



Container Orchestration and Security

ASSIGNMENT – 1

SESSION: January 2026 – May 2026

SUBMITTED TO-

Dr. Hitesh Kumar Sharma

SUBMITTED BY –

NAME: Devanshi Jain

SAP ID: 500123468

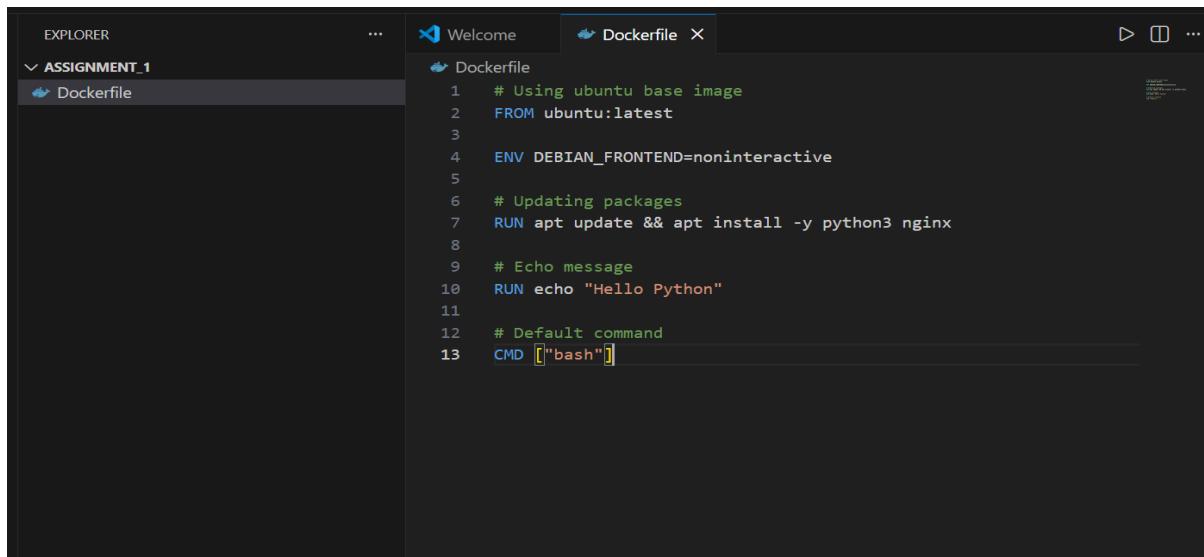
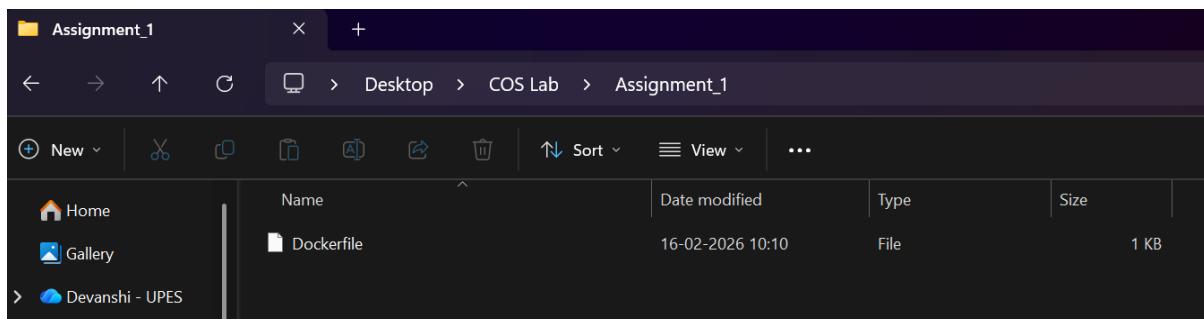
ROLL NO.: R2142230278

Batch : 01 DevOps

SEMESTER: 6th

Q. Implement the following Scenario in Docker

1. Create a Dockerfile
2. Pull an Ubuntu image in it.
3. Install python in it.
4. Echo a message “Hello Python”
5. Install Nginx server in it.
6. Build an image of this Dockerfile named as “your roll number”
7. Push that image on Docker Hub
8. Pull that image from Docker Hub
9. Run a container from this image
10. Create volume MyDvol for this container.
11. Create a file in this volume with a text message “Hello MyDvol”



```
PS C:\Users\Devanshi> cd C:\Users\Devanshi\Desktop\COS_Lab\Assignment_1
PS C:\Users\Devanshi\Desktop\COS_Lab\Assignment_1> docker pull ubuntu:latest
latest: Pulling from library/ubuntu
sha256:cd1dba651b3880c3686ecf4e3c4220f026b521fb76978881737d24f2008828b2b
Status: Downloaded newer image for ubuntu:latest
docker.io/library/ubuntu:latest
PS C:\Users\Devanshi\Desktop\COS_Lab\Assignment_1> docker images
REPOSITORY          TAG      IMAGE ID      CREATED        SIZE
mysql              latest   932fe8fc04c  2 weeks ago   1.25GB
nginx-html-app    latest   5e84d56148aa  3 weeks ago   237MB
wordpress          latest   afa48d92726d  4 weeks ago   1.05GB
ubuntu             latest   cd1dba651b30  4 weeks ago   117MB
nginx              latest   c881927c4077  4 weeks ago   237MB
sreyasharma/signed_images_jenkins  1.0.1   9f728814bd33  3 months ago   80.1MB
demo_app_try      latest   7796fc7a40b3  3 months ago   80.1MB
jasonish/suricata latest   fc6cce7683d2  3 months ago   594MB
ghcr.io/zaproxy/zaproxy  stable  84d2459d3c85  3 months ago   3.58GB
alpine             latest   45710df74cf5d  4 months ago   12.8MB
hello-world        latest   45710df74cf5d  4 months ago   20.3kB
docker/desktop-kubernetes  kubernetes-v1.32.2-cni-v1.6.0-critools-v1.31.1-cri-dockerd-v0.3.16-1-debian fdd1722e4fdcc  12 months ago   596MB
registry.k8s.io/kube-apiserver  v1.32.2   c4749f93e751  12 months ago   129MB
registry.k8s.io/kube-controller-manager  v1.32.2   399a50f4d13  12 months ago   119MB
registry.k8s.io/kube-proxy       v1.32.2   83c25f0faa6  12 months ago   129MB
registry.k8s.io/kube-scheduler  v1.32.2   45710df74cf5d  12 months ago   93.5MB
envoyproxy/envoy      v1.32.0   071ae2096452  16 months ago   224MB
kindest/node        v1.31.1   cd224d8da58d  16 months ago   1.49GB
busybox             latest   2383baad1868  16 months ago   6.78MB
registry.k8s.io/etc  3.5.16-0   c6a9d11cc5c8  17 months ago   211MB
docker/desktop-cloud-provider-kind  v0.3.0-decktop.3  c321a5c92549  17 months ago   582MB
docker/desktop-containerd-registry-mirror  v0.0.2   aadc48ce8966  18 months ago   46.4MB
registry.k8s.io/coredns/coredns  v1.11.3   9caabbf6238b  18 months ago   85.1MB
hkshtesh/kubedemo  2.0     a21f8e748696  19 months ago   59.4MB
hkshtesh/kubedemo  1.0     edde5e5e77713  19 months ago   59.4MB
registry.k8s.io/pause  3.10   ee6521f290b2  21 months ago   1.06MB
docker/desktop-vpnkit-controller  dc331cb22850be0cd97c84a9cfecaf44alaafb6e  7ecf567ea070  2 years ago   47MB
kubernetesui/dashboard  v2.7.0   2e50dd29e9d5  3 years ago   334MB
kubernetesui/metrics-scrapers  v1.0.8   76049887f07a  3 years ago   63.6MB
docker/desktop-storage-provisioner  v2.0   115d77effe6e2  4 years ago   59.2MB
PS C:\Users\Devanshi\Desktop\COS_Lab\Assignment_1>
```

```
PS C:\Users\Devanshi\Desktop\COS_Lab\Assignment_1> docker build -t r2142230278 .
[+] Building 95.9s (7/7) FINISHED
=> [internal] load build definition from Dockerfile
=> transferring dockerfile: 271B
=> [internal] load metadata for docker.io/library/ubuntu:latest
=> [internal] load build context
=> transferring context: 2B
[+] [1/1] FROM docker.io/library/ubuntu:latest@sha256:cd1dba651b3880c3686ecf4e3c4220f026b521fb76978881737d24f2008828b2b
=> resolve docker.io/library/ubuntu:latest@sha256:cd1dba651b3880c3686ecf4e3c4220f026b521fb76978881737d24f2008828b2b
[2/2] RUN apt update && apt install -y python3 nginx
[3/3] Echo Hello Python"
=> exporting to image
=> exporting layers
=> exporting manifest sha256:87e49ac2b1c95e7403bdb21f383e822eacf29ba6b4736a8ab7f8953c237879
=> exporting configuration manifest sha256:5c0b03b52b173f28e6a6724c37c5c79814ff0994a9e892baa23f8aab1bc0a
=> pushing manifest list sha256:5c0b03b52b173f28e6a6724c37c5c79814ff0994a9e892baa23f8aab1bc0a
=> naming to docker.io/r2142230278:latest
=> unpacking to docker.io/library/r2142230278:latest

View build details: docker-desktop://dashboard/build/desktop-linux/desktop-linux/rmppqlqmc4gksu29nvne8v6sr
PS C:\Users\Devanshi\Desktop\COS_Lab\Assignment_1> docker images
REPOSITORY          TAG      IMAGE ID      CREATED        SIZE
r2142230278        latest   7bfd56b53166  2 seconds ago  294MB
mysql              latest   932fe8fc04c  2 weeks ago   1.25GB
nginx-html-app    latest   5e84d56148aa  3 weeks ago   237MB
wordpress          latest   afa48d92726d  4 weeks ago   1.05GB
ubuntu             latest   cd1dba651b30  4 weeks ago   117MB
nginx              latest   c881927c4077  4 weeks ago   237MB
demo_app_try      latest   9f728814bd33  3 months ago   80.1MB
sreyasharma/signed_images_jenkins  1.0.1   7796fc7a40b3  3 months ago   80.1MB
jasonish/suricata latest   fc6cce7683d2  3 months ago   594MB
ghcr.io/zaproxy/zaproxy  stable  84d2459d3c85  3 months ago   3.58GB
alpine             latest   45710df74cf5d  4 months ago   12.8MB
hello-world        latest   45710df74cf5d  4 months ago   20.3kB
docker/desktop-kubernetes  kubernetes-v1.32.2-cni-v1.6.0-critools-v1.31.1-cri-dockerd-v0.3.16-1-debian fdd1722e4fdcc  12 months ago   596MB
registry.k8s.io/kube-apiserver  v1.32.2   c4749f93e751  12 months ago   129MB
registry.k8s.io/kube-proxy       v1.32.2   399a50f4d13  12 months ago   119MB
registry.k8s.io/kube-controller-manager  v1.32.2   83c25f0faa6  12 months ago   129MB
registry.k8s.io/kube-scheduler  v1.32.2   45710df74cf5d  12 months ago   93.5MB
envoyproxy/envoy      v1.32.0   071ae2096452  16 months ago   224MB
kindest/node        v1.31.1   cd224d8da58d  16 months ago   1.49GB
busybox             latest   2383baad1868  16 months ago   6.78MB
registry.k8s.io/etc  3.5.16-0   c6a9d11cc5c8  17 months ago   211MB
docker/desktop-cloud-provider-kind  v0.3.0-decktop.3  c321a5c92549  17 months ago   582MB
docker/desktop-containerd-registry-mirror  v0.0.2   aadc48ce8966  18 months ago   46.4MB
registry.k8s.io/coredns/coredns  v1.11.3   9caabbf6238b  18 months ago   85.1MB
hkshtesh/kubedemo  2.0     a21f8e748696  19 months ago   59.4MB
hkshtesh/kubedemo  1.0     edde5e5e77713  19 months ago   59.4MB
registry.k8s.io/pause  3.10   ee6521f290b2  21 months ago   1.06MB
PS C:\Users\Devanshi\Desktop\COS_Lab\Assignment_1>
```

```
PS C:\Users\Devanshi\Desktop\COS_Lab\Assignment_1> docker login
Authenticating with existing credentials... [Username: devanshij04ain]
[ Info To log in with a different account, run 'docker logout' followed by 'docker login'

Login Succeeded
PS C:\Users\Devanshi\Desktop\COS_Lab\Assignment_1> docker tag r2142230278 devanshij04ain/r2142230278
PS C:\Users\Devanshi\Desktop\COS_Lab\Assignment_1> docker images
REPOSITORY          TAG      IMAGE ID      CREATED        SIZE
devanshij04ain/r2142230278  latest   7bfd56b53166  About a minute ago  294MB
r2142230278        latest   7bfd56b53166  About a minute ago  294MB
mysql              latest   932fe8fc04c  2 weeks ago   1.25GB
nginx-html-app    latest   5e84d56148aa  3 weeks ago   237MB
wordpress          latest   afa48d92726d  4 weeks ago   1.05GB
ubuntu             latest   cd1dba651b30  4 weeks ago   117MB
nginx              latest   c881927c4077  4 weeks ago   237MB
demo_app_try      latest   7796fc7a40b3  3 months ago   80.1MB
sreyasharma/signed_images_jenkins  1.0.1   9f728814bd33  3 months ago   80.1MB
jasonish/suricata latest   fc6cce7683d2  3 months ago   594MB
ghcr.io/zaproxy/zaproxy  stable  84d2459d3c85  3 months ago   3.58GB
alpine             latest   45710df74cf5d  4 months ago   12.8MB
hello-world        latest   45710df74cf5d  4 months ago   20.3kB
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registry.k8s.io/kube-apiserver  v1.32.2   c4749f93e751  12 months ago   129MB
registry.k8s.io/kube-proxy       v1.32.2   83c25f0faa6  12 months ago   129MB
registry.k8s.io/kube-controller-manager  v1.32.2   45710df74cf5d  12 months ago   93.5MB
registry.k8s.io/kube-scheduler  v1.32.2   399a50f4d13  12 months ago   119MB
envoyproxy/envoy      v1.32.0   071ae2096452  16 months ago   224MB
kindest/node        v1.31.1   cd224d8da58d  16 months ago   1.49GB
busybox             latest   2383baad1868  16 months ago   6.78MB
registry.k8s.io/etc  3.5.16-0   c6a9d11cc5c8  17 months ago   211MB
docker/desktop-cloud-provider-kind  v0.3.0-decktop.3  c321a5c92549  17 months ago   582MB
docker/desktop-containerd-registry-mirror  v0.0.2   aadc48ce8966  18 months ago   46.4MB
registry.k8s.io/coredns/coredns  v1.11.3   9caabbf6238b  18 months ago   85.1MB
hkshtesh/kubedemo  2.0     a21f8e748696  19 months ago   59.4MB
hkshtesh/kubedemo  1.0     edde5e5e77713  19 months ago   59.4MB
registry.k8s.io/pause  3.10   ee6521f290b2  21 months ago   1.06MB
docker/desktop-vpnkit-controller  dc331cb22850be0cd97c84a9cfecaf44alaafb6e  7ecf567ea070  2 years ago   47MB
kubernetesui/dashboard  v2.7.0   2e50dd29e9d5  3 years ago   334MB
kubernetesui/metrics-scrapers  v1.0.8   76049887f07a  3 years ago   63.6MB
docker/desktop-storage-provisioner  v2.0   115d77effe6e2  4 years ago   59.2MB
PS C:\Users\Devanshi\Desktop\COS_Lab\Assignment_1>
```

```
2 Windows PowerShell X + v

PS C:\Users\Devanshi\Desktop\COS_Lab\Assignment_1> docker push devanshij04ain/r2142230278
Using default tag: latest
The push refers to repository [docker.io/devanshij04ain/r2142230278]
7c50a20fdd96: Pushed
4f4fb700ef54: Mounted from library/wordpress
a3629ac5b9f4: Mounted from library/ubuntu
41d1dde4aab: Pushed
latest: digest: sha256:7bfd56b5316608e258fc50ca00a2e9c09d20bc2d49d7827fd4b709cc3ddd4128 size: 855
PS C:\Users\Devanshi\Desktop\COS_Lab\Assignment_1> docker pull devanshij04ain/r2142230278
Using default tag: latest
latest: Pulling from devanshij04ain/r2142230278
Digest: sha256:7bfd56b5316608e258fc50ca00a2e9c09d20bc2d49d7827fd4b709cc3ddd4128
Status: Image is up to date for devanshij04ain/r2142230278:latest
docker.io/devanshij04ain/r2142230278:latest
PS C:\Users\Devanshi\Desktop\COS_Lab\Assignment_1> docker run -it --name mycontainer devanshij04ain/r2142230278
root@9dd561589b1a:/# python3 --version
Python 3.12.3
root@9dd561589b1a:/# nginx -v
nginx version: nginx/1.24.0 (Ubuntu)
root@9dd561589b1a:/# exit
exit
PS C:\Users\Devanshi\Desktop\COS_Lab\Assignment_1> docker volume create MyDvol
MyDvol
PS C:\Users\Devanshi\Desktop\COS_Lab\Assignment_1> docker volume ls
DRIVER VOLUME NAME
local 0faeb2f7d30e0647db36f64a6546cfa8252e07a7c7a3b0834c9f855e6c407e5f
local 11b3ac6e713306f7b186383ea2470d737ef47213b5baa2ac840691a667c5c8ac
local MyDvol
local f7eb6786fb6714c03495bfb412a062355e3362cf98259db58f53acc3618f196
local fa4f109ce31a400e40f05c0308f7630f3e2a78b8d48377bf152a31c04b477752
local lab_6_db_data
```

```
PS C:\Users\Devanshi\Desktop\COS_Lab\Assignment_1> docker run -it --name volcontainer -v MyDvol:/data devanshij04ain/r2142230278
root@76c2b0131b15:/# cd /data
root@76c2b0131b15:/data# echo "Hello MyDvol" > myfile.txt
root@76c2b0131b15:/data# cat myfile.txt
Hello MyDvol
root@76c2b0131b15:/data# exit
exit
PS C:\Users\Devanshi\Desktop\COS_Lab\Assignment_1> docker ps
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
PS C:\Users\Devanshi\Desktop\COS_Lab\Assignment_1> docker ps
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
PS C:\Users\Devanshi\Desktop\COS_Lab\Assignment_1> docker ps -a
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
76c2b0131b15 devanshij04ain/r2142230278 "bash" 2 minutes ago Exited (0) About a minute ago
9dd561589b1a devanshij04ain/r2142230278 "bash" 8 minutes ago Exited (0) 8 minutes ago
volcontainer
mycontainer
```

```
PS C:\Users\Devanshi\Desktop\COS_Lab\Assignment_1> docker rm mycontainer
mycontainer
PS C:\Users\Devanshi\Desktop\COS_Lab\Assignment_1> docker rm volcontainer
volcontainer
PS C:\Users\Devanshi\Desktop\COS_Lab\Assignment_1> docker rmi r2142230278
Untagged: r2142230278:latest
PS C:\Users\Devanshi\Desktop\COS_Lab\Assignment_1> docker rmi devanshij04ain/r2142230278
Untagged: devanshij04ain/r2142230278:latest
Deleted: sha256:7bfd56b5316608e258fc50ca00a2e9c09d20bc2d49d7827fd4b709cc3ddd4128
PS C:\Users\Devanshi\Desktop\COS_Lab\Assignment_1> |
```