Ex. No. **FINDING AREA OF DIFFERENT SHAPES USING ABSTRACT CLASS**

Date:

Problem:

Write a Java Program to create an abstract class named Shape that contains two integers and an empty method named print Area(). Provide three classes named Rectangle, Triangle and Circle such that each one of the classes extends the class Shape. Each one of the classes contains only the method print Area () that prints the area of the given shape.

Aim:

To write a JAVA program for finding area of different shapes using abstract class concept.

Algorithm:

Step 1:Start.
Step 2: Create an abstract class named Shape that contains two integers and an empty method named print Area()
Step 3:Get the value of length and breadth of rectangle.
Step 4:Calculate the area of rectangle using area=length * breadth
Step 5:Print the area of rectangle.
Step 6:Get the value of length anf height of triangle.
Step 7:Calculate the area of triangle using area = 0.5 * length * height
Step 8:Print the area of circle.
Step 9:Get the value of radius.
Step 10:Calculate the area of circle using area =Math.PI * radius * radius.
Step 11:Print the area of circle.
Step 12:Stop.

Program:

```
import java.util.*;
abstract class Shape
{
	int length = 0;
	int height = 0;
	public abstract void printArea();
}
class Rectangle extends Shape
{
	int area = 0;
	public void printArea()
	{
	System.out.println("\n   Rectangle\n ---------- ");
	Scanner input = new Scanner(System.in);
	System.out.printf("Enter Length of Rectangle : ");
	this.length = input.nextInt();
	System.out.printf("Enter Breadth of Rectangle : ");
	this.height = input.nextInt();
	this.area = this.length*this.height;
	System.out.println("Area of the Rectangle is : " + this.area);
	}
}
class Triangle extends Shape
{
	double area = 0.0;
	public void printArea()
	{
	System.out.println("\n   Triangle\n --------- ");
	Scanner input = new Scanner(System.in);
	System.out.printf("Enter Length of Triangle : ");
	this.length = input.nextInt();
	System.out.printf("Enter Height of Triangle : ");
	this.height = input.nextInt();
	this.area = 0.5 * this.length * this.height;
	System.out.println("Area of the Triangle is : " + this.area);
	}
}
class Circle extends Shape
{
	double area = 0.0;
	public void printArea()
	{
	System.out.println("\n   Circle\n--------");
	Scanner input = new Scanner(System.in);
	System.out.printf("Enter Radius of Circle : ");
	this.length = input.nextInt();
	this.area = Math.PI * this.length * this.length;
	System.out.println("Area of the Circle is : "+this.area);
```

```
        }
}
class Absclass
{
public static void main(String[] args)
{
        System.out.println("\n----------\nFinding Area\n ---------- ");
        Shape rt = new Rectangle();
        rt.printArea();
        Shape tr = new Triangle();
        tr.printArea();
        Shape cr = new Circle();
        cr.printArea();
}
}
```

Viva Questions:

1.How will you Import the java packages?
2. How will you Create an abstract class name?
3. How will you Create a class Rectangle, Triangle, Circle?
4. How will you get the input during runtime?
5. How will you Create object for a class in memory?

Result:

Thus the JAVA program for finding area of different shapes using abstract class concept was written, executed and the output was verified successfully.