Class : Circle

package Program01;

public class Circle extends GeometricObject{

    private double radius;

    Circle(){

    }

    public Circle(double radius) {

        this.radius = radius;

    }

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

        super(color, filled);

        this.radius = radius;

    }

    public double getRadius() {

        return radius;

    }

    public void setRadius(double radius) {

        this.radius = radius;

    }

    @Override

    public double getArea(){

        return Math.PI\*(radius\*radius);

    }

    @Override

    public double getPerimeter() {

        return 2\*Math.PI\*radius;

    }

    public double getDiameter(){

        return 2\*radius;

    }

    @Override

    public String toString() {

        return super.toString()+"Circle [radius=" + radius + "]";

    }

}

Class: GeometricObject

package Program01;

import java.util.Date;

public abstract class GeometricObject implements Comparable<GeometricObject> {

    private String color;

    private boolean filled;

    Date dateCreated;

    protected GeometricObject() {

        dateCreated = new Date();

    }

    protected GeometricObject(String color, boolean filled) {

        this.color = color;

        this.filled = filled;

        this.dateCreated = new Date();

    }

    public String getColor() {

        return color;

    }

    public void setColor(String color) {

        this.color = color;

    }

    public boolean isFilled() {

        return filled;

    }

    public void setFilled(boolean filled) {

        this.filled = filled;

    }

    public Date getDateCreated() {

        return dateCreated;

    }

    @Override

    public int compareTo(GeometricObject o) {

        if (o.getArea() < getArea()) {

            return 1;

        } else if (o.getArea() > getArea()) {

            return -1;

        } else {

            return 0;

        }

    }

    public static GeometricObject max(GeometricObject o1,GeometricObject o2){

            if(o1.compareTo(o2) == 1){

                return o1;

            }

            else if(o1.compareTo(o2) == -1){

                return o2;

            }

            else{

                return o1;

            }

    }

    public abstract double getArea();

    public abstract double getPerimeter();

    @Override

    public String toString() {

        return "GeometricObject [color=" + color + ", dateCreated=" + dateCreated + ", filled=" + filled + "]";

    }

}

Class: Rectangle

package Program01;

public class Rectangle extends GeometricObject{

    private double width;

    private double height;

    Rectangle(){

    }

    public Rectangle(double width, double height) {

        this.width = width;

        this.height = height;

    }

    public Rectangle(String color, boolean filled, double width, double height) {

        super(color, filled);

        this.width = width;

        this.height = height;

    }

    public double getWidth() {

        return width;

    }

    public void setWidth(double width) {

        this.width = width;

    }

    public double getHeight() {

        return height;

    }

    public void setHeight(double height) {

        this.height = height;

    }

    @Override

    public double getArea() {

        return width \* height;

    }

    @Override

    public double getPerimeter() {

        return 2\*(width+height);

    }

    @Override

    public String toString() {

        return super.toString() + "Rectangle [height=" + height + ", width=" + width + "]";

    }

}

Class: Main

package Program01;

import java.util.Scanner;

public class Main {

    public static void main(String[] args) {

        Scanner input = new Scanner(System.in);

        System.out.print("Creating circle 1, input radius:");

        Circle c1 = new Circle(input.nextDouble());

        System.out.print("Creating circle 2, input radius:");

        Circle c2 = new Circle(input.nextDouble());

        System.out.println("------------------------");

        System.out.println("The max circle's radius is "+((Circle)GeometricObject.max(c1, c2)).getRadius());

        System.out.println("========================");

        System.out.print("Creating rectangle 1, input width and height:");

        Rectangle r1 = new Rectangle(input.nextDouble(),input.nextDouble());

        System.out.print("Creating rectangle 2, input width and height:");

        Rectangle r2 = new Rectangle(input.nextDouble(),input.nextDouble());

        System.out.println("------------------------");

        System.out.println("The max rectangle's width and height are "+((Rectangle)GeometricObject.max(r1, r2)).getWidth()+" "+((Rectangle)GeometricObject.max(r1, r2)).getHeight());

        System.out.println("========================");

        input.close();

    }

}

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