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Course/Section: CpE31S4 - CpE232	Date Submitted: 11/28/23
Instructor: Engr. Jonathan Taylar	Semester and SY: 1st Semester 2023 - 2024
Activity 13: OpenStack Prerequisite Installation	
1. Objectives	
Create a workflow to install OpenStack using Ansible as your Infrastructure as Code (IaC).	
2. Intended Learning Outcomes	
<ol style="list-style-type: none"> 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	
<p>Oracle VirtualBox (Hypervisor)</p> <p>1x Ubuntu VM or Centos VM</p>	
4. Tasks	
<ol style="list-style-type: none"> 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/ <ol style="list-style-type: none"> a. NTP b. OpenStack packages c. SQL Database d. Message Queue e. Memcached f. Etcd g. Create different plays in installing per server type (controller, compute etc.) and identify it as a group in Inventory file. h. Add, commit and push it to your GitHub repo. 	
5. Output (screenshots and explanations)	
Create a new repository named as HOA13	

Create a new repository

A repository contains all project files, including the revision history. Already have a project repository elsewhere? [Import a repository.](#)

Required fields are marked with an asterisk (*).

Owner *

 KBDBuenvenida ▾

Repository name *

/ HOA13

🟢 HOA13 is available.

Great repository names are short and memorable. Need inspiration? How about [miniature-meme](#) ?

Description (optional)



Public

Anyone on the internet can see this repository. You choose who can commit.



Private

You choose who can see and commit to this repository.

Initialize this repository with:



Add a README file

This is where you can write a long description for your project. [Learn more about READMEs.](#)

Add .gitignore


.gitignore template: None ▾

Choose which files not to track from a list of templates. [Learn more about ignoring files.](#)

Choose a license

License: None ▾

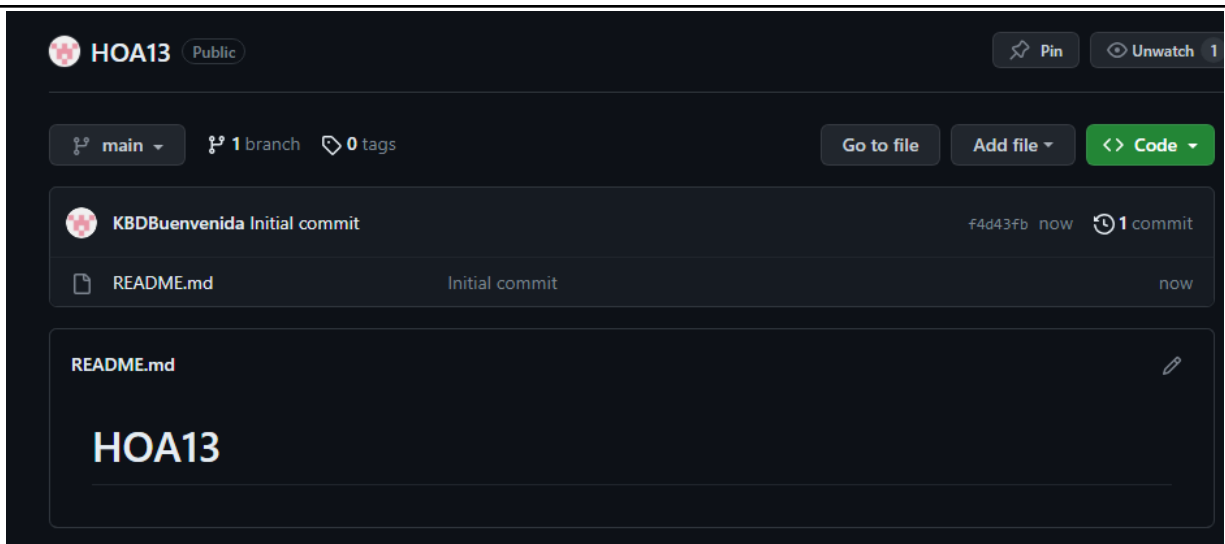
A license tells others what they can and can't do with your code. [Learn more about licenses.](#)

This will set  main as the default branch. Change the default name in your [settings](#).



You are creating a public repository in your personal account.

Create repository



Git clone the repository you just created

```
ken@controlNode:~$ git clone git@github.com:KBDBuenvenida/HOA13.git
Cloning into 'HOA13'...
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
Receiving objects: 100% (3/3), done.
ken@controlNode:~$
```

Create a directory for roles

```
ken@controlNode:~/HOA13$ mkdir roles
```

Create a directory inside roles named as common and create tasks inside common

```
ken@controlNode:~/HOA13/roles$ mkdir common
ken@controlNode:~/HOA13/roles$ cd common
ken@controlNode:~/HOA13/roles/common$ mkdir tasks
ken@controlNode:~/HOA13/roles/common$ cd tasks
ken@controlNode:~/HOA13/roles/common/tasks$
```

Create a directory inside roles named as etcd and create handlers, tasks, and templates inside etcd

```
ken@controlNode:~/HOA13/roles$ mkdir etcd
ken@controlNode:~/HOA13/roles$ cd etcd
ken@controlNode:~/HOA13/roles/etcd$ mkdir handlers tasks templates
ken@controlNode:~/HOA13/roles/etcd$ ls
handlers tasks templates
ken@controlNode:~/HOA13/roles/etcd$
```

Create a directory inside roles named as memcached and create handlers, tasks, and templates inside memcached

```
ken@controlNode:~/HOA13/roles$ mkdir memcached
ken@controlNode:~/HOA13/roles$ cd memcached
ken@controlNode:~/HOA13/roles/memcached$ mkdir handlers tasks templates
ken@controlNode:~/HOA13/roles/memcached$ ls
handlers tasks templates
ken@controlNode:~/HOA13/roles/memcached$
```

Create a directory named message_queue and inside it create a directory named tasks.

```
ken@controlNode:~/HOA13/roles$ mkdir message_queue
ken@controlNode:~/HOA13/roles$ cd message_queue
ken@controlNode:~/HOA13/roles/message_queue$ mkdir tasks
ken@controlNode:~/HOA13/roles/message_queue$ cd tasks
ken@controlNode:~/HOA13/roles/message_queue/tasks$
```

Create a directory inside roles named as ntp and create handlers, tasks, and templates inside ntp

```
ken@controlNode:~/HOA13/roles$ mkdir ntp
ken@controlNode:~/HOA13/roles$ cd ntp
ken@controlNode:~/HOA13/roles/ntp$ ls
ken@controlNode:~/HOA13/roles/ntp$ mkdir handlers tasks templates
ken@controlNode:~/HOA13/roles/ntp$ ls
handlers tasks templates
```

Create a directory named openstack_packages and create a tasks directory inside it

```
ken@controlNode:~/HOA13/roles$ mkdir openstack_packages
ken@controlNode:~/HOA13/roles$ cd openstack_packages
ken@controlNode:~/HOA13/roles/openstack_packages$ mkdir tasks
ken@controlNode:~/HOA13/roles/openstack_packages$ cd tasks
```

Create a directory named sql_database and inside it create tasks directory

```
ken@controlNode:~/H0A13/roles$ mkdir sql_database
ken@controlNode:~/H0A13/roles$ cd sql_database
ken@controlNode:~/H0A13/roles/sql_database$ mkdir tasks
ken@controlNode:~/H0A13/roles/sql_database$ cd tasks
ken@controlNode:~/H0A13/roles/sql_database/tasks$
```

Create a file named main.yml inside common/tasks

```
ken@controlNode:~/H0A13/roles/common/tasks$ sudo nano main.yml  
[sudo] password for ken:
```

```
GNU nano 6.2  
---  
- name: Update package cache on Ubuntu  
  apt:  
    update_cache: yes  
  when: ansible_distribution == "Ubuntu"  
  
- name: Install common packages on Ubuntu  
  apt:  
    name:  
      - vim  
      - htop  
      - curl  
      - wget  
    state: present  
  when: ansible_distribution == "Ubuntu"  
  
- name: Update package cache on CentOS  
  dnf:  
    name: '*'  
    state: latest  
    use_backend: dnf4  
  when: ansible_distribution == "CentOS"  
  
- name: Install common packages on CentOS  
  dnf:  
    name:  
      - vim  
      - htop  
      - curl  
      - wget  
    state: present  
    use_backend: dnf4  
  when: ansible_distribution == "CentOS"
```

Create a file named main.yml inside etcd/handlers

```
ken@controlNode:~/H0A13/roles/etcd/handlers$ sudo nano main.yml
```

```
GNU nano 6.2
```

```
---  
- name: Restart etcd service  
  service:  
    name: etcd  
    state: restarted
```

Create a file named main.yml inside etcd/tasks

```
ken@controlNode:~/H0A13/roles/etcd/tasks$ sudo nano main.yml
```

GNU nano 6.2

```
---
- name: Install etcd on Ubuntu
  apt:
    name: "[[ item ]]"
    state: present
  loop:
    - etcd
    - etcd-discovery
    - python3-etcd
    - python3-etcd3
    - python3-etcd3gw
  when: ansible_distribution == "Ubuntu"

- name: Install etcd on CentOS
  dnf:
    name: "[[ item ]]"
    state: present
    use_backend: dnf4
  loop:
    - etcd
    - puppet-etcd
    - python2-etcd3gw
  when: ansible_distribution == "CentOS"

- name: Start and enable etcd service
  service:
    name: etcd
    state: started
    enabled: yes

- name: Configure etcd
  template:
    src: etcd.conf.j2
    dest: /etc/etcd/etcd.conf
  notify: Restart etcd service
```

Create a file named etcd.conf.j2 inside templates

```
ken@controlNode:~/H0A13/roles/etcd/templates$ sudo nano etcd.conf.j2
```



```
GNU nano 6.2 etcd.conf.j2 *
# /etc/etcd/etcd.conf

ETCD_NAME="{{ ansible_host }}"

# Specify the listening interface and port
ETCD_LISTEN_CLIENT_URLS="http://0.0.0.0:2379"

# Specify the advertised URL to be used for client connections
ETCD_ADVERTISE_CLIENT_URLS="http://{{ ansible_host }}:2379"
```

Create a file named main.yml inside handlers.

```
ken@controlNode:~/HOA13/roles/memcached/handlers$ sudo nano main.yml
```

```
GNU nano 6.2
---
- name: Restart Memcached service
  service:
    name: memcached
    state: restarted
```

Create a file named main.yml inside tasks.

```
ken@controlNode:~/HOA13/roles/memcached/tasks$ sudo nano main.yml
```

GNU nano 6.2

```
---
- name: Install Memcached on Ubuntu
  apt:
    name: "{{ item }}"
    state: present
  loop:
    - memcached
    - python3-memcache
  when: ansible_distribution == "Ubuntu"

- name: Install Memcached on CentOS
  dnf:
    name: "{{ item }}"
    state: present
    use_backend: dnf4
  loop:
    - memcached
    - python-memcached
  when: ansible_distribution == "CentOS"

- name: Start and enable Memcached service
  service:
    name: memcached
    state: started
    enabled: yes

- name: Configure Memcached for OpenStack
  template:
    src: memcached.conf.j2
    dest: /etc/memcached.conf
  notify: Restart Memcached service
```

Create a file named memcached.conf.j2 inside memcached/templates

```
ken@controlNode:~/HOA13/roles/memcached/templates$ sudo nano memcached.conf.j2
[sudo] password for ken:
```

```
GNU nano 6.2
# /etc/memcached.conf

# Use this file to configure your memcached instance.

# Default connection settings
-l 127.0.0.1
-p 11211

# Limit the maximum size of the cache in megabytes
-m 512

# Use a specific user to run the daemon
-u memcache

# Specify the maximum number of connections
-c 1024
```

Create a file named main.yml inside message_queue/tasks

```
ken@controlNode:~/H0A13/roles/message_queue/tasks$ sudo nano main.yml
```

```
---
- name: Install RabbitMQ on Ubuntu
  apt:
    name: "{{ item }}"
    state: present
  loop:
    - rabbitmq-server
    - python3-pika
  when: ansible_distribution == "Ubuntu"

- name: Install RabbitMQ on CentOS
  dnf:
    name: "{{ item }}"
    state: present
    use_backend: dnf4
  loop:
    - rabbitmq-server
    - python36-pika
  when: ansible_distribution == "CentOS"

- name: Start and enable RabbitMQ service
  service:
    name: rabbitmq-server
    state: started
    enabled: yes

- name: Create RabbitMQ OpenStack user and vhost
  rabbitmq_user:
    user: "{{ rabbitmq_user }}"
    password: "{{ rabbitmq_password }}"
    vhost: "{{ rabbitmq_vhost }}"
    configure_priv: '.*'
    write_priv: '.*'
    read_priv: '.*'
    state: present
vars:
```

```
- name: Create RabbitMQ OpenStack user and vhost
  rabbitmq_user:
    user: "{{ rabbitmq_user }}"
    password: "{{ rabbitmq_password }}"
    vhost: "{{ rabbitmq_vhost }}"
    configure_priv: '.*'
    write_priv: '.*'
    read_priv: '.*'
    state: present
  vars:
    rabbitmq_user: 'openstack'
    rabbitmq_password: '2111419'
    rabbitmq_vhost: '/openstack'
```

Create a file named main.yml inside ntp/handlers

```
ken@controlNode:~/HOA13/roles/ntp$ cd handlers
ken@controlNode:~/HOA13/roles/ntp/handlers$ sudo nano main.yml
```

GNU nano 6.2

```
---
- name: Restart NTP service
  service:
    name: ntp
    state: restarted
```

Create a file named main.yml inside ntp/tasks

```
ken@controlNode:~/HOA13/roles/ntp/tasks$ sudo nano main.yml
```

```

GNU nano 6.2
---
- name: Install NTP on Ubuntu
  apt:
    name: ntp
    state: present
  when: ansible_distribution == "Ubuntu"

- name: Install NTP on CentOS
  dnf:
    name: ntp
    state: present
    use_backend: dnf4
  when: ansible_distribution == "CentOS"

- name: Configure NTP servers
  template:
    src: ntp.conf.j2
    dest: /etc/ntp.conf
  notify: Restart NTP service

```

Create a file named ntp.conf.j2 inside ntp/templates

```

ken@controlNode:~/H0A13/roles/ntp/templates$ sudo nano ntp.conf.j2

```

```

GNU nano 6.2
# /etc/ntp.conf

# Use servers from the NTP Pool Project
server 0.pool.ntp.org iburst
server 1.pool.ntp.org iburst
server 2.pool.ntp.org iburst
server 3.pool.ntp.org iburst

# Restrict access to the server
restrict default kod nomodify notrap nopeer noquery
restrict -6 default kod nomodify notrap nopeer noquery

# Allow localhost to use the service
restrict 127.0.0.1
restrict -6 ::1

```

Create a main.yml inside openstack_packages/tasks

```
ken@controlNode:~/H0A13/roles/openstack_packages/tasks$ sudo nano main.yml
```

```
GNU nano 6.2 main.yml
---
- name: Install OpenStack packages on Ubuntu
  apt:
    name: "{{ item }}"
    state: present
  loop:
    - python3-openstackclient
    - keystone
    - glance
    - nova-api
    - nova-conductor
    - nova-novncproxy
    - nova-scheduler
    - neutron-server
    - neutron-linuxbridge-agent
    - neutron-dhcp-agent
    - neutron-metadata-agent
    - neutron-l3-agent
  when: ansible_distribution == "Ubuntu"

- name: Install RDO Repository on CentOS
  become: true
  shell: dnf install -y https://rdoproject.org/repos/rdo-release.rpm
  when: ansible_distribution == "CentOS"

- name: Install OpenStack packages on CentOS
  dnf:
    name: "{{ item }}"
    state: present
    use_backend: dnf4
  loop:
    - python-openstackclient
    - openstack-keystone
    - openstack-glance
    - openstack-nova-api
    - openstack-nova-conductor
```

```
- name: Install OpenStack packages on CentOS
  dnf:
    name: "{{ item }}"
    state: present
    use_backend: dnf4
  loop:
    - python-openstackclient
    - openstack-keystone
    - openstack-glance
    - openstack-nova-api
    - openstack-nova-conductor
    - openstack-nova-console
    - openstack-nova-novncproxy
    - openstack-nova-scheduler
    - openstack-neutron
    - openstack-neutron-linuxbridge
    - openstack-neutron-fwaas
    - openstack-neutron-bgp-dragent
    - openstack-neutron-dynamic-routing-common
  when: ansible_distribution == "CentOS"
```

Create the main.yml inside sql_database/tasks

```
ken@controlNode:~/H0A13/roles/sql_database/tasks$ sudo nano main.yml
```



```
---
- name: Install SQL Database Server on Ubuntu
  apt:
    name: "{{ item }}"
    state: present
  loop:
    - mariadb-server
    - python3-pymysql
  when: ansible_distribution == "Ubuntu"

- name: Install SQL Database Server on CentOS
  dnf:
    name: "{{ item }}"
    state: present
    use_backend: dnf4
  loop:
    - mariadb-server
    - MySQL-python
  when: ansible_distribution == "CentOS"

- name: Start and enable the MariaDB service
  service:
    name: mariadb
    state: started
    enabled: yes

- name: Secure MariaDB installation
  mysql_user:
    name: root
    host: localhost
    password: "2111419.!"
    login_user: root
    login_password: "2111419.!"
    state: present
    check_implicit_admin: yes

- name: Create OpenStack databases and users
  mysql_db:
    name: "{{ item.name }}"
    state: present
    login_user: root
    login_password: "2111419.!"
  with_items:
    - { name: 'keystone', collation: 'utf8_general_ci', encoding: 'utf8' }
```

```

- name: Create OpenStack databases and users
  mysql_db:
    name: "[[ item.name ]]"
    state: present
    login_user: root
    login_password: "2111419.!"
  with_items:
    - { name: 'keystone', collation: 'utf8_general_ci', encoding: 'utf8' }
    - { name: 'nova', collation: 'utf8_general_ci', encoding: 'utf8' }
    - { name: 'neutron', collation: 'utf8_general_ci', encoding: 'utf8' }
    - { name: 'glance', collation: 'utf8_general_ci', encoding: 'utf8' }

- name: Create OpenStack database users
  mysql_user:
    name: "[[ item.name ]]"
    password: "[[ item.password ]]"
    priv: "[[ item.privileges ]]"
    state: present
    login_user: root
    login_password: "2111419.!"
  with_items:
    - { name: 'keystone', password: '2111419.!', privileges: '*.*:ALL' }
    - { name: 'nova', password: '2111419.!', privileges: '*.*:ALL' }
    - { name: 'neutron', password: '2111419.!', privileges: '*.*:ALL' }
    - { name: 'glance', password: '2111419.!', privileges: '*.*:ALL' }

```

Create the playbook.yml

```
ken@controlNode:~/H0A13$ sudo nano playbook.yml
```

GNU nano 6.2

```
---
- name: OpenStack Prerequisite Installation Playbook
  hosts: ubuntu_controller
  become: true
  roles:
    - common
    - ntp
    - openstack_packages
    - sql_database
    - message_queue
    - memcached
    - etcd

  hosts: centos_compute
  become: true
  roles:
    - common
    - ntp
    - openstack_packages
    - sql_database
    - message_queue
    - memcached
    - etcd
```

Ubuntu Playbook test

```
ken@controlNode:~/H0A13$ ansible-playbook --ask-become-pass playbook.yml
```

BECOME password:

PLAY [OpenStack Prerequisite Installation Playbook] *****

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

TASK [common : Update package cache on Ubuntu] *****
[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 [common : Install common packages on Ubuntu] *****
[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 [common : Update package cache on CentOS] *****
[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)
skipping: [192.168.56.103]

TASK [common : Install common packages on CentOS] *****
[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)
skipping: [192.168.56.103]

```
TASK [ntp : Install NTP on Ubuntu] *****
[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 [ntp : Install NTP on CentOS] *****
[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)
skipping: [192.168.56.103]
```

```
TASK [ntp : Configure NTP servers] *****
[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 [openstack_packages : Install OpenStack packages on Ubuntu] *****
[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] => (item=python3-openstackclient)
ok: [192.168.56.103] => (item=keystone)
ok: [192.168.56.103] => (item=glance)
ok: [192.168.56.103] => (item=nova-api)
ok: [192.168.56.103] => (item=nova-conductor)
ok: [192.168.56.103] => (item=nova-novncproxy)
ok: [192.168.56.103] => (item=nova-scheduler)
ok: [192.168.56.103] => (item=neutron-server)
ok: [192.168.56.103] => (item=neutron-linuxbridge-agent)
ok: [192.168.56.103] => (item=neutron-dhcp-agent)
ok: [192.168.56.103] => (item=neutron-metadata-agent)
ok: [192.168.56.103] => (item=neutron-l3-agent)
```

```
TASK [openstack_packages : Install RDO Repository on CentOS] *****
[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)
skipping: [192.168.56.103]
```

```
TASK [openstack_packages : Install OpenStack packages on CentOS] *****
[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)
skipping: [192.168.56.103] => (item=python-openstackclient)
skipping: [192.168.56.103] => (item=openstack-keystone)
skipping: [192.168.56.103] => (item=openstack-glance)
skipping: [192.168.56.103] => (item=openstack-nova-api)
skipping: [192.168.56.103] => (item=openstack-nova-conductor)
skipping: [192.168.56.103] => (item=openstack-nova-console)
skipping: [192.168.56.103] => (item=openstack-nova-novncproxy)
skipping: [192.168.56.103] => (item=openstack-nova-scheduler)
skipping: [192.168.56.103] => (item=openstack-neutron)
skipping: [192.168.56.103] => (item=openstack-neutron-linuxbridge)
skipping: [192.168.56.103] => (item=openstack-neutron-fwaas)
skipping: [192.168.56.103] => (item=openstack-neutron-bgp-dragnet)
skipping: [192.168.56.103] => (item=openstack-neutron-dynamic-routing-common)
```

```
TASK [sql_database : Install SQL Database Server on Ubuntu] *****
[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] => (item=mariadb-server)
ok: [192.168.56.103] => (item=python3-pymysql)
```

```
TASK [sql_database : Install SQL Database Server on CentOS] *****
[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)
skipping: [192.168.56.103] => (item=mariadb-server)
skipping: [192.168.56.103] => (item=MySQL-python)
```

```
TASK [sql_database : Start and enable the MariaDB service] *****
[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 [sql_database : Secure MariaDB installation] *****
[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 [sql_database : Create OpenStack databases and users] *****
[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] => (items={'name': 'keystone', 'collation': 'utf8_general_ci', 'encoding': 'utf8'})
ok: [192.168.56.103] => (items={'name': 'nova', 'collation': 'utf8_general_ci', 'encoding': 'utf8'})
ok: [192.168.56.103] => (items={'name': 'neutron', 'collation': 'utf8_general_ci', 'encoding': 'utf8'})
ok: [192.168.56.103] => (items={'name': 'glance', 'collation': 'utf8_general_ci', 'encoding': 'utf8'})
```

```
TASK [message_queue : Install RabbitMQ on Ubuntu] *****
[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] => (item=rabbitmq-server)
ok: [192.168.56.103] => (item=python3-pika)
```

```
TASK [message_queue : Install RabbitMQ on CentOS] *****
[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)
skipping: [192.168.56.103] => (item=rabbitmq-server)
skipping: [192.168.56.103] => (item=python3-pika)
```

```
TASK [message_queue : Start and enable RabbitMQ service] *****
[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 [message_queue : Create RabbitMQ OpenStack user and vhost] *****
[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 [memcached : Install Memcached on Ubuntu] *****
[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] => (item=memcached)
ok: [192.168.56.103] => (item=python3-memcache)

TASK [memcached : Install Memcached on CentOS] *****
[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)
skipping: [192.168.56.103] => (item=memcached)
skipping: [192.168.56.103] => (item=python-memcached)

TASK [memcached : Start and enable Memcached service] *****
[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 [memcached : Configure Memcached for OpenStack] *****
[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 [etcd : Install etcd on Ubuntu] *****
[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] => (item=etcd)
ok: [192.168.56.103] => (item=etcd-discovery)
ok: [192.168.56.103] => (item=python3-etcd)
ok: [192.168.56.103] => (item=python3-etcd3)
ok: [192.168.56.103] => (item=python3-etcd3gw)

TASK [etcd : Install etcd on CentOS] *****
[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)
skipping: [192.168.56.103] => (item=etcd)
skipping: [192.168.56.103] => (item=puppet-etcd)
skipping: [192.168.56.103] => (item=python2-etcd3gw)

TASK [etcd : Start and enable etcd service] *****
[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 [etcd : Configure etcd] *****
[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]

RUNNING HANDLER [etcd : Restart etcd service] *****
[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 RECAP *****
192.168.56.103      : ok=21   changed=3    unreachable=0    failed=0    skipped=9    rescued=0    ignored=0

ken@controlNode:~/H0A13$

```

CentOS Playbook test

```
ken@controlNode:~/H0A1$ ansible-playbook --ask-become-pass playbook.yml
BECOME password:

PLAY [OpenStack Prerequisite Installation Playbook] *****

TASK [Gathering Facts] *****
ok: [192.168.56.106]

TASK [common : Update package cache on Ubuntu] *****
[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)
skipping: [192.168.56.106]

TASK [common : Install common packages on Ubuntu] *****
[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)
skipping: [192.168.56.106]

TASK [common : Update package cache on CentOS] *****
[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: [192.168.56.106]

TASK [common : Install common packages on CentOS] *****
[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: [192.168.56.106]

TASK [ntp : Install NTP on Ubuntu] *****
[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)
skipping: [192.168.56.106]

TASK [ntp : Install NTP on CentOS] *****
[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: [192.168.56.106]

TASK [ntp : Configure NTP servers] *****
[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: [192.168.56.106]

TASK [openstack_packages : Install OpenStack packages on Ubuntu] *****
[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)
skipping: [192.168.56.106] => (item=python3-openstackclient)
skipping: [192.168.56.106] => (item=keystone)
skipping: [192.168.56.106] => (item=glance)
skipping: [192.168.56.106] => (item=nova-api)
skipping: [192.168.56.106] => (item=nova-conductor)
skipping: [192.168.56.106] => (item=nova-novncproxy)
skipping: [192.168.56.106] => (item=nova-scheduler)
skipping: [192.168.56.106] => (item=neutron-server)
skipping: [192.168.56.106] => (item=neutron-linuxbridge-agent)
skipping: [192.168.56.106] => (item=neutron-dhcp-agent)
skipping: [192.168.56.106] => (item=neutron-metadata-agent)
skipping: [192.168.56.106] => (item=neutron-l3-agent)
```

```
TASK [openstack_packages : Install RDO Repository on CentOS] *****
[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)
[WARNING]: Consider using the dnf module rather than running 'dnf'. If you need to use command because dnf is insufficient you can
add 'warn: false' to this command task or set 'command_warnings=False' in ansible.cfg to get rid of this message.
changed: [192.168.56.106]
```

```
TASK [openstack_packages : Install OpenStack packages on CentOS] *****
[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: [192.168.56.106] => (item=python3-openstackclient)
ok: [192.168.56.106] => (item=openstack-keystone)
ok: [192.168.56.106] => (item=openstack-neutron)
ok: [192.168.56.106] => (item=openstack-neutron-linuxbridge)
ok: [192.168.56.106] => (item=openstack-neutron-bgp-dragent)
ok: [192.168.56.106] => (item=openstack-neutron-dynamic-routing-common)
```

```
TASK [sql_database : Install SQL Database Server on Ubuntu] *****
[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)
skipping: [192.168.56.106] => (item=mariadb-server)
skipping: [192.168.56.106] => (item=python3-pymysql)
```

```
TASK [sql_database : Install SQL Database Server on CentOS] *****
[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: [192.168.56.106] => (item=mariadb-server)
ok: [192.168.56.106] => (item=python3-mysql)
```

```
TASK [sql_database : Start and enable the MariaDB service] *****
[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: [192.168.56.106]
```

```
TASK [message_queue : Install RabbitMQ on Ubuntu] *****
[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)
skipping: [192.168.56.106] => (item=rabbitmq-server)
skipping: [192.168.56.106] => (item=python3-pika)
```

```
TASK [message_queue : Install RabbitMQ on CentOS] *****
[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: [192.168.56.106] => (item=python3-pika)
```

```
TASK [message_queue : Start and enable RabbitMQ service] *****
[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: [192.168.56.106]
```

```
TASK [memcached : Install Memcached on Ubuntu] *****
[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)
skipping: [192.168.56.106] => (item=memcached)
skipping: [192.168.56.106] => (item=python3-memcache)
```



```
TASK [memcached : Install Memcached on CentOS] *****
[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: [192.168.56.106] => (item=memcached)
ok: [192.168.56.106] => (item=python3-memcached)
```

```
TASK [memcached : Start and enable Memcached service] *****
[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: [192.168.56.106]
```

```
TASK [memcached : Configure Memcached for OpenStack] *****
[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: [192.168.56.106]
```

```
TASK [etcd : Install etcd on Ubuntu] *****
[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)
skipping: [192.168.56.106] => (item=etcd)
skipping: [192.168.56.106] => (item=etcd-discovery)
skipping: [192.168.56.106] => (item=python3-etcd)
skipping: [192.168.56.106] => (item=python3-etcd3)
skipping: [192.168.56.106] => (item=python3-etcd3gw)
```

```
TASK [memcached : Start and enable Memcached service] *****
[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: [192.168.56.106]
```

```
TASK [memcached : Configure Memcached for OpenStack] *****
[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: [192.168.56.106]
```

```
TASK [etcd : Install etcd on Ubuntu] *****
[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)
skipping: [192.168.56.106] => (item=etcd)
skipping: [192.168.56.106] => (item=etcd-discovery)
skipping: [192.168.56.106] => (item=python3-etcd)
skipping: [192.168.56.106] => (item=python3-etcd3)
skipping: [192.168.56.106] => (item=python3-etcd3gw)
```

```
TASK [etcd : Install etcd on CentOS] *****
[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: [192.168.56.106] => (item=etcd)
ok: [192.168.56.106] => (item=puppet-etcd)
```

```
PLAY RECAP *****
192.168.56.106      : ok=15   changed=1   unreachable=0    failed=0    skipped=8    rescued=0    ignored=0
```

memcached status (CentOS)

```
[ken@localhost ~]$ systemctl status memcached
● memcached.service - memcached daemon
   Loaded: loaded (/usr/lib/systemd/system/memcached.service; enabled; vendor p>
   Active: active (running) since Tue 2023-11-28 01:01:37 PST; 1h 27min ago
   Main PID: 115184 (memcached)
     Tasks: 10 (limit: 23092)
    Memory: 3.5M
    CGroup: /system.slice/memcached.service
            └─115184 /usr/bin/memcached -p 11211 -u memcached -m 64 -c 1024 -l 1>

Nov 28 01:01:37 localhost.localdomain systemd[1]: Started memcached daemon.
lines 1-10/10 (END)
```

ntp status (CentOS)

```
[ken@localhost ~]$ systemctl status chronyd
● chronyd.service - NTP client/server
   Loaded: loaded (/usr/lib/systemd/system/chronyd.service; enabled; vendor pre>
   Active: active (running) since Mon 2023-11-27 21:51:29 PST; 4h 42min ago
     Docs: man:chronyd(8)
           man:chrony.conf(5)
   Main PID: 795 (chronyd)
     Tasks: 1 (limit: 23092)
    Memory: 1.2M
    CGroup: /system.slice/chronyd.service
            └─795 /usr/sbin/chronyd

Nov 27 21:51:23 localhost.localdomain systemd[1]: Starting NTP client/server...
Nov 27 21:51:23 localhost.localdomain chronyd[795]: chronyd version 4.2 startin>
Nov 27 21:51:24 localhost.localdomain chronyd[795]: Frequency 6.724 +/- 18.346 >
Nov 27 21:51:24 localhost.localdomain chronyd[795]: Using right/UTC timezone to>
Nov 27 21:51:29 localhost.localdomain systemd[1]: Started NTP client/server.
Nov 28 01:21:09 localhost.localdomain chronyd[795]: Selected source 162.159.200>
Nov 28 01:21:09 localhost.localdomain chronyd[795]: System clock wrong by 3.614>
Nov 28 01:21:13 localhost.localdomain chronyd[795]: System clock was stepped by>
Nov 28 01:21:13 localhost.localdomain chronyd[795]: System clock TAI offset set>
lines 1-20/20 (END)
```

mariadb/mysql status (CentOS)

```
[ken@localhost ~]$ systemctl status mysql
● mariadb.service - MariaDB 10.3 database server
   Loaded: loaded (/usr/lib/systemd/system/mariadb.service; enabled; vendor pre>
   Active: active (running) since Mon 2023-11-27 23:41:26 PST; 2h 53min ago
     Docs: man:mysqld(8)
           https://mariadb.com/kb/en/library/systemd/
   Main PID: 62439 (mysqld)
    Status: "Taking your SQL requests now..."
     Tasks: 30 (limit: 23092)
    Memory: 12.6M
    CGroup: /system.slice/mariadb.service
            └─62439 /usr/libexec/mysqld --basedir=/usr

Nov 27 23:41:25 localhost.localdomain systemd[1]: Starting MariaDB 10.3 databas>
Nov 27 23:41:26 localhost.localdomain mysql-prepare-db-dir[62401]: Database Mar>
Nov 27 23:41:26 localhost.localdomain mysql-prepare-db-dir[62401]: If this is n>
Nov 27 23:41:26 localhost.localdomain mysqld[62439]: 2023-11-27 23:41:26 0 [Not>
Nov 27 23:41:26 localhost.localdomain systemd[1]: Started MariaDB 10.3 database>
lines 1-17/17 (END)
```

rabbitmq status (CentOS)

```
[ken@localhost ~]$ systemctl status rabbitmq-server
● rabbitmq-server.service - RabbitMQ broker
   Loaded: loaded (/usr/lib/systemd/system/rabbitmq-server.service; enabled; ve>
   Active: active (running) since Tue 2023-11-28 00:47:56 PST; 1h 48min ago
   Main PID: 100662 (beam.smp)
     Tasks: 25 (limit: 23092)
    Memory: 99.1M
    CGroup: /system.slice/rabbitmq-server.service
            └─100662 /usr/lib64/erlang/erts-14.1.1/bin/beam.smp -W w -MBas ageff>
              └─100676 erl_child_setup 32768
                └─100765 /usr/lib64/erlang/erts-14.1.1/bin/epmd -daemon
                  └─100786 /usr/lib64/erlang/erts-14.1.1/bin/inet_gethost 4
                    └─100787 /usr/lib64/erlang/erts-14.1.1/bin/inet_gethost 4
                      └─100865 /bin/sh -s rabbit_disk_monitor

Nov 28 00:47:47 localhost.localdomain rabbitmq-server[100662]: Release series>
Nov 28 00:47:47 localhost.localdomain rabbitmq-server[100662]: Doc guides: h>
Nov 28 00:47:47 localhost.localdomain rabbitmq-server[100662]: Support: h>
Nov 28 00:47:47 localhost.localdomain rabbitmq-server[100662]: Tutorials: h>
Nov 28 00:47:47 localhost.localdomain rabbitmq-server[100662]: Monitoring: h>
Nov 28 00:47:47 localhost.localdomain rabbitmq-server[100662]: Logs: /var/log>
Nov 28 00:47:47 localhost.localdomain rabbitmq-server[100662]: <stdout>
Nov 28 00:47:47 localhost.localdomain rabbitmq-server[100662]: Config file(s)>
Nov 28 00:47:56 localhost.localdomain rabbitmq-server[100662]: Starting broke>
```

memcached status (Ubuntu)

```
ken@controlNode2:~$ systemctl status memcached
● memcached.service - memcached daemon
   Loaded: loaded (/lib/systemd/system/memcached.service; enabled; vendor preset: enabled)
   Active: active (running) since Mon 2023-11-27 01:53:18 PST; 25min ago
     Docs: man:memcached(1)
    Main PID: 11996 (memcached)
      Tasks: 10 (limit: 4594)
    Memory: 2.0M
       CPU: 200ms
    CGroup: /system.slice/memcached.service
            └─11996 /usr/bin/memcached -m 64 -p 11211 -u memcache -l 127.0.0.1 -P /var/run/memcached/memcached.pid

Nov 27 01:53:18 controlNode2 systemd[1]: Started memcached daemon.
```

etcd status (Ubuntu)

```
ken@controlNode2:~$ systemctl status etcd
● etcd.service - etcd - highly-available key value store
   Loaded: loaded (/lib/systemd/system/etcd.service; enabled; vendor preset: enabled)
   Active: active (running) since Mon 2023-11-27 02:09:37 PST; 9min ago
     Docs: https://etcd.io/docs
    Main PID: 19092 (etcd)
      Tasks: 7 (limit: 4594)
    Memory: 5.6M
       CPU: 1.103s
    CGroup: /system.slice/etcd.service
            └─19092 /usr/bin/etcd

Nov 27 02:09:36 controlNode2 etcd[19092]: enabled capabilities for version 3.3
Nov 27 02:09:37 controlNode2 etcd[19092]: 8e9e05c52164694d is starting a new election at term 3
Nov 27 02:09:37 controlNode2 etcd[19092]: 8e9e05c52164694d became candidate at term 4
Nov 27 02:09:37 controlNode2 etcd[19092]: 8e9e05c52164694d received MsgVoteResp from 8e9e05c52164694d at term 4
Nov 27 02:09:37 controlNode2 etcd[19092]: 8e9e05c52164694d became leader at term 4
Nov 27 02:09:37 controlNode2 etcd[19092]: raft.node: 8e9e05c52164694d elected leader 8e9e05c52164694d at term 4
Nov 27 02:09:37 controlNode2 etcd[19092]: published {Name:controlNode2 ClientURLs:[http://localhost:2379]} to cluster cdf818194e3a8
Nov 27 02:09:37 controlNode2 etcd[19092]: ready to serve client requests
Nov 27 02:09:37 controlNode2 etcd[19092]: serving insecure client requests on 127.0.0.1:2379, this is strongly discouraged!
Nov 27 02:09:37 controlNode2 systemd[1]: Started etcd - highly-available key value store.
lines 1-22/22 (END)
```

rabbitmq status (Ubuntu)

```
ken@controlNode2:~$ systemctl status rabbitmq-server
● rabbitmq-server.service - RabbitMQ Messaging Server
   Loaded: loaded (/lib/systemd/system/rabbitmq-server.service; enabled; vendor preset: enabled)
   Active: active (running) since Mon 2023-11-27 01:45:27 PST; 34min ago
    Main PID: 5665 (beam.smp)
      Tasks: 21 (limit: 4594)
    Memory: 89.1M
       CPU: 15.478s
    CGroup: /system.slice/rabbitmq-server.service
            └─5665 /usr/lib/erlang/erts-12.2.1/bin/beam.smp -W w -MBas ageffcbf -MHas ageffcbf -MBlmbs 512 -MHLmbs 512 -MMmcs 30
            └─5676 erl_child_setup 65536
            └─5780 inet_gethost 4
            └─5781 inet_gethost 4

Nov 27 01:45:05 controlNode2 systemd[1]: Starting RabbitMQ Messaging Server...
Nov 27 01:45:27 controlNode2 systemd[1]: Started RabbitMQ Messaging Server.
lines 1-15/15 (END)
```

ntp status (Ubuntu)

```
ken@controlNode2:~$ systemctl status ntp
● ntp.service - Network Time Service
   Loaded: loaded (/lib/systemd/system/ntp.service; enabled; vendor preset: enabled)
   Active: active (running) since Mon 2023-11-27 01:39:26 PST; 41min ago
     Docs: man:ntpd(8)
    Main PID: 850 (ntpd)
      Tasks: 2 (limit: 4594)
     Memory: 2.6M
        CPU: 176ms
    CGroup: /system.slice/ntp.service
            └─850 /usr/sbin/ntpd -p /var/run/ntpd.pid -g -u 134:143

Nov 27 01:39:32 controlNode2 ntpd[850]: Listen normally on 4 enp0s3 10.0.2.15:123
Nov 27 01:39:32 controlNode2 ntpd[850]: Listen normally on 5 enp0s8 192.168.56.103:123
Nov 27 01:39:32 controlNode2 ntpd[850]: Listen normally on 6 enp0s3 [fe80::a3b7:c740:7b59:d4e6%2]:123
Nov 27 01:39:32 controlNode2 ntpd[850]: Listen normally on 7 enp0s8 [fe80::6fe7:64b0:eb2d:d862%3]:123
Nov 27 01:39:32 controlNode2 ntpd[850]: new interface(s) found: waking up resolver
Nov 27 02:18:38 controlNode2 ntpd[850]: Deleting interface #5 enp0s8, 192.168.56.103#123, interface stats: received=0, sent=0, drop=0
Nov 27 02:18:38 controlNode2 ntpd[850]: Deleting interface #7 enp0s8, fe80::6fe7:64b0:eb2d:d862%3#123, interface stats: received=0, sent=0, drop=0
Nov 27 02:18:40 controlNode2 ntpd[850]: Listen normally on 8 enp0s8 192.168.56.103:123
Nov 27 02:18:40 controlNode2 ntpd[850]: Listen normally on 9 enp0s8 [fe80::6fe7:64b0:eb2d:d862%3]:123
Nov 27 02:18:40 controlNode2 ntpd[850]: new interface(s) found: waking up resolver
lines 1-21/21 (END)
```

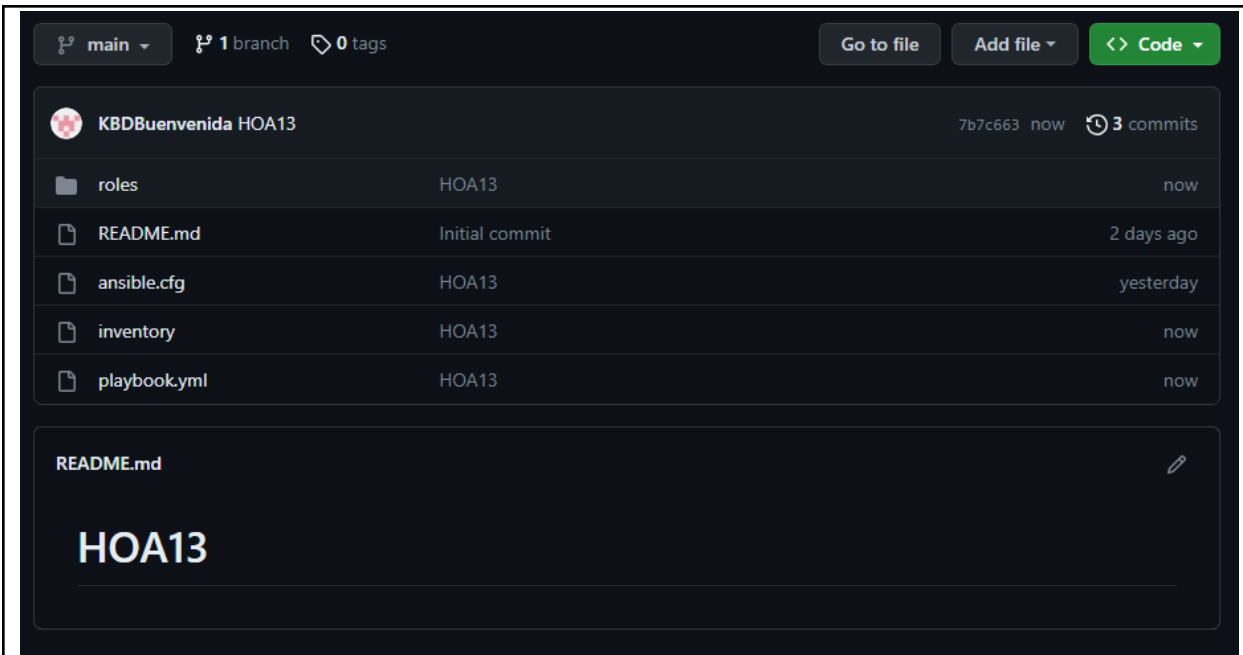
mysql status (Ubuntu)

```
ken@controlNode2:~$ systemctl status mysql
● mariadb.service - MariaDB 10.6.12 database server
   Loaded: loaded (/lib/systemd/system/mariadb.service; enabled; vendor preset: enabled)
   Active: active (running) since Mon 2023-11-27 01:39:56 PST; 41min ago
     Docs: man:mariadb(8)
           https://mariadb.com/kb/en/library/systemd/
    Main PID: 890 (mariadb)
      Status: "Taking your SQL requests now..."
      Tasks: 8 (limit: 4594)
     Memory: 91.6M
        CPU: 799ms
    CGroup: /system.slice/mariadb.service
            └─890 /usr/sbin/mariadb

Nov 27 01:39:56 controlNode2 systemd[1]: Started MariaDB 10.6.12 database server.
Nov 27 01:39:56 controlNode2 /etc/mysql/debian-start[1514]: Upgrading MySQL tables if necessary.
Nov 27 01:40:00 controlNode2 /etc/mysql/debian-start[1633]: Checking for insecure root accounts.
Nov 27 01:40:01 controlNode2 /etc/mysql/debian-start[1638]: Triggering myisam-recover for all MyISAM tables and aria-recover for all
Nov 27 01:48:22 controlNode2 mariadb[890]: 2023-11-27 1:48:22 40 [Warning] Access denied for user 'root'@'localhost' (using password)
Nov 27 01:48:22 controlNode2 mariadb[890]: 2023-11-27 1:48:22 41 [Warning] Access denied for user 'root'@'localhost' (using password)
Nov 27 01:49:50 controlNode2 mariadb[890]: 2023-11-27 1:49:50 42 [Warning] Access denied for user 'root'@'localhost' (using password)
Nov 27 01:49:50 controlNode2 mariadb[890]: 2023-11-27 1:49:50 43 [Warning] Access denied for user 'root'@'localhost' (using password)
Nov 27 01:52:27 controlNode2 mariadb[890]: 2023-11-27 1:52:27 44 [Warning] Access denied for user 'root'@'localhost' (using password)
Nov 27 02:08:55 controlNode2 mariadb[890]: 2023-11-27 2:08:55 54 [Warning] Access denied for user 'root'@'localhost' (using password)
lines 1-23/23 (END)
```

Git add, commit, and push origin

```
ken@controlNode:~/HOA13$ git add *
ken@controlNode:~/HOA13$ git commit -m 'HOA13'
[main 7b7c663] HOA13
 11 files changed, 114 insertions(+), 124 deletions(-)
 rewrite roles/sql_database/tasks/main.yml (70%)
ken@controlNode:~/HOA13$ git push origin
Enumerating objects: 52, done.
Counting objects: 100% (52/52), done.
Compressing objects: 100% (17/17), done.
Writing objects: 100% (30/30), 3.65 KiB | 1.82 MiB/s, done.
Total 30 (delta 3), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (3/3), completed with 2 local objects.
To github.com:KBDBuenvenida/HOA13.git
 14324ef..7b7c663  main -> main
ken@controlNode:~/HOA13$
```

Reflections:

Answer the following:

1. What are the benefits of implementing OpenStack?
 - **The benefits of using OpenStack is that it reduces cost for the organization that will use it and that it increases scalability and control for organizations that can choose their own hardware and software vendors. Organizations can avoid the upfront cost of overprovisioning their infrastructure and can also avoid the risks. OpenStack is a powerful platform that can provide a wide range of benefits to organizations of all sizes.**

Conclusions:

- **In conclusion, I was able to implement OpenStack properly in CentOS and Ubuntu where I encountered some problems but I was able to fix it and make it work out. Using OpenStack can improve the Standardization of platforms where we can easily migrate different workloads between different OpenStack clouds. I was also able to learn that OpenStack can offer a reliable and stable foundation for running it on both Ubuntu and CentOS.**