

# Project 1: Hello DBMS

## Objectives

Set up a working environment for interacting with SQLite databases.

## Instructions

Read The Definitive Guide to SQLite, 2nd ed. front cover to page 46 (Introduction, Chapter 1 and Chapter 2).

Download and install SQLite 3.

Ensure that the sqlite3 executable is on your PATH. *Ask on Piazza if you do not know how to do this!*

## Explore the Database

Download the Project 1 sqlite3 database file.

Using the sqlite3 client, open the mystery database.

Use the `.schema` command to see a representation of the database schema.

Use the `SELECT * FROM _____;` statement to see the data within the tables.

## Reverse-Engineer an ER Diagram

While you should be wary of assuming the meaning of a particular field based upon its name, well-named fields are meant to allude to their meaning. For example, a field named `gender` is most likely an attribute that represents gender; no documentation is necessary for you to infer this meaning.

This caution is particularly important when assuming a field is a foreign key. For this assignment, however, you may assume that all fields ending in `_id` are foreign keys. You may also assume that the prefix of a foreign key field name alludes to the table to which it relates. For example, a field called `manufacturer_id` might be a foreign key associated with the table `manufacturers`.

Draw an ER diagram that best matches the world modeled by the relational schema you see in the Project 1 database. *Try to indicate entities, attributes, relationships, cardinality and degree of participation.*

## Answer the Following Questions (*for each, explain why*)

Which professor teaches multiple sections of one course?

Which professor teaches multiple courses?

Which courses are not offered? (Meaning, they have no section.)

What department does not have any students majoring in its discipline?

Which student is not enrolled in any courses?

Which course has no students enrolled?

In the enrollments table, grade values are NULL. What do you think this means?

### **Presentation**

You should submit two pages for this assignment: one containing the ER diagram and another containing the answers to the exploratory questions.

Remember, for each question, you must explain why you come to the particular conclusion.

Good writing is important. Be certain to answer in complete sentences. *Writing with poor grammar, misspellings, etc will be handed back for re-writing (no grade penalty).*

Bring both pages of your results (the ER diagram and your answers) to class on the due date.

### **Grading Criteria (30 points)**

ER diagram	14 points
Questions	16 points

Bring both pages of your results (the ER diagram and your answers) to class on the due date.