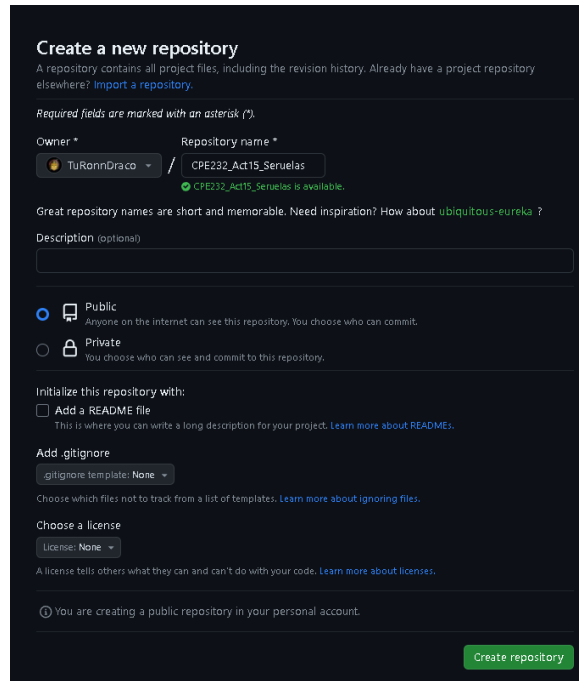| Name: Seruelas, Ronn Kristoper H.	Date Performed: 11-21-2023
Course/Section: CPE232-CPE31S4	Date Submitted: 12-09-2023
Instructor: Dr. Jonathan V. Taylar	Semester and SY: 1st Sem. 2023-2024

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)

1. Setup Repository in Github and Workstation.

1.1 - Creation of Repository

1.2 - Successful creation of Repository

1.3 - Inventory Configuration

2. Setup installation for Neutron, Horizon, and Cinder.


```
GNU nano 6.2                roles/Neutron/tasks/main.yml *

    - name: Install Neutron packages
      apt:
        name:
          - neutron-server
          - neutron-plugin-ml2
          - neutron-linuxbridge-agent
          - neutron-l3-agent
          - neutron-dhcp-agent
          - neutron-metadata-agent
        state: present

    - name: Configure Neutron
      template:
        src: neutron.conf.j2
        dest: /etc/neutron/neutron.conf

    - name: Configure ML2 plugin
      template:
        src: ml2_conf.ini.j2
        dest: /etc/neutron/plugins/ml2/ml2_conf.ini

    - name: Restart Neutron
      service:
        name: neutron-server
        state: restarted
```
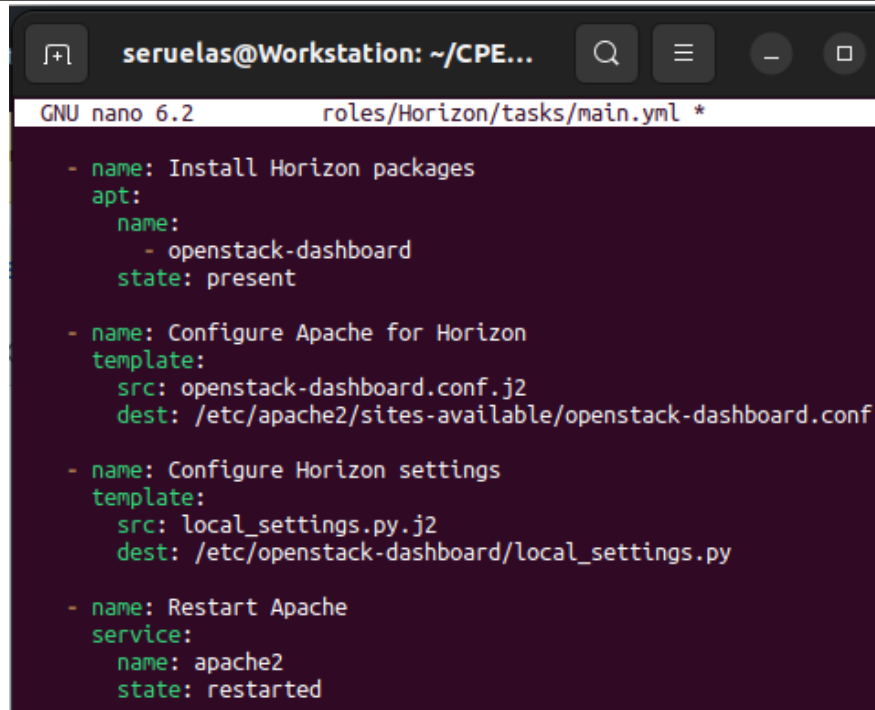
2.1 - Installation for Neutron

```
GNU nano 6.2              roles/Horizon/tasks/main.yml *

  - name: Install Horizon packages
    apt:
      name:
        - openstack-dashboard
      state: present

  - name: Configure Apache for Horizon
    template:
      src: openstack-dashboard.conf.j2
      dest: /etc/apache2/sites-available/openstack-dashboard.conf

  - name: Configure Horizon settings
    template:
      src: local_settings.py.j2
      dest: /etc/openstack-dashboard/local_settings.py

  - name: Restart Apache
    service:
      name: apache2
      state: restarted
```
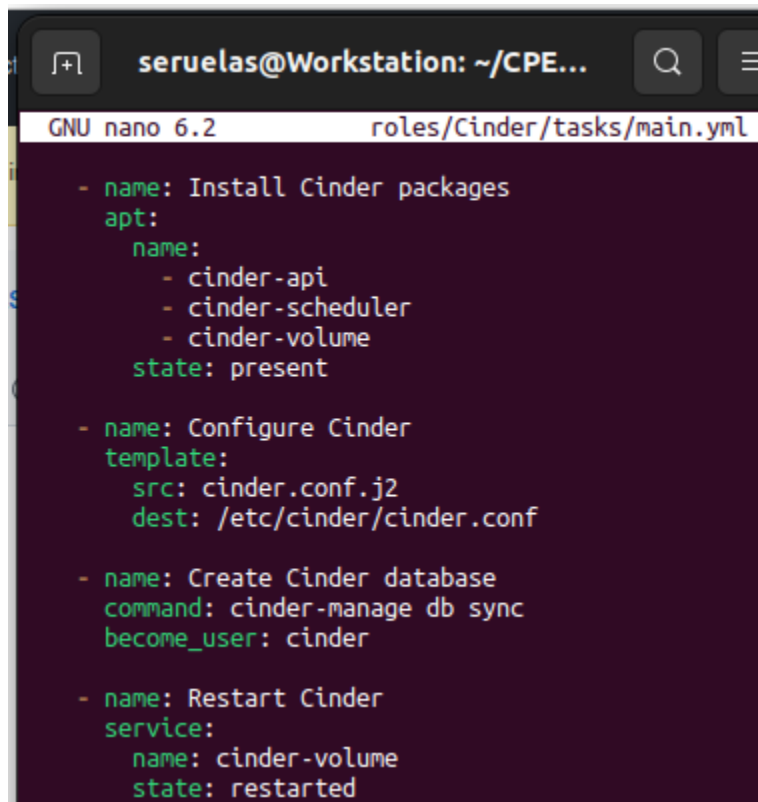
2.2 - Installation for Horizon

```
GNU nano 6.2              roles/Cinder/tasks/main.yml

  - name: Install Cinder packages
    apt:
      name:
        - cinder-api
        - cinder-scheduler
        - cinder-volume
      state: present

  - name: Configure Cinder
    template:
      src: cinder.conf.j2
      dest: /etc/cinder/cinder.conf

  - name: Create Cinder database
    command: cinder-manage db sync
    become_user: cinder

  - name: Restart Cinder
    service:
      name: cinder-volume
      state: restarted
```

2.3 - Installation for Cinder

2.4 - File Hierarchy of Roles

3. Verify installations of Neutron, Horizon, and Cinder.

```
seruelas@Workstation:~/CPE232_Act15_Seruelas$ ansible-playbook --ask-bec
ome-pass install_openstack_nhc.yaml
BECOME password:

PLAY [all] *******************************************************
********

TASK [Gathering Facts] *******************************************
********
ok: [Server1]

TASK [Install Updates (Ubuntu)] **********************************
********
ok: [Server1]

PLAY [Controller] ************************************************
********

TASK [Gathering Facts] *******************************************
********
ok: [Server1]

TASK [Neutron : Install Neutron packages] ************************
********
changed: [Server1]

TASK [Neutron : Configure Neutron] *******************************
********
changed: [Server1]

TASK [Neutron : Configure ML2 plugin] ****************************
********
changed: [Server1]

TASK [Neutron : Restart Neutron] *********************************
********
changed: [Server1]
```

```
seruelas@Workstation: ~/CPE...          Q   ☰   —   □   ✕

TASK [Gathering Facts] **********************************************
********
ok: [Server1]

TASK [Neutron : Install Neutron packages] **************************
********
changed: [Server1]

TASK [Neutron : Configure Neutron] ********************************
********
changed: [Server1]

TASK [Neutron : Configure ML2 plugin] ****************************
********
changed: [Server1]

TASK [Neutron : Restart Neutron] **********************************
********
changed: [Server1]

TASK [Horizon : Install Horizon packages] **************************
********
changed: [Server1]

TASK [Horizon : Configure Apache for Horizon] **********************
********
changed: [Server1]

TASK [Horizon : Configure Horizon settings] ************************
********
changed: [Server1]

TASK [Horizon : Restart Apache] ***********************************
********
changed: [Server1]
```

Neutron

4. Push and Save all Changes to GitHub Repository.
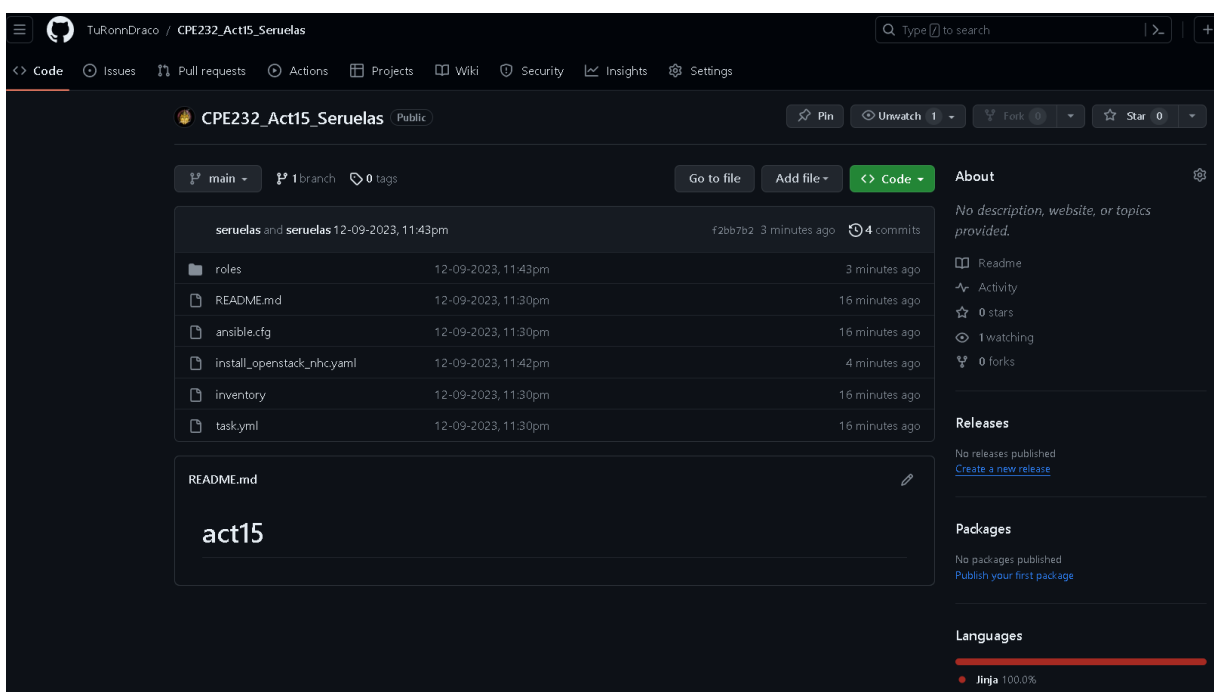
https://github.com/TuRonnDraco/CPE232_Act15_Seruelas

Reflections:

Answer the following:

1. Describe Neutron, Horizon and Cinder services
   - Neutron's purpose is to provide the administrator a networking service that allows it to manage and to access other interfaces using a network. Horizon's

purpose is to provide the administrator a web based user interface that allows the administrator to access and to interact with the OpenStack services. Cinder's purpose is to provide the administrators a block storage service to hosts and containers.

Conclusions:

In this activity, we were able to educate ourselves on the importance of Neutron, Horizon, and Cinder in OpenStack services and what their main function is. We were able to learn that in summary, OpenStack is a set of services and packages that is used to assist and give administrators an open interface that allows them to monitor, manage and use each services using networks and hashes.