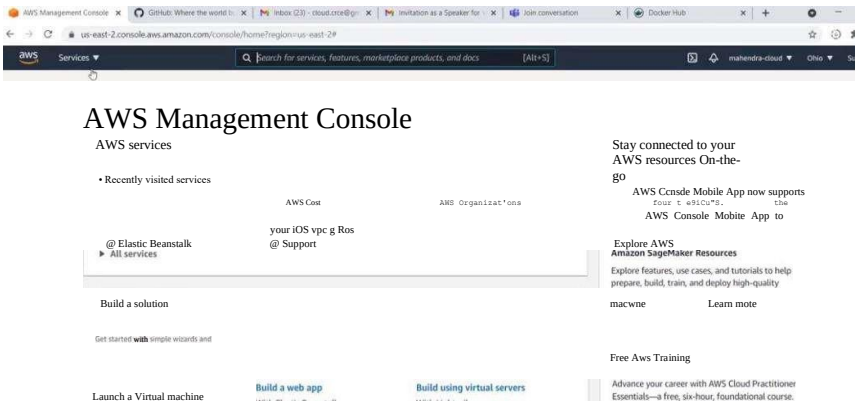
Experiment No.8

Aim: To understand Docker Architecture and Container Life Cycle, install Docker and execute docker commands to manage images and interact with containers.

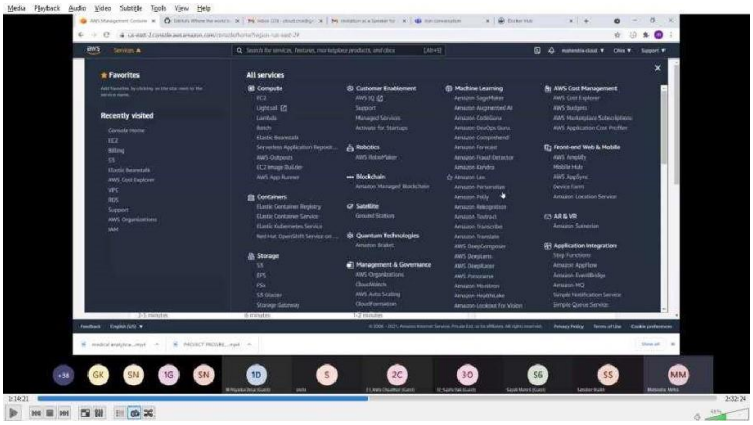
Theory :

Steps are as follows:

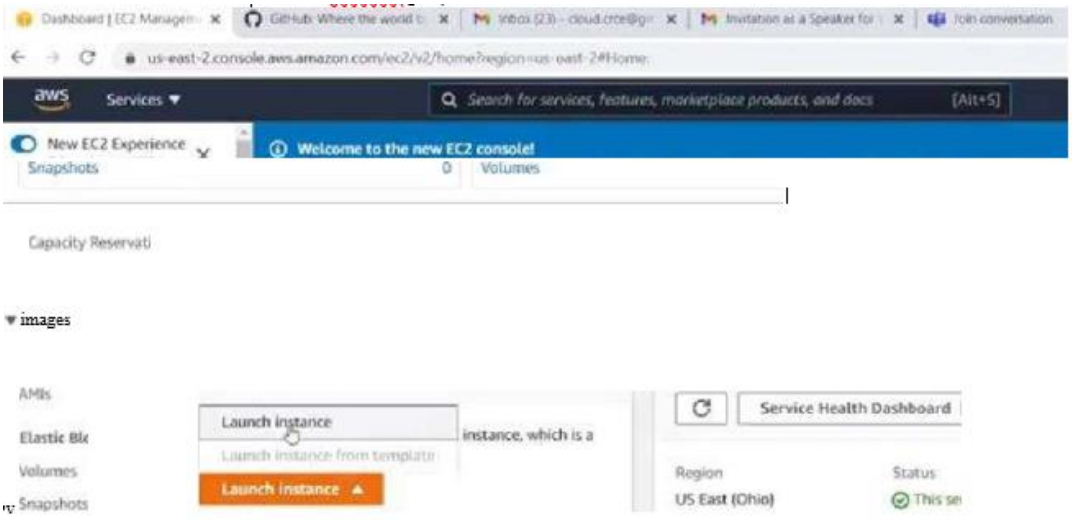
1. Create AWS account by paying Rs. 2/2
2. Login into AWS Console as root user.
3. Following screen will display



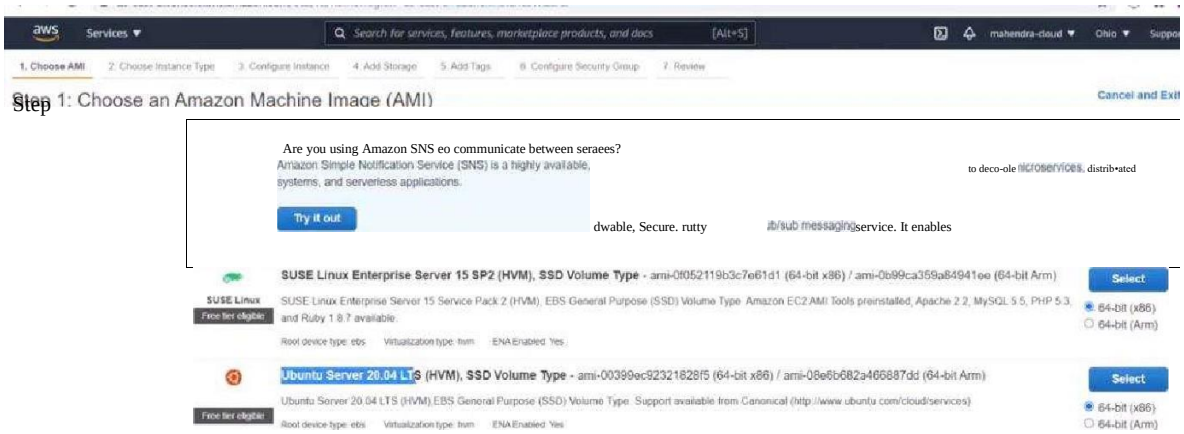
4. Click on Services:



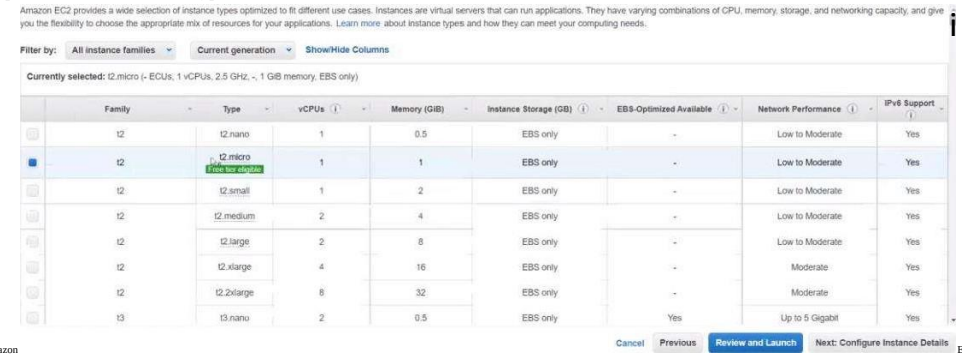
6. Click on "Launch Instances". As Current Instances running shows as 0".



7. Select "Ubuntu" and press "Select" button:



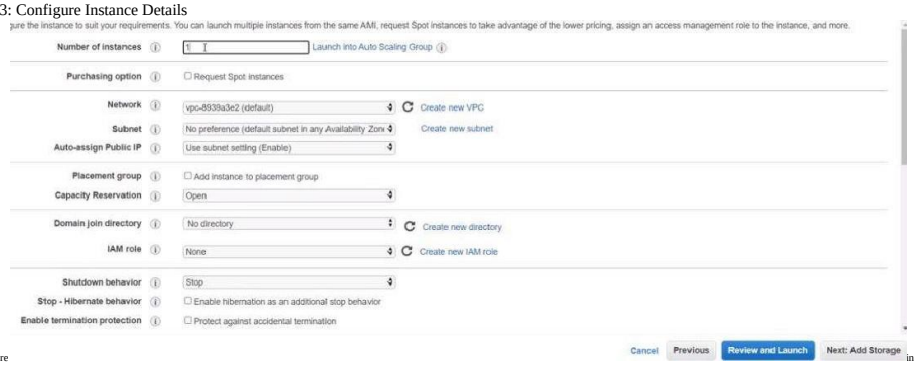
Step 2: Choose an Instance Type



Amazon EC2 provides wide

8. Select "Free" instance and Click on "Configure Instance Details".

Step 3: Configure Instance Details



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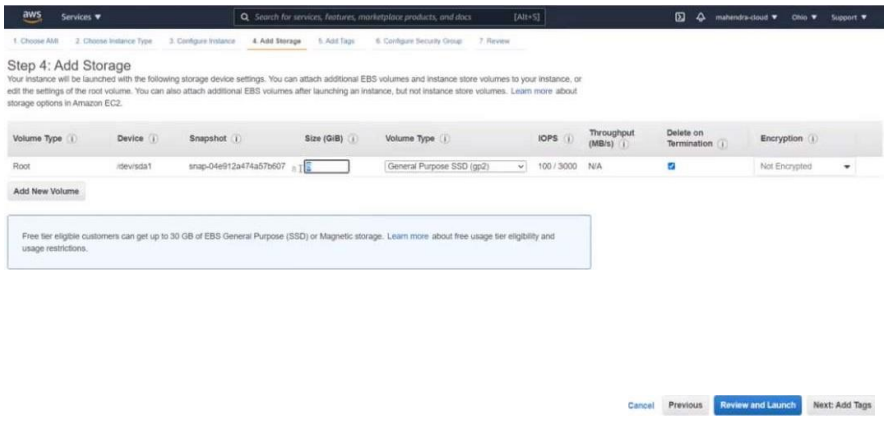
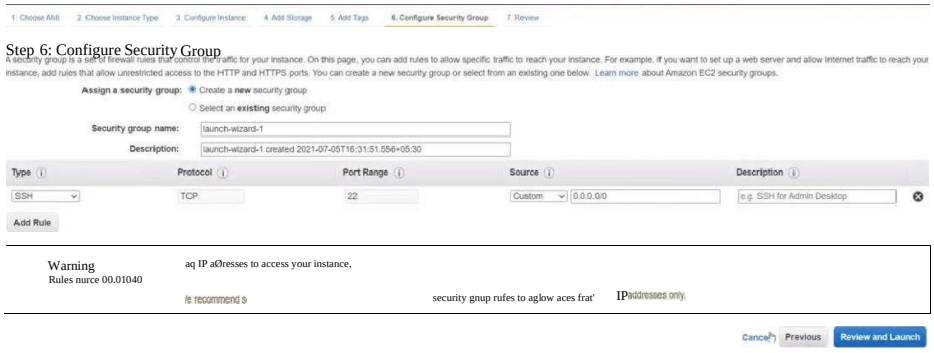
9. Click "Add Storage"



10. Click " Add Tags"

11. Skip this page as it is and click on "Configure Security Group".



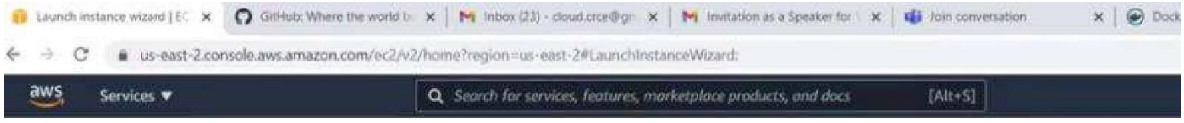
12. Write Security Group name as "vcet-te"

13. Click on "Add Rule" and select HTTP and Keep Source as "Anywhere" and One more add rule as "HTTPS" and keep source "Anywhere" as well.

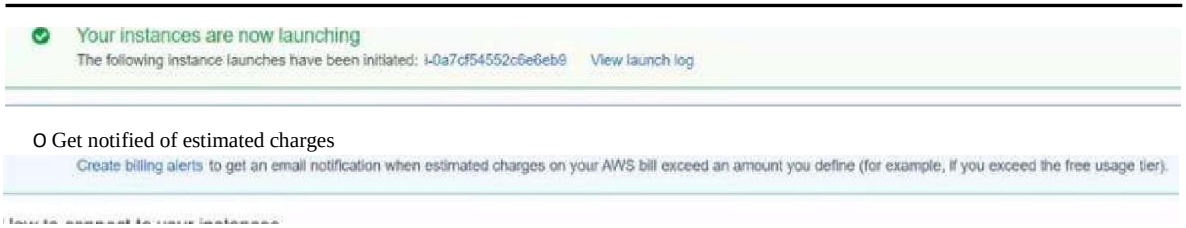
14. Click on "Review and Launch"

15. Select "Create key pair" and write key-pair name "vcet-te" and download this key pair and save it in respective folder.

16. Click on "Launch Instances"

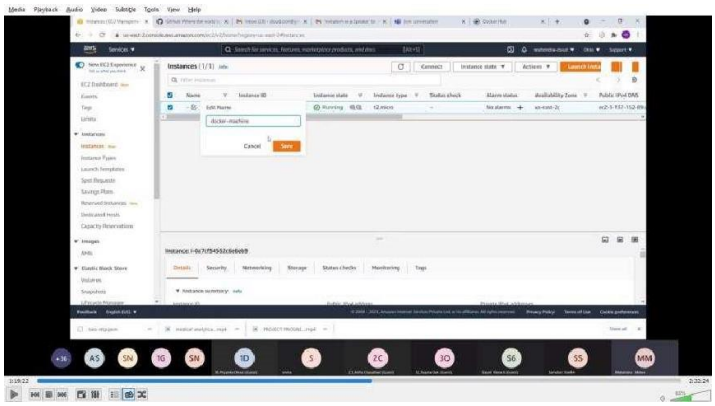


Launch Status



Create billing alerts to

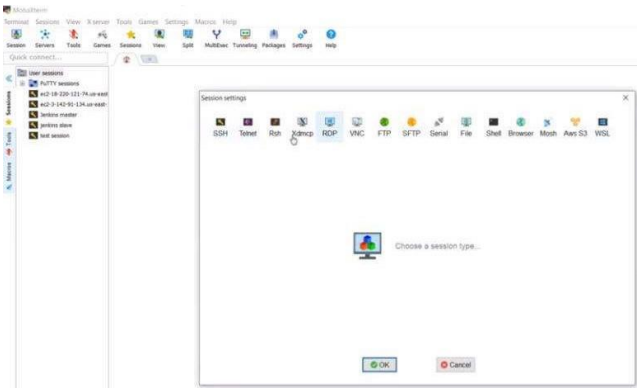
17. Write instance name as "docker-machine".



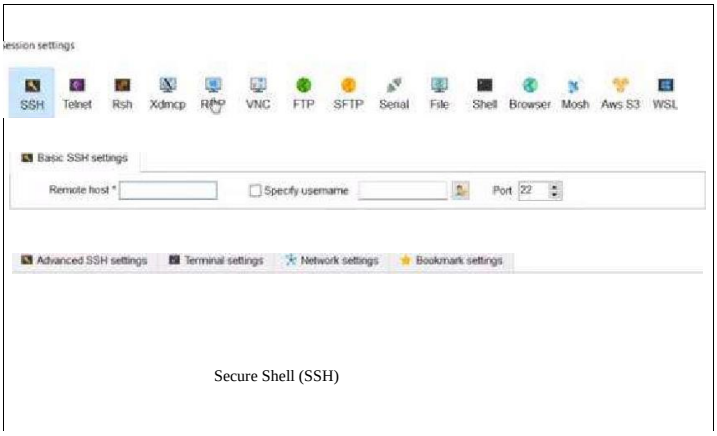
18. Your instance will be displayed on the instance monitoring window

19. Download "MobaXterm" for using SSH

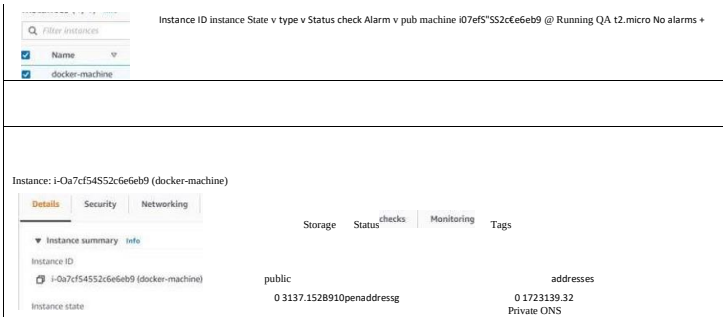
20. Click on "Session” after opening the application



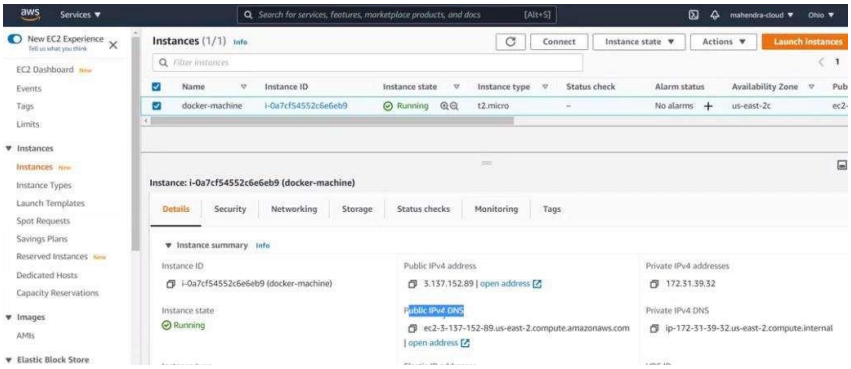
21. Click on"SSH"



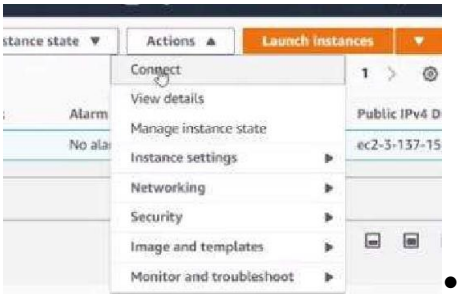
Secure Shell (SSH)



22. Pickup "Remote Host" from AWS Instance as "Copy IPV4 DNS address" and paste it here.



23. To get Username Click on "Action" Menu



24. In "SSH Client" Tab, Copy the name as "ubuntu" and paste it in Username

EQ Instances i.0a/d5455Zc6eQb9 Connect /ftstönce

Connect to instance

ICE Info

0a7cf54552c6e6eb9

Connect1. 'rszance using agtiaos

Session EC2 Serial console Manager SSH client

EC2instanee

Connect

instance10

i.O*7ef5CSS7e6e6eb9

i_ Open an"SSA dient_

Rev Tho keyused this 'is

3.. Run corvn-and. if ensure your key is publikly viewable.

O •ihrnod tsec- sttp.pem

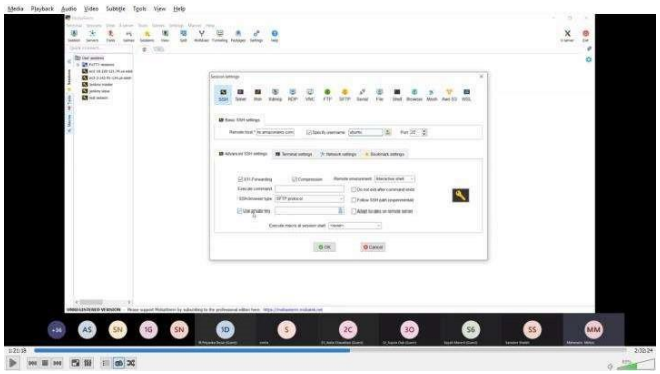
4. Connect to your instance using its Public DNS:

ec2-3-137-152-89.us-east-2.compute.amazonaws.com

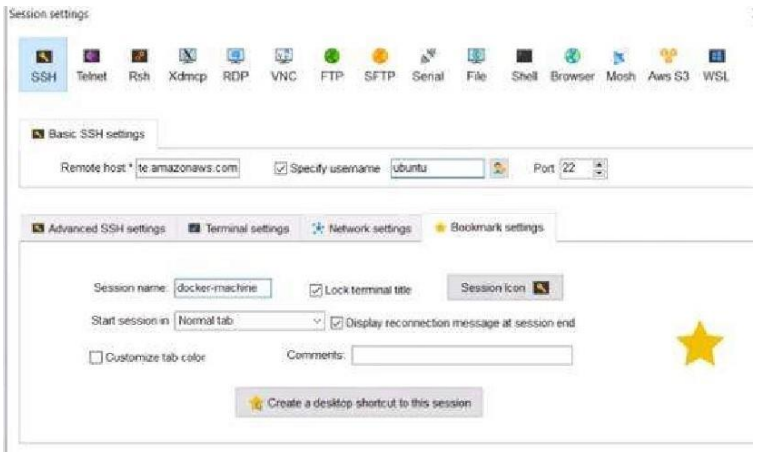
Example:

ssh -i "tsec-sttp.pem" ubuntu@ec2-3-137-152-89.us-east-2.compute.amazonaws.com

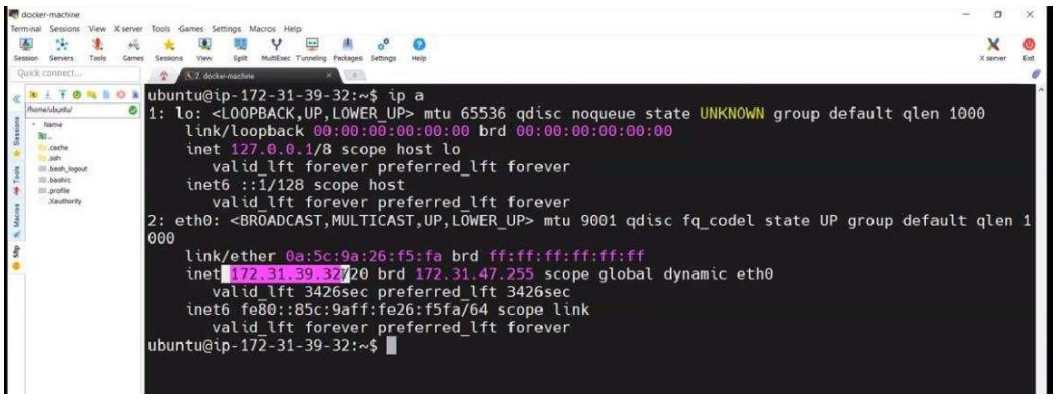
25. Click on "Advance SSH Settings". Select private key. Click on browse button and select that keypair downloaded file.



26. In bookmark settings write session name as "docker-machine"



27. It will open the following shell. Type "ip a" command to see IP address.



28. Type command "sudo su" to select superuser.

29. Type command as follows to get docker shell:

30. Then lastly run command "#sh get-docker.sh" to install docker in EC2.

31. Type command "#docker —version"

root@ip-172-3i-39-32:/home/ubuntu# docker - -version Docker version 20, 10.7, build f0df350 root@ip-172-31-39-32:/home/ubuntu# I

Most Used Docker Commands

docker - -version	docker PS	docker comrnit
docker - -help	docker images	docker import
docker pull	docker stop	docker export
docker run	docker kill	docker container
docker build	docker rm	docker compose
docker login	docker rmi	doc ker swarm
docker push	docker exec	docker service

root@ip-172-31-39-32 :/home/ubuntu# docker --version Docker version 20. 10.7, build fodf35Ø

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32. Go to https://hub.docker.com/_/mysql search for mysql image. Give following command:

#docker pull mysql

```
root@ip-172-31-39-32:/home/ubuntu# docker pull mysql
Using default tag: latest
latest: Pulling from library/mysql
b4d181a07f80: Pull complete
a462b60610f5: Pull complete
578fafb77ab8: Pull complete
524046006037: Pull complete
d0cbe54c8855: Pull complete
aa18e05cc46d: Pull complete
32ca814c833f: Pull complete
9ecc8abdb7f5: Pull complete
ad042b682e0f: Pull complete
71d327c6bb78: Pull complete
165d1d10a3fa: Pull complete
2f40c47d0626: Pull complete
Digest: sha256:52b8406e4c32b8cf0557f1b74517e14c5393aff5cf0384eff62d9e81f4985d4b
Status: Downloaded newer image for mysql:latest
docker.io/library/mysql:latest
root@ip-172-31-39-32:/home/ubuntu# docker images
REPOSITORY   TAG       IMAGE ID       CREATED       SIZE
mysql        latest    5c62e459e087   12 days ago   556MB
```

33. Then type "#docker pull httpd"

```
root@ip-172-31-39-32:/home/ubuntu# docker pull httpd
Using default tag: latest
latest: Pulling from library/httpd
b4d181a07f80: Already exists
4b72f5187e6e: Pull complete
12b2c44d04b2: Pull complete
ef481fc2a03a: Pull complete
d483d945fcab: Pull complete
Digest: sha256:317cc1a2ded5e96225e4181323737f6d29b4fda58a6cc840a5752af6493a231f
Status: Downloaded newer image for httpd:latest
docker.io/library/httpd:latest
root@ip-172-31-39-32:/home/ubuntu#
```

34. To make image containerize, run the docker image as follows:

#docker run -it 302 bash ('it' means interactive)

35. To display the container, give command as "#docker ps"

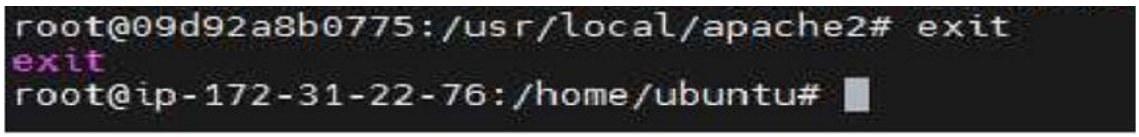
36. To check which linux is running give command as "#uname -a"

IS 2. docker-maehine 3 dBCker•m achine

root@09d92a8b0775 ; /usr/Ioca1/apache2# uname -a
Linux ogdg2a8bG775 5.4.ø-1G45-ews #47-Ubuntu SMP Tue Apr 13 UTC 2021 x86_64 GNU/Linux
root@09d92a8bG775 : 'us r/local/apache2#

This shows that you are inside the container apache2

37. To stop the container give command here "exit" and check in another tab that the container has stopped.



38. To check all stopped containers, give command as " #docker ps -a"

```
root@ip-172-31-39-32:/home/ubuntu# docker ps
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS     NAMES
root@ip-172-31-39-32:/home/ubuntu# docker ps -a
CONTAINER ID   IMAGE     COMMAND   CREATED         STATUS                          PORTS
e3d762f8f24a   302       "bash"    4 minutes ago   Exited (1) 41 seconds ago
tic_goldstine
root@ip-172-31-39-32:/home/ubuntu#
```

39. Just press $^{A}p^{A}q$ (To come out of container)

```
root@04e0349283b7:/usr/local/apache2# root@ip-172-31-22-76:/home/ubuntu#
root@ip-172-31-22-76:/home/ubuntu#
```

An Overview of above steps :

40. Give command #docker exec -it 04e bash (To go inside container)

41. To stop container give command #docker stop 04e
42. Check this with command #docker ps
43. To check previous exited containers, give command #docker ps -a

Conclusion : Therefore we understood the Docker Architecture and Container Life Cycle, installed Docker and successfully execute docker commands to manage images and interact with containers.