CIS 4004: Web Based Information Technology Spring 2011

Advanced XHTML & CSS – Audio & Video

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Web Multimedia And Interactivity

- Different types of media, such as audio and video, can be used to make your web pages more interesting and informative for the visitor (they are also more fun to develop as well).

- The previous section of notes (Advanced XHTML & CSS – Forms) introduced web page interactivity with the use of forms, but we'll step the interactivity up a notch or two in this set of notes by discussing how to include both audio and video into your web pages.

Web Multimedia And Interactivity

- There are a number of ethical issues connected with placing audio and video into your web pages. In general, you need to obtain the rights (i.e., a license) from either the creator or the copyright owner before you can publish web pages including such material. Again, as we have mentioned before, in an educational setting, you are allowed much more leeway in utilizing such material. However, be aware of the consequences of using copyrighted material without license in a non-educational setting.

Helper Applications and Plug-Ins

- Web browsers are designed to display web pages, `.gif,` `.jpeg,` and `.png` images among others.

- When the media is not one of these types, the browser will search for a plug-in or helper application which is designed to display the file type.

- When the browser cannot find a plug-in or helper application on the user's computer, it will generally ask the user if they want to save the file to their computer. The user may already have a program that will view the file, or they will be unable to view the file until they find a compatible program.

Helper Applications and Plug-Ins

- In order for visitor's to your web site to have a good experience, use media files that are supported by the most common helper applications and plug-ins (see next page).

- A helper application is a program that can handle a particular file type (such as `.wav` or `.mp3`) to allow the user to open the special file.

- The helper application runs in a separate window from the browser.

- A newer and more common method is for the browser to invoke a plug-in application. The plug-in can run directly in the browser window so that the visitor can open media objects within the web page.

Commonly Used Plug-Ins

Plug-In	Download From	Description
Adobe Flash Player	http://www.adobe.com/products/flashplayer	The Flash Player displays `.swf` format files. These can contain audio, video, and animation, along with interactivity.
Adobe Shockwave Player	http://www.adobe.com/products/shockwaveplayer	The Shockwave Player displays high-performance multimedia created using the Adobe Director application.
Adobe Reader	http://www.adobe.com/products/acrobat/readstep2.html	Adobe Reader is commonly used to exchange information stored in `.pdf` format, such as the lecture notes for this course.
Java Runtime Environment	http://www.java.com/en/download/manual.jsp	The JRE is used to run applications and applets utilizing Java technology.
RealPlayer SP	http://real.com	The RealPlayer plug-in plays streaming audio, video, animations, and multimedia presentations on the Web.
Windows Media Player	http://microsoft.com/windows/windowsmedia	The Windows Media plug-in plays streaming audio, video, animations, and multimedia presentations on the Web.
Apple Quick Time	http://www.apple.com/quicktime/download	The Apple Quick Time plug-in displays Quick Time animation, music, MIDI, audio, video, and VR panoramas and objects directly within the Web page.

Helper Applications and Plug-Ins

- You're probably not surprised to know that there are a huge number of plug-ins that exist. You've probably already downloaded and used several.

- Mozilla provides a list of plug-ins and other browser extensions, or add-ons, used with its Firefox browser. You can view these at: http://addons.mozilla.org/en-US/firefox

- Most plug-ins are free and can be easily downloaded and installed.

- As a Web developer, you must strive for the usability of your web pages. Some visitor will simply leave your site if you require them to download and install a new plug-in. Stick with audio and video files that use the most popular plug-ins because your visitors probably already will have them installed on their computers.

Helper Applications and Plug-Ins

- Sounds can be used to set a mood for a web site. They can also be used to provide additional information, provide an explanation for an image, give a message from the company's CEO, provide the pronunciation of a word, and so on.

- The next page, list the most common types of audio files used on the Web.

Most Common Audio File Extensions

File Extension	Description
.wav (Wave file)	This format was originally created by Microsoft. It is a standard on the PC platform but is also supported by the Mac platform. This is typically raw and uncompressed leading to large audio files.
.aiff (Audio Interchange File Format)	This is one of the most popular audio file formats on the Mac platform. It is also supported on the PC platform, however, here use the three character .aif extension.
.mid (Musical Instrument Digital Interface – MIDI)	These files contain instructions to recreate a musical sound rather than a digital recording of the sound itself. The advantage of this concise format is small file size, but the disadvantage is the limited number of types of sounds that can be reproduced.
.au (Sun UNIX Sound File)	This is an older type of sound file that generally
.mp3 (MPEG-1 Audio Layer-3)	This sound file uses an advanced compression algorithm that results in the MP3 file being about 1/12 the size of the original audio file. Podcasts typically use the MP3 format.
.ogg (ogg Vorbis)	This sound file format uses a relatively new audio compression format that is comparable to MP3. However, it is open source and free to use. Visit www.vorbis.com for more details.

Most Common Video File Extensions

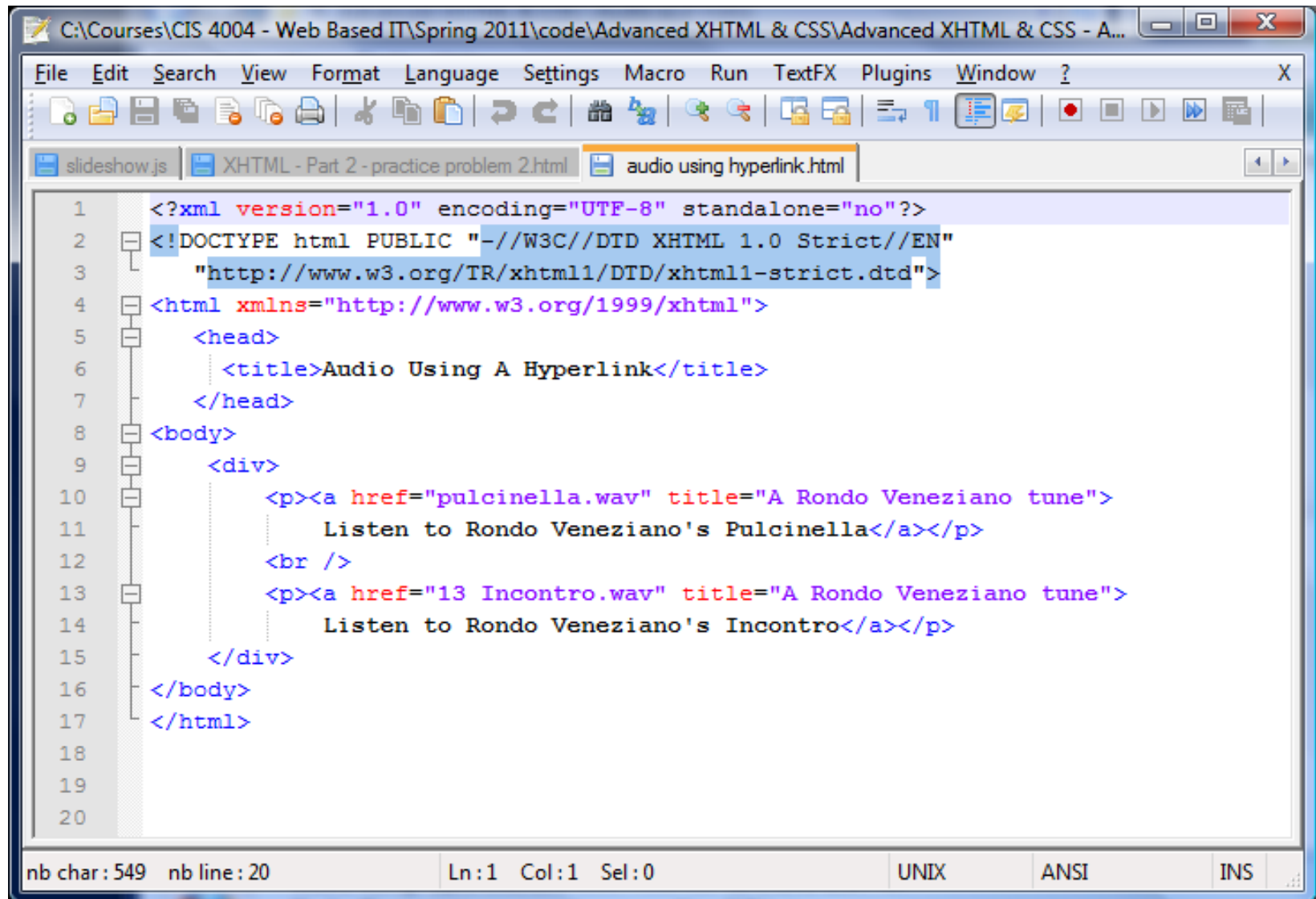| File Extension	Description
.mov (QuickTime)	This format was originally created by Apple and used on the Macintosh platform. The QuickTime for Windows plug-in supports this file format on the Windows platform. Because it has universal support, this format is widely used on the Web. QuickTime can begin playing the video before the entire file is downloaded, which gives the illusion of streaming video.
.avi (Microsoft Audio Video Interleaved File for Windows)	This was the original standard video format for PC platforms and is still widely used.
.wmv (Windows Media Video)	This is a streaming video technology developed by Microsoft. The Windows Media Player supports this file format.
.mpg3 and .mpg4 (MPEG)	The MPG technology standards were developed under the sponsorship of the Moving Pictures Experts Group (MPEG). These formats are supported on both Windows and Mac platforms.
.mp3 (MPEG-1 Audio Layer-3)	This sound file uses an advanced compression algorithm that results in the MP3 file being about 1/12 the size of the original audio file. Podcasts typically use the MP3 format.
.ogg (ogg Vorbis)	This sound file format uses a relatively new audio compression format that is comparable to MP3. However, it is open source and free to use. Visit www.vorbis.com for more details.

Adding Sound To Your Web Pages

- One simple technique for giving your website visitors access to a sound is to create a hyperlink that references the sound file.

- The XHTML markup to link to a sound file named "`pulcinella.wav`" would be:

```
<a href="pulcinella.wav"

        title="A Rondo Veneziano tune">

        Listen to Rondo Veneziano</a>
```

- If your visitor clicks on the link, the plug-in for the .wav files that is installed on the computer will display.

- This is a common technique for providing links to MP3 podcast files.

Using A Hyperlink To Add Sound To A Web Page


```
1   <?xml version="1.0" encoding="UTF-8" standalone="no"?>
2   <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
3       "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
4   <html xmlns="http://www.w3.org/1999/xhtml">
5       <head>
6          <title>Audio Using A Hyperlink</title>
7       </head>
8   <body>
9       <div>
10          <p><a href="pulcinella.wav" title="A Rondo Veneziano tune">
11             Listen to Rondo Veneziano's Pulcinella</a></p>
12          <br />
13          <p><a href="13 Incontro.wav" title="A Rondo Veneziano tune">
14             Listen to Rondo Veneziano's Incontro</a></p>
15       </div>
16   </body>
17   </html>
18
19
20
```

Adding Sound To Your Web Pages

- A more common technique for adding sound to a web page is to embed the sound in the page and optionally display a control panel for the sound.

- Often you will see this done using the `<embed />` element, however, this element is not part of the Strict DTD and using it will render your pages invalid against this standard.

- The more modern approach to embedding sound into a web page is to use the `<object>` element, which is part of the Strict DTD.

- The `<object>` element is part of the Strict DTD and it can be used for audio, video, and other items, so you should get familiar with this element.

Adding Sound To Your Web Pages

- Depending on the media type and plug-in or player to be used, additional configuration values (parameters), may be need to be coded using the `<param />` element.

- The `<param />` tag is a self-contained (empty) element that requires two attributes: `name` and `value`.

- All `<param />` tags for the object must appear before the ending `</object>` tag.

- The media player's documentation will indicate if parameters are needed and the format that you need to use.

- Page 15 lists the attributes of the `<object>` element when used with media files.

- Page 16 lists some of the common `<param />` attribute values.

Attributes Of Media `<object>` Elements

Attribute	Value	Usage	
`data`	Valid file name, (name of audio or video file)	Required – provides name of file to be played.	
`type`	A valid MIME type, such as audio/midi, audio/wav, video/quicktime, and so on	Optional – specifies the MIME type of the media file	
`width`	Numeric – number of pixels	Optional – configures the width of the media control console.	
`height`	Numeric – number of pixels	Optional – configures the height of the media control console.	
`classid`	Uniquely identifies the player software; for QuickTime it must be set to `clsid: 02BF25D5-8C17-4B23-BC80-D3488ABDDC6B` this unique code identifies an ActiveX control that must be installed on the user's PC before the movie can be played; if the user does not have the ActiveX control installed the browser can automatically download and install it.	The `classid` identifies an ActiveX control that must be installed on the visitor's computer; if the ActiveX control is not installed, the browser can automatically download and install it.	
`codebase`	Specifies a relative path for the location of the plug-in.	For QuickTime and IE, this value must be http://www.apple.com/qtactivex/qtplugin.cab - the location of the most recent version of the QuickTime player.	

Common Attribute Values Of `<param />` Elements

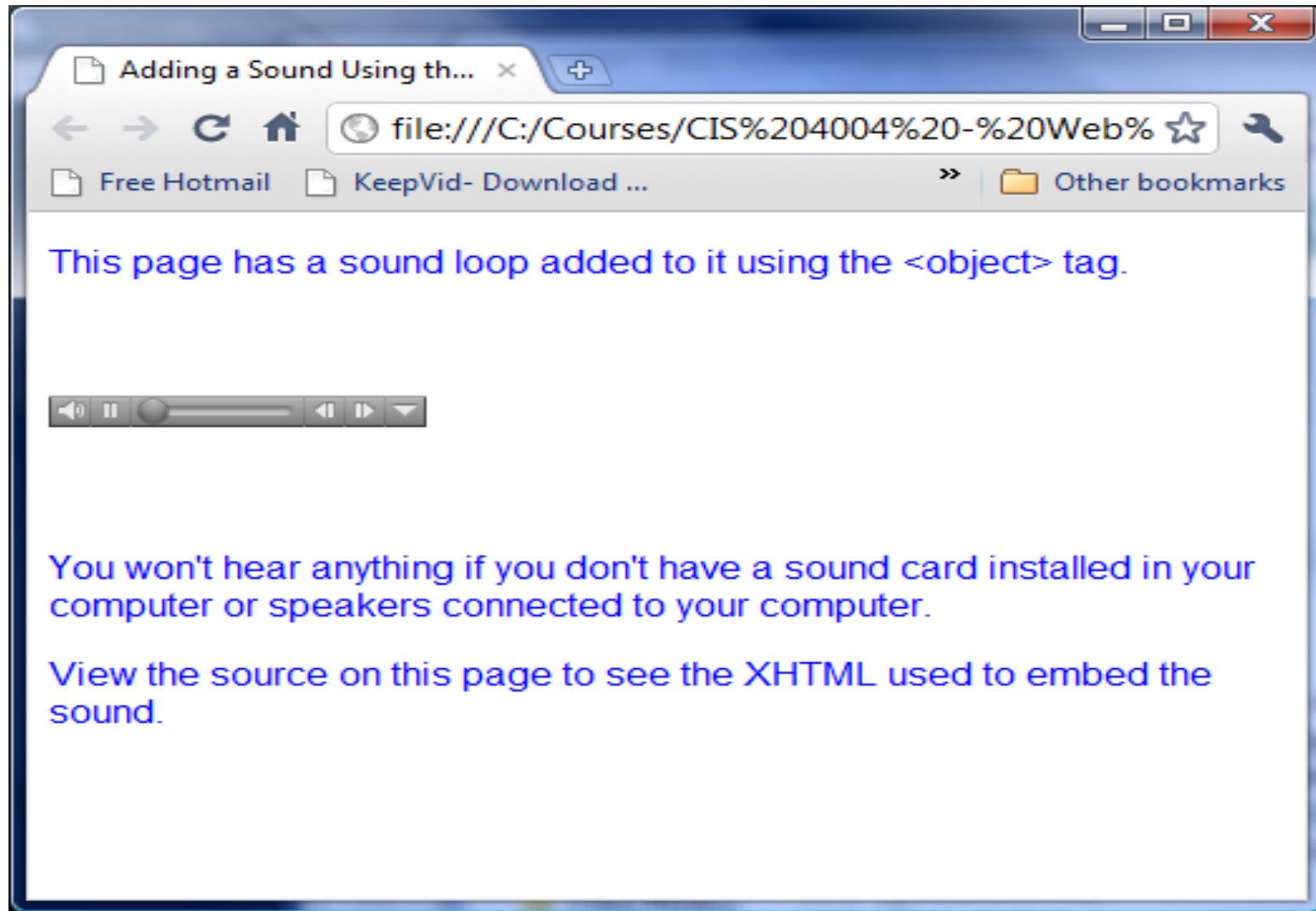| Attribute	Value	Usage
`src`	Valid file name, (name of media file)	Required – provides name of file to be played.
`loop`	Numeric value, or `true` for continuous play (not uniformly supported by all browsers).	Optional – determines how many times the media file will repeat.
`hidden`	`true` (not uniformly supported by all browsers).	Optional – hides the default media control console.
`autoplay`	`true , false`	Optional – determines if the media will play automatically when the page is loaded – if omitted, media may not autoplay.
`controller`	true, false (not uniformly supported by all browsers).	Optional – indicates whether the media control console will display.

Adding Sound To Your Web Pages

- Using an `<object>` element to place sound in a web page is obviously a bit more complicated than using a simple hyperlink, but is more versatile.

- The example on the following page, illustrates how to embed sound into a web page using the `<object>` element.

File   Edit   Search   View   Format   Language   Settings   Macro   Run   TextFX   Plugins   Window   ?   X

slideshow.js | XHTML - Part 2 - practice problem 2.html | audio2.html

```xml
 1  <?xml version="1.0" encoding="UTF-8" standalone="no"?>
 2  <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
 3      "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
 4  <html xmlns="http://www.w3.org/1999/xhtml" >
 5  <head>
 6      <title>Adding a Sound Using the Object Tag</title>
 7      <style type="text/css">
 8      <!--
 9          body { background-color: #FFFFFF;  color: #0000FF;    font-family: Arial,san-serif; }
10      -->
11      </style>
12  </head>
13  <body>
14      <p>This page has a sound loop added to it using the &lt;object&gt; tag.</p>
15      <object data="Pulcinella.wav"
16              height="100"
17              width="150"
18              type="audio/wav" >
19          <param name="src"   value="pulcinella.wav" />
20      </object>
21      <p>You won't hear anything if you don't have a sound card
22         installed in your computer or speakers connected to your
23         computer.</p>
24      <p>View the source on this page to see the XHTML used
25         to embed the sound.</p>
26  </body>
27  </html>
28
```
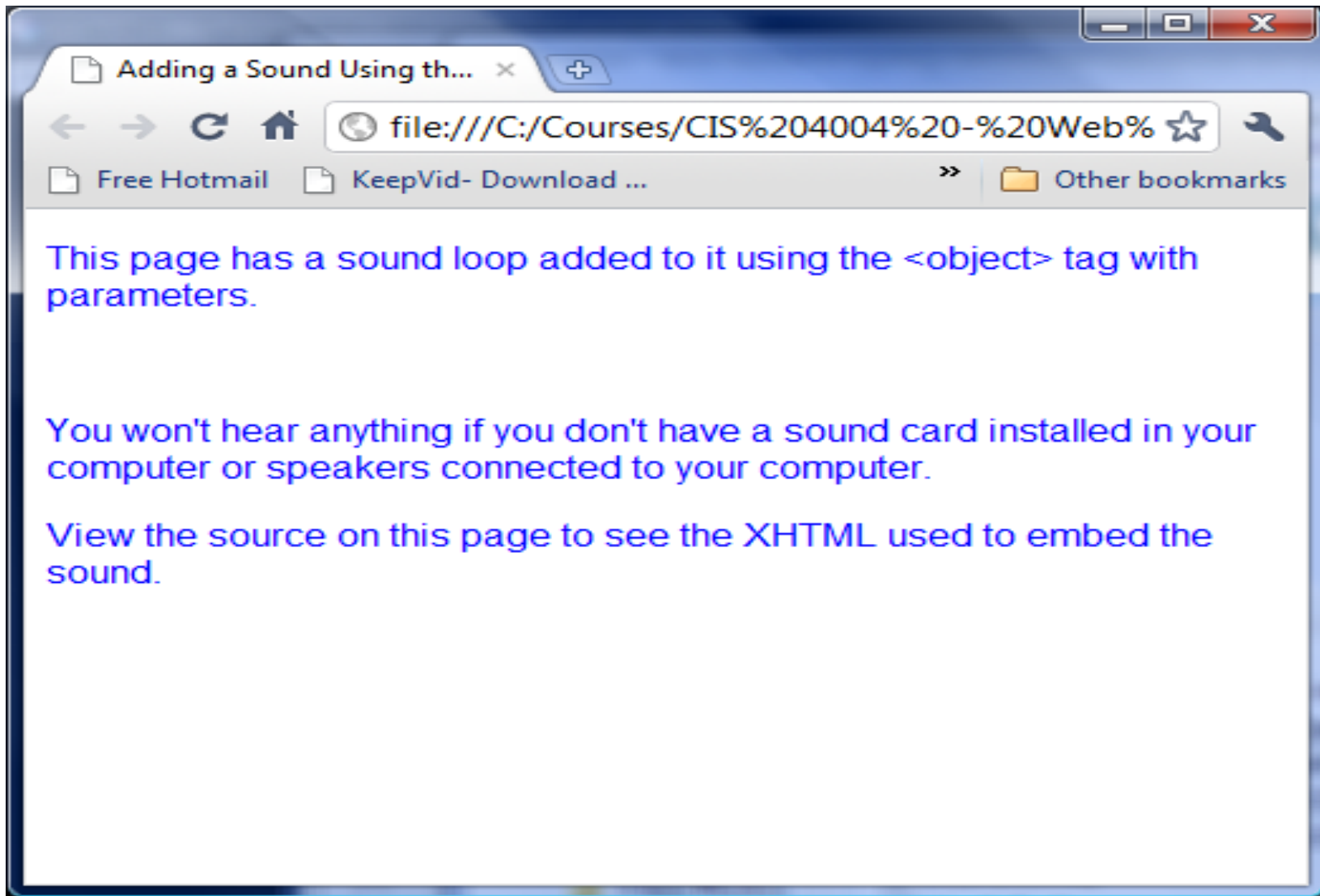
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Adding Sound To Your Web Pages

File   Edit   Search   View   Format   Language   Settings   Macro   Run   TextFX   Plugins   Window   ?   X

slideshow.js | XHTML - Part 2 - practice problem 2.html | audio2.html | audio4.html

```
 2  <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
 3      "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
 4  <html xmlns="http://www.w3.org/1999/xhtml" >
 5  <head>
 6      <title>Adding a Sound Using the Object Tag with paramet
 7      <style type="text/css">
 8      <!--
 9          body { background-color: #FFFFFF;  color: #0000FF;   font-family: Arial,san-serif; }
10      -->
11      </style>
12  </head>
13  <body>
14      <p>This page has a sound loop added to it using the &lt;object&gt; tag with parameters.</p>
15      <div>
16          <object  data="13 Incontro.wav"
17                   height="0"
18                   width="0"
19                   type="audio/wav" >
20              <param name="src"        value="incontro.wav" />
21              <param name="loop"       value="true" />
22              <param name="hidden"     value="true" />
23              <param name="autostart"  value="true" />
24              <param name="autoplay"   value="true" />
25              <param name="controller" value="false" />
26          </object>
27      </div>
28      <p>You won't hear anything if you don't have a sound card
29          installed in your computer or speakers connected to your computer.</p>
```

Same basic markup as previous example – this one uses parameters to define a more specific instance of the player.

Controller is hidden

Hyper Text Markup Lang   nb char : 1187   nb line : 33   Ln : 1   Col : 1   Sel : 0   Dos\Windows   ANSI   INS

Adding Sound To Your Web Pages

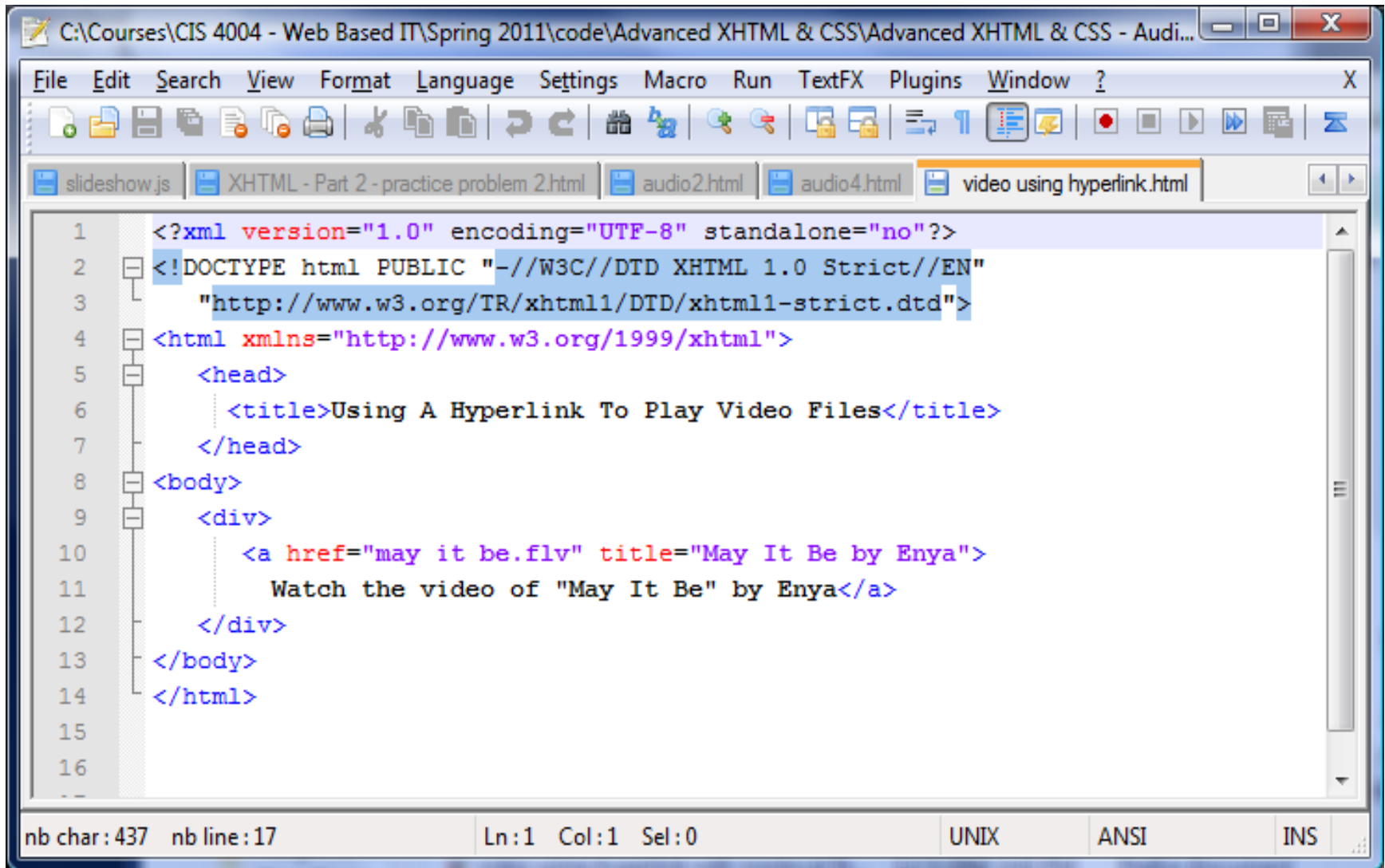# Adding Video To Your Web Pages

- As with audio, one simple technique for giving your website visitors access to a video is to create a hyperlink that references the video file.

- The XHTML markup to link to a video file named "`may it be.flv`" would be:

```
<a href="may it be.flv"

        title="May It Be by Enya">

        Watch the video of "May It Be" by Enya</a>
```

- If your visitor clicks on the link, the plug-in for the .flv files that is installed on the computer will display.

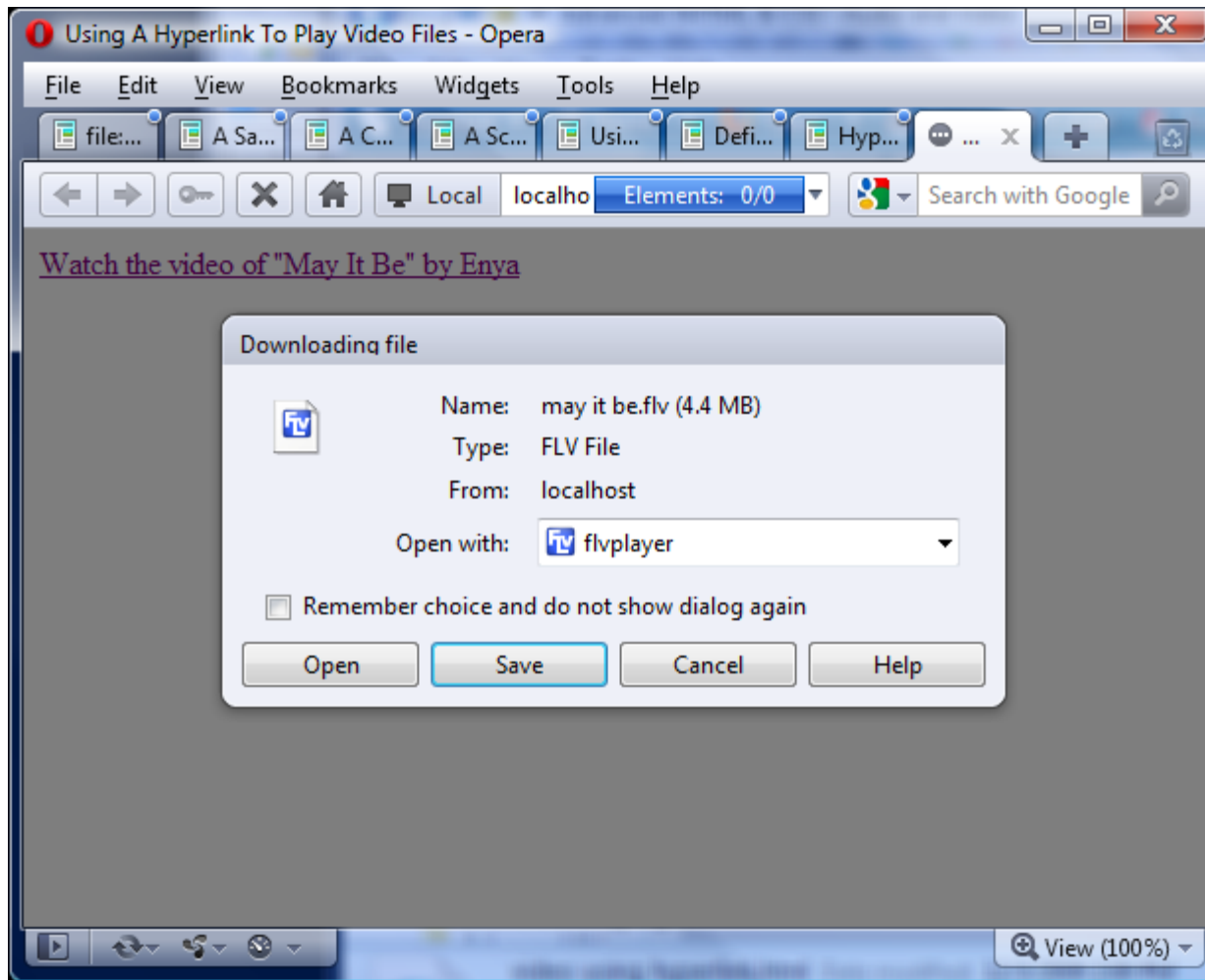# Using A Hyperlink To Add Video To A Web Page

```
1  <?xml version="1.0" encoding="UTF-8" standalone="no"?>
2  <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
3      "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
4  <html xmlns="http://www.w3.org/1999/xhtml">
5    <head>
6      <title>Using A Hyperlink To Play Video Files</title>
7    </head>
8  <body>
9    <div>
10      <a href="may it be.flv" title="May It Be by Enya">
11        Watch the video of "May It Be" by Enya</a>
12    </div>
13  </body>
14  </html>
15
16
```
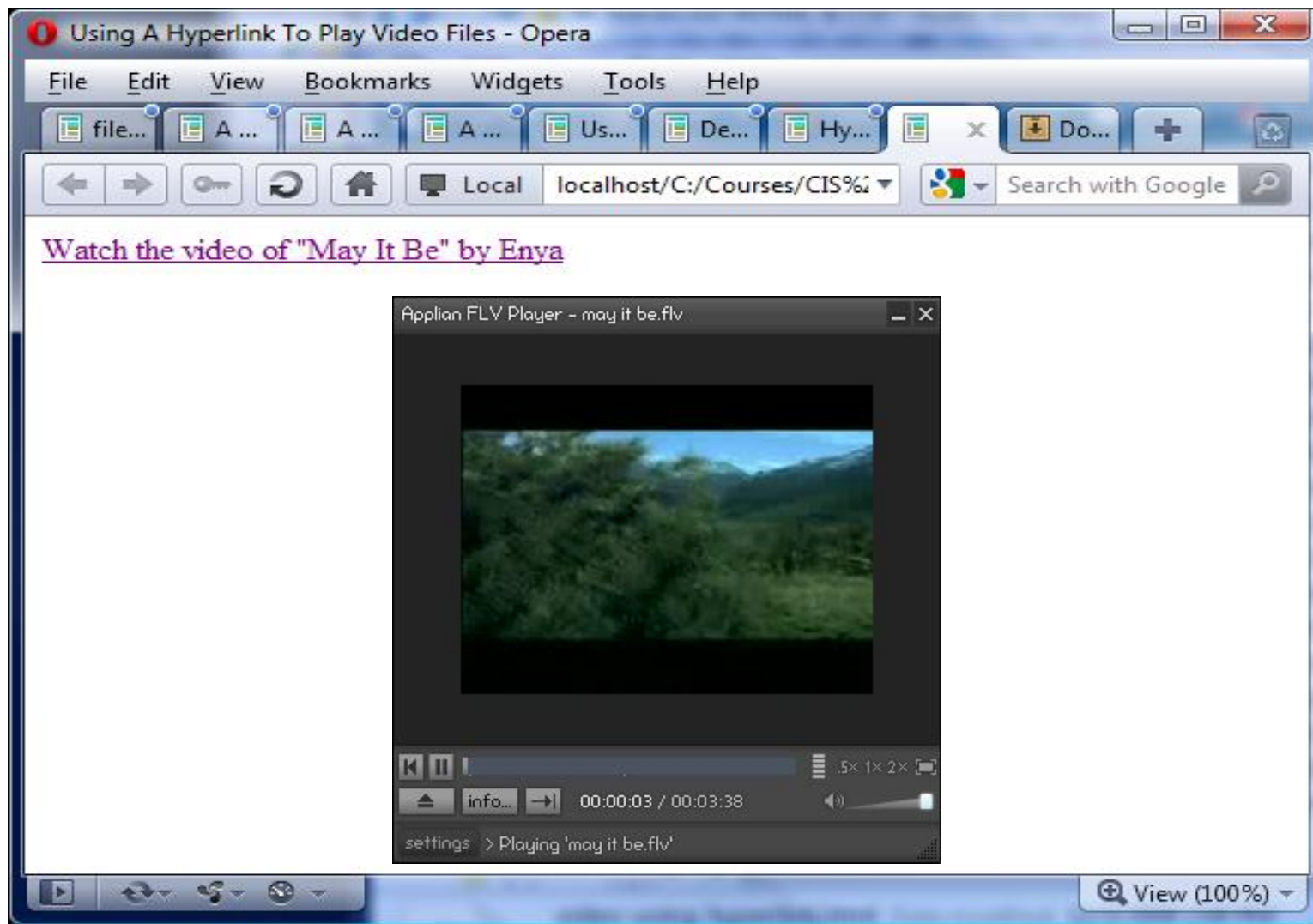
Using A Hyperlink To Add Video To A Web Page

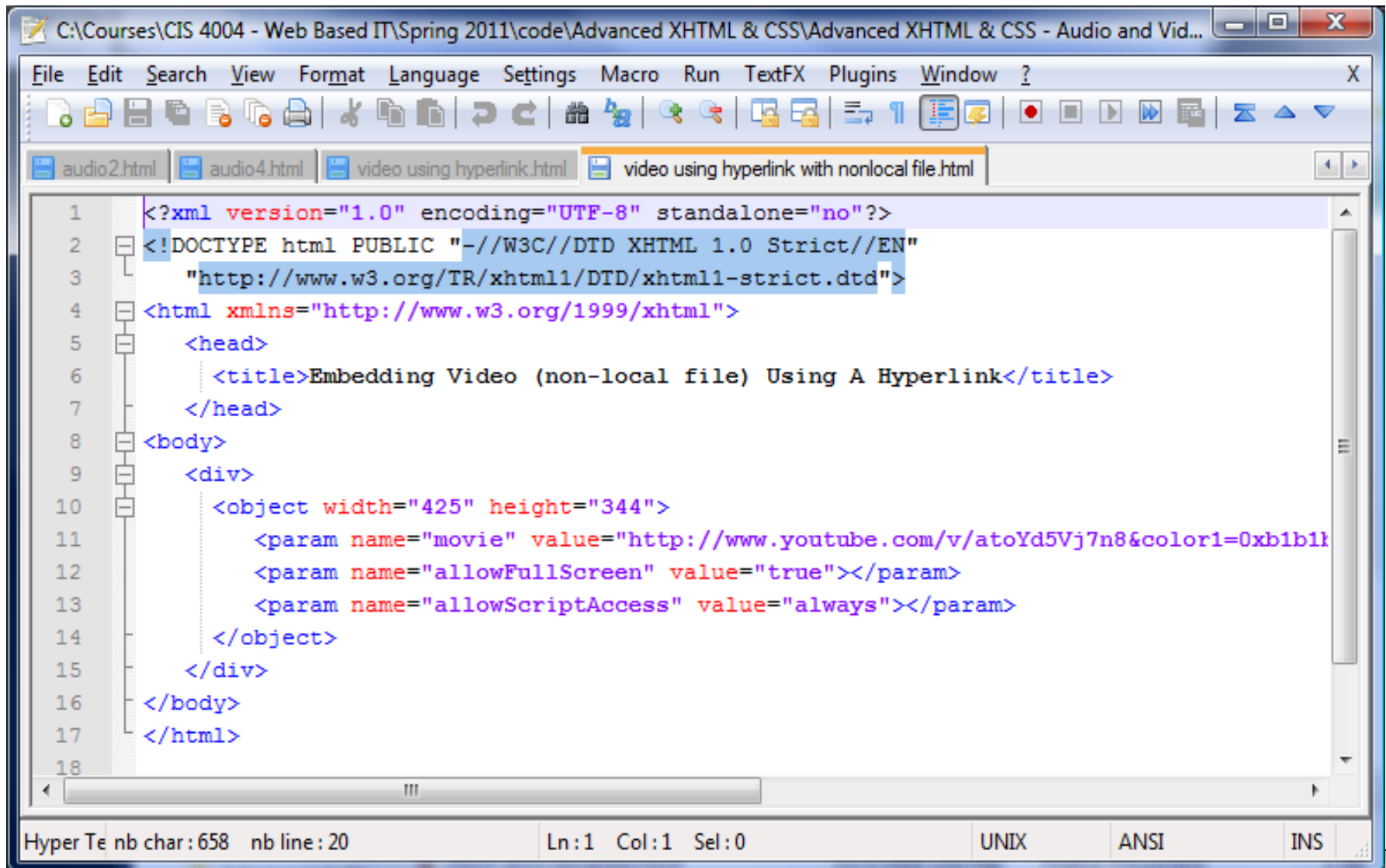# Using A Hyperlink To Add Video To A Web Page

Adding Video To Your Web Pages

- The following example also embeds a video into a webpage using a hyperlink, but in this case additional parameters are specified and the video file is non-local, so an absolute URL is specified.

- The `<object>` element should be used to embed video files into a web page under the Strict DTD.

- As with sound files, the various parameters that are required for embedding video files into the document will vary depending on the player that is used and the type of file that is to be played.

Using A Hyperlink To Add Video To A Web Page

```
1    <?xml version="1.0" encoding="UTF-8" standalone="no"?>
2    <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
3        "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
4    <html xmlns="http://www.w3.org/1999/xhtml">
5        <head>
6          <title>Embedding Video (non-local file) Using A Hyperlink</title>
7        </head>
8    <body>
9        <div>
10        <object width="425" height="344">
11            <param name="movie" value="http://www.youtube.com/v/atoYd5Vj7n8&color1=0xb1b1l
12            <param name="allowFullScreen" value="true"></param>
13            <param name="allowScriptAccess" value="always"></param>
14        </object>
15      </div>
16    </body>
17    </html>
18
```
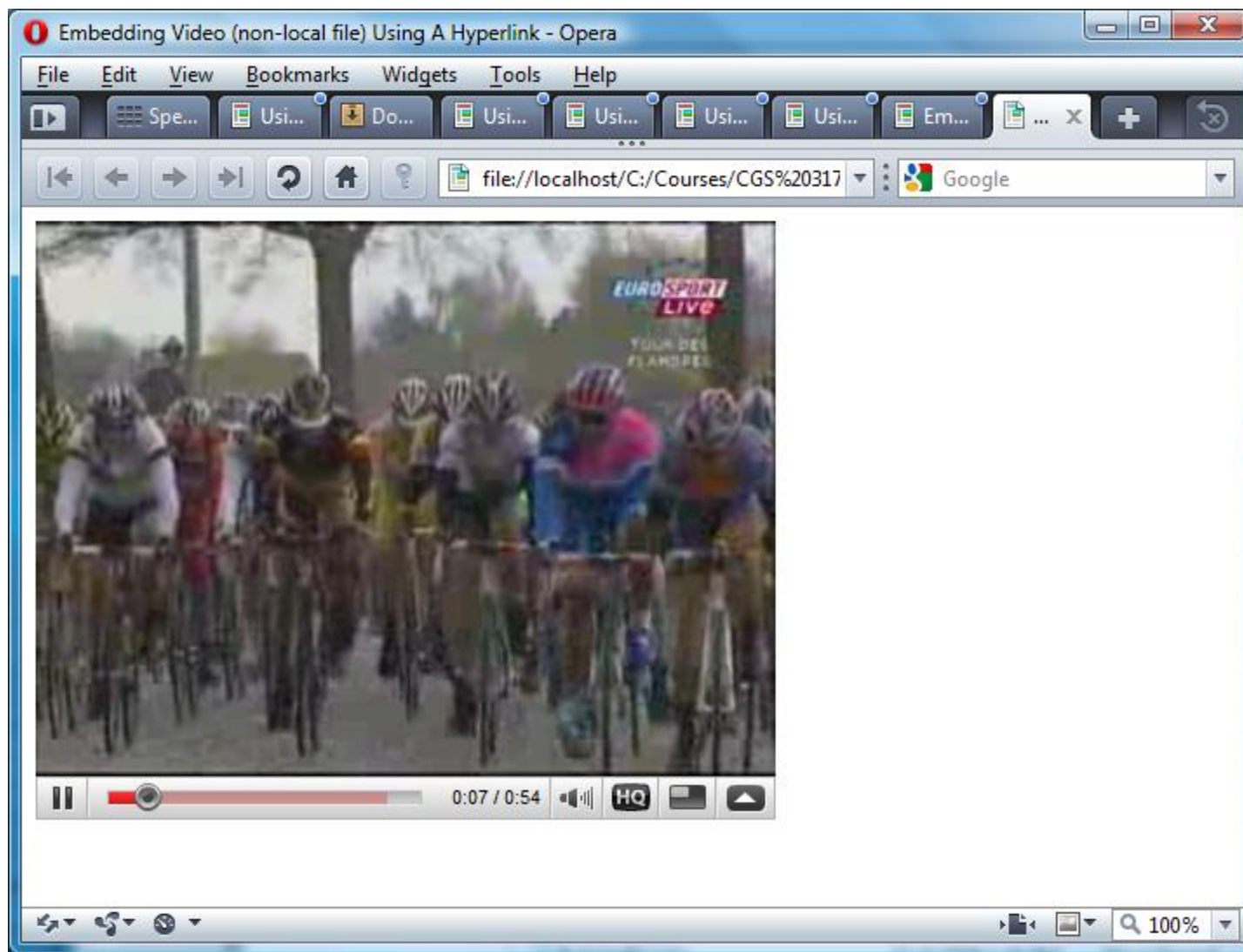
Window title: C:\Courses\CIS 4004 - Web Based IT\Spring 2011\code\Advanced XHTML & CSS\Advanced XHTML & CSS - Audio and Vid...

Menu: File   Edit   Search   View   Format   Language   Settings   Macro   Run   TextFX   Plugins   Window   ?

Tabs: audio2.html   audio4.html   video using hyperlink.html   video using hyperlink with nonlocal file.html

Status bar: Hyper Te   nb char : 658   nb line : 20   Ln : 1   Col : 1   Sel : 0   UNIX   ANSI   INS

Using A Hyperlink To Add Video To A Web Page

Using A Hyperlink To Add Video To A Web Page

Adding Video To Your Web Pages

- The `<object>` element can also be used to embed video files into a web page.

- As with sound files, the exact parameters that will be needed with the object element will depend on the video player and the format of the video file to be played.