

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 interface. At the top, there's a dropdown for the namespace set to 'default'. Below it, the 'Cluster' section displays an active cluster with type 'kubeadm', 1 node, and version v1.34.1. On the right, there are 'Stop' and 'Edit cluster' buttons. To the left, the 'Deployments' section lists 'my-apache' as available with 1/1 pods. To the right, the 'Pods' section shows a single pod named 'my-apache-5c789d6ff-swghh' in a 'Running' state. At the bottom, the 'Nodes' and 'Services' sections show one node named 'docker-desktop' in a 'Ready' state, and two services: 'kubernetes' on port 10.96.0.1 and 'my-apache' on port 10.105.66.178.

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
```

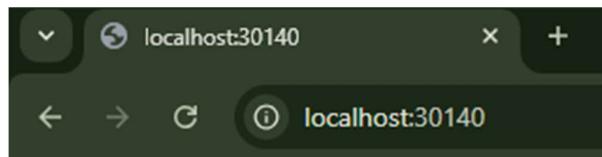
Expose: Exposes the my-apache deployment externally through a NodePort service on port 80.

```
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.

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!**