Dr. Volker Riediger
M.Sc. Mahmood Al-Doori
Dipl.-Inf. Julian Flake
M.Sc. Veronika Vasileva

— Engineering Web and Data-intensive Systems - Winter Term 2024/25 —

Assignment 3.

From: Dec 16th, 2024   To: Jan 13th, 2025

Notes on the sumbission

Please store your solution in the OLAT group folder. We have already created a `solutions` folder for you.

Create a sub-folder for each assignment according to the scheme `solutions/assignmentNN`.

Put all solution files into that subfolder. We prefer PDF documents. You shall also add other files contributing to the solution, for example Astah models, database scripts (in later assignments).

Serious Advice

If you repeat the EWADIS course, we *strongly recommend* to redo the assignments from scratch. It is not very useful to copy solutions from the last semester, even if you think you have a perfect solution or a reference solution that we provided.

The intent of the assignments is to actively practice, not to present a perfect solution!

1 Navigation Model

In this assignment, we are asking you to design and implement a relational database of the TSS domain model created in the first assignment.

We provide a reference solution for assignment 01 as an Astah model.

Tasks and Deliverables:

a) Create DB structures: Provide a database schema design in SQL. This means, you submit a SQL file containing all the required CREATE TABLE and ALTER TABLE statements. The database shall be normalized (Aim for the 3rd or Boyce-Codd normal form). We recommend using Astah as modeling tool. Then, you can simply export the SQL file without having to type it by hand. Additionally, if you made mistakes, it's easier to update the model. If you use the tool, please provide the . asta file as well.

b) Explain Decisions: If you use the model, please add your annotations and comments as Note elements in the diagram.

c) Test Data: Please populate your database with example data such that you provide five (5) Persons. The roles such as (Supervisor, Secretary, and Assistant) need to be clearly identified. Each person can also have several roles, e.g. be a supervisor for one contract and an employee for another. Add data such that you get around 5 instances of all associations and classes. The deliverable here is a SQL file containing INSERT statements in the correct order.

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 Person (referenced by name), please provide the contract status, starting date and ending date.

- For each Contract, provide the time sheet entries and their respective types.

Remarks:

Please submit your solution as a PDF file in your group folder `solutions/assignment03`.

Additionally, please add the `.asta` *model file*. Don't forget to add the database structure in text, the test data and SQL queries files.

Please prepare to discuss your solution in one of the next exercises!