

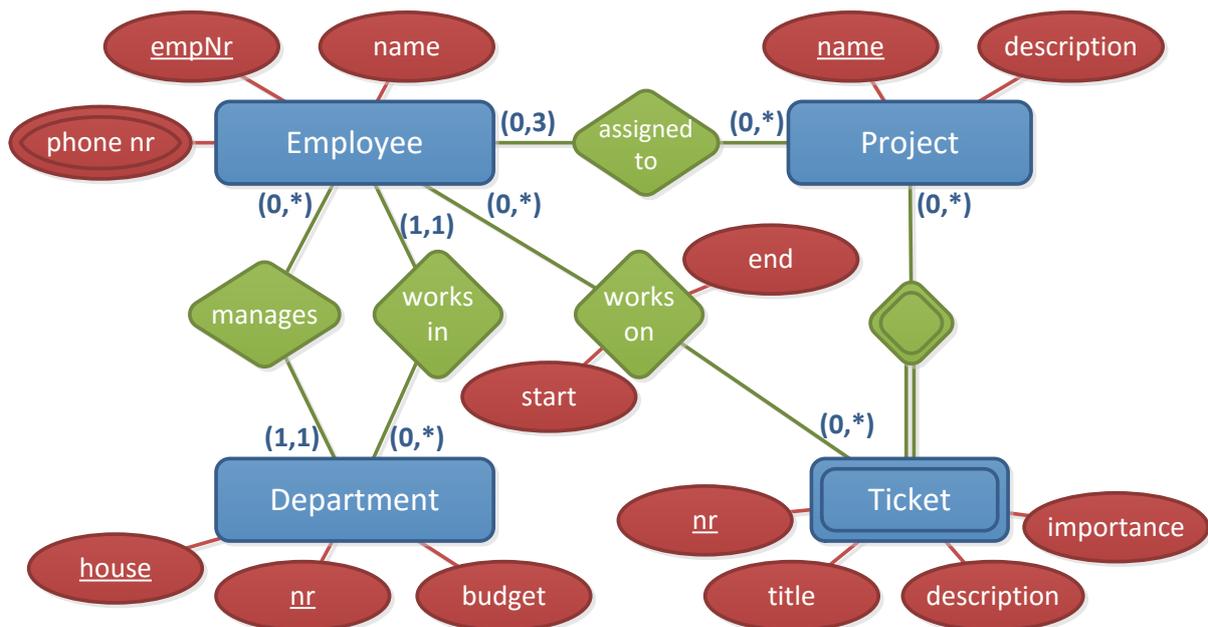


Exercise Sheet 9: SQL 2 (until Thursday, 12.01.2017) (20 points)

Please note: you need **50%** of all exercise points to receive the *Studienleistung* for this lecture. In order to pass the RDB I Module, you need both the *Studienleistung* **and** you need to pass the exam. Exercises have to be turned in until **Thursday before the lecture** either in the lecture hall or into our mailbox at the IFIS floor (Mühlenpfordtstraße 23, 2nd floor). Please do not forget your **Matrikelnummer** and your **tutorial group number** on your solutions. **If you forget** to write your Matrikelnummer and/or your tutorial group number, you get **automatically 0 points**. Your solutions may be in German or English. Unless otherwise specified: **Always use your own words!**

Exercise 9.1 (14 points)

Following conceptual schema describes a simple company database.



The company is divided into several departments. Each department is uniquely defined by a combination of a letter and a number, where the letter describes the room (e.g. Department C-15 for room 'C', and number 15). Furthermore, each department is managed by an employee. Each employee is assigned to a department and to several projects to work on, where the number of projects an employee works on must not exceed 3. In order to manage the tasks belonging to a project more efficiently, employees are allowed to create tickets for the project. Each ticket has a number, which is only unique within the scope of the project. It also has a title and description as well as an importance level which can take the values 'minor', 'medium' and 'major'. When an employee starts to work on the ticket the start date will be stored and as soon as the task described in the ticket is done, the end time is stored. Consequently, the ticket is assumed to be closed. Based on the given conceptual schema, please provide SQL statements to create the tables described in the schema. The created tables should consider as much constraints as possible.

Exercise 9.2 (6 points)

Consider the following schema of a network of authors of scientific research papers used last week:

Author (id, name, numberOfPublications)

Collaborator (id1 → Author, id2 → Author)

Cites (id1 → Author, id2 → Author)

- Provide a SQL query that finds the names and the ids of the authors that directly or indirectly cites Tilo. (3 points)
- Provide a SQL query that finds the median of the number of publications. Assume you have an odd number of authors in the table author. **Hint:** The median¹ of a finite list of numbers can be found by arranging all the numbers from smallest to greatest. If there is an odd number of numbers, the middle one is picked. For example, consider the set of numbers: 1, 3, 3, 6, 7, 8, 9. this set contains seven numbers. The median is the fourth of them, which is 6. (3 points)

¹ <https://en.wikipedia.org/wiki/Median>