

TencentDB for MongoDB Getting Started Product Documentation



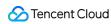


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Getting Started Creating TencentDB for MongoDB Instance

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Overview

The TencentDB for MongoDB console makes it simple to work with database instances without writing code or running programs. This document describes how to purchase and configure a TencentDB for MongoDB instance as described in Viewing Instance Details.

Prerequisites

You have registered a Tencent Cloud account and completed identity verification.

Click here to register a Tencent Cloud account.

Click here to complete identity verification.

You have determined a region and AZ for the instance. For more information, see Regions and AZs.

You have determined the specification and performance requirements of the instance. For more information, see Product Specifications and Performance.

You have determined a VPC and security group for the instance. For more information, see Creating VPC and Configuring Security Group. Currently, access over the public network isn't supported.

You have checked out the billing details of the instance. For more information, see Billing Overview. Database fees for one hour will be frozen when you create a pay-as-you-go database. Make sure that your account balance is sufficient before making a purchase.

You have determined the business project of the instance. You can create a project in **Project Management** in the **Account Center**.

You have understood the differences between each database versions. For more information, see Storage Engine and Version.

Directions

- 1. Log in to the TencentDB for MongoDB purchase page with a Tencent Cloud account.
- 2. Specify instance configurations as needed. Required configuration items are as follows.

Parameter	Required	Description



Billing Modes	Yes	Pay-as-you-go is supported. For more information, see Billing Overview.
Region	Yes	Select a region where your instance resides. You should select a region closest to you to reduce access latency. Note that the region cannot be changed after the instance is successfully created. We recommend that you select the same region as the CVM instance for private network communication.
AZ	Yes	Enable Multi-AZ Deployment as needed. Multi-AZ deployment refers to deploying an instance across different AZs in the same region. Compared with single-AZ deployment, it has a higher availability and disaster recovery capability. If your instance is deployed in the same AZ, select an AZ for the primary node from the drop-down list next to Primary Node . If your instance is deployed across different AZs, select an AZ for the primary node from the drop-down list next to Primary Node and specify the AZ for each secondary node in each drop-down list next to Secondary Node n (n=1,2,3,4,5,6). If the read-only node count is configured, configure the AZ for each read-only node. After creating the instance, you can change the instance AZ.
Database Version	Yes	Select a database version from 3.2, 3.6, 4.0, 4.2, and 4.4. Currently, v3.2 is no longer for sales. We recommend that you select a later version. For more information on how to select an appropriate version, see the version description in Storage Engine and Version. After purchasing an instance, you can upgrade its version. For more information, see Version Upgrade.
Architecture Type	Yes	Select a system architecture for the instance cluster. Supported architectures include replica set , sharded cluster , and single-node . The single-node architecture is no longer for sales. You need to understand the use cases of different architectures and select an appropriate one based on the actual data volume of your business. For more information, see System Architecture. Currently, architecture upgrade isn't supported.
Storage engine	Yes	The default storage engine is WiredTiger .
Mongod Specs	Yes	Select the computing specification of the instance from the drop-down list. The higher the specification, the higher the IOPS. For supported specifications, see Product Specifications. After creating an instance, you can adjust its computing specification. For detailed directions, see Adjusting Instance Specification.
Mongod Shard	Yes	This parameter will be displayed if you select Sharded Cluster as the Architecture Type . It is used to set the mongod shard quantity in a sharded



Count		cluster instance, and its value range is [1,20]. Each shard is a replica set. The more the shards, the larger the cluster storage capacity. You can select a shard quantity as needed. After creating an instance, you can adjust the mongod shard quantity. For detailed directions, see Adjusting Instance Specification.
Disk Capacity	Yes	Select the storage capacity of the instance on the slider. The range of the disk capacity varies by mongod specification. For more information, see Product Specifications. The default oplog storage space is 10% of the selected storage capacity. You can adjust the oplog capacity in the instance list in the console. For detailed directions, see Adjusting Oplog Capacity. After creating an instance, you can adjust its disk capacity. For detailed directions, see Adjusting Instance Specification.
Primary and Secondary Nodes Count	Yes	This parameter will be displayed if you select Replica Set as the Architecture Type . It is one-primary-two-secondary architecture with three storage nodes by default. Currently, you cannot customize the number of secondary nodes. You can select five (one-primary-four-secondary) or seven (one-primary-six-secondary) nodes from the drop-down list. After creating the instance, you can add more secondary nodes per shard. For detailed directions, see Adding Secondary Node.
Primary and Secondary Nodes Count per shard	Yes	This parameter will be displayed if you select Sharded Cluster as the Architecture Type . It is used to set the number of nodes per shard in a sharded cluster instance. The system adopts a one-primary-two-secondary architecture with three nodes by default, that is, each shard has three nodes in a in one-primary-two-secondary architecture. You can select five (one-primary-four-secondary) or seven (one-primary-six-secondary) nodes from the drop-down list. Currently, you cannot customize the number of nodes. After creating the instance, you can add more secondary nodes per shard. For detailed directions, see Adding Secondary Node.
Read-Only Node Count	Yes	The number of read-only nodes. You can configure 0 or 1–5 read-only nodes. Currently, only v4.0, v4.2, and v4.4 support this parameter, while v3.6 doesn't. After creating the instance, you can add more read-only nodes. For detailed directions, see Adding Read-Only Node.
Specs Description	-	This parameter calculates the maximum number of connections to the instance based on the configured mongod specification to help you determine whether the current specification meets the expectation.
Mongos	Yes	This parameter will be displayed if you select Sharded Cluster as the



Specs		Architecture Type. It is used to configure mongos specification. After you configure the mongod specification, the corresponding mongos specification will be selected by default. For example, if you select 2-core 4 GB MEM for mongod, the mongos specification will be configured as 1-core 2 GB MEM by default. After the mongos specification is upgraded, fees will be charged based on the new specification. For more information, see MongoDB Pricing. The number of connections to the sharded cluster instance is subject to the selected mongos node specification and quantity. You can view the maximum number of connections of the instance in Specs Description. After creating the instance, you can adjust the mongos specification. For detailed directions, see Adjusting Mongos Node Specification.
Mongos Nodes Count	Yes	This parameter will be displayed if you select Sharded Cluster as the Architecture Type . It is used to set mongos node quantity. If the instance is deployed in the same AZ, it can contain 3–32 mongos nodes. If you select Multi-AZ Deployment to deploy the instance across different AZs, the instance can contain 6–32 mongos nodes. Adding more Mongos instances will result in additional charges. For more information, see MongoDB Pricing. After creating the instance, you can adjust the mongos node quantity. For detailed directions, see Adding Mongos Node.
Network Type	-	Only VPC is supported.
IPv4 Network	Yes	Select a specific VPC and subnet. You can use a CVM instance to connect to the automatically assigned private network address of a TencentDB instance. This method utilizes the high-speed private network of Tencent Cloud and features low delay. Note that both instances must be under the same account in the same VPC in the same region. For more information, see Connecting to TencentDB for MongoDB Instance. VPCs are region-specific (e.g., Guangzhou), while subnets are AZ-specific (e.g., Guangzhou Zone 1). One VPC can be divided into one or multiple subnets, which are interconnected over the private network by default. Different VPCs are isolated over the private network by default, no matter whether they are in the same or different regions. You can switch the VPC after instance purchase as instructed in Configuring Network. You can also click Create VPCs and Create Subnets to create a required network environment. For detailed directions, see Creating VPC.
IPv6 Network	-	IPv6 address access is currently not supported in the current region and subnet.
Security Group	Yes	Set security group rules to control the inbound traffic to your database.



		You can either select a security group from the Existing Security Groups dropdown list or click Custom Security Groups to create one and set new inbound rules. For more information, see Security Group.
Set Project	Yes	Assign your instance to a project for easy management.
Tags	No	Add tags to your instance for easy classification and management. Click Add to select tag keys and values.
Instance Name	Yes	Set the instance name. The default name is 500. You can enter up to 60 letters, digits, hyphens, and underscores.
Set Password	Yes	Set the password authentication mode of the instance. Password Authentication: You need to set an instance password for database access. For more information, see Connecting to TencentDB for MongoDB Instance. Password-Free Access: You don't need to set a password. For more information, see Accessing Instance Without Authentication.
Password	No	This parameter will be displayed if you select Password Authentication . It is used to set the access password of the instance. Password requirements: Minimum of 8 characters, maximum of 32 characters. A combination of uppercase letters A-Z, lowercase letters a-z, and numbers 0-9. Symbols: !@#%^*() Do not use all letters or all numbers.
Confirm Password	No	Enter your password again.
Purchase Quantity	Yes	You can purchase up to 30 instances in each region and up to 10 instances each time.
Total Fees	Yes	Hourly fees will be displayed if you select Pay as You Go . For more information, see MongoDB Pricing.

3. After verifying that the parameters are correctly configured, click **Buy Now**. After the purchase success message is displayed, click **Go to Console**. After the instance's status becomes **Running** in the instance list, you can use it.

Related Operations

Use a CVM instance to directly access the private network address of the TencentDB instance. For more information, see Connecting to TencentDB for MongoDB Instance.

View the instance list and instance details. For more information, see Viewing Instance Details.



Connecting to TencentDB for MongoDB Instance

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After a TencentDB for MongoDB instance is created, you can read, write, and query it by using either MongoDB shell or drivers in various programming languages.

Basic Process

Using MongoDB shell

MongoDB shell is an interactive JavaScript command line tool that comes with MongoDB and encapsulates many common commands. After installing MongoDB shell on a CVM instance, you can run shell commands to connect to the MongoDB instance and query, write/read, or update database data.

Note:

A CVM instance can be used to connect to the private network address that is automatically assigned to a TencentDB instance. This access method utilizes the high-speed private network of Tencent Cloud and features low delay. Both instances should be under the same account and reside in the same VPC in the same region or reside in the classic network. Public network access is not supported for the time being.

Using URI

A Uniform Resource Identifier (URI) uniquely identifies a resource on the Web. MongoDB recommends using URIs to connect to MongoDB databases, which is supported by most drivers.

Typical samples of URI connection are as follows:



mongodb://username:password@IP:27017/admin





mongodb://username:password@IP:27017/somedb?authSource=admin





mongodb://username:password@IP:27017/somedb?authSource=admin&readPreference=seconda

URI components are described as follows. For more information, see the Connection Strings section in the MongoDB official documentation.

Component	Description	Required
mongodb://	A specific string indicating MongoDB protocol	Yes
username	Username used to log in to	Yes. For more information, see



	MongoDB	Default user.
password	Password used to log in to MongoDB	Yes
hostX:portX	MongoDB IP and port	Yes
/admin	Database to be authenticated, which is always admin for TencentDB for MongoDB.	Yes. For more information, see Authentication database.
authMechanism=MONGODB-CR	Authentication mechanism	Yes. For more information, see Authentication mechanism.
authSource=admin	Database used for authentication, which is always admin for TencentDB for MongoDB.	Yes. For more information, see Authentication database.
readPreference=secondaryPreferred	Read a secondary node first	Yes. For more information, see Read preference.

Connecting to Databases Using Shell

The following describes how to connect to databases using MongoDB shell.

Prerequisites

You have signed up for a Tencent Cloud account and completed identity verification as instructed in Signing Up and Identity Verification Guide respectively.

You have created a Linux CVM instance in the same VPC and the same region as the TencentDB for MongoDB instance.

You have created a TencentDB for MongoDB instance, and it is in **Running** status.

You have obtained the username and password information for database instance access on the **Account**Management tab on the **Database Management** page. For detailed directions, see Account Management.

You have obtained the private IP and port for database instance access in the **Instance List**. For detailed directions, see Viewing Instance Details.

Directions

Step 1. Log in to the CVM instance

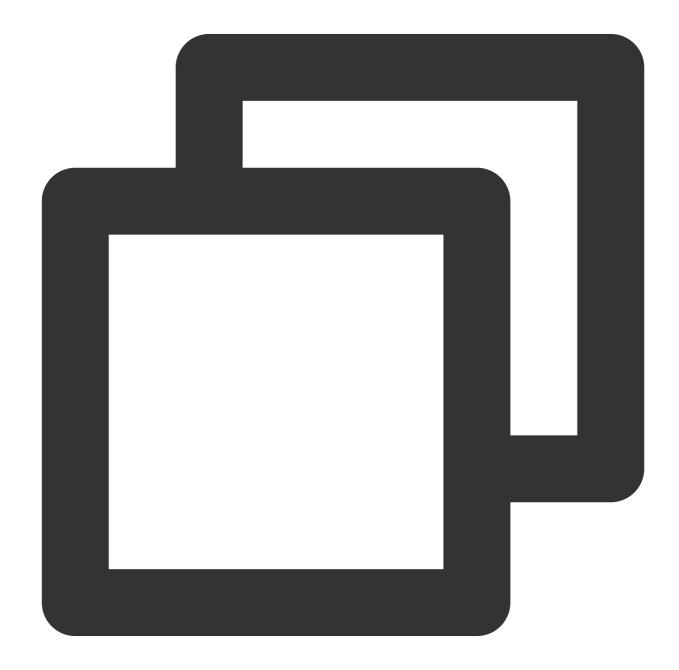
- 1. Log in to the CVM console.
- 2. On the left sidebar, select **Instances**.



- 3. Select a region at the top of the instance management page.
- 4. In the instance list, locate the CVM instance you created and click **Log In** in the **Operation** column.
- 5. Enter the user password you set when creating the CVM instance and log in.

Step 2. Download and decompress MongoDB shell

- 1. Go to the MongoDB shell installation directory and run the mkdir command to create a folder for easy management.
- 2. Go to the created folder and run the wget command to download MongoDB shell, as shown below:



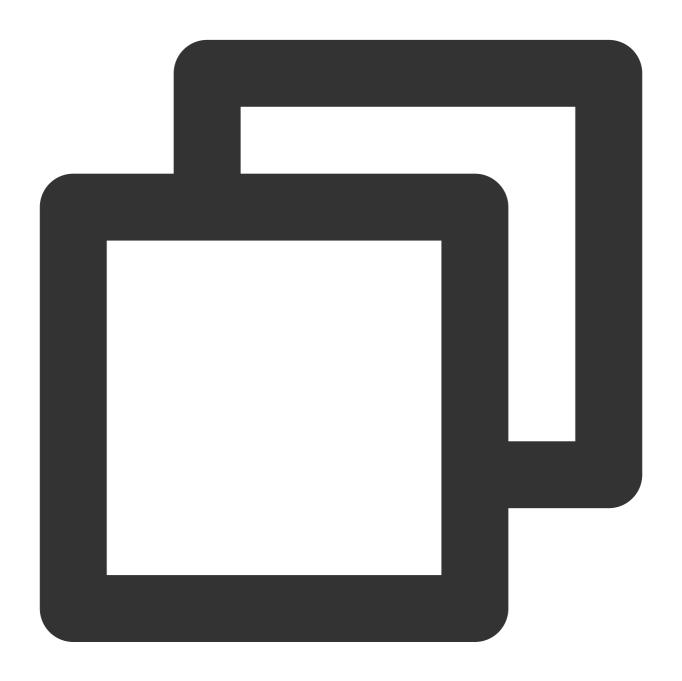
wget https://fastdl.mongodb.org/linux/mongodb-linux-x86_64-rhel70-XX.XX.XX.tgz



Note:

Select a MongoDB shell whose version matches both TencentDB for MongoDB and the CVM operating system. For more information, see the Download section in the MongoDB official website.

3. Run the tar command to decompress the downloaded installer of MongoDB shell, as shown below:

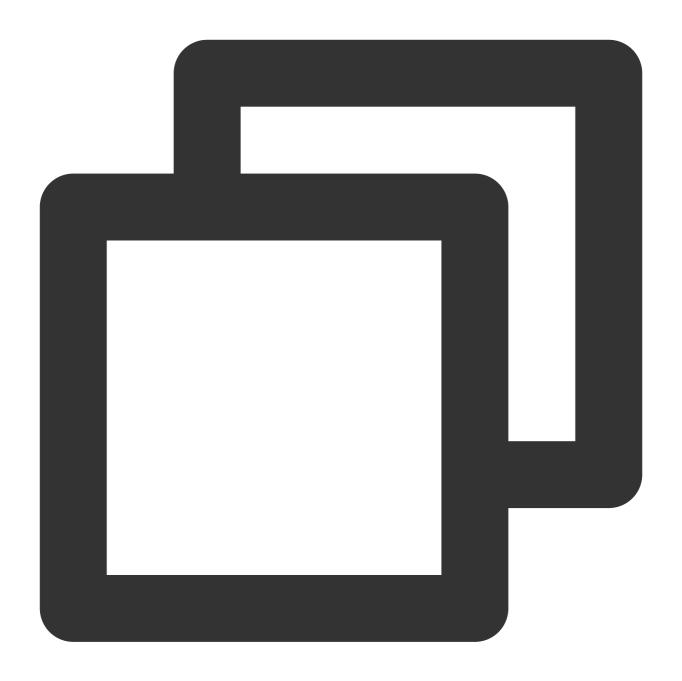


tar zxvf mongodb-linux-x86_64-rhel70-XX.XX.XX.tgz

Step 3. Connect to MongoDB

1. Run the cd command to enter the directory of the decompressed MongoDB shell, as shown below:

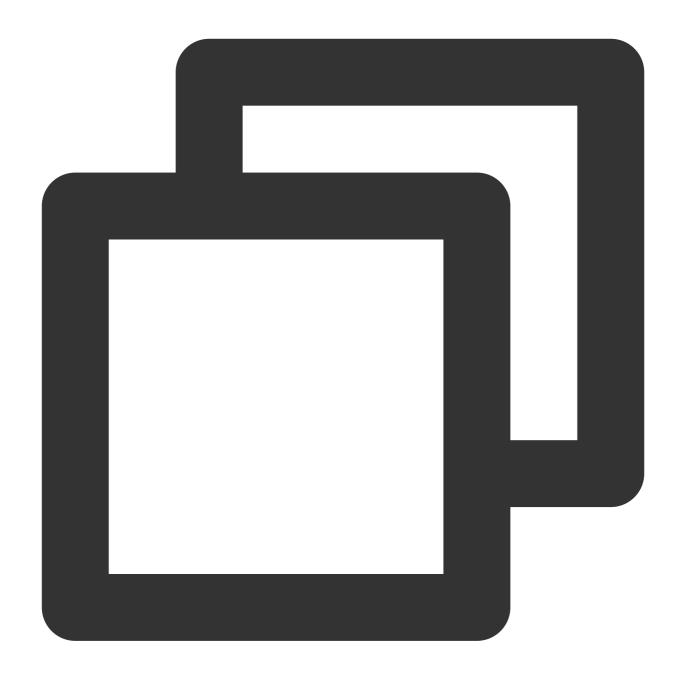




cd mongodb-linux-x86_64-rhel70-XX.XX.XX

2. Run the following command to connect to MongoDB.





```
./bin/mongo -umongouser -plxh**** 172.xx.xx.xx:27017/admin
```

Here, -u is followed by the database connection username, -p is followed by the username password, and 172.xx.xx and 27017 specify the IP address and port of the primary or secondary node of the TencentDB for MongoDB instance respectively. Replace them with your actual configuration information.

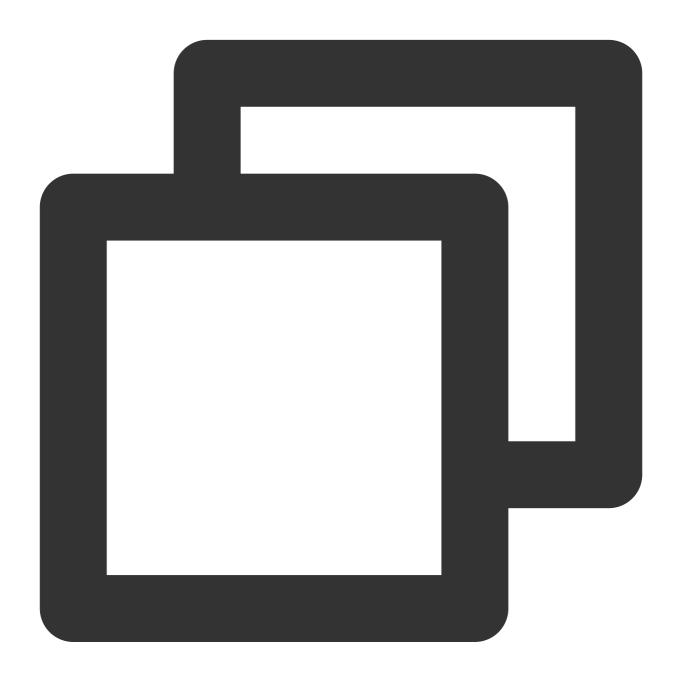
If you forgot the username and password, view and change the account and password as instructed in Account Management.

You can get the IP addressand port of the primary or secondary node of the instance on the Node Management tab.



For multiple IP access, you can configure them by separating each IP address with a comma, such as --host 172.XX.XX.27017,172.XX.XX.27017,172.30.XX.XX:27017.

After a successful connection, the following information will be displayed. For more information, see Shell Connection Sample.



```
MongoDB shell version v4.2.16 connecting to: mongodb://172.x.x.X:27017/admin?compressors=disabled&gssapiServiceNa Implicit session: session { "id" : UUID("aeb18f32-6413-49da-864a-5123b4d2****") } MongoDB server version: 4.2.11 Welcome to the MongoDB shell.
```



Note:

For a replica set instance, you can connect to the address of the primary node, secondary node 1, or secondary node 2

Primary node: If you connect to the primary node, you can write to, and read data from the database.

Secondary node: If you connect to a secondary node, you can only read from the database.

For a sharded cluster instance, you can connect to any mongos node.

Connecting to Databases Using URI

The following describes how to use URIs to connect to TencentDB for MongoDB from the SDK client which supports various programing languages.

Prerequisites

You have signed up for a Tencent Cloud account and completed identity verification as instructed in Signing Up and Identity Verification Guide respectively.

You have prepared a running environment for the SDK client which supports various programing languages.

You have obtained the URI encoded connection string: Log in to the TencentDB for MongoDB console, find the target instance in the instance list, enter its Instance Details page, and copy the string in Access Address in the Network Configuration section.



Connection sample

To connect to TencentDB for MongoDB, the driver version 3.2 or later is required. Use the latest version of the client driver to ensure the best compatibility with the shell kit, Java jar package, PHP expansion, Node.js module, etc. For more information, see MongoDB Drivers. SDK connection samples in various programing languages supported by TencentDB for MongoDB are listed below. Based on those samples, you can configure URIs to connect to, write to, or read from the database.

PHP Connection Sample



Node.js Connection Sample
Mongoose Connection Sample
Java Connection Sample
Python Connection Sample
Go Connection Sample
PHP Reconnection Sample

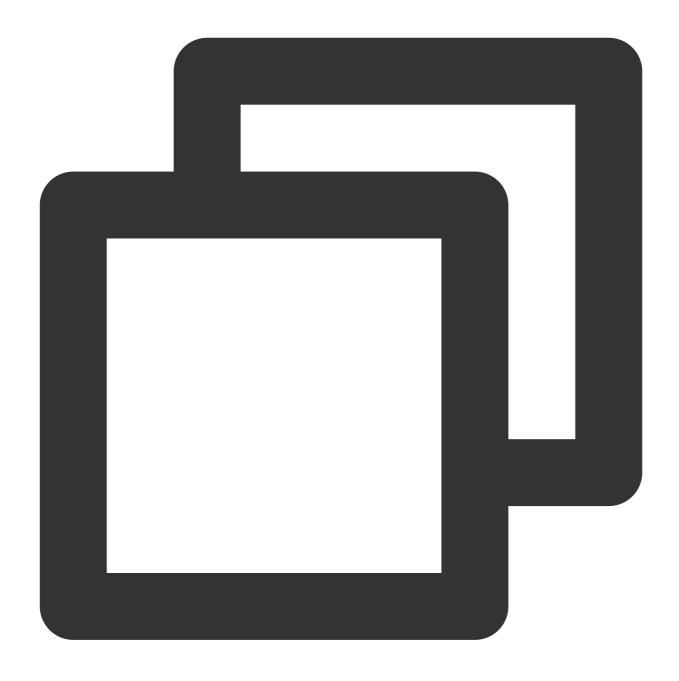
References

Default user

TencentDB for MongoDB 3.2 uses both mongouser and rwuser as the default users, while other versions only use mongouser as the default user. On the **Database Management** page in the TencentDB for MongoDB console, you can view system accounts (i.e., default users) and manage permissions as needed.

Only **rwuser** is authenticated with MONGODB-CR. Below is a sample URI:





mongodb://rwuser:password@10.66.100.186:27017/admin?authMechanism=MONGODB-CR

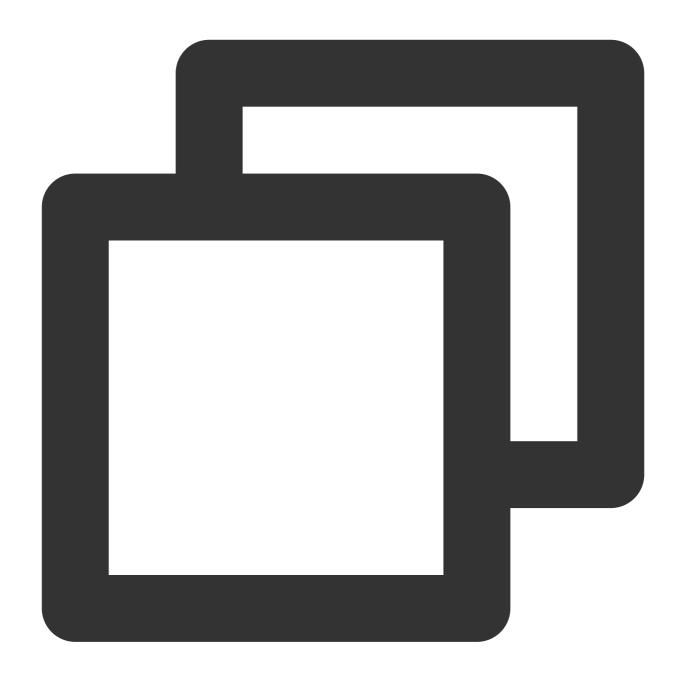




mongodb://rwuser:password@10.66.100.186:27017/somedb?authMechanism=MONGODB-CR&authS

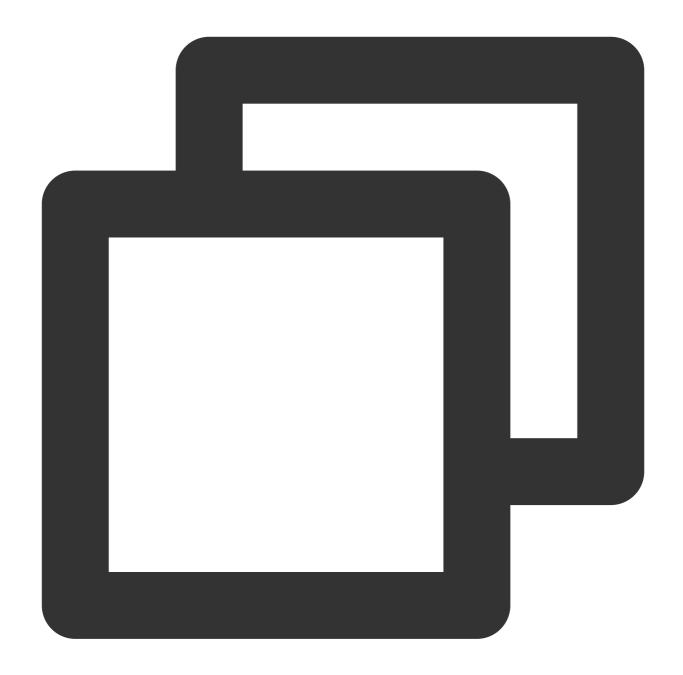
Both **mongouser** and users created in the TencentDB for MongoDB console are authenticated with SCRAM-SHA-1. Below is a sample URI:





mongodb://mongouser:password@10.66.100.186:27017/admin



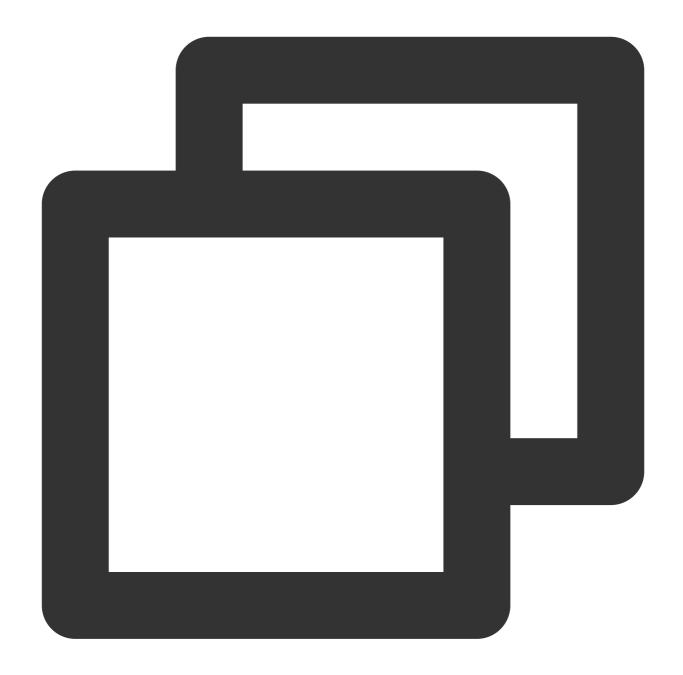


 $\verb|mongodb://mongouser:password@10.66.100.186:27017/somedb?authSource=admin||$

Authentication database

TencentDB for MongoDB uses the admin database as the authentication database during login authentication, so the port in a URI must be followed by /admin to specify it. After authentication, you can switch to a specific business database for reads/writes. Below is a sample URI:





mongodb://username:password@IP:27017/admin

You can also directly access the target database by specifying the target database for reads/writes and an additional authentication database parameter (authSource=admin). Below is a sample URI:





mongodb://username:password@IP:27017/somedb?authSource=admin

Note:

The authentication database for users created in the console is the admin database, so the users need to specify admin as the authentication database during login. The users created with the command line, such as those created under the test database, need to specify test as the authentication database.

You must use one of the above methods to add admin as the authentication database into the URI.

Authentication mechanism



TencentDB for MongoDB supports the MONGODB-CR and SCRAM-SHA-1 authentication mechanisms as well as the rwuser and mongouser default users. You can create other users in the TencentDB for MongoDB console. Different users adopt different authentication mechanisms.

Username	Authentication mechanism	URI Processing
rwuser	MONGODB-CR	The parameter authMechanism=MONGODB-CR must be added.
mongouser and users created in the console	SCRAM-SHA-1 (recommended)	No parameter needs to be added.

Read preference

TencentDB for MongoDB provides a load balancer IP to access the entire replica set. To read from a secondary node, you need to add the readPreference parameter in the URI. Parameter values are described below:

Value	Description	Default
primary	Reads the primary node only.	Yes
primaryPreferred	Reads the primary node first. If it is not available, a secondary node will be read.	No
secondary	Reads a secondary node only. If it is not available, an error will be reported.	No
secondaryPreferred	Reads a secondary node first. If it is not available, the primary node will be read.	No

To read a secondary node first, you can configure the URI as follows:





mongodb://username:password@IP:27017/admin?readPreference=secondaryPreferred



Reading/Writing Database

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After you connect to the database instance, you can create databases and write data to them.

Creating a Database

The syntax to create a MongoDB database is as follows:

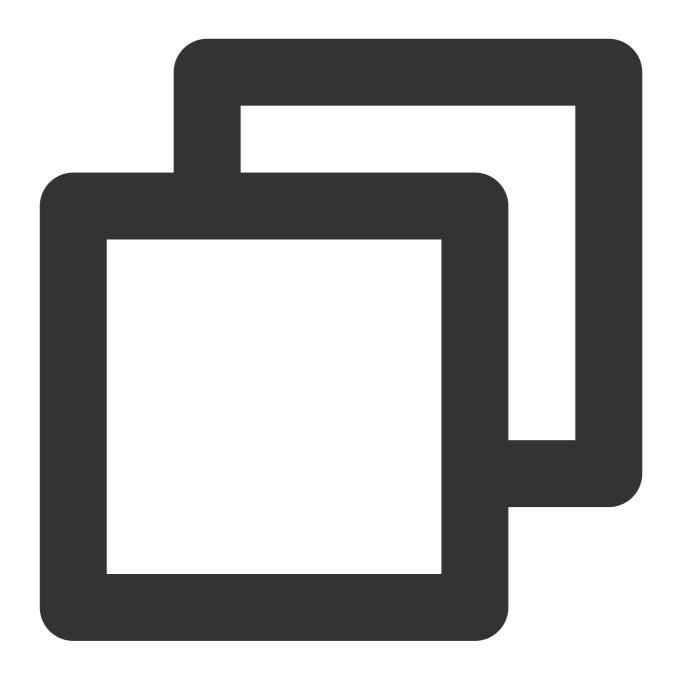




use DATABASE_NAME

Create a database named "myFirstDB" and insert a document to it:

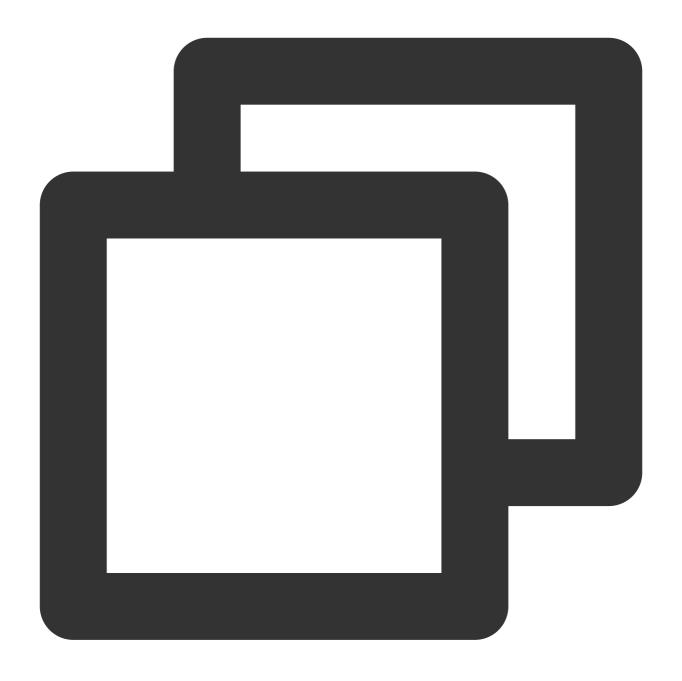




```
> use myFirstDB
switched to db myFirstDB
> db.myFirstDB.insert({"test":"myFirstDB"})
WriteResult({ "nInserted" : 1 })
```

Show the database you created:





> show dbs
admin 0.000GB
config 0.000GB
local 0.041GB
myFirstDB 0.000GB

Creating a Collection



In MongoDB, you can use the <code>createCollection()</code> method to create a collection. Syntax:



db.createCollection(name, options)

Parameter description:

name: the name of the collection to create

options: (optional) options of memory size and index

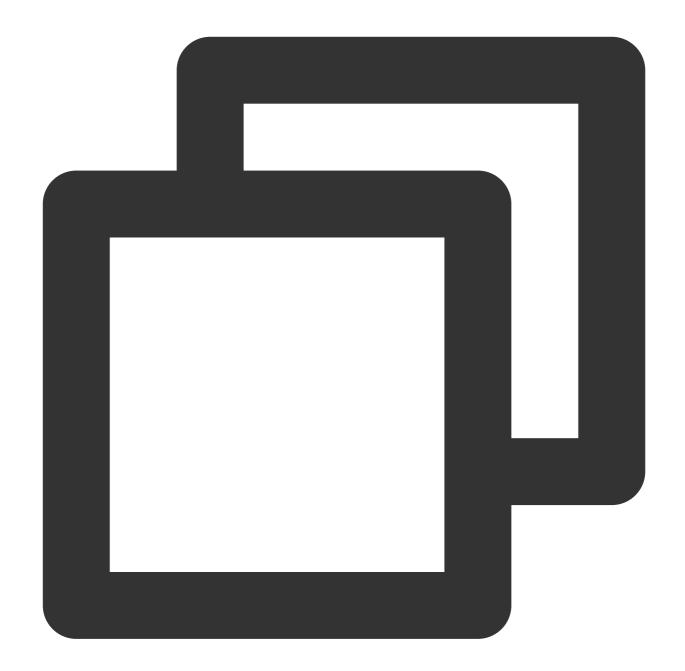
options Field Type Description	
----------------------------------	--



capped	BOOL	Whether to set a maximum size in bytes for the collection. Valid values: true (the size field must be specified), false (default)	
autoIndexId	BOOL	Whether to automatically create an index on the _id field. Valid values: true, false (default)	
size	number	The maximum size in bytes of the collection	
max	number	The maximum number of documents in the collection	

Create a collection named "FirstCol" in the myFirstDB database:

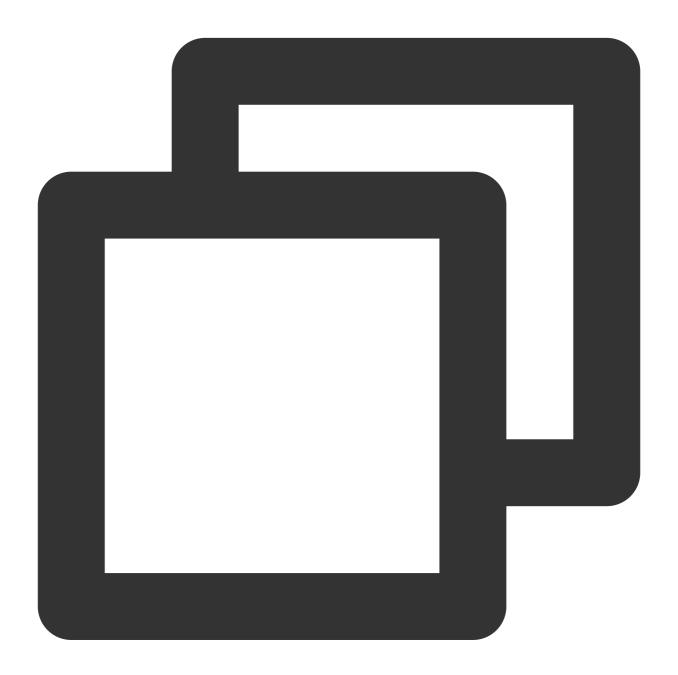






```
},
"operationTime" : Timestamp(1634821900, 2)
}
```

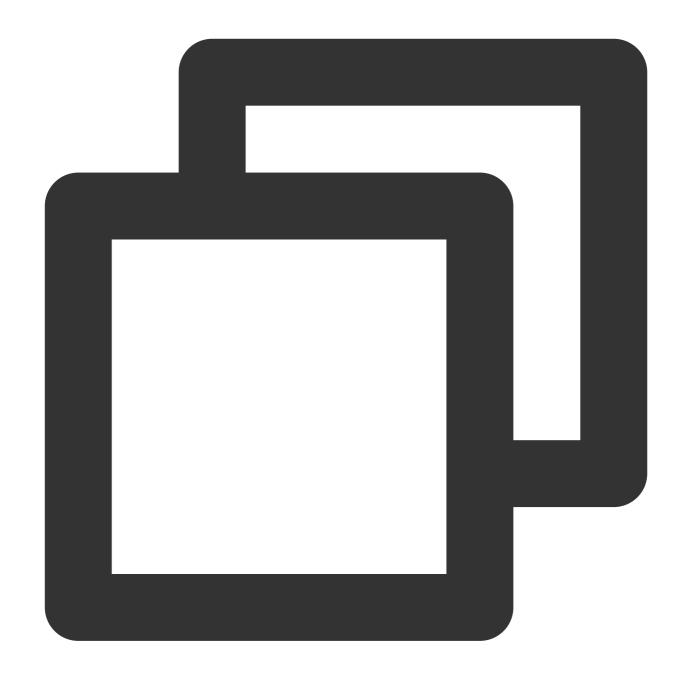
Show the collection you created:



```
> show collections
FirstCol
```

The following sample shows that the FirstCol collection you created can have up to 10,000 documents whose total size cannot exceed 6,142,800 bytes.



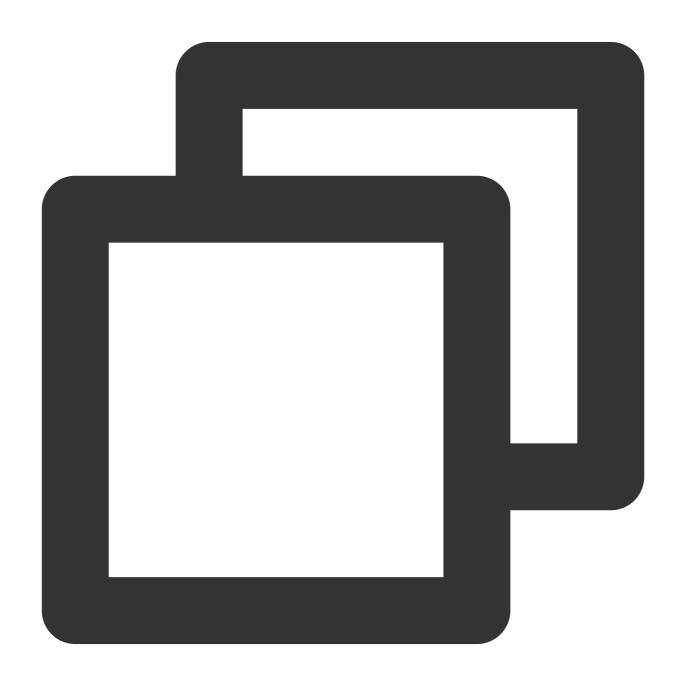




```
"operationTime" : Timestamp(1634821879, 1)
}
```

Inserting a Document

In MongoDB, you can use the <code>insert()</code> or <code>save()</code> method to insert a document to a collection, as shown below:

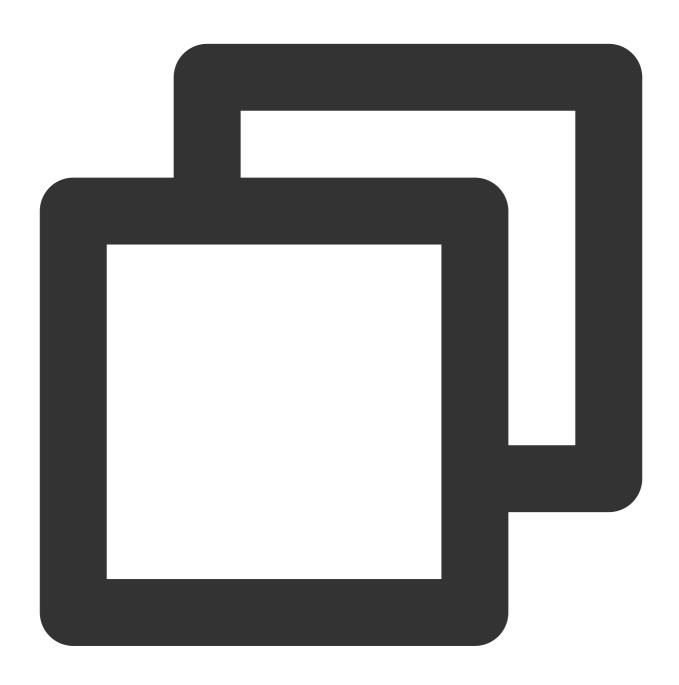


```
> db.FirstCol.insert({name:"Jane Smith",sex:"Female",age:25,status:"A"})
```



```
WriteResult({ "nInserted" : 1 })
```

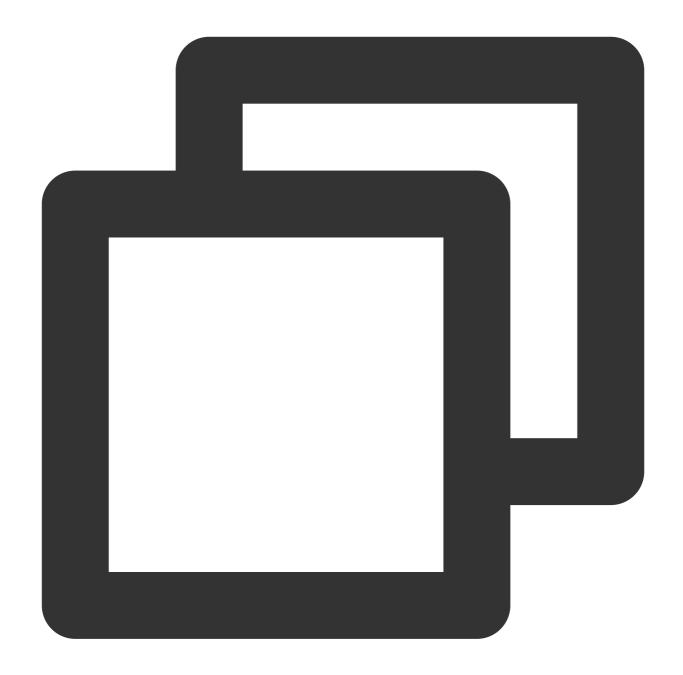
Show the document inserted to the collection:



```
> db.FirstCol.find()
{ "_id" : ObjectId("61716957a6fe1ef4d7eae979"), "name" : "Jane Smith", "sex" : "Fem
```

You can use db.collection.insertMany() to insert one or more documents to a collection, as shown below:





```
db.collection.insertMany(
  [ <document 1> , <document 2>, ... ]
)
```

Sample:



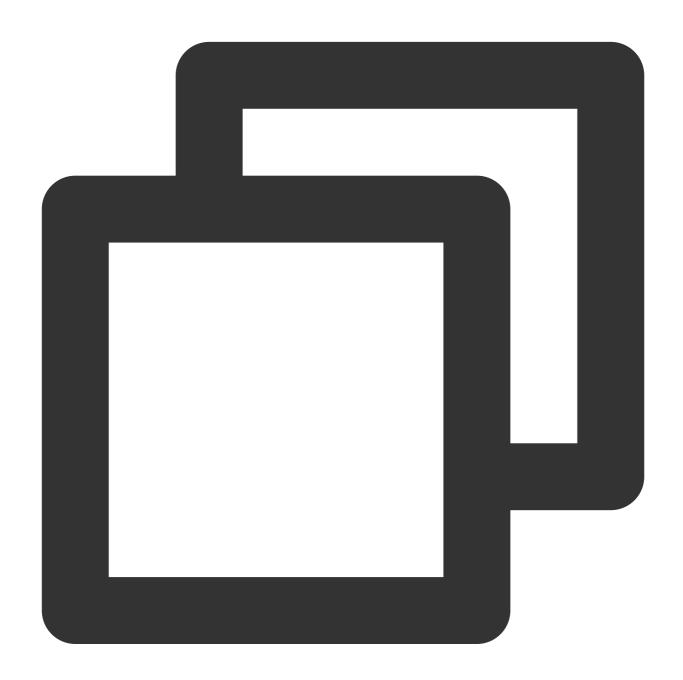




Updating a Database

In MongoDB, you can use <code>update()</code> to update documents in a collection.

Update the data in the FirstCol collection where <code>name</code> is <code>Mary Smith</code>:



```
> db.FirstCol.update({name:"Mary Smith",sex:"Female",age:25,status:"A"},{$set:{'age
WriteResult({ "nMatched" : 1, "nUpserted" : 0, "nModified" : 1 })
```

Show the result:





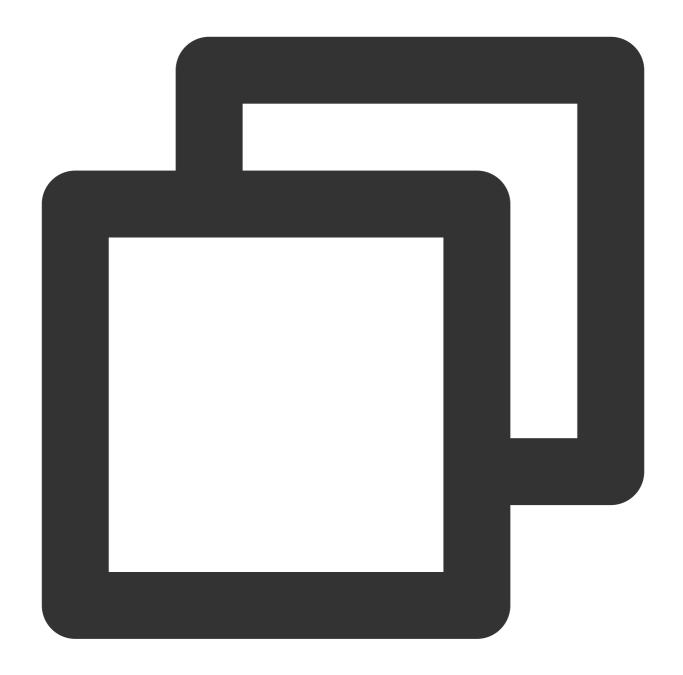
```
> db.FirstCol.find().pretty()
{
    "_id" : ObjectId("618904b6258a6c38daf13abd"),
    "name" : "Mary Smith",
    "sex" : "Female",
    "age" : 28,
    "status" : "A"
}
{
    "_id" : ObjectId("618904b6258a6c38daf13abe"),
    "name" : "John White",
```



Deleting a Database

In MongoDB, you can use remove() to delete documents from a collection, as shown below:





```
> db.FirstCol.remove({name:"Mary Smith",sex:"Female",age:28,status:"A"})
WriteResult({ "nRemoved" : 1 })
```

Show the result:





```
> db.FirstCol.find().pretty()
{
    "_id" : ObjectId("618904b6258a6c38daf13abe"),
    "name" : "John White",
    "sex" : "Male",
    "age" : 26,
    "status" : "B"
}
{
    "_id" : ObjectId("618904b6258a6c38daf13abf"),
    "name" : "Michael White",
```



References

For more information, see MongoDB official documentation.