**Create a Database table with the following structure using SQLite: Student (Name, roll no, Marks) Develop an android application to perform the following operation using SQLite developer class.**

**AIM:**

**To Create a Database table with the following structure using SQLite: Student (Name, roll no, Marks). Develop an android application to perform the following operation (1. Insert student Details 2. Update the student Record 3. Delete the student record by Roll no 4. View the details).**

**PROCEDURE:**

**Step 1: File → NewProject Provide the application name and Click “Next”**

**Step 2: Select the target android devices, Select the minimum SDK to run the application. Click “Next”.**

**Step 3: Choose the activity for the application (By default choose “Blank Activity). Click “Next”.**

**Step 4: Enter activity name and click "Finish".**

**Step 5: Edit the program.**

**Step 6: Run the application, 2-ways to run the application**

**1. Running through emulator**

**2. Running through mobile device**

**CODE:**

**AndroidManifest.xml:**

**package com.example.studentdatabaseapp;**

**import android.content.ContentValues;**

**import android.content.Context;**

**import android.database.Cursor;**

**import android.database.sqlite.SQLiteDatabase;**

**import android.database.sqlite.SQLiteOpenHelper;**

**public class DatabaseHelper extends SQLiteOpenHelper {**

**// Database and Table information**

**private static final String DATABASE\_NAME = "StudentDB";**

**private static final int DATABASE\_VERSION = 1;**

**private static final String TABLE\_NAME = "Student";**

**private static final String COLUMN\_NAME = "Name";**

**private static final String COLUMN\_ROLL\_NO = "RollNo";**

**private static final String COLUMN\_MARKS = "Marks";**

**public DatabaseHelper(Context context) {**

**super(context, DATABASE\_NAME, null, DATABASE\_VERSION);**

**}**

**@Override**

**public void onCreate(SQLiteDatabase db) {**

**String CREATE\_TABLE = "CREATE TABLE " + TABLE\_NAME + " ("**

**+ COLUMN\_ROLL\_NO + " INTEGER PRIMARY KEY, "**

**+ COLUMN\_NAME + " TEXT, "**

**+ COLUMN\_MARKS + " INTEGER)";**

**db.execSQL(CREATE\_TABLE);**

**}**

**@Override**

**public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {**

**db.execSQL("DROP TABLE IF EXISTS " + TABLE\_NAME);**

**onCreate(db);**

**}**

**// Insert a student record**

**public boolean insertStudent(String name, int rollNo, int marks) {**

**SQLiteDatabase db = this.getWritableDatabase();**

**ContentValues values = new ContentValues();**

**values.put(COLUMN\_NAME, name);**

**values.put(COLUMN\_ROLL\_NO, rollNo);**

**values.put(COLUMN\_MARKS, marks);**

**long result = db.insert(TABLE\_NAME, null, values);**

**return result != -1;**

**}**

**// Retrieve all student records**

**public Cursor getAllStudents() {**

**SQLiteDatabase db = this.getReadableDatabase();**

**return db.rawQuery("SELECT \* FROM " + TABLE\_NAME, null);**

**}**

**// Delete a student record by roll number**

**public boolean deleteStudent(int rollNo) {**

**SQLiteDatabase db = this.getWritableDatabase();**

**return db.delete(TABLE\_NAME, COLUMN\_ROLL\_NO + "=?", new String[]{String.valueOf(rollNo)}) > 0;**

**}**

**// Update a student's marks**

**public boolean updateMarks(int rollNo, int newMarks) {**

**SQLiteDatabase db = this.getWritableDatabase();**

**ContentValues values = new ContentValues();**

**values.put(COLUMN\_MARKS, newMarks);**

**return db.update(TABLE\_NAME, values, COLUMN\_ROLL\_NO + "=?", new String[]{String.valueOf(rollNo)}) > 0;**

**}**

**}**

**activity\_main.xml:**

**<?xml version="1.0" encoding="utf-8"?>**

**<ScrollView xmlns:android="http://schemas.android.com/apk/res/android"**

**android:layout\_width="match\_parent"**

**android:layout\_height="match\_parent">**

**<LinearLayout**

**android:layout\_width="match\_parent"**

**android:layout\_height="wrap\_content"**

**android:orientation="vertical"**

**android:padding="16dp">**

**<EditText**

**android:id="@+id/etName"**

**android:layout\_width="match\_parent"**

**android:layout\_height="wrap\_content"**

**android:hint="Name"**

**android:inputType="textPersonName" />**

**<EditText**

**android:id="@+id/etRollNo"**

**android:layout\_width="match\_parent"**

**android:layout\_height="wrap\_content"**

**android:hint="Roll No"**

**android:inputType="number" />**

**<EditText**

**android:id="@+id/etMarks"**

**android:layout\_width="match\_parent"**

**android:layout\_height="wrap\_content"**

**android:hint="Marks"**

**android:inputType="number" />**

**<Button**

**android:id="@+id/btnAdd"**

**android:layout\_width="match\_parent"**

**android:layout\_height="wrap\_content"**

**android:text="Add Student" />**

**<Button**

**android:id="@+id/btnView"**

**android:layout\_width="match\_parent"**

**android:layout\_height="wrap\_content"**

**android:text="View Students" />**

**<Button**

**android:id="@+id/btnUpdate"**

**android:layout\_width="match\_parent"**

**android:layout\_height="wrap\_content"**

**android:text="Update Marks" />**

**<Button**

**android:id="@+id/btnDelete"**

**android:layout\_width="match\_parent"**

**android:layout\_height="wrap\_content"**

**android:text="Delete Student" />**

**<TextView**

**android:id="@+id/tvResult"**

**android:layout\_width="match\_parent"**

**android:layout\_height="wrap\_content"**

**android:paddingTop="16dp"**

**android:textSize="16sp" />**

**</LinearLayout>**

**</ScrollView>**

**MainActivity.java:**

**package com.example.studentdatabaseapp;**

**import android.database.Cursor;**

**import android.os.Bundle;**

**import android.view.View;**

**import android.widget.Button;**

**import android.widget.EditText;**

**import android.widget.TextView;**

**import android.widget.Toast;**

**import androidx.appcompat.app.AppCompatActivity;**

**public class MainActivity extends AppCompatActivity {**

**private DatabaseHelper dbHelper;**

**private EditText etName, etRollNo, etMarks;**

**private TextView tvResult;**

**@Override**

**protected void onCreate(Bundle savedInstanceState) {**

**super.onCreate(savedInstanceState);**

**setContentView(R.layout.activity\_main);**

**dbHelper = new DatabaseHelper(this);**

**etName = findViewById(R.id.etName);**

**etRollNo = findViewById(R.id.etRollNo);**

**etMarks = findViewById(R.id.etMarks);**

**tvResult = findViewById(R.id.tvResult);**

**Button btnAdd = findViewById(R.id.btnAdd);**

**Button btnView = findViewById(R.id.btnView);**

**Button btnUpdate = findViewById(R.id.btnUpdate);**

**Button btnDelete = findViewById(R.id.btnDelete);**

**btnAdd.setOnClickListener(view -> addStudent());**

**btnView.setOnClickListener(view -> viewStudents());**

**btnUpdate.setOnClickListener(view -> updateMarks());**

**btnDelete.setOnClickListener(view -> deleteStudent());**

**}**

**private void addStudent() {**

**String name = etName.getText().toString();**

**int rollNo = Integer.parseInt(etRollNo.getText().toString());**

**int marks = Integer.parseInt(etMarks.getText().toString());**

**if (dbHelper.insertStudent(name, rollNo, marks)) {**

**Toast.makeText(this, "Student Added", Toast.LENGTH\_SHORT).show();**

**} else {**

**Toast.makeText(this, "Error Adding Student", Toast.LENGTH\_SHORT).show();**

**}**

**}**

**private void viewStudents() {**

**Cursor cursor = dbHelper.getAllStudents();**

**if (cursor.getCount() == 0) {**

**tvResult.setText("No students found.");**

**return;**

**}**

**StringBuilder result = new StringBuilder();**

**while (cursor.moveToNext()) {**

**result.append("Roll No: ").append(cursor.getInt(0))**

**.append(", Name: ").append(cursor.getString(1))**

**.append(", Marks: ").append(cursor.getInt(2))**

**.append("\n");**

**}**

**tvResult.setText(result.toString());**

**}**

**private void updateMarks() {**

**int rollNo = Integer.parseInt(etRollNo.getText().toString());**

**int newMarks = Integer.parseInt(etMarks.getText().toString());**

**if (dbHelper.updateMarks(rollNo, newMarks)) {**

**Toast.makeText(this, "Marks Updated", Toast.LENGTH\_SHORT).show();**

**} else {**

**Toast.makeText(this, "Error Updating Marks", Toast.LENGTH\_SHORT).show();**

**}**

**}**

**private void deleteStudent() {**

**int rollNo = Integer.parseInt(etRollNo.getText().toString());**

**if (dbHelper.deleteStudent(rollNo)) {**

**Toast.makeText(this, "Student Deleted", Toast.LENGTH\_SHORT).show();**

**} else {**

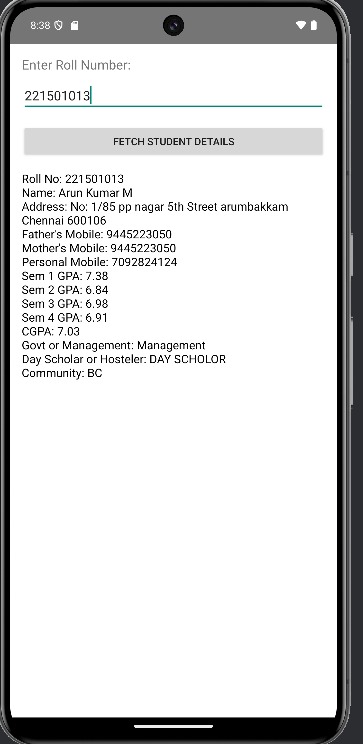
**Toast.makeText(this, "Error Deleting Student", Toast.LENGTH\_SHORT).show();**

**}**

**}**

**}**

**OUTPUT:**

****

**RESULT:**

**The program is created and executed successfully.**