Concordia University
Department of Computer Science & Software Engineering
COMP 353 – Databases
Summer 2018
Assignment # 2

Due: July 23, 2018

For the contract Management system, managers want to keep track of their Projects to know whether they were delivered on time or not. In addition to this, it is also requested that the database designer provide the ability to have a new table to keep track of the productivity of the employees based on the tasks performed in a contract.

Requirement-1) There are some fixed tasks to be done in each project such as:

a) Set up infrastructure for client;
b) Provisioning of resources;
c) Assigning tasks to resources;
d) Allocating a dedicated point of contact.

Requirement-2) A Customer associate lead manages all the managers in various lines of business (such as Cloud Services, Development and Research) who are responsible for the contracts

You should implement the following SQL queries and provide your results:

Q-1) A manager allocates different type of tasks (as per req.1) to all the employees. Using this information about the allocated tasks, an employee logs in the number of hours worked on a specific task. For this requirement design your database, give a list of all employees who are working on contracts with ACV of $50,000 and working on “Provisioning of resources" task.

Q-2) Give the list of all the employees who are not managers working in “Cloud services” line of business.

Answer the following questions:

Q-3) Given R = (D, E, G) with the set of FDs F = {D → EG, E → G, D → E, DE → G} that hold on R. Find a canonical cover for R.

Q-4) Given R(employeeID, employeeFirstName, employeeLastName, address, gender, employeeRole, employeeSalary)
with the following functional dependencies that hold on R:

FD1 : employeeID → employeeFirstName, employeeLastName;
FD2 : employeeFirstName, employeeLastName →employeeID,address, seniority;
FD3 : address → employeeRole;
FD4 : employeeRole, seniority→ employeeSalary.

a) Find all candidate keys of R.
b) Find a 3NF decomposition of R that is lossless and dependency preserving.
c) Is your decomposition in (b) is in BCNF? (explain)

What you should hand in:

You should submit an individual report that include:

a) reasonable assumption(s) you made;
b) SQL queries for questions 1 and 2 and the output of the queries;
c) Appropriate answers to questions 3 and 4.

You should submit your report on Moodle.