

Data Analytics Project

22. NoSQL Databases



Aagam Deolasi



Introduction

1. **Relational databases** struggle with the **exponential growth of data**, leading to the rise of NoSQL databases.
2. **NoSQL**, or **non-relational databases**, offer alternatives to relational databases for managing **large volumes of unstructured data**.
3. NoSQL databases differ from relational databases in **structure, storage, and retrieval methods**.



Types of NoSQL DBs

1. **Key-value Stores:** Efficiently store keys and values, optimized for quick retrieval of billions of keys.
2. **Document Databases:** Store documents in a machine-readable format like JSON or XML, allowing for flexible data structures.
3. **Graph Databases:** Store interconnected nodes and relationships, optimized for navigating complex networks.
4. **Wide Column Stores:** Store data in tables with columns as values, ideal for managing sparse information efficiently.



Advantages & Challenges of NoSQL DBs

ADVANTAGES:

Designed for large, unstructured datasets; scalable to support rapid data growth; flexibility to add new data structures.

CHALLENGES:

Lack of standardization for querying; potential for temporal inconsistencies; limited application support compared to relational databases.



Example of NoSQL DBs

Imagine a *streaming platform with millions of users and movies.*

Wide column stores efficiently manage sparse information about user-movie interactions.

Graph databases help social networks analyze connections between users for personalized recommendations.

Document databases store user profiles and preferences in flexible JSON format for fast retrieval.



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Summary

1. **NoSQL databases** offer efficient solutions for managing large and unstructured datasets.
2. Understanding the advantages and challenges of NoSQL compared to relational databases is crucial for making informed database design decisions.



THANK YOU!!! FOR YOUR SUPPORT! For Now...

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Aagam Deolasi.

