

Name: Swastika Sharma

Sec-B

2401730032

Java Assignment - 2

⑦

```
public class Calculator {
```

```
// Add two integers
```

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

```
}
```

```
// Add two double-precision floating point nos.
```

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

```
}
```

```
// Add three integers .
```

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

```
}
```

```
// Sub the second integer from the first .
```

```
public int subtract (int a, int b) {  
    return a - b;  
}
```

```
}
```

```
// Multiply two double-precision floating-point nos.
```

```
public double multiply (double a * double b) {  
    return a * b;  
}
```

```
}
```

```
// Calls the division method ensuring errors are handled gracefully
```

```
private void perform Division () {
```

Case 3: // Add two doubles

(3)

System.out ("Enter first double: ");

double d1 = Scanner.next Double ();

System.out ("Enter second double");

double d2 = Scanner.next Double ();

System.out ("Result: " + calculator.add (d1, d2));

break;

default:

System.out ("invalid choice for addition type,");

}

} Catch (input Mismatch Exception) {

System.out ("invalid input please enter no. of correct type.");

Scanner.nextLine(); // clear buffer

}

}

// invoke the 'Subtract method' to compute & show the difference.

private void perform Subtraction () {

try {

System.out ("Enter first integer:");

int a = Scanner.next ~~Int~~ ();

System.out ("Enter second integer:");

int b = Scanner.nextLine();

System.out ("Result: " + calculator.Subtract (a, b));

} Catch (input Mismatch Exception e) {

System.out ("invalid input please enter valid integers");

try {

System.out.println("Enter the dividend (integer):");

int a = scanner.nextInt();

System.out.println("Enter the divisor (integer):");

int b = scanner.nextInt();

double result = calculator.divide(a, b);

System.out.println("Result: " + result);

} Catch (InputMismatchException e) {

// Handles invalid input [cite:32]

System.out.println("Invalid input please enter valid integers!");

Scanner.nextLine();

} Catch (ArithmeticException e) { // proper handling of divide-by-zero [cite:32]

System.out.println(e.getMessage());

}

}

}

Scanner.nextLine();

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3 3

// uses the "multiply" method to calculate the product.

```
private void performMultiplication () {
```

```
try {
```

```
    Sout ("Enter first double:");
```

```
    double a = Scanner.nextDouble();
```

```
    Sout ("Enter Second double");
```

```
    double b = Scanner.nextDouble();
```

```
    Sout ("Result : " + Calculator.multiply(a, b));
```

```
} catch (InputMismatchException e) {
```

```
    Sout ("Invalid input please enter valid doubles");
```

```
    Scanner.nextLine();
```

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}

```
public static void main (String[] args) {
```

```
    UserInterface ui = new UserInterface();
```

```
    ui.mainMenu();
```

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// Display the main menu and handles user choice.

```
public void Menu () {
```

```
    while (true) {
```

```
        Sout (" \n Welcome to the Calculator App ");
```

```
        Sout ("1. Add Numbers");
```

```
        Sout ("2. Subtract Numbers");
```

⑤

```
Sout ("3. Multiply Numbers");  
Sout ("4. Divide Numbers");  
Sout ("Exit");  
Sout ("Enter your choice:");
```

```
try {
```

```
    int choice = scanner.nextInt();
```

```
    // user control structure effectively for menu  
    navigation. [cities : 33]
```

```
    Switch (choice){
```

```
        Case 1 :
```

```
            perform Addition ();  
            break ;
```

```
        Case 2
```

```
            perform subtraction ();
```

```
        break ;
```

```
    // Handles the addition opp. by calling the appropriate 'add'  
    method.
```

```
    private void perform Addition () {
```

```
        Sout ("In ..... Addition options .....");
```

```
        Sout ("1. Add two integers");
```

```
        Sout ("2. Add three integers");
```

```
        Sout ("3. Add two doubles");
```

```
        Sout ("Choose add addition type:");
```

```
    try {
```

```
        int choice = scanner.nextInt();
```

try {

int choice = Scanner.nextInt();

Switch (choice) {

Case 1: // Add two integers

System.out.print("Enter first integer: ");

int a = Scanner.nextInt();

System.out.print("Enter second integer: ");

int b = Scanner.nextInt();

System.out.print("Result: + Calculator.add(a,b)");

break;

Case 2: // Add three integers.

System.out.print("Enter First integer:");

int x = Scanner.nextInt();

System.out.print("Enter Second integer:");

int y = Scanner.nextInt();

System.out.print("Enter third integer:");

int z = Scanner.nextInt();

System.out.print("Result: " + Calculator.add(x,y,z));

break;

// Divide the first int by second ~~part~~

public double divide (int a, int b) {

if (b == 0) {

// This handles the divide-by-zero through new

ArithmeticException ("Error: Division by zero is not allowed");

}

return (double) a/b;

}

}

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

```
public class userinterface {
```

```
    private final Calculator calculator;
```

```
    private final Scanner scanner;
```

```
// Scanner object use for input.
```

```
public UserInterface () {
```

```
    this.calculator = new calculator ();
```

```
    this.scanner = new Scanner (System.in);
```

}

```
// main method to start the calculator app.
```

```
Case 3 :
```

```
    perform Multiplication ();
```

```
    break;
```

```
Case 4:
```

```
    perform Division ();
```

```
    break;
```

```
Case 5:
```

```
    Sout (" Thank you for using the calculator ").
```

```
    Scanner.close ();
```

```
return : // Exit the App.
```

default :

System.out.println("Invalid choice please enter a no. b/w
1 and 5);

}

} catch (InputMismatchException e) {

System.out.println("Invalid input please enter a valid integer
choice");

Scanner.nextLine(); // clear the invalid input.

}

}

}