

Assignment 2

Query Tuning

Database Management and Tuning

Start date: March 19, 2013

Due date: April 2, 2013, 16:00

Grading: 1 point

In this assignment you will gain hands-on experience in rewriting slow queries and in experimentally evaluating the rewritten queries.

Task 1: Create a database with the following database schema:

- **Employee**(ssnum, name, manager, dept, salary, numfriends)
 - unique index on **ssnum**
 - unique index on **name**
 - index on **dept**
- **Student**(ssnum, name, course, grade)
 - unique indexes on **ssnum**
 - unique indexes on **name**
- **Techdept**(dept, manager, location)
 - unique index on **dept**
 - a manager may manage multiple departments
 - a location may contain multiple departments

Task 2: Fill the database with 100k employees, 100k students, and 10 technical departments. Only about 10% of the employees are in a technical department. The types of the attributes should make sense (e.g., **ssnum** should be an integer), but the values need not be meaningful (e.g., names can be random strings).

Task 3: Choose two types of queries that might be hard for your database to optimize. Taking queries from the lecture notes is OK.

NOTE: For at least one of your queries rewriting should make a difference.

Task 4: Rewrite the queries and consult the execution plans of the original and the rewritten query.

Task 5: Run the original and the rewritten query and measure the runtime.

Report:

- Describe your instance (data types, how did you fill the tables?).
- Give the original and the rewritten queries.
- Show and explain the execution plans.
- Report and briefly discuss the runtime results from your experiment.

Please indicate the time that you spent solving this assignment in your report. The time that you indicate will have *no* impact on your grade.