DATA 225
Database Systems for Analytics

Fall 2023
Section 21
Instructor: Ron Mak

Assignment #4a

Assigned: Monday, September 18
Due: Monday, September 25 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 can 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 and the SQL ALTER TABLE command, create named constraints for at least one of 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.
<table>
<thead>
<tr>
<th>Criteria</th>
<th>Max points</th>
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<tbody>
<tr>
<td>• Relational schema.</td>
<td>• 20</td>
</tr>
<tr>
<td>• <code>CREATE TABLE</code> commands with foreign key constraints (Python code).</td>
<td>• 35</td>
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<tr>
<td>• <code>INSERT INTO</code> and <code>ALTER TABLE</code> commands (Python code).</td>
<td>• 35</td>
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<tr>
<td>• <code>SELECT</code> commands to display table contents in dataframes (Python code).</td>
<td>• 10</td>
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