Linux Foundation

CKAD Exam

Linux Foundation Certified Kubernetes Application Developer Exam

Question: 1

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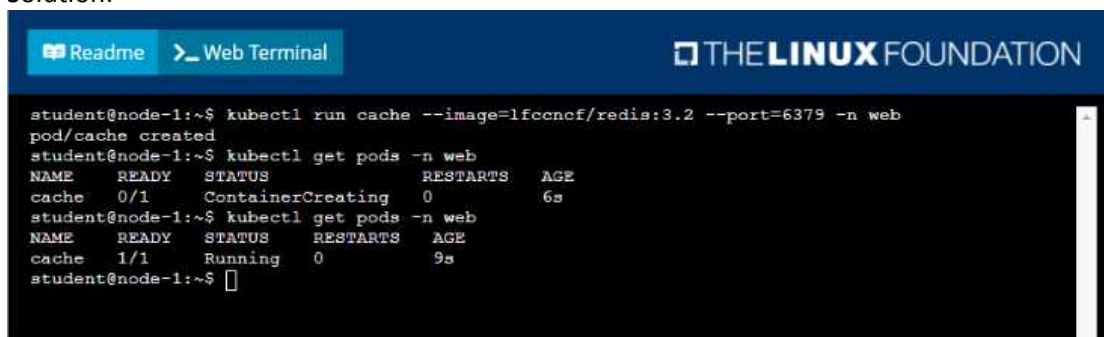Create a pod with the following characteristics, and leave it running when complete:
• The pod must run in the web namespace.
The namespace has already been created
• The name of the pod should be cache
• Use the Ifccncf/redis image with the 3.2 tag
• Expose port 6379

Solution

Solution:

```
student@node-1:~$ kubectl run cache --image=1fccncf/redis:3.2 --port=6379 -n web
pod/cache created
student@node-1:~$ kubectl get pods -n web
NAME     READY   STATUS                   RESTARTS   AGE
cache    0/1     ContainerCreating        0          6s
student@node-1:~$ kubectl get pods -n web
NAME     READY   STATUS     RESTARTS   AGE
cache    1/1     Running    0          9s
student@node-1:~$ []
```

Question: 2

Exhibit:

Set configuration context:

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

Context

You are tasked to create a secret and consume the secret in a pod using environment variables as follow:

Task

• Create a secret named another-secret with a key/value pair; key1/value4

• Start an nginx pod named nginx-secret using container image nginx, and add an environment variable exposing the value of the secret key key 1, using COOL_VARIABLE as the name for the environment variable inside the pod

Solution

Solution:

```
student@node-1:~$ kubectl create secret generic some-secret --from-literal=key1=value4
secret/some-secret created
student@node-1:~$ kubectl get secret
NAME                 TYPE                                  DATA   AGE
default-token-4kvr5  kubernetes.io/service-account-token   3      2d11h
some-secret          Opaque                                1      5s
student@node-1:~$ kubectl run nginx-secret --image=nginx --dry-run=client -o yaml > nginx_secret
.yml
student@node-1:~$ vim nginx_secret.yml
```

```yaml
apiVersion: v1
kind: Pod
metadata:
  creationTimestamp: null
  labels:
    run: nginx-secret
  name: nginx-secret
spec:
  containers:
  - image: nginx
    name: nginx-secret
    resources: {}
  dnsPolicy: ClusterFirst
  restartPolicy: Always
status: {}
~
~
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~
~
"nginx_secret.yml" 15L, 253C                           1,1          All
```

```yaml
apiVersion: v1
kind: Pod
metadata:
  labels:
    run: nginx-secret
  name: nginx-secret
spec:
  containers:
  - image: nginx
    name: nginx-secret
    env:
    - name: COOL_VARIABLE
      valueFrom:
        secretKeyRef:
          name: some-secret
          key: key1
~
~
~
~
~
~
~
~
~
~
-- INSERT --                                           16,20        All
```

```
student@node-1:~$ kubectl get pods -n web
NAME      READY   STATUS     RESTARTS   AGE
cache     1/1     Running    0          9s
student@node-1:~$ kubectl create secret generic some-secret --from-literal=key1=value4
secret/some-secret created
student@node-1:~$ kubectl get secret
NAME                TYPE                                   DATA   AGE
default-token-4kvr5 kubernetes.io/service-account-token    3      2d11h
some-secret         Opaque                                 1      5s
student@node-1:~$ kubectl run nginx-secret --image=nginx --dry-run=client -o yaml > nginx_secret
.yml
student@node-1:~$ vim nginx_secret.yml
student@node-1:~$ kubectl create -f nginx_secret.yml
pod/nginx-secret created
student@node-1:~$ kubectl get pods
NAME            READY   STATUS             RESTARTS   AGE
liveness-http   1/1     Running            0          6h38m
nginx-101       1/1     Running            0          6h39m
nginx-secret    0/1     ContainerCreating  0          4s
poller          1/1     Running            0          6h39m
student@node-1:~$ kubectl get pods
NAME            READY   STATUS    RESTARTS   AGE
liveness-http   1/1     Running   0          6h38m
nginx-101       1/1     Running   0          6h39m
nginx-secret    1/1     Running   0          8s
poller          1/1     Running   0          6h39m
student@node-1:~$
```

Question: 3

Exhibit:

Set configuration context: ⚠

[student@node-1] $ | kubectl config

use-context k8s

Task

You are required to create a pod that requests a certain amount of CPU and memory, so it gets scheduled to-a node that has those resources available.

• Create a pod named nginx-resources in the pod-resources namespace that requests a minimum of 200m CPU and 1Gi memory for its container
• The pod should use the nginx image
• The pod-resources namespace has already been created

Solution

Solution:

```
student@node-1:~$ kubectl run nginx-resources -n pod-resources --image=nginx --dry-run=client -o
yaml > nginx_resources.yml
student@node-1:~$ vim nginx_
```

```
apiVersion: v1
kind: Pod
metadata:
  creationTimestamp: null
  labels:
    run: nginx-resources
  name: nginx-resources
  namespace: pod-resources
spec:
  containers:
  - image: nginx
    name: nginx-resources
    resources: {}
  dnsPolicy: ClusterFirst
  restartPolicy: Always
status: {}
~
~
~
~
~
~
~
~
~
~
"nginx_resources.yml" 16L, 289C                              1,1          All
```

```
apiVersion: v1
kind: Pod
metadata:
  labels:
    run: nginx-resources
  name: nginx-resources
  namespace: pod-resources
spec:
  containers:
  - image: nginx
    name: nginx-resources
    resources:
      requests:
        cpu: 200m
        memory: "1Gi"
~
~
~
~
~
~
~
~
~
~
~
-- INSERT --                                                 15,22        All
```

```
student@node-1:~$ kubectl run nginx-resources -n pod-resources --image=nginx --dry-run=client -o
 yaml > nginx_resources.yml
student@node-1:~$ vim nginx_resources.yml
student@node-1:~$ kubectl create -g nginx_resources.yml
Error: unknown shorthand flag: 'g' in -g
See 'kubectl create --help' for usage.
student@node-1:~$ kubectl create -f nginx_resources.yml
pod/nginx-resources created
student@node-1:~$ kubectl get pods -n pod-re
```

```
student@node-1:~$ kubectl get pods -n pod-resources
NAME                READY   STATUS    RESTARTS   AGE
nginx-resources     1/1     Running   0          8s
student@node-1:~$ □
```

Question: 4

Exhibit:

Set configuration context: ⚠

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

Context

You are tasked to create a ConfigMap and consume the ConfigMap in a pod using a volume mount.

Task

Please complete the following:

• Create a ConfigMap named another-config containing the key/value pair: key4/value3

• start a pod named nginx-configmap containing a single container using the

nginx image, and mount the key you just created into the pod under directory /also/a/path

---

Solution

Solution:

```
student@node-1:~$ kubectl create configmap another-config --from-literal=key4=value3
configmap/another-config created
student@node-1:~$ kubectl get configmap
NAME              DATA   AGE
another-config    1      5s
student@node-1:~$ kubectl run nginx-configmap --image=nginx --dry-run=client -o yaml > ngin_conf
igmap.yml
student@node-1:~$ vim ngin_configmap.yml ^C
student@node-1:~$ mv ngin_configmap.yml nginx_configmap.yml
student@node-1:~$ vim nginx_co
```

```
apiVersion: v1
kind: Pod
metadata:
  creationTimestamp: null
  labels:
    run: nginx-configmap
  name: nginx-configmap
spec:
  containers:
  - image: nginx
    name: nginx-configmap
    resources: {}
  dnsPolicy: ClusterFirst
  restartPolicy: Always
status: {}
~
~
~
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~
~
~
~
~
~
~
"nginx_configmap.yml" 15L, 262C                          1,1            All
```

```
apiVersion: v1
kind: Pod
metadata:
  labels:
    run: nginx-configmap
  name: nginx-configmap
spec:
  containers:
  - image: nginx
    name: nginx-configmap
    volumeMounts:
    - name: myvol
      mountPath: /also/a/path
  volumes:
  - name: myvol
    configMap:
      name: another-config
~
~
~
~
~
~
~
~
~
                                                        13,6           All
```

```
student@node-1:~$ kubectl create configmap another-config --from-literal=key4=value3
configmap/another-config created
student@node-1:~$ kubectl get configmap
NAME              DATA    AGE
another-config    1       5s
student@node-1:~$ kubectl run nginx-configmap --image=nginx --dry-run=client -o yaml > ngin_conf
igmap.yml
student@node-1:~$ vim ngin_configmap.yml ^C
student@node-1:~$ mv ngin_configmap.yml nginx_configmap.yml
student@node-1:~$ vim nginx_configmap.yml
student@node-1:~$ █
```

```
student@node-1:~$ kubectl run nginx-configmap --image=nginx --dry-run=client -o yaml > ngin_conf
igmap.yml
student@node-1:~$ vim ngin_configmap.yml ^C
student@node-1:~$ mv ngin_configmap.yml nginx_configmap.yml
student@node-1:~$ vim nginx_configmap.yml
student@node-1:~$ kubectl create f nginx_configmap.yml
Error: must specify one of -f and -k

error: unknown command "f nginx_configmap.yml"
See 'kubectl create -h' for help and examples
student@node-1:~$ kubectl create -f nginx_configmap.yml
error: error validating "nginx_configmap.yml": error validating data: ValidationError(Pod.spec.c
ontainers[1]): unknown field "mountPath" in io.k8s.api.core.v1.Container; if you choose to ignor
e these errors, turn validation off with --validate=false
student@node-1:~$ vim nginx_configmap.yml █
```

```
student@node-1:~$ kubectl create f nginx_configmap.yml
Error: must specify one of -f and -k

error: unknown command "f nginx_configmap.yml"
See 'kubectl create -h' for help and examples
student@node-1:~$ kubectl create -f nginx_configmap.yml
error: error validating "nginx_configmap.yml": error validating data: ValidationError(Pod.spec.c
ontainers[1]): unknown field "mountPath" in io.k8s.api.core.v1.Container; if you choose to ignor
e these errors, turn validation off with --validate=false
student@node-1:~$ vim nginx_configmap.yml
student@node-1:~$ kubectl create -f nginx_configmap.yml
pod/nginx-configmap created
student@node-1:~$ kubectl get pods
NAME                READY    STATUS             RESTARTS    AGE
liveness-http       1/1      Running            0           6h44m
nginx-101           1/1      Running            0           6h45m
nginx-configmap     0/1      ContainerCreating  0           5s
nginx-secret        1/1      Running            0           5m39s
poller              1/1      Running            0           6h44m
student@node-1:~$ kubectl get pods
NAME                READY    STATUS     RESTARTS    AGE
liveness-http       1/1      Running    0           6h44m
nginx-101           1/1      Running    0           6h45m
nginx-configmap     1/1      Running    0           8s
nginx-secret        1/1      Running    0           5m42s
poller              1/1      Running    0           6h45m
student@node-1:~$ l█
```