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Class:- AIML B1

Experiment 1

Aim:- Design and implement a Java program that performs arithmetic operations using a menu-driven approach with proper user input validation and modular methods

Code:

```
import java.util.Scanner;

public class Calculator {
    public int num1, num2, op;

    public int addNums(int n1, int n2) {
        return n1 + n2;
    }

    public int subNums(int n1, int n2) {
        return n1 - n2;
    }

    public long mulNums(int n1, int n2) {
        return (long) n1 * n2;
    }

    public float divNums(int n1, int n2) {
        if (n2 == 0) return 0;
        return (float) n1 / n2;
    }

    public int calcMod(int n1, int n2) {
        return n1 % n2;
    }
}
```

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    }

    public static void main(String[] args) {
        Calculator calc = new Calculator();
        float result = 0;
        Scanner scan = new Scanner(System.in);

        System.out.println("Welcome to the Calculator Program!");

        do {
            System.out.println("0. Exit 1. Addition 2. Subtraction 3.
Multiplication 4. Division 5. Modulus");
            System.out.print("Select an operation (0-5): ");
            calc.op = scan.nextInt();

            if (calc.op == 0) {
                System.out.println("Exiting program...");
                break;}
            if (calc.op < 1 || calc.op > 5) {
                System.out.println("Invalid operation selected. Please try
again.");
                continue;
            }

            System.out.print("Enter first number: ");
            calc.num1 = scan.nextInt();
            System.out.print("Enter second number: ");
            calc.num2 = scan.nextInt();

            switch (calc.op) {
                case 1:
                    result = calc.addNums(calc.num1, calc.num2);
                    break;
                case 2:
                    result = calc.subNums(calc.num1, calc.num2);
                    break;
                case 3:
                    result = calc.mulNums(calc.num1, calc.num2);
                    break;
                case 4:

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        result = calc.divNums(calc.num1, calc.num2);
        break;
    case 5:
        result = calc.calcMod(calc.num1, calc.num2);
        break;
    default:
        System.out.println("Invalid operation selected.");
        continue;
    }

    System.out.println("Result: " + result);
}while (calc.op != 0);

scan.close();
}
}

```

Output:

1. Addition

Welcome to the Calculator Program!

0. Exit 1. Addition 2. Subtraction 3. Multiplication 4. Division 5. Modulus

Select an operation (0-5): 1

Enter first number: 1

Enter second number: 2

Result: 3.0

2. Subtraction

0. Exit 1. Addition 2. Subtraction 3. Multiplication 4. Division 5. Modulus

Select an operation (0-5): 2

Enter first number: 300

Enter second number: 150

Result: 150.0

3. Multiplication

0. Exit 1. Addition 2. Subtraction 3. Multiplication 4. Division 5. Modulus

Select an operation (0-5): 3

Enter first number: 200

Enter second number: 300

Result: 60000.0

4. Division

0. Exit 1. Addition 2. Subtraction 3. Multiplication 4. Division 5. Modulus

Select an operation (0-5): 4

Enter first number: 3

Enter second number: 2

Result: 1.5

5. Modulus

0. Exit 1. Addition 2. Subtraction 3. Multiplication 4. Division 5. Modulus

Select an operation (0-5): 5

Enter first number: 3

Enter second number: 2

Result: 1.0

6. Exit

0. Exit 1. Addition 2. Subtraction 3. Multiplication 4. Division 5. Modulus

Select an operation (0-5): 0

Exiting program...

7. Invalid operation

0. Exit 1. Addition 2. Subtraction 3. Multiplication 4. Division 5. Modulus

Select an operation (0-5): 6

Invalid operation selected. Please try again.