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

A)

```
import java.util.Scanner;
abstract class Shape
{   int a,b;
    abstract void printArea();
    public Shape(int a, int b)
    {   this.a = a;
        this.b = b;
    }
}

class Rectangle extends Shape
{   public Rectangle(int a, int b)
    {   super(a, b);
    }

void printArea()
{
    System.out.println(" Area of rectangle : "+(a*b));
}

class Triangle extends Shape
{   public Triangle(int a, int b)
    {   super(a, b);
    }
    void printArea()
    {   System.out.println("Area of triangle : "+(a*b));
```

a=3
b=4

015

```
}
}

class Circle extends Shape
  {
     public Circle(int a, int b)
     {  super(a, b)
        }
  void printArea()
     { System.out.println(" Area of Circle :" +(3.142*a*b));
  }
}

class Prog5 {

public static void main(String[] args)
  {
    Scanner sc = new Scanner(System.in);
    System.out.println(" Enter length of rectangle: ");
    int l_rec = sc.nextInt();
    System.out.println(" Enter breadth of rectangle :");
    int b_rec = sc.nextInt();

    System.out.println(" Enter height of triangle :");
    int l_tri = sc.nextInt();
    System.out.println(" Enter base of triangle :");
    int b_tri = sc.nextInt();

    System.out.println(" Enter radius of circle :");
    int r_cir = sc.nextInt();

    Rectangle r = new Rectangle(l_rec, b_rec);
    Triangle t = new Triangle(l_tri, b_tri);
    Circle c = new Circle(r_cir, r_cir);
    System.out.println(" ---------");
```

```
r.printArea();
t.printArea();
c.printArea();
}
}
```

Shape - Notepad

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```
import java.util.Scanner;

abstract class Shape
{
   int a;
   int b;
   abstract void printArea();

   public Shape(int a, int b) {
      this.a = a;
      this.b = b;
   }
}

class Rectangle extends Shape
{
   public Rectangle(int a, int b) {
      super(a, b);
   }

   void printArea()
   {
      System.out.println("Area of rectangle:"+(a*b));
   }
}

class Triangle extends Shape
{
   public Triangle(int a, int b) {
      super(a, b);
```

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Shape - Notepad

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```
   public Triangle(int a, int b) {
      super(a, b);
   }

   void printArea() {
      System.out.println("Area of triangle:"+(.2*a*b));
   }
}

class Circle extends Shape
{
   public Circle(int a, int b) {
      super(a, b);
   }

   void printArea() {
      System.out.println("Area of Circle:"+(3.142*a*b));
   }
}

class Prog5 {

   public static void main(String[] args) {
      Scanner sc = new Scanner(System.in);
      System.out.print("Enter length of rectangle:");
      int l_rec = sc.nextInt();
      System.out.print("Enter breadth of rectangle:");
      int b_rec = sc.nextInt();

      System.out.print("Enter height of triangle:");
```

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Shape - Notepad

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```
    }
}

class Prog5 {

    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter length of rectangle:");
        int l_rec = sc.nextInt();
        System.out.print("Enter breadth of rectangle:");
        int b_rec = sc.nextInt();

        System.out.print("Enter height of triangle:");
        int l_tri = sc.nextInt();
        System.out.print("Enter base of triangle:");
        int b_tri = sc.nextInt();

        System.out.print("Enter radius of circle:");
        int r_cir = sc.nextInt();

        Rectangle r = new Rectangle(l_rec,b_rec);
        Triangle t = new Triangle(l_tri,b_tri);
        Circle c = new Circle(r_cir,r_cir);
        System.out.println("----------");
        r.printArea();
        t.printArea();
        c.printArea();
    }
}
```

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Command Prompt

```
Microsoft Windows [Version 10.0.18363.1139]
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C:\Users\sohan>cd C:\Users\sohan\Desktop\Java Programs\Shape

C:\Users\sohan\Desktop\Java Programs\Shape>javac Prog5.java

C:\Users\sohan\Desktop\Java Programs\Shape>java Prog5
Enter length of rectangle:10
Enter breadth of rectangle:5
Enter height of triangle:6
Enter base of triangle:3
Enter radius of circle:7
---------------
Area of rectangle:50
Area of triangle:18
Area of Circle:153.958

C:\Users\sohan\Desktop\Java Programs\Shape>
```