

# COMP30680

## Web Application Development

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# Basics of HTML

## Overview

- Web Page Components
- The Building Blocks For Web Page Markup
- Basic Text Formatting
- Working With Images
- Lists
- Tables
- Links

# HTML

HTML or HyperText Markup Language has two essential features:

- Hypertext
  - Means you can create a link in a Web page that leads any visitor to any other Web page or to practically anything else on the Internet. Thus, the information on the Web can be accessed from many different directions.
- Universality
  - Means that because HTML documents are saved as Text Only files, virtually any computer can read a Web page. It doesn't matter if your visitors have Macintosh or Windows machines, whether they use a Unix box or even a hand-held device like an iPhone. Put simply, the Web is open to all.

# Online Resources

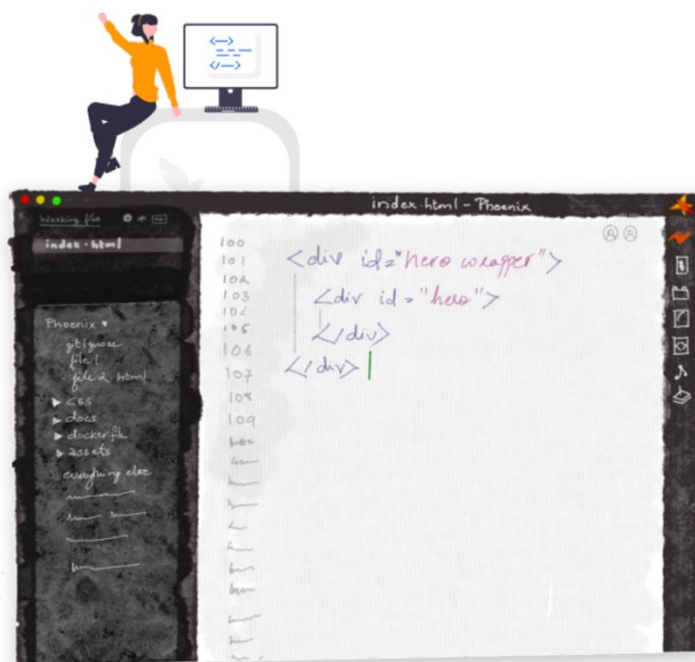
Web Platform - <http://www.webplatform.org/> (A bit outdated)

Code Academy - <http://www.codecademy.com/> (Lots of v. useful resources)

W3Schools – <http://www.w3schools.com/> (Recommended – we will follow this on course)

# Meet Phoenix Code

A text editor specially crafted for web developers, designers, and students. Phoenix Code's advanced visual tools and live previews eliminate guesswork, making web development quicker and more enjoyable.



## Runs Everywhere

Phoenix Code is natively available for macOS, Windows, Linux and ChromeOS

Or use the web app on any device with a browser.



# Webpage Components

A Web page is made up of three principal components:

## Markup

- Instructions that describe how the content and references should be displayed. The fundamental markup structures of HTML are called **tags**.

## Text Content

- The actual headings and paragraphs that appear on the page.

## Occasional References

- More complex content like links, images, animations etc.

Web pages also include information about the language or script in which the text was written (the **encoding**) as well as the kind of markup it describes (the **doctype**).

# Simple HTML page

```
<!DOCTYPE html>
<html>
<head>
<title>Page Title</title>
</head>
<body>

<h1>My First Heading</h1>
<p>My first paragraph.</p>

</body>
</html>
```

- The **DOCTYPE** declaration defines the document type to be HTML
- The text between **<html>** and **</html>** describes an HTML document
- The text between **<head>** and **</head>** provides information about the document
- The text between **<title>** and **</title>** provides a title for the document
- The text between **<body>** and **</body>** describes the visible page content
- The text between **<h1>** and **</h1>** describes a heading
- The text between **<p>** and **</p>** describes a paragraph

# Simple HTML page

```
<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>
```



# <!DOCTYPE>

The **<!DOCTYPE>** declaration helps the browser to display a web page correctly.

There are different document types on the web.

To display a document correctly, the browser must know both type and version.

Version	Year
HTML	1991
HTML 2.0	1995
HTML 3.2	1997
HTML 4.01	1999
XHTML	2000
HTML5	2014

## HTML5

```
<!DOCTYPE html>
```

## HTML 4.01

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN" "http://www.w3.org/TR/html4/loose.dtd">
```

## XHTML 1.0

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

# Markup: Elements

HTML elements are written with a **start** tag, with an **end** tag, with the **content** in between:

```
<tagname>content</tagname>
```

The HTML **element** is everything from the start tag to the end tag:

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

# Nested elements

HTML elements can be nested (elements can contain elements).

All HTML documents consist of nested HTML elements.

The example on the right contains examples of nested HTML elements.

**Note:** Improperly nested tags confuse the browser and the results can be unpredictable. Under the XHTML standard, improperly nested tags are illegal.

```
<!DOCTYPE html>
<html>
  <head>
    <title>Page Title</title>
  </head>
  <body>

    <h1>My First Heading</h1>
    <p>My first paragraph.</p>

  </body>
</html>
```


# Tags





HTML provides lots, and lots of Tags!

See

<http://www.w3schools.com/tags/default.asp>  
for a list.

## HTML Tags Ordered Alphabetically

 = New in HTML5.

Tag	Description
<u>&lt;!--...--&gt;</u>	Defines a comment
<u>&lt;!DOCTYPE&gt;</u>	Defines the document type
<u>&lt;a&gt;</u>	Defines a hyperlink
<u>&lt;abbr&gt;</u>	Defines an abbreviation or an acronym
<u>&lt;acronym&gt;</u>	Not supported in HTML5. Use <abbr> instead. Defines an acronym
<u>&lt;address&gt;</u>	Defines contact information for the author/owner of a document
<u>&lt;applet&gt;</u>	Not supported in HTML5. Use <embed> or <object> instead. Defines an embedded applet
<u>&lt;area&gt;</u>	Defines an area inside an image-map
<u>&lt;article&gt;</u>	 Defines an article
<u>&lt;aside&gt;</u>	 Defines content aside from the page content
<u>&lt;audio&gt;</u>	 Defines sound content
<u>&lt;b&gt;</u>	Defines bold text
<u>&lt;base&gt;</u>	Specifies the base URL/target for all relative URLs in a document
<u>&lt;basefont&gt;</u>	Not supported in HTML5. Use CSS instead. Specifies a default color, size, and font for all text in a document
<u>&lt;bdi&gt;</u>	 Isolates a part of text that might be formatted in a different direction
<u>&lt;bdo&gt;</u>	Overrides the current text direction
<u>&lt;big&gt;</u>	Not supported in HTML5. Use CSS instead. Defines big text
<u>&lt;blockquote&gt;</u>	Defines a section that is quoted from another source
<u>&lt;body&gt;</u>	Defines the document's body

# End Tags

Don't forget the end tags.

Some HTML elements will display correctly, even if you forget the end tag. However, never rely on this. It might produce unexpected results and/or errors if you forget the end tag.

Exception:

HTML elements with no content are called empty elements.

`<br>` is an empty element without a closing tag (the `<br>` tag defines a line break).

Empty elements can be "closed" in the opening tag like this: `<br />`.

HTML5 does not require empty elements to be closed. But if you want stricter validation, or you need to make your document readable by XML parsers, you should close all HTML elements.

# Lowercase Tags?

HTML tags are not case sensitive: <P> means the same as <p>.

The HTML5 standard does not require lowercase tags, but W3C **recommends** lowercase in HTML4, and **demands** lowercase for stricter document types like XHTML.

# Markup: Attributes and Values

Attributes provide additional information about HTML elements.


- Attributes are always specified in **the start tag**
- Attributes come in name/value pairs: **name="value"**

```

```

Some elements, like `img` shown here, can take one or more attributes, each with its own value. The order is not important. Separate each attribute name/value-pair from the next with a space.


<img>









Attribute	Value	Description
<u>align</u>	top bottom middle left right	<b>Not supported in HTML5.</b> Specifies the alignment of an image according to surrounding elements
<u>alt</u>	<i>text</i>	Specifies an alternate text for an image
<u>border</u>	<i>pixels</i>	<b>Not supported in HTML5.</b> Specifies the width of the border around an image
crossorigin	 anonymous use-credentials	Allow images from third-party sites that allow cross-origin access to be used with canvas
<u>height</u>	<i>pixels</i>	Specifies the height of an image
<u>hspace</u>	<i>pixels</i>	<b>Not supported in HTML5.</b> Specifies the whitespace on left and right side of an image
<u>ismap</u>	ismap	Specifies an image as a server-side image-map
<u>longdesc</u>	<i>URL</i>	Specifies a URL to a detailed description of an image
<u>src</u>	<i>URL</i>	Specifies the URL of an image
<u>usemap</u>	<i>#mapname</i>	Specifies an image as a client-side image-map
<u>vspace</u>	<i>pixels</i>	<b>Not supported in HTML5.</b> Specifies the whitespace on top and bottom of an image
<u>width</u>	<i>pixels</i>	Specifies the width of an image



# HTML Global Attributes

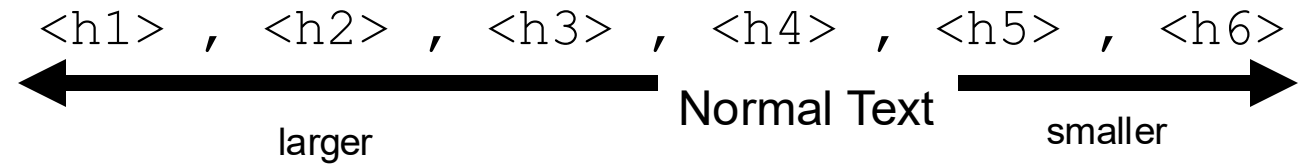
[http://www.w3schools.com/tags/ref\\_standardattributes.asp](http://www.w3schools.com/tags/ref_standardattributes.asp)

 = Attribute added in HTML5.

Attribute	Description
<u><a href="#">accesskey</a></u>	Specifies a shortcut key to activate/focus an element
<u><a href="#">class</a></u>	Specifies one or more classnames for an element (refers to a class in a style sheet)
<u><a href="#">contenteditable</a></u>	 Specifies whether the content of an element is editable or not
<u><a href="#">contextmenu</a></u>	 Specifies a context menu for an element. The context menu appears when a user right-clicks on the element
<u><a href="#">data-*</a></u>	 Used to store custom data private to the page or application
<u><a href="#">dir</a></u>	Specifies the text direction for the content in an element
<u><a href="#">draggable</a></u>	 Specifies whether an element is draggable or not
<u><a href="#">dropzone</a></u>	 Specifies whether the dragged data is copied, moved, or linked, when dropped
<u><a href="#">hidden</a></u>	 Specifies that an element is not yet, or is no longer, relevant
<u><a href="#">id</a></u>	Specifies a unique id for an element
<u><a href="#">lang</a></u>	Specifies the language of the element's content
<u><a href="#">spellcheck</a></u>	 Specifies whether the element is to have its spelling and grammar checked or not
<u><a href="#">style</a></u>	Specifies an inline CSS style
<u><a href="#">tabindex</a></u>	Specifies the tabbing order
<u><a href="#">title</a></u>	Specifies extra information about an element
<u><a href="#">translate</a></u>	 Specifies whether the content of an element should be translated or not

Note: there are also **Global Event Attributes**, but we will talk about this When we cover JavaScript.

# Headings



Headings are defined with the `<h1>` to `<h6>` tags.

`<h1>` defines the most important heading. `<h6>` defines the least important heading.

## Example

```
<h1>This is a heading</h1>  
<h2>This is a heading</h2>  
<h3>This is a heading</h3>
```

## Headings are important!

Use HTML headings for headings only. Don't use headings to make text **BIG** or **bold**.

Search engines use your headings to index the structure and content of your web pages.

Users skim your pages by its headings. It is important to use headings to show the document structure.

h1 headings should be main headings, followed by h2 headings, then the less important h3, and so on.

# The HTML <head> Element

**The HTML <head> element has nothing to do with HTML headings!**

The HTML <head> element contains **meta data**. Meta data are not displayed.

The HTML <head> element is placed between the <html> tag and the <body> tag.

E.g. The HTML **<title>** element is meta data. It defines the HTML document's title.

The title will not be displayed in the document, but might be displayed in the browser tab.

```
<!DOCTYPE html>
<html>

<head>
  <title>My First HTML</title>
  <meta charset="UTF-8">
</head>

<body>
  .
  .
  .
```

# HTML Text Markup

The HTML `<p>` element defines a **paragraph**.

```
Mary had a little lamb, <p> its fleece was white as snow </p>
```

```
Mary had a little lamb,
```

```
it's fleece was white as snow
```

```
<p>
  My Bonnie lies over the ocean.

  My Bonnie lies over the sea.

  My Bonnie lies over the ocean.

  Oh, bring back my Bonnie to me.
</p>
```

With HTML, you cannot change the output by adding extra spaces or extra lines in your HTML code.

The poem to the left will display as a single line.

# HTML Line Breaks & pre-formatted text

The HTML `<br>` element defines a **line break**.

Use `<br>` if you want a line break (a new line) without starting a new paragraph:

```
<p>This is<br>a para<br>graph with line breaks</p>
```

Result:

This is  
a para  
graph with line breaks

The HTML `<pre>` element defines preformatted text.

The text inside a `<pre>` element is displayed in a fixed-width font (usually Courier), and it preserves both spaces and line breaks:

```
<pre>
  My Bonnie lies over the ocean.

  My Bonnie lies over the sea.

  My Bonnie lies over the ocean.

  Oh, bring back my Bonnie to me.
</pre>
```

# HTML Style Attribute

Setting the style of an HTML element, can be done with the **style attribute**.

```
<body style="background-color:lightgrey;">  
  
<h1>This is a heading</h1>  
<p>This is a paragraph.</p>  
  
</body>
```

**This is a heading**

This is a paragraph.

```
<h1 style="color:blue;">This is a heading</h1>  
<p style="color:red;">This is a paragraph.</p>
```

```
<h1 style="font-family:verdana;">This is a heading</h1>  
<p style="font-family:courier;">This is a paragraph.</p>
```

# Formatting text

HTML also defines special **elements** for defining text with a special **meaning**.

`<p><b>This text is bold</b>.</p>`

`<p><i>This text is italic</i>.</p>`

Tag	Description
<u><code>&lt;b&gt;</code></u>	Defines bold text
<u><code>&lt;em&gt;</code></u>	Defines emphasized text
<u><code>&lt;i&gt;</code></u>	Defines italic text
<u><code>&lt;small&gt;</code></u>	Defines smaller text
<u><code>&lt;strong&gt;</code></u>	Defines important text
<u><code>&lt;sub&gt;</code></u>	Defines subscripted text
<u><code>&lt;sup&gt;</code></u>	Defines superscripted text
<u><code>&lt;ins&gt;</code></u>	Defines inserted text
<u><code>&lt;del&gt;</code></u>	Defines deleted text
<u><code>&lt;mark&gt;</code></u>	Defines marked/highlighted text

See also quotations and citations:

[http://www.w3schools.com/html/html\\_quotation\\_elements.asp](http://www.w3schools.com/html/html_quotation_elements.asp)

# Working With Images

Use the HTML **<img>** element to define an image

Use the HTML **src** attribute to define the URL of the image

Use the HTML **alt** attribute to define an alternate text for an image, if it cannot be displayed

Traditionally the HTML **width** and **height** attributes were used to define the size of the image

```

```

It is better to use the CSS **width** and **height** properties to define the size of the image

```

```



# Width and Height or Style?

Both the width, height, and style attributes are valid in the latest HTML5 standard.

W3C suggest you use the style attribute. It prevents styles sheets from changing the original size of images:

```
<!DOCTYPE html>
<html>
<head>
<style>
img {
    width:100%;
}
</style>
</head>
<body>




</body>
</html>
```

# Lists – unordered.

```
<!-- unordered.html -->  
<h3>Some Common Single-Engine Aircraft</h3>  
<ul>  
  <li>Cessna Skyhawk</li>  
  <li>Beechcraft Bonanza</li>  
  <li>Piper Cherokee</li>  
</ul>
```

## **Some Common Single-Engine Aircraft**

- Cessna Skyhawk
- Beechcraft Bonanza
- Piper Cherokee

# Lists – ordered.

```
<!-- ordered.html -->
```

```
<h3> Cessna 210 Starting Instructions </h3>
```

```
<ol>
```

```
  <li> Set mixture to rich </li>
```

```
  <li> Set propeller to high RPM </li>
```

```
  <li> Set ignition switch to "BOTH" </li>
```

```
  <li> Set auxillary fuel pump switch to "LOW PRIME" </li>
```

```
  <li> When fuel pressure reaches 2 to 2.5 PSI, push the  
    starter button </li>
```

```
</ol>
```

## **Cessna 210 Engine Starting Instructions**

1. Set mixture to rich
2. Set propeller to high RPM
3. Set ignition switch to "BOTH"
4. Set auxillary fuel pump switch to "LOW PRIME"
5. When fuel pressure reaches 2 to 2.5 PSI, push starter button

For further detail see: [http://www.w3schools.com/html/html\\_lists.asp](http://www.w3schools.com/html/html_lists.asp)

# Key Table Tags

Use the HTML **<table>** element to define a table

Use the HTML **<tr>** element to define a table row

Use the HTML **<td>** element to define a table data

Use the HTML **<th>** element to define a table heading

For more on Tables see:

[http://www.w3schools.com/html/html\\_tables.asp](http://www.w3schools.com/html/html_tables.asp)

```
<table border="1" style="width:100%">
  <tr>
    <td>Jill</td>
    <td>Smith</td>
    <td>50</td>
  </tr>
  <tr>
    <td>Eve</td>
    <td>Jackson</td>
    <td>94</td>
  </tr>
</table>
```

Jill	Smith	50
Eve	Jackson	94
John	Doe	80

# Cell alignment

The placement of content within a cell can be specified with the **align** and **valign** attributes in the `<tr>`, `<td>`, and `<th>` tags.

The `align` attribute has possible values **left**, **right** and **center**, representing the horizontal placement of content within the cell.

The `valign` attribute of the `<td>` and `<th>` tags has the possible values **top** and **bottom**. The default value is **center**.

```
<!-- cell_align.html -->
<table border = "2">
<caption> The align and valign attributes
</caption>
<tr align = "center">
    <th> </th>
    <th> Column Level </th>
    <th> Another One </th>
    <th> Still Another One </th>
</tr>
<tr>
    <th> align </th>
    <td align = "left"> Left </td>
    <td align = "center"> Center </td>
    <td align = "right"> Right </td>
</tr>
<tr>
    <th> <br /> valign <br /> <br /> </th>
    <td> Default </td>
    <td valign = "top"> Top </td>
    <td valign = "bottom"> Bottom </td>
</tr>
</table>
```

The align and valign attributes			
	Column Level	Another One	Still Another One
align	Left	Center	Right
valign	Default	Top	Bottom

# HTML Block Elements

A block-level element always starts on a new line and takes up the full width available (stretches out to the left and right as far as it can).

The `<div>` element is a block-level element.

The `<div>` element is often used as a container for other HTML elements.

The `<div>` element has no required attributes, but **style** and **class** are common.

When used together with CSS, the `<div>` element can be used to style blocks of content:

```
<div style="background-color:black; color:white; padding:20px;">

<h2>London</h2>
<p>London is the capital city of England. It is the most populous city
in the United Kingdom, with a metropolitan area of over 13 million
inhabitants.</p>

</div>
```

# HTML Inline Elements

An inline element does not start on a new line and only takes up as much width as necessary.

This is an inline <span> element inside a paragraph.

The <span> element is an **inline element** that is often used as a container for some text.

The <span> element has no required attributes, but **style** and **class** are common.

When used together with CSS, the <span> element can be used to style parts of the text:

```
<h1>My <span style="color:red">Important</span> Heading</h1>
```

# Hypertext Links

```
<a href="url">Link text</a>
```

All links are specified in an attribute of an `<a>` tag.

A document that includes an `<a>` tag that specifies a link is called the **source** of that link.

The document whose URL is specified in a link is called the **target** or **anchor** of that link.

href stands for *hypertext reference*.

`<a href = "http://www.ucd.ie/welcome.html"> Click Here! </a>`

Link Designator      Server Name      HTML File      Visible Link Text



# Links

It is a good idea to use all lowercase letters for your URLs to avoid problems on the many servers that are case sensitive.

Try not to use “Click here” for a label. Instead use the key words that already exist in your text to identify the link. Alternatively an image could act as a label.

As a general rule, use **relative** URLs for links to Web pages on your site and **absolute** URLs for links to Web pages on other sites.

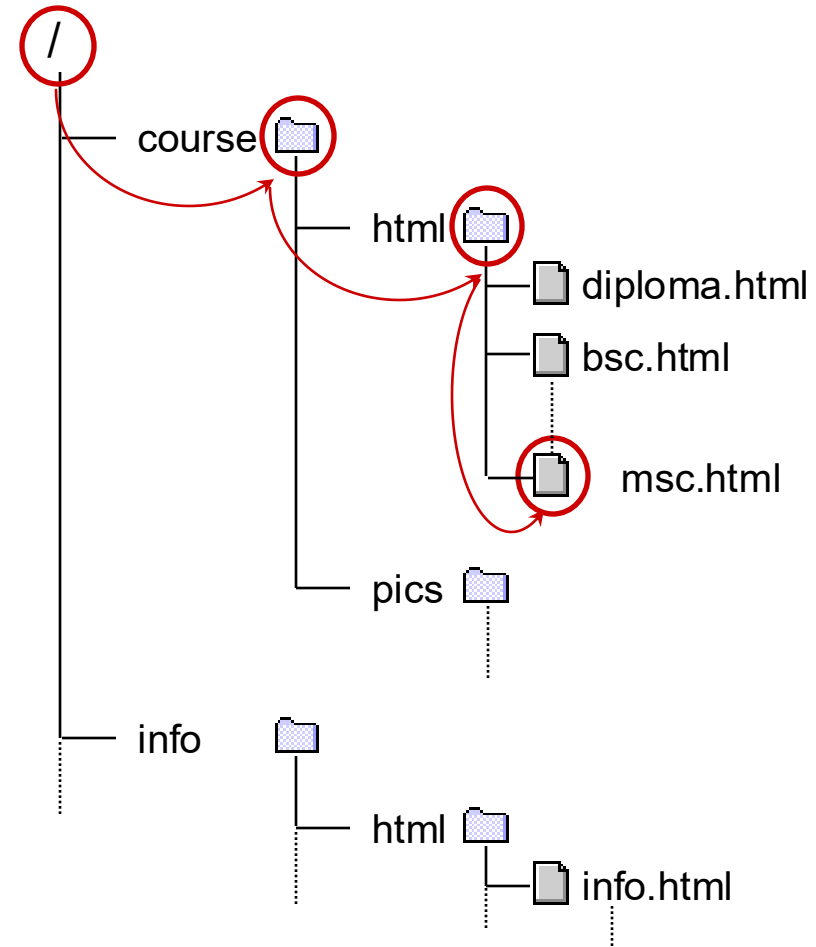
# Relative & Absolute Links

Relative address of msc.html:

</course/html/msc.html>

Absolute URL address of msc.html:

<http://www.ucd.ie/course/html/msc.html>



# Using Images to Label Links

```
<h1>Cookie and Woody</h1>
<p>
  Generally considered the sweetest and yet most independent cats in the <a
  href="pioneerval.html">Pioneer Valley,</a> Cookie and Woody are consistently
  underestimated by their humble humans.
</p>
<p>
  <a href="prevpage.html"></a>
  <a href="nextpage.html"></a>
</p>
<p>
  <a href="mailto:lcastro@crocker.com"> Send me comments</a> on this page!
</p>
```

## Cookie and Woody

Generally considered the sweetest and yet most independent cats in the [Pioneer Valley](#), Cookie and Woody are consistently underestimated by their humble humans.



[Send me comments](#) on this page!

# Questions, Suggestions?

Next class:

CSS part 1.