

DATA 201

Database Technologies for Data Analytics

Spring 2025
Sections 21 and 71
Instructor: Ron Mak

Assignment #4a

Assigned: Thursday, February 13
Due: Thursday, February 20 at 5:30 pm
Team assignment, 100 points max

Constraints and normalization

- Normalize the tables of your team database to 3NF if they aren't already normalized. Use ERDPlus to draw a relational schema diagram of the normalized tables of your database. You can use your database from Assignment #3 or create a new one. You should start with an ER diagram which you then map to a relational schema.
- Generate SQL **CREATE TABLE** commands for your tables. Be sure they include foreign key constraints. Use the commands in a Python notebook.
- In your Python notebook (it can be the same one as above), use SQL **INSERT INTO** commands to populate each table with around 5 rows of example data. To practice using named constraints, create named foreign constraints for the tables, and use the **ALTER TABLE** command with a named constraint on at least one table.
- In your Python notebook, use SQL **SELECT** commands to display the contents of each table in dataframes.

What to submit

- The relational schema diagram of your normalized tables.
- Your Python notebook that uses **CREATE TABLE** commands to create the tables.
- Your Python notebook that uses **INSERT INTO** commands and **ALTER TABLE** commands to alter and populate your tables.
- Your Python notebook that uses **SELECT** commands to display the tables in dataframes.

Zip all your texts, screen shots, and Python code into one or more files for submission into Canvas.

Rubric

Criteria	Max points
<ul style="list-style-type: none">• Relational schema (mapped from an ER diagram).	<ul style="list-style-type: none">• 20
<ul style="list-style-type: none">• CREATE TABLE commands with named foreign key constraints (Python code).	<ul style="list-style-type: none">• 35
<ul style="list-style-type: none">• INSERT INTO and ALTER TABLE commands (Python code).	<ul style="list-style-type: none">• 35
<ul style="list-style-type: none">• SELECT commands to display table contents in dataframes (Python code).	<ul style="list-style-type: none">• 10