

Lab Program 1: Create an application to design a Visiting Card. The Visiting card should have a company logo at the top right corner. The company name should be displayed in Capital letters, aligned to the center. Information like the name of the employee, job title, phone number, address, email, fax and the website address is to be displayed. Insert a horizontal line between the job title and the phone number.



Program Name: activity\_main.xml

```
<?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"
    android:orientation="vertical"
    tools:context=".MainActivity"><![CDATA[
    " />

]]>

<RelativeLayout
    android:layout_width="match_parent"
    android:layout_height="125dp">

    <TextView
        android:id="@+id/textView"
        android:layout_width="294dp"
        android:layout_height="35dp"
        android:layout_alignParentStart="true"
        android:layout_alignParentTop="true"
        android:layout_alignParentBottom="true"
        android:layout_marginStart="10dp"
        android:layout_marginTop="67dp"
        android:layout_marginBottom="23dp"
        android:text="SAPTHAGIRI COLLEGE "
        android:textAlignment="center"
        android:textColor="#FF5722"
        android:textSize="24sp"
        android:textStyle="bold" />

    <ImageView
        android:id="@+id/imageView"
        android:layout_width="wrap_content"
```

```
        android:layout_height="wrap_content"
        android:layout_alignParentStart="true"
        android:layout_alignParentEnd="true"
        android:layout_marginStart="250dp"
        android:layout_marginEnd="-39dp"
        app:srcCompat="@drawable/sap" />
</RelativeLayout>

<View
    android:id="@+id/view"
    android:layout_width="match_parent"
    android:layout_height="2dp"
    android:background="@color/black"/>

<TextView
    android:id="@+id/textView2"
    android:layout_width="match_parent"
    android:layout_height="51dp"
    android:text="SUDARSANAN D"
    android:textAlignment="center"
    android:textColor="#E91E63"
    android:textSize="24sp"
    android:textStyle="bold|italic" />

<TextView
    android:id="@+id/textView3"
    android:layout_width="match_parent"
    android:layout_height="57dp"
    android:text="Asst. Professor"
    android:textAlignment="center"
    android:textColor="#FF9800"
    android:textSize="24sp"
    android:textStyle="bold" />

<View
    android:id="@+id/view2"
    android:layout_width="match_parent"
    android:layout_height="2dp"
    android:background="@color/black"/>

<TextView
    android:id="@+id/textView4"
    android:layout_width="match_parent"
    android:layout_height="64dp"
    android:text="9535937675"
    android:textAlignment="center"
    android:textColor="#F44336"
    android:textSize="24sp"
    android:textStyle="bold|italic" />

<TextView
    android:id="@+id/textView5"
    android:layout_width="match_parent"
    android:layout_height="125dp"
    android:text="Information Science and Engineering"
    android:textAlignment="center"
    android:textColor="#03A9F4"
```

```
        android:textSize="34sp" />

        <TextView
            android:id="@+id/textView6"
            android:layout_width="match_parent"
            android:layout_height="61dp"
            android:text="sudarsanand@sapthagiri.edu.in
, www.sapthagiri.edu.in, 123456788"
            android:textAlignment="center"
            android:textColor="#4CAF50"
            android:textSize="20sp"
            android:textStyle="bold|italic" />
    </LinearLayout>
```

Program Name: MainActivity.java  
`package` com.example.visitioncard;

`import` androidx.appcompat.app.AppCompatActivity;

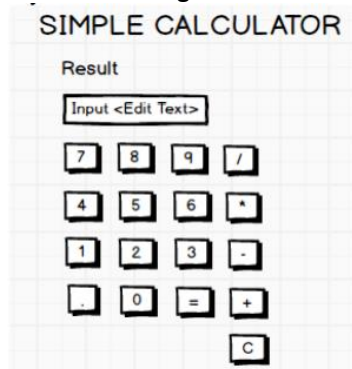
`import` android.os.Bundle;

`public class` MainActivity `extends` AppCompatActivity {

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



**PROGRAM 2:** Develop an Android application using controls like Button, TextView, EditText for designing a calculator having basic functionality like Addition, Subtraction, Multiplication, and Division.



Program File Name: activity\_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
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">

<Button
    android:id="@+id/btn_div"
    android:layout_width="78dp"
    android:layout_height="53dp"
    android:background="#9C27B0"
    android:text="/"
    android:textColor="#FFFFFF"
    android:textSize="16sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.924"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.834" />

<Button
    android:id="@+id/btn_minus"
    android:layout_width="78dp"
    android:layout_height="53dp"
    android:background="#9C27B0"
    android:text="-"
    android:textColor="#FFFFFF"
    android:textSize="16sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.351"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.834" />

<Button
    android:id="@+id/btn_plus"
    android:layout_width="78dp"
    android:layout_height="53dp"
    android:background="#9C27B0"
    android:text="+"
    android:textColor="#FFFFFF"
    android:textSize="16sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.081"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.834" />

<Button
    android:id="@+id/btn_clear"
    android:layout_width="78dp"
    android:layout_height="53dp"
    android:background="#9C27B0"
    android:text="C"
    android:textColor="#FFFFFF"
    android:textSize="16sp"
    app:layout_constraintBottom_toBottomOf="parent"
```

```
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.924"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintVertical_bias="0.927" />

<Button
    android:id="@+id/btn_mul"
    android:layout_width="78dp"
    android:layout_height="53dp"
    android:background="#9C27B0"
    android:text="*"
    android:textColor="#FFFFFF"
    android:textSize="16sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.636"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.834" />

<Button
    android:id="@+id/btn_0"
    android:layout_width="78dp"
    android:layout_height="53dp"
    android:background="#9C27B0"
    android:text="0"
    android:textColor="#FFFFFF"
    android:textSize="16sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.348"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.725" />

<Button
    android:id="@+id/btn_9"
    android:layout_width="78dp"
    android:layout_height="53dp"
    android:background="#9C27B0"
    android:text="9"
    android:textColor="#FFFFFF"
    android:textSize="16sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.081"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.725" />

<Button
    android:id="@+id/btn_equals"
    android:layout_width="78dp"
    android:layout_height="53dp"
    android:background="#9C27B0"
    android:text="="
```

```
        android:textColor="#FFFFFF"
        android:textSize="16sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.924"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.725" />

<Button
    android:id="@+id/btn_dot"
    android:layout_width="78dp"
    android:layout_height="53dp"
    android:background="#9C27B0"
    android:text="."
    android:textColor="#FFFFFF"
    android:textSize="16sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.636"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.725" />

<Button
    android:id="@+id/btn_7"
    android:layout_width="78dp"
    android:layout_height="53dp"
    android:background="#9C27B0"
    android:text="7"
    android:textColor="#FFFFFF"
    android:textSize="16sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.636"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.617" />

<Button
    android:id="@+id/btn_6"
    android:layout_width="78dp"
    android:layout_height="53dp"
    android:background="#9C27B0"
    android:text="6"
    android:textColor="#FFFFFF"
    android:textSize="16sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.351"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.617" />

<Button
    android:id="@+id/btn_8"
    android:layout_width="78dp"
```

```
        android:layout_height="53dp"
        android:background="#9C27B0"
        android:text="8"
        android:textColor="#FFFFFF"
        android:textSize="16sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.924"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.617" />

<Button
    android:id="@+id/btn_5"
    android:layout_width="78dp"
    android:layout_height="53dp"
    android:background="#9C27B0"
    android:text="5"
    android:textColor="#FFFFFF"
    android:textSize="16sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.081"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.617" />

<Button
    android:id="@+id/btn_4"
    android:layout_width="78dp"
    android:layout_height="53dp"
    android:background="#9C27B0"
    android:text="4"
    android:textColor="#FFFFFF"
    android:textSize="16sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.884"
    app:layout_constraintStart_toStartOf="@+id/btn_2"
    app:layout_constraintTop_toTopOf="parent" />

<Button
    android:id="@+id/btn_3"
    android:layout_width="78dp"
    android:layout_height="53dp"
    android:background="#9C27B0"
    android:text="3"
    android:textColor="#FFFFFF"
    android:textSize="16sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.442"
    app:layout_constraintStart_toStartOf="@+id/btn_2"
    app:layout_constraintTop_toTopOf="parent" />

<Button
    android:id="@+id/btn_2"
```



```
        android:layout_width="78dp"
        android:layout_height="53dp"
        android:layout_marginStart="116dp"
        android:background="#9C27B0"
        android:text="2"
        android:textColor="#FFFFFF"
        android:textSize="16sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

<TextView
    android:id="@+id/textView"
    android:layout_width="273dp"
    android:layout_height="45dp"
    android:text="SIMPLE CALCULATOR"
    android:textAlignment="center"
    android:textColor="#F44336"
    android:textSize="24sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.12" />

<TextView
    android:id="@+id/textView2"
    android:layout_width="97dp"
    android:layout_height="39dp"
    android:text="Result"
    android:textAlignment="center"
    android:textColor="#9C27B0"
    android:textSize="20sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.473"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.238" />

<EditText
    android:id="@+id/edit_txt"
    android:layout_width="224dp"
    android:layout_height="49dp"
    android:ems="10"
    android:inputType="textPersonName"
    android:textAlignment="center"
    android:textColor="#F44336"
    android:textSize="20sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.497"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.364"
    tools:ignore="SpeakableTextPresentCheck" />
```

```

<Button
    android:id="@+id/btn_1"
    android:layout_width="78dp"
    android:layout_height="53dp"
    android:background="#9C27B0"
    android:text="1"
    android:textColor="#FFFFFF"
    android:textSize="16sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.081"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>

```

Program file Name: MainActivity.java

```
package com.example.simplecalculator;
```

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

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

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

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

```
import android.widget.EditText;
```

```
import android.widget.Toast;
```

```
import java.util.regex.Pattern;
```

```

public class MainActivity extends AppCompatActivity implements View.OnClickListener {
    Button btnnone,btntwo,btnthree,btnfour,btnfive,btnsix,btnseven,btneight,btnnine,btnzero;
    Button btnAdd,btnSub,btnMul,btnDiv;
    Button btnclear,btnequal,btndot;
    EditText txtResult;

```

```
@Override
```

```
protected void onCreate(Bundle savedInstanceState) {
```

```
    super.onCreate(savedInstanceState);
```

```
    setContentView(R.layout.activity_main);
```

```
    btnnone =(Button) findViewById(R.id.btn_1);
```

```
    btnnone.setOnClickListener(this);
```

```
    btntwo =(Button) findViewById(R.id.btn_2);
```

```
    btntwo.setOnClickListener(this);
```

```
    btnthree =(Button) findViewById(R.id.btn_3);
```

```
    btnthree.setOnClickListener(this);
```

```
    btnfour =(Button) findViewById(R.id.btn_4);
```

```
    btnfour.setOnClickListener(this);
```

```
    btnfive =(Button) findViewById(R.id.btn_5);
```

```
    btnfive.setOnClickListener(this);
```

```
btnsix =(Button) findViewById(R.id.btn_6);
btnsix.setOnClickListener(this);

btnseven =(Button) findViewById(R.id.btn_7);
btnseven.setOnClickListener(this);

btneight =(Button) findViewById(R.id.btn_8);
btneight.setOnClickListener(this);

btnnine =(Button) findViewById(R.id.btn_9);
btnnine.setOnClickListener(this);

btnzero =(Button) findViewById(R.id.btn_0);
btnzero.setOnClickListener(this);

btnAdd =(Button) findViewById(R.id.btn_plus);
btnAdd.setOnClickListener(this);

btnSub =(Button) findViewById(R.id.btn_minus);
btnSub.setOnClickListener(this);

btnMul =(Button) findViewById(R.id.btn_mul);
btnMul.setOnClickListener(this);

btnDiv =(Button) findViewById(R.id.btn_div);
btnDiv.setOnClickListener(this);

btndot =(Button) findViewById(R.id.btn_dot);
btndot.setOnClickListener(this);

btnclear =(Button) findViewById(R.id.btn_clear);
btnclear.setOnClickListener(this);

btnequal =(Button) findViewById(R.id.btn_equals);
btnequal.setOnClickListener(this);

txtResult = (EditText) findViewById(R.id.edit_txt);
txtResult.setText("");
}
```

#### @Override

```
public void onClick(View view) {
    if(view.equals(btnone))
        txtResult.append("1");
    if(view.equals(btntwo))
        txtResult.append("2");
    if(view.equals(btntthree))
        txtResult.append("3");
    if(view.equals(btnfour))
        txtResult.append("4");
    if(view.equals(btnfive))
        txtResult.append("5");
    if(view.equals(btnsix))
```

```
txtResult.append("6");
if(view.equals(btnseven))
    txtResult.append("7");
if(view.equals(btneight))
    txtResult.append("8");
if(view.equals(btnnine))
    txtResult.append("9");
if(view.equals(btnzero))
    txtResult.append("0");
if(view.equals(btndot))
    txtResult.append(".");
if(view.equals(btnAdd))
    txtResult.append("+");
if(view.equals(btnSub))
    txtResult.append("-");
if(view.equals(btnMul))
    txtResult.append("*");
if(view.equals(btnDiv))
    txtResult.append("/");
if(view.equals(btnclear))
    txtResult.setText("");
if(view.equals(btnequal))
    try {
        String data = txtResult.getText().toString();
        if(data.contains("/"))
        {
            divide(data);
        }
        else if(data.contains("*"))
        {
            multiplication(data);
        } else if(data.contains("+"))
        {
            addition(data);
        } else if(data.contains("-"))
        {
            subtration(data);
        }
    } catch (Exception e)
    {
        displayInvalidMessage("Invalid Operation");
    }
}

private void displayInvalidMessage(String mes) {
    Toast.makeText(getApplicationContext(),mes,Toast.LENGTH_LONG).show();
}

private void subtration(String data) {
    String[] operands = data.split("-");
    if (operands.length == 2) {
        Double operand1 = Double.parseDouble(operands[0]);
```

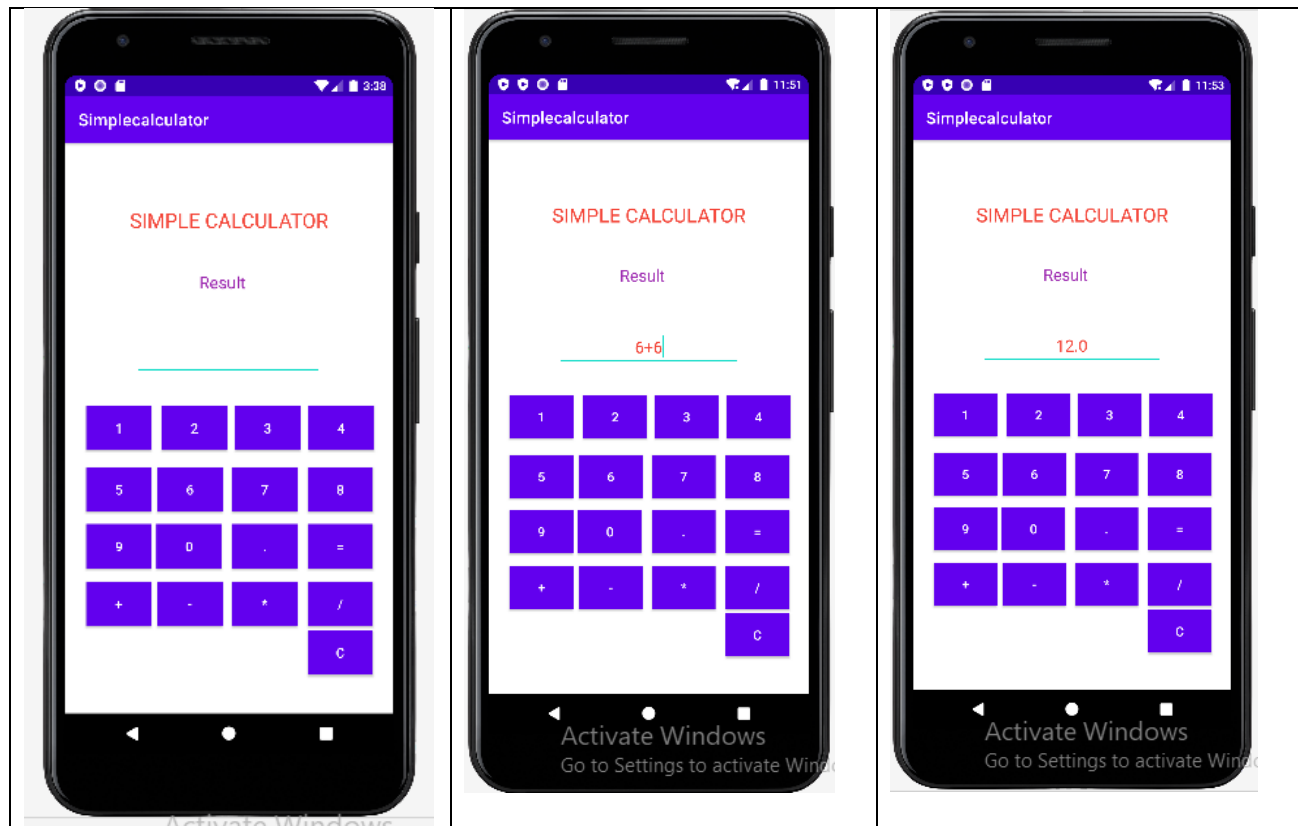
```
        Double operand2 = Double.parseDouble(operands[1]);
        Double result = operand1 - operand2;
        txtResult.setText(String.valueOf(result));
    } else
    {
        displayInvalidMessage("invalid input");
    }
}

private void addition(String data) {
    String[] operands = data.split(Pattern.quote("+"));
    if (operands.length == 2) {
        Double operand1 = Double.parseDouble(operands[0]);
        Double operand2 = Double.parseDouble(operands[1]);
        Double result = operand1 + operand2;
        txtResult.setText(String.valueOf(result));
    } else
    {
        displayInvalidMessage("invalid input");
    }
}

private void divide(String data) {
    String[] operands = data.split("/");
    if (operands.length == 2) {
        Double operand1 = Double.parseDouble(operands[0]);
        Double operand2 = Double.parseDouble(operands[1]);
        Double result = operand1 / operand2;
        txtResult.setText(String.valueOf(result));
    } else
    {
        displayInvalidMessage("invalid input");
    }
}

private void multiplication(String data) {
    String[] operands = data.split(Pattern.quote("*"));
    if (operands.length == 2) {
        Double operand1 = Double.parseDouble(operands[0]);
        Double operand2 = Double.parseDouble(operands[1]);
        Double result = operand1 * operand2;
        txtResult.setText(String.valueOf(result));
    } else
    {
        displayInvalidMessage("invalid input");
    }
}
}

OUTPUT:
```



PROGRAM 3 :Create a SIGN Up activity with Username and Password. Validation of password should happen based on the following rules:

- Password should contain uppercase and lowercase letters.
- Password should contain letters and numbers.
- Password should contain special characters.
- Minimum length of the password (the default value is 8).

On successful SIGN UP proceed to the next Login activity. Here the user should SIGN IN using the Username and Password created during signup activity. If the Username and Password are matched then navigate to the next activity which displays a message saying “Successful Login” or else display a toast message saying “Login Failed”. The user is given only two attempts and after that display a toast message saying “Failed Login Attempts” and disable the SIGN IN button. Use Bundle to transfer information from one activity to another.

SIGNUP ACTIVITY	LOGIN ACTIVITY
Username: <input type="text"/>	Username: <input type="text"/>
Password: <input type="password"/>	Password: <input type="password"/>
<input type="button" value="SIGN UP"/>	<input type="button" value="SIGN IN"/>

FILE NAME:activity\_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
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"
    android:textAlignment="center"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/textView"
        android:layout_width="278dp"
        android:layout_height="50dp"
        android:text="SIGNUP ACTIVITY"
        android:textAlignment="center"
        android:textColor="#9C27B0"
        android:textSize="28sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.497"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.173" />

    <TextView
        android:id="@+id/textView2"
        android:layout_width="175dp"
        android:layout_height="44dp"
        android:text="USER NAME"
        android:textAlignment="center"
        android:textColor="#F44336"
        android:textSize="24sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.1"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.396" />

    <TextView
        android:id="@+id/textView3"
        android:layout_width="133dp"
        android:layout_height="50dp"
        android:text="PASSWORD"
        android:textAlignment="center"
        android:textColor="#F44336"
        android:textSize="24sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.147"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.499" />
```

```
<EditText
    android:id="@+id/Signup_username"
    android:layout_width="205dp"
    android:layout_height="49dp"
    android:ems="10"
    android:inputType="textPersonName"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.932"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.397" />

<EditText
    android:id="@+id/Signup_password"
    android:layout_width="207dp"
    android:layout_height="58dp"
    android:ems="10"
    android:inputType="textPersonName"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.947"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />

<Button
    android:id="@+id/btn_signin"
    android:layout_width="208dp"
    android:layout_height="51dp"
    android:background="#E91E63"
    android:text="SIGN UP"
    android:textAlignment="center"
    android:textSize="24sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.498"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.672" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

**FILE NAME: MainActivity.java**

```
package com.example.signupandlogin;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;

import java.util.regex.Matcher;
```



```

import java.util.regex.Pattern;

public class MainActivity extends AppCompatActivity implements View.OnClickListener
{
    EditText Signup_Username, Signup_Password;
    Button btnSignup;
    String regularExpression = "^(?=.*[A-Z])(?=.*[a-z])(?=.*\\d)(?=.*[@$!]) [A-Za-z\\d@$!]{8,}$";

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Signup_Username = (EditText) findViewById(R.id.Signup_username);
        Signup_Password = (EditText) findViewById(R.id.Signup_password);
        btnSignup = (Button) findViewById(R.id.btn_signin);
        btnSignup.setOnClickListener(this);
    }

    @Override
    public void onClick(View view) {
        String username = Signup_Username.getText().toString();
        String password = Signup_Password.getText().toString();
        if (validatePassword(password)) {
            Toast.makeText(getApplicationContext(), "Valid password",
            Toast.LENGTH_LONG).show();
            Bundle bundle = new Bundle();
            bundle.putString("user", username);
            bundle.putString("pwd", password);
            Intent it = new Intent(this, Login.class);
            it.putExtra("data", bundle);
            startActivity(it);
        } else {
            Toast.makeText(getApplicationContext(), "Invalid password",
            Toast.LENGTH_LONG).show();
        }
    }

    private boolean validatePassword(String password) {
        Pattern pattern = Pattern.compile(regularExpression);
        Matcher matcher = pattern.matcher(password);
        return matcher.matches();
    }
}

```

**file Name: Activity\_login.xml**

```

<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
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"
android:textAlignment="center"
tools:context=".MainActivity">

<TextView
    android:id="@+id/textView"
    android:layout_width="278dp"
    android:layout_height="50dp"
    android:text="LOGIN ACTIVITY"
    android:textAlignment="center"
    android:textColor="#9C27B0"
    android:textSize="28sp"
    android:textStyle="bold"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.497"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.173" />

<TextView
    android:id="@+id/textView2"
    android:layout_width="175dp"
    android:layout_height="44dp"
    android:text="USER NAME"
    android:textAlignment="center"
    android:textColor="#F44336"
    android:textSize="24sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.1"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.396" />

<TextView
    android:id="@+id/textView3"
    android:layout_width="133dp"
    android:layout_height="50dp"
    android:text="PASSWORD"
    android:textAlignment="center"
    android:textColor="#F44336"
    android:textSize="24sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.147"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.499" />

<EditText
    android:id="@+id/Signup_username"
    android:layout_width="205dp"
    android:layout_height="49dp"
    android:ems="10"
    android:inputType="textPersonName"
    app:layout_constraintBottom_toBottomOf="parent"
```

```

        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.932"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.397" />

<EditText
    android:id="@+id/Signup_password"
    android:layout_width="198dp"
    android:layout_height="53dp"
    android:ems="10"
    android:inputType="textPersonName"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.924"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.534" />

<Button
    android:id="@+id/btn_signin"
    android:layout_width="208dp"
    android:layout_height="51dp"
    android:background="#E91E63"
    android:text="SIGN IN"
    android:textAlignment="center"
    android:textSize="24sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.498"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.672" />
</androidx.constraintlayout.widget.ConstraintLayout>

```

FILE NAME: login.java

```
package com.example.signupandlogin;
```

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

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

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

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

```
import android.widget.EditText;
```

```
import android.widget.Toast;
```

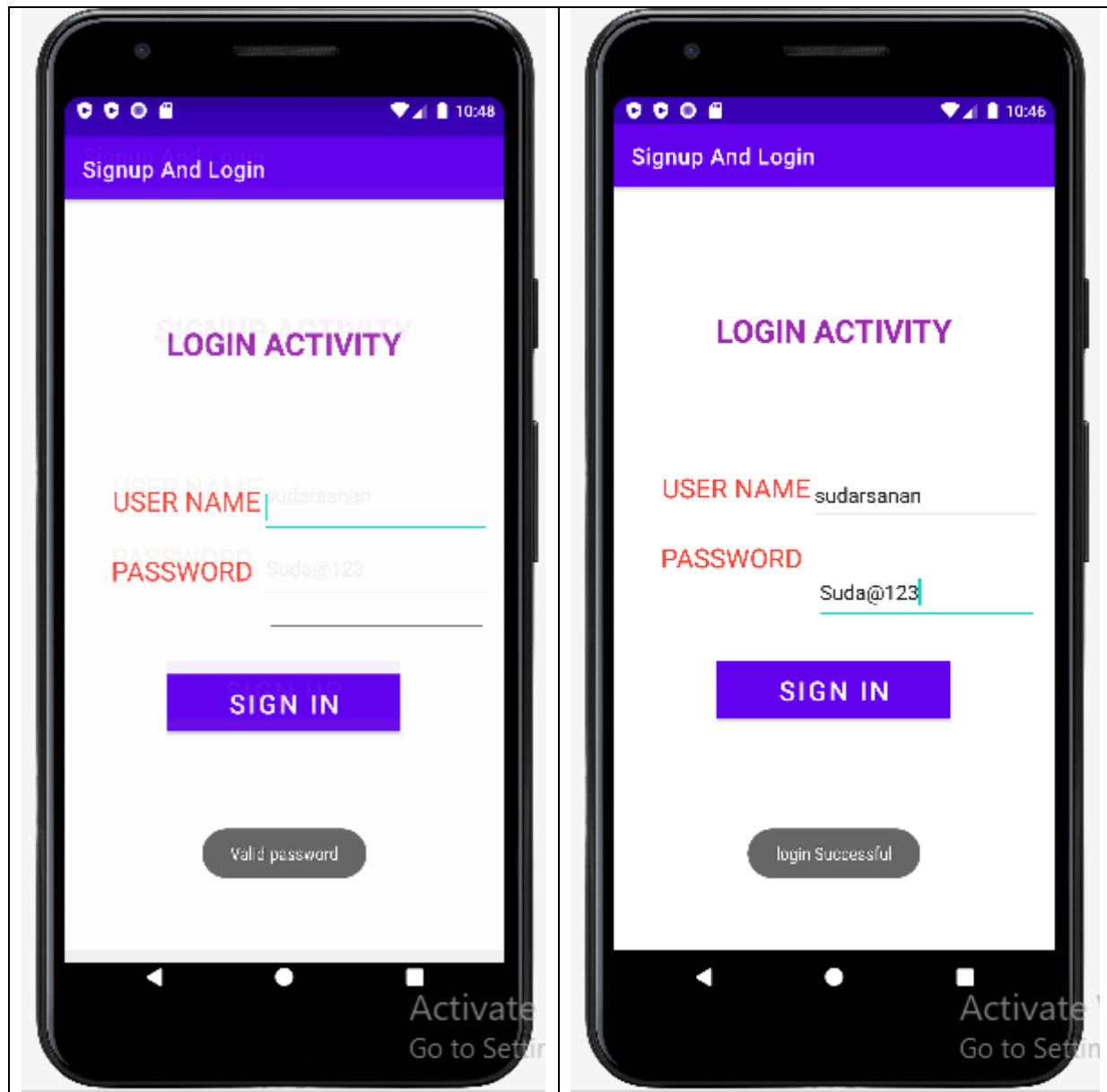
```

public class Login extends AppCompatActivity implements View.OnClickListener {
    EditText LoginUsername,LoginPassword;
    Button btnLogin;
    String user,pass;
    int count=0;
    @Override

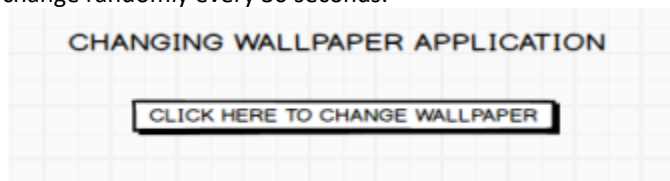
```

```
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_login);
    LoginUsername=(EditText)findViewById(R.id.Signup_username);
    LoginPassword=(EditText)findViewById(R.id.Signup_password);
    btnLogin=(Button)findViewById(R.id.btn_signin);
    btnLogin.setOnClickListener(this);
    Bundle bundle=getIntent().getBundleExtra("data");
    user=bundle.getString("user");
    pass=bundle.getString("pwd");
}

@Override
public void onClick(View view) {
    String user1=LoginUsername.getText().toString();
    String pass1=LoginPassword.getText().toString();
    if(user.equals(user1)&&pass.equals(pass1))
    {
        Toast.makeText(this,"login Successful",Toast.LENGTH_LONG).show();
    }
    else
    {
        count++;
        if(count==3)
        {
            btnLogin.setEnabled(false);
            Toast.makeText(this,"Failed login Attempts",Toast.LENGTH_LONG).show();
        }
        else
        {
            Toast.makeText(this,"Login Failed"+count,Toast.LENGTH_LONG).show();
        }
    }
}
}
```



**PROGRAM 4:** Develop an application to set an image as wallpaper. On click of a button, the wallpaper image should start to change randomly every 30 seconds.



FILE NAME:activity\_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
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">

<TextView
    android:id="@+id/textView"
    android:layout_width="387dp"
    android:layout_height="70dp"
    android:text="CHANGING WALLPAPER APPLICATION"
    android:textAlignment="center"
    android:textColor="#F44336"
    android:textSize="24sp"
    android:textStyle="bold"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.666"
    app:layout_constraintLeft_toLeftOf="parent"
    app:layout_constraintRight_toRightOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.177" />

<Button
    android:id="@+id/btn_wall"
    android:layout_width="266dp"
    android:layout_height="102dp"
    android:background="#FF9800"
    android:text="CLICK HERE TO WALL PAPER CHANGE"
    android:textAlignment="center"
    android:textSize="24sp"
    android:textStyle="bold"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.498"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.523" />

</androidx.constraintlayout.widget.ConstraintLayout>
```

FILE NAME: MainActivity.java

```
package com.example.wallpaper;

import androidx.appcompat.app.AppCompatActivity;

import android.app.WallpaperManager;
import android.graphics.BitmapFactory;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

import java.io.IOException;
```

```
import java.util.Random;
import java.util.Timer;
import java.util.TimerTask;

public class MainActivity extends AppCompatActivity implements View.OnClickListener
{
    Button btn;
    boolean running;
    int[] ia=new
int[] {R.drawable.imag1,R.drawable.imag2,R.drawable.imag3,R.drawable.imag4,R.drawabl
e.imag5};

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        btn = (Button) findViewById(R.id.btn_wall);
        btn.setOnClickListener(this);
    }

    @Override
    public void onClick(View view) {
        if (!running) {
            new Timer().schedule(new Mytimer(), 0, 3000);
            running=true;
        }
    }

    private class Mytimer extends TimerTask {
        @Override
        public void run() {
            try {
                WallpaperManager wallpaperManager =
WallpaperManager.getInstance(getApplicationContext());
                Random random = new Random();

                wallpaperManager.setBitmap(BitmapFactory.decodeResource(getResources(),
ia[random.nextInt(5)]));

            } catch (IOException e) { }
        }
    }
}
```



**PROGRAM 5:** Write a program to create an activity with two buttons START and STOP. On pressing of the START button, the activity must start the counter by displaying the numbers from One and the counter must keep on counting until the STOP button is pressed. Display the counter value in a TextViewcontrol



File Name: Activity\_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
    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"
    android:textAlignment="center"
    tools:context=".MainActivity">

    <Button
        android:id="@+id/btn_stop"
        android:layout_width="94dp"
        android:layout_height="42dp"
        android:text="STOP"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.507"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.566" />

    <TextView
        android:id="@+id/textView2"
```



```
        android:layout_width="290dp"
        android:layout_height="37dp"
        android:text="COUNTER APPLICATION"
        android:textAlignment="center"
        android:textColor="#E91E63"
        android:textSize="24sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.495"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.142" />

<TextView
    android:id="@+id/txt_value"
    android:layout_width="186dp"
    android:layout_height="46dp"
    android:text="counter vallue"
    android:textAlignment="center"
    android:textColor="#FF5722"
    android:textSize="24sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.498"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.323" />

<Button
    android:id="@+id/btn_start"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="START"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.498"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.453" />

</androidx.constraintlayout.widget.ConstraintLayout>
```

**File Name:MainActivity.java**

```
package com.example.counter;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.os.Handler;
import android.os.Looper;
import android.os.Message;
import android.view.View;
```

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

public class MainActivity extends AppCompatActivity implements View.OnClickListener
{
    Button buttonStart, buttonStop;
    TextView counterValue;
    public int Counter=0;
    public boolean running=false;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        buttonStart=(Button) findViewById(R.id.btn_start);
        buttonStart.setOnClickListener(this);
        buttonStop=(Button) findViewById(R.id.btn_stop);
        buttonStop.setOnClickListener(this);
        counterValue=(TextView) findViewById(R.id.txt_value);
    }

    @Override
    public void onClick(View v) {
        if(v.equals(buttonStart))
        {
            counterStart();
        } else if(v.equals(buttonStop))
        {
            counterStop();
        }
    }

    private void counterStop() {
        this.running=false;
        buttonStart.setEnabled(true);
        buttonStop.setEnabled(false);
    }

    private void counterStart() {
        Counter=0;
        running=true;
        System.out.println("Start ->"+Thread.currentThread().getName());
        new myCounter().start();
        buttonStart.setEnabled(false);
        buttonStop.setEnabled(true);
    }

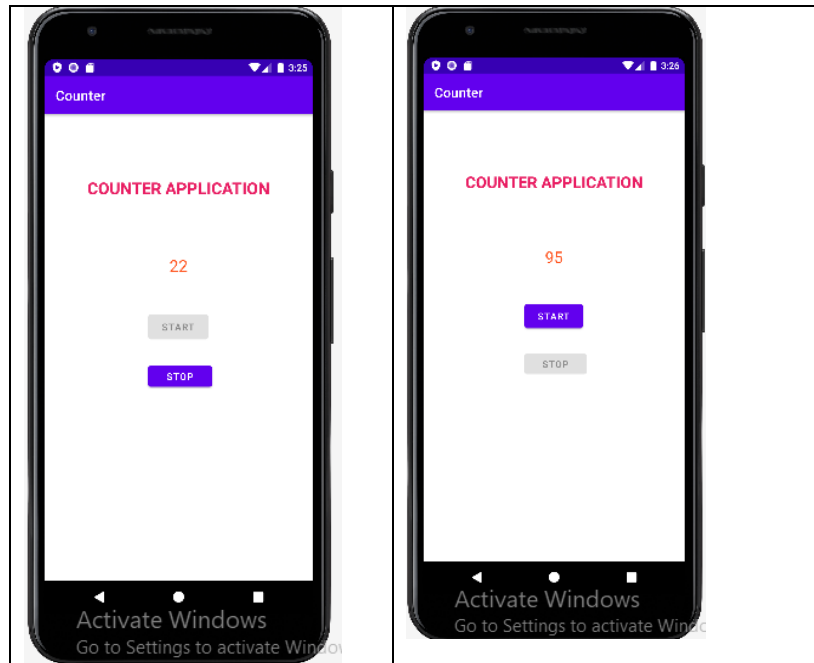
    Handler handler = new Handler(Looper.getMainLooper())
    {
        public void handleMessage(Message mes)
        {
            counterValue.setText(String.valueOf(mes.what));
        }
    };

    class myCounter extends Thread {
        public void run() {
            System.out.println("myCounter->"+Thread.currentThread().getName());
        }
    }
}
```

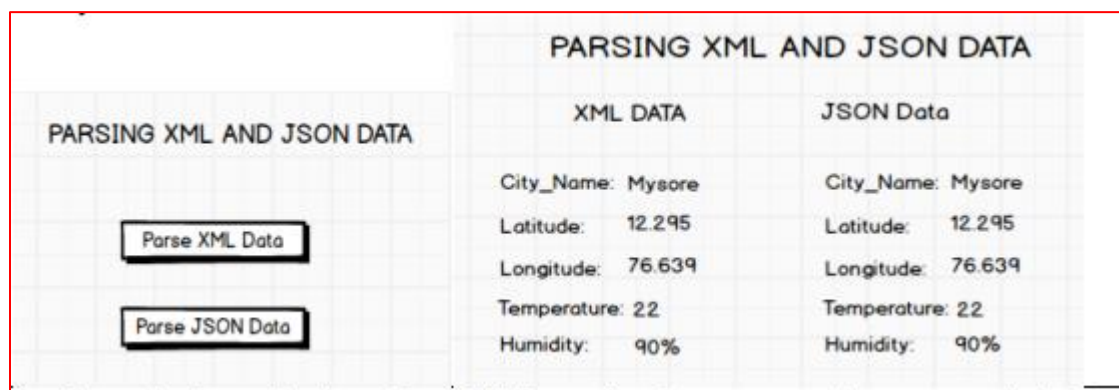
```

        while(running) {
            Counter++;
            handler.sendMessage(Counter);
            try{
                Thread.sleep(1000);
            } catch(Exception e) { }
        }
    }
}

```



**Program 6:** Create two files of XML and JSON type with values for City\_Name, Latitude, Longitude, Temperature, and Humidity. Develop an application to create an activity with two buttons to parse the XML and JSON files which when clicked should display the data in their respective layouts side by side



Filename:activity\_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
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">

    <Button
        android:id="@+id/btn_json"
        android:layout_width="195dp"
        android:layout_height="66dp"
        android:background="#FF9800"
        android:text="PARSEJSON"
        android:textAlignment="center"
        android:textColor="#100F0F"
        android:textSize="24sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.742" />

    <Button
        android:id="@+id/Btn_xml"
        android:layout_width="195dp"
        android:layout_height="66dp"
        android:background="#FF9800"
        android:text="PARSEXML"
        android:textAlignment="center"
        android:textColor="#100F0F"
        android:textSize="24sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.451" />

    <TextView
        android:id="@+id/textView"
        android:layout_width="314dp"
        android:layout_height="72dp"
        android:text="PARSE YOUR DATA"
```

```
        android:textAlignment="center"
        android:textColor="#FF5722"
        android:textSize="34sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.464"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.176" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

Filename:activity\_view.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
    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=".ViewActivity">

    <TextView
        android:id="@+id/xmlplaceholder"
        android:layout_width="341dp"
        android:layout_height="466dp"
        android:text="TextView"
        android:textColor="#E91E63"
        android:textSize="16sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.124"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView4"
        app:layout_constraintVertical_bias="0.365" />

    <TextView
        android:id="@+id/jsonplaceholder"
        android:layout_width="168dp"
        android:layout_height="144dp"
        android:text="TextView"
        android:textColor="#3F51B5"
        android:textSize="16sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.88"
```

```

        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.364" />

<TextView
    android:id="@+id/textView4"
    android:layout_width="177dp"
    android:layout_height="48dp"
    android:text="XML DATA"
    android:textAlignment="center"
    android:textColor="#E91E63"
    android:textSize="24sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.068"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.212" />

<TextView
    android:id="@+id/textView5"
    android:layout_width="160dp"
    android:layout_height="43dp"
    android:text="JSON DATA"
    android:textAlignment="center"
    android:textColor="#E91E63"
    android:textSize="24dp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.883"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.216" />
</androidx.constraintlayout.widget.ConstraintLayout>

```

Filename:input.xml

```

<?xml version="1.0" ?>
<Records>
    <City id="1">
        <City-Name>BANGALORE</City-Name>
        <Longitude>8</Longitude>
        <Latitude>13</Latitude>
        <Temperature>30</Temperature>
        <Humidity>90%</Humidity>
    </City>
    <City id="2">
        <City-Name>MANGALORE</City-Name>
    </City>
</Records>

```

```
<Longitude>8</Longitude>
<Latitude>13</Latitude>
<Temparature>30</Temparature>
<Humidity>90%</Humidity>
</City>
</Records>
```

Filename:input.json

```
{
  "City":{
    "City-name": "BANGALORE",
    "longitude": "8",
    "Latitude": "13",
    "Temparature": "30",
    "Humidity": "90%"
  }
}
```

Filename: MainActivity.java

```
package com.example.xmlparse;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

public class MainActivity extends AppCompatActivity {
    Button btnx,btnj;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        btnx=findViewById(R.id.Btn_xml);
        btnj=findViewById(R.id.btn_json);
        btnx.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Intent intent=new
Intent(MainActivity.this,ViewActivity.class);
                intent.putExtra("val",1);
                startActivity(intent);
            }
        });
        btnj.setOnClickListener(new View.OnClickListener() {
            @Override
```

```
        public void onClick(View view) {
            Intent intent=new
Intent(MainActivity.this,ViewActivity.class);
            intent.putExtra("val",2);
            startActivity(intent);
        }
    });
}
```

filename:ViewActivity.java

```
package com.example.xmlparse;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.util.Log;
import android.widget.TextView;

import org.json.JSONException;
import org.json.JSONObject;
import org.w3c.dom.Document;
import org.w3c.dom.Element;
import org.w3c.dom.Node;
import org.w3c.dom.NodeList;
import org.xml.sax.SAXException;

import java.io.IOException;
import java.io.InputStream;

import javax.xml.parsers.DocumentBuilder;
import javax.xml.parsers.DocumentBuilderFactory;
import javax.xml.parsers.ParserConfigurationException;

public class ViewActivity extends AppCompatActivity {
    int flag;
    TextView jsonplaceholder, xmlplaceholder;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_view);
        flag = getIntent().getIntExtra("val", 0);
        jsonplaceholder = findViewById(R.id.jsonplaceholder);
        xmlplaceholder = findViewById(R.id.xmlplaceholder);
        if (flag == 1) {
```



```
        parseX();
    }
    if (flag == 2) {
        parseJ();
    }
}

public void parseJ() {
    String stringData;
    try {
        InputStream inputStream = getAssets().open("input.json");
        int size = inputStream.available();
        byte[] buffer = new byte[size];
        inputStream.read(buffer);
        stringData = new String(buffer);
        Log.e("data", "parseJSON" + stringData);
        JSONObject jsonObject = new JSONObject(stringData);
        Log.e("data", "parseJSON" + jsonObject);
        Log.e("data", "parseJSON" + jsonObject.getClass().getName());

        JSONObject cityObject = jsonObject.getJSONObject("City");
        String cityName = cityObject.getString("City-name");
        String longitude = cityObject.getString("longitude");
        String latitude = cityObject.getString("Latitude");
        String temperature = cityObject.getString("Temperature");
        String humidity = cityObject.getString("Humidity");
        Log.e("data", "parseJSON" + cityName);
        jsonplaceholder.setText(cityName + "\n");
        jsonplaceholder.append(longitude + "\n");
        jsonplaceholder.append(latitude + "\n");
        jsonplaceholder.append(temperature + "\n");
        jsonplaceholder.append(humidity + "\n");

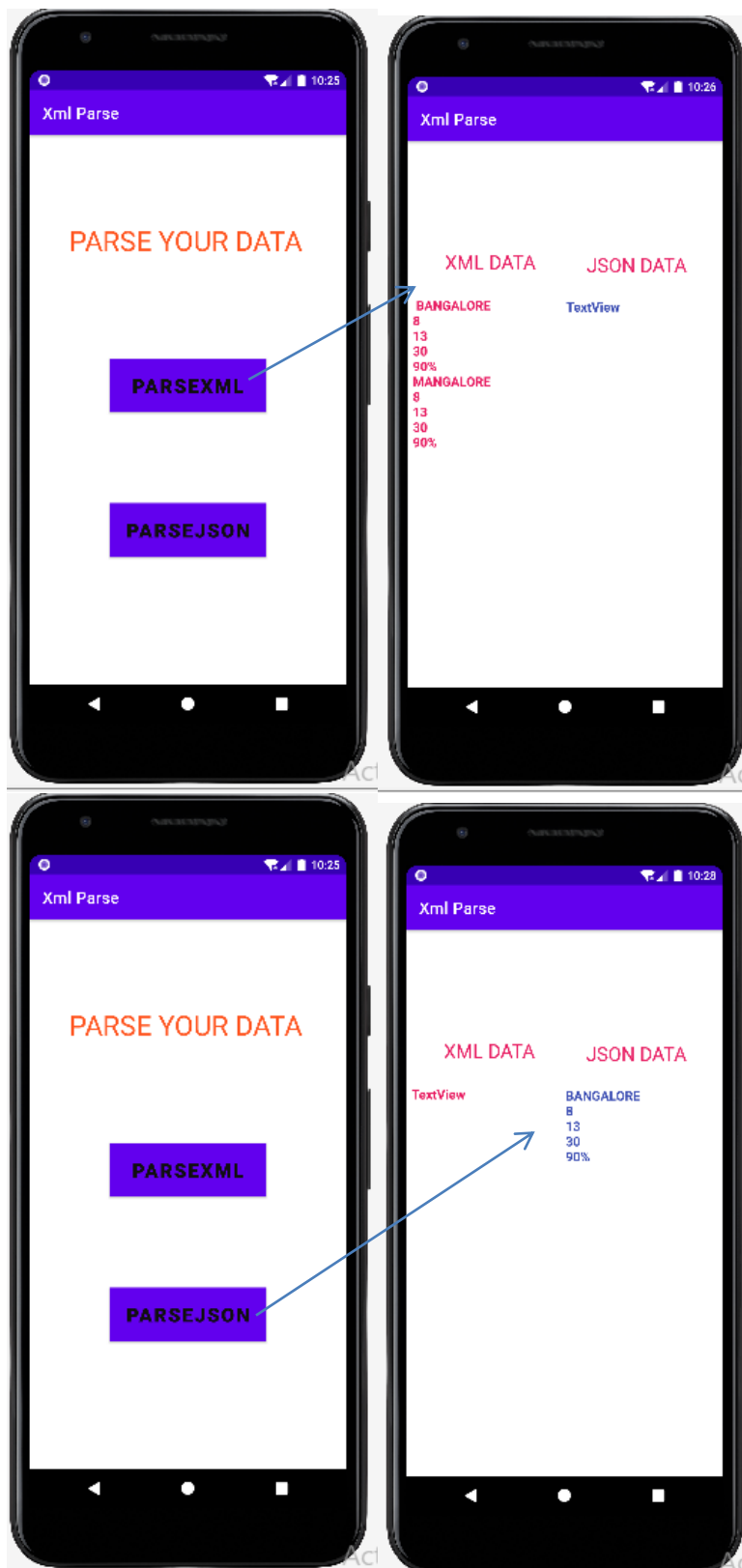
    } catch (IOException | JSONException e) {
        e.printStackTrace();
    }
}

public void parseX() {
    xmlplaceholder.setText(" ");
    try {
        InputStream inputStream=getAssets().open("input.xml");
        DocumentBuilderFactory documentBuilderFactory =
DocumentBuilderFactory.newInstance();
        DocumentBuilder documentBuilder =
documentBuilderFactory.newDocumentBuilder();
        Document document = documentBuilder.parse(inputStream);
    }
}
```

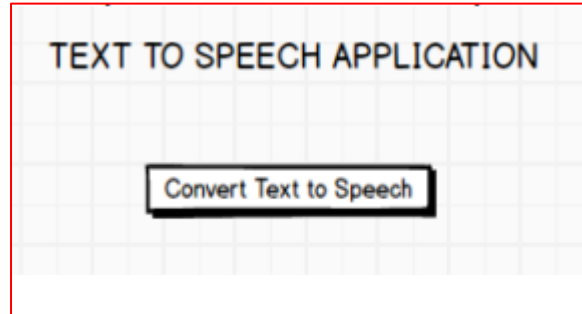
```
        NodeList cityList = document.getElementsByTagName("City");
        for (int i = 0; i < cityList.getLength(); i++) {
            Node c = cityList.item(i);
            if (c.getNodeType() == Node.ELEMENT_NODE) {
                Element city = (Element) c;
                // String id = city.getAttribute("id");
                // Log.e("data", "parseXML:" + id);

                NodeList cityDetailList = city.getChildNodes();
                for (int j = 0; j < cityDetailList.getLength(); j++)
                {
                    Node n = cityDetailList.item(j);
                    if (n.getNodeType() == Node.ELEMENT_NODE) {
                        Element cityDetail = (Element) n;
                        String value = cityDetail.getTextContent();
                        Log.e("data", "parseXML:" + value);
                        xmlplaceholder.append(value + "\n");
                    }
                }
            }
        }
    } catch (IOException e) {
        e.printStackTrace();
    } catch (ParserConfigurationException e) {
        e.printStackTrace();
    } catch (SAXException e) {
        e.printStackTrace();
    }
}
```

output:



PROGRAM 7: Develop a simple application with one EditText so that the user can write some text in it. Create a button called "Convert Text to Speech" that converts the user input text into voice.



FILENAME:activity\_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
    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">

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="TEXT TO SPEECH APPLICATION"
        android:textColor="#FF5722"
        android:textSize="24sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.506"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.169" />

    <EditText
        android:id="@+id/edt_txt"
        android:layout_width="280dp"
        android:layout_height="52dp"
        android:ems="10"
        android:inputType="textPersonName"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
```

```
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.275" />

<Button
    android:id="@+id/btn_speech"
    android:layout_width="146dp"
    android:layout_height="73dp"
    android:background="#9C27B0"
    android:text="SPEECH"
    android:textColor="#FFFFFF"
    android:textSize="20sp"
    android:textStyle="bold"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.451" />

</androidx.constraintlayout.widget.ConstraintLayout>

FILENAME:ActivityMain.java

package com.example.texttospeech;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.speech.tts.TextToSpeech;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;

import java.util.Locale;

public class MainActivity extends AppCompatActivity implements
View.OnClickListener, TextToSpeech.OnInitListener {
    Button btnspeak;
    EditText txtspeak;
    TextToSpeech textToSpeech;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        txtspeak=(EditText) findViewById(R.id.edt_txt);
    }
}
```

```

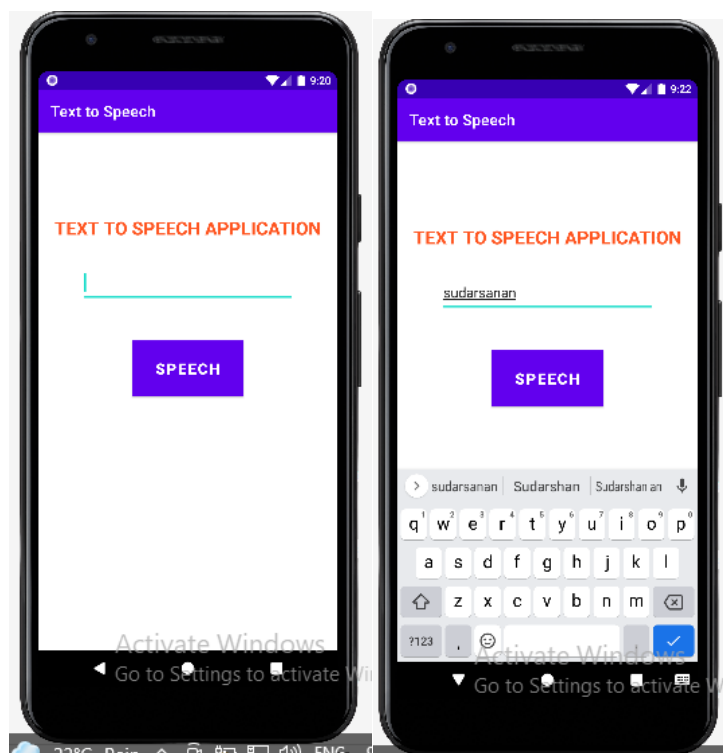
        btnspeak=(Button) findViewById(R.id.btn_speech);
        btnspeak.setOnClickListener(this);
        textToSpeech=new TextToSpeech(getApplicationContext(),this);
        textToSpeech.setLanguage(Locale.ENGLISH);
    }

    @Override
    public void onClick(View view) {
        String text=txtspeak.getText().toString();
        textToSpeech.speak(text,TextToSpeech.QUEUE_FLUSH,null);
    }

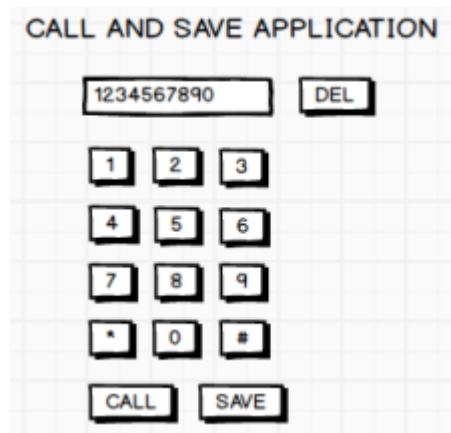
    @Override
    public void onInit(int status) {
        if(status!=TextToSpeech.ERROR)
        {
            Toast.makeText(getApplicationContext(),"success",Toast.LENGTH_LONG).show();
        }
    }
}

```

output:



**Program 8:** Create an activity like a phone dialer with CALL and SAVE buttons. On pressing the CALL button, it must call the phone number and on pressing the SAVE button it must save the number to the phone contacts.



Filename: activity\_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
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">

    <Button
        android:id="@+id/btncall"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:background="#F44336"
        android:text="CALL"
        android:textColor="#F4EDEF"
        android:textSize="20sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.498"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/display"
        app:layout_constraintVertical_bias="0.904" />

    <Button
        android:id="@+id/btnrem"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:background="#F44336"
        android:text="DEL"
```

```
        android:textColor="#F6F0F0"
        android:textSize="20sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.871"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/display"
        app:layout_constraintVertical_bias="0.904" />
```

<Button

```
        android:id="@+id/btnsave"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:background="#F44336"
        android:text="SAVE"
        android:textColor="#F8F4F4"
        android:textSize="20sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.117"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/display"
        app:layout_constraintVertical_bias="0.904" />
```

<Button

```
        android:id="@+id/btn0"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:background="#F44336"
        android:text="0"
        android:textColor="#F3F0F0"
        android:textSize="20sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.498"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/display"
        app:layout_constraintVertical_bias="0.761" />
```

<Button

```
        android:id="@+id/btnhash"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:background="#F44336"
        android:text="#"
        android:textColor="#FBF7F7"
        android:textSize="20sp"
        app:layout_constraintBottom_toBottomOf="parent"
```



```
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.87"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toBottomOf="@+id/display"
app:layout_constraintVertical_bias="0.761" />

<Button
    android:id="@+id/btnstar"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:background="#F44336"
    android:text="*"
    android:textColor="#F8F5F5"
    android:textSize="20sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.117"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/display"
    app:layout_constraintVertical_bias="0.761" />

<Button
    android:id="@+id/btn8"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:background="#F44336"
    android:text="8"
    android:textColor="#FAFAFA"
    android:textSize="20sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.498"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/display"
    app:layout_constraintVertical_bias="0.611" />

<Button
    android:id="@+id/btn9"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:background="#F44336"
    android:text="9"
    android:textColor="#FAF6F6"
    android:textSize="20sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.87"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/display"
```

```
        app:layout_constraintVertical_bias="0.611" />

<Button
    android:id="@+id/btn7"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:background="#F44336"
    android:text="7"
    android:textColor="#FFDFDF"
    android:textSize="20sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.117"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/display"
    app:layout_constraintVertical_bias="0.611" />

<Button
    android:id="@+id/btn5"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:background="#F44336"
    android:text="5"
    android:textColor="#FDFBFB"
    android:textSize="20sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.498"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/display"
    app:layout_constraintVertical_bias="0.44" />

<Button
    android:id="@+id/btn6"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:background="#F44336"
    android:text="6"
    android:textColor="#FAF5F5"
    android:textSize="20sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.87"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/display"
    app:layout_constraintVertical_bias="0.44" />

<Button
    android:id="@+id/btn4"
```

```
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:background="#F44336"
    android:text="4"
    android:textColor="#FBFAFA"
    android:textSize="20sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.117"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/display"
    app:layout_constraintVertical_bias="0.44" />
```

<EditText

```
    android:id="@+id/display"
    android:layout_width="280dp"
    android:layout_height="71dp"
    android:ems="10"
    android:inputType="phone"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.412"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.231"
    tools:ignore="SpeakableTextPresentCheck" />
```

<Button

```
    android:id="@+id/btn2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:background="#F44336"
    android:text="2"
    android:textColor="#F8F3F3"
    android:textSize="20sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.498"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/display"
    app:layout_constraintVertical_bias="0.27" />
```

<Button

```
    android:id="@+id/btn1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:background="#F44336"
    android:text="1"
    android:textColor="#F8F3F3"
```

```
        android:textSize="20sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.117"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/display"
        app:layout_constraintVertical_bias="0.27" />

<Button
    android:id="@+id/btn3"
    android:layout_width="92dp"
    android:layout_height="42dp"
    android:background="#F44336"
    android:text="3"
    android:textColor="#FAF6F6"
    android:textSize="20sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.87"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/display"
    app:layout_constraintVertical_bias="0.27"
    tools:ignore="TouchTargetSizeCheck" />

<TextView
    android:id="@+id/textView"
    android:layout_width="385dp"
    android:layout_height="47dp"
    android:layout_marginTop="64dp"
    android:text="CALL AND SAVE APPLICATION"
    android:textAlignment="center"
    android:textColor="#9C27B0"
    android:textSize="24sp"
    android:textStyle="bold"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

**Filename:MainActivity.java**

```
package com.example.program8;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.net.Uri;
import android.os.Bundle;
import android.provider.ContactsContract;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;

public class MainActivity extends AppCompatActivity implements
View.OnClickListener {
    EditText Display;
    Button btn_1,btn_2,btn_3,btn_4,btn_5,btn_6,btn_7,btn_8,btn_9,btn_0;
    Button btn_star,btn_hash,btn_del,btn_call,btn_save;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        btn_0=(Button)findViewById(R.id.btn0);
        btn_0.setOnClickListener(this);
        btn_1=(Button)findViewById(R.id.btn1);
        btn_1.setOnClickListener(this);
        btn_2=(Button)findViewById(R.id.btn2);
        btn_2.setOnClickListener(this);
        btn_3=(Button)findViewById(R.id.btn3);
        btn_3.setOnClickListener(this);
        btn_4=(Button)findViewById(R.id.btn4);
        btn_4.setOnClickListener(this);
        btn_5=(Button)findViewById(R.id.btn5);
        btn_5.setOnClickListener(this);
        btn_6=(Button)findViewById(R.id.btn6);
        btn_6.setOnClickListener(this);
        btn_7=(Button)findViewById(R.id.btn7);
        btn_7.setOnClickListener(this);
        btn_8=(Button)findViewById(R.id.btn8);
        btn_8.setOnClickListener(this);
        btn_9=(Button)findViewById(R.id.btn9);
        btn_9.setOnClickListener(this);

        btn_call=findViewById(R.id.btncall);
        btn_call.setOnClickListener(this);
        btn_save=findViewById(R.id.btnsave);
        btn_save.setOnClickListener(this);
    }
}
```

```
        btn_star=findViewById(R.id.btnstar);
        btn_star.setOnClickListener(this);
        btn_del=findViewById(R.id.btnrem);
        btn_del.setOnClickListener(this);
        btn_hash=findViewById(R.id.btnhash);
        btn_hash.setOnClickListener(this);

        Display=(EditText) findViewById(R.id.display);
        Display.setText("");

    }

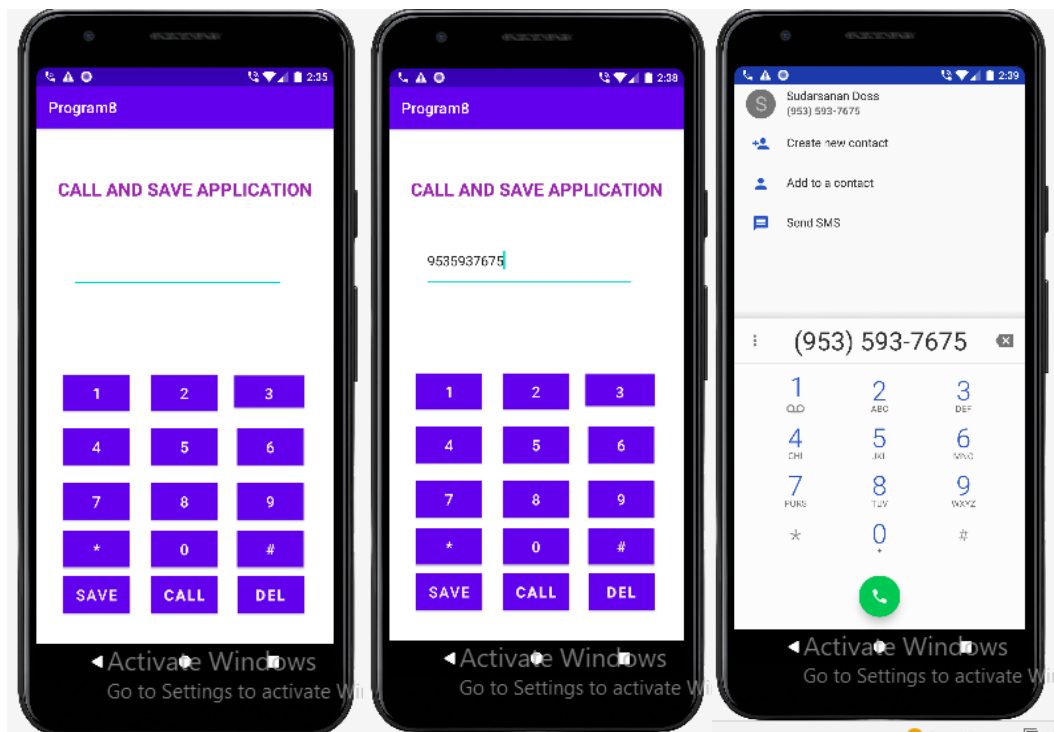
    @Override
    public void onClick(View view) {
        if(view.equals(btn_1))
            Display.append("1");
        else if(view.equals(btn_2)) Display.append("2");
        else if(view.equals(btn_3)) Display.append("3");
        else if(view.equals(btn_4)) Display.append("4");
        else if(view.equals(btn_5)) Display.append("5");
        else if(view.equals(btn_6)) Display.append("6");
        else if(view.equals(btn_7)) Display.append("7");
        else if(view.equals(btn_8)) Display.append("8");
        else if(view.equals(btn_9)) Display.append("9");
        else if(view.equals(btn_0)) Display.append("0");
        else if(view.equals(btn_star)) Display.append("*");
        else if(view.equals(btn_hash)) Display.append("#");
        else if(view.equals(btn_save))
        {
            Intent contactIntent= new
            Intent(ContactsContract.Intents.Insert.ACTION);

            contactIntent.setType(ContactsContract.RawContacts.CONTENT_TYPE);

            contactIntent.putExtra(ContactsContract.Intents.Insert.NAME, "Unknown");

            contactIntent.putExtra(ContactsContract.Intents.Insert.PHONE, Display.getText().toString());
            startActivity(contactIntent);
        }
        else if(view.equals(btn_del))
        {
            String data=Display.getText().toString();
            if(data.length()>0)
                Display.setText(data.substring(0,data.length()-1));
            else
                Display.setText("");
        }
    }
}
```

```
btn_call.setOnClickListener(new View.OnClickListener()
{
    @Override
    public void onClick(View v) {
        String data = Display.getText().toString();Intent
        intent=new Intent(Intent.ACTION_DIAL);
        intent.setData(Uri.parse("tel:"+ data));
        startActivity(intent);
    }
});
}
```

**OUTPUT :****phone dialer with CALL**

## phone dialer with SAVE

