

ASSIGNMENT 4.3

on

Kubernetes

Submitted by:

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Task 01:

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*.

1. Pull [mongo related files from the repository](#)

All files are pulled successfully.

2. Support yourself with the slides, README and knowledge from the internet.

Slides and readme files are reviewed, additionally we have used internet for further understanding and dealing with errors.

3. Review all the files to learn the dependencies between Kubernetes objects

All files have been reviewed and the dependencies are understood.

4. Run the objects so you have both mongo-service and mongo-express-service deployed (list, pods, deployments, services and configmaps) - document with screenshots

```
PS C:\Users\dell\Downloads\4_microservices_development\day_3_kubernetes\hands-on> minikube start
minikube v1.30.1 on Microsoft Windows 10 Pro 10.0.19045.2965 Build 19045.2965
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" ...
This container is having trouble accessing https://registry.k8s.io
To pull new external images, you may need to configure a proxy: https://minikube.sigs.k8s.io/docs/reference/networking/proxy/
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: default-storageclass, storage-provisioner
Done! kubect1 is now configured to use "minikube" cluster and "default" namespace by default
PS C:\Users\dell\Downloads\4_microservices_development\day_3_kubernetes\hands-on> kubectl apply -f mongo-secret.yaml
secret/mongodb-secret created
PS C:\Users\dell\Downloads\4_microservices_development\day_3_kubernetes\hands-on> kubectl apply -f mongo-configmap.yaml
configmap/mongodb-configmap created
```

```
PS C:\Users\dell\Downloads\4_microservices_development\day_3_kubernetes\hands-on> kubectl apply -f mongodb-deployment.yaml
deployment.apps/mongo-deployment created
PS C:\Users\dell\Downloads\4_microservices_development\day_3_kubernetes\hands-on> kubectl apply -f mongo-db-service.yaml
error: the path "mongo-db-service.yaml" does not exist
PS C:\Users\dell\Downloads\4_microservices_development\day_3_kubernetes\hands-on> kubectl apply -f mongodb-service.yaml
service/mongo-service created
PS C:\Users\dell\Downloads\4_microservices_development\day_3_kubernetes\hands-on> kubectl apply -f mongo-express-deployment.yaml
deployment.apps/mongo-express created
PS C:\Users\dell\Downloads\4_microservices_development\day_3_kubernetes\hands-on> kubectl apply -f mongo-express-service.yaml
service/mongo-express-service created
PS C:\Users\dell\Downloads\4_microservices_development\day_3_kubernetes\hands-on> kubectl get all
```

NAME	READY	STATUS	RESTARTS	AGE
pod/mongo-deployment-85bbdc6549-z7x2b	0/1	ContainerCreating	0	77s
pod/mongo-express-5bcd46fcff-j8zxx	0/1	ContainerCreating	0	25s
pod/mydeployment-85495857f7-486j5	0/1	ErrImageNeverPull	0	12h
pod/mydeployment-85495857f7-5vstg	0/1	ErrImageNeverPull	0	12h
pod/mydeployment-85495857f7-9qkbg	0/1	ErrImageNeverPull	0	12h
pod/mydeployment-85495857f7-fvwbF	0/1	ErrImageNeverPull	0	12h
pod/mydeployment-85495857f7-wn86w	0/1	ErrImageNeverPull	0	12h

NAME	TYPE	CLUSTER-IP	EXTERNAL-IP	PORT(S)	AGE
service/kubernetes	ClusterIP	10.96.0.1	<none>	443/TCP	12h
service/mongo-express-service	LoadBalancer	10.97.15.198	192.168.0.10	8080:30001/TCP	14s
service/mongo-service	ClusterIP	10.97.42.95	<none>	27017/TCP	53s
service/mywebapp	LoadBalancer	10.102.216.156	<pending>	80:30778/TCP	12h

```
NAME                                READY    UP-TO-DATE    AVAILABLE    AGE
deployment.apps/mongo-deployment    0/1      1              0            77s
deployment.apps/mongo-express       0/1      1              0            25s
deployment.apps/mydeployment         0/5      5              0            12h
```


NAME	DESIRED	CURRENT	READY	AGE
replicaset.apps/mongo-deployment-85bbdc6549	1	1	0	77s
replicaset.apps/mongo-express-5bcd46fcff	1	1	0	25s
replicaset.apps/mydeployment-85495857f7	5	5	0	12h

```
PS C:\Users\dell\Downloads\4_microservices_development\day_3_kubernetes\hands-on> minikube ip
192.168.49.2
```

```
Stopping tunnel for service mongo-express-service.
PS C:\Users\dell\Downloads\4_microservices_development> kubectl get pods
```

NAME	READY	STATUS	RESTARTS	AGE
mongo-deployment-85bbdc6549-z7x2b	1/1	Running	1 (9m29s ago)	54m
mongo-express-5bcd46fcff-j8zxx	1/1	Running	2 (8m30s ago)	53m

```
PS C:\Users\dell\Downloads\4_microservices_development> kubectl get deployments
```

NAME	READY	UP-TO-DATE	AVAILABLE	AGE
mongo-deployment	1/1	1	1	55m
mongo-express	1/1	1	1	54m

```

mydeployment-85495857f7-w86w 0/1 ErrImageNeverPull 0 13h
PS C:\Users\dell\Downloads\4_microservices_development> kubectl get services
NAME                TYPE        CLUSTER-IP      EXTERNAL-IP      PORT(S)          AGE
kubernetes           ClusterIP   10.96.0.1        <none>            443/TCP          13h
mongo-express-service LoadBalancer 10.97.15.198     192.168.0.10     8080:30001/TCP   55m
mongo-service        ClusterIP   10.97.42.95      <none>            27017/TCP        55m
mywebapp             LoadBalancer 10.102.216.156   <pending>         80:30778/TCP     13h
PS C:\Users\dell\Downloads\4_microservices_development>

mywebapp             LoadBalancer 10.102.216.156   <pending>         80:30778/TCP     13h
PS C:\Users\dell\Downloads\4_microservices_development> kubectl get configmaps
NAME                DATA      AGE
kube-root-ca.crt    1          13h
mongodb-configmap   1          57m
PS C:\Users\dell\Downloads\4_microservices_development>

```

5. Run describe on a deployment, pod, service, configmap or choice. - document with screenshots

Note: Description text files are uploaded in the current directory named assignment 4.3 of my repo.

- Description of pods is stored in txt files named: mongo-deployments.txt and mongo-express.txt

```

mydeployment-85495857f7-w86w 0/1 ErrImageNeverPull 0 13h
PS C:\Users\dell\Downloads\4_microservices_development> kubectl describe pod mongo-express-5bcd46fcff-j8zxx > mongo-express-5bcd46fcff-j8zxx.txt
Normal Started 14m kubelet started container mongoexp
PS C:\Users\dell\Downloads\4_microservices_development> kubectl describe pod mongo-deployment-85bbdc6549-z7x2b > mongo-deployment.txt

```

- Description of services is stored in txt files named: ds_mongo-service.txt and ds_mongo-express-service.txt

```

PS C:\Users\dell\Downloads\4_microservices_development> kubectl describe service mongo-service > ds_mongo-service.txt
PS C:\Users\dell\Downloads\4_microservices_development> kubectl describe service mongo-express-service > ds_mongo-express-service.txt
PS C:\Users\dell\Downloads\4_microservices_development>

```

- Description of deployment is stored in txt files named: dd_mongo-deployment.txt and dd_mongo-express.txt

```

PS C:\Users\dell\Downloads\4_microservices_development> kubectl describe deployments mongo-deployment > dd_mongo-deployment.txt
PS C:\Users\dell\Downloads\4_microservices_development> kubectl describe deployments mongo-express > dd_mongo-express.txt
PS C:\Users\dell\Downloads\4_microservices_development>

```

- Description of configmap is stored in txt file named: dc_mongodb-configmap.txt.

```

PS C:\Users\dell\Downloads\4_microservices_development> kubectl describe configmaps mongodb-configmap > dc_mongodb-configmap.txt
PS C:\Users\dell\Downloads\4_microservices_development>

```

6. Show logs from a pod of choice - document with a screenshot

- Logs of pod are stored in file named: logs-mongo-deployment.txt

```
PS C:\Users\dell\Downloads\4_microservices_development> kubectl logs mongo-deployment-85bbdc6549-z7x2b > logs_mongo-deployment.txt
```

7. Run minikube service <proper_service_name> to make the service appear in a browser and expose it for network traffic.

```
PS C:\Users\dell\Downloads\4_microservices_development> kubectl get services
```

NAME	TYPE	CLUSTER-IP	EXTERNAL-IP	PORT(S)	AGE
kubernetes	ClusterIP	10.96.0.1	<none>	443/TCP	13h
mongo-express-service	LoadBalancer	10.97.15.198	192.168.0.10	8080:30001/TCP	77m
mongo-service	ClusterIP	10.97.42.95	<none>	27017/TCP	78m
mywebapp	LoadBalancer	10.102.216.156	<pending>	80:30778/TCP	13h

```
PS C:\Users\dell\Downloads\4_microservices_development> minikube service mongo-express-service
```

NAMESPACE	NAME	TARGET PORT	URL
default	mongo-express-service	8080	http://192.168.49.2:30001

Starting tunnel for service mongo-express-service.

NAMESPACE	NAME	TARGET PORT	URL
default	mongo-express-service		http://127.0.0.1:55820

Opening service default/mongo-express-service in default browser...
Because you are using a Docker driver on windows, the terminal needs to be open to run it.
Stopping tunnel for service mongo-express-service.

8. Add db, collection and a document in the WebUI.

Mongo Express Database: my_db Collection: my_collection

Viewing Collection: my_collection

Document added!

[New Document](#) [New Index](#)

Simple [Advanced](#)

Key Value String [Find](#)

Delete all 1 documents retrieved

_id
645f0770e5f5e496aa0a7193

9. Enter the pod for mongodb run mongosh to see if the document was created in collection in db.

10. You may need some additional parameters (and use the environment variables from the .yaml files.)

```
PS C:\Users\dell\Downloads\4_microservices_development> kubectl exec -it mongo-deployment-85bbdc6549-z7x2b -- sh
# mongosh -u $MONGO_INITDB_ROOT_USERNAME -p $MONGO_INITDB_ROOT_PASSWORD --authenticationDatabase admin
Current Mongosh Log ID: 645f14881d81546010d02ea5
Connecting to:      mongodb://<credentials>@127.0.0.1:27017/?directConnection=true&serverSelectionTimeoutMS=2000&authSource=admin&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
  2023-05-13T03:05:20.210+00:00: Using the XFS filesystem is strongly recommended with the WiredTiger storage engine. See http://dochub.mongodb.org/core/prodnotes-filesystem
  2023-05-13T03:05:22.318+00:00: /sys/kernel/mm/transparent_hugepage/enabled is 'always'. We suggest setting it to 'never'
  2023-05-13T03:05:22.318+00:00: vm.max_map_count is too low
-----
```

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

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  2023-05-13T03:05:22.318+00:00: /sys/kernel/mm/transparent_hugepage/enabled is 'always'. We suggest setting it to 'never'
  2023-05-13T03:05:22.318+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> show db
```

```
ReferenceError: show_db is not defined
test> show dbs
admin    100.00 KiB
config   84.00 KiB
local    72.00 KiB
my_db     48.00 KiB
test> use my_db
switched to db my_db
my_db> db.my_collection
my_db.my_collection
my_db> db.my_collection .find()
[ { _id: ObjectId("645f0770e5f5e496aa0a7193") } ]
my_db> █
```