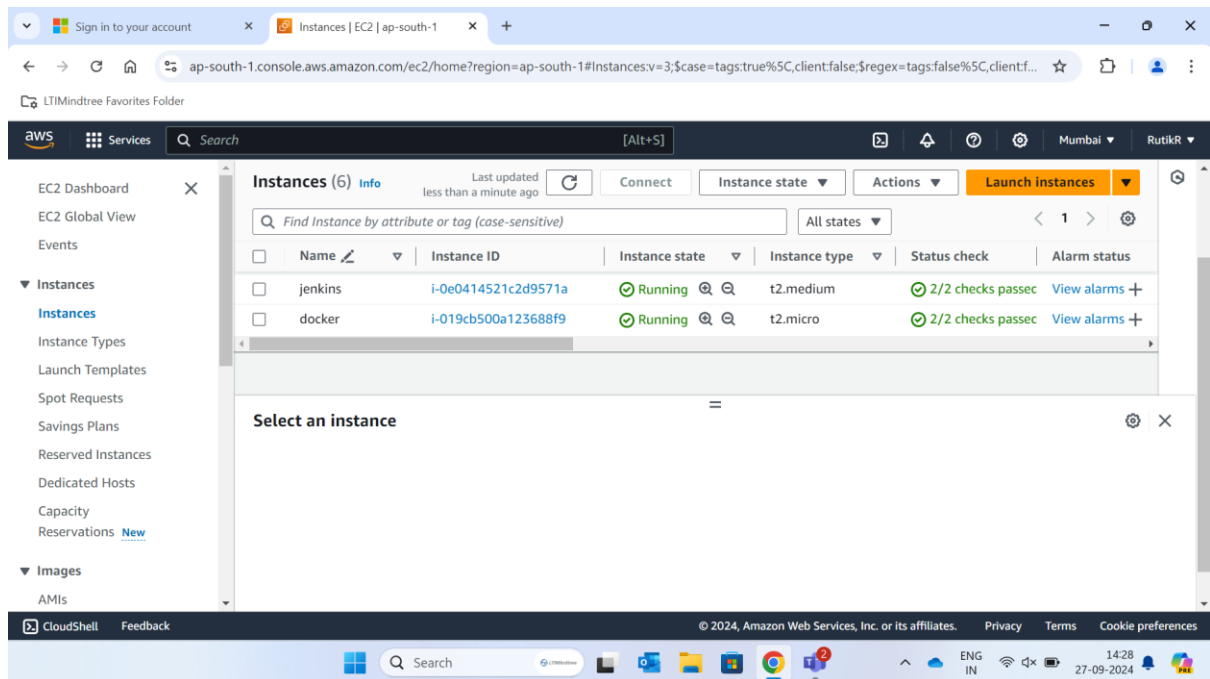


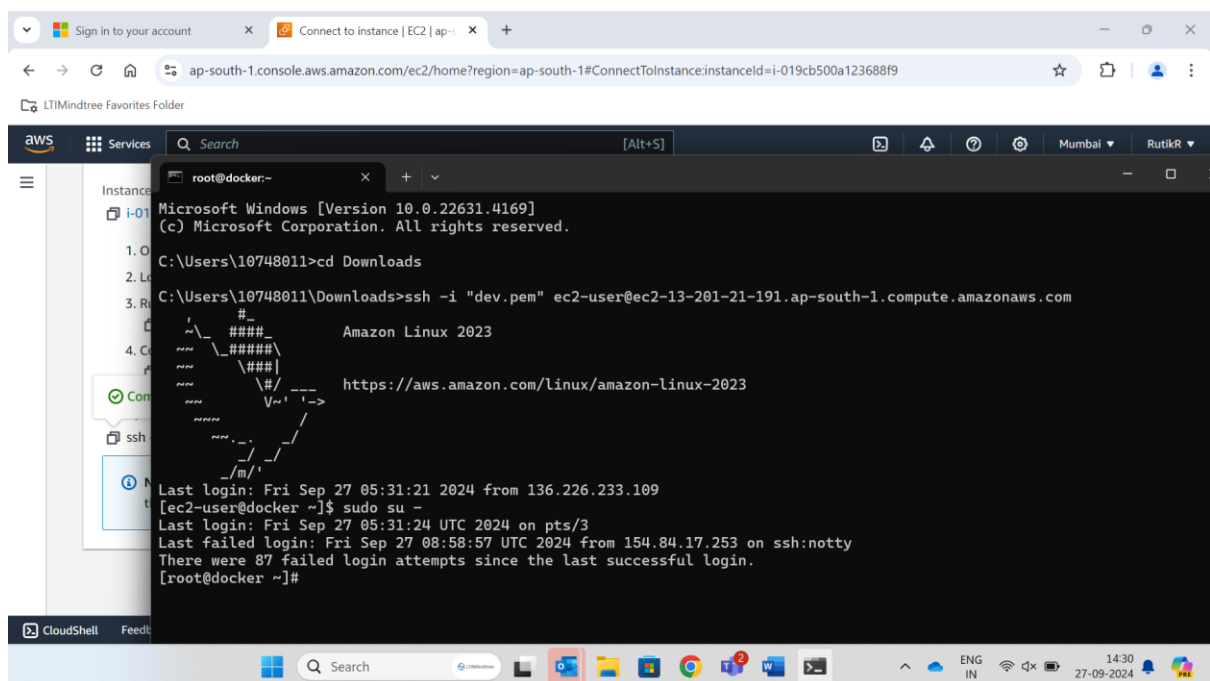
Q1) Pull the Ubuntu image from Docker hub and Launch a web application in the container on port no. 8080 and this application should be reachable globally.

Steps:

Created instance where I can configure docker to use it .



Connected to instance to access it.



[illegible]

Docker is started and checked if images and container exists.

A screenshot of a terminal window titled "root@docker:~". The terminal shows the following commands and output:  

```
C:\Users\10748011>cd Downloads  
C:\Users\10748011\Downloads>ssh -i "dev.pem" ec2-user@ec2-13-201-21-191.ap-south-1.compute.amazonaws.com
```

  
The terminal then displays the Amazon Linux 2023 logo and the URL <https://aws.amazon.com/linux/amazon-linux-2023>.  

```
Last login: Fri Sep 27 05:31:21 2024 from 136.226.233.109  
[ec2-user@docker ~]$ sudo su -  
Last login: Fri Sep 27 05:31:24 UTC 2024 on pts/3  
Last failed login: Fri Sep 27 08:58:57 UTC 2024 from 154.84.17.253 on ssh:notty  
There were 87 failed login attempts since the last successful login.  
[root@docker ~]# yum install docker  
Last metadata expiration check: 3:59:15 ago on Fri Sep 27 05:01:56 2024.  
Package docker-25.0.6-1.amzn2023.0.2.x86_64 is already installed.  
Dependencies resolved.  
Nothing to do.  
Complete!  
[root@docker ~]# docker images  
REPOSITORY TAG IMAGE ID CREATED SIZE  
[root@docker ~]# docker ps  
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES  
[root@docker ~]# sudo systemctl start docker  
[root@docker ~]#
```

  
The terminal window is part of a desktop environment with other windows visible at the top, including "Sign in to your account", "Connect to instance | EC2 | ap...", and "project-grp/Docker version1.b...". The taskbar at the bottom shows various application icons and system status indicators like time (14:34) and date (27-09-2024).

There were no images so pulled image of ubuntu from docker hub.

```
root@docke:~  
Last login: Fri Sep 27 05:31:21 2024 from 136.226.233.109  
[ec2-user@docke ~]$ sudo su -  
Last login: Fri Sep 27 05:31:24 UTC 2024 on pts/3  
Last failed login: Fri Sep 27 08:58:57 UTC 2024 from 154.84.17.253 on ssh:notty  
There were 87 failed login attempts since the last successful login.  
[root@docke ~]# yum install docker  
Last metadata expiration check: 3:59:15 ago on Fri Sep 27 05:01:56 2024.  
Package docker-25.0.6-1.amzn2023.0.2.x86_64 is already installed.  
Dependencies resolved.  
Nothing to do.  
Complete!  
[root@docke ~]# docker images  
REPOSITORY TAG IMAGE ID CREATED SIZE  
[root@docke ~]# docker ps  
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES  
[root@docke ~]# sudo systemctl start docker  
[root@docke ~]# docker pull ubuntu  
Using default tag: latest  
latest: Pulling from library/ubuntu  
dafa2b0c44d2: Pull complete  
Digest: sha256:dfc10878be8d8fc9c61cbff33166cb1d1fe44391539243703c72766894fa834a  
Status: Downloaded newer image for ubuntu:latest  
docker.io/library/ubuntu:latest  
[root@docke ~]#
```

Image is successfully pulled .

```
Status: Downloaded newer image for ubuntu:latest  
docker.io/library/ubuntu:latest  
[root@docke ~]# docker images  
REPOSITORY TAG IMAGE ID CREATED SIZE  
ubuntu latest b1e9cef3f297 4 weeks ago 78.1MB  
[root@docke ~]#
```

Created container with the help of docker command and attached this image to it.

```
REPOSITORY TAG IMAGE ID CREATED SIZE  
ubuntu latest b1e9cef3f297 4 weeks ago 78.1MB  
[root@docke ~]# docker run -it --name container1 -p 8080:80 ubuntu:latest bin/bash
```

Installed apache and started the service. Also created index.html to host it globally.

```
Added, 0 removed, done.  
Running hooks in /etc/ca-certificates/update.d...  
done.  
root@04c08deb18e6:/# service apache2 start  
* Starting Apache httpd web server apache2  
AH00558: apache2: Could not reliably determine the server's fully qualified domain name, please  
add a 'ServerName' directive globally to suppress this message  
*  
root@04c08deb18e6:/# cd /var/www/html  
root@04c08deb18e6:/var/www/html# ls  
index.html  
root@04c08deb18e6:/var/www/html# cat > index.html  
<h1> Hi, Welcome to this site! <h1>  
root@04c08deb18e6:/var/www/html# cat index.html  
<h1> Hi, Welcome to this site! <h1>  
root@04c08deb18e6:/var/www/html# cd  
root@04c08deb18e6:~#
```

```
1 apt update
2 apt install apache2
3 service apache2 start
4 cd /var/www/html
5 ls
6 cat > index.html
7 cat index.html
8 cd
9 history
root@04c08deb18e6:~# |
```

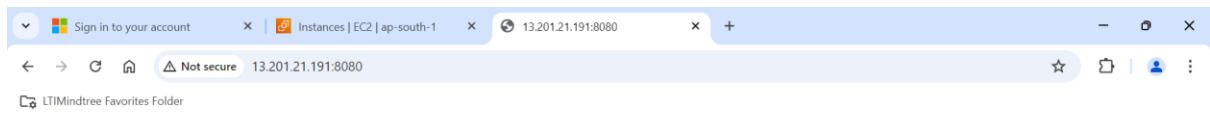
Exited container to check if it is available or not.

```
[root@docker ~]# docker ps
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS                               NAMES
04c08deb18e6   ubuntu:latest  "bin/bash"              9 minutes ago  Up 9 minutes  0.0.0.0:8080->80/tcp, :::8080->80/tcp  conta
iner1
[root@docker ~]# |
```

The website is available globally. Using public ip of instance.

```
[root@docker ~]# curl http://172.17.0.1:8080
<h1> Hi, Welcome to this site! </h1>
[root@docker ~]# |
```

The website is hosted and available globally



**Hi, Welcome to this site!**



Q2) using of the Ansible configuration management tool install httpd package and start and make it enable of this service. and copy a fstab file in the /tmp folder on the remote server via Playbook.

Created instance where I can configure ansible and use it.

<input type="checkbox"/>	instance1	i-0bac8abe03c0f116e	Running	t2.micro	2/2 checks passed	Failed to fetch
<input checked="" type="checkbox"/>	ansible	i-0f25d7e547d0b62e8	Running	t2.micro	2/2 checks passed	Failed to fetch

Connected to the instance and installed ansible inside it.

```
root@dockey:~
root@ip-172-31-46-207:~

=====
Install 3 Packages
Total download size: 6.8 M
Installed size: 34 M
Downloading Packages:
(1/3): sshpass-1.09-6.amzn2023.0.1.x86_64.rpm 443 kB/s | 28 kB 00:00
(2/3): ansible-core-2.15.3-1.amzn2023.0.4.x86_64.rpm 9.8 MB/s | 2.5 MB 00:00
(3/3): git-core-2.40.1-1.amzn2023.0.3.x86_64.rpm 10 MB/s | 4.3 MB 00:00
-----
Total 14 MB/s | 6.8 MB 00:00
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
Preparing :
Installing : sshpass-1.09-6.amzn2023.0.1.x86_64 1/1
Installing : git-core-2.40.1-1.amzn2023.0.3.x86_64 1/3
Installing : ansible-core-2.15.3-1.amzn2023.0.4.x86_64 2/3
Running scriptlet: ansible-core-2.15.3-1.amzn2023.0.4.x86_64 3/3
Verifying : ansible-core-2.15.3-1.amzn2023.0.4.x86_64 3/3
Verifying : ansible-core-2.15.3-1.amzn2023.0.4.x86_64 1/3
Verifying : git-core-2.40.1-1.amzn2023.0.3.x86_64 2/3
Verifying : sshpass-1.09-6.amzn2023.0.1.x86_64 3/3

Installed:
ansible-core-2.15.3-1.amzn2023.0.4.x86_64 git-core-2.40.1-1.amzn2023.0.3.x86_64 sshpass-1.09-6.amzn2023.0.1.x86_64

Complete!
[root@ansible ~]#
```

Configured ansible using ansible.cfg file.

```
inventory = /etc/ansible/hosts
```

So need another remote host so launched an instance and connected to it.

```
link/ether 02:0e:b7:ee:95:eb brd ff:ff:ff:ff:ff:ff
altname eni-0b7e1dec7015ae813
altname device-number-0.0
inet 172.31.38.251/20 metric 512 brd 172.31.47.255 scope global dynamic enX0
    valid_lft 2196sec preferred_lft 2196sec
inet6 fe80::e:b7ff:feee:95eb/64 scope link
    valid_lft forever preferred_lft forever
[root@ip-172-31-38-251 ~]# ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/root/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /root/.ssh/id_rsa
Your public key has been saved in /root/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:d4u7tcnrqZva5W5RhrJ3nMVvXI+0nIJKs4goGedF94E root@ip-172-31-38-251.ap-south-1.compute.internal
The key's randomart image is:
+----[RSA 3072]-----+
|
|. E . . . + +
| . . .S....B B*
| . . . +..o+.B.B|
|= o . o +. ++ o
| o o . o. B.+
| . . .BBX.
+----[SHA256]-----+
[root@ip-172-31-38-251 ~]#
[root@ip-172-31-38-251 ~]#
```

Configured sshd file to allow password authentication to copy ssh key to the remote host.

```
[root@ansible ~]# vim /etc/ansible/ansible.cfg
[root@ansible ~]# cd /etc/ansible
[root@ansible ansible]# ls
ansible.cfg  roles
[root@ansible ansible]# cd
[root@ansible ~]# ssh-keygen
Generating public/private rsa key pair.

Enter file in which to save the key (/root/.ssh/id_rsa): Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /root/.ssh/id_rsa
Your public key has been saved in /root/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:JKMz0S0YuSD586phYyYSRVnur088necAthFNUf0eeG4 root@ansible
The key's randomart image is:
+----[RSA 3072]-----+
|.o. oo..
|o.o o
|+ + o + . o
|. + * = + . +
|. = & . S + .
|. = O E
|+ =, o...
|*..+. o..
|...+. o.
+----[SHA256]-----+
[root@ansible ~]#
[root@ansible ~]# vim /etc/ssh/sshd_config
[root@ansible ~]# systemctl restart sshd
[root@ansible ~]#
```

Configured sshd at remote server side to copy ssh key

```
[root@ip-172-31-38-251 .ssh]# history
 1 ip a s
 2 ssh-keygen
 3 passwd root
 4 vim /etc/ssh/sshd_config
 5 systemctl restart sshd
 6 cd .ssh'
 7 cd .ssh
 8 ls
 9 cat authorized_keys
10 ip a s
11 history
[root@ip-172-31-38-251 .ssh]# |
```

Key is copied into remote server.

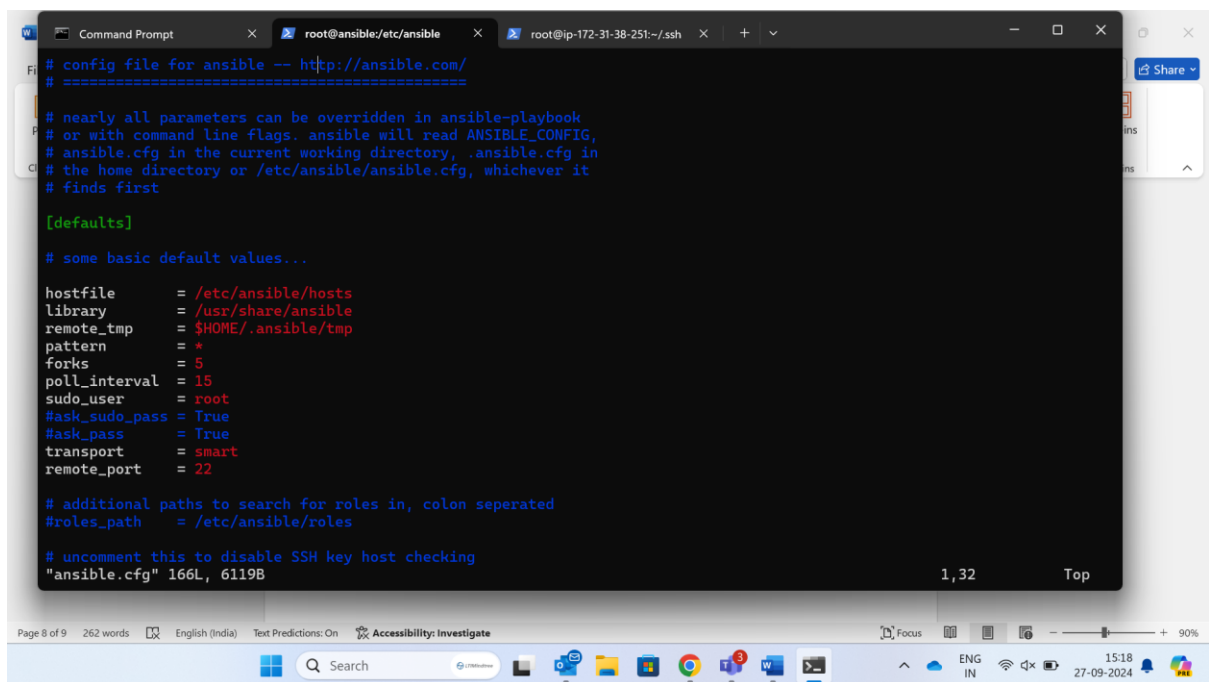
```
[root@ip-172-31-38-251 .ssh]# cat authorized_keys
no-port-forwarding,no-agent-forwarding,no-X11-forwarding,command="echo 'Please login as the user \"ec2-user\" rather than the user \"root\".';echo;sleep 10;exit 142" ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQCVFtWamXE0FEUAY1GhrH13uUxTwoTV2DiorG
rpZhcKxxSYmR8WYQ/pDQkWP7+JSeXerkwKxBNfhgxCMdhj/f/rzPySnMk2fNgv8beCIa/5myj3Gn5d7M6vi8zqGRXLJMX3e1M8n7gcTpiHUF/z0j+4772Uht
IcYHH2LWYsgweiFNG3dBcmHkR/D4t73EBcCB1ga5eRoLL36zXs2tzMFxkwnfL/78zUjaE3gDyLAPU2hr64Y0UmjLPuCZaTb++NKS8cq+Hx4bQ9f1N8eXdjN1
SmBt9Jz6AbuNCRbTQ3n2utnfudyeQ7VvEtA0SszX022AWE68zvqf5yxuHL5YCT3RhQF dev
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQgQDKAYQQIgSssWTzvuQ+R6CbE5H3mLQ0ack9wWbYQFp1dHbAai7uC5WHmBirKRpYXIRHtqtK497gZD03CSFg
iQK2sry7VKWqK6XBgoWY7oiyNHZP7SDvWHVIMEWTu8x1u0ShRk08vd9/hNKK2zeyE+W+3uHnuLFZmWxu5RtFjzb2k0CUfC0ysG9s0Fuv0EAb+dLgpwT54rsN
fMvNv2f9SH/PfWfQqrC+SgRuj23v3Quk7xf3DVfQyzDdjNhLXTjw3HB0C+GvwX9QUFLqJi6iMlyAkHu6tNDaaIcNzV4bfA2w0/Mf2ikCCvCqKm8dcUSY0nXf
pcLWCYiJ1AxCRGIM0pbTh3QSSiytpuqZz691mmujxP0W4T26KqkWhL8SDfCvneZsoM3F5C6o60mZiaiAc6KGxFSufrFgmTUfrs4ZH2u29kDwX5/RC3NeHQQR
LfPHRQS/F58Rn5ZVubWaoa75Af+IcS2Qy957Qh2HIH3eXEbd4DPzRGClw7yHA/9iKene/IM= root@ansible
```

Now add this host ip into hosts file onto ansible configured server.

```
[root@ansible ~]# cd /etc/ansible
[root@ansible ansible]# ls
ansible.cfg  roles
[root@ansible ansible]# vim hosts
[root@ansible ansible]# vim ansible.cfg
[root@ansible ansible]# ls
ansible.cfg  hosts  roles
[root@ansible ansible]# cat hosts
[india]
172.31.38.251
[root@ansible ansible]# |
```



Ansible.cfg is configured.



```
# config file for ansible -- http://ansible.com/
# =====

# nearly all parameters can be overridden in ansible-playbook
# or with command line flags. ansible will read ANSIBLE_CONFIG,
# ansible.cfg in the current working directory, .ansible.cfg in
# the home directory or /etc/ansible/ansible.cfg, whichever it
# finds first

[defaults]

# some basic default values...

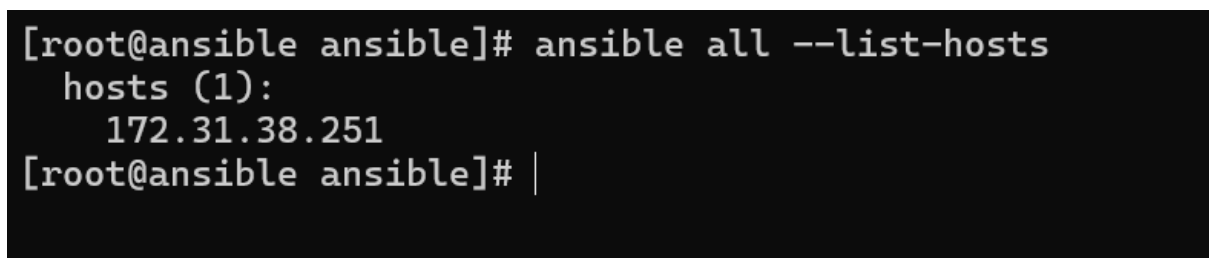
hostfile      = /etc/ansible/hosts
library       = /usr/share/ansible
remote_tmp    = $HOME/.ansible/tmp
pattern       = *
forks         = 5
poll_interval = 15
sudo_user     = root
ask_sudo_pass = True
ask_pass      = True
transport     = smart
remote_port   = 22

# additional paths to search for roles in, colon separated
roles_path    = /etc/ansible/roles

# uncomment this to disable SSH key host checking
"ansible.cfg" 166L, 6119B
```

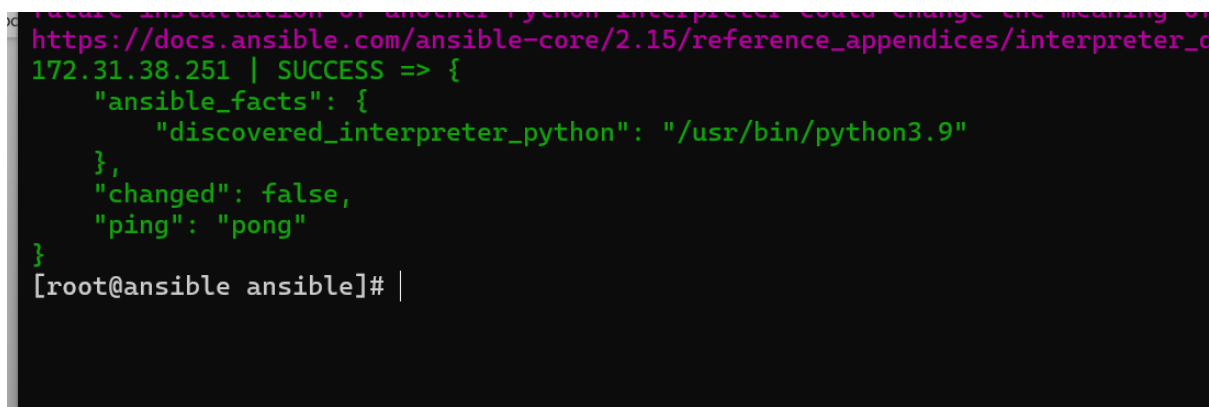
Now let's check if the remote server is reachable.

First check if hosts are listed



```
[root@ansible ansible]# ansible all --list-hosts
hosts (1):
    172.31.38.251
[root@ansible ansible]# |
```

Check if hosts are reachable



```
172.31.38.251 | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3.9"
  },
  "changed": false,
  "ping": "pong"
}
[root@ansible ansible]# |
```

Now create a playbook to host a website and also change the fstab file.

```
Command Prompt x root@ansible/etc/ansible x root@ip-172-31-38-251:~/ssh x + v
172.31.38.251 | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3.9"
  },
  "changed": false,
  "ping": "pong"
}
[root@ansible ansible]# vim a.yml
[root@ansible ansible]# ansible-playbook a.yml
-bash: ansible-playbook: command not found
[root@ansible ansible]# ansible-playbook a.yml

PLAY [Install and configure HTTPD] *****

TASK [Gathering Facts] *****
[WARNING]: Platform linux on host 172.31.38.251 is using the discovered Python interpreter at /usr/bin/python3.9, but
future installation of another Python interpreter could change the meaning of that path. See
https://docs.ansible.com/ansible-core/2.15/reference\_appendices/interpreter\_discovery.html for more information.
ok: [172.31.38.251]

TASK [Install httpd package] *****
ok: [172.31.38.251]

TASK [Start httpd service] *****
ok: [172.31.38.251]

TASK [Copy fstab file to /tmp] *****
changed: [172.31.38.251]

PLAY RECAP *****
172.31.38.251 : ok=4 changed=1 unreachable=0 failed=0 skipped=0 rescued=0 ignored=0

[root@ansible ansible]#
```

Done this on th host server.