Assignment-4

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ASSIGNMENT 4

1. **Recall our study of XML. Referencing your notes, look back at the section, how to Use, and study the Books.xml data set. Rewrite the data definitions using JSON and write a detailed, step-by-step explanation of how you completed the task.**

Answer:

An XML file is a type of data file that contains hierarchical parts. Custom tags, which specify the type of element, can be used by computer systems to access data stored in XML files.

XML is used in many aspects of web development.and often used to separate data from presentation.

The root element is “catalog”. Under the root element we have 12 child elements “book” and corresponding to the further child elements

Book.xml

```
<?xml  version="1.0"  encoding="UTF-8"?>

<bookstore>

<book  category="COOKING">
<title  lang="en">Everyday  Italian</title>
<author>Giada  De  Laurentiis</author>
<year>2005</year>
<price>30.00</price>
</book>

<book  category="CHILDREN">
<title  lang="en">Harry  Potter</title>
<author>J  K.  Rowling</author>
<year>2005</year>
```

```
<price>29.99</price>
</book>

<book category="WEB">
<title lang="en">XQuery Kick Start</title>
<author>James McGovern</author>
<author>Per Bothner</author>
<author>Kurt Cagle</author>
<author>James Linn</author>
<author>Vaidyanathan Nagarajan</author>
<year>2003</year>
<price>49.99</price>
</book>

<book category="WEB">
<title lang="en">Learning XML</title>
<author>Erik T. Ray</author>
<year>2003</year>
<price>39.95</price>
</book>
</bookstore>
```

- To open this xml file doc() function is used and the syntax is:

  doc("books.xml")

- To navigate through the elements in an XML document, XQuery uses path expressions as shown below

```
doc("books.xml")/bookstore/book/year
```

The above query returns following output:

```
<year>2005</year>

<year>2005</year>

<year>2003</year>

<year>2003</year>
```

Process to convert XML into JSON data

There are many ways to convert the XML data into JSON format like by using SQLServer, using C#, convert online and so on.

Here one of such process is explained to convert XML into JSON data with the help of console application in .NET using C# and the code related to this is as per below:

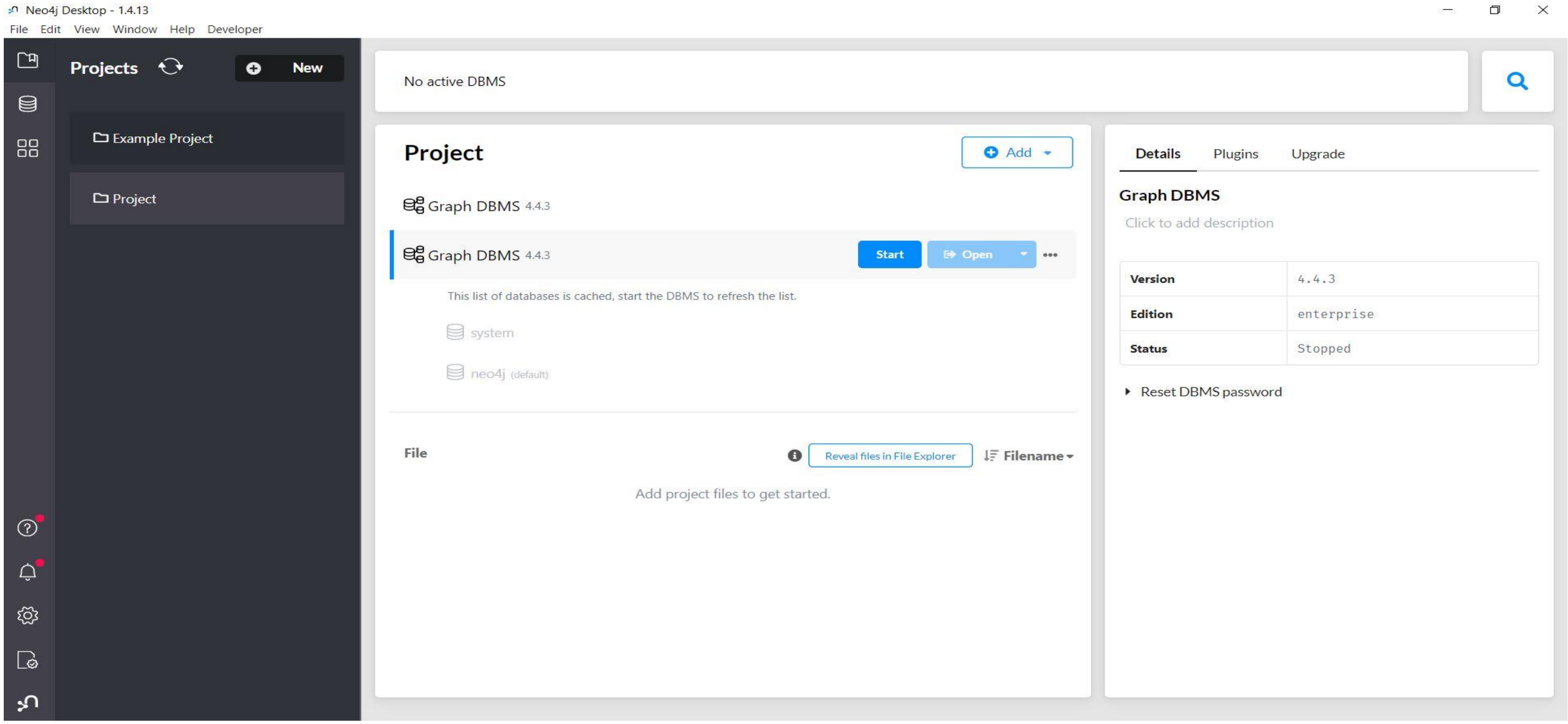
```
string xml = @""; //assign XML value here

XmlDocument doc = new XmlDocument(); doc.LoadXml(xml);

string json = JsonConvert.SerializeXmlNode(doc); Console.WriteLine(json);
```

The output of the above XML with this code is as below:

```
[
   {
      "@category": "COOKING", "title": {
         "@lang": "en",
         "#text": "Everyday Italian"
      },
      "author": "Giada De Laurentiis", "year": "2005",
      "price": "30.00"
   },
   {
      "@category": "CHILDREN", "title": {
         "@lang":  "en", "#text": "Harry Potter"
      },
      "author": "J K. Rowling",
      "year": "2005",
      "price": "29.99"
   },
   {
      "@category": "WEB", "title": {
         "@lang": "en",
         "#text": "XQuery Kick Start"
      },
      "author": [
         "James McGovern", "Per Bothner", "Kurt Cagle", "James Linn",
         "Vaidyanathan Nagarajan"
      ],
      "year": "2003",
      "price": "49.99"
   },
   {
      "@category": "WEB", "title": {
         "@lang":  "en", "#text": "Learning XML"
      },
      "author": "Erik T. Ray",
      "year": "2003",
      "price": "39.95"
   }
   ]
```

2.Continuing with the previous task, convert the books data set to a graph database. Write a detailed, a step-by-step explanation of how you completed the work.
Answer:

Step 1: Open the Neo4J and create a project which shows the active database.



No active DBMS

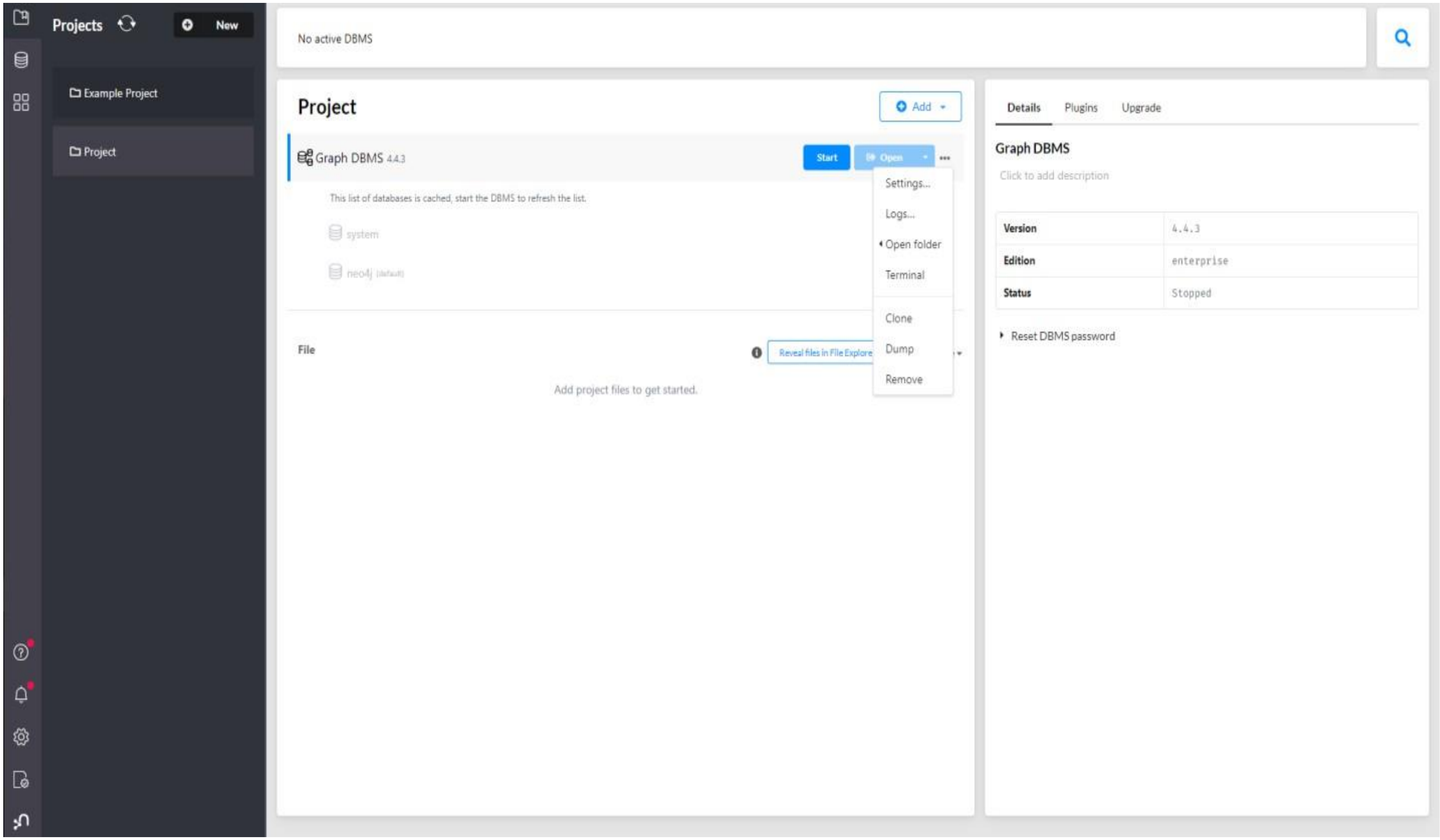
Project

This list of databases is cached, start the DBMS to refresh the list.

Add project files to get started.

Version	4.4.3
Edition	enterprise
Status	Stopped

Step 2: After that click on setting to add install APOC plug-in.

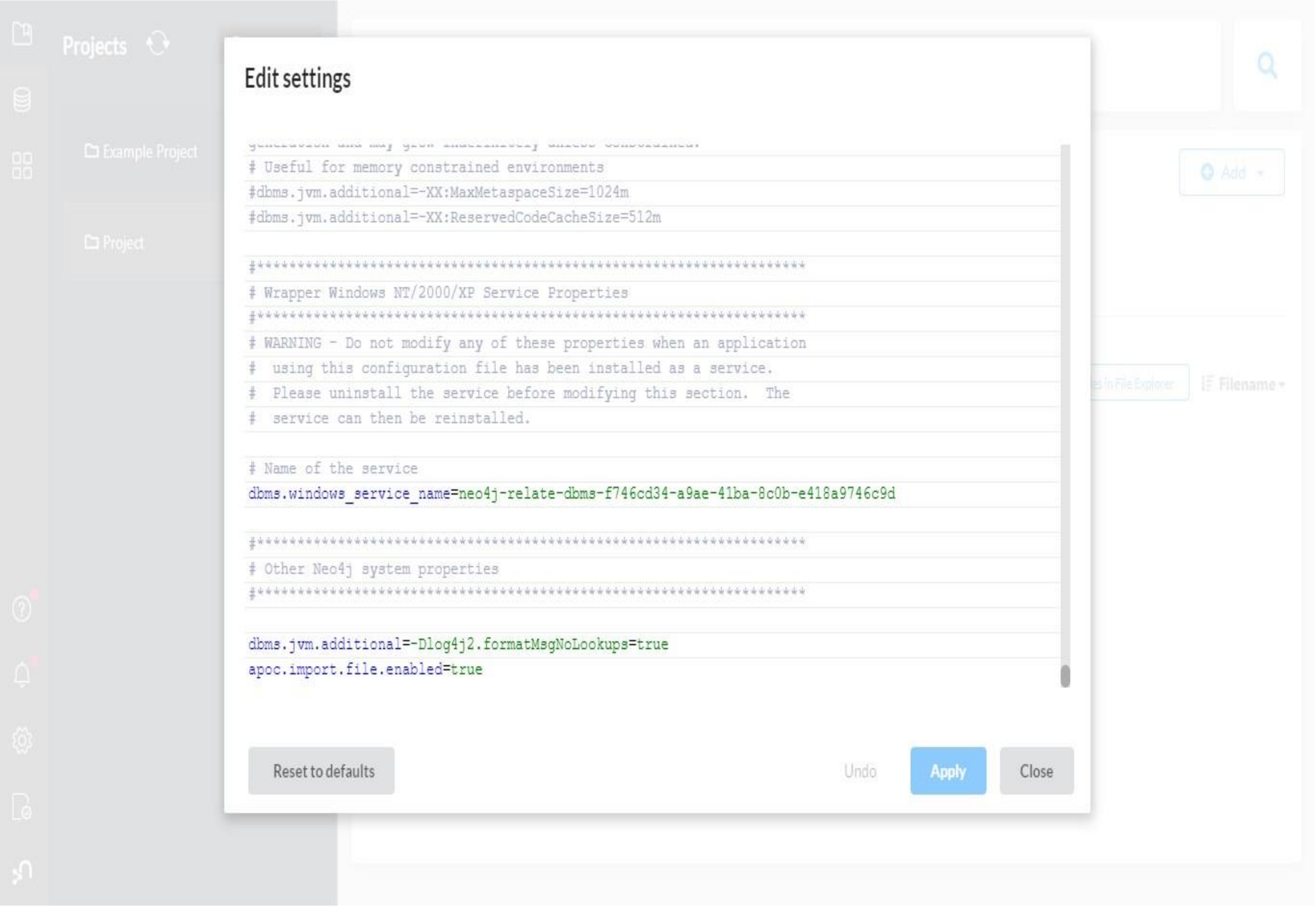


This list of databases is cached, start the DBMS to refresh the list.

Add project files to get started.

Version	4.4.3
Edition	enterprise
Status	Stopped

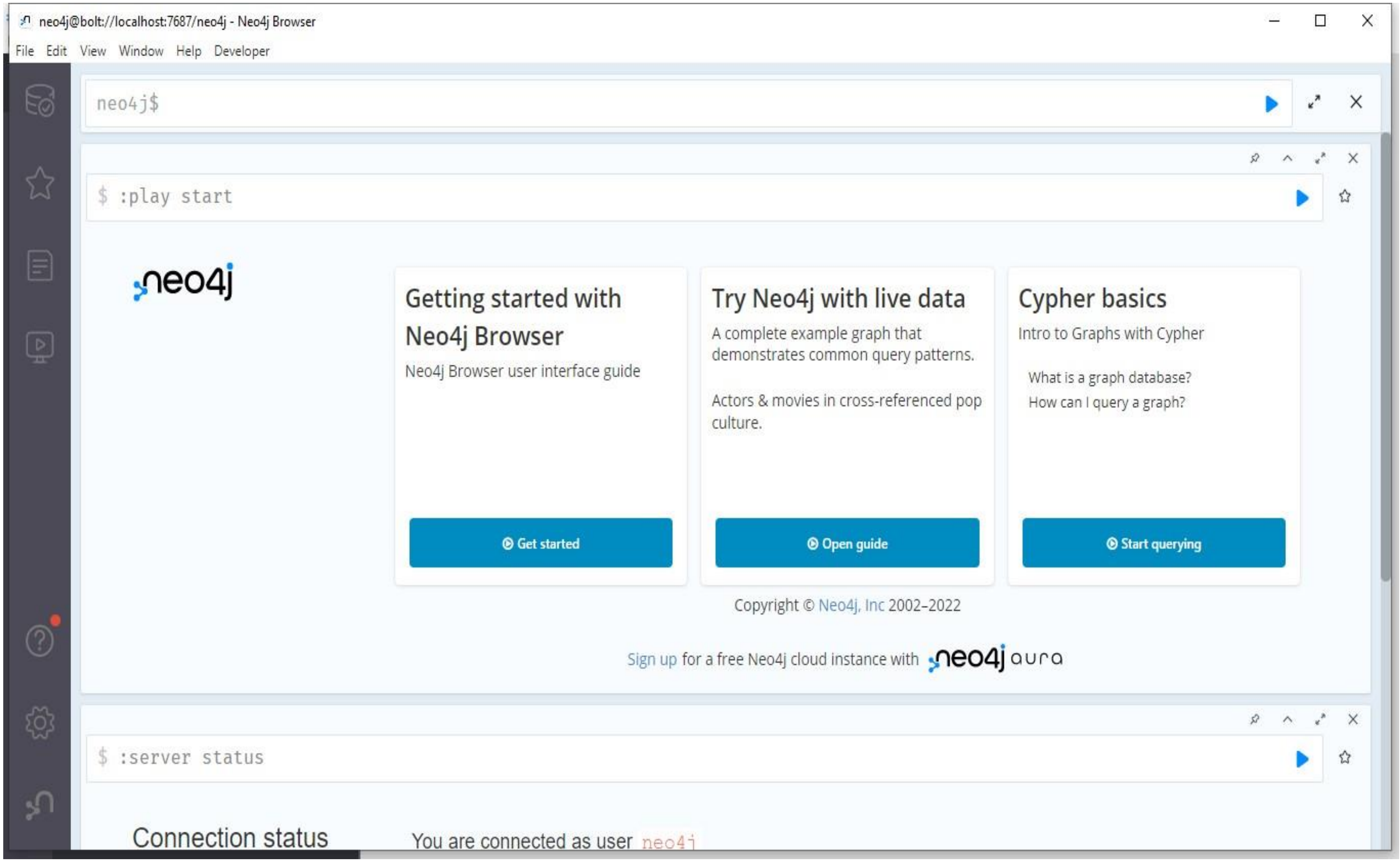
Step 3: Add **apoc.import.file.enabled=true** configuration to add files from the device.



Edit settings

```
generation and may grow indefinitely unless constrained.
# Useful for memory constrained environments
#dbms.jvm.additional=-XX:MaxMetaspaceSize=1024m
#dbms.jvm.additional=-XX:ReservedCodeCacheSize=512m

#*********************************************************************
# Wrapper Windows NT/2000/XP Service Properties
#*********************************************************************
# WARNING - Do not modify any of these properties when an application
#  using this configuration file has been installed as a service.
#  Please uninstall the service before modifying this section.  The
#  service can then be reinstalled.

# Name of the service
dbms.windows_service_name=neo4j-relate-dbms-f746cd34-a9ae-41ba-8c0b-e418a9746c9d

#*********************************************************************
# Other Neo4j system properties
#*********************************************************************

dbms.jvm.additional=-Dlog4j2.formatMsgNoLookups=true
apoc.import.file.enabled=true
```

Step 4: After that open the db with Neo4j browser.



neo4j@bolt://localhost:7687/neo4j - Neo4j Browser
File Edit View Window Help Developer
neo4j$

```
$ :play start
```

Getting started with Neo4j Browser

Neo4j Browser user interface guide

Try Neo4j with live data

A complete example graph that demonstrates common query patterns.

Actors & movies in cross-referenced pop culture.

Cypher basics

Intro to Graphs with Cypher

What is a graph database?
How can I query a graph?

Copyright © Neo4j, Inc 2002–2022

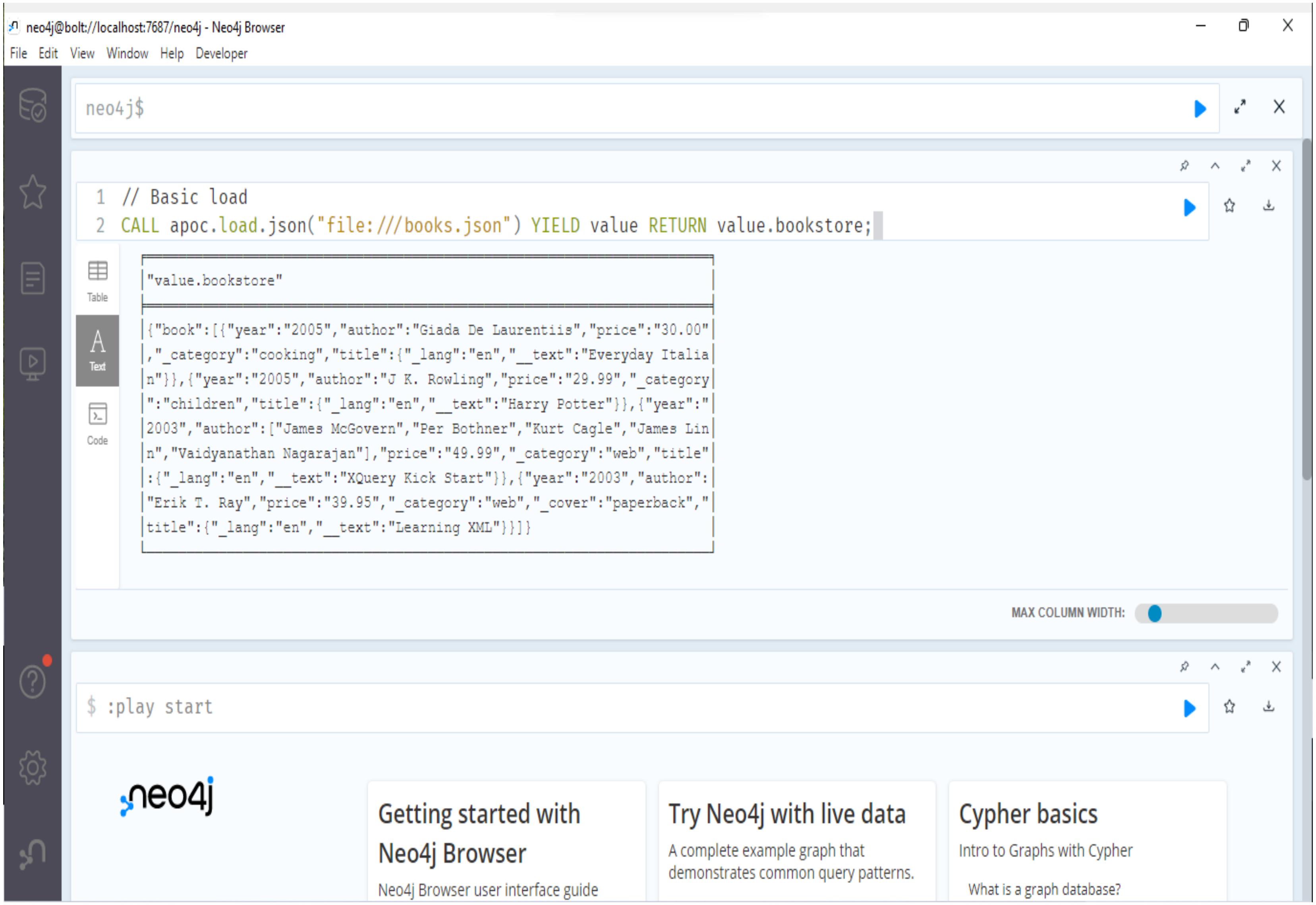
Sign up for a free Neo4j cloud instance with neo4j aura

```
$ :server status
```

Connection status

You are connected as user neo4j

Step 5: Use call function to load Book.json file as shown below.


neo4j@bolt://localhost:7687/neo4j - Neo4j Browser
File
Edit
View
Window
Help
Developer
Table
Text
Code
MAX COLUMN WIDTH:
Getting started with Neo4j Browser
Neo4j Browser user interface guide
Try Neo4j with live data
A complete example graph that demonstrates common query patterns.
Cypher basics
Intro to Graphs with Cypher
What is a graph database?

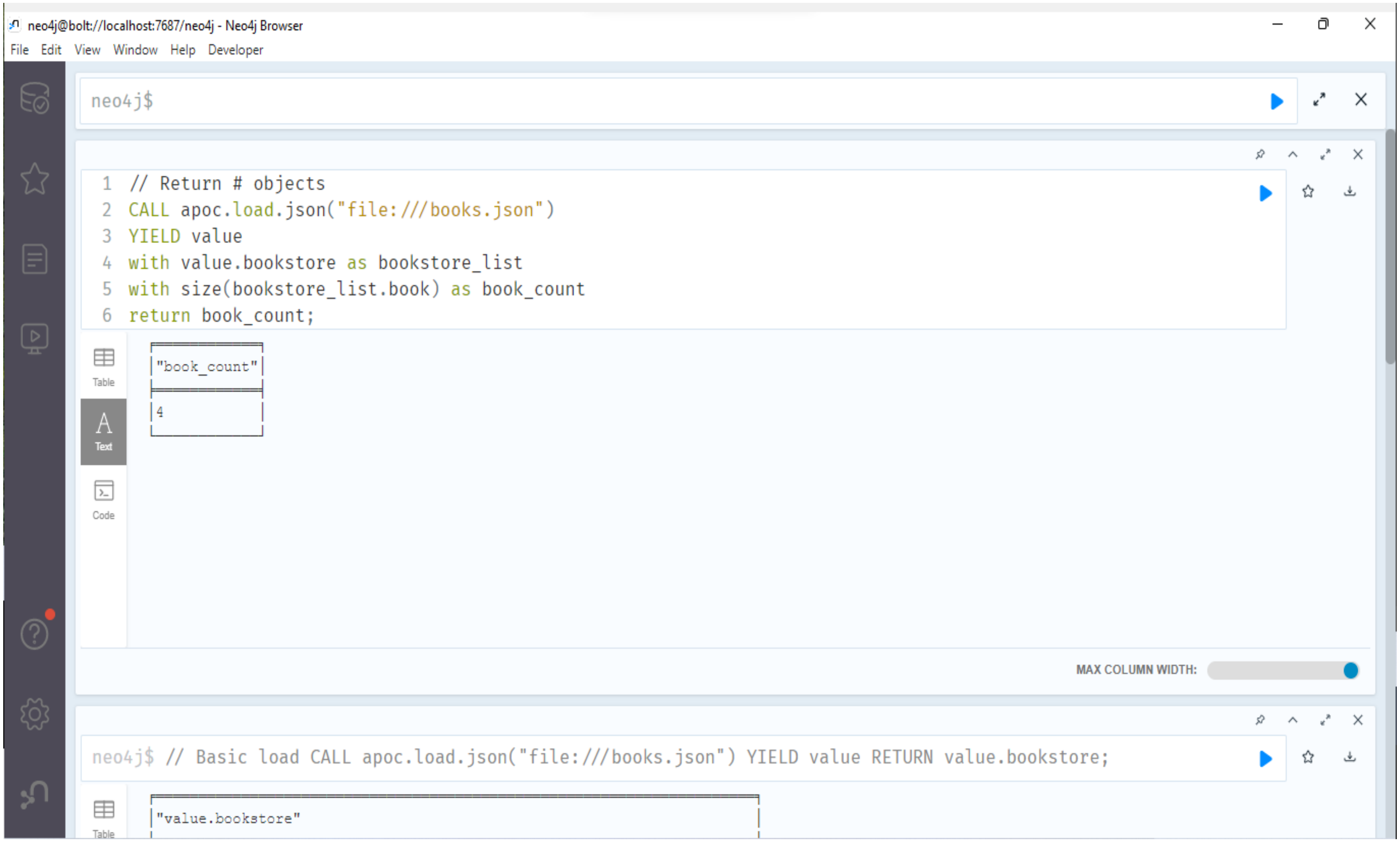
```
neo4j$
```

```
// Basic load
CALL apoc.load.json("file:///books.json") YIELD value RETURN value.bookstore;
```

```
╒════════════════════════════════════════════════════════════════════╕
│"value.bookstore"                                                   │
╞════════════════════════════════════════════════════════════════════╡
│{"book":[{"year":"2005","author":"Giada De Laurentiis","price":"30.00"│
│,"_category":"cooking","title":{"_lang":"en","__text":"Everyday Italia│
│n"}},{"year":"2005","author":"J K. Rowling","price":"29.99","_category│
│":"children","title":{"_lang":"en","__text":"Harry Potter"}},{"year":"│
│2003","author":["James McGovern","Per Bothner","Kurt Cagle","James Lin│
│n","Vaidyanathan Nagarajan"],"price":"49.99","_category":"web","title"│
│:{"_lang":"en","__text":"XQuery Kick Start"}},{"year":"2003","author":│
│"Erik T. Ray","price":"39.95","_category":"web","_cover":"paperback","│
│title":{"_lang":"en","__text":"Learning XML"}}]}                      │
└────────────────────────────────────────────────────────────────────┘
```

```
$ :play start
```

Step 6: After loading the JSON data, it will return the number of records in JSON


neo4j@bolt://localhost:7687/neo4j - Neo4j Browser
File Edit View Window Help Developer
neo4j$
Table
Text
Code
MAX COLUMN WIDTH:
Table

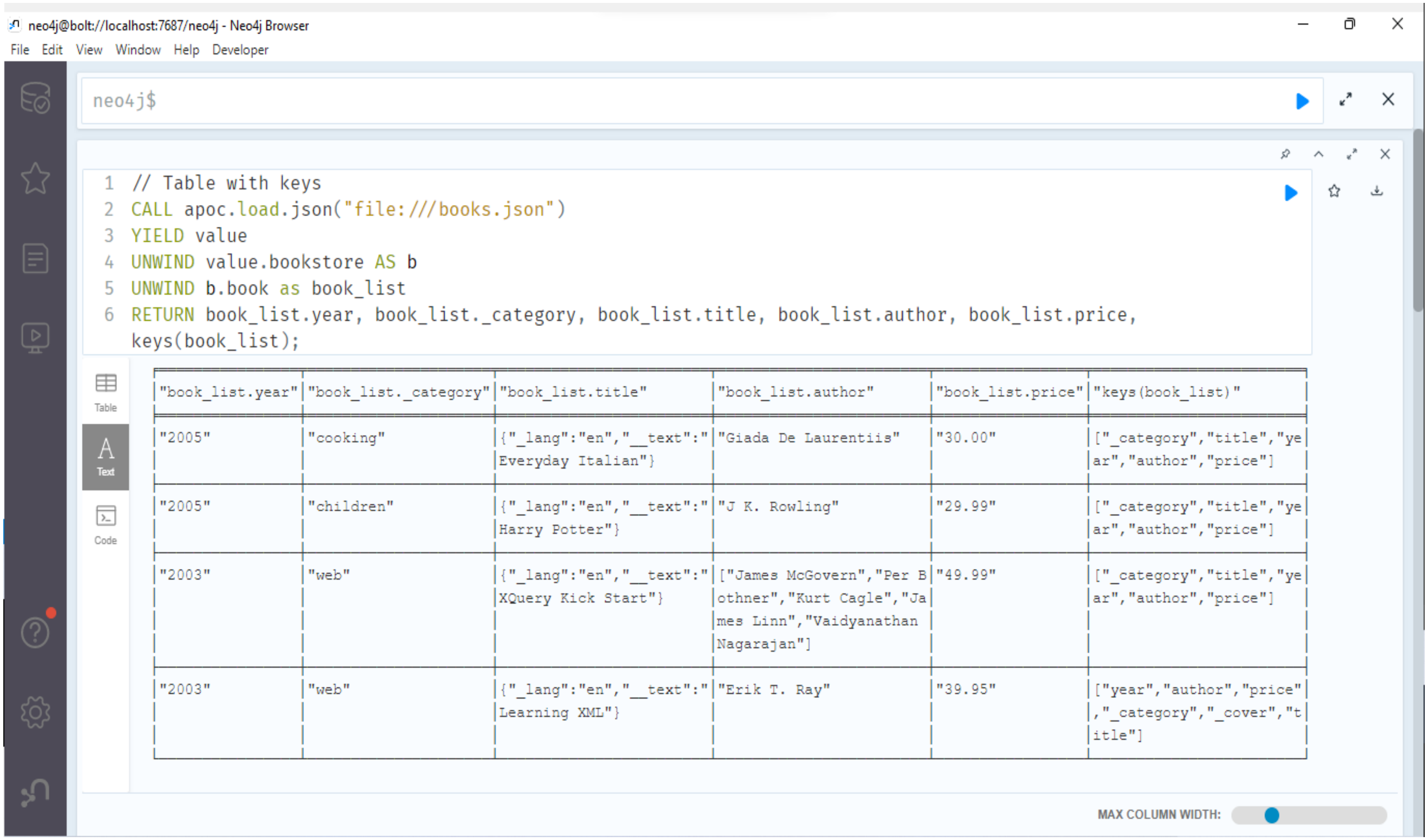
```
// Return # objects
CALL apoc.load.json("file:///books.json")
YIELD value
with value.bookstore as bookstore_list
with size(bookstore_list.book) as book_count
return book_count;
```

```
"book_count"
4
```

```
neo4j$ // Basic load CALL apoc.load.json("file:///books.json") YIELD value RETURN value.bookstore;
```

```
"value.bookstore"
```

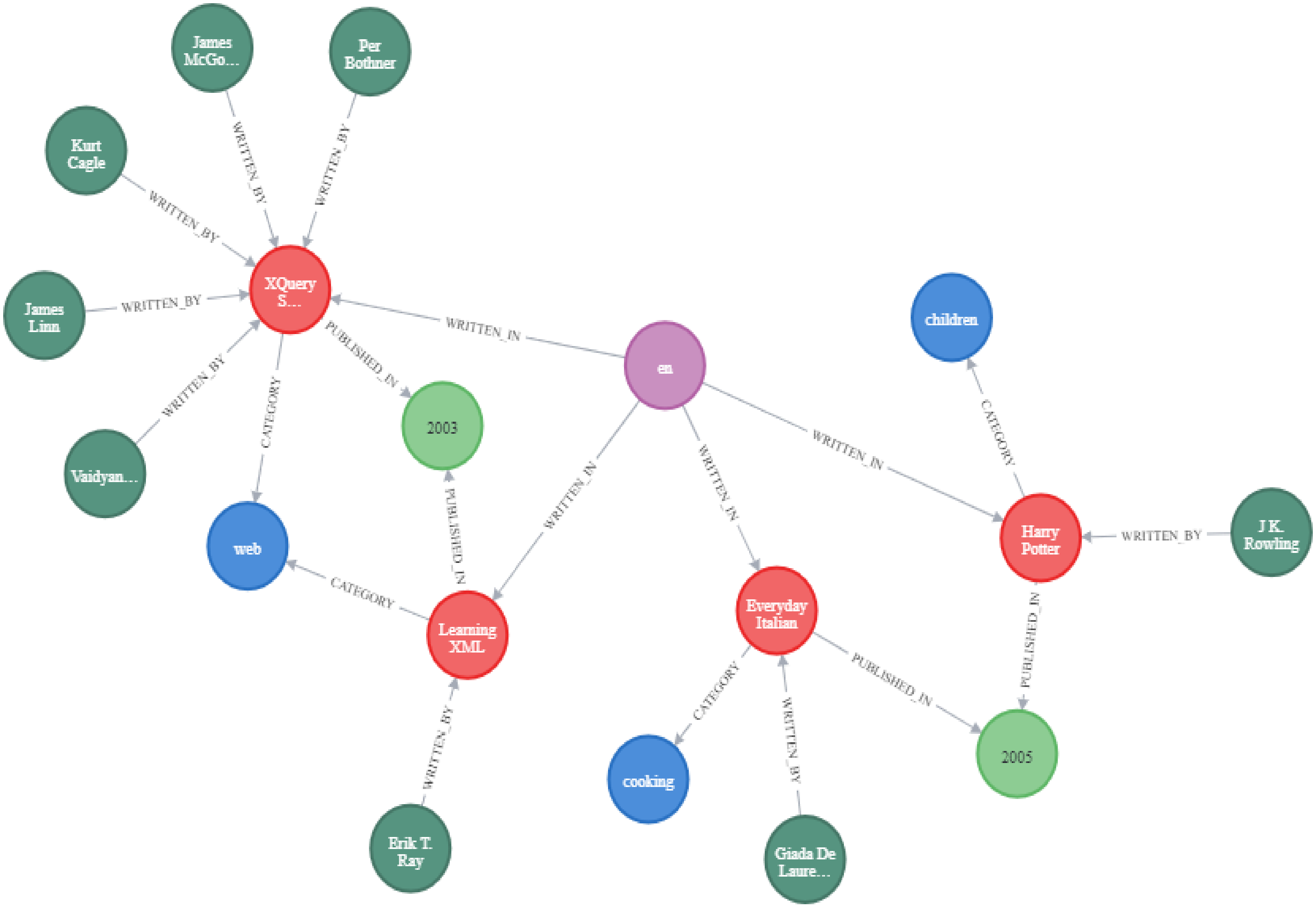
Step 7: To show he data we can return every record in table form



```
// Table with keys
CALL apoc.load.json("file:///books.json")
YIELD value
UNWIND value.bookstore AS b
UNWIND b.book as book_list
RETURN book_list.year, book_list._category, book_list.title, book_list.author, book_list.price,
keys(book_list);
```

```
╒════════════════╤════════════════════╤═════════════════════════╤═════════════════════════╤═════════════════╤═════════════════════════╕
│"book_list.year"│"book_list._category"│"book_list.title"        │"book_list.author"       │"book_list.price"│"keys(book_list)"        │
╞════════════════╪════════════════════╪═════════════════════════╪═════════════════════════╪═════════════════╪═════════════════════════╡
│"2005"          │"cooking"           │{"_lang":"en","__text":" │"Giada De Laurentiis"    │"30.00"          │["_category","title","ye │
│                │                    │Everyday Italian"}       │                         │                 │ar","author","price"]    │
├────────────────┼────────────────────┼─────────────────────────┼─────────────────────────┼─────────────────┼─────────────────────────┤
│"2005"          │"children"          │{"_lang":"en","__text":" │"J K. Rowling"           │"29.99"          │["_category","title","ye │
│                │                    │Harry Potter"}           │                         │                 │ar","author","price"]    │
├────────────────┼────────────────────┼─────────────────────────┼─────────────────────────┼─────────────────┼─────────────────────────┤
│"2003"          │"web"               │{"_lang":"en","__text":" │["James McGovern","Per B │"49.99"          │["_category","title","ye │
│                │                    │XQuery Kick Start"}      │othner","Kurt Cagle","Ja │                 │ar","author","price"]    │
│                │                    │                         │mes Linn","Vaidyanathan  │                 │                         │
│                │                    │                         │Nagarajan"]              │                 │                         │
├────────────────┼────────────────────┼─────────────────────────┼─────────────────────────┼─────────────────┼─────────────────────────┤
│"2003"          │"web"               │{"_lang":"en","__text":" │"Erik T. Ray"            │"39.95"          │["year","author","price" │
│                │                    │Learning XML"}           │                         │                 │,"_category","_cover","t │
│                │                    │                         │                         │                 │itle"]                   │
└────────────────┴────────────────────┴─────────────────────────┴─────────────────────────┴─────────────────┴─────────────────────────┘
```

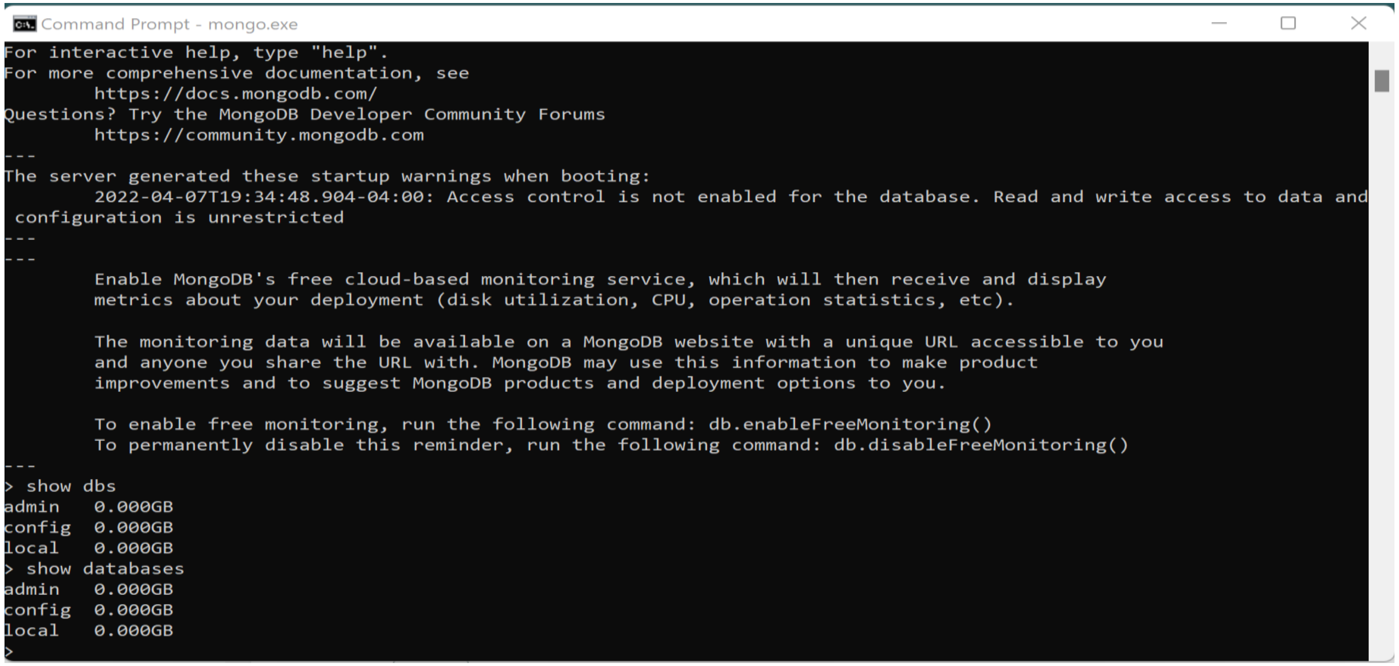
Step 8: Write a query to import all the records and create a graph with the help of connections and nodes.



3.A couple of weeks ago you were asked to complete Laboratory Exercise 6. Review the work that you completed for the exercise and write a short tutorial/learning object that documents the steps are taken to complete the work. Support your solution with a detailed set of screenshots.

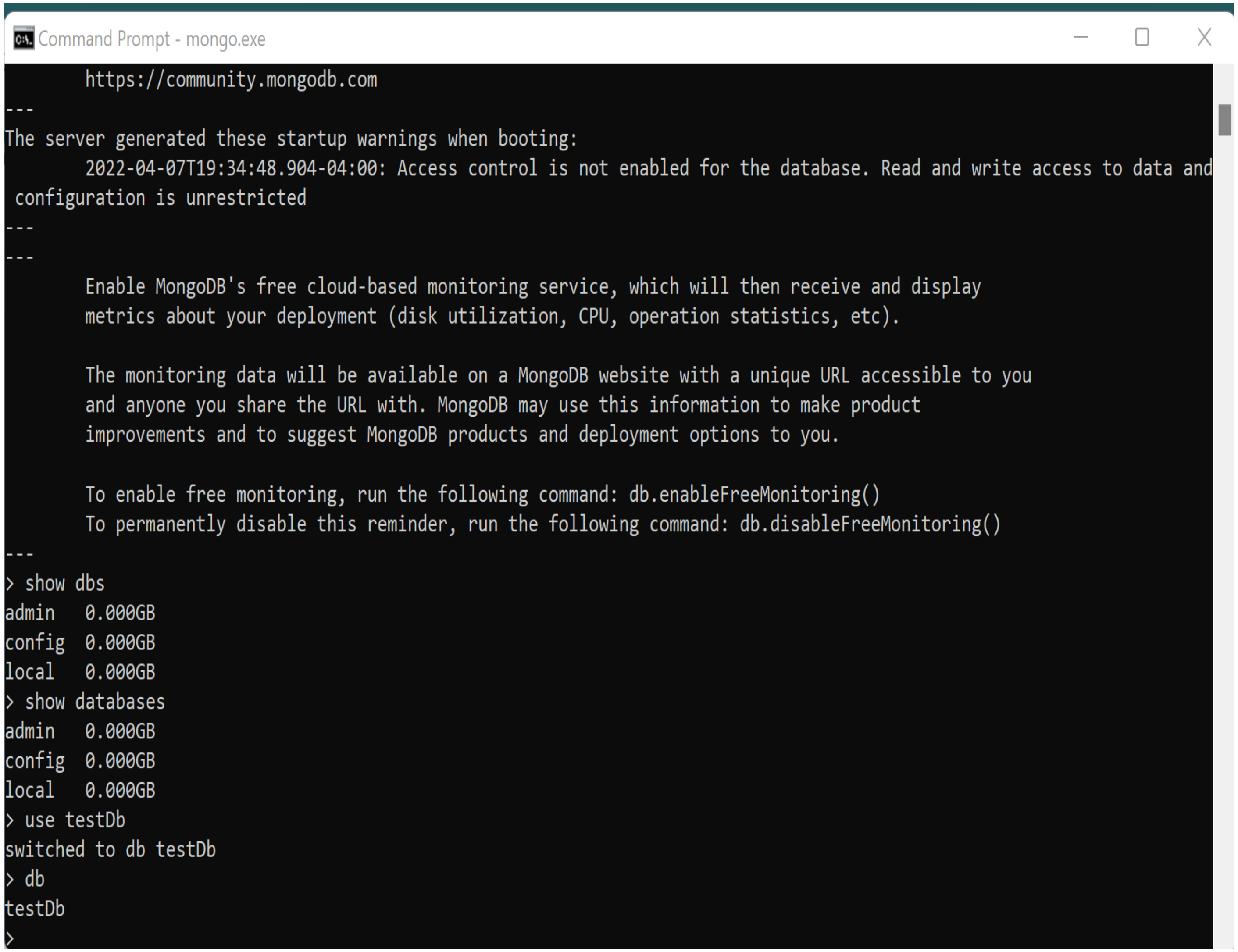
Answer:

- Verify that testDb is the current database being used.



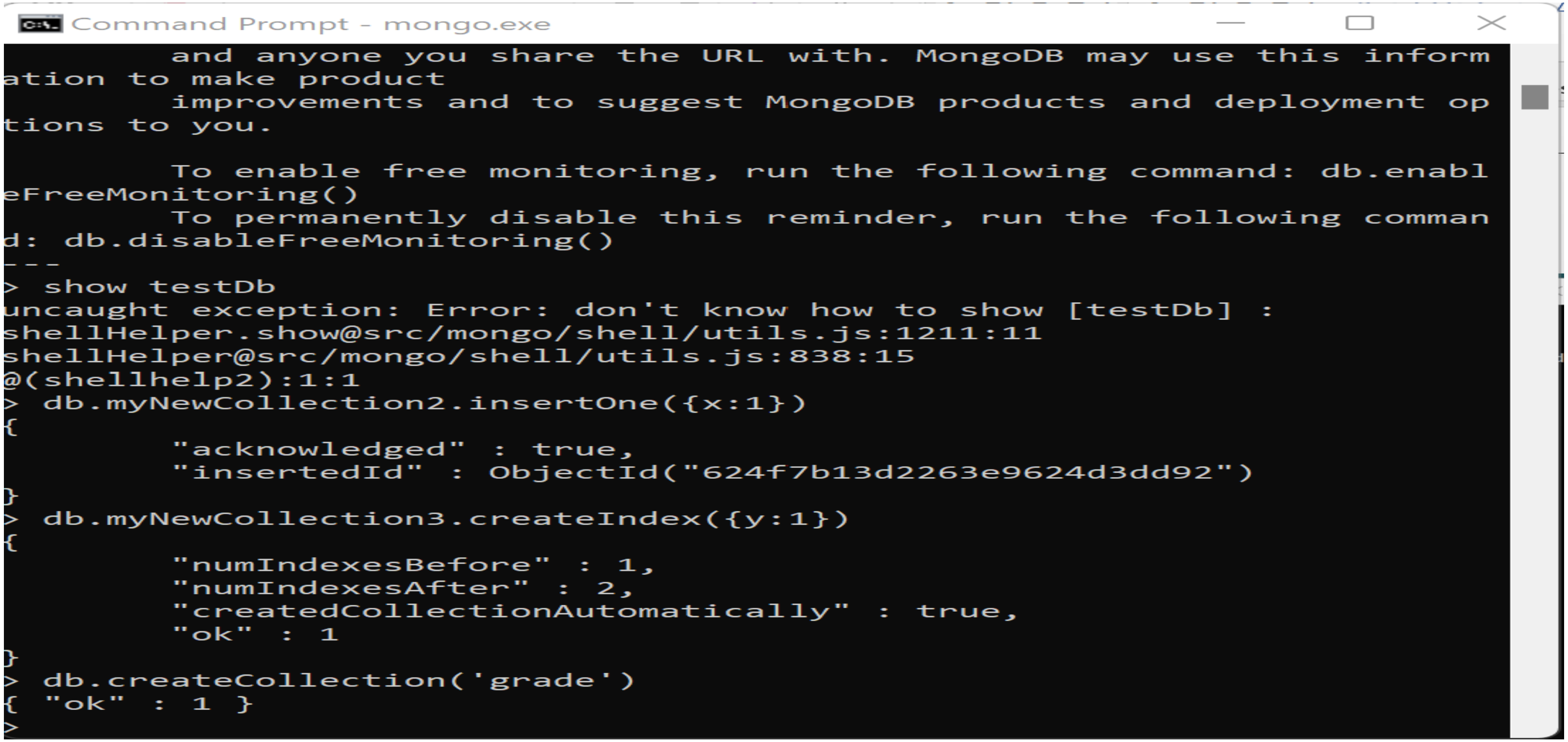
```
For interactive help, type "help".
For more comprehensive documentation, see
        https://docs.mongodb.com/
Questions? Try the MongoDB Developer Community Forums
        https://community.mongodb.com
---
The server generated these startup warnings when booting:
        2022-04-07T19:34:48.904-04:00: Access control is not enabled for the database. Read and write access to data and
 configuration is unrestricted
---
---
        Enable MongoDB's free cloud-based monitoring service, which will then receive and display
        metrics about your deployment (disk utilization, CPU, operation statistics, etc).

        The monitoring data will be available on a MongoDB website with a unique URL accessible to you
        and anyone you share the URL with. MongoDB may use this information to make product
        improvements and to suggest MongoDB products and deployment options to you.

        To enable free monitoring, run the following command: db.enableFreeMonitoring()
        To permanently disable this reminder, run the following command: db.disableFreeMonitoring()
---
> show dbs
admin   0.000GB
config  0.000GB
local   0.000GB
> show databases
admin   0.000GB
config  0.000GB
local   0.000GB
>
```

- show dbs to verify that testDb is in the list of available databases



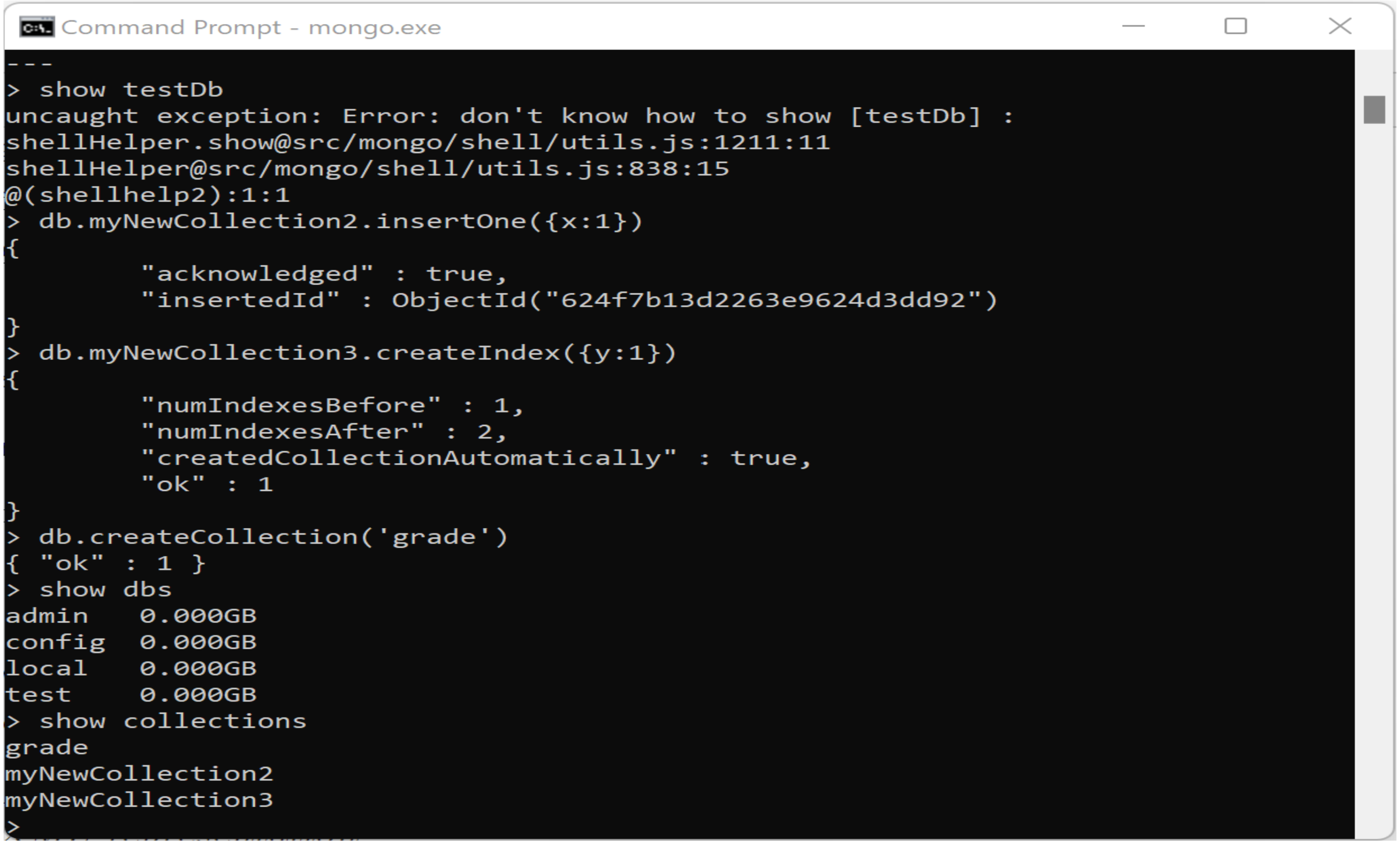
```
        https://community.mongodb.com
---
The server generated these startup warnings when booting:
        2022-04-07T19:34:48.904-04:00: Access control is not enabled for the database. Read and write access to data and
 configuration is unrestricted
---
---
        Enable MongoDB's free cloud-based monitoring service, which will then receive and display
        metrics about your deployment (disk utilization, CPU, operation statistics, etc).

        The monitoring data will be available on a MongoDB website with a unique URL accessible to you
        and anyone you share the URL with. MongoDB may use this information to make product
        improvements and to suggest MongoDB products and deployment options to you.

        To enable free monitoring, run the following command: db.enableFreeMonitoring()
        To permanently disable this reminder, run the following command: db.disableFreeMonitoring()
---
> show dbs
admin   0.000GB
config  0.000GB
local   0.000GB
> show databases
admin   0.000GB
config  0.000GB
local   0.000GB
> use testDb
switched to db testDb
> db
testDb
>
```

- Type the following commands:
  db.myNewCollection2.insertOne({ x : 1 })
  db.myNewCollection3.createIndex({ y : 1 })
  db.createCollection(‘grade’)



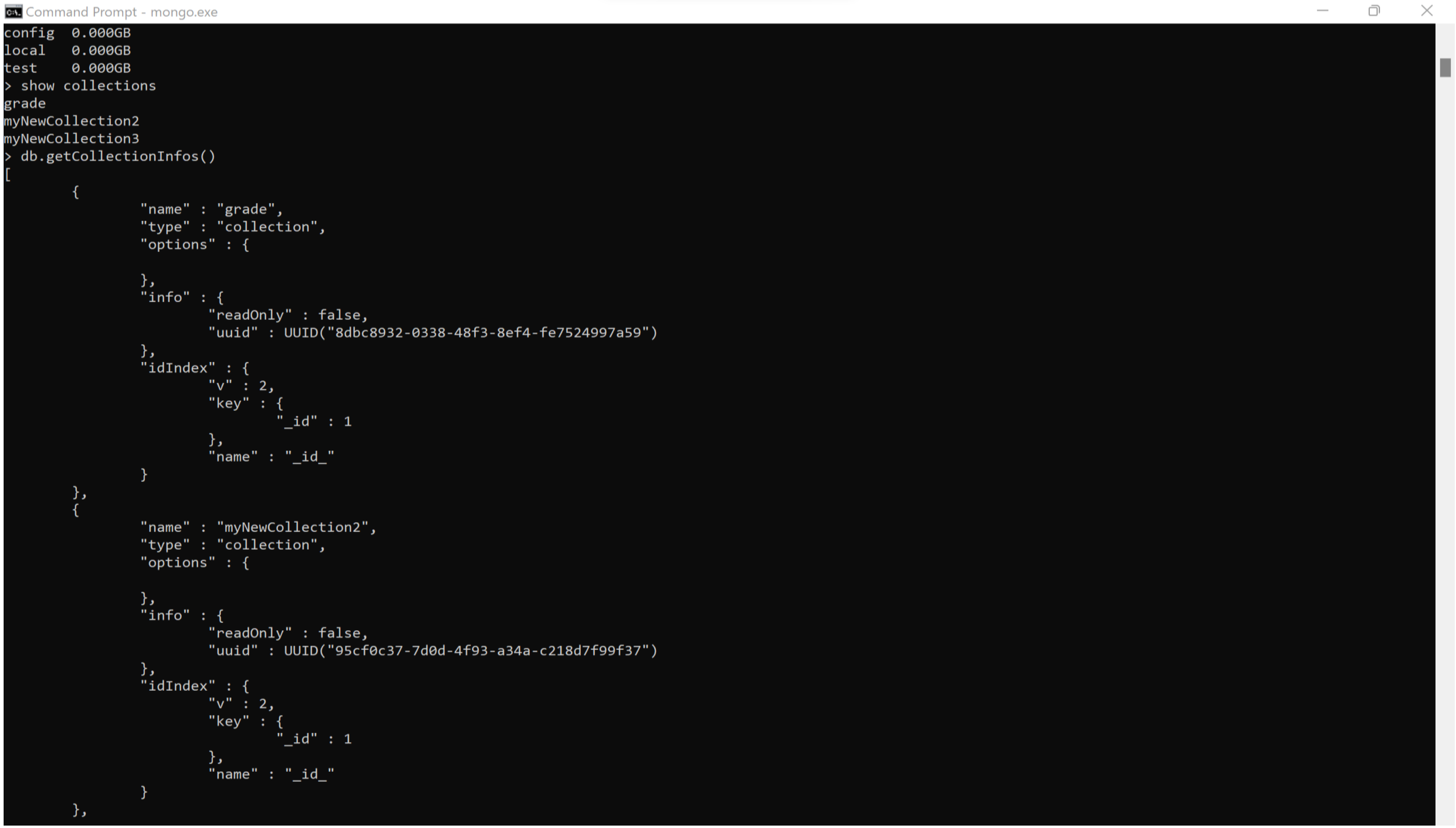
```
        and anyone you share the URL with. MongoDB may use this inform
ation to make product
        improvements and to suggest MongoDB products and deployment op
tions to you.

        To enable free monitoring, run the following command: db.enabl
eFreeMonitoring()
        To permanently disable this reminder, run the following comman
d: db.disableFreeMonitoring()
---
> show testDb
uncaught exception: Error: don't know how to show [testDb] :
shellHelper.show@src/mongo/shell/utils.js:1211:11
shellHelper@src/mongo/shell/utils.js:838:15
@(shellhelp2):1:1
> db.myNewCollection2.insertOne({x:1})
{
        "acknowledged" : true,
        "insertedId" : ObjectId("624f7b13d2263e9624d3dd92")
}
> db.myNewCollection3.createIndex({y:1})
{
        "numIndexesBefore" : 1,
        "numIndexesAfter" : 2,
        "createdCollectionAutomatically" : true,
        "ok" : 1
}
> db.createCollection('grade')
{ "ok" : 1 }
>
```

- To display a listing of all data collections, type the command: show collections



```
---
> show testDb
uncaught exception: Error: don't know how to show [testDb] :
shellHelper.show@src/mongo/shell/utils.js:1211:11
shellHelper@src/mongo/shell/utils.js:838:15
@(shellhelp2):1:1
> db.myNewCollection2.insertOne({x:1})
{
        "acknowledged" : true,
        "insertedId" : ObjectId("624f7b13d2263e9624d3dd92")
}
> db.myNewCollection3.createIndex({y:1})
{
        "numIndexesBefore" : 1,
        "numIndexesAfter" : 2,
        "createdCollectionAutomatically" : true,
        "ok" : 1
}
> db.createCollection('grade')
{ "ok" : 1 }
> show dbs
admin   0.000GB
config  0.000GB
local   0.000GB
test    0.000GB
> show collections
grade
myNewCollection2
myNewCollection3
>
```

- Input the command: db.getCollectionInfos()
- This command retrieves the data collection method and it results in in JSON form.



```
config  0.000GB
local   0.000GB
test    0.000GB
> show collections
grade
myNewCollection2
myNewCollection3
> db.getCollectionInfos()
[
        {
                "name" : "grade",
                "type" : "collection",
                "options" : {

                },
                "info" : {
                        "readOnly" : false,
                        "uuid" : UUID("8dbc8932-0338-48f3-8ef4-fe7524997a59")
                },
                "idIndex" : {
                        "v" : 2,
                        "key" : {
                                "_id" : 1
                        },
                        "name" : "_id_"
                }
        },
        {
                "name" : "myNewCollection2",
                "type" : "collection",
                "options" : {

                },
                "info" : {
                        "readOnly" : false,
                        "uuid" : UUID("95cf0c37-7d0d-4f93-a34a-c218d7f99f37")
                },
                "idIndex" : {
                        "v" : 2,
                        "key" : {
                                "_id" : 1
                        },
                        "name" : "_id_"
                }
        },
```

- How would the data from the previous step be represented in XML? Write an equivalent XML representation.

```
<?xml version="1.0" encoding="UTF-8" ?>

 <root>

   <0>

     <name>grade</name>

     <type>collection</type>

     <options></options>

     <info>

       <readOnly>false</readOnly>

       <uuid>UUID(8dbc8932-0338-48f3-8ef4-fe7524997a59)</uuid>

     </info>

     <idIndex>

       <v>2</v>

       <key>

         <_id>1</_id>

       </key>

       <name>_id_</name>

     </idIndex>

   </0>

   <1>
```

```
    <name>myNewCollection2</name>
    <type>collection</type>
    <options></options>
    <info>
      <readOnly>false</readOnly>
      <uuid> UUID(95cf0c37-7d0d-4f93-a34a-c218d7f99f37)</uuid>
    </info>
    <idIndex>
      <v>2</v>
      <key>
        <_id>1</_id>
      </key>
      <name>_id_</name>
    </idIndex>
  </1>
  <2>
    <name>myNewCollection3</name>
    <type>collection</type>
    <options></options>
    <info>
```

```
      <readOnly>false</readOnly>
      <uuid>UUID(135aff69-79b4-4d63-a243-7b351e774fc7)</uuid>
    </info>
    <idIndex>
      <v>2</v>
      <key>
        <_id>1</_id>
      </key>
      <name>_id_</name>
    </idIndex>
  </2>
</root>
```