Comparing NoSQL to SQL: MongoDB vs SQL

Mohamed Firas Zighni
mohamedfiras.zighni@esprit.tn

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Introduction

In this presentation, we will explore the key differences between NoSQL and SQL databases, focusing on MongoDB and SQL. We will discuss the fundamental concepts and functionality of both database types, and then delve into a detailed comparison of their features. By the end, you will have a clear understanding of when to choose NoSQL or SQL for your specific database needs.

What is NoSQL and SQL?

Defining NoSQL and SQL

1 **NoSQL**

NoSQL, or 'Not only SQL,' is a category of database types that do not adhere to the traditional tabular relational model. NoSQL databases are designed to handle unstructured data, offering scalability and high performance. They are a good choice for handling big data and real-time web applications.

2 **SQL**

SQL, or Structured Query Language, is the standard language for managing relational databases. SQL databases utilize the tabular structure, where data is organized into rows and columns. They ensure data integrity, are suited for complex transactions, and have excellent support for ad hoc querying.

Functionality of NoSQL

Key Features of NoSQL

1 Scalability

NoSQL databases excel in horizontal scalability, allowing seamless distribution of data across multiple servers. This enables handling high traffic and large datasets efficiently.

2 Flexibility

NoSQL databases are schema-less, allowing developers to store data without predefined columns or tables. This flexibility supports dynamic and evolving data models.

3 Performance

Due to the absence of complex joins and transactions, NoSQL databases offer high performance and low latency. They can easily handle heavy read/write workloads.

4 Big Data and Real-time Applications

NoSQL databases are ideal for handling big data and real-time applications, providing fast data ingestion, analysis, and retrieval.

Functionality of SQL

SQL databases offer a range of functionalities that make them suitable for various applications. They ensure data integrity through constraints and support complex transactions that require multiple queries and updates.

Comparison between NoSQL and SQL

Understanding the Differences

1 **Data Model**

NoSQL databases use various data models like key-value, document, graph, or wide-column, while SQL databases strictly follow the tabular data model.

2 **Scalability**

NoSQL databases easily scale horizontally, allowing distribution of data across multiple nodes. SQL databases have vertical scalability, where data is scaled on a single server.

3 **Schema**

NoSQL databases are schema-less, while SQL databases have a predefined schema that specifies the structure of data.

4 **Query Language**

NoSQL databases use different query languages specific to their data model, while SQL databases use SQL for querying and manipulating data.

Thank You

Any Questions?