K8s Day 1 Lab 1

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1- Install k8s cluster (minikube)

```
Administrator: Windows PowerShell
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\WINDOWS\system32> minikube status
minikube
type: Control Plane
host: Running
kubelet: Running
apiserver: Running
kubeconfig: Configured

PS C:\WINDOWS\system32>
```
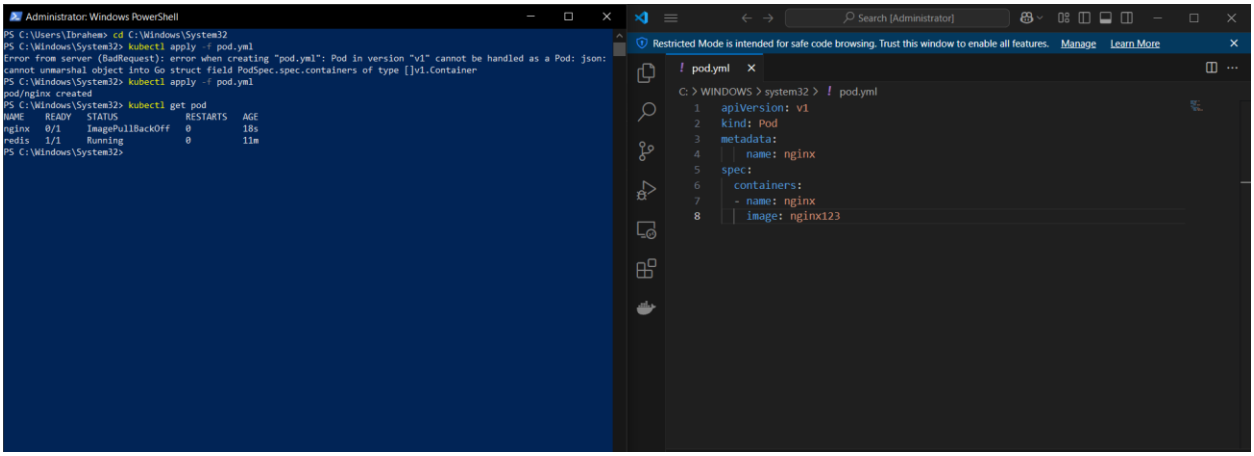

2- Create a pod with the name redis and with the image redis.

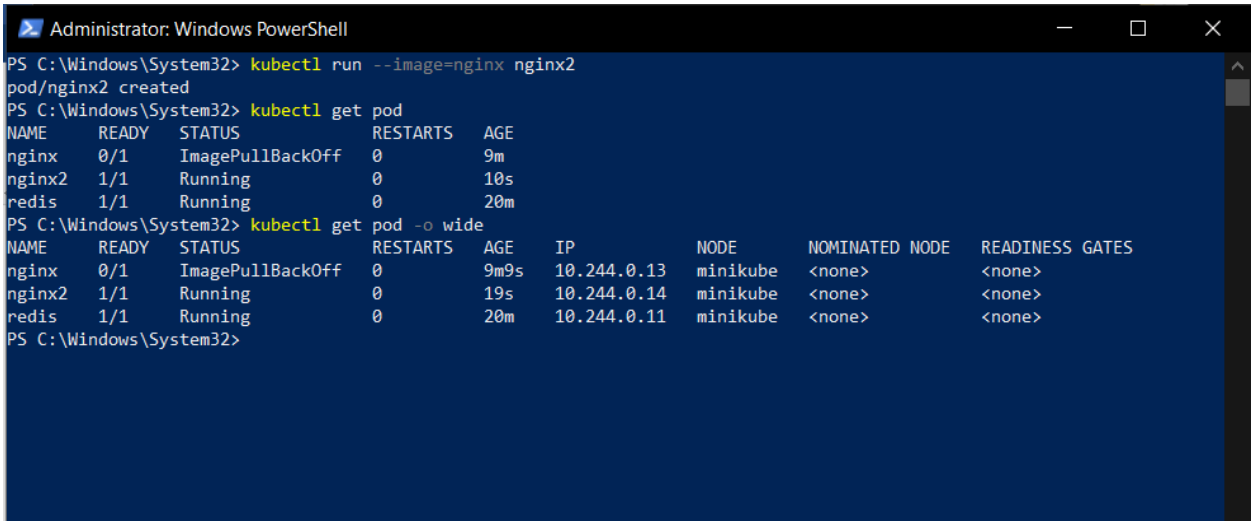
```
Administrator: Windows PowerShell
PS C:\WINDOWS\system32> kubectl  run --image=redis  redis
pod/redis created
PS C:\WINDOWS\system32> kubectl get pod
NAME    READY   STATUS              RESTARTS   AGE
redis   0/1     ContainerCreating   0          10s
PS C:\WINDOWS\system32>
```

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

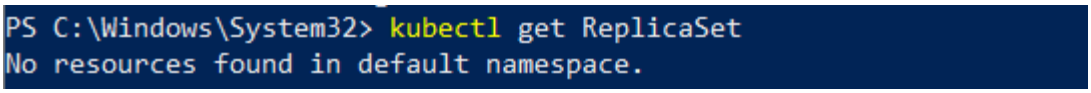
4- What is the nginx pod status?



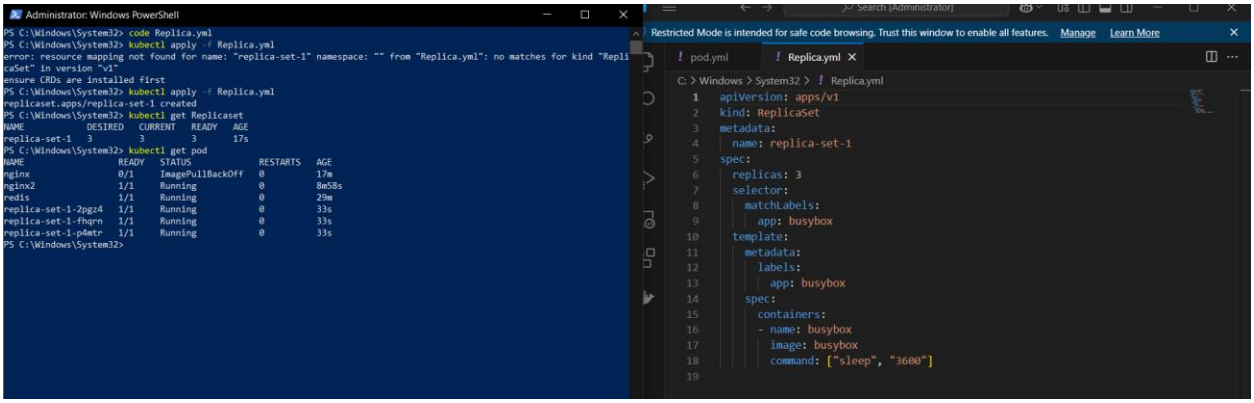
5- Change the nginx pod image to “nginx” check the status again



6- How many ReplicaSets exist on the system?



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

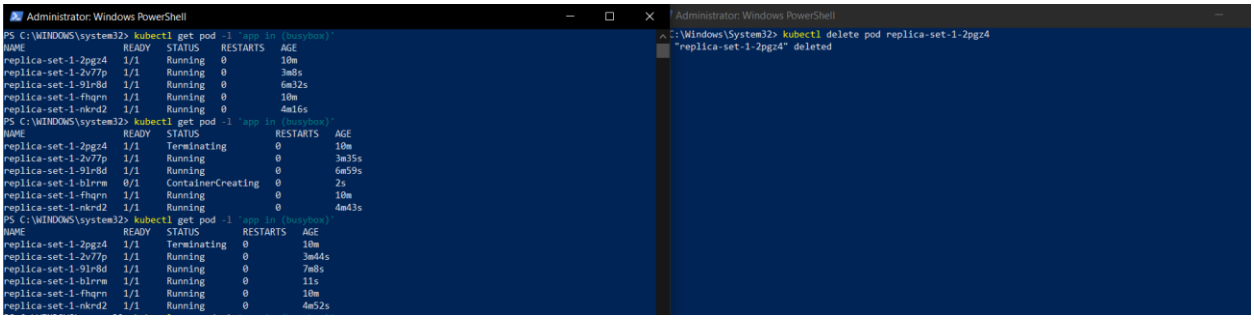


8- Scale the ReplicaSet replica-set-1 to 5 PODs.

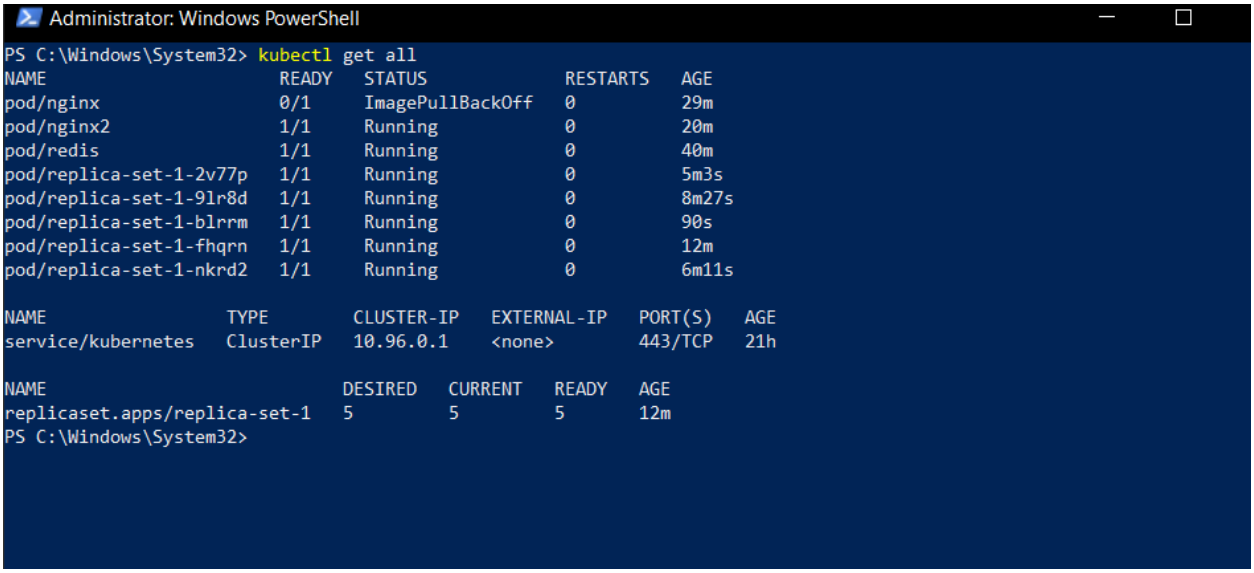
9- How many PODs are READY in the replica-set-1?

```
PS C:\Windows\System32> kubectl scale ReplicaSet replica-set-1 --replicas=5
replicaset.apps/replica-set-1 scaled
PS C:\Windows\System32> kubectl get pod
NAME                   READY   STATUS              RESTARTS   AGE
nginx                  0/1     ImagePullBackOff    0          21m
nginx2                 1/1     Running             0          12m
redis                  1/1     Running             0          32m
replica-set-1-2pgz4    1/1     Running             0          3m55s
replica-set-1-9lr8d    1/1     Running             0          5s
replica-set-1-fhqrn    1/1     Running             0          3m55s
replica-set-1-p4mtr    1/1     Running             0          3m55s
replica-set-1-pnwvz    0/1     ContainerCreating   0          5s
PS C:\Windows\System32> kubectl get pod
NAME                   READY   STATUS              RESTARTS   AGE
nginx                  0/1     ImagePullBackOff    0          21m
nginx2                 1/1     Running             0          12m
redis                  1/1     Running             0          32m
replica-set-1-2pgz4    1/1     Running             0          4m
replica-set-1-9lr8d    1/1     Running             0          10s
replica-set-1-fhqrn    1/1     Running             0          4m
replica-set-1-p4mtr    1/1     Running             0          4m
replica-set-1-pnwvz    1/1     Running             0          10s
PS C:\Windows\System32>
```

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?



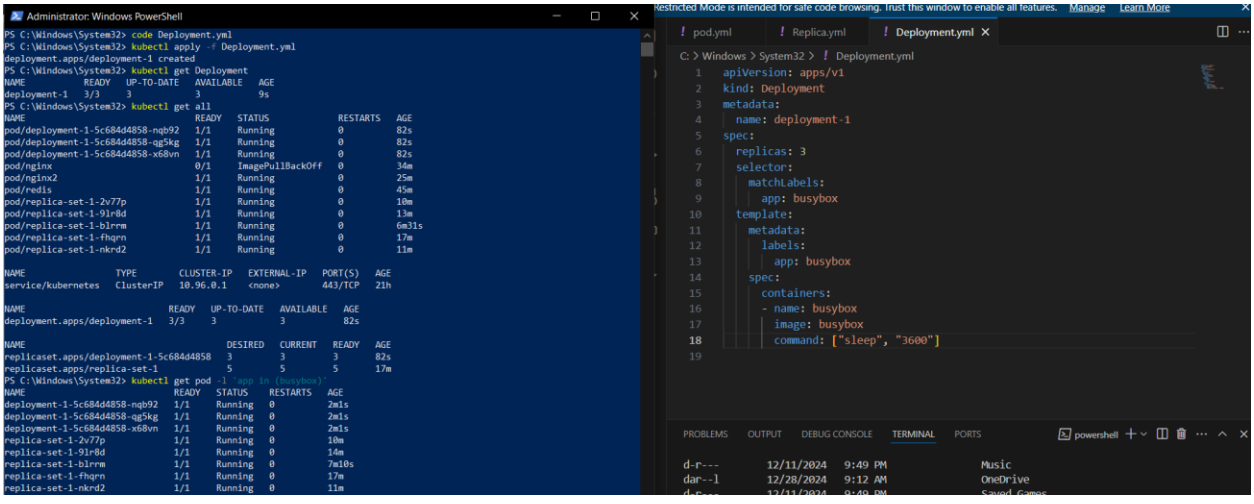
11- How many Deployments and ReplicaSets exist on the system?



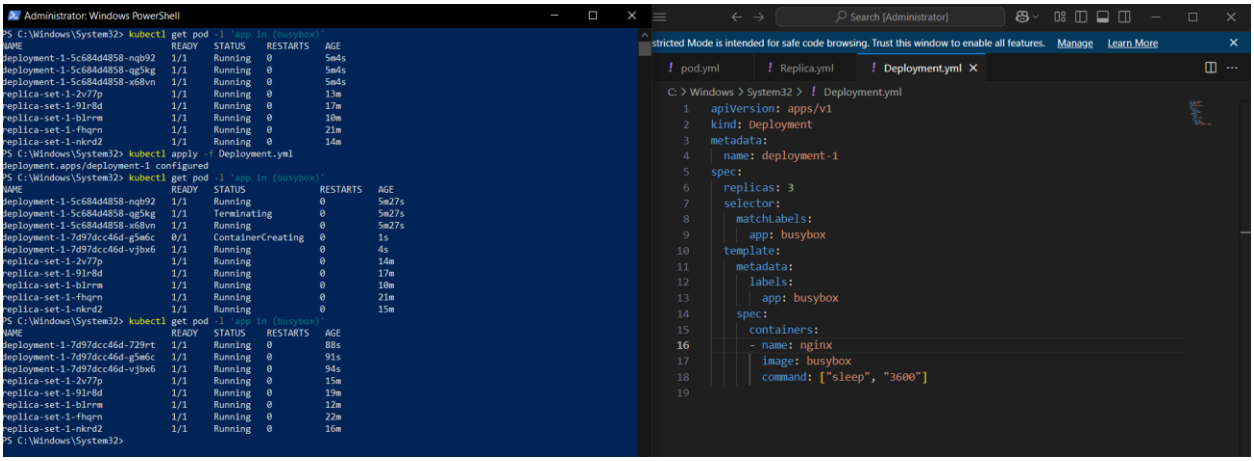
12- create a Deployment with name= deployment-1 image= busybox replicas= 3

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

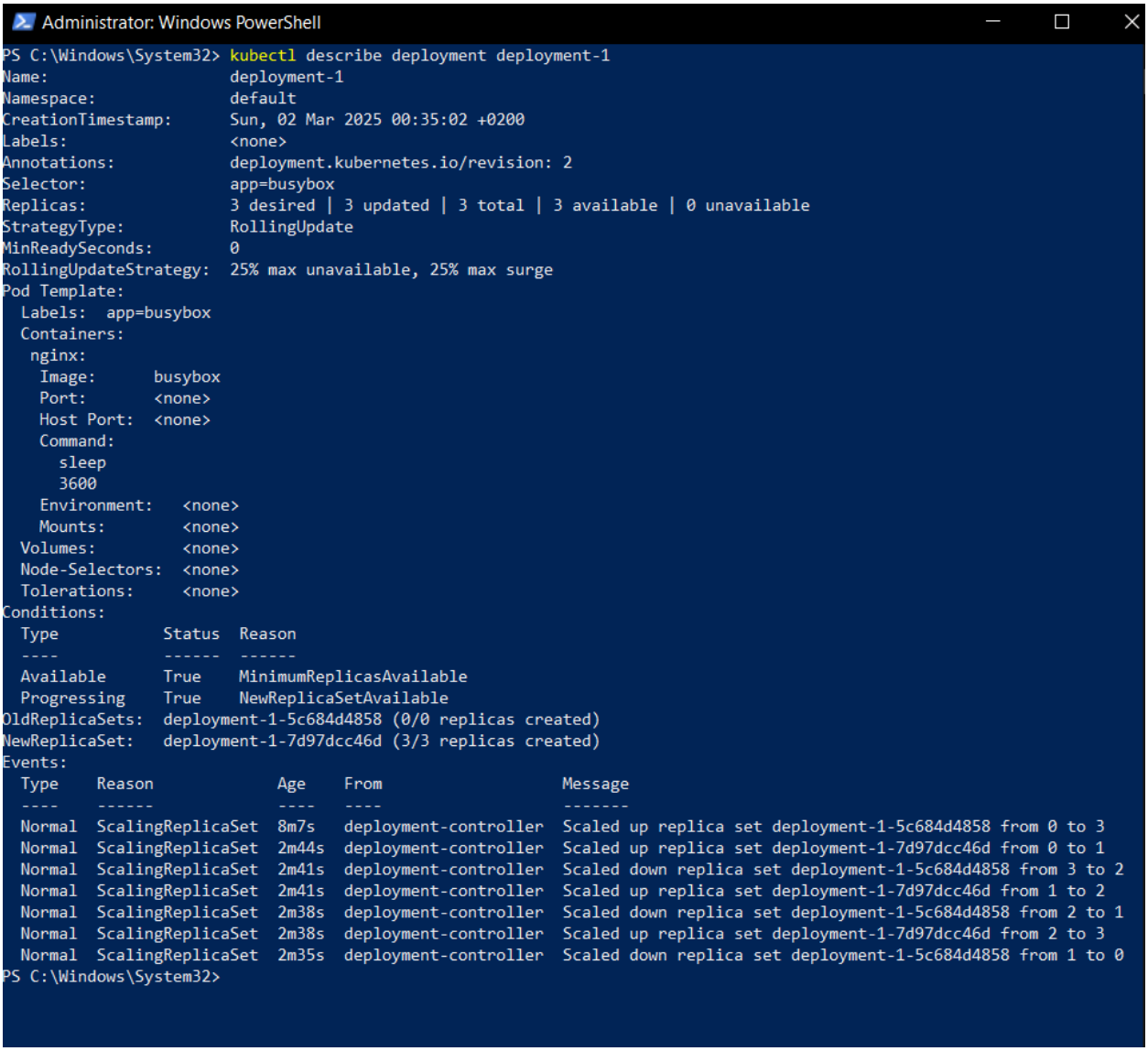
14- How many pods are ready with the deployment-1?



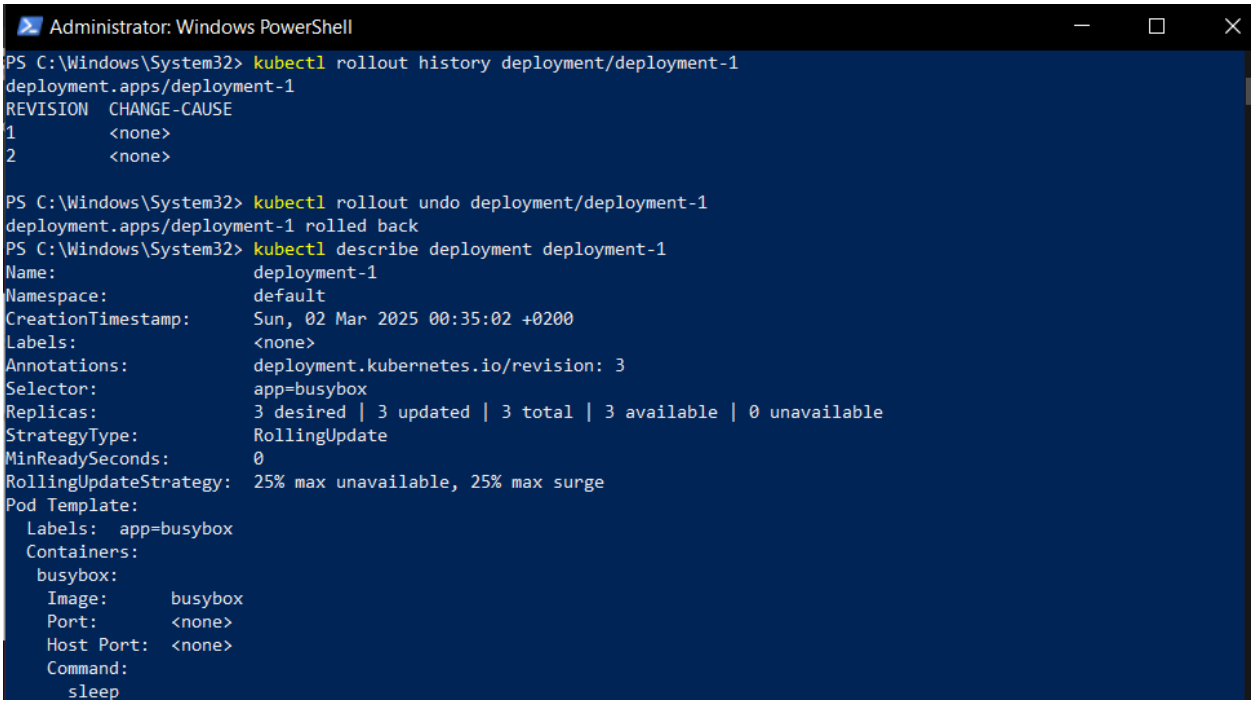
15- Update deployment-1 image to nginx then check the ready pods again



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


Administrator: Windows PowerShell
PS C:\Windows\System32> kubectl describe deployment deployment-1
Name: deployment-1
Namespace: default
CreationTimestamp: Sun, 02 Mar 2025 00:35:02 +0200
Labels: <none>
Annotations: deployment.kubernetes.io/revision: 2
Selector: app=busybox
Replicas: 3 desired | 3 updated | 3 total | 3 available | 0 unavailable
StrategyType: RollingUpdate
MinReadySeconds: 0
RollingUpdateStrategy: 25% max unavailable, 25% max surge
Pod Template:
  Labels: app=busybox
  Containers:
   nginx:
    Image: busybox
    Port: <none>
    Host Port: <none>
    Command:
      sleep
      3600
    Environment: <none>
    Mounts: <none>
  Volumes: <none>
  Node-Selectors: <none>
  Tolerations: <none>
Conditions:
  Type   Status Reason
  ----   ------ ------
  Available   True   MinimumReplicasAvailable
  Progressing   True   NewReplicaSetAvailable
OldReplicaSets: deployment-1-5c684d4858 (0/0 replicas created)
NewReplicaSet: deployment-1-7d97dcc46d (3/3 replicas created)
Events:
  Type   Reason   Age   From   Message
  ----   ------   ----   ----   -------
  Normal ScalingReplicaSet 8m7s   deployment-controller Scaled up replica set deployment-1-5c684d4858 from 0 to 3
  Normal ScalingReplicaSet 2m44s deployment-controller Scaled up replica set deployment-1-7d97dcc46d from 0 to 1
  Normal ScalingReplicaSet 2m41s deployment-controller Scaled down replica set deployment-1-5c684d4858 from 3 to 2
  Normal ScalingReplicaSet 2m41s deployment-controller Scaled up replica set deployment-1-7d97dcc46d from 1 to 2
  Normal ScalingReplicaSet 2m38s deployment-controller Scaled down replica set deployment-1-5c684d4858 from 2 to 1
  Normal ScalingReplicaSet 2m38s deployment-controller Scaled up replica set deployment-1-7d97dcc46d from 2 to 3
  Normal ScalingReplicaSet 2m35s deployment-controller Scaled down replica set deployment-1-5c684d4858 from 1 to 0
PS C:\Windows\System32>

17- Rollback the deployment-1 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