COMP 453

Midterm Review

Spring, 2022

- The exam is completely online. It will be on Sakai under Tests and Quizzes, and you also have to participate in zoom.. If you are unable to take it in person, please let me know..
- The midterm is officially 2.5 hours. The exam itself is about 2 hours, but I will allow up to 2.5 hours.
- I would strongly recommend that you prepare 2 sides of notes with some sample queries and some information about mapping ERDs to relations and normalization.
- I cannot stop you from attempting to run queries on a database while you are taking the exam. However, I don't think it will help you very much, if at all. The exam was not designed to include hands-on queries. Further, I am not grading for completely correct queries. That said, the queries have to be "mostly" correct (incorporating the correct clauses and an appropriate process). It's not like the homework where if you have something pretty much on track, you get full credit.

This review is a gift, not a guarantee!! I have rewritten the midterm review to reflect the recent changes that I made to the midterm. This review is written off of the actual midterm. It is being posted one week before the exam, so it is very current. However, I may continue to make slight changes as I edit the exam. There will be no changes in the material that you are expected to know.

Total points: 200, as per the syllabus.

Part I (10 points): Interpreting an ER Diagram, True/False and multi-answer. All links shown are also included in the handouts document.

You are given the Pine Valley ERD (included in handouts), and you are asked questions about the requirements, which you only answer if you understand the entities, relationships, cardinalities and degrees on the ER Diagram.

Part II (6 points) : Interpreting an EER Diagram, True/False

You are given a smaller version of the MountainView ERD than the one that was shown on the syllabus for the older version of homework #2, and you are asked questions about the requirements, which you only answer if you understand the entities, relationships, cardinalities and degrees on the ER Diagram.

Part III (6 points): Changing an ER Diagram, Multiple Choice

You are given an ERD that you haven't seen before. You are given a scenario, and you must modify the diagram to reflect that scenario. This may involve relationships, cardinalities, adding or removing PKs or FKs.

Part IV (28 points): Understanding queries

You are given an ER Diagram, and you are also given some queries. You are given sample data for the database, and you must list the results of the query for those sample data. For instance, if you were given the query: SELECT CustomerName FROM CUSTOMER WHERE ZipCode = 60611, your answer should be a list of the actual customer names who live in that zip code. You are required to list the actual values from the sample data, not a description of the data.

Part V (82 points): Writing Queries

You are given an ER Diagram of a sample database (the same as in Part IV, above), and you are given the query description and must write the appropriate query. Queries may include any type of query that we covered in class. I will probably not include anything like Question #17 from the homework (maybe for extra credit? Oh that's right, we don't have EC in this course). But there will be some simple queries, joins, aggregate queries, GroupBy, OrderBy, calculated fields, subqueries. (As of this writing, there are no correlated subqueries in this exam. So assume that there will not be any on the exam.) There's one query at the end that's a little much, but it's not as bad as the complicated homework ones.

Part VI (43 points): Mapping of ER and EER diagrams to relations. Like it says: you are given some ER diagrams, and one EER diagram, and you have to map them to 3NF relations, and also specify the Functional Dependencies. *Please review Chapter 9!!!* We did not have a homework on this topic, as you will be using this extensively in your project. However, there was a lecture (and videos).

Part VII(25 points): Normalization and anomalies. You are given a sample relation, with data, and a description of the constraints in that relation (for instance, what attribute is related to which other attribute(s), and the semantic integrity constraints, so that you understand what the relation is modeling. You are asked to identify the normal form of the relation; identify what information is deleted if some specific data is deleted (a deletion anomaly); give an example of an update/modification anomaly in the database; identify and know how to correct a possible insert anomaly; and to put the relation into the next normal form.