Database Management Systems(COP 5725)
Individual Project

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Advertising on the Web Part II (Bonus, 5% overall)

1 Project description

1.1 Project Overview

In this project, you are required to optimize your code through database optimization techniques. You can optimize the performance by

- faster way to load the data to database and dump the results/outputs.
- precomputation and avoid recomputation.
- adding/dropping index to improve execution time
- optimization techniques in `http://docs.oracle.com/cd/B19306_01/server.102/b14211/sql_1016.htm`
- set flags to disable/force certain join algorithms/index to improve performance
- any other ways you can think of to improve the performance.

Note: The above optimization techniques may not guarantee to improve the performance but they are all good alternatives for you to explore to improve the performance.

1.2 Project Report

You are required to submit a 1-3 pages PDF report. Name it report.pdf. Your report should answer the following questions.

1. What are the main components of your implementation in project I? For each component, describe clearly how do you implement it in the project I. What is the running time per component in project I?
2. For each component, describe clearly what are the alternative ways you tried to optimize the performance. What is the query evaluation plan before and after? please explain the query plans in the report.
3. Is the performance better than the original implementation? How much is the performance increased/decreased. Why there is an increase and decrease? Any further optimization or tuning based on this observation?
4. What are the main components of your new implementation in project II? For each component, describe clearly how do you implement it in the project II. What is the running time per component in project II?

5. What is the overall performance improvement? What is the main techniques used and what is the improvements achieved by each technique? If no, why not?

6. What difficulties you faced and what you learned from this project.

1.3 Tutorials

You can have a look at the following tutorials that might be helpful in doing this project:

1. How to use Oracle EXPLAIN PLAN `http://docs.oracle.com/cd/B19306_01/server.102/b14211/ex_plan.htm`
2. How to create Oracle SQL index `http://docs.oracle.com/cd/B28359_01/server.111/b28310/indexes003.htm`
3. How to optimize SQL statment `http://docs.oracle.com/cd/B10501_01/server.920/a96533/sql_1016.htm`
4. Oralce sql tunning tips `http://www.oratraining.com/blog/2009/06/oracle-sql-tuning`
5. How to measure the run time in Oracle database `http://docs.oracle.com/cd/E11882_01/server.112/e16604/ch_twelve040.htm#i2700163`
6. How to measure the run time in Java `http://stackoverflow.com/questions/4863658/how-to-get-system-time-in-java-without-creating-a-new-date`

1.4 Grading Guidelines

In the project part I, you will primarily be graded based on the correctness of your implementation. For project part II, we will grade it based on the report only. This is a bonus assignment, which means that, based on your report on your experience with different tuning techniques and the performance improvement (i.e., you would need to measure and report the runtime of SQL queries), we will decide to give you up to 5% of the total bonus marks. You need to make sure to include all the changes in the code and the methods used for tuning and measuring performance in the report.

1.5 Submission Guidelines

Please upload your report to sakai.

1.6 Questions and Answers

This section will list the questions from you and the TA's clarifications. Please let the TAs know *ASAP* if you find any ambiguity or any issue which may lead to non-unique outputs. Bonus points are possbile!

- Coming soon...