- **Reference Databases for answering questions 11 and 12**

  classroom(building, room_number, capacity)

  department(dept_name, building, budget)

  course(course_id, title, dept_name, credits)

  instructor(ID, name, dept_name, salary)

  section(course_id, sec_id, semester, year, building, room_number,

  time_slot_id)

  teaches(ID, course_id, sec_id, semester, year)

  student(ID, name, dept_name, tot_cred)

  takes(ID, course_id, sec_id, semester, year, grade)

  advisor(s_ID, i_ID)

  time slot(time_slot_id, day, start_time, end_time)

  prereq(course_id, prereq_id)

  **Figure 2.8 Schema of the university database**

- **Reference Databases for answering questions 13**

  person(driver_id, name, address)

  car(license, model, year)

  accident(report_number, date, location)

  owns(driver_id, license)

  participated(report_number, license, driver_id, damage_amount)

  **Figure 3.17 Insurance database**

**3.11** Write the following queries in SQL, using the university schema.

a. Find the ID and name of each student who has taken at least one Comp. Sci. course; make sure there are no duplicate names in the result.

b. Find the ID and name of each student who has not taken any course offered before 2017.

c. For each department, find the maximum salary of instructors in that department. You may assume that every department has at least one instructor.

d. Find the lowest, across all departments, of the per-department maximum salary computed by the preceding query.

**3.12** Write the SQL statements using the university schema to perform the following operations:

a. Create a new course "CS-001", titled "Weekly Seminar", with 0 credits.

b. Create a section of this course in Fall 2017, with *sec_id* of 1, and with the location of this section not yet specified.

c. Enroll every student in the Comp. Sci. department in the above section.

d. Delete enrollments in the above section where the student's ID is 12345.

e. Delete the course CS-001. What will happen if you run this **delete** statement without first deleting offerings (sections) of this course?

f. Delete all *takes* tuples corresponding to any section of any course with the word "advanced" as a part of the title; ignore case when matching the word with the title.

**3.13** Write SQL DDL corresponding to the schema in Figure 3.17. Make any reasonable assumptions about data types, and be sure to declare primary and foreign keys.

**Ref:** Database System Concepts textbook: Chapter 3: (p. 119 in the DB textbook)