

Current Trends in DBS

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Courses:

Wednesday, 10:00 – 11:30h
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Room: 46-210



Current Trends in DBS – SS 2006



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1. Layer Model of DBS Architecture
(prerequisite of the course: key concepts of DBAW)
 - Towards a relational DBS architecture
 - Evolution of the layer model
 - Optimization issues
 - Provisions for ACID properties
 - Architectural extensions for DBS
 - Towards information systems

2. Towards Future DBS Architectures
 - Distribution and parallelism
 - Classical requirements: performance, availability, extensibility, ...
 - Processing concepts
 - Future requirements
 - New DBMS data types
 - Architectural issues
 - Overflow



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3. Multi-Computer DBS

- Coupling of computers
- Spatial distributions
- Classification of MC-DBS
- Integrated vs. federated architectures
- Client/server architectures

4. High-Performance Transaction Systems (HTPS)

- Classification schema for MC-DBS
- Shared Nothing vs. Shared Disk
- Performance, availability, extensibility
- Realization problems
- Reproduction of TA workloads
- Measures of transaction processing
- The Benchmark Success
- Overflow



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5. Function and Data Integration

- Towards an FD integration architecture
- Towards function integration by workflows
- Coupling FDBS and CIF
- Mapping complexity of federated functions
- Execution model of the integration architecture
- Some remarks on an extended transaction model
- Prototyped architectures – performance measurements

6. Web and Database Caching

- Issues of Web caching
- What is DB caching?
- Research prototypes: DBProxy and DBCache
- ACCache: Adaptive constraint-based DB caching
- Implementation issues for a middleware-based cache system
- Update models for DB caching



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- 7. XML Database Systems
- 8. Peer-to-Peer Database Systems
- 9. Data Warehousing
- 10. Data Mining



References

- Gray, J.: The Next Database Revolution, SIGMOD Conference 2004: 1-4
- Härder, T.: DBMS Architecture - The Layer Model and its Evolution, in: Datenbank-Spektrum, dpunkt-Verlag, Heft 13, May 2005, pp. 45-57.
- Härder, T.: DBMS Architecture - New Challenges Ahead, in: Datenbank-Spektrum, dpunkt-Verlag, Heft 14, Aug. 2005, pp. 38–48.
- Härder, T., Bühmann, A.: Value Complete, Column Complete, Predicate Complete—Magic Words Driving the Design of Cache Groups, submitted.
- *Özsu, T., Valduriez, P.: Principles of Distributed Database Systems. Second Edition, Prentice-Hall, 1999*
- Rahm, E.: Hochleistungs-Transaktionssysteme, Vieweg, 1993
- Rahm, E.: Mehrrechner-Datenbanksysteme, Addison-Wesley, 1994
- Further references are listed in the individual chapters.

