

p5js Programming Challenges

For this part of the exam, you may use the following references:

- p5js reference: <https://p5js.org/reference/>
- MDN JavaScript reference: <https://developer.mozilla.org/en-US/docs/Web/JavaScript>

No code that you have made/saved previously may be accessed during this challenge!

1. Two-Dimensional Array Display

(10 marks)

In your Final Exam folder, you will see a folder called `2d-array-question`. Open that folder in VS Code, and navigate to the `sketch.js` file. In this file, you need to fill in the `displayGrid(grid)` function according to the following rules:

- There is a global variable called `grid` that has been defined in `setup()`
- The size of each cell will be a square with length and width `cellSize` (which is a global variable that has also already been declared)
- You need to draw a grid (think game of life), where the color of each cell is given by the number inside the `grid` variable at that location. The colors are defined as follows:
 - 1 - red
 - 2 - blue
 - 3 - green
 - 4 - black
 - 5 - white

2. Functions and Keyboard Control

(10 marks)

In your Final Exam folder, you will see a folder called `wasd-movement-starter-code`. Open that folder in VS Code, and navigate to the `sketch.js` file. If you go live with this file, you will see a Raptors mascot that shows up in the middle of your screen. Adapt the code to do the following:

- Create global variables `x` and `y`, and have the mascot be displayed at whatever location these variables are set to.
- The mascot should move up, left, down and right respectively when WASD is pressed.

As with every assignment throughout the course, the more knowledge you can demonstrate, the better! Consider comments, coding style, efficiency, etc.

3. Ball OOP

(15 marks)

In your Final Exam folder, you will see a folder called `oop-starter-code`. Open that folder in VS Code, and navigate to the `sketch.js` file. In this file, you need to use the given Ball class to create the following: *You do not need to edit the class at all! You are just using it.*

- Create a global variable that starts as an empty array.
- In the `setup()` function, put 100 Ball objects into the array. The Balls should be created to show up at any random location within the screen.
- During the `draw()` loop, iterate through the Ball array, moving and displaying each of the Ball objects.
- When the mouse is pressed, check to see if any Ball was clicked on. If it was, remove it from the array. You'll want to use the `checkIfPointInsideBall(x, y)` function for this. *Remember that you can check to see what is currently in the array by opening up the console and typing in the name of the array...*

As with every assignment throughout the course, the more knowledge you can demonstrate, the better! Consider comments, coding style, efficiency, etc.

When you are confident that you have completed each of the following challenges to the best of your ability, right click the **final-exam-starter-code** folder, then select Send To -> Compressed (zip). Rename the folder to be something like **dan-schellenberg-final.zip**. Submit that zip file to me on Edsby (through the p5js Programming Challenges assignment).