CIS 552: DATABASE DESIGN

LAB HOMEWORK 7

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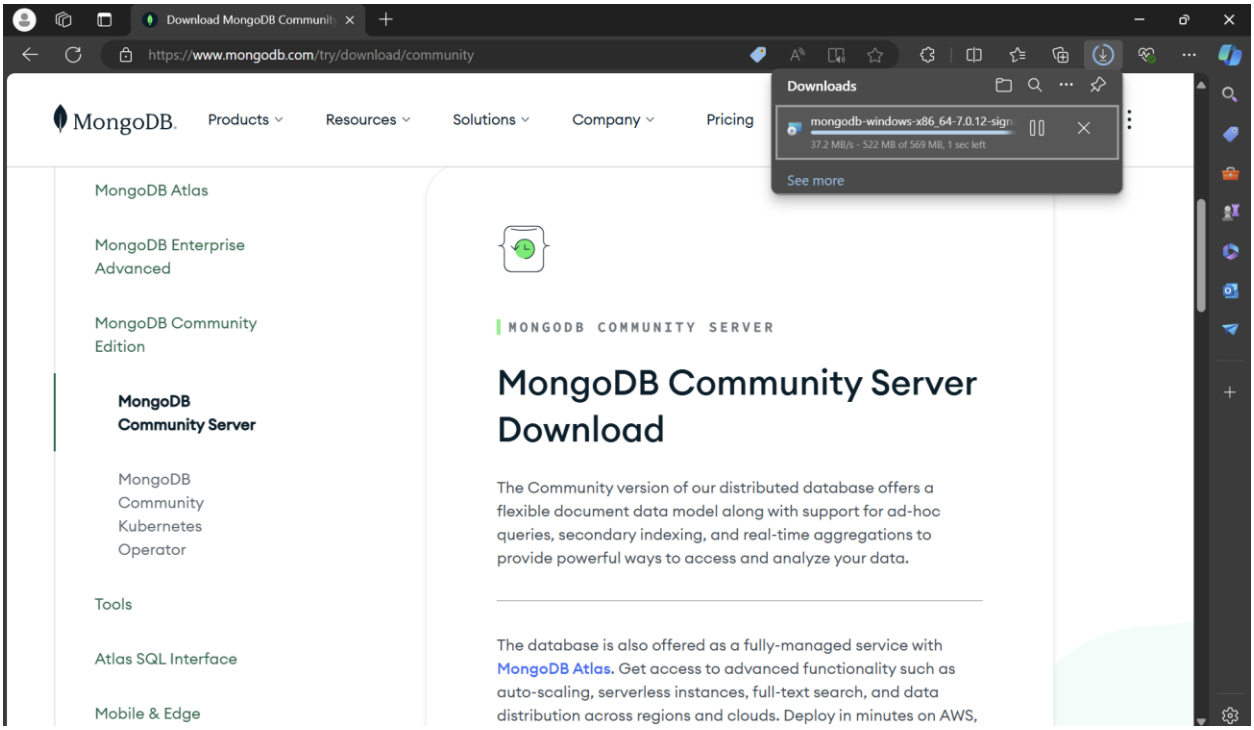
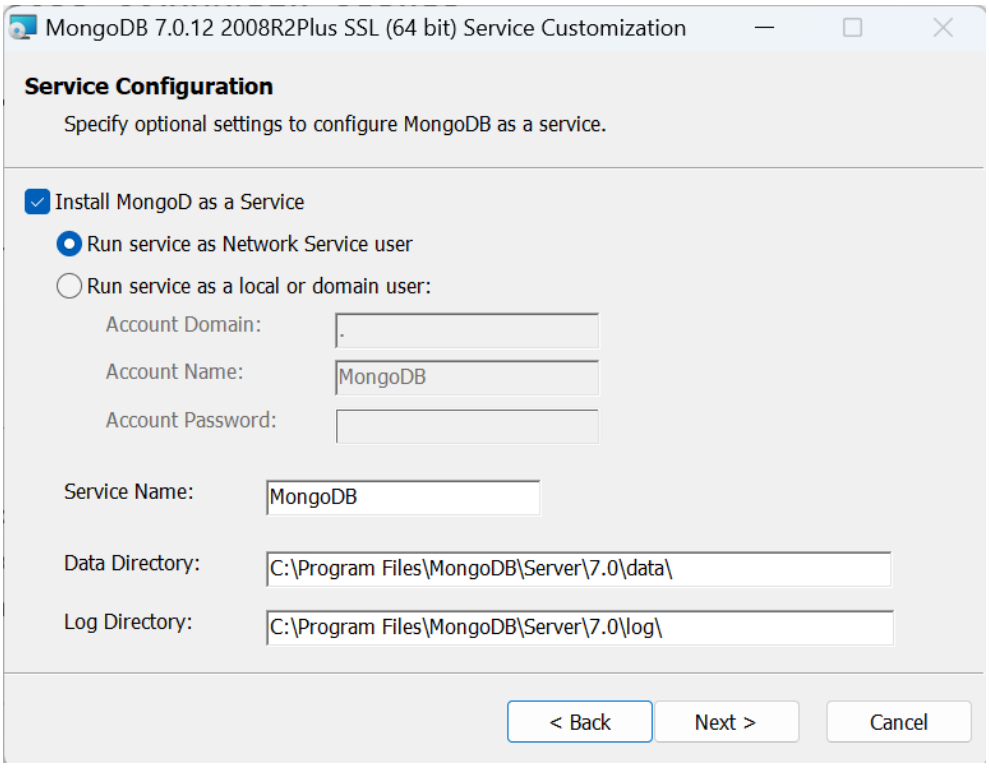
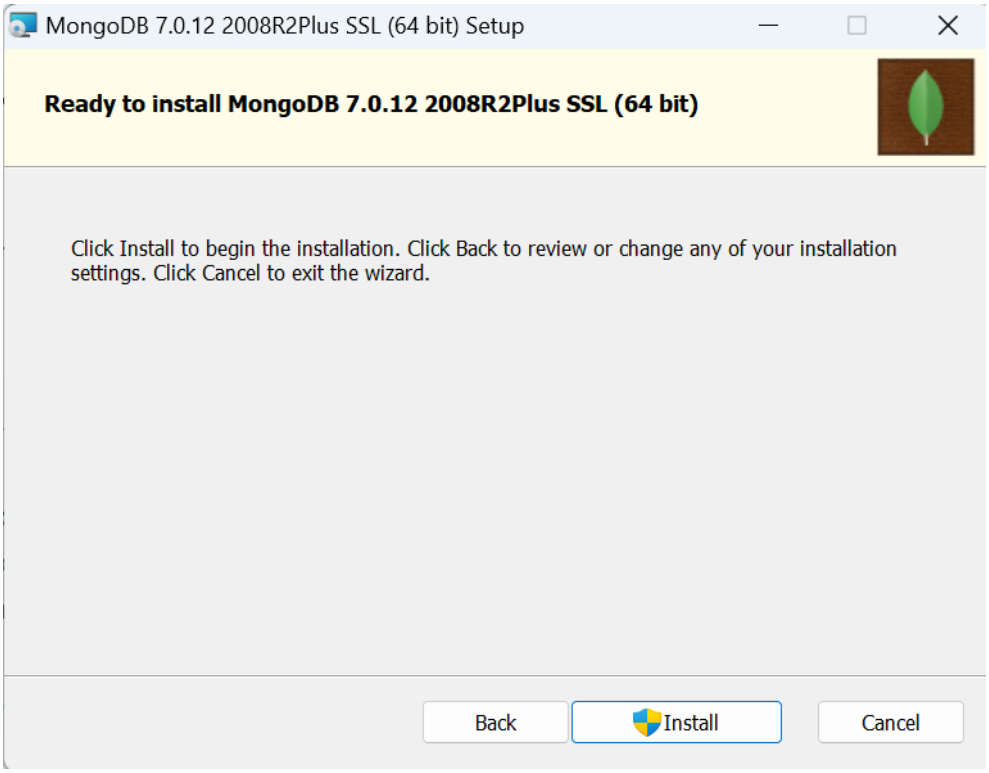
1. **Downloading and Installing MongoDB Community Server:** I downloaded and completed the installation of “MongoDB community server” as shown in the screenshot below.



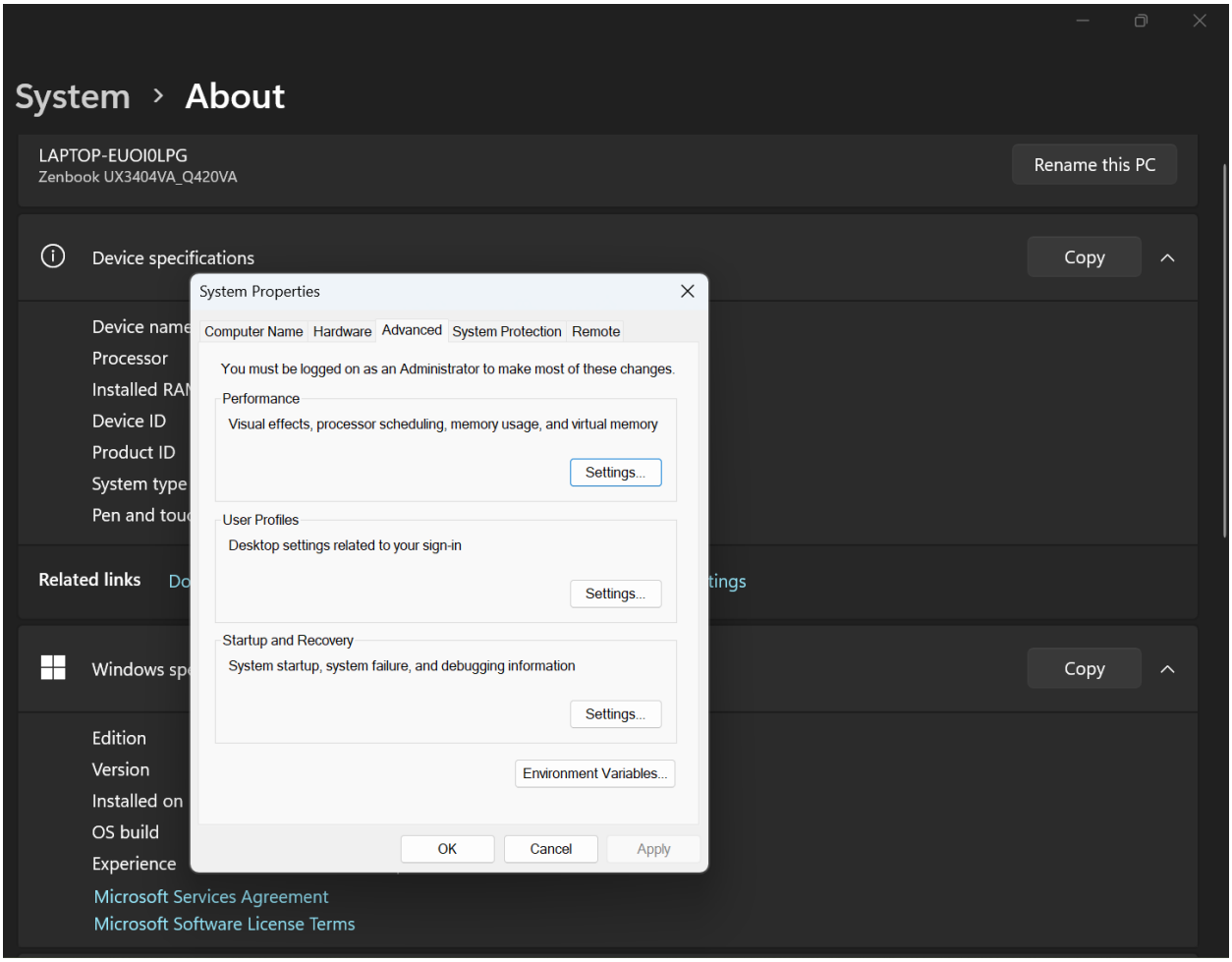
2. **Service Configuration Setup:** During the setup, I selected the Custom installation type and configured the service to run as a Network Service user, which creates a built-in service account for MongoDB.

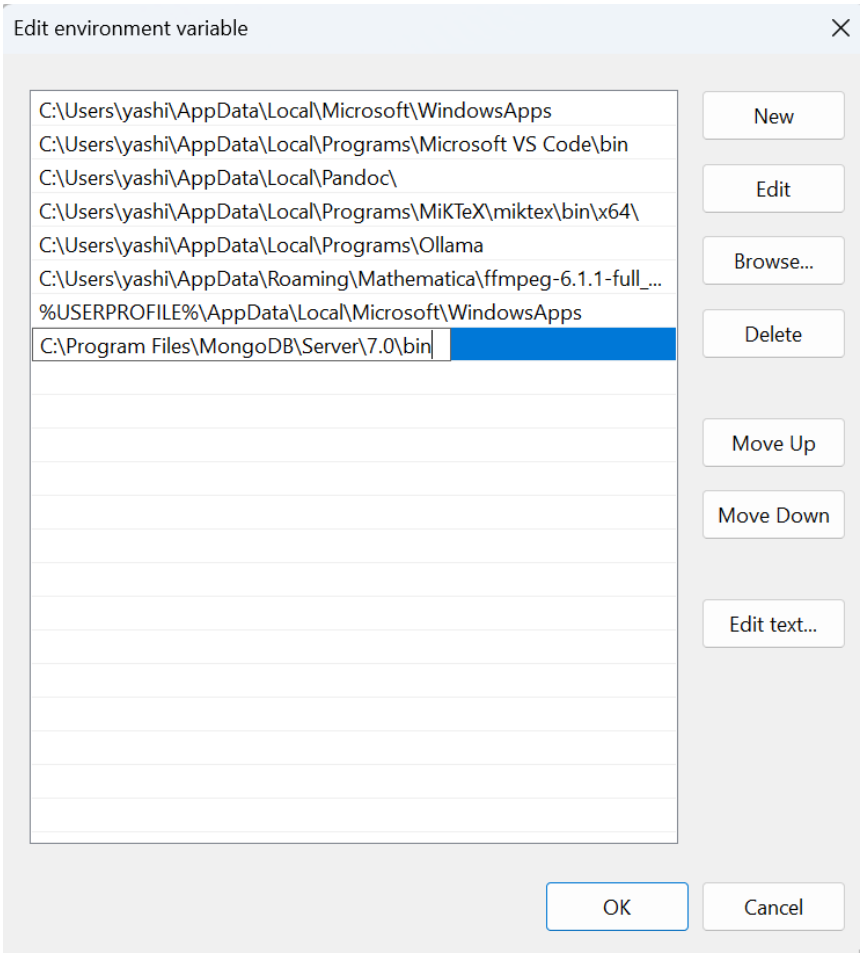


3. **Installing MongoDB Compass:** I also installed MongoDB Compass, which is the graphical user interface for MongoDB.

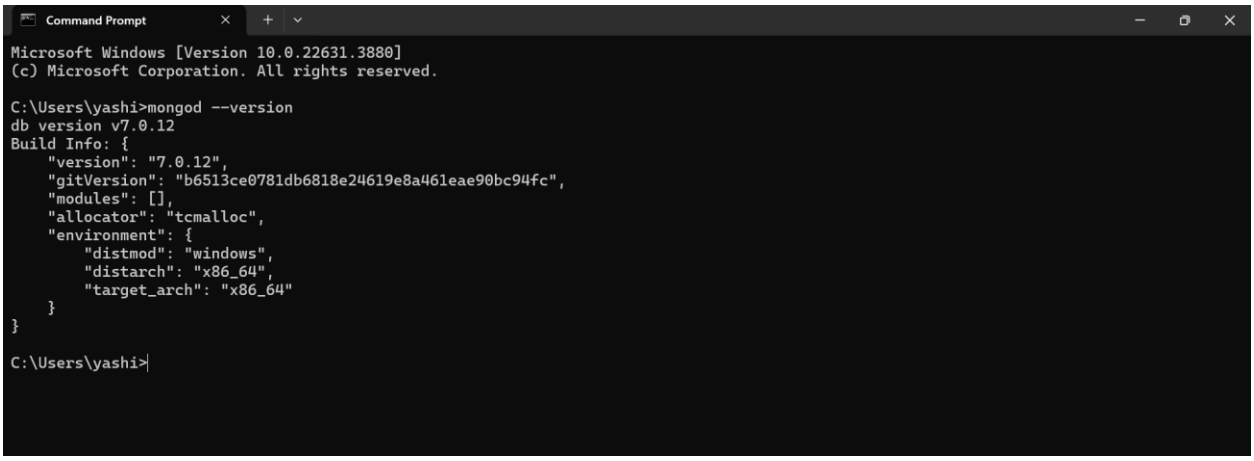


4. After the installation, the MongoDB Compass opens a tab for new connection.
5. **Setting the Path in Environment Variables:** I navigated to the Environment Variables in the system settings and added the path for MongoDB\bin to the system's PATH variable. This allows for executing MongoDB commands from any terminal location. Go to settings -> About -> Advanced system settings. Go to 'Environment Variables' and set the 'path' by entering the path.

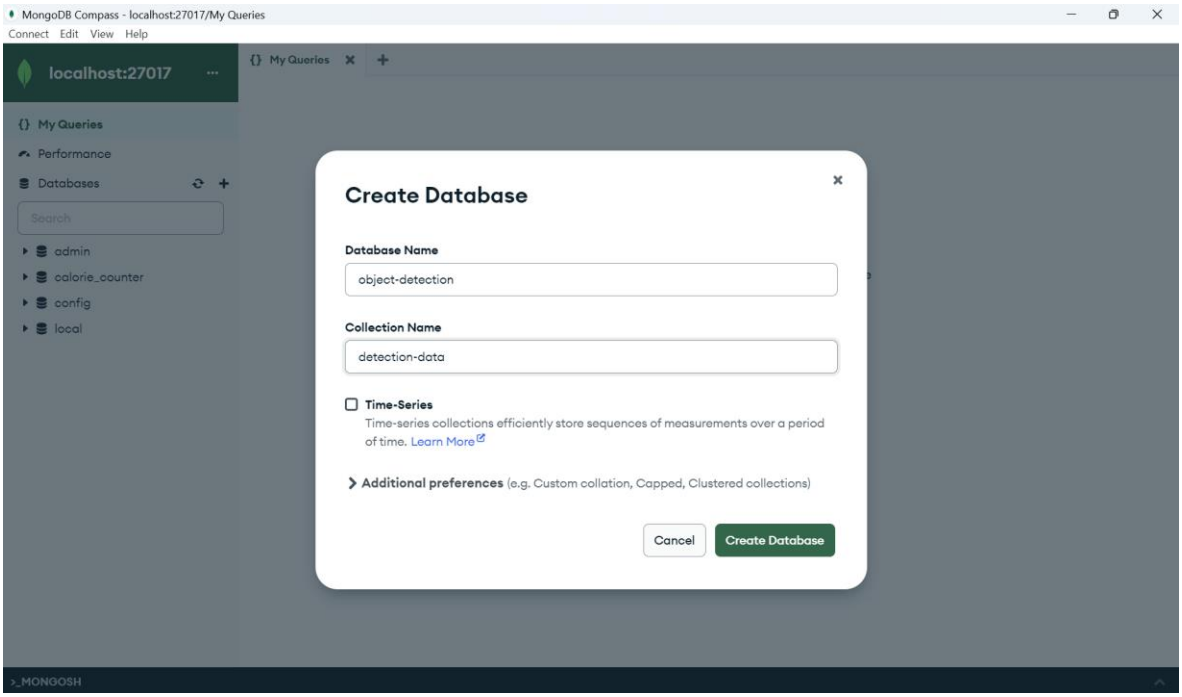




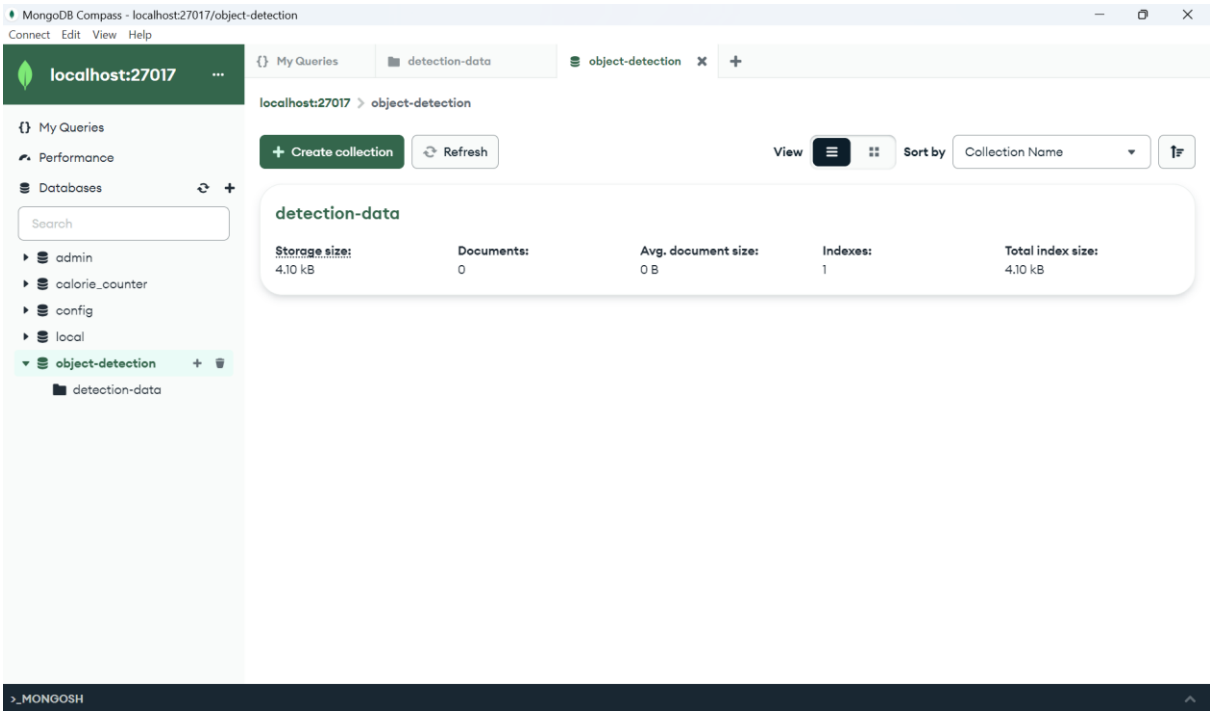
6. **Verifying MongoDB Installation:** I verified the MongoDB installation and version via the command prompt, ensuring that MongoDB commands can be executed from any directory. This is because when the bin directory of MongoDB is added to the Path variable, users can run executables from the terminal directly without changing the “working directory”.



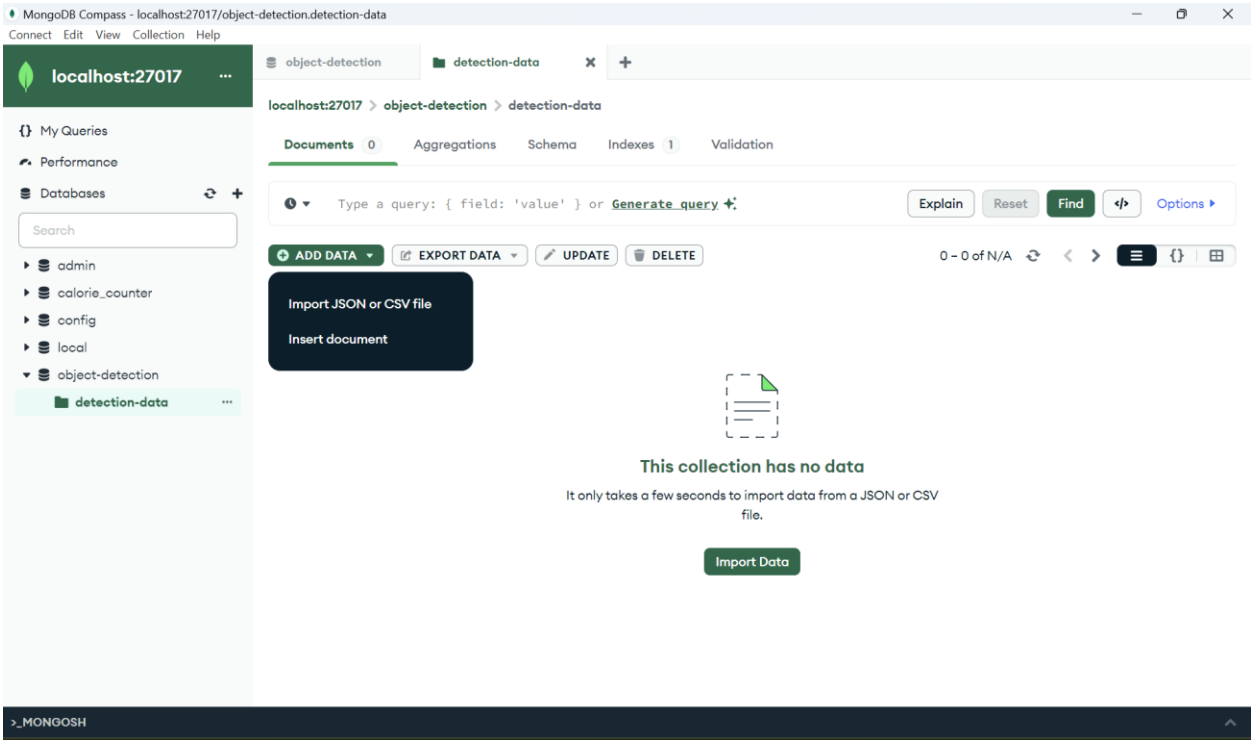
7. **Connecting to MongoDB via Compass:** I used the default connection string URL in MongoDB Compass to connect to the MongoDB server.
8. **Creating a New Database:** To create a new database, click on ‘Create Database’ and name it ‘object-detection’. Name the collection - ‘detection-data’.



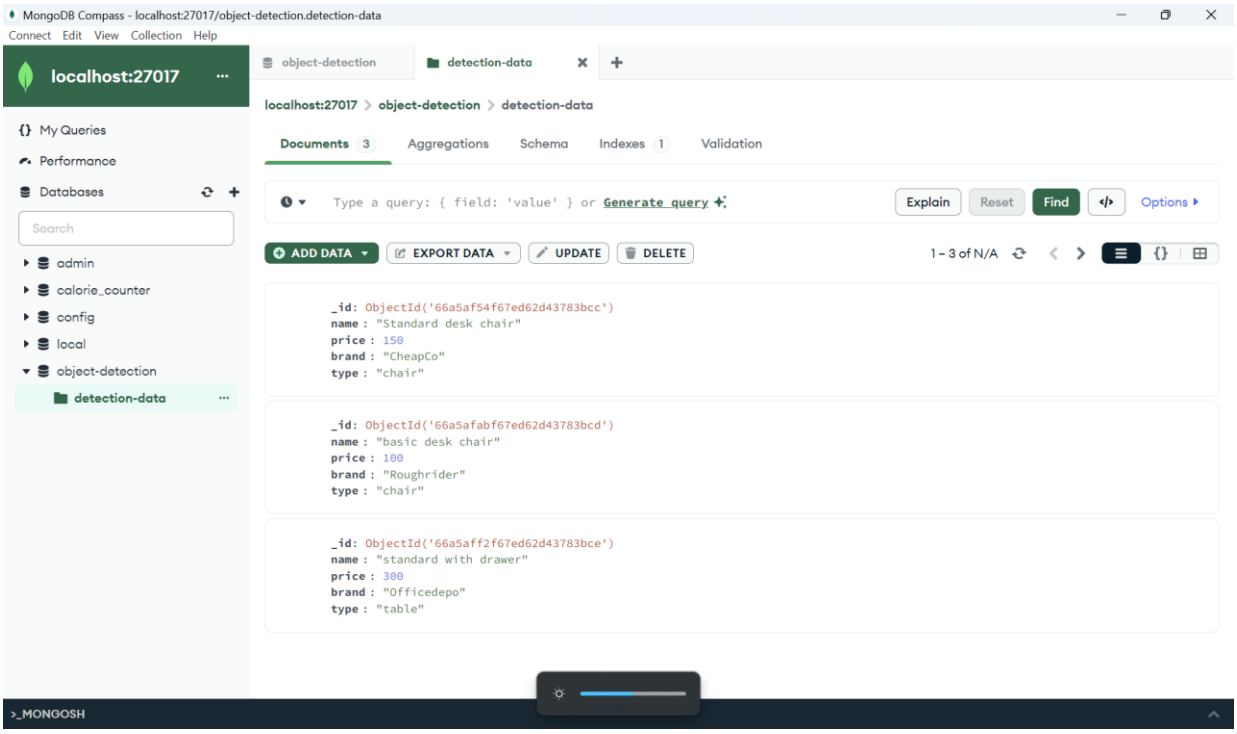
9. **Database Creation Confirmation:** The newly created database was successfully displayed in MongoDB Compass.



10. **Adding New Data:** To add new data, click on ‘Add data’ and go to inset document to manually add the data.

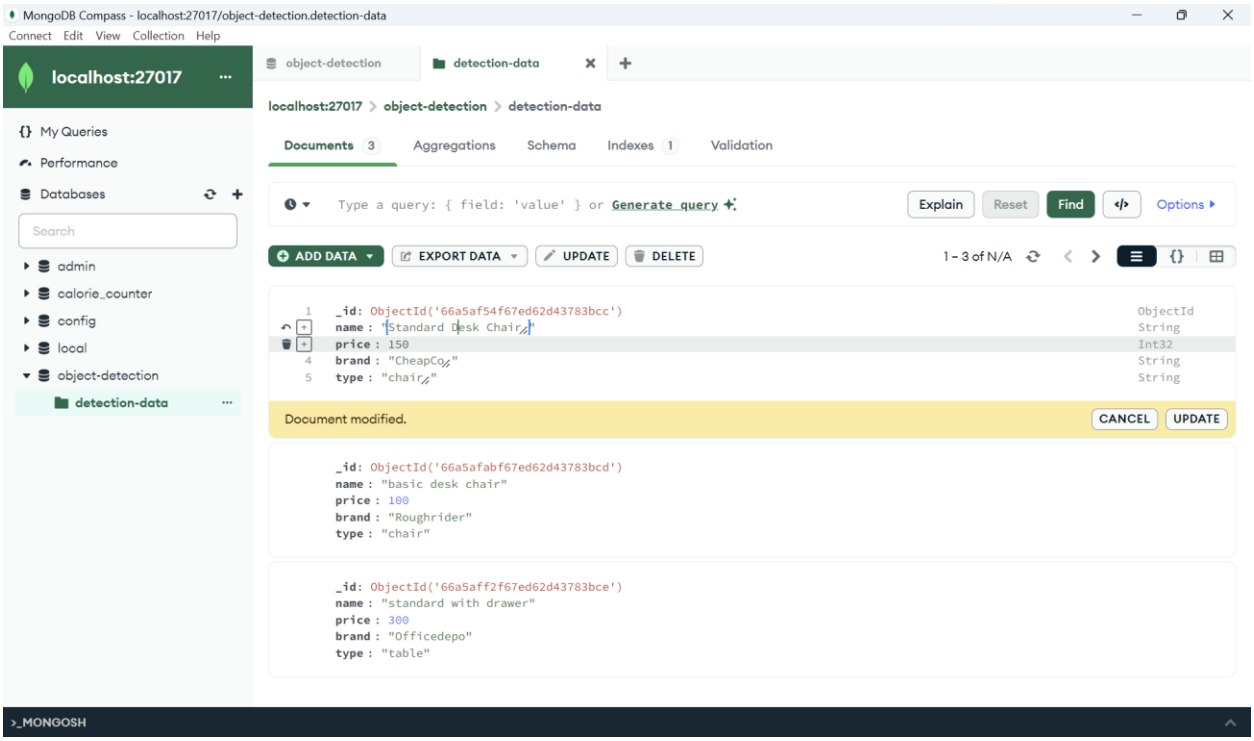


11. Insert the data and several other documents as shown in the screenshot below. The data is stored in JSON format.

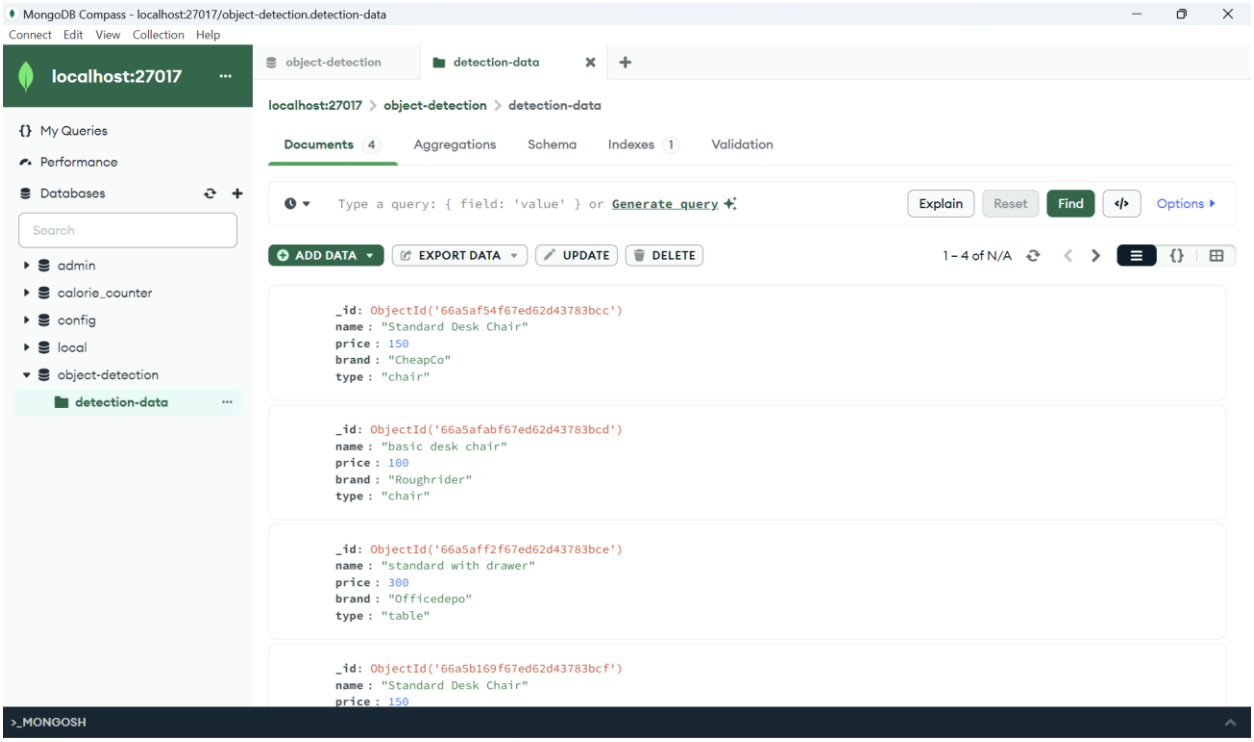


12. CRUD operations in MongoDB:

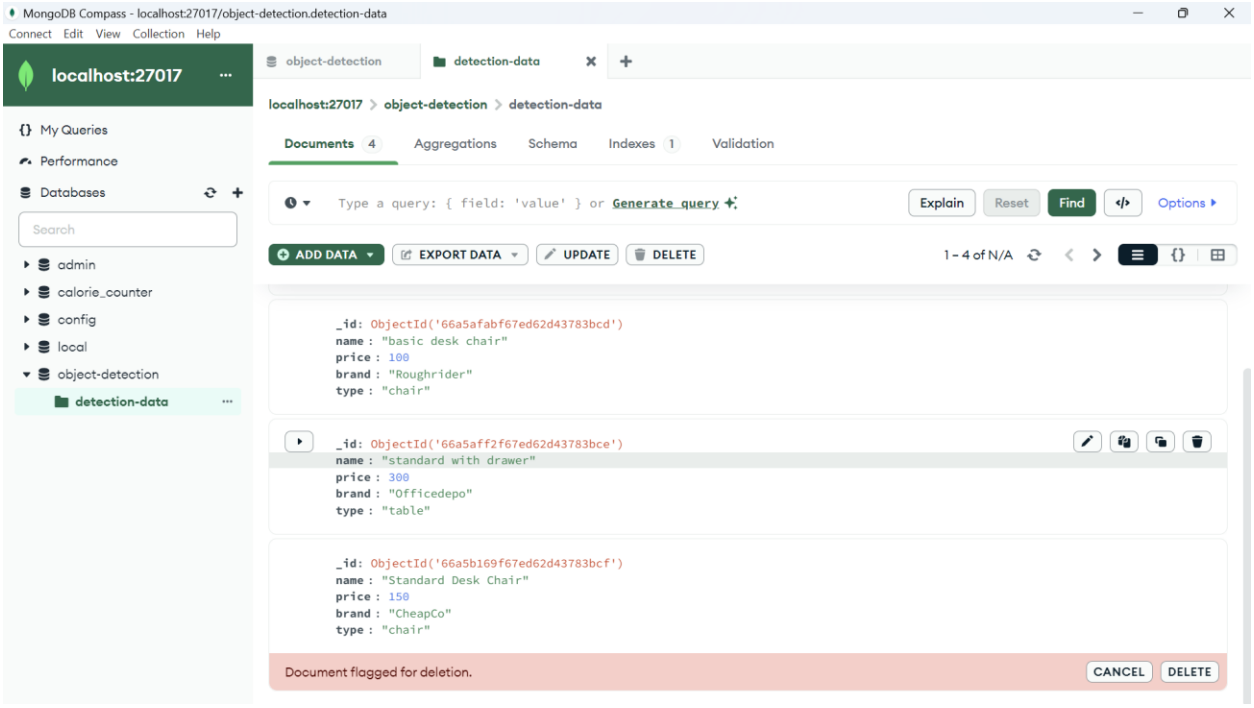
a. **Edit/Update:** Once the documents are created, they can be edited or updated using the first symbol shown on the right-hand side as shown below. I updated the name of the document by capitalizing all the words.



b. **Copy the document:** The second option on the right is to copy a document. This feature could be used to copy the document and paste it in any other editors.
c. **Cloning the document:** The third option is to clone a document. I cloned the first document and noticed that the id of the cloned document is different from the one it is cloned from. This shows that each document is uniquely identifiable with a unique id.

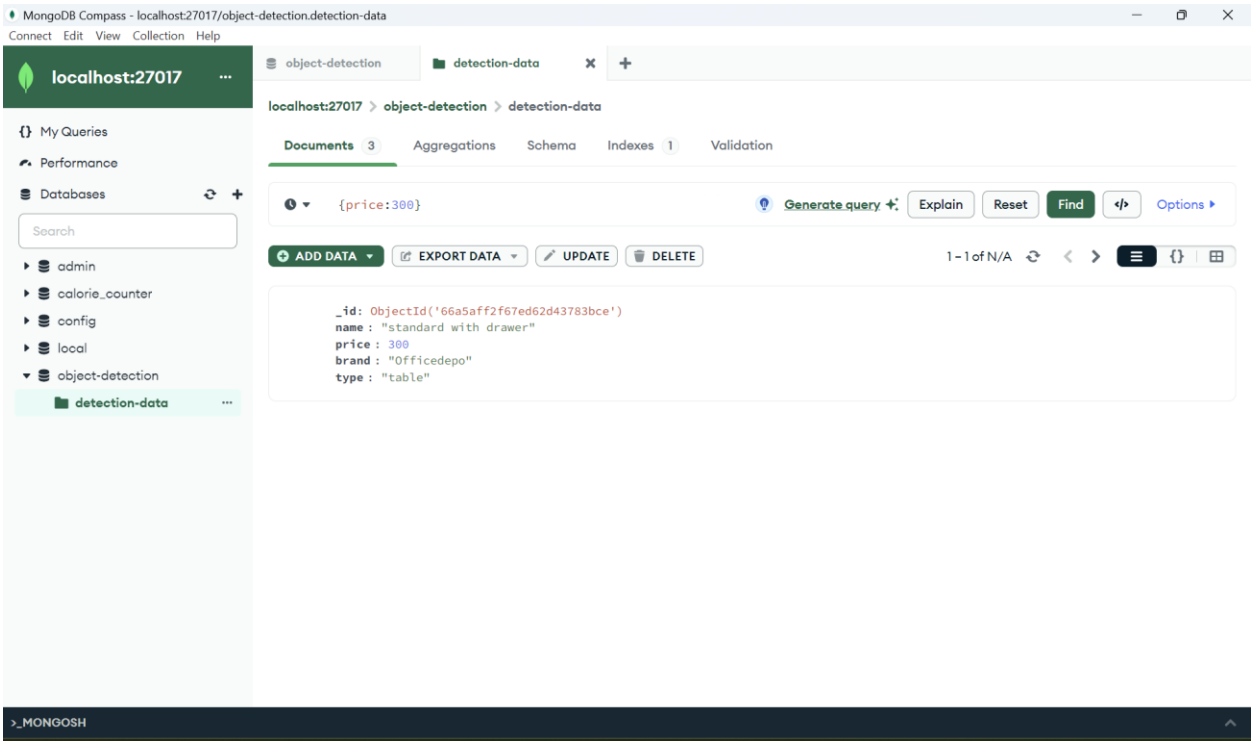


d. **Deletion of the document:** The fourth option is to delete a document. Using this feature, I deleted the document I cloned before.

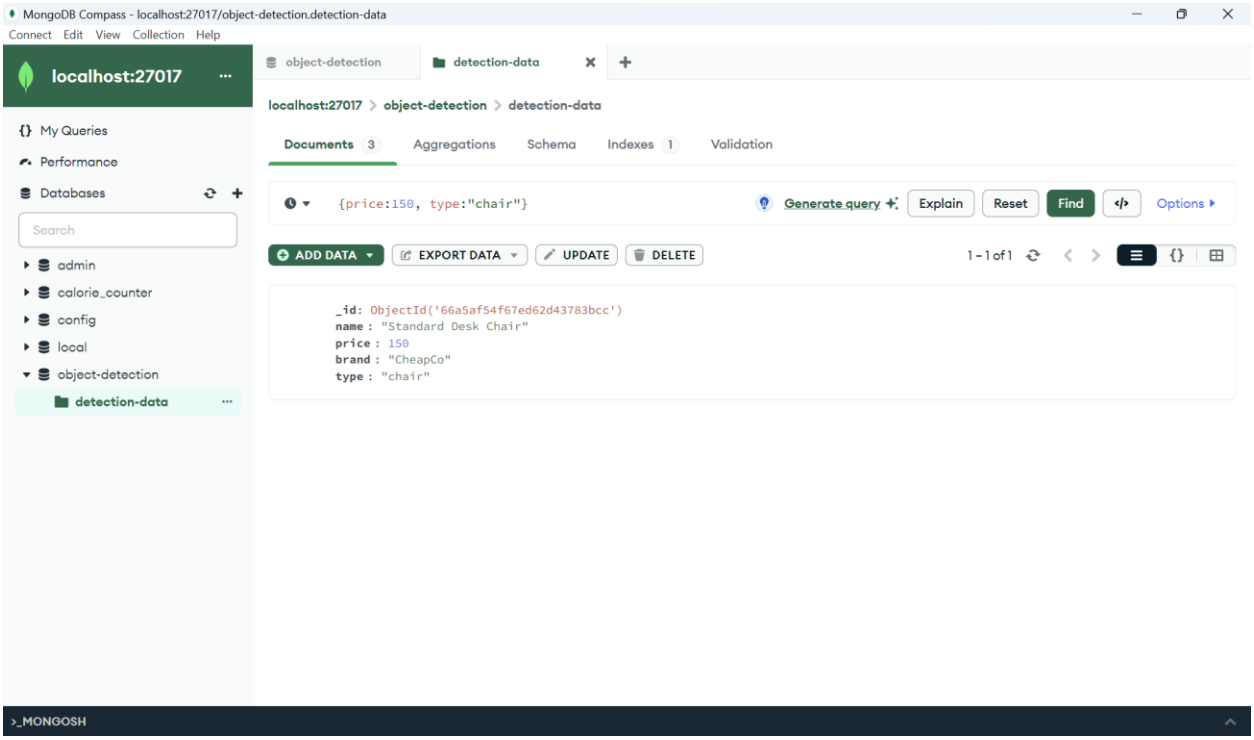


13. Querying in MongoDB:

a. Single Parameter Query: To query, I filtered for “price: 300”. This returns the result where the price = 300. If it doesn’t exist, then it returns nothing.



b. Multiple Parameters Query: I searched for two parameters, namely: price = 300 and type = chair. This returns the document the one matching both the parameters, as shown below.



Conclusion:

1. I successfully installed MongoDB Community Server and MongoDB Compass.
2. I configured MongoDB to run as a Network Service user for built-in service account management.
3. I added MongoDB\bin to the system PATH variable to enable command execution from any directory.
4. I connected to MongoDB via MongoDB Compass using the default connection string URL.
5. I created a database and collection. Manually added data to the collection in JSON format using MongoDB Compass.
6. I performed CRUD operations:
    a. Edited a document by capitalizing all words in its name.
    b. Copied a document to an external text editor.
    c. Cloned a document, observing the unique ID assignment for the cloned document.
    d. Deleted a cloned document using the deletion feature.
7. I executed queries to filter documents based on specific parameters:

    a. Queried for documents with a price of 300.
    b. Queried for documents with both a price of 300 and type of chair.
8. I successfully imported and exported collections using MongoDB Compass.
9. Through this homework, I learned to perform data insertion, editing, cloning, and deletion within MongoDB. I developed an understanding of MongoDB query operations for data retrieval.
10. I developed skills in database setup and configuration, including service account management and environment variable configuration.
11. Overall, I gained hands-on experience with MongoDB, improving my capability in database management and operations.