

Exam

- 30 minutes individual oral exam
 - Draw a topic from 10
 - ~1 minute preparation with your notes
 - Put your notes aside and start!
- Reference to your mini project
 - But the grade is not given based on the mini project
- Danish 7-point grading scale
- The format is similar to other exams at IT-Vest
- Censor will be Rico Wind, Aalborg University

Preparation for Exam

- Prepare 12-15 minutes of talk, we will interrupt you
 - Use the blackboard
 - Use small and good examples
 - Go for the “beef”, ignore the less important
 - Own notes cannot be used!
 - Feel free to discuss materials related to another question
- Two extreme cases will be avoided
 - Reading your own notes
 - No reference with you at all
 - ◆ A topic page will be given to aid you a little bit
- Question list

1. Relational Algebra

- The relational data model
- Operators, e.g., σ and π
- Joins

2. SQL

- SQL's data model
- DDL, DML
- Subquery and operators
 - **ANY, ALL, IN, EXISTS**
- NULL values
- Views

3. ER Modeling

- ER model components
- Keys
- ER-diagram to tables

4. Integrity Constraints

- Column Constraints
 - Table Constraints
 - Referential Integrity
 - Domain Constraints
 - Assertion
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- Covered in “Constraints in SQL” slides

5. Normalization

- Functional dependencies
- BCNF
- 3NF

6. Physical Database Design

- Data file organization
 - Heap, sequential, hashing, clustering
- Indexes
 - Single level: primary, clustering, secondary indexes
 - B⁺-tree index
 - hash index

7. Query Processing and Optimization

- Evaluation strategies for selections and joins
- External sorting
- Query optimization
 - Heuristic vs cost-based
 - Measures of cost
 - Size estimation

8. The Transaction Concept

- ACID properties
- Serializability
 - Result and conflict
- Recoverability

9. Concurrency Control

- Isolation
- Protocols
- Deadlocks

10. Recovery

- Atomicity
- Durability
- Logging
- Recovery algorithms
- Checkpoint

What to Do Next?

- Mini-project
 - Transactions, concurrency control, and recovery
 - Report deadline: **October 23, 2008 at 14.00**
- Three weeks ahead before the exam
- Reading
 - Slides
 - Textbook