

Cs166 Fake Midterm

1) A university database contains information about professors (identified by social security number, or SSN) and courses (identified by courseid). Professors teach courses, each of the following situations concerns the Teaches relationship set. For each situation, draw an ER diagram that describes it (assuming no further constraints hold).

- a) Professors can teach the same course in several semesters, and each offering must be recorded.
- b) Professors can teach the same course in several semesters, and only the most recent such offering needs to be recorded. (Assume this condition applies in all subsequent questions.)
- c) Every professor teaches exactly one course (no more, no less).
- d) Every professor teaches exactly one course (no more, no less), and every course must be taught by some professor.

2) Consider the following schema:

Suppliers(sid: integer, sname: string, address: string)

Parts(pid: integer, pname: string, color: string)

Catalog(sid: integer, pid: integer, cost: real)

Write the following queries in relational algebra.

- a) Find the names of suppliers who supply some red part.
- b) Find the sids of suppliers who supply some red or green part.
- c) Find the sids of suppliers who supply some red and some green part.
- d) Find the sids of suppliers who supply every part.
- e) Find the sids of suppliers who supply every red or green part.

3) Consider the schema presented in problem 2. Write the following queries in SQL.

- a) Find the name of every part.
- b) Find the pname and cost of all parts supplied by “BMI Supply”.
- c) Find the sids of suppliers who supply some red and some green part.
- d) Find the sids of suppliers who only supply blue parts.
- e) Find the sids of suppliers who supply every part.