REVA UNIVERSITY
Bengaluru, India

Mobile Application Development Lab: B20EF0606

LAB-Manual

Course Title	Mobile Application Development Lab				Course Type		HC	
Course Code	B20EF0606	Credits	1		Lab		VI Semester	
Course Structure	TLP	Credits	Contact Hours	Work Load	Total Number of Classes Per Semester		Assessment in Weightage	
	Theory	-	-	-				
	Practice	1	2	2	Theory	Practical	CIE	SEE
	-	-	-	-				
	Total	**1**	**2**	**2**	**-**	**26**	**25**	**25**

COURSE OVERVIEW:

The Android Laboratory is a 26-hours module within the Course on Mobile Application Laboratory, for the undergraduate students of REVA University . The goal of this module is to introduce the basics of mobile applications development for Android-based terminals . we aim at presenting the essential concepts of APP development and deployments for mobile and battery-constrained devices, at introducing the main characteristics and components of the Android projects, and at providing the minimum know-how required to develop (from scratch) mobile applications for the Android architecture, at increasing levels of complexity.

COURSE OBJECTIVE (S):

1. Creating robust mobile applications and learn how to integrate them with other services.
2. Creating intuitive, reliable mobile apps using the android services and components.
3. Demonstrate the use of knowledge of Android Studio development tool.
4. Creating intuitive, reliable mobile apps using the android services and components.

COURSE OUTCOMES (COs)

After the completion of the course, the student will be able to:

CO#	Course Outcomes	POs	PSOs
CO-1	Build enterprise level mobile applications with Android	1,2,3,4,5,6,9,11,12	1,2,3
CO-2	Understand both the basic and advanced concepts of Android.	1,2,3,4,5,6,9,11,12	1,2,3
CO-3	Understand why use Android over Java.	1,2,3,4,5,6,9,11,12	1,2,3
CO-4	Install and configure Android Studio.	1,2,3,4,5,6,9,11,12	1,2,3

CO-5	Explain and use key Android programming concepts.	1,2,3,4,5,6,9,11,12	1,2,3
CO-6	Deploy the App application in different devices.	1,2,3,4,5,6,9,11,12	1,2,3

BLOOM'S LEVELOF THECOURSE OUTCOMES

CO#	Bloom's Level					
	Remember (L1)	Understand (L2)	Apply (L3)	Analyze (L4)	Evaluate (L5)	Create (L6)
CO-1		√				
CO-2			√			
CO-3					√	
CO-4			√			
CO-5					√	
CO-6			√			

COURSE ARTICULATION MATRIX

CO#/ Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO-1	3	3	3	3	3	3			3		3	3	3	3	3
CO-2	3	3	3	3	3	3			3		3	3	3	3	3
CO-3	3	2	3	3	3	3			3		3	3	3	3	3
CO-4	3	3	3	3	3	3			3		3	3	3	3	3
CO-5	3	3	3	3	3	3			3		3	3	3	3	3
CO-6	3	2	3	3	3	3			3		3	3	3	3	3

Note:1-Low,2-Medium,3-High

PART-A

Programs	Problem statements
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 centre. 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.
2	Develop an Android application using controls like Button, TextView, EditText for designing a calculator having basic functionality like Addition, Subtraction, Multiplication, and Division.
3	Create an android application to implement the spinner class using java
4	Create an android application to Demonstrate the check box and radio button
5	Create an android application to demonstrate Scroll View
6	Create a SIGN Up activity with Username and Password. Validation of password should happen based on the following rules: a. Password should contain uppercase and lowercase letters. b. Password should contain letters and numbers. c. Password should contain special characters. d. 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.
7	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.
8	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
9	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
10	Develop a simple application with one Edit Text 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.
11	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.
12	Create an android application to perform crud operation using SQL_Lite database

PART-B

Project	Mini Projects

Android Studio

Installation steps:

System Requirements

- Microsoft Windows 7/8/10 (32-bit or 64-bit)
- 4 GB RAM minimum, 8 GB RAM recommended (plus 1 GB for the Android Emulator)
- 2 GB of available disk space minimum, 4 GB recommended (500 MB for IDE plus 1.5 GB for Android SDK and emulator system image)
- 1280 x 800 minimum screen resolution

Installation Guide

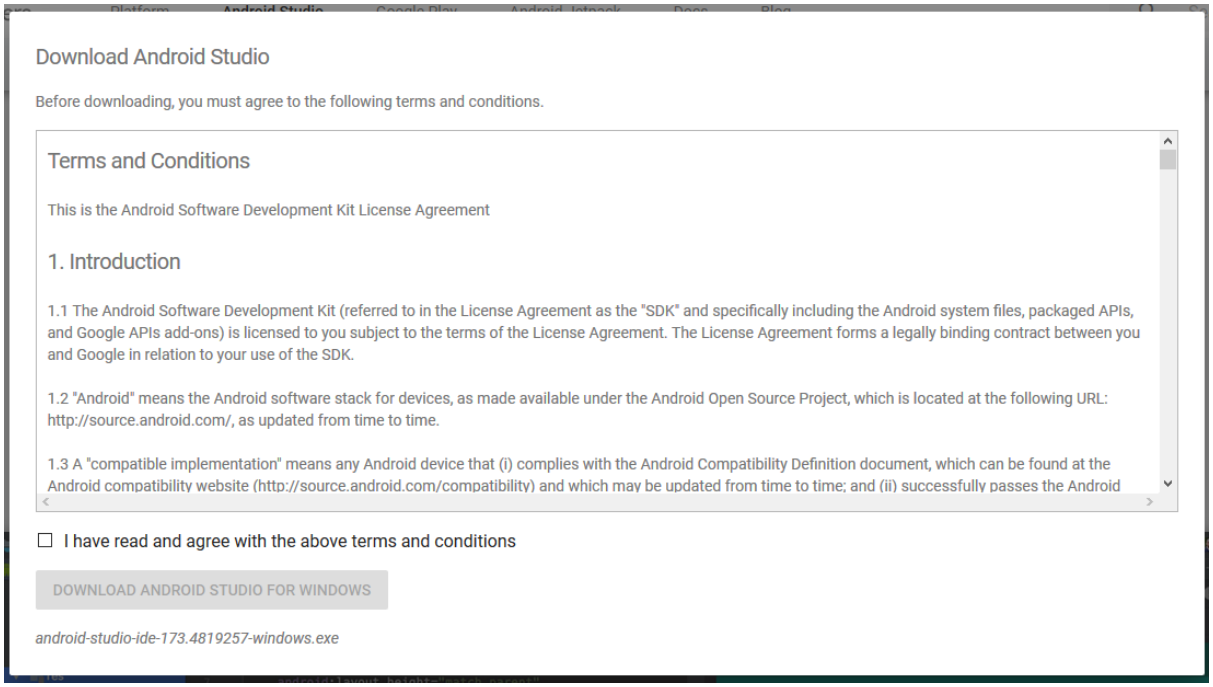
Step 1: Head over to **this link** to get the Android Studio executable or zip file.
Step 2: Click on the **Download Android Studio** Button.

Android Studio provides the fastest tools for building apps on every type of Android device.

DOWNLOAD ANDROID STUDIO

4.1.3 for Windows 64-bit (896 MiB)

Click on the “I have read and agree with the above terms and conditions” checkbox followed by the download button.

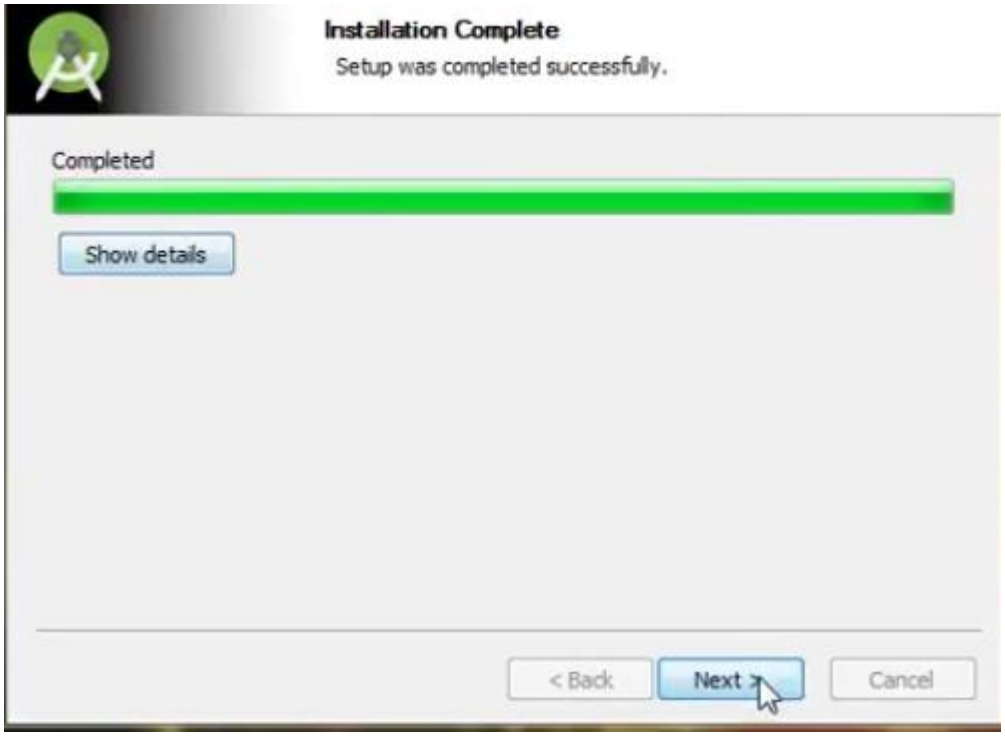


Click on the Save file button in the appeared prompt box and the file will start downloading.

Step 3: After the downloading has finished, open the file from downloads and run it. It will prompt the following dialog box.

Click on next. In the next prompt, it'll ask for a path for installation. Choose a path and hit next.

Step 4: It will start the installation, and once it is completed, it will be like the image shown below.



Click on next.

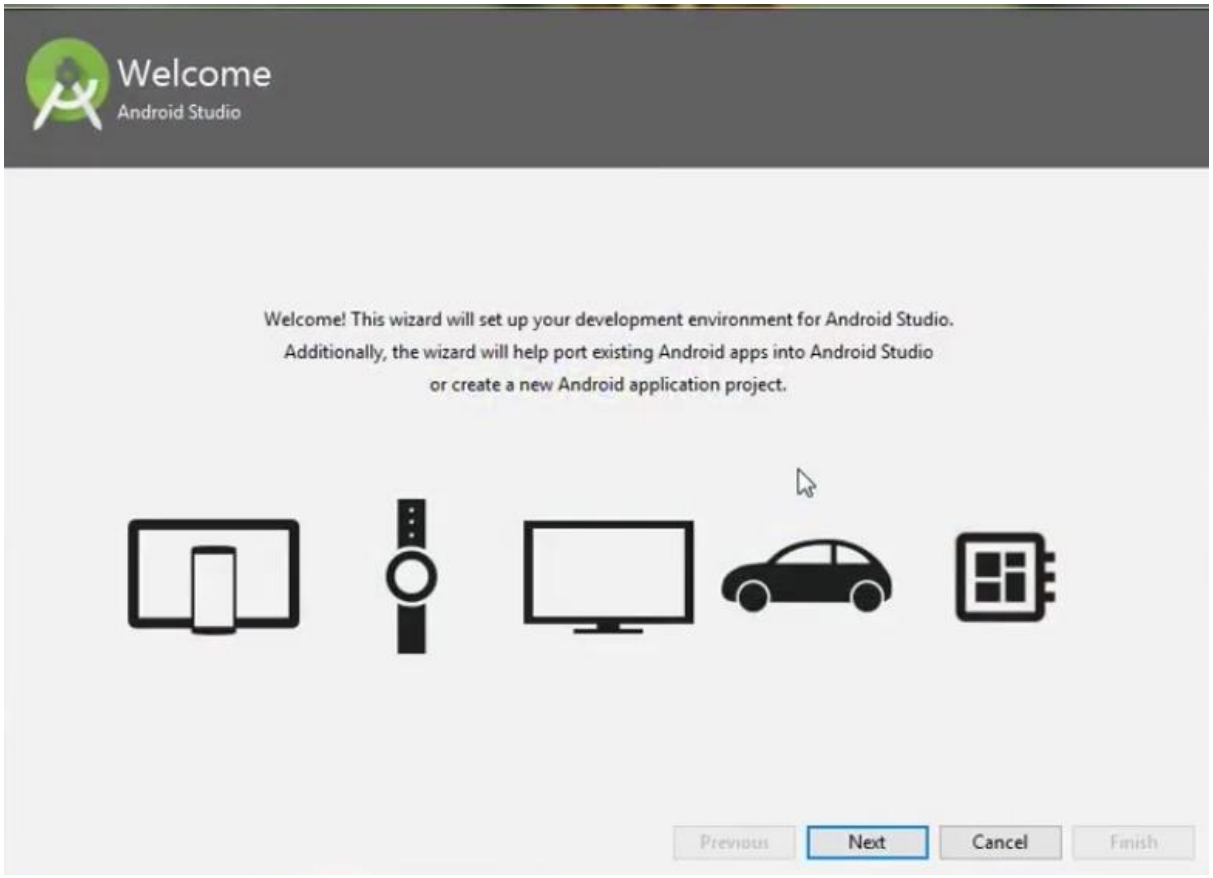
Step 5: Once "**Finish**" is clicked, it will ask whether the previous settings need to be imported [if the android studio had been installed earlier], or not. It is better to choose the 'Don't import Settings option'.

Click the **OK** button.

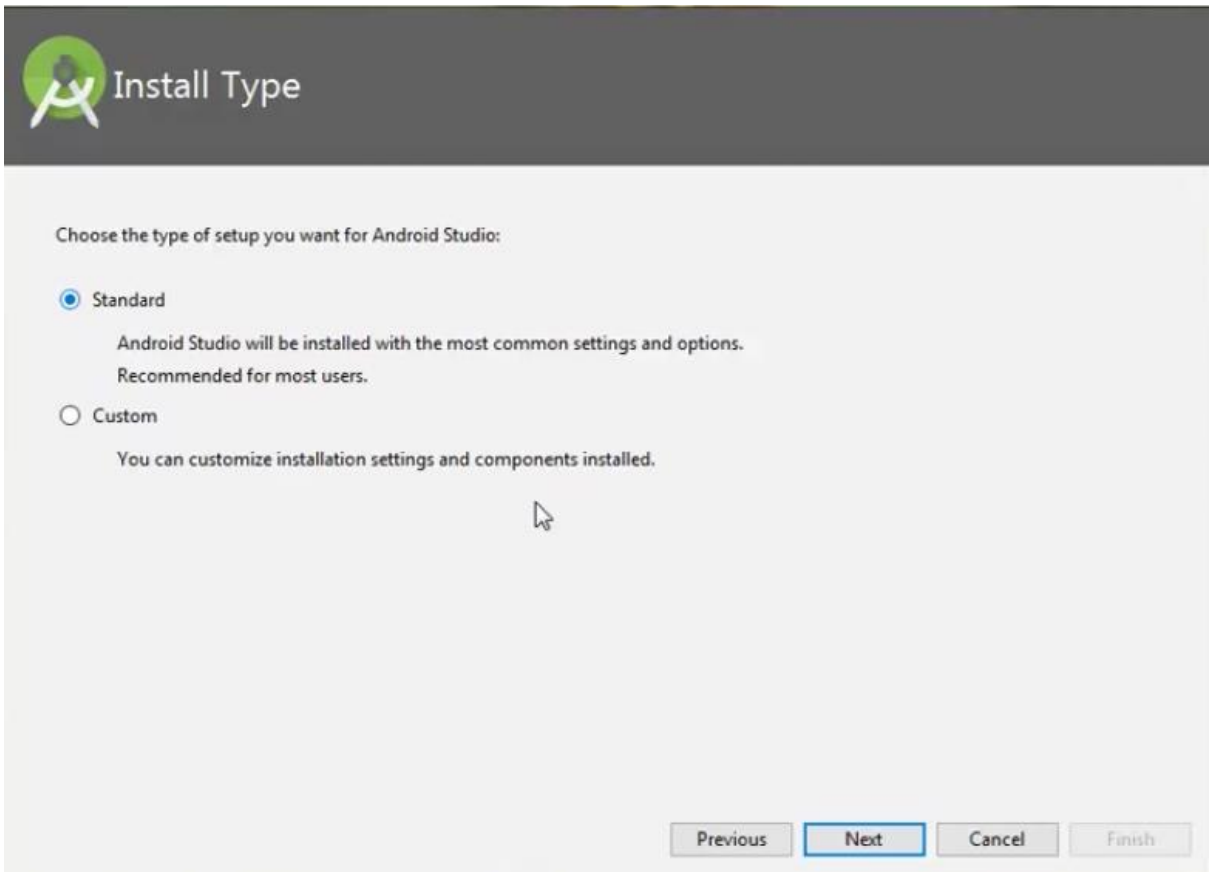
Step 6: This will start the Android Studio.

Meanwhile, it will be finding the available SDK components.

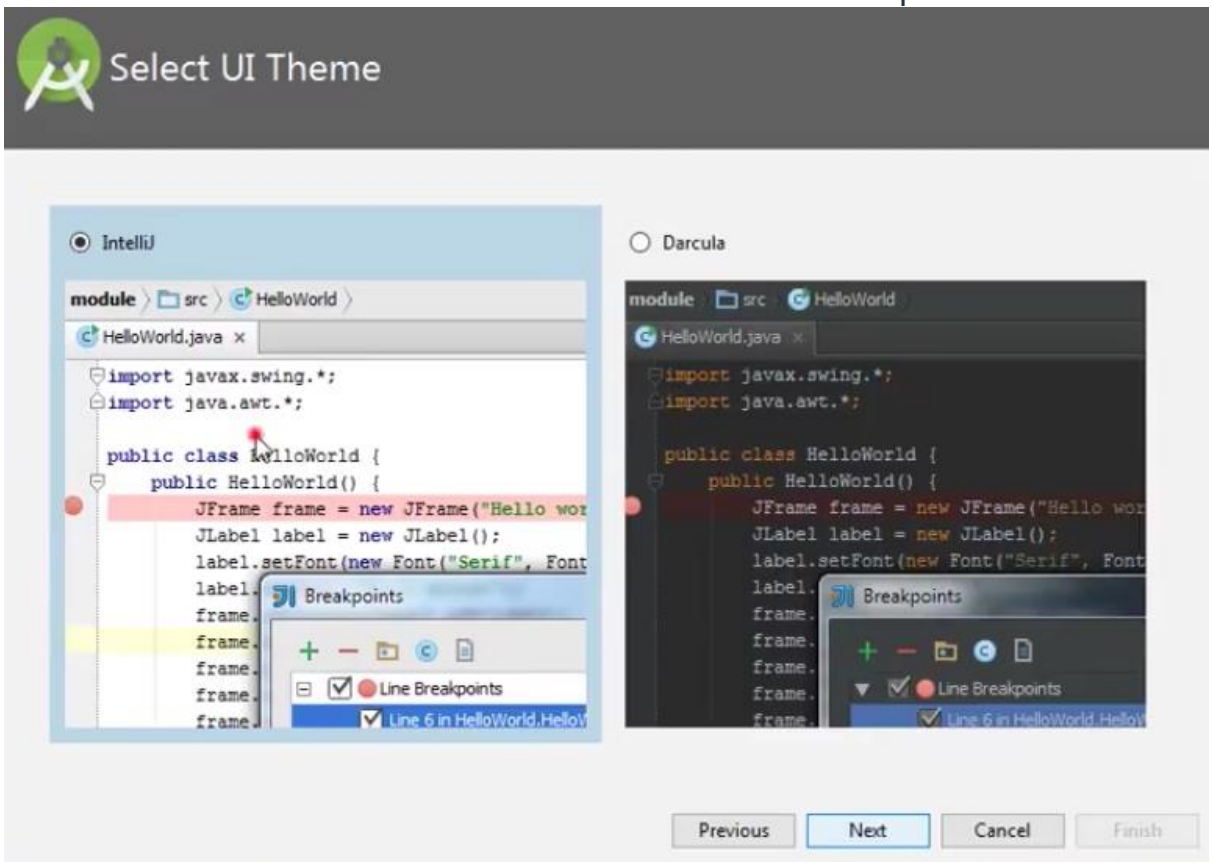
Step 7: After it has found the SDK components, it will redirect to the Welcome dialog box.



Click on **Next**.

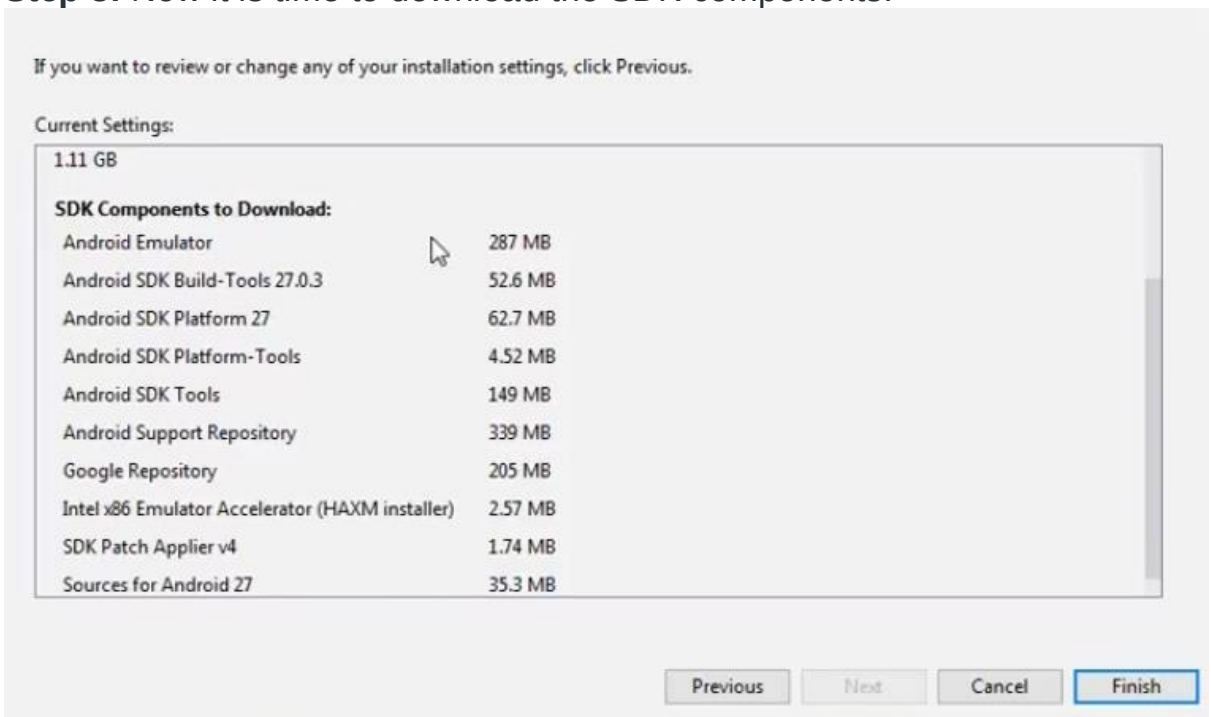


Choose Standard and click on Next. Now choose the theme, whether the **Light** theme or the **Dark** one. The light one is called the **IntelliJ** theme whereas the dark theme is called **Dracula**. Choose as required.

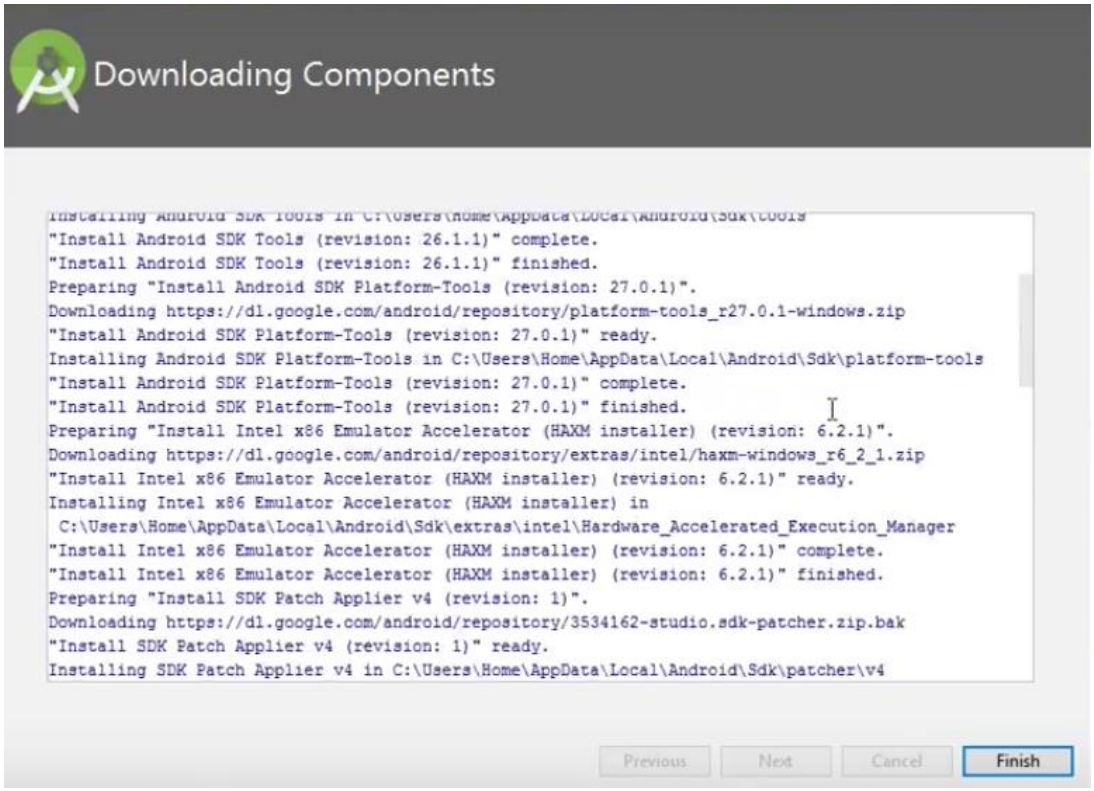


Click on the **Next** button.

Step 8: Now it is time to download the SDK components.

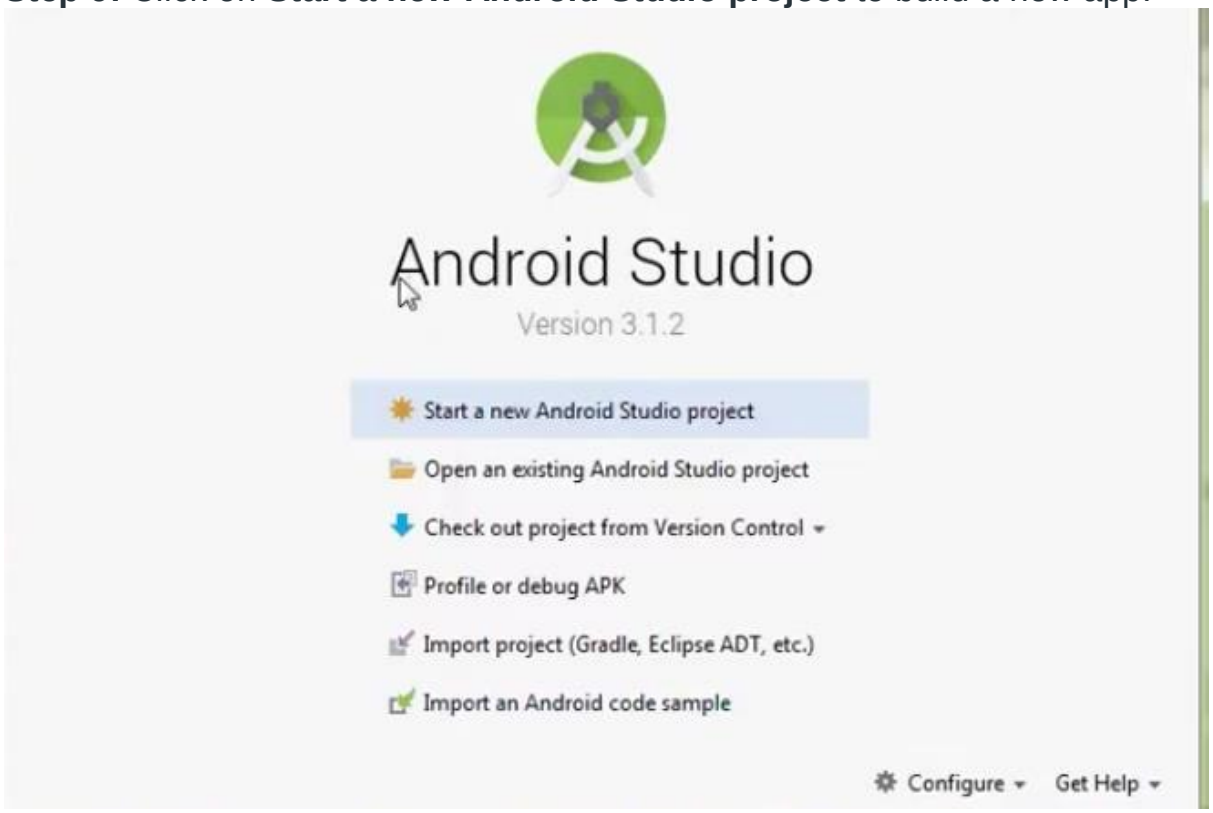


Click on Finish. Components begin to download let it complete.



The Android Studio has been successfully configured. Now it's time to launch and build apps. Click on the Finish button to launch it.

Step 9: Click on **Start a new Android Studio project** to build a new app.



Gradle Software Setup to Local Drive

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1)Download gradle software from

https://gradle.org/install/

Set the environment variables

variable name:GRADLE_PATH

path:D:\Tools\gradle-7.6-bin\gradle-7.6

To set the path

Double click on the path in the environment variables window

Click on New

specify the following the path

D:\Tools\gradle-7.6-bin\gradle-7.6\bin

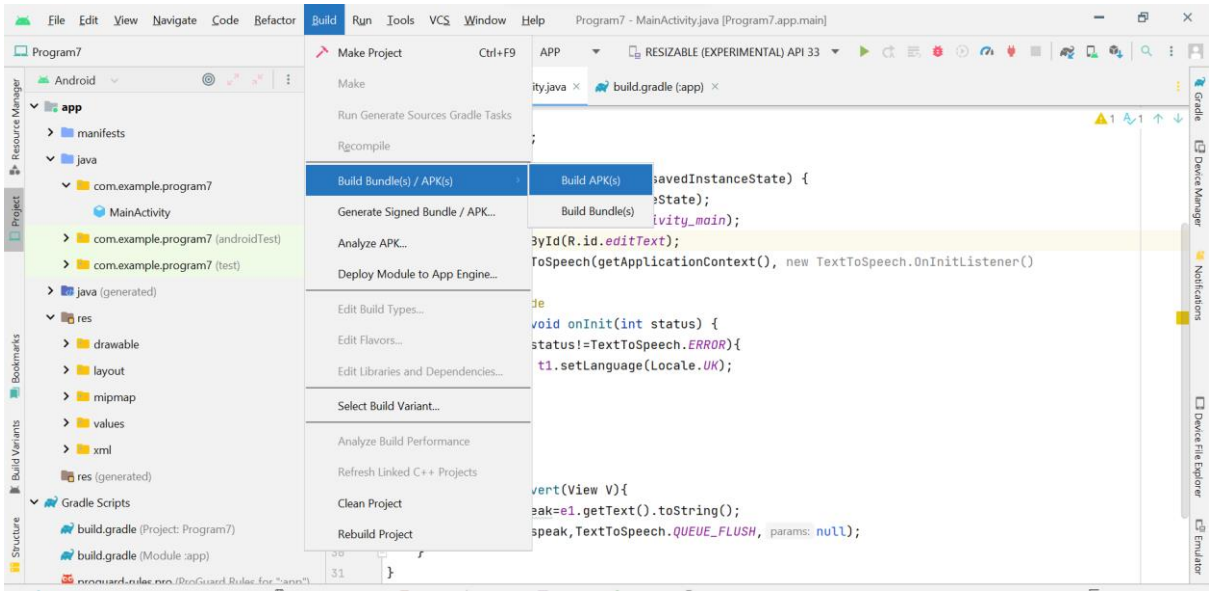
once done successfully above steps

open the command prompt

type command gradle -v

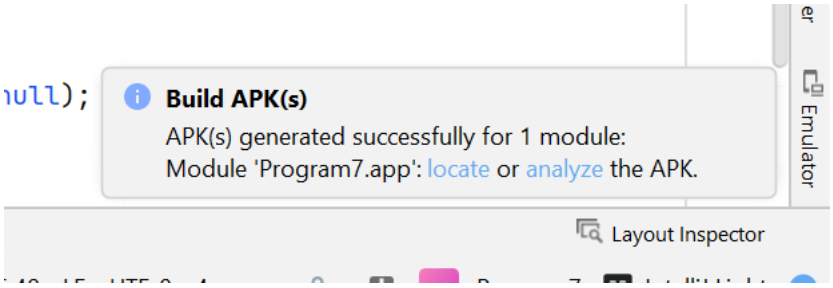
How to Generate or Find an .APK File in your Android Project

Open the project in Android studio then follow the below steps

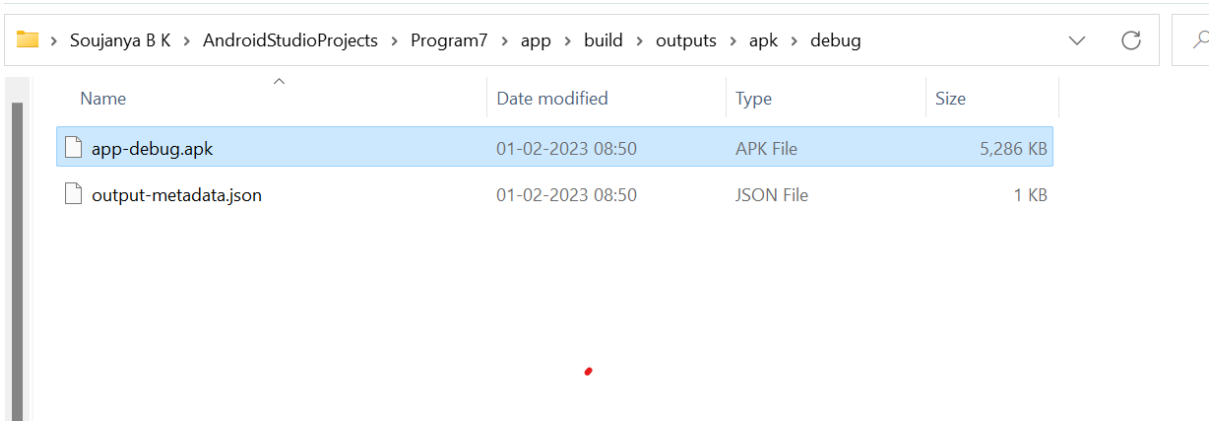


Once you click on Build APK(s)

You will get a popup in that select locate as shown below



Then the below location will open you can rename it and use it for sharing it to your devices



Then you can install in your mobile and test the same

How to start an virtual device using command Prompt and how to test the app using Command prompt

Follow the below procedure:

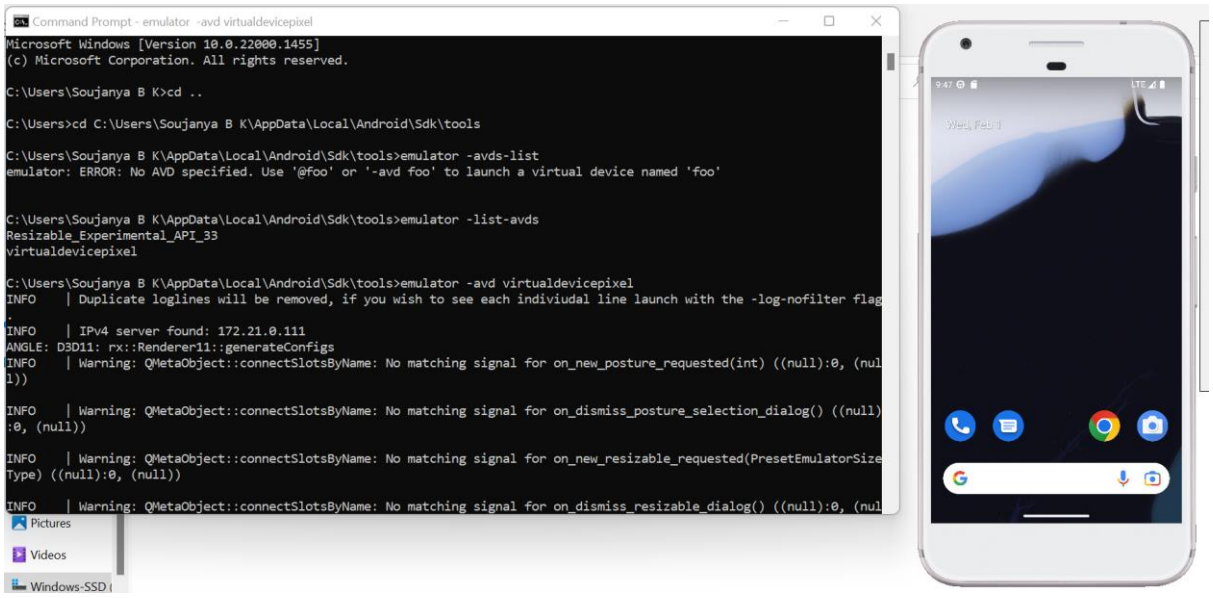
Open cmd

Go to the path directory

C:\Users\Soujanya B K\AppData\Local\Android\Sdk\tools

C:\Users\Soujanya B K\AppData\Local\Android\Sdk\tools>emulator -list-avds

C:\Users\Soujanya B K\AppData\Local\Android\Sdk\tools>emulator -avd virtualdevicepixel



Open one more cmd terminal:

Go to the root directory where you have adb installed and you will have to copy your apk file in this path

C:\Users>cd C:\Users\Soujanya B K\AppData\Local\Android\Sdk\platform-tools

Then ,

C:\Users\Soujanya B K\AppData\Local\Android\Sdk\platform-tools>adb devices

(it lists the devices available)

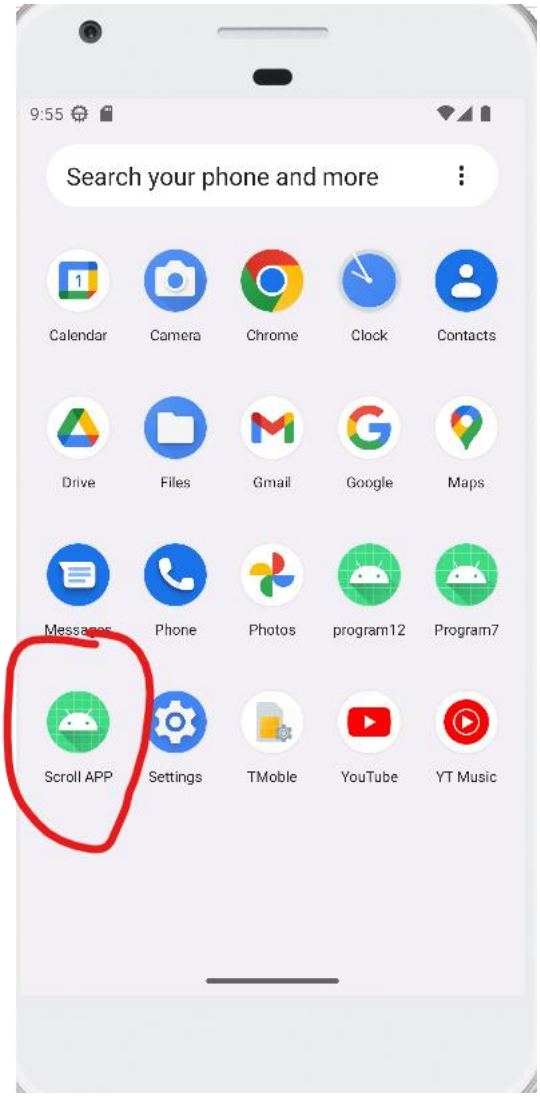
List of devices attached

emulator-5554 device

C:\Users\Soujanya B K\AppData\Local\Android\Sdk\platform-tools>adb install scroll.apk

Command Prompt

```
Microsoft Windows [Version 10.0.22000.1455]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Soujanya B K>cd ..

C:\Users>cd C:\Users\Soujanya B K\AppData\Local\Android\Sdk\platform-tools

C:\Users\Soujanya B K\AppData\Local\Android\Sdk\platform-tools>adb devices
List of devices attached
emulator-5554   device


C:\Users\Soujanya B K\AppData\Local\Android\Sdk\platform-tools>adb install scroll.apk
Performing Streamed Install
Success

C:\Users\Soujanya B K\AppData\Local\Android\Sdk\platform-tools>
```



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 centre. Information like the name of the employee, job title, phone number, address, email, fax and the website address are to be displayed. Insert a horizontal line between the job title and the phone number

Activity_main.XML

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#988D8D"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/textView4"
        android:layout_width="371dp"
        android:layout_height="wrap_content"
        android:layout_alignParentStart="true"
        android:layout_alignParentLeft="true"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentBottom="true"
        android:layout_marginStart="28dp"
        android:layout_marginLeft="28dp"
        android:layout_marginEnd="12dp"
        android:layout_marginRight="12dp"
        android:layout_marginBottom="219dp"
        android:text="Address:REVA University, Kattigenahalli | Bangalore -
560 064"
        android:textAlignment="center"
        android:textColor="#DB2F2F"
        android:textSize="24sp" />

    <TextView
        android:id="@+id/textView5"
        android:layout_width="250dp"
        android:layout_height="wrap_content"
        android:layout_alignParentStart="true"
        android:layout_alignParentLeft="true"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentBottom="true"
        android:layout_marginStart="87dp"
        android:layout_marginLeft="87dp"
        android:layout_marginEnd="73dp"
        android:layout_marginRight="73dp"
        android:layout_marginBottom="157dp"
        android:text="Ph No: 9876543210"
        android:textAlignment="center"
        android:textColor="#3F51B5"
        android:textSize="24sp" />

    <TextView
```

```
        android:id="@+id/textView6"
        android:layout_width="367dp"
        android:layout_height="wrap_content"
        android:layout_alignParentStart="true"
        android:layout_alignParentLeft="true"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentBottom="true"
        android:layout_marginStart="25dp"
        android:layout_marginLeft="25dp"
        android:layout_marginEnd="19dp"
        android:layout_marginRight="19dp"
        android:layout_marginBottom="64dp"
        android:text="Email Id: soujanya.bk@reva.edu.in"
        android:textAlignment="center"
        android:textColor="@color/purple_500"
        android:textSize="24sp" />

    <TextView
        android:id="@+id/textView3"
        android:layout_width="367dp"
        android:layout_height="66dp"
        android:layout_alignParentStart="true"
        android:layout_alignParentLeft="true"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentBottom="true"
        android:layout_marginStart="32dp"
        android:layout_marginLeft="32dp"
        android:layout_marginEnd="12dp"
        android:layout_marginRight="12dp"
        android:layout_marginBottom="287dp"
        android:text="Assistant Professor-CSE"
        android:textAlignment="center"
        android:textColor="@color/purple_700"
        android:textSize="24sp" />

    <ImageView
        android:id="@+id/imageView3"
        android:layout_width="155dp"
        android:layout_height="98dp"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="12dp"
        android:layout_marginRight="12dp"
        android:layout_marginBottom="495dp"
        app:srcCompat="@drawable/reva" />

    <View
        android:id="@+id/view"
        android:layout_width="wrap_content"
        android:layout_height="4dp"
        android:layout_alignParentBottom="true"
        android:layout_marginBottom="487dp"
        android:background="#4444" />

    <TextView
        android:id="@+id/textView2"
        android:layout_width="176dp"
```

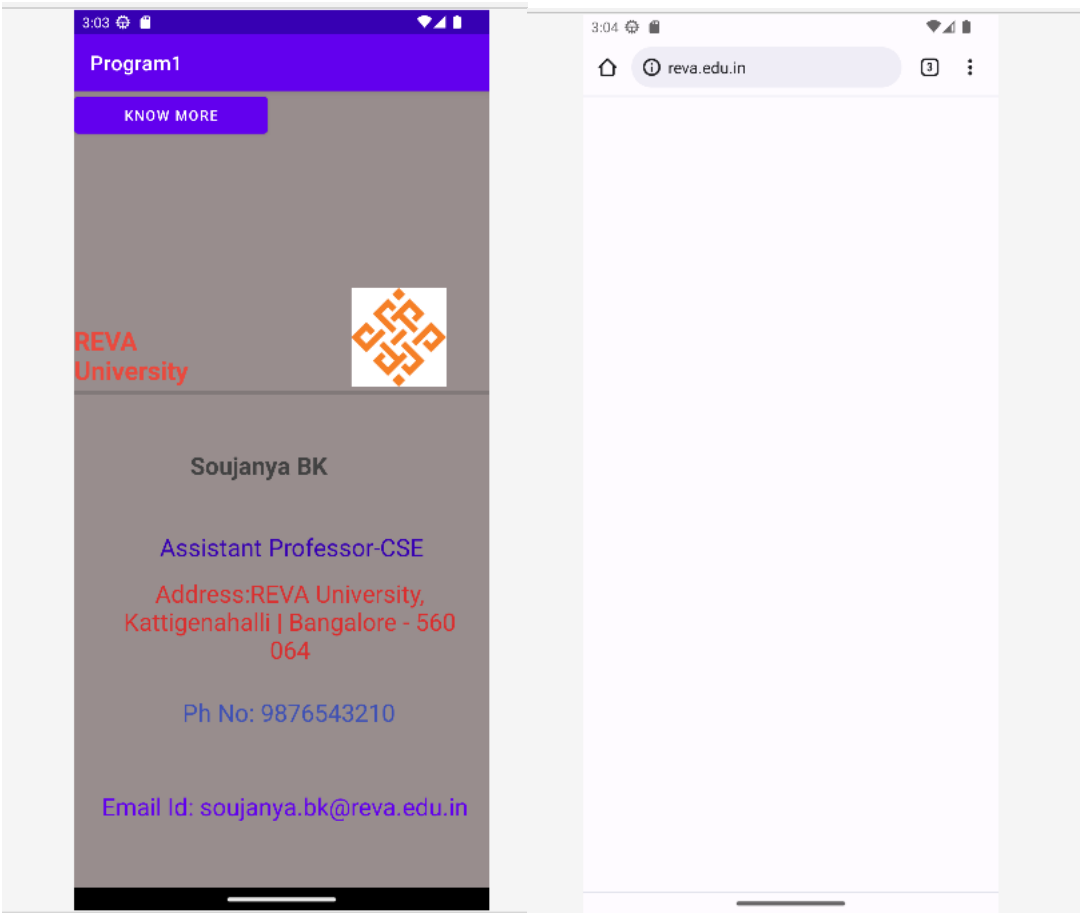
```
        android:layout_height="wrap_content"
        android:layout_alignParentStart="true"
        android:layout_alignParentLeft="true"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentBottom="true"
        android:layout_marginStart="95dp"
        android:layout_marginLeft="95dp"
        android:layout_marginEnd="140dp"
        android:layout_marginRight="140dp"
        android:layout_marginBottom="401dp"
        android:text="Soujanya BK"
        android:textAlignment="center"
        android:textColor="@color/cardview_dark_background"
        android:textSize="24sp"
        android:textStyle="bold" />

    <TextView
        android:id="@+id/textView7"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="99dp"
        android:layout_marginRight="99dp"
        android:layout_marginBottom="495dp"
        android:layout_toStartOf="@+id/imageView3"
        android:layout_toLeftOf="@+id/imageView3"
        android:text="REVA University"
        android:textColor="#EB493D"
        android:textSize="25sp"
        android:textStyle="bold" />

    <Button
        android:id="@+id/button"
        android:layout_width="192dp"
        android:layout_height="wrap_content"
        android:text="Know more" />
</RelativeLayout>
```

MainActivity.Java

```
package com.example.program1;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.net.Uri;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

public class MainActivity extends AppCompatActivity {
Button button;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
```

```
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        button=findViewById(R.id.button);

        button.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Intent i=new Intent(Intent.ACTION_VIEW);
                i.setData(Uri.parse("https://www.reva.edu.in"));

                startActivity(i);
            }
        });
    }
}
```

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

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="209dp"
        android:layout_height="60dp"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="108dp"
        android:layout_marginRight="108dp"
        android:layout_marginBottom="530dp"
        android:text="Simple Calci"
        android:textSize="36sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
    <EditText
        android:id="@+id/editText2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="115dp"
        android:layout_marginRight="115dp"
        android:layout_marginBottom="364dp"
        android:ems="10"
        android:hint="Enter the Number 2"
        android:inputType="textPersonName"
        android:text=""
        android:textColorHighlight="#FFFFFF" />
    <EditText
        android:id="@+id/editText1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="110dp"
        android:layout_marginRight="110dp"
        android:layout_marginBottom="439dp"
        android:ems="10"
        android:hint="Enter the Number 1"
        android:inputType="textPersonName"
        android:text=""
        android:textColorHighlight="#FFFFFF" />
```

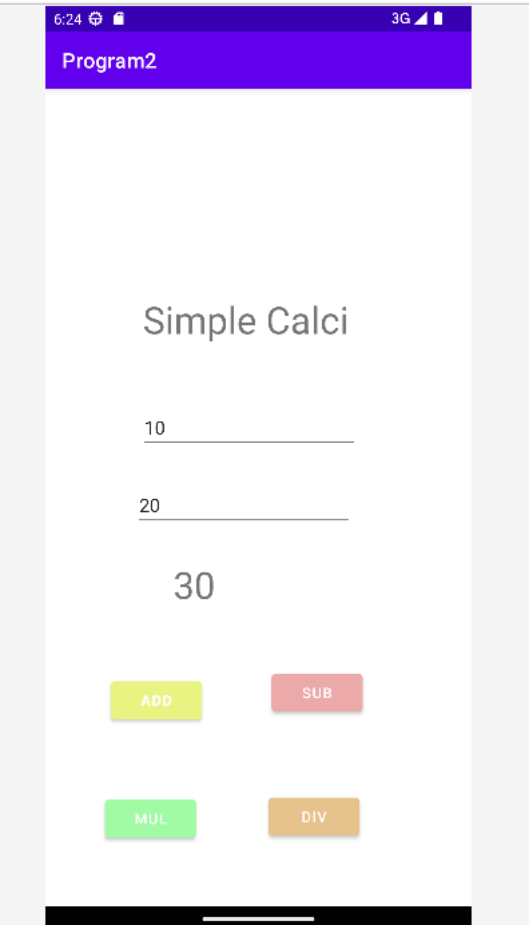
```
<Button
    android:id="@+id/button"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentRight="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="260dp"
    android:layout_marginRight="260dp"
    android:layout_marginBottom="175dp"
    android:text="ADD"
    android:textStyle="bold"
    android:onClick="add"
    app:backgroundTint="#E8F381" />
<Button
    android:id="@+id/button3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentRight="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="266dp"
    android:layout_marginRight="266dp"
    android:layout_marginBottom="61dp"
    android:text="MUL"
    android:onClick="mul"
    app:backgroundTint="#A1FAA4" />
<Button
    android:id="@+id/button4"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentRight="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="108dp"
    android:layout_marginRight="108dp"
    android:layout_marginBottom="63dp"
    android:text="DIV"
    android:onClick="div"
    app:backgroundTint="#E6C28C" />
<Button
    android:id="@+id/button2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentEnd="true"
    android:layout_alignParentRight="true"
    android:layout_alignParentBottom="true"
    android:layout_marginEnd="105dp"
    android:layout_marginRight="105dp"
    android:layout_marginBottom="182dp"
    android:text="SUB"
    android:onClick="sub"
    app:backgroundTint="#ECA9A9" />
<TextView
    android:id="@+id/tv1"
    android:layout_width="86dp"
    android:layout_height="61dp"
    android:layout_alignParentEnd="true"
    android:layout_alignParentRight="true"
    android:layout_alignParentBottom="true"
```

```
        android:layout_marginEnd="202dp"
        android:layout_marginRight="202dp"
        android:layout_marginBottom="274dp"
        android:text="0"
        android:textSize="36sp" />
</RelativeLayout>
```

Java code:

```
package com.example.program2;

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 e1,e2;
    TextView tv;
    @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);
        tv= (TextView)findViewById(R.id.tv1);
    }
    public void add(View v){
        int a1=Integer.parseInt(e1.getText().toString());
        int a2= Integer.parseInt(e2.getText().toString());
        int result=a1+a2;
        tv.setText(""+result);
    }
    public void sub(View v){
        int a1=Integer.parseInt(e1.getText().toString());
        int a2= Integer.parseInt(e2.getText().toString());
        int result=a1-a2;
        tv.setText(""+result);
    }
    public void mul(View v){
        int a1=Integer.parseInt(e1.getText().toString());
        int a2= Integer.parseInt(e2.getText().toString());
        int result=a1*a2;
        tv.setText(""+result);
    }
    public void div(View v){
        float a1=Integer.parseInt(e1.getText().toString());
        float a2= Integer.parseInt(e2.getText().toString());
        float result=a1/a2;
        tv.setText(""+result);
    }
}
```

output:


6:24
3G
Program2
Simple Calci
10
20
30
ADD
SUB
MUL
DIV

Program3: Create an android application to implement spinner class using java

Xml code:

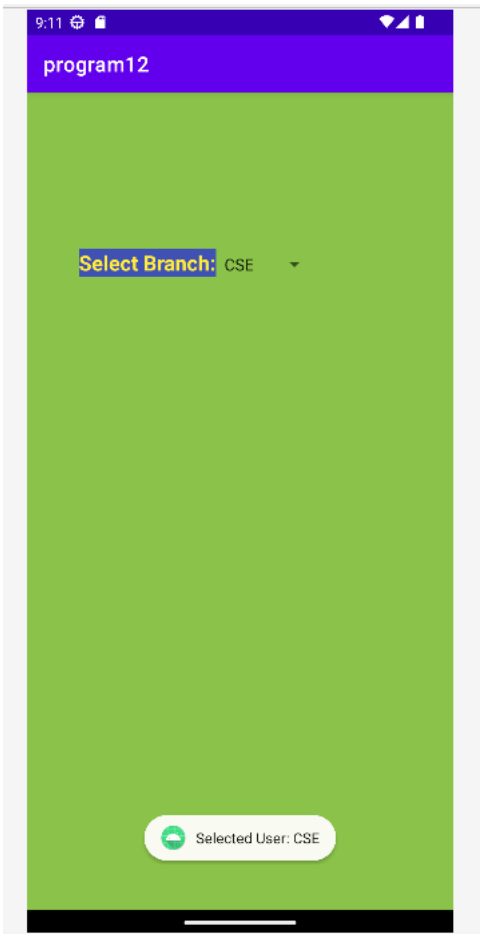
```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#8BC34A"
    android:backgroundTint="#8BC34A"
    android:contextClickable="true">

    <TextView
        android:id="@+id/txtVw"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="50dp"
        android:layout_marginTop="150dp"
        android:background="#3F51B5"
        android:text="Select Branch:"
        android:textColor="#FFEB3B"
        android:textSize="20sp"
        android:textStyle="bold" />

    <Spinner
        android:id="@+id/spinner1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignBottom="@+id/txtVw"
        android:layout_toRightOf="@+id/txtVw" />
</RelativeLayout>
```

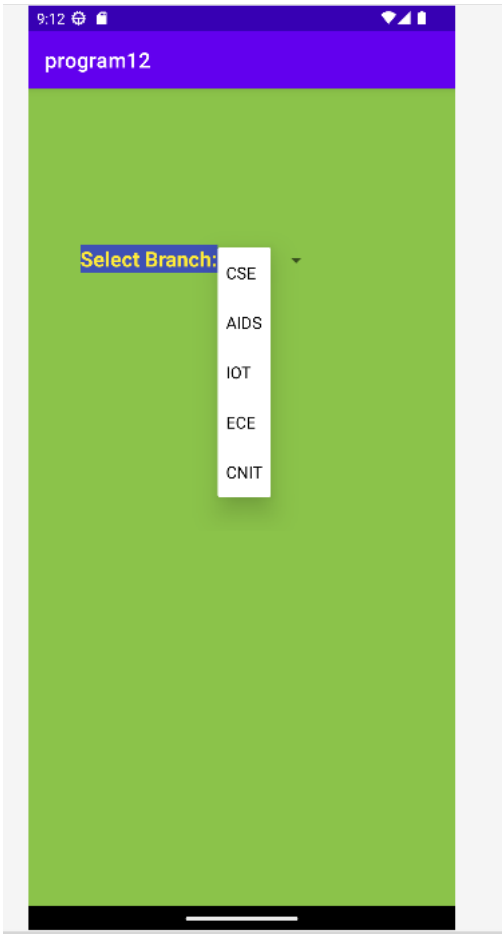
Java code:

```
package com.example.program12;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.AdapterView;
import android.widget.ArrayAdapter;
import android.widget.Spinner;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity implements
AdapterView.OnItemSelectedListener {
    String[] Branches = { "CSE", "AIDS", "IOT", "ECE", "CNIT" };
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Spinner spin = (Spinner) findViewById(R.id.spinner1);
        ArrayAdapter<String> adapter = new ArrayAdapter<String>(this,
android.R.layout.simple_spinner_item, Branches);

adapter.setDropDownViewResource(android.R.layout.simple_spinner_dropdown_it
em);
```

```
        spin.setAdapter(adapter);
        spin.setOnItemSelectedListener(this);
    }
    @Override
    public void onItemSelected(AdapterView<?> arg0, View arg1, int
position,long id) {
        Toast.makeText(getApplicationContext(), "Selected User:
"+Branches[position] ,Toast.LENGTH_SHORT).show();
    }
    @Override
    public void onNothingSelected(AdapterView<?> arg0) {
        // TODO - Custom Code
    }
}
```

output:





Program 4: Create an android application to Demonstrate the check box and radio button

Activity_Main.xml

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

<RelativeLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Select the Year"
        android:textStyle="bold"
        android:layout_marginLeft="10dp"
        android:textSize="20sp"/>

    <!-- add RadioGroup which contain the many RadioButton-->
    <RadioGroup
        android:layout_marginTop="50dp"
        android:id="@+id/groupradio"
        android:layout_marginLeft="10dp"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content">

        <!-- In RadioGroup create the 1 Radio Button-->
        <!-- like this we will add some more Radio Button-->
        <RadioButton
            android:layout_width="fill_parent"
            android:layout_height="wrap_content"
            android:id="@+id/radia_id1"
            android:text="First year"
            android:textSize="20sp"/>

        <RadioButton
            android:layout_width="fill_parent"
            android:layout_height="wrap_content"
            android:id="@+id/radia_id2"
            android:text="Second Year"
            android:textSize="20sp"/>

        <RadioButton
            android:layout_width="fill_parent"
            android:layout_height="wrap_content"
            android:id="@+id/radia_id3"
            android:text="Third year"
            android:textSize="20sp"/>

        <RadioButton
            android:layout_width="fill_parent"
            android:layout_height="wrap_content"
            android:id="@+id/radia_id4"
            android:text="Fourth year"
```

```
            android:textSize="20sp"/>
    </RadioGroup>

    <!-- add button For Submit the Selected item-->
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Submit"
        android:id="@+id/submit"
        android:textStyle="bold"
        android:textSize="20sp"
        android:layout_marginTop="300dp"
        android:layout_marginLeft="180dp"
        />

    <!-- add clear button for clear the selected item-->
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Clear"
        android:id="@+id/clear"
        android:textSize="20sp"
        android:textStyle="bold"
        android:layout_marginTop="300dp"
        android:layout_marginLeft="20dp"
        />

</RelativeLayout>
```

MainACtivity.java

```
package com.example.radiobutton;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.RadioButton;
import android.widget.RadioGroup;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    // Define the object for Radio Group,
    // Submit and Clear buttons
    private RadioGroup radioGroup;
    Button submit, clear;

    @Override
    protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        // Bind the components to their respective objects
        // by assigning their IDs
        // with the help of findViewById() method
```

```
submit = (Button)findViewById(R.id.submit);
clear = (Button)findViewById(R.id.clear);
radioGroup = (RadioGroup)findViewById(R.id.groupradio);

// Uncheck or reset the radio buttons initially
radioGroup.clearCheck();

// Add the Listener to the RadioGroup
radioGroup.setOnCheckedChangeListener(
        new RadioGroup
                .OnCheckedChangeListener() {
            @Override

            // The flow will come here when
            // any of the radio buttons in the radioGroup
            // has been clicked

            // Check which radio button has been clicked
            public void onCheckedChanged(RadioGroup group,
                                         int checkedId)
            {

                // Get the selected Radio Button
                RadioButton
                        radioButton
                        = (RadioButton)group
                        .findViewById(checkedId);
            }
        });

// Add the Listener to the Submit Button
submit.setOnClickListener(new View.OnClickListener() {

    @Override
    public void onClick(View v)
    {

        // When submit button is clicked,
        // Ge the Radio Button which is set
        // If no Radio Button is set, -1 will be returned
        int selectedId = radioGroup.getCheckedRadioButtonId();
        if (selectedId == -1) {
            Toast.makeText(MainActivity.this,
                           "No answer has been selected",
                           Toast.LENGTH_SHORT)
                    .show();
        }
        else {

            RadioButton radioButton
                    = (RadioButton)radioGroup
                    .findViewById(selectedId);

            // Now display the value of selected item
            // by the Toast message
            Toast.makeText(MainActivity.this,
                           radioButton.getText(),
                           Toast.LENGTH_SHORT)
                    .show();
        }
```

```
Intent i=new Intent(MainActivity.this,yearwiseActivity.class);
                startActivity(i);
            }
        });

        // Add the Listener to the Submit Button
        clear.setOnClickListener(new View.OnClickListener() {

            @Override
            public void onClick(View v)
            {

                // Clear RadioGroup
                // i.e. reset all the Radio Buttons
                radioGroup.clearCheck();
            }
        });
    }
}
```

activity_yearwise.xml

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

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#ffffff"
    android:orientation="vertical"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/textView"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginEnd="8dp"
    android:layout_marginStart="8dp"
    android:layout_marginTop="48dp"
    android:text="Choose your Certification course"
    android:textSize="24sp"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />

    <CheckBox
        android:id="@+id/checkBox"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="python"
    android:layout_marginTop="16dp"
    android:textSize="18sp" />

    <CheckBox
        android:id="@+id/checkBox2"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
```

```
    android:text="AWS Services"
    android:layout_marginTop="16dp"
    android:textSize="18sp" />

    <CheckBox
        android:id="@+id/checkBox3"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="16dp"
    android:text="Fullstack Development"
    android:textSize="18sp"
    app:layout_constraintTop_toTopOf="@+id/textView"
    tools:layout_editor_absoluteX="382dp" />

    <CheckBox
        android:id="@+id/checkBox4"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="Mobile application develpment"
    android:layout_marginTop="16dp"
    android:textSize="18sp"
    app:layout_constraintTop_toBottomOf="@+id/checkBox"
    tools:layout_editor_absoluteX="386dp" />

    <Button
        android:id="@+id/button"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="16dp"
    android:onClick="Check"
    android:text="submit" />
</LinearLayout>
```

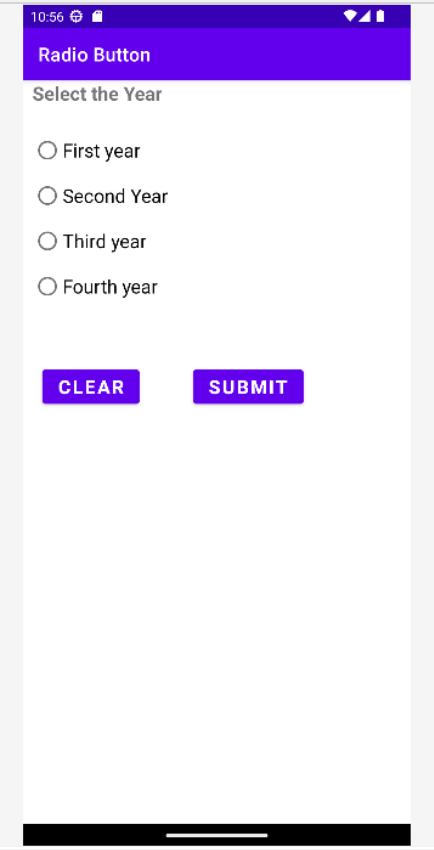
yearwiseActivity.java

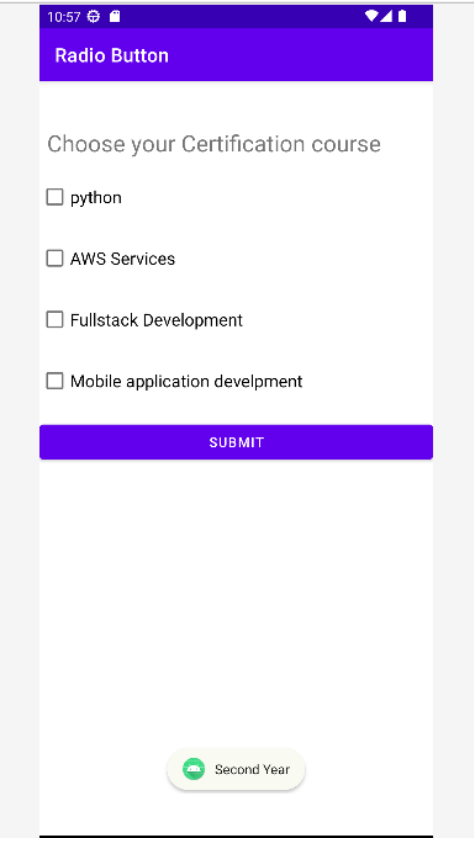
```
package com.example.radiobutton;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.view.View;
import android.widget.CheckBox;
import android.widget.CompoundButton;
import android.widget.Toast;
public class yearwiseActivity extends AppCompatActivity {
    CheckBox ch, ch1, ch2, ch3;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_yearwise);
        // Finding CheckBox by its unique ID
        ch=(CheckBox)findViewById(R.id.checkBox);
        ch1=(CheckBox)findViewById(R.id.checkBox2);
        ch2=(CheckBox)findViewById(R.id.checkBox3);
        ch3=(CheckBox)findViewById(R.id.checkBox4);

        ch.setOnCheckedChangeListener(new
CompoundButton.OnCheckedChangeListener() {
            @Override
```

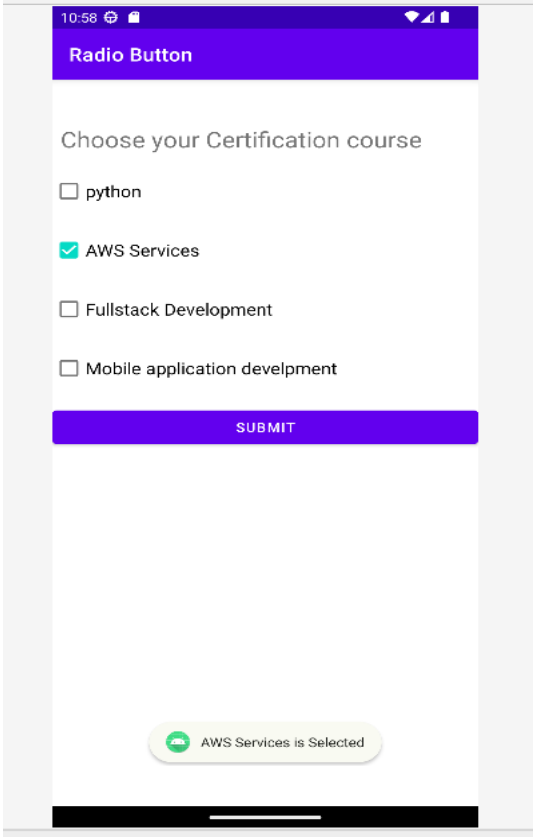
```
            public void onCheckedChanged(CompoundButton compoundButton,
boolean b) {
                ch1.setChecked(false);
                ch2.setChecked(false);
                ch3.setChecked(false);

            }
        });

        ch1.setOnCheckedChangeListener(new
CompoundButton.OnCheckedChangeListener() {
            @Override
            public void onCheckedChanged(CompoundButton compoundButton,
boolean b) {
                ch.setChecked(false);
                ch2.setChecked(false);
                ch3.setChecked(false);
            }
        });
        ch2.setOnCheckedChangeListener(new
CompoundButton.OnCheckedChangeListener() {
            @Override
            public void onCheckedChanged(CompoundButton compoundButton,
boolean b) {
                ch.setChecked(false);
                ch1.setChecked(false);
                ch3.setChecked(false);
            }
        });

        ch3.setOnCheckedChangeListener(new
CompoundButton.OnCheckedChangeListener() {
            @Override
            public void onCheckedChanged(CompoundButton compoundButton,
boolean b) {
                ch.setChecked(false);
                ch1.setChecked(false);
                ch2.setChecked(false);
            }
        });
    }

    // This function is invoked when the button is pressed.
    public void Check(View v)
    {
        String msg="";

        // Concatenation of the checked options in if

        // isChecked() is used to check whether
        // the CheckBox is in true state or not.

        if(ch.isChecked()) {
            msg = msg + ch.getText();
            Toast.makeText(this, msg +" " + "is Selected",
Toast.LENGTH_SHORT).show();
        }
        else if (ch1.isChecked()) {
            msg = msg + ch1.getText();
            Toast.makeText(this, msg +" "  + "is Selected",
```

```
Toast.LENGTH_SHORT).show();
        } else if (ch2.isChecked()) {
            msg = msg + ch2.getText();
            Toast.makeText(this, msg +" " + "is Selected",
Toast.LENGTH_SHORT).show();
        } else if (ch3.isChecked()) {
            msg = msg + ch3.getText();
            Toast.makeText(this, msg +" "  + "is Selected",
Toast.LENGTH_SHORT).show();
        }

        else

        // Toast is created to display the
        // message using show() method.
        Toast.makeText(this, msg +" " + " Nothing is selected, kindly
select one from above checkbox",
                Toast.LENGTH_LONG).show();
    }


}
```

output:


10:56
Radio Button
Select the Year
First year
Second Year
Third year
Fourth year
CLEAR
SUBMIT


10:57
Radio Button
Choose your Certification course
python
AWS Services
Fullstack Development
Mobile application develpment
SUBMIT
Second Year


10:58
Radio Button
Choose your Certification course
python
AWS Services
Fullstack Development
Mobile application develpment
SUBMIT
AWS Services is Selected

Program 5: Create an android application to demonstrate Scroll View

XML Code:

```
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <ScrollView
        android:layout_width="fill_parent"
        android:layout_height="fill_parent"
        android:background="#A88C83"
        android:scrollbars="vertical">

        <LinearLayout
            android:layout_width="fill_parent"
            android:layout_height="fill_parent"
            android:layout_margin="20dp"
            android:background="#4B3E3838"
            android:orientation="vertical">

            <Button
                android:id="@+id/cse"
                android:layout_width="fill_parent"
                android:layout_height="wrap_content"
                android:layout_gravity="center"
                android:layout_marginTop="100dp"
                android:layout_marginBottom="100dp"
                android:backgroundTint="#FF5722"
                android:textStyle="bold"
                android:text="School of CSE"
                android:textColor="#fff"
                android:textSize="25sp" />

            <Button
                android:id="@+id/ece"
                android:layout_width="fill_parent"
                android:layout_height="wrap_content"
                android:layout_gravity="center"
                android:layout_marginTop="100dp"
                android:layout_marginBottom="100dp"
                android:textStyle="bold"
                android:backgroundTint="#FF5722"
                android:text="SChool of ECE"
                android:textColor="#fff"
                android:textSize="25sp" />

            <Button
                android:id="@+id/eee"
                android:layout_width="fill_parent"
                android:layout_height="wrap_content"
                android:layout_gravity="center"
                android:layout_marginTop="100dp"
                android:layout_marginBottom="100dp"
                android:backgroundTint="#FF5722"
```

```
            android:text="School of EEE "
            android:textColor="#fff"
            android:textStyle="bold"
            android:textSize="25sp" />

        <Button
            android:id="@+id/mech"
            android:layout_width="fill_parent"
            android:layout_height="wrap_content"
            android:layout_gravity="center"
            android:layout_marginTop="100dp"
            android:layout_marginBottom="100dp"
            android:backgroundTint="#FF5722"
            android:text="School of Mechanical"
            android:textColor="#fff"
            android:textStyle="bold"
            android:textSize="25sp" />

        <Button
            android:id="@+id/cnit"
            android:layout_width="fill_parent"
            android:layout_height="wrap_content"
            android:layout_gravity="center"
            android:layout_marginTop="100dp"
            android:layout_marginBottom="100dp"
            android:backgroundTint="#FF5722"
            android:text="School of CNIT"
            android:textStyle="bold"
            android:textColor="#fff"
            android:textSize="25sp" />


    </LinearLayout>

</ScrollView>

</RelativeLayout>
```

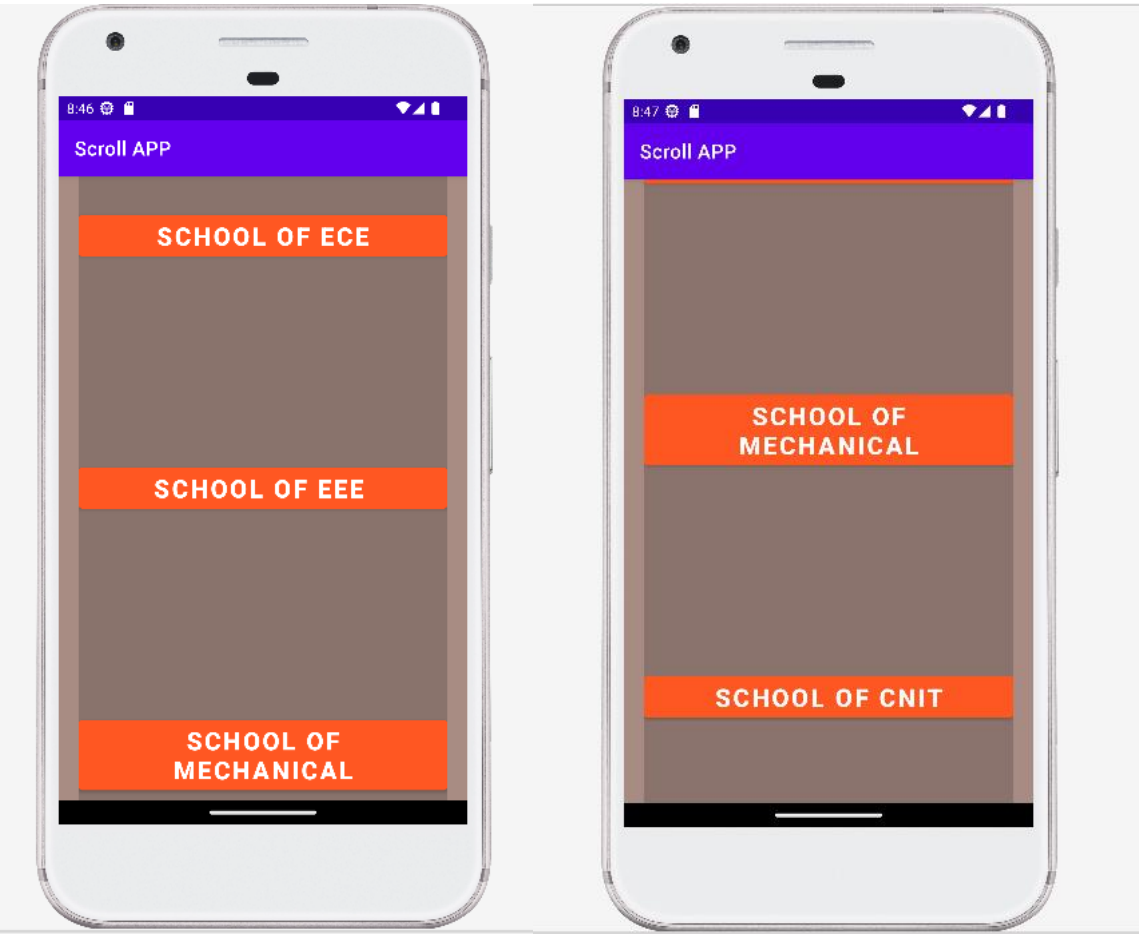
JAVA code:

```
package com.example.scrollapp;

import static com.example.scrollapp.R.*;

import androidx.appcompat.app.AppCompatActivity;

import android.annotation.SuppressLint;
import android.content.Intent;
import android.net.Uri;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
Button cse;
Button ece;
Button mech;
Button eee;
```

```
Button cnit;

    @SuppressLint("MissingInflatedId")
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(layout.activity_main);
        cse=findViewById(id.cse);
        ece=findViewById(id.ece);
        cnit=findViewById(id.cnit);
        mech=findViewById(id.mech);
        eee=findViewById(id.eee);

        cse.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Toast.makeText(MainActivity.this, "welcome to cse",
Toast.LENGTH_SHORT).show();
                Intent i=new Intent(Intent.ACTION_VIEW);

i.setData(Uri.parse("https://www.reva.edu.in/course/btech-in-computer-
science-and-engineering"));
                    startActivity(i);
            }
        });

       ece.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Toast.makeText(MainActivity.this, "welcome to ECE",
Toast.LENGTH_SHORT).show();
                Intent i=new Intent(Intent.ACTION_VIEW);
                i.setData(Uri.parse("https://www.reva.edu.in/course/btech-
in-electronics-and-communication-engineering"));
                startActivity(i);
            }
       });
       mech.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Toast.makeText(MainActivity.this, "welcome to Mech",
Toast.LENGTH_SHORT).show();
                Intent i=new Intent(Intent.ACTION_VIEW);
                i.setData(Uri.parse("https://www.reva.edu.in/course/btech-
in-mechanical-engineering"));
                startActivity(i);

            }
       });

eee.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        Toast.makeText(MainActivity.this, "welcome to EEE",
Toast.LENGTH_SHORT).show();
        Intent i = new Intent(Intent.ACTION_VIEW);
        i.setData(Uri.parse("https://www.reva.edu.in/course/btech-in-
electrical-and-electronics-engineering"));
        startActivity(i);
```

```
    }
});

        cnit.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Toast.makeText(MainActivity.this, "welcome to CNIT",
Toast.LENGTH_SHORT).show();
                Intent i=new Intent(Intent.ACTION_VIEW);
                i.setData(Uri.parse("https://www.reva.edu.in/course-
list/school-of-computing-and-information-technology"));
                startActivity(i);
            }
        });
    }

    }
```

OutPut:



Program-6: Create a SIGNUp 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:

Activity main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <TextView
        android:layout_width="129dp"
        android:layout_height="45dp"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="168dp"
        android:layout_marginRight="168dp"
        android:layout_marginBottom="596dp"
        android:text="Sign Up"
        android:textSize="24sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
    <EditText
        android:id="@+id/SignUp_email"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="114dp"
        android:layout_marginRight="114dp"
        android:layout_marginBottom="464dp"
        android:ems="10"
```

```
        android:hint="EmailId"
        android:inputType="textPersonName" />
    <Button
        android:id="@+id/signUpBtn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="168dp"
        android:layout_marginRight="168dp"
        android:layout_marginBottom="245dp"
        android:text="Sign Up" />
    <EditText
        android:id="@+id/SignUp_Password"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="101dp"
        android:layout_marginRight="101dp"
        android:layout_marginBottom="385dp"
        android:ems="10"
        android:hint="Password"
        android:inputType="textPassword" />
</RelativeLayout>
```

Activity login.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".loginActivity">
    <TextView
        android:id="@+id/loginTextView"
        android:layout_width="225dp"
        android:layout_height="45dp"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="113dp"
        android:layout_marginRight="113dp"
        android:layout_marginBottom="544dp"
        android:text="Login"
        android:textSize="30sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        tools:layout_editor_absoluteX="143dp" />
    <EditText
        android:id="@+id/passEditText"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentBottom="true"
```

```
        android:layout_marginEnd="124dp"
        android:layout_marginRight="124dp"
        android:layout_marginBottom="380dp"
        android:ems="10"
        android:hint="password"
        android:inputType="textPassword" />
    <Button
        android:id="@+id/loginBtn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="218dp"
        android:layout_marginRight="218dp"
        android:layout_marginBottom="263dp"
        android:text="Login" />
    <EditText
        android:id="@+id/EmaileditText"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="127dp"
        android:layout_marginRight="127dp"
        android:layout_marginBottom="455dp"
        android:ems="10"
        android:hint="Email ID"
        android:inputType="textPersonName" />
</RelativeLayout>
```

Activity.loginsuccess.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".loginsuccessActivity">
    <TextView
        android:id="@+id/textView"
        android:layout_width="match_parent"
        android:layout_height="121dp"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="-11dp"
        android:layout_marginRight="-11dp"
        android:layout_marginBottom="322dp"
        android:text="Login Successful"
        android:textSize="36sp"
        android:textStyle="bold" />
</RelativeLayout>
```

Java code:

Main activity .java

```
package com.example.program3;

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.Pattern;
public class MainActivity extends AppCompatActivity {
    EditText email_Sign, password_Sign;
    Button signUp_btn;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        email_Sign=(EditText)findViewById(R.id.SignUp_email);
        password_Sign=(EditText)findViewById(R.id.SignUp_Password);
        signUp_btn =(Button)findViewById(R.id.signUpBtn);
        signUp_btn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String email = email_Sign.getText().toString();
                String password = password_Sign.getText().toString();
                if(!isValidPassword(password)) {
                    Toast.makeText(MainActivity.this, "Password doesn't
match\n" +
                            "                                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].*$");
    Pattern special_Chara = Pattern.compile("^.*[^a-zA-Z0-9].*$");
    private Boolean isValidPassword(String password){
        if(password.length()<8) {
            return false;
        }
        if(!lowerCase.matcher(password).matches()) {
            return false;
        }
        if(!upperCase.matcher(password).matches()) {
            return false;
        }
        if(!number.matcher(password).matches()) {
```

```
            return false;
        }
        if(!special_Chara.matcher(password).matches()) {
            return false;
        }
        return true;
    }
}
```

loginactivity.java

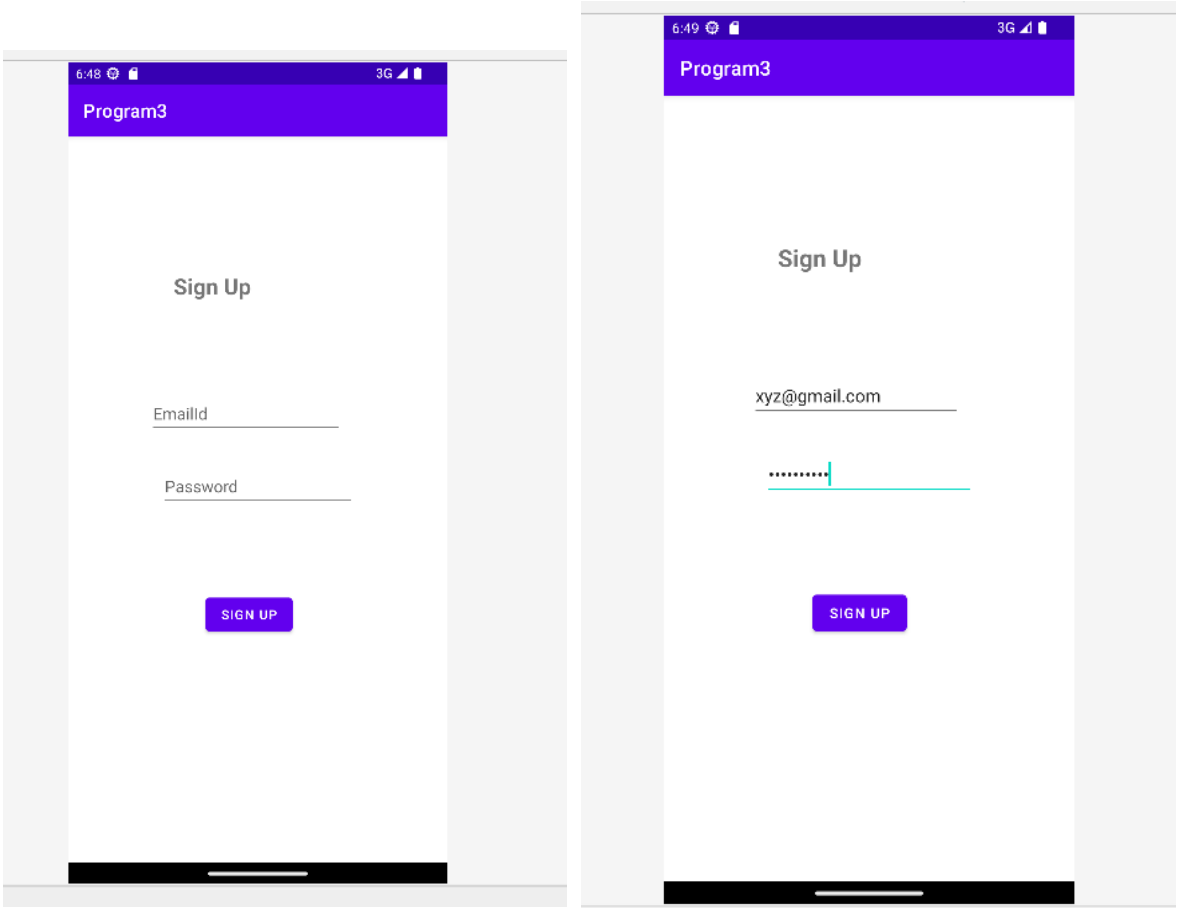
```
package com.example.program3;

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;
public class loginActivity extends AppCompatActivity {
    EditText emailEditText,passwordEditText;
    Button login_btn;
    int counter=2;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_login);
        emailEditText=(EditText)findViewById(R.id.EmaileditText);
        passwordEditText=(EditText)findViewById(R.id.passEditText);
        login_btn=(Button)findViewById(R.id.loginBtn);
        String registeredEmail = getIntent().getStringExtra("email");
        String registeredPassword= getIntent().getStringExtra("password");
        login_btn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String email = emailEditText.getText().toString();
                String password = passwordEditText.getText().toString();
                if(registeredEmail.equals(email) &&
registeredPassword.equals(password))
                {
                    Intent intent= new
Intent(loginActivity.this,loginsuccessActivity.class);
                    startActivity(intent);
                }
                else {
                    Toast.makeText(loginActivity.this,"Invalid
Credentials",Toast.LENGTH_SHORT).show();
                }
                counter--;
                if(counter==0){
                    Toast.makeText(getBaseContext(),"failed to login
attempts",Toast.LENGTH_SHORT).show();
                                login_btn.setEnabled(false);
                }
            }
        });
```

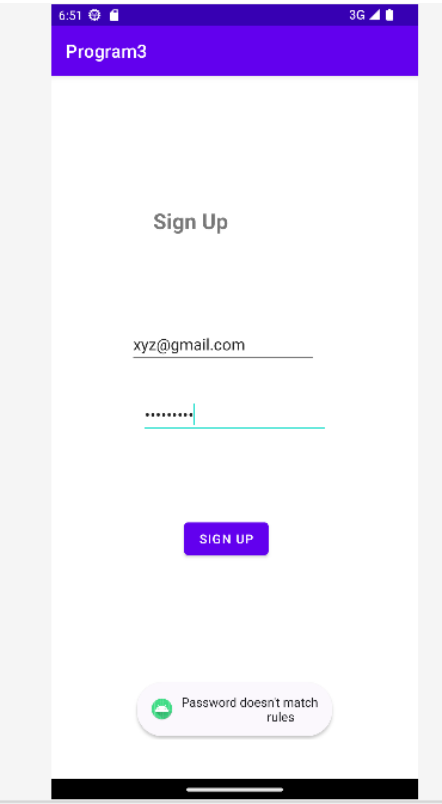
```
    }
}
```

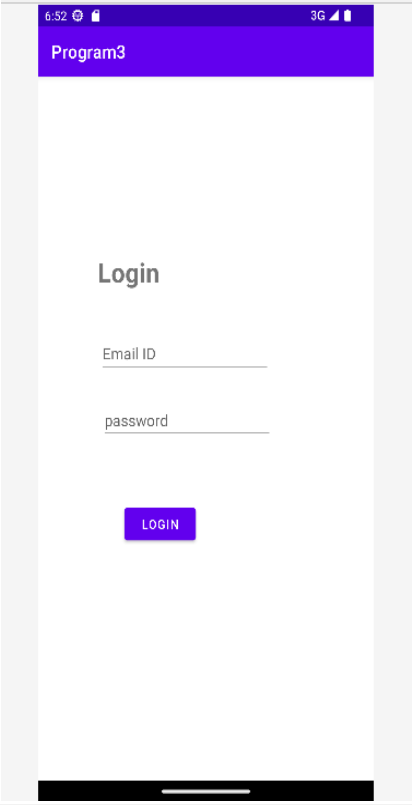
Loginsuccessactivity.java

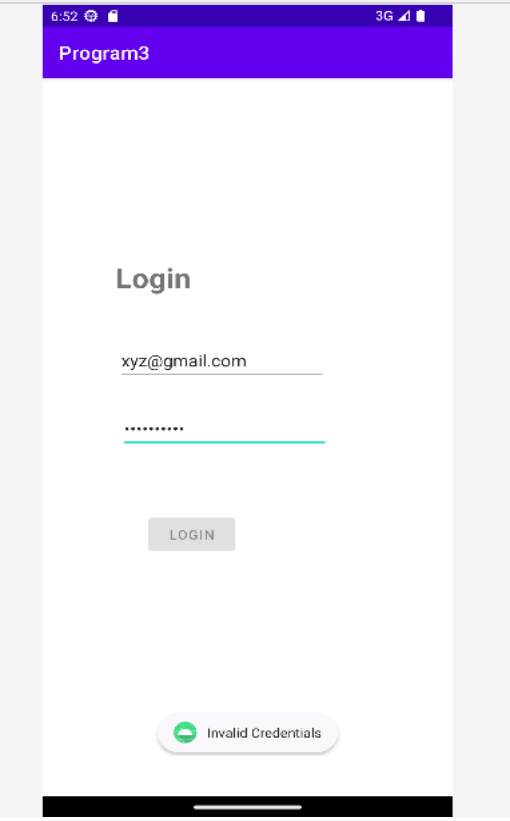
```
package com.example.program3;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

public class loginsuccessActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_loginsuccess);
    }
}
```

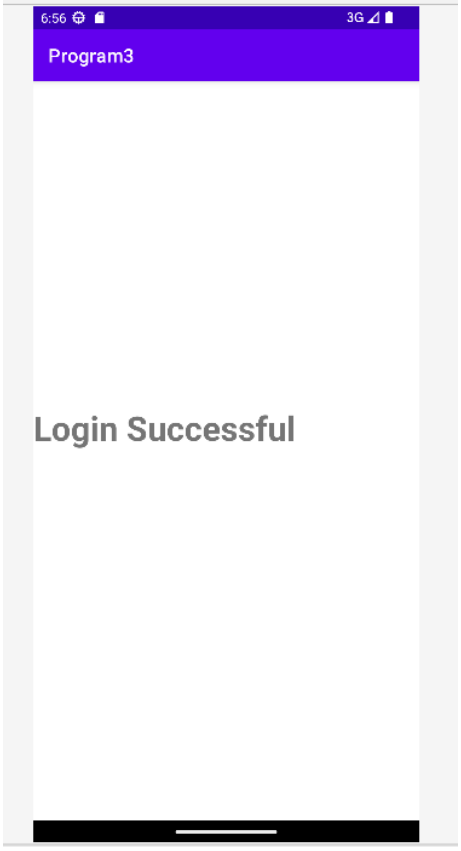
output




6:51
3G
Program3
Sign Up
xyz@gmail.com
SIGN UP
Password doesn't match rules


6:52
3G
Program3
Login
Email ID
password
LOGIN


6:52
3G
Program3
Login
xyz@gmail.com
LOGIN
Invalid Credentials


6:56
3G
Program3
Login Successful

Program-7: 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.

XML file:

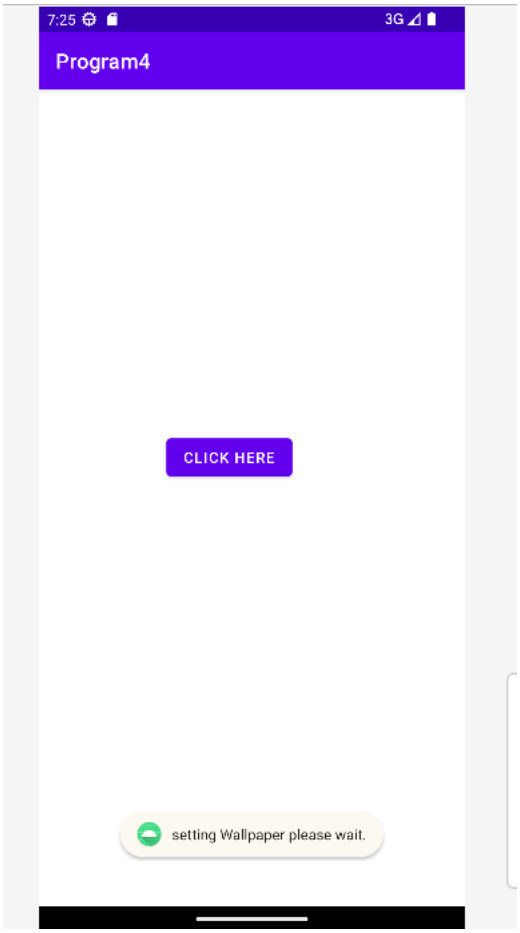
```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <Button
        android:id="@+id/button1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="167dp"
        android:layout_marginRight="167dp"
        android:layout_marginBottom="409dp"
        android:text="CLICK HERE" />
</RelativeLayout>
```

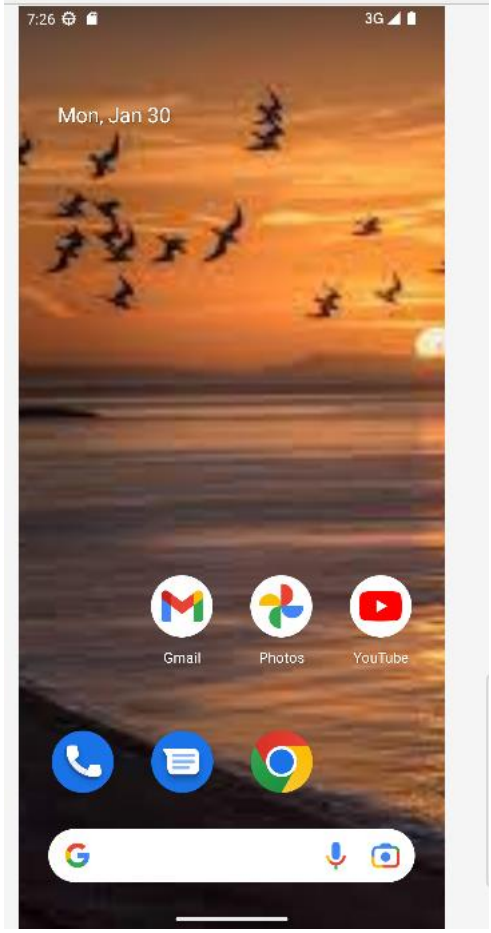
Java file:

```
package com.example.program4;

import androidx.appcompat.app.AppCompatActivity;
import android.app.WallpaperManager;
import android.graphics.Bitmap;
import android.graphics.BitmapFactory;

import android.graphics.drawable.BitmapDrawable;
import android.graphics.drawable.Drawable;
import android.os.Bundle;
import android.os.Handler;
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 wallpaperChange;
    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);
        wallpaperChange=(Button)findViewById(R.id.button1);
        wallpaperChange.setOnClickListener(new View.OnClickListener() {
```

```
            @Override public void onClick(View view) {
                setwallpaper();
            }
        });
    }
    private void setwallpaper() {
        Toast.makeText(this,"setting Wallpaper please
wait.",Toast.LENGTH_LONG).show();
        mytimer.schedule(new TimerTask() {
            @Override
            public void run()
            {
                if(prev==1) {
                    drawable = getResources().getDrawable(R.drawable.i1);
prev = 2;
                }
                else if(prev==2) {
                    drawable = getResources().getDrawable(R.drawable.i2);
prev=3;
                }
                else if(prev==3) {
                    drawable = getResources().getDrawable(R.drawable.i3);
prev=4;
                }
                else if(prev==4) {
                    drawable = getResources().getDrawable(R.drawable.i4);
prev=5;
                }
                else if(prev==5) {
                    drawable = getResources().getDrawable(R.drawable.i5);
prev=1;
                }
                Bitmap wallpaper = ((BitmapDrawable)drawable).getBitmap();
try {
                    wpm.setBitmap(wallpaper);
            }
            catch (IOException e)
            { e.printStackTrace();
            }
            }
        },0,30000);
    }
}
```

output:


7:25
3G
Program4
CLICK HERE
setting Wallpaper please wait.


7:26
3G
Mon, Jan 30
Gmail
Photos
YouTube

Program-8 : Write a program to create an activity with two buttons START and STOP. On pressing of the START button, the activity must start the counter by displaying the numbers from One and the counter must keep on counting until the STOP button is pressed. Display the counter value in a TextViewcontrol

Xml code:

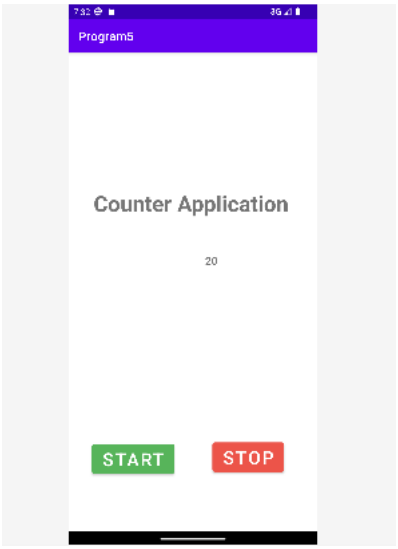
```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <TextView
        android:id="@+id/textView1"
        android:layout_width="332dp"
        android:layout_height="wrap_content"
        android:layout_alignParentStart="true"
        android:layout_alignParentLeft="true"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentBottom="true"
        android:layout_marginStart="41dp"
        android:layout_marginLeft="41dp"
        android:layout_marginEnd="38dp"
        android:layout_marginRight="38dp"
        android:layout_marginBottom="516dp"
        android:text="Counter Application"
        android:textSize="36sp"
        android:textStyle="bold" />
    <Button
        android:id="@+id/button1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="236dp"
        android:layout_marginRight="236dp"
        android:layout_marginBottom="89dp"
        android:text="Start"
        android:textSize="30sp"
        app:backgroundTint="#4CAF50" />
    <Button
        android:id="@+id/button2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="55dp"
        android:layout_marginRight="55dp"
        android:layout_marginBottom="92dp"
        android:text="STOP"
        android:textSize="30sp"
        app:backgroundTint="#EC5449" />
```

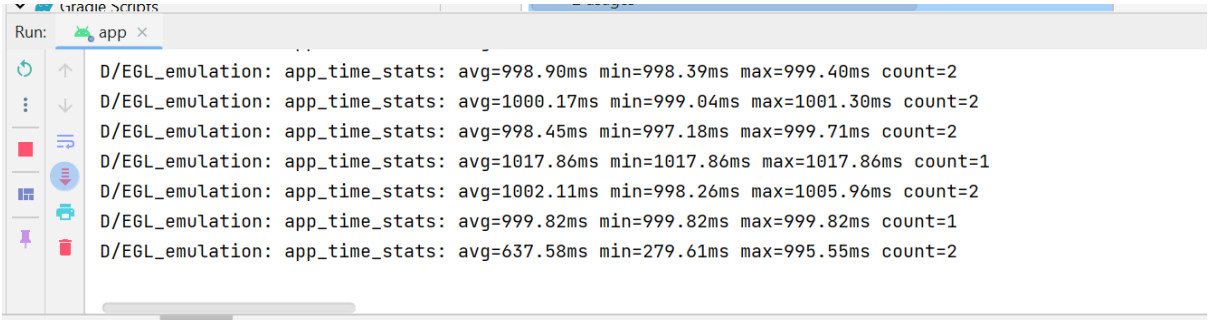
```
    <TextView
        android:id="@+id/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="165dp"
        android:layout_marginRight="165dp"
        android:layout_marginBottom="434dp"
        android:text="counter value"
        android:textSize="18sp"
        android:textStyle="bold" />
</RelativeLayout>
```

Java code:

```
package com.example.program5;

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 {
    TextView txtCounter;
    Button btn_start,btn_stop;
    int count=0;
    Handler customHandler=new Handler();
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        txtCounter= (TextView)findViewById(R.id.textView2);
        btn_start =(Button)findViewById(R.id.button1);
        btn_stop=(Button)findViewById(R.id.button2);
        btn_start.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                customHandler.postDelayed(updateTimerThread,0);
            }
        });
        btn_stop.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(""+count);
            customHandler.postDelayed(this,1000);
            count++;
        }
    };
}
```

output:


Program5
Counter Application
20
START
STOP


Run:
app
D/EGL_emulation: app_time_stats: avg=998.90ms min=998.39ms max=999.40ms count=2
D/EGL_emulation: app_time_stats: avg=1000.17ms min=999.04ms max=1001.30ms count=2
D/EGL_emulation: app_time_stats: avg=998.45ms min=997.18ms max=999.71ms count=2
D/EGL_emulation: app_time_stats: avg=1017.86ms min=1017.86ms max=1017.86ms count=1
D/EGL_emulation: app_time_stats: avg=1002.11ms min=998.26ms max=1005.96ms count=2
D/EGL_emulation: app_time_stats: avg=999.82ms min=999.82ms max=999.82ms count=1
D/EGL_emulation: app_time_stats: avg=637.58ms min=279.61ms max=995.55ms count=2

Program-9: Create two files of XML and JSON type with values for City_Name, Latitude, Longitude, Temperature, and Humidity. Develop an application to create an activity with two buttons to parse the XML and JSON files which when clicked should display the data in their respective layouts side by side.

1) Firstly, Create an Application by Name “JsonParser”

2) Go to xml code of design change the layout to “RelativeLayout”

3) Add TextView component & change the following properties:

1) Size: 38dp

2) Text: XML and JSON Parser

3) Center-Align

4) Add Two Buttons to Design & change the name “ParseXml” & “ParseJson” with following

onclick functions:

• ParseXml-Button: parsexml

• ParseJson-Button: parsejson

5) Add TextView component & change the following properties:

• Id: display

• Text: “”

• Align: Center

6) Add Assets folder by following the given hierarchy:

App->new->folder->Assests folder

7) Inside the assets folder create new files of xml and json using the following hierarchy:

new->file->city.xml

new->file->city.json

once created place the following details inside the “city.xml” and “city.json”

city.xml:

```
        <?xml version="1.0"?>
<records>
    <place>
        <name>Mysore</name>
        <lat>12.295</lat>
        <long>76.639</long>
        <temperature>22</temperature>
        <humidity>90%</humidity>
    </place>
```

```
    <place>
        <name>Bangalore</name>
        <lat>13.295</lat>
        <long>77.639</long>
        <temperature>25</temperature>
        <humidity>74%</humidity>
    </place>
</records>
```

City.json:

```
[
  {
    "name":"HASSAN",
    "lat":"12.295",
    "long":"76.639",
    "temperature":"22",
    "humidity":"92%"
  },
  {
    "name":"MANDYA",
    "lat":"10.11",
    "long":"66.639",
    "temperature":"24",
    "humidity":"82%"
  }
]
```

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="#9DB87F"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/textView"
        android:layout_width="257dp"
        android:layout_height="59dp"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="74dp"
        android:layout_marginBottom="453dp"
        android:text="PARSER"
        android:textSize="36sp"
        tools:layout_editor_absoluteX="194dp"
        tools:layout_editor_absoluteY="126dp" />
    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="260dp"
```

```
        android:layout_marginBottom="371dp"
        android:backgroundTint="#182C9F"
        android:onClick="parsexml"
        android:text="XML"
        android:textAlignment="center" />
    <Button
        android:id="@+id/button2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="118dp"
        android:layout_marginBottom="373dp"
        android:backgroundTint="#23669B"
        android:onClick="parsejson"
        android:text="JSON"
        android:textAlignment="center" />
    <TextView
        android:id="@+id/display"
        android:layout_width="402dp"
        android:layout_height="332dp"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="9dp"
        android:layout_marginBottom="11dp"
        android:textAlignment="center"
        android:textColor="#721334" />
</RelativeLayout>
```

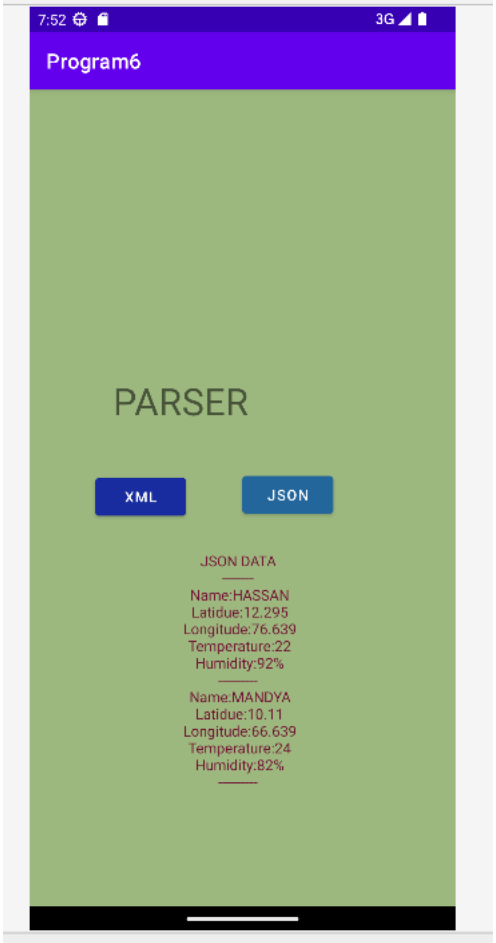
Java code:

```
package com.example.program6;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.TextView;
import android.widget.Toast;
import org.json.JSONArray;
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 java.nio.charset.StandardCharsets;
import javax.xml.parsers.DocumentBuilder;
import javax.xml.parsers.DocumentBuilderFactory;
public class MainActivity extends AppCompatActivity {
    TextView display;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        display=findViewById(R.id.display);
    }
    public void parsexml(View v){
        try {
            InputStream is=getAssets().open("city.xml");
```

```
            DocumentBuilderFactory documentBuilderFactory =
                    DocumentBuilderFactory.newInstance();
            DocumentBuilder

documentBuilder=documentBuilderFactory.newDocumentBuilder();
            Document document=documentBuilder.parse(is);
            StringBuilder stringBuilder=new StringBuilder();
            stringBuilder.append("XML DATA");
            stringBuilder.append("\n-------------");
            NodeList nodeList=document.getElementsByTagName("place");
            for(int i=0; i<nodeList.getLength();i++){
                Node node = nodeList.item(i);
                if(node.getNodeType()==Node.ELEMENT_NODE){
                    Element element = (Element)node;
                    stringBuilder.append("\n
Name:").append(getValue("name",element));
                    stringBuilder.append("\n
Latitude:").append(getValue("lat",element));
                    stringBuilder.append("\n
Longitude:").append(getValue("long",element));
                    stringBuilder.append("\n
Temperature:").append(getValue("temperature",element));
                    stringBuilder.append("\n
humidity").append(getValue("humidity",element));
                    stringBuilder.append("\n----------");
                }
            }
            display.setText(stringBuilder.toString());
        }
        catch (Exception e){
            e.printStackTrace();
            Toast.makeText(MainActivity.this,"Error in reading XML
FILE",Toast.LENGTH_LONG).show();
        }
    }
    public void parsejson(View V){
        String json;
        StringBuilder stringBuilder = new StringBuilder();
        try {
            InputStream is = getAssets().open("city.json");
            int size=is.available();
            byte[] buffer=new byte[size];
            is.read(buffer);
            json = new String(buffer, StandardCharsets.UTF_8);
            JSONArray jsonArray = new JSONArray(json);
            stringBuilder.append("JSON DATA");
            stringBuilder.append("\n--------");
            for(int i=0;i<jsonArray.length();i++){
                JSONObject jsonObject = jsonArray.getJSONObject(i);
                stringBuilder.append("\n
Name:").append(jsonObject.getString("name"));
                stringBuilder.append("\n
Latidue:").append(jsonObject.getString("lat"));
                stringBuilder.append("\n
Longitude:").append(jsonObject.getString("long"));
                stringBuilder.append("\n
Temperature:").append(jsonObject.getString("temperature"));
                stringBuilder.append("\n
Humidity:").append(jsonObject.getString("humidity"));
                stringBuilder.append("\n----------");
```

```
            }
            display.setText(stringBuilder.toString());
            is.close();
        }
        catch (Exception e){
            e.printStackTrace();
            Toast.makeText(MainActivity.this,"Error in reading JSON
file",Toast.LENGTH_LONG).show();
        }
    }
    private String getValue(String tag,Element element){
        return

element.getElementsByTagName(tag).item(0).getChildNodes().item(0).getNodeVa
lue();
    }
}
```

output:



Program-10: 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:

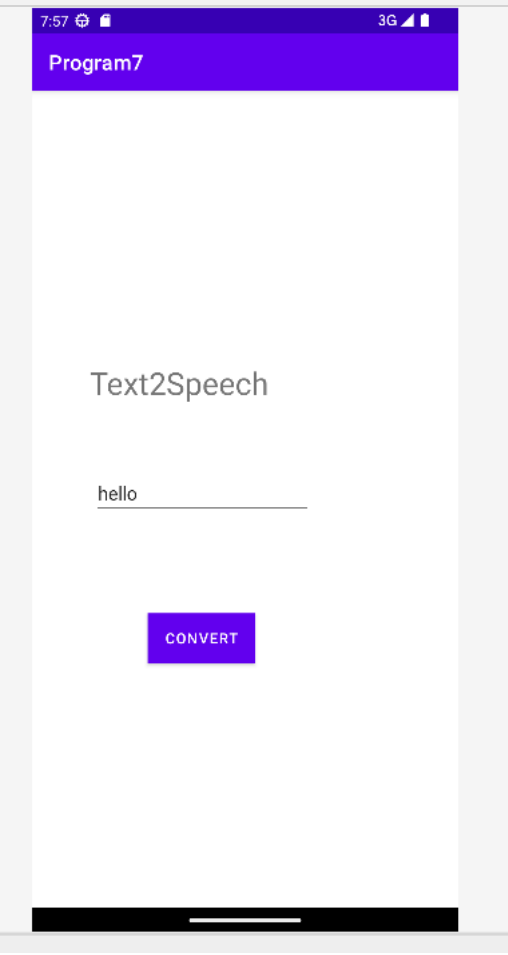
```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <TextView
        android:id="@+id/textView"
        android:layout_width="335dp"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="21dp"
        android:layout_marginBottom="486dp"
        android:text="Text2Speech"
        android:textSize="30sp" />
    <EditText
        android:id="@+id/editText"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="142dp"
        android:layout_marginBottom="377dp"
        android:ems="10"
        android:hint="Enter text here"
        android:inputType="textPersonName" />
    <Button
        android:id="@+id/convert"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="196dp"
        android:layout_marginBottom="236dp"
        android:onClick="convert"
        android:background="#6CEC71"
        android:text="CONVERT" />
</RelativeLayout>
```

Java code:

```
package com.example.program7;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.speech.tts.TextToSpeech;
import android.view.View;
import android.widget.EditText;
import java.util.Locale;
public class MainActivity extends AppCompatActivity {
    EditText e1;
    TextToSpeech t1;
```

```
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        e1=findViewById(R.id.editText);
        t1=new TextToSpeech(getApplicationContext(), new
TextToSpeech.OnInitListener()
        {
            @Override
            public void onInit(int status) {
                if(status!=TextToSpeech.ERROR){
                    t1.setLanguage(Locale.UK);
                }
            }
        });
    }
    public void convert(View V){
        String tospeak=e1.getText().toString();
        t1.speak(tospeak,TextToSpeech.QUEUE_FLUSH,null);
    }
}
```

output:



Program-11: 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"?>
<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:id="@+id/Button11"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:backgroundTint="#4CAF50"
    tools:context=".MainActivity">
    <Button
        android:id="@+id/button8"
        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="201dp"
        android:backgroundTint="#4CAF50"
        android:onClick="inputNumber"
        android:text="8" />
    <Button
        android:id="@+id/Button10"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="286dp"
        android:layout_marginBottom="115dp"
        android:onClick="inputNumber"
        android:backgroundTint="#4CAF50"
        android:text="*" />
    <Button
        android:id="@+id/saveBtn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="80dp"
        android:layout_marginBottom="38dp"
        android:backgroundTint="#CDDC39"
        android:text="Save" />
    <Button
        android:id="@+id/callBtn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="209dp"
        android:layout_marginBottom="35dp"
        android:backgroundTint="#F44336"
        android:text="Call" />
    <Button
        android:id="@+id/clearBtn12"
```

```
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="159dp"
        android:layout_marginBottom="116dp"
        android:backgroundTint="#4CAF50"
        android:onClick="inputNumber"
        android:text="0" />
    <Button
        android:id="@+id/Button7"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="288dp"
        android:layout_marginBottom="201dp"
        android:onClick="inputNumber"
        android:backgroundTint="#4CAF50"
        android:text="7" />
    <Button
        android:id="@+id/Button9"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="38dp"
        android:layout_marginBottom="201dp"
        android:onClick="inputNumber"
        android:backgroundTint="#4CAF50"
        android:text="9" />
    <EditText
        android:id="@+id/phoneNumberEditText"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="172dp"
        android:layout_marginBottom="543dp"
        android:onClick="inputNumber"
        android:ems="10"
        android:hint="Phone Number"
        android:inputType="phone" />
    <Button
        android:id="@+id/clearBtn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="48dp"
        android:layout_marginBottom="544dp"
        android:backgroundTint="#E91E63"
        android:text="Clear" />
    <Button
        android:id="@+id/Button12"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="38dp"
```

```
        android:onClick="inputNumber"
        android:layout_marginBottom="108dp"
        android:backgroundTint="#4CAF50"
        android:text="#" />
    <Button
        android:id="@+id/Button1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="291dp"
        android:onClick="inputNumber"
        android:layout_marginBottom="380dp"
        android:backgroundTint="#4CAF50"
        android:text="1" />
    <Button
        android:id="@+id/Button4"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="289dp"
        android:onClick="inputNumber"
        android:layout_marginBottom="296dp"
        android:backgroundTint="#4CAF50"
        android:text="4" />
    <Button
        android:id="@+id/Button5"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="170dp"
        android:onClick="inputNumber"
        android:layout_marginBottom="295dp"
        android:backgroundTint="#4CAF50"
        android:text="5" />
    <Button
        android:id="@+id/Button6"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="35dp"
        android:layout_marginBottom="290dp"
        android:onClick="inputNumber"
        android:backgroundTint="#4CAF50"
        android:text="6" />
    <Button
        android:id="@+id/Button2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="172dp"
        android:onClick="inputNumber"
        android:layout_marginBottom="380dp"
        android:backgroundTint="#4CAF50"
        android:text="2" />
    <Button
```

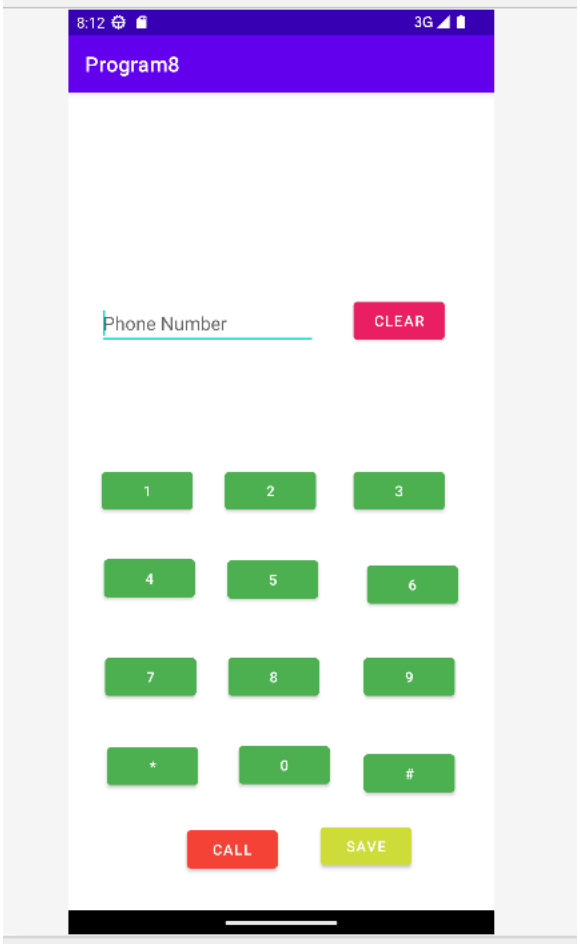
```
        android:id="@+id/Button3"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="48dp"
        android:onClick="inputNumber"
        android:layout_marginBottom="380dp"
        android:backgroundTint="#4CAF50"
        android:text="3" />
</RelativeLayout>
```

Java code:

```
package com.example.program8;

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;
import java.net.URI;
public class MainActivity extends AppCompatActivity {
    EditText phoneNumberEditText;
    Button clearBtn,saveBtn,callBtn;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        phoneNumberEditText=findViewById(R.id.phoneNumberEditText);
        clearBtn=findViewById(R.id.clearBtn);
        callBtn=findViewById(R.id.callBtn);
        saveBtn=findViewById(R.id.saveBtn);
        clearBtn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                phoneNumberEditText.setText("");
            }
        });
        callBtn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String
phoneNumber=phoneNumberEditText.getText().toString();
                Intent intent= new Intent(Intent.ACTION_DIAL);
                intent.setData(Uri.parse("tel:"+phoneNumber));
                startActivity(intent);
            }
        });
        saveBtn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String
phoneNumber=phoneNumberEditText.getText().toString();
                Intent intent=new Intent(Intent.ACTION_INSERT);
                intent.setType(ContactsContract.Contacts.CONTENT_TYPE);
```

```
intent.putExtra(ContactsContract.Intents.Insert.PHONE,phoneNumber);
                startActivity(intent);
            }
        });
    }
    public void inputNumber(View v){
        Button btn=(Button)v;
        String digit=btn.getText().toString();
        String phoneNumber=phoneNumberEditText.getText().toString();
        phoneNumberEditText.setText(phoneNumber+digit);
    }
}
```

output:



Program 12: Create an android application to perform crud operation using SQLite database

CRUD operations:

C-Create

R-Read

U-Update

D-Delete

Activity_main.XML

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout  xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity"
    android:orientation="vertical"
    android:background="#F8E6BF96"
    >
    <EditText
        android:id="@+id/student_id"
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:layout_weight="1"
        android:ems="10"
        android:textStyle="bold"
        android:inputType="number"
        android:hint="Student ID"
        />
    <EditText
        android:id="@+id/student_name"
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:layout_weight="1"
        android:ems="10"
        android:textStyle="bold"
        android:inputType="textPersonName"
        android:hint="Student Name"
        />
    <Button
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:layout_weight="1"
        android:text="Load All Students"
        android:onClick="loadStudents"
        android:backgroundTint="#8BC34A"
        />

    <TextView
        android:id="@+id/result"
        android:layout_width="match_parent"
```

```
        android:layout_height="0dp"
        android:layout_weight="1"
        android:hint="Result"
        android:textSize="30dp"
        android:textStyle="bold|italic" />
    <Button
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:layout_weight="1"
        android:onClick="addStudent"
        android:backgroundTint="#8BC34A"
        android:text="ADD" />
    <Button
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:layout_weight="1"
        android:onClick="updateStudent"
        android:backgroundTint="#8BC34A"
        android:text="UPDATE"
        />
    <Button
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:layout_weight="1"
        android:onClick="deleteStudent"
        android:backgroundTint="#CD3428"
        android:text="DELETE By Id"
        />
</LinearLayout>
```

Mainactivity.java

```
package com.example.sqliteprogram12;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.text.method.ScrollingMovementMethod;
import android.view.View;
import android.widget.EditText;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {
    TextView resultText;
    EditText studentId;
    EditText studentName;
    MyDBHandler dbHandler;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        resultText = (TextView) findViewById(R.id.result);
        studentId = (EditText) findViewById(R.id.student_id);
        studentName = (EditText) findViewById(R.id.student_name);
        resultText.setMovementMethod(new ScrollingMovementMethod());
        dbHandler= new MyDBHandler(this);
    }
    public void loadStudents(View view) {
        resultText.setText(dbHandler.loadHandler());
```

```
        studentId.setText("");
        studentName.setText("");
    }
    public void addStudent (View view) {
        if(!studentId.getText().toString().isEmpty() &&
!studentName.getText().toString().isEmpty()) {
            int id = Integer.parseInt(studentId.getText().toString());
            String name = studentName.getText().toString();
            Student student = new Student(id, name);
            long insertId=dbHandler.addHandler(student);
            if(insertId==-1){
                resultText.setText("Record already exists");
            }
            else{
                studentId.setText("");
                studentName.setText("");
                resultText.setText("Record added");
            }
        }
        else{
            resultText.setText("Please fill correct id and name");
        }
    }
    public void updateStudent(View view) {
        if( !studentId.getText().toString().isEmpty() &&
!studentName.getText().toString().isEmpty()) {
            boolean result = dbHandler.updateHandler(Integer.parseInt(
                    studentId.getText().toString()),
studentName.getText().toString());
            if (result) {
                studentId.setText("");
                studentName.setText("");
                resultText.setText("Record Updated");
            } else {
                resultText.setText("No Record Found");
            }
        }
        else{
            resultText.setText("Please fill correct id and name");
        }
    }
    public void deleteStudent(View view) {
        if(!studentId.getText().toString().isEmpty()) {
            boolean result = dbHandler.deleteHandler(Integer.parseInt(
                    studentId.getText().toString()));
            if (result) {
                studentId.setText("");
                studentName.setText("");
                resultText.setText("Record Deleted");
            } else {
                resultText.setText("No Record Found");
            }
        } else{
            resultText.setText("Please fill correct id");
        }
    }
    @Override
    protected void onDestroy() {
        super.onDestroy();
        dbHandler.close();
```

```
    }
}
```

MyDBHandler .java

```
package com.example.sqliteprogram12;

import android.content.ContentValues;
import android.content.Context;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteOpenHelper;
public class MyDBHandler extends SQLiteOpenHelper {
    private static final int DATABASE_VERSION = 1;
    private static final String DATABASE_NAME = "studentDB.db";
    private static final String TABLE_STUDENTS = "students";
    private static final String COLUMN_ID = "StudentID";
    private static final String COLUMN_NAME = "StudentName";
    MyDBHandler(Context context)
    {
        super(context, DATABASE_NAME, null, DATABASE_VERSION);
    }
    @Override
    public void onCreate(SQLiteDatabase db) {
        String CREATE_STUDENT_TABLE = "CREATE TABLE " +
                TABLE_STUDENTS + "(" + COLUMN_ID + " INTEGER PRIMARY KEY,"
+ COLUMN_NAME
                + " TEXT " + ")";
        db.execSQL(CREATE_STUDENT_TABLE);
    }
    @Override
    public void onUpgrade(SQLiteDatabase db, int oldVersion,
                          int newVersion) {
        db.execSQL("DROP TABLE IF EXISTS " + TABLE_STUDENTS);
        onCreate(db);
    }
    String loadHandler() {
        String result = "";
        String query = "Select*FROM " + TABLE_STUDENTS;
        SQLiteDatabase db = this.getWritableDatabase();
        Cursor cursor = db.rawQuery(query, null);
        while (cursor.moveToNext()) {
            int result_0 = cursor.getInt(0);
            String result_1 = cursor.getString(1);
            result += String.valueOf(result_0) + " " + result_1 +
                    System.getProperty("line.separator");
        }
        cursor.close();
        db.close();
        if(result.equals(""))
            result="No Record Found";
        return result;
    }
    long addHandler(Student student) {
        long id;
        ContentValues values = new ContentValues();
        values.put(COLUMN_ID, student.getID());
        values.put(COLUMN_NAME, student.getStudentName());
        SQLiteDatabase db = this.getWritableDatabase();
```

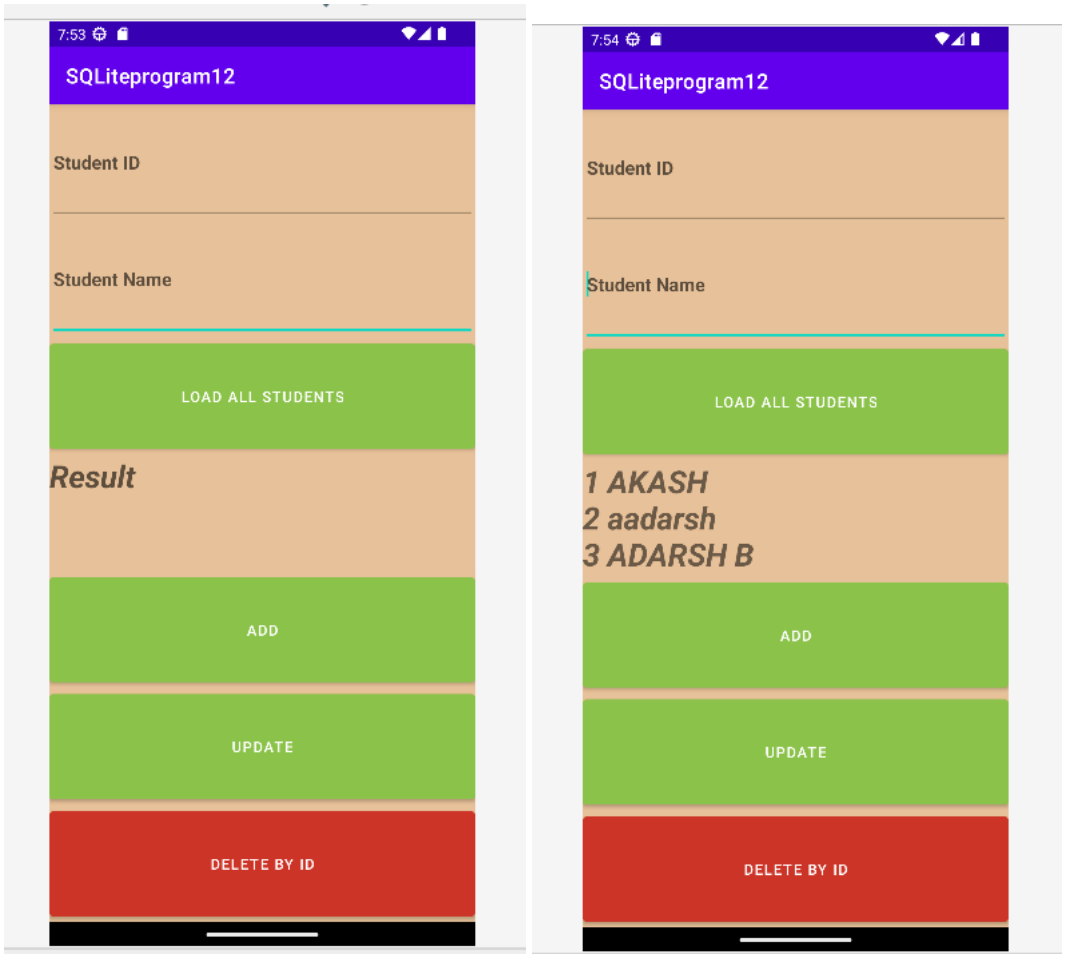
```
        id = db.insert(TABLE_STUDENTS, null, values);
        db.close();
        return id;
    }
    boolean updateHandler(int ID, String name) {
        SQLiteDatabase db = this.getWritableDatabase();
        ContentValues args = new ContentValues();
        args.put(COLUMN_ID, ID);
        args.put(COLUMN_NAME, name);
        return db.update(TABLE_STUDENTS, args, COLUMN_ID + "=" + ID, null)
> 0;
    }
    boolean deleteHandler(int ID) {
        boolean result = false;
        String query = "Select*FROM " + TABLE_STUDENTS + " WHERE " +
COLUMN_ID + " = '" + String.valueOf(ID) + "'";
        SQLiteDatabase db = this.getWritableDatabase();
        Cursor cursor = db.rawQuery(query, null);
        Student student = new Student();
        if (cursor.moveToFirst()) {
            student.setID(Integer.parseInt(cursor.getString(0)));
            db.delete(TABLE_STUDENTS, COLUMN_ID + "=?",
                    new String[] {
                            String.valueOf(student.getID())
                    });
            cursor.close();
            result = true;
        }
        db.close();
        return result;
    }
}
```

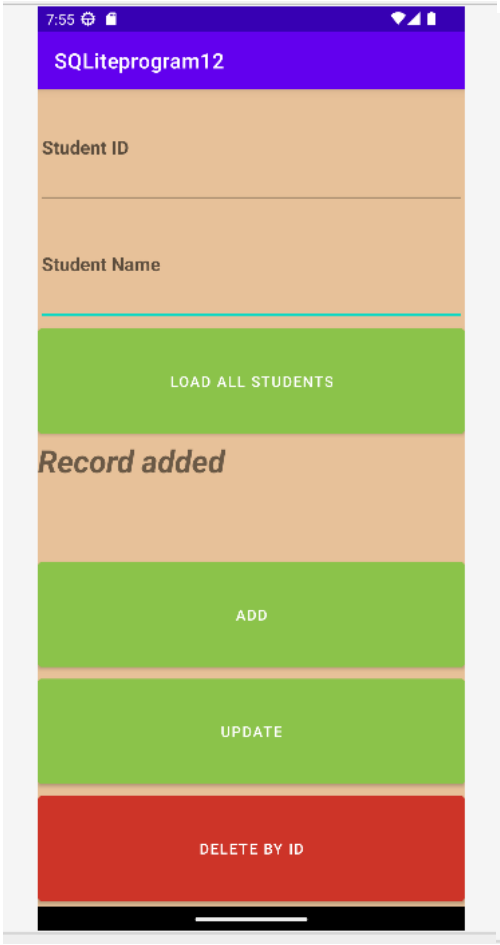
student.java

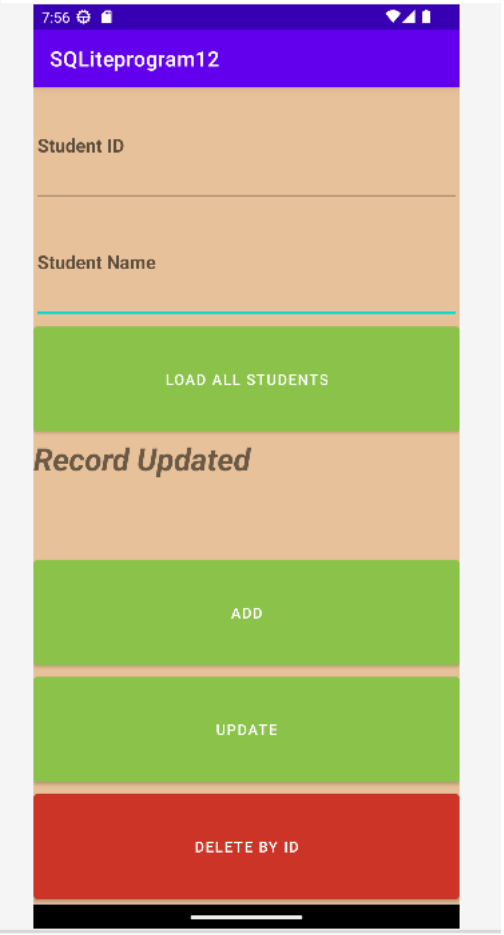
```
package com.example.sqliteprogram12;


public class Student {
    private int id;
    private String studentName;
    Student() {
    }
    Student(int id, String studentName) {
        this.id = id;
        this.studentName = studentName;
    }
    void setID(int id) {
        this.id = id;
    }
    int getID() {
        return this.id;
    }
    void setStudentName(String studentname) {
        this.studentName = studentname;
    }
    String getStudentName() {
        return this.studentName;
```

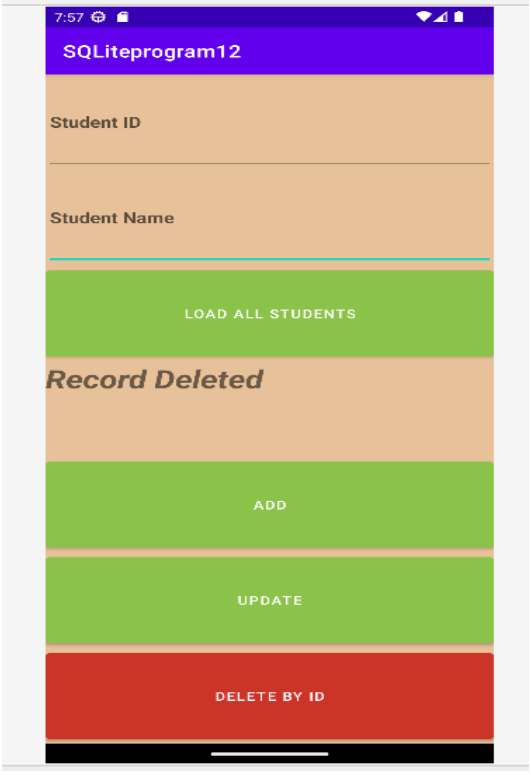
```
    }
}
```

OUTPUT:


7:53
SQLiteprogram12
Student ID
Student Name
LOAD ALL STUDENTS
Result
ADD
UPDATE
DELETE BY ID
7:54
SQLiteprogram12
Student ID
Student Name
LOAD ALL STUDENTS
1 AKASH
2 aadarsh
3 ADARSH B
ADD
UPDATE
DELETE BY ID


7:55
SQLiteprogram12
Student ID
Student Name
LOAD ALL STUDENTS
Record added
ADD
UPDATE
DELETE BY ID


7:56
SQLiteprogram12
Student ID
Student Name
LOAD ALL STUDENTS
Record Updated
ADD
UPDATE
DELETE BY ID


7:57
SQLiteprogram12
Student ID
Student Name
LOAD ALL STUDENTS
Record Deleted
ADD
UPDATE
DELETE BY ID