

Q4) To install Kubectl and execute kubectl commands to manage clusters and deploy your first Kubernetes application (Apache)

Cluster-info: Displays information about the Kubernetes control plane and service endpoints.

```
PS C:\Users\Rishabh> kubectl cluster-info
Kubernetes control plane is running at https://kubernetes.docker.internal:6443
CoreDNS is running at https://kubernetes.docker.internal:6443/api/v1/namespaces/kube-system/services/kube-dns:dns/proxy

To further debug and diagnose cluster problems, use 'kubectl cluster-info dump'.
```

Get nodes: Lists all the nodes in the Kubernetes cluster with their status.

```
PS C:\Users\Rishabh> kubectl get nodes
NAME                STATUS    ROLES    AGE   VERSION
docker-desktop      Ready    control-plane  113m  v1.34.1
```

Create deployment: Creates a deployment named my-apache using the Apache (httpd) Docker image.

```
PS C:\Users\Rishabh> kubectl create deployment my-apache --image=httpd
deployment.apps/my-apache created
```

In the Kubernetes section of **Docker**, click the **create cluster** button and then select **kubeadm** option

The screenshot shows the Docker Kubernetes dashboard. At the top, there's a 'Kubernetes' header with a 'Give feedback' link. Below it, a 'namespace' dropdown is set to 'default'. The main content area is divided into several sections:

- Cluster:** Shows 'Active' status, 'kubeadm' cluster type, 1 node, and Kubernetes version v1.34.1. There are 'Stop' and 'Edit cluster' buttons.
- Deployments:** A table with columns 'Name', 'Status', and 'Pods'. It shows 'my-apache' with status 'Available' and 1/1 pods.
- Pods:** A table with columns 'Name' and 'Status'. It shows 'my-apache-5c789d6ff-swghh' with status 'Running'.
- Nodes:** A table with columns 'Name' and 'Status'. It shows 'docker-desktop' with status 'Ready'.
- Services:** A table with columns 'Name', 'Cluster IP', and 'Ports'. It shows 'kubernetes' with Cluster IP 10.96.0.1 and port 443/TCP, and 'my-apache' with Cluster IP 10.105.66.178 and port 80/TCP.

Get deployments: Shows all current deployments running in the cluster.

```
PS C:\Users\Rishabh> kubectl get deployments
NAME                READY    UP-TO-DATE    AVAILABLE    AGE
my-apache           0/1      1              0            13s
```

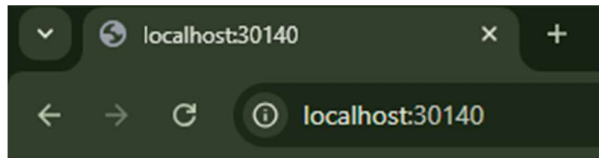
Expose: Exposes the my-apache deployment externally through a NodePort service on port 80.

```
PS C:\Users\Rishabh> kubectl expose deployment my-apache --type=NodePort --port=80
service/my-apache exposed
```

Get svc: Lists all active services and their assigned ports for external access.

```
PS C:\Users\Rishabh> kubectl get svc
NAME                TYPE        CLUSTER-IP    EXTERNAL-IP    PORT(S)          AGE
kubernetes          ClusterIP   10.96.0.1     <none>         443/TCP          115m
my-apache           NodePort    10.105.66.178 <none>         80:30140/TCP     13s
```

Copy the highlighted part and paste it in the browser as (localhost:highlighted_part)



It works!