

The Chinese University of Hong Kong
Department of Systems Engineering and Engineering
Management

**SEEM5770/ECLT5840 Open Systems/Electronic
Commerce**

2013-14 Assignment 2: SQL

This assignment is for understanding SQL, which is worth of 15% of the total assessment.¹ The due date for the assignment 2 is 11:00pm, Wednesday, November 13, 2013. This assignment counts for 15% of the unit's assessment. You must submit to the assignment box **B10** (ERB 5th floor). You need to put down your student id and your name.

The lectures on database part are based on the textbook of "Database System Concepts" (6th Edition). The website for this textbook is at <http://codex.cs.yale.edu/avi/db-book/>. There are solutions to practice exercises in most chapters. We mainly discussed SQL (Chapter 3). It is recommend for you to try the practice exercises and see whether your answers are correct by checking the answers provided at the website. It helps.

In the course website, there is a document (under the Laboratory) showing how to install a well-known database management system MySQL, which is free. There are tutorials to help you to install and configure MySQL, as announced. You do not need to use MySQL to answer the questions. But it helps, if you try to use MySQL.

1 Question

A relational database schema for an application is a set of relation schemas. Consider a database for a university. Its relational database schema is highlighted in the slide 3.3 (Introduction to SQL, **database-3.ppt**), which consists of 11 relation schemas (tables). The relation name (table names) are shown in

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the blue rectangles. The corresponding attribute names (column names) are shown in the white box below the relation names. The underlined attribute names in a relation schema shows that the combination of their values in a relation is unique. For example, in the student relation, every student will have a unique ID. The arrow “ $\rightarrow$ ” from an attribute A in a relation schema R to an attribute B in another relation schema S , $A \rightarrow B$, shows that B ’s value must appear in A . For example, in the course relation, any value in the attribute dept_name must appear in the department relation. It implies a course must be offered by an existing department at the university. The relation names and attribute names are self-explained.

Formulate the following queries using SQL statements.

1. Show all the information about an instructor with an ID (1113) in the instructor relation.
2. Show the course_id and the title for the courses offered by 'SEEM' department. (Hint: Use the department relation and the course relation.)
3. Find the distinct course titles the students in 'SEEM' department take. (Hint: Use the student relation, the takes relation, and the course relation.)
4. Find the distinct course titles the students in 'SEEM' department take that are not offered by 'SEEM' department. (Hint: Use the student relation, the takes relation, and the course relation. In the student relation, the attribute dept_name records where the student belongs, and in the course relation, the attribute dept_name records which department offers.)
5. Show the total number of courses offered in year 2013. (Hint: Use the takes relation.)
6. Show the names of the departments that offer the largest number of courses in year 2013. (Hint: Use the course relation and the takes relation.)
7. Show the department name and the average number of students an instructor supervises in the department, for all departments. (Hint: Use the instructor relation and the advisor relation.)
8. List the name of the student who take the courses his/her advisor teaches. (Hint: Use the following relations: student, instructor, advisor, takes, teaches, course, and section.)