

Strengths and weaknesses of databases cont'd**2. NoSQL - Document store Databases**

Document-oriented databases, also known as document stores, are used to store and manage **semi-structured or unstructured data**. A document store is a nonrelational database that stores data in JSON, BSON, or XML documents. These databases supports a flexible schema i.e. the data does not adhere to a fixed structure, instead it forms its own structure. Due to the lack of a defined structure i.e. no schema of table is declared before inserting data, document stores don't enforce document structure. Documents can contain any data desired. Since the information of Document Stores cannot be arranged in tables, this data is not suitable for relational databases

A document database creates a key-value pair: A **key** is assigned to a specific document. The actual information is then located within this document, which may be formatted as an XML, JSON or YAML file. Documents have key-value pairs but also embed attribute metadata (fields) to make querying easier. Since the document does not require a specific schema, different types of documents can also be integrated together in a document store. Further, any changes or modifications to the documents need not to be communicated to the database.

Strengths

- Document stores are very flexible and can store any type of data. They can easily handle semistructured and unstructured data. Even large volumes of unstructured data can be accommodated in the database. Users don't need specify what data will be stored, so this is a good choice when it isn't clear in advance what types of data will be stored. For example: Social Media data.
- Easier to integrate **new information**
- Each record may have different structure, these records are called documents. Users can create their desired structure in a particular document without affecting all

documents and subsequently modify it again to a new structure. Schema can be modified without causing downtime, which leads to high availability. Write speed is generally fast, as well.

- The information is not distributed over multiple linked tables. Everything is contained in a single location, and this can result in better performance.
- Document stores can be scaled horizontally easily. The sharding necessary for horizontal scaling is much more intuitive than with relational databases, so document stores scale out fast and efficiently.

Weaknesses

- Document databases sacrifice ACID compliance for flexibility.
- Query can be done in a particular document not across multiple / different documents (not like multiple tables of RDBMS). So, not suitable for highly networked data volumes.
- No restrictions on data and any type of data can be feed into documents, this raises the potential for accidents & threats (both unintentionally or intentionally)

Final verdict

Based on the various parameters, strengths and weaknesses, a Document Store database may be used for

- Unstructured or semistructured data
- Content management
- In-depth data analysis
- Rapid prototyping

Some of the examples of Document Store databases are MongoDB, CouchDB, BaseX, Elasticsearch etc.

Assignment

1. What are the benefits of Document Store?
2. In what situations, document store databases are not suggested?