

Project 3: SQL

Objectives

Become familiar with the fundamentals of SQL. Learn how to query, insert, update and delete records in a relational database.

Instructions

Read The Definitive Guide to SQLite, 2nd ed. pages 47 - 92 (all of chapter 3, and chapter 4 “Modifying Data: Insert, Update, Delete.”)

Explore the Database

Download the Project 3 sqlite3 database file called `university.db`.

Using the sqlite3 client, open the database.

Use the `.schema` command to see a representation of the database schema. It should look familiar.

To better format your output, use the pragma commands:

```
.mode column
```

```
.header on
```

Execute `SELECT * FROM students;` and verify that the output looks like this:

id	name	graduation_year	major_id
-----	-----	-----	-----
1	Charlie	2025	1
2	Lucy	2017	4
3	Linus	2020	1
4	Marcie	2016	1
5	Violet	2031	2
6	Schroeder	2015	4

Using the provided database, either explain what the following queries mean in english, or write the SQL queries that satisfy the statements on the next page.

Queries

```
SELECT * FROM students;
```

```
SELECT name FROM students
  WHERE graduation_year > 2015
  AND graduation_year < 2020;
```

```
SELECT COUNT(*) FROM students, departments
  WHERE major_id = departments.id
  AND departments.name = 'Computer Science';
```

```
SELECT courses.title FROM courses, departments
  WHERE departments.name = 'Computer Science'
  AND courses.department_id = departments.id;
```

```
SELECT title as course_name, professor_name as instructor
  FROM courses, sections
  WHERE course_id = courses.id
  AND year_offered = 2012;
```

Statements

The course titles and department names of all courses.

The names of all students and their major (department) names.

The names of all students enrolled in courses, and the course names that they are enrolled in.

The names of all students, the course names of the sections they are enrolled in, the department name associated with the course, and the professor's name for the sections each student is enrolled in, *ordered by the students' name*.

Question

Why do you think the author of this assignment wrote the statements the way he did? In other words, why did he write "The collection of ____" instead of "Show me all the ____" ?

Presentation

You should submit just one page for this assignment.

Good writing is important, but you may be brief with your answers for this assignment. Nevertheless, *writing with poor grammar, misspellings, etc will be handed back for re-writing (no grade penalty).*

Bring a hard copy of your results (your answers and queries) to class on the due date.

Grading Criteria (30 points)

Completion & correctness of work (30 points)

Bring a hard copy of your results (your answers and queries) to class on the due date.