Assignment-5(Part:1)

MainFile:

```
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// Batch: AIML-A1
/* Objective: Implement the generic Shapes class as an interface s so that we can
implement concrete classes like circle, triangle, rectangle class from it.*/


package com.College;
import java.util.*;
public class MainFile1 {
    public static void main(String[] args) {
        Scanner sc= new Scanner(System.in);
        System.out.print("Enter value of radius for a Circle: ");
        float rad = sc.nextFloat();
        Circle c=new Circle(rad);
        c.calculteArea();
        c.calculatePerimeter();
        System.out.println("Area of circle:"+c.circleArea+" "+"Circumference of circle:"+c.circlePeri
meter);
        //square
        System.out.print("Enter value of side of a Square: ");
        float side = sc.nextFloat();
        Square s=new Square(side);
        s.calculteArea();
        s.calculatePerimeter();
        System.out.println("Area of Square:"+s.squareArea+" "+"Perimeter of Square: "+s.squarePerimet
er);
        //Rectangle
        System.out.print("Enter value of width of a Rectangle: ");
        float width = sc.nextFloat();
        System.out.println();
        System.out.print("Enter value of length of a Rectangle: ");
        float length = sc.nextFloat();
        Rectangle r=new Rectangle(width,length);
        r.calculteArea();
        r.calculatePerimeter();
        System.out.println("Area of Rectangle:"+r.rectangleArea+" "+"Perimeter of Rectangle: "+r.rect
anglePerimeter);
        //triangle
        System.out.print("Enter value of base of a Triangle: ");
        float base = sc.nextFloat();
        System.out.print("Enter value of height of a Triangle: ");
        float height = sc.nextFloat();
        System.out.print("Enter value of 3 sides of a Triangle: ");
        float side1 = sc.nextFloat();
        float side2 = sc.nextFloat();
        float side3 = sc.nextFloat();
```

```
        Triangle t=new Triangle(base,height,side1,side2,side3);
        t.calculteArea();
        t.calculatePerimeter();
        System.out.println("Area of Triangle:"+t.triangleArea+" "+"Perimeter of Triangle: "+t.triangl
ePerimeter);

    }
}
```

Interface:

```
package com.College;

public interface Shape {
    //all variables inside interface are constant
    float pi=3.14F;
    float calculteArea();
    float calculatePerimeter();
}
```

Circle:

```
package com.College;
import java.util.*;
public class Circle implements Shape{
    Scanner sc= new Scanner(System.in);
    float circleArea,circlePerimeter,rad;
    public Circle(float rad) {
        this.rad=rad;
    }

    @Override
    public float calculteArea() {
        circleArea= (float) (pi*Math.pow(rad,2));
        return circleArea;
    }

    @Override
    public float calculatePerimeter() {
        circlePerimeter=(float)(2*pi*rad);
        return circlePerimeter;
    }
}
```

Rectangle:

```
package com.College;

public class Rectangle implements Shape{
    float rectangleArea,rectanglePerimeter,width,length;
    public Rectangle(float width,float length) {
        this.width=width;
```

```
        this.length=length;
    }

    @Override
    public float calculteArea() {
        rectangleArea= (float) (width*length);
        return rectangleArea;
    }

    @Override
    public float calculatePerimeter() {
        rectanglePerimeter=(float)(2*(length+width));
        return rectanglePerimeter;
    }
}
```

Square:

```
package com.College;

public class Square implements Shape{
    float squareArea,squarePerimeter,side;
    public Square(float side) {
        this.side=side;
    }

    @Override
    public float calculteArea() {
        squareArea= (float) (Math.pow(side,2));
        return squareArea;
    }

    @Override
    public float calculatePerimeter() {
        squarePerimeter=(float)(4*side);
        return squarePerimeter;
    }
}
```

Triangle:

```
package com.College;

public class Triangle implements Shape{

    float triangleArea,trianglePerimeter,base,height,side1,side2,side3;
    public Triangle(float base,float height,float side1,float side2,float side3) {
        this.base=base;
        this.height=height;
        this.side1=side1;
        this.side2=side2;
        this.side3=side3;
    }

    @Override
```

```
    public float calculteArea() {
       triangleArea= (float) (0.5*base*height);
        return triangleArea;
    }

    @Override
    public float calculatePerimeter() {
       trianglePerimeter = (float) (side1 + side2 + side3);
        return trianglePerimeter;
    }
}
```

```
OUTPUT:
"C:\Program Files\Java\jdk-19\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Comm
unity Edition 2022.3.1\lib\idea_rt.jar=62988:C:\Program Files\JetBrains\IntelliJ IDEA Community Editi
on 2022.3.1\bin" -Dfile.encoding=UTF-8 -Dsun.stdout.encoding=UTF-8 -Dsun.stderr.encoding=UTF-8 -class
path C:\Users\ANIKET\IdeaProjects\JavaIntel\out\production\JavaIntel com.College.MainFile1


Enter value of radius for a Circle: 5
Area of circle:78.5 Circumference of circle:31.400002
Enter value of side of a Square: 4
Area of Square:16.0 Perimeter of Square: 16.0
Enter value of width of a Rectangle: 6

Enter value of length of a Rectangle: 7
Area of Rectangle:42.0 Perimeter of Rectangle: 26.0
Enter value of base of a Triangle: 8
Enter value of height of a Triangle: 4
Enter value of 3 sides of a Triangle: 6 12 10
Area of Triangle:16.0 Perimeter of Triangle: 28.0

Process finished with exit code 0
```

java_Assignments/Assignment_5 at main · AniketSingh1m/java_Assignments

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https://github.com/AniketSingh1m/java_Assignments/tree/main/Assignment_5

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