

COMP 353 and COMP 453

Midterm Review

Spring, 2020

(revised February 3, 2020)

You are allowed to bring 2 sides of notes with anything that you want as part of those notes!!

You may bring scratch paper, but it will be checked to make sure that it's blank.

No books, no phones, no computers.

***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. However, this is being posted at the beginning of the semester. I will continue to make changes and post a more final review as the midterm gets closer.

**Total points: 200, as per the syllabus.**

**Part I (10 points): Interpreting an ER Diagram, True/False and multi-answer.**

You are given the [Pine Valley ERD](#), 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 ER 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): Interpreting an ER Diagram, Short answers**

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.

**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 and correlated 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.