

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>
```

Logs can be viewed for troubleshooting and solving problems.

```

S      1/1      1      1      4/5
amer/khan@11-MS-7035:~/Documents/Assignments/Unit 4 3$ kubectl logs mongo-deployment-85bhd6549-68

```

```

mongo-express 1/1      1      4/5
(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":{"$date":"2023-05-12T06:02:33.681+00:00"},"s":"I",  "c":"NETWORK",  "id":4915701, "ctx":"main", "msg":"Initialized wire specification", "attr":{"spec":{"incomingExternalClient":{"minWireVersion":0,"maxWireVersion":17},"incomingInternalClient":{"minWireVersion":0,"maxWireVersion":17},"isInternalClient":true}}}
{"t":{"$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":{"$date":"2023-05-12T06:02:33.683+00:00"},"s":"I",  "c":"CONTROL",  "id":4615611, "ctx":"initandlisten", "msg":"MongoDB starting", "attr":{"pid":28,"port":27017,"dbPath":"/data/db","architecture":"64-bit","host":"mongo-deployment-85bbdc6549-68k57"}}
{"t":{"$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

```


5) Opening Mongo Express on browser

Now, we have to open Mongo Express on browser.

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

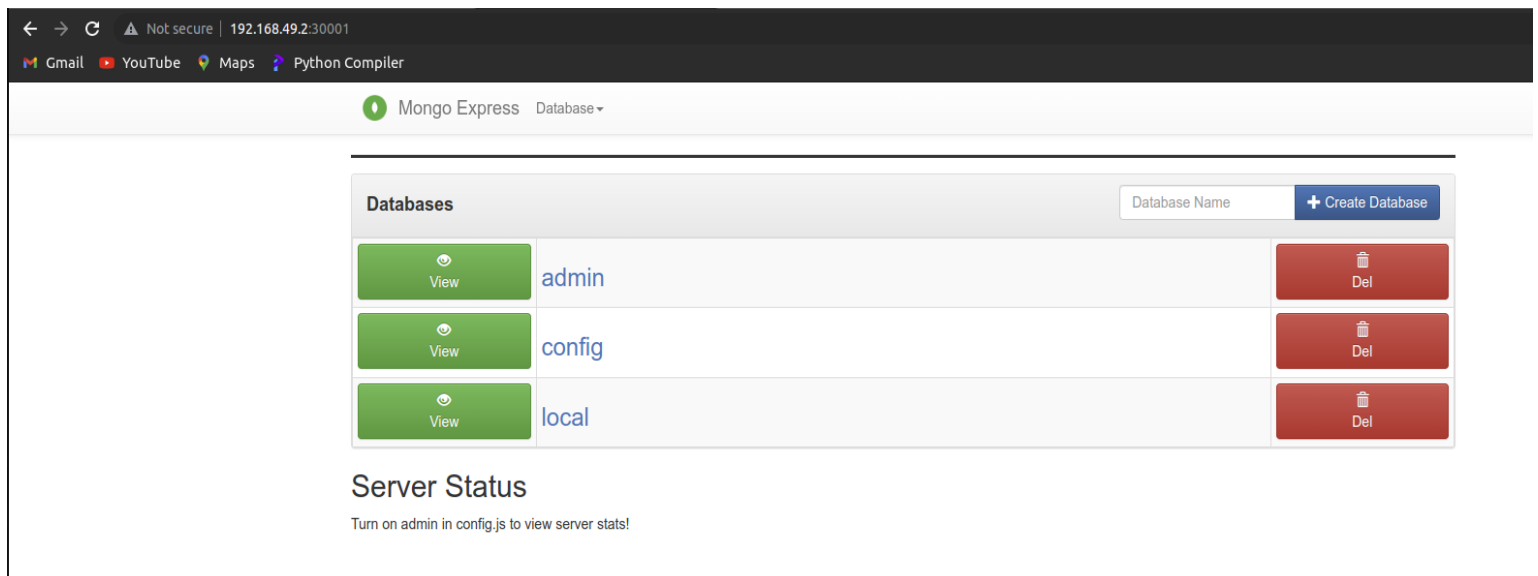
```
(base) saadsameerkhan@all-MS-7D35:~/Documents/Assignments/Unit 4.3$ minikube service mongo-express-service
```

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

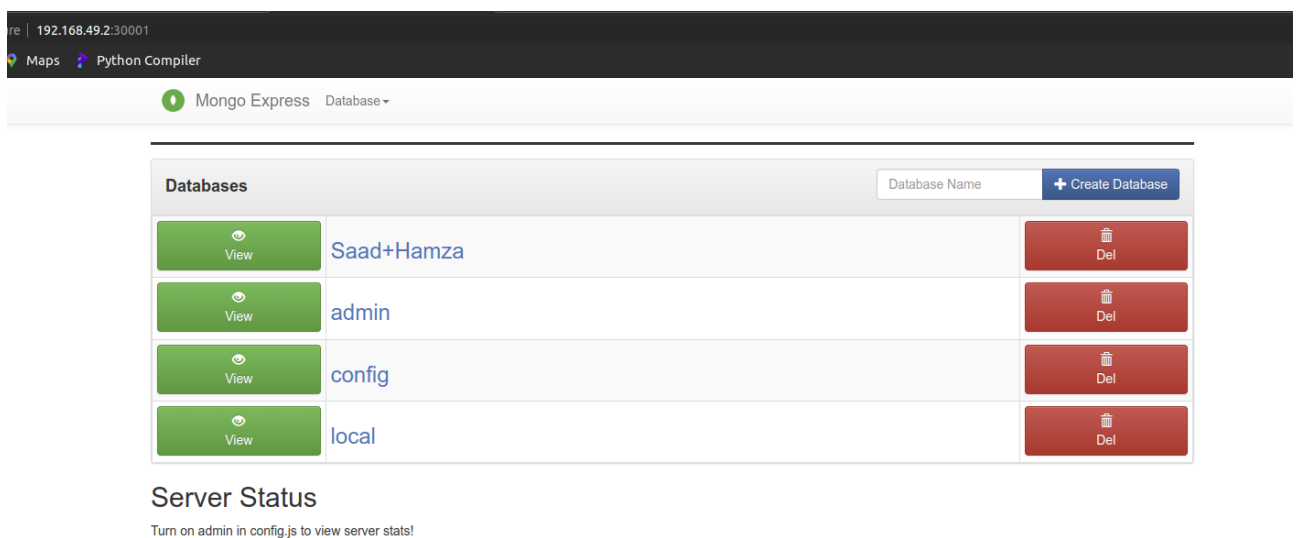
 Opening service default/mongo-express-service in default browser...

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

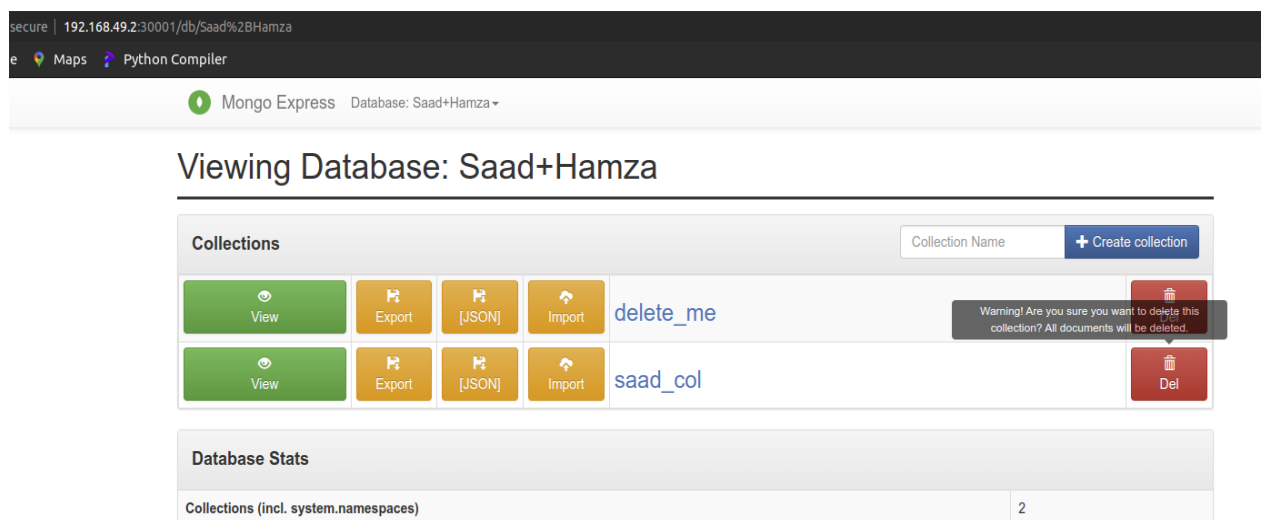
- This will open Mongo Express on our browser at nodeport 30001, as was defined in the mongo-express service file:



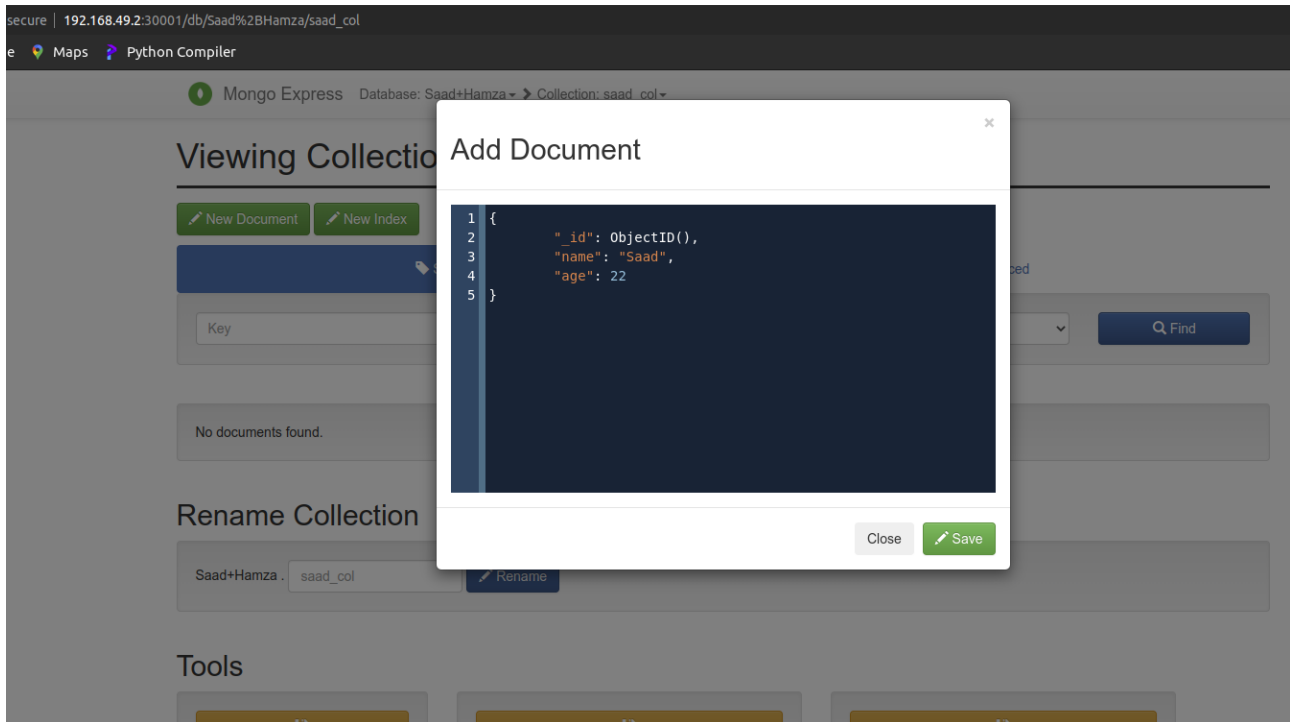
- Now we create a new database with the name 'Saad+Hamza'



- 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/Assignment...
(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/mongosh-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.mongodb.org/core/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()  
-----  
To permanently disable this reminder, run the following command: db.disableFreeMonitoring()  
-----  
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$
```