

Lab 2: SQL Practice

CSL303: Database Management Systems

August 12, 2025

Objective

To practice writing SQL queries for a variety of tasks, ranging from simple data retrieval to complex joins and aggregations. This lab uses a pre-populated SQLite database named `students.db`.

Setup

Before you begin, you must create the SQLite database from the provided SQL script. Run the following command in your terminal from the same directory where `lab2_data.sql` is located:

```
sqlite3 students.db < lab2_data.sql
```

This command will execute the SQL script, creating the necessary tables (`Students`, `Courses`, `Enrolled`) and populating them with data. You can now open the database and run the queries for the exercises below.

```
sqlite3 students.db
```

Exercises

For each question, write a single SQL query that produces the required result.

Part 1: Simple Retrieval (SELECT, WHERE, ORDER BY)

1. Find the names and Grades of all students in discipline 'Physics'.
2. List the course names and their credit values for all courses worth 4 credits.
3. Retrieve the student ID and course ID for all enrollments where the grade is 'F'.
4. List all student names and their discipline, sorted alphabetically by discipline, and then by name for students in the same discipline.

Part 2: Joins

1. List the names of all students who are enrolled in 'Databases' (CSL303).
2. Find the names of all courses that 'Ben Taylor' is enrolled in.
3. Show the name of each student and the name of each course they are enrolled in, along with their grade.
4. List the names of all students who are **not** enrolled in any courses.
5. Find the names of all students who received a 'B' in a 3-credit course.

Part 3: Aggregation and Grouping

1. For each discipline, find the number of students in it.
2. Count the number of courses offered, grouped by the number of credits (i.e., how many 3-credit courses, 4-credit courses, etc.).
3. For each course, find the number of students enrolled. List the course name and the student count.
4. Find the 'cid' of all courses that have **more than 2** students with a grade of 'A'.

Challenge: Subqueries and Complex Queries

1. Find the names of all students who are enrolled in 'Data Structures' (CSL211). Use a subquery in your **WHERE** clause.
2. Find the names of courses that have at least one student enrolled but also have at least one student with a grade of 'F'.
3. Find the names of students who are enrolled in both 'Intro to Programming' (CSL100) and 'Databases' (CSL303).