Syllabus
Database Technology (2IMW20, 5 ECTS)
Quartile 3 2016-2017
Wednesdays (15:45-17:30, Flux 1.02) & Fridays (10:45-12:30, Aud 2)

Staff

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Prior Knowledge

2ID50 – Datamodeling and databases (recommended)

Learning Objectives

Insight into and knowledge of concepts, methods and techniques for the improvement of the performance of data-intensive systems and for the realization of characteristic database properties such as persistence, reliability and integrity. The insight and knowledge are acquired partly by following lectures, partly by study, and partly by setting up and carrying out database experiments.

Major Topics Covered in the Course

Selected topics from the area of database system properties and their realization. The implementation design of a database system has to take performance and dependability requirements into account. In this course the different ways are studied in which database systems try to meet these requirements. In particular, attention will be paid to access and storage structures, query and transaction processing, concurrency control and recovery. These aspects will mainly be studied for both central and distributed relational database systems. Some topics will be covered in the lectures, others in an assignment. The actual topics will be announced via the on-line study guide.

Required Textbook

A. Silberschatz, H. Korth, and S. Sudarshan, "Database System Concepts", 6th Edition (2011) McGraw-Hill. Note: you can also use the 5th edition.

Student Responsibilities

- One written individual assignment,

- One multi-part team project, and

- One final exam.

Grading Criteria

- 10% written assignment

- 50% team project

- 40% final exam

Tentative Week-by-Week Course Outline

- (8 February) Course introduction and background review (relational model, data independence).

- (10 February) Storage, the I/O computational model, & external sorting. Indexing: B-trees, R-trees.

    - Sunday 12 February: project part 0 due (paper selection)

- (15 February) Indexing: hashing and evaluation of indexes

- (17 February) Query processing

- (22 February) Data statistics & Answering queries using views

- (24 February) Query optimization

    - Sunday 26 February: project part 1 due (first report)

- (1 & 3 March) *no lectures – Carnaval*

- (8 March) *no lecture – team project meetings with instructors*

    - written assignment posted

- (10 March) Main-memory data management

- (15 March) Transaction management

- (17 March) *no lecture – University Information Day*

- (22 & 24 March) *no lectures – work on team project*

    - Sunday 26 March: project part 2 due (second report)

- (29 March) Distributed query processing

- (31 March) *no lecture – team project meetings with instructors*

- (5 April) Course summary and exam review

- (7 April) Project poster presentations

    - Friday 7 April (in class): written assignment due

- (13 April) Project part 3 (final submission) due

- (21 April, 9:00-12:00) Final exam

Course Policies

- *Participation.* As this class endeavors to teach professional skills, it is reasonable to ask that students act professionally and treat all course participants with respect. The subject matter of this course deserves discussion; we encourage you to offer your ideas and thoughts to the class and to question the material presented.

- *Assignments & project deliverables* are due at the time and in the manner specified in the assignment description. Late work will lose 33% of its original point-value for each day late, and once solutions are posted or discussed late submissions will not be accepted.

- *Plagiarism and cheating* will not be tolerated. University policy will be adhered to in all such cases. You are free to work with others in interpreting assignments, practicing with tools, and inspecting code. However, the individual assignment and the exam are to be done individually. Submissions that appear to be plagiarized will trigger an investigation.