

Introduction to MongoDB

MongoDB is an **open-source, **NoSQL**, document-oriented database developed by MongoDB Inc.**

It Stores Structured and Unstructured Data, but popular to store Unstructured Data

Mongodb Stores data as documents in a format similar to JSON (called BSON — Binary JSON) instead of Storing data in Tables and Row Columns

It's great for applications that need to handle large volumes of unstructured or semi-structured data.



Why MongoDB?



Flexible Schema

You don't need to predefine your schema (structure of your data). Documents in the same collection can have different fields.



Fast for Large-Scale Data

MongoDB is designed to handle high volumes of unstructured or semi-structured data efficiently.



Great with JavaScript/Node.js

Since data is stored as JSON-like documents (BSON), it's a natural fit for JavaScript-based applications.



Works Well in Cloud Environments

MongoDB integrates seamlessly with cloud platforms like **MongoDB Atlas**, making deployment and scaling easier.



Easily Scalable (Horizontally)

Supports **sharding** (horizontal scaling), which distributes data across multiple servers for better performance and capacity.



Advantages of MongoDB





- **Schema-less**
- **Scalability**
- **High Performance**
- **Data Flexibility**
- **Developer-Friendly**
- **Ease of Use**
- **Cloud-Native Compatibility**



What is NoSQL?

NoSQL stands for "**Not Only SQL**" — it's a broad category of databases that differ from traditional **relational databases (RDBMS)**.

Instead of storing data in tables with rows and columns, **NoSQL databases** use various data models like:

-  **Document-based** (e.g., MongoDB)
-  **Key-Value stores** (e.g., Redis)
-  **Column-based** (e.g., Cassandra)
-  **Graph-based** (e.g., Neo4j)



Why NoSQL?



Flexible Data Models

NoSQL allows you to store data in various formats: **documents, key-value pairs, graphs, or wide-columns.**



High Performance at Scale

Optimized for **read/write speed** even with massive datasets and Ideal for **real-time applications**, like chat apps, gaming, and analytics dashboards.



Great for Semi-Structured & Unstructured Data

Handles data from **IoT devices, logs, social media, user behavior**, etc., without needing to transform it into a strict table format.



Perfect for Modern Web & Mobile Apps

JSON-like data formats (like BSON in MongoDB) work seamlessly with JavaScript and REST APIs.