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Instructor: Engr. Jonathan Taylar	Semester and SY: 1st sem sy 2022
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	
<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. 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. Create your own github repository to clone.	

The screenshot shows the GitHub interface for a repository named 'Hoa_15.1_Portfolio' by user 'jchermitano'. The repository is public and has 0 stars and 0 forks. The navigation bar includes links for Code, Issues, Pull requests, Actions, Projects, Wiki, Security, Insights, and Settings. The main content area provides instructions on how to set up the repository. It includes a 'Quick setup' section with a button to 'Set up in Desktop' and a text input field for the repository URL: 'https://github.com/jchermitano/Hoa_15.1_Portfolio.git'. Below this, there are two sections for creating a new repository on the command line. The first section shows a series of git commands to initialize a new repository, create a README, and push to the main branch. The second section shows the commands to add an existing repository from the command line. At the bottom, there is a section for importing code from another repository, with a note that you can initialize the repository with code from a Subversion, Mercurial, or TFS project. A 'ProTip!' at the bottom suggests using the URL for this page when adding GitHub as a remote.

jchermitano / Hoa_15.1_Portfolio Public

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Quick setup — if you've done this kind of thing before

Set up in Desktop or HTTPS SSH `https://github.com/jchermitano/Hoa_15.1_Portfolio.git`

Get started by creating a new file or uploading an existing file. We recommend every repository include a [README](#), [LICENSE](#), and [.gitignore](#).

...or create a new repository on the command line

```
echo "# Hoa_15.1_Portfolio" >> README.md
git init
git add README.md
git commit -m "first commit"
git branch -M main
git remote add origin https://github.com/jchermitano/Hoa_15.1_Portfolio.git
git push -u origin main
```

...or push an existing repository from the command line

```
git remote add origin https://github.com/jchermitano/Hoa_15.1_Portfolio.git
git branch -M main
git push -u origin main
```

...or import code from another repository

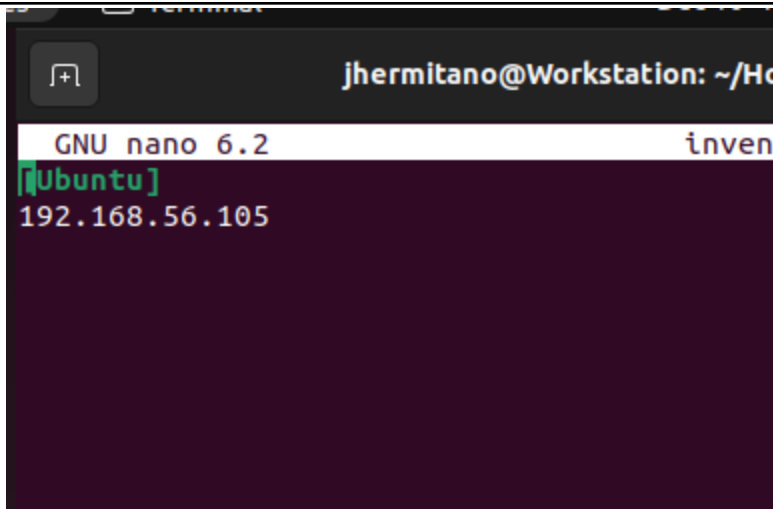
You can initialize this repository with code from a Subversion, Mercurial, or TFS project.

Import code

ProTip! Use the URL for this page when adding GitHub as a remote.

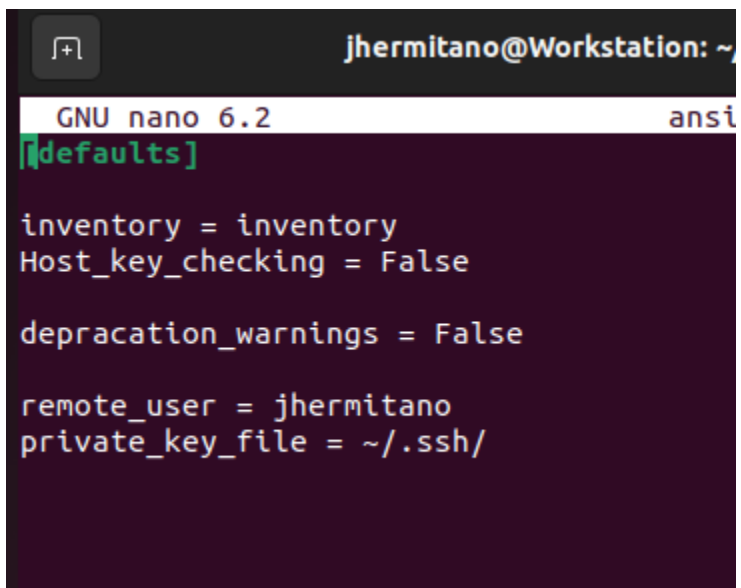
Step 2. Clone your repository and start creating your inventory and ansible.cfg

```
jhermitano@Workstation:~/Hoa_15.1_Portfolio$ sudo nano ansible.cfg
jhermitano@Workstation:~/Hoa_15.1_Portfolio$ sudo nano inventory
jhermitano@Workstation:~/Hoa_15.1_Portfolio$ sudo nano install_openstack.yml
```



A terminal window titled "jhermitano@Workstation: ~/Ho" showing the first part of an Ansible inventory file in nano 6.2. The file content is:

```
GNU nano 6.2          inven
[Ubuntu]
192.168.56.105
```



A terminal window titled "jhermitano@Workstation: ~/Ho" showing the second part of an Ansible inventory file in nano 6.2. The file content is:

```
GNU nano 6.2          ansi
[defaults]

inventory = inventory
Host_key_checking = False

depracation_warnings = False

remote_user = jhermitano
private_key_file = ~/.ssh/
```

Step 3. Create your playbook with this code to install the activities requirements.

```
jhermitano@Workstation: ~/Hoa_15.1_Portfoli
GNU nano 6.2 install_openstack.yml
- hosts: all
  become: true
  tasks:
    - name: update repository index
      apt:
        update_cache: yes
        when: ansible_distribution == "Ubuntu"

    - name: install neutron on Ubuntu
      apt:
        name:
          - neutron-server
        state: latest
        when: ansible_distribution == "Ubuntu"

    - name: install horizon on Ubuntu
      apt:
        name:
          - openstack-dashboard
        state: latest
        when: ansible_distribution == "Ubuntu"

    - name: install cinder on Ubuntu
      apt:
        name:
          - cinder-api
        state: latest
        when: ansible_distribution == "Ubuntu"
```

Step 4. Run your playbook with this command: `ansible-playbook --ask-become-pass yourPlaybook`

```
jhermitano@Workstation: ~/Hwa_15.1_Portfolio$ ansible-playbook --ask-become-pass install_openstack.yml
BECOME password:

PLAY [all] *****

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

TASK [update repository index] *****
changed: [192.168.56.105]

TASK [install neutron on Ubuntu] *****
changed: [192.168.56.105]

TASK [install horizon on Ubuntu] *****
changed: [192.168.56.105]

TASK [install cinder on Ubuntu] *****
changed: [192.168.56.105]

PLAY RECAP *****
192.168.56.105      : ok=5    changed=4    unreachable=0    failed=0    skipped=0    rescued=0
ignored=0
```

Step 5. Verify the installation.

```
jhermitano@Server1: ~
jhermitano@Server1:~$ service neutron-server status
● neutron-server.service - OpenStack Neutron Server
   Loaded: loaded (/lib/systemd/system/neutron-server.service; enabled; vendor preset: enabled)
   Active: active (running) since Sat 2022-12-10 19:54:17 PST; 2s ago
     Docs: man:neutron-server(1)
    Main PID: 8972 (neutron-server)
      Tasks: 1 (limit: 1075)
     Memory: 84.0M
        CPU: 1.648s
    CGroup: /system.slice/neutron-server.service
            └─8972 /usr/bin/python3 /usr/bin/neutron-server --config-file=/etc/neutron/neutron.conf

Dec 10 19:54:17 Server1 systemd[1]: Stopped OpenStack Neutron Server.
Dec 10 19:54:17 Server1 systemd[1]: neutron-server.service: Consumed 3.846s CPU time.
Dec 10 19:54:17 Server1 systemd[1]: Started OpenStack Neutron Server.
lines 1-14/14 (END)

jhermitano@Server1:~$ cinder-api --version
/usr/lib/python3/dist-packages/cinder/db/sqlalchemy/models.py:152: SAWarning: implicitly coercing SEL
ECT object to scalar subquery; please use the .scalar_subquery() method to produce a scalar subquery.
  last_heartbeat = column_property(
/usr/lib/python3/dist-packages/cinder/db/sqlalchemy/models.py:160: SAWarning: implicitly coercing SEL
ECT object to scalar subquery; please use the .scalar_subquery() method to produce a scalar subquery.
  num_hosts = column_property(
/usr/lib/python3/dist-packages/cinder/db/sqlalchemy/models.py:169: SAWarning: implicitly coercing SEL
ECT object to scalar subquery; please use the .scalar_subquery() method to produce a scalar subquery.
  num_down_hosts = column_property(
20.0.1
```

Step 6. Git add your files. You can use git status to check the status of your file.

```

jhermitano@Workstation:~/Hoa_15.1_Portfolio$ ls
ansible.cfg  install_openstack.yml  inventory
jhermitano@Workstation:~/Hoa_15.1_Portfolio$ git add ansible.cfg install_openstack.yml inventory
jhermitano@Workstation:~/Hoa_15.1_Portfolio$ git status
On branch main

No commits yet

Changes to be committed:
  (use "git rm --cached <file>..." to unstage)
        new file:   ansible.cfg
        new file:   install_openstack.yml
        new file:   inventory

```

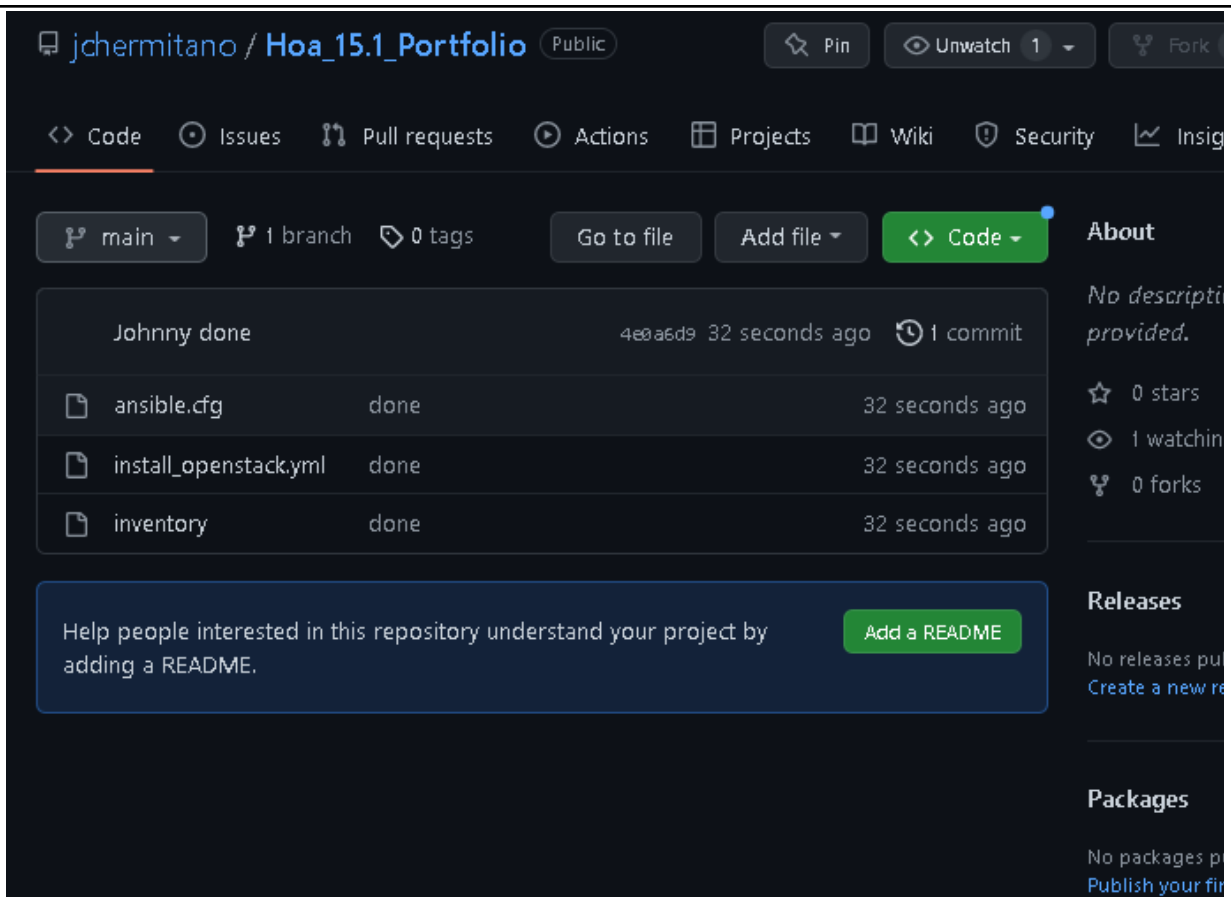
Step 7. Git commit and then git push.

```

jhermitano@Workstation:~/Hoa_15.1_Portfolio$ git commit -m done
[main (root-commit) 4e0a6d9] done
 3 files changed, 43 insertions(+)
 create mode 100644 ansible.cfg
 create mode 100644 install_openstack.yml
 create mode 100644 inventory
jhermitano@Workstation:~/Hoa_15.1_Portfolio$ git push -u origin mian
error: src refspec mian does not match any
error: failed to push some refs to 'github.com:jchermitano/Hoa_15.1_Portfolio.git'
jhermitano@Workstation:~/Hoa_15.1_Portfolio$ git push -u origin main
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Compressing objects: 100% (4/4), done.
Writing objects: 100% (5/5), 634 bytes | 634.00 KiB/s, done.
Total 5 (delta 0), reused 0 (delta 0), pack-reused 0
To github.com:jchermitano/Hoa_15.1_Portfolio.git
 * [new branch]      main -> main
Branch 'main' set up to track remote branch 'main' from 'origin'.

```

Step 8. You verify your files if successfully pushed through your github repository.



Github Repository: https://github.com/jchermitano/Hoa_15.1_Portfolio.git

Reflections:

Answer the following:

1. Describe Neutron, Horizon and Cinder services

In order to connect interface devices (such as vNICs) controlled by other OpenStack services, Neutron is an OpenStack project. Cloud administrators and users can control OpenStack compute, storage, and networking services using OpenStack Horizon, a web-based graphical interface. For OpenStack, Cinder is a Block Storage service. It virtualizes the management of block storage devices and gives end users access to a self-service API that allows them to request and use those resources without having to know where or what kind of device their storage is actually deployed on.

Conclusions: