SQL vs. NoSQL

- SQL stands for Structured Query Language. It allows users to query, insert, update and delete records in databases. [1]
- It allows transactions using complex logic. [1]

- NoSQL stands for Not only SQL. [1]
- It includes databases such as documents, graph databases, and key-value stores to store and retrieve data. [1]

- NoSQL is used over SQL as it offers more scalability and flexibility than traditional SQL databases. [1]
- It allows developers to deliver features and build more business logic faster without having to worry about the database schema. [1]
- NoSQL databases can store different pieces of data, each having a different set of properties which SQL databases cannot. [1]

The technological differences between SQL and NoSQL databases are discussed below:

SQL Databases:

- They use predefined schemas to define & manipulate data. [1]
- All data stored in a SQL database must follow the same schema. [1]
- Any change to the schema can disrupt the entire system. [1]
- They are vertically scalable, i.e., they can be scaled by adding more CPU, RAM, SSD / HDD, etc. [1]

NoSQL Databases:

- Documents can be created without having to define their structure. [1]
- Each document can have its own structure. [1]
- The syntax can vary from database to database. [1]
- Each piece of data that's stored can have different fields. [1]
- They are horizontally scalable and use sharding (dividing a database into smaller databases, each of which is independent and contains a subset of the data) to handle more traffic. [1]

Usage:

- SQL databases are best used when we need to handle data that is uniform in nature, i.e., when we store similar / same kind of data that can be stored in the same kind of schema. NoSQL databases are used when we need to store many different kinds of data. [2]
- NoSQL databases are better for storing data that will be read much more than written (Eg - addresses). [2]

The decision to use a SQL database over a NoSQL one is taken after understanding the nature of the data that we're going to be using. The following factors are involved:

- What data we are storing. [2]
- How we are going to query that data. [2]
- How often the data structure changes. [2]
- How flexible the data structure needs to be. [2]

The order of precedence of factors while selecting a SQL vs. NoSQL database are as follows:

- Flexibility of the data. [2]
- No. of Read Operations. [2]
- No. of Write Operations. [2]

REFERENCES

[1] SQL vs NoSQL: 5 Critical Differences | Integrate.io
[2] When To Use SQL and NoSQL | Medium