Visiting Card Source Code:
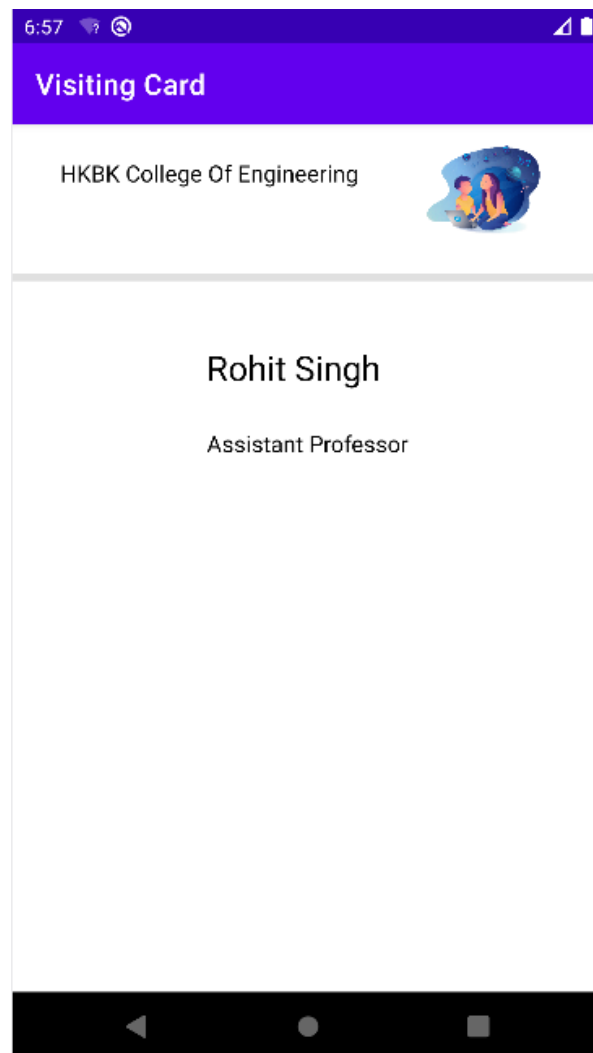
```xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <TextView
        android:id="@+id/textView2"
        android:layout_width="217dp"
        android:layout_height="37dp"
        android:text="HKBK College Of Engineering"
        android:textColor="#000000"
        android:textSize="16sp"
        app:layout_constraintBaseline_toTopOf="parent"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.17"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.041" />
    <TextView
        android:id="@+id/textView"
        android:layout_width="140dp"
        android:layout_height="32dp"
        android:text="Rohit Singh"
        android:textColor="@color/black"
        android:textSize="24sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.498"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.268" />
    <View
        android:id="@+id/view"
        android:layout_width="match_parent"
        android:layout_height="5dp"
        android:layout_marginTop="104dp"
        android:background="?android:attr/listDivider"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.0"
        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="Assistant Professor"
        android:textColor="#000000"
        android:textSize="16sp"
        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="0.363" />
    <ImageView
        android:id="@+id/imageView"
        android:layout_width="105dp"
        android:layout_height="66dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.898"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.024"
        app:srcCompat="@drawable/logo" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

Output:

Calculator Source Code:

activity_main.xml

```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">
    <RelativeLayout
        android:layout_width="368dp"
        android:layout_height="495dp"
        android:layout_marginTop="8dp"
        android:layout_marginBottom="8dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent">
        <Button
            android:id="@+id/btn_1"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_below="@+id/edText1"
            android:layout_alignParentStart="true"
            android:layout_alignParentLeft="true"
            android:layout_marginTop="60dp"
            android:onClick="PressOne"
            android:text="1"
            android:textSize="18sp" />
        <Button
            android:id="@+id/btn_0"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_below="@+id/btn_8"
            android:layout_toEndOf="@+id/btn_7"
            android:layout_toRightOf="@+id/btn_7"
            android:text="0"
            android:textSize="18sp" />
        <Button
            android:id="@+id/btn_9"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_below="@+id/btn_6"
            android:layout_toEndOf="@+id/btn_5"
            android:layout_toRightOf="@+id/btn_5"
            android:text="9"
            android:textSize="18sp" />
        <Button
```

```xml
    android:id="@+id/btn_8"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/btn_5"
    android:layout_toEndOf="@+id/btn_7"
    android:layout_toRightOf="@+id/btn_7"
    android:text="8"
    android:textSize="18sp" />
<Button
    android:id="@+id/btn_7"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/btn_4"
    android:layout_alignStart="@+id/btn_4"
    android:layout_alignLeft="@+id/btn_4"
    android:text="7"
    android:textSize="18sp" />
<Button
    android:id="@+id/btn_6"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignBaseline="@+id/btn_5"
    android:layout_alignBottom="@+id/btn_5"
    android:layout_toEndOf="@+id/btn_5"
    android:layout_toRightOf="@+id/btn_5"
    android:text="6"
    android:textSize="18sp" />
<Button
    android:id="@+id/btn_5"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/btn_2"
    android:layout_toEndOf="@+id/btn_4"
    android:layout_toRightOf="@+id/btn_4"
    android:text="5"
    android:textSize="18sp" />
<Button
    android:id="@+id/btn_4"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/btn_1"
    android:layout_alignStart="@+id/btn_1"
    android:layout_alignLeft="@+id/btn_1"
    android:text="4"
    android:textSize="18sp" />
<Button
    android:id="@+id/btn_3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignBaseline="@+id/btn_2"
    android:layout_alignBottom="@+id/btn_2"
```

```xml
    android:layout_toEndOf="@+id/btn_2"
    android:layout_toRightOf="@+id/btn_2"
    android:text="3"
    android:textSize="18sp" />
<Button
    android:id="@+id/btn_2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignBaseline="@+id/btn_1"
    android:layout_alignBottom="@+id/btn_1"
    android:layout_toEndOF="@+id/btn_1"
    android:layout_toRightOf="@+id/btn_1"
    android:text="2"
    android:textSize="18sp" />
<Button
    android:id="@+id/btn_Add"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_above="@+id/btn_6"
    android:layout_alignParentEnd="true"
    android:layout_alignParentRight="true"
    android:backgroundTint="@android:color/darker_gray"
    android:text="+"
    android:textColor="@android:color/background_light"
    android:textSize="18sp" />
<Button
    android:id="@+id/btn_Sub"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/btn_Add"
    android:layout_alignStart="@+id/btn_Add"
    android:layout_alignLeft="@+id/btn_Add"
    android:backgroundTint="@android:color/darker_gray"
    android:text="-"
    android:textColor="@android:color/background_light"
    android:textSize="18sp" />
<Button
    android:id="@+id/btn_Mul"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/btn_6"
    android:layout_alignStart="@+id/btn_Sub"
    android:layout_alignLeft="@+id/btn_Sub"
    android:backgroundTint="@android:color/darker_gray"
    android:text="*"
    android:textColor="@android:color/background_light"
    android:textSize="18sp" />
<Button
    android:id="@+id/btn_Div"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
```

```xml
        android:layout_below="@+id/btn_9"
        android:layout_alignStart="@+id/btn_Mul"
        android:layout_alignLeft="@+id/btn_Mul"
        android:backgroundTint="@android:color/darker_gray"
        android:text="/"
        android:textColor="@android:color/background_light"
        android:textSize="18sp" />
    <EditText
        android:id="@+id/edText1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentStart="true"
        android:layout_alignParentLeft="true"
        android:layout_alignParentTop="true"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:layout_marginTop="22dp"
        android:ems="10"
        android:inputType="textPersonName"
        android:textAlignment="textEnd"
        android:textSize="24sp" />
    <Button
        android:id="@+id/btn_calc"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@+id/btn_0"
        android:layout_toEndOf="@+id/btn_0"
        android:layout_toRightOf="@+id/btn_0"
        android:backgroundTint="@android:color/holo_green_light"
        android:text="="
        android:textColor="@android:color/background_light"
        android:textSize="18sp" />
    <Button
        android:id="@+id/btn_dec"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@+id/btn_7"
        android:layout_toStartOf="@+id/btn_8"
        android:layout_toLeftOf="@+id/btn_8"
        android:text="."
        android:textSize="18sp" />
    <Button
        android:id="@+id/btn_clear"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@+id/btn_Div"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:backgroundTint="@android:color/holo_blue_dark"
        android:text="clear"
        android:textColor="@android:color/background_light"
```

```xml
        android:textSize="18sp" />
    </RelativeLayout>
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```java
package com.example.calculator;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
public class MainActivity extends AppCompatActivity {
    Button
btn_1,btn_2,btn_3,btn_4,btn_5,btn_6,btn_7,btn_8,btn_9,btn_0,btn_Add,btn_Sub,btn_Mul,btn_Div,btn
_calc,btn_dec,btn_clear;
    EditText ed1;
    float Value1, Value2;
    boolean mAddition, mSubtract, mMultiplication, mDivision ;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        btn_0 = (Button) findViewById(R.id.btn_0);
        btn_1 = (Button) findViewById(R.id.btn_1);
        btn_2 = (Button) findViewById(R.id.btn_2);
        btn_3 = (Button) findViewById(R.id.btn_3);
        btn_4 = (Button) findViewById(R.id.btn_4);
        btn_5 = (Button) findViewById(R.id.btn_5);
        btn_6 = (Button) findViewById(R.id.btn_6);
        btn_7 = (Button) findViewById(R.id.btn_7);
        btn_8 = (Button) findViewById(R.id.btn_8);
        btn_9 = (Button) findViewById(R.id.btn_9);
        btn_Add = (Button) findViewById(R.id.btn_Add);
        btn_Div = (Button) findViewById(R.id.btn_Div);
        btn_Sub = (Button) findViewById(R.id.btn_Sub);
        btn_Mul = (Button) findViewById(R.id.btn_Mul);
        btn_calc = (Button) findViewById(R.id.btn_calc);
        btn_dec = (Button) findViewById(R.id.btn_dec);
        btn_clear = (Button) findViewById(R.id.btn_clear);
        ed1 = (EditText) findViewById(R.id.edText1);
        btn_0.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                ed1.setText(ed1.getText()+"0");
            }
        });
        btn_1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                ed1.setText(ed1.getText()+"1");
            }
```

```java
        });
        btn_2.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                ed1.setText(ed1.getText()+"2");
            }
        });
        btn_3.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                ed1.setText(ed1.getText()+"3");
            }
        });
        btn_4.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                ed1.setText(ed1.getText()+"4");
            }
        });
        btn_5.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                ed1.setText(ed1.getText()+"5");
            }
        });
        btn_6.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                ed1.setText(ed1.getText()+"6");
            }
        });
        btn_7.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                ed1.setText(ed1.getText()+"7");
            }
        });
        btn_8.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                ed1.setText(ed1.getText()+"8");
            }
        });
        btn_9.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                ed1.setText(ed1.getText()+"9");
            }});
        btn_dec.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
```

```java
                ed1.setText(ed1.getText()+".");
            }
        });
        btn_Add.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                if (ed1 == null){
                    ed1.setText("");
                }else {
                    Value1 = Float.parseFloat(ed1.getText() + "");
                    mAddition = true;
                    ed1.setText(null);
                }
            }
        });
        btn_Sub.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Value1 = Float.parseFloat(ed1.getText() + "");
                mSubtract = true ;
                ed1.setText(null);
            }
        });
        btn_Mul.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Value1 = Float.parseFloat(ed1.getText() + "");
                mMultiplication = true ;
                ed1.setText(null);
            }
        });
        btn_Div.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Value1 = Float.parseFloat(ed1.getText()+"");
                mDivision = true ;
                ed1.setText(null);
            }
        });
        btn_calc.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Value2 = Float.parseFloat(ed1.getText() + "");
                if (mAddition == true){
                    ed1.setText(Value1 + Value2 +"");
                    mAddition=false;
                }
                if (mSubtract == true){
                    ed1.setText(Value1 -Value2 +"");
                    mSubtract=false;
                }
```

```java
            if (mMultiplication == true){
                ed1.setText(Value1 * Value2 + "");
                mMultiplication=false;
            }
            if (mDivision == true){
                ed1.setText(Value1 / Value2+"");
                mDivision=false;
            }
        }
    });
    btn_clear.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            ed1.setText("");
        }
    });
  }
}
```

Output:

SignUp Source Code:

Activity_main.xml

```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/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="100dp"
        android:text="SIGN UP"
        android:textColor="@color/purple_700"
        android:textSize="22dp"
        app:layout_constraintEnd_toEndOf="parent"
        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:layout_marginStart="30dp"
        android:layout_marginTop="50dp"
        android:text="USERNAME"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView2" />
    <TextView
        android:id="@+id/textView4"
        android:layout_width="82dp"
        android:layout_height="34dp"
        android:layout_marginTop="50dp"
        android:text="PASSWORD"
        app:layout_constraintStart_toStartOf="@+id/textView3"
        app:layout_constraintTop_toBottomOf="@+id/textView3" />
    <EditText
        android:id="@+id/txt_username"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="40dp"
        android:layout_marginEnd="10dp"
        android:ems="10"
        android:inputType="textPersonName"
        app:layout_constraintBottom_toBottomOf="@+id/textView3"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toEndOf="@+id/textView3"
```

```
            app:layout_constraintTop_toTopOf="@+id/textView3" />
        <EditText
            android:id="@+id/txt_password"
            android:layout_width="0dp"
            android:layout_height="40dp"
            android:layout_marginTop="26dp"
            android:ems="10"
            android:inputType="textPassword"
            app:layout_constraintEnd_toEndOf="@+id/txt_username"
            app:layout_constraintStart_toStartOf="@+id/txt_username"
            app:layout_constraintTop_toBottomOf="@+id/txt_username" />
        <Button
            android:id="@+id/btn_signup"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_marginTop="30dp"
            android:text="Sign Up"
            app:layout_constraintEnd_toEndOf="parent"
            app:layout_constraintStart_toStartOf="parent"
            app:layout_constraintTop_toBottomOf="@+id/txt_password" />
</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=".LoginActivity">
    <TextView
        android:id="@+id/textView7"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="50dp"
        android:text="Login"
        android:textSize="22dp"
        android:textColor="@color/purple_700"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
    <TextView
        android:id="@+id/textView9"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="30dp"
        android:layout_marginTop="50dp"
        android:text="USERNAME"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView7" />
```

```xml
    <EditText
        android:id="@+id/txt_login_username"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="20dp"
        android:layout_marginEnd="20dp"
        android:ems="10"
        android:inputType="textPersonName"
        app:layout_constraintBottom_toBottomOf="@+id/textView9"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toEndOf="@+id/textView9"
        app:layout_constraintTop_toTopOf="@+id/textView9" />
    <TextView
        android:id="@+id/textView10"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="30dp"
        android:layout_marginTop="50dp"
        android:text="PASSWORD"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView9" />
    <EditText
        android:id="@+id/txt_login_password"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10"
        android:inputType="textPassword"
        app:layout_constraintEnd_toEndOf="@+id/txt_login_username"
        app:layout_constraintStart_toStartOf="@+id/txt_login_username"
        app:layout_constraintTop_toTopOf="@+id/textView10" />
    <Button
        android:id="@+id/btn_login_signin"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="50dp"
        android:text="Login"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/txt_login_password" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```java
package com.example.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;
```

```java
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_username);
        txtPassword = (EditText) findViewById(R.id.txt_password);
        btnSignup = (Button) findViewById(R.id.btn_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("Lab@2018", password);
            Intent it = new Intent(this, LoginActivity.class);
            it.putExtra("data", bundle);
            startActivity(it);
        } else {
            Toast.makeText(getBaseContext(), "Invalid Password", Toast.LENGTH_LONG).show();
        }
    }
    public boolean validatePassword(String password) {
        Pattern pattern = Pattern.compile(regularExpression);
        Matcher matcher = pattern.matcher(password);
        return matcher.matches();
    }
}
```

LoginActivity.java

```java
package com.example.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 LoginActivity extends AppCompatActivity implements View.OnClickListener {
    EditText txtLoginUsername;
    EditText txtLoginPassword;
    Button btnLogin;
    String user, pass;
    int count = 0;
    @Override
```
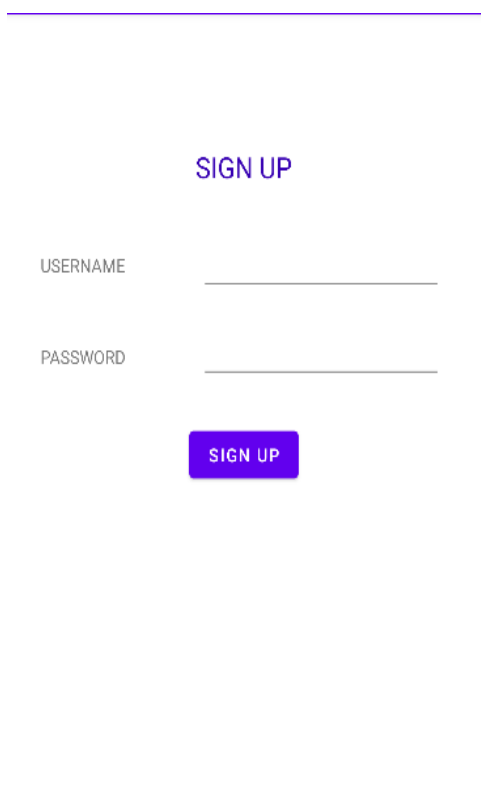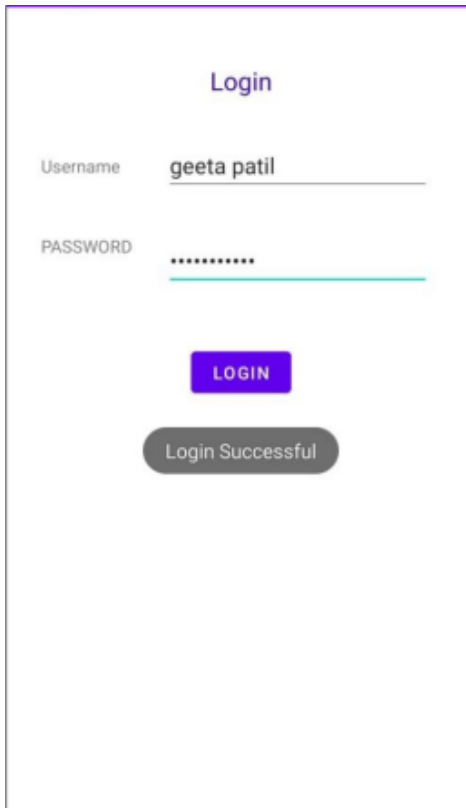
```java
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_login);
    txtLoginUsername = (EditText) findViewById(R.id.txt_login_username);
    txtLoginPassword = (EditText) findViewById(R.id.txt_login_password);
    btnLogin = (Button) findViewById(R.id.btn_login_signin);
    btnLogin.setOnClickListener(this);
    Bundle bundle = getIntent().getBundleExtra("data");
    user = bundle.getString("user");
    pass = bundle.getString("Lab@2018");
}
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();
        }
    }
}
}
```

Output:

Wallpaper Changer Source Code:

Activity_main.xml

```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"
    android:background="@color/teal_700">
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="CHANGING WALLPAPER APPLICATION"
        android:textColor="@color/design_default_color_primary_dark"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.583"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.067" />
    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="72dp"
        android:layout_marginTop="53dp"
        android:layout_marginEnd="35dp"
        android:layout_marginBottom="590dp"
        android:text="CLICK HERE TO CHANGE WALLPAPER"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.714"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="1.0" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```java
package com.example.wallpaper;
import androidx.appcompat.app.AppCompatActivity;
import android.app.WallpaperManager;
import android.graphics.Bitmap;
import android.graphics.BitmapFactory;
import android.graphics.drawable.AnimationDrawable;
```

```java
import android.graphics.drawable.BitmapDrawable;
import android.graphics.drawable.Drawable;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.Toast;
import java.io.IOException;
import java.util.Timer;
import java.util.TimerTask;
public class MainActivity extends AppCompatActivity {
    Button changewallpaper;
    Timer mytimer;
    Drawable drawable;
    WallpaperManager wpm;
    int prev=1;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        mytimer = new Timer();
        wpm = WallpaperManager.getInstance(this);
        changewallpaper = findViewById(R.id.button);
        changewallpaper.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                setWallpaper();
            }
        });
    }
    private void setWallpaper()
    {
        mytimer.schedule(new TimerTask() {
            @Override
            public void run() {
                if(prev==1) {
                    drawable = getResources().getDrawable(R.drawable.one);
                    prev = 2;
                }
                else if(prev==2) {
                    drawable = getResources().getDrawable(R.drawable.two);
                    prev=3;
                }
                else if(prev==3) {
                    drawable = getResources().getDrawable(R.drawable.three);
                    prev=4;
                }
                else if(prev==4) {
                    drawable = getResources().getDrawable(R.drawable.four);
                    prev=5;
                }
                else if(prev==5) {
```
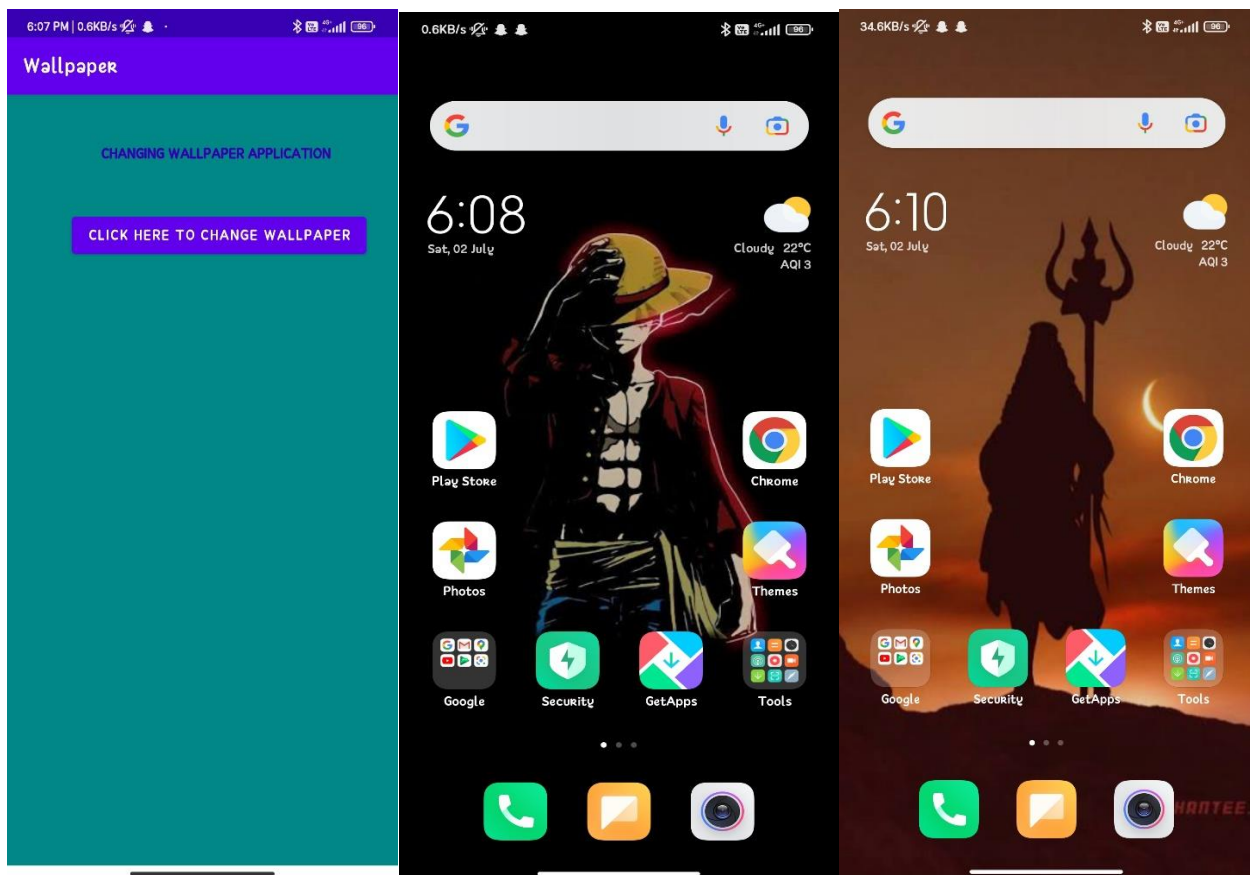
```
            drawable = getResources().getDrawable(R.drawable.five);
            prev=1;
         }
         Bitmap wallpaper = ((BitmapDrawable)drawable).getBitmap();
         try {
            wpm.setBitmap(wallpaper);
         }
         catch (IOException e) {
            e.printStackTrace();
         }
      }
   },0,30000);
   }
}
```

Output:

Counter Source Code:

```xml
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation ="vertical"
    android:layout_width="match_parent"
    android:layout_height="fill_parent" >
    <TextView
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:text="Counter"
        android:textSize="30dp"
        android:textAlignment="center"
        android:textStyle="italic"/>
    <Chronometer
        android:id="@+id/chronometer"
        android:layout_gravity="center_horizontal"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:textAlignment="center"
        android:textStyle="bold"/>
    <Button
        android:id="@+id/buttonstart"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:text="Start"/>
    <Button
        android:id="@+id/buttonstop"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:text="Stop"/>
    <Button android:id="@+id/buttonreset"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:text="Reset"/>
</LinearLayout>
```
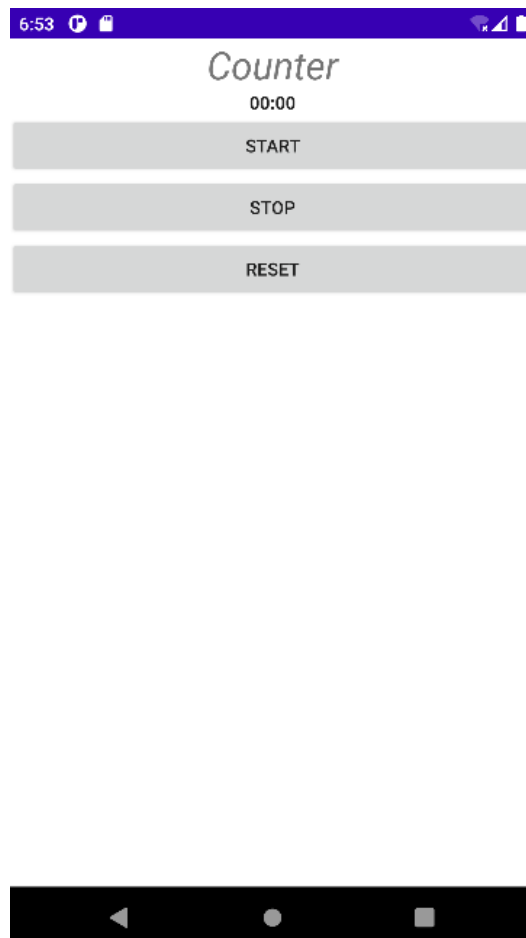
MainActivity.java

```java
package com.example.counter;
import android.app.Activity;
import android.os.Bundle;
import android.os.SystemClock;
import android.view.View;
import android.widget.Button;
import android.widget.Chronometer;
public class MainActivity extends Activity {
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
```

```java
setContentView(R.layout.activity_main);
final Chronometer myChronometer =
    (Chronometer)findViewById(R.id.chronometer);
Button buttonStart = (Button)findViewById(R.id.buttonstart);
Button buttonStop = (Button)findViewById(R.id.buttonstop);
Button buttonReset = (Button)findViewById(R.id.buttonreset);
buttonStart.setOnClickListener(new Button.OnClickListener(){
    @Override
    public void onClick(View v) {
        myChronometer.start();
    }});
buttonStop.setOnClickListener(new Button.OnClickListener(){
    @Override
    public void onClick(View v) {
        myChronometer.stop();
    }});
buttonReset.setOnClickListener(new Button.OnClickListener(){
    @Override
    public void onClick(View v) {
        myChronometer.setBase(SystemClock.elapsedRealtime());
    }});
    }
}
```

Output:

Parsing XML and JSON Data Source Code:

Activity_main.xml

```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_parsexml"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="80dp"
        android:text="Parse XML Data"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView4" />
    <Button
        android:id="@+id/btn_parsejson"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="80dp"
        android:text="Parse Json Data"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/btn_parsexml" />
    <TextView
        android:id="@+id/textView4"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="40dp"
        android:text="PARSING XML AND JSON DATA"
        android:textSize="20dp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

Activity_view.xml

```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">
```

```xml
    <TextView
        android:id="@+id/lbl_xml_data"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="30dp"
        android:text="Xml Data"
        app:layout_constraintStart_toStartOf="@id/textView2"
        app:layout_constraintTop_toBottomOf="@id/textView2" />
    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="40dp"
        android:text="PARSING XML AND JSON DATA"
        android:textSize="20dp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
    <TextView
        android:id="@+id/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="40dp"
        android:layout_marginTop="20dp"
        android:text="XML DATA"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView" />
    <TextView
        android:id="@+id/textView3"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="20dp"
        android:layout_marginEnd="40dp"
        android:text="JSON DATA"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView" />
    <TextView
        android:id="@+id/lbl_json_data"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="30dp"
        android:text="Json Data"
        app:layout_constraintEnd_toEndOf="@+id/textView3"
        app:layout_constraintTop_toBottomOf="@+id/textView3" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```java
package com.example.parsing;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
```

```java
import android.view.View;
import android.widget.Button;
public class MainActivity extends AppCompatActivity implements View.OnClickListener {
    Button btnParseXml,btnParseJson;
@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    btnParseXml=(Button)findViewById(R.id.btn_parsexml);
    btnParseJson=(Button)findViewById(R.id.btn_parsejson);
    btnParseJson.setOnClickListener(this);
    btnParseXml.setOnClickListener(this);
}
    @Override
    public void onClick(View v) {
        if(v.equals(btnParseJson))
        {
            Intent it=new Intent(this,ViewActivity.class);
            it.putExtra("mode",1);
            startActivity(it);
        }
        else
        {
            Intent it=new Intent(this,ViewActivity.class);
            it.putExtra("mode",2);
            startActivity(it);
        }
    }
}
```

ViewActivity.java

```java
package com.example.parsing;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.TextView;
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.InputStream;
import javax.xml.parsers.DocumentBuilder;
import javax.xml.parsers.DocumentBuilderFactory;
public class ViewActivity extends AppCompatActivity {
    TextView lblXmlData,lblJsonData;
    int mode=0;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_view);
        lblXmlData=(TextView)findViewById(R.id.lbl_xml_data);
```

```java
        lblJsonData=(TextView)findViewById(R.id.lbl_json_data);
        mode=getIntent().getIntExtra("mode",0);
        if(mode== 1)
            parseJson();
        else
            parseXmlDocument();
    }
    public String parseXmlDocument()
    {
        try {
            InputStream is = getAssets().open("input.xml");
            DocumentBuilderFactory  dbFactory = DocumentBuilderFactory.newInstance();
            DocumentBuilder dBuilder= dbFactory.newDocumentBuilder();
            Document doc = dBuilder.parse(is);
            Element element=doc.getDocumentElement();
            element.normalize();
            NodeList nList = doc.getElementsByTagName("employee");
            for (int i=0; i<nList.getLength(); i++) {
                Node node = nList.item(i);
                if (node.getNodeType() ==
                        Node.ELEMENT_NODE) {Element element2 =
                        (Element) node;
                    lblXmlData.setText("City Name : " + getValue("city_name", element2)+"\n");
                    lblXmlData.append("Latitude : " + getValue("Latitude", element2)+"\n");
                    lblXmlData.append("Longitude : " + getValue("Longitude", element2)+"\n");
                    lblXmlData.append("Temperature : " + getValue("Temperature", element2)+"\n");
                    lblXmlData.append("Humidity : " + getValue("Humidity", element2)+"\n");
                }
            }
        }
        catch (Exception e) {e.printStackTrace();}return
            null;
    }
    private static String getValue(String tag, Element element) {
        NodeList nodeList = element.getElementsByTagName(tag).item(0).getChildNodes();Node node =
nodeList.item(0);
        return node.getNodeValue();
    }
    public void parseJson()
    {
        try {
            InputStream inputStream=getAssets().open("input.json");
            byte[] data=new byte[inputStream.available()];
            inputStream.read(data);
            String readData=new String(data);
            JSONObject jsonObject=new JSONObject(readData);
            JSONObject jsonObject1=jsonObject.getJSONObject("employee");
            lblJsonData.setText("City Name:"+jsonObject1.getString("city_name")+"\n");
            lblJsonData.append("Latitude:"+jsonObject1.getString("Latitude")+"\n");
            lblJsonData.append("Longitude"+jsonObject1.getString("Longitude")+"\n");
            lblJsonData.append("Temperature:"+jsonObject1.getInt("Temperature")+"\n");
```
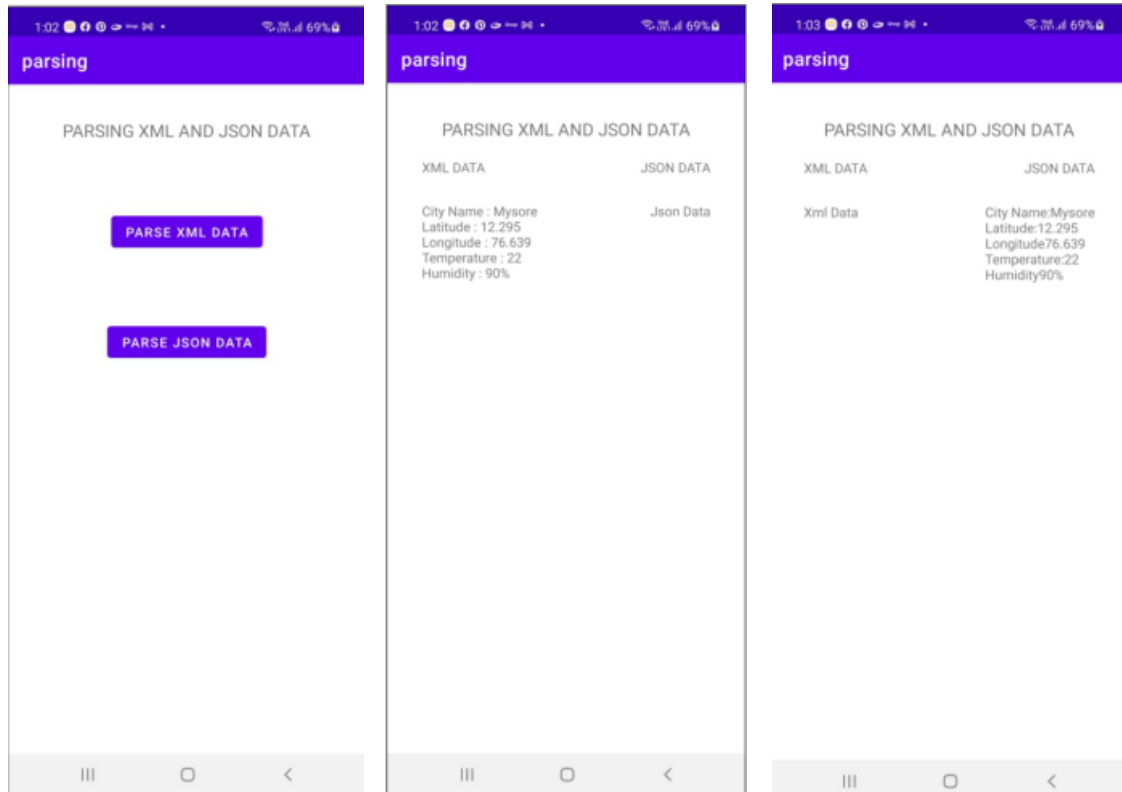
```
        lblJsonData.append("Humidity"+jsonObject1.getString("Humidity")+"\n");
    }
    catch (Exception e) {e.printStackTrace();}
  }
}
```

Output:

Text To Speech Source Code:

Activity_main.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="50dp"
        android:layout_marginTop="80dp"
        android:text="Enter Text to Speak"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
    <EditText android:id="@+id/editText"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="48dp"
        android:ems="10"
        android:inputType="textPersonName"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.0"
        app:layout_constraintStart_toStartOf="@+id/textView"
        app:layout_constraintTop_toBottomOf="@+id/textView" />
    <Button
        android:id="@+id/btn_speak"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="52dp" android:text="Speak"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/editText" />
</androidx.constraintlayout.widget.ConstraintLayout>
```
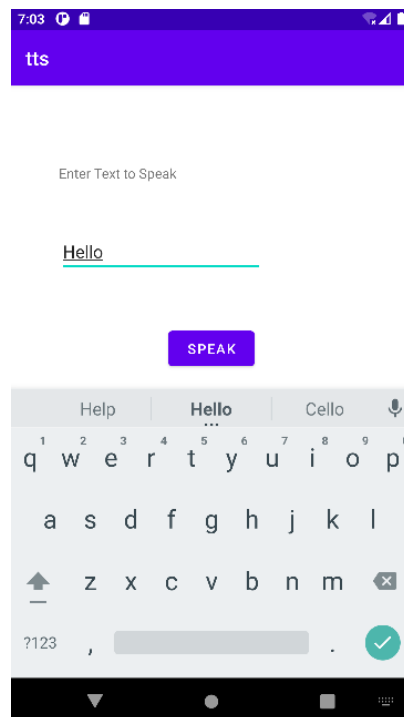
MainActivity.java

```java
package com.example.tts;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.speech.tts.TextToSpeech;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
import java.util.Locale;
```

```java
public class MainActivity extends AppCompatActivity implements View.OnClickListener {
    EditText txtSpeak;
    Button btnSpeak;
    TextToSpeech textToSpeech;
@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    txtSpeak=(EditText)findViewById(R.id.editText);
    btnSpeak=(Button)findViewById(R.id.btn_speak);
    btnSpeak.setOnClickListener(this);
    textToSpeech=new TextToSpeech(getBaseContext(),
    new TextToSpeech.OnInitListener() {
@Override
public void onInit(int status) {
    if(status!=TextToSpeech.ERROR)
    {
    Toast.makeText(getBaseContext(),"Success", Toast.LENGTH_LONG).show();
    }
    }
    });
    textToSpeech.setLanguage(Locale.UK);
    }
public void onClick(View v)
    {
    String text=txtSpeak.getText().toString();
    textToSpeech.speak(text,TextToSpeech.QUEUE_FLUSH,null
    );
    }
    }
```

Output:

Phone Dialer Source Code:

Activity_main.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="50dp"
        android:text="PHONE DAILER"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
    <EditText
        android:id="@+id/txt_phonenumber"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="20dp"
        android:layout_marginTop="30dp"
        android:ems="10"
        android:inputType="textPersonName"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView" />
    <Button
        android:id="@+id/btn_delete"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="20dp"
        android:layout_marginTop="30dp"
        android:text="Delete"
        app:layout_constraintStart_toEndOf="@+id/txt_phonenumber"
        app:layout_constraintTop_toBottomOf="@+id/textView" />
    <Button
        android:id="@+id/btn_one"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="20dp"
        android:layout_marginTop="30dp"
        android:text="1"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/txt_phonenumber" />
    <Button
        android:id="@+id/btn_two"
```

```xml
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="30dp"
        android:text="2"
        app:layout_constraintEnd_toStartOf="@+id/btn_three"
        app:layout_constraintStart_toEndOf="@+id/btn_one"
        app:layout_constraintTop_toBottomOf="@+id/txt_phonenumber" />
    <Button
        android:id="@+id/btn_three"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="30dp"
        android:layout_marginEnd="20dp"
        android:text="3"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/txt_phonenumber" />
    <Button
        android:id="@+id/btn_four"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="20dp"
        android:layout_marginTop="30dp"
        android:text="4"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/btn_one" />
    <Button
        android:id="@+id/btn_five"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="30dp"
        android:text="5"
        app:layout_constraintEnd_toStartOf="@+id/btn_six"
        app:layout_constraintStart_toEndOf="@+id/btn_four"
        app:layout_constraintTop_toBottomOf="@+id/btn_two" />
    <Button
        android:id="@+id/btn_six"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="30dp"
        android:layout_marginEnd="20dp"
        android:text="6"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/btn_three" />
    <Button
        android:id="@+id/btn_seven"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="20dp"
        android:layout_marginTop="30dp"
        android:text="7"
        app:layout_constraintStart_toStartOf="parent"
```

```xml
        app:layout_constraintTop_toBottomOf="@+id/btn_four" />
    <Button
        android:id="@+id/btn_eight"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="30dp"
        android:text="8"
        app:layout_constraintEnd_toStartOf="@+id/btn_nine"
        app:layout_constraintStart_toEndOf="@+id/btn_seven"
        app:layout_constraintTop_toBottomOf="@+id/btn_five" />
    <Button
        android:id="@+id/btn_nine"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="30dp"
        android:layout_marginEnd="20dp"
        android:text="9"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/btn_six" />
    <Button
        android:id="@+id/btn_zero"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="30dp"
        android:text="0"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/btn_eight" />
    <Button
        android:id="@+id/btn_call"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="20dp"
        android:layout_marginTop="30dp" android:text="Call"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/btn_zero" />
    <Button
        android:id="@+id/btn_save"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="30dp"
        android:layout_marginEnd="20dp"
        android:text="Save"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/btn_zero" />
    <Button
        android:id="@+id/btn_start"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="20dp"
        android:layout_marginTop="30dp"
```

```xml
        android:text="*"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/btn_seven" />
    <Button
        android:id="@+id/btn_hash"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="30dp"
        android:layout_marginEnd="20dp"
        android:text="#"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/btn_nine" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```java
package com.example.phone;
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;
    Button btnSix,btnSeven,btnEight,btnNine,btnZero;
    Button btnDel,btnStar,btnHash,btnCall,btnSave;
    EditText txtPhonenumber;
    @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);
```

```java
        btnZero=(Button)findViewById(R.id.btn_zero);
        btnZero.setOnClickListener(this);
        btnStar=(Button)findViewById(R.id.btn_start);
        btnStar.setOnClickListener(this);
        btnHash=(Button)findViewById(R.id.btn_hash);
        btnHash.setOnClickListener(this);
        btnCall=(Button)findViewById(R.id.btn_call);
        btnCall.setOnClickListener(this);
        btnSave=(Button)findViewById(R.id.btn_save);
        btnSave.setOnClickListener(this);
        btnDel=(Button)findViewById(R.id.btn_delete);
        btnDel.setOnClickListener(this);
        txtPhonenumber=(EditText)findViewById(R.id.txt_phonenumber);
        txtPhonenumber.setText("");
    }
    public void onClick(View v) {
        if(v.equals(btnOne))
        txtPhonenumber.append("1");
        else if(v.equals(btnTwo)) txtPhonenumber.append("2");
        else if(v.equals(btnThree))txtPhonenumber.append("3");
        else if(v.equals(btnFour))txtPhonenumber.append("4");
        else if(v.equals(btnFive))txtPhonenumber.append("5");
        else if(v.equals(btnSix)) txtPhonenumber.append("6");
        else if(v.equals(btnSeven))txtPhonenumber.append("7");
        else if(v.equals(btnEight))txtPhonenumber.append("8");
        else if(v.equals(btnNine))txtPhonenumber.append("9");
        else if(v.equals(btnZero))txtPhonenumber.append("0");
        else if(v.equals(btnStar)) txtPhonenumber.append("*");
        else if(v.equals(btnHash))txtPhonenumber.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,"Unknown");
            contactIntent.putExtra(ContactsContract.Intents.Insert.PHONE,
            txtPhonenumber.getText().toString());
            startActivity(contactIntent);
        }
        else if(v.equals(btnDel)) {
            String data=txtPhonenumber.getText().toString();
            if(data.length()>0)
            txtPhonenumber.setText(data.substring(0,data.length()-1));
            else
            txtPhonenumber.setText("");
        }
        btnCall.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            String data = txtPhonenumber.getText().toString();
```

```
        Intent intent=new Intent(Intent.ACTION_DIAL);
        intent.setData(Uri.parse("tel:"+ data));
        startActivity(intent);
    }
});
}
}
```

Output: