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Pair Partner 1: - Muhammad Faizan Rafique (2303.005.KHI.DEG)

Pair Partner 2: - Syed Muhammad Hammad Irshad(2303.KHI.DEG.032)

UNIT 4.3:

Assignment

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*.

```
EXPLORER  PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  COMMENTS
DATA_ENGINEERING_BOOTCAMP_2303
  > .vscode
  > tasks
    > 1_introduction
    > 2_mathematical_programmi...
    > 3_machine_learning_essenti...
    > 4_microservices_development
      > day_1_microservices
      > day_2_kafka
      > day_3_kubernetes
        > hands-on
          ! mongo-configmap.yaml
          ! mongo-express-deployment.y...
          ! mongo-secret.yaml
          ! mongo-deployment.yaml
          ! mongodb-service.yaml
          > play_with_kubernetes
            ① README.md
            > OUTLINE
            > TIMELINE

muhammadfaizanrafique@all-MS-7B35:~/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 ...
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, default-storageclass
Done! kubectl is now configured to use "minikube" cluster and "default" namespace by default
muhammadfaizanrafique@all-MS-7B35:~/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$ kubectl get pods
No resources found in default namespace.
muhammadfaizanrafique@all-MS-7B35:~/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$ kubectl apply -f mongo
mongo-configmap.yaml          mongodb-service.yaml          mongo-express-deployment.yaml  mongo-secret.yaml
mongodb-deployment.yaml      mongo-express-deployment.yaml  mongo-secret.yaml
secret/mongodb-secret unchanged
muhammadfaizanrafique@all-MS-7B35:~/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$ kubectl apply -f mongodb-deployment.yaml
deployment.apps/mongo-deployment created
muhammadfaizanrafique@all-MS-7B35:~/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$ kubectl apply -f mongodb-service.yaml
service/mongo-service unchanged
muhammadfaizanrafique@all-MS-7B35:~/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$ kubectl apply -f mongo-configmap.yaml
configmap/mongodb-configmap unchanged
muhammadfaizanrafique@all-MS-7B35:~/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
muhammadfaizanrafique@all-MS-7B35:~/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$ kubectl apply -f mongo-express-service.yaml
service/mongo-express-service unchanged
muhammadfaizanrafique@all-MS-7B35:~/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$ kubectl get pods
NAME                                READY  STATUS   RESTARTS  AGE
mongo-deployment-85bbdc6549-d262b  1/1    Running  0          71s
mongo-express-5bc046fcff-tgflb      1/1    Running  0          27s
muhammadfaizanrafique@all-MS-7B35:~/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$ kubectl exec -it mongo-deployment -- /bin/bash
Error from server (NotFound): pods "mongo-deployment" not found
muhammadfaizanrafique@all-MS-7B35:~/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$ kubectl exec -it mongo-deployment-85bbdc6549-d262b -- /bin/bash
root@mongo-deployment-85bbdc6549-d262b:/# ^C
root@mongo-deployment-85bbdc6549-d262b:/# exit
exit
command terminated with exit code 130
muhammadfaizanrafique@all-MS-7B35:~/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/muhammadfaizanrafique/snap/code/common/.cache/gio/modules/libgio1libproxy.so
muhammadfaizanrafique@all-MS-7B35:~/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$ kubectl exec -it mongo-deployment-85bbdc6549-d262b -- /bin/bash
root@mongo-deployment-85bbdc6549-d262b:/# mongosh -u username -p password --authenticationDatabase taizandb
Current Mongosh Log ID: 645f88b30c1cd41cd3a2674
```

```
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  vscode
  tasks
    1_introduction
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            ! mongo-secret.yaml
            ! mongodbd-deployment.yaml
            ! mongodbd-service.yaml
            > play_with_kubernetes
            0 README.md
            0 README.md

command terminated with exit code 130
muhammadfaizanrafique@all-MS-7035:~/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/muhammadfaizanrafique/snap/code/common/.cache/gio-modules/libgiolibrary.so
muhammadfaizanrafique@all-MS-7035:~/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$ kubectl exec -it mongo-deployment-85bbdc6549-d262b -- /
bin/bash
root@mongo-deployment-85bbdc6549-d262b:/# mongosh -u username -p password --authenticationDatabase faizandb
Current Mongosh Log ID: 645f080a30c1cd41c3a2674
Connecting to: mongodbi://<credentials>@127.0.0.1:27017/?directConnection=true&serverSelectionTimeoutMS=2000&authSource=faizandb&appName=mongosh+1.8.2
MongoServerError: Authentication failed.
root@mongo-deployment-85bbdc6549-d262b:/# mongosh -u username -p password --authenticationDatabase admin
Current Mongosh Log ID: 645f0815a44785e2bf704ff
Connecting to: mongodbi://<credentials>@127.0.0.1:27017/?directConnection=true&serverSelectionTimeoutMS=2000&authSource=admin&appName=mongosh+1.8.2
Using Mongosh: 0.0.5
Using Mongosh: 1.8.2
For mongosh info see: https://docs.mongodb.com/mongodbd-shell/

To help improve our products, anonymous usage data is collected and sent to MongoDB periodically (https://www.mongodb.com/legal/privacy-policy).
You can opt-out by running the disableTelemetry() command.

-----
The server generated these startup warnings when booting
2023-05-13T03:35:57.561+00:00: Using the XFS filesystem is strongly recommended with the WiredTiger storage engine. See http://dochub.mongodb.org/core/prodnotes-filesystem
2023-05-13T03:35:57.964+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> db.mycollection.find()

test> admin.mycollection.find({})
ReferenceError: admin is not defined
test> db.mycollection.find({})

test> db.mycollection.find({})
```

```
EXPLORER  PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL
KUBERNETES FILE
  mongo-configmap.yaml
  ! mongo-express-deployment.yaml
  ! mongo-express-service.yaml
  ! mongo-secret.yaml
  ! mongodbd-deployment.yaml
  ! mongodbd-service.yaml

muhammadhuzafawaseem@all-MS-7035:~/Desktop/Kubernetes files$ kubectl logs mongo-deployment-85bbdc6549-hdzg4
about to fork child process, waiting until server is ready for connections.
forked process: 28
{"t":{"$date":"2023-05-13T07:27:00.186+00:00"},"s":"I", "c":"CONTROL", "id":20698, "ctx":"-","msg":"***** SERVER RESTARTED *****"}, {"t":{"$date":"2023-05-13T07:27:00.189+00:00"},"s":"I", "c":"CONTROL", "id":22325, "ctx":"-","msg":"Automatically disabling TLS 1.0, to force-enable TLS 1.0 specify --sslDisabledProtocols 'none'"}, {"t":{"$date":"2023-05-13T07:27:00.189+00:00"},"s":"I", "c":"NETWORK", "id":4915701, "ctx":"main","msg":"Initialized wire specification","attr":{"spec":{"incomingExternalClient":{"minWireVersion":0,"maxWireVersion":17},"incomingInternalClient":{"minWireVersion":0,"maxWireVersion":17},"outgoing":{"minWireVersion":6,"maxWireVersion":17},"isInternalClient":true}}}}, {"t":{"$date":"2023-05-13T07:27:00.190+00:00"},"s":"I", "c":"NETWORK", "id":4048601, "ctx":"main","msg":"Implicit TCP FastOpen unavailable. If TCP FastOpen is required, set tcpFastOpenServer, tcpFastOpenClient, and tcpFastOpenQueueSize."}, {"t":{"$date":"2023-05-13T07:27:00.190+00:00"},"s":"I", "c":"REPL", "id":5123008, "ctx":"main","msg":"Successfully registered PrimaryOnlyService","attr":{"service":"TenantMigrationDonorService","namespace":"config.tenantMigrationDonors"}}, {"t":{"$date":"2023-05-13T07:27:00.190+00:00"},"s":"I", "c":"REPL", "id":5123008, "ctx":"main","msg":"Successfully registered PrimaryOnlyService","attr":{"service":"TenantMigrationRecipientService","namespace":"config.tenantMigrationRecipients"}}, {"t":{"$date":"2023-05-13T07:27:00.190+00:00"},"s":"I", "c":"REPL", "id":5123008, "ctx":"main","msg":"Successfully registered PrimaryOnlyService","attr":{"service":"ShardSplitDonorService","namespace":"config.tenantSplitDonors"}}, {"t":{"$date":"2023-05-13T07:27:00.191+00:00"},"s":"I", "c":"CONTROL", "id":5945603, "ctx":"main","msg":"Multi threading initialized"}, {"t":{"$date":"2023-05-13T07:27:00.191+00:00"},"s":"I", "c":"CONTROL", "id":4615011, "ctx":"initandlisten","msg":"MongoDB starting","attr":{"pid":28,"port":27017,"dbPath":"/data/db","architecture":"64-bit","host":"mongo-deployment-85bbdc6549-hdzg4"}}, {"t":{"$date":"2023-05-13T07:27:00.191+00:00"},"s":"I", "c":"CONTROL", "id":23403, "ctx":"initandlisten","msg":"Build Info","attr":{"buildInfo":{"version":"6.0.5","gitVersion":"c9a99c12071d44c52cbb13dac34a36ce8d3b1d","openSSLVersion":"OpenSSL 3.0.2 15 Mar 2022","modules":[],"allocator":"tcmalloc","environment":{"distmod":"ubuntu2004","distarch":"x86_64","target_arch":"x86_64"}}}}, {"t":{"$date":"2023-05-13T07:27:00.191+00:00"},"s":"I", "c":"CONTROL", "id":51765, "ctx":"initandlisten","msg":"Operating System","attr":{"os":{"name":"Ubuntu","version":"22.04"}}}, {"t":{"$date":"2023-05-13T07:27:00.191+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/1/fd/1}}}}, {"t":{"$date":"2023-05-13T07:27:00.191+00:00"},"s":"I", "c":"STORAGE", "id":22257, "ctx":"initandlisten","msg":"Using the XFS filesystem is strongly recommended with the WiredTiger storage engine. See http://dochub.mongodb.org/core/prodnotes-filesystem"}, {"t":{"$date":"2023-05-13T07:27:00.191+00:00"},"s":"I", "c":"STORAGE", "id":22315, "ctx":"initandlisten","msg":"Opening WiredTiger","attr":{"config":{"create,cache size=15442M,session max=3980,eviction=(threads min=4,threads max=4),config base=base,statistics=(fast),log=(enabled=true,remove=true,path=journal,compressor=snappy),builtin extension config={zstd:(compression level=6)},file_manager=(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,fts:0,salvage:0,tiered:0,timestampt:0,transaction:0,verify:0,log:0,1)}}}}, {"t":{"$date":"2023-05-13T07:27:00.371+00:00"},"s":"I", "c":"STORAGE", "id":4795906, "ctx":"initandlisten","msg":"WiredTiger opened","attr":{"durationMillis":180}}, {"t":{"$date":"2023-05-13T07:27:00.371+00:00"},"s":"I", "c":"RECOVERY", "id":23987, "ctx":"initandlisten","msg":"WiredTiger recoveryTimestamp","attr":{"recoveryTimestamp":{"$timestamp":{"$seconds":1683888000,"$nanoseconds":0}}}}, {"t":{"$date":"2023-05-13T07:27:00.379+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":{"$date":"2023-05-13T07:27:00.379+00:00"},"s":"W", "c":"CONTROL", "id":5123300, "ctx":"initandlisten","msg":"vm.max_map_count is too low","attr":{"currentValue":65530,"recommendedMinimum":1677720,"maxConns":8388608,"tags":["startupWarnings"]}}, {"t":{"$date":"2023-05-13T07:27:00.379+00:00"},"s":"I", "c":"STORAGE", "id":20320, "ctx":"initandlisten","msg":"createCollection","attr":{"namespace":"admin.system.version","uuidDisposition":"provided","uuid":{"uuid":{"$uuid":"89032e58-b323-4908-99ae-ac48849e6dda"}},"options":{"uuid":{"$uuid":"89032e58-b323-4908-99ae-ac48849e6dda"}}}}, {"t":{"$date":"2023-05-13T07:27:00.384+00:00"},"s":"I", "c":"INDEX", "id":20345, "ctx":"initandlisten","msg":"Index build: done building","attr":{"buildUUID":null,"collectionUUID":{"uuid":{"$uuid":"89032e58-b323-4908-99ae-ac48849e6dda"},"namespace":"admin.system.version","index":{"_id","_idnt":"index-1-793174608548081020","collectionIdent":"collection-0-793174608548081020","commitTimestamp":null}}, {"t":{"$date":"2023-05-13T07:27:00.384+00:00"},"s":"I", "c":"REPL", "id":20459, "ctx":"initandlisten","msg":"Setting featureCompatibilityVersion","attr":{"newVersion":"6.0"}}, {"t":{"$date":"2023-05-13T07:27:00.384+00:00"},"s":"I", "c":"REPL", "id":5853300, "ctx":"initandlisten","msg":"current featureCompatibilityVersion value","attr":{"featureCompatibilityVersion":"6.0","context":"setFCV"}}, {"t":{"$date":"2023-05-13T07:27:00.384+00:00"},"s":"I", "c":"NETWORK", "id":4915702, "ctx":"initandlisten","msg":"Updated wire specification","attr":{"oldSpec":{"incomingExternalClient":{"minWireVersion":0,"maxWireVersion":17},"incomingInternalClient":{"minWireVersion":0,"maxWireVersion":17},"outgoing":{"minWireVersion":6,"maxWireVersion":17},"isInternalClient":true},"newSpec":{"incomingExternalClient":{"minWireVersion":17},"incomingInternalClient":{"minWireVersion":0,"maxWireVersion":17},"outgoing":{"minWireVersion":17,"maxWireVersion":17},"isInternalClient":true}}}}, {"t":{"$date":"2023-05-13T07:27:00.384+00:00"},"s":"I", "c":"REPL", "id":5853300, "ctx":"initandlisten","msg":"current featureCompatibilityVersion value","attr":{"featureCompatibilityVersion":"6.0","context":"startup"}}
```

EXPLORER

DATA_ENGINEERING_BOOTCAMP_2303

tasks

1.introduction

2.mathematical_programmi...

3.machine_learning_essent...

4.microservices_development

day_1_microservices

day_2_faia

day_3_kubernetes

hands-on

mongo-configmap.yaml

mongo-express-deployment.y...

mongo-express-service.yaml

mongo-secret.yaml

mongodb-deployment.yaml

mongodb-service.yaml

play_with_kubernetes

README.md

README.md

OUTLINE

TIMELINE

PROBLEMS

OUTPUT

DEBUG CONSOLE

TERMINAL

COMMENTS

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test> admin.mycollection.find({})

ReferenceError: admin is not defined

test> db.mycollection.find({})

test> db.mycollection.find({})

test> db.mycollection.find({})

test> use admin

switched to db admin

admin> show collections

test

system.users

system.version

admin> db.test.find()

{

id: ObjectId("645f08d0299b9e0007246a5b"),

fruit: 'Apple',

size: 'Large',

color: 'Red'

}

{

id: ObjectId("645f08e5299b9e0007246a5c"),

fruit: 'Apple',

size: 'Large',

color: 'Red'

}

{

id: ObjectId("645f08fe299b9e0007246a5d"),

fruit: 'banana',

size: 'Large',

color: 'yellow'

}

}

admin>

← → ↺ 🔒 Not secure | 192.168.49.2:30001

Mongo Express Database

Databases

Database Name

Create Database

View admin Del

View config Del

View faizandb Del

View local Del

Server Status

Turn on admin in config.js to view server stats!

← → ⚠ Not secure | 192.168.49.2:30001/db/admin/

Mongo Express Database: admin

Viewing Database: admin

Collections

Collection Name + Create collection

View

Export

JSON

Import

system.users

Del

View

Export

JSON

Import

system.version

Del

View

Export

JSON

Import

test

Del

Database Stats

Collections (incl. system.namespaces)	3
Data Size	848 Bytes
Storage Size	77.8 KB
Avg Obj Size #	141 Bytes
Objects #	6
Indexes #	4
Index Size	98.3 KB

← → ⚠ Not secure | 192.168.49.2:30001/db/admin/test

Mongo Express Database: admin > Collection: test

Viewing Collection: test

Document added!

New Document

New Index

Simple

Advanced

Key

Value

String

Find

Delete all 3 documents retrieved

_id	fruit	size	color
645f08d0299b9e0007246a5b	Apple	Large	Red
645f08e5299b9e0007246a5c	Apple	Large	Red
645f08fe299b9e0007246a5d	banana	Large	yellow

Rename Collection

admin . test Rename

Expian

Let's embark on an exciting adventure into the world of Kubernetes! We start with "**minikube start**," which wakes up Minikube and makes it powerful. Then we use "**kubectl get pods**" to see a list of running pods. With "**kubectl apply -f**," we bring our files to life, like building blocks. We discover "**minikube service mongo-express-service**," a special door to Mongo Express. Using "**kubectl exec -it mongo-deployment-**** --/bin/bash**," we enter the container and find secrets inside. Finally, "**db.mycollection.find()**" helps us find treasures in the database. It's like exploring a magical land where we can create, discover, and learn!