

Graded Assignment 4.3

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1) Running the mongoDB and mongo-express deployment & service files

We first start the secret yaml file and configMap yaml file before starting mongoDB and mongo-express as the secret and configMap are referenced in these files.

```
saadsameerkhan@all-MS-7D35: ~/Documents/Assign... x mongosh mongodb://<credentials>@127.0.0.1:27017/... x saadsameerkhan@all-MS-7D35:~/Documents/Assignments/Unit 4.3$ kubectl apply -f mongo-secret.yaml
secret/mongodb-secret unchanged
(base) saadsameerkhan@all-MS-7D35:~/Documents/Assignments/Unit 4.3$ kubectl apply -f mongodb-deployment.yaml
error: unknown command "mongodb-deployment.yaml" for "kubectl"
(base) saadsameerkhan@all-MS-7D35:~/Documents/Assignments/Unit 4.3$ kubectl apply -f mongodb-deployment.yaml
deployment.apps/mongo-deployment created
(base) saadsameerkhan@all-MS-7D35:~/Documents/Assignments/Unit 4.3$ kubectl apply -f mongodb-service.yaml
service/mongo-service created
(base) saadsameerkhan@all-MS-7D35:~/Documents/Assignments/Unit 4.3$ kubectl apply -f mongo-configmap.yaml
configmap/mongodb-configmap created
(base) saadsameerkhan@all-MS-7D35:~/Documents/Assignments/Unit 4.3$ kubectl apply -f mongo-express-deployment.yaml
deployment.apps/mongo-express created
(base) saadsameerkhan@all-MS-7D35:~/Documents/Assignments/Unit 4.3$ kubectl apply -f mongo-express-service.yaml
service/mongo-express-service created
```

2) Listing all running deployments, pods, containers, etc.

```
(base) saadsameerkhan@all-MS-7D35:~/Documents/Assignments/Unit 4.3$ kubectl get pod
NAME                                READY   STATUS    RESTARTS   AGE
mongo-deployment-85bbdc6549-68k57  1/1     Running   0           18m
mongo-express-5bcd46fcff-bpjxb     1/1     Running   0           17m
(base) saadsameerkhan@all-MS-7D35:~/Documents/Assignments/Unit 4.3$ kubectl get deployment
NAME            READY   UP-TO-DATE   AVAILABLE   AGE
mongo-deployment 1/1     1             1           18m
mongo-express    1/1     1             1           17m
(base) saadsameerkhan@all-MS-7D35:~/Documents/Assignments/Unit 4.3$ kubectl get service
NAME                TYPE        CLUSTER-IP      EXTERNAL-IP   PORT(S)          AGE
kubernetes          ClusterIP   10.96.0.1        <none>        443/TCP          2d22h
mongo-express-service LoadBalancer 10.106.189.165  192.168.0.10  8080:30001/TCP   17m
mongo-service       ClusterIP   10.103.252.234   <none>        27017/TCP        18m
mongodb-service     ClusterIP   10.103.10.25     <none>        8015/TCP         80m
(base) saadsameerkhan@all-MS-7D35:~/Documents/Assignments/Unit 4.3$ kubectl get configmap
NAME              DATA   AGE
kube-root-ca.crt  1       2d22h
mongodb-configmap 1       18m
(base) saadsameerkhan@all-MS-7D35:~/Documents/Assignments/Unit 4.3$ kubectl get secret
NAME            TYPE      DATA   AGE
mongodb-secret  Opaque    2       80m
```

3) Getting detailed information on a mongoDB pod by using describe

```
(base) saadsameerkhan@all-MS-7D35:~/Documents/Assignments/Unit 4.3$ kubectl describe pod mongo-deployment-85bbdc6549-68k57
Name: mongo-deployment-85bbdc6549-68k57
Namespace: default
Priority: 0
Service Account: default
Node: minikube/192.168.49.2
Start Time: Fri, 12 May 2023 11:02:31 +0500
Labels: app=mongodb
        pod-template-hash=85bbdc6549
Annotations: <none>
Status: Running
IP: 10.244.0.6
IPs:
  IP: 10.244.0.6
Controlled By: ReplicaSet/mongo-deployment-85bbdc6549
Containers:
  mongodb:
    Container ID: docker://4c27afec36c5b8a800572187a62b1d46460392cfa6601f92a777d687016ed6d8
    Image: mongo
    Image ID: docker-pullable://mongo@sha256:928347070dc089a596f869a22a4204c0feace3eb03470a6a2de6814f11fb7309
    Port: 27017/TCP
    Host Port: 0/TCP
    State: Running
      Started: Fri, 12 May 2023 11:02:33 +0500
    Ready: True
    Restart Count: 0
    Environment:
      MONGO_INITDB_DATABASE: admin
      MONGO_INITDB_ROOT_USERNAME: <set to the key 'mongo-root-username' in secret 'mongodb-secret'> Optional: false
      MONGO_INITDB_ROOT_PASSWORD: <set to the key 'mongo-root-password' in secret 'mongodb-secret'> Optional: false
    Mounts:
      /var/run/secrets/kubernetes.io/serviceaccount from kube-api-access-7xbjr (ro)
Conditions:
  Type              Status
  Initialized        True
  Ready              True
  ContainersReady    True
  PodScheduled       True
Volumes:
  kube-api-access-7xbjr:
    Type: Projected (a volume that contains injected data from multiple sources)
    TokenExpirationSeconds: 3607
    ConfigMapName: kube-root-ca.crt
    ConfigMapOptional: <nil>
    DownwardAPI: true
  QoS Class: BestEffort
  Node-Selectors: <none>
```

4) Getting logs for the mongoDB pod

Logs can be viewed for troubleshooting and solving problems.

```
mongo-express 1/1 1 4/s
(base) saadsameerkhan@all-MS-7D35:~/Documents/Assignments/Unit 4.3$ kubectl logs mongo-deployment-85bbdc6549-68k57
about to fork child process, waiting until server is ready for connections.
forked process: 28

{"t":{"$date":"2023-05-12T06:02:33.679+00:00"},"s":"I", "c":"CONTROL", "id":20698, "ctx":"-", "msg":"***** SERVER RESTARTED *****"}
{"t":{"$date":"2023-05-12T06:02:33.681+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":{"$date":"2023-05-12T06:02:33.681+00:00"},"s":"I", "c":"NETWORK", "id":4915701, "ctx":"main", "msg":"Initialized wire specification", "attr":{"spec":{"incomingExternalClient":{"minWireVersion":0,"maxWireVersion":17},"incomingInternalClient":{"minWireVersion":0,"maxWireVersion":17},"outgoing":{"minWireVersion":6,"maxWireVersion":17},"isInternalClient":true}}}
{"t":{"$date":"2023-05-12T06:02:33.681+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":{"$date":"2023-05-12T06:02:33.682+00:00"},"s":"I", "c":"REPL", "id":5123008, "ctx":"main", "msg":"Successfully registered PrimaryOnlyService", "attr":{"
service":"TenantMigrationDonorService", "namespace":"config.tenantMigrationDonors"}}
{"t":{"$date":"2023-05-12T06:02:33.682+00:00"},"s":"I", "c":"REPL", "id":5123008, "ctx":"main", "msg":"Successfully registered PrimaryOnlyService", "attr":{"
service":"TenantMigrationRecipientService", "namespace":"config.tenantMigrationRecipients"}}
{"t":{"$date":"2023-05-12T06:02:33.682+00:00"},"s":"I", "c":"REPL", "id":5123008, "ctx":"main", "msg":"Successfully registered PrimaryOnlyService", "attr":{"
service":"ShardSplitDonorService", "namespace":"config.tenantSplitDonors"}}
{"t":{"$date":"2023-05-12T06:02:33.683+00:00"},"s":"I", "c":"CONTROL", "id":5945603, "ctx":"main", "msg":"Multi threading initialized"}
{"t":{"$date":"2023-05-12T06:02:33.683+00:00"},"s":"I", "c":"CONTROL", "id":4615611, "ctx":"initandlisten", "msg":"MongoDB starting", "attr":{"pid":28, "port":27
017, "dbPath":"/data/db", "architecture":"64-bit", "host":"mongo-deployment-85bbdc6549-68k57"}}
{"t":{"$date":"2023-05-12T06:02:33.683+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":"2023-05-12T06:02:33.683+00:00"},"s":"I", "c":"CONTROL", "id":51765, "ctx":"initandlisten", "msg":"Operating System", "attr":{"os":{"name":"Ubuntu
22.04 LTS", "type":"linux", "platform":"x86_64", "user":"root", "documentedKernelVersion":"5.15.0-56-generic", "kernel":"5.15.0-56-generic", "platformVersion":"22.04 LTS"
}}}
```

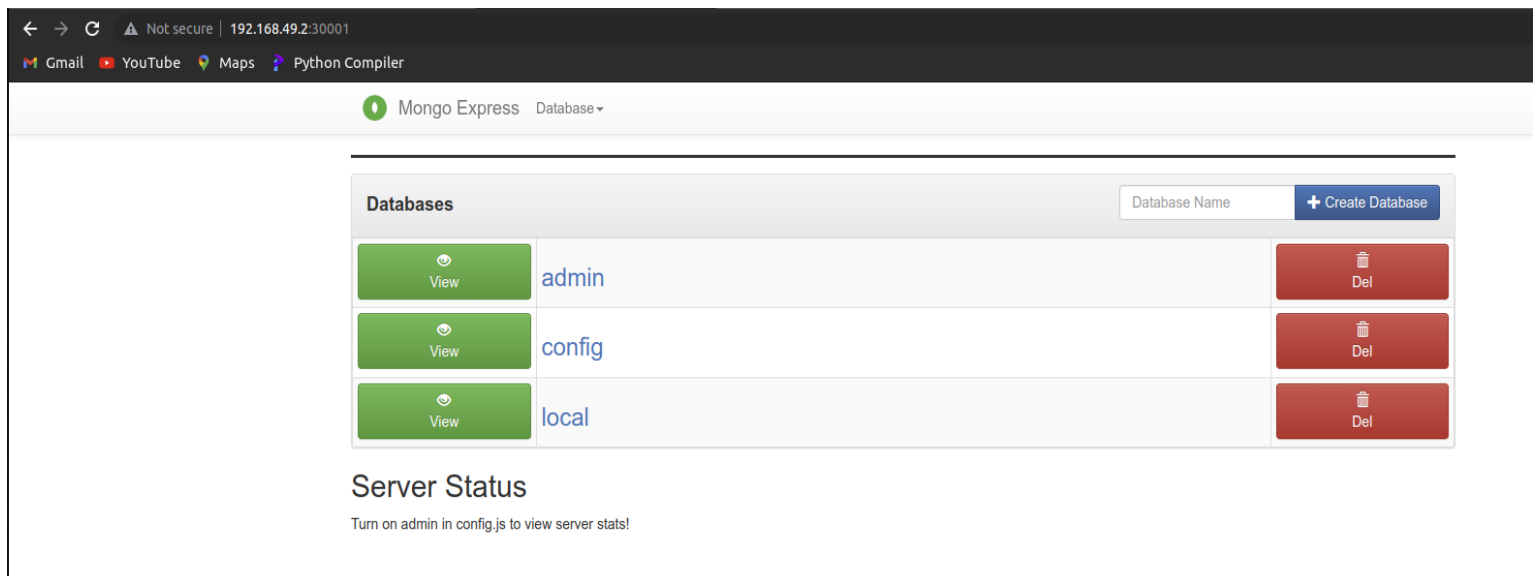
5) Opening Mongo Express on browser

Now, we have to open Mongo Express on browser.

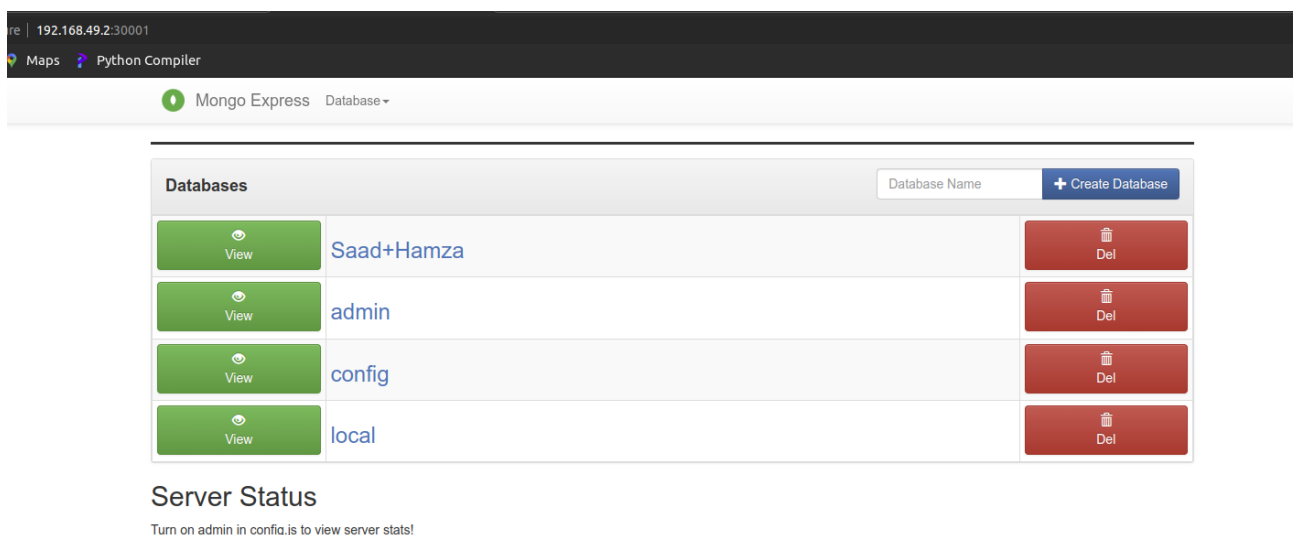
- To do that, first we open mongo-express' service:

```
(base) saadsameerkhan@all-MS-7D35:~/Documents/Assignments/Unit 4.3$ 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...
(base) saadsameerkhan@all-MS-7D35:~/Documents/Assignments/Unit 4.3$ Opening in existing browser session.
```

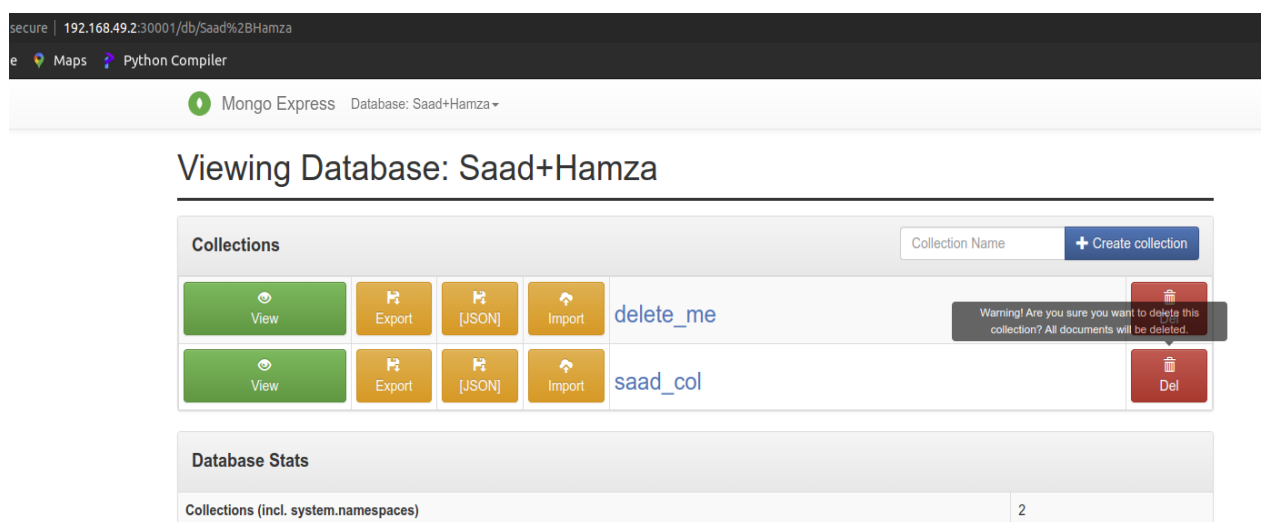
- This will open Mongo Express on our browser at nodeport 30001, as was defined in the mongo-express service file:



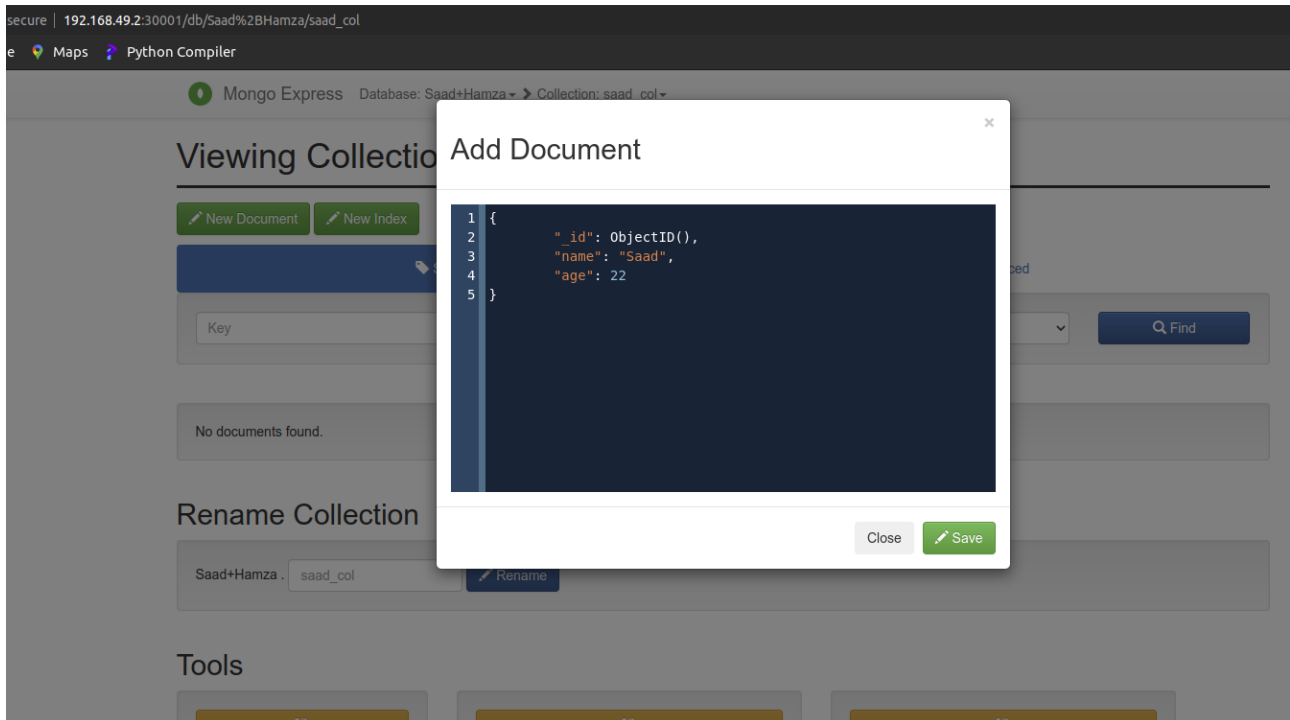
- Now we create a new database with the name 'Saad+Hamza'



- Inside the database, we create a new collection named 'saad_col'



- Now we create a new document inside this collection:



6) Verifying changes

Now, we want to see whether the changes we made in mongo-express took place inside mongoDB.

- To do that, we get into the interactive terminal of the pod of mongoDB. After which we log into mongosh with the username and password we declared in the secret file.

```
saadsameerkhan@all-MS-7D35: ~/Documents/Assignment... x saadsameerkhan@all-MS-7D35: ~/Documents/Assignment... x saadsameerkhan@all-MS-7D35: ~/Documents/
(base) saadsameerkhan@all-MS-7D35:~/Documents/Assignments/Unit 4.3$ kubectl get pod
NAME                                READY   STATUS    RESTARTS   AGE
mongo-deployment-85bbdc6549-68k57   1/1     Running   0           5h24m
mongo-express-5bcd46fcff-bpjxb      1/1     Running   0           5h23m
(base) saadsameerkhan@all-MS-7D35:~/Documents/Assignments/Unit 4.3$ kubectl exec -it mongo-deployment-85bbdc6549-68k57 -- bin/bash
root@mongo-deployment-85bbdc6549-68k57:/# mongosh -u $MONGO_INITDB_ROOT_USERNAME -p $MONGO_INITDB_ROOT_PASSWORD
Current Mongosh Log ID: 645e22f990e192de42426291
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
2023-05-12T06:02:37.023+00:00: Using the XFS filesystem is strongly recommended with the WiredTiger storage engine. See http://dochub.mon
tes-filesystem
2023-05-12T06:02:37.323+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
```

- Now we get into our database 'Saad+Hamza'. And then we list all the collections. And finally view the document inside 'saad_col' collection. We then see that our newly document is there.

```
To enable free monitoring, run the following command: db.enableFreeMonitoring()
-----
test> show dbs
Saad+Hamza  48.00 KiB
admin       100.00 KiB
config      108.00 KiB
local       72.00 KiB
test> use Saad+Hamza
switched to db Saad+Hamza
Saad+Hamza> db.getCollectionNames()
[ 'delete_me', 'saad_col' ]
Saad+Hamza> db.saad_col.find({})
[
  { _id: ObjectId("645de11fb0f1d21ca959f3cc"), name: 'Saad', age: 22 }
]
(base) saadsameerkhan@all-MS-7D35:~/Documents/Assignments/Unit 4.3$
```