

Documentation of FMMS Database Structure

Software Factory Group 1

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1 Introduction

1.1 Overview

This document provides an overview over the database structure of the Fontys Module Management System (FMMS). The target group of this document are informatics students of at least semester 7 or persons with a similar or better understanding of information technologies and databases.

The database management system (DBMS) which is used is PostgreSQL, which provides a full set up up-to-date database feature in an open source software product. Initially the database was created by HVD but has been improved during the project.

1.2 Conventions

All database names follow a special convention which is described in this section.

Table Names All tables are named after the entity they represent. The name is always singular. If the table represents a many-to-many relationship, the table name contains the two tables which are connected separated by an underscore. The order of the tables is not regulated, but normally there is a natural direction inside the relationship.

Primary Keys All tables contain a column named "id" with the database type "SERIAL" which implies integer. This column is the primary key of each table. If there are business keys or natural unique combinations, they are created separately keeping "id" as the only primary key column to every table.

Foreign Keys All columns which contain a foreign key relationship are named using a special convention. They contain a regular name, which is mostly the table name they reference, followed by an underscore and then the column name of the foreign table which they reference. Therefore, all columns which contain an underscore represent a relationship to another table and hold a foreign key.

Data Types For each column the data type has been chosen which fits best to the intended data. There are two exceptions: first, all primary key columns have the data type "SERIAL" which implies an "INTEGER" (as described before), second all columns which contains character have the data type "TEXT". Because there

is no performance or data storage difference in PostgreSQL database between "TEXT" and "CHARACTER VARYING" we do not need to keep track of max string length when we use "TEXT" by default.

2 Database Structure

This section documents the individual tables and their purpose. The table names aren't always enough to understand the purpose of the table. Also this sections provides important information about relationships between tables and specific constraints.

Table	
Schema	study
Name	activity
Description	This table contains all activities as they are defined in the HBO-I qualifications document.

Table	
Schema	study
Name	architecturallayer
Description	This table contains all architectural layers as they are defined in the HBO-I qualifications document.

Table	
Schema	study
Name	curriculum
Description	This table contains different curricula. Curricula are a set of modules which belongs to a specific study program. Basically, curricula represent a version of a study program which can change over time. A curriculum has a curriculum owner and belongs to a specific department.
Connected Tables	employee, department

Table	
Schema	study
Name	department
Description	This table contain the different departments which manage their modules inside the system.

Table	
Schema	study
Name	employee
Description	This table contains the employee, meaning the lecturers of the departments.

Table	
Schema	study
Name	employee_department
Description	This table connects employee with certain departments. In theory, an employee can work for multiple departments.
Connected Tables	employee, department

Table	
Schema	study
Name	learninggoal
Description	This table contains all learning goals. Learning goals consists of a sequence number, a weight and a description. Every learning goal is connected to exactly one module.
Connected Tables	module

Table	
Schema	study
Name	learninggoal_qualification
Description	This table connects learning goals with concrete qualifications. A learning goal can be connected with multiple qualifications. These connections shows how the learning goal contributes the to students skills.
Connected Tables	learninggoal, qualification

Table	
Schema	study
Name	levelofskill
Description	This table contains the different level of skills which can be reached during study. A skill is always a combination of an activity and an architectural layer. The possible levels of skills are defined in the HBO-I document.

Table	
Schema	study
Name	module
Description	
Connected Tables	

Table	
Schema	study
Name	module_employee
Description	This table contains the many-to-many relationship between modules and employees. A module can be taught by multiple employees (and usually is), and an employee can teach multiple modules.
Connected Tables	module, employee

Table	
Schema	study
Name	module_profile
Description	
Connected Tables	module, profile

Table	
Schema	study
Name	moduleassessment
Description	This table contains information about exams and assessments. Each instance has a globally unique assessment code which can also be found in Progress.
Connected Tables	module

Table	
Schema	study
Name	moduledependency
Description	This table represents dependencies between modules. There are three types of dependencies: PRIOR, CONCURRENT and MANDATORY. Prior module are modules which are logically before the actual module. Concurrent modules are taught in the same semester and share some topics. Mandatory modules have to be passed before you can start with the current module. This table allows to generate a flow chart which displays the dependencies inside a study program.
Connected Tables	module

Table	
Schema	study
Name	moduledescription
Description	This table contains information displayed in module descriptions.
Connected Tables	module

Table	
Schema	study
Name	moduletopic
Description	This table contains the topics for each module. Topics only consists of a simple description and a sequence number. The sequence number is automatically generated and is unique in combination with the module id.
Connected Tables	module

Table	
Schema	study
Name	professionaltask
Description	This table contains the description of the task a student has to fulfill when to reach a certain qualification. The tasks are defined in the HBO-I document.
Connected Tables	qualification

Table	
Schema	study
Name	profile
Description	This table connects a study program with a specific curriculum. A curriculum can belong to multiple study programs. Also a study program can have multiple curricula, but for each point in time only one curriculum can be valid. Therefore this connections can be seen as a kind of curriculum versioning.
Connected Tables	curriculum, studyprogramme

Table	
Schema	study
Name	profile_qualification
Description	This table connects profile with qualifications. The connections show the end qualifications of after a specific study program. This table is unused at the moment.
Connected Tables	profile, qualification

Table	
Schema	study
Name	qualification
Description	This table contains all permutations of all reachable skills. A qualification is the combination of an activity, an architectural layer and a certain skill level as defined in "levelofskill".
Connected Tables	activity, architecturallayer, levelofskill

Table	
Schema	study
Name	studyprogramme
Description	This table contains the general information about a study programme, for example software engineering or business informatics.

Table	
Schema	study
Name	teachingmaterial
Description	This table contains the information about teaching materials. There are different types of teaching materials: books, websites, article and others. The type is stored to allow the export of a book list for each module. The table is connected to module descriptions.
Connected Tables	moduledescription