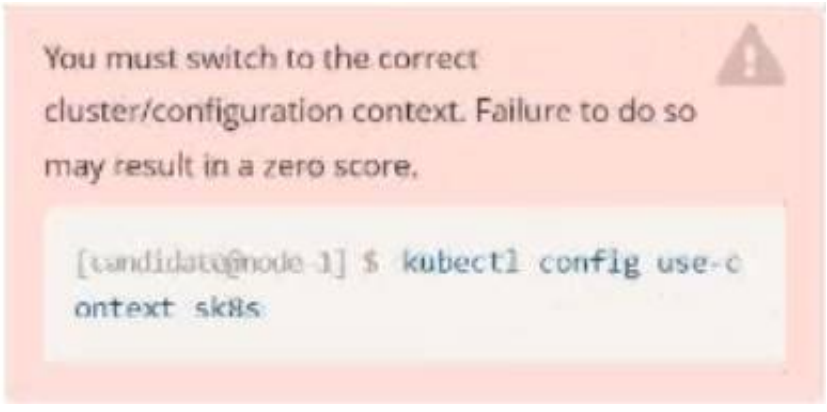
Linux-Foundation

Exam Questions CKAD

Certified Kubernetes Application Developer (CKAD) Program

NEW QUESTION 1
Exhibit:

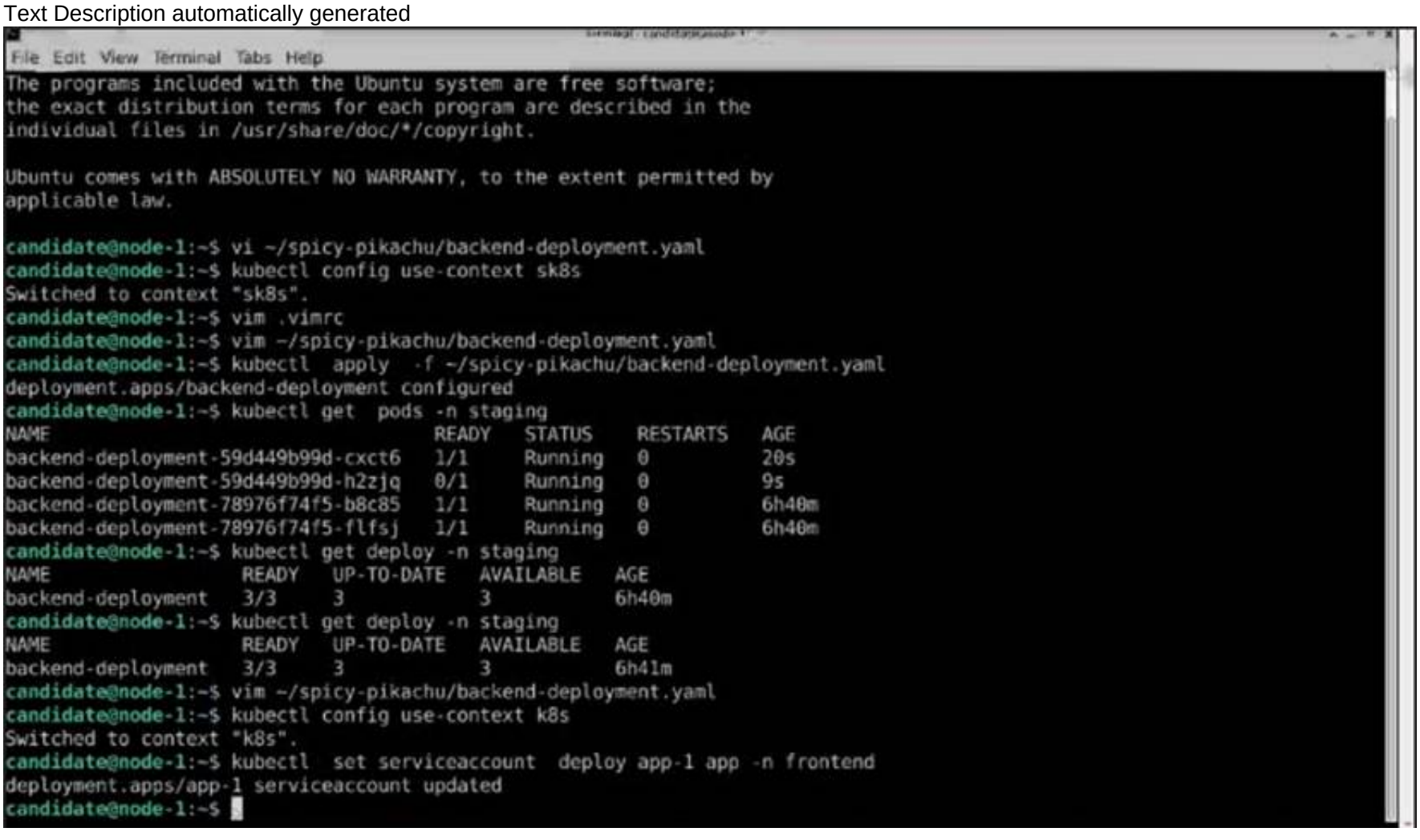


Task:
Update the Deployment app-1 in the frontend namespace to use the existing ServiceAccount app.

A. Mastered
B. Not Mastered

Answer: A

Explanation:
Solution:
Text Description automatically generated



NEW QUESTION 2
Exhibit:

Task:
Key3: value1
Add an environment variable named BEST_VARIABLE consuming the value of the secret key3.

A. Mastered
B. Not Mastered

Answer: A

Explanation:
Solution:

```
candidate@node-1:~$ kubectl config use-context k8s
Switched to context "k8s".
candidate@node-1:~$ kubectl  create  secret  generic  app-secret -n default  --from-literal=key3=value1
secret/app-secret created
candidate@node-1:~$ kubectl get secrets
NAME         TYPE      DATA   AGE
app-secret   Opaque    1      4s
candidate@node-1:~$ kubectl  run nginx-secret -n default  --image=nginx:stable --dry-run=client -o yaml> sec.yaml
candidate@node-1:~$ vim sec.yaml
```

Text Description automatically generated

```
File  Edit  View  Terminal  Tabs  Help
apiVersion: v1
kind: Pod
metadata:
  creationTimestamp: null
  labels:
    run: nginx-secret
  name: nginx-secret
  namespace: default
spec:
  containers:
  - image: nginx:stable
    name: nginx-secret
    env:
      - name: BEST_VARIABLE
        valueFrom:
           secretKeyRef:
              name: app-secret
              key: key3
:wq
```

Text Description automatically generated

```
candidate@node-1:~$ kubectl config use-context k8s
Switched to context "k8s".
candidate@node-1:~$ kubectl  create  secret  generic  app-secret -n default  --from-literal=key3=value1
secret/app-secret created
candidate@node-1:~$ kubectl get secrets
NAME         TYPE      DATA   AGE
app-secret   Opaque    1      4s
candidate@node-1:~$ kubectl  run nginx-secret -n default  --image=nginx:stable --dry-run=client -o yaml> sec.yaml
candidate@node-1:~$ vim sec.yaml
candidate@node-1:~$ kubectl  create  -f sec.yaml
pod/nginx-secret created
candidate@node-1:~$ kubectl  get pods
NAME           READY   STATUS    RESTARTS   AGE
nginx-secret   1/1     Running   0          7s
candidate@node-1:~$
```

NEW QUESTION 3
Exhibit:

Set configuration context:

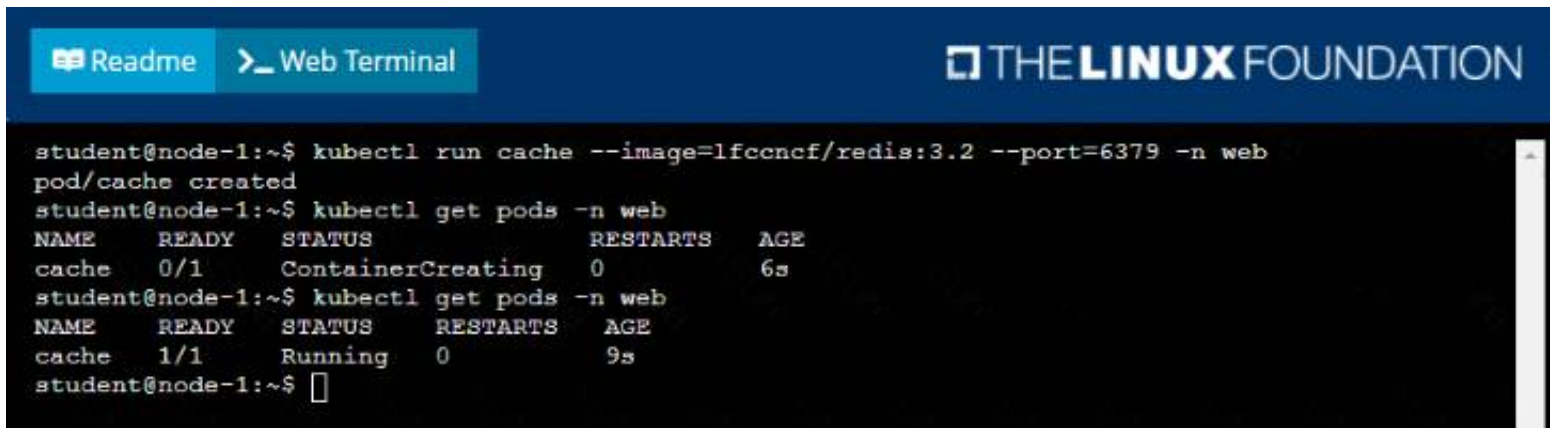
```
[student@node-1] $ | kubectl config use-context k8s
```

Context
A web application requires a specific version of redis to be used as a cache. Task
Create a pod with the following characteristics, and leave it running when complete:
• The pod must run in the web namespace. The namespace has already been created
• The name of the pod should be cache
• Use the Ifccncf/redis image with the 3.2 tag
• Expose port 6379

A. Mastered
B. Not Mastered

Answer: A

Explanation:
Solution:



NEW QUESTION 4
Exhibit:

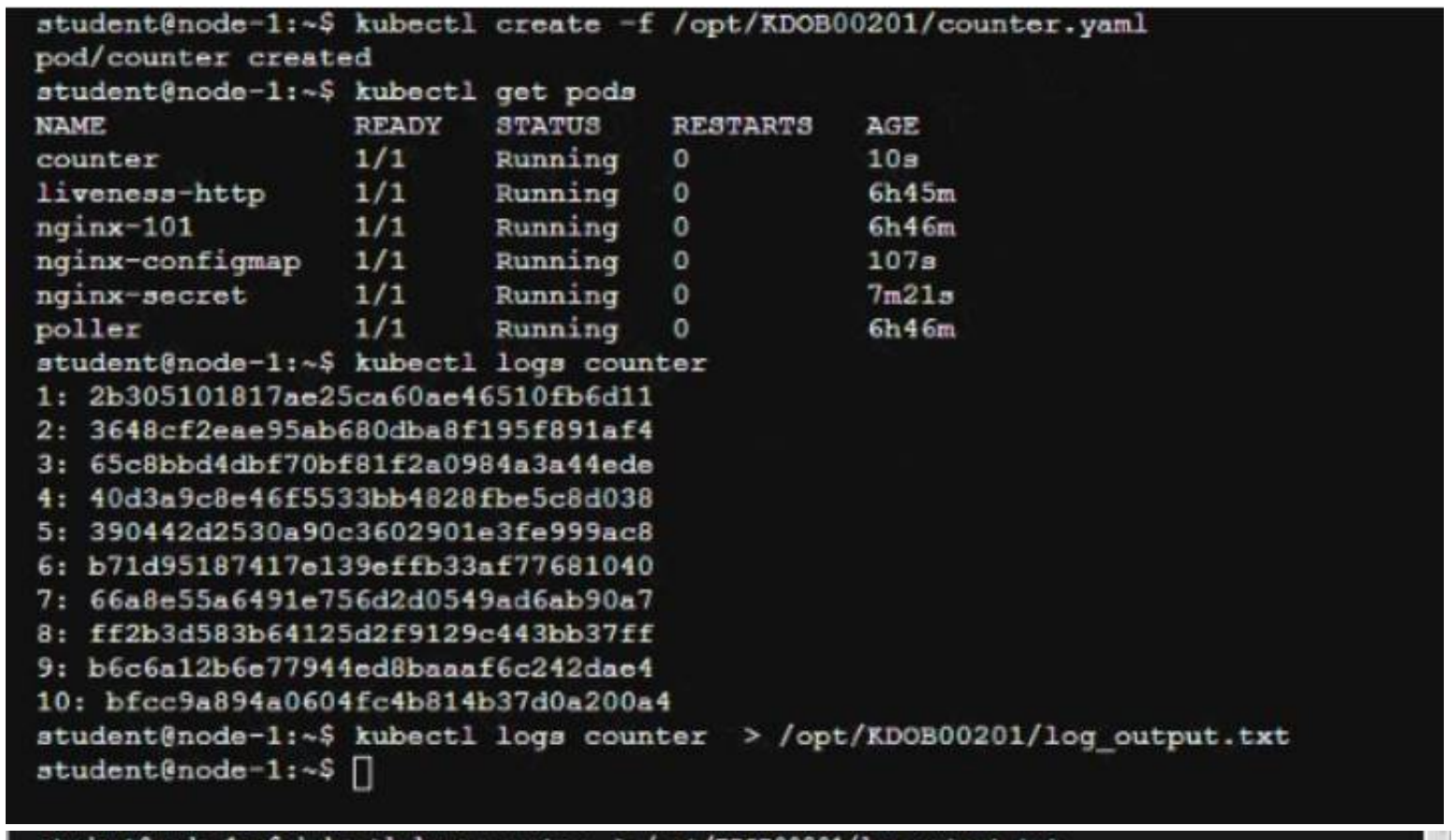
Context
You sometimes need to observe a pod's logs, and write those logs to a file for further analysis. Task
Please complete the following;
• Deploy the counter pod to the cluster using the provided YAMLspec file at /opt/KDOB00201/counter.yaml
• Retrieve all currently available application logs from the running pod and store them in the file /opt/KDOB0020l/log_Output.txt, which has already been created

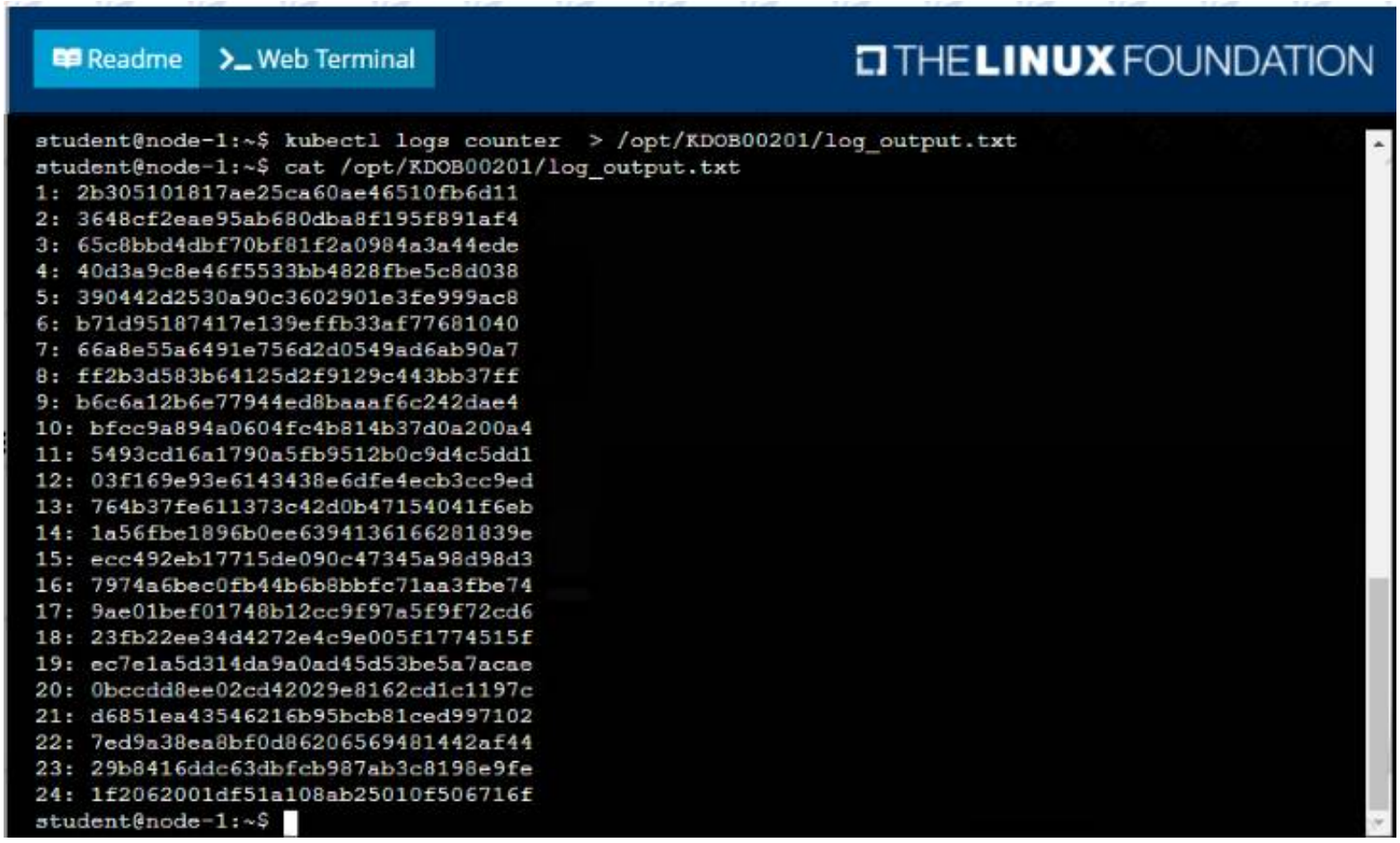
A. Mastered
B. Not Mastered

Answer: A

Explanation:

Solution:





NEW QUESTION 5
Exhibit:

Task:

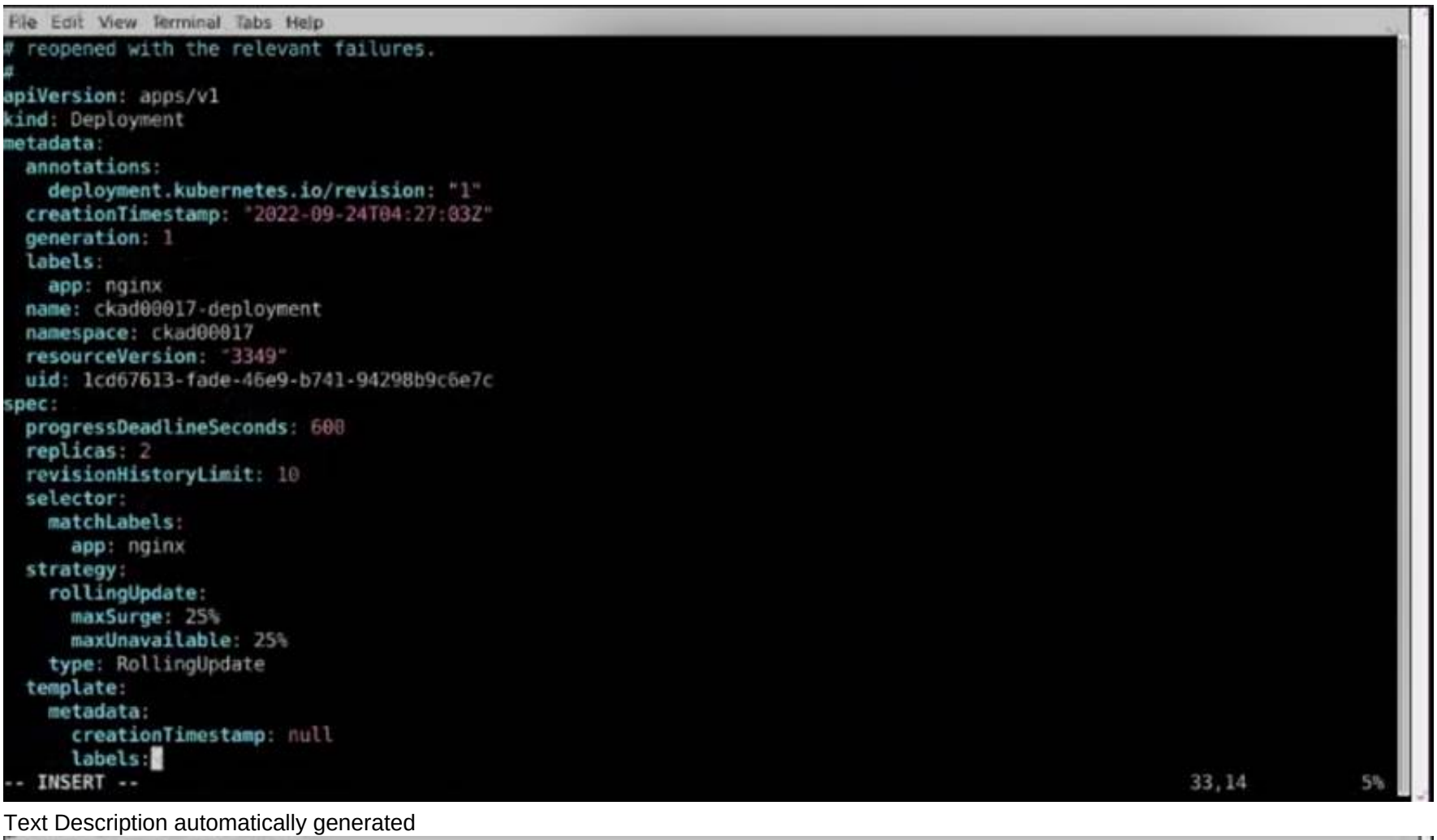
- To run 2 replicas of the pod
- Add the following label on the pod:

Role userUI

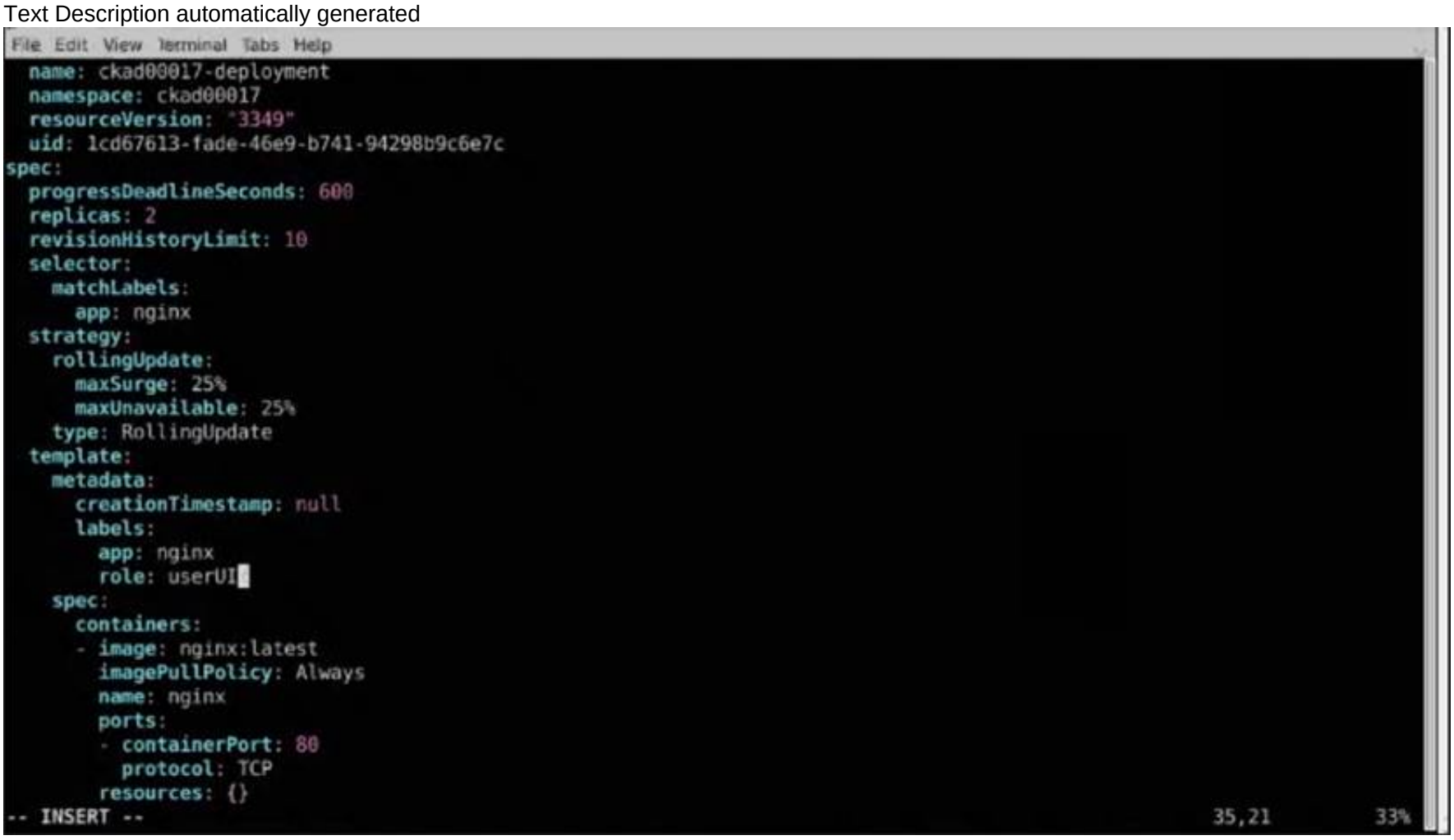
A. Mastered
B. Not Mastered

Answer: A

Explanation:
Solution:
Text Description automatically generated



Text Description automatically generated

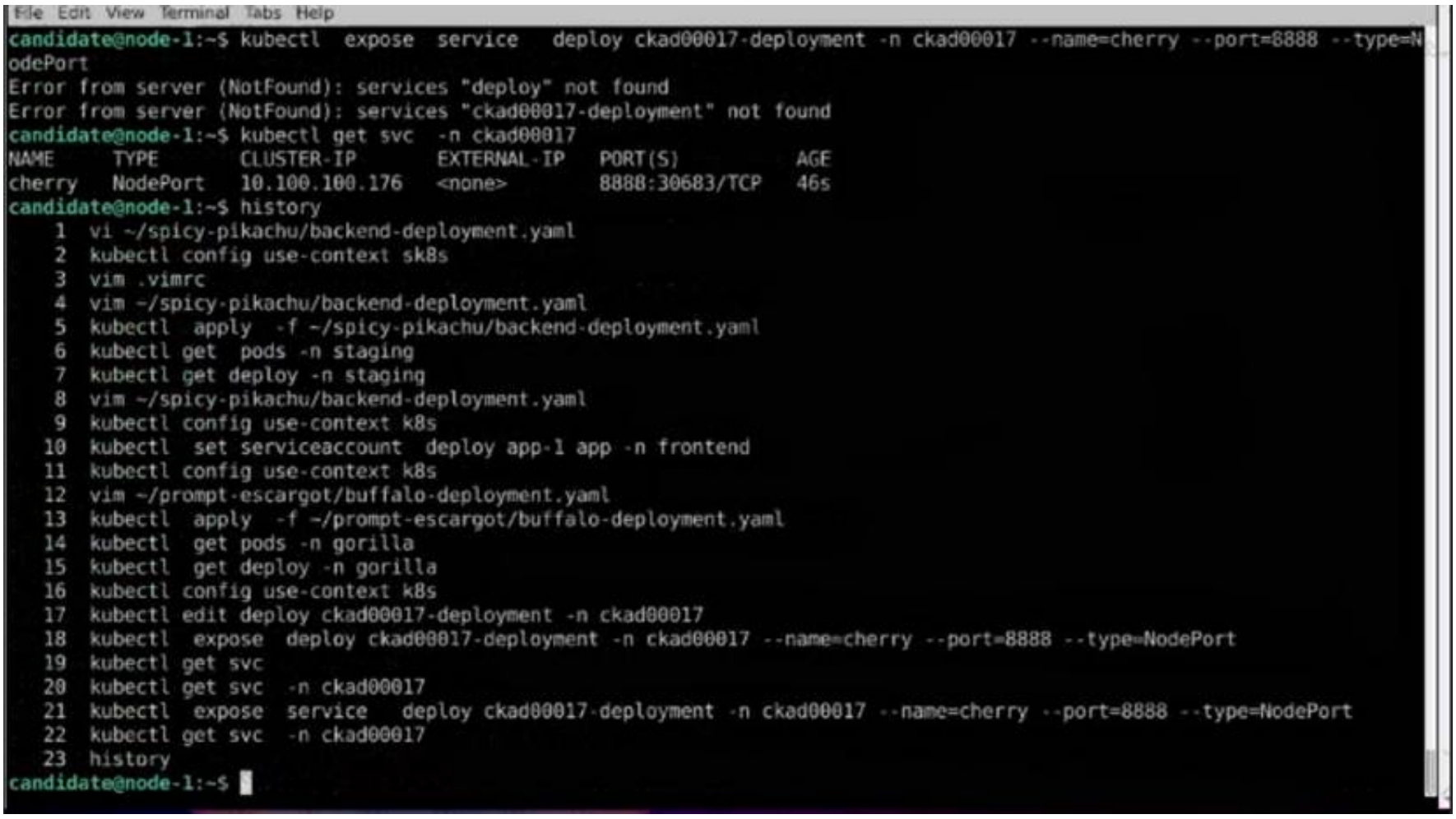


Text Description automatically generated

```
backend-deployment-59d449b99d-h2zjq   0/1     Running   0          9s
backend-deployment-78976f74f5-b8c85   1/1     Running   0          6h40m
backend-deployment-78976f74f5-flfsj   1/1     Running   0          6h40m
candidate@node-1:~$ kubectl get deploy -n staging
NAME                 READY   UP-TO-DATE   AVAILABLE   AGE
backend-deployment   3/3     3            3           6h40m
candidate@node-1:~$ kubectl get deploy -n staging
NAME                 READY   UP-TO-DATE   AVAILABLE   AGE
backend-deployment   3/3     3            3           6h41m
candidate@node-1:~$ vim ~/spicy-pikachu/backend-deployment.yaml
candidate@node-1:~$ kubectl config use-context k8s
Switched to context "k8s".
candidate@node-1:~$ kubectl  set serviceaccount  deploy app-1 app -n frontend
deployment.apps/app-1 serviceaccount updated
candidate@node-1:~$ kubectl config use-context k8s
Switched to context "k8s".
candidate@node-1:~$ vim ~/prompt-escargot/buffalo-deployment.yaml
candidate@node-1:~$ vim ~/prompt-escargot/buffalo-deployment.yaml
candidate@node-1:~$ kubectl  apply  -f ~/prompt-escargot/buffalo-deployment.yaml
deployment.apps/buffalo-deployment configured
candidate@node-1:~$ kubectl  get pods -n gorilla
NAME                                  READY   STATUS              RESTARTS   AGE
buffalo-deployment-776844df7f-r5fsb   1/1     Running             0          6h38m
buffalo-deployment-859898c6f5-zx5gj   0/1     ContainerCreating   0          8s
candidate@node-1:~$ kubectl  get deploy -n gorilla
NAME                 READY   UP-TO-DATE   AVAILABLE   AGE
buffalo-deployment   1/1     1            1           6h38m
candidate@node-1:~$ kubectl config use-context k8s
Switched to context "k8s".
candidate@node-1:~$ kubectl edit deploy ckad00017-deployment -n ckad00017
deployment.apps/ckad00017-deployment edited
candidate@node-1:~$
```

```
candidate@node-1:~$ kubectl  get pods -n gorilla
NAME                                  READY   STATUS              RESTARTS   AGE
buffalo-deployment-776844df7f-r5fsb   1/1     Running             0          6h38m
buffalo-deployment-859898c6f5-zx5gj   0/1     ContainerCreating   0          8s
candidate@node-1:~$ kubectl  get deploy -n gorilla
NAME                 READY   UP-TO-DATE   AVAILABLE   AGE
buffalo-deployment   1/1     1            1           6h38m
candidate@node-1:~$ kubectl config use-context k8s
Switched to context "k8s".
candidate@node-1:~$ kubectl edit deploy ckad00017-deployment -n ckad00017
deployment.apps/ckad00017-deployment edited
candidate@node-1:~$ kubectl  expose  deploy ckad00017-deployment -n ckad0001
ckad00014  ckad00015  ckad00017
candidate@node-1:~$ kubectl  expose  deploy ckad00017-deployment -n ckad0001
ckad00014  ckad00015  ckad00017
candidate@node-1:~$ kubectl  expose  deploy ckad00017-deployment -n ckad0001
ckad00014  ckad00015  ckad00017
candidate@node-1:~$ kubectl  expose  deploy ckad00017-deployment -n ckad0001
ckad00014  ckad00015  ckad00017
candidate@node-1:~$ kubectl  expose  deploy ckad00017-deployment -n ckad0001
ckad00014  ckad00015  ckad00017
candidate@node-1:~$ kubectl  expose  deploy ckad00017-deployment -n ckad0001
ckad00014  ckad00015  ckad00017
candidate@node-1:~$ kubectl  expose  deploy ckad00017-deployment -n ckad0001
ckad00014  ckad00015  ckad00017
candidate@node-1:~$ kubectl  expose  deploy ckad00017-deployment -n ckad0001
ckad00014  ckad00015  ckad00017
candidate@node-1:~$ kubectl  expose  deploy ckad00017-deployment -n ckad0001
ckad00014  ckad00015  ckad00017
candidate@node-1:~$ kubectl  expose  deploy ckad00017-deployment -n ckad00017 --name=cherry --port=8888 --type=NodePort
service/cherry exposed
candidate@node-1:~$
```

```
candidate@node-1:~$ kubectl get svc
NAME         TYPE        CLUSTER-IP   EXTERNAL-IP   PORT(S)   AGE
kubernetes   ClusterIP   10.96.0.1    <none>        443/TCP   77d
candidate@node-1:~$ kubectl get svc  -n ckad00017
NAME     TYPE       CLUSTER-IP       EXTERNAL-IP   PORT(S)          AGE
cherry   NodePort   10.100.100.176   <none>        8888:30683/TCP   24s
candidate@node-1:~$ kubectl  expose  service   deploy ckad00017-deployment -n ckad00017 --name=cherry --port=8888 --type=N
odePort
Error from server (NotFound): services "deploy" not found
Error from server (NotFound): services "ckad00017-deployment" not found
candidate@node-1:~$ kubectl get svc  -n ckad00017
NAME     TYPE       CLUSTER-IP       EXTERNAL-IP   PORT(S)          AGE
cherry   NodePort   10.100.100.176   <none>        8888:30683/TCP   46s
candidate@node-1:~$
```



NEW QUESTION 6
Exhibit:

Context
A pod is running on the cluster but it is not responding. Task
The desired behavior is to have Kubemetes restart the pod when an endpoint returns an HTTP 500 on the
/healthz endpoint. The service, probe-pod, should never send traffic to the pod while it is failing. Please complete the following:
• The application has an endpoint, /started, that will indicate if it can accept traffic by returning an HTTP 200. If the endpoint returns an HTTP 500, the application has not yet finished initialization.
• The application has another endpoint /healthz that will indicate if the application is still working as expected by returning an HTTP 200. If the endpoint returns an HTTP 500 the application is no longer responsive.
• Configure the probe-pod pod provided to use these endpoints
• The probes should use port 8080

A. Mastered
B. Not Mastered

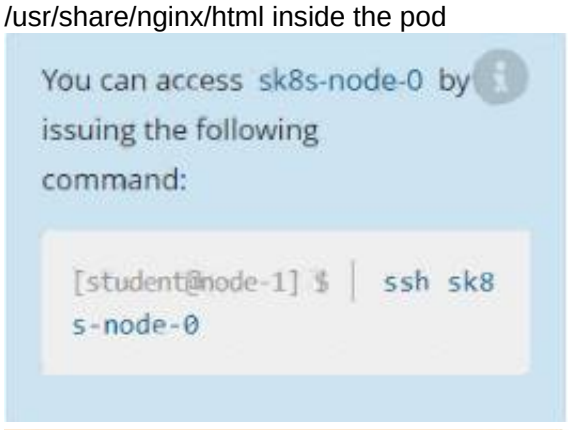
Answer: A

Explanation:
Solution:
apiVersion: v1 kind: Pod metadata: labels:
test: liveness
name: liveness-exec
spec: containers:
- name: liveness
image: k8s.gcr.io/busybox
args:
- /bin/sh
- -c
- touch /tmp/healthy; sleep 30; rm -rf /tmp/healthy; sleep 600
livenessProbe: exec: command:
- cat
- /tmp/healthy
initialDelaySeconds: 5
periodSeconds: 5
In the configuration file, you can see that the Pod has a single Container. The periodSeconds field specifies that the kubelet should perform a liveness probe every 5 seconds. The initialDelaySeconds field tells the kubelet that it should wait 5 seconds before performing the first probe. To perform a probe, the kubelet executes the command cat /tmp/healthy in the target container. If the command succeeds, it returns 0, and the kubelet considers the container to be alive and healthy. If the command returns a non-zero value, the kubelet kills the container and restarts it.
When the container starts, it executes this command:
/bin/sh -c "touch /tmp/healthy; sleep 30; rm -rf /tmp/healthy; sleep 600"

For the first 30 seconds of the container's life, there is a /tmp/healthy file. So during the first 30 seconds, the command cat /tmp/healthy returns a success code. After 30 seconds, cat /tmp/healthy returns a failure co
Create the Pod:
kubectl apply -f https://k8s.io/examples/pods/probe/exec-liveness.yaml Within 30 seconds, view the Pod events:
kubectl describe pod liveness-exec
The output indicates that no liveness probes have failed yet:
FirstSeen LastSeen Count From SubobjectPath Type Reason Message
--------- -------- ----- ---- ------------- -------- ------ ------
24s 24s 1 {default-scheduler } Normal Scheduled Successfully assigned liveness-exec to worker0
23s 23s 1 {kubelet worker0} spec.containers{liveness} Normal Pulling pulling image "k8s.gcr.io/busybox" 23s 23s 1 {kubelet worker0} spec.containers{liveness} Normal Pulled Successfully pulled image
"k8s.gcr.io/busybox"
23s 23s 1 {kubelet worker0} spec.containers{liveness} Normal Created Created container with docker id 86849c15382e; Security:[seccomp=unconfined]
23s 23s 1 {kubelet worker0} spec.containers{liveness} Normal Started Started container with docker id 86849c15382e
After 35 seconds, view the Pod events again: kubectl describe pod liveness-exec
At the bottom of the output, there are messages indicating that the liveness probes have failed, and the containers have been killed and recreated.
FirstSeen LastSeen Count From SubobjectPath Type Reason Message
--------- -------- ----- ---- ------------- -------- ------ ------
37s 37s 1 {default-scheduler } Normal Scheduled Successfully assigned liveness-exec to worker0
36s 36s 1 {kubelet worker0} spec.containers{liveness} Normal Pulling pulling image "k8s.gcr.io/busybox" 36s 36s 1 {kubelet worker0} spec.containers{liveness} Normal Pulled Successfully pulled image
"k8s.gcr.io/busybox"
36s 36s 1 {kubelet worker0} spec.containers{liveness} Normal Created Created container with docker id 86849c15382e; Security:[seccomp=unconfined]
36s 36s 1 {kubelet worker0} spec.containers{liveness} Normal Started Started container with docker id 86849c15382e
2s 2s 1 {kubelet worker0} spec.containers{liveness} Warning Unhealthy Liveness probe failed: cat: can't open '/tmp/healthy': No such file or directory
Wait another 30 seconds, and verify that the container has been restarted: kubectl get pod liveness-exec
The output shows that RESTARTS has been incremented: NAME READY STATUS RESTARTS AGE
liveness-exec 1/1 Running 1 1m

NEW QUESTION 7
Exhibit:

Context
A project that you are working on has a requirement for persistent data to be available. Task
To facilitate this, perform the following tasks:
• Create a file on node sk8s-node-0 at /opt/KDSP00101/data/index.html with the content Acct=Finance
• Create a PersistentVolume named task-pv-volume using hostPath and allocate 1Gi to it, specifying that the volume is at /opt/KDSP00101/data on the cluster's node. The configuration should specify the access mode of ReadWriteOnce . It should define the StorageClass name exam for the PersistentVolume , which will be used to bind PersistentVolumeClaim requests to this PersistenetVolume.
• Create a PefsissentVolumeClaim named task-pv-claim that requests a volume of at least 100Mi and specifies an access mode of ReadWriteOnce
• Create a pod that uses the PersistentVolmeClaim as a volume with a label app: my-storage-app mounting the resulting volume to a mountPath /usr/share/nginx/html inside the pod

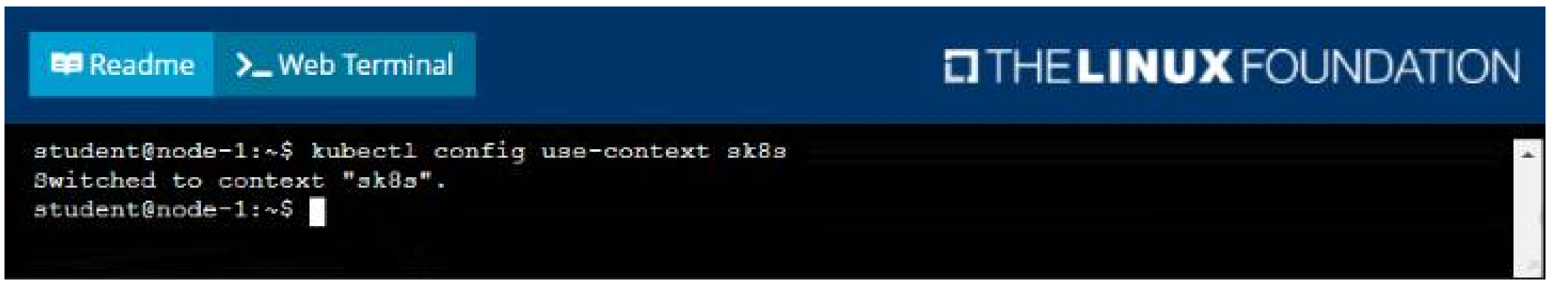


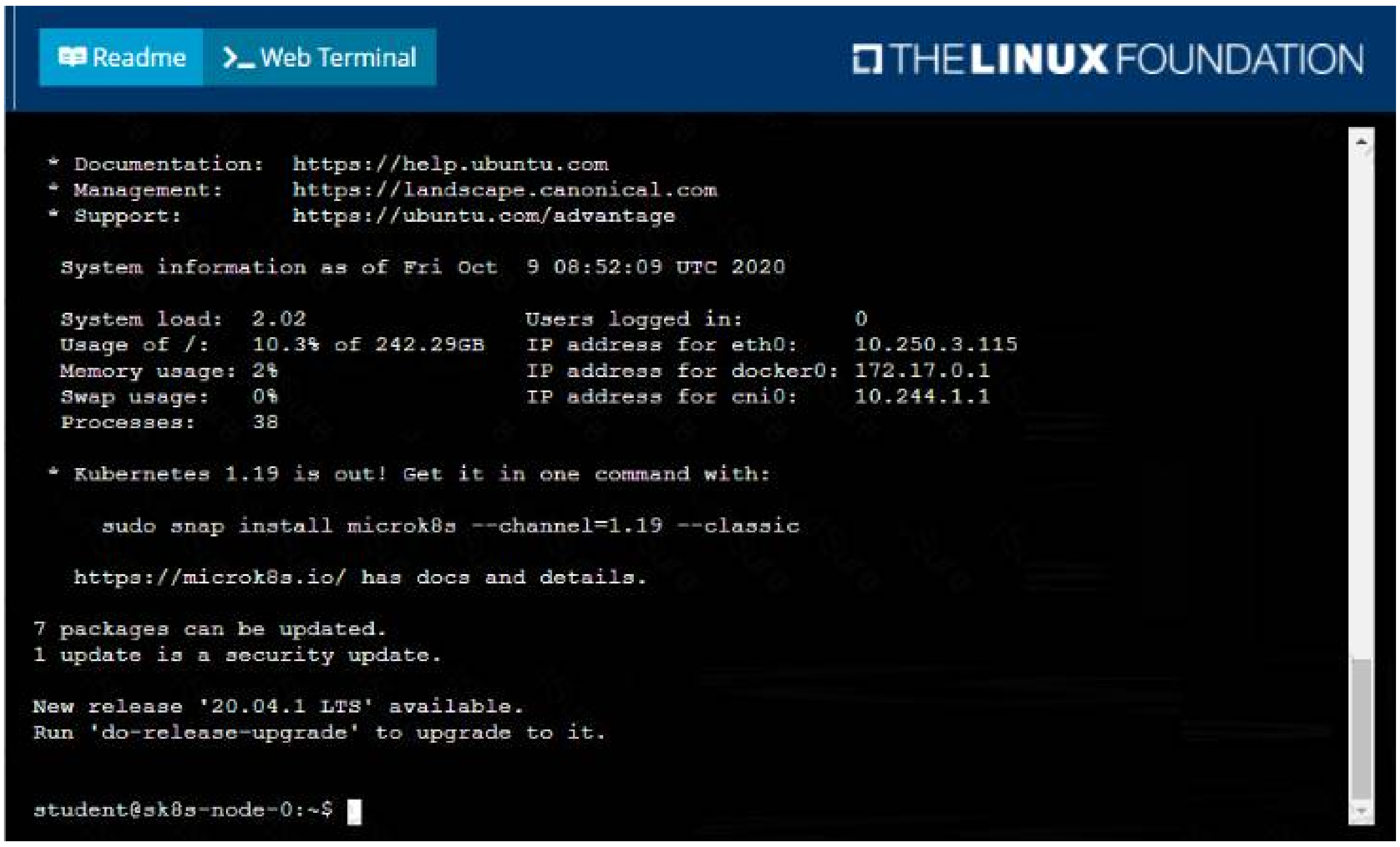
A. Mastered
B. Not Mastered

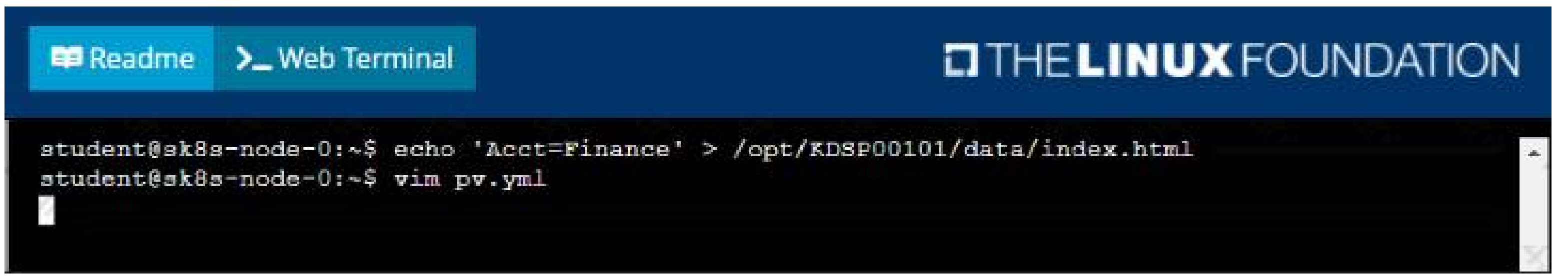
Answer: A

Explanation:

Solution:


Readme
>_ Web Terminal
THE LINUX FOUNDATION
student@node-1:~$ kubectl config use-context sk8s
Switched to context "sk8s".
student@node-1:~$


Readme
>_ Web Terminal
THE LINUX FOUNDATION
* Documentation: https://help.ubuntu.com
* Management: https://landscape.canonical.com
* Support: https://ubuntu.com/advantage
System information as of Fri Oct 9 08:52:09 UTC 2020
System load: 2.02
Usage of /: 10.3% of 242.29GB
Memory usage: 2%
Swap usage: 0%
Processes: 38
Users logged in: 0
IP address for eth0: 10.250.3.115
IP address for docker0: 172.17.0.1
IP address for cni0: 10.244.1.1
* Kubernetes 1.19 is out! Get it in one command with:
sudo snap install microk8s --channel=1.19 --classic
https://microk8s.io/ has docs and details.
7 packages can be updated.
1 update is a security update.
New release '20.04.1 LTS' available.
Run 'do-release-upgrade' to upgrade to it.
student@sk8s-node-0:~$


Readme
>_ Web Terminal
THE LINUX FOUNDATION
student@sk8s-node-0:~$ echo 'Acct=Finance' > /opt/KDSP00101/data/index.html
student@sk8s-node-0:~$ vim pv.yml


Readme
>_ Web Terminal
THE LINUX FOUNDATION
-- INSERT --
0,1
All

Readme | Web Terminal — THE LINUX FOUNDATION

```
apiVersion: v1
kind: PersistentVolume
metadata:
  name: task-pv-volume
spec:
  capacity:
    storage: 1Gi
  accessModes:
  - ReadWriteOnce
  storageClassName: storage
  hostPath:
    path: /opt/KDSP00101/data
    type: Directory
```

Readme | Web Terminal — THE LINUX FOUNDATION

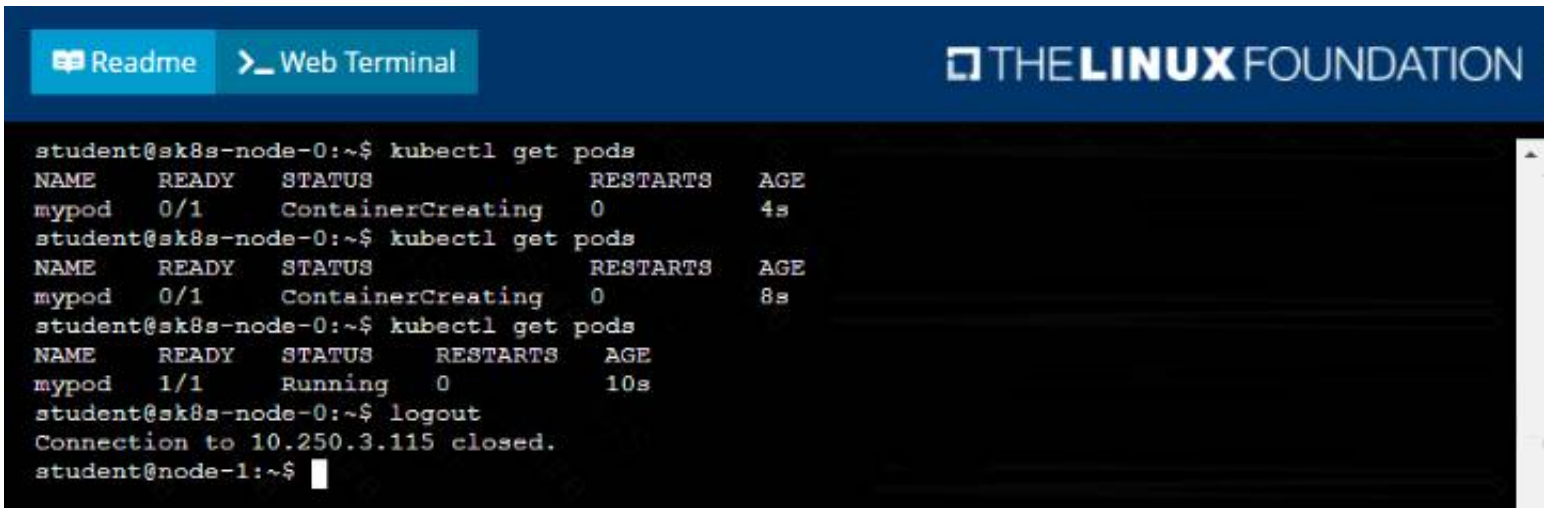
```
apiVersion: v1
kind: PersistentVolumeClaim
metadata:
  name: task-pv-claim
spec:
  accessModes:
  - ReadWriteOnce
  resources:
    requests:
      storage: 100Mi
  storageClassName: storage
~
```

```
student@sk8s-node-0:~$ kubectl create -f pv.yml
persistentvolume/task-pv-volume created
student@sk8s-node-0:~$ kubectl create -f pvc.yml
persistentvolumeclaim/task-pv-claim created
student@sk8s-node-0:~$ kubectl get pv
NAME             CAPACITY   ACCESS MODES   RECLAIM POLICY   STATUS   CLAIM                   STO
RAGECLASS   REASON   AGE
task-pv-volume   1Gi        RWO            Retain           Bound    default/task-pv-claim   sto
rage                11s
student@sk8s-node-0:~$ kubectl get pvc
NAME            STATUS   VOLUME           CAPACITY   ACCESS MODES   STORAGECLASS   AGE
task-pv-claim   Bound    task-pv-volume   1Gi        RWO            storage        9s
student@sk8s-node-0:~$ vim pod.yml
```

Readme | Web Terminal — THE LINUX FOUNDATION

```
apiVersion: v1
kind: Pod
metadata:
  name: mypod
  labels:
    app: my-storage-app
spec:
  containers:
  - name: myfrontend
    image: nginx
    volumeMounts:
    - mountPath: "/usr/share/nginx/html"
      name: mypod
  volumes:
    - name: mypod
      persistentVolumeClaim:
        claimName: task-pv-clai
~
~
~
~
~
~
~
~
~
~
                                                                    17,32         All
```

```
student@sk8s-node-0:~$ kubectl create -f pod.yml
pod/mypod created
student@sk8s-node-0:~$ kubectl get
```



NEW QUESTION 8
Exhibit:

Context
A container within the poller pod is hard-coded to connect the nginxsvc service on port 90. As this port changes to 5050 an additional container needs to be added to the poller pod which adapts the container to connect to this new port. This should be realized as an ambassador container within the pod.
Task
• Update the nginxsvc service to serve on port 5050.
• Add an HAproxy container named haproxy bound to port 90 to the poller pod and deploy the enhanced pod. Use the image haproxy and inject the configuration located at /opt/KDMC00101/haproxy.cfg, with a ConfigMap named haproxy-config, mounted into the container so that haproxy.cfg is available at /usr/local/etc/haproxy/haproxy.cfg. Ensure that you update the args of the poller container to connect to
localhost instead of nginxsvc so that the connection is correctly proxied to the new service endpoint. You must not modify the port of the endpoint in poller's args .
The spec file used to create the initial poller pod is available in /opt/KDMC00101/poller.yaml

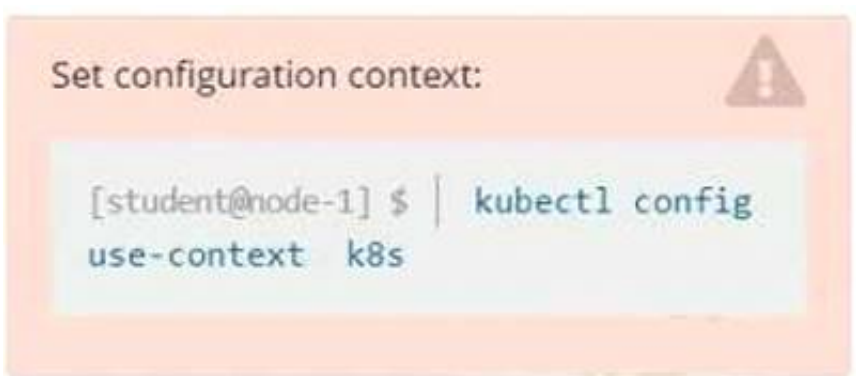
A. Mastered
B. Not Mastered

Answer: A

Explanation:

Solution:
apiVersion: apps/v1 kind: Deployment metadata:
name: my-nginx spec:
selector:
matchLabels: run: my-nginx replicas: 2 template: metadata: labels:
run: my-nginx spec: containers:
- name: my-nginx image: nginx ports:
- containerPort: 90
This makes it accessible from any node in your cluster. Check the nodes the Pod is running on: kubectl apply -f ./run-my-nginx.yaml
kubectl get pods -l run=my-nginx -o wide
NAME READY STATUS RESTARTS AGE IP NODE
my-nginx-3800858182-jr4a2 1/1 Running 0 13s 10.244.3.4 kubernetes-minion-905m my-nginx-3800858182-kna2y 1/1 Running 0 13s 10.244.2.5 kubernetes-minion-ljyd Check your pods' IPs:
kubectl get pods -l run=my-nginx -o yaml | grep podIP podIP: 10.244.3.4
podIP: 10.244.2.5

NEW QUESTION 9
Exhibit:



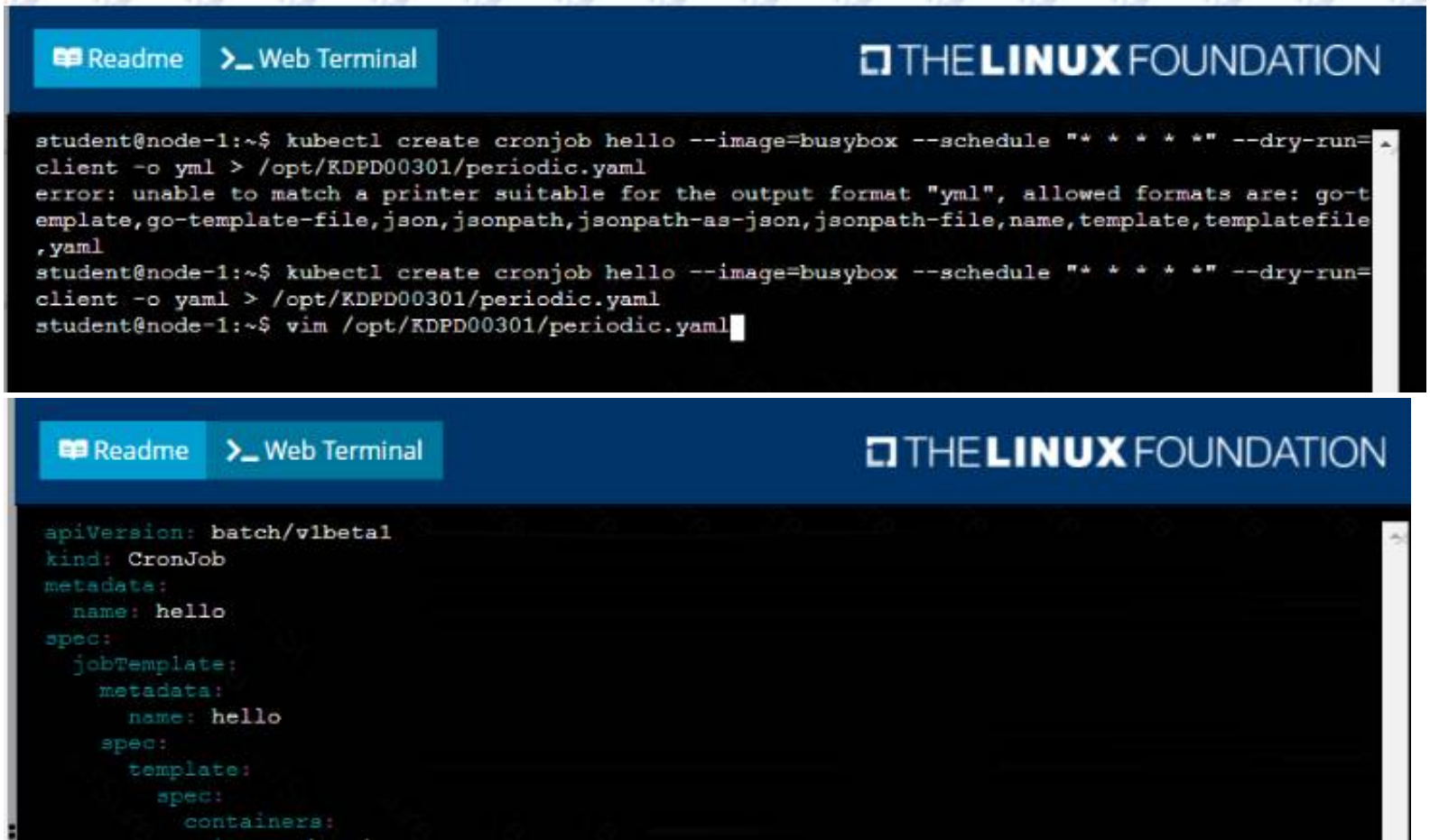
Context
Developers occasionally need to submit pods that run periodically. Task
Follow the steps below to create a pod that will start at a predetermined time and]which runs to completion only once each time it is started:
• Create a YAML formatted Kubernetes manifest /opt/KDPD00301/periodic.yaml that runs the following shell command: date in a single busybox container. The command should run every minute and must complete within 22 seconds or be terminated oy Kubernetes. The Cronjob namp and container name should both be

hello
• Create the resource in the above manifest and verify that the job executes successfully at least once

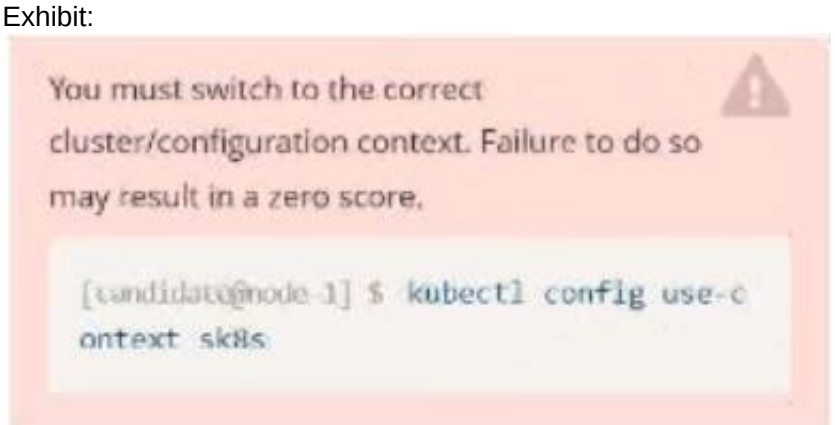
A. Mastered
B. Not Mastered

Answer: A

Explanation:
Solution:



NEW QUESTION 10
Exhibit:



Task:
Create a Pod named nginx resources in the existing pod resources namespace. Specify a single container using nginx:stable image.
Specify a resource request of 300m cpus and 1G1 of memory for the Pod's container.

A. Mastered
B. Not Mastered

Answer: A

Explanation:
Solution:

```
candidate@node-1:~$ kubectl config use-context k8s
Switched to context "k8s".
candidate@node-1:~$ kubectl  run nginx-resources -n pod-resources  --image=nginx:stable --dry-run=client -o yaml > hw.yaml
candidate@node-1:~$ vim hw.yaml
```

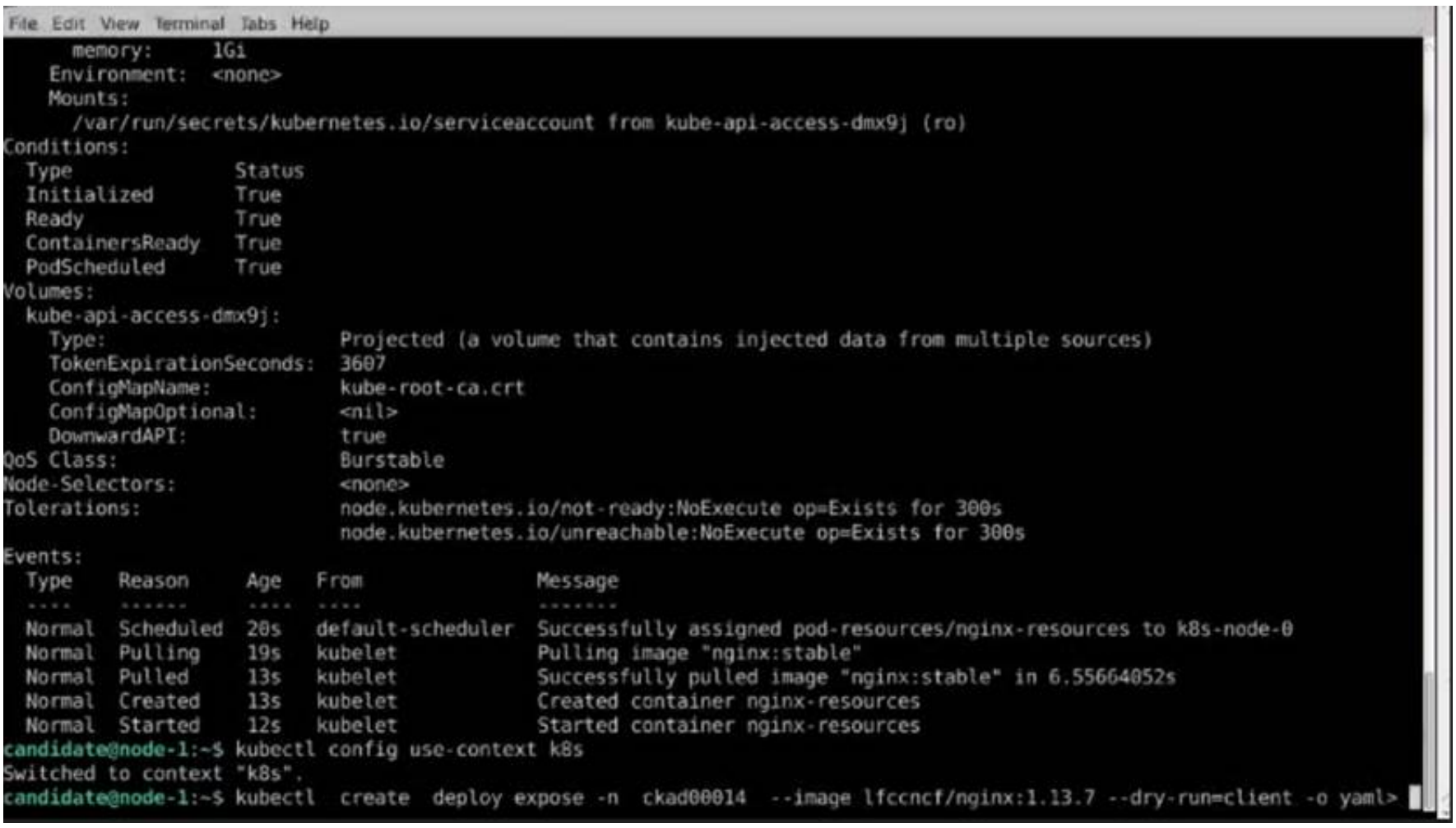
Text Description automatically generated with medium confidence

```
File  Edit  View  Terminal  Tabs  Help
apiVersion: v1
kind: Pod
metadata:
  creationTimestamp: null
  labels:
    run: nginx-resources
  name: nginx-resources
  namespace: pod-resources
spec:
  containers:
  - image: nginx:stable
    name: nginx-resources
    resources:
      requests:
          cpu: 300m
          memory: "1Gi"
~
~
~
~
~
~
~
~
~
~
~
~
~
:wq
```

Text Description automatically generated

```
candidate@node-1:~$ kubectl config use-context k8s
Switched to context "k8s".
candidate@node-1:~$ kubectl  run nginx-resources -n pod-resources  --image=nginx:stable --dry-run=client -o yaml > hw.yaml
candidate@node-1:~$ vim hw.yaml
candidate@node-1:~$ kubectl  create  -f hw.yaml
pod/nginx-resources created
candidate@node-1:~$ kubectl get pods -n pod-resources
NAME              READY   STATUS    RESTARTS   AGE
nginx-resources   1/1     Running   0          13s
candidate@node-1:~$ kubectl  describe  pods -n pod-resources
```

Text Description automatically generated



NEW QUESTION 10
Exhibit:

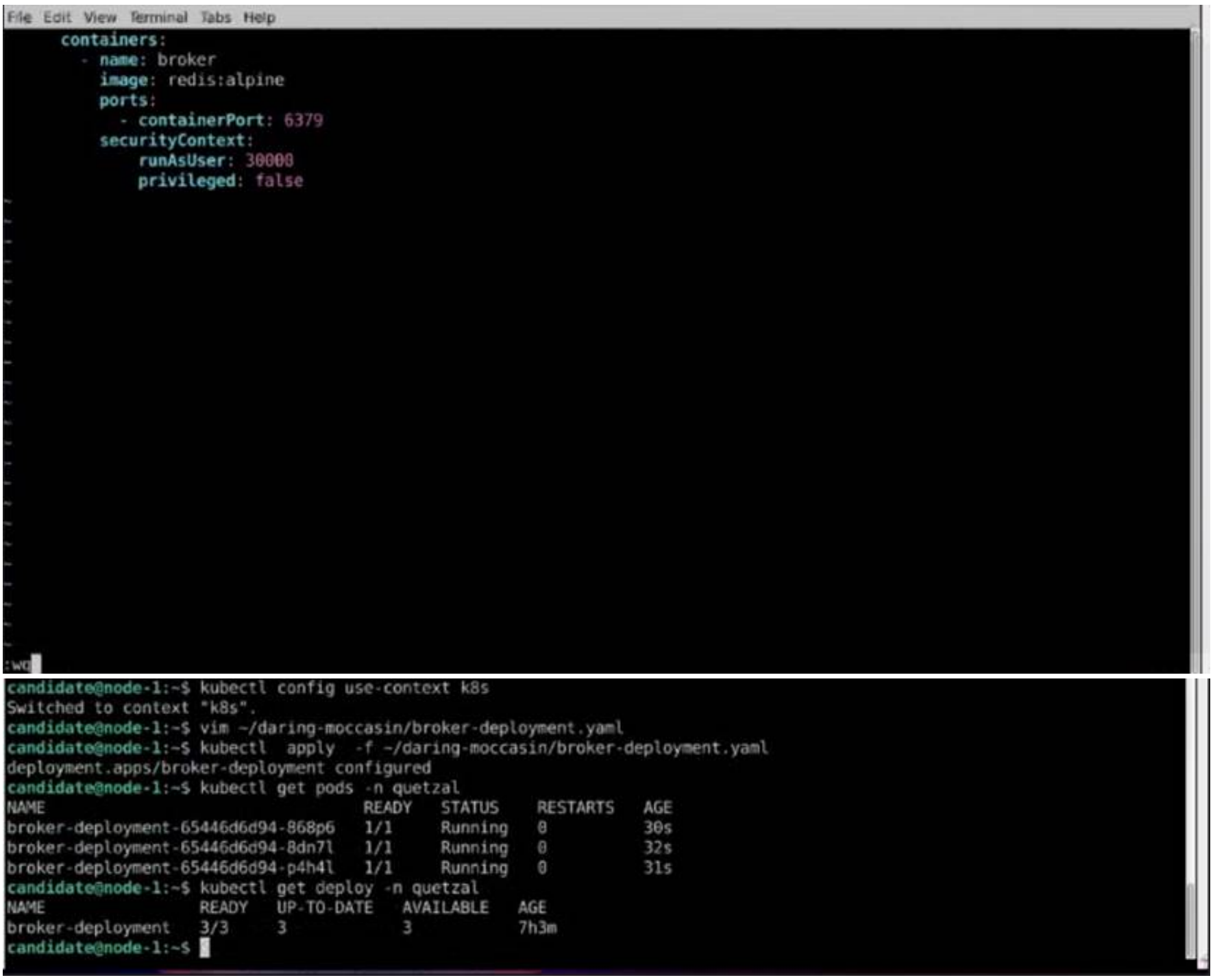
Task:
Modify the existing Deployment named broker-deployment running in namespace quetzal so that its containers.
The broker-deployment is manifest file can be found at:
~/daring-moccasin/broker-deployment.yaml

A. Mastered
B. Not Mastered

Answer: A

Explanation:
Solution:

Text Description automatically generated



NEW QUESTION 11
Exhibit:

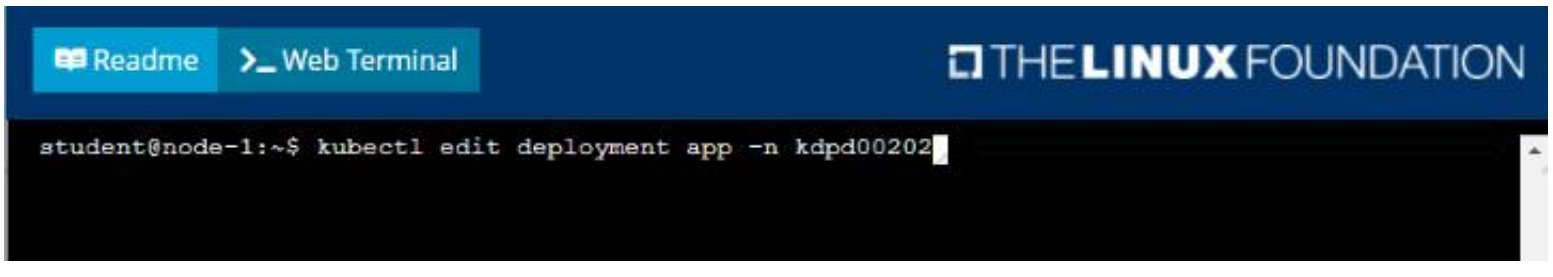
Context
As a Kubernetes application developer you will often find yourself needing to update a running application. Task
Please complete the following:
• Update the app deployment in the kdpd00202 namespace with a maxSurge of 5% and a maxUnavailable of 2%
• Perform a rolling update of the web1 deployment, changing the lfccncf/ngmx image version to 1.13
• Roll back the app deployment to the previous version

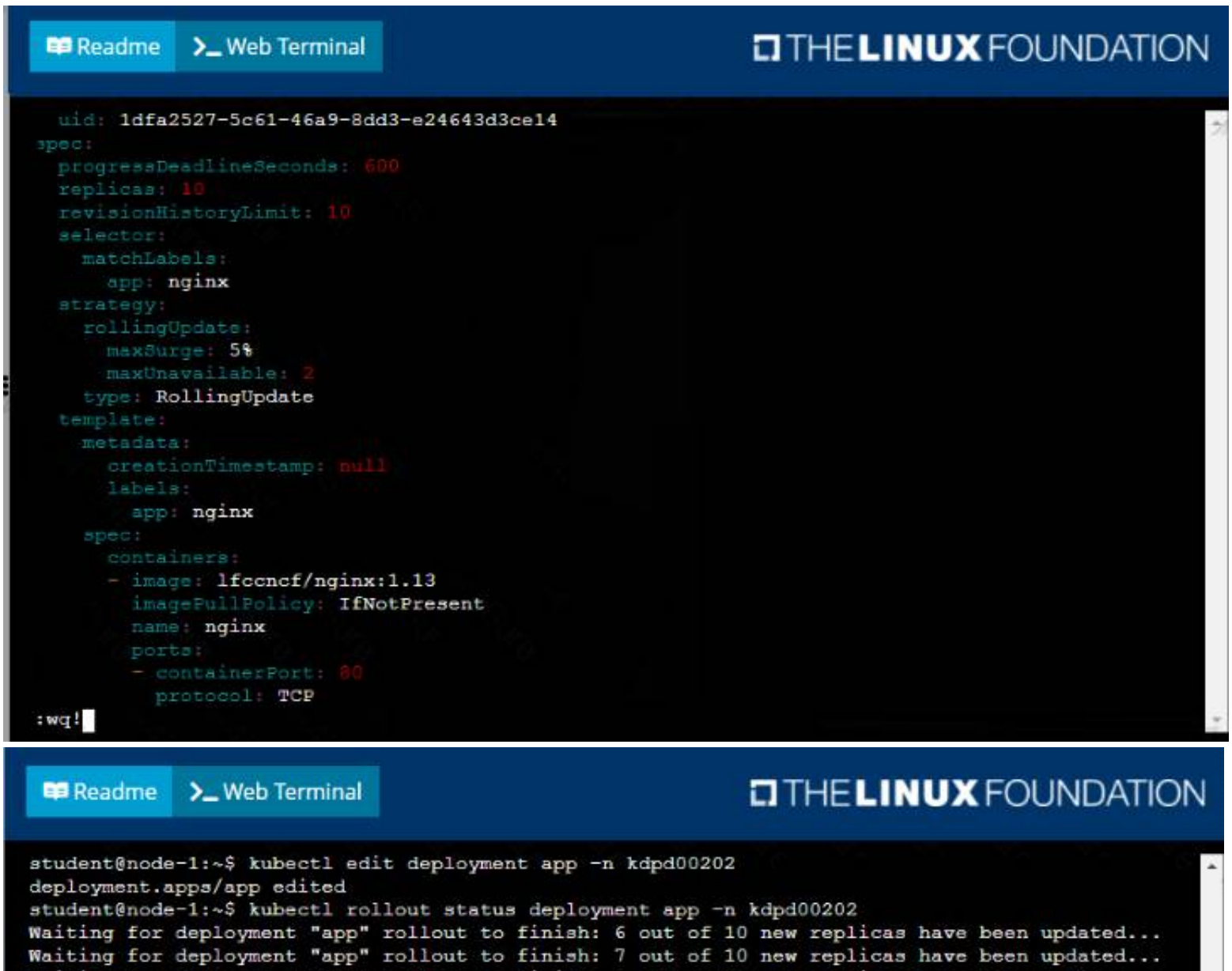
A. Mastered
B. Not Mastered

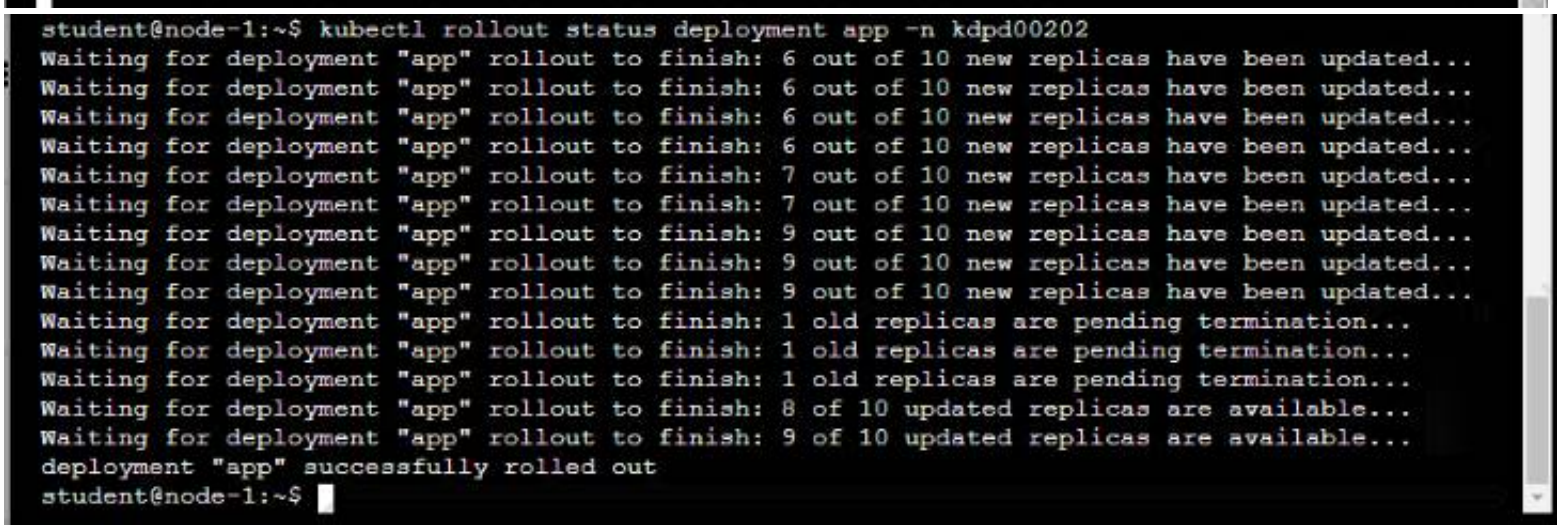
Answer: A

Explanation:

Solution:

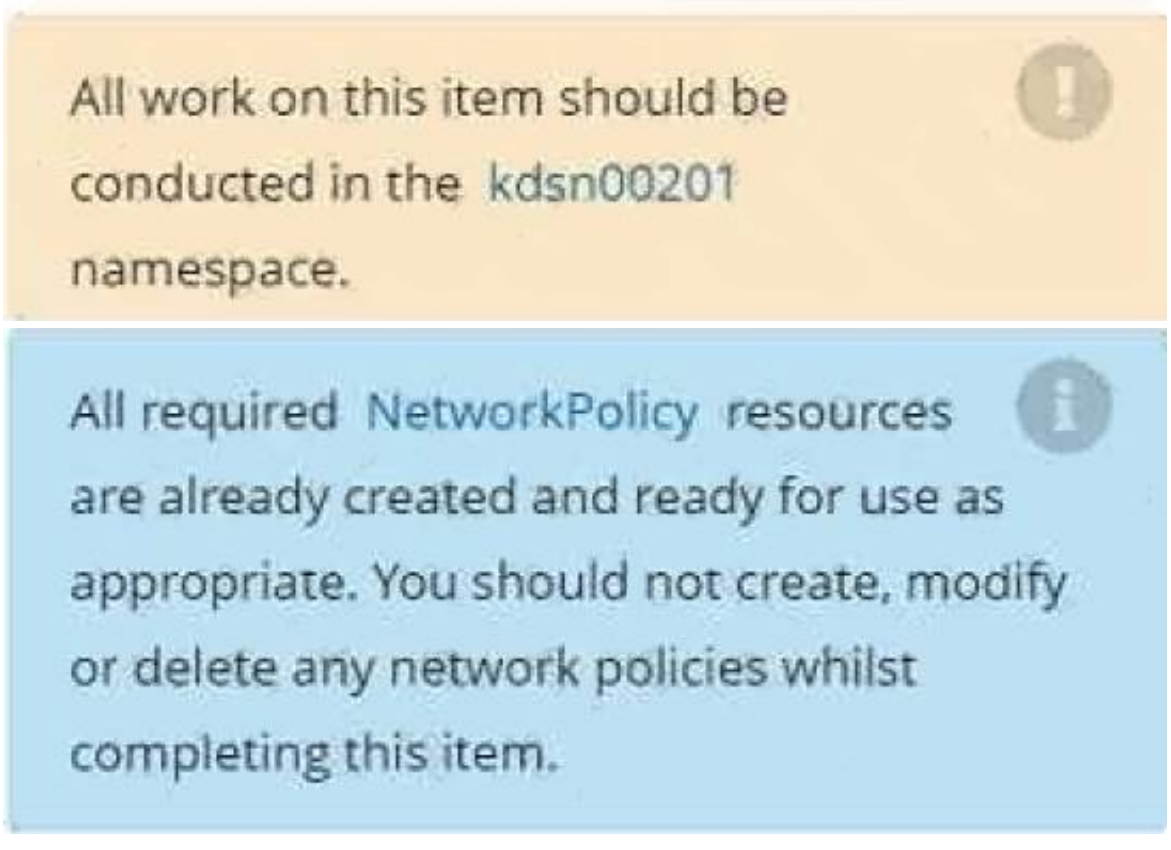






NEW QUESTION 12
Exhibit:

Task
You have rolled out a new pod to your infrastructure and now you need to allow it to communicate with the web and storage pods but nothing else. Given the running pod kdsn00201 -newpod edit it to use a network policy that will allow it to send and receive traffic only to and from the web and storage pods.



A. Mastered
B. Not Mastered

Answer: A

Explanation:
apiVersion: networking.k8s.io/v1 kind: NetworkPolicy
metadata:
name: internal-policy namespace: default spec:
podSelector: matchLabels: name: internal policyTypes:
- Egress
- Ingress ingress:
- {}
egress:
- to:
- podSelector: matchLabels: name: mysql ports:
- protocol: TCP port: 3306
- to:
- podSelector: matchLabels:
name: payroll ports:
- protocol: TCP port: 8080
- ports:
- port: 53 protocol: UDP
- port: 53 protocol: TCP

NEW QUESTION 17
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