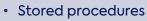




Module 5: SQL and Finance









Trainer Notes

Indexes and stored procedures will be critical in understanding the day to day of databases that you will be running/supporting.



Indexes

An index can be applied to a table in a database with the purpose of speeding up retrieval of rows from the table or the view.

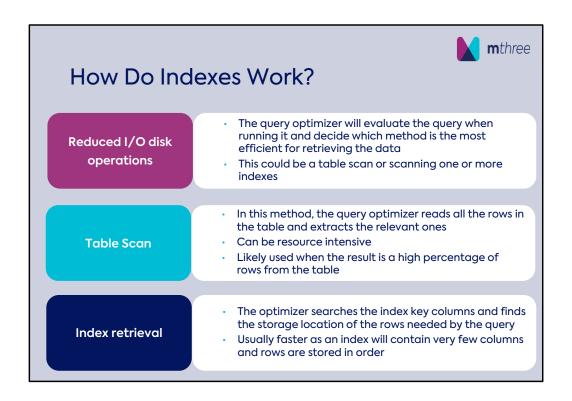
It is composed of keys which are built on one or more of the columns in the table or the view.

The keys are stored in a B-tree structure so that the server can find the row or rows associated with it quickly.

Indexes are automatically created when primary key and unique constraints are defined on table columns.

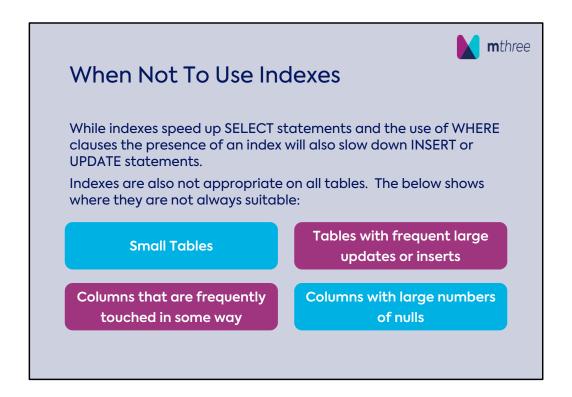
Trainer/Trainee Notes

Real life production databases can be huge. And with the requirement of storing data for several years for regulatory reasons it is important that you can be efficient as possible in your queries on the database. Indexes will help with retrieval.

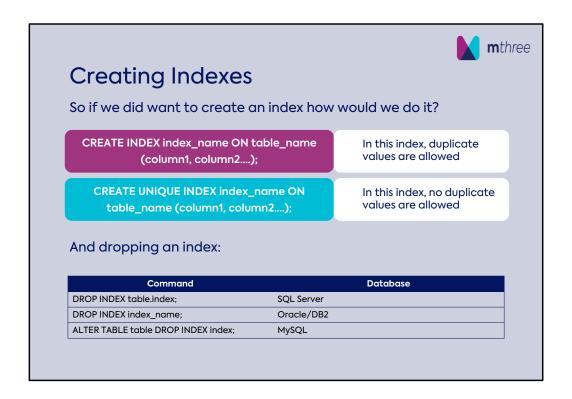


Reducing the number of disk accesses will speed up queries and also reduce the impact on system resources

Think about indexes like the back of a book index



Unless you are developing databases, I would not expect production support staff to have to create indexes but it is important to know about their existence.



Here you can see that creating an index is very easy on the column you wish, and dropping the index is also pretty simple across the various database types.



SQL Stored Procedures

Stored procedures are used to group one or more SQL statements into logical units.

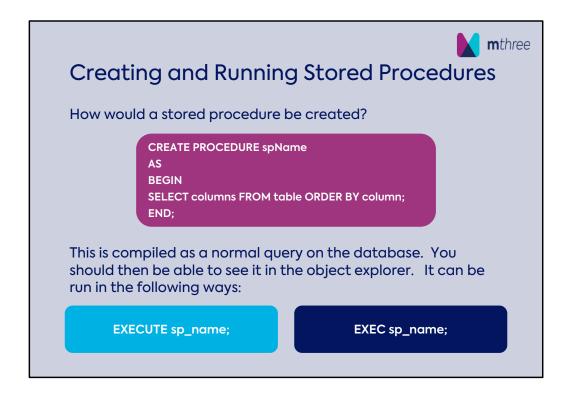
When you call a stored procedure for the first time, the server will create an execution plan which is then stored in the cache.

Once the execution plan is saved, the server will reuse this plan to execute the stored procedure every time it is run.

If your database changes over time, there is potential that your saved execution plan is not the most optimal way of retrieving data anymore and can lead to slow performing queries.

Trainer/Trainee Notes

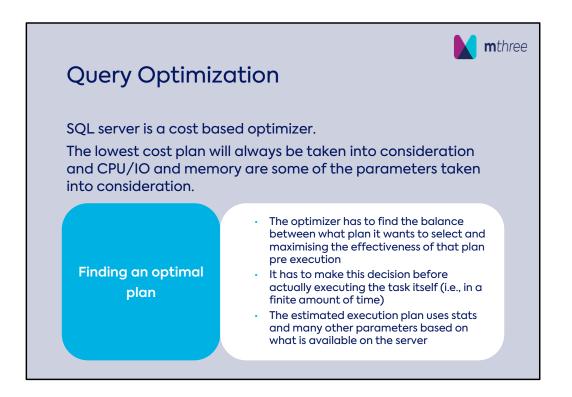
Execution plans not performing are often the root cause of performance issues on a database. A DBA will have tools to analyse the query plans to understand where the inefficiencies lie. A execution plan can be deleted which will force the engine to recalculate and hopefully create a more efficient query and result.



Having a high level understanding of stored procedures and execution plans is important.



Check with the database version you are running what the correct syntax is. Also be very careful deleting a stored procedure or altering it as multiple people may well be using it as well as the application itself.



Statistics are important here – if the statistics on a database are stale, it will potentially cause the wrong plan to be chosen and executed. Often DBAs will need to refresh the statistics if performance issues are seen