Concordia University
Dept. of Computer Science & Software Engineering

COMP 353 – Databases
Warm-up Project

Title: Montreal Cargo Shipping (MCS)
Report Due Date: Monday February 15, 2016 at 13:00
Demo Dates: During the lab sessions in the Week of February 15, 2016
Maximum Mark: 5

You and your team are required to develop a miniature database application system, a description of which is provided below. The lab instructors will assist you with problems and questions you may have to access and interact with the MySQL DBMS in the lab to which you have the access. The lab instructors will evaluate your running application in the lab and decide your project grade. It is expected that every team member contributes to the project. Insufficient contribution by any team member may be penalized by the lab instructors.

Project Description

MCS is an established cargo shipping company in Montreal. It has a large amount of data that has to be managed. The data is about *products, manufactures, customers,* **and** *customer orders***. The director of the company has requested different COMP353 teams to build a desired relational database application, with details provided below.**

Database schema

The database schema includes the following tables/relations. In each relation, the underlined attributes together form the primary key for that relation.

1. *Customer*={*cNumber, cName, cAddress, cPhone*}.
2. *Manufacturer*= {*mNumber, mName, mAddress, mManager, mPhone*}.
3. *Product*={*pNumber, mNumber, pName, pUnitPrice*}.
4. *Shippment*={*oNumber, cNumber, sDate, receivedDate*}.
5. *OrderDetail*={*oNumber, oDate, detailNo, pNumber, oQuantity, Cost*}.

The semantics of the relations should be clear. A customer order can include several products. The attribute *Cost* **in the** *OrderDetail* **indicates** $oQuantity \times UnitPrice$ **for each part** *pNumber* **that is ordered. In your opinion, what is the problem(s) of having** *Cost* **as an attribute of** *OrderDetail***? What is your suggestion (to change the database schema) in order to fix the problem? Do NOT consider/use your proposed change(s) in the implementation of this warm-up project, that is, your team should still implement the same database schema defined above. (This is to allow uniform evaluation of the projects).**

The Queries

Create the above database and populate the tables with some appropriate data. The system should also support some queries and/or transactions. To produce meaningful outputs to the various queries, make sure the number of tuples in each relation is reasonably large (about 10 to 20 tuples in each table). Also make sure that these tuples are "representative."

Express the following queries in SQL and evaluate them against your database and report the results. Note that no Graphical User-Interface (GUI) is required for your project.

1. **List those customers who ordered a product that contains the substring "ware" in the product's name.**
2. **Given an order number, give details of the products ordered.**
3. **List the name of those ordered exactly 3 different kinds of products in an order.**
4. **List the pair of name-manufacturer of every product with unit price above $100.**
5. **List the names of customers who have not ordered any product ordered by Frank, who is a customer.**
6. **Find customers who ordered all the products.**
7. **For each customer, find the highest and lowest number of products ordered. Produce the output in the increasing order of the names of the customers.**

What You Should Hand In

You should hand in a report that reports the SQL statements that you formulated to define the database schema, the queries, and their outputs produced by the system. Also give the E/R diagram of the database.

Important Note Make sure that the cover page has the Group ID received from Stan, the student ID, the first name, and LAST NAME of every team member, with the last names in CAPITAL LETTERs. Also include a subsection in your report that indicates who worked on which part of the project.