

## CS585 – Database Systems – Fall 2009

Professor Dennis McLeod

### Assignment 2

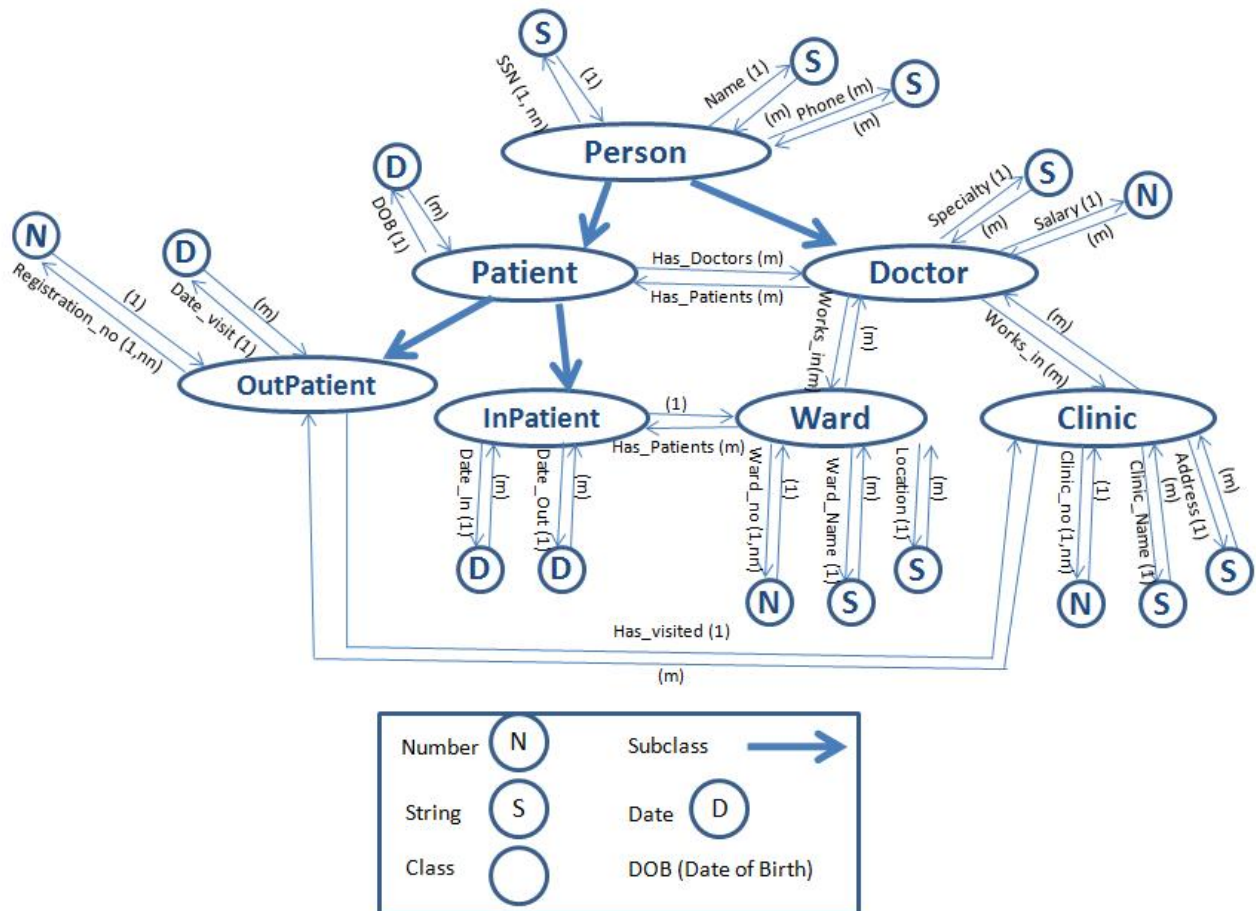
Due: November 3, 2009

(Hard copy of part 1 should be submitted before lecture)

In this assignment, you will have the opportunity to explore the relationship between CIOM and the relational database model as well as gain experience with SQL.

### Part 1: Relational Database Design (30 points)

In the first part of this assignment, you are to design a conceptual schema in the basic relational database model, corresponding to the below CIOM conceptual schema. In your design, specify primary keys for each of your tables, domains for each of your attributes, and indicate all reasonable referential integrity constraints. In addition, describe what semantic information you lost in the mapping. Explicitly state any assumptions you make.



Here, Date is a subclass of String. The following is the example of the attribute value format:

SSN: '111-11-1234'

DOB (Date of Birth): '1988-09-22'

Phone: '213-740-1111'

Speciality: 'Surgery'

## Part 2: MySQL: Create Database (30 points)

In the second part of this assignment, you will convert the relational database from part 1 into tables and then store the tables in MySQL. Go through the queries in part 3 and make reasonable assumptions regarding attributes. Also make sure that you have populated sufficient data into the database in order to test your queries. This means that each of the queries in part 3 should return something but not everything.

Refer to the MySQL manual for information on how to create tables, insert data and query data. Please refer to the following links and documents:

<http://dev.mysql.com/doc/refman/5.4/en/index.html> (Reference manual)

<http://dev.mysql.com/downloads/mysql/5.4.html> (Download)

## Part 3: MySQL: Queries on Database (40 points)

In the third part of this assignment, you will write the following queries in MySQL and run them on your database created in part 2.

Q1. Find the name of all out-patients who have visited the “USC University Hospital”.  
(USC University Hospital is a clinic name.)

Q2. Find each doctor (Name and Salary) whose salary is greater than average doctor’s salary.

Q3. Find doctors (Name and Specialization) who work in at least one ward and one clinic.

Q4. Find the name of the oldest patient.

Q5. Find the name of the clinics in which more than two doctors work.

Q6. Find persons (Name and Phone) who have only one phone number, and who do not share that phone number with anyone.

Q7. Find the name of each doctor who has more than one patient.

Q8. Find the name of each doctor who works in every ward.

## Submission Guidelines

1. Your submission includes both hardcopy and softcopy. Part1 should be done in hardcopy; part2 and part3 must be submitted to the **Digital Dropbox** in USC Distance Education Network (DEN) website (<https://www.uscdcn.net>). Access the csci585 class of the USC DEN website and click "Tools" menu, then you can see the "Digital Dropbox". It is ok to modify and re-send your file, but please indicate which one is the final version. The softcopy should be zipped with all the .sql files. The filename should follow the format: lastname\_firstname\_hw2.zip.

2. Your submission of part2 and part3 should include one createdb.sql file, one populate.sql file, one dropdb.sql file, and eight .sql files for queries described in part3.

3. The createdb.sql file should create your own database including the required types, tables, and primary keys.

4. As we have mentioned before, the populate.sql file should include as much data as is reasonable for us to check your queries.

5. The dropdb.sql file should drop your database including all types and tables that are created by createdb.sql.

6. The Q1.sql to Q8.sql query files should contain SQL statements for queries Q1 to Q8 described in part 3 respectively. If you need to write two or more SQL statements, then they should be written after each other in one file.

7. Points will be deducted for not following the submission guideline.

- Digital dropbox: Just adding the file but not sending the file, 10 points will be deducted.
- Digital dropbox: Sending a file to a dropbox for a different course or to a different system such as USC Blackboard System, 10 points will be deducted.
- Wrong file format: Not zipped in **lastname\_firstname\_hw2.zip** format. 5 points will be deducted.
- Wrong file format: Different filename for **createdb.sql, dropdb.sql, populate.sql, Q1.sql ~ Q8.sql**, 5 points will be deducted.
- Late assignment: Due date for softcopy is **11/03/2009 11:59:59 PM PST**. The penalty for each day late is 10%.