UNIT 1: HTML, CSS & Client Side Scripting

HTML

HTML is the language in which most websites are written. HTML is used to create pages and make them functional. The code used to make them visually appealing is known as CSS.

HTML was first created by Tim Berners-Lee, Robert Cailliau, and others starting in 1989. It stands for Hyper Text Mark-up Language. Hypertext means that the document contains links that allow the reader to jump to other places in the document or to another document altogether. The latest version is known as HTML5.

HTML is a mark-up language which is comprised of a set of tags that describe the document's content. HTML files are simple text files that contain plain text and tags and typically have the file extension .html or .htm. They are commonly referred to as web pages. HTML describes what a page should look like when viewed through a web browser such a Mozilla Firefox, Google Chrome, Safari, and Internet Explorer.

A **Mark-up Language** is a way that computers speak to each other to control how text is processed and presented. To do this HTML uses two things: **tags** and **attributes**.

HTML Editors

HTML can be created or edited in many different types of editors, many of which are free and work incredibly well. In reality, all you need is a simple text editor, like Microsoft Notepad, or Text Edit on a Mac to get started. An HTML editor makes things much easier by colour coding different items making it

simple to find specific items or locate errors.

Free Editors:

- Notepad ++ - http://notepad-plus-plus.org/
- visual studio code - https://code.visualstudio.com/download
- Sublime - https://www.sublimetext.com/3

HTML Tags

HTML Tags are keywords or tag names surrounded by angle brackets or < > and normally come in pairs like this:

<tag> and </tag>.

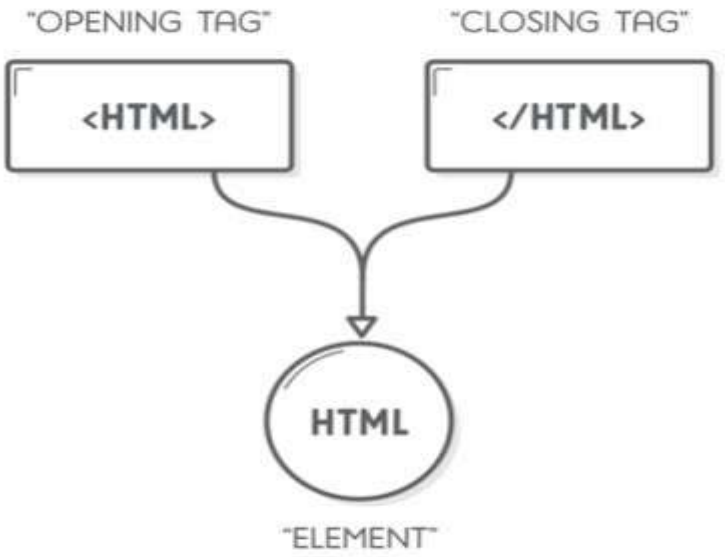
The first tag in a pair is the opening tag and the second tag is the closing tag. The closing tag is written the same way as the opening tag with a forward slash (/) to say “stop doing this.”

For Example:

<tagname> content </tagname>

Your HTML document should always contain <html> to signify the beginning of the HMTL content and </html> to signify the end. Without this tag, the document is only text.

Most tags come in matched "beginning" and "ending" pairs, but this is not an absolute rule.



Any Web page you create will contain the following tags at the start of the page:

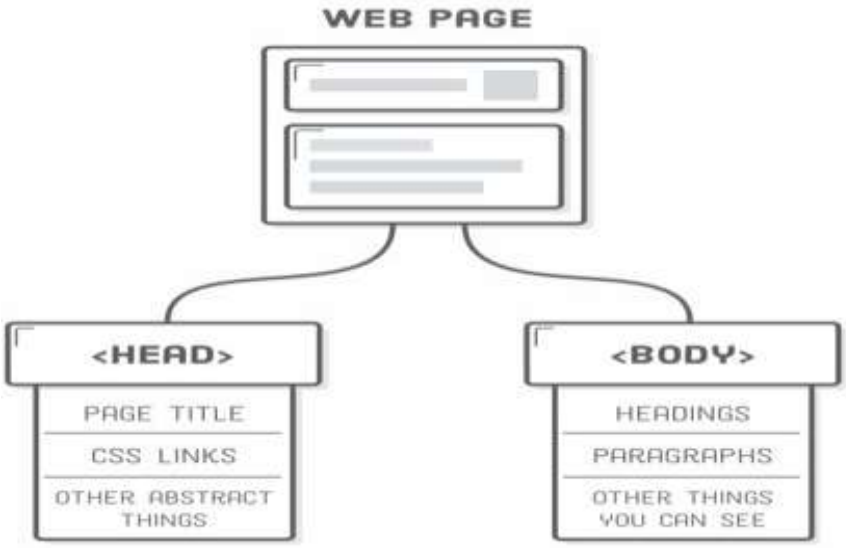
- <HTML>: tells the Web browser that this is the beginning of an HTML document
- <HEAD>: tells that Web browser that this is the header for the page (you'll learn later what goes between "HEAD" tags)
- <TITLE>: tells the Web browser that this is the title of the page
- <BODY>: tells the Web browser that this is the beginning of the Web page content -- everything you want to say and see on your page will follow this tag.
- The tags needed to end any Web page are:
- </BODY>
- </HTML>

Example:

```
<html>
  <head>
    <title>My First Page</title>
```

```
</head>
<body>
  Hello there. This is my first page!
</body>

</html>
```



Document Language

A web page's default language is defined by the Lang attribute on the top-level <html> element. The document is in English, use the en country code as the attribute value :

```
<html lang='en'>
```

Character Sets

A "character set" is kind of like a digital alphabet for your browser. It's different from the language of your document in that it only affects how the letters themselves are rendered, not the language of the content.

HTML Elements

An HTML Element is everything from the opening tag to the closing tag. The element content is everything between the opening and closing tags. There are also special elements that are closed in the start tag such as a line break. Most HTML elements can have attributes, or special characteristics that describe the element.

Start Tag	Element Content	End Tag
<html>	All of your HTML code	</html>
<head>	Special information about your page	</head>
<body>	The content of your page	</body>
<h1> to <h6>	Headings	</h1> to </h6>
<hr>	Adds a horizontal rule	none
	This is a paragraph	
	This is a link	
 	This is a line break	
<!--	This is a comment	-->

Special Elements

While there are a number of special HTML elements, such as the
 tag mentioned above, there are some other special elements you should know.

HTML Lines: The HTML horizontal rule can be used to divide content areas and uses the <hr> tag. Inserting the <hr> tag will draw a horizontal line across your content area.

HTML Comments: Comments can be inserted into HTML code to make it more readable and to explain to the reader of your code what it is you plan to do or what you have changed. It's always good practice to comment your HTML code.

Comment elements are written as follows and do not show on your rendered page. <!-- This is a comment --> The <!-- is the beginning of the comment

and the --> is the end. Everything typed within these tags will be invisible to the viewer unless the source code is viewed.

HTML "White Space": Browsers will ignore all "white space" in your HTML document. White space can be added to make your code more human readable, but it will be completely ignored when the browser renders the document. Keep this in mind when you write your code. Everything is controlled by a tag. Tags tell the browser what to do, if you instruct nothing, nothing will result.

HTML Attributes

HTML elements can have attributes which provide additional information about an element. Attributes are always assigned in the opening tag and always contain a name and value pair. The value must be contained in double quotes.

<tag name="value"> Content </tag>

Attribute	Description
Class	Specifies one or more classnames for an element (CSS)
Id	Specified a unique id for an element
Style	Specifies an inline CSS style for an element
Title	Specifies extra information about an element (displays as tooltip)

A common example of a complete element:

** google.com **

HTML Headings

HTML headings are defined with <h1> through <h6> tags. <h1> defines the most important heading while <h6> defines the lease important heading. The browser used to view the headings will automatically add space before and after each heading. It is very important that you use headings for your content

headers only and not simply to make any text larger. Search engine crawlers will use your heading tags to organize your content by order of importance. <h1> should always be used for your most important topics, followed by <h2> and so on.

HTML Paragraphs

HTML Documents are divided into paragraphs. Paragraphs are defined with the tag. Browsers will automatically add white space above and below a paragraph tag. Make sure to include the closing tag to complete the paragraph and start the next. Below is an example paragraph.

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Cras pharetra metus a arcu vulputate aliquet. Nulla ac metus ut neque fringilla posuere. Pellentesque quis viverra nisl.

HTML Formatting

HTML also uses tags for formatting text, much like you would with a word processing program. Text formatting means simply things like bold, italic, and underline. You should note, however, that underlining text in an HTML document is terribly poor form as it can be misconstrued as a link. All formatting tags must be closed.

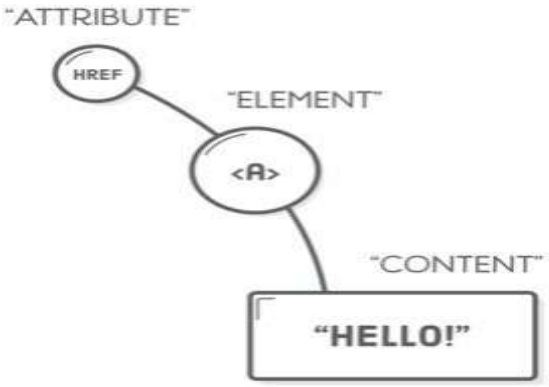
Tag	Description
<b>	Defines bold text
	Also defines bold text
<i>	Defines italic text
	Also defines italic text
<sub>	Defines subscript text
<sup>	Defines superscript text
<blockquote>	Defines a section of text that will be indented

Example:

<p>Text formatting means simply things like bold, italic, and <u>underline.</u>

HTML Links

The HTML <a> tag defines an anchor or hyperlink. An element adds meaning to the content it contains, an HTML "attribute" adds meaning to the element it's attached to.



A hyperlink (or link) is a word, group of words, or image that you can click on to jump to another document. When you move the cursor over a link in a Web page, the arrow will turn into a little hand.

The most important attribute of the <a> element is the href attribute, which indicates the link's destination. By default, links will appear as follows in all browsers:

- An unvisited link is underlined and blue
- A visited link is underlined and purple
- An active link is underlined and red

HTML Head

The HTML <head> element is a special container element to contain all of the head specific elements. Elements inside the head can include scripts, tell the browser where to find external information such as style sheets or JavaScript's

and provide search engines with descriptive information about the content of the page.

Tag	Description
<head>	Defines information about the document
<title>	Defines the title of a document
<base>	Defines the default address of the page
<link>	Links to the document to an external resourse
<meta>	Defines metadata about an HTML document
<script>	Defines a client-side script
<style>	Defines style information for a document

HTML Images

Images are displayed in HTML by use of the <img> tag. The <img> tag does not need to be closed. The <img> tag has multiple attributes to define what to display and how it should be displayed. As with other attributes, values must be contained in quotes.

Attribute	Value	Description
alt	Plain text	Alternate text to describe the image
border	Pixels #	Width of border around an image "0" for none
height	Pixels #	Height in pixels
src	URL	The location of the image file
width	Pixels #	Width in pixels

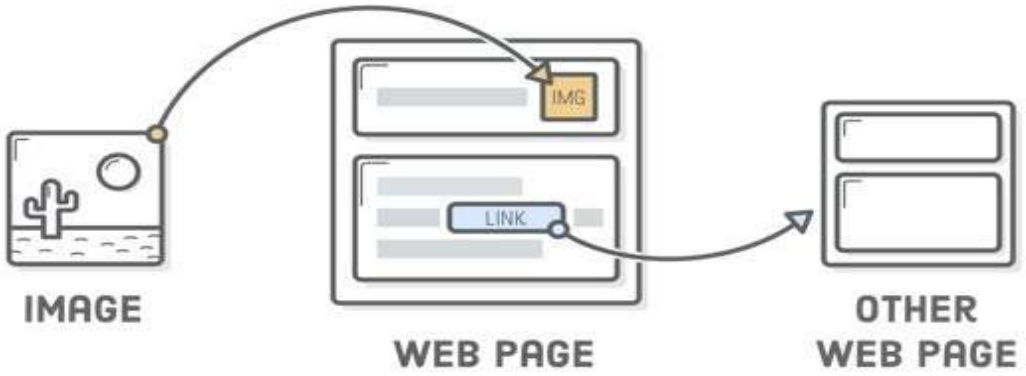


Image Formats

There's four main image formats in use on the web, and they were all designed to do different things.

JPG Images

JPG images are designed for handling large colour palettes without exorbitantly increasing file size. This makes them great for photos and images with lots of gradients in them.

GIF Images

GIFs are the go-to option for simple animations, but the trade off is that they're somewhat limited in terms of colour palette—never use them for photos. Transparent pixels are a binary option for GIFs, meaning you can't have semi-opaque pixels.

PNG Images

PNGs are great for anything that's not a photo or animated. For photos, a PNG file of the same quality (as perceived the human eye) would generally be bigger than an equivalent JPG file.

SVG Images

Unlike the pixel-based image formats above, SVG is a vector-based graphics format, meaning it can scale up or down to any dimension without loss of quality. This property makes SVG images a wonderful tool for responsive design. They're good for pretty much all the same use cases as PNGs, and you should use them whenever you can.

Image Dimensions by default, the <img/> element uses the inherit dimensions of its image file. Our JPG, GIF, and PNG images are actually 150×150 pixels, while SVG is only 75×75 pixels.

Adding alt attributes to your <img/> elements is a best practice. It defines a "text alternative" to the image being displayed. This has an impact on both search engines and users with text-only browsers (e.g., people that use text-to-speech software due to a vision impairment).

Aligning Images

The horizontal alignment of images on web page is formatted using the below tags and techniques

- Use the tag before the image tag to centre or justify right or left.
- Use the tag after the image tag to end the justification.
- Use the <align="..."> tag within the "img src" tag to have text wrap around the image.

Insert below tags **within** the "img src" tag for the **vertical** alignment of images in relation to text:

align="bottom" The text lines up with the bottom of the image.

<img src="https://imageww.com/gif/hsw-logo3.gif" alt="flower" border=0 **align="bottom"**>

align="top" The text lines up with the top of the image.

<img src="https://imageww.com/gif/hsw-logo3.gif" alt="flower" border=0 **align="top"**>

align="middle" The text lines up alongside the middle of the image.

<img src="https://imageww.com/gif/hsw-logo3.gif" alt="flower" border=0 **align="middle"**>

HTML Lists

There are two types of lists in HTML, Ordered and Unordered. Quite simply,

the two are best described as Numbered and Bulleted, respectively. Lists contain two types of tags: The type of list: Ordered <ol> and Unordered <ul> and the List items <li>.

Unordered List

- List Item
- List Item
- List Item

Ordered List

1. List Item
2. List Item
3. List Item

Example:

```
<ul>
    <li>List Item</li>
    <li>List Item</li>
    <li>List Item</li>
</ul>
```

Descriptive Lists

A descriptive list creates a list of text items with an indented second line:

Tony Stark

Founder of Stark Company

Use the following tags in this manner:

<dl>

<dt> Tony Stark

<dd>Founder of Stark Company

</dl>

The <dt> tag should correspond with the text you want lined up on the margin; <dd> corresponds with the line you want indented.

HTML Tables

A table is comprised of rows and columns, similar to a spreadsheet, and can be

quite complex. Tables consist of a number of tags and will always start with the <table> tag. Like many other tags the table tag can have attributes assigned to it such as width and follow the same rules as other attributes. The <table> tag signifies the start of a table but will need other tags to assign rows and columns inside it.

Table Rows and Columns

Table Rows are defined using the <tr> tag and columns are defined using the <td> tag. The <td> tag stands for 'Table Data' and can contain text, images, links, lists or any other HTML element.

Table Tag	Meaning	Location
<thead>	Table Head	Top of the table
<tbody>	Table Body	Content of the table
<tfoot>	Table Foot	Bottom of the table
<colgroup>	Column Group	Within the table
<th>	Table Header	Data cell for the table header

Below is an example of a simple table in HTML.

```
<table>
<tr>
   <td>Row One - Column One</td>
   <td>Row One - Column Two</td>
</tr>
<tr>
   <td>Row Two - Column One</td>
   <td>Row Two - Column Two</td>
</tr>
</table>
```

HTML Output:

Row One –Column One	Row One – Column Two
Row Two – Column One	Row Two – Column Two

Cellpadding

The "cellpadding" tag specifies (in pixels) the amount of space between the edges of each cell and the data inside each cell. Use it within the starting "table" tag:

Example 1: <table border=1 cellpadding=5>

Example 2: <table border=1 cellpadding=15>

Cellspacing

The "cellspacing" tag specifies (in pixels) the amount of space between each cell. Use it within the "table" tag:

Example 1: <table border=1 cellspacing=5>

Example 2: <table border=1 cellspacing=15>

Alignment and Cell Padding

By default, all cell contents within a table (with the exception of table headings) align vertically centered and left justified. To make the contents of a cell align a different way, apply the following tags within the <td>, <th> or <tr> tags:

For horizontal alignment, values can be left, right, or centre:

Example: <tr align="centre">

For vertical alignment, values can be top, bottom, or middle:

Example: <td valign="top">

Cell Spanning

"Spanning" occurs when one cell spans two or more other cells in the table.

For column spanning, the tag <colspan=value> is placed within the <td> tag where it applies. Here is a code example:

<table border=1>

<tr><td colspan=2>This cell spans over two columns </td>

<td>This cell spans over one column </td> </tr>

<tr align="centre"> <td>A </td> <td>B </td> <td>C </td> </tr>

</table>

For row spanning, the tag <rowspan=value> is placed within the <td> tag where it applies. For example:

<table border=1>

<tr><td rowspan=2>This cell spans over two rows </td>

<td>A</td>

<td>B</td>

</tr>

<tr>

<td>C</td>

<td>D</td>

</tr>

</table>

Every web page you create should define the language it's written in and its character set.