```
package A3;

/**
 *
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 */

//import java.lang.Math.*;
import java.util.Scanner;

class Shape{
    protected String color;
    public Shape(){
        color="red";
    }

    public Shape(String color){
        this.color=color;
    }

    public String getColor(){
        return color;
    }

    public void setColor(String color){
        this.color=color;
    }
}

class Circle extends Shape{
    protected float radius;
    public Circle(){
        radius=1;
    }

    public Circle(float radius){
        this.radius=radius;
    }

    public Circle(float radius, String color){
        super(color);
        this.radius=radius;
    }

    public float getRadius(){
        return radius;
    }

    public void setRadius(float radius){
        this.radius=radius;
    }

     public float getArea(){
         return (float) (Math.PI*radius*radius);
     }
```

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      public float getPerimeter(){
          return (float) (2*Math.PI*radius);
       }
}

class Rectangle extends Shape{
    protected float width, length;

    public Rectangle(){
        width=length=1;
    }

    public Rectangle(float width, float length){
        this.width=width;
        this.length=length;
    }

    public Rectangle(float width, float length, String color){
        super(color);
        this.width=width;
        this.length=length;
    }

    public float getWidth(){
        return width;
    }

    public void setWidth(float width){
        this.width=width;
    }

    public float getLength(){
        return length;
    }

    public void setLength(float length){
        this.length=length;
    }

    public float getArea(){
        return length*width;
     }

    public float getPerimeter(){
        return 2*(length+width);
    }

}

class Square extends Rectangle{
    protected float side;

    public Square(){
        super();
        side=1;
    }
```

```
    public Square(float side){
        super(side, side);
        this.side=side;
    }

    public Square(float side, String color){
        super(side, side, color);
        this.side=side;
    }

   public float getSide(){
        return side;
    }

    public void setSide(float side){
        setWidth(side);
        setLength(side);
        this.side=side;
    }
}

public class TestShape {
    public static void main(String[] args) {
        int choice;
        String color;
        float radius, length, width;

        Scanner in=new Scanner(System.in);


        Circle cir=null;
        System.out.println("\t\tSHAPE: CIRCLE");
        System.out.println("Choice:\n\t1. Create object\n\t2. Create
object with radius\n\t3. Create object with radius and color\n\t0.
Exit\nEnter choice: ");
        choice=in.nextInt();

        while(choice!=0){
            switch(choice)
            {
                case 1: cir=new Circle();
                        System.out.println("Object created
successfully!");
                        break;
                case 2: System.out.println("Enter radius: ");
                        radius=in.nextFloat();
                        cir=new Circle(radius);
                        break;
                case 3: System.out.println("Enter radius: ");
                        radius=in.nextFloat();
                        System.out.println("Enter color : ");
                        in.nextLine();
                        color=in.nextLine();
                        cir=new Circle(radius, color);
                        break;
```

```
            }

            System.out.println("Choice:\n\t1. Get detail\n\t2. Set
Detail\n\t0. Exit\nEnter choice: ");
            choice=in.nextInt();
            while(choice!=0){
                switch(choice){
                case 1: System.out.println("\tCIRCLE PARAMETERS");
                        System.out.println("Radius   :
"+cir.getRadius());
                        System.out.println("Area     :
"+cir.getArea());
                        System.out.println("Perimeter:
"+cir.getPerimeter());
                        System.out.println("Color    :
"+cir.getColor());
                        break;
                case 2: System.out.println("Enter radius: ");
                        radius=in.nextFloat();
                        cir.setRadius(radius);
                        System.out.println("Enter color : ");
                        in.nextLine();
                        color=in.nextLine();
                        cir.setColor(color);
                        break;
                }
                System.out.println("Choice:\n\t1. Get detail\n\t2.
Set Detail\n\t0. Exit\nEnter choice: ");
                choice=in.nextInt();
            }
            System.out.println("Choice:\n\t1. Create object\n\t2.
Create object with radius\n\t3. Create object with radius and
color\n\t0. Exit\nEnter choice: ");
            choice=in.nextInt();

        }


        Rectangle rect=null;
        System.out.println("\t\tSHAPE: RECTANGLE");
        System.out.println("Choice:\n\t1. Create object\n\t2. Create
object with size\n\t3. Create object with size and color\n\t0.
Exit\nEnter choice: ");
        choice=in.nextInt();

        while(choice!=0){
            switch(choice)
            {
                case 1: rect=new Rectangle();
                        System.out.println("Object created
successfully!");
                        break;
                case 2: System.out.println("Enter length: ");
                        length=in.nextFloat();
                        System.out.println("Enter width: ");
                        width=in.nextFloat();
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                        rect=new Rectangle(length, width);
                        break;
                case 3: System.out.println("Enter length: ");
                        length=in.nextFloat();
                        System.out.println("Enter width: ");
                        width=in.nextFloat();
                        System.out.println("Enter color : ");
                        in.nextLine();
                        color=in.nextLine();
                        rect=new Rectangle(length, width, color);
                        break;
            }

            System.out.println("Choice:\n\t1. Get detail\n\t2. Set
Detail\n\t0. Exit\nEnter choice: ");
            choice=in.nextInt();
            while(choice!=0){
                switch(choice){
                case 1: System.out.println("\tRECTANGLE
PARAMETERS");
                        System.out.println("Length   :
"+rect.getLength());
                        System.out.println("Width    :
"+rect.getWidth());
                        System.out.println("Area     :
"+rect.getArea());
                        System.out.println("Perimeter:
"+rect.getPerimeter());
                        System.out.println("Color    :
"+rect.getColor());
                        break;
                case 2: System.out.println("Enter length: ");
                        length=in.nextFloat();
                        rect.setLength(length);
                        System.out.println("Enter width : ");
                        width=in.nextFloat();
                        rect.setWidth(width);
                        System.out.println("Enter color : ");
                        in.nextLine();
                        color=in.nextLine();
                        rect.setColor(color);
                        break;
                }
                System.out.println("Choice:\n\t1. Get detail\n\t2.
Set Detail\n\t0. Exit\nEnter choice: ");
                choice=in.nextInt();
            }
            System.out.println("Choice:\n\t1. Create object\n\t2.
Create object with size\n\t3. Create object with size and
color\n\t0. Exit\nEnter choice: ");
            choice=in.nextInt();

        }


        Square sq=null;
```

```
        System.out.println("\t\tSHAPE: SQUARE");
        System.out.println("Choice:\n\t1. Create object\n\t2. Create
object with side\n\t3. Create object with side and color\n\t0.
Exit\nEnter choice: ");
        choice=in.nextInt();

        while(choice!=0){
            switch(choice)
            {
                case 1: sq=new Square();
                        System.out.println("Object created
successfully!");
                        break;
                case 2: System.out.println("Enter side  : ");
                        length=in.nextFloat();
                        sq=new Square(length);
                        break;
                case 3: System.out.println("Enter side  : ");
                        length=in.nextFloat();
                        System.out.println("Enter color : ");
                        in.nextLine();
                        color=in.nextLine();
                        sq=new Square(length, color);
                        break;
            }

            System.out.println("Choice:\n\t1. Get detail\n\t2. Set
Detail\n\t0. Exit\nEnter choice: ");
            choice=in.nextInt();
            while(choice!=0){
                switch(choice){
                case 1: System.out.println("\tSQUARE PARAMETERS");
                        System.out.println("Side     :
"+sq.getSide());
                        System.out.println("Color    :
"+sq.getColor());
                        System.out.println("Area     :
"+sq.getArea());
                        System.out.println("Perimeter:
"+sq.getPerimeter());
                        break;
                case 2: System.out.println("Enter side: ");
                        length=in.nextFloat();
                        sq.setSide(length);
                        System.out.println("Enter color : ");
                        in.nextLine();
                        color=in.nextLine();
                        sq.setColor(color);
                        break;
                }
                System.out.println("Choice:\n\t1. Get detail\n\t2.
Set Detail\n\t0. Exit\nEnter choice: ");
                choice=in.nextInt();
            }
```

```
            System.out.println("Choice:\n\t1. Create object\n\t2.
Create object with side\n\t3. Create object with side and
color\n\t0. Exit\nEnter choice: ");
            choice=in.nextInt();

        }
    }

}
```