CIS 552: DATABASE DESIGN
LAB HOMEWORK – 8

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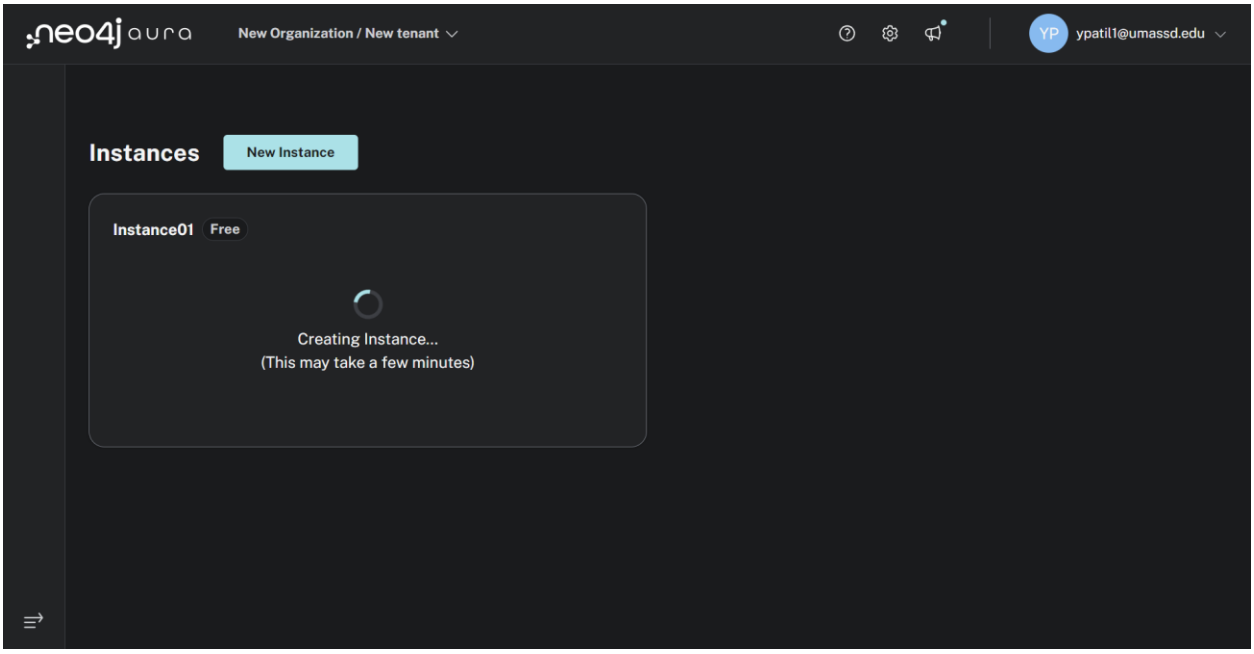
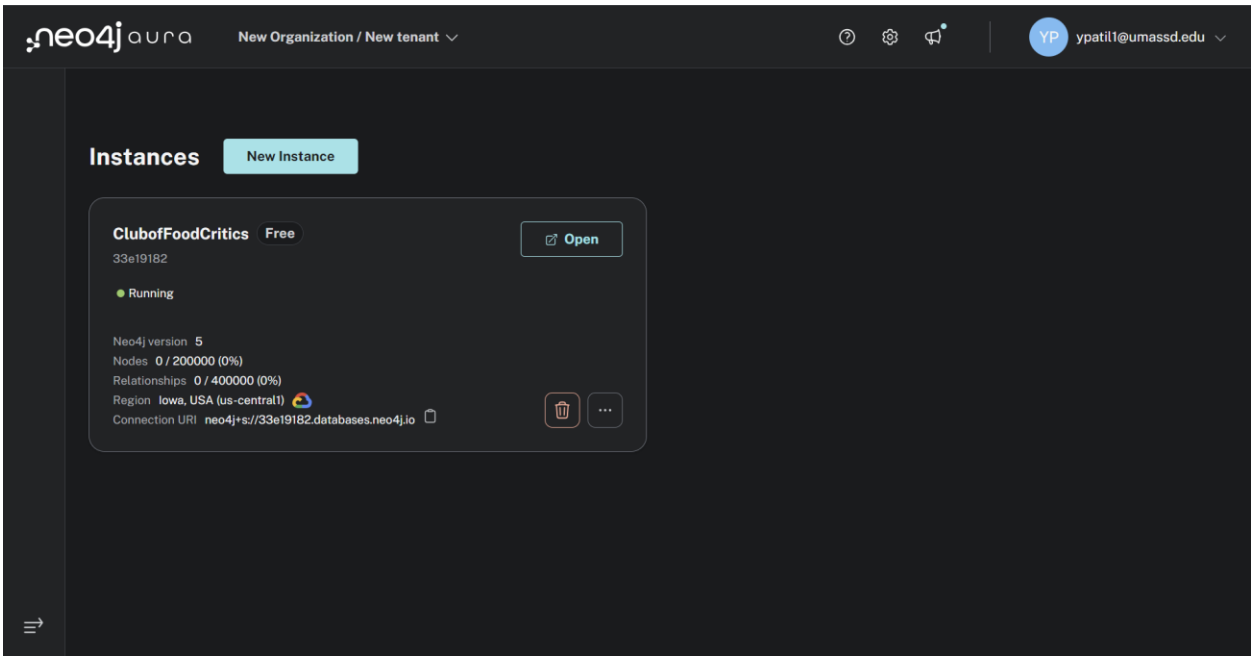
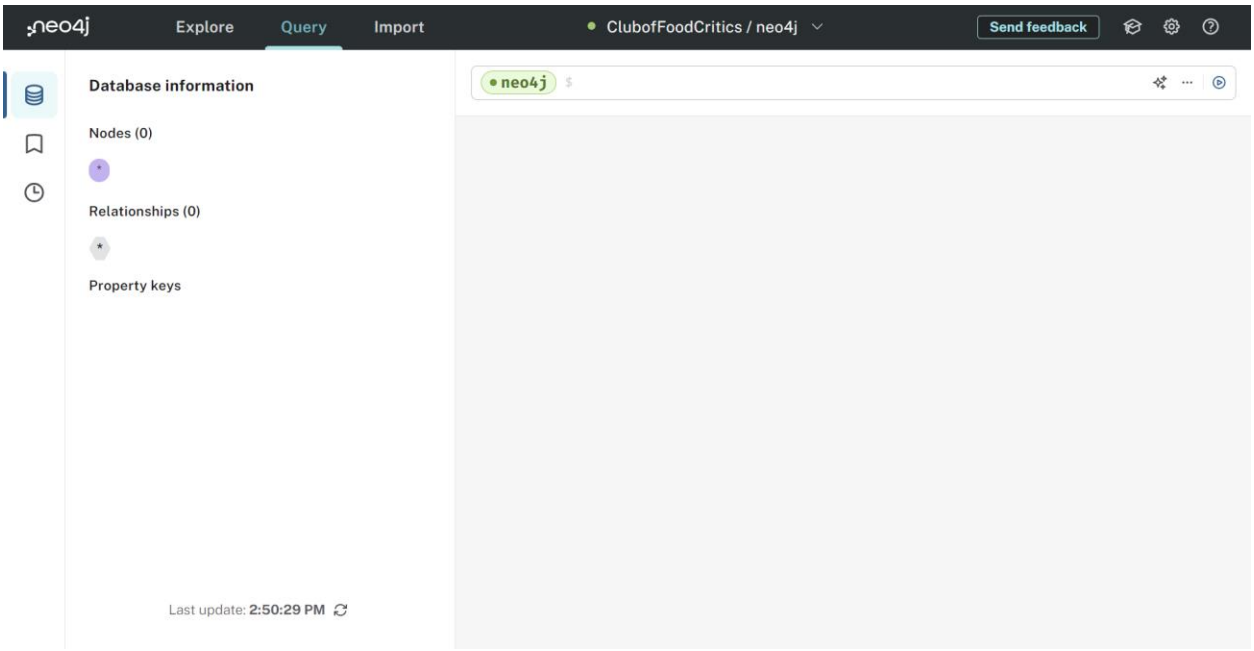
1. **Account creation for Neo4j in Neo4j Aura:** To create an account, go to the link: https://neo4j.com/product/neo4j-graph-database/ and create an account with UMassD credentials. After verification, you can log in and the following screen appears to create an instance.
2. Creation of instance takes some time.



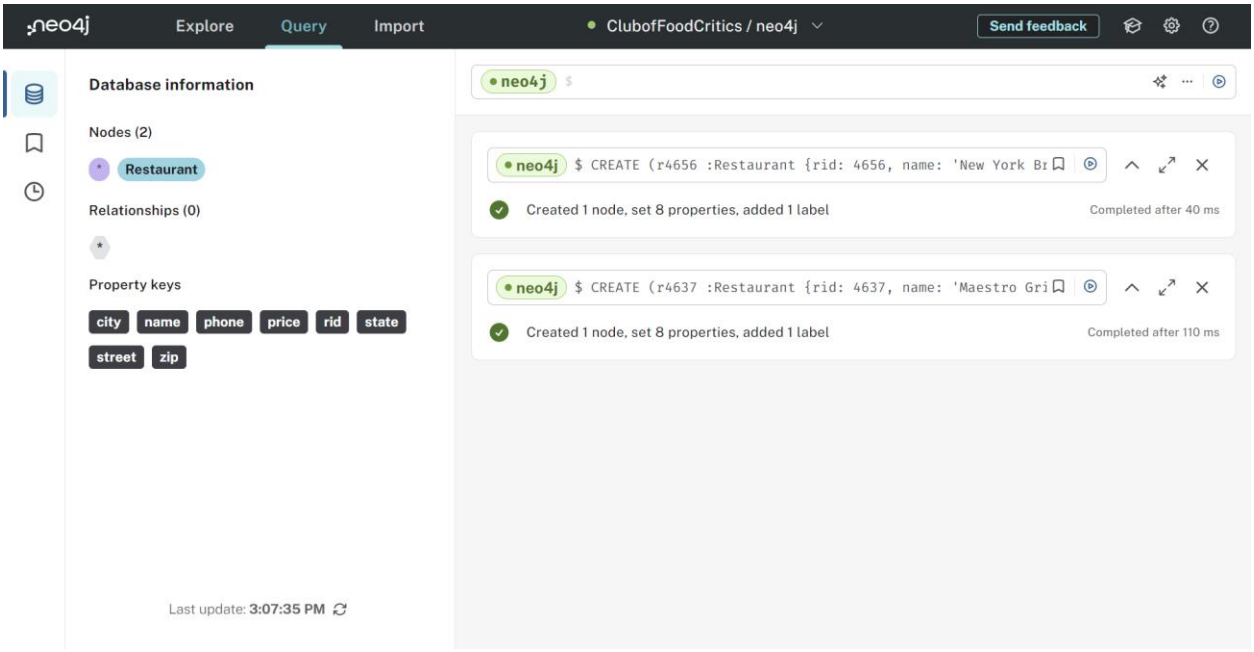
3. Once the instance is created, name it "ClubOfFoodCritics" and open it.



4. **Querying the instance using Cypher Query Language:** Enter the password to connect to the instance. Once done, the following screen shows up, where you can write queries.

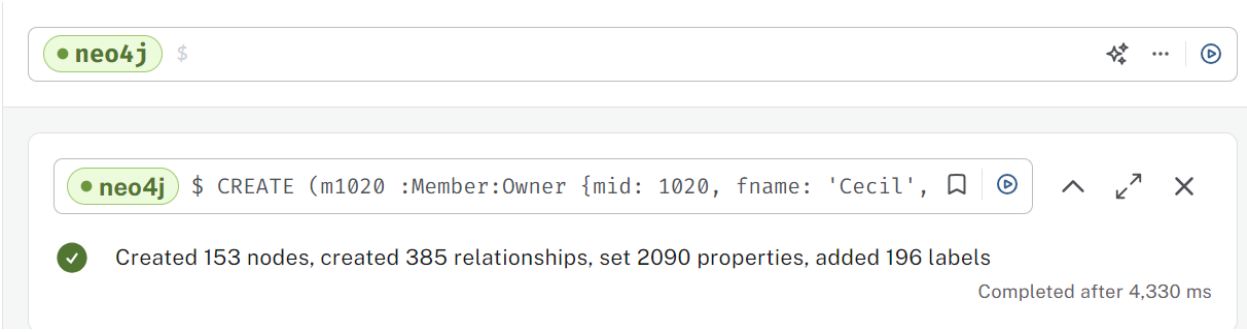


5. **Populating Data using CREATE Commands:** Use the CREATE commands given in the 'Ch14_FCC.txt' on MyCourses. The commands can be copied, pasted and executed as shown below.



6. Multiple commands can be executed as shown in the screenshot below.

7. **Created Nodes and Relationships:** After executing all the commands from the document, the following number of nodes and relationships are created as shown.



8. **Querying the data using Cypher Query Language:**

The Cypher Query Language (CQL) is used to query the data within the Neo4j database. The following queries are executed to search for data within the dataset.

a. **Query Members by State:** This query retrieves all members who are located in the state of Tennessee (TN).

Query:

MATCH (m:Member)

WHERE m.state = 'TN'

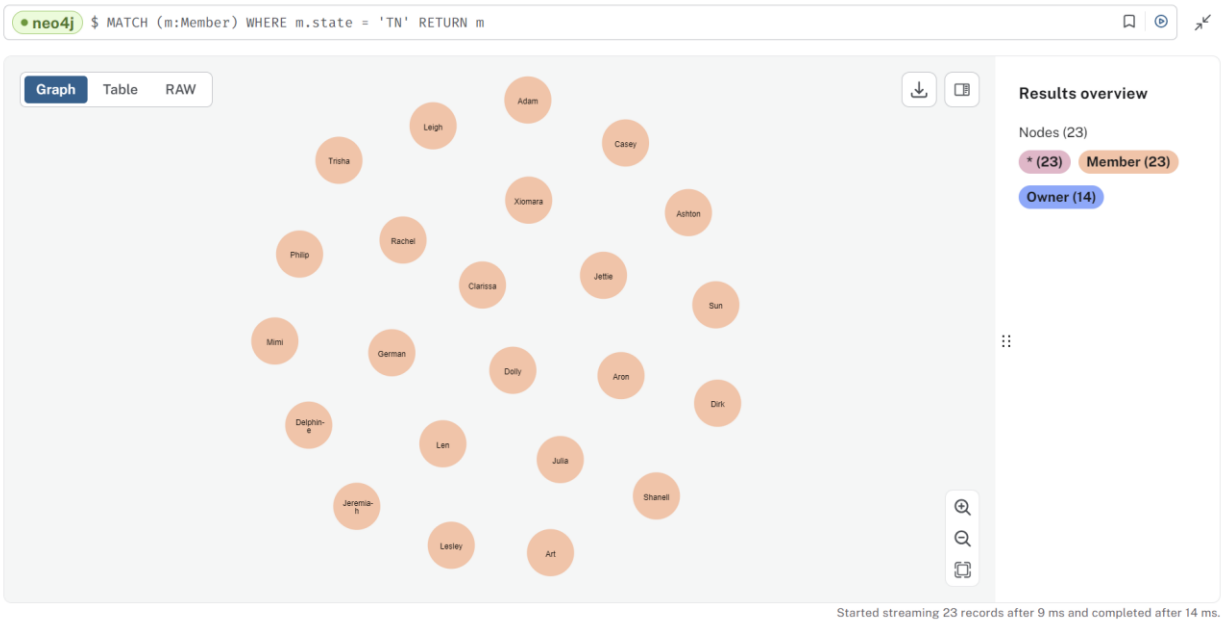
RETURN m

Explanation:

MATCH (m:Member) finds all nodes labeled as Member.

WHERE m.state = 'TN' filters these nodes to those where the state property is 'TN'.

RETURN m returns the resulting nodes.

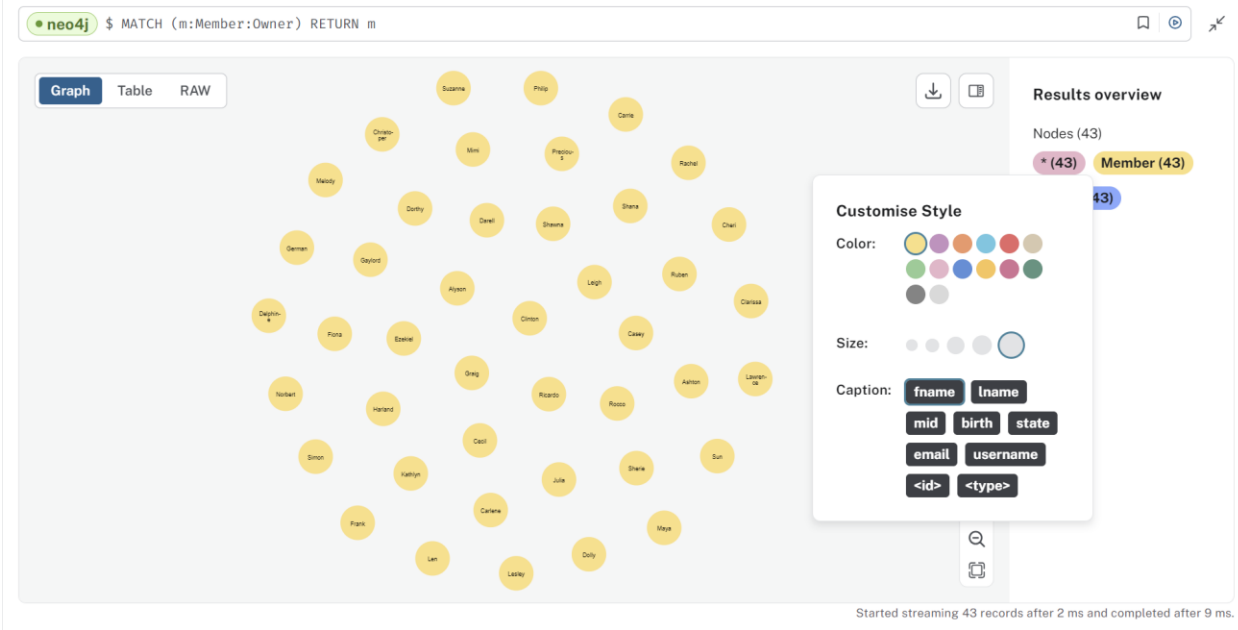


b. **Query Members who are Owners:** This query retrieves all members who also have the role of an owner.

   MATCH (m:Member:Owner)

   RETURN m

More settings like changing the size of the nodes, caption, and color can be done in ‘Customise Style’ as shown in the screenshot below.

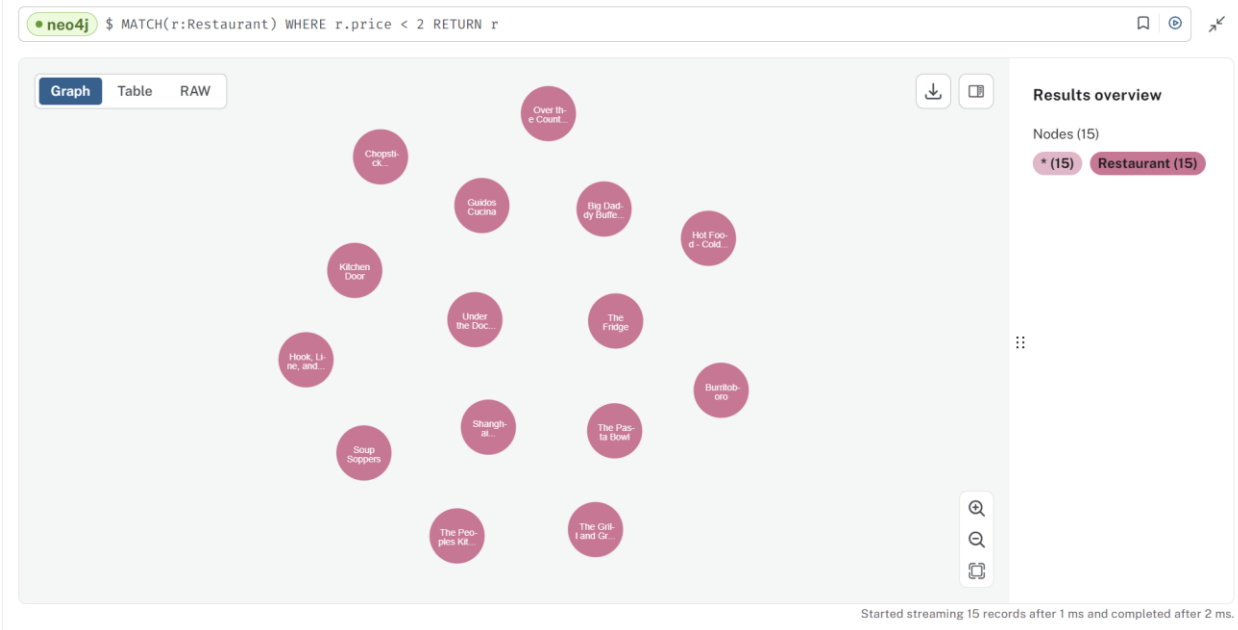


c. **Query Restaurants by Price Range:** This query retrieves all restaurants with a price range less than 2.

MATCH(r: Restaurant)

WHERE r.price < 2

RETURN r



d. **Query Restaurants in a Specific City:** This query retrieves all restaurants located in New York City.

```
MATCH (r:Restaurant)
WHERE r.city = 'New York'
RETURN r
```

Conclusion:

- In this lab, I navigated through setting up and utilizing Neo4j, a graph database, within the Neo4j Aura environment.
- I gained practical experience in creating and managing nodes and relationships, fundamental elements of a graph database.
- I developed skills in using Cypher Query Language (CQL) to perform various queries, such as filtering members by state, identifying members who are also owners, and retrieving restaurants based on price and location.
- I learned to populate the database with data using CREATE commands, improving data modeling and manipulation skills.
- I realized the advantages of graph databases in uncovering patterns and insights that might be missed with traditional relational databases.
- This lab helped me understand the structure and capabilities of Neo4j, including its ability to efficiently handle and query complex data relationships.