Problem Statement:

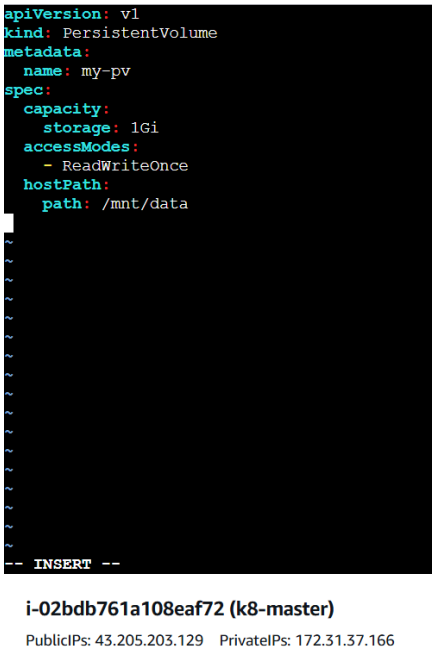
You work for the xyz organization. Your organization uses Kubernetes for container orchestration. Your organization has recently created pods from which data was being lost. Now they require volume mounts which preserve data and save a password called “xyzIsthebest” and this has to be put on a particular node of your choice.

You have been asked to:

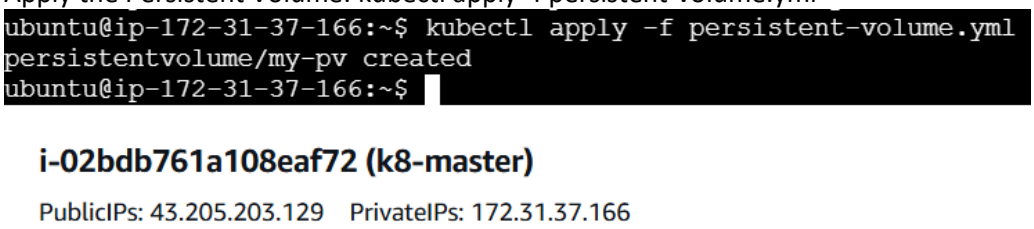
1. Create a persistent volume
2. create a persistent volume claim
3. create a secret “xyzIsthebest”
4. Taint one of the nodes of the cluster

Solution:

1) Create a Persistent Volume YAML File:
   Create a file named persistent-volume.yml with the following content



2) Apply the Persistent Volume: kubectl apply -f persistent-volume.yml



3) Create a Persistent Volume Claim YAML File:

Create a file named persistent-volume-claim.yml with the following content

```
apiVersion: v1
kind: PersistentVolumeClaim
metadata:
  name: my-pvc
spec:
  accessModes:
    - ReadWriteOnce
  resources:
    requests:
      storage: 1Gi
~
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~
-- INSERT --
```

i-02bdb761a108eaf72 (k8-master)

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4) Apply the Persistent Volume Claim: kubectl apply -f persistent-volume-claim.yml

```
ubuntu@ip-172-31-37-166:~$ sudo vi persistent-volume-claim.yml
ubuntu@ip-172-31-37-166:~$ kubectl apply -f persistent-volume-claim.yml
persistentvolumeclaim/my-pvc created
ubuntu@ip-172-31-37-166:~$
```

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5) Create a Secret:
kubectl create secret generic my-secret --from-literal=password=xyzIsthebest

```
ubuntu@ip-172-31-37-166:~$ kubectl create secret generic my-secret --from-literal=password=xyzIsthebest
secret/my-secret created
ubuntu@ip-172-31-37-166:~$
```

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6) Verify the Secret: kubectl get secrets my-secret

```
ubuntu@ip-172-31-37-166:~$ kubectl get secrets my-secret
NAME        TYPE     DATA   AGE
my-secret   Opaque   1      40s
ubuntu@ip-172-31-37-166:~$
```

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7) Identify the Node to Taint: kubectl get nodes

```
ubuntu@ip-172-31-37-166:~$ kubectl get nodes
NAME               STATUS   ROLES           AGE   VERSION
ip-172-31-37-166   Ready    control-plane   80m   v1.30.10
ip-172-31-42-24    Ready    <none>          53m   v1.30.10
ip-172-31-44-28    Ready    <none>          54m   v1.30.10
ubuntu@ip-172-31-37-166:~$
```

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Taint the chosen node: <kubectl taint nodes node-name key=value:NoSchedule>
kubectl taint nodes ip-172-31-42-24 key=value:NoSchedule

```
ubuntu@ip-172-31-37-166:~$ kubectl taint nodes ip-172-31-42-24 key=value:NoSchedule
node/ip-172-31-42-24 tainted
ubuntu@ip-172-31-37-166:~$
```

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8) Verify the tainted node : kubectl describe node ip-172-31-42-24

```
ubuntu@ip-172-31-37-166:~$ kubectl describe node ip-172-31-42-24
Name:               ip-172-31-42-24
Roles:              <none>
Labels:             beta.kubernetes.io/arch=amd64
                    beta.kubernetes.io/os=linux
                    kubernetes.io/arch=amd64
                    kubernetes.io/hostname=ip-172-31-42-24
                    kubernetes.io/os=linux
Annotations:        flannel.alpha.coreos.com/backend-data: {"VNI":1,"VtepMAC":"92:
                    flannel.alpha.coreos.com/backend-type: vxlan
                    flannel.alpha.coreos.com/kube-subnet-manager: true
                    flannel.alpha.coreos.com/public-ip: 172.31.42.24
                    kubeadm.alpha.kubernetes.io/cri-socket: unix:///var/run/contai
                    node.alpha.kubernetes.io/ttl: 0
                    volumes.kubernetes.io/controller-managed-attach-detach: true
CreationTimestamp:  Sun, 09 Mar 2025 04:40:30 +0000
Taints:             key=value:NoSchedule
Unschedulable:      false
Lease:
  HolderIdentity:  ip-172-31-42-24
  AcquireTime:     <unset>
  RenewTime:       Sun, 09 Mar 2025 05:37:27 +0000
Conditions:
  Type                 Status  LastHeartbeatTime                 LastTransitionTi
  ----                 ------  -----------------                 ----------------
  NetworkUnavailable   False   Sun, 09 Mar 2025 04:40:49 +0000   Sun, 09 Mar 2025
  MemoryPressure       False   Sun, 09 Mar 2025 05:33:06 +0000   Sun, 09 Mar 2025
  DiskPressure         False   Sun, 09 Mar 2025 05:33:06 +0000   Sun, 09 Mar 2025
  PIDPressure          False   Sun, 09 Mar 2025 05:33:06 +0000   Sun, 09 Mar 2025
```

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