

ITCS 209 Object Oriented Programming	Name:	Lab Score	Challenge Bonus
	ID:		
	Section:		

### Lab09: Polymorphism

In this lab, you are provided with the four java files as follows:

- Shape.java - **DO NOT MODIFY THIS CLASS.**
- Rectangle.java – a subclass of Shape. **You have to complete this class.**
- Triangle.java – a subclass of Shape. **You have to complete this class.**
- ShapeTester.java: This is the main class. - **DO NOT MODIFY THIS CLASS.**

**Task 1:** complete Rectangle.java

- **Override** method `double getArea()` from Shape.java to compute and return area of a rectangle using **area = width \* length**.
- **Override** method `String toString()` to return the following string :

```
"Rectangle[length=4, width=5, Shape[color=red]]"
```

- **Overload** the method `double getArea (double width, double length)` then compute and return area of a rectangle.

**Task 2:** complete Triangle.java

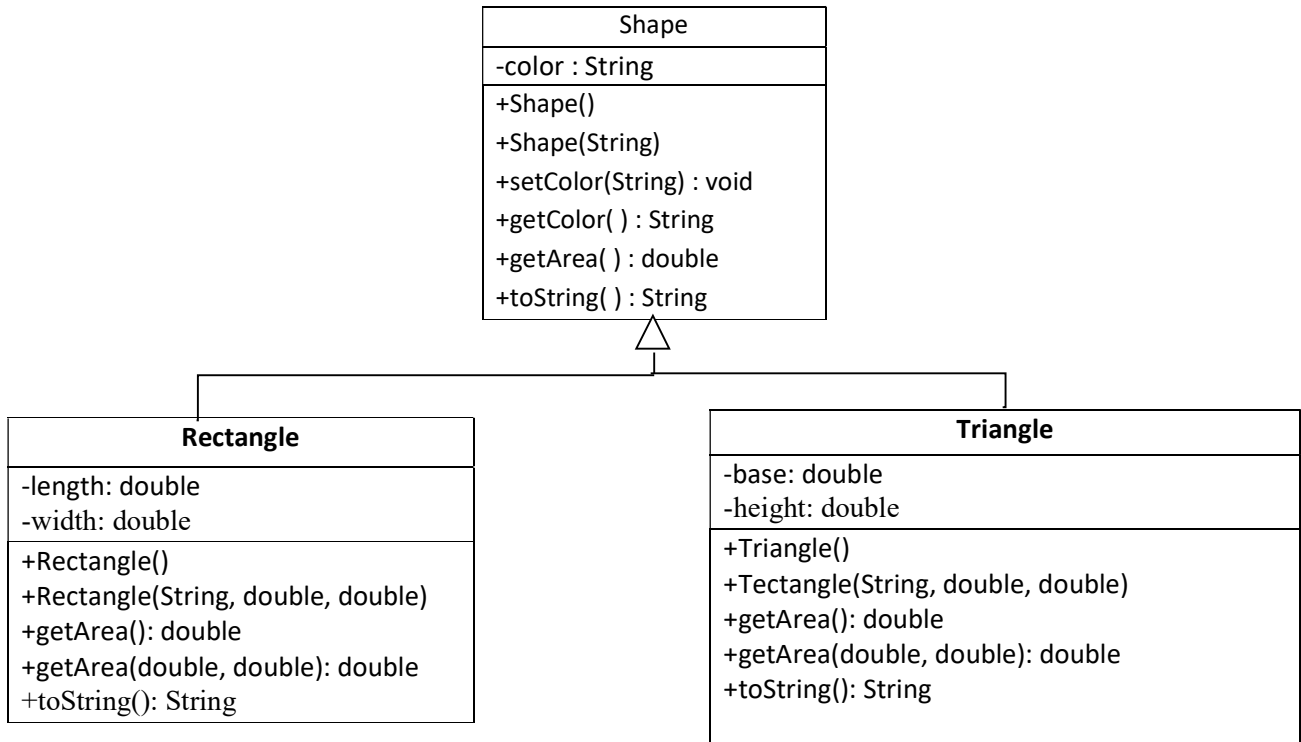
- **Override** method `double getArea()` from Shape.java to compute and return area of a rectangle using **area = 0.5\*base \* height**.
- **Override** method `String toString()` to return the following string :  

```
"Triangle[base=4, height=5, Shape[color=blue]]"
```
- **Overload** the method `double getArea (double base, double height)` then compute and return area of a rectangle.

### Expected output

```
Rectangle[length=4.0,width=5.0,Shape[color=red]]
Area is 20.0
Triangle[base=4.0,height=5.0,Shape[color=blue]]
Area is 10.0
--Test superclass method--
Shape[color=blue]
Shape unknown! Cannot compute area!
Area is 0.0
--Test overload method--
Area is 50.0
Rectangle[length=5.0,width=10.0,Shape[color=green]]
--Test overload method--
Area is 25.0
Triangle[base=5.0,height=10.0,Shape[color=yellow]]
```

Note that: you can use the class diagram next page for more detail.



### Challenge Bonus (Optional):

Create a new class representing any shapes you like that extends `Shape.java` such as circles, hexagons and so on. For the challenge, you are allow to modify `ShapeTester.java` to have **at least 2 objects of your class** and compute an area and print the output.