Program 1:Visitng card

mainactivity.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"</p>
    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">
         <RelativeLayout
              android:layout_width="match_parent"
              android:layout_height="150dp">
              <TextView
                   android:id="@+id/textView10"
                   android:layout_width="211dp"
                   android:layout_height="61dp'
                   android:layout_alignParentStart="true"
                   android:layout_alignParentTop="true"
                   android:layout_alignParentEnd="true"
                   android:layout_alignParentBottom="true"
                   android:layout_marginStart="91dp"
                   android:layout_marginTop="50dp"
                   android:layout_marginEnd="109dp"
                   android:layout_marginBottom="39dp"
                   android:text="CISCO"
                   android:textColor="#E30953"
                   android:textSize="24sp"/>
              <ImageView
                   android:id="@+id/imageView3"
                   android:layout_width="wrap_content"
                   android:layout_height="wrap_content"
                   android:layout_alignParentEnd="true"
                   android:layout_marginEnd="3dp"
                   app:srcCompat="@drawable/flower"/>
         </RelativeLayout>
         <View
              android:id="@+id/view5"
              android:layout_width="match_parent"
              android:layout_height="2dp"
              android:background="@color/black"/>
         <TextView
              android:id="@+id/textView11"
              android:layout_width="match_parent"
              android:layout_height="45dp"
              android:text="Name"
              android:textAlignment="center"
              android:textColor="#0A28D1"
              android:textSize="16sp"
              tools:textAlignment="center"/>
          <TextView
              android:id="@+id/textView12"
              android:layout_width="match_parent"
              android:layout_height="44dp"
              android:text="Job title"
              android:textAlignment="center"
              android:textColor="#102FDF"
              android:textSize="16sp"/>
         <View
              android:id="@+id/view6"
              android:layout_width="match_parent"
              android:layout_height="2dp"
              android:background="@color/black"/>
         <TextView
```

```
android:id="@+id/textView13"
              android:layout width="match parent"
              android:layout height="47dp"
              android:text="phone number"
              android:textAlignment="center"
              android:textColor="#1030E1"
              android:textSize="16sp"/>
         <TextView
              android:id="@+id/textView14"
              android:layout_width="match_parent"
              android:layout height="50dp"
              android:text="address"
              android:textAlignment="center"
              android:textColor="#0E2AC8"
              android:textSize="16sp"/>
         <TextView
              android:id="@+id/textView15"
              android:layout_width="match_parent"
              android:layout_height="57dp"
              android:text="email"
              android:textAlignment="center"
              android:textColor="#0B2ADA"
              android:textSize="16sp"/>
</LinearLayout>
```

Program 2: Simple Calculator

```
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="328dp"
         android:layout_height="62dp"
         android:text="Simple Calculator"
         android:textAlignment="center"
         android:textColor="#F44336"
         android:textSize="34sp"
         app:layout_constraintBottom_toBottomOf="parent"
         app:layout_constraintEnd_toEndOf="parent"
         app:layout_constraintHorizontal_bias="0.493"
         app:layout_constraintStart_toStartOf="parent"
         app:layout_constraintTop_toTopOf="parent"
         app:layout_constraintVertical_bias="0.023" />
     <TextView
         android:id="@+id/textView2"
         android:layout_width="111dp"
         android:layout height="49dp"
         android:layout marginStart="4dp"
         android:text="Result"
         android:textColor="#009688"
         android:textSize="34sp"
         app:layout_constraintBottom_toBottomOf="parent"
         app:layout_constraintStart_toStartOf="parent"
         app:layout_constraintTop_toTopOf="parent"
         app:layout_constraintVertical_bias="0.149" />
     <EditText
```

```
android:id="@+id/txtResult"
    android:layout width="248dp"
    android:layout height="47dp"
    android:ems="10"
    android:inputType="textPersonName"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.901"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout constraintVertical bias="0.135"/>
<Button
    android:id="@+id/btn_1"
    android:layout_width="78dp"
    android:layout_height="56dp"
    android:text="1"
    android:textSize="20sp"
    app:layout constraintBottom toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.048"
    app:layout constraintStart toStartOf="parent"
    app:layout constraintTop toTopOf="parent"
    app:layout_constraintVertical_bias="0.269" />
<Button
    android:id="@+id/btn_2"
    android:layout_width="78dp"
    android:layout_height="56dp"
    android:text="2"
    android:textSize="20sp"
    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="0.269" />
<Button
    android:id="@+id/btn 3"
    android:layout width="78dp"
    android:layout height="56dp"
    android:text="3"
    android:textSize="20sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.651"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.269" />
    android:id="@+id/btn 4"
    android:layout_width="78dp"
    android:layout height="56dp"
    android:text="4"
    android:textSize="20sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.948"
    app:layout constraintStart toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.269" />
<Button
    android:id="@+id/btn_5"
    android:layout_width="78dp"
    android:layout_height="56dp"
    android:text="5"
    android:textSize="20sp"
    app:layout_constraintBottom_toBottomOf="parent"
```

```
app:layout constraintEnd toEndOf="parent"
    app:layout constraintHorizontal bias="0.048"
    app:layout constraintStart toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.401"/>
<Button
    android:id="@+id/btn_6"
    android:layout_width="78dp"
    android:layout_height="56dp"
    android:text="6"
    android:textSize="20sp"
    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="0.401" />
<Button
    android:id="@+id/btn 7"
    android:layout_width="78dp"
    android:layout height="56dp"
    android:text="7"
    android:textSize="20sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.651"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout constraintVertical bias="0.401"/>
<Button
    android:id="@+id/btn_8"
    android:layout_width="78dp"
    android:layout_height="56dp"
    android:text="8"
    android:textSize="20sp"
    app:layout constraintBottom toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.948"
    app:layout constraintStart toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout constraintVertical bias="0.401"/>
<Button
    android:id="@+id/btn 9"
    android:layout_width="78dp"
    android:layout_height="56dp"
    android:text="9"
    android:textSize="20sp"
    app:layout constraintBottom toBottomOf="parent"
    app:layout constraintEnd toEndOf="parent"
    app:layout constraintHorizontal bias="0.048"
    app:layout constraintStart toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.52" />
<Button
    android:id="@+id/btn_0"
    android:layout_width="78dp"
    android:layout_height="56dp"
    android:text="0"
    android:textSize="20sp"
    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="0.52" />
<Button
```

```
android:id="@+id/btn clear"
    android:layout width="78dp"
    android:layout height="56dp"
    android:text="C'
    android:textSize="20sp"
    app:layout constraintBottom toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.948"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout constraintVertical bias="0.746"/>
<Button
    android:id="@+id/btn_equal"
    android:layout_width="78dp"
    android:layout_height="56dp"
    android:text="="
    android:textSize="20sp"
    app:layout constraintBottom toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.951"
    app:layout constraintStart toStartOf="parent"
    app:layout constraintTop toTopOf="parent"
    app:layout_constraintVertical_bias="0.637" />
<Button
    android:id="@+id/btn_dot"
    android:layout_width="79dp"
    android:layout_height="54dp"
    android:text="."
    android:textSize="24sp"
    app:layout constraintBottom toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout constraintHorizontal bias="0.653"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.635"/>
<Button
    android:id="@+id/btn_plus"
    android:layout width="78dp"
    android:layout_height="56dp"
    android:text="+"
    android:textSize="20sp"
    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="0.52" />
    android:id="@+id/btn minus"
    android:layout_width="78dp"
    android:layout height="56dp"
    android:text="-"
    android:textSize="20sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.948"
    app:layout constraintStart toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.52" />
<Button
    android:id="@+id/btn_multi"
    android:layout_width="78dp"
    android:layout height="56dp"
    android:text="*"
    android:textSize="20sp"
    app:layout_constraintBottom_toBottomOf="parent"
```

```
app:layout constraintEnd toEndOf="parent"
          app:layout constraintHorizontal bias="0.048"
          app:layout constraintStart toStartOf="parent"
          app:layout_constraintTop_toTopOf="parent"
          app:layout_constraintVertical_bias="0.637" />
     <Button
          android:id="@+id/btn_div"
          android:layout_width="78dp"
          android:layout height="56dp"
          android:text="/"
          android:textSize="20sp"
          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="0.637"/>
</androidx.constraintlayout.widget.ConstraintLayout>
mainactivity. java
package com.example.cal;
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.text.CollationElementIterator;
import java.util.regex.Pattern;
public class MainActivity extends AppCompatActivity implements View.OnClickListener {
     Button btnzero, btnone, btntwo, btnthree, btnfour, btnfive, btnsix, btnseven, btneight, btnnine;
     Button btnadd, btnmul, btnsub, btndiv;
     Button btnclear, btnequal, btndot;
     EditText txtResult;
     @Override
     protected void onCreate(Bundle savedInstanceState) {
          super.onCreate(savedInstanceState);
          setContentView(R.layout.activity_main);
          btnone=(Button) findViewById(R.id.btn_1);
          btnone.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_multi);

```
btnmul.setOnClickListener(this):
     btndiv=(Button) findViewById(R.id.btn div);
     btndiv.setOnClickListener(this);
     btndot=(Button) findViewById(R.id.btn_dot);
     btndot.setOnClickListener(this);
     btnequal=(Button) findViewById(R.id.btn_equal);
     btnequal.setOnClickListener(this);
     btnclear=(Button) findViewById(R.id.btn_clear);
     btnclear.setOnClickListener(this);
     txtResult=(EditText) findViewById(R.id.txtResult);
     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(btnthree))
          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(btnadd))
          txtResult.append("+");
     if(view.equals(btnsub))
          txtResult.append("-");
     if(view.equals(btndiv))
          txtResult.append("/");
     if(view.equals(btnmul))
          txtResult.append("*");
     if(view.equals(btndot))
          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("-")){
                     subtraction(data);
          catch (Exception e){
                displayInvalidMessage("Invalid Input");
```

```
}
private void displayInvalidMessage(String msg) {
          Toast.makeText(getBaseContext(),msg, Toast.LENGTH_LONG).show();
private void subtraction(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 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 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");
private void divide(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");
     }
```

}

Program 3: SignIn And LogIn

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="Signup Activity"
         android:textAllCaps="true"
         android:textColor="#F44336"
         android:textColorHighlight="#E91E63"
         android:textSize="34sp"
         app:layout_constraintBottom_toBottomOf="parent"
         app:layout constraintHorizontal bias="0.467"
         app:layout constraintLeft toLeftOf="parent"
         app:layout_constraintRight_toRightOf="parent"
         app:layout_constraintTop_toTopOf="parent"
         app:layout_constraintVertical_bias="0.096" />
    <TextView
         android:id="@+id/textView"
         android:layout_width="139dp"
         android:layout height="58dp"
         android:text="User Name"
         android:textColor="#2196F3"
         android:textSize="24sp"
         app:layout_constraintBottom_toBottomOf="parent"
         app:layout_constraintEnd_toEndOf="parent"
         app:layout_constraintHorizontal_bias="0.071"
         app:layout_constraintStart_toStartOf="parent"
         app:layout_constraintTop_toTopOf="parent"
         app:layout_constraintVertical_bias="0.271" />
    <TextView
         android:id="@+id/textView2"
         android:layout_width="131dp"
         android:layout_height="58dp"
         android:text="Password"
         android:textColor="#2196F3"
         android:textSize="24sp"
         app:layout_constraintBottom_toBottomOf="parent"
         app:layout_constraintEnd_toEndOf="parent"
         app:layout constraintHorizontal bias="0.071"
         app:layout constraintStart toStartOf="parent"
         app:layout_constraintTop_toTopOf="parent"
         app:layout constraintVertical bias="0.428"/>
    <EditText
         android:id="@+id/txt_username"
         android:layout_width="191dp"
         android:layout_height="77dp"
         android:ems="10"
         android:inputType="textPersonName"
         app:layout_constraintBottom_toBottomOf="parent"
         app:layout_constraintEnd_toEndOf="parent"
         app:layout constraintHorizontal bias="0.866"
         app:layout_constraintStart_toStartOf="parent"
         app:layout_constraintTop_toTopOf="parent"
         app:layout_constraintVertical_bias="0.245" />
    <EditText
         android:id="@+id/txt_password"
         android:layout_width="191dp"
```

```
android:layout height="64dp"
         android:ems="10"
         android:inputType="textPersonName"
         app:layout_constraintBottom_toBottomOf="parent"
         app:layout_constraintEnd_toEndOf="parent"
         app:layout_constraintHorizontal_bias="0.863"
         app:layout_constraintStart_toStartOf="parent"
         app:layout constraintTop toTopOf="parent"
         app:layout_constraintVertical_bias="0.406"/>
    <Button
         android:id="@+id/btn signin"
         android:layout_width="201dp"
         android:layout_height="84dp"
         android:text="Sign Up"
         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="0.613"/>
</androidx.constraintlayout.widget.ConstraintLayout>
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"
    tools:context=".MainActivity">
    <TextView
         android:id="@+id/textView3"
         android:layout_width="wrap_content"
         android:layout_height="wrap_content"
         android:text="LogIn Activity"
         android:textAllCaps="true"
         android:textColor="#F44336"
         android:textColorHighlight="#E91E63"
         android:textSize="34sp"
         app:layout_constraintBottom_toBottomOf="parent"
         app:layout constraintHorizontal bias="0.467"
         app:layout_constraintLeft_toLeftOf="parent"
         app:layout_constraintRight_toRightOf="parent"
         app:layout_constraintTop_toTopOf="parent"
         app:layout_constraintVertical_bias="0.096" />
    <TextView
         android:id="@+id/textView"
         android:layout_width="141dp"
         android:layout_height="51dp"
         android:text="User Name"
         android:textColor="#2196F3"
         android:textSize="24sp"
         app:layout_constraintBottom_toBottomOf="parent"
         app:layout_constraintEnd_toEndOf="parent"
         app:layout_constraintHorizontal_bias="0.071"
         app:layout_constraintStart_toStartOf="parent"
         app:layout_constraintTop_toTopOf="parent"
         app:layout_constraintVertical_bias="0.271"/>
    <TextView
         android:id="@+id/textView2"
         android:layout_width="139dp"
         android:layout_height="47dp"
         android:text="Password"
         android:textColor="#2196F3"
         android:textSize="24sp"
         app:layout_constraintBottom_toBottomOf="parent"
```

```
app:layout constraintEnd toEndOf="parent"
         app:layout constraintHorizontal bias="0.071"
         app:layout constraintStart toStartOf="parent"
         app:layout_constraintTop_toTopOf="parent"
         app:layout_constraintVertical_bias="0.428" />
    <EditText
         android:id="@+id/login_username"
         android:layout width="185dp"
         android:layout height="62dp"
         android:ems="10"
         android:inputType="textPersonName"
         app:layout constraintBottom toBottomOf="parent"
         app:layout_constraintEnd_toEndOf="parent"
         app:layout_constraintHorizontal_bias="0.923"
         app:layout_constraintStart_toStartOf="parent"
         app:layout_constraintTop_toTopOf="parent"
         app:layout_constraintVertical_bias="0.267"/>
    <EditText
         android:id="@+id/login_password"
         android:layout width="189dp"
         android:layout height="61dp"
         android:ems="10"
         android:inputType="textPersonName"
         app:layout_constraintBottom_toBottomOf="parent"
         app:layout_constraintEnd_toEndOf="parent"
         app:layout_constraintHorizontal_bias="0.917"
         app:layout constraintStart toStartOf="parent"
         app:layout_constraintTop_toTopOf="parent"
         app:layout constraintVertical bias="0.415"/>
    <Button
         android:id="@+id/btn_login"
         android:layout_width="201dp"
         android:layout_height="84dp"
         android:text="Sign In"
         android:textSize="34sp"
         app:layout constraintBottom toBottomOf="parent"
         app:layout_constraintEnd_toEndOf="parent"
         app:layout constraintHorizontal bias="0.59"
         app:layout constraintStart toStartOf="parent"
         app:layout constraintTop toTopOf="parent"
         app:layout constraintVertical bias="0.666"/>
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```
package com.example.signinandlogin;
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])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.*[a-z])(?=.
                    @Override
                   protected void onCreate(Bundle savedInstanceState) {
                                      super.onCreate(savedInstanceState);
                                      setContentView(R.layout.activity_main);
```

```
signup username=(EditText) findViewBvId(R.id.txt username):
          signup password=(EditText) findViewById(R.id.txt 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(getBaseContext(), "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(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();
}
<mark>login.java</mark>
package com.example.signinandlogin;
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.login_username);
          loginpassword=(EditText) findViewById(R.id.login_password);
          btnlogin=(Button) findViewById(R.id.btn_login);
          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, "Successful login", 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", Toast.LENGTH_LONG).show();
      }
    }
}

Program4: 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:id="@+id/textView"
         android:layout_width="332dp"
         android:layout_height="77dp"
         android:text="Changing Wall Paper"
         android:textColor="#F44336"
         android:textSize="34sp"
         app:layout constraintBottom toBottomOf="parent"
         app:layout_constraintEnd_toEndOf="parent"
         app:layout_constraintHorizontal_bias="0.6"
         app:layout_constraintStart_toStartOf="parent"
         app:layout_constraintTop_toTopOf="parent"
         app:layout_constraintVertical_bias="0.105" />
     <Button
         android:id="@+id/btn"
         android:layout_width="wrap_content"
         android:layout height="wrap content"
         android:text="Click Here"
         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="0.445"/>
</androidx.constraintlayout.widget.ConstraintLayout>
```

main_activity.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.img1, R.drawable.img2, R.drawable.img3, R.drawable.img4, R.drawable.img5};
     protected void onCreate(Bundle savedInstanceState) {
          super.onCreate(savedInstanceState);
          setContentView(R.layout.activity_main);
          btn=(Button) findViewById(R.id.btn);
          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(getBaseContext());
                    Random random=new Random();
                    wallpaperManager.setBitmap(BitmapFactory.decodeResource(getResources(),ia[random.nextInt(5)]));
               } catch (IOException e) {
               }}
}
```

Program 5: Counter Application

activitymain.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="282dp"
         android:layout_height="91dp"
         android:layout_marginStart="61dp"
         android:layout_marginEnd="68dp"
         android:text="Counter Application"
         android:textAlignment="center"
         android:textSize="34sp"
         app:layout_constraintEnd_toEndOf="parent"
```

```
app:layout constraintStart toStartOf="parent"
         tools:layout_editor_absoluteY="72dp" />
    <EditText
         android:id="@+id/count_val"
         android:layout_width="175dp"
         android:layout_height="62dp"
         android:layout_marginStart="108dp"
         android:layout_marginTop="42dp"
         android:layout_marginEnd="128dp"
         android:ems="10"
         android:inputType="textPersonName"
         android:text="Name"
         app:layout constraintEnd toEndOf="parent"
         app:layout_constraintStart_toStartOf="parent"
         app:layout_constraintTop_toBottomOf="@+id/textView"/>
    <Button
         android:id="@+id/btn_start"
         android:layout_width="212dp"
         android:layout_height="89dp"
         android:layout marginStart="99dp"
         android:layout marginTop="54dp"
         android:layout_marginEnd="100dp"
         android:text="Start"
         android:textAlignment="center"
         android:textSize="34sp"
         app:layout_constraintEnd_toEndOf="parent"
         app:layout_constraintStart_toStartOf="parent"
         app:layout_constraintTop_toBottomOf="@+id/count_val"/>
    <Button
         android:id="@+id/btn_stop"
         android:layout_width="197dp"
         android:layout height="66dp"
         android:layout_marginStart="99dp"
         android:layout_marginTop="100dp"
         android:layout_marginEnd="100dp"
         android:layout_marginBottom="166dp"
         android:text="Stop"
         android:textAlignment="center"
         android:textSize="34sp"
         app:layout constraintBottom toBottomOf="parent"
         app:layout_constraintEnd_toEndOf="parent"
         app:layout_constraintHorizontal_bias="0.0"
         app:layout_constraintStart_toStartOf="parent"
         app:layout_constraintTop_toBottomOf="@+id/btn_start"/>
</androidx.constraintlayout.widget.ConstraintLayout>
```

Activitymain.java

package com.example.counter_ram;

```
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.os.Handler;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
public class MainActivity extends AppCompatActivity implements View.OnClickListener {
    Button start, stop;
    EditText val;
    int i = 0;
    Handler handler = new Handler();
    @Override
```

```
protected void onCreate(Bundle savedInstanceState) {
          super.onCreate(savedInstanceState);
          setContentView(R.layout.activity_main);
          val = (EditText) findViewById(R.id.count_val);
          start = (Button) findViewById(R.id.btn_start);
          start.setOnClickListener(this);
          stop = (Button) findViewById(R.id.btn_stop);
          stop.setOnClickListener(this);
     @Override
     public void onClick(View view) {
          if (view.equals(start)) {
               handler.postDelayed(updatedTime, 0);
               start.setEnabled(false);
               stop.setEnabled(true);
          if (view.equals(stop)) {
               handler.removeCallbacks(updatedTime);
               stop.setEnabled(false);
               start.setEnabled(true);
     private final Runnable updatedTime = new Runnable() {
          @Override
          public void run() {
    val.setText("" + i);
                handler.postDelayed(this, 1000);
               i++;
          }
     };
}
```