

1- How many Namespaces exist on the system?

```
abdo@abdo-Lenovo-ideapad-520-15IKB:~/NTI/docker-k8s/k8s$ kubectl get namespaces
```

NAME	STATUS	AGE
default	Active	53m
kube-node-lease	Active	53m
kube-public	Active	53m
kube-system	Active	53m

2- How many pods exist in the kube-system namespace?

```
abdo@abdo-Lenovo-ideapad-520-15IKB:~/NTI/docker-k8s/k8s$ kubectl get pods -n kube-system
```

NAME	READY	STATUS	RESTARTS	AGE
coredns-5d78c9869d-m5fdc	1/1	Running	0	53m
etcd-minikube	1/1	Running	0	53m
kube-apiserver-minikube	1/1	Running	0	53m
kube-controller-manager-minikube	1/1	Running	0	53m
kube-proxy-vvmz7	1/1	Running	0	53m
kube-scheduler-minikube	1/1	Running	0	53m
storage-provisioner	1/1	Running	0	53m

3- Create a deployment with

Name: beta

Image: redis

Replicas: 2

Namespace: finance

Resources Requests:

CPU: .5 vcpu

Mem: 1G

Resources Limits:

CPU: 1 vcpu

Mem: 2G

```
abdo@abdo-Lenovo-ideapad-520-15IKB:~/NTI/docker-k8s/k8s$ kubectl create namespace finance
namespace/finance created
abdo@abdo-Lenovo-ideapad-520-15IKB:~/NTI/docker-k8s/k8s$ kubectl apply -f beta-deployment.yaml
deployment.apps/beta created
abdo@abdo-Lenovo-ideapad-520-15IKB:~/NTI/docker-k8s/k8s$
```

4- How many Nodes exist on the system?

```
abdo@abdo-Lenovo-ideapad-520-15IKB:~/NTI/docker-k8s/k8s$ kubectl get nodes
NAME          STATUS    ROLES          AGE    VERSION
minikube      Ready     control-plane  56m    v1.27.4
abdo@abdo-Lenovo-ideapad-520-15IKB:~/NTI/docker-k8s/k8s$
```

5- Do you see any taints on master?

```
abdo@abdo-Lenovo-ideapad-520-15IKB:~/NTI/docker-k8s/k8s$ kubectl describe node minikube
Name:          minikube
Roles:         control-plane
Labels:        beta.kubernetes.io/arch=amd64
               beta.kubernetes.io/os=linux
               kubernetes.io/arch=amd64
               kubernetes.io/hostname=minikube
               kubernetes.io/os=linux
               minikube.k8s.io/commit=fd7ecd9c4599bef9f04c0986c4a0187f98a4396e
               minikube.k8s.io/name=minikube
               minikube.k8s.io/primary=true
               minikube.k8s.io/updated_at=2025_04_26T02_05_30_0700
               minikube.k8s.io/version=v1.31.2
               node-role.kubernetes.io/control-plane=
               node.kubernetes.io/exclude-from-external-load-balancers=
Annotations:   kubeadm.alpha.kubernetes.io/cri-socket: unix:///var/run/cni-dockerd.sock
               node.alpha.kubernetes.io/ttl: 0
               volumes.kubernetes.io/controller-managed-attach-detach: true
CreationTimestamp: Sat, 26 Apr 2025 02:05:25 +0300
Taints:         <none>
Unschedulable:  false
Lease:
  HolderIdentity: minikube
  AcquireTime:    <unset>
  RenewTime:      Sat, 26 Apr 2025 03:03:40 +0300
Conditions:
  Type           Status  LastHeartbeatTime           LastTransitionTime          Reas
```

6- Apply a label color=blue to the master node

```
minikube      Ready     control-plane  62m    v1.27.4
abdo@abdo-Lenovo-ideapad-520-15IKB:~/NTI/docker-k8s/k8s$ kubectl get nodes
NAME          STATUS    ROLES          AGE    VERSION
minikube      Ready     control-plane  62m    v1.27.4
abdo@abdo-Lenovo-ideapad-520-15IKB:~/NTI/docker-k8s/k8s$ kubectl label node minikube color=blue
node/minikube labeled
```

7- Create a new deployment named blue with the nginx image and 3 replicas

Set Node Affinity to the deployment to place the pods on master only

NodeAffinity: requiredDuringSchedulingIgnoredDuringExecution

```
Key: color
values: blue
apiVersion: apps/v1
kind: Deployment
metadata:
  name: blue
spec:
  replicas: 3
  selector:
    matchLabels:
      app: blue
  template:
    metadata:
      labels:
        app: blue
    spec:
      affinity:
        nodeAffinity:
          requiredDuringSchedulingIgnoredDuringExecution:
            nodeSelectorTerms:
              - matchExpressions:
                  - key: color
                    operator: In
                    values:
                      - blue
      containers:
        - name: nginx
          image: nginx
```