

Name : Tejas R. Mlachkar

Roll No : 23

Class : TE-2 COMP

PRN : F18112025

Date: __/__/__

DBMSL-Assignment-01
Group B

• Questions:

Q1) List different NOSQL data models. Explain document based NOSQL data model.

A1) Different NOSQL data models are:

- i) Key-value store
- ii) Document-based store
- iii) Column-based store
- iv) Graph based

- Document-based data model: The data which is a collection of key value pairs is compressed as a document store. The values stored (referred to as documents) provide some structure and encoding of the managed data.
- XML, JSON, BSON are some standard encodings. of the ~~stan~~ Document store embeds attribute metadata associated with the store content, which essentially provides a way to query the data based on the documents
- The fact that document style databases are schema-less makes adding fields to JSON documents a simple task without having to define changes first.

Q2) Explain sharding in MongoDB.

- A2)
- 1) Sharding is a method for distributing data across multiple machines.
 - 2) MongoDB supports horizontal scaling through sharding.

- 3) This involves dividing the system dataset and load, over multiple servers, adding additional servers to increase capacity as required.
- 4) While the overall speed or capacity of a single machine may not be high, each machine handles a subset of the overall workload, potentially providing better efficiency than a single high speed, high capacity server.
- 5) The trade off is increased complexity in infrastructure and maintenance for the deployment.

Q3) What are the features of MongoDB.

A.3) Some important features of MongoDB are:

- 1) High performance (Indexing)
- 2) High availability (Replication)
- 3) Sharding
- 4) Aggregation
- 5) Easy readability
- 6) Support for multiple storage engines

Q4) Explain CAP and BASE in NoSQL.

A.4) 1) CAP theorem: It's impossible for a distributed data store to simultaneously provide more than 2 out of the following 3 guarantee:

- Consistency: Every read receives the most recent write / an error.
- Availability: Every read request receives a response without a guarantee that it contains the most recent write.
- Partition tolerance: The system continues to operate despite an arbitrary number of messages being dropped by network between nodes.

2) BASE: It stands for 3 properties, namely:

Basically available soft state Eventual consistency.

- Basically available means that the data in system will mostly be available. The system doesn't guarantee for data to be always

available.

- Soft state and eventually consistent go together. These props. mean that the system can be in ~~partial~~ partially consistent at any time. It will get into a consistent state over time if the system doesn't receive any input during that interval.

Q5) What's database, collection and document in MongoDB?

- A5)
- 1) Database: In MongoDB, databases hold collection of document
 - 2) Collections: Documents are stored in a collection. They're analogous to tables in relational databases.
 - 3) Document: They're composed of field and value pairs. MongoDB stores data records as BSON documents.