



Midterm Review: Fall 2015

CS-6360 Database Design

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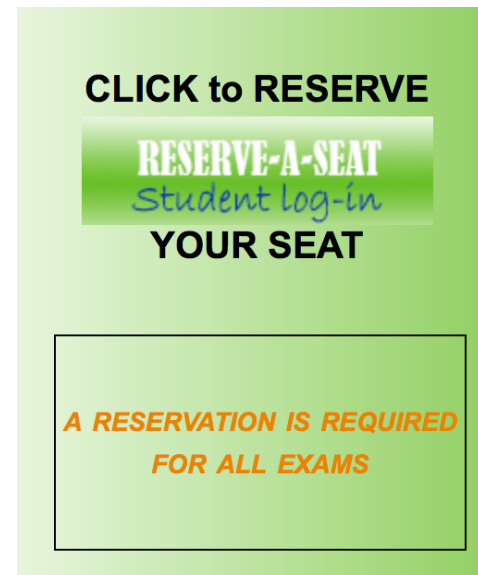
Office: ECSS 4.705

Midterm Parameters



- Closed Book, Closed Notes
 - Accessing eLearning course materials (lecture slides, notes, etc.) during an exam is **absolutely prohibited**
 - **Location:** Testing Center
 - **Time:** 7:00-7:30pm
 - You may begin up to 30 minutes early
 - **Duration:** 90 minutes
 - Regardless of start time

- UTD Testing Center (*not classroom*)
 - McDermott Library Basement
- Reserve a seat in advance!
 - <http://www.utdallas.edu/studentsuccess/testingcenter/>



- **Testing Center**
 - Identification: Comet Card
 - Bathroom breaks are prohibited (please plan ahead)
 - No jackets or sweaters
 - No backpacks
 - No pencil boxes
 - Non-approved calculators prohibited
(calculator supplied, if needed)
 - Scratch paper and whiteboard supplied, if needed.

- Chapters 1-7
 - Introduction (1,2)
 - ER Model (3)
 - EER Model (4)
 - Relational Model (5)
 - SQL (6, 7)

- **Bold concepts and definitions**
 - §1.3 Characteristics of the Database Approach
 - §1.4 Actors on the Scene
 - §1.5 Workers behind the Scene
 - §1.6 Advantages of Using the DBMS Approach
- T/F, Multiple Choice, Multiple Answer, Matching
- No written definitions or descriptions

Ch. 2: Database System Concepts and Architecture



- **Bold concepts and definitions**
 - §2.1 Data Models, Schemas, and Instances
 - §2.2 Three-Schema Architecture and Data Independence
 - §2.3 Database Languages and Interfaces
 - §2.4 The Database System Environment
 - §2.5 Centralized and Client/Server Architectures for DBMSs
 - §2.6 Classification of Database Management Systems
- T/F, Multiple Choice, Multiple Answer, Matching
- No written definitions or descriptions

- Create ER diagrams from English descriptions
- Answer questions about existing ER diagrams
- Cardinality and Participation
 - Cardinality (1:1, 1:N, M:N) encodes only **max**
 - Participation (total, partial) encodes only **min**
- Be able to interpret ER diagrams using either (min, max) or Cardinality / Participation
- Know ER Notation Figure 3.14

- §4.1 Subclasses, Superclasses, and Inheritance
- §4.2 Specialization and Generalization
- §4.3 Constraints and Characteristics of Specialization and Generalization Hierarchies
- §4.4 Modeling of UNION Types Using Categories
- **NO UML**

- §5.1 Domains, Attributes, Tuples, and Relations
 - **Bold** concepts and definitions
- §5.2 Relational Model Constraints and Relational Database Schemas
 - Be able to interpret relational schemas
 - Be able to bidirectionally convert between **English** \Leftrightarrow **Relational Schema**

- §5.3 Update Operations, Transactions, and Dealing with Constraint Violations
 - Given a schema and an operation (insert, modify, delete), be able to identify constraint violations
 - Domain constraint
 - Key constraint
 - Constraint on NULL
 - Entity integrity constraint
 - Referential integrity constraint
 - Be able to suggest a resolution other than simply rejecting the operation

- §6.1 Data Definitions and Data Types
 - CREATE TABLE syntax and options
 - Data types
- §6.2 Constraints
 - **Implicit** – inherent in the data model
 - **Explicit** – directly expressed in the schema of the data model (foreign keys, assertions, triggers)
 - **Semantic** – applications-based / business rules

- §6.3 Basic Retrieval Queries in SQL
 - The **SELECT-FROM-WHERE** Structure
 - Review textbook Query Examples
- §6.4 INSERT, DELETE, and UPDATE Statements in SQL
 - Review textbook Examples
 - Be able to predict allowed and disallowed operations (i.e. like Chapter 3: Relational Model)
 - Reason for disallowance (constraint violations)

- §5.1 More Complex SQL Retrieval Queries
 - §5.1.1 Comparisons Involving NULL and Three-Valued Logic
 - §5.1.2 Nested Queries, Tuples, and Set/Multiset Comparisons
 - EXISTS and UNIQUE
 - WHERE *attribute* IN *set*
 - §5.1.6 Joined Tables in SQL and Outer Joins
 - §5.1.7 Aggregate Functions

- §5.1.7 Ordering and Grouping
 - ORDER BY
 - GROUP BY *attributes*
HAVING *condition*