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SU 2: Summary

Database performance tuning and Query Optimization

Database performance tuning:

It is a set of activities and procedures used to make sure that the user query is handled in the database management system in a timely fashion.

Database statistics:

Is the number of measurements collected by the database management system that describes a snapshot of the characteristics of the objects.

The database management system processes queries in 3 phases:

- Parsing phase
- Execution phase
- Fetching phase

The use of indexes is important to speed up the access of data. They facilitate search and sorting. They also make use of aggregate functions and joins.

In query optimization, the database management system should choose which indexes to use, how to perform joins and which table to start with.

Data sparsity:

A column of values of different values.

Hash index:

Based on an ordered list

B-tree index:

Organized as upside down.

Bitmap index:

Uses a bit value to represent existence.

Rule based optimizers:

Uses rules when executing a query, to find the best approach.

A cost-based optimizer:

Uses statistics of objects to determine the best approach in executing queries.

Performance tuning in SQL:

Handles queries that utilizes statistical data.

Database management tuning:

Manages the DBMS processes in primary memory and allocates space for data files.

In- memory database:

Optimized to store large portions of database Ram rather than disk storage.

I/O Accelerator:

A device that is utilized to improve the throughput for input/output operations.

RAID – Redundant Array of Independent Disks:

Uses multiple disks to create virtual disks from individual disks.