Exam 2

- Is cumulative = topics from midterm 1 will be asked again
- We will expect proficiency on old topics
  - Proficiency = can solve more difficult problems and/or faster
- 40 minutes for midterm 2.
- Questions that students struggle the most:
  - For loops (loop table)
  - Built-in variables
  - Mathematical expressions

Where to practice

1. Archived Problems - Project Euler
2. For Loop [87 exercises with solution]

Ask in Piazza if you need more practice problems

Extra credit opportunity :

- *Share on Piazza (folder **extra_credit**) the material that you use to study with the rest of the class for 0.5 extra credit point!*
- *Come up with your own problems based on the assigned readings for 1 extra credit point!*

Today

- Ask me questions about PA4
- Work with Laptops
- Send ICA to Gradescope. Save and submit after each question

Question 1 - Review Code style

- Go to the class website
  - Download square_example.pde
  - Modify it to use good variable names (if there are any), correct indentation and spacing, and comments

square_example.pde

```
void setup() { size(200, 200) ;} void draw(){
background(100, 200, 250);
fill(0, 0, 255);
if (mousePressed) {
if (mouseX > 100) {
fill(255, 0, 0);
}}
if (    mouseButton ==  RIGHT) {
background(0, 0, 0  );
strokeWeight(7);
}                    rect(50, 50, 100, 100  ) ;}
```

CS 101
If statements with system variables

Type a system variable (aka built-in variables)

Review - System variables

- To track of the location of the mouse:
  - mouseX and mouseY

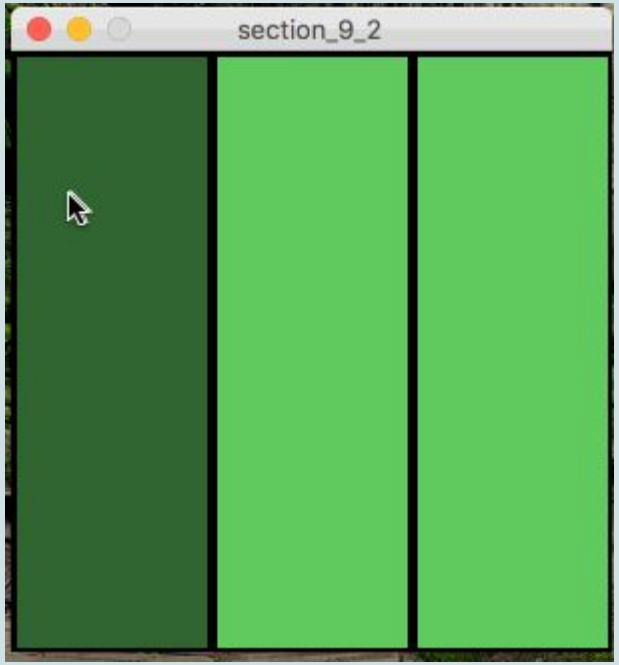
- To know the size of the canvas:
  - width and height

Question 1.

Write a program that draws this canvas.

Each rectangle should be a 3rd of the canvas, even if we change the size of the canvas.

i.e. Do not use fixed numbers for drawing the rectangles. Use system variables.

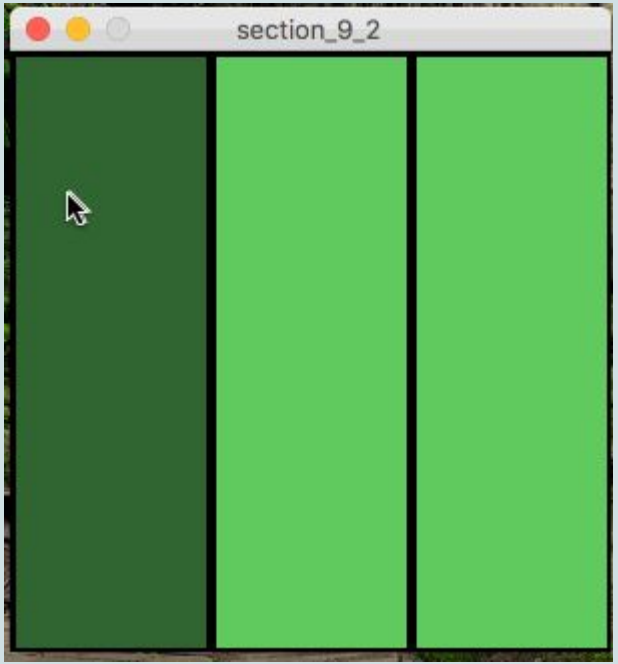


Question 2.

Write a program that prints the X and Y coordinates of the mouse cursor

Question 3.

Using if-statements, modify your program so that a rectangle becomes darker when the mouse is located within the boundary of the rectangle

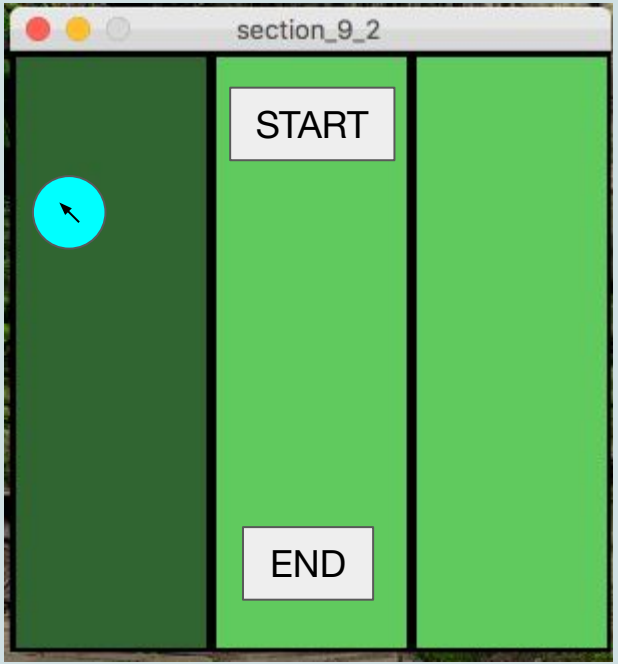


Question 4

Modify the previous program so the mouse cursor is highlighted with a blue circle.
In other words, add a blue circle that follows the mouse cursor.

Question 5

1. Read the reference page for the function “text” https://processing.org/reference/text_.html
2. Add two text boxes and rectangles so your canvas looks like the on the right



Question 6

We want to program a game that asks the user to move the mouse from the START square to the END square.

What are some steps you would do to complete this program?