

Washington State University
School of Electrical Engineering and Computer Science
CptS 451 – Introduction to Database Systems
Online

Dr. Sakire Arslan Ay

Homework-1

Name: _____

Student Number: _____

Question:	Max points:	Score:
1(a)	85	
1(b)	10	
1(c)	5	
Total	100	

1. A chain of pharmacy stores has asked you to design its database. Here's the information that you gather:

1. Patients are identified by their SSN. For each patient, the name, address, and age must be recorded.
2. Doctors are identified by their SSN. For each doctor, the name, specialty, and years of experience must be recorded.
3. Each clinic is identified by its name and the city it is in. A clinic's name is assumed to be unique within the city.
4. Doctors work for clinics. Each doctor should be associated with at least one clinic.
5. Every patient has one primary physician. Every doctor has at least one patient.
6. Each drug company is identified by name and has a phone number.
7. For each drug, the name and formula must be recorded. Each drug is made by a given drug company, and the drug name identifies a drug uniquely among the products of that company. If a drug company is deleted, you need not keep track of its products any longer.
8. Each pharmacy has a unique name and has a phone number. A pharmacy can either be an in-store pharmacy (which has an address) or an online pharmacy (which has a webURL).
9. Each pharmacy sells several drugs and has a price for each. A drug could be sold at several pharmacies, and the price could vary from one pharmacy to another.
10. Doctors write prescriptions for patients. A doctor can write prescriptions for many patients and a patient could obtain prescriptions from several doctors.
11. A doctor could prescribe one or more drugs in a prescription. Each prescription has a prescription number and a date associated with it. Each prescription is given to the patient in a certain clinic and the prescription number is unique within the clinic it is given.
12. Drug companies have long-term contracts with in-store pharmacies. A drug company can have contracts with several in-store pharmacies, and an in-store pharmacy can have contracts with several drug companies. For each contract, you have to store a start date, an end date, and the text of the contract.
13. Pharmacies appoint a supervisor for each contract. There must always be a supervisor for each contract.

Questions:

a) (85pts) Draw an ER diagram for the pharmacy database. Make sure that your design captures all of implications of the business model, including:

- all of the relevant entities and their attributes, including keys;
- all the relevant relationships and associated attributes, appropriate key constraints for the relationships, and appropriate participation constraints for the relationships.

b) (10pts) How would your design change if each drug must be sold at a fixed price by all pharmacies?

c) (5pts) Make sure that your diagram is clear and easy to read. Make sure to use the ER notation we covered in the lecture notes.

Submission Instructions:

Please use the ER model notation we covered in lectures. Do not use UML or Crow's Foot notation. Homework 1 will be submitted electronically on Blackboard to HW1-DROPBOX. You may either type/draw your HW in an editor or handwrite it and then scan it. Do not take pictures of your handwritten pages. Name your file CptS451_HW1_<yourname>.pdf Please submit only PDF files.