

Database Management Systems, Aug–Dec 2023

Assignment 4, 12 November 2023, due 20 November 2023

Setup You have to execute some SQL queries on the sample university database used in the textbook by Silberschatz et al and report your results. You have two options.

1. *Set up the database on your own laptop*

- From https://www.db-book.com/university-lab-dir/sample_tables-dir/index.html, download the SQL files to set up the university database. For the tables, there are two options: the small tables used in the textbook examples, and large tables with random data. You should download the *small tables*.
- Create and populate the database from the downloaded files.
- Submit a text file `Assignment4.txt` recording all your queries and their responses. You should be able to record your SQL session in a text file. For instance, in *MySQL*, you can save the entire session to a file `Assignment4.txt` by using the following command.

```
mysql --tee=Assignment4.txt
```

2. *Use the online SQL interpreter*

An online SQL interpreter is provided at <https://www.db-book.com/university-lab-dir/sqljs.html>

- This already has the sample university database with the small tables preloaded.
 - Put all your SQL queries into a single text file called `Assignment4-SQL-queries.txt`.
 - For each query, execute it using the online SQL interpreter and take a screen dump as a pdf file using “Print to file” from the browser. Use the following naming convention for the pdf files. For the solution to question number *N*, the pdf dump should be named `Assignment4-SQL-answer-N.pdf`.
 - Submit the SQL query text files and screen dumps as separate files on Moodle.
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Task Write SQL queries for the following.

1. For each department, report the faculty member(s) with the *minimum* salary in that department. The output should contain the instructor ID, instructor name, department name and salary.
 2. Find all faculty members whose office is not in the building Taylor. The output should contain the instructor ID, instructor name and building name where the instructor’s office is located.
 3. Find all faculty members who teach exactly one course. The output should contain the instructor ID, instructor name, the course ID and title of the course taught by instructor.
 4. Report the number of courses that have been taught by each faculty member. If a faculty member has not taught any course, the output should have a row for that faculty member with an entry 0 or NULL against number of courses taught.
 5. Find all courses that have more than one pre-requisite. The output should contain the course ID, course title and the number of pre-requisites for that course.
 6. Find all students who are registered for at least two courses. The output should contain the student ID, the student name and the number of courses that the student is registered for.
 7. Find all students who have registered for the same course more than once. For each instance where a student has registered for the same course more than once, the output should contain a row with the student ID, the student name, the course ID, the course title, the most recent semester and year when the course was registered for and the number of times the student has registered for that course.
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