

## Docker-3

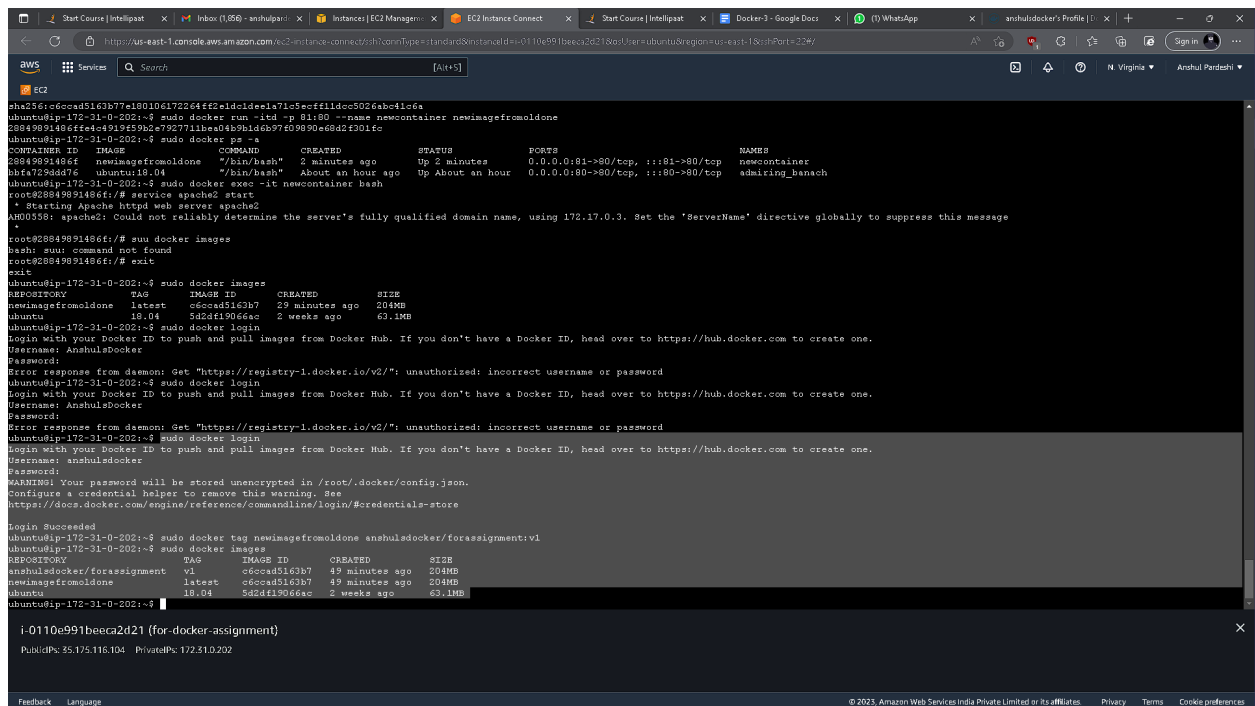
You have been asked to:

- Use the saved image in the previous assignment
- Upload this image on Dockerhub
- On a separate machine pull this dockerhub image, and launch it on port 80
- Start the apache2 service
- Verify if you are able to see the apache2 service

First login to your DockerHub account using: `sudo docker login`

You need to tag image to push to dockerhub:

`sudo docker tag <image name you want to tag> <dockerhubusername/path:v1>`



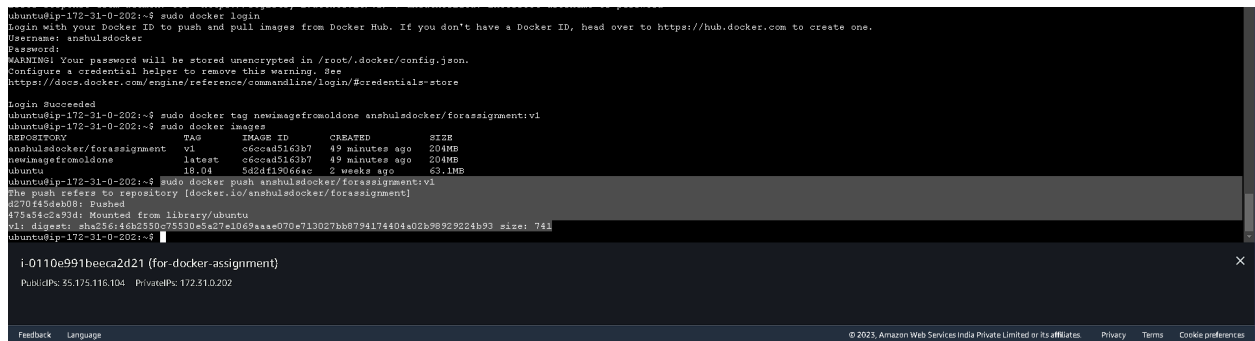
```
i-0110e991beeca2d21 (for-docker-assignment)
PublicIP: 35.175.116.104 PrivateIP: 172.31.0.202

aws
EC2
ubuntu@ip-172-31-0-2021:~$ sudo docker run -itd -p 81:80 --name newcontainer newimagefromoldone
28849891486ffe4e4919459b2e7927711bea04b9b1d6b97409890e68d2f301fc
ubuntu@ip-172-31-0-2021:~$ sudo docker ps -a
CONTAINER ID        IMAGE               COMMAND                  CREATED        STATUS        PORTS                    NAMES
28849891486ffe      newimagefromoldone  "/bin/bash"             2 minutes ago Up 2 minutes   0.0.0.0:81->80/top, :::81->80/top    newcontainer
bbfa729dd476       ubuntu:18.04        "/bin/bash"             About an hour ago Up About an hour   0.0.0.0:80->80/top, :::80->80/top    admiring_banach
ubuntu@ip-172-31-0-2021:~$ sudo docker exec -it newcontainer bash
root@28849891486ff:/# service apache2 start
* Starting Apache httpd web server apache2
AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 172.17.0.3. Set the 'ServerName' directive globally to suppress this message
*
root@28849891486ff:/# suu docker images
bash: suu command not found
root@28849891486ff:/# exit
exit
ubuntu@ip-172-31-0-2021:~$ sudo docker images
REPOSITORY          TAG             IMAGE ID          CREATED          SIZE
newimagefromoldone  latest          c6ccad5163b7     29 minutes ago   204MB
ubuntu              18.04          5d2df19066ac     2 weeks ago      63.1MB
ubuntu@ip-172-31-0-2021:~$ sudo docker login
Login with your Docker ID to push and pull images from Docker Hub. If you don't have a Docker ID, head over to https://hub.docker.com to create one.
Username: anshulsdocker
Password:
Error response from daemon: Get "https://registry-1.docker.io/v2/": unauthorized: incorrect username or password
ubuntu@ip-172-31-0-2021:~$ sudo docker login
Login with your Docker ID to push and pull images from Docker Hub. If you don't have a Docker ID, head over to https://hub.docker.com to create one.
Username: anshulsdocker
Password:
Error response from daemon: Get "https://registry-1.docker.io/v2/": unauthorized: incorrect username or password
ubuntu@ip-172-31-0-2021:~$ sudo docker login
Login with your Docker ID to push and pull images from Docker Hub. If you don't have a Docker ID, head over to https://hub.docker.com to create one.
Username: anshulsdocker
Password:
WARNING! Your password will be stored unencrypted in /root/.docker/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store

Login Succeeded
ubuntu@ip-172-31-0-2021:~$ sudo docker tag newimagefromoldone anshulsdocker/forassignment:v1
ubuntu@ip-172-31-0-2021:~$ sudo docker images
REPOSITORY          TAG             IMAGE ID          CREATED          SIZE
anshulsdocker/forassignment  v1             c6ccad5163b7     49 minutes ago   204MB
newimagefromoldone  latest          c6ccad5163b7     49 minutes ago   204MB
ubuntu              18.04          5d2df19066ac     2 weeks ago      63.1MB
ubuntu@ip-172-31-0-2021:~$
```

Then push that image to dockerhub using:

`sudo docker push <dockerhubusername/path:v1>`

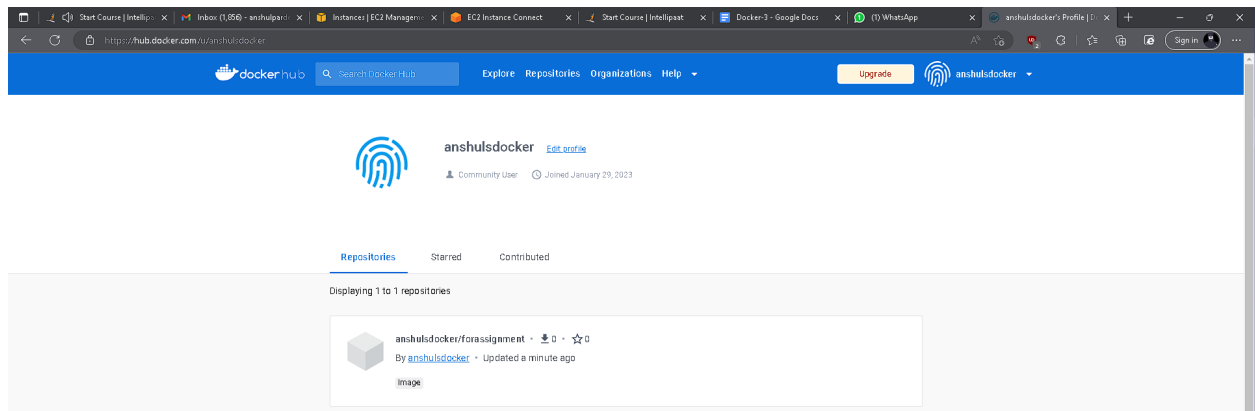


```
i-0110e991beeca2d21 (for-docker-assignment)
PublicIP: 35.175.116.104 PrivateIP: 172.31.0.202

ubuntu@ip-172-31-0-2021:~$ sudo docker login
Login with your Docker ID to push and pull images from Docker Hub. If you don't have a Docker ID, head over to https://hub.docker.com to create one.
Username: anshulsdocker
Password:
WARNING! Your password will be stored unencrypted in /root/.docker/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store

Login Succeeded
ubuntu@ip-172-31-0-2021:~$ sudo docker tag newimagefromoldone anshulsdocker/forassignment:v1
ubuntu@ip-172-31-0-2021:~$ sudo docker images
REPOSITORY          TAG             IMAGE ID          CREATED          SIZE
anshulsdocker/forassignment  v1             c6ccad5163b7     49 minutes ago   204MB
newimagefromoldone  latest          c6ccad5163b7     49 minutes ago   204MB
ubuntu              18.04          5d2df19066ac     2 weeks ago      63.1MB
ubuntu@ip-172-31-0-2021:~$ sudo docker push anshulsdocker/forassignment:v1
The push refers to repository [docker.io/anshulsdocker/forassignment]
4570454eb0b5: Pushed
475a54c2e93d: Mounted from library/ubuntu
v1: digest: sha256:46b2350e75530e5a27e1069aaaae07e713027bb8794174404a02b98929224b93 size: 744
ubuntu@ip-172-31-0-2021:~$
```

## Check your dockerhub account image will be available there.

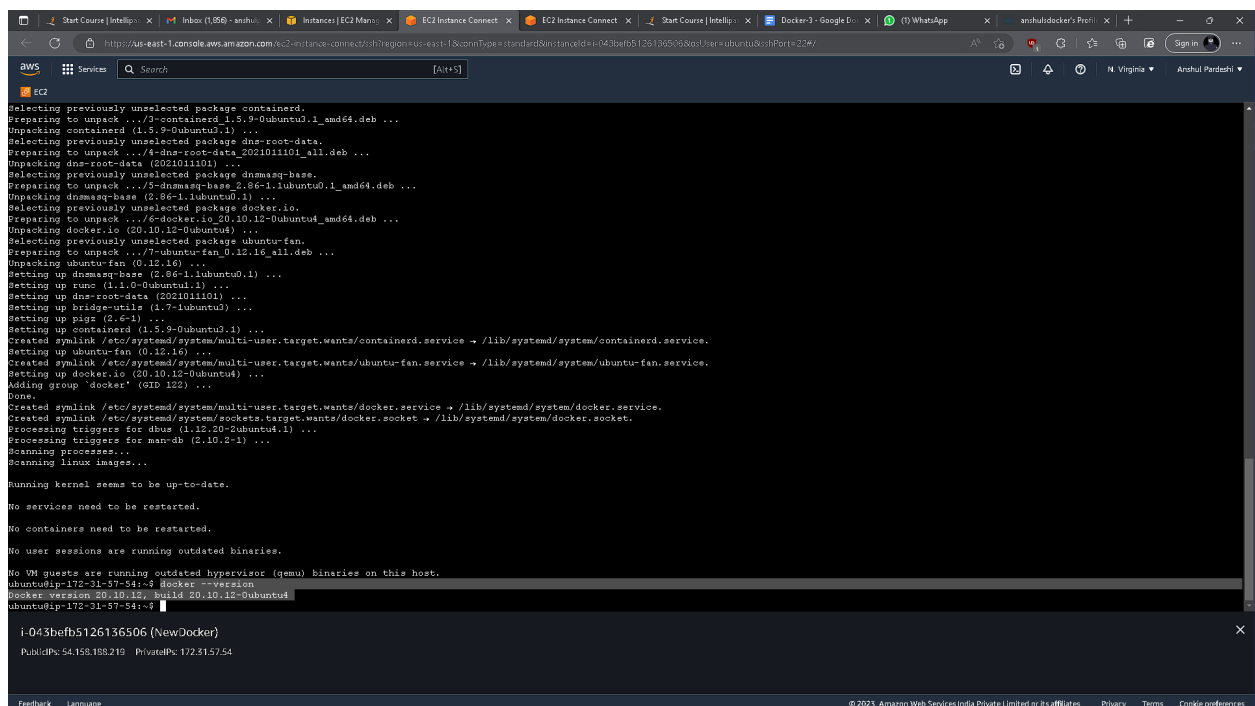
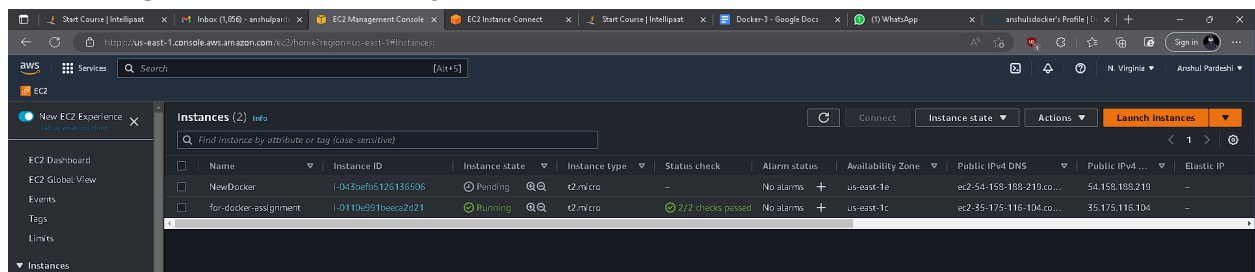


To start This DOcker image on new instance, let us start new instance and install docker in it.

To install we know the commands:

**Sudo apt-get update -y**

**Sudo apt-get install docker.io -y**



Now let us login docker hub in new instance and pull previously pushed image.

To login: `sudo docker login`

To pull: `sudo docker pull <dockerhubusername/path:v1>`

```
Setting up runc (1.1.0-0ubuntu1.1) ...
Setting up dnsmasq-root-data (2021011101) ...
Setting up bridge-utils (1.7-7ubuntu1) ...
Setting up pigz (2.6-1) ...
Setting up containerd (1.5.9-0ubuntu1.1) ...
Created symlink /etc/systemd/system/multi-user.target.wants/containerd.service → /lib/systemd/system/containerd.service.
Setting up ubuntu-fan (0.12-16) ...
Created symlink /etc/systemd/system/multi-user.target.wants/ubuntu-fan.service → /lib/systemd/system/ubuntu-fan.service.
Setting up docker.io (20.10.12-0ubuntu1) ...
Adding group 'docker' (GID 122) ...
Done.
Created symlink /etc/systemd/system/multi-user.target.wants/docker.service → /lib/systemd/system/docker.service.
Created symlink /etc/systemd/system/docker.target.wants/docker.socket → /lib/systemd/system/docker.socket.
Processing triggers for dbus (1.12.20-2ubuntu1.1) ...
Processing triggers for man-db (2.10.2-1) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-172-31-57-54:~$ docker --version
Docker version 20.10.12, build 20.10.12-0ubuntu1
ubuntu@ip-172-31-57-54:~$ sudo docker login
Login with your Docker ID to push and pull images from Docker Hub. If you don't have a Docker ID, head over to https://hub.docker.com to create one.
Username: anshuldocker
Password:
WARNING! Your password will be stored unencrypted in /root/.docker/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store

Login Succeeded
ubuntu@ip-172-31-57-54:~$ sudo docker pull anshuldocker/forassignmentv1
v1: Pulling from anshuldocker/forassignment
7249f18470f3: Pull complete
5008c4cf089c: Pull complete
Digest: sha256:46b2550c75530a5a27e1069aaae07a6713027bb679417440a402b98929224b93
Status: Downloaded newer image for anshuldocker/forassignment:v1
docker.io/anshuldocker/forassignment:v1
ubuntu@ip-172-31-57-54:~$
```

Now run the image: `sudo docker run -itd -p 80:80 <dockerhubusername/path:v1>`

Run: `sudo docker ps -a` #to know container details

```
No containers need to be restarted.

No user sessions are running outdated binaries.

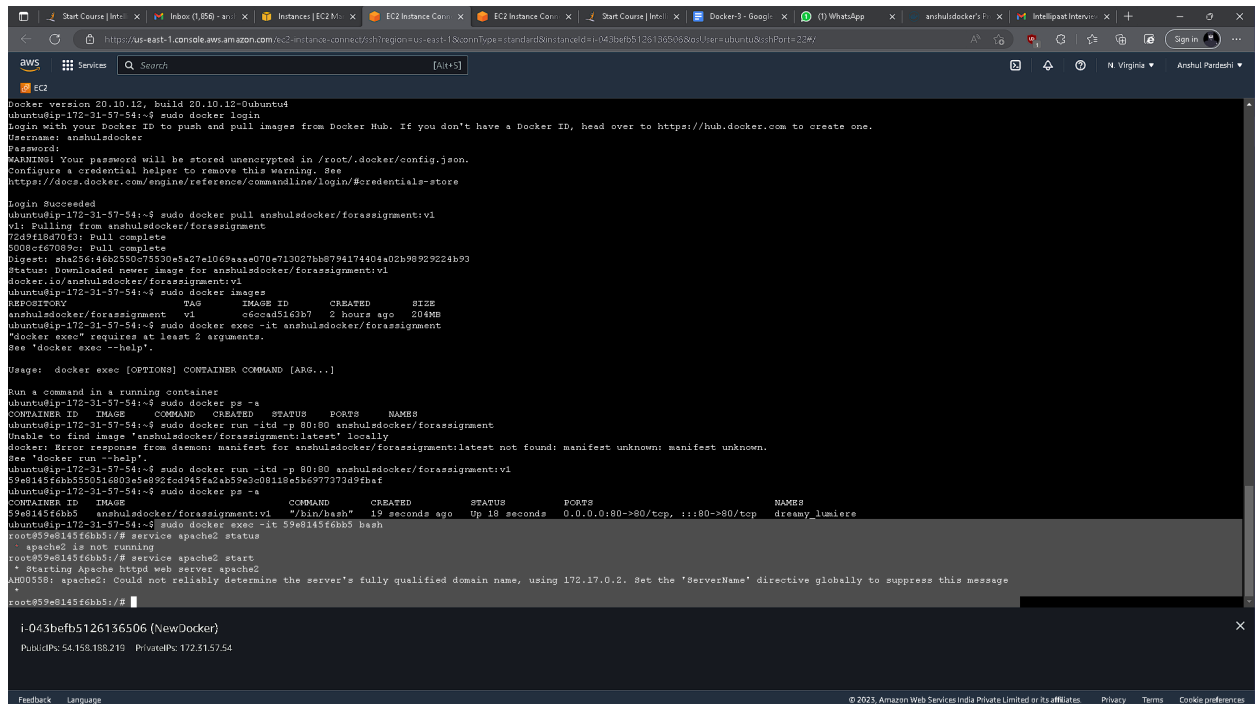
No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-172-31-57-54:~$ docker --version
Docker version 20.10.12, build 20.10.12-0ubuntu1
ubuntu@ip-172-31-57-54:~$ sudo docker login
Login with your Docker ID to push and pull images from Docker Hub. If you don't have a Docker ID, head over to https://hub.docker.com to create one.
Username: anshuldocker
Password:
WARNING! Your password will be stored unencrypted in /root/.docker/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store

Login Succeeded
ubuntu@ip-172-31-57-54:~$ sudo docker pull anshuldocker/forassignmentv1
v1: Pulling from anshuldocker/forassignment
7249f18470f3: Pull complete
5008c4cf089c: Pull complete
Digest: sha256:46b2550c75530a5a27e1069aaae07a6713027bb679417440a402b98929224b93
Status: Downloaded newer image for anshuldocker/forassignment:v1
docker.io/anshuldocker/forassignment:v1
ubuntu@ip-172-31-57-54:~$ sudo docker images
REPOSITORY          TAG             IMAGE ID        CREATED         SIZE
anshuldocker/forassignment   v1             c6cc4d5163b7   2 hours ago    204MB
ubuntu@ip-172-31-57-54:~$ sudo docker exec -it anshuldocker/forassignment
$docker exec" requires at least 2 arguments.
See "docker exec --help".

Usage: docker exec [OPTIONS] CONTAINER COMMAND [ARG...]

Run a command in a running container
ubuntu@ip-172-31-57-54:~$ sudo docker ps -a
CONTAINER ID        IMAGE               COMMAND          STATUS       PORTS       NAMES
ubuntu@ip-172-31-57-54:~$ sudo docker run -itd -p 80:80 anshuldocker/forassignment
Unable to find image 'anshuldocker/forassignment:latest' locally
docker: Error response from daemon: manifest for anshuldocker/forassignment:latest not found: manifest unknown: manifest unknown.
See "docker run --help".
ubuntu@ip-172-31-57-54:~$ sudo docker run -itd -p 80:80 anshuldocker/forassignment:v1
59a8145f6b559514803e54892cd945fe2ab59a3c0811845b6977373d9f4bf
ubuntu@ip-172-31-57-54:~$ sudo docker ps -a
CONTAINER ID        IMAGE               COMMAND          CREATED         STATUS      PORTS       NAMES
59a8145f6b55        anshuldocker/forassignmentv1   "/bin/bash"      19 seconds ago Up 18 seconds 0.0.0.0:80->80/tcp, :::80->80/tcp   dreamy_lumiere
ubuntu@ip-172-31-57-54:~$
```

Now let us get inside container and get apache2:  
`sudo docker exec -it <container id> bash`  
Check if apache 2 is there: `service apache2 status`  
If not: `service apache2 start`



The screenshot shows a terminal window within the AWS console, connected to an EC2 instance. The terminal output shows the following steps:

```
Docker version 20.10.12, build 20.10.12-0ubuntu4
ubuntu@ip-172-31-57-54:~$ sudo docker login
Login with your Docker ID to push and pull images from Docker Hub. If you don't have a Docker ID, head over to https://hub.docker.com to create one.
Username: anshuldocker
Password:
WARNING! Your password will be stored unencrypted in /root/.docker/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store

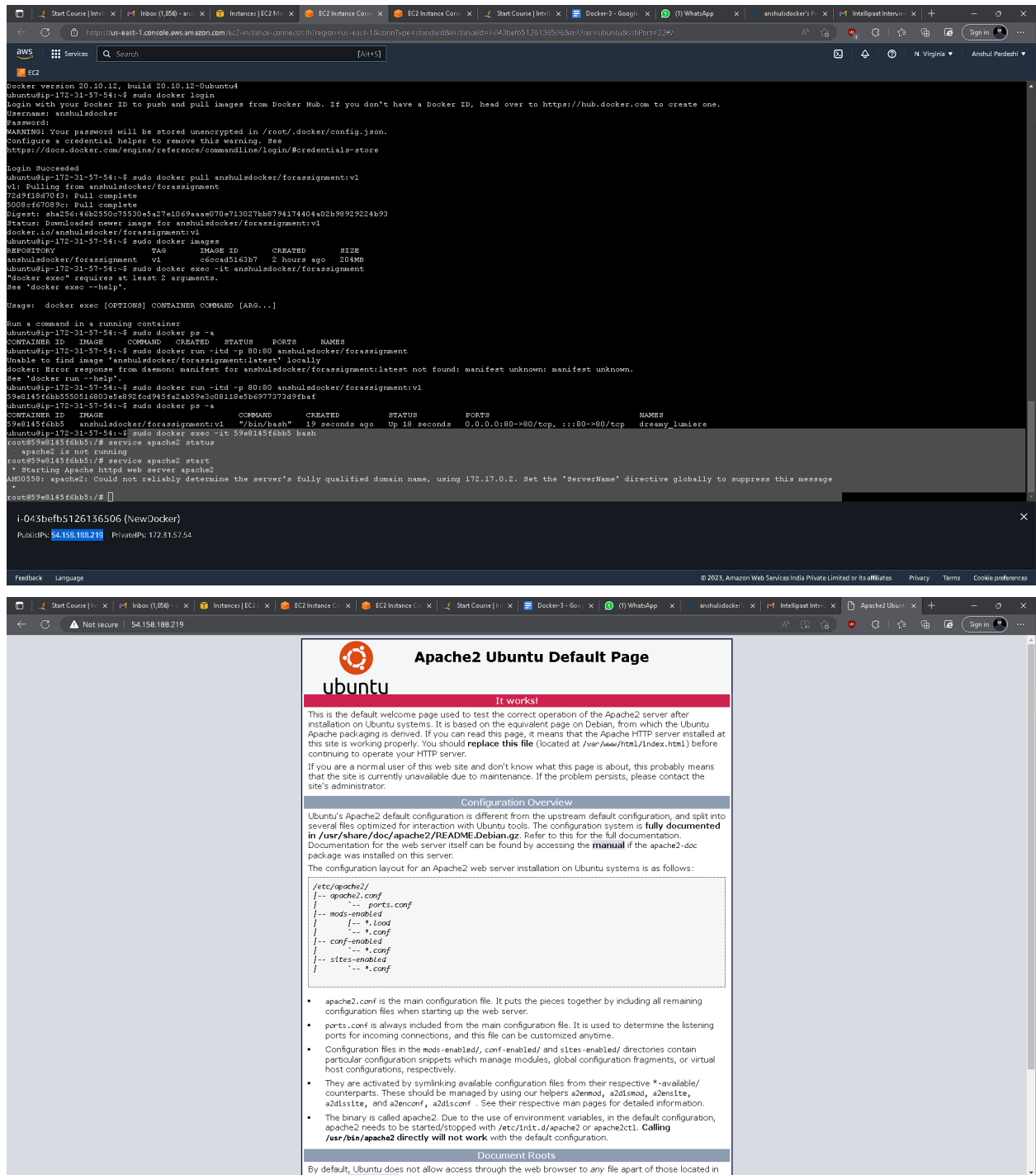
Login Succeeded
ubuntu@ip-172-31-57-54:~$ sudo docker pull anshuldocker/forassignment:vl
vl: Pulling from anshuldocker/forassignment
72d9418d70f3: Pull complete
1008e4cf080e: Pull complete
Digest: sha256:46b2550c75530e5a27e1069aaa070e713027bb0794174404a02b99923224b93
Status: Downloaded newer image for anshuldocker/forassignment:vl
docker.io/anshuldocker/forassignment:vl
ubuntu@ip-172-31-57-54:~$ sudo docker images
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
anshuldocker/forassignment   vl                 c6ccad51c3b7       2 hours ago        204MB
ubuntu@ip-172-31-57-54:~$ sudo docker exec -it anshuldocker/forassignment
"docker exec" requires at least 2 arguments.
See "docker exec --help".

Usage: docker exec [OPTIONS] CONTAINER COMMAND [ARG...]

Run a command in a running container
ubuntu@ip-172-31-57-54:~$ sudo docker ps -a
CONTAINER ID        IMAGE               COMMAND             CREATED             STATUS             PORTS             NAMES
ubuntu@ip-172-31-57-54:~$ sudo docker run -itd -p 80:80 anshuldocker/forassignment
Unable to find image 'anshuldocker/forassignment:latest' locally
docker: Error response from daemon: manifest for anshuldocker/forassignment:latest not found: manifest unknown: manifest unknown.
See 'docker run --help'.
ubuntu@ip-172-31-57-54:~$ sudo docker run -itd -p 80:80 anshuldocker/forassignment:vl
59e8145f6bb5550516800e5e092fcd945fa2ab59e3c08119e5b697773d9f4bf
ubuntu@ip-172-31-57-54:~$ sudo docker ps -a
CONTAINER ID        IMAGE               COMMAND             CREATED             STATUS             PORTS             NAMES
59e8145f6bb5        anshuldocker/forassignment:vl   "/bin/bash"        19 seconds ago     Up 18 seconds     0.0.0.0:80->80/tcp, :::80->80/tcp   dreamy-lumiere
ubuntu@ip-172-31-57-54:~$ sudo docker exec -it 59e8145f6bb5 bash
root@59e8145f6bb5:/# service apache2 start
 * Starting Apache httpd web server apache2
AH00558: apache2: could not reliably determine the server's fully qualified domain name, using 172.17.0.2. Set the 'ServerName' directive globally to suppress this message
 *
root@59e8145f6bb5:/#
```

A notification box at the bottom of the terminal window displays the instance ID: `i-043befb5126136506 (NewDocker)` and its public and private IP addresses: `PublicIP: 54.155.188.210 PrivateIP: 172.31.57.54`.

## Check if apache2 is running by copy pasting the public ip of new instance with port n.o 80.



The screenshot displays the AWS Management Console for an EC2 instance named 'anahuldocker'. The terminal output shows the following steps:

```
docker version 20.10.12, build 20.10.12-0ubuntu1
ubuntu@ip-172-31-57-54:~$ sudo docker login
Login with your Docker ID to push and pull images from Docker Hub. If you don't have a Docker ID, head over to https://hub.docker.com to create one.
Username: anahuldocker
Password:
WARNING! Your password will be stored unencrypted in /root/.docker/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store

Login Succeeded
ubuntu@ip-172-31-57-54:~$ sudo docker pull anahuldocker/forassignmentv1
v1: Pulling from anahuldocker/forassignment
72d9f18d70f3: Pull complete
008cf67089c: Pull complete
Digest: sha256:460355075330e5a27e1069aae070e713027bb6794174404e02b98925224b93
Status: Downloaded newer image for anahuldocker/forassignmentv1
docker.io/anahuldocker/forassignmentv1
ubuntu@ip-172-31-57-54:~$ sudo docker images
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
anahuldocker/forassignment  v1                 66cad516b7         2 hours ago        204MB
ubuntu@ip-172-31-57-54:~$ sudo docker exec -it anahuldocker/forassignment
$docker exec" requires at least 2 arguments.
See 'docker exec --help'.

Usage:  docker exec [OPTIONS] CONTAINER COMMAND [ARG...]

Run a command in a running container
ubuntu@ip-172-31-57-54:~$ sudo docker ps -a
CONTAINER ID        IMAGE               COMMAND             STATUS             PORTS             NAMES
ubuntu@ip-172-31-57-54:~$ sudo docker run -itd -p 80:80 anahuldocker/forassignment
Unable to find image 'anahuldocker/forassignment:latest' locally
docker: Error response from daemon: manifest for anahuldocker/forassignment:latest not found: manifest unknown: manifest unknown.
See 'docker run --help'.
ubuntu@ip-172-31-57-54:~$ sudo docker run -itd -p 80:80 anahuldocker/forassignmentv1
59e8145f6bb550514803e5e092e04945e2ab59e3c08110e5b697737d9f4bf
ubuntu@ip-172-31-57-54:~$ sudo docker ps -a
CONTAINER ID        IMAGE               COMMAND             STATUS             PORTS             NAMES
59e8145f6bb5        anahuldocker/forassignmentv1   "/bin/bash"         Up 19 seconds ago   Up 19 seconds     0.0.0.0:80->80/top, :::80->80/top   dreamy_lumiere
ubuntu@ip-172-31-57-54:~$ sudo docker exec -it 59e8145f6bb5 bash
root@59e8145f6bb5:/# service apache2 status
apache2 is not running
root@59e8145f6bb5:/# service apache2 start
 * Starting Apache httpd web server apache2
AND0558: apache2: Could not reliably determine the server's fully qualified domain name, using 172.17.0.2. Set the 'ServerName' directive globally to suppress this message
 *
root@59e8145f6bb5:/# []

i-043beffb5126136506 (NewDocker)
PublicIP: 54.156.188.219   PrivateIP: 172.31.57.54
```

The terminal output shows the successful installation and configuration of Apache2 on the EC2 instance. The Apache2 service is now running, and the default Apache2 Ubuntu page is displayed in the browser.

**Apache2 Ubuntu Default Page**

It works!

This is the default welcome page used to test the correct operation of the Apache2 server after installation on Ubuntu systems. It is based on the equivalent page on Debian, from which the Ubuntu Apache packaging is derived. If you can read this page, it means that the Apache HTTP server installed at this site is working properly. You should **replace this file** (located at `/var/www/html/index.html`) before continuing to operate your HTTP server.

If you are a normal user of this web site and don't know what this page is about, this probably means that the site is currently unavailable due to maintenance. If the problem persists, please contact the site's administrator.

**Configuration Overview**

Ubuntu's Apache2 default configuration is different from the upstream default configuration, and split into several files optimized for interaction with Ubuntu tools. The configuration system is **fully documented** in [/usr/share/doc/apache2/README.Debian.gz](#). Refer to this for the full documentation. Documentation for the web server itself can be found by accessing the **manual** if the `apache2-doc` package was installed on this server.

The configuration layout for an Apache2 web server installation on Ubuntu systems is as follows:

```
/etc/apache2/
|-- apache2.conf
|   |-- ports.conf
|-- mods-enabled/
|   |-- *.load
|   |-- *.conf
|-- conf-enabled/
|   |-- *.conf
|-- sites-enabled/
|   |-- *.conf
```

- `apache2.conf` is the main configuration file. It puts the pieces together by including all remaining configuration files when starting up the web server.
- `ports.conf` is always included from the main configuration file. It is used to determine the listening ports for incoming connections, and this file can be customized anytime.
- Configuration files in the `mods-enabled/`, `conf-enabled/` and `sites-enabled/` directories contain particular configuration snippets which manage modules, global configuration fragments, or virtual host configurations, respectively.
- They are activated by symlinking available configuration files from their respective `*-available/` counterparts. These should be managed by using our helpers `a2enmod`, `a2dismod`, `a2ensite`, `a2dissite`, and `a2enconf`, `a2disconf`. See their respective man pages for detailed information.
- The binary is called `apache2`. Due to the use of environment variables, in the default configuration, `apache2` needs to be started/stopped with `/etc/init.d/apache2` or `apache2ctl`. **Calling `/usr/bin/apache2` directly will not work** with the default configuration.

**Document Roots**

By default, Ubuntu does not allow access through the web browser to any file apart of those located in