Program 01:

i) 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.

ii) 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.

NOTE:
- **This pdf is designed in landscape mode for better readability on tablet/laptop/desktop system.**
- **All the screenshots attached in this pdf are taken in the dark mode on the android phone itself.**
- **All the codes and files can be found at tinyurl.com/aryaStark18**

activity_main.xml (part i layout)


```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:orientation="vertical"
    android:gravity="center"
```
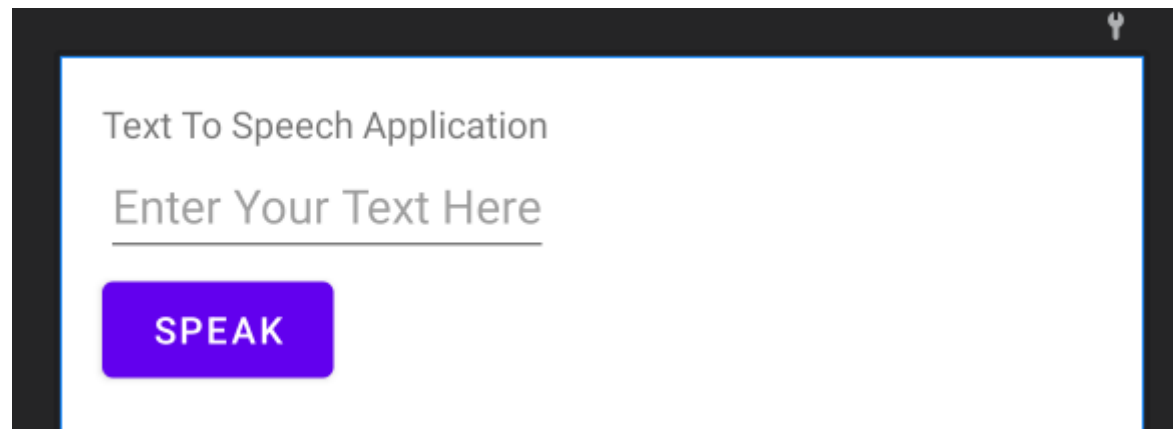
```xml
    tools:context=".MainActivity">
<LinearLayout
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:orientation="horizontal"
    android:layout_marginBottom="20px">
    <TextView
        android:layout_width="216dp"
        android:layout_height="90dp"
        android:textSize="70dp"
        android:text="Dr. AIT"/>
    <ImageView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        app:srcCompat="@mipmap/ic_banner_foreground"/>
</LinearLayout>
<LinearLayout
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:orientation="vertical"
    android:gravity="center">
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textSize="40dp"
        android:text="Kumar Vedant"
        android:layout_marginBottom="10px"/>
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textSize="20dp"
        android:text="Final Year Student"
        android:layout_marginBottom="10px"/>
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textSize="20dp"
        android:text="BE Computer Science"
        android:layout_marginBottom="10px"/>
```

```xml
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textSize="20dp"
        android:text="Bangalore, India"
        android:layout_marginBottom="10px"/>
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textSize="20dp"
        android:text="+91 90196 00754"
        android:layout_marginBottom="10px"/>
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textSize="20dp"
        android:text="kvgns5424@gmail.com"
        android:layout_marginBottom="10px"/>
    </LinearLayout>
</LinearLayout>
```

activity_main.xml (part ii layout)

```xml
<?xml version="1.0" encoding="utf-8"?>
<AbsoluteLayout
    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"
    tools:ignore="Deprecated">
    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="16dp"
        android:layout_y="16dp"
        android:text="Text To Speech Application"/>
    <EditText
        android:id="@+id/idText"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="16dp"
        android:layout_y="35dp"
        android:hint="Enter Your Text Here"/>
    <Button
        android:id="@+id/idSpeak"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="16dp"
        android:layout_y="80dp"
        android:text="Speak"/>
</AbsoluteLayout>
```

MainActivity.java (part ii activity)

```java
package com.example.program1b;
```

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

public class MainActivity extends AppCompatActivity {
    TextToSpeech t1;
    EditText text;
    Button speak;
    @Override
    protected void onCreate(Bundle b) {
        super.onCreate(b);
        setContentView(R.layout.activity_main);
        text = findViewById(R.id.idText);
        speak = findViewById(R.id.idSpeak);
        t1 = new TextToSpeech(getApplicationContext(), new TextToSpeech.OnInitListener() {
            @Override
            public void onInit(int i) {
                if(i!=TextToSpeech.ERROR){
                    t1.setLanguage(Locale.ENGLISH);
                }
            }
        });
        speak.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String toSpeak = text.getText().toString();
                Toast.makeText(getBaseContext(),toSpeak,Toast.LENGTH_SHORT).show();
                t1.speak(toSpeak,TextToSpeech.QUEUE_FLUSH,null);
            }
        });
    }
}
```
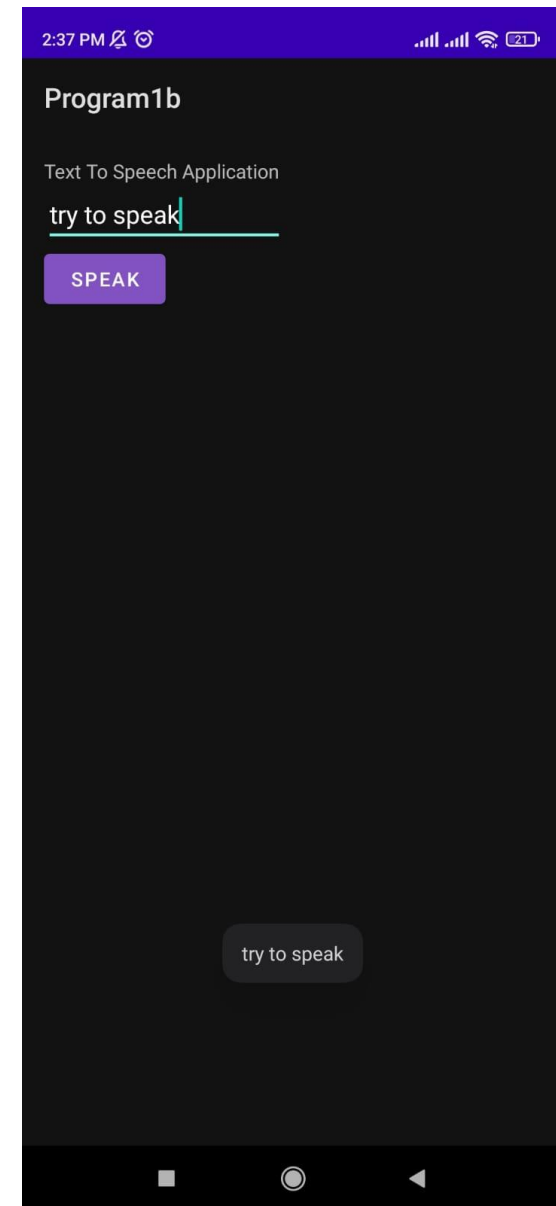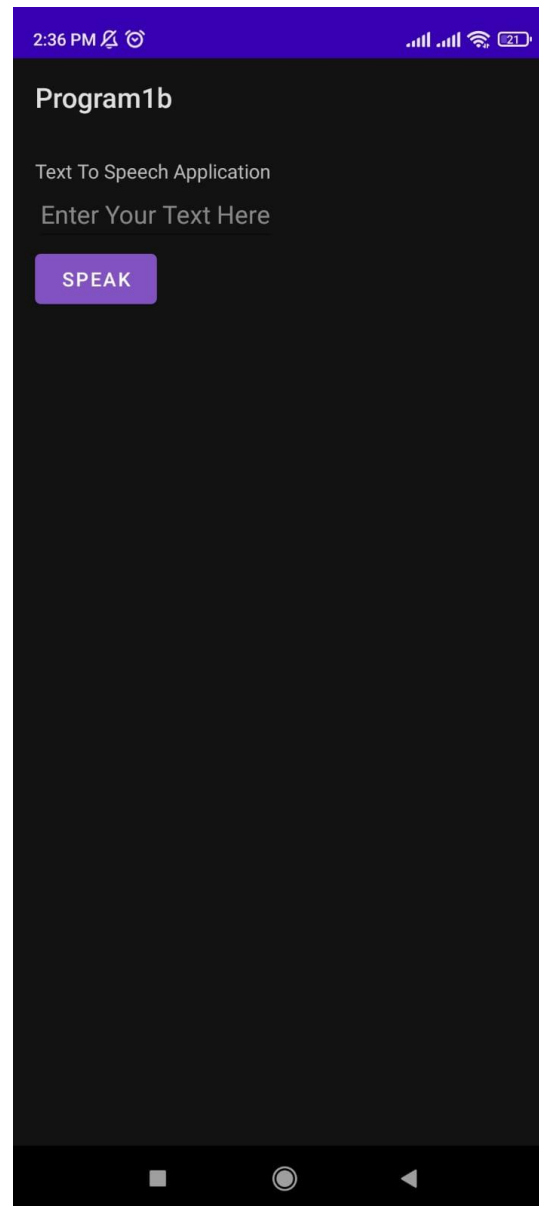
Program 02: Write a program to create an Activity to read Employee Details (EmpId, Name, Age, Address) from user and store to database and create a menu with menu item (Show Details) on pressing menu details it must go to another activity with employee id search box and search button and display the employee details on the screen. keshav929
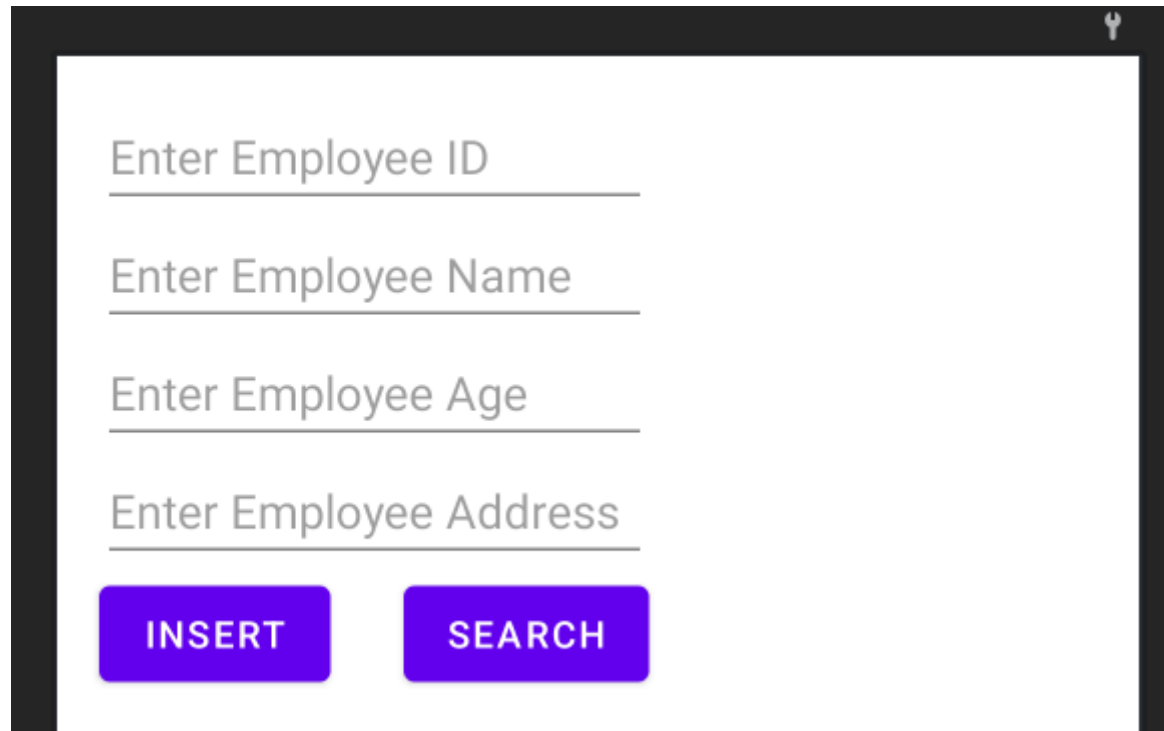
Database.java

```java
package com.example.program2;

import android.content.Context;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteOpenHelper;

public class Database extends SQLiteOpenHelper {
    public static final String DATABASE_NAME = "employee.db";
    public static final String TABLE_NAME = "employee_table";
    public Database(Context context, String name, SQLiteDatabase.CursorFactory factory, int version) {
        super(context, name, factory, version);
    }
    @Override
    public void onCreate(SQLiteDatabase db) {
        db.execSQL("create table " + TABLE_NAME + " (ID TEXT, NAME TEXT, AGE TEXT, ADDRESS TEXT)");
    }
    @Override
    public void onUpgrade(SQLiteDatabase db, int i, int i1) {

    }
}
```

activity_main.xml (layout)


```xml
<?xml version="1.0" encoding="utf-8"?>
<AbsoluteLayout
    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"
    tools:ignore="Deprecated">
    <EditText
        android:id="@+id/idId"
        android:layout_width="wrap_content"
```

```xml
        android:layout_height="wrap_content"
        android:ems="10"
        android:layout_x="16dp"
        android:layout_y="16dp"
        android:hint="Enter Employee ID"/>
<EditText
        android:id="@+id/idName"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10"
        android:layout_x="16dp"
        android:layout_y="61dp"
        android:hint="Enter Employee Name"/>
<EditText
        android:id="@+id/idAge"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10"
        android:layout_x="16dp"
        android:layout_y="106dp"
        android:hint="Enter Employee Age"/>
<EditText
        android:id="@+id/idAddress"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10"
        android:layout_x="16dp"
        android:layout_y="151dp"
        android:hint="Enter Employee Address"/>
<Button
        android:id="@+id/idInsert"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="16dp"
        android:layout_y="196dp"
        android:text="Insert"/>
<Button
        android:id="@+id/idSearch"
        android:layout_width="wrap_content"
```

```xml
        android:layout_height="wrap_content"
        android:layout_x="132dp"
        android:layout_y="196dp"
        android:text="Search"/>
</AbsoluteLayout>
```

MainActivity.java (activity)

```java
package com.example.program2;

import android.os.Bundle;
import android.view.View;
import android.widget.Toast;
import android.widget.Button;
import android.content.Intent;
import android.widget.EditText;
import android.content.ContentValues;
import android.database.sqlite.SQLiteDatabase;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity implements View.OnClickListener {
    EditText id, name, age, address;
    Button insert, search;

    @Override
    protected void onCreate(Bundle b) {
        super.onCreate(b);
        setContentView(R.layout.activity_main);
        id = findViewById(R.id.idId);
        name = findViewById(R.id.idName);
        age = findViewById(R.id.idAge);
        address = findViewById(R.id.idAddress);
        insert = findViewById(R.id.idInsert);
        search = findViewById(R.id.idSearch);
```

```java
        insert.setOnClickListener(this);
        search.setOnClickListener(this);
    }

    @Override
    public void onClick(View v) {
        if(v.equals(insert)) {
            String idStr = id.getText().toString();
            String nameStr = name.getText().toString();
            String ageStr = age.getText().toString();
            String addressStr = address.getText().toString();
            Database db = new Database(this, Database.DATABASE_NAME, null, 1);
            SQLiteDatabase mydb = db.getWritableDatabase();
            ContentValues cv = new ContentValues();
            cv.put("ID", idStr);
            cv.put("NAME", nameStr);
            cv.put("AGE", ageStr);
            cv.put("ADDRESS", addressStr);
            mydb.insert(Database.TABLE_NAME, null, cv);
            mydb.close();
            Toast.makeText(this, "Data Inserted", Toast.LENGTH_SHORT).show();
        }
        else if(v.equals(search)) {
            Toast.makeText(this, "Search Activity", Toast.LENGTH_SHORT).show();
            Intent it = new Intent(this, SearchActivity.class);
            startActivity(it);
        }
    }
}
```

activity_search.xml (layout)
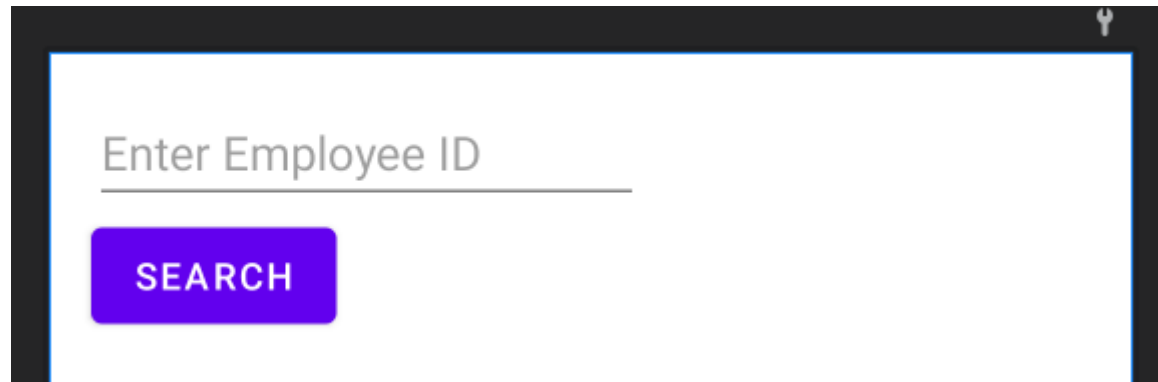

```xml
<?xml version="1.0" encoding="utf-8"?>
<AbsoluteLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".SearchActivity"
    tools:ignore="Deprecated">
    <EditText
        android:id="@+id/idId"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10"
        android:layout_x="16dp"
        android:layout_y="16dp"
        android:hint="Enter Employee ID"/>
    <Button
        android:id="@+id/idSearch"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="16dp"
        android:layout_y="61dp"
        android:text="Search"/>
```

```xml
    <TextView
        android:id="@+id/idDisplay"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="16dp"
        android:layout_y="109dp"/>
</AbsoluteLayout>
```

SearchActivity.java (activity)

```java
package com.example.program2;

import android.os.Bundle;
import android.view.View;
import android.widget.Toast;
import android.widget.Button;
import android.database.Cursor;
import android.widget.EditText;
import android.widget.TextView;
import android.database.sqlite.SQLiteDatabase;
import androidx.appcompat.app.AppCompatActivity;

public class SearchActivity extends AppCompatActivity implements View.OnClickListener {
    EditText id;
    Button search;
    TextView display;

    @Override
    protected void onCreate(Bundle b) {
        super.onCreate(b);
        setContentView(R.layout.activity_search);
        id = findViewById(R.id.idId);
        search = findViewById(R.id.idSearch);
        display = findViewById(R.id.idDisplay);
```

```java
            search.setOnClickListener(this);
    }

    @Override
    public void onClick(View v) {
        if (v.equals(search)) {
            String idStr = id.getText().toString();
            Database db = new Database(this, Database.DATABASE_NAME, null, 1);
            SQLiteDatabase mydb = db.getReadableDatabase();
            String[] columns = {"ID", "NAME", "AGE", "ADDRESS"};
            String[] selectionArgs = {idStr};
            String selection = "ID = ?";
            Cursor c = mydb.query(Database.TABLE_NAME, columns, selection, selectionArgs, null, null, null);
            display.setText("");
            if(c.moveToNext()) {
                String nameStr = c.getString(1);
                String ageStr = c.getString(2);
                String addressStr = c.getString(3);
                display.append(idStr + " " + nameStr + " " + ageStr + " " + addressStr + "\n");
            }
            else {
                Toast.makeText(this, "No Data Found", Toast.LENGTH_SHORT).show();
            }
        }
    }
}
```

Screen 1 (left):

Program2

Enter Employee ID

SEARCH

Search Activity

Screen 2 (right):

Program2

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SEARCH

78 Kumar Vedant 21 Patna
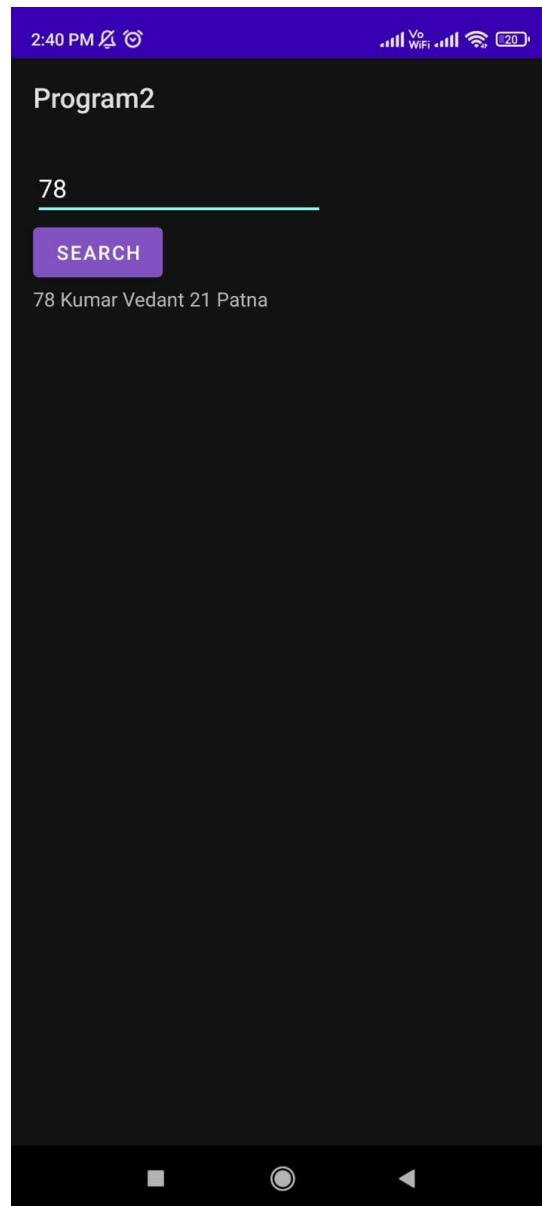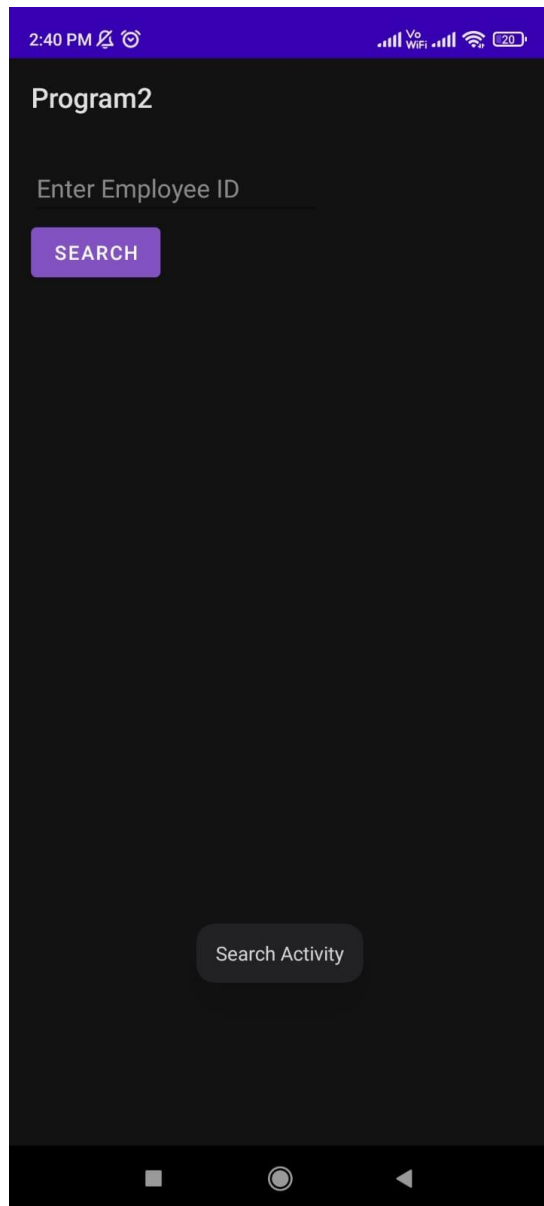
Program 04: Write a program to create an activity with two text boxes (date /time and note contents). Create a content provider to store the date and time and note contents to the database. Create another program with a Button (Fetch Today Notes) on press must access the note provider and display the notes stored for today's date.

activity_main.xml (App A layout)
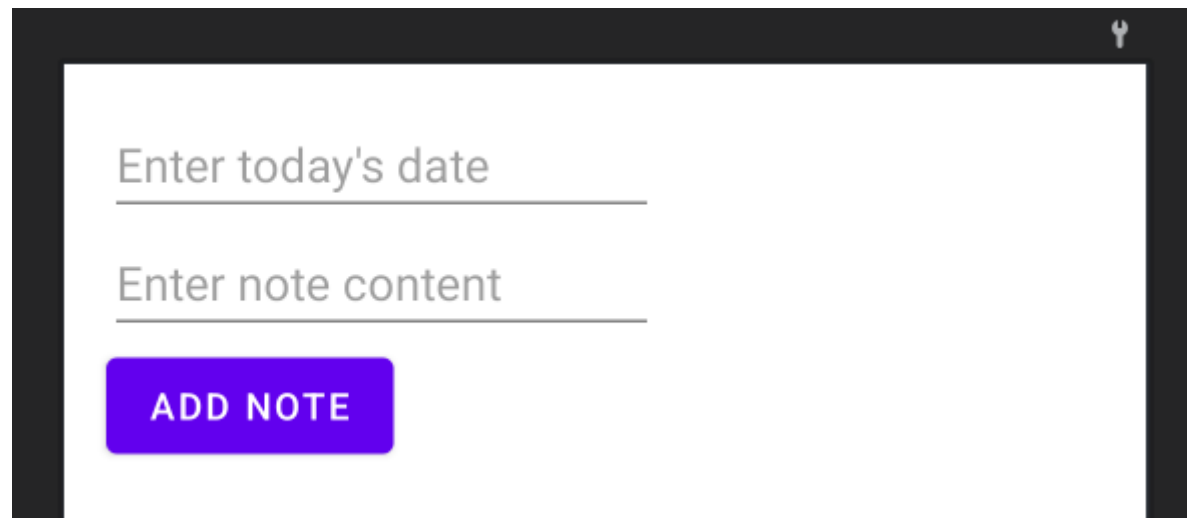

```xml
<?xml version="1.0" encoding="utf-8"?>
<AbsoluteLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity"
    tools:ignore="Deprecated">
    <EditText
```

```xml
        android:id="@+id/idDate"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="16dp"
        android:layout_y="16dp"
        android:ems="10"
        android:hint="Enter today's date"/>
    <EditText
        android:id="@+id/idNote"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="16dp"
        android:layout_y="61dp"
        android:ems="10"
        android:hint="Enter note content"/>
    <Button
        android:id="@+id/idAdd"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="16dp"
        android:layout_y="106dp"
        android:text="Add Note"/>
</AbsoluteLayout>
```

MainActivity.java (App A activity)

```java
package com.example.program4a;

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

```java
public class MainActivity extends AppCompatActivity implements View.OnClickListener {
    EditText date, note;
    Button add;

    @Override
    protected void onCreate(Bundle b) {
        super.onCreate(b);
        setContentView(R.layout.activity_main);
        date = findViewById(R.id.idDate);
        note = findViewById(R.id.idNote);
        add = findViewById(R.id.idAdd);
        add.setOnClickListener(this);
    }

    @Override
    public void onClick(View v) {
        if(v.equals(add)){
            String dateText = date.getText().toString();
            String noteText = note.getText().toString();
            ContentValues cv = new ContentValues();
            cv.put("date", dateText);
            cv.put("note", noteText);
            getContentResolver().insert(NotesProvider.CONTENT_URI, cv);
            Toast.makeText(this, "Note added", Toast.LENGTH_SHORT).show();
        }
    }
}
```

NotesProvider.java (App A)

```java
package com.example.program4a;

import android.net.Uri;
import android.database.Cursor;
import android.content.ContentValues;
import android.content.ContentProvider;
import android.database.sqlite.SQLiteDatabase;
```

```java
public class NotesProvider extends ContentProvider {
    static String AUTHORITY = "com.example.notesprovider";
    static String BASE_PATH = "notes";
    static Uri CONTENT_URI = Uri.parse("content://" + AUTHORITY + "/" + BASE_PATH);
    ProviderDatabase dbHelper;
    SQLiteDatabase db;

    @Override
    public boolean onCreate() {
        dbHelper = new ProviderDatabase(getContext(), ProviderDatabase.DATABASE_NAME, null, 1);
        return (dbHelper == null) ? false : true;
    }

    @Override
    public Cursor query(Uri uri, String[] strings, String s, String[] strings1, String s1) {
        db = dbHelper.getReadableDatabase();
        Cursor c = db.query(ProviderDatabase.TABLE_NAME, strings, s, strings1, null, null, null);
        return c;
    }

    @Override
    public String getType(Uri uri) {
        return null;
    }

    @Override
    public Uri insert(Uri uri, ContentValues cv) {
        db = dbHelper.getWritableDatabase();
        db.insert(ProviderDatabase.TABLE_NAME, null, cv);
        db.close();
        return null;
    }

    @Override
    public int delete(Uri uri, String s, String[] strings) {
        return 0;
    }
```

```java
    @Override
    public int update(Uri uri, ContentValues cv, String s, String[] strings) {
        return 0;
    }
}
```

ProviderDatabase.java (App A)

```java
package com.example.program4a;

import android.content.Context;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteOpenHelper;

public class ProviderDatabase extends SQLiteOpenHelper {
    public static String DATABASE_NAME = "notes.db";
    public static String TABLE_NAME = "notes";
    public ProviderDatabase(Context context, String name, SQLiteDatabase.CursorFactory factory, int version) {
        super(context, name, factory, version);
    }

    @Override
    public void onCreate(SQLiteDatabase db) {
        db.execSQL("CREATE TABLE " + TABLE_NAME + " (date TEXT, note TEXT);");
    }

    @Override
    public void onUpgrade(SQLiteDatabase db, int i, int i1) {
    }
}
```
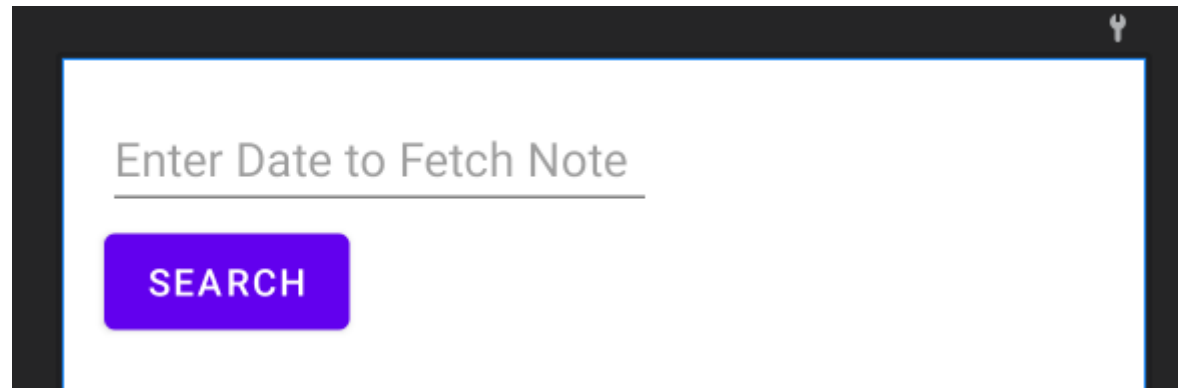
AndroidManifest.xml (App A)

```xml
<provider
    android:authorities="com.example.notesprovider"
    android:name=".NotesProvider"
    android:exported="true"
    android:enabled="true"/>
```

activity_main.xml (App B layout)

Enter Date to Fetch Note

SEARCH

```xml
<?xml version="1.0" encoding="utf-8"?>
<AbsoluteLayout
    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"
    tools:ignore="Deprecated">
    <EditText
        android:id="@+id/idDate"
```

```xml
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="16dp"
        android:layout_y="16dp"
        android:ems="10"
        android:hint="Enter Date to Fetch Note"/>
    <Button
        android:id="@+id/idSearch"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="16dp"
        android:layout_y="61dp"
        android:text="Search"/>
    <TextView
        android:id="@+id/idDisplay"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="16dp"
        android:layout_y="109dp"/>
</AbsoluteLayout>
```

MainActivity.java (App B activity)

```java
package com.example.program4b;

import android.net.Uri;
import android.os.Bundle;
import android.view.View;
import android.widget.Toast;
import android.widget.Button;
import android.database.Cursor;
import android.widget.EditText;
import android.widget.TextView;
import androidx.appcompat.app.AppCompatActivity;
```

```java
public class MainActivity extends AppCompatActivity implements View.OnClickListener {
    EditText date;
    Button search;
    TextView display;

    @Override
    protected void onCreate(Bundle b) {
        super.onCreate(b);
        setContentView(R.layout.activity_main);
        date = findViewById(R.id.idDate);
        search = findViewById(R.id.idSearch);
        display = findViewById(R.id.idDisplay);
        search.setOnClickListener(this);
    }


    @Override
    public void onClick(View v) {
        if(v.equals(search)) {
            String searchDate = date.getText().toString();
            Uri uri = Uri.parse("content://com.example.notesprovider/notes");
            String[] columns = {"date", "note"};
            String selection = "date = ?";
            String[] selectionArgs = {searchDate};
            Cursor c = getContentResolver().query(uri, columns, selection, selectionArgs, null);
            if (c.moveToNext()) {
                String dateText = c.getString(0);
                String noteText = c.getString(1);
                display.setText(dateText + " : " + noteText);
            } else {
                Toast.makeText(this, "No Note Found", Toast.LENGTH_SHORT).show();
            }
        }
    }
}
```
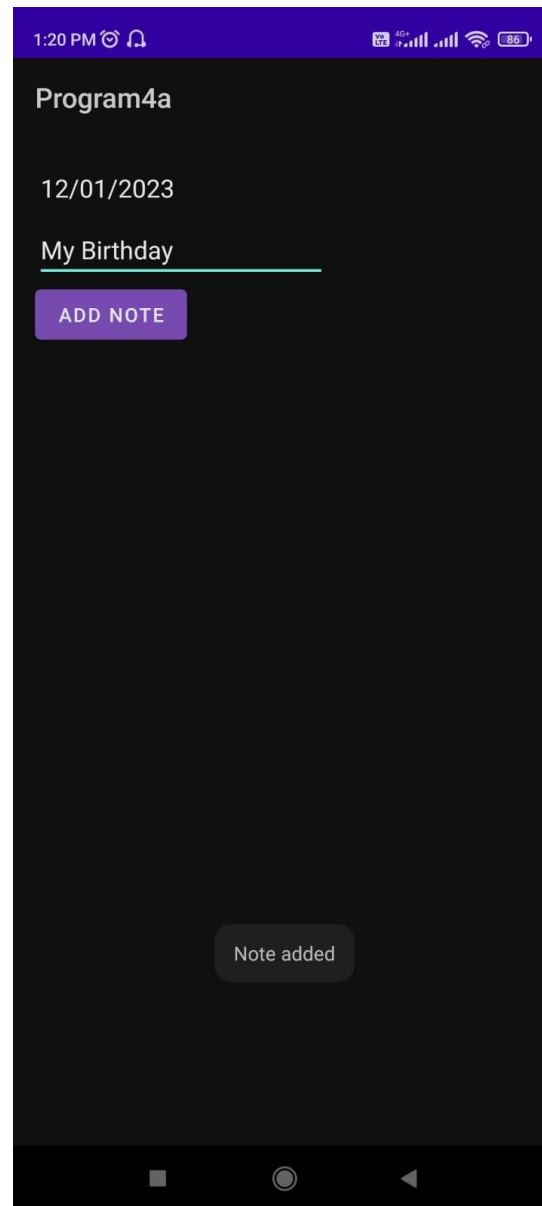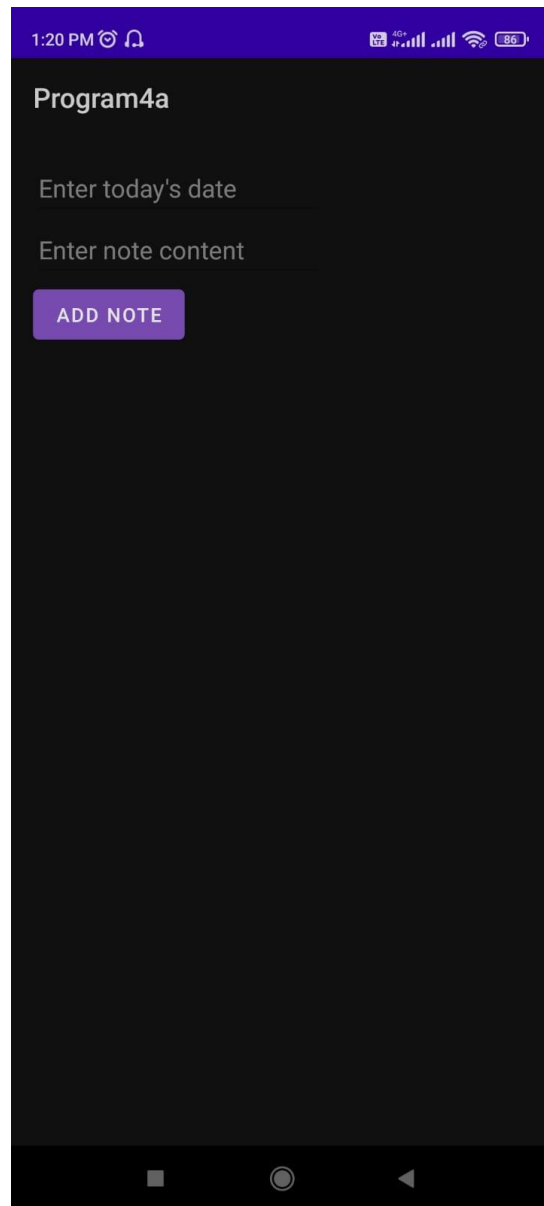
Program 05: Write a program to create an activity with two buttons start and stop. On pressing start button the program must start the counter and must keep on counting until stop button is pressed.

activity_main.xml (layout)
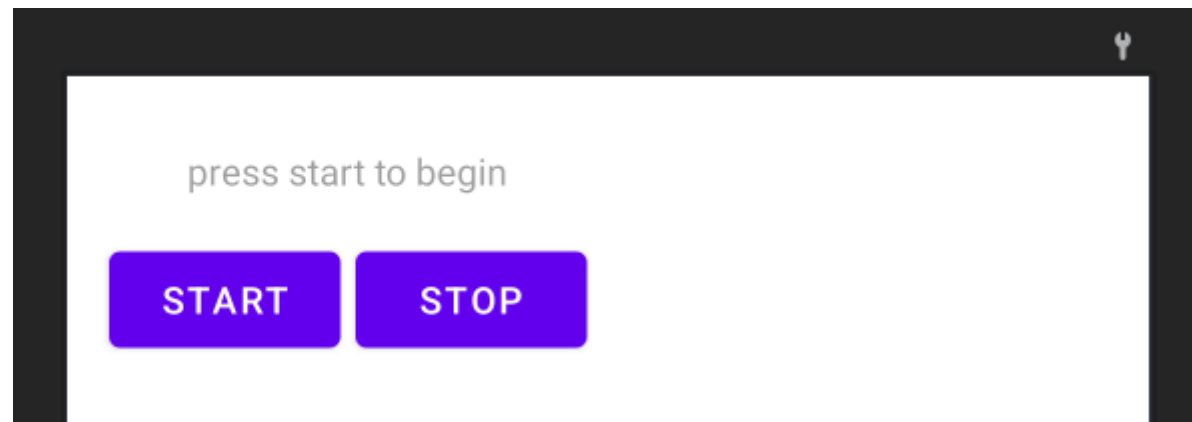

```xml
<?xml version="1.0" encoding="utf-8"?>
<AbsoluteLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity"
    tools:ignore="Deprecated">
    <TextView
        android:id="@+id/idDisplay"
        android:layout_width="181dp"
        android:layout_height="40dp"
        android:layout_x="16dp"
        android:layout_y="16dp"
        android:gravity="center"
        android:hint="press start to begin"/>
```

```xml
    <Button
        android:id="@+id/idStart"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="16dp"
        android:layout_y="61dp"
        android:text="start"/>
    <Button
        android:id="@+id/idStop"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="110dp"
        android:layout_y="61dp"
        android:text="stop"/>
</AbsoluteLayout>
```

MainActivity.java (activity)

```java
package com.example.program5;

import android.os.Bundle;
import android.view.View;
import android.os.Handler;
import android.os.Message;
import android.widget.Button;
import android.widget.TextView;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity implements View.OnClickListener, Runnable {
    Thread th;
    int count = 0;
    TextView display;
    Button start, stop;
    Boolean isRunning = false;
    @Override
    protected void onCreate(Bundle b) {
```

```java
        super.onCreate(b);
        setContentView(R.layout.activity_main);
        display = findViewById(R.id.idDisplay);
        start = findViewById(R.id.idStart);
        stop = findViewById(R.id.idStop);
        start.setOnClickListener(this);
        stop.setOnClickListener(this);
    }
    @Override
    public void onClick(View v) {
        if(v.equals(start)){
            isRunning = true;
            th = new Thread(this);
            th.start();
        }
        else if(v.equals(stop)){
            isRunning = false;
        }
    }
    Handler h = new Handler(){
        @Override
        public void handleMessage(Message msg) {
            display.setText(""+msg.what);
        }
    };
    public void run(){
        while(isRunning){
            try {
                Thread.sleep(1000);
            } catch (InterruptedException e) {
                e.printStackTrace();
            }
            count++;
            h.sendEmptyMessage(count);
        }
    }
}
```
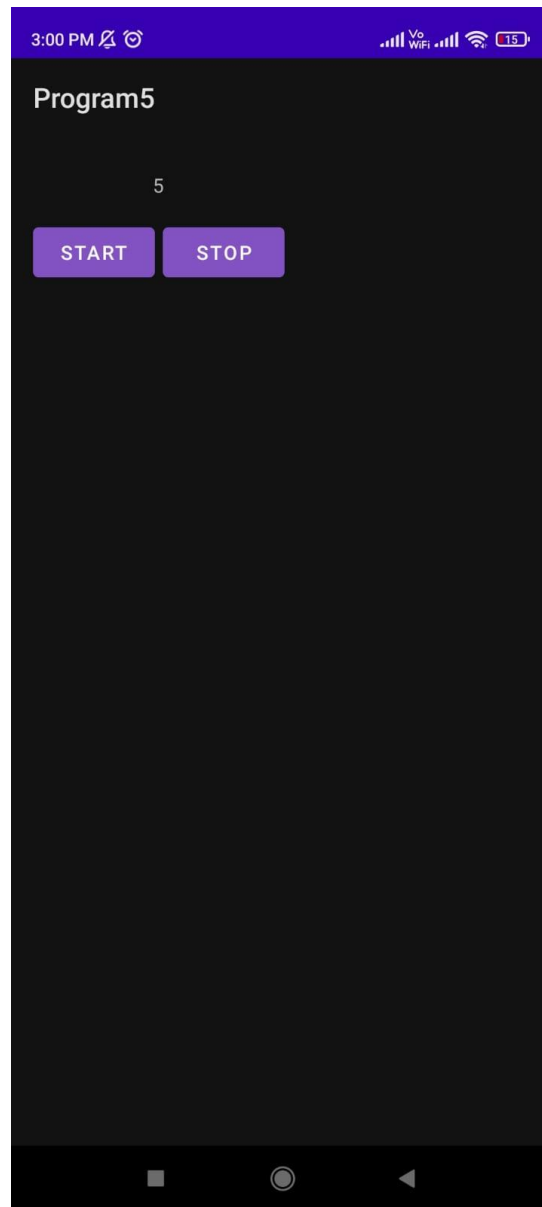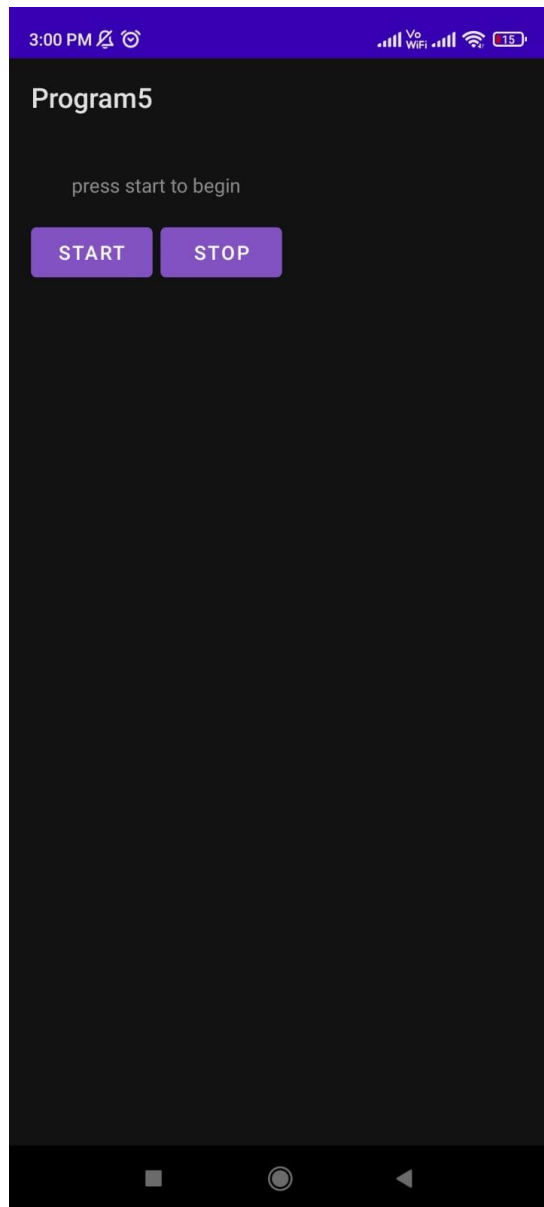
Program 06: Create a program to receive the incoming SMS to the phone and put a notification on screen, on clicking the notification it must display sender number and message content on screen.

activity_main.xml (layout)
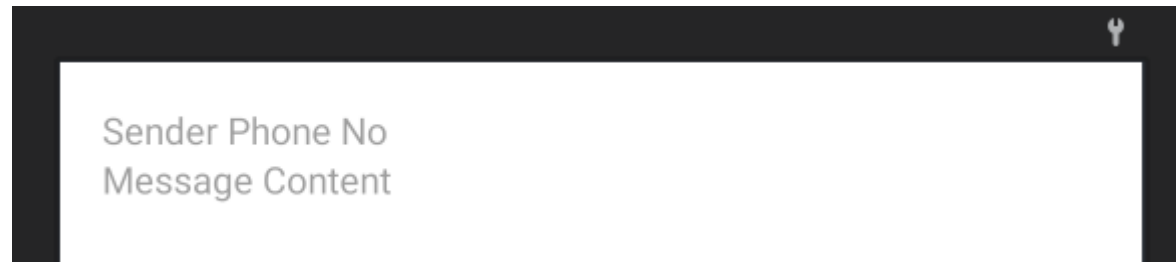

```xml
<?xml version="1.0" encoding="utf-8"?>
<AbsoluteLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity"
    tools:ignore="Deprecated">
    <TextView
        android:id="@+id/idNumber"
        android:layout_width="120dp"
        android:layout_height="wrap_content"
        android:layout_x="16dp"
        android:layout_y="16dp"
        android:hint="Sender Phone No"/>
    <TextView
        android:id="@+id/idMessage"
        android:layout_width="120dp"
        android:layout_height="wrap_content"
        android:layout_x="16dp"
        android:layout_y="35dp"
        android:hint="Message Content"/>
</AbsoluteLayout>
```

MainActivity.java

```java
package com.example.program6;

import android.os.Bundle;
import android.widget.TextView;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {
    TextView number, message;
    @Override
    protected void onCreate(Bundle b) {
        super.onCreate(b);
        setContentView(R.layout.activity_main);
        number = findViewById(R.id.idNumber);
        message = findViewById(R.id.idMessage);
        Bundle b = getIntent().getBundleExtra("data");
        if(b != null){
            number.setText(b.getString("number"));
            message.setText(b.getString("message"));
        }
    }
}
```

MyReceiver.java

```java
package com.example.program6;

import android.os.Bundle;
import android.content.Intent;
import android.content.Context;
import android.telephony.SmsMessage;
import android.content.BroadcastReceiver;
```

```java
public class MyReceiver extends BroadcastReceiver {
    @Override
    public void onReceive(Context context, Intent intent) {
        Object [] objmessages = (Object[]) intent.getExtras().get("pdus");
        for(int i = 0; i < objmessages.length; i++){
            SmsMessage sms = SmsMessage.createFromPdu((byte[]) objmessages[i]);
            Bundle b = new Bundle();
            b.putString("num", sms.getOriginatingAddress());
            b.putString("msg", sms.getMessageBody());
            Intent it = new Intent(context, MainActivity.class);
            it.putExtra("data", b);
            it.setFlags(Intent.FLAG_ACTIVITY_NEW_TASK);
            context.startActivity(it);
        }
    }
}
```

AndroidManifest.xml

```xml
<uses-permission android:name="android.permission.RECEIVE_SMS"/>
```

```xml
<receiver
    android:name="com.example.program6.MyReceiver"
    android:exported="true">
    <intent-filter>
        <action android:name="android.provider.Telephony.SMS_RECEIVED" />
    </intent-filter>
</receiver>
```
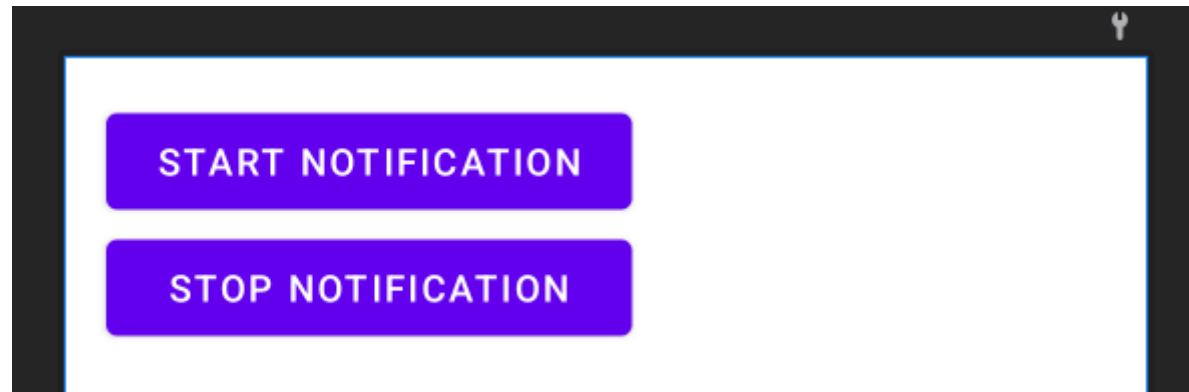
Program 07: Write a program to create a service that will put a notification on the screen every 5 seconds.

activity_main.xml (layout)


```xml
<?xml version="1.0" encoding="utf-8"?>
<AbsoluteLayout 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"
    tools:ignore="Deprecated">
    <Button
        android:id="@+id/idStart"
        android:layout_width="200dp"
        android:layout_height="wrap_content"
        android:layout_x="16dp"
        android:layout_y="16dp"
        android:text="Start Notification"/>
    <Button
        android:id="@+id/idStop"
        android:layout_width="200dp"
        android:layout_height="wrap_content"
        android:layout_x="16dp"
```

```xml
            android:layout_y="64dp"
            android:text="Stop Notification"/>
</AbsoluteLayout>
```

MainActivity.java

```java
package com.example.program7;

import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.content.Intent;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity implements View.OnClickListener {
    Button start, stop;
    @Override
    protected void onCreate(Bundle b) {
        super.onCreate(b);
        setContentView(R.layout.activity_main);
        start = findViewById(R.id.idStart);
        stop = findViewById(R.id.idStop);
        start.setOnClickListener(this);
        stop.setOnClickListener(this);
    }
    @Override
    public void onClick(View v) {
        if(v.equals(start)) {
            Intent it = new Intent(this,MyService.class);
            startService(it);
        }
        else if(v.equals(stop)) {
            Intent it = new Intent(this, MyService.class);
            stopService(it);
        }
    }
}
```

MyService.java

```java
package com.example.program7;

import android.os.Bundle;
import android.os.Handler;
import android.os.IBinder;
import android.os.Message;
import android.app.Service;
import android.widget.Toast;
import android.content.Intent;
import android.app.Notification;
import android.app.PendingIntent;
import androidx.annotation.NonNull;
import android.app.NotificationManager;
import androidx.core.app.NotificationCompat;

public class MyService extends Service {
    boolean isRunning = false;
    MyThread thread;
    @Override
    public void onCreate() {
        super.onCreate();
        isRunning = true;
        Toast.makeText(getBaseContext(),"Service Created", Toast.LENGTH_SHORT).show();
        thread = new MyThread();
        thread.start();
    }

    @Override
    public int onStartCommand(Intent intent, int flags, int startId) {
        super.onStartCommand(intent, flags, startId);
        Toast.makeText(getBaseContext(),"Service Started", Toast.LENGTH_SHORT).show();
        Bundle b = intent.getBundleExtra("data");
        isRunning = b.getBoolean("stop");
        if(!thread.isAlive()) {
            thread = new MyThread();
            thread.start();
```

```java
        }
        return Service.START_NOT_STICKY;
    }

    @Override
    public IBinder onBind(Intent intent) {
        return null;
    }

    @Override
    public void onDestroy() {
        isRunning = false;
        Toast.makeText(getBaseContext(),"Service Stopped", Toast.LENGTH_SHORT).show();
        super.onDestroy();
    }

    Handler hand = new Handler(){
        @Override
        public void handleMessage(@NonNull Message msg) {
            NotificationManager manager=(NotificationManager)getSystemService(NOTIFICATION_SERVICE);
            NotificationCompat.Builder builder=new NotificationCompat.Builder(getBaseContext());
            builder.setContentTitle("From Service");
            builder.setContentText("Hi! " + msg.what);
            builder.setSmallIcon(R.drawable.ic_launcher_foreground);
            builder.setContentIntent(PendingIntent.getActivity(getBaseContext(), 1, new
Intent(getBaseContext(),MainActivity.class),Intent.FILL_IN_ACTION));
            manager.notify(1, builder.build());
        }
    };

    private class MyThread extends Thread {
        @Override
        public void run() {
            int i = 0;
            while (isRunning){
                try {
                    Thread.sleep(5000);
                }
                catch(InterruptedException e) {
```
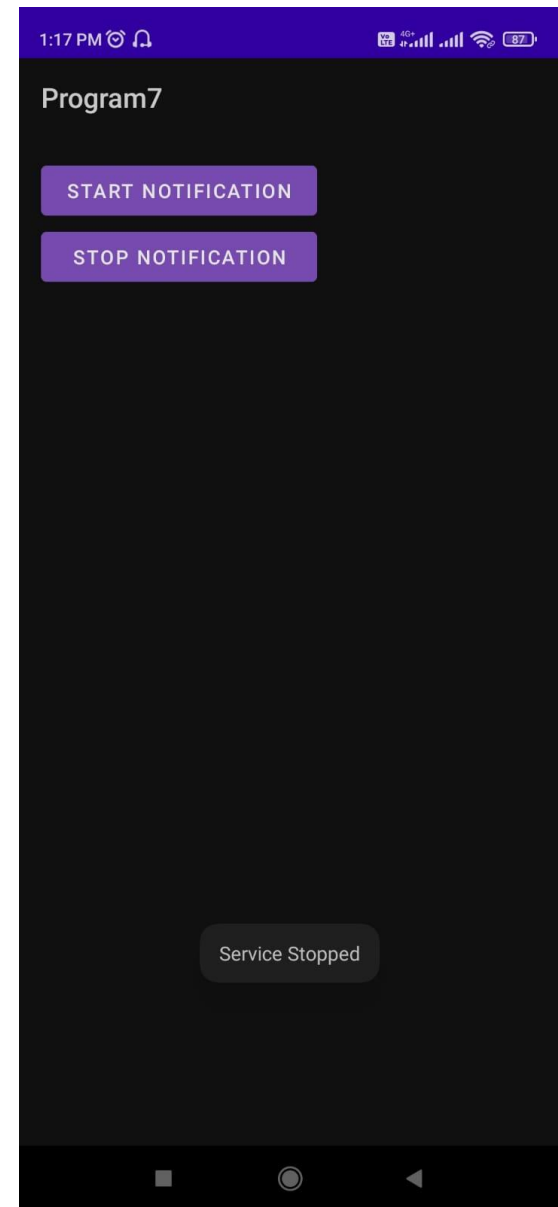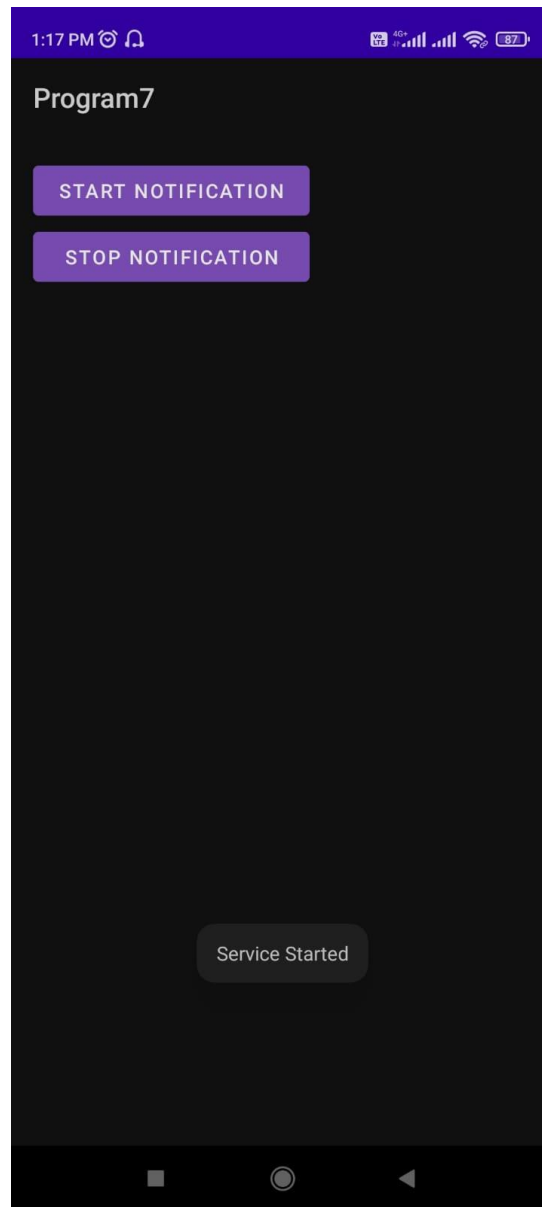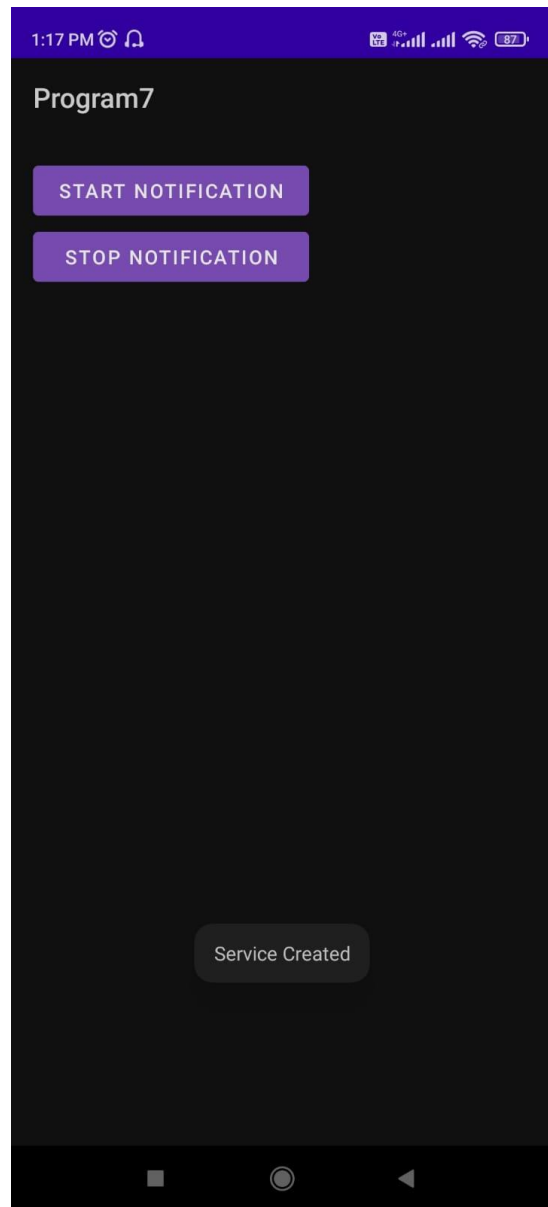
```
                    e.printStackTrace();
                }
                hand.sendEmptyMessage(i++);
            }
        }
    }
}
```
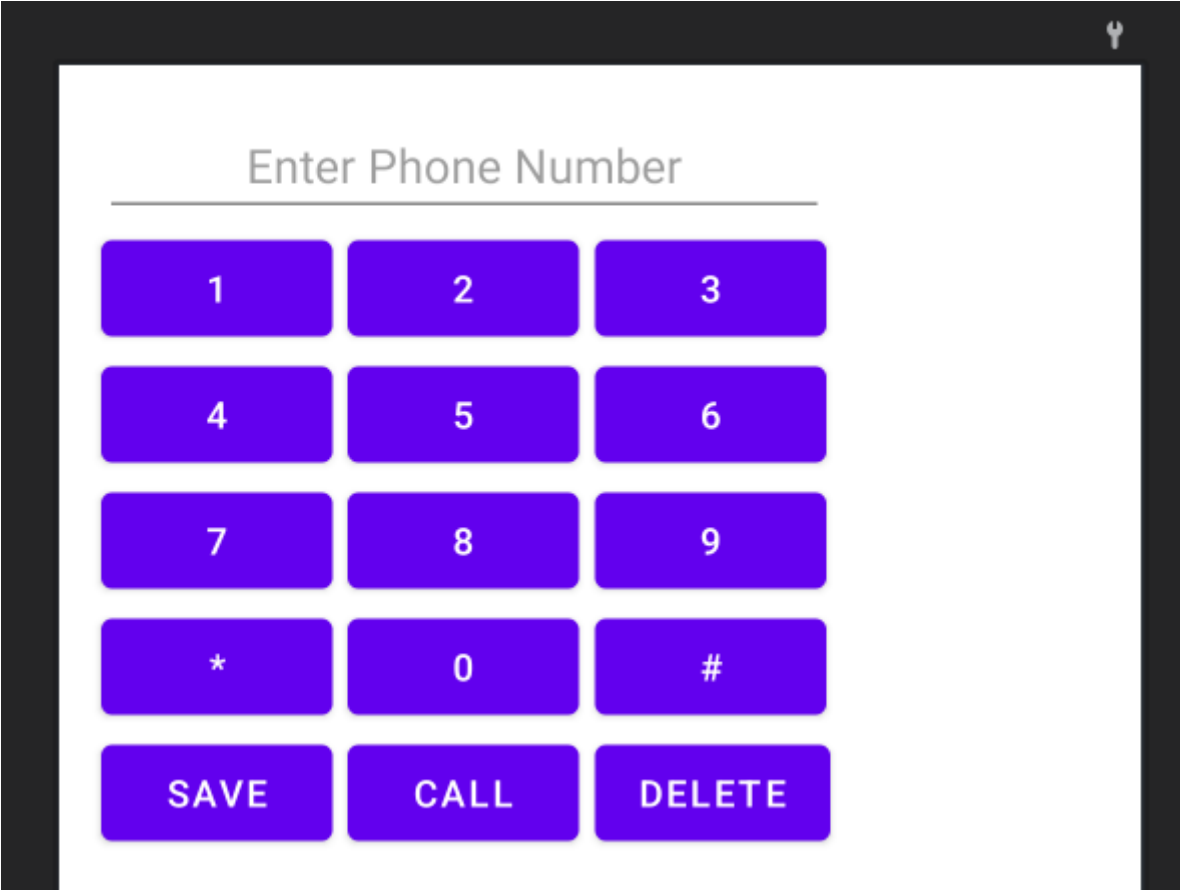
AndroidManifest.xml

```xml
<service
    android:name=".MyService"
    android:enabled="true"
    android:exported="true"/>
```

Program 09: Create an activity like a phone dialler with (1, 2, 3, 4, 5, 6, 7, 8, 9, 0, *, #) buttons including call, save and delete 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 (layout)

```xml
<?xml version="1.0" encoding="utf-8"?>
<AbsoluteLayout
    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"
    tools:ignore="Deprecated">
    <EditText
        android:id="@+id/idDisplay"
        android:layout_width="276dp"
        android:layout_height="wrap_content"
        android:layout_x="16dp"
        android:layout_y="16dp"
        android:hint="Enter Phone Number"
        android:textAlignment="center"/>
    <Button
        android:id="@+id/id1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="16dp"
        android:layout_y="61dp"
        android:text="1"/>
    <Button
        android:id="@+id/id2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="110dp"
        android:layout_y="61dp"
        android:text="2"/>
    <Button
        android:id="@+id/id3"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="204dp"
        android:layout_y="61dp"
        android:text="3"/>
    <Button
        android:id="@+id/id4"
```

```xml
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="16dp"
        android:layout_y="109dp"
        android:text="4"/>
<Button
        android:id="@+id/id5"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="110dp"
        android:layout_y="109dp"
        android:text="5"/>
<Button
        android:id="@+id/id6"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="204dp"
        android:layout_y="109dp"
        android:text="6"/>
<Button
        android:id="@+id/id7"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="16dp"
        android:layout_y="157dp"
        android:text="7"/>
<Button
        android:id="@+id/id8"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="110dp"
        android:layout_y="157dp"
        android:text="8"/>
<Button
        android:id="@+id/id9"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="204dp"
        android:layout_y="157dp"
```

```xml
        android:text="9"/>
    <Button
        android:id="@+id/idStar"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="16dp"
        android:layout_y="205dp"
        android:text="*"/>
    <Button
        android:id="@+id/id0"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="110dp"
        android:layout_y="205dp"
        android:text="0"/>
    <Button
        android:id="@+id/idHash"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="204dp"
        android:layout_y="205dp"
        android:text="#"/>
    <Button
        android:id="@+id/idSave"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="16dp"
        android:layout_y="253dp"
        android:text="SAVE"/>
    <Button
        android:id="@+id/idCall"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="110dp"
        android:layout_y="253dp"
        android:text="CALL"/>
    <Button
        android:id="@+id/idDelete"
        android:layout_width="wrap_content"
```

```xml
        android:layout_height="wrap_content"
        android:layout_x="204dp"
        android:layout_y="253dp"
        android:text="DELETE" />
</AbsoluteLayout>
```

MainActivity.java (activity)

```java
package com.example.program9;
import android.net.Uri;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.content.Intent;
import android.widget.TextView;
import androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends AppCompatActivity implements View.OnClickListener {
    TextView display;
    Button one, two, three, four, five, six, seven, eight, nine, zero, star, hash, save, call, delete;
    @Override
    protected void onCreate(Bundle b) {
        super.onCreate(b);
        setContentView(R.layout.activity_main);
        display = findViewById(R.id.idDisplay);
        one = findViewById(R.id.id1);
        two = findViewById(R.id.id2);
        three = findViewById(R.id.id3);
        four = findViewById(R.id.id4);
        five = findViewById(R.id.id5);
        six = findViewById(R.id.id6);
        seven = findViewById(R.id.id7);
        eight = findViewById(R.id.id8);
        nine = findViewById(R.id.id9);
        zero = findViewById(R.id.id0);
        star = findViewById(R.id.idStar);
        hash = findViewById(R.id.idHash);
        save = findViewById(R.id.idSave);
```

```java
        call = findViewById(R.id.idCall);
        delete = findViewById(R.id.idDelete);
        one.setOnClickListener(this);
        two.setOnClickListener(this);
        three.setOnClickListener(this);
        four.setOnClickListener(this);
        five.setOnClickListener(this);
        six.setOnClickListener(this);
        seven.setOnClickListener(this);
        eight.setOnClickListener(this);
        nine.setOnClickListener(this);
        zero.setOnClickListener(this);
        star.setOnClickListener(this);
        hash.setOnClickListener(this);
        save.setOnClickListener(this);
        call.setOnClickListener(this);
        delete.setOnClickListener(this);
    }
    @Override
    public void onClick(View v) {
        String numStr = display.getText().toString();
        switch (v.getId()){
            case R.id.id1:
                display.append("1");
                break;
            case R.id.id2:
                display.append("2");
                break;
            case R.id.id3:
                display.append("3");
                break;
            case R.id.id4:
                display.append("4");
                break;
            case R.id.id5:
                display.append("5");
                break;
            case R.id.id6:
                display.append("6");
```

```java
                break;
            case R.id.id7:
                display.append("7");
                break;
            case R.id.id8:
                display.append("8");
                break;
            case R.id.id9:
                display.append("9");
                break;
            case R.id.id0:
                display.append("0");
                break;
            case R.id.idStar:
                display.append("*");
                break;
            case R.id.idHash:
                display.append("#");
                break;
            case R.id.idSave:
                Intent it1 = new Intent(Intent.ACTION_INSERT);
                it1.setType("vnd.android.cursor.dir/contact");
                it1.putExtra("phone", numStr);
                startActivity(it1);
                break;
            case R.id.idCall:
                Intent it2 = new Intent(Intent.ACTION_DIAL);
                it2.setData(Uri.parse("tel:"+numStr));
                startActivity(it2);
                break;
            case R.id.idDelete:
                if (numStr.length() > 0){
                    numStr = numStr.substring(0, numStr.length()-1);
                    display.setText(numStr);
                }
                break;
        }
    }
}
```

Program 10: Create a file of JSON type with values for City_Name, Latitude, Longitude, Temperature and Humidity. Develop an application to create an activity with button to parse the JSON file which when clicked should display the data in the textview.

activity_main.xml (layout)

```xml
<?xml version="1.0" encoding="utf-8"?>
<AbsoluteLayout
    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"
    tools:ignore="Deprecated">
    <Button
        android:id="@+id/idParse"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="16dp"
        android:layout_y="16dp"
        android:text="Parse JSON" />
    <TextView
        android:id="@+id/idDisplay"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:hint="the JSON will be displayed here"
        android:layout_x="16dp"
        android:layout_y="64dp" />
</AbsoluteLayout>
```

sample.json (to be created under assets directory)

```json
[
  {
    "city": "patna",
    "latitude": "25.5941",
    "longitude": "85.1376",
    "temperature": "18",
    "humidity": "88"
  },
  {
    "city":  "bangalore",
    "latitude": "12.9716",
    "longitude": "77.5946",
    "temperature": "27",
    "humidity": "65"
  }
]
```

MainActivity.java (activity)

```java
package com.example.program10;

import android.os.Bundle;
import android.view.View;
import org.json.JSONArray;
import org.json.JSONObject;
import java.io.IOException;
import java.io.InputStream;
import android.widget.Button;
import org.json.JSONException;
import android.widget.TextView;
import java.nio.charset.StandardCharsets;
import androidx.appcompat.app.AppCompatActivity;
```

```java
public class MainActivity extends AppCompatActivity implements View.OnClickListener {
    Button parse;
    TextView display;
    @Override
    protected void onCreate(Bundle b) {
        super.onCreate(b);
        setContentView(R.layout.activity_main);
        parse = findViewById(R.id.idParse);
        display = findViewById(R.id.idDisplay);
        parse.setOnClickListener(this);
    }
    @Override
    public void onClick(View v) {
        if (v.equals(parse)) {
            try {
                JSONObject obj = new JSONObject();
                InputStream is = getAssets().open("sample.json");
                int size = is.available();
                byte[] buffer = new byte[size];
                is.read(buffer);
                is.close();
                String json = new String(buffer, StandardCharsets.UTF_8);
                JSONArray array = new JSONArray(json);
                display.setText("");
                for (int i = 0; i < array.length(); i++) {
                    obj = array.getJSONObject(i);
                    display.append("\nCity Name: " + obj.getString("city") + "\nLatitude: " +
obj.getString("latitude") + "\nLongitude: " + obj.getString("longitude") + "\nTemperature: " +
obj.getString("temperature") + "\nHumidity: " + obj.getString("humidity") + "\n");
                }
            } catch (IOException | JSONException e) {
                e.printStackTrace();
            }
        }
    }
}
```

the JSON will be displayed here

2:50 PM

Program10

PARSE JSON

City Name: patna
Latitude: 25.5941
Longitude: 85.1376
Temperature: 18
Humidity: 88

City Name: bangalore
Latitude: 12.9716
Longitude: 77.5946
Temperature: 27
Humidity: 65