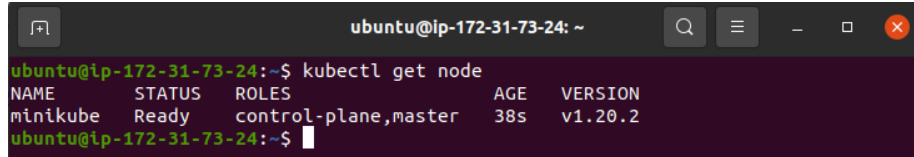


Cloud Computing Lab 8 Report

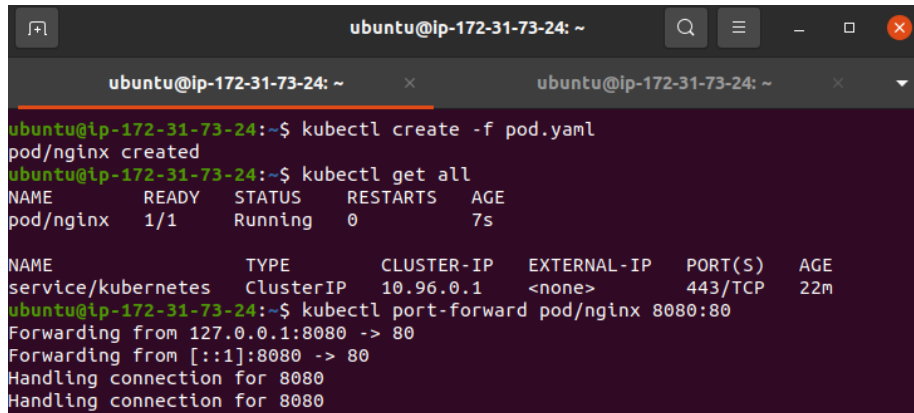
1 Creating Kubernetes cluster using minikube



```
ubuntu@ip-172-31-73-24: ~  
ubuntu@ip-172-31-73-24:~$ kubectl get node  
NAME      STATUS    ROLES    AGE   VERSION  
minikube   Ready     control-plane,master   38s   v1.20.2  
ubuntu@ip-172-31-73-24:~$
```

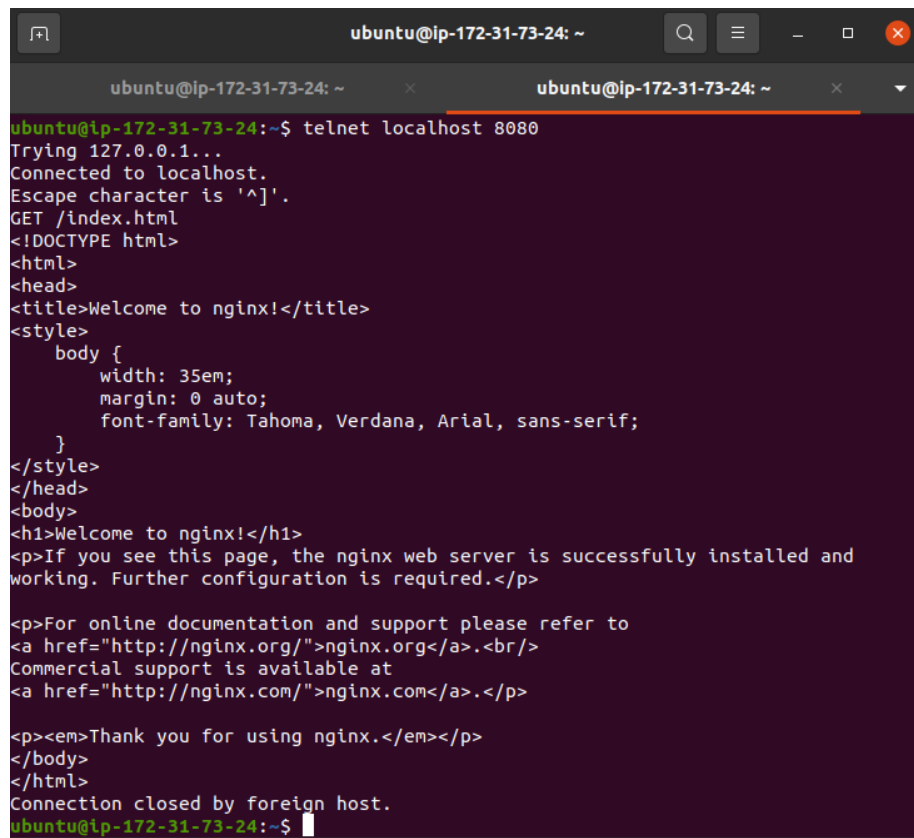
Figure 1: Output of kubectl get node

2 Creating Kubernetes Pod



```
ubuntu@ip-172-31-73-24: ~  
ubuntu@ip-172-31-73-24:~$ kubectl create -f pod.yaml  
pod/nginx created  
ubuntu@ip-172-31-73-24:~$ kubectl get all  
NAME      READY   STATUS    RESTARTS   AGE  
pod/nginx  1/1     Running   0           7s  
  
NAME                TYPE          CLUSTER-IP   EXTERNAL-IP   PORT(S)    AGE  
service/kubernetes  ClusterIP     10.96.0.1    <none>        443/TCP    22m  
ubuntu@ip-172-31-73-24:~$ kubectl port-forward pod/nginx 8080:80  
Forwarding from 127.0.0.1:8080 -> 80  
Forwarding from [::1]:8080 -> 80  
Handling connection for 8080  
Handling connection for 8080
```

Figure 2: nginx pod is running and pot-forwarding



```
ubuntu@ip-172-31-73-24: ~  
ubuntu@ip-172-31-73-24: ~  
ubuntu@ip-172-31-73-24:~$ telnet localhost 8080  
Trying 127.0.0.1...  
Connected to localhost.  
Escape character is '^]'.  
GET /index.html  
<!DOCTYPE html>  
<html>  
<head>  
<title>Welcome to nginx!</title>  
<style>  
    body {  
        width: 35em;  
        margin: 0 auto;  
        font-family: Tahoma, Verdana, Arial, sans-serif;  
    }  
</style>  
</head>  
<body>  
<h1>Welcome to nginx!</h1>  
<p>If you see this page, the nginx web server is successfully installed and  
working. Further configuration is required.</p>  
  
<p>For online documentation and support please refer to  
<a href="http://nginx.org/">nginx.org</a>.<br/>  
Commercial support is available at  
<a href="http://nginx.com/">nginx.com</a>.</p>  
  
<p><em>Thank you for using nginx.</em></p>  
</body>  
</html>  
Connection closed by foreign host.  
ubuntu@ip-172-31-73-24:~$
```

Figure 3: nginx homepage on localhost via telnet

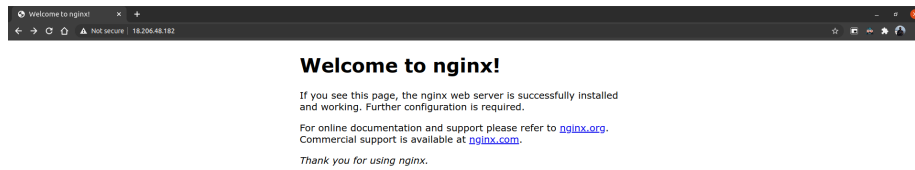


Figure 4: nginx homepage on localhost via browser

3 Creating Kubernetes Deployment and a Load Balancing Service

```

ubuntu@ip-172-31-73-24: ~
ubuntu@ip-172-31-73-24: ~$ kubectl create -f deploy_service.yaml
deployment.apps/mynginx created
service/nginx created
ubuntu@ip-172-31-73-24: ~$ kubectl get all
NAME                                READY    STATUS    RESTARTS   AGE
pod/mynginx-88bb55cb6-5h46d         1/1      Running   0           46s
pod/mynginx-88bb55cb6-5zsgm         1/1      Running   0           46s

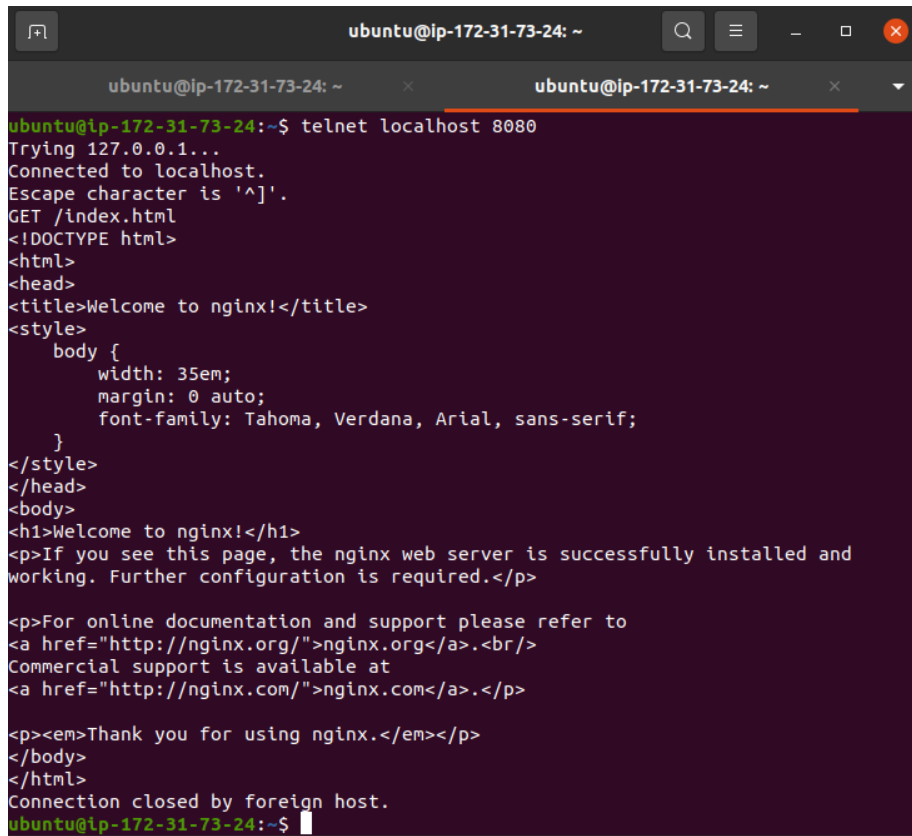
NAME                                TYPE          CLUSTER-IP    EXTERNAL-IP   PORT(S)          AGE
service/kubernetes                  ClusterIP     10.96.0.1     <none>         443/TCP          32m
service/nginx                       LoadBalancer 10.108.19.29  <pending>     80:31721/TCP     46s

NAME                                READY    UP-TO-DATE   AVAILABLE   AGE
deployment.apps/mynginx             2/2      2            2           46s

NAME                                DESIRED    CURRENT    READY    AGE
replicaset.apps/mynginx-88bb55cb6   2          2          2        46s
ubuntu@ip-172-31-73-24: ~$ kubectl port-forward service/nginx 8080:80
Forwarding from 127.0.0.1:8080 -> 80
Forwarding from [::1]:8080 -> 80
Handling connection for 8080

```

Figure 5: Deployment is running



```
ubuntu@ip-172-31-73-24: ~  
ubuntu@ip-172-31-73-24: ~  
ubuntu@ip-172-31-73-24:~$ telnet localhost 8080  
Trying 127.0.0.1...  
Connected to localhost.  
Escape character is '^]'.  
GET /index.html  
<!DOCTYPE html>  
<html>  
<head>  
<title>Welcome to nginx!</title>  
<style>  
    body {  
        width: 35em;  
        margin: 0 auto;  
        font-family: Tahoma, Verdana, Arial, sans-serif;  
    }  
</style>  
</head>  
<body>  
<h1>Welcome to nginx!</h1>  
<p>If you see this page, the nginx web server is successfully installed and  
working. Further configuration is required.</p>  
  
<p>For online documentation and support please refer to  
<a href="http://nginx.org/">nginx.org</a>.<br/>  
Commercial support is available at  
<a href="http://nginx.com/">nginx.com</a>.</p>  
  
<p><em>Thank you for using nginx.</em></p>  
</body>  
</html>  
Connection closed by foreign host.  
ubuntu@ip-172-31-73-24:~$
```

Figure 6: Port-forwarding of the Kubernetes service

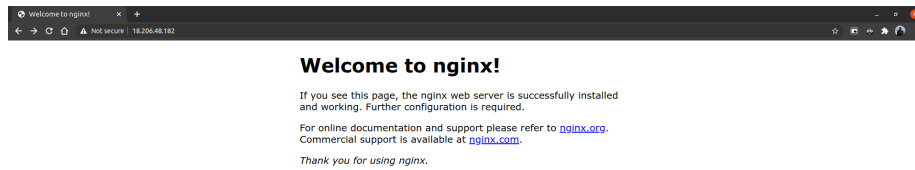


Figure 7: nginx homepage on localhost via browser

4 Scaling Deployments

```
ubuntu@ip-172-31-73-24: ~
ubuntu@ip-172-31-73-24: ~
ubuntu@ip-172-31-73-24:~$ kubectl scale deploy mynginx --replicas=10
deployment.apps/mynginx scaled
ubuntu@ip-172-31-73-24:~$ kubectl get all
```

NAME	READY	STATUS	RESTARTS	AGE
pod/mynginx-88bb55cb6-5h46d	1/1	Running	0	4m9s
pod/mynginx-88bb55cb6-5zsgm	1/1	Running	0	4m9s
pod/mynginx-88bb55cb6-cbndm	0/1	Pending	0	24s
pod/mynginx-88bb55cb6-fqbnc	0/1	Pending	0	24s
pod/mynginx-88bb55cb6-fvw4z	0/1	Pending	0	24s
pod/mynginx-88bb55cb6-k8tn2	0/1	Pending	0	24s
pod/mynginx-88bb55cb6-pcc9f	0/1	Pending	0	24s
pod/mynginx-88bb55cb6-qjpl2	0/1	Pending	0	24s
pod/mynginx-88bb55cb6-srrtk	0/1	Pending	0	24s
pod/mynginx-88bb55cb6-wzbk9	0/1	Pending	0	24s

NAME	TYPE	CLUSTER-IP	EXTERNAL-IP	PORT(S)	AGE
service/kubernetes	ClusterIP	10.96.0.1	<none>	443/TCP	36m
service/nginx	LoadBalancer	10.108.19.29	<pending>	80:31721/TCP	4m9s

NAME	READY	UP-TO-DATE	AVAILABLE	AGE
deployment.apps/mynginx	2/10	10	2	4m9s

NAME	DESIRED	CURRENT	READY	AGE
replicaset.apps/mynginx-88bb55cb6	10	10	2	4m9s

```
ubuntu@ip-172-31-73-24:~$
```

Figure 8: Scaling deployment to 10 pods