

# Rajalakshmi Engineering College

Name: Anbarasu V  
Email: 241501018@rajalakshmi.edu.in  
Roll no: 241501018  
Phone: 9488440199  
Branch: REC  
Department: AI & ML - Section 3  
Batch: 2028  
Degree: B.E - AI & ML

Scan to verify results



## 2024\_28\_III\_OOPS Using Java Lab

### 2028\_REC\_OOPS using Java\_Week 6\_Q4

Attempt : 1  
Total Mark : 10  
Marks Obtained : 10

#### **Section 1 : Coding**

##### **1. Problem Statement**

Mr.Kapoor wants to create a program to calculate the volume of a Cuboid and a Cube using method overriding.

Implements a base class Cuboid with attributes for length, width, and height. Include a method calculateVolume() that computes the volume of the cuboid.

Extends the base class with a subclass Cube representing a cube, where all sides are equal. Override the calculateVolume() method in the Cube class to compute the volume of the cube.

The program should take user input for the dimensions of the cuboid and the side length of the cube and display the calculated volumes with two decimal places.

### ***Input Format***

The first line of input consists of 3 space-separated double values, representing the cuboid length, width, and height, respectively.

The second line consists of a double value, representing the side length of the cube.

### ***Output Format***

The first line of output prints the volume of the cuboid, rounded off to two decimal places.

The second line prints the volume of the cube, rounded off to two decimal places.

Refer to the sample output for formatting specifications.

### ***Sample Test Case***

Input: 60.0 60.0 60.0  
50.0

Output: Volume of Cuboid: 216000.00  
Volume of Cube: 125000.00

### ***Answer***

```
import java.util.Scanner;  
class Cuboid {  
    double length, width, height;  
  
    Cuboid(double length, double width, double height) {  
        this.length = length;  
        this.width = width;  
        this.height = height;  
    }  
  
    double calculateVolume() {  
        return length * width * height;  
    }  
}
```

```
class Cube extends Cuboid {  
    Cube(double side) {  
        super(side, side, side);  
    }  
    @Override  
    double calculateVolume() {  
        return length * length * length;  
    }  
  
    public class Main {  
        public static void main(String[] args) {  
            Scanner scanner = new Scanner(System.in);  
  
            double cuboidLength = scanner.nextDouble();  
            double cuboidWidth = scanner.nextDouble();  
            double cuboidHeight = scanner.nextDouble();  
  
            // Regular object instantiation for Cuboid  
            Cuboid cuboid = new Cuboid(cuboidLength, cuboidWidth, cuboidHeight);  
            System.out.printf("Volume of Cuboid: %.2f\n", cuboid.calculateVolume());  
  
            double cubeSide = scanner.nextDouble();  
  
            // Upcasting - Using superclass reference for subclass object (DMD)  
            Cuboid cube = new Cube(cubeSide); // Upcasting  
            System.out.printf("Volume of Cube: %.2f", cube.calculateVolume()); // Calls  
            Cube's method dynamically  
  
            scanner.close();  
        }  
    }  
}
```

**Status :** Correct

**Marks :** 10/10