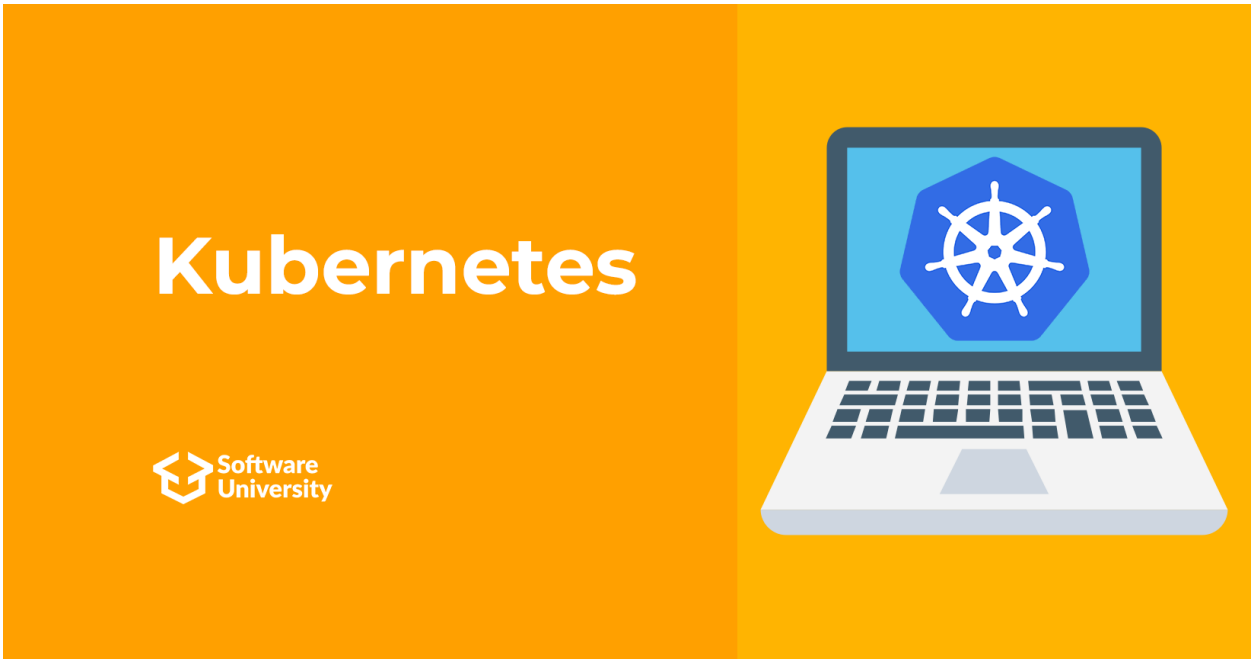

Kubernetes

June 2022

Templating Tools and Package Management
Home Work

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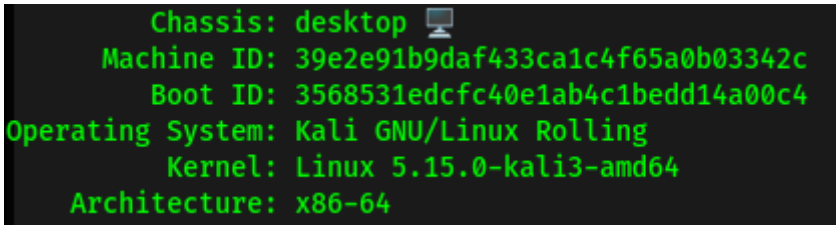
Environment:

Host



Tasks Solution

1. Using the files in task1 folder create a template using the sed-based approach. Parametrize the number of replicas and the service port

task1/homework.yaml

```
apiVersion: v1
kind: Namespace
metadata:
  name: homework
---
apiVersion: apps/v1
kind: Deployment
metadata:
  name: homework
  namespace: homework
spec:
  replicas: 1 # replace 1 with %replicas%
  selector:
    matchLabels:
      app: hw
  template:
    metadata:
      labels:
        app: hw
    spec:
      containers:
      - image: shekeriev/k8s-oracle
```

```
    name: homework
---
apiVersion: v1
kind: Service
metadata:
  labels:
    app: hw
  name: homework-svc
  namespace: homework
spec:
  ports:
  - port: 5000
    nodePort: 32000 # replace 32000 with %nodePort%
    protocol: TCP
    targetPort: 5000
  selector:
    app: hw
  type: NodePort
```

- Execute: **sed 's/%replicas%/4/ ; s/%nodePort%/30001/' homework-solution.yaml | kubectl apply -f -**

```
vagrant@node1:~/TemplatingToolsAndPackageManagement/task1$ ls -la
total 16
drwxr-xr-x 2 vagrant vagrant 4096 Jul 24 12:23 .
drwxr-xr-x 3 vagrant vagrant 4096 Jul 24 12:18 ..
-rw-r--r-- 1 vagrant vagrant  606 Jul 24 12:23 homework-solution.yaml
-rw-r--r-- 1 vagrant vagrant  592 Jul 24 12:18 homework.yaml
vagrant@node1:~/TemplatingToolsAndPackageManagement/task1$ sed 's/%replicas%/4/ ; s/%nodePort%/30001/' homework-solution.yaml | kubectl apply -f -
namespace/homework created
deployment.apps/homework created
service/homework-svc created
vagrant@node1:~/TemplatingToolsAndPackageManagement/task1$ kubectl get svc,deployment -n homework
NAME                   TYPE       CLUSTER-IP       EXTERNAL-IP   PORT(S)          AGE
service/homework-svc   NodePort   10.110.150.190   <none>        5000:30001/TCP   19s

NAME                       READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/homework   1/4     4            1           19s
vagrant@node1:~/TemplatingToolsAndPackageManagement/task1$
```

Hmmmm, I sense that you are wondering ...

Will it be difficult for me to learn Kubernetes?

... and I tell you my friend ... with **95%** confidence - **Yes**

Served by ***homework-6c76758857-rkqxn***

2. Using the files in task2 folder create a template using kustomize with two variants – test and production with difference in the service port and number of replicas

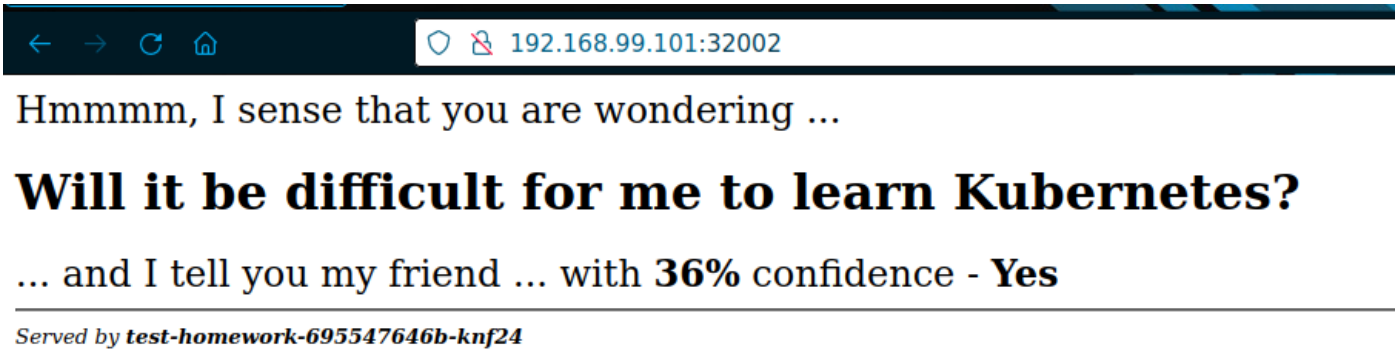
- files are included in homework zip

- Execute: **kubectl apply -k overlays/test**

```
vagrant@node1:~/TemplatingToolsAndPackageManagement/task2$ tree
├── base
│   ├── homework.yaml
│   └── kustomization.yaml
└── overlays
    ├── production
    │   ├── deployment.yaml
    │   ├── kustomization.yaml
    │   └── service.yaml
    └── test
        ├── deployment.yaml
        ├── kustomization.yaml
        └── service.yaml

4 directories, 8 files
vagrant@node1:~/TemplatingToolsAndPackageManagement/task2$ kubectl apply -k overlays/test
namespace/homework created
service/test-homework-svc created
deployment.apps/test-homework created
vagrant@node1:~/TemplatingToolsAndPackageManagement/task2$ kubectl get svc,deployment -n homework
NAME                            TYPE       CLUSTER-IP      EXTERNAL-IP   PORT(S)          AGE
service/test-homework-svc   NodePort   10.103.151.19   <none>        5000:32002/TCP   17s

NAME                                READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/test-homework   3/3     3            3           17s
vagrant@node1:~/TemplatingToolsAndPackageManagement/task2$
```

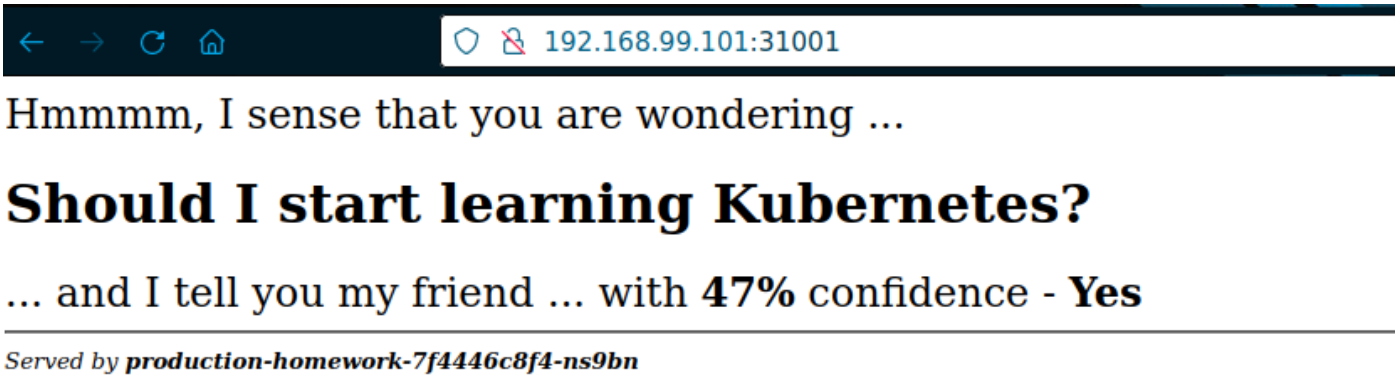


- Execute: **kubectl apply -k overlays/production**

```
vagrant@node1:~/TemplatingToolsAndPackageManagement/task2$ kubectl delete -k overlays/test
namespace "homework" deleted
service "test-homework-svc" deleted
deployment.apps "test-homework" deleted
vagrant@node1:~/TemplatingToolsAndPackageManagement/task2$ kubectl apply -k overlays/production
namespace/homework created
service/production-homework-svc created
deployment.apps/production-homework created
```

```
vagrant@node1:~/TemplatingToolsAndPackageManagement/task2$ kubectl get svc,deployment -n homework
NAME                                TYPE       CLUSTER-IP      EXTERNAL-IP   PORT(S)          AGE
service/production-homework-svc     NodePort   10.102.225.93   <none>        5000:31001/TCP   17s

NAME                                    READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/production-homework     5/5     5            5           17s
```



3. Create a Helm chart that spins a **NGINX-based deployment with 3 replicas by default**. It must mount a default **index.html (with a text and a picture) page from a ConfigMap**. The web server should be **exposed via NodePort service on port 31000 by default**. At least the **text of the default page, number of replicas, and service port should be parametrized**

```
vagrant@node1:~/TemplatingToolsAndPackageManagement$ tree task3/
task3/
├── Chart.yaml
├── templates
│   ├── cm.yaml
│   ├── depl.yaml
│   ├── ns.yaml
│   └── svc.yaml
└── values.yaml

1 directory, 6 files
```

```
vagrant@node1:~/TemplatingToolsAndPackageManagement$ cat task3/values.yaml
contentText: "<h1>Hello from NGINX!</h1>"
replicasCount: 5
nodePort: 31000vagrant@node1:~/TemplatingToolsAndPackageManagement$
```

- Execute: **helm install homework task3**

```
vagrant@node1:~/TemplatingToolsAndPackageManagement$ helm install homework task3
NAME: homework
LAST DEPLOYED: Sun Jul 24 13:53:50 2022
NAMESPACE: default
STATUS: deployed
REVISION: 1
TEST SUITE: None
vagrant@node1:~/TemplatingToolsAndPackageManagement$ kubectl get cm,pods,svc -n homework
NAME                             DATA   AGE
configmap/homework-cm            1      11s
configmap/kube-root-ca.crt       1      11s

NAME                                 READY   STATUS    RESTARTS   AGE
pod/homework-b84dccd68-dzr4j         1/1     Running   0          11s
pod/homework-b84dccd68-fbkkj         1/1     Running   0          11s
pod/homework-b84dccd68-fmlk4         1/1     Running   0          11s
pod/homework-b84dccd68-g76tq         1/1     Running   0          11s
pod/homework-b84dccd68-wdn2l         1/1     Running   0          11s

NAME                    TYPE       CLUSTER-IP     EXTERNAL-IP   PORT(S)        AGE
service/homework-svc    NodePort   10.96.55.111   <none>        80:31000/TCP   11s
```

Hello from NGINX!