ICT502 Internet and Web Development

Assessment 2 Individual Coding Project

Real Estate Agency Website

Report on Website Design and Development

Website Link:

**Introduction**

This report aims to present the working of this Website Project, its development process along with an overview of the code base and the issues faced during the construction phase. The goals of this project were to develop a working, aesthetically pleasing website which was to include features such as, being responsive, an element of user engagement, and clean lines. The problem-solving approaches highlighted in every part of the report involve the aspects of the code, the tools employed, and the measures by the designer ideal in developing the solutions required in the overcoming of the challenges encountered.

The Official Real Estate Agency website was developed to be informative and user friendly to individuals searching for properties and mortgage. Being designed to provide the visitors with the information about the developments, shiny layout of the site focused on the key activities, such as property search, estimation of the potential mortgage amount, and request for property viewings. These characteristics are crucial since the site has been designed to be accessed on education facilities’ computers and students’ mobile devices. In addition, distinctive features such as scroll animated illustrations and dynamic forms were also included to improve the interaction design perspective. Those design solutions including a strict and minimalist design with no clutter, simple shades of blue are associated with trust and reliability which are important factors when it comes to choosing real estate service. By integrating purpose and aesthetics, the website provides a useful platform in presenting real estate offerings together with facilitating functional interaction with its facilities.

**Planning and Structure**

The first activity in designing the Real Estate website was to establish the site’s objectives, goals, and target clients that dictate the layout and design. After these fundamentals have been put in place, the remaining area is divided into repeated sections, starting with the header, main content, forms, and the lower section usually called the footer. In this project the structure of the website will uses HTML while CSS is used to style and JavaScript when it comes to aspects like form submission and animations (Walker, 2020). The primary goal was to design a website that could be fast and intuitive for users to land and interact with.

**Code Structure and Design Choices**

The structural organization of the research HTML code met aimed to provide clear semantics. Due to this, I used <header> <main> <section> and <footer> tags to ensure that the document structure had no confusion as this enhances both accessibility and possibility for search engine optimization. In each of the sections, I used <div> containers with class names to style & arrange things with CSS. Whenever the form, buttons, and input were required I used <form>, <input>, <button> tags with the required form attributes so that the form data is posted correctly and the inputs are handled correctly by the system.

In the CSS code, all attributes and elements were formed in classes, where the classes for color, font, margin, and adjustments for different responsiveness level were made distinctly. I used simple Flexbox layout from CSS and more complex CSS Grid to better manage the positioning of elements. It has become reasonable to use Flexbox and Grid instead of the float or to use complex CSS rules in the layout process. I used media queries as well as to align the page to fit the screen because of change in orientation which I know needed a lot of trial and error to make its content to be present in both the mobile display and the larger display (O’rinboev, 2023).

**Implementing Animations**

To enhance interactivity, I implemented scroll animations to make the page more lively. These were developed using JavaScript and CSS transitions as the basis for making the changes. For example, with the help of JavaScript I initialized the scroll event and appended the show class to each section as it was in the visible area of the page. This class launched CSS animations pointed out by opacity and transform transitions which offered a fade-in and slide-up look. I had a couple of issues with coordinating the timing of the animations to avoid causing a problem to the webpage loading time. Depending on when and how animations were eased or timed, I was able to produce a polished look and feel where the user experience is not heavily hindered in terms of performance.

**Challenges with the JavaScript Functionality**

JavaScript was integrated into the website prominently contributing to the forms and form submissions and interactive features. For instance, I tried out a mortgage calculator in JavaScript whereby users put values in and the program calculates the monthly payment using a specific formula. It was not easy to put into practice this function, and tackled factors that accompanied data type and operations. I first had problems with getting precise decimal numbers in the calculations because the JavaScript parseFloat and toFixed functions would occasionally produce slight rounding discrepancies. As a solution to this, I incorporated error checking, and also double checked on the formula to make sure that is providing with the correct results all the time.

Moreover, to control object validation, I implemented the use of JavaScript in the form. This meant having to use event listeners to listen for submit events on form inputs and to check the data entered by the user before submission. I also used preventDefault() to stop the form from reloading the page on submission in order to show success messages where they belong. Another challenge was validating inputs to ensure that the work done was creating validation rules that would work in response to any data input without creating some error or issue. I spent a significant amount of time trying to find out how to make the functionality meet all the possible edges of the browser and optimizing the code for forms.

**Ensuring Cross-Browser Compatibility**

Web compatibility was one of the objectives throughout the implementation. Each browser interprets HTML, CSS, and JavaScript somewhat uniquely, resulting in the dissimilar appearance of a web site. I scoured through several browsers which include Chrome, Firefox, Safari and Edge to establish whether there was any display problem. One problem was with the CSS flex properties where I had to learn that some versions of Safari had display issues with some layout elements compared to Chrome or Firefox. This I addressed by ensuring all the CSS properties used are as close to the standard as possible and saw that where it was necessary I added browser specific CSS prefixes.

An example of a problem that was solved after some time in older versions of Edge was an animation delay bug. This little stumble gave the impression that Edge was applying certain CSS animations in a haphazard manner. By doing some research I figured out that the problem was with JavaScript event listeners in Edge and I changed all the animation timing functions. This adjustment helped to make animations look more polished on all popular browsers, as well as helping to make the viewing experience as unified as possible.

**Responsive Design and Mobile Optimization**

Another important aspect for this project was to make sure the website is fully mobile friendly and properly adapted for various devices. In general, the CSS used for this layout was to fit mobile to wide screen desktop resolutions. I encapsulated in media queries where I was able to set various layouts for the widths effectively so as the text, images and form layouts. The second problem was how to achieve the modern layout of the website that looks equally well on small devices as it does on computers. A few things had to be reduced or positioned at the bottom of the page on devices with low screen resolution to remain functional and easily readable.

That is why I also compressed the images and defined proper width and height for them to load faster on the mobile devices. This also commanded helped lower the amount of load times especially on mobile networks while at the same time delivering crisp images on larger devices. It also included the image lazy loading which means that an image is only loaded when a user scrolls down to that position. This approach enhanced the speed of the page-load by a great measure and most importantly the, mobile devices, which users may have a slow internet connection.

**Accessibility Considerations**

To make the website accessible, I provided aria-labels for screens’ readers more so for buttons and forms since they are interactive. This made it possible for all users, especially those with the use of assistive technologies, to know exactly what each of the elements offer in terms of interaction and usefulness. Also, the contrast of colors was considered in order to make the readability of all texts for the users with impaired vision. Contrast ratios within the color scheme were also checked to guarantee that it meets the standards of WCAG for background to foreground principles.

Another thing on accessibility was handling the TAB order for keyboard control. I also used the tabindex attribute to make form fields and the interactive buttons easily navigable using only the keyboard. I also offered the focus styles to form inputs and buttons so that the user will know the focused item most of the time to enhance the usability for keyboard user. All these accessibility features implementations called for enhanced concern due to their sensitivity in handling; however, it made the website more responsive.

**Testing and Final Adjustments**

It is common to give a lot of importance to testing in the process of a website’s development as it is crucial to make sure that the website looks and works well on different devices, displays, and browsers. For the interaction with the site, I arranged a couple of fellow students to try to use the site and offer criticism to the site design, practicality or effectiveness, and features. I used this for finding minor problems like for instance in some buttons that were text based while others were icons or inactive form fields on certain gadgets.

Among the repeated comments, one of them was that the first animations were slightly slower, making them look like lagging. As a result of the feedback, I gave a new timing and speed to the animations, making the entire process more fluent and responsive. A further improvement was made in order to intensify the concentration on form fields and specific objects as buttons, etc.; Visual response was added to that.

**Conclusion**

The website design and development project were a highly enlightening experience for me as I have learned much more about HTML, CSS, and JavaScript. I also faced and solved a number of issues, which included grappling with cross-browser issues, avoiding jerky animations, and validation of inputs. Every challenge offered an opportunity to try something new and improve myself in making engaging and easy-to-navigate web page designs. For instance, optimizing the speed and easing functions made the animations more enjoyable to the users; fixing bugs in the form validation made the sites more reliable and responsive.

When addressing those challenges, I noticed that development should be an orderly process accompanied by a detailed plan of action, normally known as a development cycle, involving pre-testing, trial, and improvement stages. It also helped in dealing with feedback and made sure that every component of the site created a fun and usable experience for the users. However, I learned to be more effective in deploying responsive design, the layout of the website in the physical and virtual space, and other related gadgets. Apart from the technical knowledge, this project also proved that effective testing and prompt response for designing a website are crucial for creating a final product that is both usable and visually appealing.

**References**

Beaird, J., Walker, A., & George, J. (2020). *The principles of beautiful web design*. SitePoint Pty Ltd.

Ganapathy, A., Vadlamudi, S., Ahmed, A. A. A., Hossain, M. S., & Islam, M. A. (2021). HTML Content and Cascading Tree Sheets: Overview of Improving Web Content Visualization. *Turkish Online Journal of Qualitative Inquiry*, *12*(3), 2428-2438.

Wirfs-Brock, A., & Eich, B. (2020). JavaScript: the first 20 years. *Proceedings of the ACM on Programming Languages*, *4*(HOPL), 1-189.

O’rinboev, A. (2023). ANALYZING THE EFFICIENCY AND PERFORMANCE OPTIMIZATION TECHNIQUES OF REACT. JS IN MODERN WEB DEVELOPMENT. *Инновационные исследования в современном мире: теория и практика*, *2*(24), 54-57.

Quvvatov, B. (2024). WEB FRONT-END AND BACK-END TECHNOLOGIES IN PROGRAMMING. *Theoretical aspects in the formation of pedagogical sciences*, *3*(1), 208-215.