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:

```
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, wid
        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 choos
        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
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.
```

OBSERVATION:

```
2) Lab program 4 195-16 16 hoter about about
 Develop a Java program to create an abstract
class named shape that contains two integers
and an empty method named point Area ().

Provide three classes named Rectangle, Towards
 and circle such that each one of the classes
extends the class shape. Each one of the classes
contain only the method front Avacs that prints
 the area of the given shape.
                                 reliable class points
 import java. util. * >
abstract class shape 1
       Scanner Sc= new Scanner (System . Pr.);
       int side 1;
       ind sided; alphatus 1000 toos
       abstract void printarea ();
class sectangle extends shape 1
void print Arua () L
           sout ("Enter length and breadth:");
            side1 = sc. nextInt();
            Side 2 = Sc. next Int ();
           Sout (" Area of Rutangle" + (side 1 * side 2));
            to partici bruse of
class topangle extends shape t
               system. out pointln ("Enter base and Height:)
                side 1 = sc. next Int ();
                 side = sc. nent (1);
              Sout (" Area of Triangle: "+(0.5+sidursmus);
```

```
world printared () &
      sout ("Enter Radius of arcle: ").
       side 1 - sc. next Int ();
              sout (" Brea of wicle: "+ (3.1445ide 14574)
   Public class print 1
                  static void main (string [] args).
          Public
              Sout (" Enter Shape of your Choice: ");
Scanner sc = revo Scanner ( System.in);
              while (true) !
                  soud [" 1. Rutangle In 2. Triangle in
                    3. Circle In 4. Exit "'s
                    int choice = sc. rent Int ();
                    switch (charce) 1.
                         case 1:
                         rectangle ot = new rectangle ();
ot. print Aua ();
  natry and breadth!")
                         breaks
1.5 sectionalis + (side side side si
                         tolangle t= new tolangle ();
                         t. proint Area ();
                          preak;
                         Case 3:
                         Circle ( = new Circle ():
                         C. proint Area ():
renter base and
                         break;
                        case 4:
                Sout Con Exiting the program.
                     System ent (0);
```

```
entire shape of your choice:
  1. Rectargle
  2. Triangle
  3. circle
  4. Ext
 Enter length and Breadth:
  Alua of Rictangle : 8
  1. Rutangle
  2. Triangle.
  3. circle
 Tan Exet.
  Enter base and Height:
 Mea of Troiangle: 5.0
  4. Rectangle rul askab ut winds sin more
  2. Porangle war you at son at bear not
   3. · Circle 17 at about the maringak read
 on the swit
            order to actions
    a) Burge dapath them mustomer 1980:1811
                      explain othe balance
   1 Rectangle
   2. Triangle
                      3 Display the balance
    Circle
           a) compute and deposit interest
@ Permit withdrawal and supporte the palance
   if aliestany and upphale balance. I am
```