



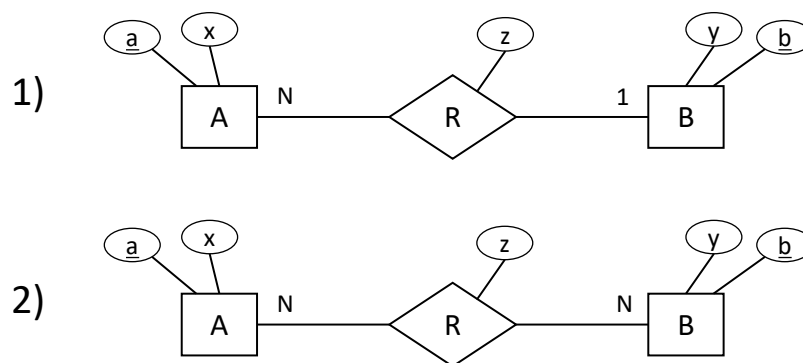
Exercise for *Database System Concepts for Non-Computer Scientist* im
WiSe 19/20

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<http://db.in.tum.de/teaching/ws1920/DBSandere/?lang=en>

Sheet 06

Exercise 1

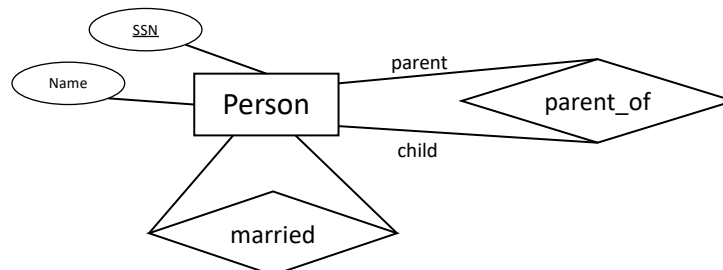
Consider the following ER-diagram:



Refine and transform this diagram into a database schema (SQL DDL). You can assume that each attribute is an integer. Use **not null**, **primary key**, **references**, **unique** and **cascade** when possible/necessary.

Exercise 2

In the following ER-diagram, we model people (*person*). The *married* relation models the German law (i.e., each person can have at most one spouse). The *parent_of* is to be interpreted in the traditional biological way (i.e., each person has exactly one mother and one father).



First, add min/max to the diagram. Then, create SQL-statements that would create the corresponding tables in a database system. Use **not null**, **primary key**, **references**, **unique** and **cascade** when possible/necessary.

Exercise 3

Write **relational algebra** queries for following tasks on our university database:

- (a) Which *Lectures* are attended by *Students* in the 1.-4. semester? Only output the title of those *lectures*.
- (b) Find all *Students* that know Sokrates from a *Lecture*.
- (c) Find all *Students* that attend at least one *Lecture* together with Fichte.

Exercise 4

Write the following queries in **SQL** on the known university schema:

- (a) Find all students that are in the third semester.
- (b) Figure out if there is a lecture with more than five *weeklyhours*.
- (c) Print out a list with all professor names and avoid duplicates.