Lab 3: Simple Sqlite operations on android

1. Create a sqlite database named “noteApp.db”.
2. Create a table named “notes” with following columns:
    a. _id (autoincrement primary key)
    b. UUID string
    c. Title string
    d. Description string
3. Create two buttons in MainActivity
    a. Insert
    b. List
4. When clicked on insert, make a database operation to insert dummy data on notes table.
    a. Insert at least 5 dummy notes
5. When clicked on List, make a database operation to query all data on notes table and show it in a listView just below the buttons.

MainActivity.java

```
package com.example.noteapp;

import android.database.Cursor;
import android.os.Bundle;
import android.view.View;
import android.widget.ArrayAdapter;
import android.widget.Button;
import android.widget.ListView;

import androidx.appcompat.app.AppCompatActivity;

import java.util.ArrayList;
import java.util.List;

public class MainActivity extends AppCompatActivity {

    private NoteDbHelper dbHelper;
    private ListView listView;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        dbHelper = new NoteDbHelper(this);
        listView = findViewById(R.id.listView);

        Button insertButton = findViewById(R.id.insertButton);
        Button listButton = findViewById(R.id.listButton);

        // Insert dummy notes when clicking the insert button
        insertButton.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                dbHelper.insertDummyData();
            }
        });

        // List all notes when clicking the list button
        listButton.setOnClickListener(new View.OnClickListener() {
            @Override
```

```
        public void onClick(View v) {
            List<String> notes = getAllNotes();
            ArrayAdapter<String> adapter = new ArrayAdapter<>(MainActivity.this,
                    android.R.layout.simple_list_item_1, notes);
            listView.setAdapter(adapter);
        }
    });
}

// Retrieve all notes from the database and convert to a list
private List<String> getAllNotes() {
    List<String> notesList = new ArrayList<>();
    Cursor cursor = dbHelper.getAllNotes();

    if (cursor.moveToFirst()) {
        do {
            String title = cursor.getString(cursor.getColumnIndex("title"));
            String description = cursor.getString(cursor.getColumnIndex("description"));
            notesList.add(title + ": " + description);
        } while (cursor.moveToNext());
    }

    cursor.close();
    return notesList;
}
}
```

NoteDbHelper.java

```
package com.example.noteapp;

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

import java.util.UUID;

public class NoteDbHelper extends SQLiteOpenHelper {
    private static final String DATABASE_NAME = "noteApp.db";
```

```
private static final int DATABASE_VERSION = 1;
private static final String TABLE_NOTES = "notes";

// Columns
private static final String COLUMN_ID = "_id";
private static final String COLUMN_UUID = "uuid";
private static final String COLUMN_TITLE = "title";
private static final String COLUMN_DESCRIPTION = "description";

private final Context context;

public NoteDbHelper(Context context) {
   super(context, DATABASE_NAME, null, DATABASE_VERSION);
   this.context = context;
}

@Override
public void onCreate(SQLiteDatabase db) {
   String createTable = "CREATE TABLE " + TABLE_NOTES + " (" +
         COLUMN_ID + " INTEGER PRIMARY KEY AUTOINCREMENT, " +
         COLUMN_UUID + " TEXT, " +
         COLUMN_TITLE + " TEXT, " +
         COLUMN_DESCRIPTION + " TEXT)";
   db.execSQL(createTable);
}

@Override
public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {
   db.execSQL("DROP TABLE IF EXISTS " + TABLE_NOTES);
   onCreate(db);
}

@Override
public void onOpen(SQLiteDatabase db) {
   super.onOpen(db);
   // Clear all previous data
   db.execSQL("DELETE FROM " + TABLE_NOTES);
}

// Insert Dummy Data with unique descriptions
public void insertDummyData() {
   SQLiteDatabase db = this.getWritableDatabase();
   ContentValues contentValues = new ContentValues();
```

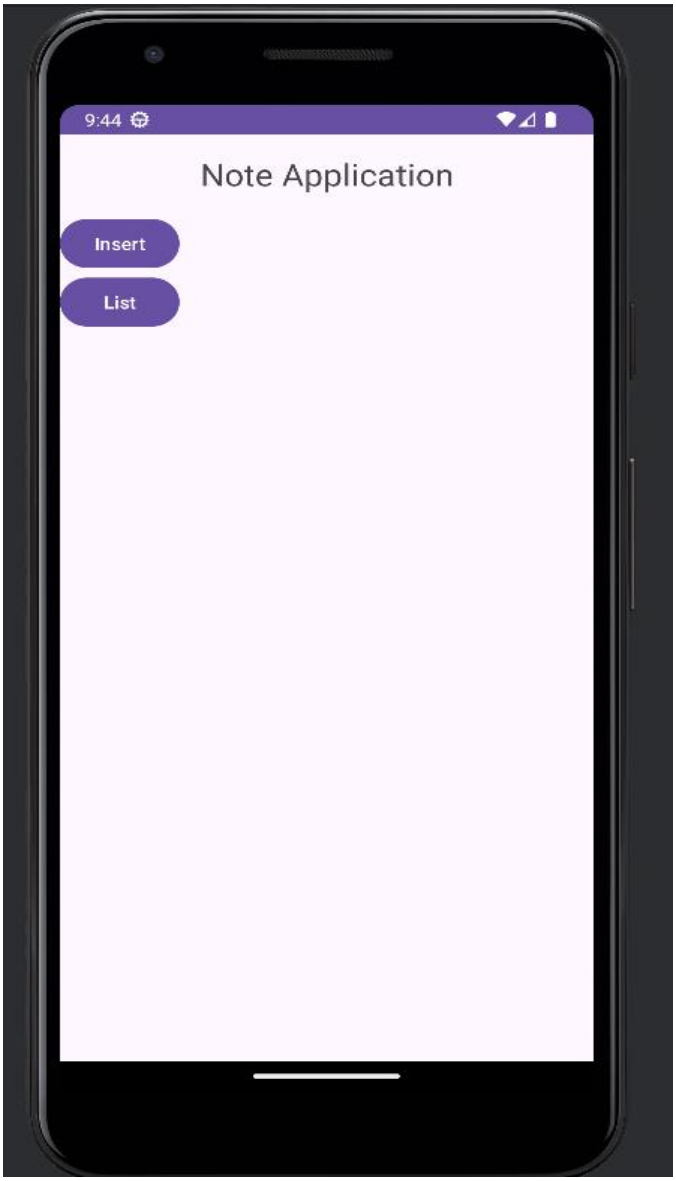
```
        // Array of unique descriptions
        String[] descriptions = {
                "Advance Java Programming Note",
                "Mobile Programming Note",
                "Network Programming Note",
                "Applied Economics Note",
                "Distributed System Note"
        };

        for (int i = 1; i <= descriptions.length; i++) {
            contentValues.put(COLUMN_UUID, UUID.randomUUID().toString());
            contentValues.put(COLUMN_TITLE, "Note " + i);
            contentValues.put(COLUMN_DESCRIPTION, descriptions[i - 1]); // Assign unique
description
            db.insert(TABLE_NOTES, null, contentValues);
        }

        // Use the context to show a Toast message
        Toast.makeText(context, "Data inserted", Toast.LENGTH_SHORT).show();
    }

    // Insert Dummy Data with dynamic descriptions (optional)
    public void insertDynamicDummyData() {
        SQLiteDatabase db = this.getWritableDatabase();
        ContentValues contentValues = new ContentValues();

        for (int i = 1; i <= 5; i++) {
            String uniqueDescription = "CodyNoteApp " + i + " - " + System.currentTimeMillis();
            contentValues.put(COLUMN_UUID, UUID.randomUUID().toString());
            contentValues.put(COLUMN_TITLE, "Note " + i);
            contentValues.put(COLUMN_DESCRIPTION, uniqueDescription);
            db.insert(TABLE_NOTES, null, contentValues);
        }

        Toast.makeText(context, "Dynamic data inserted", Toast.LENGTH_SHORT).show();
    }

    // Query All Notes
    public Cursor getAllNotes() {
        SQLiteDatabase db = this.getReadableDatabase();
        return db.rawQuery("SELECT * FROM " + TABLE_NOTES, null);
    }
}
```

activity_main.xml

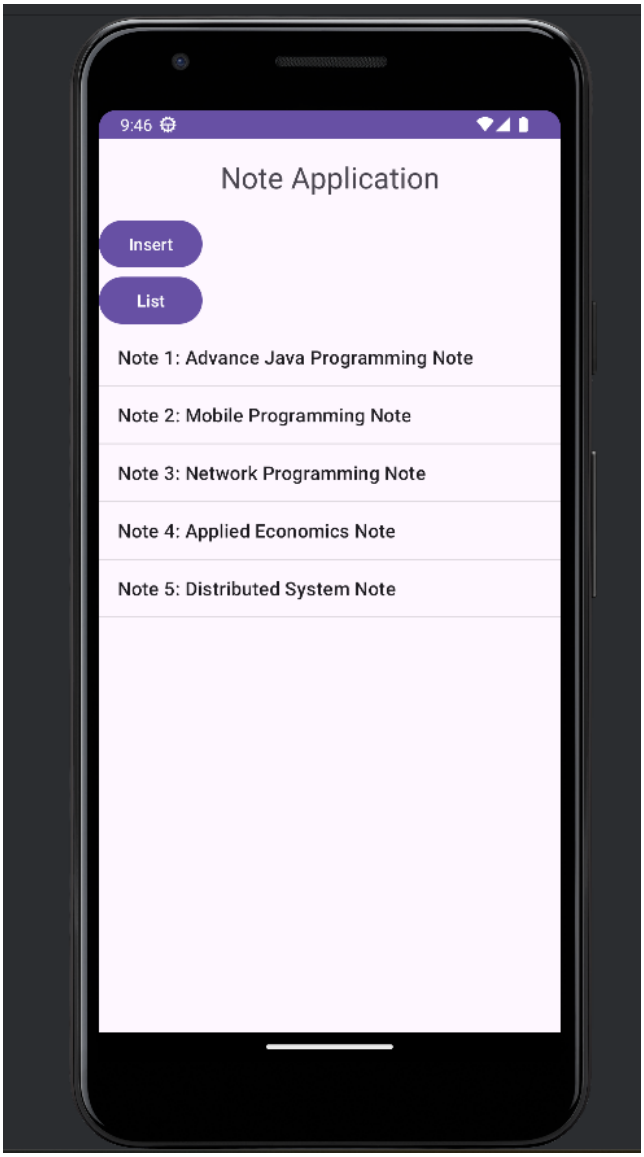
```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity"
    android:orientation="vertical">

    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Note Application"
        android:textSize="25dp"
        android:textAlignment="center"
        android:layout_margin="16dp"

        />

    <Button
        android:id="@+id/insertButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Insert" />

    <Button
        android:id="@+id/listButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="List"
        />

    <ListView
        android:id="@+id/listView"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        />

  </LinearLayout>
```

Output:

First view of the app



After clicking on List button we can see list of an item like this



Conclusion :

In this lab, we learn about the database SQlite to store data. We insert dummy data in the database and show that data in list form . We create two button as Insert and List . The insert button function as it help to insert data in the database and List button function as to show the list of item store in the database.