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Prof. Dr. Michael Böhlen  
Database Technology

**Vertiefungsarbeit**

Martin Noack

Zürich, 9. November 2011

### **Design and implementation of a correctness checker for the Oshiya demo application**

In the proposed project, an existing demo application for the *Oshiya* scheduling model shall be extended by a correctness checker that checks during runtime whether a set of user-specified, protocol-specific constraints holds for the generated history. The correctness checker (logic and GUI) shall be designed and implemented in a way that it emphasizes the characteristics and advantages of Oshiya. This task includes requirements analysis, conceptual design, implementation and testing. For testing, the protocol-specific constraints have to be developed for the existing SS2PL implementation.

#### Tasks:

- Literature research on declarative scheduling [1, 2, 3]
- Based on the existing basic version of the demo application, requirements analysis and conceptual design (towards high modularity) shall be done for the protocol-dependent correctness checkers.
- Implementation and testing of the correctness checker
- Presentation of results (15 minutes)
- Oral exam

#### Requirements:

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

#### Aim:

- A running protocol-dependent correctness checker for the demo application that periodically checks protocol constraints specified by the users.



## 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 *Proceedings of the 2010 EDBT/ICDT Workshops*, EDBT '10, pages 41:1–41:6, 2010.

Task assignment and Supervisor: Christian Tilgner

Starting date: 09.11.2011

Ending date: 24.01.12

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**Vereinbarer Prüfungstoff:**

- Mehrbenutzerkontrolle in Datenbanksystemen
- Funktionsweisen und Varianten vom Zwei-Phasen-Sperrprotokoll
- Oshiya scheduling model
- Protokoll - Korrektheitsprüfung in Oshiya