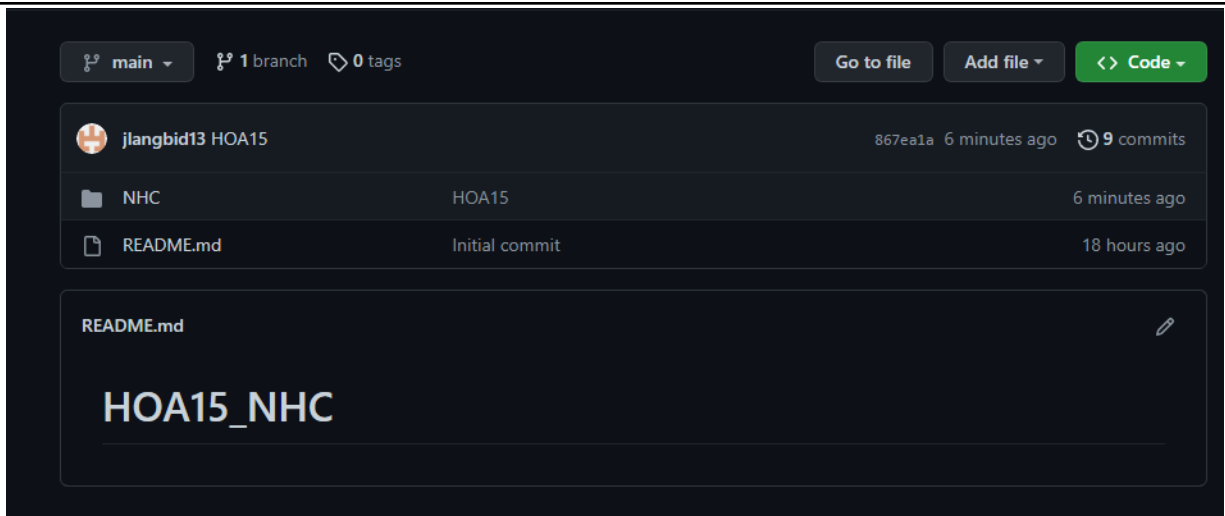


<b>Name: Jefferson Langbid</b>	<b>Date Performed:</b>
<b>Course/Section: CPE 232-CPE31S23</b>	<b>Date Submitted:</b>
<b>Instructor: Dr. Taylar</b>	<b>Semester and SY:</b>
<b>Activity 15: OpenStack Installation (Neutron, Horizon, Cinder)</b>	
<b>1. Objectives</b>	
Create a workflow to install OpenStack using Ansible as your Infrastructure as Code (IaC).	
<b>2. Intended Learning Outcomes</b>	
<ol style="list-style-type: none"> <li>1. Analyze the advantages and disadvantages of cloud services</li> <li>2. Evaluate different Cloud deployment and service models</li> <li>3. Create a workflow to install and configure OpenStack base services using Ansible as documentation and execution.</li> </ol>	
<b>3. Resources</b>	
Oracle VirtualBox (Hypervisor) 1x Ubuntu VM or Centos VM	
<b>4. Tasks</b>	
<ol style="list-style-type: none"> <li>1. Create a new repository for this activity.</li> <li>2. Create a playbook that converts the steps in the following items in <a href="https://docs.openstack.org/install-guide/">https://docs.openstack.org/install-guide/</a> <ol style="list-style-type: none"> <li>a. Neutron</li> <li>b. Horizon</li> <li>c. Cinder</li> <li>d. Create different plays in installing per server type (controller, compute etc.) and identify it as a group in the Inventory file.</li> <li>e. Add, commit and push it to your GitHub repo.</li> </ol> </li> </ol>	
<b>5. Output</b> (screenshots and explanations)	



I created a new github repository for the activity

```
jefferson@LocalMachine: ~/HOA15_NHC/NHC
GNU nano 6.2 inventory
[remote_users]
192.168.56.104

[controller]
192.168.56.104
```

```
GNU nano 6.2 ansible.cfg
[defaults]

inventory = inventory
host_key_checking = False

deprecation_warnings = False

ansible_user = jefferson
private_key_file = ~/.ssh/
```

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

```
jefferson@LocalMachine: ~/HOA15_NHC/NHC
GNU nano 6.2 NHC.YML *
---
- hosts: all
  become: true
  pre_tasks:

  - name: Install updates for ubuntu
    apt:
      upgrade: dist
      update_cache: yes
      changed_when: false
      when: ansible_distribution == "ubuntu"
```

Create the yml for the ansible

```
jefferson@LocalMachine:~/HOA15_NHC/NHC/roles$ tree
.
├── Cinder
│   └── tasks
│       └── main.yml
├── Horizon
│   └── tasks
│       └── main.yml
└── Neutron
    └── tasks
        └── main.yml

6 directories, 3 files
```

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

```
jefferson@LocalMachine: ~/HOA15_NHC/NHC/roles/Horizo...
GNU nano 6.2 main.yml
- name: Install Horizon for ubuntu
  apt:
    name:
      - openstack-dashboard
    state: present
    update_cache: yes

- name: Configure the Horizon
  copy:
    dest: /etc/openstack-dashboard/local_settings.py
    content: |
      CACHES = {
        'default': {
          'BACKEND': 'django.core.cache.backends.memcached.MemcachedCache'
        },
      }

      SESSION_ENGINE = "django.contrib.sessions.backends.cache"
      OPENSTACK_HOST = "192.168.56.124"
      OPENSTACK_KEYSTONE_URL = "http://%s/identity/v3" % OPENSTACK_HOST
      OPENSTACK_KEYSTONE_URL = "http://192.168.56.124:5000/v3"

      TIME_ZONE = "Asia/Tokyo"

      OPENSTACK_KEYSTONE_MULTIDOMAIN_SUPPORT = True
      OPENSTACK_KEYSTONE_DEFAULT_DOMAIN = 'Default'
```

main.yml of Horizon

```
jefferson@LocalMachine: ~/HOA15_NHC/NHC/roles/Neutro...
GNU nano 6.2 main.yml *
- name: Install Neutron for ubuntu
  apt:
    name: neutron-linuxbridge-agent
    state: present
    update_cache: yes

- name: Configuring the Neutron
  copy:
    dest: /etc/neutron/neutron.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 = neutron
      password = 1234

- name: Restarting Neutron
```

main.yml of Neutron.

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

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

TASK [Horizon : Install Apache2 for ubuntu] *****
*
ok: [192.168.56.104]

TASK [Horizon : Restart apache for ubuntu] *****
*
changed: [192.168.56.104]
```

```
changed: [192.168.56.104]

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.

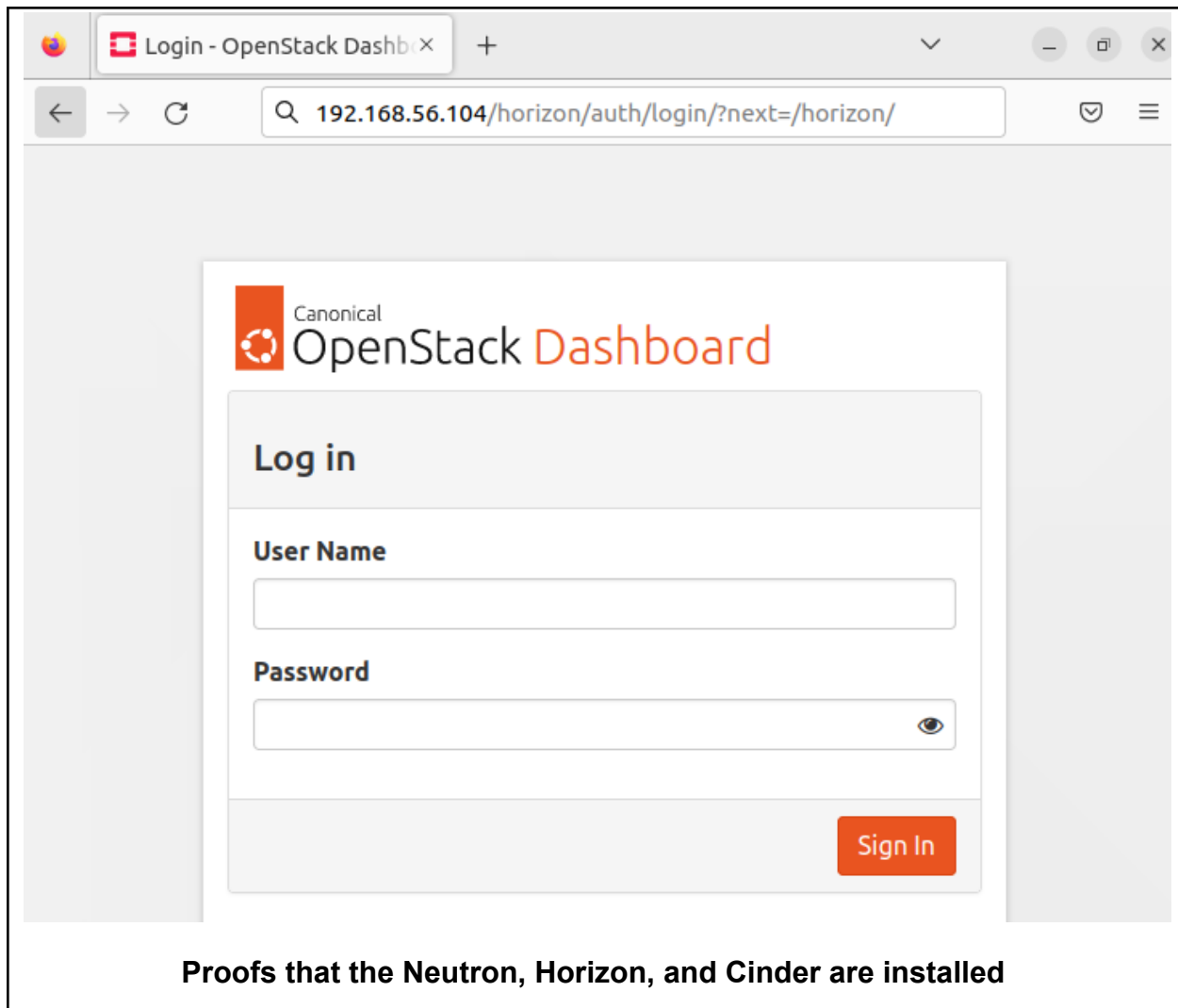
```
jefferson@Server2:~$ sudo systemctl status neutron-linuxbridge-agent
● neutron-linuxbridge-agent.service - Openstack Neutron Linux Bridge Agent
   Loaded: loaded (/lib/systemd/system/neutron-linuxbridge-agent.service; en>
   Active: active (running) since Sat 2022-12-10 17:37:45 PST; 4s ago
     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: Consum>
```

```
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)
```





```
jefferson@LocalMachine: ~/HOA15_NHC/NHC
modified: inventory
modified: roles/Cinder/tasks/main.yml
modified: roles/Horizon/tasks/main.yml
modified: roles/Neutron/tasks/main.yml

no changes added to commit (use "git add" and/or "git commit -a")
jefferson@LocalMachine:~/HOA15_NHC/NHC$ git add NHC.YML
jefferson@LocalMachine:~/HOA15_NHC/NHC$ git add inventory
jefferson@LocalMachine:~/HOA15_NHC/NHC$ git add roles/Cinder/tasks/main.yml
jefferson@LocalMachine:~/HOA15_NHC/NHC$ git add roles/Horizon/tasks/main.yml
warning: could not open directory 'NHC/roles/Horizon/tasks/': No such file or d
irectory
fatal: pathspec 'roles/Horizon/tasks/main.yml' did not match any files
jefferson@LocalMachine:~/HOA15_NHC/NHC$ git add roles/Horizon/tasks/main.yml
jefferson@LocalMachine:~/HOA15_NHC/NHC$ git add roles/Neutron/tasks/main.yml
jefferson@LocalMachine:~/HOA15_NHC/NHC$ git commit -m "HOA15"
[main fca224c] HOA15
 5 files changed, 26 insertions(+), 49 deletions(-)
 rewrite NHC/roles/Horizon/tasks/main.yml (81%)
jefferson@LocalMachine:~/HOA15_NHC/NHC$ git push origin main
Enumerating objects: 27, done.
Counting objects: 100% (27/27), done.
Compressing objects: 100% (9/9), done.
Writing objects: 100% (15/15), 1.32 KiB | 675.00 KiB/s, done.
Total 15 (delta 3), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (3/3), completed with 2 local objects.
To github.com:jangbid13/HOA15_NHC.git
 867ea1a..fca224c  main -> main
jefferson@LocalMachine:~/HOA15_NHC/NHC$
```

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

[jangbid13/HOA15\\_NHC \(github.com\)](https://github.com/jangbid13/HOA15_NHC)

### 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