Programming Assignment #2

CS 317 Data Management and Information Processing
Spring'03
Instructor Goce Trajcevski
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due: Tuesday, June 10, 2003, at 9:59PM

1 General Info

In general, whenever you submit a project, there should be a formal *report* to accompany it, the main purposes of which are:
1. To describe the *goal* of the project.
2. To describe your approach to the solution.

These should be done in such a manner that even a person who has no clue about the project should get the idea of the intended problem and about some general aspects of your solution/approach. However, you should not be too verbose when writing reports...

2 Project's Specification

Below is a detailed specification of the goals of this project.

Queries.

For this particular assignment, you are to provide a set of SQL queries which will retrieve a desired information from a given database.

The database schema contains the four relational schemas below:

```
Employee(employeeName,street,city)
Works(employeeName,companyName,salary)
Company(companyName,city)
Manages(employeeName,managerName)
```

In each relation, the very first attribute listed is a key attribute.

You may assume that the databases are specified in the format of Microsoft Access. Note that some of the queries below may very well be expressed by simply using the QBE ability of the Microsoft Access, however, in this project you have to use SQL (you may want to double-check your correctness by using QBE wherever applicable, though...).

Following is the list of queries which you need to specify:

Q1: Find the names and cities of residence of all the employees who work for *Bank1* corporation.
Q2: Find the names and cities of all the employees in the database who live in the same cities as the companies that they work for.
Q3: Find the names and cities of all the employees in the database who do not work for *Bank1*.
Q4: Find the names of all the employees in the database who do not live in the same cities as their managers.
Q5: (Assume that the companies may be located in several cities) Find all the companies who have a location in every city where *Bank1* has a location.
Q6: Find all the employees in the database who earn more than each employee of *Bank2*.
Q7: Find the name and the location(s) of the company which has the most employees.
Q8: Find all the companies whose employees earn a higher salary, on the average, than the average salary of the employees at *Bank1*.

Q9: Find all the managers and companies that they work for, such that each of them earns more than any manager of the *Bank2*. **Q10:** Give all the employees of *Bank1* a 10% increase of their salary.

You will have a sample database, populated with instances for each relation, pertaining to the schemas specified above. You should use this sample database to test the correctness of your SQL specifications.

Interface.

This part of the project requires you to design an interface that one can use to query the database, for the relations specified in the previous sub-section. It is your free choice whether the interface will be written in *html*, or you will be using Microsoft Access capabilities.

NOTE that you are not expected to make the interface "functional" (i.e. it is NOT the case that you need to "link" it with the database itself – you are not expected to have any experience with Java or VisualBasic...)). Just present how you would view a design of a good interface for "juggling" with a database like the one in the previous sub-section (see below). This is purely from a "computer-human" interaction point of view, having a particular problem domain in mind.

3 What to Turn in

When submitting your project, you should make sure that the following is sent (besides the brief description of the goal of the project...):
1. A printout with the SQL specification of the queries above;
2. A printout containing the answers that you have obtained for the SQL queries. For this, as indicated above, you will be provided with a sample populated instance of the database.
3. The *html* code of the GUI part (equivalently, the file containing the interface spec.s if you chose to use Microsoft Access).
4. A short document (NO LONGER THAN 1 page and with NO SMALLER fonts than 10pt.), describing what prompted you do decide certain features of the GUI and to present them the way you did.

4 Grading Policy

As you were informed in class, you should work in groups of 2 (but no more than 2) students. The distribution of the weight of each part of this assignemnt is as follows:
- 80% for the SQL queries part;
- 20% for the GUI part (please indicate which environment you have chosen to use).
- Should you choose to submit 2 GUIs (both in *html* and Access, you could earn yourself 15% extra credits (PLEASE indicate this AND indicate which one of the two should be looked upon as your "first choice" for the 20% portion of the grade).

Note that *no extension* can be granted for this project.

Good Luck.