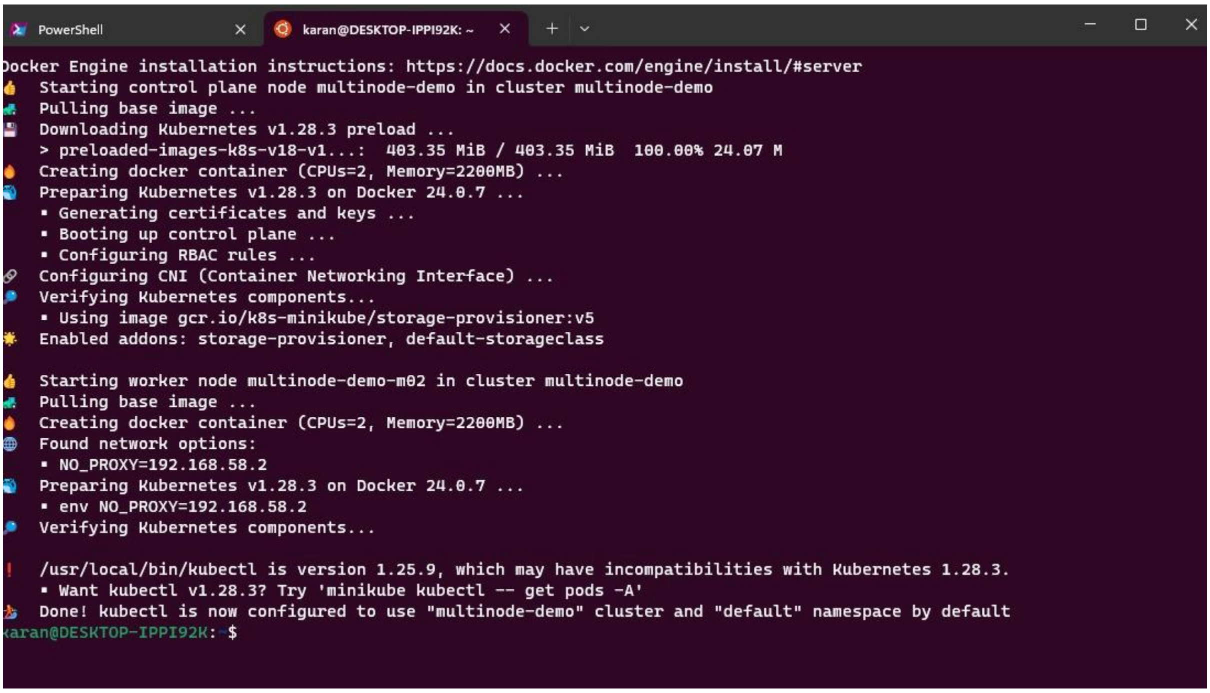
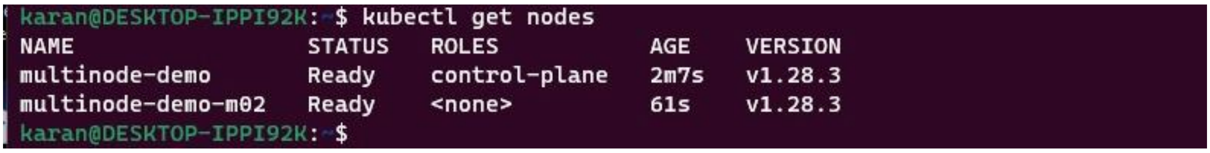
KARAN YASHWANT KALBHOR
STUDENT ID- 101494204

minikube start --nodes 2 -p multinode-demo



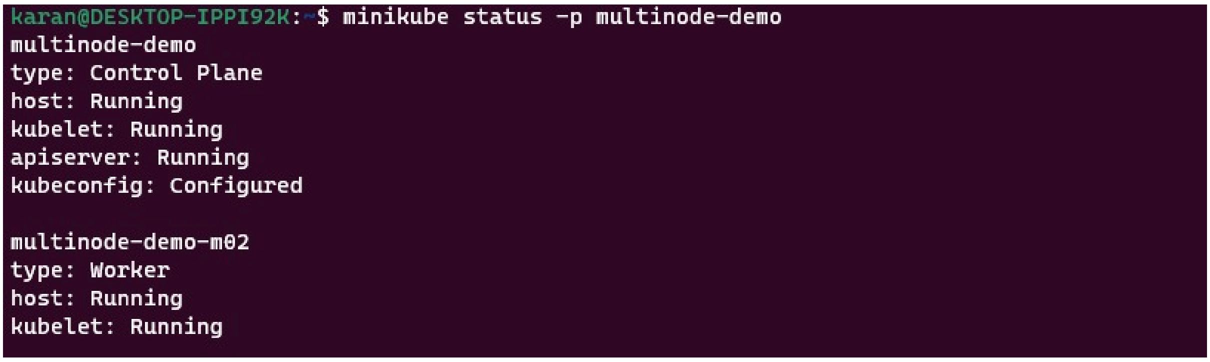
```
Docker Engine installation instructions: https://docs.docker.com/engine/install/#server
👍  Starting control plane node multinode-demo in cluster multinode-demo
🚜  Pulling base image ...
💾  Downloading Kubernetes v1.28.3 preload ...
    > preloaded-images-k8s-v18-v1...:  403.35 MiB / 403.35 MiB  100.00% 24.07 M
🔥  Creating docker container (CPUs=2, Memory=2200MB) ...
🐳  Preparing Kubernetes v1.28.3 on Docker 24.0.7 ...
    ▪ Generating certificates and keys ...
    ▪ Booting up control plane ...
    ▪ Configuring RBAC rules ...
🔗  Configuring CNI (Container Networking Interface) ...
🔎  Verifying Kubernetes components...
    ▪ Using image gcr.io/k8s-minikube/storage-provisioner:v5
🌟  Enabled addons: storage-provisioner, default-storageclass

👍  Starting worker node multinode-demo-m02 in cluster multinode-demo
🚜  Pulling base image ...
🔥  Creating docker container (CPUs=2, Memory=2200MB) ...
🌐  Found network options:
    ▪ NO_PROXY=192.168.58.2
🐳  Preparing Kubernetes v1.28.3 on Docker 24.0.7 ...
    ▪ env NO_PROXY=192.168.58.2
🔎  Verifying Kubernetes components...

❗  /usr/local/bin/kubectl is version 1.25.9, which may have incompatibilities with Kubernetes 1.28.3.
    ▪ Want kubectl v1.28.3? Try 'minikube kubectl -- get pods -A'
🏄  Done! kubectl is now configured to use "multinode-demo" cluster and "default" namespace by default
karan@DESKTOP-IPPI92K:~$
```

kubectl get nodes



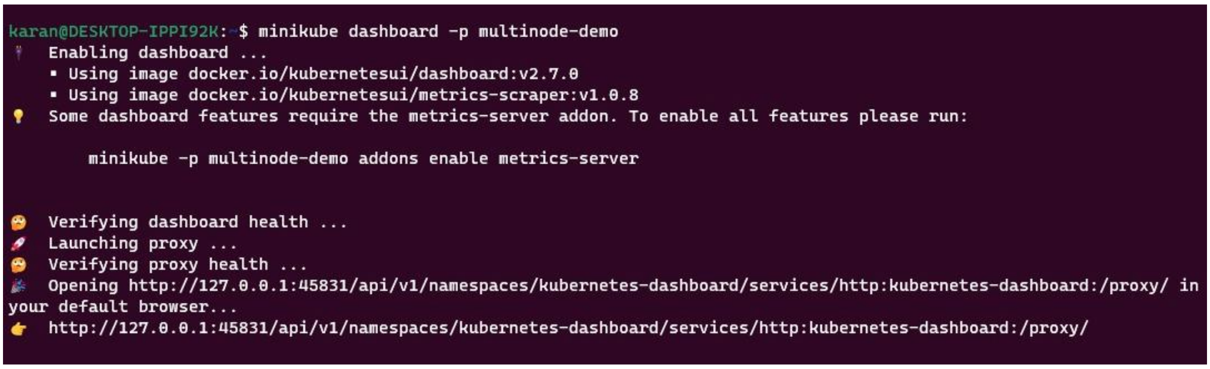
```
karan@DESKTOP-IPPI92K:~$ kubectl get nodes
NAME                 STATUS   ROLES           AGE    VERSION
multinode-demo       Ready    control-plane   2m7s   v1.28.3
multinode-demo-m02   Ready    <none>          61s    v1.28.3
karan@DESKTOP-IPPI92K:~$
```

minikube status -p multinode-demo

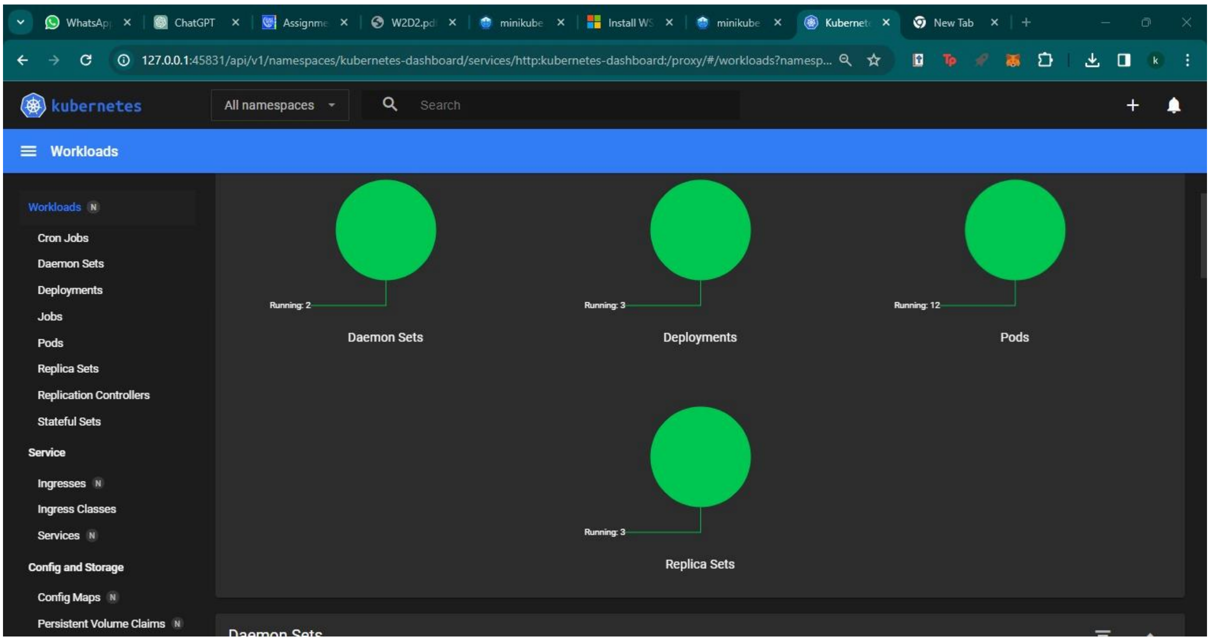


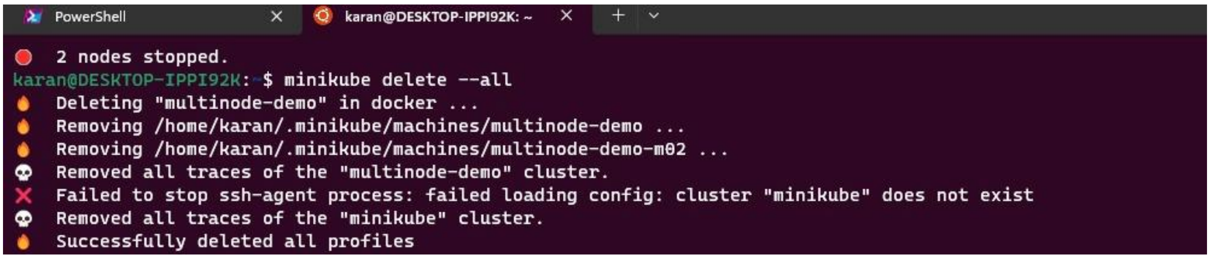
```
karan@DESKTOP-IPPI92K:~$ minikube status -p multinode-demo
multinode-demo
type: Control Plane
host: Running
kubelet: Running
apiserver: Running
kubeconfig: Configured

multinode-demo-m02
type: Worker
host: Running
kubelet: Running
```

minikube dashboard -p multinode-demo

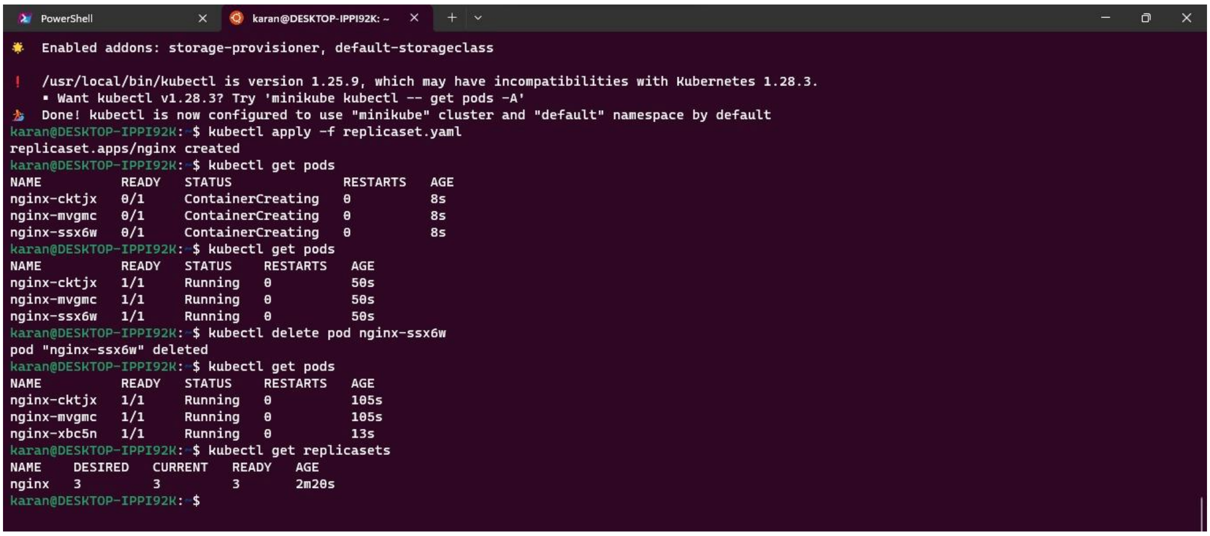


```
karan@DESKTOP-IPPI92K:~$ minikube dashboard -p multinode-demo
🔌  Enabling dashboard ...
    ▪ Using image docker.io/kubernetesui/dashboard:v2.7.0
    ▪ Using image docker.io/kubernetesui/metrics-scraper:v1.0.8
💡  Some dashboard features require the metrics-server addon. To enable all features please run:

        minikube -p multinode-demo addons enable metrics-server


🤔  Verifying dashboard health ...
🚀  Launching proxy ...
🤔  Verifying proxy health ...
🎉  Opening http://127.0.0.1:45831/api/v1/namespaces/kubernetes-dashboard/services/http:kubernetes-dashboard:/proxy/ in your default browser...
👉  http://127.0.0.1:45831/api/v1/namespaces/kubernetes-dashboard/services/http:kubernetes-dashboard:/proxy/
```

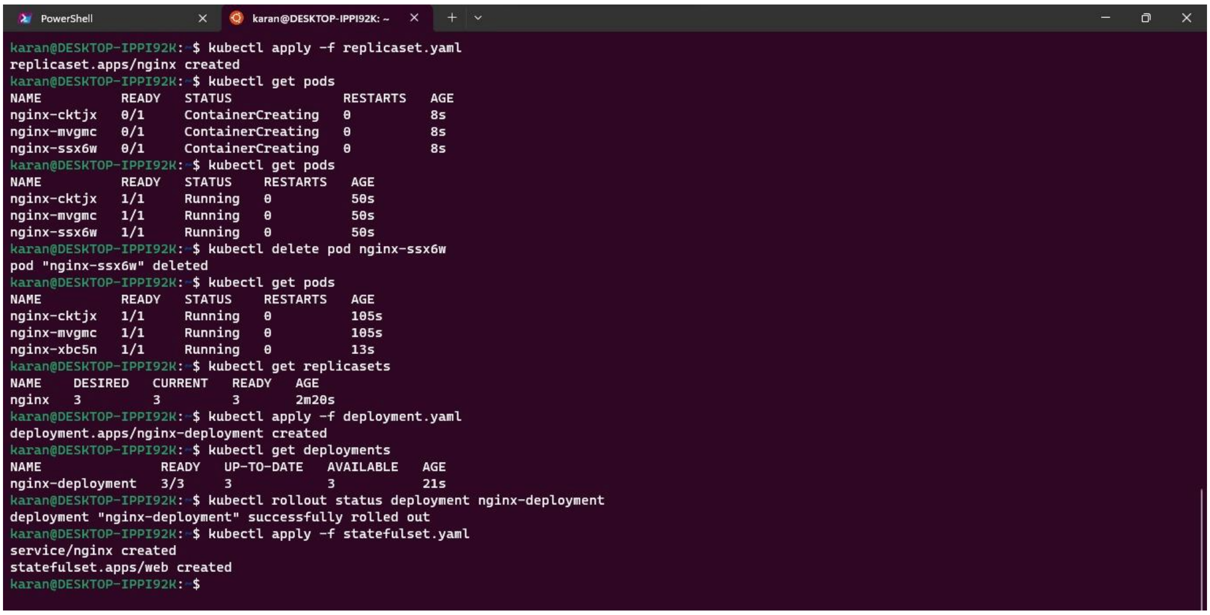




```
🛑  2 nodes stopped.
karan@DESKTOP-IPPI92K:~$ minikube delete --all
🔥  Deleting "multinode-demo" in docker ...
🔥  Removing /home/karan/.minikube/machines/multinode-demo ...
🔥  Removing /home/karan/.minikube/machines/multinode-demo-m02 ...
💀  Removed all traces of the "multinode-demo" cluster.
❌  Failed to stop ssh-agent process: failed loading config: cluster "minikube" does not exist
💀  Removed all traces of the "minikube" cluster.
🔥  Successfully deleted all profiles
```

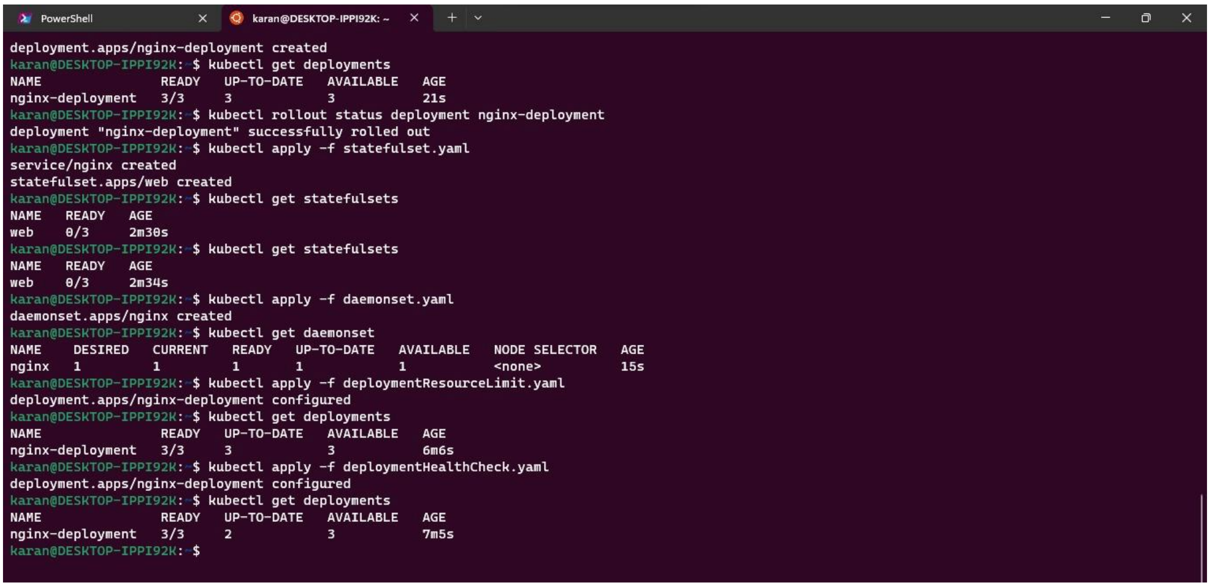


```
🌟  Enabled addons: storage-provisioner, default-storageclass

❗  /usr/local/bin/kubectl is version 1.25.9, which may have incompatibilities with Kubernetes 1.28.3.
    ▪ Want kubectl v1.28.3? Try 'minikube kubectl -- get pods -A'
🏄  Done! kubectl is now configured to use "minikube" cluster and "default" namespace by default
karan@DESKTOP-IPPI92K:~$ kubectl apply -f replicaset.yaml
replicaset.apps/nginx created
karan@DESKTOP-IPPI92K:~$ kubectl get pods
NAME          READY   STATUS              RESTARTS   AGE
nginx-cktjx   0/1     ContainerCreating   0          8s
nginx-mvgmc   0/1     ContainerCreating   0          8s
nginx-ssx6w   0/1     ContainerCreating   0          8s
karan@DESKTOP-IPPI92K:~$ kubectl get pods
NAME          READY   STATUS    RESTARTS   AGE
nginx-cktjx   1/1     Running   0          50s
nginx-mvgmc   1/1     Running   0          50s
nginx-ssx6w   1/1     Running   0          50s
karan@DESKTOP-IPPI92K:~$ kubectl delete pod nginx-ssx6w
pod "nginx-ssx6w" deleted
karan@DESKTOP-IPPI92K:~$ kubectl get pods
NAME          READY   STATUS    RESTARTS   AGE
nginx-cktjx   1/1     Running   0          105s
nginx-mvgmc   1/1     Running   0          105s
nginx-xbc5n   1/1     Running   0          13s
karan@DESKTOP-IPPI92K:~$ kubectl get replicasets
NAME    DESIRED   CURRENT   READY   AGE
nginx   3         3         3       2m20s
karan@DESKTOP-IPPI92K:~$
```



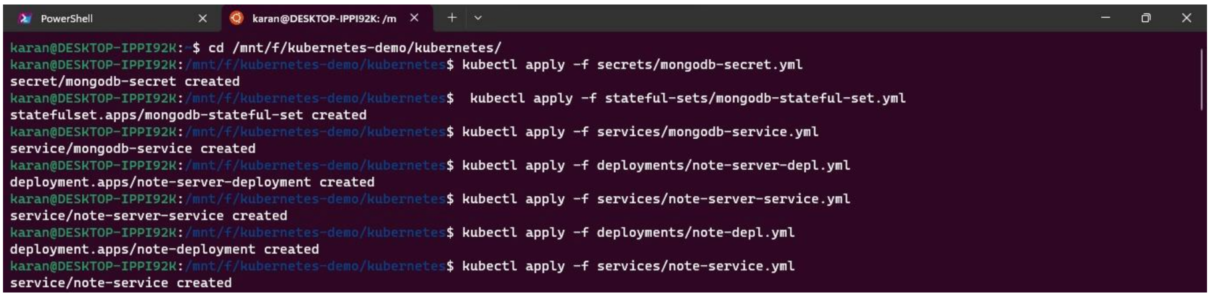
```
karan@DESKTOP-IPPI92K:~$ kubectl apply -f replicaset.yaml
replicaset.apps/nginx created
karan@DESKTOP-IPPI92K:~$ kubectl get pods
NAME          READY   STATUS              RESTARTS   AGE
nginx-cktjx   0/1     ContainerCreating   0          8s
nginx-mvgmc   0/1     ContainerCreating   0          8s
nginx-ssx6w   0/1     ContainerCreating   0          8s
karan@DESKTOP-IPPI92K:~$ kubectl get pods
NAME          READY   STATUS    RESTARTS   AGE
nginx-cktjx   1/1     Running   0          50s
nginx-mvgmc   1/1     Running   0          50s
nginx-ssx6w   1/1     Running   0          50s
karan@DESKTOP-IPPI92K:~$ kubectl delete pod nginx-ssx6w
pod "nginx-ssx6w" deleted
karan@DESKTOP-IPPI92K:~$ kubectl get pods
NAME          READY   STATUS    RESTARTS   AGE
nginx-cktjx   1/1     Running   0          105s
nginx-mvgmc   1/1     Running   0          105s
nginx-xbc5n   1/1     Running   0          13s
karan@DESKTOP-IPPI92K:~$ kubectl get replicasets
NAME    DESIRED   CURRENT   READY   AGE
nginx   3         3         3       2m20s
```

```
karan@DESKTOP-IPPI92K:~$ kubectl apply -f deployment.yaml
deployment.apps/nginx-deployment created
karan@DESKTOP-IPPI92K:~$ kubectl get deployments
NAME               READY   UP-TO-DATE   AVAILABLE   AGE
nginx-deployment   3/3     3            3           21s
karan@DESKTOP-IPPI92K:~$ kubectl rollout status deployment nginx-deployment
deployment "nginx-deployment" successfully rolled out
karan@DESKTOP-IPPI92K:~$ kubectl apply -f statefulset.yaml
service/nginx created
statefulset.apps/web created
karan@DESKTOP-IPPI92K:~$
```

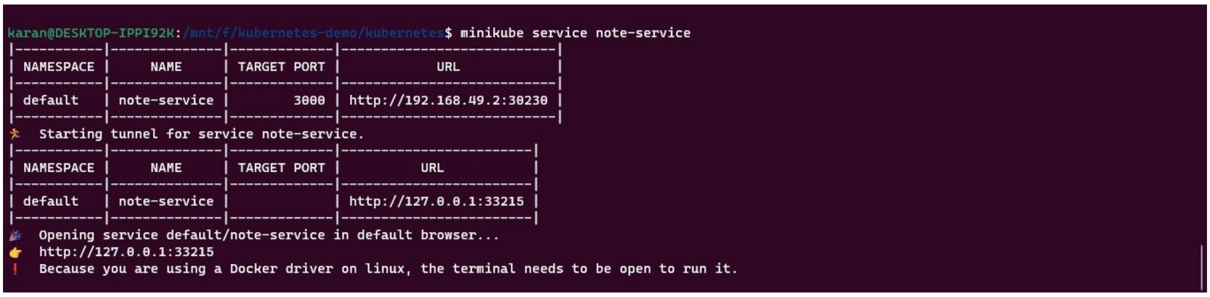


```
deployment.apps/nginx-deployment created
karan@DESKTOP-IPPI92K:~$ kubectl get deployments
NAME               READY   UP-TO-DATE   AVAILABLE   AGE
nginx-deployment   3/3     3            3           21s
karan@DESKTOP-IPPI92K:~$ kubectl rollout status deployment nginx-deployment
deployment "nginx-deployment" successfully rolled out
karan@DESKTOP-IPPI92K:~$ kubectl apply -f statefulset.yaml
service/nginx created
statefulset.apps/web created
karan@DESKTOP-IPPI92K:~$ kubectl get statefulsets
NAME   READY   AGE
web    0/3     2m30s
karan@DESKTOP-IPPI92K:~$ kubectl get statefulsets
NAME   READY   AGE
web    0/3     2m34s
karan@DESKTOP-IPPI92K:~$ kubectl apply -f daemonset.yaml
daemonset.apps/nginx created
karan@DESKTOP-IPPI92K:~$ kubectl get daemonset
NAME    DESIRED   CURRENT   READY   UP-TO-DATE   AVAILABLE   NODE SELECTOR   AGE
nginx   1         1         1       1            1           <none>          15s
karan@DESKTOP-IPPI92K:~$ kubectl apply -f deploymentResourceLimit.yaml
deployment.apps/nginx-deployment configured
karan@DESKTOP-IPPI92K:~$ kubectl get deployments
NAME               READY   UP-TO-DATE   AVAILABLE   AGE
nginx-deployment   3/3     3            3           6m6s
karan@DESKTOP-IPPI92K:~$ kubectl apply -f deploymentHealthCheck.yaml
deployment.apps/nginx-deployment configured
karan@DESKTOP-IPPI92K:~$ kubectl get deployments
NAME               READY   UP-TO-DATE   AVAILABLE   AGE
nginx-deployment   3/3     2            3           7m5s
karan@DESKTOP-IPPI92K:~$
```

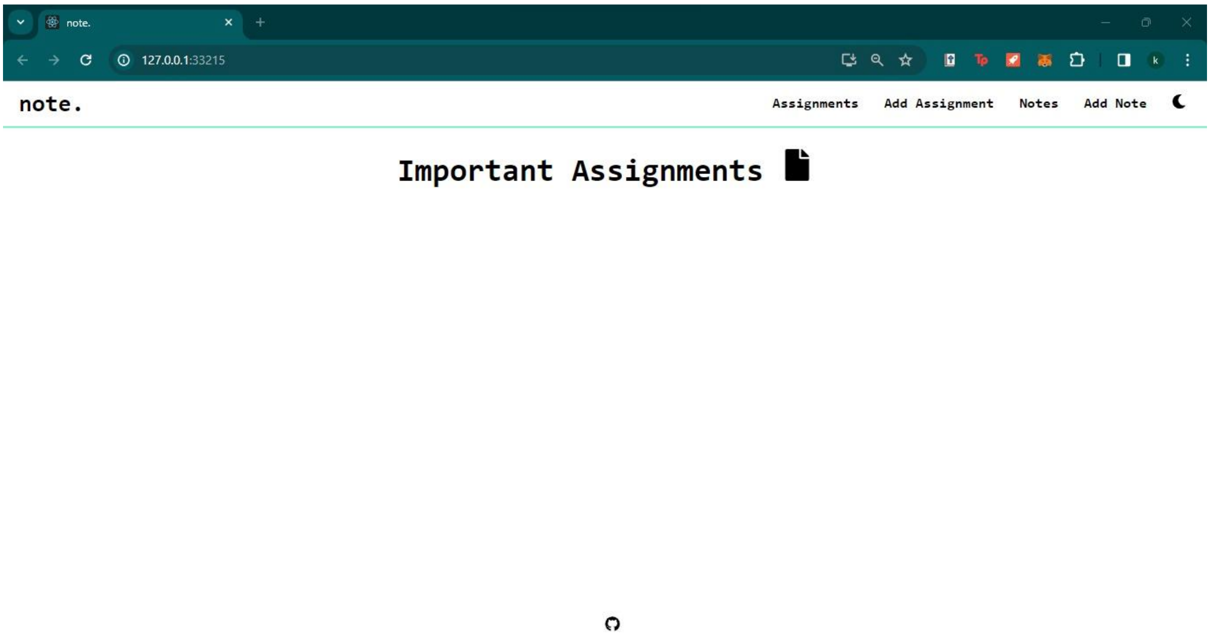
#Kubernetes demo screenshots



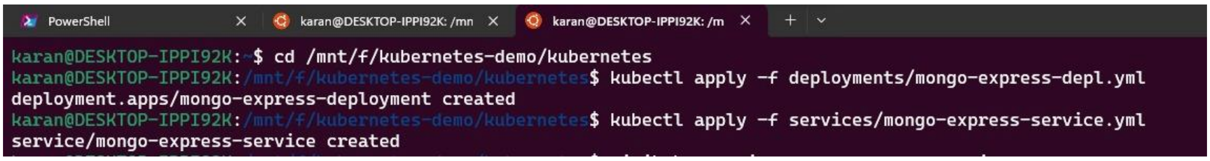
```
karan@DESKTOP-IPPI92K:~$ cd /mnt/f/kubernetes-demo/kubernetes/
karan@DESKTOP-IPPI92K:/mnt/f/kubernetes-demo/kubernetes$ kubectl apply -f secrets/mongodb-secret.yml
secret/mongodb-secret created
karan@DESKTOP-IPPI92K:/mnt/f/kubernetes-demo/kubernetes$  kubectl apply -f stateful-sets/mongodb-stateful-set.yml
statefulset.apps/mongodb-stateful-set created
karan@DESKTOP-IPPI92K:/mnt/f/kubernetes-demo/kubernetes$ kubectl apply -f services/mongodb-service.yml
service/mongodb-service created
karan@DESKTOP-IPPI92K:/mnt/f/kubernetes-demo/kubernetes$ kubectl apply -f deployments/note-server-depl.yml
deployment.apps/note-server-deployment created
karan@DESKTOP-IPPI92K:/mnt/f/kubernetes-demo/kubernetes$ kubectl apply -f services/note-server-service.yml
service/note-server-service created
karan@DESKTOP-IPPI92K:/mnt/f/kubernetes-demo/kubernetes$ kubectl apply -f deployments/note-depl.yml
deployment.apps/note-deployment created
karan@DESKTOP-IPPI92K:/mnt/f/kubernetes-demo/kubernetes$ kubectl apply -f services/note-service.yml
service/note-service created
```



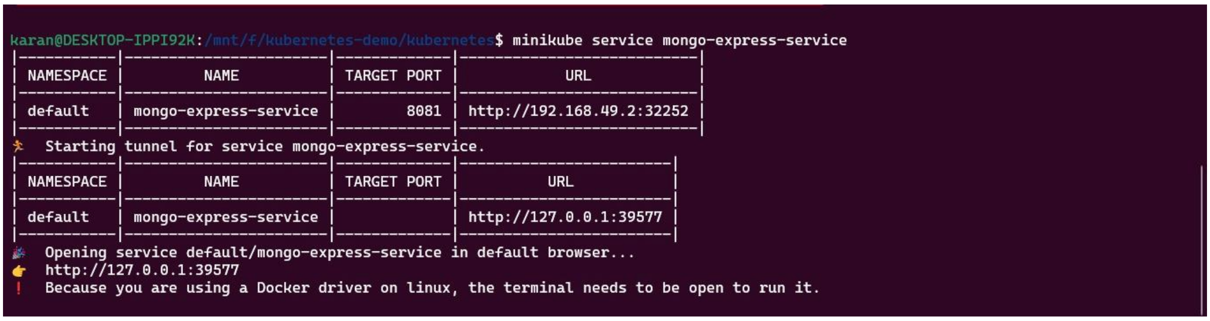
```
karan@DESKTOP-IPPI92K:/mnt/f/kubernetes-demo/kubernetes$ minikube service note-service
|-----------|--------------|-------------|---------------------------|
| NAMESPACE |     NAME     | TARGET PORT |            URL            |
|-----------|--------------|-------------|---------------------------|
| default   | note-service |        3000 | http://192.168.49.2:30230 |
|-----------|--------------|-------------|---------------------------|
🏃  Starting tunnel for service note-service.
|-----------|--------------|-------------|------------------------|
| NAMESPACE |     NAME     | TARGET PORT |          URL           |
|-----------|--------------|-------------|------------------------|
| default   | note-service |             | http://127.0.0.1:33215 |
|-----------|--------------|-------------|------------------------|
🎉  Opening service default/note-service in default browser...
👉  http://127.0.0.1:33215
❗  Because you are using a Docker driver on linux, the terminal needs to be open to run it.
```



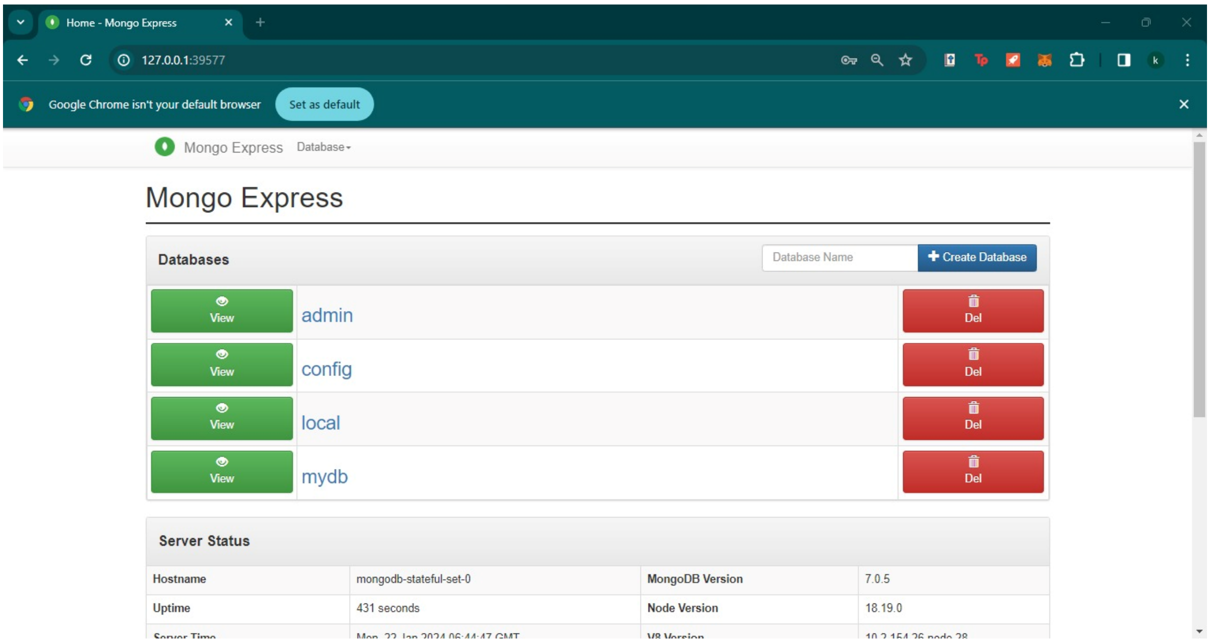
Important Assignments



```
karan@DESKTOP-IPPI92K:~$ cd /mnt/f/kubernetes-demo/kubernetes
karan@DESKTOP-IPPI92K:/mnt/f/kubernetes-demo/kubernetes$ kubectl apply -f deployments/mongo-express-depl.yml
deployment.apps/mongo-express-deployment created
karan@DESKTOP-IPPI92K:/mnt/f/kubernetes-demo/kubernetes$ kubectl apply -f services/mongo-express-service.yml
service/mongo-express-service created
```



```
karan@DESKTOP-IPPI92K:/mnt/f/kubernetes-demo/kubernetes$ minikube service mongo-express-service
|-----------|-----------------------|-------------|---------------------------|
| NAMESPACE |         NAME          | TARGET PORT |            URL            |
|-----------|-----------------------|-------------|---------------------------|
| default   | mongo-express-service |        8081 | http://192.168.49.2:32252 |
|-----------|-----------------------|-------------|---------------------------|
🏃  Starting tunnel for service mongo-express-service.
|-----------|-----------------------|-------------|------------------------|
| NAMESPACE |         NAME          | TARGET PORT |          URL           |
|-----------|-----------------------|-------------|------------------------|
| default   | mongo-express-service |             | http://127.0.0.1:39577 |
|-----------|-----------------------|-------------|------------------------|
🎉  Opening service default/mongo-express-service in default browser...
👉  http://127.0.0.1:39577
❗  Because you are using a Docker driver on linux, the terminal needs to be open to run it.
```



Mongo Express

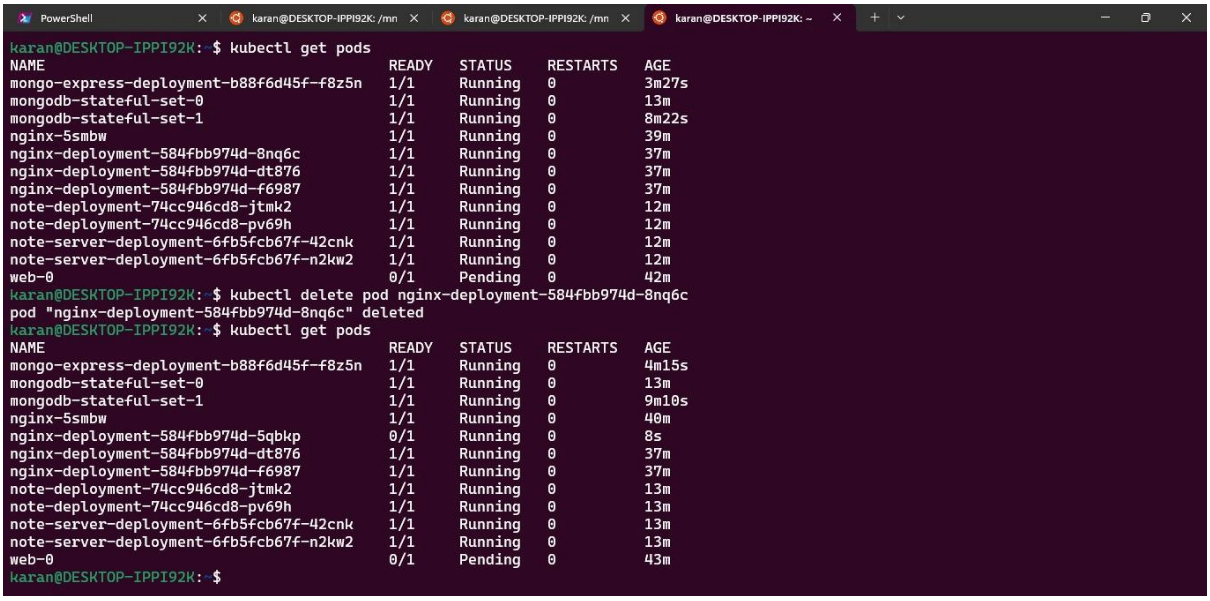
Databases

Database Name | Create Database

View	admin	Del
View	config	Del
View	local	Del
View	mydb	Del

Server Status

Hostname	mongodb-stateful-set-0	**MongoDB Version**	7.0.5
Uptime	431 seconds	**Node Version**	18.19.0
Server Time	Mon, 22 Jan 2024 06:44:47 GMT	**V8 Version**	10.2.154.26-node.28



```
karan@DESKTOP-IPPI92K:~$ kubectl get pods
NAME                                   READY   STATUS    RESTARTS   AGE
mongo-express-deployment-b88f6d45f-f8z5n   1/1     Running   0          3m27s
mongodb-stateful-set-0                 1/1     Running   0          13m
mongodb-stateful-set-1                 1/1     Running   0          8m22s
nginx-5smbw                            1/1     Running   0          39m
nginx-deployment-584fbb974d-8nq6c      1/1     Running   0          37m
nginx-deployment-584fbb974d-dt876      1/1     Running   0          37m
nginx-deployment-584fbb974d-f6987      1/1     Running   0          37m
note-deployment-74cc946cd8-jtmk2       1/1     Running   0          12m
note-deployment-74cc946cd8-pv69h       1/1     Running   0          12m
note-server-deployment-6fb5fcb67f-42cnk   1/1     Running   0          12m
note-server-deployment-6fb5fcb67f-n2kw2   1/1     Running   0          12m
web-0                                  0/1     Pending   0          42m
karan@DESKTOP-IPPI92K:~$ kubectl delete pod nginx-deployment-584fbb974d-8nq6c
pod "nginx-deployment-584fbb974d-8nq6c" deleted
karan@DESKTOP-IPPI92K:~$ kubectl get pods
NAME                                   READY   STATUS    RESTARTS   AGE
mongo-express-deployment-b88f6d45f-f8z5n   1/1     Running   0          4m15s
mongodb-stateful-set-0                 1/1     Running   0          13m
mongodb-stateful-set-1                 1/1     Running   0          9m10s
nginx-5smbw                            1/1     Running   0          40m
nginx-deployment-584fbb974d-5qbkp      0/1     Running   0          8s
nginx-deployment-584fbb974d-dt876      1/1     Running   0          37m
nginx-deployment-584fbb974d-f6987      1/1     Running   0          37m
note-deployment-74cc946cd8-jtmk2       1/1     Running   0          13m
note-deployment-74cc946cd8-pv69h       1/1     Running   0          13m
note-server-deployment-6fb5fcb67f-42cnk   1/1     Running   0          13m
note-server-deployment-6fb5fcb67f-n2kw2   1/1     Running   0          13m
web-0                                  0/1     Pending   0          43m
karan@DESKTOP-IPPI92K:~$
```