Exercise 1

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.

(1)Professors can teach the same course in several semesters, and each offering must be recorded

Step 1- Entity Identification:-

Number of entity = professor ,Cource , Semester

Step 2 - Relationship Identification:-

Teach relation use with the entity professor, course and semester not contain any extra attribute

Step 3- Cardinality Identification:-

For professor with cource is many to many
For professor wth semester is many to many

Step 4-Identify Attributes:-

professor = pid , pname , p_age

Cource = cid, cname , cduration

Semester = sid

List all candidate keys of the Teaches relationship

= sid,cid,pid

(2)Professors can teach the same course in several semesters, but only the most recent such offering needs to be records.

due to only recent record need to store we take semester as attribute then

Step 1- Entity Identification:-

Number of entity = professor ,Cource

Step 2 - Relationship Identification:-

Teach relation use with the entity professor and course

Step 3- Cardinality Identification:-

For professor with cource is many to many

Step 4-Identify Attributes:-

professor = pid , pname , p_age

Cource = cid, cname , cduration

List all candidate keys of the Teaches relationship

= cid,pid

(3)Every professor teaches a course, and every course is taught by some professor

This is same condition as problem-2 so all the answer is same as above problem

Step 1- Entity Identification:-

Number of entity = professor ,Cource

Step 2 - Relationship Identification:-

Teach relation use with the entity professor and course

Step 3- Cardinality Identification:-

For professor with cource is many to many

Step 4-Identify Attributes:-

professor = pid , pname , p_age

Cource = cid, cname , cduration

List all candidate keys of the Teaches relationship

= cid,pid

(4)Every professor teaches exactly one course, and every course is taught by exactly one professor.

Step 1- Entity Identification:-

Number of entity = professor ,Cource

Step 2 - Relationship Identification:-

Teach relation use with the entity professor and course

Step 3- Cardinality Identification:-

For professor with cource is one to one

Step 4-Identify Attributes:-

professor = pid , pname , p_age

Cource = cid, cname , cduration

List all candidate keys of the Teaches relationship

= either cid or pid