

CS 3335

Exam II

March 26, 2009

100 points

Name: _____

1. Consider the relation $R = (A, B, C, D, E, F, G)$ with the domain of each attribute is integer and the functional dependencies $F = \{A \rightarrow BC, D \rightarrow EF, E \rightarrow CD\}$.

(a) Find the candidate keys for R

(10)

(b) Find a 3NFLJDP decomposition for R using the algorithm presented in class.

(10)

(c) Is your decomposition from Question b also in BCNF? Prove or disprove your answer. (10)

2. Prove or disprove that if $X \rightarrow Y$ and $\exists A \in X$ such that $Y \rightarrow A$, then $A \rightarrow Y$. (6)

3. Use the following ER-diagram for questions 3 and 4

(10)

Write a paragraph describing the diagram in English. Be sure to discuss all properties of all items in the diagram.

4. Show the SQL statements needed to most efficiently create the tables represented by this ER diagram. (10)

5. Draw an ER-diagram representing biological descendents. In other words, I would be able to find you, your parents, your grandparents, etc. (10)

6. What is the difference between generalization and specialization with respect to ER diagrams? (4)

7. Given $R = (A, B, C, D, E)$ is a relation with functional dependencies $F = \{A \rightarrow BCDE, D \rightarrow BC, BE \rightarrow C, CE \rightarrow A\}$. What is the highest normal form for R given the rules presented in class? (4)

8. What is denormalization and why would you use it? (4)

9. What is the difference between a three-tier web architecture and a two-tier web architecture? (4)

10. In HTTP, what is a cookie? (4)

11. What is the difference between a view and a materialized view? (4)

12. Give an example of a trigger and when you would use it.

(4)

13. Using the tables from our Jokes database, define a view to show each movie and the average rating for its jokes. Is this view updatable?

(6)