

Java assignment -2

NAME-Azhar Ali

Roll no- 2401730134

Calculator.java

```
public class Calculator <
```

```
    public int add (int a, int b) <
```

```
        return a+b;
```

>

```
    public double add (double a, double b) <
```

```
        return a+b;
```

>

```
    public int add (int a, int b, int c) <
```

```
        return a+b+c;
```

>

```
    public int subtract (int a, int b) <
```

```
        return a-b;
```

>

```
    public double multiply (double a, double b) <
```

```
        return a*b;
```

>

```
    public int divide (int a, int b) Arithmetic  
        Exception <
```

```
        if (b==0) <
```

```
            throw new ArithmeticException ("s:  
                division by zero is not allowed");
```

>

```
        return a/b;
```

>

>

```
// UserInterface.java
import java.util.InputMismatchException;
import java.util.Scanner;

public class UserInterface {
    private Scanner scanner = new Scanner(System.in);
    private Calculator calculator = new Calculator();

    public void performAddition() {
        System.out.println("In -- Perform Addition--");
        System.out.println("Select addition type:");
        System.out.println("1. Two Integers (add(int, int))");
        System.out.println("2. Two Double (add(double, double))");
        System.out.println("3. Three Integers (add(int, int, int))");
        System.out.print("Enter choice: ");
        try {
            int choice = scanner.nextInt();
            scanner.nextLine();
            switch (choice) {
                case 1:
                    System.out.print("Enter first Integer: ");
                    int a1 = scanner.nextInt();
                    System.out.print("Enter Second Integer: ");
                    int b1 = scanner.nextInt();
                    System.out.println("Result (int, int): " +
                        calculator.add(a1, b1));
                    break;
            }
        } catch (InputMismatchException e) {
            System.out.println("Please enter integer value");
        }
    }
}
```

Case 2:

```
System.out.print("Enter first double: ");
double d2 = Scanner.nextDouble();
System.out.print("Enter Second double: ");
double b2 = Scanner.nextDouble();
System.out.println("Result (double, double): " + Calculator.add(d2, b2));
break;
```

Case 3:

```
System.out.print("Enter first integer: ");
int a3 = Scanner.nextInt();
System.out.print("Enter second Integer: ");
int b3 = Scanner.nextInt();
System.out.print("Enter third integer: ");
int c3 = Scanner.nextInt();
System.out.println("Result (int, int, int): " +
    Calculator.add(a3, b3, c3));
break;
```

default:

```
System.out.println("Invalid addition choice");
> catch (InputMismatchException e) {
    System.out.println("Invalid input. Please enter the
        correct data type.");
    Scanner.nextLine();
}
```

```
public void performSubtraction() {
    System.out.println("In -- Perform Subtraction--");
    try {
        System.out.print("Enter first integer:");
        int a = scanner.nextInt();
        System.out.print("Enter second integer:");
        int b = scanner.nextInt();
        int result = calculator.subtract(a, b);
        System.out.println("Result :" + result);
    } catch (InputMismatchException e) {
        System.out.println('Invalid input. Please enter integers only.');
        scanner.nextLine();
    }
}
```

```
public void performMultiplication() {
    System.out.println("In -- Perform Multiplication");
    try {
        System.out.print("Enter first double:");
        double a = scanner.nextDouble();
        System.out.print("Enter second double:");
        double b = scanner.nextDouble();
        double result = calculator.multiply(a, b);
        System.out.println("Result :" + result);
    } catch (InputMismatchException e) {
        System.out.println("Invalid Input");
        scanner.nextLine();
    }
}
```

```
public void performDivision() {
    System.out.println("In -- Perform Division ---");
    try {
        System.out.print("Enter first integer (numerator): ");
        int a = scanner.nextInt();
        System.out.print("Enter second integer (denominator): ");
        int b = scanner.nextInt();
        int result = calculator.divide(a, b);
        System.out.println("Result: " + result);
    }
```

 > Catch (InputMismatchException) &

```
    System.out.println("Invalid input. Please enter
                        integer only.");
```

```
    scanner.nextLine();
```

 > Catch (ArithmaticException) &

```
    System.out.println("Error: " + e.getMessage());
```

 >

 > Public void mainmenu() &

```
int choice;
```

 do {

```
        System.out.println("In Welcome to the Calculator
                            Application!");
```

```
        System.out.println("1. Add Numbers");
```

```
        System.out.println("2. Subtract Numbers");
```

```
        System.out.println("3. Multiply Numbers");
```

```
        System.out.println("4. Divide Numbers");
```

```
        System.out.print("Enter your choice: ");
```

```
if (Scanner.hasNextInt()) {
    choice = Scanner.nextInt();
    Scanner.nextLine();
    switch (choice) {
        case 1:
            PerformAddition();
            break;
        case 2:
            performSubtraction();
            break;
        case 3:
            PerformMultiplication();
            break;
        case 4:
            PerformDivision();
            break;
        case 5:
            System.out.println ("Exiting application.");
            System.out.println ("Good bye!");
            break;
        default:
            System.out.println ("Invalid choice. Please
                enter a Number between 1 and 5.");
    }
    System.out.println ("Invalid input. Please
        enter a number.");
    Scanner.nextLine();
    choice = 0;
}
```

```
> while (choice != S);  
Scanner. close();
```

```
> public static void main (String [] args) {  
UserInterface ui = new UserInterface ();  
ui.mainMenu();
```

```
1 >
```