

KUBERNETES ASSIGNMENT 1

Exercise 1: Deploy an Nginx pod

Step 1: Start a Kubernetes cluster (Minikube or other cluster):

```
minikube start
```

Step 2: Create an Nginx pod:

```
kubectl run nginx-pod --image=nginx --restart=Never
```

Step 3: Verify the pod is running:

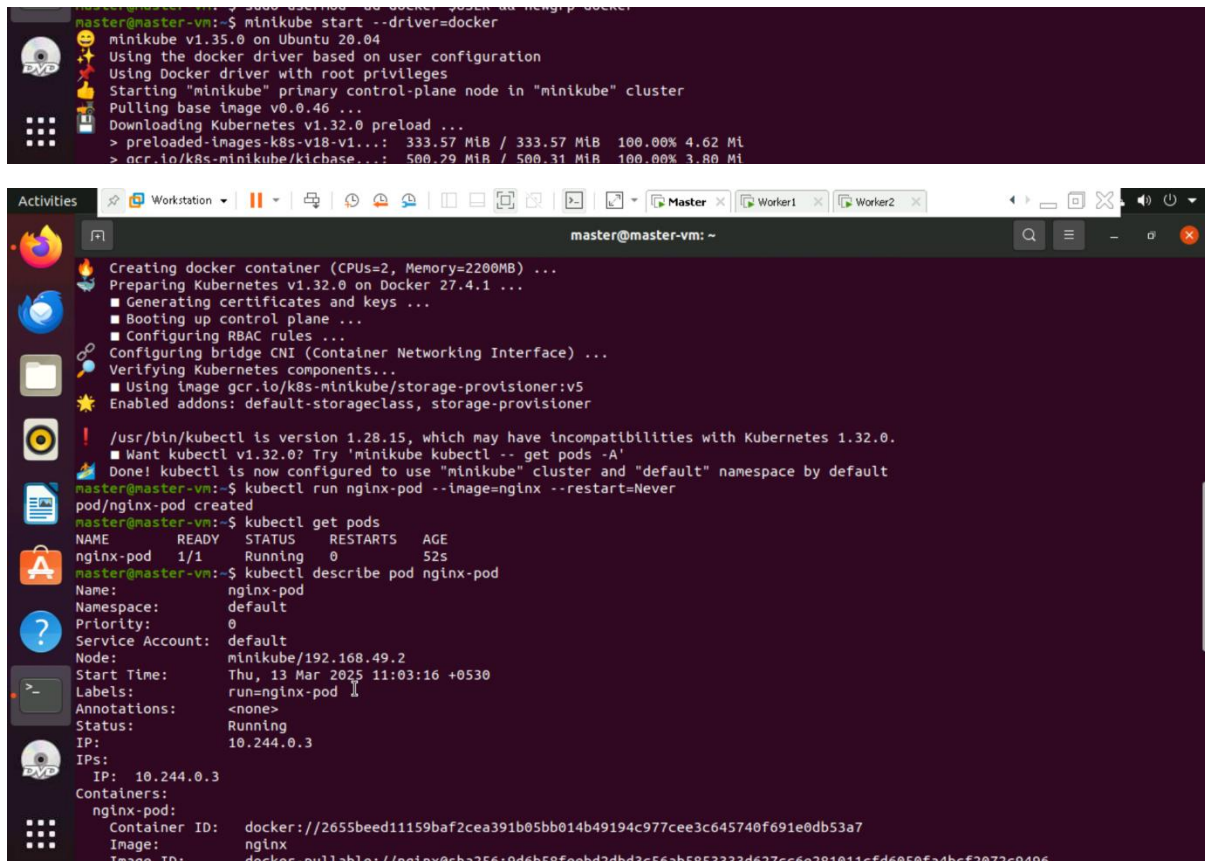
```
kubectl get pods
```

Step 4: Check pod details:

```
kubectl describe pod nginx-pod
```

Step 5: Delete the pod:

```
kubectl delete pod nginx-pod
```



The image shows two screenshots of a terminal window. The top screenshot shows the command `minikube start --driver=docker` being executed, which starts a Minikube cluster. The output shows that the cluster is successfully created and the control plane is up. The bottom screenshot shows the command `kubectl run nginx-pod --image=nginx --restart=Never` being executed, which creates an Nginx pod. The output shows that the pod is successfully created and is in a 'Running' state. The terminal also displays the output of `kubectl get pods` and `kubectl describe pod nginx-pod`, showing the pod's details and status.

```
master@master-vm:~$ minikube start --driver=docker
minikube v1.35.0 on Ubuntu 20.04
Using the docker driver based on user configuration
Using Docker driver with root privileges
Starting "minikube" primary control-plane node in "minikube" cluster
Pulling base image v0.0.46 ...
Downloading Kubernetes v1.32.0 preload ...
> preloaded-images-k8s-v18-v1...: 333.57 MiB / 333.57 MiB 100.00% 4.62 Mi
> gcr.io/k8s-minikube/kicbase...: 500.29 MiB / 500.31 MiB 100.00% 3.80 Mi

master@master-vm:~$ kubectl run nginx-pod --image=nginx --restart=Never
pod/nginx-pod created
master@master-vm:~$ kubectl get pods
NAME      READY   STATUS    RESTARTS   AGE
nginx-pod 1/1     Running   0           52s
master@master-vm:~$ kubectl describe pod nginx-pod
Name:      nginx-pod
Namespace: default
Priority:   0
Service Account: default
Node:      minikube/192.168.49.2
Start Time: Thu, 13 Mar 2025 11:03:16 +0530
Labels:    run=nginx-pod
Annotations: <none>
Status:    Running
IP:        10.244.0.3
IPs:
  IP: 10.244.0.3
Containers:
  nginx-pod:
    Container ID: docker://2655beed11159baf2cea391b05bb014b49194c977cee3c645740f691e0db53a7
    Image:        nginx
    Image ID:     docker-pullable://nginx@sha256:9d6b58fehd2dbd3c56ab585333d627cc6e281011cfd6050fa4bfcf2072c9496
```

```
Activities Workstation Master Worker1 Worker2
master@master-vm: ~
Environment: <none>
Mounts:
/var/run/secrets/kubernetes.io/serviceaccount from kube-api-access-5qwlc (ro)
Conditions:
Type Status
PodReadyToStartContainers True
Initialized True
Ready True
ContainersReady True
PodScheduled True
Volumes:
kube-api-access-5qwlc:
Type: Projected (a volume that contains injected data from multiple sources)
TokenExpirationSeconds: 3607
ConfigMapName: kube-root-ca.crt
ConfigMapOptional: <nil>
DownwardAPI: true
QoS Class: BestEffort
Node-Selectors: <none>
Tolerations: node.kubernetes.io/not-ready:NoExecute op=Exists for 300s
node.kubernetes.io/unreachable:NoExecute op=Exists for 300s
Events:
Type Reason Age From Message
Normal Scheduled 2m47s default-scheduler Successfully assigned default/nginx-pod to minikube
Normal Pulling 2m46s kubelet Pulling image "nginx"
Normal Pulled 2m26s kubelet Successfully pulled image "nginx" in 19.605s (19.605s including waiting). Image size: 191998640 bytes.
Normal Created 2m26s kubelet Created container: nginx-pod
Normal Started 2m26s kubelet Started container nginx-pod
master@master-vm:~$ kubectl delete pod nginx-pod
Error from server (NotFound): pods "nginx-pod" not found
master@master-vm:~$ kubectl delete pod nginx-pod
pod "nginx-pod" deleted
master@master-vm:~$
```

Exercise – 2: Create an Nginx Deployment and scale it.

Step 1: Create a deployment with Nginx:

```
kubectl create deployment nginx-deployment --image=nginx
```

Step 2: Check the deployment:

```
kubectl get deployments
```

Step 3: Scale the deployment to 3 replicas:

```
kubectl scale deployment nginx-deployment --replicas=3
```

Step 4: Check the running pods:

```
kubectl get pods -o wide
```

Step 5: Delete the deployment:

```
kubectl delete deployment nginx-deployment
```

```
master@master-vm:~$ kubectl create deployment nginx-deployment --image=nginx
deployment.apps/nginx-deployment created
master@master-vm:~$ kubectl get deployments
NAME READY UP-TO-DATE AVAILABLE AGE
nginx-deployment 1/1 1 1 63s
master@master-vm:~$ kubectl scale deployment nginx-deployment --replica=3
error: unknown flag: --replica
See 'kubectl scale --help' for usage.
master@master-vm:~$ kubectl scale deployment nginx-deployment --replicas=3
deployment.apps/nginx-deployment scaled
master@master-vm:~$ kubectl get pods -o wide
NAME READY STATUS RESTARTS AGE IP NODE NOMINATED NODE READINESS GATES
nginx-deployment-6cfb98644c-26p5v 1/1 Running 0 3m15s 10.244.0.4 minikube <none> <none>
nginx-deployment-6cfb98644c-vwmdl 1/1 Running 0 80s 10.244.0.6 minikube <none> <none>
nginx-deployment-6cfb98644c-xwq6q 1/1 Running 0 80s 10.244.0.5 minikube <none> <none>
master@master-vm:~$ kubectl delete deployment nginx-deployment
deployment.apps "nginx-deployment" deleted
master@master-vm:~$
```