uc3m | Universidad **Carlos III** de Madrid

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OpenCourseWare

Database

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Evaluation test 3 solution

QUIZ (0,5)

Take the quiz in this paper, there is **only one correct option**. (Correct option: +0.1 p; Incorrect option: -0.05 p).

1. **Question 1:** Given the relational graph that defines data stored about roads and their corresponding exits in a country, which of the following statements is true?

ROAD (Rcode, RLength)

DC/UC

EXIT (Num_exit, Road, Municipality)
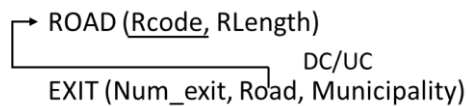
   A. Num_exit cannot be repeated in different roads
   B. Num_exit can be repeated in different roads

Question 2: Regarding the relational model constraints. Which of the following statements is true?

   A. A relation can have duplicate tuples.
   B. The order of the attributes is not relevant.

Question 3: If the insertion INSERT <'Mary', 'F', 'Brown', '577678989', '1969-03-20', '1287 Windswept, Katy, TX', F, 28000, '987654321',4> into EMPLOYEE is to be performed. What is the correct option?

EMPLOYEE (Fname, Minit, Lname, Ssn ,Bdate, Address, Sex, Salary. Super_ssn, Dno)

DEPARTMENT (Dname, Dnumber, Mgr_ssn, Mgr_start_date)

DEPARTMENT

| Dname	Dnumber	Mgr_ssn	Mgr_start_date
Research	5	333445555	1988-05-22
Administration	4	987654321	1995-01-01
Headquarters	1	888665555	1981-06-19

   A. The operation is not acceptable because the referential integrity constraint is violated.
   B. The operation is acceptable.

Question 4. Given the relational graph of the figure, which of the following statements is true?

DEPARTMENT (Dname, <u>Dnumber</u>, Manager_ssn, Manager_start_date)

DEPT_LOCATIONS (<u>Dnumber</u>, <u>City</u>)

DC/UC
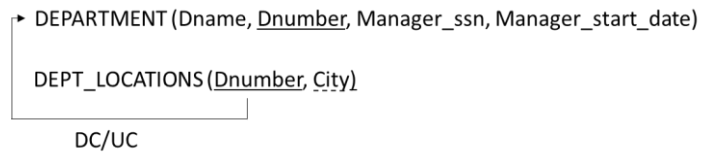
A. There could be more than one department with the same manager
B. A department could be located in several cities

Question 5. If we want to delete a volunteer from the VOLUNTEER relation, but there are volunteers of the type of health personnel (in HEALTH_PERSONNEL relation) related. What is the correct option?

VOLUNTEER (<u>Code</u>, Personal_data, Cod_headquarter, Type)

DC/UC

HEALTH_PERSONNEL (<u>Code_volunter</u>, Profession)
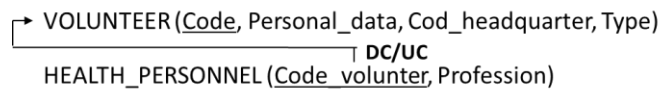
A. The delete operation is rejected.
B. The volunteer of the VOLUNTEER RELATION Is deleted, in addition, the related volunteers of the HEALTH_PERSONNEL relation will also be deleted.

Problem 2 (1 P)

The Ministry of Education works in a project to offer a database of online courses provided to students in different areas of knowledge. Keeping in mind that the semantic assumptions of this example are hypothetical, the requirements to be considered in the design of the database are explained below.

The information that we want to store in the database refers to the students enrolled in each course, taking into account the start date and the end date of each student in a given course and knowing that a student has been able to enroll in one or more courses and that one course has at least one student.

About the students, we will want to know their ID, full name, address, telephone number, nationality, but it is only interesting to know if the nationality is Spanish or not, and the email address. The email address is essential to take the courses and is also unique for each student.

The information regarding the courses consists of an identifier code, the name, title of the reference book that is used (although there are courses that do not have it) and Internet address where all the material that can be used during the course is located.

Each course is associated with a group of experts, called tutors, who are responsible for solving the doubts proposed by the students, their evaluation and even the shoulder for them to vent. Within the tutors of the same course there is an important figure that is the coordinator who is responsible for carrying out work of unification and planning. Do not forget that an expert person can be tutor of several courses and that in addition a course coordinator is a tutor. The information that you want to store in the DB about the tutors is the following: an identifier, full name and email address.

The project also takes into account that it has to provide students with access to the Internet and therefore has installed classrooms with all the necessary services for the full development of the courses. Each student is assigned to a classroom and maintenance of both computers and programs is carried out by classroom administrators.

Each classroom is assigned a unique code, a name and an address. The information needed for each administrator is their identifier, full name and email address.

You must:

a) Obtain the relational schema/diagram according to requirements with the primary and alternative keys. Indicate the foreign keys with their delete and update options.
b) Write additional semantic assumptions to the statement, if needed
c) Write additional semantic assumptions to the scheme, if needed