**Shape Sorter Report**

EECS 3311: Project 1

Laura Toro

216650236

Due: Oct 10th 2021

# **INTRODUCTION**

## **1.1 PURPOSE**

The purpose of the “Shape Sorter” is to display randomly generated shapes. Clicking the Load button generates shapes, clicking the Sort button will then display the shapes in order by their area.

This report is structured as follows: **Part II Design, Part III: Implementation** and **Part IV Conclusion.**

## **1.2 Challenges**

### **Threads**

Because Swing uses threads, there are bugs in implementation that cannot be easily recreated.

### **Help and Tutorials**

As there are many methods for implementation a Shape Sorter, there are no resources available online for assistance when your implementation experiences bugs.

## **1.3 OO Design Principles**

### **Abstract Factory**

The abstract factory pattern is used to generate Shape objects of 3 different types: Square, Circle and Rectangle.

# **DESIGN**

## **Class Diagram**

Diagram

Description automatically generated with medium confidence

The above displays the design for the abstract factory. Each shape extends Shape abstract class and has appropriate methods to get their area as well as draw them onto the GUI. ShapeFactory randomly generates and stores them in an ArrayList which is accessed by myPanel which also contains the main method. MyPanel draws the components by accessing the ShapeFactor.

# **IMPLENTATION**

My implantation will use Bubble sort on an ArrayList of Shape objects and save the newly sorted list into a new Array. Once sorted, their coordinates will be changed so that they are displayed in order. I implemented my first class diagram.

The files to make the abstract factory are: Shape.java, Circle.java, Square.java, Rectangle.java

Tools used: Eclipse version 4.21

A picture containing graphical user interface

Description automatically generated

Above displays newly generated shapes.

Screen recording prints onto console what the Load button will do.

# **CONCLUSION**

During this assignment, the creation of shapes was simple. I was able to successfully generate random colors and sizes and display them without overlapping.

Unfortunately, after exhausting all resources, it was not possible for me to repaint() the screen with shapes in different positions. Therefore I could not complete implementation of sorting the shapes.

This was my first experience with Java Swing GUI, I learned a lot about how to display shapes onto the Frame. I would recommend anyone who would like to complete this to watch and read tutorials available online.

Three resources I found useful: Youtube, StackOverflow and TutorialsPoint.