Lab Number:	9
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Title:

1. Write a java program to create an abstract class named Shape that contains two integers and an abstract 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.

Learning Objective:

Students will be able to implement abstract class and abstract method programs.

Learning Outcome:

- Understanding the abstraction concept and hiding of the unnecessary code.

Course Outcome:

ECL304.4	1. Implement different programming applications using packaging.

Theory:

- Explain in details about necessity of data hiding in any application / project. □
  Explain abstract class and abstract methods.

Algorithm :	1. **Start**
	2. **Create a abstract class - shape and declare necessary methods and attributes.**
	3. **Create a derived class of shape class – rectangle, circle , triangle and take input of dimensions and print its area**
	4. **Create the objects of derived classes in Main class and then call them to print the area.**
	5.End

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| Program: | ```java
package com.company;

import java.util.*;


abstract class Shape { int length,
    breadth, base, height,radius;
    Scanner sc = new
    Scanner(System.in);


    abstract void printArea();
}
class Rectangle extends
    Shape { void printArea() {
        System.out.print("Enter length & breadth:
"); length = sc.nextInt(); breadth = sc.nextInt();
        System.out.println("Area of Rectangle is: " + length * breadth);
    }
}
class Triangle extends Shape
    { void printArea() {
        System.out.print("Enter Base And Height: ");
        length = sc.nextInt(); breadth = sc.nextInt();
        System.out.println("Area of Triangle is: " + (base * height) / 2);
    }
``` |
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```java
        }

    class Cricle extends
    Shape { void
    printArea() {

            System.out.print("Enter Radius: "); radius

            = sc.nextInt();

            System.out.println("Area of Cricle is: " + 3.14 * radius * radius);

        }

    }

    public class Main {

        public static void main(String[] args)

            { Shape rec = new Rectangle();

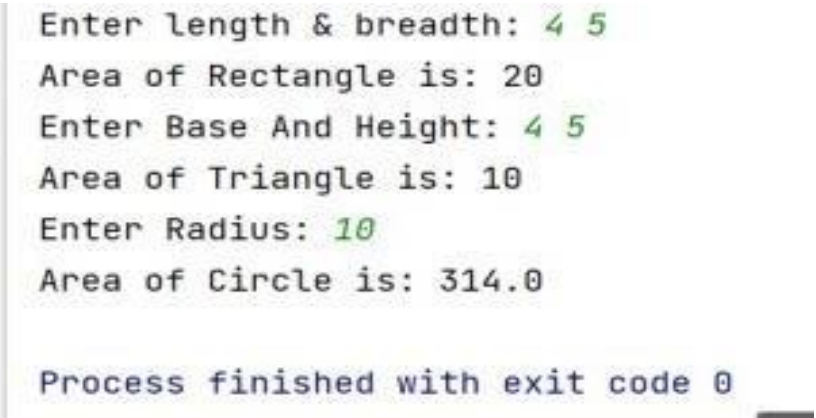            rec.printArea();

Shape tri = new Triangle();

            tri.printArea();


            Shape cri = new Cricle();

            cri.printArea();

        }
}
```

Input given:	Length – 4
	Breadth – 5
	Base – 4
	Height - 5
	Radius - 10
Output Screenshot:	Enter length & breadth: 4 5 Area of Rectangle is: 20 Enter Base And Height: 4 5 Area of Triangle is: 10 Enter Radius: 10 Area of Circle is: 314.0 Process finished with exit code 0

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