WEEK 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.

Source Code:

```
abstract class Shape {     int
dim1;     int dim2;
       abstract void printArea();
}  class Rectangle extends Shape {     public Rectangle(int
length, int width) {         this.dim1 = length;         this.dim2 =
width;
    }
        void printArea() {
       int area = dim1 * dim2;
       System.out.println("Area of Rectangle: " + area);
    }
}
class Triangle extends Shape {
    public Triangle(int base, int height) {         this.dim1 =
base;         this.dim2 = height;
    }      void printArea() {
       double area = 0.5 * dim1 * dim2;
       System.out.println("Area of Triangle: " + area);
    }
}  class Circle extends Shape {
```

```
    public Circle(int radius) {        this.dim1 =
radius;        this.dim2 = 0;
    }
        void printArea() {
        double area = Math.PI * dim1 * dim1;
        System.out.println("Area of Circle: " + area);
    }
}
public class Main {
    public static void main(String[] args) {        Shape rectangle =
new Rectangle(8,9);
        Shape triangle = new Triangle(8, 6);
        Shape circle = new Circle(14);
         rectangle.printArea();
triangle.printArea();
circle.printArea();
    }
}
```

OUTPUT:

```
Area of Rectangle: 72
Area of Triangle: 24.0
Area of Circle: 615.7521601035994
PS C:\Users\satis\OneDrive\Documents\ooj_lab>
```

OBSERVATION:

Pgm: 4

24/10/24

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 contain only the method printArea() that prints the area of the given shape.

```
class Main{
    public static void main(String[] args){
    Scanner sc = new Scanner(System.in);
    System.out.print("choose a shape to calculate
                the area: (1: rectangle, 2: triangle,
                        3: circle): ");
    int choice = sc.nextInt();
    Shape shape = null;
    switch(choice){
    case 1:
    System.out.println("Enter width of the rectangle:");
    int width = sc.nextInt();
    System.out.println("Enter height of the rectangle");
    int height = sc.nextInt();
    shape = new Rectangle(width, height);
    break;

    case 2:
    System.out.println("Enter base of the triangle:
```

```
        int base=sc.nextInt();
        System.out.println("Enter height of the Triangle:");
        int height=sc.nextInt();
        shape=new Triangle(base, height);
        break;
      case 3:
        System.out.println("Enter radius of the circle:");
        int radius=sc.nextInt();
        shape=new Circle(radius);
        break;
      default
        System.out.println("Invalid choice");
        break;
    }
    if(shape!=null){
        shape.printArea();
    }
    scanner.close();
}
```

Choose a shape to calculate the area (1: Rectangle, 2: Triangle, 3: Circle): 1

Enter width of the rectangle: 12
Enter height of the rectangle: 44
Area of rectangle: 528