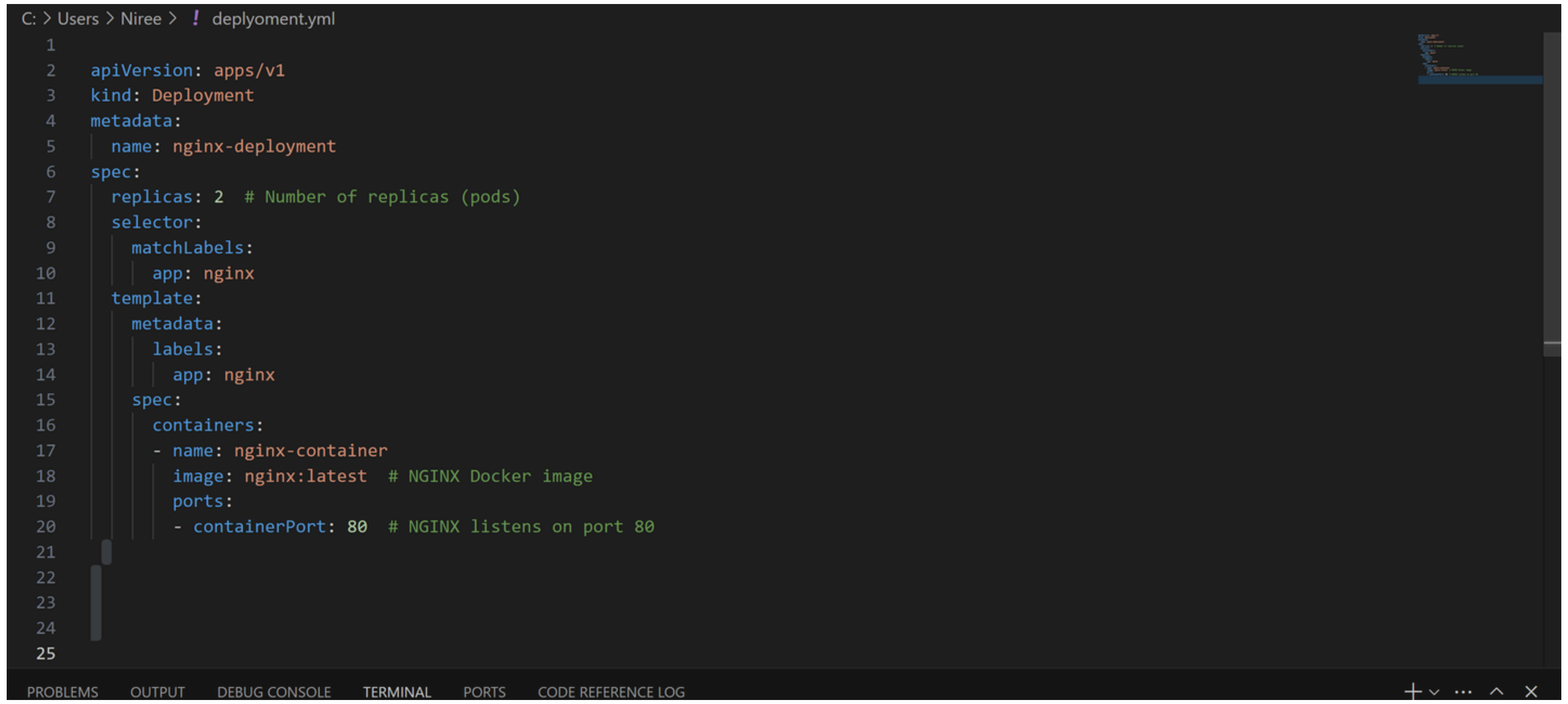
# Kubernets services

1. **Cluster IP**
2. **Node port IP**
3. **Loadbalancer**

# Cluster IP

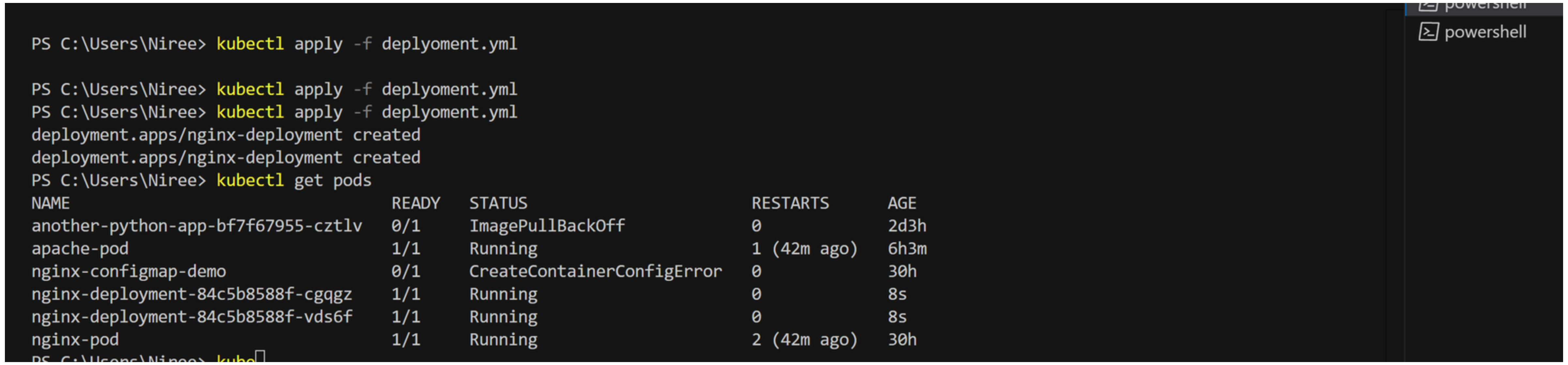
- Internal Communication: Pods within the same cluster use ClusterIP to communicate with each other.
- Not Externally Accessible: It cannot be accessed from outside the cluster.
- Automatic DNS Resolution: Kubernetes assigns a DNS name to services, making it easy for pods to communicate.

# Created Deployment.yml file



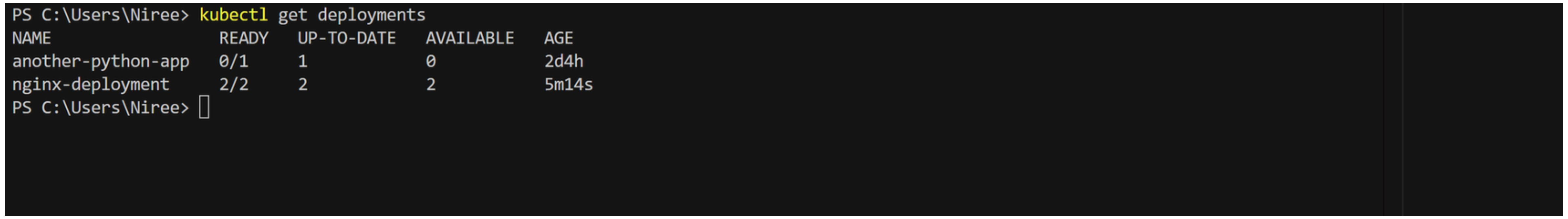
```yaml

apiVersion: apps/v1
kind: Deployment
metadata:
  name: nginx-deployment
spec:
  replicas: 2  # Number of replicas (pods)
  selector:
    matchLabels:
      app: nginx
  template:
    metadata:
      labels:
        app: nginx
    spec:
      containers:
      - name: nginx-container
        image: nginx:latest  # NGINX Docker image
        ports:
        - containerPort: 80  # NGINX listens on port 80
```



```
PS C:\Users\Niree> kubectl apply -f deplyoment.yml

PS C:\Users\Niree> kubectl apply -f deplyoment.yml
PS C:\Users\Niree> kubectl apply -f deplyoment.yml
deployment.apps/nginx-deployment created
deployment.apps/nginx-deployment created
PS C:\Users\Niree> kubectl get pods
NAME                                  READY   STATUS                       RESTARTS      AGE
another-python-app-bf7f67955-cztlv    0/1     ImagePullBackOff             0             2d3h
apache-pod                            1/1     Running                      1 (42m ago)   6h3m
nginx-configmap-demo                  0/1     CreateContainerConfigError   0             30h
nginx-deployment-84c5b8588f-cgqgz     1/1     Running                      0             8s
nginx-deployment-84c5b8588f-vds6f     1/1     Running                      0             8s
nginx-pod                             1/1     Running                      2 (42m ago)   30h
PS C:\Users\Niree> kube
```

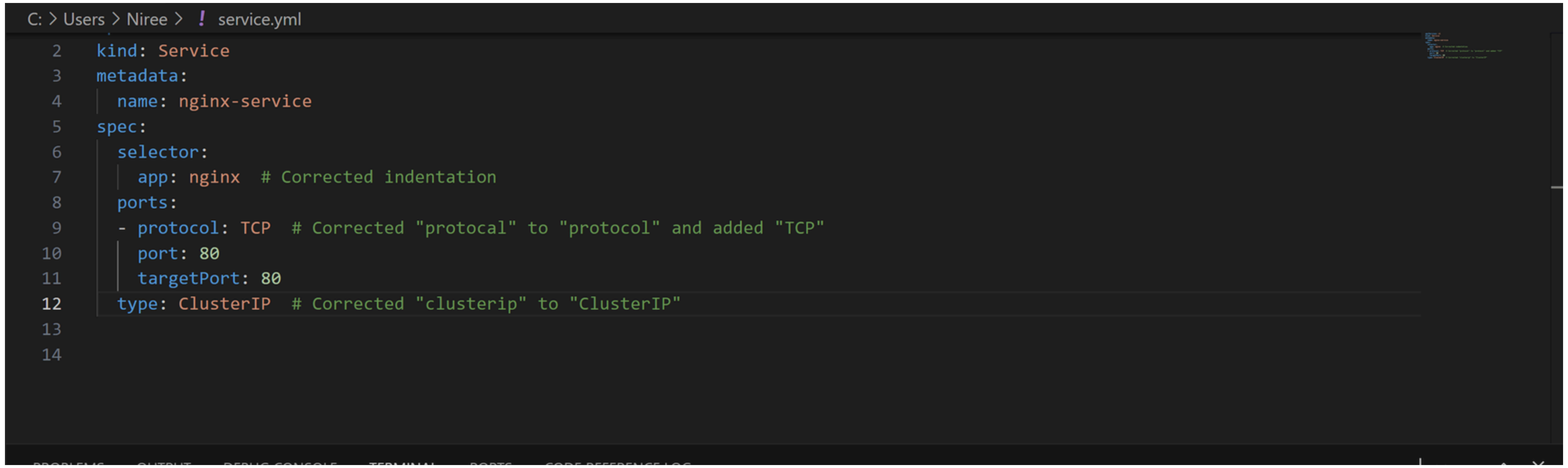


```
PS C:\Users\Niree> kubectl get deployments
NAME                 READY   UP-TO-DATE   AVAILABLE   AGE
another-python-app   0/1     1            0           2d4h
nginx-deployment     2/2     2            2           5m14s
PS C:\Users\Niree> 
```

## Then Use This Commands to apply and check pods

- kubectl apply -f deplyoment.yml
- kubectl get pods
- kubectl get deployments

## Then Create Service.yml



```yaml
kind: Service
metadata:
  name: nginx-service
spec:
  selector:
    app: nginx  # Corrected indentation
  ports:
  - protocol: TCP  # Corrected "protocal" to "protocol" and added "TCP"
    port: 80
    targetPort: 80
  type: ClusterIP  # Corrected "clusterip" to "ClusterIP"
```

## Then Use This Commands to apply and check services

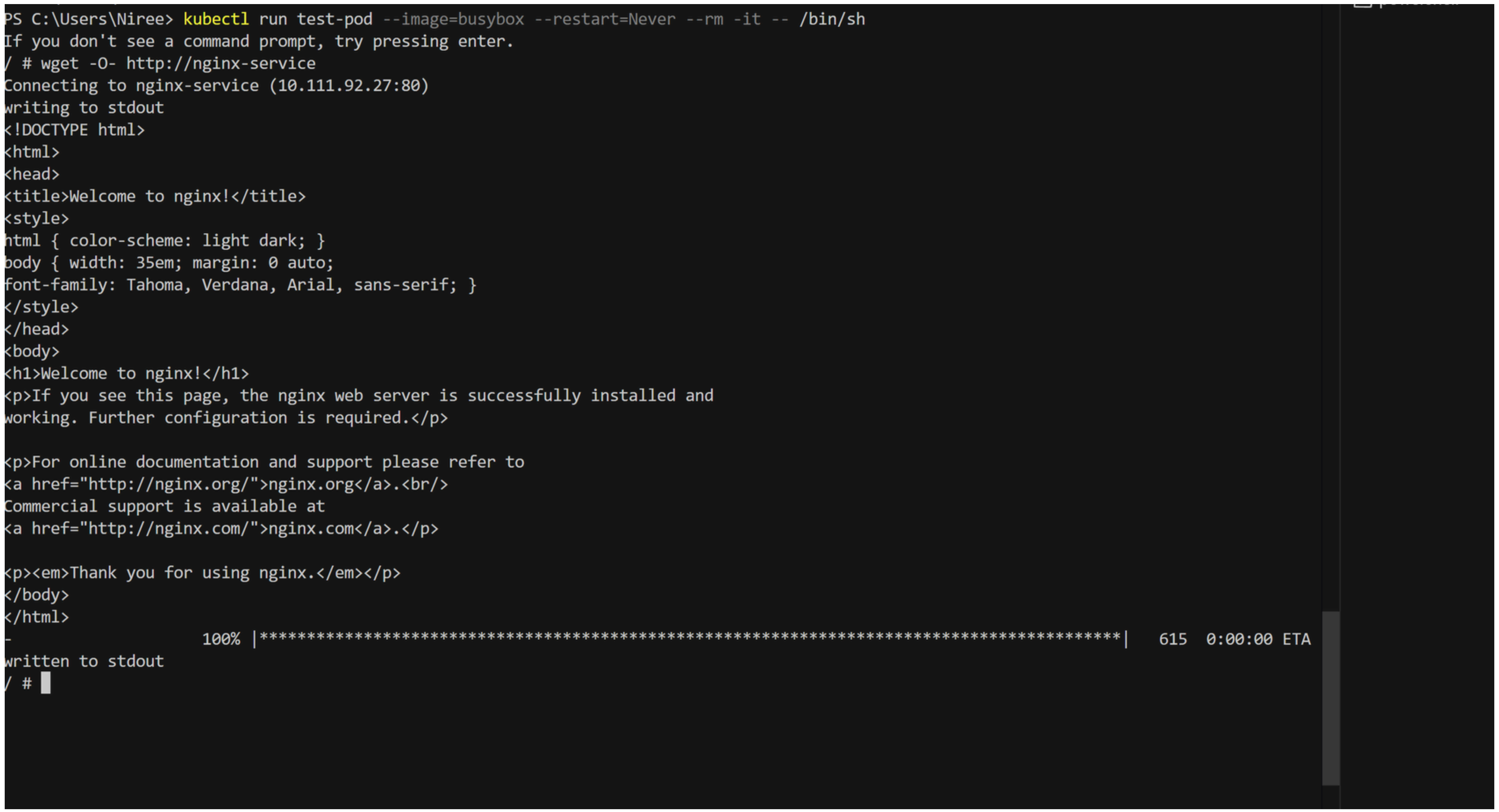
- kubectl apply -f service.yml
- kubectl get svc
- curl  http://10.111.92.27

Run a temporary debugging pod inside the cluster:

```
kubectl run test-pod --image=busybox --restart=Never --rm -it -- /bin/sh
```

Once inside the pod, try:

```
wget -O- http://nginx-service
```



```
PS C:\Users\Niree> kubectl run test-pod --image=busybox --restart=Never --rm -it -- /bin/sh
If you don't see a command prompt, try pressing enter.
/ # wget -O- http://nginx-service
Connecting to nginx-service (10.111.92.27:80)
writing to stdout
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
<style>
html { color-scheme: light dark; }
body { width: 35em; margin: 0 auto;
font-family: Tahoma, Verdana, Arial, sans-serif; }
</style>
</head>
<body>
<h1>Welcome to nginx!</h1>
<p>If you see this page, the nginx web server is successfully installed and
working. Further configuration is required.</p>

<p>For online documentation and support please refer to
<a href="http://nginx.org/">nginx.org</a>.<br/>
Commercial support is available at
<a href="http://nginx.com/">nginx.com</a>.</p>

<p><em>Thank you for using nginx.</em></p>
</body>
</html>
-                    100% |*******************************************************************************************|   615  0:00:00 ETA
written to stdout
/ # 
```

If it works inside the cluster, but not from your local machine, your service is only accessible inside Kubernetes (ClusterIP limitation).