Lab Exercise 9- Create Service in Kubernetes

Objective:

- Understand the syntax and structure of a Kubernetes Service definition file (YAML).

Prerequisites

- Kubernetes Cluster: Have a running Kubernetes cluster (locally using Minikube or kind, or a cloud-based service).
- kubectl: Install and configure kubectl to interact with your Kubernetes cluster.
- Basic Knowledge of YAML: Familiarity with YAML format will be helpful for understanding Kubernetes resource definitions.

Step-by-Step Guide

NodePort Service

To expose the Service on a port on each Node in the cluster, modify the Service type to NodePort.

Create a YAML file named ***service.yaml*** with the following content:

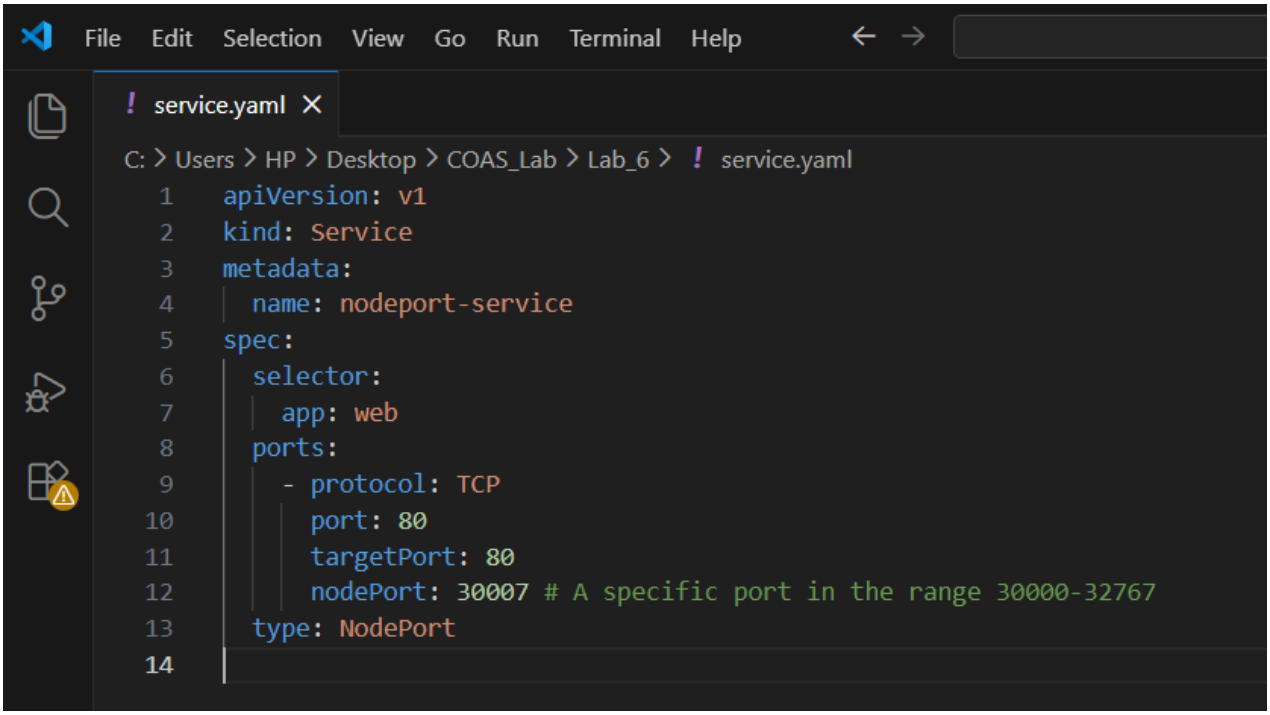
service.yaml

```
apiVersion: v1
kind: Service
metadata:
  name: nodeport-service
spec:
  selector:
    app: web
  ports:
    - protocol: TCP
      port: 80
      targetPort: 80
      nodePort: 30007 # A specific port in the range 30000-32767
  type: NodePort
```

Explanation:

- The primary difference from the ClusterIP Service is the addition of nodePort, which specifies the static port on each Node.
- type: Set to NodePort, exposing the Service on a specific port across all Nodes.

```
PS C:\Users\HP\Desktop\COAS_Lab\Lab_6> wsl
docker-desktop:/tmp/docker-desktop-root/run/desktop/mnt/host/c/Users/HP/Desktop/COAS_Lab/Lab_6# touch service.yaml
docker-desktop:/tmp/docker-desktop-root/run/desktop/mnt/host/c/Users/HP/Desktop/COAS_Lab/Lab_6#
```



Apply this YAML to create the NodePort Service:

```
kubectl apply -f nodeport-service.yaml
```

Verify the Service:

```
kubectl get services
```

You should see the nodeport-service listed with a NodePort and details about the port exposed.

```
PS C:\Users\HP\Desktop\COAS_Lab\Lab_6> wsl -d Ubuntu-22.04 -u shivang
Welcome to Ubuntu 22.04.5 LTS (GNU/Linux 6.6.87.2-microsoft-standard-WSL2 x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/pro

 System information as of Tue Feb 10 11:23:43 IST 2026

  System load:  0.72                Processes:             82
  Usage of /:   0.6% of 1006.85GB   Users logged in:       0
  Memory usage: 9%                  IPv4 address for eth0: 172.22.242.177
  Swap usage:   0%


This message is shown once a day. To disable it please create the
/home/shivang/.hushlogin file.
```

```
shivang@Shivang:/mnt/c/Users/HP/Desktop/COAS_Lab/Lab_6$ minikube start --driver=docker
😄  minikube v1.38.0 on Ubuntu 22.04 (kvm/amd64)
✨  Using the docker driver based on existing profile
👍  Starting "minikube" primary control-plane node in "minikube" cluster
🚜  Pulling base image v0.0.49 ...
🔄  Restarting existing docker container for "minikube" ...
❗  Failing to connect to https://registry.k8s.io/ from inside the minikube container
💡  To pull new external images, you may need to configure a proxy: https://minikube.sigs.k8s.io/docs/reference/networking/proxy/
🐳  Preparing Kubernetes v1.35.0 on Docker 29.2.0 ...
🔎  Verifying Kubernetes components...
    ▪ Using image gcr.io/k8s-minikube/storage-provisioner:v5
🌟  Enabled addons: storage-provisioner, default-storageclass
🏄  Done! kubectl is now configured to use "minikube" cluster and "default" namespace by default
shivang@Shivang:/mnt/c/Users/HP/Desktop/COAS_Lab/Lab_6$ kubectl apply -f nodeport-service.yaml
service/nodeport-service created
shivang@Shivang:/mnt/c/Users/HP/Desktop/COAS_Lab/Lab_6$
```

```
shivang@Shivang:/mnt/c/Users/HP/Desktop/COAS_Lab/Lab_6$ kubectl get services
NAME               TYPE        CLUSTER-IP      EXTERNAL-IP   PORT(S)        AGE
kubernetes         ClusterIP   10.96.0.1       <none>        443/TCP        15h
nodeport-service   NodePort    10.103.41.239   <none>        80:30007/TCP   91s
shivang@Shivang:/mnt/c/Users/HP/Desktop/COAS_Lab/Lab_6$
```