

An Introduction to HTML5



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1 Overview

HTML5 is the first major development in HTML in over ten years mainly being pushed to the forefront by the quick, expansion of mobile technology. This class looks at the transition from the classic HTML tags to the new HTML5 tags and what changes you can expect to make to your web site to make it more HTML5 compliant in terms of video, audio and page layout. Some background knowledge of HTML and HTML tags are assumed.

2 Software requirements

For this class, you will need a browser that supports HTML5. The following browsers support HTML5:

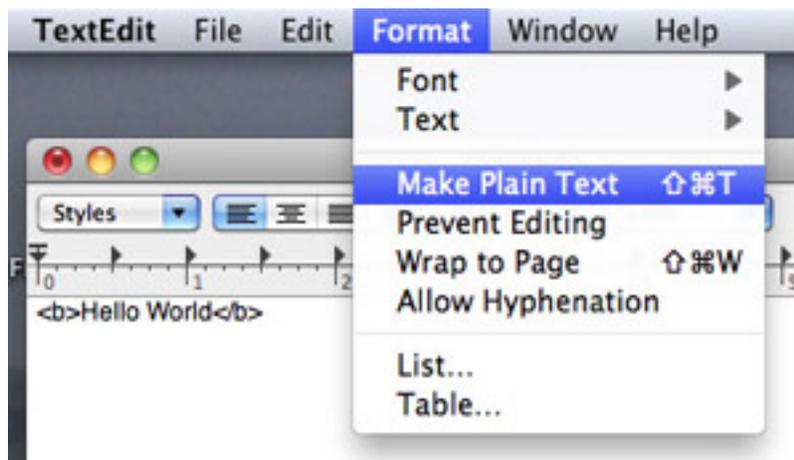
- Firefox 3.0+ (on all operating systems)
- Safari 3.0+ (on Windows, OS X and iPhone OS 1.0+ operating systems)
- Google Chrome (on all operating systems)
- Opera 9.5+ (on all operating systems)

3 Getting Started

To get started, we are going to investigate some of the newer HTML5 commands in a browser. To do this, we are going to enter the commands into a standard text editor and then view those commands on the desktop via an HTML5 compliant browser.

3.1 Macintosh

On a Macintosh, double-click the **TextEdit** application that is normally within the **Applications** folder. Pull down under **File** → **New**. Then enter the following line `Hello World` into that file. Next pull down under **Format** to **Make Plain Text**.

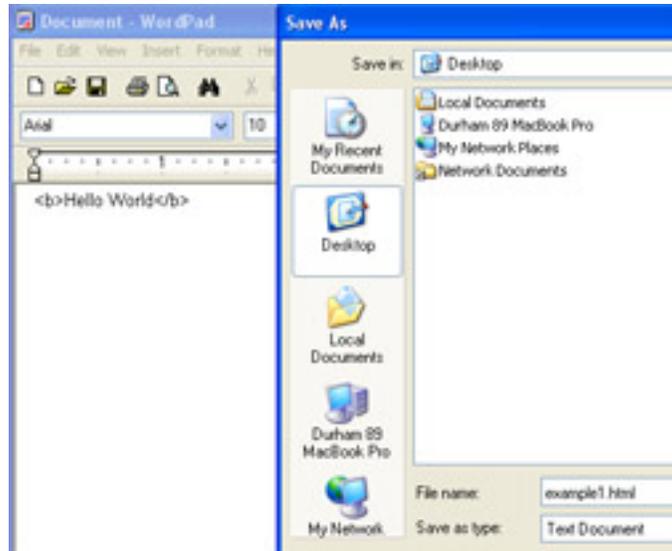


And finally, pull down under **File** → **Save as** and save the file as **example1.html**.

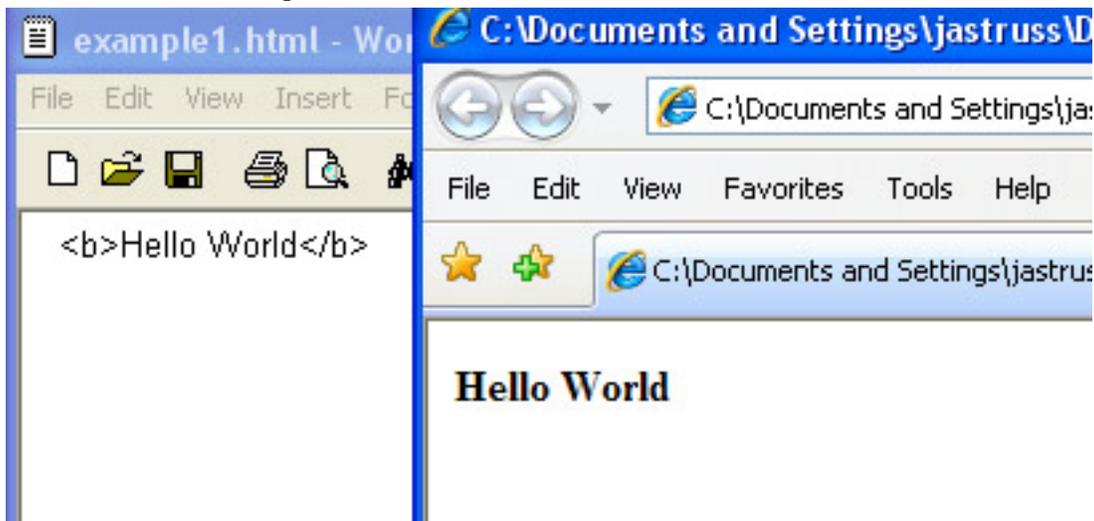
Double-click `example1.html` on your desktop to view the file with Safari to see your result. For the first part of this class, we will make changes to the `example1.html` file, save the file and then view the result with Safari by pressing the **reload** button within Safari. To re-open with TextEdit and not get forced into Rich Text Format, use the *Open* option within TextEdit and turn on the *ignore rich text commands* option.

3.2 Windows

On a Windows system, open up WordPad by going under **All Programs** → **Accessories** → **WordPad**. Enter the following line: `Hello World` into Wordpad. Pull down under **File** → **Save As** and save the file as `example1.html` as a *Text Document*.



Double-click `example1.html` on your desktop to view the file with Internet Explorer to see your result. For the first part of this class, we will make changes to the `example1.html` file, save the file and then view the result with Internet Explorer by pressing the **reload** button within Internet Explorer.



4 HTML5 Basics

HTML stands for Hypertext Markup Language. It is the markup language used to create most web pages on the internet. HTML commands known as tags are enclosed in `< >` and mostly come in pairs `<H1>Topic</H1>` which surround the area where the effect is to take place with a `/` preceding the ending tag name. For educational purposes and emphasis, HTML commands are shown within this document in both upper and lowercase. HTML commands can be in either case but case should probably be consistent within a document.

The web today is not the same web that was supported back in the early to mid-90's when HTML began. There is more emphasis on mobile browsing today and applications

such as Twitter and Facebook have greatly impacted the web that we have today. HTML4 which is currently used by all internet browsers came from the foundation that was laid in the mid-90's as to what people wanted to do on the internet. HTML5 is the biggest step forward on the web in over 10 years and integrates some of the new capabilities of the web while cleaning up some of the previous HTML capabilities that have become unnecessarily complicated over time.

HTML5 gracefully supports almost all code practices in HTML. So don't worry that all your previous HTML knowledge has gone to waste. The new areas of HTML5 can allow you to "block" contents on the page, help with media management and allow more control over the structure with a form tag. The big emphasis change in HTML5 is to allow HTML code to inform the browser as to the type or content of the tagged text and then allow the browser and CSS code that goes with the page to alter the text on the screen. So the emphasis in HTML5 is to tag content within a page for use by the browser.

4.1 The HTML4 Page

A full HTML4 page is made up of various sections.

<HTML>

- marks web page as an HTML file

<HEAD> Title stuff **</HEAD>**

- marks header of this web page.

<BODY>

<p>Everything else on this page.**</p>**

</BODY>

- marks body of this web page.

</HTML>

- marks end of an HTML file

An initial full HTML4 page might look something like this:

```
<HTML>
```

```
<HEAD>
```

```
<TITLE> Personal Homepage - Your Name Here</TITLE>
```

```
</HEAD>
```

```
<BODY>
```

```
<H1>Welcome!</H1>
```

```
<P>This is a sample homepage.</P>
```

```
<P>Text can be shown in <B>bold</B>
```

and `emphasis.</P>`

```
<p>My electronic mail address is  
<ADDRESS>somewhere@out.there</ADDRESS></P>  
</BODY>  
</HTML>
```

5 HTML5 Blocking Elements

Blocking elements are excellent examples of what HTML5 actually does on a web page. These elements block the parts of the web page which would have been previously done with a `<DIV>` tag and a lot of extra work.

The main blocking element in HTML5 are:

- **HEADER** - header portion of the page
- **SECTION** - defines a section or sectional content of a page
- **ARTICLE** - defines an article either within a section or a page
- **ASIDE** - defines a sidebar contents
- **FOOTER** - defines the footer portion of a page



Go head and try out some of the blocking elements of HTML5 like: header, footer or nav; on our standard HTML4 page. You can download the starter page and some additional class items like a CSS folder and an image for your page at:

<http://css.ait.iastate.edu/Networking/>

So you would start your header area with `<header>` and end with `</header>`. Or you would define a footer area of your page with `<footer>` and end with `</footer>`. Remember though that these elements like header and footer are meant to be document headers and footer and not just page headers and footers so they may not appear on every page.

Additionally HTML5 not only includes tags to block out the page, it also includes tags like `<section>` which closes with `</section>` to identify the text level content structure. Try some of these out like: section, article and aside out on your page and take a look at it from the browser.

5.1 The NAV Tag

The NAV tag is used to enclose the navigation elements of your page, such as:

```
<a href="http://css.ait.iastate.edu/Dreamweaver/">Dreamweaver</a> |  
<a href="http://css.ait.iastate.edu/Flash/">Flash</a> |  
<a href="http://css.ait.iastate.edu/Fireworks/">Fireworks</a>
```

The NAV tag is one of the easiest blocking elements to convert from an HTML4 page and is perhaps the easiest HTML5 tag to learn how to use.

5.2 HTML5 DOCTYPE

To define your page as being an HTML5 page, simply alter the `<html>` tag to be `<!DOCTYPE html>`. The DOCTYPE has its roots in SGML and XHTML but you would have to include a lot of additional code for SGML or XHTML. HTML5 just makes it easier.

5.3 Trying it Out

Okay, let's alter our old HTML4 homepage into a new HTML5 style homepage:

```
<!DOCTYPE HTML>  
<HEAD>  
<TITLE> Personal Homepage - Your Name Here</TITLE>  
</HEAD>  
  
<BODY>  
<HEADER> Welcome to my homepage.</HEADER>  
<SECTION>  
<NAV>  
<A HREF="http://css.ait.iastate.edu/">Home</a> |  
<A HREF="http://www.yahoo.com/">Yahoo</a> |
```

```

<A HREF="http://www.ebay.com/">Ebay</a>
</NAV>
</SECTION>

<SECTION>
<H1>Welcome!</H1>

<P>This is a sample homepage.</P>

<ARTICLE>
<P>Text can be shown in <B>bold</B>
and <EM>emphasis</EM>.</P>
</ARTICLE>

<ASIDE>
<p>My electronic mail address is:
<ADDRESS>somewhere@out.there</ADDRESS></P>
</ASIDE>
</SECTION>
<FOOTER>This is Joe's Homepage on the web</FOOTER>
</BODY>
</HTML>

```

Now that doesn't look like much but in HTML5 you allow the CSS file to do all the heavy lifting, positioning, color and effects. So add the link tag at the top and then add the class option to the major HTML5 tags.

```

<!DOCTYPE HTML>
<HEAD>
<link href="css/style.css" rel="stylesheet" type="text/css" >
<TITLE> Personal Homepage - Your Name Here</TITLE>
</HEAD>

<BODY>
<HEADER class="headerStyle"> Welcome to my homepage.</HEADER>
<SECTION class="leftSection">
<NAV class="navigationStyle">
<A HREF="http://css.ait.iastate.edu/">Home</a> |
<A HREF="http://www.yahoo.com/">Yahoo</a> |
<A HREF="http://www.ebay.com/">Ebay</a>
</NAV>
</SECTION>

<SECTION class="centerSection">
<H1>Welcome!</H1>

```

```
<P>This is a sample homepage.</P>
```

```
<ARTICLE>
```

```
<P>Text can be shown in <B>bold</B>  
and <EM>emphasis</EM>.</P>
```

```
</ARTICLE>
```

```
<ASIDE class="newsAside">
```

```
<p>My electronic mail address is:
```

```
<ADDRESS>somewhere@out.there</ADDRESS></P>
```

```
</ASIDE>
```

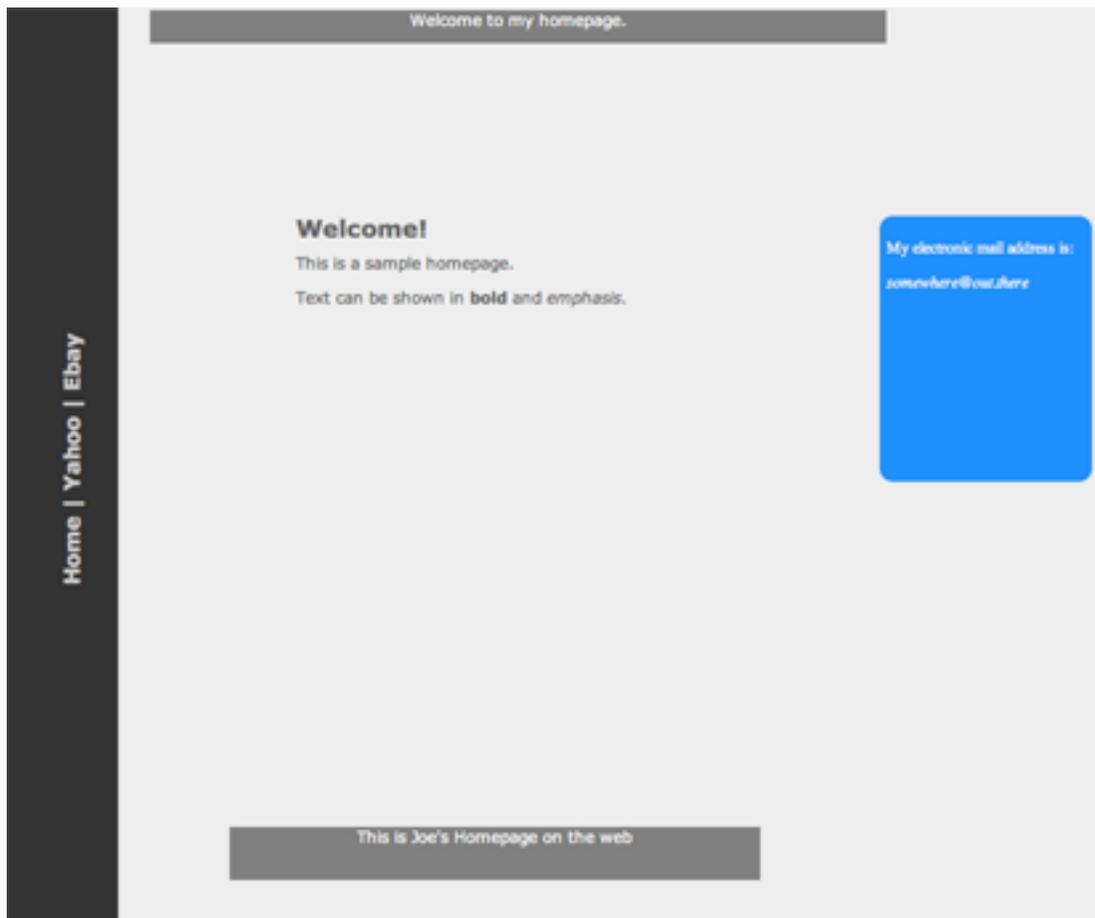
```
</SECTION>
```

```
<FOOTER class="footerStyle">This is Joe's Homepage on the web</FOOTER>
```

```
</BODY>
```

```
</HTML>
```

This should get you a fairly nice looking HTML page. You can alter the CSS file style.css to alter page placement and color elements. Go ahead and play around with this for a bit.



5.4 Additional HTML5 Content Tags

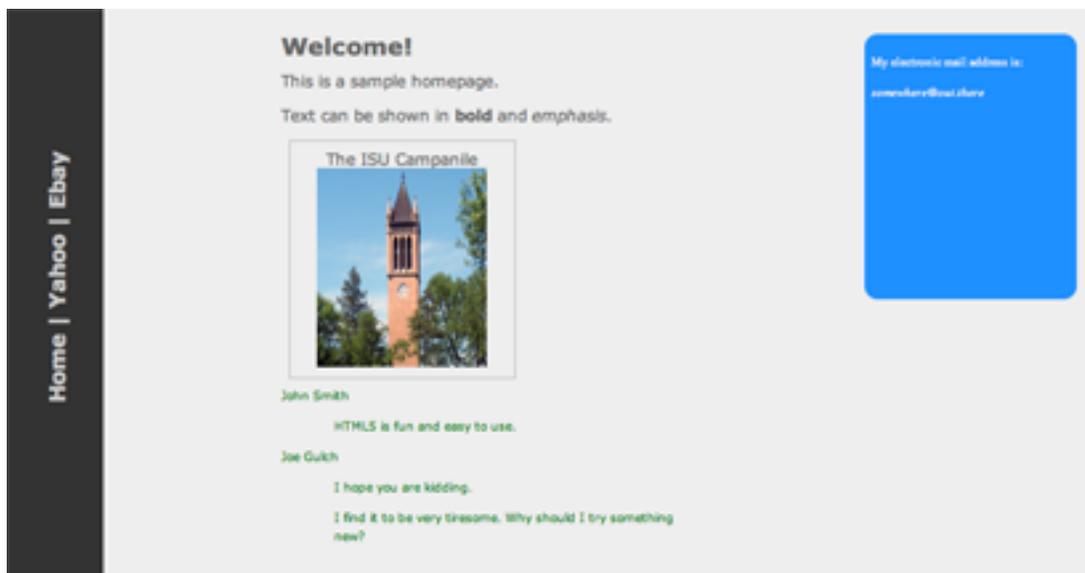
A lot of web page text tends to be conversation and comments. To that end, the HTML5 tag called DIALOG identifies a conversation dialogue with the additional tags: DT to identify the speaker and DD to identify the conversation; such as:

```
<DIALOG class="dialogueStyle">
<DT>John Smith </DT>
<DD><P>HTML5 is fun and easy to use.</P></DD>
<DT>Joe Gulch</DT>
<DD><P>I hope you are kidding.</P> <P>I find it to be very tiresome.
Why should I try something new?</P>
</DIALOG>
```

The FIGURE tag along with the LEGEND caption element allow you to identify an image on your page, identify it as a figure and give it a legend:

```
<FIGURE class="figureArea">
<LEGEND>The ISU Campanile</LEGEND>
<IMG alt="The ISU Campanile Image"
src="camp.jpg" height="150" width="128" border=0 />
</FIGURE>
```

So here is what we have so far:



5.5 Mark, Time, Meter and Progress

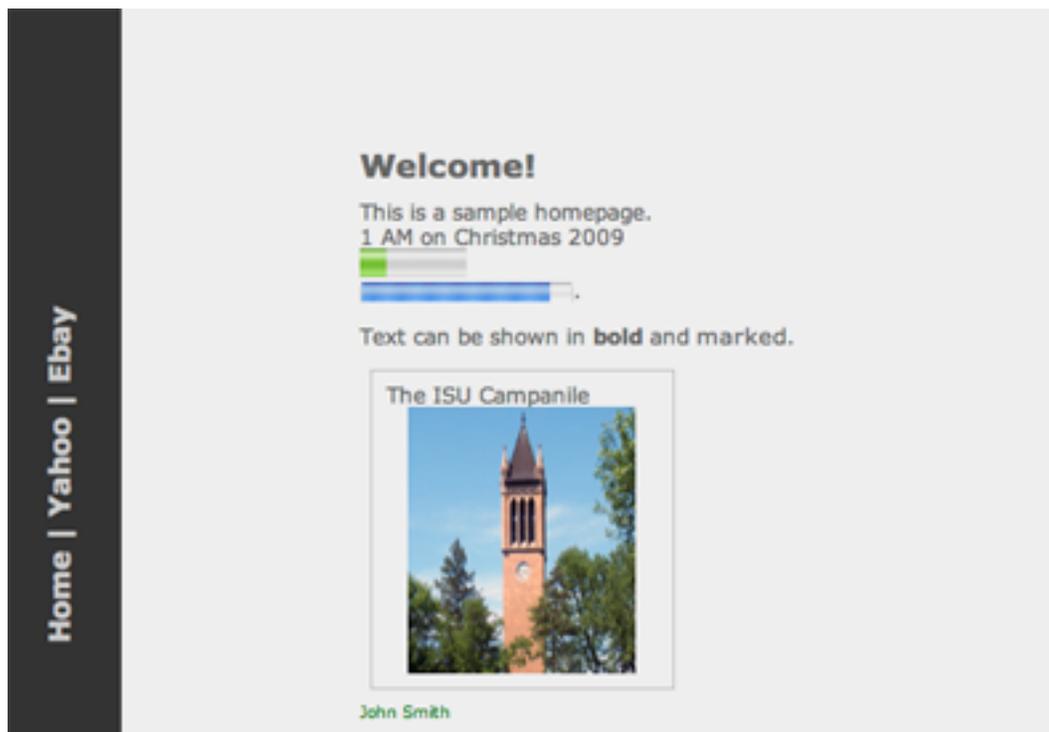
The <M> or Mark tag adds highlighting or emphasis to text without necessarily reformatting the text.

The `<TIME>` tag identifies text as being a measurement of time such as `<TIME>April 23, 2011</TIME>`. The goal being to describe the Date/Time text on a page. A more complete form is something like `<TIME datetime="2009-12-25T01:00:00"> 1 AM on Christmas 2009</TIME>`.

The `METER` tag identifies a numeric value over a specific range. Tag options include: `value`, `min`, `max`, `low`, `high` and `optimum`. For example, if you have completed about 75% of an online module, you might have: `<METER value="25" min="0" max="100">3 of 4 modules completed</METER>`

The `PROGRESS` tag represents the progress of an ongoing process. For instance, if you are downloading an time from the web. The three attributes for this tag are `value`, `min` and `max`. So for example: `<PROGRESS value="90" min="0" max="100"> Almost 90% completed</PROGRESS>`.

Try this out with the Google Chrome browser and you should see some interesting results:



5.6 A Quick look at Forms

Forms in HTML5 have finally gone to version 2 and have received a major upgrade. One of the main new features is that you can now specify the type of input field, so `<input name="blah" type="item">`: where the *item* part can be:

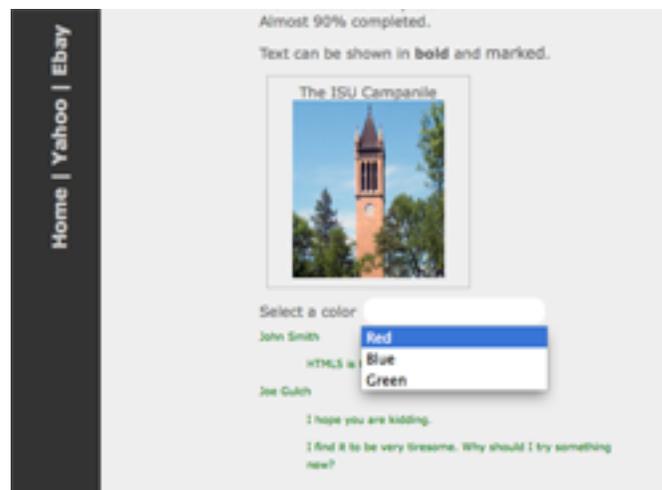
- search
- number
- range
- color
- tel
- url
- email
- date
- month
- week
- time
- datetime

Other additions to Forms include an autofocus option to put the cursor into a specified field: `<input name="FirstName" type="text" autofocus>`. Additionally you have a required option for requiring an item on a form: `<input name="FirstName" type="text" required>`. Plus you can also now have placeholder text:

```
<input name="FirstName" type="text" placeholder="John">
```

An additional feature is the ability to do a dropdown list which currently only works in Firefox (click on the far right of the label to get the list):

```
<label>Select a color</label>
<input list="mylist" type="text">
<datalist id="mylist">
<option label="Red" value="Red">
<option label="Blue" value="Blue">
<option label="Green" value="Green">
</datalist>
```



6 HTML Migration

If you are updating a page to HTML5 standards then you might want to take a look at the following list of Tags that are being dropped, modified or are no longer supported by HTML. It is quite a long list but most tags will continue to work within browsers for quite some time to come.

6.1 Tags being dropped

The following list of tags are not supported by HTML5.

- BASEFONT- can be duplicated with CSS
- BIG - can be duplicated with CSS
- CENTER - can be duplicated with CSS
- FONT - can be duplicated with CSS
- S - can be duplicated with CSS
- STRIKE - can be duplicated with CSS
- TT - can be duplicated with CSS
- U - can be duplicated with CSS
- FRAME - can be duplicated with iFrame or CSS
- FRAMESET - can be duplicated with iFrame or CSS
- NOFRAMES - can be duplicated with iFrame or CSS
- ACRONYM - can use the ABBR tag
- APPLET - can use the OBJECT tag
- ISINDEX - use FORM controls instead
- DIR - has been replaced by the UL list element

6.2 Tags being modified

The following tag have had their functions modified by HTML5.

- The A anchor with an HREF attribute now represents a “placeholder link”.
- The ADDRESS tag is now scoped by the new sectioning concepts.
- The B tag now represents a span of text to be stylistically offset from normal prose.

- The HR tag now represents a paragraph level thematic break.
- The LABEL tag should no longer move focus from the label to the control.
- The MENU tag has be redefined so that is is actually useful for menus.
- The SMALL tag now represents small print like for side comments and legal print.
- The STRONG tag now represents importance rather than strong emphasis.
- The Q tag quotation marks are now to be provided by the author rather than the user agent.

6.3 Tags being no longer supported

The following tags and options are no longer supported by HTML5. Again these are not going away right now but their use should be discouraged moving into the future.

- The ALIGN option on most common tags.
- The ALINK, LINK, TEXT and LINK options on the BODY tag.
- The BACKGROUND option on the BODY tag.
- The BGCOLOR option on most common tags.
- The BORDER option on TABLE, IMG and OBJECT.
- The CELLPADDING and CELLSPACING TABLE options.
- The FRAME option on the TABLE tag.
- The HEIGHT option on the TD and TH tags.
- The HSPACE and VSPACE options on the IMG and OBJECT tags.
- The NOWRAP option on the TD and TH tags.
- The SIZE option on the HR, INPUT and SELECT tags.
- The TYPE option on the LI, OL and UL tags.
- The VALIGN option on most common tags.
- The WIDTH option on most common tags.

7 HTML5 Media

For the first time, there are actual AUDIO and VIDEO tags in HTML5 although they are not currently supported by many browsers at this time. The standard video tag is:

```
<video src="sourcename"></video>
```

With the VIDEO tag you can add the autoplay and controls options to automatically play your video and place controls on the screen so users can control the video.

The movement with Video Codec options on the web is more towards open-source alternatives— so more towards webm and ogv and away from proprietary options like mp4 and flv. Now not everyone can use the open-source alternatives with their browsers so you can additionally use fallback options on your video tag just in case the video source file you are initially listing is not supported. So as the provider of the video, you just providing the source material in a variety of different ways:

```
<video width="320" height="240" controls>
  <source src="video.mp4" type="video/mp4">
  <source src="video.webm" type="video/webm">
  <source src="video.ogv" type="video/ogv">
  <embed src="video.flv" type="application/x-shockwave-flash"
    width="1024" height="798" allowscriptaccess="always" allowfullscreen="true">
  </embed>
</video>
```

In this case, I would use a handbrake, firefogg or a commercial video convertor like iSkysoft's video convertor and convert the material into different Codec systems for a variety of browsers.

Very similar options are available for the audio tag which is simply:

```
<audio src="sourcename"></audio>
```

The Audio tag supports the same autoplay and controls options as the Video tag. With audio source files, the trend is towards OGG and MP3 with a fallback to Flash audio.

```
<audio width="200">
<source src="audio.mp3" type="audio/mpeg">
<source src="audio.ogg" type="audio/mpeg">
<embed href="audio.swf" bgcolor="#085c68" width="200"
  height="20" name="movie" align=" "
  type="application/x-shockwave-flash" flashvars="mp3=test.mp3">
</embed>
```

8 References

1. Class data for this workshop can be found at:
<http://css.ait.iastate.edu/Networking/> Just **right-click** or **ctrl-click** on the *Class Data* link and save it to your desktop. On a Windows system, you will also need to extract it from the archive.
2. “HTML5 Designing Rich Internet Applications” by Matthew David.
3. “Dive into HTML5” by Mark Pilgrim at <http://diveintohtml5.org>
4. “HTML and the Future of the Web” by Tim Wright at www.smashingmagazine.com

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