

CSCI 366 (Database and Web Dev)
Dr. Schwartz
Review Sheet for Midterm

This is intended as a guideline for studying for the midterm... but only as a guideline. I wouldn't have covered something if I didn't think it was important. If you are wondering about a topic and you don't see it here, ask me!

Introductory Concepts

- Types of information systems
- Desirable attributes of data (shareable, transportable,...)
- Problems with data management systems (redundancy, lack of data control,...)
- Definitions and differences of terms data, information and knowledge
- Levels of views of database (physical, logical, view)
- Instances and schemas
- Database languages (DDL and DML)

SQL

- Defining a table (create table statements)
- Inserting rows into the table (insert statements)
- Concepts of project and restrict
- Querying the data (select statements)
 - Derived data (calculating attributes)
 - Aggregate functions (min, max, count, average, sum)
 - Where (also like, in, and, or, etc.)
 - Order by
 - Group by, having
 - Distinct
 - Joins (various types: inner, left outer, right outer, full outer, outer with exclusions)
 - Subqueries (correlated and other)
 - Union and intersect
- Deleting and modifying data (delete and update statements)
- Views (create view)

Data Modeling

- Entities, attributes, identifiers, relationships
- Foreign keys – what, why, and when
- Criteria for evaluating the quality of a model
- Notation (use book's notation)
- Types of relationships (one-to-one, one-to-many, many-to-many, recursive, etc.)
- Identifiers (what should the primary key be? Should it be meaningful? When is best to generate a random id?)
- Entity types: independent, weak or dependent, associative, aggregate, subordinate
- Generalization and aggregation
- Seven habits of highly effective data modelers

Normalization

- Functional dependency
- Normal Forms (1st, 2nd, 3rd in detail, basic definition of 4th and 5th)

Types of Questions

- Short answer
- Multiple choice
- True/false
- Write a SQL statement
- Given a SQL statement, what are results?
- Create a data model
- Revise a data model
- Identify problems in a data model
- Given a data model, can certain information be obtained?
- Identify and resolve normalization issues in tables