

TASK4

1. Source code

```
import java.util.Scanner;

/**
 * Task 4: Method Design & Modular Calculator
 */

public class ModularCalculator {

    // Addition method (int)
    static int add(int a, int b) {
        return a + b;
    }

    // Addition method (double) - Method Overloading
    static double add(double a, double b) {
        return a + b;
    }

    // Subtraction
    static double subtract(double a, double b) {
        return a - b;
    }

    // Multiplication
    static double multiply(double a, double b) {
        return a * b;
    }

    // Division with exception handling
    static double divide(double a, double b) {
```

```
if (b == 0) {
    throw new ArithmeticException("Division by zero is not allowed");
}

return a / b;
}

// Utility method to display result

static void displayResult(String operation, double result) {
    System.out.println("Result of " + operation + ": " + result);
}

// Method to demonstrate pass-by-value

static void changeValue(int x) {
    x = 100;
    System.out.println("Inside method, value is: " + x);
}

public static void main(String[] args) {
    Scanner sc = new Scanner(System.in);
    System.out.println("==== Modular Calculator ====");
    System.out.print("Enter first number: ");
    double num1 = sc.nextDouble();
    System.out.print("Enter second number: ");
    double num2 = sc.nextDouble();
    System.out.print("Choose operation (+ - * /): ");
    char choice = sc.next().charAt(0);
    try {
        switch (choice) {
```

```

case '+':
    displayResult("Addition", add(num1, num2));
break;

case '-':
    displayResult("Subtraction", subtract(num1, num2));
break;

case '*':
    displayResult("Multiplication", multiply(num1, num2));
break;

case '/':
    displayResult("Division", divide(num1, num2));
break;

default:
    System.out.println("Invalid operation selected.");
}

} catch (ArithmeticException e) {
    System.out.println("Error: " + e.getMessage());
}

// Pass-by-value demonstration

int value = 50;

System.out.println("\nBefore method call, value is: " + value);
changeValue(value);

System.out.println("After method call, value is: " + value);
sc.close();
}

```

}

2.Output:

```
==== Modular Calculator ====
Enter first number: 10
Enter second number: 2
Choose operation (+ - * /): /
Result of Division: 5.0

Before method call, value is: 50
Inside method, value is: 100
After method call, value is: 50
```