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Batch: A3

Assignment No. 6

Aim:

Write an ansible-playbook to install nginx on target servers.

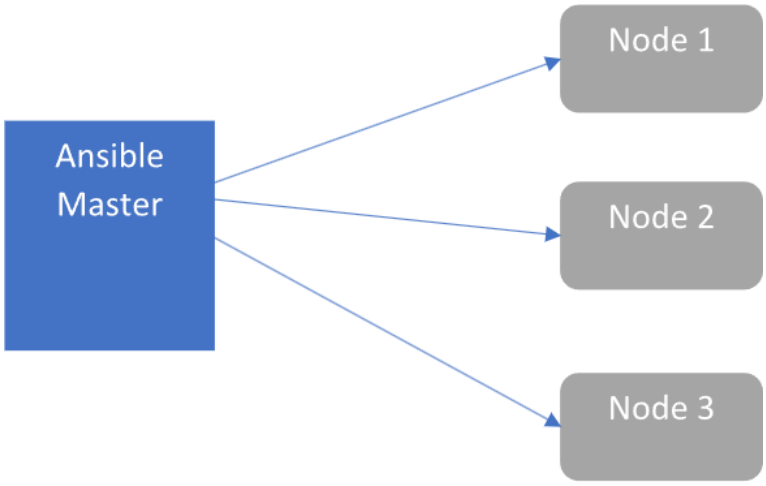
Theory:

- **What is YAML :**
  1. YAML Ain't Markup Language (YAML) is a data serialization language that is consistently listed as one of the most popular programming languages.
  2. It's often used as a format for configuration files, but its object serialization abilities make it a viable replacement for languages like JSON.
  3. YAML has broad language support and maps easily into native data structures.
  4. It's also easy for humans to read, which is why it's a good choice for configuration.

Introduction to ansible:

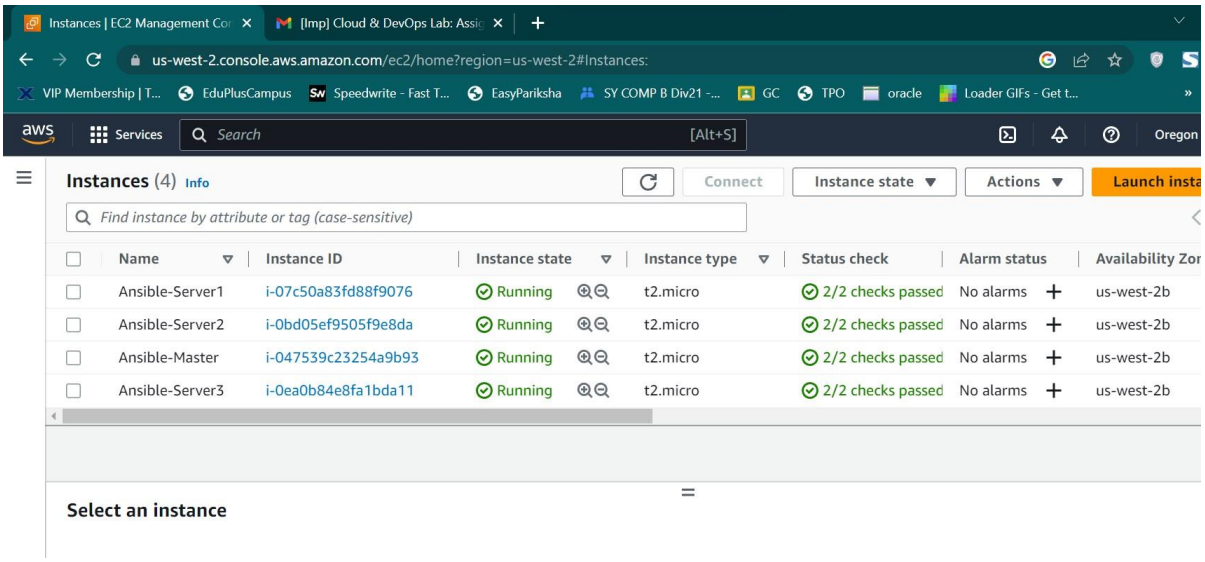
1. Ansible is an open source, command-line IT automation software application written in Python.
2. It can configure systems, deploy software, and orchestrate advanced workflows to support application deployment, system updates, and more.
3. Ansible's main strengths are simplicity and ease of use.
4. It also has a strong focus on security and reliability, featuring minimal moving parts.
5. It uses OpenSSH for transport (with other transports and pull modes as alternatives), and uses a human-readable language that is designed for getting started quickly without a lot of training.

Architecture:



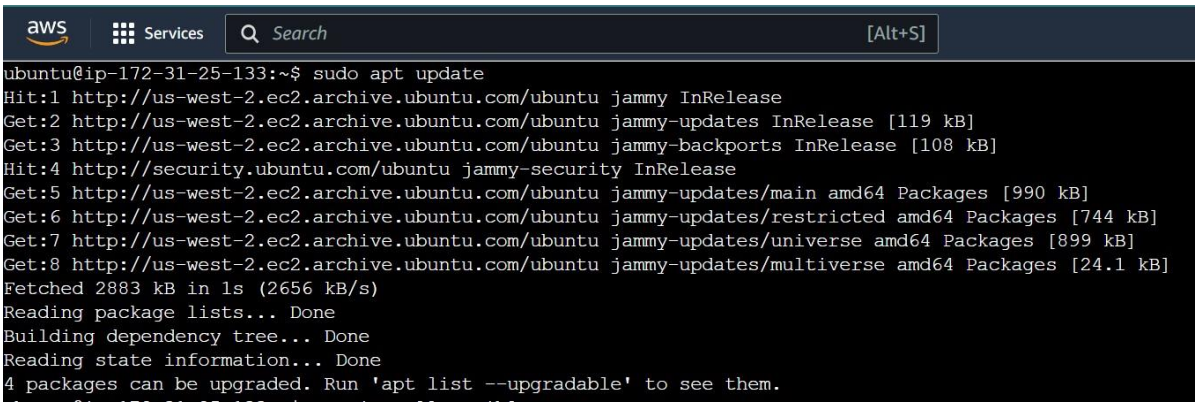
Steps:

Step 1: Create 4 ec2 instances of Ubuntu machine.

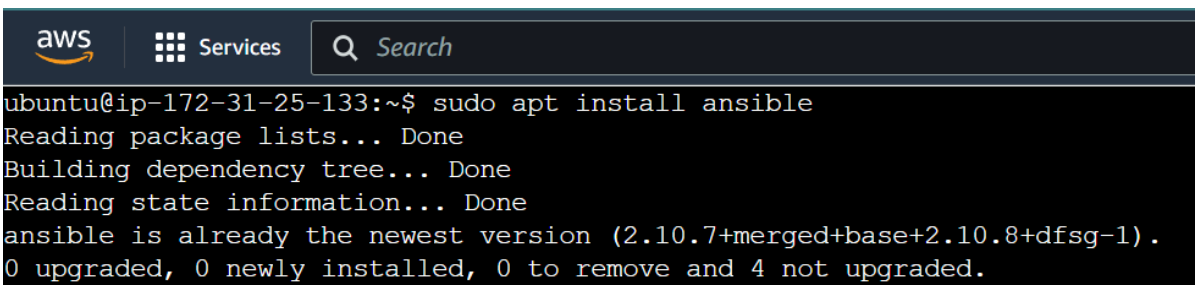


Step 2: Connect to **“Ansible-Master”** server.

Step 3: Write following command: **sudo apt update**



Step 4: Install ansible using command: **sudo apt install ansible**



Step 5: Check the version of ansible using command: **ansible --version**

```
ubuntu@ip-172-31-30-33:~$ ansible --version
Command 'ansible' not found, but can be installed with:
sudo apt install ansible-core  # version 2.12.0-1ubuntu0.1, or
sudo apt install ansible       # version 2.10.7+merged+base+2.10.8+dfsg-1
ubuntu@ip-172-31-30-33:~$
```

Step 6: update reaming all hosts i.e. Ansible-Server1, Ansible-Server2, Ansible-Server3 using command : **sudo apt-get update**

```
ubuntu@ip-172-31-22-184:~$ sudo apt-get update
Hit:1 http://us-west-2.ec2.archive.ubuntu.com/ubuntu
Get:2 http://us-west-2.ec2.archive.ubuntu.com/ubuntu
Get:3 http://us-west-2.ec2.archive.ubuntu.com/ubuntu
Get:4 http://us-west-2.ec2.archive.ubuntu.com/ubuntu
Get:5 http://security.ubuntu.com/ubuntu jammy-securit
Get:6 http://us-west-2.ec2.archive.ubuntu.com/ubuntu
Get:7 http://us-west-2.ec2.archive.ubuntu.com/ubuntu
Get:8 http://us-west-2.ec2.archive.ubuntu.com/ubuntu
Get:9 http://us-west-2.ec2.archive.ubuntu.com/ubuntu
Get:10 http://us-west-2.ec2.archive.ubuntu.com/ubuntu
Get:11 http://us-west-2.ec2.archive.ubuntu.com/ubuntu
Get:12 http://us-west-2.ec2.archive.ubuntu.com/ubuntu
Get:13 http://us-west-2.ec2.archive.ubuntu.com/ubuntu
Get:14 http://us-west-2.ec2.archive.ubuntu.com/ubuntu
Get:15 http://us-west-2.ec2.archive.ubuntu.com/ubuntu
Get:16 http://us-west-2.ec2.archive.ubuntu.com/ubuntu
Get:17 http://us-west-2.ec2.archive.ubuntu.com/ubuntu
Get:18 http://us-west-2.ec2.archive.ubuntu.com/ubuntu
```

i-0753b3fd7b1c7ee38 (Ansible-Server3)

PublicIPs: 34.216.21.131 PrivateIPs: 172.31.22.184

```
ubuntu@ip-172-31-20-121:~$ sudo apt-get update
Hit:1 http://us-west-2.ec2.archive.ubuntu.com/ubuntu
Get:2 http://us-west-2.ec2.archive.ubuntu.com/ubuntu
Get:3 http://us-west-2.ec2.archive.ubuntu.com/ubuntu
Get:4 http://us-west-2.ec2.archive.ubuntu.com/ubuntu
Get:5 http://security.ubuntu.com/ubuntu jammy-securit
Get:6 http://us-west-2.ec2.archive.ubuntu.com/ubuntu
Get:7 http://us-west-2.ec2.archive.ubuntu.com/ubuntu
Get:8 http://us-west-2.ec2.archive.ubuntu.com/ubuntu
Get:9 http://us-west-2.ec2.archive.ubuntu.com/ubuntu
Get:10 http://us-west-2.ec2.archive.ubuntu.com/ubuntu
Get:11 http://us-west-2.ec2.archive.ubuntu.com/ubuntu
Get:12 http://us-west-2.ec2.archive.ubuntu.com/ubuntu
Get:13 http://us-west-2.ec2.archive.ubuntu.com/ubuntu
Get:14 http://us-west-2.ec2.archive.ubuntu.com/ubuntu
Get:15 http://us-west-2.ec2.archive.ubuntu.com/ubuntu
Get:16 http://us-west-2.ec2.archive.ubuntu.com/ubuntu
Get:17 http://us-west-2.ec2.archive.ubuntu.com/ubuntu
Get:18 http://us-west-2.ec2.archive.ubuntu.com/ubuntu
```

i-05b8ed5a2fc706173 (Ansible-Server2)

PublicIPs: 54.218.74.2 PrivateIPs: 172.31.20.121

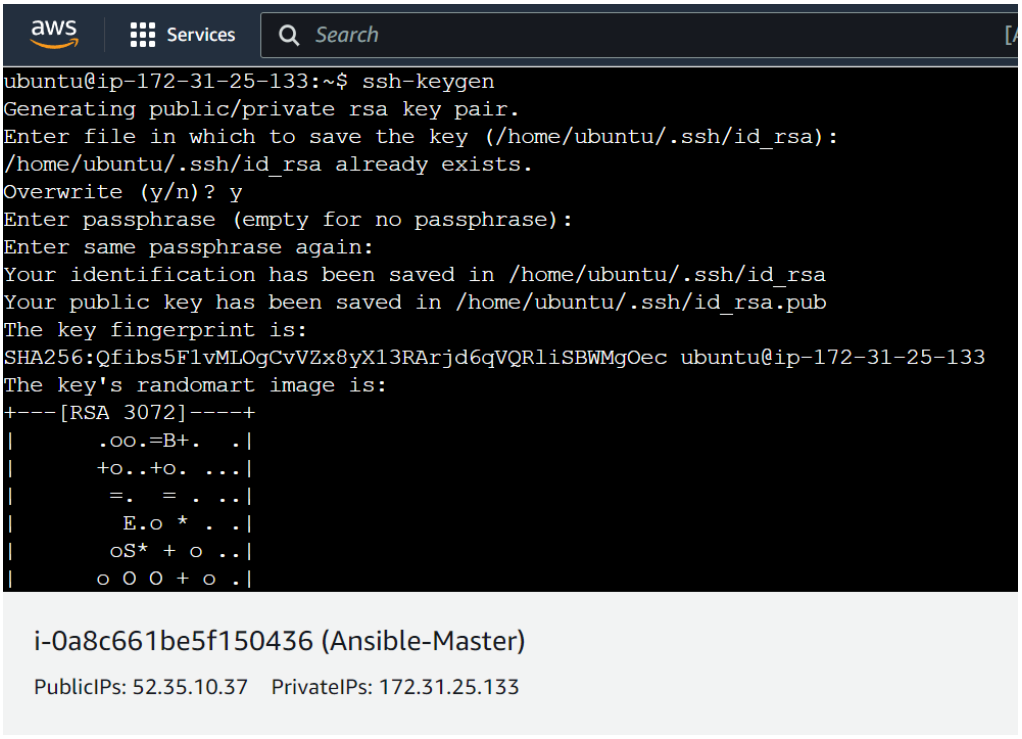
```
ubuntu@ip-172-31-30-33:~$ sudo apt-get update
Hit:1 http://us-west-2.ec2.archive.ubuntu.com/ubuntu
Hit:2 http://us-west-2.ec2.archive.ubuntu.com/ubuntu
Hit:3 http://us-west-2.ec2.archive.ubuntu.com/ubuntu
Hit:4 http://security.ubuntu.com/ubuntu jammy-securit
Reading package lists... Done
ubuntu@ip-172-31-30-33:~$
```

i-082d597aafee504a3 (Ansible-Server1)

PublicIPs: 34.219.49.112 PrivateIPs: 172.31.30.33

Step 7: Generate a ssh key on **Ansible-master** using command :

ssh-keygen



i-0a8c661be5f150436 (Ansible-Master)

PublicIPs: 52.35.10.37 PrivateIPs: 172.31.25.133

Step 8: copy the public key which is in .ssh folder into “authorized keys” on **ansible-server1** using commands:

ls ~/.ssh

cat ~/.ssh/id_rsa.pub

Step 9: connect to **ansible-server1** and again give command:

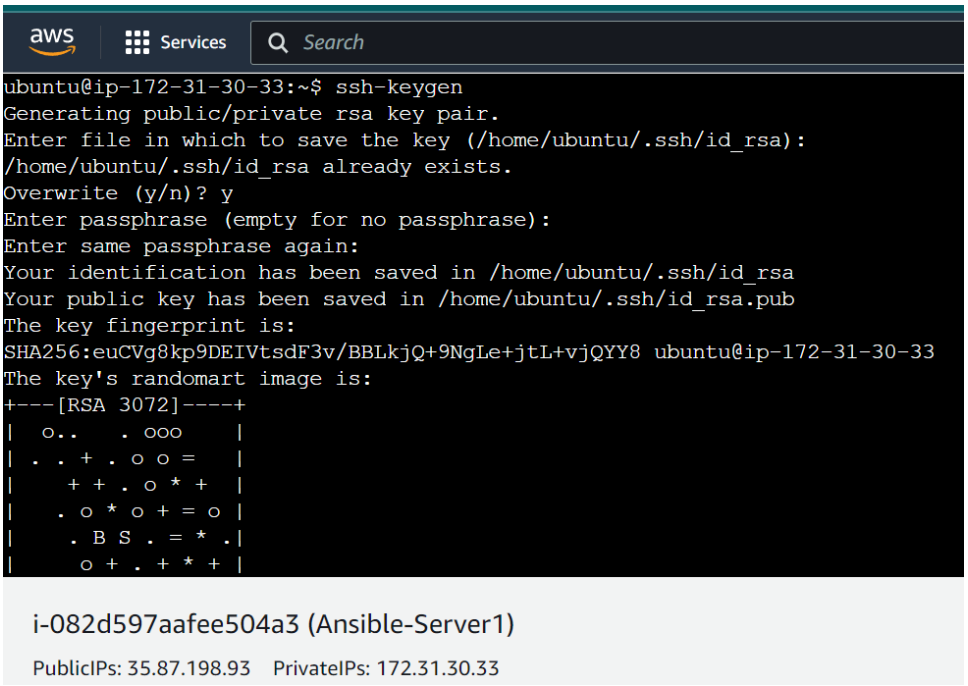
ssh-keygen

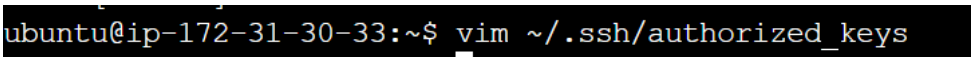
It will create the same files on **ansible-server1**

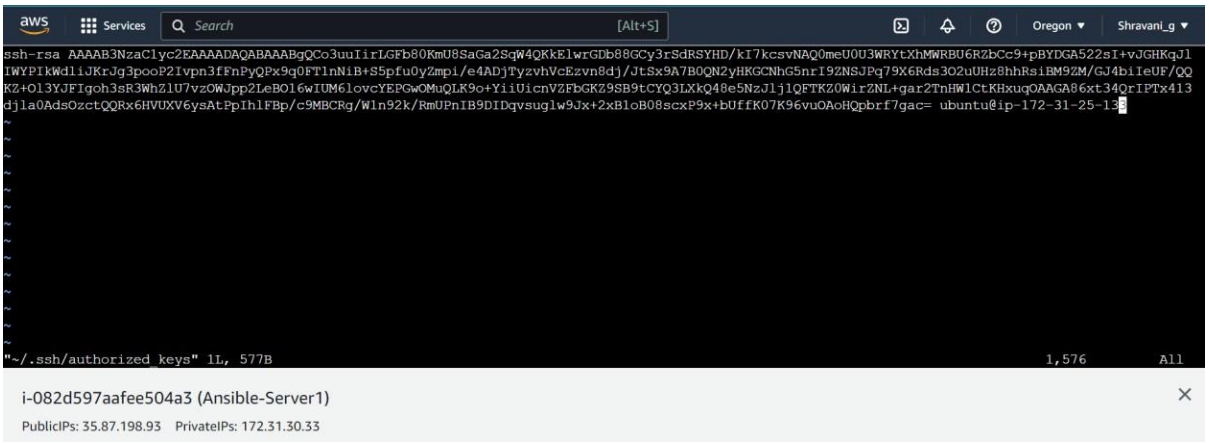
Now,

vim ~/.ssh/authorized_keys

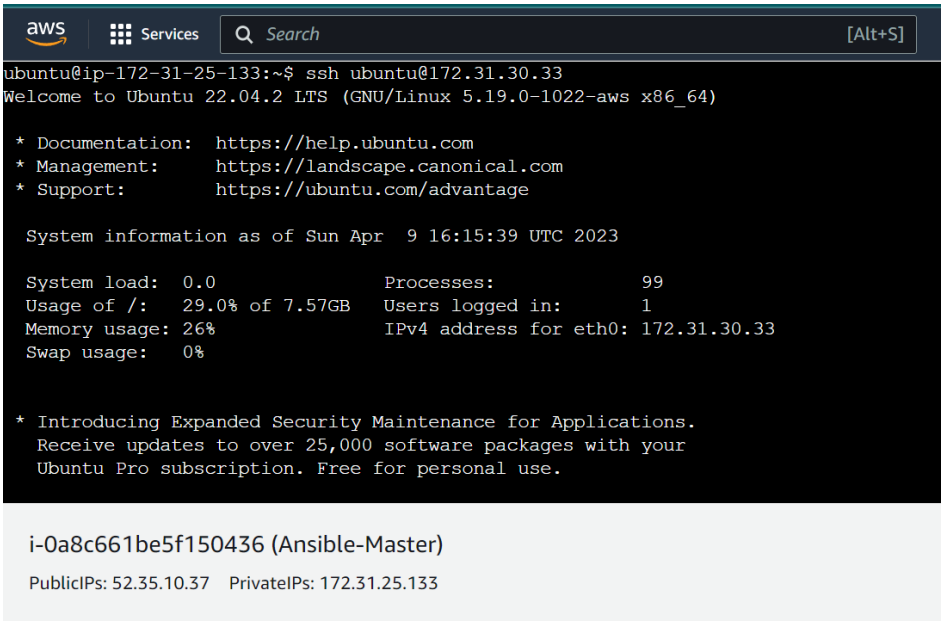
and paste the public key which is copied from above step.

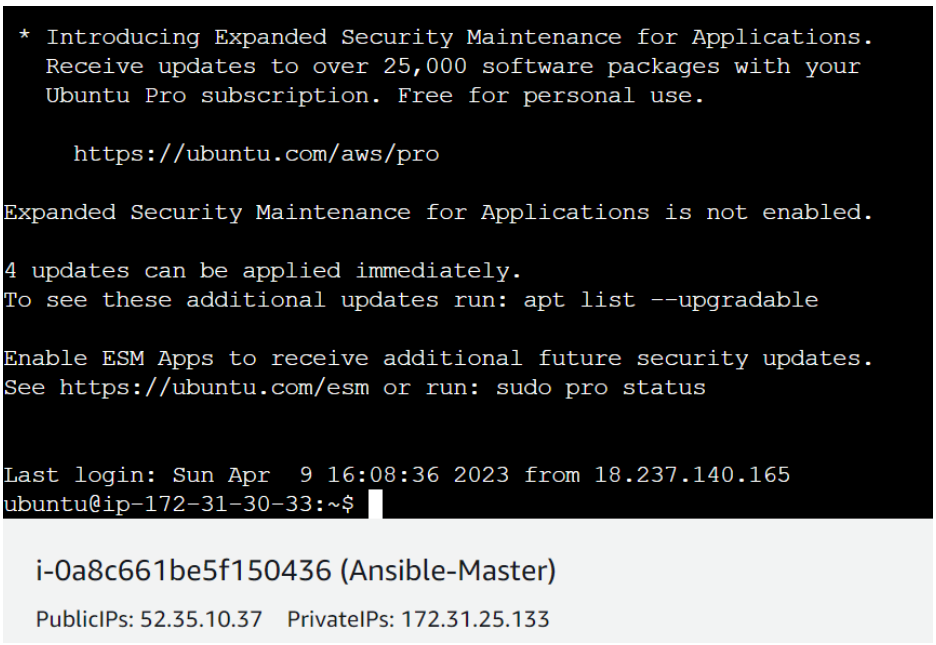






Step 9: Now login to **Ansible-master** and try to connect to ansible server1 using command: **ssh ubuntu@private-ip of ansible-server1**





Create a playbook on Ansible-master:

Step 1: connect to **"Ansible-Master"**

Step 2: create a new folder **"ansible-project"** using command :

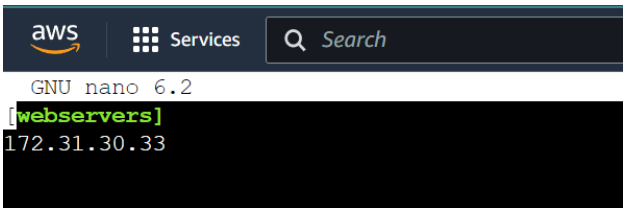
mkdir ansible-project

Step 3:

```
ubuntu@ip-172-31-25-133:~$ cd ansible-project
```

```
ubuntu@ip-172-31-25-133:~/ansible-project$ nano inventory
```

Step 4: write a private IP of **"Ansible-server1"** into inventory:

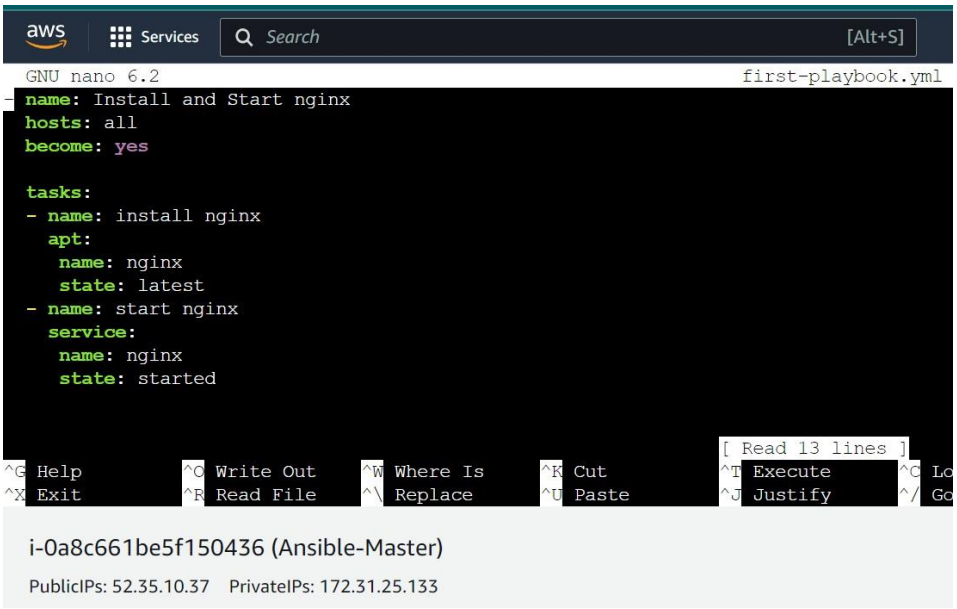


Install Nginx and Start Nginx:

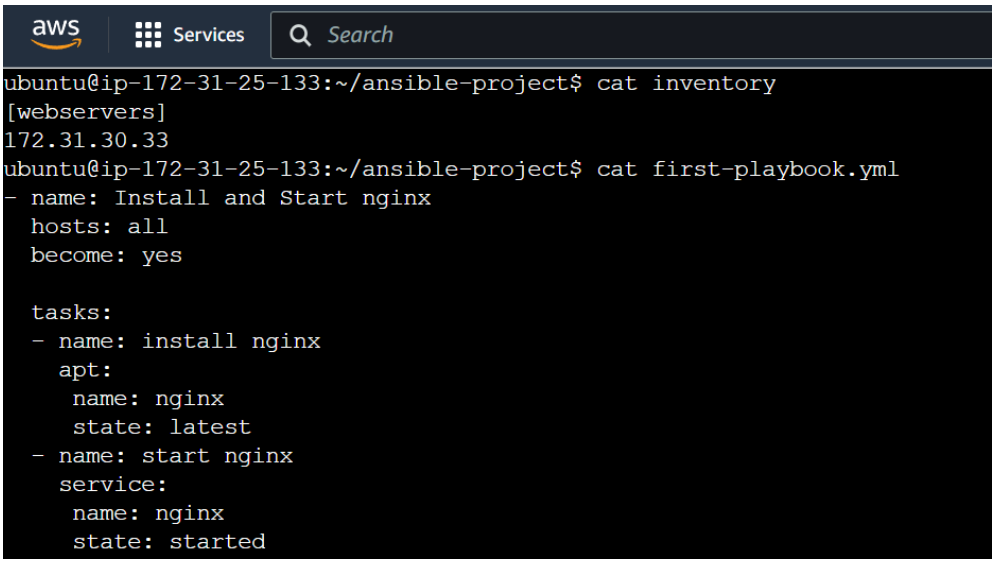
Step 1: Create a new file called **“first-playbook.yml”**

```
ubuntu@ip-172-31-25-133:~/ansible-project$ nano first-playbook.yml
```

Step 2: write foll code in **“first-playbook.yml”:**



Contents in **inventory** and **first-playbook.yml** file:



Step 3: Execute the playbook by using command:

Ansible-playbook -i inventory first-playbook.yml

```
ubuntu@ip-172-31-25-133:~/ansible-project$ ansible-playbook -i inventory first-playbook.yml

PLAY [Install and Start nginx] ************************************************************************************

TASK [Gathering Facts] ********************************************************************************************
ok: [172.31.30.33]

TASK [install nginx] **********************************************************************************************
ok: [172.31.30.33]

TASK [start nginx] ************************************************************************************************
ok: [172.31.30.33]

PLAY RECAP ********************************************************************************************************
172.31.30.33               : ok=3    changed=0    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0

ubuntu@ip-172-31-25-133:~/ansible-project$
```

i-0a8c661be5f150436 (Ansible-Master)

PublicIPs: 52.35.10.37 PrivateIPs: 172.31.25.133

Verify the output:

Step 4: connect to **ansible-server1**

run the command: **sudo systemctl status nginx**

```
aws  Services  Search  [Alt+S]

ubuntu@ip-172-31-30-33:~$ sudo systemctl status nginx
● nginx.service - A high performance web server and a reverse proxy server
     Loaded: loaded (/lib/systemd/system/nginx.service; enabled; vendor preset: enabled)
     Active: active (running) since Sun 2023-04-09 16:18:56 UTC; 8min ago
       Docs: man:nginx(8)
    Process: 3418 ExecStartPre=/usr/sbin/nginx -t -q -g daemon on; master_process on; (code=exited, status=0/SUCCESS)
    Process: 3419 ExecStart=/usr/sbin/nginx -g daemon on; master_process on; (code=exited, status=0/SUCCESS)
   Main PID: 3512 (nginx)
      Tasks: 2 (limit: 1141)
     Memory: 4.6M
        CPU: 24ms
     CGroup: /system.slice/nginx.service
             ├─3512 "nginx: master process /usr/sbin/nginx -g daemon on; master_process on;"
             └─3515 "nginx: worker process" "" "" "" "" "" "" "" "" "" "" "" "" "" "" "" "" "" "" "" "" "" "" "" "" "" "" "

Apr 09 16:18:56 ip-172-31-30-33 systemd[1]: Starting A high performance web server and a reverse proxy server...
Apr 09 16:18:56 ip-172-31-30-33 systemd[1]: Started A high performance web server and a reverse proxy server.
ubuntu@ip-172-31-30-33:~$
```

i-082d597aafee504a3 (Ansible-Server1)

PublicIPs: 35.87.198.93 PrivateIPs: 172.31.30.33