Department of Computer Engineering, METU

# CENG 302

Fall 2023-2024
Homework 3 - SQL Queries
Due date: 5 December 2023, Tuesday, 23:59

## 1 Database schema

Author (authorID, name, surname)
Book (isbn, authorID, title, publisher, subject)
Borrowed (isbn, dueDate, userID, returnDate)
Student (studentID, name, surname, email)

You are required to write SQL queries against this schema, which is the same schema from the 2nd homework. Please follow the instructions in the next section to load the CSV files given in the homework files.

## 2 Instructions for loading the data into PostgreSQL server

- Open the CSV files. This is a way of storing values in a table. First line contains the column headers:

```
authorID,name,surname
11111,Ramez,Elmasri
11112,Yuval Noah,Harari
...
```

The separators can be anything, as long as they don't appear in the values. Usually comma (,) or semicolon (;) is preferred in these type of files.

Open DBeaver and follow these steps to prepare the database:

1. Click plus (+) icon on top left to add a new database connection. (ss1.png)
2. Choose "PostgreSQL" (ss2.png)
3. Type "localhost" for host, "postgres" for database, "postgres" for username. For password, type the password you set in PostgreSQL installation. Then click "Finish" to add the connection. (ss3.png)
4. After these, you should see the "postgres" among the added connections on left panel. Do right-click and "Connect" to the database. (ss4.png)
5. You should see that the connection is established. (ss5.png)
6. Then do right-click again, hit "SQL editor" > "Open SQL script" (ss6.png)
7. Type the database creation statement "CREATE DATABASE ceng302_hw3" and hit right arrow to execute it. (ss7.png)
8. You can disconnect from postgres database by right-click on it on left panel and hit "Disconnect". No need to save anything.
9. Now you can connect to the new database by doing step 1,2,3 but this time change the database to "ceng302_hw3" (ss8.png)
10. Do steps 4,5,6 for the new database.
11. Type your CREATE TABLE queries and run them to create the tables. (ss9.png)
12. After the table is created, on left panel, choose "ceng302_hw3" > "Schemas" > "public" > "Tables" > "author" and double click on the table name. If you can not see the table name, hit F5 to refresh the left panel. (ss10.png)
13. Import CSV data given to you, by right clicking on the table name and hitting "Import data" (ss11.png)

14. Say "Next" for import source, choose the author.csv file for input file. Make sure that extension is CSV and column delimiter is comma (,). (ss13.png)
15. Do Next & Proceed until the end to finish importing.
16. Do the same for all tables. You should be able to see the data by double-clicking on table name and opening Data tab. (ss14.png)

# 3 Tasks

1. Create table queries (20pts):

   - Write create table query for author table. Given example is the simplest form, you are required to tell if a column is a primary key, or a foreign key etc.
   - Write create table query for book table.
   - Write create table query for student table.
   - Write create table query for borrowed table.

2. SQL queries that returns the following (80pts). Write a **SINGLE** query to return the desired result. Step by step queries will **NOT** be accepted.

   - List isbn of the overdue books which supposed to be returned by 8.10.2023 (5pts)
   - List isbn of all books which are written by Yuval Noah Harari. (5pts)
   - List studentID of the student(s) who borrowed '1984' (10pts)
   - List studentID of the student(s) who borrowed books at least one for both "Database" and "Civilization" (10pts)
   - List studentID of the students who have borrowed books which are written by 'Michio'. (10pts)
   - List isbn of all the other books of the author who wrote Sapiens. (10pts)
   - List the student name and surname of the "bookworm" student. (10pts)
   - List name and surname of the student(s) who have borrowed all the books that are borrowed by "Emre" (20pts)

# 4 Regulations

- The assignment must be completed individually; copying from other students and other resources is strictly forbidden.
- You have to submit your homework as ZIP file through ODTUClass. Put your solutions to tasks separately like,
  - q1-1.sql
  - q1-2.sql
  - ...
  - q2-1.sql
  - ...
  - q2-8.sql

  and ZIP all of them into 1 file and submit the ZIP file.
- Late submissions will be graded with a penalty of 5% for each late day (until 5 days)