COURSEWORK 2

SET08801 – Web Technologies

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Deployment URL

My web technology journey began in the late years of my associate's degree, so I do have a fair amount of knowledge when it comes to HTML, CSS, and JavaScript. However, I still was new to areas like creating melodies with the AudioContext API. With that said, when developing my static website, I used Xampp, which is an application that mimics a server environment. Although this was unnecessary for this website as no server-side code was used, it was a habitual choice. I am aware that opening the file directly via the browser is more appropriate for this case. Nevertheless, I still uploaded my website's content to GitHub and used the GitHub Pages option. The link to the website is the following: https://devtheprogrammer-maker.github.io/set08801/ . The website is live, and it should work as expected which will be covered in the video.

Differences Between Initial Plan and Implementation

At a surface level, the design of the website was mildly reshaped mainly due to time constraints and evolving ideas during development. Originally, only three games were to be developed, but ultimately, only two were implemented. The two developed games were a math game and a newly conceptualized runner game. Notice how there is no cipher game or story mode. After careful consideration, it was decided to discontinue the development of the cipher game since the core mechanics of the game felt dull, which would result in the user's interest being ephemeral. To accommodate this change, a new idea arose, which was to create a game where a carrot would jump over kitchen utensils to stay alive. Developing a game like this felt more rewarding because it revolved around user engagement and interaction as opposed to just getting a 'translation' of a user's input. Story mode, on the other hand, was not developed because it was realized early on that most of the development time would be spent creating the characters. As a result, tools like Three.js, Anime.js, and Phaser were not used since the characters were no longer being designed and animated. Instead, the online Pixelart app was used to develop the game's assets since it was quicker. Developing the story mode would have come at the cost of fully developing the other games, resulting in only one game being partially finished. Moving on, Google Fonts was not used since suitable fonts were already available. A notable difference from the wireframes is that the games do not contain the navigation bar. The primary reason for omitting this is that it avoids overwhelming users with various options. Furthermore, the same hyperlinks could be found under the quick links in the footer section. On the topic of wireframes, the implemented design differs slightly because of preferring other styles upon development. Finally, the reason for not implementing a hamburger menu is that the number of hyperlinks being used was minimal, making the menu unnecessary. All in all, these modifications were made thoughtfully to improve the website and user engagement.

Improvements

Given more time, there are several features I would have liked to add or improve to further enhance the website. Firstly, I would refine the sounds for the current character's actions, such as jumping, colliding, and reaching a new high score. Similarly, I would also add this feature to the math game when either figure is hit by a rocket or defeated. For the runner game, adding various vegetables and obstacles with varying dimensions would also be implemented. The vegetables would also be able to move around, just like the characters in Super Mario. Likewise, for the math game, I would like to create new monsters with unique abilities after each level. The monster and the user would be able to move and possibly dodge the missiles. Other obstacles would also be added, like buildings, lamp posts, and other environmental obstacles. These obstacles could be used as a shield to make the games more intriguing. I am also considering using sprites for the characters instead of single pictures. For my landing page, when the user scrolls to an area, page elements would slowly transition into view. Additionally, when hovering over a section of the welcome section, I would like to spotlight it and reduce the opacity of the other sections. In the near future, I would add the story mode with the animated characters. Google Analytics would be added to record visitor behavior and user interaction, thereby enabling thoughtful website improvements. Adding a leaderboard to store the top 100 scores would also be a potential addition, but that would go beyond the scope of the module. As mentioned previously, I learned about the AudioContext API and how to create notes and melodies. Additionally, the local storage unit was fascinating since I had minimal knowledge about it. I also expanded my understanding of HTML, CSS, JavaScript, and DOM manipulation via the window and document objects. Overall, providing these additions would enhance the website and my understanding of web technologies.

Challenges and Achievements

While developing the runner game, the carrot and the obstacle were in a fixed position. So, calculating a collision was relatively simple, however, when trying to make the game responsive, the images would be placed off the game's interface. So, instead of the impractical approach of updating and changing the position every time the object moves, a solution was sought. To combat this, extensive research was done, and with the help of W3Schools, the DOM method getBoundingClientRect() was introduced. This was extremely useful as it got the position of the obstacles based on the viewport. After this, it was just comparing the positions to see if they overlap. Another issue that emerged was when trying to move the image from one side to the next. Initially, I was using a while loop but quickly realized that it was inefficient since, after a while, it would close my browser (probably crashed it). So, when finding ways to move an object, I came across setInterval(), which calls something every x millisecond. Ambition was another challenge since I wanted to build various interactive games, but time did not permit it. One of my biggest achievements is expanding my JavaScript knowledge and familiarizing myself with the DOM objects such as document. Even though I did not manage to use libraries like Three.js and Phaser, researching about them proved to be valuable. Finally, I view completing and hosting this web application via GitHub Pages as an achievement. To conclude, even though there were challenges, the website was still completed, and with it came a lot of new knowledge.