CS348: Introduction to Database Systems (S'17)

Assignment 3 (due by 10am on Monday, July 10, 2017)

1 Overview

The assignment consists of several questions; as an aid to scheduling your work on this assignment, you should plan to spend 5 to 7 hours in total on this assignment.

Question 1.

Assume your company is developing a student grade management system for sale to universities. An initial analysis phase of the project has resulted in the following (informal) description of relevant data for the system.

- In a given university, there are many departments, with each offering many courses.

- A course is offered by one and only one department.

- The properties of a department that are relevant include its name, its chair and the location of its department office.

- Every course is represented by its course number and the semester in which the course is offered. For example, the pair "CS348" and "17S" denotes the Computer Science 348 course offered in the spring term of 2017.

- Each course has at least one section and at most four sections.

- The name of a course is also relevant (e.g. "Introduction to Theory of Computation").

- Students can major in one department; each department can have any number of students majoring in it.

- Students can enroll in any number of courses (sections), with at most five taken per semester.

- For each course taken by a student, a grade is recorded.

- Each course can have a maximum of four hundred students enrolled.

- Each course section has an instructor.

- The properties of a student that are relevant include the student's name and identification number.

- Student identification numbers are unique within a given university.

Based on this requirements definition, construct an E-R diagram for the university system. An integral part of the assignment is to *resolve* under-specified portions of the requirements in a form additional *written* assumptions you made during the design process.

Question 2. Translate the E-R diagram you constructed in Question 1 to a collection of relational tables with the appropriate integrity constraints attached.

2 Assignment Submission

You should submit:

1. a PDF file `a3.pdf` containing your ER diagram (hand-drawn and scanned solutions, perhaps with additional assumptions stated in English).

2. a file `a3.sql` containing SQL DDL commands for part 2 of this assignment.