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

In this android program XML layout code has to be edited according to the user need and JAVA code doesn’t require any changes.

To create an android application of visiting card in xml layout add on TextViews(for displaying Name,title,phone number, address, email/fax) and ImageView (logo) from the Layout Palette.

**XML-CODE**

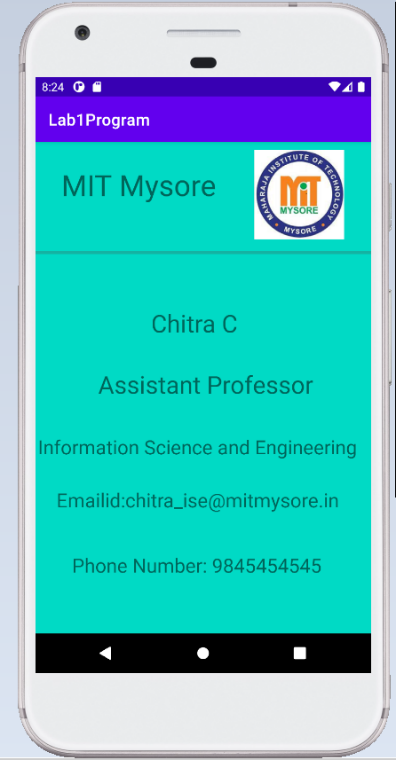
*<?***xml version="1.0" encoding="utf-8"***?>*<**RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:app="http://schemas.android.com/apk/res-auto"  
 xmlns:tools="http://schemas.android.com/tools"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:background="@color/teal\_200"  
 tools:context=".MainActivity"**>  
  
 <**TextView  
 android:id="@+id/CardName"  
 android:layout\_width="261dp"  
 android:layout\_height="59dp"  
 android:layout\_alignParentStart="true"  
 android:layout\_alignParentLeft="true"  
 android:layout\_alignParentTop="true"  
 android:layout\_alignParentEnd="true"  
 android:layout\_alignParentRight="true"  
 android:layout\_alignParentBottom="true"  
 android:layout\_marginStart="32dp"  
 android:layout\_marginLeft="32dp"  
 android:layout\_marginTop="28dp"  
 android:layout\_marginEnd="118dp"  
 android:layout\_marginRight="118dp"  
 android:layout\_marginBottom="516dp"  
 android:text="MIT Mysore"  
 android:textSize="36sp"** />  
  
 <**ImageView  
 android:id="@+id/imageView"  
 android:layout\_width="157dp"  
 android:layout\_height="110dp"  
 android:layout\_alignParentEnd="true"  
 android:layout\_alignParentRight="true"  
 android:layout\_alignParentBottom="true"  
 android:layout\_marginEnd="9dp"  
 android:layout\_marginRight="9dp"  
 android:layout\_marginBottom="484dp"  
 app:srcCompat="@drawable/mitlogo"** />  
  
 <**View  
 android:id="@+id/view"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="4dp"  
 android:layout\_alignParentBottom="true"  
 android:layout\_marginBottom="466dp"  
 android:background="#4444"** />  
  
 <**TextView  
 android:id="@+id/Name"  
 android:layout\_width="221dp"  
 android:layout\_height="32dp"  
 android:layout\_alignParentStart="true"  
 android:layout\_alignParentLeft="true"  
 android:layout\_alignParentTop="true"  
 android:layout\_alignParentEnd="true"  
 android:layout\_alignParentRight="true"  
 android:layout\_alignParentBottom="true"  
 android:layout\_marginStart="142dp"  
 android:layout\_marginLeft="142dp"  
 android:layout\_marginTop="202dp"  
 android:layout\_marginEnd="48dp"  
 android:layout\_marginRight="48dp"  
 android:layout\_marginBottom="369dp"  
 android:text="@string/chitra\_c"  
 android:textSize="30sp"** />  
  
 <**TextView  
 android:id="@+id/Designation"  
 android:layout\_width="326dp"  
 android:layout\_height="41dp"  
 android:layout\_alignParentStart="true"  
 android:layout\_alignParentLeft="true"  
 android:layout\_alignParentTop="true"  
 android:layout\_alignParentEnd="true"  
 android:layout\_alignParentRight="true"  
 android:layout\_alignParentBottom="true"  
 android:layout\_marginStart="77dp"  
 android:layout\_marginLeft="77dp"  
 android:layout\_marginTop="277dp"  
 android:layout\_marginEnd="9dp"  
 android:layout\_marginRight="9dp"  
 android:layout\_marginBottom="286dp"  
 android:text="@string/assistant\_professor"  
 android:textSize="30sp"** />  
  
 <**TextView  
 android:id="@+id/Branch"  
 android:layout\_width="404dp"  
 android:layout\_height="39dp"  
 android:layout\_alignParentStart="true"  
 android:layout\_alignParentLeft="true"  
 android:layout\_alignParentTop="true"  
 android:layout\_alignParentEnd="true"  
 android:layout\_alignParentRight="true"  
 android:layout\_alignParentBottom="true"  
 android:layout\_marginStart="3dp"  
 android:layout\_marginLeft="3dp"  
 android:layout\_marginTop="358dp"  
 android:layout\_marginEnd="5dp"  
 android:layout\_marginRight="5dp"  
 android:layout\_marginBottom="206dp"  
 android:text="@string/information\_science\_and\_engineering"  
 android:textSize="24sp"** />  
  
 <**TextView  
 android:id="@+id/Email"  
 android:layout\_width="364dp"  
 android:layout\_height="46dp"  
 android:layout\_alignParentStart="true"  
 android:layout\_alignParentLeft="true"  
 android:layout\_alignParentTop="true"  
 android:layout\_alignParentEnd="true"  
 android:layout\_alignParentRight="true"  
 android:layout\_alignParentBottom="true"  
 android:layout\_marginStart="26dp"  
 android:layout\_marginLeft="26dp"  
 android:layout\_marginTop="423dp"  
 android:layout\_marginEnd="20dp"  
 android:layout\_marginRight="20dp"  
 android:layout\_marginBottom="135dp"  
 android:text="@string/emailid\_chitra\_ise\_mitmysore\_in"  
 android:textSize="24sp"** />  
  
 <**TextView  
 android:id="@+id/Phoneno"  
 android:layout\_width="353dp"  
 android:layout\_height="45dp"  
 android:layout\_alignParentStart="true"  
 android:layout\_alignParentLeft="true"  
 android:layout\_alignParentTop="true"  
 android:layout\_alignParentEnd="true"  
 android:layout\_alignParentRight="true"  
 android:layout\_alignParentBottom="true"  
 android:layout\_marginStart="45dp"  
 android:layout\_marginLeft="45dp"  
 android:layout\_marginTop="503dp"  
 android:layout\_marginEnd="13dp"  
 android:layout\_marginRight="13dp"  
 android:layout\_marginBottom="55dp"  
 android:text="Phone Number: 9845454545"  
 android:textSize="24sp"** />

</**RelativeLayout**>

**JAVA-CODE(No Change Required)**

**package** com.example.lab1program;  
  
**import** androidx.appcompat.app.AppCompatActivity;  
  
**import** android.os.Bundle;  
  
**public class** MainActivity **extends** AppCompatActivity {  
  
 @Override  
 **protected void** onCreate(Bundle savedInstanceState) {  
 **super**.onCreate(savedInstanceState);  
 setContentView(R.layout.***activity\_main***);  
 }  
}

**OUTPUT:**



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

To create an Android application of Simple Calculator use input controls like Button,TextView and EditText Views.

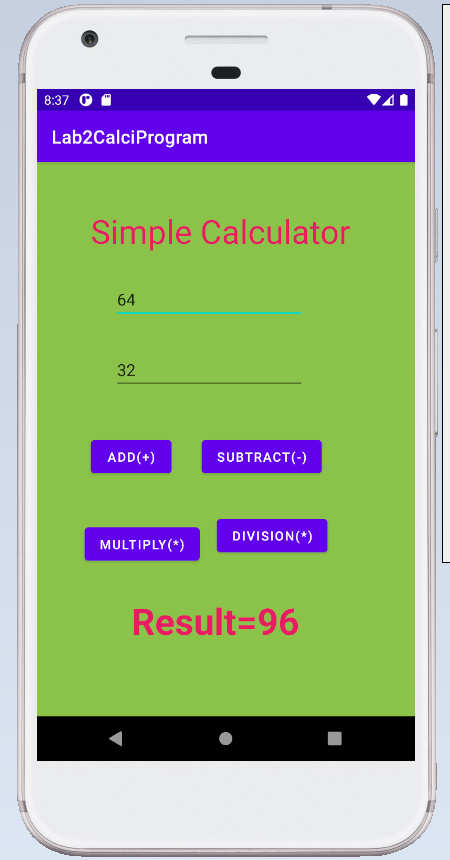
**XML-CODE:**

*<?***xml version="1.0" encoding="utf-8"***?>*<**androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:app="http://schemas.android.com/apk/res-auto"  
 xmlns:tools="http://schemas.android.com/tools"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:background="#8BC34A"  
 tools:context=".MainActivity"**>  
  
 <**TextView  
 android:id="@+id/textView"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="@string/simple\_calculator"  
 android:textColor="#E91E63"  
 android:textColorHighlight="#CDDC39"  
 android:textSize="36sp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.457"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.091"** />  
  
 <**EditText  
 android:id="@+id/edit1"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:autofillHints=""  
 android:ems="10"  
 android:hint="@string/enter\_first\_number"  
 android:inputType="number"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.411"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.227"** />  
  
 <**EditText  
 android:id="@+id/edit2"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:autofillHints=""  
 android:ems="10"  
 android:hint="@string/enter\_second\_number"  
 android:inputType="number"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.411"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.365"** />  
  
 <**Button  
 android:id="@+id/btnAdd"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="@string/add"  
 android:onClick="toAdd"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.182"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.534"** />  
  
 <**Button  
 android:id="@+id/btnSub"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="@string/subtract"  
 android:onClick="toSub"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.64"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.534"** />  
  
 <**Button  
 android:id="@+id/btnMul"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="@string/multiply"  
 android:onClick="toMultiply"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.182"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.705"** />  
  
 <**Button  
 android:id="@+id/btnDiv"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="@string/division"  
 android:onClick="toDivide"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.674"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.689"** />  
  
 <**TextView  
 android:id="@+id/tvAnswer"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Result: "  
 android:textColor="#E91E63"  
 android:textSize="40sp"  
 android:textStyle="bold"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.451"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.858"** />  
  
</**androidx.constraintlayout.widget.ConstraintLayout**>

**JAVA-CODE:**

**package** com.example.lab2calciprogram;  
  
**import** androidx.appcompat.app.AppCompatActivity;  
  
**import** android.os.Bundle;  
**import** android.view.View;  
**import** android.widget.Button;  
**import** android.widget.EditText;  
**import** android.widget.TextView;  
  
**public class** MainActivity **extends** AppCompatActivity {  
  
 EditText **n1**,**n2**;  
 TextView **t1**;  
 Button **b1**,**b2**,**b3**,**b4**;  
  
  
 @Override  
 **protected void** onCreate(Bundle savedInstanceState) {  
 **super**.onCreate(savedInstanceState);  
 setContentView(R.layout.***activity\_main***);  
 **n1**=findViewById(R.id.***edit1***);  
 **n2**=findViewById(R.id.***edit2***);  
 **t1**=findViewById(R.id.***tvAnswer***);  
 }  
  
 **public void** toAdd(View view) {  
 **int** a1=Integer.*parseInt*(**n1**.getText().toString());  
 **int** a2=Integer.*parseInt*(**n2**.getText().toString());  
 **int** res=a1+a2;  
 **t1**.setText(**"Result="**+res);  
 }  
  
 **public void** toSub(View view) {  
 **int** a1=Integer.*parseInt*(**n1**.getText().toString());  
 **int** a2=Integer.*parseInt*(**n2**.getText().toString());  
 **int** res=a1-a2;  
 **t1**.setText(**"Result="**+res);  
 }  
  
 **public void** toMultiply(View view) {  
 **int** a1=Integer.*parseInt*(**n1**.getText().toString());  
 **int** a2=Integer.*parseInt*(**n2**.getText().toString());  
 **int** res=a1\*a2;  
 **t1**.setText(**"Result="**+res);  
 }  
  
 **public void** toDivide(View view) {  
 **int** a1=Integer.*parseInt*(**n1**.getText().toString());  
 **int** a2=Integer.*parseInt*(**n2**.getText().toString());  
 **int** res=a1/a2;  
 **t1**.setText(**"Result="**+res);  
 }  
}

**OUTPUT:**



**Program - 3**

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

**- Password should contain uppercase and lowercase letters.**

**- Password should contain letters and numbers.**

**- Password should contain special characters.**

**- Minimum length of the password (the default value is 8).**

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

**XML-Code:**

*<?***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:id="@+id/linearLayout"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 tools:context=".MainActivity"**>  
  
 <**TextView  
 android:id="@+id/tvTitle"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="@string/sign\_up\_activity"  
 android:textColor="#FF5722"  
 android:textSize="46sp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.071"** />  
  
 <**EditText  
 android:id="@+id/etUsername1"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:autofillHints=""  
 android:ems="10"  
 android:gravity="center\_horizontal"  
 android:hint="@string/enter\_your\_email\_id"  
 android:inputType="textPersonName"  
 android:textAlignment="center"  
 android:textSize="24sp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.408"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.292"** />  
  
 <**EditText  
 android:id="@+id/etPassword"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:autofillHints=""  
 android:ems="10"  
 android:gravity="center\_horizontal"  
 android:hint="@string/enter\_your\_password"  
 android:inputType="textPassword"  
 android:textAlignment="center"  
 android:textSize="24sp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.408"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.439"** />  
  
 <**Button  
 android:id="@+id/btnSignup"  
 android:layout\_width="102dp"  
 android:layout\_height="36dp"  
 android:background="@drawable/btn\_signup"  
 android:text="@string/sign\_up"  
 android:textSize="18sp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.498"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@+id/etUsername1"  
 app:layout\_constraintVertical\_bias="0.398"** />  
  
</**androidx.constraintlayout.widget.ConstraintLayout**>

**MainActivity.java**

**package** com.example.lab3loginactivity;  
  
**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.TextView;  
**import** android.widget.Toast;  
  
**import** java.util.regex.Pattern;  
  
**public class** MainActivity **extends** AppCompatActivity {  
  
 EditText **eUsername**;  
 EditText **ePassword**;  
 Button **btnSignUP**;  
  
  
 @Override  
 **protected void** onCreate(Bundle savedInstanceState) {  
 **super**.onCreate(savedInstanceState);  
 setContentView(R.layout.***activity\_main***);  
 **eUsername**=findViewById(R.id.***etUsername1***);  
 **ePassword**=findViewById(R.id.***etPassword***);  
 **btnSignUP**=findViewById(R.id.***btnSignup***);  
  
 **btnSignUP**.setOnClickListener(**new** View.OnClickListener() {  
 @Override  
 **public void** onClick(View v) {  
 String email=**eUsername**.getText().toString();  
 String password=**ePassword**.getText().toString();  
 **if** (!isValidPassword(password)) {  
 Toast.*makeText*(MainActivity.**this**, **"Password doesn't match rules"** , Toast.***LENGTH\_SHORT***).show();  
 **return**;  
 }  
 Intent intent = **new** Intent(MainActivity.**this**, LoginActivity.**class**);  
 intent.putExtra(**"email"**, email);  
 intent.putExtra(**"password"**, password);  
 startActivity(intent);  
 }  
 });  
 }  
 Pattern **lowerCase** = Pattern.*compile*(**"^.\*[a-z].\*$"**);  
 Pattern **upperCase** = Pattern.*compile*(**"^.\*[A-Z].\*$"**);  
 Pattern **number** = Pattern.*compile*(**"^.\*[0-9].\*$"**);  
 Pattern **specialCharacter** = Pattern.*compile*(**"^.\*[^a-zA-Z0-9].\*$"**);  
 **private** Boolean isValidPassword(String password) {  
*// Checks if password length is less than 8* **if** (password.length() < 8) {  
 **return false**;  
 }  
*// Returns false if password doesn't contain a lower case character* **if** (!**lowerCase**.matcher(password).matches()) {  
 **return false**;  
 }  
*// Returns false if password doesn't contain an upper case character* **if** (!**upperCase**.matcher(password).matches()) {  
 **return false**;  
 }  
*// Returns false if password doesn't contain a number* **if** (!**number**.matcher(password).matches()) {  
 **return false**;  
 }  
*// Returns false if password doesn't contain a special character* **if** (!**specialCharacter**.matcher(password).matches()) {  
 **return false**;  
 }  
 **return true**;  
 }  
}

**Activity\_login.xml**

*<?***xml version="1.0" encoding="utf-8"***?>*<**androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:app="http://schemas.android.com/apk/res-auto"  
 xmlns:tools="http://schemas.android.com/tools"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:background="@color/white"  
 tools:context=".LoginActivity"**>  
  
 <**TextView  
 android:id="@+id/tvLogin"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="@string/login\_activity"  
 android:textSize="36sp"  
 android:textStyle="bold"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.099"** />  
  
 <**EditText  
 android:id="@+id/etUsername"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:ems="10"  
 android:hint="@string/enter\_the\_username"  
 android:inputType="textPersonName"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.525"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@+id/tvLogin"  
 app:layout\_constraintVertical\_bias="0.169"  
 android:autofillHints=""** />  
  
 <**EditText  
 android:id="@+id/etPassword1"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:ems="10"  
 android:hint="@string/enter\_password"  
 android:inputType="textPassword"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.525"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@+id/etUsername"  
 app:layout\_constraintVertical\_bias="0.175"  
 android:autofillHints=""** />  
  
 <**Button  
 android:id="@+id/etbtn"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="@string/sign\_in"  
 android:textSize="24sp"  
 android:textStyle="bold"  
 app:backgroundTint="#3F51B5"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@+id/etPassword1"  
 app:layout\_constraintVertical\_bias="0.289"** />  
  
 <**TextView  
 android:id="@+id/tvAttemptInfo"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Number of Attempts: 2"  
 android:textSize="24sp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.869"** />

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

**LoginActivity.java**

**package** com.example.lab3loginactivity;  
  
**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.TextView;  
**import** android.widget.Toast;  
  
**public class** LoginActivity **extends** AppCompatActivity {  
  
 TextView **etvAttemptInfo**;  
 EditText **Username**;  
 EditText **Password**;  
 Button **login**;  
 **private int counter**=2;  
  
 @Override  
 **protected void** onCreate(Bundle savedInstanceState) {  
 **super**.onCreate(savedInstanceState);  
 setContentView(R.layout.***activity\_login***);  
 **Username**=findViewById(R.id.***etUsername***);  
 **Password**=findViewById(R.id.***etPassword1***);  
 **login**=findViewById(R.id.***etbtn***);  
 **etvAttemptInfo**=findViewById(R.id.***tvAttemptInfo***);  
  
 String registeredEmail=getIntent().getStringExtra(**"email"**);  
 String registeredPassword=getIntent().getStringExtra(**"password"**);  
  
 **login**.setOnClickListener(**new** View.OnClickListener() {  
 @Override  
 **public void** onClick(View v) {  
 String eName=**Username**.getText().toString();  
 String ePassword=**Password**.getText().toString();  
  
 **if**(eName.isEmpty() ||ePassword.isEmpty())  
 {  
 Toast.*makeText*(LoginActivity.**this**, **"Please enter all the details correctly"**,Toast.***LENGTH\_SHORT***).show();  
 }  
 **else** {  
  
 **if**((registeredEmail.equals(eName) && registeredPassword.equals(ePassword)))  
 {  
 Toast.*makeText*(LoginActivity.**this**, **"Login successful!"**,Toast.***LENGTH\_SHORT***).show();  
 *//Add New Activity* Intent intent= **new** Intent(LoginActivity.**this**, HomePageActivity.**class**);  
 startActivity(intent);  
  
 }  
 **else**{  
 **counter**--;  
 Toast.*makeText*(LoginActivity.**this**, **"Incorrect credentials entered/Login Failed"**,Toast.***LENGTH\_SHORT***).show();  
 **etvAttemptInfo**.setText(**"No of Attempts:"**+**counter**);  
 **if**(**counter**==0)  
 {  
 **login**.setEnabled(**false**);  
 }  
 }  
 }  
 }  
 });  
 }  
}

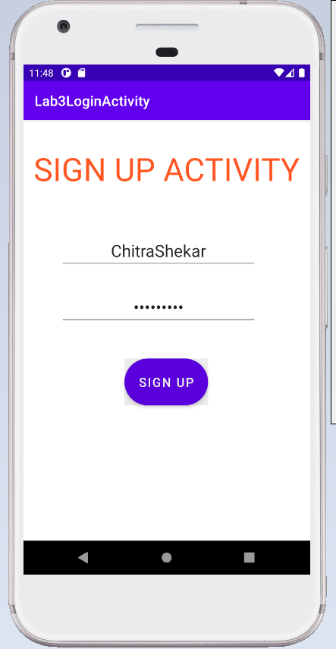
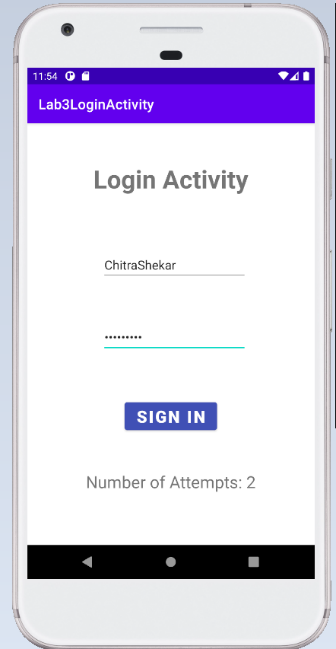
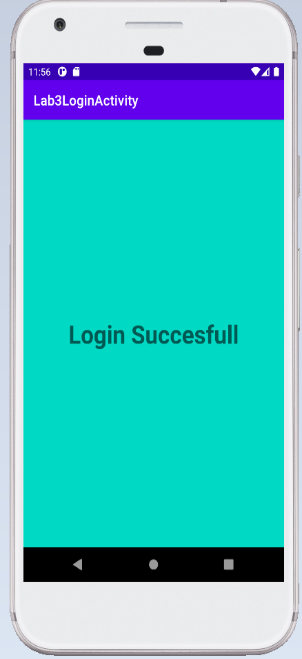
**Activity\_login\_success.xml**

*<?***xml version="1.0" encoding="utf-8"***?>*<**androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:app="http://schemas.android.com/apk/res-auto"  
 xmlns:tools="http://schemas.android.com/tools"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:background="@color/teal\_200"  
 tools:context=".HomePageActivity"**>  
  
 <**TextView  
 android:id="@+id/tvLoginSuccess"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="@string/login\_succesfull"  
 android:textColor="#0E5A53"  
 android:textSize="36sp"  
 android:textStyle="bold"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"** />  
</**androidx.constraintlayout.widget.ConstraintLayout**>

**LoginSuccessActivity.java**

**ackage** com.example.lab3loginactivity;  
  
**import** androidx.appcompat.app.AppCompatActivity;  
  
**import** android.os.Bundle;  
**import** android.widget.TextView;  
  
**public class** HomePageActivity **extends** AppCompatActivity {  
  
 TextView **tv1**;  
  
 @Override  
 **protected void** onCreate(Bundle savedInstanceState) {  
 **super**.onCreate(savedInstanceState);  
 setContentView(R.layout.***activity\_home\_page***);  
 **tv1**=findViewById(R.id.***tvLoginSuccess***);  
  
 }  
}

**OUTPUT**

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

First, create the android application as discussed in “Create your First Android Application”. Copy the images and save the images in the drawable folder. Following is the content of the modified res/layout/activity\_main.xml.

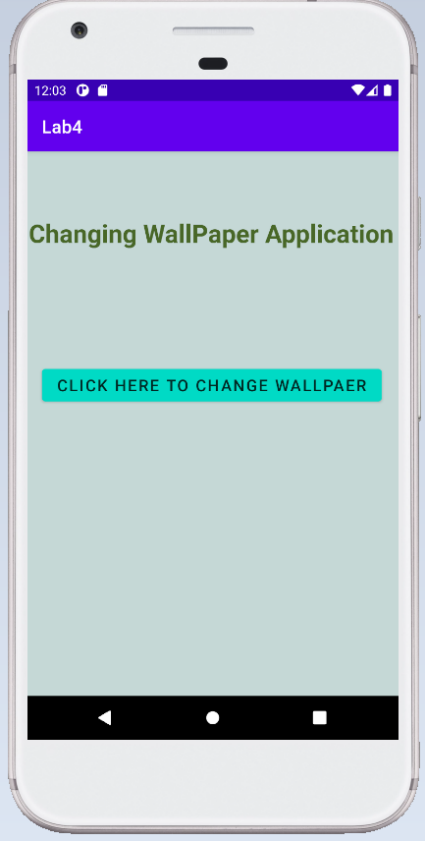
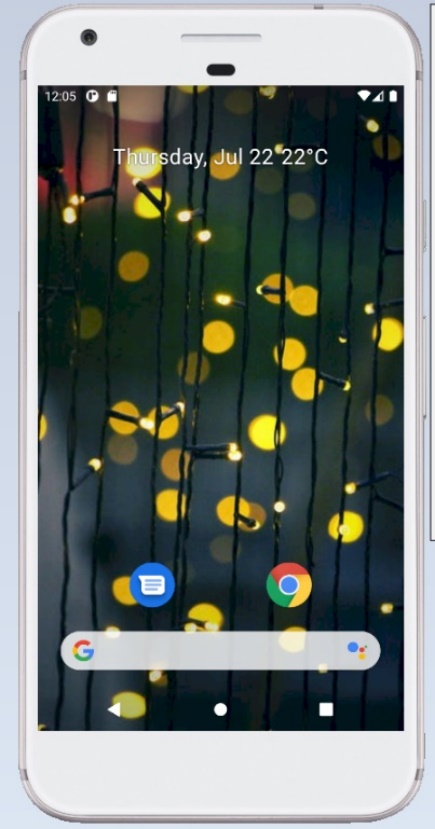
**Activity\_main.xml**

*<?***xml version="1.0" encoding="utf-8"***?>*<**androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:app="http://schemas.android.com/apk/res-auto"  
 xmlns:tools="http://schemas.android.com/tools"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:background="#C5D8D6"  
 tools:context=".MainActivity"**>  
  
 <**TextView  
 android:id="@+id/tvWallpaper"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="@string/changing\_wallpaper\_application"  
 android:textColor="#496726"  
 android:textSize="28sp"  
 android:textStyle="bold"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.242"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.126"** />  
  
 <**Button  
 android:id="@+id/btnChangeWallpaper"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="@string/click\_here\_to\_change\_wallpaer"  
 android:textColor="#092523"  
 android:textColorHighlight="#689535"  
 android:textSize="18sp"  
 app:backgroundTint="@color/teal\_200"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.467"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@+id/tvWallpaper"  
 app:layout\_constraintVertical\_bias="0.282"** />  
</**androidx.constraintlayout.widget.ConstraintLayout**>

Save five images (jpg format) in the drawable folder. In this example one.jpg, two.jpg,three.jpg, four.jpg and five.jpg images are saved in drawable folder.

**package** com.example.lab4;  
  
**import** androidx.appcompat.app.AppCompatActivity;  
  
**import** android.app.WallpaperManager;  
**import** android.graphics.Bitmap;  
**import** android.graphics.drawable.BitmapDrawable;  
**import** android.graphics.drawable.Drawable;  
**import** android.os.Bundle;  
**import** android.view.View;  
**import** android.widget.Button;  
  
**import** java.io.IOException;  
**import** java.util.Timer;  
**import** java.util.TimerTask;  
  
**public class** MainActivity **extends** AppCompatActivity {  
  
 Button **btn**;  
 WallpaperManager **wpm**;  
 Timer **mytimer**;  
 Drawable **drawable**;  
 **int prev**=1;  
  
 @Override  
 **protected void** onCreate(Bundle savedInstanceState) {  
 **super**.onCreate(savedInstanceState);  
 setContentView(R.layout.***activity\_main***);  
 **btn** = findViewById(R.id.***btnChangeWallpaper***);  
  
 **mytimer** = **new** Timer();  
 **wpm** = WallpaperManager.*getInstance*(**this**);  
  
 **btn**.setOnClickListener(**new** View.OnClickListener() {  
 @Override  
 **public void** onClick(View v)  
 {  
 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**

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

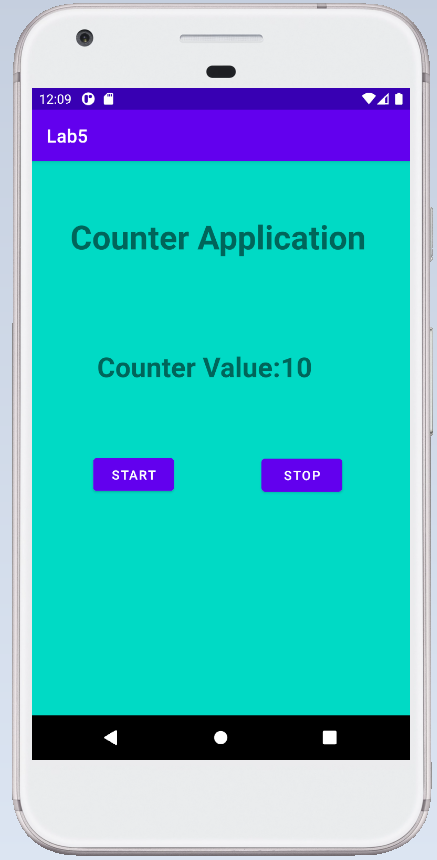
**Activity\_main.xml**

*<?***xml version="1.0" encoding="utf-8"***?>*<**androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:app="http://schemas.android.com/apk/res-auto"  
 xmlns:tools="http://schemas.android.com/tools"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:background="@color/teal\_200"  
 tools:context=".MainActivity"**>  
  
 <**TextView  
 android:id="@+id/tvTitle"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Counter Application"  
 android:textSize="36sp"  
 android:textStyle="bold"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.471"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.104"** />  
  
 <**TextView  
 android:id="@+id/tvValue"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Counter Value:"  
 android:textSize="30sp"  
 android:textStyle="bold"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.401"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.361"** />  
  
 <**Button  
 android:id="@+id/btnstart"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Start"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.207"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.571"** />  
  
 <**Button  
 android:id="@+id/btnstop"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Stop"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.773"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.572"** />  
</**androidx.constraintlayout.widget.ConstraintLayout**>

**MainActivity.java**

**package** com.example.lab5;  
  
**import** androidx.appcompat.app.AppCompatActivity;  
  
**import** android.os.Bundle;  
**import** android.os.Handler;  
**import** android.view.View;  
**import** android.widget.Button;  
**import** android.widget.TextView;  
  
**public class** MainActivity **extends** AppCompatActivity {  
  
 Button **bstart**, **bstop**;  
 TextView **txtcounter**;  
 **int i** = 1;  
 Handler **customHandler** = **new** Handler();  
  
 @Override  
 **protected void** onCreate(Bundle savedInstanceState) {  
 **super**.onCreate(savedInstanceState);  
 setContentView(R.layout.***activity\_main***);  
 **bstart** = findViewById(R.id.***btnstart***);  
 **bstop** = findViewById(R.id.***btnstop***);  
 **txtcounter** = findViewById(R.id.***tvValue***);  
  
 **bstart**.setOnClickListener(**new** View.OnClickListener() {  
 @Override  
 **public void** onClick(View v) {  
 **customHandler**.postDelayed(**updateTimerThread**, 0);  
 }  
 });  
  
 **bstop**.setOnClickListener(**new** View.OnClickListener() {  
 @Override  
 **public void** onClick(View v) {  
 **customHandler**.removeCallbacks(**updateTimerThread**);  
 }  
 });  
 }  
  
 **private final** Runnable **updateTimerThread** = **new** Runnable() {  
 @Override  
 **public void** run() {  
 **txtcounter**.setText(**"Counter Value:"** + **i**);  
 **customHandler**.postDelayed(**this**, 1000);  
 **i**++;  
 }  
  
 };  
}

**OUTPUT:**

****

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

**XML CODE:**

*<?***xml version="1.0" encoding="utf-8"***?>*<**androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:app="http://schemas.android.com/apk/res-auto"  
 xmlns:tools="http://schemas.android.com/tools"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:background="#9BED3C"  
 tools:context=".MainActivity"**>  
  
 <**TextView  
 android:id="@+id/textView"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:background="#4CAF50"  
 android:text="Parsing Data Application"  
 android:textSize="30sp"  
 android:textStyle="bold"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.121"** />  
  
 <**Button  
 android:id="@+id/btnJSON"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Parse JSON data"  
 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="0.347"** />  
  
 <**Button  
 android:id="@+id/btnXML"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Parse XMLdata"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.672"** />  
</**androidx.constraintlayout.widget.ConstraintLayout**>

**JAVA CODE:**

**package** com.example.lab6parsedata;  
  
**import** androidx.appcompat.app.AppCompatActivity;  
  
**import** android.content.Intent;  
**import** android.os.Bundle;  
**import** android.view.View;  
**import** android.widget.Button;  
  
**public class** MainActivity **extends** AppCompatActivity {  
  
 Button **btnxml**;  
 Button **btnJSON**;  
  
 @Override  
 **protected void** onCreate(Bundle savedInstanceState) {  
 **super**.onCreate(savedInstanceState);  
 setContentView(R.layout.***activity\_main***);  
 **btnxml**=findViewById(R.id.***btnXML***);  
 **btnJSON**=findViewById(R.id.***btnJSON***);  
  
 **btnxml**.setOnClickListener(**new** View.OnClickListener() {  
 @Override  
 **public void** onClick(View v) {  
 Intent intent=**new** Intent(MainActivity.**this**, ViewActivity.**class**);  
 intent.putExtra(**"mode"**,1);  
 startActivity(intent);  
 }  
 });  
  
  
 **btnJSON**.setOnClickListener(**new** View.OnClickListener() {  
 @Override  
 **public void** onClick(View v) {  
 Intent intent=**new** Intent(MainActivity.**this**, ViewActivity.**class**);  
 intent.putExtra(**"mode"**,2);  
 startActivity(intent);  
 }  
 });  
  
 }  
}

**XML FILE: INPUT.XML**

*<?***xml version="1.0" encoding="utf-8"** *?>*<**Records**>  
<**City id="1"**>  
 <**City-Name**>Mysore</**City-Name**>  
 <**Latitude**>56</**Latitude**>  
 <**Longitutde**>78</**Longitutde**>  
 <**Temperature**>30</**Temperature**>  
 <**Humidity**>40</**Humidity**>  
</**City**>  
</**Records**>

**JSON FILE: INPUT.JSON**

{  
 **"City"**:{  
 **"City-Name"**: **"Mysore"**,  
 **"Latitude"**: **"56"**,  
 **"Longitude"**: **"78"**,  
 **"Temperature"**: **"30"**,  
 **"Humidity"**: **"40"** }  
}

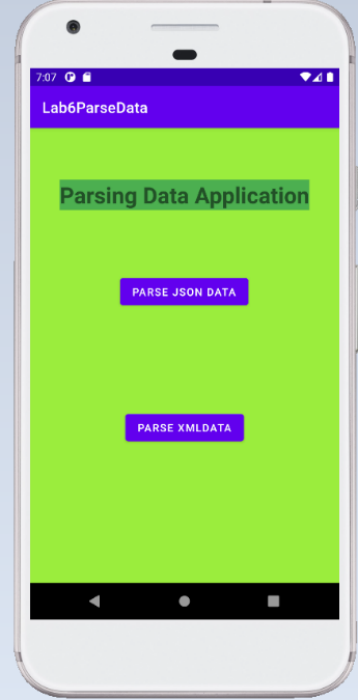
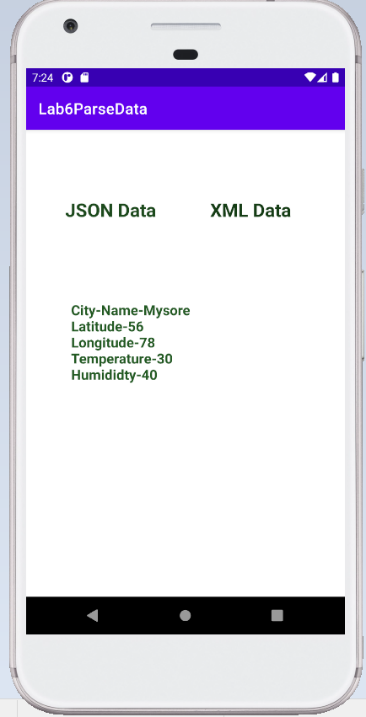
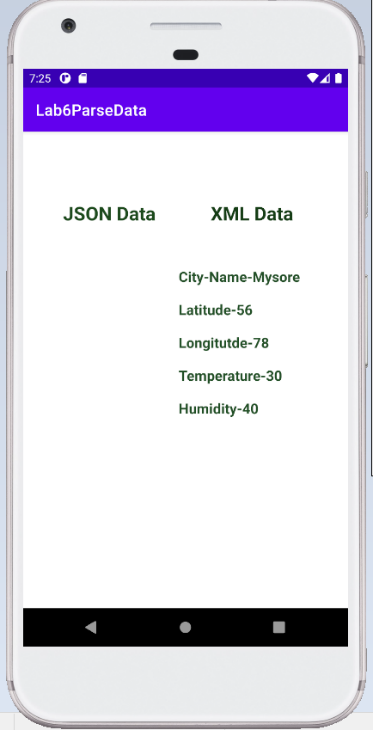
**XML CODE: ViewActivity.XML**

*<?***xml version="1.0" encoding="utf-8"***?>*<**androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:app="http://schemas.android.com/apk/res-auto"  
 xmlns:tools="http://schemas.android.com/tools"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 tools:context=".ViewActivity"**>  
  
 <**TextView  
 android:id="@+id/ParseJSONdata"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.232"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.464"** />  
  
 <**TextView  
 android:id="@+id/Parsexmldata"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.783"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.462"** />  
  
 <**TextView  
 android:id="@+id/textView4"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="JSON Data"  
 android:textSize="24sp"  
 android:textStyle="bold"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.173"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.152"** />  
  
 <**TextView  
 android:id="@+id/textView5"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="XML Data"  
 android:textSize="24sp"  
 android:textStyle="bold"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.775"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.152"** />  
</**androidx.constraintlayout.widget.ConstraintLayout**>

**JAVA CODE: ViewMainActivuty.Java**

**package** com.example.lab6parsedata;  
  
**import** androidx.annotation.RequiresApi;  
**import** androidx.appcompat.app.AppCompatActivity;  
  
**import** android.os.Build;  
**import** android.os.Bundle;  
**import** android.util.Log;  
**import** android.widget.TextView;  
  
**import** org.json.JSONException;  
**import** org.json.JSONObject;  
**import** org.w3c.dom.Document;  
**import** org.w3c.dom.Element;  
**import** org.w3c.dom.Node;  
**import** org.w3c.dom.NodeList;  
**import** org.xml.sax.SAXException;  
  
**import** java.io.IOException;  
**import** java.io.InputStream;  
  
**import** javax.xml.parsers.DocumentBuilder;  
**import** javax.xml.parsers.DocumentBuilderFactory;  
**import** javax.xml.parsers.ParserConfigurationException;  
  
**public class** ViewActivity **extends** AppCompatActivity {  
  
 **int mode**;  
 TextView **JSONdata**,**XMLdata**;  
 @Override  
 **protected void** onCreate(Bundle savedInstanceState) {  
 **super**.onCreate(savedInstanceState);  
 setContentView(R.layout.***activity\_view***);  
 **JSONdata**=findViewById(R.id.***ParseJSONdata***);  
 **XMLdata**=findViewById(R.id.***Parsexmldata***);  
  
 **mode**=getIntent().getIntExtra(**"mode"**,0);  
  
 **if**(**mode**==1)  
 {  
 parseXML();  
 }  
 **if**(**mode**==2){  
 parseJSON();  
 }  
 }  
 **public void** parseXML(){  
  
 **try** {  
 InputStream in=getAssets().open(**"input.xml"**);  
 DocumentBuilderFactory documentBuilderFactory=DocumentBuilderFactory.*newInstance*();  
  
 DocumentBuilder documentBuilder=documentBuilderFactory.newDocumentBuilder();  
 Document document=documentBuilder.parse(in);  
 NodeList cityList=document.getElementsByTagName(**"City"**);  
 **for**(**int** i=0; i<cityList.getLength();i++)  
 {  
 Node c=cityList.item(i);  
 **if**(c.getNodeType()==Node.***ELEMENT\_NODE***)  
 {  
 Element city=(Element)c;  
  
 NodeList cityDetailList=city.getChildNodes();  
  
 **for**(**int** j=0;j<cityDetailList.getLength();j++){  
 Node n=cityDetailList.item(j);  
  
 **if**(n.getNodeType()==Node.***ELEMENT\_NODE***){  
 Element cityDetail=(Element)n;  
  
 String tagValue=cityDetail.getTagName();  
 String value=cityDetail.getTextContent();  
  
 Log.*e*(**"data"**,**"parseXML:"**+value);  
 **XMLdata**.append(tagValue+**"-"**+value+**"\n"**);  
 **XMLdata**.append(**"\n"**);  
 }  
 }  
; }  
 }  
  
 } **catch** (IOException e) {  
 e.printStackTrace();  
 } **catch** (ParserConfigurationException e) {  
 e.printStackTrace();  
 } **catch** (SAXException e) {  
 e.printStackTrace();  
 }  
 }  
  
 *//read the file -->inputStream  
 //array= inputStream  
 //String(array)* **public void** parseJSON(){  
 String strData=**null**;  
  
 **try**{  
 InputStream in=getAssets().open(**"input.json"**);  
 **int** size=in.available();  
 **byte** buffer[]=**new byte**[size];  
 in.read(buffer);  
 strData=**new** String(buffer);  
 Log.*e*(**"data"**,**"parseJSON"**+strData);  
  
 JSONObject jsonObject=**new** JSONObject(strData);  
 Log.*e*(**"data"**,**"parseJSON"**+(jsonObject));  
 Log.*e*(**"data"**,**"parseJSON"**+jsonObject.getClass().getName());  
  
 JSONObject cityObject=jsonObject.getJSONObject(**"City"**);  
 String cityName=cityObject.getString(**"City-Name"**);  
 String latitude=cityObject.getString(**"Latitude"**);  
 String longitude=cityObject.getString(**"Longitude"**);  
 String temperature=cityObject.getString(**"Temperature"**);  
 String humidity=cityObject.getString(**"Humidity"**);  
  
 Log.*e*(**"data"**,**"parseJSON"**+cityName);  
 **JSONdata**.setText(cityName+**"\n"**);  
 **JSONdata**.append(latitude+**"\n"**);  
 **JSONdata**.append(longitude+**"\n"**);  
 **JSONdata**.append(temperature+**"\n"**);  
 **JSONdata**.append(humidity+**"\n"**);  
  
 } **catch** (IOException e) {  
 e.printStackTrace();  
 } **catch** (JSONException e) {  
 e.printStackTrace();  
 }  
 }  
}

**OUTPUT:**

**  **

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

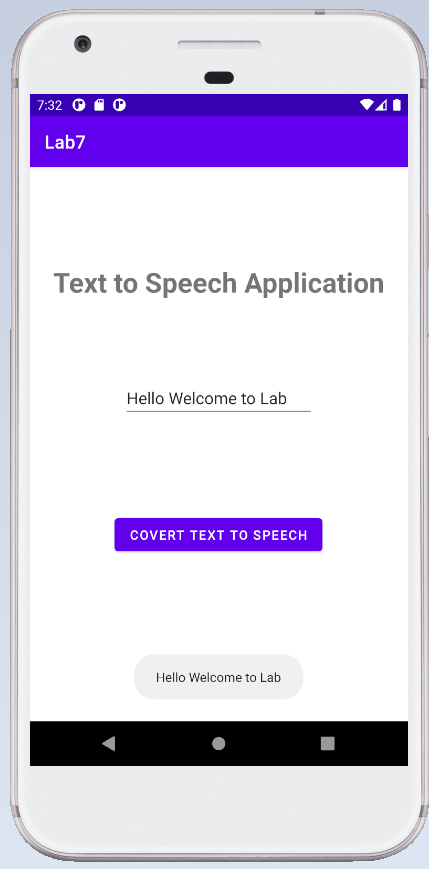
**XML-CODE:**

*<?***xml version="1.0" encoding="utf-8"***?>*<**androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:app="http://schemas.android.com/apk/res-auto"  
 xmlns:tools="http://schemas.android.com/tools"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:background="@color/white"  
 tools:context=".MainActivity"**>  
  
 <**TextView  
 android:id="@+id/textView"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="@string/text\_to\_speech\_application"  
 android:textSize="30sp"  
 android:textStyle="bold"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.186"** />  
  
 <**EditText  
 android:id="@+id/edit1"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:autofillHints=""  
 android:ems="10"  
 android:hint="@string/enter\_text"  
 android:inputType="textPersonName"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.41"** />  
  
 <**Button  
 android:id="@+id/btnClick"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:onClick="ToConvet"  
 android:text="@string/covert\_text\_to\_speech"  
 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="0.677"** />  
</**androidx.constraintlayout.widget.ConstraintLayout**>

**JAVA CODE:**

**package** com.example.lab7;  
  
**import** androidx.appcompat.app.AppCompatActivity;  
  
**import** android.os.Bundle;  
**import** android.speech.tts.TextToSpeech;  
**import** android.view.View;  
**import** android.widget.Button;  
**import** android.widget.EditText;  
**import** android.widget.Toast;  
  
**import** java.util.Locale;  
  
**public class** MainActivity **extends** AppCompatActivity {  
  
 EditText **et1**;  
 Button **btn**;  
 TextToSpeech **t1**;  
  
 @Override  
 **protected void** onCreate(Bundle savedInstanceState) {  
 **super**.onCreate(savedInstanceState);  
 setContentView(R.layout.***activity\_main***);  
 **et1**=findViewById(R.id.***edit1***);  
 **btn**=findViewById(R.id.***btnClick***);  
  
 */\* t1=new TextToSpeech(getApplicationContext(), new TextToSpeech.OnInitListener() {  
 @Override  
 public void onInit(int status) {  
 if (status != TextToSpeech.ERROR) {  
 t1.setLanguage(Locale.UK);  
 }  
 }  
 });\*/* **t1**=**new** TextToSpeech(getApplicationContext(), **new** TextToSpeech.OnInitListener() {  
 @Override  
 **public void** onInit(**int** status) {  
 **if**(status==TextToSpeech.***SUCCESS***) {  
 **int** lang=**t1**.setLanguage(Locale.***ENGLISH***);  
 }  
 }  
 });  
  
 */\*public void ToConvet(View view) {  
 String tospeak = et1.getText().toString();  
 Toast.makeText(getBaseContext(),tospeak,Toast.LENGTH\_LONG).show();  
 t1.speak(tospeak,TextToSpeech.QUEUE\_FLUSH,null);\*/* **btn**.setOnClickListener(**new** View.OnClickListener() {  
 @Override  
 **public void** onClick(View v) {  
 String s=**et1**.getText().toString();  
 Toast.*makeText*(getBaseContext(),s,Toast.***LENGTH\_LONG***).show();  
 **int** speech=**t1**.speak(s,TextToSpeech.***QUEUE\_FLUSH***,**null**);  
 }  
 });  
  
 }  
}

**OUTPUT:**



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

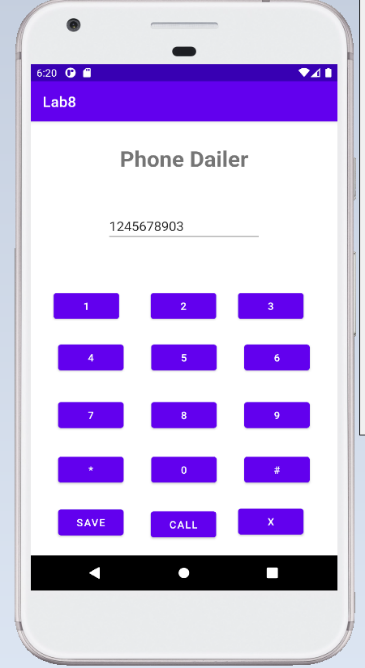
**XML CODE:**

*<?***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"**>  
  
 <**EditText  
 android:id="@+id/display"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:ems="10"  
 android:inputType="phone"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.22"** />  
  
 <**Button  
 android:id="@+id/btn2"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="2"  
 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="0.418"** />  
  
 <**Button  
 android:id="@+id/btn1"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="1"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.095"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.418"** />  
  
 <**Button  
 android:id="@+id/btn3"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="3"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.86"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.418"** />  
  
 <**Button  
 android:id="@+id/btn5"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginTop="136dp"  
 android:text="5"  
 app:layout\_constraintEnd\_toStartOf="@+id/btn6"  
 app:layout\_constraintHorizontal\_bias="0.5"  
 app:layout\_constraintStart\_toEndOf="@+id/btn4"  
 app:layout\_constraintTop\_toBottomOf="@+id/display"** />  
  
 <**Button  
 android:id="@+id/btn4"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginTop="136dp"  
 android:text="4"  
 app:layout\_constraintEnd\_toStartOf="@+id/btn5"  
 app:layout\_constraintHorizontal\_bias="0.5"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@+id/display"** />  
  
 <**Button  
 android:id="@+id/btn6"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginTop="136dp"  
 android:text="6"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.5"  
 app:layout\_constraintStart\_toEndOf="@+id/btn5"  
 app:layout\_constraintTop\_toBottomOf="@+id/display"** />  
  
 <**Button  
 android:id="@+id/btn7"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginTop="216dp"  
 android:text="7"  
 app:layout\_constraintEnd\_toStartOf="@+id/btn8"  
 app:layout\_constraintHorizontal\_bias="0.5"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@+id/display"** />  
  
 <**Button  
 android:id="@+id/btn8"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginTop="216dp"  
 android:text="8"  
 app:layout\_constraintEnd\_toStartOf="@+id/btn9"  
 app:layout\_constraintHorizontal\_bias="0.5"  
 app:layout\_constraintStart\_toEndOf="@+id/btn7"  
 app:layout\_constraintTop\_toBottomOf="@+id/display"** />  
  
 <**Button  
 android:id="@+id/btn9"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginTop="216dp"  
 android:text="9"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.5"  
 app:layout\_constraintStart\_toEndOf="@+id/btn8"  
 app:layout\_constraintTop\_toBottomOf="@+id/display"** />  
  
 <**Button  
 android:id="@+id/btnstar"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginTop="292dp"  
 android:text="\*"  
 app:layout\_constraintEnd\_toStartOf="@+id/btn0"  
 app:layout\_constraintHorizontal\_bias="0.5"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@+id/display"** />  
  
 <**Button  
 android:id="@+id/btn0"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginTop="292dp"  
 android:text="0"  
 app:layout\_constraintEnd\_toStartOf="@+id/btnhash"  
 app:layout\_constraintHorizontal\_bias="0.5"  
 app:layout\_constraintStart\_toEndOf="@+id/btnstar"  
 app:layout\_constraintTop\_toBottomOf="@+id/display"** />  
  
 <**Button  
 android:id="@+id/btnhash"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginTop="292dp"  
 android:text="#"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.5"  
 app:layout\_constraintStart\_toEndOf="@+id/btn0"  
 app:layout\_constraintTop\_toBottomOf="@+id/display"** />  
  
 <**Button  
 android:id="@+id/btnSave"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginTop="364dp"  
 android:text="Save"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.114"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@+id/display"  
 app:layout\_constraintVertical\_bias="0.05"** />  
  
 <**Button  
 android:id="@+id/btnCall"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginTop="200dp"  
 android:text="Call"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.498"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@+id/display"  
 app:layout\_constraintVertical\_bias="0.896"** />  
  
 <**Button  
 android:id="@+id/btnClear"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginTop="364dp"  
 android:text="X"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.86"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@+id/display"  
 app:layout\_constraintVertical\_bias="0.0"** />  
  
 <**TextView  
 android:id="@+id/textView"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Phone Dailer"  
 android:textSize="30sp"  
 android:textStyle="bold"  
 app:layout\_constraintBottom\_toBottomOf="@+id/btnCall"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.057"** />  
  
</**androidx.constraintlayout.widget.ConstraintLayout**>

**JAVA CODE**

**package** com.example.lab8;  
  
**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 {  
  
 EditText **display**;  
 Button **btn1**,**btn2**,**btn3**,**btn4**,**btn5**,**btn6**,**btn7**,**btn8**,**btn9**,**btn0**;  
 Button **btnSave**,**btnCall**,**btnStar**,**btnHash**,**btnRemove**;  
  
 @Override  
 **protected void** onCreate(Bundle savedInstanceState) {  
 **super**.onCreate(savedInstanceState);  
 setContentView(R.layout.***activity\_main***);  
 **btn0**=findViewById(R.id.***btn0***);  
 **btn1**=findViewById(R.id.***btn1***);  
 **btn2**=findViewById(R.id.***btn2***);  
 **btn3**=findViewById(R.id.***btn3***);  
 **btn4**=findViewById(R.id.***btn4***);  
 **btn5**=findViewById(R.id.***btn5***);  
 **btn6**=findViewById(R.id.***btn6***);  
 **btn7**=findViewById(R.id.***btn7***);  
 **btn8**=findViewById(R.id.***btn8***);  
 **btn9**=findViewById(R.id.***btn9***);  
  
 **btnSave**=findViewById(R.id.***btnSave***);  
 **btnCall**=findViewById(R.id.***btnCall***);  
 **btnStar**=findViewById(R.id.***btnstar***);  
 **btnHash**=findViewById(R.id.***btnhash***);  
 **btnRemove**=findViewById(R.id.***btnClear***);  
  
 **display**=findViewById(R.id.***display***);  
  
 **btn0**.setOnClickListener(**new** View.OnClickListener() {  
 @Override  
 **public void** onClick(View v) {  
 **display**.append(**"0"**);  
 }  
 });  
  
 **btn1**.setOnClickListener(**new** View.OnClickListener() {  
 @Override  
 **public void** onClick(View v) {  
 **display**.append(**"1"**);  
 }  
 });  
  
 **btn2**.setOnClickListener(**new** View.OnClickListener() {  
 @Override  
 **public void** onClick(View v) {  
 **display**.append(**"2"**);  
 }  
 });  
  
 **btn3**.setOnClickListener(**new** View.OnClickListener() {  
 @Override  
 **public void** onClick(View v) {  
 **display**.append(**"3"**);  
 }  
 });  
  
 **btn4**.setOnClickListener(**new** View.OnClickListener() {  
 @Override  
 **public void** onClick(View v) {  
 **display**.append(**"4"**);  
 }  
 });  
  
 **btn5**.setOnClickListener(**new** View.OnClickListener() {  
 @Override  
 **public void** onClick(View v) {  
 **display**.append(**"5"**);  
 }  
 });  
  
 **btn6**.setOnClickListener(**new** View.OnClickListener() {  
 @Override  
 **public void** onClick(View v) {  
 **display**.append(**"6"**);  
 }  
 });  
  
 **btn7**.setOnClickListener(**new** View.OnClickListener() {  
 @Override  
 **public void** onClick(View v) {  
 **display**.append(**"7"**);  
 }  
 });  
  
 **btn8**.setOnClickListener(**new** View.OnClickListener() {  
 @Override  
 **public void** onClick(View v) {  
 **display**.append(**"8"**);  
 }  
 });  
  
 **btn9**.setOnClickListener(**new** View.OnClickListener() {  
 @Override  
 **public void** onClick(View v) {  
 **display**.append(**"9"**);  
 }  
 });  
  
 **btnStar**.setOnClickListener(**new** View.OnClickListener() {  
 @Override  
 **public void** onClick(View v) {  
 **display**.append(**"\*"**);  
 }  
 });  
  
 **btnHash**.setOnClickListener(**new** View.OnClickListener() {  
 @Override  
 **public void** onClick(View v) {  
 **display**.append(**"#"**);  
 }  
 });  
  
 **btnCall**.setOnClickListener(**new** View.OnClickListener() {  
 @Override  
 **public void** onClick(View v) {  
  
 String data=**display**.getText().toString();  
 Intent intent= **new** Intent(Intent.***ACTION\_DIAL***);  
  
 intent.setData(Uri.*parse*(**"tel:"**+data));  
 startActivity(intent);  
 }  
 });  
  
 **btnSave**.setOnClickListener(**new** View.OnClickListener() {  
 @Override  
 **public void** onClick(View v) {  
 String data = **display**.getText().toString();  
  
 Intent intent = **new** Intent(ContactsContract.Intents.Insert.***ACTION***);  
  
 intent.setType(ContactsContract.RawContacts.***CONTENT\_TYPE***);  
  
 intent.putExtra(ContactsContract.Intents.Insert.***NAME***,**"Unknown"**);  
 intent.putExtra(ContactsContract.Intents.Insert.***PHONE***,data);  
  
 startActivity(intent);  
  
 }  
 });  
  
 **btnRemove**.setOnClickListener(**new** View.OnClickListener() {  
 @Override  
 **public void** onClick(View v) {  
 String data = **display**.getText().toString();  
  
 **if**(data.length()>0){  
 String val = data.substring(0,data.length()-1);  
 **display**.setText(val);  
 }  
  
 **else**{  
 **display**.setText(**""**);  
 }  
  
 }  
 });  
 }  
}

OUTPUT:



**(PART-B): Develop an application that makes use of the clipboard framework for copying and pasting of the text. The activity consists of two EditText controls and two Buttons to trigger the copy and paste functionality.**

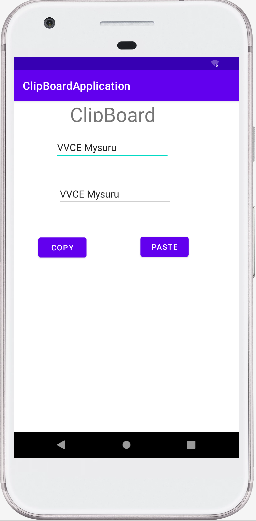
XML-CODE:

<?xml version="1.0" encoding="utf-8"?>  
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:app="http://schemas.android.com/apk/res-auto"  
 xmlns:tools="http://schemas.android.com/tools"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 tools:context=".MainActivity">  
  
 <TextView  
 android:id="@+id/textView"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_alignParentEnd="true"  
 android:layout\_alignParentBottom="true"  
 android:layout\_marginEnd="152dp"  
 android:layout\_marginBottom="564dp"  
 android:text="ClipBoard"  
 android:textSize="36sp" />  
  
 <EditText  
 android:id="@+id/editText1"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_alignParentEnd="true"  
 android:layout\_alignParentBottom="true"  
 android:layout\_marginEnd="127dp"  
 android:layout\_marginBottom="496dp"  
 android:ems="10"  
 android:hint="Enter the text here"  
 android:inputType="textPersonName"  
 android:text="" />  
  
 <EditText  
 android:id="@+id/editText2"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_alignParentEnd="true"  
 android:layout\_alignParentBottom="true"  
 android:layout\_marginEnd="122dp"  
 android:layout\_marginBottom="411dp"  
 android:ems="10"  
 android:hint="Copied Text"  
 android:inputType="textPersonName"  
 android:text="" />  
  
 <Button  
 android:id="@+id/copy"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_alignParentEnd="true"  
 android:layout\_alignParentBottom="true"  
 android:layout\_marginEnd="279dp"  
 android:onClick="copy"  
 android:layout\_marginBottom="312dp"  
 android:text="Copy" />  
  
 <Button  
 android:id="@+id/paste"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_alignParentEnd="true"  
 android:layout\_alignParentBottom="true"  
 android:layout\_marginEnd="92dp"  
 android:onClick="paste"  
 android:layout\_marginBottom="313dp"  
 android:text="Paste" />  
</RelativeLayout>

JAVA-CODE:

import androidx.appcompat.app.AppCompatActivity;  
import android.content.ClipData;  
import android.content.ClipboardManager;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.EditText;  
public class MainActivity extends AppCompatActivity {  
 ClipboardManager cbm;  
 ClipData cd;  
 EditText e1,e2;  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.activity\_main);  
 e1 = (EditText)findViewById(R.id.editText1);  
 e2 = (EditText)findViewById(R.id.editText2);  
 cbm =(ClipboardManager)getSystemService(CLIPBOARD\_SERVICE);  
 }  
 public void copy(View V){  
 String text = e1.getText().toString();  
 cd = ClipData.newPlainText("text",text);  
 cbm.setPrimaryClip(cd);  
 }  
 public void paste(View V){  
 ClipData cd2 = cbm.getPrimaryClip();  
 ClipData.Item item = cd2.getItemAt(0);  
 String copied = item.getText().toString();  
 e2.setText(copied);  
 }  
}

OUTPUT:



**(PART-B): Develop an application to demonstrate the use of Asynchronous tasks in android. The asynchronous task should implement the functionality of a simple moving banner. On pressing the Start Task button, the banner message should scroll from right to left. On pressing the Stop Task button, the banner message should stop. Let the banner message be “Demonstration of Asynchronous Task”.**

XML-CODE:

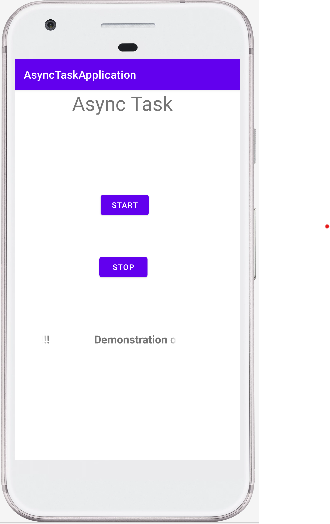
<?xml version="1.0" encoding="utf-8"?>  
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:app="http://schemas.android.com/apk/res-auto"  
 xmlns:tools="http://schemas.android.com/tools"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 tools:context=".MainActivity">  
 <TextView  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_alignParentEnd="true"  
 android:layout\_alignParentBottom="true"  
 android:layout\_marginEnd="123dp"  
 android:layout\_marginBottom="630dp"  
 android:text="Async Task"  
 android:textSize="36sp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintLeft\_toLeftOf="parent"  
 app:layout\_constraintRight\_toRightOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent" />  
 <Button  
 android:id="@+id/buttonstart"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_alignParentEnd="true"  
 android:layout\_alignParentBottom="true"  
 android:layout\_marginEnd="167dp"  
 android:layout\_marginBottom="441dp"  
 android:text="Start" />  
 <Button  
 android:id="@+id/buttonstop"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_alignParentEnd="true"  
 android:layout\_alignParentBottom="true"  
 android:layout\_marginEnd="169dp"  
 android:layout\_marginBottom="328dp"  
 android:text="Stop" />  
 <TextView  
 android:id="@+id/marqueeText"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_alignParentEnd="true"  
 android:layout\_alignParentBottom="true"  
 android:layout\_marginStart="50dp"  
 android:layout\_marginTop="250dp"  
 android:layout\_marginEnd="117dp"  
 android:layout\_marginBottom="207dp"  
 android:ellipsize="marquee"  
 android:marqueeRepeatLimit="marquee\_forever"  
 android:scrollHorizontally="true"  
 android:singleLine="true"  
 android:text="Demonstration of Asynchronous Task !!!!"  
 android:textSize="20sp"  
 android:textStyle="bold"  
 android:visibility="invisible" />  
</RelativeLayout>

JAVA-CODE:

import androidx.appcompat.app.AppCompatActivity;  
import android.os.AsyncTask;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Button;  
import android.widget.TextView;  
import android.widget.Toast;  
public class MainActivity extends AppCompatActivity {  
 TextView marqtxt;  
 Button btnstart, btnstop;  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.activity\_main);  
 marqtxt = (TextView) findViewById(R.id.marqueeText);  
 btnstart = (Button) findViewById(R.id.buttonstart);  
 btnstop = (Button) findViewById(R.id.buttonstop);  
 btnstart.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 ExampleAsyncTask task = new ExampleAsyncTask();  
 task.execute();  
 }  
 });  
 btnstop.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 marqtxt.setSelected(false);  
 marqtxt.setVisibility(View.INVISIBLE);  
 }  
 });  
 }  
 private class ExampleAsyncTask extends AsyncTask<String, String,String>{  
 @Override  
 protected void onPreExecute() {  
 super.onPreExecute();  
 Toast.makeText(getBaseContext(),"Async Task Started!!!!!!!!",Toast.LENGTH\_SHORT).show();  
 }

@Override  
 protected String doInBackground(String... strings) {  
 try {  
 Thread.sleep(250);  
 }  
 catch (InterruptedException e){  
 e.printStackTrace();  
 }  
 return null;  
 }  
 @Override  
 protected void onPostExecute(String s) {  
 super.onPostExecute(s);  
 marqtxt.setVisibility(View.VISIBLE);  
 marqtxt.setSelected(true);  
 }  
 }  
}

OUTPUT:



**(PART-B): Create an application to demonstrate a basic media player that allows the user to Forward Backward, Play and Pause an audio. Also, make use of the indicator in the seek bar to move the audio forward or backward as required.**

XML-CODE:

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

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

xmlns:app="http://schemas.android.com/apk/res-auto"

xmlns:tools="http://schemas.android.com/tools"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

tools:context=".MainActivity">

<SeekBar

android:id="@+id/seekBar"

android:layout\_width="255dp"

android:layout\_height="28dp"

android:layout\_alignParentEnd="true"

android:layout\_alignParentBottom="true"

android:layout\_marginEnd="66dp"

android:layout\_marginBottom="311dp" />

<ImageButton

android:id="@+id/rewind"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_alignParentEnd="true"

android:layout\_alignParentBottom="true"

android:layout\_marginEnd="256dp"

android:layout\_marginBottom="219dp"

app:srcCompat="@android:drawable/ic\_media\_rew" />

<ImageButton

android:id="@+id/playButton"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_alignParentEnd="true"

android:layout\_alignParentBottom="true"

android:layout\_marginEnd="168dp"

android:layout\_marginBottom="223dp"

app:srcCompat="@android:drawable/ic\_lock\_power\_off" />

<ImageButton

android:id="@+id/forward"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_alignParentEnd="true"

android:layout\_alignParentBottom="true"

android:layout\_marginEnd="79dp"

android:layout\_marginBottom="220dp"

app:srcCompat="@android:drawable/ic\_media\_ff" />

</RelativeLayout>

Java CODE:

import androidx.appcompat.app.AppCompatActivity;

import android.annotation.SuppressLint;

import android.media.MediaPlayer;

import android.os.Bundle;

import android.os.Handler;

import android.view.View;

import android.widget.ImageButton;

import android.widget.SeekBar;

import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

private ImageButton playButton,forward,rewind;

private SeekBar seekbar;

private MediaPlayer mediaPlayer;

private Handler handler = new Handler();

@SuppressLint("ClickableViewAccessibility")

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

playButton = findViewById(R.id.playButton);

forward = findViewById(R.id.forward);

rewind = findViewById(R.id.rewind);

seekbar = findViewById(R.id.seekBar);

prepareMediaPlayer();

seekbar.setMax(100);

playButton.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

if(mediaPlayer.isPlaying()){

handler.removeCallbacks(updater);

mediaPlayer.pause();

}else {

mediaPlayer.start();

updateSeekBar();

}

}

});

forward.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

if(mediaPlayer.getDuration()>mediaPlayer.getCurrentPosition() + 10000){

mediaPlayer.seekTo(mediaPlayer.getCurrentPosition() + 10000);

updateSeekBar();

}

}

});

rewind.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

if(mediaPlayer.getCurrentPosition()>10000){

mediaPlayer.seekTo(mediaPlayer.getCurrentPosition() - 10000);

updateSeekBar();

}

}

});

seekbar.setOnTouchListener((v, event) -> {

SeekBar s = (SeekBar) v;

int position = (mediaPlayer.getDuration()/100)\*s.getProgress();

mediaPlayer.seekTo(position);

return false;

});

mediaPlayer.setOnCompletionListener(new MediaPlayer.OnCompletionListener() {

@Override

public void onCompletion(MediaPlayer mp) {

seekbar.setProgress(0);

mediaPlayer.reset();

prepareMediaPlayer();

}

});

}

private void prepareMediaPlayer (){

try {

mediaPlayer =MediaPlayer.create(this,R.raw.poc);

}catch (Exception e){

Toast.makeText(this, e.getMessage(), Toast.LENGTH\_LONG).show();

}

}

private Runnable updater = new Runnable() {

@Override

public void run() {

updateSeekBar();

}

};

private void updateSeekBar(){

if(mediaPlayer.isPlaying()){

seekbar.setProgress((int)((float)mediaPlayer.getCurrentPosition()/mediaPlayer.getDuration()\*100));

handler.postDelayed(updater,1000);

}

}

}