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.

```
import java.util.Scanner;
abstract class shape{
   double a,b;
   abstract void printArea();
}

class rectangle extends shape{
   void getdata(double x,double y){
      a=x;
      b=y;
   }

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

```
class triangle extends shape{
   void getdata(double x,double y){
      a=x;
      b=y;
   }

   void printArea(){
      double area = 0.5*a*b;
      System.out.println("Area of triangle = " + area);
   }
}

class circle extends shape{
   void getdata(double x){
      a=x;
   }

   void printArea(){
      double area=3.14*a*a;
      System.out.println("Area of circle =" + area);
   }
```

```
}

public class Main
{
   public static void main(String args[]) {
      Scanner scan = new Scanner(System.in);
      int ch;
      shape si;
      rectangle r = new rectangle();
      triangle t = new triangle();
      circle c = new circle();
      System.out.print("\n1.Rectangle\n2. Triangle\n3.
Circle\nEnter your choice: ");
      ch = scan.nextInt();
      switch(ch){
         case 1: System.out.println("Enter length and breadth:
");
               double l = scan.nextDouble();
               double b = scan.nextDouble();
               r.getdata(l,b);
               r.printArea();
               break;
```

```
        case 2: System.out.println("Enter base and height: ");
                double b1 = scan.nextDouble();
                double h = scan.nextDouble();
                t.getdata(b1,h);
                t.printArea();
                break;

        case 3: System.out.println("Enter radius: ");
                double r1 = scan.nextDouble();
                c.getdata(r1);
                c.printArea();
                break;

        default: System.out.println("Invalid Input");
      }
   }
}
```

Output:

```
1.Rectangle
2. Triangle
3. Circle
Enter your choice: 1
Enter length and breadth:
5 4
Area of rectangle = 20.0
```

```
1.Rectangle
2. Triangle
3. Circle
Enter your choice: 2
Enter base and height:
20 40
Area of triangle = 400.0
```

```
1.Rectangle
2. Triangle
3. Circle
Enter your choice: 3
Enter radius:
10 20
Area of circle =314.0
```

```
1.Rectangle
2. Triangle
3. Circle
Enter your choice: 4
Invalid Input
```