RNS INSTITUTE OF TECHNOLOGY

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UG Programs - CSE, ECE, ISE, EIE and EEE have been Accredited by NBA for three Academic years

DR. VISHNUVARDHAN ROAD, CHANNASANDRA, RR NAGAR POST, BENGALURU – 560 09

ESTD:2001

An Institute with a Diffe

Department of Computer Science and Engineering

MOBILE APPLICATION DEVELOPMENT LABORATORY MANUAL

For Sixth Semester B.E-2018 Batch [VTU/CBCS, 2018-19 syllabus]

Subject Code – 18CSMP68

NAME : .....

USN: .....

SECTION : .....

USN :

VISION AND MISSION OF INSTITUTION

Vision

Building RNSIT into a World Class Institution

Mission

To impart high quality education in Engineering, Technology and Management with a Difference, Enabling Students to Excel in their Career by

1. Attracting quality Students and preparing them with a strong foundation in fundamentals so as to achieve distinctions in various walks of life leading to outstanding contributions
2. Imparting value based, need based, choice based and skill based professional education to the aspiring youth and carving them into disciplined, World class Professionals with social responsibility
3. Promoting excellence in Teaching, Research and Consultancy that galvanizes academic consciousness among Faculty and Students
4. Exposing Students to emerging frontiers of knowledge in various domains and make them suitable for Industry, Entrepreneurship, Higher studies, and Research & Development
5. Providing freedom of action and choice for all the Stake holders with better visibility

VISION AND MISSION OF CSE DEPARTMENT

Vision

Preparing better computer professionals for a real world

Mission

The Department of Computer Science and Engineering will make every effort to promote an intellectual and an ethical environment in which the strengths and skills of Computer Professionals will flourish by

1. Imparting Solid foundations and Applied aspects in both Computer Science Theory and Programming practices
2. Providing Training and encouraging R&D and Consultancy Services in frontier areas of Computer Science with a Global outlook
3. Fostering the highest ideals of Ethics, Values and creating Awareness on the role of Computing in Global Environment
4. Educating and preparing the graduates, highly Sought-after, Productive, and Well-respected for their work culture
5. Supporting and inducing Lifelong Learning practice

Mobile Application Development Laboratory- 18CSMP68
INTERNAL EVALUATION SHEET

EVALUATION (MAX MARKS 40)				
TEST A	**REGULAR EVALUATION B**	**MINI PROJECT C**	**RECORD D**	**TOTAL MARKS A+B+C+D**
10	**10**	**10**	**10**	**40**

R1: REGULAR LAB EVALUATION WRITE UP RUBRIC (MAX MARKS 10)				
Sl. No.	**Parameters**	**Good**	**Average**	**Needs improvement**
a.	**Understanding of problem (3 marks)**	Clear understanding of problem statement while designing and implementing the program (3)	Problem statement is understood clearly but few mistakes while designing and implementing program (2)	Problem statement is not clearly understood while designing the program (1)
b.	**Writing program (4 marks)**	Program handles all possible conditions (4)	Average condition is defined and verified. (3)	Program does not handle possible conditions (1)
c.	**Result and documentation (3 marks)**	Meticulousdocumentation and all conditions are taken care (3)	Acceptable documentation shown (2)	Documentation does not take care all conditions (1)

R2: REGULAR LAB EVALUATION VIVA RUBRIC (MAX MARKS 10)					
Sl. No.	**Parameter**	**Excellent**	**Good**	**Average**	**Needs Improvement**
a.	**Conceptual understanding (10 marks)**	Answers 80% of the viva questions asked (10)	Answers 60% of the viva questions asked (7)	Answers 30% of the viva questions asked (4)	Unable to relate the concepts (1)

R3: REGULAR LAB PROGRAM EXECUTION RUBRIC (MAX MARKS 10)				
Sl. No.	**Parameters**	**Excellent**	**Good**	**Needs Improvement**
a.	**Design, implementation and demonstration (5 marks)**	Program follows syntax and semantics of the programming language. Demonstrates the complete knowledge of the program written (5)	Program has few logical errors, moderately demonstrates all possible concepts implemented in programs (3)	Syntax and semantics of programming is not clear (1)
b.	**Result and documentation (5 marks)**	All test cases are successful, all errors are debugged with own practical knowledge and clear documentation according to the guidelines (5)	Moderately debugs the programs , few test case are unsuccessful and Partial documentation (3)	Test cases are not taken care , unable to debug the errors and no proper documentation (1)

R4: RECORD EVALUATION RUBRIC (MAX MARKS 10)					
Sl. No.	**Parameter**	**Excellent**	**Good**	**Average**	**Needs Improvement**
a.	**Documentation (10 marks)**	Meticulous record writing including program, comments and test cases as per the guidelines mentioned (10)	Write up contains program and test cases, but comments are not included (8)	Write up contains only program (5)	Program written with few mistakes (3)

R5: MINI PROJECT EVALUATION RUBRIC (MAX MARKS 10)				
Sl. No	**Parameters**	**Good**	**Average**	**Needs improvement**
1	**Understanding theProblem statement, Design and Implementation(4 marks)**	Clear understanding of problem statement and 50% implementationof the project(4)	Moderate understanding of problem statement and 30% implementation of the project(3)	Less than 30% of the project work is completed with minimal understanding of the problem statement(2)
2	**Demonstration of Legitimate Results and documentation (6 marks)**	Complete knowledge about all possible concepts implemented in project and clear documentation according to the guidelines (6)	Moderate knowledge about all possible concepts implemented in project along with documentation according to the guidelines (5)	Minimal knowledge of concepts implemented in the project and poor documentation (2)

A. TEST /LAB INTERNALS MARKS (MAX MARKS 10)

TEST #	Write up 6	Execution 28	Viva 6	Sign	Total 40	Avg. 40	Final 10
TEST-1							
TEST-2						$\overline{40}$	$\overline{10}$

B. REGULAR LAB EVALUATION (MAX MARKS 10)

Week #	Date of Execution	Additional programs	Write up (10)	Exen. (10)	Viva (10)	Total 30	Teacher Signature
1							
2							
3							
4							
5							
6							
7							
8							
Total Marks		$\overline{240}$	$\overline{30}$			$\overline{10}$	

C. MINI PROJECT EVALUATION (MAX MARKS 10)

TITLE OF THE PROJECT							
TEAM MEMBERS							
REVIEW	Date of Conduction	Design (7)	Demonstration (26)	Viva (7)	Total (40)	Avg. 40	Final 10
1							
2						$\frac{}{40}$	$\frac{}{10}$
REMARKS							

FINAL MARKS OBTAINED			
A : TEST (10)		TOTAL (A+B+C+D) $\frac{}{40}$	Lab in charge signature with date:
B : REGULAR EVALUATION (10)			
C: MINI PROJECT(10)			
D: RECORD (10)			

PREFACE

We have developed this comprehensive laboratory manual on Mobile Application Development with two primary objectives: To make the students comfortable with basic layout design in application development and to train them in evolving as an efficient Android Developer by strengthening their programming abilities.

The manual comprises of procedure for configuration of Android Studio followed by programming solutions with expected output layouts.

Our profound and sincere efforts will be fruitful only when students acquire the extensive knowledge by reading this manual and apply the concepts learnt apart from the requirements specified in C Programming Laboratory as prescribed by VTU, Belagavi.

Department of CSE

SYLLABUS

MOBILE APPLICATION DEVELOPMENTLABORATORY

Subject Code: 18CSMP68	IA Marks: 40
No. of Practical Hrs. / Week: 0:0:2	Exam Marks: 60
Total No. of Practical Hrs: 3 Hours/Week	Exam Hours: 03

Lab Experiments:

1. **The installation procedure of the Android Studio/Java software must be demonstrated and carried out in groups.**
2. **Students should use the latest version of Android Studio/Java/ Kotlin to execute these programs. Diagrams given are for representational purposes only, students are expected to improvise on them.**
3. **Part B programs should be developed as an application and are to be demonstrated as a mini project in a group by adding extra features or the students can also develop their application and demonstrate it as a mini-project. (Projects/programs are not limited to the list given in Part B).**

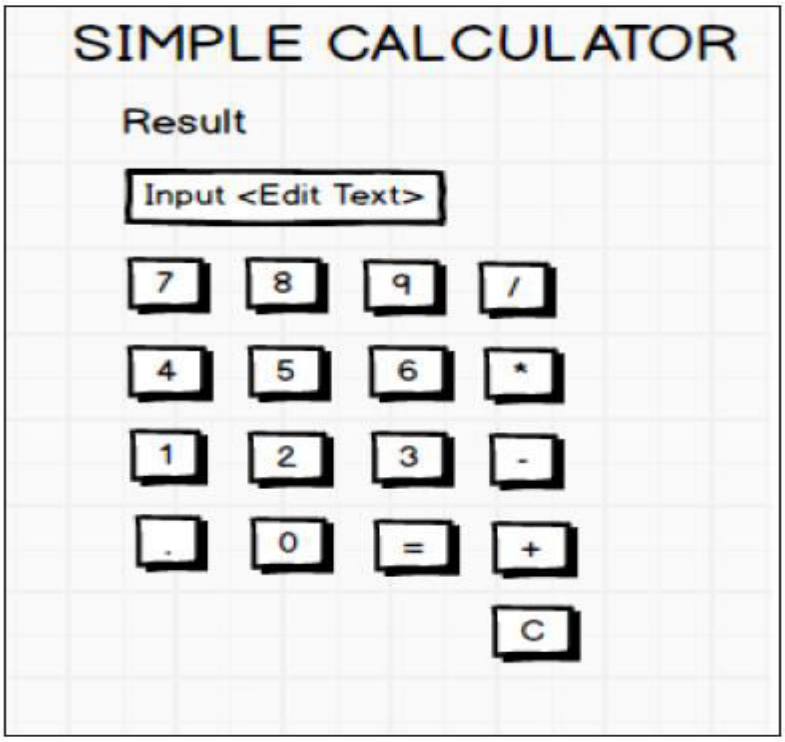
PART A

Program 1

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

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.

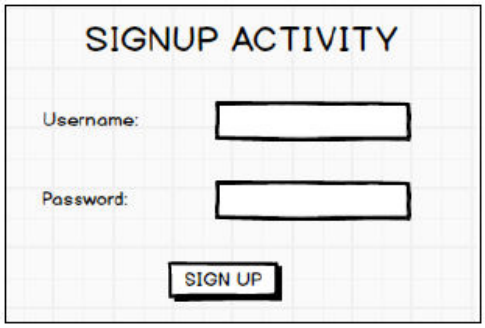


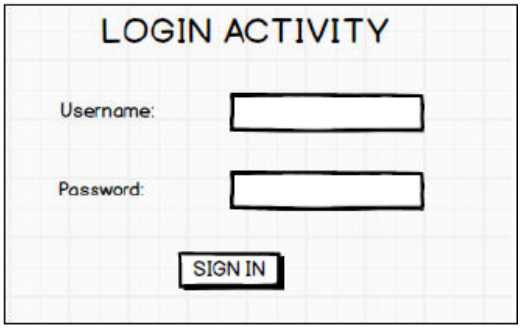
Program 3

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

- Password should contain uppercase and lowercase letters.
- Password should contain letters and numbers.
- Password should contain special characters.
- Minimum length of the password (the default value is 8).

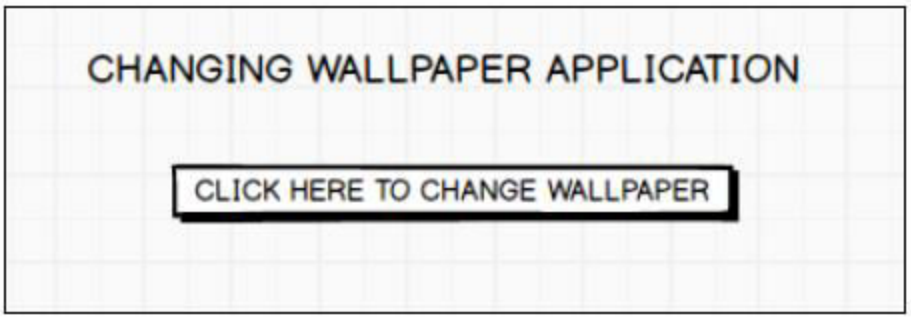
On successful SIGN UP proceed to the next Login activity. Here the user should SIGN IN using the Username and Password created during signup activity. If the Username and Password are matched then navigate to the next activity which displays a message saying "Successful Login" or else display a toast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





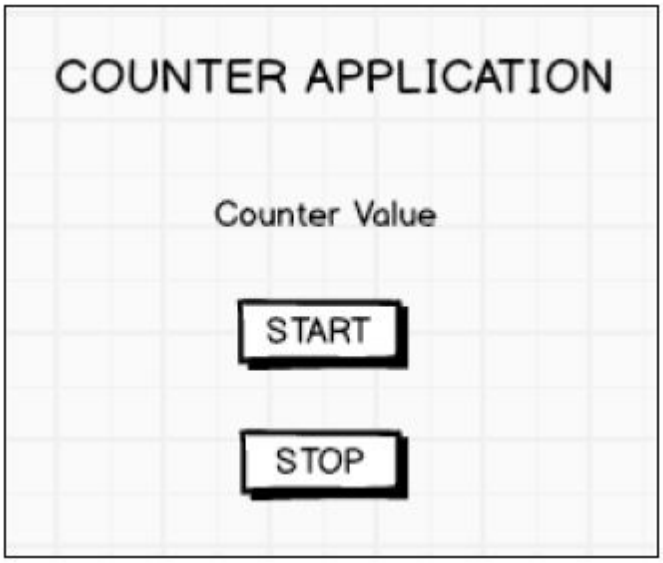
Program 4

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



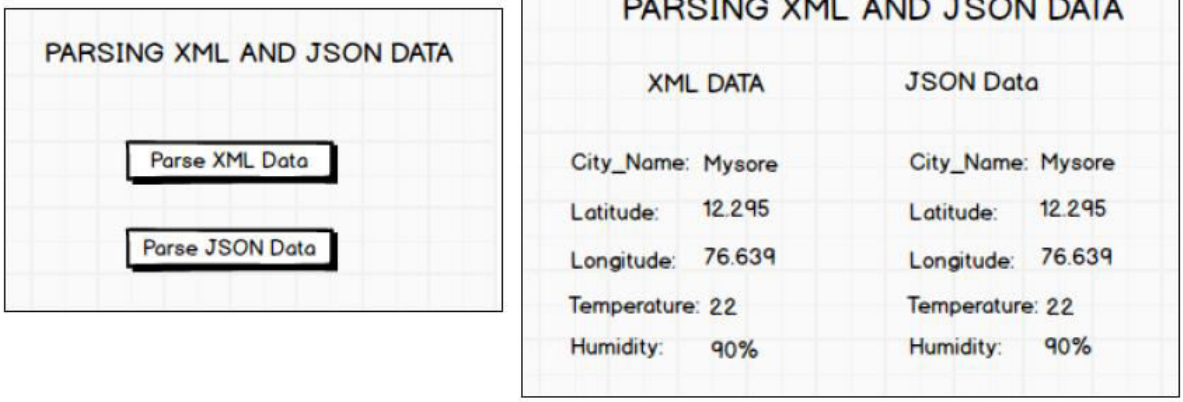
Program 5

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



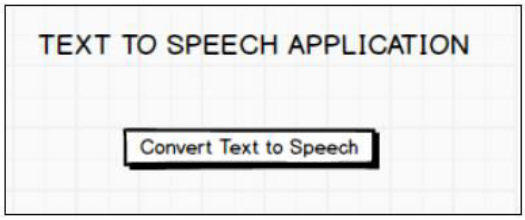
Program 6

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



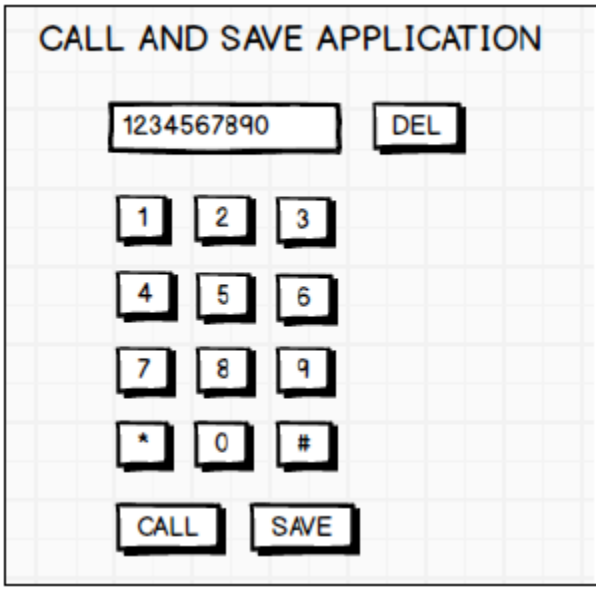
Program 7

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.



Program 8

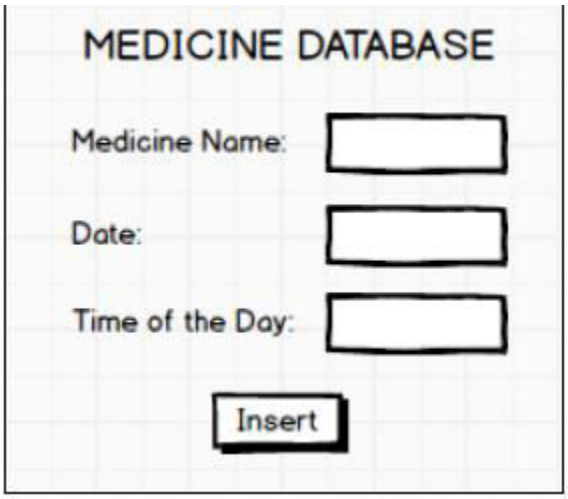
Create an activity like a phone dialer with CALL and SAVE buttons. On pressing the CALL button, it must call the phone number and on pressing the SAVE button it must save the number to the phone contacts



PART B

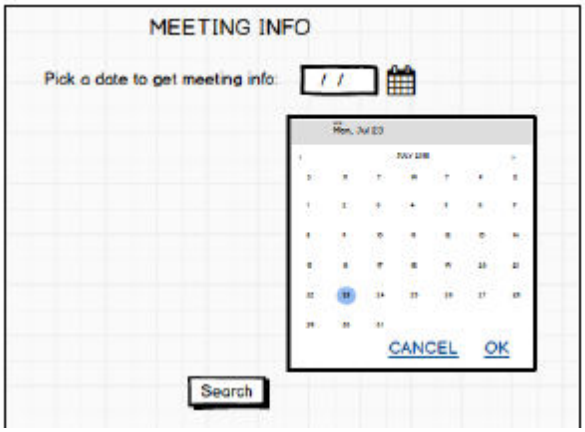
Program 1

Write a program to enter Medicine Name, Date and Time of the Day as input from the user and store it in the SQLite database. Input for Time of the Day should be either Morning or Afternoon or Evening or Night. Trigger an alarm based on the Date and Time of the Day and display the Medicine Name.



Program 2

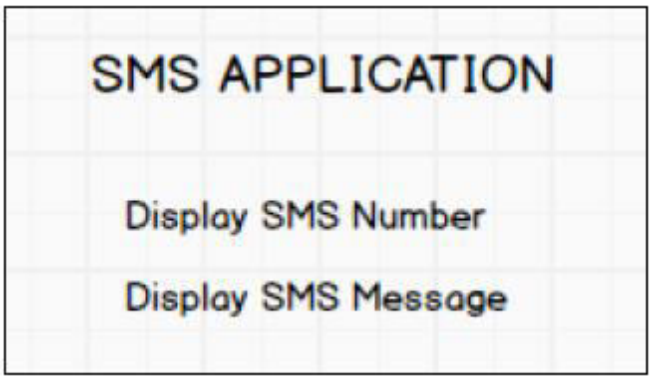
Develop a content provider application with an activity called “Meeting Schedule” which takes Date, Time and Meeting Agenda as input from the user and store this information into the SQLite database. Create another application with an activity called “Meeting Info” having DatePicker control, which on the selection of a date should display the Meeting Agenda information for that particular date, else it should display a toast message saying “No Meeting on this Date”.



Program 3

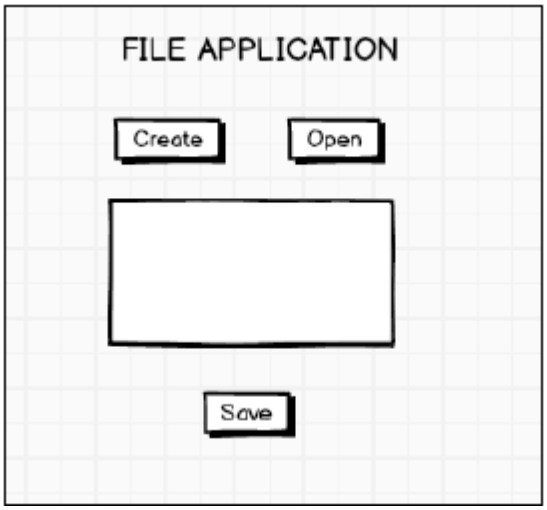
Create an application to receive an incoming SMS which is notified to the user. On clicking this

SMS notification, the message content and the number should be displayed on the screen. Use appropriate emulator control to send the SMS message to your application



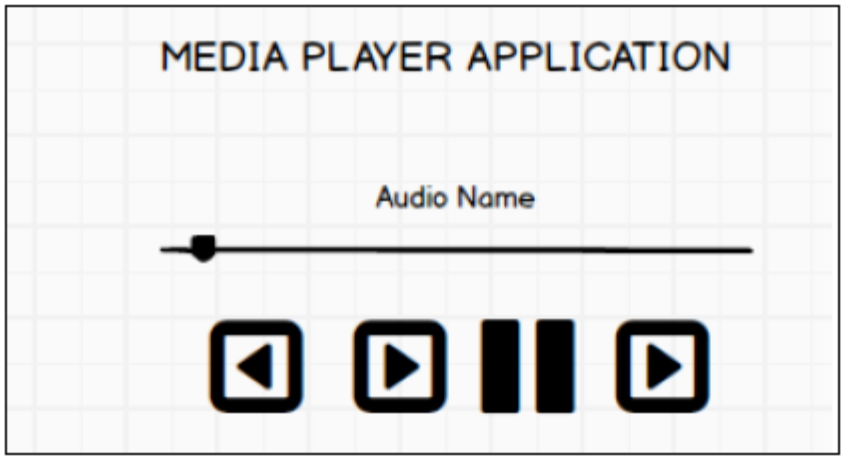
Program 4

Write a program to create an activity having a Text box, and also Save, Open and Create buttons. The user has to write some text in the Text box. On pressing the Create button the text should be saved as a text file in MkSDcard. On subsequent changes to the text, the Save button should be pressed to store the latest content to the same file. On pressing the Open button, it should display the contents from the previously stored files in the Text box. If the user tries to save the contents in the Textbox to a file without creating it, then a toast message has to be displayed saying “FirstCreate a File”.



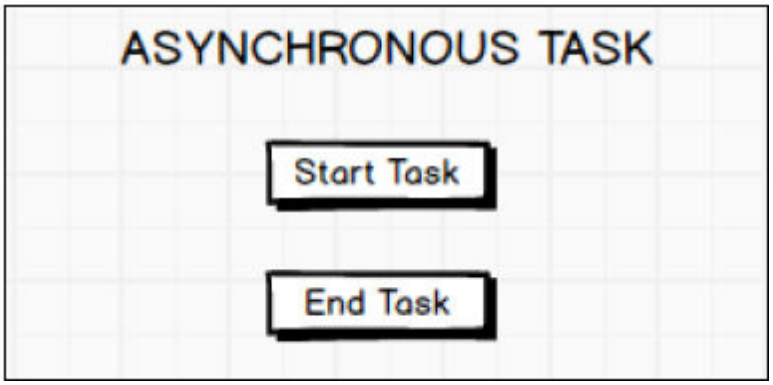
Program 5

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



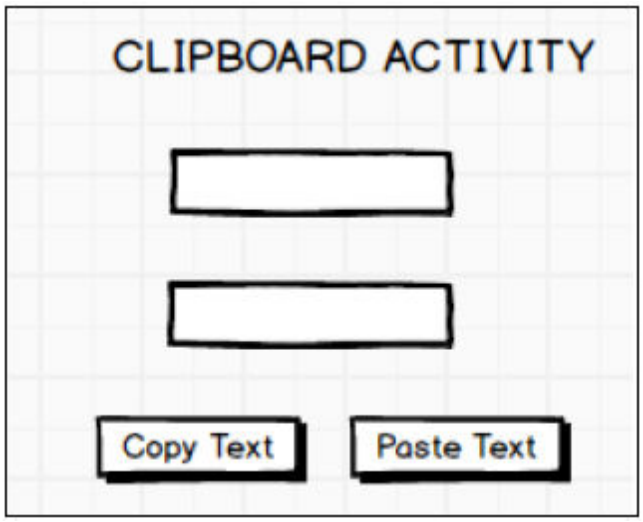
Program 6

Develop an application to demonstrate the use of Asynchronous tasks in android. The asynchronous task should implement the functionality of a simple moving banner. On pressing the Start Task button, the banner message should scroll from right to left. On pressing the Stop Task button, the banner message should stop. Let the banner message be "Demonstration of Asynchronous Task



Program 7

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



Program 8

Create an AIDL service that calculates Car Loan EMI. The formula to calculate EMI is

E = P * (r(1+r)n)/((1+r)n-1)

where

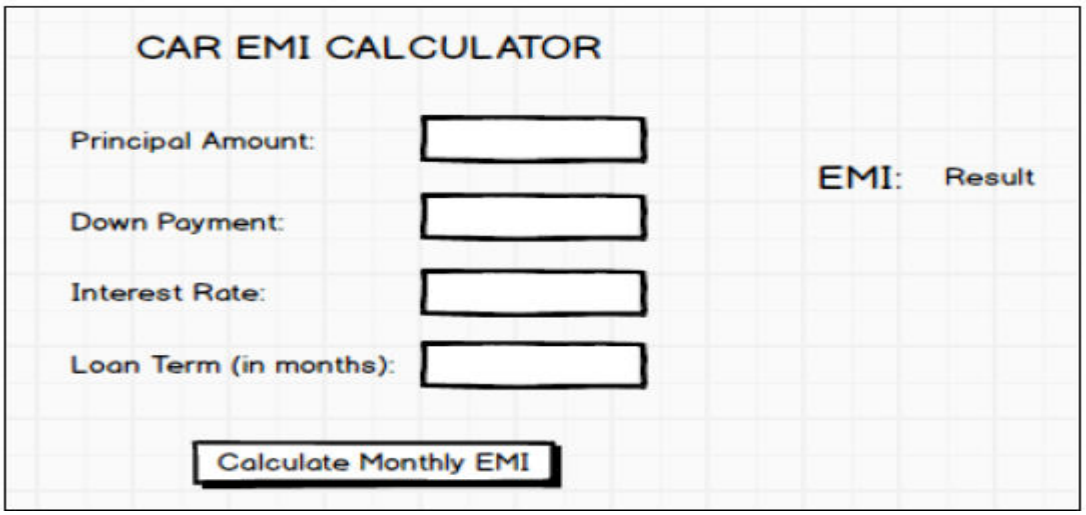
E = The EMI payable on the car loan amount

P = The Car loan Principal Amount

r = The interest rate value computed on a monthly basis

n = The loan tenure in the form of months

The down payment amount has to be deducted from the principal amount paid towards buying the Car. Develop an application that makes use of this AIDL service to calculate the EMI. This application should have four EditText to read the Principal Amount, Down Payment, Interest Rate, Loan Term (in months) and a button named as "Calculate Monthly EMI". On click of this button, the result should be shown in a TextView. Also, calculate the EMI by varying the Loan Term and Interest Rate values.



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

MainActivity.java

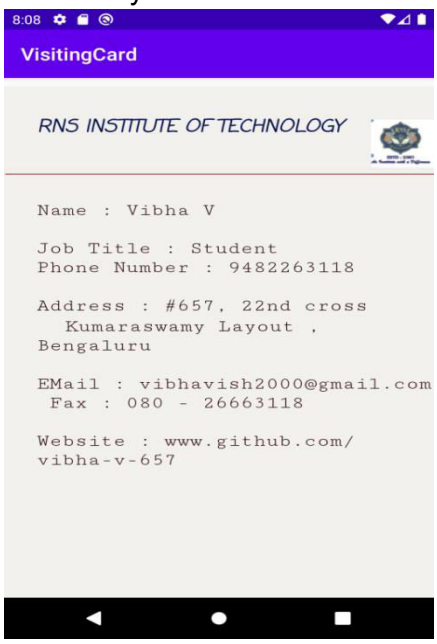
```
package com.example.visitingcard;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
public class MainActivity extends AppCompatActivity {

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

Activity_main.xml

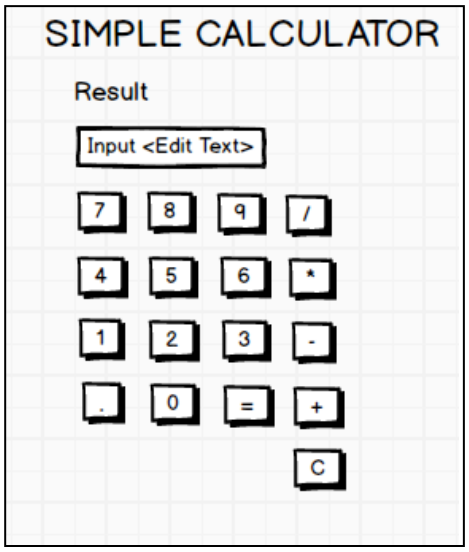
```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_alignWithParentIfMissing="true"
    android:layout_alignParentLeft="true"
    android:layout_alignParentTop="true"
    android:layout_alignParentRight="true"
    android:layout_alignParentBottom="true"
    android:layout_centerInParent="true"
    android:layout_centerHorizontal="true"
    android:layout_centerVertical="true"
    android:animateLayoutChanges="false"
    android:background="#F3F1ED"
    android:divider="@android:drawable/bottom_bar"
    android:orientation="vertical"
    android:layout_marginTop="10dp"
    android:paddingLeft="1dp"
    android:paddingTop="1dp"
    tools:context=".MainActivity">
```

```
<RelativeLayout
   android:layout_width="match_parent"
   android:layout_height="100dp">


      <TextView
         android:layout_width="390dp"
         android:layout_height="89dp"
         android:layout_marginLeft="20dp"
         android:capitalize="sentences"
         android:fontFamily="casual"
         android:foregroundGravity="center"
         android:paddingLeft="10dp"
         android:paddingRight="20dp"
         android:text="\nRNS INSTITUTE OF TECHNOLOGY\n"
         android:textAppearance="@style/TextAppearance.AppCompat.Display1"
         android:textColor="#06114E"
         android:textSize="20sp"
         android:textStyle="bold|italic"
         app:layout_constraintBottom_toBottomOf="parent"
         app:layout_constraintLeft_toLeftOf="parent"
         app:layout_constraintRight_toRightOf="parent"
         app:layout_constraintTop_toTopOf="parent" />
      <ImageView
         android:layout_width="100dp"
         android:layout_height="100dp"
         android:layout_marginLeft="350dp"
         android:layout_marginTop="30dp"
         android:layout_marginRight="20dp"
         android:src="@drawable/icon3" />
</RelativeLayout>

<TableRow
   android:id="@+id/hr"
   android:layout_width="match_parent"
   android:layout_height="1dp"
   android:background="#CE851414"
   android:paddingTop="10dp"
   android:paddingBottom="10dp"></TableRow>

<TextView
   android:layout_width="match_parent"
   android:layout_height="wrap_content"
   android:layout_marginLeft="10dp"
   android:layout_marginTop="10dp"
```

```
        android:fontFamily="serif-monospace"
        android:paddingLeft="20dp"
        android:paddingTop="20dp"
        android:text="Name : Vibha V\n\nJob Title : Student\nPhone Number : 9482263118\n"
        android:textColor="#1E0202"
        android:textSize="20dp" />

    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginLeft="10dp"
        android:fontFamily="serif-monospace"
        android:paddingLeft="20dp"
        android:text="Address : #657, 22nd cross \n\t\t Kumaraswamy Layout ,\t Bengaluru\n"
        android:textColor="#170101"
        android:textSize="20dp" />

    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginLeft="10dp"
        android:fontFamily="serif-monospace"
        android:paddingLeft="20dp"
        android:text="EMail : vibhavish2000@gmail.com\n Fax : 080 - 26663118\n\nWebsite :
www.github.com/vibha-v-657"
        android:textColor="#220303"
        android:textSize="20dp" /></LinearLayout>
```



2) Develop an Android application using controls like Button, TextView, EditText for designing a Calculator having basic functionality like Addition, Subtraction, Multiplication, and Division.



activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayoutxmlns:android="http://schemas.andr
oid.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/button_clear" android:layout_width="87dp" android:layout_height="53dp"
android:layout_marginTop="30dp" android:text="C"
app:layout_constraintStart_toStartOf="@+id/button_add"
app:layout_constraintTop_toBottomOf="@+id/button_add" />

<Button android:id="@+id/button_sub" android:layout_width="87dp" android:layout_height="53dp"
android:layout_marginStart="20dp" android:layout_marginTop="30dp" android:text="-"
app:layout_constraintStart_toEndOf="@+id/button_three"
app:layout_constraintTop_toBottomOf="@+id/button_mul" />

<Button android:id="@+id/button_add" android:layout_width="87dp" android:layout_height="53dp"
android:layout_marginStart="20dp" android:layout_marginTop="30dp" android:text="+"
app:layout_constraintStart_toEndOf="@+id/button_equal"
app:layout_constraintTop_toBottomOf="@+id/button_sub" />

<Button android:id="@+id/button_mul" android:layout_width="87dp" android:layout_height="53dp"
android:layout_marginStart="20dp" android:layout_marginTop="30dp" android:text="*"
```

```
app:layout_constraintStart_toEndOf="@+id/button_six"
app:layout_constraintTop_toBottomOf="@+id/button_div" />

<Button android:id="@+id/button_equal" android:layout_width="62dp" android:layout_height="53dp"
android:layout_marginStart="20dp" android:layout_marginTop="30dp" android:text="="
app:layout_constraintStart_toEndOf="@+id/button_zero"
app:layout_constraintTop_toBottomOf="@+id/button_three" />

<Button android:id="@+id/button_zero" android:layout_width="62dp" android:layout_height="53dp"
android:layout_marginStart="20dp" android:layout_marginTop="30dp" android:text="0"
app:layout_constraintStart_toEndOf="@+id/button_dot"
app:layout_constraintTop_toBottomOf="@+id/button_two" />

<Button android:id="@+id/button_dot" android:layout_width="62dp" android:layout_height="53dp"
android:layout_marginStart="20dp" android:layout_marginTop="30dp" android:text="."
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toBottomOf="@+id/button_one" />

<Button android:id="@+id/button_three" android:layout_width="62dp" android:layout_height="53dp"
android:layout_marginStart="20dp" android:layout_marginTop="30dp" android:text="3"
app:layout_constraintStart_toEndOf="@+id/button_two"
app:layout_constraintTop_toBottomOf="@+id/button_six" />

<Button android:id="@+id/button_two" android:layout_width="62dp" android:layout_height="53dp"
android:layout_marginStart="20dp" android:layout_marginTop="30dp" android:text="2"
app:layout_constraintStart_toEndOf="@+id/button_one"
app:layout_constraintTop_toBottomOf="@+id/button_five" />

<Button android:id="@+id/button_one" android:layout_width="62dp" android:layout_height="53dp"
android:layout_marginStart="20dp" android:layout_marginTop="30dp" android:text="1"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toBottomOf="@+id/button_four" />

<Button android:id="@+id/button_six" android:layout_width="62dp" android:layout_height="53dp"
android:layout_marginStart="20dp" android:layout_marginTop="30dp" android:text="6"
app:layout_constraintStart_toEndOf="@+id/button_five"
app:layout_constraintTop_toBottomOf="@+id/button_nine" />

<Button android:id="@+id/button_seven" android:layout_width="62dp" android:layout_height="53dp"
android:layout_marginStart="20dp" android:layout_marginTop="20dp" android:text="7"
app:layout_constraintStart_toStartOf="parent" app:layout_constraintTop_toBottomOf="@+id/txt_result"
/>

<Button android:id="@+id/button_eight" android:layout_width="62dp" android:layout_height="53dp"
android:layout_marginStart="20dp" android:layout_marginTop="20dp" android:text="8"
```

```
app:layout_constraintStart_toEndOf="@+id/button_seven"
app:layout_constraintTop_toBottomOf="@+id/txt_result" />

<Button android:id="@+id/button_nine" android:layout_width="62dp" android:layout_height="53dp"
android:layout_marginStart="20dp" android:layout_marginTop="20dp" android:text="9"
app:layout_constraintStart_toEndOf="@+id/button_eight"
app:layout_constraintTop_toBottomOf="@+id/txt_result" />

<Button android:id="@+id/button_four" android:layout_width="62dp" android:layout_height="53dp"
android:layout_marginStart="20dp" android:layout_marginTop="30dp" android:text="4"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toBottomOf="@+id/button_seven" />

<TextView android:id="@+id/textView" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:layout_marginTop="30dp" android:text="SIMPLE
CALCULATOR" android:textSize="26dp" app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintStart_toStartOf="parent" app:layout_constraintTop_toTopOf="parent" />

<TextView android:id="@+id/textView2" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:layout_marginStart="20dp"
android:layout_marginTop="20dp" android:text="Result" android:textSize="18dp"
android:textStyle="bold"
app:layout_constraintEnd_toStartOf="@+id/textView" app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toBottomOf="@+id/textView" />

<EditText android:id="@+id/txt_result" android:layout_width="310dp" android:layout_height="46dp"
android:layout_marginTop="20dp" android:ems="10" android:inputType="textPersonName"
app:layout_constraintStart_toStartOf="@+id/textView2"
app:layout_constraintTop_toBottomOf="@+id/textView2" />

<Button android:id="@+id/button_div" android:layout_width="87dp" android:layout_height="53dp"
android:layout_marginStart="20dp" android:layout_marginTop="20dp"
android:text="/" app:layout_constraintStart_toEndOf="@+id/button_nine"
app:layout_constraintTop_toBottomOf="@+id/txt_result" />

<Button android:id="@+id/button_five" android:layout_width="62dp" android:layout_height="53dp"
android:layout_marginStart="20dp" android:layout_marginTop="30dp" android:text="5"
app:layout_constraintStart_toEndOf="@+id/button_four"
app:layout_constraintTop_toBottomOf="@+id/button_eight" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

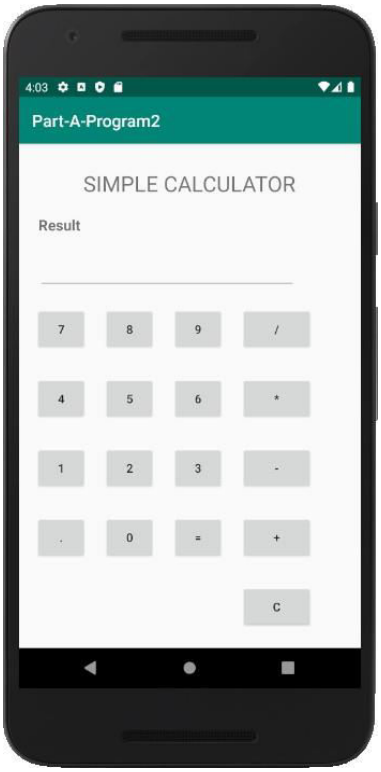
MainActivity.java

```
package com.example.partaprogram2;
```

```
import androidx.appcompat.app.AppCompatActivity; import android.os.Bundle;
import android.view.View; import android.widget.Button; import android.widget.EditText; import
android.widget.Toast;

import java.util.regex.Pattern;

public class MainActivityextendsAppCompatActivityimplementsView.OnClickListener { Button btnOne,
btnTwo, btnThree, btnFour, btnFive, btnSix;
Button btnSeven, btnEight, btnNine, btnZero; Button btnAdd,btnSub,btnMul,btnDiv;
Button btnClear,btnEqual,btnDot; EditTexttxtResult;
@Override
protected void onCreate(Bundle savedInstanceState) { super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);

btnOne=(Button)findViewById(R.id.button_one); btnOne.setOnClickListener(this);
btnTwo=(Button)findViewById(R.id.button_two); btnTwo.setOnClickListener(this);
btnThree=(Button)findViewById(R.id.button_three); btnThree.setOnClickListener(this);
btnFour=(Button)findViewById(R.id.button_four); btnFour.setOnClickListener(this);
btnFive=(Button)findViewById(R.id.button_five); btnFive.setOnClickListener(this);
btnSix=(Button)findViewById(R.id.button_six); btnSix.setOnClickListener(this);
btnSeven=(Button)findViewById(R.id.button_seven); btnSeven.setOnClickListener(this);
btnEight=(Button)findViewById(R.id.button_eight); btnEight.setOnClickListener(this);
btnNine=(Button)findViewById(R.id.button_nine); btnNine.setOnClickListener(this);
btnZero=(Button)findViewById(R.id.button_zero); btnZero.setOnClickListener(this);
btnAdd=(Button)findViewById(R.id.button_add); btnAdd.setOnClickListener(this);
btnSub=(Button)findViewById(R.id.button_sub); btnSub.setOnClickListener(this);
btnMul=(Button)findViewById(R.id.button_mul); btnMul.setOnClickListener(this);
btnDiv=(Button)findViewById(R.id.button_div); btnDiv.setOnClickListener(this);
btnClear=(Button)findViewById(R.id.button_clear); btnClear.setOnClickListener(this);
btnEqual=(Button)findViewById(R.id.button_equal); btnEqual.setOnClickListener(this);
btnDot=(Button)findViewById(R.id.button_dot); btnDot.setOnClickListener(this);

txtResult=(EditText)findViewById(R.id.txt_result); txtResult.setText("");
}

public void onClick(View v)
{
if(v.equals(btnOne)) txtResult.append("1"); if(v.equals(btnTwo)) txtResult.append("2");
if(v.equals(btnThree)) txtResult.append("3"); if(v.equals(btnFour)) txtResult.append("4");
if(v.equals(btnFive)) txtResult.append("5"); if(v.equals(btnSix)) txtResult.append("6");
if(v.equals(btnSeven)) txtResult.append("7"); if(v.equals(btnEight)) txtResult.append("8");
if(v.equals(btnNine)) txtResult.append("9"); if(v.equals(btnZero)) txtResult.append("0");
if(v.equals(btnDot)) txtResult.append("."); if(v.equals(btnClear)) txtResult.setText("");

if(v.equals(btnEqual))
```

```
{
try {

String data = txtResult.getText().toString(); if (data.contains("/")) {
String[] operands = data.split("/"); if(operands.length==2) {
double operand1 = Double.parseDouble(operands[0]); double operand2 =
Double.parseDouble(operands[1]); double result = operand1 / operand2;
txtResult.setText(String.valueOf(result));
}
else
{
Toast.makeText(getBaseContext(),"Invalid Input", Toast.LENGTH_LONG).show();
}

}
else if (data.contains("*")) {
String[] operands = data.split(Pattern.quote("*")); if(operands.length==2) {
double operand1 = Double.parseDouble(operands[0]); double operand2 =
Double.parseDouble(operands[1]);
double result = operand1 * operand2; txtResult.setText(String.valueOf(result));
}
else
{
Toast.makeText(getBaseContext(),"Invalid Input", Toast.LENGTH_LONG).show();
}

}
else if (data.contains("+")) {
String[] operands = data.split(Pattern.quote("+")); if(operands.length==2) {
double operand1 = Double.parseDouble(operands[0]); double operand2 =
Double.parseDouble(operands[1]); double result = operand1 + operand2;
txtResult.setText(String.valueOf(result));
}
else
{
Toast.makeText(getBaseContext(),"Invalid Input", Toast.LENGTH_LONG).show();
}
}
else if (data.contains("-")) { String[] operands = data.split("-"); if(operands.length==2) {
double operand1 = Double.parseDouble(operands[0]); double operand2 =
Double.parseDouble(operands[1]); double result = operand1 - operand2;
txtResult.setText(String.valueOf(result));
}
else
{
```

```
Toast.makeText(getBaseContext(),"Invalid Input", Toast.LENGTH_LONG).show();
}
}
}

catch(Exception e) { Toast.makeText(getBaseContext(),"Invalid Input", Toast.LENGTH_LONG).show();
}
}
if(v.equals(btnAdd)) txtResult.append("+"); if(v.equals(btnSub)) txtResult.append("-");
if(v.equals(btnMul)) txtResult.append("*"); if(v.equals(btnDiv)) txtResult.append("/");
}
}
```



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

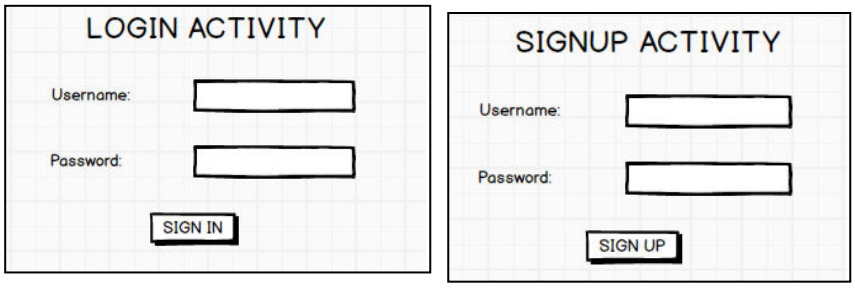
Password should contain uppercase and lowercase letters.

Password should contain letters and numbers.

Password should contain special characters.

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

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



Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayoutxmlns:android="http://schemas.andr
oid.com/apk/res/android"
xmlns:app="http://schemas.android.com/apk/res-auto" xmlns:tools="http://schemas.android.com/tools"
android:layout_width="match_parent" android:layout_height="match_parent"
tools:context=".MainActivity">

<TextView android:id="@+id/textView2" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:layout_marginTop="100dp" android:text="SIGN UP"
android:textColor="@android:color/background_dark" android:textSize="22dp"
app:layout_constraintEnd_toEndOf="parent" app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent" />

<TextView android:id="@+id/textView3" android:layout_width="wrap_content"
android:layout_height="wrap_content"

 android:layout_marginStart="30dp" android:layout_marginTop="50dp" android:text="USERNAME"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toBottomOf="@+id/textView2" />
```

```
<TextView android:id="@+id/textView4" android:layout_width="82dp" android:layout_height="34dp"
android:layout_marginTop="50dp" android:text="PASSWORD"
app:layout_constraintStart_toStartOf="@+id/textView3"
app:layout_constraintTop_toBottomOf="@+id/textView3" />

<EditText android:id="@+id/txt_username" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:layout_marginStart="40dp"
android:layout_marginEnd="10dp" android:ems="10" android:inputType="textPersonName"
app:layout_constraintBottom_toBottomOf="@+id/textView3"
app:layout_constraintEnd_toEndOf="parent" app:layout_constraintStart_toEndOf="@+id/textView3"
app:layout_constraintTop_toTopOf="@+id/textView3" />

<EditText android:id="@+id/txt_password" android:layout_width="0dp" android:layout_height="40dp"
android:layout_marginTop="26dp" android:ems="10" android:inputType="textPassword"
app:layout_constraintEnd_toEndOf="@+id/txt_username"
app:layout_constraintStart_toStartOf="@+id/txt_username"
app:layout_constraintTop_toBottomOf="@+id/txt_username" />

<Button android:id="@+id/btn_signup" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:layout_marginTop="30dp" android:text="Sign Up"
app:layout_constraintEnd_toEndOf="parent" app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toBottomOf="@+id/txt_password" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

Activity_login.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayoutxmlns:android="http://schemas.andr
oid.com/apk/res/android"
xmlns:app="http://schemas.android.com/apk/res-auto" xmlns:tools="http://schemas.android.com/tools"
android:layout_width="match_parent" android:layout_height="match_parent"
tools:context=".LoginActivity">

<TextView android:id="@+id/textView7" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:layout_marginTop="50dp" android:text="Login"
android:textSize="22dp"
app:layout_constraintEnd_toEndOf="parent" app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent" />

<TextView android:id="@+id/textView9" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:layout_marginStart="30dp"
android:layout_marginTop="50dp" android:text="Username"
app:layout_constraintStart_toStartOf="parent" app:layout_constraintTop_toBottomOf="@+id/textView7"
/>
```

```
<EditText android:id="@+id/txt_login_username" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:layout_marginStart="20dp"
android:layout_marginEnd="20dp" android:ems="10" android:inputType="textPersonName"
app:layout_constraintBottom_toBottomOf="@+id/textView9"
app:layout_constraintEnd_toEndOf="parent" app:layout_constraintStart_toEndOf="@+id/textView9"
app:layout_constraintTop_toTopOf="@+id/textView9" />

<TextView android:id="@+id/textView10" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:layout_marginStart="30dp"
android:layout_marginTop="50dp"
android:text="PASSWORD" app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toBottomOf="@+id/textView9" />

<EditText android:id="@+id/txt_login_password" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:ems="10" android:inputType="textPassword"
app:layout_constraintEnd_toEndOf="@+id/txt_login_username"
app:layout_constraintStart_toStartOf="@+id/txt_login_username"
app:layout_constraintTop_toTopOf="@+id/textView10" />

<Button android:id="@+id/btn_login_signin" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:layout_marginTop="50dp" android:text="Login"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toBottomOf="@+id/txt_login_password" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```
package com.example.parta.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.Matcher; import java.util.regex.Pattern;
public class MainActivityextends AppCompatActivityimplements View.OnClickListener {
EditTexttxtUsername;
EditTexttxtPassword;

Button btnSignup;
String regularExpression="^(?=.*[A-Z])(?=.*[a-z])(?=.*\\d)(?=.*[@$!])[A-Za- z\\d@$!]{8,}$";

@Override
```

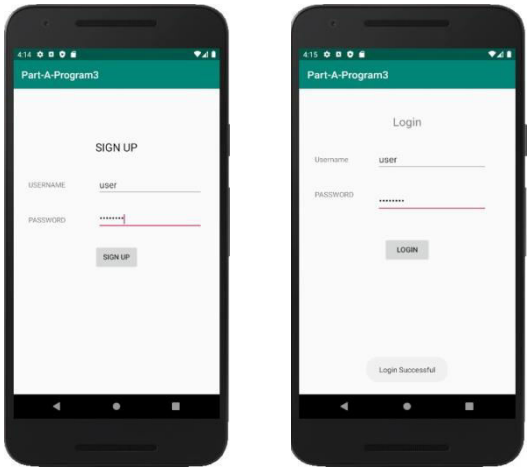
```
protected void onCreate(Bundle savedInstanceState) { super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main); txtUsername=(EditText)findViewById(R.id.txt_username);
txtPassword=(EditText)findViewById(R.id.txt_password);

btnSignup=(Button)findViewById(R.id.btn_signup); btnSignup.setOnClickListener(this);

}

public void onClick(View v)
{
String username=txtUsername.getText().toString(); String password=txtPassword.getText().toString();

if(validatePassword(password)) { Bundle bundle = new Bundle(); bundle.putString("user", username);
bundle.putString("Lab@2018", password);

Intent it = new Intent(this, LoginActivity.class); it.putExtra("data", bundle);
else
{
startActivity(it);
}

Toast.makeText(getBaseContext(), "Invalid Password", Toast.LENGTH_LONG).show();
}
}

public booleanvalidatePassword(String password)
{
Pattern pattern= Pattern.compile(regularExpression); Matcher matcher=pattern.matcher(password);
return matcher.matches();
}
}
```

LoginActivity.java

```
package com.example.parta.program3;

import androidx.appcompat.app.AppCompatActivity; import android.os.Bundle;
import android.view.View; import android.widget.Button; import android.widget.EditText; import
android.widget.Toast;
public class LoginActivityextends AppCompatActivityimplements View.OnClickListener {
EditTexttxtLoginUsername;
EditTexttxtLoginPassword;
Button btnLogin; String user,pass;
int count=0;
```

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

txtLoginUsername=(EditText) findViewById(R.id.txt_login_username); txtLoginPassword=(EditText)
findViewById(R.id.txt_login_password);

btnLogin=(Button)findViewById(R.id.btn_login_signin); btnLogin.setOnClickListener(this);

Bundle bundle=getIntent().getBundleExtra("data"); user=bundle.getString("user");
pass=bundle.getString("Lab@2018");
}

public void onClick(View v)
{
String user1=txtLoginUsername.getText().toString(); String
pass1=txtLoginPassword.getText().toString();

if(user.equals(user1)&&pass.equals(pass1))
{
Toast.makeText(this,"Login Successful"
,Toast.LENGTH_LONG).show();
}
else

{
count++; if(count==3)
{
btnLogin.setEnabled(false); Toast.makeText(this, "Failed Login Attempts"
,Toast.LENGTH_LONG).show();
}
else
{
Toast.makeText(this,"Login Failed "+count
,Toast.LENGTH_LONG).show();
}
}
}
}
```

Sample Output



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

MainActivity.java

```
package com.example.wallpaper;

import androidx.appcompat.app.AppCompatActivity;

import android.app.WallpaperManager;
import android.graphics.BitmapFactory;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

import java.util.Random;
import java.util.Timer;
import java.util.TimerTask;

public class MainActivity extends AppCompatActivity implements View.OnClickListener {

    Boolean running=false;
    Button chnge;
    int i = 1;
    int[] images = new int[]{R.drawable.imga, R.drawable.imgb,
            R.drawable.imgc, R.drawable.imgd,
            R.drawable.imge, R.drawable.imgf};

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

        chnge = (Button) findViewById(R.id.chng);
        chnge.setOnClickListener(this);
    }

    @Override
    public void onClick(View view) {
        if (!running) {
            new Timer().schedule(new MyTimer(), 0, 3000);
            running = false;
        }

    }
```

```
    class MyTimer extends TimerTask {
        public void run() {
            try {
                WallpaperManager wallpaperManager = WallpaperManager.getInstance(getBaseContext());
                Random rand = new Random();
                i = rand.nextInt(6);


                wallpaperManager.setBitmap(BitmapFactory.decodeResource(getResources(), images[i]));
            } catch (Exception e) {
            }
        }
    }
}
```

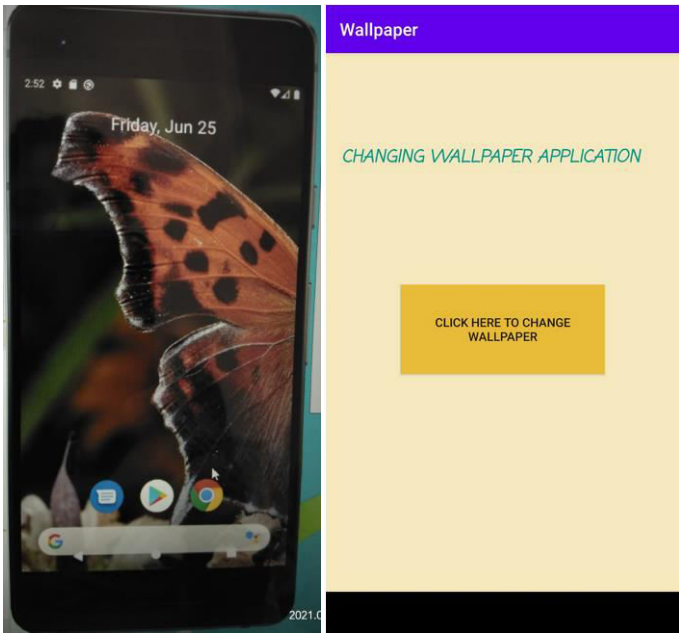
Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#F6E8BF"
    tools:context=".MainActivity">
    <Button
        android:id="@+id/chng"
        android:layout_width="237dp"
        android:layout_height="104dp"
        android:background="#E8BC39"
        android:text="Click here To Change Wallpaper"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.497"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.515" />
    <TextView
        android:id="@+id/textView"
        android:layout_width="376dp"
        android:layout_height="58dp"
        android:fontFamily="casual"
```

```
        android:text="CHANGING WALLPAPER APPLICATION”
        android:textColor="#009688"
        android:textSize="20sp"
        android:textStyle="bold|italic"
        app:layout_constraintBottom_toTopOf="@+id/chng"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.501" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

AndroidManifest.xml

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.wallpaper">
    <uses-permission android:name="android.permission.SET_WALLPAPER" />
    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/AppTheme">
        <activity android:name=".MainActivity">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />
                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
    </application></manifest>
```


2:52
Friday, Jun 25
Wallpaper
CHANGING WALLPAPER APPLICATION
CLICK HERE TO CHANGE WALLPAPER

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

MainActivity.java

```
package com.example.counter;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.graphics.Bitmap;
import android.graphics.Color;
import android.graphics.drawable.Drawable;
import android.os.Bundle;
import android.os.Handler;
import android.os.Message;
import android.view.View;
import android.webkit.WebView;
import android.widget.Button;
import android.widget.ImageView;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity implements View.OnClickListener {
    TextView count;
    Button start,stop;
    int counter=0;
    boolean running = false;
    String
url="https://media1.tenor.com/images/142ffb3aa784ee74e9ce08b57edc89c6/tenor.gif?itemid=5301252
";

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        count=(TextView)findViewById(R.id.count);
        start=(Button)findViewById(R.id.startbtn);
        stop=(Button)findViewById(R.id.stopbtn);
        start.setOnClickListener(this);
        stop.setOnClickListener(this);

    }
    @Override
```

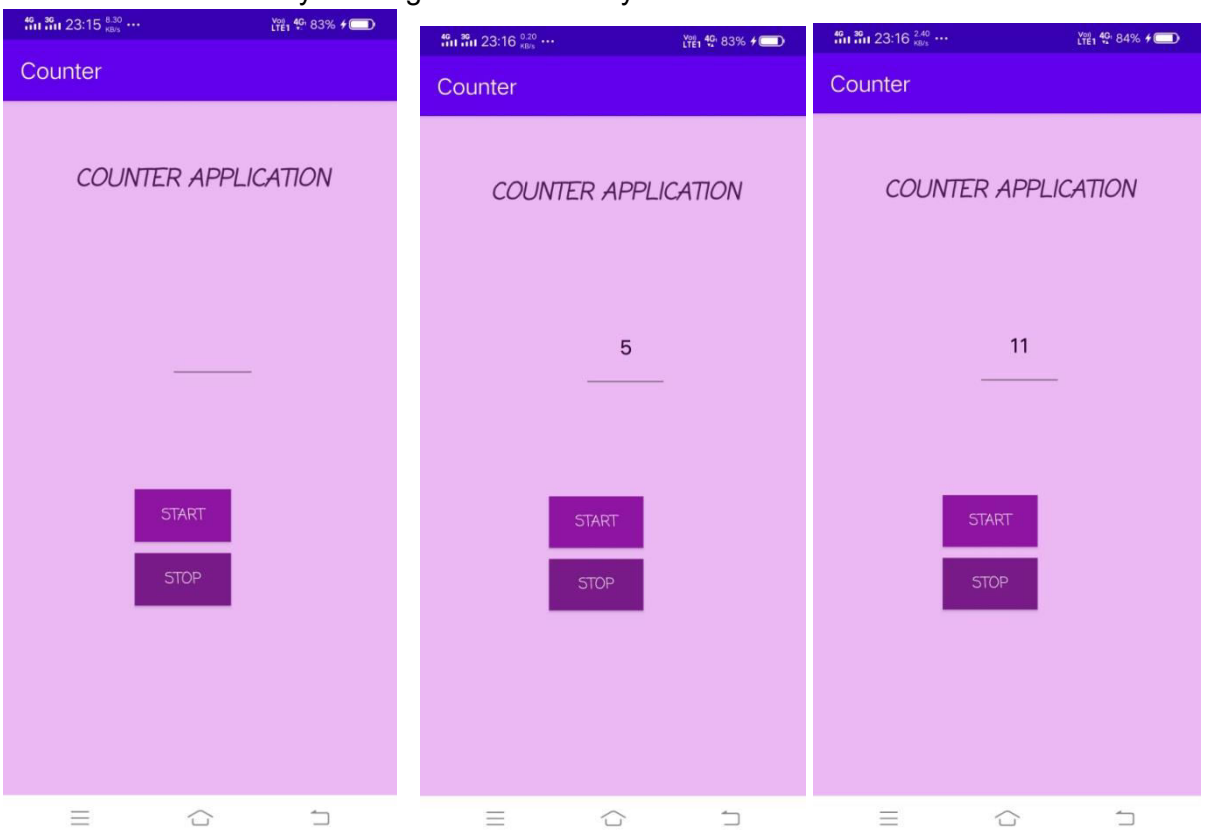
```
    public void onClick(View view)
    {
        if(view.equals(start))
        {
            counter=0;
            running=true;

            new MyCounter().start();
        }
        else
            running=false;
    }
    Handler handler= new Handler(){
    public void handleMessage(Message counter)
    {
        count.setText(String.valueOf(counter.what));
    }};
    class MyCounter extends Thread
    {
        public void run()
        {
            while(running)
            {

                counter++;
                handler.sendEmptyMessage(counter);
                try{
                    Thread.sleep(100);
                }
                catch(Exception e){}
            }
        }
    }
}
```

Activity_main.xml

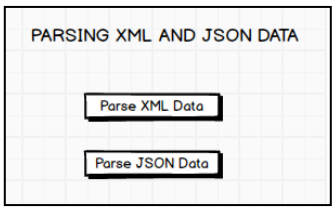
```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
```

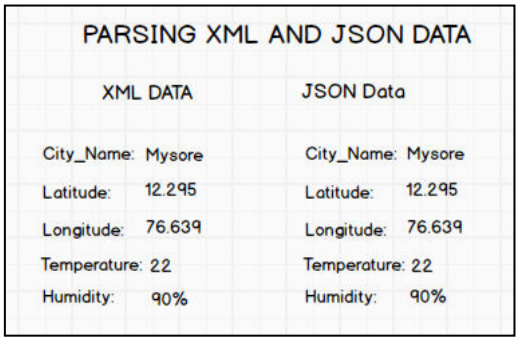
```
    android:background="#EBB8F4"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/heading"
        android:layout_width="381dp"
        android:layout_height="61dp"
        android:fontFamily="casual"
        android:gravity="center"
        android:text="COUNTER APPLICATION"
        android:textAppearance="@style/TextAppearance.AppCompat.Large"
        android:textColor="#4E1B57"
        android:textStyle="bold|italic"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintHorizontal_bias="0.41"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.073" />


      <Button
        android:id="@+id/startbtn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="144dp"
        android:background="#8D15A1"
        android:fontFamily="casual"
        android:text="START"
        android:textColor="#FAF6F6"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.507"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/heading" />

    <EditText
        android:id="@+id/count"
        android:layout_width="79dp"
        android:layout_height="80dp"
        android:layout_marginStart="164dp"
        android:layout_marginTop="152dp"
        android:ems="10"
        android:fontFamily="sans-serif-black"
        android:gravity="center"
        android:inputType="textPersonName"
```

```
        android:textColor="#2A0630"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <Button
        android:id="@+id/stopbtn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginBottom="172dp"
        android:background="#781A88"
        android:fontFamily="casual"
        android:text="STOP"
        android:textColor="#FAF6F6"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.535"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/startbtn"
        app:layout_constraintVertical_bias="0.186" />


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



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





activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayoutxmlns:android="http://schemas.andr
oid.com/apk/res/android"
xmlns:app="http://schemas.android.com/apk/res-auto" xmlns:tools="http://schemas.android.com/tools"
android:layout_width="match_parent" android:layout_height="match_parent"
tools:context=".MainActivity">

<Button android:id="@+id/btn_parsexml" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:layout_marginTop="80dp" android:text="Parse XML
Data"
app:layout_constraintEnd_toEndOf="parent" app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toBottomOf="@+id/textView4" />

<Button android:id="@+id/btn_parsejson" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:layout_marginTop="80dp" android:text="Parse Json
Data"
app:layout_constraintEnd_toEndOf="parent" app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toBottomOf="@+id/btn_parsexml" />

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

activity_view.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayoutxmlns:android="http://schemas.andr
oid.com/apk/res/android"
xmlns:app="http://schemas.android.com/apk/res-auto" xmlns:tools="http://schemas.android.com/tools"
android:layout_width="match_parent" android:layout_height="match_parent"
tools:context=".ViewActivity">

<TextView android:id="@+id/lbl_xml_data" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:layout_marginTop="30dp" android:text="Xml Data"
app:layout_constraintStart_toStartOf="@+id/textView2"
app:layout_constraintTop_toBottomOf="@+id/textView2" />

<TextView android:id="@+id/textView" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:layout_marginTop="40dp" android:text="PARSING XML
AND JSON DATA" android:textSize="20dp" app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintStart_toStartOf="parent" app:layout_constraintTop_toTopOf="parent" />

<TextView android:id="@+id/textView2" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:layout_marginStart="40dp"
android:layout_marginTop="20dp" android:text="XML DATA"
app:layout_constraintStart_toStartOf="parent" app:layout_constraintTop_toBottomOf="@+id/textView"
/>

<TextView android:id="@+id/textView3" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:layout_marginTop="20dp"
android:layout_marginEnd="40dp" android:text="JSON DATA"
app:layout_constraintEnd_toEndOf="parent" app:layout_constraintTop_toBottomOf="@+id/textView" />

<TextView android:id="@+id/lbl_json_data" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:layout_marginTop="30dp" android:text="Json Data"
app:layout_constraintEnd_toEndOf="@+id/textView3"
app:layout_constraintTop_toBottomOf="@+id/textView3" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```
package com.example.parta_program6;
import androidx.appcompat.app.AppCompatActivity; import android.content.Intent;
import android.os.Bundle; import android.view.View; import android.widget.Button;

public class MainActivityextendsAppCompatActivityimplementsView.OnClickListener { Button
btnParseXml,btnParseJson;
@Override
```

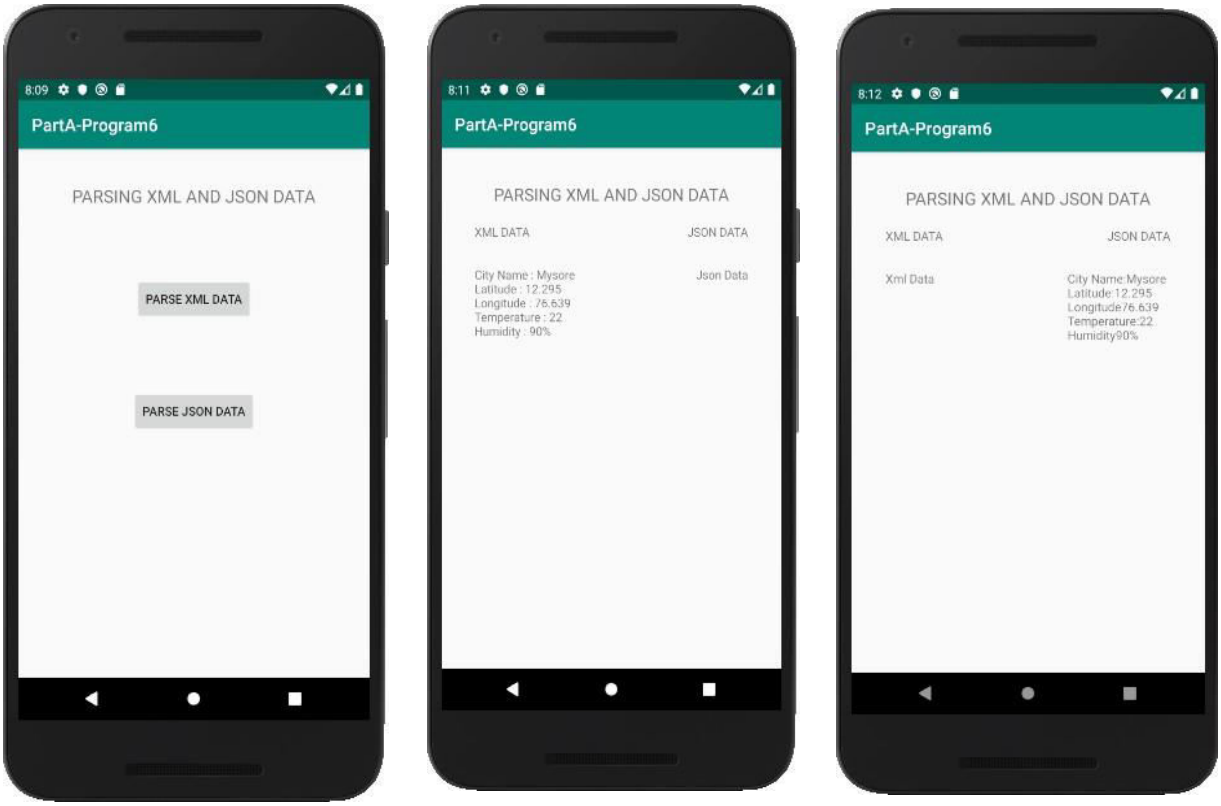
```
protected void onCreate(Bundle savedInstanceState) { super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main); btnParseXml=(Button)findViewById(R.id.btn_parsexml);
btnParseJson=(Button)findViewById(R.id.btn_parsejson); btnParseJson.setOnClickListener(this);
btnParseXml.setOnClickListener(this);
}

@Override
public void onClick(View v) {

if(v.equals(btnParseJson))
{
Intent it=new Intent(this,ViewActivity.class); it.putExtra("mode",1);
startActivity(it);

}
else if(v.equals(btnParseXml))
{
Intent it=new Intent(this,ViewActivity.class); it.putExtra("mode",2);
startActivity(it);
}
}
}
```

ViewActivity.java

```
package com.example.parta_program6;
import androidx.appcompat.app.AppCompatActivity; import android.os.Bundle;
import android.widget.TextView;

import org.json.JSONObject; import org.w3c.dom.Document; import org.w3c.dom.Element; import
org.w3c.dom.Node; import org.w3c.dom.NodeList;

import java.io.InputStream;

import javax.xml.parsers.DocumentBuilder; import javax.xml.parsers.DocumentBuilderFactory;

public class ViewActivityextendsAppCompatActivity { TextViewlblXmlData,lblJsonData;
int mode=0; @Override
protected void onCreate(Bundle savedInstanceState) { super.onCreate(savedInstanceState);
setContentView(R.layout.activity_view); lblXmlData=(TextView)findViewById(R.id.lbl_xml_data);
lblJsonData=(TextView)findViewById(R.id.lbl_json_data); mode=getIntent().getIntExtra("mode",0);

if(mode==1) parseJson();

else parseXmlDocument();
```

```
}


public String parseXmlDocument()
{
try {

InputStream is = getAssets().open("input.xml");

DocumentBuilderFactorydbFactory = DocumentBuilderFactory.newInstance();
DocumentBuilderdBuilder = dbFactory.newDocumentBuilder();
Document doc = dBuilder.parse(is);

Element element=doc.getDocumentElement(); element.normalize();

NodeListnList = doc.getElementsByTagName("employee"); for (int i=0; i<nList.getLength(); i++) {
Node node = nList.item(i);
if (node.getNodeType() == Node.ELEMENT_NODE) { Element element2 = (Element) node;
lblXmlData.setText("City Name : " + getValue("city_name", element2)+"\n");
lblXmlData.append("Latitude : " + getValue("Latitude", element2)+"\n"); lblXmlData.append("Longitude :
" + getValue("Longitude", element2)+"\n"); lblXmlData.append("Temperature : " +
getValue("Temperature", element2)+"\n"); lblXmlData.append("Humidity : " + getValue("Humidity",
element2)+"\n");
}
}
}
catch (Exception e) {e.printStackTrace();} return null;
}

private static String getValue(String tag, Element element) { NodeListnodeList =
element.getElementsByTagName(tag).item(0).getChildNodes(); Node node = nodeList.item(0);
return node.getNodeValue();
}

public void parseJson()
{
try { InputStreaminputStream=getAssets().open("input.json"); byte[] data=new
byte[inputStream.available()]; inputStream.read(data);

String readData=new String(data); JSONObjectjsonObject=new JSONObject(readData);
JSONObject jsonObject1=jsonObject.getJSONObject("employee"); lblJsonData.setText("City
Name:"+jsonObject1.getString("city_name")+"\n");
lblJsonData.append("Latitude:"+jsonObject1.getString("Latitude")+"\n");
lblJsonData.append("Longitude"+jsonObject1.getString("Longitude")+"\n");
```

```
lblJsonData.append("Temperature:"+jsonObject1.getInt("Temperature")+"\n");
lblJsonData.append("Humidity"+jsonObject1.getString("Humidity")+"\n");
}
catch (Exception e) {e.printStackTrace();}
}
}
```



7) Develop a simple application withoneEditTextso 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.

MainActivity.java

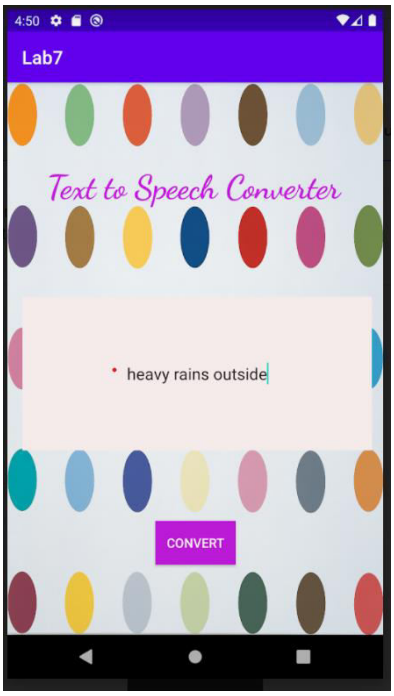
```
package com.example.lab7;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.speech.tts.TextToSpeech;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;

import java.util.Locale;

public class MainActivity extends AppCompatActivity implements View.OnClickListener
{
    EditText input;
    Button btn;
    TextToSpeech tts;

    @Override
    protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        input =(EditText)findViewById(R.id.input);
        btn=(Button)findViewById(R.id.submit);
        btn.setOnClickListener(this);
        tts=new TextToSpeech(getBaseContext(), new TextToSpeech.OnInitListener() {
            @Override
            public void onInit(int i) {
                if(i!=TextToSpeech.ERROR)
                    Toast.makeText(getBaseContext(), "Success", Toast.LENGTH_LONG).show();
            }
        });
        tts.setLanguage(Locale.ENGLISH);

    }

    @Override
    public void onClick(View view) {
```

```
        String text=input.getText().toString();
        tts.speak(text,TextToSpeech.QUEUE_FLUSH,null);
    }
}
```

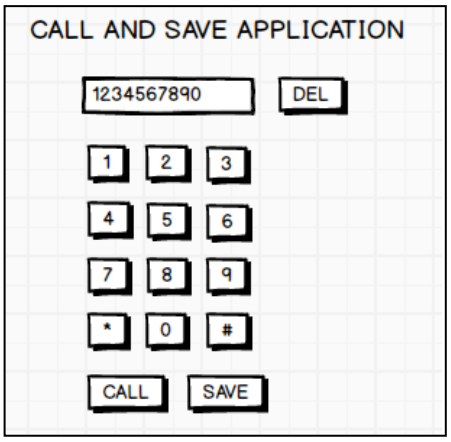
Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity"
    android:background="@drawable/damien_hirst_dot">

    <TextView
        android:id="@+id/textView"
        android:layout_width="369dp"
        android:layout_height="90dp"
        android:fontFamily="cursive"
        android:gravity="center"
        android:text="Text to Speech Converter"
        android:textColor="#C51FE1"
        android:textSize="36sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.446"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintStart_toStartOf="parent"

        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.134" />

    <EditText
        android:id="@+id/input"
        android:layout_width="383dp"
        android:layout_height="168dp"
        android:background="#F4EBEB"
        android:ems="10"
        android:gravity="center"
```

```
        android:inputType="textPersonName"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.571"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView"
        app:layout_constraintVertical_bias="0.271" />

    <Button
        android:id="@+id/submit"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:background="#BB1BD6"
        android:text="Convert Text to Speech"
        android:textColor="#FAF6F6"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/input" />

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



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



activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayoutxmlns:android="http://schemas.andr
oid.com/apk/res/android"
xmlns:app="http://schemas.android.com/apk/res-auto" xmlns:tools="http://schemas.android.com/tools"
android:layout_width="match_parent" android:layout_height="match_parent"
tools:context=".MainActivity">

<TextView android:id="@+id/textView" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:layout_marginTop="50dp" android:text="PHONE
DAILER" app:layout_constraintEnd_toEndOf="parent" app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent" />

<EditText android:id="@+id/txt_phonenumber" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:layout_marginStart="20dp"
android:layout_marginTop="30dp" android:ems="10" android:inputType="textPersonName"
app:layout_constraintStart_toStartOf="parent" app:layout_constraintTop_toBottomOf="@+id/textView"
/>

<Button android:id="@+id/btn_delete" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:layout_marginStart="20dp"
android:layout_marginTop="30dp" android:text="Delete"
app:layout_constraintStart_toEndOf="@+id/txt_phonenumber"
app:layout_constraintTop_toBottomOf="@+id/textView" />

<Button android:id="@+id/btn_one"
```

```
android:layout_width="wrap_content" android:layout_height="wrap_content"
android:layout_marginStart="20dp" android:layout_marginTop="30dp" android:text="1"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toBottomOf="@+id/txt_phonenumber" />

<Button android:id="@+id/btn_two"
android:layout_width="wrap_content" android:layout_height="wrap_content"
android:layout_marginTop="30dp" android:text="2"
 app:layout_constraintEnd_toStartOf="@+id/btn_three"
app:layout_constraintStart_toEndOf="@+id/btn_one"
app:layout_constraintTop_toBottomOf="@+id/txt_phonenumber" />

<Button android:id="@+id/btn_three"
android:layout_width="wrap_content" android:layout_height="wrap_content"
android:layout_marginTop="30dp" android:layout_marginEnd="20dp" android:text="3"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintTop_toBottomOf="@+id/txt_phonenumber" />

<Button android:id="@+id/btn_four"
android:layout_width="wrap_content" android:layout_height="wrap_content"
android:layout_marginStart="20dp" android:layout_marginTop="30dp" android:text="4"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toBottomOf="@+id/btn_one" />

<Button android:id="@+id/btn_five"
android:layout_width="wrap_content" android:layout_height="wrap_content"
android:layout_marginTop="30dp" android:text="5"
app:layout_constraintEnd_toStartOf="@+id/btn_six"
app:layout_constraintStart_toEndOf="@+id/btn_four"
app:layout_constraintTop_toBottomOf="@+id/btn_two" />

<Button android:id="@+id/btn_six"
android:layout_width="wrap_content" android:layout_height="wrap_content"
android:layout_marginTop="30dp" android:layout_marginEnd="20dp" android:text="6"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintTop_toBottomOf="@+id/btn_three" />

<Button android:id="@+id/btn_seven"
android:layout_width="wrap_content" android:layout_height="wrap_content"
android:layout_marginStart="20dp" android:layout_marginTop="30dp" android:text="7"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toBottomOf="@+id/btn_four" />

<Button android:id="@+id/btn_eight"
```

```
android:layout_width="wrap_content" android:layout_height="wrap_content"
android:layout_marginTop="30dp"
android:text="8" app:layout_constraintEnd_toStartOf="@+id/btn_nine"
app:layout_constraintStart_toEndOf="@+id/btn_seven"
app:layout_constraintTop_toBottomOf="@+id/btn_five" />

<Button android:id="@+id/btn_nine"
android:layout_width="wrap_content" android:layout_height="wrap_content"
android:layout_marginTop="30dp" android:layout_marginEnd="20dp" android:text="9"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintTop_toBottomOf="@+id/btn_six" />

<Button android:id="@+id/btn_zero"
android:layout_width="wrap_content" android:layout_height="wrap_content"
android:layout_marginTop="30dp" android:text="0" app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toBottomOf="@+id/btn_eight" />

<Button android:id="@+id/btn_call"
android:layout_width="wrap_content" android:layout_height="wrap_content"
android:layout_marginStart="20dp" android:layout_marginTop="30dp" android:text="Call"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toBottomOf="@+id/btn_zero" />

<Button android:id="@+id/btn_save"
android:layout_width="wrap_content" android:layout_height="wrap_content"
android:layout_marginTop="30dp" android:layout_marginEnd="20dp" android:text="Save"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintTop_toBottomOf="@+id/btn_zero" />

<Button android:id="@+id/btn_start"
android:layout_width="wrap_content" android:layout_height="wrap_content"
android:layout_marginStart="20dp" android:layout_marginTop="30dp" android:text="*"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toBottomOf="@+id/btn_seven" />

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

MainActivity.java

```
package com.example.part_a_program_8;

import androidx.appcompat.app.AppCompatActivity; import android.content.Intent;
import android.net.Uri; import android.os.Bundle;
import android.provider.ContactsContract; import android.view.View;
import android.widget.Button; import android.widget.EditText;
public class MainActivityextends AppCompatActivityimplements View.OnClickListener{ Button
btnOne,btnTwo,btnThree,btnFour,btnFive;
Button btnSix,btnSeven,btnEight,btnNine,btnZero; Button btnDel,btnStar,btnHash,btnCall,btnSave;
EditTexttxtPhonenumber; @Override
protected void onCreate(Bundle savedInstanceState) { super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);

btnOne=(Button)findViewById(R.id.btn_one); btnOne.setOnClickListener(this);
btnTwo=(Button)findViewById(R.id.btn_two); btnTwo.setOnClickListener(this);
btnThree=(Button)findViewById(R.id.btn_three); btnThree.setOnClickListener(this);
btnFour=(Button)findViewById(R.id.btn_four); btnFour.setOnClickListener(this);
btnFive=(Button)findViewById(R.id.btn_five); btnFive.setOnClickListener(this);
btnSix=(Button)findViewById(R.id.btn_six); btnSix.setOnClickListener(this);
btnSeven=(Button)findViewById(R.id.btn_seven); btnSeven.setOnClickListener(this);
btnEight=(Button)findViewById(R.id.btn_eight); btnEight.setOnClickListener(this);
btnNine=(Button)findViewById(R.id.btn_nine); btnNine.setOnClickListener(this);
btnZero=(Button)findViewById(R.id.btn_zero); btnZero.setOnClickListener(this);
btnStar=(Button)findViewById(R.id.btn_start); btnStar.setOnClickListener(this);
btnHash=(Button)findViewById(R.id.btn_hash); btnHash.setOnClickListener(this);
btnCall=(Button)findViewById(R.id.btn_call); btnCall.setOnClickListener(this);
btnSave=(Button)findViewById(R.id.btn_save); btnSave.setOnClickListener(this);
btnDel=(Button)findViewById(R.id.btn_delete); btnDel.setOnClickListener(this);
txtPhonenumber=(EditText)findViewById(R.id.txt_phonenumber); txtPhonenumber.setText("");
}

public void onClick(View v)
{
if(v.equals(btnOne)) txtPhonenumber.append("1");

else if(v.equals(btnTwo)) txtPhonenumber.append("2");

else if(v.equals(btnThree)) txtPhonenumber.append("3");

else if(v.equals(btnFour)) txtPhonenumber.append("4");

else if(v.equals(btnFive)) txtPhonenumber.append("5");

else if(v.equals(btnSix)) txtPhonenumber.append("6");
```

```
else if(v.equals(btnSeven)) txtPhonenumber.append("7");

else if(v.equals(btnEight)) txtPhonenumber.append("8");

else if(v.equals(btnNine)) txtPhonenumber.append("9");

else if(v.equals(btnZero)) txtPhonenumber.append("0");

else if(v.equals(btnStar)) txtPhonenumber.append("*");

else if(v.equals(btnHash)) txtPhonenumber.append("#");

else if(v.equals(btnSave))
{
Intent contactIntent= new Intent
(ContactsContract.Intents.Insert.ACTION); contactIntent.setType
(ContactsContract.RawContacts.CONTENT_TYPE);
contactIntent.putExtra(ContactsContract.Intents.Insert.NAME,"Unknown");
contactIntent.putExtra(ContactsContract.Intents.Insert.PHONE, txtPhonenumber.getText().toString());
startActivity(contactIntent);
}
else if(v.equals(btnDel))
{
String data=txtPhonenumber.getText().toString(); if(data.length()>0)
{
txtPhonenumber.setText
(data.substring(0,data.length()-1));
}
else
{
txtPhonenumber.setText("");
}
}

btnCall.setOnClickListener(new View.OnClickListener()
{
@Override
public void onClick(View v) {
String data = txtPhonenumber.getText().toString(); Intent intent=new Intent(Intent.ACTION_DIAL);
intent.setData(Uri.parse("tel:"+ data)); startActivity(intent);
}
}
);
}
```

```
}
```

AndriodManifest.xml

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
package="com.example.part_a_program_8">
<uses-permission android:name="android.permission.CALL_PHONE"/>
<application android:allowBackup="true" android:icon="@mipmap/ic_launcher"
android:label="@string/app_name"
android:roundIcon="@mipmap/ic_launcher_round" android:supportsRtl="true"
android:theme="@style/AppTheme">
<activity android:name=".MainActivity">
<intent-filter>
<action android:name="android.intent.action.MAIN" />
<category android:name="android.intent.category.LAUNCHER" />
</intent-filter>
</activity>
</application>
</manifest>
```

Sample Output