**Lab 21: Android SQLite Database**

# **Introduction**

# For tasks like storing, altering, or retrieving persistent data from the database on Android devices, SQLite is an open-source relational database. It comes pre-installed on Android. Therefore, no database setup or management tasks are required. The ability to use the SQLite database is provided by the SQLiteOpenHelper class.

**Let’s get Started:**

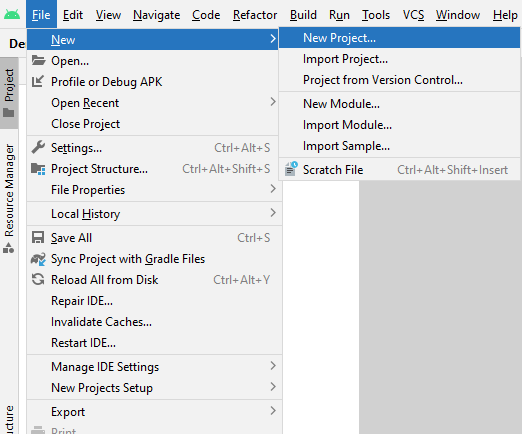
In this experiment we will develop an Android App to demonstrate the use of Android SQLite Database.

* Launching File Explorer
* access the data directory
* Look up the name of your application package in the data directory.
* Go to databases in your application package to access your database (contactsManager)
* A copy of your database can be saved.
* any tool or browser extension for SQLite. DB Browser for SQLite, for instance
* Open your database in the programme (DB Browser for SQLite) by launching it.
* You can then choose and view the data in your database depending on the tool you're using.
* To see the stored data, for instance, pick your table (contacts) from the Browse Data menu in the DB Browser for SQLite.

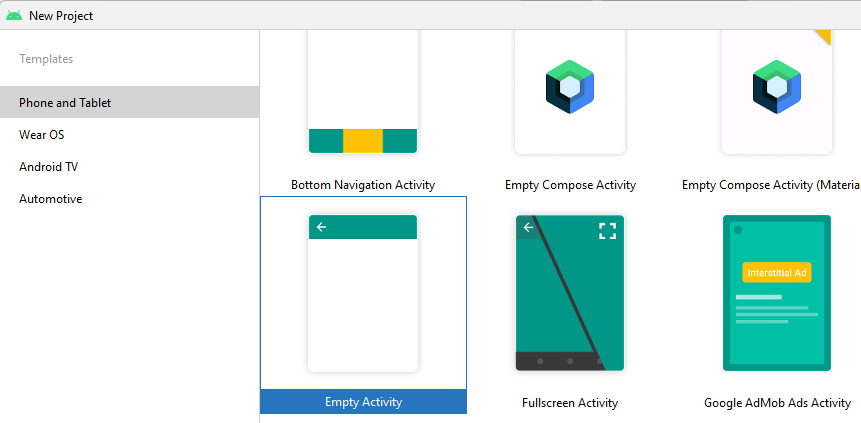
**Download & Install**

* [DB Browser for SQLite - Standard installer for 64-bit Windows](https://download.sqlitebrowser.org/DB.Browser.for.SQLite-3.12.2-win64.msi)

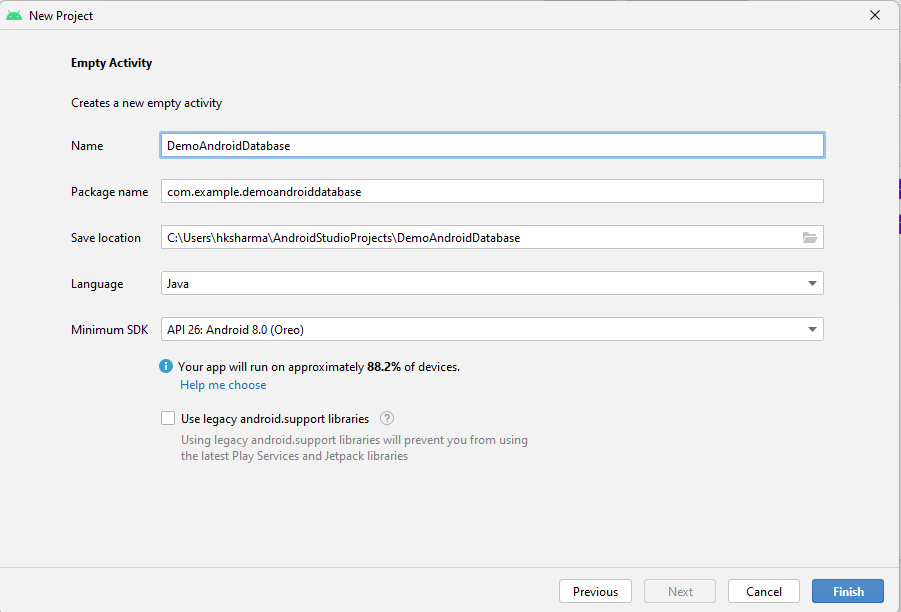
**Step 1: Create a New Project in Android Studio as shown below**



**Step 2: Select Empty Activity as shown below**



**Step 3: Provide a Project Name as shown below**

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**Step 4: Update MainActivity.java as per the code given below**

**package** com.example.demosql23;  
**import** android.os.Bundle;  
**import** android.view.View;  
**import** android.widget.Button;  
**import** android.widget.EditText;  
**import** android.widget.Toast;  
**import** androidx.appcompat.app.AppCompatActivity;  
  
**public class** MainActivity **extends** AppCompatActivity {  
 *// creating variables for our edittext, button and dbhandler* **private** EditText **courseNameEdt**, **courseTracksEdt**, **courseDurationEdt**, **courseDescriptionEdt**;  
 **private** Button **addCourseBtn**;  
 **private** DBHandler **dbHandler**;  
 @Override  
 **protected void** onCreate(Bundle savedInstanceState) {  
 **super**.onCreate(savedInstanceState);  
 setContentView(R.layout.***activity\_main***);  
 **courseNameEdt** = findViewById(R.id.***idEdtCourseName***);  
 **courseTracksEdt** = findViewById(R.id.***idEdtCourseTracks***);  
 **courseDurationEdt** = findViewById(R.id.***idEdtCourseDuration***);  
 **courseDescriptionEdt** = findViewById(R.id.***idEdtCourseDescription***);  
 **addCourseBtn** = findViewById(R.id.***idBtnAddCourse***);  
 **dbHandler** = **new** DBHandler(MainActivity.**this**);  
 **addCourseBtn**.setOnClickListener(**new** View.OnClickListener() {  
 @Override  
 **public void** onClick(View v) {  
 String courseName = **courseNameEdt**.getText().toString();  
 String courseTracks = **courseTracksEdt**.getText().toString();  
 String courseDuration = **courseDurationEdt**.getText().toString();  
 String courseDescription = **courseDescriptionEdt**.getText().toString();  
 **if** (courseName.isEmpty() && courseTracks.isEmpty() && courseDuration.isEmpty() && courseDescription.isEmpty()) {  
 Toast.*makeText*(MainActivity.**this**, **"Please enter all the data.."**, Toast.***LENGTH\_SHORT***).show();  
 **return**;  
 }  
 **dbHandler**.addNewCourse(courseName, courseDuration, courseDescription, courseTracks);  
 Toast.*makeText*(MainActivity.**this**, **"Course has been added."**, Toast.***LENGTH\_SHORT***).show();  
 **courseNameEdt**.setText(**""**);  
 **courseDurationEdt**.setText(**""**);  
 **courseTracksEdt**.setText(**""**);  
 **courseDescriptionEdt**.setText(**""**);  
 }  
 });  
 }  
}

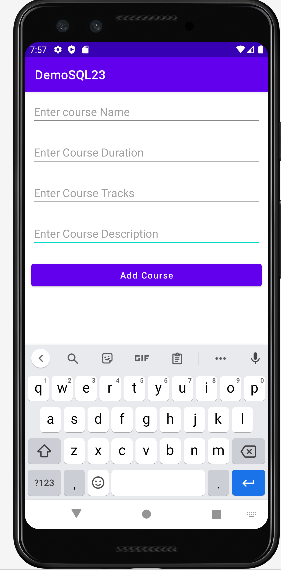
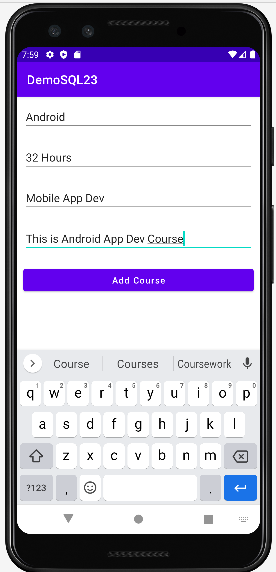
**Step 5: Create DBHandler.java as per the code given below**

**package** com.example.demosql23;  
**import** android.content.ContentValues;  
**import** android.content.Context;  
**import** android.database.sqlite.SQLiteDatabase;  
**import** android.database.sqlite.SQLiteOpenHelper;  
**public class** DBHandler **extends** SQLiteOpenHelper {  
 **private static final** String ***DB\_NAME*** = **"coursedb"**;  
 **private static final int *DB\_VERSION*** = 1;  
 **private static final** String ***TABLE\_NAME*** = **"mycourses"**;  
 **private static final** String ***ID\_COL*** = **"id"**;  
 **private static final** String ***NAME\_COL*** = **"name"**;  
 **private static final** String ***DURATION\_COL*** = **"duration"**;  
 **private static final** String ***DESCRIPTION\_COL*** = **"description"**;  
 **private static final** String ***TRACKS\_COL*** = **"tracks"**;  
 **public** DBHandler(Context context) {  
 **super**(context, ***DB\_NAME***, **null**, ***DB\_VERSION***);  
 }  
 @Override  
 **public void** onCreate(SQLiteDatabase db) {  
 String query = **"CREATE TABLE "** + ***TABLE\_NAME*** + **" ("** + ***ID\_COL*** + **" INTEGER PRIMARY KEY AUTOINCREMENT, "** + ***NAME\_COL*** + **" TEXT,"** + ***DURATION\_COL*** + **" TEXT,"** + ***DESCRIPTION\_COL*** + **" TEXT,"** + ***TRACKS\_COL*** + **" TEXT)"**;  
 db.execSQL(query);  
 }  
 **public void** addNewCourse(String courseName, String courseDuration, String courseDescription, String courseTracks) {  
  
 SQLiteDatabase db = **this**.getWritableDatabase();  
 ContentValues values = **new** ContentValues();  
 values.put(***NAME\_COL***, courseName);  
 values.put(***DURATION\_COL***, courseDuration);  
 values.put(***DESCRIPTION\_COL***, courseDescription);  
 values.put(***TRACKS\_COL***, courseTracks);  
 db.insert(***TABLE\_NAME***, **null**, values);  
 db.close();  
 }  
  
 @Override  
 **public void** onUpgrade(SQLiteDatabase db, **int** oldVersion, **int** newVersion) {  
 *// this method is called to check if the table exists already.* db.execSQL(**"DROP TABLE IF EXISTS "** + ***TABLE\_NAME***);  
 onCreate(db);  
 }  
}

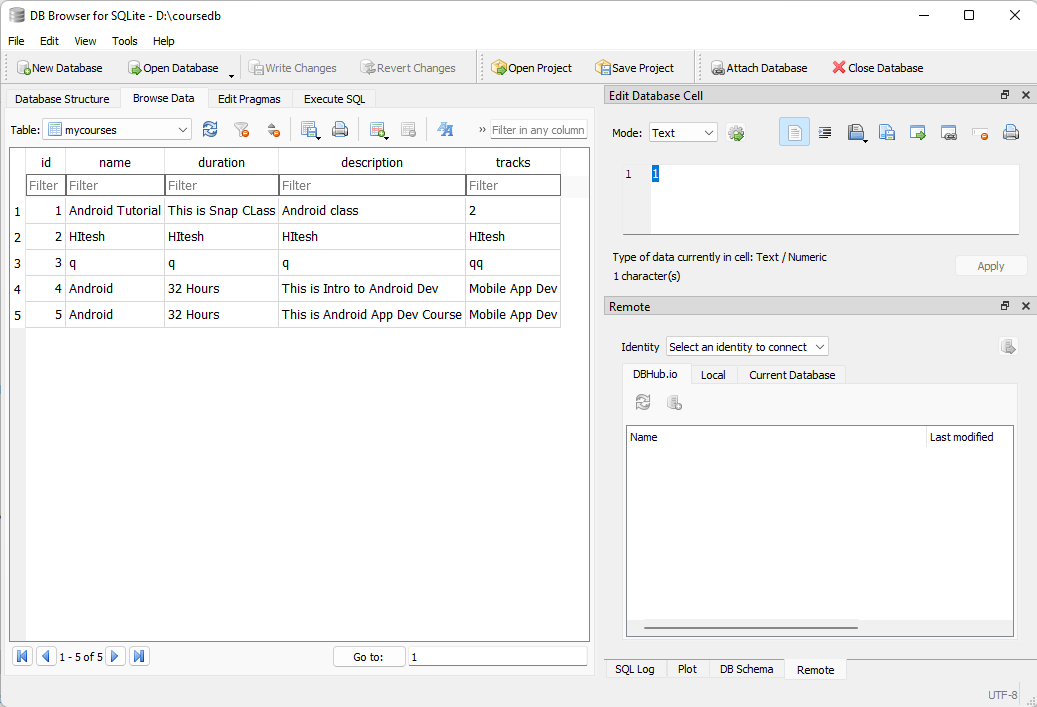
**Step 6: Update activity\_main.xml for Relative Layout as per the code given below**

*<?***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:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:orientation="vertical"  
 tools:context=".MainActivity"**>  
  
 *<!--Edit text to enter course name-->* <**EditText  
 android:id="@+id/idEdtCourseName"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_margin="10dp"  
 android:hint="Enter course Name"** />  
  
 *<!--edit text to enter course duration-->* <**EditText  
 android:id="@+id/idEdtCourseDuration"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_margin="10dp"  
 android:hint="Enter Course Duration"** />  
  
 *<!--edit text to display course tracks-->* <**EditText  
 android:id="@+id/idEdtCourseTracks"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_margin="10dp"  
 android:hint="Enter Course Tracks"** />  
  
 *<!--edit text for course description-->* <**EditText  
 android:id="@+id/idEdtCourseDescription"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_margin="10dp"  
 android:hint="Enter Course Description"** />  
  
 *<!--button for adding new course-->* <**Button  
 android:id="@+id/idBtnAddCourse"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_margin="10dp"  
 android:text="Add Course"  
 android:textAllCaps="false"** />  
  
</**LinearLayout**>

**Step 7: Check Output on Android Emulator and it should look like as given below**

**Step 8: Check Database as given below**



**Voila!!** We have successfully completed this lab.