Name: Buenvenida, Ken Benedict D.	Date Performed: December 01, 2023
Course/Section: CpE232 - CpE31S4	Date Submitted: December 03, 2023
Instructor: Engr. Jonathan Taylar	Semester and SY: 1st Semester 2023-2024

Activity 14: OpenStack Installation (Keystone, Glance, Nova)

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

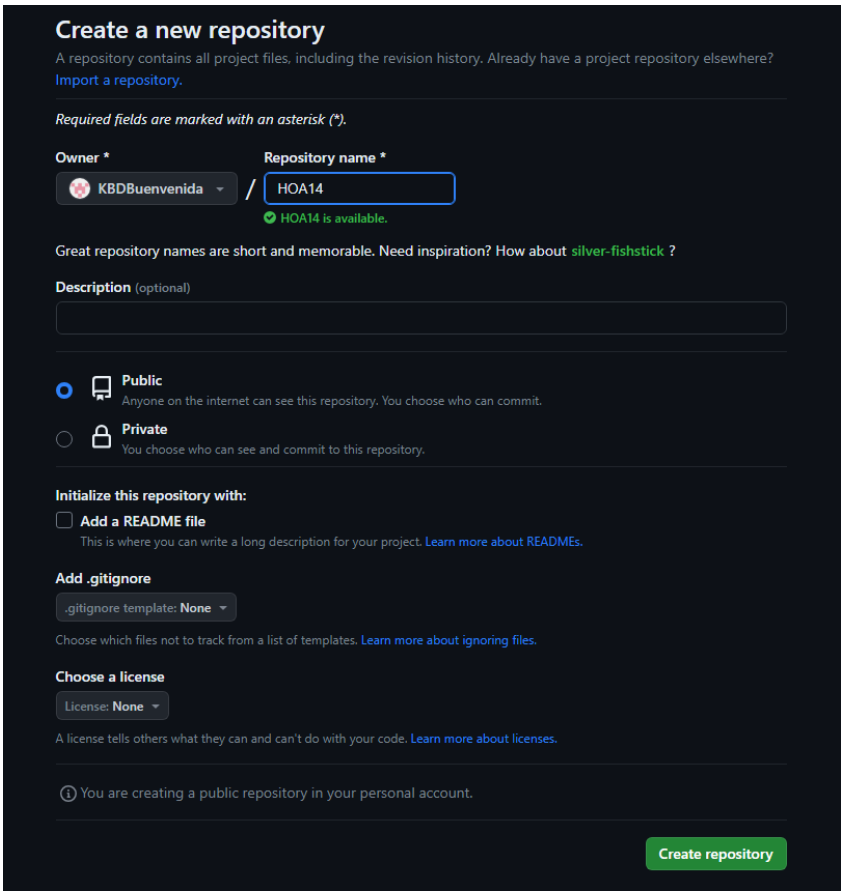
4. Tasks

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. Keystone (Identity Service)
    b. Glance (Imaging Service)
    c. Nova (Compute Service)
    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.

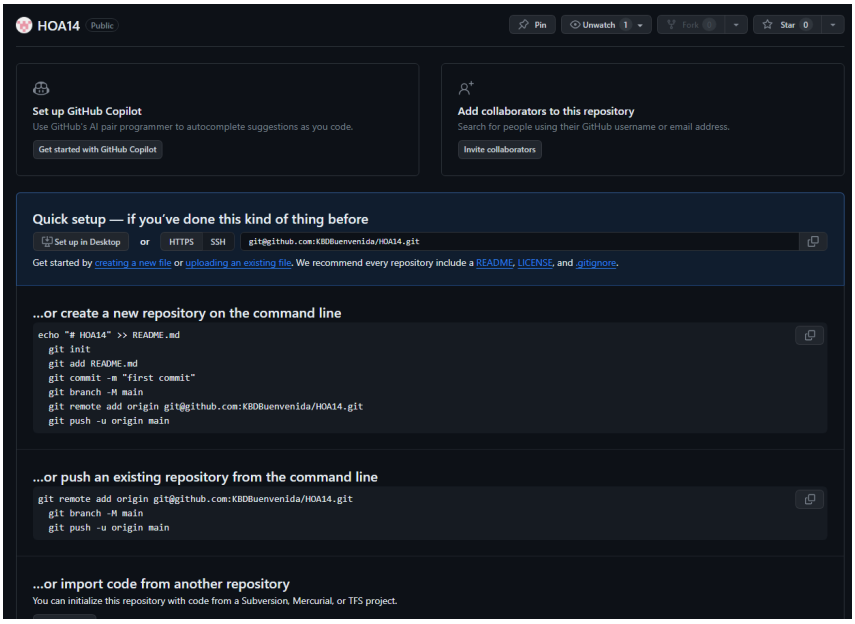
5. Output (screenshots and explanations)

1. Create a new repository for this activity.

Input



Output



git clone repository	ken@controlNode:~$ git clone git@github.com:KBDBuenvenida/HOA14.git Cloning into 'HOA14'... warning: You appear to have cloned an empty repository. ken@controlNode:~$

2. Create a playbook that converts the steps into the following items.

Input	ken@controlNode:~/HOA13$ cp ansible.cfg inventory ~/HOA14 ken@controlNode:~/HOA13$
Output	ken@controlNode:~/HOA14$ ls ansible.cfg inventory

create a playbook named ‘playbook.yml’

Input	ken@controlNode:~/HOA14$ sudo nano playbook.yml [sudo] password for ken:

Output	GNU nano 6.2
	--- 	
	
	- hosts: Ubuntu
	  become: true
	  roles:
	  - keystone
	  - glance
	  - nova
	
	- hosts: CentOS
	  become: true
	  roles:
	  - keystone
	  - glance
	  - nova

Create a directory named ‘roles’

Input	`ken@controlNode:~/HOA14$ mkdir roles`
Output	`ken@controlNode:~/HOA14$ ls` `ansible.cfg  inventory  playbook.yml  roles`

create a directory inside roles named nova keystone glance

Input & Output	`ken@controlNode:~/HOA14$ cd roles`
	`ken@controlNode:~/HOA14/roles$ mkdir nova keystone glance`
	`ken@controlNode:~/HOA14/roles$ ls`
	`glance  keystone  nova`

create a directory inside glance named files and tasks

Input & Output	`ken@controlNode:~/HOA14/roles/glance$ mkdir files tasks`
	`ken@controlNode:~/HOA14/roles/glance$ ls`
	`files  tasks`

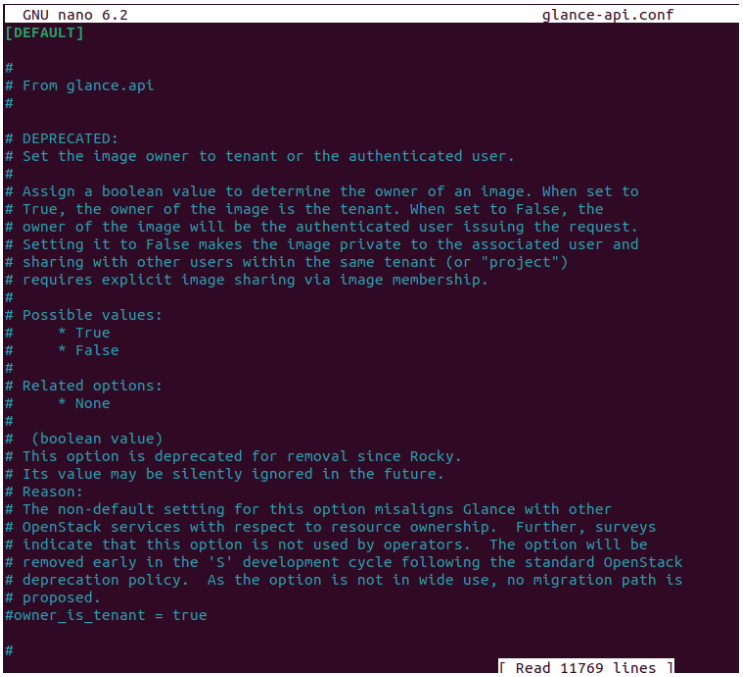
create a directory inside nova named files and tasks

Input & Output	`ken@controlNode:~/HOA14/roles/nova$ mkdir files tasks`
	`ken@controlNode:~/HOA14/roles/nova$ ls`
	`files  tasks`

create a directory inside keystone named files handlers and tasks

Input & Output	`ken@controlNode:~/HOA14/roles/keystone$ mkdir files handlers tasks`
	`ken@controlNode:~/HOA14/roles/keystone$ ls`
	`files  handlers  tasks`

create a .conf file for glance-api

Input	`ken@controlNode:~/HOA14/roles/glance/files$ sudo nano glance-api.conf`
Output	

create a configure.yml for glance

Input	`ken@controlNode:~/HOA14/roles/glance/tasks$ sudo nano configure.yml`

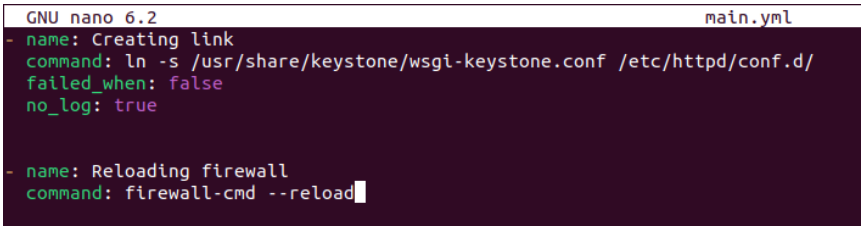
Output	GNU nano 6.2 configure.yml - name: Copying the config file copy: src: glance-api.conf dest: /etc/glance/glance-api.conf owner: root group: glance mode: 0640 - name: Populating the database command: su -s /bin/sh -c "glance-manage db_sync" glance failed_when: false no_log: true - name: Restarting glance-api service: name: openstack-glance-api.service state: started enabled: true

create main.yml for glance

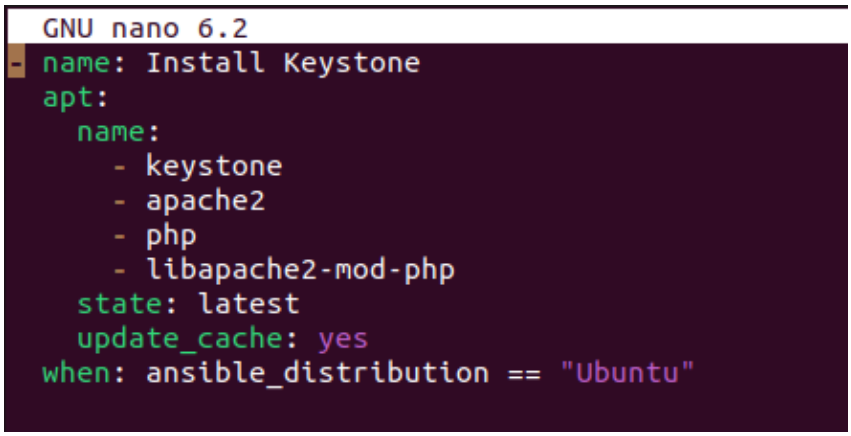
Input	ken@controlNode:~/HOA14/roles/glance/tasks$ sudo nano main.yml
Output	GNU nano 6.2 - name: Installation Glance apt: name: - glance state: latest update_cache: yes when: ansible_distribution == "Ubuntu" - name: Start Glance service: name: glance-api state: restarted enabled: yes

create a main.yml inside handlers directory under keystone

Input	ken@controlNode:~/HOA14/roles/keystone/handlers$ sudo nano main.yml

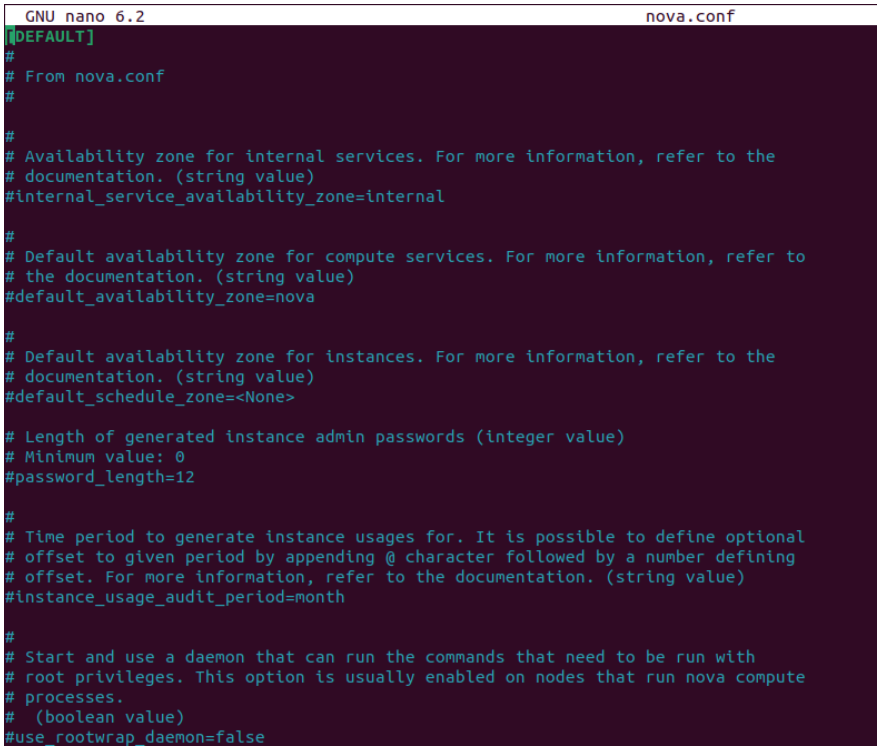
Output	

create main.yml inside tasks directory under keystone

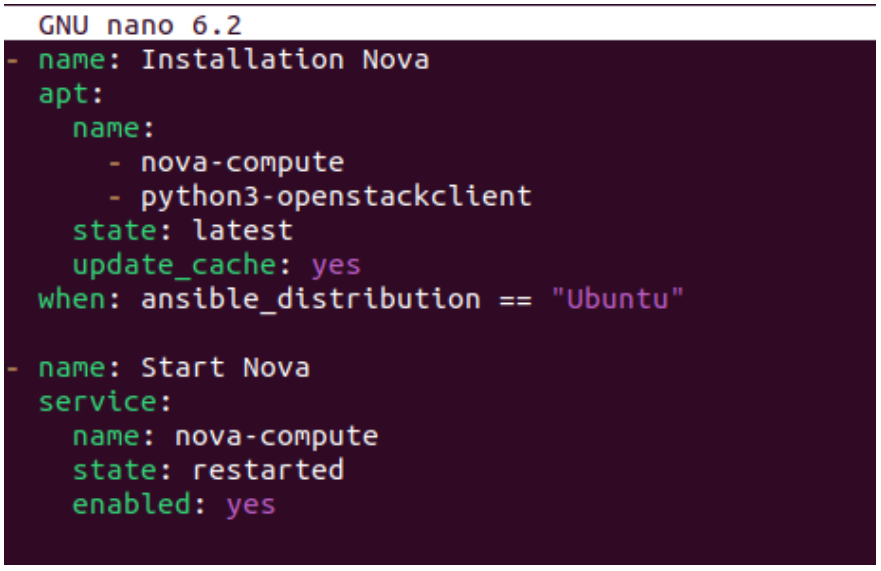
Input	
Output	

create a nova.conf inside files directory under nova

Input	

Output	

create a main.yml inside tasks directory under nova

Input	
Output	

run the playbook.yml

Input & Output

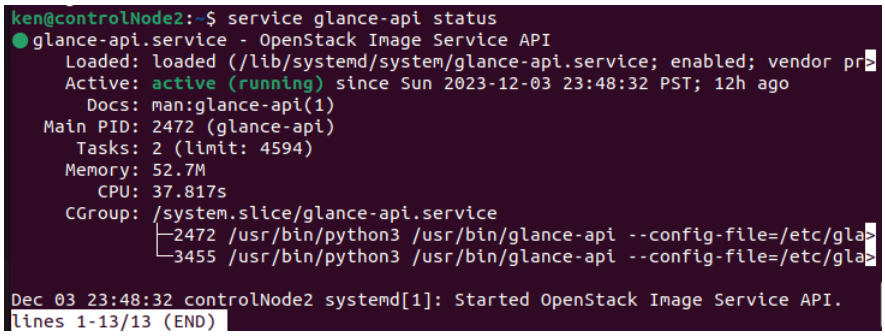
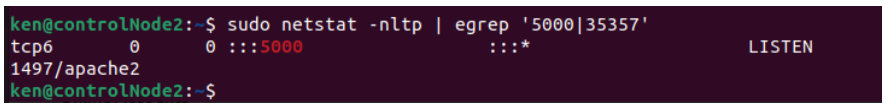
```
ken@controlNode:~/HOA14$ ansible-playbook --ask-become-pass playbook.yml
BECOME password:

PLAY [Ubuntu] ***********************************************************************************************************************

TASK [Gathering Facts] **************************************************************************************************************
^[      ok: [192.168.56.103]

TASK [keystone : Install Keystone] **************************************************************************************************
[WARNING]: Skipping plugin (/usr/lib/python3/dist-packages/ansible/plugins/filter/core.py) as it seems to be invalid: cannot import
name 'environmentfilter' from 'jinja2.filters' (/home/ken/.local/lib/python3.10/site-packages/jinja2/filters.py)
[WARNING]: Skipping plugin (/usr/lib/python3/dist-packages/ansible/plugins/filter/mathstuff.py) as it seems to be invalid: cannot
import name 'environmentfilter' from 'jinja2.filters' (/home/ken/.local/lib/python3.10/site-packages/jinja2/filters.py)
changed: [192.168.56.103]

TASK [glance : Installation Glance] *************************************************************************************************
[WARNING]: Skipping plugin (/usr/lib/python3/dist-packages/ansible/plugins/filter/core.py) as it seems to be invalid: cannot import
name 'environmentfilter' from 'jinja2.filters' (/home/ken/.local/lib/python3.10/site-packages/jinja2/filters.py)
[WARNING]: Skipping plugin (/usr/lib/python3/dist-packages/ansible/plugins/filter/mathstuff.py) as it seems to be invalid: cannot
import name 'environmentfilter' from 'jinja2.filters' (/home/ken/.local/lib/python3.10/site-packages/jinja2/filters.py)
ok: [192.168.56.103]

TASK [glance : Start Glance] ********************************************************************************************************
[WARNING]: Skipping plugin (/usr/lib/python3/dist-packages/ansible/plugins/filter/core.py) as it seems to be invalid: cannot import
name 'environmentfilter' from 'jinja2.filters' (/home/ken/.local/lib/python3.10/site-packages/jinja2/filters.py)
[WARNING]: Skipping plugin (/usr/lib/python3/dist-packages/ansible/plugins/filter/mathstuff.py) as it seems to be invalid: cannot
import name 'environmentfilter' from 'jinja2.filters' (/home/ken/.local/lib/python3.10/site-packages/jinja2/filters.py)
changed: [192.168.56.103]

TASK [nova : Installation Nova] *****************************************************************************************************
[WARNING]: Skipping plugin (/usr/lib/python3/dist-packages/ansible/plugins/filter/core.py) as it seems to be invalid: cannot import
name 'environmentfilter' from 'jinja2.filters' (/home/ken/.local/lib/python3.10/site-packages/jinja2/filters.py)
[WARNING]: Skipping plugin (/usr/lib/python3/dist-packages/ansible/plugins/filter/mathstuff.py) as it seems to be invalid: cannot
import name 'environmentfilter' from 'jinja2.filters' (/home/ken/.local/lib/python3.10/site-packages/jinja2/filters.py)
changed: [192.168.56.103]
```

```
TASK [nova : Start Nova] ************************************************************************************************************
[WARNING]: Skipping plugin (/usr/lib/python3/dist-packages/ansible/plugins/filter/core.py) as it seems to be invalid: cannot import
name 'environmentfilter' from 'jinja2.filters' (/home/ken/.local/lib/python3.10/site-packages/jinja2/filters.py)
[WARNING]: Skipping plugin (/usr/lib/python3/dist-packages/ansible/plugins/filter/mathstuff.py) as it seems to be invalid: cannot
import name 'environmentfilter' from 'jinja2.filters' (/home/ken/.local/lib/python3.10/site-packages/jinja2/filters.py)
changed: [192.168.56.103]

PLAY [CentOS] ***********************************************************************************************************************
skipping: no hosts matched

PLAY RECAP **************************************************************************************************************************
192.168.56.103             : ok=6    changed=4    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

Checking of status

Nova

```
ken@controlNode2:~$ service nova-compute status
● nova-compute.service - OpenStack Compute
     Loaded: loaded (/lib/systemd/system/nova-compute.service; enabled; vendor >
     Active: active (running) since Sun 2023-12-03 23:48:32 PST; 12h ago
   Main PID: 2483 (nova-compute)
      Tasks: 2 (limit: 4594)
     Memory: 55.7M
        CPU: 2.727s
     CGroup: /system.slice/nova-compute.service
             └─2483 /usr/bin/python3 /usr/bin/nova-compute --config-file=/etc/n>

Dec 03 23:48:32 controlNode2 systemd[1]: Started OpenStack Compute.
Dec 03 23:48:40 controlNode2 nova-compute[2483]: Modules with known eventlet mo>
lines 1-12/12 (END)
```

Glance	
Keystone	

Reflections:

Answer the following:

1. Describe Keystone, Glance and Nova services
   - Keystone is the identity and access management service for OpenStack that authenticates and authorizes users, projects, and roles.
   - Glance is the image service for Openstack that stores and manages disk and server images for creating new VM's
   - Nova is the compute service for OpenStack that manages creation, operation, and deletion of VM's.

Together, these 3 services are the foundation for building and managing a cloud computing environment.

Conclusions:

In conclusion, this Hands-on Activity has made me learn about the different usage of OpenStack services especially Keystone, Glance, and Nova. I was able to implement the usage of these services where all play in my playbook was successful.