

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

```

Written code and output:

Lab-4.
4) Develop a Java program to create an empty method that contains two integers and an empty method. Provide 3 classes named Rectangle, Triangle, Circle such that one of it extends class shape.

```
import java.util.Scanner;

abstract class shape {
    int dimension1;
    int dimension2;

    public shape(int dim1, int dim2) {
        dimension1 = dim1;
        dimension2 = dim2;
    }

    public abstract void printArea();
}

class rectangle extends shape {
    public rectangle(int length, int width) {
        super(length, width);
    }

    public void printArea() {
        int area = dimension1 * dimension2;
        System.out.println("Area of rectangle" + Area);
    }
}

class triangle extends shape {
    public triangle(int base, int height) {
        super(base, height);
    }

    public void printArea() {
        int area = dimension1 * dimension2 * 0.5;
        System.out.println("Area of triangle" + Area);
    }
}

class Circle extends shape {
    public circle(int radius) {
        super(radius, 0);
    }
}
```

```

public void printArea() {
    double area = Math.PI * dimension1 * dimension2;
    System.out.println("Area of circle" + Area);
}
}

public class Main {
    public static void main(String args[]) {
        Shape rectangle = new rectangle(10, 5);
        Shape triangle = new triangle(8, 6);
        Shape circle = new circle(7);
        rectangle.printArea();
        triangle.printArea();
        circle.printArea();
    }
}

```

Output

Area of rectangle : 50

Area of Triangle : 24

Area of circle : 153.9380400...

Observed
 ✓
 07/11/24