Southern New Hampshire University

CS-340: Assignment 1-3: Module 1 Journal

Prepared on: September 6, 2025
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Contents

1 Introduction

This writeup documents the tasks that I was able to perform for assignment 1-3 (CS-340, n.d.). The second section discusses the problem set, what I have done to perform tasks in accordance with the assignment guidelines, and demonstrations in the form of a screenshot, produced in an appendix, are depicted as evidence of my completion of the tasks.

To ensure that the screenshots are this student's original work, I have included my username (located in the top-right corner of the virtual lab),

and in some of the demonstrations, I put in comments along the lines of "Alexander Ahmann has logged into the system" or "Aleksey was here" as another piece of evidence to demonstrate originality.

1.1 List of figures and their relation to given tasks

- *Figure 1* depicts the results of myself simply logging into the *Codio* lab, in accordance with the directive: "Begin by logging into the Virtual Lab (Codio) and accessing the terminal application. Use the Mongo in Codio (Virtual Lab) Tutorial to help with this task." (CS-340, n.d.)
- *Figure 2* depicts the results of myself interacting with the *MongoDB* instance through the `mongosh` shell, in accordance with the directive: "Execute the mongo command to start the mongo shell." (CS-340, n.d.)
- *Figure 3* depicts the results of importing the `enron` dataset into the *MongoDB* instance, in accordance with the directive: "Load the database by executing the following at the Linux command line in the terminal you opened." (CS-340, n.d.)
- *Figures 4, 5, and 6* depict the results of my initial assessment of `enron`'s `emails` collection, in accordance with the directive "Retrieve a document from the collection." (CS-340, n.d.)
- *Figure 7* depicts the results of getting the "bson size" of an arbitrary document in the `emails` collection, in accordance with the directive: "Execute the command to find the size of a single document." (CS-340, n.d.)
- *Figure 8* depicts the results of getting the "bson size" of all documents in the `emails` collection, in accordance with the directive "Execute the command to find the size of the collection of documents." (CS-340, n.d.)

2 Problem Set

2.1 Q1: Logging into the Virtual Environment

The given task is as follows:

> "*Begin by logging into the Virtual Lab (Codio) and accessing the terminal application. Use the Mongo in Codio (Virtual Lab) Tutorial to help with this task.*" — CS-340 (n.d.).

This task is fairly straightforward: the given tutorial[1] for logging into, and making use of, the virtual lab does a fine job explaining the procedure. Figure 1 depicts what was returned to me after logging into the *Codio* virtual environment.

2.2 Q2: Starting up MongoDB

The given task is as follows:

> "*First, you must verify access to the environment by starting up the mongo shell. Open the terminal application; this is open by default when you first access Codio. If you do not have it already open, you can open it by clicking Tools > Terminal from the Codio menu bar, which will bring up a Linux shell prompt.*

Like with the previous task, this one was pretty straightforward. Figure 2 depicts my results in starting up a *MongoDB* shell with the `mongodb` command.

2.3 Q3: Loading and Working with Datasets

This part is less straightforward, but nonetheless, I persisted. I started out by loading the `enron` database[2] to the mongodb instance with the following command:

```
mongoimport --db enron --collection
  emails --drop ./enron.json
```

I then logged into the MongoDB instance with the `mongosh` command, and proceeded to switch to the `enron` database context — this being depicted in figure 4. I then dumped a sample of an `enron` document with the command `db.emails.findOne()` — this being depicted in figures 5 and 6.[3]

[1] CS-340 (n.d.). *CS 340 Mongo in Codio (Virtual Lab) Tutorial.*

[2] In accordance with the following directive: "Load the database by executing the following at the Linux command line." (CS-340, n.d.)

[3] Based on the following directive: "Execute the command to find the size of a single document" and the specific instructions to run the following commands in the `mongosh` shell:

```
show dbs
use enron
show collections
db.emails.findOne()
```

I then proceeded to gather basic statistics regarding the "bson size" of each of the documents in the `emails` collection.[4] I started small with a single document, and then advanced to list the "bson sizes" of all the documents in the `emails` collection:[5]

- Regarding the "bson size" of a single, arbitrary document in the collection, I used the `Object.bsonSize()` method,[6] like so:

  ```
  Object.bsonsize(db.enron.findOne())
  ```

  The results are depicted in figure 7.

- To get the "bson size" for all documents in the `emails` collection,[7] I used the `$bsonSize` operator like so:

  ```
  db.emails.aggregate([
    {
      $project: {
        "rootSize": { $sum: { $bsonSize: "$$ROOT" } }
      }
    }
  ])
  ```

  The results are depicted in figure 8.

References

CS-340 (n.d.). *CS-340 Module One Assignment Guidelines and Rubric.*

[4]But first, to make things work properly, I had to activate compatabiliy with legacy MongoDB versions by executing the following command in the shell: `snippet install mongocompat`.

[5]I referenced the following article when doing this task: "Ian" (Jun. 14, 2021). *2 Ways to Get a Document's Size in MongoDB.* "Database.Guide". Retrieved on Sept. 5, 2025 from: https://database.guide/2-ways-to-get-a-documents-size-in-mongodb/

[6]When I ran into problems with this command, I referenced the following resource to debug the issue: "user1949763" (Mar 4, 2014). *How to get the size of single document in Mongodb?.* StackOverflow. Retrieved on Sept. 5, 2025 from: https://stackoverflow.com/questions/22008822/how-to-get-the-size-of-single-document-in-mongodb

[7]In accordance with the directive: "Execute the command to find the size of the collection of documents."

A Appendix: Figures, Graphics and Charts

A.1 Figure 1: Logging into the virtual environment

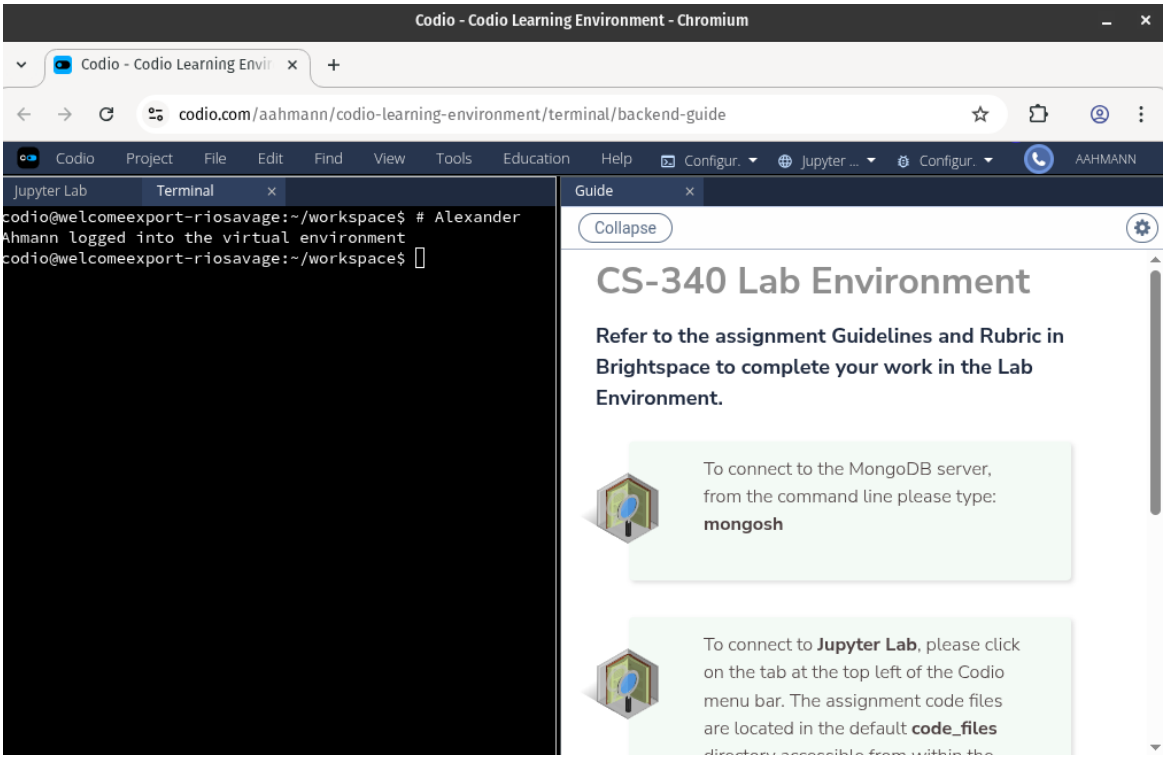

Figure 1: Logging into the virtual environment.

A.2 Figure 2: Starting up the *MongoDB* shell

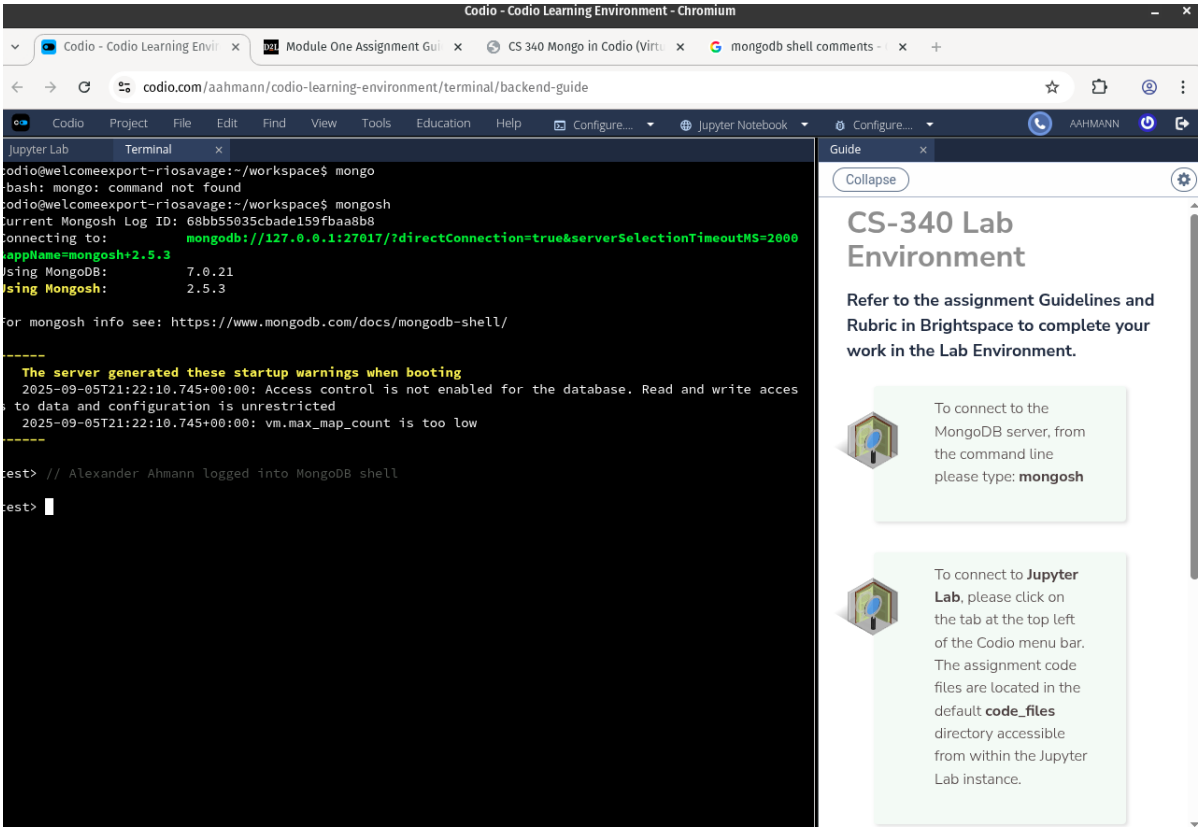

Figure 2: Starting up the *MongoDB* shell.

A.3 Figure 3: Importing the `enron` dataset

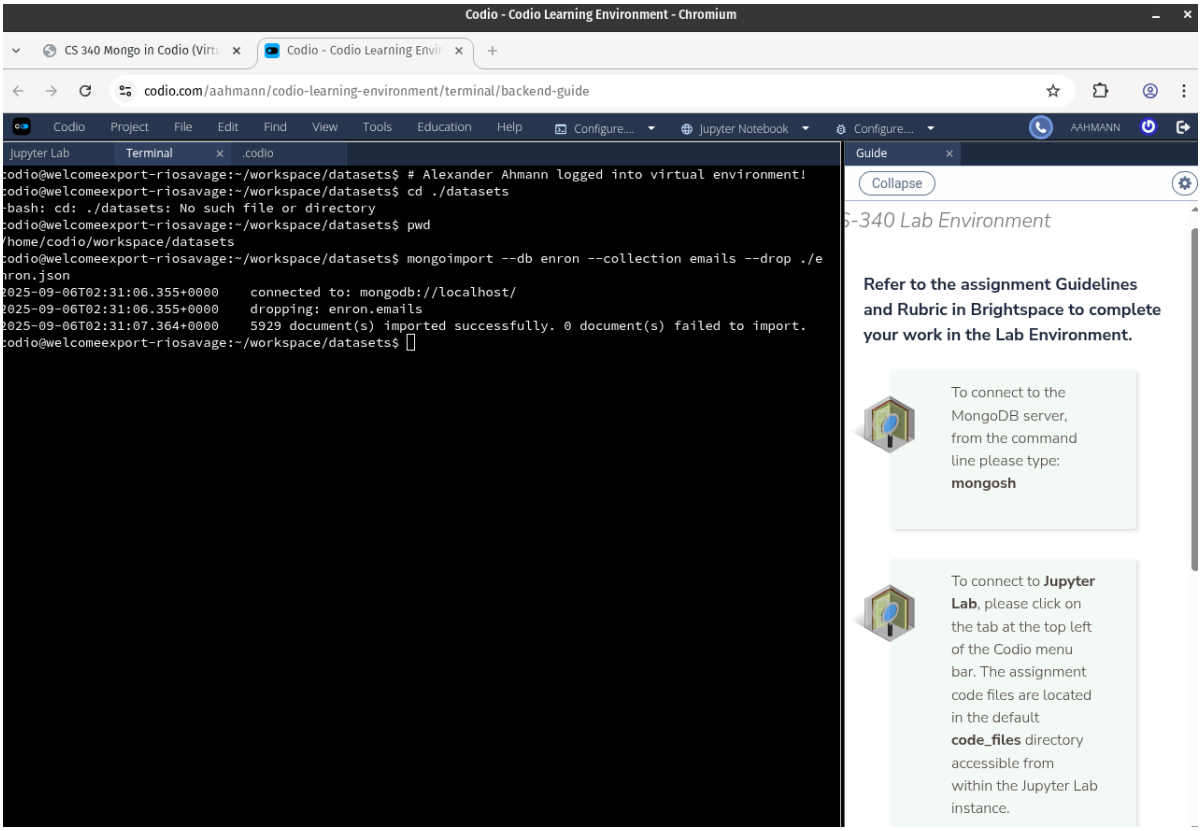

Figure 3: Importing the `enron` dataset.

A.4 Figures 4, 5, and 6— Regarding the Initial Assessment of `enron` the database

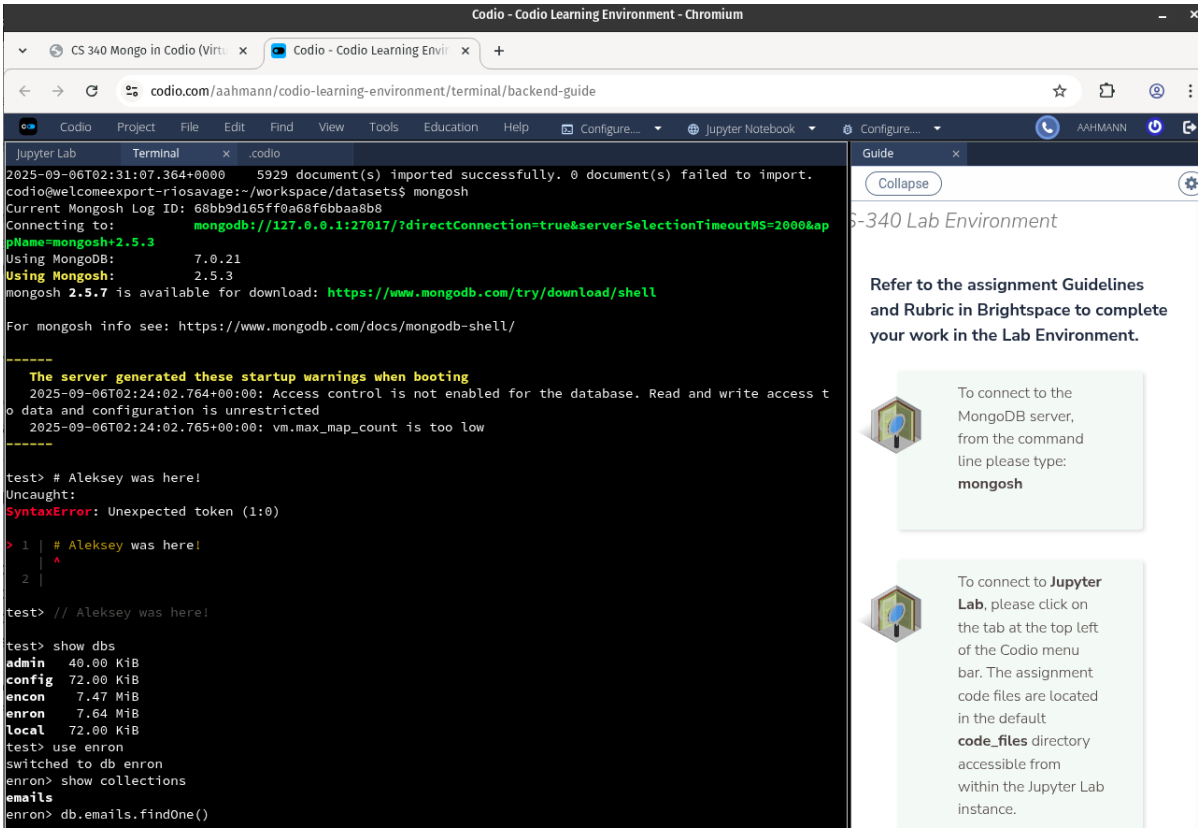

Figure 4: Logging into the shell and switching to the `Enron` database.

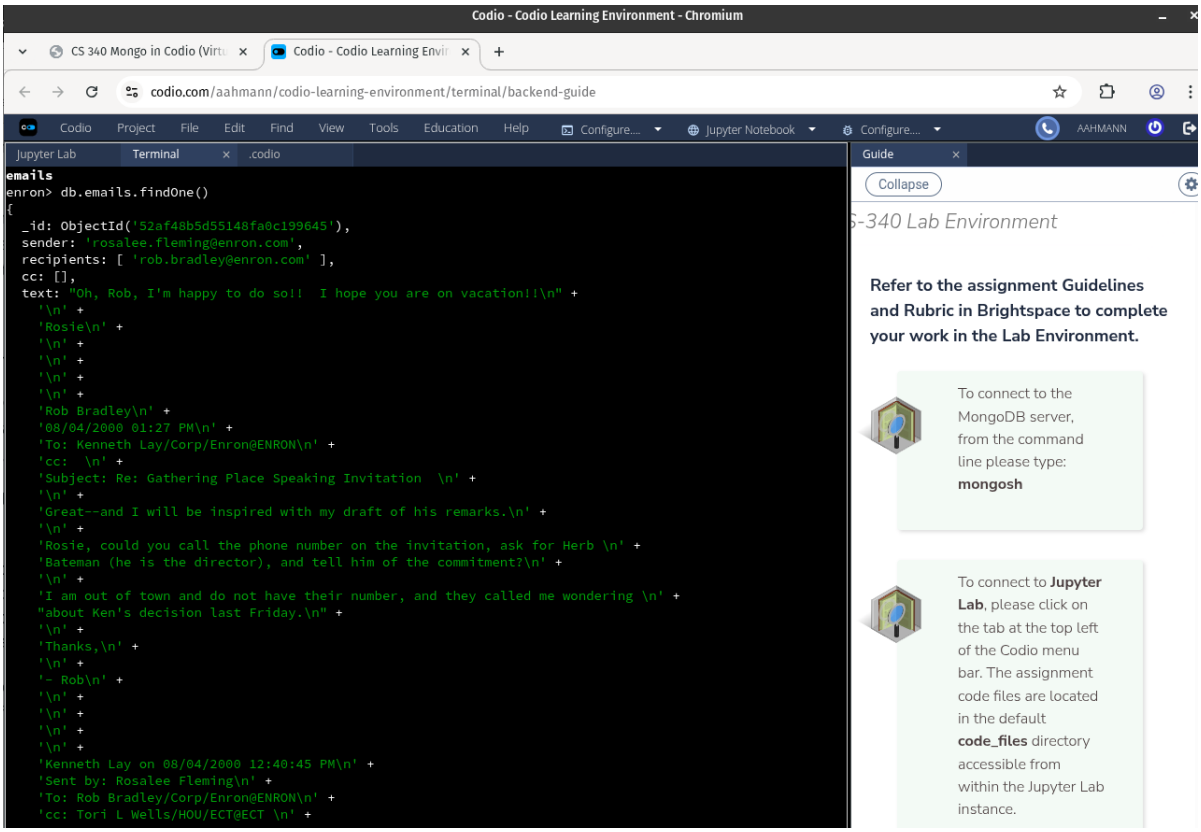

Figure 5: Sample of `enron` email.

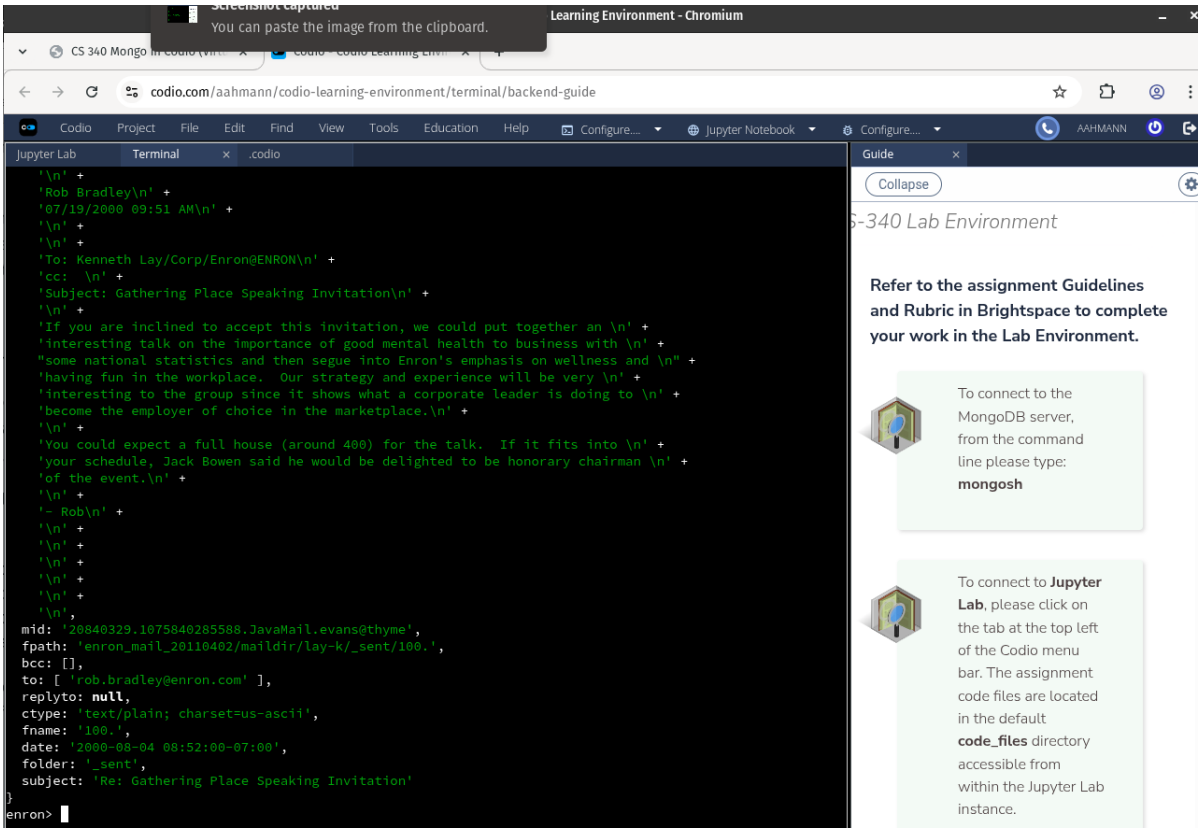

Figure 6: Sample of `enron` email (continued).

A.5 Figure 7: Application of `Object.bsonsize` to get the document size of an arbitrary item in the `emails` collection

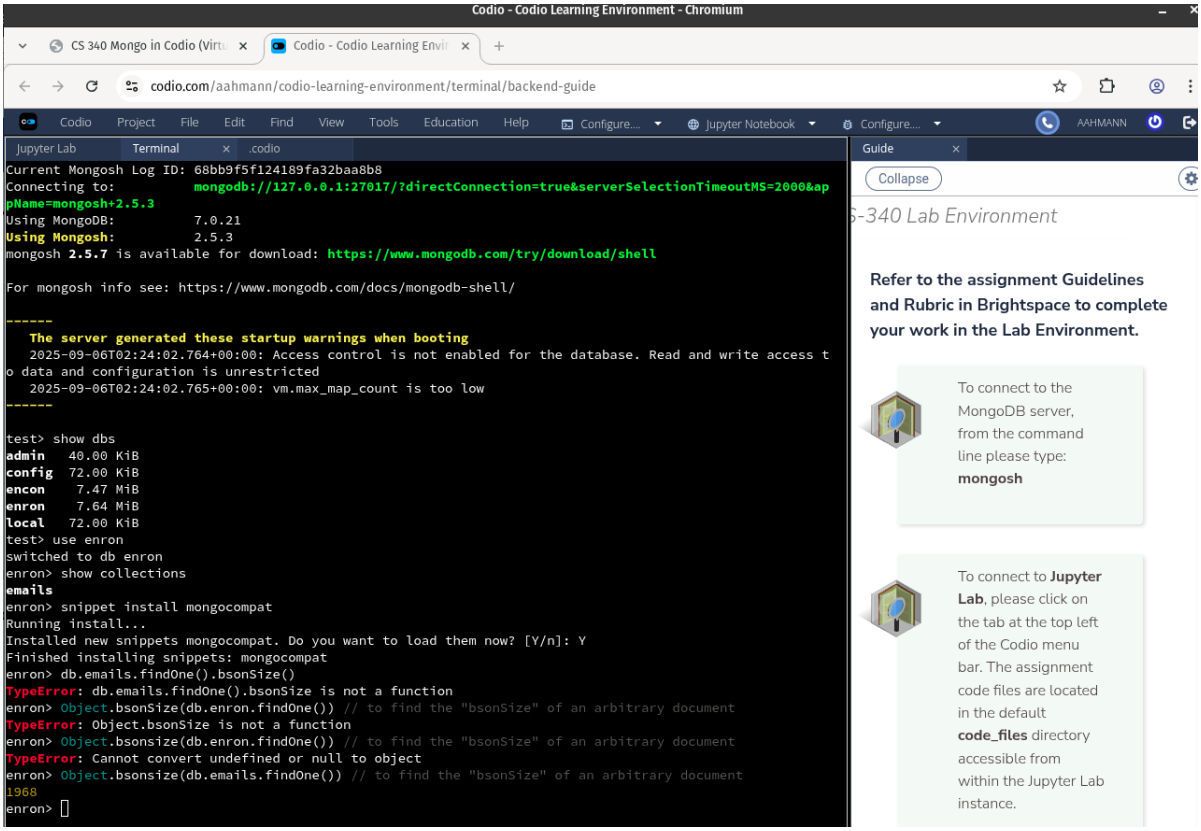

Figure 7: Application of `Object.bsonsize` to get the document size of an arbitrary item in the `emails` collection.

A.6 Figure 8: Application of `$bsonSize` to get the document size of all items in the `emails` collection

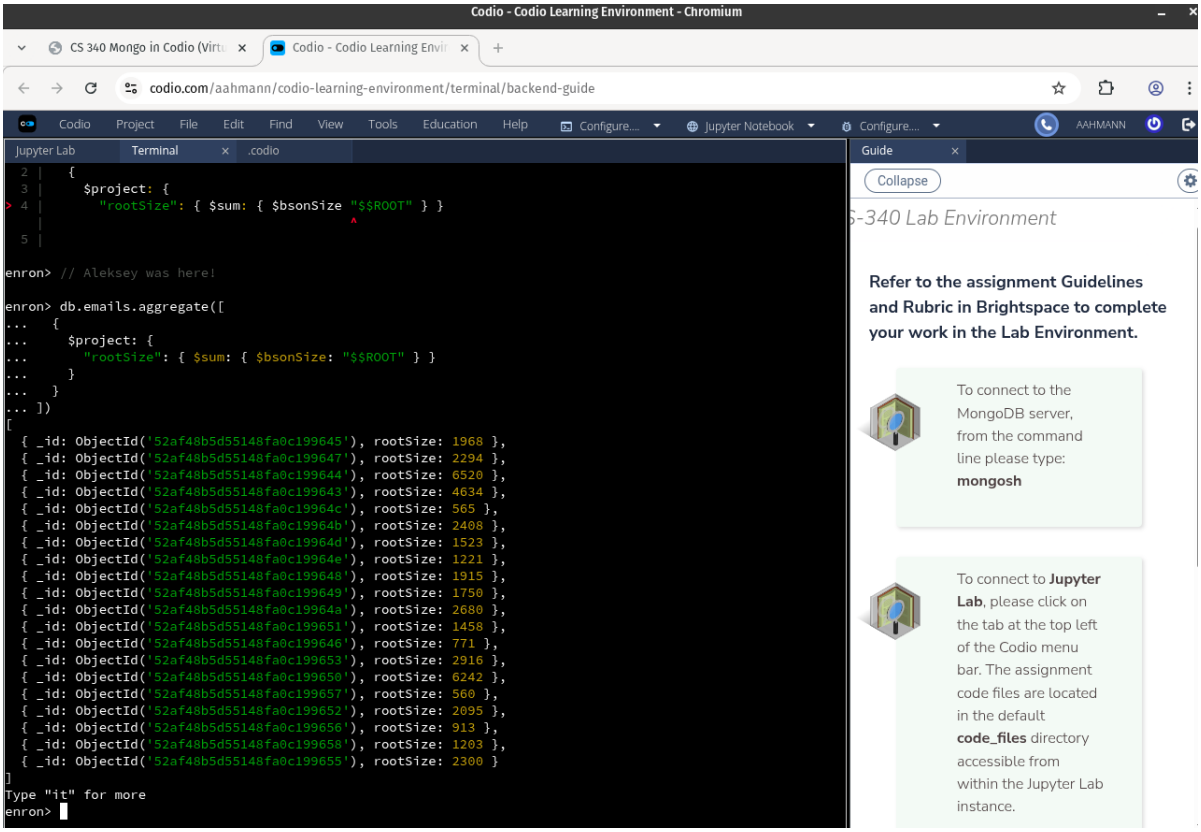

Figure 8: Application of `$bsonSize` to get the document size of all items in the `emails` collection.