15/12/21

EXPERIMENT NO: 4
Abstraction.

Aim

Write a java program to creati an abstract class named shape that contains an empty method named numberofSides(). Bovide three classes named Rectangle Tsiangle and Hexagon such that each one of the classes extends class Shape. Each one of the classes contains only the member method numberofSides() that shows the number of sides in the given geometrical structures Calculate area of these shapes using appropriate method.

Input

Length of the sides of given polygon.

Expected output.

Calculate and display the area of the respective polygon.

Processing

Implementation of abstract class and method. Accept input from the user and print the area.

Algorithm.

Start

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abstract class Shapes

1. Declass abstract method numberofSides and area.

Triangle inherits class Shape.

1. Override numberofsidsand print- 3
2. Overside area
   2.1 Input Sides
   2.2 Calaulate area and display

Rectangle inherits class Shape.

1. Override numberofSides and print-3
2. Override area.
   2.1 Input sides
   2.2 Calaulate area and display

Hexagon inherits dass Shape

1. Overide numberofSides and print 6
2. Overide area
   2.1 Input sides
   2.2 Calaulate area and display

Result

Output is obtained

Output

```
Number of sides of Rectangle is : 4
Enter length : 5
Enter breadth : 4
Area of rectangle : 20

Number of sides of triangle is : 3
Enter side : 7
Area of triangle : 3.031

Number of sides of Hexagon is : 6
Enter length : 9
Area of Hexagon : 23.381
```

```
import java.util.*;
abstract class Shapes
{
 abstract void no();
 abstract void area();
}

class Rectangle extends Shapes
{
 void no()
 {
   System.out.println("\nNumber of sides of Rectangle is : 4");
 }
 void area()
 {
    Scanner sc = new Scanner(System.in);
    int l,b;
    System.out.print("Enter length : ");
    l= sc.nextInt();
    System.out.print("Enter breadth : ");
    b= sc.nextInt();
    System.out.println("Area of Rectangle : "+l*b);
 }
}

class Triangle extends Shapes
{
 void no()
  {
   System.out.println("\nNumber of sides of Triangle is : 3");
   }
void area()
```

```
    Scanner sc = new Scanner(
float l;
System.out.print("Enter side : ");
l= sc.nextInt();
System.out.println("Area of Triangle : "+0.433*l);

}


}
class Hexagon extends Shapes
{
void no()
{
    System.out.println("\nNumber of sides of Hexagon is : 6");
}
void area()
{
    Scanner sc = new Scanner(System.in);
    float l;
    System.out.print("Enter length : ");
    l= sc.nextInt();
    System.out.println("Area of Hexagon : "+2.598*l);



public class abs

{
public static void main(String args[])
{


 Shapes s;
 s=new Rectangle ();
 s.no();
 s.area();
 s=new Triangle();
 s.no();
 s.area();
 s=new Hexagon();
 s.no();
 s.area();
}
```