KOREA UNIVERSITY
DATABASE LAB

Chapter 3 - Lab

SQL Practice 1

Useful PostgreSQL Commands

- \h: help, \h $command$: help on the command
- \d: list tables, \d $table\_name$: describe table
- \i $file\_name$: import SQL script
- \c $database\_name$: connect to the database
- \q: quit PostgreSQL
- History 기능 제공 (위, 아래 화살표 사용)

Database Setup

1. Download the following two sql files from blackboard
   - DDL.sql
   - smallRelationsInsertFile.sql
2. Make university schema and insert the data into relations, using sql files
   a. Execute PostgreSQL SQL Shell(psql)
   b. Create a new database using 'CREATE DATABASE practice1;' command
   c. Run '\c practice1' // connection to database 'practice1'
   d. Run '\i [filepath]/DDL.sql' (Don't use whitespace or backslash '\' in the filepath)
      - 문제가 있으면 파일을 조건에 맞는 디렉토리로 옮겨서 사용
   e. Run '\i [filepath]/smallRelationsInsertFile.sql'

Exercise 1

- Write the following queries in SQL, using the university schema.
  a. Find the titles of courses in the ‘Comp. Sci.’ department that have 3 credits
  b. Find the IDs of all students who were taught by an instructor named ‘Srinivasan’; make sure there are no duplicates in the result
  c. Find the highest salary among all instructors
  d. Find the enrollment (i.e. the number of students) for each section that was offered in Fall 2017
     - “course_id, section_id, number of students” must be displayed

Exercise 2

- Make a relation $grade\_points(\underline{grade}, points)$, which provides a conversion from letter grades in the $takes$ relation to numeric scores.
- The tuples of the $grade\_points$ relation: (A+, 4.3), (A, 4.0), (A-, 3.7), (B+, 3.3), (B, 3.0), (B-, 2.7), (C+, 2.3), (C, 2.0), (C-, 1.7), (D+, 1.3), (D, 1.0), (D-, 0.7), (F, 0.0)
- The grade points earned by a student for a course offering (section) is defined as the number of credits for the course multiplied by the numeric points for the grade that the student received.
- You can assume for simplicity that no $takes$ tuple has the null value for grade.
  a. Find the total grade-points earned by the student with ID 12345, across all courses taken by the student
  b. Find the grade-point average (GPA) for the above student, that is, the total grade-points divided by the total credits for the associated courses
     - 평균 평점 = (과목별 점수 * 과목의 학점 수) / 전체 학점 수
     - $grade\_point$ 릴레이션을 사용해서 '점수 (A, B, C)'를 '숫자'로 변환
  c. Find the ID and the grade-points average of every student
  d. Find the ID and the grade-points average of students whose GPA is greater than 3.0

Homework

- Complete today's practice exercises
- Write your queries and take screenshots of execution results
- Submit your report on blackboard
  - 10:29:59, April 6th
  - **Only PDF files** are accepted
  - **No late submission**

End of Lab