

PES UNIVERSITY

UE19CS352

Cloud Computing

Assignment - 02

Kubernetes

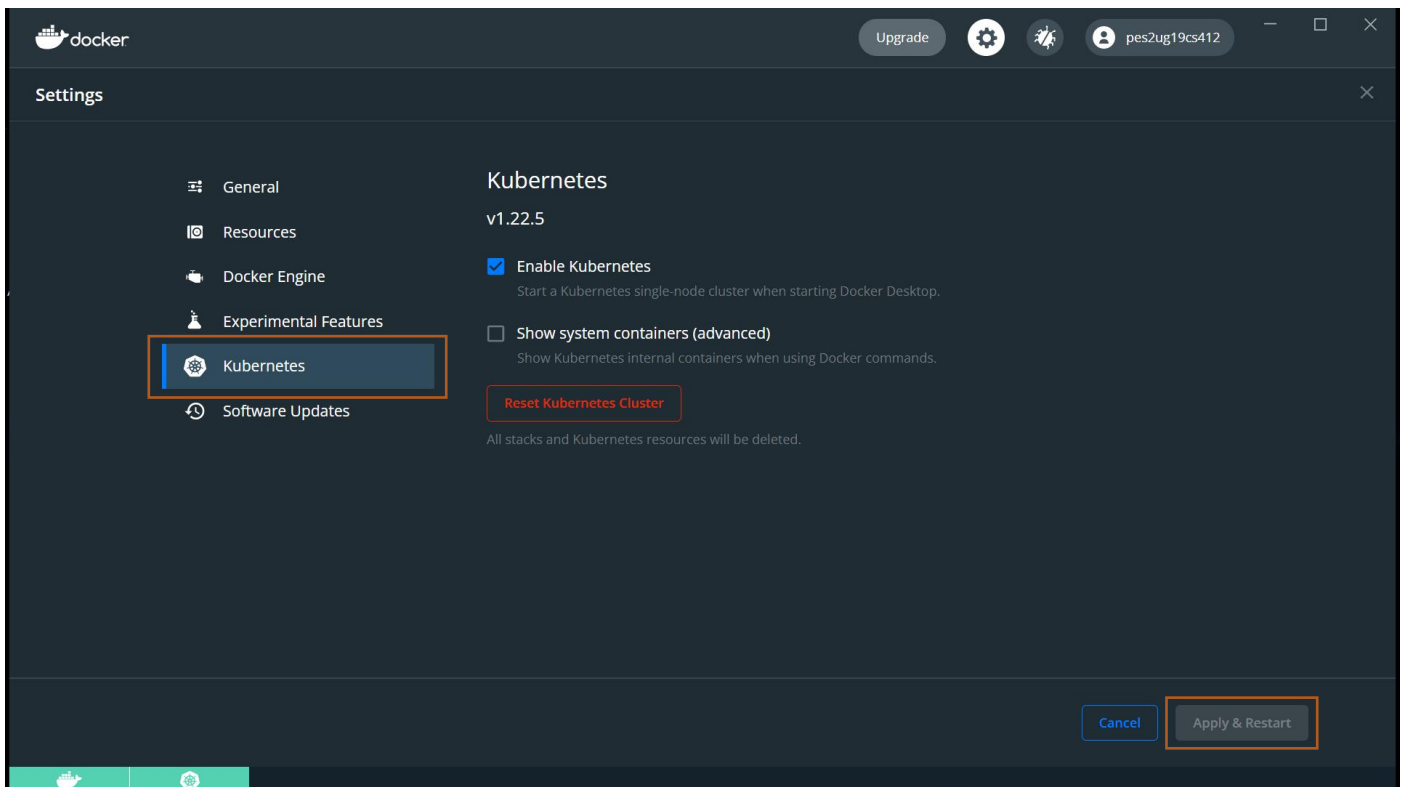
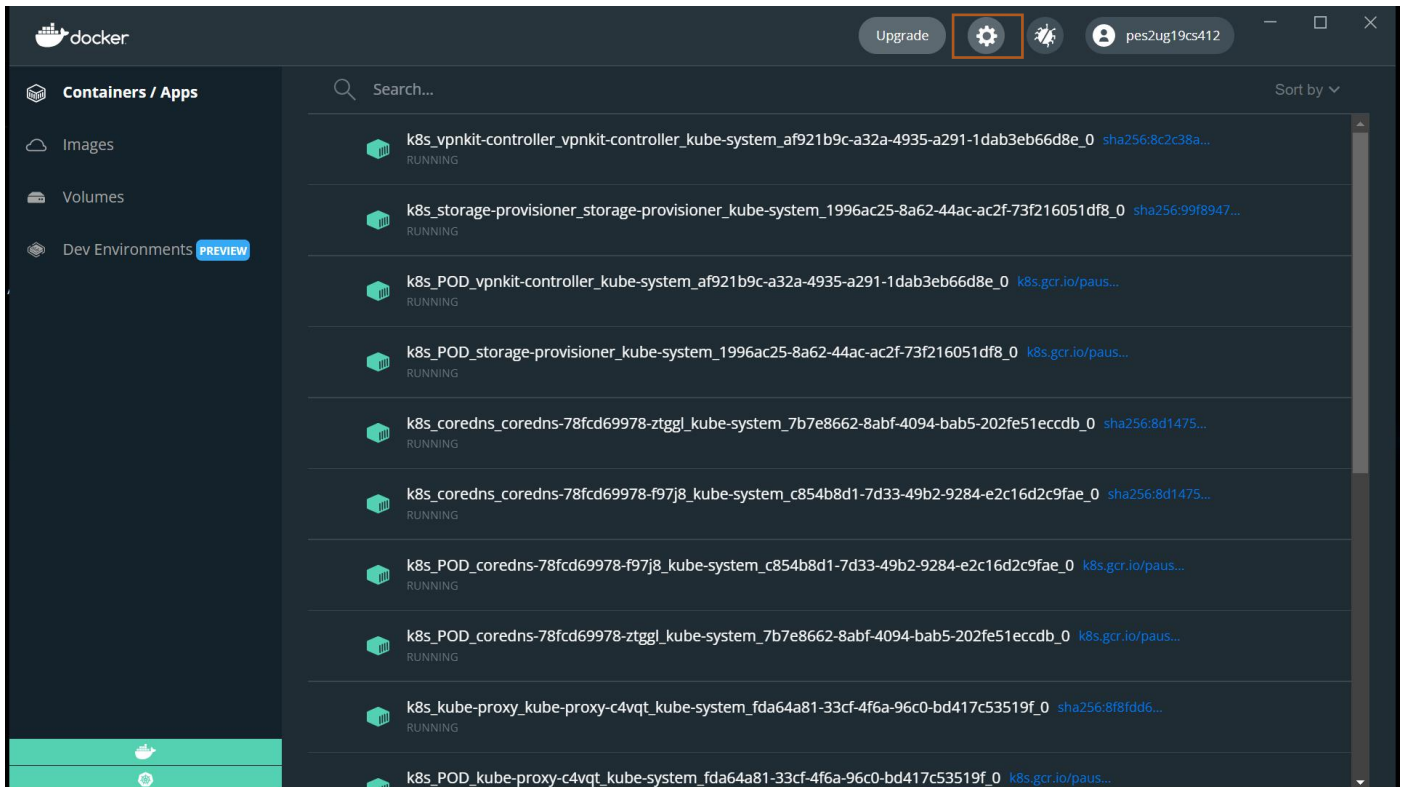
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Section : G Section

# Deliverables:

- Setting up Kubernetes



- Deploying Kubernetes pods

- 2a.jpg Screenshot of kubectl commands and port forwarding

```
Command Prompt
Microsoft Windows [Version 10.0.19044.1503]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Pragati>cd desktop/Assignment2

C:\Users\Pragati\Desktop\Assignment2>kubectl get node
NAME                STATUS    ROLES                  AGE      VERSION
docker-desktop      Ready    control-plane,master   109s     v1.22.5

C:\Users\Pragati\Desktop\Assignment2>kubectl create -f pod.yaml
pod/nginx-pes2ug19cs412 created

C:\Users\Pragati\Desktop\Assignment2>kubectl get all
NAME                READY    STATUS    RESTARTS   AGE
pod/nginx-pes2ug19cs412  1/1      Running   0           19s

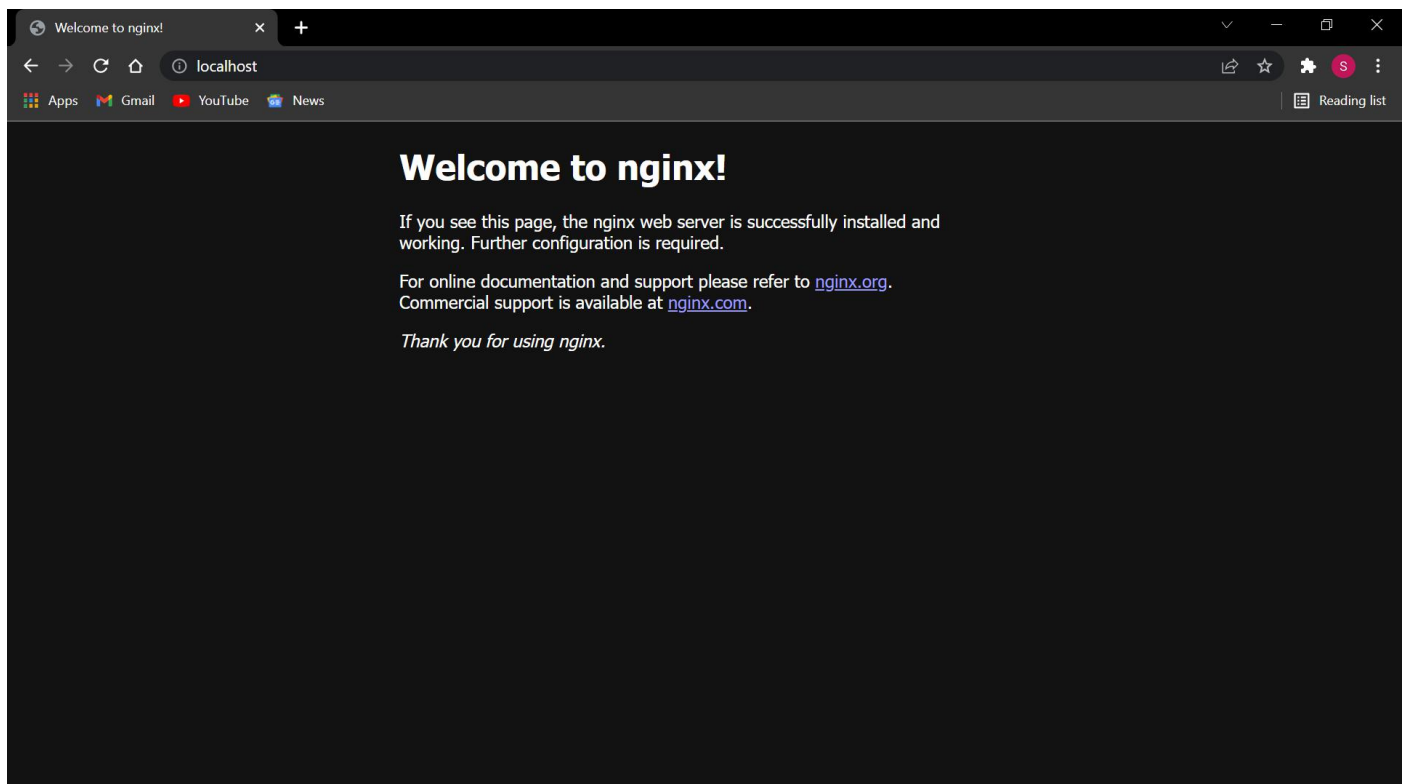
NAME                TYPE          CLUSTER-IP    EXTERNAL-IP  PORT(S)    AGE
service/kubernetes  ClusterIP     10.96.0.1     <none>       443/TCP    2m26s

C:\Users\Pragati\Desktop\Assignment2>kubectl get pods
NAME                READY    STATUS    RESTARTS   AGE
nginx-pes2ug19cs412  1/1      Running   0           33s

C:\Users\Pragati\Desktop\Assignment2>kubectl port-forward pod/nginx-pes2ug19cs412 80:80
Forwarding from 127.0.0.1:80 -> 80
Forwarding from [::1]:80 -> 80
Handling connection for 80

C:\Users\Pragati\Desktop\Assignment2>
```

- 2b.jpg Nginx home page access through localhost



- Seal healing, updates, and rollback with Kubernetes deployment

- 3a.jpg Screenshot showing deleted pod and seal healing of pods in a deployment

```
Command Prompt
C:\Users\Pragati\Desktop\Assignment2>kubectl get all
NAME                                READY   STATUS    RESTARTS   AGE
pod/mynginx-pes2ug19cs412-7645df487c-cbfbk4  1/1     Running   0          100s
pod/mynginx-pes2ug19cs412-7645df487c-dnmt5    1/1     Running   0          100s
pod/mynginx-pes2ug19cs412-7645df487c-w8xjn    1/1     Running   0          100s

NAME                                TYPE               CLUSTER-IP   EXTERNAL-IP   PORT(S)    AGE
service/kubernetes                  ClusterIP         10.96.0.1    <none>        443/TCP    6m52s

NAME                                READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/mynginx-pes2ug19cs412  3/3     3            3          100s

NAME                                DESIRED   CURRENT   READY   AGE
replicaset.apps/mynginx-pes2ug19cs412-7645df487c  3         3         3       100s

C:\Users\Pragati\Desktop\Assignment2>kubectl delete pod/mynginx-pes2ug19cs412-7645df487c-cbfbk4
pod "mynginx-pes2ug19cs412-7645df487c-cbfbk4" deleted

C:\Users\Pragati\Desktop\Assignment2>kubectl get all
NAME                                READY   STATUS    RESTARTS   AGE
pod/mynginx-pes2ug19cs412-7645df487c-dnmt5    1/1     Running   0          3m36s
pod/mynginx-pes2ug19cs412-7645df487c-w8xjn    1/1     Running   0          3m36s
pod/mynginx-pes2ug19cs412-7645df487c-xfq6j    1/1     Running   0          6s

NAME                                TYPE               CLUSTER-IP   EXTERNAL-IP   PORT(S)    AGE
service/kubernetes                  ClusterIP         10.96.0.1    <none>        443/TCP    8m48s

NAME                                READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/mynginx-pes2ug19cs412  3/3     3            3          3m36s

NAME                                DESIRED   CURRENT   READY   AGE
replicaset.apps/mynginx-pes2ug19cs412-7645df487c  3         3         3       3m36s

C:\Users\Pragati\Desktop\Assignment2>
```

self - healing of pods

- 3b.jpg Screenshot showing updates and revision history of a deployment

```
Command Prompt
C:\Users\Pragati\Desktop\Assignment2>kubectl set image --record=true deployment/mynginx-pes2ug19cs412 mynginx-pes2ug19cs412=nginx:1.16.1 --record=true
Flag --record has been deprecated, --record will be removed in the future
Flag --record has been deprecated, --record will be removed in the future
deployment.apps/mynginx-pes2ug19cs412 image updated

C:\Users\Pragati\Desktop\Assignment2>kubectl rollout history deployment/mynginx-pes2ug19cs412
deployment.apps/mynginx-pes2ug19cs412
REVISION   CHANGE-CAUSE
1          <none>
2          kubectl set image deployment/mynginx-pes2ug19cs412 mynginx-pes2ug19cs412=nginx:1.16.1 --record=true --record=true

C:\Users\Pragati\Desktop\Assignment2>
```

### ○ 3c.jpg Screenshot showing rollback of deployment

```
Command Prompt
C:\Users\Pragati\Desktop\Assignment2>kubectl set image --record=true deployment/mynginx-pes2ug19cs412 mynginx-pes2ug19cs412=nginx:1.16.1 --record=true
Flag --record has been deprecated, --record will be removed in the future
Flag --record has been deprecated, --record will be removed in the future
deployment.apps/mynginx-pes2ug19cs412 image updated

C:\Users\Pragati\Desktop\Assignment2>kubectl rollout history deployment/mynginx-pes2ug19cs412
deployment.apps/mynginx-pes2ug19cs412
REVISION  CHANGE-CAUSE
1          <none>
2          kubectl set image deployment/mynginx-pes2ug19cs412 mynginx-pes2ug19cs412=nginx:1.16.1 --record=true --record=true

C:\Users\Pragati\Desktop\Assignment2>kubectl rollout undo deployment/mynginx-pes2ug19cs412 ←
deployment.apps/mynginx-pes2ug19cs412 rolled back

C:\Users\Pragati\Desktop\Assignment2>kubectl rollout status deployment/mynginx-pes2ug19cs412
deployment "mynginx-pes2ug19cs412" successfully rolled out

C:\Users\Pragati\Desktop\Assignment2>
C:\Users\Pragati\Desktop\Assignment2>
C:\Users\Pragati\Desktop\Assignment2>kubectl delete deploy mynginx-pes2ug19cs412
deployment.apps "mynginx-pes2ug19cs412" deleted

C:\Users\Pragati\Desktop\Assignment2>
```



- Scaling Kubernetes services

- 4a.jpg Screenshot showing:



deployment and service creation

```
Command Prompt
C:\Users\Pragati\Desktop\Assignment2>kubectl create -f deploy_service.yaml
deployment.apps/mynginx-pes2ug19cs412 created
service/nginx-pes2ug19cs412 created

C:\Users\Pragati\Desktop\Assignment2>kubectl port-forward service/nginx-pes2ug19cs412 80:80
Forwarding from 127.0.0.1:80 -> 80

C:\Users\Pragati\Desktop\Assignment2>kubectl scale deploy mynginx-pes2ug19cs412 --replicas=10
deployment.apps/mynginx-pes2ug19cs412 scaled

C:\Users\Pragati\Desktop\Assignment2>kubectl get all
NAME                                READY    STATUS    RESTARTS   AGE
pod/mynginx-pes2ug19cs412-5c849c8766-5mdn7    1/1      Running   0           3m20s
pod/mynginx-pes2ug19cs412-5c849c8766-5rsms    0/1      Pending   0           27s
pod/mynginx-pes2ug19cs412-5c849c8766-6q2d5    1/1      Running   0           27s
pod/mynginx-pes2ug19cs412-5c849c8766-841f1    1/1      Running   0           3m20s
pod/mynginx-pes2ug19cs412-5c849c8766-m5mwb    0/1      Pending   0           27s
pod/mynginx-pes2ug19cs412-5c849c8766-q4jx9    0/1      Pending   0           27s
pod/mynginx-pes2ug19cs412-5c849c8766-rpsp5    0/1      Pending   0           27s
pod/mynginx-pes2ug19cs412-5c849c8766-t2hx7    1/1      Running   0           27s
pod/mynginx-pes2ug19cs412-5c849c8766-wv699    1/1      Running   0           27s
pod/mynginx-pes2ug19cs412-5c849c8766-xwts9    1/1      Running   0           27s

NAME                                TYPE                CLUSTER-IP    EXTERNAL-IP    PORT(S)        AGE
service/kubernetes                  ClusterIP          10.96.0.1     <none>         443/TCP        26m
service/nginx-pes2ug19cs412        LoadBalancer      10.99.47.15   localhost      80:31853/TCP   3m20s

NAME                                READY    UP-TO-DATE    AVAILABLE    AGE
deployment.apps/mynginx-pes2ug19cs412    6/10     10             6           3m20s

NAME                                DESIRED    CURRENT    READY    AGE
replicaset.apps/mynginx-pes2ug19cs412-5c849c8766    10         10         6       3m20s

C:\Users\Pragati\Desktop\Assignment2>
```



port forwarding

```
Command Prompt
C:\Users\Pragati\Desktop\Assignment2>kubectl create -f deploy_service.yaml
deployment.apps/mynginx-pes2ug19cs412 created
service/nginx-pes2ug19cs412 created

C:\Users\Pragati\Desktop\Assignment2>kubectl port-forward service/nginx-pes2ug19cs412 80:80
Forwarding from 127.0.0.1:80 -> 80

C:\Users\Pragati\Desktop\Assignment2>kubectl scale deploy mynginx-pes2ug19cs412 --replicas=10
deployment.apps/mynginx-pes2ug19cs412 scaled

C:\Users\Pragati\Desktop\Assignment2>kubectl get all
NAME                                READY    STATUS    RESTARTS   AGE
pod/mynginx-pes2ug19cs412-5c849c8766-5mdn7    1/1      Running   0           3m20s
pod/mynginx-pes2ug19cs412-5c849c8766-5rsms    0/1      Pending   0           27s
pod/mynginx-pes2ug19cs412-5c849c8766-6q2d5    1/1      Running   0           27s
pod/mynginx-pes2ug19cs412-5c849c8766-841f1    1/1      Running   0           3m20s
pod/mynginx-pes2ug19cs412-5c849c8766-m5mwb    0/1      Pending   0           27s
pod/mynginx-pes2ug19cs412-5c849c8766-q4jx9    0/1      Pending   0           27s
pod/mynginx-pes2ug19cs412-5c849c8766-rpsp5    0/1      Pending   0           27s
pod/mynginx-pes2ug19cs412-5c849c8766-t2hx7    1/1      Running   0           27s
pod/mynginx-pes2ug19cs412-5c849c8766-wv699    1/1      Running   0           27s
pod/mynginx-pes2ug19cs412-5c849c8766-xwts9    1/1      Running   0           27s

NAME                                TYPE                CLUSTER-IP    EXTERNAL-IP    PORT(S)        AGE
service/kubernetes                  ClusterIP          10.96.0.1     <none>         443/TCP        26m
service/nginx-pes2ug19cs412        LoadBalancer      10.99.47.15   localhost      80:31853/TCP   3m20s

NAME                                READY    UP-TO-DATE    AVAILABLE    AGE
deployment.apps/mynginx-pes2ug19cs412    6/10     10             6           3m20s

NAME                                DESIRED    CURRENT    READY    AGE
replicaset.apps/mynginx-pes2ug19cs412-5c849c8766    10         10         6       3m20s

C:\Users\Pragati\Desktop\Assignment2>
```

## Scaling deployment

```
Command Prompt
C:\Users\Pragati\Desktop\Assignment2>kubectl create -f deploy_service.yaml
deployment.apps/mynginx-pes2ug19cs412 created
service/nginx-pes2ug19cs412 created

C:\Users\Pragati\Desktop\Assignment2>kubectl port-forward service/nginx-pes2ug19cs412 80:80
Forwarding from 127.0.0.1:80 -> 80

C:\Users\Pragati\Desktop\Assignment2>kubectl scale deploy mynginx-pes2ug19cs412 --replicas=10
deployment.apps/mynginx-pes2ug19cs412 scaled

C:\Users\Pragati\Desktop\Assignment2>kubectl get all
NAME                                READY    STATUS    RESTARTS   AGE
pod/mynginx-pes2ug19cs412-5c849c8766-5mdn7    1/1      Running   0           3m20s
pod/mynginx-pes2ug19cs412-5c849c8766-5rsms    0/1      Pending   0           27s
pod/mynginx-pes2ug19cs412-5c849c8766-6q2d5    1/1      Running   0           27s
pod/mynginx-pes2ug19cs412-5c849c8766-841f1    1/1      Running   0           3m20s
pod/mynginx-pes2ug19cs412-5c849c8766-m5mwb    0/1      Pending   0           27s
pod/mynginx-pes2ug19cs412-5c849c8766-q4jx9    0/1      Pending   0           27s
pod/mynginx-pes2ug19cs412-5c849c8766-rpsp5    0/1      Pending   0           27s
pod/mynginx-pes2ug19cs412-5c849c8766-t2hx7    1/1      Running   0           27s
pod/mynginx-pes2ug19cs412-5c849c8766-wv699    1/1      Running   0           27s
pod/mynginx-pes2ug19cs412-5c849c8766-xwts9    1/1      Running   0           27s

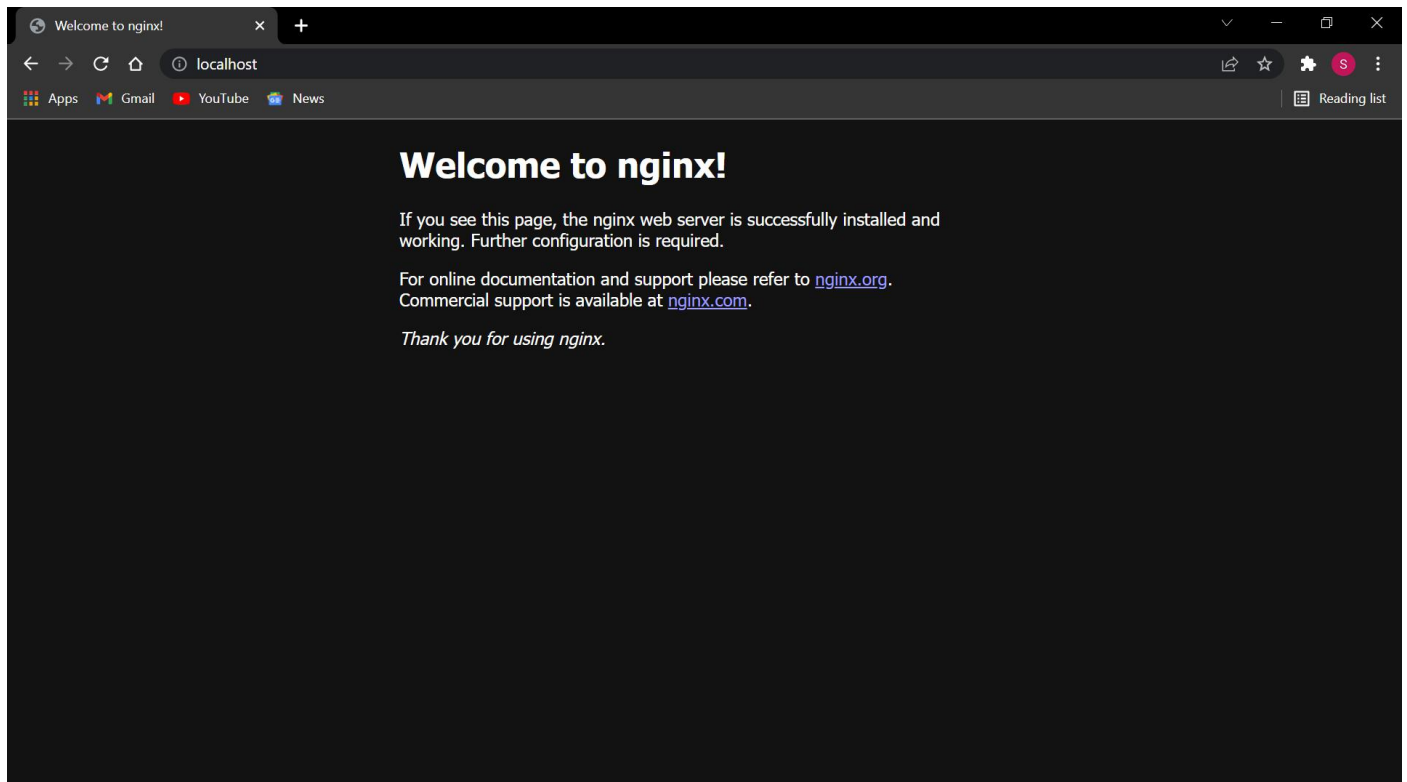
NAME                                TYPE                CLUSTER-IP    EXTERNAL-IP    PORT(S)          AGE
service/kubernetes                  ClusterIP          10.96.0.1     <none>         443/TCP          26m
service/nginx-pes2ug19cs412        LoadBalancer      10.99.47.15   localhost      80:31853/TCP     3m20s

NAME                                READY    UP-TO-DATE    AVAILABLE    AGE
deployment.apps/mynginx-pes2ug19cs412 6/10     10             6            3m20s

NAME                                DESIRED    CURRENT    READY    AGE
replicaset.apps/mynginx-pes2ug19cs412-5c849c8766 10         10         6        3m20s

C:\Users\Pragati\Desktop\Assignment2>
```

### 4b.jpg Nginx home page access through localhost



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