each HTML document distinctly addressed
- Links can be created from a document to other documents
- These distinct web addresses knows as URLs.
- Creating links explored in detail in further slides

Creating Links to Other Files

- Links- elements in a Web page that users can click to be "taken" to a different Web page.
- Anchor tags (“<A> and </A>) used to create a link.
- Within anchor tags, following is placed.
  - HREF attribute after the opening anchor tag
  - URL under HREF attribute within quotation marks
  - Text of the link between opening and closing tags
- Example:

<A href='FA.html'>Freshman Advisor</A>

  - *Freshman Advisor* appears underlined in blue text and can be clicked
  - When link clicked, browser fetches FA.html and displays its contents
  - Since relative URL used, file to be in the same directory as the page of the link
  - Link’s color changed to show that it was visited

Creating Internal Links

- Links can be created to other places in the same page
- First anchor tag used with *name* attribute to specify target
- Next anchor tag used to create link to jump to target
- Example:

<A name='office'><H2>Jim's Office</H2></A> → Target

<A href='Jim.html#office'>Jim's Office</A>. → Link to target

Note: # used to display the section of Jim.html where the *office* target is found.

Embedding image in Web Page

- <IMG> tag used to embed pictures in web pages
- Used with *src* attribute to specify URL of the image
- *align* used to justify the image to left, center or right
- Many other attributes can be used with IMG which is beyond current discussion.
- Example:

<IMG src = “index.jpg” align= “left”>

HTML Table

- Preferred over <PRE> </PRE> tags to increase readability of text
- <TABLE> </TABLE> used to create tables
- <TR> used to create table row
- <TH> used to create table header
- <TD> used to create table data
- Each row to have same number of columns for consistency
- Lot of syntax involved with tables in HTML

HTML Table Syntax

```
<TABLE>
<CAPTION align = "bottom"> text of caption goes
here </CAPTION>
<TR align = "center"><TH> column 1 name
</TH><TH>column 2 name </TH>… </TR>
<TR><TD> row1, col1 data </TD><TD>row1, col2
data </TD>… </TR>
<TR><TD> row2, col1 data </TD><TD>row2, col2
data </TD>… </TR>
<TR><TD> row3, col1 data </TD><TD>row3, col2
data </TD>… </TR>…
</TABLE>
```

Images and Multimedia - I

- Two common extensions for image files: *.jpg* and *.gif*
- *.jpg* used for **JPEG** (Joint Photographic Experts Group) files.
  - .jpg files are compressed
  - Hence takes lesser time for images to be displayed by browser
  - Most browsers *cache* image files, i.e. store them on user's hard drive; compression is thus advantageous
  - Supports an entire range of colors and hence can impact image quality, due to loss of some

Images and Multimedia - I

- *.gif* extension used for **GIF** (Graphics Interchange Format) files.
  - .gif files also compressed
  - Compression done differently from .jpg so that no original image information lost
  - .gif files limited in range of colors supported than .jpg
- .jpg used for photographs, and .gif for drawings and icons on web

- Home work
- Read from book 19-35 pages
- Book: Creating a Web Site: Missing Manual

Question

- Give examples of container element
- Give examples of standalone element

Understanding Images

- To display pictures on a page, you use the <img> element in your HTML document
- Example

- Standalone
- Inline element (you can put them inside inside other block element, like paragraph)
-

Alternate text

- Attributes: *src* and *alt*

- *src – location of the image*
- *alt- if the user for some reason cannot view it (slow connection)*

Examples of <img> with attributes

-
- To add pop-up text, use title attribute:
- <img src="matador.jpg"
- alt="A matador extends his cape in welcome."
- **title="Welcome to the ring." />**

Picture Size

- Web weavers measure graphics in units called pixels.
- A pixel represents one tiny dot on a computer screen.
- **

HTML Elements for Tables

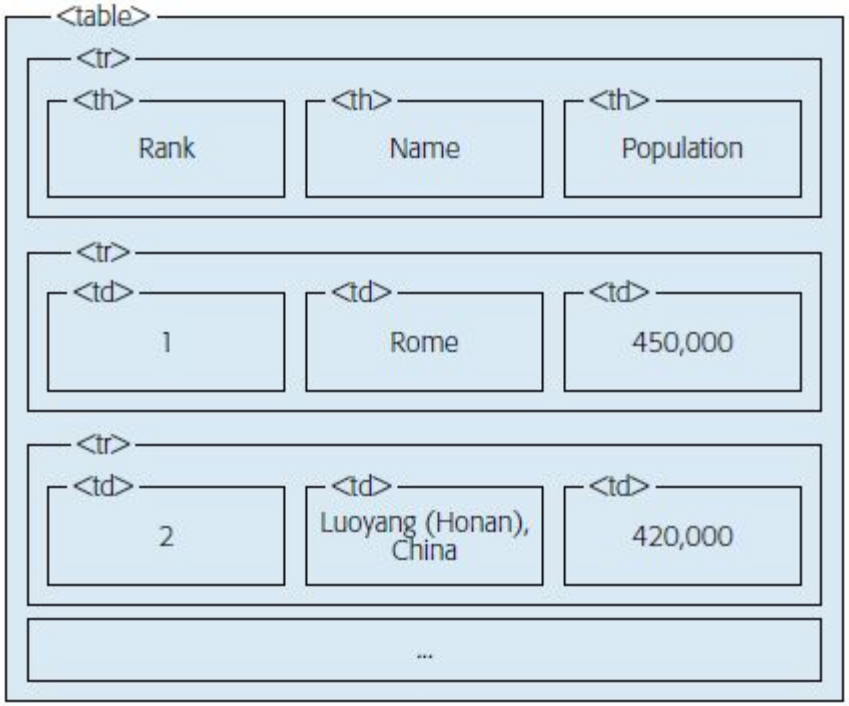
- **<table>** wraps the whole shebang. It's the starting point for every table.
- **<tr>** represents a single table row. Every table element (<table>) contains a series of one or more <tr> elements.
- **<td>** represents a table cell ("td" stands for "table data"). For each cell you want in a row, you add one <td> element. You put the text that you want to appear in that cell inside the <td> element.
- **<th>** is an optional table element; you use it when you want to define a column heading. You can use a <th> element instead of a <td> element any time, although it usually makes the most sense in the first row of a table.

Example

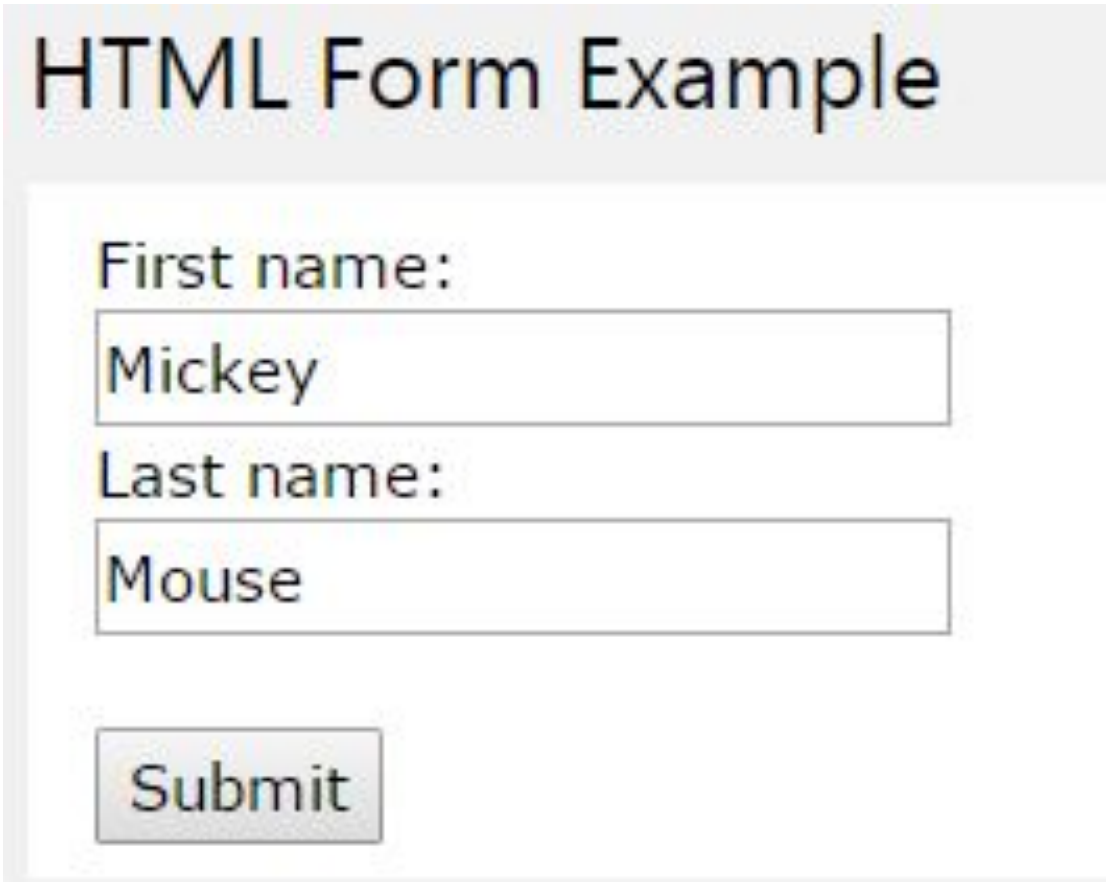
```
<table>
  <tr>
    <th>Rank</th>
    <th>Name</th>
    <th>Population</th>
  </tr>
  <tr>
    <td>1</td>
    <td>Rome</td>
    <td>450,000</td>
  </tr>
  <tr>
    <td>2</td>
    <td>Luoyang (Honan), China</td>
    <td>420,000</td>
  </tr>
  <tr>
    <td>3</td>
    <td>Seleucia (on the Tigris), Iraq</td>
    <td>250,000</td>
  </tr>
  ...
</table>
```

Largest Cities in the Year 100

Rank	Name	Population
1	Rome	450,000
2	Luoyang (Honan), China	420,000
3	Seleucia (on the Tigris), Iraq	250,000
4	Alexandria, Egypt	250,000
5	Antioch, Turkey	150,000
6	Anuradhapura, Sri Lanka	130,000
7	Peshawar, Pakistan	120,000
8	Carthage, Tunisia	100,000
9	Suzhou, China	n/a
10	Smyrna, Turkey	90,000



HTML Forms



The <form> Element

The HTML **<form>** element defines a form that is used to collect user input:

```
<form>
.
form elements
.
</form>
```

An HTML form contains **form elements**.
Form elements are different types of input elements, like text fields, checkboxes, radio buttons, submit buttons, and more.

The <input> Element

- The **<input>** element is the most important form element.
- The <input> element can be displayed in several ways, depending on the **type** attribute.

Type	Description
<input type="text">	Defines a one-line text input field
<input type="radio">	Defines a radio button (for selecting one of many choices)
<input type="submit">	Defines a submit button (for submitting the form)

Text Input

<input type="text"> defines a one-line input field for **text input**:

```
<form>
  First name:<br>
  <input type="text" name="firstname"><br>
  Last name:<br>
  <input type="text" name="lastname">
</form>
```

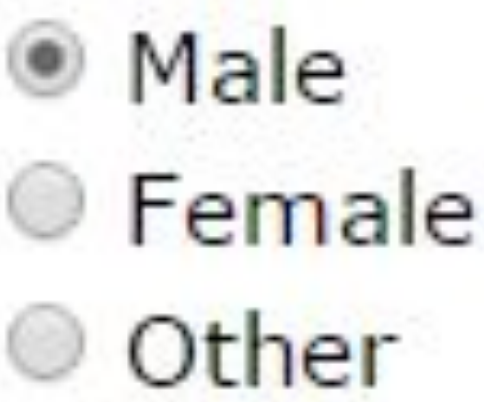
First name:

Last name:

Radio Button Input

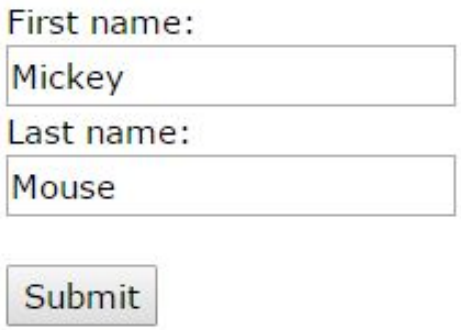
- **<input type="radio">** defines a **radio button**.
- Radio buttons let a user select ONE of a limited number of choices:

```
<form>
  <input type="radio" name="gender" value="male" checked> Male<br>
  <input type="radio" name="gender" value="female"> Female<br>
  <input type="radio" name="gender" value="other"> Other
</form>
```



The Submit Button

- **<input type="submit">** defines a button for **submitting** the form data to a **form-handler**.
- The form-handler is typically a server page with a script for processing input data.
- The form-handler is specified in the form's **action** attribute:




```
<form action="action_page.php">
  First name:<br>
  <input type="text" name="firstname" value="Mickey"><br>
  Last name:<br>
  <input type="text" name="lastname" value="Mouse"><br><br>
  <input type="submit" value="Submit">
</form>
```

Grouping Form Data with <fieldset>

- The **<fieldset>** element is used to group related data in a form.
- The **<legend>** element defines a caption for the <fieldset> element.

```
<form action="action_page.php">
  <fieldset>
    <legend>Personal information:</legend>
    First name:<br>
    <input type="text" name="firstname" value="Mickey"><br>
    Last name:<br>
    <input type="text" name="lastname" value="Mouse"><br><br>
    <input type="submit" value="Submit">
  </fieldset>
</form>
```

Example

Personal information:

First name:

Mickey

Last name:

Mouse

Submit

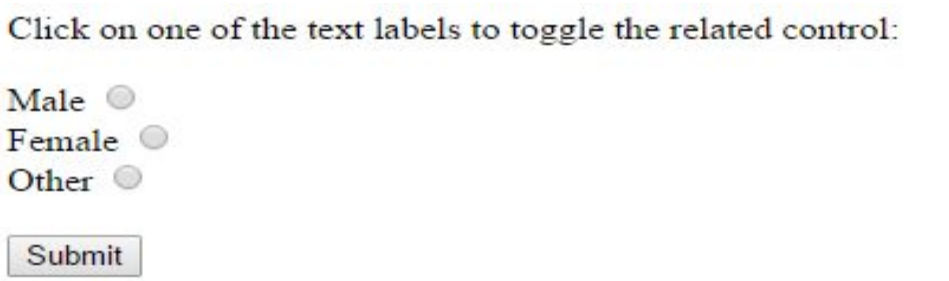
Label Element

- The <label> tag defines a label for an <input> element.
- The <label> element does not render as anything special for the user. However, it provides a usability improvement for mouse users, because if the user clicks on the text within the <label> element, it toggles the control.

HTML Forms

Three radio buttons with labels:

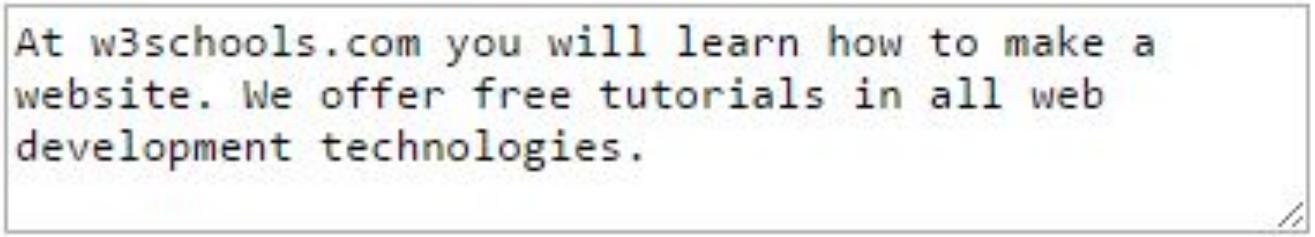
```
<form action="demo_form.asp">
  <label for="male">Male</label>
  <input type="radio" name="gender" id="male" value="male"><br>
  <label for="female">Female</label>
  <input type="radio" name="gender" id="female" value="female"><br>
  <label for="other">Other</label>
  <input type="radio" name="gender" id="other" value="other"><br><br>
  <input type="submit" value="Submit">
</form>
```



HTML <textarea> Tag

- An HTML text area: The <textarea> tag defines a multi-line text input control.
- A text area can hold an unlimited number of characters, and the text renders in a fixed-width font (usually Courier).

```
<textarea rows="4" cols="50">
At w3schools.com you will learn how to make a website. We offer free tutorials in all web development technologies.
</textarea>
```



<textarea> Attributes

Attribute	Value	Description
autofocus	autofocus	Specifies that a text area should automatically get focus when the page loads
cols	*number*	Specifies the visible width of a text area
dirname	*textareaname*.dir	Specifies that the text direction of the textarea will be submitted
disabled	disabled	Specifies that a text area should be disabled
form	*form_id*	Specifies one or more forms the text area belongs to
maxlength	*number*	Specifies the maximum number of characters allowed in the text area
name	*text*	Specifies a name for a text area
placeholder	*text*	Specifies a short hint that describes the expected value of a text area
readonly	readonly	Specifies that a text area should be read-only
required	required	Specifies that a text area is required/must be filled out
rows	*number*	Specifies the visible number of lines in a text area
wrap	hard soft	Specifies how the text in a text area is to be wrapped when submitted in a form

HTML <select> Tag

Create a drop-down list with four options:

```
<select>
  <option value="volvo">Volvo</option>
  <option value="saab">Saab</option>
  <option value="mercedes">Mercedes</option>
  <option value="audi">Audi</option>
</select>
```

HTML <optgroup> Tag

The <optgroup> is used to group related options in a drop-down list.

```
<!DOCTYPE html>
<html>
<body>

<select>
  <optgroup label="Swedish Cars">
    <option value="volvo">Volvo</option>
    <option value="saab">Saab</option>
  </optgroup>
  <optgroup label="German Cars">
    <option value="mercedes">Mercedes</option>
    <option value="audi">Audi</option>
  </optgroup>
</select>

</body>
</html>
```

HTML <option> Tag

The <option> tag defines an option in a select list.

```
<!DOCTYPE html>
<html>
<body>

<select>
  <option value="volvo">Volvo</option>
  <option value="saab">Saab</option>
  <option value="opel">Opel</option>
  <option value="audi">Audi</option>
</select>

</body>
</html>
```

HTML Tag

The tag defines a division or a section in an HTML document.

```
<div style="color:#0000FF">
  <h3>This is a heading</h3>
  <p>This is a paragraph.</p>
</div>
```

This is some text.

This is a heading in a div element

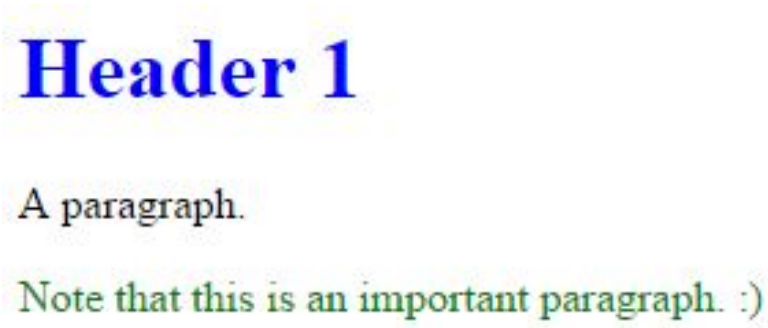
This is some text in a div element.

This is some text.

HTML class Attribute

The class attribute specifies one or more classnames for an element.

```
<!DOCTYPE html>
<html>
<head>
<style>
h1.intro {
    color: blue;
}

p.important {
    color: green;
}
</style>
</head>
<body>

<h1 class="intro">Header 1</h1>
<p>A paragraph.</p>
<p class="important">Note that this is an important paragraph. :)</p>

</body>
</html>
```

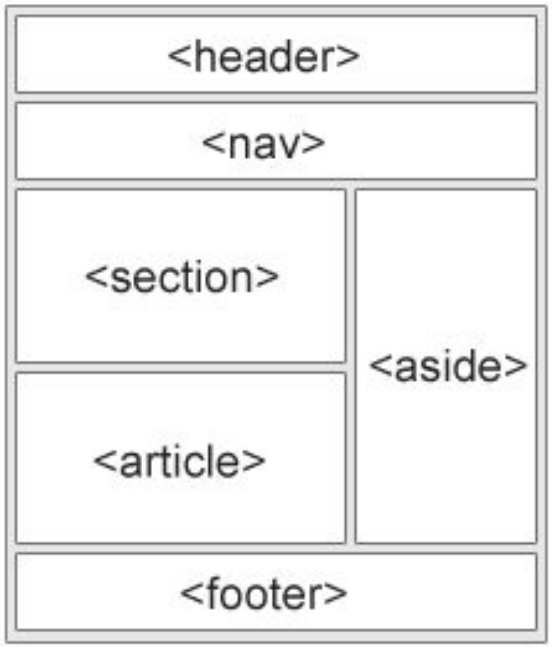


HTML id Attribute

```
<html>
<body>

<h1 id="myHeader">Hello World!</h1>
<button onclick="displayResult()">Change text</button>

<script>
function displayResult() {
    document.getElementById("myHeader").innerHTML = "Have a nice day!";
}
</script>

</body>
</html>
```

HTML5 Semantic Elements

- A semantic element clearly describes its meaning to both the browser and the developer.
- Examples of **non-semantic** elements: and - Tells nothing about its content.
- Examples of **semantic** elements: <form>, <table>, and <article> - Clearly defines its content.

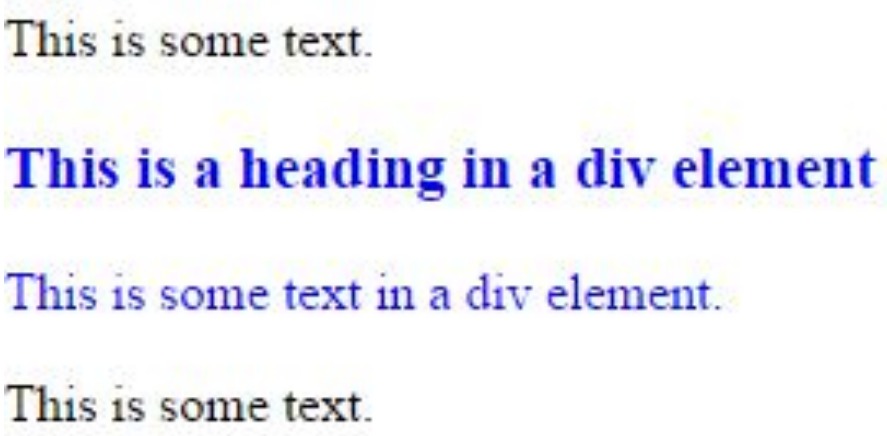


- <article>
- <aside>
- <details>
- <figcaption>
- <figure>
- <footer>
- <header>
- <main>
- <mark>
- <nav>
- <section>
- <summary>
- <time>

HTML Tag

The tag defines a division or a section in an HTML document.

```
<div style="color:#0000FF">
  <h3>This is a heading in a div element</h3>
  <p>This is some text in a div element.</p>
</div>
```



Semantic Elements

The <nav> element defines a set of navigation links.

```
<nav>
  <a href="/html/">HTML</a> |
  <a href="/css/">CSS</a> |
  <a href="/js/">JavaScript</a> |
  <a href="/jquery/">jQuery</a>
</nav>
```

The <header> Specifies a header for a document or section

The <main> Specifies the main content of a document

The <footer> Defines a footer for a document or section

Home Work

- Read CHAPTER 5