kubernetes

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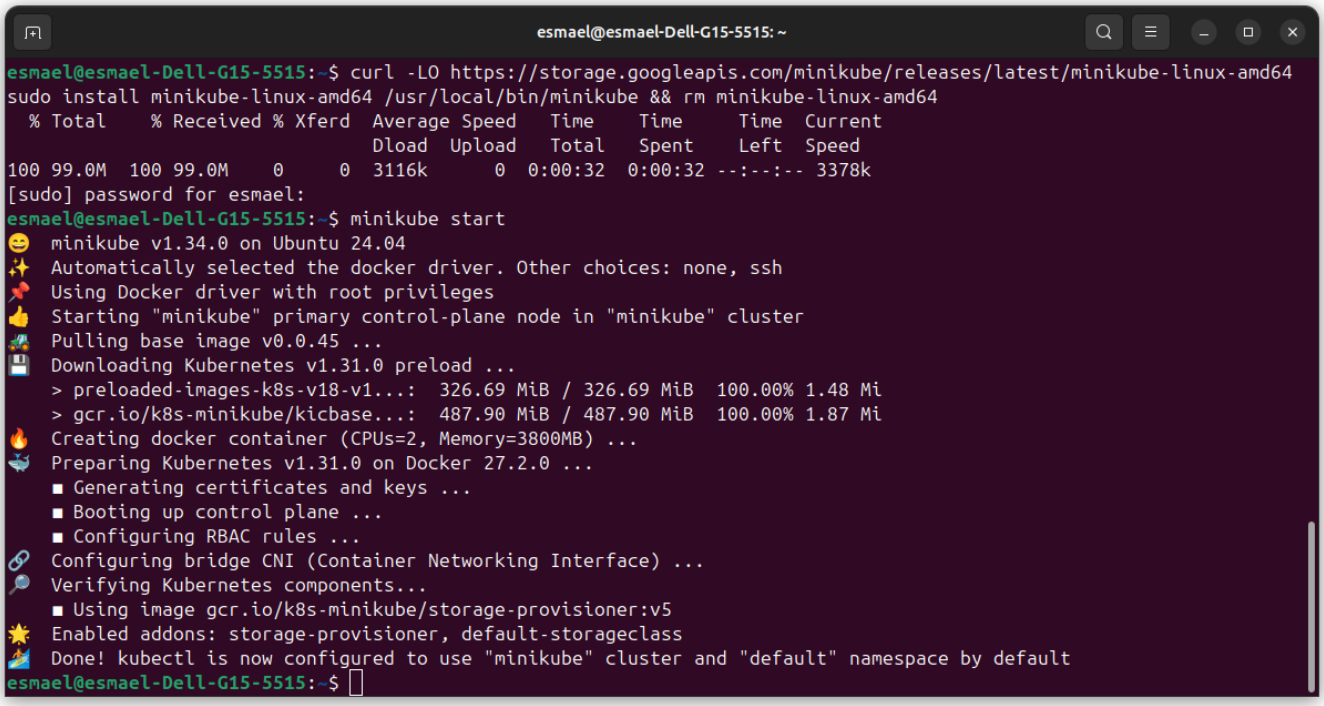
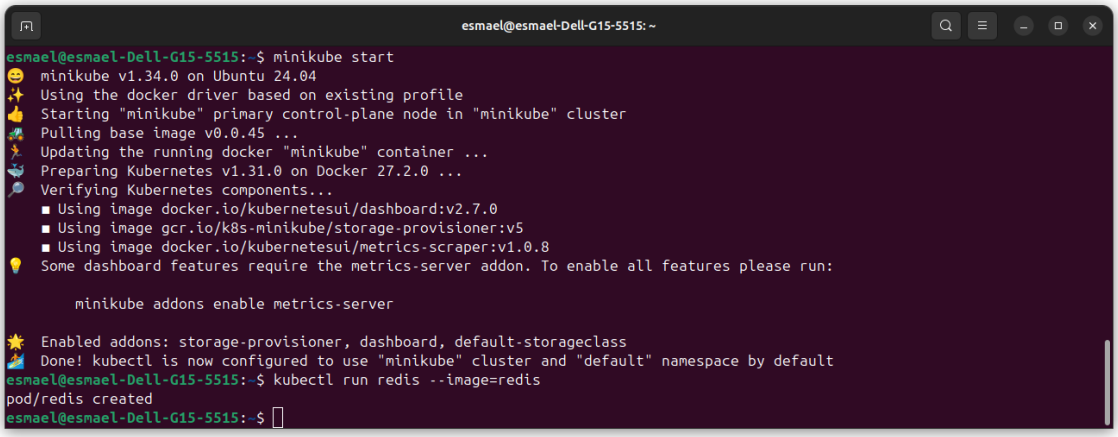
K8S-LAB1

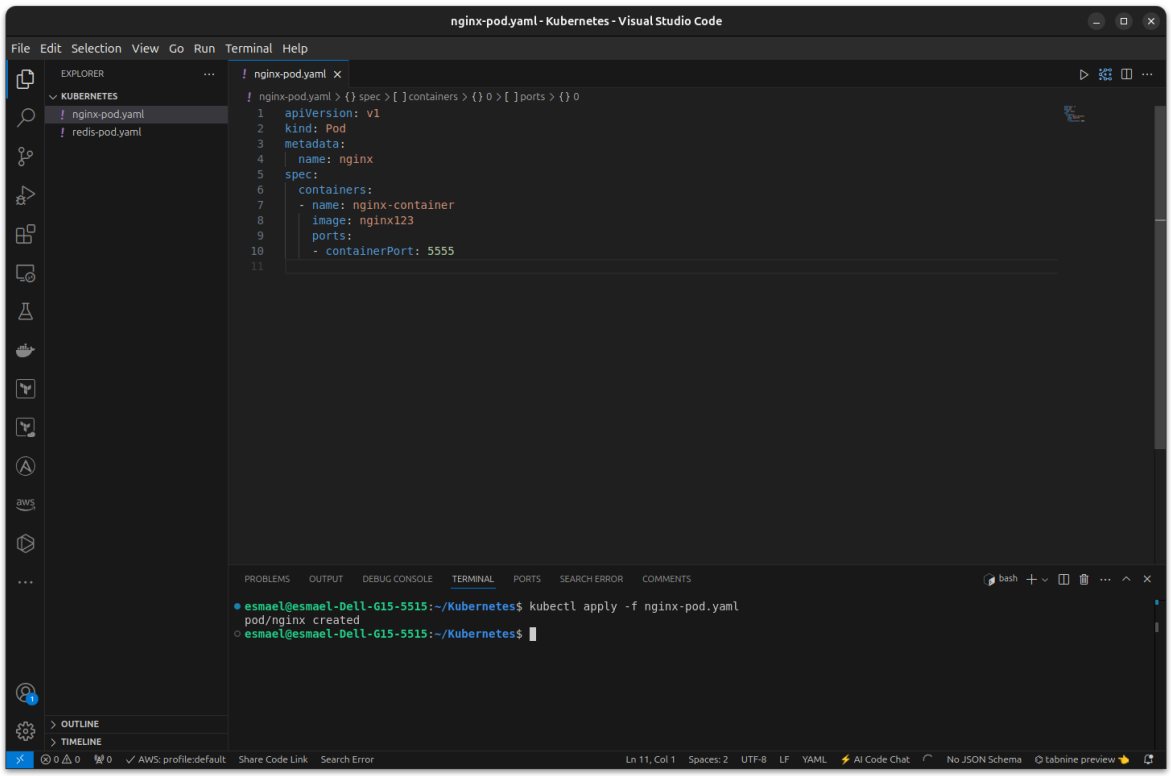
1-Install k8s cluster (minikube)



2- Create a pod with the name redis and with the image redis.

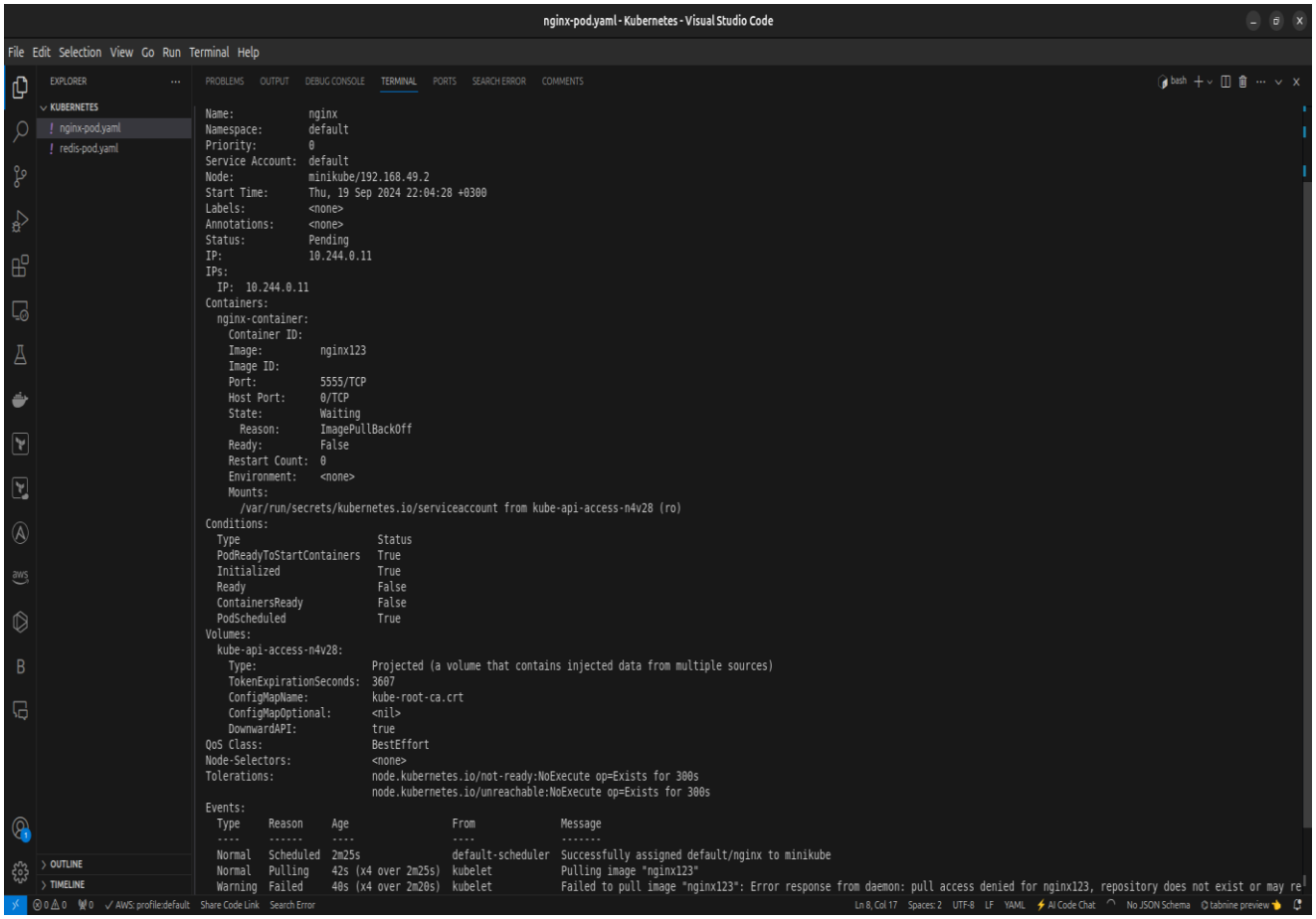


3- Create a pod with the name nginx and with the image “nginx123” Use a pod-definition YAML file.

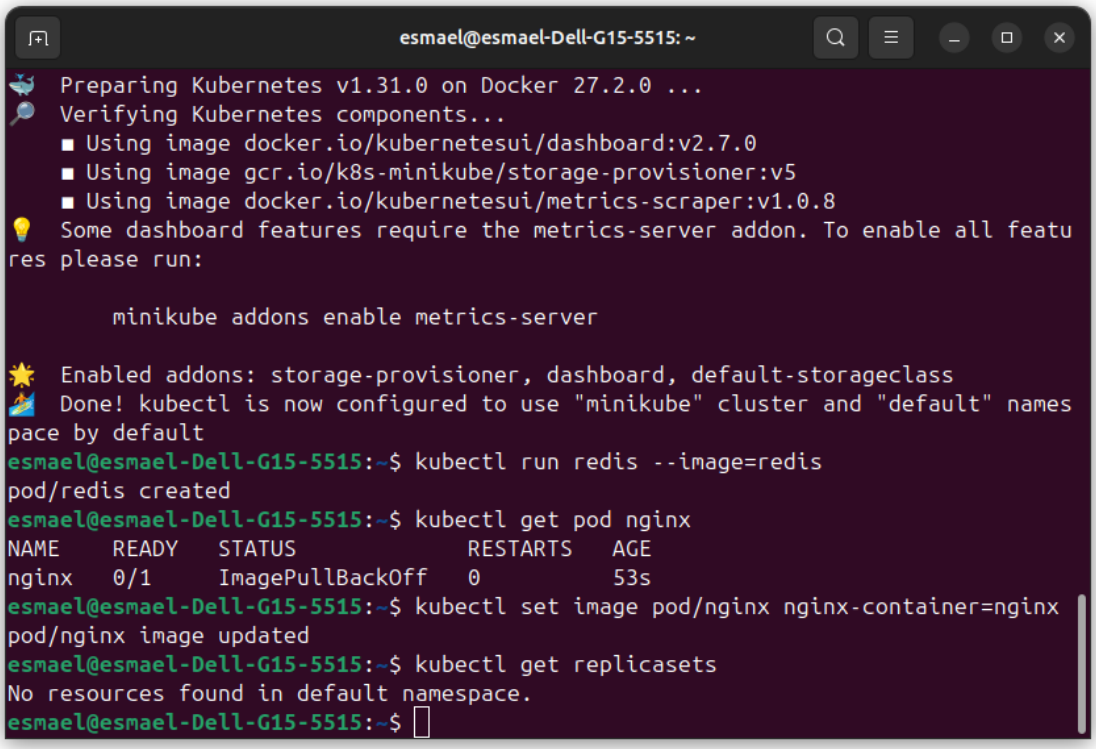


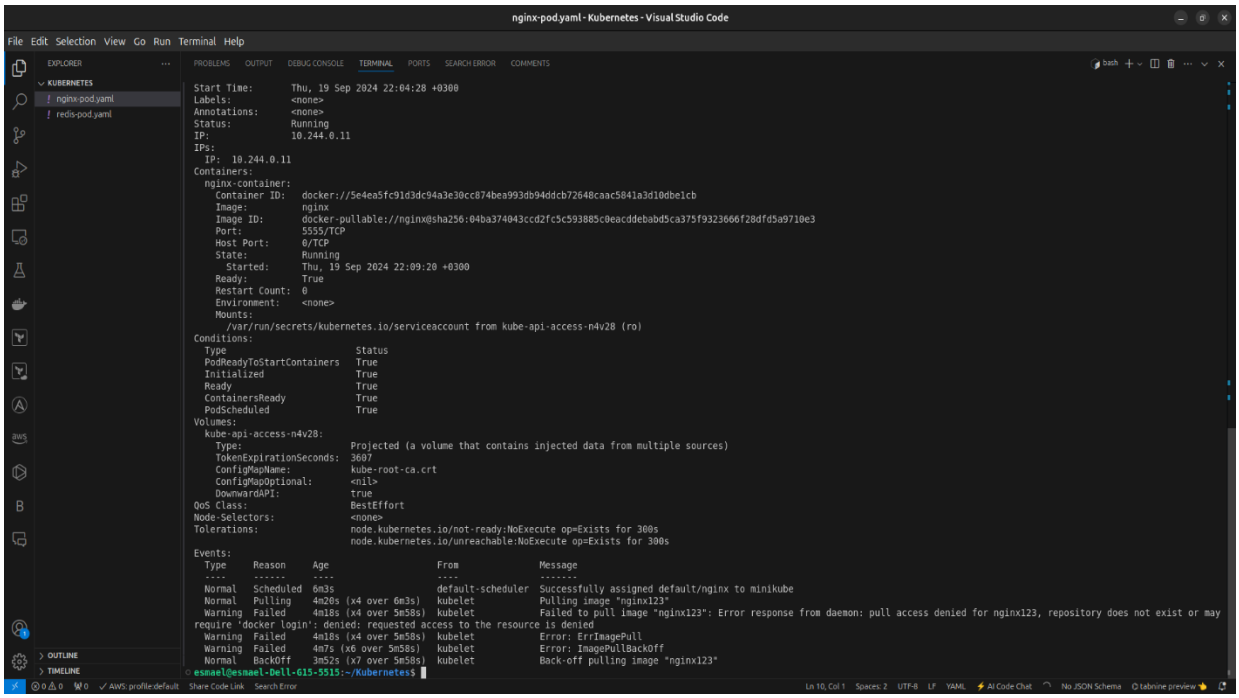
4- What is the nginx pod status?

```
esmael@esmael-Dell-G15-5515: ~
✨  Using the docker driver based on existing profile
👍  Starting "minikube" primary control-plane node in "minikube" cluster
🚜  Pulling base image v0.0.45 ...
🏃  Updating the running docker "minikube" container ...
🐳  Preparing Kubernetes v1.31.0 on Docker 27.2.0 ...
🔎  Verifying Kubernetes components...
    ▪ Using image docker.io/kubernetesui/dashboard:v2.7.0
    ▪ Using image gcr.io/k8s-minikube/storage-provisioner:v5
    ▪ Using image docker.io/kubernetesui/metrics-scraper:v1.0.8
💡  Some dashboard features require the metrics-server addon. To enable all featu
res please run:

        minikube addons enable metrics-server

🌟  Enabled addons: storage-provisioner, dashboard, default-storageclass
🏄  Done! kubectl is now configured to use "minikube" cluster and "default" names
pace by default
esmael@esmael-Dell-G15-5515:~$ kubectl run redis --image=redis
pod/redis created
esmael@esmael-Dell-G15-5515:~$ kubectl get pod nginx
NAME    READY   STATUS             RESTARTS   AGE
nginx   0/1     ImagePullBackOff   0          53s
esmael@esmael-Dell-G15-5515:~$
```

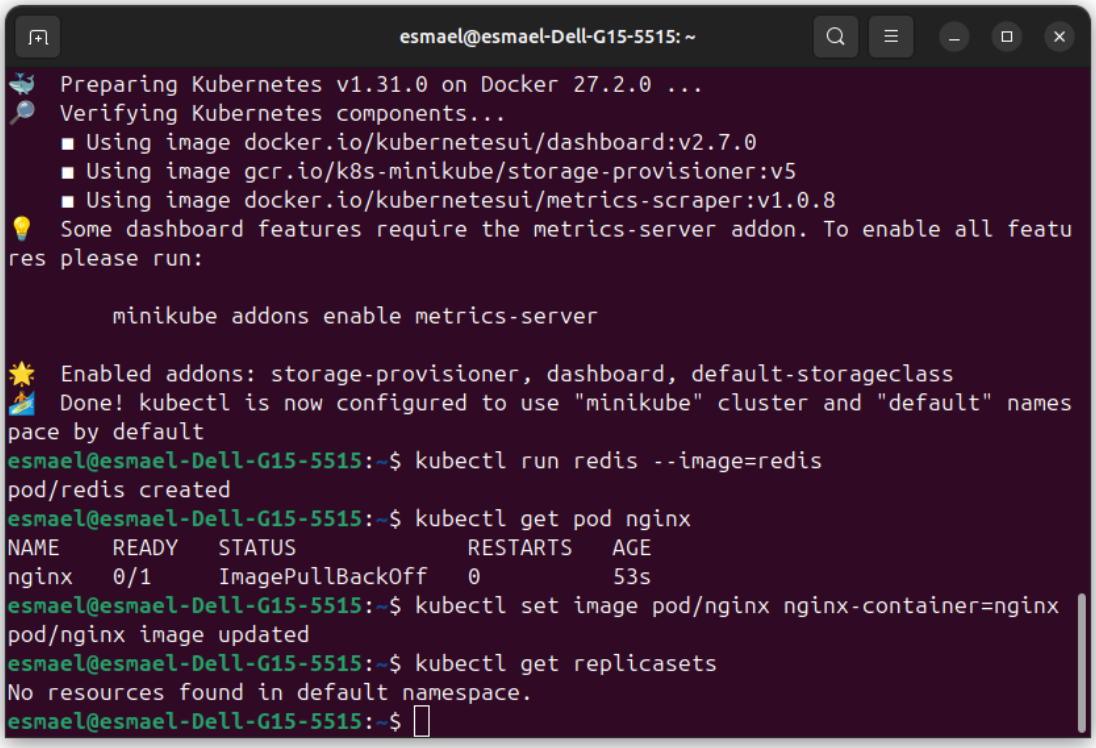


5- Change the nginx pod image to “nginx” check the status again

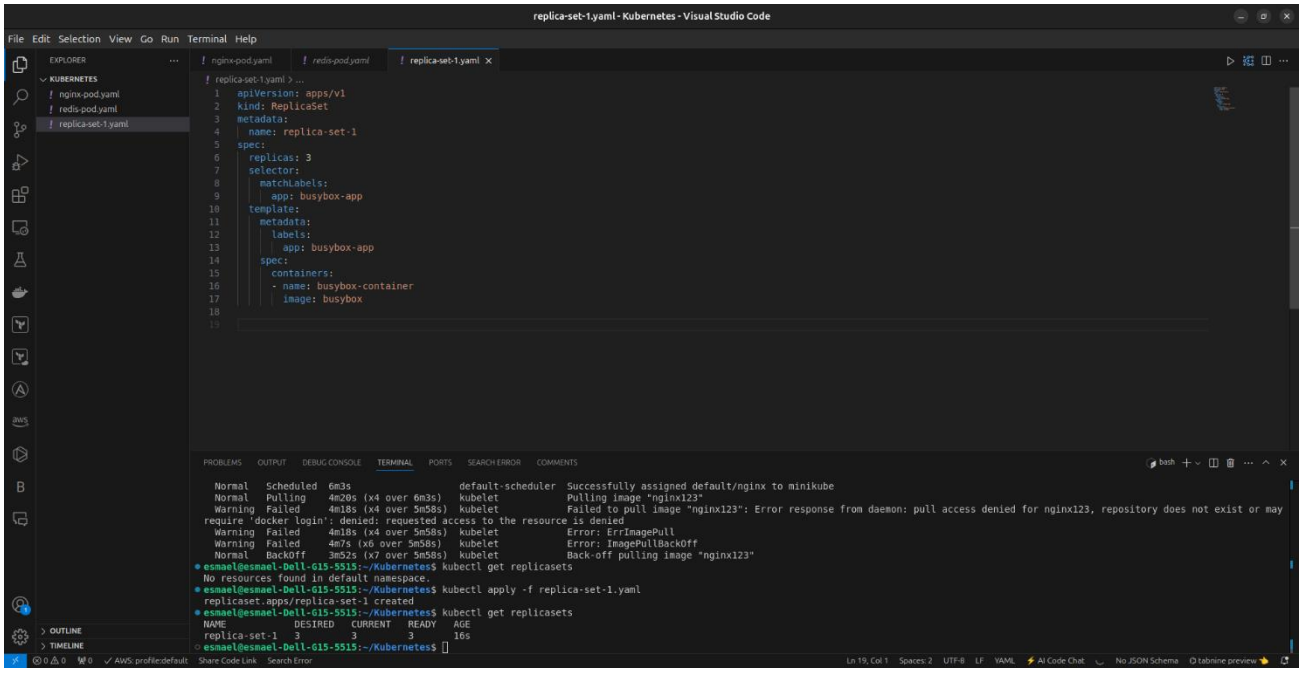




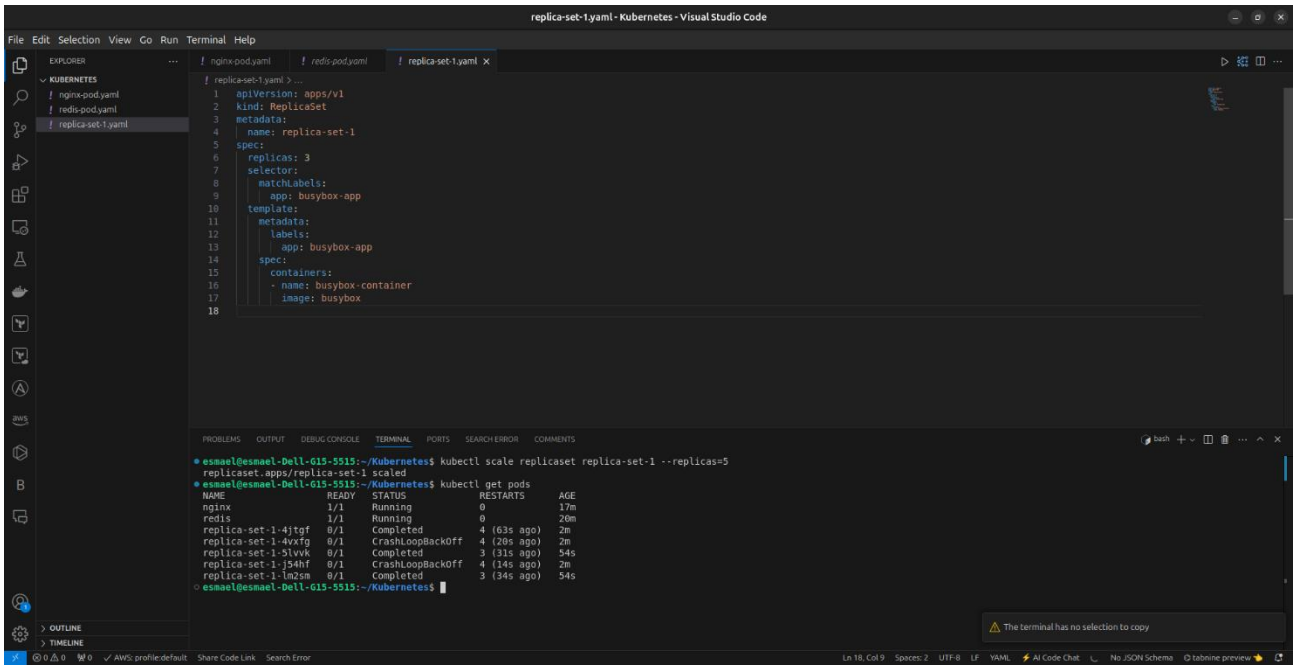
6- How many ReplicaSets exist on the system?



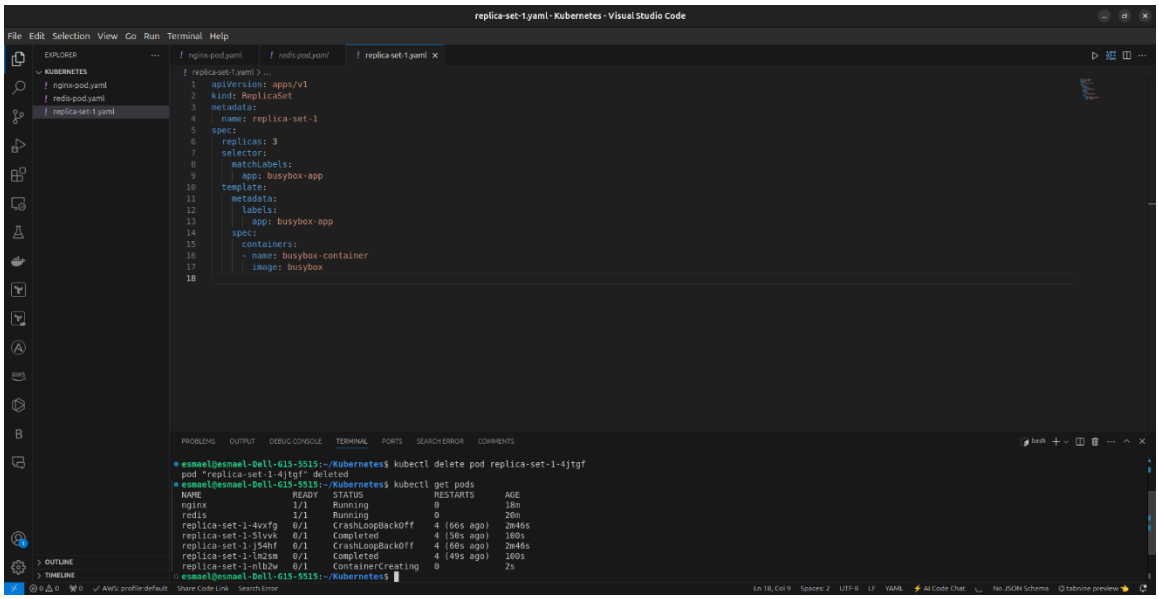
7- create a ReplicaSet with name= replica-set-1 image= busybox replicas= 3



8- Scale the ReplicaSet replica-set-1 to 5 PODs.
9- How many PODs are READY in the replica-set-1?



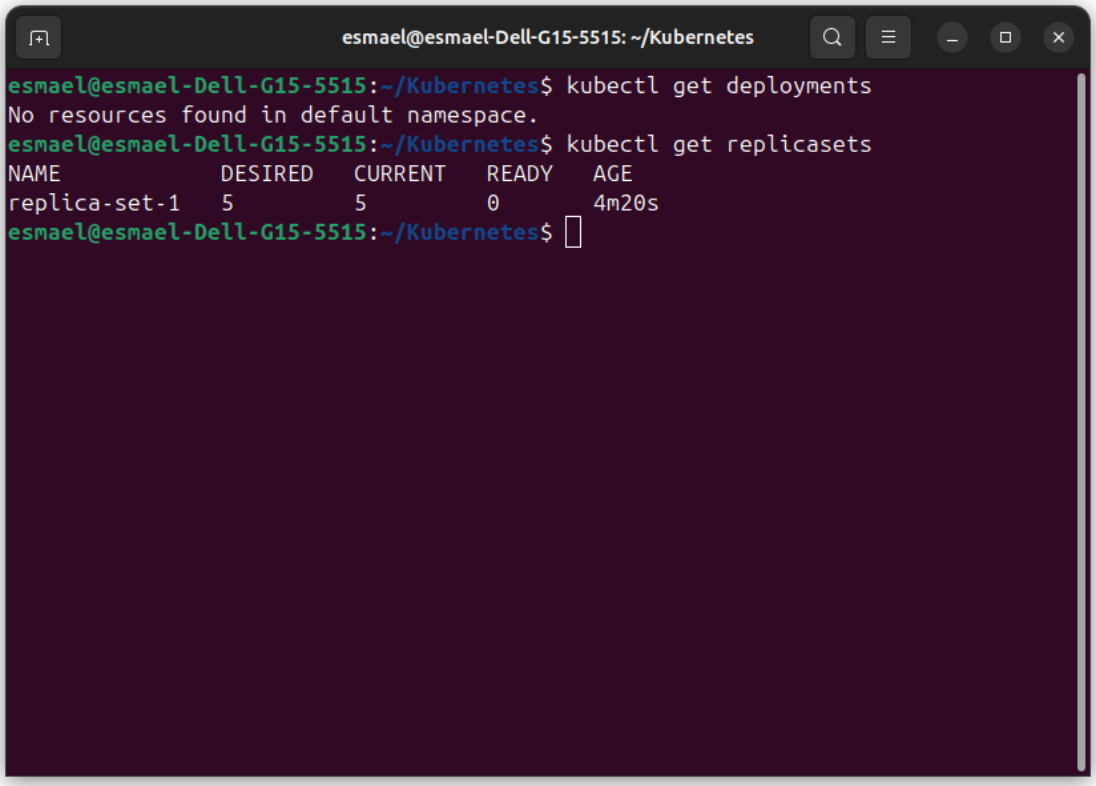
10- Delete any one of the 5 PODs then check How many PODs exist now?



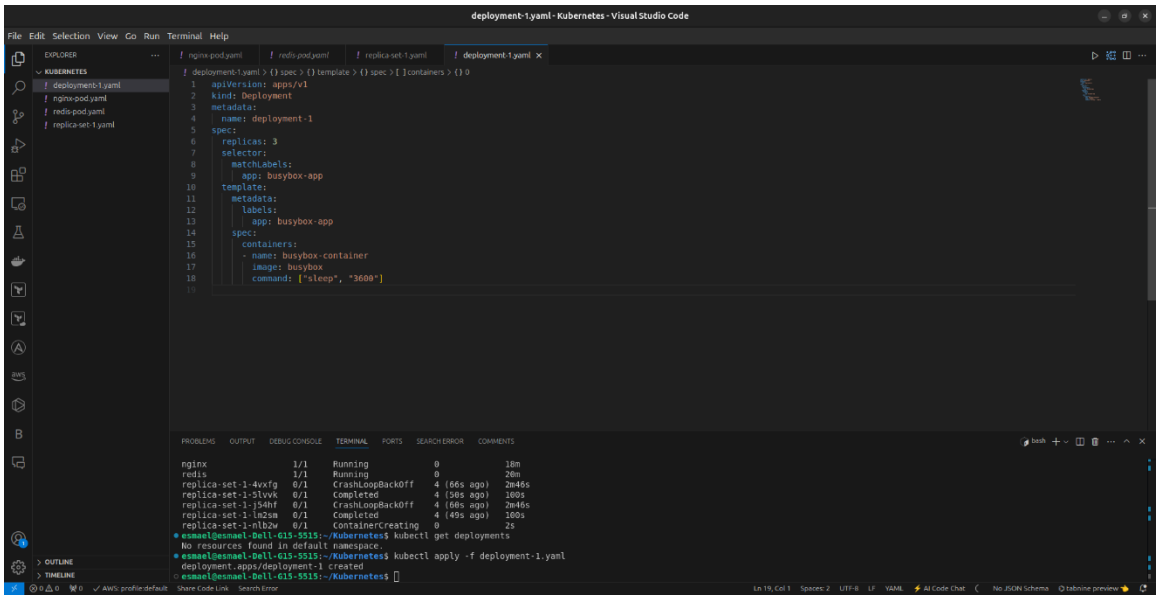
WHY ARE THERE STILL 5 PODS, EVEN AFTER YOU DELETED ONE?

YOU WILL SEE 5 PODS EVEN AFTER DELETING ONE BECAUSE THE REPLICASET AUTOMATICALLY MANAGES THE NUMBER OF REPLICAS. IT WILL CREATE A NEW POD TO MAINTAIN THE DESIRED STATE OF 5 PODS. THIS IS ONE OF THE KEY FEATURES OF REPLICASETS—THEY ENSURE THAT THE SPECIFIED NUMBER OF REPLICAS IS ALWAYS RUNNING.

11- How many Deployments and ReplicaSets exist on the system?

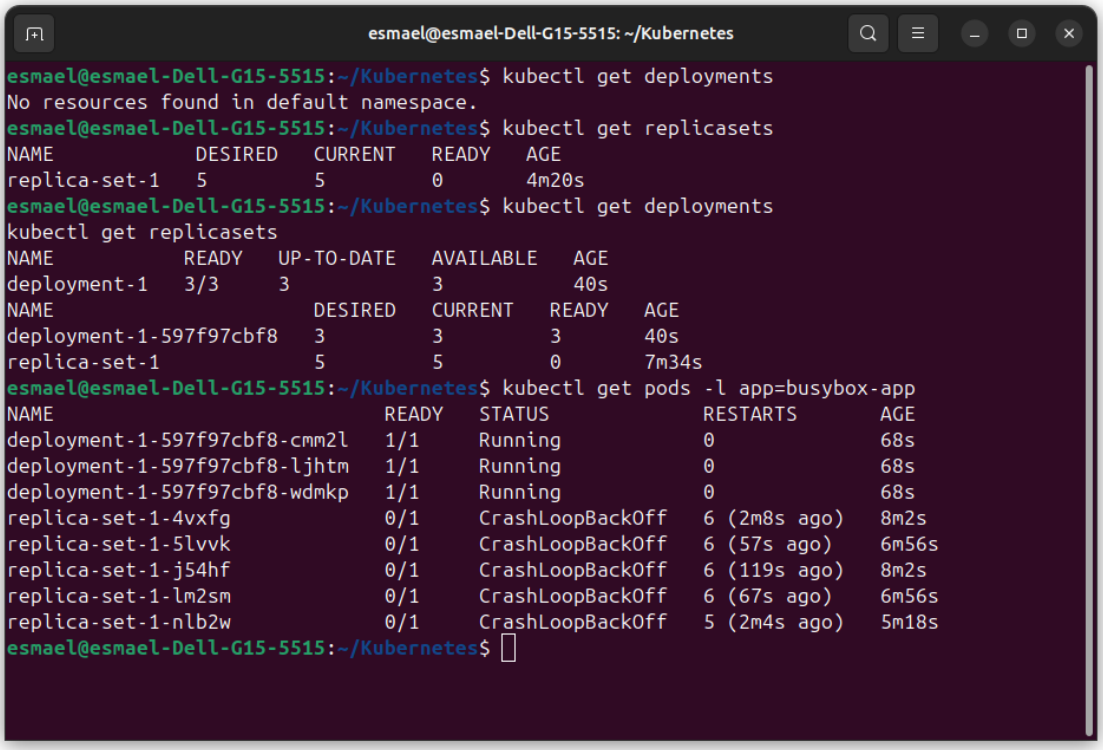


12- create a Deployment with name= deployment-1 image= busybox replicas= 3

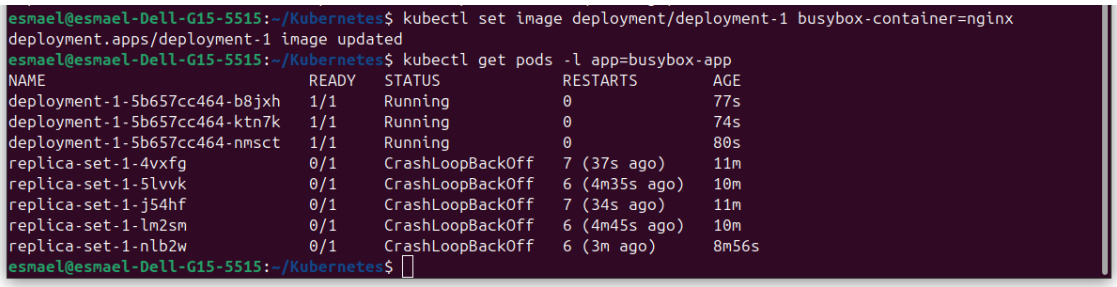


13- How many Deployments and ReplicaSets exist on the system now?

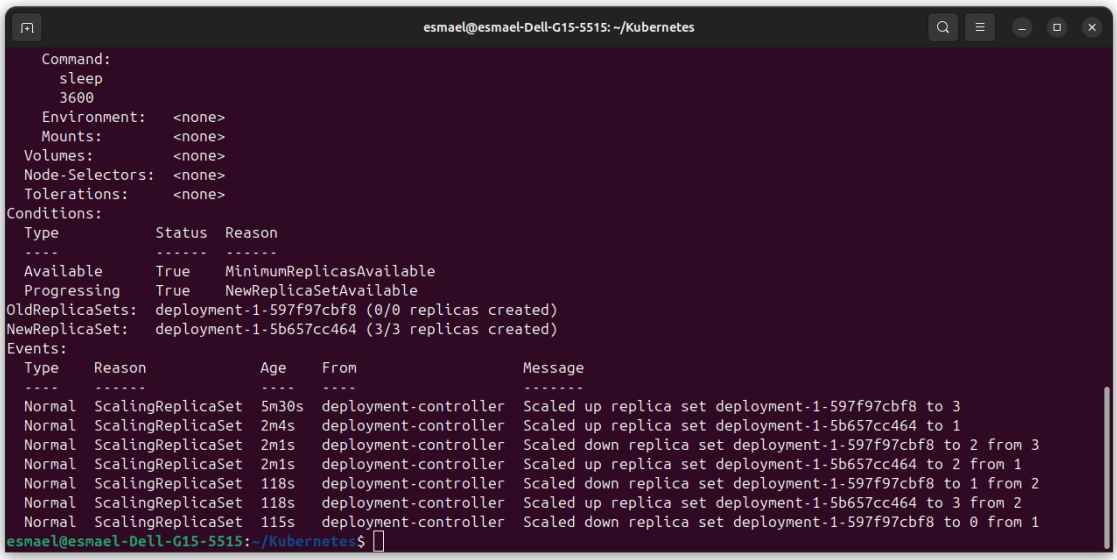
14- How many pods are ready with the deployment-1?



15- Update deployment-1 image to nginx then check the ready pods again



16- Run kubectl describe deployment deployment-1 and check events What is the deployment strategy used to upgrade the deployment-1?

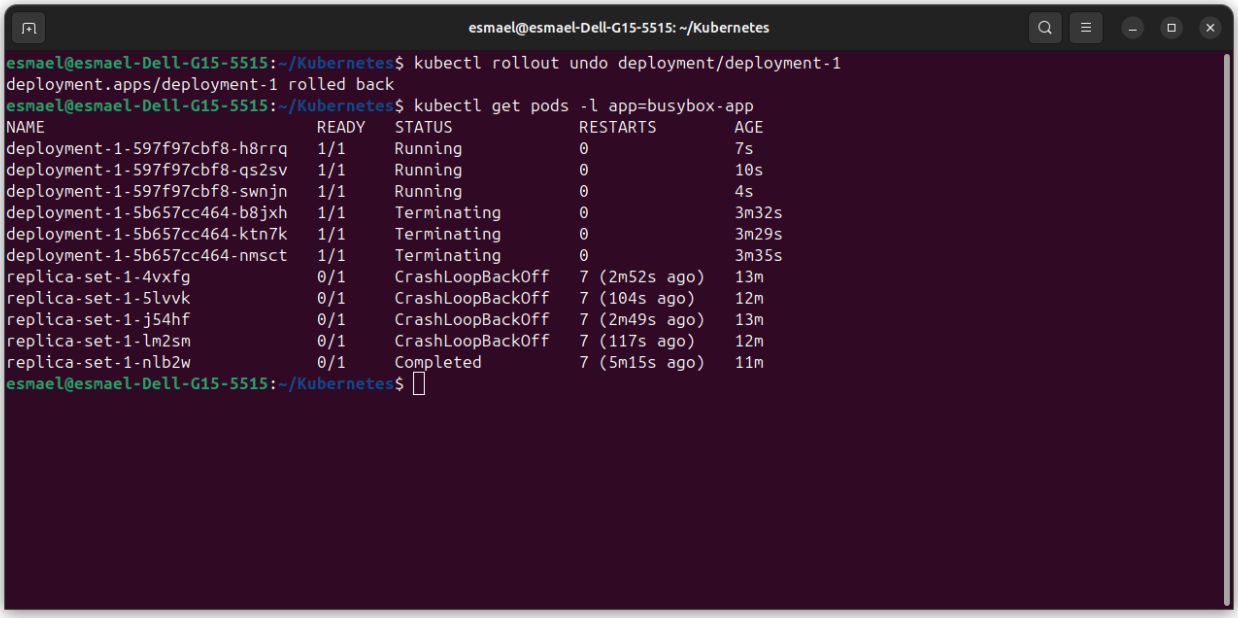


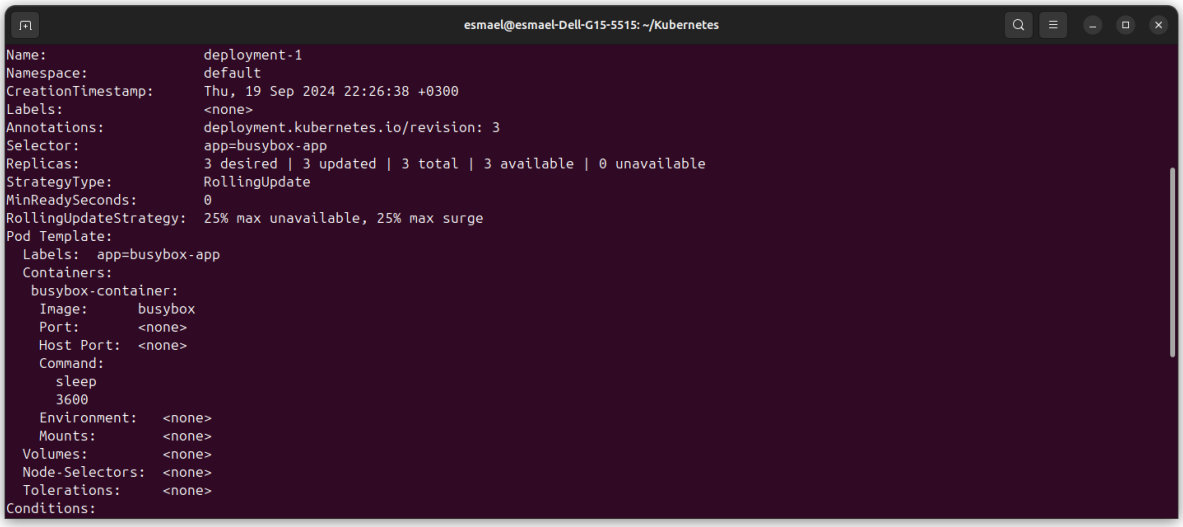
-THE DEFAULT DEPLOYMENT STRATEGY USED FOR KUBERNETES DEPLOYMENTS IS ROLLING UPDATE. THIS STRATEGY ALLOWS FOR UPDATING THE PODS GRADUALLY, ENSURING THAT SOME PODS REMAIN AVAILABLE DURING THE UPGRADE PROCESS. THE ROLLING UPDATE STRATEGY MINIMIZES DOWNTIME BY

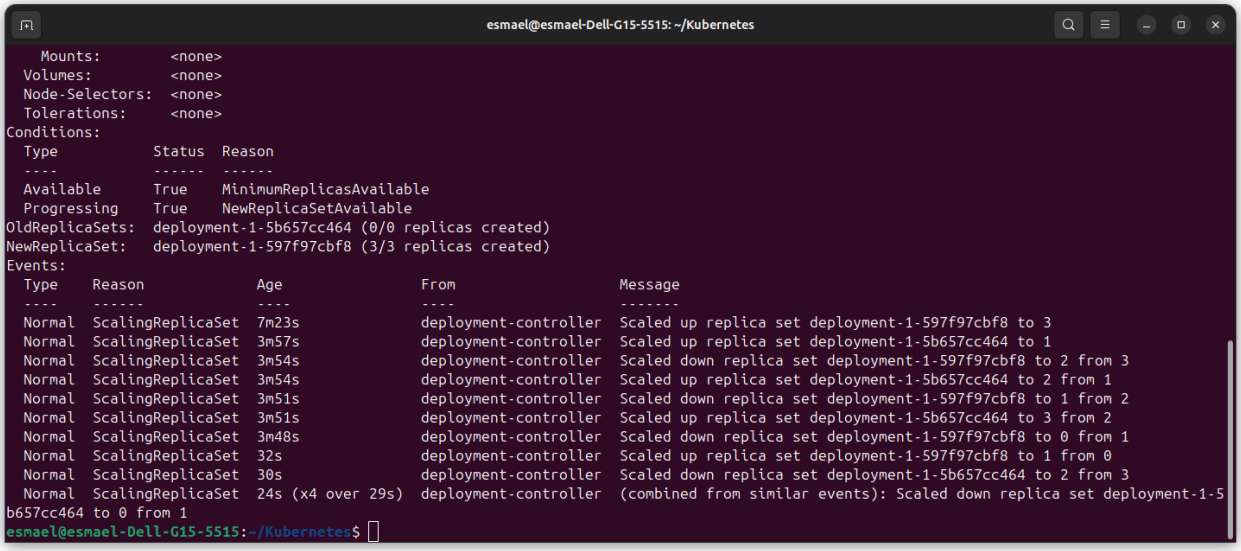
UPDATING A FEW PODS AT A TIME UNTIL ALL HAVE BEEN UPDATED TO THE NEW IMAGE.

17- Rollback the deployment

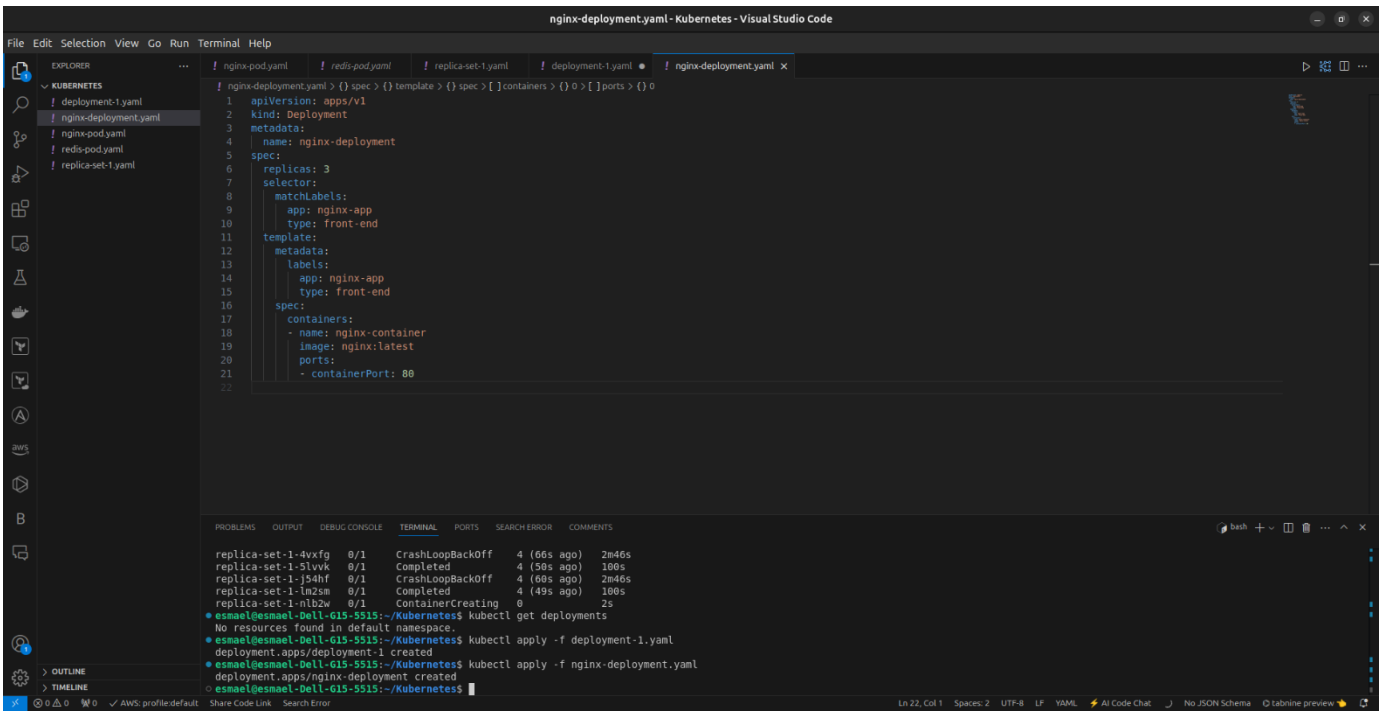
WHAT IS THE USED IMAGE WITH THE DEPLOYMENT-1?

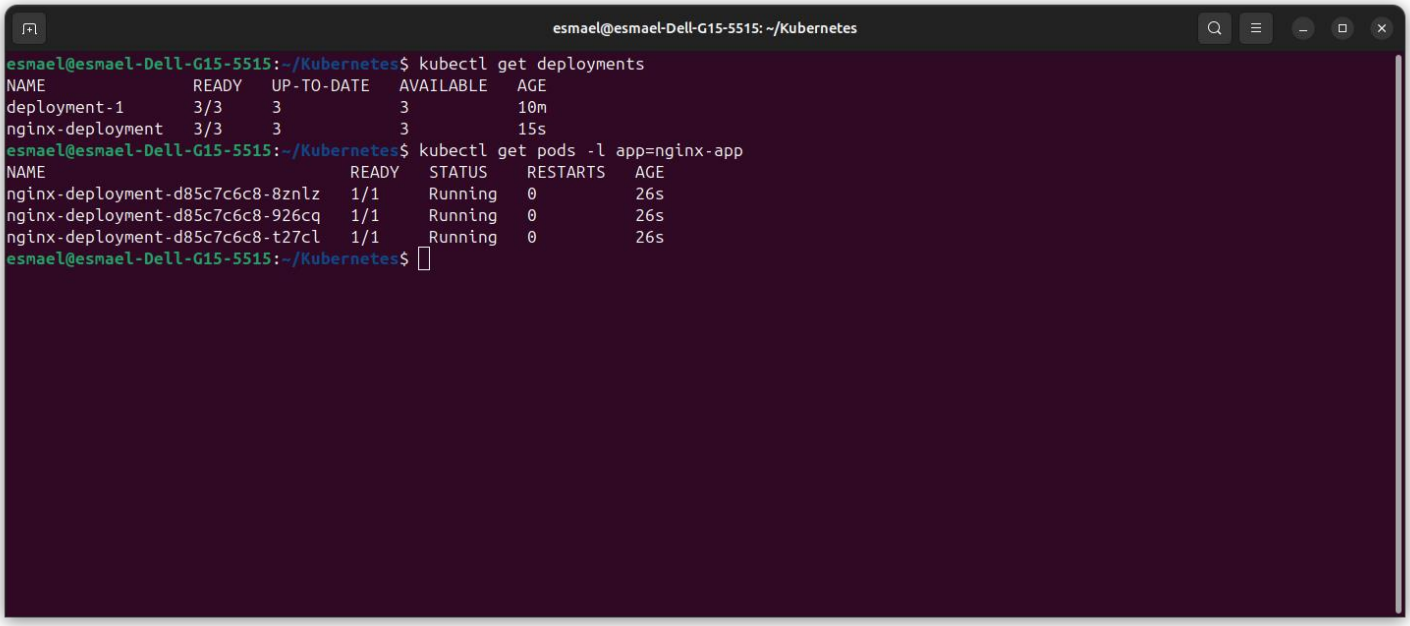






18- Create a deployment using nginx image with latest tag only and remember to mention tag i.e nginx:latest and name it as nginx-deployment. App labels should be app: nginx-app and type: front-end. The container should be named as nginx-container; also make sure replica counts are 3.




esmael@esmael-Dell-G15-5515: ~/Kubernetes
esmael@esmael-Dell-G15-5515:~/Kubernetes$ kubectl get deployments
NAME READY UP-TO-DATE AVAILABLE AGE
deployment-1 3/3 3 3 10m
nginx-deployment 3/3 3 3 15s
esmael@esmael-Dell-G15-5515:~/Kubernetes$ kubectl get pods -l app=nginx-app
NAME READY STATUS RESTARTS AGE
nginx-deployment-d85c7c6c8-8znlz 1/1 Running 0 26s
nginx-deployment-d85c7c6c8-926cq 1/1 Running 0 26s
nginx-deployment-d85c7c6c8-t27cl 1/1 Running 0 26s
esmael@esmael-Dell-G15-5515:~/Kubernetes$