
OpenCourseWare

Database

Lourdes Moreno López
Paloma Martínez Fernández
José Luis Martínez Fernández
Rodrigo Alarcón García

Project 1 (Relational Model Design (2.1))



OpenCourseWare



Data Base

Bachelor's in Data Science and Engineering

SUBJECT: Project 1 (Design DB)

uc3m

Universidad
Carlos III
de Madrid

TITLE: The Olympic Games

1. Statement

The various Olympic venues found in each host city (such as for the Tokyo Olympic Games) are comprised of different sports complexes. Each venue is identified by a code; the address must also be stored. The sports complexes are subdivided into those in which only one sport is carried out and the multi-purpose sports centres. All the sports complexes have their own name, opening hours, address, and a corresponding manager. Moreover, the facilities total surface area, the number of different sports taking place there, the number of outdoor sports units and the number of indoor/covered sports units must be stored for each multi-purpose sports centre.

Information regarding the employees such as managers, supervisors, maintenance, cleaning, officials and security staff must also be stored. The ID number, name and surname(s), telephone numbers and possibly an email address must be stored for each employee.

The venues have three different categories of hospitality facilities: hotels, apartments, and restaurants. Each facility must be identified by the venue to which it belongs, an identification number; the capacity of the facility must also be stored. The type of food served in each restaurant (such as Spanish, American, etc.) must also be stored and may include food from one single country or various countries. Each facility will have cleaning and maintenance staff who must be included in the database. What's more, each facility will have a manager and various supervisors.

Each hotel will accommodate one or several delegations. Each delegation is identified by the name of the country and number of athletes, including the check-in and check-out dates for the delegation in each hotel. The following information must be included for each athlete in every delegation: ID number, name and surname(s), type of food, sport, date of birth, height, weight, telephone number and possibly an email address. All athletes belonging to the same delegation will have the same check-in and check-out dates.

Various events are held at each complex. A date, duration, number of participants and number of Olympic officials are established for each event. Specific equipment is also needed for each event (bows, poles, parallel bars, etc.) which must also be stored.

The database must include all the Olympic officials, the list of events each official will participate in, the date of each event and whether each official will be acting as a judge or an observer. The ID number, name and surname(s), telephone numbers and possibly an email address must be stored for each Olympic official. These officials are also considered employees.

In order to organise transport between the various facilities, the athletes' information must also be stored, including the various events in which they are participating and the dates of said events.

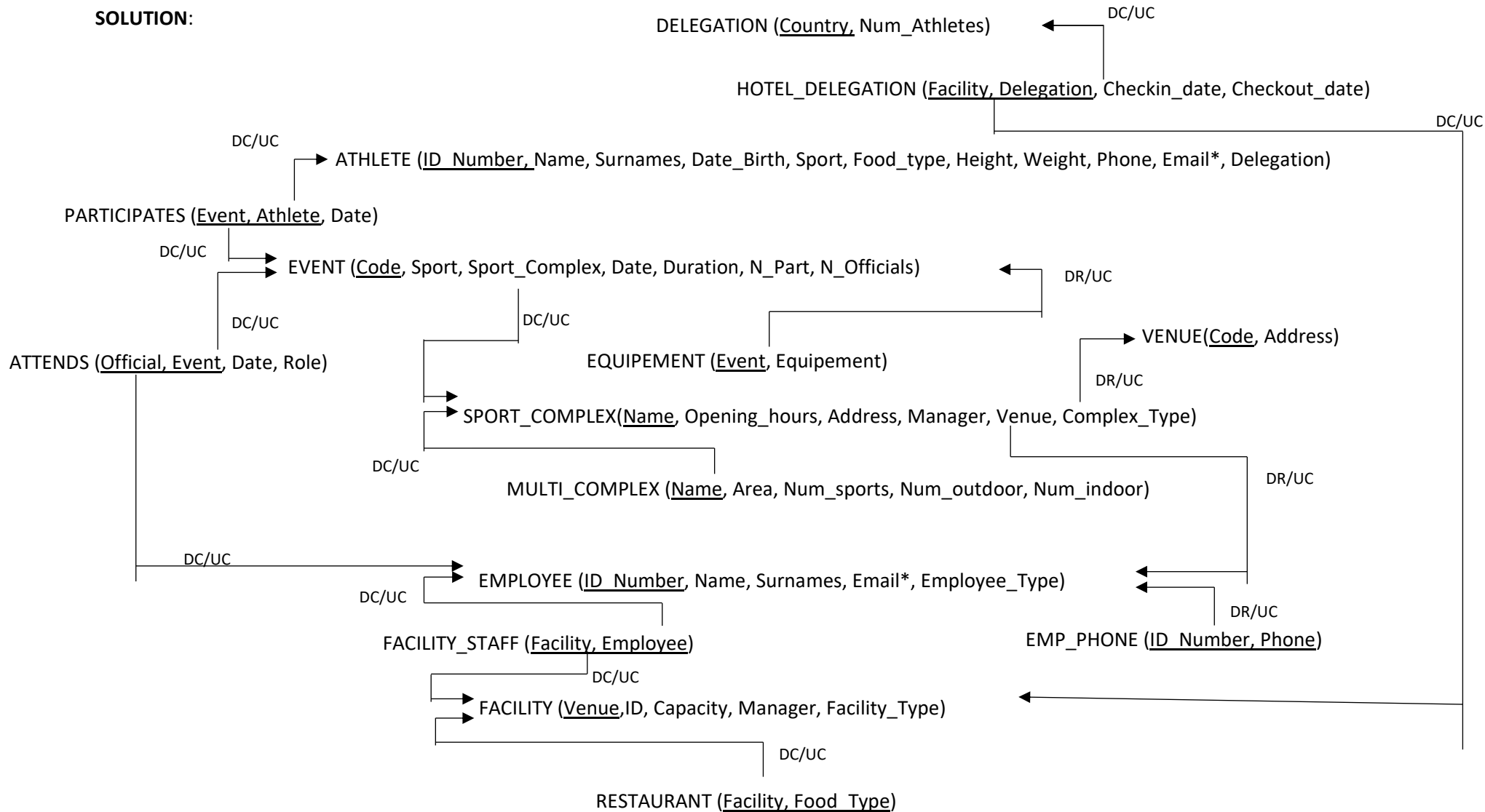
2. Requested information

You must:

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

The diagram must be made digitally and follow the relational model notation.

SOLUTION:



Assumptions to the schema

- Check that the Complex_Type in SPORT_COMPLEX is Multisport for rows in MULTI_COMPLEX
- Only employees of type Manager can manage FACILITY
- Employees linked through FACILITY_STAFF must have type 'cleaning', 'maintenance', 'supervisor' or 'security' but not 'manager' nor 'official'.
- HOTEL_DELEGATION must include facilities of type 'Hotel'
- All athletes of the same delegation will have the same check in and check out dates
- Check that the date officials and athletes take part in an event match the date of the event
- Each facility will have various supervisors

DOMAINS

Complex_Type={'multisport','onesport'}

Employee_Type={'manager', 'supervisor', 'maintenance', 'cleaning', 'security','official'}

Facility_Type={'hotel','apartment','restaurant'}

Assumptions to the statement

- 2 employees can share the same phone number
- One delegation can be hosted in more than one hotel
- One event takes place in one sports_complex