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.