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Instructor:	Semester and SY: 1st Semester

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)

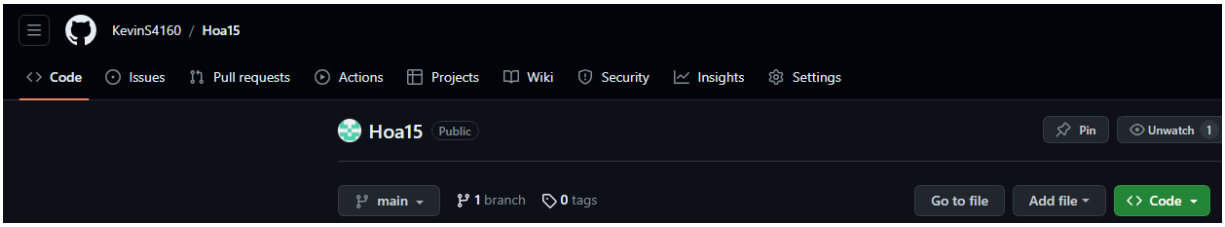
1x Ubuntu VM or Centos VM

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)

Step 1: First we create a repository



Step 2: Clone the created repository

```
sumaya@Workstation:~/Hoa15$
```

“Already cloned just forgot to screenshot the procedure”

Step 3: Creating a file inside the directory (ansible.cfg).

```
                                    sumaya@Workstation: ~/Hoa15
File  Edit  View  Search  Terminal  Help
  GNU nano 2.9.3                                ansible.cfg

[defaults]

inventory = inventory
host_key_checking = False

deprecation_warnings = False

remote_use = kevin
private_key_file = ~/.ssh
```

Step 4: Put the ip address into the inventory file.

```
  GNU nano 2.9.3                                inventory

[horizon]
192.168.56.105

[neutron]
192.168.56.105

[cinder]
192.168.56.105
```

Step 5: Necessary file for ansible.cfg

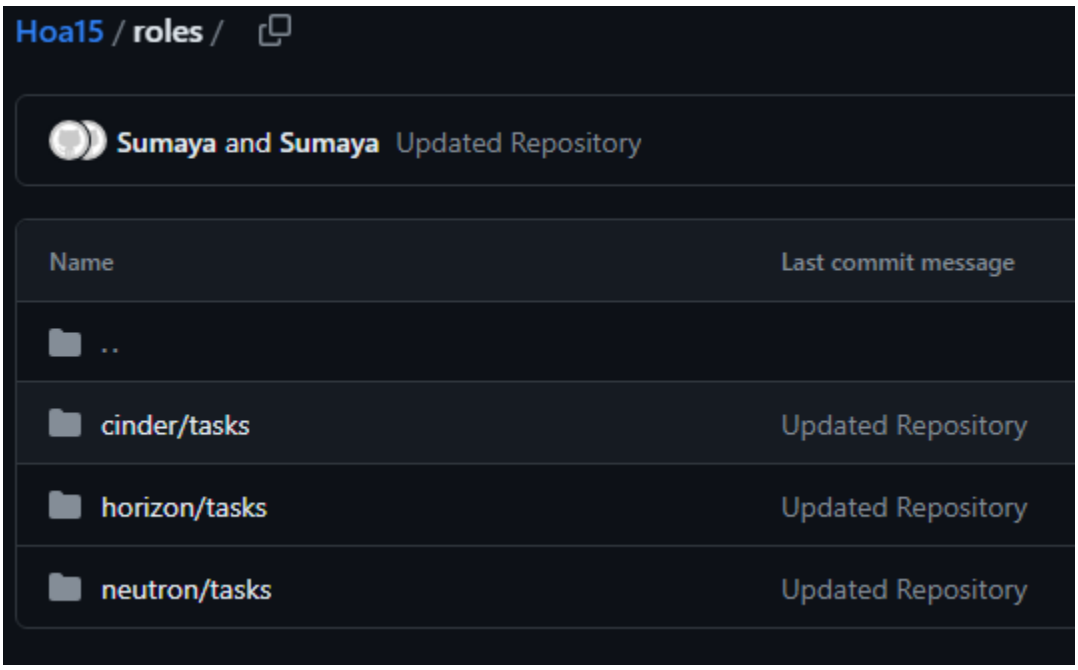
Hoa15 / ansible.cfg

Sumaya and Sumaya Updated Repository

Code | Blame | 9 lines (6 loc) · 136 Bytes | Code 55% faster with GitHub Copilot

```
1   [defaults]
2
3   inventory = inventory
4   host_key_checking = False
5
6   deprecation_warnings = False
7
8   remote_use = kevin
9   private_key_file = ~/.ssh
```

Step 6: Creating a playbook playbook that converts the steps in the following items



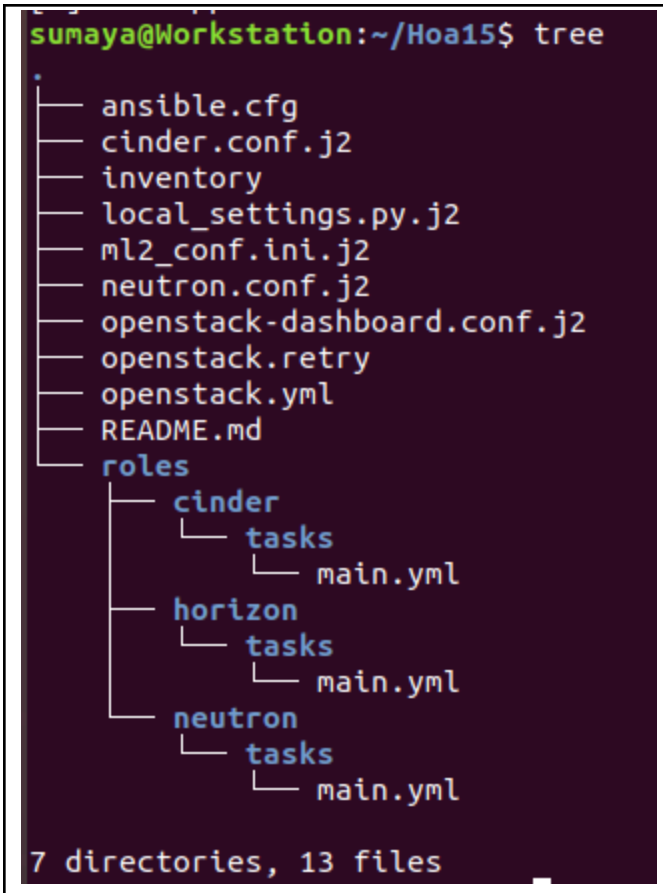
Hoa15 / openstack.yml

Sumaya and Sumaya Updated Repository

Code | Blame | 17 lines (13 loc) · 193 Bytes

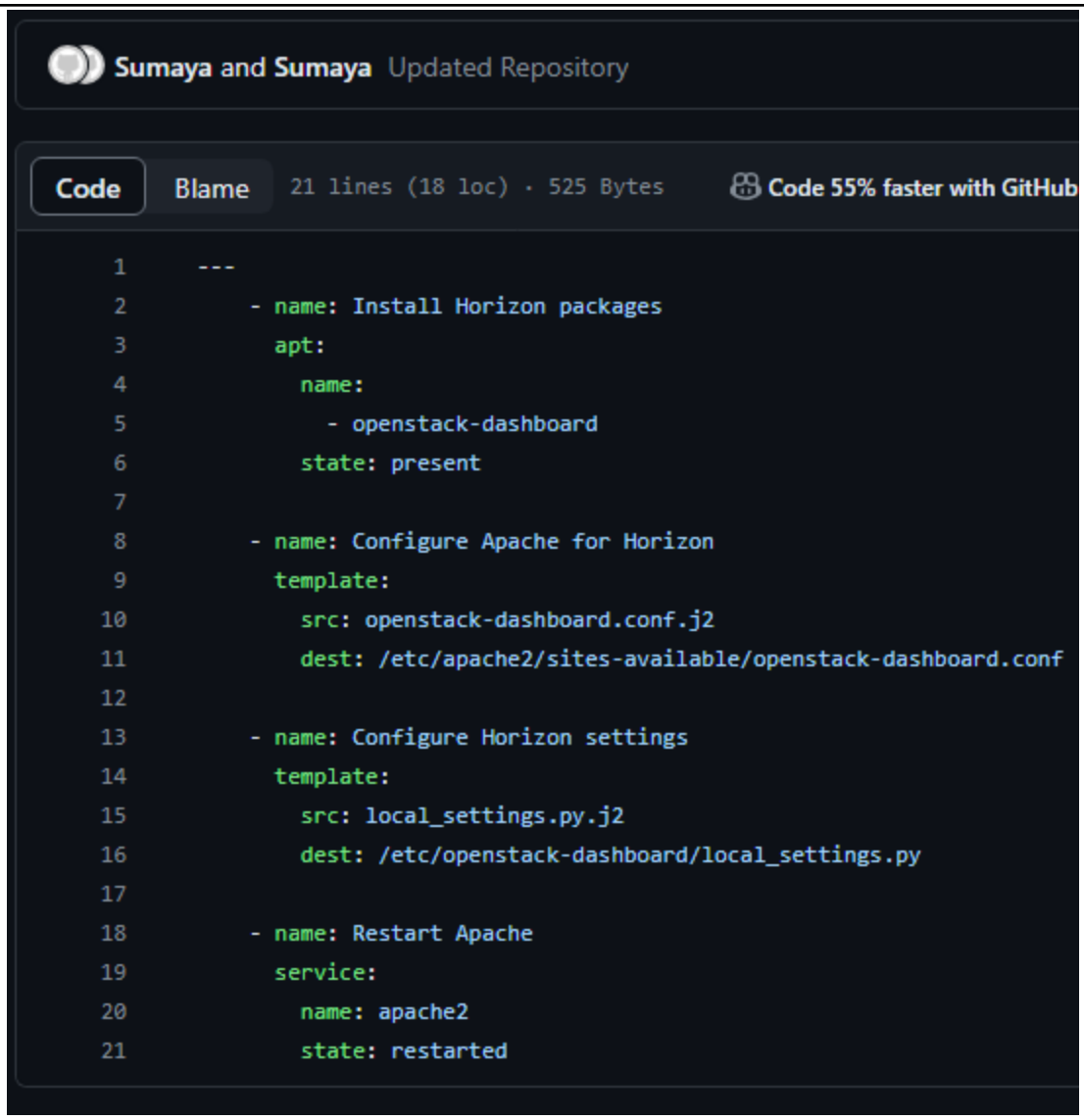
```
1   ---
2
3
4   - hosts: neutron
5     become: true
6     roles:
7       - role: neutron
8
9   - hosts: horizon
10    become: true
11    roles:
12      - role: horizon
13
14  - hosts: cinder
15    become: true
16    roles:
17      - role: cinder
```

Step 7: Create a file inside of the main directory (HOA15)



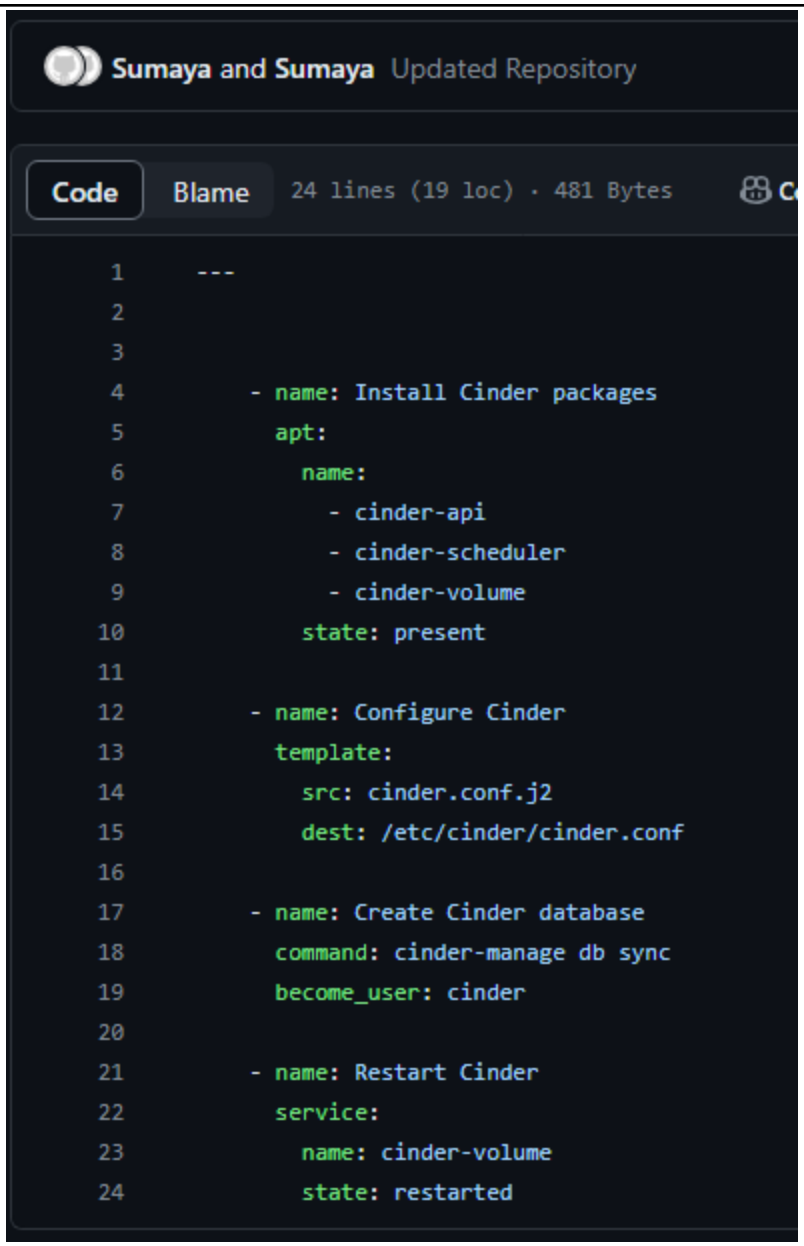
Step 8: Scripts for other playbooks.

Horizon


Sumaya and Sumaya Updated Repository
Code
Blame
21 lines (18 loc) · 525 Bytes
Code 55% faster with GitHub

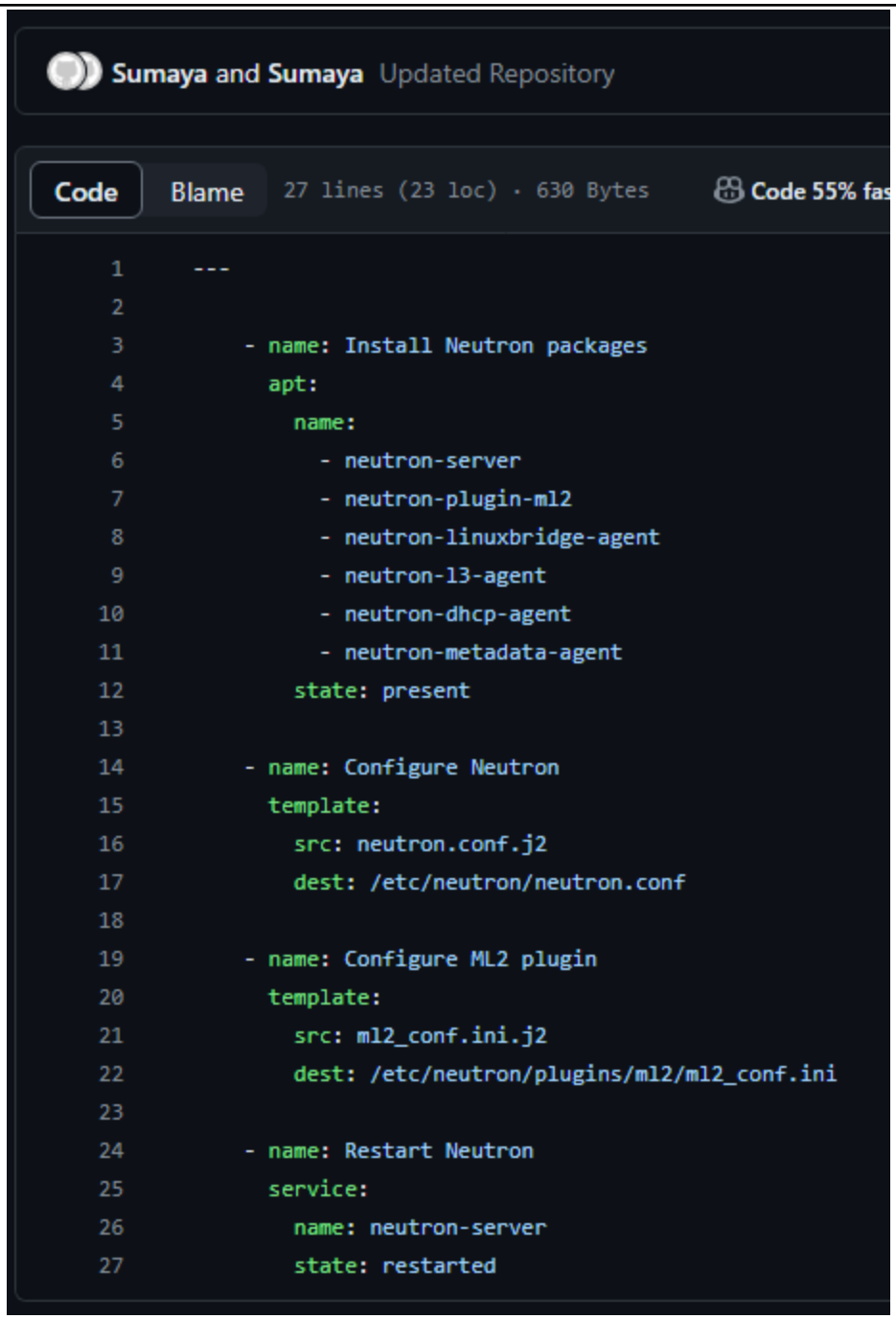
- name: Install Horizon packages
apt:
name:
- openstack-dashboard
state: present
- name: Configure Apache for Horizon
template:
src: openstack-dashboard.conf.j2
dest: /etc/apache2/sites-available/openstack-dashboard.conf
- name: Configure Horizon settings
template:
src: local_settings.py.j2
dest: /etc/openstack-dashboard/local_settings.py
- name: Restart Apache
service:
name: apache2
state: restarted

Cinder


Sumaya and Sumaya Updated Repository
Code
Blame
24 lines (19 loc) · 481 Bytes

- 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

Neutron


Sumaya and Sumaya Updated Repository
Code
Blame
27 lines (23 loc) · 630 Bytes
Code 55% fas

- 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

Step 9: Running output.

```
sumaya@Workstation:~/Hoa15$ ansible-playbook --ask-become-pass openstack.yml
SUDO password:

PLAY [neutron] *****************************************************************
*

TASK [Gathering Facts] *********************************************************
*
ok: [192.168.56.105]

TASK [neutron : Install Neutron packages] **************************************
*
ok: [192.168.56.105]

TASK [neutron : Configure Neutron] *********************************************
*
ok: [192.168.56.105]

TASK [neutron : Configure ML2 plugin] ******************************************
*
ok: [192.168.56.105]

TASK [neutron : Restart Neutron] ***********************************************
*
changed: [192.168.56.105]
```

```
TASK [Gathering Facts] *********************************************************
*
ok: [192.168.56.105]

TASK [horizon : Install Horizon packages] **************************************
*
ok: [192.168.56.105]

TASK [horizon : Configure Apache for Horizon] **********************************
*
ok: [192.168.56.105]

TASK [horizon : Configure Horizon settings] ************************************
*
ok: [192.168.56.105]

TASK [horizon : Restart Apache] ************************************************
*
changed: [192.168.56.105]

PLAY [cinder] ******************************************************************
*

TASK [Gathering Facts] *********************************************************
*
ok: [192.168.56.105]

TASK [cinder : Install Cinder packages] ****************************************
```

```
TASK [Gathering Facts] *********************************************************
*
ok: [192.168.56.105]

TASK [cinder : Install Cinder packages] ****************************************
*
ok: [192.168.56.105]

TASK [cinder : Configure Cinder] ***********************************************
*
ok: [192.168.56.105]

TASK [cinder : Create Cinder database] *****************************************
*
changed: [192.168.56.105]

TASK [cinder : Restart Cinder] *************************************************
*
changed: [192.168.56.105]

PLAY RECAP *********************************************************************
*
192.168.56.105             : ok=15   changed=4    unreachable=0    failed=0
```

Step 10: Checking if it's installed.

Neutron

```
sumaya@Server1:~$ systemctl status neutron-server
● neutron-server.service - OpenStack Neutron Server
   Loaded: loaded (/lib/systemd/system/neutron-server.service; enabled; vendor
   Active: active (running) since Thu 2023-12-07 09:47:38 +08; 744ms ago
 Main PID: 9216 (neutron-server)
    Tasks: 1 (limit: 4654)
   CGroup: /system.slice/neutron-server.service
           └─9216 /usr/bin/python2 /usr/bin/neutron-server --config-file=/etc/n
```

Cinder

```
sumaya@Server1:~$ systemctl status cinder-volume
● cinder-volume.service - OpenStack Cinder Volume
   Loaded: loaded (/lib/systemd/system/cinder-volume.service; enabled; vendor p
   Active: active (running) since Thu 2023-12-07 09:48:39 +08; 2s ago
 Main PID: 9719 (cinder-volume)
    Tasks: 1 (limit: 4654)
   CGroup: /system.slice/cinder-volume.service
           └─9719 /usr/bin/python2 /usr/bin/cinder-volume --config-file=/etc/ci
```

Horizon

```
sumaya@Server1:~$ systemctl status apache2
● apache2.service - The Apache HTTP Server
     Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset:
    Drop-In: /lib/systemd/system/apache2.service.d
             └─apache2-systemd.conf
     Active: active (running) since Thu 2023-12-07 09:40:07 +08; 31min ago
   Main PID: 5117 (apache2)
      Tasks: 114 (limit: 4654)
     CGroup: /system.slice/apache2.service
             ├─5117 /usr/sbin/apache2 -k start
             ├─5141 (wsgi:cinder-wsgi -k start
             ├─5142 (wsgi:cinder-wsgi -k start
             ├─5143 (wsgi:cinder-wsgi -k start
             ├─5144 (wsgi:cinder-wsgi -k start
             ├─5145 (wsgi:cinder-wsgi -k start
             ├─5146 (wsgi:horizon)    -k start
             ├─5147 (wsgi:horizon)    -k start
             ├─5148 (wsgi:horizon)    -k start
             ├─5149 /usr/sbin/apache2 -k start
             └─5156 /usr/sbin/apache2 -k start

[3]+  Stopped                 systemctl status apache2
```

Step 11: Github Commit / Link

https://github.com/KevinS4160/Hoa15.git

Reflections:

Answer the following:

1. Describe Neutron, Horizon and Cinder services

- Neutron focuses on networking, Horizon provides a web-based dashboard for managing OpenStack resources, and Cinder deals with block storage to meet the storage needs of virtual machines in an OpenStack environment. Together, these services contribute to the comprehensive infrastructure management capabilities of the OpenStack platform.

Conclusions:

- I learned a lot about Horizon, Cinder, and Neutron while developing this. Neutron, Horizon, and Cinder are all essential components of the OpenStack cloud computing platform, constituting a powerful and comprehensive infrastructure management system. Neutron simplifies network connectivity and services by enabling the development and management of virtual networks. Horizon is the user-friendly web-based dashboard that allows users and administrators to effortlessly interact with OpenStack services.