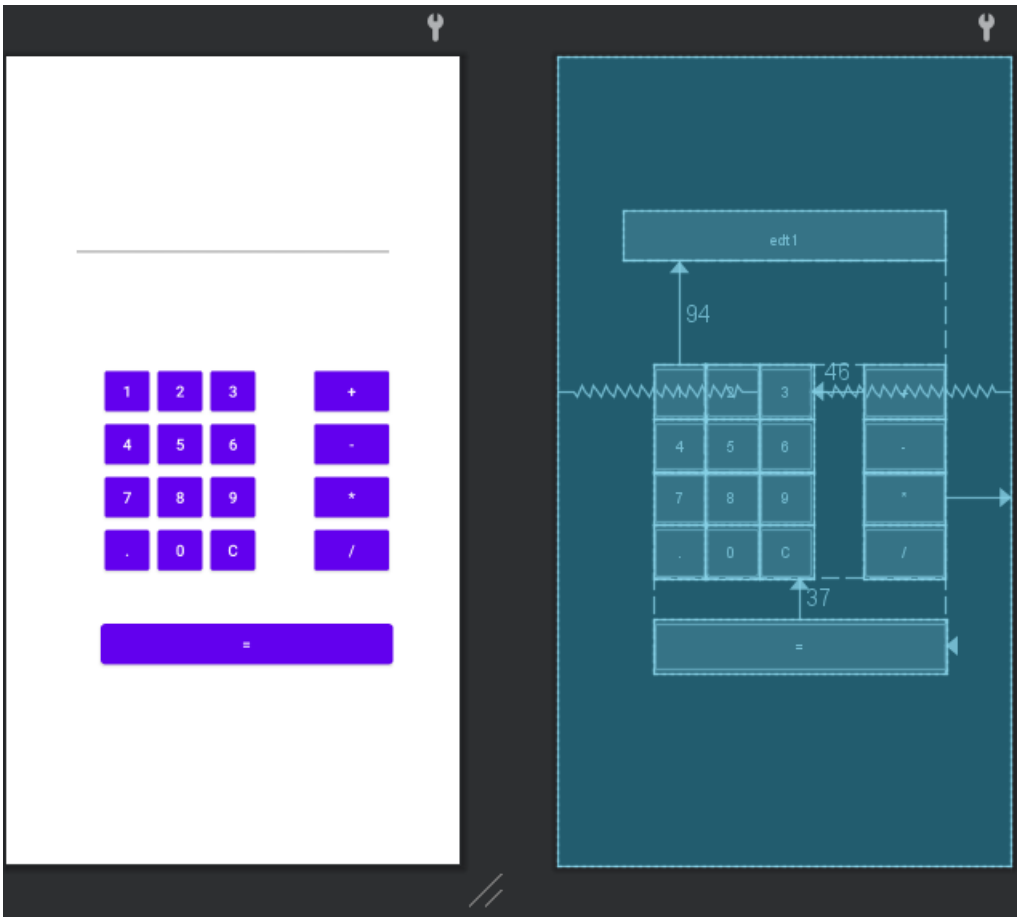
SIMPLE CALCULATOR



A simple Calculator built on Android Studio which has basic functionality such as Addition, Subtraction, Multiplication and Division.

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Introduction

Android Studio is the official integrated development environment (IDE) for Google's Android operating system, built on JetBrains' IntelliJ IDEA software and designed specifically for Android development. This project is built exactly of Android Studio.

The project is of a simple calculator with a simple User Interface for exploring the basics of Android programming. Using Java language instead of Kotlin, the functionality of the calculator is made simple to understand. This calculator has 4 basic functions of Addition, Subtraction, Multiplication and Division.

Java Code

```
package com.example.simplecalculator;

import android.os.Bundle;
import com.google.android.material.floatingactionbutton.FloatingActionButton;
import com.google.android.material.snackbar.Snackbar;
import androidx.appcompat.app.AppCompatActivity;
import androidx.appcompat.widget.Toolbar;
import android.view.View;
import android.view.Menu;
import android.view.MenuItem;
import android.widget.Button;
import android.widget.EditText;

public class MainActivity extends AppCompatActivity {
    Button button0, button1, button2, button3, button4, button5, button6, button7,
button8, button9, buttonDot, buttonAdd, buttonSub, buttonMul, buttonDiv,
buttonClr, buttonEqual;
    EditText Simple_CalculatorEditText;

    float mValueOne, mValueTwo;


    boolean Simple_CalculatorAddition, mSubtract, SimpleCalculator_Multiplication,
Simple_CalculatorDivision;

    @Override
    protected void onCreate(Bundle savedInstanceState) {


        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        button0 = (Button) findViewById(R.id.button0);
        button1 = (Button) findViewById(R.id.button1);
        button2 = (Button) findViewById(R.id.button2);
```

```
        button3 = (Button) findViewById(R.id.button3);
        button4 = (Button) findViewById(R.id.button4);
        button5 = (Button) findViewById(R.id.button5);
        button6 = (Button) findViewById(R.id.button6);
        button7 = (Button) findViewById(R.id.button7);
        button8 = (Button) findViewById(R.id.button8);
        button9 = (Button) findViewById(R.id.button9);
        buttonDot = (Button) findViewById(R.id.buttonDot);
        buttonAdd = (Button) findViewById(R.id.buttonAdd);
        buttonSub = (Button) findViewById(R.id.buttonSub);
        buttonMul = (Button) findViewById(R.id.buttonMul);
        buttonDiv = (Button) findViewById(R.id.buttonDiv);
        buttonClr = (Button) findViewById(R.id.buttonClr);
        buttonEqual = (Button) findViewById(R.id.buttonEqual);
        Simple_CalculatorEditText = (EditText) findViewById(R.id.edt1);

        button1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {

Simple_CalculatorEditText.setText(Simple_CalculatorEditText.getText() + "1");
            }
        });

        button2.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {

Simple_CalculatorEditText.setText(Simple_CalculatorEditText.getText() + "2");
            }
        });

        button3.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {

Simple_CalculatorEditText.setText(Simple_CalculatorEditText.getText() + "3");
            }
        });

        button4.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {

Simple_CalculatorEditText.setText(Simple_CalculatorEditText.getText() + "4");
            }
        });

        button5.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {

Simple_CalculatorEditText.setText(Simple_CalculatorEditText.getText() + "5");
            }
        });
```

```
        button6.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {

Simple_CalculatorEditText.setText(Simple_CalculatorEditText.getText() + "6");
            }
        });

        button7.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {

Simple_CalculatorEditText.setText(Simple_CalculatorEditText.getText() + "7");
            }
        });

        button8.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {

Simple_CalculatorEditText.setText(Simple_CalculatorEditText.getText() + "8");
            }
        });

        button9.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {

Simple_CalculatorEditText.setText(Simple_CalculatorEditText.getText() + "9");
            }
        });

        button0.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {

Simple_CalculatorEditText.setText(Simple_CalculatorEditText.getText() + "0");
            }
        });

        buttonAdd.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                if (Simple_CalculatorEditText == null){
                    Simple_CalculatorEditText.setText("");
                }
                else{
                    mValueOne =
Float.parseFloat(Simple_CalculatorEditText.getText() + "");
                    Simple_CalculatorAddition = true;
                    Simple_CalculatorEditText.setText(null);
                }
            }
        });
```

```
        buttonSub.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                mValueOne = Float.parseFloat(Simple_CalculatorEditText.getText() +
"");
                mSubtract = true;
                Simple_CalculatorEditText.setText(null);
            }
        });

        buttonMul.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                mValueOne = Float.parseFloat(Simple_CalculatorEditText.getText() +
"");
                SimpleCalculator_Multiplication = true;
                Simple_CalculatorEditText.setText(null);
            }
        });

        buttonDiv.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                mValueOne = Float.parseFloat(Simple_CalculatorEditText.getText() +
"");
                Simple_CalculatorDivision = true;
                Simple_CalculatorEditText.setText(null);
            }
        });

        buttonEqual.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                mValueTwo = Float.parseFloat(Simple_CalculatorEditText.getText() +
"");

                if(Simple_CalculatorAddition == true){
                    Simple_CalculatorEditText.setText(mValueOne + mValueTwo + "");
                    Simple_CalculatorAddition = false;
                }

                if(mSubtract == true){
                    Simple_CalculatorEditText.setText(mValueOne - mValueTwo + "");
                    mSubtract = false;
                }

                if(SimpleCalculator_Multiplication == true){
                    Simple_CalculatorEditText.setText(mValueOne * mValueTwo + "");
                    SimpleCalculator_Multiplication = false;
                }

                if(Simple_CalculatorDivision == true){
                    Simple_CalculatorEditText.setText(mValueOne / mValueTwo + "");
                    Simple_CalculatorDivision = false;
```

```
                }
            }
        });

        buttonClr.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Simple_CalculatorEditText.setText("");
            }
        });

        buttonDot.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {

Simple_CalculatorEditText.setText(Simple_CalculatorEditText.getText() + ".");
            }
        });


        /*Toolbar toolbar = findViewById(R.id.toolbar);
        setSupportActionBar(toolbar);

        FloatingActionButton fab = findViewById(R.id.fab);
        fab.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Snackbar.make(view, "Replace with your own action",
Snackbar.LENGTH_LONG)
                        .setAction("Action", null).show();
            }
        }); */
    }

    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        // Inflate the menu; this adds items to the action bar if it is present.
        getMenuInflater().inflate(R.menu.menu_main, menu);
        return true;
    }

    @Override
    public boolean onOptionsItemSelected(MenuItem item) {
        // Handle action bar item clicks here. The action bar will
        // automatically handle clicks on the Home/Up button, so long
        // as you specify a parent activity in AndroidManifest.xml.
        int id = item.getItemId();

        //noinspection SimplifiableIfStatement
        if (id == R.id.action_settings) {
            return true;
        }
        return super.onOptionsItemSelected(item);
    }
}
```

Layout Code

```
<?xml version="1.0" encoding="utf-8"?>


<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/relative1"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingLeft="60"
    android:paddingTop="140"
    android:paddingRight="60"
    tools:context=".MainActivity">

    <EditText
        android:id="@+id/edt1"
        android:layout_width="match_parent"
        android:layout_height="wrap_content" />


    <Button
        android:id="@+id/button1"
        style="?android:attr/buttonStyleSmall"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@+id/edt1"
        android:layout_alignEnd="@+id/button4"
        android:layout_alignRight="@+id/button4"
        android:layout_marginTop="94dp"
        android:text="1" />

    <Button
        android:id="@+id/button2"
        style="?android:attr/buttonStyleSmall"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignTop="@+id/button1"
        android:layout_toStartOf="@+id/button3"
        android:layout_toLeftOf="@+id/button3"
        android:text="2" />

    <Button
        android:id="@+id/button3"
        style="?android:attr/buttonStyleSmall"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignTop="@+id/button2"
        android:layout_centerHorizontal="true"
        android:text="3" />

    <Button
        android:id="@+id/button4"
```

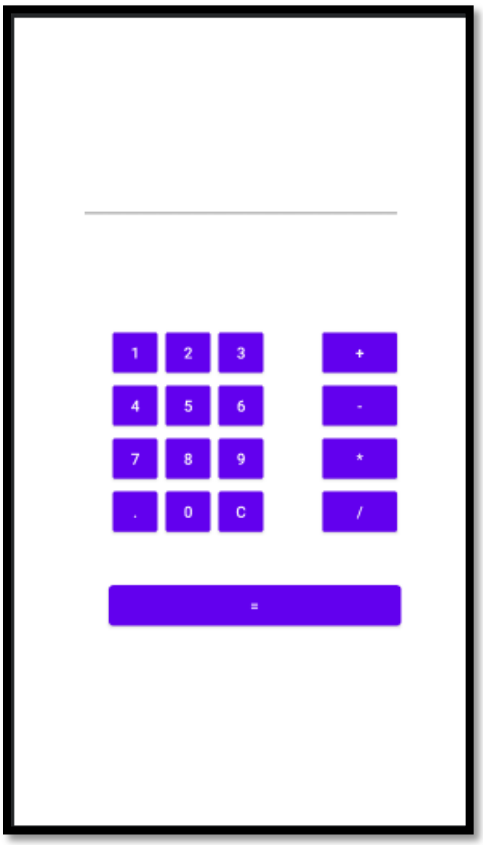
```
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/button1"
    android:layout_toLeftOf="@+id/button2"
    android:text="4" />

<Button
    android:id="@+id/button5"
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignStart="@+id/button2"
    android:layout_alignLeft="@+id/button2"
    android:layout_alignBottom="@+id/button4"
    android:text="5" />

<Button
    android:id="@+id/button6"
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/button3"
    android:layout_alignStart="@+id/button3"
    android:layout_alignLeft="@+id/button3"
    android:text="6" />

<Button
    android:id="@+id/button7"
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/button4"
    android:layout_toLeftOf="@+id/button2"
    android:text="7" />

<Button
    android:id="@+id/button8"
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/button5"
    android:layout_alignStart="@+id/button5"
    android:layout_alignLeft="@+id/button5"
    android:text="8" />

<Button
    android:id="@+id/button9"
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/button6"
    android:layout_alignStart="@+id/button6"
    android:layout_alignLeft="@+id/button6"
    android:text="9" />
```

```
<Button
    android:id="@+id/buttonAdd"
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignTop="@+id/button3"
    android:layout_alignEnd="@+id/edt1"
    android:layout_alignRight="@+id/edt1"
    android:layout_marginStart="46dp"
    android:layout_marginLeft="46dp"
    android:layout_toRightOf="@+id/button3"
    android:text="+" />

<Button
    android:id="@+id/buttonSub"
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/buttonAdd"
    android:layout_alignStart="@+id/buttonAdd"
    android:layout_alignLeft="@+id/buttonAdd"
    android:layout_alignEnd="@+id/buttonAdd"
    android:layout_alignRight="@+id/buttonAdd"
    android:text="-" />

<Button
    android:id="@+id/buttonMul"
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/buttonSub"
    android:layout_alignStart="@+id/buttonSub"
    android:layout_alignLeft="@+id/buttonSub"
    android:layout_alignParentEnd="true"
    android:layout_alignParentRight="true"
    android:text="*" />

<Button
    android:id="@+id/buttonDot"
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/button7"
    android:layout_toLeftOf="@+id/button2"
    android:text="." />

<Button
    android:id="@+id/button0"
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/button8"
    android:layout_alignStart="@+id/button8"
    android:layout_alignLeft="@+id/button8"
```

```
        android:text="0" />

    <Button
        android:id="@+id/buttonClr"
        style="?android:attr/buttonStyleSmall"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@+id/button9"
        android:layout_alignStart="@+id/button9"
        android:layout_alignLeft="@+id/button9"
        android:text="C" />

    <Button
        android:id="@+id/buttonDiv"
        style="?android:attr/buttonStyleSmall"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@+id/buttonMul"
        android:layout_alignStart="@+id/buttonMul"
        android:layout_alignLeft="@+id/buttonMul"
        android:layout_alignEnd="@+id/buttonMul"
        android:layout_alignRight="@+id/buttonMul"
        android:text="/" />

    <Button
        android:id="@+id/buttonEqual"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@+id/button0"
        android:layout_alignStart="@+id/buttonDot"
        android:layout_alignLeft="@+id/buttonDot"
        android:layout_alignEnd="@+id/buttonDiv"
        android:layout_alignRight="@+id/buttonDiv"
        android:layout_marginTop="37dp"
        android:text="=" />

</RelativeLayout>
```

Output

Actual User Interface:



Inference

- A lot of improvements can be made on the User Interface.
- Relative constraints are logical to be applied for the buttons but not for the screen.
- More functions such as logarithmic functions, trigonometric functions and exponential functions can be added further to make the calculator more useful.