CS3431: Project Description
B-Term, 2013
Building a Database Application
Phase 2: SQL Design and Queries

Release Date: Nov. 15, 2013.
Due Date: Nov. 25, 2013 (11:59PM).
Teams: The project is done in teams of two.

Description:
In this phase you are required to convert the database model you created for a ***Hospital System*** to a working relational database using Oracle system.

Part 1 (40 Points): Create the database

Given the ER diagram and the initial relational model that you created in Phase 1, you are required to do the following:

- Build the database in Oracle that reflects the given requirements in Phase 1. When converting from the ERD to the relational tables, you must follow the rules given in class to create a good database design.

- The database you will create must include:

    - All tables with descriptive names and fields.
    - For the fields, choose the appropriate data types
    - Add the appropriate constraints, which must include (you may add more):
        - Primary Keys and Unique constraints
        - Foreign Key constraints
        - Not Null constraints
        - Domain constraints

Note: It is up to each team, to either keep using your own ER design from Phase 1, or you may use the design given in the posted solution of Phase 1. Both are accepted. Therefore, the solution to the queries (Part 2 below) may differ based on your design.

Part 2 (50 Points—5 points each): SQL Queries

Write SQL queries against the tables you created above to answer the following queries:

Q1: Select the hospital rooms (the room number) that are currently occupied.

Q2: For a given division manager (say, ID = 10), select all regular employees that are supervised by this manager. Display the employees ID, names, and salary.

Q3: For each patient, report the sum of amounts paid by the insurance company for that patient, i.e., report the patients SSN, and the sum of insurance payments over all visits.

Note: If you keep the insurance coverage as a percentage, then compute this percentage before getting the sum.

Q4: Report the number of visits done for each patient, i.e., for each patient, report the patient SSN, first and last names, and the count of visits done by this patient.

Q5: Report the room number that has an equipment unit with serial number 'A01-02X'.

Q6: Report the employee who has access to the largest number of rooms. We need the employee ID, and the number of rooms (s)he can access.

Note: If there are several employess with the same maximum number, then report all of these employees.

Q7: Report the number of regular employees, division managers, and general managers in the hospital. The output should look like:

Type	Count
Regular employees	10
Division managers	5
General managers	2

Q8: For patients who have scheduled future visit, report that patient (SSN, and first and last names) and the visit date. Do not report patients who do not have scheduled visit.

Q9: For each equipment type that has more than 3 units, report the equipment type ID, model, and the number of units this type has.

Q10: Report the date of the coming future visit for patient with SSN = 111-22-3333.

Note: This date should exist in the last visit of that patient.

Part 3 (30 Points): Populate the Database

Insert records in the database such that:

1. All the constraints that you defined in Part 1 will be obeyed
2. Each of the above queries must return some records in their results
3. Insert information for at least:
    a. 10 Patients
    b. 10 Doctors
    c. 10 Rooms, at least 3 of these rooms have 2 or more services
    d. 3 Equipment types
    e. 3 Equipment units of each type
    f. At least 5 patients have 2 or more admissions (visits)
    g. 10 regular employees, 4 division managers, and 2 general managers

Grading:

The maximum grade is 120 Points. Late submissions follow the rules stated on the website.

Deliverables:

Each team should deliver two files as follows:

1) Text file (.sql) that contains all SQL commands from Part1, Part3, and Part2 above (Put the insert statements before the queries). The file must be executable from SQL using command:

   SQL > @<fileName>

   The file must run correctly, first drops all tables, then creates all tables, inserts data, and then execute queries. If the file's syntax was not correct (and the file did not run), you will loose 20 points in addition to any other deductions.

   Above each SQL query, also write the query in text enclosed between /* */. In this case, SQL will treat this text as a comment and will execute normally. For example:

   ```
   /* This query is to select the emp name given its id */
   Select name From emp where Id = 10;
   ```

2) Any comments or assumptions that you have, you can write them to a separate .doc or .pdf file.

3) Put the two files in a single zip file that will be submitted as below.

Submission (Each team give one submission):

- Submit electronically by the due date via blackboard.wpi.edu website. Make sure your two files (the text file .sql, and your report .doc or .pdf) are zipped, and you upload one file.
- Each team submits one copy (from either of the team members).
- ***No hard copy submissions***