Web Technology & Programming

HTML

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Introduction

What the following term mean:

- Web server: a system on the internet contains one or more web site
- Web site: a collection of one or more web pages
- Web pages: single disk file with a single file name
- Home pages: first page in website

Introduction

- **What is HTML?**

  Plain-text documents can be created using any text editor.

- **What is a markup language?**
  - One where we can embed special tags or formatting commands in the text.
  - To describe how the text should be displayed / printed.

- **HTML is a markup language**

  Special formatting codes (called tags) to adjust fonts, create bulleted lists, create forms, display images, create tables, etc.

Introduction

- The left and right angle brackets are used to enclose all special instructions, called tags.

- **Two classes of tags:**

  1. Those which appear in pairs.

      Good morning

  2. Those which appear individually.

     <img src="baby.jpg">

- Browsers interpret the tags to display a HTML page in properly formatted form.

Introduction

- **Tags are case insensitive**

  <HEAD>, <Head> and <head> are all equivalent.

- **Tags may be nested**

<html> <head>…</head> <body>…</body> </html>

- Most browsers have a VIEW SOURCE menu option. The HTML version of the page can be displayed.

HTML Document Structure

A HTML document consists of two major portions:

- **Head**

  Contains information about the document, like the title and "meta" data describing the contents.

- **Body**

  Contains the actual matter of the document. Gets displayed within the browser window.

HTML file structure

- <html>

<head>
<title>web page title</title>
</head>

<body>
Hello! This is my first page of code. I can't believe I'm on my way to being a webmaster. This is so great!!!
</body>

</html>

Body Tag

- **<body> ……. </body>**

  Used to bracket the body of a HTML document.

- **Attributes:**
  - **background=url**

    specifies an image file to be used as tiling background.
  - **bgcolor=color**

    Sets the background color of the document.
  - **text=color**

    Sets the default color for the normal text in the document.

How to specify colors?

Two ways:

By specifying the red, green, blue or

- **RGB components**.
  - Each color encoded in 8 bits.
  - 00 means that the color is turned off;
  - FF means fully turned on.

Example:

<body text="#FFFFFF" bgcolor="#0000FF">

How to specify colors?

By specifying the color name.

Some of the colors that are supported by browsers are:

aqua	black	blue	fuchsia
gray	green	lime	maroon
navy	olive	purple	red
silver	teal	yellow	white

Many other colors are possible.

Example:

```
<body text=white>
<body bgcolor="yellow">
```

Text Formatting in HTML

- **<Hn> ……. </Hn>**
  - Used to generate headings, $1 \leq n \leq 6$.
  - Six different levels of headings.

<H1> is the largest, <H6> is the smallest.

- **<P>**
  - Paragraph marker, used to separate text into paragraphs.

End tag </P> is optional.

A series of paragraph tags <p><p>…<p> with no intervening text is treated as a single <p>.

Text Formatting in HTML

- **<HR>**

  Produces a horizontal line, which can be used to delimit sections.

  Length of the line can be specified.

- **Examples:**
  - <hr>
  - <hr size="20"> [noshade option possible]
  - <hr width="75%">
  - <hr align="right" width=120>
  - Across full width of browser, 20 pixels thick, 75% of available page width, and 120 pixels right-justified.

Text Formatting in HTML

- **<address> ……. </address>**
  - Supplies the contact information of the author.

  Generally formatted in italics, with a line break above and below.
- **Example:**

<address>

Prof. Indranil Sen Gupta

Dept. of Computer Science & Engg.

I.I.T. Kharagpur, INDIA

Email: isg@hotmail.com

</address>

Text Formatting in HTML

- ** ……. **
  - Displays the enclosed text in bold.
- ** ……. **
  - Displays the enclosed text in italics.
- **<cite> ……. </cite>**
  - Tells the browser that this is a citation. Usually displayed in italics.
- **_{…….}**
  - Displays the enclosed text as subscript.
- **^{…….}**
  - Displays the enclosed text as superscript.

Text Formatting in HTML

- ** ……. **
  - Specifies the style of the enclosed text.
- **Attributes:**
  - color = color name
  - face = typeface
  - size = value [1 to 7; 3 is the default]
- ** ……. **
  - Centers the enclosed elements horizontally on the page.
- **<P align=option> ……. </P>**
  - Used to align a paragraph.
  - Option can be left, right or center.

Text Formatting in HTML

- **<pre> …….</pre>**
  - The <pre> tag defines preformatted text.
  - Text in a pre element is displayed in a fixed-width font (usually Courier), and it preserves both spaces and line breaks.

```
<!DOCTYPE HTML>
    <html>
        <body>
                <PRE>
                        class HelloWorld {
                            public static void main(String[] args) {
                                System.out.println("Hello World!");
                                                                    }
                                                }
                </PRE>
        </body>
 </html>
```

Comments

- comments may be added to an HTML file to inform those who would modify or maintain the pages

Example:

<!--This is a comment for the reader of the HTML file,

but not the page-->

Hyperlinks

- References to other elements: pages, images, resources, etc. causes automatic request for linked element

Example:

<A HREF="http://www.mbl.edu">

The Marine Biological Laboratory</A>

Displayed as:

- The Marine Biological Laboratory

Using Some Special Characters

- There are certain special characters that can be used while creating document.
- Following are some special character:

Symbols	Entity
©, ®	&copy, &reg
¼, ½, ¾	&frac14, &frac12, &frac34
÷, <, >, ≤,≥	&divide, &lt, &gt, &le, &ge
&	&amp
♣ ♠ ♥	&spades, &clubs, &hearts

Example 1

```
<html>
   <head>
        <title> Title of the Document </title>
   </head>
   <body text="white" bgcolor="blue">
        This is the content of the document.
        This is an <i> italic </i> font,
        and this is <b> bold </b>.
</body>
</html>
```

Example 2

```
<html>
   <head><title>Demonstration of Headings </title></head>
   <body text="#FFFFFF" bgcolor="#0000FF">
         <h1>This is a first level heading. </h1>
         <h2>The second level</h2>
         <h3>The third level</h3>
         <h4>Fourth level. </h4>
         <h5>Fifth level.</h5>
         <h6>And, finally, the sixth .</h6>
         A small amount of plain non-heading text.
   </body>
</html>
```

Example 3

```
<html>
<head><title>Paragaph Aligning</title></head>
<body text=white bgcolor=blue>
   <h3>
         <P ALIGN=CENTER> This paragraph will be aligned
         at the center. Even as the browser window
         size changes, the alignment remains the same. </P>

         <P ALIGN=LEFT>This demonstrates left alignment. </P>

         <P ALIGN=RIGHT>How about aligning by the rightmargin? </P>
   </h3>
</body>
</html>
```

Example 4

```
<html>
<head><title>Layout Features 1</title></head>
<body text=yellow bgcolor=blue>
    <h2> <pre>
    begin
            if (a > b)
                    then max := a;
                    else max := b;
                    end;
</pre>
</h2>
<hr size=8 width=50%>
<hr>
<hr size=20 width="75%" noshade>
</body>
</html>
```

Example 5

```
<html>
<head><title>Layout Features 2</title></head>
<body text=yellow bgcolor=blue>
   <h3>Extended Quotations</h3>
   <blockquote>
         <P>This is the first paragraph within
         the BLOCKQUOTE environment. </P>
         <P>Another paragraph starts here. </P>
         We type some text here without explicitly
         giving paragraph break.
   </blockquote>
</body>
</html>
```

Example 6

```
<html>
<head><title> Superscript and Subscript </title></head>
<body text=white bgcolor=blue>
   <h1> y = x <sup> 3 </sup> + 2 x <sup> 2 </sup> + 4
   </h1>
   <br>
   <h2> W <sub> total </sub> = x <sup> 2 </sup> - 5 <h2>
</body>
</html>
```

Lists

- There are a number of tags for building lists.
- Serves the purpose of improving the readability of the text.
- Depending on the way the list items are displayed, lists may be divided into three types:
  - Unnumbered list
  - Numbered list
  - Definition list

Ordered Lists

- Numbered or ordered lists are used when the sequence of the items is important.
- Specified using the tag:

  <OL> …… </OL>

- The individual items in the list are specified using the <LI> tag.

```
Outline<BR>
  <OL>
      <LI>Introduction
      <LI>Body
      <LI>Conclusion
      <LI>Endnotes
  </OL>
```

displayed as:

Outline

1. Introduction
2. Body
3. Conclusion
4. Endnotes

Unordered Lists

- Used to display a set of related items that appear in no particular order.
- Each item is indented with a preceding bullet symbol.
- Specified using the tag: **<UL> …… </UL>**
- The individual items in the list are specified using the <LI> tag.

Attributes: type = disc | circle | square

Types of Lists
<UL>
<LI>ordered lists
<LI>unordered lists
<LI>definition lists
</UL>

displayed as:

Types of Lists

- ordered lists
- unordered lists
- definition lists

Definition Lists

- ***Glossary lists*** are slightly different from other lists.
- Each list item in a glossary/Definition list has **two parts:**
  - **A term**
  - **The term's definition**
- Each part of the glossary list has its own tag:
  - <dt> for the term (definition term),
  - <dd> for its definition (data definition).

- <dt> and <dd> usually occur in pairs, although most browsers can handle single terms or definitions.
- The entire glossary list is indicated by the tags **<dl>...</dl>** (definition list).

Lists

- <dl>

  <dt>Basil</dt>

  <dd>Annual. Can grow four feet high; the scent of its tiny white flowers is heavenly.</dd>

  <dt>Oregano</dt>

  <dd>Perennial. Sends out underground runners and is difficult to get rid of once established.</dd>

  <dt>Coriander</dt>

  <dd>Annual. Also called cilantro, coriander likes cooler weather of spring and fall.</dd>

</dl>

Tables

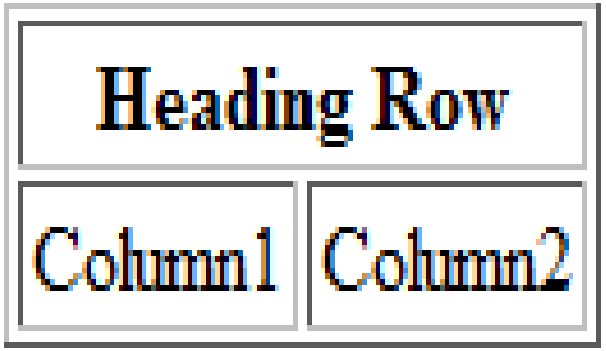
```
<table>
   <th>Header</th>
        <tr>
                <td>Column 1</td>
                <td>Column 2</td>
                …
                …
                <td>Column n</td>
        </tr>
</table>
```

Tables

- Additional attributes of the tag are:
  - **Align** to define where the table should go.
  - **Width** = width of the table (either a number or %).
  - **Border** to define if there would be a border.
  - **Cellspacing** = distance between cells.
  - **Cellpadding** = distance between edge of a cell and the cell contents.

Exercise

```
<html>
<head>
<title>Table Examples </title>
</head>
<body>
    <table border=1 align="center" cellspacing=2 cellpadding=2>
        <th colspan=2>Heading Row</th>
        <tr>
            <td>Column1</td>
            <td>Column2</td>
        </tr>
    </table>
</body>
</html>
```



What are forms?

- **<form>** is just another kind of HTML tag
- Forms are used to create (rather primitive) GUIs on Web pages
  - Usually the purpose is to ask the user for information
  - The information is then sent back to the server

What are forms?

- A form is an area that can contain **form elements**
- The syntax is:
  - **<form** ***parameters*****>** ***...form elements...*** **</form>**
- Form elements include:
  - buttons, checkboxes, text fields, radio buttons, drop-down menus, etc
  - Other kinds of tags can be mixed in with the form elements
- A form usually contains a Submit button to send the information in he form elements to the server
- The form's ***parameters*** tell JavaScript how to send the information to the server (there are two different ways it could be sent)
- Forms can be used for other things, such as a GUI for simple programs

The <form> tag

- The <form *arguments*> … </form> tag encloses form elements (and probably other elements as well)
- The arguments to form tell what to do with the user input
  - action="*url*" (required)
    - Specifies where to send the data when the Submit button is clicked
  - method="get" (default)
    - Form data is sent as a URL with ***?form_data*** info appended to the end
    - Can be used *only* if data is all ASCII and not more than 100 characters
  - method="post"
    - Form data is sent in the body of the URL request
    - Cannot be bookmarked by most browsers
  - target="*target*"
    - Tells where to open the page sent as a result of the request
    - *target*= _blank means open in a new window
    - *target*= _top means use the same window

The <input> tag

- Most, but not all, form elements use the input tag, with a type="..." argument to tell which kind of element it is
  - type can be text, checkbox, radio, password, hidden, submit, reset, button, file, or image
- Other common input tag arguments include:
  - name: the name of the element
  - id: a unique identifier for the element
  - value: the "value" of the element; used in different ways for different values of type
  - readonly: the value cannot be changed
  - disabled: the user can't do anything with this element

Text input

A text field:

```
<input type="text" name="textfield" value="with an initial value" />
```

A multi-line text field

```
<textarea name="textarea" cols="24" rows="2">Hello</textarea>
```

A password field:

```
<input type="password" name="textfield3" value="secret" />
```

Note that two of these use the **input** tag, but one uses **textarea**

Buttons

- **A submit button:**

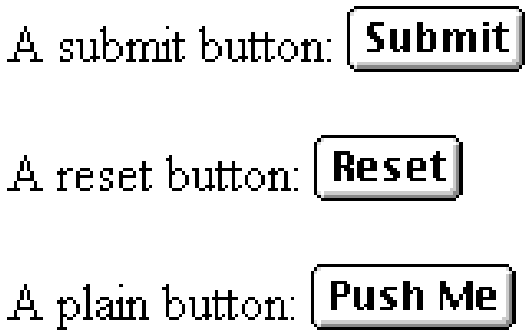
```
<input type="submit" name="Submit" value="Submit" />
```

- **A reset button:**

```
<input type="reset" name="Submit2" value="Reset" />
```

- **A plain button:**

```
<input type="button" name="Submit3" value="Push Me" />
```



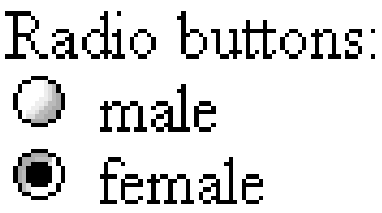
- submit: send data
- reset: restore all form elements to their initial state
- button: take some action as specified by JavaScript

Note that the type is input, not "button"

Radio buttons

Radio buttons:

```
<br>
    <input type="radio" name="radiobutton" value="myValue1" />male<br>
    <input type="radio" name="radiobutton" value="myValue2" checked="checked" />female
```



- If two or more radio buttons have the same name, the user can only select one of them at a time
  - This is how you make a radio button ***"group"***
- If you ask for the value of that name, you will get the value specified for the selected radio button
- As with checkboxes, radio buttons do not contain any text

Labels

- In many cases, the labels for controls are not part of the control
  - <input type="radio" name="gender" value="m" />male
  - In this case, clicking on the word “male” has no effect
- A label tag will bind the text to the control
  - <label><input type="radio" name="gender" value="m" />male</label>
  - Clicking on the word “male” now clicks the radio button
- Sometimes you should use the ***for*** attribute:
  - <label for="lname">Last Name:</label>
    <input type="text" name="lastname" id="lname" />
  - In some Browser (Firefox and Opera), this isn’t necessary, but it may be for some browsers
- Labels also help page readers read the page correctly
- Some browsers may render labels differently

Checkboxes

- **A checkbox:**

  <input type="checkbox" name="checkbox" value="checkbox" checked="checked">

  - type: "checkbox"
  - name: used to reference this form element from JavaScript
  - value: value to be returned when element is checked
  - Note that there is *no text* associated with the checkbox
    - Unless you use a label tag, only clicking on the box itself has any effect

Drop-down menu or list

- ***A menu or list:***

```
<select name="select">
   <option value="red">red</option>
   <option value="green">green</option>
   <option value="BLUE">blue</option>
</select>
```

  - ***Additional arguments:***
    - ***size***: the number of items visible in the list (default is "1")
    - ***multiple***
      - if set to "true" (or just about anything else), any number of items may be selected
      - if omitted, only one item may be selected
      - if set to "false", behavior depends on the particular browser

A complete example

```
<html>
<head>
        <title>Get Identity</title>
</head>
<body>
<p><b>Who are you?</b></p>
<form method="post" action="">
        <p>Name:
                <input type="text" name="textfield">
        </p>
        <p>Gender:
        <label><input type="radio" name="gender" value="m" />Male<label>
        <label><input type="radio" name="gender" value="f" />Female</label>
        </p>
 </form>
</body>
</html>
```