# Deploy a Web Application to Kubernetes using Minikube.

## STEP 1 - Start Minikube

minikube start

## STEP 2 - Check Minikube Status

minikube status

You should see:

host: Running
kubelet: Running
apiserver: Running
kubeconfig: Configured

## STEP 3 - If Minikube is not running, restart it

minikube delete
minikube start --driver=docker

## STEP 4 - Create the Deployment file (nginx-deployment.yaml)

Create a new file:

### nginx-deployment.yaml

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: nginx-deployment
spec:
  replicas: 2
  selector:
    matchLabels:
      app: nginx
  template:
    metadata:
      labels:
        app: nginx
```

```
  spec:
    containers:
      - name: nginx
        image: nginx:latest
        ports:
          - containerPort: 80
```

## STEP 5 - Apply the deployment

kubectl apply -f nginx-deployment.yaml

## STEP 6 - Check Deployment & Pods

kubectl get deployments
kubectl get pods

You should see **2 pods** running.

## STEP 7 -Expose the Deployment as a Service

```
kubectl expose deployment nginx-deployment \
  --type=NodePort \
  --port=80
```

This creates a service that exposes Nginx to your system.

## STEP 8 - Check Services

kubectl get services

A service named **nginx-deployment** should appear with a **NodePort**.

## STEP 9 - Access the Webpage

Minikube provides a shortcut to open the app:

minikube service nginx-deployment

This will open the browser showing the **Nginx Welcome Page**.

# STEP 10 — Clean Up (Optional)

## Delete all pods

kubectl delete pods --all

## Delete all services

kubectl delete svc --all

## Delete all deployments

kubectl delete deployments --all

```
abhishek@Abhishek-Ubuntu:~$ mkdir program-07
abhishek@Abhishek-Ubuntu:~$ cd program-07
abhishek@Abhishek-Ubuntu:~/program-07$ nano nginx-deployment.yaml
abhishek@Abhishek-Ubuntu:~/program-07$ minikube start
😄  minikube v1.37.0 on Ubuntu 24.04
✨  Using the docker driver based on existing profile
👍  Starting "minikube" primary control-plane node in "minikube" cluster
🚜  Pulling base image v0.0.48 ...
🔄  Restarting existing docker container for "minikube" ...
🐳  Preparing Kubernetes v1.34.0 on Docker 28.4.0 ...
🔎  Verifying Kubernetes components...
    ▪ Using image gcr.io/k8s-minikube/storage-provisioner:v5
🌟  Enabled addons: default-storageclass, storage-provisioner
🏄  Done! kubectl is now configured to use "minikube" cluster and "default" namespace by default
abhishek@Abhishek-Ubuntu:~/program-07$ minikube status
minikube
type: Control Plane
host: Running
kubelet: Running
apiserver: Running
kubeconfig: Configured

abhishek@Abhishek-Ubuntu:~/program-07$ kubectl apply -f nginx-deloyment.yaml
error: the path "nginx-deloyment.yaml" does not exist
abhishek@Abhishek-Ubuntu:~/program-07$ kubectl apply -f nginx-deployment.yaml
deployment.apps/nginx-deployment created
abhishek@Abhishek-Ubuntu:~/program-07$ kubectl get deployments
NAME               READY   UP-TO-DATE   AVAILABLE   AGE
nginx-deployment   4/4     4            4           27s
abhishek@Abhishek-Ubuntu:~/program-07$ kubectl get pods
NAME                                READY   STATUS    RESTARTS   AGE
nginx-deployment-6f9664446b-2dxrx   1/1     Running   0          32s
nginx-deployment-6f9664446b-46fj9   1/1     Running   0          32s
nginx-deployment-6f9664446b-klknz   1/1     Running   0          32s
nginx-deployment-6f9664446b-l6qcg   1/1     Running   0          32s
```

```
abhishek@Abhishek-Ubuntu:~/program-07$ kubectl expose deployment nginx-deployment --type=NodePort --port=80
service/nginx-deployment exposed
abhishek@Abhishek-Ubuntu:~/program-07$ minikube service nginx-deployment
```

| NAMESPACE | NAME | TARGET PORT | URL |
|---|---|---|---|
| default | nginx-deployment | 80 | http://192.168.49.2:30282 |

```
🎉  Opening service default/nginx-deployment in default browser...
abhishek@Abhishek-Ubuntu:~/program-07$ Opening in existing browser session.
^C
```