



Universität Zürich
Institut für Informatik

Binzmühlestr. 14
CH-8050 Zürich
Schweiz
Tel. +41 044 635 43 33
Fax +41 044 635 68 09
boehlen@ifi.uzh.ch
www.ifi.uzh.ch/dbtg

Prof. Dr. Michael Böhlen
Database Technology

MSc thesis

Patrick Leibundgut

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Design and implementation of a statistics and visualization engine for Oshiya

The Oshiya scheduling model enables the development of traditional and domain-specific scheduling protocols in a declarative and flexible manner. The Oshiya demo application is intended (1) to facilitate the development of new scheduling protocols, (2) to support the analysis of their behavior and (3) to allow for protocol comparisons.

In the proposed project, the Oshiya demo application shall be extended by a statistics and visualization engine. This task includes most notably:

1. Literature research on declarative scheduling [1, 2, 3]
2. Requirements analysis - analyzing which data has to be collected
3. Conceptual design - evaluating the most beneficial visualization options
4. Implementation (modular and extendible) and testing of the statistics and visualization engine
5. Design and implementation of a flexible export functionality
6. Writing a scientific demonstration paper. The contribution of the paper shall be elaborated which is the support of comparisons of single- and multiversion protocols.
7. The statistics and visualization engine shall be designed and implemented in a way that it emphasizes the characteristics and advantages of Oshiya as well as the main contributions of the paper.
8. Writing a master thesis presenting and analyzing your results
9. Presentation of results (15 minutes)

Aim:

- A running Oshiya demo application allowing users to compare single- and multiversion protocols, whereby, a statistics and visualization engine emphasize the comparison resp. analysis.
- A scientific demonstration paper (e.g., for VLDB 2012, deadline March 29, 2012)



Requirements:

- Experience in programming Java (incl. thread programming), Java Swing
- Knowledge in concurrency control, transaction processing

Conditions:

- A project meeting will take place periodically (typically every two weeks). At least 24 hours prior to a project meeting a report has to be sent to the supervisor including (a) the progress since the last meeting, (b) planned next steps, (c) problems to discuss and (d) ideas to solve those problems.

Literatur

- [1] Christian Tilgner and Boris Glavic and Michael H. Böhlen and Carl-Christian Kanne. Declarative Serializable Snapshot Isolation. In *ADBIS*, pages 170–184, September 2011.
- [2] Christian Tilgner and Boris Glavic and Michael H. Böhlen and Carl-Christian Kanne. Smile: Enabling Easy and Fast Development of Domain-Specific Scheduling Protocols. In *BNCOD*, pages 128–131, 2011.
- [3] C. Tilgner. Declarative Scheduling in Highly Scalable Systems. In *EDBT/ICDT Workshops*, pages 41:1–41:6, 2010.

Task assignment and Supervisor: Christian Tilgner

Starting date: January 3, 2012

Ending date: July 3, 2012

Department of Informatics, University of Zurich

Prof. Dr. Michael Böhlen