Optimizing Queries

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Welcome to Optimizing Queries

Objectives

After watching this video, you will be able to:

- Explain how to use query execution plans
- Explain what query optimization is
- Describe some of the different query optimization tools available

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- Explain how to use query execution plans,
- explain what query optimization is.
- and describe some of the different query optimization tools available.

Query execution plan

Steps used to access RDBMS data

- Shows details of a query execution plan for a statement

Obtaining query execution plan details:

- GUI tool
- Mode setting
- EXPLAIN statement

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A query execution plan (sometimes just referred to as a query plan) is the name given to the series of steps used to access data in RDBMSes when running statements.

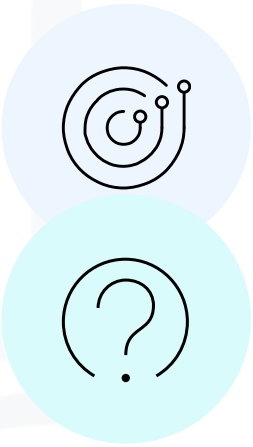
An RDBMS will often provide several methods for returning the details of a query execution plan.

Some RDBMSes offer tools which create a graphical representation of their query plans, while others allow a distinct mode to be set on the connection which causes the RDBMS to return a text-based description of their query plans.

And lastly, RDBMSes allow you to query a virtual database table, after running the query, by using an EXPLAIN statement.

Query optimization

- Query optimizer works out most efficient method for executing a query
- Evaluates possible query execution plans
- Database admins can manually fine - tune plans
- Some RDBMSes allow hints to be provided to query optimizer



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Most RDBMSes have a query optimization feature that uses a query optimizer tool to calculate the most efficient method for executing a query by evaluating all the available query execution plans.

When a query gets submitted to the database, the query optimizer evaluates the various possible query execution plans and returns what it determines to be the best choice.

However, query optimizers can be fallible, so database admins will sometimes need to manually inspect and fine-tune the plans produced by the query optimizer to get optimum query performance.

Some RDBMSes allow you to provide hints to the query optimizer. A hint is an additional component to the SQL statement that informs the database engine about how it wants it to execute a query, such as instructing the database engine to use an index when executing the query, even though the query optimizer might have decided not to.

EXPLAIN tools

- EXPLAIN statement
  - MySQL
  - PostgreSQL
  - Db2
- Graphical EXPLAIN tools
  - Db2 - Visual Explain
  - MySQL Workbench - Visual Explain Plan
  - PostgreSQL – PgAdmin graphical explain plan feature

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All flavors of RDBMSes, such as MySQL, PostgreSQL, and Db2 have an EXPLAIN statement that you can use to show a text-based representation of the details of a query execution plan for a statement, including the processes that occur and in what order they occur.

An EXPLAIN statement can be a good way to swiftly cure slow running queries.

Some RDBMSes also provide a graphical version of the EXPLAIN statement.

For example, Db2's Visual Explain uses information from a number of sources to enable you to view the access plan for explained SQL or XQuery statements as a graph. You can use the information available from the access plan graph to tune your queries for better performance.

For MySQL systems, the MySQL Workbench provides a Visual Explain Plan which produces and presents a visual representation of the MySQL EXPLAIN statement. MySQL Workbench provides all of the EXPLAIN formats for executed queries including the standard format, the raw extended JSON format, and the visual query plan.

And for PostgreSQL systems the **PgAdmin** utility provides a graphical explain plan feature. Although this is not an entire substitute for EXPLAIN or EXPLAIN ANALYZE text plans, it does offer a fast and simple method for viewing plans for additional analysis.

There also many third-party tools that can provide these same capabilities.

Summary

In this video, you learned that:

- Query execution plans show details of the steps used to access data when running query statements
- Most RDBMSes provide several methods for returning the details of a query execution plan
- Query optimization features use a query optimizer tool to determine the most efficient method for executing a query
- EXPLAIN statements show text -based details of a query execution plan for a statement

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In this video, you learned that:

- Query execution plans show details of the steps used to access data when running query statements.
- Most RDBMSes provide several methods for returning the details of a query execution plan, including EXPLAIN statements and visual explain tools.
- Query optimization features use a query optimizer tool to determine the most efficient method for executing a query.
- And EXPLAIN statements show a text-based representation of the details of a query execution plan for a statement.