Database Systems - G22.2433 - Spring 2006

Professor: Dennis Shasha

Homework 1 - Due: Monday, February 13, 2006

Each question is worth 10 points. You may work with one partner and sign both of your names to your paper. Homeworks should be legible.

You are to create the following database in MySQL or SQLServer and write queries to answer the questions below. The queries should be written in such a way that they will work even if the data changes. You should hand in a file containing all the SQL commands needed to create the database. For each query, show the query text and the answer.

Employee(Name, Salary, Manager, Department)
Smith, 31000, Jones, Switch
Eliot, 28000, Warren, Software
Hughes, 33000, Jones, Switch
Jones, 32000, Roe, Switch
Warren, 40000, Patten, Software

Course(Student, Subj, Prof, Grade)
Smith, Algs, Hackett, 85
Decker, Dbase, Black, 94
Jones, Comp, Roe, 75
Patten, Comp, Roe, 70

1. Find all names of employees who work in the software department.
2. Find all names of employees who earn at least 5000 more than their managers.
3. Find all names of employees who received higher grades than their managers in the same course.
4. Find the average salary earned.
5. Find the average salary earned by people taking Roe’s course.
6. For those departments in which more than one employee takes courses, find the average salary by department.
7. Give the relational algebra for: ”Find all names of employees who work in the software department.”
8. Give the relational algebra for: ”Find all names of employees who earn at least 5000 more than their managers.”
9. Give the relational algebra for: ”Find all names of employees who received higher grades than their managers in the same course.”
10. For the query ”For those departments in which more than one employee takes courses, find the average salary by department” take the data from the files we give you and put them in the two tables. Show the timing and then print out the counts of the tables. Also show what the queries return.
11. Using this same database, show what the following query returns: "Find the average salary earned by people taking Roe’s course."