**MIS2502: Exam 1 Study Guide**

The exam will be a combination of short-answer and multiple-choice questions. It is a closed-book, closed-notes exam. You will not be able to use a computer during the exam.

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 an operational data store?
  + What are the goals of this type of database?
* What are the characteristics of an analytical data store?
  + What are the goals of this type of database?
* What is the relationship between an operational data store and an analytical data store?

**Relational Data Modeling**

* Identify and define entities, relationships, and attributes
* Cardinality
  + One-to-one, one-to-many, many-to-many, optional (i.e., 0)
* Be able to draw an ERD based on a scenario description using the correct symbols and cardinality
* Identify when attributes describe entities and when they describe relationships
* Be able to relate an ERD to its corresponding schema
  + 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
* Given data from two tables, be able to draw the results of a join of those tables with the data correctly “matched up” (see the examples from the slides)

**SQL**

* **SELECTing from a single table will be on this exam**
* Given a schema of a database, be able to create a SQL statement to answer a question
  + i.e., In what state does customer Bob Smith live?   
     How many people live in each state?
  + You will be provided the general syntax of the SELECT statement, the WHERE clause, etc., but you will need to know how to apply them!
* Understand how to use
  + WHERE
  + GROUP BY
  + ORDER BY (ASC/DESC)
  + COUNT, AVG, MIN, MAX, SUM

**This exam will cover Joins, Subselects, CREATE, ALTER, INSERT, UPDATE, and DELETE**

* Given the schema of a database, be able to create the SQL statements that will
  + Construct a query that requires a join of multiple tables
  + Construct a query that contains a subselect   
    (i.e., determine the customers with the highest sales)
  + Create a table based on a list of its metadata using CREATE TABLE
  + Change the structure of a table using ALTER TABLE
  + Add a record to a table using INSERT
  + Update an existing record in a table using UPDATE
  + Delete a record from a table using DELETE
* Be familiar with using conditional statements in the UPDATE and DELETE statements
* Identify how to add records to a table created from a many-to-many relationship so that the new record associates two existing records in the associated tables  
  (i.e., add a record to a film-actor table that associates a particular film with a particular actor)