MAD Exercise 5 by Ebenezer Isaac 2020178014

Basic CRUD operations with database

DatabaseHelper.java

```
package com.example.studentdb;

import java.util.ArrayList;

import android.content.ContentValues;
import android.content.Context;
import android.database.Cursor;
import android.database.SQLException;
import android.database.sqlite.SQLiteOpenHelper;
import android.database.sqlite.SQLiteDatabase;

@SuppressWarnings("ALL")
public class DatabaseHelper extends SQLiteOpenHelper {

    public static final String DATABASE_NAME = "students.db";
    public static final String TABLE_NAME = "student details";
    public static final String STUDENT_ID = "id";
    public static final String STUDENT_NAME = "name";
    public static final String STUDENT_EMAIL = "email";
    public static final String STUDENT_CGPA = "cgpa";
    public static final String STUDENT_CITY = "city";
    public static final String STUDENT_PHONE = "phone";
    public static final String STUDENT_HOSTEL = "hostel";

    public DatabaseHelper(Context context) {
        super(context, DATABASE_NAME, null, 1);
    }

    @Override
    public void onCreate(SQLiteDatabase db) {
        // TODO Auto-generated method stub
        db.execSQL(
                "CREATE TABLE `student details` (\n" +
                        "   `id` INTEGER PRIMARY KEY AUTOINCREMENT,\n" +
                        "   `name` TEXT(100) NOT NULL,\n" +
                        "   `email` TEXT(50) NOT NULL UNIQUE,\n" +
                        "   `city` TEXT(20) NOT NULL,\n" +
                        "   `phone` TEXT(10) NOT NULL UNIQUE,\n" +
                        "   `cgpa` TEXT(5) NOT NULL,\n" +
                        "   `hostel` BOOLEAN(1) NOT NULL\n" +
                        ")"
        );
    }

    @Override
    public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion)
{
        // TODO Auto-generated method stub
        db.execSQL("DROP TABLE IF EXISTS " + TABLE_NAME);
```

```
        onCreate(db);
    }

    public String insertStudent(String name, String email, String city,
String phone, String cgpa, boolean hostel) {
        SQLiteDatabase db = this.getWritableDatabase();
        ContentValues contentValues = new ContentValues();
        contentValues.put(STUDENT_NAME, name);
        contentValues.put(STUDENT_EMAIL, email);
        contentValues.put(STUDENT_CITY, city);
        contentValues.put(STUDENT_PHONE, phone);
        contentValues.put(STUDENT_CGPA, cgpa);
        contentValues.put(STUDENT_HOSTEL, hostel);
        try {
            db.insertOrThrow(TABLE_NAME, null, contentValues);
            return "Data inserted successfully";
        } catch (SQLException e) {
            return e.getMessage();
        }
    }

    public boolean updateStudent(Integer id, String name, String email,
String city, String phone, String cgpa, boolean hostel) {
        SQLiteDatabase db = this.getWritableDatabase();
        ContentValues contentValues = new ContentValues();
        contentValues.put(STUDENT_NAME, name);
        contentValues.put(STUDENT_EMAIL, email);
        contentValues.put(STUDENT_CITY, city);
        contentValues.put(STUDENT_PHONE, phone);
        contentValues.put(STUDENT_CGPA, cgpa);
        contentValues.put(STUDENT_HOSTEL, hostel);
        db.update("contacts", contentValues, "id = ? ", new
String[]{Integer.toString(id)});
        return true;
    }

    public void deleteStudent(Integer id) {
        SQLiteDatabase db = this.getWritableDatabase();
        db.delete(TABLE_NAME,
                "id = ? ",
                new String[]{Integer.toString(id)});
    }

    public ArrayList getAllStudents() {
        ArrayList<ArrayList<String>> array_list = new ArrayList<>();
        //hp = new HashMap();
        SQLiteDatabase db = this.getReadableDatabase();
        Cursor res = db.rawQuery("select * from " + TABLE_NAME, null);
        res.moveToFirst();

        while (!res.isAfterLast()) {
            ArrayList<String> temp = new ArrayList<>();
            temp.add(res.getString(res.getColumnIndex(STUDENT_ID)));
            temp.add(res.getString(res.getColumnIndex(STUDENT_NAME)));
            temp.add(res.getString(res.getColumnIndex(STUDENT_EMAIL)));
            temp.add(res.getString(res.getColumnIndex(STUDENT_CITY)));
            temp.add(res.getString(res.getColumnIndex(STUDENT_CGPA)));
```

```
            temp.add(res.getString(res.getColumnIndex(STUDENT_PHONE)));
            temp.add(res.getString(res.getColumnIndex(STUDENT_HOSTEL)));
            res.moveToNext();
            array_list.add(temp);
        }
        res.close();
        return array_list;
    }
}
```

MainActivity.java

```
package com.example.studentdb;

import androidx.appcompat.app.AppCompatActivity;

import android.annotation.SuppressLint;
import android.os.Bundle;
import android.view.Gravity;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Spinner;
import android.widget.TableLayout;
import android.widget.TableRow;
import android.widget.TextView;
import android.widget.Toast;
import java.util.ArrayList;

public class MainActivity extends AppCompatActivity {
    DatabaseHelper db;
    Button refresh;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        db = new DatabaseHelper(this);
        setContentView(R.layout.activity_main);
        refresh = findViewById(R.id.refresh);
        refresh.performClick();
    }

    @SuppressWarnings("rawtypes")
    @SuppressLint("SetTextI18n")
    public void populateData(View v) {
        TableLayout table = findViewById(R.id.display_table);
        table.removeAllViews();
        System.out.println("cleared");
        ArrayList student details = db.getAllStudents();
        if (student_details.size() > 0) {
            for (int i = 0; i < student_details.size(); i++) {
                ArrayList student = (ArrayList) student details.get(i);
                for (int j = 1; j < student.size(); j++) {
                    TableRow row = new TableRow(this);
                    TextView item = new TextView(this);
```

```
                    if (j == student.size() - 1) {
                        if (student.get(6).toString().equals("0")) {
                            item.setText("Day Scholar");
                        } else {
                            item.setText("Hosteller");
                        }
                    } else {
                        item.setText(student.get(j).toString());
                    }
                    item.setLayoutParams(new TableRow.LayoutParams(1));
                    item.setTextSize(20);
                    item.setPadding(10, 10, 10, 10);
                    row.addView(item);
                    table.addView(row);
                }
                TableRow row = new TableRow(this);
                TextView item = new TextView(this);
                Button del = new Button(this);
                del.setText("Delete");
                del.setTag(student.get(0));
                row.setGravity(Gravity.CENTER);
                int id = 15000;
                del.setId(id);
                del.setOnClickListener(v1 -> {

db.deleteStudent(Integer.parseInt(v1.getTag().toString()));
                    refresh.performClick();
                });
                row.addView(del);
                table.addView(row);
                TableRow row_separate = new TableRow(this);
                item.setText("x---------x");
                item.setGravity(Gravity.CENTER);
                item.setLayoutParams(new TableRow.LayoutParams(1));
                item.setTextSize(20);
                item.setPadding(10, 10, 10, 10);
                row_separate.addView(item);
                table.addView(row_separate);


            }
        } else {
            Toast.makeText(this, "Empty Database",
Toast.LENGTH_SHORT).show();

        }

    }

    public void insertPage(View v) {
        setContentView(R.layout.insert_form);
    }

    public void back(View v) {
        setContentView(R.layout.activity_main);
        refresh.performClick();
    }
```

```
    public void insertDetails(View v) {
        String result = db.insertStudent(((EditText)
findViewById(R.id.name)).getText().toString() + "",
                ((EditText) findViewById(R.id.email)).getText().toString() +
"",
                ((EditText) findViewById(R.id.city)).getText().toString() +
"",
                ((EditText) findViewById(R.id.phone_no)).getText().toString()
+ "",
                ((EditText) findViewById(R.id.cgpa)).getText().toString() +
"",
                ((Spinner)
findViewById(R.id.hostel_stat)).getSelectedItemPosition() == 0);
        Toast.makeText(this, result, Toast.LENGTH_LONG).show();
        System.out.println(result);
        setContentView(R.layout.activity_main);
        refresh.performClick();
    }
}
```

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">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:text="Student Details"
        android:textSize="25sp"
        android:textStyle="bold" />

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:layout_centerVertical="true"
        android:gravity="center"
        android:layout_marginTop="125dp"
        android:layout_marginBottom="125dp"
        android:orientation="vertical">

        <ScrollView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:scrollbars="vertical">

            <TableLayout
                android:id="@+id/display_table"
```

```
                android:layout_width="match_parent"
                android:layout_height="wrap_content"
                android:layout_margin="30dp"
                android:isScrollContainer="true"/>
        </ScrollView>
    </LinearLayout>

    <Button
        android:id="@+id/refresh"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentStart="true"
        android:layout_alignParentBottom="true"
        android:layout_marginStart="20dp"
        android:layout_marginBottom="20dp"
        android:onClick="populateData"
        android:text="Refresh" />

    <Button
        android:id="@+id/insert"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="20dp"
        android:layout_marginBottom="20dp"
        android:onClick="insertPage"
        android:text="Insert" />


</RelativeLayout>
```

Insert_form.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">

    <LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:gravity="center"
    android:orientation="vertical"
    android:layout_centerHorizontal="true"
    android:layout_centerVertical="true">

    <EditText
        android:id="@+id/name"
        android:layout_width="200dp"
        android:layout_height="50dp"
        android:ems="10"
        android:inputType="textPersonName"
```

```
        android:gravity="center_horizontal"
        android:hint="Full Name"
        tools:layout editor absoluteX="88dp"
        tools:layout_editor_absoluteY="3dp" />
    <EditText
        android:id="@+id/email"
        android:layout_width="200dp"
        android:layout height="50dp"
        android:ems="10"
        android:inputType="textEmailAddress"
        android:gravity="center_horizontal"
        android:hint="Email"
        tools:layout editor absoluteX="88dp"
        tools:layout_editor_absoluteY="3dp" />
    <EditText
        android:id="@+id/city"
        android:layout_width="200dp"
        android:layout_height="50dp"
        android:ems="10"
        android:inputType="textAutoComplete"
        android:gravity="center_horizontal"
        android:hint="City"
        tools:layout_editor_absoluteX="88dp"
        tools:layout_editor_absoluteY="3dp" />
    <EditText
        android:id="@+id/phone_no"
        android:layout width="200dp"
        android:layout_height="50dp"
        android:ems="10"
        android:inputType="phone"
        android:gravity="center_horizontal"
        android:hint="Phone No"
        tools:layout_editor_absoluteX="88dp"
        tools:layout_editor_absoluteY="3dp" />
    <EditText
        android:id="@+id/cgpa"
        android:layout_width="200dp"
        android:layout_height="50dp"
        android:ems="10"
        android:inputType="numberDecimal"
        android:gravity="center_horizontal"
        android:hint="CGPA"
        tools:layout_editor_absoluteX="88dp"
        tools:layout editor absoluteY="3dp" />

    <Spinner
        android:id="@+id/hostel_stat"
        android:layout_width="200dp"
        android:layout height="50dp"
        android:gravity="center_horizontal"
        android:entries="@array/hostel_statuses" />


</LinearLayout>

    <Button
        android:id="@+id/back"
```

```
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentStart="true"
        android:layout_alignParentBottom="true"
        android:layout_marginStart="20dp"
        android:layout_marginBottom="20dp"
        android:onClick="back"
        android:text="Back" />
    <Button
        android:id="@+id/insert"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="20dp"
        android:layout_marginBottom="20dp"
        android:onClick="insertDetails"
        android:text="Insert" />


</RelativeLayout>
```

Screenshot :