

PES2UG23CS678_Varun_Lab3

Name: Varun Namboodiri

SRN: PES2UG23CS678

Section: K

Date: 30-01-2026

Here, we are seeing the basics of the Docker container, which is of PaaS (while expanded, it gives us the Platform as a Service).

SS1:

```
varunnamboodiri@varunnamboodiri-virtual-machine:~$ cd ~/PES2UG23CS678
varunnamboodiri@varunnamboodiri-virtual-machine:~/PES2UG23CS678$ export SRN=PES2UG23CS678
varunnamboodiri@varunnamboodiri-virtual-machine:~/PES2UG23CS678$ echo "SRN:$SRN"
SRN:PES2UG23CS678
varunnamboodiri@varunnamboodiri-virtual-machine:~/PES2UG23CS678$ docker run hello-world
permission denied while trying to connect to the docker API at unix:///var/run/docker.sock
varunnamboodiri@varunnamboodiri-virtual-machine:~/PES2UG23CS678$ ^C
varunnamboodiri@varunnamboodiri-virtual-machine:~/PES2UG23CS678$ sudo docker run hello-world

Hello from Docker!
This message shows that your installation appears to be working correctly.

To generate this message, Docker took the following steps:
 1. The Docker client contacted the Docker daemon.
 2. The Docker daemon pulled the "hello-world" image from the Docker Hub.
    (amd64)
 3. The Docker daemon created a new container from that image which runs the
    executable that produces the output you are currently reading.
 4. The Docker daemon streamed that output to the Docker client, which sent it
    to your terminal.

To try something more ambitious, you can run an Ubuntu container with:
$ docker run -it ubuntu bash

Share images, automate workflows, and more with a free Docker ID:
https://hub.docker.com/

For more examples and ideas, visit:
https://docs.docker.com/get-started/
```

Now, we are trying to set the environment variable as SRN, which in this case would be PES2UG23CS678 (which is my SRN) for this lab experiment. Post setting the environment variable, we would be displaying the SRN to see if there were any errors in between or not. Finally, we are also seeing if the docker runs in our system or not.

SS2:

```
varunnamboodiri@varunnamboodiri-virtual-machine:~/PES2UG23CS678$ docker ps
permission denied while trying to connect to the docker API at unix:///var/run/docker.sock
varunnamboodiri@varunnamboodiri-virtual-machine:~/PES2UG23CS678$ sudo docker ps
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
varunnamboodiri@varunnamboodiri-virtual-machine:~/PES2UG23CS678$ sudo docker ps -a
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
c9198745836e hello-world "/hello" 4 minutes ago Exited (0) 4 minutes ago distracted_fermat
2363373d0f0e hello-world "/hello" 12 minutes ago Exited (0) 12 minutes ago zen_torvalds
cb5baeb66ed8 hello-world "/hello" 19 hours ago Exited (0) 19 hours ago epic_sinoussi
464a2261a288 hello-world "/hello" 19 hours ago Exited (0) 19 hours ago determined_lovelace
920c3c1462fb hello-world "/hello" 19 hours ago Exited (0) 19 hours ago agitated_driscoll
varunnamboodiri@varunnamboodiri-virtual-machine:~/PES2UG23CS678$ sudo docker images
          IMAGE           ID      REPOSITORY     TAG      SIZE
hello-world:latest  05813aedc15f    hello-world   latest  25.9kB
varunnamboodiri@varunnamboodiri-virtual-machine:~/PES2UG23CS678$
```

In this step, we are seeing all the images pushed and all the containers running in our local docker system.

SS3:

```
varunnamboodiri@varunnamboodiri-virtual-machine:~/PES2UG23CS678$ sudo docker pull python:3.10-slim
3.10-slim: Pulling from library/python
119d43eec815: Pull complete
47c2bec0e44b: Pull complete
af233a02f79e: Pull complete
ed8cf59ed51: Pull complete
f81c64c75055: Download complete
b3e684e4d1bb: Download complete
Digest: sha256:f5d029fe39146b08200bcc73595795ac19b85997ad0e5001a02c7c32e8769efa
Status: Downloaded newer image for python:3.10-slim
docker.io/library/python:3.10-slim
varunnamboodiri@varunnamboodiri-virtual-machine:~/PES2UG23CS678$ sudo docker images
[ Info → U In Us
IMAGE          ID      DISK USAGE   CONTENT SIZE  EXTRA
hello-world:latest 05813aedc15f    25.9kB     9.52kB  U
python:3.10-slim  f5d029fe3914    185MB      47.1MB
varunnamboodiri@varunnamboodiri-virtual-machine:~/PES2UG23CS678$ ]
```

Here, we would be pulling in the slim version of python 3.10, thereby ensuring that we would be occupying lesser space, while being as fast as the normal python. This makes our project leaner.

SS4:

```
varunnamboodiri@varunnamboodiri-virtual-machine:~/PES2UG23CS678/ml-docker-PES2UG23CS678$ sudo docker build -t spam-web-app-pes2ug23cs678 .
[+] Building 73.5s (12/12) FINISHED
  => [internal] load build definition from Dockerfile
  => => transferring dockerfile: 800B
  => [internal] load metadata for docker.io/library/python:3.10-slim
  => [internal] load .dockerignore
  => => transferring context: 2B
  => [internal] load build context
  => => transferring context: 398.76kB
  => [1/7] FROM docker.io/library/python:3.10-slim@sha256:f5d029fe39146b08200bcc73595795ac19b85997ad0e5001a02c7c32e8769efa
  => => resolve docker.io/library/python:3.10-slim@sha256:f5d029fe39146b08200bcc73595795ac19b85997ad0e5001a02c7c32e8769efa
  => [2/7] WORKDIR /app
  => [3/7] COPY app.py .
  => [4/7] COPY spam_classifier_model.pkl .
  => [5/7] COPY tfidf_vectorizer.pkl .
  => [6/7] COPY templates ./templates
  => [7/7] RUN pip install --no-cache-dir flask scikit-learn joblib
  => exporting to image
  => => exporting layers
  => => exporting manifest sha256:b435103d6492ed380b95e126ec411351fd520f524673df34eb2a47857b3b04cf
  => => exporting config sha256:75b9a588ad29f6f0291cda708debeefcacebe485db33428691ff654a01687a4e
  => => exporting attestation manifest sha256:ca5ce688e9c40fb0d63c1633d896c8392be79dcdf4dce4273aab7fc6a8694bd
  => => exporting manifest list sha256:46765c599b85904870e421d9437b5d72ccc8385e89e9d4f3ee35ded73d7a013f
  => => naming to docker.io/library/spam-web-app-pes2ug23cs678:latest
  => => unpacking to docker.io/library/spam-web-app-pes2ug23cs678:latest
varunnamboodiri@varunnamboodiri-virtual-machine:~/PES2UG23CS678/ml-docker-PES2UG23CS678$ ]
```

Now, we are running the Dockerfile, thereby installing the required python libraries for our experiment.

SS5:

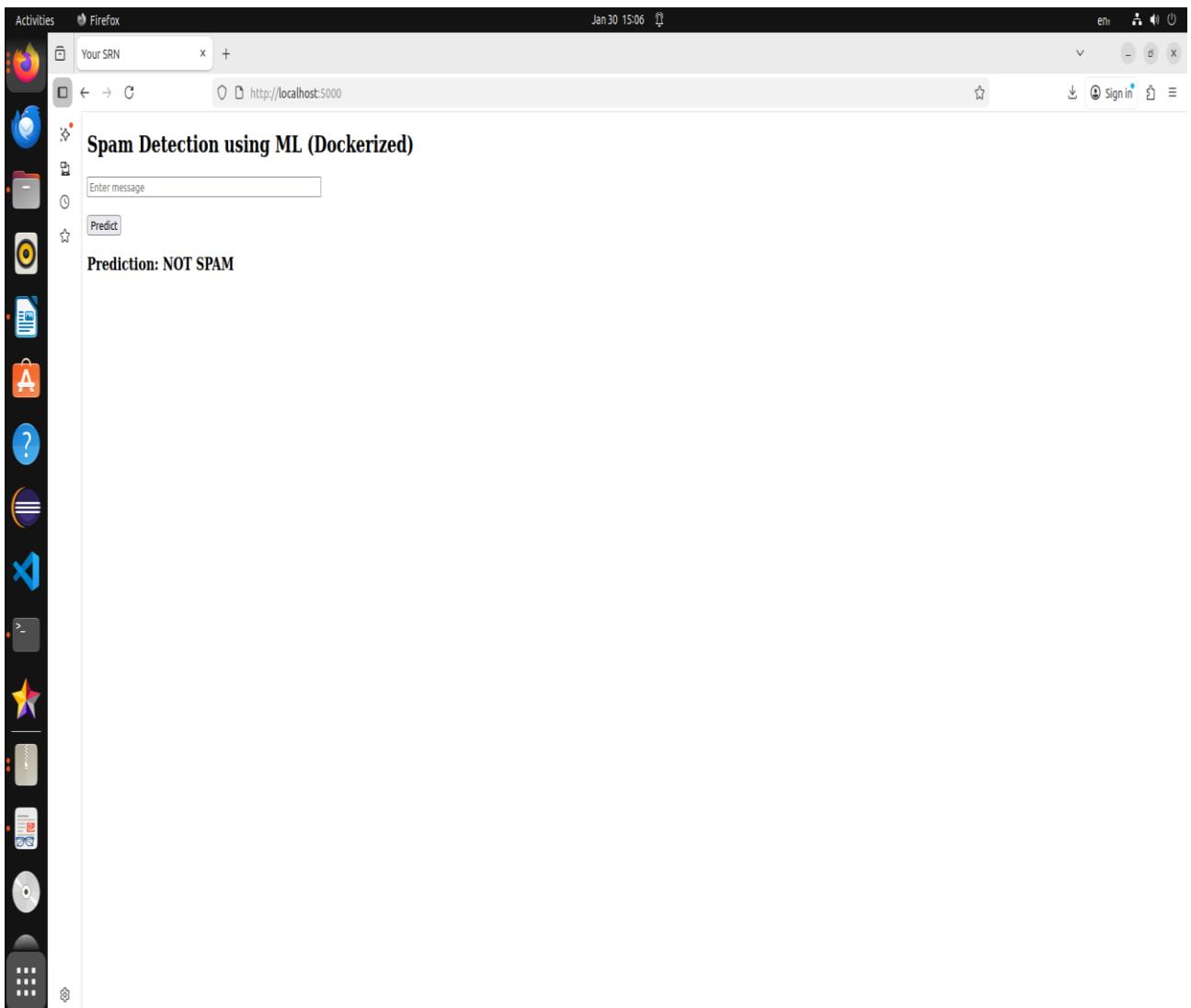
```

varunnanboodtri@varunnanboodtri-virtual-machine:~/PES2UC23CS678/nl-docker-PES2UC23CS678$ sudo docker run -d -p 5000:5000 spam-web-app-pes2ug23cs678
fc217c016158bd2303ef0630d77f157af7d3b2e1e7bdeab9e0e2a512295f5678
varunnanboodtri@varunnanboodtri-virtual-machine:~/PES2UC23CS678/nl-docker-PES2UC23CS678$ docker ps
permission denied while trying to connect to the docker API at unix:///var/run/docker.sock
varunnanboodtri@varunnanboodtri-virtual-machine:~/PES2UC23CS678/nl-docker-PES2UC23CS678$ sudo docker ps
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
fc217c016158 spam-web-app-pes2ug23cs678 "python app.py" 22 seconds ago Up 21 seconds 0.0.0.0:5000->5000/tcp, [::]:5000->5000/tcp practical_hertz
varunnanboodtri@varunnanboodtri-virtual-machine:~/PES2UC23CS678/nl-docker-PES2UC23CS678$ 

```

We are running this created container, which would be starting our ML application (with the HTML page as the front-end). The port over here is mapped to the number of 5000 for this experiment. The name of the image created now is the spam-web-app.

SS6:



This is the front-end of the ML application, as we have discussed in the preceding step.

SS7:

```
varunnamboodri@varunnamboodri-virtual-machine:/PES2UG23CS678/ml-docker-PES2UG23CS678/templates$ sudo docker login
```

USING WEB-BASED LOGIN

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

Your one-time device confirmation code is: GJPK-FKZX

Press ENTER to open your browser or submit your device code here: <https://login.docker.com/activate>

Waiting for authentication in the browser...

WARNING! Your credentials are stored unencrypted in '/root/.docker/config.json'.

Configure a credential helper to remove this warning. See

<https://docs.docker.com/go/credential-store/>

Login Succeeded

We are logging into our docker account from the ubuntu terminal.

SS8:

```
varunnamboodri@varunnamboodri-virtual-machine:/PES2UG23CS678/ml-docker-PES2UG23CS678/templates$ sudo docker tag spam-web-app-pes2ug23cs678 pes2ug23cs678/spam-web-app-pes2ug23cs678:v1
```

```
varunnamboodri@varunnamboodri-virtual-machine:/PES2UG23CS678/ml-docker-PES2UG23CS678/templates$ docker images
```

permission denied while trying to connect to the docker API at unix:///var/run/docker.sock

```
varunnamboodri@varunnamboodri-virtual-machine:/PES2UG23CS678/ml-docker-PES2UG23CS678/templates$ sudo docker images
```

Info → In Use

IMAGE	ID	DISK USAGE	CONTENT SIZE	EXTRA
hello-world:latest	65813aedc15f	25.9kB	9.52kB	
pes2ug23cs678/spam-web-app-pes2ug23cs678:v1	40765c5b9b85	541MB	125MB	
python:3.10-slim	f5d029fe3914	185MB	47.1MB	
spam-web-app-pes2ug23cs678:latest	40765c5b9b85	541MB	125MB	

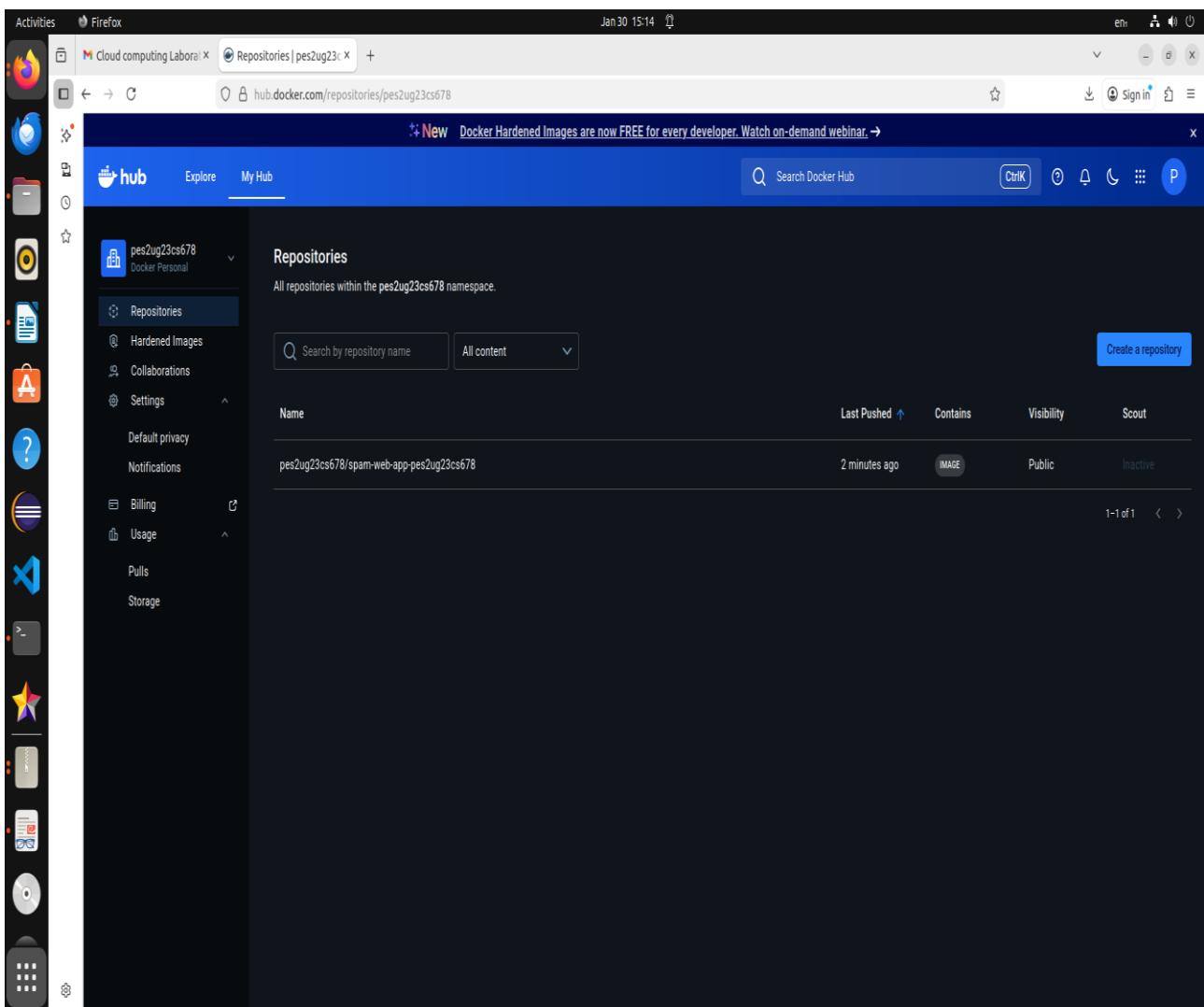
We are tagging the spam-web-app image (this image is created in the screenshot numbered 5).

SS9:

```
varunnamboodiri@varunnamboodiri-virtual-machine:/PES2UG23CS678/nl-docker-PES2UG23CS678/templates$ sudo docker push pes2ug23cs678/spam-web-app-pes2ug23cs678:v1
The push refers to repository [docker.io/pes2ug23cs678/spam-web-app-pes2ug23cs678]
48609b39cb75: Pushed
b9b61d0aec03: Pushed
ed8cfdf59ed51: Mounted from library/python
47c2bec0e44b: Mounted from library/python
b72cb076ea7f: Pushed
af233a02f79e: Mounted from library/python
9fcfc502598fc: Pushed
8ce9d3299d95: Pushed
119d43eec815: Mounted from library/python
24174e8481ef: Pushed
5a444ed8c0f6: Pushed
v1: digest: sha256:40765c5b9b8596487be421d9437b5d72ccc8385e89e9d4f3ee35ded73d7a013f size: 856
```

We are now pushing the image tagged in the preceding step.

SS10:



This is the screenshot of the repository in the docker UI.

SS11:

```

varunnamboodiri@varunnamboodiri-virtual-machine:~/PES2UG23CS678/ml-docker-PES2UG23CS678/templates$ sudo docker ps
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
fc217c016158 spam-web-app-pes2ug23cs678 "python app.py" 16 minutes ago Up 16 minutes 0.0.0.0:5000->5000/tcp, [::]:5000->5000/tcp practical_hertz
varunnamboodiri@varunnamboodiri-virtual-machine:~/PES2UG23CS678/ml-docker-PES2UG23CS678/templates$ sudo docker stop fc217c016158
fc217c016158
varunnamboodiri@varunnamboodiri-virtual-machine:~/PES2UG23CS678/ml-docker-PES2UG23CS678/templates$ sudo docker ps
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES

```

We are stopping the spam-web-app-pes2ug23cs678 container from running further.

SS12:

```

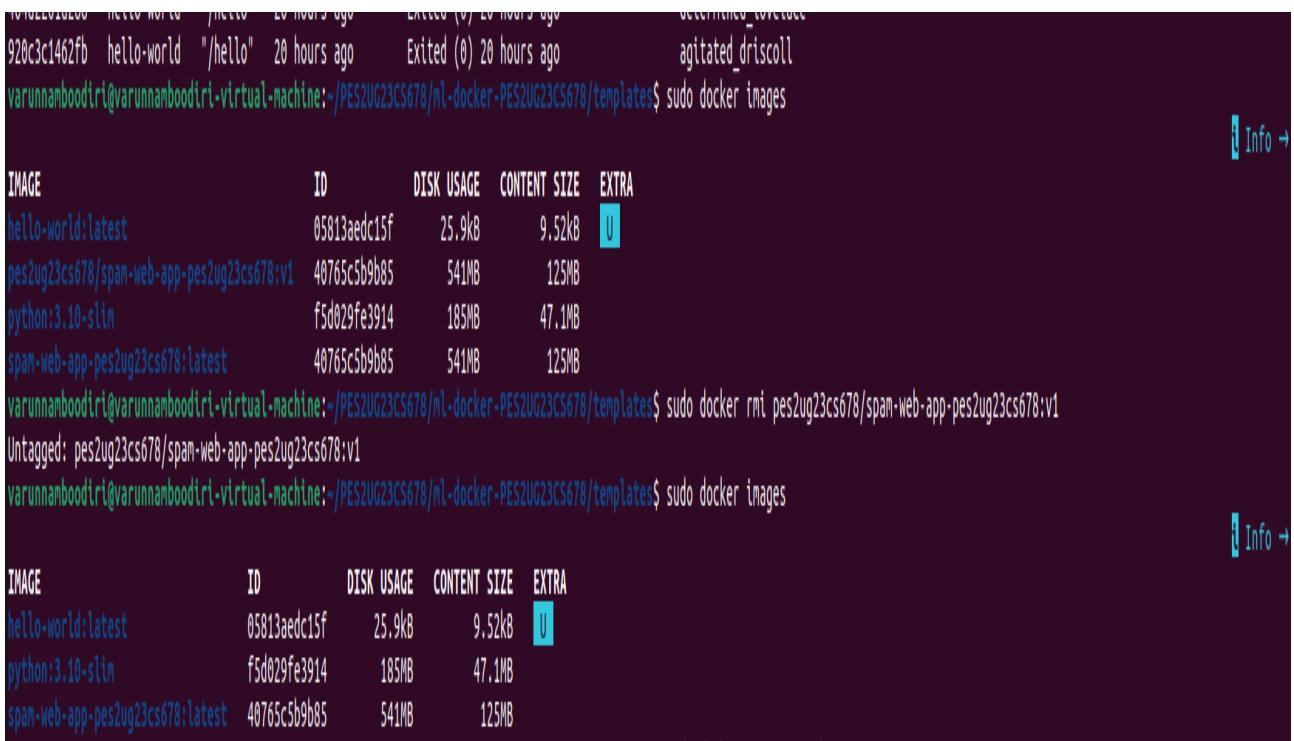
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
varunnamboodiri@varunnamboodiri-virtual-machine:~/PES2UG23CS678/ml-docker-PES2UG23CS678/templates$ sudo docker ps -a
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
fc217c016158 spam-web-app-pes2ug23cs678 "python app.py" 20 minutes ago Exited (137) 2 minutes ago practical_hertz
c9198745836e hello-world "/hello" About an hour ago Exited (0) About an hour ago distracted_fermat
2363373d0f0e hello-world "/hello" About an hour ago Exited (0) About an hour ago zen_torvalds
cb5baeb06ed8 hello-world "/hello" 20 hours ago Exited (0) 20 hours ago epic_sinoussi
464a2261a288 hello-world "/hello" 20 hours ago Exited (0) 20 hours ago determined_lovelace
920c3c1462fb hello-world "/hello" 20 hours ago Exited (0) 20 hours ago agitated_driscoll
varunnamboodiri@varunnamboodiri-virtual-machine:~/PES2UG23CS678/ml-docker-PES2UG23CS678/templates$ sudo docker rm fc217c016158
fc217c016158
varunnamboodiri@varunnamboodiri-virtual-machine:~/PES2UG23CS678/ml-docker-PES2UG23CS678/templates$ docker ps -a
permission denied while trying to connect to the docker API at unix:///var/run/docker.sock
varunnamboodiri@varunnamboodiri-virtual-machine:~/PES2UG23CS678/ml-docker-PES2UG23CS678/templates$ sudo docker ps -a
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
c9198745836e hello-world "/hello" About an hour ago Exited (0) About an hour ago distracted_fermat
2363373d0f0e hello-world "/hello" About an hour ago Exited (0) About an hour ago zen_torvalds
cb5baeb06ed8 hello-world "/hello" 20 hours ago Exited (0) 20 hours ago epic_sinoussi
464a2261a288 hello-world "/hello" 20 hours ago Exited (0) 20 hours ago determined_lovelace
920c3c1462fb hello-world "/hello" 20 hours ago Exited (0) 20 hours ago agitated_driscoll

```

Here, we are removing the container spam-web-app-pes2ug23cs678.

SS13:

```

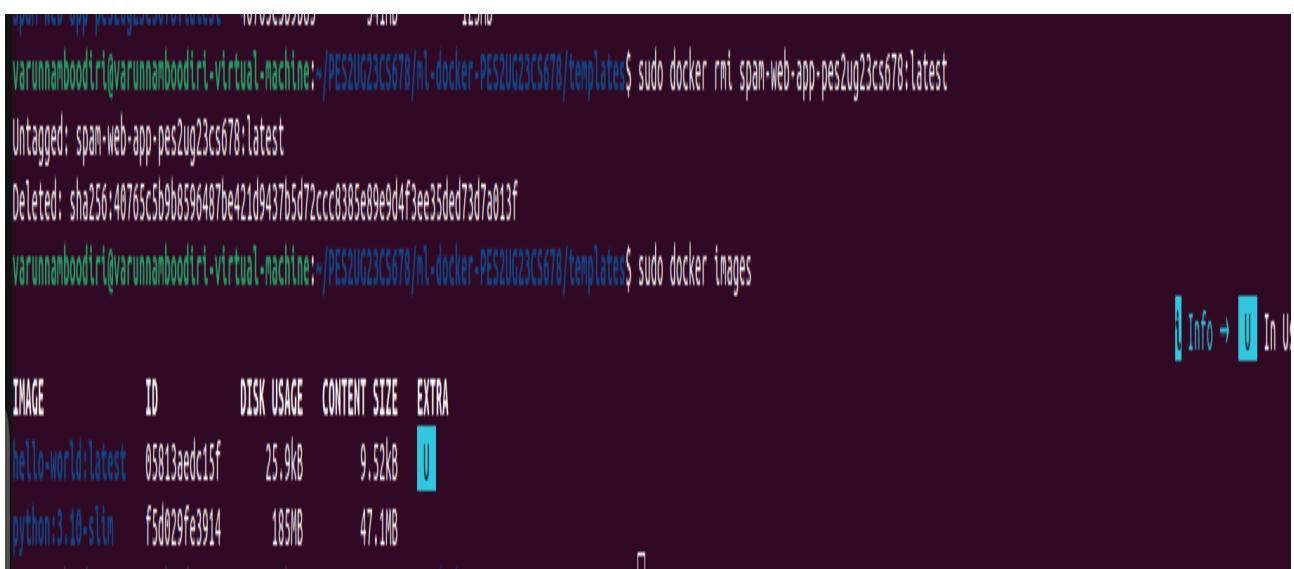
10:02:29.000 hello world    /hello   20 hours ago      Exited (0) 20 hours ago      agitated_driscoll
920c3c1462fb hello-world  "/hello"  20 hours ago      Exited (0) 20 hours ago      agitated_driscoll
varunnamboodiri@varunnamboodiri-virtual-machine:~/PES2UG23CS678/ml-docker-PES2UG23CS678/templates$ sudo docker images


```

We are now removing the image pes2ug23cs678/spam-web-app-pes2ug23cs678:v1. This does not eliminate the image named spam-web-app=pes2ug23cs678:latest.

SS14:

```

varunnamboodiri@varunnamboodiri-virtual-machine:~/PES2UG23CS678/ml-docker-PES2UG23CS678/templates$ sudo docker rmi spam-web-app-pes2ug23cs678:latest
Untagged: spam-web-app-pes2ug23cs678:latest
Deleted: sha256:40765c5b9b8596407be421d94375d72cc8385e89e9d4f3ee35ded73d7a013f
varunnamboodiri@varunnamboodiri-virtual-machine:~/PES2UG23CS678/ml-docker-PES2UG23CS678/templates$ sudo docker images


```

1 PES2UG23CS678

2

3 sudo docker rmi 40765c5b9b85

We are seeing two ways to eliminate the remaining image, which are:-

- Using the help of the image name.
- Using the help of the image id (this would have deleted both these images).

SS15:

```
varunnamboodri@varunnamboodri-virtual-machine:/PES2UG23CS678/ml-docker-PES2UG23CS678/templates$ sudo docker pull pes2ug23cs678/spam-web-app-pes2ug23cs678:v1
v1: Pulling from pes2ug23cs678/spam-web-app-pes2ug23cs678
b72cb076ea77: Pull complete
9fcf502598fc: Pull complete
5a444ed8c0f6: Pull complete
8ce9d3299d95: Pull complete
24174e8481ef: Pull complete
b9b61d0aec03: Pull complete
48609b39cb75: Download complete
Digest: sha256:40765c5b9b8596487be421d9437b5d72ccc8385e89e9d4f3ee35ded73d7a013f
Status: Downloaded newer image for pes2ug23cs678/spam-web-app-pes2ug23cs678:v1
docker.io/pes2ug23cs678/spam-web-app-pes2ug23cs678:v1
varunnamboodri@varunnamboodri-virtual-machine:/PES2UG23CS678/ml-docker-PES2UG23CS678/templates$ sudo docker images
```

Info → In Use

IMAGE	ID	DISK USAGE	CONTENT SIZE	EXTRA
hello-world:latest	05813aedc15f	25.9kB	9.52kB	U
pes2ug23cs678/spam-web-app-pes2ug23cs678:v1	40765c5b9b85	541MB	125MB	
python:3.10-slim	f5d029fe3914	185MB	47.1MB	

We are now pulling the image pes2ug23cs678/spam-web-app-pes2ug23cs678 and seeing the available images(The image of pes2ug23cs678/spam-web-app-pes2ug23cs678 has been pushed into the docker containers).