

## Exam Questions CKA

Certified Kubernetes Administrator (CKA) Program

<https://www.2passeasy.com/dumps/CKA/>



**NEW QUESTION 1**

Given a partially-functioning Kubernetes cluster, identify symptoms of failure on the cluster.

Determine the node, the failing service, and take actions to bring up the failed service and restore the health of the cluster. Ensure that any changes are made permanently.

You can ssh to the relevant nodes (bk8s-master-0 or bk8s-node-0) using:

```
[student@node-1] $ ssh <nodename>
```

You can assume elevated privileges on any node in the cluster with the following command:

```
[student@nodename] $ | sudo ?Ci
```

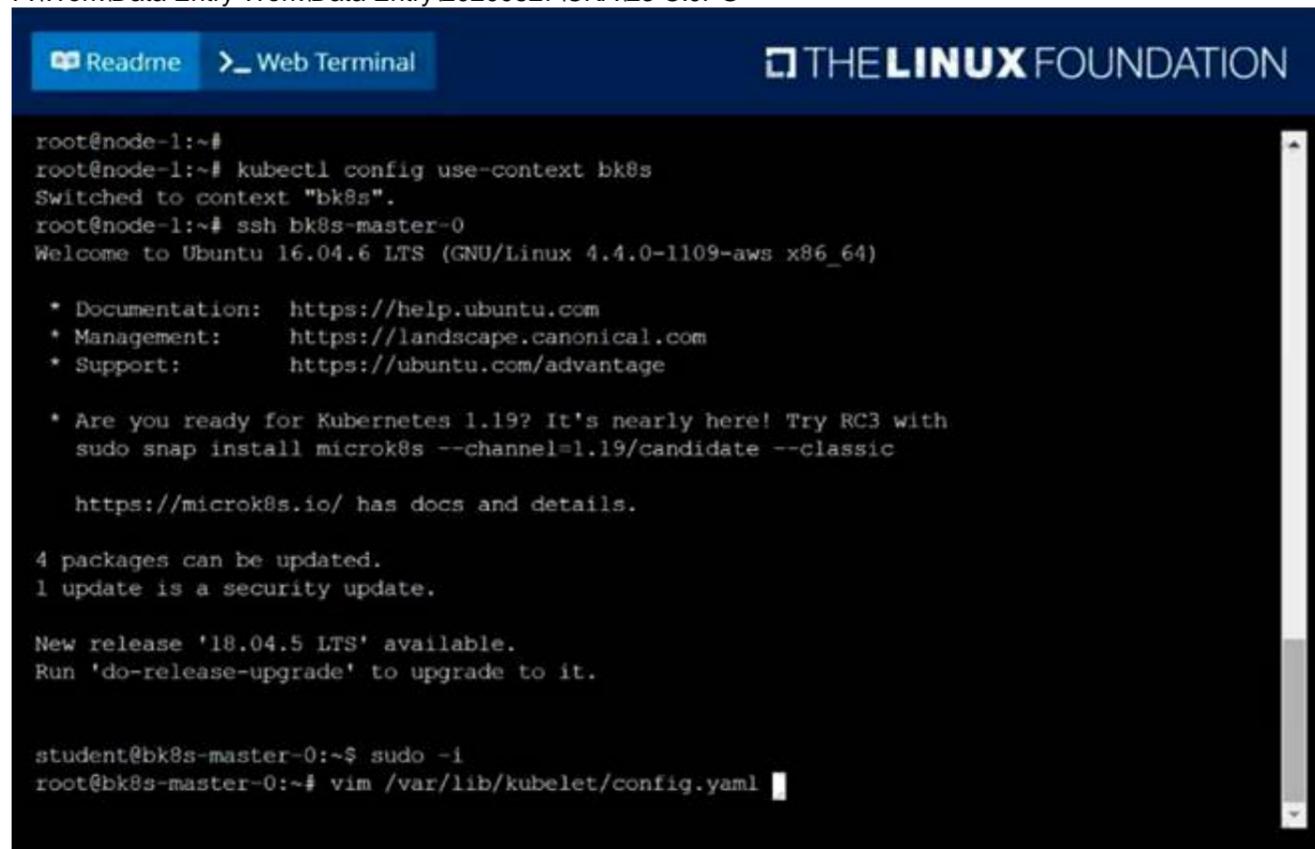
- A. Mastered
- B. Not Mastered

**Answer: A**

**Explanation:**

solution

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```
root@node-1:~#
root@node-1:~# kubectl config use-context bk8s
Switched to context "bk8s".
root@node-1:~# ssh bk8s-master-0
Welcome to Ubuntu 16.04.6 LTS (GNU/Linux 4.4.0-1109-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

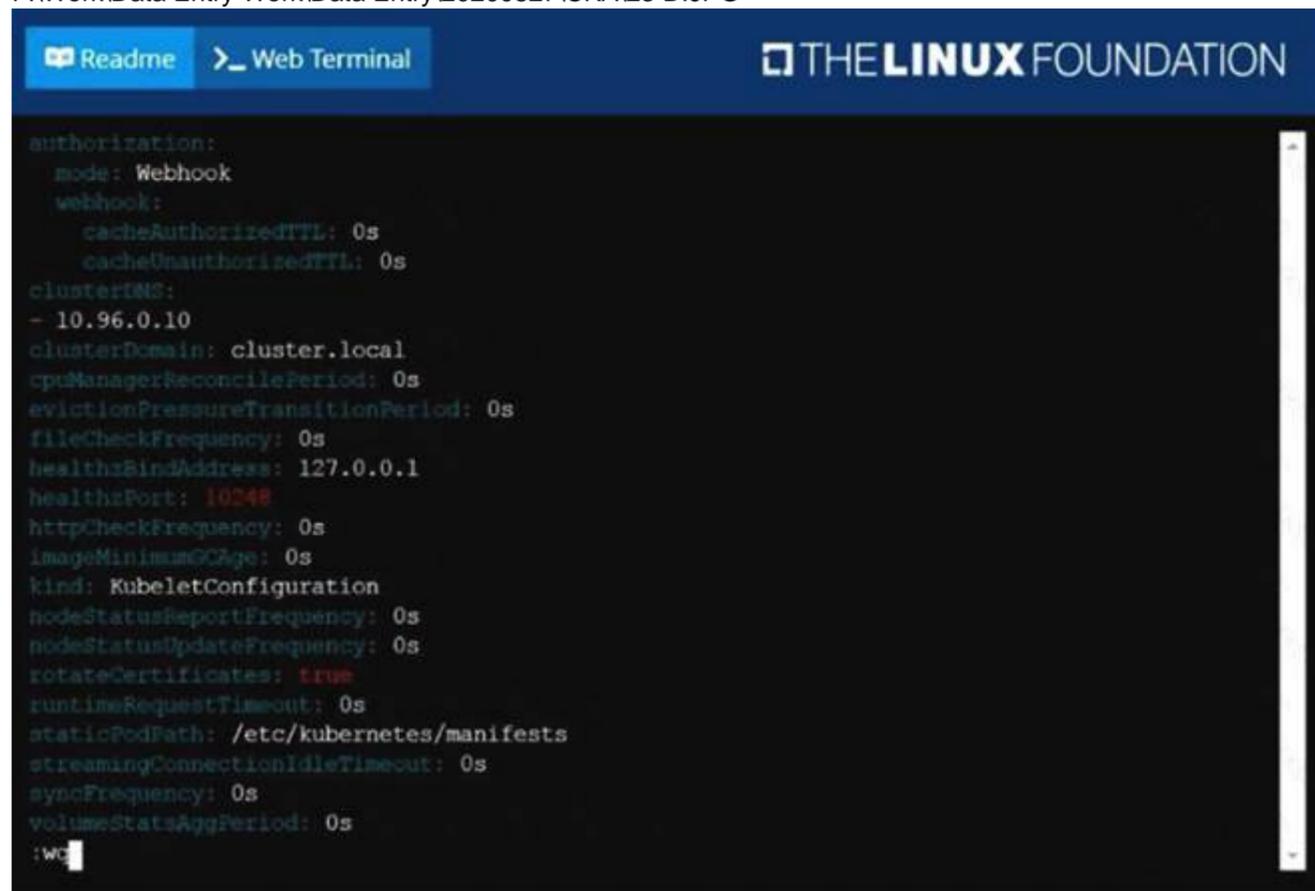
 * Are you ready for Kubernetes 1.19? It's nearly here! Try RC3 with
   sudo snap install microk8s --channel=1.19/candidate --classic
   https://microk8s.io/ has docs and details.

4 packages can be updated.
1 update is a security update.

New release '18.04.5 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

student@bk8s-master-0:~$ sudo -i
root@bk8s-master-0:~# vim /var/lib/kubelet/config.yaml
```

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```
authorization:
  mode: Webhook
  webhook:
    cacheAuthorizedTTL: 0s
    cacheUnauthorizedTTL: 0s
clusterDNS:
- 10.96.0.10
clusterDomain: cluster.local
cpuManagerReconcilePeriod: 0s
evictionPressureTransitionPeriod: 0s
fileCheckFrequency: 0s
healthzBindAddress: 127.0.0.1
healthzPort: 10248
httpCheckFrequency: 0s
imageMinimumGCAge: 0s
kind: KubeletConfiguration
nodeStatusReportFrequency: 0s
nodeStatusUpdateFrequency: 0s
rotateCertificates: true
runtimeRequestTimeout: 0s
staticPodPath: /etc/kubernetes/manifests
streamingConnectionIdleTimeout: 0s
syncFrequency: 0s
volumeStatsAggPeriod: 0s
:~#
```

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```
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https://microk8s.io/ has docs and details.

4 packages can be updated.
1 update is a security update.

New release '18.04.5 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

student@bk8s-master-0:~$ sudo -i
root@bk8s-master-0:~# vim /var/lib/kubelet/config.yaml
root@bk8s-master-0:~# systemctl restart kubelet
root@bk8s-master-0:~# systemctl enable kubelet
root@bk8s-master-0:~# kubectl get nodes

NAME             STATUS    ROLES    AGE   VERSION
bk8s-master-0   Ready    master   77d   v1.18.2
bk8s-node-0     Ready    <none>   77d   v1.18.2
root@bk8s-master-0:~#
root@bk8s-master-0:~# exit
logout
student@bk8s-master-0:~$ exit
logout
Connection to 10.250.4.77 closed.
root@node-1:~#
```

**NEW QUESTION 2**

Create a pod as follows:

- > Name:mongo
- > Using Image:mongo
- > In anew Kubernetes namespacenamed:my-website

- A. Mastered
- B. Not Mastered

Answer: A

**Explanation:**

solution

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```
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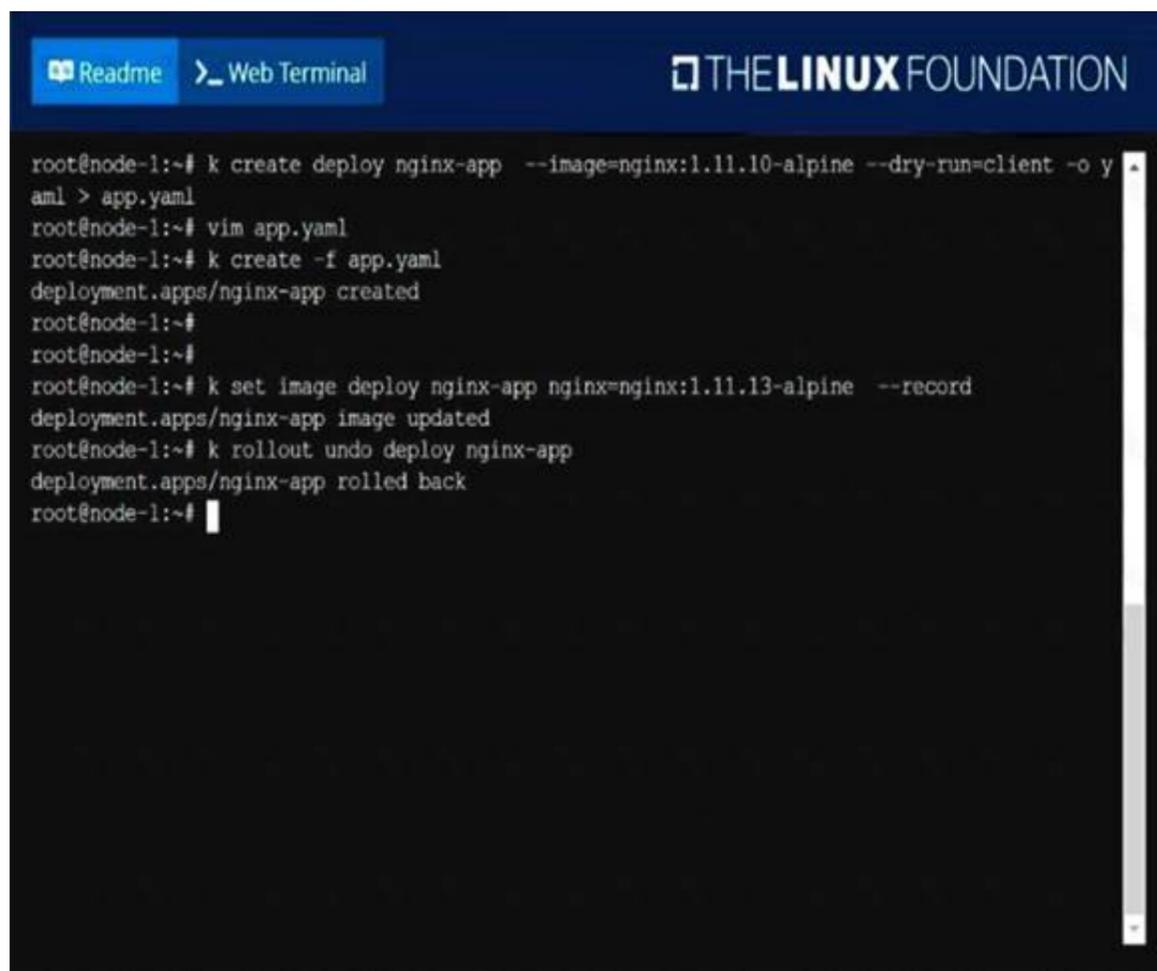
root@node-1:~#
root@node-1:~#
root@node-1:~# k create ns my-website
namespace/my-website created
root@node-1:~# k run mongo --image=mongo -n my-website
pod/mongo created
root@node-1:~# k get po -n my-website
NAME    READY   STATUS              RESTARTS   AGE
mongo   0/1     ContainerCreating   0           4s
root@node-1:~#
```

**NEW QUESTION 3**

Create a deployment as follows:

- > Name:nginx-app
- > Using containernginxwithversion 1.11.10-alpine
- > The deployment should contain3replicas





```
Readme Web Terminal THE LINUX FOUNDATION
root@node-1:~# k create deploy nginx-app --image=nginx:1.11.10-alpine --dry-run=client -o y
aml > app.yaml
root@node-1:~# vim app.yaml
root@node-1:~# k create -f app.yaml
deployment.apps/nginx-app created
root@node-1:~#
root@node-1:~#
root@node-1:~# k set image deploy nginx-app nginx=nginx:1.11.13-alpine --record
deployment.apps/nginx-app image updated
root@node-1:~# k rollout undo deploy nginx-app
deployment.apps/nginx-app rolled back
root@node-1:~#
```

**NEW QUESTION 4**

Create a pod with image nginx called nginx and allow traffic on port 80

- A. Mastered
- B. Not Mastered

**Answer:** A

**Explanation:**

kubectlrn nginx --image=nginx --restart=Never --port=80

**NEW QUESTION 5**

Create a nginx pod with label env=test in engineering namespace

- A. Mastered
- B. Not Mastered

**Answer:** A

**Explanation:**

```
kubectl run nginx --image=nginx --restart=Never --labels=env=test --namespace=engineering --dry-run -o yaml > nginx-pod.yaml
kubectl run nginx --image=nginx --restart=Never --labels=env=test --namespace=engineering --dry-run -o yaml | kubectl create -nengineering-f ?C
YAML File: apiVersion: v1 kind: Pod metadata: name: nginx
namespace: engineering labels:
env: test spec: containers:
- name: nginx image: nginx
imagePullPolicy: IfNotPresent restartPolicy: Never
kubectl create -f nginx-pod.yaml
```

**NEW QUESTION 6**

Set the node named ek8s-node-1 as unavailable and reschedule all the pods running on it.

- A. Mastered
- B. Not Mastered

**Answer:** A

**Explanation:**

solution  
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```
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root@node-1:~# kubectl config use-context ek8s
Switched to context "ek8s".
root@node-1:~# k drain ek8s-node-1 --ignore-daemonsets --delete-local-data --force
node/ek8s-node-1 cordoned
WARNING: ignoring DaemonSet-managed Pods: kube-system/kube-flannel-ds-amd64-qj7w8, kube-system/kube-proxy-x7xkv
evicting pod default/nginx-568f5649b8-c9zkj
evicting pod kube-system/metrics-server-64b57fd654-cktk5
█
```

**NEW QUESTION 7**

Create a persistent volume with name app-data, of capacity 2Gi and access mode ReadWriteMany. The type of volume is hostPath and its location is /srv/app-data.

- A. Mastered
- B. Not Mastered

**Answer:** A

**Explanation:**

solution

Persistent Volume

A persistent volume is a piece of storage in a Kubernetes cluster. Persistent Volumes are a cluster-level resource like nodes, which don't belong to any namespace. It is provisioned by the administrator and has a particular file size. This way, a developer deploying their app on Kubernetes need not know the underlying infrastructure. When the developer needs a certain amount of persistent storage for their application, the system administrator configures the cluster so that they consume the Persistent Volume provisioned in an easy way.

Creating Persistent Volume

```
kind: PersistentVolume
apiVersion: v1
metadata:
  name: app-data
spec:
  capacity: # defines the capacity of PV we are creating
  storage: 2Gi # the amount of storage we are trying to claim
  accessModes: # defines the rights of the volume we are creating
  - ReadWriteMany
  hostPath:
    path: "/srv/app-data" # path to which we are creating the volume
```

Challenge

> Create a Persistent Volume named app-data, with access mode ReadWriteMany, storage class name shared, 2Gi of storage capacity and the host path /srv/app-data.

```
apiVersion: v1
kind: PersistentVolume
metadata:
  name: app-data
spec:
  capacity:
    storage: 2Gi
  accessModes:
    - ReadWriteMany
  hostPath:
    path: /srv/app-data
  storageClassName: share
```

"app-data.yaml" 12L, 194C

\* 2. Save the file and create the persistent volume. Image for post

```
njerry191@cloudshell:~ (extreme-clone-265411)$ kubectl create -f pv.yaml
persistentvolume/pv created
```

\* 3. View the persistent volume.

```
njerry191@cloudshell:~ (extreme-clone-265411)$ kubectl get pv
```

NAME	CAPACITY	ACCESS MODES	RECLAIM POLICY	STATUS	CLAIM	STORAGECLASS	REASON	AGE
app-data	2Gi	RWX	Retain	Available		shared		31s

> Our persistent volume status is available meaning it is available and it has not been mounted yet. This status will change when we mount the persistentVolume to a persistentVolumeClaim.

PersistentVolumeClaim

In a real ecosystem, a system admin will create the PersistentVolume then a developer will create a PersistentVolumeClaim which will be referenced in a pod. A PersistentVolumeClaim is created by specifying the minimum size and the access mode they require from the persistentVolume.

Challenge

> Create a Persistent Volume Claim that requests the Persistent Volume we had created above. The claim should request 2Gi. Ensure that the Persistent Volume Claim has the same storageClassName as the persistentVolume you had previously created.

```
kind: PersistentVolumeClaim
apiVersion: v1
metadata:
  name: app-data
spec:
  accessModes:
    - ReadWriteMany
  resources:
    requests:
      storage: 2Gi
  storageClassName: shared
```

\* 2. Save and create the pvc

```
njerry191@cloudshell:~(extreme-clone-2654111)$ kubectl create -f app-data.yaml persistentvolumeclaim/app-data created
```

\* 3. View the pvc Image for post

```
njerry191@cloudshell:~ (extreme-clone-265411)$ kubectl get pvc
```

NAME	STATUS	VOLUME	CAPACITY	ACCESS MODES	STORAGECLASS
pv	Bound	pv	512m	RWX	shared

\* 4. Let's see what has changed in the pv we had initially created.

Image for post

```
njerry191@cloudshell:~ (extreme-clone-265411)$ kubectl get pv
```

NAME	CAPACITY	ACCESS MODES	RECLAIM POLICY	STATUS	CLAIM	STORAGECLASS	REASON	AGE
pv	512m	RWX	Retain	Bound	default/pv	shared		16m

Our status has now changed from available to bound.

\* 5. Create a new pod named myapp with image nginx that will be used to Mount the Persistent Volume Claim with the path /var/app/config.

Mounting a Claim

```
apiVersion: v1
kind: Pod
metadata:
  creationTimestamp: null
  name: app-data
spec:
  volumes:
    - name: config
  persistentVolumeClaim:
    claimName: app-data
containers:
  - image: nginx
    name: app
    volumeMounts:
      - mountPath: "/srv/app-data"
        name: config
```

**NEW QUESTION 8**

List pod logs named frontend and search for the pattern started and write it to a file /opt/error-logs

- A. Mastered
- B. Not Mastered

**Answer:** A

**Explanation:**

```
Kubectl logs frontend | grep -i ??started?? > /opt/error-logs
```

**NEW QUESTION 9**

Create a namespace called 'development' and a pod with image nginx called nginx on this namespace.

- A. Mastered
- B. Not Mastered

**Answer:** A

**Explanation:**

```
kubectl create namespace development  
kubectl run nginx --image=nginx --restart=Never -n development
```

**NEW QUESTION 10**

Create a pod as follows:

- > Name:non-persistent-redis
- > container Image:redis
- > Volume with name:cache-control
- > Mount path:/data/redis

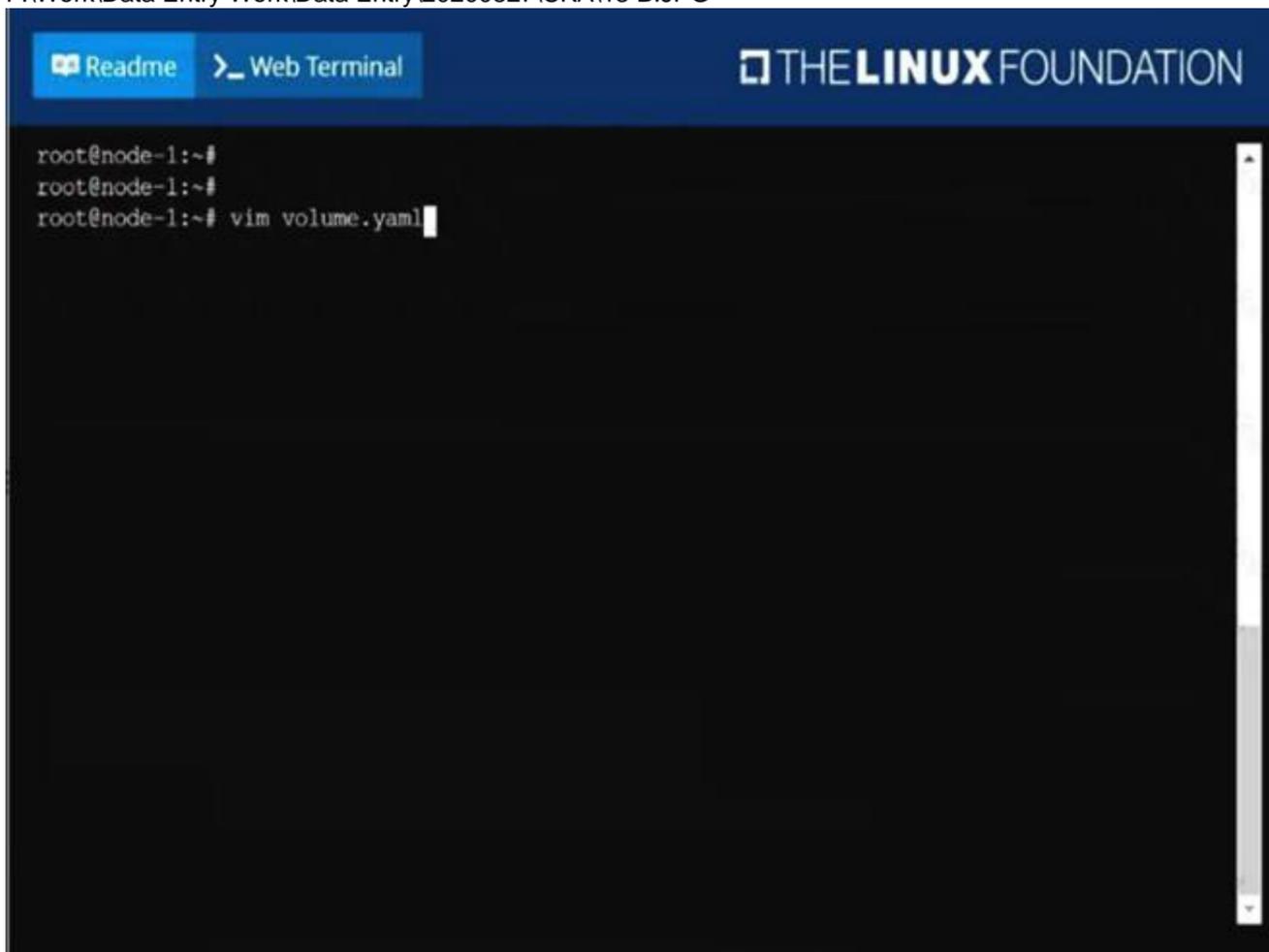
The pod should launch in the staging namespace and the volume must not be persistent.

- A. Mastered
- B. Not Mastered

**Answer:** A

**Explanation:**

solution  
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password: bob

Create a pod named pod-secrets-via-file, using the redis image, which mounts a secret named super-secret at /secrets.

Create a second pod named pod-secrets-via-env, using the redis image, which exports password as CONFIDENTIAL

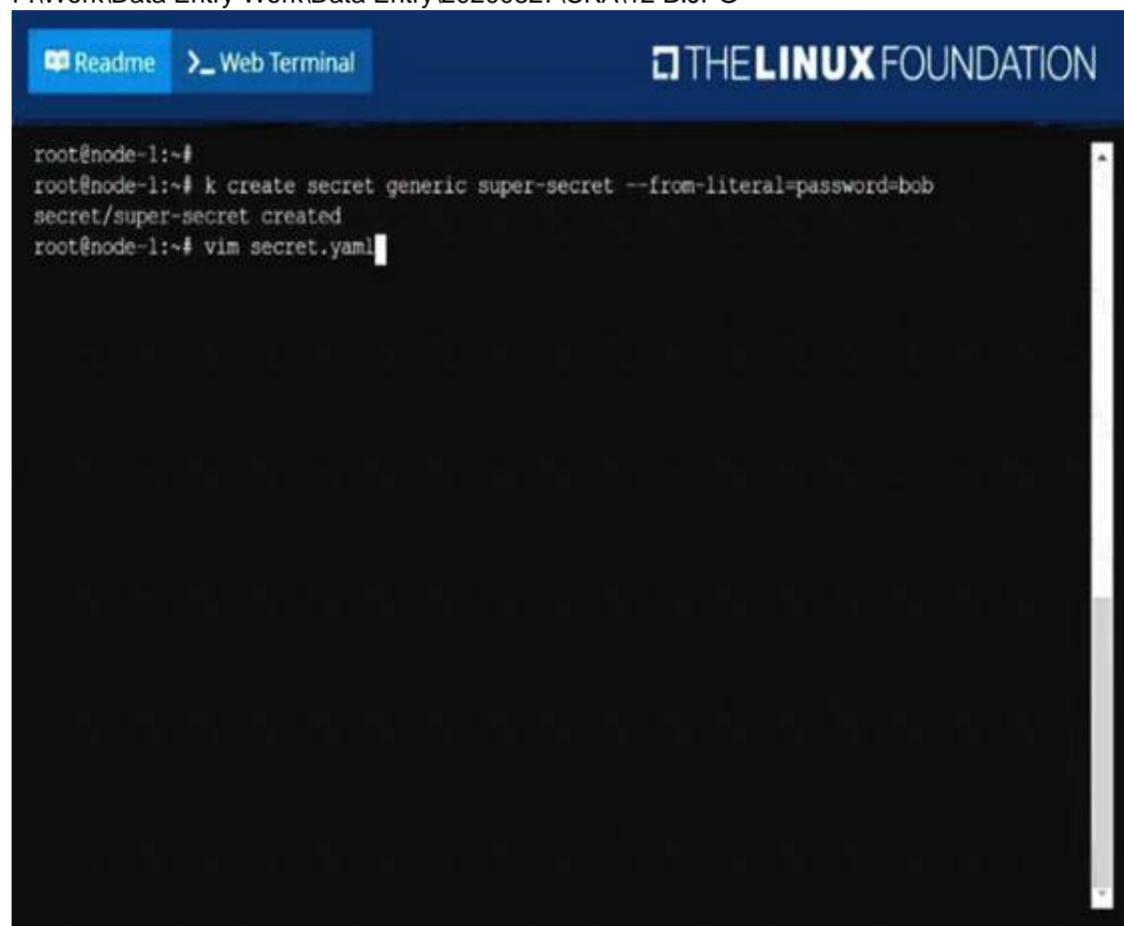
- A. Mastered
- B. Not Mastered

**Answer:** A

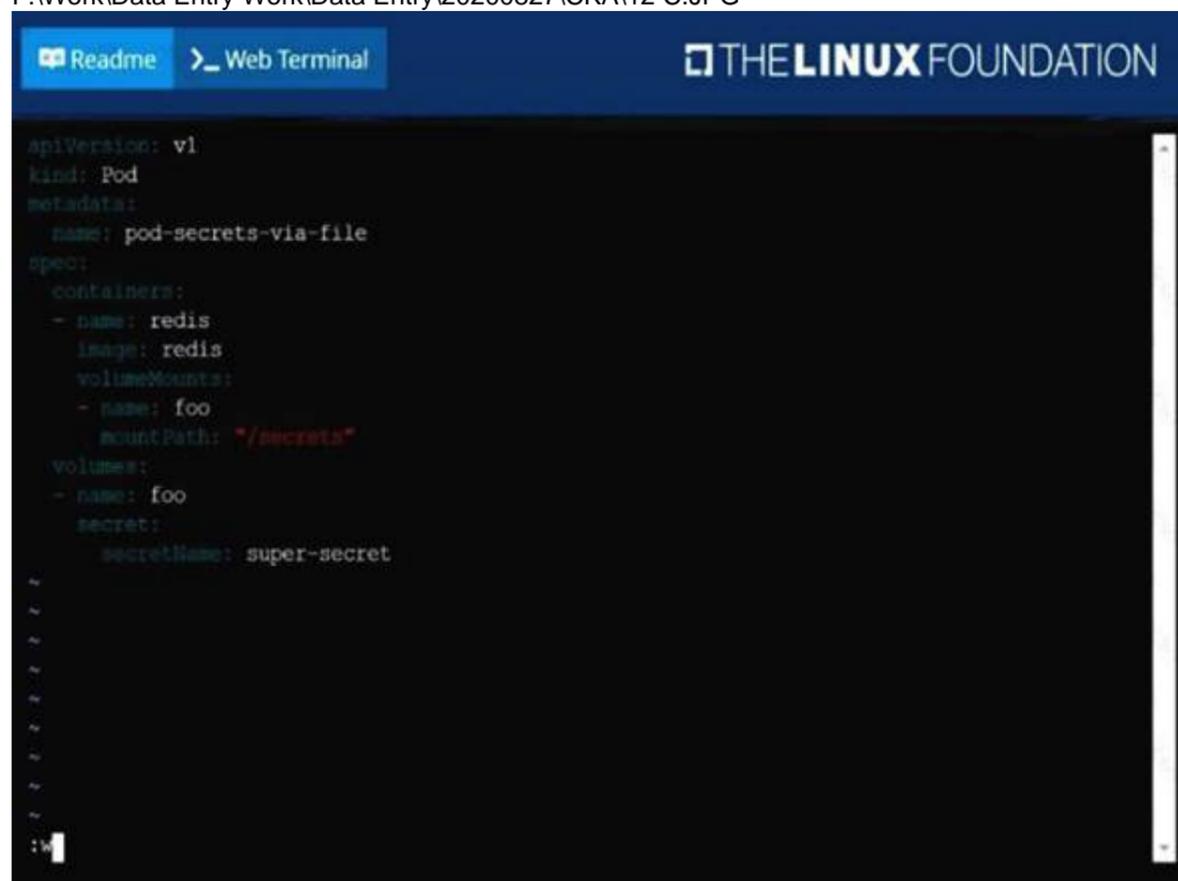
**Explanation:**

solution

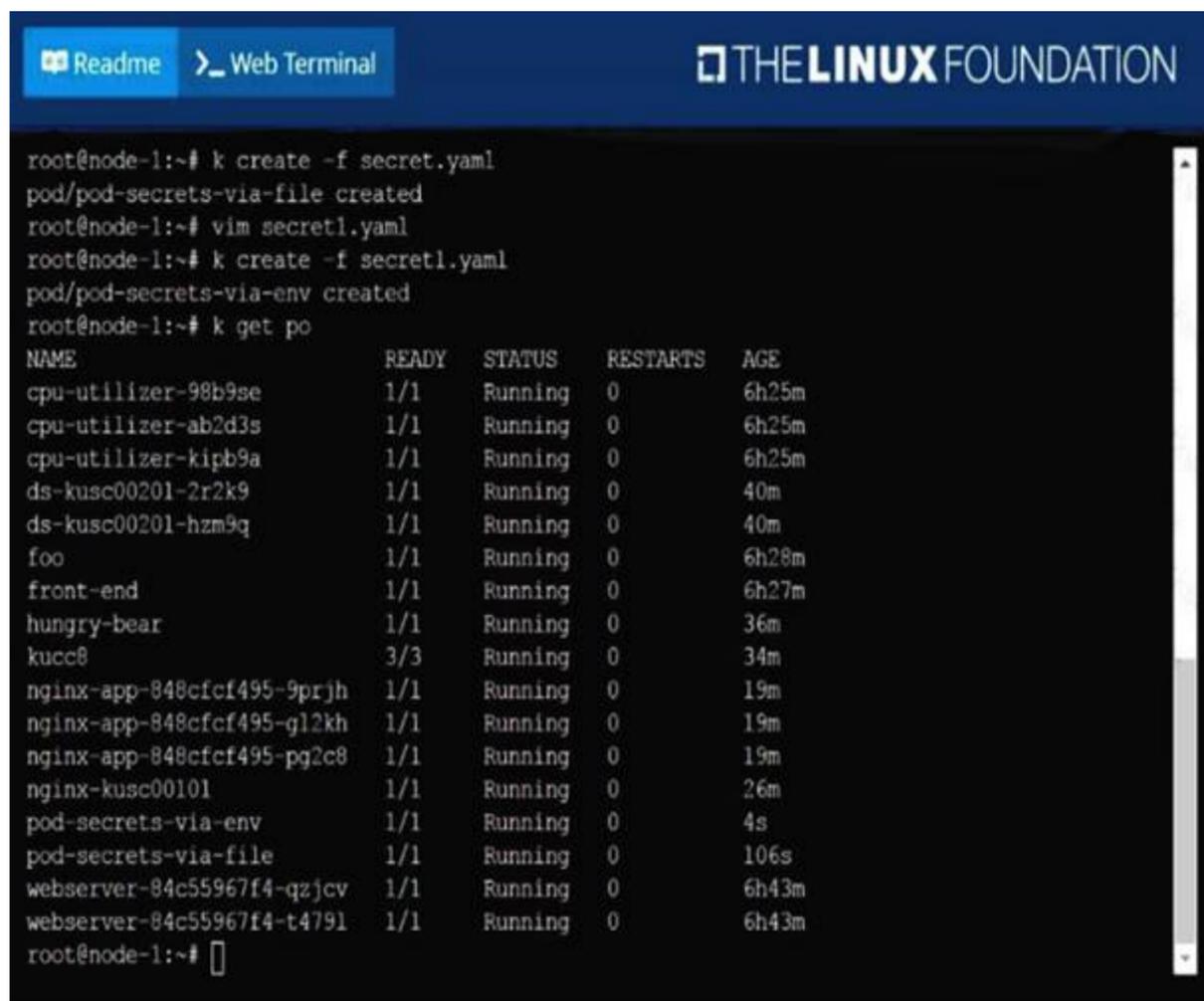
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The screenshot shows a terminal window with the following content:

```
root@node-1:~# k create -f secret.yaml
pod/pod-secrets-via-file created
root@node-1:~# vim secret1.yaml
root@node-1:~# k create -f secret1.yaml
pod/pod-secrets-via-env created
root@node-1:~# k get po
```

NAME	READY	STATUS	RESTARTS	AGE
cpu-utilizer-98b9se	1/1	Running	0	6h25m
cpu-utilizer-ab2d3s	1/1	Running	0	6h25m
cpu-utilizer-kiqb9a	1/1	Running	0	6h25m
ds-kusc00201-2r2k9	1/1	Running	0	40m
ds-kusc00201-hzm9q	1/1	Running	0	40m
foo	1/1	Running	0	6h28m
front-end	1/1	Running	0	6h27m
hungry-bear	1/1	Running	0	36m
kucc8	3/3	Running	0	34m
nginx-app-848cfcf495-9prjh	1/1	Running	0	19m
nginx-app-848cfcf495-gl2kh	1/1	Running	0	19m
nginx-app-848cfcf495-pg2c8	1/1	Running	0	19m
nginx-kusc00101	1/1	Running	0	26m
pod-secrets-via-env	1/1	Running	0	4s
pod-secrets-via-file	1/1	Running	0	106s
webserver-84c55967f4-qzjcv	1/1	Running	0	6h43m
webserver-84c55967f4-t4791	1/1	Running	0	6h43m

```
root@node-1:~#
```

**NEW QUESTION 20**

Check the Image version of nginx-dev pod using jsonpath

- A. Mastered
- B. Not Mastered

**Answer:** A

**Explanation:**

```
kubect1 get po nginx-dev -o jsonpath='{.spec.containers[].image}'
```

**NEW QUESTION 24**

Create and configure the service front-end-services so it's accessible through NodePort and routes to the existing pod named front-end.

- A. Mastered
- B. Not Mastered

**Answer:** A

**Explanation:**

solution  
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```

root@node-1:~# k expose po
error: resource(s) were provided, but no name, label selector, or --all flag specified
See 'kubectl expose -h' for help and examples
root@node-1:~# k expose po fron-end --name=front-end-service --port=80 --target-port=80 --t
ype=NodePort
Error from server (NotFound): pods "fron-end" not found
root@node-1:~# k expose po front-end --name=front-end-service --port=80 --target-port=80 --
type=NodePort
service/front-end-service exposed
root@node-1:~# k get svc
NAME                TYPE                CLUSTER-IP      EXTERNAL-IP      PORT(S)          AGE
front-end-service   NodePort            10.103.221.227  <none>           80:31828/TCP     3s
kubernetes          ClusterIP           10.96.0.1       <none>           443/TCP          77d
root@node-1:~#

```

**NEW QUESTION 28**

For this item, you will have to ssh to the nodes `ik8s-master-0` and `ik8s-node-0` and complete all tasks on these nodes. Ensure that you return to the base node (hostname: `node-1`) when you have completed this item.

Context

As an administrator of a small development team, you have been asked to set up a Kubernetes cluster to test the viability of a new application.

Task

You must use `kubeadm` to perform this task. Any `kubeadm` invocations will require the use of the `--ignore-preflight-errors=alloption`.

- > Configure the node `ik8s-master-0` as a master node.
- > Join the node `ik8s-node-0` to the cluster.

- A. Mastered
- B. Not Mastered

**Answer: A**

**Explanation:**

solution

You must use the `kubeadm` configuration file located at `/etc/kubeadm.conf` when initializing your cluster.

You may use any CNI plugin to complete this task, but if you don't have your favourite CNI plugin's manifest URL at hand, Calico is one popular option: <https://docs.projectcalico.org/v3.14/manifests/calico.yaml>

Docker is already installed on both nodes and `apt` has been configured so that you can install the required tools.

**NEW QUESTION 32**

Get IP address of the pod `?C ??nginx-dev??`

- A. Mastered
- B. Not Mastered

**Answer: A**

**Explanation:**

Kubectl `get po -o wide` Using `JsonPath`

`kubectl get pods -o=jsonpath='{range items[*]}.{metadata.name}{"\t"}{.status.podIP}{"\n"}{end}'`

**NEW QUESTION 35**

List all the pods showing name and namespace with a json path expression

- A. Mastered
- B. Not Mastered

**Answer: A**

**Explanation:**

`kubectl get pods -o=jsonpath='{.items[*]}[\'metadata.name\', \'metadata.namespace\']'`

**NEW QUESTION 36**

Create a snapshot of the `etcd` instance running at `https://127.0.0.1:2379`, saving the snapshot to the file path `/srv/data/etcd-snapshot.db`.

The following TLS certificates/key are supplied for connecting to the server with `etcdctl`:

- > CA certificate:/opt/KUCM00302/ca.crt
- > Client certificate:/opt/KUCM00302/etcd-client.crt
- > Client key:Topt/KUCM00302/etcd-client.key

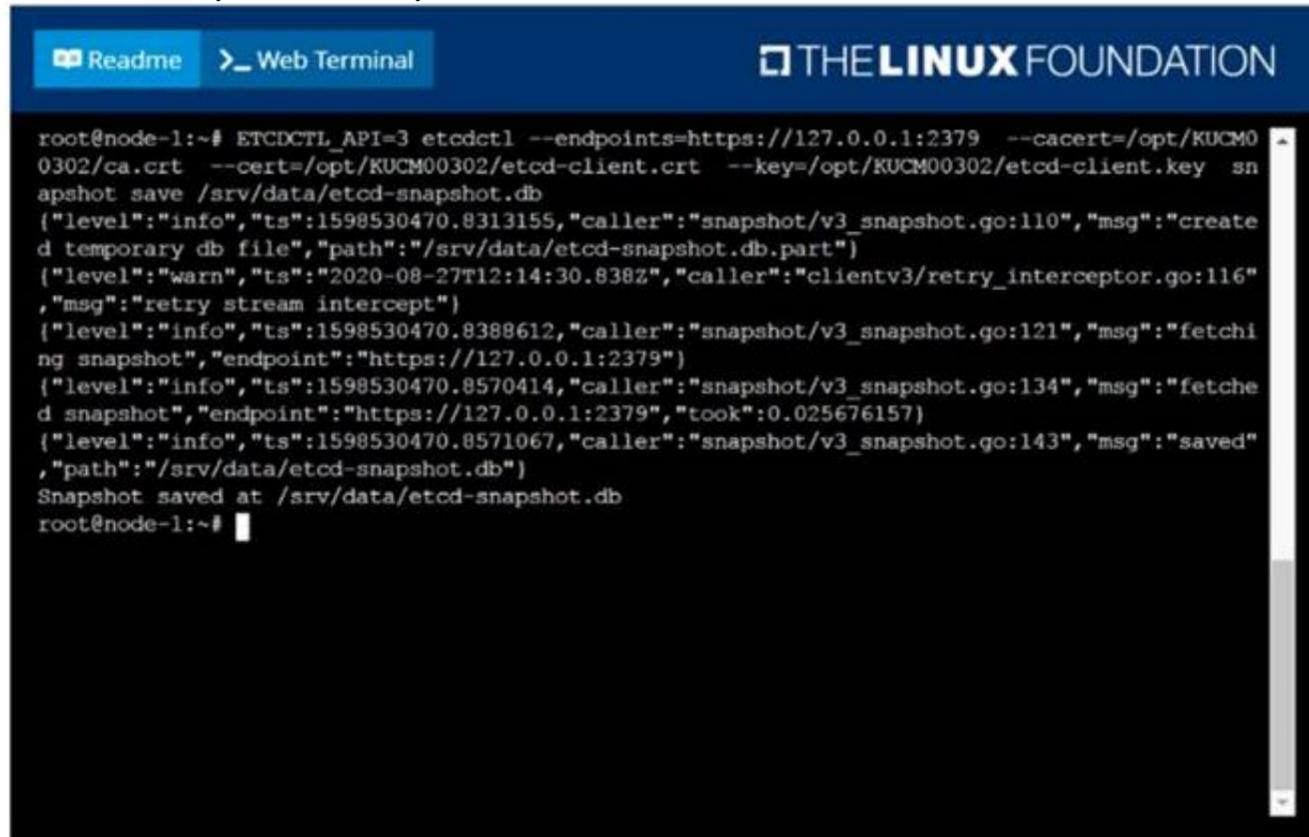
- A. Mastered
- B. Not Mastered

Answer: A

**Explanation:**

solution

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```
root@node-1:~# ETCDCCTL_API=3 etcdctl --endpoints=https://127.0.0.1:2379 --cacert=/opt/KUCM00302/ca.crt --cert=/opt/KUCM00302/etcd-client.crt --key=/opt/KUCM00302/etcd-client.key snapshot save /srv/data/etcd-snapshot.db
{"level":"info","ts":1598530470.8313155,"caller":"snapshot/v3_snapshot.go:110","msg":"created temporary db file","path":"/srv/data/etcd-snapshot.db.part"}
{"level":"warn","ts":"2020-08-27T12:14:30.838Z","caller":"clientv3/retry_interceptor.go:116","msg":"retry stream intercept"}
{"level":"info","ts":1598530470.8388612,"caller":"snapshot/v3_snapshot.go:121","msg":"fetching snapshot","endpoint":"https://127.0.0.1:2379"}
{"level":"info","ts":1598530470.8570414,"caller":"snapshot/v3_snapshot.go:134","msg":"fetched snapshot","endpoint":"https://127.0.0.1:2379","took":0.025676157}
{"level":"info","ts":1598530470.8571067,"caller":"snapshot/v3_snapshot.go:143","msg":"saved","path":"/srv/data/etcd-snapshot.db"}
Snapshot saved at /srv/data/etcd-snapshot.db
root@node-1:~#
```

**NEW QUESTION 39**

Scale the deploymentwebserverto6pods.

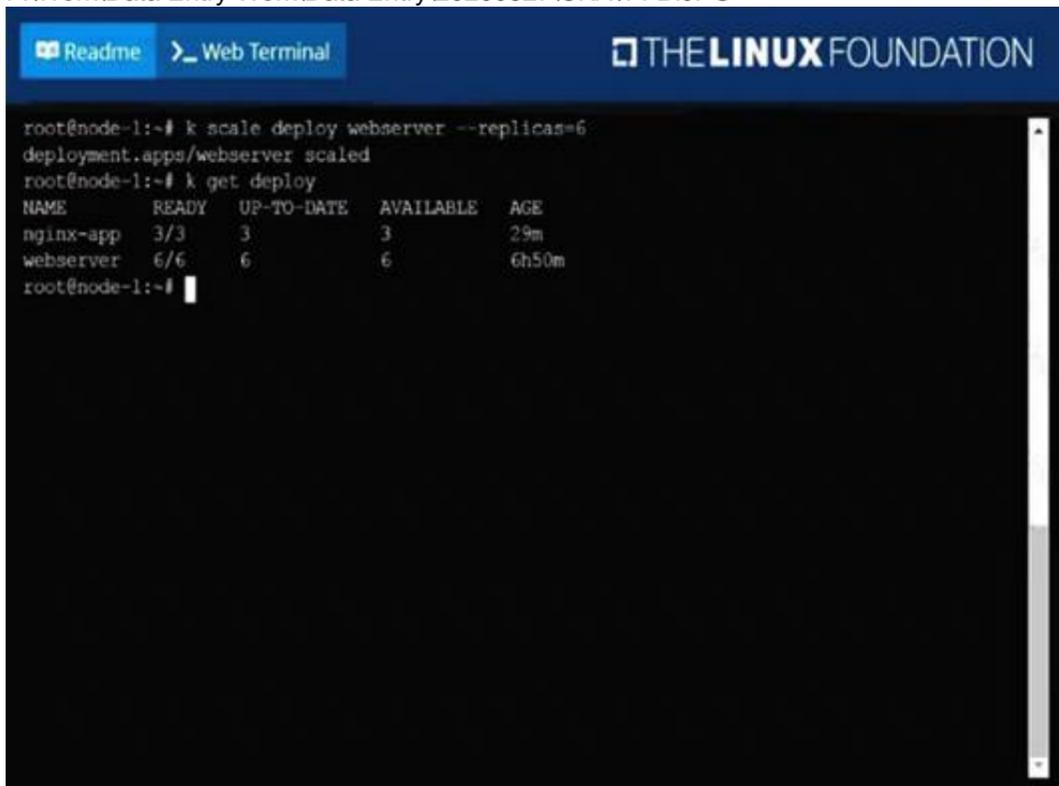
- A. Mastered
- B. Not Mastered

Answer: A

**Explanation:**

solution

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```
root@node-1:~# k scale deployment.apps/webserver --replicas=6
deployment.apps/webserver scaled
root@node-1:~# k get deployment
NAME          READY   UP-TO-DATE   AVAILABLE   AGE
nginx-app     3/3     3             3           29m
webserver     6/6     6             6           6h50m
root@node-1:~#
```

**NEW QUESTION 43**

List all the pods sorted by created timestamp

- A. Mastered

B. Not Mastered

**Answer:** A

**Explanation:**

kubect1 get pods--sort-by=.metadata.creationTimestamp

**NEW QUESTION 46**

Create a pod that having 3 containers in it? (Multi-Container)

A. Mastered  
B. Not Mastered

**Answer:** A

**Explanation:**

image=nginx, image=redis, image=consul Name nginx container as ??nginx-container?? Name redis container as ??redis-container?? Name consul container as ??consul-container??

Create a pod manifest file for a container and append container section for rest of the images

kubectl run multi-container --generator=run-pod/v1 --image=nginx -- dry-run -o yaml > multi-container.yaml

# then

vim multi-container.yaml apiVersion: v1

kind: Pod metadata: labels:

run: multi-container name: multi-container spec:

containers:

- image: nginx

name: nginx-container

- image: redis

name: redis-container

- image: consul

name: consul-container

restartPolicy: Always

**NEW QUESTION 50**

Schedule a pod as follows:

> Name: nginx-kusc00101

> Image: nginx

> Node selector: disk=ssd

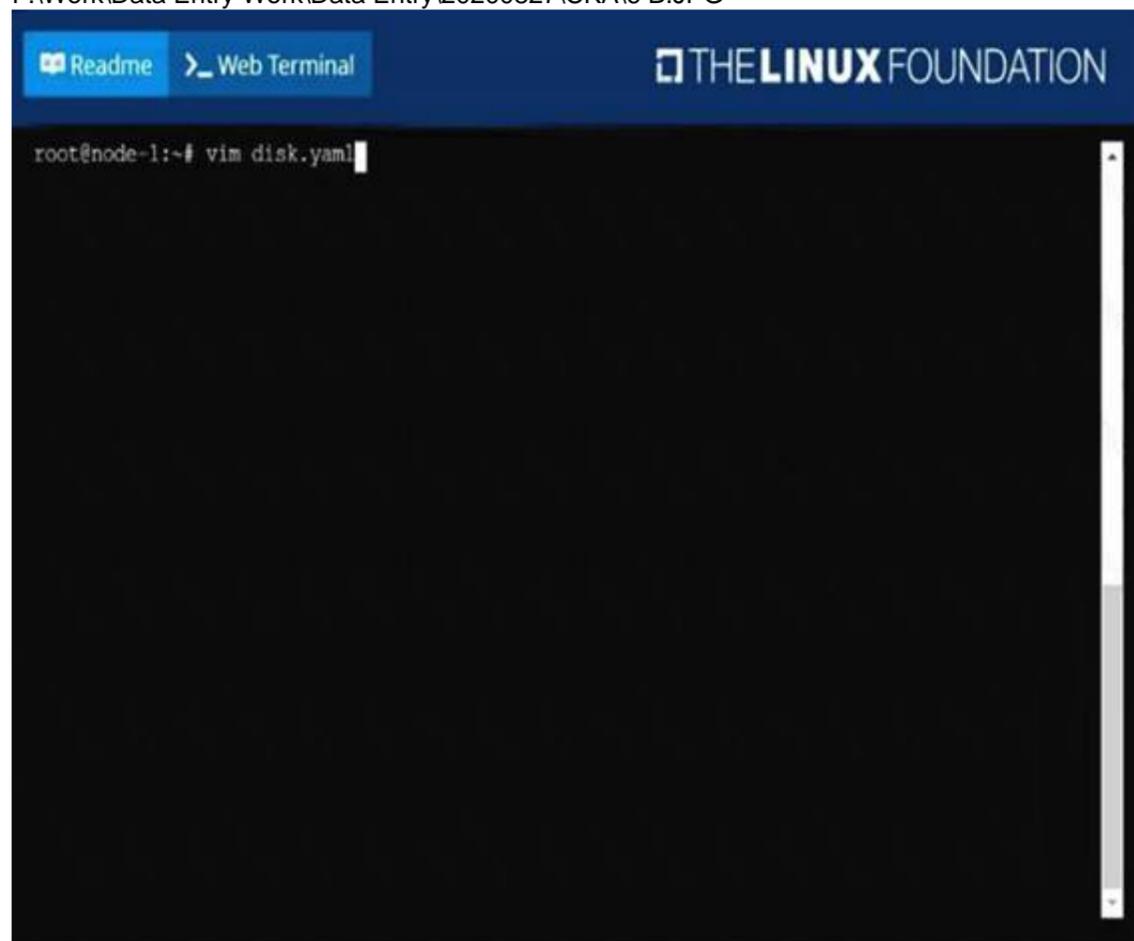
A. Mastered  
B. Not Mastered

**Answer:** A

**Explanation:**

solution

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