

Semester	T.E. Semester VI – Computer Engineering
Subject	Cloud Computing
Subject Professor In-charge	Prof. Divya Nimbalkar
Assisting Teachers	Prof. Divya Nimbalkar

Student Name	Deep Salunkhe
Roll Number	21102A0014
TE Division	A

Title: Docker and Kubernetes

Implementation:

Docker:

```
PS D:\OneDrive - Vidyalankar Institute of Technology\Study_material\Semester VI\CC\Practice\Docker and Kubernetes\docker-k8s-workshop> ls

Directory: D:\OneDrive - Vidyalankar Institute of Technology\Study_material\Semester VI\CC\Practice\Docker and Kubernetes\docker-k8s-workshop

Mode                LastWriteTime         Length Name
----                -
d-----          26-04-2024    09:52          exercises
d-----          26-04-2024    09:52          manifests
-a-----          26-04-2024    09:52           280 app.py
-a-----          26-04-2024   10:01          497 Dockerfile
-a-----          26-04-2024    09:52           21 README.md
-a-----          26-04-2024    09:59           14 requirements.txt
-a-----          26-04-2024    09:52          1383 setup-docker-minikube.md

PS D:\OneDrive - Vidyalankar Institute of Technology\Study_material\Semester VI\CC\Practice\Docker and Kubernetes\docker-k8s-workshop> docker build -f Dockerfile -t app:0.0.1 .
[+] Building 32.9s (11/11) FINISHED
=> [internal] load build definition from Dockerfile                                docker:default
=> => transferring dockerfile: 536B
=> [internal] load .dockerignore
=> => transferring context: 2B
=> [internal] load metadata for docker.io/library/python:3.9-slim
=> [1/6] FROM docker.io/library/python:3.9-slim@sha256:44122e46edb1c3ae2a144778db3e01c78b6de3af20ddcc38d43032decff00cf 16.6s
=> => resolve docker.io/library/python:3.9-slim@sha256:44122e46edb1c3ae2a144778db3e01c78b6de3af20ddcc38d43032decff00cf 0.1s
=> => sha256:19611b60238f488b83fb4229632e28130ae9d76647ebdc57f781f08d1c32f5cd 11.89MB / 11.89MB 8.7s
=> => sha256:44122e46edb1c3ae2a144778db3e01c78b6de3af20ddcc38d43032decff00cf 1.86kB / 1.86kB 0.0s
=> => sha256:2e1f1541f093ecfd3bda3388cedeb5034e73cfe0d36a124d55744ae926fa6be0 1.37kB / 1.37kB 0.0s
=> => sha256:a8260aeae86e9399429c23095da23d7ab308426dc30e3122d6bf50ae83183e7 6.90kB / 6.90kB 0.0s
=> => sha256:b0a0cf830b12453b7e15359a804215a7bcccc3780e2bcecf2a03af64bbdd4df7 29.15MB / 29.15MB 12.7s
=> => sha256:72914424168c8ebb0dbb3d0e08eb1d3b5b2a64cc51745bd65caf29c335b31dc7 3.51MB / 3.51MB 3.8s
=> => sha256:a1e1c999a12c5f9fef531eb908858fb2938f86a9cd98830bb8ae0d3f331161fa 243B / 243B 4.4s
=> => sha256:3d5cbb4d884e7912ff3bbbc08931cca207cebcb0daa15954c407c75355fbcdf 3.13MB / 3.13MB 6.0s
=> => extracting sha256:b0a0cf830b12453b7e15359a804215a7bcccc3780e2bcecf2a03af64bbdd4df7 1.8s
=> => extracting sha256:72914424168c8ebb0dbb3d0e08eb1d3b5b2a64cc51745bd65caf29c335b31dc7 0.2s
=> => extracting sha256:19611b60238f488b83fb4229632e28130ae9d76647ebdc57f781f08d1c32f5cd 0.7s
=> => extracting sha256:a1e1c999a12c5f9fef531eb908858fb2938f86a9cd98830bb8ae0d3f331161fa 0.0s
=> => extracting sha256:3d5cbb4d884e7912ff3bbbc08931cca207cebcb0daa15954c407c75355fbcdf 0.3s
```

Title: Docker and Kubernetes

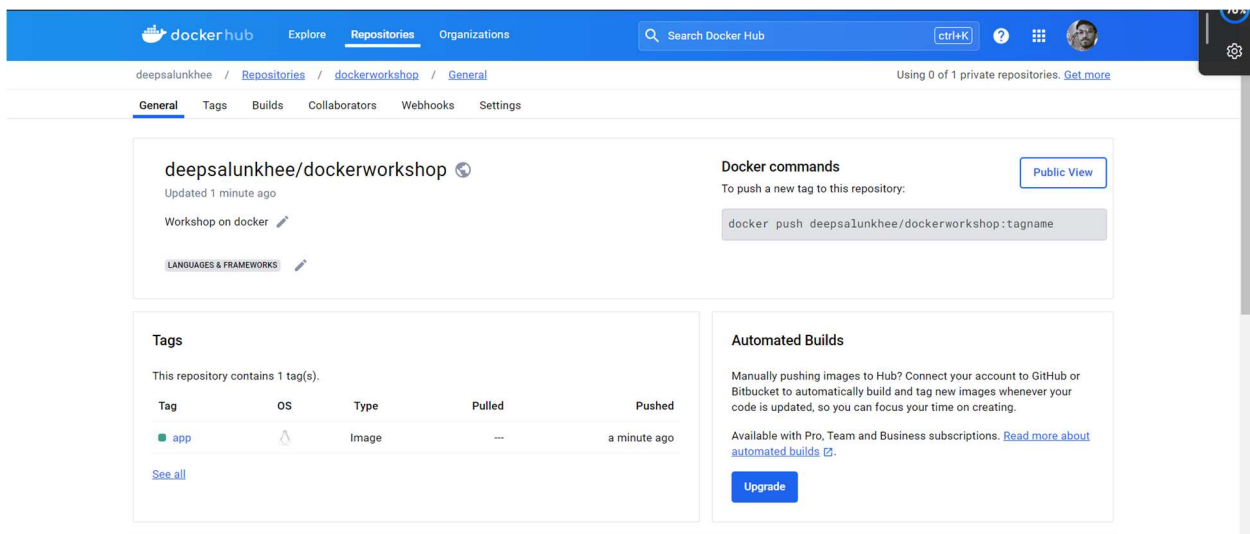
Roll No: 21102A0014

```
=> => sha256:44122e46ed1c3ae2a144778db3e01c78b6de3af20ddcc38d43832decffbf00cf 1.86kB / 1.86kB
=> => sha256:2e1f1541f093ecfd3bda3388cedeb5034e73cfe0d36a124d55744ae926fa6be0 1.37kB / 1.37kB
=> => sha256:a8260aaeae86e9399429c23095da23d7ab308426dc30e3122d6bf50aee83183e7 6.90kB / 6.90kB
=> => sha256:b0a0cf830b12453b7e15359a804215a7bcccc3788e2bcecf2a03af64bbd4d7f 29.15MB / 29.15MB
=> => sha256:72914424168c8ebb0dbb3d0e08eb1d3b5b2a64cc51745bd65caf29c335b31dc7 3.51MB / 3.51MB
=> => sha256:a1e1c999a12c5f9fef531eb908858fb2938f86a9cd98830bb8ae0d3f331161fa 2438 / 2438
=> => sha256:3d5cbb4d884e7912ff3bbbc08931cca207cebccb0daa15954c407c75355fbcdf 3.13MB / 3.13MB
=> => extracting sha256:b0a0cf830b12453b7e15359a804215a7bcccc3788e2bcecf2a03af64bbd4d7f
=> => extracting sha256:72914424168c8ebb0dbb3d0e08eb1d3b5b2a64cc51745bd65caf29c335b31dc7
=> => extracting sha256:19611b60238f488b83fb4229632e28130ae9d76647ebdc57f781f08d1c32f5cd
=> => extracting sha256:a1e1c999a12c5f9fef531eb908858fb2938f86a9cd98830bb8ae0d3f331161fa
=> => extracting sha256:3d5cbb4d884e7912ff3bbbc08931cca207cebccb0daa15954c407c75355fbcdf
=> [internal] load build context
=> => transferring context: 350B
=> [2/6] RUN apt-get update && apt-get install -y curl
=> [3/6] WORKDIR /app1
=> [4/6] COPY app.py .
=> [5/6] COPY requirements.txt .
=> [6/6] RUN pip3 install -r requirements.txt
=> => exporting to image
=> => exporting layers
=> => writing image sha256:fa6cf18d8dc1852fec41ea2090a22fa56b382e564cd521a59383dc02f3bde724
=> => naming to docker.io/library/app:0.0.1

What's Next?
View a summary of image vulnerabilities and recommendations → docker scout quickview
PS D:\OneDrive - Vidyalankar Institute of Technology\Study_material\Semester VI\CC\Practicle\Docke and Kubernetes\docker-k8s-workshop>
```

```
What's Next?
View a summary of image vulnerabilities and recommendations → docker scout quickview
PS D:\OneDrive - Vidyalankar Institute of Technology\Study_material\Semester VI\CC\Practicle\Docke and Kubernetes\docker-k8s-workshop> docker images
REPOSITORY TAG IMAGE ID CREATED SIZE
app 0.0.1 fa6cf18d8dc1 52 seconds ago 162MB
redis latest 7fc37b47acde 2 weeks ago 116MB
clientimage latest 3ff6a5d4391a 6 weeks ago 210MB
postgres latest b9390dd1ea18 2 months ago 431MB
PS D:\OneDrive - Vidyalankar Institute of Technology\Study_material\Semester VI\CC\Practicle\Docke and Kubernetes\docker-k8s-workshop>
```

```
PS D:\OneDrive - Vidyalankar Institute of Technology\Study_material\Semester VI\CC\Practicle\Docke and Kubernetes\docker-k8s-workshop> docker tag app:0.0.1 deepsalunkhee/dockerworkshop
PS D:\OneDrive - Vidyalankar Institute of Technology\Study_material\Semester VI\CC\Practicle\Docke and Kubernetes\docker-k8s-workshop> docker push deepsalunkhee/dockerworkshop:app
The push refers to repository [docker.io/deepsalunkhee/dockerworkshop]
bc07acc4a01d: Pushed
77dfb9a6cd4a: Pushed
b8f3d14551a0: Pushed
bc4c1e8b8b8b: Pushed
93bd73b4a391: Pushed
4fae8d5765e1: Mounted from library/python
19bf713f869b: Mounted from library/python
039d8e7e112d: Mounted from library/python
7a75d57a5024: Mounted from library/python
52ec5a4316fa: Mounted from library/python
app: digest: sha256:fdca367f0d1c167c519798b59d16b13ce8f5d279a35e8cde6d1f7fe4ff695 size: 2413
PS D:\OneDrive - Vidyalankar Institute of Technology\Study_material\Semester VI\CC\Practicle\Docke and Kubernetes\docker-k8s-workshop>
```



Kubernetes

```
PS D:\OneDrive - Vidyalankar Institute of Technology\Study_material\Semester VI\CC\Practicle\Docker and Kubernetes> kubectl version --client
Client Version: v1.30.0
Kustomize Version: v5.0.4-0.20230601165947-6ce0bf390ce3
PS D:\OneDrive - Vidyalankar Institute of Technology\Study_material\Semester VI\CC\Practicle\Docker and Kubernetes>
```

```
PS D:\OneDrive - Vidyalankar Institute of Technology\Study_material\Semester VI\CC\Practicle\Docker and Kubernetes> minikube status
W0426 10:44:42.819470 16124 main.go:291] Unable to resolve the current Docker CLI context "default": context "default": context not found: open C:\Users\Deep Salunkhe\.docker\contexts\meta\37a8eec1ce19687d132fe29051dca629d164e2c4958ba141d5f4133a33f0688f\meta.json: The system cannot find the path specified.
* Profile "minikube" not found. Run "minikube profile list" to view all profiles.
To start a cluster, run: "minikube start"
PS D:\OneDrive - Vidyalankar Institute of Technology\Study_material\Semester VI\CC\Practicle\Docker and Kubernetes> minikube profile list
W0426 10:45:00.168885 23956 main.go:291] Unable to resolve the current Docker CLI context "default": context "default": context not found: open C:\Users\Deep Salunkhe\.docker\contexts\meta\37a8eec1ce19687d132fe29051dca629d164e2c4958ba141d5f4133a33f0688f\meta.json: The system cannot find the path specified.

* Exiting due to MK_USAGE_NO_PROFILE: No minikube profile was found.
* Suggestion:

    You can create one using 'minikube start'.
```

```
PS D:\OneDrive - Vidyalankar Institute of Technology\Study_material\Semester VI\CC\Practicle\Docker and Kubernetes> minikube start
W0426 10:45:13.317358 14040 main.go:291] Unable to resolve the current Docker CLI context "default": context "default": context not found: open C:\Users\Deep Salunkhe\.docker\contexts\meta\37a8eec1ce19687d132fe29051dca629d164e2c4958ba141d5f4133a33f0688f\meta.json: The system cannot find the path specified.
* minikube v1.33.0 on Microsoft Windows 11 Home Single Language 10.0.22631.3527 Build 22631.3527
* Automatically selected the docker driver
* Using Docker Desktop driver with root privileges
* Starting "minikube" primary control-plane node in "minikube" cluster
* Pulling base image v0.0.43 ...
* Downloading Kubernetes v1.30.0 preload ...
> gcr.io/k8s-minikube/kicbase... 18.08 MiB / 480.29 MiB 3.76% 1.22 MiB p|
```

```
1 # version1-deployment.yaml
2 apiVersion: apps/v1
3 kind: Deployment
4 metadata:
5   name: app1-deployment
6   namespace: app1-ns
7 spec:
8   replicas: 2
9   selector:
10    matchLabels:
11      app: app
12   template:
13     metadata:
14       labels:
15         app: app
16     spec:
17       containers:
18       - name: app
19         image: localhost:5000/app
20         ports:
21         - containerPort: 8080
```

Normal Git main ~4 ..\deploy.yml yml utf-8[dos] 386B 19:33
"..\deploy.yml" 21L, 386B written

```
PS D:\OneDrive - Vidyalankar Institute of Technology\Study_material\Semester VI\CC\Practicle\Docker and Kubernetes\docker-k8s-workshop\manifest
s> kubectl create -f pod.yml
pod/app created
PS D:\OneDrive - Vidyalankar Institute of Technology\Study_material\Semester VI\CC\Practicle\Docker and Kubernetes\docker-k8s-workshop\manifest
s>
```

```
PS D:\OneDrive - Vidyalankar Institute of Technology\Study_material\Semester VI\CC\Practicle\Docker and Kubernetes\docker-k8s-workshop\manifest
s> kubectl get pods
NAME READY STATUS RESTARTS AGE
app 0/1 ErrImageNeverPull 0 36s
PS D:\OneDrive - Vidyalankar Institute of Technology\Study_material\Semester VI\CC\Practicle\Docker and Kubernetes\docker-k8s-workshop\manifest
s>
```

```
PS D:\OneDrive - Vidyalankar Institute of Technology\Study_material\Semester VI\CC\Practicle\Docker and Kubernetes\docker-k8s-workshop\manifest
s> kubectl describe pod app
Name: app
Namespace: default
Priority: 0
Service Account: default
Node: minikube/192.168.49.2
Start Time: Fri, 26 Apr 2024 10:55:02 +0530
Labels: <none>
Annotations: <none>
Status: Pending
IP: 10.244.0.3
IPs:
IP: 10.244.0.3
Containers:
  app:
    Container ID:
    Image: app
    Image ID:
    Port: <none>
    Host Port: <none>
    State: Waiting
      Reason: ErrImageNeverPull
    Ready: False
    Restart Count: 0
    Limits:
      memory: 200Mi
    Requests:
      memory: 200Mi
    Environment: <none>
    Mounts:
      /var/run/secrets/kubernetes.io/serviceaccount from kube-api-access-55mqh (ro)
Conditions:
  Type Status
  PodReadyToStartContainers True
  Initialized True
  Ready False
  ContainersReady False
```

```

Port: <none>
Host Port: <none>
State: Waiting
Reason: ErrImageNeverPull
Ready: False
Restart Count: 0
Limits:
  memory: 200Mi
Requests:
  memory: 200Mi
Environment: <none>
Mounts:
  /var/run/secrets/kubernetes.io/serviceaccount from kube-api-access-55mqh (ro)
Conditions:
  Type              Status
  PodReadyToStartContainers True
  Initialized        True
  Ready              False
  ContainersReady    False
  PodScheduled       True
Volumes:
  kube-api-access-55mqh:
    Type: Projected (a volume that contains injected data from multiple sources)
    TokenExpirationSeconds: 3607
    ConfigMapName: kube-root-ca.crt
    ConfigMapOptional: <nil>
    DownwardAPI: true
QoS Class: Burstable
Node-Selectors: <none>
Tolerations:
  node.kubernetes.io/not-ready:NoExecute op=Exists for 300s
  node.kubernetes.io/unreachable:NoExecute op=Exists for 300s
Events:
  Type      Reason      Age      From      Message
  ----      -
  Normal    Scheduled    3m13s    default-scheduler    Successfully assigned default/app to minikube
  Warning   Failed       66s (x12 over 3m12s)    kubelet              Error: ErrImageNeverPull
  Warning   ErrImageNeverPull 51s (x13 over 3m12s)    kubelet              Container image "app" is not present with pull policy of Never
PS D:\OneDrive - Vidyalankar Institute of Technology\Study_material\Semester VI\CC\Practice\Docker and Kubernetes\docker-k8s-workshop\manifests>

```