MOBILE APPLICATIONS DEVELOPMENT LAB CSLR-34

11/02/2021

Lab1

Submitted By: -

Supria Basak

106118116

CSE

QUESTION-1: MAKE AN APP TO ADD, SUBTRACT, MULTIPLY AND DIVIDE TWO NUMBERS

EXPERIMENT NAME: BASIC ANDROID APPLICATION

AIM:

Make an app to add, subtract, multiply and divide two numbers.

DESCRIPTION OF APP:

Made an app to add, subtract, multiply and divide two numbers.

1. Read 2 nos(Decimal and signed)
2. Add/sub/mul/div 2 nos

DEVICE SPECIFICATION:

Device Name: - Pixel 3a XL (6 1080x2160 xxhdpi)
Android Version: - R (Android 10.0+ x86)
API Level: - 30
Screen Size: - 6 inch
RAM: - 2048 MB

TECHNICAL CONCEPTS LEARNT:

- EditText:A user interface element for entering and modifying text. When you define an edit text widget, you must specify the R.styleable.TextView_inputType attribute.

- Button : A button consists of text or an icon (or both text and an icon) that communicates whataction occurs when the user touches it.

- Radio ButtonRadio buttons allow the user to select one option from a set.

SOURCE CODE:

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout 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"
    tools:layout_editor_absoluteY="81dp">

    <TextView
        android:id="@+id/result"
        android:layout_width="100dp"
        android:layout_height="25dp"
        android:layout_marginStart="160dp"
        android:layout_marginLeft="160dp"
        android:layout_marginTop="360dp"
        android:textSize="20sp"
```

```
        android:textStyle="bold" />

    <EditText
        android:id="@+id/number1"
        android:layout_width="125dp"
        android:layout_height="40dp"
        android:layout_marginStart="50dp"
        android:layout_marginLeft="50dp"
        android:layout_marginTop="40dp"
        android:autofillHints=""
        android:inputType="number"
        tools:ignore="LabelFor" />


    <EditText
        android:id="@+id/number2"
        android:layout_width="125dp"
        android:layout_height="40dp"
        android:layout_marginStart="225dp"
        android:layout_marginLeft="225dp"
        android:layout_marginTop="40dp"
        android:autofillHints=""
        android:inputType="number"
        tools:ignore="LabelFor,Missing Constraints" />

    <RadioGroup
        android:id="@+id/radioGroup"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@+id/number2"
        android:layout_marginTop="24dp"
        android:orientation="vertical"
        android:showDividers="beginning|middle|end">


        <RadioButton
            android:id="@+id/add"
            android:layout_width="110dp"
            android:layout_height="wrap_content"
            android:checked="true"
            android:text="@string/Addition" />

        <RadioButton
            android:id="@+id/sub"
            android:layout_width="124dp"
            android:layout_height="wrap_content"
            android:checked="false"
            android:text="@string/Subtraction" />

        <RadioButton
            android:id="@+id/mul"
            android:layout_width="131dp"
            android:layout_height="wrap_content"
            android:checked="false"
            android:text="@string/Multiplication" />

        <RadioButton
            android:id="@+id/div"
            android:layout_width="109dp"
            android:layout_height="wrap_content"
            android:checked="false"
            android:text="@string/Division" />
```

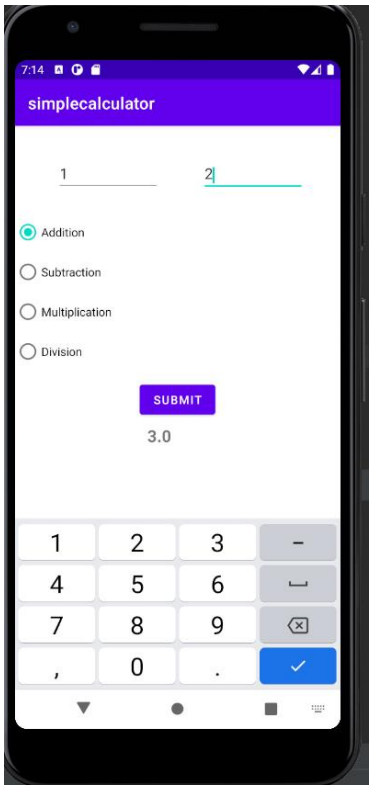
```
    </RadioGroup>

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/Submit"
        android:id="@+id/submit_button"
        android:layout_below="@+id/radioGroup"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="10dp"/>



</RelativeLayout>
```

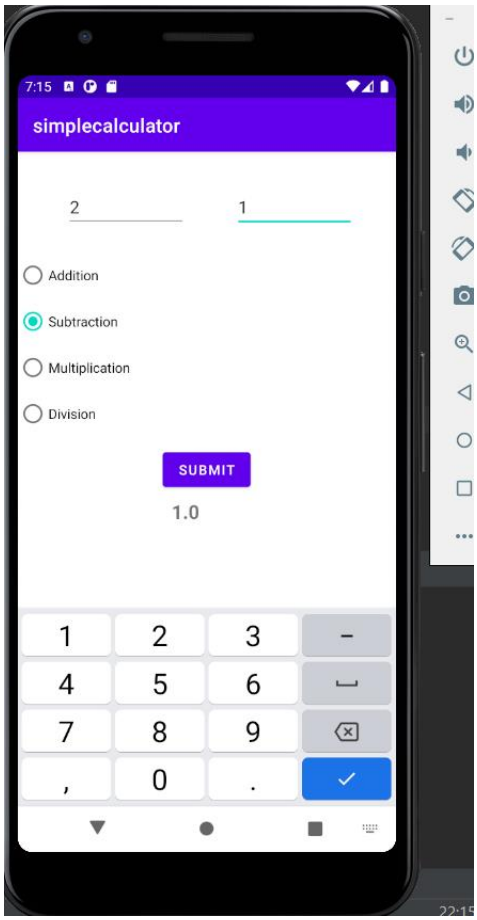
MainActivity.java

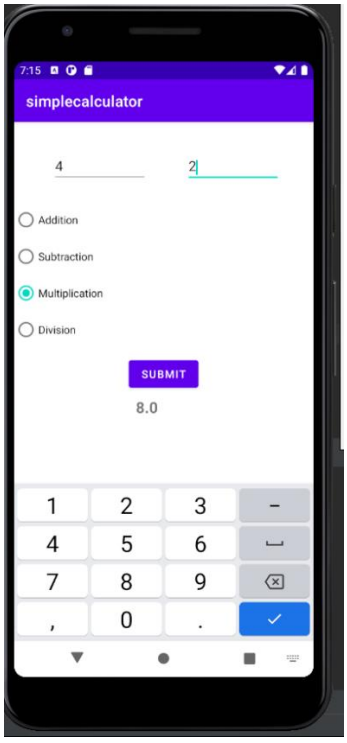
```
package com.example.simplecalculator;

import androidx.appcompat.app.AppCompatActivity;

import android.annotation.SuppressLint;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.RadioButton;
import android.widget.RadioGroup;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

    EditText number1;
    EditText number2;
    Button Submit_button;
    RadioGroup radio_group;
    RadioButton selection;
    TextView result;
    int ans=0;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        number1=(EditText) findViewById(R.id.number1);
        number2=(EditText) findViewById(R.id.number2);
        Submit_button=(Button) findViewById(R.id.submit_button);
        result = (TextView) findViewById(R.id.result);
        radio_group = (RadioGroup)findViewById(R.id.radioGroup);
        Submit_button.setOnClickListener(new View.OnClickListener() {

            @SuppressLint("SetTextI18n")
            public void onClick(View v) {
                if(number1.getText().toString().matches(""))
                {
                    if(number2.getText().toString().matches(""))
                        result.setText("Enter both the numbers");
                    else
                        result.setText("Enter 1st number");
```

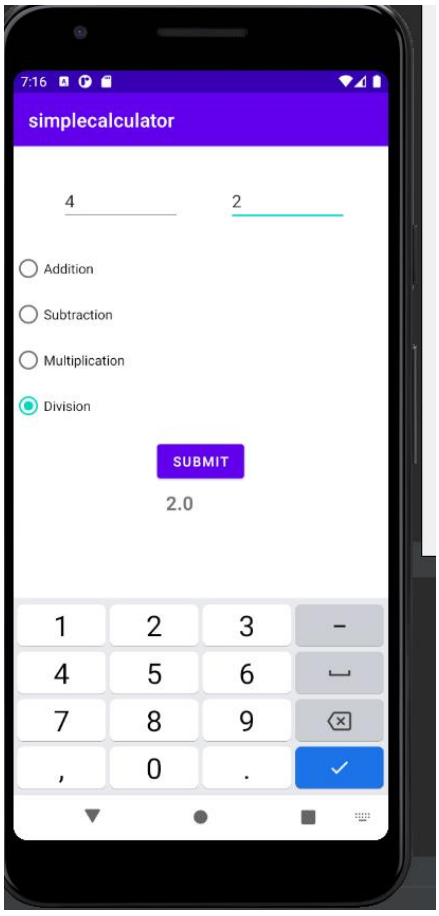
```
                }
                else if(number2.getText().toString().matches(""))
                {
                    result.setText("Enter 2nd number");
                }
                else {
                    double no1 = Double.parseDouble(number1.getText().toString());
                    double no2 = Double.parseDouble(number2.getText().toString());
                    selection = (RadioButton)
findViewById(radio_group.getCheckedRadioButtonId());
                    String option = selection.getText().toString();
                    double a = 0;
                    switch (option) {
                        case "Addition":
                            a = no1 + no2;
                            break;
                        case "Subtraction":
                            a = no1 - no2;
                            break;
                        case "Multiplication":
                            a = no1 * no2;
                            break;
                        case "Division":
                            a = no1 / no2;
                            break;
                    }

                    result.setText(Double.toString(a));
                }
            }
        });
    }
}
```

Screenshots:




7:15
simplecalculator
2
1
Addition
Subtraction
Multiplication
Division
SUBMIT
1.0


7:15
simplecalculator
4
2
Addition
Subtraction
Multiplication
Division
SUBMIT
8.0



Outcomes:

Created a basic App to implement addition, subtraction, multiplication, division of two numbers using Radio button.

QUESTION 2: MAKE APP TO IMPLEMENT A BASIC CALCULATOR

EXPERIMENT NAME: BASIC ANDROID APPLICATION

AIM: MAKE APP TO IMPLEMENT A BASIC CALCULATOR

DESCRIPTION OF APP:

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- Button : A button consists of text or an icon (or both text and an icon) that communicates whataction occurs when the user touches it.
- Radio ButtonRadio buttons allow the user to select one option from a set.

Source Code:

MainActivity.java

```
package com.example.bmi;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;

import android.view.View;
import android.widget.Button;
import android.widget.EditText;

public class MainActivity extends AppCompatActivity {

    Button button0, button1, button2, button3, button4, button5, button6,
            button7, button8, button9, buttonAdd, buttonSub, buttonDivision,
            buttonMul, button10, buttonC, buttonEqual;
    EditText crunchifyEditText;

    float mValueOne, mValueTwo;

    boolean crunchifyAddition, mSubtract, crunchifyMultiplication,
crunchifyDivision;

    @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);
        button10 = (Button) findViewById(R.id. button10);
        buttonAdd = (Button)findViewById(R.id.buttonadd);
        buttonSub = (Button)findViewById(R.id.buttonsub);
        buttonMul = (Button)findViewById(R.id.buttonmul);
        buttonDivision = (Button) findViewById(R.id.buttondiv);
        buttonC = (Button) findViewById(R.id.buttonC);
        buttonEqual = (Button) findViewById(R.id.buttoneql);
```

```
        crunchifyEditText = (EditText) findViewById(R.id.edt1);


        button1.setOnClickListener(new View.OnClickListener(){
            @Override
            public void onClick(View v) {
                crunchifyEditText.setText(crunchifyEditText.getText() + "1");
            }
        });

        button2.setOnClickListener(new View.OnClickListener(){
            @Override
            public void onClick(View v) {
                crunchifyEditText.setText(crunchifyEditText.getText() + "2");
            }
        });

        button3.setOnClickListener(new View.OnClickListener(){
            @Override
            public void onClick(View v) {
                crunchifyEditText.setText(crunchifyEditText.getText() + "3");
            }
        });

        button4.setOnClickListener(new View.OnClickListener(){
            @Override
            public void onClick(View v) {
                crunchifyEditText.setText(crunchifyEditText.getText() + "4");
            }
        });

        button5.setOnClickListener(new View.OnClickListener(){
            @Override
            public void onClick(View v) {
                crunchifyEditText.setText(crunchifyEditText.getText() + "5");
            }
        });

        button6.setOnClickListener(new View.OnClickListener(){
            @Override
            public void onClick(View v) {
                crunchifyEditText.setText(crunchifyEditText.getText() + "6");
            }
        });

        button7.setOnClickListener(new View.OnClickListener(){
            @Override
            public void onClick(View v) {
                crunchifyEditText.setText(crunchifyEditText.getText() + "7");
            }
        });

        button8.setOnClickListener(new View.OnClickListener(){
            @Override
            public void onClick(View v) {
                crunchifyEditText.setText(crunchifyEditText.getText() + "8");
            }
        });
```

```
        button9.setOnClickListener(new View.OnClickListener(){
            @Override
            public void onClick(View v) {
                crunchifyEditText.setText(crunchifyEditText.getText() + "9");
            }
        });

        button0.setOnClickListener(new View.OnClickListener(){
            @Override
            public void onClick(View v) {
                crunchifyEditText.setText(crunchifyEditText.getText() + "0");
            }
        });

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

                if (crunchifyEditText == null) {
                    crunchifyEditText.setText("");
                } else {
                    mValueOne = Float.parseFloat(crunchifyEditText.getText() +
"");

                    crunchifyAddition = true;
                    crunchifyEditText.setText(null);
                }
            }
        });

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

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

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

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

```
                mValueTwo = Float.parseFloat(crunchifyEditText.getText() + "");

                if (crunchifyAddition == true) {
                    crunchifyEditText.setText(mValueOne + mValueTwo + "");
                    crunchifyAddition = false;
                }

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

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

                if (crunchifyDivision == true) {
                    crunchifyEditText.setText(mValueOne / mValueTwo + "");
                    crunchifyDivision = false;
                }
            }
        });

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

        button10.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                crunchifyEditText.setText(crunchifyEditText.getText() + ".");
            }
        });
    }
}
```

activity_main.xml

```
<?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"
    tools:context=".MainActivity">

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

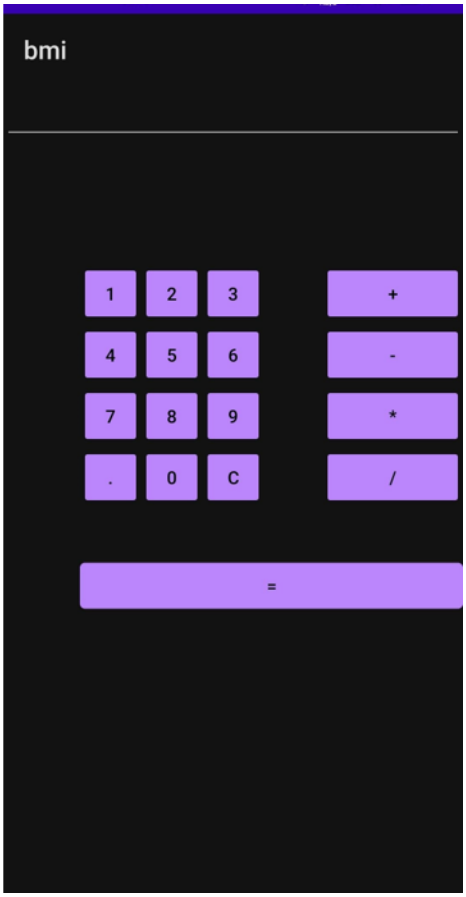
```
    <Button
        android:id="@+id/button1"
        style="?android:attr/buttonStyleSmall"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignEnd="@+id/button4"
        android:layout_alignRight="@+id/button4"
        android:layout_below="@+id/edt1"
        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_toLeftOf="@+id/button3"
        android:layout_toStartOf="@+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_alignBottom="@+id/button4"
        android:layout_alignLeft="@+id/button2"
        android:layout_alignStart="@+id/button2"
        android:text="5" />

    <Button
        android:id="@+id/button6"
        style="?android:attr/buttonStyleSmall"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignLeft="@+id/button3"
        android:layout_alignStart="@+id/button3"
        android:layout_below="@+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_alignLeft="@+id/button5"
        android:layout_alignStart="@+id/button5"
        android:layout_below="@+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_alignLeft="@+id/button6"
        android:layout_alignStart="@+id/button6"
        android:layout_below="@+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_alignEnd="@+id/edt1"
        android:layout_alignRight="@+id/edt1"
        android:layout_alignTop="@+id/button3"
        android:layout_marginLeft="46dp"
        android:layout_marginStart="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_alignEnd="@+id/buttonadd"
        android:layout_alignLeft="@+id/buttonadd"
        android:layout_alignRight="@+id/buttonadd"
        android:layout_alignStart="@+id/buttonadd"
        android:layout_below="@+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_alignLeft="@+id/buttonsub"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:layout_alignStart="@+id/buttonsub"
        android:layout_below="@+id/buttonsub"
        android:text="*" />

    <Button
        android:id="@+id/button10"
        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_alignLeft="@+id/button8"
        android:layout_alignStart="@+id/button8"
        android:layout_below="@+id/button8"
        android:text="0" />

    <Button
        android:id="@+id/buttonC"
        style="?android:attr/buttonStyleSmall"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignLeft="@+id/button9"
        android:layout_alignStart="@+id/button9"
        android:layout_below="@+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_alignEnd="@+id/buttonmul"
        android:layout_alignLeft="@+id/buttonmul"
        android:layout_alignRight="@+id/buttonmul"
        android:layout_alignStart="@+id/buttonmul"
        android:layout_below="@+id/buttonmul"
        android:text="/" />

    <Button
        android:id="@+id/buttoneql"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignEnd="@+id/buttondiv"
        android:layout_alignLeft="@+id/button10"
        android:layout_alignRight="@+id/buttondiv"
        android:layout_alignStart="@+id/button10"
        android:layout_below="@+id/button0"
        android:layout_marginTop="37dp"
        android:text="=" />
```

```
</RelativeLayout>
```

Screenshot:



Outcomes:

- Built a basic Calculator app which can successfully add, multiply, divide and subtract.
- Learnt about EditText, TextView and Buttons of xml files and how to use them in Java MainActivity.
- Learnt the basic differences between Java and Kotlin.