Module 3: Docker Part 1   Assignment - 1
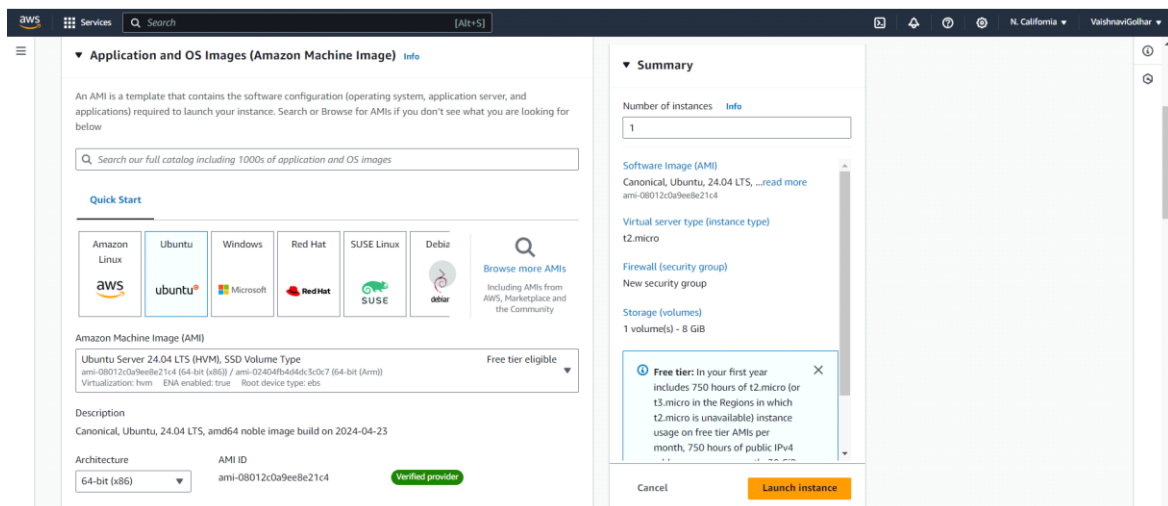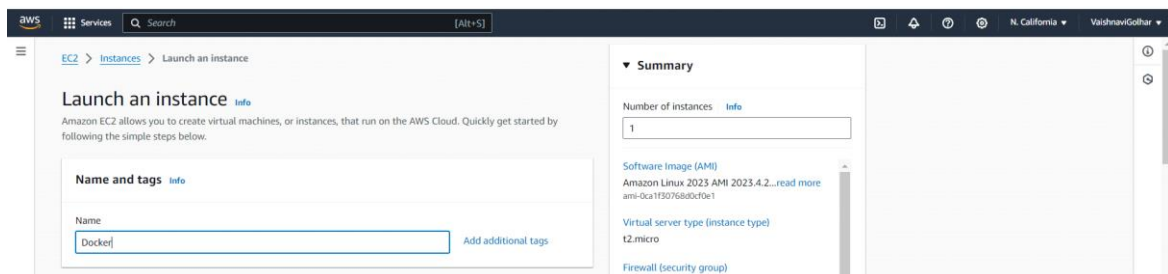
Tasks To Be Performed:

1. Pull Ubuntu container

2. Run this container and map port 80 on the local

3. Install Apache2 on this container

4. Check if you are able to access the Apache page on your browser

Solution:

Step 1: Pull Ubuntu Container

First, make sure Docker is installed on your EC2 instance. You can install Docker by following these steps:

▼ **Instance type** Info | Get advice

Instance type

t2.micro Free tier eligible
Family: t2 1 vCPU 1 GiB Memory Current generation: true
On-Demand RHEL base pricing: 0.0738 USD per Hour
On-Demand SUSE base pricing: 0.0138 USD per Hour
On-Demand Windows base pricing: 0.0184 USD per Hour
On-Demand Linux base pricing: 0.0138 USD per Hour

○ All generations

Compare instance types

Additional costs apply for AMIs with pre-installed software

▼ **Key pair (login)** Info

You can use a key pair to securely connect to your instance. Ensure that you have access to the selected key pair before you launch the instance.

Key pair name - required
Ncalifornia   Create new key pair

▼ **Summary**

Number of instances Info
1

Software Image (AMI)
Canonical, Ubuntu, 24.04 LTS, ...read more
ami-08012c0a9ee8e21c4

Virtual server type (instance type)
t2.micro

Firewall (security group)
New security group

Storage (volumes)
1 volume(s) - 8 GiB

ⓘ **Free tier:** In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance

---

EC2 > Instances > Launch an instance > Compare security group rules

Compare security group rules Info

Amazon EC2 evaluates all the rules of the selected security groups to control inbound and outbound traffic. You can select more security groups to view their inbound rules to help you to decide how to secure your instance from incoming traffic.

Common security groups

Select security groups

Docker sg-0e005cd7502487013 ✕
VPC: vpc-02ece41d93620d0d2

Security groups that you add or remove here will be added to or removed from all your network interfaces.

Inbound rules (2)

Security group name ▲	Security group ID ▽	Type ▽	Protocol ▽	Port range ▽	Source ▽	Description ▽
Docker	sg-0e005cd7502487013	All traffic	All	All	0.0.0.0/0	-
Docker	sg-0e005cd7502487013	All traffic	All	All	::/0	-

Cancel   **Select security groups**

▼ **Network settings** Info   Edit

Network Info
vpc-02ece41d93620d0d2

Subnet Info
No preference (Default subnet in any availability zone)

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

Common security groups Info

Select security groups

Docker sg-0e005cd7502487013 ✕
VPC: vpc-02ece41d93620d0d2

Compare security group rules

Security groups that you add or remove here will be added to or removed from all your network interfaces.

▼ **Summary**

Number of instances Info
1

Software Image (AMI)
Canonical, Ubuntu, 24.04 LTS, ...read more
ami-08012c0a9ee8e21c4

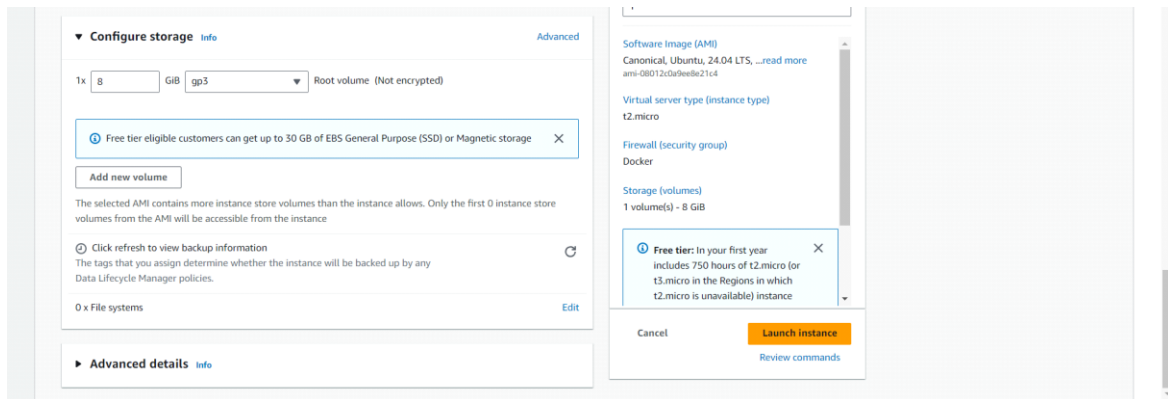Virtual server type (instance type)
t2.micro

Firewall (security group)
Docker

Storage (volumes)
1 volume(s) - 8 GiB

ⓘ **Free tier:** In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance

```
▼ Configure storage  Info                                    Advanced

1x  8      GiB  gp3        ▼   Root volume  (Not encrypted)

ⓘ Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage   ✕

Add new volume

The selected AMI contains more instance store volumes than the instance allows. Only the first 0 instance store
volumes from the AMI will be accessible from the instance

⟳ Click refresh to view backup information
The tags that you assign determine whether the instance will be backed up by any
Data Lifecycle Manager policies.                                                      ⟳

0 x File systems                                                                    Edit

▶ Advanced details  Info
```

```
Software Image (AMI)
Canonical, Ubuntu, 24.04 LTS, ...read more
ami-08012c0a9ee8e21c4

Virtual server type (instance type)
t2.micro

Firewall (security group)
Docker

Storage (volumes)
1 volume(s) - 8 GiB

ⓘ Free tier: In your first year      ✕
includes 750 hours of t2.micro (or
t3.micro in the Regions in which
t2.micro is unavailable) instance

Cancel          Launch instance
         Review commands
```

```
ubuntu@ip-172-31-5-28:~$ docker --version
Docker version 24.0.7, build 24.0.7-0ubuntu4
ubuntu@ip-172-31-5-28:~$ sudo docker pull ubuntu
Using default tag: latest
latest: Pulling from library/ubuntu
00d679a470c4: Pull complete
Digest: sha256:e3f92abc0967a6c19d0dfa2d55838833e947b9d74edbcb0113e48535ad4be12a
Status: Downloaded newer image for ubuntu:latest
docker.io/library/ubuntu:latest
ubuntu@ip-172-31-5-28:~$
```

i-0a47ba3926927531d (Docker)   X

PublicIPs: 54.67.104.198   PrivateIPs: 172.31.5.28

2. Run this container and map port 80 on the local

```
aws  ⠿ Services  Q Search                    [Alt+S]                   ⌘  ⌃  ⑦  ⚙  N. California ▾  VaishnaviGolhar ▾

ubuntu@ip-172-31-5-28:~$ sudo docker images
REPOSITORY    TAG      IMAGE ID      CREATED      SIZE
ubuntu        latest   17c0145030df  2 weeks ago  76.2MB
ubuntu@ip-172-31-5-28:~$ sudo docker run -itd -p 80:80 ubuntu
c2183428ed5e22ce3d20b2012ebea97fe2adc40ee951c70099fa8a079a06feac
ubuntu@ip-172-31-5-28:~$ sudo docker ps
CONTAINER ID  IMAGE   COMMAND      CREATED      STATUS        PORTS                              NAMES
c2183428ed5e  ubuntu  "/bin/bash"  40 seconds ago  Up 38 seconds  0.0.0.0:80->80/tcp, :::80->80/tcp  unruffled_kalam
ubuntu@ip-172-31-5-28:~$ sudo docker exec -it c2183428ed5e bash
root@c2183428ed5e:/# apt-get update
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://archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:4 http://security.ubuntu.com/ubuntu noble-security/main amd64 Packages [181 kB]
Get:5 http://archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:6 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Packages [50.3 kB]
Get:7 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Packages [84.8 kB]
Get:8 http://archive.ubuntu.com/ubuntu noble/main amd64 Packages [1808 kB]
Get:9 http://archive.ubuntu.com/ubuntu noble/multiverse amd64 Packages [331 kB]
Get:10 http://archive.ubuntu.com/ubuntu noble/restricted amd64 Packages [117 kB]
Get:11 http://archive.ubuntu.com/ubuntu noble/universe amd64 Packages [19.3 MB]
Get:12 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 Packages [77.6 kB]
Get:13 http://archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Packages [3126 B]
Get:14 http://archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Packages [84.8 kB]
Get:15 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 Packages [209 kB]
Get:16 http://archive.ubuntu.com/ubuntu noble-backports/universe amd64 Packages [7519 B]
Fetched 22.9 MB in 3s (7542 kB/s)
Reading package lists... Done
root@c2183428ed5e:/# []
```
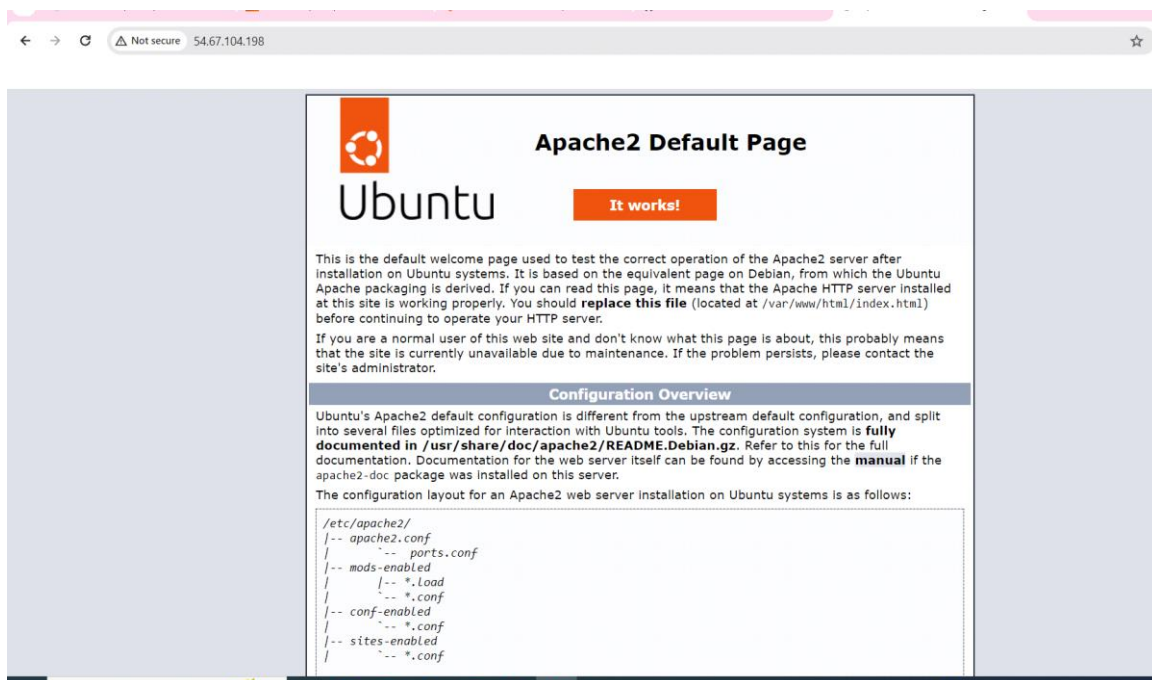
3. Install Apache2 on this container

```
root@c2183428ed5e:/# apt-get install apache2 -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  adduser apache2-bin apache2-data apache2-utils ca-certificates krb5-locales libapr1t64 libaprutil1-dbd-sqlite3 libaprutil1-ldap libaprutil1t64 libbrotli1 libcurl4t64 libdb5.3t64
  libexpat1 libgdbm-compat4t64 libgdbm6t64 libgssapi-krb5-2 libicu74 libjansson4 libk5crypto3 libkeyutils1 libkrb5-3 libkrb5support0 libldap-common libldap2 liblua5.4-0
  libnghttp2-14 libperl5.38t64 libpsl5t64 librtmp1 libsasl2-2 libsasl2-modules libsasl2-modules-db libsqlite3-0 libssh-4 libxml2 media-types netbase openssl perl perl-modules-5.38
  publicsuffix ssl-cert
Suggested packages:
  liblocale-gettext-perl cron quota ecryptfs-utils apache2-doc apache2-suexec-pristine | apache2-suexec-custom www-browser ufw gdbm-l10n krb5-doc krb5-user
  libsasl2-modules-gssapi-mit | libsasl2-modules-gssapi-heimdal libsasl2-modules-ldap libsasl2-modules-otp libsasl2-modules-sql perl-doc libterm-readline-gnu-perl
  | libterm-readline-perl-perl make libtap-harness-archive-perl
The following NEW packages will be installed:
  adduser apache2 apache2-bin apache2-data apache2-utils ca-certificates krb5-locales libapr1t64 libaprutil1-dbd-sqlite3 libaprutil1-ldap libaprutil1t64 libbrotli1 libcurl4t64
  libdb5.3t64 libexpat1 libgdbm-compat4t64 libgdbm6t64 libgssapi-krb5-2 libicu74 libjansson4 libk5crypto3 libkeyutils1 libkrb5-3 libkrb5support0 libldap-common libldap2 liblua5.4-0
  libnghttp2-14 libperl5.38t64 libpsl5t64 librtmp1 libsasl2-2 libsasl2-modules libsasl2-modules-db libsqlite3-0 libssh-4 libxml2 media-types netbase openssl perl perl-modules-5.38
  publicsuffix ssl-cert
0 upgraded, 44 newly installed, 0 to remove and 6 not upgraded.
Need to get 27.0 MB of archives.
After this operation, 111 MB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu noble/main amd64 perl-modules-5.38 all 5.38.2-3.2build2 [3110 kB]
Get:2 http://archive.ubuntu.com/ubuntu noble/main amd64 libdb5.3t64 amd64 5.3.28+dfsg2-7 [734 kB]
Get:3 http://archive.ubuntu.com/ubuntu noble/main amd64 libgdbm6t64 amd64 1.23-5.1build1 [34.4 kB]
Get:4 http://archive.ubuntu.com/ubuntu noble/main amd64 libgdbm-compat4t64 amd64 1.23-5.1build1 [6710 B]
Get:5 http://archive.ubuntu.com/ubuntu noble/main amd64 libperl5.38t64 amd64 5.38.2-3.2build2 [4873 kB]
Get:6 http://archive.ubuntu.com/ubuntu noble/main amd64 perl amd64 5.38.2-3.2build2 [231 kB]
Get:7 http://archive.ubuntu.com/ubuntu noble/main amd64 libapr1t64 amd64 1.7.2-3.1build2 [107 kB]
Get:8 http://archive.ubuntu.com/ubuntu noble/main amd64 libexpat1 amd64 2.6.1-2build1 [87.0 kB]
Get:9 http://archive.ubuntu.com/ubuntu noble/main amd64 libaprutil1t64 amd64 1.6.3-1.1ubuntu7 [91.9 kB]
Get:10 http://archive.ubuntu.com/ubuntu noble/main amd64 libsqlite3-0 amd64 3.45.1-1ubuntu2 [701 kB]
Get:11 http://archive.ubuntu.com/ubuntu noble/main amd64 libaprutil1-dbd-sqlite3 amd64 1.6.3-1.1ubuntu7 [11.2 kB]
Get:12 http://archive.ubuntu.com/ubuntu noble/main amd64 libsasl2-modules-db amd64 2.1.28+dfsg1-5ubuntu3 [20.3 kB]
Get:13 http://archive.ubuntu.com/ubuntu noble/main amd64 libsasl2-2 amd64 2.1.28+dfsg1-5ubuntu3 [53.2 kB]
Get:14 http://archive.ubuntu.com/ubuntu noble/main amd64 libldap2 amd64 2.6.7+dfsg-1~exp1ubuntu8 [195 kB]
Get:15 http://archive.ubuntu.com/ubuntu noble/main amd64 libaprutil1-ldap amd64 1.6.3-1.1ubuntu7 [9116 B]
Get:16 http://archive.ubuntu.com/ubuntu noble/main amd64 libbrotli1 amd64 1.1.0-2build2 [331 kB]
Get:17 http://archive.ubuntu.com/ubuntu noble/main amd64 libkrb5support0 amd64 1.20.1-6ubuntu2 [33.5 kB]
```

4. Check if you are able to access the Apache page on your browser

```
root@c2183428ed5e:/# service apache2 status
 * apache2 is not running
root@c2183428ed5e:/# 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@c2183428ed5e:/# service apache2 status
 * apache2 is running
root@c2183428ed5e:/#
```

← → C ⚠ Not secure 54.67.104.198   ☆

Apache2 Default Page

Ubuntu   **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
```

```
root@c2183428ed5e:/# exit
exit
ubuntu@ip-172-31-5-28:~$
```

```
ubuntu@ip-172-31-5-28:~$ history
    1  sudo apt update
    2  sudo apt install docker.io -y
    3  docker --version
    4  sudo docker pull ubuntu
    5  clear
    6  sudo docker images
    7  sudo docker run -itd -p 80:80 ubuntu
    8  sudo docker ps
    9  sudo docker exec -it c2183428ed5e bash
   10  history
ubuntu@ip-172-31-5-28:~$
```

COMMANDS

  1 sudo apt update

  2 sudo apt install docker.io -y

  3 docker --version

  4 sudo docker pull ubuntu

  5 clear

  6 sudo docker images

  7 sudo docker run -itd -p 80:80 ubuntu

  8 sudo docker ps

  9 sudo docker exec -it c2183428ed5e bash

  10 history

1 apt-get update

  2 apt-get install apache2 -y

  3 service apache2 status

4   service apache2 start

5   service apache2 status

6   exit