MONGO DB

INTRODUCTION

MongoDB is an open-source document-oriented database that is designed to store a large scale of data and also allows you to work with that data very efficiently. It is categorized under the NoSQL (Not only SQL) database because the storage and retrieval of data in the MongoDB are not in the form of tables.
The MongoDB database is developed and managed by MongoDB.Inc under SSPL(Server Side Public License) and initially released in February 2009. It also provides official driver support for all the popular languages like C, C++, C#.

FEATURES:

MongoDB provides developers with a number of useful out-of-the-box capabilities, whether you need to run privately on site or in the public cloud.

- Replication for better data availability and stability.
- Sharding for horizontal scalability.
- Ad-hoc queries for optimized, real-time analytics.
- The document model with a flexible schema to best store data for your application needs.

DATA TYPES:

1. **String:** This is the most commonly used data type in MongoDB to store data, BSON strings are of UTF-8. So, the drivers for each programming language convert from the string format of the language to UTF-8 while serializing and de-serializing BSON. The string must be a valid UTF-8.
2. **Integer:** In MongoDB, the integer data type is used to store an integer value. We can store integer data type in two forms 32 -bit signed integer and 64 – bit signed integer.
3. **Double:** The double data type is used to store the floating-point values.
4. **Boolean:** The boolean data type is used to store either true or false.
5. **Null:** The null data type is used to store the null value.

6. **Array:** The Array is the set of values. It can store the same or different data types values in it. In MongoDB, the array is created using square brackets([]).
7. **Object:** Object data type stores embedded documents. Embedded documents are also known as nested documents. Embedded document or nested documents are those types of documents which contain a document inside another document.
8. **Object Id:** Whenever we create a new document in the collection MongoDB automatically creates a unique object id for that document(if the document does not have it). There is an _id field in MongoDB for each document. The data which is stored in Id is of hexadecimal format and the length of the id is 12 bytes which consist:
9. **Undefined:** This data type stores the undefined values.
10. **Binary Data:** This datatype is used to store binary data.

ADVANTAGES OF MongoDB:

-Schema Not Required
-Simplified Performance Optimization
-Horizontal Scaling with Sharding
-Replication and Workload Distribution
-Ease of Maintenance

Organizations that use MongoDB:

1.SAP

2.McAfee

3. Adobe

4. LinkedIn

5.eBay

USES OF MongoDB:

1.**Content Management Systems: -** The schema-less nature of MongoDB is ideal for managing diverse content types, such as articles, videos, and images, without the need for predefined schemas.

2. **Catalogs and Inventory Management: -** E-commerce platforms and other businesses use MongoDB to manage product catalogs and inventory systems that require flexibility in data models and the ability to handle large datasets.

3. **IoT and Sensor Data: -** For Internet of Things (IoT) applications, MongoDB can efficiently store and process data from a multitude of sensors, allowing for real-time monitoring and analysis.

4. **Web and Mobile Applications: -** MongoDB's flexibility and performance make it an excellent choice for web and mobile applications that require rapid development cycles and scalability. It powers many e-commerce platforms, social networks, and content management systems.

5. **Big Data and Analytics: -** MongoDB is capable of handling large volumes of data, making it suitable for big data applications. It integrates well with data processing frameworks like Apache Spark for real-time analytics and insights.

COLLECTIONS:

Database is a physical container for collections. Each database gets its own set of files on the file system. A single MongoDB server typically has multiple databases.Typically, all documents in a collection are of similar or related purpose.

DATABASE:

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DOCUMENT:

A document is a set of key-value pairs. Documents have dynamic schema. Dynamic schema means that documents in the same collection do not need to have the same set of fields or structure, and common fields in a collection's documents may hold different types of data.

Sample Document

```
{
    id : ObjectId("5099803df3f4948bd2f98391"),
 name : {first: "Alan", last: "Turing" },
    birth:new Date('Jun 23, 1912'),
    death : new Date('Jun 07, 1954'),
 contribs: [ "Turing machine", "Turing test", "Turingery" ],
   view : NumberLong(1250000)
 }
```

MongoDB Installation Process

Download and Install MongoDB on windows using

https://www.mongodb.com/download-center/community

OR

Refer :- https://www.geeksforgeeks.org/how-to-install-mongodb-on-windows/

Download Mongodb shell using https;//www.mongodb.com/try/download/shell