

Introduction to HTML

CS5610: Web Development

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Pre-Class Activity

- Fork the repo
<https://github.com/CSE-316-Software-Development/learn-html.git>
 - Create a new branch with the name: *today's date*(MMDDYY)
 - Enter your full name in README.md
 - Push to the branch when done.
- Useful git commands:
 - Create new local branch
`$ git checkout -b <branch-name>`
 - Push new branch to remote
`$ git push origin <branch-name>`
 - Push modified/new files to remote branch
`$ git add <path/to/file>`
`$ git commit -m "useful message"`
`$ git push`

What is HTML?

- HTML stands for **H**yper **T**ext **M**arkup **L**anguage.
- HTML is a *declarative language* that describes the structure of a web page.
- HTML is a nested series of elements.
- Each element has its own attributes and associated actions.
- HTML elements tell the browser what to display (e.g., text, image, paragraph, etc.).

HTML Basics

- The basic structure of an HTML is as follows:

```
<!DOCTYPE html>
```

```
<html>
```

```
<head>
```

```
...
```

```
</head>
```

```
<body>
```

```
...
```

```
</body>
```

```
</html>
```

- All HTML documents must begin with a document type declaration
- The HTML document itself begins with `<html>` and ends with `</html>`
- Document Metadata goes within `<head>` and `</head>`
- Elements that will be displayed go within `<body>` and `</body>`
- There can only be one `<body>` element in a document

Page Metadata

- Metadata includes page title and icon.

```
<html>
<head>
  <title>My Page Title</title>
  <link rel="icon" type="image/x-icon" href="/images/logo.png">
</head>
<body>

<h1>This is a Heading</h1>
<p>This is a paragraph.</p>

</body>
</html>
```

HTML Elements

- An element is from the start tag to the end tag.
`<tag> content </tag>`
- Elements can be nested, that is, elements can contain other elements.
- Tags are not case-sensitive. So, `<p>` and `<P>` are the same.

```
<!DOCTYPE html>
```

```
<html>
```

```
<body>
```

```
<h1>My First Heading</h1>
```

```
<p>My first paragraph.</p>
```

```
</body>
```

```
</html>
```

See HTML Element Reference at

<https://developer.mozilla.org/en-US/docs/Web/HTML/Element>

HTML Attributes

- Elements have attributes to specify additional information.
- Attributes are always part of the start tag.
- Attributes are key value pairs of the form *name*="value".
 - For example, the hyperlink `<a>` tag's *href* attribute specifies a URL.
`Visit Northeastern University`
 - The image `` tag's *src* attribute specifies path of the image file and the *alt* attribute specifies an alternate text.
``
- See Attribute Reference at <https://developer.mozilla.org/en-US/docs/Web/HTML/Attributes>

HTML Headings

- Elements <h1> to <h6> represent 6 levels of heading with <h1> being the most headings and <h6> being the least.
- Headings have a default font size which can be changed with the *style* attribute.

```
<h1 style="font-size:80px;">Heading H1</h1>
```


For You to Do

- Set the style attribute of a `<h1>` in *quizzes/headings.html*. Will the default size of `<h1>` change?

```
<h1 style="font-size:10px;">Heading H1</h1>
```

HTML Paragraphs

- The <p> tag is used to define a paragraph or a block of text.

```
<p>This is a paragraph.</p>
```

```
<p>This is another paragraph.</p>
```

- A paragraph's display is adjusted according to screen size; extra spaces are ignored by the browser.

```
<p>
```

```
This paragraph  
will be displayed  
according to screen size.
```

```
</p>
```

HTML Paragraphs

- To preserve new lines and spaces, we can use the `<pre>` tag.

```
<pre>
This paragraph
will be displayed
as is.
</pre>
```

- We can add horizontal breaks between paragraphs using the `<hr>` tag

```
<h1>This is heading 1</h1>
<p>This is some text.</p>
<hr>
<h2>This is heading 2</h2>
<p>This is some other text.</p>
<hr>
```

This is heading 1

This is some text.

This is heading 2

This is some other text.

- We can also add line breaks (newline) using the `
` tag.

For You to Do

- Correct the HTML document in *quizzes/paragraph.html* such that when it is opened in a browser, it appears as the following:

About React

React is a JavaScript library for rendering user interfaces (UIs).

UIs are built from reusable small units such as button, text, etc. and combined to form larger units.

In this worksheet and the subsequent ones, we will learn about React components and how they can be used to build UI screens effectively.

Format Text

- HTML has special tags to display text in special types.
 - ``: Bold text.
 - ``: Important text.
 - `<i>`: Italic text.
 - ``: emphasized text.
 - `<mark>`: Highlight text.
 - `<small>`: Smaller text.
 - ``: Scratched out text.
 - `<ins>`: Underlined text.
 - `<sub>`: subscripted text.
 - `<sup>`: Superscript text.

For You to Do

- Complete the HTML document in *quizzes/format.html* such that when it is opened in a browser, it appears as the following:

Binary Math

If N is a K -bit binary string
then the decimal representation of N can be derived as follows:
 $2^0 + 2^1 + \dots + 2^{K-1}$

HTML Comments

- Comments are a great way to document your code or hide code during development.

```
<!-- Write your comments here -->
```

- Examples:

```
<!-- This is a comment -->  
<p>This is a paragraph.</p>  
<!-- Add more -->
```

```
<!--  
<p>Multiline comment</p>  
  
-->  
<p>This is a paragraph.</p>
```

```
<p>This <!-- hide text --> is a paragraph.</p>
```

HTML Colors

- Colors are specified using color names, RGB, HEX, HSL, RGBA, or HSLA mode.
- Colors are specified in the *style* attribute.

HTML Colors

- An RGB code is a triple (*Red, Green, Blue*) where each element in the triple is a code 0–255 to denote intensity.
- A Hex code is of the form #RRGGBB, where *RR* is red, *GG* is green, and *BB* is blue in hex. ff is highest and 00 is lowest value for a color.
- A HSL code is a triple (*hue, saturation, lightness*).
 - Hue is a value on the color wheel 0-360. 0 is red, 120 is green, and 240 is blue.
 - Saturation is a % that indicates a shade of gray. 0% is gray; 100% is full color.
 - Lightness is a % that indicates darkness. 0% is dark, 100% is white.
- The A in HSLA and RGBA adds/removes transparency.

For You to Do

- Change the values in *quizzes/colors.html* and observe how the colors change.

HTML Links

- The `<a>` tag is used to define links.
- The *href* attribute value specifies the URL of the link.
- The *target* attribute value specifies where the page should open.
 - *_self* is default. Open in same window/tab.
 - *_blank*. Opens in new window/tab.
 - *_parent*. Opens in parent frame.
 - *_top*. Opens in full body of window.
- Inside the `<a>` tag we can put anything as the link's description (e.g., text or image).

```
<a href="/src/test.html">  
    
</a>
```

HTML Links

- We can create links to specific locations in the same page using the `#id` syntax.

```
<h2 id="C10">Chapter 10</h2>  
<p> Chapter is empty.</p>
```

- Link to “C10” using `<a>`.

```
<a href="#C10">View Chapter 10</a>
```

- If “C10” is in another page (*demo.html*):

```
<a href="demo.html#C10">Go to Chapter 10</a>
```

For You to Do

- In *quizzes/links.html*
 - correct the <a> tag in line 32.
 - change the image link such that when clicked it opens in a new tab.

HTML Tables

- Tables are used to display data in rows and columns using the **<table>** tag.
- Each row is indicated using the **<tr>** tag.
- Each cell is indicated using the **<td>** tag.
- Header cells are indicated using the **<th>** tag.
- The *border* attribute is used to draw a border around the table.
 - Border value is of numeric string type such as “1”, “2”, and so on.
- The *width* attribute is used to specify the size of entire table or a column.
- The *height* attribute is used to specify the size of entire table or a row.
 - width and height can be absolute in pixels or in percentage relative to the parent object.
- The *caption* attribute is to label a table with a caption text.
 - The *align* attribute is used to position the caption; values can be *top* or *bottom*.

For You to Do

Complete the HTML in *quizzes/simple-table.html* to display the table shown below.

ID	Name	Course
928282134	Jojo Pal	CSE 316
29828812	Hal Abel	CSE 101

Simple Table

Set the “Name” column to 50% of the table’s width.

For You to Do

Complete the HTML in *quizzes/side-table.html* to display the table as shown below.

SideWays Table.

ID	928282134	29828812
Name	Jojo Pal	Hal Abel
Course	CSE 316	CSE 101

HTML Tables

- We can merge cells in a table using the *colspan* and *rowspan* attributes.
 - they take numeric values.
 - indicates the number of columns or rows to be occupied.

For You to Do

- Correct the HTML in *quizzes/table-span.html* such that the following table is displayed:

Table with merged cells.

SBU ID	Full Name		Course
928282134	Jojo	Pal	CSE 316
			CSE 320
29828812	Hal	Abel	CSE 101
			CSE 320

HTML Lists

- Unordered Lists are specified using the **** tag.

```
<ul>  
  <li>CSE316</li>  
  <li>CSE300</li>  
  <li>CSE320</li>  
</ul>
```

Unordered Lists

- CSE316
- CSE300
- CSE320

- Ordered Lists are specified using the **** tag.

```
<ol>  
  <li>CSE316</li>  
  <li>CSE300</li>  
  <li>CSE320</li>  
</ol>
```

Ordered Lists

1. CSE316
2. CSE300
3. CSE320

For You to Do

Complete the HTML in *quizzes/nested-list.html* to display a list as follows:

Nested Lists

- CSE316
 1. HTML
 2. CSS
- CSE300
- CSE320

HTML Block Elements

- A block element occupies the entire width of a page.
- It always begins on a new line and has a top and bottom margin.
- It is often used as a container that can hold other HTML elements.
- Examples include:
 - **<div>, <p>, <form>, <h1-6>, <footer>, <nav>, <table>, <section>**

```
<div style="border: 1px solid black">Hello World</div>
```

Hello World

HTML Inline Elements

- An inline element occupies as much width as necessary.
- It does not start on a new line.

```
<p> Say <span style="border: 1px solid black">Hello World</span> </p>
```

SayHello World

- Other notable examples include **<a>**, ****, **
, **<button>.

The HTML Class Attribute

- The class attribute is used to specify one or more class names for an element.
- Class names are used to group HTML elements.
- They are used by JavaScript and CSS to apply certain actions to a group of elements.
- Class names are case sensitive.
- One element can have multiple class names.
- Different elements can have the same class name.

```
<h2 class="state main">NY</h2>  
<h2 class="state">MA</h2>  
<p class="state">NJ</p>
```

The HTML ID Attribute

- The *id* attribute is used to identify a specific element in a page.
- Hence, *id* must be unique in a page.
- The *id* attribute is case sensitive.
- Ids are used by JavaScript and CSS to apply actions/styles to a specific element.

```
<html>
<head>
<style>
#myHeader {
  background-color: green;
  color: black;
  padding: 20px;
  text-align: center;
}
</style>
</head>
<body>

<h2>The id Attribute</h2>
<p>CSS is used to style the div with "myHeader":</p>

<div id="myHeader">This is a div</div>

</body>
</html>
```


For You to Do

- Change the *quizzes/block-inline.html* such that the second *div* is displayed as an inline block (shown below).

Inline Elements

This is an inline element. Inline elements do not start on a new line and only take up as much width as necessary. They flow horizontally, allowing other elements to sit beside them.

HTML Forms

- The `<form>` tag is used to capture user input and send it to a server.
- A form can have many kinds of inputs.
 - `<input type="text">` : single line of text input.
 - `<input type="radio">` : radio button to select an item.
 - `<input type="checkbox">`: checkbox to select multiple items.
 - `<input type="submit">` : button to perform some action.

<https://developer.mozilla.org/en-US/docs/Web/HTML/Element/form>

For You to Do

- In the *forms* directory follow the instructions in *forms/README.md* to setup the forms app.
- Answer the questions in the README file.

Additional References

- <https://developer.mozilla.org/en-US/docs/Web/HTML>