# Introduction

For the fourth Lab, we used a basic storage solution in the Android system to design and implement a simple contact book. For my implementation for the contact book, I decided to use SQL which can be implemented using SQLite to store my contact information. I would store the first and last name, phone number and email for each of my Contacts.

# Main

The first major task I would encounter was setting up the main Activity layout. Two buttons would be used for my Add and Delete functions and I decided to use a ListView to show all contacts.

Once the layout was ready the next challenge was to setup the Main activity have a SQL database, initialization was set up sing the execSQL function with “CREATE TABLE”. In order to add a contact to the database I used ContentValues class and the insert method to add a contact to the database. In order to delete a contact I used my name parameter and and the delete method that is part of SQLiteDatabase. Last to query all the contacts in the dataase, the query method “Select \* from TABLE\_NAME” was used with the Cursor class to go through all the contacts and generate a String representation and append it to an Arraylist.

The diagram above show how I start in the Main activity and switch to Add Contact activity and delete activity when buttons are pressed.

|  |  |  |
| --- | --- | --- |
| Screenshot_2017-03-07-23-47-04.png  Shows empty Contact List in Main Activity | Screenshot_2017-03-07-23-47-44.png  Add Activity with filled in fields | Screenshot_2017-03-07-23-47-52.png  Main Activity showing Added Contact |
| Screenshot_2017-03-07-23-49-06.png  A couple more Contacts added | Screenshot_2017-03-07-23-51-40.png  Contact May Flowers in Delete activity about to be deleted | Screenshot_2017-03-07-23-51-49.png  Single contact in Main Activity |

Transfer of Data between Activities was established using Intents more specifically calling the startActivityForResult method from the main Activity and getting the data back in the main activity from the onActivityResult method.

In order to list the contacts in the ListView an ArrayList string representation was needed of the database. Once acquired an ArrayAdapter was instantiated and passed to my ListView

# Discussion and Conclusion

This again was a very enjoyable lab to work on. Having never worked with SQL I found this lab to be very beneficial. I didn’t have many problems with this lab with the demo coming in very helpful. Once the database was initialized I was very quickly able to add and delete contacts. Using intents for inter Activity data transfer also proved to be a simple task. I really enjoyed this lab and hope to work on future labs.

# Appendix A: Code

**MainActivity.java**

**package** com.project.jasonesquivel.simplecontactbook;  
  
**import** android.app.Activity;  
**import** android.content.ContentValues;  
**import** android.content.Context;  
**import** android.content.Intent;  
**import** android.database.Cursor;  
**import** android.database.SQLException;  
**import** android.database.sqlite.SQLiteDatabase;  
**import** android.database.sqlite.SQLiteOpenHelper;  
**import** android.support.v7.app.AppCompatActivity;  
**import** android.os.Bundle;  
  
**import** android.util.Log;  
**import** android.view.View;  
**import** android.widget.\*;  
  
**import** java.util.\*;  
  
  
**public class** MainActivity **extends** AppCompatActivity **implements** View.OnClickListener {  
  
 **private** DatabaseHelper **mOpenHelper**;  
 *//The information about the SQLite Database.* **private static final** String ***DATABASE\_NAME*** = **"ContactBook.db"**;  
 **private static final int *DATABASE\_VERSION*** = 1;  
 **private static final** String ***TABLE\_NAME*** = **"ContactBook"**;  
 **private static final** String ***NAME*** = **"name"**;  
 **private static final** String ***PHONE\_NUMBER*** = **"phone\_number"**;  
 **private static final** String ***EMAIL*** = **"email"**;  
 **private static final** String ***TAG*** = **"Main Activity Message:"**;  
  
 **public static class** DatabaseHelper **extends** SQLiteOpenHelper{  
  
 **public** DatabaseHelper(Context context){  
 **super**(context, ***DATABASE\_NAME***, **null**, ***DATABASE\_VERSION***);  
 }  
  
 @Override  
 **public void** onCreate(SQLiteDatabase db) {  
 String sql = **"CREATE TABLE "** + ***TABLE\_NAME*** + **" ("** + ***NAME*** + **" text not null, "** + ***PHONE\_NUMBER*** + **" text not null, "** + ***EMAIL*** + **" text not null "**+ **");"**;  
 db.execSQL(sql);  
 }  
  
 @Override  
 **public void** onUpgrade(SQLiteDatabase db, **int** oldVersion, **int** newVersion) {  
 }  
 **private boolean** isExists(String name)  
 {  
 SQLiteDatabase db = **this**.getReadableDatabase();  
 Cursor cur = db.rawQuery(**"SELECT \* FROM "** + ***TABLE\_NAME*** + **" WHERE name = '"** + name + **"'"**, **null**);  
 **boolean** exist = (cur.getCount() > 0);  
 cur.close();  
 db.close();  
 **return** exist;  
 }  
 **private void** addContact(String name, String phoneNumber, String email){  
  
 **if**(isExists(name))  
 Log.*i*(***TAG***, name + **" exists"**);  
 **else if**(name.equals(**null**) || name.equals(**""**) || (name.trim().length() == 0))  
 Log.*i*(***TAG***, **"Name is Empty"**);  
 **else** {  
 SQLiteDatabase db = **this**.getWritableDatabase();  
  
 ContentValues contact = **new** ContentValues();  
 contact.put(***NAME***, name);  
 contact.put(***PHONE\_NUMBER***, phoneNumber);  
 contact.put(***EMAIL***, email);  
  
 db.insert(***TABLE\_NAME***, **null**, contact);  
 db.close();  
 Log.*i*(***TAG***, name + **" Added"**);  
 }  
 }  
 **private void** deleteContact(String name){  
  
 **try**{  
 SQLiteDatabase db = **this**.getWritableDatabase();  
 db.delete(***TABLE\_NAME***, **" name = '"** + name + **"'"**, **null**);  
 db.close();  
 }  
 **catch**(SQLException e){  
 }  
 }  
  
 **private** ArrayList<String> getAllContacts() {  
 ArrayList<String> contactList = **new** ArrayList<>();  
 *// Select All Query* String selectQuery = **"SELECT \* FROM "** + ***TABLE\_NAME*** ;  
  
 SQLiteDatabase db = **this**.getWritableDatabase();  
 Cursor cursor = db.rawQuery(selectQuery, **null**);  
  
 *// looping through all rows and adding to list* **if** (cursor.moveToFirst()) {  
 **do** {  
 String temp = cursor.getString(0) + **" "** + cursor.getString(1) + **" "** + cursor.getString(2) ;  
 *// Adding contact to list* contactList.add(temp);  
 } **while** (cursor.moveToNext());  
 }  
  
 *// return contact list* Collections.*sort*(contactList, String.***CASE\_INSENSITIVE\_ORDER***);  
 **return** contactList;  
 }  
 }  
 @Override  
 **protected void** onCreate(Bundle savedInstanceState) {  
 **super**.onCreate(savedInstanceState);  
 setContentView(R.layout.***activity\_main***);  
  
 **mOpenHelper** = **new** DatabaseHelper(**this**);  
  
 Button addButton = (Button) findViewById(R.id.***add\_main***);  
 addButton.setOnClickListener(**this**);  
 Button delButton = (Button) findViewById(R.id.***del\_main***);  
 delButton.setOnClickListener(**this**);  
 Log.*i*(***TAG***, **"onCreate"**);  
 }  
 @Override  
 **public void** onClick(View v) {  
 **switch** (v.getId()){  
 **case** R.id.***add\_main***:  
 Intent intentAdd = **new** Intent(MainActivity.**this**, AddContactActivity.**class**);  
 startActivityForResult(intentAdd,1);  
 Log.*i*(***TAG***, **"Add Contact Button Pressed"**);  
 **break**;  
 **case** R.id.***del\_main***:  
 Intent intentDel = **new** Intent(MainActivity.**this**, DeleteContactActivity.**class**);  
 startActivityForResult(intentDel,2);  
 Log.*i*(***TAG***, **"Del Contact Button Pressed"**);  
 **break**;  
 }  
 }  
  
 *//Rebuild the Table in the Database.* **private void** createTable() {  
 SQLiteDatabase db = **mOpenHelper**.getWritableDatabase();  
 String sql = **"CREATE TABLE "** + ***TABLE\_NAME*** + **" ("** + ***NAME*** + **" text not null, "** + ***PHONE\_NUMBER*** + **" text not null, "** + ***EMAIL*** + **" text not null "**+ **");"**;  
  
 **try** {  
 db.execSQL(**"DROP TABLE IF EXISTS SQLtest"**);  
 db.execSQL(sql);  
 setTitle(**"Build the Table Successfully."**);  
 }  
 **catch** (SQLException e) {  
 setTitle(**"Build the Table failed"**);  
 }  
 }  
  
 *//Delete the Table into the Database.* **private void** dropTable() {  
 SQLiteDatabase db = **mOpenHelper**.getWritableDatabase();  
 String sql\_cmd = **"drop table "** + ***TABLE\_NAME***;  
 *//Here is anther SQL command which is used to delete the table.* **try** {  
 db.execSQL(sql\_cmd);  
 setTitle(**"Delete the Table Successfully."**);  
 }  
 **catch** (SQLException e) {  
 setTitle(**"Delete the Table Failed."**);  
 }  
 createTable();  
 *//Also the title of the window is set to indicate the status of the background SQL operation.* }  
 @Override  
 **protected void** onActivityResult(**int** requestCode, **int** resultCode, Intent data){  
 Log.*i*(***TAG***, **"onActivityResult"**);  
 **if**(requestCode == 1){  
 **if**(resultCode == Activity.***RESULT\_OK*** ){  
 String name = data.getStringExtra(**"name"**);  
 String phoneNumber = data.getStringExtra(**"phoneNumber"**);  
 String email = data.getStringExtra(**"email"**);  
 **mOpenHelper**.addContact(name, phoneNumber, email);  
 }  
 }  
 **if**(requestCode == 2){  
 **if**(resultCode == Activity.***RESULT\_OK*** ){  
 String name = data.getStringExtra(**"name"**);  
 **mOpenHelper**.deleteContact(name);  
 }  
 }  
 }  
  
 @Override  
 **protected void** onStart() {  
 **super**.onStart();  
 Log.*i*(***TAG***, **"onStart"**);  
 }  
 @Override  
 **protected void** onResume() {  
 **super**.onResume();  
 Log.*i*(***TAG***, **"onResume"**);  
  
 ArrayList<String> list = **mOpenHelper**.getAllContacts();  
 ListView myListView = (ListView) findViewById(R.id.***list***);  
 ArrayAdapter<String> adapter = **new** ArrayAdapter<String>(**this**, android.R.layout.***simple\_list\_item\_1***, list);  
 myListView.setAdapter(adapter);  
  
 }  
 @Override  
 **protected void** onPause() {  
 **super**.onPause();  
 Log.*i*(***TAG***, **"onPause"**);  
 }  
 @Override  
 **protected void** onStop() {  
 **super**.onStop();  
 Log.*i*(***TAG***, **"onStop"**);  
 }  
 @Override  
 **protected void** onDestroy() {  
 **super**.onDestroy();  
 Log.*i*(***TAG***, **"onDestroy"**);  
 }  
 @Override  
 **protected void** onSaveInstanceState(Bundle outState) {  
 **super**.onSaveInstanceState(outState);  
 Log.*i*(***TAG***, **"onSaveInstanceState"**);  
 }  
}

**AddContactActivity.java**

**package** com.project.jasonesquivel.simplecontactbook;  
  
**import** android.app.Activity;  
**import** android.os.Bundle;  
  
**import** android.widget.\*;  
**import** android.view.View;  
**import** android.content.Intent;  
  
*/\*\*  
 \* Created by Jason Esquivel on 3/7/2017.  
 \*/***public class** AddContactActivity **extends** Activity {  
  
  
 **protected void** onCreate(Bundle savedInstanceState){  
 **super**.onCreate(savedInstanceState);  
 setContentView(R.layout.***add\_contact***);  
  
 Button addButton = (Button) findViewById(R.id.***add***);  
 addButton.setOnClickListener(**addListener**);  
 }  
  
 **private** Button.OnClickListener **addListener** = **new** Button.OnClickListener(){  
  
 **public void** onClick(View v){  
 EditText firstNameET = (EditText) findViewById(R.id.***firstname\_add***);  
 EditText lastNameET = (EditText) findViewById(R.id.***lastname\_add***);  
 EditText phoneNumberET = (EditText) findViewById(R.id.***phonenumber\_add***);  
 EditText emailET = (EditText) findViewById(R.id.***email\_add***);  
  
 String name = firstNameET.getText().toString().trim() + **" "** + lastNameET.getText().toString().trim();  
 String phoneNumber = phoneNumberET.getText().toString().trim();  
 String email = emailET.getText().toString().trim();  
  
 Intent i = **new** Intent( AddContactActivity.**this**, MainActivity.**class**);  
 i.putExtra(**"name"**, name);  
 i.putExtra(**"phoneNumber"**, phoneNumber);  
 i.putExtra(**"email"**, email);  
  
 setResult(Activity.***RESULT\_OK***,i);  
 finish();  
 }  
 };  
  
  
}

**DeleteContactActivty.java**

**package** com.project.jasonesquivel.simplecontactbook;  
  
**import** android.app.Activity;  
**import** android.os.Bundle;  
  
**import** android.widget.\*;  
**import** android.view.View;  
**import** android.content.Intent;  
  
*/\*\*  
 \* Created by Jason Esquivel on 3/7/2017.  
 \*/***public class** DeleteContactActivity **extends** Activity {  
  
  
 **protected void** onCreate(Bundle savedInstanceState){  
 **super**.onCreate(savedInstanceState);  
 setContentView(R.layout.***delete\_contact***);  
  
 Button delButton = (Button) findViewById(R.id.***del***);  
 delButton.setOnClickListener(**delListener**);  
 }  
  
 **private** Button.OnClickListener **delListener** = **new** Button.OnClickListener(){  
  
 **public void** onClick(View v){  
 EditText firstNameET = (EditText) findViewById(R.id.***firstname\_del***);  
 EditText lastNameET = (EditText) findViewById(R.id.***lastname\_del***);  
 String name = firstNameET.getText().toString().trim() + **" "** + lastNameET.getText().toString().trim();  
  
 Intent i = **new** Intent( DeleteContactActivity.**this**, MainActivity.**class**);  
 i.putExtra(**"name"**, name);  
  
 setResult(Activity.***RESULT\_OK***,i);  
 finish();  
 }  
 };  
  
  
}

**Activity\_main.xml**

*<?***xml version="1.0" encoding="utf-8"***?>*<**RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:app="http://schemas.android.com/apk/res-auto"  
 xmlns:tools="http://schemas.android.com/tools"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 tools:context="com.project.jasonesquivel.simplecontactbook.MainActivity"**>  
  
 <**LinearLayout  
 android:id="@+id/buttons"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:orientation="horizontal"**>  
  
 <**Button  
 android:id="@+id/add\_main"  
 android:layout\_width="0dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:text="add"** />  
 <**Button  
 android:id="@+id/del\_main"  
 android:layout\_width="0dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:text="delete"** />  
 </**LinearLayout**>  
 <**ListView  
 android:id="@+id/list"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:layout\_below="@id/buttons"** >  
 </**ListView**>  
</**RelativeLayout**>

**Add\_contact.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"**>  
  
 <**LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:orientation="horizontal"**>  
 <**TextView  
 android:layout\_width="0dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:text="First Name"  
 android:textStyle="bold"  
 android:textSize="18dp"**/>  
 <**EditText  
 android:id="@+id/firstname\_add"  
 android:layout\_width="0dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="2"**/>  
 </**LinearLayout**>  
 <**LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:orientation="horizontal"**>  
 <**TextView  
 android:layout\_width="0dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:text="Last Name"  
 android:textStyle="bold"  
 android:textSize="18dp"**/>  
 <**EditText  
 android:id="@+id/lastname\_add"  
 android:layout\_width="0dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="2"**/>  
 </**LinearLayout**>  
 <**LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:orientation="horizontal"**>  
 <**TextView  
 android:layout\_width="0dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:text="Phone Number"  
 android:textStyle="bold"  
 android:textSize="18dp"**/>  
 <**EditText  
 android:id="@+id/phonenumber\_add"  
 android:layout\_width="0dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="2"**/>  
 </**LinearLayout**>  
 <**LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:orientation="horizontal"**>  
 <**TextView  
 android:layout\_width="0dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:text="Email"  
 android:textStyle="bold"  
 android:textSize="18dp"**/>  
 <**EditText  
 android:id="@+id/email\_add"  
 android:layout\_width="0dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="2"**/>  
 </**LinearLayout**>  
 <**Button  
 android:id="@+id/add"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:text="Add"**/>  
</**LinearLayout**>

**Delete\_contact.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"**>  
  
 <**LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:orientation="horizontal"**>  
 <**TextView  
 android:layout\_width="0dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:text="First Name"  
 android:textStyle="bold"  
 android:textSize="18dp"**/>  
 <**EditText  
 android:id="@+id/firstname\_del"  
 android:layout\_width="0dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="2"**/>  
 </**LinearLayout**>  
 <**LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:orientation="horizontal"**>  
 <**TextView  
 android:layout\_width="0dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:text="Last Name"  
 android:textStyle="bold"  
 android:textSize="18dp"**/>  
 <**EditText  
 android:id="@+id/lastname\_del"  
 android:layout\_width="0dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="2"**/>  
 </**LinearLayout**>  
  
 <**Button  
 android:id="@+id/del"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:text="Delete"**/>  
</**LinearLayout**>

**AndroidManifest.xml**

*<?***xml version="1.0" encoding="utf-8"***?>*<**manifest xmlns:android="http://schemas.android.com/apk/res/android"  
 package="com.project.jasonesquivel.simplecontactbook"**>  
  
 <**application  
 android:allowBackup="true"  
 android:icon="@mipmap/ic\_launcher"  
 android:label="@string/app\_name"  
 android:roundIcon="@mipmap/ic\_launcher\_round"  
 android:supportsRtl="true"  
 android:theme="@style/Theme.AppCompat.NoActionBar"**>  
 <**activity android:name=".MainActivity"**>  
 <**intent-filter**>  
 <**action android:name="android.intent.action.MAIN"** />  
  
 <**category android:name="android.intent.category.LAUNCHER"** />  
 </**intent-filter**>  
 </**activity**>  
 <**activity  
 android:name=".AddContactActivity"**>  
 </**activity**>  
 <**activity  
 android:name=".DeleteContactActivity"**>  
 </**activity**>  
 </**application**>  
  
</**manifest**>