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Subject: OOP Lab
Stream: CSE-B

3.1 Write a Java Program to create a class having the name Room with data members height, length, breadth, and methods set_value and volume. Create another class Room_demo to create an object of Room and print the volume.

Code:

```java
import java.util.Scanner;

class Room {
        double length, breadth, height;

        void set_values(double l, double b, double h) {
                length = l;
                breadth = b;
                height = h;
        }

        double volume() {
                return length * breadth * height;
        }
}

class Room_demo {
        public static void main(String[] args) {
                Scanner sc = new Scanner(System.in);
                System.out.print("Enter height: ");
                double height = sc.nextDouble();
                System.out.print("Enter breadth: ");
                double breadth = sc.nextDouble();
                System.out.print("Enter length: ");
                double length = sc.nextDouble();

                System.out.println("Height: " + height + " Breadth: " + breadth + " Length: " + length);

                Room room = new Room();
                room.set_values(length, breadth, height);

                System.out.println("Area of the room: " + room.volume());
        }
}
```

Output:

```
[raunak@Raunaks-MacBook-Air OOPs-Assignment % javac Room.java
[raunak@Raunaks-MacBook-Air OOPs-Assignment % java Room_demo
Enter height: 32
Enter breadth: 12
Enter length: 43
Height: 32.0 Breadth: 12.0 Length: 43.0
Area of the room: 16512.0
[raunak@Raunaks-MacBook-Air OOPs-Assignment % java Room_demo
Enter height: 1
Enter breadth: 4
Enter length: 6
Height: 1.0 Breadth: 4.0 Length: 6.0
Area of the room: 24.0
[raunak@Raunaks-MacBook-Air OOPs-Assignment % java Room_demo
Enter height: 0
Enter breadth: 4
Enter length: 3
Height: 0.0 Breadth: 4.0 Length: 3.0
Area of the room: 0.0
raunak@Raunaks-MacBook-Air OOPs-Assignment %
```

3.2 Write a program to create class Arithmetic in Java having methods add(), subtract(), multiply(), divide() which perform the respective function over two numbers passed as parameters to methods.

Code:
```java
import java.util.Scanner;

class Arithmetic {
        double add(double no1, double no2) {return no1 + no2;}
        double subtract(double no1, double no2){return no1 - no2;};
        double multiply(double no1, double no2){return no1 * no2;};
        double divide(double no1, double no2){return no1 / no2;};

        public static void main(String[] args) {
                Scanner sc = new Scanner(System.in);

                int ch = 1;

                do {
                System.out.print("Enter operand 1: ");
                double num1 = sc.nextDouble();
                System.out.print("Enter operand 2: ");
                double num2 = sc.nextDouble();
                System.out.print("Enter operator (+, -, *, /): ");
                char op = sc.next().charAt(0);

                Arithmetic arith = new Arithmetic();

                System.out.print("Arithmatic Result: ");
                double res = 0.0;
```

```java
            switch (op) {
                case '+':
                    res = arith.add(num1, num2);
                    break;
                case '-':
                    res = arith.subtract(num1, num2);
                    break;
                case '*':
                    res = arith.multiply(num1, num2);
                    break;
                case '/':
                    res = arith.divide(num1, num2);
                    break;
                default: break;
            }
            System.out.println(res);
            System.out.print("Press any number to continue and 0 to exit: ");
            ch = sc.nextInt();
        } while(ch != 0);
    }
}
```

Output:

```
[raunak@Raunaks-MacBook-Air OOPs-Assignment % javac Arithmetic.java
[raunak@Raunaks-MacBook-Air OOPs-Assignment % java Maths
Enter operand 1: 12
Enter operand 2: 32
Enter operator (+, -, *, /): +
Arithmatic Result: 44.0
Press any number to continue and 0 to exit: 1
Enter operand 1: 32
Enter operand 2: 37
Enter operator (+, -, *, /): +
Arithmatic Result: 69.0
Press any number to continue and 0 to exit: 1
Enter operand 1: 12
Enter operand 2: 3
Enter operator (+, -, *, /): -
Arithmatic Result: 9.0
Press any number to continue and 0 to exit: 0
raunak@Raunaks-MacBook-Air OOPs-Assignment %
```