CS3431: Project Description
B-term, 2011
Homework 4: SQL and Advanced SQL

Due Date: Dec. 6, 2011 (8:00 AM).

General Instructions

- The homework is to be done individually.

Consider the following relations (All the questions will refer to them):

Doctor(SSN, FirstName, LastName, Specialty, YearsOfExperience, PhoneNum)
Patient(SSN, FirstName, LastName, Address, DOB, PrimaryDoctor_SSN)
Medicine(TradeName, UnitPrice, GenericFlag)
Prescription(Id, Date, Doctor_SSN, Patient_SSN)
Prescription_Medicine(Prescription Id, TradeName, NumOfUnits)

- The **Doctor** relation has attributes Social Security Number (SSN), first and last names, specialty, the number of experience years, and the phone number.
- The **Patient** relation has attributes SSN, first and last names, address, date of birth (DOB), and the SSN of the patient's primary doctor.
- The **Medicine** relation has attributes trade name, unit price, and whether or not the medicine is generic (True or False).
- The **Prescription** relation has attributes the prescription id, the date in which the prescription is written, the SSN of the doctor who wrote the prescription, and the SSN of the patient to whom the prescription is written.
- The **Prescription_Medicine** relation stores the medicines written in each prescription along with their quantities (number of units).

Problem 1 (SQL Queries) [20 Points (5 Points each query)]

Write SQL query to answer each of the following queries:

Q1: Report the first and last names of patients whose primary doctor is "John Smith".

Q2: For each medicine (TradeName), report the trade name, the number of prescriptions it is written in, and the total number of units prescribed.

Q3: Report the first and last names of the patient who has the most prescriptions.

Q4: Report the first and last names of the patient who have more than 10 prescriptions. Order the list based on the last name and then the first name.

Problem 2 (SQL Views) [20 Points (10 Points each sub-question)]

Q1: Create a view that reports the trade name, unit price, and the generic flag of the most expensive and cheapest medicines.

Q2: Using the view you created in the previous step, write a query that reports the SSN of doctors who prescribed the most expensive or the cheapest medicine (the query should reference the view and may reference other tables as well).

Problem 3 (Triggers) [20 Points]

Write the needed trigger(s) that ensure that if NumOfUnits in Prescription_Medicine is less than or equal to zero or null, then the value should be automatically set to 1.

Problem 4 (Assertions) [20 Points (10 Points each sub-question)]

Q1: Write an assertion that makes sure that no patient takes 'Aspirin' and 'Vitamin' trade names in the same prescription.

Q2: Write an assertion that makes sure that no doctor is the primary doctor to more than 5 patients.

Grading:
The maximum grade is 80 Points. Late submissions follow the rules stated on the website.

Deliverables:
Each student should deliver a report containing the required solution.

Submission:
Submit a hardcopy in the beginning of the class (8:00AM), or submit electronically via blackboard.wpi.edu website.