Assignment 3

Index Tuning

Database Management and Tuning

Start date: April 12, 2012
Due date: April 26, 2012, 16:00
Grading: 1 points

In this assignment you will study the indexing capabilities of a database management systems of your choice.

Choose one of the following database management systems:

- PostgreSQL 9
- Oracle 11g
- SQL Server 2008
- IBM DB2 UDB V9

Consider the table `Employee(ssnum,name,dept,salary)`, where `ssnum` is a key. For the system of your choice answer the following questions.

1. Which index data structures (e.g., B^+-tree index) are supported?
2. Discuss how the system supports clustered indexes, in particular:
   (a) How do you create a clustered index on `ssnum`? Show the query.[1]
   (b) Are clustered indexes on non-key attributes supported, e.g., on `name`? Show the query.
   (c) Is the clustered index dense or sparse?
   (d) How does the system deal with overflows in clustered indexes? How is the fill factor controlled?
   (e) Discuss any further characteristics of the system related to clustered indexes that are relevant to a database tuner?
3. Discuss how the system supports non-clustered indexes, in particular:
   (a) How do you create a non-clustered index on `(dept,salary)`? Show the query.[1]
   (b) Can the system take advantage of covering indexes? What if the index covers the query, but the condition is not a prefix of the attribute sequence `(dept,salary)`?

[1] Give the queries for creating a hash index *and* a B^+-tree index if both of them are supported.

(c) Discuss any further characteristics of the system related to non-clustered indexes that are relevant to a database tuner?

4. If your system supports B^+-trees, what kind of key compression (if any) does it support? How large is the default disk page? Can it be changed?

Important: Reference your information sources.

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.