



Test 1 Review

CS347 Database Systems
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Midterm: October 9 in class – closed book

This review sheet is intended only as a study guide concerning the breadth of the exam. You are expected to know all the terminology presented as covered in class, the text and the required supplemental reading.

Again, individual terms in this document are indicative of the breadth of the exam and do not represent an exhaustive list of the contents to be covered. Otherwise, the scope of the homework is indicative of exam contents. D.M.

Reading:

Texts:

- Jewett text, everything up to and including section titled DDL & DML
- Schaum book, chapter 1

Papers:

- Mapping Objects to Data Models with the UML, IBM Rational Technical Documentation 2003

Material:

1. Basic Relational Database Concepts

- a. What is a database?
- b. What is a database management system?
- c. Three tier architecture.
- d. Basic terminology of the relational model,
 - i. Relation schema
 - ii. Database schema
 - iii. ...
- e. SQL, and its three components
 - i. DDL
 - ii. DQL
 - iii. DML
- f. Keys and Content Addressability
 - i. How many “key” definitions? (make sure you know them all)
 - ii.
- g. Storage Structure, existence and role of B-tree indexes
 - i. Primary index
 - ii. Secondary index

2. Data Modeling

- a. What is a data model?
- b. . What are the steps of a data modeling effort?
 - i. planning and analysis
 - ii. conceptual design // logic without the details
 - iii. logical design
 - iv. physical design
 - v. implementation
- c. Terminology, with particular attention to the fact that there are many synonyms. The following list *is not* exhaustive
 - i. Data model
 - ii. Entity, attribute, identifier, relation/association
 - iii. Logical model, Physical Model, DDL

- d. UML Class Diagrams for data modeling
 - i. Vocabulary of the graphical language, e.g.
 - 1. Package, class, association
 - 2. Multiplicity, Aggregation, identifying/nonidentifying
 - ii. Compiling using Rational Rose
 - 1. How are individual constructs compiled to a physical [data] model
 - 2. What additional details must (and how) be addressed in the physical model specification panel.
 - e. Design Patterns and Models
 - i. [That] Repeatable patterns in models may connect to abstractions of problem solving at a higher level.
 - ii. Text is organized around this concept.
3. Constraints and Application Semantics
- a. Referential integrity constraints (i.e. foreign key constraints)
 - i. How to define.
 - ii. How they operate (details)
 - 1. Conceptually
 - 2. Syntax
 - 3. Operational aspects, particularly wrt to the transaction system (e.g. deferred vs. immediate execution)
 - b. Other constraints e.g.
 - i. Not null
 - ii. Primary key
 - iii. Check
 - iv. ...
4. Supply Chain and EDI
- a. Basic definitions
 - b. ... // this is a commercial issue. There is the so-called “50 thousand foot view”, and the application details, e.g. how to model a purchase order, and not very much in between. (well, in a CS class, otherwise you’re talking ½ the classes in some MBAs.)