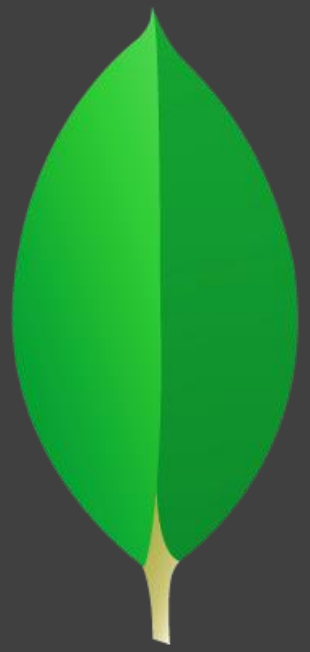


MongoDB Day 1

#MangoDB Notes

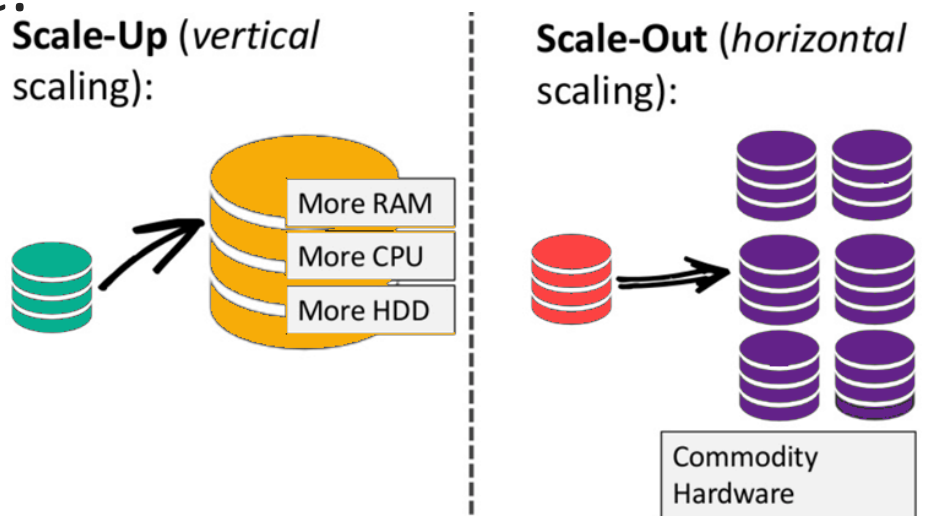
Introduction

What is NoSQL?

- **NoSQL** Database is a non-relational Data Management System, that does not require a fixed schema. It avoids joins, and is easy to scale.
- The major purpose of using a NoSQL database is for distributed data stores with humongous data storage needs.
- NoSQL is used for Big data and real-time web apps. For example, companies like Twitter, Facebook and Google collect terabytes of user data every single day.

Why NoSQL?

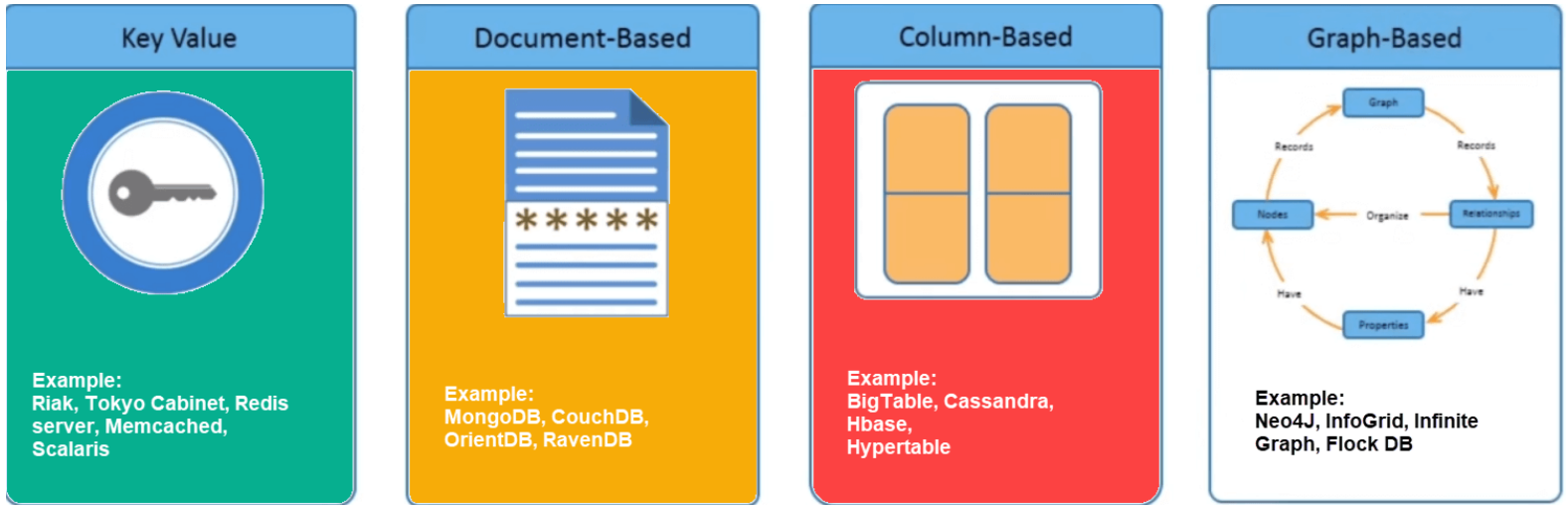
- The concept of NoSQL databases became popular with Internet giants like Google, Facebook, Amazon, etc. who deal with huge volumes of data.
- The system response time becomes slow when you use RDBMS for massive volumes of data.
- To resolve this problem, we could “scale up” our systems by upgrading our existing hardware. This process is expensive.



Types of NoSQL Databases

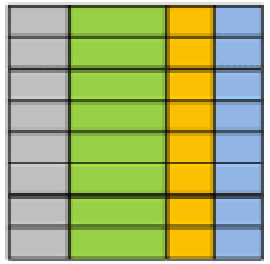
- **NoSQL Databases** are mainly categorized into four types: Key-value pair, Column-oriented, Graph-based and Document-oriented.
- Every category has its unique attributes and limitations. None of the above-specified database is better to solve all the problems.
- Users should select the database based on their product needs.

- Types of NoSQL Databases:
  - Key-value Pair Based
  - Column-oriented Graph
  - Graphs based
  - Document-oriented

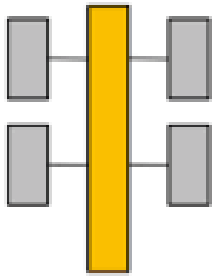


SQL Database

Relational



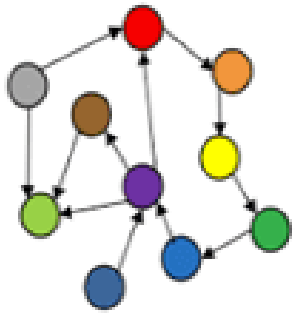
Analytical (OLAP)



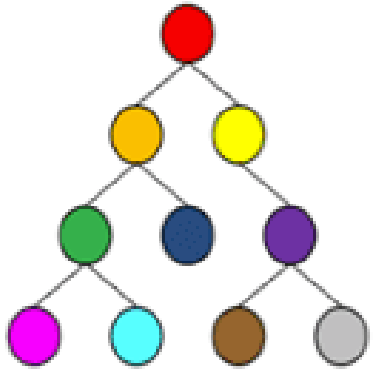
NoSQL Database

Column-Family

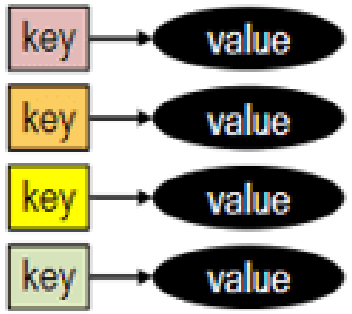
Graph



Document

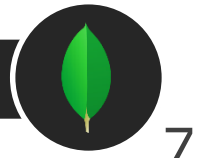


Key-Value



JSON vs BSON

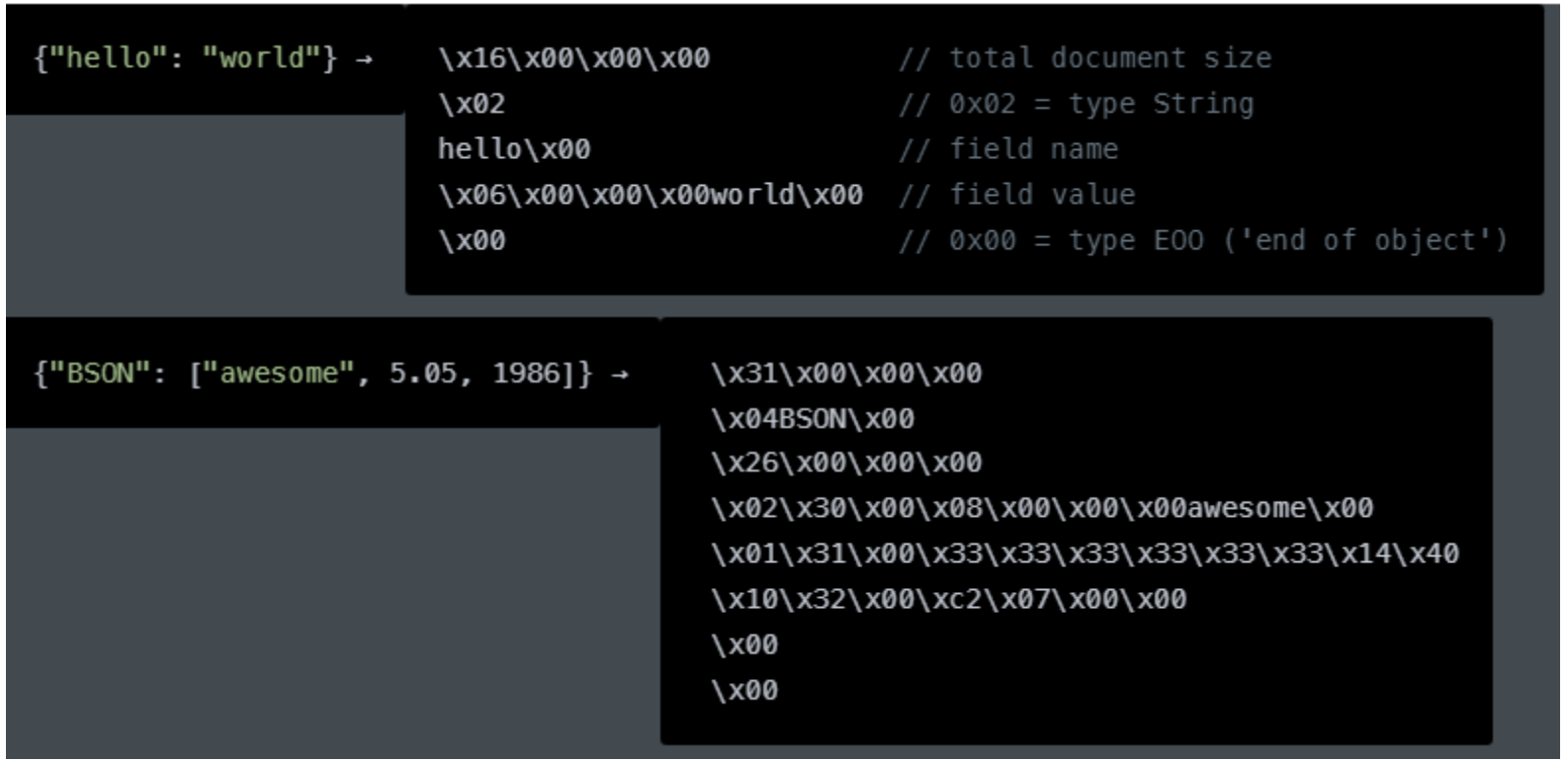
- JSON is **Javascript Object Notation**. It is a standard format used for storing and interchanging the data.
- JSON is a user readable and it is a completely language format. It is light weight.
- When we read the JSON data of any application so that is language independent. We can send information through **JSON** very easily.
- JSON is basically a combination of key/value pair and arrays.
- In JSON, we can embed more than one json documents in a single json file. The maximum 100 documents can be embedded in a single json document.



```
{
  "_id": 1,
  "name" : { "first" : "John", "last" : "Backus" },
  "contribs" : [ "Fortran", "ALGOL", "Backus-Naur Form", "FP" ],
  "awards" : [
    {
      "award" : "W.W. McDowell Award",
      "year" : 1967,
      "by" : "IEEE Computer Society"
    }, {
      "award" : "Draper Prize",
      "year" : 1993,
      "by" : "National Academy of Engineering"
    }
  ]
}
```

BSON

- BSON is a Binary **Javascript Object notation**.
- It is not in the human readable format as it is in the binary format. In MongoDB, BSON is used to encrypt the JSON data.
- It provides additional data types over the JSON data.
- It is also a language independent, and can be easily parsed.
- It supports the adding of documents and arrays within other documents and arrays.
- https://www.mongodb.com/json-and-bson


{"hello": "world"} →
\x16\x00\x00\x00 // total document size
\x02 // 0x02 = type String
hello\x00 // field name
\x06\x00\x00\x00world\x00 // field value
\x00 // 0x00 = type EOO ('end of object')
{"BSON": ["awesome", 5.05, 1986]} →
\x31\x00\x00\x00
\x04BSON\x00
\x26\x00\x00\x00
\x02\x30\x00\x08\x00\x00\x00awesome\x00
\x01\x31\x00\x33\x33\x33\x33\x33\x33\x14\x40
\x10\x32\x00\xc2\x07\x00\x00
\x00
\x00

MongoDB

- MongoDB is an open source, document oriented database that stores data in form of documents (key and value pairs).
- MongoDB provides high performance, high availability, and easy scalability.
- MongoDB works on concept of collection and document.
- MongoDB is also a schema-less database, so we don’t need to specify the number or type of columns before inserting our data.
- MongoDB is a database which came into light around the mid-2000s.

SQL Database	NoSQL Database (MongoDB)
Relational database	Non-relational database
Supports SQL query language	Supports JSON query language
Table based	Collection based and key-value pair
Row based	Document based
Column based	Field based
Support foreign key	No support for foreign key
Support for triggers	No Support for triggers
Contains schema which is predefined	Contains dynamic schema
Not fit for hierarchical data storage	Best fit for hierarchical data storage
Vertically scalable - increasing RAM	Horizontally scalable - add more servers
Emphasizes on ACID properties (Atomicity, Consistency, Isolation and Durability)	Emphasizes on CAP theorem (Consistency, A

Why Use MongoDB?

- **Document Oriented Storage** – Data is stored in the form of JSON style documents.
- Index on any attribute
- Replication and high availability
- Auto-sharding
- Rich queries
- Fast in-place updates
- Professional support by MongoDB

When to go for MongoDB

- Load Balancing
- Avoid JOINS
- Not Relational data
- Best suited for changing schema

Where to Use MongoDB?

- Big Data
- Content Management and Delivery
- Mobile and Social Infrastructure
- User Data Management
- Data Hub

Problem : Insert Data for table Student and Subject. And link Subject to Student entry.

RDBM

1st INSERT - Data into Subject

Insert into Subject(1, 'Drawing');

2nd INSERT - Data into Student with Subject Id

Insert into Student(1, 1, 'Viraj', 'Nursery')

NoSQL

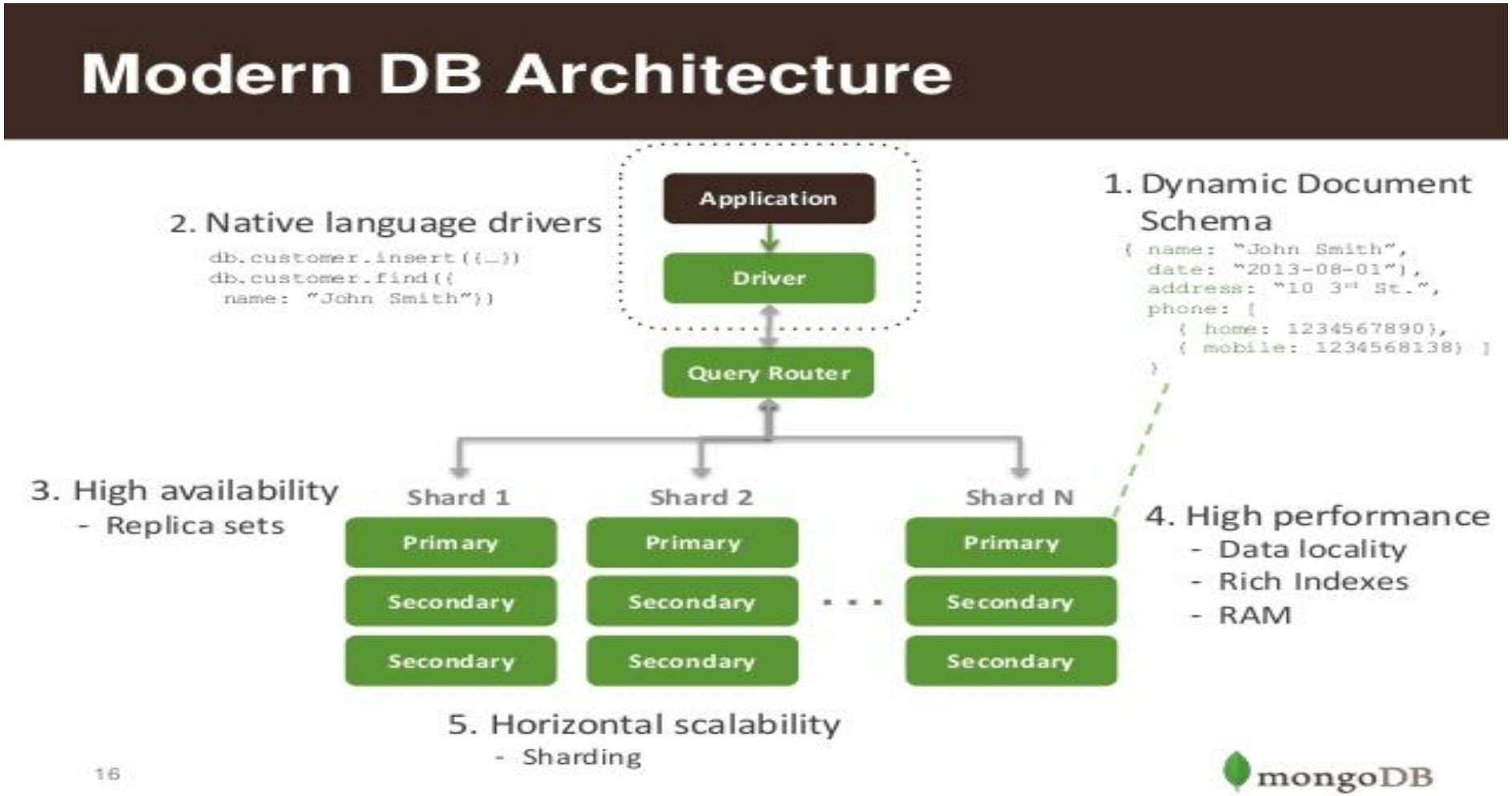
SINGLE INSERT

```
Student :
{
  student_id : 1,
  stu_name : "Viraj",
  stu_class : "Nursery",
  subject : ["Drawing", "English"]
}
```

Student :
- student_id
- subject_id
- stu_name
- stu_class

Subject :
- subject_id
- sub_name

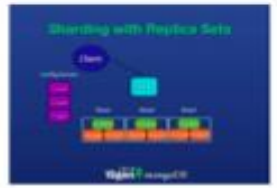
Architecture



Features Of MongoDB

Faster process

Open Source



Sharding

mongoDB

Schemaless

Document based

No SQL Injection

Organizations that use MongoDB

- Adobe
- LinkedIn
- McAfee
- FourSquare
- eBay
- MetLife
- SAP

Date	MySQL	MongoDB
Written in	C++, C	C++, C and JavaScript
Type	RDBMS	Document-oriented
Main points	- Table - Row - Column	- Collection - Document - Field
License	GPL v2 / Commercial licenses available OD	GNU AGPL v3.0 / Commercial licenses available OD
Schemas	Strict	Dynamic
Scaling	Vertically	Horizontally
Key features	- Full-text searching and indexing - Integrated replication support - Triggers - SubSELECTs - Query caching - SSL support - Unicode support - Different storage engines with various performance characteristics	- Auto-sharding - Native replication - In-memory speed - Embedded data models support - Comprehensive secondary indexes - Rich query language support - Various storage engines support
Best used for	- Data structure fits for tables and rows - Strong dependence on multi-row transactions - Frequent updates and modifications of large volume of records - Relatively small datasets	- High write loads - Unstable schema - Your DB is set to grow big - Data is location based - HA (high availability) in unstable environment is required - No database administrators (DBAs)
Examples	NASA, US Navy, Bank of Finland, UCR, Walmart, Sony, S2 Security Corporation, Telenor, Italtel, iStock, Uber, Zappos, Booking.com, Twitter, Facebook, others.	Expedia, Bosch, Otto, eBay, Gap, Forbes, Foursquare, Adobe, Intuit, Metlife, BuzzFeed, Crittercism, CitiGroup, the City of Chicago, others.

Advantages

- Performance
- Document Model
- Flexible Schema

mongoDB

Disadvantages

- No transaction
- No join
- Memory limitation

MongoDB Terminology

SQL Server	MongoDB
Database	Database
Table	Collection
Row	Document
Column	Field
Index	Index

Mongo DB Version

- Current Version is : 5.0

Download

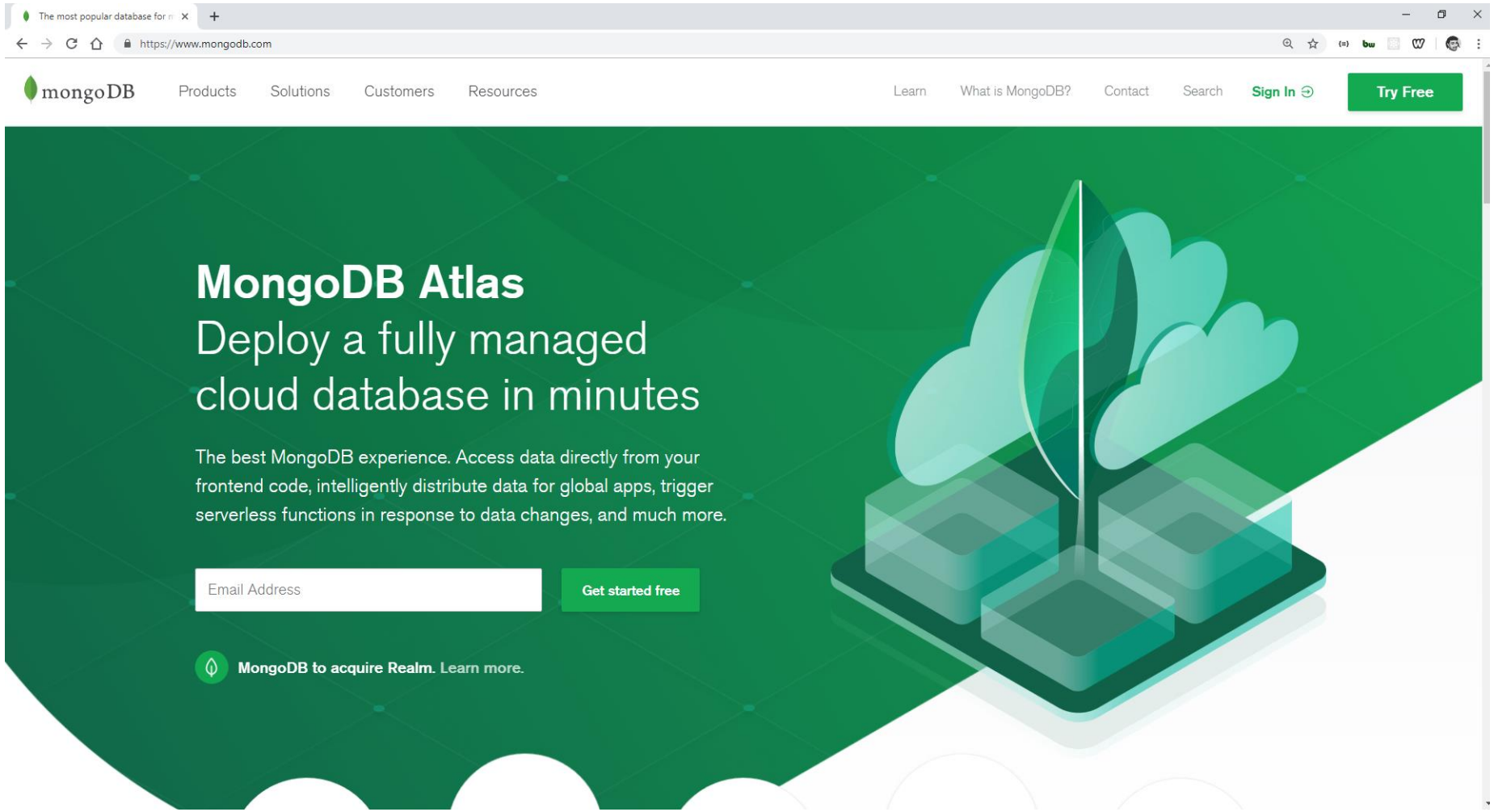
- Mongo DB Setup
- Mongo DB Compass
-

Mongo DB Port Number

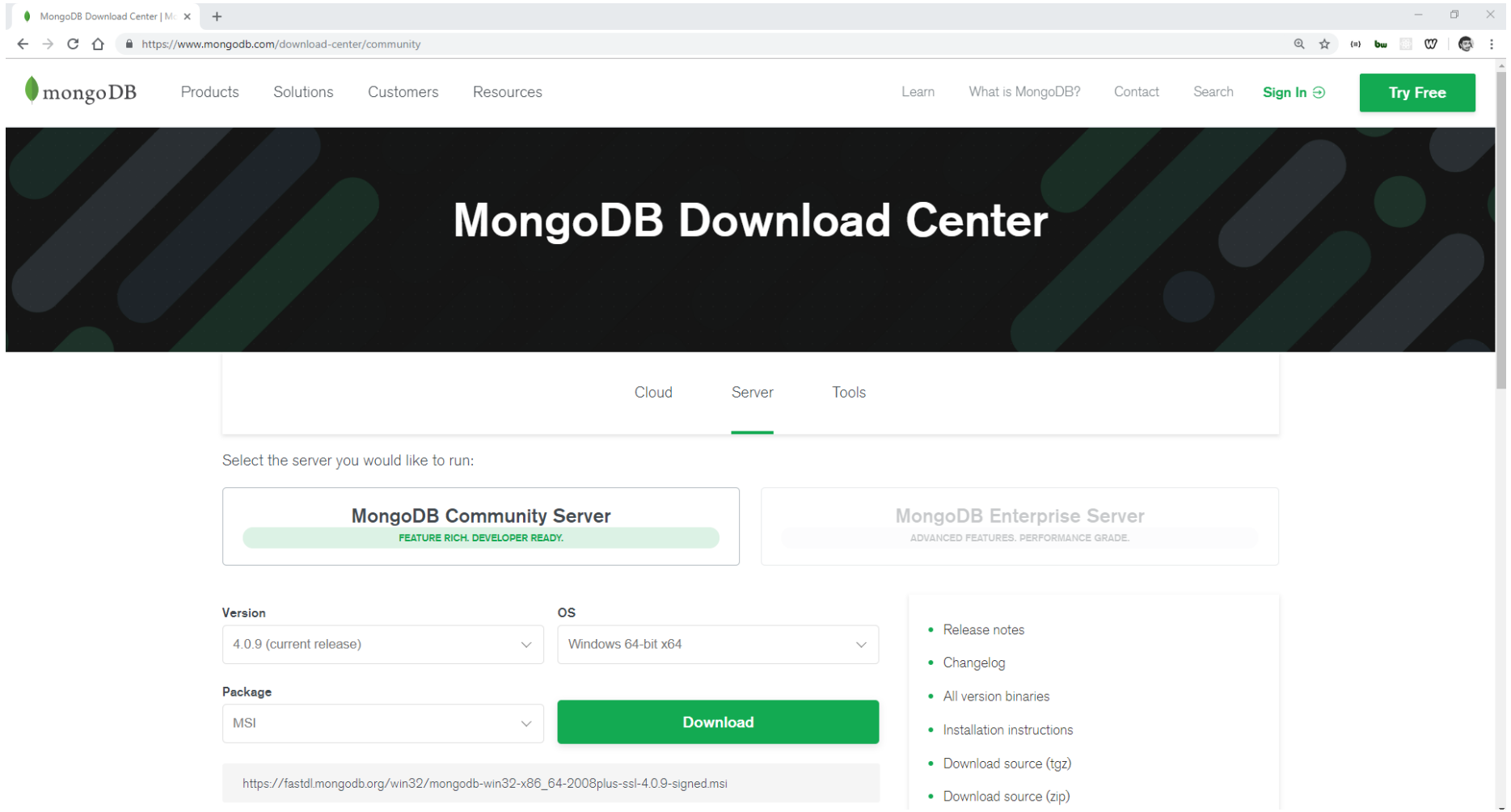
- 27017

Installation

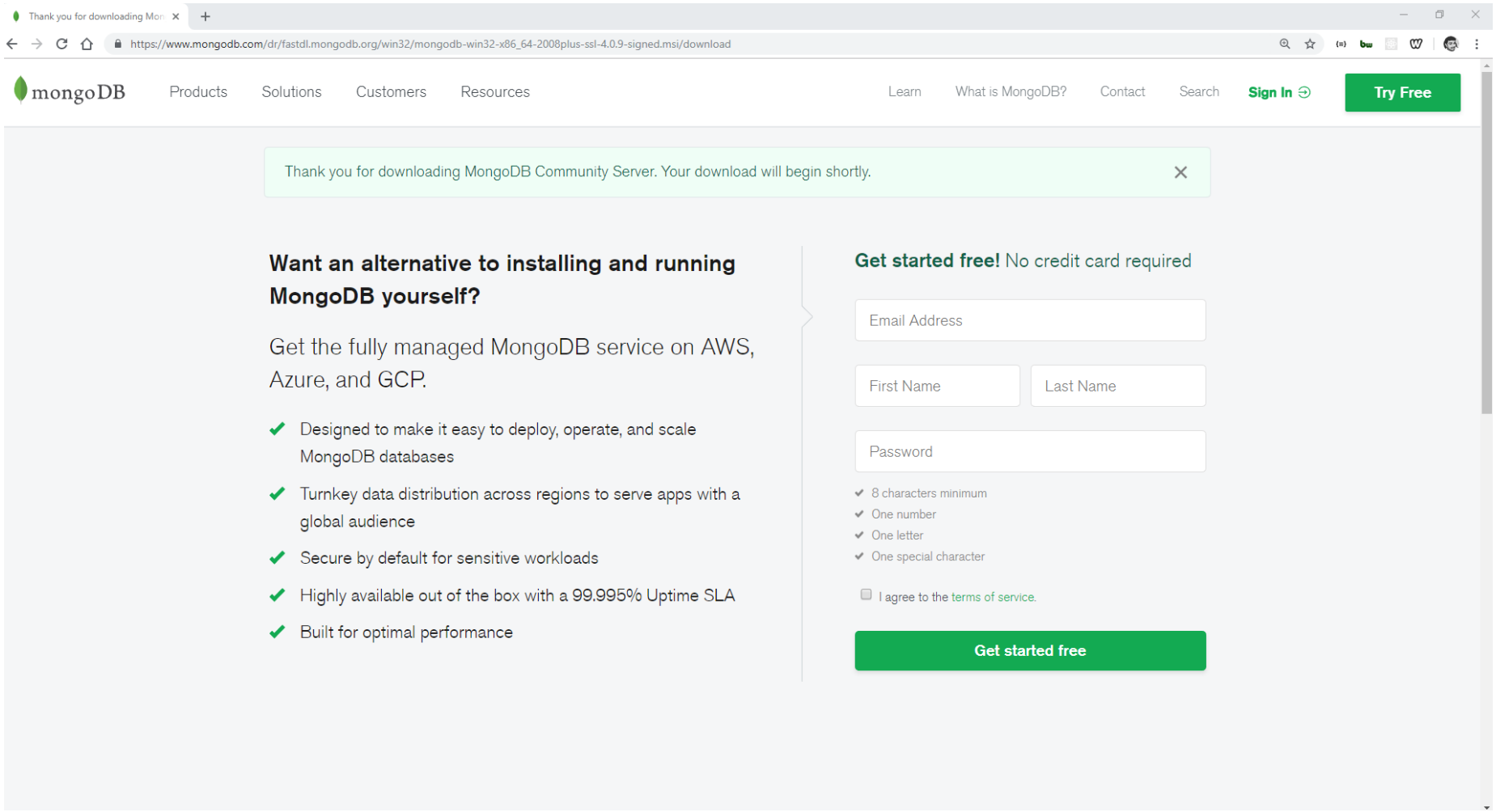
Download Mongo DB

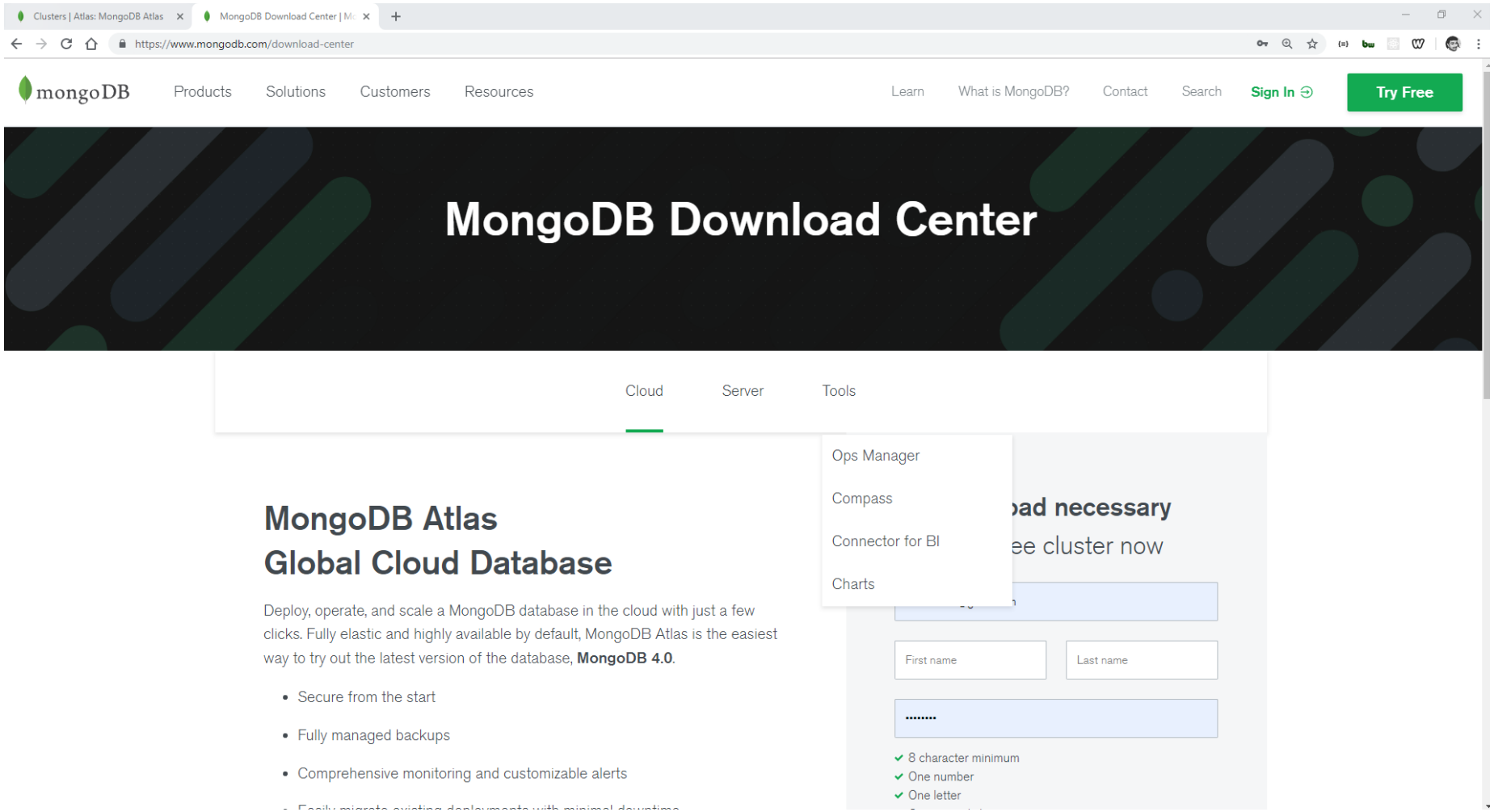


Download Community Server



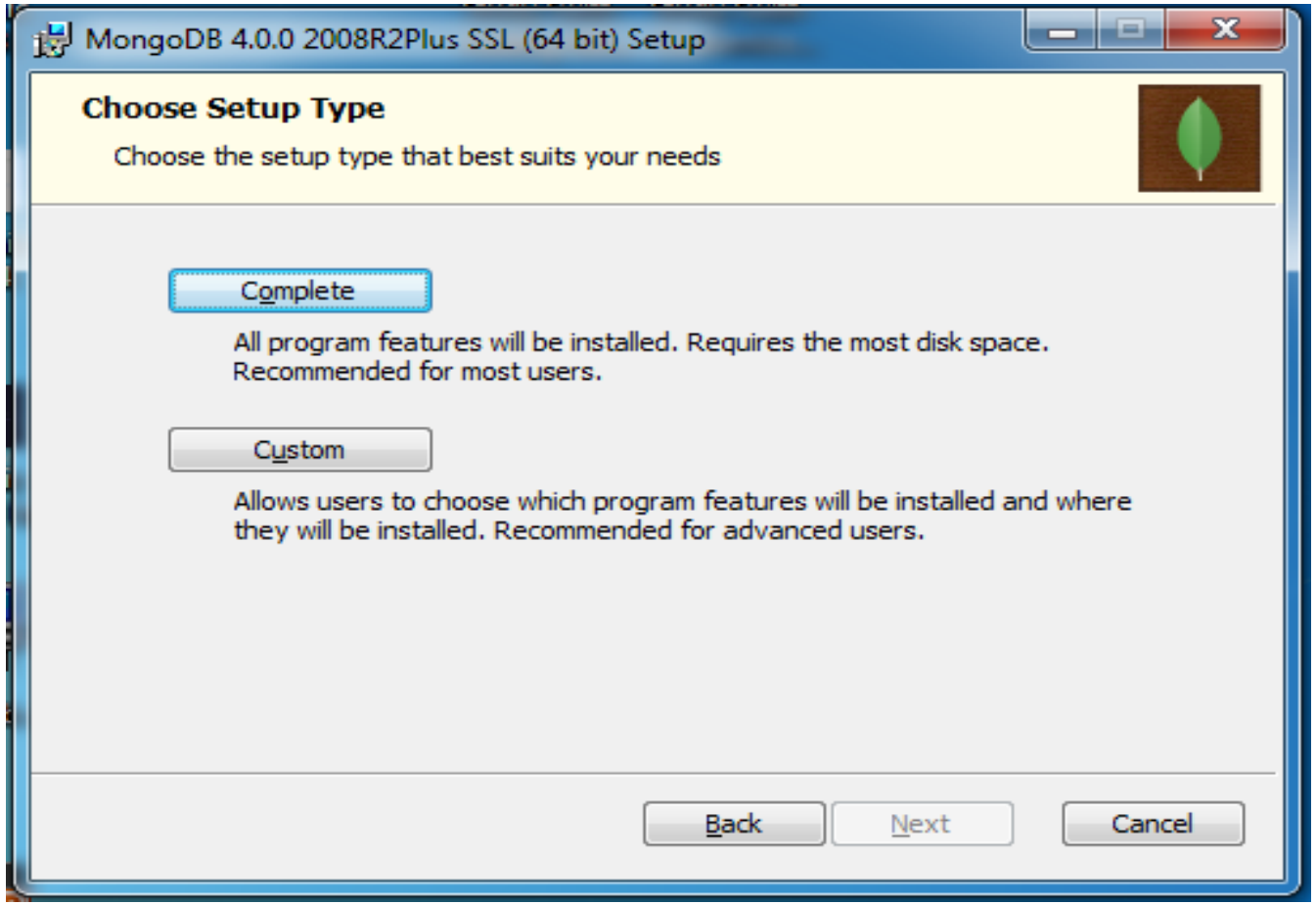
Download Compass



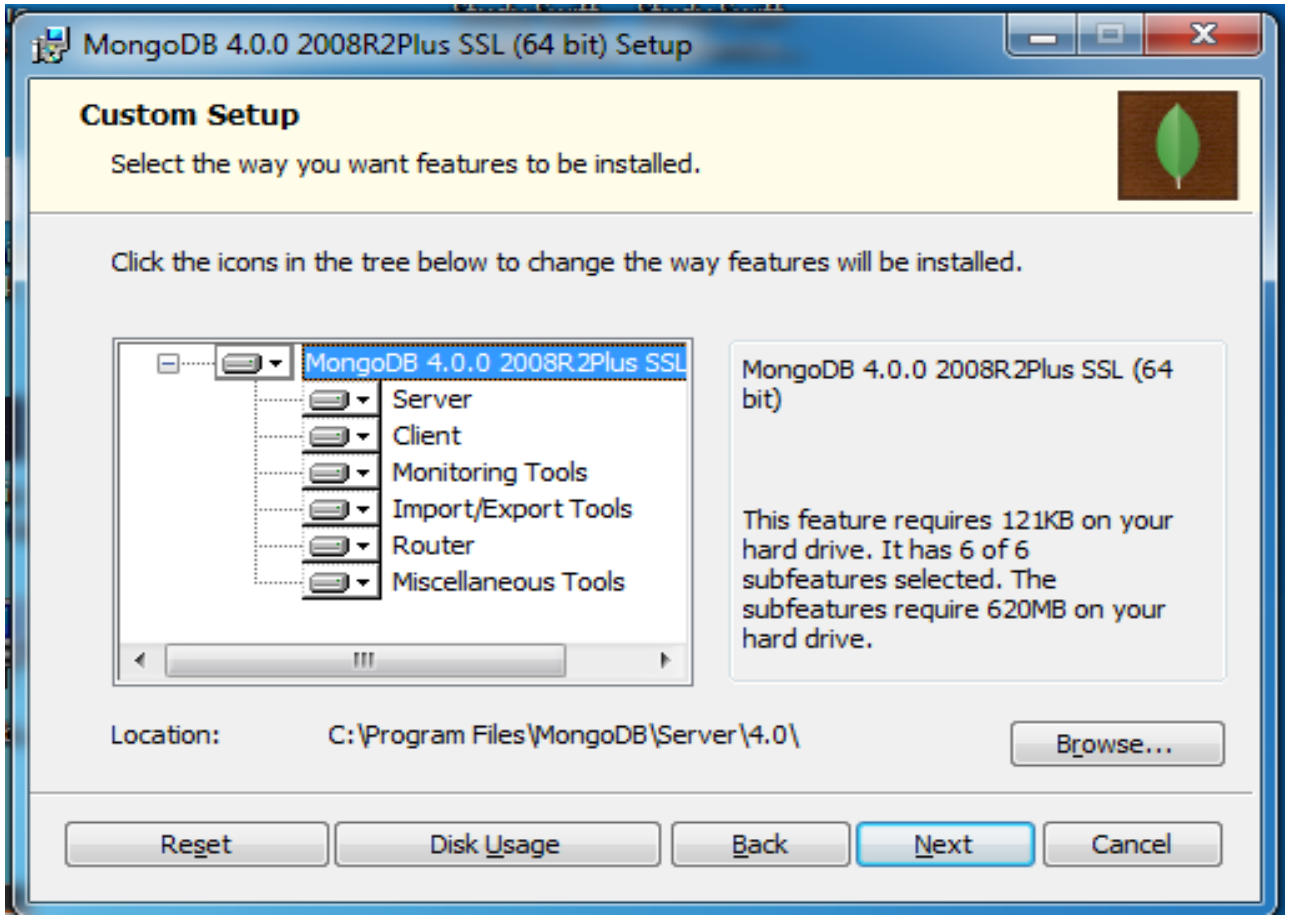

Clusters | Atlas: MongoDB Atlas
MongoDB Download Center
https://www.mongodb.com/download-center
mongoDB
Products
Solutions
Customers
Resources
Learn
What is MongoDB?
Contact
Search
Sign In
Try Free
MongoDB Download Center
Cloud
Server
Tools
Ops Manager
Compass
Connector for BI
Charts
MongoDB Atlas
Global Cloud Database
Deploy, operate, and scale a MongoDB database in the cloud with just a few clicks. Fully elastic and highly available by default, MongoDB Atlas is the easiest way to try out the latest version of the database, MongoDB 4.0.
Secure from the start
Fully managed backups
Comprehensive monitoring and customizable alerts
ad necessary
ee cluster now
First name
Last name
8 character minimum
One number
One letter

Installation MongoDB

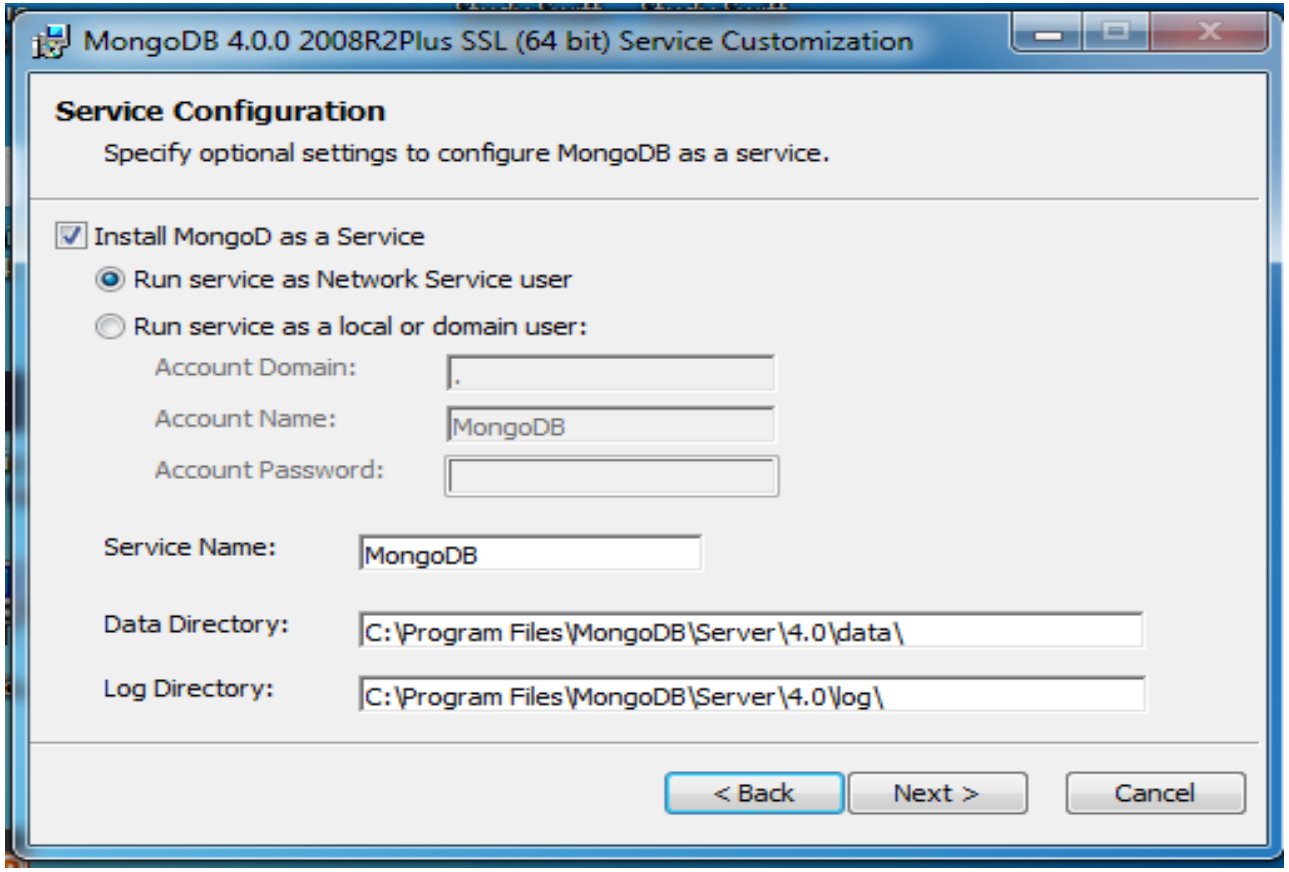
Select Custom Option



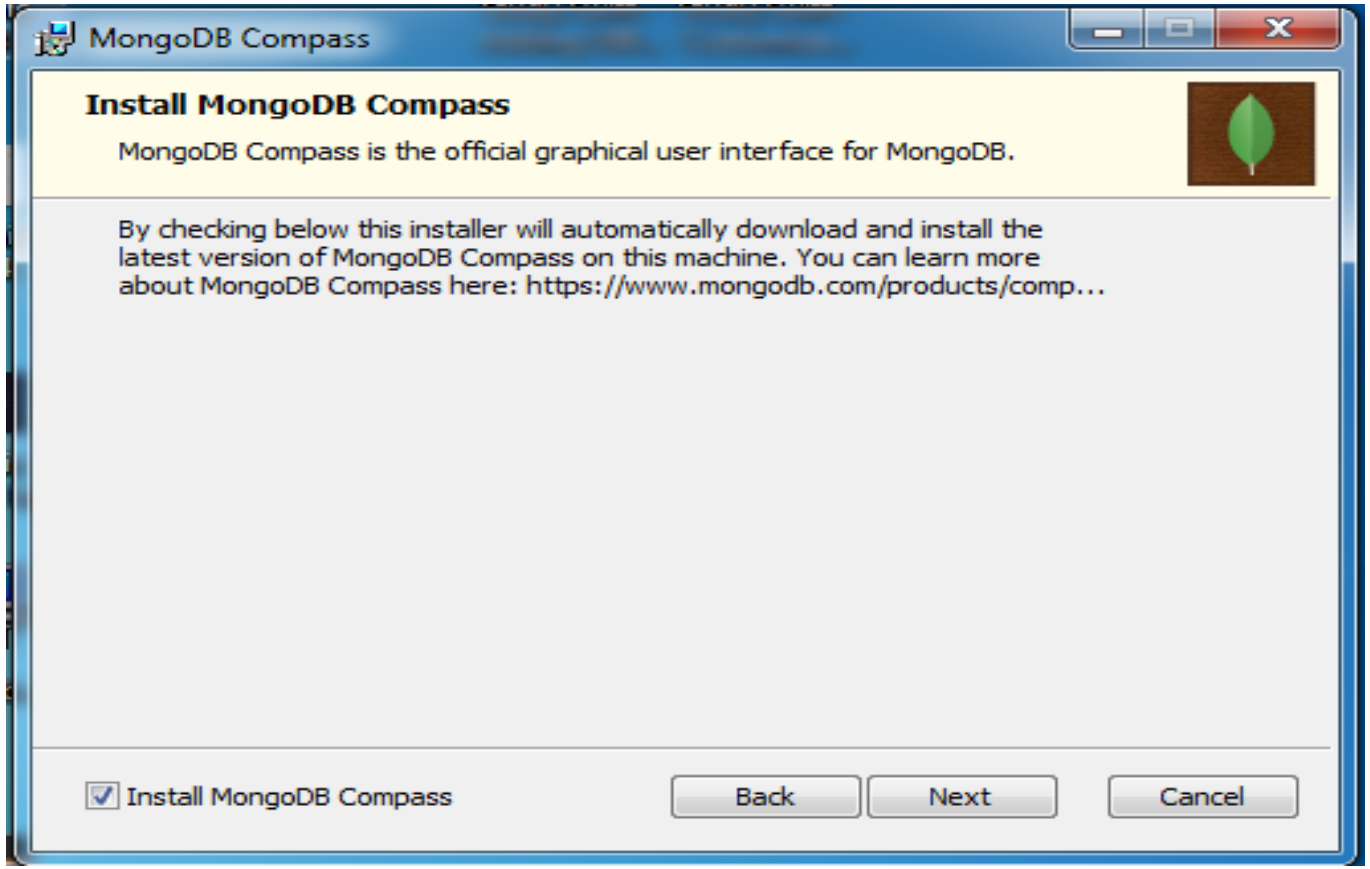
Click Next


MongoDB 4.0.0 2008R2Plus SSL (64 bit) Setup
Custom Setup
Select the way you want features to be installed.
Click the icons in the tree below to change the way features will be installed.
MongoDB 4.0.0 2008R2Plus SSL
Server
Client
Monitoring Tools
Import/Export Tools
Router
Miscellaneous Tools
MongoDB 4.0.0 2008R2Plus SSL (64 bit)
This feature requires 121KB on your hard drive. It has 6 of 6 subfeatures selected. The subfeatures require 620MB on your hard drive.
Location:
C:\Program Files\MongoDB\Server\4.0\
Browse...
Reset
Disk Usage
Back
Next
Cancel

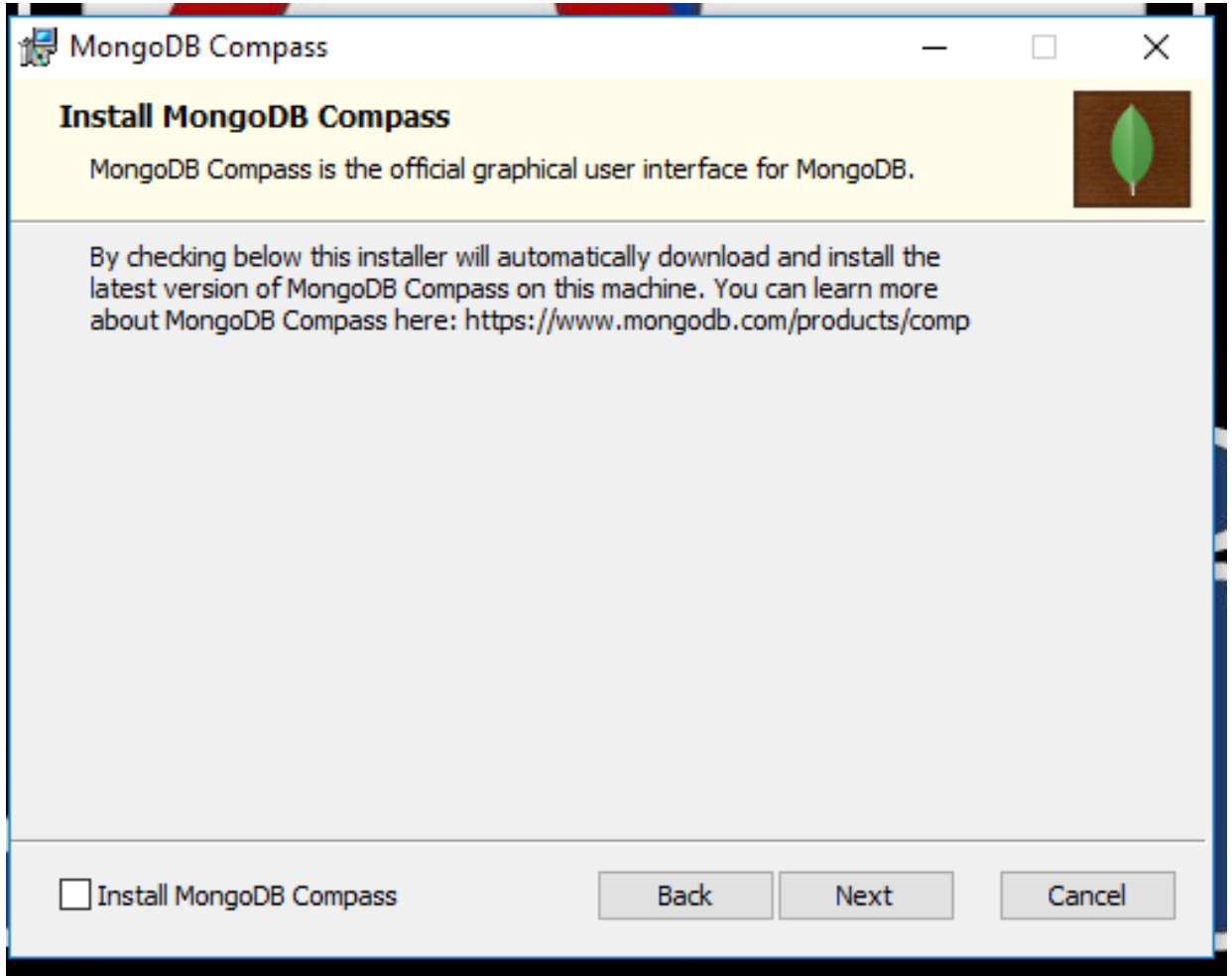
Click Next


MongoDB 4.0.0 2008R2Plus SSL (64 bit) Service Customization
Service Configuration
Specify optional settings to configure MongoDB as a service.
Install MongoD as a Service
Run service as Network Service user
Run service as a local or domain user:
Account Domain:
.
Account Name:
MongoDB
Account Password:
Service Name:
MongoDB
Data Directory:
C:\Program Files\MongoDB\Server\4.0\data\
Log Directory:
C:\Program Files\MongoDB\Server\4.0\log\
< Back
Next >
Cancel

UnCheck Install MongoDB Option

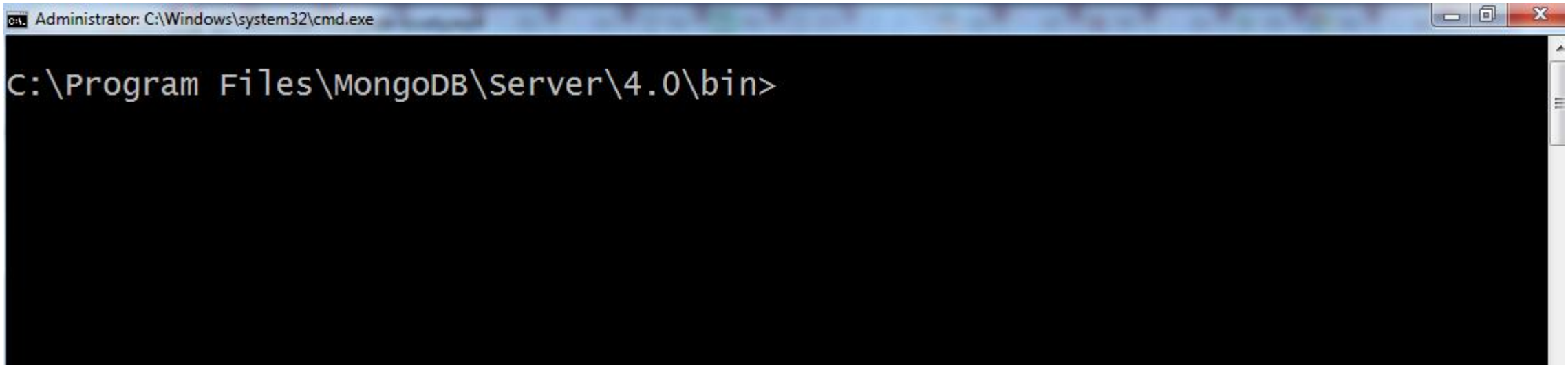


Install MongoDB Compass Seprate



Mongo DB Path

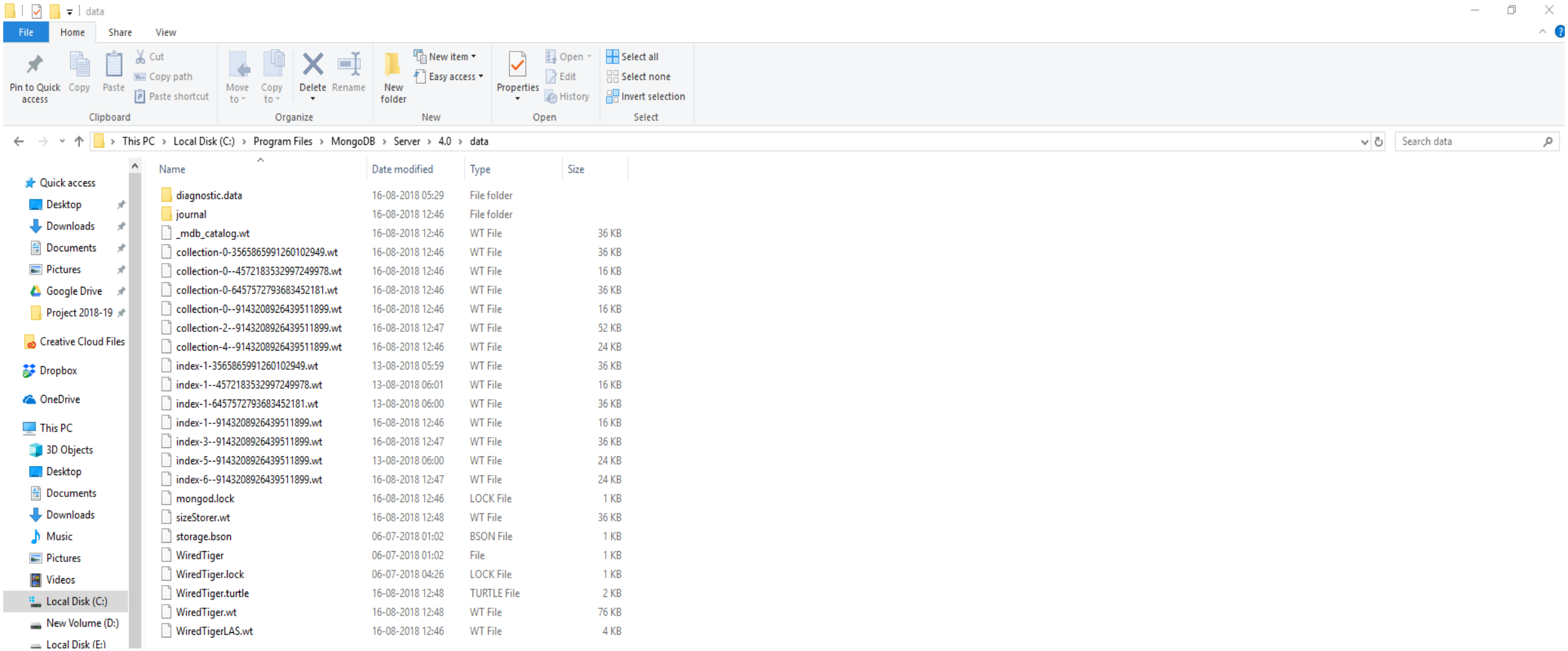
- Mongo DB Install Path



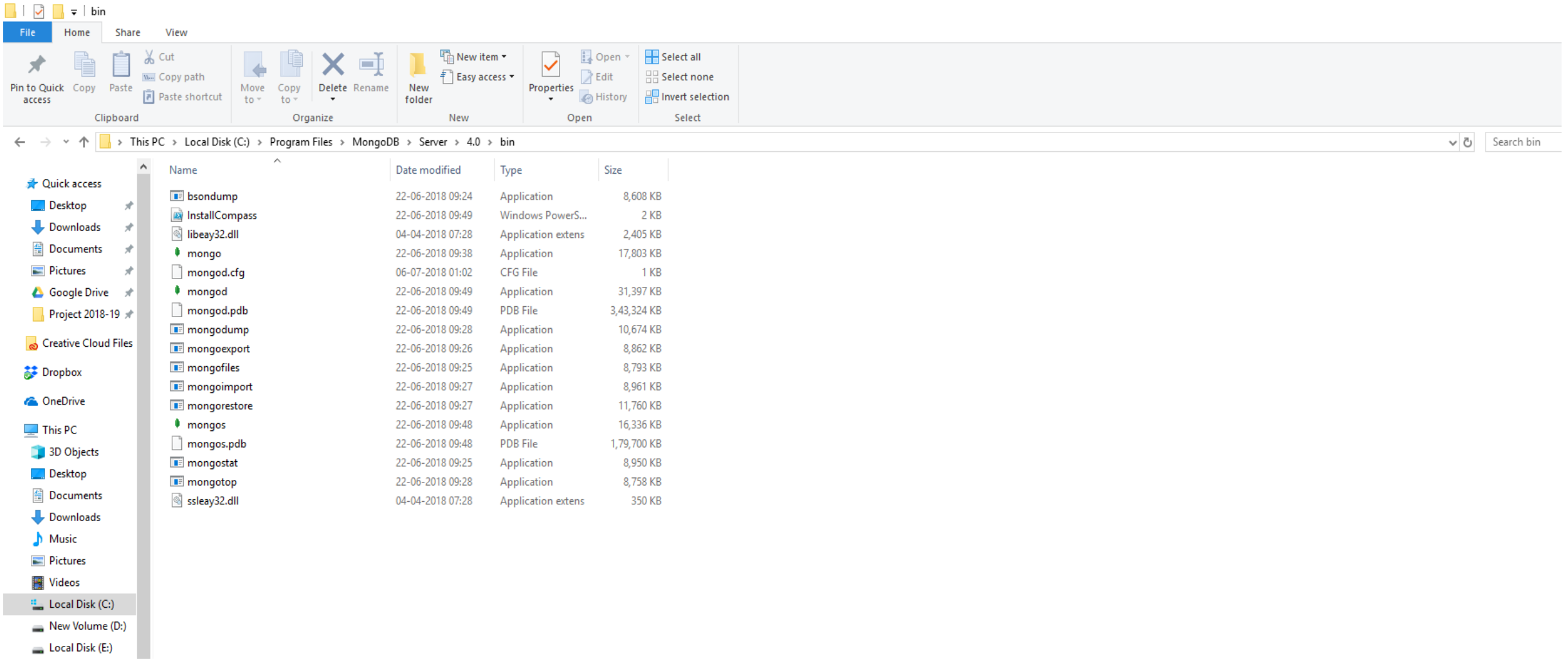
MongoDB Path Set

If MongoDB is not Connecting Using Command Line

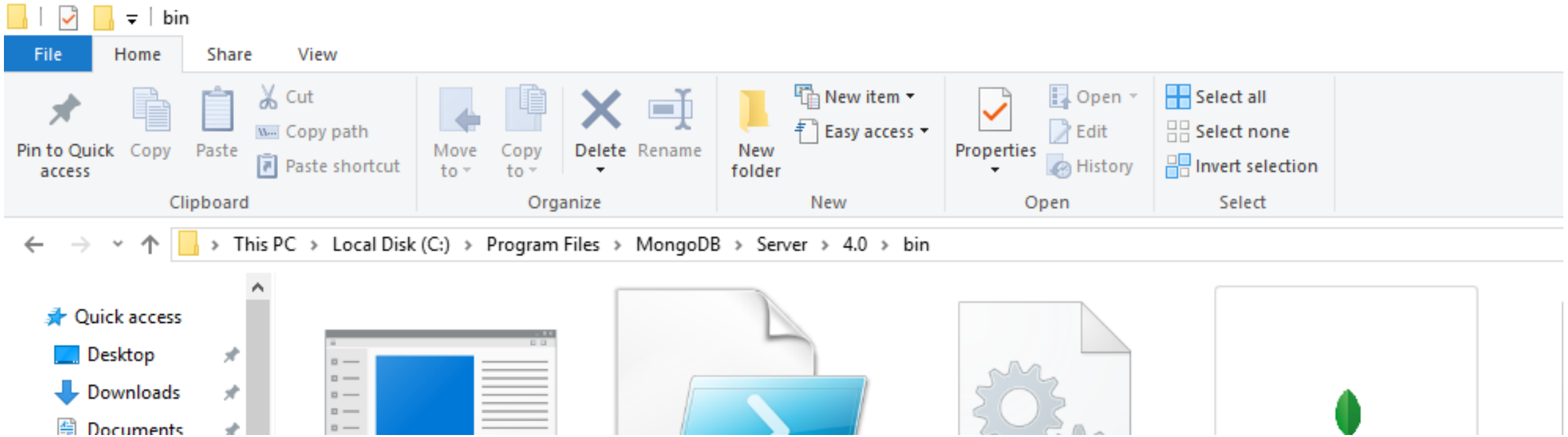
Goto Data Path



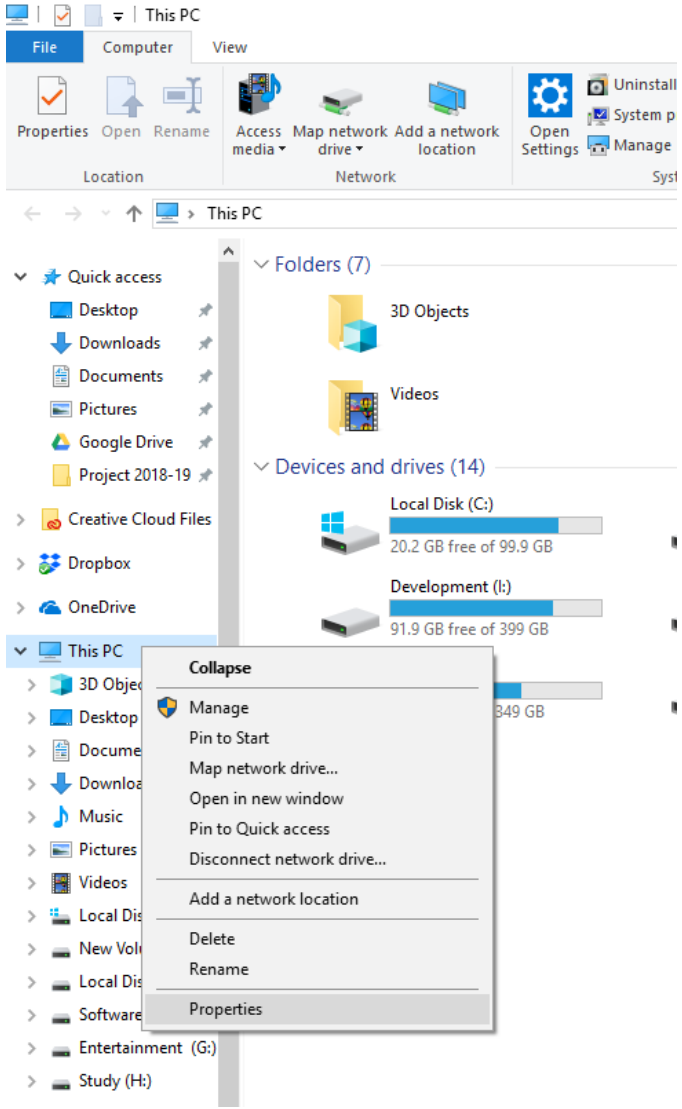
Goto Bin Folder



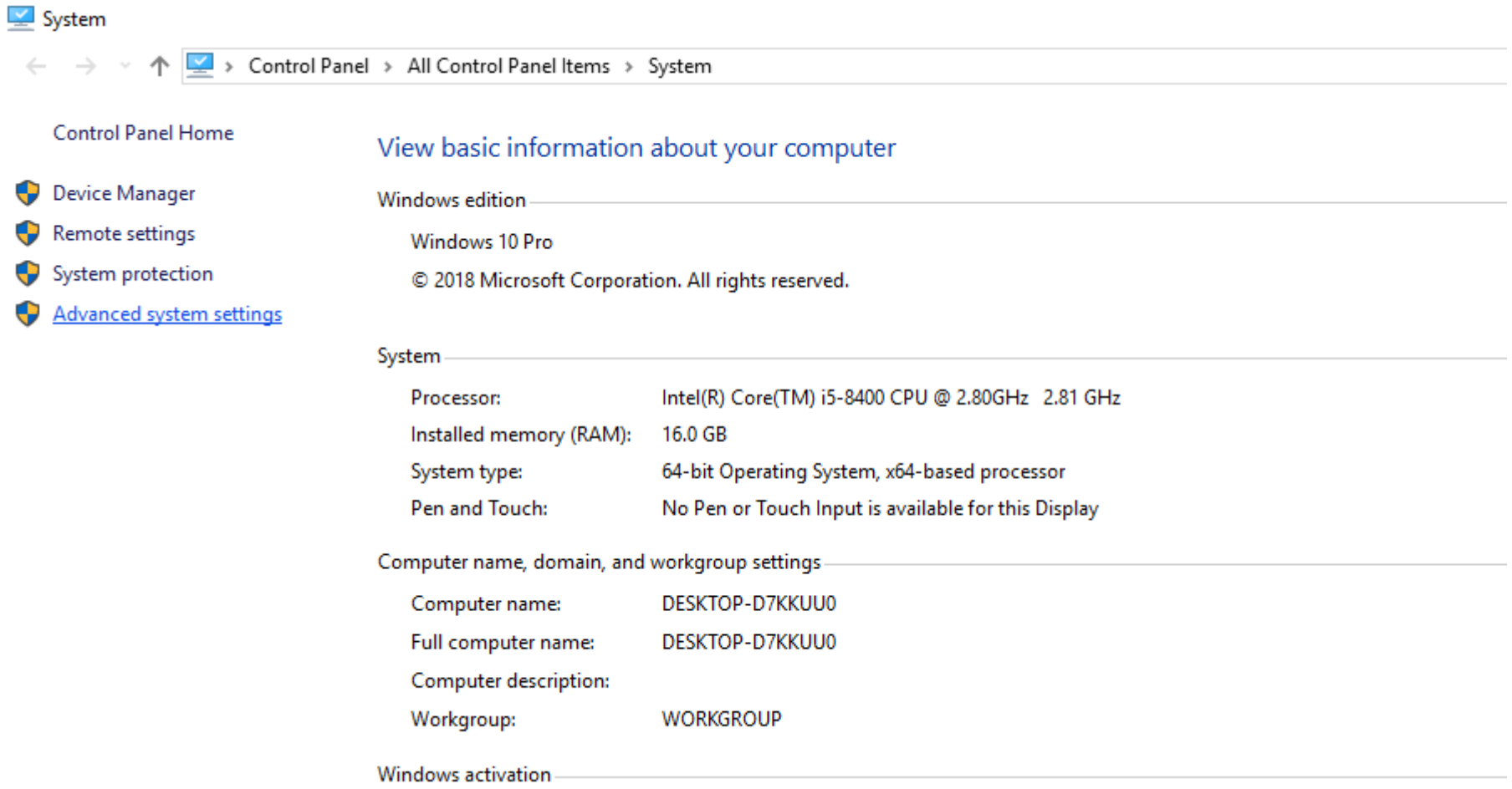
Select Path


bin
File
Home
Share
View
Pin to Quick access
Copy
Paste
Cut
Copy path
Paste shortcut
Clipboard
Move to
Copy to
Delete
Rename
Organize
New folder
New item
Easy access
New
Properties
Open
Edit
History
Open
Select all
Select none
Invert selection
Select
This PC
Local Disk (C:)
Program Files
MongoDB
Server
4.0
bin
Quick access
Desktop
Downloads
Documents

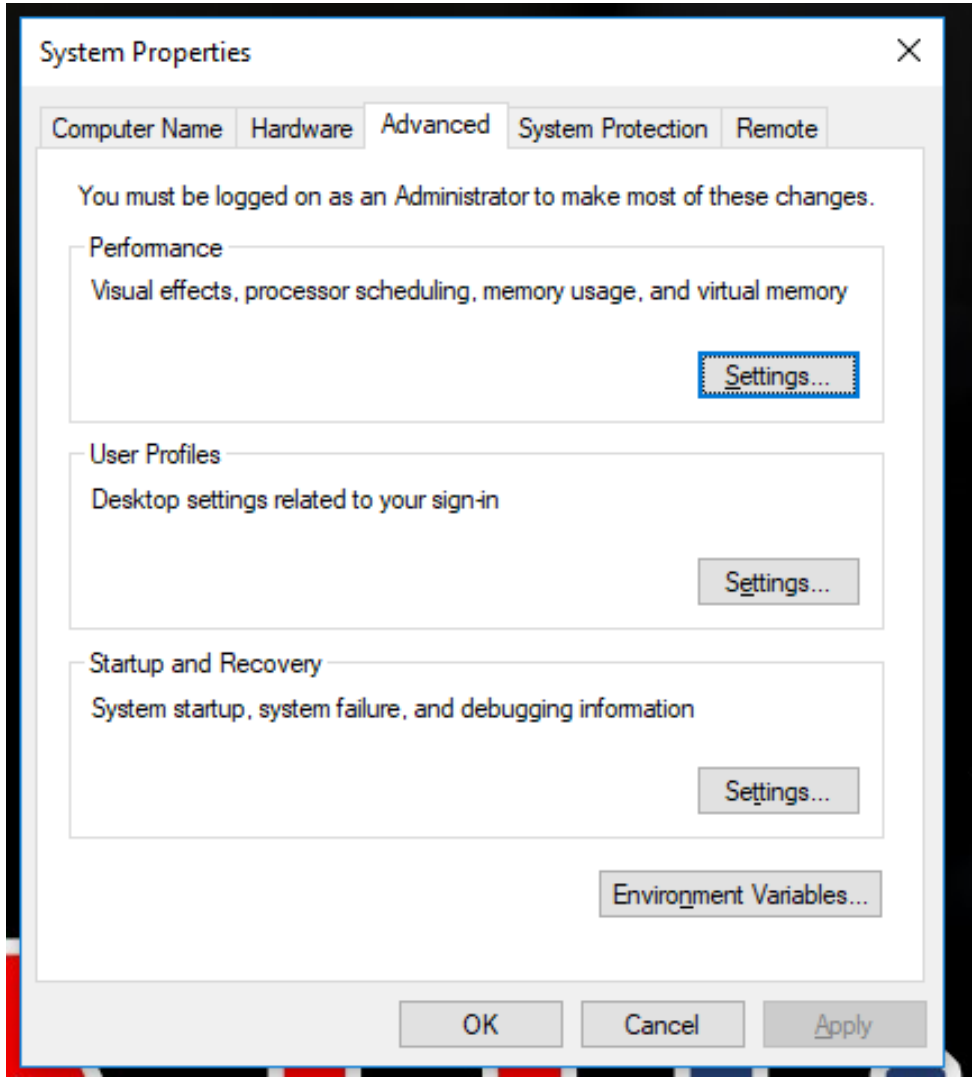
Goto Computer Properties



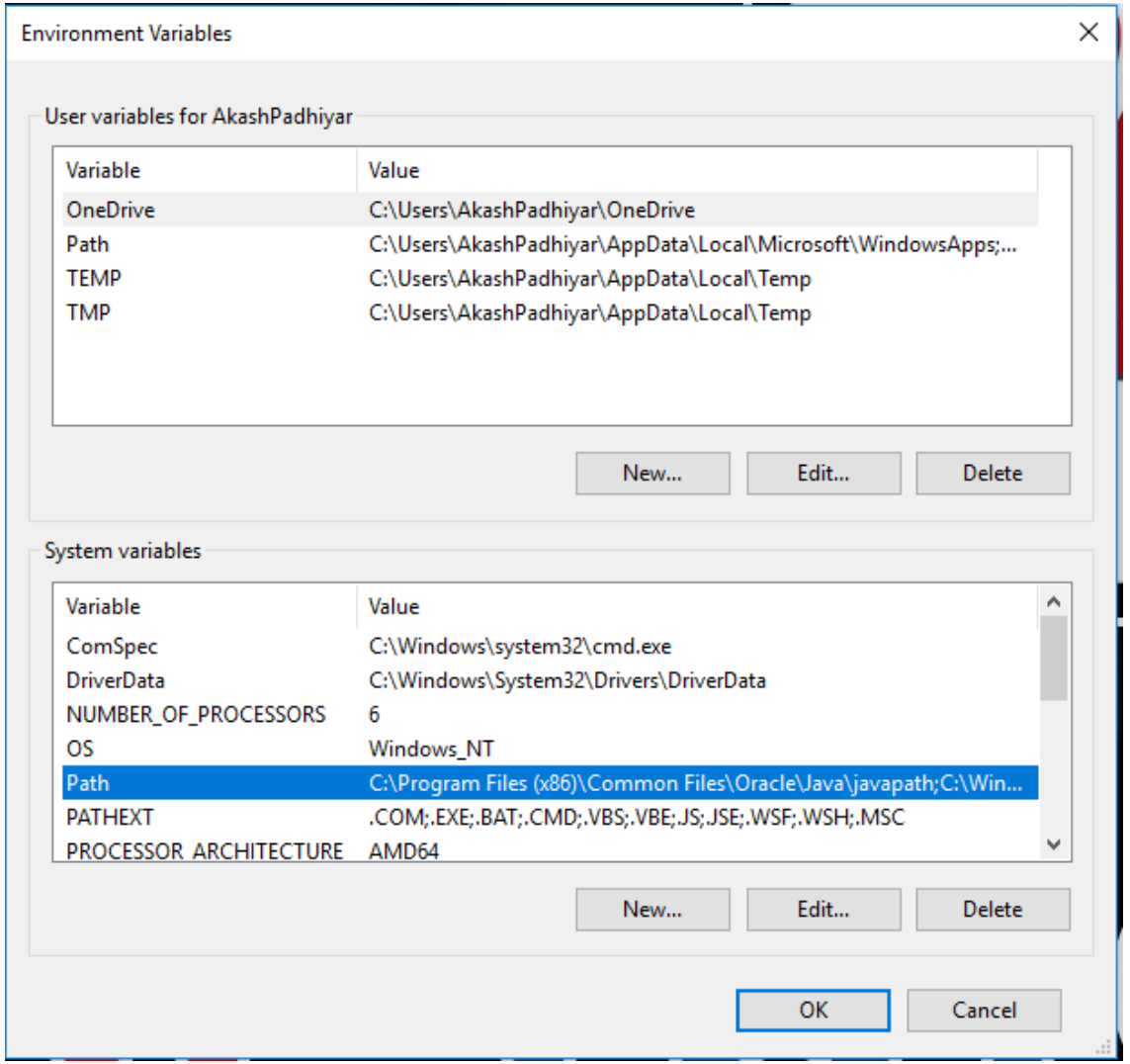
Click on Advance System Settings



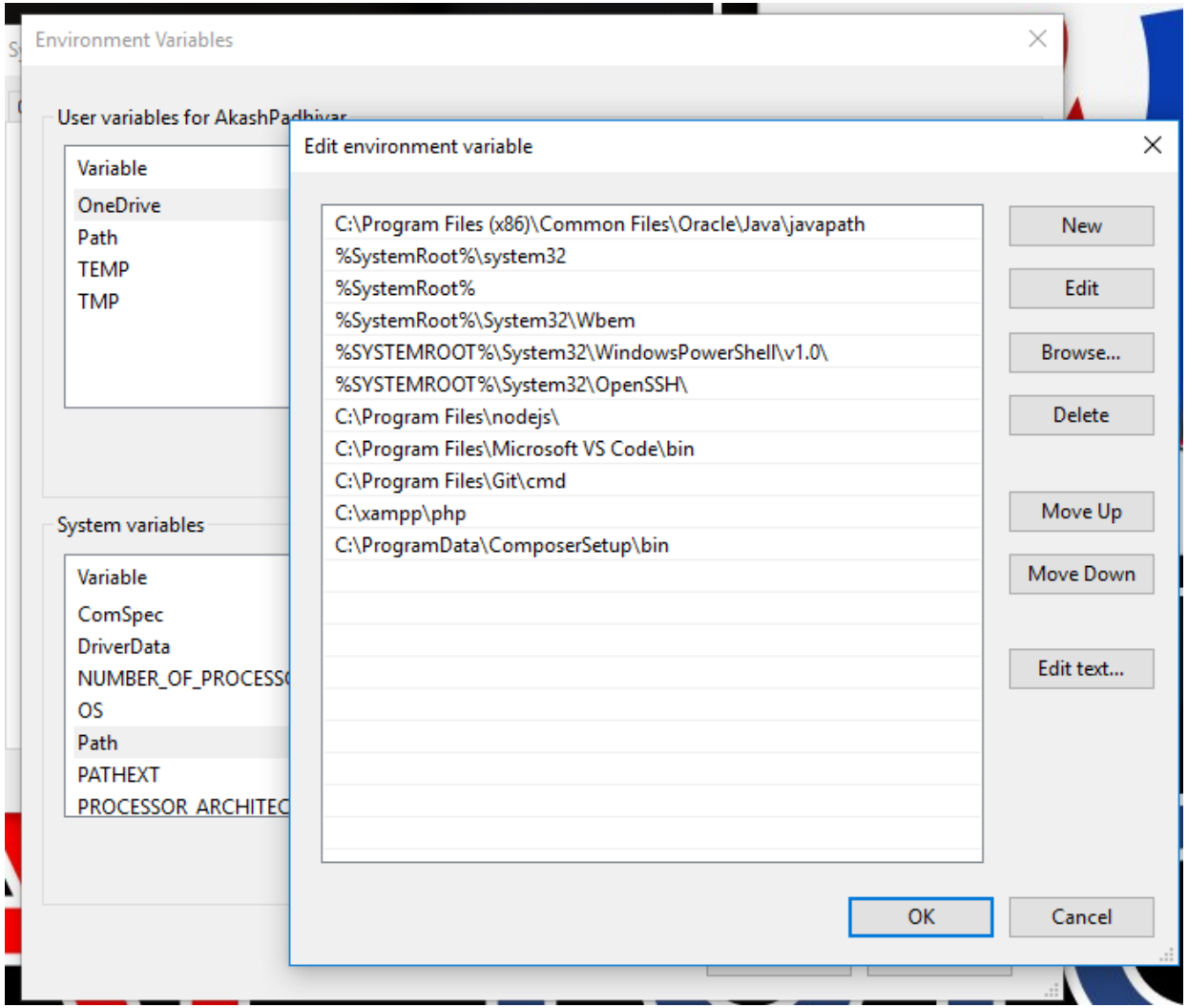
Click on Environment



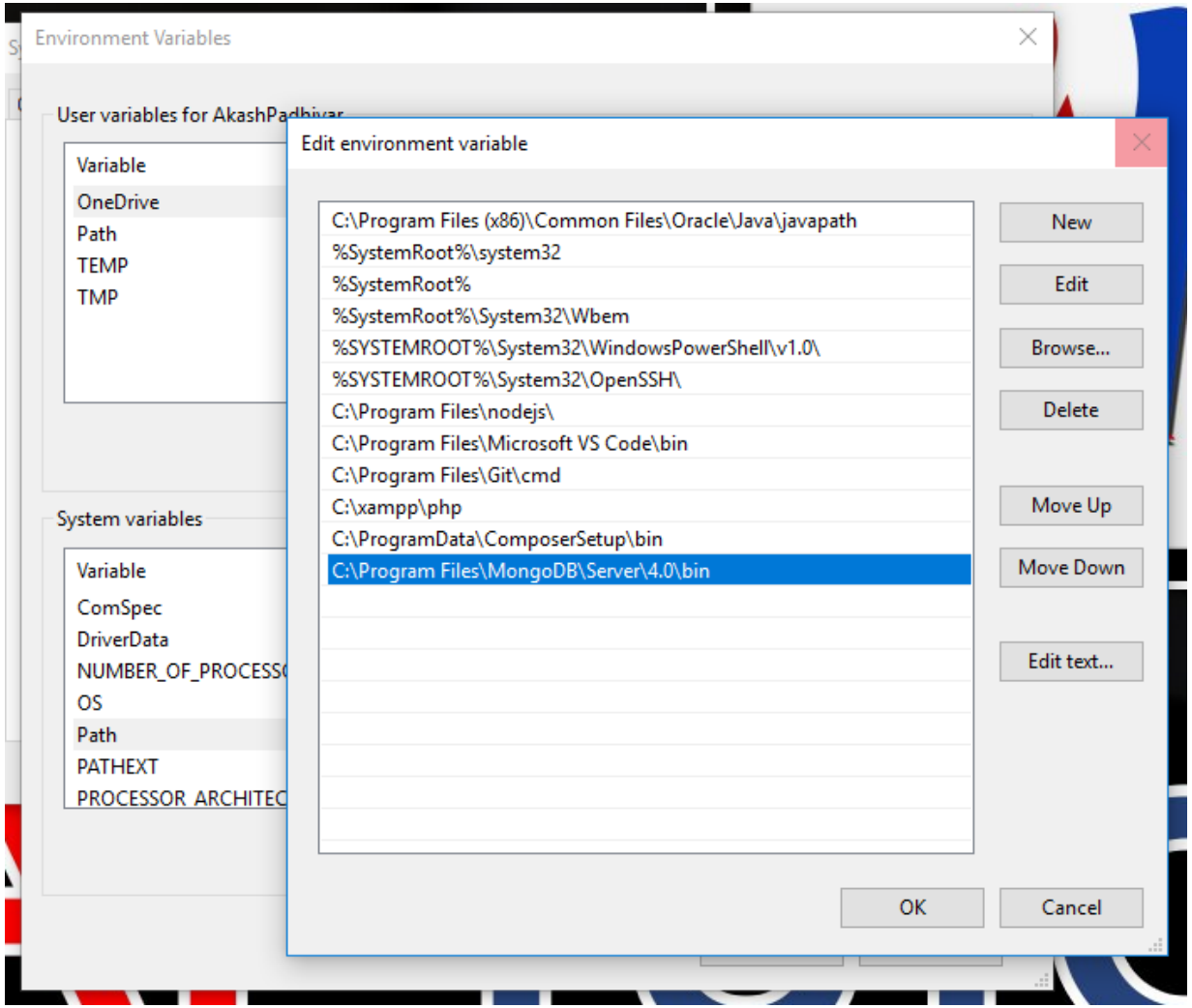
Add Path


Environment Variables
User variables for AkashPadhiyar
Variable
Value
OneDrive
C:\Users\AkashPadhiyar\OneDrive
Path
C:\Users\AkashPadhiyar\AppData\Local\Microsoft\WindowsApps;...
TEMP
C:\Users\AkashPadhiyar\AppData\Local\Temp
TMP
C:\Users\AkashPadhiyar\AppData\Local\Temp
New...
Edit...
Delete
System variables
Variable
Value
ComSpec
C:\Windows\system32\cmd.exe
DriverData
C:\Windows\System32\Drivers\DriverData
NUMBER_OF_PROCESSORS
6
OS
Windows_NT
Path
C:\Program Files (x86)\Common Files\Oracle\Java\javapath;C:\Win...
PATHEXT
.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH;.MSC
PROCESSOR_ARCHITECTURE
AMD64
New...
Edit...
Delete
OK
Cancel

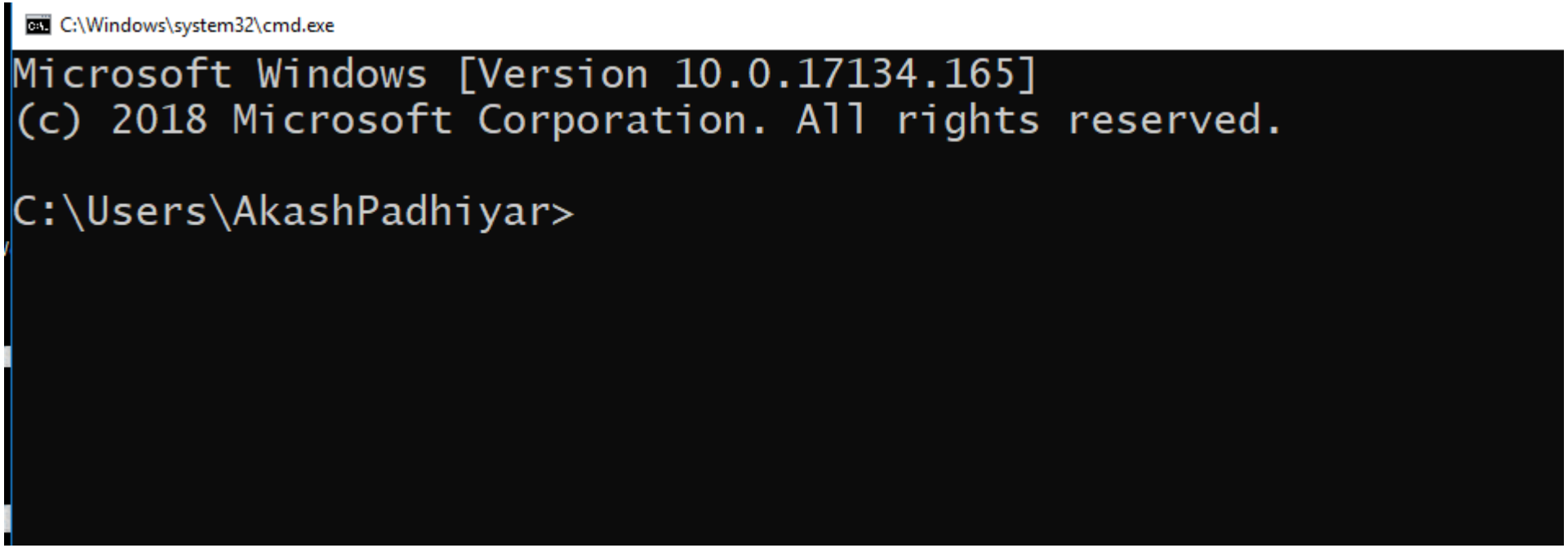
Click on New


Environment Variables
User variables for AkashPadhiyar
Variable
OneDrive
Path
TEMP
TMP
System variables
Variable
ComSpec
DriverData
NUMBER_OF_PROCESS
OS
Path
PATHEXT
PROCESSOR_ARCHITEC
Edit environment variable
C:\Program Files (x86)\Common Files\Oracle\Java\javapath
%SystemRoot%\system32
%SystemRoot%
%SystemRoot%\System32\Wbem
%SYSTEMROOT%\System32\WindowsPowerShell\v1.0\
%SYSTEMROOT%\System32\OpenSSH\
C:\Program Files\nodejs\
C:\Program Files\Microsoft VS Code\bin
C:\Program Files\Git\cmd
C:\xampp\php
C:\ProgramData\ComposerSetup\bin
New
Edit
Browse...
Delete
Move Up
Move Down
Edit text...
OK
Cancel

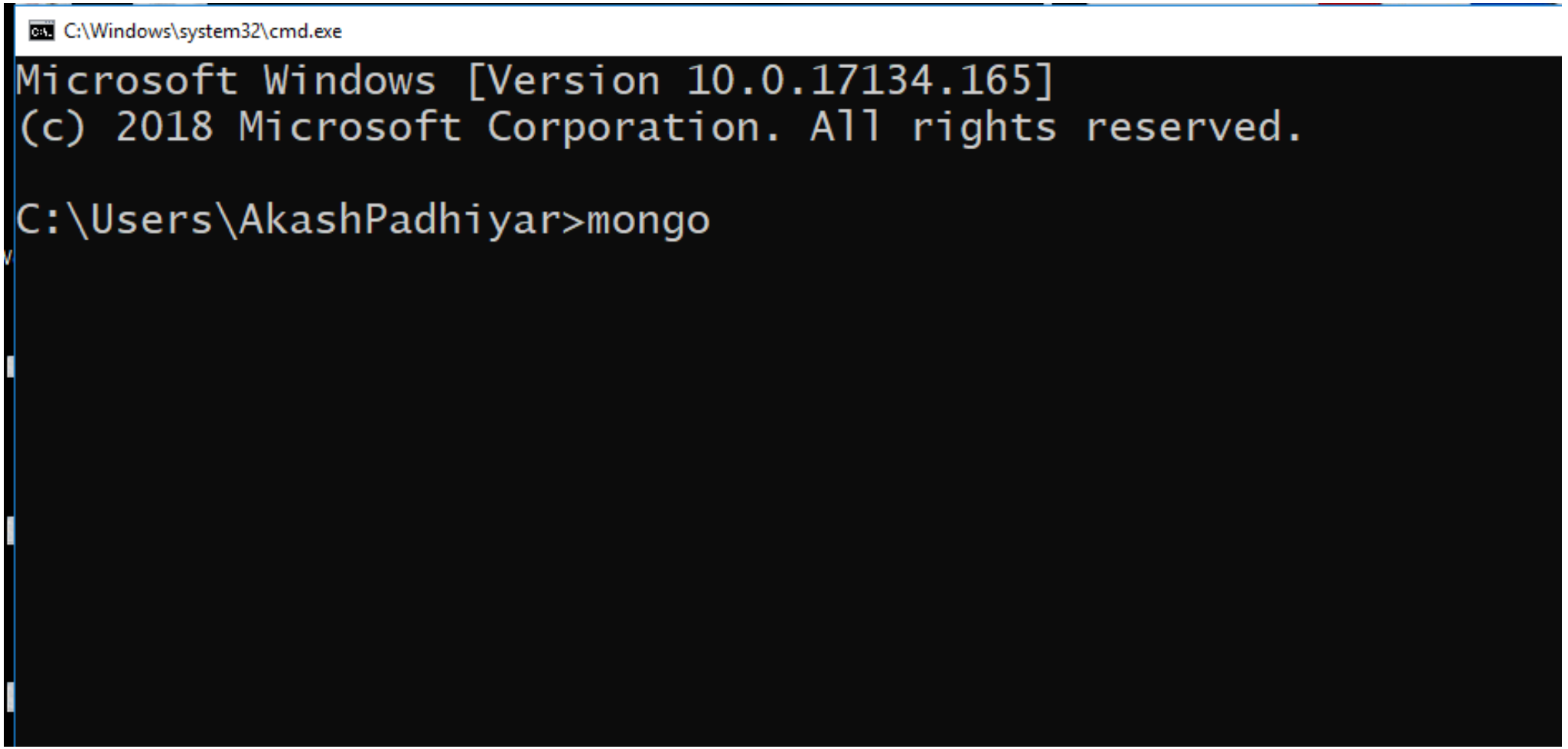
Paste Path


Environment Variables
User variables for AkashPadhiyar
Variable
OneDrive
Path
TEMP
TMP
System variables
Variable
ComSpec
DriverData
NUMBER_OF_PROCESSO
OS
Path
PATHEXT
PROCESSOR_ARCHITEC
Edit environment variable
C:\Program Files (x86)\Common Files\Oracle\Java\javapath
%SystemRoot%\system32
%SystemRoot%
%SystemRoot%\System32\Wbem
%SYSTEMROOT%\System32\WindowsPowerShell\v1.0\
%SYSTEMROOT%\System32\OpenSSH\
C:\Program Files\nodejs\
C:\Program Files\Microsoft VS Code\bin
C:\Program Files\Git\cmd
C:\xampp\php
C:\ProgramData\ComposerSetup\bin
C:\Program Files\MongoDB\Server\4.0\bin
New
Edit
Browse...
Delete
Move Up
Move Down
Edit text...
OK
Cancel

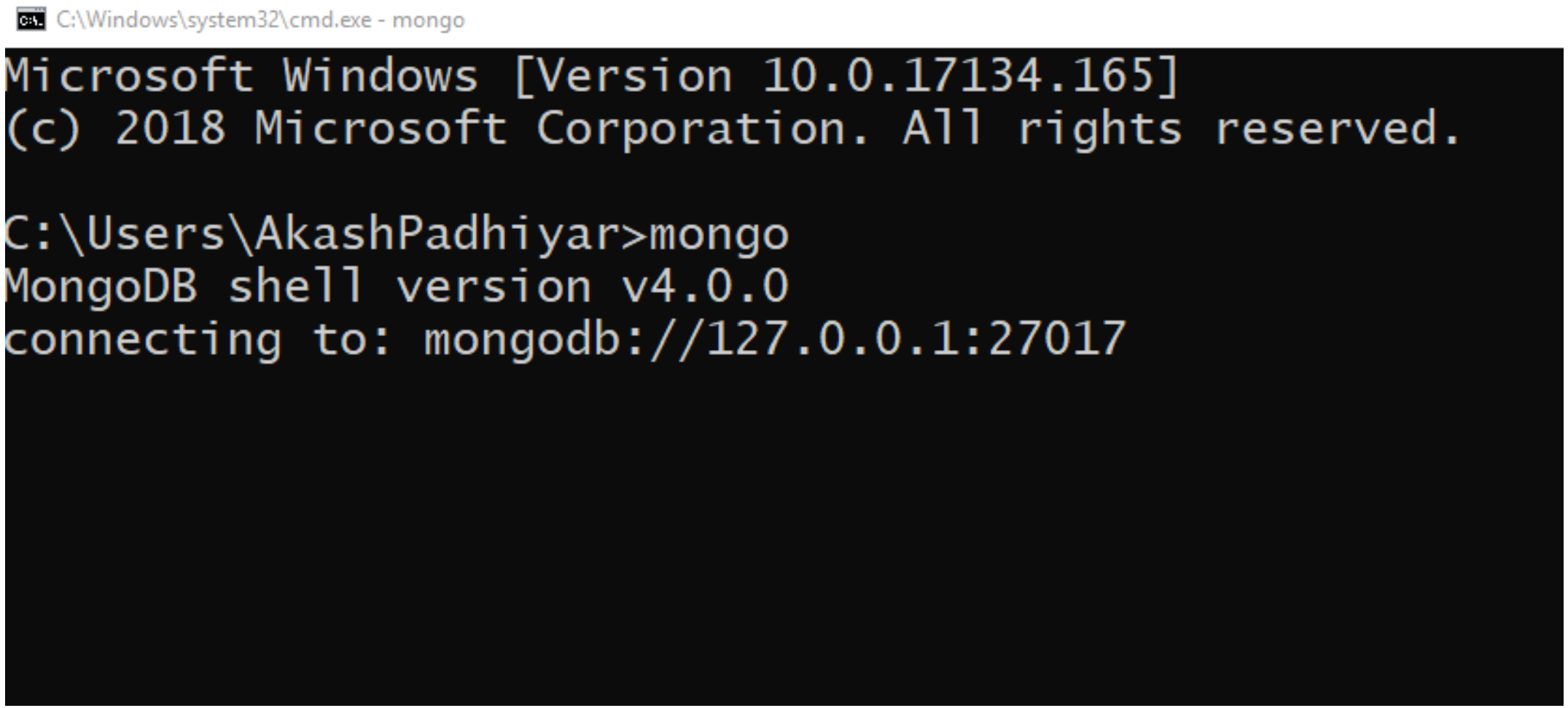
Connect MongoDB



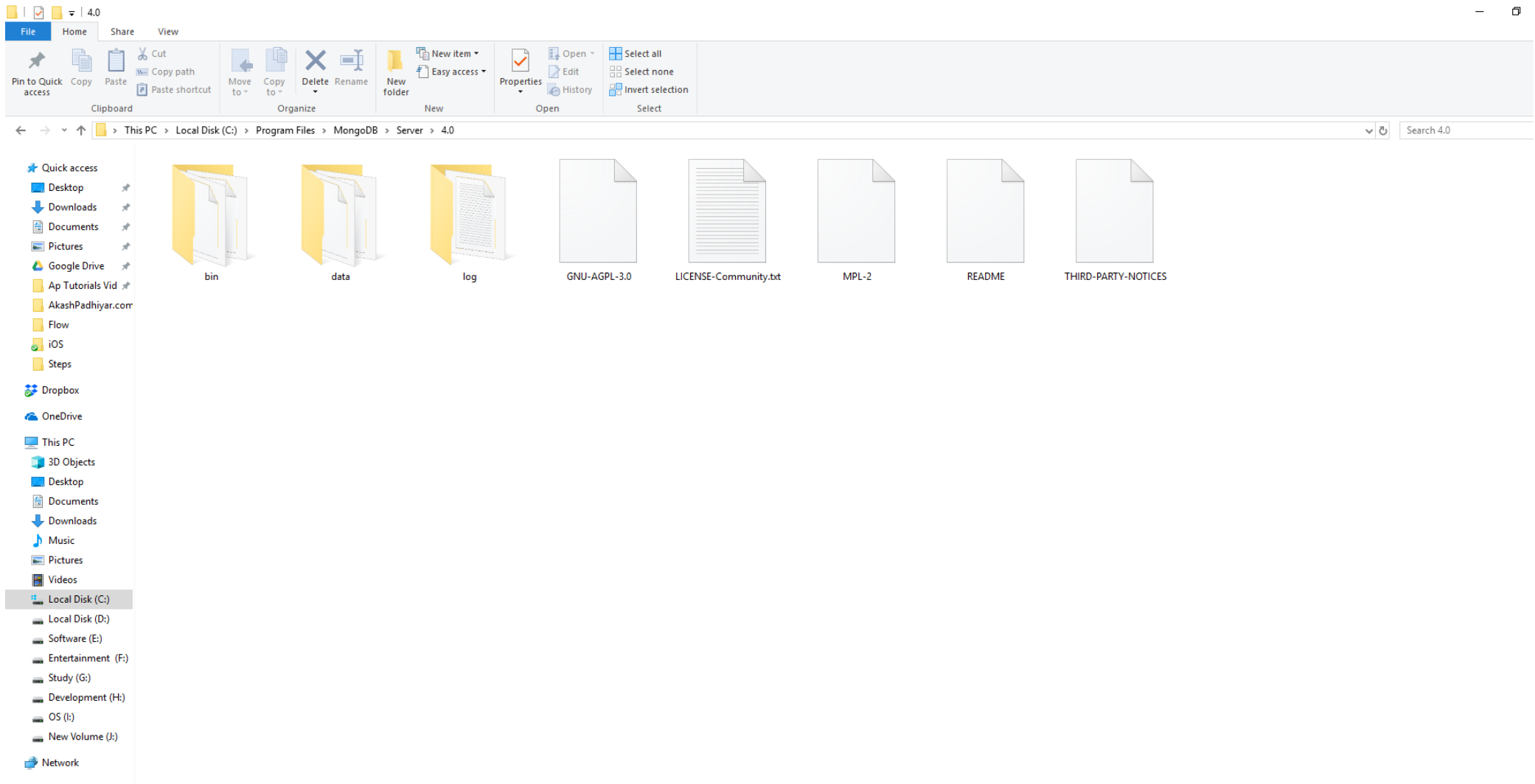
Connect Using Mongo



MongoDB Path Port Number



Mongo DB Installation Directory



Mongo DB Compass

What is MongoDB Compass ?

- **MongoDB Compass** is a simple-to-use, sophisticated GUI that allows any user within your organization to visualize and explore your data with ad-hoc queries in just a few clicks – all with zero knowledge of the **MongoDB** query language.

How to Install MongoDB Compass

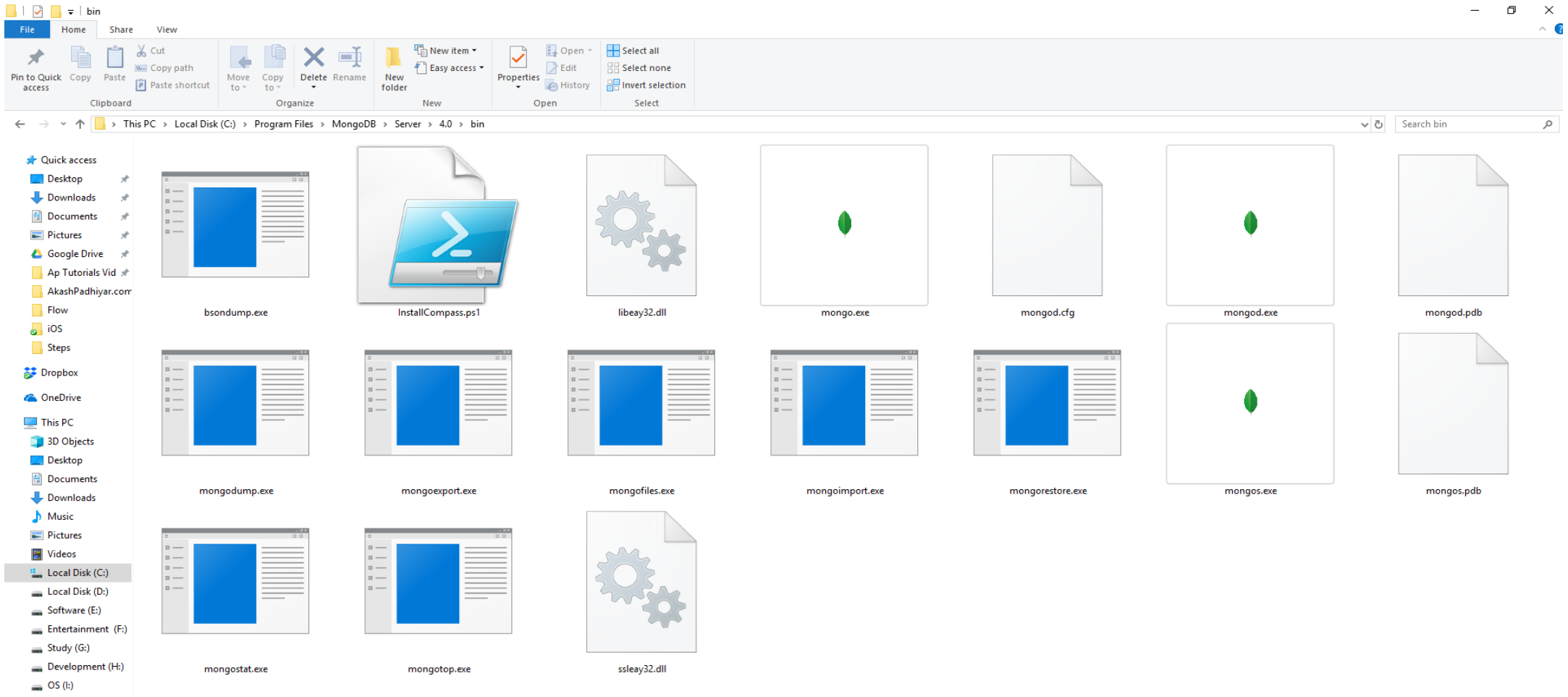
- There are two ways to Download MongoDB Compass

1. Download From Official Website
2. Using Inbuilt Command

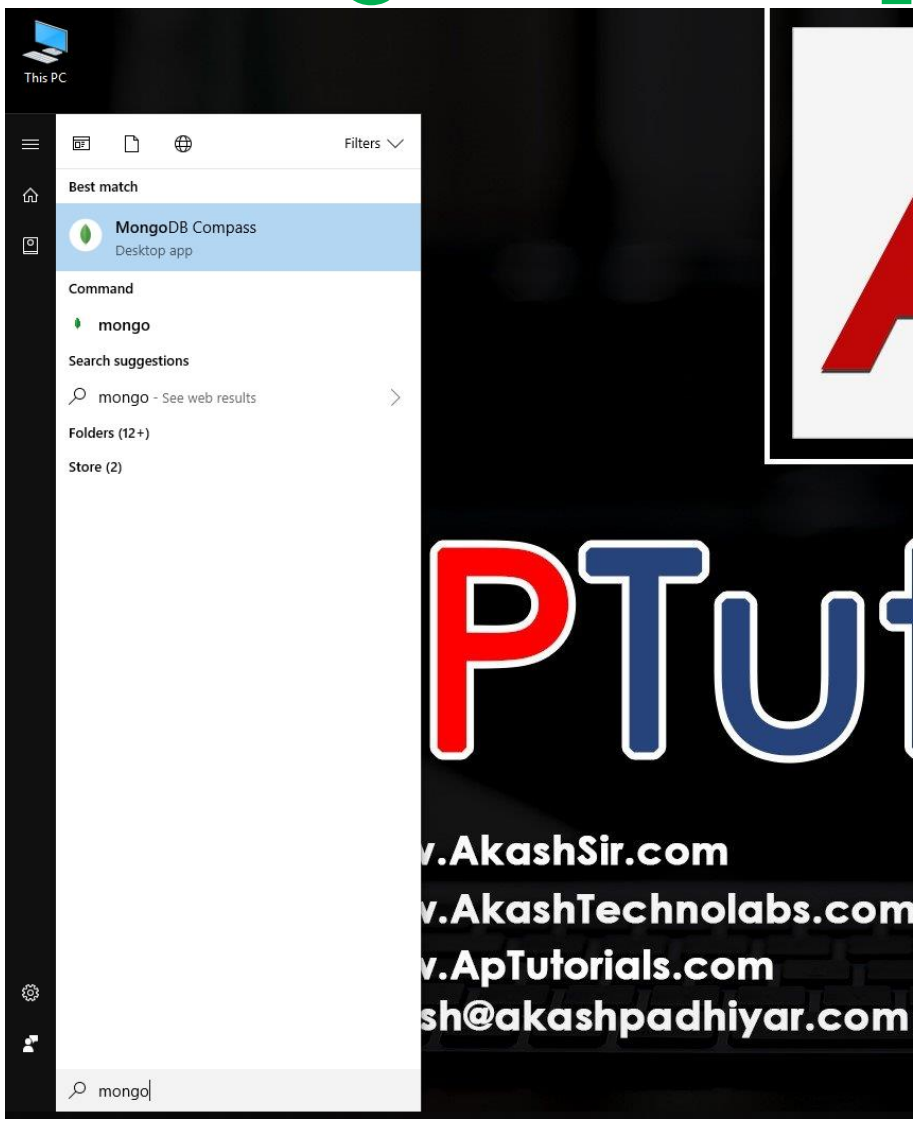
Download MongoDB Compass

- To Download Mongo DB Compass
  - https://www.mongodb.com/products/compass

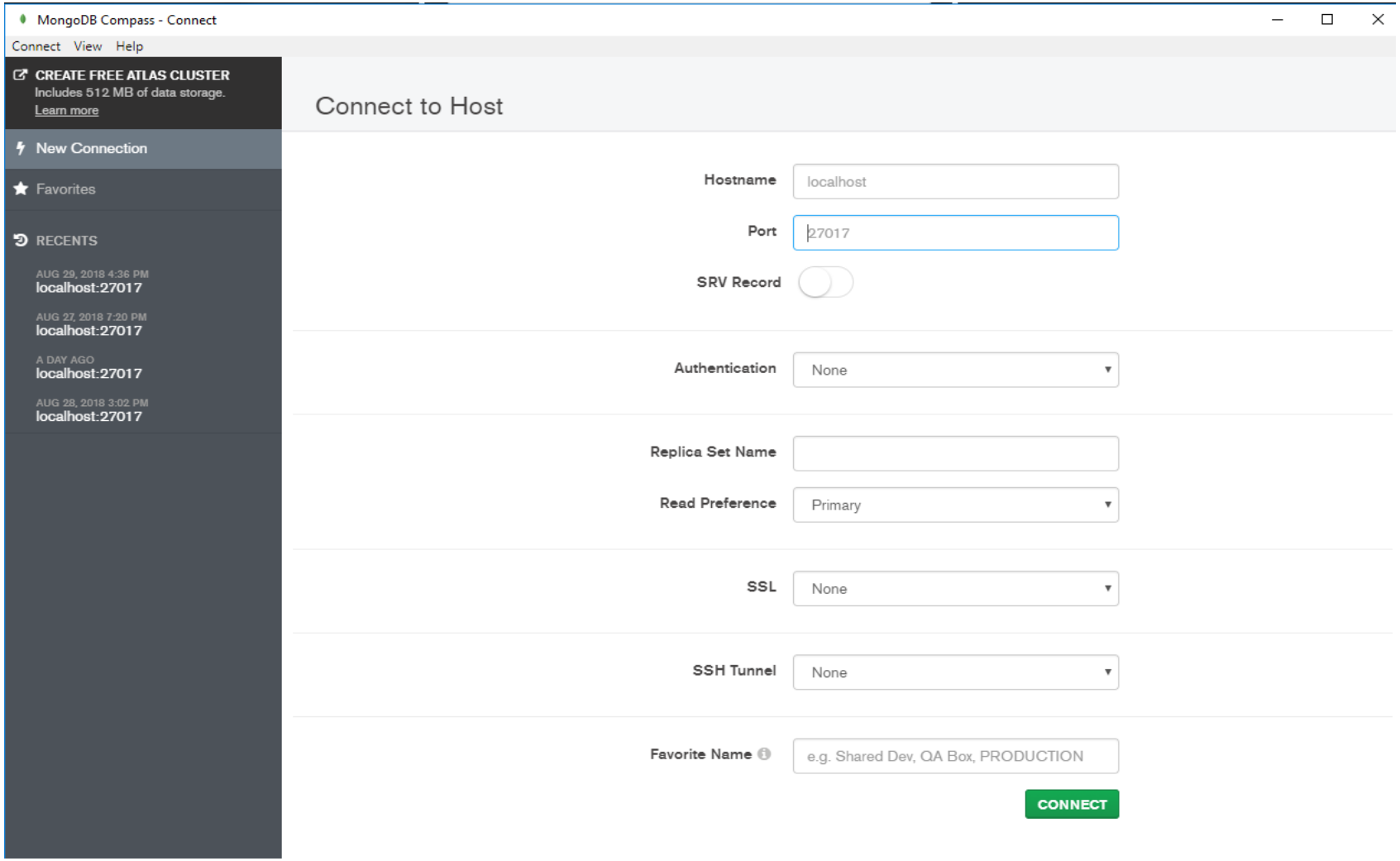
Install Mongo Compass Using InstallCompass.ps1

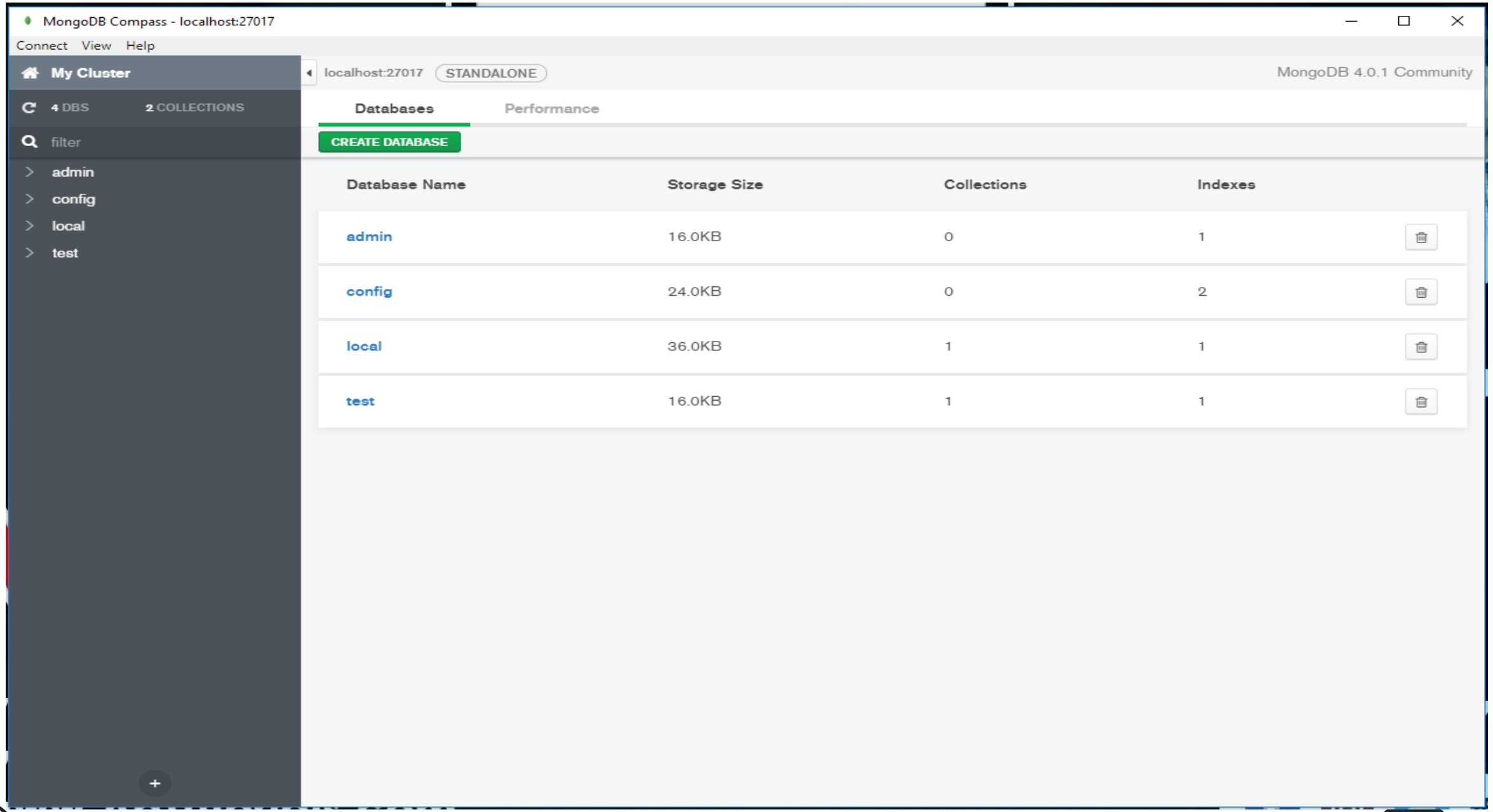


Run MongoDB Compass

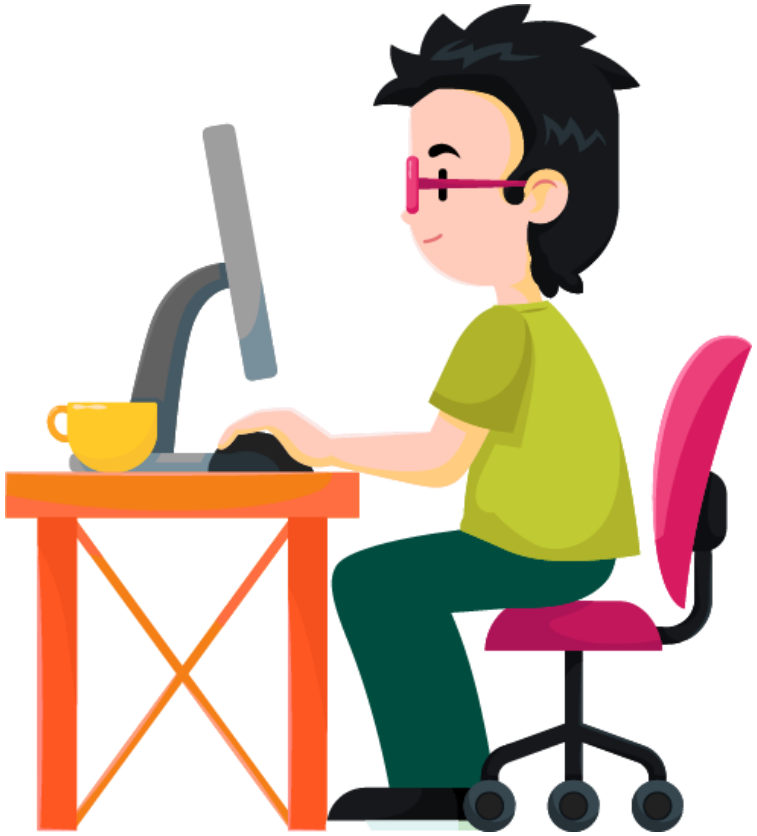


MongoDB Compass UI




MongoDB Compass - localhost:27017
Connect View Help
My Cluster
4 DBS 2 COLLECTIONS
filter
admin
config
local
test
localhost:27017 STANDALONE
MongoDB 4.0.1 Community
Databases
Performance
CREATE DATABASE
Database Name
Storage Size
Collections
Indexes
admin 16.0KB 0 1
config 24.0KB 0 2
local 36.0KB 1 1
test 16.0KB 1 1

Get Exclusive Video Tutorials



www.aptutorials.com
https://www.youtube.com/user/Akashtips

If You Liked It !

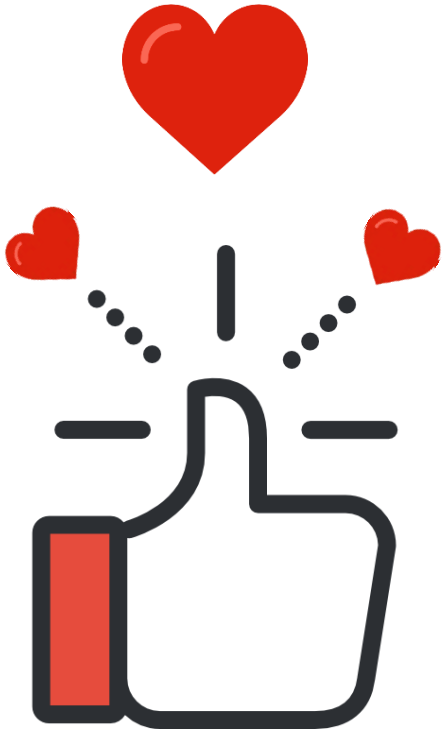
Rating Us Now

Just Dial

https://www.justdial.com/Ahmedabad/Akash-Technolabs-Navrangpura-Bus-Stop-Navrangpura/079PXX79-XX79-170615221520-S5C4_BZDET

Sulekha

https://www.sulekha.com/akash-technolabs-navrangpura-ahmedabad-contact-address/ahmedabad



Get More Details

www.akashsir.com

Connect With Me

Akash Padhiyar
#AkashSir

www.akashsir.com
www.akashtechnolabs.com
www.akashpadhiyar.com
www.aptutorials.com

Social Info

Akash.padhiyar

Akashpadhiyar

Akash_padhiyar

+91 99786-21654

#Akashpadhiyar
#aptutorials