

Homework Assignment 1: Conceptual Entity-Relationship Modeling

This is an **individual** assignment. You are welcome to discuss the assignment with your colleagues, but the work you do must be your own.

The purpose of this assignment is to create a Conceptual ER Model for an information system, based on requirements described in a business case and to demonstrate understanding through questions about the design.

Requirements:

1. Read the Mountain View Community Hospital (MVCH) “Case Description” on pages 49-51 and 111.

*Changes to the case in the book:

- **Patients** are charged set amounts for **services**, i.e., labs, x-rays, tests, surgeries, medicines, etc., and MVCH stores how much each of these cost the hospital.
 - Patient outcomes are tracked – **both** from the hospital/doctor perspective and patient feedback. Make sure that patients can have the same service repeated by the same physician, and the appropriate **data is captured**. **Triage is performed during intake and ICD-10 diagnostic codes used.**
 - In addition to name and MRN, assume that the hospital gathers gender, date of birth, social security number, and whether or not the patient is insured. If the patient is insured, then record **each company’s name**, address, phone number and the patient’s insurance number.
 - Assume that the hospital records the **employee’s** hire/termination date and current job title. Also, MVCH tracks **volunteers**, i.e., where/when/how much they participate.
 - MVCH tracks **prescriptions** - any medicine that a doctor prescribes to a patient. The hospital records the medicine ID/code, name, and dosage prescribed. Doctors can prescribe any number of prescriptions, but the following medications are on a “restricted” list and require a double check by two RNs or an RN and an LPN (chemotherapy agents, heparin, argatroban, insulin, narcotics, and fentanyl). Others may be added later.
 - MVCH needs to be able to assemble all the **physicians** treating a patient for a face-to-face meeting if necessary.
 - Items are supplied by a separate **vendor system**, but MVCH keeps track of what is in **inventory** for each **care center**.
2. Create a “project level” (detailed) **Conceptual ER Diagram** for the MVCH case, with the above additions. The diagram should include all relevant entity types, attributes, and relationships. Every entity should have an identifier (but no foreign keys!). Specify relationship names and cardinality constraints. Indicate whether attributes are **required, composite, multi-valued, and/or derived**^[1]. Use consistent naming conventions for entity types and attributes. You are strongly encouraged, but not required, to use *Microsoft Visio 2010* for drawing the ER Diagram as demonstrated in class or video.
 3. Submit your design (Visio file and PDF printout) by the deadline. Then, answer the questions on Canvas about the ER model based on the assignment.

[1] Unless specified otherwise, the assumption is that an **attribute is simple, single-valued, optional, and not derived**.