Midterm Exam Review Outline
Eric J. Schwabe
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References: Slides for Lectures 1-9, Ullman and Widom Sections 1.1-1.3, 2.1-2.3, 6.1-6.6, 7.1-7.3.

(This is not necessarily an exhaustive list of every detail of every topic we have discussed; it is meant as a guide to what I consider to be the most important concepts we have seen so far.)

Introduction to Databases:
Properties of databases
Costs and benefits of databases
Types of database models
~~Components of a DBMS~~

The Relational Model:
Relations/Tables
Records/Tuples
Attributes
Domains
Properties of relations
Schema vs instance
Candidate keys
Primary keys
Foreign keys
Domain constraints
Key constraints
Entity integrity
Referential integrity

SQL DDL:
CREATE TABLE
Domains (Numerical, String, Date)
CHECK
Defining keys
INSERT INTO
DROP TABLE
ALTER TABLE
UPDATE
DELETE

SQL Queries:
SELECT
DISTINCT
AS
FROM
WHERE
Comparison operators (=, !=, <>, <, <=, >, >=)
LIKE and wildcards (_, %)

Logical operators (AND, OR, NOT)
NULLs
ORDER BY
ASC/DESC
Aggregate functions
GROUP BY
HAVING
Subqueries
Single-value vs table
= vs IN
EXISTS
NOT EXISTS
ANY
ALL
Correlated subqueries
~~Set operations~~
Inner join vs outer join
INNER JOIN
LEFT OUTER JOIN
RIGHT OUTER JOIN
~~FULL OUTER JOIN~~

SQL Transactions:
ACID properties
COMMIT
ROLLBACK
Serializable
~~Repeatable read~~
Read committed
Read uncommitted
~~Phantoms~~
~~Non-repeatable reads~~
~~Dirty reads~~