

CMPT 354 –Database Systems I (Section D100)

Assignment #7

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Total Marks: 50 (5% of the Individual Assignments)

Due Date: Nov 4, 14:30

For the below questions consider the relation below, and assume that firstname/lastname are unique.

Employees(EmpID integer, firstname varchar(50), lastname varchar(50), dateofbirth date)

Wherever you are required to *implement*, ensure it works in SQL Server 2008 R2.

Question 1) [20 marks]

My business, CMPT'R'Us, wants to hire you to help with the management of the employee database. We need to create a way (i.e. database procedure) to insert employee data into this table. According to our practice and our current database setup, we have the following restrictions:

- Although EmpID is the primary key, it does not autogenerate.
- If the employee already exists, we need an error message.
- If multiple instances of the employee exist, we must assume that John Doe mucked around in the database, so we discipline him, but must delete all instances of the employee and replace it with the values that are incoming from the user.
- If an employee does not exist in the database, we must store them.

We need a database procedure that will always keep the database in a consistent state, even after a failure somewhere in the system. Please provide instructions on how to call the procedure.

Question 2) [10 marks]

Implement a database function to calculate the Manhattan Distance, given two XY coordinate pairs. Please provide instructions on how to use the function.

Question 3) [5 marks]

In Question 1, John Doe was able to muck around in the database and cause duplicate employees (i.e. duplicate firstname/lastname combinations). Assuming SQL Server 2008 supported Tuple-Based Checks (which it does not, nor does it support assertions), how would you stop 2 people with the same name to be inserted? Write the SQL code to do this (again, note that SQL Server 2008 doesn't support this).

Question 4) [5 marks]

Given that SQL Server 2008 does not support Tuple-Based Checks, nor Assertions, but you still wanted to implement this restriction at the database level. What could you do? Do not actually implement anything, just list the strategies you could try.

Question 5) [5 marks]

Create a trigger which copies employees who are above the age of 50 into another table *ExperienceEmployees*.

Question 6) [5 marks]

We talked about transactions quite a bit. Can transactions be nested? That is, have a *transaction* within a transaction? If so, how do COMMIT and ROLLBACK work?