Experiment 4: Write a java program to demonstrate the:
a. Constructor Overloading
b. Method Overloading

4(a). Constructor Overloading

Aim

To write a Java program to demonstrate Constructor Overloading.

Theory

Constructor overloading is an object-oriented concept where a class has more than one constructor with different parameter lists.
It allows objects to be initialized in different ways depending on the arguments passed.

Algorithm

1. Create a class.
2. Define multiple constructors with different parameters.
3. Initialize variables using constructors.
4. Create objects using different constructors.
5. Display the values.

Program Code

```
class Student {
    int id;
    String name;

    // Default constructor
    Student() {
        id = 0;
        name = "Not Assigned";
    }

    // Constructor with one parameter
    Student(int i) {
        id = i;
```

```
        name = "Unknown";
    }

    // Constructor with two parameters
    Student(int i, String n) {
        id = i;
        name = n;
    }

    void display() {
        System.out.println("ID: " + id + " Name: " + name);
    }
}
class ConstructorOverloadingDemo {
    public static void main(String[] args) {

        Student s1 = new Student();
        Student s2 = new Student(101);
        Student s3 = new Student(102, "Anu");

        s1.display();
        s2.display();
        s3.display();
    }
}
```

Result

The program successfully demonstrates constructor overloading by creating objects using different constructors.

4(b). Method Overloading

Aim
To write a Java program to demonstrate Method Overloading.

Theory
Method overloading allows a class to have multiple methods with the same name but different parameter lists.
It improves code readability and allows performing similar operations using the same method name.

Algorithm
1. Create a class.
2. Define methods with the same name but different parameters.
3. Call the overloaded methods.
4. Display the results.

Program Code
```
class Calculator {

   int add(int a, int b) {
      return a + b;
   }

   int add(int a, int b, int c) {
      return a + b + c;
   }

   double add(double a, double b) {
      return a + b;
   }
}
class MethodOverloadingDemo {
   public static void main(String[] args) {

      Calculator c = new Calculator();
```

```
        System.out.println("Addition of two integers: " + c.add(10, 20));
        System.out.println("Addition of three integers: " + c.add(10, 20, 30));
        System.out.println("Addition of two doubles: " + c.add(10.5, 20.5));
    }
}
```

Result

The program successfully demonstrates method overloading by calling methods with the same name but different parameters.