```
noelmathen@noelmathen-VirtualBox:~$ mkdir ~/webapp
noelmathen@noelmathen-VirtualBox:~$ cd ~/webapp
noelmathen@noelmathen-VirtualBox:~/webapp$ cd ~/webapp
noelmathen@noelmathen-VirtualBox:~/webapp$ cat > index.html <<EOF
<html><body><h1>Hello from v1.0</h1></body></html>
EOF
noelmathen@noelmathen-VirtualBox:~/webapp$ cat > Dockerfile <<EOF
FROM nginx:alpine
COPY index.html /usr/share/nginx/html/index.html
EOF
noelmathen@noelmathen-VirtualBox:~/webapp$ docker build -t noelmathen/web-demo:1.0 .
[+] Building 20.9s (7/7) FINISHED                              docker:default
 => [internal] load build definition from Dockerfile          0.6s
 => => transferring dockerfile: 104B                          0.2s
 => [internal] load metadata for docker.io/library/nginx:alpine   5.8s
 => [internal] load .dockerignore                             0.1s
 => => transferring context: 2B                               0.0s
 => [internal] load build context                             0.2s
 => => transferring context: 88B                              0.0s
 => [1/2] FROM docker.io/library/nginx:alpine@sha256:65645c7bb6a0661892a  12.0s
 => => resolve docker.io/library/nginx:alpine@sha256:65645c7bb6a0661892a8  0.2s
 => => sha256:65645c7bb6a0661892a8b03b89d0743208a18dd2f 10.33kB / 10.33kB  0.0s
 => => sha256:62223d644fa234c3a1cc785ee14242ec47a77364226 2.50kB / 2.50kB  0.0s
 => => sha256:6769dc3a703c719c1d2756bda113659be28ae16cf 10.79kB / 10.79kB  0.0s
```

```
noelmathen@noelmathen-VirtualBox:~/webapp$ docker build -t noelmathen/web-demo:1.0 .
[+] Building 1.9s (7/7) FINISHED                              docker:default
 => [internal] load build definition from Dockerfile          0.1s
 => => transferring dockerfile: 104B                          0.0s
 => [internal] load metadata for docker.io/library/nginx:alpine   1.3s
 => [internal] load .dockerignore                             0.1s
 => => transferring context: 2B                               0.0s
 => [internal] load build context                             0.0s
 => => transferring context: 31B                              0.0s
 => [1/2] FROM docker.io/library/nginx:alpine@sha256:65645c7bb6a0661892a8  0.0s
 => CACHED [2/2] COPY index.html /usr/share/nginx/html/index.html   0.0s
 => exporting to image                                        0.0s
 => => exporting layers                                       0.0s
 => => writing image sha256:baaf843c40ace3971f7c51ccac1b878faa36cbbf183fa  0.0s
 => => naming to docker.io/noelmathen/web-demo:1.0            0.0s
```

```
noelmathen@noelmathen-VirtualBox:~/webapp$ docker login

USING WEB-BASED LOGIN

i Info → To sign in with credentials on the command line, use 'docker login -u <usern
ame>'


Your one-time device confirmation code is: GKZZ-QXPV
Press ENTER to open your browser or submit your device code here: https://login.docke
r.com/activate

Waiting for authentication in the browser…

WARNING! Your credentials are stored unencrypted in '/home/noelmathen/snap/docker/326
5/.docker/config.json'.
Configure a credential helper to remove this warning. See
https://docs.docker.com/go/credential-store/

Login Succeeded
noelmathen@noelmathen-VirtualBox:~/webapp$ docker push noelmathen/web-demo:1.0
The push refers to repository [docker.io/noelmathen/web-demo]
17dfbca1d5f0: Pushed
0d853d50b128: Mounted from library/nginx
```
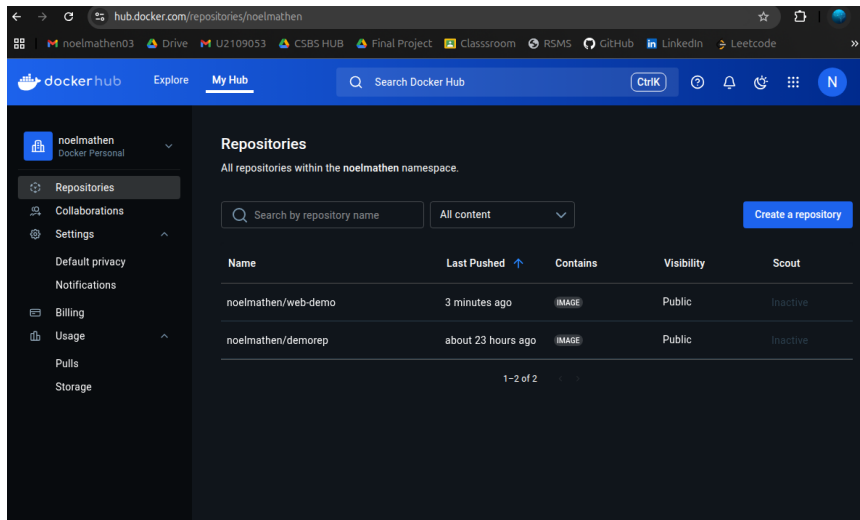
```
Login Succeeded
noelmathen@noelmathen-VirtualBox:~/webapp$ docker push noelmathen/web-demo:1.0
The push refers to repository [docker.io/noelmathen/web-demo]
17dfbca1d5f0: Pushed
0d853d50b128: Mounted from library/nginx
947e805a4ac7: Mounted from library/nginx
811a4dbbf4a5: Mounted from library/nginx
b8d7d1d22634: Mounted from library/nginx
e244aa659f61: Mounted from library/nginx
c56f134d3805: Mounted from library/nginx
d71eae0084c1: Mounted from library/nginx
08000c18d16d: Mounted from library/nginx
1.0: digest: sha256:a30b4f1d4f94aa961db1cca386d4dac51ca1a127182b3bc8d0664916f6bfd5bd
size: 2196
```
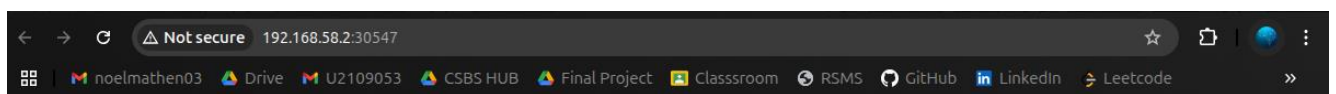
docker hub   Explore   **My Hub**   Search Docker Hub   CtrlK

noelmathen
Docker Personal

- Repositories
- Collaborations
- Settings
  - Default privacy
  - Notifications
  - Billing
- Usage
  - Pulls
  - Storage

Repositories

All repositories within the **noelmathen** namespace.

Search by repository name	All content			Create a repository

Name	Last Pushed ↑	Contains	Visibility	Scout
noelmathen/web-demo	3 minutes ago	IMAGE	Public	Inactive
noelmathen/demorep	about 23 hours ago	IMAGE	Public	Inactive

1–2 of 2

---

noelmathen@noelmathen-VirtualBox: ~/webapp

noelmathen@noelmathen-VirtualBox: ~/webapp   noelmathen@noelmathen-VirtualBox: ~/webapp

```
noelmathen@noelmathen-VirtualBox:~/webapp$ minikube -p multinode-demo status
multinode-demo
type: Control Plane
host: Running
kubelet: Running
apiserver: Running
kubeconfig: Configured

multinode-demo-m02
type: Worker
host: Running
kubelet: Running

multinode-demo-m03
type: Worker
host: Running
kubelet: Running

noelmathen@noelmathen-VirtualBox:~/webapp$ kubectl create deployment web-deploy \
  --image=noelmathen/web-demo:1.0
deployment.apps/web-deploy created
noelmathen@noelmathen-VirtualBox:~/webapp$ minikube -p multinode-demo kubectl get dep
loyments
NAME          READY   UP-TO-DATE   AVAILABLE   AGE
```

```
noelmathen@noelmathen-VirtualBox:~/webapp$ kubectl create deployment web-deploy \
  --image=noelmathen/web-demo:1.0
deployment.apps/web-deploy created
noelmathen@noelmathen-VirtualBox:~/webapp$ minikube -p multinode-demo kubectl get dep
loyments
NAME          READY   UP-TO-DATE   AVAILABLE   AGE
demo-nginx    1/1     1            1           16m
web-deploy    0/1     1            0           9s
noelmathen@noelmathen-VirtualBox:~/webapp$ kubectl expose deployment web-deploy \
  --type=NodePort --port=80
service/web-deploy exposed
noelmathen@noelmathen-VirtualBox:~/webapp$ minikube -p multinode-demo service web-dep
loy --url
http://192.168.58.2:30547
noelmathen@noelmathen-VirtualBox:~/webapp$
```

Hello from v1.0

noelmathen@noelmathen-Vi... ×   noelmathen@noelmathen-Vi... ×   noelmathen@noelmathen-Vi... ×

```
noelmathen@noelmathen-VirtualBox:~/webapp$ cat <<EOF | kubectl apply -f -
apiVersion: v1
kind: ReplicationController
metadata:
  name: web-rc
spec:
  replicas: 2
  selector:
    app: web-rc
  template:
    metadata:
      labels:
        app: web-rc
    spec:
      containers:
      - name: web-rc
        image: noelmathen/web-demo:1.0
        ports:
        - containerPort: 80
EOF
replicationcontroller/web-rc created
```
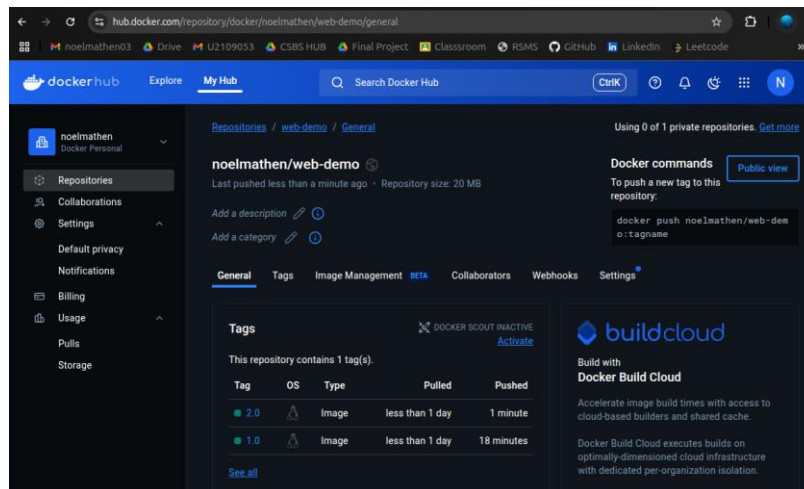
```
noelmathen@noelmathen-VirtualBox:~/webapp$ kubectl expose rc web-rc --type=NodePort -
-port=80
service/web-rc exposed
noelmathen@noelmathen-VirtualBox:~/webapp$ minikube -p multinode-demo service web-rc
--url
!   Executing "docker container inspect multinode-demo --format={{.State.Status}}" to
ok an unusually long time: 2.129127968s
💡  Restarting the docker service may improve performance.
http://192.168.58.2:30285
noelmathen@noelmathen-VirtualBox:~/webapp$ minikube -p multinode-demo kubectl get dep
loyments
NAME          READY   UP-TO-DATE   AVAILABLE   AGE
demo-nginx    1/1     1            1           25m
web-deploy    1/1     1            1           8m20s
```

← → C   ⚠ Not secure 192.168.58.2:30285   ☆

⊞ M noelmathen03 ▲ Drive M U2109053 ▲ CSBS HUB ▲ Final Project 🖼 Classsroom 🟢 RSMS 🐙 GitHub in LinkedIn ⮚ Leetcode   »
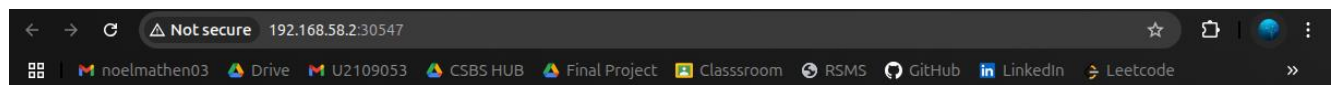
Hello from v1.0

noelmathen@noel... ×   noelmathen@noel... ×   noelmathen@noel... ×   noelmathen@noel... ×

```
noelmathen@noelmathen-VirtualBox:~/webapp$ kubectl scale deployment web-deploy --repl
icas=4
deployment.apps/web-deploy scaled
noelmathen@noelmathen-VirtualBox:~/webapp$ kubectl get pods -l app=web-deploy
NAME                          READY   STATUS    RESTARTS   AGE
web-deploy-7c5885fbb4-7vcnt   1/1     Running   0          11m
web-deploy-7c5885fbb4-nfl9f   1/1     Running   0          29s
web-deploy-7c5885fbb4-nwm85   1/1     Running   0          29s
web-deploy-7c5885fbb4-zc4wq   1/1     Running   0          29s
```

```
noelmathen@noelmathen-VirtualBox:~/webapp$ cat > index.html <<EOF
<html><body><h1>Hello from v2.0</h1></body></html>
EOF
noelmathen@noelmathen-VirtualBox:~/webapp$ docker build -t noelmathen/web-demo:2.0 .
[+] Building 4.1s (8/8) FINISHED                                docker:default
 => [internal] load build definition from Dockerfile                     0.1s
 => => transferring dockerfile: 104B                                     0.0s
 => [internal] load metadata for docker.io/library/nginx:alpine          2.6s
 => [auth] library/nginx:pull token for registry-1.docker.io            0.0s
 => [internal] load .dockerignore                                        0.1s
 => => transferring context: 2B                                          0.0s
 => [internal] load build context                                        0.1s
 => => transferring context: 88B                                         0.0s
 => CACHED [1/2] FROM docker.io/library/nginx:alpine@sha256:65645c7bb6a0661892  0.0s
 => [2/2] COPY index.html /usr/share/nginx/html/index.html              0.3s
 => exporting to image                                                   0.4s
 => => exporting layers                                                  0.2s
 => => writing image sha256:5d55607508dc60fe009ad676372d8140ad362cc82ab3b6af9c  0.0s
 => => naming to docker.io/noelmathen/web-demo:2.0                      0.1s
noelmathen@noelmathen-VirtualBox:~/webapp$ docker push noelmathen/web-demo:2.0
The push refers to repository [docker.io/noelmathen/web-demo]
d089cc7894c8: Pushed
0d853d50b128: Layer already exists
947e805a4ac7: Layer already exists
```



```
noelmathen@noelmathen-VirtualBox:~/webapp$ kubectl get deployment web-deploy -o yaml
| grep -A2 'containers:'
      containers:
      - image: noelmathen/web-demo:1.0
        imagePullPolicy: IfNotPresent
noelmathen@noelmathen-VirtualBox:~/webapp$ kubectl set image deployment/web-deploy \
  web-demo=noelmathen/web-demo:2.0
deployment.apps/web-deploy image updated
```

```
noelmathen@noelmathen-VirtualBox:~/webapp$ kubectl rollout status deployment/web-deploy
oy
deployment "web-deploy" successfully rolled out
noelmathen@noelmathen-VirtualBox:~/webapp$ minikube -p multinode-demo service web-dep
loy --url
 !  Executing "docker container inspect multinode-demo --format={{.State.Status}}" to
ok an unusually long time: 2.793660492s
 💡  Restarting the docker service may improve performance.
http://192.168.58.2:30547
noelmathen@noelmathen-VirtualBox:~/webapp$ kubectl get pods -l app=web-deploy
NAME                            READY   STATUS    RESTARTS   AGE
web-deploy-5657c969c5-66m54     1/1     Running   0          2m26s
web-deploy-5657c969c5-8vsw2     1/1     Running   0          2m9s
web-deploy-5657c969c5-q6zsw     1/1     Running   0          2m7s
web-deploy-5657c969c5-t8zt2     1/1     Running   0          2m26s
noelmathen@noelmathen-VirtualBox:~/webapp$
```


Hello from v2.0