

SPPU-TE-COMP-CONTENT - KSKA Git

Q1. What is NoSQL and enlist its benefits.

Ans. The term NoSQL, short for "not-only SQL", refers to non-relational databases that store data in a non-tabular format, rather than in table-based, relational ~~data~~ tables like relational databases do.

→ Benefits:-

1. Scalability:

- NoSQL databases replicate data across multiple servers, data centers or cloud resources, so a single-node failure doesn't cause downtime or data loss.

2. Scalability:

- NoSQL databases scale out horizontally by using distributed clusters of hardware, so you can add or remove nodes without impacting availability.

3. Agile development:

- NoSQL databases ~~are~~ can adapt quickly to changing requirements.

4. Security:

- NoSQL databases are typically backed up, replicated, and secured against intrusion.

Q2. Explain CRUD operations in MongoDB data with suitable example.

Ans. 1. Create operations:

- Create or insert operations add new documents to a collection.
- If the collection does not currently exist, insert

SPPU-TE-COMP-CONTENT - KSKA Git

operations will create the collection.

```
eg: db.users.insertOne({
  name: "Sue",
  age: 26,
  status: "pending"
})
```

2. Read operations

Read operations retrieve documents from a collection; i.e. query a collection for documents.

eg:

```
db.users.find(
  { age: { $gt: 18 } },
  { name: 1, address: 1 }
)
```

limit (5)

3. Update operations

Update operations modify existing documents on a collection.

eg:

```
db.users.updateMany(
  { age: { $lt: 18 } },
  { $set: { status: "reject" } }
)
```

4. Delete operations

Delete operations remove documents from a collection.

eg:

```
db.users.deleteMany(
  { status: "reject" }
)
```

SPPU-TE-COMP-CONTENT - KSKA Git

Q2. Show the relationship of RDBMS, terminology with MongoDB.

Ans.	RDBMS	MongoDB
1.	Database	Database
2.	Table	Collection
3.	Tuple / Row	Document
4.	column	Field
5.	Table Join	Embedded Documents
6.	Primary Key	Primary Key (Key-Id)

Q4. What are the advantages of MongoDB over RDBMS?

- Ans. → Advantages of MongoDB over RDBMS:
1. MongoDB is schema less. It is a document database in which one collection holds different documents.
 2. Structure of a single object is clear.
 3. No complex joins.
 4. Deep query-ability. MongoDB supports dynamic queries on documents using a document-based query language that's nearly as powerful as SQL.
 5. Easy to scale-out - MongoDB is easy to scale.
 6. Conversion / mapping of application objects to database objects not needed.
 7. Uses internal memory for storing the clustered.

SPPU-TE-COMP-CONTENT - KSKA Git

working set, enabling faster access of data.

Q5. Enumerate basic datatypes of mongo DB.

Ans. The basic datatypes of mongo DB are:-

1. String

2. Integer

3. Boolean

4. Double

5. Min / Max Keys

6. Arrays

7. Timestamp

8. Object

9. Null

10. Symbol

11. Date

12. Object Id

13. Binary data

14. Code

15. Regular expression

Q6. What is difference between SAVE and UPDATE method?

Ans.

→ Difference between SAVE and UPDATE method:

Usage

i) SAVE

The save method is used to add a new document to the database or to save changes to an existing document.

ii) UPDATE

It can update multiple documents at once based

SPPU-TE-COMP-CONTENT - KSKA Git

on the filter condition.

2. Behaviour

i) **SAVE**
When you call `save()` on a document, MongoDB will check if the document is new or already exists on the database.

If it's new, it is inserted, otherwise, MongoDB updates it.

ii) **UPDATE**

It directly modifies documents on the database that match the query and does not return the modified documents.

Q7. What is ObjectId on MongoDB?

Ans. ObjectIds are small, likely ~~unique~~ unique, fast to generate, and ordered.

Object Id values are 12 bytes in length, consisting of:

1. A byte timestamp, representing the Object Id's creation, measured in seconds since the Unix epoch.

2. A 5-byte random value generated once per process. This random value is unique to the machine and process.

3. A 3-byte incrementing counter, initialized to a random value.

SPPU-TE-COMP-CONTENT - KSKA Git

- Four timestamp and counter values, the most significant ~~most~~ bytes appear first on the byte sequence (big-endian).
- This is unlike other BSON values, where the least significant bytes appear first (little-endian).

Q8. Explain different method to insert document on MongoDB.

Ans → The different methods to insert document on MongoDB:

1. Insert a single document:
 - `db.collection.insertOne()` inserts a single document into a collection.
 - If the document does not specify an `_id` field, MongoDB adds the `_id` field with an `ObjectId` value to the new document.

eg: `db.movies.insertOne`

&

`{title: "The Favourite",`

`runtime: 121,`

`rated: "R",`

`year: 2018`

2. Insert multiple documents

• `db.collection.insertMany()` can insert multiple documents into a collection.

• It passes an array of documents to the method.

SPPU-TE-COMP-CONTENT - KSKA Git

eg:

db.movies.insertMany({

{

title: "Paeck",

runtime: 130

},

{

title: "GOT",

runtime: 105

}]

7)

Q4. Explain CAP and BASE theorem with suitable example.

example:

Ans. 1.

CAP

- This theorem explains that in a distributed system, a database can only guarantee two out of these of the following:

→ Consistency:

- All clients see the same data at the same ~~data~~ time.

→ Availability:

- Every request receives a response in a reasonable amount of time.

→ Partition tolerance:

- The system continues to operate even if some messages are lost or some nodes fail.

2. BASE

- This model is often used by companies that deal with large amounts of unstructured data, such as social networking feeds.

SPPU-TE-COMP-CONTENT - KSKA Git

→ Basically Available:

- Guarantees the availability of data.

→ Soft state:

- The state of the system could change over time.

→ ~~Can~~ Eventual Consistency:

- The system will eventually become consistent once it stops receiving input.

Q10. What are different key features of MongoDB?

Ans. Some key features of MongoDB:

1. Document model:

- MongoDB is a document database that is schema-less meaning it can manage data without a blueprint.

2. Replication:

- MongoDB can deploy multiple servers for a backup and disaster recovery.

3. Sharding:

- MongoDB can split large datasets across multiple distributed collections.

4. Storage:

- MongoDB can store very large files.

5. Security:

- MongoDB offers security mechanisms like role-based access control, encryption at rest, and transport encryption.