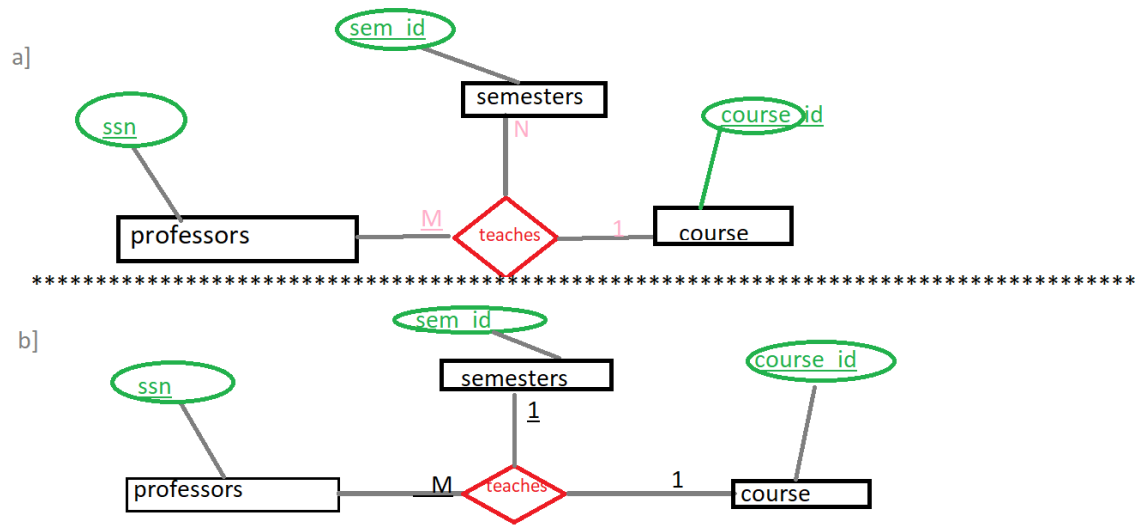# Database Technology
Assignment-1

<u>Exercise 1</u>

A university DB contains information about professors (identified by SIN) and courses (identified by course ID). Professors teach courses; each of the following situations concerns the Teaches relationship set.

List all candidate keys of the Teaches relationship set. 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, but only the most recent such offering needs to be records. Assume the above Situation (b) applies in all subsequent situations.

List all the keys possible in each of the following situations.

a. Every professor teaches a course, and every course is taught by some professor. b. Every professor teaches exactly one course, and every course is taught by exactly one professor.

a]

sem_id

ssn

semesters

N

course id

professors

M

teaches

1

course

****

b]

sem_id

ssn

semesters

1

course_id

professors

M

teaches

1

course

1a]
a) Entity sets
     ---> professor: with SIN underlined as the primary key,
     ---> course: with CID underlined as the primary key,
    ---> semester: with SID underlined as the primary key.

Relationship set
       ---> teaches : associates professor, course and semester. No other attributes.
        The cardinality constraint is m-to-m. There is a single candidate key of the teaches

        Relationship: {SIN, CID, SID}. The participation constraint can be anything.

b] This means total participation from professors and total participation from courses. Because it is still m-to-m, the candidate key remains {SIN, CID}.

 This time the relationship is 1-to-1. There are now two Candidate keys: either {SIN} or {CID}.

 Entity sets
   - employee : with SIN as the primary key;
   - department with DID as the key.

Relationship set
- works-in : with the attribute interval.
m-to-m relationship with the candidate key being {SIN, DID}.