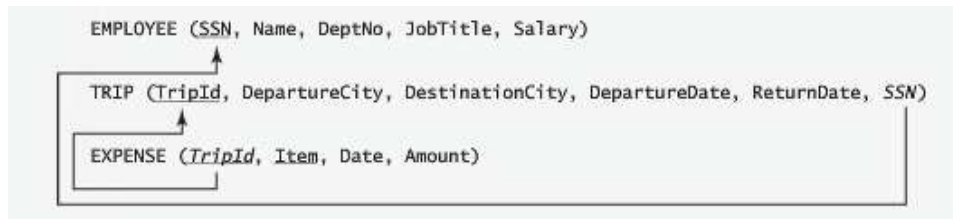# SQL Assignment

Tom Kelliher, CS 417

1. Write the DDL commands needed to create a relational database for the following schema:

   Use appropriate data types and include the appropriate foreign key and check constraints. State the assumptions you make in choosing data types and in including constraints.

2. For the following, use the University schema from the SQL class exercise. Write SQL queries to find:

   (a) Using `takes`, the enrollment in each course. Display the course ID and the enrollment.

   (b) Display the course ID and enrollment of those courses with an enrollment of two or fewer students;

   (c) Using a sub-query, display the course ID and enrollment of the course with the maximum enrollment.

   (d) Using a sub-query, display the course ID and enrollment of the courses with the minimum enrollment.

   (e) The enrollment in each section of each course. Display the course ID, the section ID and the enrollment.

   (f) The course IDs of those courses in `teaches` with a course ID that begins with `BIO-`. Each course ID should be displayed only once.

   (g) Using a sub-query and `IN`, the names of those instructors who have taught one or more of those courses. Each name should be displayed only once.

   (h) The names of those instructors who have taught all of those courses. Each name should be displayed only once.

   This time, you may *not* assume that SQL has a `DIV` operator. Instead, implement division using the "counting" technique described on slides 29 and 30 of the *On Making Relational Division Comprehensible* presentation available on the course web site on phoenix.

   Note: If you're not careful, you'll be counting sections of courses rather than courses.

   You queries should be written in such a way that they would work correctly with any instance of the database.