CS105 Course Reader
Appendix A: HTML Reference

Tag Index by Section

The tags are listed in one of nine sections as shown below:

Character Appearance Elements
`<strong>`, `<b>` Bold
`<i>` Italic, `<em>` Emphasis
`<q>` Quote
`<abbr>` Abbreviation
`<sub>` Subscript, `<sup>` Superscript
`<span>`

Content Structure Elements
`<p>` Paragraph
`<br />` Line Break
`<h1>`, `<h2>`, … , `<h6>` Headings
`<header>`
`<footer>`
`<div>` Division
`<hr />` Horizontal Rule
`<!--   -->` Comment

Section Elements
`<section>`
`<article>`
`<nav>`
`<aside>`

File Structure Elements
`<!DOCTYPE>`
`<html>`
`<head>`
`<title>`
`<meta />`
`<style>`
`<link />`
`<body>`

Linking
`<a>` Anchor

Image and Image Maps
`<img />` Image
`<map>`
`<area />`

List Elements
`<ol>` Ordered List
`<ul>` Unordered List
`<li>` List Item
`<dl>` Definition List
`<dt>` Definition Term
`<dd>` Definition Description

Table Elements
`<table>`
`<tr>` Table Row
`<td>` Table Data
`<th>` Table Header
`<caption>`†

Form and Form Elements
`<form>`
`<input />`
`<textarea>`
`<select>`
`<option>`

Common Attributes

There are a number of attributes which may be used with any HTML element.

The `class` and `id` attributes provide support for style sheets. The `id` attribute also allows an element to act as a link destination.

`class=`*`class-identifier`*—The `class` attribute determines the class of the enclosed text for use with style sheets.

`id=`*`id`*—The `id` attribute can be used instead of the `class` attribute, if the element must be uniquely identified.

Here are some more global attributes you may find useful:

`title=`*`text`*—Most web browsers will display the value of the `text` as a tooltip if the user leaves the mouse cursor on top of the element for an extended time.

`lang=`*`language`*—The `lang` attribute tells the web browser what language a particular element is for. For example, we could create two elements, one with lang="en" for English and one with lang="de" for German. Depending on the user's language, we might make one element visible and the other invisible.

Text-Level Elements

The following elements are used to provide information on individual words or phrases.

<i> Italic, <em> Emphasis

Categories: Flow Content, Phrasing Content

May Contain: Phrasing Content

Both i and em elements are typically rendered as italicized text by web browsers. The <em> tag indicates that you want to emphasize a particular word or phrase. The <i> tag may be used for words in a foreign language, ship names, technical terms, or other words or phrases which are commonly italicized.

<b> Bold, <strong>

Categories: Flow Content, Phrasing Content

May Contain: Phrasing Content

Both the b and strong elements are typically rendered as bold text by web browsers. In general use of strong is preferred over b, as strong is more semantically focused whereas b is more presentation oriented and is therefore more appropriately handled at the style sheet level.

<q> Quote

Categories: Flow Content, Phrasing Content

May Contain: Phrasing Content

Use this element when you have a quote which is within a larger paragraph. If you want a quote alone by itself use the blockquote element.

<abbr> Abbreviation

Categories: Flow Content, Phrasing Content

May Contain: Phrasing Content

This element is used to represent abbreviations or acronyms.[1] It can be combined with a title attribute (see Common Attribute section above) to give readers a means of determining what the meaning of the abbreviation or acronym is.

<sub> Subscript, <sup> Superscript

Categories: Flow Content, Phrasing Content

May Contain: Phrasing Content

These elements are used to create subscript and superscript text.

<span>

Categories: Flow Content, Phrasing Content

May Contain: Phrasing Content

This element is used to group a word or phrase which does not fit in any of the previous text-level element categories. It is typically used in conjunction with a class or id attribute as a means of identifying something for which you wish to provide a style rule.

Content Structure Elements

<p> Paragraph

Categories: Flow Content

May Contain: Phrasing Content

HTML browsers ignore both carriage returns and blank lines in an HTML document. In order to break your document into paragraphs you need to use the `<p>` paragraph tag.

<br /> Line Break

Categories: Flow Content, Phrasing Content

May Not Contain Elements

[1] HTML4 included a separate acronym element. This element was removed in HTML5 in favor of using the abbr element for both abbreviations and acronyms.

While `p` elements do have line breaks between them, logically not all line breaks represent paragraphs. The `<br>` tag should be used to force a line break in these non-paragraph cases. There is no corresponding end tag, so we will end all `<br>` tags with a “ `/>`”.

<h1>, <h2>, … , <h6> Headings

Categories: Flow Content, Headings Content

May Contain: Phrasing Content

The `h1` through `h6` elements are used to produce headings on the web page. `h1` should be used for the most important headers. `h6` should be used for the least important headers.

You should have only a single h1 element on your webpage or within a section element (see below).

<header> *HTML5 only*

Categories: Flow Content

May Contain: Flow Content, but may not contain header or footer elements.

Use this to designate content which represents a header for a webpage or a section within a webpage.

<footer> *HTML5 only*

Categories: Flow Content

May Contain: Flow Content, but may not contain header or footer elements.

Use this to designate content which represents a footer for a webpage or a section within a webpage.

<div> Division

Categories: Flow Content

May Contain: Flow Content

The `div` element is used to create sections within an HTML document if no other element type is appropriate. This element will typically include a class or id attribute to allow the section to be formatted in conjunction with a style sheet.

<hr /> Horizontal Rule

Categories: Flow Content

May Not Contain Elements

The `<hr>` tag creates a horizontal line or horizontal rule across a webpage. There is no corresponding end tag, so all `<hr>` tags should end with a “ `/>`”.

`<!--   -->` Comment

Categories: None Ignored by Web Browser

An HTML comment allows us to enter text which can be read by other humans, but which is ignored by the computer. If we're writing a particularly complex set of HTML tags, comments allow us to describe in plain English what we're trying to accomplish and how we're accomplishing it, without having these comments show up in the actual webpage.

Any text between the starting `<!--` and concluding `-->` is completely ignored by the browser. Text between these character sequences does *not* appear in the webpage, and any tags between them are ignored.

Section Elements

HTML5 provides several new elements that can be used to create sections within a larger webpage. Each section can include a full-range of headings (h1 through h6) and may contain its own header and footer.

<section> *HTML5 only*

Categories: Flow Content, Sectioning Content

May Contain: Flow Content, but may not contain header or footer elements.

The section element can be used to create any type of generic section within a wider document. Use this if none of the more specialized section elements listed below are appropriate.

<article> *HTML5 only*

Categories: Flow Content, Sectioning Content

May Contain: Flow Content, but may not contain header or footer elements.

Use to designate an article within a larger webpage. This could be used, for example, to designate a blog entry or a news article on a webpage displaying multiple articles.

<nav> *HTML5 only*

Categories: Flow Content, Sectioning Content

May Contain: Flow Content, but may not contain header or footer elements.

This element should be used to indicate that a section is specifically for navigation purposes only. The nav element, for example, would be appropriate for a navigation sidebar.

<aside> *HTML5 only*

Categories: Flow Content, Sectioning Content

May Contain: Flow Content, but may not contain header or footer elements.

Use this to designate content for sidebars, advertising, or other items which are parenthetical to the main webpage content.

File Structure Tags

The following tags serve to structure the HTML file into header and body sections. The tags in this section are introduced in Chapter 3.

<!DOCTYPE>

The `<!DOCTYPE>` or Document Type tag was originally used to tell the web browser which version of HTML the file is written in. For HTML5 files, the `<!DOCTYPE>` tag should look like this:

```
   <!DOCTYPE html>
```

While the new HTML5 `<!DOCTYPE>` tag does not include a version number you must include it anyway. Many web browsers will not display a page properly if it does not contain a `<!DOCTYPE>` tag.

<html>

Categories: None.

May Contain: a head element and a body element

The `<html>` tag signifies that the enclosed text is HTML. All HTML files should begin with an `<html>` start tag and end with an `</html>` end tag.

<head>

Categories: None.

May Contain: Metadata Content

The `<head>` tag and its corresponding `</head>` end tag surround the head section at the beginning of the HTML document. Most HTML documents have a head section and a body section. The head section provides information that the browser may need to properly display the document. However, it does not contain any of the actual document text.

<title>

Categories: Metadata Content.

May Contain: Text only

The `<title>` tag and its corresponding `</title>` end tag surround the web page title. This title is used as the name of the browser window. The `<title>` tag should always appear as part of the `<head>` section of an HTML document. In XHTML a `<title>` is required.

<meta /> Meta-Information

Categories: Metadata Content.

May Not Contain Elements

The `<meta>` tag can be used to provide meta-information about a webpage or to provide HTTP header information. There is no corresponding end tag, so `<meta>` tags must end with a "`/>`".

The most important use of this tag is to provide the charset.

> `charset=`*`name`*—The `charset` attribute tells the web browser what character encoding your webpage is using.

Other information provided by the `<meta>` tag is commonly used by web search engines. HTTP header information provided by the `<meta>` tag may be used to automatically redirect browsers to a different website or to cause regular reloads of a news website.

> `name=`*`name`*—When the `<meta>` tag is used to provide general meta-information, the `name` attribute defines what kind of information will be specified in the `content` attribute.

> `http-equiv=`*`name`*—When the `<meta>` tag is used to provide HTTP header information, the `http-equiv` attribute defines what kind of information will be specified in the `content` attribute.

> `content=`*`data`*—The `content` attribute provides the actual information of the type specified by the `name` or `http-equiv` attribute.

<style> Style Sheet

Categories: Metadata Content.

May Contain: Style Rules only

The `<style>` tag is used to define a style sheet. It should be placed within the head of the HTML file. One or more style rules may be placed between the `<style>` start tag and the `</style>` end tag.

<link />

Categories: Metadata Content

May Not Contain Elements

The `<link>` tag is used to setup the relationship between two files on a webserver. The `<link>` tag should only appear in the document's head section. There is no corresponding end tag, so `<link>` tags must end with a "`/>`".

> `href=`*`URL`*—The `href` attribute identifies an external file which is related to the current HTML file.

> `rel=`*`relationship`*—This attribute determines the nature of the relationship between the files. Use `stylesheet` to link to a stylesheet.

> `type=`*`file-type`*—This attribute specifies the type of the external file. For style sheets, set it to `"text/css"`.

<body>

The `<body>` tag and its corresponding `</body>` end tag surround the actual document body in the HTML file.

Linking

The `<a>` anchor tag is introduced in Chapter 5.

<a> Anchor

Categories: Flow Content, Phrasing Content (but only if the a element itself only contains Phrasing Content), Interactive Content

May Contain: Determined by Parent Element.

The `a` anchor element creates a link to another document or resource.

> `href=`*`URL`*—When a reader clicks on the text or images between the `<a>` tag and its associated `</a>` ending tag, the browser finds the resource specified by the given URL and carries out the appropriate action. The most common URL is an HTTP reference, linking the current web page to another web page.

The `a` element's `target` attribute is used to support iframe's or popup windows.

> `target=`*`id`*—The `target` attribute tells the browser to open the URL specified in the `href` attribute in a different window or in an `iframe`. If the `target` attribute specifies an `id` which is not the `id` of an existing `iframe`, the web page specified by the `href` will open in a new window. Future references to the same name will affect the newly opened window.

Image and Image Maps

The following tags are used to place images on the webpage and to create image maps. The `<img>` tag is first introduced in Chapter 5.

<img /> Image

Categories: Flow Content, Phrasing Content, Embedded Content

May Not Contain Elements

Images are inserted into HTML pages using the `<img>` tag. There is no corresponding end tag, so `<img>` tags must end with a "`/>`".

All `<img>` tags must have a `src` attribute and an `alt` attribute:

> `src=`*`URL`*—The `src` source attribute tells the browser where to get the actual image to display. The value of the `SRC` attribute can either be an absolute reference or a relative reference.

`alt=`*`string`*—The `alt` attribute should be set to a text string describing the image. This string is used as an alternative for browsers which cannot display pictures. Some browsers also display the `alt` string while waiting for the image to download.

In addition to the required `src` and `alt` attributes, the following attributes may be used:

`height=`*`amount`*—The height in pixels of the image displayed.

`width=`*`amount-or-percent`*—Either the width in pixels of the image displayed, or the percent of the browser window width in which the image should be displayed.

Image maps are enabled by using the `usemap` attribute on the `<img>` tag.

`usemap=`*`URL`*—If an image tag includes the `usemap` attribute, the browser knows that the image is an image map. The value of the `usemap` attribute should be the name of a `<map>` tag (see above) preceded by a # sign. For example, if your file contains a `<map>` tag with the name `coolmap`, you could associate an image to that map by adding `usemap="#coolmap" to your <img> tag`.

Because the image map is linked, the web browser will place a blue link border around it. To eliminate this border, just set the image's border to zero.

<map>

Categories: Flow Content, Phrasing Content (but only if the a element itself only contains Phrasing Content)

May Contain: Determined by Parent Element.

The `map` element is used in conjunction with `area` elements to define a mapping between areas in an image and webpages to link to. The mapping is defined by the `area` elements (see below) found between the `<map>` start tag and `</map>` end tag.

The `<map>` tag has only one major attribute—`name`. The `name` attribute is required.

`name=`*`string`*—Set the value of the `name` attribute to a string which you will use as the value for the `usemap` attribute in the corresponding `<img>` tag.

<area />

Categories: Flow Content, Phrasing Content

May Not Contain Elements

The `area` element is used to define individual areas within an image and to link those areas to other URLs. There is no corresponding end tag—all the information needed to define an area is included as attributes of the `<area>` tag. `<area>` tags should end with a "`/>`". You can define areas as rectangles, circles, or polygons using the `shape` attribute.

`shape=`*`area-shape`*—The `shape` attribute can be set to `rect`, `circle`, or `poly`.

The `coords` attribute defines the location of the `area`. Its value is dependent on the value of the `shape` attribute.

`coords=`*`coordinates`*—If the `shape` attribute is set to `rect`, the `coords` attribute should specify the upper-left corner and lower-right corner of the area in the following order: X1, Y1, X2, Y2. All coordinates are relative to the upper-left hand corner of the image. So for example, if your rectangle started in the upper-left corner of the image (0,0) and continued to the 100th pixel in width and 200th in height, you would set `coords="0,0,100,200"`.

If your `shape` attribute is set to `circle`, the `coords` attribute should specify the x and y coordinates of the center of your circle and the radius of the circle. For example if you had a circle centered at (40,30) with radius 5, you would set `coords="40,30,5"`.

Finally, if your `shape` attribute is set to `poly`, the `coords` attribute should consist of the X, Y value pairs of all the points forming the polygon. For example, a triangle with vertices (20,20), (40,40), and (0,40) would have `coords="20,20,40,40,0,40"`.

The `href` attribute defines the action taken by the browser when the user clicks in the area. Typically it will be a reference to another web page.

`href=`*`URL`*—The `href` attribute can be set to any valid URL, just like the `href` attribute on an `<a>` anchor tag.

The `alt` attribute on an `<area>` tag is similar to the `alt` attribute on an `<img>` tag. This attribute describes the area for non-graphic web browsers. XHTML requires an `alt` attribute on all `<area>` tags.

`alt=`*`string`*—The `alt` attribute should be set to a text string describing the area. This string is used by browsers which cannot display pictures.

List Tags

The following tags are used to create lists..

<ol> Ordered List

Categories: Flow Content

May Contain: li elements only

The `ol` element is used to create an ordered list. Place `li` elements for each list item between the `<ol>` start and `</ol>` end tags.

Browsers usually number items in an ordered list. Using style sheets you can designate that you'd like the list to use roman numerals or letters instead of numbers.

<ul> Unordered List

Categories: Flow Content

May Contain: li elements only

The `ul` element is used to create an unordered list. Place `li` elements for each list item between the `<ul>` start and `</ul>` end tags.

Browsers will typically display items in the list using bullets '●'. If desired, you can control the symbol used to designate each list item using style sheets.

<li> List Item

Categories: None

May Contain: Flow Content

The `li` list item element is used to designate list items in both ordered and unordered lists.

> `value=`*`integer`*—The `value` attribute can be determines the number associated with an item in an ol ordered list. It should always be set to an integer, even if the list is being displayed using letters or Roman numerals.

<dl> Definition List

Categories: Flow Content

May Contain: dd and dt elements only

The `dl` tag is used to create a definition list. A definition list is a list of terms along with their definitions.

<dt> Definition Term

Categories: None. May only appear in a dl element

May Contain: Phrasing Content

The `dt` element designates a term definition in a definition list.

<dd> Definition Description

Categories: None. May only appear in a dl element

May Contain: Flow Content

The `dd` element is used to designate the description for a corresponding `<dt>` term in a definition list.

Table Tags

The following tags are used to create HTML tables. The table tags are introduced in Chapter 3. Use of table tags for website layout is explored in Chapter 4.

<table>

Categories: Flow Content

May Contain: An optional caption element followed by table rows

All table data and formatting information should be enclosed between the `<table>` and `</table>` tags.

<tr> Table Row

Categories: None

May Contain: td or th elements

Each row in the table should be listed using the `<tr>` tag.

<td> Table Data

Category: Sectioning Root

May Content: Flow Content

Individual cells within a row are designated using the `<td>` table data tag or the `<th>` table header tag discussed below.

Any information between the `<td>` and either the `<td>` start and `</td>` end tag is placed inside of the table cell. While this information is usually text, it can be any legal HTML content. This includes, for example, both images and sub-tables.

<th> Table Header

Category: Sectioning Root

May Content: Flow Content

You may specify that certain cells in a table are table header cells rather than data cells by using the `<th>` tag. The `<th>` tag acts exactly the same as the `<td>` tag except that the contents of the `<th>` tag are displayed in bold and are centered, rather than left-aligned.

The `<th>` tag supports all the same attributes as the `<td>` tag shown above.

<caption>

Categories: None

May Contain: Flow Content, but may not contain Subtables

The `<caption>` tag can be used to add a caption for an entire table. The caption desired should be placed between the `<caption>` start and `</caption>` end tags. The caption tags themselves should be placed immediately after the `<table>` start tag.

Form and Form Elements

The following tags are used to create forms and form elements. These tags are introduced in Chapter 5. Chapter 13 discusses how to access these elements from JavaScript. Attributes supporting JavaScript events are discussed in Chapter 15.

<form>

Categories: Flow Content

May Contain: Flow Content, but may not contain a a subform.

The `<form>` tag is used to group together user-interface elements on a web page. In addition to the user-interface elements described below, you can put any other legal HTML inside of a form. The HTML `<table>` tag, for example, is often used to format the user-input elements contained in a form.

> `action=`*`URL`*—This attribute determines the action taken by the webserver when the form's contents are submitted. Forms which are not working in conjunction with a webserver should skip this attribute.

<input />

Categories: Flow Content, Phrasing Content, Interactive Content

May Not Contain Elements

The `<input>` tag is used to create single-line text boxes, buttons, check boxes, and radio buttons. There is no corresponding end tag, so all `<input>` tags should end with a " `/>`". All `<input>` tags must be contained within a `<form>`.

> `name=`*`string`*—You can provide an input element with a name. The name is used when the form containing the `<input>` element is submitted. This attribute also makes access to the element easier from JavaScript.

> `type=`*`input-type`*—The `type` attribute determines what kind of user-interface element is displayed. Legal types are `text`, `password`, `checkbox`, `radio`, `button`, `submit`, and `reset`.

> `value=`*`string`*—The purpose of the `value` attribute varies depending on the setting of the `type` attribute. `value` provides the initial text-field contents for `text` fields. It provides the label for `button`, `submit`, and `reset` buttons. It can also be used to provide values for transmission to the webserver for both `checkbox` and `radio` input elements.

Additional attributes for `text` input items are:

> `size=`*`integer`*—The `size` attribute determines the length of the text field in characters. This is actually just the number of characters which will be visible at any given time. The actual total number of characters which can be typed is determined by the `maxlength` attribute.

> `maxlength=`*`integer`*—The `maxlength` attribute determines the maximum number of characters the user can type into the text field.

Both `checkbox` and `radio` input items also support the `checked` attribute:

> `checked`—If the `checked` attribute is provided, the radio button or checkbox is initially marked as checked when the web page is first displayed. The `checked` attribute has no corresponding value so use `checked="checked"`.

The `<input>` tag's event-related tags also depend on the `type`. `<input>` tags of `type` `button`, `radio`, `checkbox`, `submit`, or `reset` support the `onclick` attribute:

> `onclick=`*`script`*—The script associated with the `onclick` attribute will execute when the user clicks on the input element.

`<input>` tags with `type="text"` or `type="password"` support the `onchange` attribute:

> `onchange=`*`script`*—The script associated with the `onchange` attribute will execute when the user changes the text in the text field.

<textarea>

Categories: Flow Content, Phrasing Content, Interactive Content

May Contain: Text Only

While the `<input>` tag's `text` input element is used to create a single-line text input item, the `<textarea>` tag creates a multi-line text area. There is a corresponding required `</textarea>` end tag.

Attributes for `<textarea>` include:

> `name=`*`string`*—As with the `<input>` tag, providing a `name` makes the textarea's data easier to access from JavaScript.

> `rows=`*`integer`*—This attribute determines the number of rows of text visible in the `<textarea>`. This sets the height of the text area. *In XHTML this attribute is required.*

> `cols=`*`integer`*—This attribute determines the number of columns of text visible in the `<textarea>`. This sets the width of the text area. *In XHTML this attribute is required.*

The `rows` and `cols` attributes only determine the amount of text displayed at once. The `<textarea>` provides scrollbar support in case the user decides to provide more information than will fit in the allotted space.

Like the `<input>` tag with `type="text"`, the `<textarea>` has an `onchange` attribute which can be used for JavaScript programming.

> `onchange=`*`script`*—The script associated with the `onchange` attribute will execute when the user changes the text in the text area.

<select>

Categories: Flow Content, Phrasing Content, Interactive Content

May Contain: option elements or optgroup elements

The `<select>` tag can be used to present a list of items for selection to the user. Items in the list are specified by placing `<option>` tags (described below) between the `<select>` tag and its corresponding `</select>` end tag. The list can be presented in a variety of ways depending on the attributes provided.

Attributes include:

> `name=`*`string`*—Providing the `<select>` tag with a name makes it easier to access the selection from JavaScript.

> `size=`*`integer`*—The value of the `size` attribute determines how many option items are displayed at once. If `size` is one, the select input element will show up as an in-place

pull-down menu. Otherwise the select input element will show up as a scrollable list of options.

`multiple`—Providing this tag notifies the browser that the user may select more than one item from the options provided. If `multiple` is set, the select input element will always show up as a scrollable list. The `multiple` attribute has no corresponding value so use `multiple="multiple"`.

The `<select>` element includes an `onchange` attribute for use with JavaScript.

`onchange=`*`script`*—The script associated with the `onchange` attribute will execute when the user changes the current selection.

<option>

Categories: None

May Contain: Text Only

The `<option>` tag is used to provide options for a `<select>` user-input element.

`selected`—If `selected` is set, the option will show up as initially selected in the `<select>` user-input element. The `selected` attribute has no corresponding value so use `selected="selected"`.

`value=`*`string`*—The `value` attribute may be used to define the value sent to a webserver when the option is selected. If no `value` is provided, the text enclosed in the `<option>` tag will be used. This attribute may also be used in conjunction with JavaScript.

Appendix B: Style Sheet Reference

This section summarizes the properties that may be used within a Style Sheet. *When using Style Sheet properties, keep in mind that some web browsers may not support properties listed or values listed—this may particularly be a problem with older web browsers.*

Property Index by Section

Style sheet properties are listed in one of six sections as shown below:

Font Properties
`font-family`
`font-style`
`font-variant`
`font-weight`
`font-size`
`font`

Color and Background Properties
`color`
`background-color`
`background-image`
`background-repeat`
`background-attachment`
`background-position`
`background`

Text Properties
`word-spacing`
`letter-spacing`
`text-decoration`
`vertical-align`
`text-transform`
`text-align`
`text-indent`
`line-height`

Box Properties
`margin-top`
`margin-right`
`margin-bottom`
`margin-left`
`margin`

Box Properties (continued)
`padding-top`
`padding-right`
`padding-bottom`
`padding-left`
`padding`
`border-top-width`
`border-right-width`
`border-bottom-width`
`border-left-width`
`border-width`
`border-color`
`border-style`
`border-top`
`border-right`
`border-bottom`
`border-left`
`border`
`width`
`height`
`float`
`clear`

Classification Properties
`display`
`white-space`
`list-style-type`
`list-style-image`
`list-style-position`
`list-style`

Descriptions

Each property description begins with a list of one or more sets of property values. Many of the properties have keyword values—these properties must be set to specific keywords such as `bold` or `italic`. Other properties may be set to a length measurement or to a percentage—for example, `line-spacing` may be set to the number of inches, millimeters, or pixels desired between each line. Some properties may be set to a URL or a color.

In the property description, we will list keyword values in bold and value types (such as length, percentage, or color) in italics. For example, the `font-size` defines how large a font the browser will use. Possible values of `font-size` are listed as:

values: **xx-small, x-small, small, medium, large, x-large, xx-large**
larger, smaller
length
percentage

As we can see `xx-small`, `x-small`, `medium`, etc. are all listed above in bold. This means they are keyword values. We can therefore set our `font-size` to any of these specific keywords—for example:

```
li {font-size: x-large}
```

This will make all our links (created using the `<li>` tag) appear with extra-large size text.

The `larger` and `smaller` are also listed in bold. These are therefore also keyword values. They are listed on a separate line as they work a bit differently than the `xx-small`, `x-small`, `small`, etc. values. The `larger` and `smaller` keywords are relative sizes and their effect depends on the size of the surrounding text.

Both length and percentage are listed in italics rather than in bold. This signifies that they are not keywords, but rather represent a type of value that may be used with the `font-size` property. There are a number of value types commonly used by style sheet properties. These value types are described in the next section. In addition, some style sheet properties have their own specialized value types. These property-specific value types will be discussed in the descriptive text for the corresponding property.

Standard Value Types

The length, percentage, color, and URL value types are used by a variety of different style sheet properties. In this section, we describe the correct syntax to use for these value types. In addition, some style sheet properties allow a combination of values. We conclude this section with a discussion of how these combined values work.

Length

The length value type is used whenever we need to specify a measurement—for example, when defining the amount of space to place between lines or when defining margins. Style sheets allow webpage writers to specify measurements in inches, millimeters, centimeters, points, picas, and pixels (a point is 1/72nd of an inch, and a pica is 12 points). List these measurements using their abbreviations as shown in the table below:

Measurement	Abbreviation	Example
inches	`in`	`margin-left: 2in`
centimeters	`cm`	`line-height: 1cm`
millimeters	`mm`	`word-spacing: 3mm`
points	`pt`	`font-size: 12pt`
picas	`pc`	`font-size: 1pc`
pixels	`px`	`border-top-width: 5px`

In addition, length measurements can be given relative to the size of the current font. These measurements can be given using two different units: `em` and `ex`. While an `em` is traditionally the width of a capital 'M', in style sheets an `em` is the current font-size (e.g., 12 point). An `ex` is the height of a lower case 'x' character in the current font.

Percentage

Some properties may be set to a percentage. For example, the `line-height` property can be given as a percentage of the current font size.

```
.double-space {line-height: 200%}
```

Check the documentation for the specific property to determine which measurement the property is a percentage of.

Color

Style sheet colors can be defined in five different ways.

First, you may use the standard 16 HTML colors—`aqua`, `black`, `blue`, `fuchsia`, `gray`, `green`, `lime`, `maroon`, `navy`, `olive`, `purple`, `red`, `silver`, `teal`, `white`, and `yellow`. For example:

```
h1 {color: red}
```

You may also define a style sheet color using the six hexadecimal digit notation we learned in Chapter 6. For example:

```
h1 {color: #EE82EE}
```

Style sheets also support a three hexadecimal digit notation. This works exactly the same as the six hexadecimal digit notation, except the red, green, and blue components must each be between `0` and `F` instead of `00` and `FF`. A `0` means, none of that particular color is present, while an `F` represents the maximum intensity of the color.

```
p {color: #F0F}
```

This sets our `<p>` color to maximum intensity red (the first '`F`'), no green (the '`0`'), and maximum intensity blue (the third '`F`'). Mixing red and blue gives us purple.

You may use a special RGB notation and specify the actual decimal numbers between 0 and 255 for red, green, and blue. This works exactly the same as the standard HTML six-hexadecimal digit notation, except no hexadecimal conversion is required. For example:

```
p {color: rgb(255,0,255)}
```

This is the equivalent to our previous `<p>` style definition.

Finally, you may use the same RGB notation, except providing percentages:

```
p {color: rgb(100%,0%,100%)}
```

URL

In some cases, you may provide a URL as the value of a property—to provide the location of an image file for use as a background, for instance. Here is an example of the URL property:

```
p {background-image:
        url(http://www.statecollege.edu/images/logo.gif)}
```

URLs may be absolute or relative. Relative URLs are relative to the location of the style sheet. If your style sheet is included directly in your HTML file using a `<style>` tag, this won't be an issue. However, if you include a style sheet using the `<link>` tag, keep in mind that all URLs in the sheet will be relative to the location of the `*.css` file *not* relative to the `*.html` file.

Combinations

Some properties have values which are actually combinations of other property values. The `font` property, for example, allows the user to set `font-style`, `font-variant`, `font-weight`, `font-size`, `line-height`, and `font-family` all on one line.

```
p {font: italic 10pt/12pt sans-serif}
```

sets the font for each paragraph to italic, sans-serif 10-point font with a 12-point line height. The `border-width` property allows the user to set `border-top-width`, `border-right-width`, `border-bottom-width`, and `border-left-width` all at once.

```
table {border: thick thin thin thin}
```

sets the border around each table with a thick top border, and thin right, bottom, and left borders.

Properties which are combinations of other properties will be marked as *`combination`*. The rules for combining properties will be included in the property's descriptive text.

Font Properties

font-family

values: *`fontname`*
`serif`, `sans-serif`, `cursive`, `fantasy`, `monospace`
`list-of-fonts`

The font-family property is used to set the type of font used. It may be set to a specific font name such as Arial, Helvetica, or Times or to one of five generic font names—serif, sans-serif, cursive, fantasy, and monospace. Font names containing spaces must be enclosed in quotes—for example "Times New Roman".

Instead of listing a specific font name or generic font name, the font-family property may also be set to a list of font names and generic font names. Font names in the list should be separated by commas. The browser will use the first font on the list which is available on the computer. For example:

```
body {font-family: "New Century Schoolbook", Times,
                     "Times New Roman", serif}
```

will try to set the font to New Century Schoolbook. If that font isn't found, it will try Times, followed by Times New Roman. If none of these fonts are found, it will use any font with serifs which is available.

font-style

values: **normal, italic, oblique**

Font style may be set to normal, italic, or oblique. If the font-style is set to italic, the browser will attempt to display the text in italics. Similarly, if the font-style is set to oblique, the browser will attempt to display the text as oblique. Oblique fonts are slanted and are similar to italic fonts.

font-variant

values: **normal, small-caps**

Font variant may be set to normal or small-caps. On web browsers supporting the font-variant property, using small-caps will transform text from upper- and lower-case letters to small capital letters.

font-weight

values: **normal, bold**
bolder, lighter
100, 200, 300, 400, 500, 600, 700, 800, 900

The font-weight property can be set to several different types of values. First, font-weight can be set to either of the keywords bold or normal. The font-weight can also be set to bolder or lighter, these settings will increase or decrease the weight of the current font relative to the surrounding text. Finally, the font-weight can be set to one of nine different numeric weight settings—100, 200, 300, 400, 500, 600, 700, 800, or 900. The 100 setting is the lightest available setting, and the 900 is the heaviest. 400 corresponds to normal weight text and 700 corresponds to the standard bold weight.

font-size

values: **xx-small, x-small , small, medium, large, x-large, xx-large**
larger, smaller
length
percentage

The `font-size` property, naturally determines the size of text. It can be set to one of several types of values.

It can be set to one of seven set sizes: `xx-small`, `x-small`, `small`, `medium`, `large`, `x-large`, `xx-large`. Like the standard HTML sizes 1-7, the actual font size used for these sizes will depend on the user's default font size preferences.

The `font-size` property may also be set to the relative sizes—`larger` and `smaller`. These sizes are relative to the `font-size` of the enclosing HTML element. For example, if a `<td>` with `style="font-size: larger"` is placed within a `<table>` with `style="font-size: small"`, our `<td>` will display font of medium size while the other table elements will use small font.

Finally `font-size` may be set to a specific length, such as `12pt`, or to a percentage of the size used by enclosing HTML elements. Length and percentage follow the standard style sheet syntax discussed at the beginning of this appendix.

font

values: *`combination`*

The `font` property can set `font-style`, `font-variant`, `font-weight`, `font-size`, `line-height`, and `font-family` all at once. In its simplest form, the `font` property lists the value for `font-size` followed by the value of `font-family` (in that order). For example:

```
   h1 {font: xx-large Helvetica}
   h2 {font: 14pt "New Century Schoolbook",
                           "Times New Roman", serif}
```

We can add a `line-height` value after the `font-size`, with a slash '/' separating the two (the `line-height` value is discussed in the section on text properties below). Here is an example which sets both `line-height` and `font-size`:

```
   p {font: 12pt/14pt Helvetica}
```

This sets all paragraphs to display 12 point Helvetica with 14 point line spacing.

Finally, we can precede the `font-size` with values for `font-style`, `font-variant`, and `font-weight`. These three items may be listed in any order (although they must come before `font-size`) and they are all optional. For example:

```
   p  {font: italic bold 12pt/14pt Helvetica}
   li {font: bolder small "Times New Roman", serif}
   h3 {font: 700 120% Helvetica, Arial, sans-serif}
```

Color and Background

color

values: *`color`*

The `color` property determines the text color. This property may be set to any of the color values discussed in the Standard Value Types section at the beginning of this appendix. Link text colors are handled using the `:link`, `:visited`, `:active`, `:focus`, and `:hover` pseudo-classes described in Chapter 6.

background-color

values: *`color`*
`transparent`

The `background-color` property may be set to a color value or to the keyword value `transparent`. If it is set to `transparent`, whatever color or background is behind the element will be displayed. The `transparent` setting is the default behavior.

background-image

values: *`url`*
`none`

The `background-image` property may be used to display an image behind the element. This property is set to the URL of the image to display, for example:

```
   table {background-image: url(stanford.jpg)}
```

See the Standard Value Types section at the beginning of this appendix for more information on legal URL values. The `background-image` property may also be set to the keyword value `none`—this is the default behavior.

background-repeat

values: **`repeat`**, **`repeat-x`**, **`repeat-y`**, **`no-repeat`**

The `background-repeat` property determines what happens if the image set with the `background-image` property isn't big enough to fill the entire webpage. The default behavior, `repeat`, tiles the image horizontally and vertically—creating as many duplicate images as needed to fill the webpage. The `repeat-x` setting tells the browser to tile the image horizontally, but not vertically. Similarly `repeat-y` tells it to tile vertically, but not horizontally. The `no-repeat` tells it not to repeat at all.

background-attachment

values: **`scroll`**, **`fixed`**

The `background-attachment` property determines what happens when the user scrolls the webpage. If it is set to `scroll`, the background image scrolls along with the webpage. This is the default behavior. If `background-attachment` is set to `fixed`, the background will remain fixed and the webpage will appear to scroll in front of the image.

background-position

values: *`length-pair`*
`keyword-pair`
`percentage-pair`

The `background-position` property can be used to place the background image relative to the enclosing element. It can be given as a pair of length measurement, as a pair of keywords, or as a pair of percentages. The first item in the pair determines horizontal placement of the background image and the second item determines vertical placement. Items in the pair are separated by spaces.

Length measurements provide the distance from the top-left corner of the element to the top-left corner of the image. For example, the following style rules place the top-left corner of the "`logo.gif`" image one inch from the left-side of the webpage and two inches from the top of the webpage:

```
body {background-image: url(logo.gif);
      background-position: 1in 2in}
```

Notice that there is a space, not a comma, between the `1in` and `2in` measurements.

Keyword pairs use the keywords `top`, `center`, and `bottom` for vertical placement and `left`, `center`, and `right` for horizontal placement, for example:

```
background-position: right bottom
```

Percentages place the image relative to the width and height of the enclosing body. The actual percentage given is the percentage of width or height where the enclosing body and image will match. For example:

```
background-position: 50% 100%
```

tells the browser that the 50% point on the image horizontally should match the 50% point of the enclosing element. This will center the element horizontally. The 100% tells the browser that the 100% point on the image vertically (that is to say the bottom of the image) should match the 100% point on the surrounding element (that is to say the bottom of the element). This aligns the element to the bottom of the surrounding element.

You may provide a mixed pair of length, keyword, and percentage values. For example:

```
background-position: 50% 2in
```

You may also provide only a single value. In this case, the browser will use the value for horizontal placement and will assume a center vertical placement.

background

values: *`combination`*

The `background` property can be set to any combination of `background-color`, `background-image`, `background-repeat`, `background-attachment`, and `background-position`. These items may be listed in any order. Here is an example:

```
background: url(logo.gif) no-repeat center center fixed
```

Text Properties

word-spacing

values: *`length`*
`normal`

As its name implies, `word-spacing` controls the space between words. The value given is the amount the word spacing is increased from the normal browser word spacing. The value given may be negative.

letter-spacing

values: *`length`*
`normal`

The `letter-spacing` property controls the spacing between letters within each word. The amount given is the increase desired from the normal browser letter spacing. The amount given may be negative.

text-decoration

values: **`none`, `underline`, `overline`, `line-through`, `blink`**

Text decoration may be used to add lines above, below, or through the text. Text decoration may also be used to blink the text on and off. Multiple values may be listed simultaneously. Here is an example using the `:hover` pseudo-class (described on pages 6-49 to 6-50):

```
:hover {text-decoration: underline overline}
```

This will create lines above and below a link when the mouse is moved on top of them.

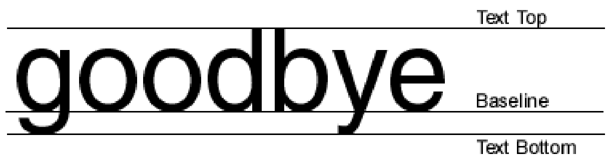
vertical-align

values: **`baseline`, `sub`, `super`, `text-top`, `middle`, `text-bottom`**
`top`, `bottom`
`percentage`
`length`

This property controls vertical alignment of an element.

The `baseline`, `sub`, `super`, `text-top`, `middle`, and `text-bottom` settings control alignment relative to the parent element. They may be used to align the top of the element to the top of nearby text (using `text-top`), to `middle` align text, or to align the bottom of the element with the bottom of nearby text (using `text-bottom`). The `baseline` setting aligns text to the baseline—the baseline is similar to the bottom of text, except it does not take descending letters into account.

The `sub` and `super` values turn the text into a subscript or superscript.



The `top` and `bottom` settings control alignment within the element itself. Setting `vertical-align` to `top` will align the top of all items in the element to the top of the tallest element. Similarly setting it to `bottom` will align the bottom of all items to the bottom of the tallest element.

The percentage and length settings raise or lower the element with respect to the surrounding elements. The percentage setting is relative to the current line height.

text-transform

values: **`capitalize`**, **`uppercase`**, **`lowercase`**, **`none`**

The `text-transform` property may be used to capitalize all words within the selected element, or to turn all words to all uppercase or all lowercase.

text-align

values: **`left`**, **`right`**, **`center`**, **`justify`**

The `text-align` attribute controls horizontal alignment of text.

text-indent

values: *length*
percentage

This property controls indentation of text. It may be given as a length or a percentage. Percentages are relative to the width of the parent element, for example, the width of a table cell or the width of the entire window.

line-height

values: **`normal`**
length
multiplier
percentage

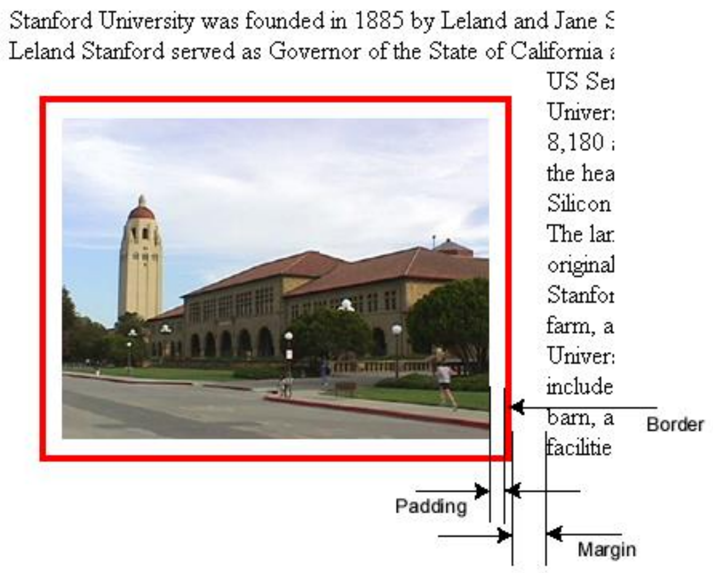
The `line-height` property controls spacing between lines of text. The `line-height` may be given as a length measurement, as a multiplier number, or as a percentage of the font size of the element. Multiplier numbers give multiples of the normal line height. For example,

```
line-height: 3
```

would signify three times the current line height.

Box Properties

Style sheets allow us to specify margin, padding, and border around elements. The padding is the distance between an element and its border. The margin is the distance between the border and surrounding text.



Stanford University was founded in 1885 by Leland and Jane S
Leland Stanford served as Governor of the State of California a
US Se
Univer
8,180 a
the hea
Silicon
The lar
original
Stanfor
farm, a
Univer
include
barn, a
facilitie

margin-top, margin-right, margin-bottom, margin-left

values: *`length`*
`percentage`
`auto`

These four properties set the margin widths for an element. They may be set to a specific length or as a percentage of the enclosing element.

margin

values: *`combination`*

The `margin` property allows us to set all four margins using one line. If only one value is specified, then that value will be used for all four margins. If two values are specified, then the first value is used for the top and bottom margins and the second value is used for the right and left margins. If all four values are specified, they should appear in the order: top, right, bottom, and left. Here are some examples:

```
margin: 5px             /* all margins are 5 pixels */
margin: 0.2in 0.5in     /* top and bottom margins are 0.2",
                           right and left margins are 0.5" */
margin: 5px 2px 1px 3px /* top margin is 5 pixels
                           right margin is 2 pixels
                           bottom margin is 1 pixel
                           left margin is 3 pixels */
```

padding-top, padding-right, padding-bottom, padding-left

values: *`length`*
`percentage`

These four properties set the padding widths for an element. They may be set to a specific length or as a percentage of the enclosing element. However, see `padding` warning below.

padding

values: *`combination`*

The `padding` property allows us to set all four padding values at the same time. It uses the same format as the margin property described above.

Warning: The `padding-top`, `padding-right`, `padding-bottom`, `padding-left`, and `padding` properties are supported on only a few elements in Internet Explorer. Supported elements include the `<span>` and `<div>` tags and the table elements. Padding is not supported on the `<img>` tag.

border-top-width, border-right-width, border-bottom-width, border-left-width

values: *`length`*
`thin`, `medium`, `thick`

These four properties determine the width of the border. They may be set to specific lengths or to one of three keywords—`thin`, `medium`, or `thick`.

border-width

values: *`combination`*

The `border-width` property allows us to set all four border width values at the same time. It uses the same format as the `margin` and `padding` properties described above.

border-color

values: *`color`*
`color-combination`

The `border-color` property sets the color of the border. Each border (top, right, bottom, and left) may have its border color set independently. Specifying a single color sets the border color for all four borders. Multiple color combinations follow the same rules as the `margin` and `padding` properties.

Specifying two colors sets the border for the top and bottom border and the right and left border. Specifying all four colors sets the border color for top, right, bottom, and left (in that order).

Warning: Setting `border-color` by itself will have no discernable effect, unless the `border-style` propery below is also set.

border-style

values: **`none`**, **`dotted`**, **`dashed`**, **`solid`**, **`double`**, **`groove`**, **`ridge`**, **`inset`**, **`outset`**

This property determines the appearance of the border. The default setting is `none`. Note that not all settings are supported by all browsers.

border-top, border-right, border-bottom, border-left

values: *`combination`*

Each of these four properties can be used to set `border-width`, `border-color`, and `border-style` all on one line. The values may be listed in any order. Here is an example:

```
   border-top: red thick solid
```

border

values: *`combination`*

The `border` property allows the user to set `border-width`, `border-color`, and `border-style` for all four borders all at once. This property may only be used if the width, color, or style specified is the same for all four borders. Here is an example:

```
   border: thin double blue
```

This sets all four borders to thin, blue, double lines.

width

values: *`length`*
`percentage`
`auto`

This property controls the width of the element. It may be set to a specific length or to a percentage of the parent element. For images, setting the `height` property to a specific height and the `width` to `auto` will instruct the browser to calculate the proper width of the image to maintain the image's original aspect ratio.

height

values: *`length`*
`auto`

This property controls the height of the element. For images, setting the `width` property to a specific width and `height` to `auto` will instruct the browser to calculate the proper height of the image to maintain the image's original aspect ratio.

float

values: **`left`, `right`, `none`**

This property can be used to control text flow around the element. If it is set to `left`, the element will appear on the left side of the webpage, with text flowing on the right. Setting it to `right`, places the element on the right with text flow on the left.

clear

values: **`none`, `left`, `right`, `both`**

This property determines whether or not other elements are allowed to float alongside the element. If clear is set to `left`, no floating images or other floating elements will be placed to the left of the element. Instead, the element will be placed below the image. The `right` and `both` settings work similarly.

Classification Properties

display

values: **`block`, `inline`, `list-item`, `none`**

This rather unusual property can turn HTML tags which normally create blocks of text, such as the `<h1>` tag, into inline text tags—eliminating the carriage returns normally created by these block items. It also can convert inline tags, such as the `<i>`, `<b>`, or `<u>` tags into block level tags.

The `list-item` setting works exactly the same as the block setting, except that a `list-item` graphic, such as a bullet '•' will precede the item when displayed.

The `none` setting tells the browser not to display the item at all. This may be used, for example, to instruct the browser not to display images:

```
img {display: none}
```

white-space

values: **`normal`, `pre`, `nowrap`**

As we have learned, HTML normally treats all whitespace the same. If we separate the words in an HTML file by a single space or by fives spaces and a tab, the browser will display our webpage the same. Excess whitespace is ignored. However, if we set the `white-space` property to `pre`, we are telling the web browser to treat our text as preformatted, and to display whitespace as originally written—displaying all spaces, tabs, and carriage returns as indicated in the original HTML file.

The `nowrap` setting works similar to the `pre` setting, except text will not wrap when it is too long to fit on a single line. Line breaks will only occur when explicitly marked with `<br>` tags.

list-style-type

values: **`disc`, `circle`, `square`, `decimal`, `lower-roman`, `upper-roman`, `lower-alpha`, `upper-alpha`, `none`**

The `list-style-type` determines whether bullets (discs), circles, or squares are used to indicate list items. Or what kind of numbering scheme the system should use for ordered lists.

list-style-image

values: *`url`*
`none`

Instead of the standard disc, circle, or square list indicators, you may specify your own image file to use with lists. The URL supplied should be the location of an image file. For example:

```
   li {list-style-image: url(tree.gif)}
```

will place the image "`tree.gif`" in front of every list item.

list-style-position

values: **`inside`**, **`outside`**

This property determines whether or not list indicators, such as discs or squares are indented.

list-style

values: *`combination`*

This combination property allows the webpage author to specify `list-style-type`, `list-style-image`, and `list-style-position` values all on one line. The property values may be listed in any order, for example:

```
   list-style: square outside
```