

# MIS2502: Exam 1 Study Guide (Spring 2023)

Instructor: Jeremy Shafer

The exam will be a combination of multiple-choice and short-answer questions. It is a closed-book, closed-notes exam. The exam will be paper-based. Bring a pencil.

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 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 Diagrams

- 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” slide 15).**
- ***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 (left 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'