CS 405G: Introduction to database systems
Assignment 1

Assigned: Sep 12, 2014
Due: Sep 24, 2014

Submission instructions: Please try to prepare the assignment in word document (hand-written homework is also acceptable). Print and bring them to class on the due date. Put the course number and your name at the top left corner of the first page of your homework. Please follow the rules in the course syllabus regarding late homework and plagiarism.

Problem 1 (100 points): Consider the following scenario modeling courses, students, professors, departments, and the like at a single university in a single semester.

1. Each student has a name, a unique PID, and an address. A professor has a name, a unique PID, and belongs to a department. We also want to record the age and office of the professor. Each course has a name, a number, an offering department, a classroom, and an enrollment. Each department offers only one course with each number.

2. Each department has a unique name. Each department has at most one chairperson who is its head (there are times when a department may not have a chairperson). Each chairperson can be the head of at most one department.

3. Each student enrolls in a certain number of courses in the semester. At most one professor teaches each course. Each student receives a grade in each course he/she is enrolled in. In turn, each student evaluates the professor teaching the course.

4. A course can have multiple pre-requisites. A course can be pre-requisites for multiple courses.

Questions
1. Identify all the entitie types and their attributes.
2. Identify all relationship types and their attributes and describe their min and max cardinality.
3. Draw the E-R diagram for this database requirement.
4. Convert the E-R diagram you drew to a collection of database relations.
5. Identify primary keys and foreign keys.