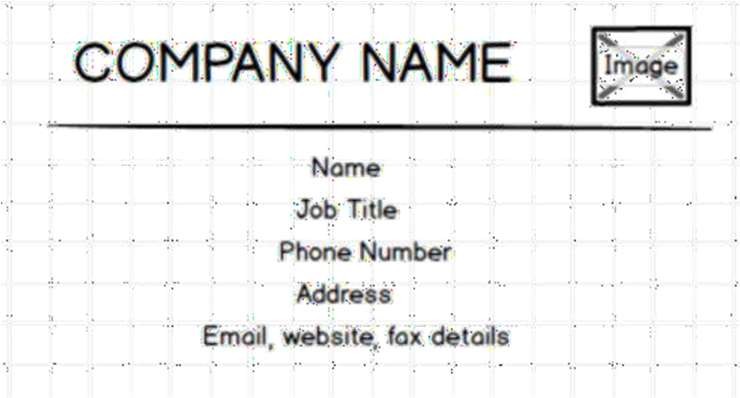
PART A

**Program 1**

Create an application to design a Visiting Card. The Visiting card should have a company logo atthe 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.



1. Create a New Android Project with Empty Activity.
2. Open activity\_main.xml file from res layout folder, check/add Linear Layout as the root view.
3. Create layout using nested Relative Layout and TextView.
4. Use View background property to draw the line
5. Add Image to drawable folder and reference the image in the layout using @drawable/<image\_name>
6. Use android:layout\_gravity/android:gravity properties to center the components.

#### activity\_main.xml

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

<RelativeLayout xmlns:android="<http://schemas.android.com/apk/res/android>"

xmlns:app="<http://schemas.android.com/apk/res-auto>" xmlns:tools="<http://schemas.android.com/tools>" android:layout\_width="match\_parent" android:layout\_height="match\_parent" android:layout\_gravity="center" tools:context=".MainActivity">

<TextView

android:id="@+id/textView3" android:layout\_width="368dp" android:layout\_height="wrap\_content" android:layout\_alignParentEnd="true" android:layout\_alignParentBottom="true" android:layout\_marginEnd="57dp" android:layout\_marginBottom="370dp" android:gravity="center" android:text="Associate Professor" android:textColor="#0337F4" android:textSize="24sp" app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.362" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.286" />

<TextView

android:id="@+id/textView4" android:layout\_width="242dp" android:layout\_height="wrap\_content" android:layout\_alignParentEnd="true" android:layout\_alignParentBottom="true" android:layout\_marginEnd="127dp" android:layout\_marginBottom="317dp" android:gravity="center" android:text="9886954954" android:textColor="#9C27B0" android:textSize="24sp" app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintHorizontal\_bias="0.362" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.286" />

<TextView

android:id="@+id/textView5" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_alignParentEnd="true" android:layout\_alignParentBottom="true" android:layout\_marginEnd="90dp" android:layout\_marginBottom="214dp" android:text="[girishkumar@bitm.edu.in](mailto:girishkumar@bitm.edu.in)" android:textColor="#FF9800" android:textSize="24sp" app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.362" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.286" />

<TextView

android:id="@+id/textView6" android:layout\_width="269dp" android:layout\_height="46dp" android:layout\_alignParentEnd="true" android:layout\_alignParentBottom="true" android:layout\_marginEnd="85dp" android:layout\_marginBottom="145dp" android:text=" [www.bitm.edu.in](http://www.bitm.edu.in/)" android:textColor="#9C27B0" android:textSize="24sp" app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.362" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.286" />

<TextView

android:id="@+id/textView" android:layout\_width="117dp" android:layout\_height="54dp"

android:layout\_alignParentEnd="true" android:layout\_alignParentBottom="true" android:layout\_marginEnd="268dp" android:layout\_marginBottom="613dp" android:text="BITM" android:textColor="#0022FF" android:textSize="34sp"

app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.139" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.097" />

<ImageButton

android:id="@+id/imageButton" android:layout\_width="192dp" android:layout\_height="93dp" android:layout\_alignParentEnd="true" android:layout\_alignParentBottom="true" android:layout\_marginEnd="48dp" android:layout\_marginBottom="590dp" app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.836" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.078" app:srcCompat="@drawable/bitm" />

<TextView

android:id="@+id/textView2" android:layout\_width="313dp" android:layout\_height="wrap\_content" android:layout\_above="@+id/textView3" android:layout\_alignParentEnd="true" android:layout\_marginEnd="77dp" android:layout\_marginBottom="57dp" android:gravity="center" android:text=" Dr Girish Kumar " android:textColor="#0099FF" android:textSize="30sp"

app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.362"

app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.286" />

<TextView

android:id="@+id/textView7" android:layout\_width="313dp" android:layout\_height="wrap\_content" android:layout\_above="@+id/textView3" android:layout\_alignParentEnd="true" android:layout\_marginEnd="75dp" android:layout\_marginBottom="11dp" android:gravity="center" android:text="Mr Praveen Kumar" android:textColor="#0099FF" android:textSize="30sp"

app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.362" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.286" />

<View

android:id="@+id/divider2" android:layout\_width="match\_parent" android:layout\_height="5dp" android:layout\_alignParentBottom="true" android:layout\_marginBottom="546dp" android:background="#ff4567" />

<View

android:id="@+id/divider4" android:layout\_width="match\_parent" android:layout\_height="5dp" android:layout\_alignParentBottom="true" android:layout\_marginBottom="286dp" android:background="#ff4567" />

</RelativeLayout>

#### MainActivity.java

package com.girish.visitingcard;

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);

}

}

**Output**



# 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.

* 1. Create a New Android Project with Empty Activity.
  2. Open activity\_main.xml file from reslayout folder, check/add Constraint Layout as the root view.
  3. Create Layout using Drag and Drop framework.
  4. Open MainActivty.java file, Override onCreate() method and bring activity\_main.xml file on screen using setContentView() and bring the view references using findViewById() method.
  5. Add Listeners to Button Click Event:
  6. Create a class which implements OnClickListener interface.
  7. Override onClick() method of OnClickListener Interface.
  8. Register the button for click event by calling setOnClickListener() method of View class and pass the object of the class that implemented OnClickListener Interface.
  9. Create a logic to Add/Subtract/Multiply/Divide to perform arithmetic operation.

## Design

#### 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/butSub" android:layout\_width="89dp" android:layout\_height="62dp" android:text="SUB" android:textSize="16sp"

app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.353" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.656" />

<Button

android:id="@+id/butDiv" android:layout\_width="89dp" android:layout\_height="62dp" android:text="DIV" android:textSize="16sp"

app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.96" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.656" />

<EditText

android:id="@+id/txtResult1" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:ems="10" android:inputType="text" android:textColor="#FF5722"

app:layout\_constraintBottom\_toBottomOf="parent"

app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.771" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" />

<EditText

android:id="@+id/txtNum2" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:ems="10" android:inputType="text" android:textColor="#3F51B5"

app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.766" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.37" />

<TextView

android:id="@+id/textView5" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="Result:" android:textAlignment="center" android:textColor="#FF5722" android:textSize="24sp" app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.191" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" />

<TextView

android:id="@+id/textView3" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="Enter Num2:" android:textAlignment="center" android:textColor="#3F51B5" android:textSize="20sp" app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.11" app:layout\_constraintStart\_toStartOf="parent"

app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.372" />

<TextView

android:id="@+id/textView" android:layout\_width="255dp" android:layout\_height="38dp" android:text="SIMPLE CALCULATOR" android:textAlignment="center" android:textColor="#9C27B0" 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="0.103" />

<TextView

android:id="@+id/textView2" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="Enter Num1:" android:textAlignment="center" android:textColor="#3F51B5" android:textSize="20sp" app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.11" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.241" />

<EditText

android:id="@+id/txtNum1" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:ems="10" android:inputType="text" android:textColor="#673AB7"

app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.761" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.233" />

<Button

android:id="@+id/butAdd" android:layout\_width="89dp" android:layout\_height="62dp" android:text="ADD" android:textSize="16sp"

app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.043" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.658" />

<Button

android:id="@+id/butMul" android:layout\_width="89dp" android:layout\_height="62dp" android:text="MUL" android:textSize="16sp"

app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.666" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.656" />

</androidx.constraintlayout.widget.ConstraintLayout>

#### Main\_activity.java

package com.girish.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.TextView;

public class MainActivity extends AppCompatActivity implements View.OnClickListener {

Button but\_Add,but\_Sub,but\_Mul,but\_Div;

EditText txt\_Num1,txt\_Num2; TextView txt\_Res;

@Override

protected void onCreate(Bundle savedInstanceState) { super.onCreate(savedInstanceState); setContentView(R.layout.activity\_main);

but\_Add = (Button) findViewById(R.id.butAdd); but\_Sub = (Button) findViewById(R.id.butSub); but\_Mul = (Button) findViewById(R.id.butMul); but\_Div = (Button) findViewById(R.id.butDiv);

txt\_Num1 = (EditText) findViewById(R.id.txtNum1); txt\_Num2 = (EditText) findViewById(R.id.txtNum2);

txt\_Res = (TextView) findViewById(R.id.txtResult1);

but\_Add.setOnClickListener(this); but\_Sub.setOnClickListener(this); but\_Mul.setOnClickListener(this); but\_Div.setOnClickListener(this);

}

@Override

public void onClick(View v) { double op1 =

Double.parseDouble(txt\_Num1.getText().toString()); double op2 =

Double.parseDouble(txt\_Num2.getText().toString()); double Res;

if(v.equals(but\_Add)) Res = op1 + op2;

else if(v.equals(but\_Sub)) Res = op1 - op2;

else if(v.equals(but\_Mul)) Res = op1 \* op2;

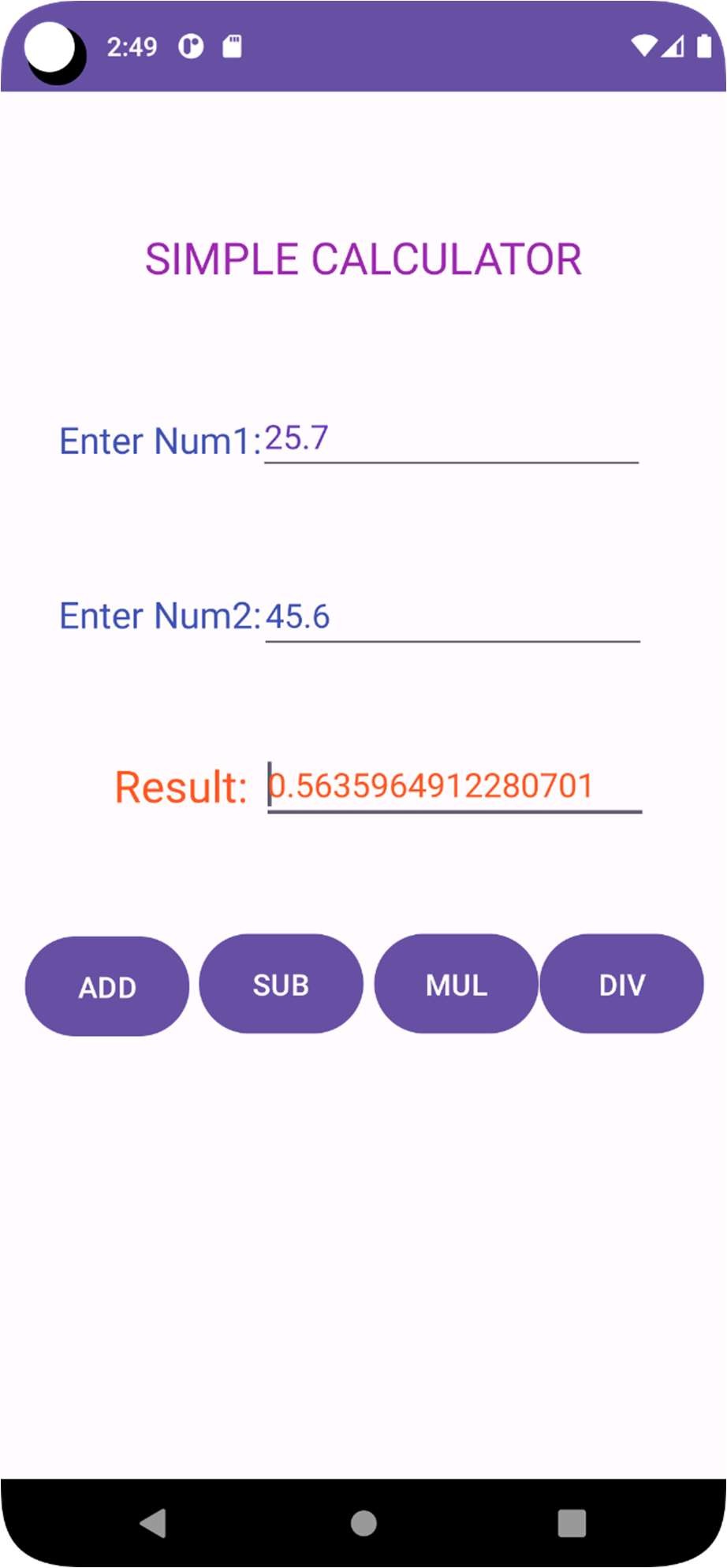
else if(v.equals(but\_Div)) Res = op1 / op2;

else Res = 0; txt\_Res.setText(String.valueOf(Res));

}

}

**Output**

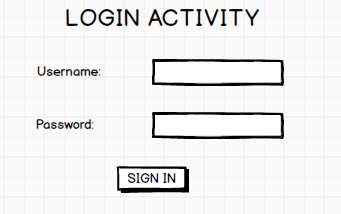


# Program 3

Create a SIGN Up activity with Username and Password. Validation of password should happen based onthe 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 messagesaying “Failed Login Attempts” and disable the SIGN IN button. Use Bundle to transfer information fromone activity to another.

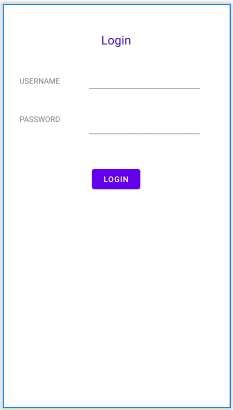
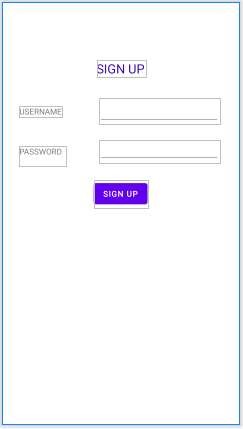


1. Create a New Android Project with Empty Activity.
2. Open activity\_main.xml file from res layout folder, check/add Constraint Layout as the root view.
3. Create Signup Layout using Drag and Drop framework design the layout.
4. Create One more Empty Activity LoginActivity using Android Studio Create Activity Flow (Refer Android Studio Tutorial)
5. Open activity\_login.xml file from reslayout folder, check/add Constraint Layout as the root view.
6. Create Login Layout using Drag and Drop framework.
7. Add Listeners to Button Click Event:

* Create a class which implements OnClickListener interface.
* Override onClick() method of OnClickListener Interface.
* Register the button for click event by calling setOnClickListener() method of View class and pass the object of the class that implemented OnClickListener Interface.

8. Use Regular Expression**"^(?=.\*[A-Z])(?=.\*[a-z])(?=.\*\\d)(?=.\*[@$!])[A-Za- z\\d@$!]{8,}$”** to validate the password.

# Design



#### 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" tools:context=".MainActivity">

<TextView

android:id="@+id/textView3" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="Password:" android:textAllCaps="true" android:textColor="#3949AB" 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="0.423" />

<TextView

android:id="@+id/textView" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="LOGIN ACTIVITY" android:textAlignment="center" android:textColor="#8E24AA" android:textSize="34sp" app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.074" />

<TextView

android:id="@+id/textView2" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="User Name:"

android:textAllCaps="true" android:textColor="#3949AB" android:textSize="24sp" app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.102" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.271" />

<EditText

android:id="@+id/txt\_login\_username" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:ems="10" android:inputType="text"

app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.905" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.256" />

<EditText

android:id="@+id/txt\_login\_password" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:ems="10" android:inputType="text"

app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.91" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.412" />

<Button

android:id="@+id/btn\_login\_signup" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:background="#1E88E5" android:backgroundTint="#1E88E5" android:text="Sign In" android:textColorLink="#1E88E5" app:layout\_constraintBottom\_toBottomOf="parent"

app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.423" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.628" />

</androidx.constraintlayout.widget.ConstraintLayout>

#### Login.java

package com.girish.signup;

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 txtLoginUsername,txtLoginPassword; Button btnLogin;

String user,pass; int count = 0; @Override

protected void onCreate(Bundle savedInstanceState) { super.onCreate(savedInstanceState); setContentView(R.layout.activity\_login);

txtLoginUsername = (EditText) findViewById(R.id.txt\_login\_username);

txtLoginPassword = (EditText) findViewById(R.id.txt\_login\_password);

btnLogin = (Button) findViewById(R.id.btn\_login\_signup); btnLogin.setOnClickListener(this);

Bundle bundle = getIntent().getBundleExtra("data"); user = bundle.getString("user");

pass = bundle.getString("pass");

}

@Override

public void onClick(View v) {

String user1 = txtLoginUsername.getText().toString(); String pass1 = txtLoginPassword.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();

}

}

}

}

#### main\_activity.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/textView3" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="Password:" android:textAllCaps="true" android:textColor="#3949AB"

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="0.423" />

<TextView

android:id="@+id/textView" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="SIGN UP ACTIVITY" android:textAlignment="center" android:textColor="#8E24AA" android:textSize="34sp" app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.074" />

<TextView

android:id="@+id/textView2" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="User Name:" android:textAllCaps="true" android:textColor="#3949AB" android:textSize="24sp" app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.102" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.271" />

<EditText

android:id="@+id/txt\_login\_username" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:ems="10" android:inputType="text"

app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintHorizontal\_bias="0.92" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.256" />

<EditText

android:id="@+id/txt\_login\_password" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:ems="10" android:inputType="text"

app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.91" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.412" />

<Button

android:id="@+id/btn\_login\_signup" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:background="#1E88E5" android:backgroundTint="#1E88E5" android:text="Sign Up" android:textColorLink="#1E88E5" app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.423" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.628" />

</androidx.constraintlayout.widget.ConstraintLayout>

#### MainActivity.java

package com.girish.signup;

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 txtUsername; EditText txtPassword; 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); txtUsername = (EditText)

findViewById(R.id.txt\_login\_username); txtPassword = (EditText)

findViewById(R.id.txt\_login\_password); btnSignup = (Button)

findViewById(R.id.btn\_login\_signup); btnSignup.setOnClickListener(this);

}

public void onClick(View v) {

String username = txtUsername.getText().toString(); String password = txtPassword.getText().toString(); if (validatePassword(password)) {

Bundle bundle = new Bundle(); bundle.putString("user", username); bundle.putString("pass", password);

Intent it = new Intent(this, Login.class); it.putExtra("data", bundle); startActivity(it);

} else {

Toast.makeText(getBaseContext(), "Invalid Password", Toast.LENGTH\_LONG).show();

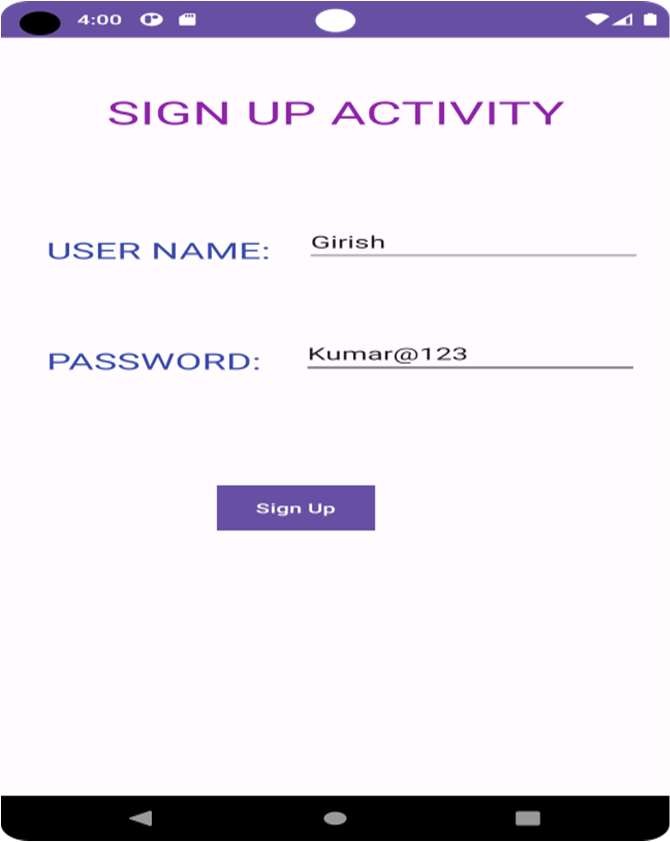
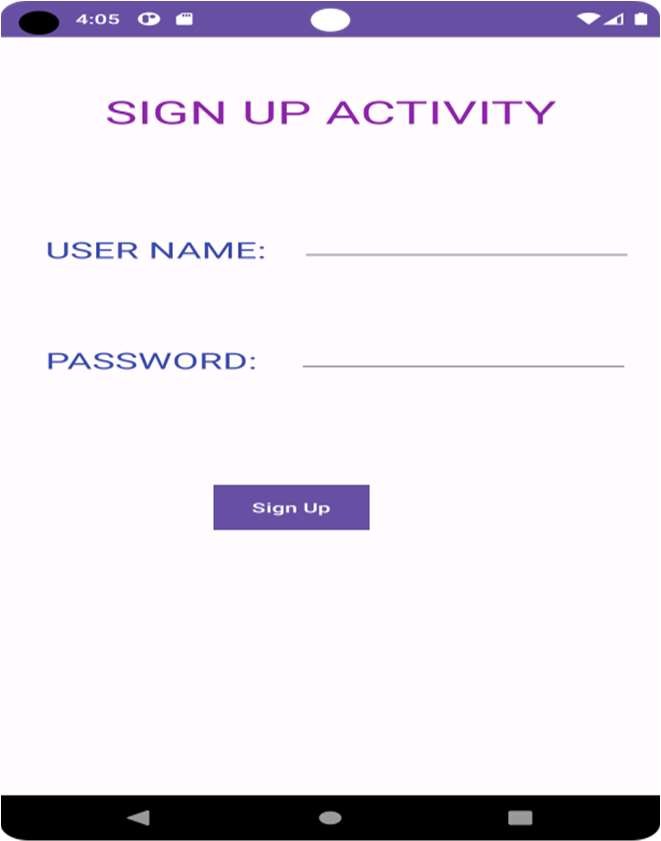
}

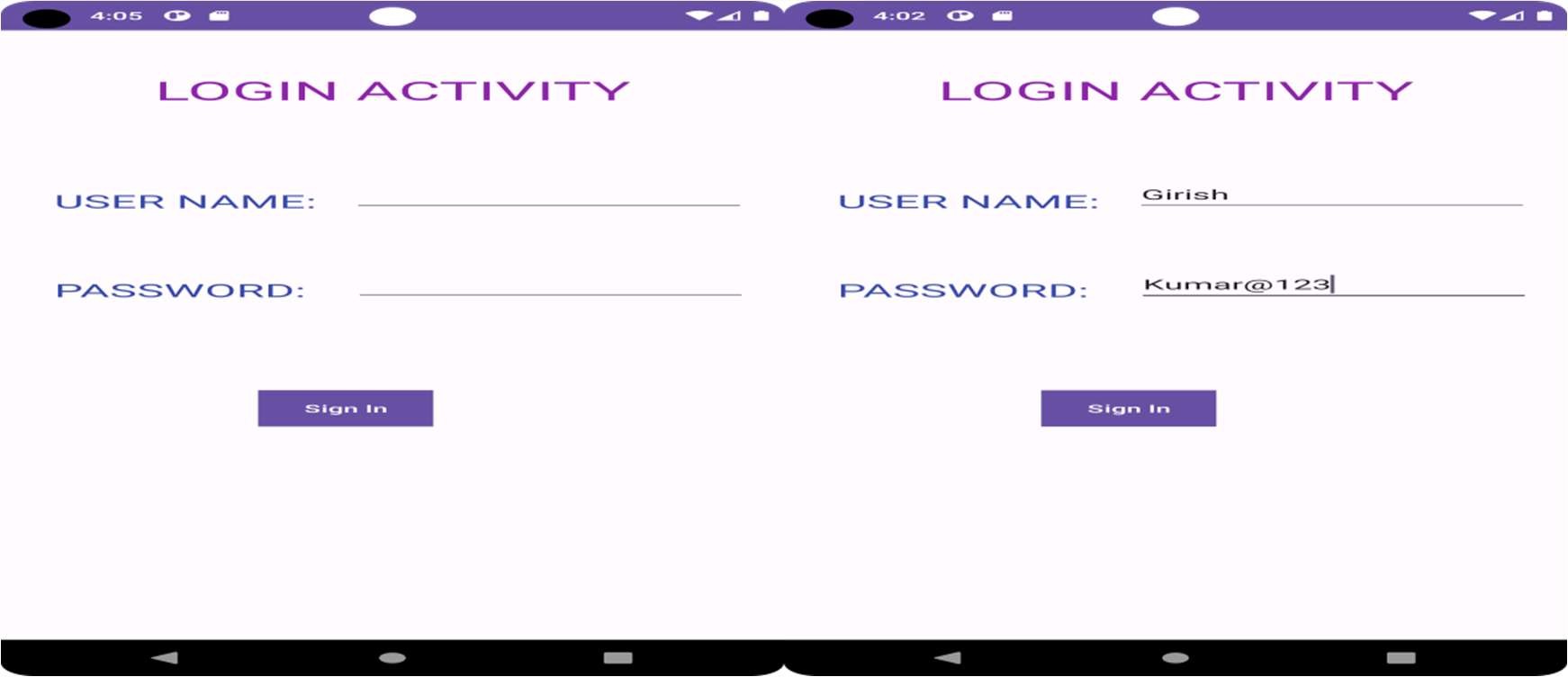
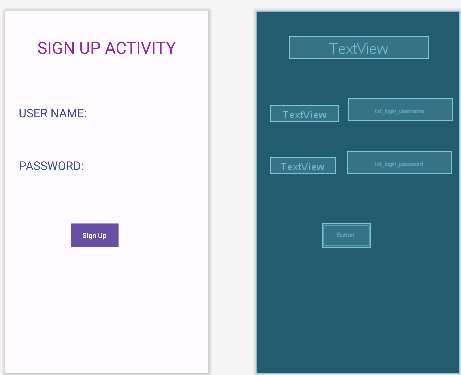
}

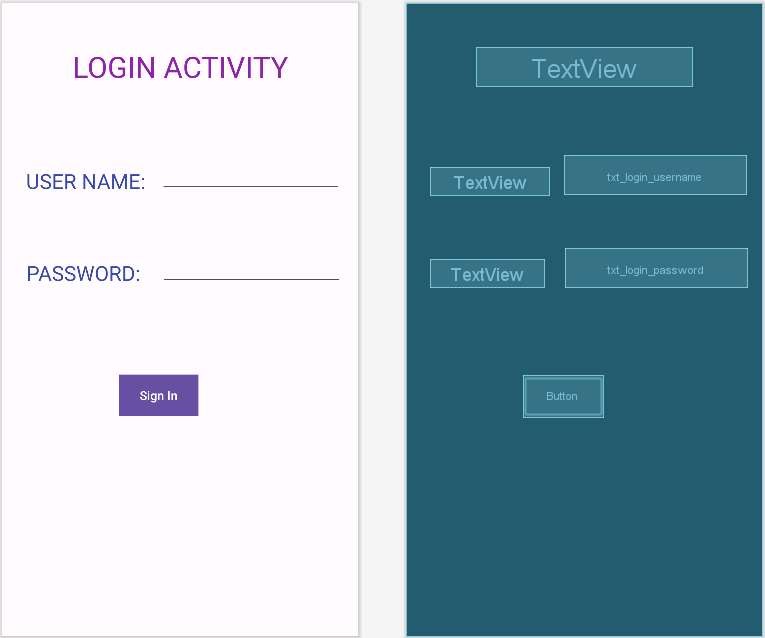
private boolean validatePassword(String password) { Pattern pattern = Pattern.compile(regularExpression); Matcher matcher = pattern.matcher(password);

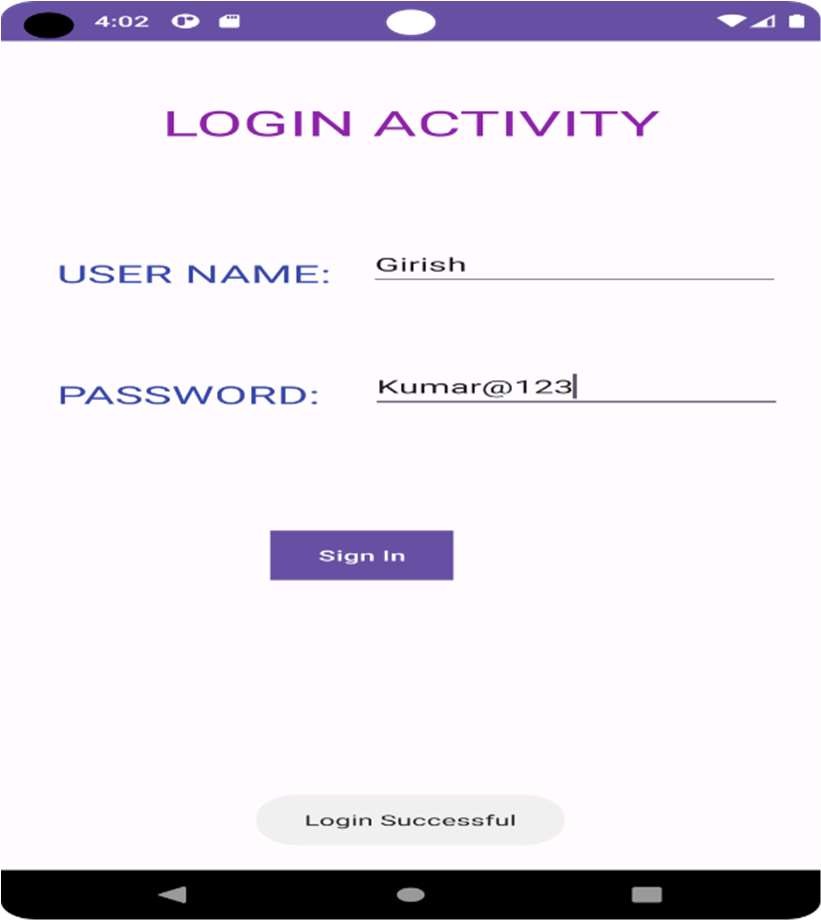
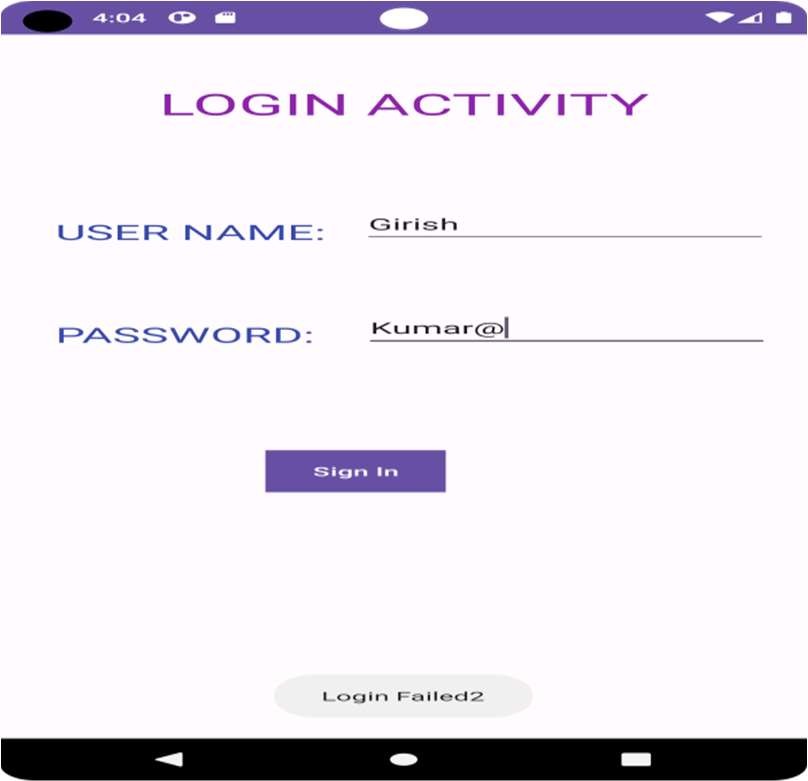
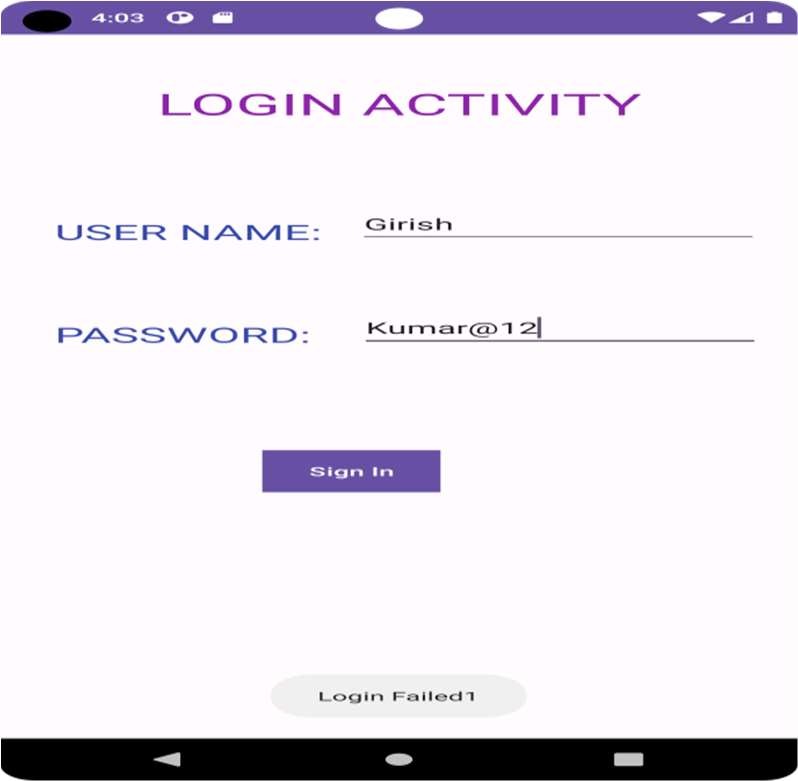
return matcher.matches();

}

}

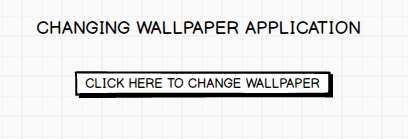






**Program 4**

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.



1. Create a New Android Project with Empty Activity.
2. Open activity\_main.xml file from reslayout folder, check/add LinearLayout as the root view.
3. Create the layout
4. Add 3 or More images to drawable folder (resdrawable)
5. Declare uses permission android.permission.SET\_WALLPAPPER in the AndroidManifest.xml file
6. Schedule Timer task to change the wallpaper on every 30 seconds interval.
7. Initialize and use WallpaperManager.setBitmap() method to change the wallpaper.

#### 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:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="changing wall paper" android:textAlignment="center" android:textAllCaps="true" android:textColor="#8E24AA" android:textSize="34sp" app:layout\_constraintBottom\_toBottomOf="parent"

app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.516" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.096" />

<Button

android:id="@+id/btn\_wall" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="click here for changing wallpaper" android:textAllCaps="true" android:textSize="20sp" app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.494" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.349" />

</androidx.constraintlayout.widget.ConstraintLayout>

#### mainActivity.java

package com.girish.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.img1,R.drawable.img2,R.drawable.img3,R.drawable.img4, R.drawable.img5};

@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 v) { if(!running){

new Timer().schedule(new MyTimer(),0,1000); running = true;

}

}

private class MyTimer extends TimerTask {

@Override

public void run() { try{

WallpaperManager wallpaperManager = WallpaperManager.getInstance(getBaseContext());

Random random = new Random();

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

} catch (IOException e) {

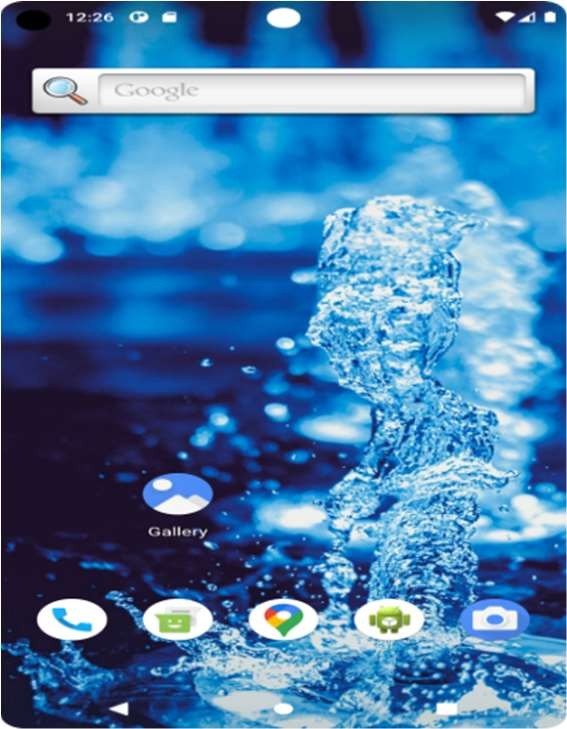
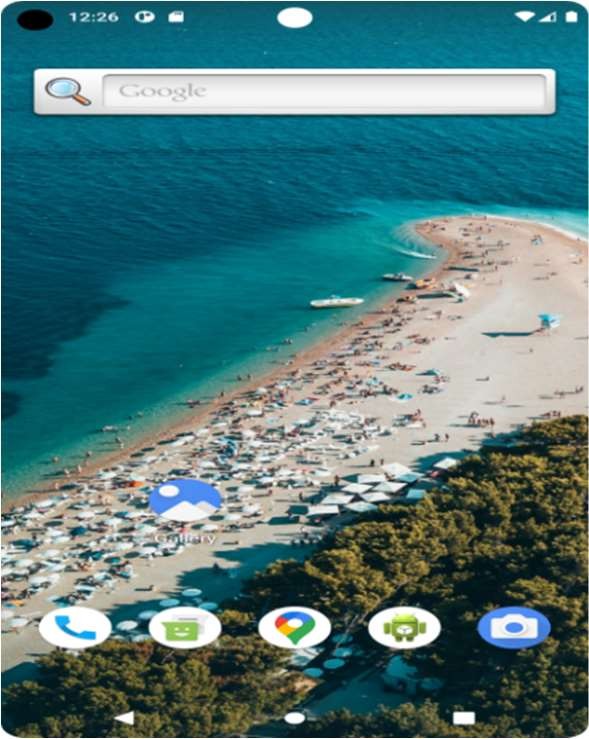
}

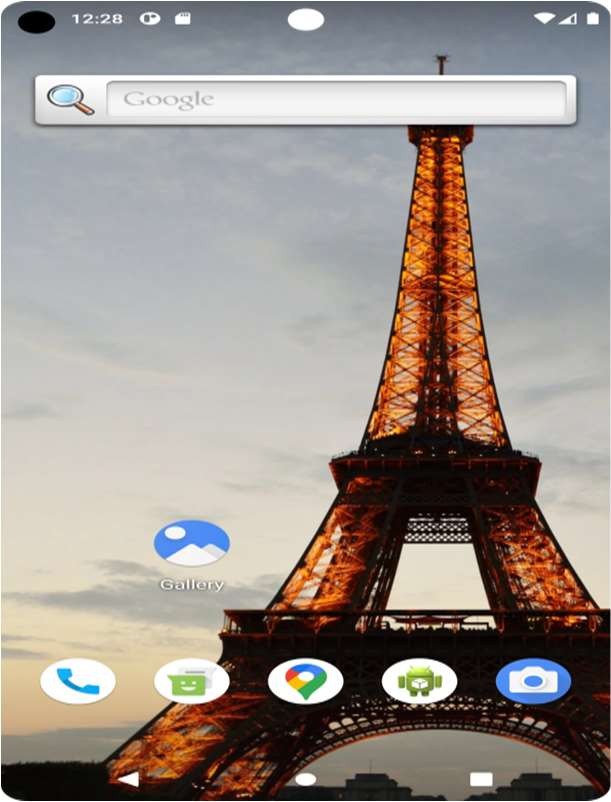
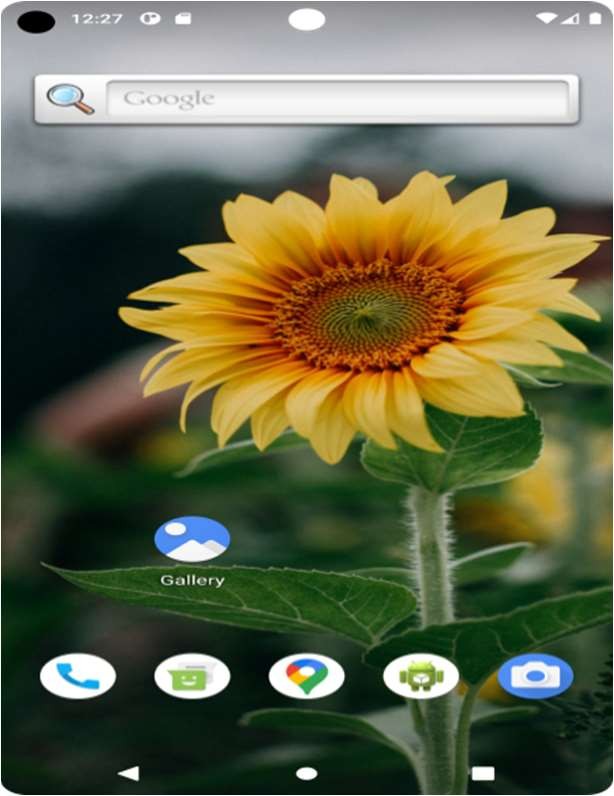
}

}

}

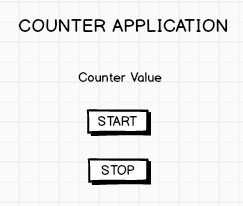
**Output**





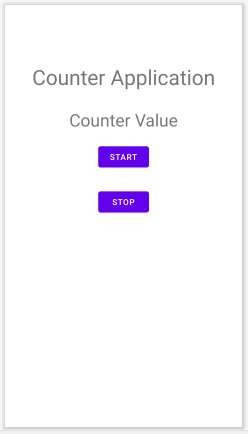
**Program 5**

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.



* 1. Create a New Android Project with Empty Activity.
  2. Open activity\_main.xml file from reslayout folder, check/add ConstraintLayout as the root view.
  3. Create the layout design using Drag and Drop framework.
  4. Add Listeners to Button Click Event:
* Create a class which implements OnClickListener interface.
* Override onClick() method of OnClickListener Interface.
* Register the button for click event by calling setOnClickListener() method of View class and pass the object of the class that implemented OnClickListener Interface.
  1. Create a Thread to start the counter logic.
  2. Steps to Create a Thread
* Create a class that extends Thread Class.
* Override run method of Thread Class.
* Use start() method of thread class to start the thread.
  1. Create Handler class to receive message from child thread, Handler executes in MainThread.
  2. Steps to Create Handler
* Create Object of type Handler.
* OverridhandleMessage() of handler class.
  1. Pass the counter value to be displayed to the handler.
  2. Update the UI to display the counter value received from thread.

### Design



#### 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\_stop" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:background="#C0CA33" android:backgroundTint="#7CB342"

android:text="Stop" android:textAlignment="center" android:textAllCaps="true" android:textColor="#D81B60" app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.463" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.623" />

<TextView

android:id="@+id/textView2" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="counter application" android:textAlignment="center" android:textAllCaps="true" android:textColor="#5E35B1" android:textSize="34sp" app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.434" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.161" />

<TextView

android:id="@+id/lbl\_text" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="Counter Value" android:textAlignment="center" android:textAllCaps="false" android:textColor="#D81B60" 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="0.313" />

<Button

android:id="@+id/btn\_start" android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content" android:background="#C0CA33" android:backgroundTint="#7CB342" android:text="Start" android:textAlignment="center" android:textAllCaps="true" android:textColor="#D81B60" app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.463" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.474" />

</androidx.constraintlayout.widget.ConstraintLayout>

#### mainActivity.java

package com.girish.counterapplication;

import androidx.appcompat.app.AppCompatActivity; import android.os.Bundle;

import android.os.Handler;

import android.os.Message; import android.view.View; import android.widget.Button; import android.widget.TextView;

public class MainActivity extends AppCompatActivity implements View.OnClickListener {

TextView lblCounter; Button btnStart,btnStop; int counter = 0;

boolean running = false;

@Override

protected void onCreate(Bundle savedInstanceState) { super.onCreate(savedInstanceState); setContentView(R.layout.activity\_main);

lblCounter = (TextView) findViewById(R.id.lbl\_text); btnStart = (Button) findViewById(R.id.btn\_start); btnStop = (Button) findViewById(R.id.btn\_stop); btnStart.setOnClickListener(this);

btnStop.setOnClickListener(this);

}

@Override

public void onClick(View v) { if(v.equals(btnStart)){

counter = 0; running = true;

new MyCounter().start();

} else if (v.equals(btnStop)) { running = false;

}

}

Handler handler = new Handler()

{

public void handleMessage(Message m)

{

lblCounter.setText(String.valueOf(m.what));

}

};

class MyCounter extends Thread{ public void run(){

while(running){ counter++;

handler.sendEmptyMessage(counter); try{

Thread.sleep(1000);

}

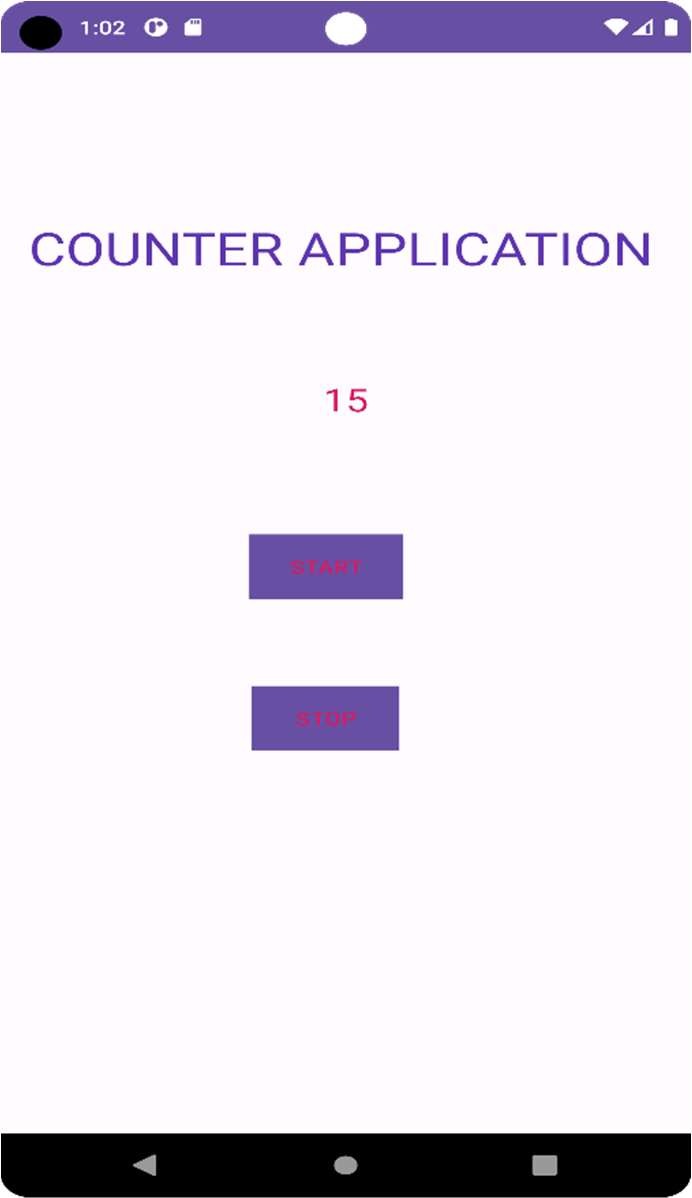
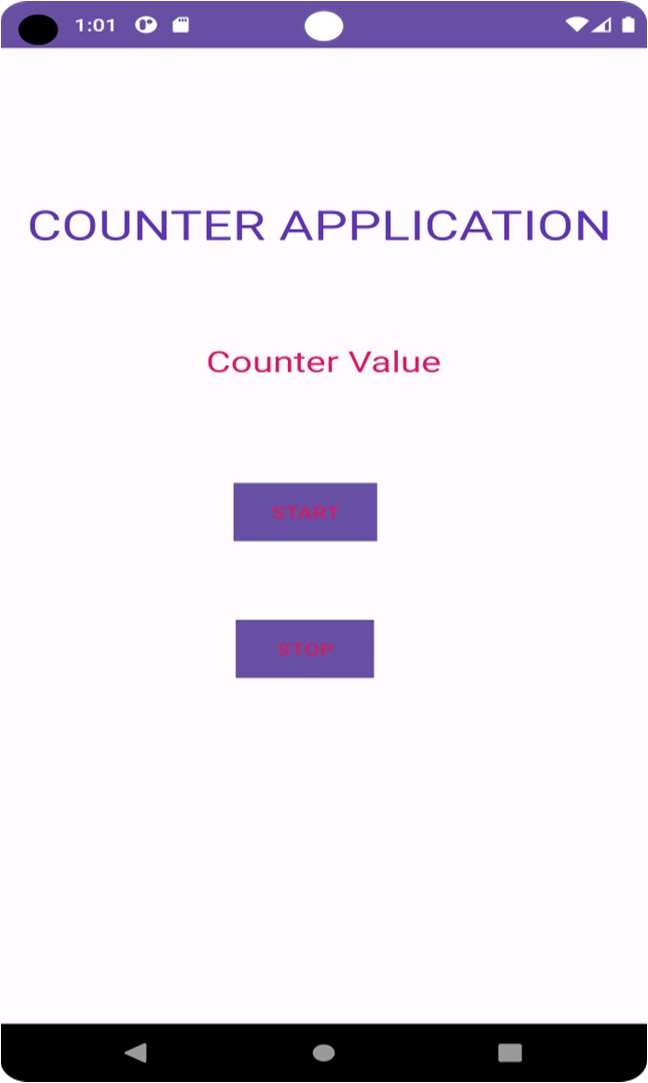
catch (Exception e){ }

}

}

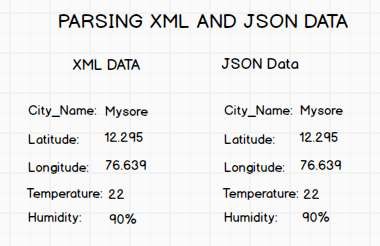
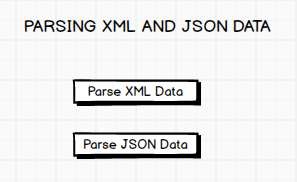
}

}

**Output**

**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.



1. Create a New Android Project with Empty Activity.
2. Open activity\_main.xml file from res layout folder, check/add ConstraintLayout as the root view.
3. Create the layout design using Drag and Drop framework.
4. Add Listeners to Button Click Event:

* Create a class which implements OnClickListener interface.
* Override onClick() method of OnClickListener Interface.
* Register the button for click event by calling setOnClickListener() method of Viewclass and pass the object of the class that implemented OnClickListener Interface.

1. Create assets folder (Refer Section Android Studio Tutorial)
2. Create **input.json** file inside assets folder and paste the below Json Data

#### input.json

{

"weather": {

"city\_name": "Ballari", "Latitude": "12.295",

"Longitude": "76.639",

"Temperature": "22",

"Humidity": "90%"

}

}

1. Create **input.xml** file inside assets folder and paste the below Xml Data

#### input.xml

<?xml version="1.0" ?>

<records>

<weather>

<city\_name>Ballari</city\_name>

<Latitude>12.295</Latitude>

<Longitude>76.639</Longitude>

<Temperature>22</Temperature>

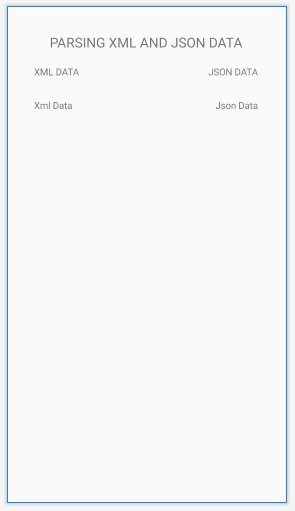
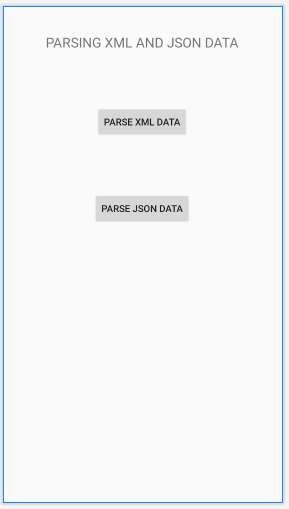
<Humidity>90%</Humidity>

</weather>

</records>

1. Read the XML and Json Data in the files and display on screen

Design



**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=".ViewActivity">

<TextView

android:id="@+id/textView2" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="PARSE XML AND JSON DATA" android:textColor="#3949AB" android:textSize="30sp" app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.405" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.119" />

<TextView

android:id="@+id/textView3" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="XML DATA" android:textColor="#8E24AA" android:textSize="24sp" app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.117" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.288" />

<TextView

android:id="@+id/textView4" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="JSON DATA" android:textColor="#8E24AA"

android:textSize="24sp" app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.882" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.287" />

<TextView

android:id="@+id/lbl\_xml\_data" android:layout\_width="160dp" android:layout\_height="348dp" android:text="xml data" android:textColor="#D81B60" android:textSize="16sp"

app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.076" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.78" />

<TextView

android:id="@+id/lbl\_json\_data" android:layout\_width="171dp" android:layout\_height="378dp" android:text="json data" android:textColor="#D81B60" android:textSize="20sp" app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.862" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.847" />

</androidx.constraintlayout.widget.ConstraintLayout>

#### ViewAcitivity.java

package com.girish.parsingxmljson;

import androidx.appcompat.app.AppCompatActivity; import android.annotation.SuppressLint;

import android.os.Bundle; 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 java.io.IOException; import java.io.InputStream;

import javax.xml.parsers.DocumentBuilder;

import javax.xml.parsers.DocumentBuilderFactory; public class ViewActivity extends AppCompatActivity {

TextView lblXmlData,lblJsonData; int mode = 0; @SuppressLint("MissingInflatedId") @Override

protected void onCreate(Bundle savedInstanceState) { super.onCreate(savedInstanceState); setContentView(R.layout.activity\_view);

lblXmlData = (TextView) findViewById(R.id.lbl\_xml\_data); lblJsonData = (TextView)

findViewById(R.id.lbl\_json\_data);

mode = getIntent().getIntExtra("mode",0); if(mode == 1)

parseJson(); else

parseXml();

}

private void parseXml() { try{

InputStream is = getAssets().open("input.xml"); DocumentBuilderFactory db =

DocumentBuilderFactory.newInstance();

DocumentBuilder b = db.newDocumentBuilder(); Document doc = b.parse(is);

Element e = doc.getDocumentElement(); e.normalize();

NodeList list = doc.getElementsByTagName("weather"); for(int i = 0; i<list.getLength();i++){

Node n = list.item(i);

if(n.getNodeType() == Node.ELEMENT\_NODE){ Element e1 = (Element)n; lblXmlData.setText("City

Name:"+getValue("city\_name", e1)+"\n"); lblXmlData.append("Latitude:"+getValue("Latitude",e1)+"\n"); lblXmlData.append("Longitude:"+getValue("Longitude",e1)+"\n");

lblXmlData.append("Temperature:"+getValue("Temperature",e1)+"\n"

);

lblXmlData.append("Humidity:"+getValue("Humidity",e1)+"\n");

}

}

} catch (Exception e){ e.printStackTrace();

}

}

private String getValue(String tag, Element e) { NodeList nl =

e.getElementsByTagName(tag).item(0).getChildNodes(); Node node = nl.item(0);

return node.getNodeValue();

}

private void parseJson() { try {

InputStream ip = getAssets().open("input.json"); byte[] data = new byte[ip.available()]; ip.read(data);

String readData = new String(data); JSONObject jo = new JSONObject(readData); JSONObject jo1 = jo.getJSONObject("weather"); lblJsonData.setText("city\_name:" +

jo1.getString("city\_name") + "\n");

lblJsonData.append("Latitude:" + jo1.getString("Latitude") + "\n");

lblJsonData.append("Longitude:" + jo1.getString("Longitude") + "\n");

lblJsonData.append("Temperature:" + jo1.getString("Temperature") + "\n");

lblJsonData.append("Humidity:" + jo1.getString("Humidity") + "\n");

} catch (JSONException ex) {

throw new RuntimeException(ex);

} catch (IOException ex) {

throw new RuntimeException(ex);

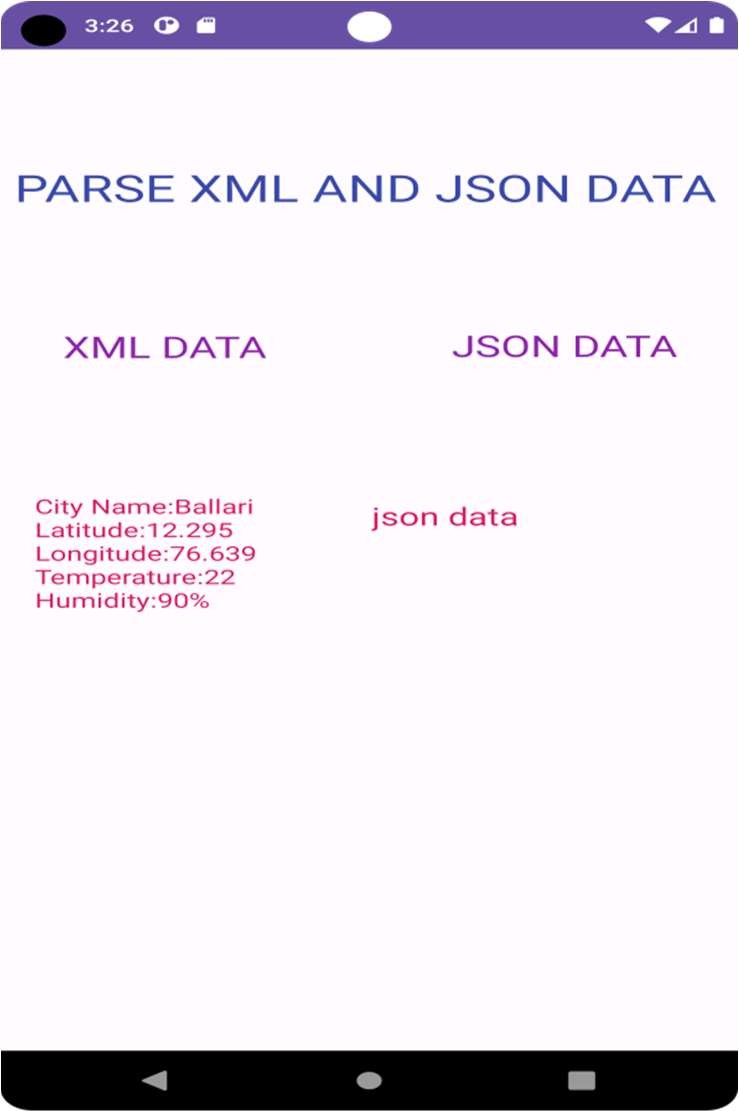
}

}

}

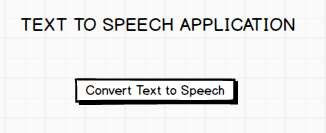
#### Output



# Program 7

Develop a simple application with one EditText so that the user can write some text in it. Create a buttoncalled “Convert Text to Speech” that converts the user input text into voice.



* 1. Create a New Android Project with Empty Activity.
  2. Open activity\_main.xml file from res layout folder, check/add ConstraintLayout as the root view.
  3. Create the layout design using Drag and Drop framework.
  4. Add Listeners to Button Click Event:
* Create a class which implments OnClickListener interface.
* Override onClick() method of OnClickListener Interface.
* Register the button for click event by calling setOnClickListener() method of Viewclass and pass the object of the class that implemented OnClickListener Interface.
  1. Initialize TextToSpeech Engine and the Language to Speak using setLanguage() method
  2. Use Speak() method to speak the text passed to it.

### Design

#### 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/textView3" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="TEXT TO SPEECH APPLICATION"

android:textColor="#5E35B1" android:textSize="28sp" app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.132" />

<Button

android:id="@+id/btn\_speak" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="Convert Text to Speech" android:textSize="24sp" app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.495" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.568" />

<EditText

android:id="@+id/editText" android:layout\_width="317dp" android:layout\_height="60dp" android:ems="10" android:inputType="text"

android:text="Type Here" app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.343" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.332" />

</androidx.constraintlayout.widget.ConstraintLayout>

#### main\_activity.java

package com.girish.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.TextView; import android.widget.Toast;

import java.util.Locale;

public class MainActivity extends AppCompatActivity implements View.OnClickListener, TextToSpeech.OnInitListener {

EditText txt; Button btnSp; TextToSpeech txtSp;

@Override

protected void onCreate(Bundle savedInstanceState) { super.onCreate(savedInstanceState); setContentView(R.layout.activity\_main);

txt = (EditText) findViewById(R.id.editText); btnSp = (Button) findViewById(R.id.btn\_speak);

btnSp.setOnClickListener(this);

txtSp = new TextToSpeech(getBaseContext(),this); txtSp.setLanguage(Locale.UK);

}

@Override

public void onClick(View v) {

String text = txt.getText().toString(); txtSp.speak(text,TextToSpeech.QUEUE\_FLUSH,null);

}

@Override

public void onInit(int status) { if(status!= TextToSpeech.ERROR){

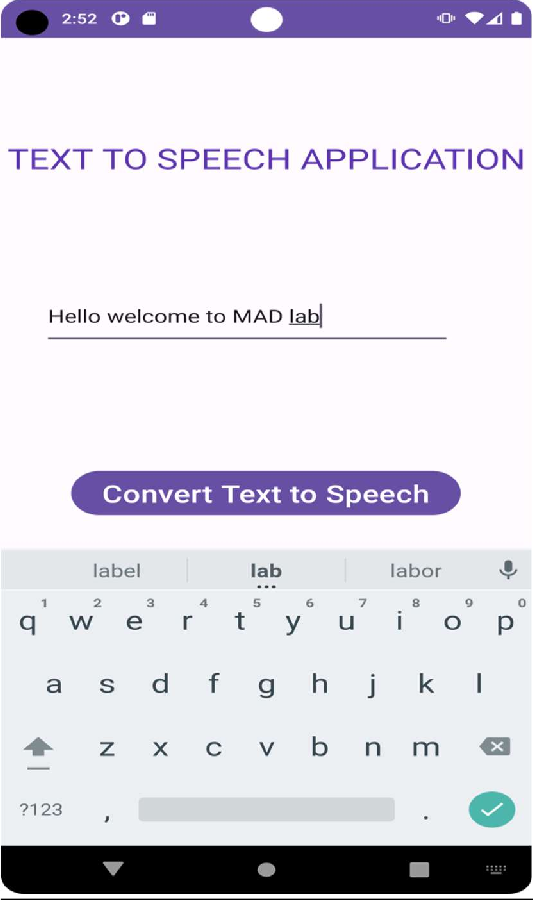
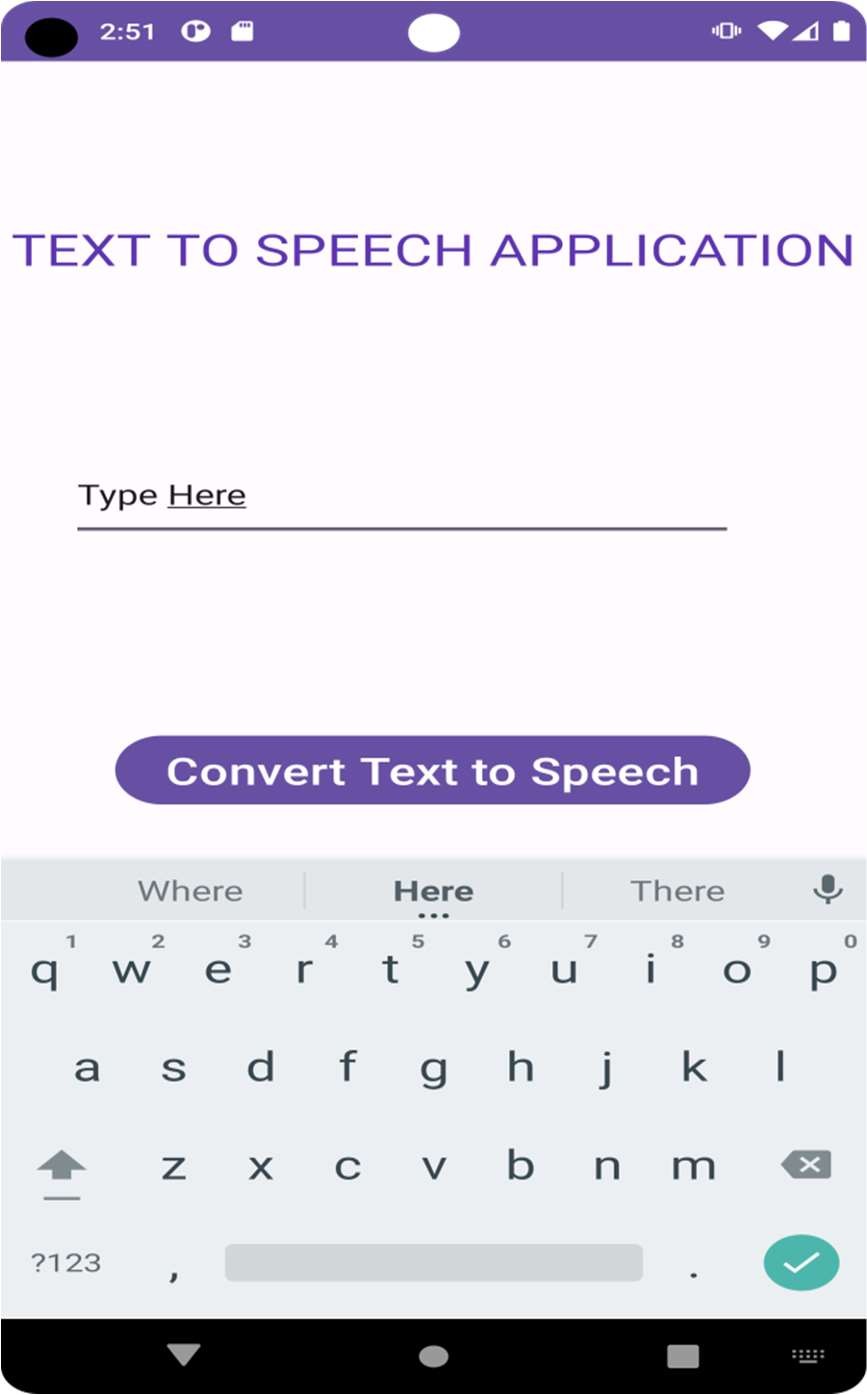
Toast.makeText(getBaseContext(),"Success",Toast.LENGTH\_LONG).sho w();

}

}

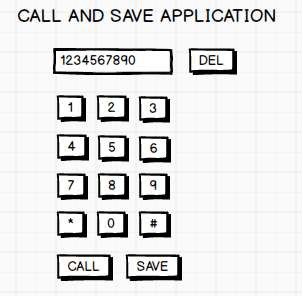
}

**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.

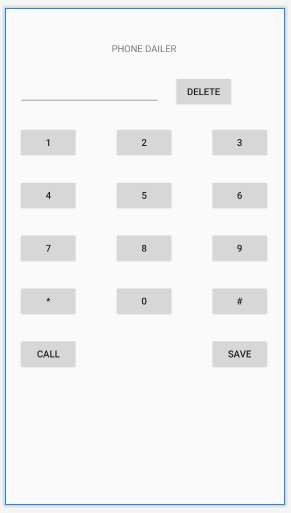


1. Create a New Android Project with Empty Activity.
2. Open activity\_main.xml file from reslayout folder, check/add ConstraintLayout as theroot view.
3. Create the layout design using Drag and Drop framework.
4. Add Listeners to Button Click Event:

* Create a class which implments OnClickListener interface.
* Override onClick() method of OnClickListener Interface.
* Register the button for click event by calling setOnClickListener() method of View class and pass the object of the class that implemented OnClickListener Interface.

1. Declare uses permission android.permission.CALL\_PHONE in the manifest file.
2. Use ACTION\_CALL intent name and pass the “tel:<phone-number> as URI in intentdata and start the call activity.
3. Use intent name and pass the “Telephone Number” and “unknown” as name as intentdata call Contacts Save Activity.

### Design



#### 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\_call" android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content" android:text="CALL" android:textSize="24sp"

app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.273" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.927" />

<Button

android:id="@+id/btn\_save" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="SAVE" android:textSize="24sp"

app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.654" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.928" />

<Button

android:id="@+id/btn\_four" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="4" android:textSize="24sp"

app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.123" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.521" />

<Button

android:id="@+id/btn\_eight" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="8" android:textSize="24sp"

app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintHorizontal\_bias="0.461" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.662" />

<Button

android:id="@+id/btn\_seven" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="7" android:textSize="24sp"

app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.105" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.662" />

<Button

android:id="@+id/btn\_zero" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="0" android:textSize="24sp"

app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.461" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.804" />

<Button

android:id="@+id/btn\_star" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="\*" android:textSize="24sp"

app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.145" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.804" />

<Button

android:id="@+id/btn\_hash" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="#" android:textSize="24sp"

app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.814" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.804" />

<Button

android:id="@+id/btn\_nine" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="9" android:textSize="24sp"

app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.814" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.662" />

<Button

android:id="@+id/btn\_five" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="5" android:textSize="24sp"

app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.439" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.521" />

<Button

android:id="@+id/btn\_six" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="6" android:textSize="24sp"

app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.792" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.521" />

<Button

android:id="@+id/btn\_three" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="3" android:textSize="24sp"

app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.792" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.39" />

<Button

android:id="@+id/btn\_one" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="1" android:textSize="24sp"

app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.125" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.39" />

<Button

android:id="@+id/btn\_two" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="2" android:textSize="24sp"

app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.461" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.39" />

<TextView

android:id="@+id/textView" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="CALL AND SAVE APPLICATION"

android:textAlignment="center" android:textColor="#5E35B1" 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="0.097" />

<Button

android:id="@+id/btn\_delete" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="DEL" android:textSize="24sp"

app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.915" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.259" />

<EditText

android:id="@+id/txt\_phonenumber" android:layout\_width="269dp" android:layout\_height="67dp" android:ems="10" android:inputType="phone"

app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.236" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.236" />

</androidx.constraintlayout.widget.ConstraintLayout>

#### MainActivity.java

package com.girish.cs;

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 {

Button btnOne, btnTwo, btnThree, btnFour, btnFive, btnSix, btnSeven, btnEight, btnNine, btnZero;

Button btnSave, btnDel, btnStar, btnHash, btnCall; EditText txtPhone;

@Override

protected void onCreate(Bundle savedInstanceState) { super.onCreate(savedInstanceState); setContentView(R.layout.activity\_main);

btnOne = (Button) findViewById(R.id.btn\_one); btnOne.setOnClickListener(this);

btnTwo = (Button) findViewById(R.id.btn\_two); btnTwo.setOnClickListener(this);

btnThree = (Button) findViewById(R.id.btn\_three); btnThree.setOnClickListener(this);

btnFour = (Button) findViewById(R.id.btn\_four); btnFour.setOnClickListener(this);

btnFive = (Button) findViewById(R.id.btn\_five); btnFive.setOnClickListener(this);

btnSix = (Button) findViewById(R.id.btn\_six); btnSix.setOnClickListener(this);

btnSeven = (Button) findViewById(R.id.btn\_seven); btnSeven.setOnClickListener(this);

btnEight = (Button) findViewById(R.id.btn\_eight); btnEight.setOnClickListener(this);

btnNine = (Button) findViewById(R.id.btn\_nine); btnNine.setOnClickListener(this);

btnZero = (Button) findViewById(R.id.btn\_zero); btnZero.setOnClickListener(this);

btnSave = (Button) findViewById(R.id.btn\_save); btnSave.setOnClickListener(this);

btnCall = (Button) findViewById(R.id.btn\_call); btnCall.setOnClickListener(this);

btnHash = (Button) findViewById(R.id.btn\_hash); btnHash.setOnClickListener(this);

btnStar = (Button) findViewById(R.id.btn\_star); btnStar.setOnClickListener(this);

btnDel = (Button) findViewById(R.id.btn\_delete); btnDel.setOnClickListener(this);

txtPhone = (EditText) findViewById(R.id.txt\_phonenumber);

txtPhone.setText("");

}

@Override

public void onClick(View v) { if (v.equals(btnOne))

txtPhone.append("1"); else if (v.equals(btnTwo))

txtPhone.append("2"); else if (v.equals(btnThree))

txtPhone.append("3"); else if (v.equals(btnFour))

txtPhone.append("4"); else if (v.equals(btnFive))

txtPhone.append("5"); else if (v.equals(btnSix))

txtPhone.append("6"); else if (v.equals(btnSeven))

txtPhone.append("7");

else if (v.equals(btnEight)) txtPhone.append("8");

else if (v.equals(btnNine)) txtPhone.append("9");

else if (v.equals(btnZero)) txtPhone.append("0");

else if (v.equals(btnHash)) txtPhone.append("#");

else if (v.equals(btnStar)) txtPhone.append("\*");

else if (v.equals(btnSave)) { Intent contactIntent = new

Intent(ContactsContract.Intents.Insert.ACTION);

contactIntent.setType(ContactsContract.RawContacts.CONTENT\_TYPE)

;

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

contactIntent.putExtra(ContactsContract.Intents.Insert.PHONE, txtPhone.getText().toString());

startActivity(contactIntent);

} else if (v.equals(btnDel)) {

String data = txtPhone.getText().toString();

if (data.length() > 0) txtPhone.setText(data.substring(0, data.length()

- 1));

}

else

txtPhone.setText("");

btnCall.setOnClickListener(new View.OnClickListener() { @Override

public void onClick(View v) {

String data = txtPhone.getText().toString(); Intent i = new Intent(Intent.ACTION\_DIAL); i.setData(Uri.parse("tel:" + data)); startActivity(i);

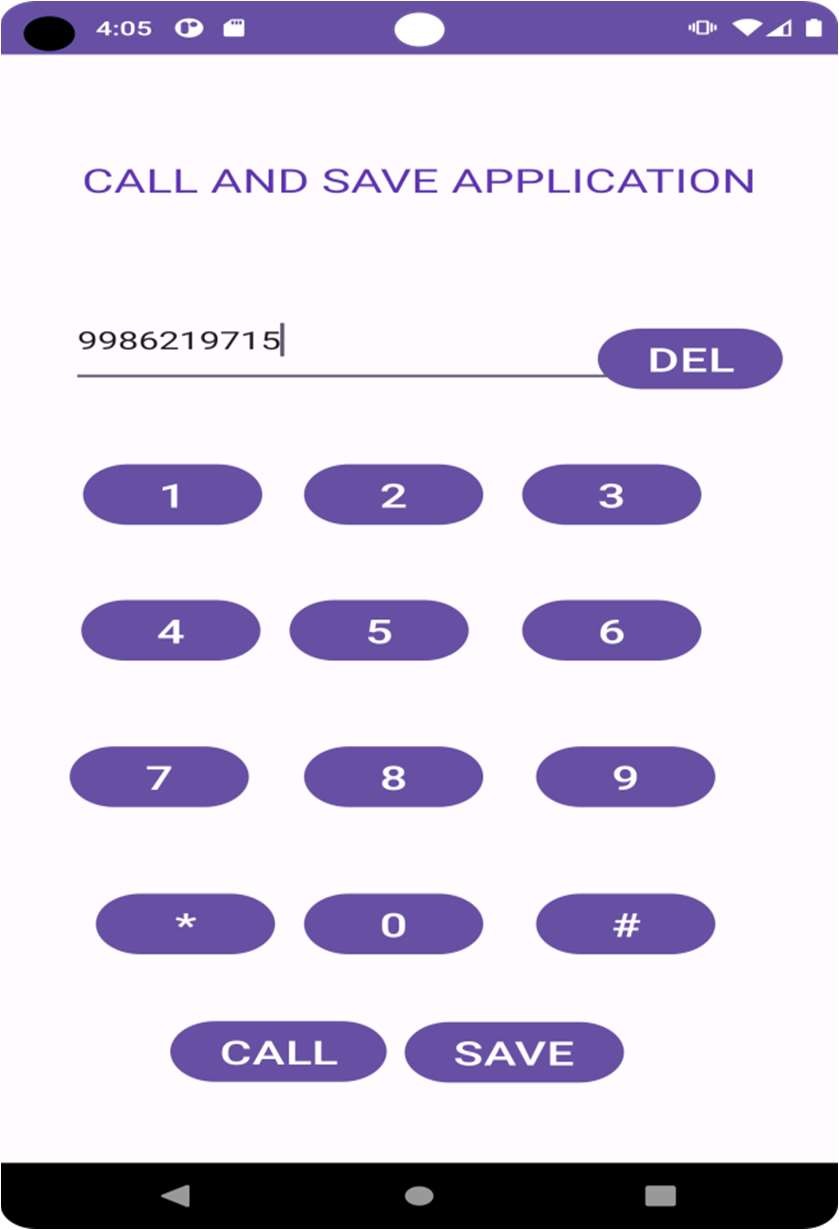
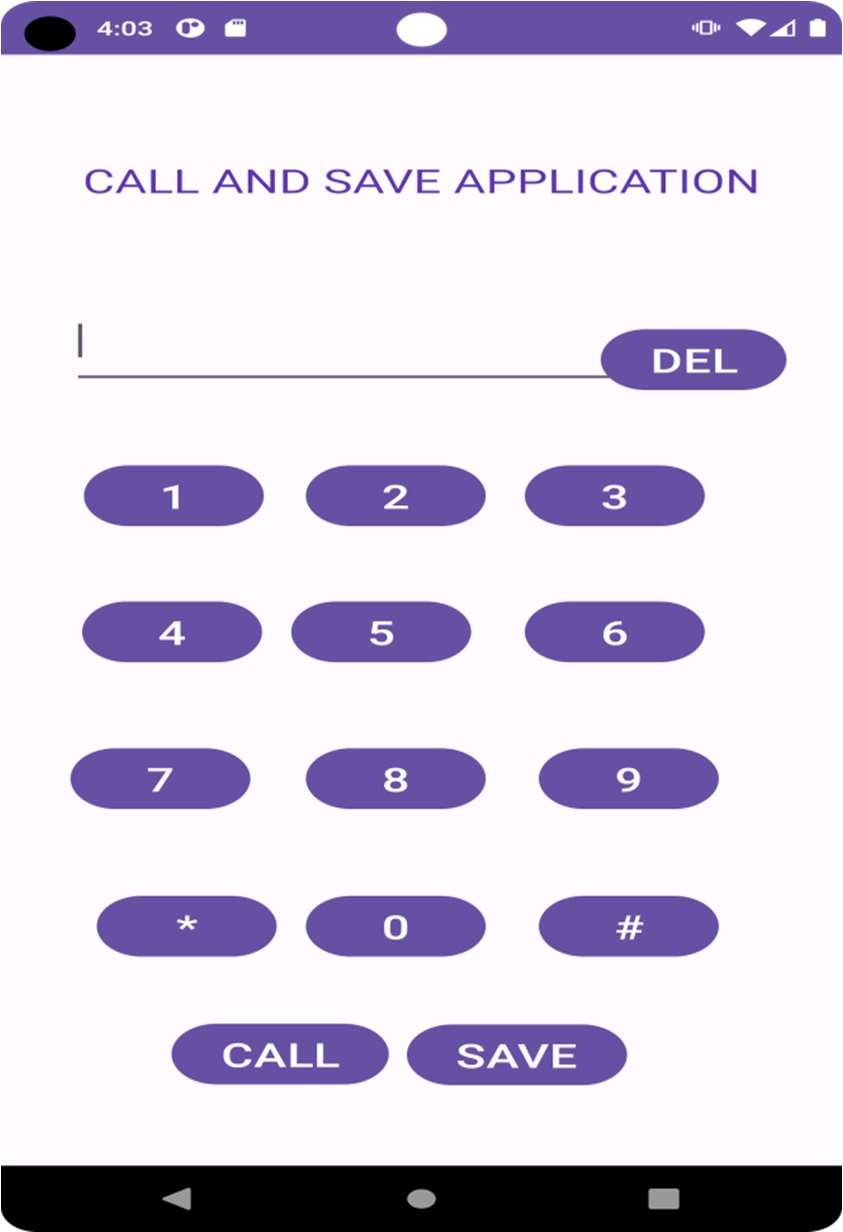
}

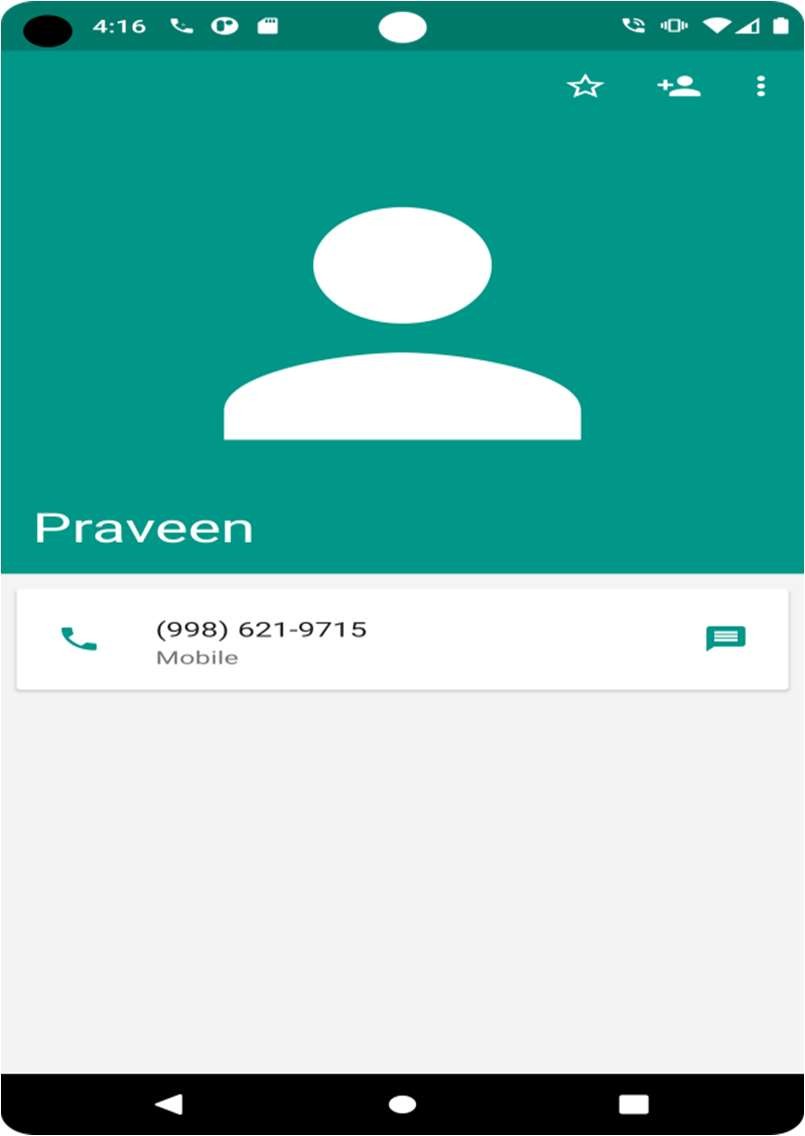
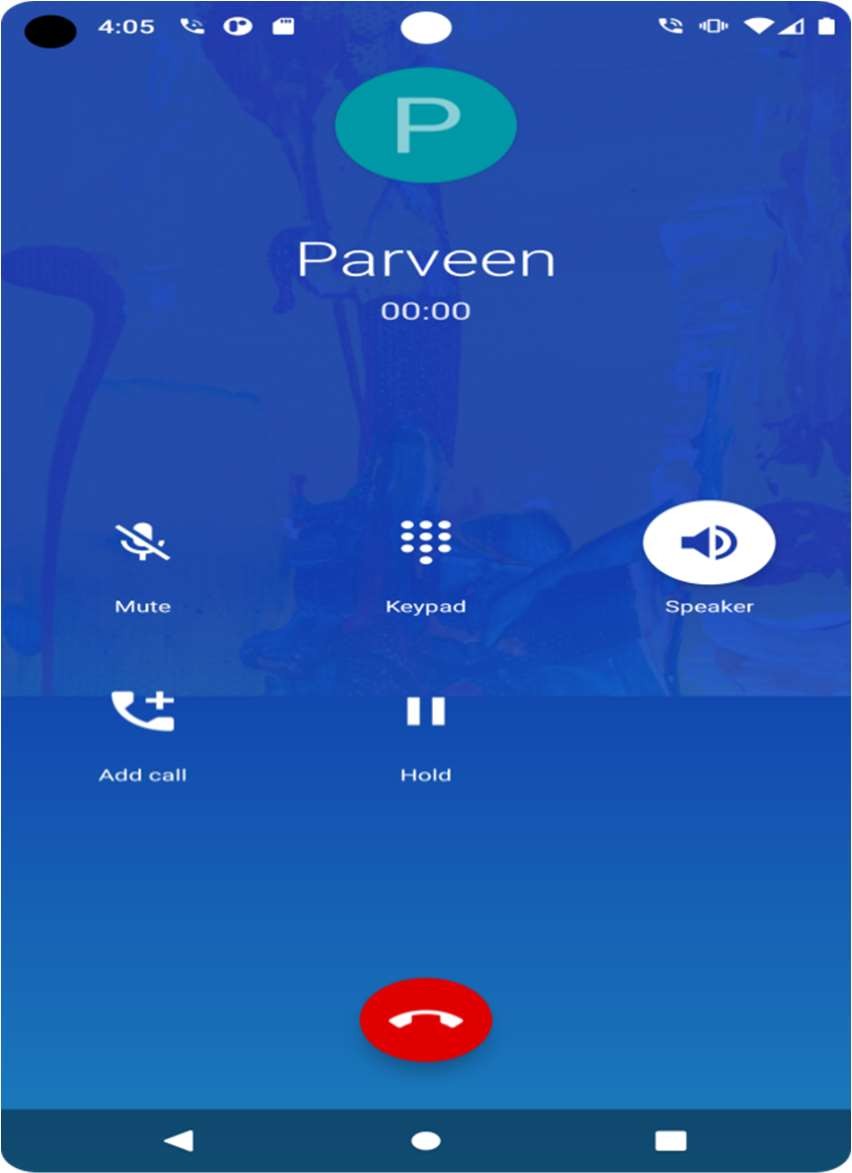
});

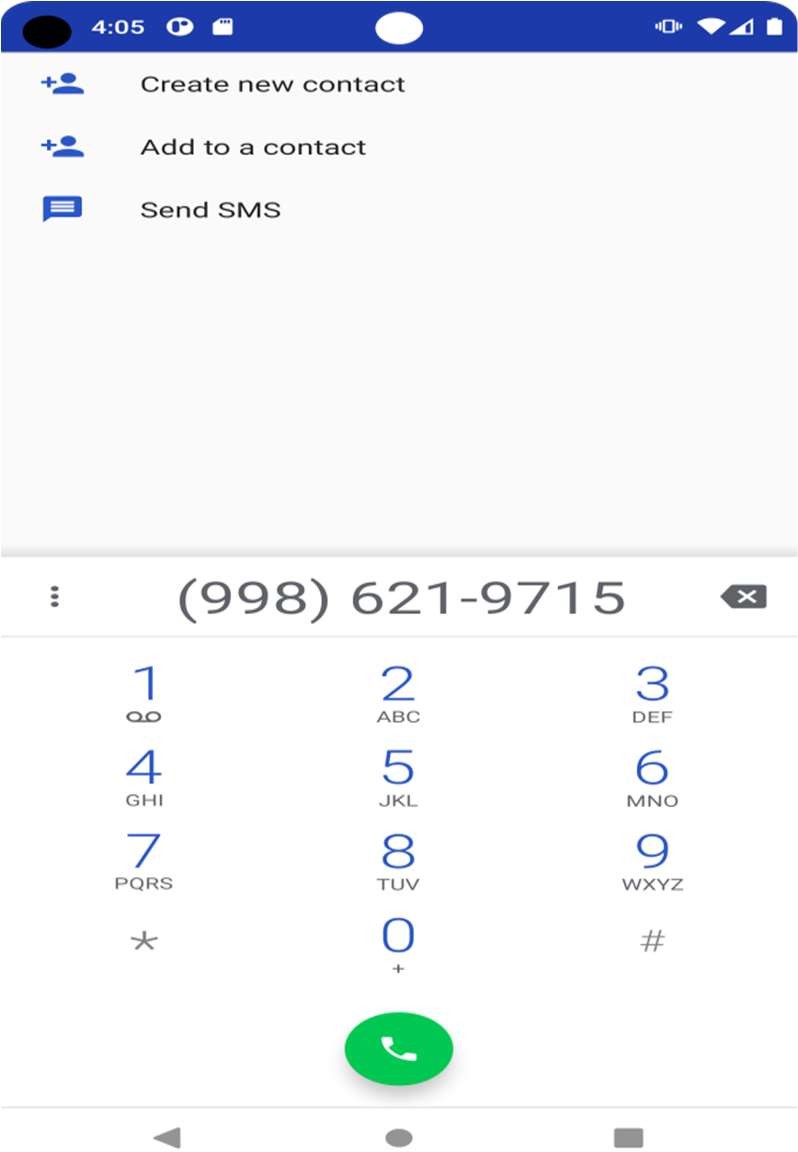
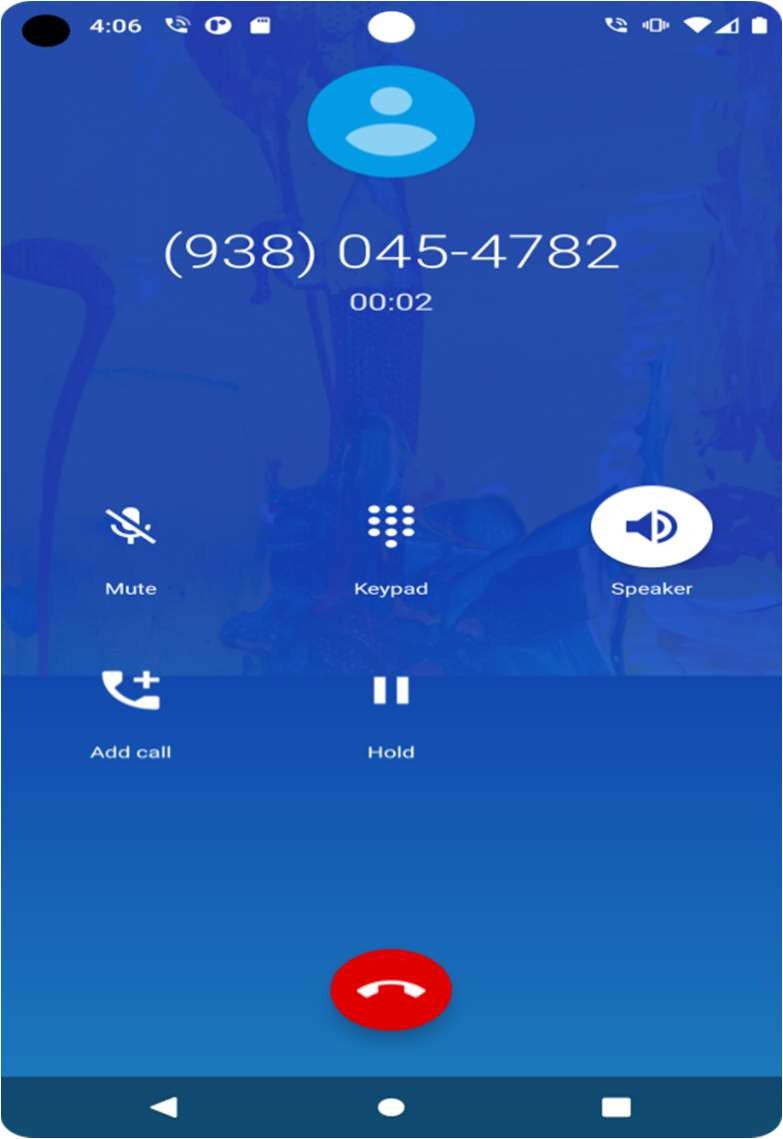
}

}

#### Output



**Reference Books**

1. Google Developer Training, "Android Developer Fundamentals Course – ConceptReference”, Google Developer Training Team, 2017. https://[www.gitbook.com/book/google-developer-](http://www.gitbook.com/book/google-developer-) training/android-developer- fundamentals-course-concepts/details

(Download pdf file from the above link)

1. Erik Hellman, “Android Programming – Pushing the Limits”, 1st Edition, Wiley India PvtLtd, 2014. ISBN-13: 978-8126547197
2. Dawn Griffiths and David Griffiths, “Head First Android Development”, 1st Edition, O‟Reilly SPD Publishers, 2015. ISBN-13: 978-9352131341
3. Bill Phillips, Chris Stewart and Kristin Marsicano, “Android Programming: The Big NerdRanch Guide”, 3rd Edition, Big Nerd Ranch Guides, 2017. ISBN-13: 978-0134706054
4. Data from Global Academy of Technology