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ECE 590
Lab 4 Report

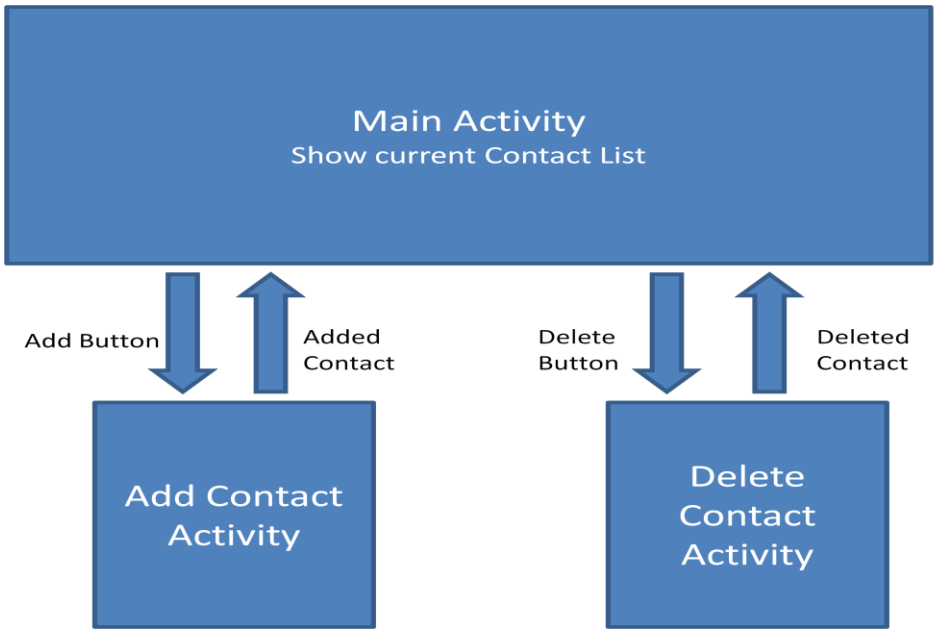
Introduction

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.

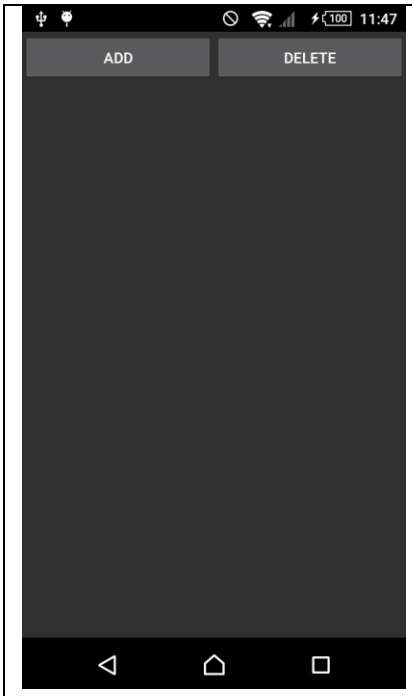
Main

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.

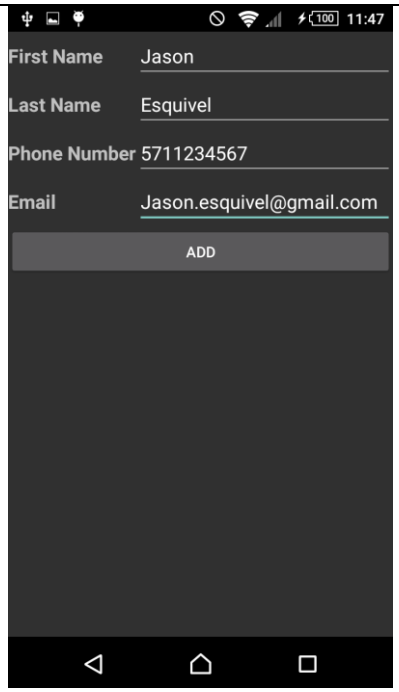
Once the layout was ready the next challenge was to setup the Main activity have a SQL database, initialization was set up sing the execSQL function with “CREATE TABLE”. In order to add a contact to the database I used ContentValues class and the insert method to add a contact to the database. In order 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.

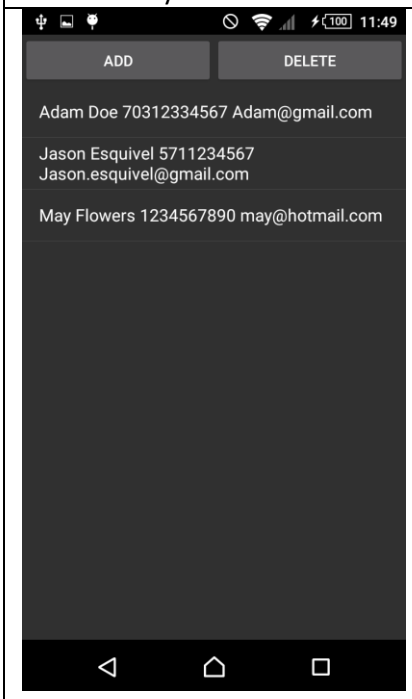


Shows empty Contact List in Main Activity



Add Activity with filled in fields

Main Activity showing Added Contact



A couple more Contacts added

Contact May Flowers in Delete activity about to be deleted

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>
```