

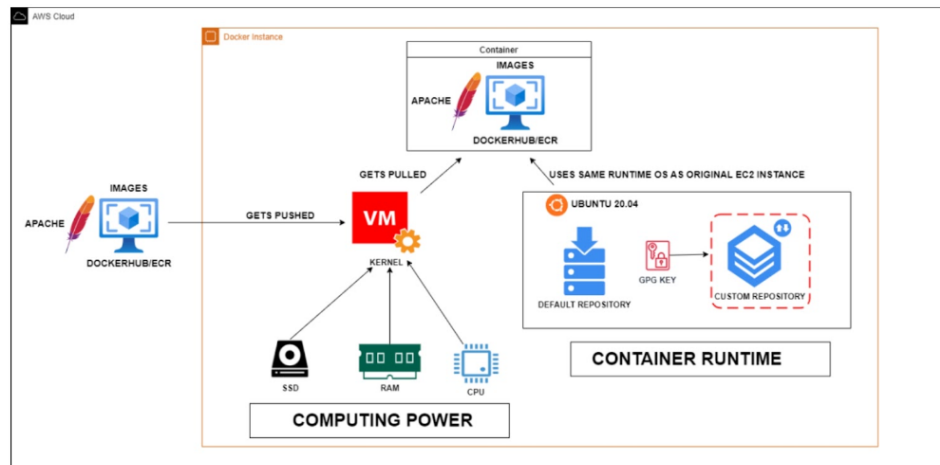
# Docker Practical 1

**Aim:**

## In EC2 Instance of Ubuntu 20.04 Version, Create a Docker Container where Apache2 is Installed and Deployed on EC2 Machine working inside.

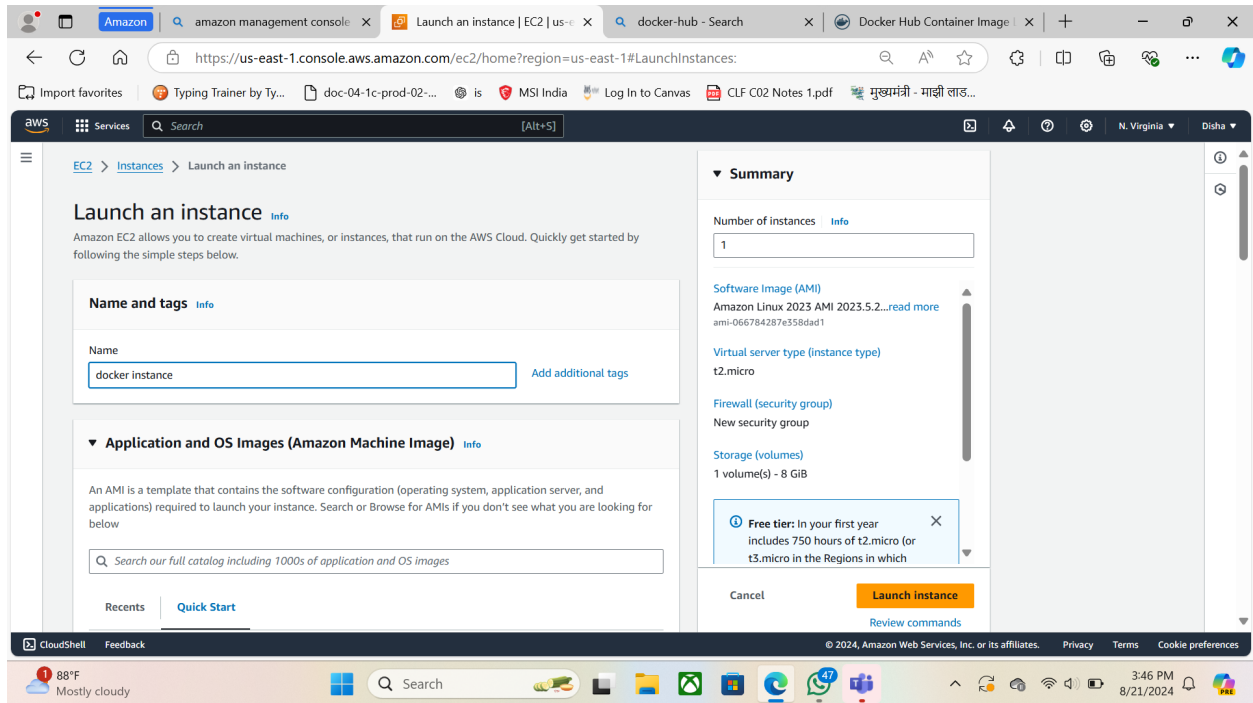
**Prerequisites:**

- **One EC2 Instance**
- **Switch User Permission**
- **t2.micro (To Allocate Necessary Compute Power to Kernel)**



## 1. Launch an EC2 Instance

- **Name : Docker\_Instance**
- **AMI : Ubuntu 24.04**
- **Instance Type : t2.micro**
- **Launch Instance**



Amazon Linux

aws

macOS

Mac

Ubuntu

ubuntu

Windows

Microsoft

Red Hat

Red Hat

SUSE Li

SUSE

Browse more AMIs

Including AMIs from AWS, Marketplace and the Community

Amazon Machine Image (AMI)

Ubuntu Server 24.04 LTS (HVM), SSD Volume Type

ami-0e86e20dae9224db8 (64-bit (x86)) / ami-096ea6a12ea24a797 (64-bit (Arm))

Virtualization: hvm   ENA enabled: true   Root device type: ebs

Free tier eligible

▼ Network settings

Info

VPC - required

Info

vpc-0d0a74748ef79beeb6

(default) ▼

172.31.0.0/16

↻

Subnet

Info

subnet-0ee248632e527781f

VPC: vpc-0d0a74748ef79beeb6

Owner: 381492031966

Availability Zone: us-east-1a ▼

Zone type: Availability Zone

IP addresses available: 4091

CIDR: 172.31.32.0/20

↻

Create new subnet

Auto-assign public IP

Info

Enable

▼

Additional charges apply

when outside of free tier allowance

Firewall (security groups)

Info

A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

☒ Create security group

☐ Select existing security group

ch

[Alt+S]

🔍

🔔

?

⚙️

N. Virginia ▼

Disha ▼

Instances (1/1)

Info

Last updated less than a minute ago

↻

Connect

Instance state ▼

Actions ▼

Launch instances ▼

🔍

Find Instance by attribute or tag (case-sensitive)

All states ▼

Instance ID = i-0008c556700c71664

✕

Clear filters

< 1 >

⚙️

<input checked="" type="checkbox"/>	Name ↗	Instance ID	Instance state ▼	Instance type ▼	Status check	Alarm status	Availability Zone ▼	Public IPv4 DNS
<input checked="" type="checkbox"/>	docker instance	i-0008c556700c71664	Running	t2.micro	Initializing	View alarms +	us-east-1a	ec2-3-82-17-187.com

Write the following commands to Create a Docker container

1. ``sudo su``: Switches the current user to the root user with elevated privileges.
2. ``apt update -y``: Updates the list of available packages and their versions, automatically accepting any prompts.
3. ``apt install apt-transport-https ca-certificates curl software-properties-common``: Installs packages required for HTTPS connections, certificate handling, file transfer, and managing software repositories.
4. ``curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo apt-key add -``: Downloads Docker's GPG key and adds it to the system's trusted keys

for package verification.

5. `sudo add-apt-repository "deb [arch=amd64]`

`https://download.docker.com/linux/ubuntu focal stable"`: Adds Docker's official repository for the stable release on Ubuntu Focal (20.04) to the system's package sources.

6. `apt-cache policy docker-ce`: Displays the version information and installation candidate for Docker's Community Edition.

7. `sudo apt install docker-ce`: Installs Docker's Community Edition on the system.

8. `docker --version`: Checks and displays the installed version of Docker.

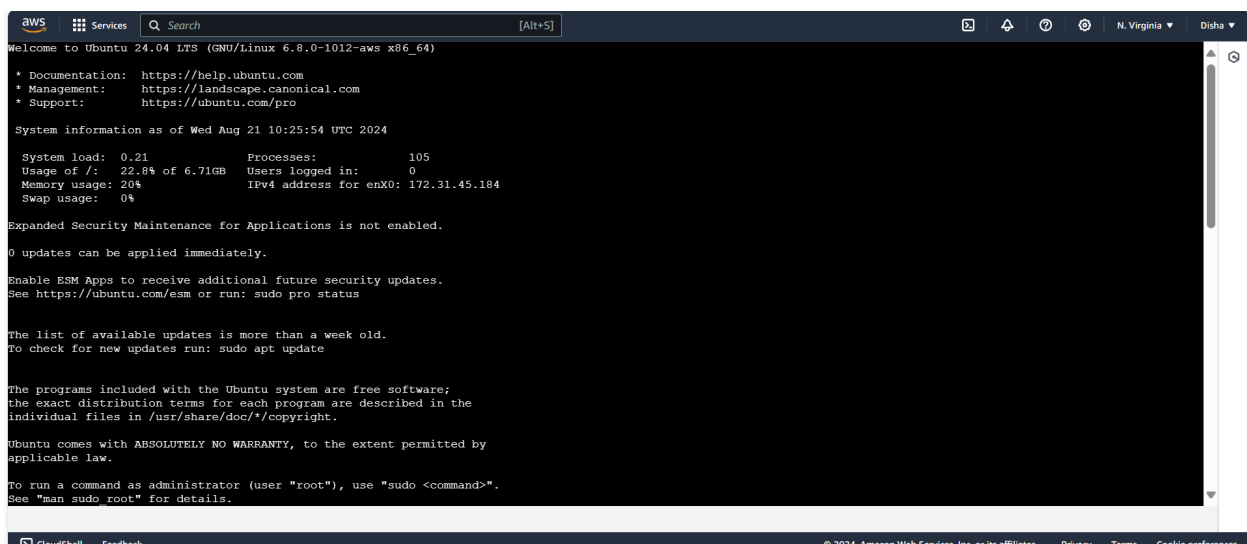
9. `docker pull ubuntu`: Downloads the latest Ubuntu image from Docker Hub.

10. `docker container run ubuntu`: Runs a new container using the Ubuntu image.

11. `docker container ls -a`: Lists all Docker containers, including those that are stopped.

12. `docker container rm <CONTAINER_ID>`: Removes a Docker container specified by the container ID.

13. `docker container run -it ubuntu /bin/bash`: Runs a new Ubuntu container in interactive mode with a bash shell.



```
aws
Services
Q Search [Alt+S]
Welcome to Ubuntu 24.04 LTS (GNU/Linux 6.8.0-1012-aws x86_64)

+ Documentation: https://help.ubuntu.com
+ Management:   https://landscape.canonical.com
+ Support:      https://ubuntu.com/pro

System information as of Wed Aug 21 10:25:54 UTC 2024

System load: 0.21          Processes: 105
Usage of /:  22.8% of 6.71GB Users logged in: 0
Memory usage: 20%         IPv4 address for enx0: 172.31.45.184
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

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo root" for details.
```

```
aws Services Search [Alt+S]
Last login: Wed Aug 21 10:25:55 2024 from 18.206.107.28
ubuntu@ip-172-31-45-184:~$ sudo su
root@ip-172-31-45-184:/home/ubuntu# apt upgrade
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Calculating upgrade... Done
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
root@ip-172-31-45-184:/home/ubuntu# pt install apt-transport-https ca-certificates curl software-properties-common
Command 'pt' not found, but can be installed with:
apt install tcclib
root@ip-172-31-45-184:/home/ubuntu# 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 (20240203).
ca-certificates set to manually installed.
curl is already the newest version (8.5.0-2ubuntu10.2).
curl set to manually installed.
software-properties-common is already the newest version (0.99.48).
software-properties-common set to manually installed.
The following NEW packages will be installed:
  apt-transport-https
0 upgraded, 1 newly installed, 0 to remove and 0 not upgraded.
Need to get 3974 B of archives.
After this operation, 35.8 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
```

```
aws Services Search [Alt+S]
root@ip-172-31-45-184:/home/ubuntu# 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-noble.list
Adding disabled deb-src entry to /etc/apt/sources.list.d/archive uri=https download.docker.com linux ubuntu-noble.list
Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease
Get:4 https://download.docker.com/linux/ubuntu focal InRelease [57.7 kB]
Hit:5 http://security.ubuntu.com/ubuntu noble-security InRelease
Get:6 https://download.docker.com/linux/ubuntu focal/stable amd64 Packages [48.8 kB]
Fetched 106 kB in 1s (124 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.
root@ip-172-31-45-184:/home/ubuntu# apt-cache policy docker-ce
docker-ce:
  Installed: (none)
  Candidate: 5:27.1.2-1-ubuntu.20.04-focal
  Version table:
   5:27.1.2-1-ubuntu.20.04-focal 500
   500 https://download.docker.com/linux/ubuntu focal/stable amd64 Packages
   5:27.1.1-1-ubuntu.20.04-focal 500
```

```

500 https://download.docker.com/linux/ubuntu focal/stable amd64 Packages
root@ip-172-31-45-184:/home/ubuntu# sudo apt install docker-ce
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  containerd.io docker-buildx-plugin docker-ce-cli docker-ce-rootless-extras docker-compose-plugin libltdl7 libslirp0 pigz slirp4netns
Suggested packages:
  aufs-tools cgroupfs-mount | cgroup-lite
The following NEW packages will be installed:
  containerd.io docker-buildx-plugin docker-ce docker-ce-cli docker-ce-rootless-extras docker-compose-plugin libltdl7 libslirp0 pigz slirp4netns
0 upgraded, 10 newly installed, 0 to remove and 0 not upgraded.
Need to get 122 MB of archives.
After this operation, 437 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 pigz amd64 2.8-1 [65.6 kB]
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libltdl7 amd64 2.4.7-7build1 [40.3 kB]
Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libslirp0 amd64 4.7.0-1ubuntu3 [63.8 kB]
Get:4 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 slirp4netns amd64 1.2.1-1build2 [34.9 kB]
Get:5 https://download.docker.com/linux/ubuntu focal/stable amd64 containerd.io amd64 1.7.20-1 [30.5 MB]
Get:6 https://download.docker.com/linux/ubuntu focal/stable amd64 docker-buildx-plugin amd64 0.16.2-1-ubuntu.20.04-focal [29.9 MB]
Get:7 https://download.docker.com/linux/ubuntu focal/stable amd64 docker-ce-cli amd64 5:27.1.2-1-ubuntu.20.04-focal [14.6 MB]
Get:8 https://download.docker.com/linux/ubuntu focal/stable amd64 docker-ce amd64 5:27.1.2-1-ubuntu.20.04-focal [25.3 MB]
Get:9 https://download.docker.com/linux/ubuntu focal/stable amd64 docker-ce-rootless-extras amd64 5:27.1.2-1-ubuntu.20.04-focal [9330 kB]
Get:10 https://download.docker.com/linux/ubuntu focal/stable amd64 docker-compose-plugin amd64 2.29.1-1-ubuntu.20.04-focal [12.5 MB]
Fetched 122 MB in 2s (59.8 MB/s)
Selecting previously unselected package pigz.

```

```

No VM guests are running outdated hypervisor (qemu) binaries on this host.
root@ip-172-31-45-184:/home/ubuntu# docker --version
Docker version 27.1.2, build d01f264
root@ip-172-31-45-184:/home/ubuntu# docker pull ubuntu
Using default tag: latest
latest: Pulling from library/ubuntu
31e907d0cc94a: Pull complete
Digest: sha256:8a37d68f4f73ebf3d4efafbcf66379bf3728902a8038616808f04e34a9ab63ee
Status: Downloaded newer image for ubuntu:latest
docker.io/library/ubuntu:latest
root@ip-172-31-45-184:/home/ubuntu# docker container run ubuntu
root@ip-172-31-45-184:/home/ubuntu# docker container ls -a
CONTAINER ID   IMAGE      COMMAND                  CREATED        STATUS              PORTS          NAMES
fc0ea4f84e2c   ubuntu    "/bin/bash"             22 seconds ago Exited (0) 21 seconds ago                reverent_sanderson
root@ip-172-31-45-184:/home/ubuntu# docker container run -it ubuntu /bin/bash
root@4a5a66a8dba7:/# ls
bin  boot  dev  etc  home  lib  lib64  media  mnt  opt  proc  root  run  sbin  srv  sys  usr  var
root@4a5a66a8dba7:/# docker images
bash: docker: command not found
root@4a5a66a8dba7:/# apt update -y
Get:1 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:2 http://archive.ubuntu.com/ubuntu noble InRelease [256 kB]
Get:3 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Packages [309 kB]
Get:4 http://archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:5 http://security.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:6 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 Packages [12.7 kB]
Get:7 http://security.ubuntu.com/ubuntu noble-security/main amd64 Packages [370 kB]

```

```

invoke-rc.d: policy-rc.d denied execution of start.
Processing triggers for libc-bin (2.39-0ubuntu8.2) ...
Processing triggers for ca-certificates (20240203) ...
Updating certificates in /etc/ssl/certs...
0 added, 0 removed; done.
Running hooks in /etc/ca-certificates/update.d...
done.
root@4a5a66a8dba7:/# service apache2 status
 * apache2 is not running
root@4a5a66a8dba7:/# 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@4a5a66a8dba7:/# service apache2 status
 * apache2 is running
root@4a5a66a8dba7:/# cd /var/www/html/index.html
bash: cd /var/www/html/index.html: No such file or directory
root@4a5a66a8dba7:/# cd /var/www/html
bash: cd /var/www/html: No such file or directory
root@4a5a66a8dba7:/# cd /var/www/html
bash: vi: command not found
root@4a5a66a8dba7:/var/www/html# echo "This is Docker Container" > index.html
root@4a5a66a8dba7:/var/www/html# cat index.html
This is Docker Container
root@4a5a66a8dba7:/var/www/html#

```

```

*** System restart required ***
Last login: Wed Aug 21 10:30:20 2024 from 18.206.107.27
ubuntu@ip-172-31-45-184:~$ sudo su
root@ip-172-31-45-184:/home/ubuntu# docker container inspect ^[[200~4a5a66a8dba7~
[]
Error response from daemon: No such container: 4a5a66a8dba7~
root@ip-172-31-45-184:/home/ubuntu# docker container inspect 4a5a66a8dba7
[
  {
    "Id": "4a5a66a8dba7aa25e95dbd744d28da0ca921c037075b851e51e024c1073437fa",
    "Created": "2024-08-21T10:39:20.29313121Z",
    "Path": "/bin/bash",
    "Args": [],
    "State": {
      "Status": "running",
      "Running": true,
      "Paused": false,
      "Restarting": false,
      "OOMKilled": false,
      "Dead": false,
      "Pid": 12782,
      "ExitCode": 0,
      "Error": "",
      "StartedAt": "2024-08-21T10:39:20.400857784Z",
      "FinishedAt": "0001-01-01T00:00:00Z"
    }
  }
]

```

```

    "IPPrefixLen": 16,
    "IPv6Gateway": "",
    "MacAddress": "02:42:ac:11:00:02",
    "Networks": {
      "bridge": {
        "IPAMConfig": null,
        "Links": null,
        "Aliases": null,
        "MacAddress": "02:42:ac:11:00:02",
        "DriverOpts": null,
        "NetworkID": "4c27beeeae8445a75e396cdc92cf376a7794a324f59957dd492d0b1fbd833dcd",
        "EndpointID": "5e107385c5da8425fd08cd70dbca2bf60d93fe5558fd8349f8cafe9cca3bf07d",
        "Gateway": "172.17.0.1",
        "IPAddress": "172.17.0.2",
        "IPPrefixLen": 16,
        "IPv6Gateway": "",
        "GlobalIPv6Address": "",
        "GlobalIPv6PrefixLen": 0,
        "DNSNames": null
      }
    }
  }
}
]
root@ip-172-31-45-184:/home/ubuntu# curl http://172.17.0.2
This is Docker Container
root@ip-172-31-45-184:/home/ubuntu#

```