**Mobile Application Development Lab:** M22TC0208

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course Title** | **Mobile Application Development Lab** | | | | **Course Type** | | **HC** | |
| **Course Code** | M22TC0208 | **Credits** | **1** | | **Lab** | | **II 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** |

**LAB-Manual**

###### 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 Outcome s | 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:**

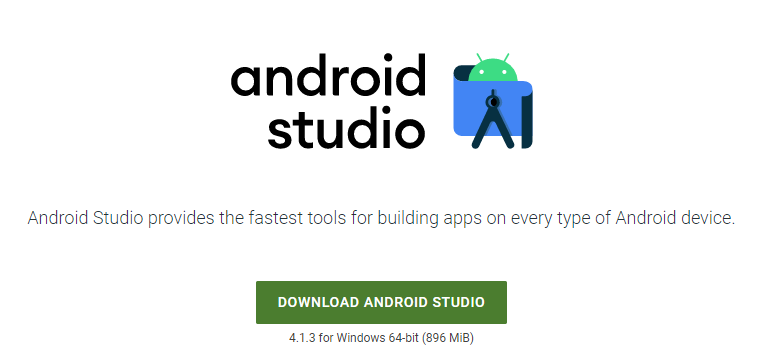
### System Requirements

* 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

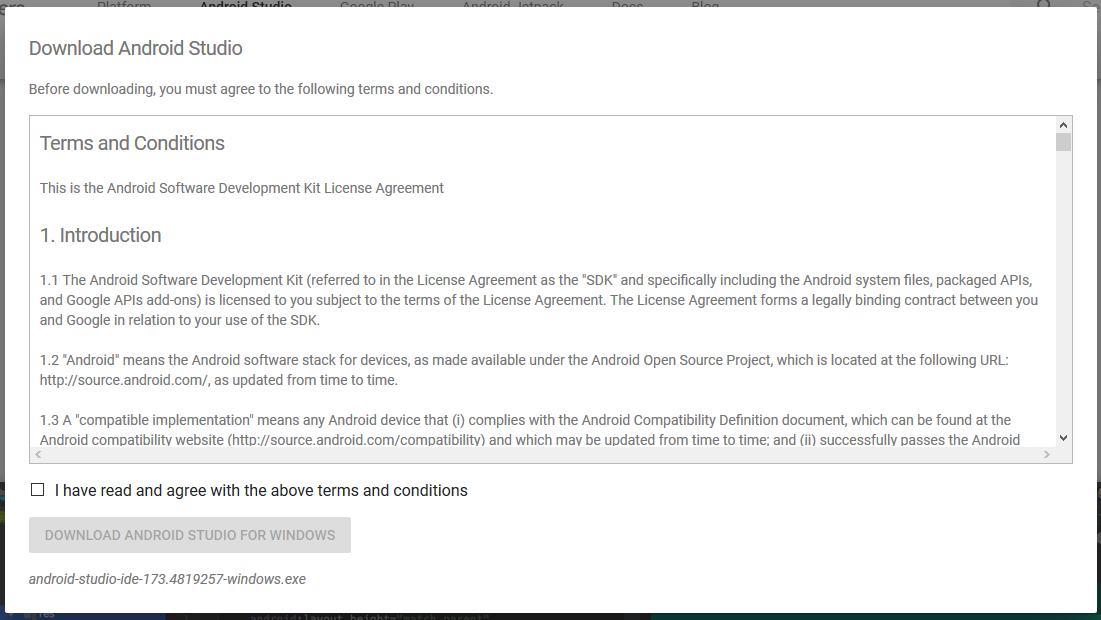
### **Installation Guide**

**Step 1:**Head over to [**this link**](https://developer.android.com/studio/#downloads) to get the Android Studio executable or zip file.

**Step 2:**Click on the **Download Android Studio** Button.



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



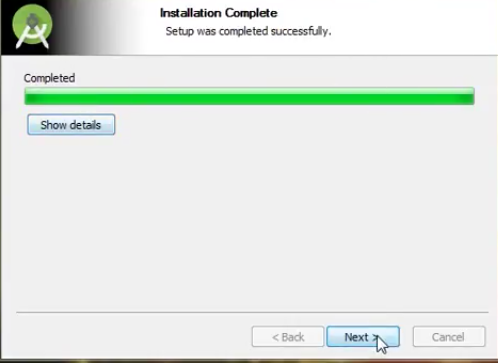
Click on the Save file button in the appeared prompt box and the file will start downloading.

**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’.

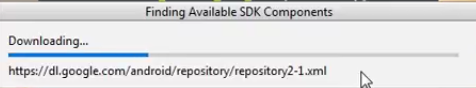


Click the **OK**button.

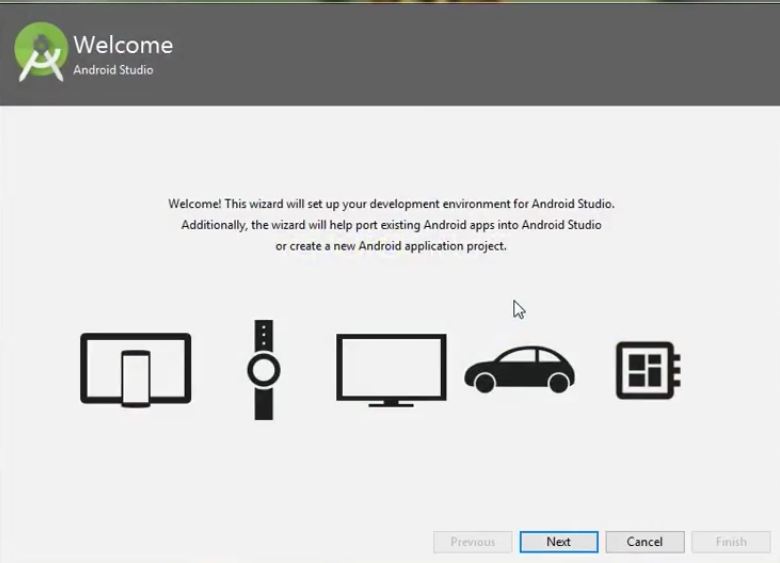
**Step 6:**This will start the Android Studio.



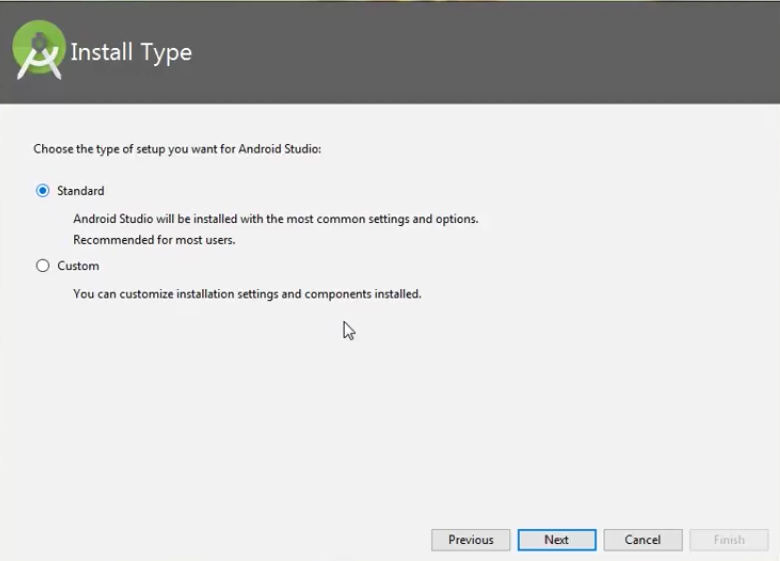
Meanwhile, it will be finding the available SDK components.



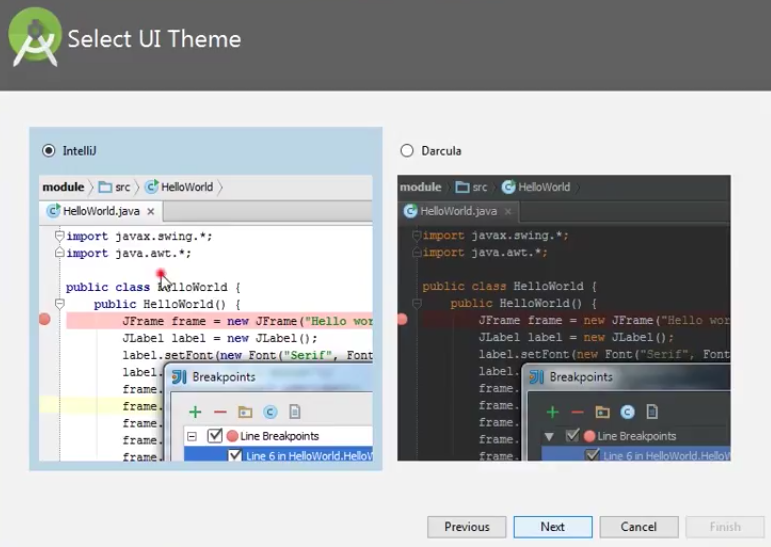
**Step 7:**After it has found the SDK components, it will redirect to the Welcome dialog box.



Click on **Next**.

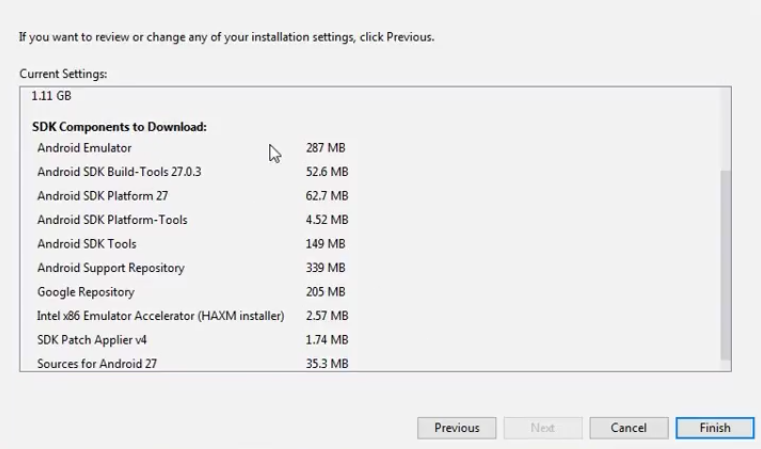


Choose Standard and click on Next. Now choose the theme, whether the **Light**theme or the **Dark**one. The light one is called the **IntelliJ**theme whereas the dark theme is called **Dracula**. Choose as required.

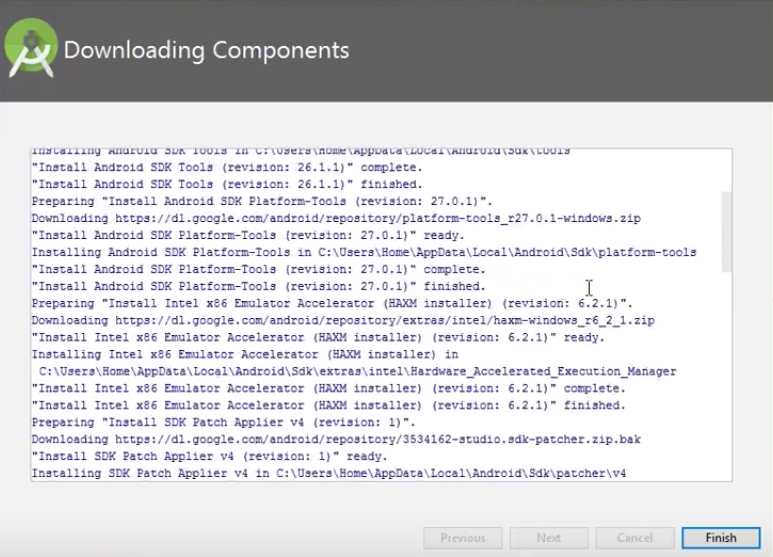


Click on the **Next**button.

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

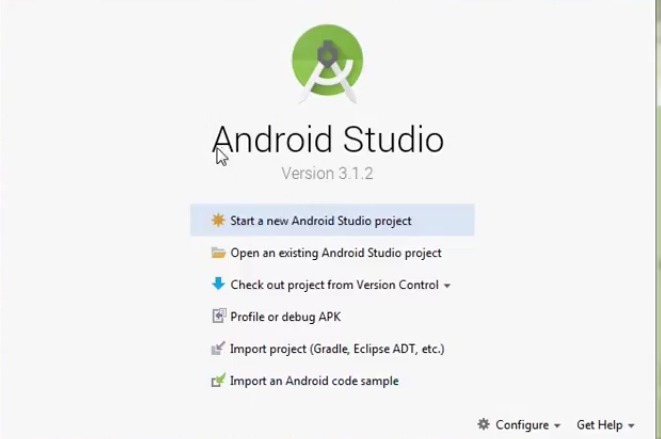


Click on Finish. Components begin to download let it complete.



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

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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

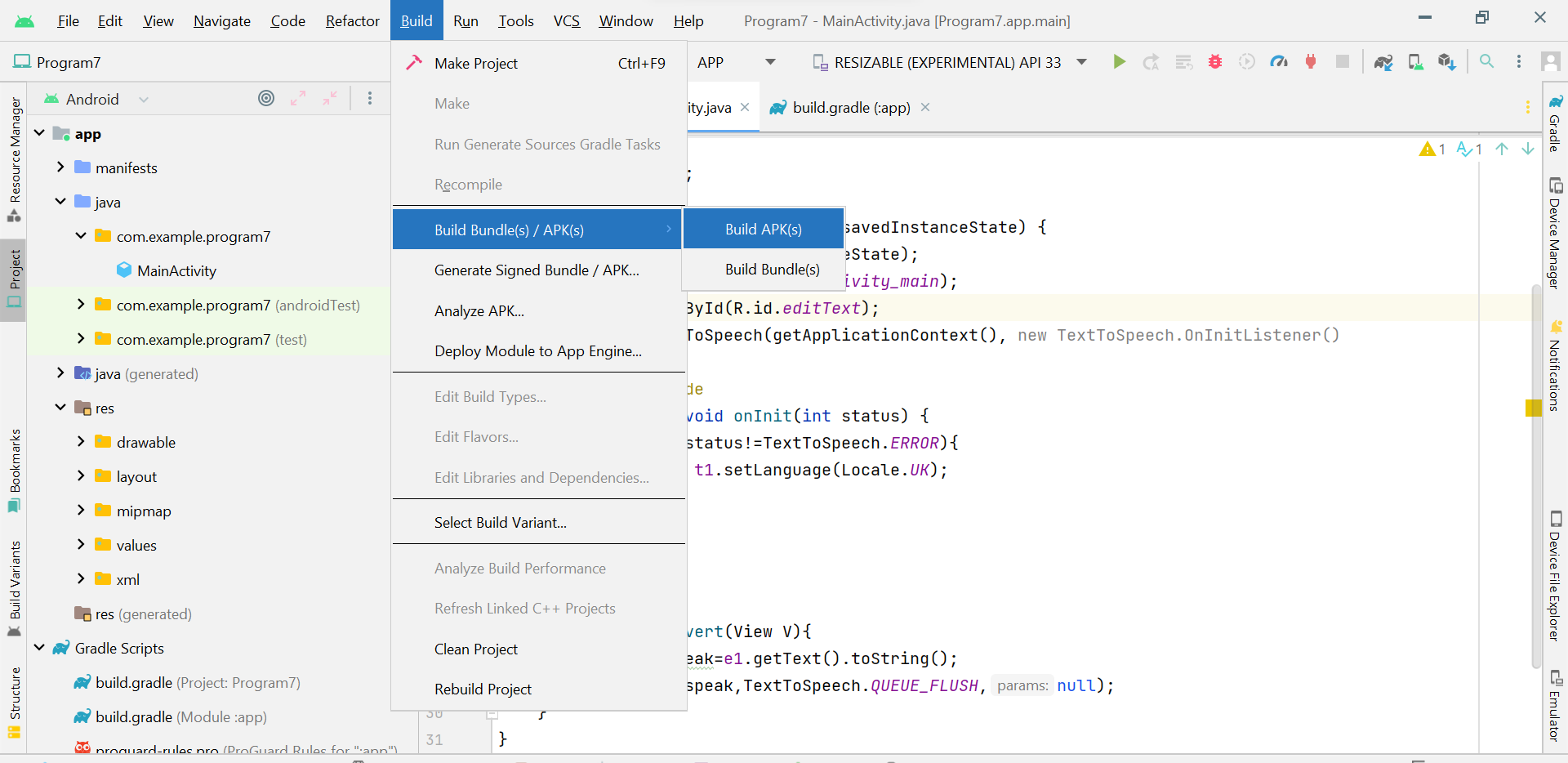
once done successfully above steps

open the command prompt

type command gradle -v

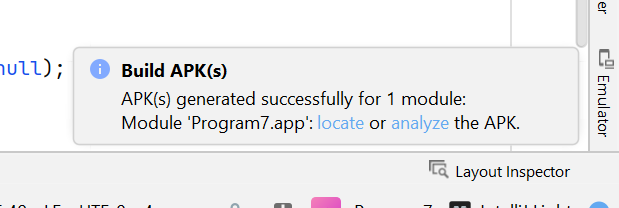
**How to Generate or Find an .APK File in your Android Project**

**Open the project in Android studio then follow the below steps**

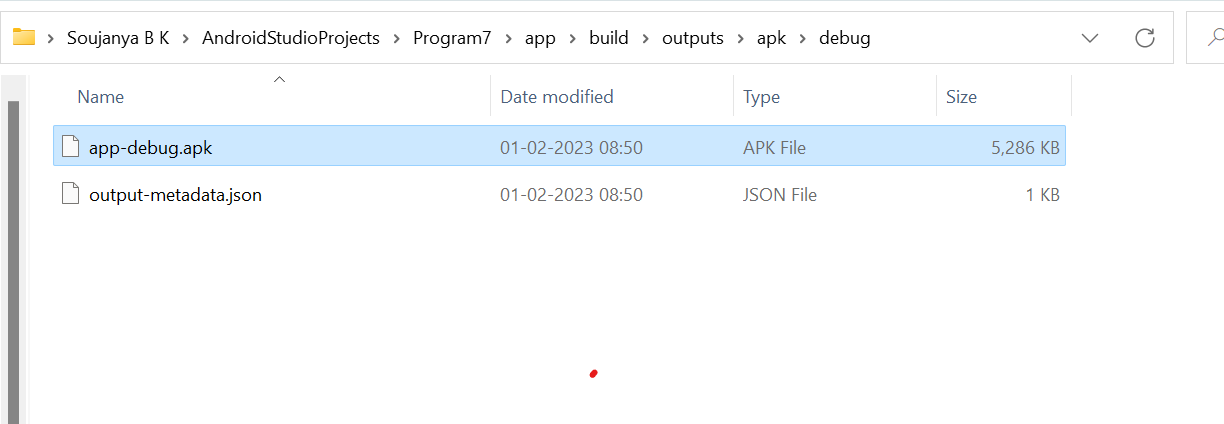
****

**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:

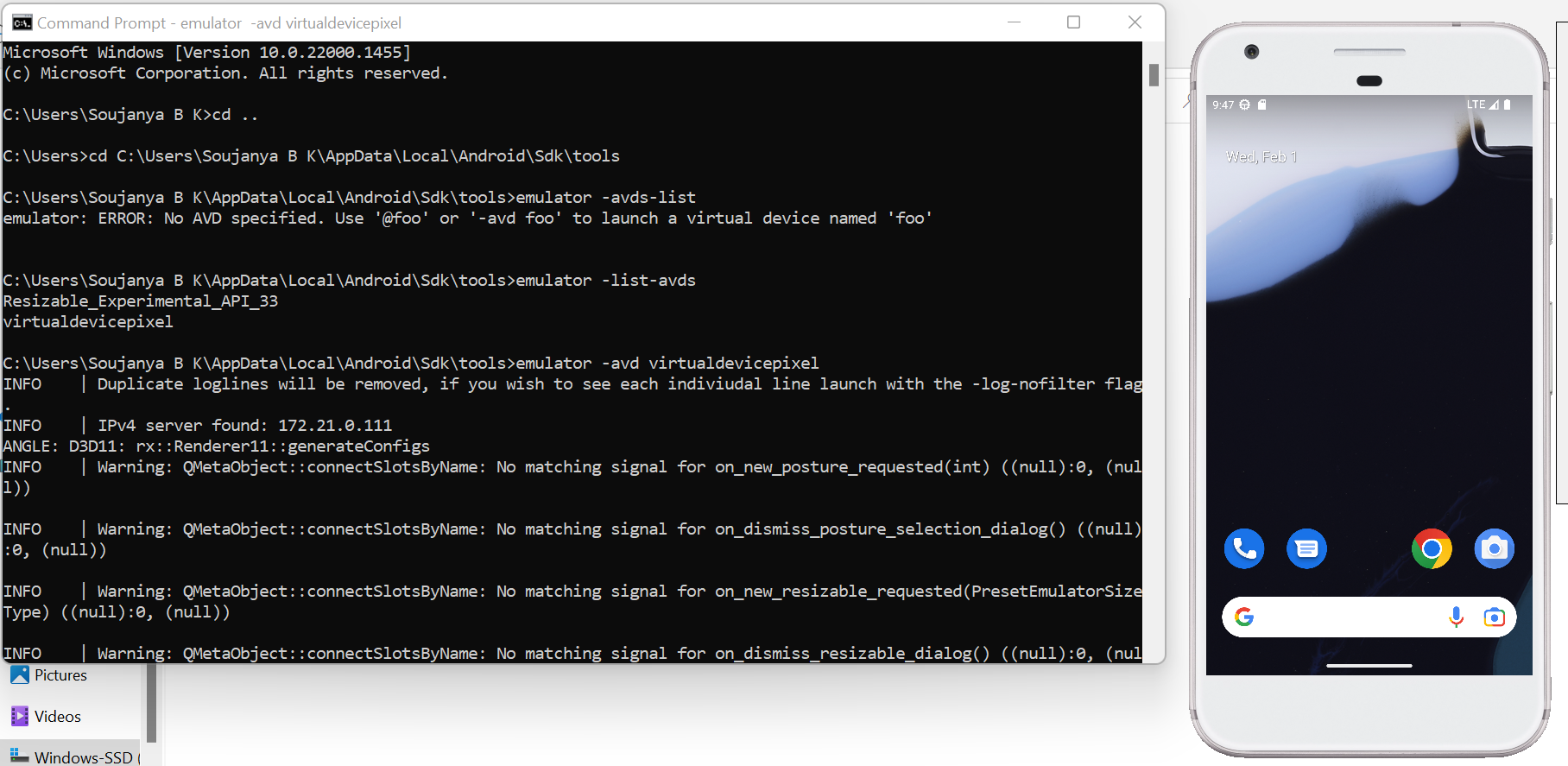
Open cmd

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

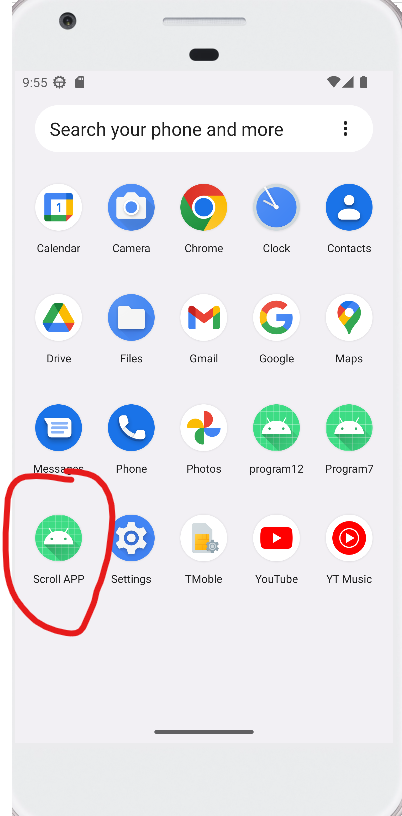
(it lists the devices available)

List of devices attached

emulator-5554 device

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





**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**

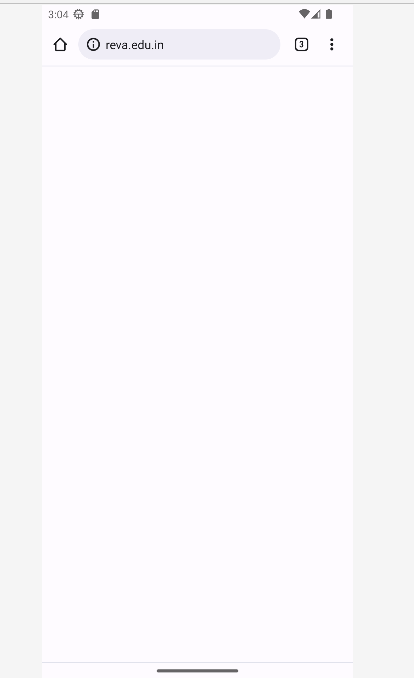
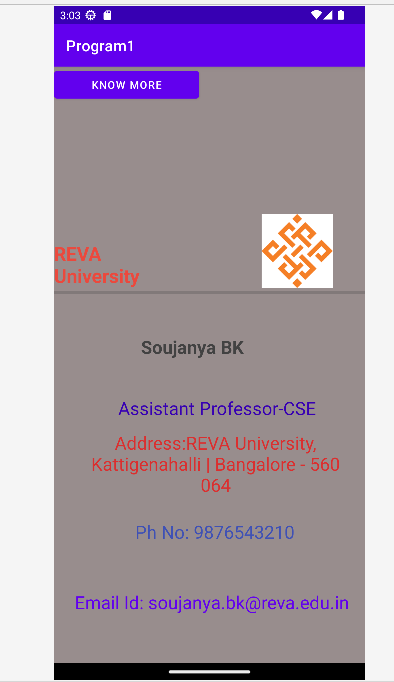
Activity\_main.XML

*<?*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**

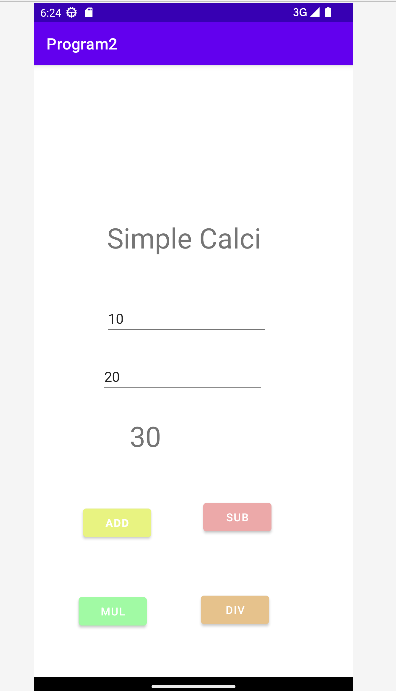
XML code:

*<?*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:



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

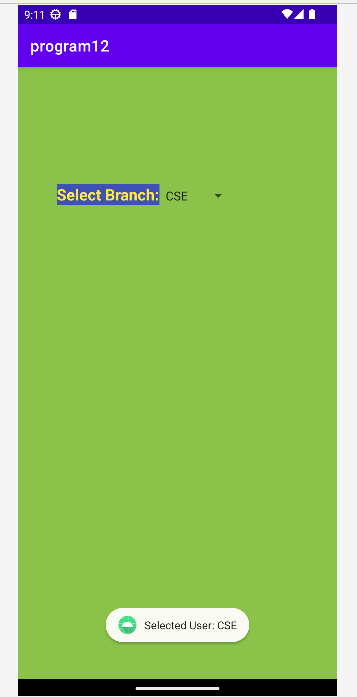
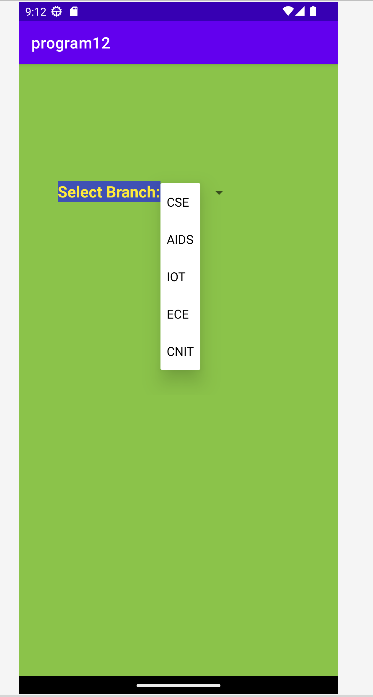
Xml code:

*<?*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\_item*);  
 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();  
 }  
 });  
 }  
}

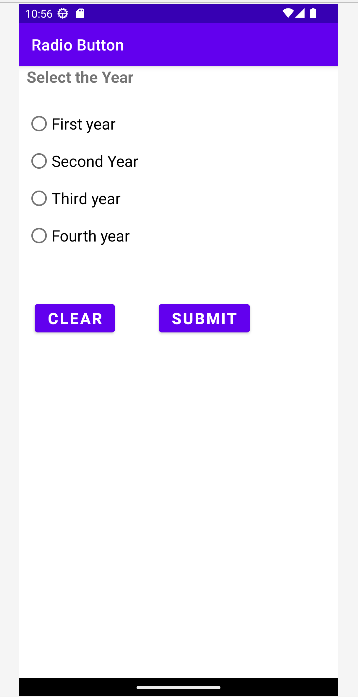
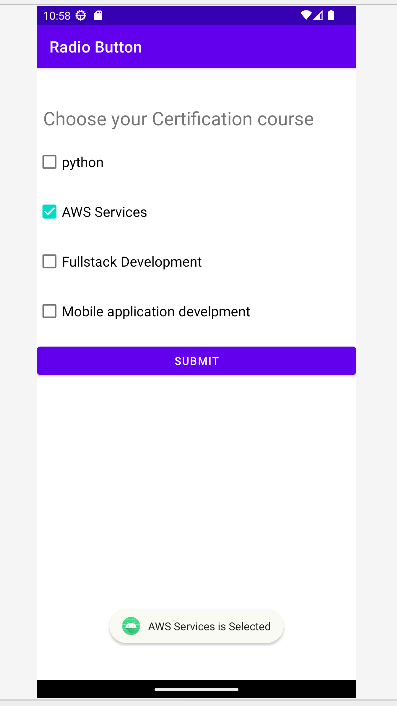
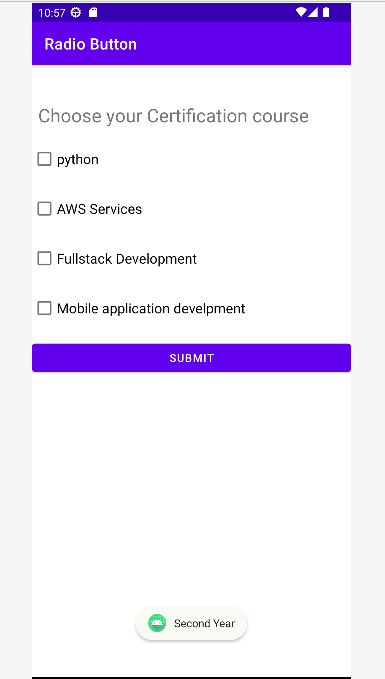
**activity\_yearwise.xml**

*<?*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:**

** **

**Program 5: Create an android application to demonstrate Scroll View**

**XML Code:**

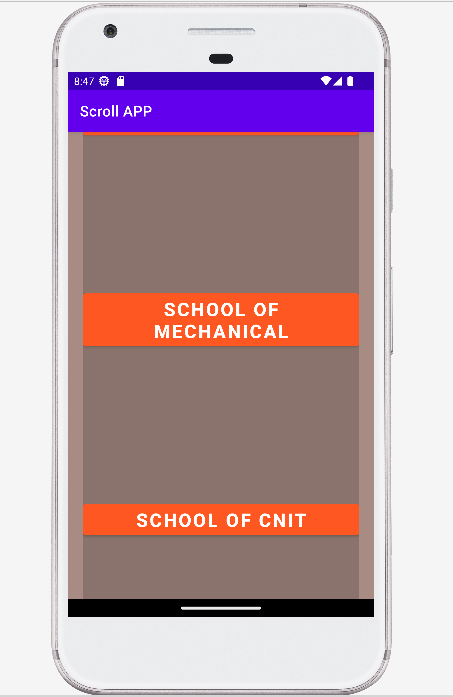
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:tools="http://schemas.android.com/tools"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 tools:context=".MainActivity">  
  
 <ScrollView  
 android:layout\_width="fill\_parent"  
 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;  
 }  
}

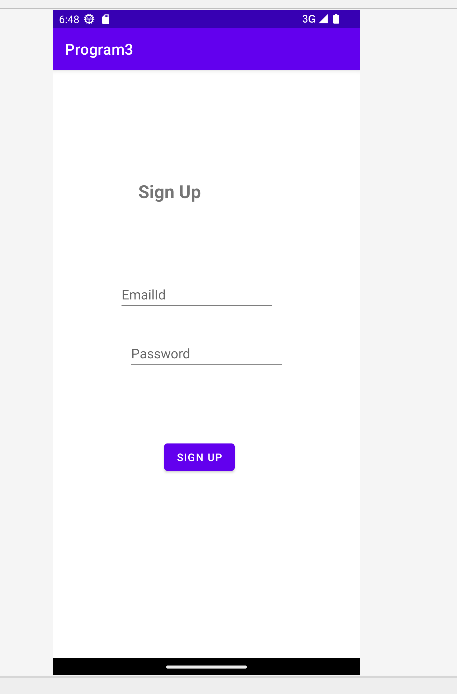
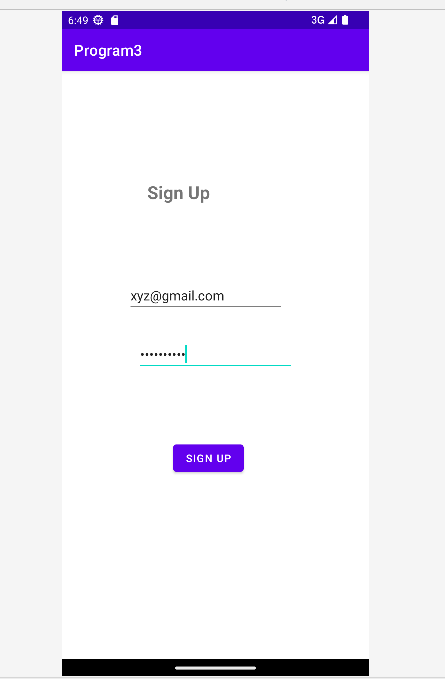
loginactivity.java

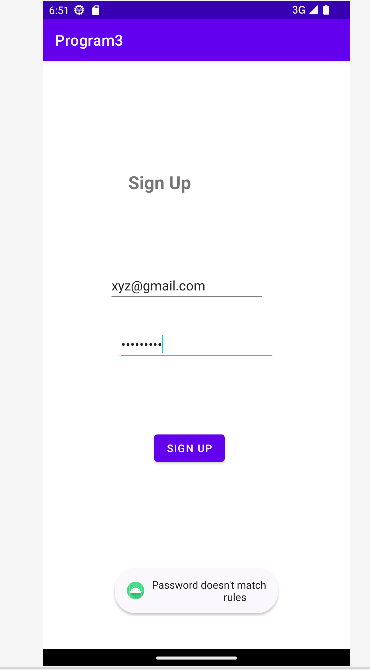
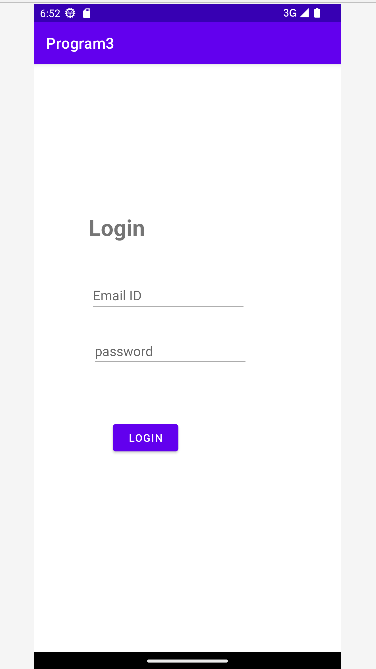
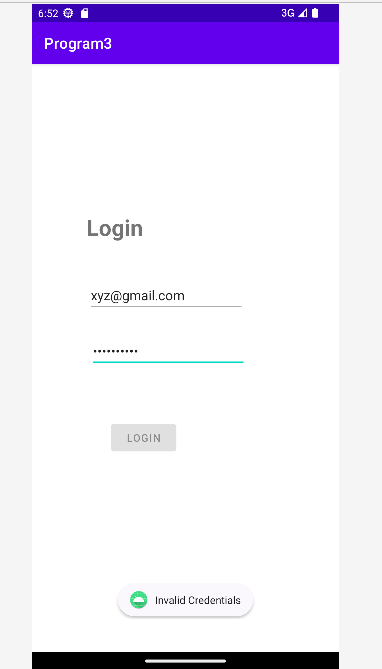
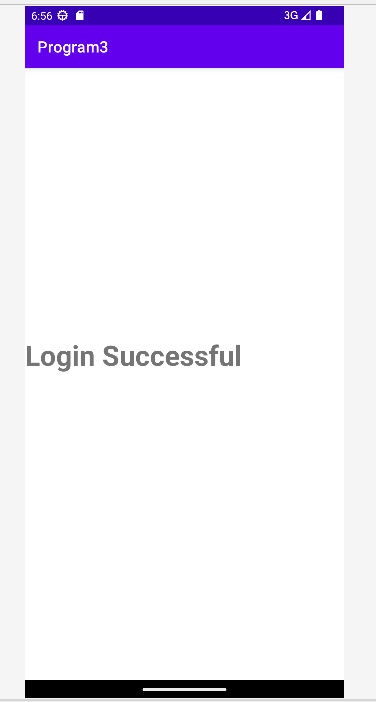
package com.example.program3;  
  
import androidx.appcompat.app.AppCompatActivity;  
import android.content.Intent;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Button;  
import android.widget.EditText;  
import android.widget.Toast;  
public class loginActivity extends 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

**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.**

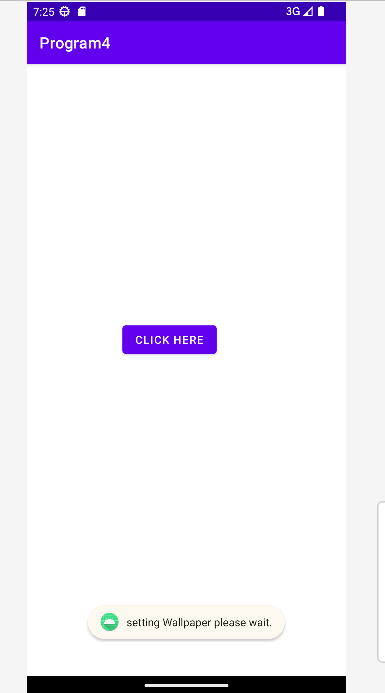
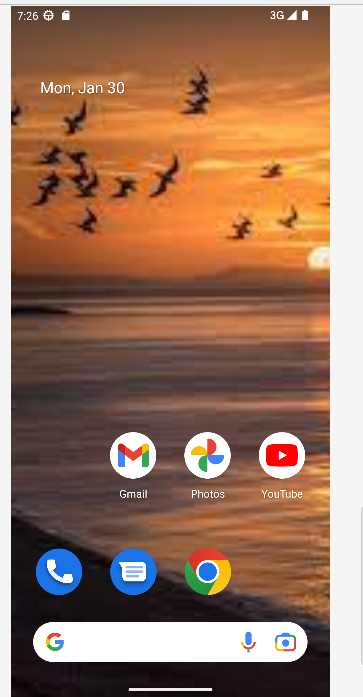
XML file:

*<?*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:

**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**

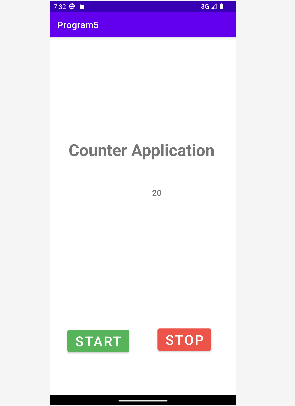
Xml code:

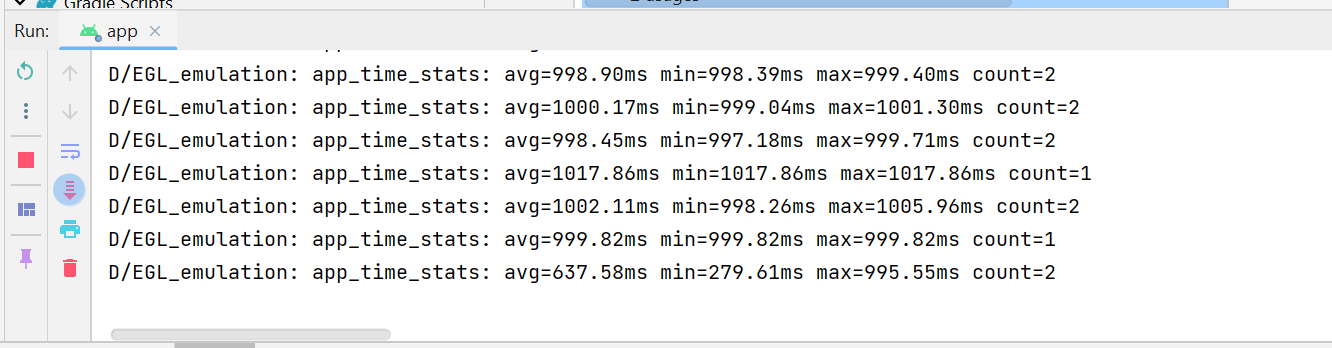
*<?*xml version="1.0" encoding="utf-8"*?>*<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:app="http://schemas.android.com/apk/res-auto"  
 xmlns:tools="http://schemas.android.com/tools"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 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:





**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%"  
 }  
]

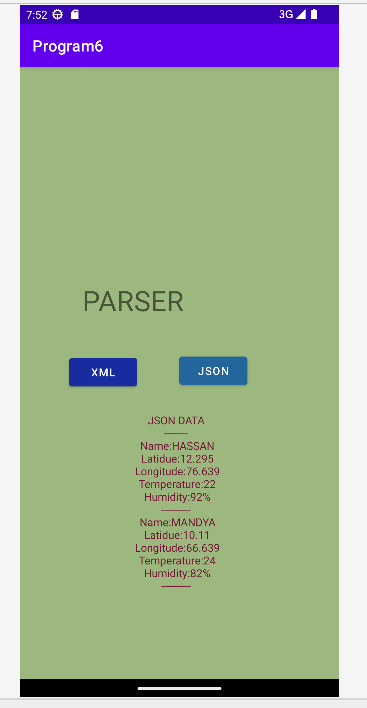
Xml code:

*<?*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).getNodeValue();  
 }  
}

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**

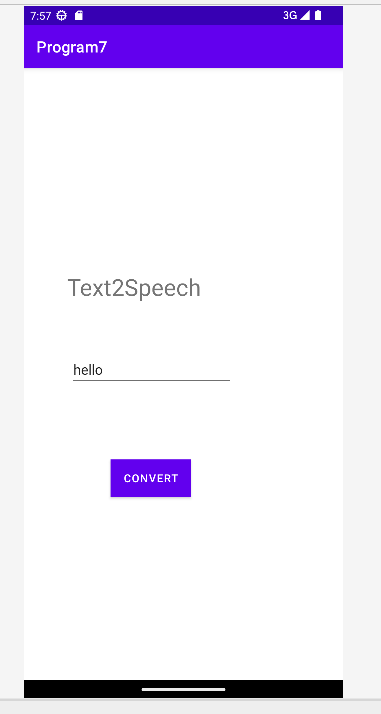
Xml code:

*<?*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.**

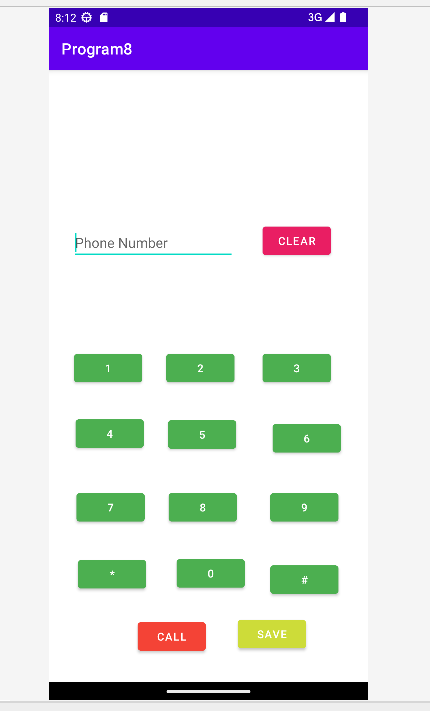
Xml code:

*<?*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();  
 }  
}

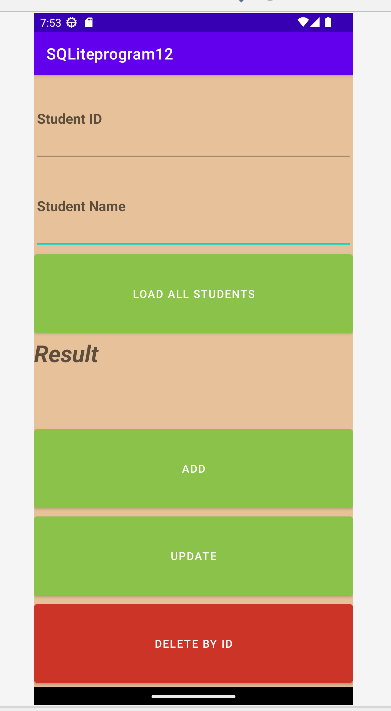
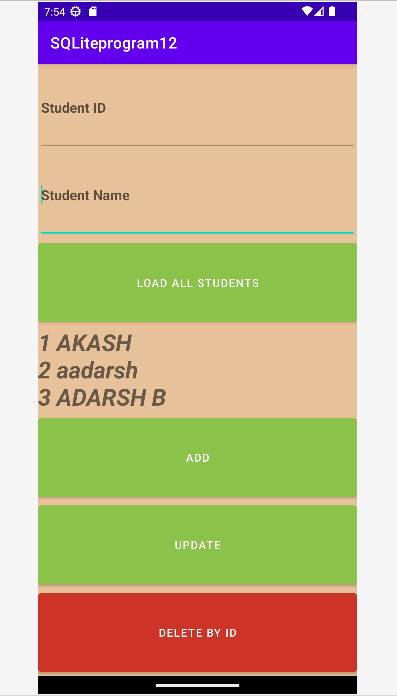
**MyDBHandler .java**

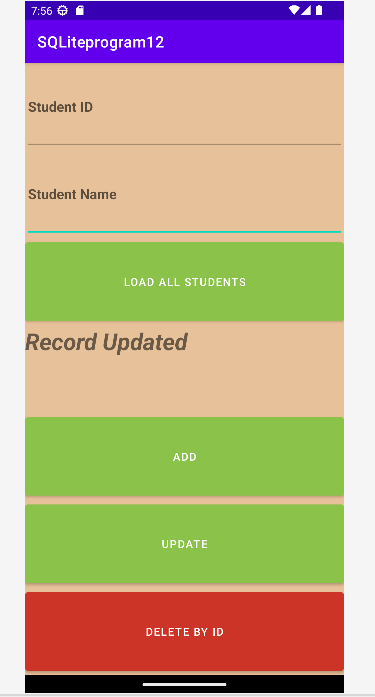
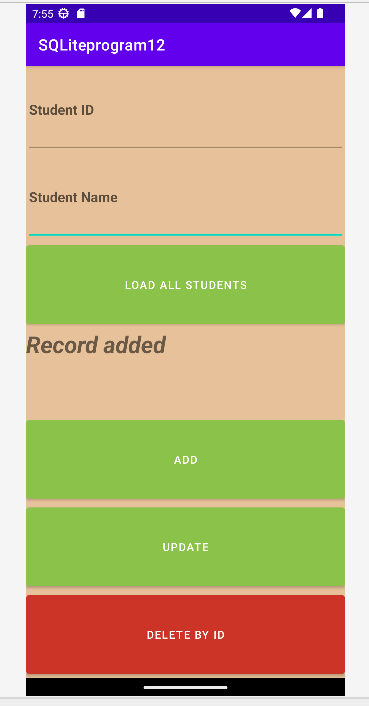
package com.example.sqliteprogram12;  
  
import android.content.ContentValues;  
import android.content.Context;  
import android.database.Cursor;  
import android.database.sqlite.SQLiteDatabase;  
import android.database.sqlite.SQLiteOpenHelper;  
public class MyDBHandler extends SQLiteOpenHelper {  
 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:**

**** ****

****