EECS 3311 – User Interfaces

Project 1

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Introduction

Explain what the software project about and what are its goals?

- This software project is about getting familiar with UI goals such as positioning and range of size of the shapes that it doesn't colide with each other. The main goals for the software project is to get that range and sort the shapes based on the surface area of shapes.

Explain the challenges associated to the software project?

- As I mentioned in the above question, the main challenges was to get the range of the size of the shapes that it doesn't colide with each other and to align them in proper diagonal line.

Explain the concepts you will use to carry out the software project?

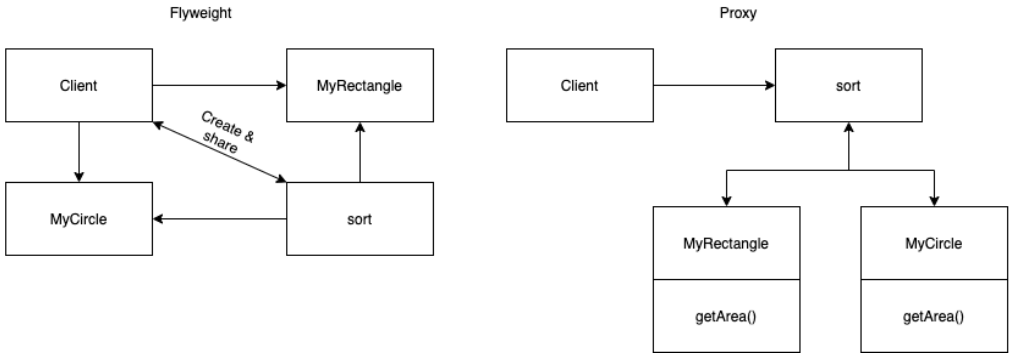
- Concepts like polymorphism is a good concept to carry the task for shapes easily as they share the same thing like getArea(), getWidth(), getHeight() etc. It has structural design pattern such as Flyweight and proxy.

Explain how you are going to structure you report accordingly?

- I'll use the all the possible terms and presentation pdf included with the project to check for the measures and to satisfy the rubics of the project.

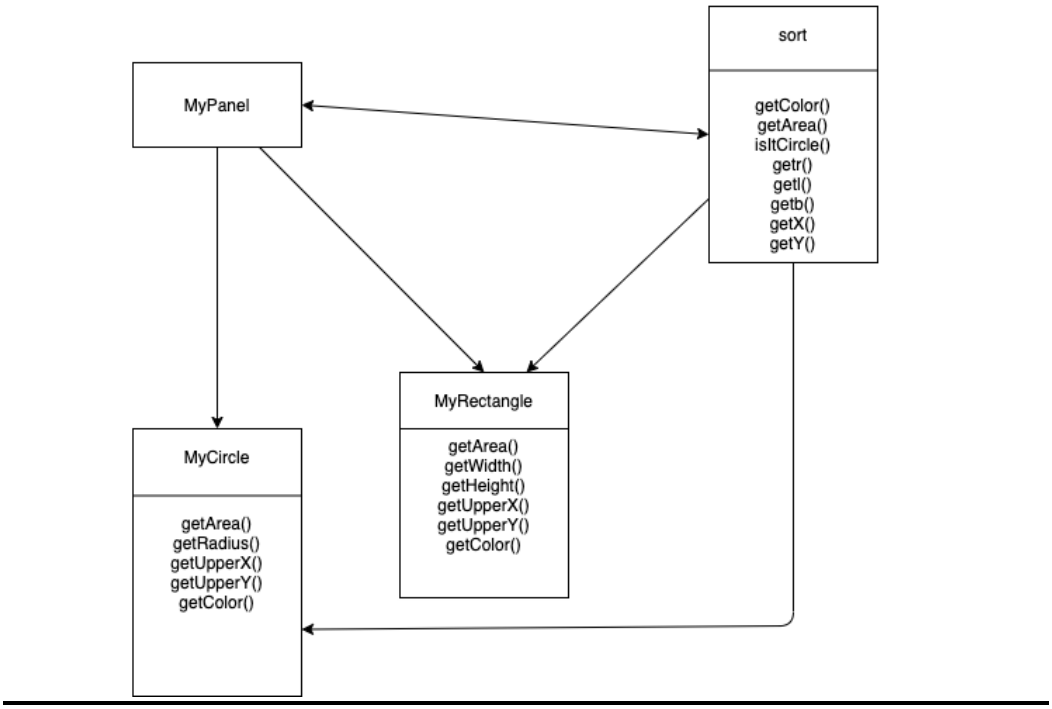
Design of the solution

UML diagram for structured design patterns I used in the software project.



There's no connection between classes in my projects. But there's sort class which is a prototype for the MyCircle and MyRectangle which I made specific for storing the both the classes' objects and sorting the sort class objects and again creating the circle.

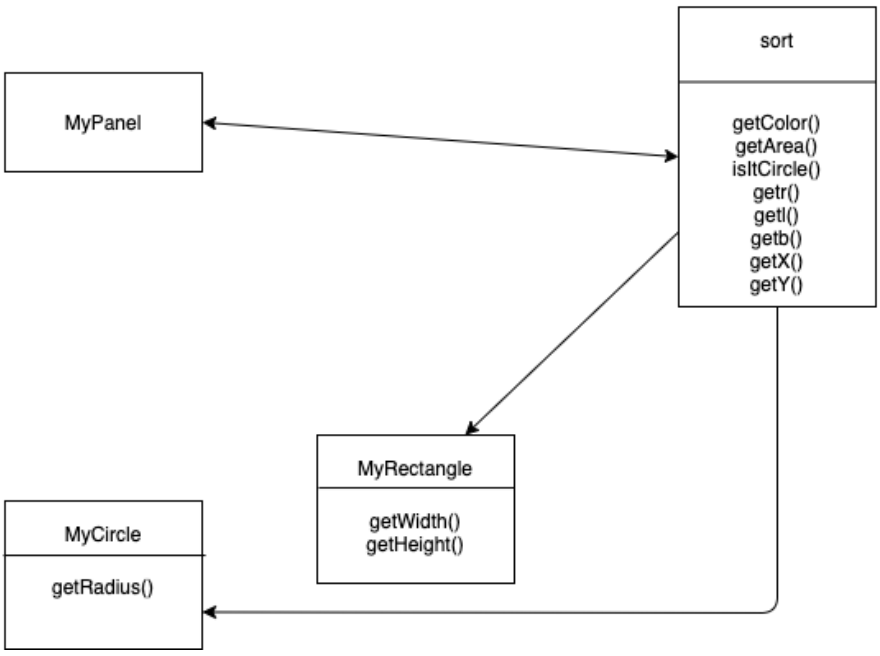
Class Diagram:



- MyPanel is the main client class. While MyRectangle() and MyCircle() are classes use to create objects for the shapes such as Rectangle and Square shapes are created by MyRectangle while Circle shape is created by MyCircle().

- As both the classes are different I cannot create a object which can be a dummy for both the objects and that's why I created a sort object for creating a common object which can store both the objects.

Better UML



If I use inheritance or abstract class, parent and child design procedure then it would be better option as both the classes share some of the similar members which could help space complexity of the project.

Implementation of the solution

Describe the algorithm of the sorting technique you have used to sort the shapes?

- I've used the bubble sort technique to sort the shapes. It first selects the first element then it compares with the second one then second with the third one and it goes one if the shape's surface area is smaller than the first one then it's swapped and thus we get the sorting of all the shapes in ascending order.

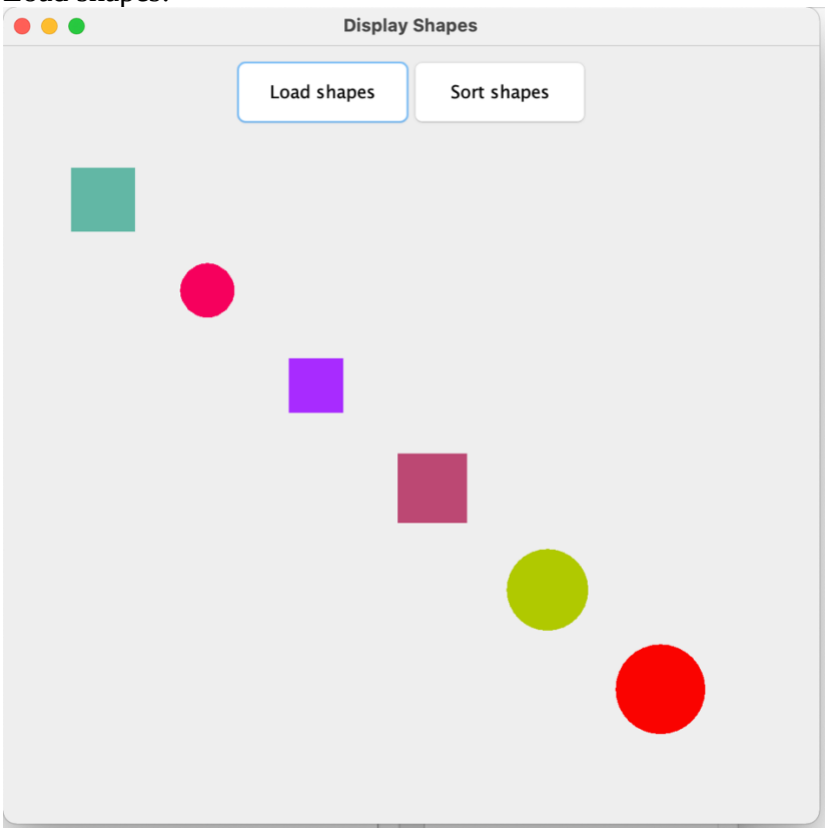
Describe how you have implemented and compiled all the classes of your class diagram in Java?

- I ran through demo code given with the project questionaire, and I keep implementing new class such as MyCircle and sort. Along with writing classes, I kept creating methods and constructors for each classes as the things were doing good. At the end, I chose to remove unwanted code and made changes to look and feel.

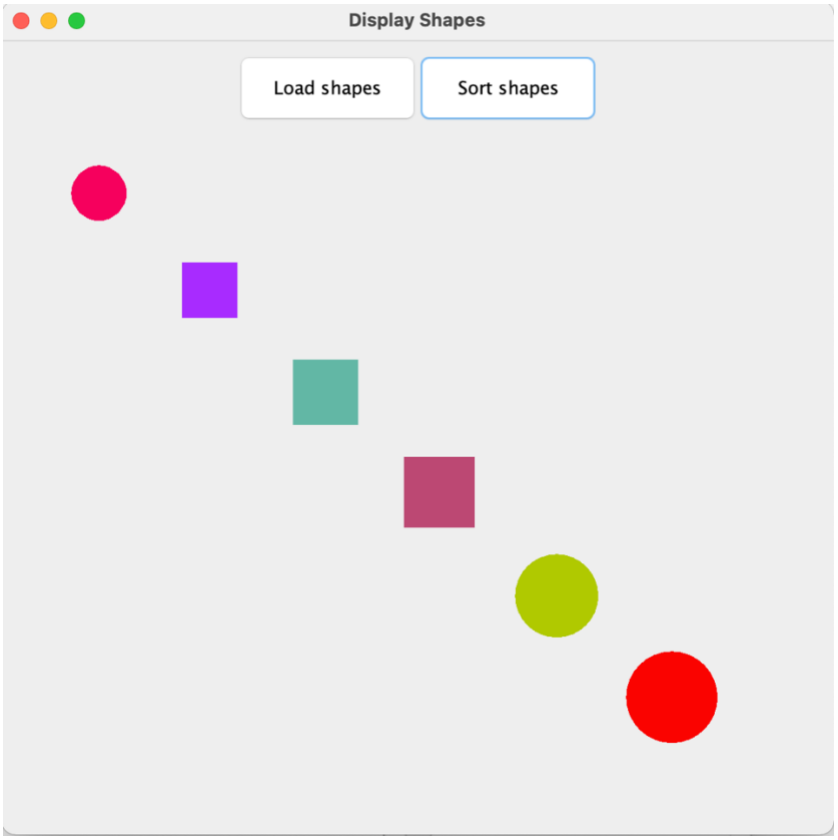
Specify the tools you have used during the implementation: version of Eclipse/IntelliJ or of another IDE use to write code and run it, version of JDK, etc.

- I used Eclipse:
    Version: 2019-09 R (4.13.0)
    JDK: jdk-13.0.1.jdk

Take a snapshot of the execution of the code (i.e., of the interface) and comment it in the report:
- On Click of Button:
Load shapes:



Sort shapes:



Conclusion

What went well in the software project?

- The sorting algorithm I used went so great and it worked perfectly, I had no issues implementing it on my first try.

What went wrong in the software project?

- Creating a similar class for both the different class such as rectangle and circle and implementing in the sorting algorithm was bit difficult.

What have you learned from the software project?

- I have tried almost all the sorting algorithms on numbers and characters, but never tried it on shapes. This project helped me achieve it.

What are your top three recommendations to ease the completion of the software project ?

- The first recommendation is create a top view first for classes and objects, I figured it out in the later part which consumed my lots of time. Second recommendation is try to create a strong code and don't complex it more enough and remove it later. Third is set debugging print out by System.out.print to track the value of the members. It helped me a lot.