Q1. What is MongoDB? Explain non-relational databases in short. In which scenarios it is preferred to use

MongoDB over SQL databases?

Ans -

- MongoDB is a popular document-oriented database that falls under the category of non-relational or NoSQL databases. It is designed to store, retrieve, and manage large volumes of structured and unstructured data in a flexible and scalable manner.

- Non-relational databases, also known as NoSQL databases, differ from traditional SQL databases in their data model and storage approach. They are designed to handle large-scale data processing and storage requirements, and they prioritize scalability, performance, and flexibility. Unlike SQL databases, which use a rigid, tabular structure with fixed schemas, non-relational databases allow for more dynamic and schema-less data models. They can store data in various formats, such as key-value pairs, documents, graphs, or wide-column stores.

scenarios it is preferred to use MongoDB over SQL databases.

- Flexible and evolving schemas: MongoDB allows for flexible and dynamic schemas, which means you can store and retrieve data without a predefined structure. This is advantageous in situations where the data format is subject to change or when dealing with unstructured data.
- Scalability and high performance: MongoDB is built to scale horizontally across multiple servers, enabling it to handle high volumes of read and write operations with ease. It employs sharding and replication techniques to distribute data and provide fault tolerance, resulting in improved performance and scalability.
- Handling complex data structures: MongoDB's document-oriented model allows you to store complex hierarchical data structures in a single document, eliminating the need for complex joins or multi-table relationships common in SQL databases. This makes it well-suited for scenarios involving nested or hierarchical data

Q2. State and Explain the features of MongoDB.

Ans –

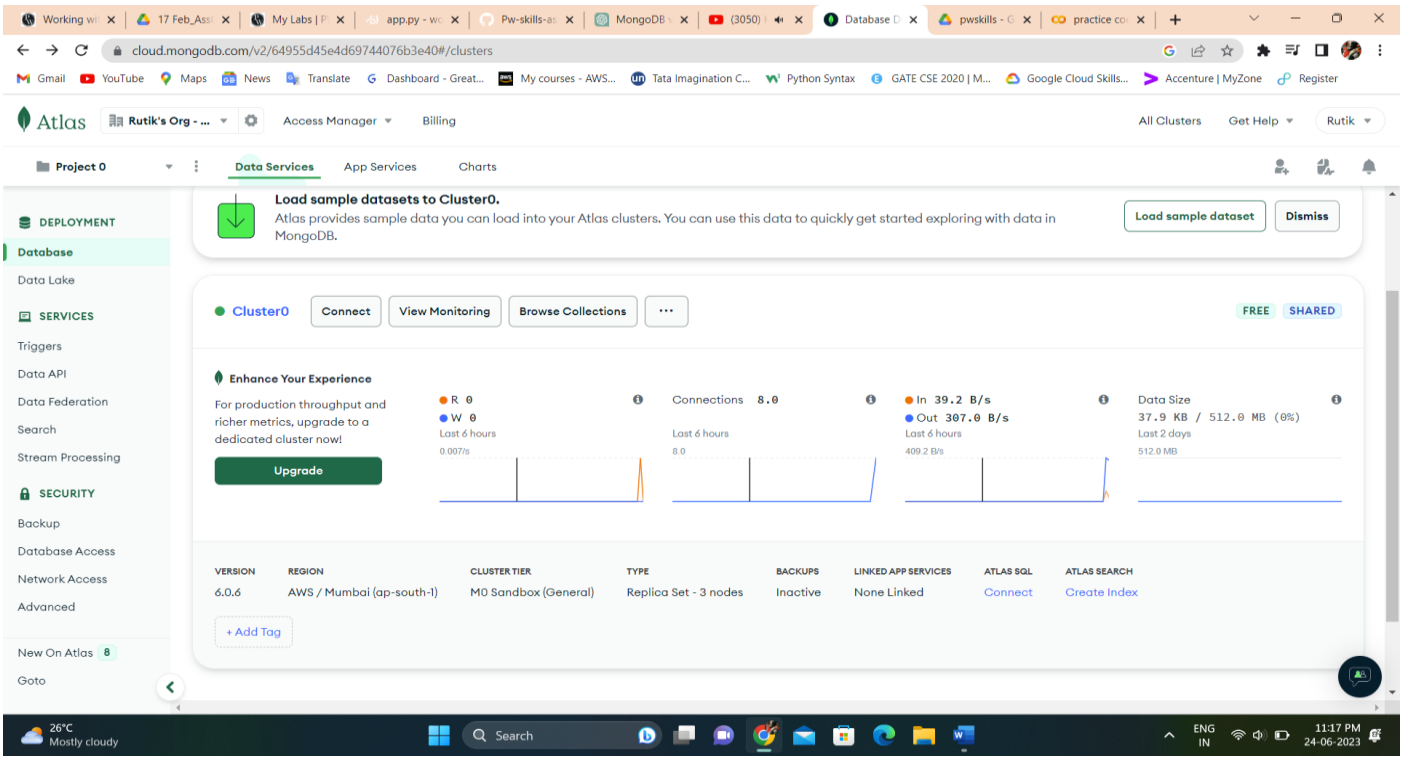
- Document-Oriented Model: MongoDB uses a flexible document model, where data is stored in JSON-like documents called BSON. This allows for a natural and intuitive representation of data, supporting complex data structures and nested arrays.
- Dynamic Schema: MongoDB has a dynamic schema, meaning documents within a collection can have varying structures and fields. This flexibility allows for easy and agile schema evolution as application requirements change over time.
- High Scalability: MongoDB is horizontally scalable, meaning it can distribute data across multiple servers or shards. Sharding enables the database to handle large amounts of data and high traffic loads by dividing the data and workload across multiple machines.
- High Performance: MongoDB provides high performance through various features like in-memory caching, native replication, and automatic load balancing. It supports indexing and provides query optimization techniques to speed up data retrieval.
- Replication and Fault Tolerance: MongoDB offers automatic replication, where data is automatically synchronized across multiple servers or replicas. Replication ensures data redundancy, fault tolerance, and high availability. If a primary node fails, a secondary node can take over seamlessly.

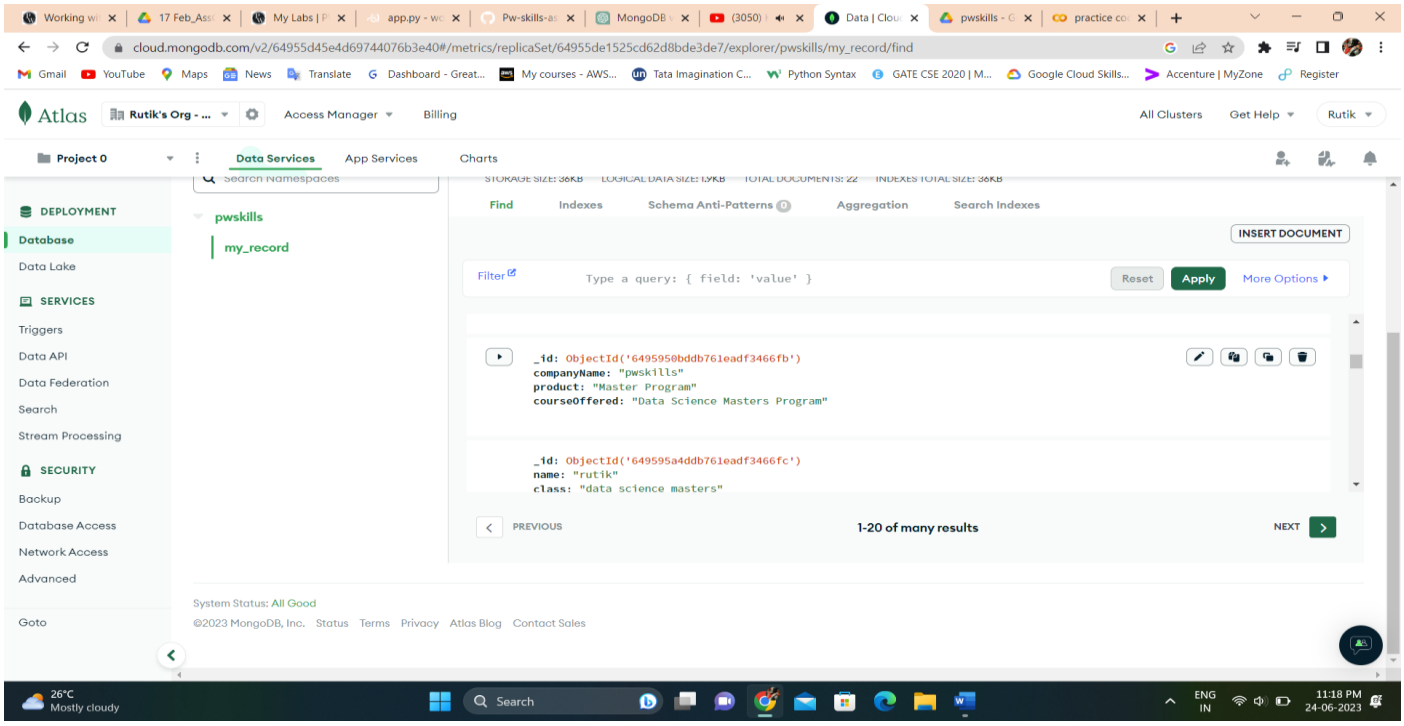
Q3. Write a code to connect MongoDB to Python. Also, create a database and a collection in MongoDB.

Ans - import pymongo

```
# Connect to MongoDB
client = pymongo.MongoClient("mongodb://localhost:27017/")
# Replace "localhost" with the appropriate MongoDB server address if necessary
# The default port for MongoDB is 27017

# Create a database
mydb = client["mydatabase"]
# Replace "mydatabase" with the desired name of your database

# Create a collection
mycol = mydb["mycollection"]
# Replace "mycollection" with the desired name of your collection

# You have now connected to MongoDB, created a database, and a collection
```

```
pip install pymongo
```

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Data Services
App Services
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DEPLOYMENT
Database
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SERVICES
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Data Federation
Search
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SECURITY
Backup
Database Access
Network Access
Advanced
Goto
pwskills
my_record
Find
Indexes
Schema Anti-Patterns
Aggregation
Search Indexes
INSERT DOCUMENT
Filter
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NEXT
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