Assignment 1 – ER Modeling

This assignment is based on Chapters 1-4 of the textbook. Review in-class handouts and exercises.

The practical part of the homework consists of two problems. Note the different deadlines for the problems of the first homework.

Solutions to problems should be submitted electronically through Blackboard and also handed-in in printed form. Problem solutions are due the beginning of class meeting on the date specified below.

Problem 1: Interpret and Extend an ERD due start of class on 2/3, Wednesday worth 30 points

A real estate firm maintains a database that stores information about property listings, their owners and sales agents. Answer the questions below based on the ERD reflecting the conceptual model of the database on the next page.

1. Is it possible for an owner to list more than one property at a time for sale with this agency? Justify your answer.

2. For the data represented with this diagram, is it possible to find out which selling agent is working with a given owner? Justify your answer.

3. Does this design allow for multiple phone numbers to be associated with the same owner name? Justify your answer.

4. Does this design allow for multiple addresses to be associated with the same owner name? Justify your answer.

5. Update this diagram so that it can be used for a database that

   • keeps records of all sales of each property, including the date of the sale and the price paid for it,
   • enables the computation of the time on market for each property sale (i.e. number of days between the date the property was listed and the sale date).

Notice that the same property can be sold multiple times.
Problem 2: Conceptual Modeling due start of class on 2/10, Wednesday worth 70 points Prepare an Extended Entity-Relationship Diagram (EERD) that reflects the data and relationships of the situation described below.

You must draw this diagram using a computer and SmartDraw software following the format for EERDs used in class handouts or in Chapters 3,4 of your textbook.

Clearly state (in writing on a separate page) all assumptions that you have made regarding details that you find missing from the situation context.

Your work must be neat and legible. It is quite possible that you will need to redraw your first draft of this assignment in order to meet this requirement. The entire diagram must fit on one sheet of standard size (8.5” x 11”) paper.

Submit your solution in electronic form and also hand in a printed copy in class.

Situation Context:
MedsToday Pharmacy would like to develop an order tracking system for drug orders placed by their customers. Each order can specify one or more non-prescription items, new prescription requests and/or prescription refill requests. The new prescription requests must include a the original paper prescription.

Each customer order should include customer name, address, phone number and email address.

When a new prescription is received, the pharmacy records the drug name, quantity, daily dosage, name and telephone number of the physician, date of the prescription, date of its expiry, and the number of refills indicated on the prescription. The pharmacy assigns a unique prescription number to each prescription. A photocopy of the prescription is also kept on record in electronic form as a file in JPG format.

Prescription refill requests should specify the prescription number, drug name, as well as the physician's name and telephone number. The pharmacy must verify that the number of refills has not exceeded the maximum allowed and the prescription has not expired.

Non-prescription items are listed in the order with the drug name and quantity.

The company would like to track the history of orders and to be able to track the time it takes to fulfill the order, i.e. the time passed between the order placement and its fulfillment.

For inventory and billing purposes, the pharmacy keeps records of the drugs. For each drug, the system records its full name (e.g. HYDROXYCHLOROQUINE SULFATE 200 MG TAB), the generic name (e.g. HYDROXYCHLOROQUINE SULFATE), the brand name (e.g. PLAQUENIL), quantity on hand, instructions on taking the medication, side effects, type (tablet, powder or solution) and price. An unique id is assigned to each drug record. In addition, the system must record drug interaction information, i.e. if a drug should not be taken simultaneously with some other drug.

**Reminder:** Your diagrams should provide complete cardinality labels that describe both the minimum and maximum cardinality of each relationship. For each entity must indicate the identifier (primary key) and other attributes. Composite attributes should be shown properly broken down into their simple components.