Database

Date: 31st Oct 2019 Assignment 9
Submission Filename: assign9.txt Due Date: 31st Oct 2019 16:59

Assignment Overview

The basic objective of this assignment is to get familiar with *index* utility of MySQL. In database, an *index* is a data structure that improves the speed of operations in a table. Indexes (or Keys) can be created on selected column(s) to facilitate fast search. Without index, a `SELECT * FROM products WHERE productID=x` needs to match with the *productID* column of all the records in the products table. If *productID* column is indexed (e.g., using a binary tree), the matching can be greatly improved (via the binary tree search).

You should index columns which are frequently used in the WHERE clause; and as JOIN columns. In this assignment, you will try to monitor the performance improvement using indexing in MySQL.

1 Task 1

For this assignment, download the transaction.csv file available in the *CS355/assignment/CSVFile* folder.

1.1 SubTask A: Define the table and load data into it from the CSV file

Go through the CSV file, check the properties of the various columns and define a table with appropriate attributes. Don't define any constraints initially. Just define appropriate data types so that you can load the values (from the CSV file) into the table. Then load all data from the CSV file into the table.

1.2 SubTask B: Check various queries and monitor the timings

Now, write various queries using SELECT, INSERT, UPDATE statements and monitor the timing. You execute the same query multiple times (atleast 5 times) and take the average. While writing the SELECT and UPDATE queries use relevant where clause to check both range and equality type of queries.

1.3 SubTask C: Create index on the copied table

Now, create a new table and copy all the data from the earlier table. For this purpose, you can use the followings-

```
CREATE TABLE new_table LIKE old_table;
INSERT new_table SELECT * FROM old_table;
```

Choose an appropriate column(s) as an index and create index on it.

1.4 SubTask D: Check various queries and monitor the timings

Now, write the same queries that you have used in SubTask B on the indexed table and note down the average timing.

1.5 SubTask D: Perform Comparative Analysis

Perform a comparative analysis on the timings that you have obtained using SubTask B and SubTask D. State your observation.

Submission

You need to submit a detailed report (assign9.txt) describing the steps (including all the MYSQL commands) you have used for performing Task A, B, C and D. Show the results to the TAs also. Use only submission module to submit your report.