**15-104 Introduction to Computing for Creative Practice – FALL 2023**

NAME: ENTER YOUR NAME HERE

ANDREW ID: ENTER YOUR ANDREW ID HERE

SECTION: ENTER YOUR SECTION LETTER HERE (A-E)

**CONCEPTS QUESTIONS 3**

Enter your answers to each of these questions in the space provided. Do not use online tools (including AI tools). Do not consult with other students when answering these questions. The information you fill in should be your work and only your work.

1. Complete the simple draw function below that draws a 50 X 50 rectangle in the center of an arbitrary sized canvas at an angle of 45 degrees, as shown in the example below:



YOUR ANSWER:

function draw() {

 translate(\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_);

 rotate(\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_);

 rectMode(CENTER);

 rect(0, 0, 50, 50);

}

1. Complete the simple draw function below that draws two 50 X 50 rectangles touching at the center of an arbitrary canvas, as shown in the example below:



YOUR ANSWER:

function draw() {

 push();

 translate(\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_);

 rect(0, 0, 50, 50);

 pop();

 push();

 translate(\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_);

 rect(0, 0, 50, 50);

 pop();

}

1. In the previous problem, if the push and pop function calls were removed, would either rectangle move to a new location? If so, identify which would move and where, and briefly explain why this happens. If not, briefly explain why not.

YOUR ANSWER:
2. Consider the Random Lines program discussed in Lecture 4, shown below. Assume that the width and height of the canvas are multiples of 20. How many lines are drawn on the canvas before the canvas is cleared, as a function of the width and height of the canvas? Your answer should be a formula using width and/or height. HINT: Solve this for the 400 X 400 canvas in the example and then try to generalize.

var x = 0;
var y = 0;
function setup() {
 createCanvas(400, 400);
 background(255);
}

function draw() {
 if (random(1) >= 0.5) {
 line(x, y, x+20, y+20);
 } else {
 line(x, y+20, x+20, y);
 }
 x += 20;
 if (x > width) {
 x = 0;
 y += 20;
 }
 if (y > height) {
 background(255);
 x = 0;
 y = 0;
 }
}

YOUR ANSWER: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_