Peer Assignment
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Assignment (4.3)

Daily Assignment

loop

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*.

Solution

Minikube start command is used to launch a single node Kubernetes cluster locally in our machine for development and testing purposes.

```
muhammadhumza@all-Latitude-3490:~/Desktop/DEG COURSE/data_engineering_bootcamp_2303/tasks/4_microservices_developm
ent/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: default-storageclass, storage-provisioner
🏄  Done! kubectl is now configured to use "minikube" cluster and "default" namespace by default
```

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Here we created yaml files.

```
muhammadhumza@all-Latitude-3490:~/Desktop/DEG COURSE/data_engineering_bootcamp_2333033030303033303303/303333333303/
tasks/4_microservices_development/day_3_kubernetes/hands-on$ kubectl apply -f mongo-configmap.yaml
configmap/mongodb-configmap created
muhammadhumza@all-Latitude-3490:~/Desktop/DEG COURSE/data_engineering_bootcamp_2303/tasks/4_microservices_developm
ent/day_3_kubernetes/hands-on$ kubectl apply -f mongodb-deployment.yaml
deployment.apps/mongo-deployment created
muhammadhumza@all-Latitude-3490:~/Desktop/DEG COURSE/data_engineering_bootcamp_2303/tasks/4_microservices_developm
ent/day_3_kubernetes/hands-on$ kubectl apply -f mongodb-service.yaml
service/mongo-service created
muhammadhumza@all-Latitude-3490:~/Desktop/DEG COURSE/data_engineering_bootcamp_2303/tasks/4_microservices_developm
ent/day_3_kubernetes/hands-on$ kubectl apply -f mongo-express-deployment.yaml
deployment.apps/mongo-express created
muhammadhumza@all-Latitude-3490:~/Desktop/DEG COURSE/data_engineering_bootcamp_2303/tasks/4_microservices_developm
ent/day_3_kubernetes/hands-on$ kubectl apply -f mongo-express-service.yaml
service/mongo-express-service created
muhammadhumza@all-Latitude-3490:~/Desktop/DEG COURSE/data_engineering_bootcamp_2303/tasks/4_microservices_developm
ent/day_3_kubernetes/hands-on$ kubectl apply -f mongo-secret.yaml
secret/mongodb-secret created
muhammadhumza@all-Latitude-3490:~/Desktop/DEG COURSE/data_engineering_bootcamp_2303/tasks/4_microservices_developm
```

Kubectl get pods is used to restore information about the running pods in a kubernetes clusters.

Kubectl get deployments is used to object and manage the life cycle of replica sets and pods.

Kubectl get services is used to provide a stable network endpoint for access set of pods.

Kubectl get configmaps is used to store configuration data in key pairs.

```
muhammadhumza@all-Latitude-3490:~/Desktop/DEG COURSE/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$
 kubectl get pods
NAME                                READY   STATUS    RESTARTS        AGE
mongo-deployment-85bbdc6549-clvq2   1/1     Running   2 (5m ago)      2d
mongo-express-5bcd46fcff-mvq4r      1/1     Running   7 (4m29s ago)   2d
muhammadhumza@all-Latitude-3490:~/Desktop/DEG COURSE/data_engineering_bootcamp_2330333333333303/tasks/4_microservices_development/day_3_kubernet
es/hands-on$ kubectl get deployments
NAME              READY   UP-TO-DATE   AVAILABLE   AGE
mongo-deployment  1/1     1            1           2d
mongo-express     1/1     1            1           2d
muhammadhumza@all-Latitude-3490:~/Desktop/DEG COURSE/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$
 kubectl get servers
error: the server doesn't have a resource type "servers"
muhammadhumza@all-Latitude-3490:~/Desktop/DEG COURSE/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          2d18h
mongo-express-service   LoadBalancer   10.98.58.255     192.168.0.10   8080:30001/TCP   2d
mongo-service           ClusterIP      10.102.157.235   <none>         27017/TCP        2d
muhammadhumza@all-Latitude-3490:~/Desktop/DEG COURSE/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$
 kubectl get configmaps
NAME               DATA   AGE
kube-root-ca.crt   1      2d18h
mongodb-configmap  1      2d
 kubernetes              ClusterIP      10.96.0.1        <none>         443/TCP          2d18h
 mongo-express-service   LoadBalancer   10.98.58.255     192.168.0.10   8080:30001/TCP   2d
 mongo-service           ClusterIP      10.102.157.235   <none>         27017/TCP        2d
 muhammadhumza@all-Latitude-3490:~/Desktop/DEG COURSE/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands-on$
  kubectl get configmaps
 NAME               DATA   AGE
 kube-root-ca.crt   1      2d18h
 mongodb-configmap  1      2d
```

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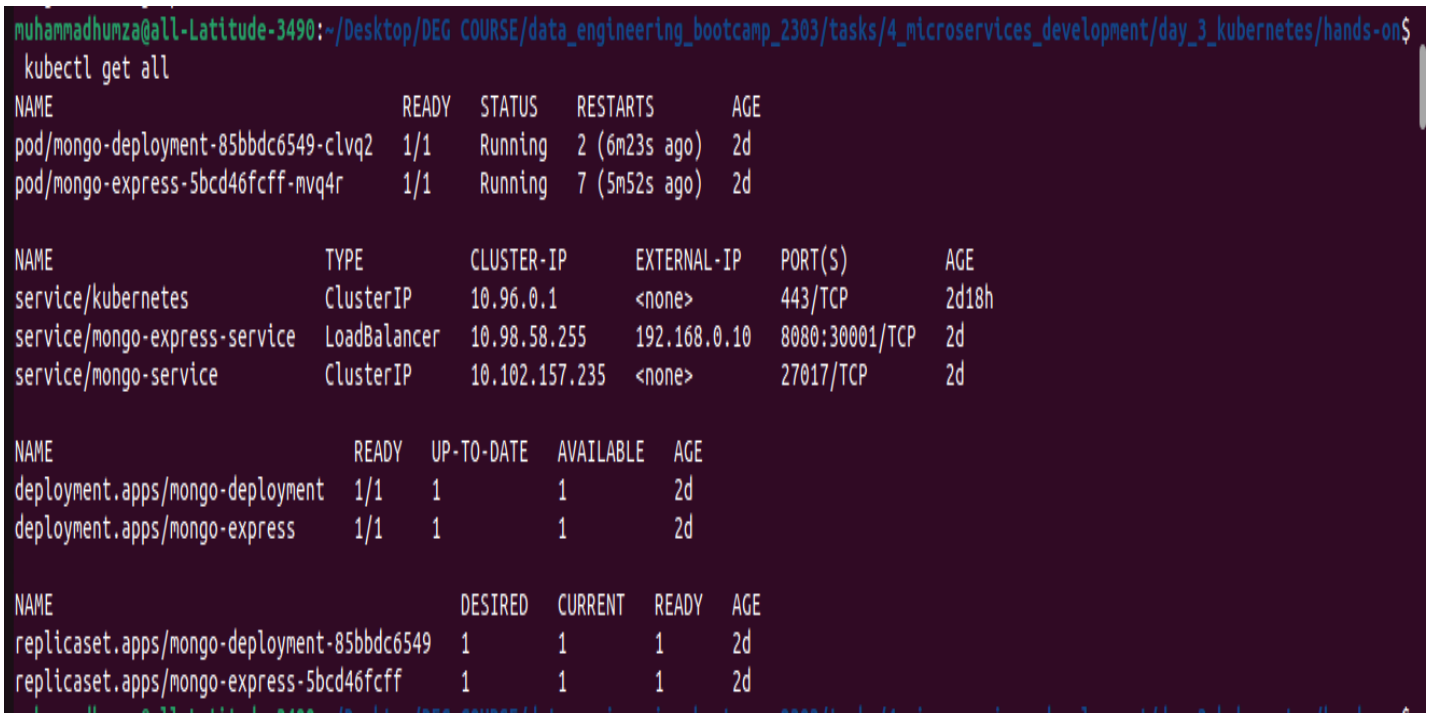
Kubectl get all is used to restore information about many kubernetes like Pods,Services,Deployment and Confirmaps and many more.



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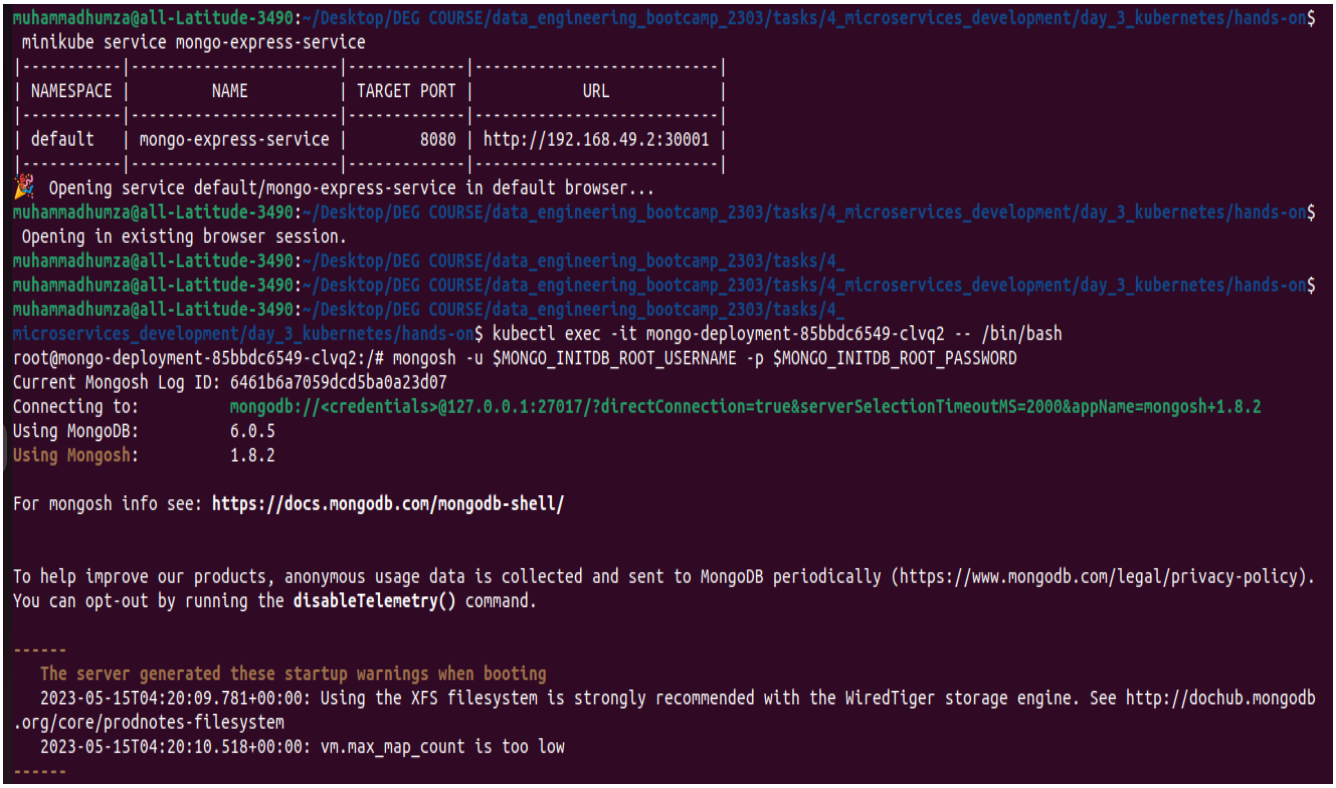
Minikube Service Mongo-Express-Service: minikube is a tool that create a way to access the web application. Minikube setup a special route to the mongo express web application.when we run this command it will open the browser.



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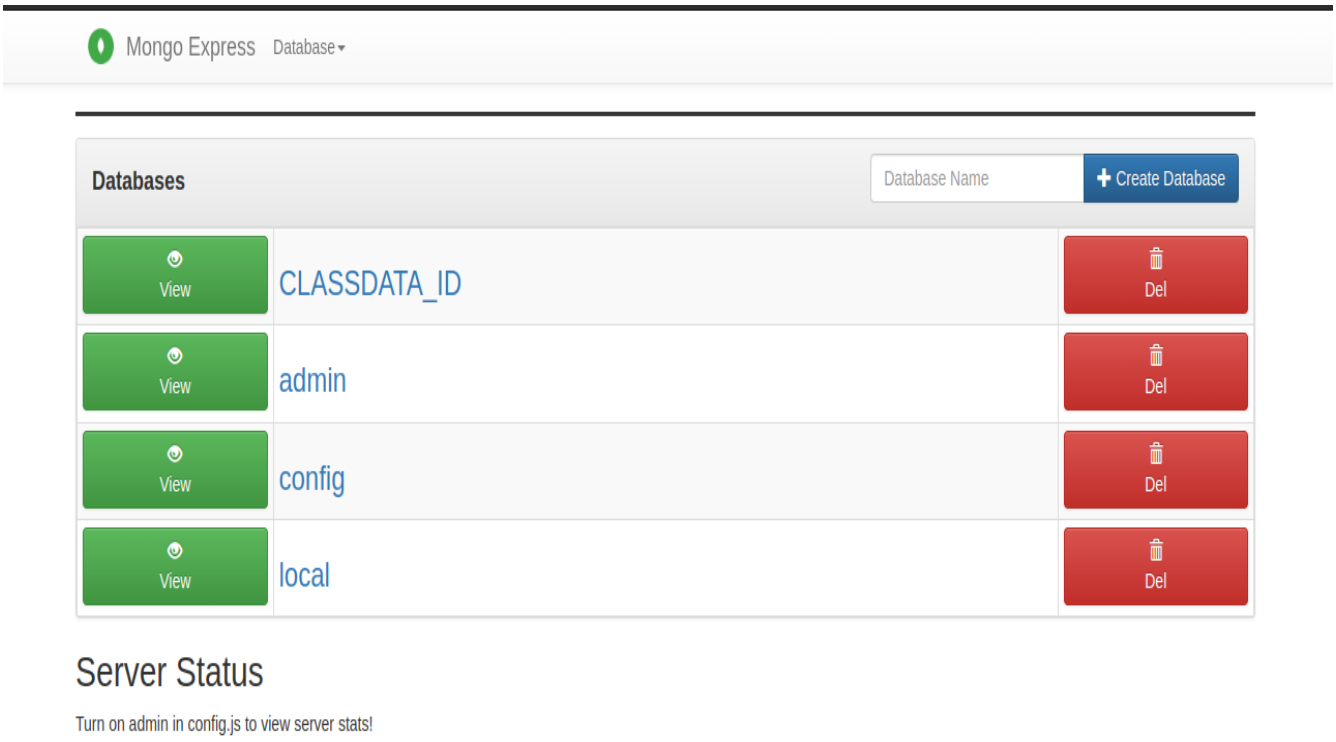
Here we created Database Name CLASSDATA_ID:



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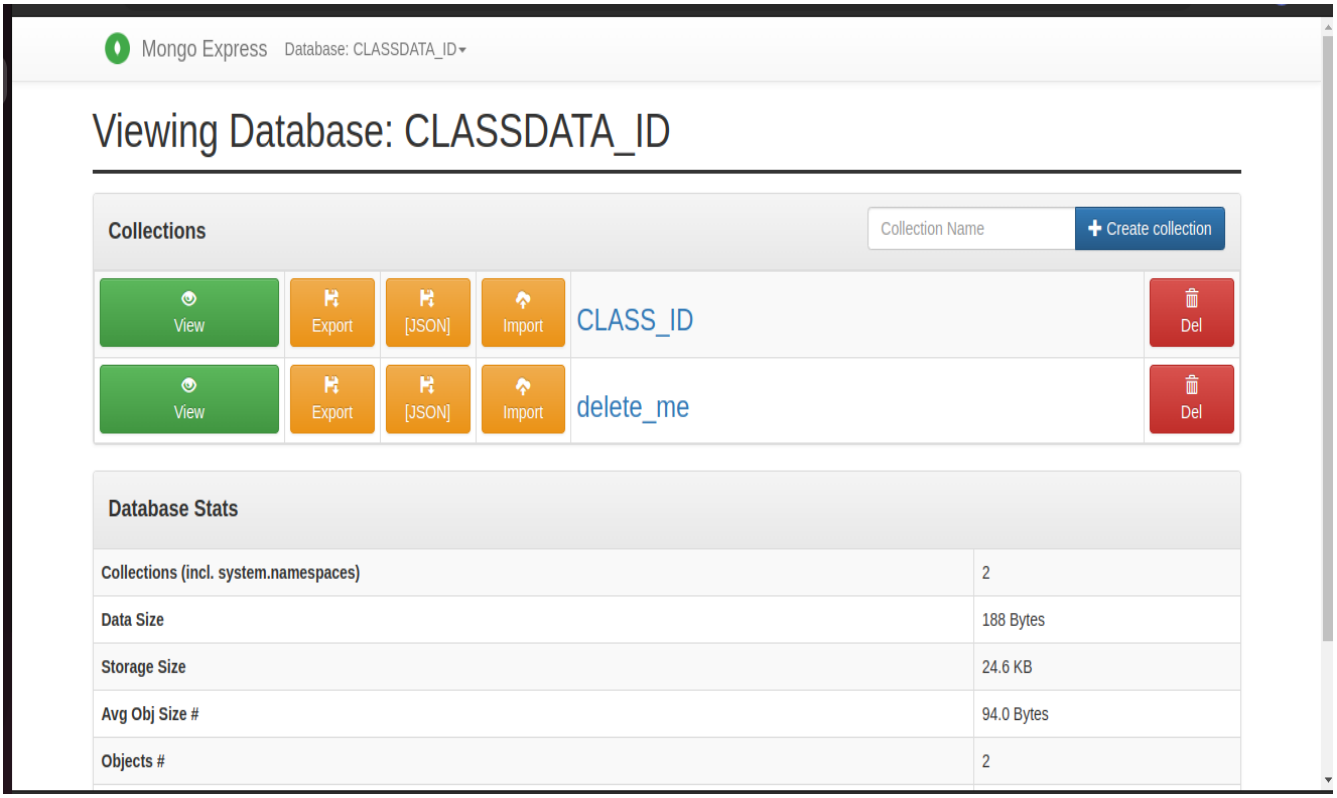
Here we created Collection Name CLASS_ID:



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Add Document

```
[
    {
        "_id":1,
        "Name":"Humza",
        "Qualification":"Graduation",
        "University":"Iqra University"
    },
    {
        "_id":2,
        "Name":"Sabih",
        "Qualification":"Graduation",
        "University":"Sir Syed University"
    }
]
```

We added **JSON** code over Mongo Db.

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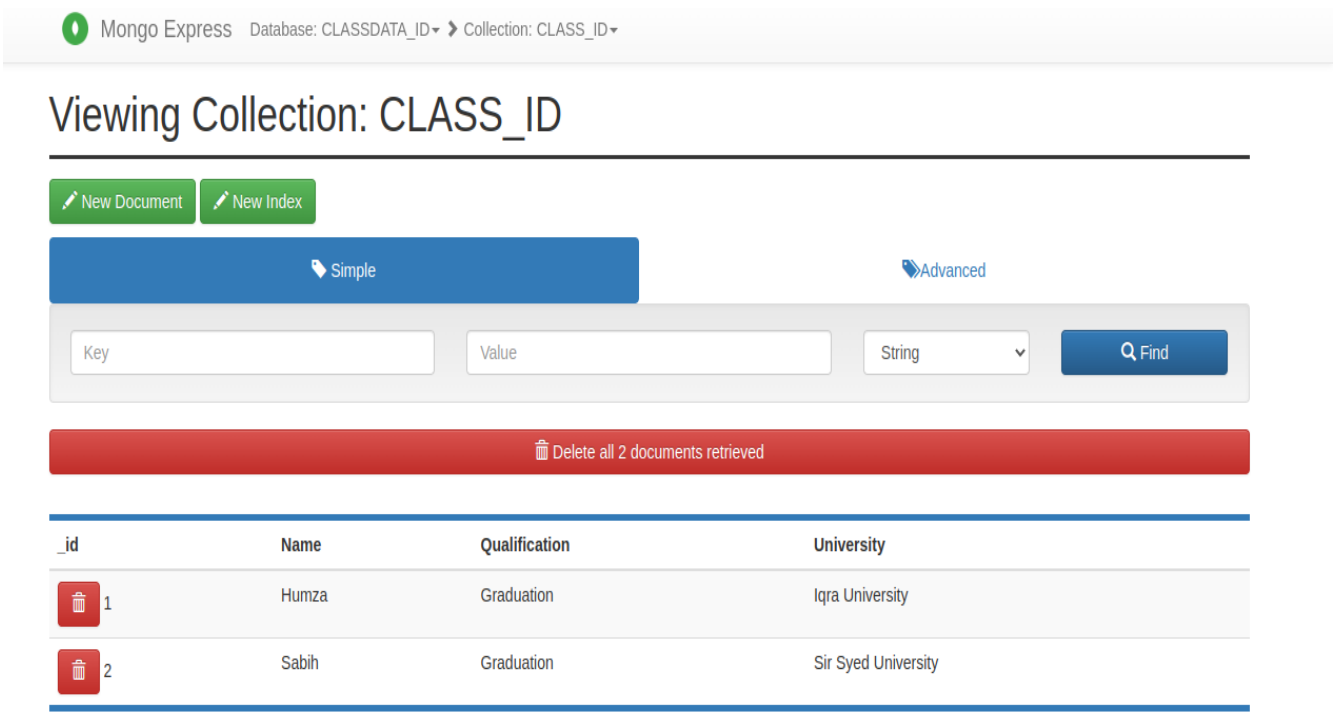
0



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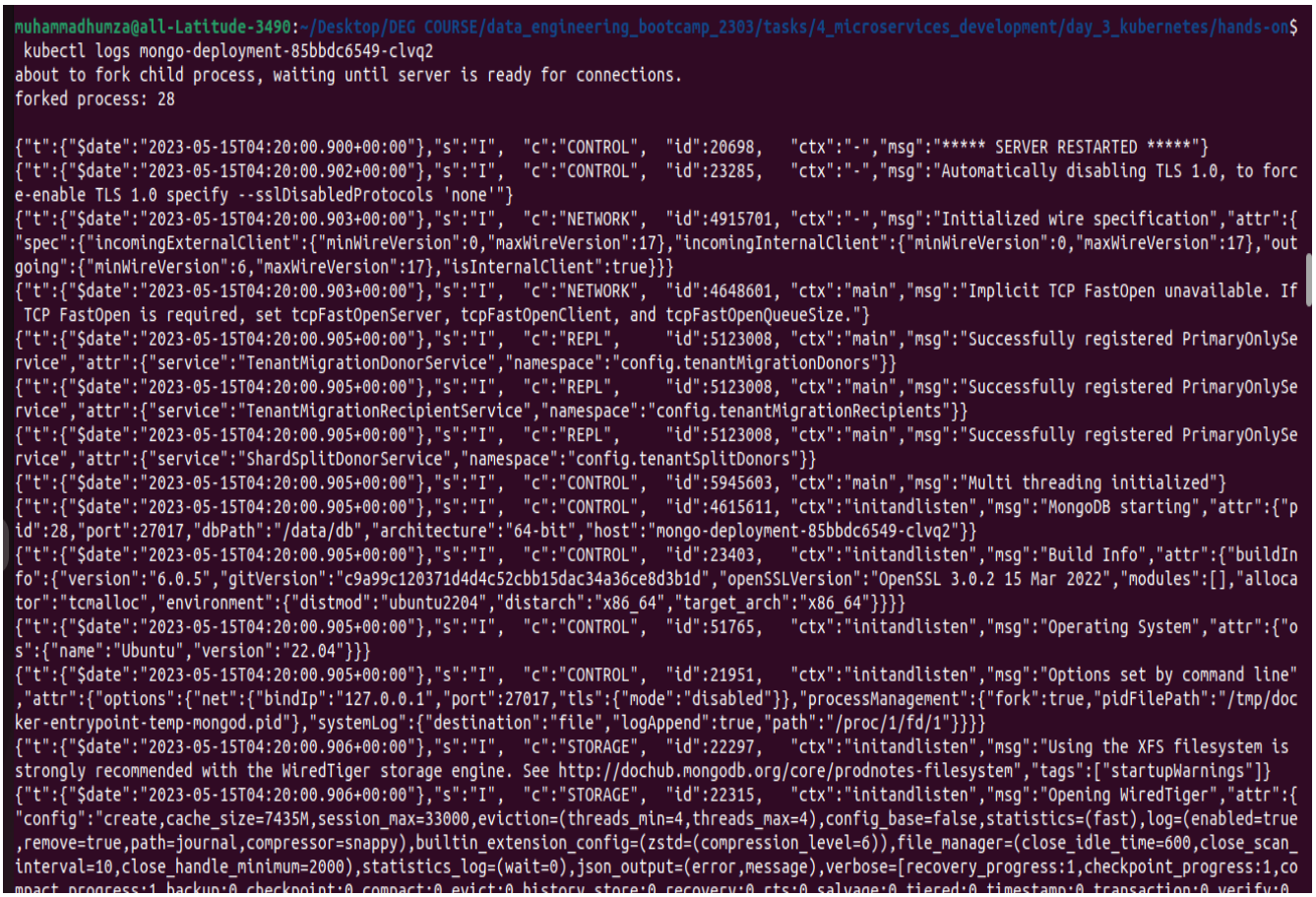

Kubectl log command is used to view the logs of specific pods of kubernetes .

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Firstly we used Mongosh command and MongoDb allow to interact with MongoDb database and perform various database .
Here we added Database and Collection those we created .

```
test> use CLASSDATA_ID
switched to db CLASSDATA_ID
CLASSDATA_ID> db.CLASS_ID.find()
[
  {
    _id: 1,
    Name: 'Humza',
    Qualification: 'Graduation',
    University: 'Iqra University'
  },
  {
    _id: 2,
    Name: 'Sabih',
    Qualification: 'Graduation',
    University: 'Sir Syed University'
  }
]
CLASSDATA_ID> db.CLASS_ID.find({ "_id": 1 })
[
  {
    _id: 1,
    Name: 'Humza',
    Qualification: 'Graduation',
    University: 'Iqra University'
  }
]
CLASSDATA_ID> db.CLASS_ID.find({ "_id": 2 })
[
  {
    _id: 2,
    Name: 'Sabih',
    Qualification: 'Graduation',
    University: 'Sir Syed University'
  }
]
CLASSDATA_ID>
(To exit, press Ctrl+C again or Ctrl+D or type .exit)
CLASSDATA ID>
```

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This command provide detail information about specific pod name.

```
muhammadhumza@all-Latitude-3490:~/Desktop/DEG COURSE/data_engineering_bootcamp_2303/tasks/4_microservices_development/day_3_kubernetes/hands
 kubectl describe pod mongo-deployment-
Name:             mongo-deployment-85bbdc6549-clvq2
Namespace:        default
Priority:         0
Service Account:  default
Node:             minikube/192.168.49.2
Start Time:       Sat, 13 May 2023 08:49:45 +0500
Labels:           app=mongodb
                  pod-template-hash=85bbdc6549
Annotations:      <none>
Status:           Running
IP:               10.244.0.13
IPs:
  IP:           10.244.0.13
Controlled By:  ReplicaSet/mongo-deployment-85bbdc6549
Containers:
  mongodb:
    Container ID:   docker://47c96f8ce48d0f1598940533756ca4f5d60c85e5cc3196b0429c2adfb3570e47
    Image:          mongo
    Image ID:       docker-pullable://mongo@sha256:928347070dc089a596f869a22a4204c0feace3eb03470a6a2de6814f11fb7309
    Port:           27017/TCP
    Host Port:      0/TCP
    State:          Running
      Started:      Mon, 15 May 2023 09:20:00 +0500
    Last State:     Terminated
      Reason:       Completed
      Exit Code:    0
      Started:      Sun, 14 May 2023 15:53:27 +0500
      Finished:     Mon, 15 May 2023 09:19:31 +0500
    Ready:          True
    Restart Count:  2
    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-vkgmm (ro)
```