Homework 9 DevOps

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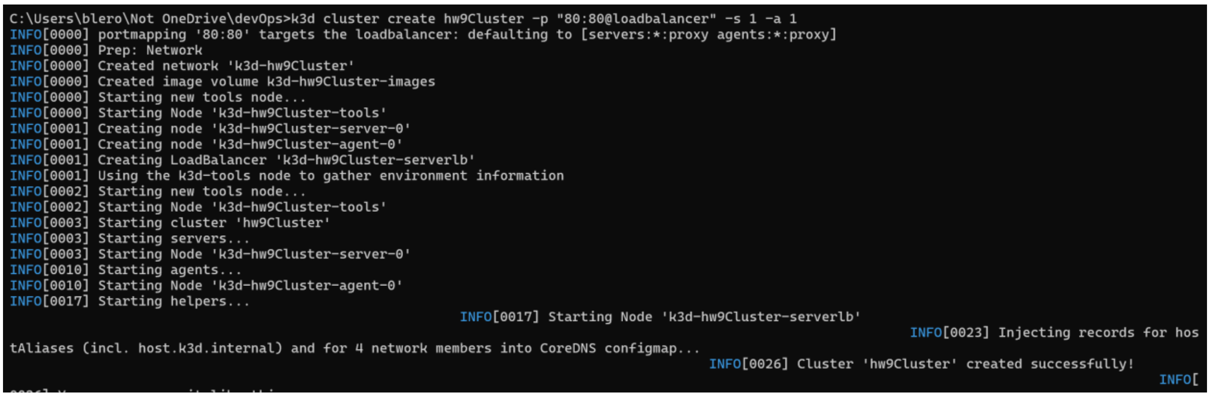
1 Create deployments and services for two Pods:

○ One for the app version 1.0 from the last homework

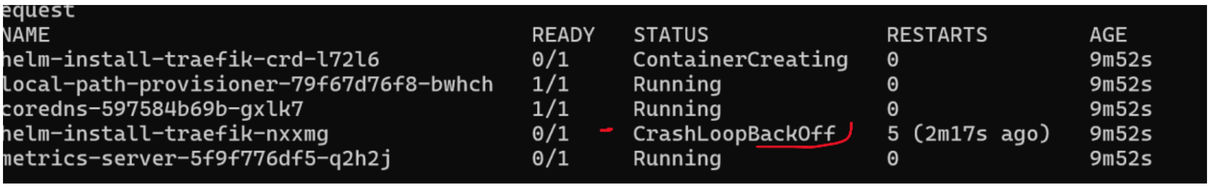
○ One for the app version 2.0 from the last homework

Creating cluster hw9Cluster and mapping my port 80 to traefik Ingress controller at the same time, since its included by default it will automatically start to run :



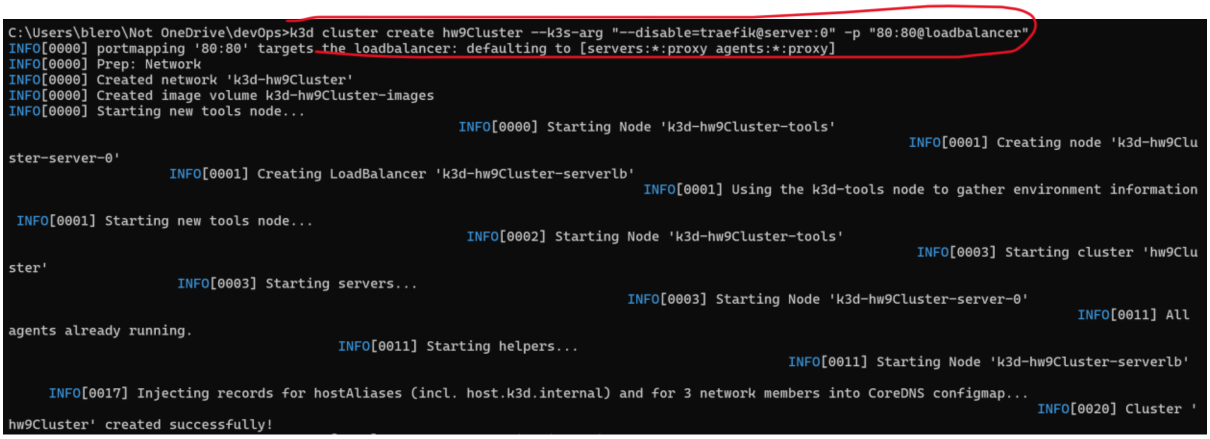
```
C:\Users\blero\Not OneDrive\devOps>k3d cluster create hw9Cluster -p "80:80@loadbalancer" -s 1 -a 1
INFO[0000] portmapping '80:80' targets the loadbalancer: defaulting to [servers:*:proxy agents:*:proxy]
INFO[0000] Prep: Network
INFO[0000] Created network 'k3d-hw9Cluster'
INFO[0000] Created image volume k3d-hw9Cluster-images
INFO[0000] Starting new tools node...
INFO[0000] Starting Node 'k3d-hw9Cluster-tools'
INFO[0001] Creating node 'k3d-hw9Cluster-server-0'
INFO[0001] Creating node 'k3d-hw9Cluster-agent-0'
INFO[0001] Creating LoadBalancer 'k3d-hw9Cluster-serverlb'
INFO[0001] Using the k3d-tools node to gather environment information
INFO[0002] Starting new tools node...
INFO[0002] Starting Node 'k3d-hw9Cluster-tools'
INFO[0003] Starting cluster 'hw9Cluster'
INFO[0003] Starting servers...
INFO[0003] Starting Node 'k3d-hw9Cluster-server-0'
INFO[0010] Starting agents...
INFO[0010] Starting Node 'k3d-hw9Cluster-agent-0'
INFO[0017] Starting helpers...
                                                            INFO[0017] Starting Node 'k3d-hw9Cluster-serverlb'
                                                                                                  INFO[0023] Injecting records for hos
tAliases (incl. host.k3d.internal) and for 4 network members into CoreDNS configmap...
                                                                                      INFO[0026] Cluster 'hw9Cluster' created successfully!
                                                                                                                                INFO[
```

At first try, after 10 minutes some started running successfully but the traefik failed



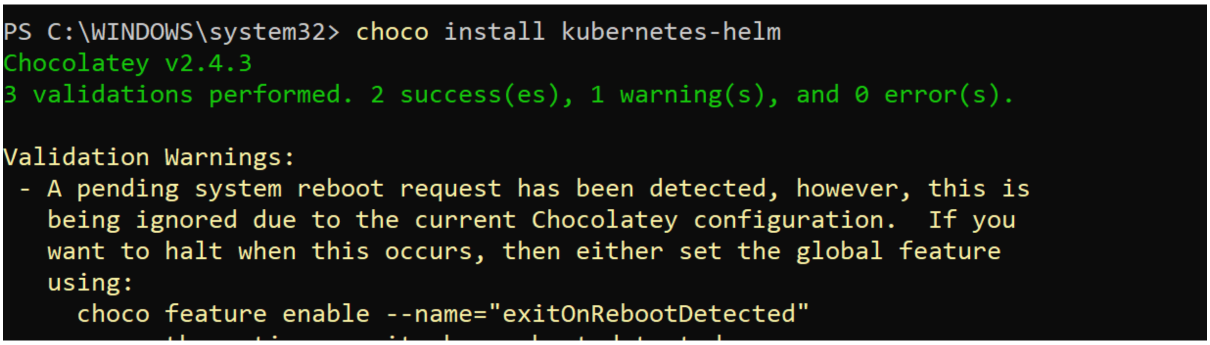
```
equest
NAME                                     READY   STATUS              RESTARTS       AGE
helm-install-traefik-crd-l72l6           0/1     ContainerCreating   0              9m52s
local-path-provisioner-79f67d76f8-bwhch  1/1     Running             0              9m52s
coredns-597584b69b-gxlk7                 1/1     Running             0              9m52s
helm-install-traefik-nxxmg               0/1     CrashLoopBackOff    5 (2m17s ago)  9m52s
metrics-server-5f9f776df5-q2h2j          0/1     Running             0              9m52s
```

Deleted cluster and tried creating it without traefik at first

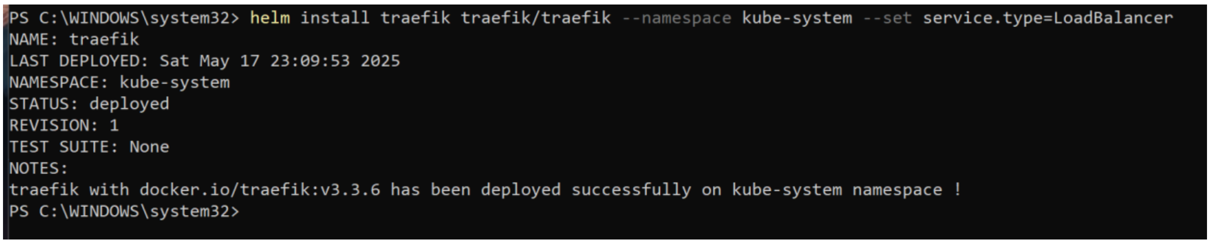


```
C:\Users\blero\Not OneDrive\devOps>k3d cluster create hw9Cluster --k3s-arg "--disable=traefik@server:0" -p "80:80@loadbalancer"
INFO[0000] portmapping '80:80' targets the loadbalancer: defaulting to [servers:*:proxy agents:*:proxy]
INFO[0000] Prep: Network
INFO[0000] Created network 'k3d-hw9Cluster'
INFO[0000] Created image volume k3d-hw9Cluster-images
INFO[0000] Starting new tools node...
                                                            INFO[0000] Starting Node 'k3d-hw9Cluster-tools'
                                                                                                  INFO[0001] Creating node 'k3d-hw9Clu
ster-server-0'
                    INFO[0001] Creating LoadBalancer 'k3d-hw9Cluster-serverlb'
                                                                                INFO[0001] Using the k3d-tools node to gather environment information

 INFO[0001] Starting new tools node...
                                                             INFO[0002] Starting Node 'k3d-hw9Cluster-tools'
                                                                                                   INFO[0003] Starting cluster 'hw9Clu
ster'
                     INFO[0003] Starting servers...
                                                                                INFO[0003] Starting Node 'k3d-hw9Cluster-server-0'
                                                                                                            INFO[0011] All
agents already running.
                                        INFO[0011] Starting helpers...
                                                                                                INFO[0011] Starting Node 'k3d-hw9Cluster-serverlb'

    INFO[0017] Injecting records for hostAliases (incl. host.k3d.internal) and for 3 network members into CoreDNS configmap...
                                                                                                             INFO[0020] Cluster '
hw9Cluster' created successfully!
```

Installed trafeik manually using choco and helm commands

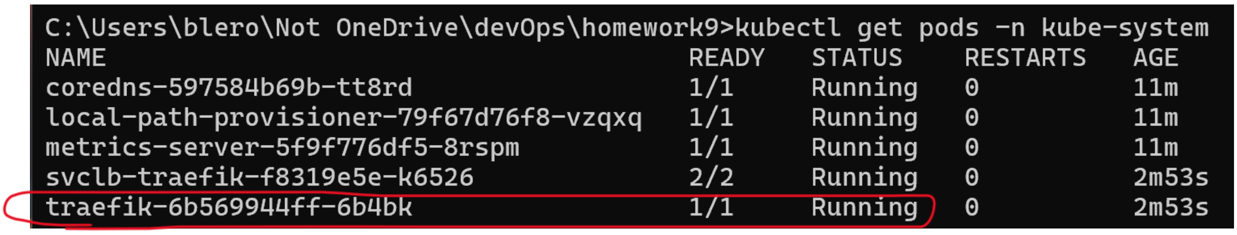


```
PS C:\WINDOWS\system32> choco install kubernetes-helm
Chocolatey v2.4.3
3 validations performed. 2 success(es), 1 warning(s), and 0 error(s).

Validation Warnings:
 - A pending system reboot request has been detected, however, this is
   being ignored due to the current Chocolatey configuration.  If you
   want to halt when this occurs, then either set the global feature
   using:
     choco feature enable --name="exitOnRebootDetected"
```



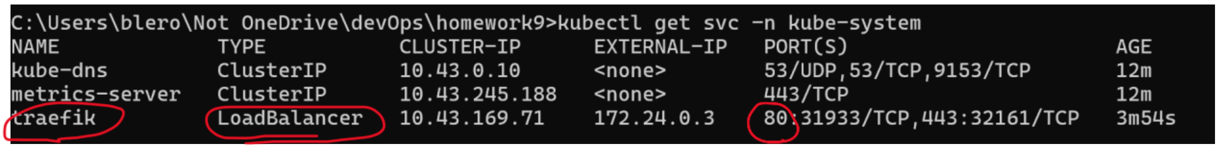
```
PS C:\WINDOWS\system32> helm install traefik traefik/traefik --namespace kube-system --set service.type=LoadBalancer
NAME: traefik
LAST DEPLOYED: Sat May 17 23:09:53 2025
NAMESPACE: kube-system
STATUS: deployed
REVISION: 1
TEST SUITE: None
NOTES:
traefik with docker.io/traefik:v3.3.6 has been deployed successfully on kube-system namespace !
PS C:\WINDOWS\system32>
```

now traefik is running



```
C:\Users\blero\Not OneDrive\devOps\homework9>kubectl get pods -n kube-system
NAME                                      READY   STATUS    RESTARTS   AGE
coredns-597584b69b-tt8rd                  1/1     Running   0          11m
local-path-provisioner-79f67d76f8-vzqxq   1/1     Running   0          11m
metrics-server-5f9f776df5-8rspm           1/1     Running   0          11m
svclb-traefik-f8319e5e-k6526              2/2     Running   0          2m53s
traefik-6b569944ff-6b4bk                  1/1     Running   0          2m53s
```

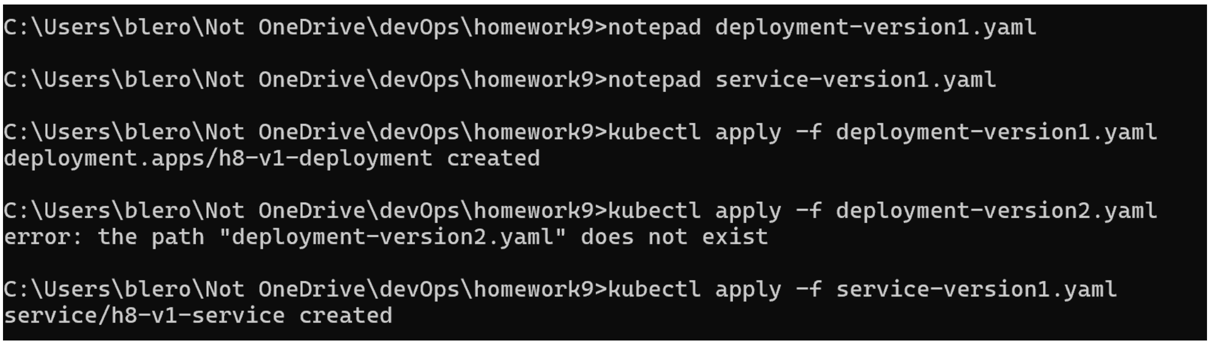
and the service LoadBalancer, port 80 exposed



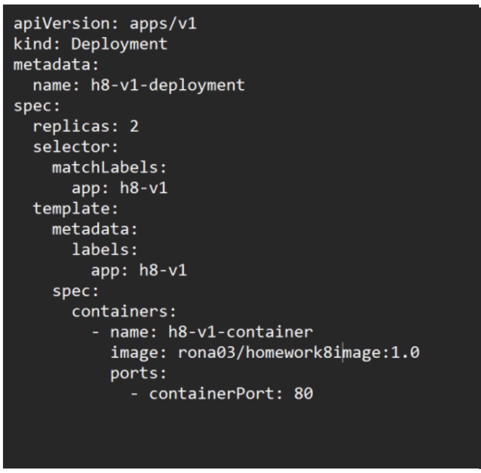
```
C:\Users\blero\Not OneDrive\devOps\homework9>kubectl get svc -n kube-system
NAME             TYPE           CLUSTER-IP      EXTERNAL-IP   PORT(S)                      AGE
kube-dns         ClusterIP      10.43.0.10      <none>        53/UDP,53/TCP,9153/TCP       12m
metrics-server   ClusterIP      10.43.245.188   <none>        443/TCP                      12m
traefik          LoadBalancer   10.43.169.71    172.24.0.3    80:31933/TCP,443:32161/TCP   3m54s
```

now creating deployments :

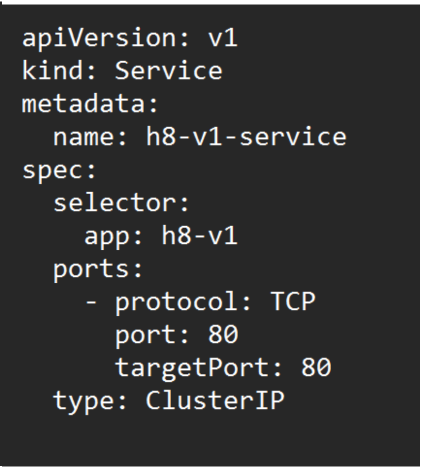
for v1



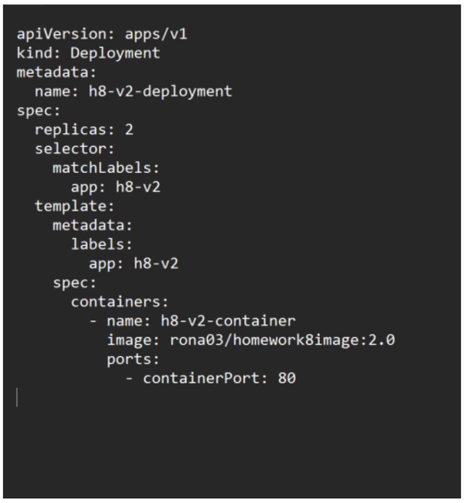
```
C:\Users\blero\Not OneDrive\devOps\homework9>notepad deployment-version1.yaml

C:\Users\blero\Not OneDrive\devOps\homework9>notepad service-version1.yaml

C:\Users\blero\Not OneDrive\devOps\homework9>kubectl apply -f deployment-version1.yaml
deployment.apps/h8-v1-deployment created

C:\Users\blero\Not OneDrive\devOps\homework9>kubectl apply -f deployment-version2.yaml
error: the path "deployment-version2.yaml" does not exist

C:\Users\blero\Not OneDrive\devOps\homework9>kubectl apply -f service-version1.yaml
service/h8-v1-service created
```



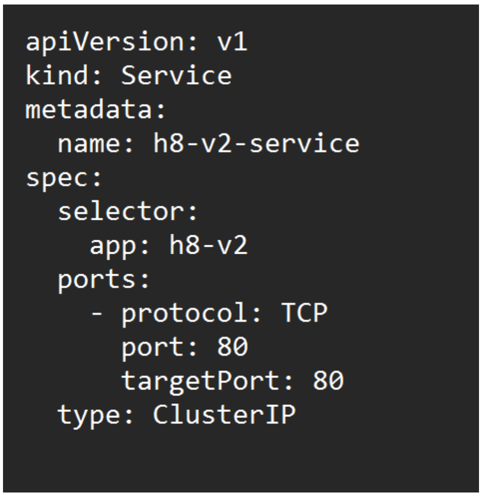
```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: h8-v1-deployment
spec:
  replicas: 2
  selector:
    matchLabels:
      app: h8-v1
  template:
    metadata:
      labels:
        app: h8-v1
    spec:
      containers:
        - name: h8-v1-container
          image: rona03/homework8image:1.0
          ports:
            - containerPort: 80
```



```
apiVersion: v1
kind: Service
metadata:
  name: h8-v1-service
spec:
  selector:
    app: h8-v1
  ports:
    - protocol: TCP
      port: 80
      targetPort: 80
  type: ClusterIP
```



```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: h8-v2-deployment
spec:
  replicas: 2
  selector:
    matchLabels:
      app: h8-v2
  template:
    metadata:
      labels:
        app: h8-v2
    spec:
      containers:
      - name: h8-v2-container
        image: rona03/homework8image:2.0
        ports:
          - containerPort: 80
```



```
apiVersion: v1
kind: Service
metadata:
  name: h8-v2-service
spec:
  selector:
    app: h8-v2
  ports:
    - protocol: TCP
      port: 80
      targetPort: 80
  type: ClusterIP
```

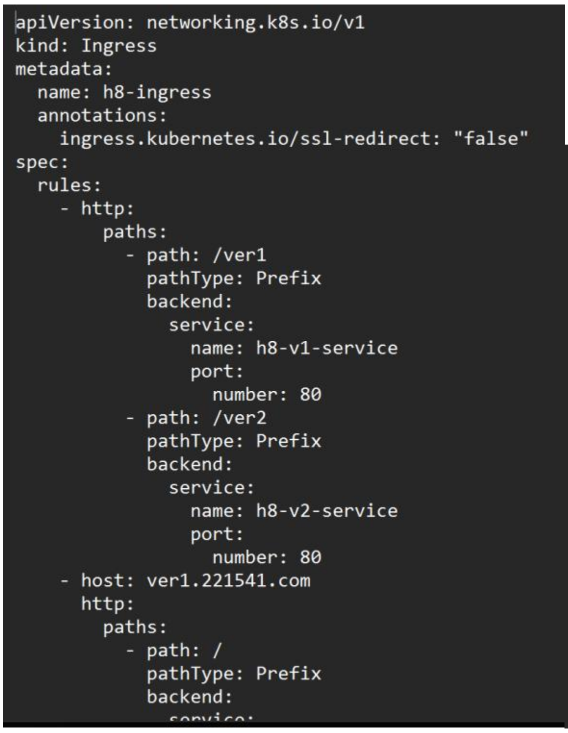
2 Create ingress pointing to the two apps:

○ path based: localhost/ver1

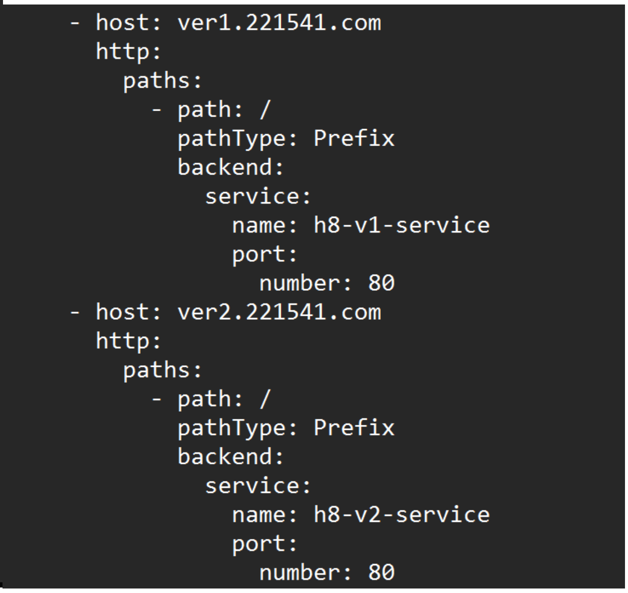
○ path based: localhost/ver2

○ host based: ver1..com

○ host based: ver2..com

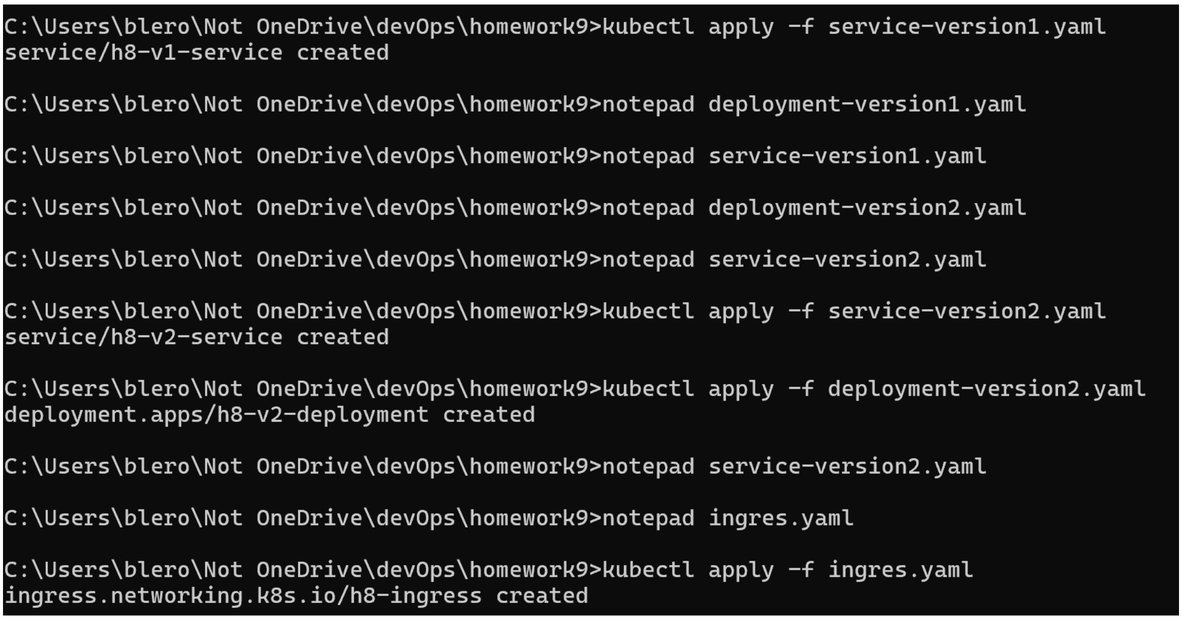


```
apiVersion: networking.k8s.io/v1
kind: Ingress
metadata:
  name: h8-ingress
  annotations:
    ingress.kubernetes.io/ssl-redirect: "false"
spec:
  rules:
    - http:
        paths:
          - path: /ver1
            pathType: Prefix
            backend:
              service:
                name: h8-v1-service
                port:
                  number: 80
          - path: /ver2
            pathType: Prefix
            backend:
              service:
                name: h8-v2-service
                port:
                  number: 80
    - host: ver1.221541.com
      http:
        paths:
          - path: /
            pathType: Prefix
            backend:
              service:
```



```
    - host: ver1.221541.com
      http:
        paths:
          - path: /
            pathType: Prefix
            backend:
              service:
                name: h8-v1-service
                port:
                  number: 80
    - host: ver2.221541.com
      http:
        paths:
          - path: /
            pathType: Prefix
            backend:
              service:
                name: h8-v2-service
                port:
                  number: 80
```

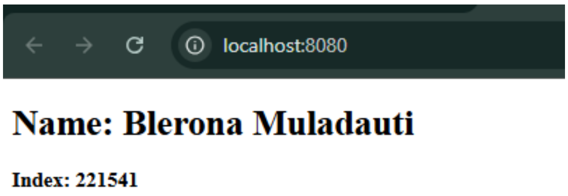
3 Deploy manifests and ingress



```
C:\Users\blero\Not OneDrive\devOps\homework9>kubectl apply -f service-version1.yaml
service/h8-v1-service created

C:\Users\blero\Not OneDrive\devOps\homework9>notepad deployment-version1.yaml

C:\Users\blero\Not OneDrive\devOps\homework9>notepad service-version1.yaml

C:\Users\blero\Not OneDrive\devOps\homework9>notepad deployment-version2.yaml

C:\Users\blero\Not OneDrive\devOps\homework9>notepad service-version2.yaml

C:\Users\blero\Not OneDrive\devOps\homework9>kubectl apply -f service-version2.yaml
service/h8-v2-service created

C:\Users\blero\Not OneDrive\devOps\homework9>kubectl apply -f deployment-version2.yaml
deployment.apps/h8-v2-deployment created

C:\Users\blero\Not OneDrive\devOps\homework9>notepad service-version2.yaml

C:\Users\blero\Not OneDrive\devOps\homework9>notepad ingres.yaml

C:\Users\blero\Not OneDrive\devOps\homework9>kubectl apply -f ingres.yaml
ingress.networking.k8s.io/h8-ingress created
```

4 Access the four ingress rules in your local browser

For some reason I get E404 when accessing the link in browser. I tried to run the container outside of Kubernetes to see if it works like that

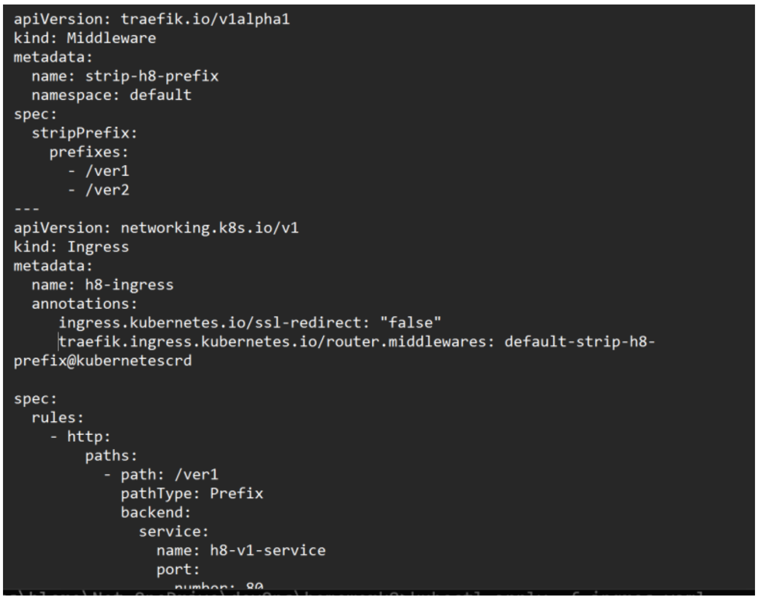


Name: Blerona Muladauti

Index: 221541

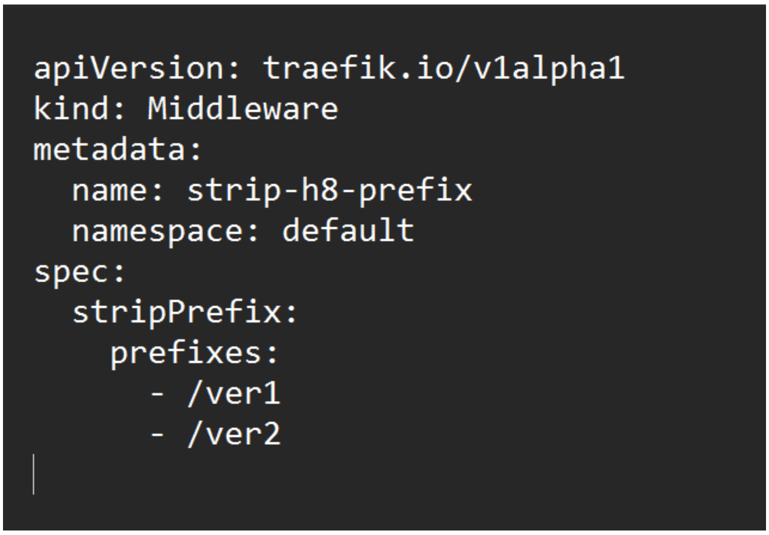
I guess this means nginx image is not the problem. Ill try the middleware solution, to tell Traefik to strip the prefix before the request is forwarded.

. Installed CRD for the middleware to work. Final versions:



```
apiVersion: traefik.io/v1alpha1
kind: Middleware
metadata:
  name: strip-h8-prefix
  namespace: default
spec:
  stripPrefix:
    prefixes:
      - /ver1
      - /ver2
---
apiVersion: networking.k8s.io/v1
kind: Ingress
metadata:
  name: h8-ingress
  annotations:
     ingress.kubernetes.io/ssl-redirect: "false"
     traefik.ingress.kubernetes.io/router.middlewares: default-strip-h8-
prefix@kubernetescrd

spec:
  rules:
    - http:
        paths:
          - path: /ver1
            pathType: Prefix
            backend:
              service:
                name: h8-v1-service
                port:
                  number: 80
```

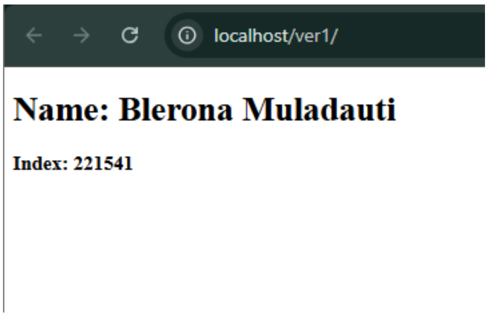
Fixed the annotations



```
apiVersion: traefik.io/v1alpha1
kind: Middleware
metadata:
  name: strip-h8-prefix
  namespace: default
spec:
  stripPrefix:
    prefixes:
      - /ver1
      - /ver2
```

THEY WORK!!!!

? http://localhost/ver1/



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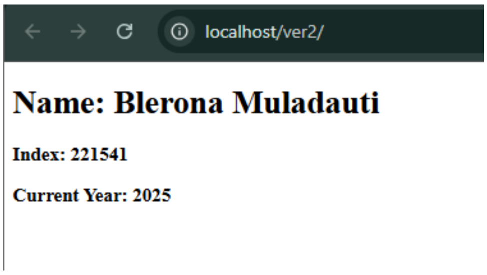
? http://localhost/ver2/



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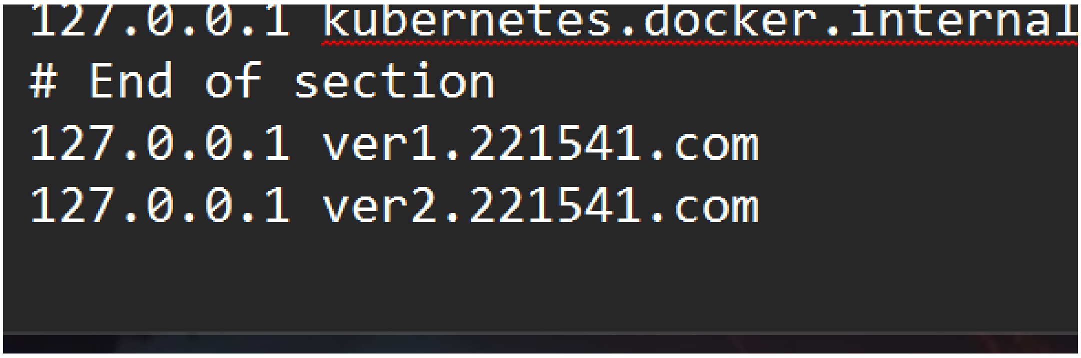
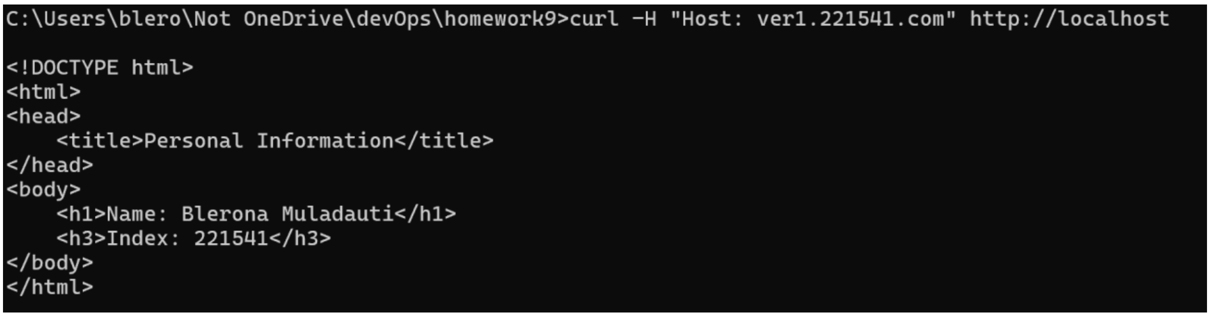
Current Year: 2025

For the next two links to work I changed the hosts file in my windows /system32

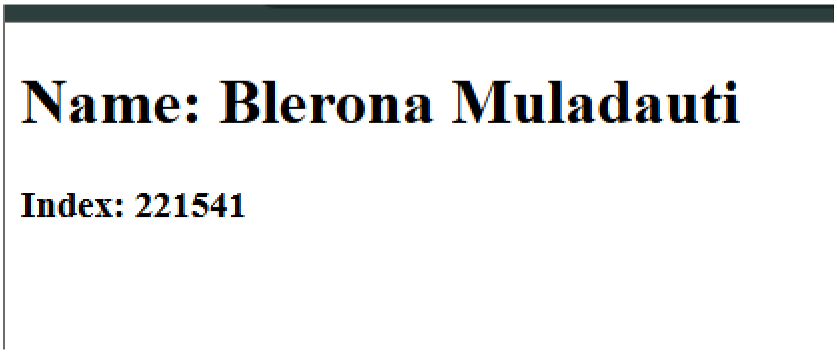


```
127.0.0.1 kubernetes.docker.internal
# End of section
127.0.0.1 ver1.221541.com
127.0.0.1 ver2.221541.com
```

- http://ver1.221541.com



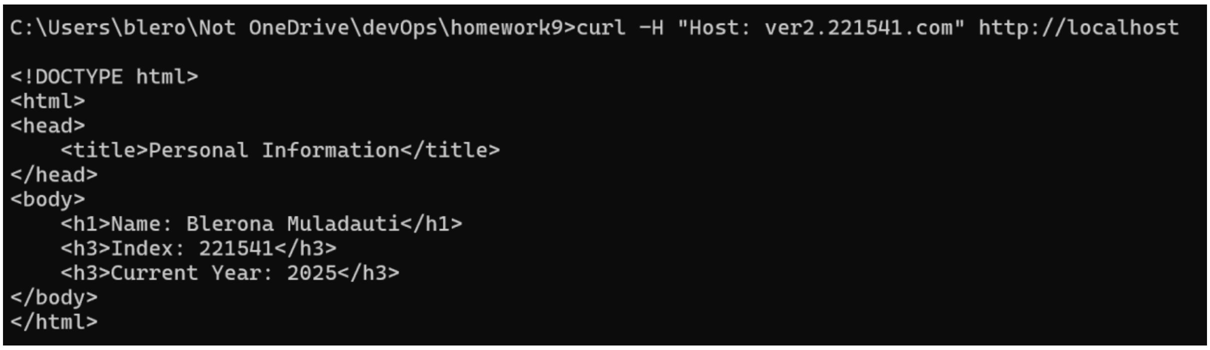
```
C:\Users\blero\Not OneDrive\devOps\homework9>curl -H "Host: ver1.221541.com" http://localhost

<!DOCTYPE html>
<html>
<head>
    <title>Personal Information</title>
</head>
<body>
    <h1>Name: Blerona Muladauti</h1>
    <h3>Index: 221541</h3>
</body>
</html>
```



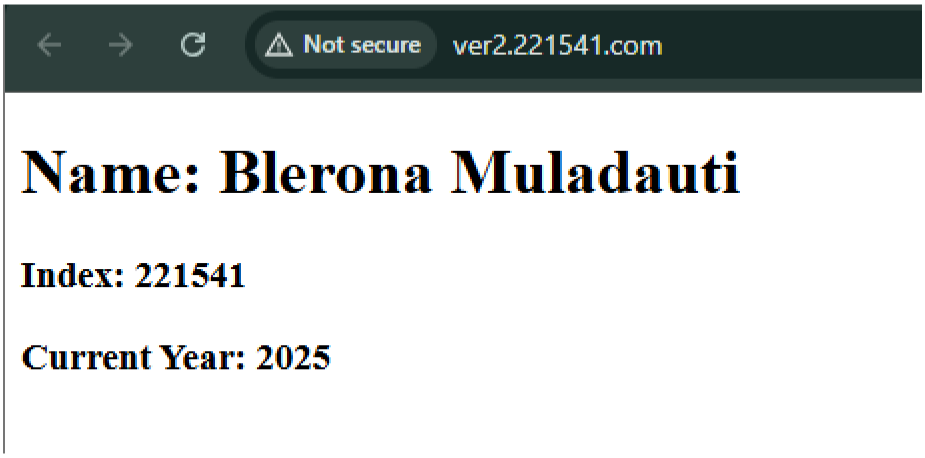
Name: Blerona Muladauti

Index: 221541

- http://ver2.221541.com



```
C:\Users\blero\Not OneDrive\devOps\homework9>curl -H "Host: ver2.221541.com" http://localhost

<!DOCTYPE html>
<html>
<head>
    <title>Personal Information</title>
</head>
<body>
    <h1>Name: Blerona Muladauti</h1>
    <h3>Index: 221541</h3>
    <h3>Current Year: 2025</h3>
</body>
</html>
```



Name: Blerona Muladauti

Index: 221541

Current Year: 2025