K.R. Mangalam University School of Engineering & Technology

Assignment 2 Java Programming

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Class: BCA (AI & DS)

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CODE –

```java
// Assignment 02: Calculator Application Using Method Overloading
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// Course: BCA (AI & DS)

import java.util.Scanner;

class Calculator {

    // Method Overloading for Addition
    int add(int a, int b) {
        return a + b;
    }

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

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

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

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

```

```
33      // Division (with divide-by-zero handling)
34      double divide(int a, int b) {
35          try {
36              if (b == 0) {
37                  throw new ArithmeticException(s: "Division by zero is not allowed.");
38              }
39              return (double) a / b;
40          } catch (ArithmeticException e) {
41              System.out.println("Error: " + e.getMessage());
42              return 0;
43          }
44      }
45  }
46
47  public class JavaAssignment2 {
48
49      Scanner sc = new Scanner(System.in);
50      Calculator calc = new Calculator();
51
52      void performAddition() {
53          System.out.print(s: "\nEnter first number: ");
54          double a = sc.nextDouble();
55          System.out.print(s: "Enter second number: ");
56          double b = sc.nextDouble();
57          System.out.println("Result: " + calc.add(a, b));
58      }
59
60      void performSubtraction() {
61          System.out.print(s: "\nEnter first integer: ");
62          int a = sc.nextInt();
```

```
63          System.out.print(s: "Enter second integer: ");
64          int b = sc.nextInt();
65          System.out.println("Result: " + calc.subtract(a, b));
66      }
67
68      void performMultiplication() {
69          System.out.print(s: "\nEnter first number: ");
70          double a = sc.nextDouble();
71          System.out.print(s: "Enter second number: ");
72          double b = sc.nextDouble();
73          System.out.println("Result: " + calc.multiply(a, b));
74      }
75
76      void performDivision() {
77          System.out.print(s: "\nEnter dividend (int): ");
78          int a = sc.nextInt();
79          System.out.print(s: "Enter divisor (int): ");
80          int b = sc.nextInt();
81          double result = calc.divide(a, b);
82          System.out.println("Result: " + result);
83      }
84
85      void mainMenu() {
86          int choice;
87          do {
88              System.out.println(x: "\n==== Welcome to the Calculator Application ====");
89              System.out.println(x: "1. Add Numbers");
90              System.out.println(x: "2. Subtract Numbers");
91              System.out.println(x: "3. Multiply Numbers");
```

```
93              System.out.println(x: "5. Exit");
94              System.out.print(s: "Enter your choice: ");
95              choice = sc.nextInt();
96
97              switch (choice) {
98                  case 1:
99                      performAddition();
100                     break;
101                 case 2:
102                     performSubtraction();
103                     break;
104                 case 3:
105                     performMultiplication();
106                     break;
107                 case 4:
108                     performDivision();
109                     break;
110                 case 5:
111                     System.out.println(x: "Thank you for using the Calculator. Goodbye!");
112                     break;
113                 default:
114                     System.out.println(x: "Invalid option. Please try again!");
115             }
116         } while (choice != 5);
117     }
118
```

```
Run | Debug
119     public static void main(String[] args) {
120         JavaAssignment2 ui = new JavaAssignment2();
121         ui.mainMenu();
122     }
123 }
124
```