

CS3431: Project Description
C-Term, 2013
Building a Database Application
Phase 1: Conceptual and Logical Design

Due Date: Jan. 26, 2013 (11:59 PM).

Teams: The project is done in teams of two.

Description:

In this phase you are required to build a database for a *Hospital System*. You will provide the Entity Relationship Diagram (ERD), and the relational model that captures the following requirements:

- The hospital has many employees, for each employee we keep the ID (unique), first, and last names, job title, salary, and the office number.
- Employees have three categories, regular employees, division managers where each one manages several regular employees, and general managers where each one manages several division managers.
- The hospital has equipment of different types. For each type, we have the type ID (unique), description, operational instructions, and the number of units (actual equipment) of that type. Then, each physical unit (equipment) has a serial number (unique), the year of purchase, and the last inspection time.
- The hospital has several rooms; each room contains several equipment units. For each room we need to keep the room number (unique), currently occupied or not (flag), and the equipment units in this room.
- Each room also has a type that indicates what services or operations can be provided in this room. Each room may provide many services (may have different types). Example of these types are: Intensive care unit (ICU), Consulting room, Ward room, Emergency room, Operating room, etc.
- Patients are admitted into the hospital. For each patient, we keep track of their SSN (unique), first and last names, address, Tel. number, the admission time, the leave time. Patients can be admitted several times to the hospital.
- For each patient admission (visit), we need to keep track of which room(s) the patient stayed in and for how many days in each room. We also need to keep track of total payment for this visit, and how much of this payment will be covered by insurance.
- The hospital has many doctors, for each doctor we keep the ID (unique), first and last names, specialty, Tel. number, and gender.
- For each patient visit, we need to keep track of which doctor(s) have examined the patient, and what was the result of this examination (the doctor comments and

observations).

- Patients may have scheduled visits in the future. Each patient can have a most one scheduled future visit.

Requirements:

1. Design an ERD that captures the above requirements according to the course slides and given guidelines.
2. State any assumptions that you make in addition to the above requirements.
3. Create a relational model for the above application. You need to follow the rules that convert the ERD to relational model. The only requirement in this phase is to define what are the relations (tables) and their primary keys. No other constraints are required in this phase. The desired format of the relational model that you should deliver is as follows:
 - a. If you have a relation named R with columns A1, A2, ..An and the primary key is A1, then your relational model should have:
“R(A1, A2, ..., An)”
 - b. So, no Create Table statements are required in this phase.

Grading:

The maximum grade is 100 Points. Late submissions follow the rules stated on the website.

Deliverables:

Each team should deliver a report containing the above requirements.

Submission (Each team give one submission):

- Submit electronically by the due date via blackboard.wpi.edu website. Make sure your report is in .doc, .ppt, or .pdf formats. **(Recommended)**
- Or, you can submit a hard copy by the due date. You will find a box next to my office in which you can put your submission.