Name:M.kavitha

RollNo:15L125

Dep:Ece-'A'

JAVA PROGRAMMING

Task:9

Abstraction:

Shape:

```
package org.object;

public abstract class Shape {
	protected String name = "shape";
	protected String colour = "yellow";
	protected boolean filled = false;
	public abstract double Area();
	public Shape() {

	}

	public Shape(String name, String colour, boolean filled) {
		this.name = name;
		this.colour = colour;
		this.filled = filled;
	}

	public void setName(String name) {
		this.name = name;
	}

	public void setColour(String colour) {
		this.colour = colour;
	}

	public void setFilled(Boolean filled) {
		this.filled = filled;
	}

	public String getName() {
		return this.name;
```

```
	}

	public String getColour(String colour) {
		return this.colour;
	}

	public boolean getFilled() {
		return this.filled;
	}

}
```

Circle:

```
package org.object.round;

import org.object.Shape;

public class Circle extends Shape {
	protected double radius = 1.0;
	final private static double PI = 3.14;

	public Circle() {
	}

	public Circle(String name, String colour, boolean filled, double radius) {
		super(name, colour, filled);
		this.radius = radius;

	}


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

	public double getradius() {
		return this.radius;
	}

	public double Area() {
		double area = PI * this.radius * this.radius;
		return area;
	}


}
```

Cylinder:

```
package org.object.round;

import org.object.round.Circle;

public class Cylinder extends Circle {
	protected double height = 1.0;

	public Cylinder() {

	}

	public Cylinder(String name, String colour, boolean filled, double radius, double height) {
		super(name, colour, filled, radius);
		this.height = height;

	}

	public void setHeight(double height) {
		this.height = height;
	}

	public double getHeight() {
		return this.height;
	}

	public double Area() {
		double area = super.Area() * height;
		return area;
	}


}
```

Triangle:

```
package org.object.tri;

import org.object.Shape;

public class Triangle extends Shape {
	private double breath = 1.0;
	private double height = 1.0;

	public Triangle(String name, String colour, boolean filled, double height, double breath) {
		super(name, colour, filled);
		this.breath = breath;
		this.height = height;
```

```
	}

	public void setbreath(double breath) {
		this.breath = breath;
	}

	public double getbreath() {
		return this.breath;
	}

	public void setHeight(double height) {
		this.height = height;
	}

	public double getHeight() {
		return this.height;
	}

	public double Area() {
		double area = (0.5) * (height * breath);
		return area;
	}


}
```

Rectangle:

```
package org.object.square;

import org.object.Shape;

public class Rectangle extends Shape {
	private double length = 1.0;
	private double breath = 1.0;

	public Rectangle(String name, String colour, boolean filled, double length, double breath) {
		super(name, colour, filled);
		this.length = length;
		this.breath = breath;

	}

	public void setbreath(double breath) {
		this.breath = breath;
	}

	public double getbreath() {
		return this.breath;
```

```
	}

	public void setlength(double length) {
		this.breath = breath;
	}

	public double getlength() {
		return this.length;
	}

	public double Area() {
		double area = length * breath;
		return area;
	}
}
```

Square:

```
package org.object.square;

import org.object.Shape;

public class Rectangle extends Shape {
	private double length = 1.0;
	private double breath = 1.0;

	public Rectangle(String name, String colour, boolean filled, double length, double breath) {
		super(name, colour, filled);
		this.length = length;
		this.breath = breath;

	}

	public void setbreath(double breath) {
		this.breath = breath;
	}

	public double getbreath() {
		return this.breath;
	}

	public void setlength(double length) {
		this.breath = breath;
	}

	public double getlength() {
		return this.length;
	}
```

```
        public double Area() {
                double area = length * breath;
                return area;
        }
}
```

Solution:

```
package org.main;
import org.object.Shape;
import org.object.round.Circle;
import org.object.round.Cylinder;
import org.object.square.Rectangle;
import org.object.tri.Triangle;
import org.object.square.Square;

public class Solution{
    public static void main(String arg[]){
       Shape shape[] = new Shape [5];
       shape[0] = new Circle("circle","pinK",true,2.0);
       shape[1] = new Rectangle("rectangle","yellow",true,3,4);
       shape[2] = new Triangle("triangle","white",true,3,4);
       shape[3] = new Cylinder("cylinder","pinK",true,4.0,2.0);
       shape[4] = new Square("square","pinK",true,4);
        System.out.println("AREA OF CIRCLE   :"+shape[0].Area());
        System.out.println("AREA OF RECTANGLE:"+shape[1].Area());
        System.out.println("AREA OF TRIANGLE :"+shape[2].Area());
        System.out.println("AREA OF CYLINDER :"+shape[3].Area());
        System.out.println("AREA OF SQUARE   :"+shape[4].Area());
    }
}
```

output:

```
AREA OF CIRCLE   :12.56
AREA OF RECTANGLE:12.0
AREA OF TRIANGLE :6.0
AREA OF CYLINDER :100.48
AREA OF SQUARE   :16.0
```