Kubernetes Assignment 1

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You are working for an MNC company, the company is struggling with managing containers, Scaling up or scaling down their containerized application, they need an orchestration solution to manage their container deployments. They have decided to use Kubernetes.
As a DevOps engineer, you are requested to execute following task.

1. Install minikube on a machine.
2. Start minikube cluster.
3. Write a deployment.yml file to deploy addressbook application.
4. Create the deployment with deployment.yml.
5. Scale up the addressbook application up to 10 instances.
6. Scale down the addressbook application to 1 instance.
7. Create a service to expose your addressbook application.
8. Verify your application.

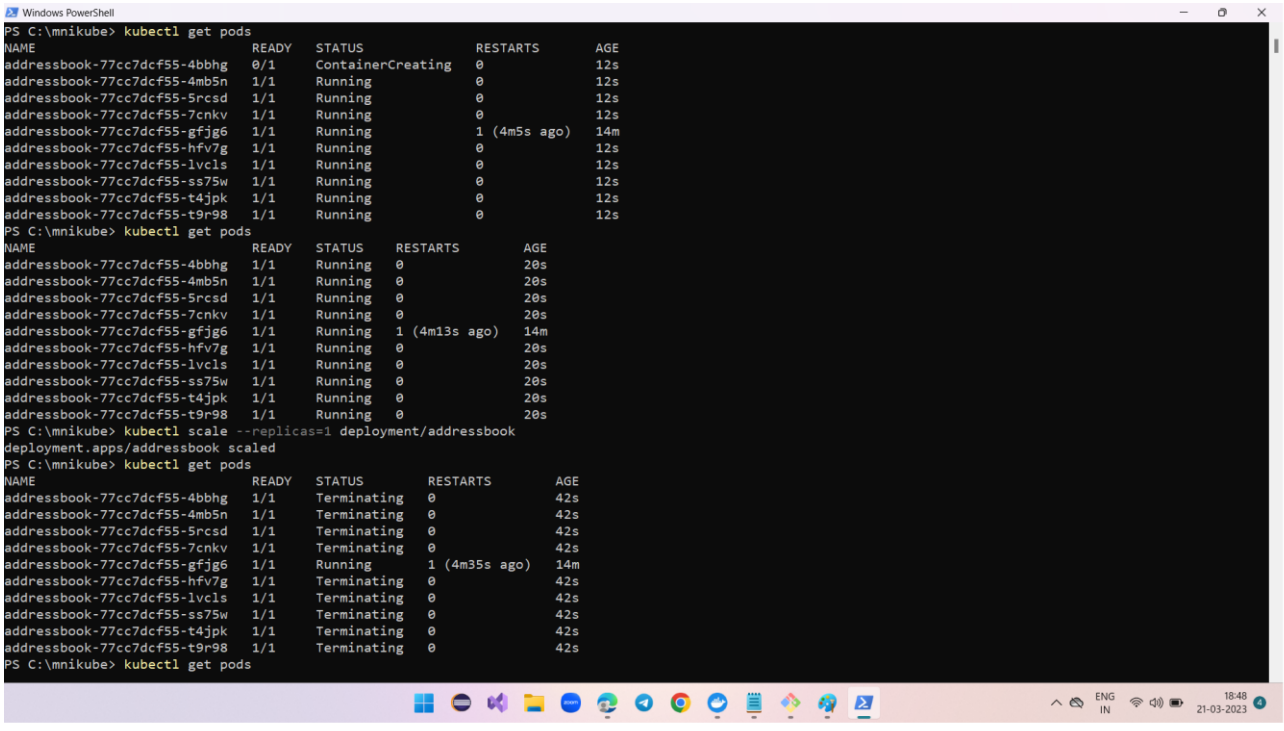
MINGW64:/c/mnikube

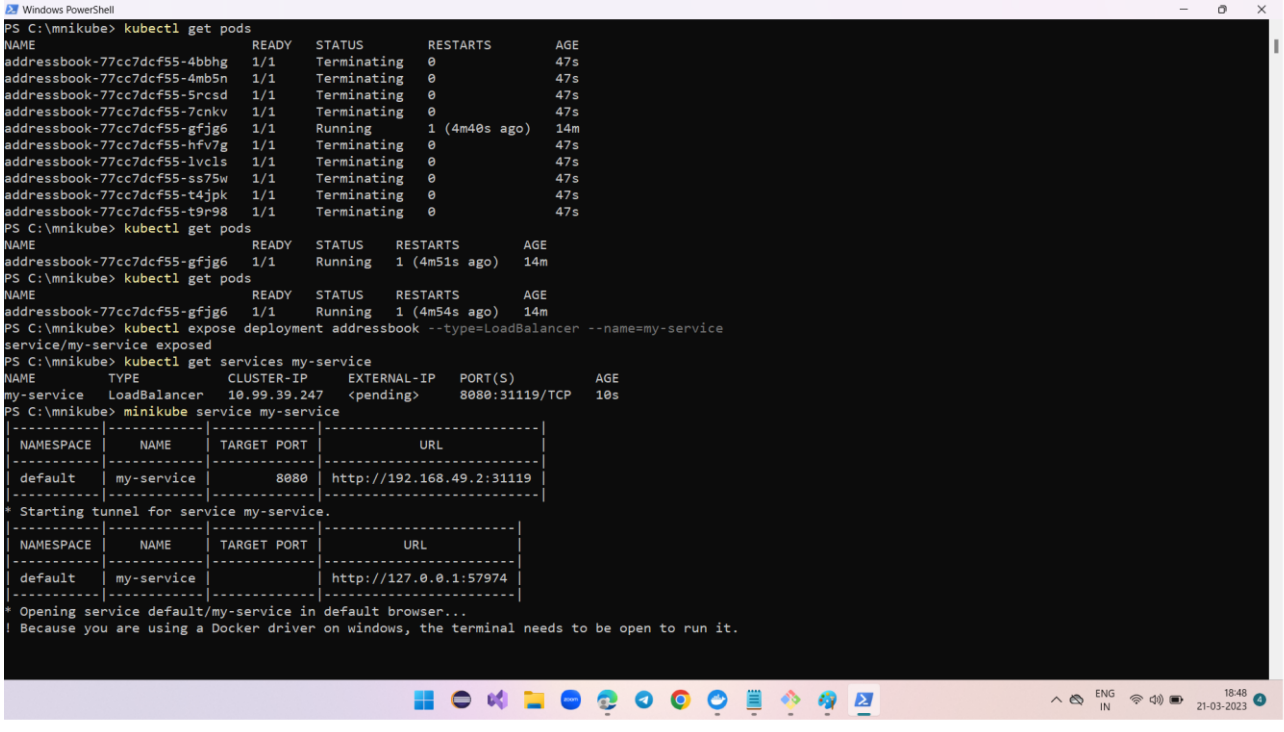
```
---
apiVersion: apps/v1
kind: Deployment
metadata:
  name: addressbook
  labels:
    app: addressbook
spec:
  replicas: 1
  selector:
    matchLabels:
      app: addressbook
  template:
    metadata:
      labels:
        app: addressbook
    spec:
      containers:
      - name: addressbook
        image: swapnil9519/mylab1:ver1
        ports:
        - containerPort: 8080
~
~
~
~
~
~
~
~
~
~
~
~
~
~
Deployment.yml [unix] (17:38 21/03/2023)                                22,5 All
"Deployment.yml" [unix] 22L, 377B
```

Windows PowerShell

```
Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\Users\jadha> cd ../
PS C:\Users> cd ../
PS C:\> cd mnikube
PS C:\mnikube> minikube start
* minikube v1.29.0 on Microsoft Windows 11 Home Single Language 10.0.22621.1265 Build 22621.1265
* Using the docker driver based on existing profile
* Starting control plane node minikube in cluster minikube
* Pulling base image ...
* docker "minikube" container is missing, will recreate.
* Creating docker container (CPUs=2, Memory=2200MB) ...
* Preparing Kubernetes v1.26.1 on Docker 20.10.23 ...
* Configuring bridge CNI (Container Networking Interface) ...
* Verifying Kubernetes components...
  - Using image gcr.io/k8s-minikube/storage-provisioner:v5
* Enabled addons: storage-provisioner, default-storageclass
* Done! kubectl is now configured to use "minikube" cluster and "default" namespace by default
PS C:\mnikube> kubectl apply -f Deployment.yml
deployment.apps/addressbook configured
PS C:\mnikube>
PS C:\mnikube> kubectl get pods
NAME                           READY   STATUS    RESTARTS        AGE
addressbook-77cc7dcf55-gfjg6   1/1     Running   1 (3m40s ago)   13m
PS C:\mnikube> kubectl scale --replicas=10 deployment/addressbook
deployment.apps/addressbook scaled
PS C:\mnikube> kubectl get pods
NAME                           READY   STATUS              RESTARTS        AGE
addressbook-77cc7dcf55-4bbhg   0/1     ContainerCreating   0               3s
addressbook-77cc7dcf55-4mb5n   0/1     ContainerCreating   0               3s
addressbook-77cc7dcf55-5rcsd   0/1     ContainerCreating   0               3s
addressbook-77cc7dcf55-7cnkv   0/1     ContainerCreating   0               3s
addressbook-77cc7dcf55-gfjg6   1/1     Running             1 (3m56s ago)   13m
addressbook-77cc7dcf55-hfv7g   0/1     ContainerCreating   0               3s
addressbook-77cc7dcf55-lvcls   0/1     ContainerCreating   0               3s
addressbook-77cc7dcf55-ss75w   0/1     ContainerCreating   0               3s
addressbook-77cc7dcf55-t4jpk   0/1     ContainerCreating   0               3s
addressbook-77cc7dcf55-t9r98   0/1     Pending             0               3s
```


Windows PowerShell
PS C:\mnikube> kubectl get pods
NAME READY STATUS RESTARTS AGE
addressbook-77cc7dcf55-4bbhg 0/1 ContainerCreating 0 12s
addressbook-77cc7dcf55-4mb5n 1/1 Running 0 12s
addressbook-77cc7dcf55-5rcsd 1/1 Running 0 12s
addressbook-77cc7dcf55-7cnkv 1/1 Running 0 12s
addressbook-77cc7dcf55-gfjg6 1/1 Running 1 (4m5s ago) 14m
addressbook-77cc7dcf55-hfv7g 1/1 Running 0 12s
addressbook-77cc7dcf55-lvcls 1/1 Running 0 12s
addressbook-77cc7dcf55-ss75w 1/1 Running 0 12s
addressbook-77cc7dcf55-t4jpk 1/1 Running 0 12s
addressbook-77cc7dcf55-t9r98 1/1 Running 0 12s
PS C:\mnikube> kubectl get pods
NAME READY STATUS RESTARTS AGE
addressbook-77cc7dcf55-4bbhg 1/1 Running 0 20s
addressbook-77cc7dcf55-4mb5n 1/1 Running 0 20s
addressbook-77cc7dcf55-5rcsd 1/1 Running 0 20s
addressbook-77cc7dcf55-7cnkv 1/1 Running 0 20s
addressbook-77cc7dcf55-gfjg6 1/1 Running 1 (4m13s ago) 14m
addressbook-77cc7dcf55-hfv7g 1/1 Running 0 20s
addressbook-77cc7dcf55-lvcls 1/1 Running 0 20s
addressbook-77cc7dcf55-ss75w 1/1 Running 0 20s
addressbook-77cc7dcf55-t4jpk 1/1 Running 0 20s
addressbook-77cc7dcf55-t9r98 1/1 Running 0 20s
PS C:\mnikube> kubectl scale --replicas=1 deployment/addressbook
deployment.apps/addressbook scaled
PS C:\mnikube> kubectl get pods
NAME READY STATUS RESTARTS AGE
addressbook-77cc7dcf55-4bbhg 1/1 Terminating 0 42s
addressbook-77cc7dcf55-4mb5n 1/1 Terminating 0 42s
addressbook-77cc7dcf55-5rcsd 1/1 Terminating 0 42s
addressbook-77cc7dcf55-7cnkv 1/1 Terminating 0 42s
addressbook-77cc7dcf55-gfjg6 1/1 Running 1 (4m35s ago) 14m
addressbook-77cc7dcf55-hfv7g 1/1 Terminating 0 42s
addressbook-77cc7dcf55-lvcls 1/1 Terminating 0 42s
addressbook-77cc7dcf55-ss75w 1/1 Terminating 0 42s
addressbook-77cc7dcf55-t4jpk 1/1 Terminating 0 42s
addressbook-77cc7dcf55-t9r98 1/1 Terminating 0 42s
PS C:\mnikube> kubectl get pods
ENG IN
18:48 21-03-2023


Windows PowerShell
PS C:\mnikube> kubectl get pods
NAME READY STATUS RESTARTS AGE
addressbook-77cc7dcf55-4bbhg 1/1 Terminating 0 47s
addressbook-77cc7dcf55-4mb5n 1/1 Terminating 0 47s
addressbook-77cc7dcf55-5rcsd 1/1 Terminating 0 47s
addressbook-77cc7dcf55-7cnkv 1/1 Terminating 0 47s
addressbook-77cc7dcf55-gfjg6 1/1 Running 1 (4m40s ago) 14m
addressbook-77cc7dcf55-hfv7g 1/1 Terminating 0 47s
addressbook-77cc7dcf55-lvcls 1/1 Terminating 0 47s
addressbook-77cc7dcf55-ss75w 1/1 Terminating 0 47s
addressbook-77cc7dcf55-t4jpk 1/1 Terminating 0 47s
addressbook-77cc7dcf55-t9r98 1/1 Terminating 0 47s
PS C:\mnikube> kubectl get pods
NAME READY STATUS RESTARTS AGE
addressbook-77cc7dcf55-gfjg6 1/1 Running 1 (4m51s ago) 14m
PS C:\mnikube> kubectl get pods
NAME READY STATUS RESTARTS AGE
addressbook-77cc7dcf55-gfjg6 1/1 Running 1 (4m54s ago) 14m
PS C:\mnikube> kubectl expose deployment addressbook --type=LoadBalancer --name=my-service
service/my-service exposed
PS C:\mnikube> kubectl get services my-service
NAME TYPE CLUSTER-IP EXTERNAL-IP PORT(S) AGE
my-service LoadBalancer 10.99.39.247 <pending> 8080:31119/TCP 10s
PS C:\mnikube> minikube service my-service
| NAMESPACE | NAME | TARGET PORT | URL |
| default | my-service | 8080 | http://192.168.49.2:31119 |
* Starting tunnel for service my-service.
| NAMESPACE | NAME | TARGET PORT | URL |
| default | my-service | | http://127.0.0.1:57974 |
* Opening service default/my-service in default browser...
! Because you are using a Docker driver on windows, the terminal needs to be open to run it.
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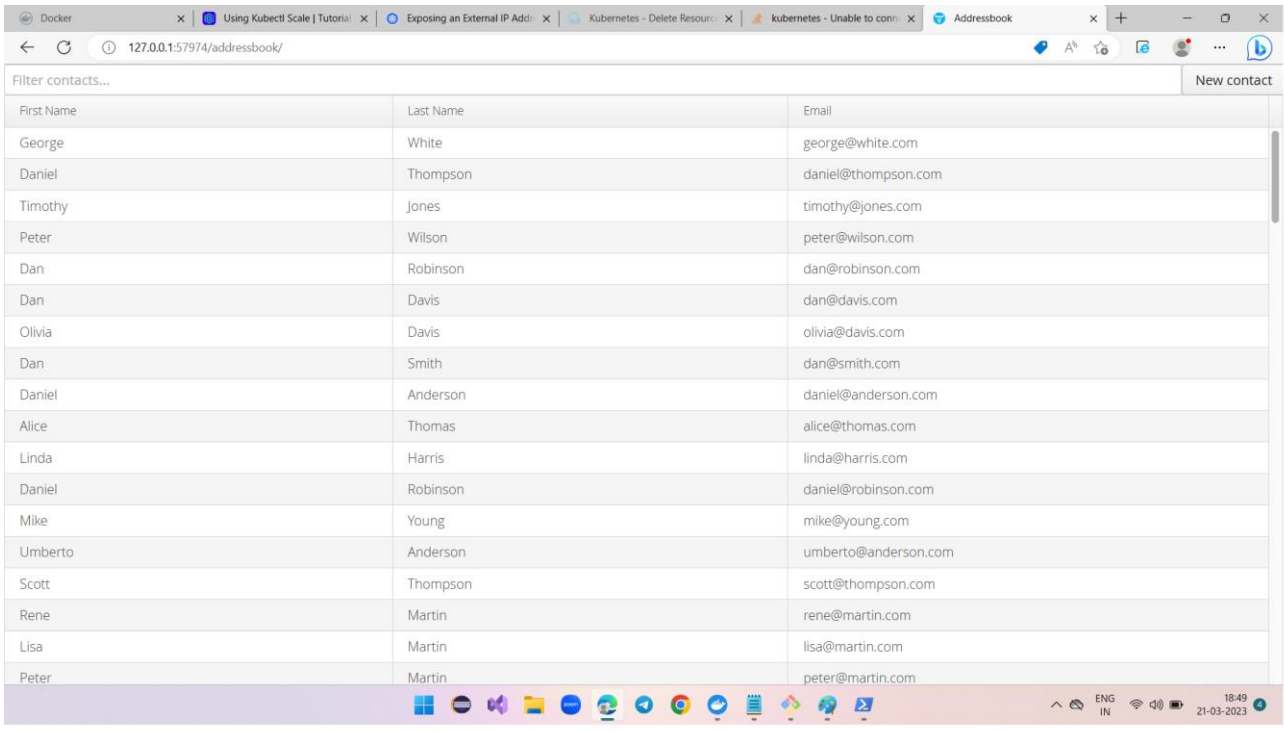
18:48 21-03-2023


Docker
Using Kubectl Scale | Tutorial
Exposing an External IP Addr
Kubernetes - Delete Resource
kubernetes - Unable to conn
Addressbook
127.0.0.1:57974/addressbook/
Filter contacts...
New contact
First Name
Last Name
Email
George
White
george@white.com
Daniel
Thompson
daniel@thompson.com
Timothy
Jones
timothy@jones.com
Peter
Wilson
peter@wilson.com
Dan
Robinson
dan@robinson.com
Dan
Davis
dan@davis.com
Olivia
Davis
olivia@davis.com
Dan
Smith
dan@smith.com
Daniel
Anderson
daniel@anderson.com
Alice
Thomas
alice@thomas.com
Linda
Harris
linda@harris.com
Daniel
Robinson
daniel@robinson.com
Mike
Young
mike@young.com
Umberto
Anderson
umberto@anderson.com
Scott
Thompson
scott@thompson.com
Rene
Martin
rene@martin.com
Lisa
Martin
lisa@martin.com
Peter
Martin
peter@martin.com
ENG
IN
18:49
21-03-2023