Fundamentals of Data Management

Credit Tasks 10.2.3: Performance

Overview

You'll learn how DBMSs execute queries, how to find out about database statistics, when to create indexes and how to investigate whether an index is being used.

Purpose

Gain practical experience of some performance-related matters in databases.

Task

Open XAMPP/ VMWare Player. Follow the instructions to open two connections to the MySQL server from the MySQL Workbench. Work through the tasks below.

Time

This task should be completed in your lab class and submitted for feedback in lab 10 or at the beginning of lab 11.

Resources

- MySQL (on FDM virtual machine) and MySQL Workbench (or other RDBMS and suitable client).

Feedback

Discuss your solutions with the tutorial instructor.

Next

Get started on Task 10.2.4.

Credit Tasks 10.2.3 — Submission Details and Assessment Criteria

Document your solutions to the tasks using a word processor. Upload your solutions to Doubtfire, then discuss it with your tutor.

Use either window and run a simple query:

EXPLAIN EXTENDED SELECT * FROM Products;

You will receive a listing that includes the following columns:

Column	What the values mean
ID	ID field for the step
select_type	The type of query, such as SIMPLE (no joins) or UNION. See listing: https://dev.mysql.com/doc/refman/5.7/en/explain-output.html#explain_select_type
table	The table accessed to get the rows.
type	The type of join used. Most common options: **all** – This usually means that the table has been searched sequentially, which is expensive (making an index might help). **ref** – The DBMS uses an index on the key column to find the matching rows. Listing of all options: https://dev.mysql.com/doc/refman/5.7/en/explain-output.html#jointype_const
possible_keys	The names of indexes that could be used. To find out which columns the indexes are made on, use SHOW indexes in <table_name>;
key	The index that was actually used for the search.
key_len	The length of the key that was used.
ref	Shows which columns or values were compared when the index mentioned under 'key' was used.
rows	Shows how many rows the DBMS believes it has to examine. This is an estimate based on statistics, not actual values.
filtered	The percentage of the table rows that will be examined based on the condition in the WHERE clause.
Extra	Any additional information.

Subtask 10.2.3

Examine the following query before retrieving the query plan with “EXPLAIN EXTENDED”. The COUNT(*) function returns the number of rows. Since there is no restriction, we should obtain a count of all rows. How do you think the DBMS would execute this query?

SQL
`EXPLAIN EXTENDED` `SELECT COUNT(*) FROM Orders;`

Run the query and then the query plan. Examine the output with the help of the column explanations given above.

Describe in your own words how the DBMS accesses the rows. Is this different from what you expected? Can you reason why this strategy was chosen?

Document and upload your findings.