

Indexing Overview

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Indexing Overview

- What is an Index
- Types of Indexes
 - Non Clustered Indexes
 - Clustered Indexes
 - When To Avoid A Clustered Index
- Covered Indexes
- Index Usage Terminology
- Summary
- Additional Topics

What is an Index

- Similar to the index at the back of a book.
- An index provides a shortcut to get to your data.
- Without an index to find a specific row in a table, it would required a full table scan.

Types of Indexes

- Two types of indexes in SQL Server
- Non-Clustered Indexes
 - Traditional Indexing – contains pointers to the data.
- Clustered Indexes
 - Reorganizes the actual data on disk.

Non Clustered Indexes

- Not required, but clustered indexes are recommended
- Contain only the data specified in the index.
- Do not change the base layout of the tables.
- Index structure is separate from the base table.
- Use pointers to get to the data.
- Can be created on most data types including char(), varchar(), and uniqueidentifiers.
- Only one non-clustered index can be used per table reference in a query.
- Can improve performance with multiple columns.

Clustered Indexes

- Causes base table structure to change.
- Only one clustered index per table.
- Not required on a table.
- Should never contain `char()`, `varchar()`, `varbinary()`, `uniqueidentifiers`, or other large or widely distributed identifiers.
- Can significantly increase the size of a table and the database.
- Can increase performance if used correctly.

When To Avoid A Clustered Index

- If you already have a clustered index on a table you can't create a second one.
- Never use a clustered index on a GUID / UniqueIdentifier

Covered Indexes

- Returns query results without accessing the base table.
- Can lead to major performance increases.
- Applies to Non-Clustered Indexes.
- All columns requested in the query are somewhere in the index regardless of :
 - Where they are in the query
 - Where they are in the index

Index Usage Terminology

- An Index Scan accesses all the rows in the index.
- An Index Seek uses selective rows in the index.
- The Seek is much quicker than the scan.

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Additional Topics

Determining Index Usage
Indexing for Performance
When an Index is not used