

4.3_Assignment_Kubernetes

Peer Members:

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Question:

Display logs of a running MongoDB container. Add a document to the DB via Mongo Express frontend.

Get into the pod and verify the document's existence via mongosh.

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Solution:

```

syedmuhammadrqimali@all-MS-7035:~/Documents/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$ sudo usermod -ag docker $USER && newgrp docker
syedmuhammadrqimali@all-MS-7035:~/Documents/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$ minikube start
🐳 minikube v1.30.1 on Ubuntu 22.04
👉 Using the docker driver based on existing profile
🔥 Starting control plane node minikube in cluster minikube
📶 Pulling base image ...
🔄 Updating the running docker "minikube" container ...
🔧 Preparing Kubernetes v1.26.3 on Docker 23.0.2 ...
🔗 Configuring bridge CNI (Container Networking Interface) ...
🔍 Verifying Kubernetes components...
   ▪ Using image docker.io/kubernetes/metrics-scraper:v1.0.8
   ▪ Using image gcr.io/k8s-minikube/storage-provisioner:v5
   ▪ Using image docker.io/kubernetes/dashboard:v2.7.0
💡 Some dashboard features require the metrics-server addon. To enable all features please run:

    minikube addons enable metrics-server

🌟 Enabled addons: storage-provisioner, default-storageclass, dashboard
🏠 Done! kubectrl is now configured to use "minikube" cluster and "default" namespace by default

syedmuhammadrqimali@all-MS-7035:~/Documents/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    13m
syedmuhammadrqimali@all-MS-7035:~/Documents/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$ kubectl apply -f mongo-secret.yaml
secret/mongodb-secret created
syedmuhammadrqimali@all-MS-7035:~/Documents/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$ kubectl apply -f mongodb-deployment.yaml
deployment.apps/mongo-deployment created
syedmuhammadrqimali@all-MS-7035:~/Documents/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           24s
syedmuhammadrqimali@all-MS-7035:~/Documents/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$ kubectl apply -f mongodb-service.yaml
service/mongo-service created
syedmuhammadrqimali@all-MS-7035:~/Documents/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$ kubectl apply -f mongo-configmap.yaml
configmap/mongodb-configmap created
syedmuhammadrqimali@all-MS-7035:~/Documents/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
syedmuhammadrqimali@all-MS-7035:~/Documents/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
syedmuhammadrqimali@all-MS-7035:~/Documents/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-tzht7    1/1     Running   0           98s
pod/mongo-express-5bcd46fcff-c5nsj       1/1     Running   0           27s

NAME                TYPE          CLUSTER-IP   EXTERNAL-IP   PORT(S)    AGE
service/kubernetes  ClusterIP     10.96.0.1    <none>         443/TCP    16m
service/mongo-express-service  LoadBalancer 10.100.20.67  192.168.0.10  8080:30001/TCP 17s
service/mongo-service  ClusterIP     10.107.224.62 <none>         27017/TCP  59s

NAME                READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/mongo-deployment  1/1     1             1           98s
deployment.apps/mongo-express    1/1     1             1           27s

NAME                DESIRED   CURRENT   READY   AGE
replicaset.apps/mongo-deployment-85bbdc6549  1         1         1       98s
replicaset.apps/mongo-express-5bcd46fcff     1         1         1       27s

```

```
exit
syedmuhammadrqimali@all-MS-7035:~/Documents/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$ minikube service mongo-express-service
+-----+-----+-----+-----+
| NAMESPACE | NAME           | TARGET PORT | URL               |
+-----+-----+-----+-----+
| default    | mongo-express-service | 8080        | http://192.168.49.2:30001 |
+-----+-----+-----+-----+
🔥 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/syedmuhammadrqimali/snap/code/common/.cache/gio-modules/libgiolibproxy.so
syedmuhammadrqimali@all-MS-7035:~/Documents/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/syedmuhammadrqimali/snap/code/common/.cache/gio-modules/libgiolibproxy.so
Opening in existing browser session.
```

Viewing Database: Xloop_db

Collections

Collection Name

Create collection

View	Export	[JSON]	Import	delete_me	Del
View	Export	[JSON]	Import	xloop_file	Del

Database Stats

Collections (incl. system.namespaces)	2
Data Size	384 Bytes
Storage Size	24.6 KB
Avg Obj Size #	54.9 Bytes
Objects #	7
Indexes #	2
Index Size	24.6 KB



Wrote this in xloop_file

```
[
  {
    color: "red",
    value: "#f00"
  },
  {
    color: "green",
    value: "#0f0"
  },
  {
    color: "blue",
    value: "#00f"
  },
  {
    color: "cyan",
    value: "#0ff"
  },
  {
    color: "magenta",
    value: "#f0f"
  },
],
```

```
{
  color: "yellow",
  value: "#ff0"
},
{
  color: "black",
  value: "#000"
}
]
```

Viewing Collection: xloop_file

 New Document

 New Index

 Simple


 Advanced







Key

Value

String ▼

 Find

 Delete all 7 documents retrieved

_id	color	value
 645ddb1328bb74000758bb8b	red	#f00
 645ddb1328bb74000758bb8c	green	#0f0
 645ddb1328bb74000758bb8d	blue	#00f
 645ddb1328bb74000758bb8e	cyan	#0ff
 645ddb1328bb74000758bb8f	magenta	#f0f
 645ddb1328bb74000758bb90	yellow	#ff0
 645ddb1328bb74000758bb91	black	#000

Rename Collection

xloop_db . xloop_file

 Rename

Tools

```

syedmuhammadraaqimali@all-MS-7D35:~/Documents/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$ kubectl exec -it mongo-deployment-85bbdc6549-tzht7
-- /bin/bash
root@mongo-deployment-85bbdc6549-tzht7:/# use Xloop_db
bash: use: command not found
root@mongo-deployment-85bbdc6549-tzht7:/# mongosh -u $MONGO_INITDB_ROOT_USERNAME -p $MONGO_INITDB_ROOT_PASSWORD
Current Mongosh Log ID: 645e10ef0263a491ad52023b
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/mongosh-shell/

-----
The server generated these startup warnings when booting
2023-05-12T06:13:47.073+00:00: Using the XFS filesystem is strongly recommended with the WiredTiger storage engine. See http://dochub.mongodb.org/core/prodnotes-filesystem
2023-05-12T06:13:47.497+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 Xloop_db
switched to db Xloop_db
Xloop_db> show collections
delete_me
xloop_file
Xloop_db> db.xloop_file.find({})
[
  {
    _id: ObjectId("645ddb1328bb74000758bb8b"),
    color: 'red',
    value: '#f00'
  },
  {
    _id: ObjectId("645ddb1328bb74000758bb8c"),
    color: 'green',
    value: '#0f0'
  },
  {
    _id: ObjectId("645ddb1328bb74000758bb8d"),
    color: 'blue',
    value: '#00f'
  },
  {
  }
]

```

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.

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```
test> use Xloop_db
switched to db Xloop_db
Xloop_db> show collections
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Xloop_db> db.xloop_file.find({})
[
  {
    _id: ObjectId("645ddb1328bb74000758bb8b"),
    color: 'red',
    value: '#f00'
  },
  {
    _id: ObjectId("645ddb1328bb74000758bb8c"),
    color: 'green',
    value: '#0f0'
  },
  {
    _id: ObjectId("645ddb1328bb74000758bb8d"),
    color: 'blue',
    value: '#00f'
  },
  {
    _id: ObjectId("645ddb1328bb74000758bb8e"),
    color: 'cyan',
    value: '#0ff'
  },
  {
    _id: ObjectId("645ddb1328bb74000758bb8f"),
    color: 'magenta',
    value: '#f0f'
  },
  {
    _id: ObjectId("645ddb1328bb74000758bb90"),
    color: 'yellow',
    value: '#ff0'
  },
  {
    _id: ObjectId("645ddb1328bb74000758bb91"),
    color: 'black',
    value: '#000'
  }
]
Xloop_db> █
```

The **kubectrl logs** command is used to print the logs of a container in a pod.

```
syedmuhammadrazaali@all-MS-7035:~/Documents/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$ kubectl logs mongo-deployment-85bbdc6549-tzht7
about to fork child process, waiting until server is ready for connections.
forked process: 28
{"t":{"$date":"2023-05-12T06:13:43.453+00:00"},"s":"I", "c":"CONTROL", "id":20698, "ctx":"-", "msg":"***** SERVER RESTARTED *****"}
{"t":{"$date":"2023-05-12T06:13:43.455+00:00"},"s":"I", "c":"CONTROL", "id":23285, "ctx":"-", "msg":"Automatically disabling TLS 1.0, to force-enable TLS 1.0 specify --sslDisabledProto
cols: none"}
{"t":{"$date":"2023-05-12T06:13:43.457+00:00"},"s":"I", "c":"NETWORK", "id":4915701, "ctx":"main", "msg":"Initialized wire specification", "attr":{"spec":{"incomingExternalClient":{"minWi
reVersion":0,"maxWireVersion":17},"incomingInternalClient":{"minWireVersion":0,"maxWireVersion":17},"outgoing":{"minWireVersion":6,"maxWireVersion":17},"isInternalClient":true}}}
{"t":{"$date":"2023-05-12T06:13:43.458+00:00"},"s":"I", "c":"NETWORK", "id":4648601, "ctx":"main", "msg":"Implicit TCP FastOpen unavailable. If TCP FastOpen is required, set tcpFastOpenS
erver, tcpFastOpenClient, and tcpFastOpenQueueSize."}
{"t":{"$date":"2023-05-12T06:13:43.459+00:00"},"s":"I", "c":"REPL", "id":5123008, "ctx":"main", "msg":"Successfully registered PrimaryOnlyService", "attr":{"service":"TenantMigrationDo
norService","namespace":"config.tenantMigrationDonors"}}
{"t":{"$date":"2023-05-12T06:13:43.459+00:00"},"s":"I", "c":"REPL", "id":5123008, "ctx":"main", "msg":"Successfully registered PrimaryOnlyService", "attr":{"service":"TenantMigrationRe
```



```
a-985c-b2ce9f686812", "connectionId":19, "connectionCount":7}}
{"t":{"sdate":"2023-05-12T10:36:34.423+00:00"},"s":"I", "c":"-", "id":20883, "ctx":"conn9", "msg":"Interrupted operation as its client disconnected", "attr":{"opId":198148}}
{"t":{"sdate":"2023-05-12T10:36:34.424+00:00"},"s":"I", "c":"NETWORK", "id":22944, "ctx":"conn9", "msg":"Connection ended", "attr":{"remote":"127.0.0.1:39942", "uuid":"eedc0f9a-f7c2-4a8d-96b1-637a28ec6a45", "connectionId":9, "connectionCount":6}}
{"t":{"sdate":"2023-05-12T10:36:34.424+00:00"},"s":"I", "c":"NETWORK", "id":22944, "ctx":"conn14", "msg":"Connection ended", "attr":{"remote":"127.0.0.1:34408", "uuid":"f04bb91e-bcf1-45d4-88f6-bf7a6e5161e8", "connectionId":14, "connectionCount":5}}
{"t":{"sdate":"2023-05-12T10:36:34.424+00:00"},"s":"I", "c":"NETWORK", "id":22944, "ctx":"conn13", "msg":"Connection ended", "attr":{"remote":"127.0.0.1:34396", "uuid":"2d033fd8-aa42-466e-8c5b-ced37535bde2", "connectionId":13, "connectionCount":4}}
{"t":{"sdate":"2023-05-12T10:36:34.424+00:00"},"s":"I", "c":"NETWORK", "id":22944, "ctx":"conn10", "msg":"Connection ended", "attr":{"remote":"127.0.0.1:39946", "uuid":"484a2c07-3912-410d-b184-801bacee8892", "connectionId":10, "connectionCount":3}}
{"t":{"sdate":"2023-05-12T10:36:34.424+00:00"},"s":"I", "c":"NETWORK", "id":22944, "ctx":"conn11", "msg":"Connection ended", "attr":{"remote":"127.0.0.1:39952", "uuid":"2dea7b3f-32da-4e8c-aa99-f62decf999bb", "connectionId":11, "connectionCount":2}}
{"t":{"sdate":"2023-05-12T10:36:34.425+00:00"},"s":"I", "c":"NETWORK", "id":22944, "ctx":"conn12", "msg":"Connection ended", "attr":{"remote":"127.0.0.1:39954", "uuid":"a40ae981-2ac5-4c4c-9337-d31046df0717", "connectionId":12, "connectionCount":1}}
```