MIS2502: Exam 2 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. We will take it on paper in our regular classroom.

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

SQL Advanced Queries (Joins, Subselects)

- Given the schema of a database, be able to create the SQL statements that
    - Require a join of multiple tables
    - Contain a Subselect statement
      (i.e., determine the customers with the highest sales)
- Understand how to use different statements (e.g., WHERE, GROUP BY, ORDER BY) on top of join/subselect statements

Semi-Structured Data

- What is semi-structured data? Examples? What does it mean to have no formal data model?
- What is unstructured data? Examples?
- Compare csv, XML, and JSON data formats and explain advantages/disadvantages of each
- Construct a csv, XML, and JSON data file from raw data.

NoSQL

- Understand how RDBMS and NoSQL database are different
- Understand how different operators work and what is the correct order to use them
    - $project, $match, $group, $sort, $limit
    - $and, $or, $eq, $gt, $lt
- Understand how to query array and embedded documents and join collections
    - Dot notation
    - $all, $size, $lookup

ETL

- What is it? Why is it important?
- Explain the purpose of each component (Extract, Transform, Load)
- How do inconsistencies in data get resolved?

Data Visualization

- Be able to assess a visualization by applying data visualization principles.
    - Tell a story
    - Graphical integrity (lie factor)
    - Minimize graphical complexity (data ink, chartjunk)
- Explain how a visualization can be improved based on those principles.
- Understand basic chart types. Be able to choose an appropriate chart type given a scenario.

****Advanced Analytics and Python will be covered in the third exam.**