

# **REPORT**

**Name-Chinmay Mittal (B.E. (COE))**

**Roll number-102203861**

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**THAPAR INSTITUTE**  
OF ENGINEERING & TECHNOLOGY  
(Deemed to be University)

# Calculator

A calculator is an electronic device which is used to solve mathematics problems which are being faced by us in our daily life. Most of the calculators perform addition, subtraction, multiplication and division. Some also do square root. Moreover, complex calculators can help us to draw functional graphs. There are many different ways to solve mathematical problems using the calculator.

**Project Summary :-** The project is a JAVA application which combines the knowledge of programming and mathematical science into one. It makes use of a famous Java IDE (Integrated Development Environment) – Netbeans IDE 8.0.2 which is currently under Oracle's development. Netbeans includes drag and drop GUI creation, thus making it much easier to develop the program. The project came into its existence by the following steps: Designing the algorithm of the application. It required application of scientific as well as mathematical concepts. Designing the layout/view/GUI(Graphical User Interface) of the application. This part provides the “LOOK” of the application that is visible to the user end. Coding the applications event-handlers (The code that should run in case the user presses a button on the application's screen.) Debugging the application by testing it through various mathematical examples. Documentation which includes the project report and presentation.

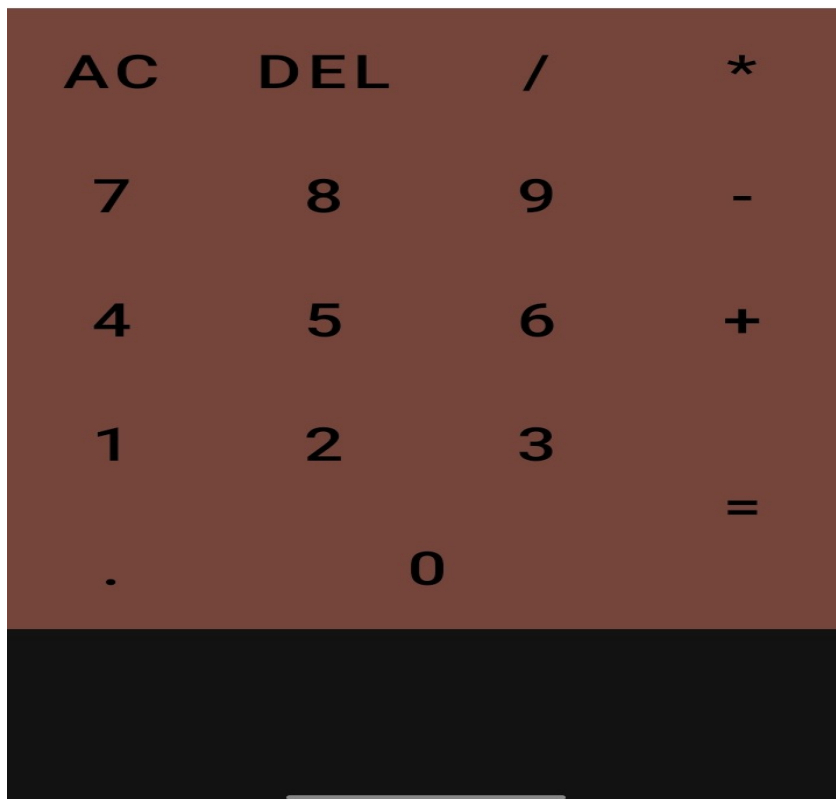
**NEED OF JAVA IN THE PROJECT :-** The team members decided to use JAVA for developing the application due to the following reasons – Swing API of JAVA which makes it easier to develop complex applications just by simple drag and drop feature. Platform Independent Nature of JAVA which makes it easier to run the application on different platforms just by making minute changes to the source code. Excellent debugging feature of Netbeans IDE (Tool used for making the application). It takes care of a number of minute bugs that can otherwise cause serious failures in programs written in other programming languages.

**Future Scope :-** App will be modified with Commerce Formulae, so that it can reach out to more people. It will be available on Google Play Store and app

store, for the students after complete development. People will be able to make graphs using this programme. It will always be free to use.

## My Calculator

0



# XML Code :-

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
```

```
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="vertical">
```

```
        <TextView
            android:layout_width="match_parent"
            android:layout_height="90dp"
            android:textSize="30sp"
            android:id="@+id/textviewhistory"
            android:gravity="center|end"
            android:background="@color/white"
            android:textColor="@color/black"/>
```

```
        <TextView
            android:layout_width="match_parent"
            android:layout_height="110dp"
            android:textSize="60sp"
            android:id="@+id/textviewresult"
            android:gravity="center|end"
            android:background="@color/white"
            android:textColor="@color/black"
            android:text="0"/>
```

```
    <GridLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:rowCount="5"
        android:columnCount="4">
```

```
        <Button
            android:id="@+id/btnAC"
            android:layout_width="wrap_content"
            android:layout_height="80dp"
            android:textSize="30sp"
            android:textColor="@color/black"
            android:background="@color/white"
            android:layout_row="0"
            android:layout_column="0"
            android:layout_columnWeight="1"
```

```
android:text="AC"/>
```

```
<Button
```

```
android:id="@+id/btnDELETE"
```

```
android:layout_width="wrap_content"
```

```
android:layout_height="80dp"
```

```
android:textSize="30sp"
```

```
android:textColor="@color/black"
```

```
android:background="@color/white"
```

```
android:layout_row="0"
```

```
android:layout_column="1"
```

```
android:layout_columnWeight="1"
```

```
android:text="DEL"/>
```

```
<Button
```

```
android:id="@+id/btnDIVIDE"
```

```
android:layout_width="wrap_content"
```

```
android:layout_height="80dp"
```

```
android:textSize="30sp"
```

```
android:textColor="@color/black"
```

```
android:background="@color/white"
```

```
android:layout_row="0"
```

```
android:layout_column="2"
```

```
android:layout_columnWeight="1"
```

```
android:text="/" />
```

```
<Button
```

```
android:id="@+id/btnMULTI"
```

```
android:layout_width="wrap_content"
```

```
android:layout_height="80dp"
```

```
android:textSize="30sp"
```

```
android:textColor="@color/black"
```

```
android:background="@color/white"
```

```
android:layout_row="0"
```

```
android:layout_column="3"
```

```
android:layout_columnWeight="1"
```

```
android:text="*" />
```

```
<Button
```

```
android:id="@+id/btnSUB"
```

```
android:layout_width="wrap_content"
```

```
android:layout_height="80dp"
```

```
android:textSize="30sp"
```

```
android:textColor="@color/black"
```

```
android:background="@color/white"
```

```
android:layout_row="1"
```

```
android:layout_column="3"
```

```
android:layout_columnWeight="1"
```

```
android:text="-" />
```

```
<Button
```

```
android:id="@+id/btn9"
```

```
android:layout_width="wrap_content"
```

```
android:layout_height="80dp"
```

```
        android:textSize="30sp"
        android:textColor="@color/black"
        android:background="@color/white"
        android:layout_row="1"
        android:layout_column="2"
        android:layout_columnWeight="1"
        android:text="9"/>
```

<Button

```
        android:id="@+id/btn8"
        android:layout_width="wrap_content"
        android:layout_height="80dp"
        android:textSize="30sp"
        android:textColor="@color/black"
        android:background="@color/white"
        android:layout_row="1"
        android:layout_column="1"
        android:layout_columnWeight="1"
        android:text="8"/>
```

<Button

```
        android:id="@+id/btn7"
        android:layout_width="wrap_content"
        android:layout_height="80dp"
        android:textSize="30sp"
        android:textColor="@color/black"
        android:background="@color/white"
        android:layout_row="1"
        android:layout_column="0"
        android:layout_columnWeight="1"
        android:text="7"/>
```

<Button

```
        android:id="@+id/btn4"
        android:layout_width="wrap_content"
        android:layout_height="80dp"
        android:textSize="30sp"
        android:textColor="@color/black"
        android:background="@color/white"
        android:layout_row="2"
        android:layout_column="0"
        android:layout_columnWeight="1"
        android:text="4"/>
```

<Button

```
        android:id="@+id/btn5"
        android:layout_width="wrap_content"
        android:layout_height="80dp"
        android:textSize="30sp"
        android:textColor="@color/black"
        android:background="@color/white"
        android:layout_row="2"
        android:layout_column="1"
        android:layout_columnWeight="1"
```

```
android:text="5"/>
```

```
<Button
```

```
android:id="@+id/btn6"
```

```
android:layout_width="wrap_content"
```

```
android:layout_height="80dp"
```

```
android:textSize="30sp"
```

```
android:textColor="@color/black"
```

```
android:background="@color/white"
```

```
android:layout_row="2"
```

```
android:layout_column="2"
```

```
android:layout_columnWeight="1"
```

```
android:text="6"/>
```

```
<Button
```

```
android:id="@+id/btnADD"
```

```
android:layout_width="wrap_content"
```

```
android:layout_height="80dp"
```

```
android:textSize="30sp"
```

```
android:textColor="@color/black"
```

```
android:background="@color/white"
```

```
android:layout_row="2"
```

```
android:layout_column="3"
```

```
android:layout_columnWeight="1"
```

```
android:text="+"/>
```

```
<Button
```

```
android:id="@+id/btn1"
```

```
android:layout_width="wrap_content"
```

```
android:layout_height="80dp"
```

```
android:textSize="30sp"
```

```
android:textColor="@color/black"
```

```
android:background="@color/white"
```

```
android:layout_row="3"
```

```
android:layout_column="0"
```

```
android:layout_columnWeight="1"
```

```
android:text="1"/>
```

```
<Button
```

```
android:id="@+id/btn2"
```

```
android:layout_width="wrap_content"
```

```
android:layout_height="80dp"
```

```
android:textSize="30sp"
```

```
android:textColor="@color/black"
```

```
android:background="@color/white"
```

```
android:layout_row="3"
```

```
android:layout_column="1"
```

```
android:layout_columnWeight="1"
```

```
android:text="2"/>
```

```
<Button
```

```
android:id="@+id/btn3"
```

```
android:layout_width="wrap_content"
```

```
android:layout_height="80dp"
```

```
        android:textSize="30sp"
        android:textColor="@color/black"
        android:background="@color/white"
        android:layout_row="3"
        android:layout_column="2"
        android:layout_columnWeight="1"
        android:text="3"/>
```

```
<Button
```

```
    android:id="@+id/btnEQUALS"
    android:layout_width="wrap_content"
    android:layout_height="80dp"
    android:textSize="30sp"
    android:textColor="@color/black"
    android:background="@color/white"
    android:layout_row="3"
    android:layout_column="3"
    android:layout_columnWeight="1"
    android:text=""
    android:layout_rowWeight="1"
    android:layout_rowSpan="2"/>
```

```
<Button
```

```
    android:id="@+id/btn0"
    android:layout_width="wrap_content"
    android:layout_height="80dp"
    android:textSize="30sp"
    android:textColor="@color/black"
    android:background="@color/white"
    android:layout_row="4"
    android:layout_column="1"
    android:layout_columnWeight="1"
    android:text="0"
    android:layout_columnSpan="2"/>
```

```
<Button
```

```
    android:id="@+id/btnDOT"
    android:layout_width="wrap_content"
    android:layout_height="80dp"
    android:textSize="30sp"
    android:textColor="@color/black"
    android:background="@color/white"
    android:layout_row="4"
    android:layout_column="0"
    android:layout_columnWeight="1"
    android:text="."/>
```

```
</GridLayout>
```



```
</LinearLayout>
```

```
</LinearLayout>
```

# Java Code :-

```
package com.example.mycalculator;
```

```
import androidx.appcompat.app.AppCompatActivity;
```

```
import android.os.Bundle;
```

```
import android.view.View;
```

```
import android.widget.Button;
```

```
import android.widget.TextView;
```

```
import java.text.DecimalFormat;
```

```
public class MainActivity extends AppCompatActivity {
```

```
    private Button btn0,btn1,btn2,btn3,btn4,btn5,btn6,btn7,btn8,btn9
```

```
        ,btnAC,btnDELETE,btnDIVIDE,btnMULTI,btnSUB,btnADD,btnEQUALS,btnDOT;
```

```
    private TextView textviewhistory,textviewresult;
```

```
    private String number = null;
```

```
    double firstNumber = 0;
```

```
    double lastNumber = 0;
```

```
    String status = null;
```

```
    boolean operator = false;
```

```
    DecimalFormat myformatter = new DecimalFormat("#####.#####");
```

```
    String history, currentresult;
```

```
    boolean dot = true;
```

```
    boolean btnACcontrol = true;
```

```
    boolean btnEQUALScontrol = false;
```

```

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);

    btn0 = findViewById(R.id.btn0);
    btn1 = findViewById(R.id.btn1);
    btn2 = findViewById(R.id.btn2);
    btn3 = findViewById(R.id.btn3);
    btn4 = findViewById(R.id.btn4);
    btn5 = findViewById(R.id.btn5);
    btn6 = findViewById(R.id.btn6);
    btn7 = findViewById(R.id.btn7);
    btn8 = findViewById(R.id.btn8);
    btn9 = findViewById(R.id.btn9);

    btnADD = findViewById(R.id.btnADD);
    btnDIVIDE = findViewById(R.id.btnDIVIDE);
    btnMULTI = findViewById(R.id.btnMULTI);
    btnSUB = findViewById(R.id.btnSUB);

    btnAC = findViewById(R.id.btnAC);
    btnDELETE = findViewById(R.id.btnDELETE);
    btnEQUALS = findViewById(R.id.btnEQUALS);
    btnDOT = findViewById(R.id.btnDOT);

    textviewhistory = findViewById(R.id.textviewhistory);
    textviewresult = findViewById(R.id.textviewresult);

    btn0.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            numberClick("0");
        }
    });

    btn1.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            numberClick("1");
        }
    });

    btn2.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            numberClick("2");
        }
    });

    btn3.setOnClickListener(new View.OnClickListener() {
        @Override

```

```
        public void onClick(View v) {  
            numberClick("3");  
        }  
    });
```

```
    btn4.setOnClickListener(new View.OnClickListener() {  
        @Override  
        public void onClick(View v) {  
            numberClick("4");  
        }  
    });
```

```
    btn5.setOnClickListener(new View.OnClickListener() {  
        @Override  
        public void onClick(View v) {  
            numberClick("5");  
        }  
    });
```

```
    btn6.setOnClickListener(new View.OnClickListener() {  
        @Override  
        public void onClick(View v) {  
            numberClick("6");  
        }  
    });
```

```
    btn7.setOnClickListener(new View.OnClickListener() {  
        @Override  
        public void onClick(View v) {  
            numberClick("7");  
        }  
    });
```

```
    btn8.setOnClickListener(new View.OnClickListener() {  
        @Override  
        public void onClick(View v) {  
            numberClick("8");  
        }  
    });
```

```
    btn9.setOnClickListener(new View.OnClickListener() {  
        @Override  
        public void onClick(View v) {  
            numberClick("9");  
        }  
    });
```

```
    btnAC.setOnClickListener(new View.OnClickListener() {  
        @Override  
        public void onClick(View v) {  
            number = null;  
            status = null;  
            textviewresult.setText("0");  
            textviewhistory.setText("");
```

```
        firstNumber = 0;
        lastNumber = 0;
        dot = true;
        btnACcontrol = true;
```

```
    }
    });
```

```
    btnADD.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            history = textviewhistory.getText().toString();
            currentresult = textviewresult.getText().toString();
            textviewhistory.setText(history+currentresult+"+");
            if (operator)
            {
                if (status == "multiplication")
                {
                    multi();
                } else if (status == "division")
                {
                    divide();
                } else if (status == "subtraction")
                {
                    sub();
                } else
                {
                    add();
                }
            }
        }
    });
```

```
    }
    status = "sum";
    operator = false;
    number = null;
```

```
    }
    });
```

```
    btnSUB.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            history = textviewhistory.getText().toString();
            currentresult = textviewresult.getText().toString();
            textviewhistory.setText(history+currentresult+"-");
```

```
            if (operator)
            {
                if (status == "multiplication")
                {
                    multi();
                } else if (status == "division")
                {
```

```

        divide();
    } else if (status == "addition")
    {
        add();
    } else
    {
        sub();
    }
}

```

```

    }
    status = "subtraction";
    operator = false;
    number = null;
}

```

```

    }
});

```

```

    btnDOT.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            if (dot)
            {
                if (number == null)
                {
                    number = "0.";
                }
                else
                {
                    number = number + ".";
                }
            }
        }
    }
}

```

```

        textviewresult.setText(number);
        dot = false;
    }
}

```

```

    }
});

```

```

    btnDIVIDE.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            history = textviewhistory.getText().toString();
            currentresult = textviewresult.getText().toString();
            textviewhistory.setText(history+currentresult+"/");
        }
    }
}

```

```

        if (operator)
        {
            if (status == "multiplication")
            {
                multi();
            } else if (status == "addition")
            {
                add();
            }
        }
    }
}

```

```

        } else if (status == "subtraction")
        {
            sub();
        } else
        {
            divide();
        }
    }
}

```

```

    }
    status = "division";
    operator = false;
    number = null;
}
}

```

```

    }
    });
}

```

```

    btnEQUALS.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            if (operator)
            {
                if (status == "addition")
                {
                    add();
                } else if (status == "subtraction") {
                    sub();

```

```

                } else if (status == "multiplication") {
                    multi();

```

```

                } else if (status == "division") {
                    divide();

```

```

            } else
            {
                firstNumber =
                Double.parseDouble(textviewresult.getText().toString());
            }

```

```

        }
        operator = false;
        btnEQUALScontrol = true;

```

```

    }
    });
}

```

```

    btnMULTI.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            history = textviewhistory.getText().toString();
            currentresult = textviewresult.getText().toString();
            textviewhistory.setText(history+currentresult+"*");

```

```

        if (operator)
        {
            if (status == "addition")
            {
                add();
            } else if (status == "division")
            {
                divide();
            } else if (status == "subtraction")
            {
                sub();
            } else
            {
                multi();
            }
        }
    }
}

```

```

        status = "multiplication";
        operator = false;
        number = null;
    }
}

```

```

    }
}

```

```

        btnDELETE.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                number = number.substring(0, number.length()-1);
                textViewresult.setText(number);
            }
        });
    }
}

```

```

    }
}

```

```

    }
    public void numberClick(String view)
    {
        if (number==null)
        {
            number = view;
        } else if (btnEQUALScontrol)
        {
            firstNumber = 0;
            lastNumber = 0;
            number = view;
        }
    }
}

```

```

        else
        {
            number = number + view;
        }
    }
}

```

```

        textViewresult.setText(number);
        operator = true;
        btnACcontrol = false;
        btnDELETE.setClickable(true);
        btnEQUALScontrol = false;

    }

    public void add()
    {
        lastNumber = Double.parseDouble(textViewresult.getText().toString());
        firstNumber = firstNumber + lastNumber;
        textViewresult.setText(myformatter.format(firstNumber));
        dot = true;
    }

    public void sub()
    {
        if (firstNumber == 0)
        {
            firstNumber =
Double.parseDouble(textViewresult.getText().toString());
        }
        else
        {
            lastNumber =
Double.parseDouble(textViewresult.getText().toString());
            firstNumber = firstNumber - lastNumber;
        }

        textViewresult.setText(myformatter.format(firstNumber));
        dot = true;
    }

    public void multi()
    {
        if (firstNumber == 0)
        {
            firstNumber = 1;

            lastNumber =
Double.parseDouble(textViewresult.getText().toString());
            firstNumber = firstNumber * lastNumber;
        }
        else
        {
            lastNumber =
Double.parseDouble(textViewresult.getText().toString());
            firstNumber = firstNumber * lastNumber;
        }

        textViewresult.setText(myformatter.format(firstNumber));
        dot = true;
    }

```



```
    }

    public void divide()
    {
        if (firstNumber == 0)
        {

            lastNumber =
Double.parseDouble(textviewresult.getText().toString());
            firstNumber = lastNumber / 1;

        }
        else
        {
            lastNumber =
Double.parseDouble(textviewresult.getText().toString());
            firstNumber = firstNumber / lastNumber;

        }
        textviewresult.setText(myformatter.format(firstNumber));
        dot = true;

    }

}
```