**13jk Game Design Challenge**

Final Report

**The Misadventures of Ms. Texture**

**Course**

Independent Studies, Fall 2020

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# Introduction

I have wanted to test my abilities, so I requested that I be allowed to design a simple game. To receive credit (1 credit), I would have to create a video game using the JS13K games competition guidelines. My main goal is to learn new forms of coding, learn new software development tools, to break down, and implement my ideas.

# Constraints and requirements

As mentioned before, the guidelines I had to follow were the same rules set for the 2020 JS13K Games design competition. JS13K games is a JavaScript coding competition for HTML5 Game Developers. The three major rules of the competition were the code must be written in JavaScript/ HTML5. The theme must be the internet term “404,” which means “Cannot be found.” Lastly, the submission’s total size must be less than 13 Kilobytes. Other smaller constraints set between Dr. Novick and I were that I would have to update every two or three weeks with a theme behind each demonstration. On 9/4/20, All tools in place and operational, on 9/11/20, Discussion of game ideas and tech challenges, on 10/2/20 First prototype, on 10/24/20 Second prototype, 11/13/20 Third prototype, and lastly on 12/4/20 Final demo and paper.

# Initial design sketches

In the beginning, I had some trouble coming up with an idea or genre of what my game should be. After thinking of why I wanted to make a game in the first place, I decided to pay homage to my days as a gamer and decided to develop a 2-D platformer. Where the main goal is to complete a level by collecting a special object to process. Taking advantage of the theme being 404, I decided that my game’s focus should be reliable and progressively challenging gameplay. I took to paper and pencil and designed “rough” level designs and created sketches of various platforms and noting the functionality of said platforms.

# The journey

Being a new user of HTML5 and JavaScript meant that I would have to learn how to best utilize standard tools such as canvas, CSS style, and hosting a live server to test my code. I took to YouTube for the initial crash course research to set up a work environment. I learned that JavaScript and HTML5 were not so different from other languages that I previously had designed in. With this, I was on track with creating my first prototype. Featuring a red box as my player character, it can move left to right and jump, a beige canvas as the play area, and three platforms consisting of the floor and obstacle and the goal.

Following feedback from the prototype’s first presentation, it was time to add depth to my game. I created a playable menu screen that served as the tutorial, ensuring players could learn the game just by gazing at the screen. On top of that, I designed and added two more levels in which each level housed a new kind of gimmick to make the game more challenging. In the now second level, there was the addition of alternating platforms. These platforms would change once the player had jumped and leaped into the air, teaching players to be more attentive of their surroundings. The third level played around using double alternating platforms to add a thought, planning, and memory elements. Introducing the “death” platforms that once touched would cause the player to “die” restart the level. Lastly, I wanted to include moving sprites to add the feel of an 8-bit classic. So I designed a 32X32 pixel sprite pattern depicting a typical representation of the missing texture models in popular 3D games such as counterstrike and G-mod. I implemented the sprite using CSS style properties and was also able to create the sprite’s animation. If nothing else, creating the sprite and animation made me realize that I could be a designer if I keep learning new techniques.

Following the sprite’s implementation, I presented the newly updated prototype with overall positive feedback. However, I had seen a slight hint of a malfunction or error occurring very often in the game. After running the game for a short while, it began to slow down. Before implementing any feedback changes, I had to first uncover and fix this massive bug. I began to break down my code’s components and tried to identify if the issue was due to the HTML5 code, the JavaScript code, or the CSS style code. Thankfully, the solution was an easy fix but finding it was the real challenge. Long story short, when I created my platforms’ instances instead of being created once, the system created over 25 platforms in a single frame. Meaning every second, due to 30fps, my code generated over 700 platforms in a single second, causing the browser’s slowdown over time. I was able to find this bug in the end by using the eloquent technique of explaining chunks of code to a small rubber duck. All it took to cut down on my game’s resources was the change of “platform.push()” to just creating the “platform[]” array earlier in the file. I am once again reminded that one line of code can mean the difference between success and defeat.

I then focused on implementing the two most significant additions to the now called “Ms. Texture” videogame. The introduction of a background for the levels has been reduced from 9 KB to 5 KB through Dr. Novick’s help and created the new playable character model, “Ms. Texture.” Ms. Texture was inspired by characters like Mrs. Pacman and Boshi. By utilizing the 404 theme, the game’s story follows Ms. Texture as she attempts to retrieve the missing pieces for her next hit title. I also felt that there needed to be one more level, so I created a culmination of all gimmicks and served as a test to the player on their character control. After completing it, they would be greeted with a thank you for your help message from Ms. Texture and a few credits.

# Conclusion

In conclusion, I learned to code a new set of languages, how to take the feedback I have been given and create a discussion to further develop an idea, how to work with deadlines while conducting personal research, and to trust in my background as an engineer, a gamer and as a software developer. I have struggled, despaired at near “impossible” bug fixes, and dropped content due to less than ideal time management. Regardless of such strife, As it stands, “The misadventures of Ms. Texture” is my way of demonstrating to myself that not only do I have the capacity to attempt bigger and more complex projects, but that I am genuinely in love with coding. My hope for the current future is to enter a career where I can use all my engineering and software talents very soon.