## Lab 10 : Node Selector and Node Affinity

1. Add labels to the nodes. The node *minikube* should have a label as *disktype=ssd* and the node *minikube-02* should have a label as *zone=prod*.

```
Shell
kubectl label nodes minikube disktype=ssd
```

2. Check the label on node minikube.

```
Shell
kubectl get nodes --show-labels | grep "disktype=ssd"
```

3. Develop a pod definition (`nodeselector-pod.yaml`) that utilizes a node selector to explicitly target the *minikube* node for placement. Verify that the pod is successfully scheduled onto the intended node.

```
Shell
apiVersion: v1
kind: Pod
metadata:
  name: ssd-pod
spec:
  containers:
  - name: busybox
    image: busybox
    command: ["sh", "-c", "echo 'I am on the SSD node'; sleep 3600"]
  nodeSelector:
    disktype: ssd
```

```
Shell
k apply -f nodeselector-pod.yaml
```

```
Shell
kubectl get pod ssd-pod -o wide | grep minikube
```

4. Add a label **zone=prod** on node **minikube-m02**.

```shell
kubectl label nodes minikube-m02 zone=prod
```

5. Check the label on node **minikube-m02**.

```shell
kubectl get nodes --show-labels | grep "zone=prod"
```

6. Create a Node Affinity pod (prod-affinity-pod.yaml).

```none
apiVersion: v1
kind: Pod
metadata:
  name: prod-affinity-pod
spec:
  affinity:
    nodeAffinity:
      requiredDuringSchedulingIgnoredDuringExecution:
        nodeSelectorTerms:
        - matchExpressions:
          - key: zone
            operator: In
            values:
            - prod
  containers:
  - name: busybox
    image: busybox
    command: ["sh", "-c", "echo 'I am in the prod zone'; sleep 3600"]
```

```shell
k apply -f prod-affinity-pod.yaml
```

```none
kubectl get pod prod-affinity-pod -o wide | grep minikube-m02
```

7. Create the impossible pod by including a node selector as color equal to blue.

```shell
apiVersion: v1
kind: Pod
metadata:
  name: impossible-pod
spec:
  containers:
  - name: busybox
    image: busybox
    command: ["sh", "-c", "echo 'Im blue ba da bee'; sleep 3600"]
  nodeSelector:
    color: blue
```

```shell
k apply -f impossible-pod.yaml
```

8. Check the pod's status to determine the reason it is in its current state.

```shell
k get pod impossible-pod -o wide
```

Shell

```
k describe po impossible-pod
...
Warning  FailedScheduling  3m42s  default-scheduler  0/2 nodes are available: 2 node(s) didn't match Pod's node affinity/selector. no new claims to deallocate, preemption: 0/2 nodes are available: 2 Preemption is not helpful for scheduling.
```

9. Delete the resources and remove labels on nodes.

Shell

```
kubectl label node minikube disktype-
kubectl label node minikube-m02 zone-
```