

Program 1: Visitng card

mainactivity.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    tools:context=".MainActivity">
    <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
```

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        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

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        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" />
<Button
    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"

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        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

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        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" />
<Button
    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"

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```

        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(getApplicationContext(),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"

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```

        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])(?=.*\\d)(?=.*[@$!])?[A-Za-z\\d@$!]{8,}$";
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
}

```

```

        signup_username=(EditText) findViewById(R.id.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(getApplicationContext(), "valid password", Toast.LENGTH_LONG).show();
            Bundle bundle=new Bundle();
            bundle.putString("user", username);
            bundle.putString("pwd", password);
            Intent it=new Intent(this, login.class);
            it.putExtra("data", bundle);
            startActivity(it);
        }
        else
        {
            Toast.makeText(getApplicationContext(), "Invalid password", Toast.LENGTH_LONG).show();
        }
    }
    private boolean validatePassword(String password) {
        Pattern pattern=Pattern.compile(RegularExpression);
        Matcher matcher=pattern.matcher(password);
        return matcher.matches();
    }
}

```

login.java

```
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};
    @Override
    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++;
    }
};
}

```