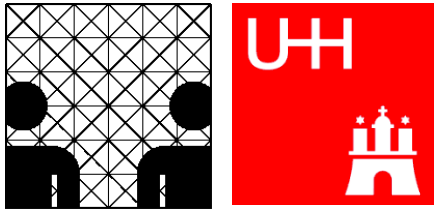
Databases and Information Systems

Prof. Dr. Wolfgang Menzel: *Natural Language Systems (NATS)*

Prof. Dr. Norbert Ritter: *Databases and Information Systems (IS)*



Course Outline (1)

Part I: Norbert Ritter

- **A) Architecture of Database Systems**
  - Layer Model
  - (Architectural) Extensions
- **B) Relational Database Systems**
  - Query Processing and Application Processing Interfaces
  - Transaction Management
    - Correctness / Concurrency Control
    - Logging and Recovery
- **C) Distributed Database Systems**
  - Architectures (Distributed/Parallel/Federated)
  - Distributed Query Processing, Distributed Transaction Management, Replication
- **D) NoSQL Database Systems**
  - System Approaches
  - CAP-Theorem
  - Consistency Models

Course Outline (2)

Part II: Wolfgang Menzel

- Deductive Databases
- Data Warehouses and OLAP
- Data Mining
- Information/Document Retrieval
- Web/Text Mining
- Semantic Web

References Part I (1)

- **Foundations/Prerequisites (cf. GDB)**
  - *Kemper, A., Eickler, A.:* **Datenbanksysteme – Eine Einführung**, 4. Auflage, Oldenbourg-Verlag, 2001
  - *Ullmann, J.D., Widom, J.:* **A First Course in Database Systems**, Prentice Hall
  - *Date, C.J.:* **An Introduction to Database Systems**, Addison-Wesley
- **A, B)**
  - *Härder, T.:* **DBMS Architecture – The Layer Model and ist Evolution**, Datenbank-Spektrum, dpunkt Verlag, Heft 13, 2005
  - *Härder, T., Rahm, E.:* **Datenbanksysteme – Konzepte und Techniken der Implementierung**, Springer-Verlag, Berlin, 2001
  - *Weikum, G., Vossen, G.:* **Transactional Information Systems**, Morgan Kaufmann Publishers, San Francisco, CA, 2002

References Part I (2)

- **C)**
  - *Rahm, E.:* **Mehrrechner-Datenbanksysteme: Grundlagen der verteilten und parallelen Datenbankverarbeitung**, Addison-Wesley, 1994, Online-Version 1997: http://dbs.uni-leipzig.de/buch
  - *Özsu, M.T.; Valduriez, P.:* **Principles of Distributed Database Systems**, Prentice Hall 1991, 1999
  - *Dadam, P.:* **Verteilte Datenbanken und Client/Server-Systeme**, Springer, 1996
- **D)**
  - *Tiwari, S.:* **Professional NoSQL**, John Wiley and Sons, 2011
  - *Gilbert, S., Lynch, N.:* **Brewer's Conjecture and the Feasibility of Consistent, Available, Partition-Tolerant Web Services,** SigAct News 2002

References Part I (3)

- **Journals**
  - *TODS* Transactions on Database Systems, ACM (quarterly)
  - *Information Systems,* Pergamon Press (6 times a year)
  - *The VLDB Journal* (quarterly)
  - *IFE Informatik - Forschung und Entwicklung* (quarterly)

- **Conference Proceedings**
  - *SIGMOD* ACM Special Interest Group on Management of Data
  - *VLDB* Very Large Data Bases
  - *IEEE* Int. Conf. on Data Engineering
  - *GI* Conferences of the German Association of Computer Science (Gesellschaft für Informatik), Department of Information Systems
  - and many more ...

Course Information/Docs and Exercises

- **Organizational Issues, Notes, Exercises**
  - http://vsis-www.informatik.uni-hamburg.de/oldServer/teaching/ss-14/dis/
- **Exercises**
  - Will be introduced during exercise hours, be there!
  - Working time: usually 1 or 2 weeks
  - Handling
    - teams of 2 students
    - mostly practical exercises
    - during exercise hours: F525, F526, F529, F531
    - you can also work on exercises at home or at IRZ
  - Demonstration
    - of results/solutions during exercise hours, see advisors!

Prerequisites for oral Examinations

- **Constant participation in exercises**
  - Be there during exercise hours!
- **Successful completion of all exercises / tasks**
  - All exercises, except one, need to be processed successfully
  - ‘Successful’ depends on specification of task; regarding theoretical tasks 50% of the achievable points are required.