

Experiment No. _____

Date ___/___/2020

TITLE OF EXPERIMENT: - Design and implement a simple calculator using Java script for operations like addition multiplication, subtraction, division, square of a number etc:

- Design a calculator like text field for input and output, buttons for numbers and operations etc.
- Validate input values
- Prompt / Alerts for invalid values etc.

DIVISION: _____ **BRANCH:** _____

BATCH: _____ **ROLL NO.:** _____

PERFORMED ON DATE: _____

SIGNATURE OF TEACHING STAFF:

EXPERIMENT NO. 9

Aim: Design and implement a simple calculator using Java script for operations like addition, multiplication, subtraction, division, square of a number etc:

- Design a calculator like text field for input and output, buttons for numbers and operations etc.
- Validate input values
- Prompt / Alerts for invalid values etc.

Prerequisites:

- For this **Javascript Lab**, it is assumed that you have a prior knowledge of HTML coding. It would help if you had some prior exposure to object-oriented programming concepts and a general idea on creating online applications.
- To understand this experiment, you should have the knowledge of the basic **JavaScript, for loop, JavaScript if...else Statement, JavaScript switch Statement, Function.**

Editor:

1.	NotePad
2.	Visual studio code

Theory:

The **Calculator** is a portable device used in our daily life to perform various mathematical functions such as **addition, subtraction, multiplication, division**, root, etc. However, we have scientific or sophisticated calculators used to solve complex tasks such as trigonometry functions, degrees, exponential operators, log functions, hyperbolic functions, square root, and so on.

Example 1: Simple Calculator with if..else if..else

```
// program for a simple calculator

// take the operator input
const operator = prompt('Enter operator ( either +, -, * or / ): ');

// take the operand input
const number1 = parseFloat(prompt('Enter first number: '));
const number2 = parseFloat(prompt('Enter second number: '));

let result;

// using if...else if... else
if (operator == '+') {
    result = number1 + number2;
}
else if (operator == '-') {
    result = number1 - number2;
}
else if (operator == '*') {
    result = number1 * number2;
}
else {
    result = number1 / number2;
}

// display the result
console.log(`${number1} ${operator} ${number2} = ${result}`);
```

Output

```
Enter operator ( either +, -, * or / ): *
Enter first number: 3.4
Enter second number: 5.6
3.4 * 5.6 = 19.04
```

In the above example, the user is prompted to enter an operator (either +, -, * or /) and two numbers.

The `parseFloat()` converts the numeric string value to a floating-point value.

The `if...else if...if` statement is used to check the condition that the user has entered for the operator. The corresponding operation is performed and the output is displayed.

Example 2: Simple Calculator with switch

```
// program for a simple calculator
let result;

// take the operator input
const operator = prompt('Enter operator ( either +, -, * or / ): ');

// take the operand input
const number1 = parseFloat(prompt('Enter first number: '));
const number2 = parseFloat(prompt('Enter second number: '));

switch(operator) {
  case '+':
    result = number1 + number2;
    console.log(` ${number1} + ${number2} = ${result} `);
    break;

  case '-':
    result = number1 - number2;
    console.log(` ${number1} - ${number2} = ${result} `);
    break;

  case '*':
    result = number1 * number2;
    console.log(` ${number1} * ${number2} = ${result} `);
    break;

  case '/':
    result = number1 / number2;
    console.log(` ${number1} / ${number2} = ${result} `);
    break;

  default:
    console.log('Invalid operator');
    break;
}
```

Output

```
Enter operator: +  
Enter first number: 4  
Enter second number: 5  
4 + 5 = 9
```

In above program, the user is asked to enter either +, -, * or /, and two numbers. Then, the switch statement executes cases based on the user input.

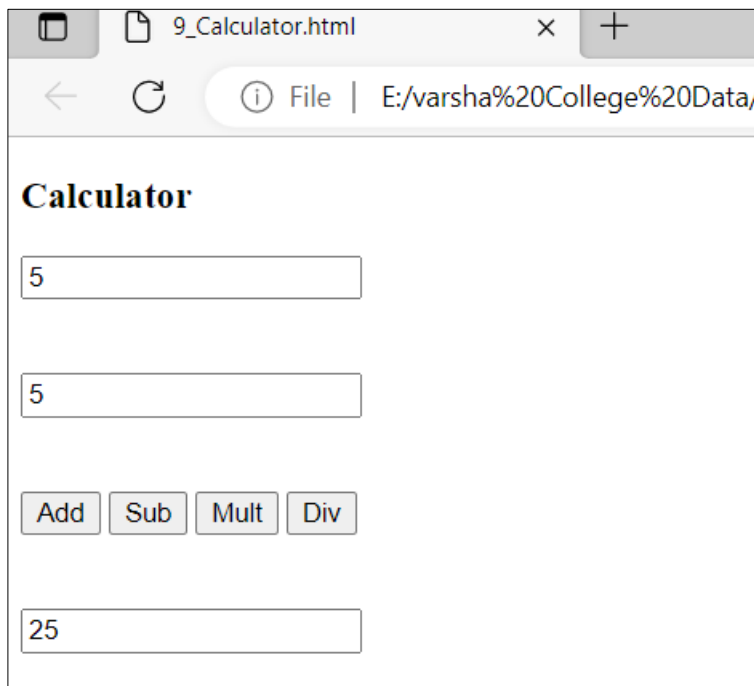
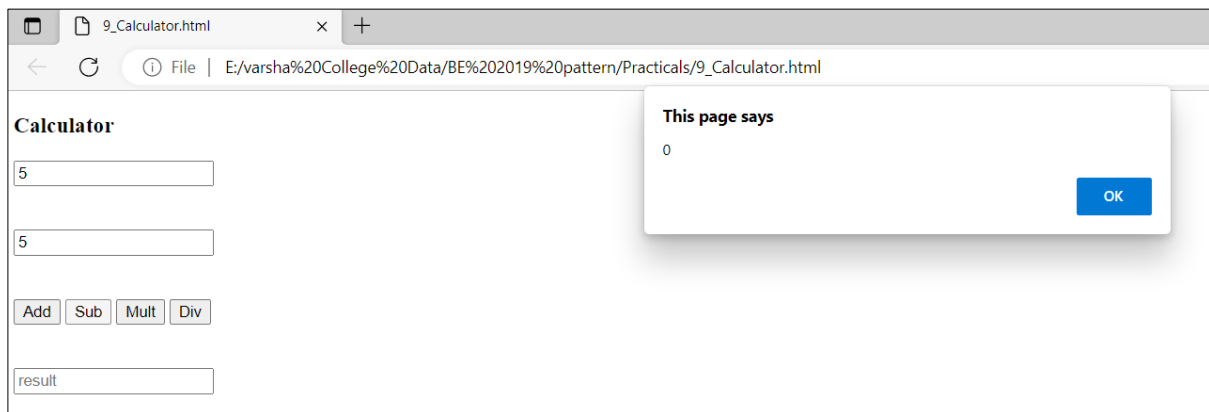
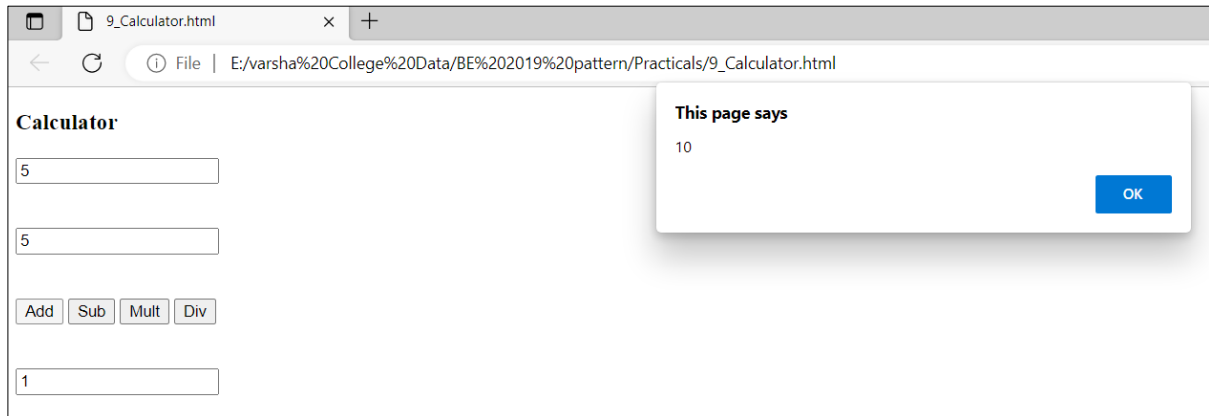
Program:

```
<!DOCTYPE html>  
  
<html>  
  
<body>  
  
<h3>Calculator</h3>  
  
<input id = "text1" placeholder = "Enter Num1" >  
  
<br>  
  
<br>  
  
<br>  
  
<input id = "text2" placeholder = "Enter Num2" >  
  
<br>  
  
<br>  
  
<br>  
  
<button onclick="sum()" id = "btn1">Add</button>  
  
<button onclick="diff()" id = "btn1">Sub</button>  
  
<button onclick="mul()" id = "btn1">Mult</button>  
  
<button onclick="div()" id = "btn1">Div</button>  
  
<br>  
  
<br>  
  
<br>  
  
<input id = "text3" placeholder = "result" >  
  
<script>  
  
function sum(){  
  
var x = parseFloat(document.getElementById("text1").value);
```

```
var y = parseFloat(document.getElementById("text2").value);
var s1 = x + y;
document.getElementById("text3").value = s1;
alert(s1);
}
function diff(){
var x = parseFloat(document.getElementById("text1").value);
var y = parseFloat(document.getElementById("text2").value);
var s2 = x - y;
document.getElementById("text3").value = s2;
alert(s2);
}
function mul(){
var x = parseFloat(document.getElementById("text1").value);
var y = parseFloat(document.getElementById("text2").value);
var s3 = x * y;
document.getElementById("text3").value = s3;
alert(s3);
}
function div(){
var x = parseFloat(document.getElementById("text1").value);
var y = parseFloat(document.getElementById("text2").value);
var s4 = x / y;
document.getElementById("text3").value = s4;
alert(s4);
}

</script>
</body>
</html>
```

Screenshot's of Output:



Conclusion: