



SQLcoach

Version 1.1

User Guide

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**Project Digital Media
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<http://sqlcoach.sf.net>

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1 Introduction

SQLcoach is an Open Source (LGPL) eLearning platform for the Structured Query Language (SQL). Instructors can install SQLcoach to provide their own SQL training content. SQLcoach can work with different data sources (i.e. different databases). Techniques used to implement are Java Servlets and JSPs with Struts. All databases are supported that provide a JDBC2.0 conform jdbc-driver. SQLcoach is tested for MaxDB and Oracle.

You can find a running sample application with links to more information on the project at <http://sqlcoach.informatik.fh-kl.de>.

You find some basic information, about the project itself on the project website (<http://sourceforge.net/projects/sqlcoach>). Information about what SQLcoach can offer you, some news, and a tutorial video. Contribution information for developers should also be available there.

2 Prerequisites

2.1 Server

The application must be installed on a JAVA web application server like tomcat.

An installation is provided at <http://sqlcoach.informatik.fh-kl.de>

2.2 Web Browser

To use SQLcoach you need an internet connection and a browser.

SQLcoach is optimized for the mainly used browsers in the latest versions. So for optimal usage please use one of the browsers listed below:

- Mozilla Firefox, Download: <http://www.firefox.com>
- Opera, Download: <http://www.opera.com>
- Apple Safari, Download: <http://www.apple.com/safari>
- Internet Explorer, Download: <http://www.microsoft.com>

3 User Manual

3.1 Start

Please enter the URL of the installation you want to use into the address field of your browser. Wait until the site has been loaded.

3.2 Choose Language

SQLcoach is available in two languages up to now. You can choose between English and German. Switch the language by clicking the British or the German flag in the right top corner of the website.

3.3 Exercise



3.3.1 Scenarios

To start your exercises with SQLcoach have a look at the exercise section. There you will find a list of available scenarios, that could be chosen. The scenarios represent the top level. Different scenarios may be used for teaching different aspects of SQL. Different courses usually use different scenarios.

Note: Exercises are currently stored only in one language. So, if a student choses to use the English user interface, but the instructor formulated all the exercises only in German, he will get a mixed output.

To choose a scenario click on it, the next screen will offer you a corresponding list of task groups – the second hierarchy level.

3.3.2 Task Groups

The task groups are the second level in hierarchy. You can choose one by clicking the text link.

Instructors are free in how they organize their exercises in task groups.



3.3.3 Tasks

After clicking the task group the tasks will be displayed. Choose one of them by clicking the green “play” button to run this task.

Instructors are free in how they organize their exercises in one task group, but it is advisable, to order them according to their difficulty. So the tasks in one task group should start with some easy exercises, to avoid frustration of the students.



3.3.4 Training

You have chosen your task, that means it is time to think about the correct SQL query to pass this task successfully. The screen looks like this:

SQLcoach - Training - Mozilla Firefox

Datei Bearbeiten Ansicht Chronik Lesezeichen Extras Hilfe

SQLcoach Home | Admin | Impressum

Back to Task Overview

Training

Tables Related to Your Chosen Scenario

Tables	Columns	Foreign Keys
ABTEILUNG	(<u>ABTNR</u> , ABTNAME, BUDGET, <u>PERSNR</u>)	PERSNR » PERSONAL.PERSNR
AKTE	(<u>PERSNR</u> , <u>DATUM</u> , POSITION, GEHALT)	PERSNR » PERSONAL.PERSNR
PERSONAL	(<u>PERSNR</u> , VNAME, NNAME, <u>PROJNR</u> , TELEFONNR, GEHALT)	PROJNR » PROJEKT.PROJNR
PROJEKT	(<u>PROJNR</u> , BUDGET, <u>ABTNR</u>)	ABTNR » ABTEILUNG.ABTNR

Explanation: **TABLE**, PRIMARY KEY, FOREIGN KEY

Personal > Subqueries > Task 4.1

Task Geben Sie die Personaldaten aller Angestellten aus, die keinen Akteneintrag haben!

SQL Query

```
1 SELECT * FROM Personal
2 WHERE persnr NOT IN (SELECT persnr FROM Akte)
3
4
5
6
7
```

Check your Query

Resultset of the Sample Solution

PERSONR	VNAME	NNAME	PROJNR	TELEFONNR	GEHALT
51	Rainer	Wein	6	6202	100
52	Rainer	Zufall	6	6203	100
72	Anna	Nass	3	3202	1000
73	Minni	Maus	3	3203	2000

First the related tables to your chosen scenario are listed. You see in the first column the table names, then the columns and the foreign key relations.

Tables are shown in gray bold letters, primary keys in plain underlined text and foreign key are marked by a brown plain font.

Below this, your scenario-task group-task path is shown and the description of the task to do. In the SQL Query box you can enter your query. This query gets checked by clicking the "Check your Query" button. The SQL Query box will provide you a helpful syntax highlighting for SQL.

Some help in finding the correct query offers the "Resultset of the Sample Solution" below. Here the system offers you a tabularly resultset of how your

resultset should look like. The query you enter needn't to be exact the equal to the one of the sample solution, but it must provide the same resultset.

SQLcoach - Training - Mozilla Firefox

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Back to Task Overview

Training

Your resultset is not equivalent to the correct sample resultset. Please compare yours to the correct one below!

Tables Related to Your Chosen Scenario

Tables	Columns	Foreign Keys
ABTEILUNG	(ABTNR , ABTNAME , BUDGET , PERSNR)	PERSNR » PERSONAL.PERSNR
AKTE	(PERSNR , DATUM , POSITION , GEHALT)	PERSNR » PERSONAL.PERSNR
PERSONAL	(PERSNR , VNAME , NNAME , PROJNR , TELEFONNR , GEHALT)	PROJNR » PROJEKT.PROJNR
PROJEKT	(PROJNR , BUDGET , ABTNR)	ABTNR » ABTEILUNG.ABTNR

Explanation: **TABLE**, PRIMARY KEY, FOREIGN KEY

Personal > Subqueries > Task 4.1

Task Geben Sie die Personaldata aller Angestellten aus, die keinen Akteneintrag haben!

SQL Query

```
1 SELECT * FROM Personal
2 WHERE persnr IN (SELECT persnr FROM Akte)
3
4
5
6
7
```

Resultset of Your Solution

PERSNR	VNAME	NNAME	PROJNR	TELEFONNR	GEHALT
1	Donald	Duck	1	1201	1000
2	Dagobert	Duck	1	1202	200
3	Zita	Delle	1	1203	50

In the screen above the query has been sent, but it was wrong. Obviously displayed by the red error message, that tells you, that your query returns a different resultset compared to the sample resultset.

This red error message also gives you detailed information about the kind of error that happens. If the query was syntactically wrong, it provides additionally the error message thrown by the database system.

You should think about your query and correct it. Scroll down to see your resultset, that is provided there and again below yours the sample resultset. You can compare them to find the correct solution.

Correct your SQL Query and press the "Check your Query" again. This could be done as often as you want. If you find the correct query, you will see a similar screen to this.

SQLcoach - Training - Mozilla Firefox

Home | Admin | Impressum

Back to Task Overview

Training

Congratulation! Your resultset is correct.

Tables Related to Your Chosen Scenario

Tables	Columns	Foreign Keys
ABTEILUNG	(ABTNR_, ABTNAME , BUDGET , PERSNR)	PERSNR » PERSONAL.PERSNR
AKTE	(PERSNR_, DATUM, POSITION , GEHALT)	PERSNR » PERSONAL.PERSNR
PERSONAL	(PERSNR_, VNAME , NNAME , PROJNR , TELEFONNR , GEHALT)	PROJNR » PROJEKT.PROJNR
PROJEKT	(PROJNR_, BUDGET , ABTNR)	ABTNR » ABTEILUNG.ABTNR

Explanation: **TABLE**, **PRIMARY KEY**, **FOREIGN KEY**

Personal > Subqueries > Task 4.1

Task Geben Sie die Personaldaten aller Angestellten aus, die keinen Akteneintrag haben!

SQL Query

```

1 SELECT * FROM Personal
2 WHERE persnr NOT IN (SELECT persnr FROM Akte)
3
4
5
6
7

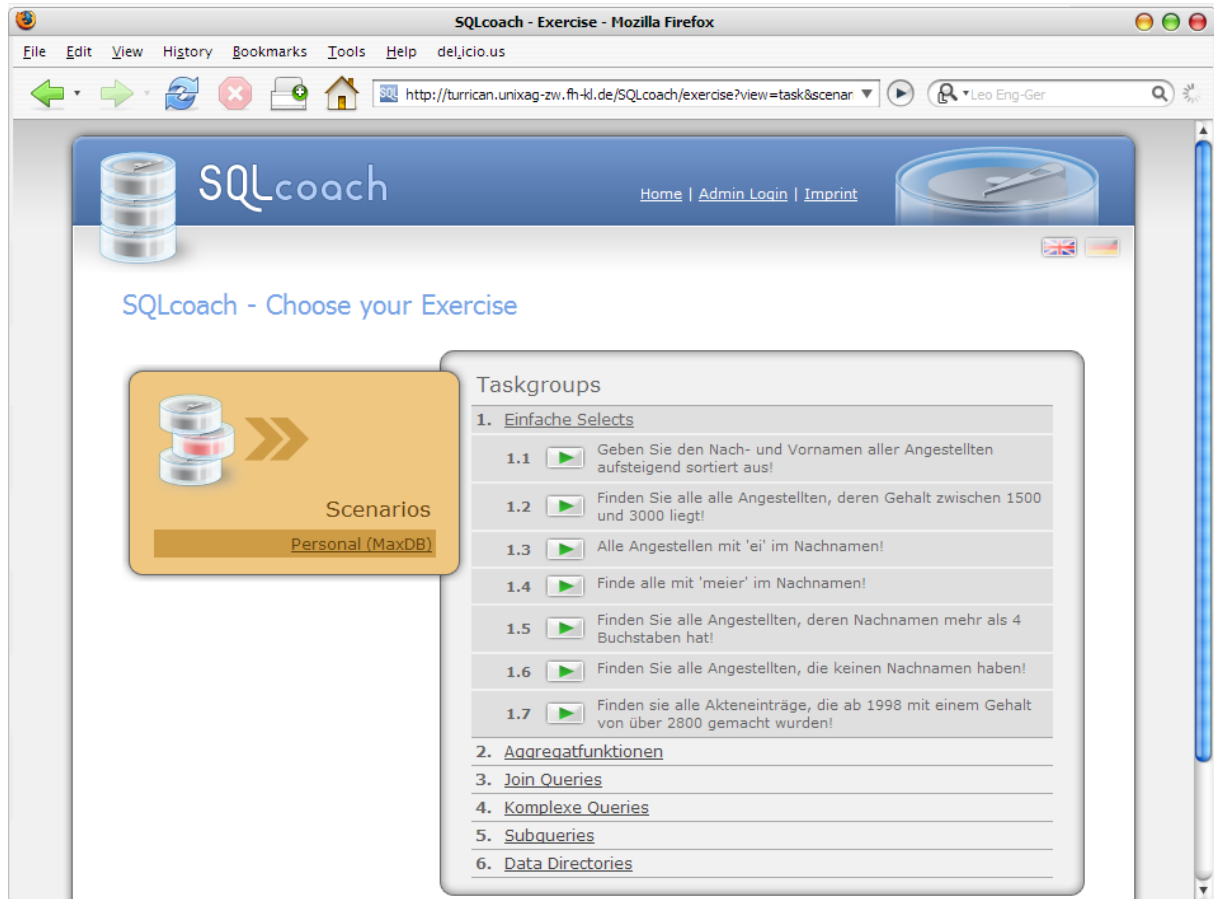
```

Resultset of Your Solution

PERSNR	VNAME	NNAME	PROJNR	TELEFONNR	GEHALT
51	Rainer	Wein	6	6202	100
52	Rainer	Zufall	6	6203	100
72	Anna	Nass	3	3202	1000

3.3.5 Choose another Scenario, Task Group or Task

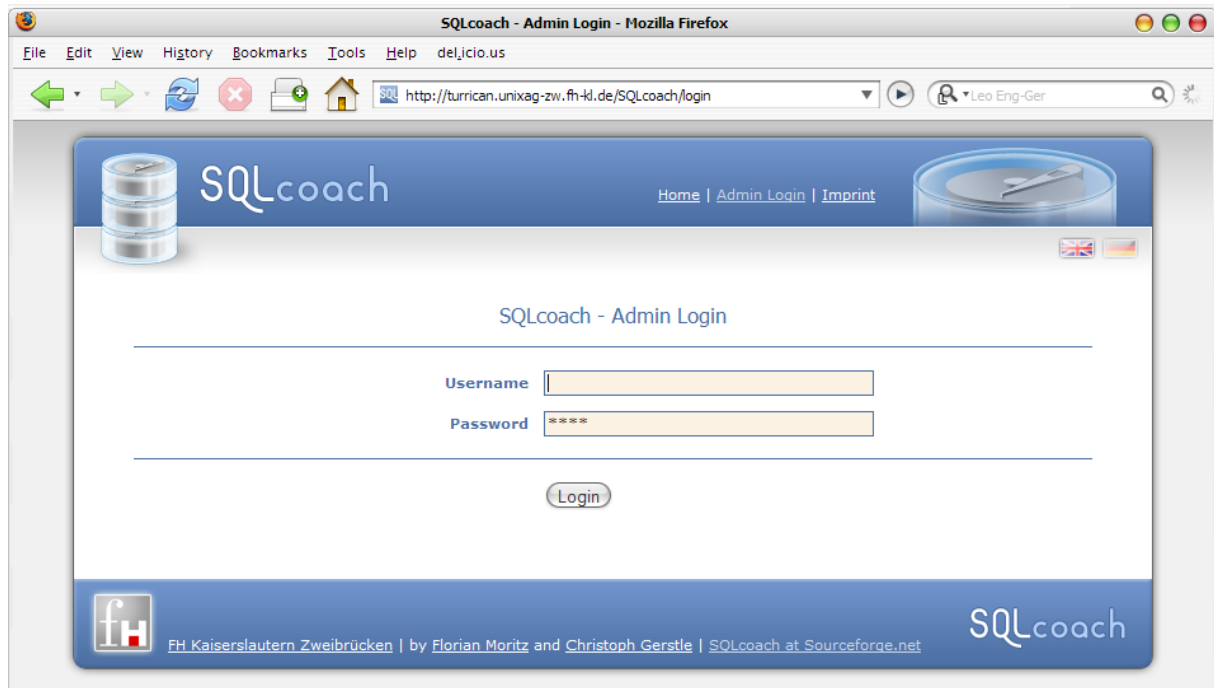
To choose another scenario, task group or task click to the "Back to Task Overview" Link at the top left corner of the web application.



4 Administration Manual

4.1 Login

To enter the admin configuration website click on "Admin Login" in the header area. Enter your username and your password and press the "Login" Button.

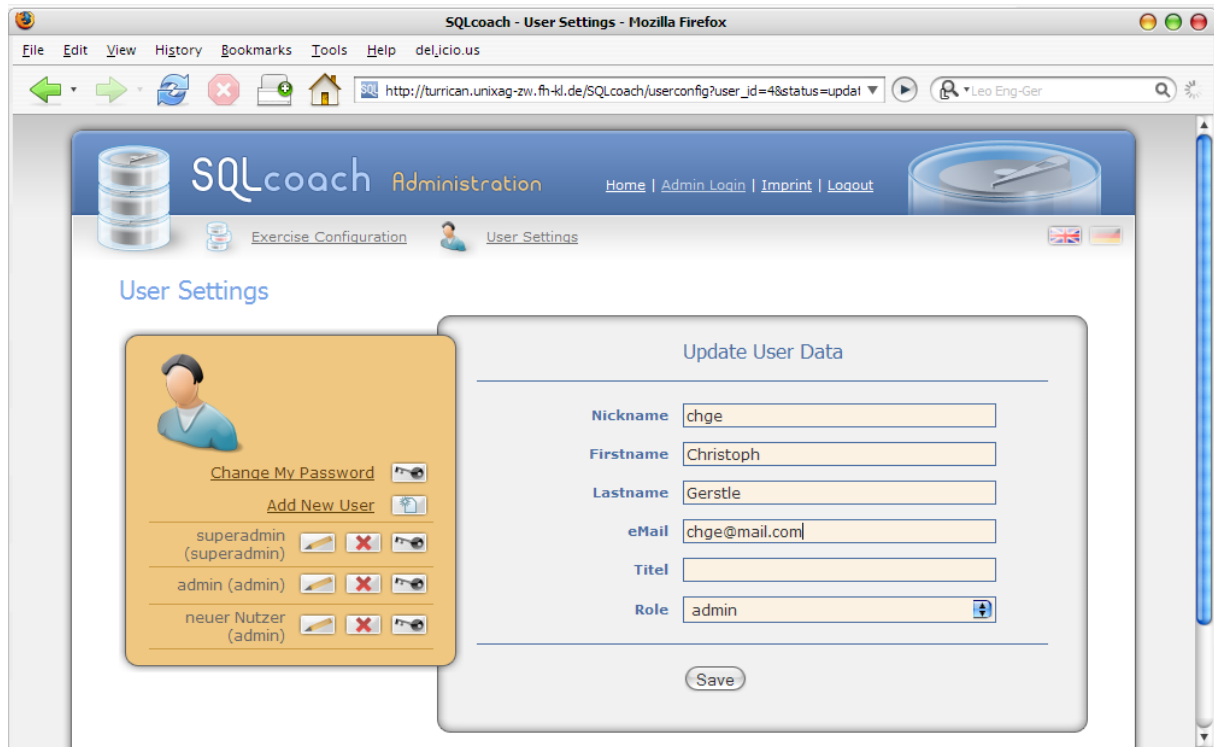


After successful login this screen will be displayed:



4.2 User Settings

Here you can manage your exercises and your user settings. To manage the user settings click on "User Settings" above.



This screen shows the configuration possibilities a superadmin has. Other users, the so called admins, will only have a subset of configuration possibilities. They can only configure their own settings. But the superadmin is authorized to modify every users settings.

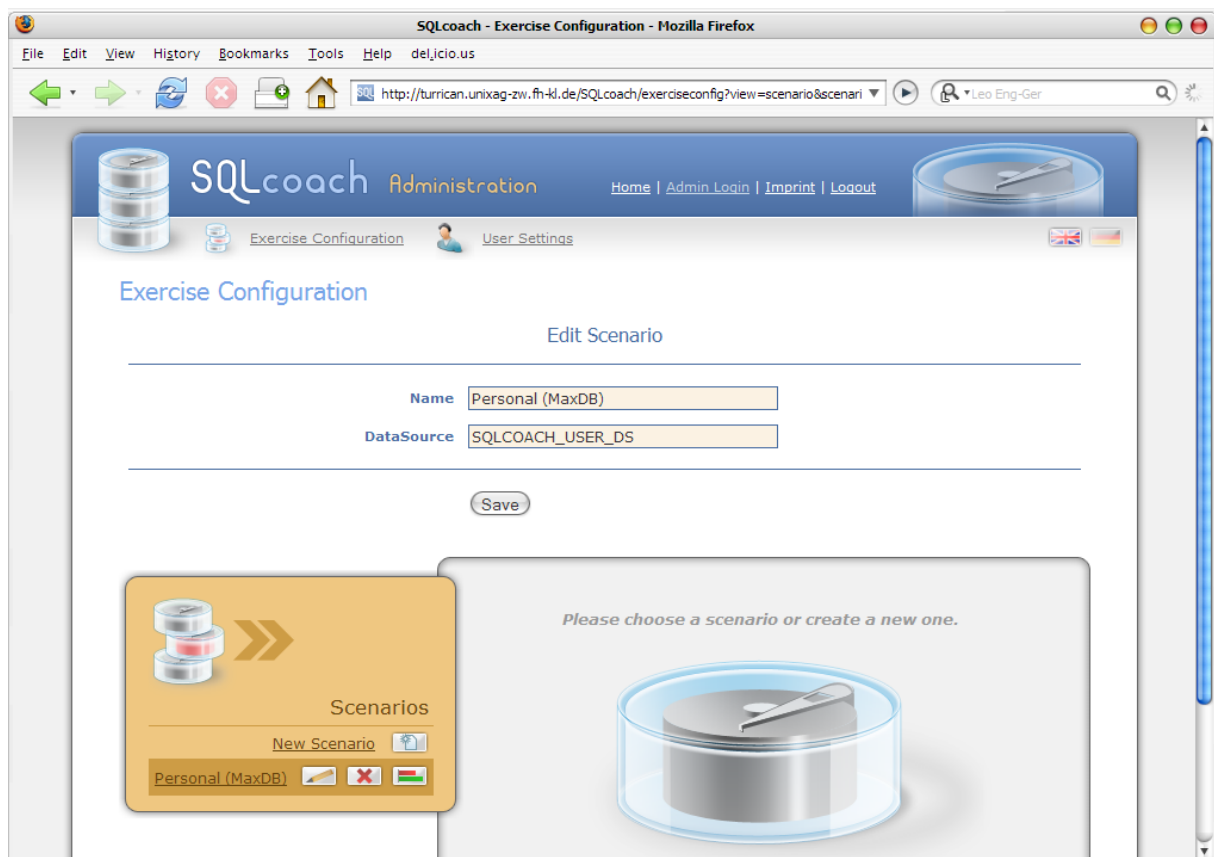
The superadmin is able to change his/her password and to add a new user. He also gets a list of all users displayed, who are registered in the system. The superadmin can configure their settings by click the "Edit" button. He/she can also delete a user by clicking the "Delete" button and can change the password of the users with the "Change Password" button.

The settings, that could be entered for each admin or superadmin are his nickname, first name, last name, email, title and his role, which will be admin or superadmin.

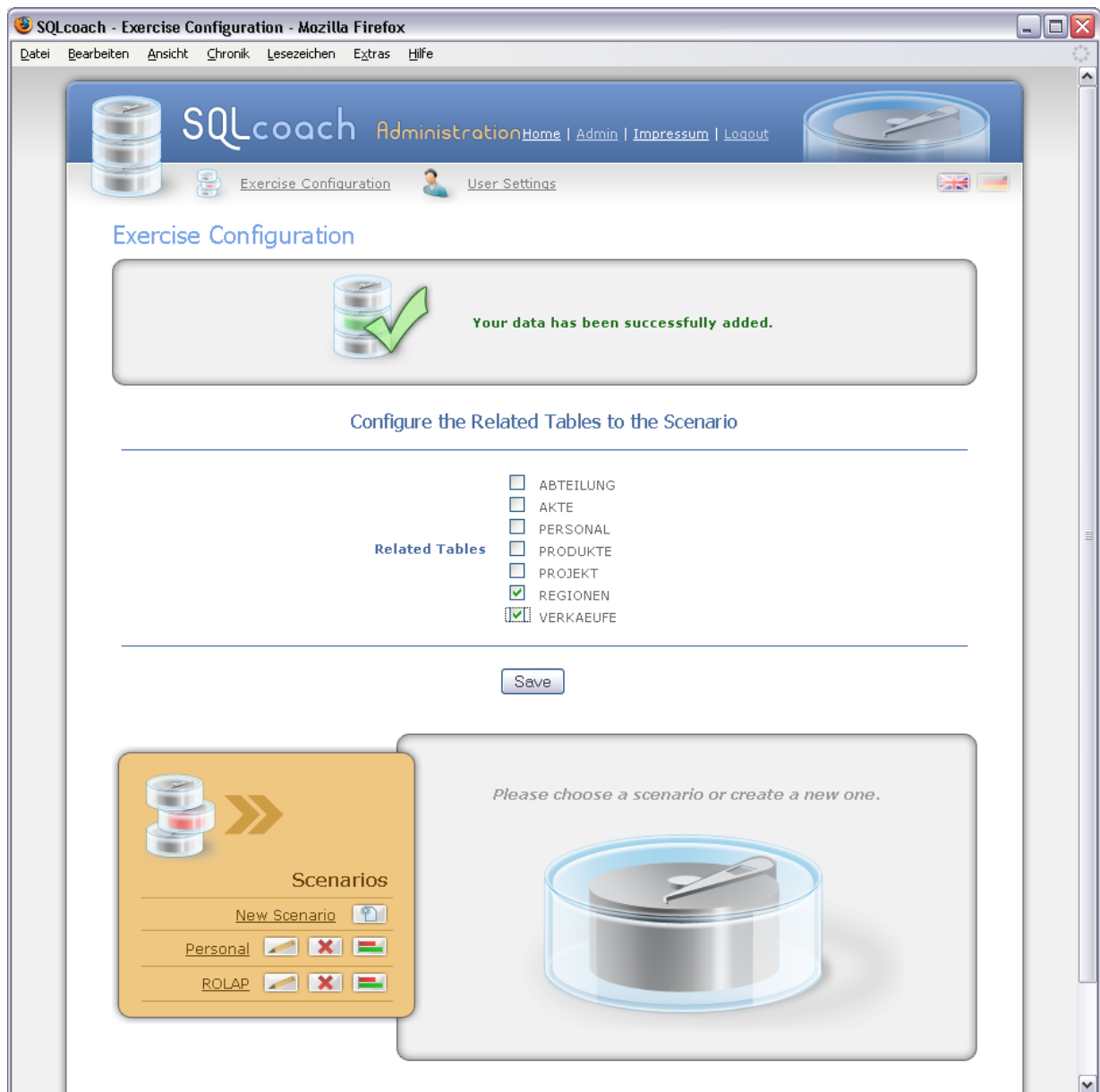
4.3 Scenarios and Related Tables

Scenarios can be created, existing ones can be edited and also deleted in the Administration view. New scenarios can be created by clicking the "New Scenario" button. Edit them by click on the "Edit" button and delete them with the "Delete" button.

In the following screen shot you can see the first step for creating or editing a scenario. For this purpose you must enter a descriptive name for the scenario and, very important, the data source of your database. More detailed information about that, you will find in the Installation Guide of SQLcoach.



After you press the "Save" button the second step follows. You have to specify the database tables, which are related to this scenario. Using meta data all tables that belong to the user of the configured data source will be selected and can now be add to this scenario. So it is also possible to have several scenarios sharing the same data source.



After this second step you should "Save" and your scenario has been created. The next step will be the creation of the task groups.

4.4 Exercise Configuration

The structure of the system is equivalent to the structure of the user GUI (Graphical User Interface). On the first level you have the scenarios, on the second level you have the task groups and on the third the tasks.

In Administration view you have four configuration possibilities for each level, so scenario, task group and task. You can create new ones, delete them, edit them or just display them.

4.4.1 Task Groups

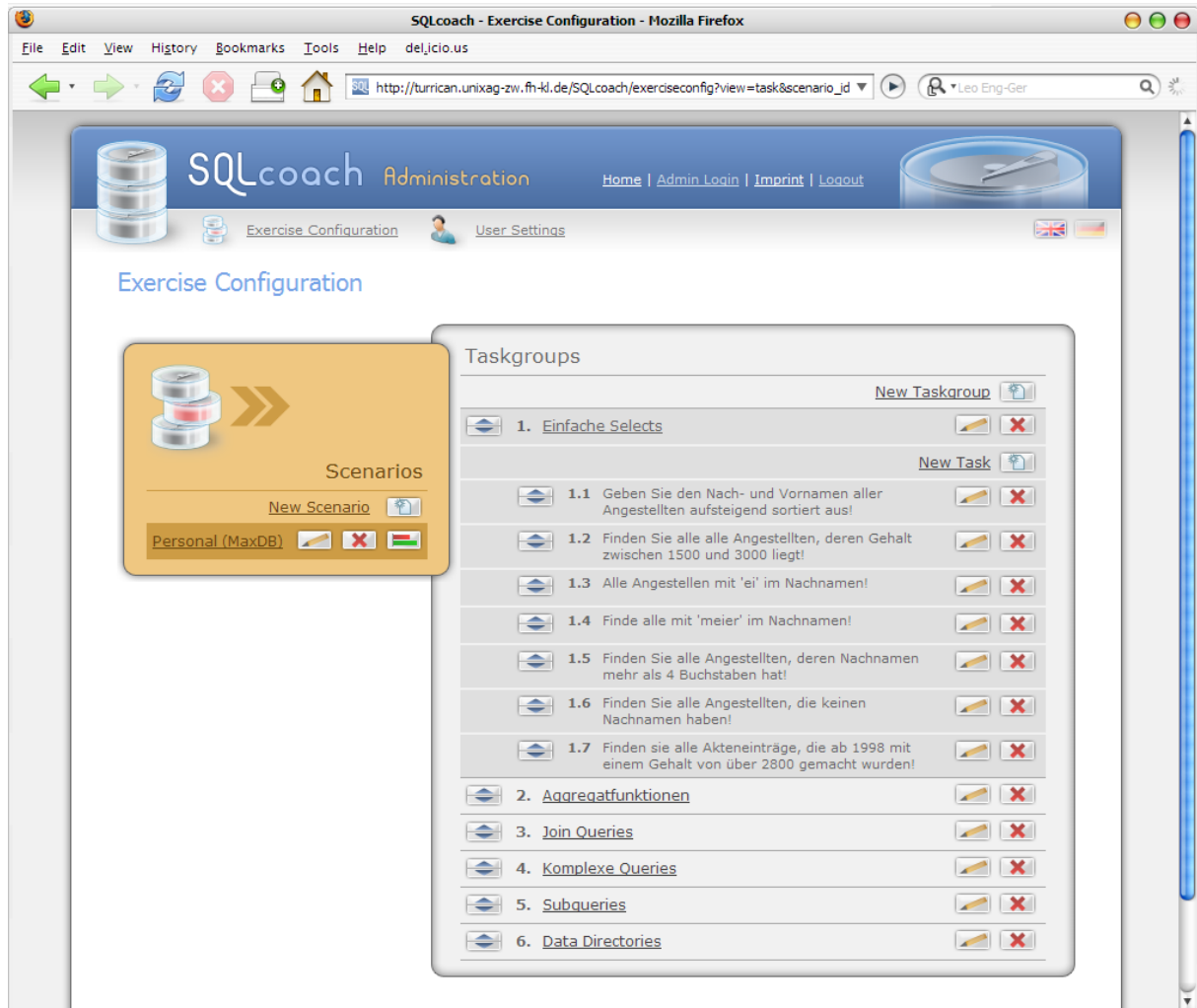
To create, edit or delete task groups click to the corresponding scenario item. For a new task group you just have to specify its name.

The buttons have the same meaning like known for the scenario. The only additional thing here is the possibility of rank the item of the task group list, by clicking on one of the blue arrow buttons in front of each item. That will rank them up or down.



4.4.2 Tasks

The tasks overview has a similar interacting background like the task groups have.



To specify a new task or edit an existing one you have to enter a significant "Task Description", to make the student understandable, which problem he/she has to solve. And you must enter your correct "SQL Query" solution.

Additionally you may provide a hint that will be shown to the student after 3 unsuccessful trials.

When saving you will get a feedback by the system if the query will fail or will be successful. The resultset of your query will also be displayed. This offers you a possibility to verify your query and your expected results.

SQLcoach Administration
 [Home](#) | [Admin](#) | [Impressum](#) | [Logout](#)

[Exercise Configuration](#)
[User Settings](#)

Exercise Configuration

Edit Task

Task Description

Bestimmen Sie die Anzahl der Mitarbeiter pro Projekt absteigend sortiert nach der Mitarbeiterzahl!

SQL Query

```

1 SELECT projnr, count(*) as anzahl FROM personal
2 GROUP BY projnr
3 ORDER BY anzahl DESC
4
5
6
7

```

Hint

Sie müssen nach der Projektnummer gruppieren!

Save

Scenarios
[New Scenario](#)

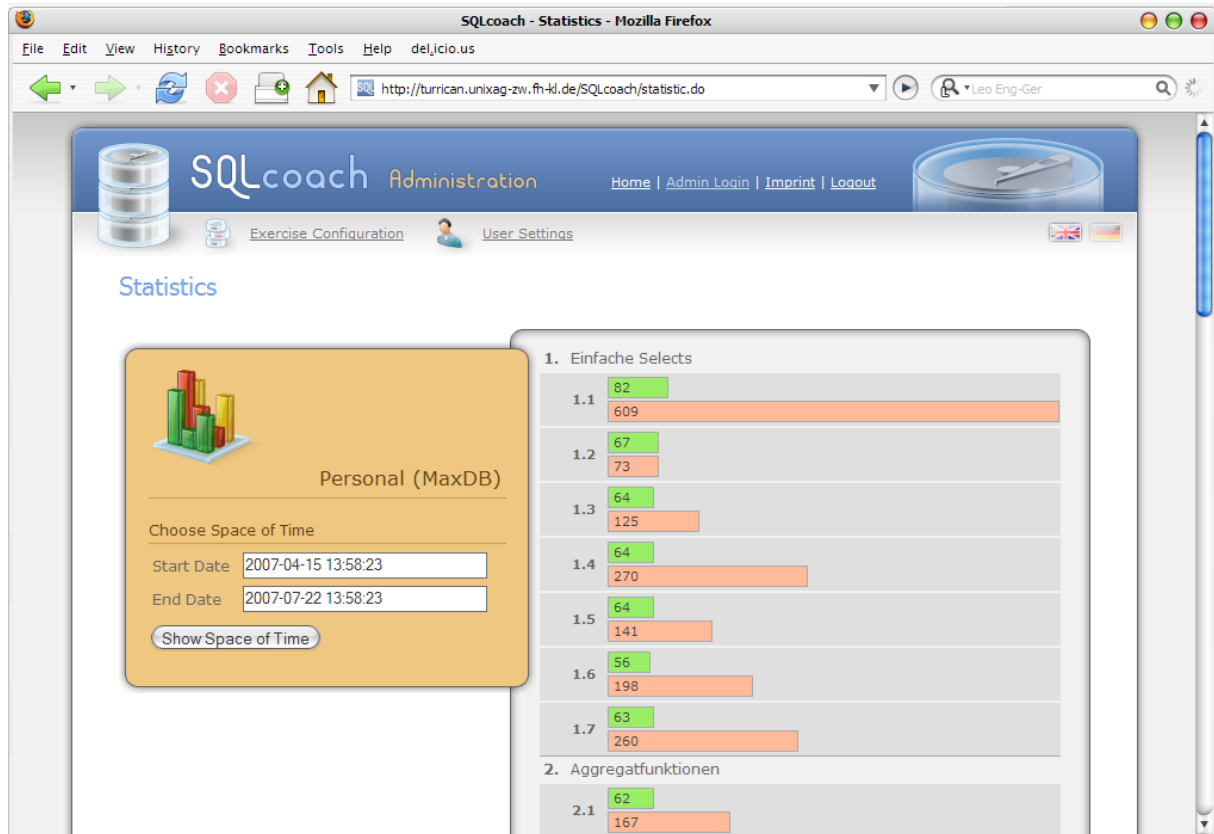
Task Groups
[New Task Group](#)

	1. Einfache Selects		
	2. Aggregatfunktionen		

[New Task](#)

4.5 Statistics

For Scenarios there is also an additional feature available. The statistic feature. Statistics can be called by clicking the "Show Statistics" button in the Scenario panel. It provides an overview of the failed (red) and successful (green) tasks of the users of the application.



Here you can also specify the space of time for the statistics. Enter a start and a end date. By default the last week is shown.

4.6 Logout

For logging out of the Administration of SQLcoach click on the top right "Logout" link. You will be forwarded to the home page of the SQLcoach application.

5 Contact

5.1 Project Pages

Project is running on: <http://sqlcoach.informatik.fh-kl.de>

Project page for developers: <http://sourceforge.net/projects/sqlcoach>

5.2 Forums

http://sourceforge.net/forum/?group_id=190456

5.3 Developer

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6 Your Notes