Databases:

Conceptual model & Relational model

Exercises

October 2025

Exercises

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École d'ingénieurs du numérique

Exercise 1

- We are building a database for a website that manages flight bookings.
- To this end, we have the following information
  - Each airline company has a name and offers different flights
  - A flight has a number, a departure airport, an arrival airport, a departure time and duration.
  - Each airport has a name, a unique 3 character identifier and a surface area.
  - Each flight may include stopovers at one or more airports.
  - A stopover has an arrival time and a departure time.
  - Each airport is link to 1 or several cities. One city may be linked to several airports.
  - Each city has a name and a number of inhabitants.

- Draw a conceptual model (using UML) for the problem described.

Exercise 2

- We want to set up a database for to track movies screened in the different cinemas across the region.
- Each cinema screens a single movie at a given time. The same movie may be screened simultaneously in several cinemas.
- Each cinema screens each movie only once a day and always at the same time.
- Each visitor can rate the movie with: 'very bad', 'bad', 'average', 'good', 'very good'. The cinema where the movie was screened is not important.
- For each cinema, we have the following data: name, address, number of rooms.
- For each room, we have the following information: number, screened movies and the time schedule. The information stored is for the current week.
- Each spectator is identified by a number. We also know their first name, last name, address, date of birth and professional category.
- For each movie, we have the title, director's name, year of release and license.
- Finally, for each spectator, we record the list of movies viewed and their opinion of each movie.

Exercise 3

- A Medical doctor is identified by his social security number (SSN), and with a first name, a last name, an address, etc.
- A doctor writes a prescription for a patient.
- Each patient is identified by a SSN, and has a first name, last name, address, etc. Furthermore, they can have 1 or 2 reference doctors attached to them.
- A prescription has a number, a date and may include a request for further medical exams.
- Each test is identified by a number, a label, a result. The test is carried out for a particular patient on a given date.

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