1A. 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.

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:orientation="vertical"
    android:background="@color/purple_200"
    tools:context=".MainActivity">
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="vertical"
        android:gravity="right" >

        <ImageView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:src="@drawable/logo" />
    </LinearLayout>

    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:gravity="center"
```

```
    android:textSize="20sp"
    android:textStyle="bold"
    android:text="DR. AMBEDKAR INSTITUTE OF TECHNOLOGY" />

<TextView
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:gravity="center"
    android:textSize="15sp"
    android:textStyle="bold"
    android:text="S SHUBHAKAR" />

<TextView
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:textSize="15sp"
    android:textStyle="bold"
    android:gravity="center"
    android:text="STUDENT" />

<View
    android:layout_width="wrap_content"
    android:layout_height="4dp"
    android:background="@android:color/black" />

<TextView
    android:layout_width="match_parent"
    android:gravity="center"
    android:textSize="15sp"
    android:textStyle="bold"
    android:layout_height="wrap_content"
    android:text="8105213549" />
```

```
    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:textSize="15sp"
        android:textStyle="bold"
        android:gravity="center"
        android:text="BANGALORE" />

    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:gravity="center"
        android:textSize="15sp"
        android:textStyle="bold"
        android:text="1da19cs139.cs@drait.edu.in" />

</LinearLayout>
```

1B. 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.

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:gravity="center"
    android:orientation="vertical"
    tools:context=".MainActivity">
```

```
    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:textSize="20dp"
        android:textStyle="bold"
        android:gravity="center"
        android:text="Enter a word" />

    <EditText
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:gravity="center"
        android:id="@+id/txt_text"/>

    <Button
        android:gravity="center"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Convert Text To Speech"
        android:id="@+id/btn_speech" />

</LinearLayout>
```

MainActivity.java

```
package com.example.a139_1_t2s;
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 txttext;
    Button btnspeech;
    TextToSpeech texttospeech;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        txttext = findViewById(R.id.txt_text);
        btnspeech = findViewById(R.id.btn_speech);
        btnspeech.setOnClickListener(this);
        texttospeech = new TextToSpeech(this, new TextToSpeech.OnInitListener(){
            @Override
            public void onInit(int i) {
                if (i != TextToSpeech.ERROR) {
                    texttospeech.setLanguage(Locale.ENGLISH);
                }
            }
        });
    }
    @Override
    public void onClick(View view) {
        String tospeak=txttext.getText().toString();
        Toast.makeText(getBaseContext(),tospeak, Toast.LENGTH_SHORT).show();
        texttospeech.speak(tospeak,TextToSpeech.QUEUE_FLUSH,null);
    }
    public void onPause(){
        if(texttospeech!=null){
```

```
            texttospeech.stop();
            texttospeech.shutdown();
        }
        super.onPause();
    }
}
```

2. 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.

MyDatabase.java

```
public class MyDatabase extends SQLiteOpenHelper {
    public static String DATABASE_NAME="Employee.db";
    public static String EMPLOYEE_TABLE="Employee";
    public MyDatabase(@Nullable Context context, @Nullable String name, @Nullable
SQLiteDatabase.CursorFactory factory, int version) {
        super(context, name, factory, version);
    }

    @Override
    public void onCreate(SQLiteDatabase db) {
        db.execSQL("create table Employee ( id TEXT ,name TEXT ,age TEXT ,address
TEXT)");
    }

    @Override
    public void onUpgrade(SQLiteDatabase sqLiteDatabase, int i, int i1) {
    }
}
```

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:orientation="vertical"
    android:gravity="center"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Employee ID"/>
    <EditText
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:id="@+id/txt_id"/>
    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Employee Name"/>
    <EditText
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:id="@+id/txt_name"/>
    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Employee Age"/>
```

```
    <EditText
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:id="@+id/txt_age"/>
    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Employee Address"/>
    <EditText
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:id="@+id/txt_address"/>
    <LinearLayout
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:orientation="horizontal"
        android:layout_gravity="center">
        <Button
            android:id="@+id/btn_submit"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_gravity="center"
            android:text="Submit" />
        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Search"
            android:layout_gravity="center"
            android:id="@+id/btn_search"/>
    </LinearLayout>

</LinearLayout>
```

MainActivity.java

```
public class MainActivity extends AppCompatActivity implements View.OnClickListener {

    EditText txtid,txtname,txtage,txtaddress;
    Button btnsubmit,btnsearch;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        txtid=findViewById(R.id.txt_id);
        txtname=findViewById(R.id.txt_name);
        txtage=findViewById(R.id.txt_age);
        txtaddress=findViewById(R.id.txt_address);
        btnsearch=findViewById(R.id.btn_search);
        btnsearch.setOnClickListener(this);
        btnsubmit=findViewById(R.id.btn_submit);
        btnsubmit.setOnClickListener(this);
    }

    @Override
    public void onClick(View v) {
        if(v.equals(btnsubmit)){
            String sid=txtid.getText().toString();
            String sname=txtname.getText().toString();
            String sage=txtage.getText().toString();
            String saddress=txtaddress.getText().toString();
            MyDatabase dat=new MyDatabase(this,MyDatabase.DATABASE_NAME,null,1);
            SQLiteDatabase db=dat.getWritableDatabase();
            ContentValues cv=new ContentValues();
            cv.put("id",sid);
            cv.put("name",sname);
            cv.put("age",sage);
```

```
            cv.put("address",saddress);
            db.insert("Employee",null,cv);
            db.close();
            Toast.makeText(this, "Data Inserted Successfully",
Toast.LENGTH_SHORT).show();
        }
        else if(v.equals(btnsearch)){
            Intent it=new Intent(this,SearchActivity.class);
            startActivity(it);
        }

    }
}
```

Activity_search.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:orientation="vertical"
    android:gravity="center"
    android:layout_height="match_parent">

    <TextView
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:text="Enter Employee id" />
    <EditText
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:id="@+id/txt_empid"/>
```

```
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Search"
        android:layout_gravity="center"
        android:id="@+id/txt_search"/>
    <TextView
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:gravity="center"
        android:id="@+id/txt_display"/>

</LinearLayout>
```

SearchActivity.java

```
public class SearchActivity extends AppCompatActivity implements View.OnClickListener
{
    EditText txtempid;
    Button btnsearch;
    TextView txtdisplay;
    public void onCreate(Bundle b)
    {
        super.onCreate(b);
        setContentView(R.layout.activity_search);
        txtempid=findViewById(R.id.txt_empid);
        btnsearch=findViewById(R.id.txt_search);
        txtdisplay=findViewById(R.id.txt_display);
        btnsearch.setOnClickListener(this);
    }
    @Override
    public void onClick(View v) {
        if(v.equals(btnsearch))
```

```
    {
        String eid=txtempid.getText().toString();
        MyDatabase dat=new MyDatabase(this, MyDatabase.DATABASE_NAME, null, 1);
        SQLiteDatabase database=dat.getReadableDatabase();
        String[] columns=new String[] {"id","name","age","address"};
        String where="id=?";
        String[] value= new String[] { eid.trim() };
        Cursor cu=database.query(MyDatabase.EMPLOYEE_TABLE, columns, where,
value, null, null, null);
        txtdisplay.setText("");
        if(cu.moveToNext())
        {
            String id=cu.getString(0);
            String name=cu.getString(1);
            String age=cu.getString(2);
            String address=cu.getString(3);
            txtdisplay.append(id+ " " +name+ " "+age+ " "+address+"\n");
        }
        else
        {
            Toast.makeText(this, "No Id Exist", Toast.LENGTH_SHORT).show();
        }
    }

  }
}
```

AndroidManifest.xml

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:tools="http://schemas.android.com/tools">
```

```
    <application
        android:allowBackup="true"
        android:dataExtractionRules="@xml/data_extraction_rules"
        android:fullBackupContent="@xml/backup_rules"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.139_2_Database"
        tools:targetApi="31">
        <activity
            android:name=".MainActivity"
            android:exported="true">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>

            <meta-data
                android:name="android.app.lib_name"
                android:value="" />
        </activity>
        <activity android:name=".SearchActivity"></activity>
    </application>

</manifest>
```

3. Write a program to create an activity with a text box and three buttons (save, open and create) open must allow to browse the text file from sdcard and must display the contents of the file on textbox, save button must save the contents of text box to file, create button must allow file user to create a new file and save the entered contents of the textbox.

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:gravity="center"
    android:orientation="vertical"
    tools:context=".MainActivity">

    <EditText
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:inputType="textMultiLine"
        android:height="200dp"
        android:id="@+id/txt_inp" />

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:gravity="center"
        android:orientation="horizontal" >

        <Button
            android:id="@+id/btn_create"
            android:layout_width="wrap_content"
```

```
            android:layout_height="wrap_content"
            android:layout_marginRight="10dp"
            android:text="CREATE" />

        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="SAVE"
            android:layout_marginRight="10dp"
            android:id="@+id/btn_save" />

        <Button
            android:id="@+id/btn_open"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="OPEN" />

    </LinearLayout>
</LinearLayout>
```

MainActivity.java

```
public class MainActivity extends AppCompatActivity implements View.OnClickListener {
    public static final  String FILE_NAME = "Example.txt";
    Button btncreate, btnopen, btnsave;
    EditText txtinp;

    @SuppressLint("MissingInflatedId")
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        btncreate=findViewById(R.id.btn_create);
```

```
        btncreate.setOnClickListener(this);
        btnopen=findViewById(R.id.btn_open);
        btnopen.setOnClickListener(this);
        btnsave=findViewById(R.id.btn_save);
        btnsave.setOnClickListener(this);
        txtinp=findViewById(R.id.txt_inp);

    }

    @Override
    public void onClick(View v) {
        if(v.equals(btncreate)) {
            String text=txtinp.getText().toString();
            FileOutputStream fos = null;

            try {
                fos = openFileOutput(FILE_NAME, MODE_PRIVATE);
                fos.write(text.getBytes());

                txtinp.setText(" ");
                Toast.makeText(this, "File Saved  "+ getFilesDir().getName()+ " "+FILE_NAME,
Toast.LENGTH_LONG).show();
            } catch (IOException e) {
                e.printStackTrace();
            }
            finally {
                if(fos!=null) {
                    try {
                        fos.close();
                    } catch (IOException e) {
                        e.printStackTrace();
                    }
```

```
            }
        }
    }
    else if(v.equals(btnsave)) {
        String text=txtinp.getText().toString();
        FileOutputStream fos = null;
        try {
            fos = openFileOutput(FILE_NAME, MODE_PRIVATE);
            fos.write(text.getBytes());
            txtinp.setText(" ");
            Toast.makeText(this, "File Saved "+ getFilesDir().getName()+" "+FILE_NAME,
Toast.LENGTH_LONG).show();
        } catch (IOException e) {
            e.printStackTrace();
        }
        finally {
            if(fos!=null) {
                try {
                    fos.close();
                } catch (IOException e) {
                    e.printStackTrace();
                }
            }
        }
    }
    else if(v.equals(btnopen)) {
        FileInputStream fis = null;
        try {
            fis = openFileInput(FILE_NAME);
            InputStreamReader isr = new InputStreamReader(fis);
            BufferedReader br = new BufferedReader(isr);
            StringBuilder sb = new StringBuilder();
```

```
            String text;
            while ((text = br.readLine()) != null){
                sb.append(text +"\n");
            }
            txtinp.setText(sb.toString());
        } catch (FileNotFoundException e) {
            e.printStackTrace();
        } catch (IOException e) {
            e.printStackTrace();
        } finally {
            if(fis!=null) {
                try {
                    fis.close();
                } catch (IOException e) {
                    e.printStackTrace();
                }
            }
        }
    }
}
```

AndroidManifest.xml

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools">
    <uses-sdk
        android:minSdkVersion="8"
        android:targetSdkVersion="18" />
    <uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE"
/>
    <uses-permission android:name="android.permission.READ_EXTERNAL_STORAGE"
/>
```

```
    <application
        android:allowBackup="true"
        android:dataExtractionRules="@xml/data_extraction_rules"
        android:fullBackupContent="@xml/backup_rules"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.139_3_SDCard"
        tools:targetApi="31">
        <activity
            android:name=".MainActivity"
            android:exported="true">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>

            <meta-data
                android:name="android.app.lib_name"
                android:value="" />
        </activity>
    </application>

</manifest>
```

4. 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.

5. 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

```
<?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:gravity="center"
    android:orientation="vertical"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/lbl_counter"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Counter" />

    <Button
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Start"
        android:id="@+id/btn_start" />

    <Button
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Stop"
        android:id="@+id/btn_stop" />
```

```
</LinearLayout>
```

MainActivity.java

```
public class MainActivity extends AppCompatActivity implements
View.OnClickListener,Runnable {


    int i = 0;
    TextView lblcounter;
    Button btnstart, btnstop;
    Thread thread;
    boolean running = false;


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


        btnstart =findViewById(R.id.btn_start);
        btnstop =findViewById(R.id.btn_stop);
        btnstart.setOnClickListener(this);
        btnstop.setOnClickListener(this);
        lblcounter =findViewById(R.id.lbl_counter);
    }


    @Override
    public void onClick(View v) {
        if (v.equals(btnstart)) {
            running = true;
            thread = new Thread(this);
            thread.start();
        } else if (v.equals(btnstop)) {
```

```
            running = false;
        }
    }

    Handler hand = new Handler() {
        public void handleMessage(Message m) {
            lblcounter.setText("" + m.what);
        }
    };

    @Override
    public void run() {
        while (i < 100 && running) {
            try {
                Thread.sleep(1000);
            } catch (InterruptedException e) {
                e.printStackTrace();
            }
            hand.sendEmptyMessage(i);
            i++;
        }
    }
}
```

6. Write a program to create a service that will put a notification on the screen every 5 seconds.

Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
```

```
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:gravity="center">
    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Notification"
        android:layout_gravity="center"
        android:textSize="50dp" />
    <Button
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Start"
        android:id="@+id/btn_start"/>
    <Button
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Stop"
        android:id="@+id/btn_stop"/>
</LinearLayout>
```

MainActivity.java

```
public class MainActivity extends AppCompatActivity implements View.OnClickListener {
    Button start,stop;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        start=findViewById(R.id.btn_start);
        start.setOnClickListener(this);
        stop=findViewById(R.id.btn_stop);
```

```
        stop.setOnClickListener(this);
    }

    @Override
    public void onClick(View view) {
        if(view.equals(start)){
            Intent it=new Intent(this,ServiceClass.class);
            startService(it);
        }
        else if (view.equals(stop)){
            Intent it=new Intent(this,ServiceClass.class);
            stopService(it);
        }
    }
}
```

ServiceClass.java

```
public class ServiceClass extends Service {
        private NotificationManager notifmanager;
        private int NOTIFICATION_ID = 1;
        @Override
        public IBinder onBind(Intent intent) {
            return null;
        }
        @Override
        public void onCreate() {
            super.onCreate();
            notifmanager = (NotificationManager)
getSystemService(NOTIFICATION_SERVICE);
        }
        @Override
        public int onStartCommand(Intent intent, int flags, int startId) {
```

```
        Toast.makeText(this, "Service started", Toast.LENGTH_LONG).show();
        showNotification();
        return START_STICKY;
    }
    private void showNotification() {
        final NotificationCompat.Builder builder = new NotificationCompat.Builder(this);
        builder.setSmallIcon(R.drawable.ic_launcher_background);
        builder.setContentTitle("My Service");
        builder.setContentText("Running");
        builder.setAutoCancel(true);
        final Intent emptyIntent = new Intent();
        final PendingIntent pi = PendingIntent.getActivity(this, 0, emptyIntent,
PendingIntent.FLAG_UPDATE_CURRENT);
        builder.setContentIntent(pi);
        final Notification notif = builder.build();
        notifmanager.notify(NOTIFICATION_ID, notif);
        new Thread(new Runnable() {
            @Override
            public void run() {
                while (true) {
                    try {
                        Thread.sleep(5000);
                    } catch (InterruptedException e) {
                        e.printStackTrace();
                    }
                    notifmanager.notify(NOTIFICATION_ID, notif);
                }
            }
        }).start();
    }
    @Override
    public void onDestroy() {
```

```
        super.onDestroy();
        Toast.makeText(this, "Service stopped", Toast.LENGTH_LONG).show();
    }
}
```

AndroidManifest.xml

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools">

    <application
        android:allowBackup="true"
        android:dataExtractionRules="@xml/data_extraction_rules"
        android:fullBackupContent="@xml/backup_rules"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.139_6_SMS"
        tools:targetApi="31">
        <activity
            android:name=".MainActivity"
            android:exported="true">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>

            <meta-data
                android:name="android.app.lib_name"
                android:value="" />
```

```
        </activity>
        <service android:name="ServiceClass"></service>
    </application>

</manifest>
```

7. 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

```
<?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:gravity="center"
    android:orientation="vertical"
    tools:context=".MainActivity">
    <Button
        android:id="@+id/btn_start"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="START NOTIFICATION" />
    <Button
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:id="@+id/btn_stop"
        android:text="STOP NOTIFICATION"/>
</LinearLayout>
```

MainActivity.java

```
public class MainActivity extends AppCompatActivity implements View.OnClickListener{
    Button start,stop;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        start=(Button) findViewById(R.id.btn_start);
        start.setOnClickListener(this);
        stop=(Button) findViewById(R.id.btn_stop);
        stop.setOnClickListener(this);
    }

    @Override
    public void onClick(View v) {
        if(v.equals(start)){
            Intent it=new Intent(this, ServiceClass.class);
            startService(it);
        }
        else if(v.equals(stop)){
            Intent it=new Intent(this, ServiceClass.class);
            stopService(it);
        }
    }
}
```

ServiceClass.java

```
public class ServiceClass extends Service {
    boolean running = false;
    Mythread thread;
    public void onCreate() {
        super.onCreate();
```

```
    Toast.makeText(getBaseContext(), "service created", Toast.LENGTH_LONG).show();
    running = true;
    thread = new Mythread();
    thread.start();
}

public int onStartCommand(Intent intent, int flag, int startid) {
    super.onStartCommand(intent, flag, startid);
    Toast.makeText(getBaseContext(), "service started", Toast.LENGTH_LONG).show();
    if (!thread.isAlive()) {
        thread = new Mythread();
        thread.start();
    }
    return Service.START_NOT_STICKY;

}

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

public void onDestroy() {
    running = false;
    Toast.makeText(getBaseContext(), "service stopped", Toast.LENGTH_LONG).show();
    super.onDestroy();
}

Handler hand = new Handler() {
    public void handleMessage(Message m) {
```

```
        NotificationManager man = (NotificationManager)
getSystemService(NOTIFICATION_SERVICE);
        NotificationCompat.Builder builder = new
NotificationCompat.Builder(getBaseContext());
        builder.setContentTitle("from service");
        builder.setContentText("Hi Shubhakar" + m.what);
        builder.setSmallIcon(R.drawable.ic_launcher_background);
        builder.setContentIntent(PendingIntent.getActivity(getBaseContext(), 1, new
Intent(getBaseContext(), MainActivity.class), Intent.FILL_IN_ACTION));
        Notification nof = builder.build();
        man.notify(100, nof);
      }
   };

   class Mythread extends Thread {
      public void run() {
         int i = 0;
         while (running) {
            try {
               Thread.sleep(1000);
            } catch (InterruptedException e) {
               e.printStackTrace();
            }
            hand.sendEmptyMessage(i++);
         }
      }
   }
}
```

AndroidManifest.xml

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:tools="http://schemas.android.com/tools">
```

```
    <application
        android:allowBackup="true"
        android:dataExtractionRules="@xml/data_extraction_rules"
        android:fullBackupContent="@xml/backup_rules"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.139_7_Notification"
        tools:targetApi="31">
        <activity
            android:name=".MainActivity"
            android:exported="true">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>

            <meta-data
                android:name="android.app.lib_name"
                android:value="" />
        </activity>
        <service android:name=".ServiceClass"/>
    </application>

</manifest>
```

8. Create an. aidl service to do add, subtraction and multiplication and create another application with two buttons to read the inputs and three button add,subtract and multiply to call add, subtract and multiply operation on .aidl service.

9. Create an activity like a phone dialer 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

```
<?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:gravity="center"
    android:orientation="vertical"
    tools:context=".MainActivity">

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="horizontal"
        android:gravity="center">
        <EditText
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:minWidth="200dp"
            android:layout_marginRight="10dp"
            android:id="@+id/txt_num"
            android:minHeight="45dp"/>
        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Delete"
```

```
        android:id="@+id/btn_del"/>
    </LinearLayout>
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="horizontal"
        android:gravity="center">

        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_marginRight="10dp"
            android:text="1"
            android:id="@+id/btn_one" />

        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_marginRight="10dp"
            android:text="2"
            android:id="@+id/btn_two" />

        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="3"
            android:id="@+id/btn_three" />

    </LinearLayout>
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
```

```
    android:orientation="horizontal"
    android:gravity="center">

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="4"
        android:layout_marginRight="10dp"
        android:id="@+id/btn_four" />

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginRight="10dp"
        android:text="5"
        android:id="@+id/btn_five" />

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="6"
        android:id="@+id/btn_six" />

</LinearLayout>
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="horizontal"
    android:gravity="center">

    <Button
        android:layout_width="wrap_content"
```

```
        android:layout_height="wrap_content"
        android:text="7"
        android:layout_marginRight="10dp"
        android:id="@+id/btn_seven" />

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="8"
        android:layout_marginRight="10dp"
        android:id="@+id/btn_eight" />

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="9"
        android:id="@+id/btn_nine" />
</LinearLayout>
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="horizontal"
    android:gravity="center">

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="*"
        android:layout_marginRight="10dp"
        android:id="@+id/btn_star" />
```

```
        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="0"
            android:layout_marginRight="10dp"
            android:id="@+id/btn_zero" />

        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="#"
            android:id="@+id/btn_hash" />
    </LinearLayout>
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="horizontal"
        android:gravity="center">

        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="CALL"
            android:layout_marginRight="10dp"
            android:id="@+id/btn_call" />
        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="SAVE"
            android:id="@+id/btn_save" />
    </LinearLayout>
</LinearLayout>
```

MainActivity.java

```
public class MainActivity extends AppCompatActivity implements View.OnClickListener {

    Button btnone, btntwo, btnthree, btnfour, btnfive, btnsix, btnseven, btneight,
            btnnine, btnzero, btndel, btnsave, btnstar, btnhash, btncall;
    EditText txtnum;

    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        txtnum = findViewById(R.id.txt_num);
        btnone = findViewById(R.id.btn_one);
        btnone.setOnClickListener(this);
        btntwo = findViewById(R.id.btn_two);
        btntwo.setOnClickListener(this);
        btnthree = findViewById(R.id.btn_three);
        btnthree.setOnClickListener(this);
        btnfour = findViewById(R.id.btn_four);
        btnfour.setOnClickListener(this);
        btnfive = findViewById(R.id.btn_five);
        btnfive.setOnClickListener(this);
        btnsix = findViewById(R.id.btn_six);
        btnsix.setOnClickListener(this);
        btnseven = findViewById(R.id.btn_seven);
        btnseven.setOnClickListener(this);
        btneight = findViewById(R.id.btn_eight);
        btneight.setOnClickListener(this);
        btnnine = findViewById(R.id.btn_nine);
        btnnine.setOnClickListener(this);
        btnzero = findViewById(R.id.btn_zero);
        btnzero.setOnClickListener(this);
        btndel = findViewById(R.id.btn_del);
```

```
    btndel.setOnClickListener(this);
    btnsave = findViewById(R.id.btn_save);
    btnsave.setOnClickListener(this);
    btnstar = findViewById(R.id.btn_star);
    btnstar.setOnClickListener(this);
    btnhash = findViewById(R.id.btn_hash);
    btnhash.setOnClickListener(this);
    btncall = findViewById(R.id.btn_call);
    btncall.setOnClickListener(this);
}

@Override
public void onClick(View view) {
    if (view.equals(btnone)) {
        txtnum.append("1");
    } else if (view.equals(btntwo)) {
        txtnum.append("2");
    } else if (view.equals(btnthree)) {
        txtnum.append("3");
    } else if (view.equals(btnfour)) {
        txtnum.append("4");
    } else if (view.equals(btnfive)) {
        txtnum.append("5");
    } else if (view.equals(btnsix)) {
        txtnum.append("6");
    } else if (view.equals(btnseven)) {
        txtnum.append("7");
    } else if (view.equals(btneight)) {
        txtnum.append("8");
    } else if (view.equals(btnnine)) {
        txtnum.append("9");
    } else if (view.equals(btnzero)) {
```

```
            txtnum.append("0");
        } else if (view.equals(btnhash)) {
            txtnum.append("#");
        } else if (view.equals(btnstar)) {
            txtnum.append("*");
        } else if (view.equals(btndel)) {
            String num = txtnum.getText().toString();
            if (num.length() > 0) {
                num = num.substring(0, num.length() - 1);
                txtnum.setText(num);
            }
        } else if (view.equals(btncall)) {
            String num = txtnum.getText().toString();
            Intent it = new Intent(Intent.ACTION_DIAL,Uri.parse("tel:" + num));
            startActivity(it);
        } else if (view.equals(btnsave)) {
            String num = txtnum.getText().toString();
            Intent it1 = new Intent(Intent.ACTION_INSERT,
ContactsContract.Contacts.CONTENT_URI);

            it1.putExtra(ContactsContract.Intents.Insert.PHONE, num);
            startActivity(it1);
        }
    }
}
```

AndroidManifest.xml

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools">
    <uses-permission android:name="android.permission.CALL_PHONE" />
    <application
```

```
        android:allowBackup="true"
        android:dataExtractionRules="@xml/data_extraction_rules"
        android:fullBackupContent="@xml/backup_rules"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.139_9_PhoneDialer"
        tools:targetApi="31">
        <activity
            android:name=".MainActivity"
            android:exported="true">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>

            <meta-data
                android:name="android.app.lib_name"
                android:value="" />
        </activity>
    </application>

</manifest>
```

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

```
<?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:gravity="center"
    android:orientation="vertical"
    tools:context=".MainActivity">

    <Button
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:id="@+id/btn_json"
        android:text="Parse JSON" />

    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:id="@+id/txt_result" />

</LinearLayout>
```

Example.json in new assets folder

```
[
  {
    "name": "Mysore",
    "latitude": "66",
```

```
  "longitude": "99",
  "temperature": "24"
 },
 {
  "name": "Bangalore",
  "latitude": "69",
  "longitude": "96",
  "temperature": "21"
 }
]
```

MainActivity.java

```
public class MainActivity extends AppCompatActivity implements View.OnClickListener {
    Button btnjson;
    TextView txtresult;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        btnjson=findViewById(R.id.btn_json);
        btnjson.setOnClickListener(this);
        txtresult=findViewById(R.id.txt_result);
    }
    public void onClick(View v){
        try {
            InputStream is=getAssets().open("example.json");
            int size=is.available();
            byte[] buffer=new byte[size];
            is.read(buffer);
            is.close();
            String json=new String(buffer,"UTF-8");
            JSONArray obj=new JSONArray(json);
```

```
            txtresult.setText("");
            for(int i=0;i<obj.length();i++){
                JSONObject ob1=obj.getJSONObject(i);
                String s1=ob1.getString("name");
                String s2=ob1.getString("latitude");
                String s3=ob1.getString("longitude");
                String s4=ob1.getString("temperature");
                txtresult.setText(txtresult.getText()+"Name:"+s1+" Latitude:"+s2+"
Longitude:"+s3+" Temperature:"+s4+"\n");
            }
        }
        catch (Exception e){
        }
    }
}
```