DATABASE DEVELOPMENT | CLASSWORK

Exercise 1 | Home Library

Design a relational database to manage detailed information about your book collection. The database should include, but is not limited to, the following details for each book:

- Title
- Author
- Description
- Chapters
- Purchase date
- Start reading date
- End reading date

You should document your design process (using the 4 steps from the pre-work material) and save it as a PDF document or a .drawio file.

Exercise 2 | Health Center

A health center needs a database to keep track of the medical history of all its patients. Here's a detailed outline:

- **Units:** The health center is divided into several units. Each unit has:
  - An identifier
  - A name
  - The floor it is located on
- **Doctors:** Each unit has a doctor in charge, who is characterized by:
  - Name
  - Code
  - Specialty
- **Patients:** When patients arrive, they are admitted to a unit and registered with:
  - Social Security number
  - Age
  - Date of admission
- **Interventions:** While patients are in the hospital, all interventions performed by doctors are recorded, including:
  - Date of the intervention
  - Observed symptom
  - Prescribed treatment

Feel free to expand on this example to include additional details as needed.

Exercise 3 | Auction House

An auction house needs a database to record all its transactions. Here are the key details:

- **Sets:** Products sold at auctions are grouped into sets. Each set has:
    - A catalog number
    - A starting price
    - The highest bid
    - The remaining auction time
- **Products:** Each product within a set is characterized by:
    - A code
    - A name
    - A brief description
    - A photo

Customers that participate in the auction must bid for a set (bids for individual products are not allowed). When a person bids, the amount, the date and the hour are registered. Customers are identified by a user name. Besides that, they have a password, a name and an e-mail address.

Feel free to expand on this example to include more details as needed.

Exercise 4 | Transport Company

A transport company has a fleet of buses available, which are distributed on different routes.

The company wants to create a database to keep information about these routes.

A route is identified by a code. The total distance (in km.), the source and the destination of each route are stored.

Besides, each bus has a license plate number, a model, its capacity (number of passengers) and the name of its driver.

We assume that a bus can only be covering one route. Routes cover several cities. We'll store the name of the city, the address and the telephone number of the bus station.

To keep the stops organized, each bus stop has an order number. This number can be different depending on the route the city belongs to (one city can belong to several routes).

Feel free to expand on this example.

Exercise 5 | Social Network

Social networks such as Facebook use profiles to store information about their users. Now try to create a database for a Social network.

You should store users' profiles. Users have a nick (unique), a password, their real name and a valid email account.

Users can write comments, which are composed by text and publication date.

Furthermore, users can appear in photos. A photo has a filename and an optional description. To tag users in the photos, a frame is used. The coordinates of these frames are stored in the photo, in order to know which users appear in each photo.

Feel free to expand on this example.

Exercise 6 | Airline Company

An airline needs a database to register information about its flights.

Flights have a unique identifier. Furthermore, each flight has an origin and a destination airport assigned to it (considering only direct flights).

Airports are identified by three letters (VLC-Valencia, BCN-Barcelona etc.). Besides that, the name of the city and the country of each airport are stored.

Planes are assigned to different flights. A plane is identified by a registration number, the manufacturer, the model, capacity (max. number of passengers) and flight range (measured in hours). The assignment of a plane to one flight is not unique, so storing the date is needed too.

Feel free to expand on this example.