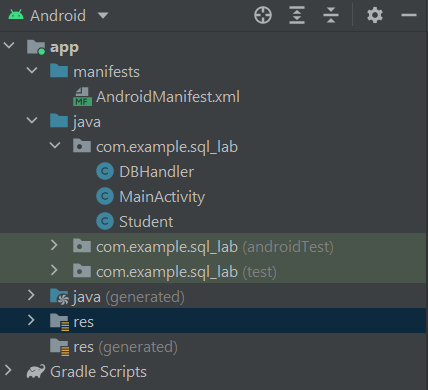
CSE2MAD Lab 6 – Part B SQLite

Aim: To give you some experience with persistent data storage on mobile devices. The aim of this app is to store students in the database.

Keep in mind, your project structure will be in the form,



1. Create the main activity with the UI below.



1. Let’s Model a Student by creating an Object

package com.example.sql\_lab;  
  
*/\*\*  
 \* Created by smann  
 \*/*public class Student {  
 int \_id;  
 String \_name;  
 String \_phoneNumber;  
  
 public Student() {}  
  
 public Student(int id, String name, String phoneNum) {  
 this.\_id = id; this.\_name = name;  
 this.\_phoneNumber = phoneNum;  
  
 }  
 public Student(String name, String phoneNumber) {  
 this.\_name = name; this.\_phoneNumber =  
 phoneNumber;  
 }  
 public int getID() {  
 return this.\_id;  
 }  
 public void setID(int id) {  
 this.\_id = id;  
 }  
 public String getName() {  
 return this.\_name;  
 }  
 public void setName(String name) {  
 this.\_name = name;  
 }  
 public String getPhone() {  
 return this.\_phoneNumber;  
 }  
 public void setPhone(String phone) {  
 this.\_phoneNumber = phone;  
 }  
  
  
  
}

3) Create the DatabaseHandler. We extend SQLiteOpenHelper and provide implementations of the callback methods.

package com.example.sql\_lab;  
  
import java.util.ArrayList;

import java.util.List;  
import android.content.ContentValues;  
import android.content.Context;

import android.database.Cursor;  
import android.database.sqlite.SQLiteDatabase;

import android.database.sqlite.SQLiteOpenHelper;  
  
*/\*\*  
 \* Created by smann  
 \*/*public class DBHandler extends SQLiteOpenHelper {  
  
 private static final int *DATABASE\_VERSION* = 1;  
 private static final String *DATABASE\_NAME* = "studentsManager";  
 private static final String *TABLE\_STUDENTS* = "students";  
 private static final String *KEY\_ID* = "id"; private  
 static final String *KEY\_NAME* = "name"; private static  
 final String *KEY\_PH\_NO* = "phone\_number";  
  
 public DBHandler(Context context) {  
 super(context, *DATABASE\_NAME*, null, *DATABASE\_VERSION*);  
 }  
  
 // Creating Table  
 @Override  
 public void onCreate(SQLiteDatabase db) {  
 String CREATE\_STUDENTS\_TABLE = "CREATE TABLE " + *TABLE\_STUDENTS* + "("  
 + *KEY\_ID* + " INTEGER PRIMARY KEY," + *KEY\_NAME* + " TEXT,"  
 + *KEY\_PH\_NO* + " TEXT" + ")";  
 db.execSQL(CREATE\_STUDENTS\_TABLE);  
 }  
  
  
 // Upgrading database  
 @Override  
 public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {  
 // Drop older table if existed  
 db.execSQL("DROP TABLE IF EXISTS " + *TABLE\_STUDENTS*);  
  
 // Create table again  
 onCreate(db);  
 }  
  
 // Adding new student  
 void addStudent(Student student) {  
 SQLiteDatabase db = this.getWritableDatabase();  
  
 ContentValues values = new ContentValues();  
 values.put(*KEY\_NAME*, student.getName()); // Contact Name  
 values.put(*KEY\_PH\_NO*, student.getPhone()); // Contact Phone  
 // Inserting Row  
 db.insert(*TABLE\_STUDENTS*, null, values);  
//2nd argument is String containing nullColumnHack  
 db.close(); // Closing database connection  
 }  
  
 // Getting single student  
 Student getStudent(int id) {  
 SQLiteDatabase db = this.getReadableDatabase();  
  
 Cursor cursor = db.query(*TABLE\_STUDENTS*, new String[] { *KEY\_ID*,  
 *KEY\_NAME*, *KEY\_PH\_NO* }, *KEY\_ID* + "=?",  
 new String[] { String.*valueOf*(id) }, null, null, null, null);  
 if (cursor != null) cursor.moveToFirst();  
  
 Student student = new Student(Integer.*parseInt*(cursor.getString(0)),  
 cursor.getString(1), cursor.getString(2));  
 // return student  
 return student;  
 }  
  
 // Getting All Contacts  
 public List<Student> getAllStudents() {  
 List<Student> studentList = new ArrayList<Student>();  
 // Select All Query  
 String selectQuery = "SELECT \* FROM " + *TABLE\_STUDENTS*;  
  
 SQLiteDatabase db = this.getWritableDatabase();  
 Cursor cursor = db.rawQuery(selectQuery, null);  
 // looping through all rows and adding to list  
 if (cursor.moveToFirst()) { do {  
 Student student = new Student();  
 student.setID(Integer.*parseInt*(cursor.getString(0)));  
 student.setName(cursor.getString(1));  
 student.setPhone(cursor.getString(2));  
 // Adding student to list  
 studentList.add(student); }  
 while (cursor.moveToNext());  
 }  
  
 // return student list  
 return studentList;  
 }  
  
 // Updating single student  
 public int updateStudent(Student student) {  
 SQLiteDatabase db = this.getWritableDatabase();  
  
 ContentValues values = new ContentValues();  
 values.put(*KEY\_NAME*, student.getName()); values.put(*KEY\_PH\_NO*,  
 student.getPhone());  
  
 // updating row  
 return db.update(*TABLE\_STUDENTS*, values, *KEY\_ID* + " = ?",  
 new String[] { String.*valueOf*(student.getID()) });  
 }  
  
 // Deleting single student  
 public void deleteStudent(Student student) {  
 SQLiteDatabase db = this.getWritableDatabase();  
 db.delete(*TABLE\_STUDENTS*, *KEY\_ID* + " = ?",  
 new String[] { String.*valueOf*(student.getID()) });  
 db.close();  
 }  
  
 // Getting student Count  
 public int getStudentsCount() {  
 String countQuery = "SELECT \* FROM " + *TABLE\_STUDENTS*;  
 SQLiteDatabase db = this.getReadableDatabase();  
 Cursor cursor = db.rawQuery(countQuery, null);  
 cursor.close();  
  
 // return count  
 return cursor.getCount();  
 } }

These should map to typical CRUD (create, read, update and delete) functionality.

4) In the java code for the main activity, we can now insert some students. Also reading them out to log for debug.

@Override  
protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
  
 DBHandler db = new DBHandler(this);  
  
 // Inserting students  
 Log.*d*("Insert: ", "Inserting ..");  
 db.addStudent(new Student("Mat", "43540"));  
 db.addStudent(new Student("Alex", "54334"));  
 db.addStudent(new Student("Sameer", "34422"));  
 db.addStudent(new Student("Shaz", "48465"));  
  
 // Reading all students  
 Log.*d*("Reading: ", "Reading all students..");  
 List<Student> students = db.getAllStudents();  
  
 for (Student cn : students) {  
 String log = "Id: "+cn.getID()+" ,Name: " + cn.getName() + " ,Phone: "  
 + cn.getPhone();  
 // Writing Contacts to log  
 Log.*d*("Name: ", log);  
 }  
}

Run the app, open the logcat in Android Studio and you will see the lines below if you have created the app correctly.

2020-09-06 13:06:21.235 13698-13698/com.example.sql\_lab D/Read Name:: Id: 1 ,Name: Mat ,Phone: 43540

2020-09-06 13:06:21.235 13698-13698/com.example.sql\_lab D/Read Name:: Id: 2 ,Name: Alex ,Phone: 54334

2020-09-06 13:06:21.235 13698-13698/com.example.sql\_lab D/Read Name:: Id: 3 ,Name: Sameer ,Phone: 34422

2020-09-06 13:06:21.235 13698-13698/com.example.sql\_lab D/Read Name:: Id: 4 ,Name: Shaz ,Phone: 48465

5) **Your goal** is to now implement the adding of students as above using the populate button and to also add individual students using the ADD button and the EditText fields.