Experiment No._____ **Date___/___/2020**

TITLE OF EXPERIMENT: - Program to make a calculator using switch case in Java

DIVISION:_____ **BRANCH: _____**

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PERFORMED ON DATE:

SIGNATURE OF TEACHING STAFF:

EXPERIMENT NO. 2

Aim: 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.

Software:

1. Eclipse
2. JDK 16

Theory:

In this Program we are making a simple calculator that performs addition, subtraction, multiplication and division based on the user input. The program takes the value of both the numbers (entered by user) and then user is asked to enter the operation (+, -, * and /), based on the input program performs the selected operation on the entered numbers using switch case.

To understand this programming, you should have the knowledge of the following Java programming topics:

- Java switch Statement
- Java Scanner Class

- **Java User Input (**Java Scanner Class):

The Scanner class is used to get user input, and it is found in the **java.util package**.

How to get Java Scanner

To get the instance of Java Scanner which reads input from the user, we need to pass the input stream (System.in) in the constructor of Scanner class. For Example:

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

To use the Scanner class, create an object of the class and use any of the available methods found in the Scanner class documentation. In our example, we will use the nextLine() method, which is used to read Strings:

Example:

```
import java.util.Scanner;  // Import the Scanner class

class Main {

  public static void main(String[] args) {

    Scanner myObj = new Scanner(System.in);  // Create a Scanner object

    System.out.println("Enter username");



    String userName = myObj.nextLine();  // Read user input

    System.out.println("Username is: " + userName);  // Output user input

  }

}
```

Input Types

The Java Scanner class provides nextXXX() methods to return the type of value such as nextInt(), nextByte(), nextShort(), x nextLine(), nextDouble(), nextFloat(), nextBoolean(), etc. To get a single character from the scanner, you can call next().charAt(0) method which returns a single character.

In the example above, we used the nextLine() method, which is used to read Strings. To read other types, look at the table below:

Method	Description
nextBoolean()	Reads a boolean value from the user
nextByte()	Reads a byte value from the user

nextDouble()	Reads a double value from the user
nextFloat()	Reads a float value from the user
nextInt()	Reads a int value from the user
nextLine()	Reads a String value from the user
nextLong()	Reads a long value from the user
nextShort()	Reads a short value from the user

- **Calculator by using do-while:**

```
package experiment2;

import java.util.Scanner;

public class Calculator {

	public static void main(String[] args) {
Scanner in = new Scanner(System.in);   // create a scanner object


		int choice;
		int no1, no2, result;

		do{
			System.out.println("1.Add");
			System.out.println("2.Subtract");
			System.out.println("3.Multiply");
			System.out.println("4.Divide");
			System.out.println("5.Factorial");
			System.out.println("6.Exit");
```

```
System.out.println("Enter your choice:");
choice = in.nextInt();

switch(choice){
case 1 :
        System.out.println("Enter First Number: ");
        no1 = in.nextInt();

        System.out.println("Enter Second Number: ");
        no2 = in.nextInt();

        result = no1+no2;

        System.out.println("Addition : " + result );
        break;
case 2 :
        System.out.println("Enter First Number: ");
        no1 = in.nextInt();

        System.out.println("Enter Second Number: ");
        no2 = in.nextInt();

        result = no1-no2;

        System.out.println("Subtraction : " + result );
        break;
case 3 :
        System.out.println("Enter First Number: ");
        no1 = in.nextInt();

        System.out.println("Enter Second Number: ");
        no2 = in.nextInt();

        result = no1*no2;

        System.out.println("Multiplication : " + result );
        break;
case 4 :
        System.out.println("Enter First Number: ");
        no1 = in.nextInt();

        System.out.println("Enter Second Number: ");
        no2 = in.nextInt();

        result = no1/no2;

        System.out.println("Division : " + result );
        break;
case 5 :
        System.out.println( "Enter number :");
```

```
                    no1 = in.nextInt();

                    result = 1;

                    for(int i =1; i <= no1;++i){
                        result *=i;
                    }

                    System.out.println("Factorial of " + no1 + " is "+result);
                    break;

                case 6 :
                    System.out.println("Terminating");
                    break;
                default :
                    System.out.println("Wrong Choice");
                    break;
                }

            }while ( choice != 6);


        }

}
```

Output:

```
1.Add
2.Subtract
3.Multiply
4.Divide
5.Factorial
6.Exit
Enter your choice:
1
Enter First Number:
12
Enter Second Number:
12
Addition : 24
1.Add
2.Subtract
3.Multiply
4.Divide
5.Factorial
6.Exit
Enter your choice:
```

```
2
Enter First Number:
12
Enter Second Number:
12
Subtraction : 0
```

- **Calculator by using switch - case:**

```
package experiment2;

import java.util.Scanner;

public class calci {

	public static void main(String[] args) {
		double num1, num2;
	Scanner scanner = new Scanner(System.in);
	System.out.print("Enter first number:");

	/* We are using data type double so that user
	 * can enter integer as well as floating point
	 * value
	 */
	num1 = scanner.nextDouble();
	System.out.print("Enter second number:");
	num2 = scanner.nextDouble();

	System.out.print("Enter an operator (+, -, *, /): ");
	char operator = scanner.next().charAt(0);

	scanner.close();
	double output;

	switch(operator)
	{
	   case '+':
			output = num1 + num2;
	      break;

	   case '-':
			output = num1 - num2;
	      break;

	   case '*':
			output = num1 * num2;
```

```
            break;

        case '/':
                output = num1 / num2;
            break;

        /* If user enters any other operator or char apart from
         * +, -, * and /, then display an error message to user
         *
         */
        default:
            System.out.printf("You have entered wrong operator");
            return;
      }

      System.out.println(num1+" "+operator+" "+num2+": "+output);

        }

}
```

Output:

```
Enter first number:40
Enter second number:4
Enter an operator (+, -, *, /): /
40.0 / 4.0: 10.0
```

Conclusion:

Screenshot's of Program and Result: