University of Innsbruck – Institute of Computer Science
Semantic Technology Institute
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PS Introduction to Modeling

Assignment 4

Exercise 1 (Mapping Basics – 4 points)

The first assignment task should help you to get familiar with mapping from a conceptual to a logical model as described in the lecture.

Read Chapter 11.2 from *Information Modelling and Relational Databases* (Halpin & Morgan) to answer the following questions:

- Explain all aspects of the following table scheme. Are the alternate keys reasonable? Can the column *someKey* even be a key? Explain why/why not! Draw a populated ORM.
  User(userId, userName, sex, userAddress, [someKey])

- Explain referential integrity with an example including an m:n table, primary and foreign keys by using the notation from Chapter 11.2. Draw an ORM model and the relational mapping. Please try to find an *unique* example and don't use the example from the Chapter.

- Now use your example from subtask 2 and create the DDL/DML statements using MySQL syntax.

Exercise 2 (Rmap – 8 points)

The Relational Mapping Procedure (Rmap) allows to map a conceptual model (cf. Assignment 2) to a logical one. Chapter 11.3 includes all necessary techniques to solve the exercise.

- The lecture introduced how (a) 1:1 associations and (b) external uniqueness constraints are mapped. Suppose you have to explain each concept to a fellow student with an example. Try to include different aspects/possibilities (for example see Figure 11.18-11.21) how this can be done.

- The Figure below shows an ORM diagram from the last year's exercise (the Rmap wasn't part of it) that has to be mapped to a relational schema. Use the Rmap procedure to map the schema and apply the learned techniques (underline keys, optional fields, subset constraints).
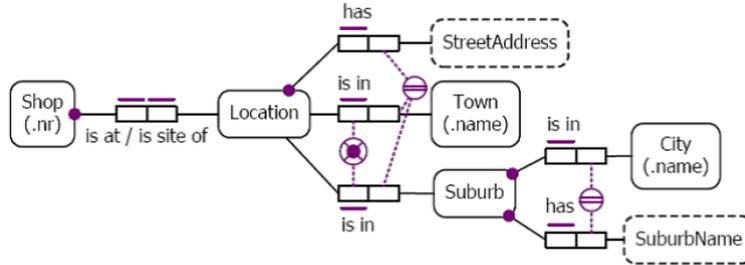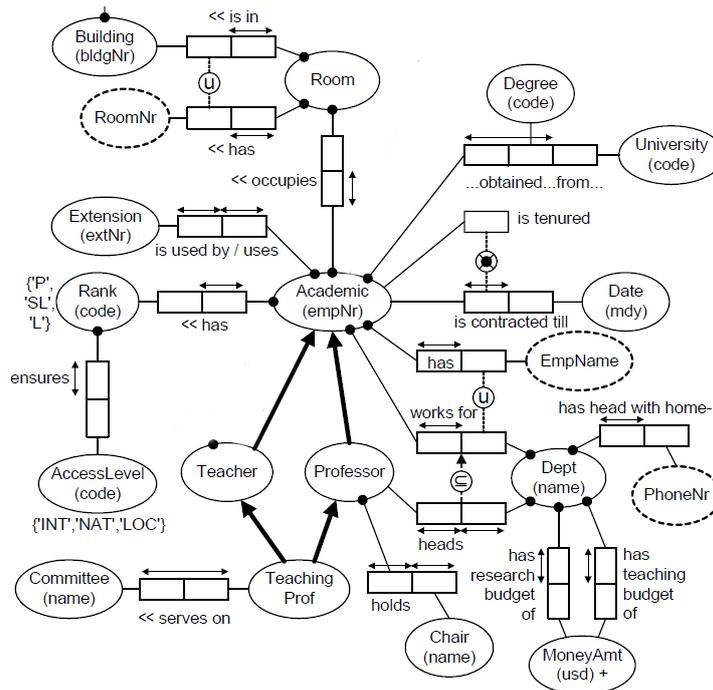

Abbildung 1: ORM model

- As a last example, an excerpt of the ORM example from the document ORM-Intro (see website) need to be mapped using Rmap. Map and explain your solution with the six steps of Rmap presented in the lecture!

Enter your anticipated points and send your final solution and explanations (txt and pdf files only!) to `anna.fensel@uibk.ac.at` until Wednesday the 9th of December 2015, 16:00.