DBMS Homework 3

End of lecture 6
20210330

Homework 3

Based on the ER model and relational database you built in Homework 1 and 2 , we design SQL statements to extract useful or interesting information in this homework. We will use 'MySQL Command line client - Unicode'. For your homework, please design:

Basic select

Write a SELECT statement on one table that contains three or more conditions connected by AND, OR, and NOT comparison operators. You must use AND, OR, NOT each at least once.

Basic projection

Write a SELECT statement on one table to show the effect of projection (show less attributes than there are attributes in the table.)

Basic Rename

Write a SELECT statement that selects some tuples from a table, and uses rename to make the names for all the attributes easier to read.

UNION

- Write a statement to demonstrate the UNION operation between two tables in your database. If your database do not already have two tables that are union-compatible, you need to create a new table so that you have two union-compatible tables. If that's the case, you need submit your CREATE TABLE statement for the new table along with your UNION statement.

Equijoin

Write a SELECT statement that performs an equijoin between two tables.

Natural join

Write a SELECT statement that performs a natural join between two tables.

Theta join

Write a SELECT statement that performs a theta join between two tables which is not a equijoin.

- Hint: for the last 3 problems, you need clearly understand the definition of equijoin, natural join and theta join.

Homework 3 (2)

- Three table join: Write a SELECT statement that performs joins among three tables
- Aggregate: Write a SELECT statement that demonstrates aggregate functionality by using GROUP BY and MAX, MIN, and COUNT
- Aggregate 2: Write a SELECT statement that demonstrates aggregate functionality by using GROUP BY and HAVING clauses and AVG, SUM, and COUNT
- IN: Write a SELECT statement that uses IN operator and explicit set value
- IN 2: Write a SELECT statement that uses IN operator and dynamic set value
- Correlated nested query: Write a SELECT statement that implements a correlated nested query using the IN operator
- Correlated nested query 2: Write a SELECT statement that implements a correlated nested query using the EXIST operator
- 3% bonus 1: Write a SELECT statement that implement a left outer join in MySQL.
- 4% bonus 2: Write a SELECT statement that demonstrate the aggregate functionality and uses the HAVING clause.
- 3% bonus 3: Write a SELECT statement that implement correlated nested query using the NOT EXIST operator

Homework 3 (3)

- Note:
  - For you to get points for each problem in this homework, you need to make sure the result of each of your SQL statement is not an empty relation. For this, you may need to insert additional rows into your table. You do not need to show these insert statements in your homework submission. Just insert the necessary row to ensure that none of your statement result is empty.
  - If one of your SQL statement returns an empty relation, you will not get points for that problem, even if the syntax of your SQL statement is correct.

- Hint:
  - For your get good points for this homework, the best way is to ensure you fully understand the definitions of all related SQL operators, clauses, and commands before you start to solve each of your homework problems.

TA Grading Guidelines

- 5% Basic select
- 5% Basic projection
- 5% Basic Rename
- 5% UNION
- 10% Equijoin
- 10% Natural join
- 10% Theta join
- 10% Three table join
- 10% Aggregate
- 5% Aggregate 2
- 5%
- 5% IN
- 5% IN 2

- 10% Correlated nested query
- 10% Correlated nested query 2
- Total 100%
- 3% 3% bonus 1
- 4% 4% bonus 2
- 3% 3% bonus 3
- Total 110%

Homework 3 submission

- Deadline: 4/13 Tue. 14:00
- File name:
  - 將檔案命名為學號.sql (例如: r07000001.sql)
  - 不加入任何資料夾直接壓縮為.zip 檔上傳
  - 禁止使用其他壓縮方式，也禁止使用其他壓縮方式後只改附檔名
  - 格式錯誤一律扣 10 分
- Submission: Ceiba
  - 參照 Ceiba 作業區檔案 example.sql
  - 請將 SQL command 依照下列段落排列整齊，每段以註解開頭
  - 程式碼不能跳error，有 error 一個扣 10 分
  - 不要寫任何題目沒有要求的指令(例: DESCRIBE)，視嚴重程度扣分，也不要加多餘註解。
  - 只要交程式碼，不要交執行結果。

Homework 3 submission

- 其他
  - 若因作業需求小幅更動DB 是可以的，此次不用再將更動部份額外打成pdf，交程式碼即可
- Delay
  - One day: original score * 0.8
  - Two days: original score * (0.8)^2
  - More than three days: get no points
- TA hour: Thu. 14:00-15:00 at BL603 (博理603)
- TA mail: ntu2021sql@gmail.com
- FB group: NTU Database 2021 Spring