**📘 Introduction to MongoDB**

# 1. What is MongoDB?

* MongoDB is a NoSQL database.
* Instead of tables and rows, it uses collections and documents.
* Documents are stored in JSON-like format.
* Very useful when data structure can change frequently, like in a Hospital Management System.

# 2. Key Terms

|  |  |  |
| --- | --- | --- |
| SQL Term | MongoDB Term | Example |
| Database | Database | hospitalDB |
| Table | Collection | patients, doctors |
| Row | Document | One patient record |
| Column | Field | name, age, disease |

# 3. Create Database and Collection

// Create or switch to hospital database

use hospitalDB;

// Create patients collection (optional, MongoDB auto-creates)

db.createCollection("patients");

# 4. Insert Data (CREATE)

// Insert a patient

db.patients.insertOne({

patientId: "P1001",

name: "John Doe",

age: 45,

gender: "Male",

disease: "Diabetes",

admittedDate: "2025-09-15"

});

// Insert multiple doctors

db.doctors.insertMany([

{ doctorId: "D2001", name: "Dr. Smith", specialization: "Cardiology" },

{ doctorId: "D2002", name: "Dr. Priya", specialization: "Neurology" }

]);

# 5. Read Data (READ)

// Show all patients

db.patients.find();

// Find patient by name

db.patients.find({ name: "John Doe" });

// Find patients above age 40

db.patients.find({ age: { $gt: 40 } });

# 6. Update Data (UPDATE)

// Update patient disease

db.patients.updateOne(

{ patientId: "P1001" },

{ $set: { disease: "Hypertension" } }

);

// Add room number

db.patients.updateOne(

{ patientId: "P1001" },

{ $set: { roomNo: "205A" } }

);

# 7. Delete Data (DELETE)

// Delete one patient

db.patients.deleteOne({ patientId: "P1001" });

// Delete all patients older than 90

db.patients.deleteMany({ age: { $gt: 90 } });

# 8. Hospital Appointments Example

db.appointments.insertOne({

appointmentId: "A3001",

patient: { patientId: "P1001", name: "John Doe" },

doctor: { doctorId: "D2001", name: "Dr. Smith" },

date: "2025-09-20",

status: "Confirmed"

});

# 9. Summary

* CRUD → Create, Read, Update, Delete
* Collections = Tables
* Documents = Rows
* Flexible structure → good for hospital systems

# 📌 Exercise for Interns

1. Insert 2 new patients into the database.

2. Find all patients younger than 30.

3. Update one doctor’s specialization.

4. Delete one appointment.