

LAB PROGRAM 4:

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

CODE:

Date 9/12/22
Page 11

Lab Program 4

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

```
import java.util.Scanner;
import java.lang.Math.*;
abstract class Shape
{
    int length, breadth;
    Scanner ss = new Scanner(System.in);
    abstract void printArea();
}
class Rectangle extends Shape
{
    void printArea()
    {
        System.out.println("Enter length and breadth : ");
        length = ss.nextInt();
        breadth = ss.nextInt();
        int area = length * breadth;
        System.out.println("The area of rectangle is :\n" + area);
    }
}
```

```
class Triangle extends Shape
{
    void printArea() {
        System.out.println("Enter base
                           length and height : ");
        length = ss.nextInt();
        breadth = ss.nextInt();
        int area = (length * breadth) / 2;
        System.out.println("The area of
                           Triangle is: " + area);
    }
}
```

```
class Circle extends Shape
{
    void printArea() {
        System.out.println("Enter the
                           radius of circle : ");
        length = ss.nextInt();
        double area = Math.PI * (length *
                                  length);
        System.out.println("The area of
                           circle is : " + area);
    }
}
```

```
class S-main
{
    public static void main(String args[])
    {
        int ch;
        Scanner scan = new Scanner(System.in);
        System.out.println("ENTER MENU\n
                           +Rect+ Select Shape\n
                           1. Rectangle\n
                           2. Triangle\n
                           3. Circle\n");
    }
}
```

```
ch = scan.nextInt();
switch(ch)
{
    case 1: Rectangle r1 = new Rectangle();
              r1.printArea();
              break;
    case 2: Triangle t1 = new Triangle();
              t1.printArea();
              break;
    case 3: Circle c1 = new Circle();
              c1.printArea();
              break;
    default: System.out.println("Invalid input"); Try Again!";
}
```

OUTPUT:

① MENU

Select Shape

- 1. Rectangle
- 2. Triangle
- 3. Circle

1

Enter length and breadth

10 20

The area of Rectangle is: 200

② MENU

Select Shape

- 1. Rectangle
- 2. Triangle
- 3. Circle

2

Enter Base length and height:

10 20

The area of Triangle is: 100

③ MENU

Select Shape

1. Rec Rectangle
2. Triangle
3. Circle

3

Enter the ^{radius} of circle

4

The area of circle is: 50.2654824

④ MENU

Select Shape

1. Rectangle
2. Triangle
3. Circle

5

Invalid input, Try Again!

10/09/2022

OUTPUT:

```
C:\ Command Prompt - java s_main
Microsoft Windows [Version 10.0.22000.1219]
(c) Microsoft Corporation. All rights reserved.

C:\Users\dhiks>cd C:\Users\dhiks\Desktop

C:\Users\dhiks\Desktop>javac Lab4_java.java

C:\Users\dhiks\Desktop>java s_main
MENU
Select Shape
1.Rectangle
2.Triangle
3.Circle
1
Enter length and breadth:
10 20
The area of rectangle is:
200
MENU
Select Shape
1.Rectangle
2.Triangle
3.Circle
2
Enter Base length and Height:
10 20
The area of triangle is:
100
MENU
Select Shape
1.Rectangle
2.Triangle
3.Circle
3
Enter radius of circle:
4
The area of circle is:
50.26548245743669
MENU
Select Shape
1.Rectangle
2.Triangle
3.Circle
5
Invalid Input, Try Again!
```