



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

Facharbeit

Michael Hartmann

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Design and Implementation of a Demo Application for Smile

Within the scope of the proposed project, a demo application for *Smile* (our declarative scheduling middleware) shall be planned and implemented. This includes requirements analysis, conceptual design, implementation and testing. The demo application shall illustrate the operating mode of our scheduling approach.

Tasks:

- Literature research on declarative scheduling [1, 2]
- Requirements analysis
- Conceptual design (towards high modularity)
- Implementation and testing of demo application (leveraging our declarative 2PL and SI implementations)
- Write a report of 10 pages presenting your results
- Presentation of results (15 minutes)

Background:

Modern systems have to schedule huge amounts of concurrent client requests efficiently while guaranteeing that the produced schedules fulfill certain correctness criteria and/or service-level agreements. The state of the art is to develop schedulers imperatively for a given application, which yields very complex scheduler implementations and inflexibility to adapt to changing scheduling requirements.

In our declarative scheduling approach, we model requests as data and use query processing to generate schedules by selecting which pending requests to execute next, based on current and historic request data. Following this idea we developed *Smile*, a declarative scheduling middleware, that hides lower-level scheduling details from the developer, who only needs to provide the queries that decide which requests should be executed next to implement a new scheduling protocol.



Requirements:

- Experience in programming Java (incl. thread programming)
- Knowledge in the following areas: concurrency control, transaction processing
- (Experience with Java Swing, SWT)

Literatur

- [1] C. Tilgner. Declarative Scheduling in Highly Scalable Systems. In *EDBT Ph.D. Workshop, Lausanne*, March 2010.
- [2] C. Tilgner, B. Glavic, M. Boehlen, and C.-C. Kanne. Correctness proof of the declarative SS2PL protocol implementation. Technical report, University of Zurich, Department of Informatics, Zürich, Switzerland, September 2010.

Task assignment and Supervisor:

- Christian Tilgner

Starting date: 24.03.2011

Ending date: 23.09.2011

Department of Informatics, University of Zurich

Prof. Dr. Michael Böhlen