

**Main.java**

```
1 // Name: Rupankar Das
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3 // Batch: Class of 2027 | B.Tech AIML | B2
4
5 import java.util.Scanner;
6
7 public class Main {
8     public static void main(String[] args) {
9         // Create a Scanner object for user input
10        Scanner scanner = new Scanner(System.in);
11        UserInput userInput = new UserInput(scanner);
12        Calculator calculator = new Calculator();
13
14        System.out.println("Welcome to the Calculator Program!");
15
16        boolean exit = false;
17        while (!exit) {
18            // Display menu options to the user
19            System.out.println("Choose an option:");
20            System.out.println("1. Add\n2. Subtract\n3. Multiply\n4. Divide\n5.
21            Fibonacci\n6. Mean\n7. Mode\n8. Exit");
22            int choice = userInput.getNumberInput();
23
24            switch (choice) {
25                case 1:
26                    // Addition operation
27                    System.out.println("Enter two numbers:");
28                    double a = userInput.getDoubleInput();
29                    double b = userInput.getDoubleInput();
30                    System.out.println("Result: " + calculator.add(a, b));
31                    break;
32                case 2:
33                    // Subtraction operation
34                    System.out.println("Enter two numbers:");
35                    a = userInput.getDoubleInput();
36                    b = userInput.getDoubleInput();
37                    System.out.println("Result: " + calculator.subtract(a, b));
38                    break;
39                case 3:
40                    // Multiplication operation
41                    System.out.println("Enter two numbers:");
42                    a = userInput.getDoubleInput();
43                    b = userInput.getDoubleInput();
44                    System.out.println("Result: " + calculator.multiply(a, b));
45                    break;
46                case 4:
47                    // Division operation
48                    System.out.println("Enter two numbers:");
49                    a = userInput.getDoubleInput();
50                    b = userInput.getDoubleInput();
51                    System.out.println("Result: " + calculator.divide(a, b));
52                    break;
```

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52         case 5:
53             // Fibonacci sequence calculation
54             System.out.println("Enter a number for Fibonacci sequence:");
55             int n = userInput.getNumberInput();
56             System.out.println("Fibonacci result: " +
calculator.fibonacci(n));
57             break;
58         case 6:
59             // Mean calculation
60             System.out.println("Enter array size:");
61             int size = userInput.getNumberInput();
62             double[] arr = userInput.getArrayInput(size);
63             System.out.println("Mean: " + calculator.mean(arr));
64             break;
65         case 7:
66             // Mode calculation
67             System.out.println("Enter array size:");
68             size = userInput.getNumberInput();
69             int[] intArr = userInput.getIntArrayInput(size);
70             System.out.println("Mode: " + calculator.mode(intArr));
71             break;
72         case 8:
73             // Exit the program
74             exit = true;
75             System.out.println("Exiting program. Goodbye!");
76             break;
77         default:
78             // Handle invalid options
79             System.out.println("Invalid option. Please try again.");
80     }
81 }
82
83 // Close the scanner
84 scanner.close();
85 }
86 }
87
```