

MongoDB Tutorial

MSBA 7024/MACC 7020

What will you learn in this tutorial?

- Create a MongoDB Atlas account and install MongoDB Compass in Windows 10 X64 / Mac
- Compare the concepts in MongoDB with MySQL
- Use MongoDB Compass to import and extract data into/from MongoDB
- Translate basic SQL to codes in MongoDB
- Use Python to import and extract data into/from MongoDB

When to use MongoDB?

- Unstructured data: Not all columns are known before database design. Adding column in SQL is not easy.
- Performance: Real-time analytics and high-speed logging
- Large data volumes: The economic cost of storing large data, especially long strings is much lower.
- Agile development and collaboration: Allow one team to control one part of a document and another team to control another part.

When not to use MongoDB?

- If you're building a simple application
- If you don't have scalability issues with traditional RDBMS
- If you don't have a specific use case to which a NoSQL database might offer a solution to.

Concepts in MongoDB and MySQL

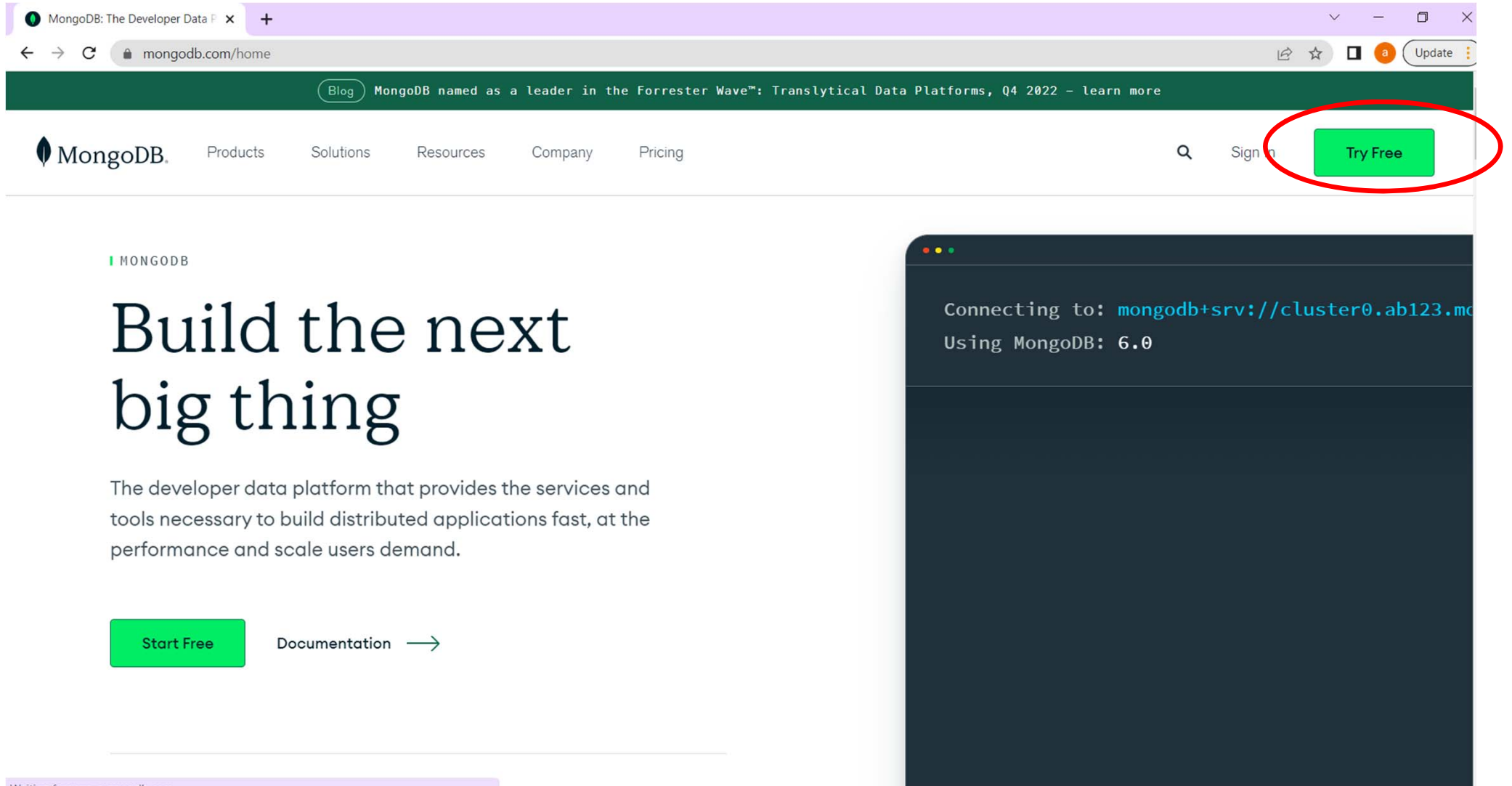
MySQL	MongoDB
Database	Database
Table	Collection
Row	Document
Column	Field
Primary Key	_id field: Auto-generated or user defined

MongoDB Setup and Installation

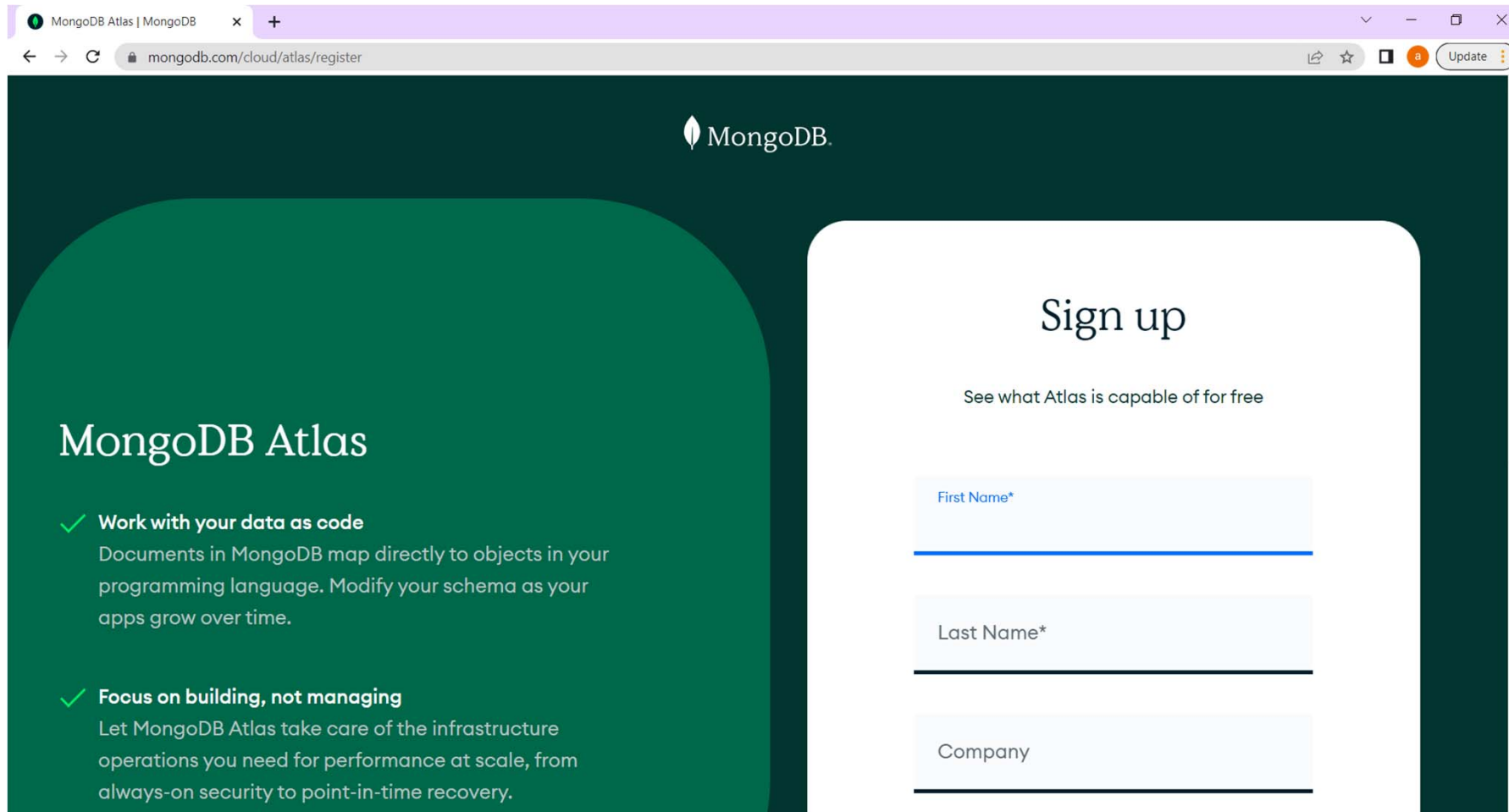
MongoDB Setup

- We will setup
 - A MongoDB account
 - A database cluster on MongoDB Atlas on the cloud
 - MongoDB Compass (the graphical user interface to connect to the database from your computer)

1. Open a web browser, go to mongodb.com Click “Try free” to register an account



2. Fill in the information to sign up



The screenshot shows a web browser window with the URL `mongodb.com/cloud/atlas/register`. The page features a dark green header with the MongoDB logo. On the left, a large green rounded rectangle contains the text "MongoDB Atlas" and two bullet points: "✓ Work with your data as code" and "✓ Focus on building, not managing". On the right, a white rounded rectangle contains the "Sign up" heading, a subtext "See what Atlas is capable of for free", and three input fields labeled "First Name*", "Last Name*", and "Company".

MongoDB Atlas

- ✓ **Work with your data as code**
Documents in MongoDB map directly to objects in your programming language. Modify your schema as your apps grow over time.
- ✓ **Focus on building, not managing**
Let MongoDB Atlas take care of the infrastructure operations you need for performance at scale, from always-on security to point-in-time recovery.

Sign up

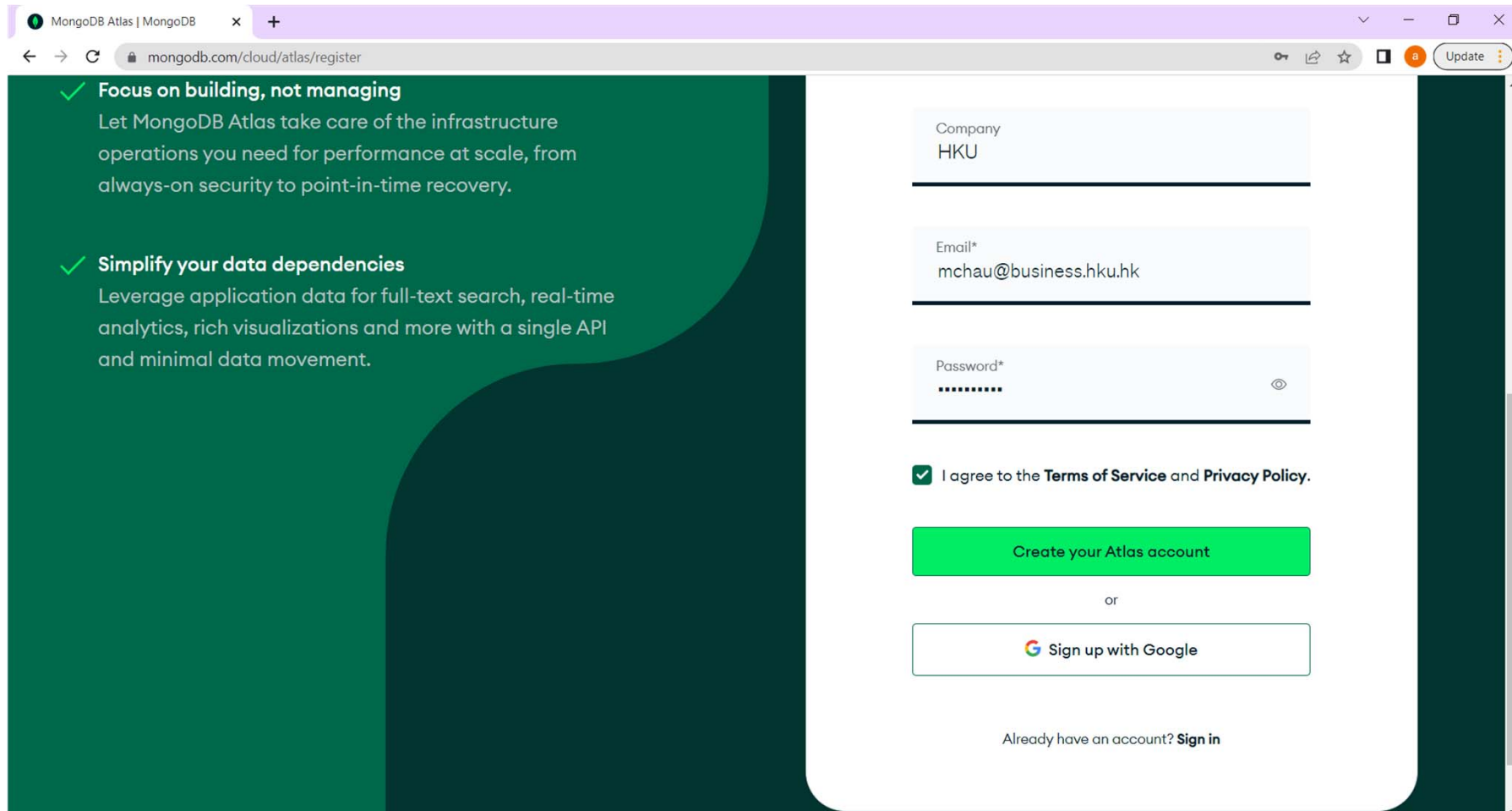
See what Atlas is capable of for free

First Name*

Last Name*

Company

2. Fill in the information to sign up



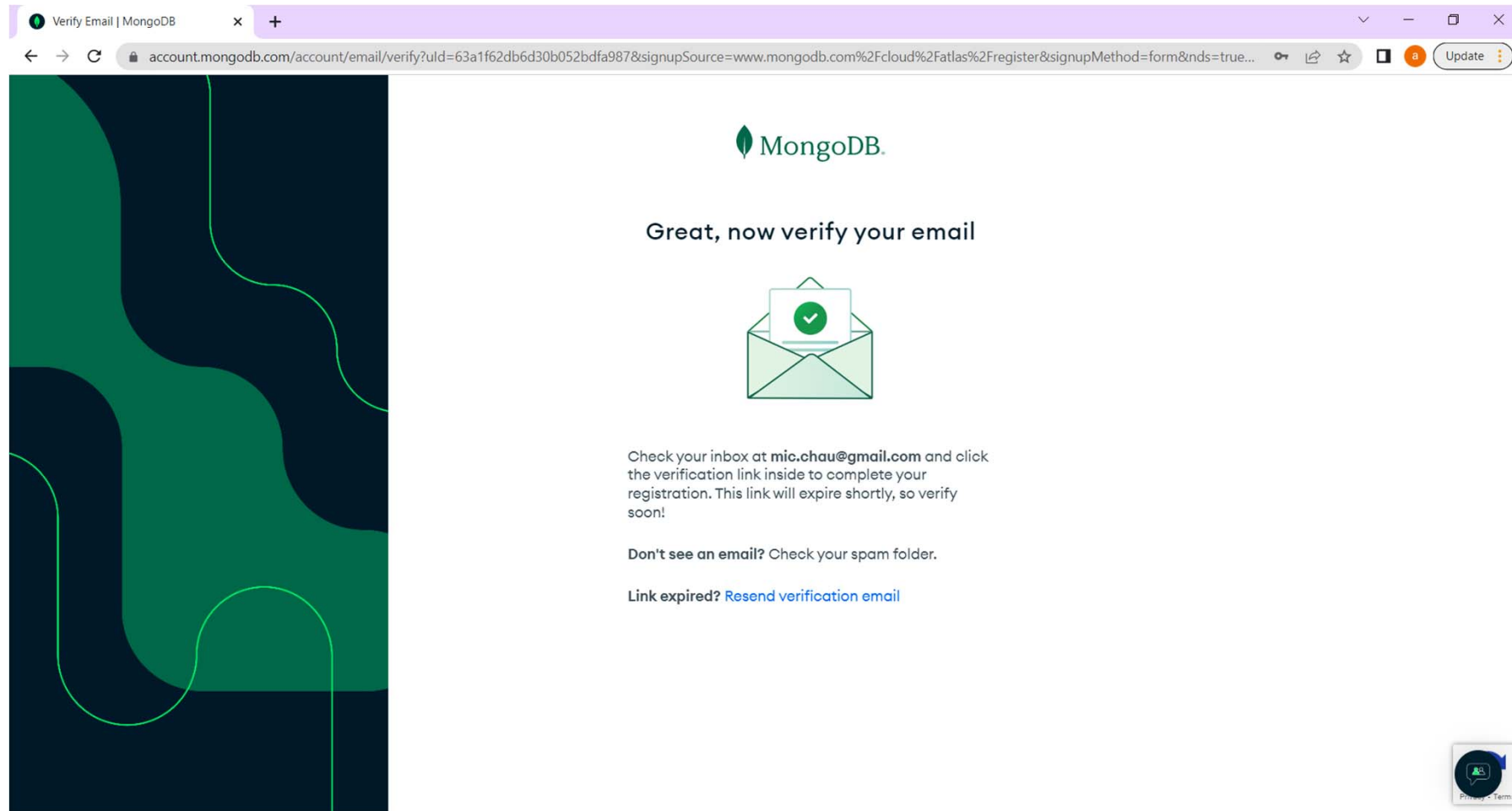
The screenshot shows the MongoDB Atlas registration page in a web browser. The browser's address bar displays 'mongodb.com/cloud/atlas/register'. The page features a dark green sidebar on the left with two bullet points, each preceded by a green checkmark:

- Focus on building, not managing**
Let MongoDB Atlas take care of the infrastructure operations you need for performance at scale, from always-on security to point-in-time recovery.
- Simplify your data dependencies**
Leverage application data for full-text search, real-time analytics, rich visualizations and more with a single API and minimal data movement.

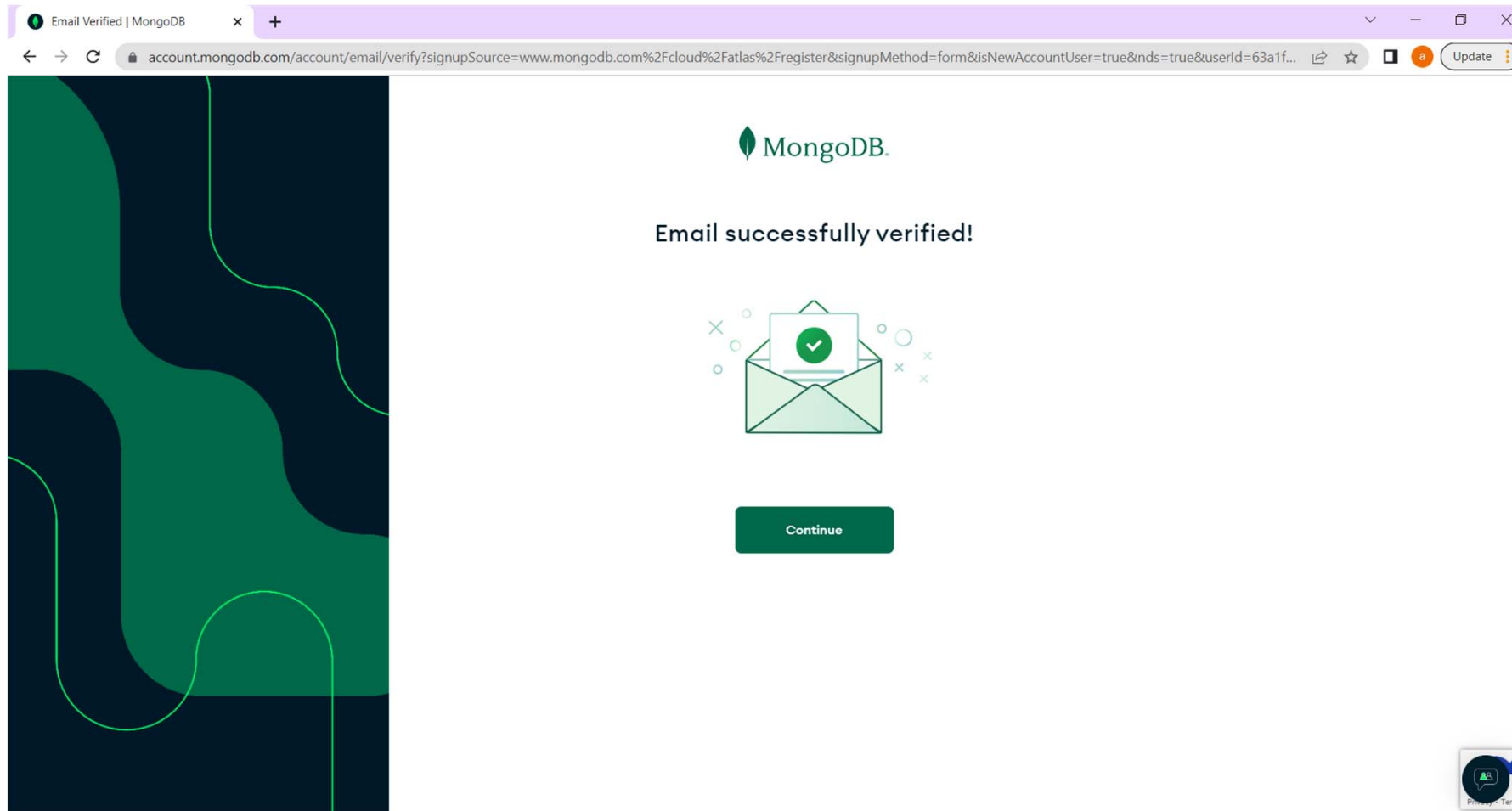
The main content area is white and contains a registration form with the following elements:

- Company:** A text input field containing 'HKU'.
- Email*:** A text input field containing 'mchau@business.hku.hk'.
- Password*:** A password input field with masked characters (dots) and a toggle icon for visibility.
- Terms of Service:** A checkbox labeled 'I agree to the Terms of Service and Privacy Policy.' which is checked.
- Create your Atlas account:** A prominent green button.
- or:** A small text separator.
- Sign up with Google:** A button featuring the Google logo.
- Already have an account? Sign in:** A link at the bottom of the form.

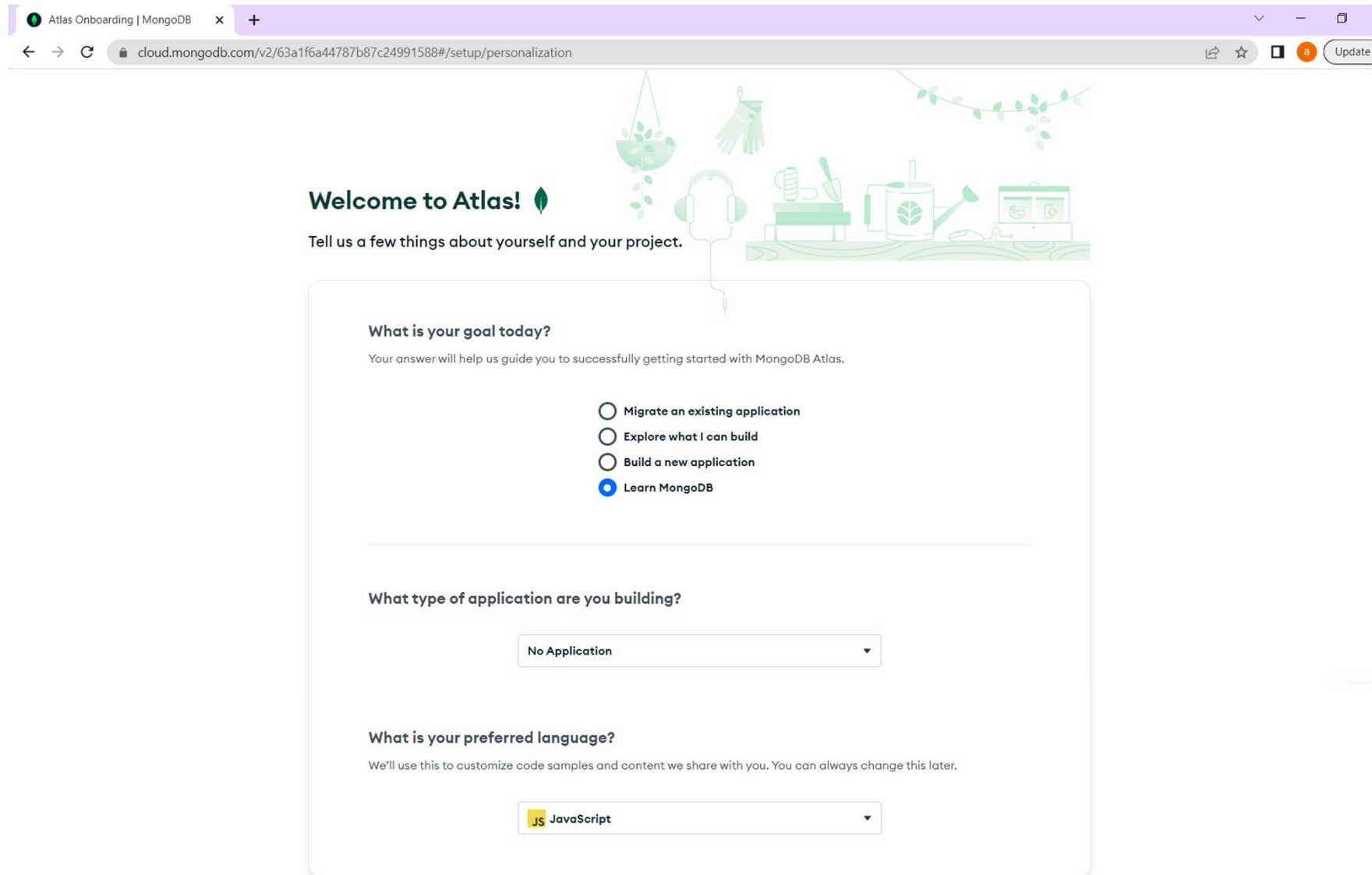
3. Login to your email account and look for the verification email



In the verification email, click “Verify Email”, then click “Continue”



4. In the survey, you may choose “Learn MongoDB”, “No Application” and “JavaScript” Then click “Finish”



The screenshot shows the MongoDB Atlas Onboarding survey page. The browser address bar displays the URL: `cloud.mongodb.com/v2/63a1f6a44787b87c24991588#/setup/personalization`. The page features a green-themed illustration at the top with a watering can, gloves, a shovel, a bucket, and a laptop. The main heading is "Welcome to Atlas!" followed by the instruction "Tell us a few things about yourself and your project." The survey consists of three sections:

- What is your goal today?**
Your answer will help us guide you to successfully getting started with MongoDB Atlas.
 - ☐ Migrate an existing application
 - ☐ Explore what I can build
 - ☐ Build a new application
 - ☒ Learn MongoDB
- What type of application are you building?**
A dropdown menu is shown with the selected option: "No Application".
- What is your preferred language?**
We'll use this to customize code samples and content we share with you. You can always change this later.
A dropdown menu is shown with the selected option: "JavaScript".

5. Click “Create” in the “Shared” section

The screenshot shows the MongoDB Atlas 'Choose a Path' interface. On the left, the MongoDB logo and 'MONGODB ATLAS' are displayed above the heading 'Deploy a cloud database'. Below this, it says 'Experience the best of MongoDB on AWS, Azure, and Google Cloud. Choose a deployment option to get started.'.

Three deployment options are presented in cards:

- NEW Serverless**: For application development and testing, or workloads with variable traffic. Minimal configuration required. Features include: Pay only for the operations you run, Resources scale seamlessly to meet your workload, and Always-on security and backups. The 'Create' button is outlined in green. The starting cost is \$0.10/1M reads.
- ADVANCED Dedicated**: For production applications with sophisticated workload requirements. Advanced configuration controls. Features include: Network isolation and fine-grained access controls, On-demand performance advice, and Multi-region and multi-cloud options available. The 'Create' button is outlined in green. The starting cost is \$0.08/hr* (estimated cost \$56.94/month).
- FREE Shared**: For learning and exploring MongoDB in a cloud environment. Basic configuration options. Features include: No credit card required to start, Explore with sample datasets, and Upgrade to dedicated clusters for full functionality. The 'Create' button is solid green and is circled in red. The cost is FREE.

At the bottom, there are links for 'I'll do this later', 'View all features', and 'Advanced Configuration Options'. A chat icon is visible in the bottom right corner.

6. Choose a Cloud Provider available in your area

CLUSTERS > CREATE A SHARED CLUSTER

Create a Shared Cluster

Welcome to MongoDB Atlas! We've recommended some of our most popular options, but feel free to customize your cluster to your needs. For more information, check our [documentation](#).

Serverless


Dedicated


FREE Shared


For learning and exploring MongoDB in a sandbox environment. Basic configuration controls.
No credit card required to start. Upgrade to dedicated clusters for full functionality.
Explore with sample datasets. Limit of one free cluster per project.

Cloud Provider & Region



















AWS, Hong Kong (ap-east-1) ^







★ Recommended region ⓘ ☑ Dedicated tier region ⓘ

NORTH AMERICA	EUROPE	AUSTRALIA
 N. Virginia (us-east-1) ★	 Stockholm (eu-north-1) ★	 Sydney (ap-southeast-2) ★
 Oregon (us-west-2) ★	 Frankfurt (eu-central-1)	ASIA
 Ohio (us-east-2) ★ ☑	 Paris (eu-west-3) ★	 Singapore (ap-southeast-1) ★
 N. California (us-west-1) ☑	 Ireland (eu-west-1) ★	<div> Hong Kong (ap-east-1) ★</div>
 Montreal (ca-central-1) ★ ☑	 London (eu-west-2) ★ ☑	 Seoul (ap-northeast-2) ★
SOUTH AMERICA	 Milan (eu-south-1) ★ ☑	 Tokyo (ap-northeast-1) ★
 Sao Paulo (sa-east-1) ★		 Mumbai (ap-south-1) ★

FREE Free forever! Your M0 cluster is ideal for experimenting in a limited sandbox. You can upgrade to a production cluster anytime.

[Back](#) [Create Cluster](#)

Privacy · Terms



Use the default settings and click “Create Cluster” at the bottom

The screenshot shows the 'Create Deployment' page in the MongoDB Cloud console. The browser address bar indicates the URL: `cloud.mongodb.com/v2/63a1f6a44787b87c24991588#/clusters/edit?filter=starter&fromPathSelector=true`. The user 'Michael' is logged in.

The configuration section includes the following options:

- Region:** AFRICA (selected), with options for Osaka (ap-northeast-3) and Cape Town (af-south-1).
- Cluster Tier:** M0 Sandbox (Shared RAM, 512 MB Storage) (selected), with a note 'Encrypted'.
- Additional Settings:** MongoDB 5.0, No Backup (selected).
- Cluster Name:** Cluster0 (selected).

At the bottom of the page, there is a 'FREE' label and a note: 'Free forever! Your M0 cluster is ideal for experimenting in a limited sandbox. You can upgrade to a production cluster anytime.' To the right of this text is a 'Back' link and a green 'Create Cluster' button, which is circled in red. A 'Privacy - Terms' link is visible in the bottom left corner, and a chat icon is in the bottom right corner.

7. Select “Username and Password”
Input “user1” in Username
Input “hku” in Password
Then click “Create User”

The screenshot shows the MongoDB Atlas Security Quickstart page. The left sidebar contains a navigation menu with sections: DEPLOYMENT (Database, Data Lake), SERVICES (Triggers, Data API, Data Federation), SECURITY (Quickstart, Database Access, Network Access, Advanced), and New On Atlas (5). The main content area is titled 'Security Quickstart' and includes a step indicator '1 How would you like to authenticate your connection?'. Below this, there are two tabs: 'Username and Password' (highlighted with a red circle) and 'Certificate'. The 'Username and Password' tab contains instructions and a form with fields for 'Username' (containing 'user1', highlighted with a red circle) and 'Password' (containing 'hku', highlighted with a red circle). There are also buttons for 'Autogenerate Secure Password' and 'Copy'. At the bottom of the form is a green 'Create User' button, also highlighted with a red circle.

8. Select “My Local Environment” Input “0.0.0.0/0” in IP Address Then click “Add Entry”

The screenshot shows the MongoDB Atlas Security Quickstart interface. The browser address bar displays the URL: `cloud.mongodb.com/v2/63a1f6a44787b87c24991588#/setup/access?includeToast=true`. The page title is "Security Quickstart | MongoDB". The navigation bar includes "Atlas", "HKU", "Access Manager", "Billing", "All Clusters", "Get Help", and "Michael". The main content area is titled "2 Where would you like to connect from?" and includes the instruction: "Enable access for any network(s) that need to read and write data to your cluster." There are two options: "My Local Environment" (selected and circled in red) and "Cloud Environment" (marked as "ADVANCED"). Below these options is the "Add entries to your IP Access List" section, which includes the instruction: "Only an IP address you add to your Access List will be able to connect to your project's clusters." This section contains a table with two columns: "IP Address" and "Description". The "IP Address" field is circled in red and contains the text "0.0.0.0/0". The "Add Entry" button is also circled in red. At the bottom right of the main content area is a "Finish and Close" button. The footer includes the "System Status: All Good" message and copyright information: "©2022 MongoDB, Inc. Status Terms Privacy Atlas Blog Contact Sales".

Security Quickstart | MongoDB

cloud.mongodb.com/v2/63a1f6a44787b87c24991588#/setup/access?includeToast=true

Atlas HKU Access Manager Billing All Clusters Get Help Michael

Project 0 Data Services App Services Charts

DEPLOYMENT Database Data Lake PREVIEW SERVICES Triggers Data API Data Federation SECURITY Quickstart Database Access Network Access Advanced New On Atlas 5 Goto

2 Where would you like to connect from?

Enable access for any network(s) that need to read and write data to your cluster.

My Local Environment
Use this to add network IP addresses to the IP Access List. This can be modified at any time.

Cloud Environment ADVANCED
Use this to configure network access between Atlas and your cloud or on-premise environment. Specifically, set up IP Access Lists, Network Peering, and Private Endpoints.

Add entries to your IP Access List

Only an IP address you add to your Access List will be able to connect to your project's clusters.

IP Address	Description
0.0.0.0/0	Enter description

Add My Current IP Address

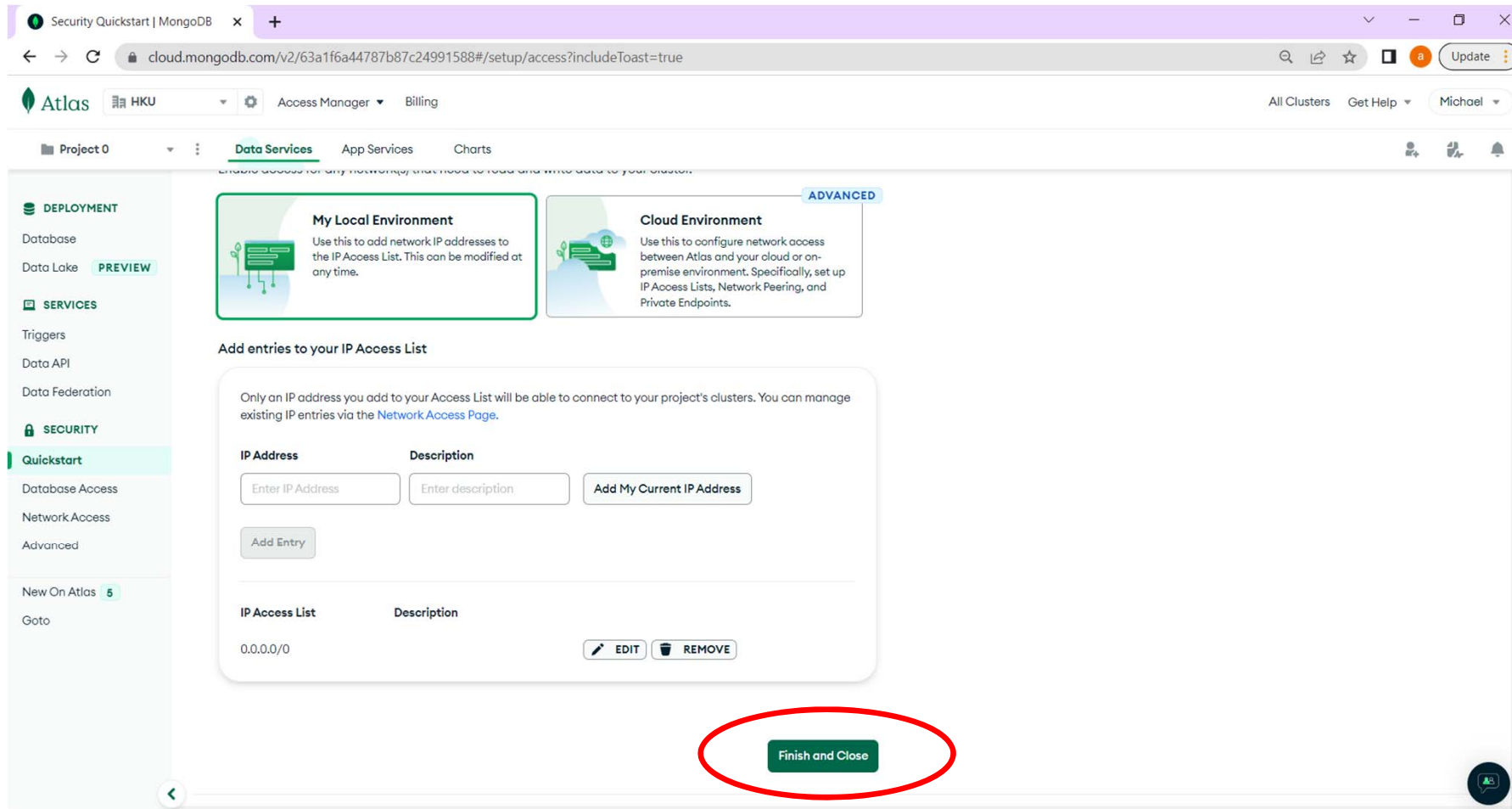
Add Entry

Finish and Close

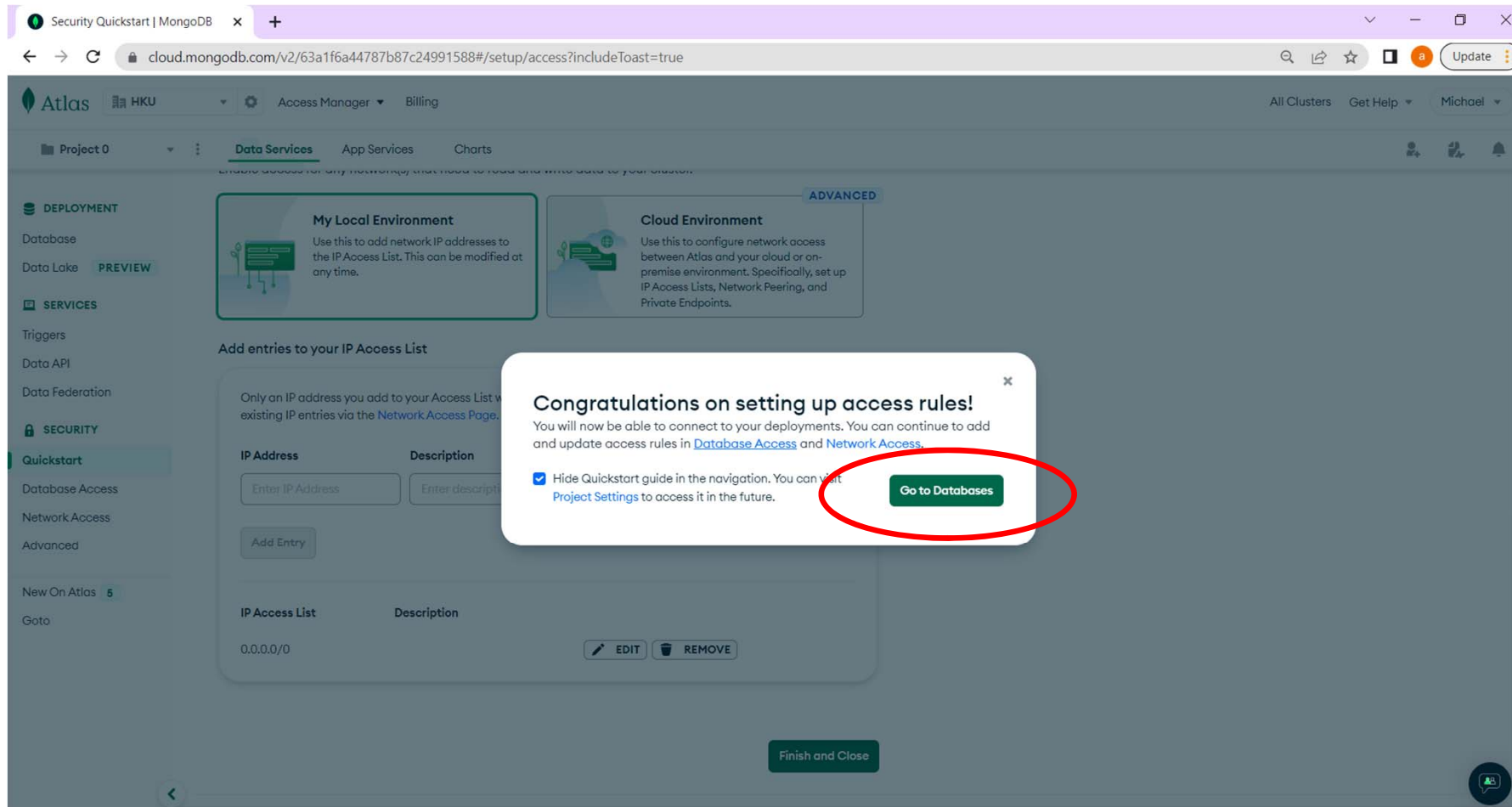
System Status: All Good

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Click “Finish and Close”



Click “Go to Databases”



11. Click “Connect”

The screenshot shows the MongoDB Atlas interface for 'Project 0'. The left sidebar contains navigation links for 'DEPLOYMENT', 'Database', 'SERVICES', and 'SECURITY'. The main content area is titled 'Database Deployments' and features a search bar, a '+ Create' button, and a 'Load sample datasets to Cluster0.' section. Below this, a card for 'Cluster0' displays various metrics and a table of cluster details. The 'Connect' button for 'Cluster0' is highlighted with a red circle.

Database Deployments

Find a database deployment...

Cluster0 **Connect** **View Monitoring** **Browse Collections** ... **FREE SHARED**

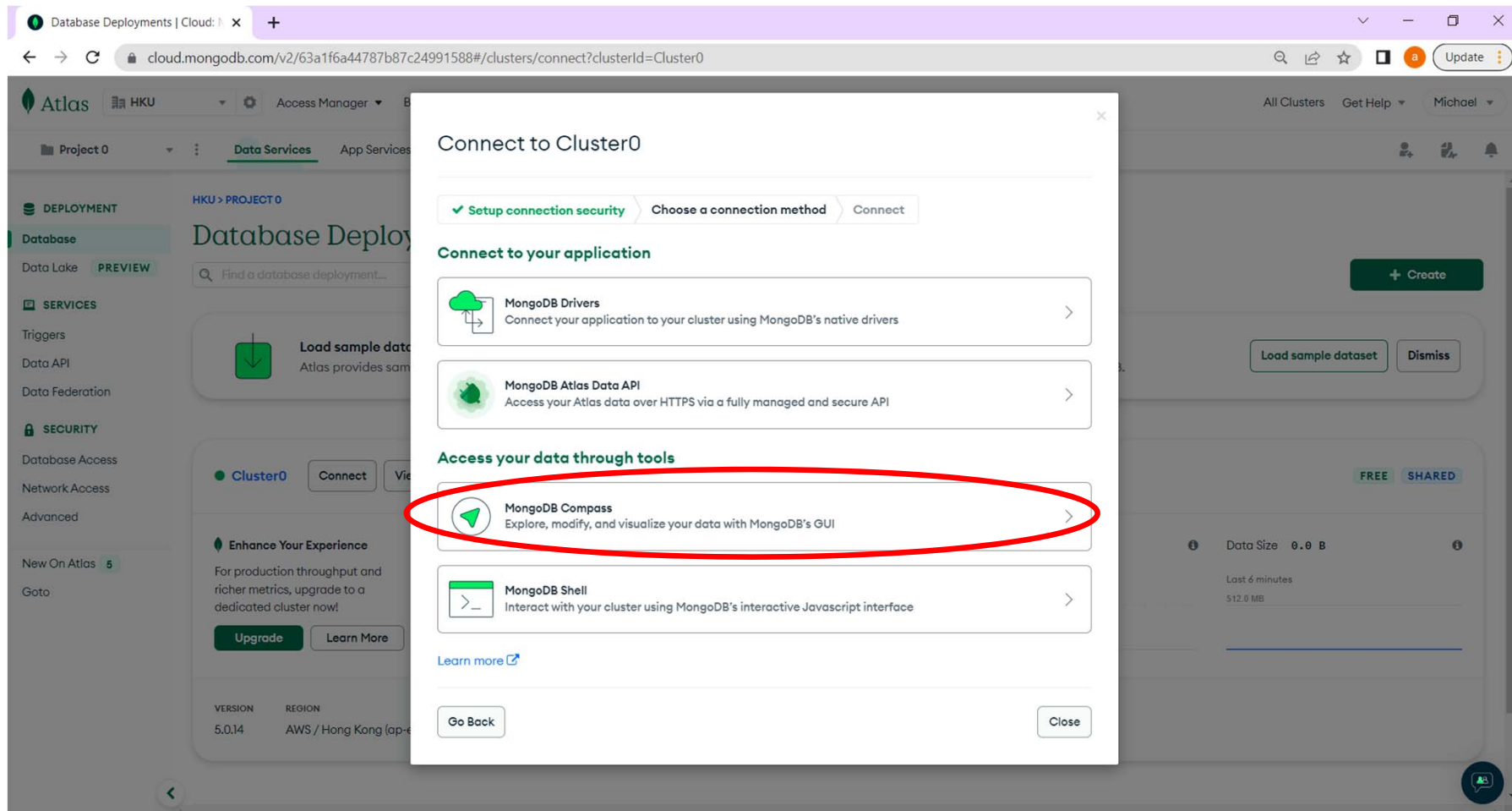
Enhance Your Experience
For production throughput and richer metrics, upgrade to a dedicated cluster now!
Upgrade **Learn More**

Metrics:

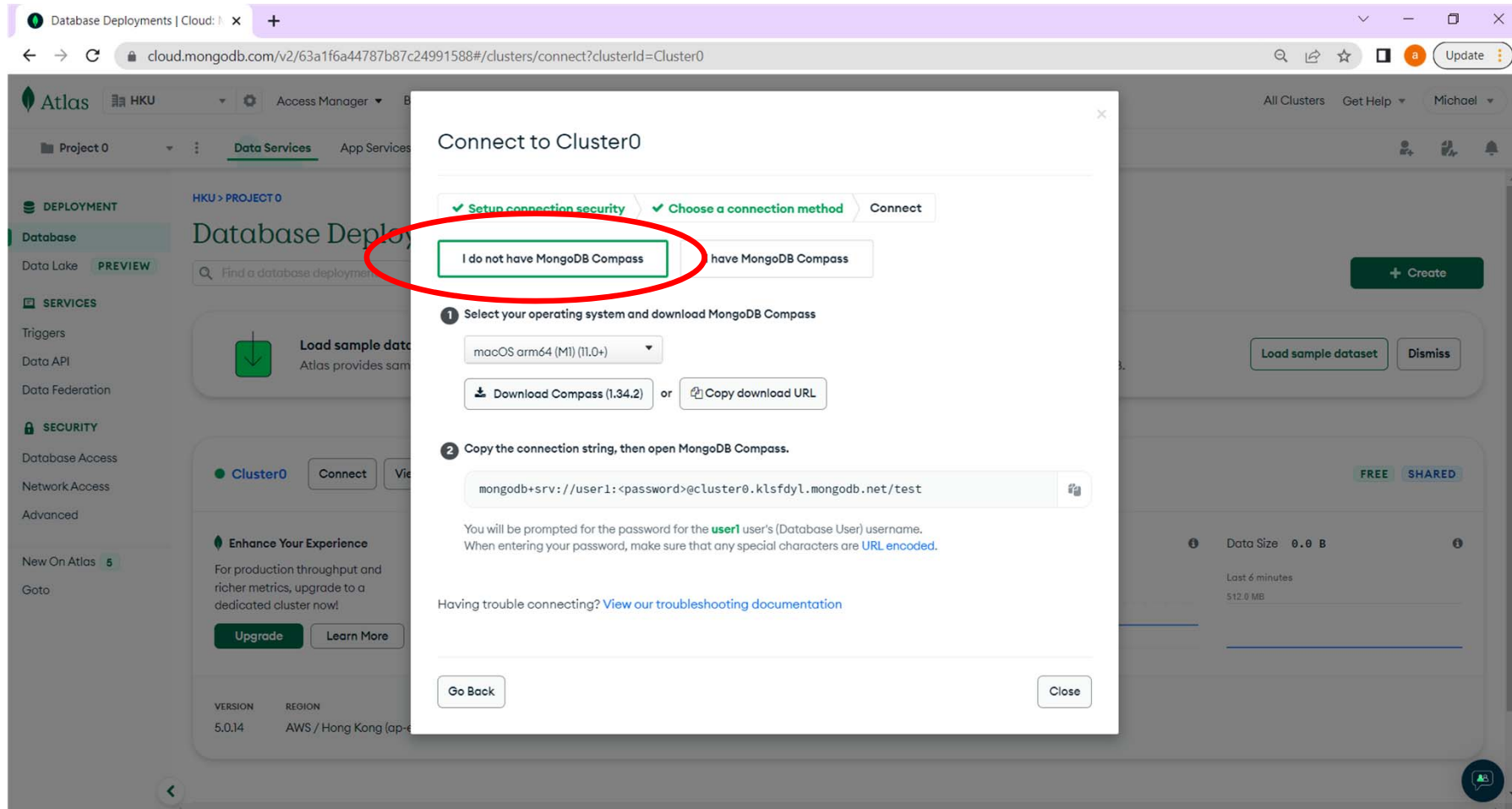
- R 0** (Last 21 seconds: 100.0/s)
- W 0** (Last 21 seconds: 100.0/s)
- Connections 0** (Last 4 minutes: 100.0)
- In 0.0 B/s** (Last 21 seconds: 100.0 B/s)
- Out 0.0 B/s** (Last 21 seconds: 100.0 B/s)
- Data Size 0.0 B** (Last 4 minutes: 512.0 MB)

VERSION	REGION	CLUSTER TIER	TYPE	BACKUPS	LINKED APP SERVICES	ATLAS SEARCH
5.0.14	AWS / Hong Kong (ap-east-1)	M0 Sandbox (General)	Replica Set - 3 nodes	Inactive	None Linked	Create Index

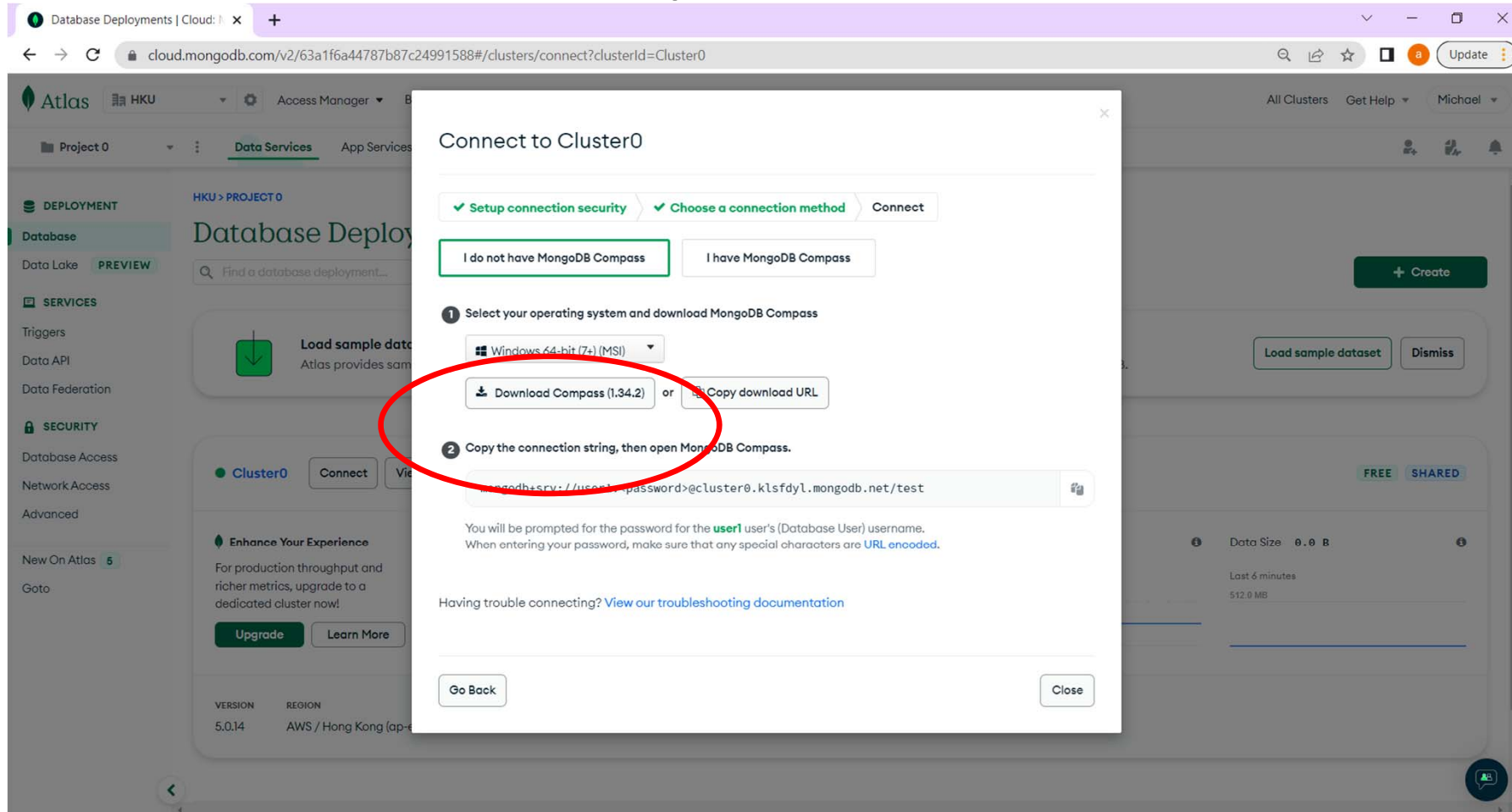
Choose “MongoDB Compass”



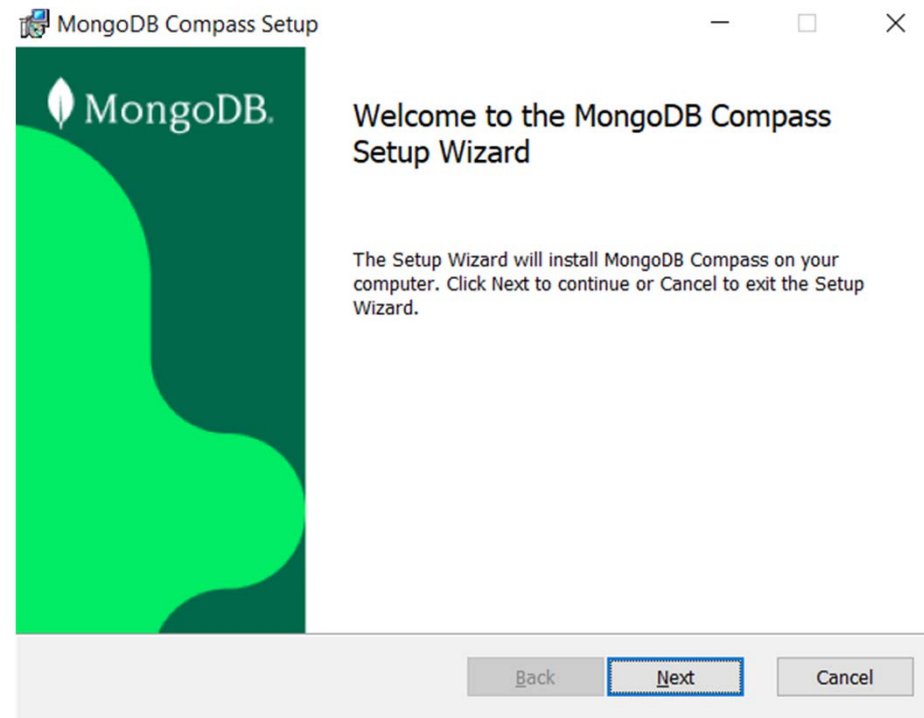
Choose “I do not have MongoDB Compass”



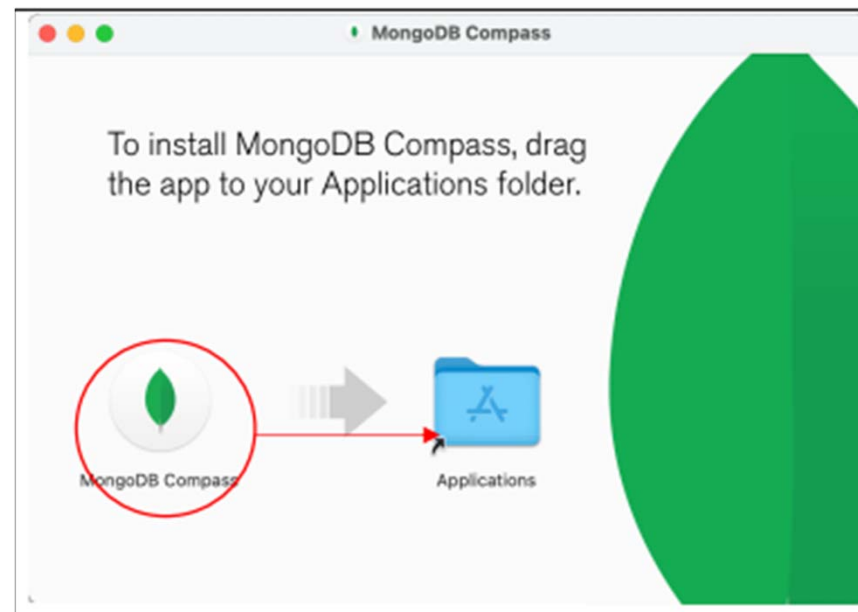
12. Just for the first time, select your operating system and click “Download Compass”



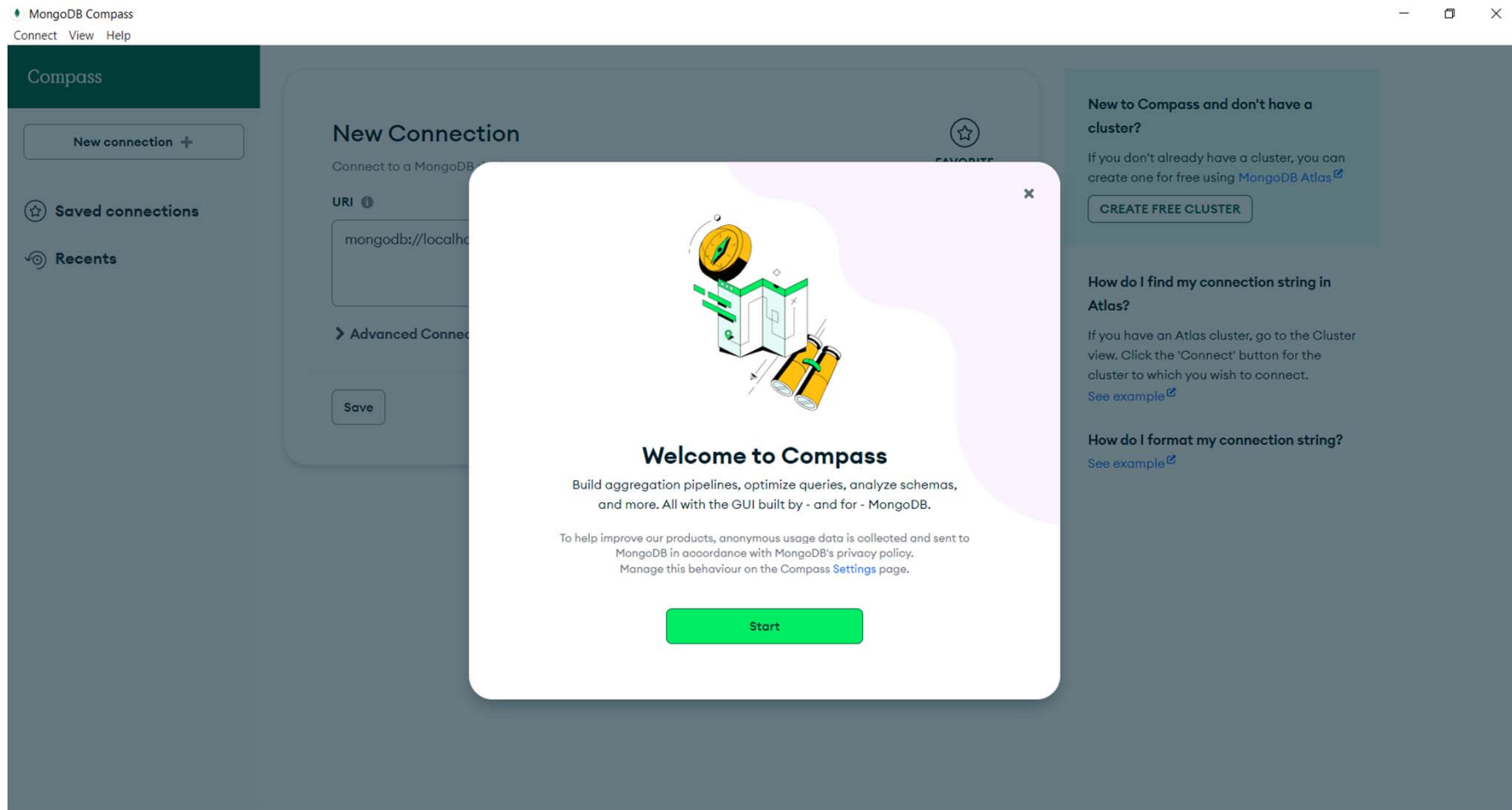
For Windows users, run the downloaded file and choose the default settings during installation



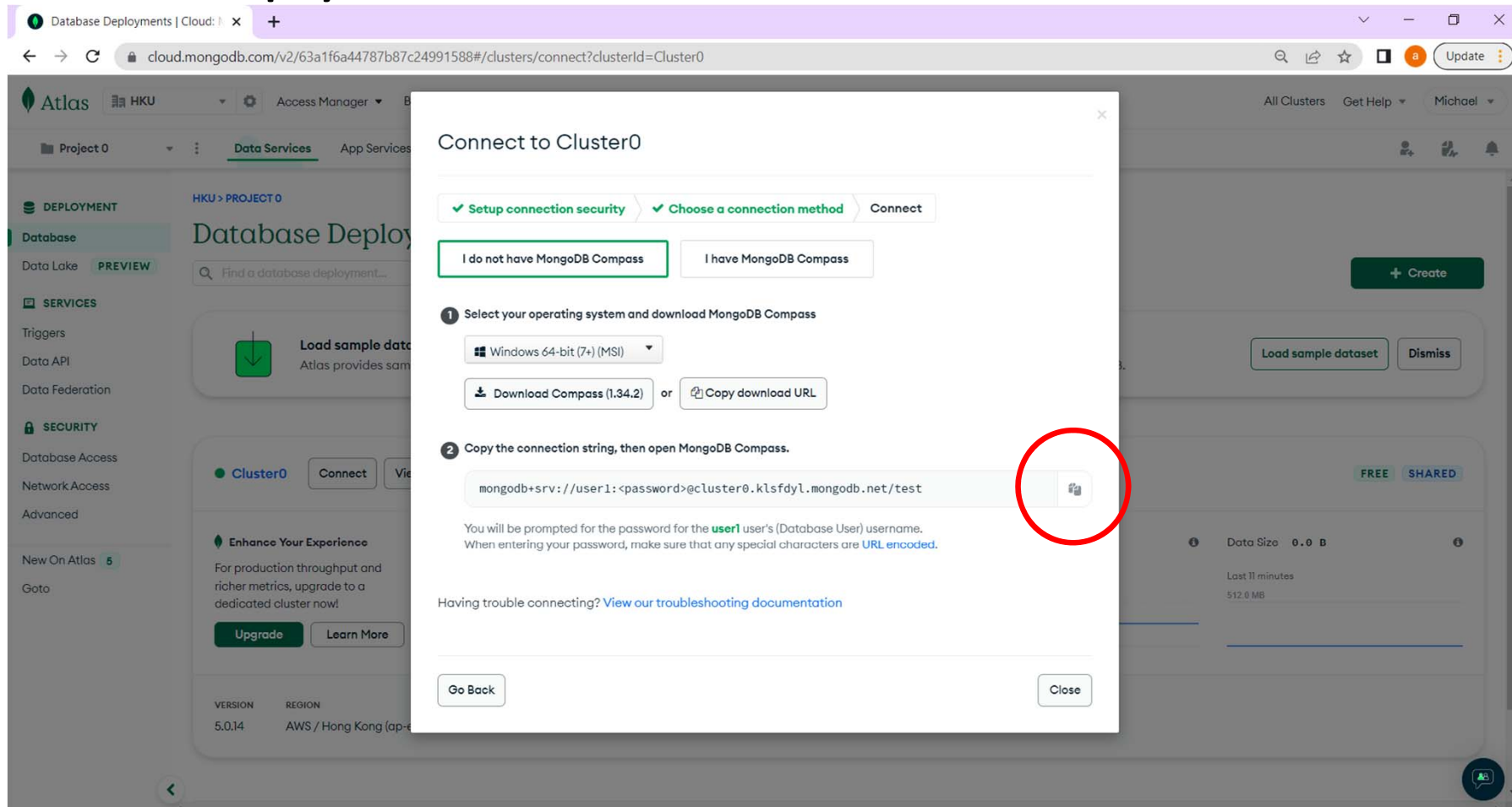
For Mac users, double click the file to extract it
Then drag the icon to the shortcut of Applications
Then start the MongoDB Compass in Applications



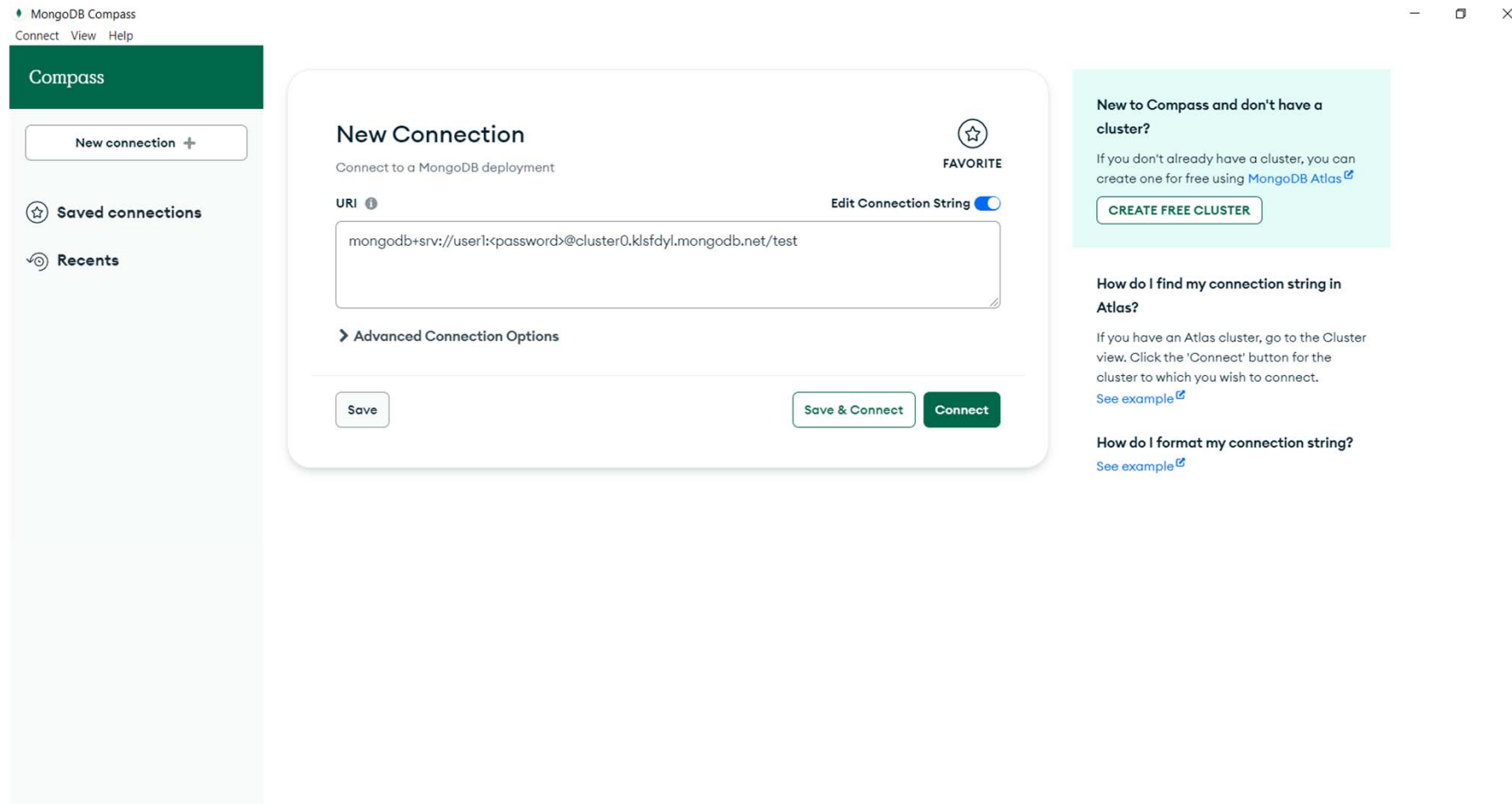
13. Start MongoDB Compass



14. Go back to the web browser Copy the connection string by clicking the copy button

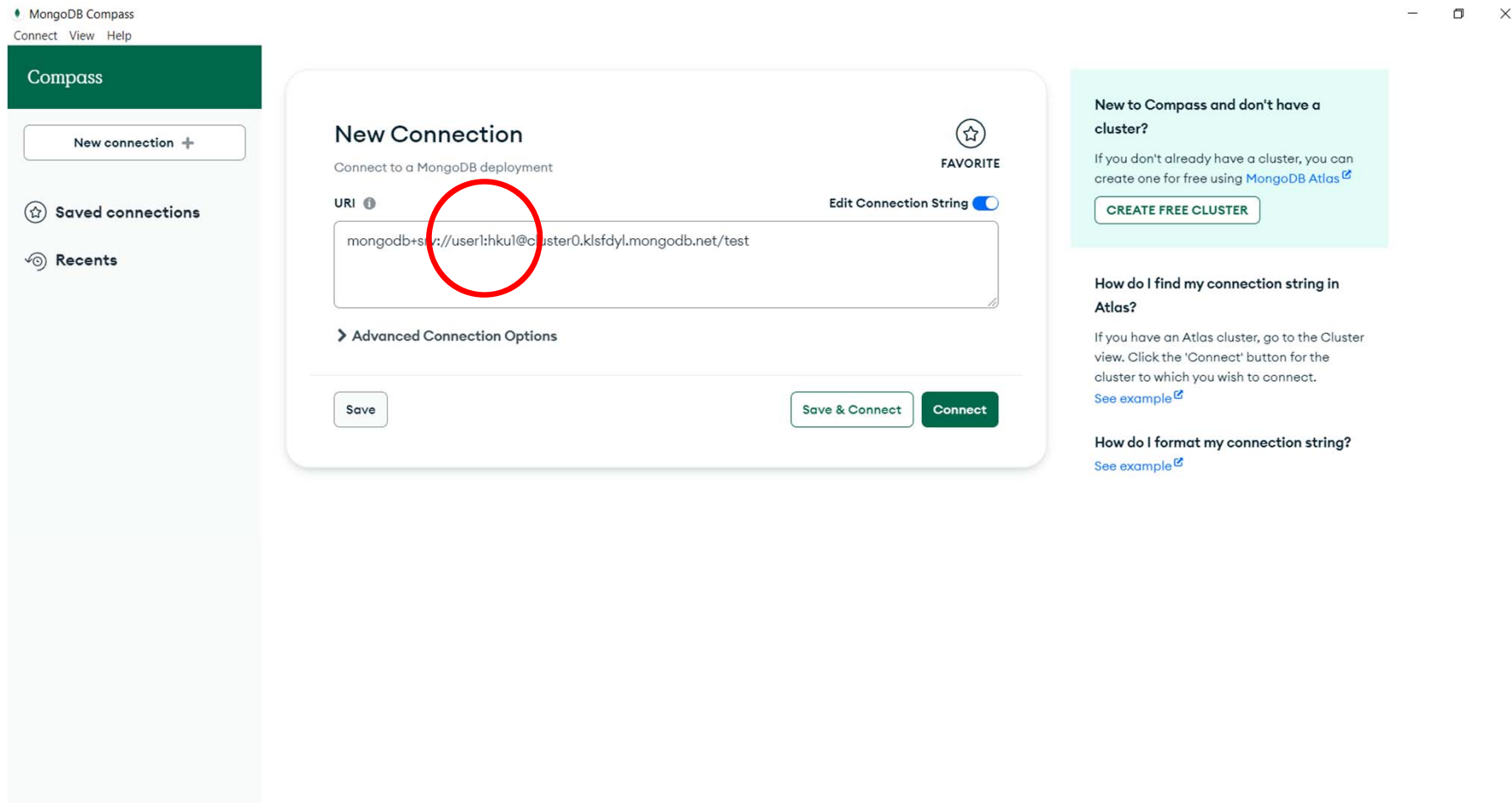


15. Go back to MongoDB Compass Paste the just copied connection string to URI



Change “<password>” to “hku”

Then click “Connect”



The screenshot shows the MongoDB Compass application window. The title bar reads 'MongoDB Compass' with menu items 'Connect', 'View', and 'Help'. The left sidebar has a 'Compass' header and two sections: 'New connection +' and 'Saved connections' (with a star icon) and 'Recents' (with a circular arrow icon). The main panel is titled 'New Connection' with a subtitle 'Connect to a MongoDB deployment'. It features a 'URI' label with an information icon, a text input field containing 'mongodb+srv://user1:hku1@cluster0.ksfdyl.mongodb.net/test', and an 'Edit Connection String' toggle switch. A red circle highlights the 'hku1' part of the URI. Below the input field is a link for 'Advanced Connection Options'. At the bottom are three buttons: 'Save', 'Save & Connect', and 'Connect'. On the right, there is a light blue informational box with the text 'New to Compass and don't have a cluster?' and a 'CREATE FREE CLUSTER' button. Below this box are two sections: 'How do I find my connection string in Atlas?' and 'How do I format my connection string?', each with a 'See example' link.

MongoDB Compass
Connect View Help

Compass

New connection +

Saved connections

Recents

New Connection
Connect to a MongoDB deployment

URI ⓘ Edit Connection String ☒

mongodb+srv://user1:hku1@cluster0.ksfdyl.mongodb.net/test

> Advanced Connection Options

Save Save & Connect Connect

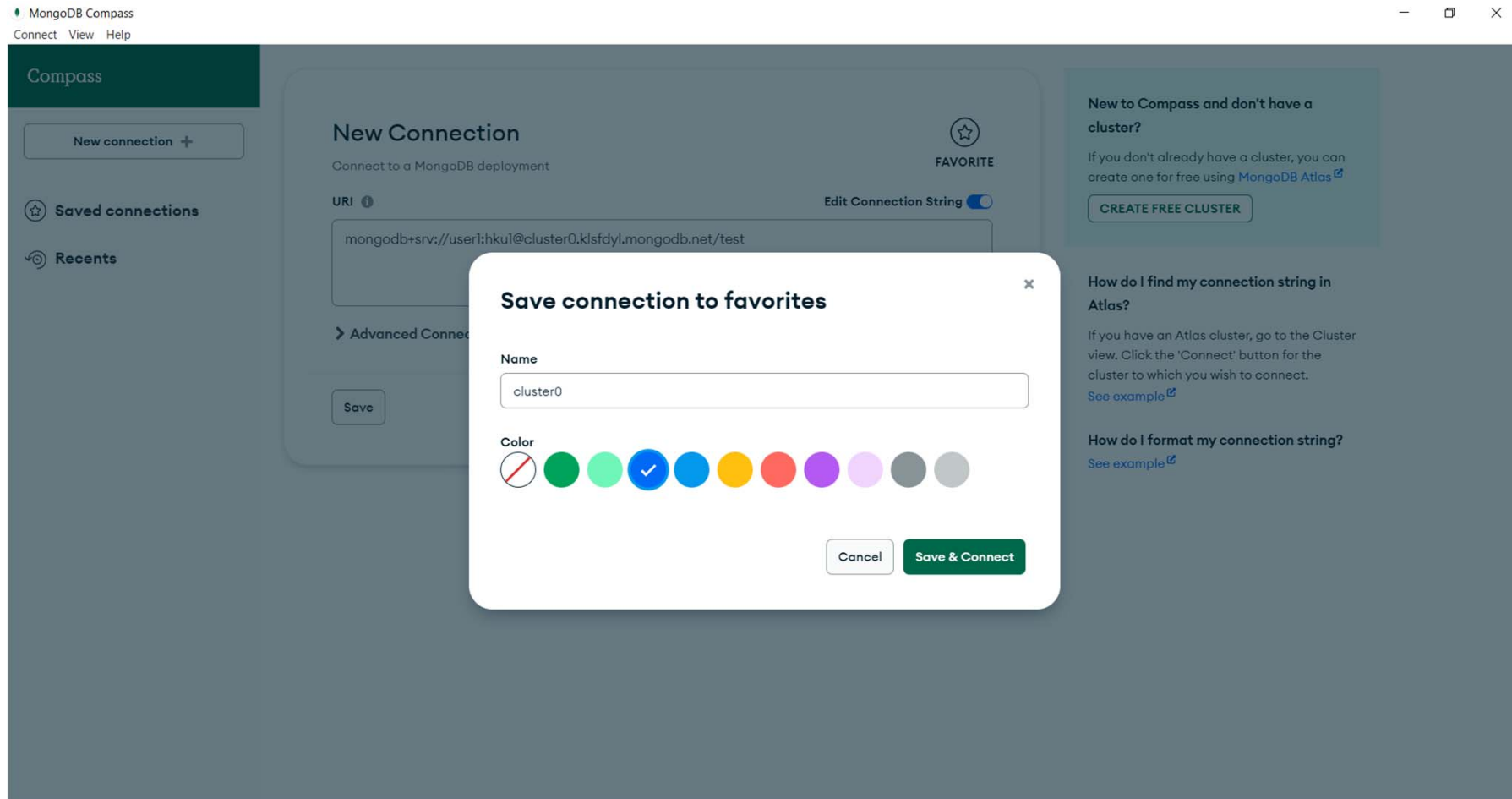
New to Compass and don't have a cluster?
If you don't already have a cluster, you can create one for free using [MongoDB Atlas](#)

CREATE FREE CLUSTER

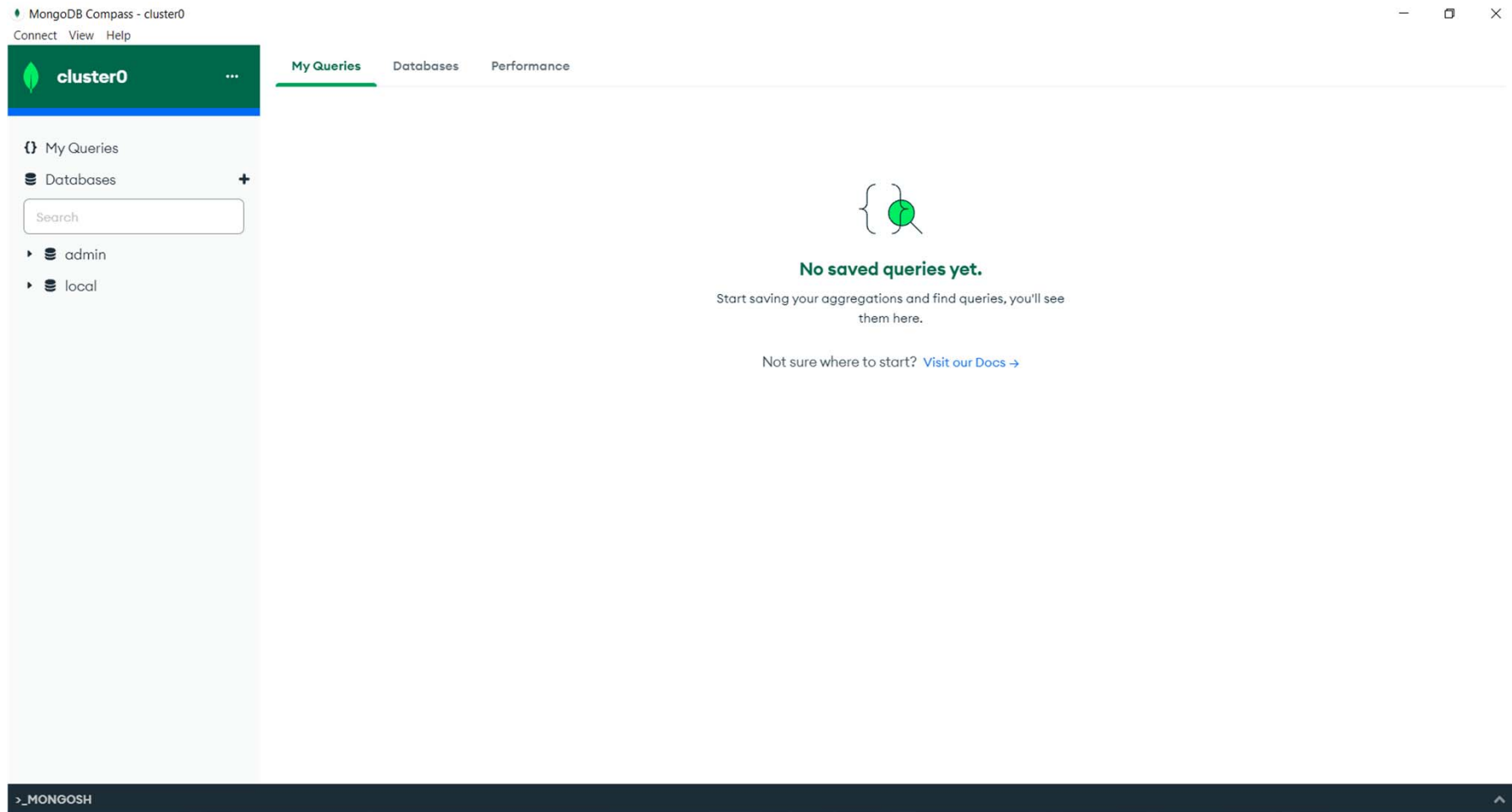
How do I find my connection string in Atlas?
If you have an Atlas cluster, go to the Cluster view. Click the 'Connect' button for the cluster to which you wish to connect.
[See example](#)

How do I format my connection string?
[See example](#)

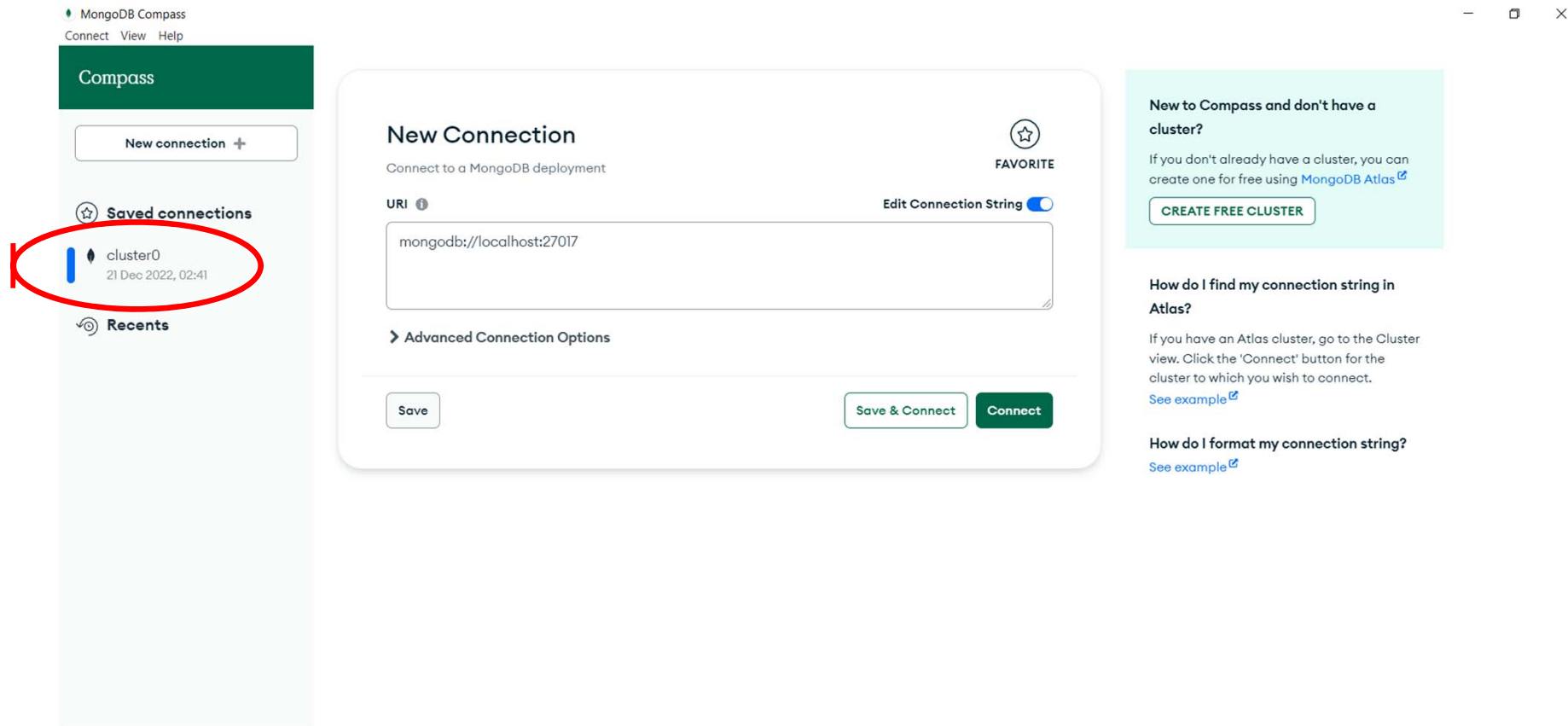
Click “Save & Connect”



Successfully connected!



You can reuse the connection to “cluster0” when you open MongoDB Compass next time



You may also load some sample data to your database

The screenshot shows the MongoDB Atlas interface for 'Project 0'. The left sidebar contains navigation links for 'DEPLOYMENT', 'Database', 'SERVICES', and 'SECURITY'. The main content area is titled 'Database Deployments' and features a search bar and a '+ Create' button. A prominent callout box with a green download icon and the text 'Load sample datasets to Cluster0.' is circled in red. Below this, the 'Cluster0' section displays various performance metrics and a table of cluster details.

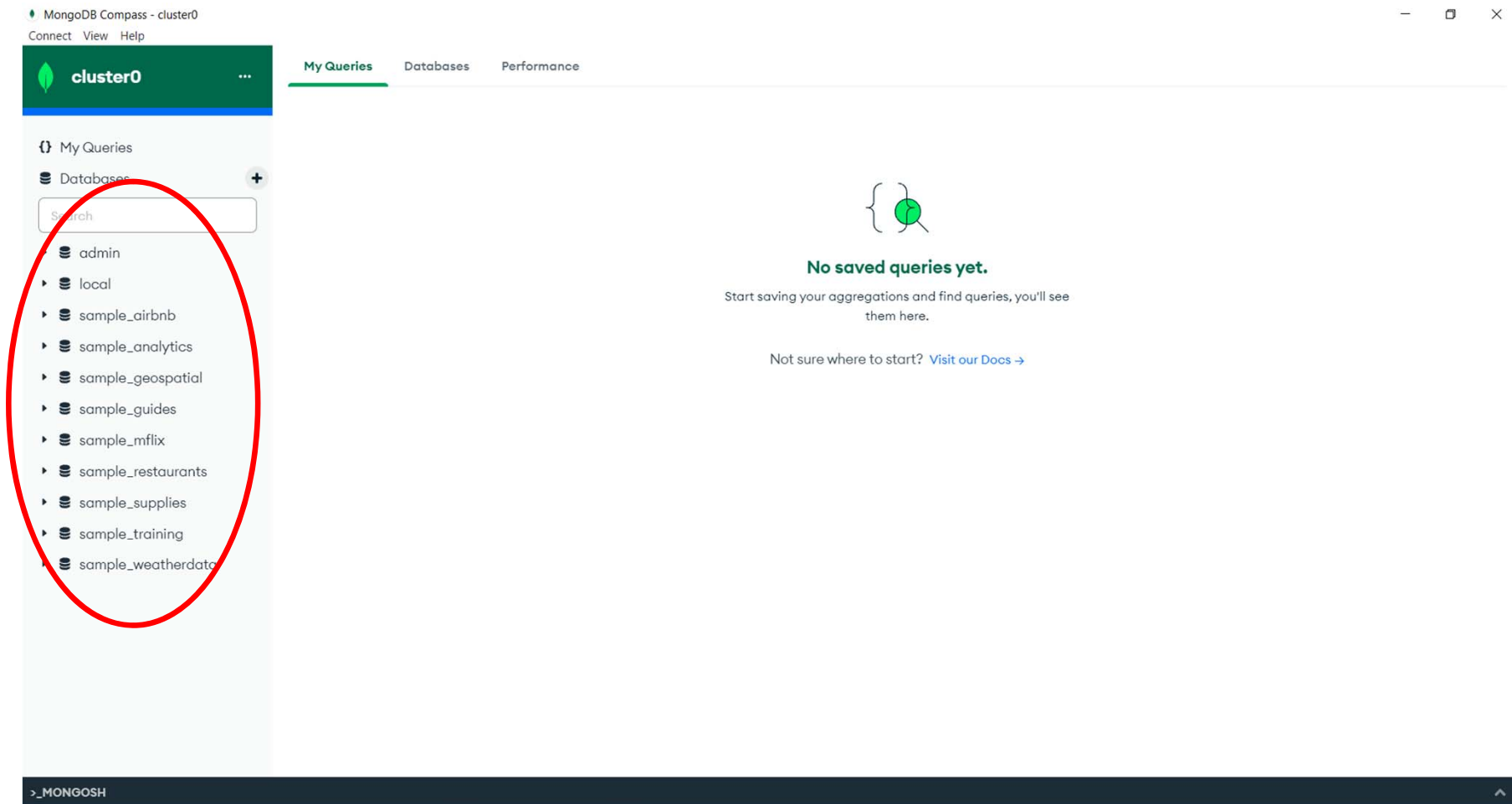
Cluster0 Metrics (Last 11 minutes):

- Read (R): 0
- Write (W): 0
- Connections: 0
- In: 0.0 B/s
- Out: 0.0 B/s
- Data Size: 0.0 B

Cluster Details Table:

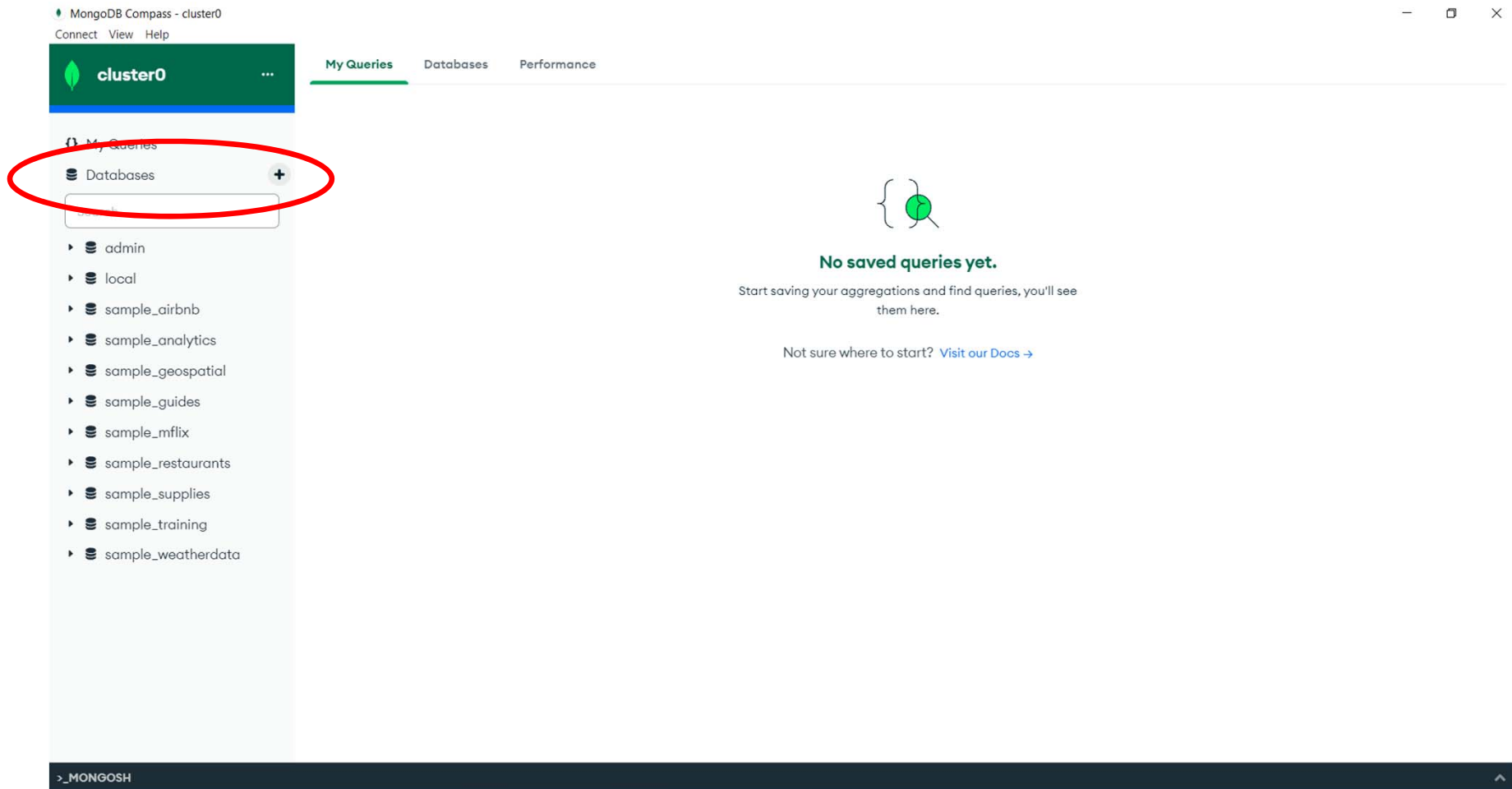
VERSION	REGION	CLUSTER TIER	TYPE	BACKUPS	LINKED APP SERVICES	ATLAS SEARCH
5.0.14	AWS / Hong Kong (ap-east-1)	M0 Sandbox (General)	Replica Set - 3 nodes	Inactive	None Linked	Create Index

List of sample data will then be visible in MongoDB (may take some time to load)

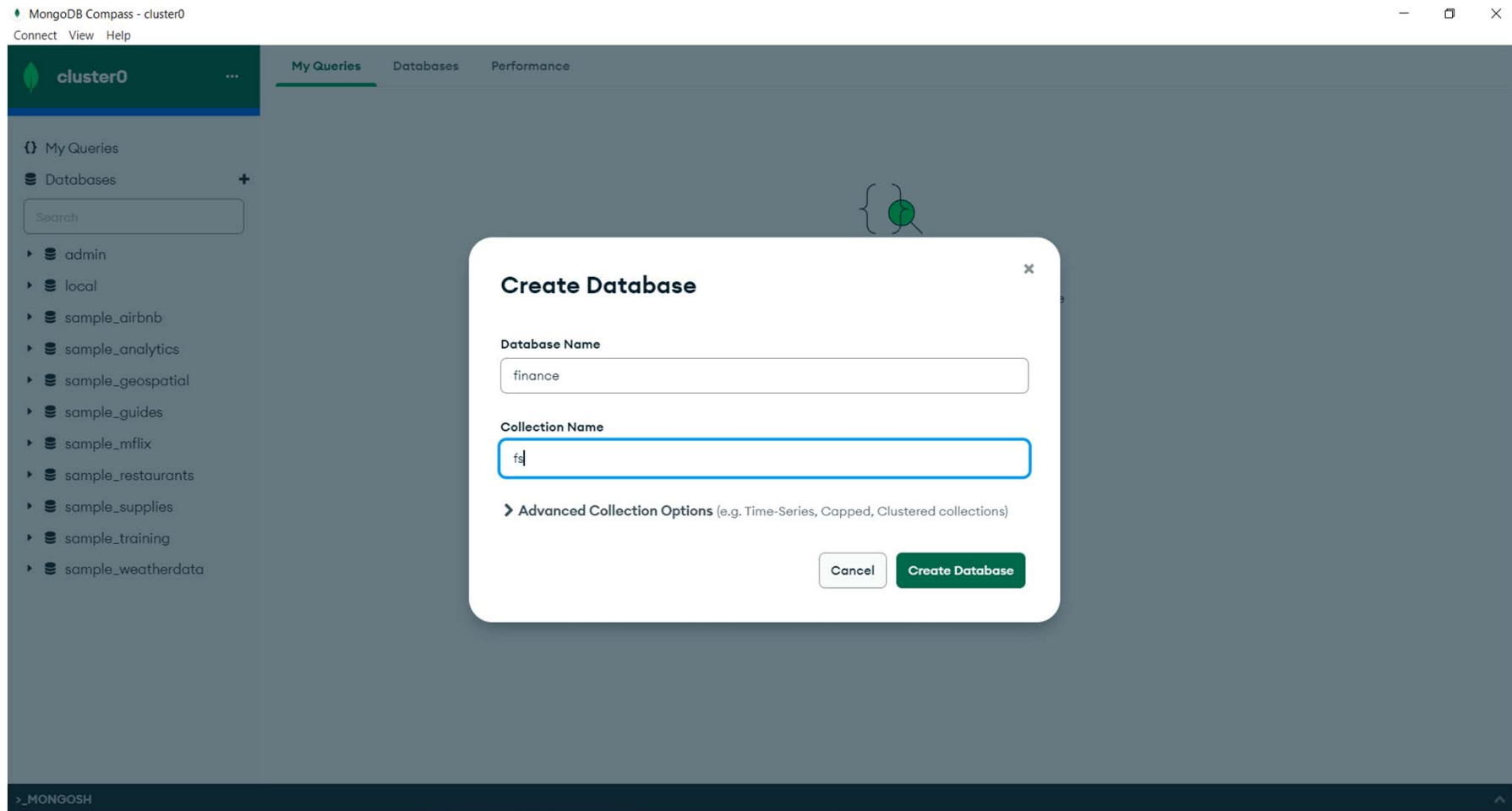


Creating Databases and Tables Through MongoDB Compass

Click the “+” sign next to “Databases” on the left panel



Put “finance” as Database Name “fs” as Collection Name



Import FS into MongoDB

MongoDB Compass - cluster0/finance

Connect View Help

cluster0

My Queries

Databases

Search

- admin
- finance
 - fs
- local
- sample_airbnb
- sample_analytics
- sample_geospatial
- sample_guides
- sample_mflix
- sample_restaurants
- sample_supplies
- sample_training
- sample_weatherdata

Collections

Create collection View

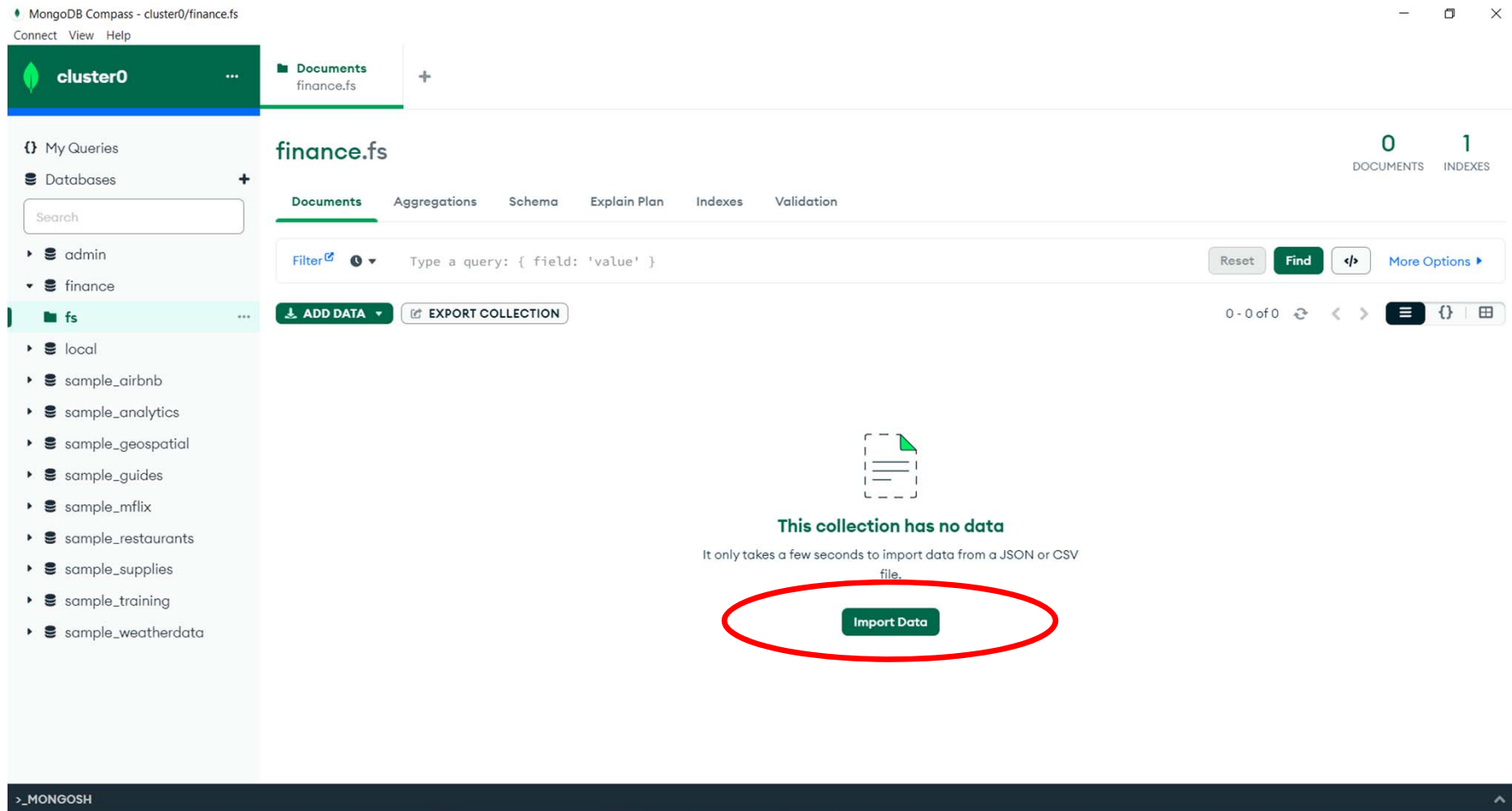
Sort by Collection Name

fs

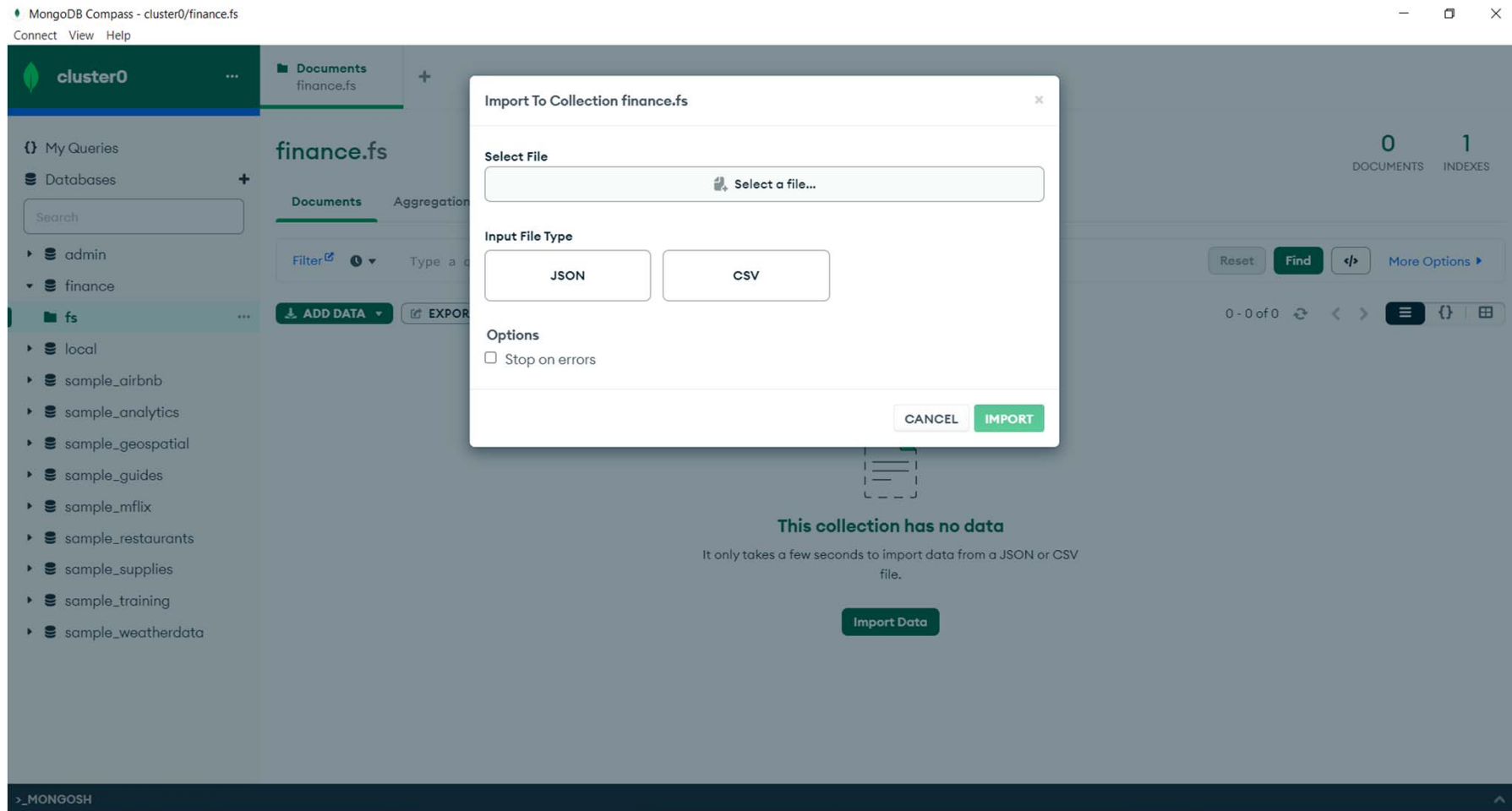
Storage size:	Documents:	Avg. document size:	Indexes:	Total index size:
4.10 kB	0	0 B	1	4.10 kB

>_MONGOSH

Click “Import Data”

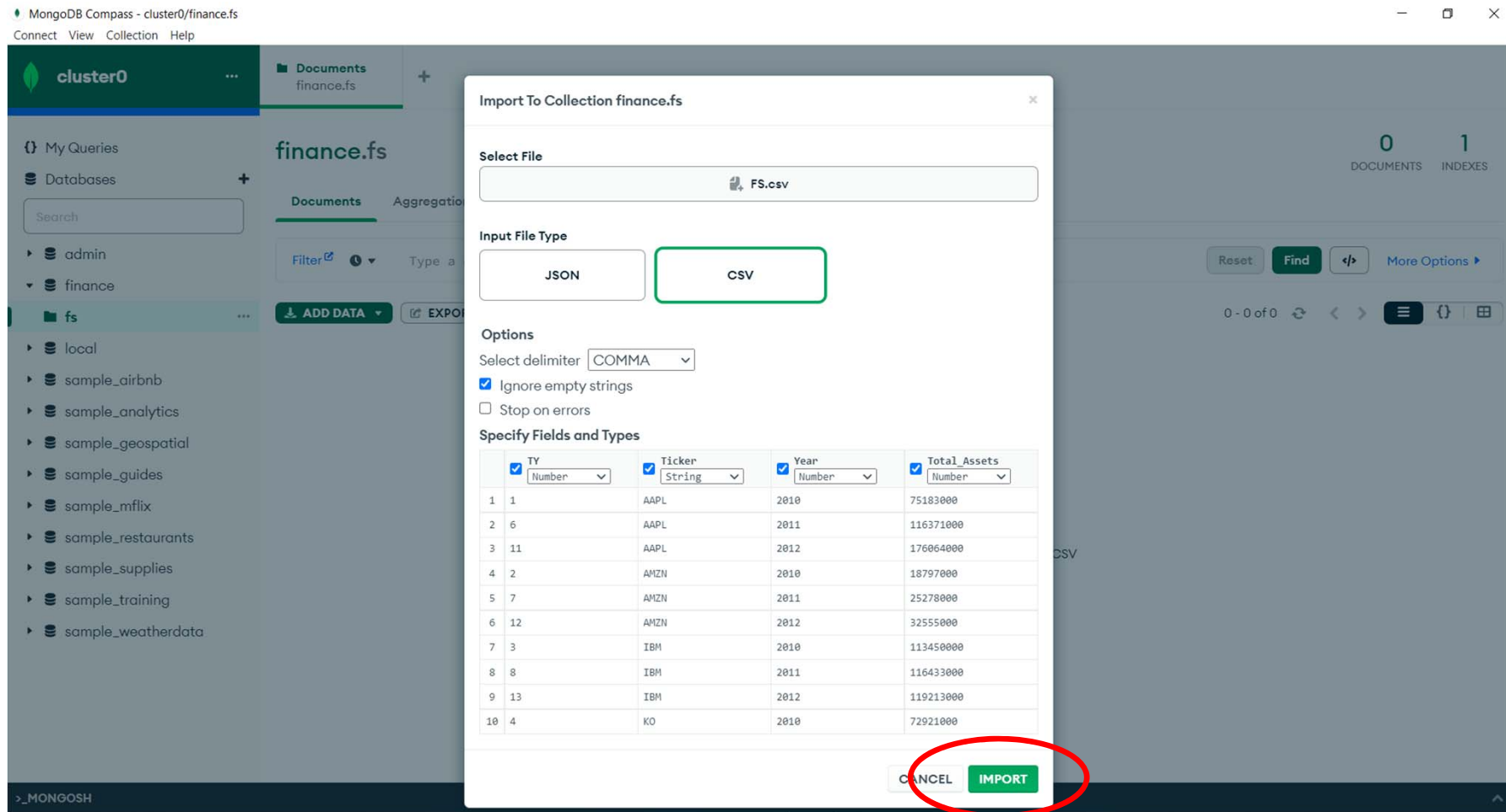


Choose the FS file from your computer Select “CSV”



Choose the correct data type for each field

Click Import



MongoDB Compass - cluster0/finance.fs

Connect View Collection Help

cluster0

Documents
finance.fs

My Queries

Databases

Search

admin

finance

fs

local

sample_airbnb

sample_analytics

sample_geospatial

sample_guides

sample_mflix

sample_restaurants

sample_supplies

sample_training

sample_weatherdata

finance.fs

Documents

Filter

ADD DATA

EXPORT

_id: ObjectId('63...
TY: 1
Ticker: "AAPL"
Year: 2010
Total_Assets: 751...

_id: ObjectId('63...
TY: 6
Ticker: "AAPL"
Year: 2011
Total_Assets: 116...

_id: ObjectId('63...
TY: 11
Ticker: "AAPL"
Year: 2012
Total_Assets: 176...

_id: ObjectId('63...
TY: 2
Ticker: "AMZN"
Year: 2010
Total_Assets: 187...

Import To Collection finance.fs

Select File

FS.csv

Input File Type

JSON CSV

Options

Select delimiter COMMA

☒ Ignore empty strings

☐ Stop on errors

Specify Fields and Types

	<input checked="" type="checkbox"/> TY Number	<input checked="" type="checkbox"/> Ticker String	<input checked="" type="checkbox"/> Year Number	<input checked="" type="checkbox"/> Total_Assets Number
1	1	AAPL	2010	75183000
2	6	AAPL	2011	116371000
3	11	AAPL	2012	176064000
4	2	AMZN	2010	18797000
5	7	AMZN	2011	25278000
6	12	AMZN	2012	32555000
7	3	IBM	2010	113450000
8	8	IBM	2011	116433000
9	13	IBM	2012	119213000
10	4	KO	2010	72921000

Import completed

15 / 15

15 DOCUMENTS 1 INDEXES

Reset Find </> More Options

1 - 15 of 15

MongoDB Compass - cluster0/finance.fs

Connect View Collection Help

cluster0

Documents
finance.fs

My Queries

Databases

Search

admin

finance

fs

local

sample_airbnb

sample_analytics

sample_geospatial

sample_guides

sample_mflix

sample_restaurants

sample_supplies

sample_training

sample_weatherdata

finance.fs

Documents Aggregations Schema Explain Plan Indexes Validation

Filter Type a query: { field: 'value' }

Reset Find More Options

1 - 15 of 15

ADD DATA EXPORT COLLECTION

15 DOCUMENTS 1 INDEXES

```
{
  "_id": ObjectId('63a20330c47ba5a6b680b07a'),
  "TY": 1,
  "Ticker": "AAPL",
  "Year": 2010,
  "Total_Assets": 75183000
}
```

```
{
  "_id": ObjectId('63a20330c47ba5a6b680b07b'),
  "TY": 6,
  "Ticker": "AAPL",
  "Year": 2011,
  "Total_Assets": 116371000
}
```

```
{
  "_id": ObjectId('63a20330c47ba5a6b680b07c'),
  "TY": 11,
  "Ticker": "AAPL",
  "Year": 2012,
  "Total_Assets": 176064000
}
```

```
{
  "_id": ObjectId('63a20330c47ba5a6b680b07d'),
  "TY": 2,
  "Ticker": "AMZN",
  "Year": 2010,
  "Total_Assets": 18707000
}
```

>_MONGOSH

Exercise

- Import DP and Articles into MongoDB and check the results

Writing MongoDB Queries

Click Mongosh at the lower left of Mongo Compass to run MongoDB queries

The screenshot shows the MongoDB Compass application window titled "MongoDB Compass - localhost:27017". The interface includes a top menu bar with "Connect", "View", "Collection", and "Help". Below the menu is a sidebar on the left with a dark theme. The sidebar contains the following information:

- Local** (selected)
- 5 DBS, 11 COLLECTIONS
- ☆ FAVORITE
- HOST: localhost:27017
- CLUSTER: Standalone
- EDITION: MongoDB 4.2.7 Enterprise
- Filter your data (search bar)
- Database list: > admin, > config, > local, > test, > test2
- A "+" button at the bottom of the list.
- A red circle highlights the ">_MONGOSH" option at the very bottom of the sidebar.

The main area of the application shows the "Databases" tab. It features a "CREATE DATABASE" button and a table listing the databases:

Database Name	Storage Size	Collections	Indexes	
admin	20.5KB	0	1	
config	36.9KB	0	2	
local	53.2KB	1	1	
test	1.8MB	9	9	
test2	1.3MB	1	1	

Show Databases and Tables/Collections

	MongoDB	MySQL
Show database	<code>show dbs/databases</code>	<code>show databases;</code>
Use database	<code>use database_name</code>	<code>use database_name</code>
Show tables/collections	<code>show collections/tables</code>	<code>show tables;</code>
Show all values in a table	<code>db.collectionName.find()</code>	<code>SELECT * FROM TableName</code>

Create/Drop Table/Collection

- Create Table/Collection:

- MySQL:

```
CREATE TABLE TableName (column1, datatype1, ...)
```

- MongoDB:

```
db.createCollection("CollectionName")
```

- Drop Table/Collection:

- MySQL:

```
DROP TABLE TableName
```

- MongoDB:

```
db.collectionName.drop()
```

Create/Drop Table/Collection

- Exercise 1. Create a collection in MongoDB with the name of “t4” and show collections.
- Exercise 2. Drop the collection “t4” in MongoDB and show collections.

Add/Drop Column/Field

- MySQL Add Column:

```
ALTER TABLE TableName ADD new_column_name new_datatype
```

- MySQL Drop Column:

```
ALTER TABLE TableName DROP column_name
```

- MongoDB Add Field:

```
db.collectionName.updateMany({}, {$set:{new_field:""}})
```

- MongoDB Drop Field:

```
db.collectionName.updateMany({}, {$unset:{"new_field": ""}})
```

Insert Values

- MySQL insert values:

```
INSERT INTO TableName (Column1, Column2,  
Column3)  
VALUES (Value1, Value2, Value3)
```

- MongoDB insert values:

```
db.collectionName.insertOne({ Field1: Value1,  
Field2: Value2, Field3: Value3})
```

Exercise

- Create collection olympics in MongoDB.

Year	Location
2016	Rio de Janeiro
2020	Tokyo

Select Statements

- MySQL:

```
SELECT Column1, Column2 FROM TableName
```

- MongoDB:

```
db.collectionName.find({ }, { Field1: 1, Field2: 1})
```

- Exercise: select fields Ticker and Year in the collection “fs”

Select Statements – Count Record Number

- MySQL:

```
SELECT COUNT(*) FROM TableName
```

- MongoDB:

```
db.collectionName.countDocuments({})
```

- Exercise: Count the number of records in collection “fs”

Select Statements – Limit Row

- MySQL:

```
SELECT * FROM TableName LIMIT 10
```

- MongoDB:

```
db.collectionName.find().limit(10)
```

- Exercise: Show the first 5 records in collection “fs”

Select Statements - WHERE

- MySQL:

```
SELECT Column1, Column2 FROM TableName  
WHERE Column1 = Value1
```

- MongoDB:

```
db.collectionName.find({Field1: Value1},  
{Field1: 1, Field2: 1})
```

- Exercise: Select field Ticker and Year of AAPL in the collection “fs”

Select Statements - Comparison

- MySQL:

```
SELECT * FROM TableName WHERE Column1 > Value1
```

- MongoDB:

```
db.collectionName.find({ Field1: { $gt: Value1 } })
```

- \$gt: > \$lt: <
- \$gte: >= \$lte: <=

- Exercise: Select Ticker, Year, and Total_Assets of all records before 2012 (2012 is not included) in the collection “fs”.

Select Statements – And/Or

- MySQL:

```
SELECT * FROM TableName WHERE Column1 >= Value1  
AND Column1 < Value2
```

- MongoDB:

```
db.collectionName.find({ Field1: { $gte: Value1,  
$lt: Value2 } })
```

- MySQL:

```
SELECT * FROM TableName WHERE Column1=Value1 OR  
Column2=Value2
```

- MongoDB:

```
db.collectionName.find({ $or: [{ Field1:  
Value1 } , { Field2: Value2 }] })
```

Select Statements – And/Or

- Exercise: Translate the SQL to MongoDB query and hide id
- ```
SELECT Ticker, Year, Total_Assets
FROM fs
WHERE Year>2011 OR Total_Assets<=80000000
```

# Select Statements – Like

- MySQL:

```
SELECT * FROM TableName WHERE Column1 LIKE "%Value%"
```

- MongoDB:

```
db.collectionName.find({ Field1: /Value/ })
```

- MySQL:

```
SELECT * FROM TableName WHERE Column1 LIKE "Value%"
```

- MongoDB:

```
db.collectionName.find({ Field1: /^Value/ })
```

# Select Statements – Like

- Exercise: Translate the SQL to MongoDB query and hide id

```
SELECT Ticker, Year, Total_Assets
```

```
FROM fs
```

```
WHERE Year>2011 OR Total_Assets<=800000000
```

```
AND Ticker LIKE "AA%"
```

# Using MongoDB with Python (for reference only)

# Import Data Into MongoDB Using Python

- 1. In Anaconda Prompt: `pip install pymongo`

*or*

In Jupyter Notebook: `conda install pymongo`

- 2.  

```
import pandas as pd
from pymongo import MongoClient
client = MongoClient()
df=pd.read_csv(r'D:\MSBA7024\fs.csv')
data = df.to_dict(orient='records')
col = client['test']['fs1']
col.insert_many(data)
```



# Extract Data From MongoDB Using Python

```
import pandas as pd
from pymongo import MongoClient
client = MongoClient()
db = client.test
collection = db.fs1
data = pd.DataFrame(list(collection.find()))
print(data.head())
```

# Extract Data From MongoDB Using Python

Extract only records of AAPL:

```
import pandas as pd
from pymongo import MongoClient
client = MongoClient()
db = client.test
collection = db.fs1
data = pd.DataFrame(list(collection.find({"Ticker": "AAPL"})))
print(data.head())
```

# Exercise

- Import DP and Articles into MongoDB through Python and check the results

Q&A