



# SQL Query Tuning



# SQL Query Tuning

- SQL query tuning or SQL optimization is the process of improving the performance of SQL queries by making them run more efficiently.
- Crucial for managing large databases where seemingly simple queries can consume significant resources and result in slow response times.
- The goal of SQL query tuning is to reduce the resource consumption (CPU, memory, I/O) and improve the speed of the query execution, thereby providing faster response times to the end-user.



# Why Tune SQL Query ?

- Improved Performance:
- Better Resource Utilization:
- Improved Scalability:
- Enhanced User Experience:
- Cost Savings:
- Prevent Downtime:



# Query Tuning Basics and Steps

- **Understand the database schema and design:** Knowledge of primary keys, foreign keys, and indexes is important.
- **Understand the Query Execution Plan:** Insights into how SQL Server interprets your query can help optimize it.
- **Indexing:** Indexes speed up retrieval of rows but can slow down updates.
- **Avoid Using SELECT \*:** Only fetch the columns you need.
- **Use Joins Instead of Subqueries:** JOINS are typically faster than subqueries.
- **Use Stored Procedures:** Stored procedures are precompiled SQL statements.



# Query Tuning Basics and Steps

- **Avoid Functions in the WHERE Clause:** Functions in WHERE clauses can lead to inefficient use of indexes.
- **Keep Statistics Updated:** Updated statistics help SQL Server make better decisions.
- **Use Pagination:** Pagination in queries improves performance.
- **Partition Large Tables:** Partitioning large tables makes them more manageable.
- **Use Parameterized Queries:** Parameterized Queries improve performance by reusing execution plans.
- **Monitor and Analyze Performance Regularly:** Regular performance monitoring helps optimize queries.