**Department of Information Technology**

**Subject- PL-I ADBMS(LAB)**

**Practical Oral Questions**

**Questions on Assignment-I**

Question-1: What is MongoDB?

=> MongoDB is a free and open-source document database, It is a NoSQL database, MongoDB stores data in documents, which are JSON-like structures that can contain nested data and multiple data types.

Question-2: *What are the features of MongoDB?*

*=>* **Schema-less:** MongoDB does not require a predefined schema, which makes it easy to store and retrieve data.

**Flexible documents:** MongoDB documents can be nested and can contain multiple data types.

**Horizontal scaling:** MongoDB can be scaled horizontally by adding more servers to the database cluster(bundle of info).

Replication: MongoDB supports replication, which means that data can be copied to multiple servers for high availability and performance.

**Ad-hoc queries:**  MongoDB supports ad-hoc queries, which allows developers to run complex queries on their data without having to define a schema in advance.

Aggregation: MongoDB offers a powerful aggregation pipeline that can be used to perform complex data analysis operations.

**Transactions:** MongoDB supports multi-document ACID transactions.

Question-3: Explain Indexes in MongoDB?

=> help MongoDB find documents quickly. Indexes can significantly improve the performance of queries. also have some drawbacks can consume additional storage space.

In short, indexes are a powerful tool that can make your MongoDB application much faster, but it is important to use them wisely.

Question-4: Why MongoDB is the best NoSQL database?

Question-5: Define Collection?

* It is a logical grouping of documents. It is similar to a table in a relational database, but it is schema-less.
* In short, a collection is a container for documents in MongoDB. It is a way to organize and store data in a flexible and scalable way.

Question-6: What is the purpose of the save() method?

* The save() method in MongoDB is used to save a document to a collection. It can either insert a new document or update an existing document, depending on whether the document has an \_id field.
* In short, the save() method is used to store data in MongoDB.

Question-7: How do we perform sorting and Explain Project in MongoDB?

**Sorting** allows you to sort the documents in a collection in a specified order.**Projection** allows you to specify which fields you want to return from a document.

In short, sorting and projection in MongoDB allow you to manipulate and filter the results of your queries.

Question-8: What is the syntax of the skip() method?

* db.collection.skip(number of documents to skip)
* Ex: db.users.skip(10)

Question-9: How do we delete everything from the MongoDB database?

* If you need to delete the entire database, then you should use the db.dropDatabase() command.

Question-10: Which command do we use for creating the backup of the database?

* The command to create a backup of a MongoDB database is mongodump.
* Syntax: mongodump --db=<database name> --out=<backup directory>

Question-11: What is the syntax of the limit() and sort() method?

* limit(): db.collection.limit(number of documents to limit)
* sort(): db.collection.sort({ sort field: sort order })

Question-12: Which command do we use for dropping a database?

* The db.dropDatabase() command is used to drop a database in MongoDB.

**Questions on Assignment-II**

Question-1: Explain MongoDB Projection

* MongoDB projection allows you to specify which fields you want to return from a document. It can be used to improve the performance and efficiency of your MongoDB queries.

Question-2: Why do we use the pretty() method?

* The pretty() method is used to display MongoDB query results in a formatted and human-readable way. It is useful for understanding the results of queries.

Question-3: What is CRUD in MongoDB?

* Create: Inserts a new document into a collection.

Ex. db.collection.insertOne({ name: "John Doe" })

* Read: Retrieves one or more documents from a collection.

Ex. db.collection.find({ name: "John Doe" })

* Update: Modifies existing documents in a collection.

Ex. db.collection.updateOne({ name: "John Doe" }, { $set: { age: 30 } })

* Delete: Removes documents from a collection.

Ex. db.collection.deleteOne({ name: "John Doe" })

Question-4: What is the difference between MongoDB and Cassandra?

* MongoDB is a good choice for applications that need to store and retrieve complex data structures
* Cassandra is a good choice for applications that need to store and retrieve large amounts of data quickly.

Question-5: Explain Map-Reduce in MongoDB.

* MongoDB map-reduce is a programming model for processing large data sets and producing aggregated results. implemented as a two-stage process: map and reduce.
* The map function processes each input document and emits one or more key-value pairs.
* The reduce phase merges the key-value pairs emitted by the map phase and produces a single output value for each key.
* used to perform a variety of tasks, such as counting the number of documents in a collection, calculating the average value of a field in a collection, finding the most popular products , and identifying the most frequent words in a text corpus etc.

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Question-6: Explain Pipeline concept in MongoDB.

* A MongoDB pipeline is a sequence of data processing stages that are applied to a collection of documents. Pipelines allow you to filter, sort, group, and project data in a single operation. This can make your queries more efficient and easier to read.
* Pipelines are defined using a JSON-like syntax and can be used to perform a wide variety of tasks.

Question-7: Explain Aggregation in MongoDB.

* In MongoDB, aggregation operations process the data records/documents and return computed results. It collects values from various documents and groups them together and then performs different types of operations on that grouped data like sum, average, minimum, maximum, etc to return a computed result.

Question-8: What is shading in MongoDB?

Question-9: Explain what is a replica set?

Question-10: What is the syntax to create a collection and to drop a collection in MongoDB?

* To create a collection:

db.createCollection(<collection\_name>)

ex. db.createCollection("users")

* To drop a collection:
* db.dropCollection(<collection\_name>)

ex. db.dropCollection("users")

**Questions on Assignment-III**

Question-1: What is Snowflake?

* **Snowflake is a cloud-based data warehouse that offers high performance, scalability, cost-effectiveness, and ease of use. It is used by a variety of businesses, including financial services, healthcare, retail, and technology.**

Question-2: . What are the essential features of Snowflake?

Snowflake is a cloud-based data warehouse with essential features for performance, scalability, cost-effectiveness, ease of use, security, and more.

Question-3: What do you mean by virtual warehouse?

* A virtual warehouse is like a digital version of this physical warehouse. It stores your data in the cloud and makes it accessible to you whenever you need it. access it from anywhere with an internet connection.

Question-4: What is snow flaking?

* snowflaking is a way to organize data in a database with the most important data at the center and the less important data at the edges This makes it easy to access the data you need quickly and easily, and it also helps to reduce data redundancy.
* improve data integrity, maintenance, and disk space usage.

Question-5: What is Characteristics of snowflake schema?

* Improved data integrity ->  eliminate data redundancy
* Simplified data maintenance -> make it easier to update and delete data.
* Reduced disk space -> reduce the amount of disk space required to store data
* Easier data analysis -> can make it easier to analyze data.

Question-6: What is the difference between Star and Snowflake Schemas?

Star schema:

* A star schema has a central fact table that contains the main metrics of interest.
* The fact table is surrounded by dimension tables, which contain information about the different dimensions of the data.
* The dimension tables are denormalized, which means that they contain redundant data.
* This makes the star schema easy to query, but it can lead to data redundancy and inconsistencies.

Snowflake schema:

* A snowflake schema is a variation of the star schema that normalizes the dimension tables to multiple levels.
* This eliminates data redundancy and improves data integrity.
* However, it can also make the snowflake schema more complex to query.

**Questions on Assignment-IV** Question-1: Describe your project?

Question-2: Advantages of your project?

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Question-3: How you gathered requirement of your project?

Question-4: Which software you used in your project?

Question-5: What are the methodology used in your project?

Question-6: What is your role in your project?

Question-6: Explain data flow of your application?

Question-7: What are the entities in your project?

Question-8: Question - What are the drawback of your system?

Question-9: How you test your application?

Question-10: From where you get reference, guide for your project work?

Question-11: In future what changes you will made in your application?