

#Assignment 7:

Github Link: <https://github.com/Miraat/Calculator>

#File structure

CalculatorApp/

- |— **MainCalculator.java**
- |— **Addition.java**
- |— **Subtraction.java**
- |— **Multiplication.java**
- |— **Division.java**
- |— **Square.java**
- |— **Cube.java**
- |— **SquareRoot.java**
- |— **README.md**

#Code: MainCalculator.java

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

```
public class MainCalculator {
```

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

```
        Scanner sc = new Scanner(System.in);
```

```
        boolean run = true;
```

```
        while (run) {
```

```
            System.out.println("\n===== Calculator Menu =====");
```

```
            System.out.println("1. Addition");
```

```
            System.out.println("2. Subtraction");
```

```

System.out.println("3. Multiplication");
System.out.println("4. Division");
System.out.println("5. Square");
System.out.println("6. Cube");
System.out.println("7. Square Root");
System.out.println("8. Exit");
System.out.print("Choose an option: ");
int choice = sc.nextInt();

try {
    switch (choice) {
        case 1 -> Addition.perform(sc);
        case 2 -> Subtraction.perform(sc);
        case 3 -> Multiplication.perform(sc);
        case 4 -> Division.perform(sc);
        case 5 -> Square.perform(sc);
        case 6 -> Cube.perform(sc);
        case 7 -> SquareRoot.perform(sc);
        case 8 -> run = false;
        default -> System.out.println("Invalid choice.");
    }
} catch (ArithmeticException ae) {
    System.out.println("Arithmetic Error: " + ae.getMessage());
} catch (Exception e) {
    System.out.println("Error: " + e.getMessage());
}
}

```

```
        System.out.println("Calculator Closed.");
    }
}
```

#Code: Addition.java

```
import java.util.Scanner;

public class Addition {
    public static void perform(Scanner sc) {
        System.out.print("Enter two numbers to add: ");
        double a = sc.nextDouble();
        double b = sc.nextDouble();
        System.out.println("Result: " + (a + b));
    }
}
```

#Code: Subtraction.java

```
import java.util.Scanner;

public class Subtraction {
    public static void perform(Scanner sc) {
        System.out.print("Enter two numbers to subtract: ");
        double a = sc.nextDouble();
        double b = sc.nextDouble();
        System.out.println("Result: " + (a - b));
    }
}
```

#Code: Multiplication.java

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

```
public class Multiplication {  
    public static void perform(Scanner sc) {  
        System.out.print("Enter two numbers to multiply: ");  
        double a = sc.nextDouble();  
        double b = sc.nextDouble();  
        System.out.println("Result: " + (a * b));  
    }  
}
```

#Code: Division.java

```
import java.util.Scanner;  
  
public class Division {  
    public static void perform(Scanner sc) {  
        System.out.print("Enter two numbers to divide: ");  
        double a = sc.nextDouble();  
        double b = sc.nextDouble();  
        if (b == 0) throw new ArithmeticException("Cannot divide by zero.");  
        System.out.println("Result: " + (a / b));  
    }  
}
```

#Code: Square.java

```
import java.util.Scanner;  
  
public class Square {  
    public static void perform(Scanner sc) {  
        System.out.print("Enter number to find square: ");
```

```
double a = sc.nextDouble();  
System.out.println("Square: " + (a * a));  
}  
}
```

#Code: Cube.java

```
import java.util.Scanner;  
  
public class Cube {  
    public static void perform(Scanner sc) {  
        System.out.print("Enter number to find cube: ");  
        double a = sc.nextDouble();  
        System.out.println("Cube: " + (a * a * a));  
    }  
}
```

#Code: Squareroot.java

```
import java.util.Scanner;  
  
public class SquareRoot {  
    public static void perform(Scanner sc) {  
        System.out.print("Enter number to find square root: ");  
        double a = sc.nextDouble();  
        if (a < 0) throw new ArithmeticException("Cannot take square root of negative  
number.");  
        System.out.println("Square Root: " + Math.sqrt(a));  
    }  
}
```

#Output:

```
$ javac *.java

$ java MainCalculator

===== Calculator Menu =====
1. Addition
2. Subtraction
3. Multiplication
4. Division
5. Square
6. Cube
7. Square Root
8. Exit
Choose an option: 1
Enter two numbers to add: 10 20
Result: 30.0

===== Calculator Menu =====
Choose an option: 4
Enter two numbers to divide: 15 0
Arithmetic Error: Cannot divide by zero.

===== Calculator Menu =====
Choose an option: 8
Calculator Closed.
```