Project 2023 – TDT4145

The problem itself is described in another document. Here, the delivery will be described. You are allowed to answer in English or Norwegian for both deliveries, but don't mix the two languages.

Delivery, part 1: ER-model and relational schema

DB1: Deadline 13. March 08:00 (08:00 am) on Blackboard.

a) An ER-model showing your complete data model. You may use all ER and EER concepts used in the course TDT4145. Document the assumptions you have made, and possible constraints that cannot be expressed through the ER model.

b) The ER-model translated to relational schemas (tables). Describe keys and foreign keys. You should explain and argue for the normal form of all your tables. For each table you must explain why the table is on 4th normal form and explain in case of a lower normal form why you had to choose this normal form.

c) An SQL script that constructs the database with tables. Remember primary and foreign keys, as well as other restrictions that you find necessary. Document restrictions that must be managed by the application program since they are not implemented in the relational schema.

Save your answers in a PDF-document. The SQL script should also be attached as a .sql-file. et the document be concise and the figures be easy to understand. Remember to write the names of all group members in your delivery (PDF + SQL) and deliver on BlackBoard.

DB2: Deadline 24. March 23:59 (11:59 pm) on Blackboard

Delivery 2: The Coffee database implemented in Python using SQLite.

The database should be implemented in Python based on the schema given in the first delivery. The requirements for desired functionality must be implemented and fulfilled. The most simple solution is to create a text-based interface that may be run in a terminal window (cmd/bash). Remember that the goal of the project is to practice SQL and the database access in Python. The following should be delivered:

a) The Python source code with SQL packed in a zip-file.

b) The database file of your project's SQLite database.

c) Textual output from the queries in the usecases.

Let the document be concise and easy to understand. Remember to write the names of all group members in your document (PDF) and deliver on BlackBoard.

Criteria for evaluating the project

Here are the criteria which are used to evaluate the project:

DB1

1. The use of entities vs. relationships vs. attributes. “Correct” level of use of these concepts. It should be easy to understand what these concepts model.

2. Use of keys. Natural vs. generated keys.

3. Constraints in the model, e.g., cardinalities. Are they used correctly?

4. Correct translation/mapping to the relational model. Correct description of normal forms.

5. Mapping to SQL tables. Correct use of SQL. Correct use attribute domains. Use of key constraints and Unique. Use of foreign keys constraints.

6. The documents should be concise and the figures should be clear.

DB2

1. Correct use of SQL in Python.

2. Understandable and readable code

3. It should be possible to regenerate your delivered output by the programs and database delivered.

With respect to the marks used, we rely on the general description found here:

https://i.ntnu.no/wiki/-/wiki/Norsk/Karakterbeskrivelser+for+teknologiske+fag