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Computer Science

— Engineering Web and Data-intensive Systems - Winter Term 2022/23 —

Assignment 4.

From: Jan 9th 2023 To: Jan 23rd 2023

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1 Mapping OO Schema to Relational Database

Based on the domain model of the OLAT system provided with this assignment (olat-system.asta), you are asked to design and implement a *relational database*.

Tasks & Deliverables:

a) **Create a relational schema**

Provide a relational schema for the OLAT domain model. You are encouraged to use the mapping rules sketched in the lecture slides. You also have to decide which data type you'd like to use for the attributes.

The deliverable is a SQL script with `CREATE TABLE`, `ALTER TABLE`, and `CREATE INDEX` commands to construct the relational schema.

You may use the ER Diagram editor of the Astah tool do create the schema. Using the tool, it's very easy to export the SQL script from the model file.

Please test your script using a database server like MariaDB or SQLite.

b) **Explain Decisions:**

Make sure to include annotations/comments in the schema diagram and/or SQL script that explain your design choices!

c) **Test Data:**

Please populate your relational database with example data such that you provide one (1) Course. Add data such that you get around 5 instances of all associations and classes.

Deliverable is a SQL script with `INSERT...` statements.

d) **Write SQL Queries:**

Try to provide two SQL `SELECT...` queries to answer the following questions. If you think that there can be no solution (with a single query), state why!

- Given a Course (referenced by it's ID), please provide a sorted list of it's Groups with the number of members in each group.
- For each top-level DiscussionTopic, compute the set of Persons who contributed to the topic and it's replies.