**Prof Rudowsky Team Assignment CISC3810**

**Work on the following problems in teams of at most 3 students.**

**7. Suppose you are given the following business rules to form the basis for a database design. The database must enable the manager of a company dinner club to mail invitations to the club’s members, to plan the meals, to keep track of who attends the dinners, and so on.**

* **Each dinner serves many members, and each member may attend many dinners.**
* **A member receives many invitations, and each invitation is mailed to many members.**
* **A dinner is based on a single entree, but an entree may be used as the basis for many dinners. For example, a dinner may be composed of a fish entree, rice, and corn. Or the dinner may be composed of a fish entree, a baked potato, and string beans.**
* **A member may attend many dinners, and each dinner may be attended by many members.**

**Because the manager is not a database expert, the first attempt at creating the database uses the structure shown in Table P6.7:**

**Table P6.7 Sample RESERVATION Records**

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute Name** | **Sample Value** | **Sample Value** | **Sample Value** |
| MEMBER\_NUM | 214 | 235 | 214 |
| MEMBER\_NAME | Alice B. VanderVoort | Gerald M. Gallega | Alice B. VanderVoort |
| MEMBER\_ADDRESS | 325 Meadow Park | 123 Rose Court | 325 Meadow Park |
| MEMBER\_CITY | Murkywater | Highlight | Murkywater |
| MEMBER\_ZIPCODE | 12345 | 12349 | 12345 |
| INVITE\_NUM | 8 | 9 | 10 |
| INVITE\_DATE | 23-Feb-2010 | 12-Mar-2010 | 23-Feb-2010 |
| ACCEPT\_DATE | 27-Feb-2010 | 15-Mar-2010 | 27-Feb-2010 |
| DINNER\_DATE | 15-Mar-2010 | 17-Mar-2010 | 15-Mar-2010 |
| DINNER\_ATTENDED | Yes | Yes | No |
| DINNER\_CODE | DI5 | DI5 | DI2 |
| DINNER\_DESCRIPTION | Glowing sea delight | Glowing sea delight | Ranch Superb |
| ENTREE\_CODE | EN3 | EN3 | EN5 |
| ENTREE\_DESCRIPTION | Stuffed crab | Stuffed crab | Marinated steak |
| DESERT\_CODE | DE8 | DE5 | DE2 |
| DESERT\_DESCRIPTION | Chocolate moussewith raspberry sauce | Cherries jubilee | Apple pie with honeycrust |

**a. Given the table structure illustrated in Table P6.7, write its relational schema and draw its dependency diagram. Label all transitive and/or partial dependencies. (*Hint*: This structure uses a composite primary key.)**

**b. Break up the dependency diagram you drew in Problem 7a to produce dependency diagrams that are in 3NF and write the relational schema. (*Hint*: You might have to create a few new attributes. Also, make sure that the new dependency diagrams contain attributes that meet proper design criteria; that is, make sure that there are no multivalued attributes, that the naming conventions are met, and so on.)**

**c. Using the results of Problem 7b, draw the Crow’s Foot ERD.**

**8. Use the dependency diagram shown in Figure 6.8 to work the following problems.**

**Figure P6.8 Initial Dependency Diagram for Problem 8**



**a. Break up the dependency diagram in Figure 6.8 to create two new dependency diagrams, one in 3NF and one in 2NF.**

**b. Modify the dependency diagrams you created in Problem 8a to produce a set of dependency diagrams that are all in 3NF. (*Hint*: One of your dependency diagrams will be in 3NF, but not in BCNF.)**

**c. Modify the dependency diagrams in Problem 8b to produce a collection of dependency diagrams that are all in 3NF and BCNF.**