Microservice Application

I have chosen **Microservice-Kubernetes Sample.**

GitHub - ewolff/microservice-kubernetes: Microservices example using Kubernetes

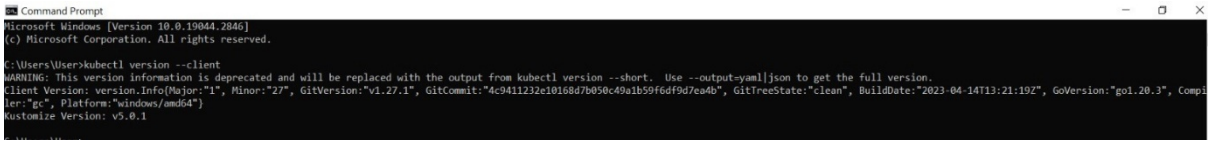
Minikube setup and Installation

First of all, I have installed kubectl (Kubernetes control tool) which is responsible to communicate with the cluster and send instructions to it.

Steps to download Kubectl on local machine:

1. Download **chocolatey** package manager for Windows
    - I opened powershell as an administrator then run the following command: Set-ExecutionPolicy Bypass -Scope Process -Force; [System.Net.ServicePointManager]::SecurityProtocol = [System.Net.ServicePointManager]::SecurityProtocol -bor 3072; iex ((New-Object System.Net.WebClient).DownloadString('https://community.chocolatey.org/install.ps1'))
    - Open cmd as an administrator, then run the following command: `choco install Kubernetes-cli`

2. Kubectl is running on my system.



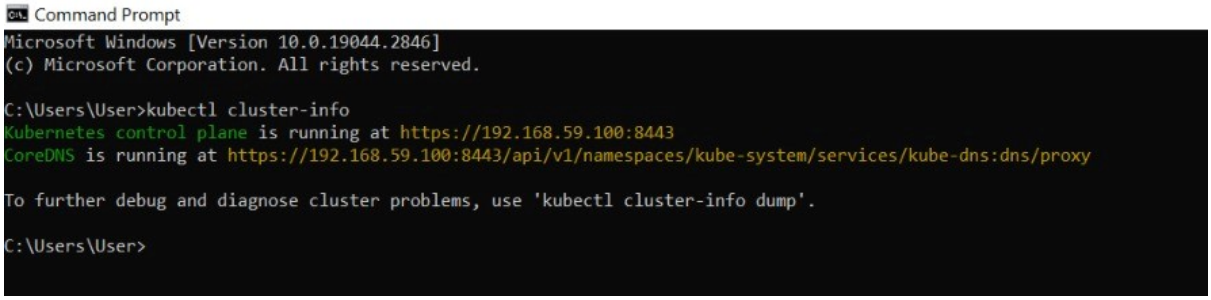
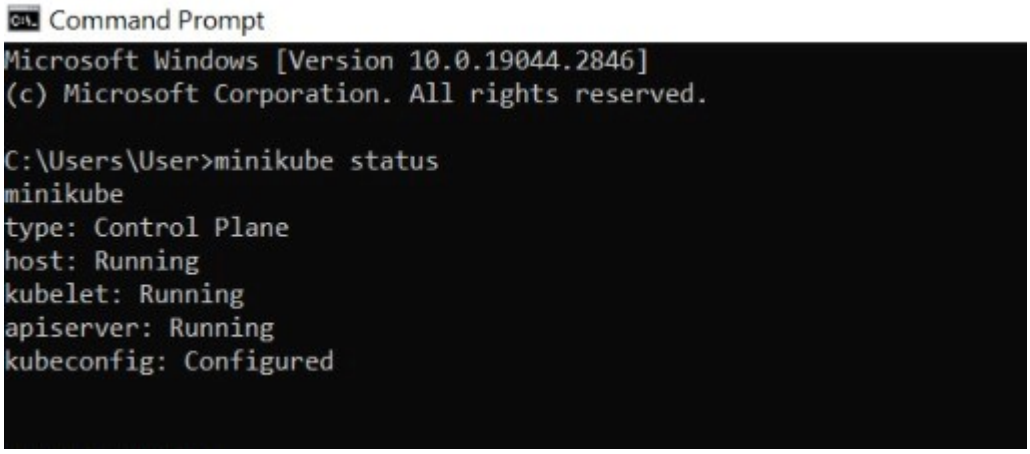


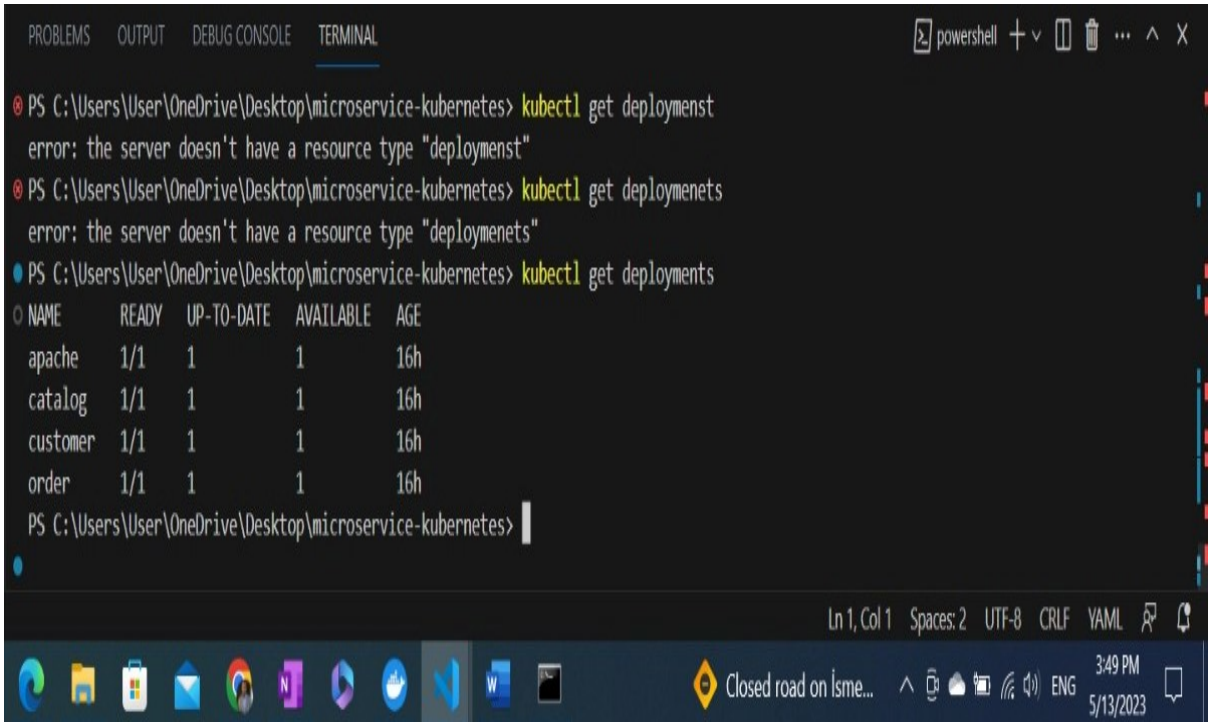
Figure 12: Cluster State

3. The image below indicates that minikube is running on my machine.

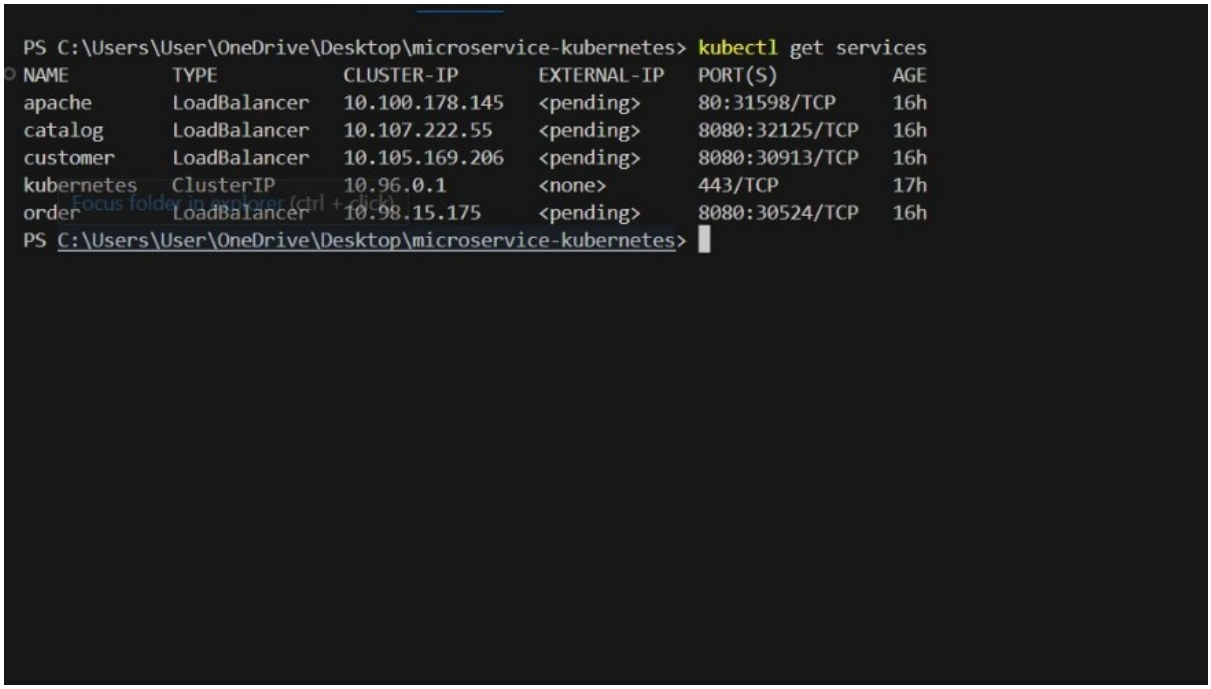


Deployment of the Application

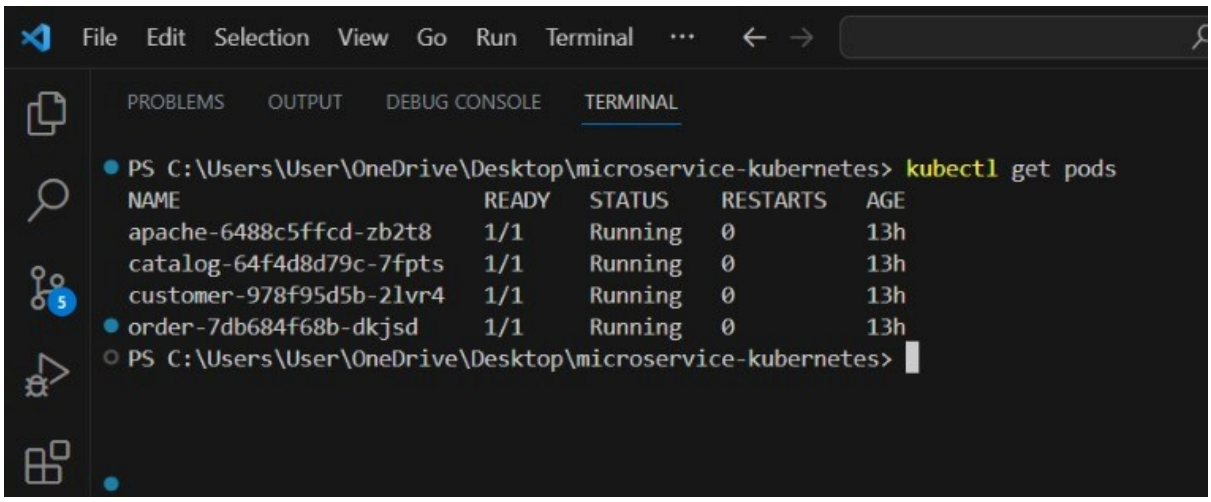
1. Run **scaffold init** command to go through my application and looks if there are any configuration files such as docker, pom.xml,etc,.
2. Run **scaffold dev** to build and deploy my application.
3. The image below shows my deployable application using **kubectl get deployments** command



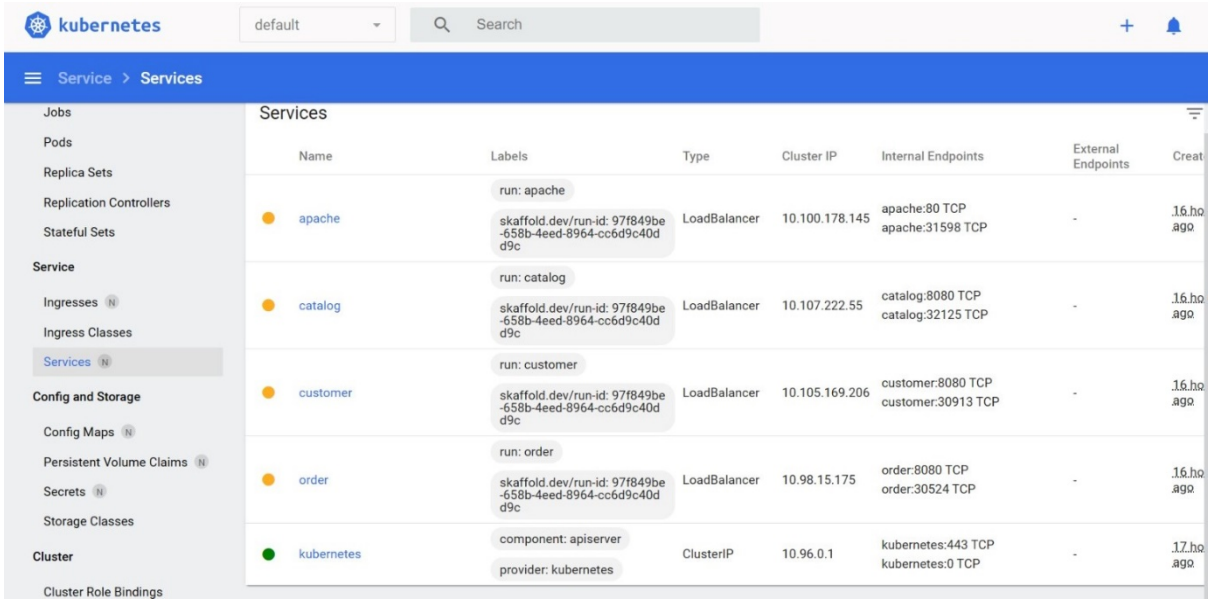
4. The image below shows services using **kubectl get services** command



5. The image below shows pods using **kubectl get pods** command



6. The image below shows services using the Kubernetes dashboard (using running **minikube dashboard** in the regular CMD)



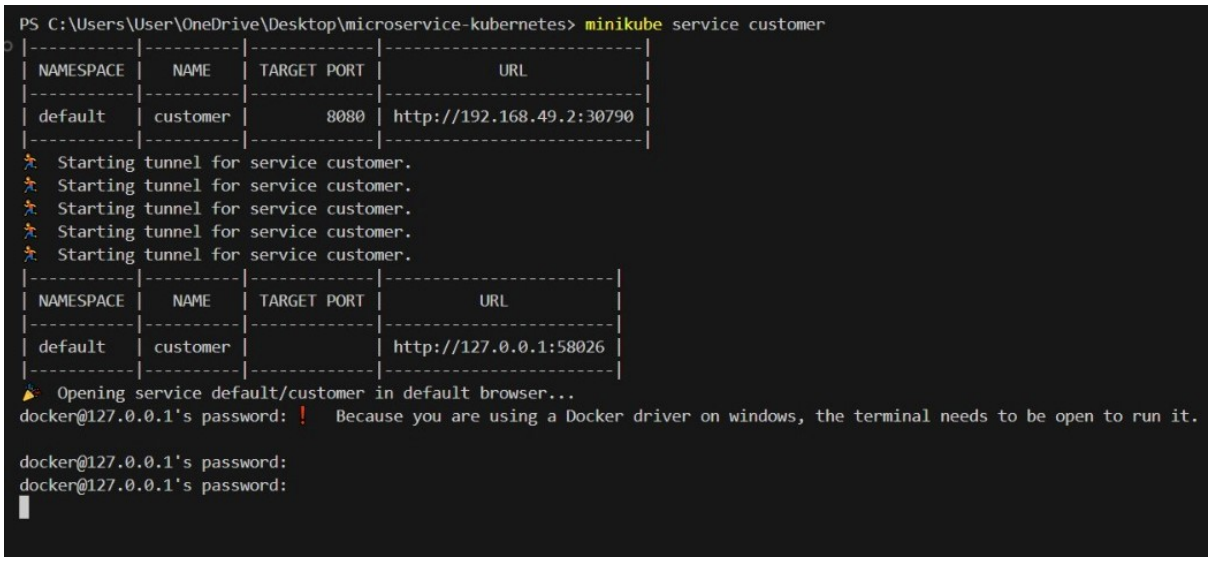
Changing to the application's frontend

Scaffold dev will deploy the application and containers after each change in the code automatically. To observe this, I have run **scaffold dev** in the terminal, then I made some changes in the code (frontend). While I am making these changes, the command rebuilt and re-deployed the application automatically without doing anything else.

5 **Exposing the application to run as localhost from my web browser**.

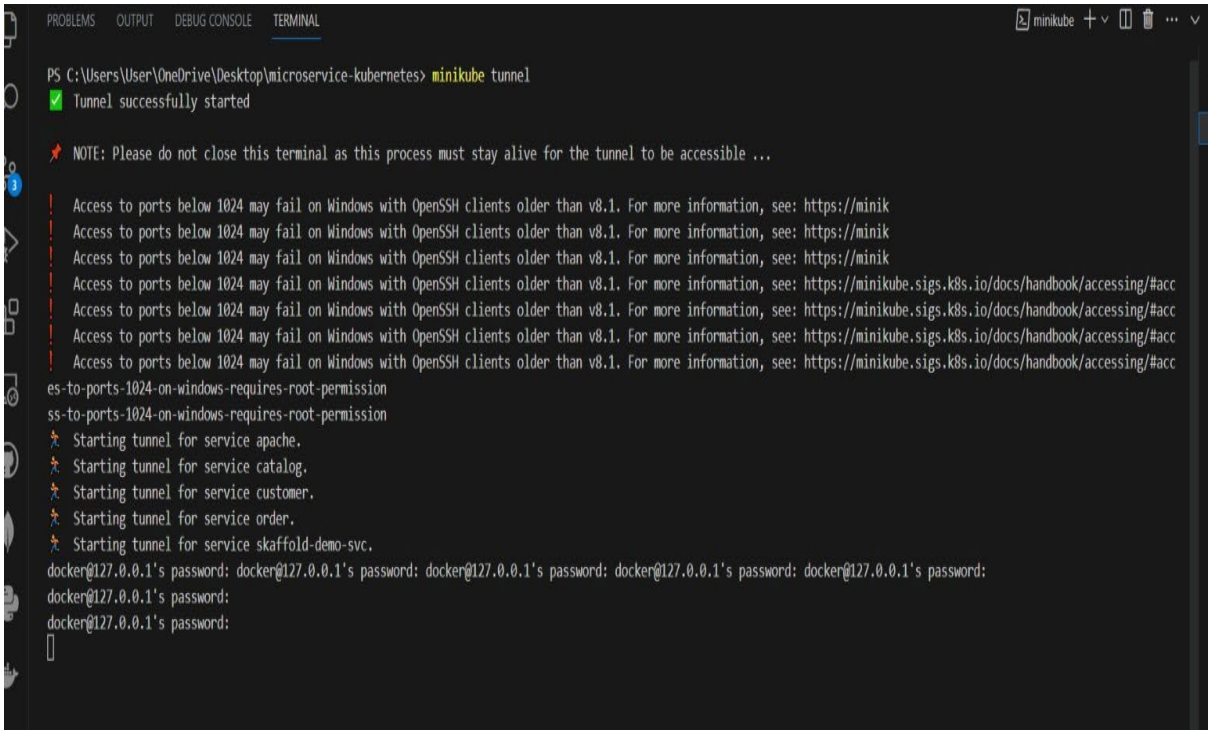
I have faced a problem regarding the exposing of my application as localhost which is as the following:

"Because you are using a docker driver on windows, the terminal needs to be open to run it.

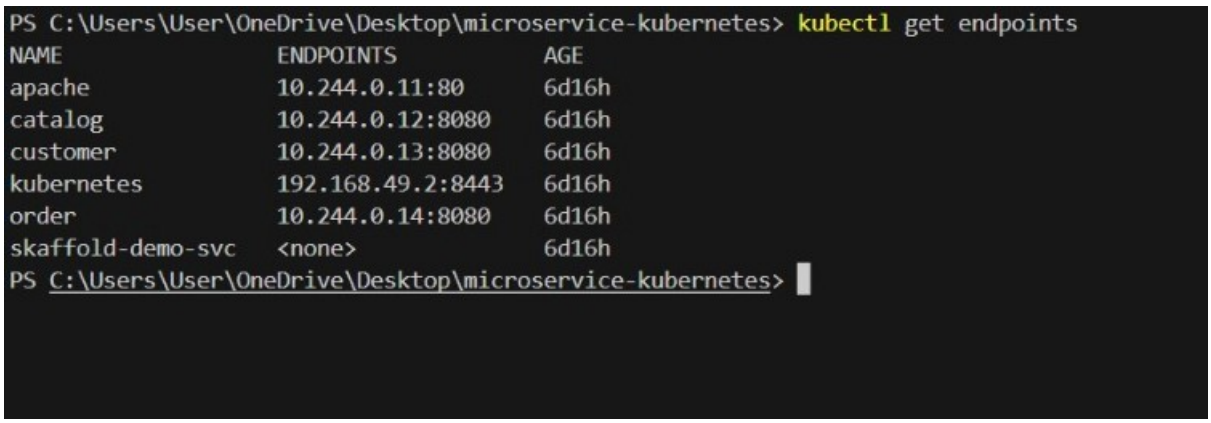


I have solved the problem by running the following command : **minikube tunnel**. This will open a terminal for each service in the deployment process. It requires to enter a password to run it.

The images below illustrate what I mean



Kubectl get endpoints



Kubectl get service

```
PS C:\Users\User\OneDrive\Desktop\microservice-kubernetes> kubectl get services
NAME               TYPE           CLUSTER-IP       EXTERNAL-IP   PORT(S)          AGE
apache             LoadBalancer   10.104.247.110   127.0.0.1     80:31540/TCP     6d16h
catalog            LoadBalancer   10.100.113.131   127.0.0.1     8080:30082/TCP   6d16h
customer           LoadBalancer   10.104.202.152   127.0.0.1     8080:30790/TCP   6d16h
kubernetes         ClusterIP      10.96.0.1        <none>        443/TCP          6d16h
order              LoadBalancer   10.108.89.134    127.0.0.1     8080:30261/TCP   6d16h
skaffold-demo-svc  LoadBalancer   10.108.51.244    127.0.0.1     8080:32689/TCP   6d16h
PS C:\Users\User\OneDrive\Desktop\microservice-kubernetes>
```

Kubectl get pods

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL

PS C:\Users\User\OneDrive\Desktop\microservice-kubernetes> kubectl get pods
NAME                        READY   STATUS    RESTARTS      AGE
apache-6d98fdcff4-c6bf6     1/1     Running   1 (20h ago)   6d16h
catalog-849f964c7-l4h6t     1/1     Running   1 (20h ago)   6d16h
customer-c7986bb7b-fm7m2    1/1     Running   1 (20h ago)   6d16h
order-84fcb5c774-7pfjv      1/1     Running   1 (20h ago)   6d16h
PS C:\Users\User\OneDrive\Desktop\microservice-kubernetes>
```

Kubectl get deployments

```
PS C:\Users\User\OneDrive\Desktop\microservice-kubernetes> kubectl get deployments
NAME       READY   UP-TO-DATE   AVAILABLE   AGE
apache     1/1     1            1           6d23h
catalog    1/1     1            1           6d23h
customer   1/1     1            1           6d23h
order      1/1     1            1           6d23h
PS C:\Users\User\OneDrive\Desktop\microservice-kubernetes>
```