

## Exercise 8: SQL Basics - E/R diagrams

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**Task 1:** Create the ER diagram for the University. With the following requirements:

- University, described by name and city, is composed of departments
- Every department is described by name, street and city
- There may be many departments in an University, but a single department can belong to only one University
- Departments employ employees, described by first name, last name birthday and unique id
- Every employee can only be employed by a single department
- Employees work on Projects, that are described by unique name, cost, start date, expected finish date and actual finish date
- An employee might be working on multiple projects.
- A single employee is a chancellor - head of the whole University
- Similarly, every department has one employee chosen as the dean.

**Task 2:** Transform the above ER diagram into relational schema

**Task 3:** Normalize previously obtained schema

**Task 4:** Create ER diagram for UEFA European League (UEL). Requirements:

- UEL is annual football competition in which many teams (name, city, address) take part in any given year
- UEL is split into seasons, every season 48 teams are chosen to participate
- Matches are played on different stadiums (name, address, city, country)
- There can only be one match played at the single stadium in a single day.
- Each team consists of players (name, age, position) with the minimum number of players being 14
- Each team also has a main coach and two supportive
- Players (and coaches) in a given season can only play in a single team, but may change teams in between seasons

**Task 5:** Transform the above ER diagram into relational schema

**Task 6:** Normalize previously obtained schema

**Task 7:** Create ER diagram for Veterinary Clinic. Requirements:

- In Veterinary Clinic animals (name, species, birthday, race) are treated
- Each animal has at least one owner. A single owner may be connected to multiple animals. Owners are described by their name and address
- Clinic employs doctors (name, pesel, birthday)
- Doctors may have certificates (title, valid from, valid to, given to) awarded to them
- Doctors treat patients during appointments (date, hour, patient, owner, doctor), during a single appointment many treatments might be performed
- Every appointment ends with a bill put on the owner account
- Due to the fact, that different treatments require different skills, not all treatments might be performed by the doctor assigned to the appointment

**Task 8:** Transform the above ER diagram into relational schema

**Task 9:** Normalize previously obtained schema