2

Installing MongoDB

Objectives

After completing this lesson, you should be able to do the following:

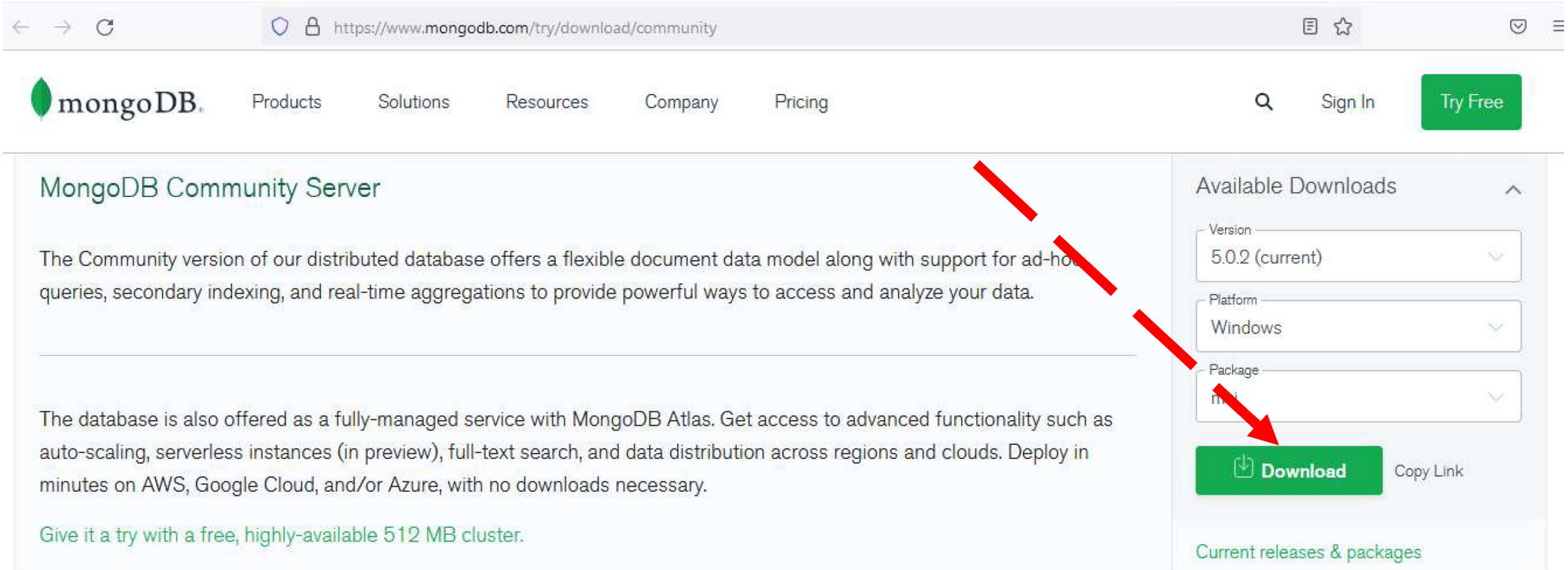
- Installation of MongoDB and MongoDB Compass
- Working with MongoShell
- Configuration
- Collections and Documents
- Data Types

Installing MongoDB

- The installers for MongoDB are available in both the 32-bit and 64-bit format.
- The 32-bit installers are good for development and test environments.
- But for production environments you should use the 64-bit installers. Otherwise, you can be limited to the amount of data that can be stored within MongoDB.
- It is advisable to always use the stable release for production environments.

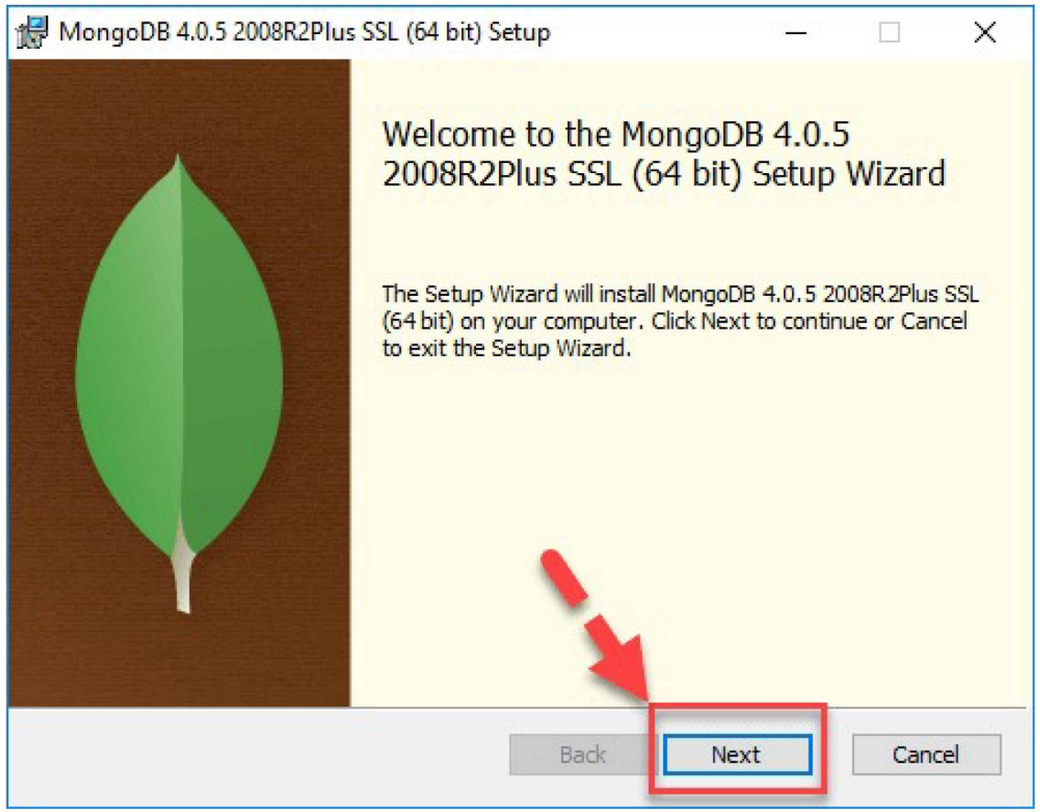
Installation : Step 1

- Download MongoDB Community Server
  - [https://www.mongodb.com/try/download/community]

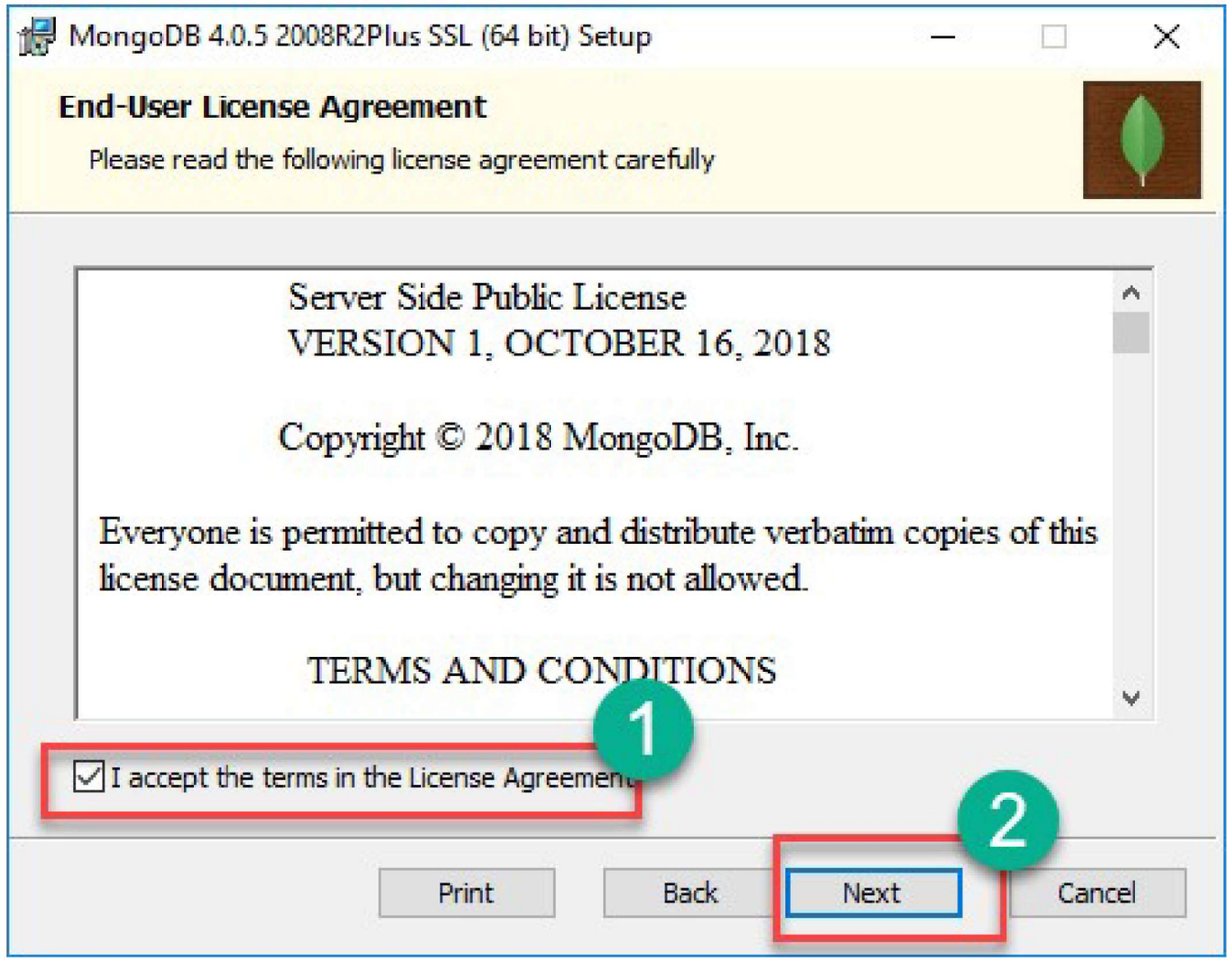


Step 2 : Click on Setup

- Once download is complete open the msi file. Click Next in the start up screen

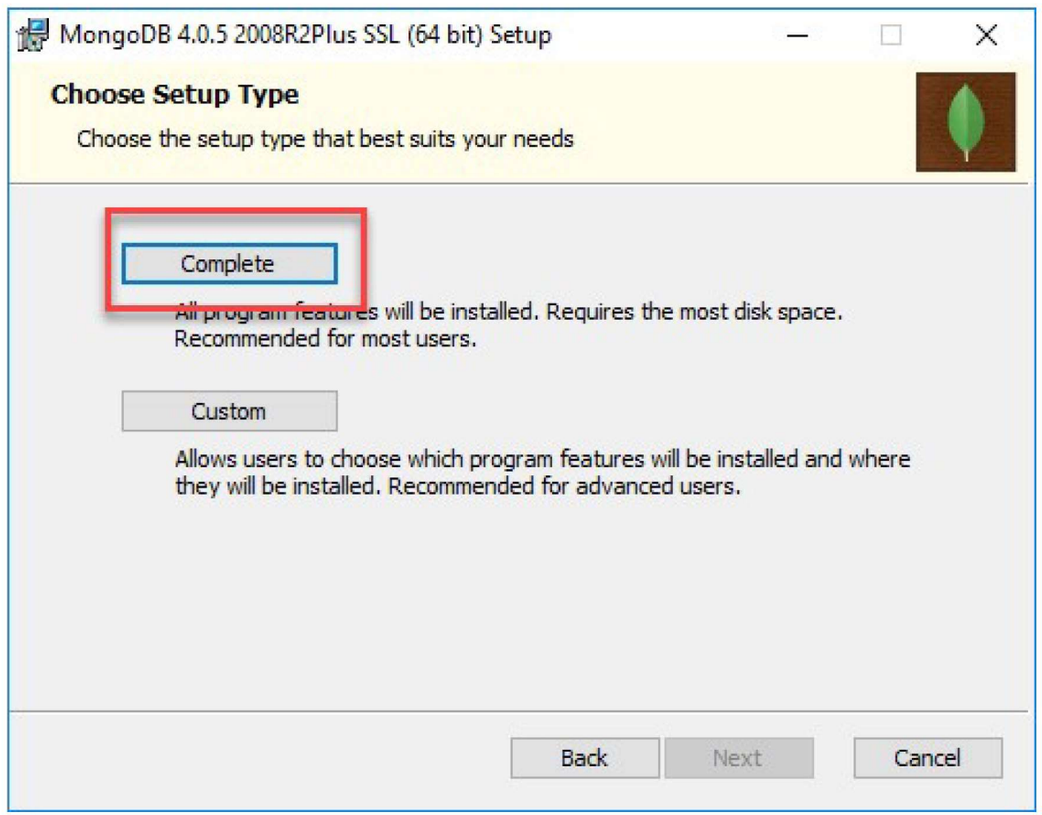


Step 3 : Accept the End-User License Agreement



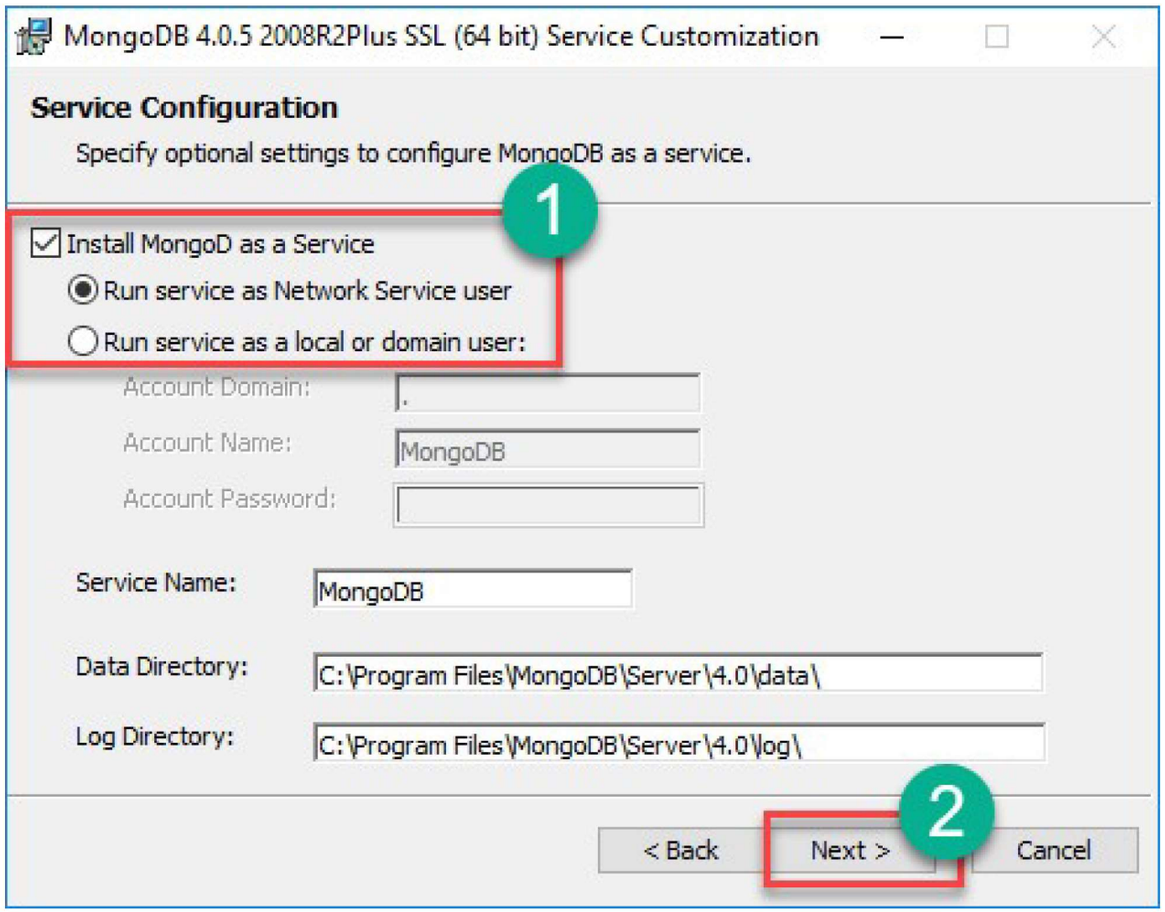
Step 4 : Click on the “complete” button

- Click on the “complete” button to install all of the components. The custom option can be used to install selective components or if you want to change the location of the installation.

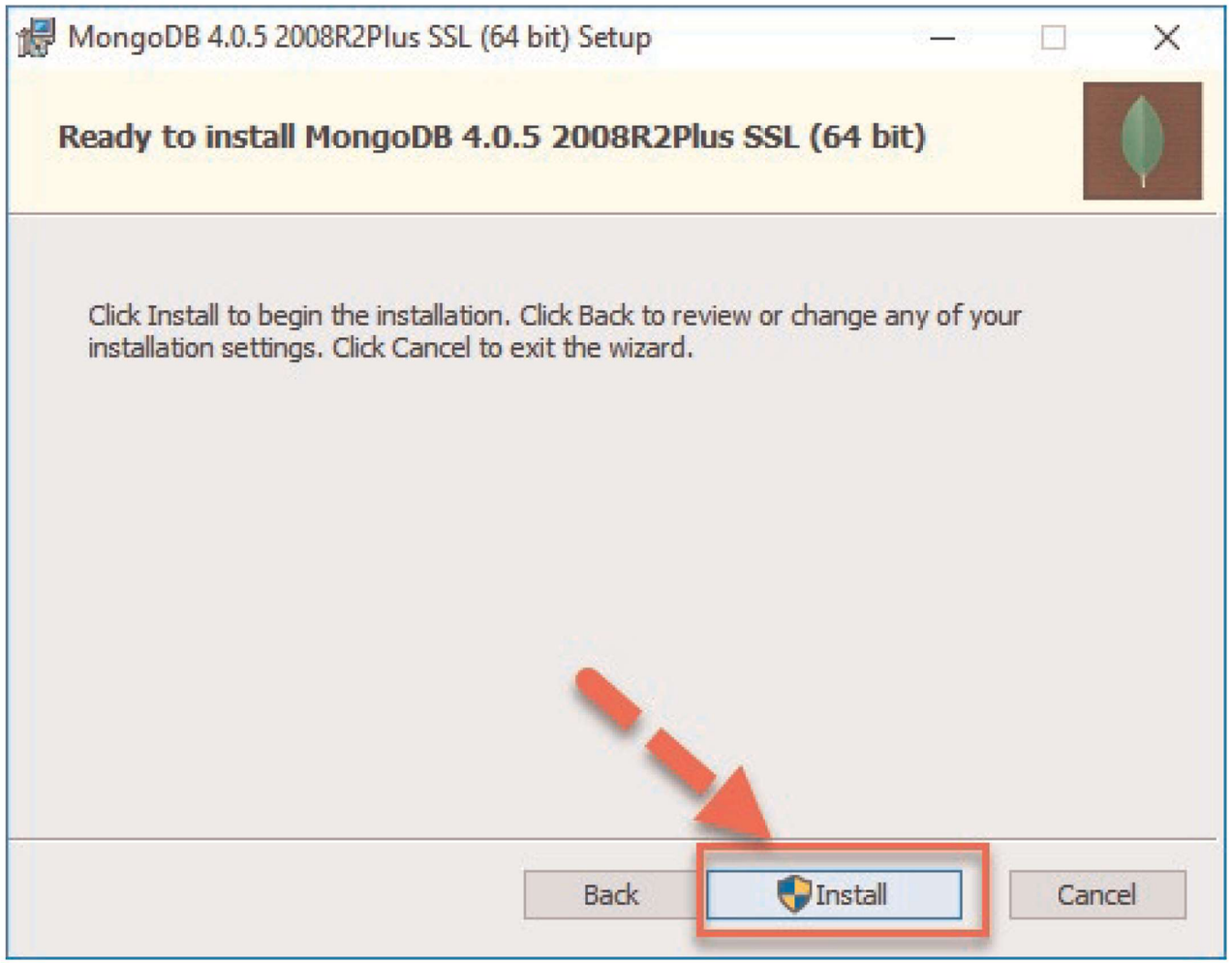


Step 5 : Service Configuratiom

1. Select “Run service as Network Service user”. make a note of the data directory, we’ll need this later.
2. Click Next

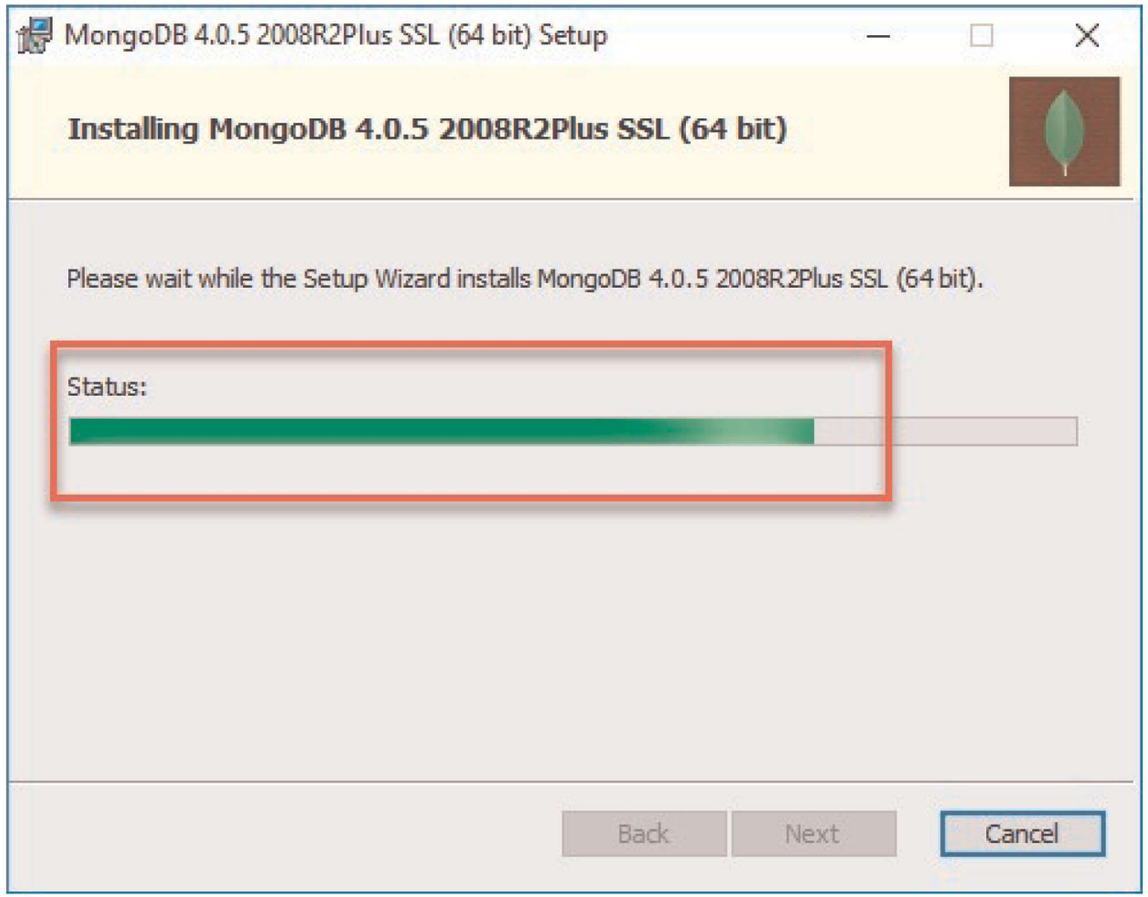


Step 6 : Start installation process

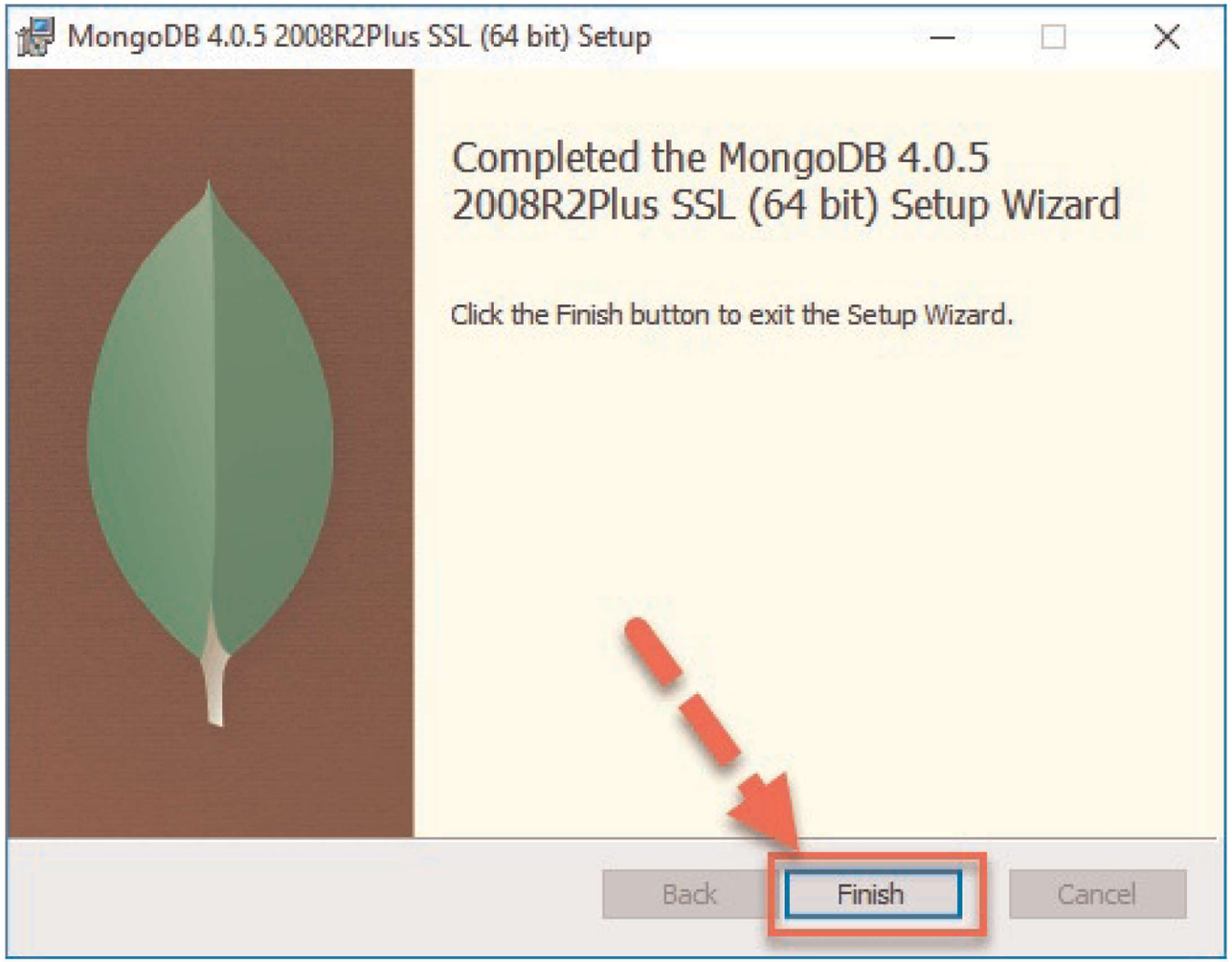


Step 7: Click Next once completed

- Installation begins. Click Next once completed

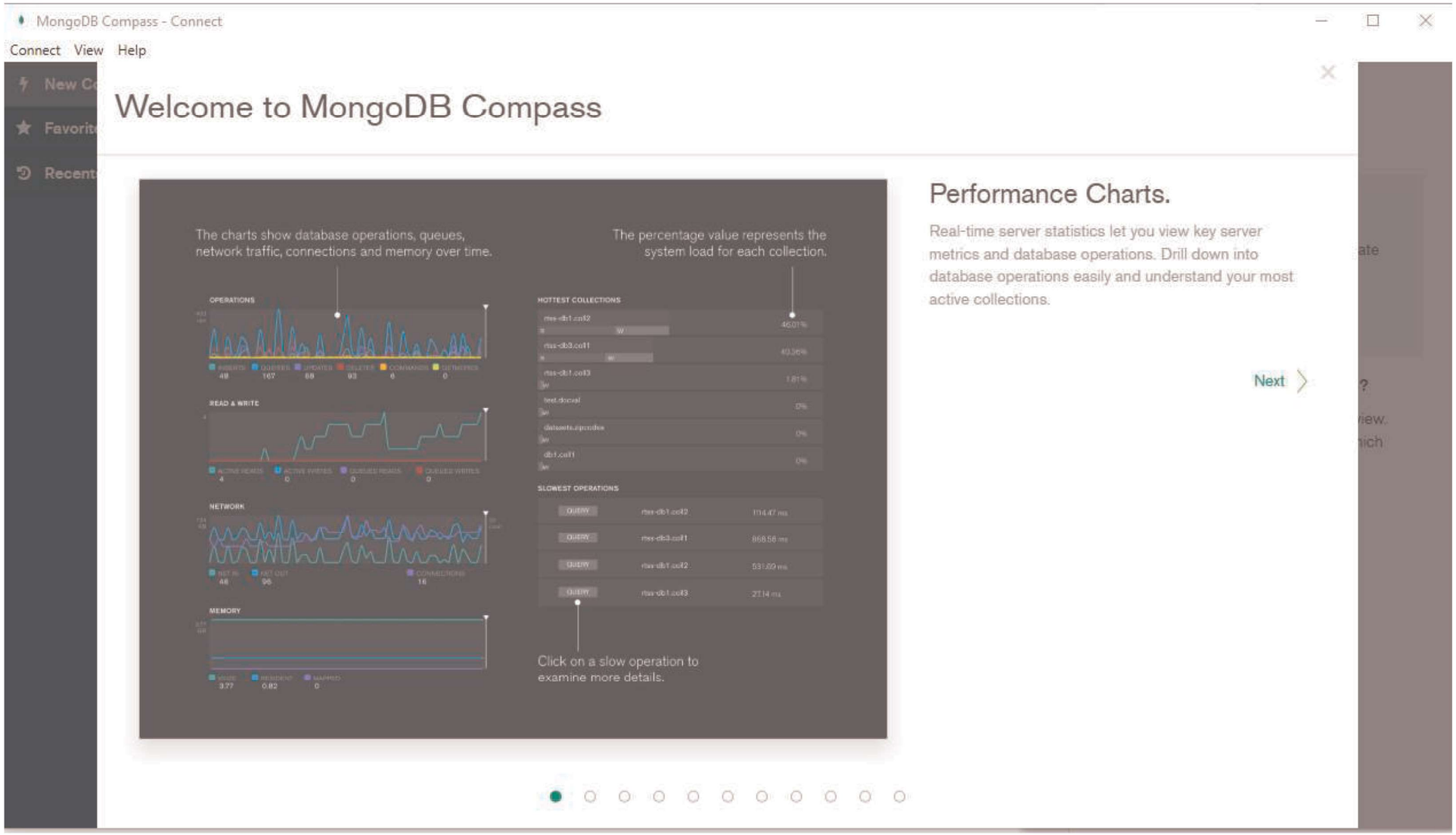


Step 8: Click on the Finish button

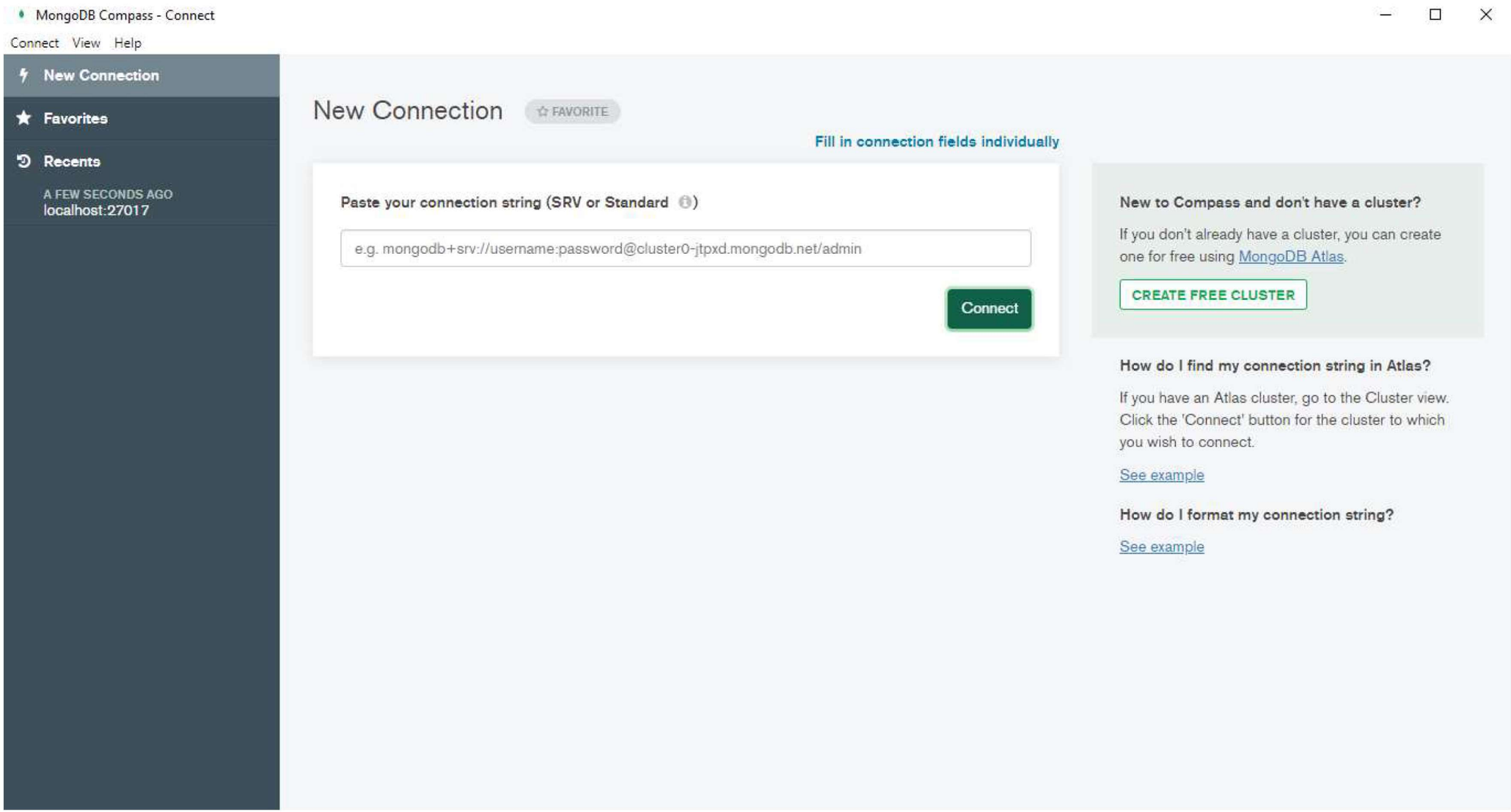


Installing & Using MongoDB Compass

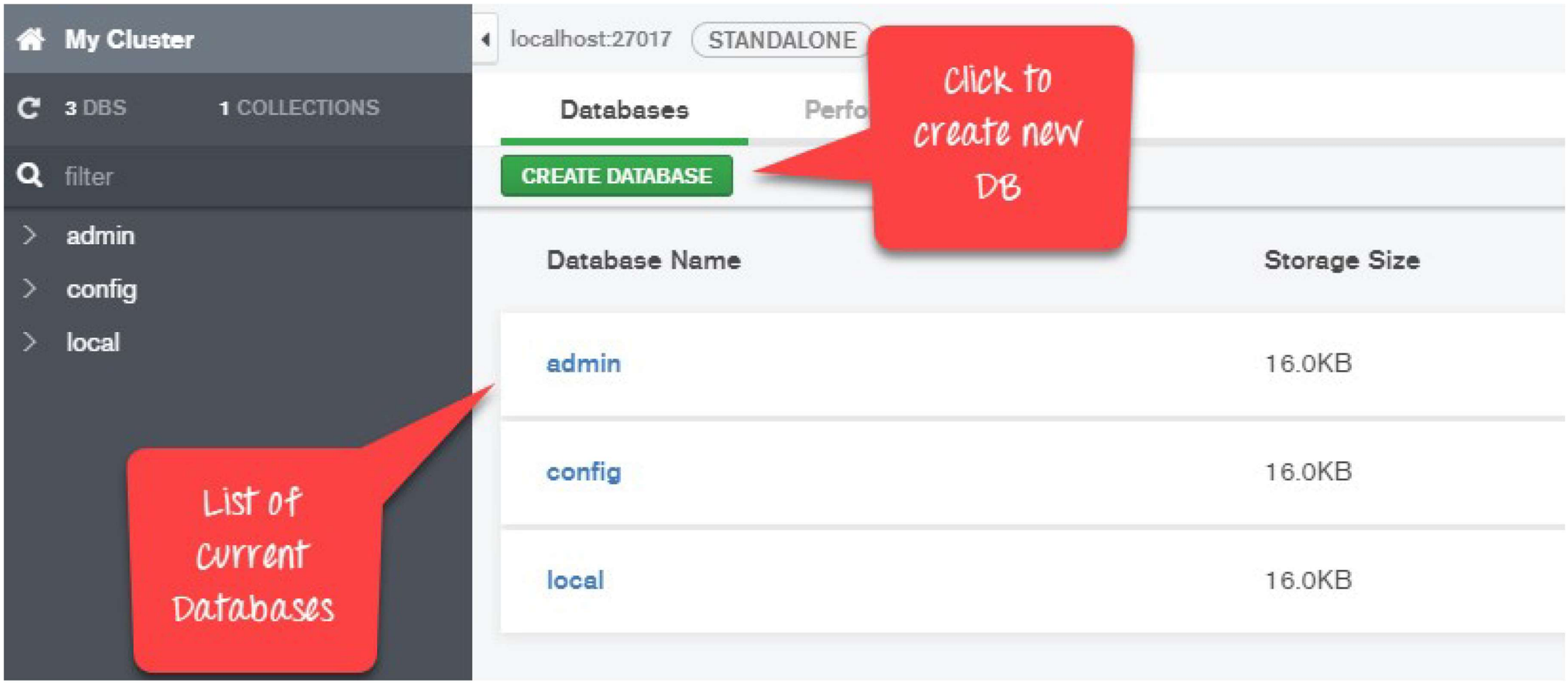
Step 1 : MongoDB Compass gets Installed with installation of MongoDB Installer



Click : Connect



You will see homescreen with list of current databases.

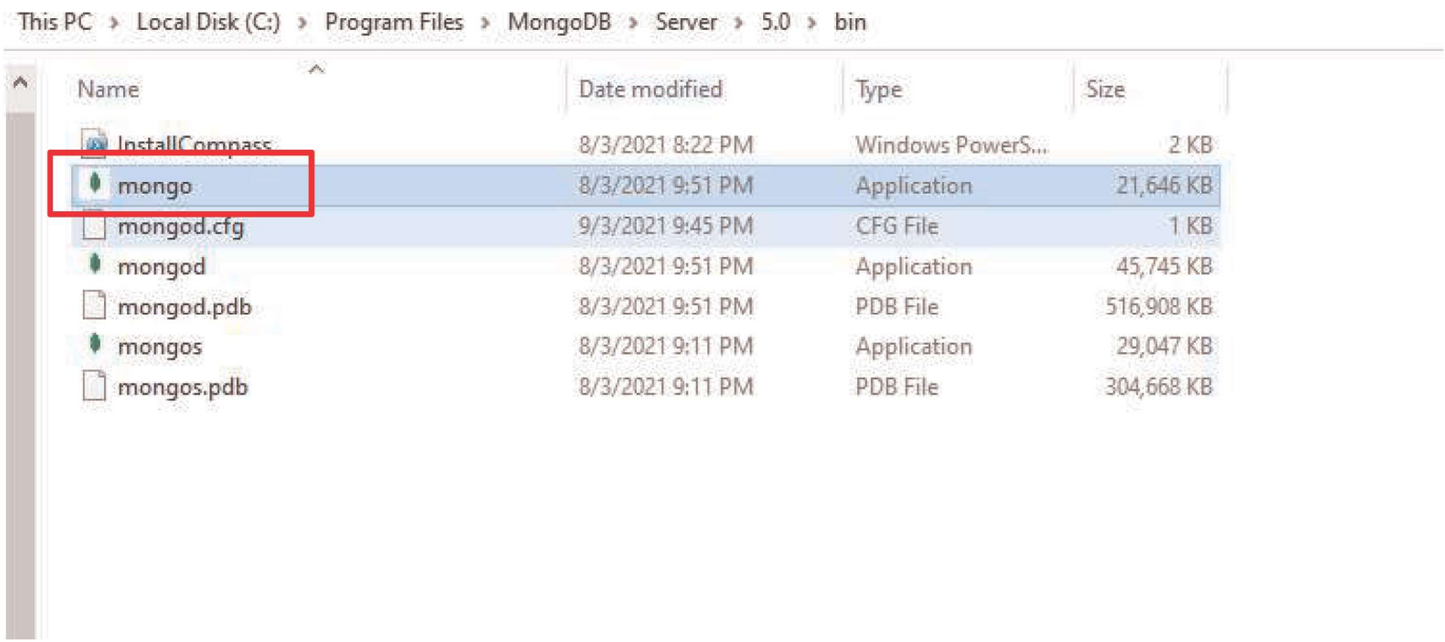


Hello World MongoDB: JavaScript Driver

- Drivers in MongoDB are used for connectivity between client applications and the database. For example, if you had Java program and required it to connect to MongoDB then you would require to download and integrate the Java driver so that the program can work with the MongoDB database.
- The driver for JavaScript comes out of the box. The MongoDB shell which is used to work with MongoDB database is actually a javascript shell. To access it

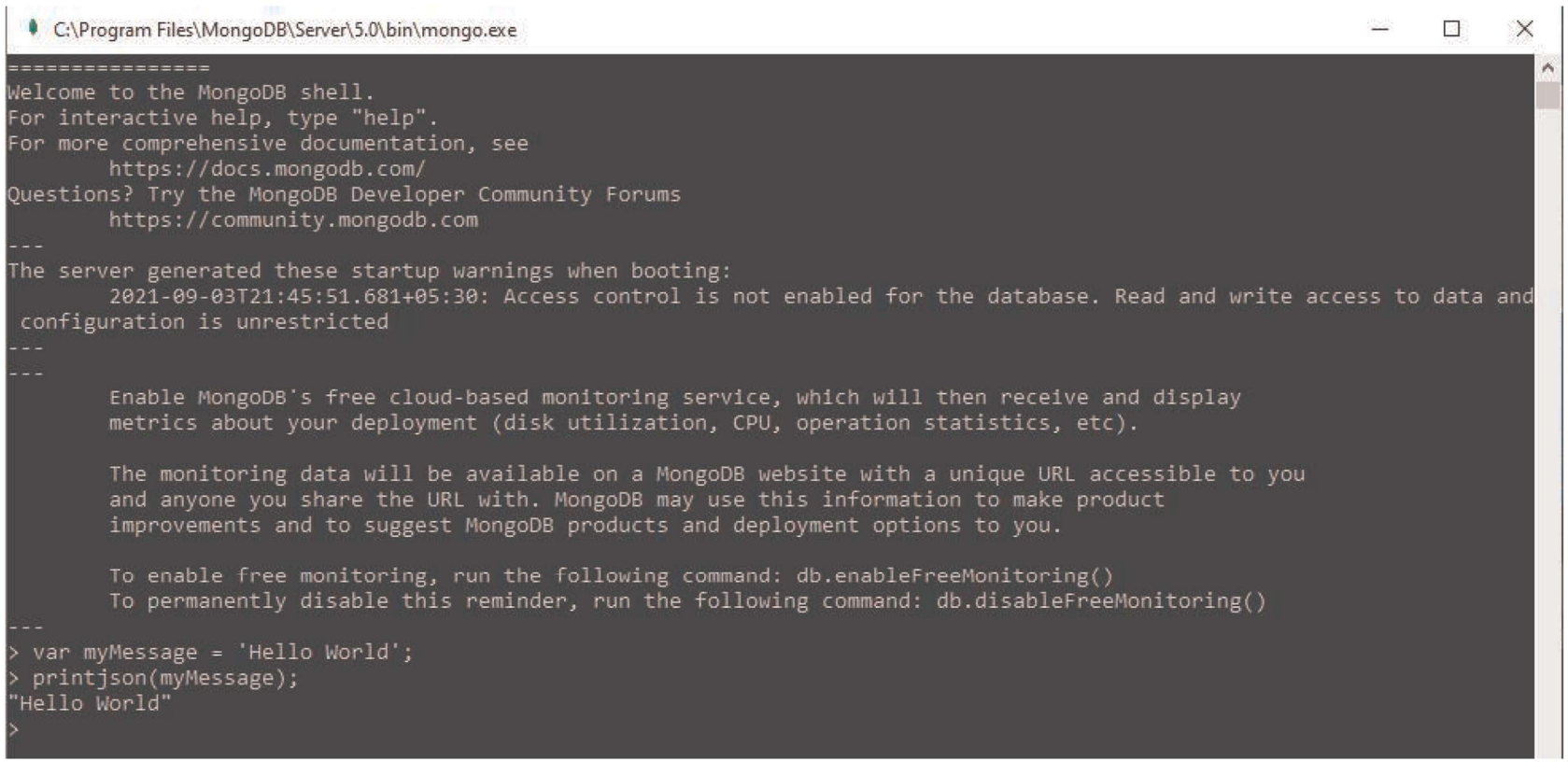
Step 1 :

- Go to ” C:\Program Files\MongoDB\Server\5.0\bin” and double click on mongo.exe. Alternatively, you can also click on the MongoDB desktop item

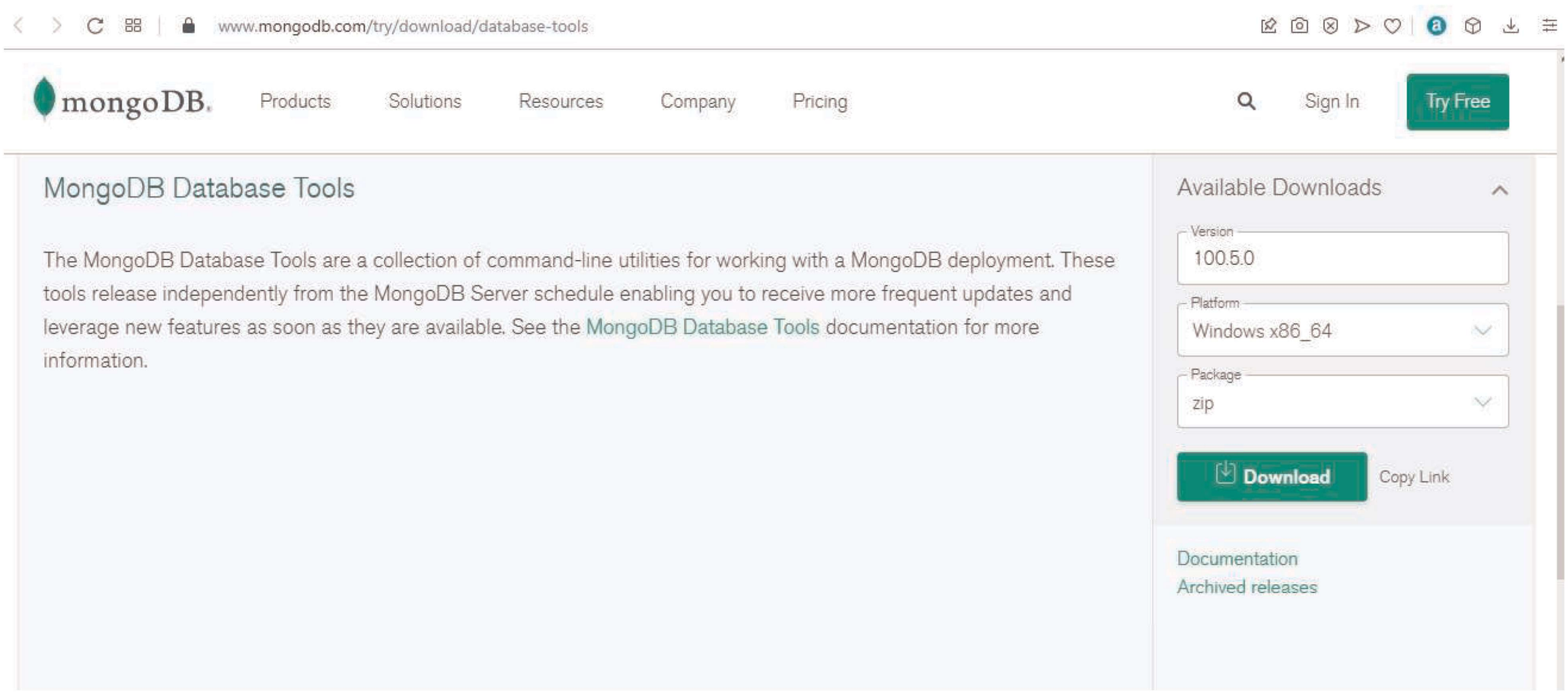


Step 2 : Enter following program into shell

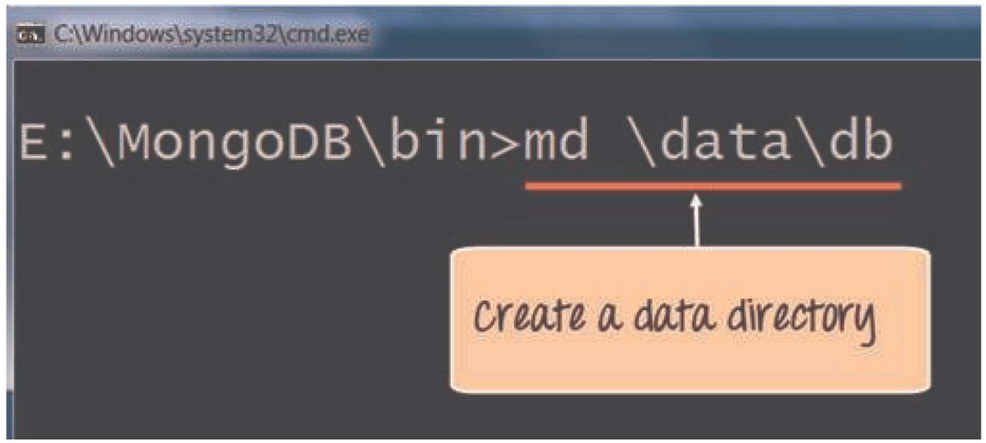
```
var myMessage='Hello World';
printjson(myMessage);
```



MongoDB Database Tools



- Before starting the MongoDB server, the first key aspect is to configure the data directory where all the MongoDB data will be stored.



- The above command 'md \data\db' makes a directory called \data\db in your current location.
- MongoDB will automatically create the databases in this location, because this is the default location for MongoDB to store its information. We are just ensuring the directory is present, so that MongoDB can find it when it starts.

The import of data into MongoDB is done using the "mongoimport" command.

Step 1: Create a CSV file called data.csv and put the following data in it

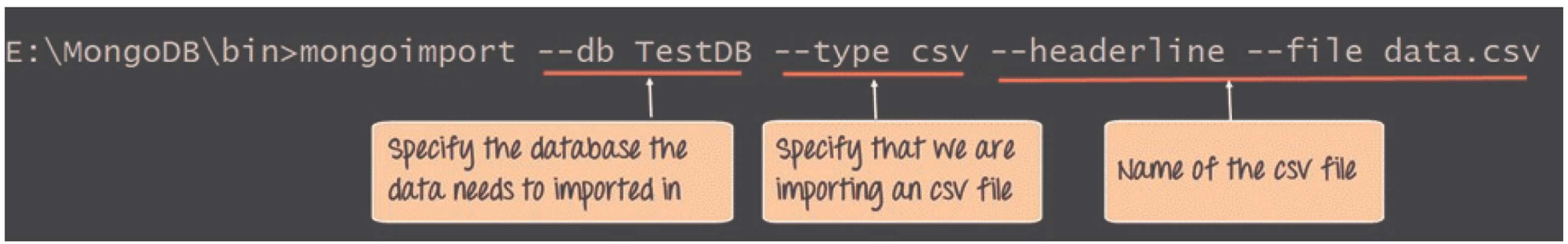
Employeeid,EmployeeName

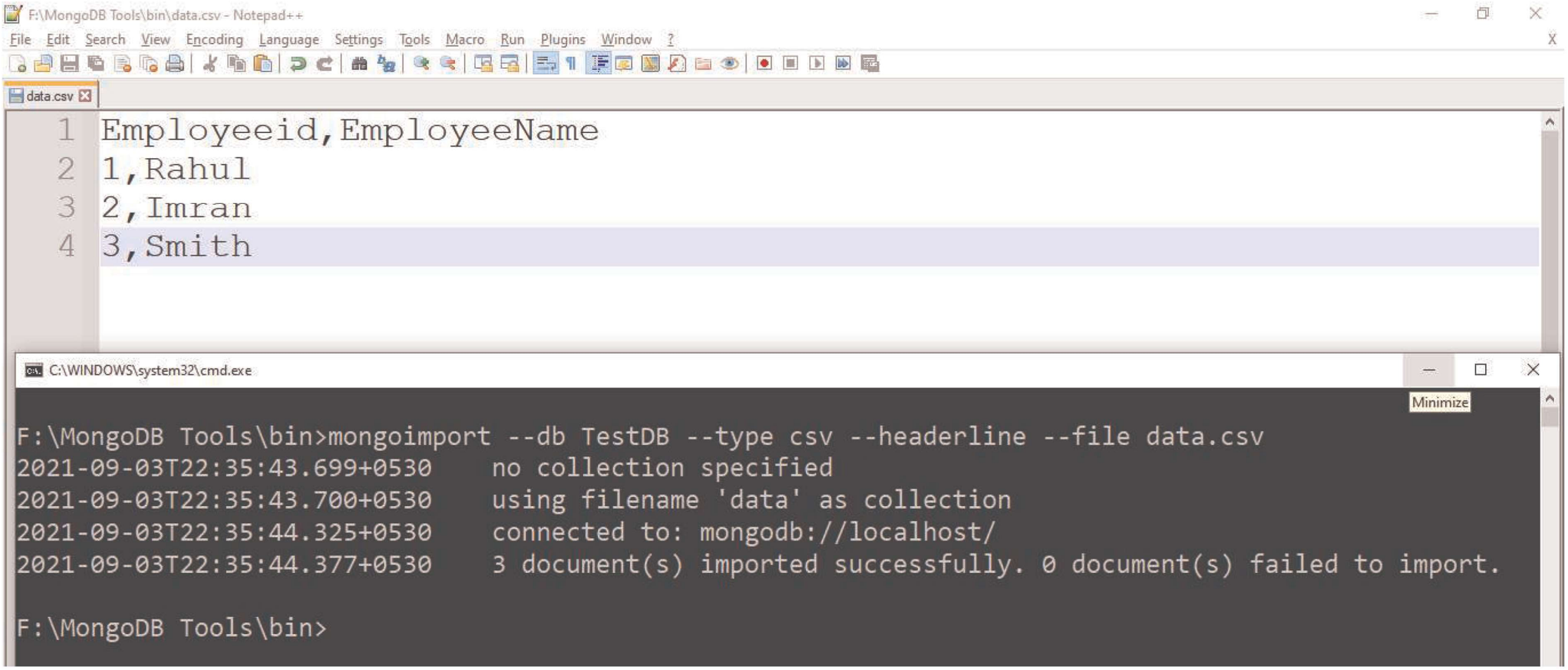
1,Rahul

2,Imran

3,Smith

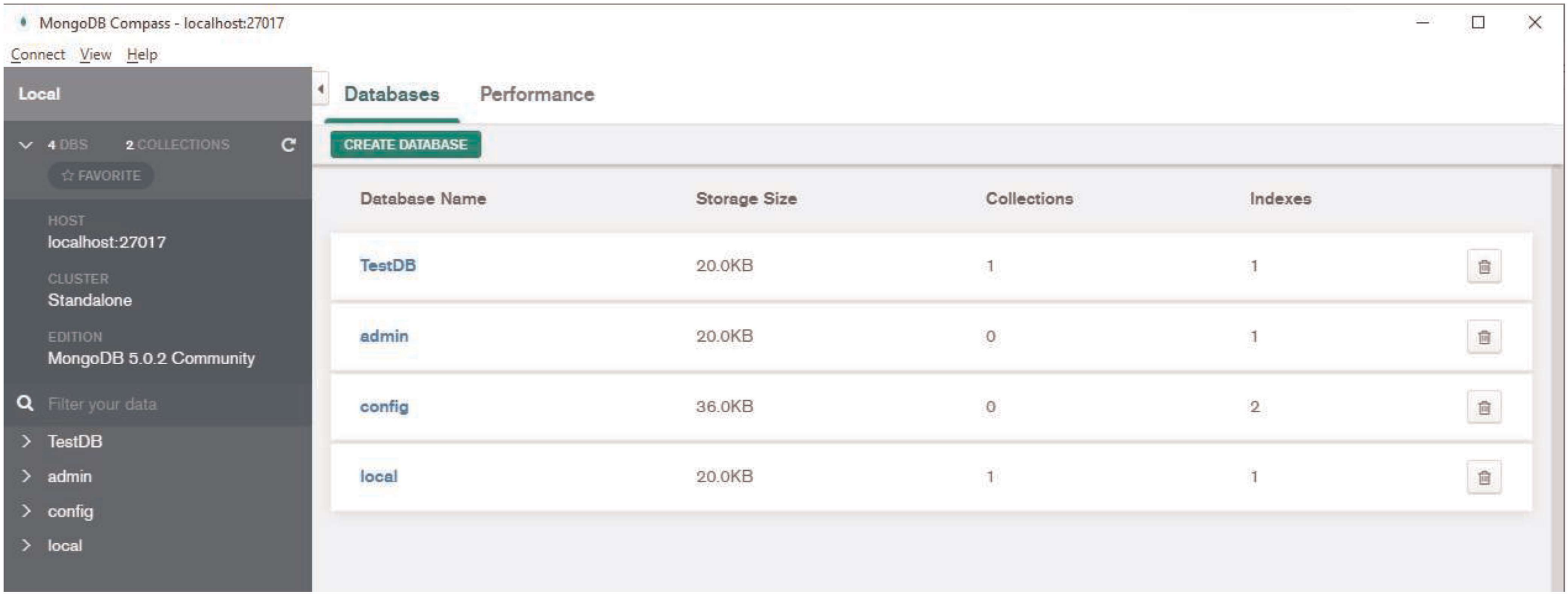
we are assuming we want to import 3 documents into a collection called data. The first row is called the header line which will become the Field names of the collection.



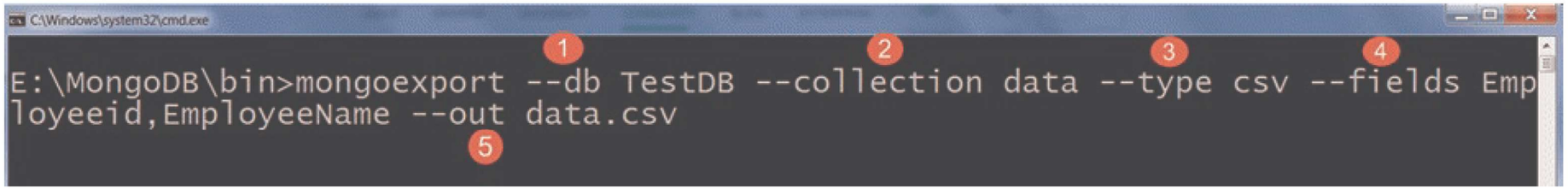

F:\MongoDB Tools\bin\data.csv - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
data.csv
1 Employeeid,EmployeeName
2 1,Rahul
3 2,Imran
4 3,Smith
C:\WINDOWS\system32\cmd.exe
Minimize
F:\MongoDB Tools\bin>mongoimport --db TestDB --type csv --headerline --file data.csv
2021-09-03T22:35:43.699+0530 no collection specified
2021-09-03T22:35:43.700+0530 using filename 'data' as collection
2021-09-03T22:35:44.325+0530 connected to: mongodb://localhost/
2021-09-03T22:35:44.377+0530 3 document(s) imported successfully. 0 document(s) failed to import.
F:\MongoDB Tools\bin>

1. We are specifying the db option to say which database the data should be imported to
2. The type option is to specify that we are importing a csv file
3. Remember that the first row is called the header line which will become the Field names of the collection, that is why we specify the –headerline option. And then we specify our data.csv file.

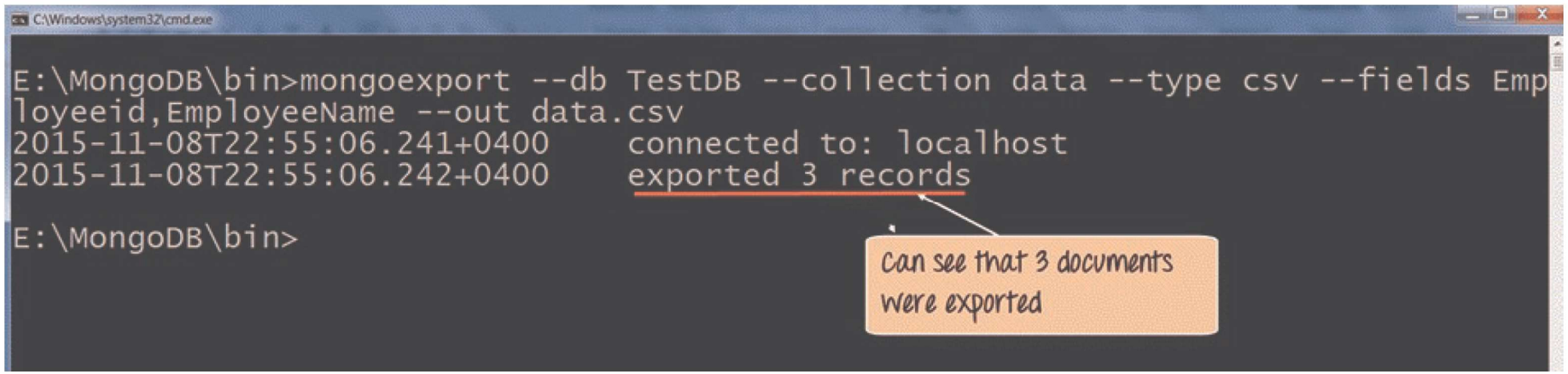
In Compass


MongoDB Compass - localhost:27017
Connect View Help
Local
4 DBS 2 COLLECTIONS
☆ FAVORITE
HOST
localhost:27017
CLUSTER
Standalone
EDITION
MongoDB 5.0.2 Community
Filter your data
TestDB
admin
config
local
Databases
Performance
CREATE DATABASE
Database Name
Storage Size
Collections
Indexes
TestDB 20.0KB 1 1
admin 20.0KB 0 1
config 36.0KB 0 2
local 20.0KB 1 1

Exporting MongoDB is done by using the mongoexport command

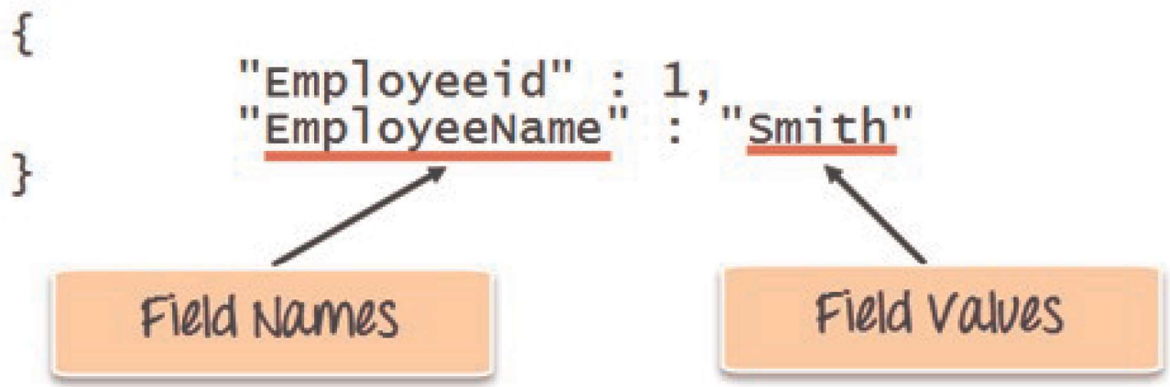


1. We are specifying the db option to say which database the data should be exported from.
2. We are specifying the collection option to say which collection to use
3. The third option is to specify that we want to export to a csv file
4. The fourth is to specify which fields of the collection should be exported.
5. The –out option specifies the name of the csv file to export the data to.



Create Database & Collection In MongoDB

- In MongoDB, the first basic step is to have a database and collection in place. The database is used to store all of the collections, and the collection in turn is used to store all of the documents. The documents in turn will contain the relevant Field Name and Field values.



- The Field Names of the document are “Employeeid” and “EmployeeName” and the Field values are “1” and “Smith’ respectively. A bunch of documents would then make up a collection in MongoDB.

Use Database method:

- There is no create database command in MongoDB. Actually, MongoDB do not provide any command to create database.
- It may be look like a weird concept, if you are from traditional SQL background where you need to create a database, table and insert values in the table manually.
- Here, in MongoDB you don't need to create a database manually because MongoDB will create it automatically when you save the value into the defined collection at first time.

Creating a database using "use" command

- Creating a database in MongoDB is as simple as issuing the "**using**" command

- The **"use"** command is used to create a database in MongoDB. If the database does not exist a new one will be created. If the database already exists, it will return the existing database.

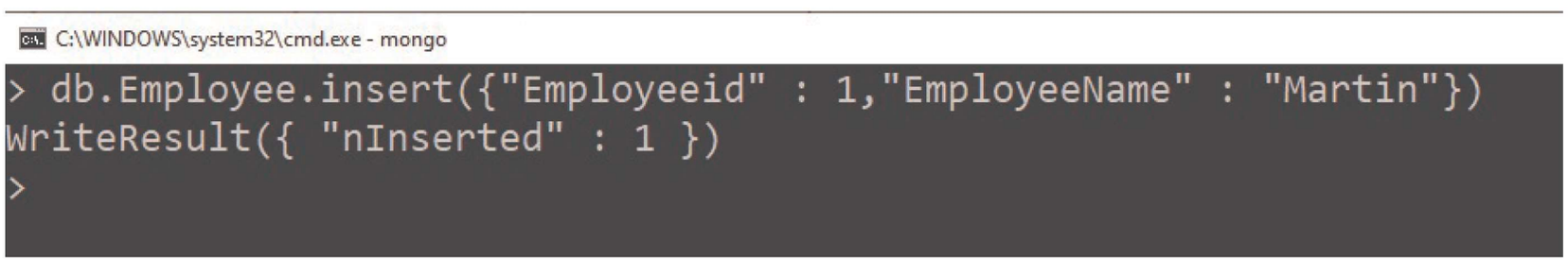
Cont …

1. To **check the currently selected database**, use the command db:

2. To **check the database list**, use the command show dbs:

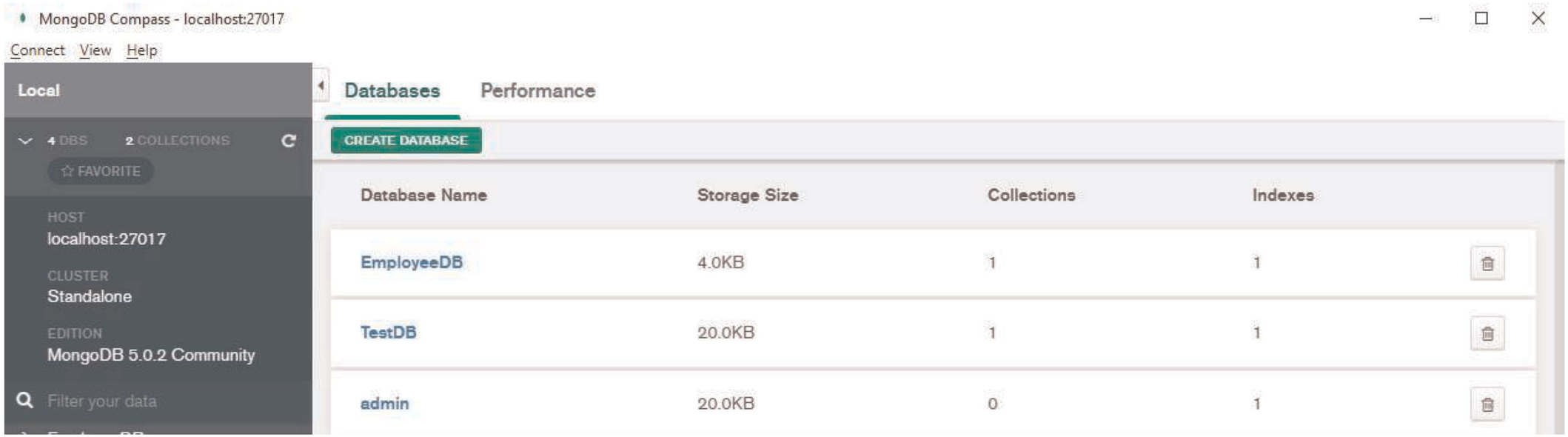
- Here, our created database “**EmployeeDB**" is not present in the list, **insert at least one document** into it to display database

```
db.Employee.insert
(
        {
                "Employeeid" : 1,
                "EmployeeName" : "Martin"
        }
)
```



C:\WINDOWS\system32\cmd.exe - mongo

```
> db.Employee.insert({"Employeeid" : 1,"EmployeeName" : "Martin"})
WriteResult({ "nInserted" : 1 })
> show dbs
EmployeeDB  0.000GB
TestDB      0.000GB
admin       0.000GB
config      0.000GB
local       0.000GB
test        0.000GB
>
```



MongoDB Drop Database

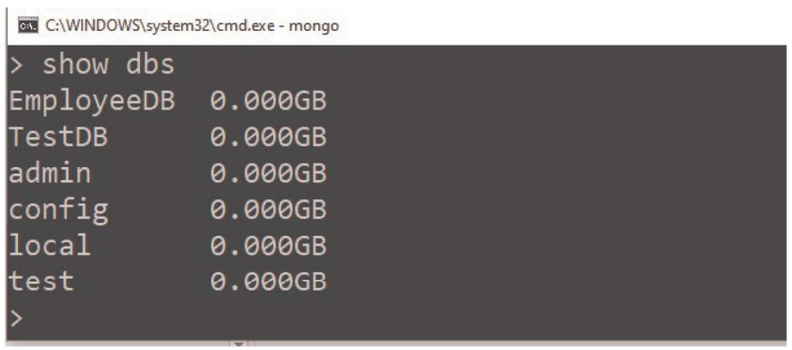
- The dropDatabase command is used to drop a database. It also deletes the associated data files. It operates on the current database.

```
db.dropDatabase()
```

- This syntax will delete the selected database. In the case you have not selected any database, it will delete default "test" database.

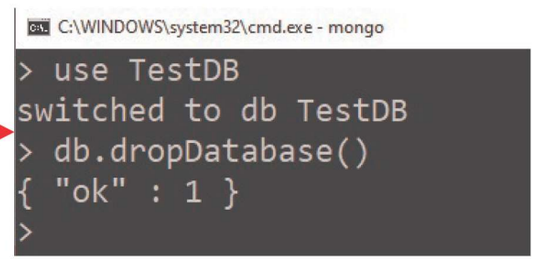
- To check the database list, use the command show dbs:

```
show dbs
```



- If you want to **delete the database "TestDB"**, use the dropDatabase() command as follows:

```
use TestDB
db.dropDatabase()
```



Creating a Collection/Table using insert()

- The easiest way to create a collection is to insert a record (which is nothing but a document consisting of Field names and Values) into a collection. If the collection does not exist a new one will be created.

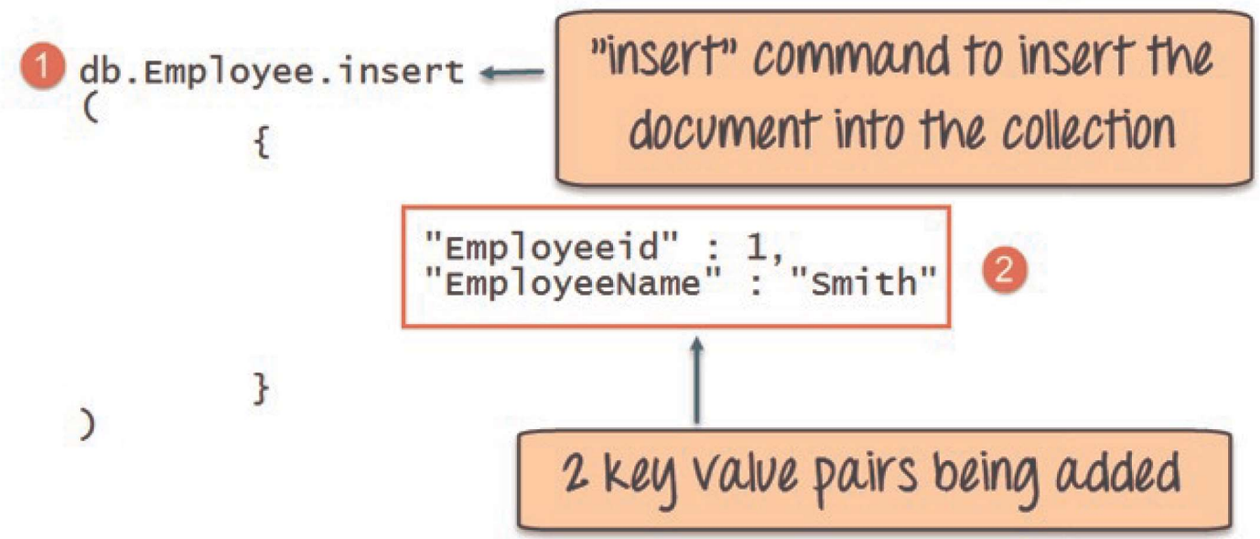
```
db.Employee.insert
(
        {
                "Employeeid" : 1,
                "EmployeeName" : "Martin"
        }
)
```

```
C:\WINDOWS\system32\cmd.exe - mongo
> db.Employee.insert({"Employeeid" : 1,"EmployeeName" : "Martin"})
WriteResult({ "nInserted" : 1 })
>
```

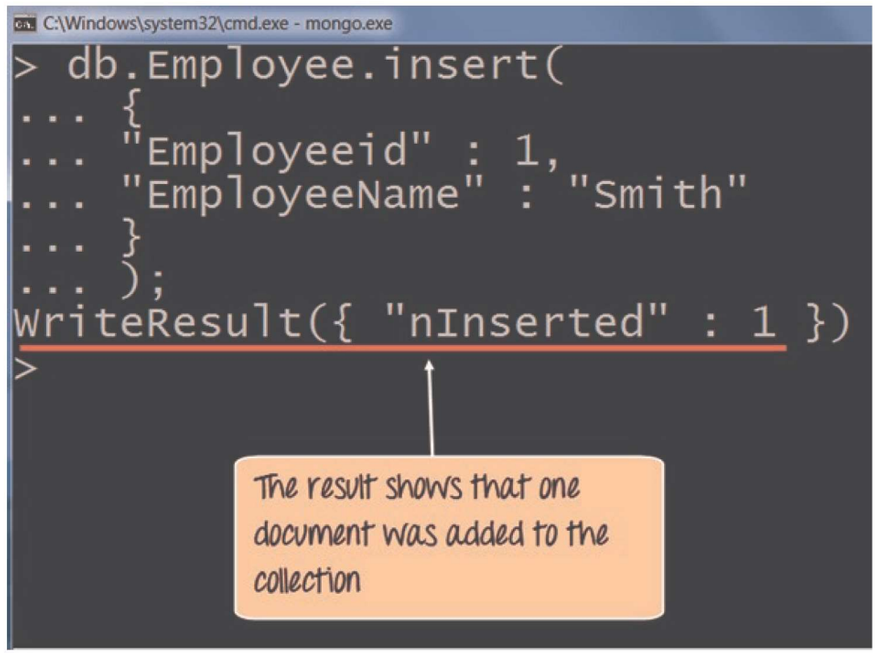
- By using the **“insert”** command the collection will be created.

Adding documents using insert() command

- MongoDB provides the **insert () command** to insert documents into a collection. The following example shows how this can be done.
  1. Write the “insert” command
  2. Within the “insert” command, add the required Field Name and Field Value for the document which needs to be created.



1. The first part of the command is the “**insert statement**” which is the statement used to insert a document into the collection.
2. The second part of the statement is to add the Field name and the Field value, in other words, what is the document in the collection going to contain.



MongoDB Datatypes

Datatypes

Data Types	Description
String	String is the most commonly used datatype. It is used to store data. A string must be UTF 8 valid in mongodb.
Integer	Integer is used to store the numeric value. It can be 32 bit or 64 bit depending on the server you are using.
Boolean	This datatype is used to store boolean values. It just shows YES/NO values.
Double	Double datatype stores floating point values.
Min/Max Keys	This datatype compare a value against the lowest and highest bson elements.
Arrays	This datatype is used to store a list or multiple values into a single key.

Cont …

Arrays	This datatype is used to store a list or multiple values into a single key.
Object	Object datatype is used for embedded documents.
Null	It is used to store null values.
Symbol	It is generally used for languages that use a specific type.
Date	This datatype stores the current date or time in unix time format. It makes you possible to specify your own date time by creating object of date and pass the value of date, month, year into it.

Creating and Dropping Collections

MongoDB Create Collection

- In MongoDB, db.createCollection(name, options) is used to create collection. But usually you don?t need to create collection. MongoDB creates collection automatically when you insert some documents.
- How to create collection:

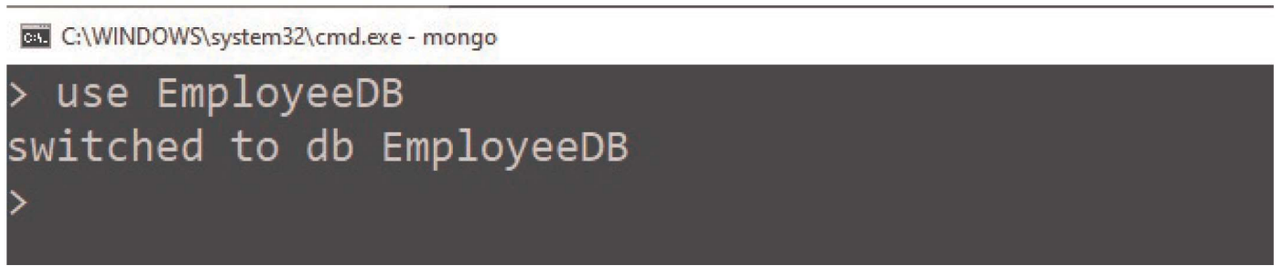
```
db.createCollection(Name, Options)
```

  - **Name:** is a string type, specifies the name of the collection to be created.
  - **Options:** is a document type, specifies the memory size and indexing of the collection. It is an optional parameter.

list of options

Field	Type	Description
Capped	Boolean	(Optional) If it is set to true, enables a capped collection. Capped collection is a fixed size collecction that automatically overwrites its oldest entries when it reaches its maximum size. If you specify true, you need to specify size parameter also.
AutoIndexID	Boolean	(Optional) If it is set to true, automatically create index on ID field. Its default value is false.
Size	Number	(Optional) It specifies a maximum size in bytes for a capped collection. Ifcapped is true, then you need to specify this field also.
Max	Number	(Optional) It specifies the maximum number of documents allowed in the capped collection.

```
use EmployeeDB
```




```
db.createCollection("Departments")
```

Inserting Documents

C:\WINDOWS\system32\cmd.exe - mongo

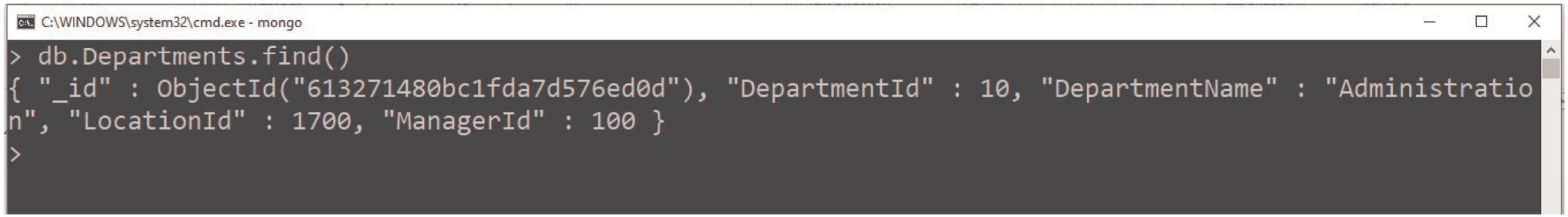
```
> db.Departments.insert(
... {
... "DepartmentId" : 10,
... "DepartmentName" : "Administration",
... "LocationId" : 1700,
... "ManagerId" : 100
... }
... )
WriteResult({ "nInserted" : 1 })
>
```

Showing Collections and Viewing Inserted Documents

```
show collections
```

- If you want to see the inserted document, use the find() command.

```
db.Collection_Name.find()
```



MongoDB Drop collection

- In MongoDB, db.collection.drop() method is used to drop a collection from a database. It completely removes a collection from the database and does not leave any indexes associated with the dropped collections.
- The db.collection.drop() method does not take any argument and produce an error when it is called with an argument. This method removes all the indexes associated with the dropped collection.

```
db.CollectionName.drop()
```

First check the already existing collections in your database.

```
use EmployeeDB
```

C:\WINDOWS\system32\cmd.exe - mongo

```
> use EmployeeDB
switched to db EmployeeDB
>
```

```
show collections
```

C:\WINDOWS\system32\cmd.exe - mongo

```
> show collections
Departments
Employee
>
```

Droping a Collection

```
db.collections.drop()
```

C:\WINDOWS\system32\cmd.exe - mongo

```
> show collections
Departments
Employee
> db.Departments.drop()
true
>
```

```
show collections
```

C:\WINDOWS\system32\cmd.exe - mongo

```
> show collections
Departments
Employee
> db.Departments.drop()
true
> show collections
Employee
>
```

Summary

In this lesson, you should have learned how to:

- Installation of MongoDB and MongoDB Compass
- Working with MongoShell
- Configuration
- Collections and Documents
- Data Types