Assignment #6: Scratch That!

Overview:

In this assignment, you'll be channeling your inner child and creating a simple game using Scratch, a free and simplified programming language.

Your goal is to build a game that functions like any of the following examples:

- A Game of Cat and Mouse (Challenge)
- Get the Cheesy Puffs! (Recommended)
- Button Click Exercise (Too easy...)

While you have three options, we *strongly* encourage you to complete the *Recommended* or *Challenge*activities.

And yes... we know you haven't been taught Scratch. But if fifth graders can learn it on their own, then so can you. This is your first *real* challenge as a developer. Take the time to independently learn what it takes to build these applications. The logic that underlies these games is *very* similar to the logic you'll be dealing with in JavaScript so treat this as a serious endeavor. As a baseline, you can expect the recommended or the challenge assignment to take up to 15 hours of time if you are completely new to programming.

Before You Begin:

Go to https://scratch.mit.edu/ and create a new account. Then take a few minutes to watch the provided tutorials and to browse a few of the projects others have built. As you will quickly discover, you can build some amazing things with Scratch.

Instructions:

1. Watch the demos again and choose an assignment. Again, we *strongly* suggest you complete the *Recommended* or *Challenge*activities.
    - A Game of Cat and Mouse (Challenge)
    - Get the Cheesy Puffs! (Recommended)
    - Button Click Exercise (Too Easy...)
2. Make a rough outline that pseudocodes all aspects of the game. In your outline, consider answering the following:
    - What are the rules of the game?
    - How does that translate into code?
    - Will we need to use loops? if/else statements?
    - What variables will we need?
    - Under what circumstances will our variables change?
3. Once you have a rough outline, begin the process of *coding* it out in Scratch. Your final game must include the following functionality:
    - **A Game of Cat and Mouse**
        - Users can move the cat left and right with the arrow keys.
        - Users can press the spacebar to shoot a projectile.
        - Mice fall from the sky at random locations.
        - If a mouse reaches the bottom, the player loses a life.
        - If the player shoots a mouse, the mouse is deleted, and the player gets a point.
        - Once a player reaches 0 life, they lose.
    - **Get the Cheesy Puffs!**

        - Users can move the cat up, down, left, and right with the arrow keys.
        - If the player touches the cheesy puffs, their score goes up by one, and the puffs move to a random location.
        - When the player reaches a score of 10, a victory image is shown, and the game ends.
    - **Button Click Exercise**
        - A variable that starts the game at 0.
        - A button that increases the value of the variable by 1.
        - A button that decreases the value of the variable by 1.
        - A button that resets the value of the button back to 0.
4. Once you finish, create a new folder titled "Scratch Activity" in your Google Drive Pre-Work folder. Then, to that folder, upload a text file with a link to your functioning game. Be sure to make your project publicly sharable! You can test this by opening your game in Chrome's Incognito Window.

Bonus:

Find ways to add your own creative touch to things! As a suggestion, consider adding any of the following features:

- **A Game of Cat and Mouse**
    - Random *power-ups* that drop from the sky and change the cat's projectile.
    - Alternative enemies with different properties from the mouse (e.g. dogs take two hits to defeat).
    - Music that changes speed as the player advances to further rounds.
    - Etc...
- **Get the Cheesy Puffs!**
    - Make the cheesy puffs a moving target.
    - Add in obstacles that the user has to avoid.
- **Button Click Exercise**
    - Add more buttons that change your variable in different ways!

Helpful Hints:

- Be sure to check out the supplemental resources listed in the reading chapter to get a primer on Scratch programming fundamentals.
- Try to look at other games found on the website. Then *view* the code to get inspiration for your own project. (Borrowing from the work of other developers in the open-source community is a great habit to get into, as you'll be doing the same repeatedly as a web developer.)
- Don't get discouraged if you can't complete this activity all the way. Submit what you were able to accomplish and be proud of what you scrapped together. What you will learn, time and again, in this bootcamp, is that perfection doesn't come easy and that sometimes it doesn't come at all.
- Stay motivated! This assignment is very much in line with the sorts of challenges you will face in class. At times, this will feel frustrating and pointless, but don't cheat yourself out of a good learning opportunity.

Good luck!