MIS2502: Exam 1 Study Guide (Spring 2021)

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The exam will be a combination of multiple-choice and short-answer questions. It is a closed-book, closed-notes exam. We will use Canvas for the exam, and it will be proctored by Proctorio.

The following is a list of items that you should review in preparation for the exam. Note that ***not every item on this list may be on the exam, and there may be items on the exam not on this list***.

The Things You Can Do With Data/The Information Architecture of an Organization

- What is the difference between data and information? Give examples.
- What is a transaction?
- What are the characteristics of a transactional database?
  - What are the goals and benefits of this type of database?
- What are the characteristics of an analytical data store?
  - What are the goals and benefits of this type of database?
- What is the relationship between a transactional database and an analytical data store?

Relational Data Modeling

Schema
- Be able to draw the corresponding schema of an ERD
  - Identify tables based on entities and relationships
  - Understand and implement primary key/foreign key relationships
  - Decomposing many-to-many relationships in an ERD into one-to-many relationships in the schema
- Understand the concept of normalization
- Cardinality
  - Maximum cardinality: One-to-one, one-to-many, many-to-many
  - Minimum cardinality: optional or mandatory (i.e., 0 or 1)
- Identify when attributes describe entities and when they describe relationships

Basic SQL & JOIN

- **Simple SQL queries and Joining tables will be on this exam (Only topics till "SQL 2: Getting Information Out of a Database – Advanced" page 16).**
- **Subselect will be on the second exam.**
- Given a schema of a database, be able to create a SQL statement to answer a question
    - e.g., In what state does customer Bob Smith live?
      How many people live in each state?
      What is the average SAT score among freshmen?
    - You will be provided the general syntax of the SELECT statement, but you will need to know how to apply it!
    - Require a join of multiple tables
    - Understand the difference between inner join and outer join
- Understand how to use
    - SELECT
    - FROM
    - DISTINCT
    - WHERE (and how to specify conditions)
    - AND/OR/LIKE
    - COUNT, AVG, MIN, MAX, SUM
    - GROUP BY
    - ORDER BY (ASC/DESC)
    - LIMIT
    - JOIN
- Put single quotes around string (non-numeric) values.
    - For example, 'NJ'
- Put single backquotes around SQL keywords that appear in table or field names (e.g. `Order`.OrderNumber).