

Assignment-7

Docker and Kubernetes:The container masterclass

Problem Statement:

Deploy a microservice using Apache Zookeeper, instead of doing manually. using kubectl, create a template of a K8s manifest for each K8s resource that you need for your application. The template should refer to parameters (e.g. image name, deployment name, port number, etc.). Those parameters should substitute with provided values during the deployment.

Methodology:

Step 1: Create the required files and directories. I have an env file, a deploy.sh script and a zookeeper-deployment.yaml along with zookeeper-service.yaml.

```
taneeshq@DESKTOP-63B6L7D: ~/assignments/docker-projects/assignment-7
taneeshq@DESKTOP-63B6L7D:~/assignments/docker-projects/assignment-7$ touch deploy.sh
taneeshq@DESKTOP-63B6L7D:~/assignments/docker-projects/assignment-7$ touch .env
taneeshq@DESKTOP-63B6L7D:~/assignments/docker-projects/assignment-7$ mkdir templates
taneeshq@DESKTOP-63B6L7D:~/assignments/docker-projects/assignment-7$ cd templates/
taneeshq@DESKTOP-63B6L7D:~/assignments/docker-projects/assignment-7/templates$ touch zookeeper-deployment.yaml
taneeshq@DESKTOP-63B6L7D:~/assignments/docker-projects/assignment-7/templates$ touch zookeeper-service.yaml
taneeshq@DESKTOP-63B6L7D:~/assignments/docker-projects/assignment-7/templates$ cd ..
taneeshq@DESKTOP-63B6L7D:~/assignments/docker-projects/assignment-7$ code .
taneeshq@DESKTOP-63B6L7D:~/assignments/docker-projects/assignment-7$ nano .env
taneeshq@DESKTOP-63B6L7D:~/assignments/docker-projects/assignment-7$ nano zookeeper-deployment.yaml
taneeshq@DESKTOP-63B6L7D:~/assignments/docker-projects/assignment-7$ cd templates/
taneeshq@DESKTOP-63B6L7D:~/assignments/docker-projects/assignment-7/templates$ nano zookeeper-deployment.yaml
taneeshq@DESKTOP-63B6L7D:~/assignments/docker-projects/assignment-7/templates$ nano zookeeper-service.yaml
taneeshq@DESKTOP-63B6L7D:~/assignments/docker-projects/assignment-7/templates$ cd ..
taneeshq@DESKTOP-63B6L7D:~/assignments/docker-projects/assignment-7$ nano deploy.sh
taneeshq@DESKTOP-63B6L7D:~/assignments/docker-projects/assignment-7$
```

```
taneeshq@DESKTOP-63B6L7D: ~/assignments/docker-projects/assignment-7
GNU nano 7.2 .env
ZOOKEEPER_DEPLOYMENT_NAME=zookeeper
ZOOKEEPER_IMAGE=zookeeper:3.7
ZOOKEEPER_PORT=2181
,
```

Step 2: Write the deployment instructions.

```
taneeshq@DESKTOP-63B6L7D: ~/assignments/docker-projects/assignment-7/templates
GNU nano 7.2 zookeeper-deployment.yaml
apiVersion: apps/v1
kind: Deployment
metadata:
  name: ${ZOOKEEPER_DEPLOYMENT_NAME}
spec:
  replicas: 1
  selector:
    matchLabels:
      app: ${ZOOKEEPER_DEPLOYMENT_NAME}
  template:
    metadata:
      labels:
        app: ${ZOOKEEPER_DEPLOYMENT_NAME}
    spec:
      containers:
        - name: ${ZOOKEEPER_DEPLOYMENT_NAME}
          image: ${ZOOKEEPER_IMAGE}
          ports:
            - containerPort: ${ZOOKEEPER_PORT}
```

Step 3: Write the service instructions.

```
taneeshq@DESKTOP-63B6L7D: ~/assignments/docker-projects/assignment-7/templates
GNU nano 7.2 zookeeper-service.yaml
apiVersion: v1
kind: Service
metadata:
  name: "${ZOOKEEPER_DEPLOYMENT_NAME}-service"
spec:
  selector:
    app: ${ZOOKEEPER_DEPLOYMENT_NAME}
  ports:
    - protocol: TCP
      port: ${ZOOKEEPER_PORT}
      targetPort: ${ZOOKEEPER_PORT}
```

Step 4: Finally I wrote the script for deploying the microservice and made it executable by “**chmod +x deploy.sh**”

```
taneeshq@DESKTOP-63B6L7D: ~/assignments/docker-projects/assignment-7/templates
GNU nano 7.2 zookeeper-deployment.yaml
apiVersion: apps/v1
kind: Deployment
metadata:
  name: ${ZOOKEEPER_DEPLOYMENT_NAME}
spec:
  replicas: 1
  selector:
    matchLabels:
      app: ${ZOOKEEPER_DEPLOYMENT_NAME}
  template:
    metadata:
      labels:
        app: ${ZOOKEEPER_DEPLOYMENT_NAME}
    spec:
      containers:
      - name: ${ZOOKEEPER_DEPLOYMENT_NAME}
        image: ${ZOOKEEPER_IMAGE}
        ports:
        - containerPort: ${ZOOKEEPER_PORT}
```

Step 5: To create the deployment and service I executed the deploy.sh script.

```
taneeshq@DESKTOP-63B6L7D:~/assignments/docker-projects/assignment-7$ ./deploy.sh
Loading environment variables...
Substituting template variables and applying manifests...
zookeeper
zookeeper:3.7
2181
deployment.apps/zookeeper created
Deployment complete.

taneeshq@DESKTOP-63B6L7D:~/assignments/docker-projects/assignment-7$ ./deploy.sh
Loading environment variables...
Substituting template variables and applying manifests...
deployment.apps/zookeeper unchanged
service/zookeeper-service created
Deployment complete.
```

Step 6: To see the final output and verify the deployments and services I listed them.

```
taneeshq@DESKTOP-63B6L7D:~/assignments/docker-projects/assignment-7$ kubectl get deployments
NAME          READY   UP-TO-DATE   AVAILABLE   AGE
zookeeper     1/1     1            1           48m
taneeshq@DESKTOP-63B6L7D:~/assignments/docker-projects/assignment-7$ kubectl get services
NAME          TYPE        CLUSTER-IP   EXTERNAL-IP   PORT(S)    AGE
kubernetes    ClusterIP   10.96.0.1    <none>        443/TCP    63m
zookeeper-service ClusterIP   10.105.252.52 <none>        2181/TCP   62s
taneeshq@DESKTOP-63B6L7D:~/assignments/docker-projects/assignment-7$
```