

TDDD37 Database technology Wrap-up

Fang Wei-Kleiner
fang.wei-kleiner@liu.se
<http://www.ida.liu.se/~TDDD37>



Written exam

- Two parts:
 - Theoretical and practical
 - Have to pass both parts
- Equipment
 - Dictionary – not electronic
 - No calculator
 - No books allowed
- Registration to the exam
 - Studentportalen
 - Exam October 20 2012 14.00-18.00
 - Old exams available at the course website, from Expeditionen in the E building
 - <http://www.ida.liu.se/~jospe/LostaTentor.pdf>



Exam practical part

- Data modeling with EER diagram
 - Key attributes
 - Cardinality ratio
 - Weak entity
 - Specialization and generalization
- Translation from EER to relational schema
 - Relations
 - Keys and foreign keys
 - ...



Exam practical part (cont.)

- SQL
 - Join
 - Subqueries (not exists, in, not in)
 - Aggregations (group by, having, sum, count, max, min...)
- Syntax!
- Be careful with writing the statement after the “select” if you use “group by” → only aggregation functions and the grouped attribute are allowed.



Exam theoretical part

- Normalization
- Data structure
- Transactions
- Recovery
- Optimization



Exam theoretical part

- Normalization
 - Keys: primary key, candidate keys
 - A key is a set of attributes which decide all the attributes in the relational schema
 - Prime attribute has nothing to do with primary key
 - An attribute is prime if it is an element of one candidate key → we need this for 2NF and 3NF test
 - Decomposition 2NF → 3NF → BCNF



Exam theoretical part

- Data structure
 - File, block
 - Blocking factor
 - Primary index, secondary index, multi-level index
 - B-tree, B+-tree

Exam theoretical part

- Transactions
 - Serial vs. Serializability
 - Conflict graph → note that the graph is directed!
 - Directed cycle is different from undirected cycle
 - 2PL locking
 - Deadlock, starving
 - ...

Exam theoretical part

- Recovery
 - Deferred update
 - Immediate update
 - Immediate update II
 - ...

Exam theoretical part

- Optimization
 - Canonical query tree
 - Optimized query tree
 - Techniques such as push down selection, projection
 - Join instead of Cartesian products