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Course/Section: CPE 232-CPE31S23	**Date Submitted:**
Instructor: Dr. Taylar	**Semester and SY:**

Activity 15: OpenStack Installation (Neutron, Horizon, Cinder)

1. Objectives

Create a workflow to install OpenStack using Ansible as your Infrastructure as Code (IaC).

2. Intended Learning Outcomes

1. Analyze the advantages and disadvantages of cloud services
2. Evaluate different Cloud deployment and service models
3. Create a workflow to install and configure OpenStack base services using Ansible as documentation and execution.

3. Resources

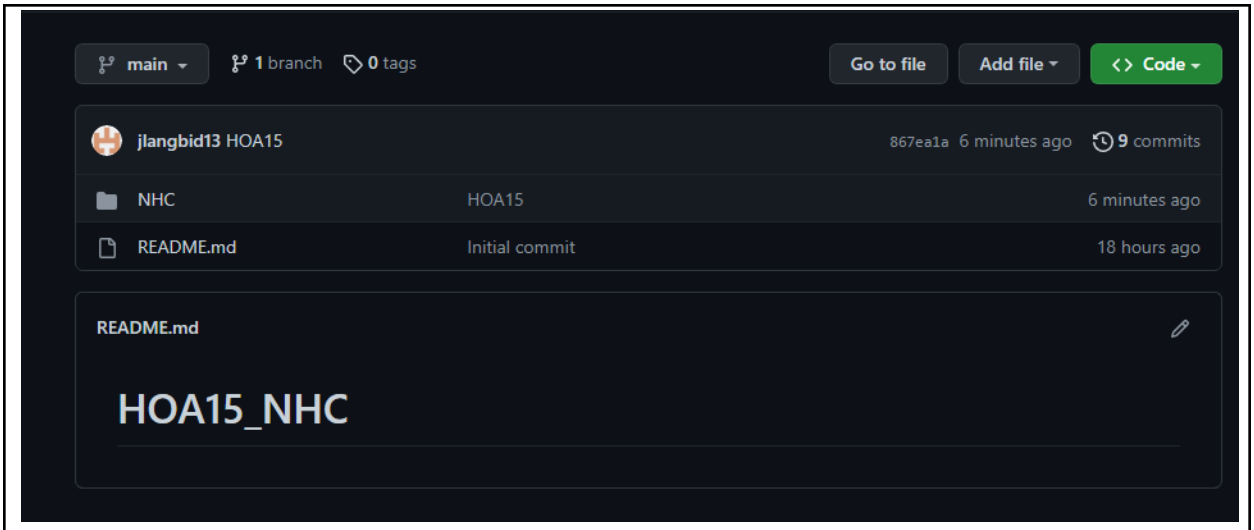
Oracle VirtualBox (Hypervisor)

1x Ubuntu VM or Centos VM

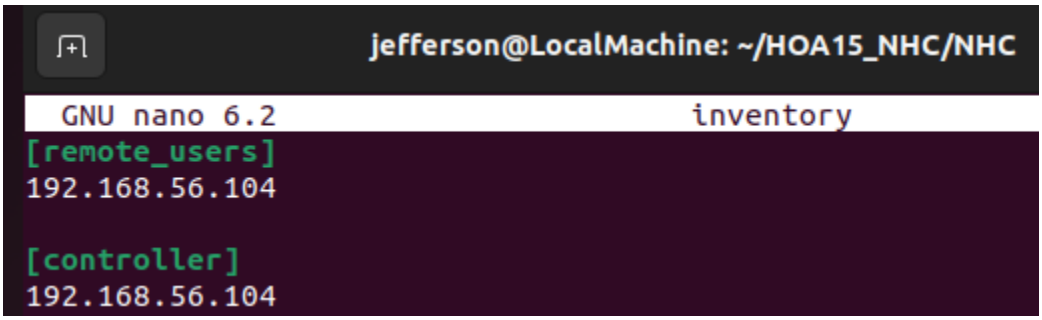
4. Tasks

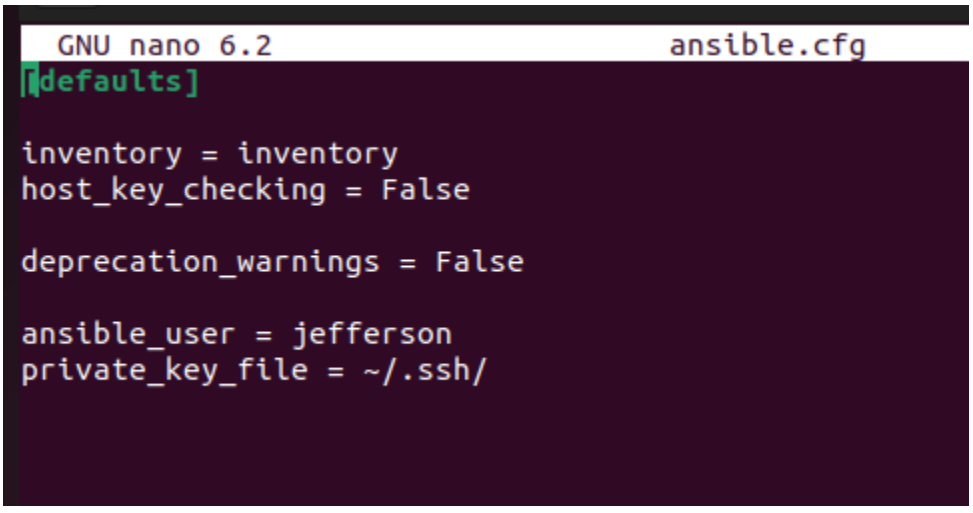
1. Create a new repository for this activity.
2. Create a playbook that converts the steps in the following items in https://docs.openstack.org/install-guide/
    a. Neutron
    b. Horizon
    c. Cinder
    d. Create different plays in installing per server type (controller, compute etc.) and identify it as a group in the Inventory file.
    e. Add, commit and push it to your GitHub repo.

5. Output (screenshots and explanations)

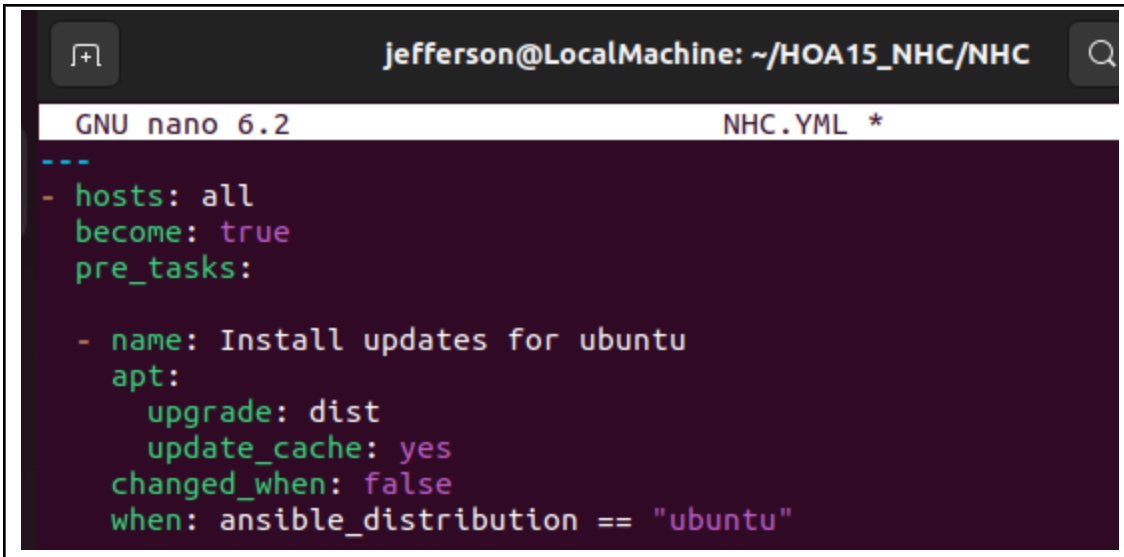


I created a new github repository for the activity

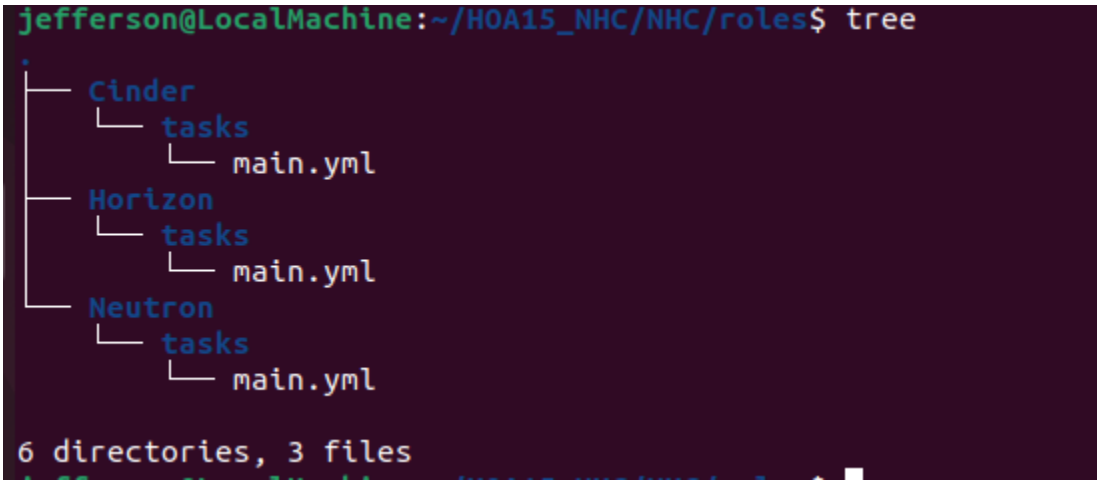




I created the ansible.cfg and inventory for the ansible.



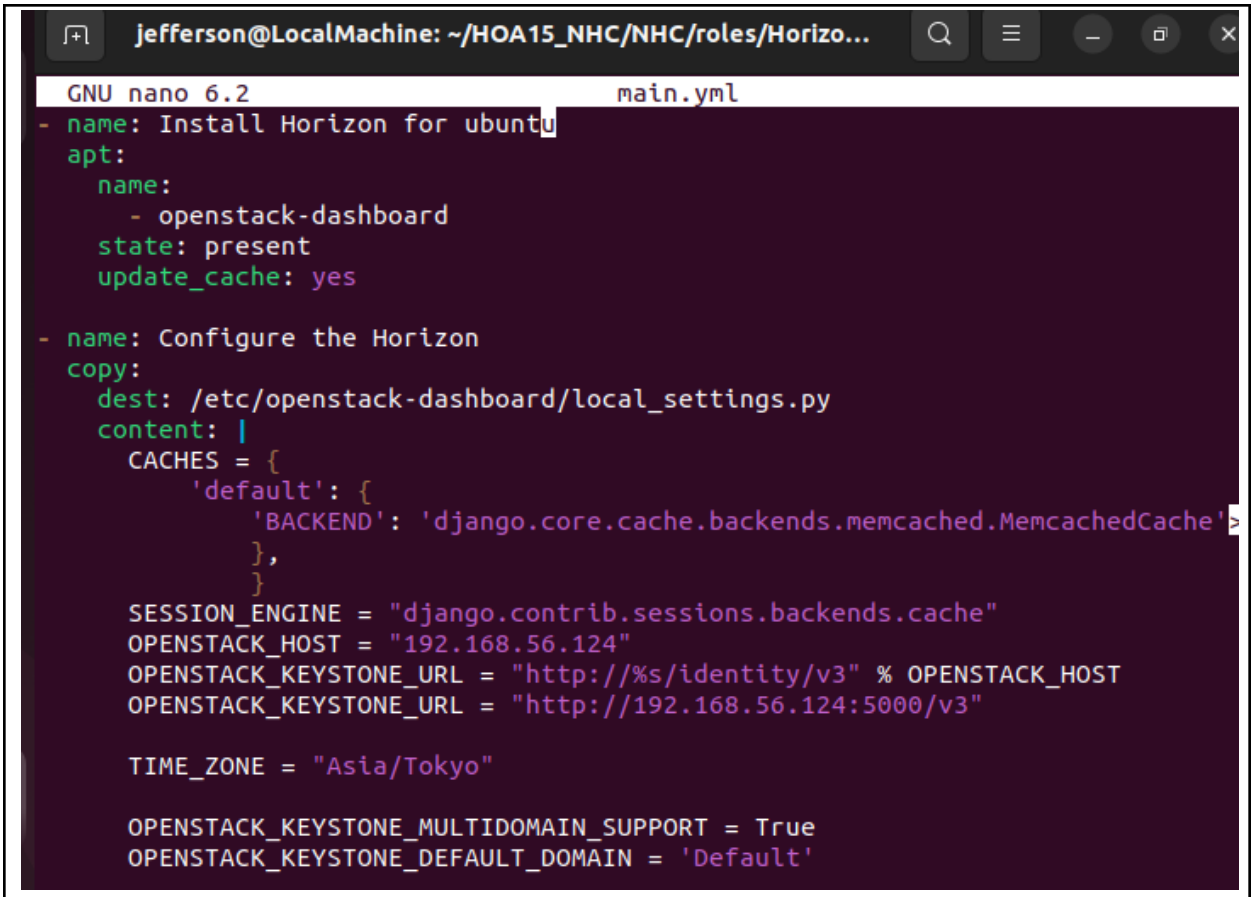
Create the yml for the ansible



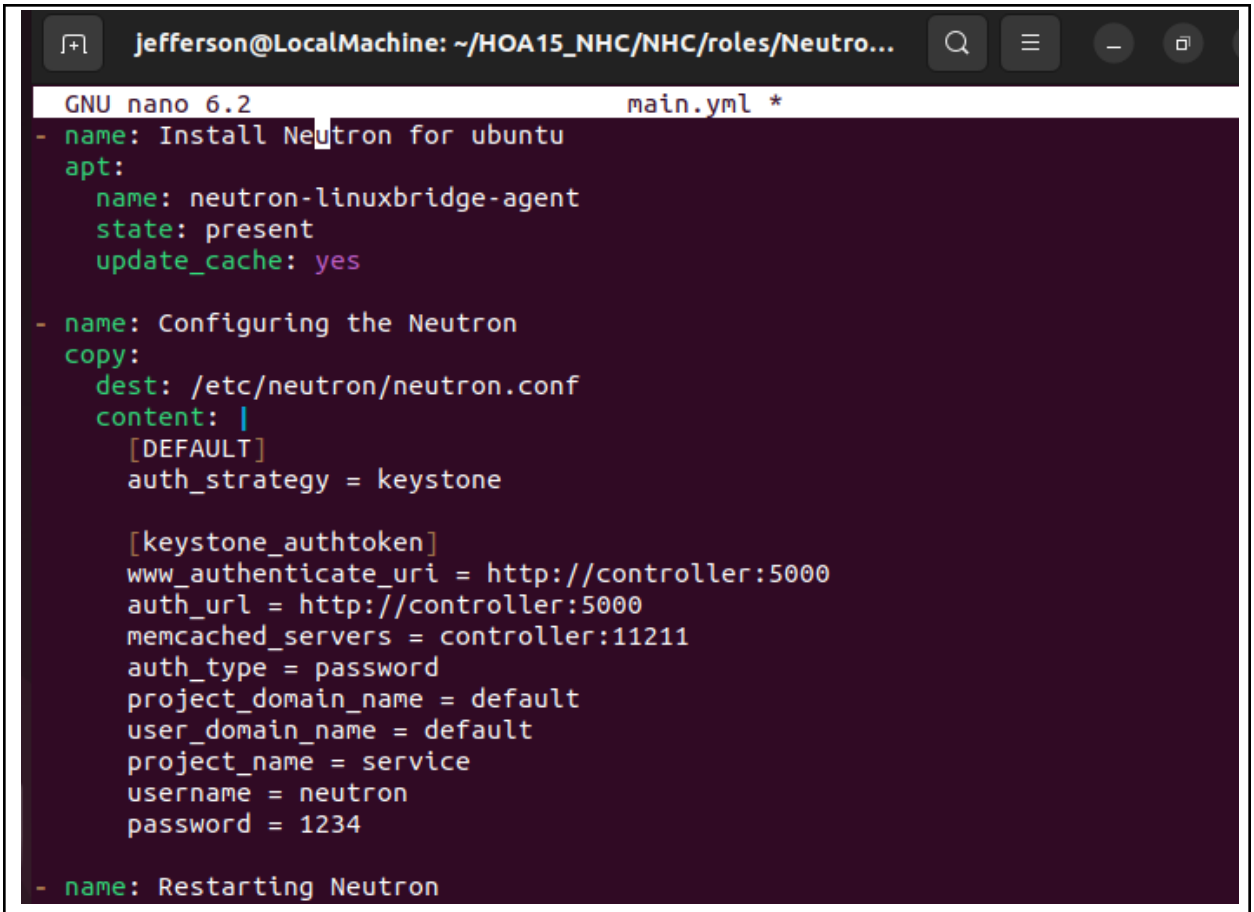
I created the roles for the installation of OpenStack

```
  GNU nano 6.2                          main.yml *
- name: Install Cinder for ubuntu
  apt:
    name:
      - cinder-api
      - cinder-backup
    state: present
    update_cache: yes

- name: Configure the Cinder
  copy:
    dest: /etc/cinder/cinder.conf
    content: |
      [DEFAULT]
      auth_strategy = keystone

      [keystone_authtoken]
      www_authenticate_uri = http://controller:5000
      auth_url = http://controller:5000
      memcached_servers = controller:11211
      auth_type = password
      project_domain_name = default
      user_domain_name = default
      project_name = service
      username = cinder
      password = 1234
```

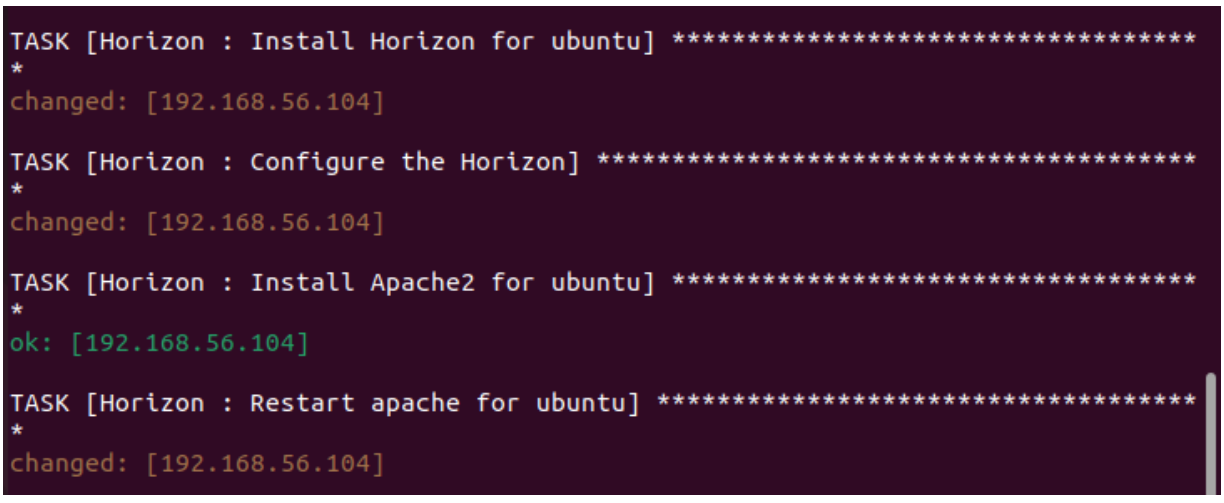
Main.yml of Cinder



main.yml of Horizon



main.yml of Neutron.



```
TASK [Cinder : Install Cinder for ubuntu] ***********************************
*
changed: [192.168.56.104]

TASK [Cinder : Configure the Cinder] ****************************************
*
changed: [192.168.56.104]

TASK [Cinder : Restart Cinder] **********************************************
*
changed: [192.168.56.104]
```

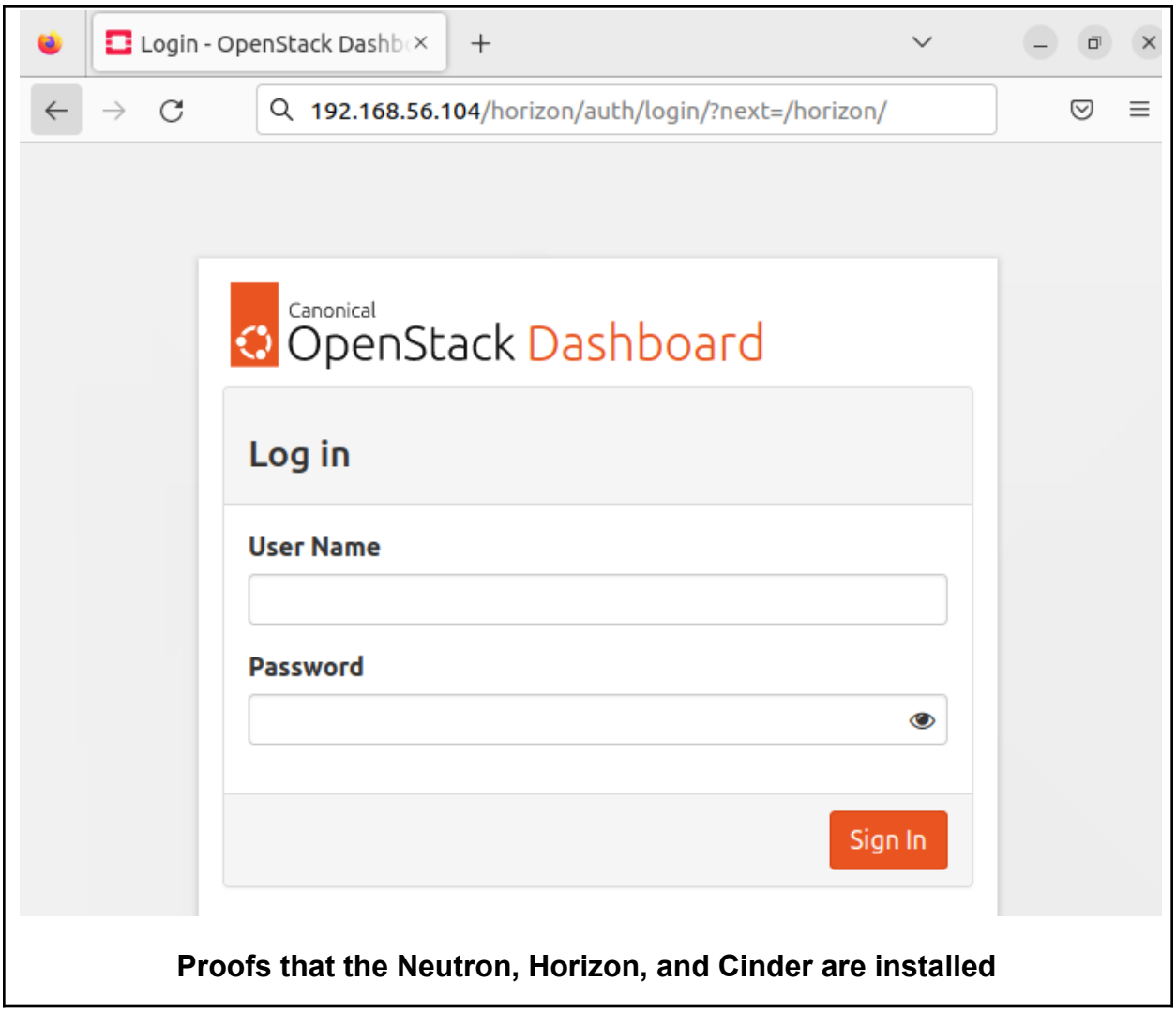
```
TASK [Neutron : Install Neutron for ubuntu] *********************************
*
changed: [192.168.56.104]

TASK [Neutron : Configuring the Neutron] ************************************
*
changed: [192.168.56.104]

TASK [Neutron : Restarting Neutron] *****************************************
*
changed: [192.168.56.104]
```

```
jefferson@LocalMachine: ~/HOA15_NHC/NHC
*
changed: [192.168.56.104]

TASK [Cinder : Configure the Cinder] ****************************************
*
changed: [192.168.56.104]

TASK [Cinder : Restart Cinder] **********************************************
*
changed: [192.168.56.104]

TASK [Neutron : Install Neutron for ubuntu] *********************************
*
changed: [192.168.56.104]

TASK [Neutron : Configuring the Neutron] ************************************
*
changed: [192.168.56.104]

TASK [Neutron : Restarting Neutron] *****************************************
*
changed: [192.168.56.104]

PLAY RECAP ******************************************************************
*
192.168.56.104             : ok=12   changed=9    unreachable=0    failed=0
skipped=1    rescued=0    ignored=0

jefferson@LocalMachine:~/HOA15_NHC/NHC$
```

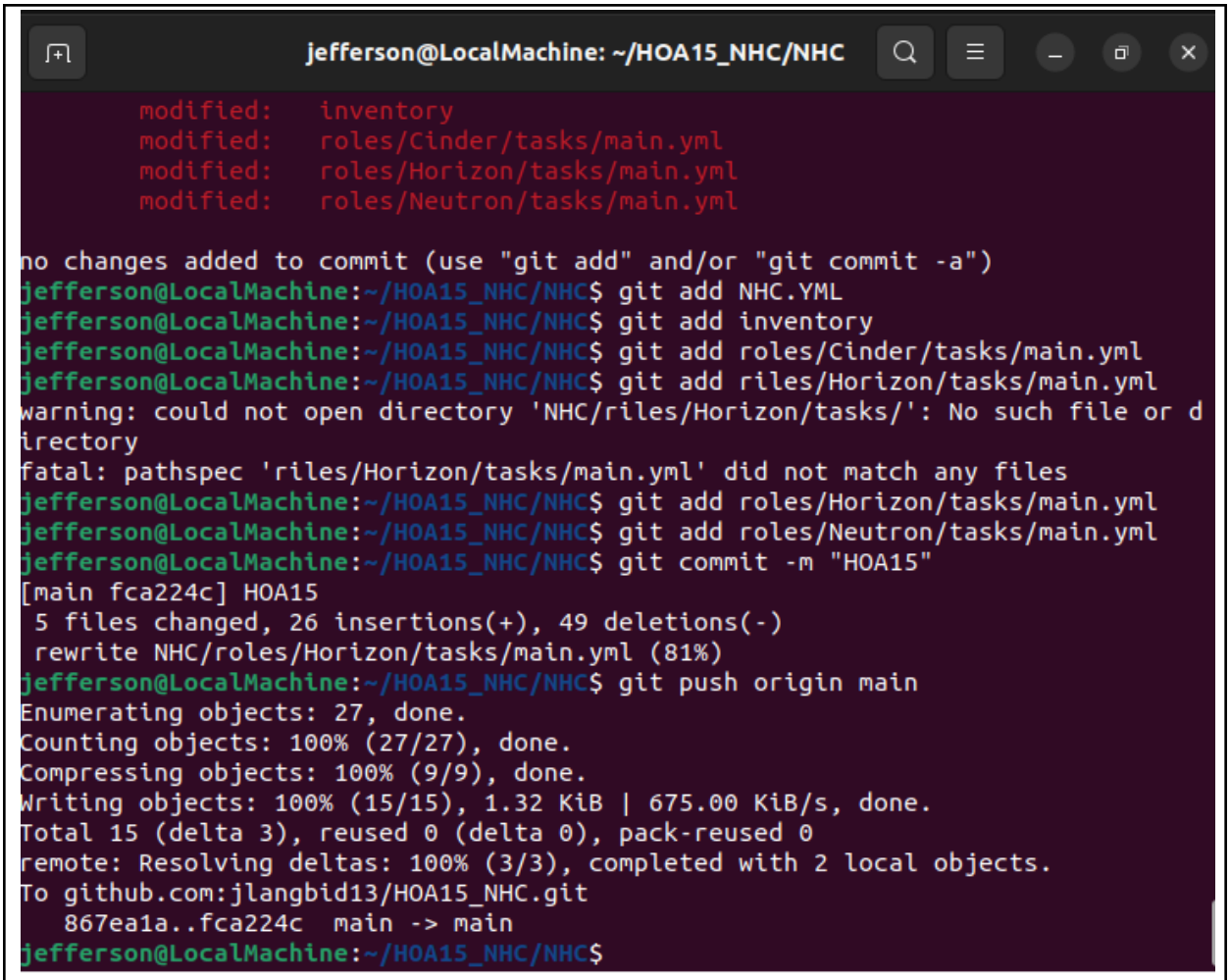
The code ran successfully and installed the Neutron, Cinder, and Horizon.

```
jefferson@Server2:~$ sudo systemctl status neutron-linuxbridge-agent
● neutron-linuxbridge-agent.service - Openstack Neutron Linux Bridge Agent
     Loaded: loaded (/lib/systemd/system/neutron-linuxbridge-agent.service; en>
     Active: active (running) since Sat 2022-12-10 17:37:45 PST; 4s ago
    Process: 10084 ExecStartPre=/bin/mkdir -p /var/lock/neutron /var/log/neutr>
    Process: 10085 ExecStartPre=/bin/chown neutron:neutron /var/lock/neutron />
    Process: 10086 ExecStartPre=/sbin/modprobe br_netfilter (code=exited, stat>
   Main PID: 10087 (neutron-linuxbr)
      Tasks: 1 (limit: 1075)
     Memory: 102.2M
        CPU: 1.547s
     CGroup: /system.slice/neutron-linuxbridge-agent.service
             └─10087 /usr/bin/python3 /usr/bin/neutron-linuxbridge-agent --con>

Dec 10 17:37:45 Server2 systemd[1]: neutron-linuxbridge-agent.service: Schedul>
Dec 10 17:37:45 Server2 systemd[1]: Stopped Openstack Neutron Linux Bridge Age>
Dec 10 17:37:45 Server2 systemd[1]: neutron-linuxbridge-agent.service: Consume>
```

```
jefferson@Server2:~$ sudo systemctl status cinder-backup
● cinder-backup.service - OpenStack Cinder Backup
     Loaded: loaded (/lib/systemd/system/cinder-backup.service; enabled; vendo
     Active: active (running) since Sat 2022-12-10 17:38:29 PST; 125ms ago
       Docs: man:cinder-backup(1)
   Main PID: 10277 (cinder-backup)
      Tasks: 2 (limit: 1075)
     Memory: 300.0K
        CPU: 17ms
     CGroup: /system.slice/cinder-backup.service
             ├─10277 /bin/sh /etc/init.d/cinder-backup systemd-start
             └─10279 whoami

Dec 10 17:38:29 Server2 systemd[1]: cinder-backup.service: Scheduled restart j
Dec 10 17:38:29 Server2 systemd[1]: Stopped OpenStack Cinder Backup.
Dec 10 17:38:29 Server2 systemd[1]: cinder-backup.service: Consumed 1.679s CPU
Dec 10 17:38:29 Server2 systemd[1]: Started OpenStack Cinder Backup.
lines 1-16/16 (END)
```



Proofs that the Neutron, Horizon, and Cinder are installed



I added, committed, and pushed it to my github repository.

[jlangbid13/HOA15_NHC (github.com)]

Reflections:

Answer the following:

1. Describe Neutron, Horizon and Cinder services

   Neutron- A network service responsible for creating network connectivity and network services. It is capable of connecting with vendor network hardware through plug-ins.

   Horizon- A dashboard that creates a GUI for users to control the OpenStack cloud. This is an extensible framework to which vendors can add features. Horizon uses the same APIs that are exposed to users.

   Cinder- A block storage service responsible for creating and managing external storage. It is capable of connecting to vendor storage hardware through plug-ins.

Conclusions:

All in all, in this activity, we are tasked to install the prerequisites of openstack which is Neutron, Horizon, and Cinder using ansible to another server. First, I created a github repository and cloned it to the local machine and also created the ansible.cfg and then the inventory for the ansible. After that I created the roles for the computer and controller. I created the yml for the installation of the prerequisites which are Neutron, Horizon, and Cinder. I created the role directory to store the main.yml of each role and after inputting the codes the ansible ran successfully. I added, committed, and pushed the files to my github repository