BHARATI VIDYAPEETH
(DEEMED TO BE UNIVERSITY)
COLLEGE OF ENGINEERING, PUNE-43.
DEPARTMENT OF COMPUTER ENGINEERING

Date: 14/09/20

Online Practical/ Oral Examination Answer sheet 2019-20

Exam: B.Tech (Computer) SemVIII Mobile Computing online practical exam 2020

Subject: Mobile Computing

Exam No.: 2014390034

PRN: 1614110182

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Problem Statement: Develop a calculator application using android studio

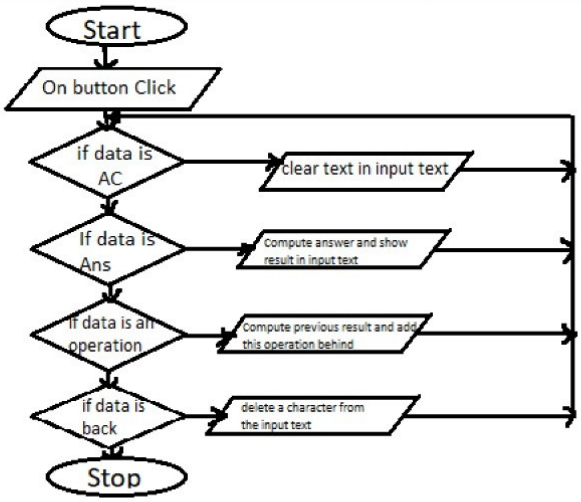
Description:

A Basic calculator is the calculator that helps in day to day life for solving mathematical problems in just seconds. Basic calculator includes operations such as Addition, Subtraction, Multiplication and Division. There can be more operations that can be used in a calculator that are such as power, logarithmic, equation solving etc. And hence this calculator can be considered as a scientific calculator.
Operations that a general user sees is as follows:
1. Addition: +
2. Subtraction: -
3. Multiplication: * or X
4. Division: /
5. Equals/ Result: =
6. AC: Clear

Algorithm:

1. Start
2. On button click get the data from the button such as +, -, *, /
3. if data
    - 3.1. AC, clear the text area and break
    - 3.2. Ans, compute answer and give it to the text area and break
    - 3.3 is an operation, compute result and the operation behind.
    - 3.4 back, delete a charater from the text area
4. Stop

Flow Chart:



Script/Code:

CODE:

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:background="#292B29"
    tools:context=".MainActivity"
    android:weightSum="6">
    <TextView
        android:id="@+id/screen"
        android:gravity="center|right"
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:layout_weight="1"
        android:textColor="#0000ff"
        android:textSize="30sp"
        android:textStyle="bold"
        android:background="#9DFFD4"
        android:layout_marginTop="10dp"
        android:layout_marginBottom="30dp"
        android:padding="5dp"
        android:layout_marginHorizontal="10dp"/>
```

```
<LinearLayout
   android:layout_width="fill_parent"
   android:layout_height="0dp"
   android:layout_weight="1"
   android:weightSum="4">
   <Button
      android:id="@+id/ac"
      android:layout_height="fill_parent"
      android:layout_width="0dp"
      android:layout_weight="1"
      android:background="@drawable/keyboard_btn"
      android:onClick="ButtonClick"
      android:text="AC"
      android:layout_margin="5dp"
      android:textColor="#FF0000"
      android:textSize="30dp" />

   <Button
      android:id="@+id/power"
      android:layout_height="fill_parent"
      android:layout_width="0dp"
      android:layout_weight="1"
      android:background="@drawable/keyboard_btn"
      android:onClick="ButtonClick"
      android:text="^"
      android:layout_margin="5dp"
      android:textColor="#000000"
      android:textSize="35dp" />

   <Button
      android:id="@+id/back"
      android:layout_height="fill_parent"
      android:layout_width="0dp"
      android:layout_weight="1"
      android:background="@drawable/keyboard_btn"
      android:onClick="ButtonClick"
      android:text="     "
      android:layout_margin="5dp"
      android:textSize="25dp" />

   <Button
      android:id="@+id/div"
      android:layout_height="fill_parent"
      android:layout_width="0dp"
      android:layout_weight="1"
      android:background="@drawable/keyboard_btn"
      android:onClick="ButtonClick"
      android:text="/"
      android:layout_margin="5dp"
      android:textColor="#000000"
      android:textSize="30dp" />
</LinearLayout>
```

```
<LinearLayout
   android:layout_width="fill_parent"
   android:layout_height="0dp"
   android:layout_weight="1"
   android:weightSum="4">
   <Button
      android:id="@+id/seven"
      android:layout_height="fill_parent"
      android:layout_width="0dp"
      android:layout_weight="1"
      android:text="7"
      android:layout_margin="5dp"
      android:textSize="30dp"
      android:onClick="ButtonClick"
      android:textColor="#000000"
      android:background="@drawable/keyboard_btn"/>
   <Button
      android:id="@+id/eight"
      android:layout_height="fill_parent"
      android:layout_width="0dp"
      android:layout_weight="1"
      android:text="8"
      android:layout_margin="5dp"
      android:textSize="30dp"
      android:onClick="ButtonClick"
      android:textColor="#000000"
      android:background="@drawable/keyboard_btn"/>
   <Button
      android:id="@+id/nine"
      android:layout_height="fill_parent"
      android:layout_width="0dp"
      android:layout_weight="1"
      android:text="9"
      android:layout_margin="5dp"
      android:textSize="30dp"
      android:onClick="ButtonClick"
      android:textColor="#000000"
      android:background="@drawable/keyboard_btn"/>
   <Button
      android:id="@+id/mul"
      android:layout_height="fill_parent"
      android:layout_width="0dp"
      android:layout_weight="1"
      android:text="x"
      android:layout_margin="5dp"
      android:textSize="30dp"
      android:onClick="ButtonClick"
      android:textColor="#000000"
      android:background="@drawable/keyboard_btn"/>
</LinearLayout>
<LinearLayout
   android:layout_width="fill_parent"
```

```
    android:layout_height="0dp"
    android:layout_weight="1"
    android:weightSum="4">
    <Button
        android:id="@+id/four"
        android:layout_height="fill_parent"
        android:layout_width="0dp"
        android:layout_weight="1"
        android:text="4"
        android:layout_margin="5dp"
        android:textSize="30dp"
        android:onClick="ButtonClick"
        android:textColor="#000000"
        android:background="@drawable/keyboard_btn"/>
    <Button
        android:id="@+id/five"
        android:layout_height="fill_parent"
        android:layout_width="0dp"
        android:layout_weight="1"
        android:text="5"
        android:layout_margin="5dp"
        android:textSize="30dp"
        android:onClick="ButtonClick"
        android:textColor="#000000"
        android:background="@drawable/keyboard_btn"/>
    <Button
        android:id="@+id/six"
        android:layout_height="fill_parent"
        android:layout_width="0dp"
        android:layout_weight="1"
        android:text="6"
        android:layout_margin="5dp"
        android:textSize="30dp"
        android:onClick="ButtonClick"
        android:textColor="#000000"
        android:background="@drawable/keyboard_btn"/>
    <Button
        android:id="@+id/min"
        android:layout_height="fill_parent"
        android:layout_width="0dp"
        android:layout_weight="1"
        android:text="-"
        android:layout_margin="5dp"
        android:textSize="30dp"
        android:onClick="ButtonClick"
        android:textColor="#000000"
        android:background="@drawable/keyboard_btn"/>
</LinearLayout>
<LinearLayout
    android:layout_width="fill_parent"
    android:layout_height="0dp"
    android:layout_weight="1"
```

```
    android:weightSum="4">
    <Button
        android:id="@+id/one"
        android:layout_height="fill_parent"
        android:layout_width="0dp"
        android:layout_weight="1"
        android:text="1"
        android:layout_margin="5dp"
        android:textSize="30dp"
        android:onClick="ButtonClick"
        android:textColor="#000000"
        android:background="@drawable/keyboard_btn"/>
    <Button
        android:id="@+id/two"
        android:layout_height="fill_parent"
        android:layout_width="0dp"
        android:layout_weight="1"
        android:text="2"
        android:layout_margin="5dp"
        android:textSize="30dp"
        android:onClick="ButtonClick"
        android:textColor="#000000"
        android:background="@drawable/keyboard_btn"/>
    <Button
        android:id="@+id/three"
        android:layout_height="fill_parent"
        android:layout_width="0dp"
        android:layout_weight="1"
        android:text="3"
        android:layout_margin="5dp"
        android:textSize="30dp"
        android:onClick="ButtonClick"
        android:textColor="#000000"
        android:background="@drawable/keyboard_btn"/>
    <Button
        android:id="@+id/plus"
        android:layout_height="fill_parent"
        android:layout_width="0dp"
        android:layout_weight="1"
        android:text="+"
        android:layout_margin="5dp"
        android:textSize="30dp"
        android:onClick="ButtonClick"
        android:textColor="#000000"
        android:background="@drawable/keyboard_btn"/>
</LinearLayout>
<LinearLayout
    android:layout_width="fill_parent"
    android:layout_height="0dp"
    android:layout_weight="1">
    <Button
        android:id="@+id/zero"
```

```
            android:layout_height="fill_parent"
            android:layout_width="0dp"
            android:layout_weight="1"
            android:text="0"
            android:layout_margin="5dp"
            android:textSize="30dp"
            android:onClick="ButtonClick"
            android:textColor="#000000"
            android:background="@drawable/keyboard_btn"/>
        <Button
            android:id="@+id/point"
            android:layout_height="fill_parent"
            android:layout_width="0dp"
            android:layout_weight="1"
            android:text="."
            android:layout_margin="5dp"
            android:textSize="30dp"
            android:onClick="ButtonClick"
            android:textColor="#000000"
            android:background="@drawable/keyboard_btn"/>
        <Button
            android:id="@+id/ans"
            android:layout_height="fill_parent"
            android:layout_width="0dp"
            android:layout_weight="1"
            android:text="Ans"
            android:layout_margin="5dp"
            android:textSize="20dp"
            android:onClick="ButtonClick"
            android:textColor="#000000"
            android:background="@drawable/keyboard_btn"/>
        <Button
            android:id="@+id/equal"
            android:layout_height="fill_parent"
            android:layout_width="0dp"
            android:layout_weight="1"
            android:text="="
            android:layout_margin="5dp"
            android:textSize="30dp"
            android:onClick="ButtonClick"
            android:textColor="#000000"
            android:background="@drawable/keyboard_btn"/>
    </LinearLayout>
</LinearLayout>
```

MainActivity.java

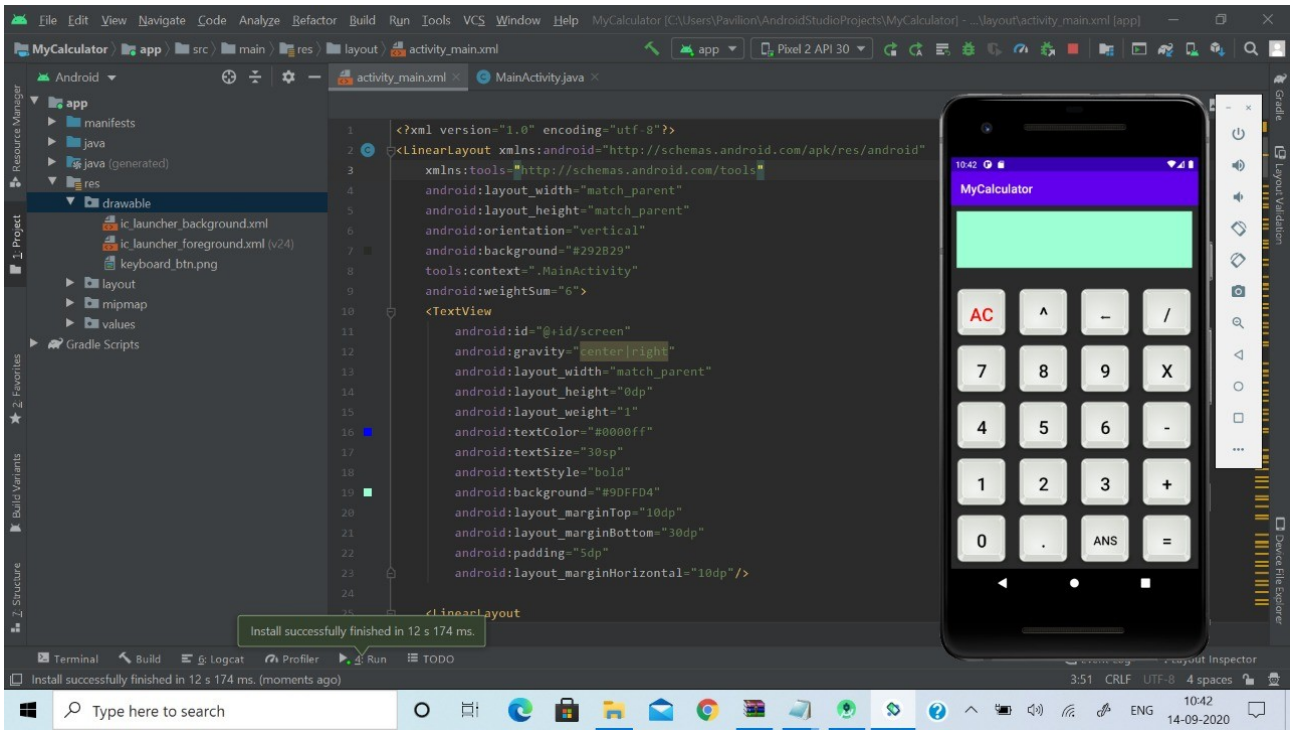
```
package com.example.mycalculator;
```

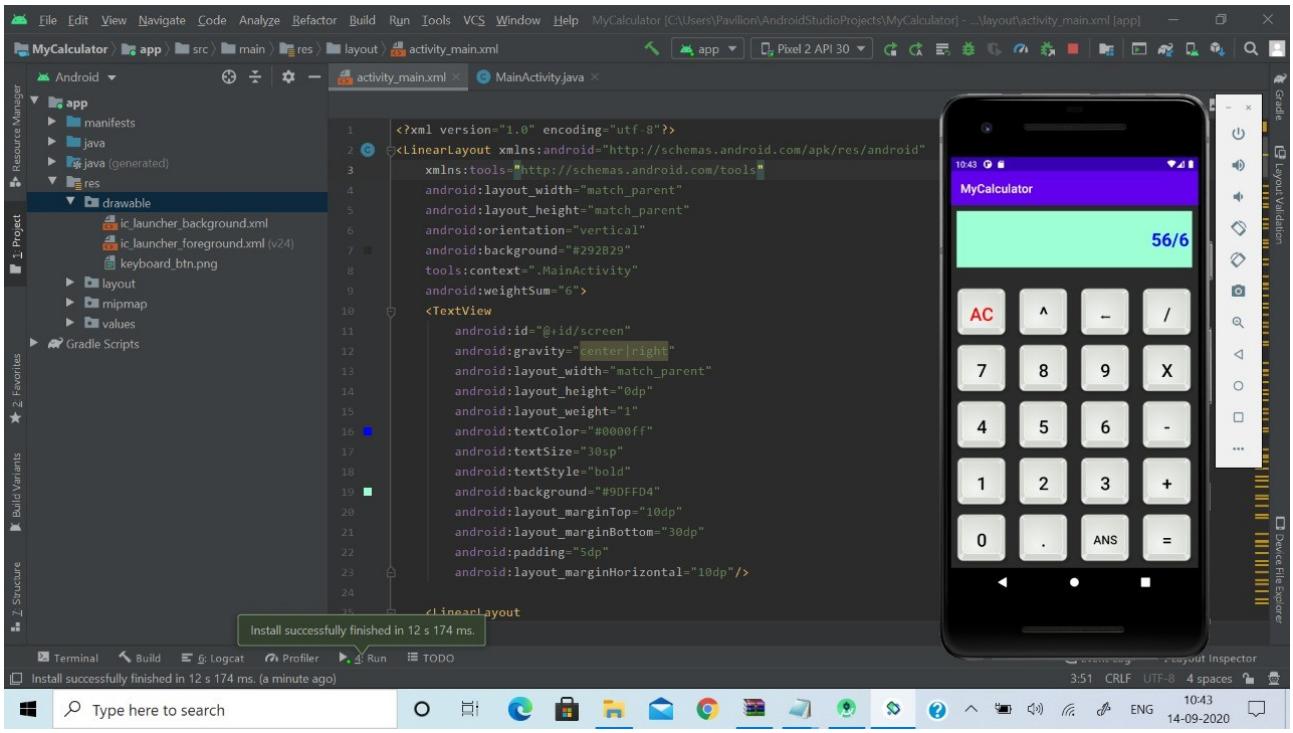
```
import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Switch;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {
    private TextView Screen;
    private String input="",Answer;
    private boolean clearResult;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Screen=findViewById(R.id.screen);
    }
    public void ButtonClick(View view){
        Button button= (Button) view;
        String data=button.getText().toString();
        switch (data){
            case "AC":
                input="";
                break;
            case "Ans":
                clearResult=false;
                input+=Answer;
                break;
            case "x":
                clearResult=false;
                Solve();
                input+="*";
                break;
            case "^":
                clearResult=false;
                Solve();
                input+="^";
                break;
            case "=":
                clearResult=true;
                Solve();
                Answer=input;
                break;
            case "     ":
                if(input.length()>0){
                    clearResult=false;
                    String newText=input.substring(0,input.length()-1);
                    input=newText;
                }
                break;
```

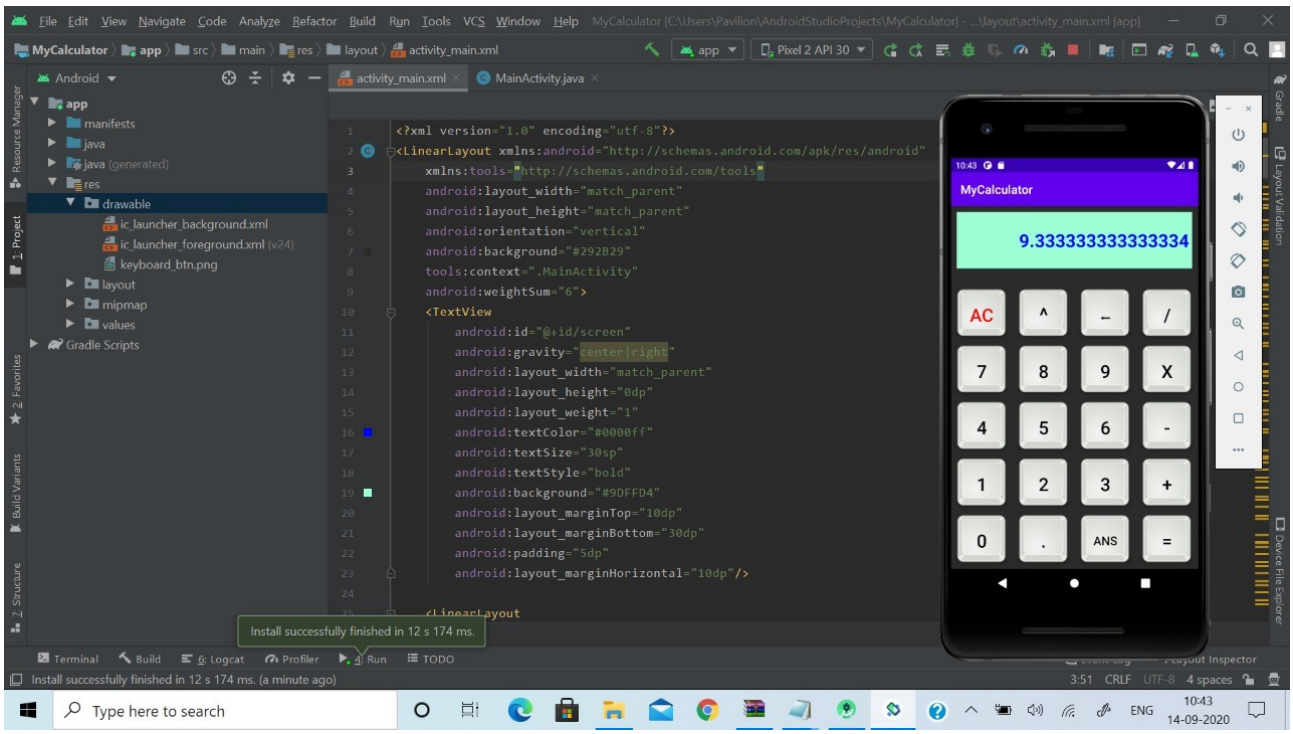
```
            default:
                if(input==null){
                    input="";
                }
                if(data.equals("+") || data.equals("-") || data.equals("/")){
                    clearResult=false;
                    Solve();
                }
                else if(clearResult==true){
                    input="";
                    clearResult=false;
                }
                input+=data;
        }
        Screen.setText(input);
    }
    public void Solve(){
        if(input.split("\\*").length==2){
            String numbers[]=input.split("\\*");
            try{
                double mul=Double.parseDouble(numbers[0])*Double.parseDouble(numbers[1]);
                input=mul+"";
            }
            catch (Exception e){
                //Display error
            }
        }
        else if(input.split("/").length==2){
            String numbers[]=input.split("/");
            try{
                double div=Double.parseDouble(numbers[0])/Double.parseDouble(numbers[1]);
                input=div+"";
            }
            catch (Exception e){
                //Display error
            }
        }
        else if(input.split("\\^").length==2){
            String numbers[]=input.split("\\^");
            try{
                double
pow=Math.pow(Double.parseDouble(numbers[0]),Double.parseDouble(numbers[1]));
                input=pow+"";
            }
            catch (Exception e){
                //Display error
            }
        }
        else if(input.split("\\+").length==2){
            String numbers[]=input.split("\\+");
            try{
                double sum=Double.parseDouble(numbers[0])+Double.parseDouble(numbers[1]);
```

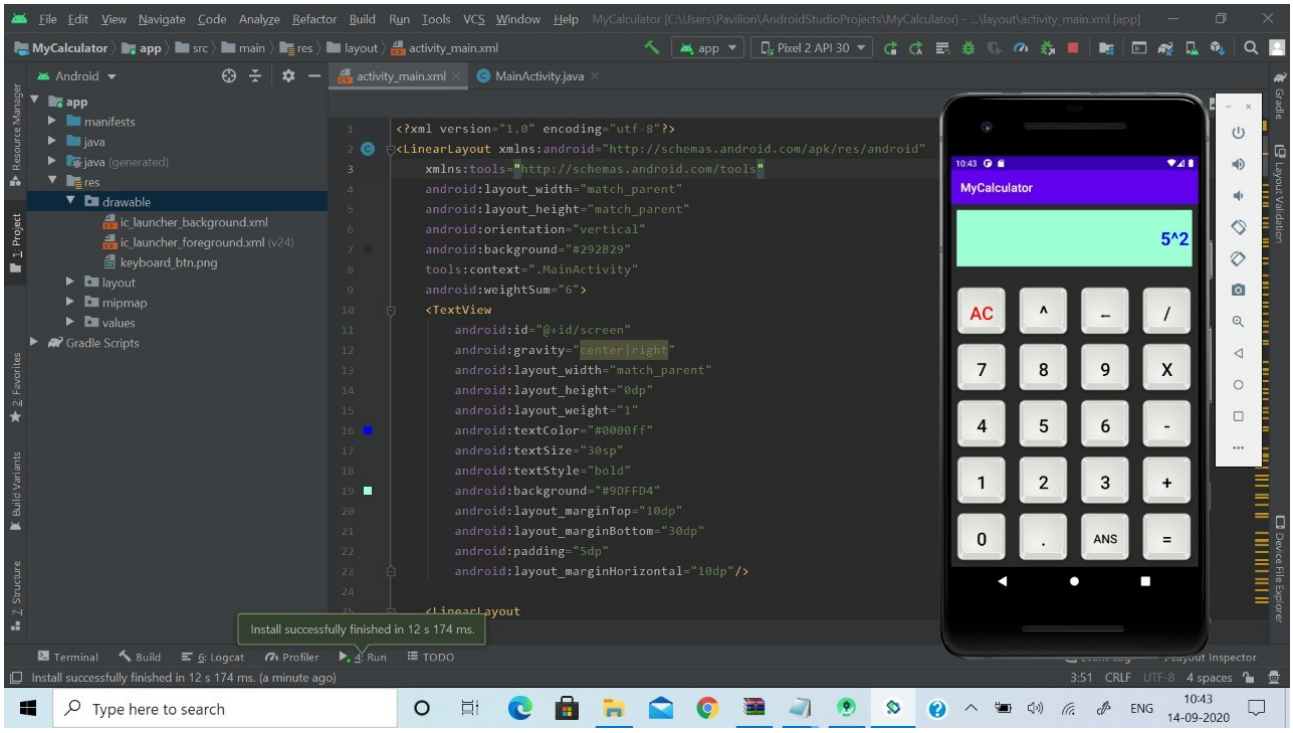
```
            input=sum+"";
        }
        catch (Exception e){
            //Display error
        }
    }
    else if(input.split("\\-").length>1){
        String numbers[]=input.split("\\-");
        if(numbers[0]=="" && numbers.length==2){
            numbers[0]=0+"";
        }
        try{
            double sub=0;
            if(numbers.length==2) {
                sub = Double.parseDouble(numbers[0]) - Double.parseDouble(numbers[1]);
            }
            else if(numbers.length==3){
                sub = -Double.parseDouble(numbers[1]) - Double.parseDouble(numbers[2]);
            }
            input=sub+"";
        }
        catch (Exception e){
            //Display error
        }
    }
    String n[]=input.split("\\.");
    if(n.length>1){
        if(n[1].equals("0")){
            input=n[0];
        }
    }
    Screen.setText(input);
  }
}
```

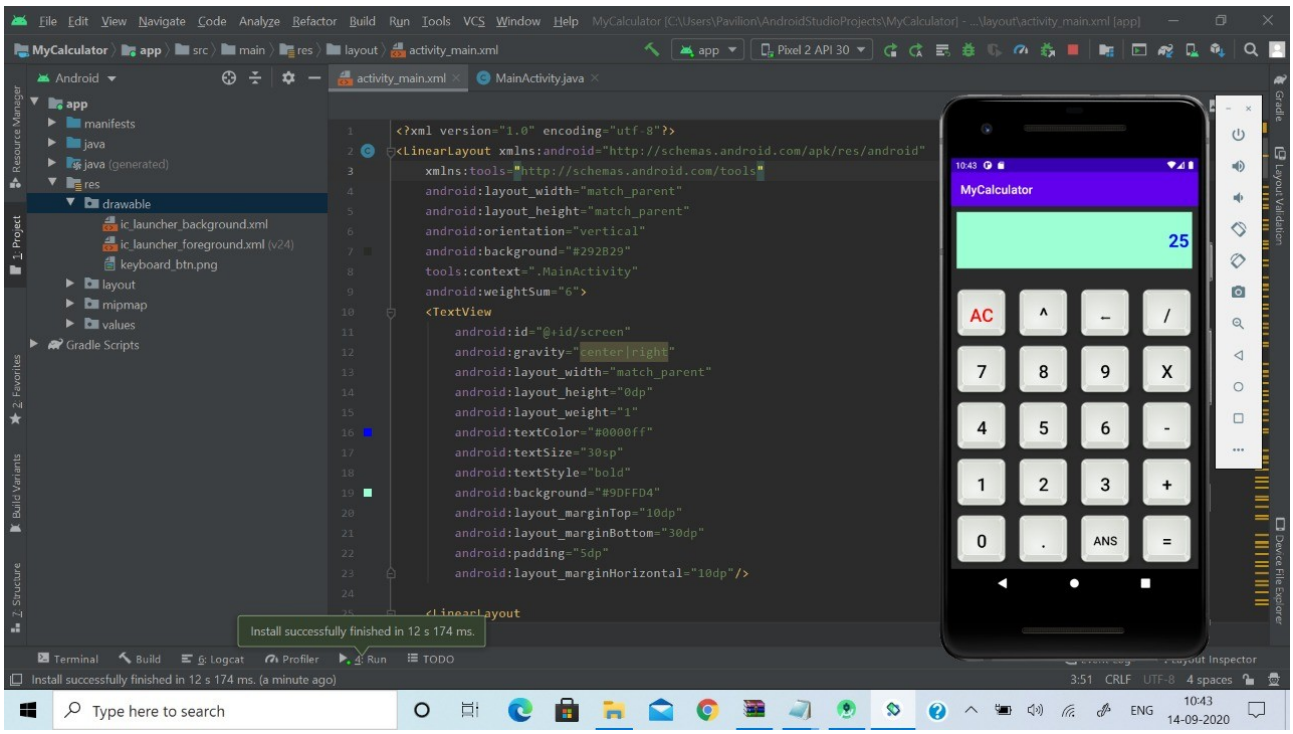
OUTPUT:


MyCalculator
10:42
AC
^
←
/
7
8
9
X
4
5
6
-
1
2
3
+
0
.
ANS
=
Install successfully finished in 12 s 174 ms.
Type here to search
ENG
10:42
14-09-2020


MyCalculator
10:43
56/6
AC
^
←
/
7
8
9
X
4
5
6
-
1
2
3
+
0
.
ANS
=
Install successfully finished in 12 s 174 ms.
Type here to search
ENG
10:43
14-09-2020


MyCalculator
9.333333333333334
AC ^ ← /
7 8 9 X
4 5 6 -
1 2 3 +
0 . ANS =
Install successfully finished in 12 s 174 ms.


MyCalculator
5^2
AC ^ ← /
7 8 9 X
4 5 6 -
1 2 3 +
0 . ANS =
Install successfully finished in 12 s 174 ms.



Conclusion:

So this calculator can be multipurposely used for mathematical calculations in the field of education or day to day life.
Android applications are very portabble as smartphones today are carried almost by everyone and hence this app will be accessible and understandable by all.