



Exercise for *Database System Concepts for Non-Computer Scientist* im  
WiSe 18/19

Alexander van Renen (renen@in.tum.de)  
<http://db.in.tum.de/teaching/ws1819/DBSandere/?lang=en>

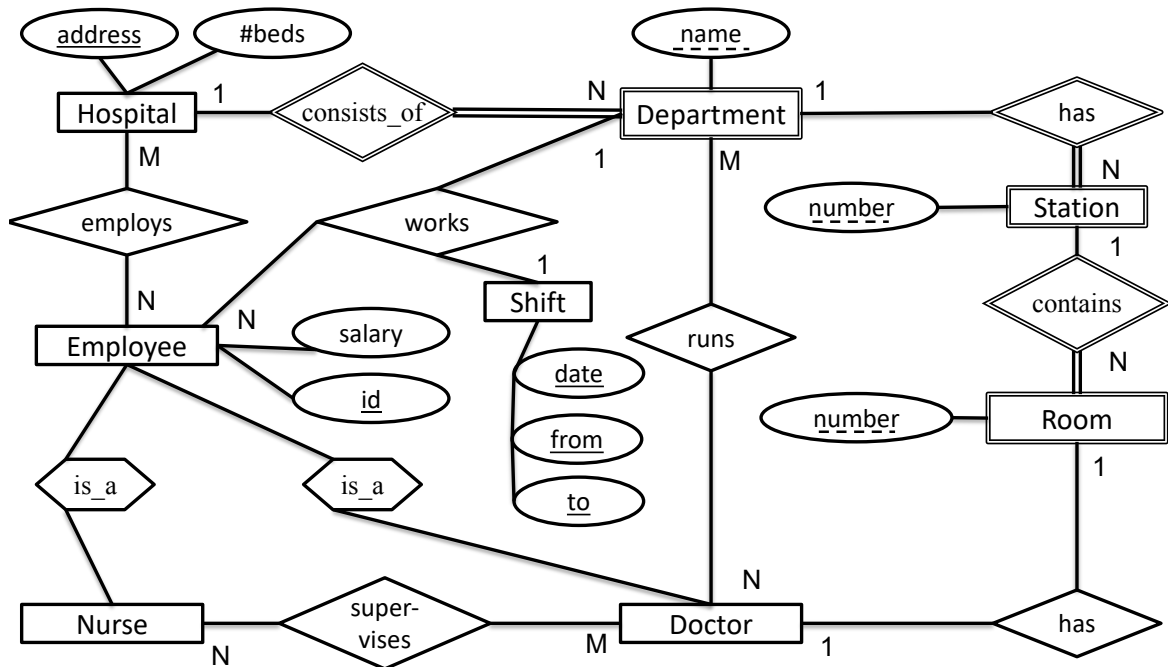
Sheet 02

**Exercise 1**

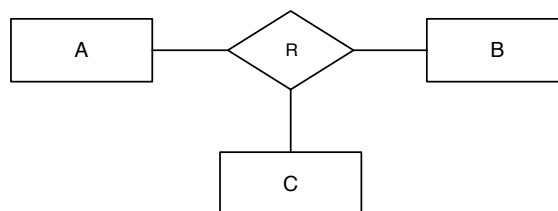
Consider the following description of a hospital and create an entity relationship diagram. Use generalization when appropriate.

- Hospitals consist of departments. Each hospital has an address (which can be used to identify it) and a number of beds. Departments have a name, which is unique only within a hospital.
- Stations in turn consist of rooms which are numbered. Such a number is unique within a station.
- Every hospital employs staff. Employees have a salary. This will determine which salary will be paid. Staff can be employed in various hospitals.
- Staff is identified by a personnel number and can be divided among other things into doctors and nurses. A doctor is associated with a department and can be a supervisor for nurses. A nurse can not be a doctor. However, nurses can have several supervisors.
- A department can be run by several doctors. A doctor can also run several departments. It is also known whether a doctor has a room and if she does, the room number is known. No doctor has to share his office with another doctor.
- Staff works in departments in shifts. A shift can be uniquely identified by date and time period. A person can work in one shift on only one department.

**Solution:**



## Exercise 2



Assume, that only the following partial function holds:

$$A \times C \rightarrow B$$

Label the diagram with functionalities.

Now, think about the following question: How can you derive functionalities out of partial functions and vice versa.

### Solution:

On the B edge: 1. On the A and C edge: N and M.

As a rule of thumb, the entity on the right side of the arrow (in the partial function) is annotated with a 1.