Programming Basics HW9

1. My final project idea is creating my own version of flappy bird, the popular mobile game from 5 years ago. The game requires you to fly your bird at the correct height in order to avoid pipes that appear on the screen as you travel right. The pipes vary in length and can stem from either the top or bottom of the screen. If you touch a pipe, you die. If you don't touch a pipe, you continue traveling right indefinitely, gaining points for every pipe you avoid. I will see if I can add a high score screen for after the game is over if I have time at the end of the project.

2. I will be working alone.

3.

   a. HTML will be used to create the page surrounding the game, with the title, the creator's name, and directions for the game. I will also use it to create the canvas for which the script will work inside of. Additionally, I will create a restart button to restart the game and a text box to input and submit a player name to use with the leaderboard.

   b. I will then use CSS to style the page as a whole to get it to meet my aesthetic and design needs as necessary. I will most likely be changing fonts in CSS to match the Mario like aesthetic of Flappy Bird. Additionally, I will use it to style the background of the page and the buttons and text box. I will also do a hover over animation for buttons so that they look clickable.

   c. Javascript will be used to code the actual game inside of the canvas. I will need to create functions inside of flappy bird that will generate random pipes on a timer as the time elapses. As the time elapses, I will also have to move the bird up when the up arrow is clicked and down when the time elapses and up is not pressed. When the bird makes it past a pipe, I will also have to add a point to the score. Lastly, I will need to code for collisions with the bird and pipes and cause a game over state when this occurs. The game will also have to end if the bird goes off screen on the bottom. If the bird reaches the top of the screen, I will code it so it can no longer move upwards. Additionally, I could use D3 for the creation of the SVG shapes needed for the pipes and bird. I would use a circle for the bird and rectangles for the pipes. Lastly, the

buttons will be given their functionality to restart the game and interact with the names on the leaderboard through JavaScript.

4. I will need to use an if statement to determine if a time counter has reached an interval at which I need to add new pipes to the right of the screen. If it has been around 3 secs, I will add new pipes and the screen and then in another three seconds I will do the same thing. I will also have to use functions to create my game as these are necessary for doing a specific process multiple times, such as I will need to do with making the bird descend or ascend on command of time or the user. These repeated actions can then be called at the appropriate time to allow the game to flow. Lastly, I will use buttons to allow the user to restart the game and submit text from a text box to personalize the player display name in the leaderboard. I apply an action listener to these button that will detect when it has been pressed and initialize the start of the game or change the leaderboard and score history (saved as an array) being kept.

5.

    a. https://www.dummies.com/programming/programming-games/how-to-add-timing-to-your-html5-game/

        i. I will need to use this dummies programming article about how to initialize a timer in HTML5. This will allow me to time out the animation of the bird descending due to gravity and new pipe generation in my game. In order to do this, I need to make a new timer object which is built into a JavaScript library called simpleGame.

    b. https://www.dashingd3js.com/svg-basic-shapes-and-d3js

        i. I will use this article to create the SVG shapes for the pipes and bird. It describes how to make SVG shapes with D3, which makes creating shapes easier to code than plain JavaScript.

    c. https://www.w3schools.com/graphics/game_intro.asp

        i. This is an example on w3 schools about how to build the start of game and create a canvas for which to draw the game on. It also describes important animation info in JavaScript about clearing a canvas and setting the width and height.

6. Since I will be working in a pair, I will be responsible for the entirety of the project. I think this will help me really make sure I understand all steps of the process of this game's development. This game is going to be challenging for me because I have never done something like this in JavaScript or for the web. I have done games in Java for my previous CS classes but this will be a new experience because for those projects I had a lot of guidance from TA's and the instructors to create the game. However, this time I will rely more on the internet and previous coding projects to overcome hurdles that I may face along the way of this game's development and will largely solve the problems along the way with my own solutions. This project is doable for me but is still going to test my ability to manage my own project.

7.

    a. The first step will be to create the layout of the page in HTML and CSS. I will provide the game's name and the instructions for the game above the canvas.

        i. Due Nov 19

    b. The next thing I will do is try to create a circle for the bird to fall to below the screen height with the timer for the game.

        i. Due Nov 20

    c. Then I will set pressing space to increasing the height of the square bird as it descends.

        i. Due Nov 20

    d. Then I will start the generation of the rectangle pipes at the right of the screen on a timer. Some will generate above and below and some will have a pipe above and below or no pipe at all.

        i. Due Nov 24

    e. I will then get the pipes to move to the left with the timer.

        i. Due Nov 24

    f. I will then program the score, starting at zero and increasing by one every time the center of the bird circle is at the same x position as a pipe.

        i. Due Nov 26

g. I will then program the game over for a collision of a bird with a pipe. Also I will program a game over for when the bird circle falls below the screen height.

   i. Due Nov 26

h. I will then create a score board that keeps track of past high scores and names with a range of history starting from when the game is opened each time. I will do this by keeping a score history array list. Above the score board I will also program the restart button and player name input text box.
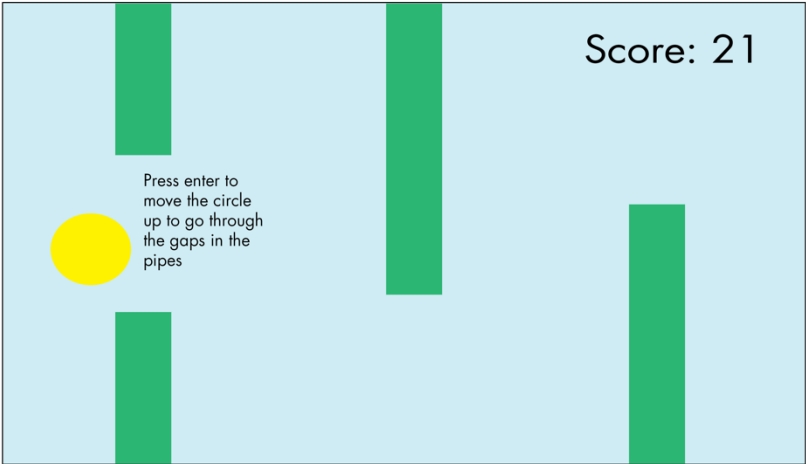
   i. Due Nov 3

Flappy Circle

Help the bright yellow circle escape the wrath of a death by the dreaded green pipe. All you need to do it press space to help the bird fly upwards towards the correct height to pass through the gaps between the pipes. Good luck on your journey, how every long it may last...

RESTART   SUBMIT

GAME OVER

Lia Andrews - 55
Kyle Davis - 41
Victoria Beth - 39
Ana Powell - 31
Beth Andrews - 2

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RESTART   SUBMIT

Score: 21

Press enter to move the circle up to go through the gaps in the pipes