MongoDB Interview Questions and Answers

Basic Concepts

What is MongoDB? How does it differ from traditional SQL databases?

MongoDB is a NoSQL database that stores data in flexible, JSON-like documents instead of tables. Unlike SQL databases, it does not require a predefined schema and supports dynamic data storage.

Explain the concept of NoSQL databases and how MongoDB fits into this category.

NoSQL databases are designed to handle unstructured or semi-structured data efficiently. MongoDB, as a NoSQL database, provides flexibility, scalability, and high availability using horizontal scaling and replication.

What are collections and documents in MongoDB?

In MongoDB, a collection is equivalent to a table in relational databases, and a document is a JSON-like data structure stored within a collection. Documents allow flexible and schema-less data storage.

Querying

How do you query documents in MongoDB?

You can use the `find()` method to retrieve documents from a collection. For example:

```python
db.collection.find({'name': 'John'})
```

What are the various query operators available in MongoDB?

MongoDB provides various query operators such as:

- `$eq` (equal), `$ne` (not equal), `$gt` (greater than), `$lt` (less than)
- `$in` (matches any value in an array), `$nin` (not in array)
- `$and`, `$or`, `$not`, `$nor` for logical operations.

Explain the aggregation framework in MongoDB.

The aggregation framework is used to process and transform data. It consists of stages like `$match`, `$group`, `$sort`, and `$project`.

Indexes

Why are indexes important in MongoDB?

Indexes improve query performance by allowing faster lookups. Without indexes, MongoDB performs a full collection scan, which is slow. Indexes reduce the time required to fetch documents by storing data in a sorted manner.

How do you create indexes in MongoDB? What types of indexes does MongoDB support?

Indexes can be created using the `createIndex()` method:

```python
db.collection.createIndex({'name': 1})
```

MongoDB supports single-field indexes, compound indexes, text indexes, hashed indexes, and geospatial indexes.

What are the considerations when creating indexes in MongoDB?

Indexes should be used wisely to avoid excessive memory usage. Considerations include query patterns, write performance impact, and choosing the right index type for optimization.