## **Installation:**

<https://kubernetes.io/docs/tasks/tools/install-kubectl-windows/>

1. Install minikube from <https://minikube.sigs.k8s.io/docs/start/>
2. Launch Docker for Desktop
3. Run minikube start (It will take a while to start)
4. Install Kubectl using
5. curl.exe -Lo <https://dl.k8s.io/release/v1.28.4/bin/windows/amd64/kubectl.exe>
6. CertUtil -hashfile kubectl.exe SHA256
7. Enable metrics server addon for minikube

minikube addons enable metrics-server

## **Basic Commands**

* **Getting K8 version**

kubectl version –client

* **Understand all the nodes associated using**

Kubectl get nodes – Gets all the nodes present

* **Stop the minikube using**

Minikube stop

* **For finding all the processes running in kubectl**

kubectl get po -A

* **Use minikube to run the same commands:**

minikube kubectl -- get pods -A

* **Find cluster-info**

Kubectl cluster-info

* **Create a sample app and deploy it**

kubectl run --image=nginx web

* **Check that the pod is up and running**

kubectl get pods

kubectl describe pod web

* **Run a simple application using**

Kubectl apply -f web-declarative.yaml

* **Find the full config created with defaults**

kubectl get pod web-declarative -o yaml

* **Understand the YAML specific field details**

kubectl explain pod.spec.restartPolicy

### **Dashboard:**

minikube dashboard

### **Simple Deployment:**

<https://kubernetes.io/docs/tutorials/hello-minikube/>

1. Use minikube to create a cluster
   1. minikube start
2. Use Kubectl to create a pod
3. Create a sample deployment
   1. kubectl create deployment hello-node --image=registry.k8s.io/e2e-test-images/agnhost:2.39 -- /agnhost netexec --http-port=8080
4. Check the status using
   1. Kubectl get deployments
   2. Kubectl get pods
5. Expose the node as service
   1. kubectl expose deployment hello-node --type=LoadBalancer --port=8080
6. Run the service
   1. minikube service hello-node
7. Cleanup the service & deployment
   1. kubectl delete service hello-node
   2. kubectl delete deployment hello-node
   3. kubectl delete pod web

Troubleshooting:

If minikube doesn’t start -

docker context use default

If the docker doesn’t run from the hub, use

Docker login

# Creating a ML service from the scratch

1. minikube start

# Get the image and tag it

1. docker pull subbu0319/placement-app
2. docker image tag subbu0319/placement-app placement-app:v1
3. docker -p 9696:9696 placement-app:v1
4. python test.py (check results)

# Create service

Use the image name from ‘docker images ‘ and update in deployment.yaml file

1. kubectl create -f deployment.yaml
2. kubectl create -f service.yaml
3. minikube service placement-app
4. Will see the port no in the command line and also on browser
5. Change the port no in predict\_test.py and run it.
6. Check the logs if docker image is not picked or for any error

Deployment.yaml:

apiVersion: apps/v1

kind: Deployment

metadata:

  name: placement-app

spec:

  selector:

    matchLabels:

      app: placement-app

  template:

    metadata:

      labels:

        app: placement-app

    spec:

      containers:

      - name: placement-app

        image: srisoudamini/placement-app

        resources:

          limits:

            memory: "128Mi"

            cpu: "500m"

        ports:

        - containerPort: 9696

Service.yaml:

apiVersion: v1

kind: Service

metadata:

  name: placement-app

spec:

  type: LoadBalancer

  selector:

    app: placement-app

  ports:

    - protocol: "TCP"

      port: 80

      targetPort: 9696