Experiment-3.1

Student Name: Aditi Pandey
UID: 22BDO10031
Branch: AIT-CSE-DevOps
Section/Group: 22BCD-1(A)
Semester: 5
Date of Performance: 21-10-24
Subject Name: Docker and Kubernetes
Subject Code: 22CSH-343

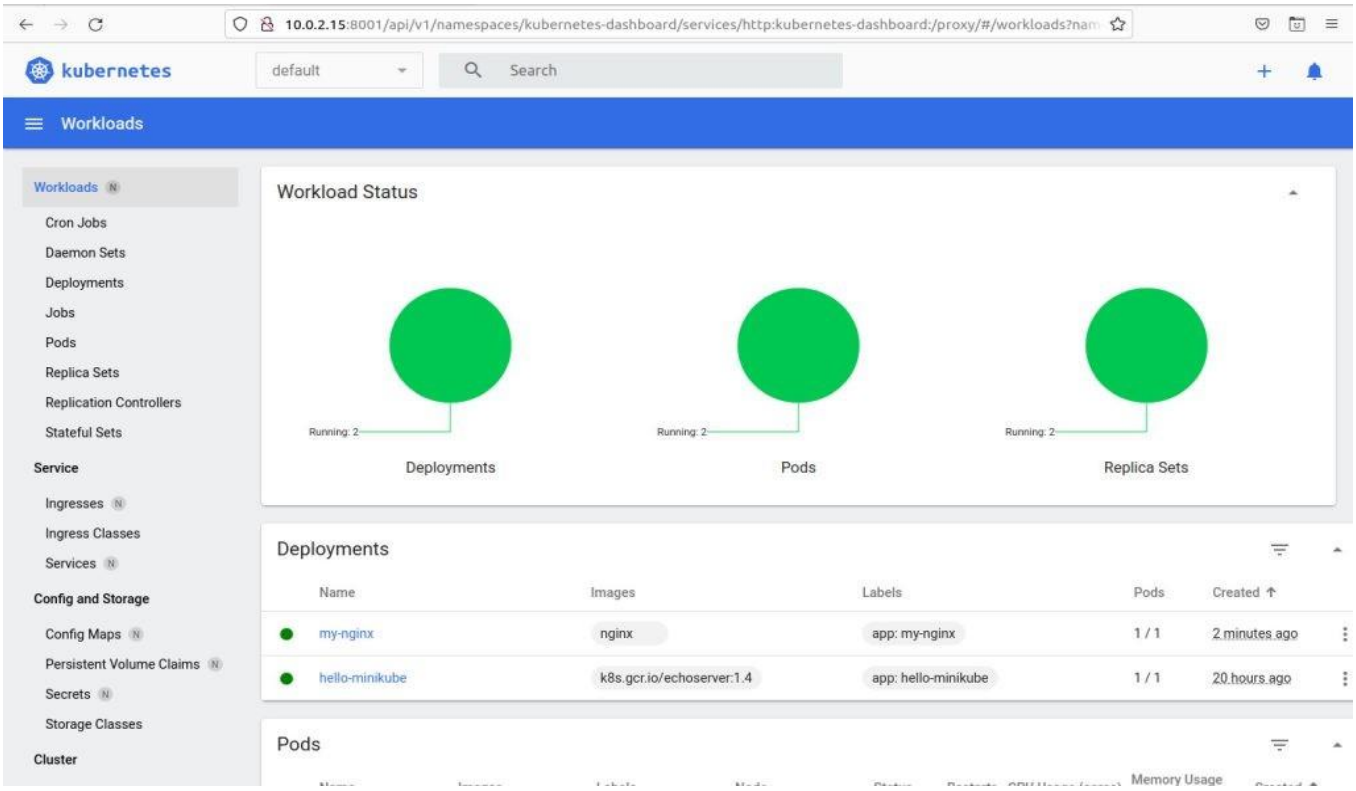
1. Aim/Overview of the practical:

Installing Kubernetes as a Single Node.

2. Apparatus: PC, Docker Engine, Kubernetes, Minikube, Ubuntu Linux

3. Steps for experiment/practical:

- To install the latest minikube stable release on x86-64 Linux using binary download:
    1. curl -LO https://storage.googleapis.com/minikube/releases/latest/minikube-linux-amd64
    2. sudo install minikube-linux-amd64 /usr/local/bin/minikube && rm minikube-linux-amd64
- From a terminal with administrator access (but not logged in as root), run:
    1. minikube start
- minikube can download the appropriate version of kubectl and you should be able to use it like this:
    1. minikube kubectl -- get po -A
- Initially, some services such as the storage-provisioner, may not yet be in a Running state. This is a normal condition during cluster bring-up, and will resolve itself momentarily. For additional insight into your cluster state, minikube bundles the Kubernetes Dashboard, allowing you to get easily acclimated to your new environment:
    1. minikube dashboard
- Create a sample deployment and expose it on port 8080:
    1. kubectl create deployment hello-minikube --image=kicbase/echo-server:1.0
    2. kubectl expose deployment hello-minikube --type=NodePort --port=8080
- The easiest way to access this service is to let minikube launch a web browser for you:
    1. minikube service hello-minikube
- minikube kubectl -- port-forward service/hello-minikube 7080:8080




```
Request served by hello-minikube-7d48979fd6-n7l2z

HTTP/1.1 GET /

Host: localhost:7080
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,image/png,image/svg+xml,*/*;q=0.8
Accept-Encoding: gzip, deflate, br, zstd
Accept-Language: en-US,en;q=0.5
Connection: keep-alive
Priority: u=0, i
Sec-Fetch-Dest: document
Sec-Fetch-Mode: navigate
Sec-Fetch-Site: cross-site
Sec-Fetch-User: ?1
Upgrade-Insecure-Requests: 1
User-Agent: Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:131.0) Gecko/20100101 Firefox/131.0
```

- Management of clusters and pods

```
Aditis-MacBook-Air:~ aditipandey$ minikube pause
⏸  Pausing node minikube ...
⏯  Paused 14 containers in: kube-system, kubernetes-dashboard, storage-gluster, istio-operator
Aditis-MacBook-Air:~ aditipandey$
```

```
Aditis-MacBook-Air:~ aditipandey$ minikube delete
🔥  Deleting "minikube" in docker ...
🔥  Deleting container "minikube" ...
🔥  Removing /Users/aditipandey/.minikube/machines/minikube ...
💀  Removed all traces of the "minikube" cluster.
```

Learning outcomes (What I have learnt):

1. I have learnt the concept of containerization and virtualization.

2. I have learnt about orchestration and orchestration tools.

3. I have learnt about Kubernetes and its architecture.

4. I have learnt the purpose of using microservice architecture over monolithic.

Evaluation Grid (To be created as per the SOP and Assessment guidelines by the faculty):

Sr. No.	Parameters	Marks Obtained	Maximum Marks
1.			
2.			
3.			