Awarding Great British Qualifications

Dynamic Websites

Topic 2

Designing and Coding a Website

Scope and Coverage

This topic will cover:

- Design and coding a website
- Considerations when building a website including:
  - CSS3 and Semantic Structures
  - HTML5
  - Responsive design
  - Templates including Bootstrap

Learning Outcomes

By the end of this topic students will be able to:

- Understand design principles of a website.
- Understand how to code a web-based user interface appropriate to a given problem.
- Understand responsive web design.
- Understand bootstrap and how it can be used to design a website.

Context of the Module

- In this module you will learn the following techniques for good web-design:
  - Designing and coding a web-based user interface
  - CSS3
  - Semantic HTML elements
  - Responsive Web Design
  - Bootstrap

Designing and Coding a Web-based User Interface.

- HTML and CSS are still the main languages for displaying what you see in a website.
- HTML:
  - Includes the elements that make up HTML pages
  - Includes the tags
  - Allows you to structure pages which can be read by different web-browsers.

HTML Editors

- The best way to learn HTML is to use a HTML Editor such as:
  - Notepad (Windows)
  - Textedit (Mac)

User Interface 1

- In web design the user interface will make or break your website.
- Websites need to be intuitive for the users.
- They need to be built so users can't get lost in the site.
- Poor use of colour and layout will result in:
  - Lost sales
  - Poor feedback
  - Customers giving up navigation

User Interface 2

Some user interface good practice considerations:

- Understand the user needs
- What are the required functionality?
- How information flow through the system?
- Avoid discrimination and accessibility
- International standard ISO9241

User Interface Example 1

- Have a look at Amazon website and identify some of the aspects that make it a user friendly website.
  - Identify three positive and three negative aspects.

User Interface Example 2

- Have a look at uglytub.com and identify how this website design differs to Amazon.
  - What do you think are some of the problems with this website?
  - Identify three positive and negative aspects.

UI Considerations 1

- There are some considerations that the website developer needs to take into account when designing a website:
  - Colour – what colours to use, how many, how are these viewed by users?
  - Layout – how should the pages be laid out? How do you want users to navigate the site? What are the key items you want users to see? How does this impact on the layout?
  - Who are your audience? What are their needs? What will bring them to your website? What about design patterns?

UI Considerations 2

- It is good practice to keep things consistent and simple on a website, eg have a template design for each page.
- The website needs to be easy to understand and navigate. The design should guide users through the site.
- Consider font types – Comic Sans tend to be the most popular and work best for users with disabilities.
- What text should be highlighted? What about contrasting text in the menu?
- Keep forms simple and easy to complete.

Using Colour - 1

- Can **highlight** certain sections or words
- **Emphasis** important sections
- More effective than *shape*
- Might not work for users who are colour blind
- More than 7 colours becomes less efficient

Using Colour - 2

- Don’t just jump into using colours immediately
- Get it right in black & white
- Concentrate on layout first
- Use colour as an additive feature
- Can give emphasis to words
- Can be used for grouping related items

Using Colour - 3

- Yellow and red ends of the spectrum increase eye fatigue
- Red produces most eye strain but is most stimulating ... grabs the attention more
- Blue produces least eye strain and is perceived as most cheerful
- Green is perceived as most restful
- Bright/large areas of colour attract attention

Colour Perceptions - 1

- Viewers are attracted to bright colours
- Bright colours quickly tire viewers' eyes
- Viewers look at bright colours first
- Overusing bright colours confuses the viewer
- Use minimum number of colours on one screen

Colour Perceptions - 2

- Too many colours can make it look gaudy and cheap
- Headline/caption with each letter different colour can annoy viewers
- Basic colours (black, white, yellow, red, blue, green, grey) work best for text colours.
- Cluttered screens can handle fewer colours
- Screens with fewer items can handle more colours

Colour Combinations

- Use appropriate combinations
- Avoid clashing colours (green/blue or red/blue)
- Avoid red/green as 10% of male population suffers from colour blindness

Is this easy to read or does it look “blurred”?

Is this easy to read or does it look “blurred”?

Text Layout

- Do not centre or right justify all text as this makes it difficult to read
- Too large/small text makes viewers uncomfortable
- Headings, subheadings and main points should be highlighted (bold, italic or colour)
- Use same font size for similar things
- Don’t use underline for headings
- Avoid all upper case text as lower case is easier to read
- Screen text should be left justified with ragged right edge

Web Page Layout

- Users scan rather than read everything
- Users tend to look for headings that tell them “this is what I want”
- Scan technology shows where users tend to look on a webpage – this is where you put key information

CSS3

- CSS stands for Cascading Style Sheet and describes how the computer interface deals with the layout, colours and fonts on a website.
- CSS separates these elements from the web page.
- CSS can improve accessibility of a webpage.
- CSS3 is the latest version of the cascading style sheet language and includes new presentation techniques such as shadows, gradients and rounded corners.

Example CSS

Below is an example of css which you can produce in your text editor:

```
body {
    background-color: red;
}

h1 {
    color: white;
    text-align: left;
}

p {
    font-family: courier;
    font-size: 16px;
}
```

Semantic HTML elements

- Semantic implies meaning and it is concerned with meaning rather than structure eg:
  - - this tag doesn't tell us what the content is – this is an example of a non-semantic element
  - <form> - this tag tells us what the content is and is an example of a semantic element
- Without semantic structure some "machines" will not be able to read your website and may be missed by search engines.

Semantic HTML5 Elements

Some examples:

<header>

<nav>

<section>

<article>

<summary>

<time>

HTML5 Elements

- A home page may be split into different sections for the introduction, main information and contact information.
- <selection> element defines a section in the document.
- <selection> element can be used to split the home page into different sections.

Responsive Design

- Responsive web design allows the web designer to provide a site for optimal viewing on different devices eg a computer desktop, tablet or mobile phone.
- Responsive web design uses CSS and HTML to make the content look good on any device by resizing, hiding, shrinking or enlarging the content.

Web Site Templates

- W3.CSS website has created some templates which you can download and edit. These are based on different themes eg band, art, architect for example.
- Visit: https://www.w3schools.com/Css/css_rwd_templates.asp
- Have a look and see if these can help you.

Bootstrap

- Bootstrap is open source software which uses HTML, CSS and JS to build responsive mobile websites.
- Bootstrap uses HTML5 doctype.
- Bootstrap is mobile first and optimizes code for mobile devices and then scales the website up using CSS media queries.
- Bootstrap is free to download and use.

Bootstrap Responsible Meta Tag

- Previously we looked at code that allowed us to scale up, Bootstrap is developed for mobile first.
- The following responsible viewport meta tag needs to be included:

```
<meta name="viewport" content="width-device-width, initial-scale=1, shrink-to-fit=no">
```

  - The width=device-width sets the width of the page to follow the screen width.
  - Initial-scale=1 sets the zoom level when the page is loaded by the browser.

Example Bootstrap Page

This is an example of bootstrap page with responsive fixed with container:

```
<!DOCTYPE html>
  <html lang="en">
  <head>
    <title>Bootstrap Example</title>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/css/bootstrap.min.css">
    <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.2.0/jquery.min.js"></script>
    <script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/js/bootstrap.min.js"></script>
  </head>
  <body>

  <div class="container">
    <h1>My First Bootstrap Page</h1>
    <p>This is some text.</p>
  </div>

  </body>
  </html>
```

Reference: https://www.w3schools.com/bootstrap/bootstrap_get_started.asp

Bootstrap Templates

- As Bootstrap is free opensource software there are lots of examples of templates that you can download, edit and are completely free to use.
- Bootstrap uses responsive grid system.

Conclusion

- In this topic you have reviewed some of the considerations that a web designer needs to take into account when designing a website and you have been introduced to designing responsive websites.
- In the next topic you will look at creating responsive webpages in future and also how these are defined to be used on a mobile site.

Terminology

- Bootstrap – open source software developed for responsive web design
- Responsive web design – this allows pages to be resized depending on the viewing area available on the device
- Viewport – visible area to a user of a web page

References

- Bootstrap, 2017. [online] Available at www.getbootstrap.com
- Eleganthemes.com, 2017. [online] Available at www.eleganthemse.com
- W3schools.com, 2017. [online] Available at www.w3schools.com

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Any Questions?