Unit 4.3 Graded Assignment:
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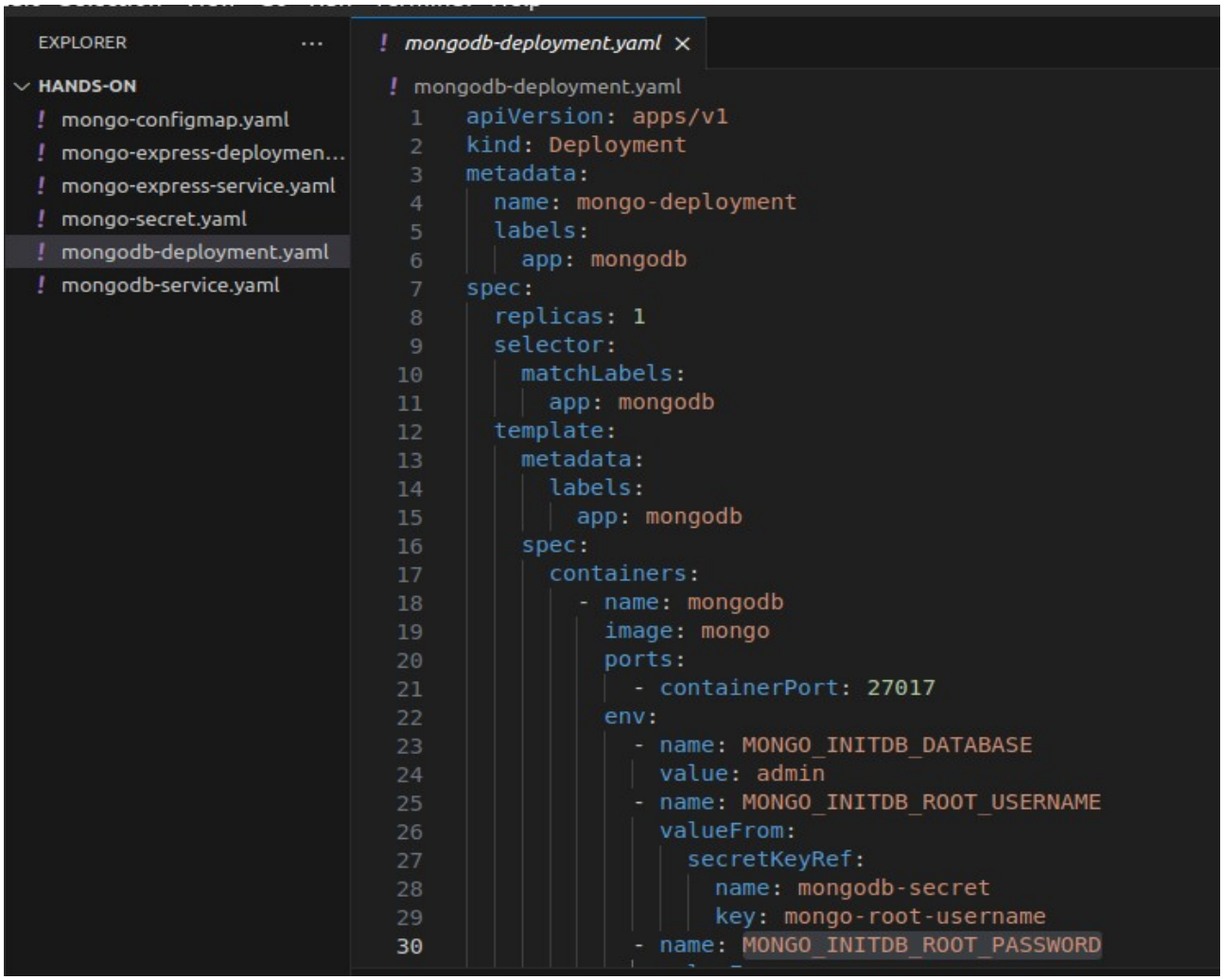
Daily Assignment :

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*.

Answer:



mongodb-configmap.yaml: This file a Kubernetes ConfigMap, that stores a single key-value pair, where the key is "database_url" and the value is "mongo-service". This ConfigMap can be used to provide the

configuration data for applications or services running in the Kubernetes cluster.

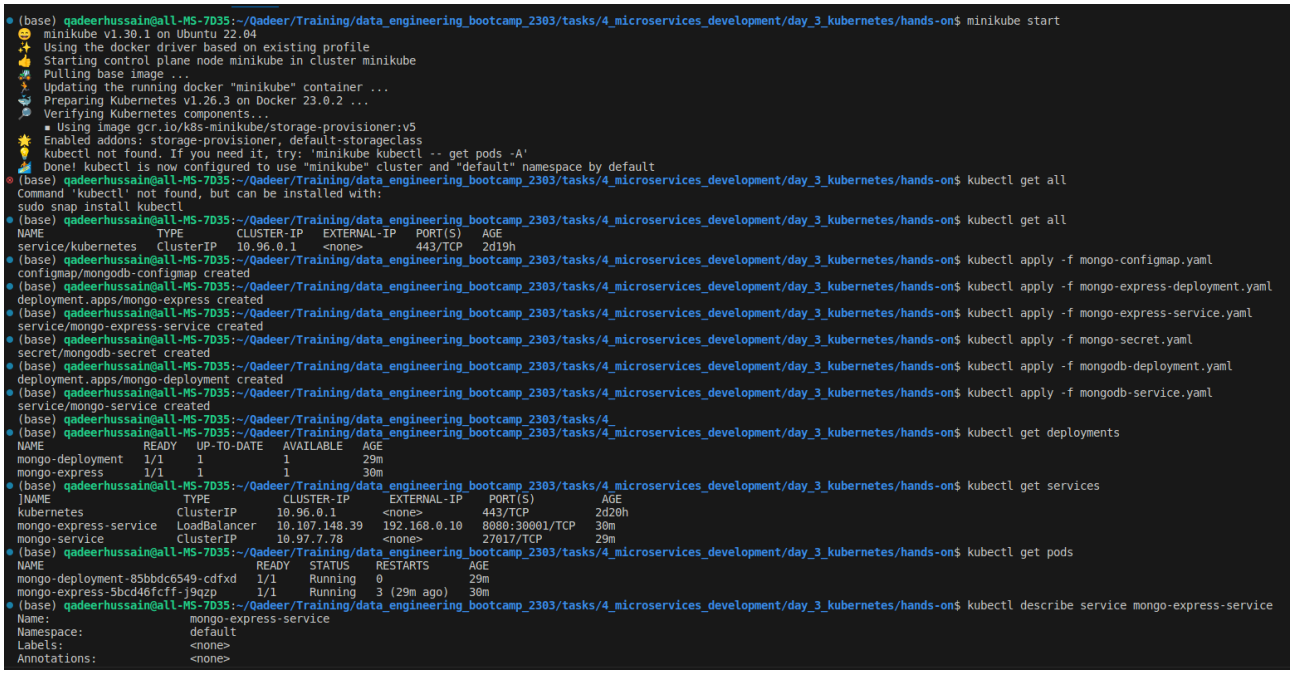
mongo-express-deployment.yaml: This file represents a Kubernetes Deployment, that manages a single replica of a container running the "mongo-express" image. The container listens on port 8081 and has environment variables set using values obtained from a Secret (mongodb-secret) and a ConfigMap (mongodb-configmap). This Deployment can be used to deploy and manage instances of the "mongo-express" application within a Kubernetes cluster.

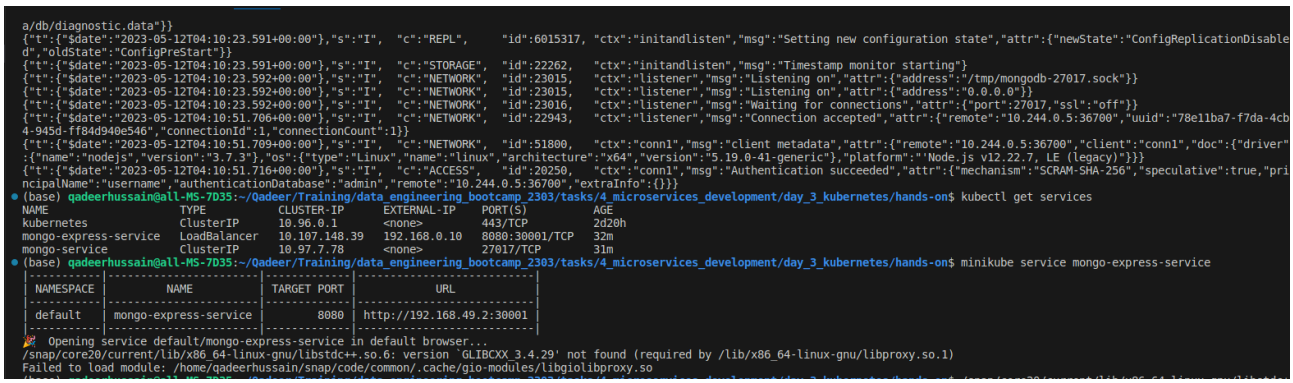
mongo-express-service.yaml: This yaml file represents a Kubernetes Service, that selects pods labeled with "app: mongo-express". The Service is of type LoadBalancer and has an external IP address assigned to it. It listens on port 8080 and forwards incoming traffic to the pods on port 8081. Additionally, the Service is externally accessible on node port 30001. This Service allows external traffic to reach the pods running the "mongo-express" application within the Kubernetes cluster.

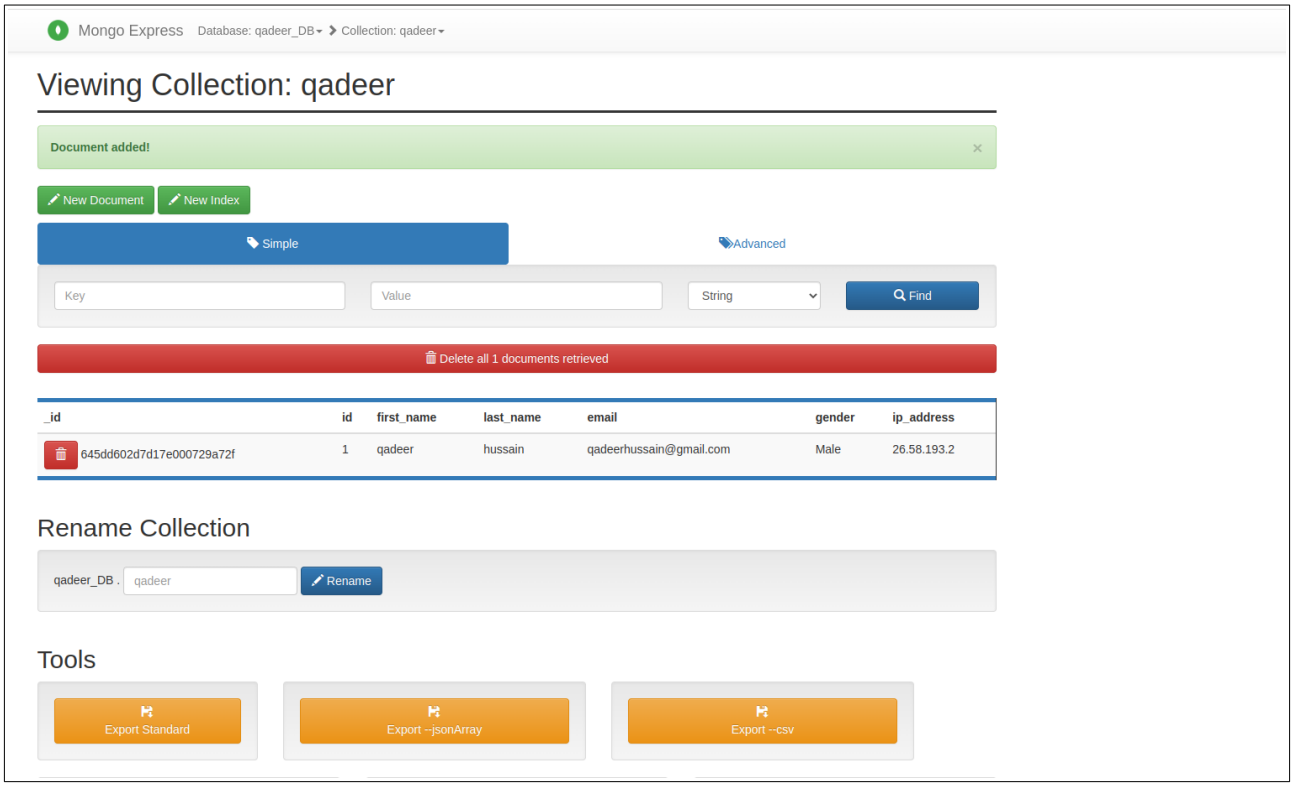
mongo-secret.yaml: This code file is represents a Kubernetes Secret , is that stores two sensitive key-value pairs: "mongo-root-username" with the value "username" and "mongo-root-password" with the value "password". These values are Base64 encoded for storage in the Secret. The Secret can be used to securely provide the MongoDB root username and password to applications or services running in the Kubernetes cluster.

mongodb-deployment.yaml: This yaml code file represents a Kubernetes Deployment ,that manages a single replica of a container running the "mongo" image. The container listens on port 27017, which is the default MongoDB port. Environment variables are set, including the database name, MongoDB root username, and MongoDB root password, with the latter two values obtained from a Secret named "mongodb-secret". This Deployment can be used to deploy and manage instances of the MongoDB database within a Kubernetes cluster.

mongodb-service.yaml: This code represents a Kubernetes Service , that routes incoming TCP traffic on port 27017 to pods labeled with "app: mongodb". This allows external clients or other services within the cluster to communicate with the pods running the MongoDB application using the specified port. The Service provides a stable endpoint for accessing the MongoDB service, abstracting away the dynamic nature of the pods.




a/db/diagnostic.data"}}
{"t":{"$date":"2023-05-12T04:10:23.591+00:00"},"s":"I", "c":"REPL", "id":6015317, "ctx":"initandlisten","msg":"Setting new configuration state","attr":{"newState":"ConfigReplicationDisable
d","oldState":"ConfigPreStart"}}
{"t":{"$date":"2023-05-12T04:10:23.591+00:00"},"s":"I", "c":"STORAGE", "id":22262, "ctx":"initandlisten","msg":"Timestamp monitor starting"}
{"t":{"$date":"2023-05-12T04:10:23.592+00:00"},"s":"I", "c":"NETWORK", "id":23015, "ctx":"listener","msg":"Listening on","attr":{"address":"/tmp/mongodb-27017.sock"}}
{"t":{"$date":"2023-05-12T04:10:23.592+00:00"},"s":"I", "c":"NETWORK", "id":23015, "ctx":"listener","msg":"Listening on","attr":{"address":"0.0.0.0"}}
{"t":{"$date":"2023-05-12T04:10:23.592+00:00"},"s":"I", "c":"NETWORK", "id":23016, "ctx":"listener","msg":"Waiting for connections","attr":{"port":27017,"ssl":"off"}}
{"t":{"$date":"2023-05-12T04:10:51.706+00:00"},"s":"I", "c":"NETWORK", "id":22943, "ctx":"listener","msg":"Connection accepted","attr":{"remote":"10.244.0.5:36700","uuid":"78e11ba7-f7da-4cb
4-945d-ff84d940e546","connectionId":1,"connectionCount":1}}
{"t":{"$date":"2023-05-12T04:10:51.709+00:00"},"s":"I", "c":"NETWORK", "id":51800, "ctx":"conn1","msg":"client metadata","attr":{"remote":"10.244.0.5:36700","client":"conn1","doc":{"driver"
:{"name":"nodejs","version":"3.7.3"},"os":{"type":"Linux","name":"linux","architecture":"x64","version":"5.19.0-41-generic"},"platform":"'Node.js v12.22.7, LE (legacy)"}}}
{"t":{"$date":"2023-05-12T04:10:51.716+00:00"},"s":"I", "c":"ACCESS", "id":20250, "ctx":"conn1","msg":"Authentication succeeded","attr":{"mechanism":"SCRAM-SHA-256","speculative":true,"pri
ncipalName":"username","authenticationDatabase":"admin","remote":"10.244.0.5:36700","extraInfo":{}}}
(base) qadeerhussain@all-MS-7D35:~/Qadeer/Training/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$ kubectl get services
NAME TYPE CLUSTER-IP EXTERNAL-IP PORT(S) AGE
kubernetes ClusterIP 10.96.0.1 <none> 443/TCP 2d20h
mongo-express-service LoadBalancer 10.107.148.39 192.168.0.10 8080:30001/TCP 32m
mongo-service ClusterIP 10.97.7.78 <none> 27017/TCP 31m
(base) qadeerhussain@all-MS-7D35:~/Qadeer/Training/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/qadeerhussain/snap/code/common/.cache/gio-modules/libgiolibproxy.so


Mongo Express
Database: qadeer_DB
Collection: qadeer
Viewing Collection: qadeer
Document added!
New Document
New Index
Simple
Advanced
Key
Value
String
Find
Delete all 1 documents retrieved
_id
id
first_name
last_name
email
gender
ip_address
645dd602d7d17e000729a72f
1
qadeer
hussain
qadeerhussain@gmail.com
Male
26.58.193.2
Rename Collection
qadeer_DB .
qadeer
Rename
Tools
Export Standard
Export --jsonArray
Export --csv


Mongo Express
Database: qadeer_DB
Collection: qadeer
Document 645dd602d7d17e000729a72f
Editing Document: 645dd602d7d17e000729a72f
{
_id: ObjectId('645dd602d7d17e000729a72f'),
id: 1,
first_name: 'qadeer',
last_name: 'hussain',
email: 'qadeerhussain@gmail.com',
gender: 'Male',
ip_address: '26.58.193.2'
}
Back
Save
Delete

```
mongosh: command not found
(base) qadeerhussain@all-MS-7D35:~/Qadeer/Training/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$ kubectl exec -it mongo-deployment-85bbdc6549
-cdfxd -- bash
root@mongo-deployment-85bbdc6549-cdfxd:/# mongosh -u $MONGO_INITDB_ROOT_USERNAME -p $MONGO_INITDB_ROOT_PASSWORD
Current Mongosh Log ID: 645e103f422a44ff137f72a3
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/


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.

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   The server generated these startup warnings when booting
   2023-05-12T04:10:23.306+00:00: Using the XFS filesystem is strongly recommended with the WiredTiger storage engine. See http://dochub.mongodb.org/core/prodnotes-filesystem
   2023-05-12T04:10:23.586+00:00: vm.max_map_count is too low
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   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()
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```

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test> use qadeer_DB
switched to db qadeer_DB
qadeer_DB> show collections
delete_me
qadeer
qadeer_DB> db.qadeer_DB_collection.find().pretty()

qadeer_DB> db.qadeer.find().pretty()
[
  {
    _id: ObjectId("645dd602d7d17e000729a72f"),
    id: 1,
    first_name: 'qadeer',
    last_name: 'hussain',
    email: 'qadeerhussain@gmail.com',
    gender: 'Male',
    ip_address: '26.58.193.2'
  }
]
qadeer_DB>
```