

MySQL Execution Plan Guide

A guide to the terminology commonly found in a MySQL Execution Plan, what they mean, and why they are used.

Ben Brumm

www.databasestar.com

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In this guide, you're going to learn more about the Execution Plan in MySQL.

This guide includes:

- how to view an Explain Plan or Execution Plan in MySQL
- a list of many of the common access methods and join methods
- what the methods mean
- why the database would use each of these methods

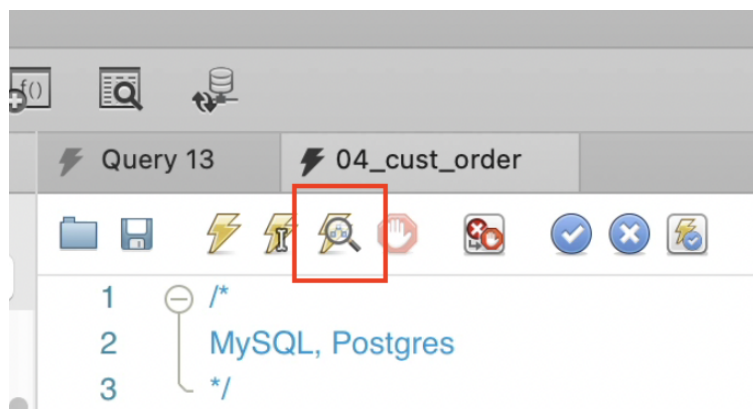
Understanding the terms in the Execution Plan is the first step in understand how your query is executed and what you can do to improve its performance.

Let's get right into it.

How to View an Execution Plan

Here's how you can view an Execution Plan in MySQL Workbench. Other SQL editors will have a similar feature.

Click this "Execute the Explain Command..." button



Access Methods

These steps are used by the database to access data from a table or an index.

| Name | Definition | When It Is Used |
|------------------------------------|--|--|
| Full Table Scan (type = ALL) | Read every row in the table | No indexes on the table. |
| Non-Unique Key Lookup (type = ref) | This operation traverses a B-tree index, similar to an Index Range Scan or a Table Access By Index Rowid. | When an index exists but the value is not unique |
| Unique Key Lookup (type = eq_ref) | This performs a traversal of a B-tree to find one row, similar to an Index Unique Scan or a Table Access by Index Rowid. | When an index exists and the value is unique |

Join Operations

These steps are used by the database to combine two sets of results and return a single set of results.

| Name | Definition | When It Is Used |
|--------------|---|--|
| Nested Loops | Compares each row of one result with each row of another, and returns a single result | Generally used for large data sets, or where one table is much larger than the other |
| Hash Join | Joins two sets of results in memory and returns a single result | Generally used for small data sets or when the results can fit in memory |

Sort Operations

These steps are used by the database to sort a set of results for display or further processing.

| Name | Definition | When It Is Used |
|-------|--|---|
| ORDER | A step where the data is ordered for display | When an Order By clause exists on a query |