

## 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:

9-12-20

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.

```
import java.util.Scanner;

abstract class Shape {
    int x, y;
    double area;
    abstract void printArea();
}

class Rectangle extends Shape {
    void printArea() {
        area = x * y;
        System.out.println("Area of the Rectangle is: " + area);
    }
}
```

Triangle

```
class Triangle extends Shape {
    void printArea() {
        area = 0.5 * x * y;
        System.out.println("Area of the Triangle is: " + area);
    }
}

class Circle extends Shape {
    void printArea() {
        area = 3.1415 * x * x;
        System.out.println("Area of the Circle is: " + area);
    }
}

class Area {
    public static void main(String[] args) {
        int choice;
        Scanner s = new Scanner(System.in);
        System.out.println("1. Rectangle 2. Triangle 3. Circle");
        choice = s.nextInt();
        switch (choice) {
            case 1:
                Rectangle r1 = new Rectangle();
                System.out.println("Enter the length and width of the Rectangle: ");
                r1.x = s.nextInt();
                r1.y = s.nextInt();
                r1.printArea();
            case 2:
                Triangle t1 = new Triangle();
                System.out.println("Enter the base and height of the Triangle: ");
                t1.x = s.nextInt();
                t1.y = s.nextInt();
                t1.printArea();
            case 3:
                Circle c1 = new Circle();
                System.out.println("Enter the radius of the Circle: ");
                c1.x = s.nextInt();
                c1.printArea();
        }
    }
}
```

x1. y = s.nextInt();

x1.printarea();

break;

case 2:

Triangle t1 = new Triangle();

System.out.println("Enter the height and base of the triangle:");

t1.x = s.nextInt();

t1.y = s.nextInt();

t1.printarea();

break;

case 3:

Circle c1 = new Circle();

System.out.println("Enter the radius of the circle:");

c1.x = s.nextInt();

c1.printarea();

break;

default: System.out.println("Enter a valid input!");

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}

}

}

## Output:

```
Command Prompt
Microsoft Windows [Version 10.0.19045.2251]
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C:\Users\bmsce>cd C:\Users\bmsce\Desktop\cs014

C:\Users\bmsce\Desktop\cs014>javac Main.java

C:\Users\bmsce\Desktop\cs014>java Area

1:Rectangle
2:Triangle
3:Circle
1
Enter the length and width of the rectangle:
20
40
Area of the Rectangle is= 800.0

C:\Users\bmsce\Desktop\cs014>java Area

1:Rectangle
2:Triangle
3:Circle
2
Enter the height and base of the triangle:
10
20
Area of the Triangle is= 100.0

C:\Users\bmsce\Desktop\cs014>java Area

1:Rectangle
2:Triangle
3:Circle
3
Enter the radius of the Circle:
20
Area of the Circle is= 1256.6000000000001

C:\Users\bmsce\Desktop\cs014>
```