



CHECKPOINT DATABASE SQL/NOSQL

What is SQL?

SQL (Structured Query Language) is a programming language specifically designed for managing relational databases. It provides a standardized way to communicate with databases and perform various operations.

key functionalities of SQL

SQL allows you to define the structure and schema of a database using DDL statements (Data Definition Language)

SQL includes functions for aggregating and summarizing data. Functions like COUNT, SUM, AVG, MIN, and MAX allow you to calculate totals, averages, and other statistics.

SQL provides DML statements for manipulating data within a database. The most common DML statements are: INSERT/SELECT/UPDATE/ DELETE

SQL provides mechanisms for enforcing data integrity rules. You can define constraints such as primary keys, foreign keys, unique constraints, and check constraints.

SQL's SELECT statement is used for querying data from one or more tables. It allows you to specify conditions using WHERE clauses to filter the results based on specific criteria.

SQL supports transactional operations, allowing you to group multiple database operations into a single logical unit.

SQL enables you to establish relationships between tables and perform joins to combine data from multiple tables in a single query.

SQL allows you to create views, which are virtual tables derived from the data in one or more base tables.

What is NoSQL?

NoSQL (Not Only SQL) is a term used to describe a category of database management systems that depart from the traditional relational model of SQL databases. NoSQL databases are designed to handle large volumes of unstructured, semi-structured, and rapidly changing data.

What is MongoDB?

MongoDB is a popular open-source NoSQL document-oriented database management system. It is designed to store, retrieve, and manage unstructured or semi-structured data in a flexible and scalable manner.

MongoDB offers a range of functionalities that make it suitable for various use cases.

key functionalities of MongoDB

MongoDB stores data in flexible and self-describing JSON-like documents called BSON (Binary JSON).

MongoDB is schema-flexible, meaning it does not enforce a predefined schema. Each document can have its own structure, allowing for dynamic changes and adaptation.

MongoDB provides a rich set of operations for creating, reading, updating, and deleting documents. These operations are often referred to as CRUD operations

MongoDB offers a powerful and expressive query language called the MongoDB Query Language (MQL).

MongoDB is designed for scalability and high availability. It supports horizontal scaling through sharding, which enables distributing data across multiple servers or clusters.

MongoDB's Aggregation Framework enables advanced data processing and analytics.

MongoDB has native support for geospatial data and provides geospatial indexes and query operators to efficiently store, query, and analyze location-based information.

MongoDB offers full-text search capabilities, allowing you to perform text-based searches across documents and collections.

SQL VS NoSQL?

	SQL	NoSQL
Database Type	Relational Databases	Non-relational Databases / Distributed Databases
Structure	Table-based	<ul style="list-style-type: none">• Key-value pairs• Document-based• Graph databases• Wide-column stores
Scalability	Designed for scaling up vertically by upgrading one expensive custom-built hardware	Designed for scaling out horizontally by using shards to distribute load across multiple commodity (inexpensive) hardware
Strength	<ul style="list-style-type: none">• Great for highly structured data and don't anticipate changes to the database structure• Working with complex queries and reports	<ul style="list-style-type: none">• Pairs well with fast paced, agile development teams• Data consistency and integrity is not top priority• Expecting high transaction load