Node Scheduling and Affinity

Lab 3: Node Scheduling and Node Affinity

🎯 Objective:

- Learn how to schedule Pods on specific nodes using node selectors and affinity rules.

🛠️ Steps

1. **Ensure Nodes Are Labeled**

Label the two Worker nodes:

```
kubectl label node minikube-m02 zone=east
kubectl label node minikube-m03 zone=west
```

2. Create YAML file `alpine.yaml` Pod with Node Selector: east

```yaml
apiVersion: v1
kind: Pod
metadata:
  name: busy-east
spec:
  nodeSelector:
    zone: east
  containers:
  - name: busybox
    image: busybox:musl
    command: ["sleep", "3600"]  # keep container running for 1 hour
```

Apply it:

```
kubectl apply -f alpine-east.yaml
```

3. Verify Pod is Running on the Correct Node

```
kubectl get pod -o wide
```

Check that the Pod is scheduled to `minikube-m02`.

4. Create YAML file `busy-affinity.yaml` to deploy a Pod with Affinity

```yaml
apiVersion: v1
kind: Pod
metadata:
  name: busy-affinity
spec:
  affinity:
    nodeAffinity:
      requiredDuringSchedulingIgnoredDuringExecution:
        nodeSelectorTerms:
        - matchExpressions:
          - key: zone
            operator: In
            values:
            - west
  containers:
  - name: busybox
    image: busybox:musl
    command: ["sleep", "3600"]  # keep container running for 1 hour
```

Save as `alpine-affinity.yaml` and apply it:

```
kubectl apply -f nginx-affinity.yaml
```

5. **Check Placement**

```
kubectl get pod -o wide
```

`nginx-affinity` should run on `minikube-m03`.

6. **Clean Up**

```
kubectl delete pod busy-east busy-affinity
```