**MongoDB**

MongoDB is a NoSQL database which stores the data in form of key-value pairs. It is an **Open Source**, **Document Database** which provides high performance and scalability along with data modelling and data management of huge sets of data in an enterprise application.

MongoDB also provides the feature of Auto-Scaling. Since, MongoDB is a cross platform database and can be installed across different platforms like Windows, Linux etc.

**Document based storage**

A Document is nothing but a data structure with name-value pairs like in JSON. It is very easy to map any custom Object of any programming language with a MongoDB Document.

For example : Student object has attributes name, rollno and subjects, where subjects is a List.

Document for Student in MongoDB will be like:

{

name : “Studytonight”,

rollno : 1,

Subjects : [“C Language:,”C++”,”Core Java”]

}

**Why MongoDB**

There are four major reasons why MongoDB is being deployed more often. They are:

**1. Flexibility:**

MongoDB uses documents that can contain sub-documents in complex hierarchies making it expressive and flexible. MongoDB can map objects from any programming language, ensuring easy implementation and maintenance.

**2. Flexible Query Model:**

The user can selectively index some parts of each document or a query based on regular expressions, ranges, or attribute values, and have as many properties per object as needed by the application layer.

**3. Native Aggregation:**

Native aggregation allows users to extract and transform data from the database. The data can either be loaded into a new format or exported to other data sources.

**4.Schema-less model:**

Applications get the power and responsibility to interpret different properties found in a collection's documents.

**Features of MongoDB**

**1. General-Purpose Database:**

MongoDB can serve diverse sets of data and multiple purposes within a single application.

**2. Flexible Schema Design:**

The document-oriented approach allows non-defined attributes to be modified on the fly. This is a key contrast between MongoDB and other relational databases.

**3. Load Balancing and Scalability:**

It is built to scale, both vertically and horizontally. Using the technique of sharding, an architect can achieve both write and read scalability. Data balancing occurs automatically and transparently to the user by the shard balancer.

**4. Aggregation Framework**:

MongoDB offers an Extract, Transform, Load (ETL) framework which eliminates the need for complex data pipelines.

**5. Native Replication:**

Data gets replicated across a replica set without a complicated setup.

**6. Security Features:**

Authentication and authorization are taken into account.

**7. JSON:**

JSON is widely used across for frontend and API communication. It only makes sense for the database to use the same protocol**.**

**8. MapReduce:**

MongoDB offers a great tool, MapReduce to build data pipelines.

**Benefits of MongoDB**

* NoSQL databases are cheaper and easier to maintain. NoSQL databases have features like easier data distribution, simpler data models, and automatic repair.
* These benefits require less administrative costs and, consequently, are less expensive.
* It’s open-source and incurs fewer server costs. Open-source is free. NoSQL databases use cheaper servers, so the price of data storage and processing per gig is significantly lower.
* It’s easily and highly scalable. Since NoSQL databases like MongoDB expand horizontally, you can scale by adding more machines to your resource pool.
* It supports integrated caching. System memory caching boosts data output performance.
* MongoDB has no schema hassles. You can place data into a NoSQL database without requiring a predefined schema, so you can change the data model and formats without disrupting applications.
* It’s user-friendly. MongoDB offers plenty of useful features (Ad-hoc queries, aggregation, capped collection, file storage, indexing, load balancing, replication, server-side JavaScript execution) that makes it a user-friendly database.

## MongoDB Applications

* Several areas of technology use MongoDB as their Database Management System.

I[nternet of Things](https://www.simplilearn.com/iot-applications-article) (IoT), mobile applications, real-time analysis, personalization, catalog management, and content management, among others, readily deploy MongoDB

**Limitations of MongoDB**

1. MongoDB uses high memory for data storage.
2. The BSON document size cannot exceed 16MB.
3. Naming restrictions for databases in Windows.