Getting started with MongoDB

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Agenda

- Problems with RDBMS
- What is MongoDB
- Performance of SQL and MongoDB
- Comparison between SQL and MongoDB
- CRUD operation in MongoDB
- Where clause commands
- Linking (Joins)
- Aggregation Pipeline

Why MongoDB why not MySQL?

- Before we understand what MongoDB is we need to understand issues with traditional RDBMS.

ANY GUESS?

1. Scalability

❖ Difficult to scale millions of millions of data.

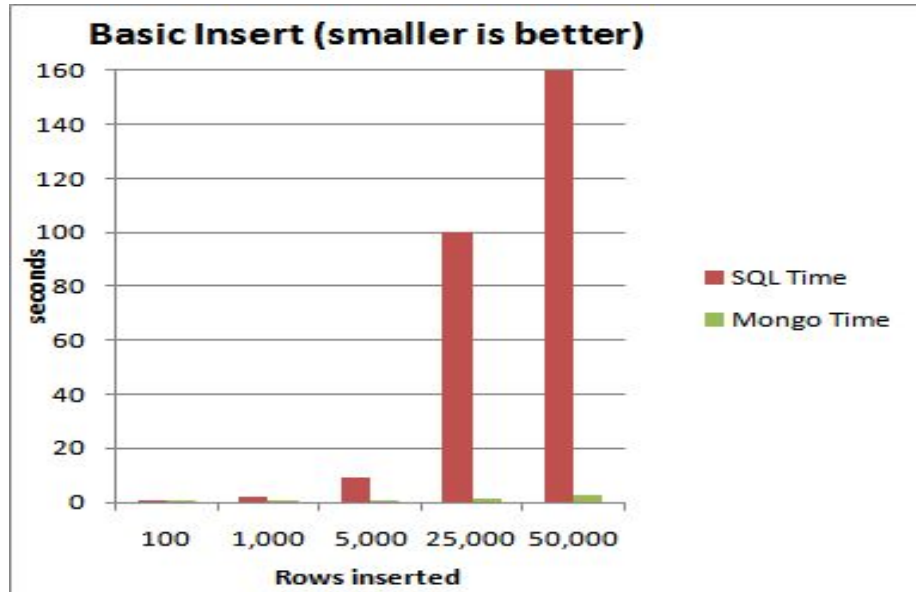❖ Data stored in multiple tables (relationship) it is difficult to scale.

2. Flexibility

❖ Fixed data structure therefore not easy to make **modifications** to data structure

❖ You need to spend hours and hours on **designing** the database before development

❖ In **Agile projects** database requires constant restructuring

3. Performance

❖ Data is generally stored across **multiple tables**. Joins have huge performance impact as it requires lot of CPU and resources

❖ Need to install and configure complex caching mechanism to make it faster

MongoDB vs SQL performance chart

Basic Insert (smaller is better)

What is MongoDB?

❖ It is a **NoSQL** database called (Document database)

❖ It stores data in flexible JSON-like document.

➢ Easy to develop REST API in JSON

❖ It is highly scalable and flexible database

How MongoDB looks when compared to RDBMS ?

first_name	last_name	email
Joe	Satana	joe@abc.in
Bob	Michel	bob@abc.in

```
{
  "first_name" : "Joe",
  "last_name" : "Satana",
  "email" : "joe@abc.in"
},
{
  "first_name" : "Bob",
  "last_name" : "Michel",
  "email" : "bob@abc.in"
}
]
```

Comparison between SQL and MongoDB

SQL Server	MongoDB
Database	Database
Table	Collection
Index	Index
Row	Document
Column	Field
Joining	Linking & Embedding

Where to use MongoDB?

- Big Data

- Content Management and Delivery

- Mobile and Social Infrastructure

- User Data Management

- Data Hub

MongoDB commands

mongo	Enter the MongoDB client
show dbs	List all database. Should have at least on record to display the db in list.
db	Display active database name
db.stats()	Show the database name, number of collection and documents in the database, etc.
use db_name	To switch / create database
db.dropDatabase()	Drop database

Collections = Tables in MongoDB is called as collections

❖ To create a collection

➤ db.createCollection(name, options)

➤ Eg : db.createCollection('Employees')

❖ Drop a collection

➤ db.collection_name.drop()

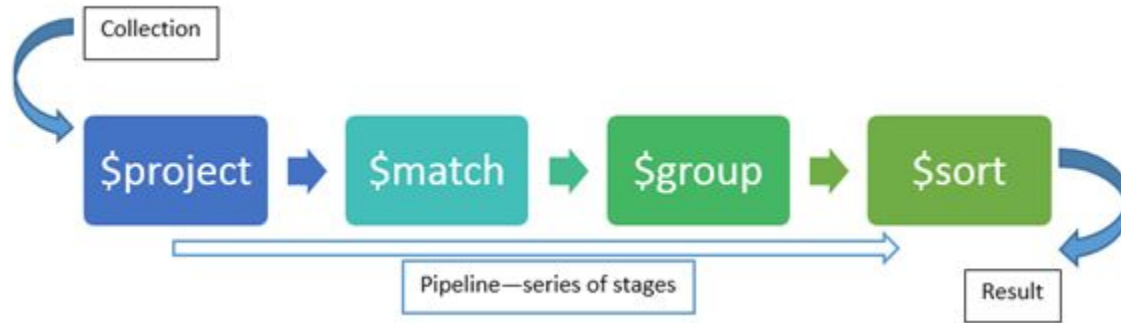| Name	Collection name
Options	❖ capped - Overwrite oldest entries if collection size is reached. ❖ autoindexId - Automatically index the _id field ❖ size - Maximum size of the collection in bytes if capped = true ❖ max - Maximum number of documents allowed in collection

Where conditions

Operation	Syntax	Example	RDBMS Equivalent
Equality	{<key>:<value>}	db.posts.find({"by":"tutorials point"}).pretty()	where by = 'tutorials point'
Less Than	{<key>:{$lt:<value>}}	db.posts.find({"likes":{$lt:50}}).pretty()	where likes < 50
Less Than Equals	{<key>:{$lte:<value>}}	db.posts.find({"likes":{$lte:50}}).pretty()	where likes <= 50
Greater Than	{<key>:{$gt:<value>}}	db.posts.find({"likes":{$gt:50}}).pretty()	where likes > 50
Greater Than Equals	{<key>:{$gte:<value>}}	db.posts.find({"likes":{$gte:50}}).pretty()	where likes >= 50
Like	{<key>:{'$regex':<value>}}	db.posts.find({"title": {'$regex': 'How'} })	where title like '%How%'

Linking (JOINS)

```
{
   "name" : "John",
   "mail"    : "John@xyz.com",

   "phone" : {

                'ph1'       :        "8080808080",
                'ph2'       : "9090909090",
                'landline' : "010-45454545"
            }
}
```

Aggregation Pipeline

Reference

- https://docs.mongodb.com/manual/reference

Question?

Thank you