# INTRODUCTION

Android is a mobile operating system based on a modified version of the Linux kernel and other open source software, designed primarily for touchscreen mobile devices such as smartphones and tablets. Android is developed by a consortium of developers known as the Open Handset Alliance and commercially sponsored by Google. It was unveiled in November 2007, with the first commercial Android device, the HTC Dream, being launched in September 2008.

Most versions of Android are proprietary. The core components are taken from the Android Open Source Project (AOSP), which is free and open-source software (FOSS) primarily licensed under the Apache License. When Android is actually installed on devices, ability to modify the otherwise FOSS software is usually restricted, either by not providing the corresponding source code or preventing reinstallation through technical measures, rendering the installed version proprietary. Most Android devices ship with additional proprietary software pre-installed, most notably Google Mobile Services (GMS) which includes core apps such as Google Chrome, the digital distribution platform Google Play, and associated Google Play Services development platform.

Android has been the best-selling OS worldwide on smartphones since 2011 and on tablets since 2013. As of May 2021, it has over three billion monthly active users, the largest installed base of any operating system, and as of January 2021, the Google Play Store features over 3 million apps. Android 12 is released on October 4, 2021, is the latest version.

# HARDWARE AND SOFTWARE REQUIREMENT

- Hardware Requirement:

  1] Computer system: - Windows 10, Intel i5 8th gen
  2] RAM: - 6 GB.

- Software Requirement:

  1] Android Studio 3.3 latest.
  2] Java JDK.

# SOURCE CODE

**XML Code :-**

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"

    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#ecf0f1"
    android:orientation="vertical">


    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_weight="0.3"
        android:orientation="horizontal">

        <TextView
            android:id="@+id/display"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:background="#ecf0f1"
            android:textSize="30sp" />
    </LinearLayout>

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_weight="0.2"
        android:orientation="horizontal">

        <Button
            android:id="@+id/buttonDel"
            android:layout_width="wrap_content"
            android:layout_height="match_parent"
            android:layout_margin="1dp"
            android:layout_weight="0.25"
            android:background="@drawable/button"
            android:text="Del"
            android:textColor="#ecf0f1"
            android:textSize="20sp" />

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

```
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:background="@drawable/button"
        android:text="Answer"
        android:textColor="#ecf0f1"
        android:textSize="30sp" />

    </LinearLayout>

    <LinearLayout
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:layout_weight="0.2"
      android:orientation="horizontal">

      <Button
        android:id="@+id/b1"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:background="@drawable/selector"
        android:text="1"
        android:textColor="#ecf0f1"
        android:textSize="20sp" />

      <Button
        android:id="@+id/b2"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:background="@drawable/selector"
        android:text="2"
        android:textColor="#ecf0f1"
        android:textSize="20sp" />

      <Button
        android:id="@+id/b3"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:background="@drawable/selector"
        android:text="3"
        android:textColor="#ecf0f1"
        android:textSize="20sp" />
```

```
    <Button
        android:id="@+id/biv"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:background="@drawable/operator_buttons"
        android:text="/"
        android:textColor="#ecf0f1"
        android:textSize="30sp" />

</LinearLayout>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_weight="0.2"
    android:orientation="horizontal">

    <Button
        android:id="@+id/b4"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:background="@drawable/selector"
        android:text="4"
        android:textColor="#ecf0f1"
        android:textSize="20sp" />

    <Button
        android:id="@+id/b5"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:background="@drawable/selector"
        android:text="5"
        android:textColor="#ecf0f1"
        android:textSize="20sp" />

    <Button
        android:id="@+id/b6"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:background="@drawable/selector"
        android:text="6"
        android:textColor="#ecf0f1"
```

```
        android:textSize="20sp" />

    <Button
        android:id="@+id/bsub"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:background="@drawable/operator_buttons"
        android:text="-"
        android:textColor="#ecf0f1"
        android:textSize="30sp" />

</LinearLayout>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_weight="0.2"
    android:orientation="horizontal">

    <Button
        android:id="@+id/b7"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:background="@drawable/selector"
        android:text="7"
        android:textColor="#ecf0f1"
        android:textSize="20sp" />

    <Button
        android:id="@+id/b8"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:background="@drawable/selector"
        android:text="8"
        android:textColor="#ecf0f1"
        android:textSize="20sp" />

    <Button
        android:id="@+id/b9"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:background="@drawable/selector"
```

```
        android:text="9"
        android:textColor="#ecf0f1"
        android:textSize="20sp" />

    <Button
        android:id="@+id/bmul"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:background="@drawable/operator_buttons"
        android:text="x"
        android:textColor="#ecf0f1"
        android:textSize="30sp" />

</LinearLayout>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_weight="0.2"
    android:orientation="horizontal">

    <Button
        android:id="@+id/bDot"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:background="@drawable/selector"
        android:text="."
        android:textColor="#ecf0f1"
        android:textSize="20sp" />

    <Button
        android:id="@+id/b0"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:background="@drawable/selector"
        android:text="0"
        android:textColor="#ecf0f1"
        android:textSize="20sp" />

    <Button
        android:id="@+id/BRemain"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
```

```
        android:layout_weight="0.25"
        android:background="@drawable/operator_buttons"
        android:text="%"
        android:textColor="#ecf0f1"
        android:textSize="30sp" />

    <Button
        android:id="@+id/badd"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:background="@drawable/operator_buttons"
        android:onClick="onClick"
        android:text="+"
        android:textColor="#ecf0f1"
        android:textSize="30sp" />

  </LinearLayout>


</LinearLayout>
```

## Main activity java Code :-

```
package com.DataFlair.mycalculator;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;


public class MainActivity extends AppCompatActivity {

    double in1 = 0, i2 = 0;
    TextView edittext1;
    boolean Add, Sub, Multiply, Divide, Remainder, deci;
    Button button_0, button_1, button_2, button_3, button_4, button_5, button_6, button_7,
button_8, button_9, button_Add, button_Sub,
            button_Mul, button_Div, button_Equ, button_Del, button_Dot, button_Remainder;

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

        button_0 = (Button) findViewById(R.id.b0);
        button_1 = (Button) findViewById(R.id.b1);
        button_2 = (Button) findViewById(R.id.b2);
        button_3 = (Button) findViewById(R.id.b3);
        button_4 = (Button) findViewById(R.id.b4);
        button_5 = (Button) findViewById(R.id.b5);
        button_6 = (Button) findViewById(R.id.b6);
        button_7 = (Button) findViewById(R.id.b7);
        button_8 = (Button) findViewById(R.id.b8);
        button_9 = (Button) findViewById(R.id.b9);
        button_Dot = (Button) findViewById(R.id.bDot);
        button_Add = (Button) findViewById(R.id.badd);
        button_Sub = (Button) findViewById(R.id.bsub);
        button_Mul = (Button) findViewById(R.id.bmul);
        button_Div = (Button) findViewById(R.id.biv);
        button_Remainder = (Button) findViewById(R.id.BRemain);
        button_Del = (Button) findViewById(R.id.buttonDel);
        button_Equ = (Button) findViewById(R.id.buttoneql);

        edittext1 = (TextView) findViewById(R.id.display);

        button_1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                edittext1.setText(edittext1.getText() + "1");
```

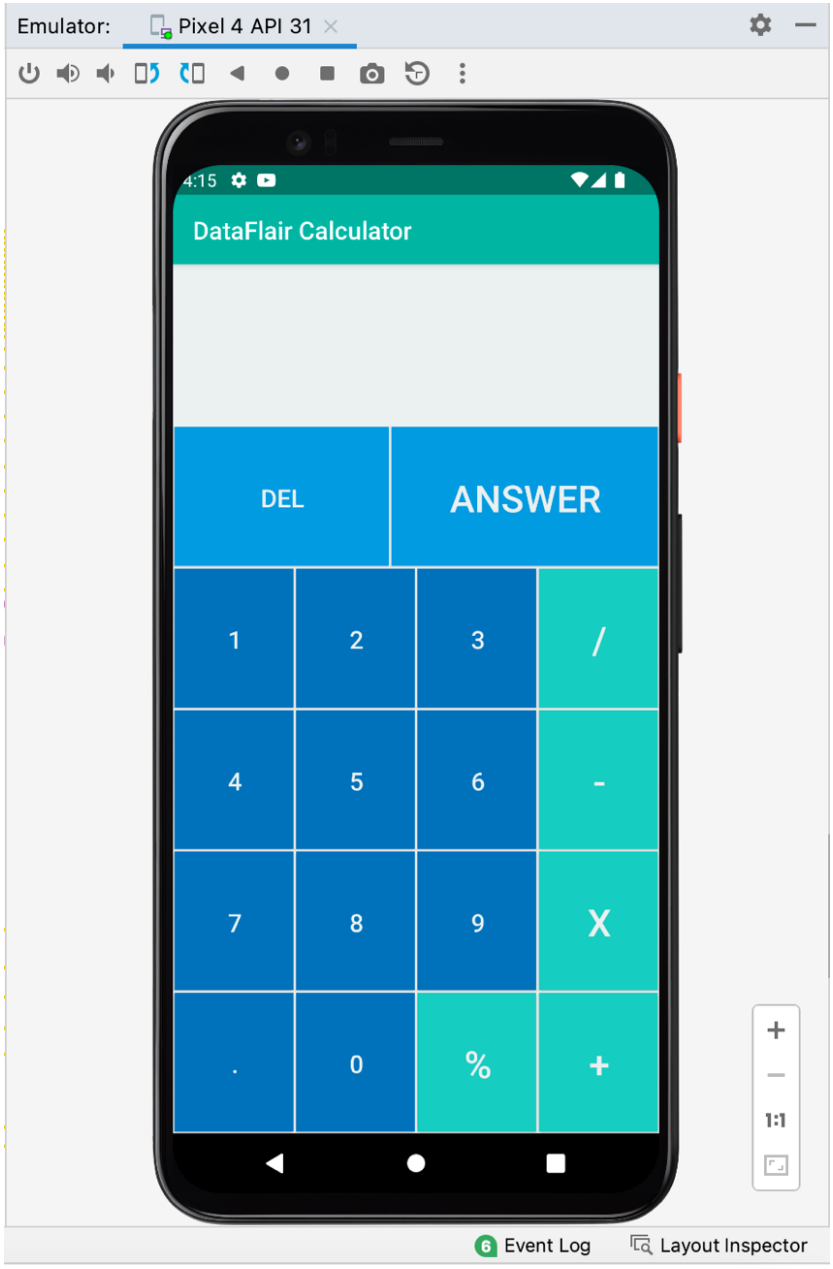
```
    }
});

button_2.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        edittext1.setText(edittext1.getText() + "2");
    }
});

button_3.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        edittext1.setText(edittext1.getText() + "3");
    }
});

button_4.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        edittext1.setText(edittext1.getText() + "4");
    }
});

button_5.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        edittext1.setText(edittext1.getText() + "5");
    }
});

button_6.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        edittext1.setText(edittext1.getText() + "6");
    }
});

button_7.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        edittext1.setText(edittext1.getText() + "7");
    }
});

button_8.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        edittext1.setText(edittext1.getText() + "8");
    }
```

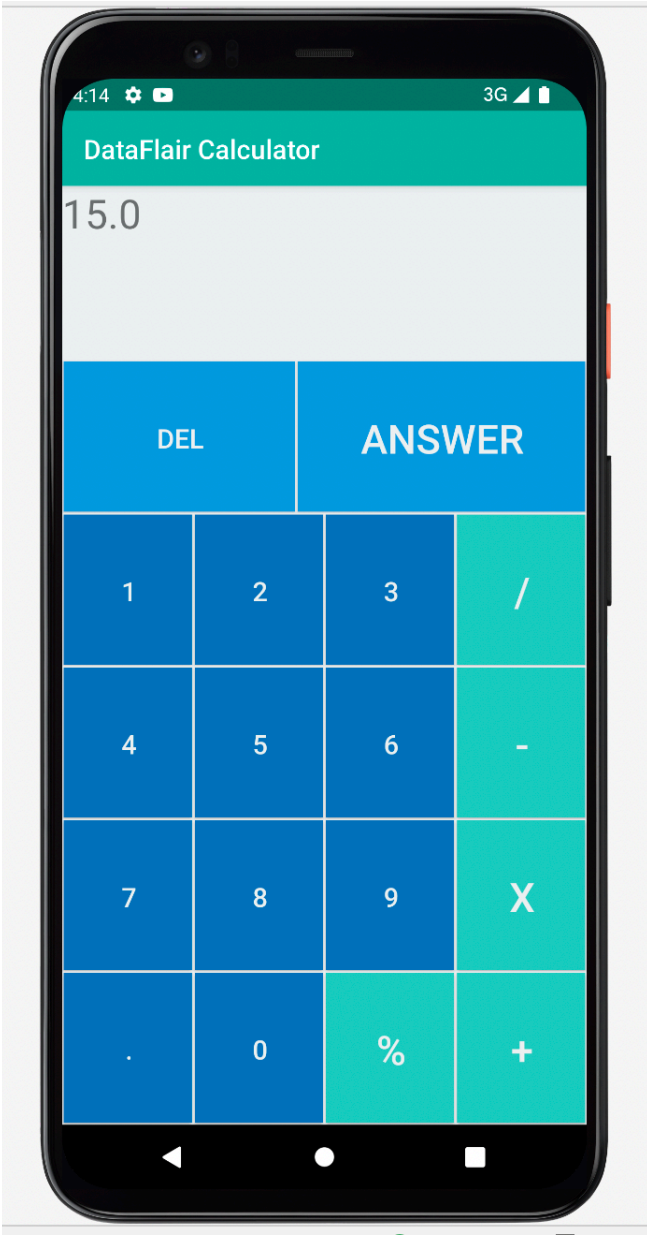
```
});

button_9.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        edittext1.setText(edittext1.getText() + "9");
    }
});

button_0.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        edittext1.setText(edittext1.getText() + "0");
    }
});

button_Add.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        if (edittext1.getText().length() != 0) {
            in1 = Float.parseFloat(edittext1.getText() + "");
            Add = true;
            deci = false;
            edittext1.setText(null);
        }
    }
});

button_Sub.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        if (edittext1.getText().length() != 0) {
            in1 = Float.parseFloat(edittext1.getText() + "");
            Sub = true;
            deci = false;
            edittext1.setText(null);
        }
    }
});

button_Mul.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        if (edittext1.getText().length() != 0) {
            in1 = Float.parseFloat(edittext1.getText() + "");
            Multiply = true;
            deci = false;
            edittext1.setText(null);
        }
    }
```

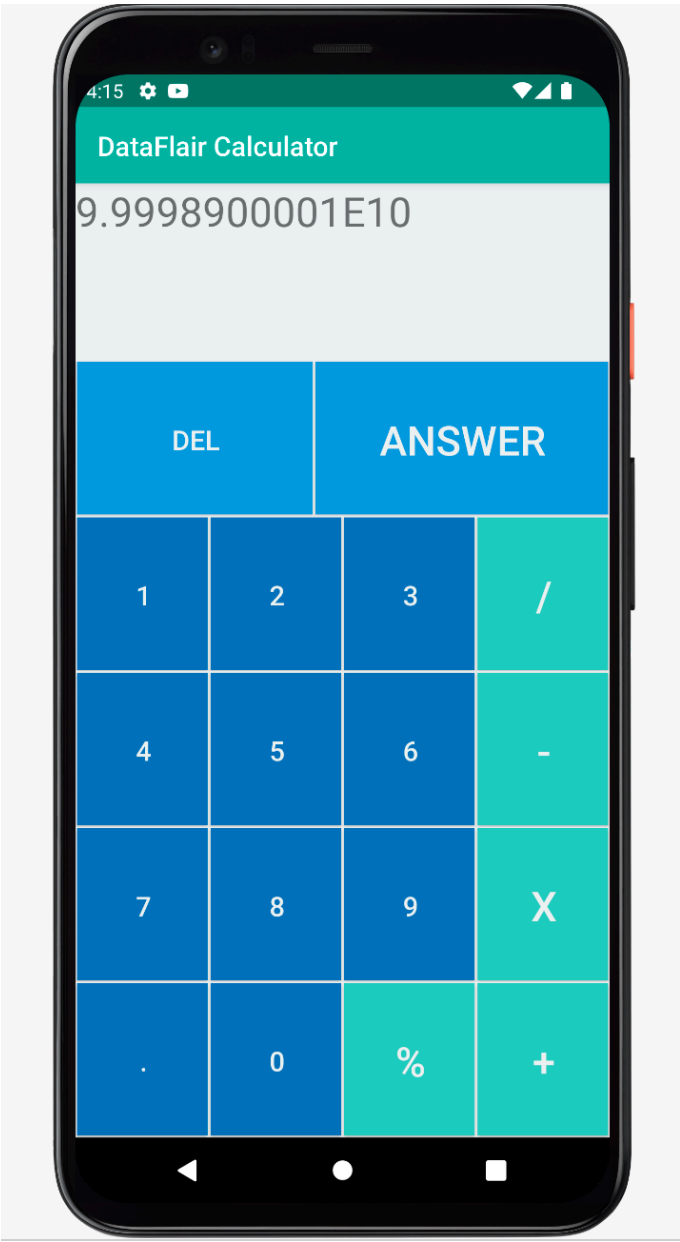
```
});

button_Div.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        if (edittext1.getText().length() != 0) {
            in1 = Float.parseFloat(edittext1.getText() + "");
            Divide = true;
            deci = false;
            edittext1.setText(null);
        }
    }
});

button_Remainder.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        if (edittext1.getText().length() != 0) {
            in1 = Float.parseFloat(edittext1.getText() + "");
            Remainder = true;
            deci = false;
            edittext1.setText(null);
        }
    }
});

button_Equ.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        if (Add || Sub || Multiply || Divide || Remainder) {
            i2 = Float.parseFloat(edittext1.getText() + "");
        }

        if (Add) {

            edittext1.setText(in1 + i2 + "");
            Add = false;
        }

        if (Sub) {

            edittext1.setText(in1 - i2 + "");
            Sub = false;
        }

        if (Multiply) {
            edittext1.setText(in1 * i2 + "");
            Multiply = false;
        }
```

```
            if (Divide) {
                edittext1.setText(in1 / i2 + "");
                Divide = false;
            }
            if (Remainder) {
                edittext1.setText(in1 % i2 + "");
                Remainder = false;
            }
        }
    });

    button_Del.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            edittext1.setText("");
            in1 = 0.0;
            i2 = 0.0;
        }
    });

    button_Dot.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            if (deci) {
                //do nothing or you can show the error
            } else {
                edittext1.setText(edittext1.getText() + ".");
                deci = true;
            }

        }
    });
  }
}
```

# OUTPUT OF PROGRAM




4:14
3G
DataFlair Calculator
15.0
DEL
ANSWER
1
2
3
/
4
5
6
-
7
8
9
X
.
0
%
+


4:15
DataFlair Calculator
9.9998900001E10
DEL
ANSWER
1
2
3
/
4
5
6
-
7
8
9
X
.
0
%
+

# ADVANTAGES AND DISADVANTAGES

## ADVANTAGES

**1]** Easy to calculate any arithmetic operations.

**2]** It will give the answer only in float number.

**3]** Easy to use and user friendly.

**4]** This technology allows students solve complicated problems quickly and in an efficient manner

**5]** The application gives fast and accurate result.

## DISADVANTAGES

**1]** Even though calculators can do the basic operations instantly, students should not use it all the time.

**2]** A student must have the ability of estimating the correct answers or the student would not cross check the problem.

**3]** There are many instants where a student or individual can make mistakes, such as punching the wrong buttons, forgetting to change the mode, incorrect rounding up of values.

# CONCLUSION

In this project we understood how to create and built an Android application in android studio. This project helped us to learn how to use text field, choice and button and how to write events on the button. We also understood how the android applications are made and how to use logic in java .

# REFERENCES

1] https://www.javapoint.com/android tutorial

2] https://www.tutorialspoint.com/android/android_studio.html

3] https://developer.android.com/training/basics/firstapp