PROGRAM 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.

CODE:

```java
import java.util.Scanner;
abstract class shape
{
 shape(){}
 int h,b;
 abstract void printArea();
}
  class rectangle extends shape
  {
        Scanner s=new Scanner(System.in);
        void printArea()
        {
         System.out.println("Enter height and width of rectangle");
         h=s.nextInt();
         b=s.nextInt();
         System.out.println("Area of Rectangle is "+b*h);
        }
         rectangle(){}
  }


  class triangle extends shape
   {
        Scanner s=new Scanner(System.in);
        void printArea()
     {
        System.out.println("Enter height and base of triangle");
        h=s.nextInt();
        b=s.nextInt();
```

```java
        System.out.println("Area of Triangle is "+0.5*b*h);
      }
       triangle(){}
  }

 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 "+3.14*h*h);
       }
        circle(){}
  }


class main
 {
   public static void main(String xx[])
    {
        rectangle r=new rectangle();
        r.printArea();
        triangle t=new triangle();
        t.printArea();
        circle c=new circle();
        c.printArea();
     }
 }
```

OBSERVATION:

Abstract class

```java
import java.util.Scanner;
abstract class shape
{
  shape (){}
  int h,b;
  abstract void print area ();
}

class rectangle extends shape
{
  Scanner s = new Scanner (system.in);
  void print area ()
  {
    System.out.Println (" Enter hught & width of rectangle");
    h = s.nextInt ();
    b = s.nextInt ();
    System.out.Println (" Area of rectangle is " + b*h);
  }
  rectangle (){}
}

Class triangle extends shape
{
  Scanner s = new scanner (system.in);
  void print area()
  {
    System. out. Println ("Enter the hught & base of triangle");
    h = s.nextInt();
    b = s.nextInt();
    System. out. Println ("Area of triangle is " + 0.5*b*h);
  }
  triangle (){}
}

Class circle extends shape
{
  Scanner s = new Scanner (system.in);
  void printarea ()
  {
    System.out. Println ("Enter the radius of circle");
    h = s.nextInt();
    System. out. Println ("Area of circle" + 3.14 *h*h);
  }
  circle (){}
}

class main
{
  Public Static void main (string xx[])
  {
    rectangle r = new rectangle ();
    r. Print area ();

    triangle t = new triangle ();
    t. Print area ();
    circle c = new circle ();
    c. Print area();
  }
}
```

Output:-

```
Enter height and width of rectangle
80
30
Area of Rectangle is 600

Enter hught and base of triangle
80
80
Area of Triangle is 300

Enter radius of circle
20
Area of circle is 1956
```

OUTPUT:

```
Command Prompt                                                                    —  □  ×

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C:\Users\bmsce>cd C:\Users\bmsce\Desktop\1BM21CS065

C:\Users\bmsce\Desktop\1BM21CS065>set path="C:\Program Files\Java\jdk1.8.0_201\bin"

C:\Users\bmsce\Desktop\1BM21CS065>javac shape.java

C:\Users\bmsce\Desktop\1BM21CS065>java main
Enter height and width of rectangle
20
30
Area of Rectangle is 600
Enter height and base of triangle
20
30
Area of Triangle is 300.0
Enter radius of Circle
20
Area of Circle is 1256.0

C:\Users\bmsce\Desktop\1BM21CS065>
```