General Goals

- Install Ansible (On WSL)
- Use Ansible to create an EC2 instance and install Git, Nginx, NodeJS, MongoDB, PM2, and other dependencies needed for the Sparta App (https://github.com/AmeenahRiffin/tech501-sparta-app), get the database running on it. Configuring the Port 3000 and the mongoDB port 27017.

Task: 3. Setup Ansible controller and first target node ('app' instance)

a. Task: Create EC2 instances for Ansible controller and first target node

b. Task: Setup dependencies for the Ansible controller and first target node

c. Task: Use other ad hoc commands

d. Task: Do update and upgrade on target nodes using ad hoc commands

e. Task: Consolidate ad hoc commands by copying a file to a target node

f. Task: Create and run playbook to install nginx on target node

g. Task: Create and run playbook to provision app VM

h. (Extension - if time) Task: Create and run playbook to print facts gathered

1. I was not able to install ansible on my windows machine, so I used WSL (Windows Subsystem for Linux) to install it. This was done by using the following command:

```
wsl --install -d Ubuntu
```

This allowed me to specify a distribution to install, which I chose to be Ubuntu. I set my username to AmeenahRiffin and the password to something I could remember.

To login to my ubuntu terminal if I log out, I navigate to the Ubuntu folder, and I used the following command:

```
wsl -d Ubuntu
```

2. Once I had installed WSL, I was in my ubuntu terminal. I then used the following commands to install ansible:

```
sudo apt update && sudo apt upgrade -y
sudo apt install ansible -y
```

This installed ansible on my ubuntu machine.

```
ameenahriffin@AmeenahMSI:~$ ansible --version
ansible [core 2.16.3]
  config file = None
  configured module search path = ['/home/ameenahriffin/.ansible/plugins/modules', '/usr/share/ansible/plugins/modules']
  ansible python module location = /usr/lib/python3/dist-packages/ansible
  ansible collection location = /home/ameenahriffin/.ansible/collections:/usr/share/ansible/collections
  executable location = /usr/bin/ansible
  python version = 3.12.3 (main, Feb  4 2025, 14:48:35) [GCC 13.3.0] (/usr/bin/python3)
  jinja version = 3.1.2
  libyaml = True
ameenahriffin@AmeenahMSI:~$
```

3. I then created a new directory called ansible-sparta-app. In this directory I created a new file called playbook.yml and inventory.ini. This is where I wrote my playbook and inventory.

The commands I used were:

```
mkdir ansible-sparta-app
cd ansible-sparta-app
touch playbook.yml inventory.ini
```

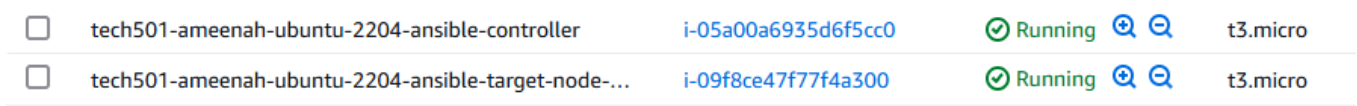
4. Create inventory.ini file with target hosts:

```
[app]
<target-node-ip>

[all:vars]
ansible_user=ubuntu
ansible_ssh_private_key_file=~/.ssh/aws-ansible-key
```

5. For creating EC2 instances:

```
# Launch EC2 instances from AWS Console or CLI
# Ensure to use Ubuntu 18.04 AMI
# Configure security groups to allow SSH access
```



```
ansible_host=63.35.178.20 | UNREACHABLE! => {
    "changed": false,
    "msg": "Failed to connect to the host via ssh: ssh: Could not resolve hostname ansible_host=63.35.178.20: Name or service not known",
    "unreachable": true
}
ansible_user=ubuntu | UNREACHABLE! => {
    "changed": false,
    "msg": "Failed to connect to the host via ssh: ssh: Could not resolve hostname ansible_user=ubuntu: Name or service not known",
    "unreachable": true
}
ansible_ssh_private_key_file=~/.ssh/ameenah-aws-key.pem | UNREACHABLE! => {
    "changed": false,
    "msg": "Failed to connect to the host via ssh: ssh: Could not resolve hostname ansible_ssh_private_key_file=~/.ssh/ameenah-aws-key.pem: Name or service not known",
    "unreachable": true
}
```

(This needed me to put the correct directory for the key, and also format the message so it's all on one line)

```
ameenahriffin@AmeenahMSI:/etc/ansible$ sudo nano hosts
ameenahriffin@AmeenahMSI:/etc/ansible$ ansible all -m ping
app | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3"
    },
    "changed": false,
    "ping": "pong"
}
```

```
ubuntu@ip-172-31-62-146:/etc/ansible$ ansible all -m ping
app | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3"
    },
    "changed": false,
    "ping": "pong"
}
ubuntu@ip-172-31-62-146:/etc/ansible$ ansible web -m ping
app | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3"
    },
    "changed": false,
    "ping": "pong"
}
```

command:

```
ubuntu@ip-172-31-62-146:/etc/ansible$ ansible web -m command -a "apt update" --become
app | CHANGED | rc=0 >>
Hit:1 http://eu-west-1.ec2.archive.ubuntu.com/ubuntu noble InRelease
Get:2 http://eu-west-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Hit:3 http://eu-west-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease
Hit:4 http://security.ubuntu.com/ubuntu noble-security InRelease
Fetched 126 kB in 0s (282 kB/s)
Reading package lists...
Building dependency tree...
Reading state information...
133 packages can be upgraded. Run 'apt list --upgradable' to see them.
```

shell:

```
ubuntu@ip-172-31-62-146:/etc/ansible$ ansible web -m shell -a "apt update && apt upgrade -y" --become
app | CHANGED | rc=0 >>
Hit:1 http://eu-west-1.ec2.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://eu-west-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:3 http://eu-west-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease
Hit:4 http://security.ubuntu.com/ubuntu noble-security InRelease
Reading package lists...
Building dependency tree...
Reading state information...
All packages are up to date.
Reading package lists...
Building dependency tree...
Reading state information...
Calculating upgrade...
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
```

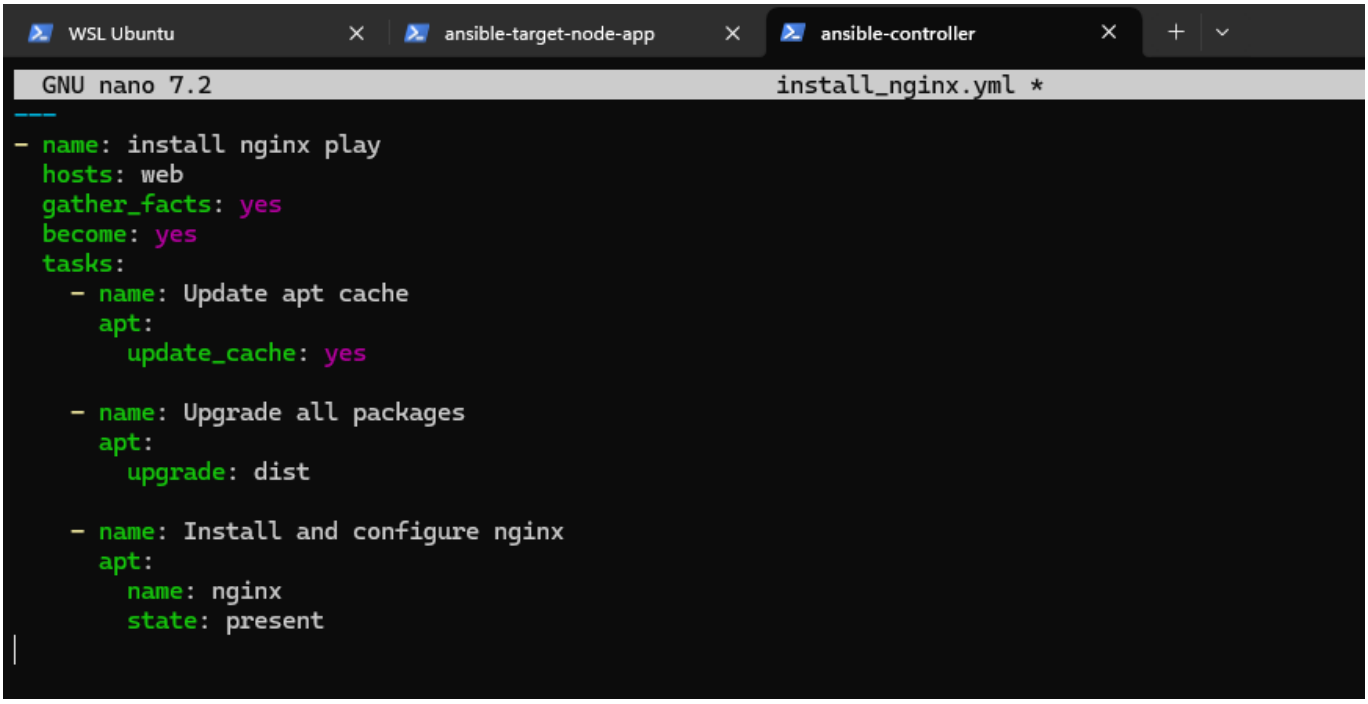
apt:

```
ubuntu@ip-172-31-62-146:/etc/ansible$ ansible web -m apt -a "update_cache=yes upgrade=dist" --become
app | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3"
    },
    "changed": false,
    "msg": "Reading package lists...\nBuilding dependency tree...\nReading state information...\nCalculating upgrade...\
n0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.\n",
    "stderr": "",
    "stderr_lines": [],
    "stdout": "Reading package lists...\nBuilding dependency tree...\nReading state information...\nCalculating upgrade.
..\n0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.\n",
    "stdout_lines": [
        "Reading package lists...",
        "Building dependency tree...",
        "Reading state information...",
        "Calculating upgrade...",
        "0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded."
    ]
}
```

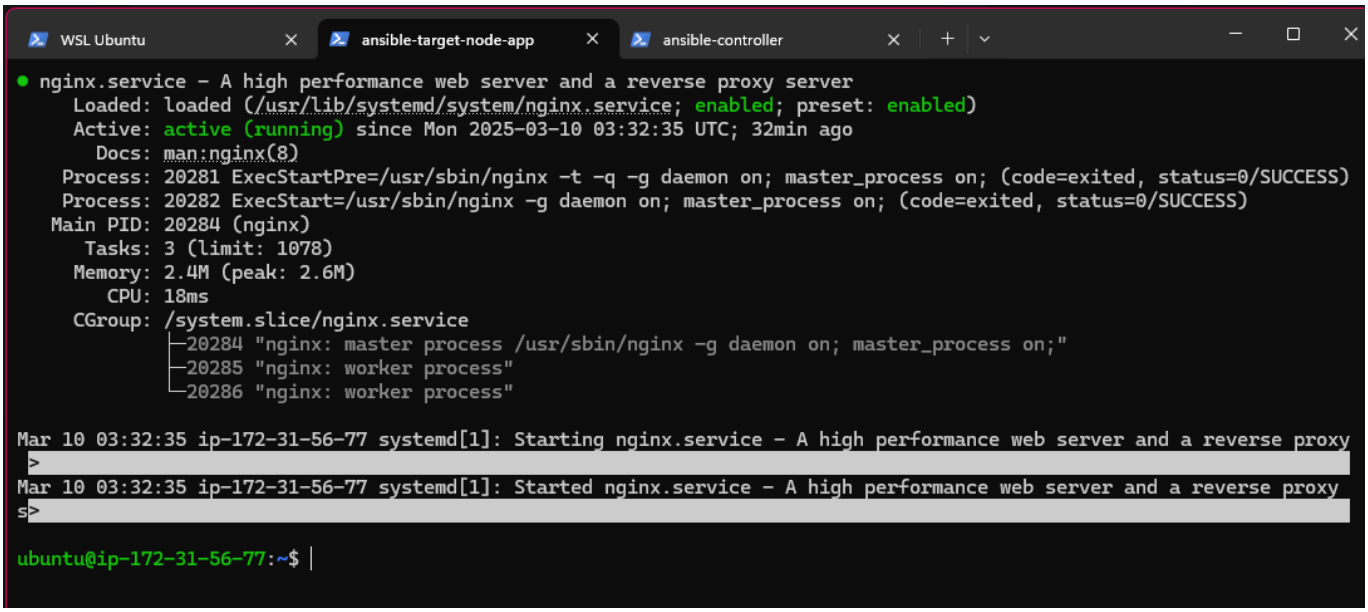
Copying SSH Key to the target node:

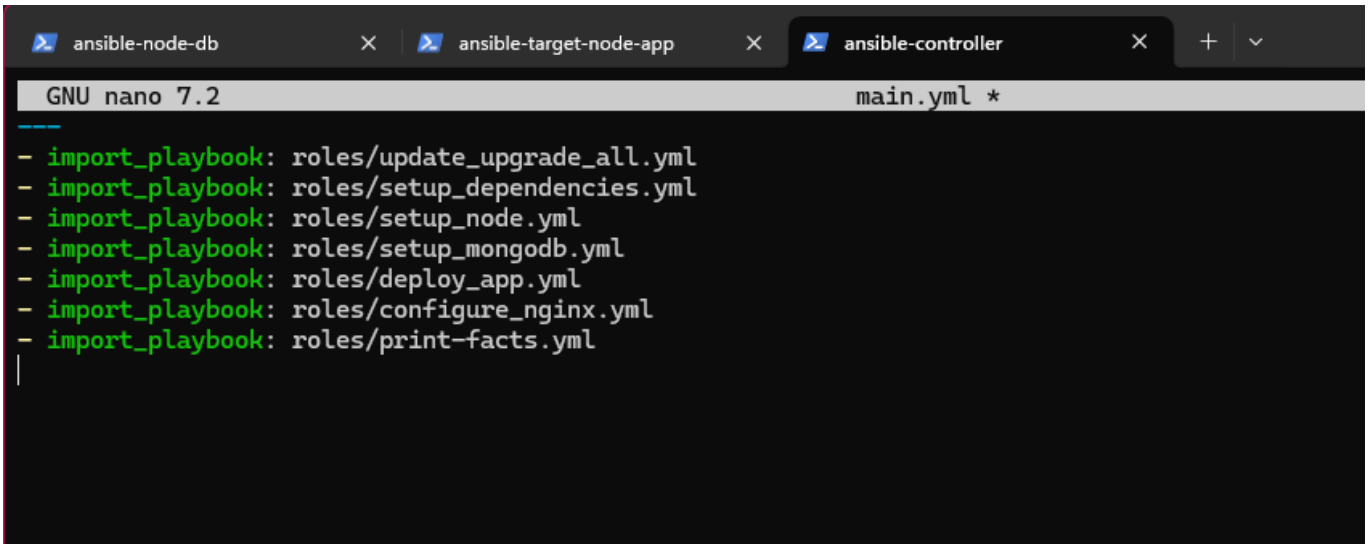
```
ubuntu@ip-172-31-62-146:/etc/ansible$ ansible web -m copy -a "src=~/.ssh/ameenah-aws-key.pem dest=/home/ubuntu/.ssh/amee
nah-aws-key.pem owner=ubuntu group=ubuntu mode=0400"
app | CHANGED => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3"
    },
    "changed": true,
    "checksum": "d925969b972c7506b9c6f56085452f715caa582f",
    "dest": "/home/ubuntu/.ssh/ameenah-aws-key.pem",
    "gid": 1000,
    "group": "ubuntu",
    "md5sum": "22893cce57bad747a3c5759e4e5e1034",
    "mode": "0400",
    "owner": "ubuntu",
    "size": 1679,
    "src": "/home/ubuntu/.ansible/tmp/ansible-tmp-1741577392.5390933-4141-129528703242842/source",
    "state": "file",
    "uid": 1000
}
```

Installing nginx:



Checking if nginx is running on the target node:




ansible-node-db
ansible-target-node-app
ansible-controller
GNU nano 7.2 main.yml *

- import_playbook: roles/update_upgrade_all.yml
- import_playbook: roles/setup_dependencies.yml
- import_playbook: roles/setup_node.yml
- import_playbook: roles/setup_mongodb.yml
- import_playbook: roles/deploy_app.yml
- import_playbook: roles/configure_nginx.yml
- import_playbook: roles/print-facts.yml