Assignment-2

**Question1:** Implement given program using copy constructor by creating a class Student with two parameter

1. int rollNumber;
2. String name

Class Main {

public static void main(String[] args) {

Student student1 = new Student(101, "ABC");

system.out.println(" Roll number of the first student: "+ student1.printRoll());

system.out.println(" Name of the first student: "+ student1.printName());

Student student2 = new Student(student1);

system.out.println(" Roll number of the second student: "+ student2.printRoll());

system.out.println(" Name of the second student: "+ student2.printName());

}

}

**Question 2:** Create a Shape class and a sub classes triangle, Parallelogram

Class: Shape  
Fields: name, color, area, perimeter

Constructors   
Shape (name, color)   
Shape (name, color, perimeter, area)   
  
Methods:

printShape()

getArea()

getPerimeter()

Class: Triangle: Inherits Shape   
Fields: base, height   
Constructors:   
triangle(side) → If single side is given then all sides to same value.

Class: Parallelogram: Inherits Shape

Fields: base, height, side

Constructor:

Parallelogram (base, height, side)  
Parallelogram (side) → If single side is given then all sides to same value.  
  
  
  
1) Create getter and setter methods for all classes.   
2) Create printShape() method in Shape class that returns desired string output.   
3) Override the getArea() and getPerimeter() getter methods of Shape in triangle and Parallelogram to give desired output.

Question 3: Implement given below figure and test the shapeTester class

Diagram

Description automatically generated

public class shapeTester

{

   public static void main(String args[])

   {

      Shape s = new Shape();

      Rectangle r = new Rectangle(2.0, 3.0);

      Circle c = new Circle(4.0);

      r.computeArea();

      r.computePerimeter();

      c.computeArea();

      c.computePerimeter();

      r.display();

      c.display();

      s.display();

   }

}

**Question 4:** Comparators are used to compare two objects. You'll create a comparator and use it to sort an array. You must create *Player* class. It has 2 fields: a String name and a score integer. Given an array of *Player* objects, write a comparator that sorts them in order of decreasing score; if 2 or more players have the same score, sort those players alphabetically by name.

write an *int compare (Player a, Player b)* method implementing the Comparator. compare (T o1, T o2) method.