**Concordia University**
**Dept. of Computer Science & Software Engineering**
**COMP 353 – Databases**
**Winter 2017**
**Warm-up Project**

**Project Title: Hospital Information System -- HIS**
**Due: February 17, 2017**
**Points: 6%**

You are provided below a design of a relational database for a hospital and required to develop an information management system to facilitate viewing/tracking of various information on doctors, nurses, and administrative staffs in different departments, as well as information about patients who visited or admitted to the hospital. You should use MySQL DBMS to develop a database system and show its execution on some simple queries.

**Data Model:**

The database contains information on employees (doctors, nurses, admin staffs), patients, and medical services provided by, for example, different departments, different labs in each department, different tests in each lab, number of wards/beds in each department, etc. A medical file is opened when a patient is admitted to the hospital for the first time and updated on every visit or medical test in the hospital. Some information on how this hospital runs:

- Each department will be administrated by a doctor.
- Each department has many doctors, but each doctor work in one department.
- Each patient is assigned to a doctor upon his/her visit/admission.
- Different tests may be required for a single patient.

The database schema includes the following relations/tables, where the underlined attribute(s) in each relation collectively form the primary key of that relation:

1. Department (<u>did</u>, deptName, administrator, numberOfBeds)
2. Employee (<u>eid</u>, did, firstName, lastName, jobTitle, startDate, lastDate, gender, dateOfBirthob, phone#, email)
3. Patient (<u>medicareNumber</u>, firstName, lastName, gender, dateOfBirth, phone#, address*)
4. Admission (<u>date, MedicareNumber, AssignedDoctor,</u> reasonForAdmission, dateAdmitted, dateDischarged)
5. Visit (<u>time, date, MedicareNumber, DoctorId,</u> diagnosis, medicalReport)

* address consists of civic number, city, postal code, and country.

Doctors and Nurses are employees with additional information on their specialties and departments. Each specialist has a "visit_fee" attribute. Looking at the following queries, you may introduce some changes to the design, such as including new attributes in case we missed to provide.

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**Implementation Requirement:**

Modify the design, if you find useful, and implement the database. Collect appropriate data and store them into the database. The system should support the following queries. Make sure that each table in the database has suitable, sufficient number of tuples/records such that each query has a meaningful and reasonable size output. For this, you should store at least 10 tuples for Employee, 15 tuples for Patient, 10 tuples for Admission, and 20 tuples for Visit. The queries should be implemented using SQL. No GUI is needed for this warm-up project. The queries to be implemented are as follows:

1. List the information of all doctors grouped by their departments and specialties.
2. List information about nurses from Montreal who started since Jan 01, 2012.
3. Given a patient's Medicare ID, list the Medical Report of that patient.
4. Given a patient's Medicare ID, determine how much s/he has paid for the visits since the beginning of "this" year.
5. List heart patients admitted/visited at least twice.
6. List patient's first name, last name, phone, date admitted, date discharged for all admitted patients grouped by special disease, e.g., Cancer, Heart disease, HIV, SARS, etc.
7. Calculate the average age of all patients admitted into the Hospital.

**What you should hand in:**

You should print and hand in a report (hard copy) that includes the E/R model for your database design (or the revised schema) together with reasonable assumption(s) you made, list of all relational schemas/tables and attribute(s) within each table with appropriate data types, identify the key attribute(s) for each table, and show the relationships among the tables. You should also hand in the SQL queries expressed and the outputs obtained.

**Note:** Every document related to the project work must be printed and properly bounded with a cover page indicating your group ID, each member's student ID and name (official names only, no nick names).