Lab Prgm: 4

WAP to create an abstract class called 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 the lengths and breadth");
        length = ss.nextInt();
        breadth = ss.nextInt();
        int area = length * breadth;
        System.out.println("Area of rectangle = "+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("Area of the triangle = "+ area);
    }
}

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

class Shape_Main
{
    public static void main(String args[])
    {
        int ch;
        Scanner ss = new Scanner(System.in);
        System.out.println("Select Shape → 1. Rectangle \n 2. Triangle \n
                                3. Circle:\n");
```

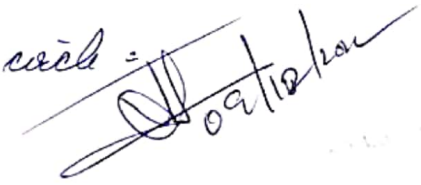
```
Area ch=sl.nextInt();
switch(ch)
{
case 1: Rectangle r= new Rectangle();
        r.printArea();
        break;
case 2: Triangle t= new Triangle();
        t.printArea();
        break;
case 3: Circle c = new Circle();
        c.printArea();
        break;
default: System.out.println("Invalid Input");
}
}
}
```

Output

```
Select shape
1. Rectangle
2. Triangle
3. Circle
1
Enter length and breadth
10 20
Area of Rectangle= 200
```

② Select Shape
1. Rectangle
2. Triangle
3. Circle
2
Enter base length and height..
20 20
Area of triangle =
200

③ Select Shape
1. Rectangle
2. Triangle
3. Circle
3.
Enter the radius:
10
Area of the circle =
314



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```
}

class Circle extends Shape
{
        Scanner s=new Scanner(System.in);
        void printArea()
                {
                        System.out.println("Enter radius of Circle");
                        h=s.nextInt();
                        System.out.println("Area of Circle is "+(Math.PI*(h*h)));
                        }
                Circle(){}
}


class Lab4
{
public static void main(String xx[])
{
        Scanner s=new Scanner(System.in);
        System.out.println("\n\nSelect shape-->1.Rectangle  2. Triangle  3.Circle");
        int ch=s.nextInt();
        switch(ch)
        {
        case 1: Rectangle r=new Rectangle();
                 r.printArea();
                break;
        case 2:Triangle t=new Triangle();
                t.printArea();break;
        case 3:Circle c=new Circle();
                c.printArea();break;
        default:System.out.println("Invalid input");
}
}
}
```

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```
C:\Users\bmsce\Desktop\Aryan>java Lab4


Select shape-->1.Rectangle  2. Triangle  3.Circle
1
Enter height and width of rectangle
20
25
Area of Rectangle is 500

C:\Users\bmsce\Desktop\Aryan>java Lab4


Select shape-->1.Rectangle  2. Triangle  3.Circle
2
Enter height and base of rectangle
20 30
Area of Trianle is 300.0

C:\Users\bmsce\Desktop\Aryan>java Lab4


Select shape-->1.Rectangle  2. Triangle  3.Circle
3
Enter radius of Circle
25
Area of Circle is 1963.4954084936207

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