CS348 Introduction to Database Management Winter 2013

Assignment 3

Due: Friday, March 15, 2013 (noon)

This assignment requires you to create an ER diagram for a database and the corresponding SQL CREATE TABLE statements.

The database you are designing records information for a national chain of pharmacies. The database should store information about patients, doctors, prescriptions, pharmaceutical companies, drugs and pharmacies. The detailed requirements are as follows:

1. Each patient is identified by their SIN (Social Insurance Number). The name, address, and age of a patient must also be recorded.
2. Eeach doctor is identified by a doctor number. For each doctor, the name, specialty and years of experience must be recorded.
3. Each pharmaceutical company is identified by its name. Other data recorded are an address and a phone number.
4. For each drug, the trade name and the formula must be recorded. Each drug is manufactured and sold by exactly one pharmaceutical company. The trade name of a drug identifies the drug from among the products of that company. Clearly, a pharmaceutical company can manufacture more than one drug. If a pharmaceutical company is deleted from the database, the drugs that it manufactures are also removed.
5. Each pharmacy has a unique name, an address and a phone number.
6. Each patient has at most one primary physician. Every doctor has at least one patient.
7. Every pharmacy sells one or more drugs, and has a price for each drug. A drug could be sold by zero or more pharmacies, and the price could vary from one pharmacy to another.
8. Doctors prescribe drugs for patients. A doctor could prescribe one or more drugs for a patient, and a patient could obtain prescriptions from several doctors. Each prescription involves exactly one drug. It has a date and a quantity associated with it. Clearly a doctor can issue many prescriptions to a patient at any time. You may assume that if a doctor prescribes the same drug more than once for the same patient, only the last such prescription needs to be recorded.
9. Pharmaceutical companies may have long-term contracts with pharmacies. A pharmaceutical company can contract with zero or more pharmacies, and a pharmacy can contract with zero or more pharmaceutical companies. For each contract, you have to store a contract number which uniquely identifies a contract, a start date, and an end date.

a. (40 marks)

Draw and entity relationship (ER) diagram for the above database. Your ER diagram should reflect all the information given above as closely as possible, without adding extra unnecessary constraints. Clearly show the primary keys, existence dependencies, and cardinality constraints. State and justify any additional assumptions that you make. Use general cardinality constraints of the form *(lower, upper)* whenever possible to represent the participation of entities in relationships.

b. (20 marks)

Translate the ER diagram you constructed in part (a) to a set of SQL CREATE TABLE commands. You may choose any reasonable data types for the attributes. Make sure that you declare primary keys for all the tables, and that you declare all the necessary foreign keys. You do not need to declare any constraints beyond the primary and foreign keys.

This assignment requires only paper submission. Handwritten submissions are acceptable, but neatness counts in the marking. Submit your assignments in the **pink CS348 assignment drop box on the third floor of MC near the walkway to DC**.