E-R Diagram Exercises 2

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1. Consider the following set of requirements for a university database that is used to keep track of students' transcripts.

a. The university keeps track of each student's name, student number, permanent address, phone, birthdate, major department, minor department (if any), and degree program (B.A., B.S., Ph.D., ...). Some user applications need to refer to the city, state, and zip of the student's permanent address, and to the student's last name. Student number attribute has unique values for each student.

b. Each department is described by a name, office number, office phone, and college. Name attribute has unique values for each department.

c. Each course has a course name, description, course code, course credits, and offering department. The value of course code is unique for each course.

d. Each section has a semester, year, course, and section number. The section number distinguishes different sections of the same course that are taught during the same semester/year; its values are 1, 2, 3, ..., up to the number of sections taught during each semester.

e. A grade report has a student, section, letter grade, and numeric grade (0, 1, 2, 3, 4 for F, D, C, B, A, respectively).

Design and draw an E-R diagram for the described application above. Specify key attributes of each entity type and structural constraints on each relationship type. Note any unspecified requirements and make appropriate assumptions to make the specification complete.

2. Convert the following E-R diagram into a relational database schema.