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DBSL Assignment 02 (Group-B)

Name: Shubham chemate
Roll. No. 31118

Title: MongoDB : Aggregation & Indexing

Problem Statement: Design & develop mongoDB queries using aggregation & indexing with suitable examples.

Objectives:

Understand indexing & aggregation concepts in mongoDB.

Software & hardware packages

Windows-10 operating system (64-bit)
Intel Core i5-8th gen CPU, 4-core processor
8GB RAM, 512 SSD memory
mongoDB updated to latest version

Theory related concepts:

Aggregation:

1) This operation processes data records & returns computed results.
2) This operation grop values from multiple documents together & can perform variety of operations on the grouped data to return a single result.
3) In SQL count(*) & with group by is an equivalent of mongodb aggregation.

syntax :

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db.collection_name.aggregate(AGGREGATE_OPERATION)

Pipeline concept:

1) In UNIX command, shell pipeline means the possibility to execute an operation on some input & use the output as the input for the next command & so on.
2) following are the possible stages in aggregation framework:
   i) $project: used to select some specific fields from a collection
   ii) $match
   iii) $sort
   iv) $skip
   v) $limit
   vi) $unwind

Indexes:

1) Indexes supports the efficient resolution of queries.
2) Without indexes mongoDB must scan every document of a collection to select those documents that match the query statement. This is highly inefficient.
3) Indexes are special data structures, that stores a small portion of data set in easy-to-traverse form. The index stores the value of a specific field or set of fields, ordered by value of field as specified in the index.

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4) the ensureIndex() method:

this method is used to create index.

syntax:

db.collectionname.ensureIndex({KEY:1})

key is a field on which you want to create index & 1 is for ascending order (use -1 for descending order)

Testcases & Output:

Separate file is attached containing code & output screenshot of performance.

Conclusion:

Hence, I learned about aggregation & indexing in this assignment.