
A Scientific Research on the Benefits of Mong DB Database Framework

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Abstract: -The most well-known data set in the field of data set frameworks is the social data set. They are conventional information base frameworks that are used to carry out SQL-based information analysis. Generally speaking, there are two main categories for data sets. The first type of data set uses SQL questions for examination while the second type uses NOSQL questions. One must choose a data set with advanced execution arrangement strategies if they are to handle large volumes of information. NOSQL is an upgraded form of conventional data sets that includes all of the components of conventional data sets along with new components and high precision rates. Examples of NoSQL databases include Mong DB, Cosmos DB, and others. These data sets are rising to fame due to the office's ability to scale it upward and evenly, which helps it effectively have control over the information stored in the data set. The other benefit of using advanced data sets is that they help designers store the information according to project requirements, which is absurd in old traditional data sets. The purpose of the Mong DB data set, how it stores data, as well as its benefits and drawbacks, will all be covered in the paper..

Keywords: -Mong DB database introduction, Useful areas, Mong DB characteristics, Mong DB's working mechanism, Mong DB's advantages, Mong DB's advantages, Mong DB's Restrictions.

Introduction: -

Mong DB is the latest type of NO SQL database which is use to store and handle large volumes of data that can be accessed at any point of time by users who have access to it and can use it for accessing data and information as per requirement. It is one of the document-based databases. The performance and results given by Mong DB are faster and efficient as compared to the results given by the old databases. The data stored in traditional database is stored in the form of tables which is not flexible. This is due to the fact that they are not able to handle the large volumes of data and it is difficult to scale them horizontally. The latest technologies are advanced and are networked and has better interactive skills. They are able to store large volumes of data and has high performance rates. To overcome these issues NO SQL database were introduced which uses document- based model and keeps adding more servers which shows its flexible nature and increases its productivity.

Difference between SQL based and No SQL based databases: - [1]

- In relational database, the relation is represented in the form of tables's rows and columns whereas in Mong DB, the search is based on the document and there is not schema or relationship.
- Mong DB has flexible and scalability feature which helps it to provide facility to store huge volumes of data and information.
- Complex transactions is not supported by the Mong DB database.
- The speed of providing results in mong DB is higher than the speed of results provided by the relational database.

Areas where mong DB is used: -

The areas where mong DB is used are classified into following three main categories: -

a. Unstable Schema: -

Its been observed that addition of a new column is difficult to perform as it is schema based database whereas on the other hand Mong DB is schema less database so any modifications done will not change the old documents.

b. Distributed Data: -

Multiple copies of data is stored on distributed system which helps to recover data in the scenario where hardware is failed.

c. Big Data: -

It is used to store large volumes of data as it has inbuilt facility for partitioning and sharding the database.

Characteristics of Mong DB: -

Mong DB is considered better than relational database due to the following elements: -



Figure 1 Characteristics of Mong DB.

1. Scalability: -

- Mong DB is highly scalable horizontally where it uses sharding process which means it partitions data across various servers. The data is partitioned into chunks using shard key where the data chunks are distributed across shard which are located across servers.
- If that does not suffice than additional new machines can also be added.

2. Document oriented: -

- Mong DB is the type of database which is based upon the document related model where it stores the data in the form of documents and not in the form of some relations.
- This can be understood by taking example of computer where it will store all the information related to computer in one document and will not prepare separate documents like CPU, RAM, etc.

3. Indexing: -

- If there is no indexing provided with the documents in Mong DB database then it will take a lot of time and effort to find out and locate a particular data in the database.
- In order to have efficient results with great speed, proper indexing should be done so that huge amount of data can be processed in less time.

4. Replica: -

- MongoDB expands the information accessibility with numerous duplicates of information on various servers. By giving overt repetitiveness, it shields the information base from equipment disappointments.
- Assuming one server goes down, the information can be recovered effectively from other dynamic servers which likewise had the information put away on them.

5. Aggregate: -

- These are the operations which are used to perform tasks like to process the data records and the give the result output after computation.

Working Mechanism of Mong DB database: - [2]

The working mechanism of Mong DB can be understood by available layers present n its framework. There are following two types of data layers present in the Mong DB database: -

1. Application Layer.
2. Data Layer.

1. Application Layer: -

- This layer is also known as Final Abstraction layer which is classified into following two parts: -
 - a. User interface also known as front end: - This is the front end where the user of Mong DB uses it by using mobile or web. This consists of web pages, mobile applications, IOS applications etc.
 - b. Server also known as Backend: - It consists of a server which is used to perform server side-logic and also contains drivers and shells which are used to interact with the database.

2. Data Layer: -

- The queries are sent to the server of mong DB present in the data layer.
- On receiving the queries, these are sent to the storage engine, where this search engine will read or write the data to the files or disk or memory.
- In the wake of passing the got questions to the capacity motor, the capacity motor is mindful to peruse or compose the information in the records or memory essentially it deals with the information.

3. However, MongoDB stores information in records regardless of tables. One can change the design of records (which is called as archives in MongoDB) basically by adding new fields or erasing existing ones.

4. This capacity of MongoDB assist you with addressing progressive connections, to store exhibits, and other more mind boggling structures without any problem. MongoDB gives elite execution, high accessibility, simple adaptability and out-of-the-container replication and auto-sharding.

Advantages of Mong DB: - [3]

Following are the advantages of Mong DB database: -



Figure-2

1. Easy modifications: -

It is very easy to make modifications in mong database as it is document based and does not follows any database schema due to which it is very easy to make changes in the mong database without affecting other operations of the database.

2. Flexibility: -

Mong DB is used to support explicit schemas and to validate the data. The flexibility feature of Mong DB is very important as it is used to handle real world data.

3. Scalability: -

Mong DB is profoundly versatile on a level plane where it utilizes sharding process which implies it parcels information across different servers. The information is divided into lumps utilizing shard key where the information pieces are circulated across shard which are situated across servers.

In the event that that doesn't get the job done than extra new machines can likewise be added.

4. Easy installation process: -

Mong Db has Mongo DB Atlas which makes it easy to form clusters easily. It takes few minutes to get connected with the Mong DB with the help of available connection string. One can install the community or enterprise version directly on the server.

5. Cost effective: -

One can create server less database which means one pays only for the services bought for a certain period of time based upon their requirements.

6. Proper technical support: -

If the user finds it difficult to use Mong DB then they can refer to the documentation provided by the database which solves most of the technical queries of the users.

Disadvantages of Mong DB: -

Following are some of the disadvantages of Mong DB: -

1. Duplicate: -

This is the biggest disadvantage of mong database as it duplicates the data and the limitation is such that relations are not defined properly which makes it difficult to find an instance in the database.

2. High memory requirements: -

MongoDB requires a high measure of capacity because of the absence of joins functionalities which lead to the duplication of information. There is an expansion in information overt repetitiveness which occupies pointless room in the memory.

3. Data Limitation: -

There is document size limitation in Mong DB which allows only 16 MB for each file.

4. Indexing: -

If the indexing of the documents is done properly then the Mong DB will perform at great speed but if the indexing is not done properly then the DB will perform at low speed.

Conclusion: -

Social data set are the most well-known data set in the field of data set frameworks. They are conventional information base frameworks which are utilized to perform investigation of information utilizing SQL inquiries. By and large, there are two fundamental classifications of data set. The first is which involves SQL questions for performing investigation and the other kind of data set utilizes NOSQL inquiries. To deal with enormous volumes of information one need to pick data set which has progressed execution arrangement strategies. NOSQL are improved type of ordinary information base which will give every one of the elements of the regular data set yet with added highlights and high exactness rate. Instances of NoSQL data set are Mong DB, Cosmos DB and so on. These data sets are becoming famous because of the way that it has office to scale it in an upward direction as well as on a level plane which assists it with effectively having command over the information put away in the data set. The other added advantage of utilizing progressed data set is that it assists the engineers with putting away the information according to the task necessity which is absurd in old conventional data set.

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