Lab programme 4

```
import java.util.Scanner;

abstract class Shape {
    int dimension1;
    int dimension2;

    public Shape(int dim1, int dim2) {
        this.dimension1 = dim1;
        this.dimension2 = dim2;
    }

    abstract void printArea();
}

class Rectangle extends Shape {
    public Rectangle(int length, int width) {
        super(length, width);
    }

    @Override
    void printArea() {
        int area = dimension1 * dimension2;
        System.out.println("Rectangle Area: " + area);
    }
}

class Triangle extends Shape {
    public Triangle(int base, int height) {
        super(base, height);
    }

    @Override
    void printArea() {
        double area = 0.5 * dimension1 * dimension2;
        System.out.println("Triangle Area: " + area);
    }
}

class Circle extends Shape {
    public Circle(int radius) {
        super(radius, 0);
```

```
    }

    @Override
    void printArea() {
        double area = Math.PI * dimension1 * dimension1;
        System.out.println("Circle Area: " + area);
    }
}

public class Main {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        System.out.println("Choose a shape to calculate area:");
        System.out.println("1. Rectangle");
        System.out.println("2. Triangle");
        System.out.println("3. Circle");
        int choice = scanner.nextInt();

        switch (choice) {
            case 1:
                System.out.print("Enter length of Rectangle: ");
                int length = scanner.nextInt();
                System.out.print("Enter width of Rectangle: ");
                int width = scanner.nextInt();
                Rectangle rectangle = new Rectangle(length, width);
                rectangle.printArea();
                break;

            case 2:
                System.out.print("Enter base of Triangle: ");
                int base = scanner.nextInt();
                System.out.print("Enter height of Triangle: ");
                int height = scanner.nextInt();
                Triangle triangle = new Triangle(base, height);
                triangle.printArea();
                break;

            case 3:
                System.out.print("Enter radius of Circle: ");
                int radius = scanner.nextInt();
                Circle circle = new Circle(radius);
                circle.printArea();
                break;
```

```
            default:
                System.out.println("Invalid choice. Please choose 1, 2, or 3.");
                break;
        }

        scanner.close();
    }
}
```

OUTPUT

Choose a shape to calculate area:

1. Rectangle
2. Triangle
3. Circle
   1
   Enter length of Rectangle: 10
   Enter width of Rectangle: 20
   Rectangle Area: 200
   Choose a shape to calculate area:

1. Rectangle
2. Triangle
3. Circle
   2
   Enter base of Triangle: 10
   Enter height of Triangle: 15
   Triangle Area: 75.0
   Choose a shape to calculate area:

1. Rectangle
2. Triangle
3. Circle
   3
   Enter radius of Circle: 7
   Circle Area: 153.93804002589985
   Choose a shape to calculate area:

1. Rectangle
2. Triangle

3. Circle
   4
   Invalid choice. Please choose 1, 2, or 3.

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LAB PROGRAMME-4

Q) Develop Java Programme to create an abstract class named shape contains two integers and empty method Provide 3 classes extend shape

```
import java.util.Scanner;
abstract class Shape {
    Scanner sc = new Scanner(System.in);
    double dim1;
    double dim2;
    abstract void printArea();
}

class Rectangle extends Shape
{
    void printArea()
    {
        System.out.println("Enter the length & breadth");
        dim1 = sc.nextDouble();
        dim2 = sc.nextDouble();
        System.out.println("Area is :" + (dim1 * dim2));
    }
}

class Triangle extends Shape
{   void printArea()
    {   System.out.println("Enter base and height");
        dim1 = sc.nextDouble();
        dim2 = sc.nextDouble();
```

```
        System.out.println("Area is"+(0.5*dim1*dim2));
    }

}

Class Circle extends Shape
{
    void printArea()
    {
        System.out.println("Enter radius:");
        dim1 = sc.nextDouble();
        System.out.println("Area :"+((22/7)*dim1*dim1));
    }

}

class main
{
    public static void main(String[] args) {
    System.out.println("Enter your choice");
    Scanner sc= new Scanner(System.in);
    l1: while(true)
    {   System.out.println("choose one of the
option \n 1. Rectangle \n 2. Triangle \n 3. Circle \n
4. exit the programme");
    int choice = sc.nextInt();
```

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```
switch (choice)
{
    case 1:
        Rectange rt = new Rectangle ();
        rt.printArea ();
        break;
    case 2:
        Triangle tr = new Triangle ();
        tr.printArea ();
        break;
    case 3:
        circle cl = new Circle();
        cl.printArea();
        break;
    case 4:
        System.out.println ("Exiting");
        break ll;

}

}

}

}
```

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Output:

Enter your choice

choose your option

1. Rectangle

2. Triangle

3. circle

4. exit programme

1

enter length and breadth of rectangle

122

123

Area is 15006.0

choose one of the option

1. Rectangle

2. Triangle

3. Circle

4. exit

3

Area for circle : 44652.0

choose one of the option

1. Rectangle

2. Triangle

3. circle

4. exit

4

exiting

24/10/24