

CS 3335

Exam II

Oct. 31, 2008

110 points

Name: _____

1. The local adult recreation league has recruited you to help with their database design. (20)
First you are to create an ER diagram representing Players playing on Teams. A Player may or may not be on a team, but can only be on 1 team. A Team must have at least 5 players, but not more than 10. A Player on a Team has a number. Players also have a name, an address consisting of a street and city, their birth date and their current age. Teams are assigned to a league (many teams can be in the same league), and have a name that is unique to the league. All leagues have different names.

2. Show the SQL statements needed to most efficiently create the tables represented by this ER diagram. (20)

3. Consider the relation $R = (A, B, C, D, E)$ with the domain of each attribute is integer and the functional dependencies $F =$

- $AB \rightarrow ABCDE$
- $B \rightarrow AC$
- $CD \rightarrow BDE$
- $E \rightarrow C$

(a) Find the canonical cover for F (10)

(b) Find a BCNFLJ decomposition for R using the algorithm presented in class. (10)

(c) Extra Credit: Find a BCNFLJDP decomposition for R . (9)

4. For each set functional dependencies, assume $R = (A, B, C, D, E)$ is the relation and the domain of each attribute is integer. In the blank, put the highest normal form for R given the rules presented in class.

(a) _____ in $A \rightarrow BCDE, BC \rightarrow A$ (3)

(b) _____ in $AB \rightarrow CDE, BC \rightarrow A$ (3)

(c) _____ in $AD \rightarrow BCE, BC \rightarrow A$ (3)

(d) _____ in $A \rightarrow BCDE, BC \rightarrow A, B \rightarrow C$ (3)

(e) _____ in $AB \rightarrow CDE, BC \rightarrow D$ (3)

5. List each of Armstrong's Axioms and its definition. (6)

6. Using the Video Store database from class, define a view that shows the name of customers and titles of movies they have ordered, along with the number of times they have ordered that movie. (10)

7. Using the Video Store database from class, define a row trigger that removes all orders placed by a customer when that customer is deleted from the Customers table. (10)