

## Synopsis of The SQL vs NoSQL Difference: MySQL vs MongoDB?

### What is relational (SQL) data base?

**SQL databases** like MySQL, Oracle, PostgreSQL use structured query language (SQL) for defining and manipulating data.

- It is a safe choice and especially great for complex queries, but it can be restrictive.
- It uses predefined schemas to determine the structure of your data before you work with it.
- In addition, all of your data must follow the **same structure**.

### power of SQL?

**Scalability** which meaning increase the load on a single server by increasing things like CPU, RAM or SSD.

**table-based**, SQL databases a better option for require **multi-row transactions accounting system**.

**Compatibility** available for all major platforms.

**Cost-effective** The database is open source and free.

**Replicable** The MySQL database can be replicated across multiple nodes, meaning that the workload can be reduced and the scalability and availability of the application can be increased.

**Sharding** The company chooses a logical method to separate the data called the **Sharding Key**.

MySQL is a strong choice for any business that will benefit from its pre-defined structure and set schemas.

### Example:

applications that require multi-row transactions - like accounting systems or systems that monitor inventory - or that run on legacy systems will thrive with the MySQL structure.

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## What is non-relational (NoSQL) data structure?

A non-relational database like MongoDB, BigTable, Redis, RavenDB Cassandra, HBase, Neo4j and CouchDB have dynamic schema for unstructured data, and data is stored in many ways: it can be **column-oriented, document-oriented, graph-based or organized as a Key-Value store.**

This flexibility means that:

- You can create documents without having to first define their structure
- Each document can have its own unique structure
- The syntax can vary from database to database, and You can add fields as you go.
- horizontally scalable. This means that you handle more traffic by sharding, or adding more servers in your NoSQL database
- document-based, key-value pairs, graph databases or wide-column stores.

## power of NoSQL?

- **Dynamic schema:** As mentioned, this gives you flexibility to change your data schema without modifying any of your existing data.
- **Scalability:** MongoDB is horizontally scalable, which helps reduce the workload and scale your business with ease.
- **Manageability:** The database doesn't require a database administrator. Since it is fairly user-friendly in this way, it can be used by both developers and administrators.
- **Speed:** It's high-performing for simple queries.
- **Flexibility:** You can add new columns or fields on MongoDB without affecting existing rows or application performance.

It can use for denormalizing data schemas, or if your schema continues to change - as is often the case with mobile apps, real-time analytics, content management systems, etc.- MongoDB can be a strong choice for you.

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### Analogy:

**Imagine you have an office with too many document to store and use them**

Your office is full of sheets of paper with different kinds of information. But you don't store it all in the same way:

- Some is stored in your file cabinet
- Some is laying around on your desk
- Some is pinned to your pin board

Why do you do that?

Because each kind of information has different access characteristics. Your pinboard is full of data you need quick access to (like memcached). Your **cabinet** is full of data which you rarely look at or change, but which could become very important sometime in the future. It's also very organized to optimize searching (**like a relational database**). Your **desk** is full of data you currently need quick access to. There isn't much order, because a strict order of things on your desk would inhibit your productivity (**like a document storage**).

Just like you choose a different storage method for each kind of data in your office, we use a different storage method for each kind of information in our computer system.

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