**MongoDB**

**Introduction and Features**

**1. What is MongoDB?**

MongoDB isa NoSQL database that stores data in a flexible, JSON-like format called

BSON.

It’s different from traditional SQL databases, which use tables. Instead, MongoDB uses

collections and documents, making it easier to handle unstructured or semi-structured

data.

**2. Why use MongoDB?**

● Ideal for big data, real-time analytics, and applications that evolve quickly.

● Schema less structure allows storing data without a fixed model.

● Highly scalable, fast, and easy to integrate with modern applications.

3.Key Features:

● Document-Oriented: Stores data in key-value pairs like JSON.

● Flexible Schema: No need to define the structure before inserting data.

● Scalability: Supports horizontal scaling (sharding).

● High Performance: Handles large volumes of data efficiently.

● Indexing: Supports powerful indexing for faster searches.

● Aggregation Framework: Advanced data processing and analytics.

**MongoDB Download & Install (Windows)**

1. **MongoDB Community Server Download**

Step 1: Go to MongoDB Official Website

Open your browser and go to:

https://www.mongodb.com/try/download/community

Step 2:

Choose Version :8.0.8(current)

Platform: Windows x64

Package: MSI

Then click Download.

Step 3: Install MongoDB

Double-click the downloaded .msi file.

Choose Complete Setup when prompted.

Ensure that the option Install MongoDB as a Service is checked

Step 4: Finish Installation

Click Next and Finish the installation process.

1. **Installing MongoDB Compass**

Step 1: Go to the Download Page

Open your browser and go to:

MongoDB Compass Download(GUI)

Step 2:

Choose Version :1.46.1(Stable)

Platform: Windows 64-bit(10+)

Package: exe

Then click Download.

Step 3: Install Compass

Once downloaded, run the installer

Double-click the .exe file and follow the install wizard.

Step 4: Open MongoDB Compass

After installation, open MongoDB Compass from your desktop or start menu.

When it opens, you'll see a connection form

Step 5: Connect to MongoDB

If you’re running MongoDB locally (on your own computer),

just use the default connection string:

mongodb://localhost:27017

Click Connect, and you’re in!

**MongoDB how it work**

● When MongoDB runs, it listens on port27017by default.

● Data is stored in collections inside databases.

● We can insert,read, update, or delete documents using the MongoDB shell or

Compass.

**Databases, Collections, and Documents in MongoDB**

1.What is a Database?

A database is like a big folder that stores related data. In MongoDB, a database

contains collections, which hold our actual data.

2. What is a Collection?

A collection is like a table in SQL. It's a group of documents. Collections do not enforce

any structure, so documents can look different from one another.

3. What is a Document?

A document is a single piece of data stored in JSON-like format (BSON). It’s like a row in

SQL but more flexible.

Example

{

}

"name": "samra",

"email": "sam@gmail.com",

**Main Difference Between SQL and NoSQL**

● SQL(Relational Database) stores data in tables with fixed rows and columns.

We must define the structure (schema) before adding data.

● NoSQL(MongoDB)stores data in collections of documents (like JSON). The

structure is flexible, and each document can be different