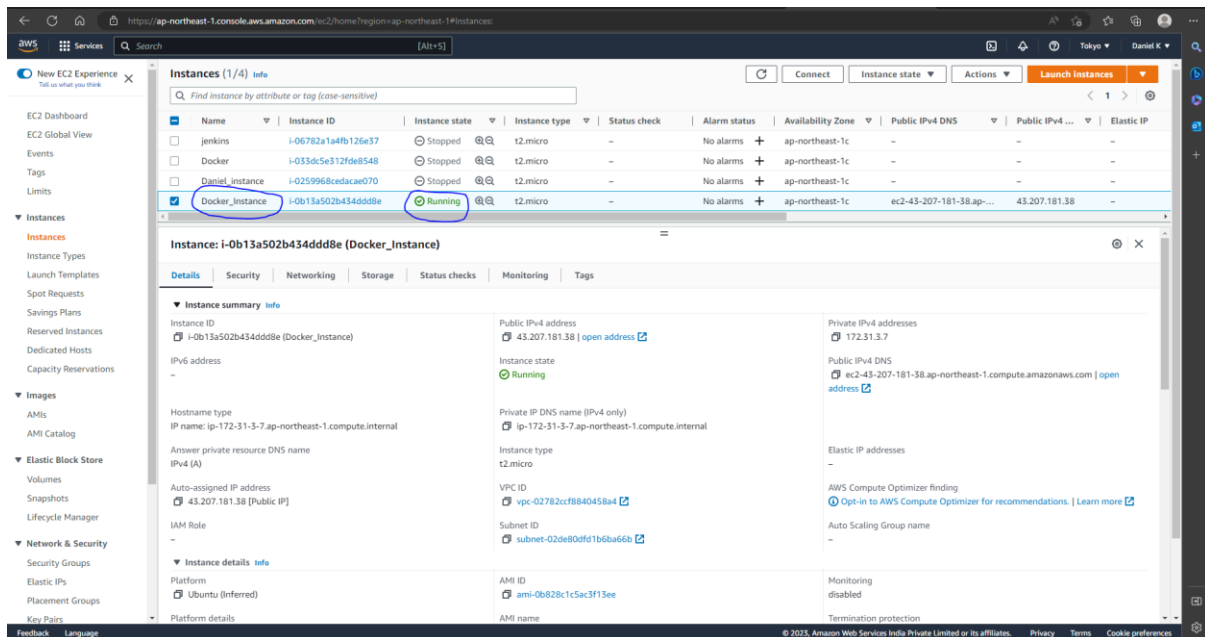


## **Devops Assignment-Module 3- Introduction to Dockers**

### **Assignment 1 - Installing and Configuring Docker on Amazon Linux.docx.txt**

Here is the official website of AWS Amazon web services: - <https://aws.amazon.com/>

1. Sign into to your Account
2. In search box search for EC2 and select EC2.
3. Click on Launch Instance
4. Provide the Required Information such as name, operating system, key pair, etc and click on Launch Instance
5. Amazon EC2 Instance is Created Successfully and Running.



6. To connect to Instance use Puttygen or SSH into cmd

```
ubuntu@ip-172-31-3-7: ~
Microsoft Windows [Version 10.0.19044.2604]
(c) Microsoft Corporation. All rights reserved.

C:\Users\dk92>cd jenkins

C:\Users\dk92\jenkins>ssh -i jenk.pem ubuntu@43.207.181.38
Welcome to Ubuntu 22.04.1 LTS (GNU/Linux 5.15.0-1028-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

System information as of Tue Mar  7 09:47:05 UTC 2023

System load:  0.0          Processes:            97
Usage of /:   20.0% of 7.57GB Users logged in:      0
Memory usage: 19%         IPv4 address for eth0: 172.31.3.7
Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

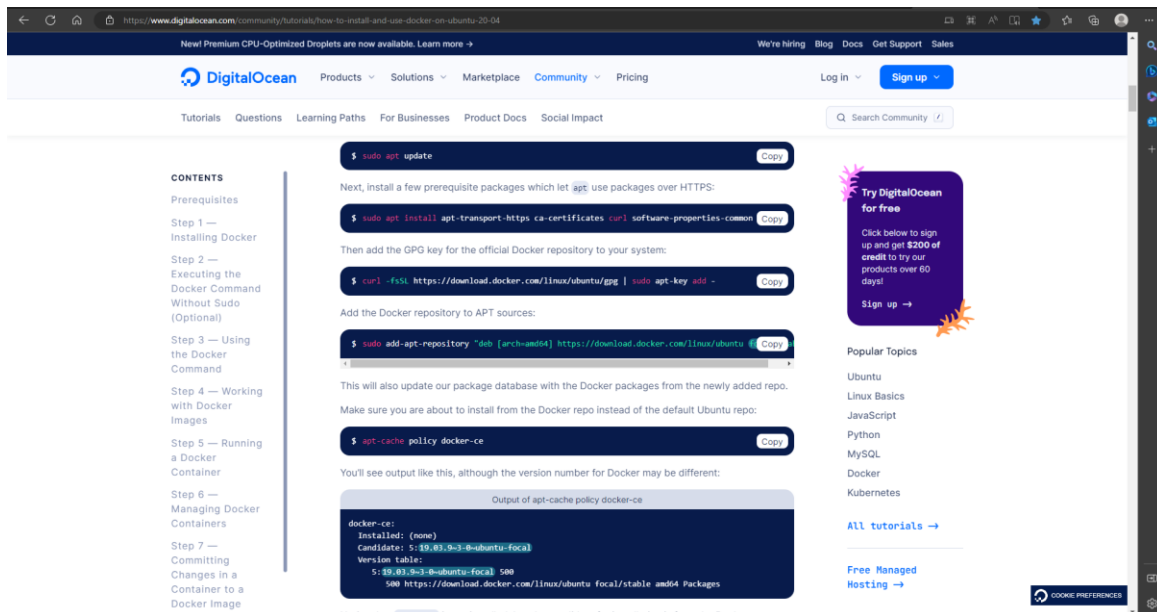
Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

Last login: Tue Mar  7 09:43:40 2023 from 49.205.137.223
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-3-7:~$
```

1. To Install Docker here is the official website: -  
<https://www.digitalocean.com/community/tutorials/how-to-install-and-use-docker-on-ubuntu-20-04>



2. Follow the commands respectively: -
  - First, update your existing list of packages:  
→ `sudo apt update`

```
ubuntu@ip-172-31-3-7: ~  
To check for new updates run: sudo apt update  
  
Last login: Tue Mar 7 09:43:40 2023 from 49.205.137.223  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
  
ubuntu@ip-172-31-3-7:~$ sudo apt update  
Hit:1 http://ap-northeast-1.ec2.archive.ubuntu.com/ubuntu jammy InRelease  
Get:2 http://ap-northeast-1.ec2.archive.ubuntu.com/ubuntu jammy-updates InRelease [119 kB]  
Get:3 http://ap-northeast-1.ec2.archive.ubuntu.com/ubuntu jammy-backports InRelease [107 kB]  
Get:4 http://ap-northeast-1.ec2.archive.ubuntu.com/ubuntu jammy/universe amd64 Packages [14.1 MB]  
Get:5 http://security.ubuntu.com/ubuntu jammy-security InRelease [110 kB]  
Get:6 http://ap-northeast-1.ec2.archive.ubuntu.com/ubuntu jammy/universe Translation-en [5652 kB]  
Get:7 http://ap-northeast-1.ec2.archive.ubuntu.com/ubuntu jammy/universe amd64 c-n-f Metadata [286 kB]  
Get:8 http://ap-northeast-1.ec2.archive.ubuntu.com/ubuntu jammy/multiverse amd64 Packages [217 kB]  
Get:9 http://ap-northeast-1.ec2.archive.ubuntu.com/ubuntu jammy/multiverse Translation-en [112 kB]  
Get:10 http://ap-northeast-1.ec2.archive.ubuntu.com/ubuntu jammy/multiverse amd64 c-n-f Metadata [8372 B]  
Get:11 http://ap-northeast-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 Packages [941 kB]  
Get:12 http://ap-northeast-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main Translation-en [203 kB]  
Get:13 http://ap-northeast-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 c-n-f Metadata [13.6 kB]  
Get:14 http://ap-northeast-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/restricted amd64 Packages [679 kB]  
Get:15 http://ap-northeast-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/restricted Translation-en [106 kB]  
Get:16 http://ap-northeast-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/restricted amd64 c-n-f Metadata [584 B]  
Get:17 http://ap-northeast-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 Packages [879 kB]  
Get:18 http://ap-northeast-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/universe Translation-en [173 kB]  
Get:19 http://ap-northeast-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 c-n-f Metadata [17.9 kB]  
Get:20 http://ap-northeast-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/multiverse amd64 Packages [9652 B]  
Get:21 http://ap-northeast-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/multiverse Translation-en [3260 B]  
Get:22 http://ap-northeast-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/multiverse amd64 c-n-f Metadata [444 B]  
Get:23 http://ap-northeast-1.ec2.archive.ubuntu.com/ubuntu jammy-backports/main amd64 Packages [40.7 kB]  
Get:24 http://ap-northeast-1.ec2.archive.ubuntu.com/ubuntu jammy-backports/main Translation-en [9800 B]  
Get:25 http://ap-northeast-1.ec2.archive.ubuntu.com/ubuntu jammy-backports/main amd64 c-n-f Metadata [392 B]  
Get:26 http://ap-northeast-1.ec2.archive.ubuntu.com/ubuntu jammy-backports/restricted amd64 c-n-f Metadata [116 B]  
Get:27 http://ap-northeast-1.ec2.archive.ubuntu.com/ubuntu jammy-backports/universe amd64 Packages [19.5 kB]  
Get:28 http://ap-northeast-1.ec2.archive.ubuntu.com/ubuntu jammy-backports/universe Translation-en [14.0 kB]  
Get:29 http://ap-northeast-1.ec2.archive.ubuntu.com/ubuntu jammy-backports/universe amd64 c-n-f Metadata [392 B]  
Get:30 http://ap-northeast-1.ec2.archive.ubuntu.com/ubuntu jammy-backports/multiverse amd64 c-n-f Metadata [116 B]  
Get:31 http://security.ubuntu.com/ubuntu jammy-security/main amd64 Packages [682 kB]  
Get:32 http://security.ubuntu.com/ubuntu jammy-security/main Translation-en [139 kB]  
Get:33 http://security.ubuntu.com/ubuntu jammy-security/main amd64 c-n-f Metadata [8544 B]  
Get:34 http://security.ubuntu.com/ubuntu jammy-security/restricted amd64 Packages [637 kB]  
Get:35 http://security.ubuntu.com/ubuntu jammy-security/restricted Translation-en [99.7 kB]  
Get:36 http://security.ubuntu.com/ubuntu jammy-security/universe amd64 Packages [696 kB]  
Get:37 http://security.ubuntu.com/ubuntu jammy-security/universe Translation-en [111 kB]  
Get:38 http://security.ubuntu.com/ubuntu jammy-security/universe amd64 c-n-f Metadata [13.5 kB]  
Get:39 http://security.ubuntu.com/ubuntu jammy-security/multiverse amd64 Packages [4960 B]  
Get:40 http://security.ubuntu.com/ubuntu jammy-security/multiverse Translation-en [996 B]  
Get:41 http://security.ubuntu.com/ubuntu jammy-security/multiverse amd64 c-n-f Metadata [240 B]  
Fetched 26.2 MB in 5s (5568 kB/s)  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
40 packages can be upgraded. Run 'apt list --upgradable' to see them.  
ubuntu@ip-172-31-3-7:~$
```

- Install a few prerequisite packages which let apt use packages over HTTPS:  
→`sudo apt install apt-transport-https ca-certificates curl software-properties-common`

```
ubuntu@ip-172-31-3-7: ~$ sudo apt install apt-transport-https ca-certificates curl software-properties-common
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
ca-certificates is already the newest version (20211016ubuntu0.22.04.1).
ca-certificates set to manually installed.
The following additional packages will be installed:
  libcurl4 python3-software-properties
The following NEW packages will be installed:
  apt-transport-https
The following packages will be upgraded:
  curl libcurl4 python3-software-properties software-properties-common
4 upgraded, 1 newly installed, 0 to remove and 36 not upgraded.
Need to get 528 kB of archives.
After this operation, 171 kB of additional disk space will be used.
Do you want to continue? [Y/n] Y
Get:1 http://ap-northeast-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 apt-transport-https all 2.4.8 [1506 B]
Get:2 http://ap-northeast-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 curl amd64 7.81.0-1ubuntu1.8 [194 kB]
Get:3 http://ap-northeast-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 libcurl4 amd64 7.81.0-1ubuntu1.8 [290 kB]
Get:4 http://ap-northeast-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 software-properties-common all 0.99.22.6 [14.1 kB]
Get:5 http://ap-northeast-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 python3-software-properties all 0.99.22.6 [28.8 kB]
Fetched 528 kB in 0s (15.1 MB/s)
Selecting previously unselected package apt-transport-https.
(Reading database ... 63605 files and directories currently installed.)
Preparing to unpack .../apt-transport-https_2.4.8_all.deb ...
Unpacking apt-transport-https (2.4.8) ...
Preparing to unpack .../curl_7.81.0-1ubuntu1.8_amd64.deb ...
Unpacking curl (7.81.0-1ubuntu1.8) over (7.81.0-1ubuntu1.7) ...
Preparing to unpack .../libcurl4_7.81.0-1ubuntu1.8_amd64.deb ...
Unpacking libcurl4:amd64 (7.81.0-1ubuntu1.8) over (7.81.0-1ubuntu1.7) ...
Preparing to unpack .../software-properties-common_0.99.22.6_all.deb ...
Unpacking software-properties-common (0.99.22.6) over (0.99.22.5) ...
Preparing to unpack .../python3-software-properties_0.99.22.6_all.deb ...
Unpacking python3-software-properties (0.99.22.6) over (0.99.22.5) ...
Setting up apt-transport-https (2.4.8) ...
Setting up python3-software-properties (0.99.22.6) ...
Setting up libcurl4:amd64 (7.81.0-1ubuntu1.8) ...
Setting up curl (7.81.0-1ubuntu1.8) ...
Setting up software-properties-common (0.99.22.6) ...
Processing triggers for libc-bin (2.35-0ubuntu3.1) ...
Processing triggers for man-db (2.10.2-1) ...
Processing triggers for dbus (1.12.20-2ubuntu4.1) ...
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-172-31-3-7:~$
```

- Add the Docker repository to APT sources:

→`sudo add-apt-repository "deb [arch=amd64] https://download.docker.com/linux/ubuntu focal stable"`

```
ubuntu@ip-172-31-3-7: ~$ sudo add-apt-repository "deb [arch=amd64] https://download.docker.com/linux/ubuntu focal stable"
Repository: 'deb [arch=amd64] https://download.docker.com/linux/ubuntu focal stable'
Description:
Archive for codename: focal components: stable
More info: https://download.docker.com/linux/ubuntu
Adding repository.
Press [ENTER] to continue or Ctrl-C to cancel.
Adding deb entry to /etc/apt/sources.list.d/archive_uri-https_download_docker_com_linux_ubuntu-jammy.list
Adding disabled deb-src entry to /etc/apt/sources.list.d/archive_uri-https_download_docker_com_linux_ubuntu-jammy.list
Hit:1 http://ap-northeast-1.ec2.archive.ubuntu.com/ubuntu jammy InRelease
Hit:2 http://ap-northeast-1.ec2.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:3 http://ap-northeast-1.ec2.archive.ubuntu.com/ubuntu jammy-backports InRelease
Get:4 https://download.docker.com/linux/ubuntu focal InRelease [57.7 kB]
Hit:5 http://security.ubuntu.com/ubuntu jammy-security InRelease
Get:6 https://download.docker.com/linux/ubuntu focal/stable amd64 Packages [24.7 kB]
Fetched 82.4 kB in 1s (106 kB/s)
Reading package lists... Done
W: https://download.docker.com/linux/ubuntu/dists/focal/InRelease: Key is stored in legacy trusted.gpg keyring (/etc/apt/trusted.gpg), see the DEPRECATION section in apt-key(8) for details.
ubuntu@ip-172-31-3-7:~$
```

- Finally, install Docker:  
→ `sudo apt install docker-ce`

```
ubuntu@ip-172-31-3-7: ~
5:19:03.9~3-0-ubuntu-focal 500
Selecting previously unselected package pigz./ubuntu focal/stable amd64 Packages
(Reading database ... 63609 files and directories currently installed.)
Preparing to unpack .../00-pigz_2.6-1_amd64.deb ...
Unpacking pigz (2.6-1) ...
Selecting previously unselected package containerd.io.
Preparing to unpack .../01-containerd.io_1.6.18-1_amd64.deb ...
Unpacking containerd.io (1.6.18-1) ...
Selecting previously unselected package docker-buildx-plugin.
Preparing to unpack .../02-docker-buildx-plugin_0.10.2-1-ubuntu.20.04~focal_amd64.deb ...
Unpacking docker-buildx-plugin (0.10.2-1-ubuntu.20.04~focal) ...
Selecting previously unselected package docker-ce-cli.
Preparing to unpack .../03-docker-ce-cli_5%3a23.0.1-1-ubuntu.20.04~focal_amd64.deb ...
Unpacking docker-ce-cli (5:23.0.1-1-ubuntu.20.04~focal) ...
Selecting previously unselected package docker-ce.
Preparing to unpack .../04-docker-ce_5%3a23.0.1-1-ubuntu.20.04~focal_amd64.deb ...
Unpacking docker-ce (5:23.0.1-1-ubuntu.20.04~focal) ...
Selecting previously unselected package docker-ce-rootless-extras.
Preparing to unpack .../05-docker-ce-rootless-extras_5%3a23.0.1-1-ubuntu.20.04~focal_amd64.deb ...
Unpacking docker-ce-rootless-extras (5:23.0.1-1-ubuntu.20.04~focal) ...
Selecting previously unselected package docker-compose-plugin.
Preparing to unpack .../06-docker-compose-plugin_2.16.0-1-ubuntu.20.04~focal_amd64.deb ...
Unpacking docker-compose-plugin (2.16.0-1-ubuntu.20.04~focal) ...
Selecting previously unselected package docker-scan-plugin.
Preparing to unpack .../07-docker-scan-plugin_0.23.0-ubuntu-focal_amd64.deb ...
Unpacking docker-scan-plugin (0.23.0-ubuntu-focal) ...
Selecting previously unselected package libltdl7:amd64.
Preparing to unpack .../08-libltdl7_2.4.6-15build2_amd64.deb ...
Unpacking libltdl7:amd64 (2.4.6-15build2) ...
Selecting previously unselected package libsliplr0:amd64.
Preparing to unpack .../09-libsliplr0_4.6.1-1build1_amd64.deb ...
Unpacking libsliplr0:amd64 (4.6.1-1build1) ...
Selecting previously unselected package slirp4netns.
Preparing to unpack .../10-slirp4netns_1.0.1-2_amd64.deb ...
Unpacking slirp4netns (1.0.1-2) ...
Setting up docker-scan-plugin (0.23.0-ubuntu-focal) ...
Setting up docker-buildx-plugin (0.10.2-1-ubuntu.20.04~focal) ...
Setting up containerd.io (1.6.18-1) ...
Created symlink /etc/systemd/system/multi-user.target.wants/containerd.service → /lib/systemd/system/containerd.service.
Setting up docker-compose-plugin (2.16.0-1-ubuntu.20.04~focal) ...
Setting up libltdl7:amd64 (2.4.6-15build2) ...
Setting up docker-ce-cli (5:23.0.1-1-ubuntu.20.04~focal) ...
Setting up libsliplr0:amd64 (4.6.1-1build1) ...
Setting up pigz (2.6-1) ...
Setting up docker-ce-rootless-extras (5:23.0.1-1-ubuntu.20.04~focal) ...
Setting up slirp4netns (1.0.1-2) ...
Setting up docker-ce (5:23.0.1-1-ubuntu.20.04~focal) ...
Created symlink /etc/systemd/system/multi-user.target.wants/docker.service → /lib/systemd/system/docker.service.
Created symlink /etc/systemd/system/sockets.target.wants/docker.socket → /lib/systemd/system/docker.socket.
Processing triggers for man-db (2.10.2-1) ...
Processing triggers for libc-bin (2.35-0ubuntu3.1) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.
Building dependency tree... Done
No services need to be restarted.
The following additional packages will be installed:
No containers need to be restarted.n docker-ce-cli docker-ce-rootless-extras docker-compose-plugin docker-scan-plugin libltdl7 libsliplr0 pigz slirp4netns
Suggested packages:
No user sessions are running outdated binaries.
The following NEW packages will be installed:
No VM guests are running outdated hypervisor (qemu) binaries on this host.tless-extras docker-compose-plugin docker-scan-plugin libltdl7 libsliplr0 pigz slirp4netns
```

- Docker should now be installed, the daemon started, and the process enabled to start on boot. Check that it's running:  
→ `sudo systemctl status docker`

```
ubuntu@ip-172-31-3-7: ~
ubuntu@ip-172-31-3-7:~$ sudo systemctl status docker
● docker.service - Docker Application Container Engine
   Loaded: loaded (/lib/systemd/system/docker.service; enabled; vendor preset: enabled)
   Active: active (running) since Tue 2023-03-07 10:00:26 UTC; 3min 37s ago
   TriggeredBy: ● docker.socket
     Docs: https://docs.docker.com
    Main PID: 3199 (dockerd)
      Tasks: 7
     Memory: 54.3M
        CPU: 286ms
    CGroup: /system.slice/docker.service
            └─3199 /usr/bin/dockerd -H fd:// --containerd=/run/containerd/containerd.sock

Mar 07 10:00:25 ip-172-31-3-7 dockerd[3199]: time="2023-03-07T10:00:25.688758494Z" level=info msg="[core] [Channel #4 SubChannel #5] Subchannel Connectivity change to READY" module=grpc
Mar 07 10:00:25 ip-172-31-3-7 dockerd[3199]: time="2023-03-07T10:00:25.688881863Z" level=info msg="[core] [Channel #4] Channel Connectivity change to READY" module=grpc
Mar 07 10:00:25 ip-172-31-3-7 dockerd[3199]: time="2023-03-07T10:00:25.745440790Z" level=info msg="Loading containers: start."
Mar 07 10:00:25 ip-172-31-3-7 dockerd[3199]: time="2023-03-07T10:00:25.940290807Z" level=info msg="Default bridge (docker0) is assigned with an IP address 172.17.0.0/16. Daemon option --bip can be used to set a preferred IP address"
Mar 07 10:00:26 ip-172-31-3-7 dockerd[3199]: time="2023-03-07T10:00:26.040814665Z" level=info msg="Loading containers: done."
Mar 07 10:00:26 ip-172-31-3-7 dockerd[3199]: time="2023-03-07T10:00:26.118083847Z" level=info msg="Docker daemon" commit=bc3805a graphdriver=overlay2 version=23.0.1
Mar 07 10:00:26 ip-172-31-3-7 dockerd[3199]: time="2023-03-07T10:00:26.118534061Z" level=info msg="Daemon has completed initialization"
Mar 07 10:00:26 ip-172-31-3-7 dockerd[3199]: time="2023-03-07T10:00:26.146419817Z" level=info msg="[core] [Server #7] Server created" module=grpc
Mar 07 10:00:26 ip-172-31-3-7 systemd[1]: Started Docker Application Container Engine.
Mar 07 10:00:26 ip-172-31-3-7 dockerd[3199]: time="2023-03-07T10:00:26.156454033Z" level=info msg="API listen on /run/docker.sock"
ubuntu@ip-172-31-3-7:~$
```

## Docker Commands:

→docker

```
ubuntu@ip-172-31-3-7:~$ docker
Usage: docker [OPTIONS] COMMAND

A self-sufficient runtime for containers

Common Commands:
run          Create and run a new container from an image
exec         Execute a command in a running container
ps           List containers
build        Build an image from a Dockerfile
pull         Download an image from a registry
push         Upload an image to a registry
images       List images
login        Log in to a registry
logout       Log out from a registry
search       Search Docker Hub for images
version      Show the Docker version information
info         Display system-wide information

Management Commands:
builder      Manage builds
buildx*      Docker Buildx (Docker Inc., v0.10.2)
checkpoint   Manage checkpoints
commit       Create a new image from a container's changes
```

→Docker info

```
root@ip-172-31-3-7:/home/ubuntu# sudo su
root@ip-172-31-3-7:/home/ubuntu# docker info
Client:
Context:    default
Debug Mode: false
Plugins:
buildx: Docker Buildx (Docker Inc.)
  Version:  v0.10.2
  Path:     /usr/libexec/docker/cli-plugins/docker-buildx
compose: Docker Compose (Docker Inc.)
  Version:  v2.16.0
  Path:     /usr/libexec/docker/cli-plugins/docker-compose
scan: Docker Scan (Docker Inc.)
  Version:  v0.23.0
  Path:     /usr/libexec/docker/cli-plugins/docker-scan
Server:
Containers: 0
  Running: 0
  Paused: 0
  Stopped: 0
Images: 0
Server Version: 23.0.1
Storage Driver: overlay2
  Backing Filesystem: extfs
  Supports d_type: true
  Using metacopy: false
  Native Overlay Diff: true
  userxattr: false
Logging Driver: json-file
Cgroup Driver: systemd
Cgroup Version: 2
Plugins:
Volume: local
Network: bridge host ipvlan macvlan null overlay
Log: awslogs fluentd gcplogs gelf journald json-file local logentries splunk syslog
Swarm: inactive
```

→Docker version

```
root@ip-172-31-3-7:/home/ubuntu# docker version
Client: Docker Engine - Community
 Version:           23.0.1
 API version:       1.42
 Go version:        go1.19.5
 Git commit:        a5ee5b1
 Built:             Thu Feb  9 19:46:56 2023
 OS/Arch:           linux/amd64
 Context:           default

Server: Docker Engine - Community
 Engine:
  Version:           23.0.1
  API version:       1.42 (minimum version 1.12)
  Go version:        go1.19.5
  Git commit:        bc3805a
  Built:             Thu Feb  9 19:46:56 2023
  OS/Arch:           linux/amd64
  Experimental:      false
 containerd:
  Version:           1.6.18
  GitCommit:        2456e983eb9e37e47538f59ea18f2043c9a73640
 runc:
  Version:           1.1.4
  GitCommit:        v1.1.4-0-g5fd4c4d
 docker-init:
  Version:           0.19.0
  GitCommit:        de40ad0
root@ip-172-31-3-7:/home/ubuntu#
```

## → Docker run hello-world

```
root@ip-172-31-3-7: /home/ubuntu

root@ip-172-31-3-7:/home/ubuntu# docker run hello-world
Unable to find image 'hello-world:latest' locally
latest: Pulling from library/hello-world
2db29710123e: Pull complete
Digest: sha256:6e8b6f026e0b9c419ea0fd02d3905dd0952ad1fee67543f525c73a0a790fefb
Status: Downloaded newer image for hello-world:latest

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/

root@ip-172-31-3-7:/home/ubuntu#
```

To create and run a container:

➔ Docker run --name mycontainer -it -d centos /bin/bash

```
root@ip-172-31-3-7: /home/ubuntu

root@ip-172-31-3-7:/home/ubuntu# docker run --name mycontainer -it -d centos /bin/bash
Unable to find image 'centos:latest' locally
latest: Pulling from library/centos
a1d0c7532777: Pull complete
Digest: sha256:a27fd8080b517143cbbbab9dfb7c8571c40d67d534bbdee55bd6c473f432b177
Status: Downloaded newer image for centos:latest
dd41c21bc0d25b1bc5710a62b79d5f3d0dec8f28b54c911c61c1b6873070c696
root@ip-172-31-3-7:/home/ubuntu#
```

→ docker ps :- to view a running container

→ docker ps -a :- to view all the container

```
root@ip-172-31-3-7: /home/ubuntu

root@ip-172-31-3-7:/home/ubuntu# docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED    STATUS    PORTS    NAMES
dd41c21bc0d2   centos    "/bin/bash"             2 minutes ago    Up 2 minutes                    mycontainer
3bd8fde66ac7   nginx     "/docker-entrypoint..." 9 minutes ago    Up 9 minutes    80/tcp    priceless_black

root@ip-172-31-3-7:/home/ubuntu# docker ps -a
CONTAINER ID   IMAGE     COMMAND                  CREATED    STATUS    PORTS    NAMES
dd41c21bc0d2   centos    "/bin/bash"             2 minutes ago    Up 2 minutes                    mycontainer
3bd8fde66ac7   nginx     "/docker-entrypoint..." 9 minutes ago    Up 9 minutes    80/tcp    priceless_black
93f4372debd8   hello-world "/hello"                48 minutes ago    Exited (0) 48 minutes ago      adoring_wright

root@ip-172-31-3-7:/home/ubuntu#
```



Command to login to a running container:

➔ Docker exec -it mycontainer /bin/bash

```
root@ip-172-31-3-7:/home/ubuntu# docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS        NAMES
dd41c21bc0d2   centos    "/bin/bash"             2 minutes ago Up 2 minutes          mycontainer
3bd8fde66ac7   nginx    "/docker-entrypoint..." 9 minutes ago Up 9 minutes      80/tcp        priceless_black

root@ip-172-31-3-7:/home/ubuntu# docker ps -a
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS        NAMES
dd41c21bc0d2   centos    "/bin/bash"             2 minutes ago Up 2 minutes          mycontainer
3bd8fde66ac7   nginx    "/docker-entrypoint..." 9 minutes ago Up 9 minutes      80/tcp        priceless_black
93f4372debd8   hello-world "/hello"                48 minutes ago Exited (0) 48 minutes ago        adoring_wright

root@ip-172-31-3-7:/home/ubuntu# docker exec -it mycontainer /bin/bash
[root@dd41c21bc0d2 /]#
```

Commands to start or stop containers:

➔ docker start container\_name or container\_id

➔ docker stop container\_name or container\_id

```
root@ip-172-31-3-7:/home/ubuntu# docker ps -a
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS        NAMES
dd41c21bc0d2   centos    "/bin/bash"             2 minutes ago Up 2 minutes          mycontainer
3bd8fde66ac7   nginx    "/docker-entrypoint..." 9 minutes ago Up 9 minutes      80/tcp        priceless_black
93f4372debd8   hello-world "/hello"                48 minutes ago Exited (0) 48 minutes ago        adoring_wright

root@ip-172-31-3-7:/home/ubuntu# docker exec -it mycontainer /bin/bash
[root@dd41c21bc0d2 /]# exit
exit

root@ip-172-31-3-7:/home/ubuntu# docker stop 3bd8fde66ac7
3bd8fde66ac7

root@ip-172-31-3-7:/home/ubuntu# docker ps -a
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS        NAMES
dd41c21bc0d2   centos    "/bin/bash"             12 minutes ago Up 12 minutes          mycontainer
3bd8fde66ac7   nginx    "/docker-entrypoint..." 19 minutes ago Exited (0) 15 seconds ago        priceless_black
93f4372debd8   hello-world "/hello"                58 minutes ago Exited (0) 58 minutes ago        adoring_wright

root@ip-172-31-3-7:/home/ubuntu# docker start 3bd8fde66ac7
3bd8fde66ac7

root@ip-172-31-3-7:/home/ubuntu# docker ps -a
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS        NAMES
dd41c21bc0d2   centos    "/bin/bash"             12 minutes ago Up 12 minutes          mycontainer
3bd8fde66ac7   nginx    "/docker-entrypoint..." 19 minutes ago Up 3 seconds      80/tcp        priceless_black
93f4372debd8   hello-world "/hello"                58 minutes ago Exited (0) 58 minutes ago        adoring_wright

root@ip-172-31-3-7:/home/ubuntu#
```

To remove a container:

➔ docker rm container\_name or container\_id

```
root@ip-172-31-3-7:/home/ubuntu# docker start 3bd8fde66ac7
3bd8fde66ac7

root@ip-172-31-3-7:/home/ubuntu# docker ps -a
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS        NAMES
dd41c21bc0d2   centos    "/bin/bash"             12 minutes ago Up 12 minutes          mycontainer
3bd8fde66ac7   nginx    "/docker-entrypoint..." 19 minutes ago Up 3 seconds      80/tcp        priceless_black
93f4372debd8   hello-world "/hello"                58 minutes ago Exited (0) 58 minutes ago        adoring_wright

root@ip-172-31-3-7:/home/ubuntu# docker rm 93f4372debd8
93f4372debd8

root@ip-172-31-3-7:/home/ubuntu#
```

➔ docker images

➔ docker rmi image\_name or image\_id

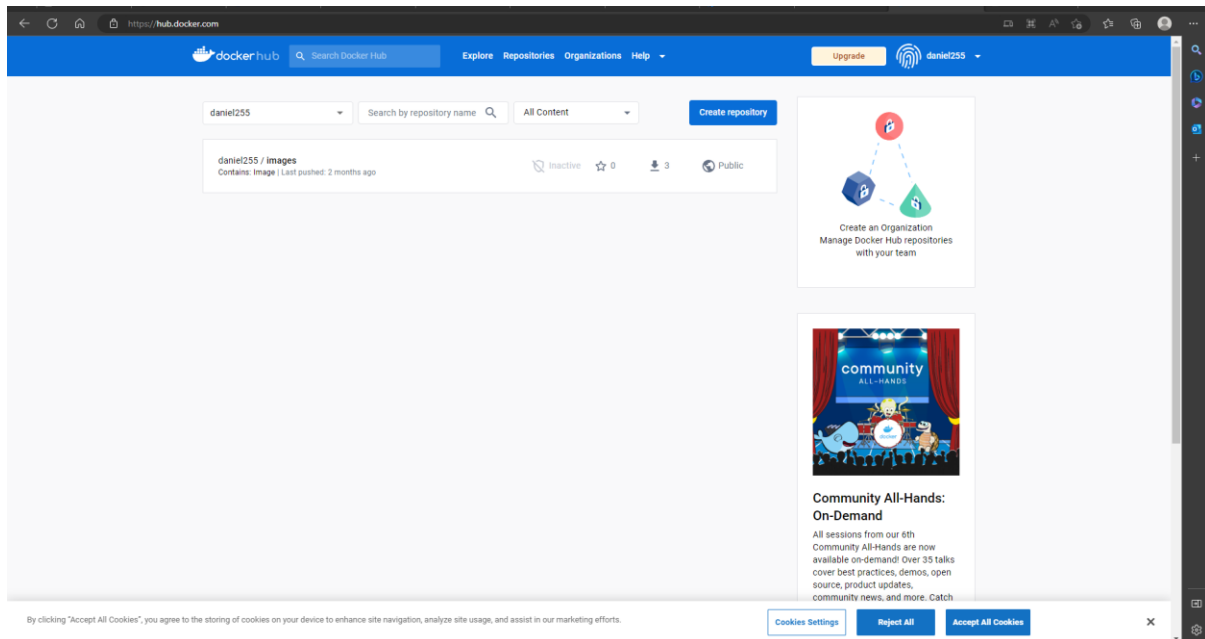
```
root@ip-172-31-3-7:/home/ubuntu# docker images
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
nginx         latest   904b8cb13b93   5 days ago    142MB
hello-world   latest   feb5d9fea6a5   17 months ago 13.3kB
centos        latest   5d0da3dc9764   17 months ago 231MB

root@ip-172-31-3-7:/home/ubuntu# docker rmi feb5d9fea6a5
Untagged: hello-world:latest
Untagged: hello-world@sha256:6e8b6f026e0b9c419ea0fd02d3905dd0952ad1fee67543f525c73a0a790febf
Deleted: sha256:feb5d9fea6a5e9606aa995e879d862b825965ba48de054caab5ef356dc6b3412
Deleted: sha256:e07ee1baac5fae6a26f30cabfe54a36d3402f96afda318fe0a96cec4ca393359

root@ip-172-31-3-7:/home/ubuntu#
```

## Docker Hub

Here is the official website for Docker Hub: - <https://hub.docker.com/>



Command to authenticate to Docker Hub:

→docker login

```
root@ip-172-31-3-7:/home/ubuntu
root@ip-172-31-3-7:/home/ubuntu# docker run --name mycontainer1 -d -p 80:80 myapp:v2
b4c4608e7cadfd8cca1102fc64b848d0ad2b8241c30132a8c2f0714b65119fe6
root@ip-172-31-3-7:/home/ubuntu# 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: daniel255
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
root@ip-172-31-3-7:/home/ubuntu#
```

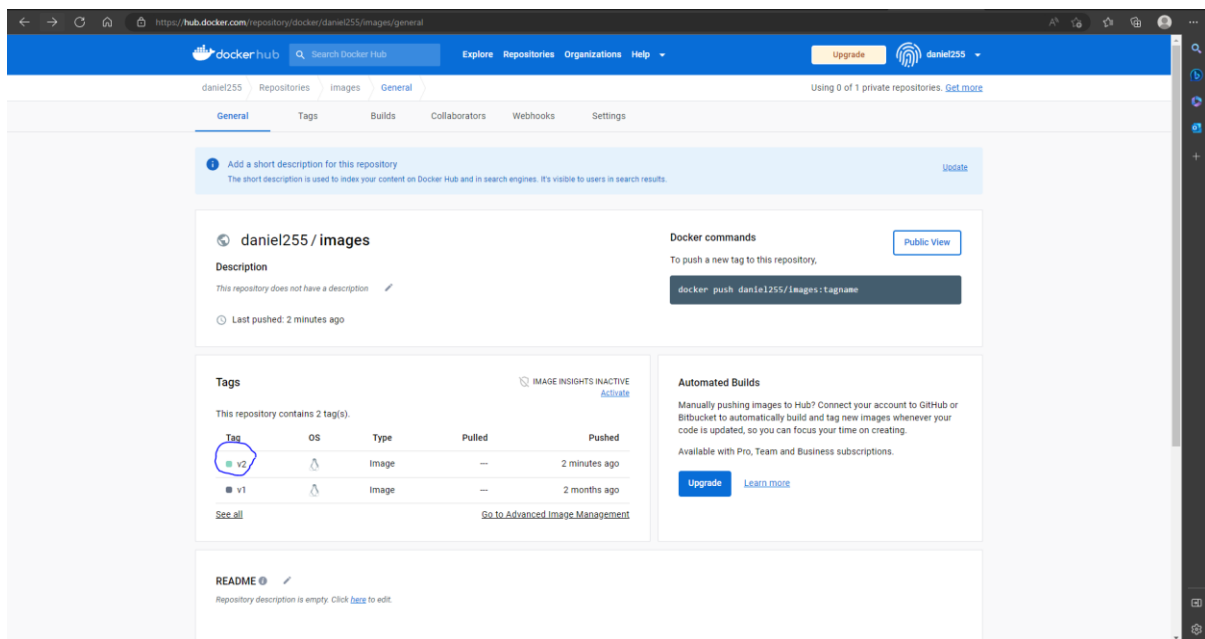
Command to push tagged image to a DockerHub Repository:

→docker push daniel255/images:tagname

```
root@ip-172-31-3-7:/home/ubuntu
root@ip-172-31-3-7:/home/ubuntu# docker images
REPOSITORY          TAG          IMAGE ID          CREATED           SIZE
daniel255/images    v2           493bde546c81     9 minutes ago    142MB
myapp                v2           493bde546c81     9 minutes ago    142MB
nginx                latest       904b8cb13b93     5 days ago       142MB
centos               latest       5d0da3dc9764     17 months ago    231MB
root@ip-172-31-3-7:/home/ubuntu# docker push daniel255/images:v2
The push refers to repository [docker.io/daniel255/images]
d8bb502c9f43: Pushed
101af4ba983b: Mounted from library/nginx
d8466e142d87: Mounted from library/nginx
83ba6d8ffb8c: Mounted from library/nginx
e161c82b34d2: Mounted from library/nginx
4dc5cd799a08: Mounted from library/nginx
650abce4b096: Mounted from library/nginx
v2: digest: sha256:9fb609f16fecc2e8c30b04276643d31493e553907fb314808c3d21e4be0a6130 size: 1777
root@ip-172-31-3-7:/home/ubuntu#
```

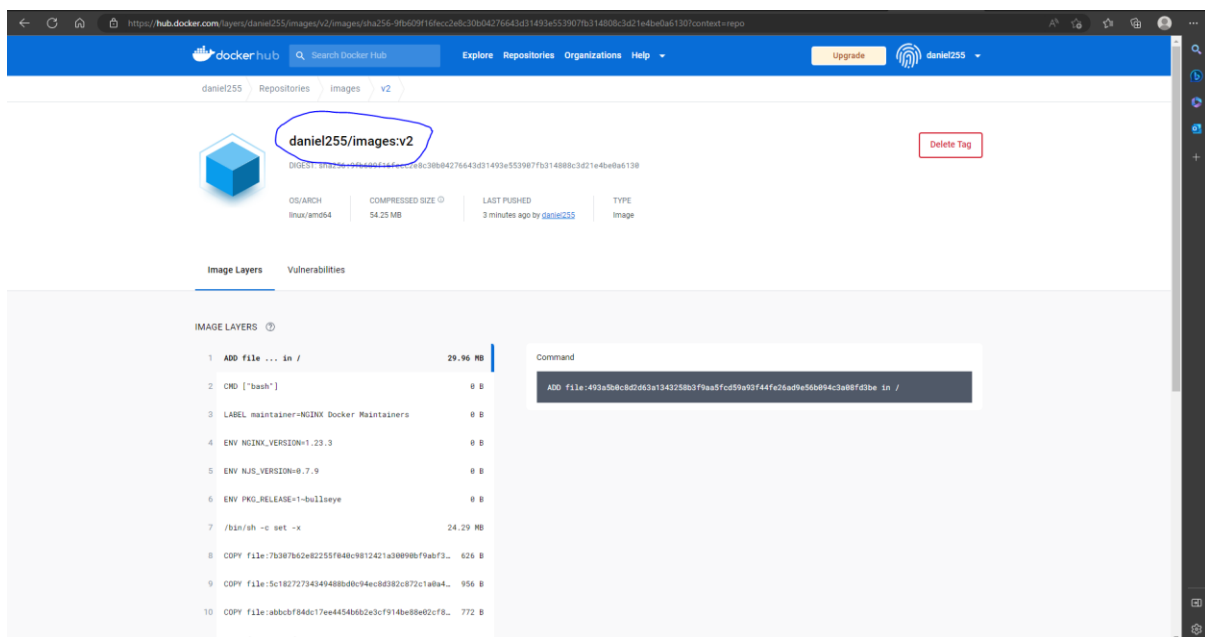


Docker image v2 has been pushed to docker hub successfully:



The screenshot shows the Docker Hub repository page for `daniel255/images`. The page has a blue header with the Docker Hub logo and navigation links. Below the header, there are tabs for `General`, `Tags`, `Builds`, `Collaborators`, `Webhooks`, and `Settings`. The `General` tab is selected. The main content area shows the repository name `daniel255 / images` and a description field that is currently empty. Below the description, there is a table of tags. The table has columns for `Tag`, `OS`, `Type`, `Pulled`, and `Pushed`. The tags listed are `v2` (pushed 2 minutes ago) and `v1` (pushed 2 months ago). The `v2` tag is circled in red. To the right of the tags table, there is a section for `Docker commands` showing the command `docker push daniel255/images:tagname`. Below the tags table, there is a `README` section that is currently empty.

Tag	OS	Type	Pulled	Pushed
v2	linux/amd64	Image	—	2 minutes ago
v1	linux/amd64	Image	—	2 months ago



The screenshot shows the Docker Hub repository page for `daniel255/images/v2`. The page has a blue header with the Docker Hub logo and navigation links. Below the header, there are tabs for `General`, `Tags`, `Builds`, `Collaborators`, `Webhooks`, and `Settings`. The `Tags` tab is selected. The main content area shows the repository name `daniel255/images:v2` and a description field that is currently empty. Below the description, there is a table of image layers. The table has columns for `Layer`, `Size`, and `Command`. The layers listed are:

Layer	Size	Command
ADD file:493a5b8c8d2d63a1343258b3f9a5fcd99a93f44fe2a8d9e56b84c3a88fd3be in /	29.96 MB	ADD file:493a5b8c8d2d63a1343258b3f9a5fcd99a93f44fe2a8d9e56b84c3a88fd3be in /
ADD file:7b387b62e2255f648c9812421a30899b7f9b73...	626 B	
ADD file:5c1827273434948b8dc94c8d382c872c1a8a4...	956 B	
ADD file:abbcbf84dc17ee4454b6b2e3cf914be88e02cf8...	772 B	
ADD file:e57eef017a14ca793499729d88a7b987579b...	1.37 KB	