MIS2502: Exam 2 Study Guide

The exam will be a combination of multiple-choice and short-answer 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.

SQL Out: Advanced Queries (LIMIT, Joins, Subselects)

- Given the schema of a database, be able to create the SQL statements that o Limit the number of results to be returned
    - Require a join of multiple tables
    - Contain a Subselect statement (i.e., determine the customers with the highest sales)

SQL In (CREATE, ALTER, INSERT, UPDATE, and DELETE)

- Given the schema of a database, be able to create the SQL statements that o Create a table based on a list of its metadata/schema using CREATE TABLE
    - Change the structure of a table using ALTER TABLE
    - Delete a table using DROP 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 WHERE conditional statements in the UPDATE and DELETE statements
- Be familiar with MySQL data types (INT, DECIMAL, BOOLEAN, DATE/DATETIME, VARCHAR, etc.)
- Know how to specify primary keys and foreign keys in CREATE TABLE 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)

Data Visualization

- Be able to assess an infographic or chart by applying data visualization principles.
    - o Tell a story
    - o Graphical integrity (lie factor)
    - o Minimize graphical complexity (data ink)
- Explain how a visualization can be improved based on those principles.

Dimensional Data Modeling

- What is the difference between a data warehouse, a data mart, and a data cube
- What is a data cube? How does it aggregate data?
    - o Give an example of "slicing" data
- What is the star schema? How does it relate to a data cube?
- Data cubes: identify facts, dimensions, and associated data fields that address a business question
- Kimball's four step process for data mart design
    - o What is granularity? Why is it important?
    - o What happens if the granularity of the information you want doesn't match the granularity of the cube?

Pivot Table Analysis

- Explain the relationship between a pivot table and a data cube
- Given a question about a set of data, be able to identify the fields required to create a pivot table
    - o Identify which fields are assigned as VALUES and which ones are assigned as ROWS
    - o Identify the correct function for aggregation: i.e., SUM, COUNT, AVERAGE
- Explain how slicing a data cube is similar to choosing values for rows and applying filters

ETL

- What is it? Why is it important?
- Explain the purpose of each component (Extract, Transform, Load)
- Understand the syntax and purpose of the Excel functions VLOOKUP and CONCATENATE
    - o And identify for what purposes they are used to transform data