Content provider

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

    <TextView
        android:text="@string/textview"
        android:layout_width="0dp"
        android:layout_height="60dp"
        android:id="@+id/contactName"
        app:layout_constraintLeft_toLeftOf="@+id/activity_main"
        android:layout_marginStart="63dp"
        tools:layout_constraintLeft_creator="1"
        app:layout_constraintRight_toRightOf="@+id/activity_main"
        android:layout_marginEnd="63dp"
        tools:layout_constraintRight_creator="1"
        app:layout_constraintBottom_toTopOf="@+id/contactID"
        android:layout_marginBottom="40dp"
        tools:layout_constraintBottom_creator="1" />

    <TextView
        android:id="@+id/contactID"
        android:layout_width="406dp"
        android:layout_height="203dp"
        android:layout_marginBottom="56dp"
        android:text="@string/TextViews"
        app:layout_constraintBottom_toBottomOf="@+id/activity_main"
        app:layout_constraintLeft_toLeftOf="@+id/activity_main"
        app:layout_constraintRight_toRightOf="@+id/activity_main"
        tools:layout_constraintBottom_creator="1"
        tools:layout_constraintLeft_creator="1"
        tools:layout_constraintRight_creator="1" />

    <ListView
        android:layout_height="0dp"
        android:id="@android:id/list"
        android:layout_width="wrap_content"
        app:layout_constraintLeft_toLeftOf="@+id/activity_main"
        app:layout_constraintTop_toTopOf="@+id/activity_main"
        tools:layout_constraintTop_creator="1"
        app:layout_constraintRight_toRightOf="@+id/activity_main"
        app:layout_constraintBottom_toTopOf="@+id/contactName"
        android:layout_marginBottom="5dp"
        tools:layout_constraintBottom_creator="1"
        tools:ignore="UnknownId" />

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

Main activity.java

Content provider

```java
package com.example.contentprovider;
import android.Manifest;
import android.app.ListActivity;
import android.content.pm.PackageManager;
import android.database.Cursor;
import android.net.Uri;
import android.os.Bundle;
import android.provider.ContactsContract;
import android.widget.CursorAdapter;
import android.widget.SimpleCursorAdapter;
import android.widget.Toast;

import androidx.core.app.ActivityCompat;
import androidx.core.content.ContextCompat;
import androidx.loader.content.CursorLoader;

public class MainActivity extends ListActivity {
        final private int REQUEST_READ_CONTACTS = 123;
        @Override
        protected void onCreate(Bundle savedInstanceState) {
            super.onCreate(savedInstanceState);
            setContentView(R.layout.activity_main);

            if (ContextCompat.checkSelfPermission(this,
                    Manifest.permission.READ_CONTACTS) !=
PackageManager.PERMISSION_GRANTED) {

                ActivityCompat.requestPermissions(this, new
String[]{Manifest.permission.READ_CONTACTS},
                        REQUEST_READ_CONTACTS);
            } else {
                ListContacts();
            }
        }
    @Override
    public void onRequestPermissionsResult(int requestCode
            , String[] permissions, int[] grantResults) {
        if (requestCode == REQUEST_READ_CONTACTS) {
            if (grantResults[0] == PackageManager.PERMISSION_GRANTED) {
                ListContacts();
            } else {
                Toast.makeText(MainActivity.this
                        , "Permission Denied", Toast.LENGTH_SHORT).show();
            }
        } else {
            super.onRequestPermissionsResult(requestCode
                    , permissions, grantResults);
        }
    }
    protected void ListContacts(){
        Uri allContacts = Uri.parse("content://contacts/people");
        Cursor c;
        CursorLoader cursorLoader = new CursorLoader(
                this,
                allContacts,
                null,
                null,
                null,
                null);
        c = cursorLoader.loadInBackground();
        String[] columns = new String[]{
```

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```
            ContactsContract.Contacts.DISPLAY_NAME,
            ContactsContract.Contacts._ID};
    int[] views = new int[]{R.id.contactName, R.id.contactID};
    SimpleCursorAdapter adapter;
    adapter = new SimpleCursorAdapter(
            this, R.layout.activity_main, c, columns, views,
            CursorAdapter.FLAG_REGISTER_CONTENT_OBSERVER);
    this.setListAdapter(adapter);
    }
}
```

edit androidmanifest.xml

```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.READ_CONTACTS"/>
    <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:supportsRtl="true"
        android:theme="@style/Theme.Contentprovider"
        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>
        </activity>
    </application>

</manifest>
```

Launch an AVD and create a few contacts in the Android Emulator. To add a contact, go to the

Phone application and click the Contact icon at the top (). You see a warning about

backing up your contacts. Click the Keep Local button and enter the name, phone number, and

email address of a few people.