

## Key Difference Between MongoDB and MySQL

- MongoDB represents data as of JSON documents whereas MySQL represents data in tables and rows.
- In MongoDB, you don't need to define the schema while in MySQL you need to define your tables and columns
- MongoDB doesn't support JOIN but MySQL supports JOIN operations.
- MongoDB uses JavaScript as query language while MySQL uses the Structured Query Language (SQL).
- MongoDB is an ideal choice if you have unstructured and/or structured data with the potential for rapid growth while MYSQL is a great choice if you have structured data and need a traditional relational database.
- If most of your services are cloud based MongoDB is the best suited for you but If data security is your priority then MYSQL is the best option for you.

### What is MongoDB?

MongoDB is a document-oriented NoSQL database used for high volume data storage. MongoDB is a database that came into light around the mid-2000s. It comes under the category of a NoSQL database.

This kind of DBMS uses dynamic schemas that mean that you can create records without first defining the structure, such as the fields or the types and their values.

MongoDB allows you to change the structure of records, which we call documents by adding new fields or deleting existing ones.

### What is MySQL?

MYSQL is a popular and widely used DBMS system. The name is taken from the girl name My, who is the daughter of the co-founder Michael Widenius. The source code of MYSQL is available under the GNU GPL. The project is owned and maintained by Oracle Corporation.

It is an RDBMS (Relational Database Management System) and works primarily on the relational database model. It makes database administration easier and more flexible.

In MySQL, you need to pre-define your database schema based on your requirements and set up rules that help you to govern the relationships between fields in your tables.

### Why Use MongoDB?

Here are the main reasons for using MongoDB:

- MongoDB is very flexible and adaptable to real business world situations and requirements.
- Queries can be made to return certain fields within documents.

- MongoDB supports field, range-based query, regular expression, etc. for searching the data from the stored data.
- MongoDB is a very easy DBMS system that can easily scale up or down.
- MongoDB helps you to use internal memory for storing the working temporary datasets for which it is much faster.
- MongoDB offers primary and secondary indexes on any field.
- MongoDB supports the replication of the database.
- You can use MongoDB as a file storage system which is known as a GridFS.
- MongoDB offers various methods to perform aggregation operations on the data like aggregation pipeline, map-reduce or single objective aggregation commands.
- MongoDB allows you to store any type of file which can be any size without affecting our stack
- MongoDB basically uses JavaScript objects in place of the procedure.
- MongoDB supports special collection type like TTL (Time-To-Live) for data storage which will expire at a certain time
- The dynamic database schema used in MongoDB is called the JSON
- Indexes can be created to improve the performance of searches within MongoDB. Any field in a MongoDB document can be indexed.
- Replication – MongoDB can provide high availability with replica sets
- MongoDB can run over multiple servers, balancing the load and/or duplicating data to keep the system up and running in case of hardware failure.

## Why use MySQL?

Here are some important reasons for using MySQL:

- Supports features like Master-Slave Replication, Scale-Out
- It supports Offload Reporting, Geographic Data Distribution, etc.
- Very Low overhead with MyISAM storage engine when used for read-mostly applications
- Support for memory storage engine for frequently used tables
- Query Cache for repeatedly used statements
- You can easily learn and troubleshoot MySQL from different sources like blogs, white papers, and books.

## Features of MongoDB

Here, are important features of MongoDB:

- Each database contains collections which in turn, contain documents.
- Each document can be different with a varying number of fields. The size and content of each document can be different from each other.
- The document structure of MongoDB is according to how developers construct their classes and objects in their respective programming languages.
- Rows don't need to have a schema defined. Instead, the fields can be created on the fly.

- MongoDB allows you to represent hierarchical relationships, to store arrays, and other more complex structures more easily.

## Features of MYSQL

Here, are an important feature of MYSQL:

- MySQL is a community-driven DBMS system
- Compatible with various platforms using all major languages and middleware
- It offers support for Multi-version concurrency control
- Compliant with the ANSI SQL standard
- Allows Log-based and trigger-based replication SSL
- Object-oriented and ANSI-SQL2008 compatible
- Multi-layered design with independent modules
- Fully multi-threaded, using kernel threads
- Server available in embedded DB or client-server model
- Offers Built-in tools for query analysis and space analysis
- It can handle any amount of data, up to as much as 50 million rows or more
- MySQL runs on many flavours of UNIX and Linux.

## Difference between MongoDB and MySQL



Here, are important differences between MongoDB and MYSQL:

MongoDB		MYSQL	
MongoDB represents data as JSON documents.		MySQL represents data in tables and rows.	
In MongoDB, you don't need to define the schema. Instead, you just drop in documents don't even need to have the same fields.		MySQL requires you to define your table schema. You can store anything, and every row in a table must have the same columns.	
MongoDB has a pre-defined structure that can be defined and adhered to, but also, if you need different documents in a collection, it can have different structures.		MySQL uses Structured Query Language (SQL) for database access. You can't change the schema.	

MongoDB	MYSQL
Supported languages are C++, C	Supported languages are C++, C and Java
Ongoing development is done by MongoDB, Inc.	Constant development is done by the C
MongoDB supports built-in replication, sharding, and auto-elections.	MySQL supports master-slave replication.
If an index is not found, every document within a collection must be scanned to select the documents which offer a match to the query statement.	If an index is not defined, then the database scan the complete table to find all relevant
GPL v2/ Commercial license available	GNU AGPL v3.0/ Commercial licenses
If most of your services are cloud based MongoDB is the best suited for you.	If data security is your priority then MySQL for you.
MongoDB places no restrictions on schema design.	MySQL requires you to define your table structure; you can store anything. Every row in a table has the same columns.
MongoDB uses JavaScript as query language.	MySQL uses the Structured Query Language
MongoDB doesn't support JOIN.	MySQL supports JOIN operations.
It has the ability to handle large unstructured data	MySQL is quite slow in comparison to MongoDB when dealing with large databases.
Real-time analytics, content management, internet of things, mobile apps	Structured data with clear schema
No schema definition required so lesser risk of attack due to design	Risk of SQL injection attacks
An ideal choice if you have unstructured and/or structured data with the potential for rapid growth.	A great choice if you have structured data in a traditional relational database.

#### Disadvantage of using MongoDB

Here, are cons/ disadvantages of using MongoDB

- MongoDB is not strong ACID (Atomic, Consistency, Isolation & Durability) when compared to many other RDBMS systems.
- Transactions using MongoDB are complex
- In MongoDB, there is no provision for Stored Procedure or functions, so you can't implement any business logic in the database level, which you can do in any RDBMS systems.

## Disadvantages of using MySQL

Here, cons/drawbacks of using MYSQL

- Transactions related to system catalog are not ACID compliant
- Sometimes a server crash can corrupt the system catalog
- Stored procedures are not cacheable
- MYSQL tables which is used for the procedure or trigger are most pre-locked.

## **Why is using MongoDB better than using MySQL?**

Organizations of all sizes are adopting MongoDB, especially as a cloud database, because it enables them to build applications faster, handle highly diverse data types, and manage applications more efficiently at scale.

Development is simplified as MongoDB documents map naturally to modern, object-oriented programming languages. Using MongoDB removes the complex object-relational mapping (ORM) layer that translates objects in code to relational tables. MongoDB's flexible data model also means that your database schema can evolve with business requirements. MySQL's rigid relational structure adds overhead to applications and slows developers down as they must adapt objects in code to a relational structure.

MongoDB can also be scaled within and across multiple distributed data centers, providing new levels of availability and scalability previously unachievable with relational databases like MySQL. As your deployments grow in terms of data volume and throughput, MongoDB scales easily with no downtime, and without changing your application. In contrast, achieving scale with MySQL often requires significant custom engineering work.