Statistics refers to the statistical information about the distribution of values in one or more columns of a table or an index. The SQL Server Query Optimizer uses this statistical information to estimate the cardinality, or number of rows, in the query result to be returned, which enables the SQL Server Query Optimizer to create a high-quality query execution plan.

**For example, based on these statistical information SQL Server Query Optimizer might decide whether to use the index seek operator or a more resource-intensive index scan operator in order to provide optimal query performance.**

Query Optimizer uses statistics to create execution plans that improves query performance.

**Practical Scenario**

Procedure… slow sometime, fast sometime… unable to reproduce.

Answer: Add statistics,

but problem will be solved for a month or so.

Later again procedure will be slow. So the statistics we added or stale. Update the statistics again or automate the statistics.

**When to Create Statistics**

Often columns being used in JOIN, WHERE, ORDER BY, or GROUP clauses are good candidate to have up-to-date statistics on them.

Substantial data change operations (like insert, update, delete, or merge) change the data distribution in the table or indexed view and make the statistics goes stale or out-of-date, as it might not reflect the correct data distribution in a given column or index.

<http://www.databasejournal.com/features/mssql/importance-of-statistics-and-how-it-works-in-sql-server-part-1.html>

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