Lab10 – Schedunling a Pod on Specific Nodes

In this exercise, you will schedule a Pod on a specific node. The Pod should only be scheduled on nodes with the label with the key `color` and the assigned values `green` or `red`.

1. Inspect the existing nodes and their assigned labels.

```
brahim@Training:~/lab10-node-affinity$ kubectl get node
NAME                 STATUS   ROLES           AGE   VERSION
kube-control-plane   Ready    control-plane   8d    v1.29.2
kube-node1           Ready    <none>          8d    v1.29.2
kube-node2           Ready    <none>          8d    v1.29.2
brahim@Training:~/lab10-node-affinity$
brahim@Training:~/lab10-node-affinity$
```

2. Pick one available node and label it with the key-value pair `color=green`. Pick a second node and label it with the key-value pair `color=red`.

```
brahim@Training:~/lab10-node-affinity$ kubectl label nodes kube-node1 color=green
node/kube-node1 labeled
brahim@Training:~/lab10-node-affinity$ kubectl label nodes kube-node2 color=red
node/kube-node2 labeled
brahim@Training:~/lab10-node-affinity$
brahim@Training:~/lab10-node-affinity$ kubectl get nodes --show-labels
NAME                 STATUS   ROLES           AGE   VERSION   LABELS
kube-control-plane   Ready    control-plane   8d    v1.29.2   beta.kubernetes.io/arch=amd64,beta.kubernetes.io/os=linux,kubernetes.io/arch=amd
64,kubernetes.io/hostname=kube-control-plane,kubernetes.io/os=linux,node-role.kubernetes.io/control-plane=,node.kubernetes.io/exclude-from-ext
ernal-load-balancers=
kube-node1           Ready    <none>          8d    v1.29.2   beta.kubernetes.io/arch=amd64,beta.kubernetes.io/os=linux,color=green,kubernetes
.io/arch=amd64,kubernetes.io/hostname=kube-node1,kubernetes.io/os=linux
kube-node2           Ready    <none>          8d    v1.29.2   beta.kubernetes.io/arch=amd64,beta.kubernetes.io/os=linux,color=red,kubernetes.i
o/arch=amd64,kubernetes.io/hostname=kube-node2,kubernetes.io/os=linux
brahim@Training:~/lab10-node-affinity$
```

3. Define a Pod with the image `nginx` in the YAML manifest file `pod.yaml`. Use the `nodeSelector` assignment to schedule the Pod on the node with the label `color=green`.

```
brahim@Training:~/lab10-node-affinity$ kubectl run app --image=nginx --dry-run=client -oyaml > pod.yaml
brahim@Training:~/lab10-node-affinity$ vim pod.yaml
brahim@Training:~/lab10-node-affinity$ cat pod.yaml
apiVersion: v1
kind: Pod
metadata:
  name: app
spec:
  containers:
  - image: nginx
    name: app
  restartPolicy: Never
  nodeSelector:
    color: green
brahim@Training:~/lab10-node-affinity$
```

4. Create the Pod and ensure that the correct node has been used to run the Pod.

```
brahim@Training:~/lab10-node-affinity$ kubectl apply -f pod.yaml
pod/app created
brahim@Training:~/lab10-node-affinity$ kubectl get pod -owide
NAME   READY   STATUS    RESTARTS   AGE   IP          NODE         NOMINATED NODE   READINESS GATES
app    1/1     Running   0          5s    10.40.0.1   kube-node1   <none>           <none>
brahim@Training:~/lab10-node-affinity$
brahim@Training:~/lab10-node-affinity$
```

5. Change the Pod definition to schedule it on nodes with the label `color=green`

```
brahim@Training:~/lab10-node-affinity$ vim pod.yaml
brahim@Training:~/lab10-node-affinity$ cat pod.yaml
apiVersion: v1
kind: Pod
metadata:
  name: app
spec:
  containers:
  - name: nginx
    image: nginx
  affinity:
    nodeAffinity:
      requiredDuringSchedulingIgnoredDuringExecution:
        nodeSelectorTerms:
        - matchExpressions:
          - key: color
            operator: In
            values:
            - green

brahim@Training:~/lab10-node-affinity$ kubectl delete -f pod.yaml
pod "app" deleted
brahim@Training:~/lab10-node-affinity$ kubectl apply -f pod.yaml
pod/app created
brahim@Training:~/lab10-node-affinity$
```

6. Verify that the Pod runs on the correct node

```
brahim@Training:~/lab10-node-affinity$ kubectl get pod -owide
NAME   READY   STATUS    RESTARTS   AGE   IP          NODE         NOMINATED NODE   READINESS GATES
app    1/1     Running   0          57s   10.40.0.1   kube-node1   <none>           <none>
brahim@Training:~/lab10-node-affinity$
brahim@Training:~/lab10-node-affinity$
```