A new Implementation of „Seminar Organization“

Uli Sacklowski
Michael Ritzschke
Contents

- Motivation
- Architecture and Design
- Documents
- Installation
- Summary
Several implementations of „Seminar Organization“ are available now

- **Balzert: Original – but without Sources**
- **Ivan Pribela (DAAD workshop, Zagreb, 2005):**
  - Java-Sources
  - new GUI
- **HU (authors: Volker Janetschek, Michael Hidebrandt):**
  - Java-Sources
  - GUI like Balzert - which is more ergonomic
  - all Functions and Associations
  - high Stability
  - Detailed Documentation (JavaDoc, installation guide, class diagram, implementation design, database design)
Where is „Seminar Organization“ used?

- JCSE (Joint Course in Software Engineering):
  - Commercial case study (XCTL technical)
  - Illustrates all required documents throughout the JCSE
  - Illustrates principles of software ergonomics
  - Real-world example ...

- Base for working with other tools:
  - Software metrics (CCCC)
  - Regression Test (ATOS)
Contents

- Motivation
- Architecture and Design
- Documents
- Installation
- Summary
HUSemOrg topics

- Stand-alone application
- MySQL-Database (free Essential-Version)
- GUI-Base: Standard Widget Toolkit (SWT)
- The running-version uses Windows
- Also possible: Linux/Unix, Mac – but you have to download the appropriate SWT version
HUSeMorg: Layered architecture

- Provides a pleasant graphical interface for the user
- SWT is fast, offers a wide spectrum of functionality and is also very portable
- Interface for easy access to the application data
- Correctness checking (entered data and associations)
- Relational database husemorg (→ Database Design)
- Java database connectivity driver

GUI
SWT
Application
Database
MySQL

DAAD Workshop Risan, September, 9th - 14th, 2007 7
Database Design

Documentation: Structure of all database tables and the ERM

Tables

The table names in the database consist only of lowercase characters. We used the mixed notation to enhance the readability.

We present the structure of the tables in tabular form using the following columns:

- **Field**: the name of the attribute or table column
- **Type**: the SQL datatype of the column
- **Not Null**: indicates, if a NULL value is allowed for the column
- **Key**: indicates, if the column is a primary key
  - PRI: column is part of the primary key
  - UNI: value must be unique in the table
  - MU: multiple occurrences of the same value are allowed
- **Default**: the default value of the attribute
- **Extra**: extra information

The Table Person

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Not Null</th>
<th>Key</th>
<th>Default</th>
<th>Extra</th>
</tr>
</thead>
<tbody>
<tr>
<td>number</td>
<td>int(11)</td>
<td>yes</td>
<td>PRI</td>
<td>NULL</td>
<td>auto_increment</td>
</tr>
<tr>
<td>salutation</td>
<td>varchar</td>
<td>yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>title</td>
<td>varchar</td>
<td>yes</td>
<td></td>
<td>NULL</td>
<td></td>
</tr>
<tr>
<td>firstname</td>
<td>varchar</td>
<td></td>
<td>NULL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>name</td>
<td>varchar</td>
<td></td>
<td>NULL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>street</td>
<td>varchar</td>
<td></td>
<td>NULL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>city</td>
<td>varchar</td>
<td></td>
<td>NULL</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DAAD Workshop Risan, September, 9th - 14th, 2007
Implementation Design

- The source code is organized in 10 packages
Contents

- Motivation
- Architecture and Design
- Documents
- Installation
- Summary
http://www2.informatik.hu-berlin.de.swt/intkoop/jcse/

**Joint Course in Software Engineering:**

<table>
<thead>
<tr>
<th>Course Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure of the course</td>
</tr>
<tr>
<td>Case studies</td>
</tr>
<tr>
<td>Tools</td>
</tr>
</tbody>
</table>

**Case studies**

The proposed syllabus currently uses two case studies:

- **the main one (Seminar organization),** that is used throughout the lectures and in some assignments
  - Preliminary Requirements Specification v 3.0
  - Preliminary Requirements Specification v 2.3
  - Requirements Specification v 3.0
  - Requirements Specification v 2.3
  - Implementation in Java (Novi Sad)
  - Implementation in Java (Humboldt University), Documents, Developer version (with Java-sources)

- **the additional one (KCTL control system),** that is partially used during the lecture and in some assignments, seminar works or student projects.
http://www2.informatik.hu-berlin.de/swt/intkoop/jcse/

Documents ➔ husemorg_documents.html

Seminar Organization
HUSemOrg: Documentation

The documentation contains 4 documents:

- Quick Start Guide
- Class Diagram
- Implementation Design
- Database Design

You can also load all documents as zip-File.

Table:
The title name is the database unique only of browsing characters. We used the column to refersto the actions the relationship.

<table>
<thead>
<tr>
<th>Title</th>
<th>Type</th>
<th>NotNull</th>
<th>Key</th>
<th>Default</th>
<th>Extra</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>double</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>null</td>
</tr>
<tr>
<td>Value2</td>
<td>double</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>null</td>
</tr>
<tr>
<td>Value3</td>
<td>double</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>null</td>
</tr>
<tr>
<td>Value4</td>
<td>double</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>null</td>
</tr>
</tbody>
</table>

The packages semorg gui.icon and semorg gui.languages

These two resource packages only contains resources used by the application. The package
semorg gui.icon contains all graphics of the application whereas semorg gui.languages
contains all text resources shown in the GUI of the application.

The packages semorg gui.list and semorg gui.provider

We use GUI tables to display the existing data records of the database tables. Thus there are
problems to solve: Firstly we need to draw the list windows and its components and secondly
we've got to insert the data records into the tables. The first problem is solved by the package
semorg gui.list and the second one by the package semorg gui.provider, i.e. the first package
defines the proper appearance of the list windows and some GUI specific functionality whereas
the second package gets the data from the application layer and puts it into the GUI tables.

The package semorg gui.util

This package encapsulates all utility classes of the GUI layer, such as some complex parts of
the editing windows, such as the controls, which enables the user to manage associations
between entries (uses the column control which enables the user insert the data in very
convention way).
http://www2.informatik.hu-berlin.de.swt/intkoop/jcse/

- **Developer version** → husemorg_project.zip
http://www2.informatik.hu-berlin.de/swt/intkoop/jcse/

- javadoc → index.html
- full description of all packages and classes

<table>
<thead>
<tr>
<th>Packages</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>semorg.conf</td>
<td>This package provides the functionalities to set and get certain configuration properties.</td>
</tr>
<tr>
<td>semorg.gui</td>
<td>Provides SWT based classes modelling editing windows for creating new or change existing data records.</td>
</tr>
<tr>
<td>semorg.gui.list</td>
<td>Provides several list windows of the GUI</td>
</tr>
<tr>
<td>semorg.gui.provider</td>
<td>Provides the mapping list windows for data objects (application layer).</td>
</tr>
<tr>
<td>semorg.gui.util</td>
<td>This package provides utilities for the several window classes.</td>
</tr>
<tr>
<td>semorg.sqlaccess</td>
<td>The package provides the access to the database and the whole connection and SQL statement management.</td>
</tr>
<tr>
<td>semorg.sqltables</td>
<td>Implements the object-relational mapping.</td>
</tr>
<tr>
<td>semorg.sqlutil</td>
<td>This packages provides utility classes for database layer classes.</td>
</tr>
</tbody>
</table>
Contents

- Motivation
- Architecture and Design
- Documents
- Installation
- Summary
Quick Start Guide

Seminar Organization

HUSemOrg: Quick Start Guide

(Sacklowski, 18.07.07; Hildebrandt 14.08.07)

This guide refers to the installation on the Windows operation system. The application should also run under Linux/Unix or Mac operating systems, but in this case you have to download the appropriate SWT version.
There are two steps to follow for the appropriate installation.

Step 1: Install MySQL and some tools
Step 2: Install the husemorg

2. Install HUSemOrg

- HUSemOrg is Java application, so it’s necessary to install the Java Runtime Environment (Version 5 and higher).
- HUSemOrg comes with all the needed libraries, so you just have to unpack the zip archive husemorg.zip.
- You can start the application by executing the HUSemOrg.bat or the HUSemOrgNoConsole.bat.
http://www2.informatik.hu-berlin.de/swt/intkoop/jcse/

- **Implementation** → husemorg.zip
- **Running version**

```
javaw -cp lib\husemorg.jar;lib\core.commands.jar;lib\equinox.common.jar;lib\jface.jar;lib\mysql-connector-java-3.0.16-ga-bin.jar;lib\swt.jar;bin\-Djava.library.path=lib semorg.gui.MainWindow
```
Contents

- Motivation
- Architecture and Design
- Documents
- Installation
- Summary
http://cloc.sourceforge.net: cloc.exe (count lines of code)

- HUSemOrg

<table>
<thead>
<tr>
<th>Language</th>
<th>files</th>
<th>blank</th>
<th>comment</th>
<th>code</th>
<th>scale</th>
<th>3rd gen. equiv</th>
</tr>
</thead>
<tbody>
<tr>
<td>Java</td>
<td>75</td>
<td>4363</td>
<td>2163</td>
<td>20314</td>
<td>1.36</td>
<td>27627.04</td>
</tr>
<tr>
<td>HTML</td>
<td>10</td>
<td>10</td>
<td>0</td>
<td>64</td>
<td>1.90</td>
<td>121.60</td>
</tr>
<tr>
<td>SUM:</td>
<td>85</td>
<td>4373</td>
<td>2163</td>
<td>20378</td>
<td>1.36</td>
<td>27748.64</td>
</tr>
</tbody>
</table>

- semorg Novi Sad

<table>
<thead>
<tr>
<th>Language</th>
<th>files</th>
<th>blank</th>
<th>comment</th>
<th>code</th>
<th>scale</th>
<th>3rd gen. equiv</th>
</tr>
</thead>
<tbody>
<tr>
<td>Java</td>
<td>65</td>
<td>2618</td>
<td>3216</td>
<td>3216</td>
<td>1.36</td>
<td>14980.40</td>
</tr>
<tr>
<td>DOS Batch</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.63</td>
<td>1.89</td>
</tr>
<tr>
<td>SUM:</td>
<td>68</td>
<td>2618</td>
<td>3216</td>
<td>11018</td>
<td>1.36</td>
<td>14982.29</td>
</tr>
</tbody>
</table>
Where you can find the software

- http://www2.informatik.hu-berlin.de/swt/intkoop/jcse/case_studies/SeminarOrg/hu/

Thank you for your attention!