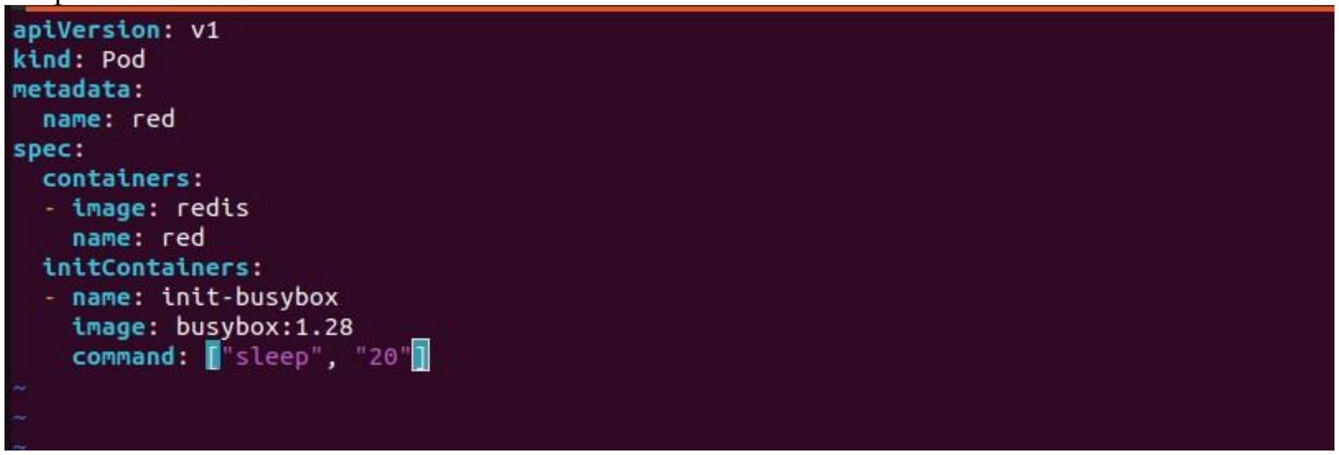
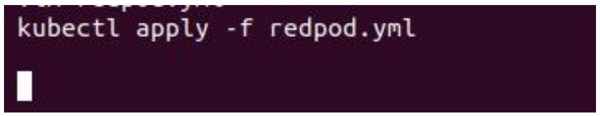
LAB 4

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



```
apiVersion: v1
kind: Pod
metadata:
  name: red
spec:
  containers:
  - image: redis
    name: red
  initContainers:
  - name: init-busybox
    image: busybox:1.28
    command: ["sleep", "20"]
~
~
~
```



```
kubectl apply -f redpod.yml
```

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

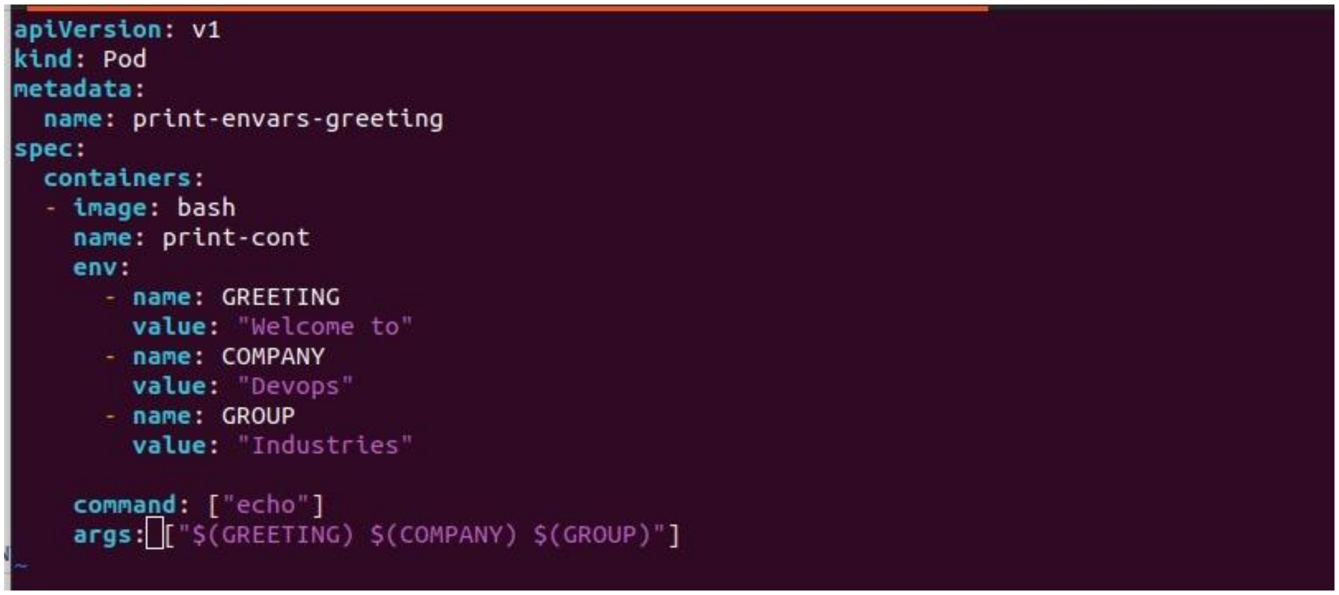
1. Configure spec as, the container name should be print-env-container and use bash image.
2. Create three environment variables:

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

b. COMPANY and its value should be “DevOps”

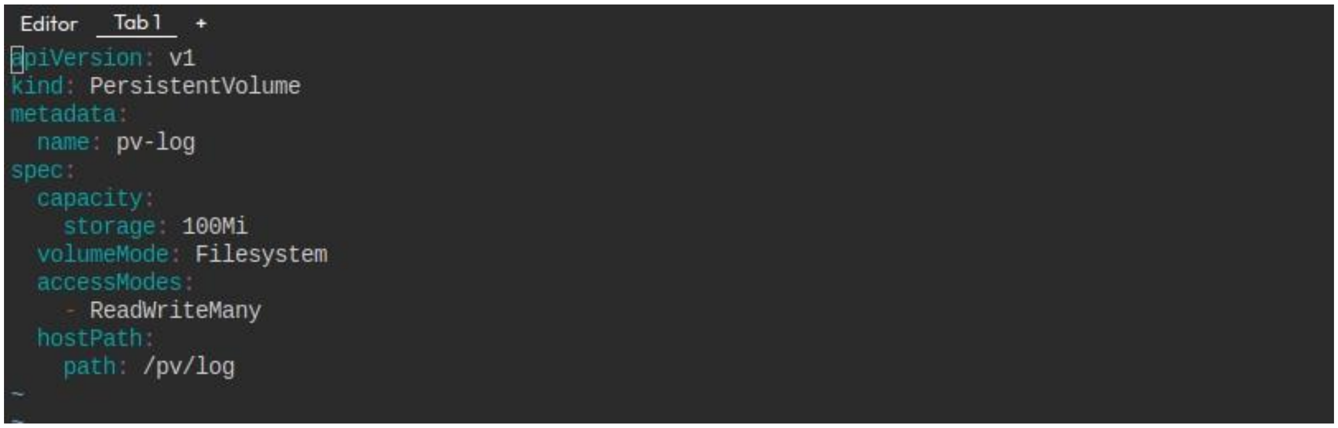
c. GROUP and its value should be “Industries”

3. Use command to echo ["$(GREETING) $(COMPANY) $(GROUP)"]
message.
4. You can check the output using <kubctl logs -f [pod-name]>command



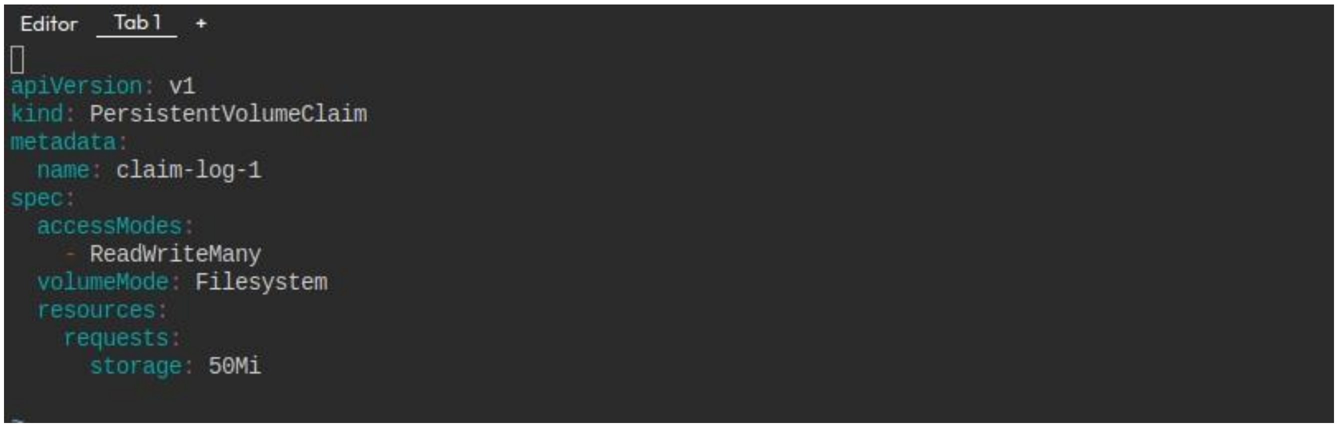
```yaml
apiVersion: v1
kind: Pod
metadata:
  name: print-envars-greeting
spec:
  containers:
  - image: bash
    name: print-cont
    env:
      - name: GREETING
        value: "Welcome to"
      - name: COMPANY
        value: "Devops"
      - name: GROUP
        value: "Industries"

    command: ["echo"]
    args: ["$(GREETING) $(COMPANY) $(GROUP)"]
~
```

3- Create a Persistent Volume with the given specification.
Volume Name: pv-log
Storage: 100Mi
Access Modes: ReadWriteMany
Host Path: /pv/log

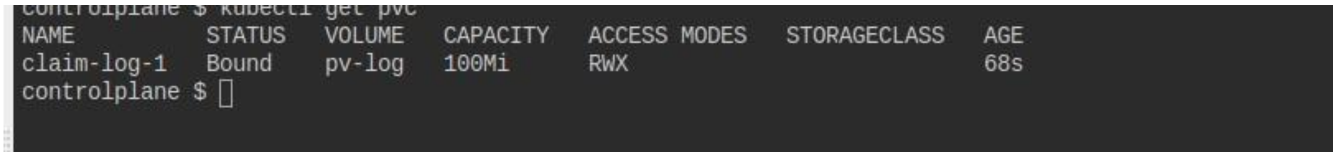


```yaml
apiVersion: v1
kind: PersistentVolume
metadata:
  name: pv-log
spec:
  capacity:
    storage: 100Mi
  volumeMode: Filesystem
  accessModes:
    - ReadWriteMany
  hostPath:
    path: /pv/log
~
~
```

4- Create a Persistent Volume Claim with the given specification.
Volume Name: claim-log-1
Storage Request: 50Mi
Access Modes: ReadWriteMany

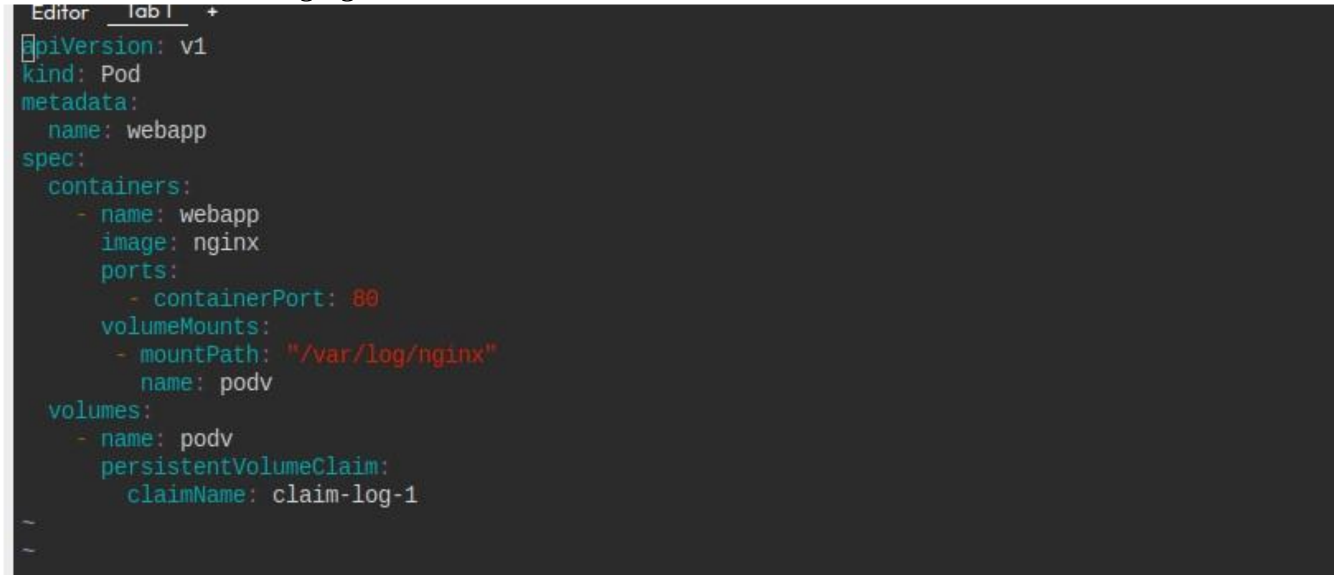


```
Editor   Tab 1   +

apiVersion: v1
kind: PersistentVolumeClaim
metadata:
  name: claim-log-1
spec:
  accessModes:
    - ReadWriteMany
  volumeMode: Filesystem
  resources:
    requests:
      storage: 50Mi
```



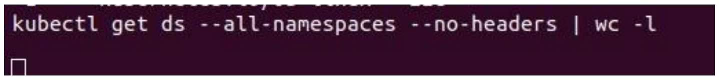
```
controlplane $ kubectl get pvc
NAME          STATUS   VOLUME   CAPACITY   ACCESS MODES   STORAGECLASS   AGE
claim-log-1   Bound    pv-log   100Mi      RWX                           68s
controlplane $ 
```

5- 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



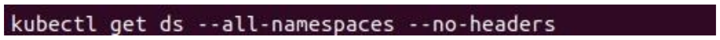
```
Editor   Tab 1   +
apiVersion: v1
kind: Pod
metadata:
  name: webapp
spec:
  containers:
    - name: webapp
      image: nginx
      ports:
        - containerPort: 80
      volumeMounts:
       - mountPath: "/var/log/nginx"
         name: podv
  volumes:
    - name: podv
      persistentVolumeClaim:
        claimName: claim-log-1
~
~
```

6- How many DaemonSets are created in the cluster in all namespaces?



```
kubectl get ds --all-namespaces --no-headers | wc -l
```

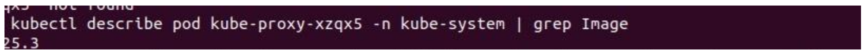
7- what DaemonSets exist on the kube-system namespace?



```
kubectl get ds --all-namespaces --no-headers
```

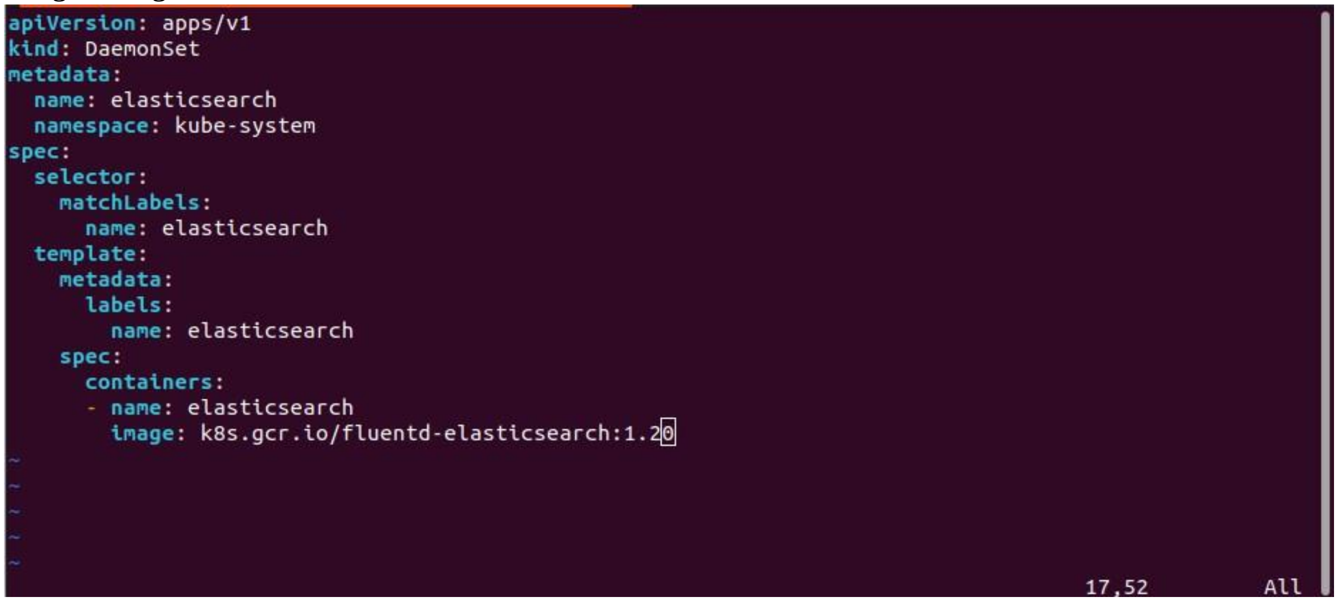
Or use kubectl get ds -n kubesystem

8- What is the image used by the POD deployed by the kube-proxy DaemonSet



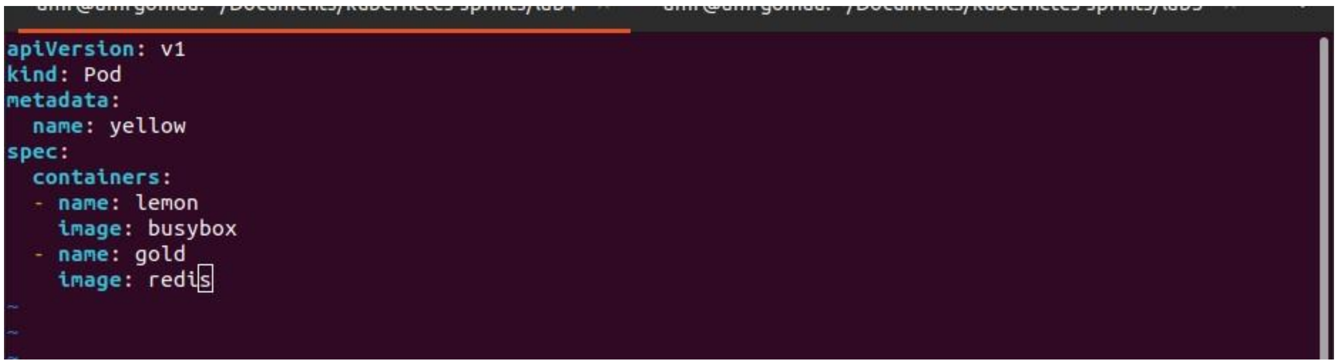
```
kubectl describe pod kube-proxy-xzqx5 -n kube-system | grep Image
25.3
```

9- Deploy a DaemonSet for FluentD Logging. Use the given specifications. Name: elasticsearch
Namespace: kube-system
Image: k8s.gcr.io/fluentd-elasticsearch:1.20



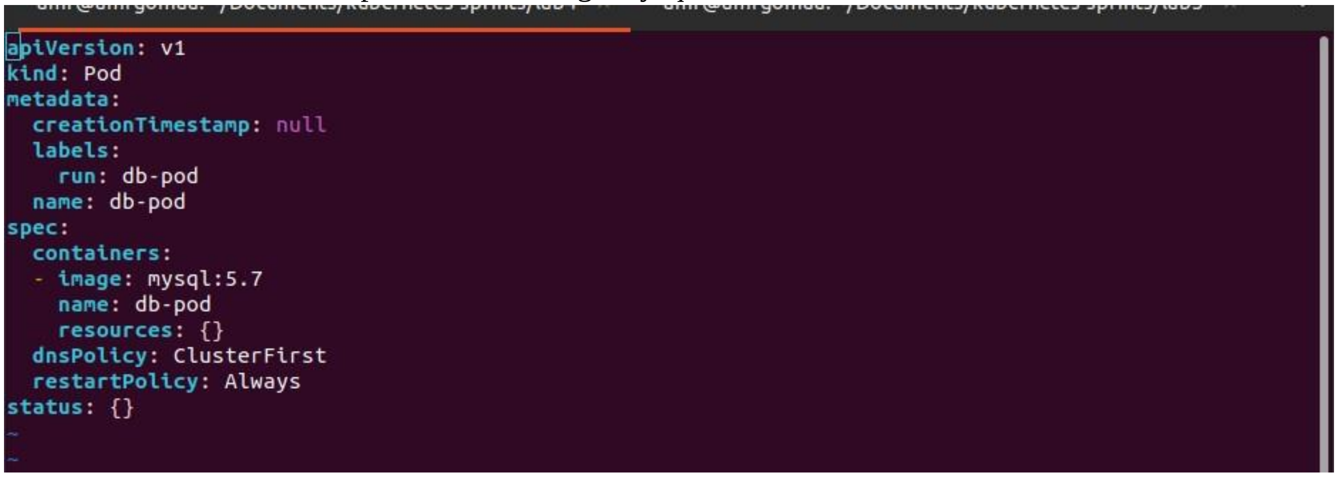
```
apiVersion: apps/v1
kind: DaemonSet
metadata:
  name: elasticsearch
  namespace: kube-system
spec:
  selector:
    matchLabels:
      name: elasticsearch
  template:
    metadata:
      labels:
        name: elasticsearch
    spec:
      containers:
      - name: elasticsearch
        image: k8s.gcr.io/fluentd-elasticsearch:1.20
~
~
~
~
~
                                                                    17,52         All
```

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



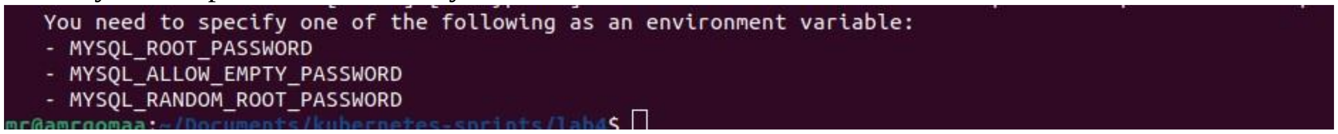
```
apiVersion: v1
kind: Pod
metadata:
  name: yellow
spec:
  containers:
  - name: lemon
    image: busybox
  - name: gold
    image: redis
~
~
```

########## Bonus Question OR if you couldn't Pull MongoDB image yesterday ;) ########
11- create a POD called db-pod with the image mysql:5.7 then check the POD status



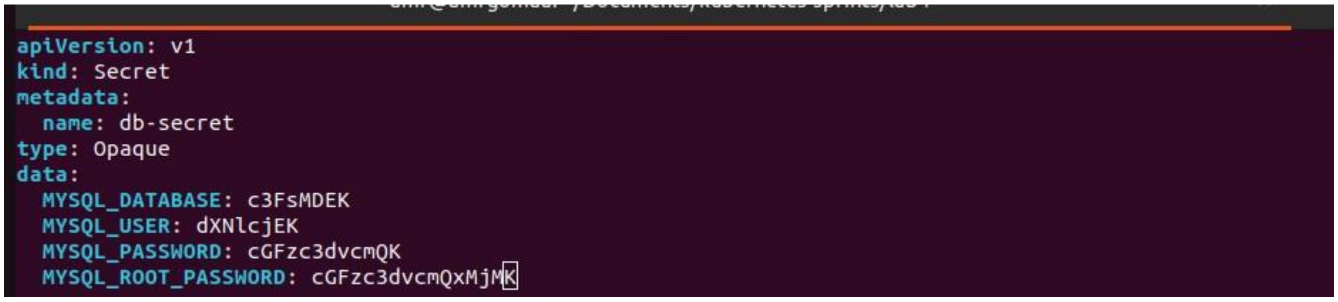
```
apiVersion: v1
kind: Pod
metadata:
  creationTimestamp: null
  labels:
    run: db-pod
  name: db-pod
spec:
  containers:
  - image: mysql:5.7
    name: db-pod
    resources: {}
  dnsPolicy: ClusterFirst
  restartPolicy: Always
status: {}
~
~
```

12- why the db-pod status not ready



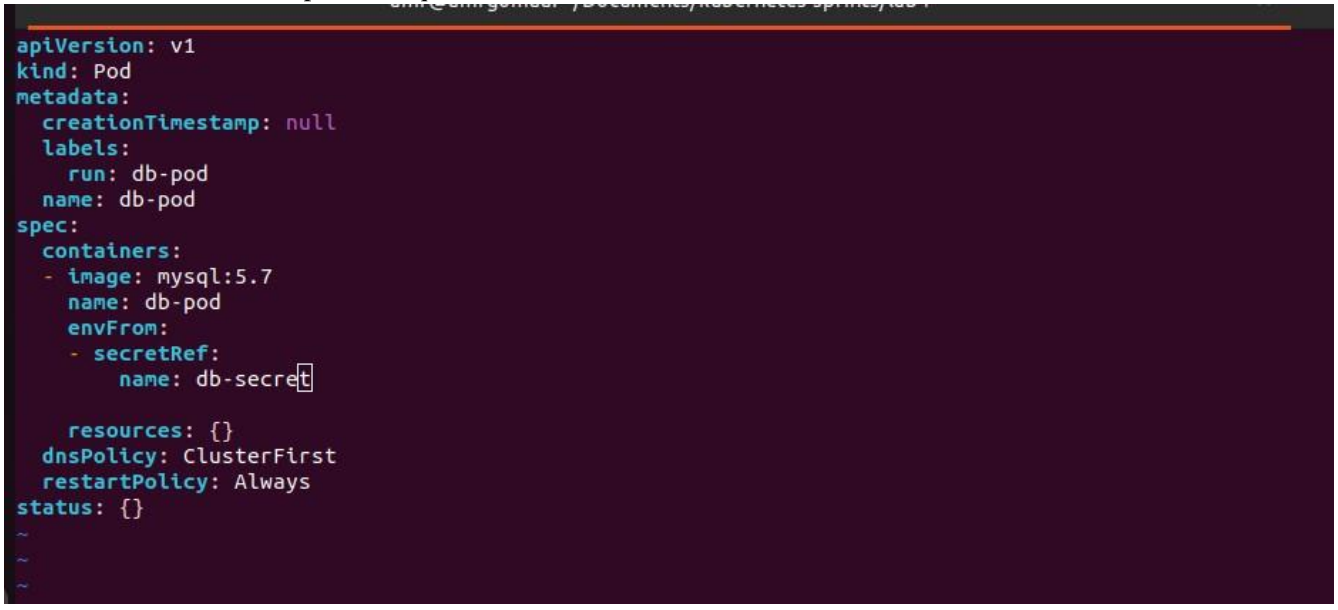
```
   You need to specify one of the following as an environment variable:
   - MYSQL_ROOT_PASSWORD
   - MYSQL_ALLOW_EMPTY_PASSWORD
   - MYSQL_RANDOM_ROOT_PASSWORD
mr@amrgomaa:~/Documents/kubernetes-sprints/lab4$
```

13- 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



```yaml
apiVersion: v1
kind: Secret
metadata:
  name: db-secret
type: Opaque
data:
  MYSQL_DATABASE: c3FsMDEK
  MYSQL_USER: dXNlcjEK
  MYSQL_PASSWORD: cGFzc3dvcmQK
  MYSQL_ROOT_PASSWORD: cGFzc3dvcmQxMjMK
```

14- Configure db-pod to load environment variables from the newly created secret.
Delete and recreate the pod if required.



```yaml
apiVersion: v1
kind: Pod
metadata:
  creationTimestamp: null
  labels:
    run: db-pod
  name: db-pod
spec:
  containers:
  - image: mysql:5.7
    name: db-pod
    envFrom:
    - secretRef:
        name: db-secret

    resources: {}
  dnsPolicy: ClusterFirst
  restartPolicy: Always
status: {}
~
~
~
```