

Pre-Read

Indexes in MongoDB



Things I need to know before this session

- MondoDB
- Concept of Database & Collections
- MongoShell and how to access the data by running queries

What will be taught in this session ?

We will understand

- a) How database stores the data
- b) What Indexes are
- c) Why they are needed
- d) Different types of Indexes supported in MongoDB

Indexes

- Indexes are data structures that a database uses to efficiently retrieve the data
- Without indexes, a database query can take hours or days to complete execution
- Indexes speed up the time taken to read and fetch data from a database

Types of Indexes in MongoDB

MongoDB supports multiple types of indexes for the documents. Following are the four different types of indexes :-

1. Single Field Index
 - a) This creates an index on only one field of a document. It can be any field inside an embedded document as well
2. Compound Index
 - a) Multiple fields can be combined and an index can be created in this type of index.
 - b) We specify the order of the index (ascending or descending) for each field.
3. Multikey Index
 - a) Multikey Index allows the user to create index on array fields
 - b) It creates an index key for each array element
4. Text Index
 - a) Using the text index, we can efficiently search all the documents that contain a specific string
 - b) collection can contain a single text search index

How are these concepts being using in the industry for building applications

Indexes are widely used in every database application. The above four indexes have different use cases. Let's assume that we have Facebook's user data

a) Single Field index

1. This type of index is used when we want to query the data using the `userId`

b) Compound Index

1. Compound index is used when we want to know all the users who are more than 18yrs of age and have less than 100 friends. It helps to filter the results based on two or more fields

c) Multikey index

1. If we want to search the array field of any document this becomes useful. For eg:- In case of facebook's data, the `comments` field can be an array field. If we want to search all the comments which have got 10 or more likes we create a multikey index

d) Text Index

1. Text index helps us to find relevant results for our text queries. We can specify a keyword and the database will search all the text fields in the `TextIndex` which match the keyword.