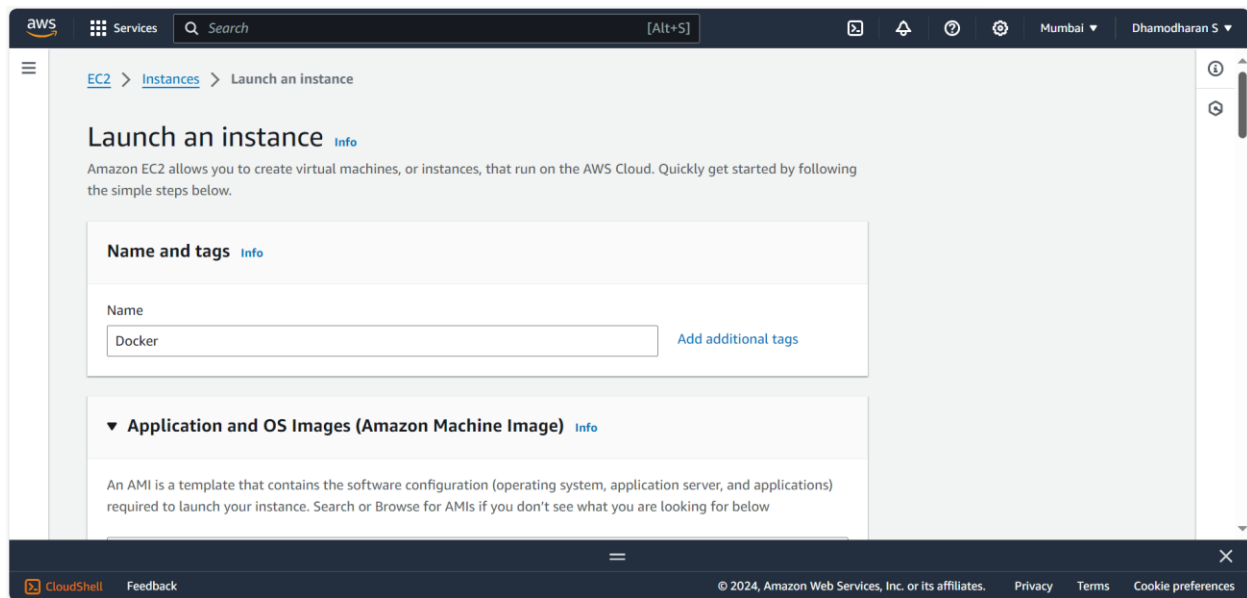


# Docker –Container Engine

Dhamodharan S

Step 1: I'm creating an Instance in AWS EC2 as Docker

Step 1.1 Launch Instance



aws

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An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

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Quick Start

Amazon Linux

macOS

Ubuntu

Windows

Red Hat

SUSE Linux

Browse more AMIs

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Amazon Machine Image (AMI)

Ubuntu Server 22.04 LTS (HVM), SSD Volume Type

Free tier eligible

ami-03f4878755434977f (64-bit (x86)) / ami-077885f59ecb77b84 (64-bit (Arm))

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

Description

Canonical, Ubuntu, 22.04 LTS, amd64 jammy image build on 2023-12-07

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Create security group

Select existing security group

Security group name - required

launch-wizard-2

This security group will be added to all network interfaces. The name can't be edited after the security group is created. Max length is 255 characters. Valid characters: a-z, A-Z, 0-9, spaces, and \_-./()#,@[]+=&;!\$\*

Description - required    Info

launch-wizard-2 created 2024-02-21T10:55:02.883Z

Inbound Security Group Rules

▼ Security group rule 1 (TCP, 0-65535, 0.0.0.0/0)

Remove

Type    Info

All TCP

Protocol    Info

TCP

Port range    Info

0-65535

Source type    Info

Anywhere

Source    Info

Add CIDR, prefix list or security group

0.0.0.0/0

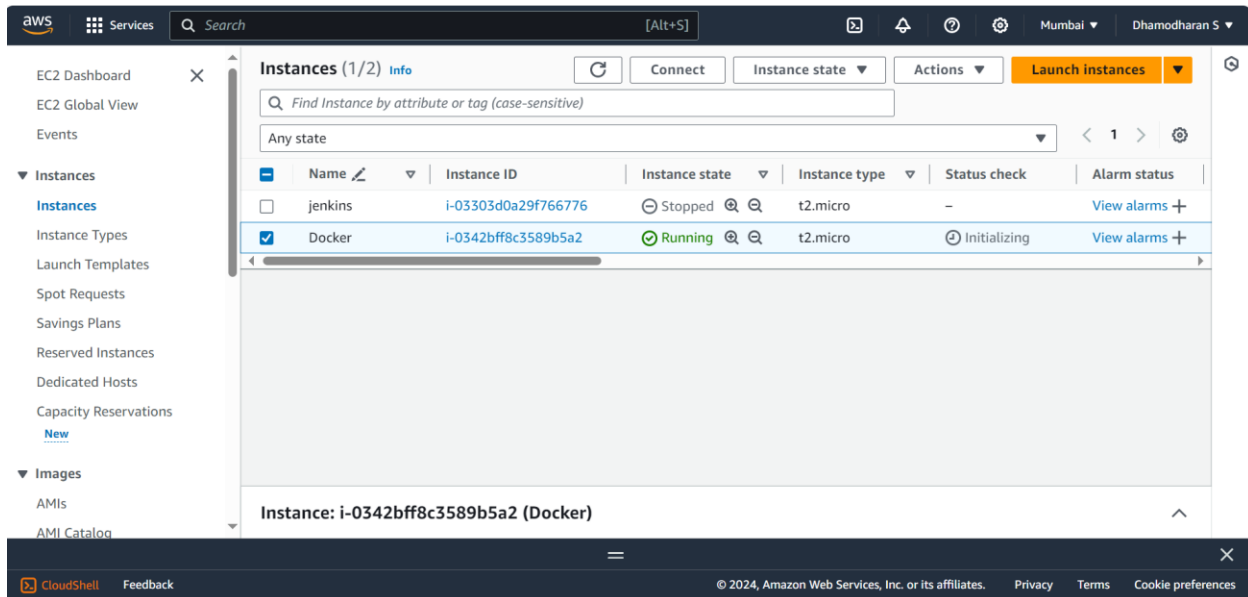
Description - optional    Info

e.g. SSH for admin desktop

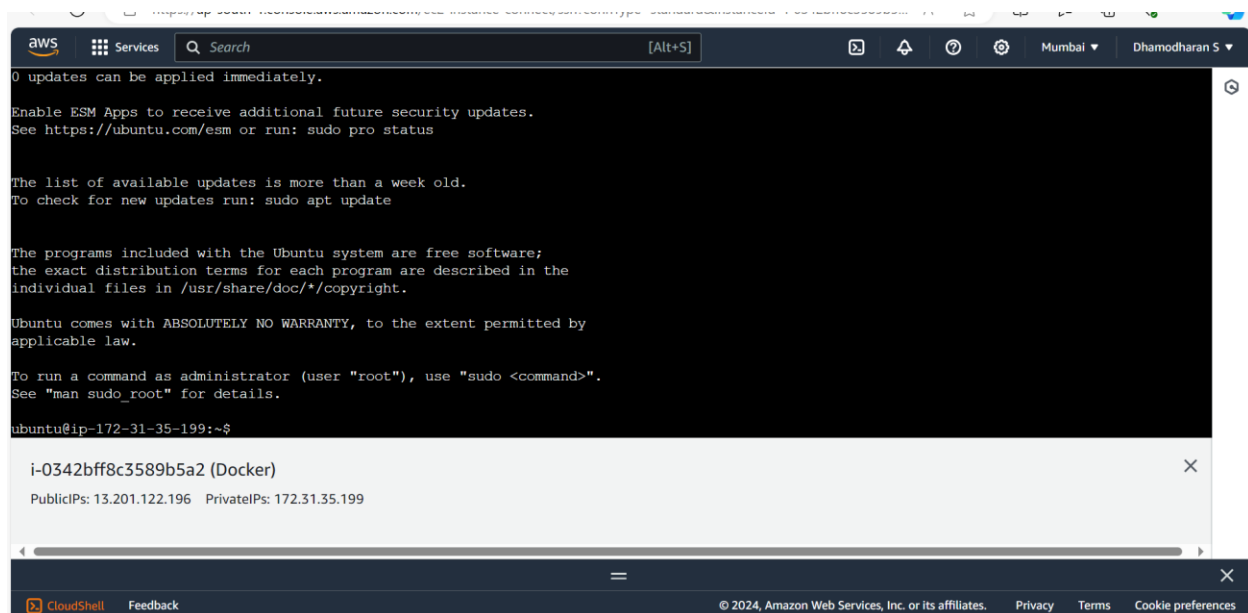
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Step 2: Connet to the Instance “Docker” using EC2 Connect.



Step 3: Now I'm Installing Docker using APT Repository

# Add Docker's official GPG key:

sudo apt-get update

sudo apt-get install ca-certificates curl

sudo install -m 0755 -d /etc/apt/keyrings

```
sudo curl -fsSL https://download.docker.com/linux/ubuntu/gpg -o  
/etc/apt/keyrings/docker.asc  
sudo chmod a+r /etc/apt/keyrings/docker.asc
```

# Add the repository to Apt sources:

```
echo \  
"deb [arch=$(dpkg --print-architecture) signed-  
by=/etc/apt/keyrings/docker.asc]  
https://download.docker.com/linux/ubuntu \  
$(. /etc/os-release && echo "$VERSION_CODENAME") stable" | \  
sudo tee /etc/apt/sources.list.d/docker.list > /dev/null  
sudo apt-get update
```

#To install the latest version, run:

```
sudo apt-get install docker-ce docker-ce-cli containerd.io docker-buildx-  
plugin docker-compose-plugin
```

#Verify that the Docker Engine installation is successful by running the  
hello-world image.

```
sudo docker run hello-world
```

Step 4: I'm running all the commands to set up APT repository.

```
aws Services Search [Alt+S] Mumbai Dhamodharan S
Get:14 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/restricted Translation-en [235 kB]
Get:15 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 Packages [1049 kB]
Get:16 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/universe Translation-en [237 kB]
Get:17 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 c-n-f Metadata [22.1 kB]
Get:18 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/multiverse amd64 Packages [42.1 kB]
Get:19 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/multiverse Translation-en [10.1 kB]
Get:20 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/multiverse amd64 c-n-f Metadata [472 B]
Get:21 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-backports/main amd64 Packages [41.7 kB]
Get:22 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-backports/main Translation-en [10.5 kB]
Get:23 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-backports/main amd64 c-n-f Metadata [388 B]
Get:24 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-backports/restricted amd64 c-n-f Metadata [116 B]
Get:25 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-backports/universe amd64 Packages [24.3 kB]
Get:26 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-backports/universe Translation-en [16.5 kB]
Get:27 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-backports/universe amd64 c-n-f Metadata [644 B]
Get:28 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-backports/multiverse amd64 c-n-f Metadata [116 B]
Get:29 http://security.ubuntu.com/ubuntu jammy-security/main amd64 Packages [1161 kB]
Get:30 http://security.ubuntu.com/ubuntu jammy-security/main Translation-en [213 kB]
Get:31 http://security.ubuntu.com/ubuntu jammy-security/restricted amd64 Packages [1401 kB]
Get:32 http://security.ubuntu.com/ubuntu jammy-security/restricted Translation-en [231 kB]
Get:33 http://security.ubuntu.com/ubuntu jammy-security/universe amd64 Packages [842 kB]
Get:34 http://security.ubuntu.com/ubuntu jammy-security/universe Translation-en [161 kB]
Get:35 http://security.ubuntu.com/ubuntu jammy-security/universe amd64 c-n-f Metadata [16.8 kB]
Get:36 http://security.ubuntu.com/ubuntu jammy-security/multiverse amd64 Packages [37.1 kB]
Get:37 http://security.ubuntu.com/ubuntu jammy-security/multiverse Translation-en [7476 B]
Get:38 http://security.ubuntu.com/ubuntu jammy-security/multiverse amd64 c-n-f Metadata [260 B]
Fetched 29.5 MB in 6s (5341 kB/s)
Reading package lists... Done
ubuntu@ip-172-31-35-199:~$
```

```
aws Services Search [Alt+S] Mumbai Dhamodharan S
Hit:4 http://security.ubuntu.com/ubuntu jammy-security InRelease
Reading package lists... Done
ubuntu@ip-172-31-35-199:~$ sudo apt-get install ca-certificates curl
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
ca-certificates is already the newest version (20230311ubuntu0.22.04.1).
ca-certificates set to manually installed.
curl is already the newest version (7.81.0-1ubuntu1.15).
curl set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 74 not upgraded.
ubuntu@ip-172-31-35-199:~$ sudo install -m 0755 -d /etc/apt/keyrings
ubuntu@ip-172-31-35-199:~$ sudo curl -fsSL https://download.docker.com/linux/ubuntu/gpg -o /etc/apt/keyrings/docker.asc
ubuntu@ip-172-31-35-199:~$ sudo chmod a+r /etc/apt/keyrings/docker.asc
ubuntu@ip-172-31-35-199:~$ echo \
"deb [arch=$(dpkg --print-architecture) signed-by=/etc/apt/keyrings/docker.asc] https://download.docker.com/linux/ubuntu \
$(. /etc/os-release && echo "$VERSION_CODENAME") stable" | \
sudo tee /etc/apt/sources.list.d/docker.list > /dev/null
ubuntu@ip-172-31-35-199:~$ sudo apt-get update
Hit:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy InRelease
Hit:2 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:3 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-backports InRelease
Get:4 https://download.docker.com/linux/ubuntu jammy InRelease [48.8 kB]
Hit:5 http://security.ubuntu.com/ubuntu jammy-security InRelease
Get:6 https://download.docker.com/linux/ubuntu jammy/stable amd64 Packages [26.7 kB]
Fetched 75.5 kB in 1s (96.0 kB/s)
Reading package lists... Done
ubuntu@ip-172-31-35-199:~$
```

Step 5: I'm running Hello World using command “docker run hello world”

```
aws Services Search [Alt+S] Mumbai Dhamodharan S
Unable to find image 'hello-world:latest' locally
latest: Pulling from library/hello-world
c1ec31eb5944: Pull complete
Digest: sha256:d000bc569937abbe195e20322a0bde6b2922d805332fd6d8a68b19f524b7d21d
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/

ubuntu@ip-172-31-35-199:~$
```

Step 6: Now here im using one image called “NGINX” from docker and pulling it and You can see “NGINX” image is downloaded.

```
aws Services Search [Alt+S] Mumbai Dhamodharan S
43 of these updates are standard security updates.
To see these additional updates run: apt list --upgradable

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

Last login: Wed Feb 21 10:59:57 2024 from 13.233.177.5
ubuntu@ip-172-31-35-199:~$ sudo docker pull jenkins
Using default tag: latest
Error response from daemon: manifest for jenkins:latest not found: manifest unknown: manifest unknown
ubuntu@ip-172-31-35-199:~$ sudo docker pull nginx
Using default tag: latest
latest: Pulling from library/nginx
e1caac4eb9d2: Pull complete
88f6f236f401: Pull complete
c3ea3344e711: Pull complete
cclbb4345a3a: Pull complete
da8fa4352481: Pull complete
c7f80e9cdab2: Pull complete
18a869624cb6: Pull complete
Digest: sha256:c26ae7472d624balfafd296e73cecc4f93f853088e6a9c13cd52f6ca5865107
Status: Downloaded newer image for nginx:latest
docker.io/library/nginx:latest
ubuntu@ip-172-31-35-199:~$ sudo docker run -d -p 80:80 --name mytomcat tomcat
docker: Error response from daemon: Conflict. The container name "/mytomcat" is already in use by container "9e24358703fd9e92d7c2088ce4fb67cfc257c6317e8ce15c27fe1fdc46023549". You have to remove (or rename) that container to be able to reuse that name.
See 'docker run --help'.
```

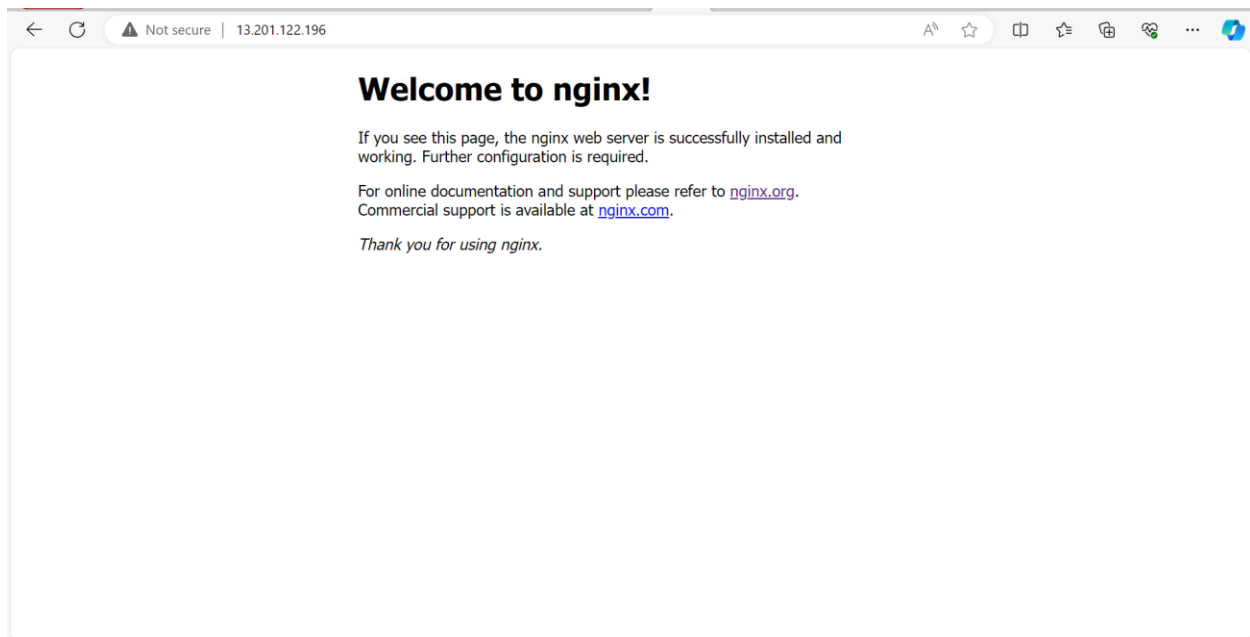
Step 7: now im starting to run my image in background as a name “my-nginx”

```
aws Services Search [Alt+S] Mumbai Dhamodharan S
docker: Error response from daemon: Conflict. The container name "/mytomcat" is already in use by container "9e24358703fd9e92d7c2088ce4fb67cfe257c6317e8ce15c27fe1dc46023549". You have to remove (or rename) that container to be able to reuse that name.
See 'docker run --help'.
ubuntu@ip-172-31-35-199:~$ sudo docker run -d -p 80:80 --name mynginx nginx
f0491fdfac5284d0924464e40cb36b37384a5bb0d6e09874ba167d8bcf9e4
ubuntu@ip-172-31-35-199:~$ sudo docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS                               NAMES
f0491fdfac52   nginx     "/docker-entrypoint..." 10 seconds ago Up 9 seconds  0.0.0.0:80->80/tcp, :::80->80/tcp    mynginx
9e24358703fd   tomcat    "catalina.sh run"         8 minutes ago Up 8 minutes  8080/tcp                             mytomcat
ubuntu@ip-172-31-35-199:~$ sudo docker stop -d -p 80:80 --name mytomcat tomcat
unknown shorthand flag: 'd' in -d
See 'docker stop --help'.
ubuntu@ip-172-31-35-199:~$ sudo docker stop --name mytomcat tomcat
unknown flag: --name
See 'docker stop --help'.
ubuntu@ip-172-31-35-199:~$ sudo docker stop mytomcat
mytomcat
ubuntu@ip-172-31-35-199:~$ sudo docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS                               NAMES
f0491fdfac52   nginx     "/docker-entrypoint..." 55 seconds ago Up 54 seconds  0.0.0.0:80->80/tcp, :::80->80/tcp    mynginx
ubuntu@ip-172-31-35-199:~$
```

i-0342bff8c3589b5a2 (Docker)  
PublicIPs: 13.201.122.196 PrivateIPs: 172.31.35.199

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Step 8: Now you can go to the port 80 and check your nginx server is running. docker pull nginx docker run --name my-nginx-container -d -p 80:80 nginx



Step 9: Now let us customize our nginx server which is running. Enter into the executing container using command “sudo docker exec -it c60c31b70646 /bin/bash”.

```
aws Services Search [Alt+S] Mumbai Dhamodharan S
35 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

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

Last login: Thu Feb 22 10:09:56 2024 from 13.233.177.4
ubuntu@ip-172-31-35-199:~$ sudo docker ps
CONTAINER ID   IMAGE      COMMAND                  CREATED    STATUS    PORTS                               NAMES
f0491fdfac52   nginx     "/docker-entrypoint..." 23 hours ago Up 49 minutes 0.0.0.0:80->80/tcp, :::80->80/tcp mynginx
ubuntu@ip-172-31-35-199:~$ sudo apt-get update
Hit:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy InRelease
Get:2 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-updates InRelease [119 kB]
Hit:3 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-backports InRelease
Hit:4 https://download.docker.com/linux/ubuntu jammy InRelease
Hit:5 http://security.ubuntu.com/ubuntu jammy-security InRelease
Fetched 119 kB in 1s (152 kB/s)
Reading package lists... Done
ubuntu@ip-172-31-35-199:~$

i-0342bff8c3589b5a2 (Docker)
PublicIPs: 13.201.52.86 PrivateIPs: 172.31.35.199

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```

Step 10: Now customize index.html file by navigating to the index.html file. `cd /usr/share/nginx/html/ nano index.html` and restart the running container.

```
aws Services Search [Alt+S] Mumbai Dhamodharan S
-t, --tty          Allocate a pseudo-TTY
-u, --user string   Username or UID (format: "<name|uid>[:<group|gid>]")
-w, --workdir string Working directory inside the container
ubuntu@ip-172-31-35-199:~$ sudo docker exec -it f0491fdfac52/bin/bash
docker: 'exec-it' is not a docker command.
See 'docker --help'
ubuntu@ip-172-31-35-199:~$ sudo docker exec -it f0491fdfac52/bin/bash
"docker exec" requires at least 2 arguments.
See 'docker exec --help'.

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

Execute a command in a running container
ubuntu@ip-172-31-35-199:~$ sudo docker exec -it f0491fdfac52 /bin/bash
root@f0491fdfac52:/# cd "/usr/share/nginx/html/"
root@f0491fdfac52:/usr/share/nginx/html# nano index.html
root@f0491fdfac52:/usr/share/nginx/html# exit
exit
ubuntu@ip-172-31-35-199:~$ sudo docker restart mynginx
mynginx
ubuntu@ip-172-31-35-199:~$

i-0342bff8c3589b5a2 (Docker)
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```

Step 11: Now you can see the customized html file running in server



Services

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GNU nano 7.2index.html \*

```
<!DOCTYPE html>
<html>
<head>
<title>Welcome to Dhamo!</title>
<style>
html { color-scheme: light dark; }
body { width: 35em; margin: 0 auto;
font-family: Tahoma, Verdana, Arial, sans-serif; }
</style>
</head>
<body>
<h1>Welcome to nginx!</h1>
<p>If you see this page, the nginx web server is successfully installed and
working. Further configuration is required.</p>
<p>For online documentation and support please refer to
<a href="http://nginx.org/">nginx.org</a>.<br/>

```

[ To suspend, type ^T^Z ]

HelpWrite OutWhere IsCutExecuteLocationUndoSet Mark  
ExitRead FileReplacePasteJustifyGo To LineRedoCopy

i-0342bff8c3589b5a2 (Docker)

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←↻⚠ Not secure | 13.201.52.86

☆

☆

Welcome dhamu to nginx!

Hi Dhamu welcome For online documentation and support please refer to  
[nginx.org](http://nginx.org).  
Commercial support is available at [nginx.com](http://nginx.com).  
  
Thank you for using nginx.