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**Class:** 3A

**Lab 3 Question:** Develop a Java program to create an abstract class named shape that contains two integers and an empty method name 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 contains only the method print area that prints the shape of the given shape.

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## Program:

### Abstract Class

```
import java.util.Scanner;
```

```
class InputScanner {
```

```
    Scanner s;
```

```
    InputScanner() { s = new Scanner(); }  
}
```

```
abstract class Shape extends InputScanner {
```

```
    double a;
```

```
    double b;
```

```
    abstract void getInput();
```

```
    abstract void displayArea();  
}
```

```
class Rectangle extends Shape {
```

```
    void getInput() {
```

```
        System.out.println("Enter dimensions of rectangle: ");
```

```
        a = s.nextDouble();
```

```
        b = s.nextDouble();  
    }
```

```
    void displayArea() {
```

```
        System.out.println("Area of Rectangle = " + (a * b));  
    }
```

```
class Triangle extends Shape {
```

```
    void getInput() {
```

```
        System.out.println("Enter dimensions of triangle: ");
```

```
        a = s.nextDouble();
```

```
        b = s.nextDouble();  
    }
```

Question: Develop a Java Program to create an abstract class named shape that contains two integers and an empty method name 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 contains only the method print Area that prints the shape of the given shape.

```

    void displayArea() {
        System.out.println("Area of Triangle = " + (a*b*0.5));
    }
}

class Circle extends Shape {
    void getInput() {
        System.out.println("Enter dimension of circle (radius): ");
        a = s.nextDouble();
    }
    void displayArea() {
        System.out.println("Area of circle = " + (3.14*a*a));
    }
}

```

```

class Main {
    public static void main (String args[])
    {
        Rectangle r = new Rectangle();
        Triangle t = new Triangle();
        Circle c = new Circle();
        r.getInput();
        t.getInput();
        c.getInput();
        r.displayArea();
        t.displayArea();
        c.displayArea();
    }
}

```

Output :

Enter the dimensions of rectangle (length and breadth):

4 6

Enter the dimensions of triangle (base and height):

8 4

Enter the dimensions of circle (Radius):

3.5

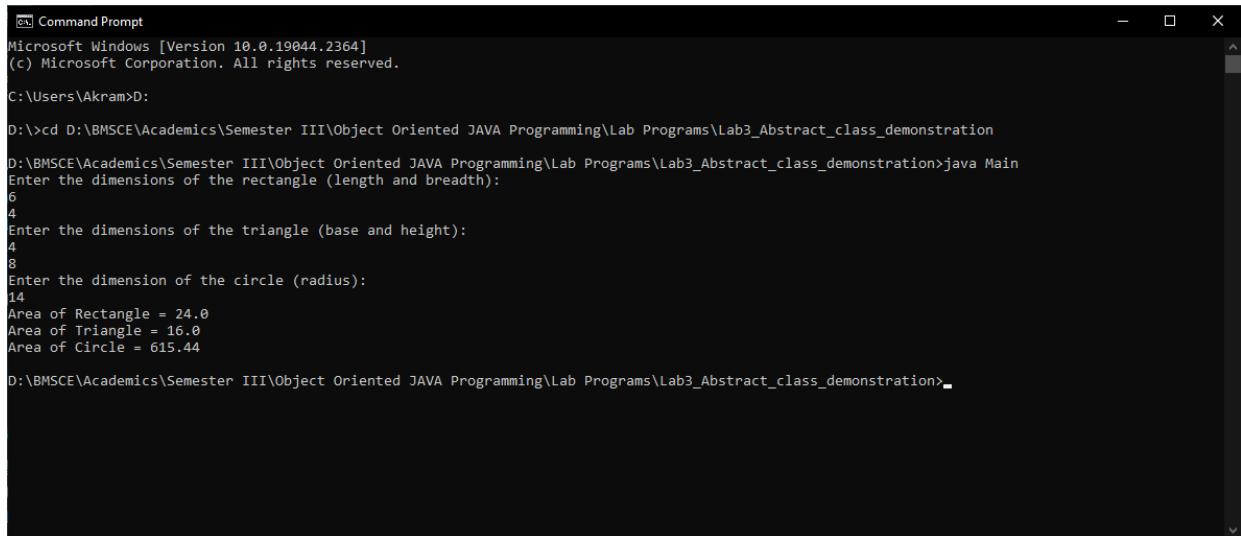
Area of rectangle = 24.0000

Area of triangle = 16.0000

Area of circle = 38.465

N  
9/12/22

## Output:



```
Command Prompt
Microsoft Windows [Version 10.0.19044.2364]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Akram>D:

D:\>cd D:\BMSCE\Academics\Semester III\Object Oriented JAVA Programming\Lab Programs\Lab3_Abstract_class_demonstration
D:\BMSCE\Academics\Semester III\Object Oriented JAVA Programming\Lab Programs\Lab3_Abstract_class_demonstration>java Main
Enter the dimensions of the rectangle (length and breadth):
6
4
Enter the dimensions of the triangle (base and height):
4
8
Enter the dimension of the circle (radius):
14
Area of Rectangle = 24.0
Area of Triangle = 16.0
Area of Circle = 615.44

D:\BMSCE\Academics\Semester III\Object Oriented JAVA Programming\Lab Programs\Lab3_Abstract_class_demonstration>_
```