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Course/Section: CPE31S23	Date Submitted:
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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)

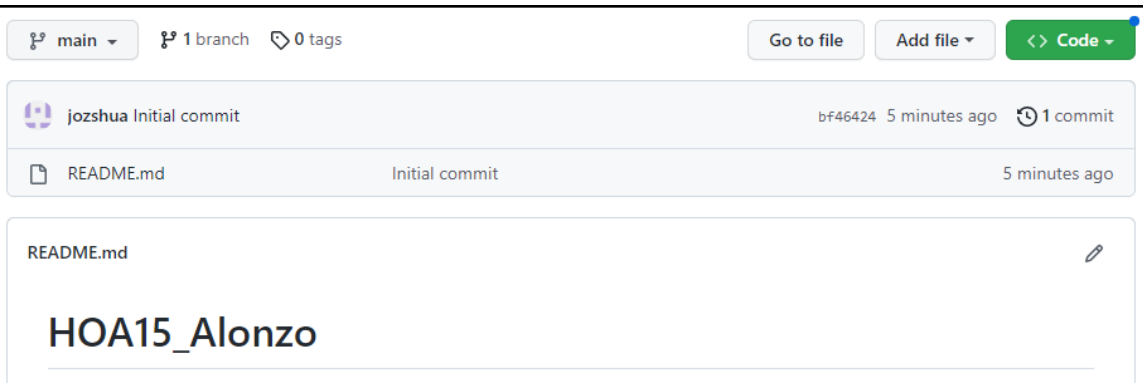
1x Ubuntu VM or Centos VM

Github link: https://github.com/jozshua/HOA15_Alonzo.git

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)



Created the new repository for this activity.

```
  GNU nano 6.2                                site.yml
---

- hosts: all
  become: true
  pre_tasks:

  - name: Installation of Cinder (Ubuntu)
    apt:
      name:
        - cinder-api
      state: latest
    when: ansible_distribution == "Ubuntu"

  - name: Installation of Horizon (Ubuntu)
    apt:
      name:
        - openstack-dashboard
      state: latest
    when: ansible_distribution == "Ubuntu"
```

```
  - name: Installation of Neutron (Ubuntu)
    apt:
      name:
        - neutron-server
      state: latest
    when: ansible_distribution == "Ubuntu"
```

Created site.yml file to install the packages for certain OpenStack services.

Executing the playbook:

```
jozshua@workstation-VirtualBox:~/HOA15_Alonzo/cpe_HOA15$ ansible-playbook --ask
-become-pass site.yml
BECOME password:

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

TASK [Gathering Facts] *********************************************************
*
ok: [192.168.56.102]

TASK [Installation of Cinder (Ubuntu)] *****************************************
*
changed: [192.168.56.102]

TASK [Installation of Horizon (Ubuntu)] ****************************************
*
changed: [192.168.56.102]

TASK [Installation of Neutron (Ubuntu)] ****************************************
*
changed: [192.168.56.102]

PLAY RECAP *********************************************************************
*
192.168.56.102             : ok=4    changed=3    unreachable=0    failed=0
skipped=0    rescued=0    ignored=0
```

There are 4 successfully executed tasks and 3 changes states from running this playbook.

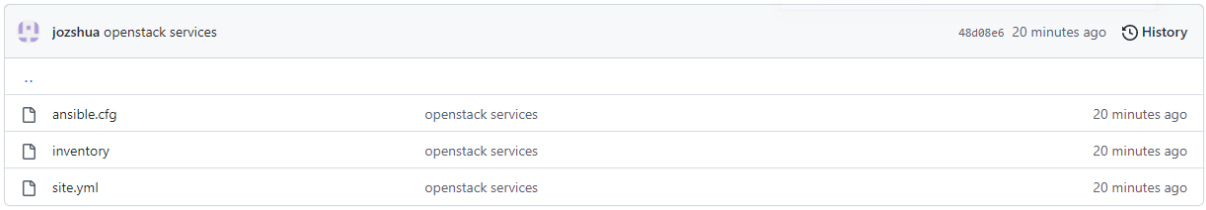
Proof of installation:

```
jozshua@server2-VirtualBox:~$ cinder-api --version
/usr/lib/python3/dist-packages/cinder/db/sqlalchemy/models.py:152: SAWarning: i
mplicitly coercing SELECT object to scalar subquery; please use the .scalar_sub
query() method to produce a scalar subquery.
  last_heartbeat = column_property(
/usr/lib/python3/dist-packages/cinder/db/sqlalchemy/models.py:160: SAWarning: i
mplicitly coercing SELECT object to scalar subquery; please use the .scalar_sub
query() method to produce a scalar subquery.
  num_hosts = column_property(
/usr/lib/python3/dist-packages/cinder/db/sqlalchemy/models.py:169: SAWarning: i
mplicitly coercing SELECT object to scalar subquery; please use the .scalar_sub
query() method to produce a scalar subquery.
  num_down_hosts = column_property(
20.0.1
```

```
jozshua@server2-VirtualBox:~$ service neutron-server status
● neutron-server.service - OpenStack Neutron Server
     Loaded: loaded (/lib/systemd/system/neutron-server.service; enabled; vend>
     Active: active (running) since Tue 2022-12-06 19:02:32 PST; 8s ago
       Docs: man:neutron-server(1)
   Main PID: 143427 (neutron-server)
      Tasks: 1 (limit: 1075)
     Memory: 96.8M
        CPU: 5.181s
     CGroup: /system.slice/neutron-server.service
             └─143427 /usr/bin/python3 /usr/bin/neutron-server --config-file=/>
```

Trash

```
apache2.service - The Apache HTTP Server
     Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor pres>
     Active: active (running) since Tue 2022-12-06 19:47:09 PST; 1h 14min ago
       Docs: https://httpd.apache.org/docs/2.4/
    Process: 984 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/SU>
   Main PID: 1272 (apache2)
      Tasks: 85 (limit: 1075)
     Memory: 9.1M
        CPU: 4.017s
     CGroup: /system.slice/apache2.service
             ├─1272 /usr/sbin/apache2 -k start
             ├─1363 "(wsgi:cinder-wsgi" -k start
             ├─1364 "(wsgi:cinder-wsgi" -k start
             ├─1365 "(wsgi:cinder-wsgi" -k start
             ├─1366 "(wsgi:cinder-wsgi" -k start
             ├─1367 "(wsgi:cinder-wsgi" -k start
             ├─1368 "(wsgi:horizon)   " -k start
             ├─1369 "(wsgi:horizon)   " -k start
             ├─1370 "(wsgi:horizon)   " -k start
             ├─1371 "(wsgi:keystone-pu" -k start
             ├─1372 "(wsgi:keystone-pu" -k start
             ├─1373 "(wsgi:keystone-pu" -k start
             ├─1374 "(wsgi:keystone-pu" -k start
             ├─1375 "(wsgi:keystone-pu" -k start
             ├─1376 /usr/sbin/apache2 -k start
             ├─1377 /usr/sbin/apache2 -k start
             ├─1378 /usr/sbin/apache2 -k start
             ├─1379 /usr/sbin/apache2 -k start
```



The codes that we used for this activity were pushed and committed into the repository that I created.

Reflections:

Answer the following:

1. Describe Neutron, Horizon and Cinder services

   Neutron - Provides connectivity between the interfaces of OpenStack services.

   Horizon - Web browser-based dashboard that you use to manage OpenStack services.

   Cinder - Manages persistent block storage volumes for virtual machines.

Conclusions:

In this activity, I created inventory, ansible.cfg, and site.yml files for the playbook. The installations were successfully installed by running the site.yml file through the playbook. I also, check the proof of installations through the terminal by checking their status and the version that was installed. I also created a new repository to push and committed the codes to my GitHub account.