Select and employ software and hardware tools

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22 November 2011
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Contents

Software and hardware tools

Tasks 1 and 2 can be viewed at http://leonie.designbyjjz.com/

Task 1

- Produce animations on a web page

Task 2

- Capture and edit video footage
- Research video formats, discuss how to show them on the internet, give advantages and disadvantages

Video format research

Formats

Format	File type	Description	Disadvantage	Advantage
AVI	.avi	AVI (Audio Video Interleave), developed by Microsoft	Files do not always play on non-Windows computers.	
WMV	.wmv	Windows Media, developed by Microsoft	Files cannot be played on a non-Windows computer without additional components.	
MPEG	.mpg .mpeg	MPEG (Moving Pictures Expert Group)		Cross-platform, and supported by most popular web browsers.

Format	File type	Description	Disadvantage	Advantage
Mpeg-4	.mp4	Mpeg-4 (with H.264 video compression) .	Not currently supported by Firefox	Recommended by YouTube. YouTube accepts multiple formats, and converts them to .flv or .mp4 for distribution
QuickTime	.mov	QuickTime, developed by Apple	Files cannot be played on a Windows computer without installing an additional component	
RealVideo	.rm .ram	RealVideo, developed for the Internet by Real Media.	Low bandwidth results in reduced quality	Allows video to be streamed on-line with low bandwidths
Flash	.swf .flv	Flash (Shockwave), developed by Macromedia	Requires additional component, which is pre-installed with some browsers, including Firefox and Internet Explorer	

Accessibility

There is no one format that works everywhere.

- Windows Media Player is installed on most PCs
- QuickTime is installed on Macs
- Flash works on most browsers, but not on the iPhone or the iPad, and since October 2010, it has not been pre-installed on Macs; third-party hosts such as

Vimeo and YouTube use Flash so the Flash format is usually recommended and it is claimed to cater to 99% of the market

- The html5 <video> tag works on the iPhone, iPad and Mac
- The <video> tag works in later versions of Safari, Chrome, and Firefox
- Firefox requires ogv files as it doesn't support .mp4
- Windows Internet Explorer version 9 is required for the html5 video tag. and as IE 9 requires Windows 7 anyone still operating on earlier versions of Windows will not have access

Players

- Windows Media Player
- QuickTime
- Java
- Adobe Flash
- Real Player
- html5 video tags, <video></video>

Hosting video files

Video files are large and use a lot of bandwidth when they are played back over the internet. Third party hosts YouTube and Vimeo host files on their servers and provide code to embed in websites so that when a visitor to the site plays the video the bandwidth being used is from the third-party host.

Some disadvantages of third-party hosts are:

- the quality of the video
- the host's branding
- links take the web user away from the site, but embedding the video overcomes this problem

Adding files to website

Iframe and Embed tags

If using third-party hosts, for example, You Tube, they will supply the code to add to a web page to enable the video/audio to play online. The current code uses <iframe></iframe> tags which will not validate in XHTML strict.

If hosting locally on the same host as the web site itself, similar code is used.

Previously, the <embed> tag was used (note this tag is self-closing). To validate, wherever embed tags are used, the code should include <noembed></noembed> tags, for example:

```
<embed
src="http://www.youtube.com/v/OJmmVHWUJ8Y?fs=1&amp;rel=0&amp;autohide=0&amp;showinfo=0&amp;modestbranding=1&amp;hl=en_US&amp;&amp;hd=1" type="application/x-shockwave-flash" width="522" height="315" allowscriptaccess="always" allowfullscreen="true" />
<noembed>Your browser doesn't support the embedding of multimedia.
</noembed>
```

Object tag

The <object></object> tag surrounds the parameters or directions on how the movie/audio will be controlled. To validate, the data attribute of <object> and the movie parameter must both be present and must have the same value—see red text in the example, and for accessibility the object element must contain content—"Amicus Strings Video":

```
<object type="application/x-shockwave-flash" data="video/amicus.swf"
width="640" height="480" title=”Amicus Strings Video” >
        <param name="movie" value="video/amicus.swf " />
        <param name="quality" value="high" />
        <param name="bgcolor" value="#ffffff" />
        <param name="play" value="true" />
        <param name="loop" value="false" />
        ... etc.
        Amicus Strings Video*
</object>
```

HTML5 <video></video> and <audio></audio> tags

With html5 there is increasing support for use of the <video></video> and <audio></audio> tags which will take the place of the <object></object> tag. for example:

```
<video>
        video src=”video/amicus.ogv” type=”video/ogg”>
        video src=”video/amicus.mp4” type=”video/mp4”>
</video>
```

Both ogg and mp4 formats are provided because some browsers support only ogg and some only mp4.

To control playback, JavasScript media elements can be used. For example:

```
var mediaElement = document.getElementByID(“myMediaElementID”);
mediaElement.pause();
mediaElement.src = “”;
```

Fallback option

Use the video tag with the <object> tag for Flash:

```
<video src=”video/jjz-amicus-string.ogv” controls>
    <object data=”flvplayer.swf” type=”application/x-shockwave-flash”
    data="video/amicus.swf" width="640" height="480" title=”Amicus
    Strings Video” >
        <param value=”flvplayer.swf” name=”jjz-amicus-string />
        Amicus Strings Video
    </object>
</video>
```

Future direction

Current trends indicate that browser support for the <video> tag is increasing and will eventually be all that is required. Adobe announced early November that it will stop development of Flash players for browsers on mobile and television devices which are used mostly for web video and games. Instead, Adobe says it will concentrate on applications developed with Adobe Air, and further increase resources for html5. The company did however also stress that it has a long-term commitment to support Flash players on desktop and laptop computers.

Task 3

Write a report on the hardware and software used to complete tasks 1 and 2. Include problems and how/what was done to overcome the problems, or why you could not overcome them. Talk about the future with HTML5.

Hardware used:

- Pentax digital camera with basic movie recording function
- Computer with graphics and sound cards, efficient processor and reasonable quality monitor

Software used:

- Adobe Photoshop for gif animation
- Windows Movie Maker for video editing, adding titles and effects

- Adobe Media Encoder to convert video from Windows Movie Maker to format read by Flash
- Adobe Flash for swf player and skins for video
- Browsers—IE 7, 8 and 9; Firefox, Safari, Opera, Chrome
- W3C validators, Cynthia Says accessibility check

Problems

I think I have covered the relevant issues in Task 2 above, for example, the disadvantages of various formats, accessibility issues, coding for websites and how to cater for different browsers, validation and accessibility. However, the main concern I had was ensuring the html file validated and passed accessibility checks. Once a template for the code was established it was realtively easy to reproduce for each object.

Future directions—canvas tag

The HTML5 canvas element, in conjunction with JavaScript code, offers alternatives to Flash and similar products that have traditionally led the market in creating animations and video effects for web pages.

Canvas capabilities will be especially pertinent to the development of educational, entertainment and gaming websites, using open source rather than proprietary products.

When used with JavaScript, the canvas enables dynamic rendering of two-dimensional shapes and bitmap images directly onto the web page. No additional software or plugins are required, just a browser that supports the feature, and JavaScript enabled.

The height and width of the canvas is specified in the html code. JavaScript is then coded to draw on the canvas, for example, the following code draws two intersecting rectangles like this:

```
<html>
    <head>
        <script type="application/javascript">
            function draw() {
```

```
                    var canvas = document.getElementById("canvas");
                    var ctx = canvas.get Context("2d");
                    ctx.fillStyle = rgb(200,0,0)";
                    ctx.fillRect (10, 1, 55, 50);
                        ctx.fillStyle = "rgba (0, 0, 200, 0.5)"
                        ctx.fillRect (30, 30, 55, 50);
                    }
                </script>
            </head>
            <body onload="draw()">
                <canvas id="canvas" width="300" height="300"></canvas
            </body>
        </html>
```

Older versions of IE do not support canvas, although plug-ins are available.

Canvas can be used to play videos with a player or plug-in. Fonts can be rendered across all browsers and operating systems. Complex vector shapes with gradients can be drawn with pixel by pixel manipulations.

For what I consider to be a stunning origami example see http://hakim.se/experiments/html5/origami/ and more of his incredible work at http://hakim.se/experiments. Hakim is not alone—for more examples, see http://net.tutsplus.com/articles/web-roundups/21-ridiculously-impressive-html5-canvas-experiments/

Flash Advantages

- 99% of internet users reportedly have Flash installed
- Popularity evidenced by You Tube
- Browser independent (although there have been issues with specific versions required for IE and Firefox, especially later releases)
- Creativity through drawing

Flash Disadvantages

- Proprietary software
- Requires plug-in
- Lack of support on mobile formats
- Hardware acceleration limitations
- Steep learning curve to create output

Canvas Advantages

- Open source development
- Doesn't require plug-in
- Mobile support
- Fast bitmap rendering
- Creativity through programming

Canvas Disadvantages

- JavaScript is slow
- No vector rendering
- Rendering differs between browsers
- Lack of browser support
- Requires knowledge of JavaScript coding (although undoubtedly there will be open source applications available)

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