Web Development

Lecture 17 – HTML5

http://www.w3schools.com/html5/default.asp

What is HTML5?

HTML5 is the new standard for HTML.

The previous version of HTML, HTML 4.01, came in 1999. The web has changed a lot since then.

Until recently HTML5 was still a work in progress. However, the major browsers have supported many of the new HTML5 elements and APIs for some time.

The W3C plan published a full HTML5 recommendation in Oct 2014.

There was a version of HTML5 which obeyed the stricter rules of all XML documents, called XHTML5. Rather than develop it as a separate language, they seem to be trying to make HTML5 compatible with XML rules.

How Did HTML5 Get Started?

HTML5 is a cooperation between the World Wide Web Consortium (W3C) and the Web Hypertext Application Technology Working Group (WHATWG).

WHATWG was working with web forms and applications, and W3C was working with XHTML 2.0. In 2006, they decided to cooperate and create a new version of HTML.

Some rules for HTML5 were established:

- New features should be based on HTML, CSS, DOM, and JavaScript
- Reduce the need for external plugins (like Flash)
- Better error handling
- More markup to replace scripting
- HTML5 should be device independent
- The development process should be visible to the public

Minimum HTML5 Document

```
<!DOCTYPE html>

<html>
  <head>
    <title>Title of the document</title>
  </head>

  <body>
    The content of the document.....
  </body>

</html>
```

A lot simpler than the old one!

HTML5 - New Features

Some of the most interesting new features in HTML5:

- The <video> and <audio> elements for media playback
- The <canvas> element for 2D drawing
- Support for local storage
- New content-specific elements, like <article>, <footer>, <header>, <nav>, <section>
- New form controls, like calendar, date, time, email, url, search

Browser Support for HTML5

- HTML5 is has only recently become an official standard, and no browsers have full HTML5 support.
- But all major browsers (Safari, Chrome, Firefox, Opera, Internet Explorer) continue to add new HTML5 features to their latest versions.

New Elements in HTML5

The internet has changed a lot since HTML 4.01 became a standard in 1999.

Today, some elements in HTML 4.01 are obsolete, never used, or not used the way they were intended to. These elements are removed or re-written in HTML5.

The following HTML 4.01 elements are removed from HTML5:

<acronym>	**<applet>**
<basefont>	**<big>**
** **	**<dir>**
<font>	**<frame>**
<frameset>	**<noframes>**
<strike>	**<tt>**
<u>	

To better handle today's internet use, HTML5 includes new elements for better structure, better form handling, drawing, and for media content.

HTML5 Video

Until now, there has not been a standard for showing a video/movie on a web page.

Today, most videos are shown through a plug-in (like flash). However, different browsers may have different plug-ins.

This means that, for example, with Internet Explorer, you would use the <object> element to mark up a video clip, but with Firefox you would use the <embed> element.

Example – MS MediaPlayer v10

```
<object classid="clsid:6BF52A52-394A-11D3-B153-00C04F79FAA6"
        width="300"
        height="200"
        type="application/x-oleobject">
  <param name="url" value="media/bike.avi" />
  <param name="showControls" value="true" />
  <param name="SendPlayStateChangeEvents" value="true">
  <param name="AutoStart" value="true">
  <param name="ShowStatusBar" value="true">
</object>
```

Each plugin has:

- a unique classid
- a different set of parameters that can be used to control its behaviour.

Classid codes for Internet Explorer

http://www.w3schools.com/media/media_playerref.asp

MS MediaPlayer v7 to v10
clsid:6BF52A52-394A-11D3-B153-00C04F79FAA6

MS MediaPlayer v6.4
clsid:22D6F312-B0F6-11D0-94AB-0080C74C7E95

MS MediaPlayer v6
clsid:05589FA1-C356-11CE-BF01-00AA0055595A

RealPlayer
clsid:CFCDAA03-8BE4-11CF-B84B-0020AFBBCCFA

Quicktime
clsid:02BF25D5-8C17-4B23-BC80-D3488ABDDC6B

```
<OBJECT
  classid="CLSID:22d6f312-b0f6-11d0-94ab-0080c74c7e95"
  codebase="http://activex.microsoft.com/activex/controls/ mplayer/
                                          en/nsmp2inf.cab#Version=5,1,52,701"
  id="mediaPlayer"
  width="320"
  height="240"
  standby="Loading Microsoft Windows Media Player components..."
  type="application/x-oleobject">

  <param name="fileName" value="theinternet.wmv" />
  <param name="animationatStart" value="1" />
  <param name="transparentatStart" value="1" />
  <param name="autoStart" value="1" />
  <param name="ShowControls" value="1" />
  <param name="ShowDisplay" value="0" />
  <param name="ShowStatusBar" value="0" />
  <param name="loop" value="0" />

  <EMBED
    type="application/x-mplayer2"
    pluginspage="http://microsoft.com/windows/mediaplayer/ en/download/"
    id="mediaPlayer" name="mediaPlayer" displaysize="4"
    autosize="0" bgcolor="darkblue"  showcontrols="0"
    showtracker="1" showdisplay="0" showstatusbar="0"
    videoborder3d="0" width="320" height="240"
    src="theinternet.wmv"
    autostart="1" designtimesp="5311" loop="0">
  </EMBED>

</OBJECT>
```

Example -
MS Media Player v6
with <EMBED> code for
Mozilla Firefox

HTML5 Video

HTML5 defines a new element which specifies a standard way to embed a video/movie on a web page: the <video> element.

```
<video width="320" height="240" controls="controls">
  <source src="movie.mp4" type="video/mp4" />
  <source src="movie.ogg" type="video/ogg" />
  Your browser does not support the video tag.
</video>
```

The control attribute adds video controls, like play, pause, and volume.

It is also a good idea to always include width and height attributes. If height and width are set, the space required for the video is reserved when the page is loaded.

Without these attributes, the browser does not know the size of the video, and cannot reserve the appropriate space to it. The effect will be that the page layout will change during loading (while the video loads).

You should also insert text content between the <video> and </video> tags for browsers that do not support the <video> element.

The <video> element allows multiple <source> elements. <source> elements can link to different video files. The browser will use the first recognized format.

Video Formats and Browser Support

Currently, there are 3 natively supported video formats for the <video> element: MP4, WebM, and Ogg:

Browser	MP4	WebM	Ogg
Internet Explorer 9	Yes	No	No
Firefox 4.0	No	Yes	Yes
Google Chrome 6	Yes	Yes	Yes
Apple Safari 5	Yes	No	No
Opera 10.6	No	Yes	Yes

MP4 = MPEG 4 files with H264 video codec and AAC audio codec

WebM = WebM files with VP8 video codec and Vorbis audio codec

Ogg = Ogg files with Theora video codec and Vorbis audio codec

HTML5 Video + DOM

The HTML5 <video> element also has methods, properties, and events.

There are methods for playing, pausing, and loading, for example.

There are properties (e.g. duration, volume, seeking) that you can read or set.

There are also DOM events that can notify you, for example, when the <video> element begins to play, is paused, is ended, etc.

HTML5 <video> - Methods, Properties, and Events

Methods	Properties	Events
play()	currentSrc	play
pause()	currentTime	pause
load()	videoWidth	progress
canPlayType	videoHeight	error
	duration	timeupdate
	ended	ended
	error	abort
	paused	empty
	muted	emptied
	seeking	waiting
	volume	loadedmetadata
	height	
	width	

Video Player Example

```
<!DOCTYPE html>
<html>
<body>

<div style="text-align:center">
  <button onclick="playPause()">Play/Pause</button>
  <button onclick="makeBig()">Big</button>
  <button onclick="makeSmall()">Small</button>
  <button onclick="makeNormal()">Normal</button>
  <br />
  <video id="video1">
    <source src="cloud computing.mp4" type="video/mp4" />
    Your browser does not support HTML5 video.
  </video>
</div>
```

```
<script type="text/javascript">

var myVideo=document.getElementById("video1");

function playPause()
{
  if (myVideo.paused)
    myVideo.play();
  else
    myVideo.pause();
}

function makeBig()
{
  myVideo.height=(myVideo.videoHeight*2);
}

function makeSmall()
{
  myVideo.height=(myVideo.videoHeight/2);
}

function makeNormal()
{
  myVideo.height=(myVideo.videoHeight);
}
</script>

</body>
</html>
```

HTML5 Audio

As with video, up until now most audio files were played through a plug-in, which meant that there was no standardisation, because plug-ins are browser specific.

HTML5 defines a new element which specifies a standard way to embed an audio file in a web page.

```
<audio controls="controls">
  <source src="song.ogg" type="audio/ogg" />
  <source src="song.mp3" type="audio/mpeg" />
  Your browser does not support the audio element.
</audio>
```

Audio Formats and Browser Support

Currently, there are 3 natively supported formats for the <audio> element: MP3, Wav, and Ogg:

Browser	MP3	Wav	Ogg
Internet Explorer 9	Yes	No	No
Firefox 4.0	No	Yes	Yes
Google Chrome 6	Yes	Yes	Yes
Apple Safari 5	Yes	Yes	No
Opera 10.6	No	Yes	Yes