**COM1008: Web and Internet Technology**

**Development and Testing**

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1. **Changes**

Whilst building my website, I have generally stuck to my planning. One of the things that was changed, was the way that the quiz answers were revealed. After making the quiz answers be discoverable through an alert, I realised that not only it is not aesthetically pleasing, but it would also not work well with the mobile version and be quite distracting. So instead, I switched to the “click-to-reveal”, showing the answer upon the user clicking the answer box, by hiding a <span> element behind a button.

I have also added a background image that I created in Photoshop to fill the space.

Background pattern

Description automatically generated

Figure 1 - background image of my website

Furthermore, I have removed the “Contact Me” link from the footer. Considering that there was already a link in the navbar, removing it from the footer ensured that there was no additional navigation and repetition for keyboard and screen reader users.

1. **Organisation**

Apart from using the materials from the lecture and following the expected layout of the HTML and CSS, I did not create any templates.

To keep the website folder well-organised, I used a separate folder for the images, JavaScript and CSS.

I have two CSS files. One to avoid cross-browser differences (resert.css) and the other to style my website (style.css). I have kept the @media query at the bottom, as shown in the tutorial exercises. Given the consistent look of the website with only a few pages, there was no need for having more than one main CSS file [1]. Having everything in one file also meant that I could edit it more efficiently with fewer errors. Each section of the website was marked with a comment for easier discoverability.

I used JavaScript for the quiz and canvas, for which I had two separate files, as they had completely different functionalities and it would have been too confusing to code all of it in one file.

The menu was organised in usual order of the websites. The main information (About Me), secondary information (my Degree), tertiary (Canvas) and finally the contact form, which is most often last in the navigation bar. Keeping the menu consistent with other website would mean that the user would find it easier to navigate the website.

1. **Optimisation**

I have used Lighthouse [2] and GTMetrix [3] to test the performance of my website and ensure that the loading speed time is as quick as possible.

I have resized the images to optimise loading time and ensured that the file sizes are appropriate [4]. The photographs were saved as JPG and the graphics as PNG.

Graphical user interface, application

Description automatically generated

Figure 2 - GTMetrix rating of my website’s performance

Graphical user interface, application

Description automatically generated

Figure 3 - Lighthouse score of the performance of my website

1. **Security**

When there is a contact form present, there is a possibility of email bombing by spam bots.

Cross Site Scripting (XSS), when a malicious user injects a script into the website, creating a danger of website take over, phishing, keylogging and cookie theft.

In the form I only ask for the essential details, such as name and email. It also validates the email by requiring the presence of “@”.

Furthermore, I avoided using .innerHTML in my JavaScript or any user content.

1. **Debugging**

To debug my website, I used the Google Chrome console whenever an error occurred in the JavaScript. It was very helpful in finding the errors in the buttons for canvas when I added the eventListeners.

To see if there are any issues in my CSS or HTML I used the recommended validators [5][6]. The only issues that I had were forgetting to change the closing tags, whenever I changed the type of an element. (i.e. <h1></h3>).

Graphical user interface, text, application, email

Description automatically generated

Figure 4 - The results of the W3C HTML validator

Graphical user interface, text, application

Description automatically generated

Figure 5 - The results of the W3C CSS validator

**6. Testing**

To ensure that I have considered all of the accessibility requirements I have ran Google Chrome Extensions such as Lighthouse and WAVE [7].

By running these checks allowed me to sort out issues such as missing keyboard accessibility, changing the contact page details from <table> to a table layout to avoid confusion for screen readers.

Graphical user interface, text, application

Description automatically generatedGraphical user interface, application

Description automatically generated

Figure 7 - WAVE Diagnostic

Figure 6 - Lighthouse rating

I have also extensively used the Firefox’s Responsive design mode to ensure that the layout of my website is coherent for both mobile and desktop versions. Furthermore, I have ran mobile-friendly test by Google [8] to check for any problems.

Graphical user interface, text, application

Description automatically generated

Figure 8 - Mobile-Friendly Test

Chart

Description automatically generatedText

Description automatically generated

Figure 7 - mobile version of the quiz

Figure 8 - Mobile version of the canvas

Graphical user interface, text

Description automatically generated

Figure 9 - Mobile version of the quiz page

**References**

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**[2]** Lighthouse, “Lighthouse”, Web. <https://developers.google.com/web/tools/lighthouse> (Accessed: Dec. 10, 2020)

**[3]** GTMetrix, “How fast does your website load?”, GTMetrix. <https://gtmetrix.com/> (Accessed: Dec. 14, 2020)

**[4]** Jimbo, “How to Optimize Images for Better Web Design & SEO” in *Website Tips*, Feb. 21, 2019. [Blog]. Accessed: Dec.14, 2020. Available: https://www.jimdo.com/blog/optimize-website-images-for-better-design-seo/

**[5]** Validator, “Markup Validation Service”, W3C. <https://validator.w3.org/> (Accessed: Dec. 14, 2020)

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**[8]** Mobile-Friendly Test, “Is your web page mobile-friendly?”, Mobile-Friendly Test. <https://search.google.com/test/mobile-friendly> (Accessed: Dec. 14, 2020)