**Shape Class:**

public abstract class Shape

{

protected String color;

protected boolean filled;

public shape()

{

this("red","true");

}

public shape(String color,boolean filled)

{

this.color=color;

this.filled=filled;

}

public String getColor()

{

return this.color;

}

public void setColor(String color)

{

this.color=color;

}

public boolean isFilled()

{

if(filled=="true")

return true;

else

return false;

}

public void setFilled(boolean filled)

{

this.filled=filled;

}

public double getArea();

public double getPerimeter();

public String toString();

}

public class Rectangle extends Shape

{

protected double width;

protected double length;

public Rectangle()

{

this(2,2);

}

public Rectangle(double width,double length)

{

this.width=width;

this.height=height;

}

**Rectangle class:**

public Rectangle(double width,double length, String color,boolean filled)

{

super(color,filled);

this.width=width;

this.height=height;

}

public double getWidth()

{

return this.width;

}

public void setWidth(double width)

{

this.width=width;

}

public double getlength()

{

return this.length;

}

public void setLength(double length)

{

this.length=length;

}

public double getArea()

{

return this.length\*this.width;

}

public double getPerimeter()

{

return 2\*(this.length+this.width);

}

public String toString()

{

return " Rectangle -" +

" Length " +this.length+

" Width " + this.width+

" Perimeter " +this.getPerimeter()+

" Area is "+this.getArea();

}

}

**Circle class:**

public class Circle extends Shape

{

protected double radius;

public Circle()

{

this(5);

}

public Circle(double radius)

{

this.radius=radius;

}

public Circle(double radius,String color,boolean filled)

{

this.radius=radius;

super(color,filled);

}

public double getRadius()

{

return this.radius;

}

public double setRadius(double radius)

{

this.radius=radius;

}

public double getArea()

{

return 3.14\*radius\*radius;

}

public double getPerimeter()

{

return 2\*3.14\*radius;

}

public String toString()

{

return " Circle -" +

" Radius " + this.radius+

" Perimeter " +this.getPerimeter()+

" Area is "+this.getArea();

}

}

**Square class:**

public class Square extends Rectangle

{

public Square()

{

super(2,2);

}

public Square(double side)

{

super(side,side);

}

public Square(double side,String color,boolean filled)

{

super(side,side,color,filled);

}

public double getSide()

{

return super.getLength;

}

public void setSide(double side)

{

super.length=side;

}

public void setWidth(double side)

{

super.width=side;

}

public void setLength(double side)

{

super.length=side;

}

public String toString()

{

return " Square -" +

" side " + this.getLength+

"length"+this.getLength+

" Width " + this.getLength;

}

}