TÉCNICO LISBOA

Bases de Dados

Lab 03: Entity-Association Modelling – PART I

Present the E-A model corresponding to each of the following scenarios

Exercise/Scenario 1: The Recording Company

A recording company has decided to keep information about the albums it publishes, the musicians, and other company information, in a database and has contracted you to create the Entity-Association diagram that captures the following requirements:

1. Each musician has an ID card number, an address, and a mobile phone number. Some musicians share the same address. For the address, we need to know the street, city, postal code and country. At that address the musician may have also a land line phone number.
2. The instruments used in the recordings have a name (e.g. guitar, synthesizer, flute) and a tonality (e.g. C, C major, D minor, etc).
3. Each album has a title, a date, and an identifier that is unique.
4. Each song has a title and author
5. A musician can play multiple instruments. The singer's voice is not considered an instrument.
6. An album consists of several songs, and no song appears in more than one album.
7. One or many musicians may participate in one song, and each musician can naturally participate in several songs.
8. Each album has exactly one musician who is the producer of this album. Each musician can produce several albums.

Exercise/Scenario 2: New requirements for the Recording Company

Complete E-A diagram for Scenario 1, now considering that:

1. The instruments can be categorized according to distinct types: wind, strings, or percussion.
2. It is only necessary to know the tonality of the string instruments. String instruments may have multiple tonalities.
3. Concerning percussion instruments, the goal is to distinguish their classification (whether they are "Ideophones" or "Membranophones").
4. Some instruments can be electronic.
5. An album is released on a date through a channel (spotify, itunes, etc). A channel has a name, and an URL address that is the key.
6. Musicians can only produce albums consisting of songs where they do not participate.

Exercise/Scenario 3: The Pharmacy Chain system

The goal of this system is to serve as a database for a chain of pharmacies. After careful analysis of the subject, the following requirements were identified:

1. Patients are identified through an ID, and have the attributes address and age.
2. Doctors are identified by the Professional Card Number. The attributes name, specialty, and years of experience should also be saved.
3. Each laboratory is identified by name and has a telephone number. The telephone numbers of a laboratory are unique.
4. For each medicine, the trade name and the active substance (drug) must be registered.
5. Each pharmacy has a Tax Identifier Number that identifies it, a name, address and telephone number. No two pharmacies have the same address or the same telephone number.
6. Each medicine is produced by one laboratory.
7. Each pharmacy sells several medicines. A medicine can be sold in several pharmacies at different prices.
8. Each patient is consulted by at least one doctor. Every doctor follows at least one patient.
9. Doctors give prescriptions to patients. A doctor prescribes a prescription for one or more medicines. A patient can obtain prescriptions from several doctors. Each prescription has a date, and also the amount for each prescription medicine.
10. Pharmacies establish contracts with laboratories. Each laboratory also establishes contracts with several pharmacies. Each contract has a start date, end date, and text.
11. Pharmacies appoint a supervisor for each contract on a given date.

Exercise/Scenario 4: New Requirements for the Pharmacy Chain system

Complete the E-A diagram of Scenario 3, now considering that:

1. Pharmacies may appoint different supervisors during the term of the contract;
2. It is necessary to know all the supervisors of a contract.