1- How many ConfigMaps exist in the environment?

```
controlplane:~$ kubectl get configmaps --all-namespaces
NAMESPACE            NAME                                                 DATA   AGE
default              kube-root-ca.crt                                     1      33d
kube-node-lease      kube-root-ca.crt                                     1      33d
kube-public          cluster-info                                         2      33d
kube-public          kube-root-ca.crt                                     1      33d
kube-system          canal-config                                         6      33d
kube-system          coredns                                              1      33d
kube-system          extension-apiserver-authentication                   6      33d
kube-system          kube-apiserver-legacy-service-account-token-tracking 1      33d
kube-system          kube-proxy                                           2      33d
kube-system          kube-root-ca.crt                                     1      33d
kube-system          kubeadm-config                                       1      33d
kube-system          kubelet-config                                       1      33d
local-path-storage   kube-root-ca.crt                                     1      33d
local-path-storage   local-path-config                                    4      33d
controlplane:~$
```

2-Create a new ConfigMap Use the spec given below.

ConfigName Name: webapp-config-map

Data: APP_COLOR=darkblue

```
Editor   Tab 1   +
 GNU nano 7.2                                          webapp-config-map.yml *
apiVersion: v1
kind: ConfigMap
metadata:
  name: webapp-config-map
data:
  APP_COLOR: darkblue
```

```
controlplane:~$ kubectl apply -f webapp-config-map.yml
configmap/webapp-config-map created
controlplane:~$ kubectl get configmap
NAME                DATA   AGE
kube-root-ca.crt    1      33d
webapp-config-map   1      20s
controlplane:~$
```

3- Create a webapp-color POD with nginx image and use the created ConfigMap

```
Editor   Tab 1   +
 GNU nano 7.2                                          webapp-color.yml *
apiVersion: v1
kind: Pod
metadata:
  name: webapp-color
spec:
  containers:
    - name: nginx-container
      image: nginx
      env:
        - name: APP_COLOR
          valueFrom:
            configMapKeyRef:
              name: webapp-config-map
              key: APP_COLOR
```

```
controlplane:~$ kubectl apply -f webapp-color.yml
pod/webapp-color created
controlplane:~$ k get pods
NAME           READY   STATUS    RESTARTS   AGE
webapp-color   1/1     Running   0          13s
```

```
Environment:
  APP_COLOR:  <set to the key 'APP_COLOR' of config map 'webapp-config-map'>
```

4-How many Secrets exist on the system?

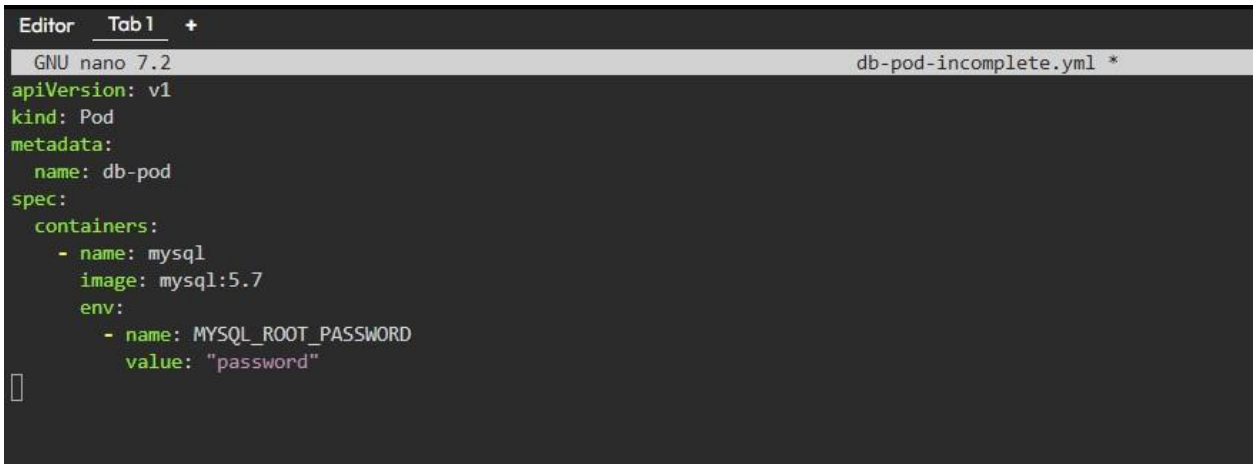
```
Editor   Tab 1   +
controlplane:~$ kubectl get secrets --all-namespaces
NAMESPACE     NAME                     TYPE                                  DATA   AGE
kube-system   bootstrap-token-fa18uz   bootstrap.kubernetes.io/token         5      33d
controlplane:~$
```

5- How many secrets are defined in the default-token secret?

```
controlplane:~$ kubectl get secrets | grep default-token
No resources found in default namespace.
controlplane:~$
```

6- create a POD called db-pod with the image mysql:5.7 then check the

POD status




```
controlplane:~$ kubectl apply -f db-pod-incomplete.yml
pod/db-pod created
controlplane:~$ kubectl get pod db-pod
NAME     READY   STATUS              RESTARTS   AGE
db-pod   0/1     ContainerCreating   0          12s
```

7- Why the db-pod status is not ready

Because it is missing required environment variables like:

- MYSQL_DATABASE
- MYSQL_USER
- MYSQL_PASSWORD

8- Create a new secret named db-secret with the data given below.

Secret Name: db-secret

Secret 1: MYSQL_DATABASE=sql01

Secret 2: MYSQL_USER=user1

Secret3: MYSQL_PASSWORD=password

Secret 4: MYSQL_ROOT_PASSWORD=password123

```
Editor   Tab 1   +
 GNU nano 7.2                                                db-secret.yml *
apiVersion: v1
kind: Secret
metadata:
  name: db-secret
type: Opaque
stringData:
  MYSQL_DATABASE: sql01
  MYSQL_USER: user1
  MYSQL_PASSWORD: password
  MYSQL_ROOT_PASSWORD: password123
```

```
controlplane:~$ kubectl apply -f db-secret.yml
secret/db-secret created
controlplane:~$ k get secrets
NAME        TYPE     DATA   AGE
db-secret   Opaque   4      3s
controlplane:~$
```

9- Configure db-pod to load environment variables from the newly created secret.

Delete and recreate the pod if required.

```
Editor   Tab 1   +
 GNU nano 7.2                                          db-pod-incomplete.yml *
apiVersion: v1
kind: Pod
metadata:
  name: db-pod
spec:
  containers:
    - name: mysql
      image: mysql:5.7
      envFrom:
        - secretRef:
            name: db-secret
```

```
controlplane:~$ kubectl delete pod db-pod
pod "db-pod" deleted
controlplane:~$ k get pods
NAME           READY   STATUS    RESTARTS   AGE
webapp-color   1/1     Running   0          21m
controlplane:~$ kubectl apply -f db-pod-incomplete.yml
pod/db-pod created
controlplane:~$ k get pods
NAME           READY   STATUS    RESTARTS   AGE
db-pod         1/1     Running   0          5s
webapp-color   1/1     Running   0          21m
controlplane:~$
```

10- Create a multi-container pod with 2 containers.

Name: yellow

Container 1 Name: lemon

Container 1 Image: busybox

Container 2 Name: gold

Container 2 Image: redis

```
Editor   Tab 1   +
  GNU nano 7.2                                          yellow-pod.yml
apiVersion: v1
kind: Pod
metadata:
  name: yellow
spec:
  containers:
    - name: lemon
      image: busybox
      command: ["sleep", "3600"]
    - name:  gold
      image: redis
```

```
controlplane:~$ kubectl apply -f yellow-pod.yml
pod/yellow created
controlplane:~$ k get pods
NAME           READY   STATUS    RESTARTS   AGE
db-pod         1/1     Running   0          6m45s
webapp-color   1/1     Running   0          28m
yellow         2/2     Running   0          4s
controlplane:~$
```

11- Create a pod red with redis image and use an initContainer that uses the busybox image and sleeps for 20 seconds


```
controlplane:~$ k apply -f red-pod.yml
pod/red created
```

```
controlplane:~$ k get pod red
NAME   READY   STATUS     RESTARTS   AGE
red    0/1     Init:0/1   0          13s
controlplane:~$
```

12- Create a pod named print-envars-greeting.

1. Configure spec as, the container name should be print-env-container and use bash image.
2. Create three environment variables:

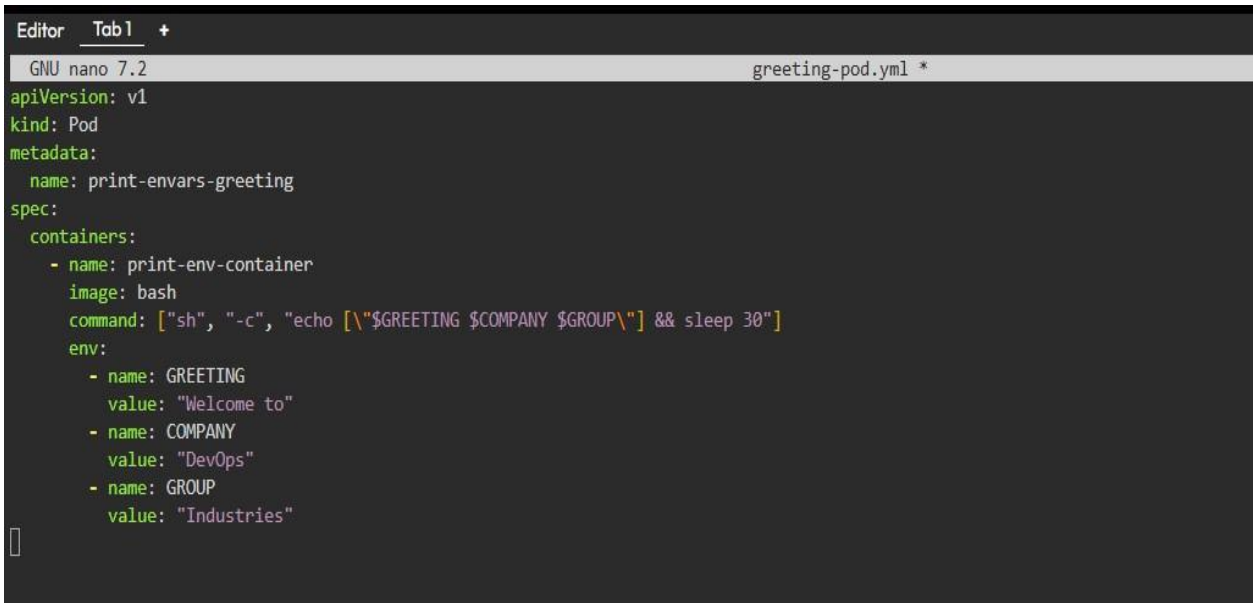
a. GREETING and its value should be “Welcome to”

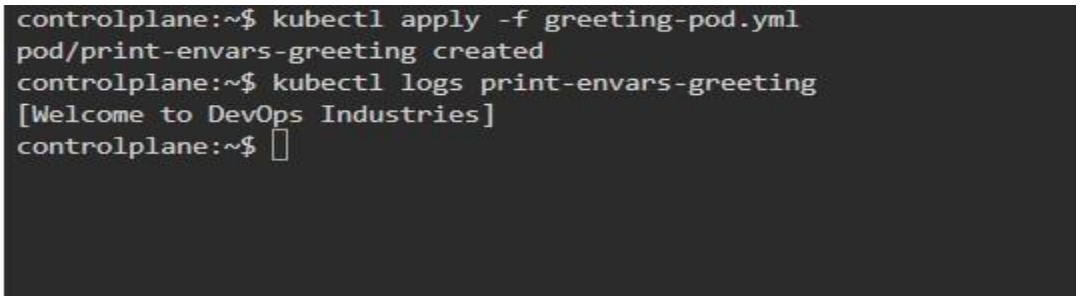
b. COMPANY and its value should be “DevOps”

c. GROUP and its value should be “Industries”

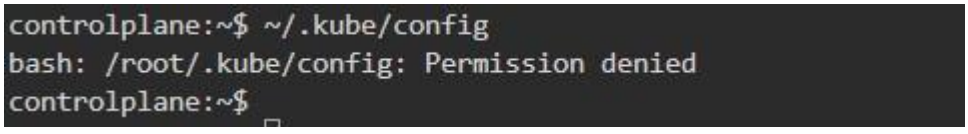
4. Use command to echo ["$(GREETING) $(COMPANY) $(GROUP)"] message.

5. You can check the output using <kubctl logs -f [ pod-name ]> command.




13- Where is the default kubeconfig file located in the current environment?




14- How many clusters are defined in the default kubeconfig file?

```
controlplane:~$ kubectl config view
apiVersion: v1
clusters:
- cluster:
    certificate-authority-data: DATA+OMITTED
    server: https://172.30.1.2:6443
  name: kubernetes
contexts:
- context:
    cluster: kubernetes
    user: kubernetes-admin
  name: kubernetes-admin@kubernetes
current-context: kubernetes-admin@kubernetes
kind: Config
preferences: {}
users:
- name: kubernetes-admin
  user:
    client-certificate-data: DATA+OMITTED
    client-key-data: DATA+OMITTED
controlplane:~$
```

There is one cluster its name is Kubernetes

15- What is the user configured in the current context?

```
controlplane:~$ kubectl config view
apiVersion: v1
clusters:
- cluster:
    certificate-authority-data: DATA+OMITTED
    server: https://172.30.1.2:6443
  name: kubernetes
contexts:
- context:
    cluster: kubernetes
    user: kubernetes-admin
  name: kubernetes-admin@kubernetes
current-context: kubernetes-admin@kubernetes
kind: Config
preferences: {}
users:
- name: kubernetes-admin
  user:
    client-certificate-data: DATA+OMITTED
    client-key-data: DATA+OMITTED
controlplane:~$
```

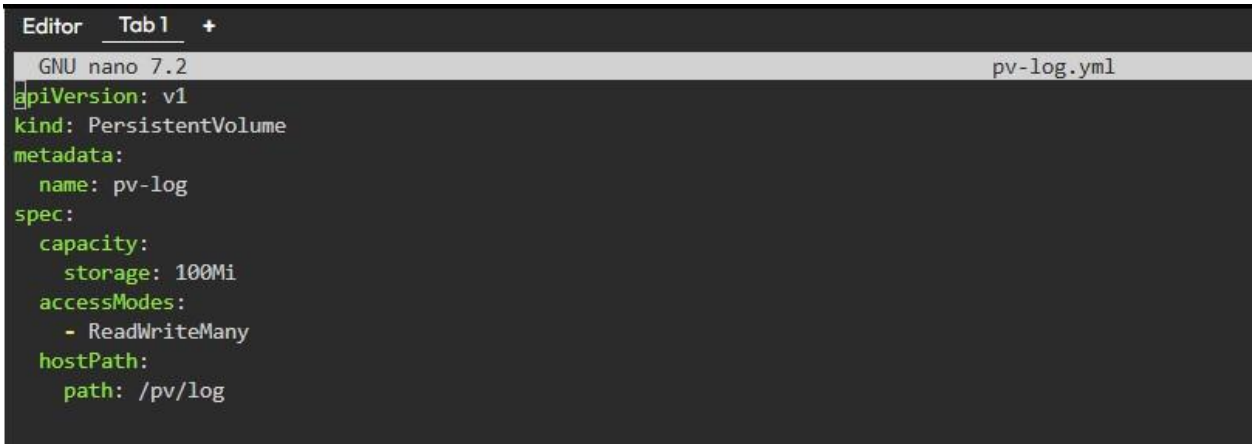
**16-Create a Persistent Volume with the given specification.**

**Volume Name: pv-log**

**Storage: 100Mi**

**Access Modes: ReadWriteMany**

**Host Path: /pv/log**





17-Create a Persistent Volume Claim with the given specification.

Volume Name: claim-log-1

Storage Request: 50Mi Access

Modes: ReadWriteMany

```
Editor   Tab 1   +
  GNU nano 7.2                                                pvc-claim.yml *
apiVersion: v1
kind: PersistentVolumeClaim
metadata:
  name: claim-log-1
spec:
  accessModes:
    - ReadWriteMany
  resources:
    requests:
      storage: 50Mi
```

```
controlplane:~$ k apply -f pvc-claim.yml
persistentvolumeclaim/claim-log-1 created
controlplane:~$ k get pvc
NAME          STATUS   VOLUME   CAPACITY   ACCESS MODES   STORAGECLASS   VOLUMEATTRIBUTESCLASS   AGE
claim-log-1   Bound    pv-log   100Mi      RWX                           <unset>                 3s
controlplane:~$
```

18-Create a webapp pod to use the persistent volume claim as its storage.

Name: webapp

Image Name: nginx

Volume: PersistentVolumeClaim=claim-log-1

Volume Mount: /var/log/nginx

```
Editor   Tab 1   +
  GNU nano 7.2                                                webapp-pod.yml *
apiVersion: v1
kind: Pod
metadata:
  name: webapp
spec:
  containers:
    - name: nginx
      image: nginx
      volumeMounts:
        - name: log-volume
          mountPath: /var/log/nginx
  volumes:
    - name: log-volume
      persistentVolumeClaim:
        claimName: claim-log-1
```

```
controlplane:~$ k apply -f webapp-pod.yml
pod/webapp created
```

```
controlplane:~$ k get pods
NAME     READY   STATUS    RESTARTS   AGE
webapp   1/1     Running   0          14s
controlplane:~$ kubectl exec -it webapp -- ls /var/log/nginx
access.log  error.log
controlplane:~$
```