Quiz 2 for CSC 432: Database Management
100 points

Spring 1998

June 20, 2000

Instructions

If you finish early, please try to remain seated or move out discreetly so as not to disturb others.

This quiz is closed-book. However, a one-page crib sheet may be used. Crib sheets may not be shared. Collusion or cheating of any form is forbidden. You can be asked to explain your solutions verbally.

There are no trick questions in this quiz. If you think there is some ambiguity, please make and state additional assumptions, but be prepared to justify why those assumptions were necessary. If you are unable to produce a formal answer, give an English description for partial credit.

1   Normalization

Consider the following relational schema with the indicated functional dependencies.

Property

p#	p-address	buy-date	b#	b-address

- p# $\longrightarrow$ p-address

- p# $\longrightarrow$ buy-date

- p# $\longrightarrow$ b#

- b# $\longrightarrow$ b-address

1. Consider 1NF, 2NF, 3NF, and BCNF.

    - (4 points) What is a candidate key for the above relational schema?
    - (8 points) Which of these normal forms does the above schema satisfy?

- (8 points) Which of these normal forms does it not satisfy?

Briefly explain your answers.

2. (10 points) Show an example anomaly that can arise from performing an operation on this relation. (Choose any operation.)

3. (20 points) Transform the relational schema into the next higher normal form. Does the abovementioned anomaly still arise?

2   SQL

Consider the *Dream Home* database.

- (25 points) Give an SQL query to *List the* bno *of branches that have no more than one manager*. Do **not** use any aggregate operator.

- (25 points) Give an SQL query to *List the* bno *of each branch along with the total number of its staff (*num_S*) and the total number of properties its staff manages (*num_P*).* Include only those branches that manage at least one property.

Use any operator (including the aggregates) discussed in class.