

Nepal College Of Information Technology  
DBMS

Assignment-2

1. Consider the relational database of Figure below, where the primary keys are underlined. Give an expression in the relational algebra 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)

- a. Find the names of all employees who work for First Bank Corporation.
- b. Find the names and cities of residence of all employees who work for First Bank Corporation.
- c. 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.
- d. Find the names of all employees in this database who live in the same city as the company for which they work.
- e. Modify the database so that Jones now lives in Newtown.
- f. Give all employees of First Bank Corporation a 10 percent salary raise.
- g. Delete all tuples in the *works* relation for employees of Small Bank Corporation.
- i. Find the names of all employees in this database who do not work for First Bank Corporation.
- j. Find the company with the most employees.

2. Consider the following relations:

**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)

Write the relational algebra expressions for the following queries .

- a. List the trade name of generic medicine with unit price less than \$50.
- b. List the first and last name of patients whose primary doctor named 'John Smith'.
- c. List the first and last name of doctors who are not primary doctors to any patient.
- d. For medicines written in more than 20 prescriptions, report the trade name and the total number of units prescribed.
- e. List the SSN of patients who have 'Aspirin' and 'Vitamin' trade names in one prescription.
- f. List the SSN of distinct patients who have 'Aspirin' prescribed to them by doctor named 'John Smith'.
- g. List the first and last name of patients who have no prescriptions written by doctors other than their primary doctors.

