

A Mini Project Report  
On  
**SCIENTIFIC CALCULATOR**

Submitted in partial fulfillment of requirements for the Course  
CSE18R272 - JAVA PROGRAMMING

**Bachelor's of Technology**  
In  
**Computer Science and Engineering**

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# ABSTRACT

A scientific calculator is a type of electronic calculator, usually but not always handheld, designed to calculate problem in science,engineering,and mathematics. Scientific calculators are used widely in situations that require quick access to certain mathematical functions,those that were once looked up in mathematical tables, such as trigonometric functions or algorithms. They are also used for calculations of very large or very small numbers, as in some aspects of astronomy, physics and chemistry. Calculator to help you solve trigonometry problems involving sine, cosine, tangent, their inverses, and their hyperbolic functions.

# DECLARATION

I hereby declare that the work presented in this report entitled “**Scientific calculator**”, in partial fulfilment of the requirements for the course CSE18R272- Java Programming and submitted in **Department of Computer Science and Engineering, Kalasalingam Academy of Research and Education (Deemed to be University)** is an authentic record of our own work carried out during the period from **Jan 2020** under the guidance of Mr. **Dr. R. Ramalakshmi** (Associate Professor).

The work reported in this has not been submitted by me for the award of any other degree of this or any other institute.

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# Chapter 1

## INTRODUCTION

The project Scientific Calculator is designed to automate the calculation procedure. Making less paper and automatic the process of calculation. Modern Scientific calculator generally have more feature set differs between manufacture and modules. The code implementation using in Java.

### 1.0.1 Statement of the problem

In computation of numbers, there ties several kinds of problems in solving tedious arithmetic operation with Scientific calculator.

1. Inability of handling complex arithmetic operation.
2. The processing of numbers are in binary coded decimal(BCD).

### 1.0.2 Objectives

1. To design a scientific calculator using JAVA.
2. Use the scientific calculator to evaluate expressions
3. To build a simple project on java.

## Chapter 2

# PROJECT DESCRIPTION

The project code in java AWT (Abstract Window ToolKit) is an API to develop GUI or window-based application in java. The java.awt package provides classes for AWT such as TextField, Lable etc. The javax swing API such as JButton, JTextField etc. ActionListeners are used for JButtons and handling all action events. It can be used by the implements keyword to the class definition. The component class is the root of all AWT components. Panel is a simplest container space in which an attach any other component. It inherits the Container class.

The scientific calculator is a type of an electronic calculator is an type of an electronic calculator in which different calculation methods are involved. These types of calculators are used when one is going for higher education contain these type of essential elements. The scientific calculators have more features as compared to the ordinary calculator. The calculator are mostly used by the students in schools, colleges, universities. This calculator will not only be performing the basic function but also complex calculations.

### WORKING OF SCIENTIFIC CALCULATOR

The memory chips inside the calculator contain thousands or millions of bytes of program code that allows the calculator to do the work. In some cases, the chips may contain some information in table form, while in other, they contain sequence of steps that can be used to get to the answer.



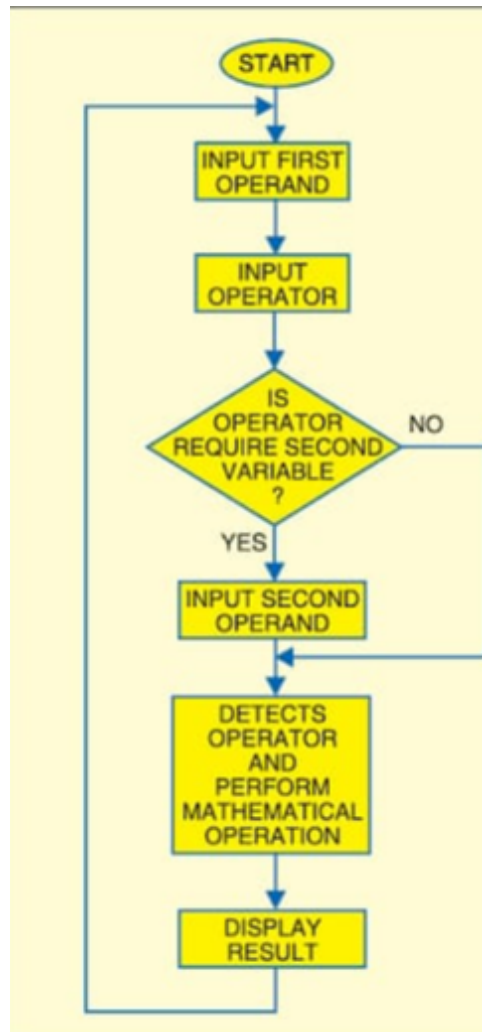


Figure 2.1: Working of scientific calculator

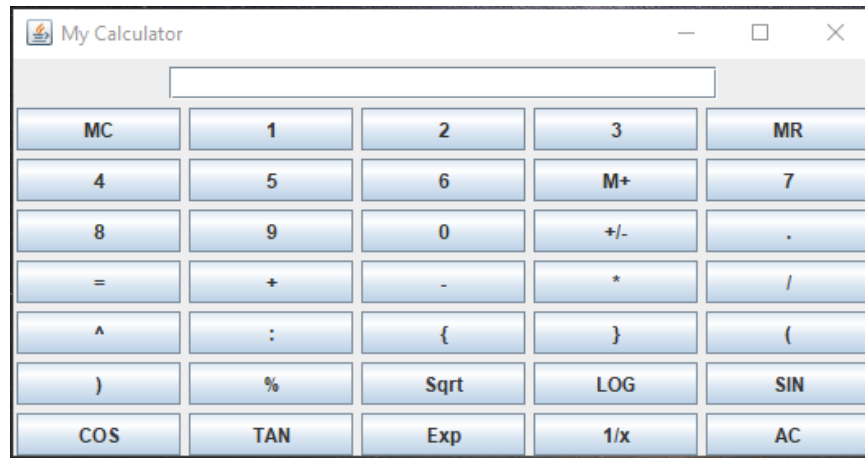


Figure 2.2: OUTPUT

The project scientific calculator will give various output. It will be a bug free calculator. You will be able to understand the purpose of calculator. You will be easily understand the basic function on the provided calculator. You will be able to understand which type of problem do you have and then you will be easily solving the given calculations along with the method which is given to you. Not only this, you will also be able to know whether you are performing right or wrong.

# CONCLUSION

This project augments both the normal brain and the defective brain. It display the outer view and the internal view of both the brain structures. The future enhancement may include the addition of dissection properly to the augmented object. When the user has the ability to dissect the object it would the understand ability of the structure. This can also be applied for other deformities in the human anatomy.

# Appendices

## SOURCE CODE

```

import java.awt.*;
import javax.swing.*;
import java.awt.event.*;
import javax.swing.event.*;

public class calci extends JFrame implements
    ActionListener
{
    Container contentpane;
    JPanel DisplayPanel, ControlPanel;
    JTextField txt;
    JButton one, two, three, four, five, six, seven, eight,
        nine, zero;
    JButton plus, min, mul, div, cap, colon, openbrace,
        closebrace, openbracket, closebracket, prec, log,
        CLR, exp;
    JButton eq, addSub, dot, memread, memcancel, memplus;
    JButton sqrt, sin, cos, tan, onebyx;
    double tempnum, tempnextnum, result, ans;
    static double ValueInMem;
    int num1 = 0, num2 = 0;
    int MemPlusFlag = 1,
        RepeatFlag = 0;
    char ch;
    calci()
    {
        contentpane = getContentPane();
        contentpane.setLayout(new BorderLayout());
        JPanel DisplayPanel = new JPanel();
        txt = new JTextField(30);
        txt.setHorizontalAlignment(SwingConstants.RIGHT);
        txt.addKeyListener(
            new KeyAdapter()
            {
                public void keyTyped(KeyEvent keyevent)
                {
                    char ch = keyevent.getKeyChar();
                    if (ch >= '0' && ch <= '9')

```

```

{
}
else
{
keyevent.consume();
}
}
});
DisplayPanel.add(txt);
ControlPanel = new JPanel();
contentpane.add("Center", ControlPanel);
contentpane.add("North", DisplayPanel);
ControlPanel.setLayout(new GridLayout(7,4,5,5));
memcancel = new JButton("MC");
ControlPanel.add(memcancel);
memcancel.addActionListener(this);
one = new JButton("1");
ControlPanel.add(one);
one.addActionListener(this);
two = new JButton("2");
ControlPanel.add(two);
two.addActionListener(this);
three = new JButton("3");
ControlPanel.add(three);
three.addActionListener(this);
memread = new JButton("MR");
ControlPanel.add(memread);
memread.addActionListener(this);
four = new JButton("4");
ControlPanel.add(four);
four.addActionListener(this);
five = new JButton("5");
ControlPanel.add(five);
five.addActionListener(this);
six = new JButton("6");
ControlPanel.add(six);
six.addActionListener(this);
memplus = new JButton("M+");
ControlPanel.add(memplus);
memplus.addActionListener(this);

```

```

seven = new JButton("7");
ControlPanel.add(seven);
seven.addActionListener(this);
eight = new JButton("8");
ControlPanel.add(eight);
eight.addActionListener(this);
nine = new JButton("9");
ControlPanel.add(nine);
nine.addActionListener(this);
zero = new JButton("0");
ControlPanel.add(zero);
zero.addActionListener(this);
addSub = new JButton("+/-");
ControlPanel.add(addSub);
addSub.addActionListener(this);
dot = new JButton("."); //represents decimal point
ControlPanel.add(dot);
dot.addActionListener(this);
eq = new JButton("="); //get an answer
ControlPanel.add(eq);
eq.addActionListener(this);
plus = new JButton("+");
ControlPanel.add(plus);
plus.addActionListener(this);
min = new JButton("-");
ControlPanel.add(min);
min.addActionListener(this);
mul = new JButton("*");
ControlPanel.add(mul);
mul.addActionListener(this);
div = new JButton("/");
div.addActionListener(this);
ControlPanel.add(div);
cap = new JButton("^");
cap.addActionListener(this);
ControlPanel.add(cap);
colon = new JButton(":");
colon.addActionListener(this);
ControlPanel.add(colon);
openbrace = new JButton("{");

```

```

openbrace.addActionListener(this);
ControlPanel.add(openbrace);
closebrace = new JButton("}");
closebrace.addActionListener(this);
ControlPanel.add(closebrace);
openbracket = new JButton("(");
openbracket.addActionListener(this);
ControlPanel.add(openbracket);
closebracket = new JButton(")");
closebracket.addActionListener(this);
ControlPanel.add(closebracket);
prec = new JButton("%");
prec.addActionListener(this);
ControlPanel.add(prec);
sqrt = new JButton("Sqrt");
ControlPanel.add(sqrt);
sqrt.addActionListener(this);
log = new JButton("LOG");
ControlPanel.add(log);
log.addActionListener(this);
sin = new JButton("SIN");
ControlPanel.add(sin);
sin.addActionListener(this);
cos = new JButton("COS");
ControlPanel.add(cos);
cos.addActionListener(this);
tan = new JButton("TAN");
ControlPanel.add(tan);
tan.addActionListener(this);
exp = new JButton("Exp");
exp.addActionListener(this);
ControlPanel.add(exp);
onebyx = new JButton("1/x");
onebyx.addActionListener(this);
ControlPanel.add(onebyx);
CLR = new JButton("AC");
ControlPanel.add(CLR);
CLR.addActionListener(this);
setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
}

```



```
public void actionPerformed(ActionEvent e)
{
    String s = e.getActionCommand();
    if (s.equals("1"))
    {
        if (RepeatFlag == 0)
        {
            txt.setText(txt.getText() + "1");
        }
        else
        {
            txt.setText("");
            txt.setText(txt.getText() + "1");
            RepeatFlag = 0;
        }
    }
    if (s.equals("2"))
    {
        if (RepeatFlag == 0)
        {
            txt.setText(txt.getText() + "2");
        }
        else
        {
            txt.setText("");
            txt.setText(txt.getText() + "2");
            RepeatFlag = 0;
        }
    }
    if (s.equals("3"))
    {
        if (RepeatFlag == 0)
        {
            txt.setText(txt.getText() + "3");
        }
        else
        {
            txt.setText("");
            txt.setText(txt.getText() + "3");
            RepeatFlag = 0;
        }
    }
}
```

```
}  
}  
if (s.equals("4"))  
{  
  if (RepeatFlag == 0)  
  {  
    txt.setText(txt.getText() + "4");  
  }  
  else  
  {  
    txt.setText("");  
    txt.setText(txt.getText() + "4");  
    RepeatFlag = 0;  
  }  
}  
if (s.equals("5"))  
{  
  if (RepeatFlag == 0)  
  {  
    txt.setText(txt.getText() + "5");  
  }  
  else  
  {  
    txt.setText("");  
    txt.setText(txt.getText() + "5");  
    RepeatFlag = 0;  
  }  
}  
if (s.equals("6"))  
{  
  if (RepeatFlag == 0)  
  {  
    txt.setText(txt.getText() + "6");  
  }  
  else  
  {  
    txt.setText("");  
    txt.setText(txt.getText() + "6");  
    RepeatFlag = 0;  
  }  
}
```

```
}  
if (s.equals("7"))  
{  
    if (RepeatFlag == 0)  
    {  
        txt.setText(txt.getText() + "7");  
    }  
    else  
    {  
        txt.setText("");  
        txt.setText(txt.getText() + "7");  
        RepeatFlag = 0;  
    }  
}  
if (s.equals("8"))  
{  
    if (RepeatFlag == 0)  
    {  
        txt.setText(txt.getText() + "8");  
    }  
    else  
    {  
        txt.setText("");  
        txt.setText(txt.getText() + "8");  
        RepeatFlag = 0;  
    }  
}  
if (s.equals("9"))  
{  
    if (RepeatFlag == 0)  
    {  
        txt.setText(txt.getText() + "9");  
    }  
    else  
    {  
        txt.setText("");  
        txt.setText(txt.getText() + "9");  
        RepeatFlag = 0;  
    }  
}
```

```

if (s.equals("0"))
{
if (RepeatFlag == 0)
{
txt.setText(txt.getText() + "0");
}
else
{
txt.setText("");
txt.setText(txt.getText() + "0");
RepeatFlag = 0;
}
}
if (s.equals("AC"))
{
txt.setText("");
num1 = 0;
num2 = 0;
RepeatFlag = 0;
}
if (s.equals("/+/-"))
{
if (num1 == 0)
{
txt.setText("-" + txt.getText());
num1 = 1;
}
else
{
txt.setText(txt.getText());
}
}
if (s.equals("."))
{
if (num2 == 0)
{
txt.setText(txt.getText() + ".");
num2 = 1;
}
else

```

```
{
txt.setText(txt.getText());
}
}
if(s.equals("+"))
{
if(txt.getText().equals(""))
{
txt.setText("");
tempnum = 0;
ch = '+';
}
else
{
tempnum = Double.parseDouble(txt.getText());
txt.setText("");
ch = '+';
num2 = 0;
num1 = 0;
}
txt.requestFocus();
}
if (s.equals("-"))
{
if (txt.getText().equals(""))
{
txt.setText("");
tempnum = 0;
ch = '-';
}
else
{
num1 = 0;
num2 = 0;
tempnum = Double.parseDouble(txt.getText());
txt.setText("");
ch = '-';
}
txt.requestFocus();
}
```

```

if (s.equals("/"))
{
if (txt.getText().equals(""))
{
txt.setText("");
tempnum = 1;
ch = '/';
}
else
{
num1 = 0;
num2 = 0;
tempnum = Double.parseDouble(txt.getText());
ch = '/';
txt.setText("");
}
txt.requestFocus();
}
if (s.equals("*"))
{
if (txt.getText().equals(""))
{
txt.setText("");
tempnum = 1;
ch = '*';
}
else
{
num1 = 0;
num2 = 0;
tempnum = Double.parseDouble(txt.getText());
ch = '*';
txt.setText("");
}
txt.requestFocus();
}
if (s.equals("^"))
{
if (txt.getText().equals(""))
{

```

```
txt.setText("");
tempnum = 1;
ch = '^';
}
else
{
num1 = 0;
num2 = 0;
tempnum = Double.parseDouble(txt.getText());
ch = '^';
txt.setText("");
}
txt.requestFocus();
}
if(s.equals(":"))
{
if(txt.getText().equals(""))
{
txt.setText("");
tempnum = 1;
ch = ':';
}
else
{
num1 = 0;
num2 = 0;
tempnum = Double.parseDouble(txt.getText());
ch = ':';
txt.setText("");
}
txt.requestFocus();
}
if(s.equals("{"))
{
if(txt.getText().equals(""))
{
txt.setText("");
tempnum = 1;
ch = '{';
}
}
```

```
else
{
num1 = 0;
num2 = 0;
tempnum = Double.parseDouble(txt.getText());
ch = '{';
txt.setText("");
}
txt.requestFocus();
}
if(s.equals("{}"))
{
if(txt.getText().equals(""))
{
txt.setText("");
tempnum = 1;
ch = '}' ;
}
else
{
num1 = 0;
num2 = 0;
tempnum = Double.parseDouble(txt.getText());
ch = '}' ;
txt.setText("");
}
txt.requestFocus();
}
if(s.equals("("))
{
if(txt.getText().equals(""))
{
txt.setText("");
tempnum = 1;
ch = '(' ;
}
else
{
num1 = 0;
num2 = 0;
```



```
tempnum = Double.parseDouble(txt.getText());
ch = '(';
txt.setText("");
}
txt.requestFocus();
}
if(s.equals(""))
{
if(txt.getText().equals(""))
{
txt.setText("");
tempnum = 1;
ch = ')';
}
else
{
num1 = 0;
num2 = 0;
tempnum = Double.parseDouble(txt.getText());
ch = ')';
txt.setText("");
}
txt.requestFocus();
}
if(s.equals("%"))
{
if(txt.getText().equals(""))
{
txt.setText("");
tempnum = 1;
ch = '%';
}
else
{
num1 = 0;
num2 = 0;
tempnum = Double.parseDouble(txt.getText());
ch = '%';
txt.setText("");
}
}
```

```

txt.requestFocus();
}
if (s.equals("MC"))
{
ValueInMem = 0;
txt.setText("");
}
if (s.equals("MR"))
{
txt.setText("");
txt.setText(txt.getText() + ValueInMem);
}
if (s.equals("M+"))
{
if (MemPlusFlag == 1)
{
ValueInMem = Double.parseDouble(txt.getText());
MemPlusFlag++;
}
else
{
ValueInMem += Double.parseDouble(txt.getText());
txt.setText("" + ValueInMem);
}
}
if (s.equals("LOG"))
{
if (txt.getText().equals(""))
{
txt.setText("");
}
else
{
ans = Math.log(Double.parseDouble(txt.getText()));
txt.setText("");
txt.setText(txt.getText() + ans);
}
}
if (s.equals("1/x"))
{

```

```

if (txt.getText().equals(""))
{
txt.setText("");
}
else
{
ans = 1 / Double.parseDouble(txt.getText());
txt.setText("");
txt.setText(txt.getText() + ans);
}
}
if (s.equals("Exp"))
{
if (txt.getText().equals(""))
{
txt.setText("");
}
else
{
ans = Math.exp(Double.parseDouble(txt.getText()));
txt.setText("");
txt.setText(txt.getText() + ans);
}
}
if (s.equals("Sqrt"))
{
if (txt.getText().equals(""))
{
txt.setText("");
}
else
{
ans = Math.sqrt(Double.parseDouble(txt.getText()));
txt.setText("");
txt.setText(txt.getText() + ans);
}
}
if (s.equals("SIN"))
{
if (txt.getText().equals(""))

```

```

{
txt.setText("");
}
else
{
ans = Math.sin(Double.parseDouble(txt.getText()));
txt.setText("");
txt.setText(txt.getText() + ans);
}
}
if (s.equals("COS"))
{
if (txt.getText().equals(""))
{
txt.setText("");
}
else
{
ans = Math.cos(Double.parseDouble(txt.getText()));
txt.setText("");
txt.setText(txt.getText() + ans);
}
}
if (s.equals("TAN"))
{
if (txt.getText().equals(""))
{
txt.setText("");
}
else
{
ans = Math.tan(Double.parseDouble(txt.getText()));
txt.setText("");
txt.setText(txt.getText() + ans);
}
}
if (s.equals("="))
{
if (txt.getText().equals(""))
{

```

```

txt.setText("");
}
else
{
tempnextnum = Double.parseDouble(txt.getText());
switch (ch)
{
case '+':
result = tempnum + tempnextnum;
break;
case '-':
result = tempnum - tempnextnum;
break;
case '/':
result = tempnum / tempnextnum;
break;
case '*':
result = tempnum * tempnextnum;
break;
}
txt.setText("");
txt.setText(txt.getText() + result);
RepeatFlag = 1;
}
}
txt.requestFocus();
}
public static void main(String args[])
{
calci c= new calci();
c.setTitle("My_Calculator");
c.pack();
c.setVisible(true);
}
}

```