**Basics of MongoDB (Q1–Q10)**

**1. What is MongoDB?**

MongoDB is a **NoSQL**, **document-oriented database** that stores data in JSON-like format (BSON), making it flexible and scalable.

**2. How is MongoDB different from SQL databases?**

| **SQL (Relational)** | **MongoDB (NoSQL)** |
| --- | --- |
| Table-based | Document-based (JSON/BSON) |
| Uses rows & columns | Uses documents & collections |
| Fixed schema | Dynamic schema |

**3. What is a document in MongoDB?**

A **document** is a key-value pair (like a JSON object) used to store data. Example:

json

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{ "\_id": 1, "name": "Alice", "age": 25 }

**4. What is a collection in MongoDB?**

A **collection** is a group of MongoDB documents, similar to a table in SQL.

**5. What is BSON?**

**Binary JSON** – It’s the format MongoDB uses to store data internally, supporting more data types than JSON.

**6. What is the \_id field?**

A unique identifier for each document. MongoDB auto-generates it if not provided.

**7. Is MongoDB schema-less?**

Yes, it’s **schema-less**, meaning documents in the same collection can have different fields.

**8. What are the main features of MongoDB?**

* Document-oriented
* Schema-less
* Indexing support
* Replication
* Aggregation framework
* High availability with replication

**9. What is the default port for MongoDB?**

**27017**

**10. What are CRUD operations in MongoDB?**

* **Create** – insertOne, insertMany
* **Read** – find, findOne
* **Update** – updateOne, updateMany
* **Delete** – deleteOne, deleteMany

**🔹 Intermediate Concepts (Q11–Q20)**

**11. How do you insert a document in MongoDB?**

js

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db.users.insertOne({ name: "John", age: 30 });

**12. How do you retrieve all documents from a collection?**

js

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db.users.find();

**13. How do you update a document?**

js

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db.users.updateOne({ name: "John" }, { $set: { age: 35 } });

**14. How do you delete a document?**

js

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db.users.deleteOne({ name: "John" });

**15. What is indexing in MongoDB?**

Indexes improve **search performance**. MongoDB creates an index on \_id by default.

**16. What is the Aggregation Framework?**

Used to perform **data processing** and transformation operations like sum, group, avg, etc.

Example:

js

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db.sales.aggregate([

{ $group: { \_id: "$category", total: { $sum: "$amount" } } }

]);

**17. What is the difference between find() and findOne()?**

* find() returns a **cursor** with multiple documents
* findOne() returns the **first matched document**

**18. How is data stored in MongoDB?**

In **collections of documents** (BSON format), not in rows and columns.

**19. What is a cursor?**

A pointer to the result set of a query. Used to iterate through query results.

**20. What is the $set operator?**

Used to **update** specific fields of a document.

js

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{ $set: { age: 30 } }

**🔹 Advanced Concepts (Q21–Q30)**

**21. What is replication in MongoDB?**

Replication provides **high availability** by creating multiple copies (replica sets) of data.

**22. What is a replica set?**

A group of MongoDB servers that maintain the same data set. One is **primary**, others are **secondaries**.

**23. What is sharding?**

Sharding is a way to **distribute large data** across multiple machines to improve performance.

**24. What is a capped collection?**

A fixed-size collection that **automatically overwrites** the oldest entries when the size limit is reached.

**25. What are the data types in MongoDB?**

* String
* Integer
* Boolean
* Double
* Date
* Object
* Array
* Null
* ObjectId

**26. Can we perform JOINs in MongoDB?**

Not traditionally like SQL, but similar functionality can be achieved using $lookup in aggregation.

**27. What is $lookup in MongoDB?**

It performs a **left outer join** with another collection.

js

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{ $lookup: { from: "orders", localField: "userId", foreignField: "\_id", as: "orders" } }

**28. What is the difference between embedded and referenced documents?**

* **Embedded**: Nested document inside another
* **Referenced**: Use ObjectId to link separate documents

**29. What is a Mongo shell?**

Interactive interface to connect and run commands on MongoDB.

**30. Can MongoDB handle big data?**

Yes, MongoDB is **scalable**, supports **sharding**, and is often used in big data applications.