

# LAB221Assignment

Type:  
Code:  
LOC:  
Slot(s):

Long Assignment  
J2.L.P0022  
300  
5

**Title:** Simple Calculator

## Background

A simple calculator is a small program used to perform basic operations of arithmetic. It imitated hardware calculators by implementing the same functionality with mouse-operated, rather than finger-operated, buttons. Such software calculators first emerged in the 1980s as part of the Windows operating system.

## Program Specifications

The simple calculator can perform basic arithmetic operations such as: Add, Subtract, Multiply and Divide Square root ( $\sqrt{\phantom{x}}$ ), %, and  $1/x$ . The operands are positive/negative integer or decimal numbers.

It also supports:

- M+ add to value stored in memory,
- M- subtract from the value stored in memory,
- MR display the value in memory
- MC clear the value in memory

## Features:

**Add operation:**

<i>Input seq</i>	<i>Input</i>	<i>Display</i>
1	1	1
2	+	1
3	2	2
4	=	3

<i>Input seq</i>	<i>Input</i>	<i>Display</i>
1	1	1
2	+	1
3	2	2
4	+	3
5	4	4
6	=	7

*Subtract, Multiply, and Divide operations execute as the Add one.*

**Square root operation**

<i>Input seq</i>	<i>Input</i>	<i>Display</i>
1	4	4
2	$\sqrt{\phantom{x}}$	2

<i>Input seq</i>	<i>Input</i>	<i>Display</i>
1	4	4
2	+/-	-4
3	$\sqrt{\phantom{x}}$	Error

**$1/x$  operation**

<i>Input seq</i>	<i>Input</i>	<i>Display</i>
1	10	10
2	1/x	0.1

% operation

<i>Input seq</i>	<i>Input</i>	<i>Display</i>
1	50	50
2	%	0.5

+/- operation

<i>Input seq</i>	<i>Input</i>	<i>Display</i>
1	3	3
2	+/-	-3
3	+/-	3

M+, M-, MR and MC

M+

<i>Input seq</i>	<i>Input</i>	<i>Display</i>
1	1	1
2	M+	1
3	2	2
4	M+	2
5	MR	3

M-

<i>Input seq</i>	<i>Input</i>	<i>Display</i>
1	1	1
2	M-	1
3	2	2
4	M-	2
5	MR	-3

M-, M+

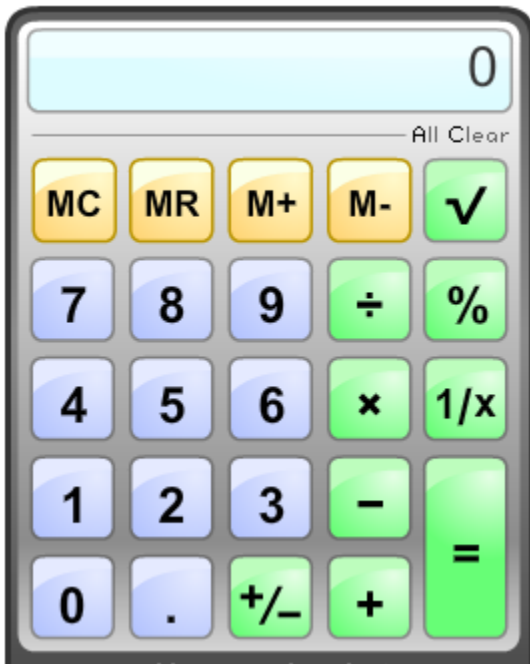
<i>Input seq</i>	<i>Input</i>	<i>Display</i>
1	1	1
2	M-	1
3	2	2
4	M+	2
5	MR	1

MC

<i>Input seq</i>	<i>Input</i>	<i>Display</i>
1	1	1
2	M+	1
3	MC	1
4	2	2
5	M+	2
6	MR	2

Expectation of User interface:

Go to <http://www.online-calculator.com/> to have a deep understand of a simple calculator.



Clear the display, and reset the calculator

### Guidelines

Use JFrame, JButton, JTextField, JLabel components and Math.sqrt() function.