

## CS 405G: Introduction to database systems

### Assignment 4

Assigned: Feb. 23, 2011  
Due: March. 7th, 2011

**Submission instructions:** Please try to prepare the assignment in word document (hand-written homework is also acceptable). Print and bring them to class on the due date. Put the course number and your name at the top left corner of the first page of your homework. Please follow the rules in the course syllabus regarding late homework and plagiarism.

#### Topics: SQL

**Problem 1 (30 points):** Consider the following relational database. Write down SQL to express each of the following queries:

**employee** (person-name, street, city)  
**works** (person-name, company-name, salary)  
**company** (company-name, city)  
**manages** (person-name, manager-name)

- Find the names of all employees who work for First Bank Corporation.
- Find the names and cities of residence of all employees who work for First Bank Corporation.
- Find the names, street address, and cities of residence of all employees who work for First Bank Corporation and earn more than \$10,000 per annum.
- Find the names of all employees in this database who live in the same city as the company for which they work.
- Assume the companies may be located in several cities. Find all companies located in every city in which Small Bank Corporation is located.
- Find the employees who work for more than two companies.

**Problem 2 (70 points)** The following schemas describe Presidents, Judges and the appointment relationships between them.

**Presidents**(PName : string, PDateOfBirth : int, Party : string, HomeState : string)  
**Judges**(JName : string, JDateOfBirth : int, LawSchool : string)  
**Appoints**(PName : string, JName : string, Date : integer)

Formulate the following queries on these schemas in relational algebra and SQL.

- Retrieve the names of all the presidents.
- Retrieve the names of all the judges graduated from Yale or Harvard.

- c) Retrieve the names of the presidents who appointed judges from both Yale and Harvard?
- d) List the number of judges graduated from each law school.
- e) Retrieve the pairs of names of judges attended the same law school
- f) What are the political parties whose presidents only appointed judges from Yale
- g) What are the names of the presidents who appointed exactly two judges?
- h) What are the names of the presidents who never appointed a judge?
- i) Retrieve the names of judges that were appointed by more than 2 presidents.
- j) List the oldest of judges graduated from each law school appointed by presidents in the Republican Party.