KUBERNETES HANDS-ON EXERCISES WITH STEP-BY-STEP COMMANDS AND SOLUTIONS

Exercise 3: Create a Pod using a YAML Manifest

Objective: Define and deploy a pod using YAML.

Steps & Commands:

1. **Create a YAML file (`nginx-pod.yaml`):**

```
master@master-vm:~$ nano nginx-pod.yaml
```

2. **Apply the YAML file:**

```
master@master-vm:~$ kubectl apply -f nginx-pod.yaml
pod/nginx-pod created
```

3. **Check if the pod is running:**

```
master@master-vm:~$ kubectl get pods
NAME        READY   STATUS    RESTARTS   AGE
nginx-pod   1/1     Running   0          11s
```

4. **Delete the pod using YAML:**

```
master@master-vm:~$ kubectl delete pod nginx-pod
pod "nginx-pod" deleted
```

Exercise 4: Create and Use a ConfigMap

Objective: Store environment variables in a ConfigMap and use it in a pod.

Steps & Commands:

1. **Create a ConfigMap:**

```
master@master-vm:~$ kubectl create configmap app-config --from-literal=APP_ENV=production
configmap/app-config created
```

2. **Verify ConfigMap:**

```
master@master-vm:~$ kubectl get configmaps app-config -o yaml
apiVersion: v1
data:
  APP_ENV: production
kind: ConfigMap
metadata:
  creationTimestamp: "2025-03-14T04:46:19Z"
  name: app-config
  namespace: default
  resourceVersion: "44754"
  uid: 31baa65d-c209-476e-b353-2a8fa32d784f
```

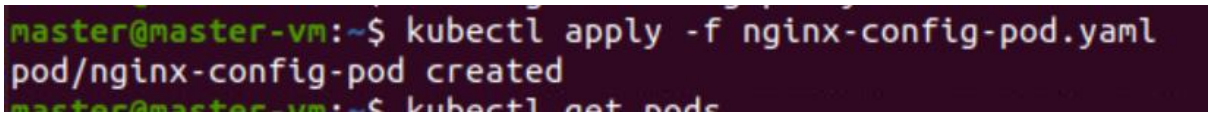
3. **Create a pod that uses the ConfigMap (`nginx-config-pod.yaml`):**

```
master@master-vm:~$ nano nginx-config-pod.yaml
```

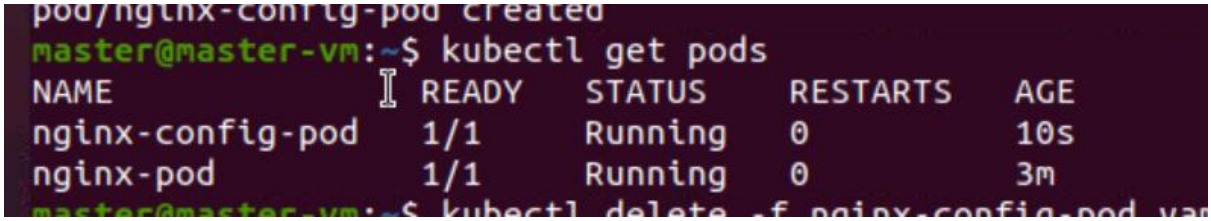
```
apiVersion: v1
kind: Pod
metadata:
  name: nginx-config-pod
spec:
  containers:
  - name: nginx
    image: nginx
```

```
env:
- name: APP_ENV
  valueFrom:
    configMapKeyRef:
      name: app-config
      key: APP_ENV
```

4. **Deploy the pod:**



5. **Check if the pod is running:**



6. **Delete the pod and ConfigMap:**