

CREATING A DATABASE IN MONGODB



MongoDB is a [NoSQL database](#). That means the way we work in MongoDB is different from that of a [relational database](#) like MySQL. If you are coming from an RDBMS background, you will be quite comfortable with this topic.

Surprisingly, however, MongoDB doesn't have a 'create database' operation to create a database as you do in SQL. So, in this article, let's explore how to work with databases in MongoDB.

(This article is part of our [MongoDB Guide](#). Use the right-hand menu to navigate.)

Installing MongoDB

If you haven't [installed MongoDB](#) yet, let's do it first. [Download](#) the MongoDB package suitable for your OS. Download the msi/zip file compatible with your OS and install the application. (I am not going to describe the installation process in detail, as it is straightforward.)

I assume now you have installed the MongoDB database successfully. Open your CMD and type **mongod --version** to verify your installation. If you get an output similar to the result in the picture below, everything is perfect.

```
C:\windows\system32>mongod --version
db version v4.4.1
Build Info: {
  "version": "4.4.1",
  "gitVersion": "ad91a93a5a31e175f5cbf8c69561e788bbc55ce1",
  "modules": [],
  "allocator": "tcmalloc",
  "environment": {
    "distmod": "windows",
    "distarch": "x86_64",
    "target_arch": "x86_64"
  }
}
```

Accessing the Mongo shell

When you install MongoDB, a CLI tool called Mongo shell will be installed along with it. You can use it to give commands to the MySQL server. In order to get access to the mongo shell, you have to start the server with the following command:

```
net start MongoDB
```

If you get this output, the MongoDB server has successfully started:

```
C:\windows\system32>net start MongoDB
The MongoDB Server (MongoDB) service is starting...
The MongoDB Server (MongoDB) service was started successfully.

C:\windows\system32>
```

Next, we should run the MongoDB shell. To do that, type the command **mongo** in the CMD.

```
C:\windows\system32>mongo
MongoDB shell version v4.4.1
connecting to: mongodb://127.0.0.1:27017/?compressors=disabled&gssapiServiceName=mongodb
Implicit session: session { "id" : UUID("2c3427b3-8da9-48c6-bca2-9ba01ea281e0") }
MongoDB server version: 4.4.1
Welcome to the MongoDB shell.
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:
  2020-09-18T15:53:05.173+05:30: ***** SERVER RESTARTED *****
  2020-09-18T15:53:07.351+05:30: 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()
---
>
```

Now you are in the MongoDB shell, where you can execute commands to:

- Create databases
- Insert data
- Edit and delete data from databases
- Issue administrative commands

Creating a Mongo database

As I said earlier, there is no 'create database' command in MongoDB. It doesn't mean there is no way to create a database—of course there is. Let's see how, by creating a database called Company using the shell.

MongoDB has a keyword called 'use,' which is used to switch to a specified database. For example, if you want to connect with an existing database named Employee, you can use the command 'use Employee' to connect with it. However, if there is no database as Employee, the command 'use' will create it and connects you to it. Let's use the 'use' command to create our database.

use Company

When you use the command, you will see the following output:

```
> use company
switched to db company
>
```

Mongo has created the company database and connected you to it. You can use the **db** command to confirm, which will display the currently connected database.

```
> db
company
>
```

You might want to see all the existing databases before creating a new database. You can do it with the **show dbs** command, and it will return the following result:

```
> show dbs
admin    0.000GB
config   0.000GB
local    0.000GB
>
```

Installing MongoDB creates three default databases:

- Admin
- Config
- Local

Surprisingly, the database we just created is not listed. This is because MongoDB doesn't truly create the database until we save values to it.

One of the critical features in NoSQL databases like MongoDB is that they are schema-less—there's no schema. That means you don't specify a structure for the databases/tables as you do in SQL. Instead of tables and rows in SQL, MongoDB has collections and documents. So, let's see how you work with collections in MongoDB.

Using collections in MongoDB

In SQL, you have tables that have a well-defined structure with columns and specified data types. You insert data into tables as records. Every record you insert should have values (including null values) for every column defined on the table.

In contrast, NoSQL has collections instead of tables. These collections don't have any structure, and you insert data, as documents, into the collection. That means that one document can be completely different from another document. Let's create a collection called Employee and add a document to it.

Before you could create a collection, remember that you add data to documents in JSON format. So, the command to insert one document to our database will look like this:

```
db.Employee.insert(  
  
    {  
  
        "EmployeeName" : "Chris",  
  
        "EmployeeDepartment" : "Sales"  
  
    }  
  
)
```

If the insertion is successful it will return **WriteResult({ "nInserted" : 1 })**:

```
> db.Employee.insert(  
... {  
... "EmployeeName" : "Chris",  
... "EmployeeDepartment" : "Sales"  
... }  
... )  
WriteResult({ "nInserted" : 1 })  
>
```

First, switch to the database to add values using the 'use' command. Then **use db.Employee.insert** command to add a document to the database:

- Db refers to the currently connected database.
- Employee is the newly created collection on the company database.

A significant issue you'll notice in this query is we haven't set a primary key. MongoDB automatically creates a primary key field called `_id` and sets a default value to it. To see this, let's view the collection we just created. Run the following command to access our collection in JSON format.

```
db.Employee.find().forEach(printjson)
```

It will print the following output:

```
> db.Employee.find().forEach(printjson)  
{  
  "_id" : ObjectId("5f64bb2b9acf97fa418e9c00"),  
  "EmployeeName" : "Chris",  
  "EmployeeDepartment" : "Sales"  
}  
{  
  "_id" : ObjectId("5f64e6b19acf97fa418e9c01"),  
  "EmployeeName" : "Chris",  
  "EmployeeDepartment" : "Sales"  
}  
>
```

In MongoDB, you cannot set an arbitrary field to the primary key. However, you can change the value of the default primary key. Let's add another document while giving value for `_id` as well.

```
db.Employee.insert(  
  
    {  
  
        "EmployeeName" : "Chris",  
  
        "EmployeeDepartment" : "Sales"  
  
    }  
  
)
```

```
{  
  
  "_id" : 1,  
  
  "EmployeeName" : "Mark",  
  
  "EmployeeDepartment" : "Marketing"  
  
}  
  
)
```

Great. Now we know how to use the primary key as well. Let's get back to our main topic. Have we created our database now? Run the following command again to find it out.

```
show dbs
```

Now you can see the database 'company' is listed in the result: it worked!

```
> show dbs  
admin      0.000GB  
company    0.000GB  
config     0.000GB  
local      0.000GB  
>
```

Removing a database

It's not good to leave this meaningless database on your server. So, let's remove it as it is a good chance for us to learn how to drop a database. To drop any database you want, first, you have to connect with it using the use keyword.

```
use Company
```

Next, type **db.dropDatabase()** to remove the database from your server.

```
> db.dropDatabase()  
{ "dropped" : "company", "ok" : 1 }  
>
```

Run the **show dbs** command again to verify it.

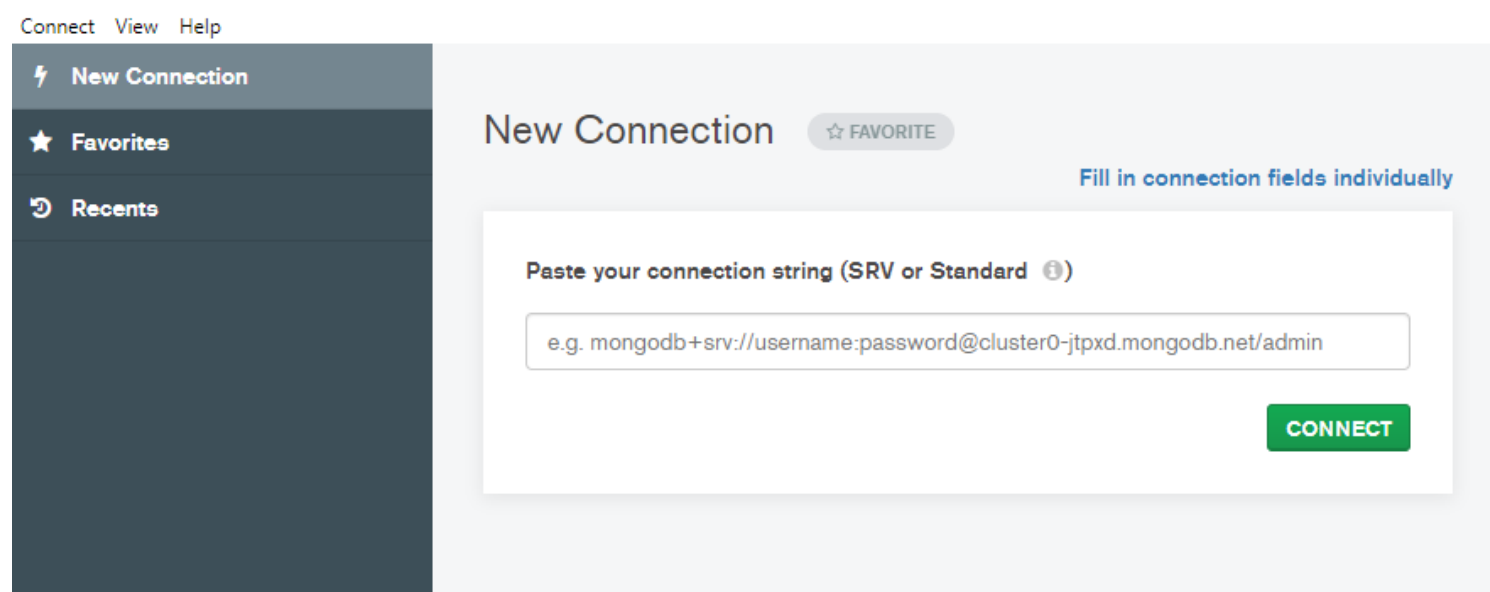
```
> show dbs  
admin      0.000GB  
config     0.000GB  
local      0.000GB  
>
```

Using MongoDB Compass

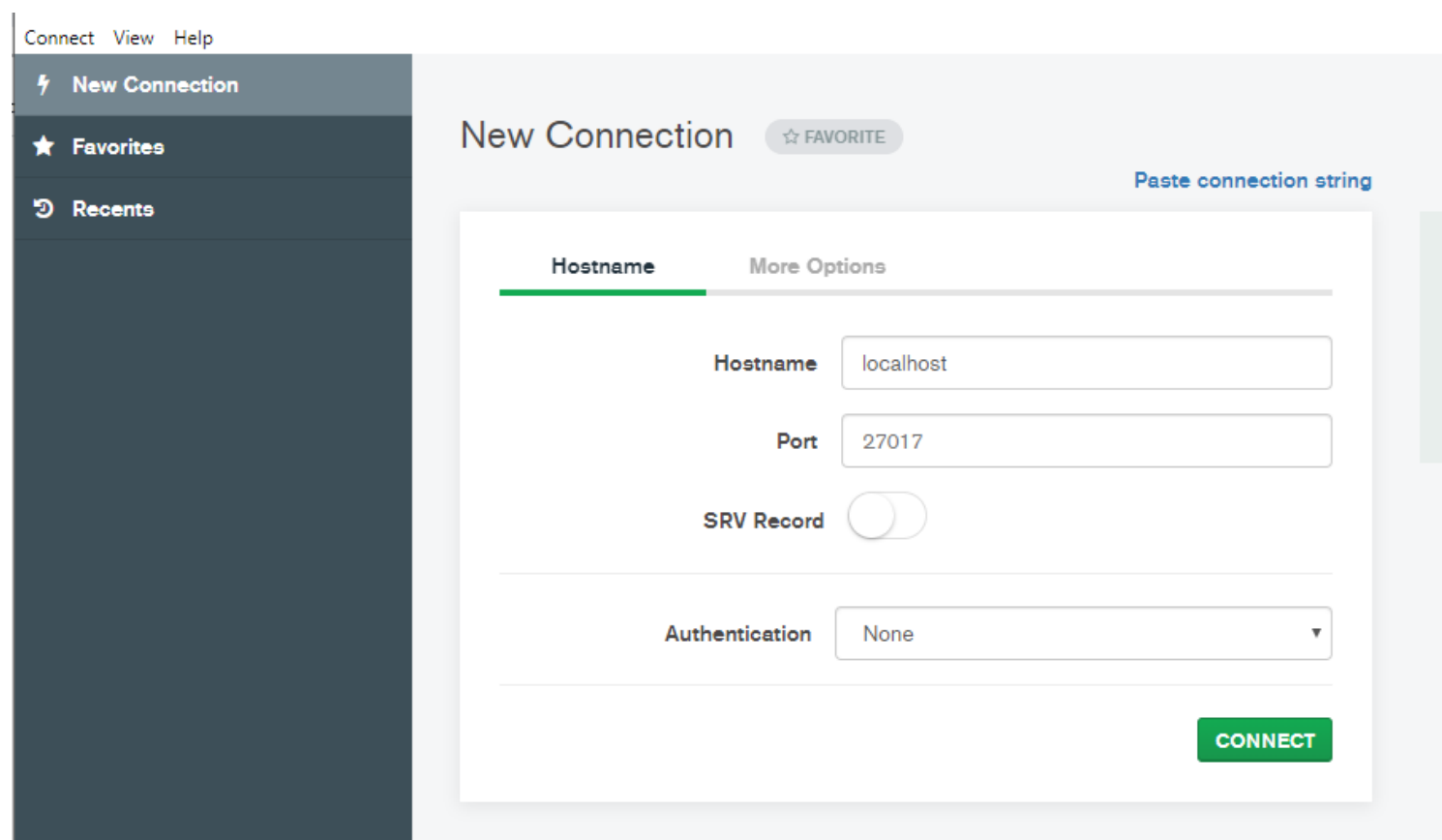
That should be the end of our tutorial—we created and removed a Mongo database. However, I want to talk about one more thing. Although the Mongo shell is a great tool for working with MongoDB servers, many people find it difficult, especially in a production environment.

That's why I encourage you to get familiar with a MongoDB Compass tool, a great GUI to work with MongoDB. Here, I will show you how to create a database in Compass GUI. You can [download the](#)

[Compass IDE](#) for any operating system. Again, the installation process is very straightforward. Now open the application and create a connection with the MySQL server that we installed earlier.



Go to 'Fill in connection fields individually.' It will take you to the following screen. If you use the default values when installing MongoDB, all you have to do is click the CONNECT button.



Now you can see a list of databases available on your MongoDB server.

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Databases

Performance

CREATE DATABASE

Database Name ^	Storage Size	Collections	Indexes	
admin	20.0KB	0	1	
company	20.0KB	1	1	
config	24.0KB	0	2	
local	36.0KB	1	1	

Click the create database button to create a new database. Then, give a database name and a collection name:

Create Database

Database Name

Collection Name

☐ **Capped Collection** ⓘ

☐ **Use Custom Collation** ⓘ

Before MongoDB can save your new database, a collection name must also be specified at the time of creation. [More Information](#)

CANCEL

CREATE DATABASE

Unlike the Mongo shell, Compass will create a database even without adding any data:

Database Name	Storage Size	Collections	Indexes
School	4.0KB	1	1
admin	20.0KB	0	1
company	20.0KB	1	1
config	36.0KB	0	2
local	36.0KB	1	1

We can verify it with the Mongo shell as well:

```
> show dbs
School 0.000GB
admin 0.000GB
company 0.000GB
config 0.000GB
local 0.000GB
>
```

Compass has a very intuitive interface way to work with the MongoDB database. It will save a lot of time when you are developing large applications. However, I still recommend you use the Mongo shell and get a good grasp of it.

We'll see you next time for another MongoDB tutorial.

Additional resources

For more tutorials like this, explore these resources:

- [BMC Machine Learning & Big Data Blog](#)
- [MongoDB Guide](#), a series of tutorials
- [PostgreSQL vs MongoDB: Comparing Databases](#)
- [MongoDB vs Cassandra: NoSQL Databases Compared](#)
- [How To Connect Amazon Glue to a JDBC Database](#)