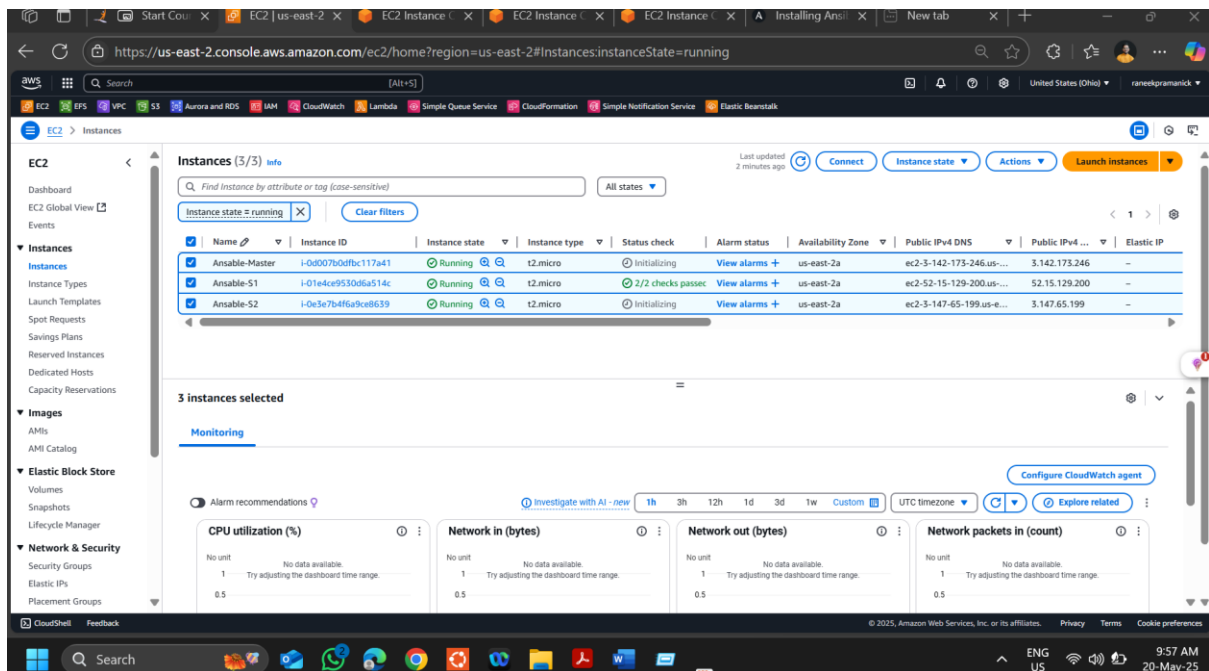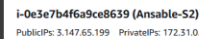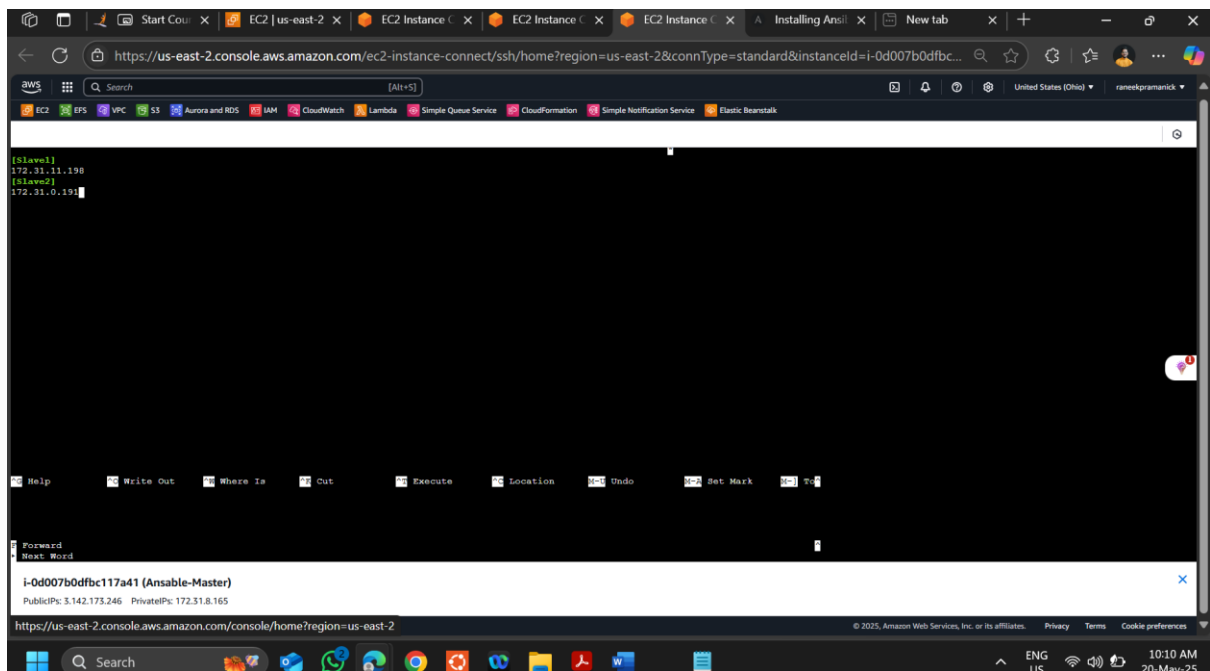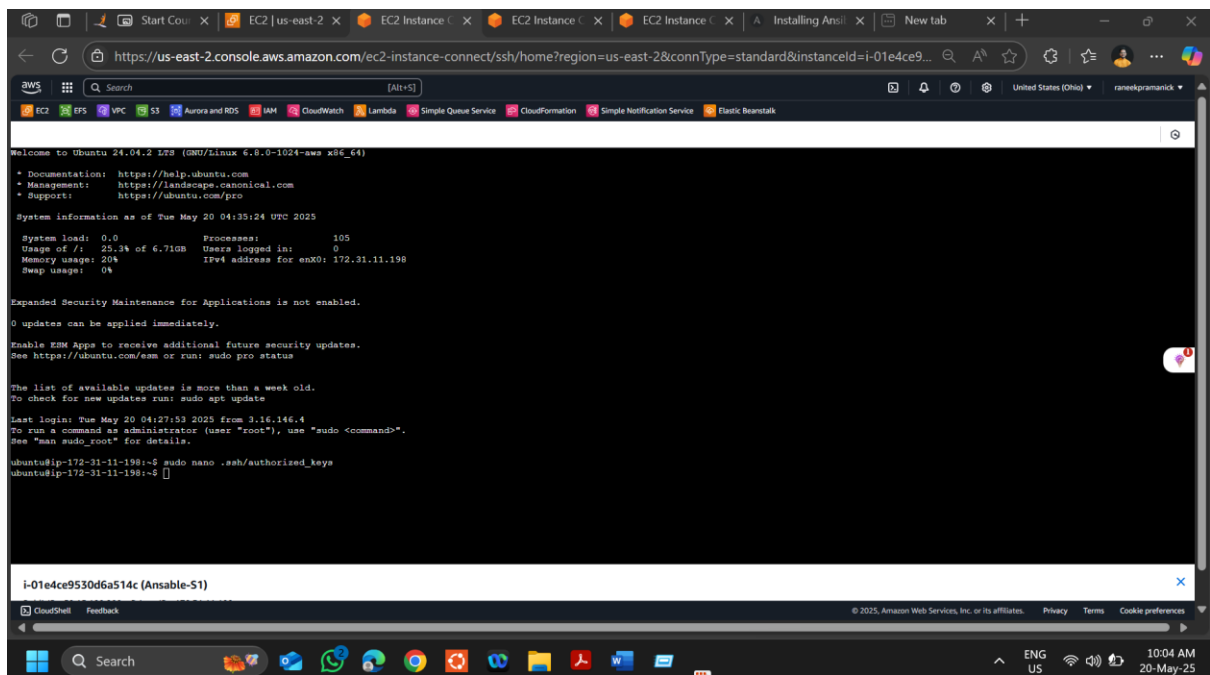# Tasks To Be Performed:

1. Create 2 Ansible roles
2. Install Apache2 on slave1 using one role and NGINX on slave2 using the other role
3. Above should be implemented using different Ansible roles
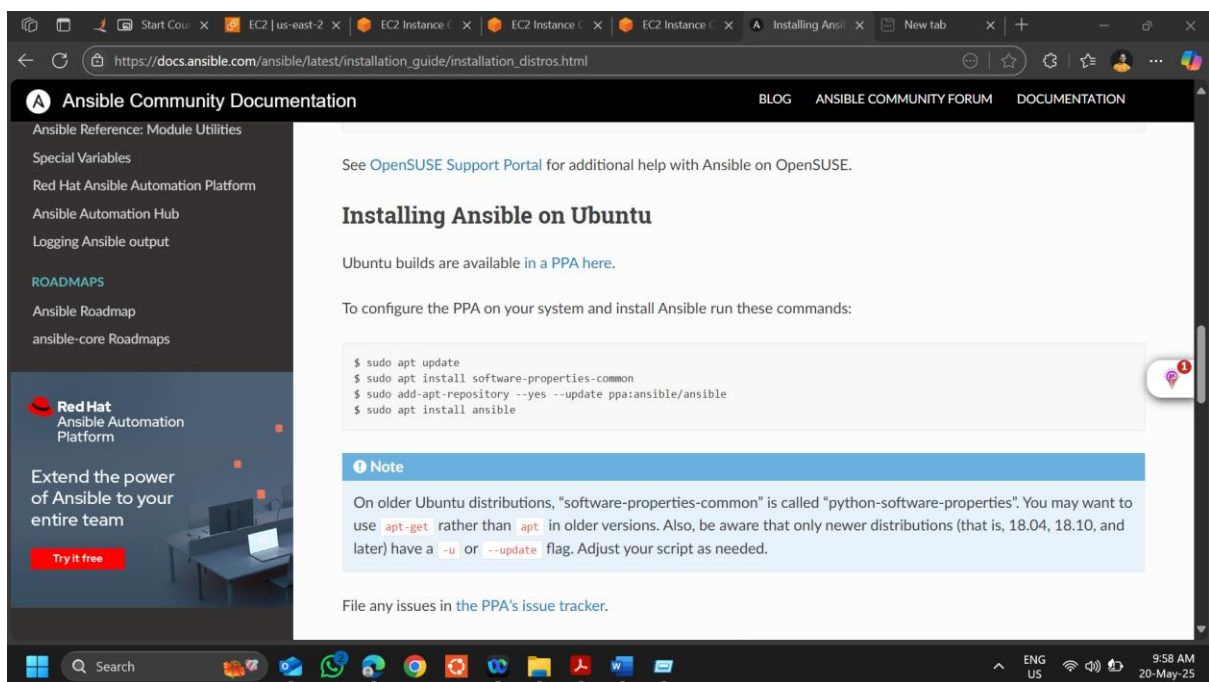
Install Ansible in Master node using these code

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No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.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-172-31-8-165:~$ ssh-keygen -t rsa
Generating public/private rsa key pair.
Enter file in which to save the key (/home/ubuntu/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/ubuntu/.ssh/id_rsa
Your public key has been saved in /home/ubuntu/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:gk8u2MUakn92BMutY+ynVNNfgM2WzKpzvlYSykJrFms ubuntu@ip-172-31-8-165
The key's randomart image is:
+---[RSA 3072]----+
| ... |
| . o +   * . |
| o . = o . o |
| o *o+ ..o . |
| *.X=S.o. |
| o BE+oo... |
| .+=.+ .o. |
| o o +. |
| . .o. |
+----[SHA256]-----+
ubuntu@ip-172-31-8-165:~$

i-0d007b0dfbc117a41 (Ansable-Master)
PublicIPs: 3.142.173.246 PrivateIPs: 172.31.8.165

Welcome to Ubuntu 24.04.2 LTS (GNU/Linux 6.8.0-1024-aws x86_64)

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

 System information as of Tue May 20 04:35:16 UTC 2025

  System load: 0.08   Processes: 105
  Usage of /:   25.3% of 6.71GB   Users logged in: 0
  Memory usage: 20%   IPv4 address for enX0: 172.31.0.191
  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 May 20 04:27:58 2025 from 3.16.146.4
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-0-191:~$ sudo nano .ssh/authorized_keys
ubuntu@ip-172-31-0-191:~$

i-0e3e7b4f6a9ce8639 (Ansable-S2)
PublicIPs: 3.147.65.199 PrivateIPs: 172.31.0.191

Screenshot 2 (bottom):

```
[Slave1]
172.31.11.198
[Slave2]
172.31.0.191
```

^G Help   ^O Write Out   ^W Where Is   ^K Cut   ^T Execute   ^C Location   M-U Undo   M-A Set Mark   M-] To

Forward
Next Word

i-0d007b0dfbc117a41 (Ansable-Master)
PublicIPs: 3.142.173.246   PrivateIPs: 172.31.8.165

```
The key's randomart image is:
+---[RSA 3072]----+
|    ...          |
| . o + * .       |
| o . = o . o     |
| o *o+ ..o .     |
|  *.X=S.o. .     |
| o BE+oo....     |
|  .+=.+ .o.      |
|   o o +.        |
|    . .o.        |
+----[SHA256]-----+
ubuntu@ip-172-31-8-165:~$ cat .ssh/id_rsa.pub
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAABgQDZ5x9OG96Lq55tFnq+zQ30iD9q+ejLyxFDPbf1UggAH9ij4tC0DPPrU+Moxgr2amFnQHy6wYkeyQ6KNWoQOtYkKwz7HcDlvWFob5vFUA73bT2b0v7t9gneblqjuddTuxNMbwaBBeYvPtXjNpQjJPdf51OARLOACWBussebI/1
mm2qV3o4w2/1yLl2zXYoGka77bYs74gwbNe+TB9BUptupL5Ll6FWcFywmNYTnzezy+LENg/J9DAxMDMbUQsXcWa2aSQqTh10/DUX+KfRWidF32i/Sn2zJQbJzIgM8/CsU1yokcEokkAe/GmOZ/02P4N3I7gBShV40GEAUmBevrSBXQmgi2Wxw4nU4arMfUUEREXSz4kHPCVmmjg
GyI8gtHX80k9Yfwjqv9j81oc/ugGrP2ctodTrErFUfzrFl1lo1YIgpSwBNGYYRJqd0R5ZiCCaYEFRyyjnVecCEz7EbjFh9qrQslHiL7s7htWJyG8ULYf/GulQeEaQhN88UKK9BT2Zk= ubuntu@ip-172-31-8-165
ubuntu@ip-172-31-8-165:~$ sudo nano /etc/ansible/hosts
ubuntu@ip-172-31-8-165:~$ ansible -m ping all
The authenticity of host '172.31.0.191 (172.31.0.191)' can't be established.
ED25519 key fingerprint is SHA256:WIm4WbEOO+upvGEpNLw0m0h4gXKo/g4BWLBOaPndTGY.
This key is not known by any other names.
The authenticity of host '172.31.11.198 (172.31.11.198)' can't be established.
ED25519 key fingerprint is SHA256:jcL95knF+WNwNuFniaimF241oYgGFCGKI56bB+ccSlM.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Please type 'yes', 'no' or the fingerprint: yes
Please type 'yes', 'no' or the fingerprint: yes
[WARNING]: Platform linux on host 172.31.11.198 is using the discovered Python interpreter at /usr/bin/python3.12, but future installation of another Python interpreter could change the meaning of that
path. See https://docs.ansible.com/ansible-core/2.18/reference_appendices/interpreter_discovery.html for more information.
172.31.11.198 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3.12"
    },
    "changed": false,
    "ping": "pong"
}
yes
[WARNING]: Platform linux on host 172.31.0.191 is using the discovered Python interpreter at /usr/bin/python3.12, but future installation of another Python interpreter could change the meaning of that path.
```

i-0d007b0dfbc117a41 (Ansable-Master)

PublicIPs: 3.142.173.246   PrivateIPs: 172.31.8.165

```
172.31.11.198 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3.12"
    },
    "changed": false,
    "ping": "pong"
}
yes
[WARNING]: Platform linux on host 172.31.0.191 is using the discovered Python interpreter at /usr/bin/python3.12, but future installation of another Python interpreter could change the meaning of that path.
See https://docs.ansible.com/ansible-core/2.18/reference_appendices/interpreter_discovery.html for more information.
172.31.0.191 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3.12"
    },
    "changed": false,
    "ping": "pong"
}
ubuntu@ip-172-31-8-165:~$ cd /etc/ansible
ubuntu@ip-172-31-8-165:/etc/ansible$ ls
ansible.cfg  hosts  roles
ubuntu@ip-172-31-8-165:/etc/ansible$ cd roles
ubuntu@ip-172-31-8-165:/etc/ansible/roles$ ls
ubuntu@ip-172-31-8-165:/etc/ansible/roles$ ansible-galaxy init apache_role
ERROR! Unexpected Exception, this is probably a bug: [Errno 13] Permission denied: b'./apache_role'
to see the full traceback, use -vvv
ubuntu@ip-172-31-8-165:/etc/ansible/roles$ sudo ansible-galaxy init apache_role
- Role apache_role was created successfully
ubuntu@ip-172-31-8-165:/etc/ansible/roles$ sudo ansible-galaxy init nginx_role
- Role nginx_role was created successfully
ubuntu@ip-172-31-8-165:/etc/ansible/roles$ ls
apache_role  nginx_role
ubuntu@ip-172-31-8-165:/etc/ansible/roles$ cd apache_role
ubuntu@ip-172-31-8-165:/etc/ansible/roles/apache_role$ ls
README.md  defaults  files  handlers  meta  tasks  templates  tests  vars
ubuntu@ip-172-31-8-165:/etc/ansible/roles/apache_role$ cd tasks
ubuntu@ip-172-31-8-165:/etc/ansible/roles/apache_role/tasks$ ls
main.yml
ubuntu@ip-172-31-8-165:/etc/ansible/roles/apache_role/tasks$ sudo nano main.yml
ubuntu@ip-172-31-8-165:/etc/ansible/roles/apache_role/tasks$
```

i-0d007b0dfbc117a41 (Ansable-Master)

PublicIPs: 3.142.173.246   PrivateIPs: 172.31.8.165

Now come and exit from roles section and we will create playbook

First screenshot (GNU nano editor - play.yaml):

```
GNU nano 7.2                                                    play.yaml *
---
- name: installing req tools in Slave1
  hosts: Slave1
  become: true
  roles:
    - apache_role
- name: installing req tools in Slave2
  hosts: Slave2
  become: true
  roles:
    - nginx_role
```

i-0d007b0dfbc117a41 (Ansable-Master)
PublicIPs: 18.119.166.115   PrivateIPs: 172.31.8.165

Second screenshot (terminal session):

```
ubuntu@ip-172-31-8-165:~$ sudo /est/ansible
sudo: /est/ansible: command not found
ubuntu@ip-172-31-8-165:~$ cd /etc/ansible
ubuntu@ip-172-31-8-165:/etc/ansible$ ls
ansible.cfg  hosts  roles
ubuntu@ip-172-31-8-165:/etc/ansible$ cd host
-bash: cd: host: No such file or directory
ubuntu@ip-172-31-8-165:/etc/ansible$ sudo nano hosts
ubuntu@ip-172-31-8-165:/etc/ansible$ cd hosts
-bash: cd: hosts: Not a directory
ubuntu@ip-172-31-8-165:/etc/ansible$ sudo nano hosts
ubuntu@ip-172-31-8-165:/etc/ansible$ cd roles
ubuntu@ip-172-31-8-165:/etc/ansible/roles$ ls
apache_role  nginx_role
ubuntu@ip-172-31-8-165:/etc/ansible/roles$ cd apache_role/
ubuntu@ip-172-31-8-165:/etc/ansible/roles/apache_role$ ls
README.md  defaults  files  handlers  meta  tasks  templates  tests  vars
ubuntu@ip-172-31-8-165:/etc/ansible/roles/apache_role$ cd tasks
ubuntu@ip-172-31-8-165:/etc/ansible/roles/apache_role/tasks$ ls
install.yaml  main.yml
ubuntu@ip-172-31-8-165:/etc/ansible/roles/apache_role/tasks$ sudo nano install.yaml
ubuntu@ip-172-31-8-165:/etc/ansible/roles/apache_role/tasks$ sudo nano main.yml
ubuntu@ip-172-31-8-165:/etc/ansible/roles/apache_role/tasks$ cd ..
ubuntu@ip-172-31-8-165:/etc/ansible/roles/apache_role$ cd ..
ubuntu@ip-172-31-8-165:/etc/ansible/roles$ cd nginx_role/
ubuntu@ip-172-31-8-165:/etc/ansible/roles/nginx_role$ ls
README.md  defaults  files  handlers  meta  tasks  templates  tests  vars
ubuntu@ip-172-31-8-165:/etc/ansible/roles/nginx_role$ cd tasks
ubuntu@ip-172-31-8-165:/etc/ansible/roles/nginx_role/tasks$ ls
install.yaml  main.yml
ubuntu@ip-172-31-8-165:/etc/ansible/roles/nginx_role/tasks$ sudo nano install.yaml
ubuntu@ip-172-31-8-165:/etc/ansible/roles/nginx_role/tasks$ sudo nano main.yml
ubuntu@ip-172-31-8-165:/etc/ansible/roles/nginx_role/tasks$ cd
ubuntu@ip-172-31-8-165:~$ ls
play.yaml
ubuntu@ip-172-31-8-165:~$ sudo nano play.yaml
ubuntu@ip-172-31-8-165:~$ sudo nano play.yaml
ubuntu@ip-172-31-8-165:~$ ansible-playbook play.yaml --syntax-check
```

i-0d007b0dfbc117a41 (Ansable-Master)
PublicIPs: 18.119.166.115   PrivateIPs: 172.31.8.165

Copy the public IP and paste in the browser

Apache2 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
```

Welcome to nginx!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to nginx.org.
Commercial support is available at nginx.com.

Thank you for using nginx.