

Linux-Foundation

Exam Questions CKA

Certified Kubernetes Administrator (CKA) Program



NEW QUESTION 1

Create a pod with environment variables as var1=value1. Check the environment variable in pod

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

```
kubectl run nginx --image=nginx --restart=Never --env=var1=value1
# then
kubectl exec -it nginx -- env
# or
kubectl exec -it nginx -- sh -c 'echo $var1'
# or
kubectl describe po nginx | grep value1
```

NEW QUESTION 2

Create a deployment as follows:

- > Name:nginx-random
- > Exposed via a service nginx-random
- > Ensure that the service & pod are accessible via their respective DNS records
- > The container(s) within any pod(s) running as a part of this deployment should use the nginx image

Next, use the utility `nslookup` to lookup the DNS records of the service & pod and write the output to `/opt/KUNW00601/service.dns` and `/opt/KUNW00601/pod.dns` respectively.

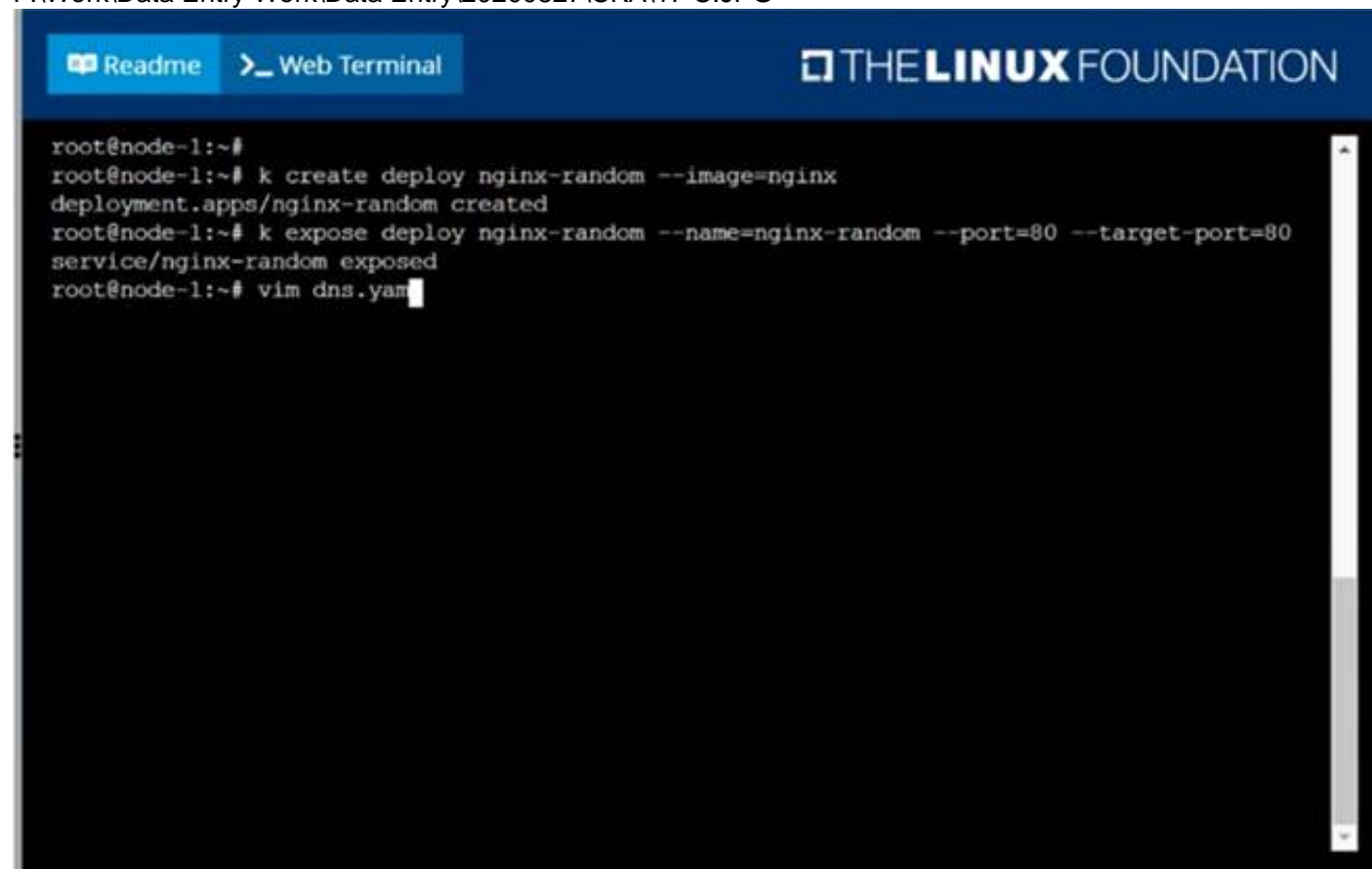
- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

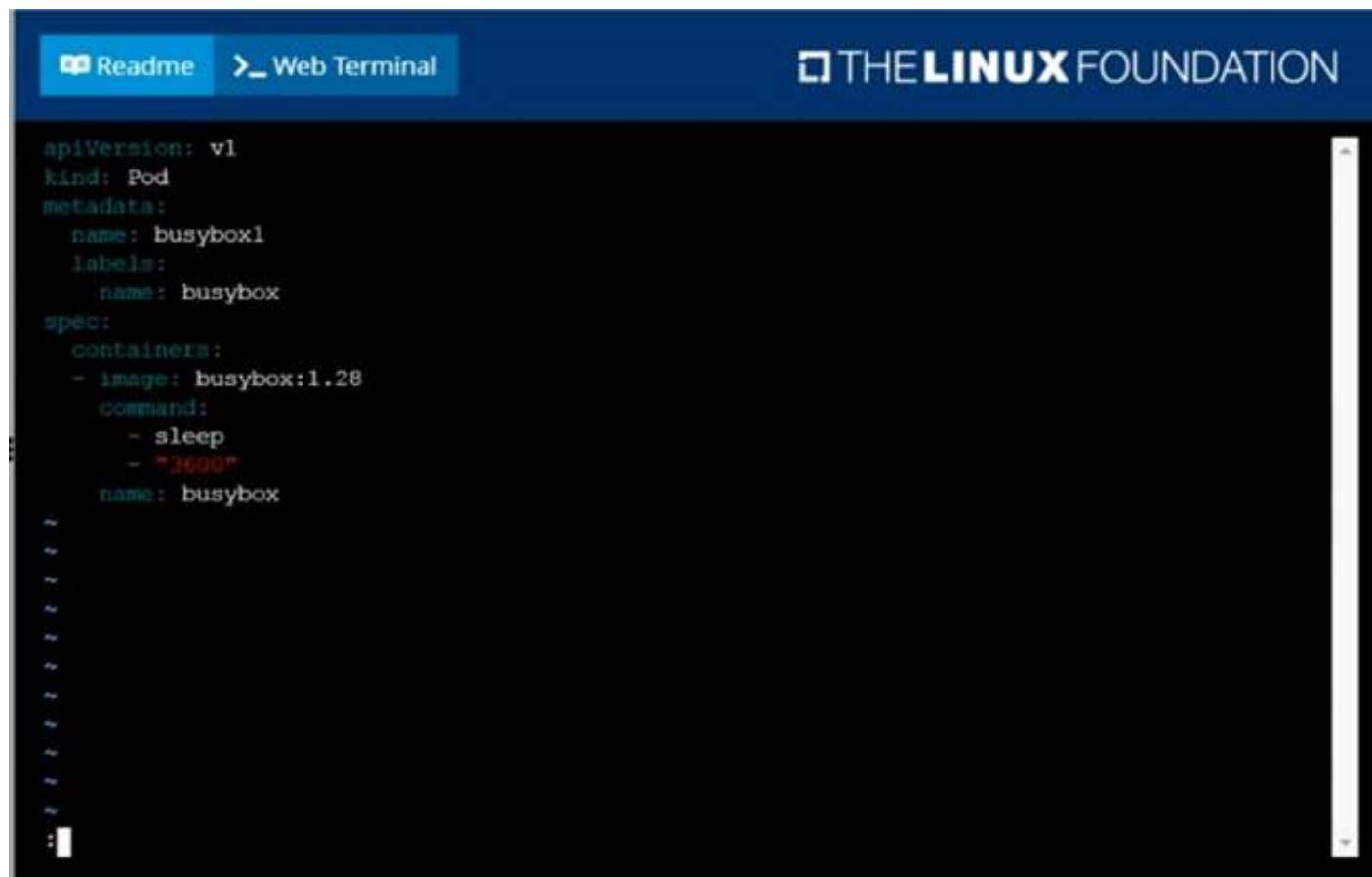
Solution:

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```
root@node-1:~#
root@node-1:~# k create deploy nginx-random --image=nginx
deployment.apps/nginx-random created
root@node-1:~# k expose deploy nginx-random --name=nginx-random --port=80 --target-port=80
service/nginx-random exposed
root@node-1:~# vim dns.yaml
```

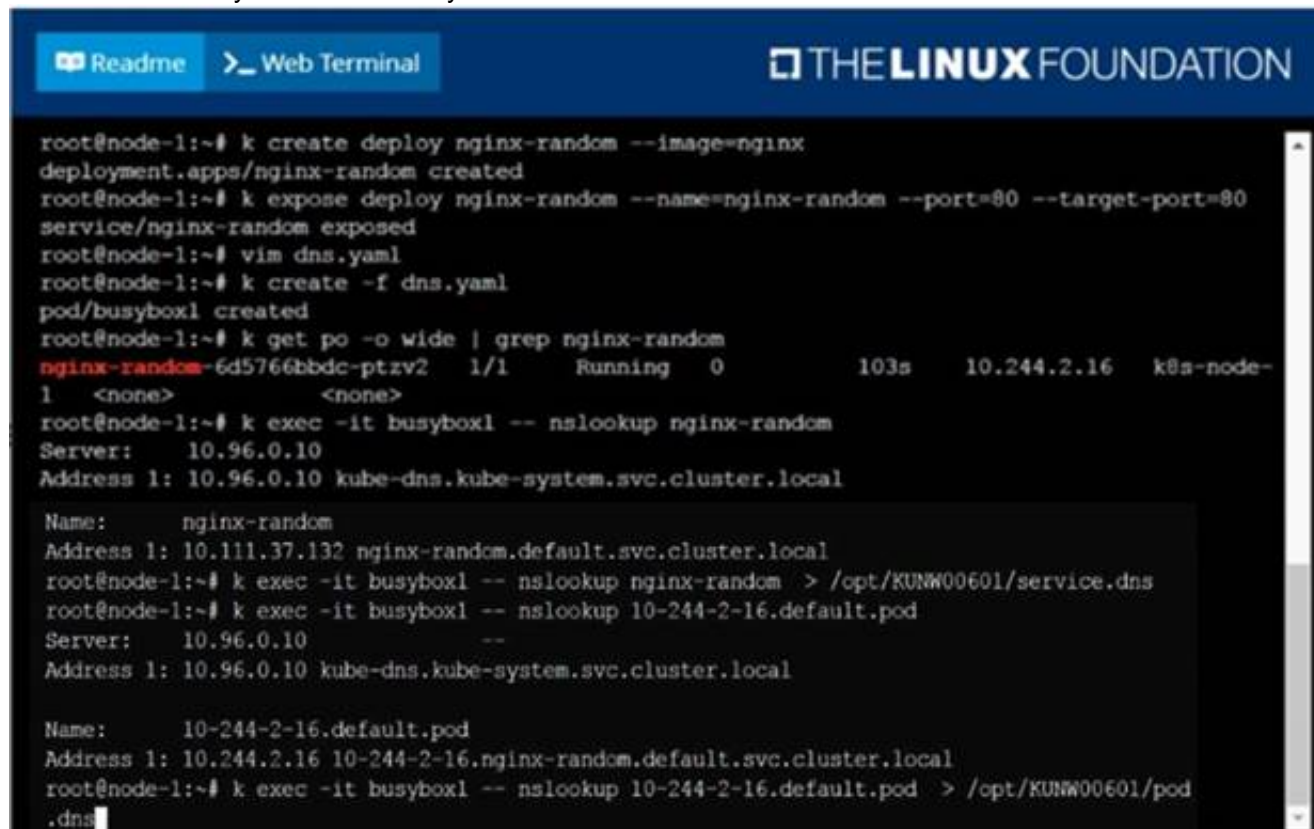
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```

apiVersion: v1
kind: Pod
metadata:
  name: busybox1
  labels:
    name: busybox
spec:
  containers:
  - image: busybox:1.28
    command:
      - sleep
      - "3600"
    name: busybox
  
```

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```

root@node-1:~# k create deploy nginx-random --image=nginx
deployment.apps/nginx-random created
root@node-1:~# k expose deploy nginx-random --name=nginx-random --port=80 --target-port=80
service/nginx-random exposed
root@node-1:~# vim dns.yaml
root@node-1:~# k create -f dns.yaml
pod/busybox1 created
root@node-1:~# k get po -o wide | grep nginx-random
nginx-random-6d5766bbdc-ptzv2 1/1 Running 0 103s 10.244.2.16 k8s-node-1 <none> <none>
root@node-1:~# k exec -it busybox1 -- nslookup nginx-random
Server: 10.96.0.10
Address 1: 10.96.0.10 kube-dns.kube-system.svc.cluster.local

Name: nginx-random
Address 1: 10.111.37.132 nginx-random.default.svc.cluster.local
root@node-1:~# k exec -it busybox1 -- nslookup nginx-random > /opt/KUNW00601/service.dns
root@node-1:~# k exec -it busybox1 -- nslookup 10-244-2-16.default.pod
Server: 10.96.0.10
Address 1: 10.96.0.10 kube-dns.kube-system.svc.cluster.local

Name: 10-244-2-16.default.pod
Address 1: 10.244.2.16 10-244-2-16.nginx-random.default.svc.cluster.local
root@node-1:~# k exec -it busybox1 -- nslookup 10-244-2-16.default.pod > /opt/KUNW00601/pod.dns

```

NEW QUESTION 3

Create a pod that echo ??hello world?? and then exists. Have the pod deleted automatically when it??s completed

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

kubectl run busybox --image=busybox -it --rm --restart=Never - /bin/sh -c 'echo hello world'
 kubectl get po # You shouldn't see pod with the name "busybox"

NEW QUESTION 4

Given a partially-functioningKubernetes cluster, identifysymptoms of failure on the cluster.
 Determine the node, the failingservice, and take actions to bring upthe failed service and restore thehealth of the cluster. Ensure that anychanges are made permanently.
 You canssh to the relevant lnodes (bk8s-master-0orbk8s-node-0) using:
 [student@node-1] \$ ssh<nodename>
 You can assume elevatedprivileges on any node in thecluster with the followingcommand:
 [student@nodename] \$ | sudo ?Ci

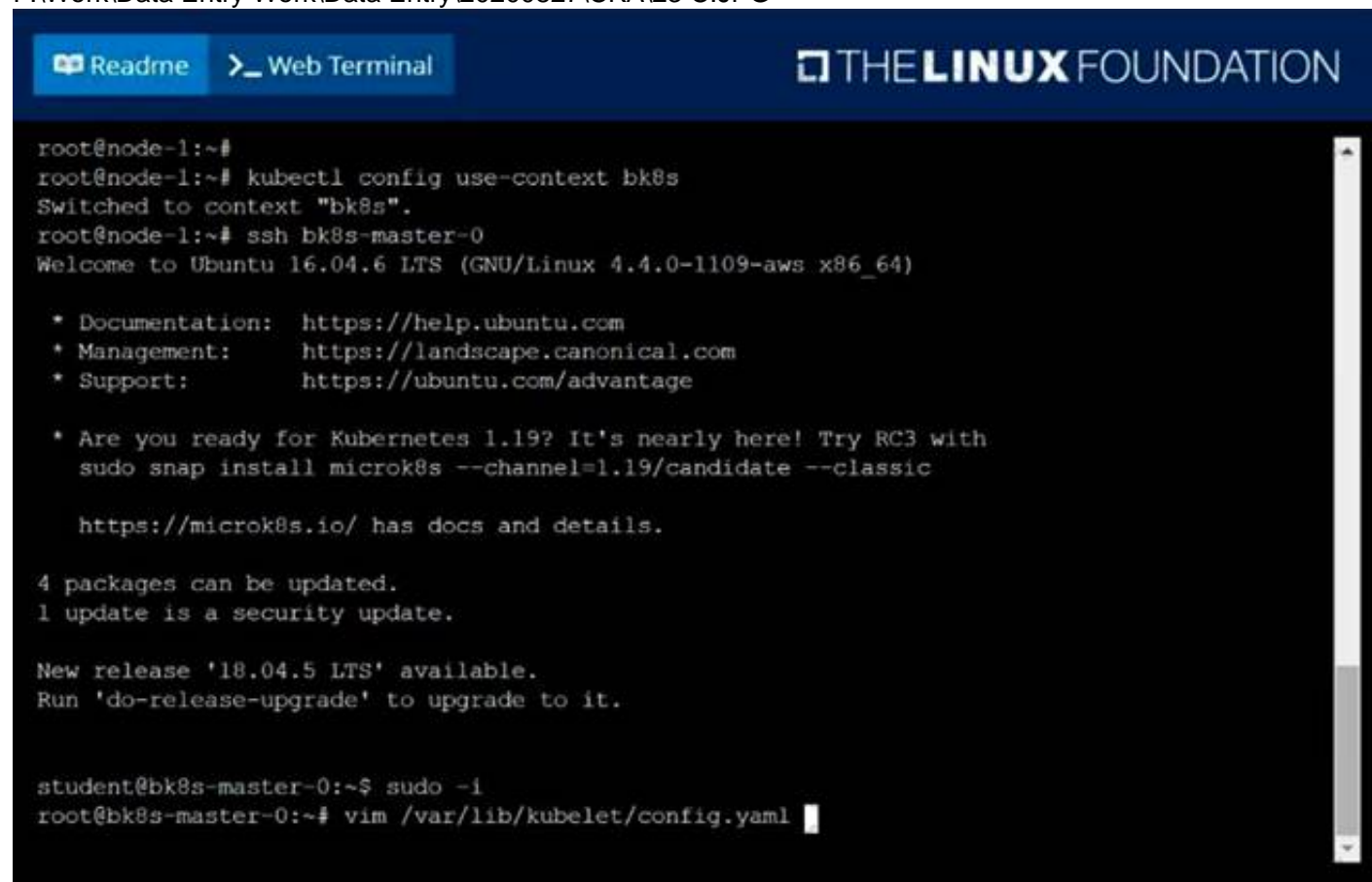
- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

solution

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The screenshot shows a terminal window with the following content:

```

root@node-1:~#
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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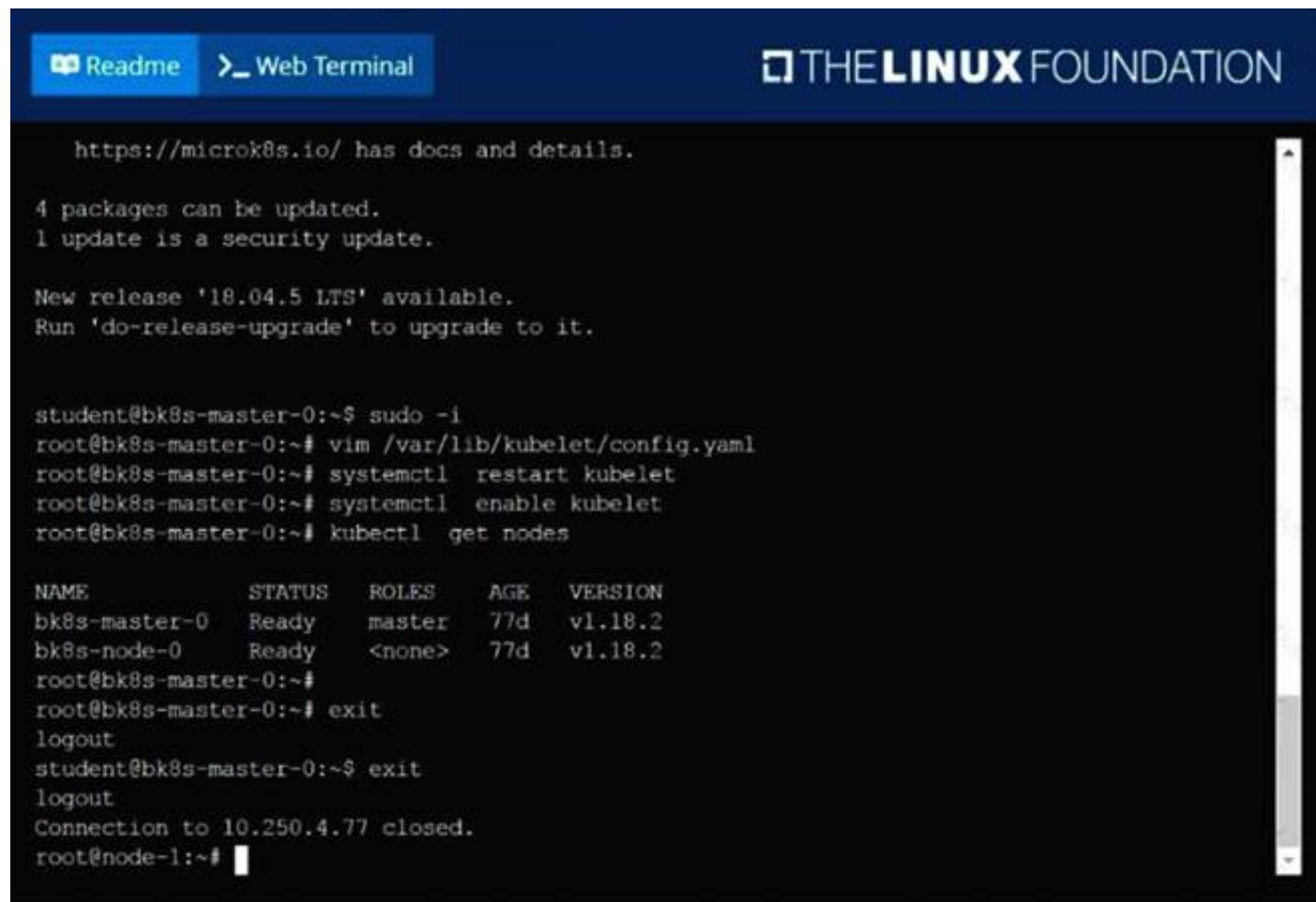
The screenshot shows a terminal window displaying the contents of a configuration file:

```

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
:WC

```

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The screenshot shows a web terminal interface with a dark background. At the top, there are two tabs: 'Readme' and 'Web Terminal'. The 'Web Terminal' tab is active, displaying a terminal session. The terminal output shows the user 'student' logging into a 'bk8s-master-0' node. The user runs 'sudo -i' to become root. Then, they run 'vim /var/lib/kubelet/config.yaml'. After editing, they run 'systemctl restart kubelet', 'systemctl enable kubelet', and 'kubectl get nodes'. The output of 'kubectl get nodes' shows two nodes: 'bk8s-master-0' (Ready, master role) and 'bk8s-node-0' (Ready, no role). Finally, the user runs 'exit' and 'logout'.

```
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 5

Create a deployment as follows:

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

Next, deploy the application with newversion1.11.13-alpine, byperforming a rolling update.

Finally, rollback that update to theprevious version1.11.10-alpine.

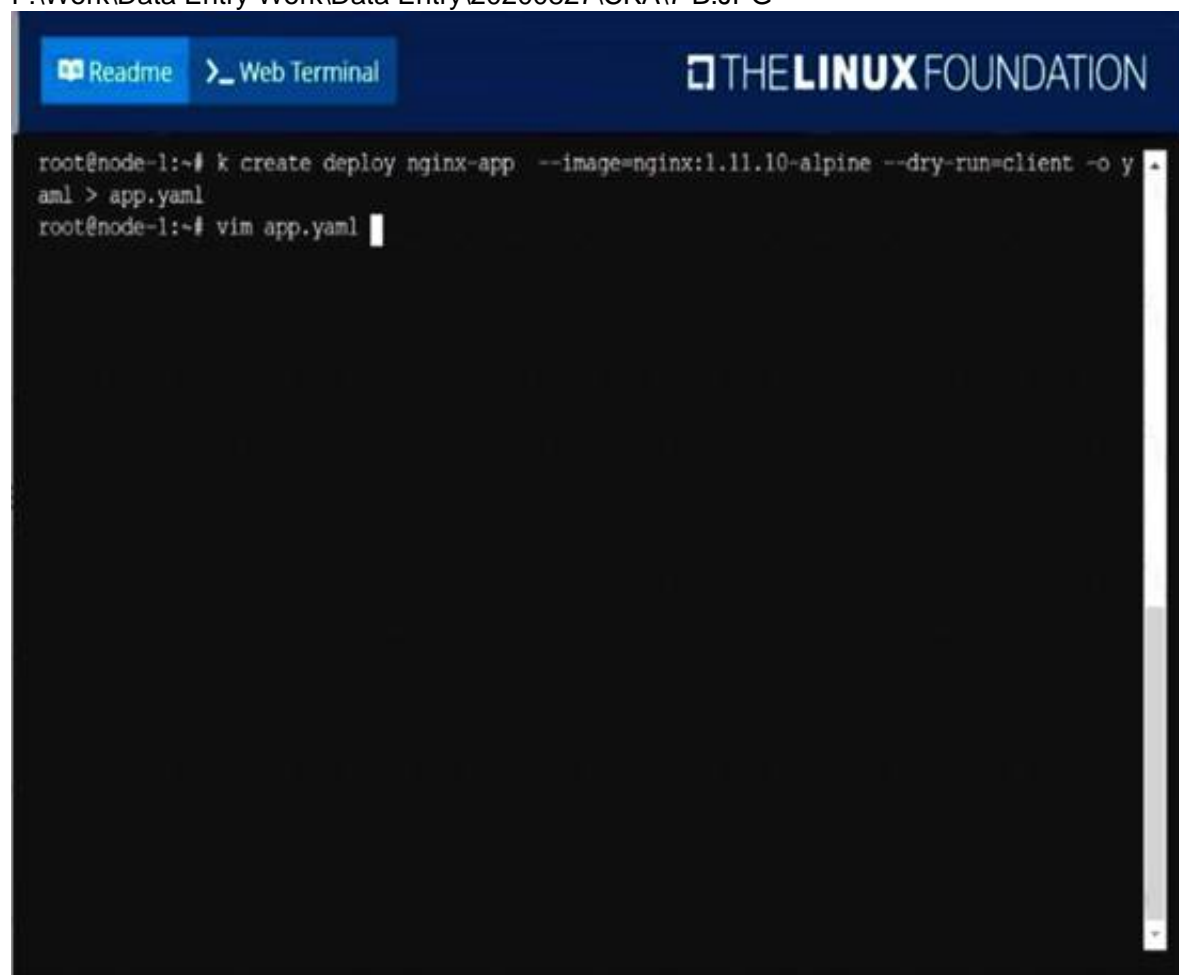
- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

solution

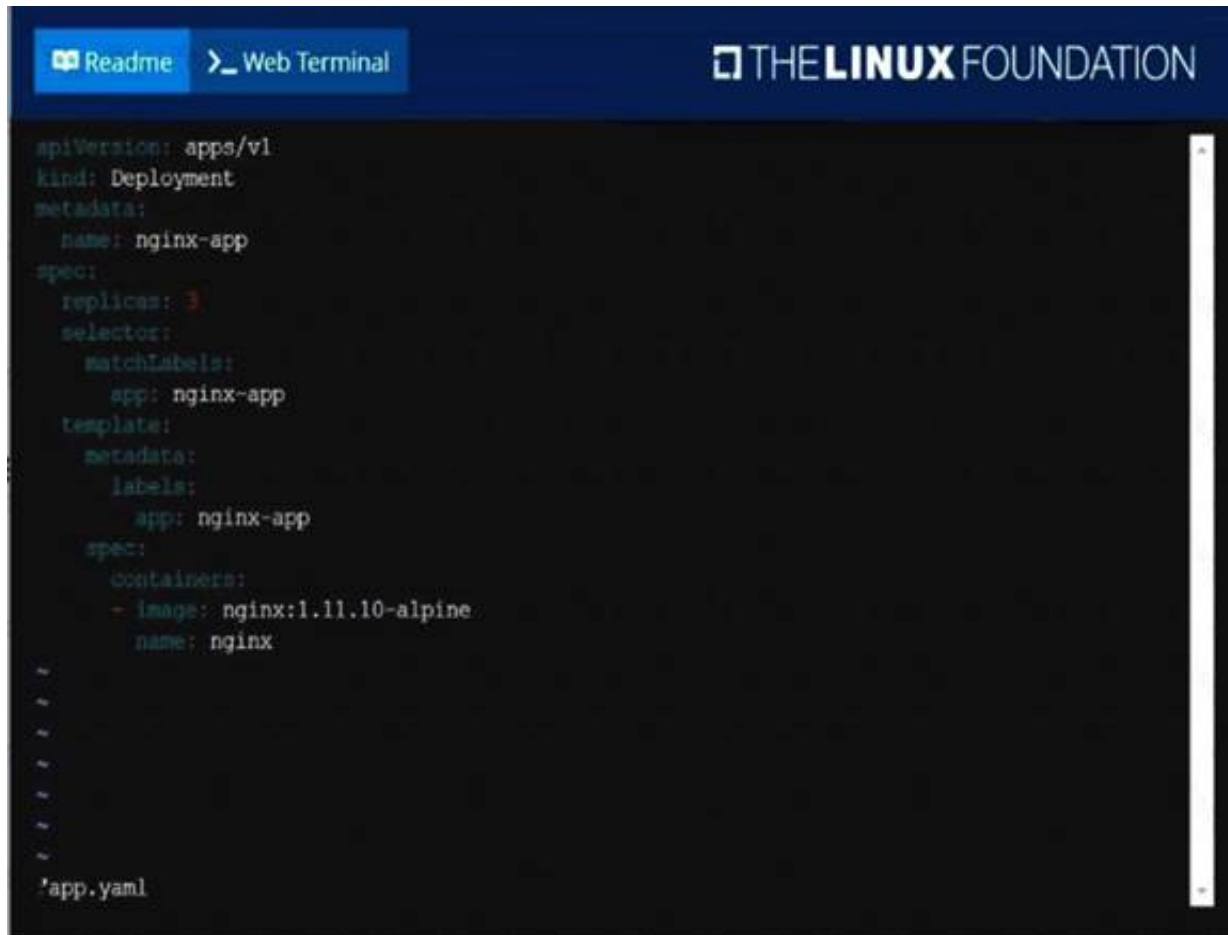
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The screenshot shows a web terminal interface with a dark background. At the top, there are two tabs: 'Readme' and 'Web Terminal'. The 'Web Terminal' tab is active, displaying a terminal session. The user 'root' is logged into a 'node-1' node. They run 'k create deploy nginx-app --image=nginx:1.11.10-alpine --dry-run=client -o yaml > app.yaml'. Then, they run 'vim app.yaml'.

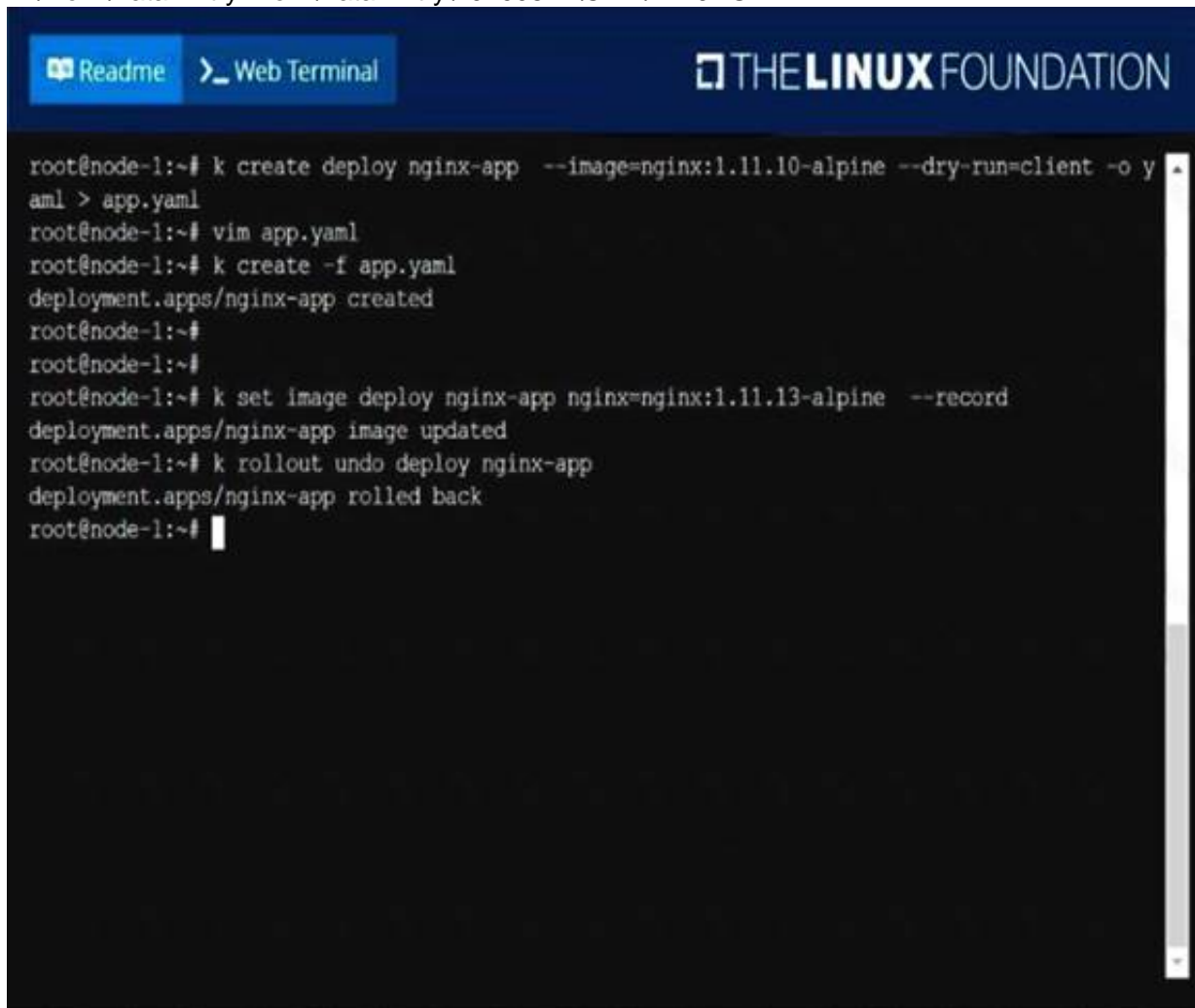
```
root@node-1:~# k create deploy nginx-app --image=nginx:1.11.10-alpine --dry-run=client -o y
aml > app.yaml
root@node-1:~# vim app.yaml
```

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```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: nginx-app
spec:
  replicas: 3
  selector:
    matchLabels:
      app: nginx-app
  template:
    metadata:
      labels:
        app: nginx-app
    spec:
      containers:
      - image: nginx:1.11.10-alpine
        name: nginx
```

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```
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:~# 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 6

List ??nginx-dev?? and ??nginx-prod?? pod and delete those pods

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

kubect1 get pods -o wide

kubectl delete po ??nginx-dev??kubectl delete po ??nginx-prod??

NEW QUESTION 7

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 -n engineering -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 8

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

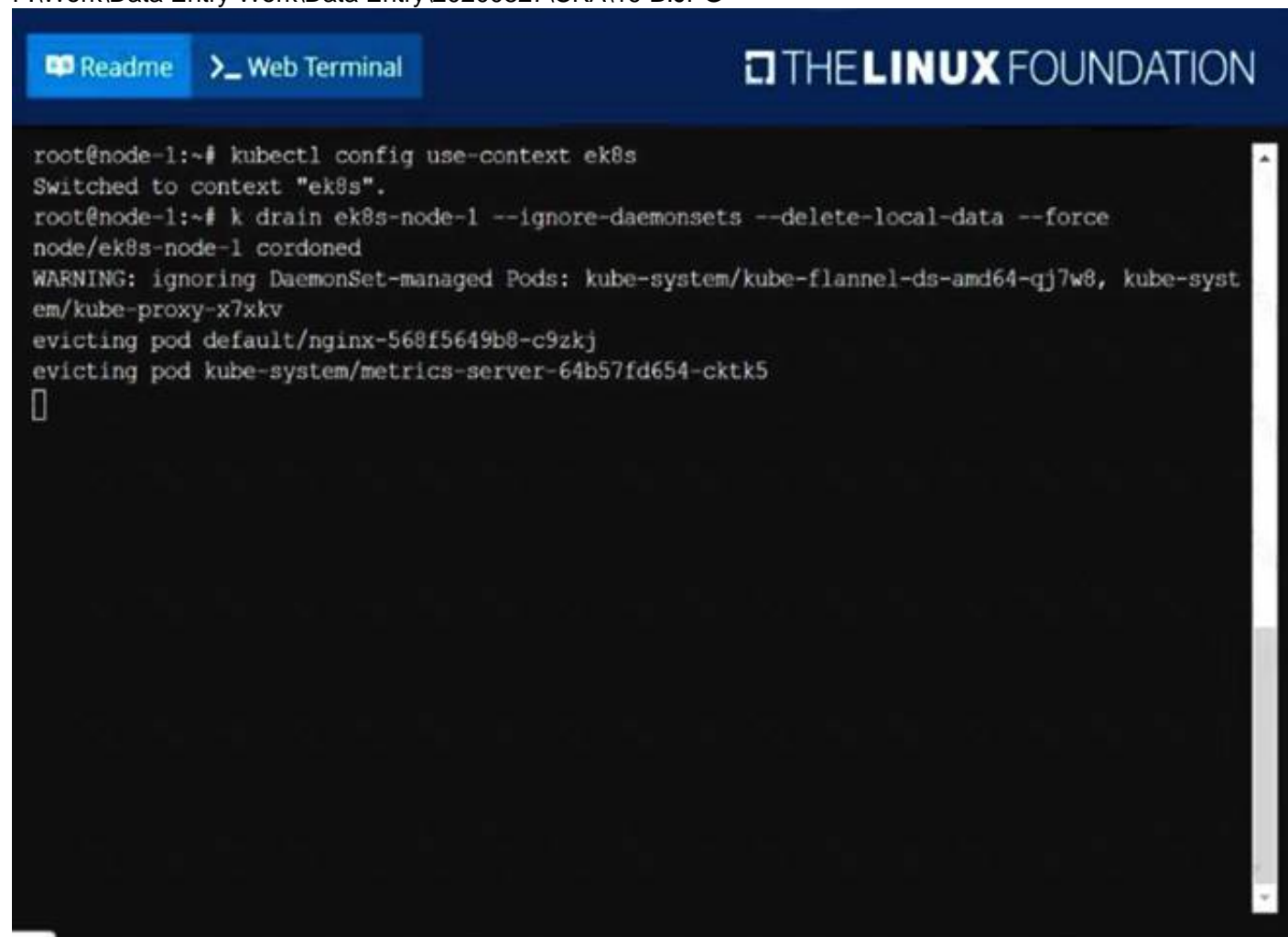
- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

solution

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```
Readme Web Terminal THE LINUX FOUNDATION

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 9

Ensure a single instance of pod nginx is running on each node of the Kubernetes cluster where nginx also represents the Image name which has to be used. Do not override any taints currently in place.

Use DaemonSet to complete this task and use ds-kusc00201 as DaemonSet name.

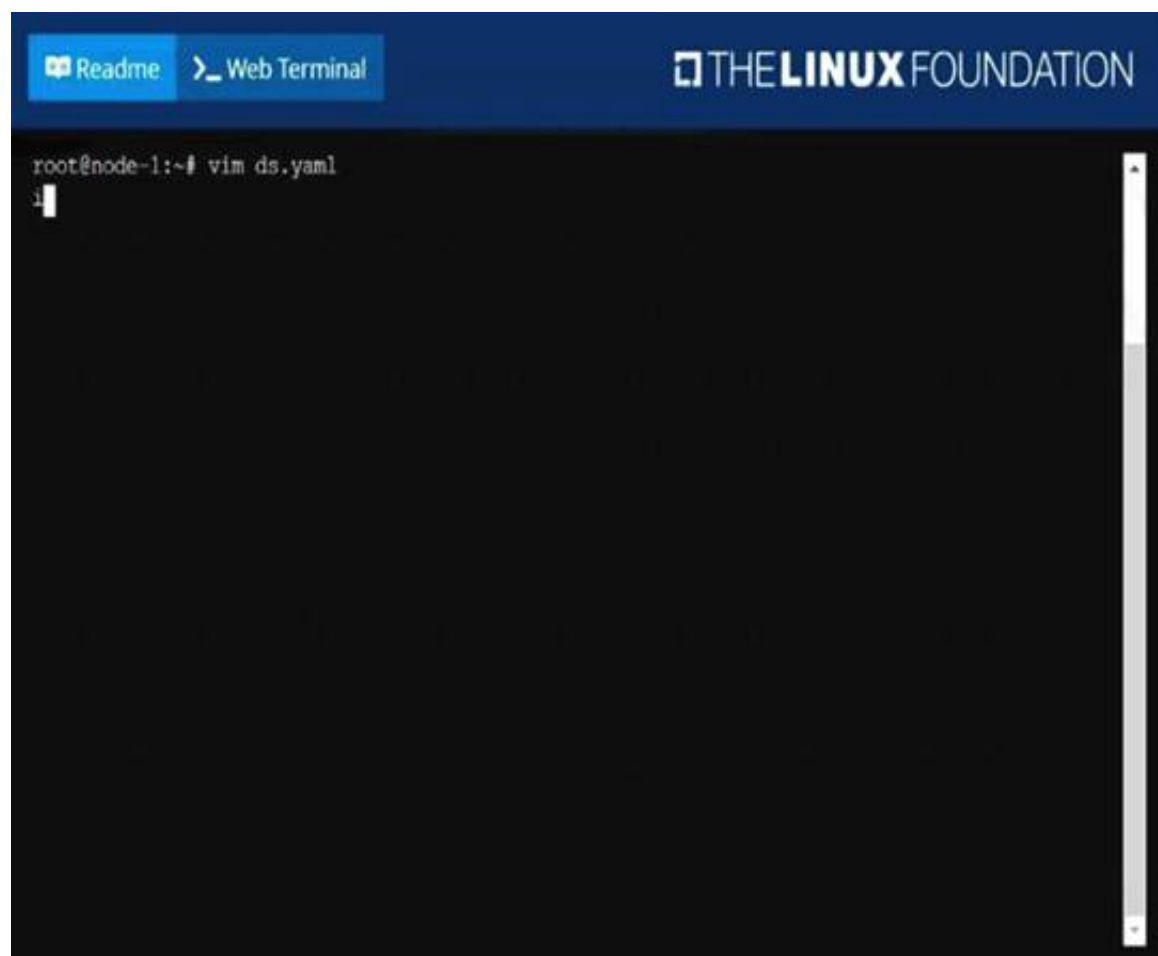
- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

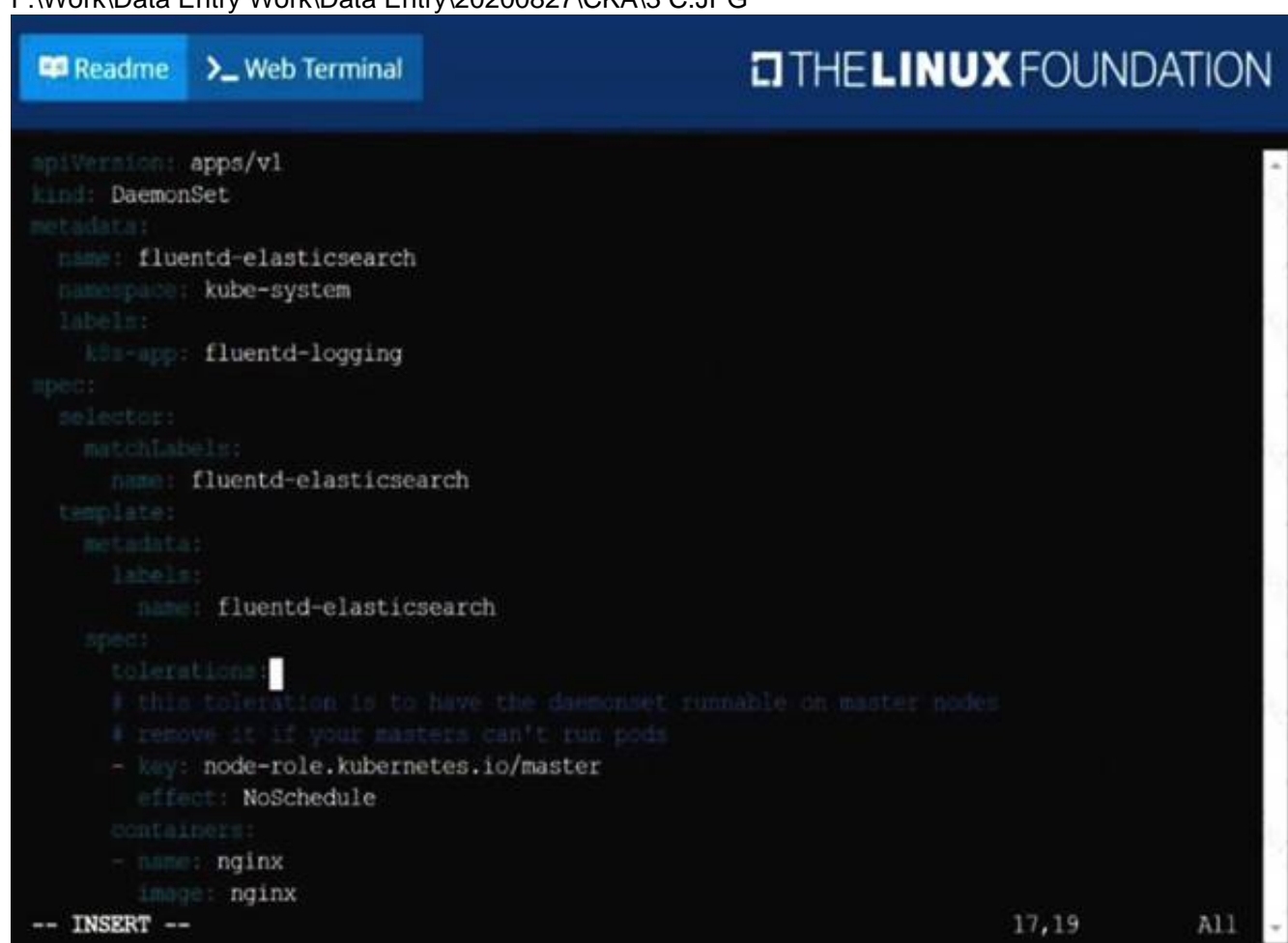
solution

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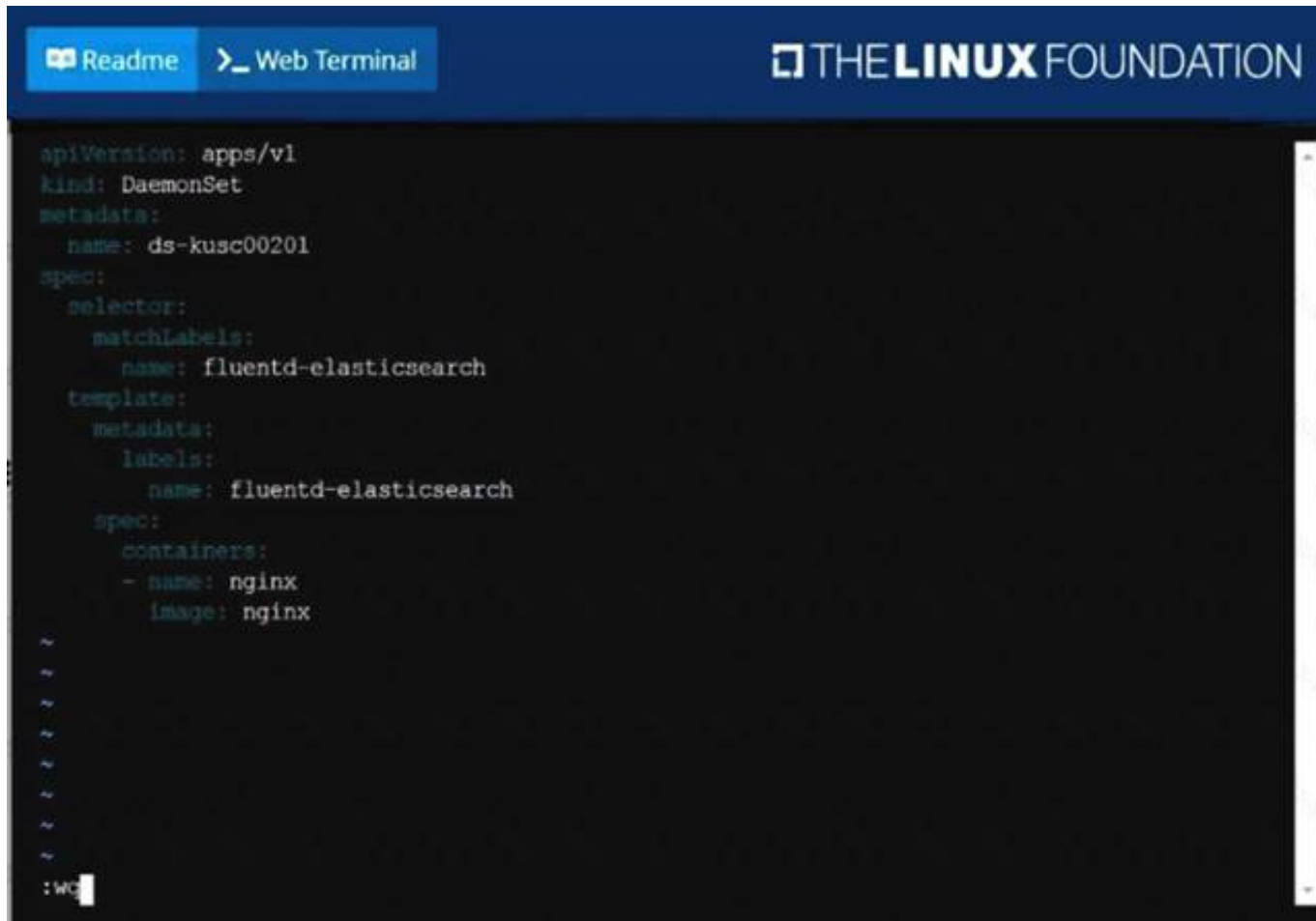
```
root@node-1:~# vim ds.yaml
```

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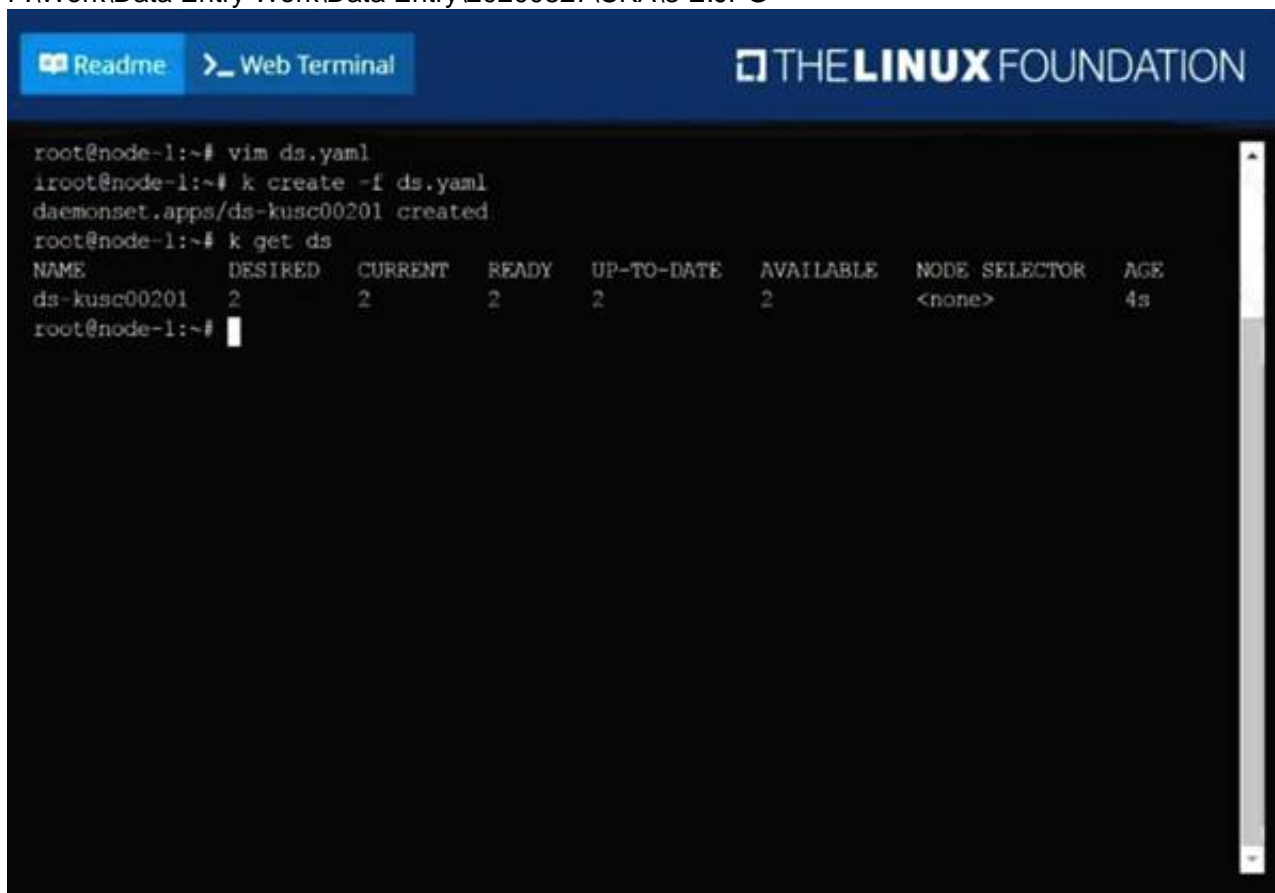


```
apiVersion: apps/v1
kind: DaemonSet
metadata:
  name: fluentd-elasticsearch
  namespace: kube-system
  labels:
    k8s-app: fluentd-logging
spec:
  selector:
    matchLabels:
      name: fluentd-elasticsearch
  template:
    metadata:
      labels:
        name: fluentd-elasticsearch
    spec:
      tolerations:
        # this toleration is to have the daemonset runnable on master nodes
        # remove it if your masters can't run pods
        - key: node-role.kubernetes.io/master
          effect: NoSchedule
      containers:
        - name: nginx
          image: nginx
-- INSERT --
```

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NEW QUESTION 10

Configure the kubelet systemd-managed service, on the node labelled with name=wk8s-node-1, to launch a pod containing a single container of Image http://dname.dwebtool automatically. Any spec files required should be placed in the /etc/kubernetes/manifests directory on the node.

You can ssh to the appropriate node using:

```
[student@node-1] $ sshwk8s-node-1
```

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

```
[student@wk8s-node-1] $ |sudo ?Ci
```

- A. Mastered
B. Not Mastered

Answer: A

Explanation:

solution

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```

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root@node-1:~#
root@node-1:~# kubectl config use-context wk8s
Switched to context "wk8s".
root@node-1:~# ssh wk8s-node-1
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.

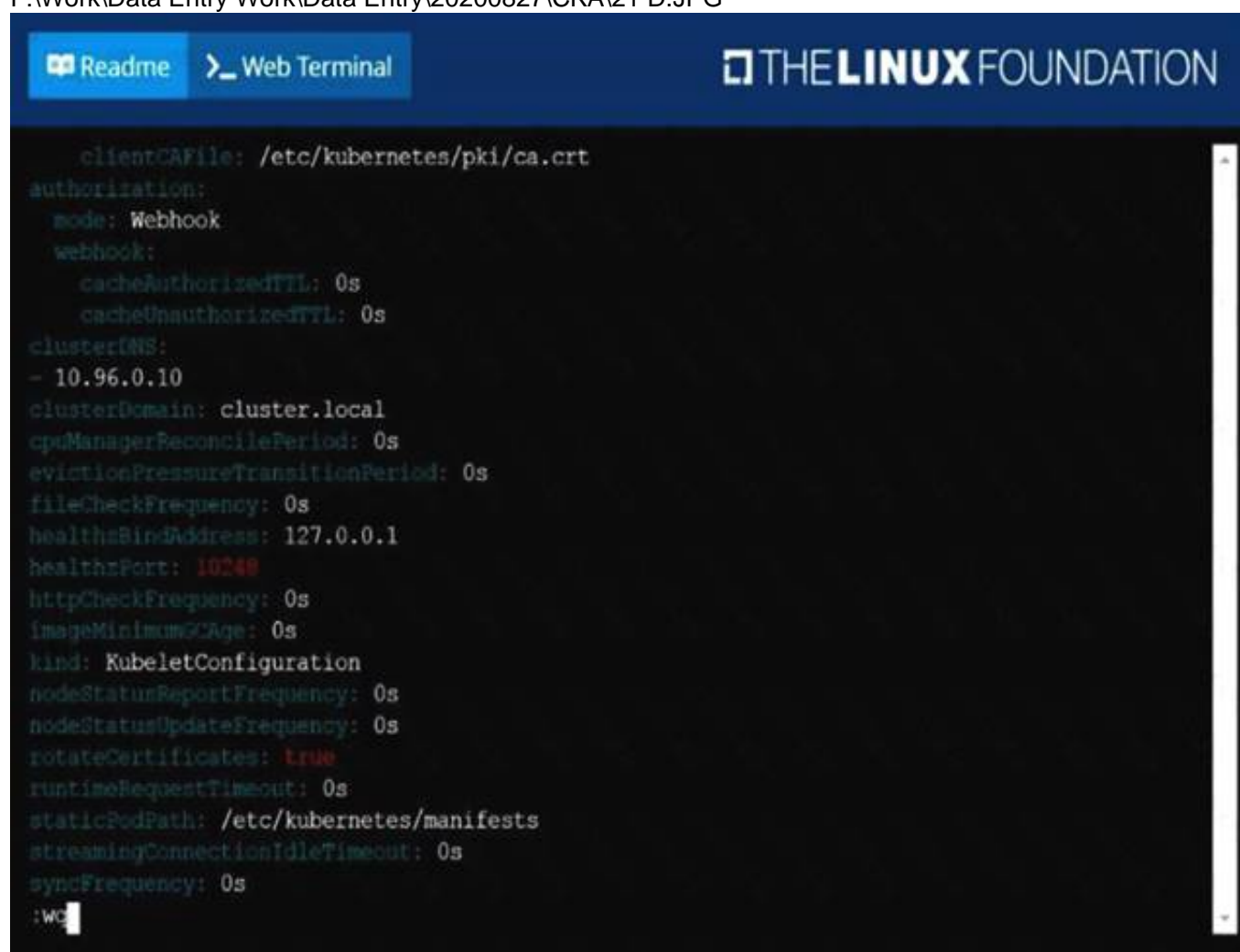
4 packages can be updated.
1 update is a security update.

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

student@wk8s-node-1:~$ sudo -i
root@wk8s-node-1:~# vim /var/lib/kubelet/config.yaml

```

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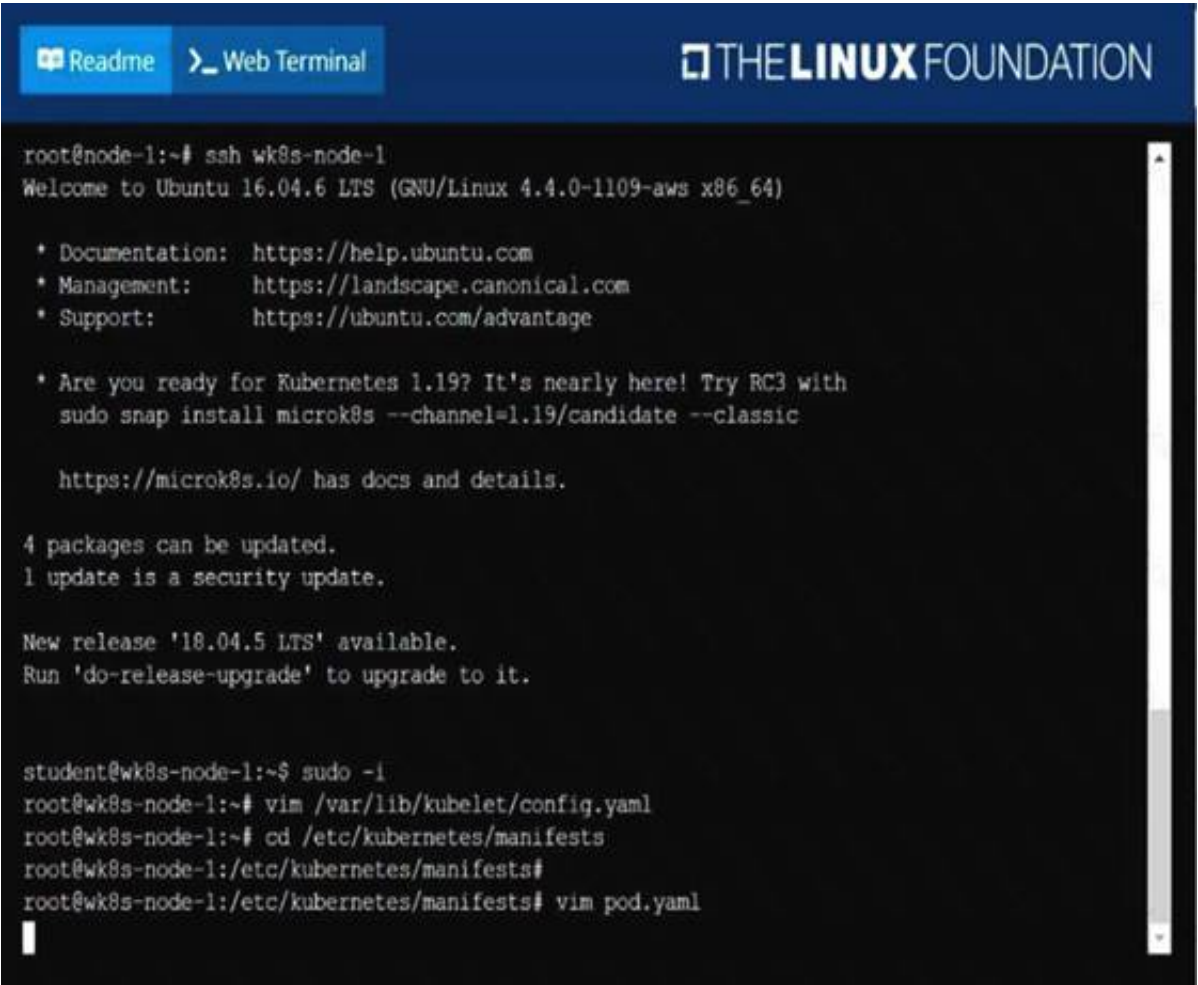
```

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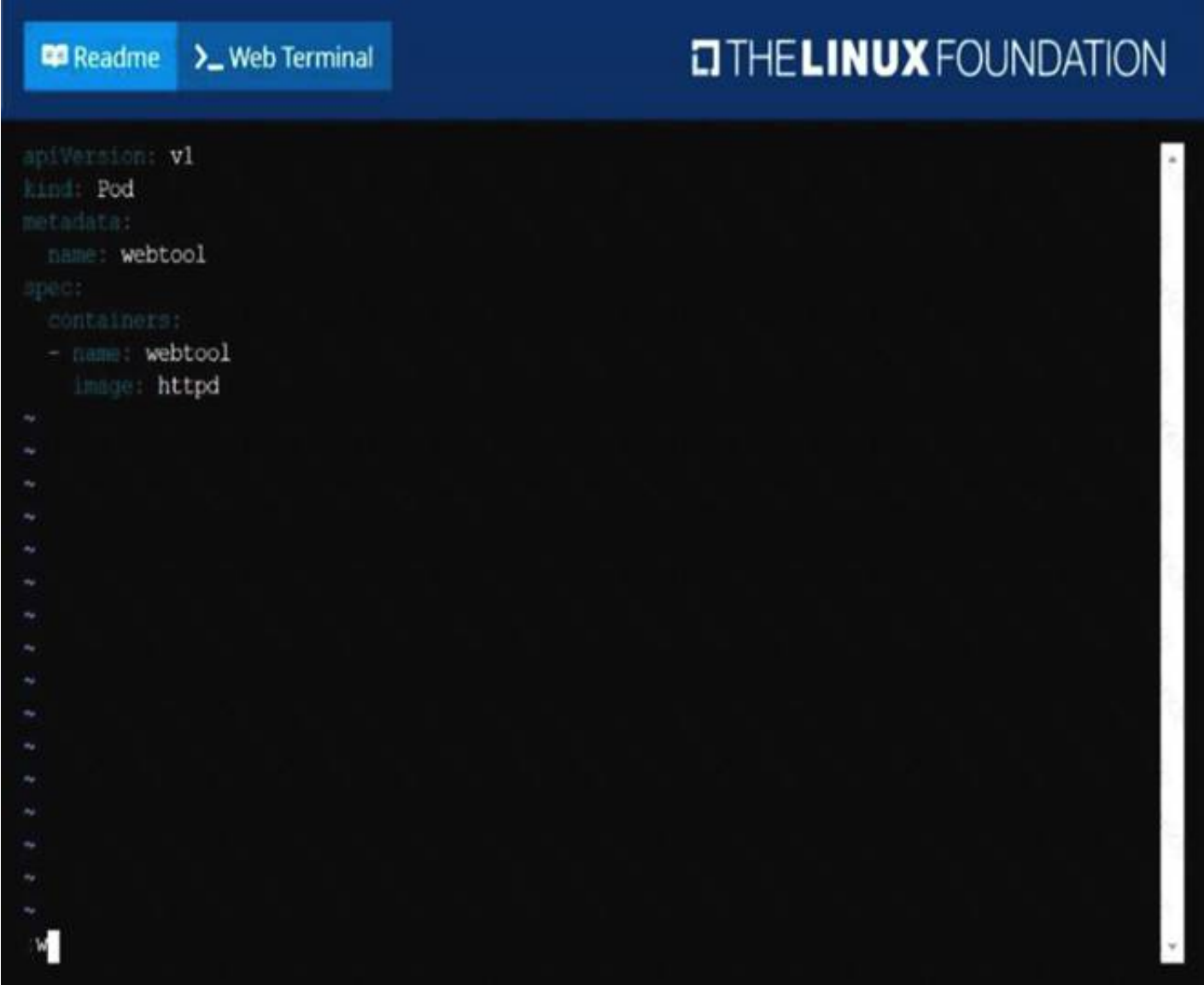
  clientCAFile: /etc/kubernetes/pki/ca.crt
authorization:
  mode: Webhook
  webhook:
    cacheAuthorizedTTL: 0s
    cacheUnauthorizedTTL: 0s
clusterDNS:
- 10.96.0.10
clusterDomain: cluster.local
cpuManagerReconcilePeriod: 0s
evictionPressureTransitionPeriod: 0s
fileCheckFrequency: 0s
healthzBindAddress: 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
:WC

```

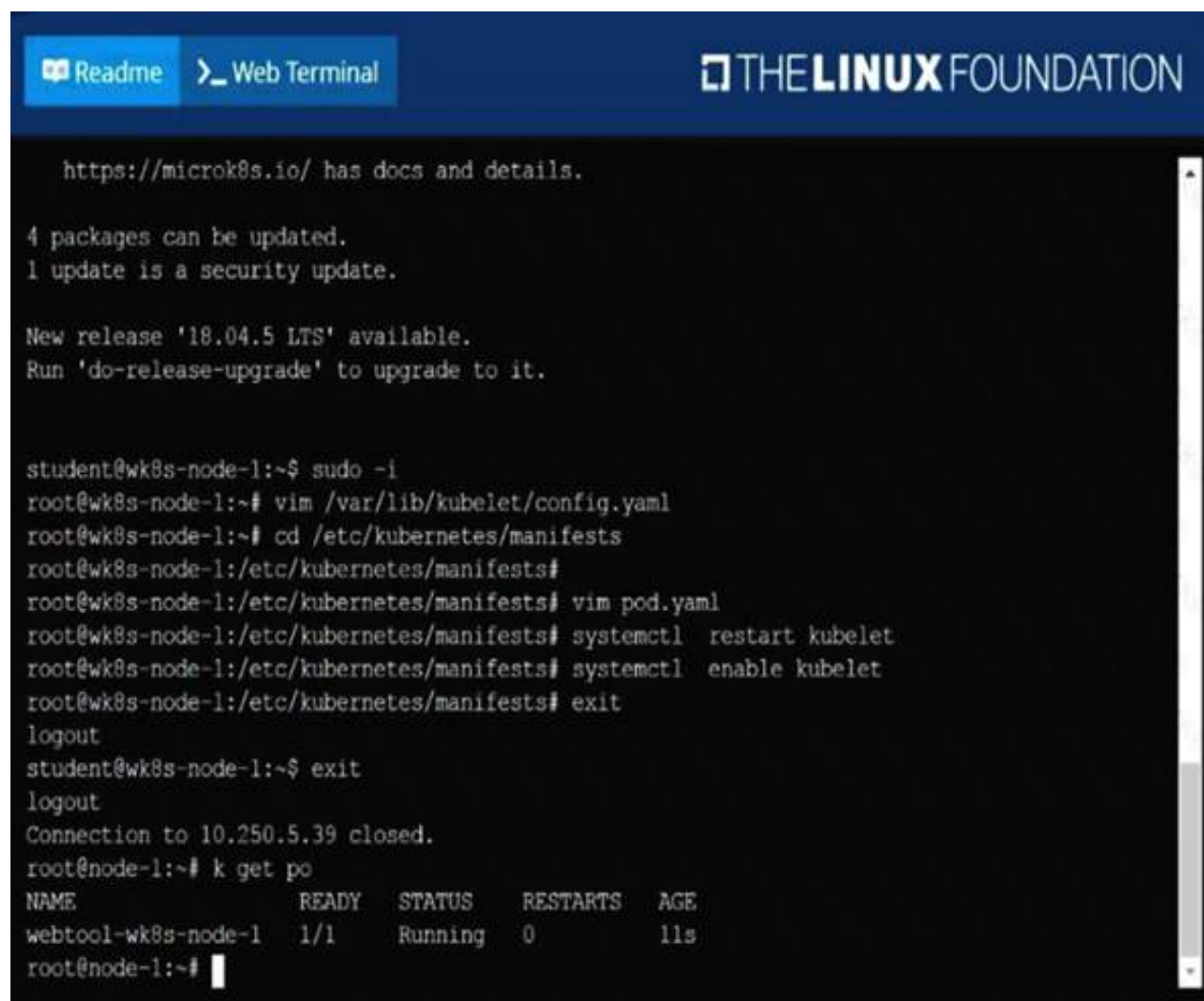
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```

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@wk8s-node-1:~$ sudo -i
root@wk8s-node-1:~# vim /var/lib/kubelet/config.yaml
root@wk8s-node-1:~# cd /etc/kubernetes/manifests
root@wk8s-node-1:/etc/kubernetes/manifests#
root@wk8s-node-1:/etc/kubernetes/manifests# vim pod.yaml
root@wk8s-node-1:/etc/kubernetes/manifests# systemctl restart kubelet
root@wk8s-node-1:/etc/kubernetes/manifests# systemctl enable kubelet
root@wk8s-node-1:/etc/kubernetes/manifests# exit
logout
student@wk8s-node-1:~$ exit
logout
Connection to 10.250.5.39 closed.
root@node-1:~# k get po
NAME                READY   STATUS    RESTARTS   AGE
webtool-wk8s-node-1  1/1     Running   0           11s
root@node-1:~#

```

NEW QUESTION 10

From the pod labelname=cpu-utilizer, find podsrunning high CPU workloads and write the name of the pod consumingmost CPU to thefile/opt/KUTR00102/KUTR00102.txt(which already exists).

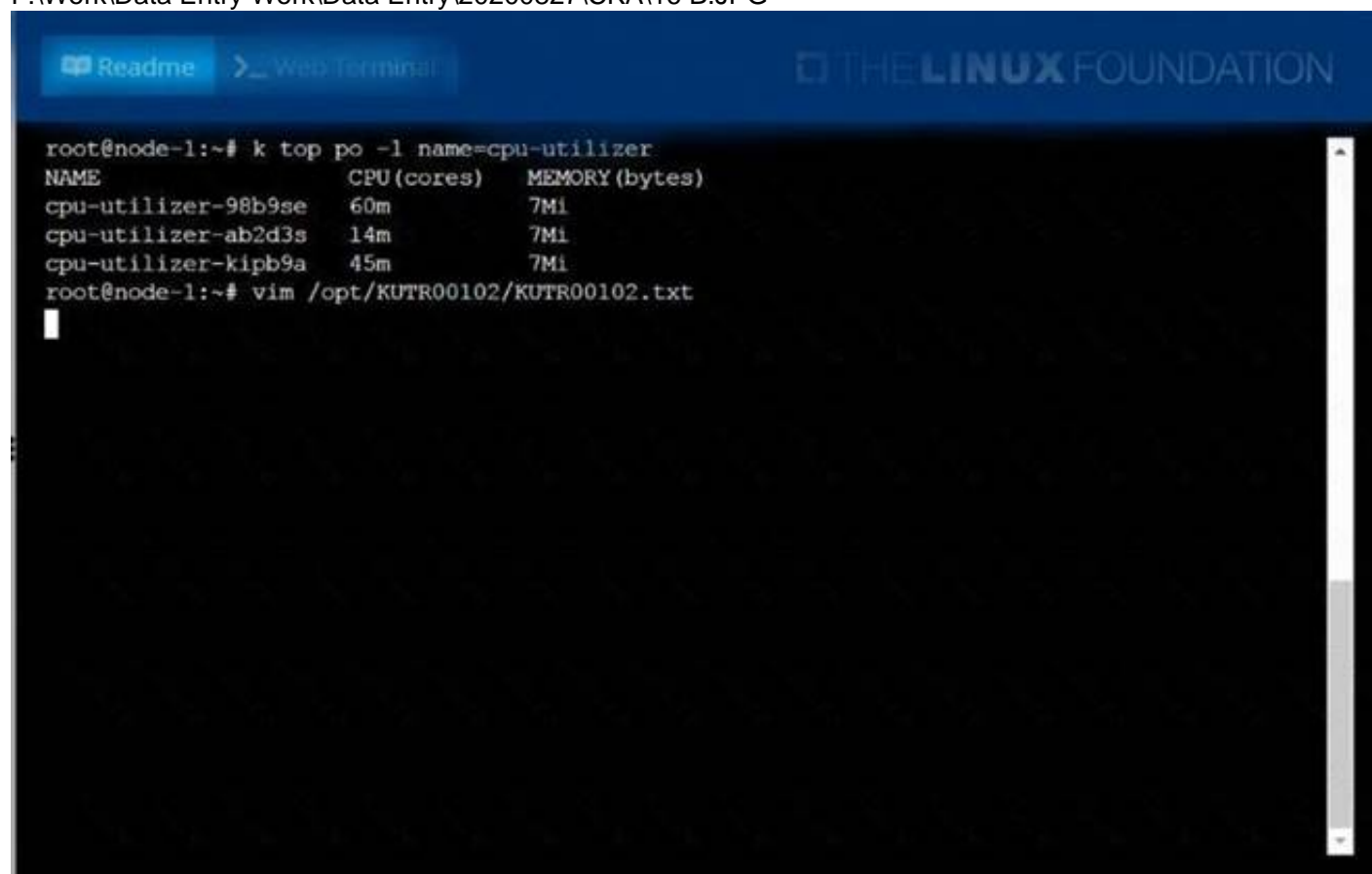
- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

solution

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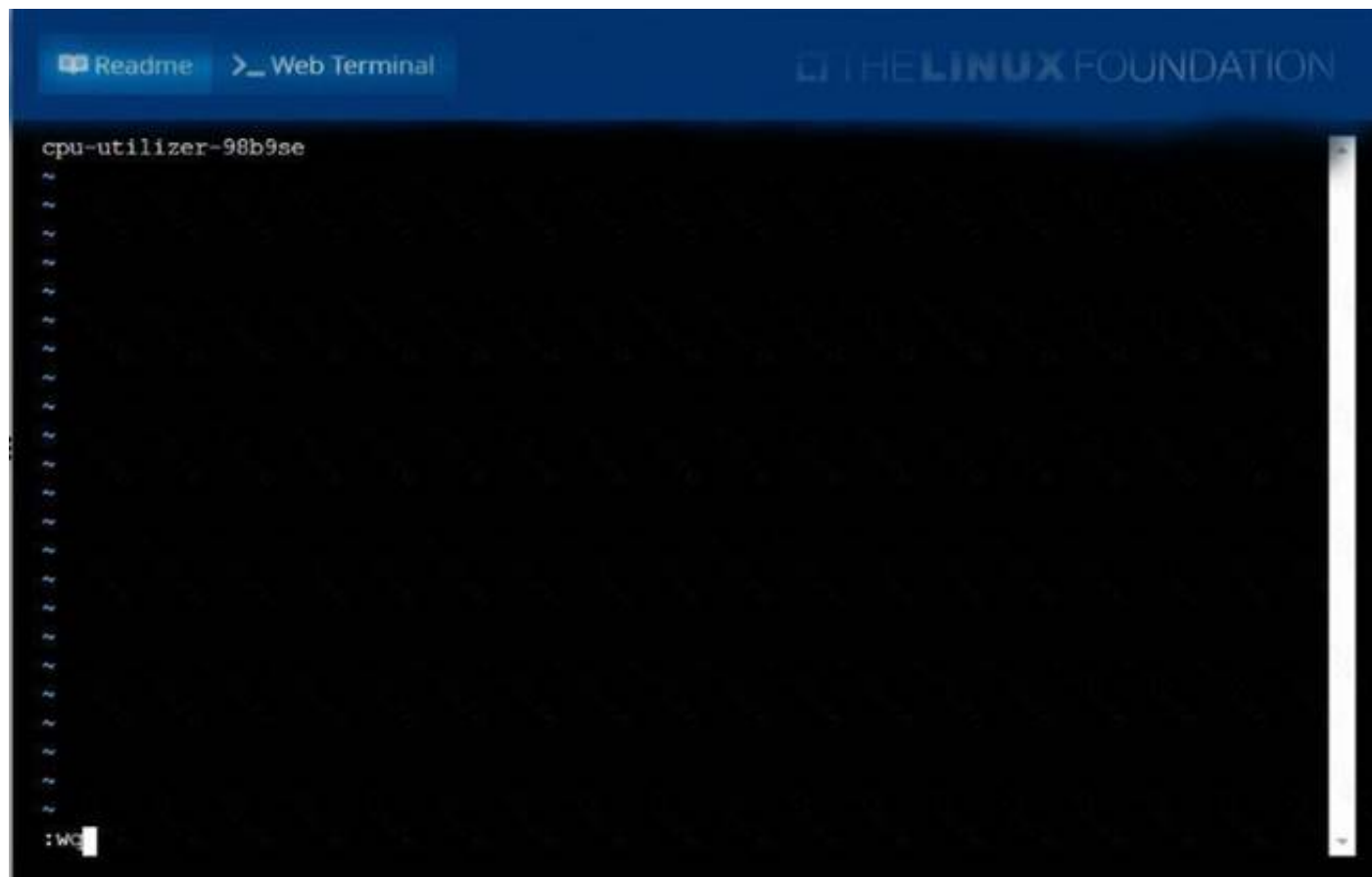


```

root@node-1:~# k top po -l name=cpu-utilizer
NAME                CPU (cores)  MEMORY (bytes)
cpu-utilizer-98b9se  60m          7Mi
cpu-utilizer-ab2d3s  14m          7Mi
cpu-utilizer-kipb9a  45m          7Mi
root@node-1:~# vim /opt/KUTR00102/KUTR00102.txt

```

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NEW QUESTION 12

For this item, you will have to `ssh` to the `node1` and `node0` 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 `node1` as a master node.
- > Join the `node0` 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 has been configured so that you can install the required tools.

NEW QUESTION 15

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: `/opt/KUCM00302/etcd-client.key`

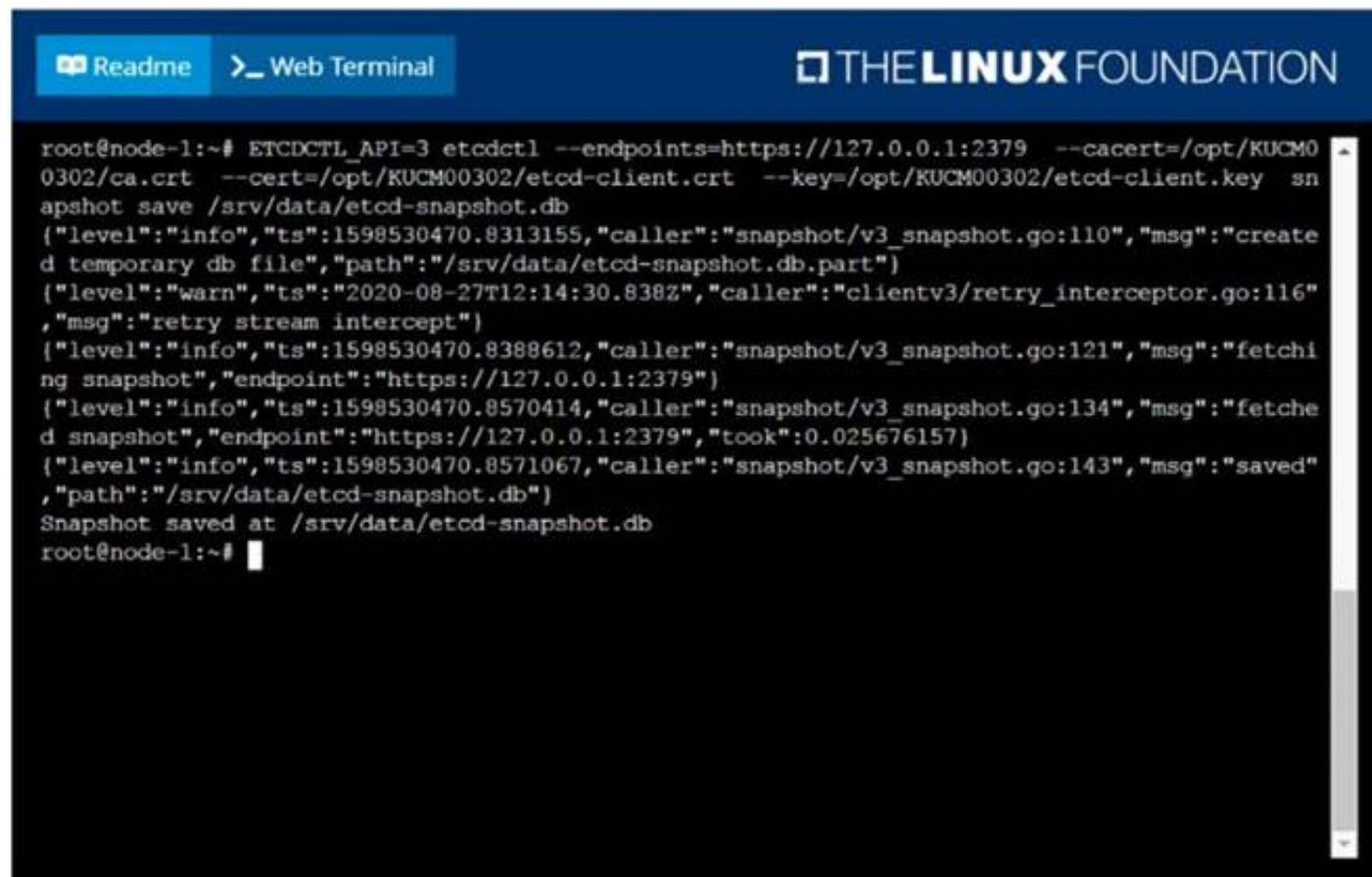
- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

solution

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```
root@node-1:~# ETCDCTL_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":"create d 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 16

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 19

Print pod name and start time to ??/opt/pod-status?? file

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

kubect1 get pods -o=jsonpath='{range items[*]}{.metadata.name}{"\t"}{.status.podIP}{"\n"}{end}'

NEW QUESTION 22

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