

Mongodb Roadmap

Introduction to MongoDB:

- What is MongoDB?
- How does MongoDB differ from traditional relational databases?

2. MongoDB Data Model:

- Document-oriented data model
- Collections and documents
- BSON (Binary JSON) format
- Schemaless design

3. CRUD Operations:

- Create, Read, Update, and Delete operations
- Using the `insert`, `find`, `update`, and `remove` methods

4. Querying:

- Query operators (`$eq`, `$gt`, `$lt`, `$in`, `$and`, `$or`, etc.)
- Projection (`find` method with projection)
- Sorting (`sort` method)
- Limiting results (`limit` method)
- Indexes and their impact on query performance

5. Aggregation:

- Aggregation pipeline stages (`$match`, `$group`, `$project`, etc.)
- Aggregation operators (`$sum`, `$avg`, `$max`, `$min`, etc.)
- Using the `aggregate` method

6. Indexes:

- Types of indexes (single-field, compound, multikey, text, geospatial, etc.)
- Index creation (`createIndex` method)
- Index strategies and best practices for performance optimization

7. Data Modeling:

- Embedding vs. referencing documents
- One-to-one, one-to-many, and many-to-many relationships
- Considerations for schema design based on use cases

8. Transactions:

- ACID transactions in MongoDB (starting from MongoDB 4.0)
- Working with multi-document transactions

9. Replication:

- Replica sets and their components (primary, secondary, arbiter)
- Automatic failover and election process
- Read preferences and read concern

10. Sharding:

- Horizontal scaling with sharding
- Sharding components (config servers, shards, routers)
- Shard key selection and considerations

11. Security:

- Authentication mechanisms (SCRAM, x.509, LDAP, Kerberos)
- Authorization and role-based access control (RBAC)
- TLS/SSL encryption
- Auditing

12. Backup and Restore:

- Backup strategies (mongodump, filesystem snapshots, cloud backups)
- Restoration methods (mongorestore, oplog replay)

13. Performance Tuning:

- Query optimization
- Indexing strategies
- Monitoring and profiling
- Hardware considerations

14. MongoDB Atlas:

- Introduction to MongoDB's cloud database service
- Features and benefits
- Deployment options and configurations

15. Common CLI Commands:

- Basic MongoDB shell commands (`mongo`, `show dbs`, `show collections`, etc.)
- Administrative commands (`use`, `db`, `show users`, `show roles`, etc.)