

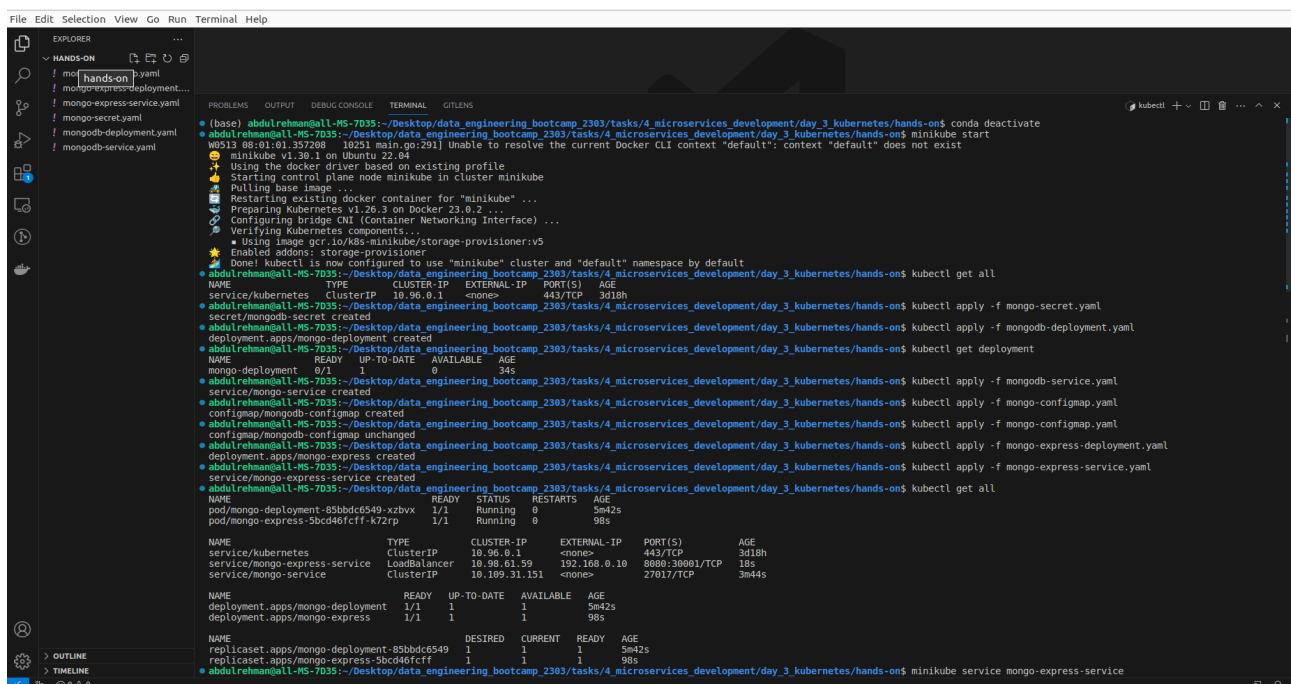
Group Member's Name:-

Muhammad Arsalan (2303.KHI.DEG.025)

Abdul Rehman (2303.KHI.DEG.035)

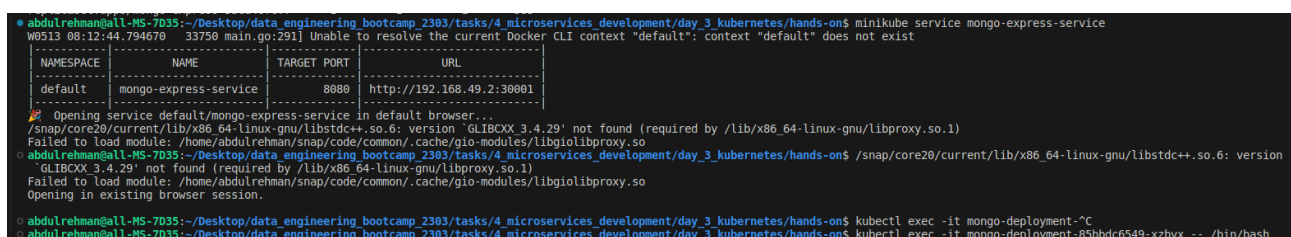
Arshad Shiwani (2303.KHI.DEG.026)

First we start minikube then we did **kubectl get all** to display a summary of all resources after that **kubectl apply -f <File Name>** this command help to create and update resources.



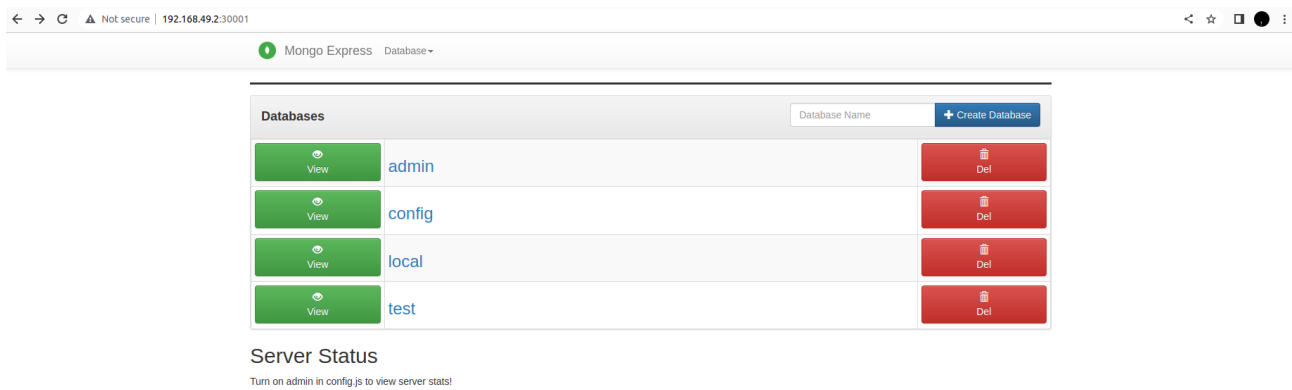
```
File Edit Selection View Go Run Terminal Help
EXPLORER
HANDS-ON
mod hands-on
mongo-express-deployment...
mongo-express-service.yaml
mongo-secret.yaml
mongodb-deployment.yaml
mongodb-service.yaml
PROBLEMS
OUTLINE
DEBUG CONSOLE
TERMINAL
GITLENS
(base) abdulrehman@all-MS-7035:~/Desktop/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$ conda deactivate
W0513 08:01:01.357288 10251 main.go:291] Unable to resolve the current Docker CLI context "default": context "default" does not exist
minikube v1.30.2 on Ubuntu 22.04
Using the docker driver based on existing profile
Starting control plane node minikube in cluster minikube
Pulling base image...
Restarting existing docker container for "minikube" ...
Preparing Kubernetes v1.26.3 on Docker 23.0.2 ...
Configuring bridge CNI (Container Networking Interface) ...
Verifying Kubernetes components...
Using image gcr.io/k8s-minikube/storage-provisioner:v5
Enabled addons: storage-provisioner
Done! kubectll is now configured to use "minikube" cluster and "default" namespace by default
abduRehman@all-MS-7035:~/Desktop/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$ kubectl get all
NAME                                TYPE                CLUSTER-IP      EXTERNAL-IP      PORT(S)          AGE
service/kubernetes                  ClusterIP           10.96.0.1        <none>            443/TCP           3010h
abduRehman@all-MS-7035:~/Desktop/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$ kubectl apply -f mongo-secret.yaml
secret/mongodb-secret created
abduRehman@all-MS-7035:~/Desktop/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$ kubectl apply -f mongodb-deployment.yaml
deployment.apps/mongo-deployment created
abduRehman@all-MS-7035:~/Desktop/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$ kubectl get deployment
NAME                                READY    UP-TO-DATE    AVAILABLE    AGE
mongo-deployment                    0/1      1              0            34s
abduRehman@all-MS-7035:~/Desktop/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$ kubectl apply -f mongodb-service.yaml
service/mongo-service created
abduRehman@all-MS-7035:~/Desktop/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$ kubectl apply -f mongo-configmap.yaml
configmap/mongodb-configmap created
abduRehman@all-MS-7035:~/Desktop/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$ kubectl apply -f mongo-configmap.yaml
configmap/mongodb-configmap unchanged
abduRehman@all-MS-7035:~/Desktop/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$ kubectl apply -f mongo-express-deployment.yaml
deployment.apps/mongo-express created
abduRehman@all-MS-7035:~/Desktop/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$ kubectl apply -f mongo-express-service.yaml
service/mongo-express-service created
abduRehman@all-MS-7035:~/Desktop/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$ kubectl get all
NAME                                READY    STATUS    RESTARTS    AGE
pod/mongo-deployment-85bbdc6549-xzbvx 1/1      Running   0            2m42s
pod/mongo-express-5bcd46fcff-k7zrp    1/1      Running   0            98s
NAME                                TYPE                CLUSTER-IP      EXTERNAL-IP      PORT(S)          AGE
service/kubernetes                  ClusterIP           10.96.0.1        <none>            443/TCP           3010h
service/mongo-express-service       LoadBalancer        10.98.61.59      192.168.0.10     8080:30801/TCP   18s
service/mongo-service               ClusterIP            10.109.31.151    <none>            27017/TCP         3m44s
NAME                                READY    UP-TO-DATE    AVAILABLE    AGE
deployment.apps/mongo-deployment     1/1      1              1            5m42s
deployment.apps/mongo-express        1/1      1              1            98s
NAME                                DESIRED    CURRENT    READY    AGE
replicaset.apps/mongo-deployment-85bbdc6549 1          1          1        5m42s
replicaset.apps/mongo-express-5bcd46fcff    1          1          1        98s
abduRehman@all-MS-7035:~/Desktop/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$ minikube service mongo-express-service
```

minikube service <File Name> It expose a kubernetes service locally. And **kubectl exec -it** It allow us to execute command inside a container as well as **mongo-deployment-85bbdc6549-xzbvx** this is the pod that I want to execute the command and **/bin/bash** It help us to run inside the container.

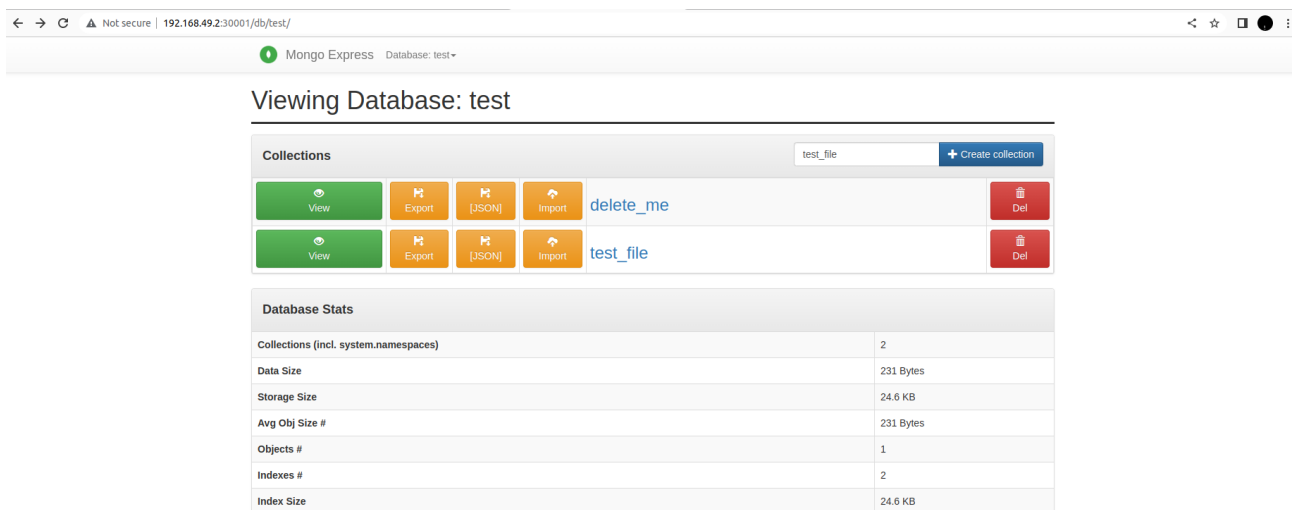


```
abduRehman@all-MS-7035:~/Desktop/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$ minikube service mongo-express-service
W0513 08:12:44.704670 33750 main.go:291] Unable to resolve the current Docker CLI context "default": context "default" does not exist
NAME      TARGET PORT  URL
default   mongo-express-service  8080  http://192.168.49.2:30801
Opening service default/mongo-express-service in default browser...
/snap/core20/current/lib/x86_64-linux-gnu/libstdc++.so.6: version 'GLIBCXX 3.4.29' not found (required by /lib/x86_64-linux-gnu/libproxy.so.1)
Failed to load module: /home/abduRehman/snap/code/common/.cache/gio-modules/libgiolibrary.so
abduRehman@all-MS-7035:~/Desktop/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$ /snap/core20/current/lib/x86_64-linux-gnu/libstdc++.so.6: version
"GLIBCXX 3.4.29" not found (required by /lib/x86_64-linux-gnu/libproxy.so.1)
Failed to load module: /home/abduRehman/snap/code/common/.cache/gio-modules/libgiolibrary.so
Opening in existing browser session.
abduRehman@all-MS-7035:~/Desktop/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$ kubectl exec -it mongo-deployment-85bbdc6549-xzbvx -- /bin/bash
```

This is the **WEBUI** of Mongodb and I created database with the name **test**



Here I Created a file with the name of **test_file**.



It shows the json file content

Mongo Express Database: test • Collection: test_file •

Viewing Collection: test_file

Document added!

New Document New Index

Simple Advanced

Key Value String Find

Delete all 1 documents retrieved

_id	menu
645f00b280b8080072273a4	<pre>{ "id": "file", "value": "File", "popup": { } }</pre>

Rename Collection

test. test_file Rename

mongosh -u \$MONGO_INITDB_ROOT_USERNAME -p \$MONGO_INITDB_ROOT_PASSWORD This command specifies the username and password to use when authenticating to a mongodb database

```
test_file> exit
root@mongo-deployment-85bbdc6549-xzbvx:/# mongosh -u $MONGO_INITDB_ROOT_USERNAME -p $MONGO_INITDB_ROOT_PASSWORD
Current Mongosh Log ID: 645f026438f837f9952129f2
Connecting to:
  mongodb://<credentials>@127.0.0.1:27017/?directConnection=true&serverSelectionTimeoutMS=2000&appName=mongosh+1.8.2
Using MongoDB:
  6.0.5
Using Mongosh:
  1.8.2

For mongosh info see: https://docs.mongodb.com/mongodb-shell/

-----
The server generated these startup warnings when booting
2023-05-13T03:05:29.438+00:00: Using the XFS filesystem is strongly recommended with the WiredTiger storage engine. See http://dochub.mongodb.org/core/prodnotes-filesystem
2023-05-13T03:05:29.740+00:00: vm.max_map_count is too low
-----

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()
-----

test> use test
already on db test
test> show collections
delete_me
test_file
test> db.test_file
test.test_file
test> db.test_file.find({})
[
  {
    _id: ObjectId("645f00b280b8080072273a4"),
    menu: {
      id: 'file',
      value: 'File',
      popup: {
        menuItem: [
          { value: 'New', onclick: 'CreateDoc()' },
          { value: 'Open', onclick: 'OpenDoc()' },
          { value: 'Save', onclick: 'SaveDoc()' }
        ]
      }
    }
  }
]
test>
```

kubectl logs this command allows to view the logs and **mongo-deployment-85bbdc6549-xzbvx** this is the name of log which we want to view logs.

```
}
]
test> exit
root@mongo-deployment-85bbdc6549-xzbvx:/# exit
exit
abdulrehman@all-MS-7035:~/Desktop/data_engineering_bootcamp_2303/tasks/4 mic
abdulrehman@all-MS-7035:~/Desktop/data_engineering_bootcamp_2303/tasks/4 microservices_development/day_3_kubernetes/hands-on$ kubectl logs mongo-deployment-85bbdc6549-xzbvx
about to fork child process, waiting until server is ready for connections.
forked process: 28

{"t":{"$date":"2023-05-13T03:05:26.306+00:00"},"s":"I", "c":"CONTROL", "id":20698, "ctx":"","msg":"***** SERVER RESTARTED *****"}
{"t":{"$date":"2023-05-13T03:05:26.307+00:00"},"s":"I", "c":"NETWORK", "id":4915701, "ctx":"","msg":"Initialized wire specification", "attr":{"spec":{"incomingExternalClient":{"minWireVersion":0,"maxWireVersion":17},"incomingInternalClient":{"minWireVersion":0,"maxWireVersion":17},"outgoing":{"minWireVersion":6,"maxWireVersion":17},"isInternalClient":true}}}}
{"t":{"$date":"2023-05-13T03:05:26.308+00:00"},"s":"I", "c":"CONTROL", "id":23285, "ctx":"main", "msg":"Automatically disabling TLS 1.0, to force-enable TLS 1.0 specify --sslDisabledProtocols 'none'"}
{"t":{"$date":"2023-05-13T03:05:26.308+00:00"},"s":"I", "c":"NETWORK", "id":4648601, "ctx":"main", "msg":"Implicit TCP FastOpen unavailable. If TCP FastOpen is required, set tcpFastOpenServer, tcpFastOpenClient, and tcpFastOpenQueueSize."}
{"t":{"$date":"2023-05-13T03:05:26.309+00:00"},"s":"I", "c":"REPL", "id":5123008, "ctx":"main", "msg":"Successfully registered PrimaryOnlyService", "attr":{"service":"TenantMigrationDonorService","namespace":"config.tenantMigrationDonors"}}
{"t":{"$date":"2023-05-13T03:05:26.309+00:00"},"s":"I", "c":"REPL", "id":5123008, "ctx":"main", "msg":"Successfully registered PrimaryOnlyService", "attr":{"service":"TenantMigrationRecipientService","namespace":"config.tenantMigrationRecipients"}}
{"t":{"$date":"2023-05-13T03:05:26.309+00:00"},"s":"I", "c":"REPL", "id":5123008, "ctx":"main", "msg":"Successfully registered PrimaryOnlyService", "attr":{"service":"ShardSplitDonorService","namespace":"config.tenantSplitDonors"}}
{"t":{"$date":"2023-05-13T03:05:26.309+00:00"},"s":"I", "c":"CONTROL", "id":5945603, "ctx":"main", "msg":"Multi threading initialized"}
{"t":{"$date":"2023-05-13T03:05:26.309+00:00"},"s":"I", "c":"CONTROL", "id":4615611, "ctx":"initandlisten", "msg":"MongoDB starting", "attr":{"pid":28,"port":27017,"dbPath":"/data/db","architecture":"64-bit","host":"mongo-deployment-85bbdc6549-xzbvx"}}
{"t":{"$date":"2023-05-13T03:05:26.309+00:00"},"s":"I", "c":"CONTROL", "id":23403, "ctx":"initandlisten", "msg":"Build Info", "attr":{"buildInfo":{"version":"6.0.5","gitVersion":"c9a99c120371d4d4c52cbb15dac34a36ce8d3b1d","opensslVersion":"OpenSSL 3.0.2 15 Mar 2022","modules":[],"allocator":"tcmalloc","environment":{"distmod":"ubuntu2204","distarch":"x86_64","target_arch":"x86_64"}}}}
{"t":{"$date":"2023-05-13T03:05:26.309+00:00"},"s":"I", "c":"CONTROL", "id":51765, "ctx":"initandlisten", "msg":"Operating System", "attr":{"os":{"name":"Ubuntu","version":"22.04"}}}
{"t":{"$date":"2023-05-13T03:05:26.309+00:00"},"s":"I", "c":"CONTROL", "id":21951, "ctx":"initandlisten", "msg":"Options set by command line", "attr":{"options":{"net":{"bindIp":"127.0.0.1","port":27017,"tls":{"mode":"disabled"},"processManagement":{"fork":true,"pidFilePath":"/tmp/docker-entrypoint-temp-mongod.pid"},"systemLog":{"destination":"file","logAppend":true,"path":"/proc/149/11"}}}}
{"t":{"$date":"2023-05-13T03:05:26.310+00:00"},"s":"I", "c":"STORAGE", "id":22297, "ctx":"initandlisten", "msg":"Using the XFS filesystem is strongly recommended with the WiredTiger storage engine. See http://dochub.mongodb.org/core/prodnotes-filesystem", "tags":["startupWarnings"]}
{"t":{"$date":"2023-05-13T03:05:26.310+00:00"},"s":"I", "c":"STORAGE", "id":22315, "ctx":"initandlisten", "msg":"Opening WiredTiger", "attr":{"config":{"create,cache_size=15442M,session_max=39800,eviction={threads_min=4,threads_max=4},config_base=false,statistics={fast},log=(enabled=true,remove=true,path=journal,compressor=snappy),builtin_extension_config={zstd=(compression_level=0)} file_managers={close_idle_time=600,close_scan_interval=10,close_handle_minimum=2000},statistics_log=(wait=0),json_output=(error,message) verbose={recovery_progress:1,checkpoint_progress:1,compact_progress:1,backup:0,checkpoint:0,compact:0,evict:0,history_store:0,recovery:0,rtts:0,salvage:0,tiered:0,timestamp:0,transaction:0,verify:0,log:0}}}}
{"t":{"$date":"2023-05-13T03:05:26.420+00:00"},"s":"I", "c":"STORAGE", "id":4795906, "ctx":"initandlisten", "msg":"WiredTiger opened", "attr":{"durationMillis":110}}
{"t":{"$date":"2023-05-13T03:05:26.420+00:00"},"s":"I", "c":"RECOVERY", "id":23987, "ctx":"initandlisten", "msg":"WiredTiger recoveryTimestamp", "attr":{"recoveryTimestamp":{"timestamp":{"timestamp":"0","i":0}}}}
{"t":{"$date":"2023-05-13T03:05:26.427+00:00"},"s":"W", "c":"CONTROL", "id":22120, "ctx":"initandlisten", "msg":"Access control is not enabled for the database. Read and write access to data and configuration is unrestricted", "tags":["startupWarnings"]}
{"t":{"$date":"2023-05-13T03:05:26.428+00:00"},"s":"W", "c":"CONTROL", "id":5123300, "ctx":"initandlisten", "msg":"vm.max_map_count is too low", "attr":{"currentValue":65530,"recommendedMinimum":1677720,"maxConns":8388600,"tags":["startupWarnings"]}
{"t":{"$date":"2023-05-13T03:05:26.428+00:00"},"s":"I", "c":"STORAGE", "id":20320, "ctx":"initandlisten", "msg":"createCollection", "attr":{"namespace":"admin.system.version","uuidDisposition":"provided","uuid":{"uuid":{"$uuid":"20fd7218-c5da-42bb-b9e0-7eca23230c64"}}},"options":{"uuid":{"$uuid":"20fd7218-c5da-42bb-b9e0-7eca23230c64"}}}}
{"t":{"$date":"2023-05-13T03:05:26.432+00:00"},"s":"I", "c":"INDEX", "id":20345, "ctx":"initandlisten", "msg":"Index build done building", "attr":{"buildUUID":null,"collectionUUID":{"uuid":{"$uuid":"20fd7218-c5da-42bb-b9e0-7eca23230c64"},"namespace":"admin.system.version","index":"_id","ident":"index-1-3576705501003053662","collectionIdent":"collection-0-3576705501003053662","commitTimestamp":null}}}
```