Experiment 2

Write a program in Java to implement a Calculator with simple arithmetic operations such as add, subtract, multiply, divide, factorial etc. using switch case and other simple java statements. The objective of this assignment is to learn Constants, Variables, and Data Types, Operators and Expressions, Decision making statements in Java.

```java
import java.util.Scanner;

public class Calculator {

    // Arithmetic operations
    static int sum(int a, int b) {
        return a + b;
    }

    static int difference(int a, int b) {
        return a - b;
    }

    static int product(int a, int b) {
        return a * b;
    }

    static double quotient(double a, double b) {
        if (b == 0) {
            System.out.println("Cannot divide by zero!");
            return 0;
        }
        return a / b;
    }

    // Taking input
    static int[] getInput(Scanner input) {
        System.out.print("Enter first number: ");
        int x = input.nextInt();
        System.out.print("Enter second number: ");
        int y = input.nextInt();
        return new int[] {x, y};
    }

    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);

        while (true) {
            System.out.println("\nSelect an operation:");
            System.out.println("1. Add (+)");
            System.out.println("2. Subtract (-)");
            System.out.println("3. Multiply (*)");
            System.out.println("4. Divide (/)");
            System.out.println("5. Exit");
            System.out.print("Your choice: ");
            int option = input.nextInt();

            int[] values;
            switch(option) {
                case 1:
                    values = getInput(input);

```

```
                    System.out.println("Result: " + sum(values[0], values[1]));
                    break;
                case 2:
                    values = getInput(input);
                    System.out.println("Result: " + difference(values[0], values[1]));
                    break;
                case 3:
                    values = getInput(input);
                    System.out.println("Result: " + product(values[0], values[1]));
                    break;
                case 4:
                    values = getInput(input);
                    double result = quotient(values[0], values[1]);
                    System.out.printf("Result: %.2f\n", result);
                    break;
                case 5:
                    System.out.println(" Program terminated.");
                    input.close();
                    return; // exit the program
                default:
                    System.out.println("Invalid selection. Please try again.");
            }
        }
    }
}
```

Output:

```
Select an operation:
1. Add (+)
2. Subtract (-)
3. Multiply (*)
4. Divide (/)
5. Exit
Your choice: 1
Enter first number: 3
Enter second number: 89
Result: 92

Select an operation:
1. Add (+)
2. Subtract (-)
3. Multiply (*)
4. Divide (/)
5. Exit
Your choice: 2
Enter first number: 80
Enter second number: 65
Result: 15

Select an operation:
1. Add (+)
2. Subtract (-)
3. Multiply (*)
4. Divide (/)
5. Exit
Your choice: 3
```

```
Enter first number: 36
Enter second number: 6
Result: 216

Select an operation:
1. Add (+)
2. Subtract (-)
3. Multiply (*)
4. Divide (/)
5. Exit
Your choice: 4
Enter first number: 67
Enter second number: 4
Result: 16.75

Select an operation:
1. Add (+)
2. Subtract (-)
3. Multiply (*)
4. Divide (/)
5. Exit
Your choice: 5
Program terminated.
```
