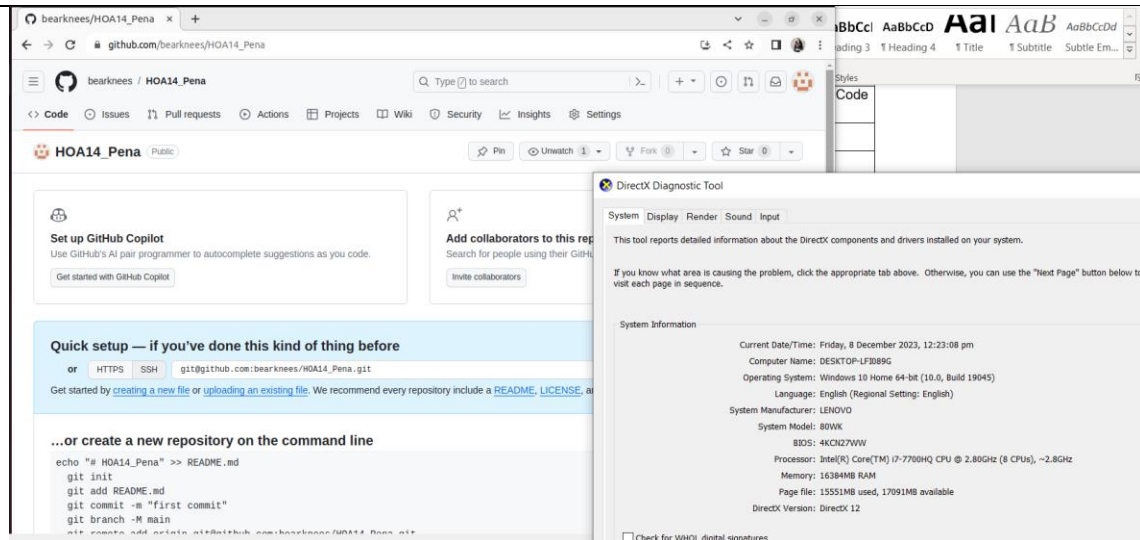
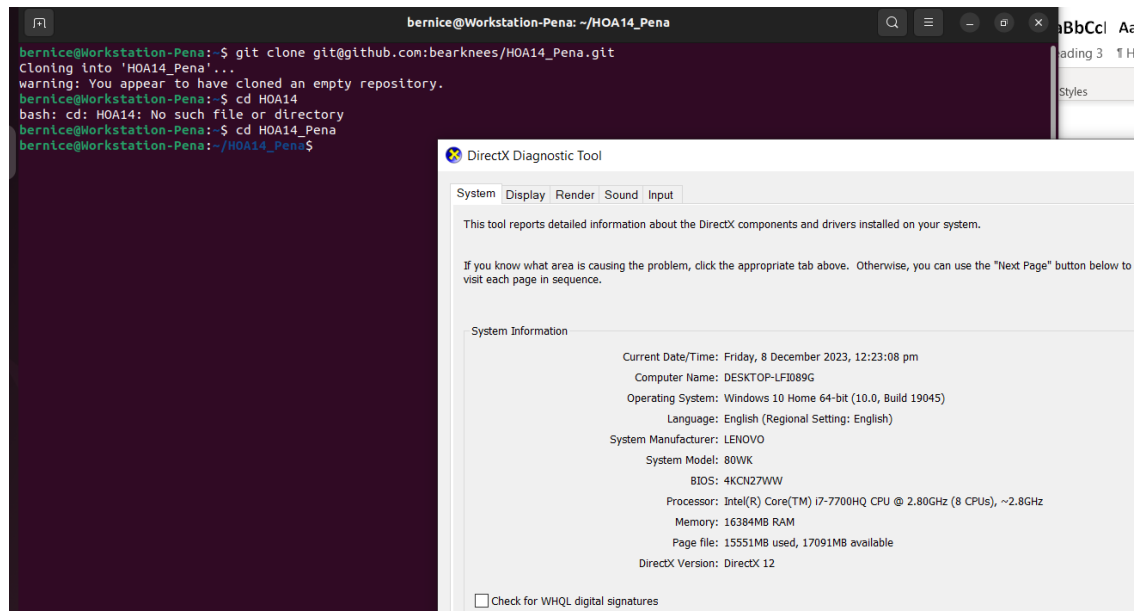


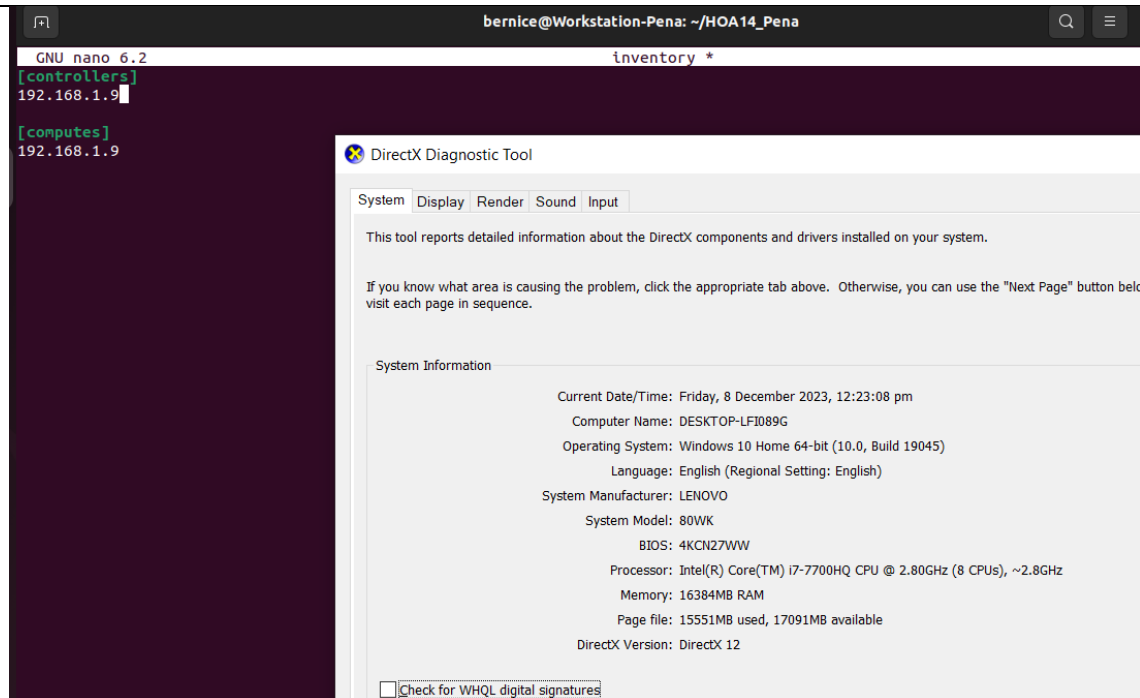
Name: Bernice M. Peña	Date Performed: 12/08/2023
Course/Section: Managing Enterprise Servers / CPE31S5	Date Submitted: 12/08/2023
Instructor: Engr. Roman Richard	Semester and SY: 1 st , SY 2023-2024
Activity 14: OpenStack Installation (Keystone, Glance, Nova)	
1. Objectives	
Create a workflow to install OpenStack using Ansible as your Infrastructure as Code (IaC).	
2. Intended Learning Outcomes	
<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. 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)	



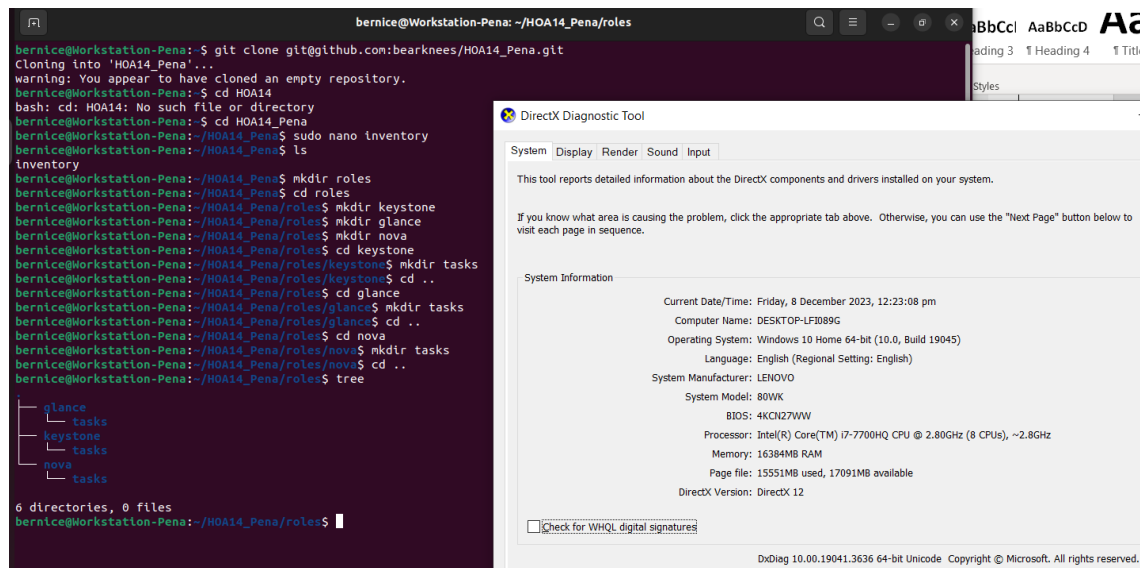
I created a new repository in my GitHub named HOA14, this is what I'm going to use for the installation of OpenStack



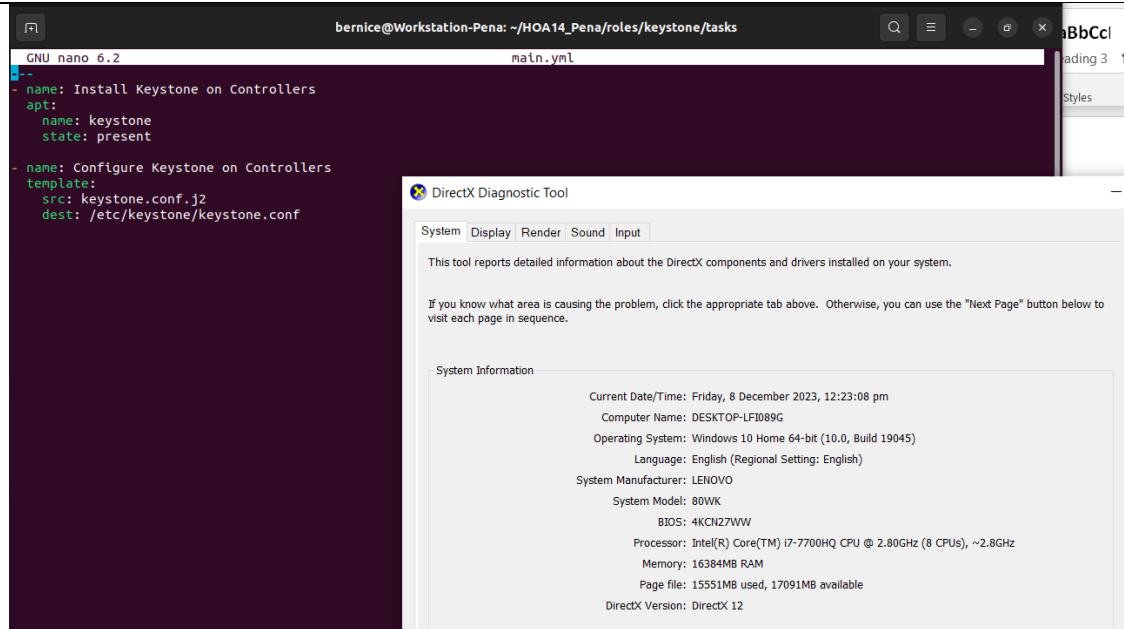
I cloned the repository to have it in my Ubuntu virtual machine



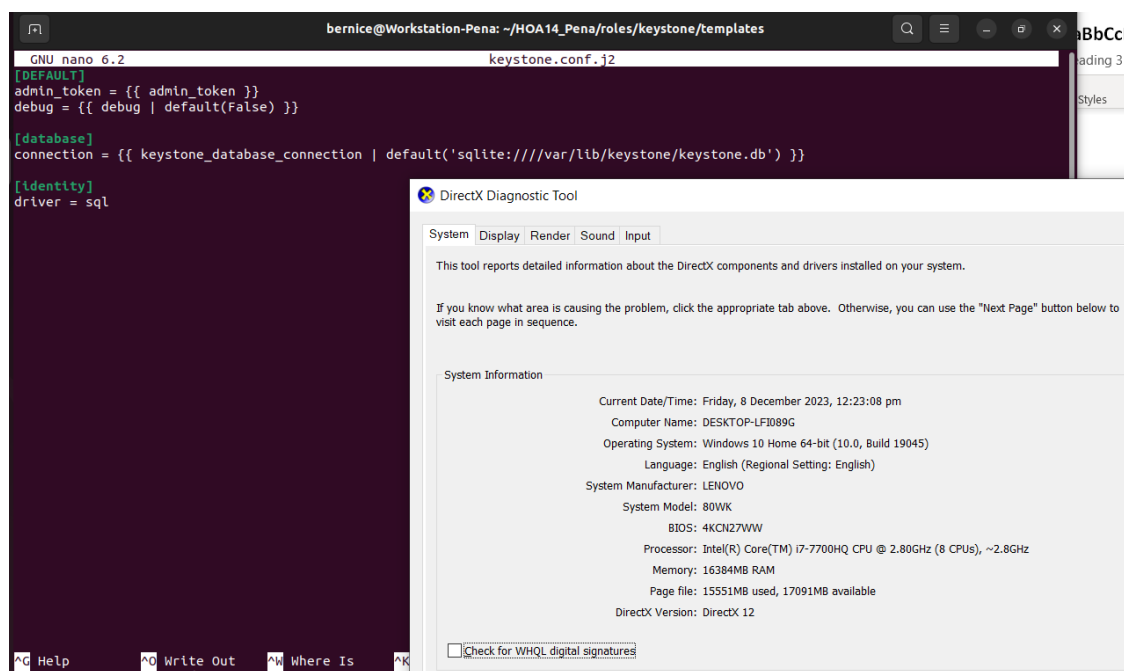
Then I created an inventory wherein the ip address of the server I'm going to use for the installation is stated



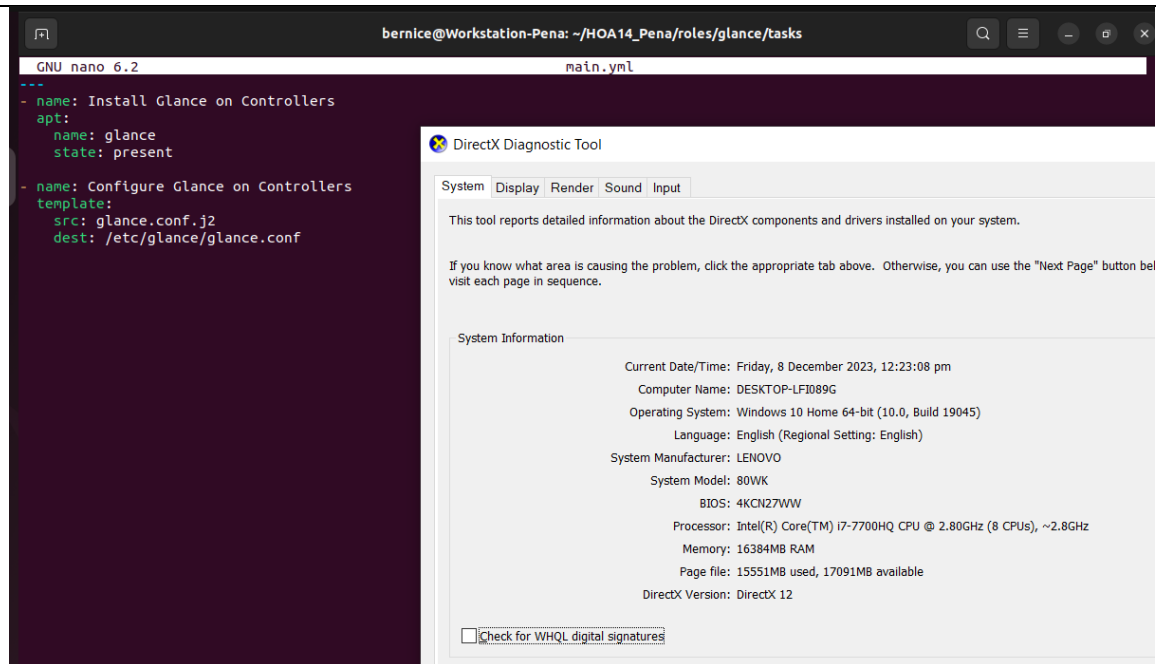
I created a roles directory and inside of it are the necessary files for keystone, glance, and nova



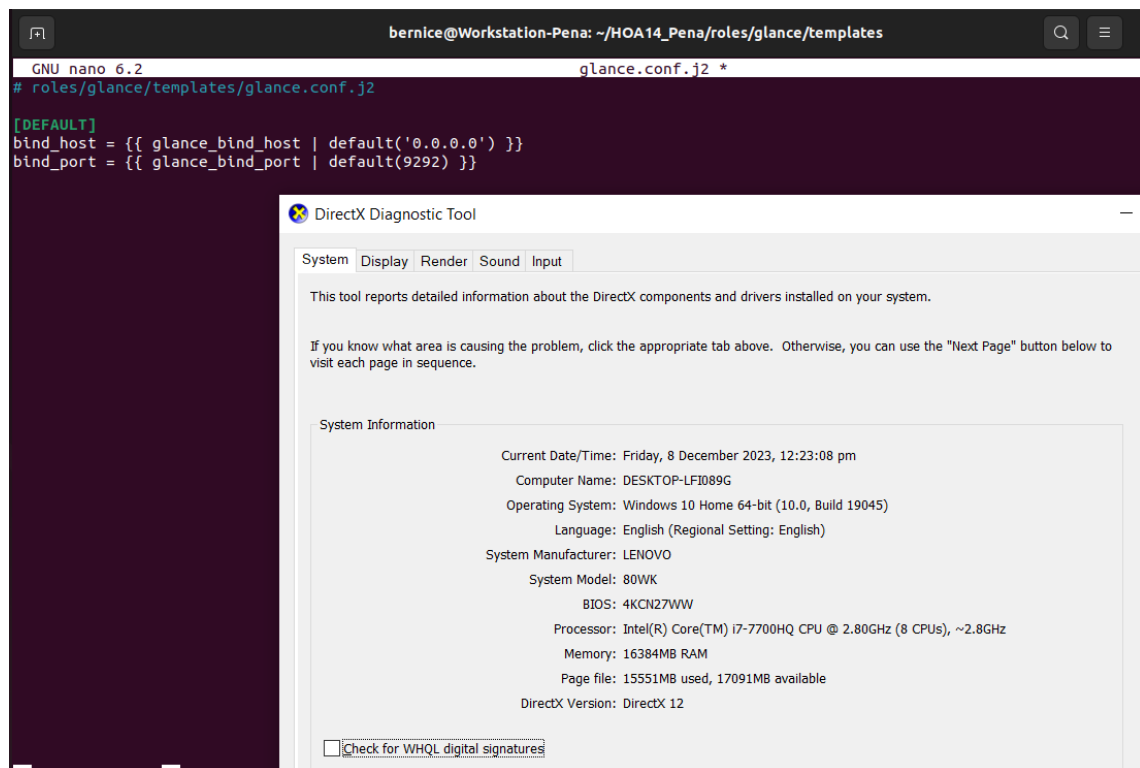
Inside the roles/keystone/tasks, I created this main.yml file that contains the tasks for the installation of keystone



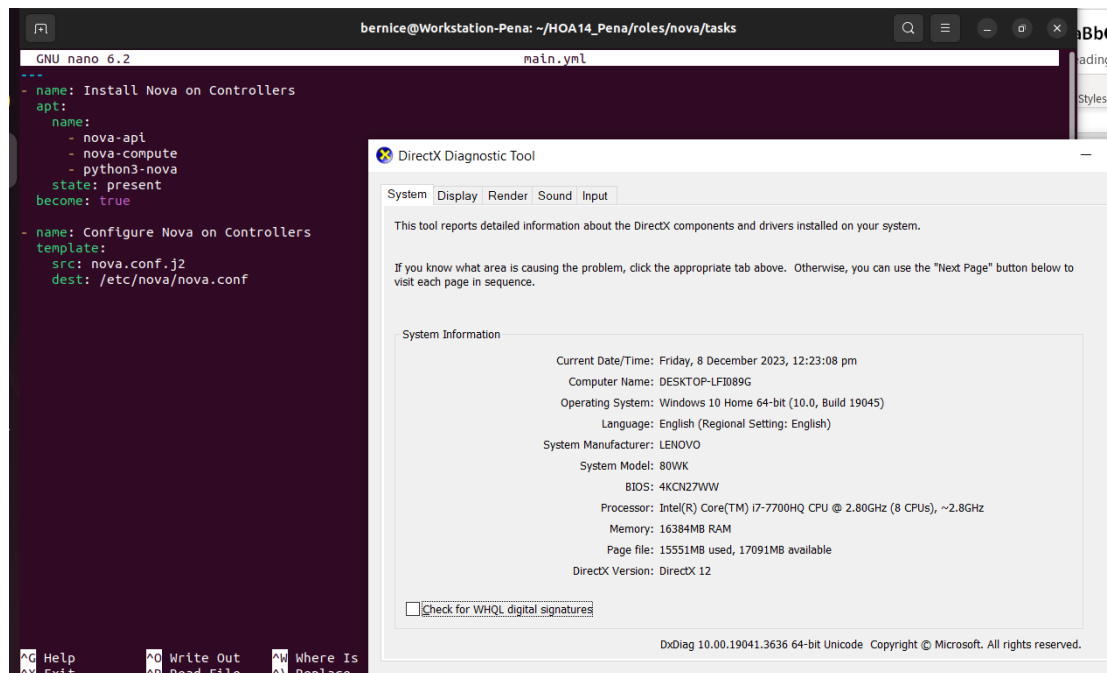
Additionally, I created a nano file for keystone.conf.j2 since in my tasks it is my src



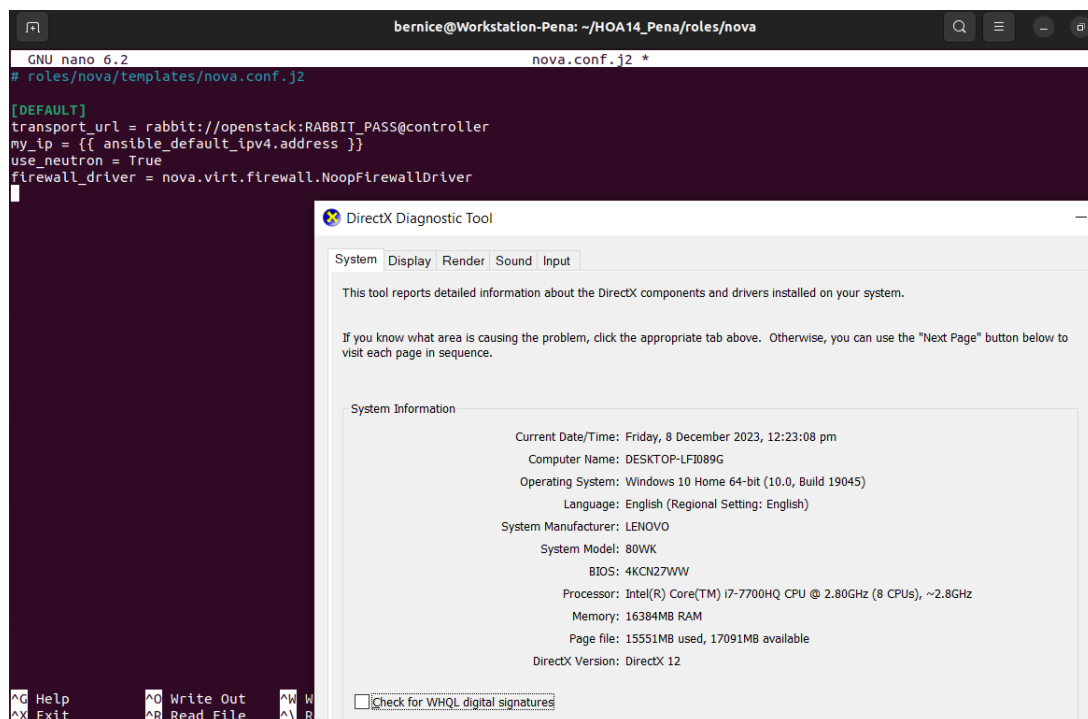
Regarding with the Glance, I also created main.yml file inside the roles/glance/tasks, this also contains the installation of glance on controllers



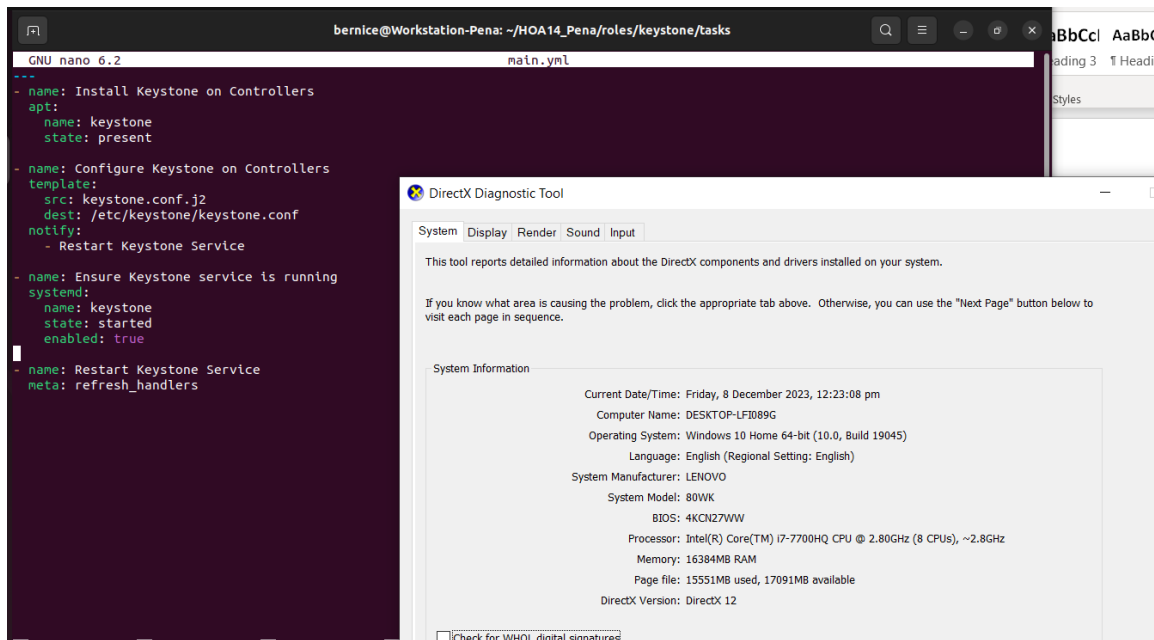
I also created a nano file for Glance for the configuration requirements



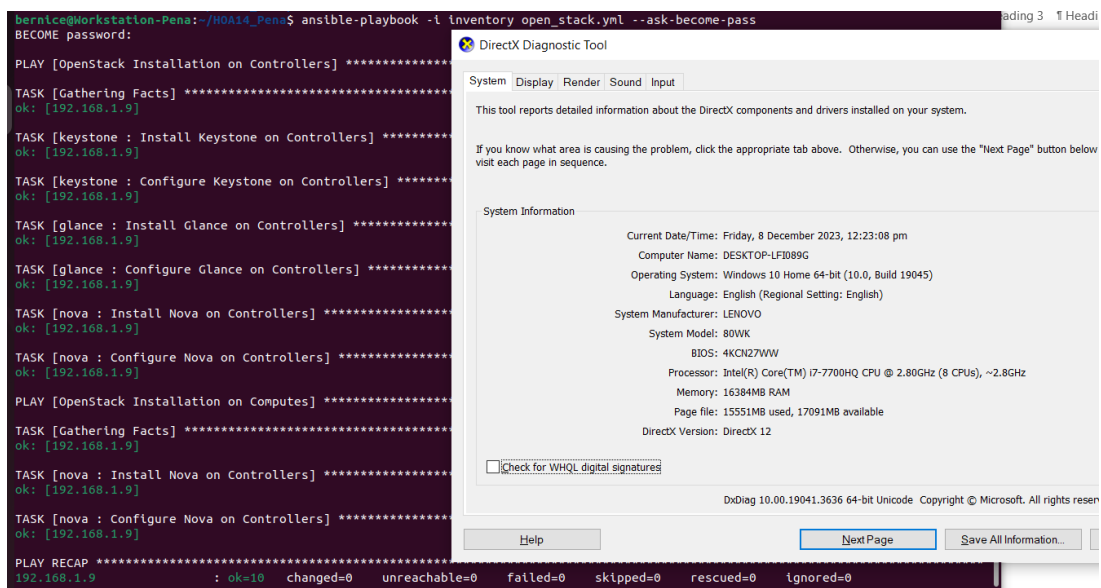
I did the same thing for the installation of Nova, this will be installed in my controllers group in my inventory file



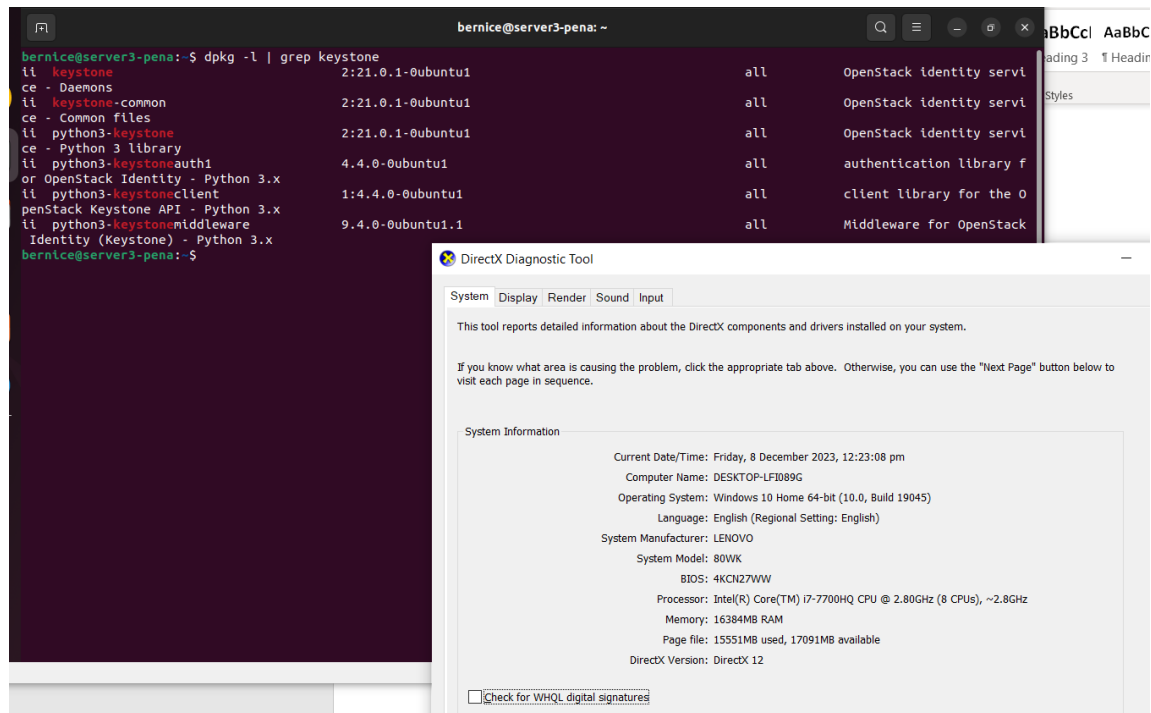
I also created a nano file for this to include the installation requirements



After doing the tasks for Keystone, Glance, and Nova, I created a new yml file named `open_stack.yml`. This file will serve as the main playbook that manages the execution of the roles that I have



After executing the playbook, the status for keystone, glance, and nova indicates “ok”, this means that the installation and configuration tasks were successful



The image shows a terminal window and a DirectX Diagnostic Tool window. The terminal window displays the output of the command `dpkg -l | grep keystone`, which lists installed packages related to Keystone. The DirectX Diagnostic Tool window shows system information, including the current date and time, computer name, operating system, language, system manufacturer, system model, BIOS, processor, memory, page file, and DirectX version.

```
bernice@server3-pena:~$ dpkg -l | grep keystone
ii keystone                2:21.0.1-0ubuntu1      all      OpenStack identity servi
ce - Daemons
ii keystone-common        2:21.0.1-0ubuntu1      all      OpenStack identity servi
ce - Common files
ii python3-keystone       2:21.0.1-0ubuntu1      all      OpenStack identity servi
ce - Python 3 library
ii python3-keystoneauth1  4.4.0-0ubuntu1         all      authentication library f
or OpenStack Identity - Python 3.x
ii python3-keystoneclient 1:4.4.0-0ubuntu1       all      client library for the O
penStack Keystone API - Python 3.x
ii python3-keystonemiddleware 9.4.0-0ubuntu1.1     all      Middleware for OpenStack
Identity (Keystone) - Python 3.x
bernice@server3-pena:~$
```

DirectX Diagnostic Tool

System | Display | Render | Sound | Input

This tool reports detailed information about the DirectX components and drivers installed on your system.

If you know what area is causing the problem, click the appropriate tab above. Otherwise, you can use the "Next Page" button below to visit each page in sequence.

System Information

Current Date/Time: Friday, 8 December 2023, 12:23:08 pm
Computer Name: DESKTOP-LFI089G
Operating System: Windows 10 Home 64-bit (10.0, Build 19045)
Language: English (Regional Setting: English)
System Manufacturer: LENOVO
System Model: 80VK
BIOS: 4KCH27WW
Processor: Intel(R) Core(TM) i7-7700HQ CPU @ 2.80GHz (8 CPUs), ~2.8GHz
Memory: 16384MB RAM
Page file: 15551MB used, 17091MB available
DirectX Version: DirectX 12

☐ Check for WHQL digital signatures

Verification of keystone installation

The image shows a terminal window with a dark background. The user has run the command `sudo service glance-api status`. The output shows that the `glance-api.service` is loaded and active (running) since Fri 2023-12-01 18:19:10 UTC, 26 minutes ago. It lists the main PID as 35422, tasks as 2, memory as 122.0M, and CPU as 20.985s. The cgroup information shows it's part of `system.slice/glance-api.service` with two tasks: `35422 /usr/bin/python3 /usr/bin/glance-api` and `35530 /usr/bin/python3 /usr/bin/glance-api`, both with `--config-file=/etc/glance/glance-api.conf` and `--config-dir=/etc/glance/`. Below the terminal output, a message states: `Dec 01 18:19:10 server3-pena systemd[1]: Started OpenStack Image Service API.` and `lines 1-13/13 (END)`.

Overlaid on the bottom right is a window titled "DirectX Diagnostic Tool". It has tabs for "System", "Display", "Render", "Sound", and "Input", with "System" selected. The text says: "This tool reports detailed information about the DirectX components and drivers installed on your system." and "If you know what area is causing the problem, click the appropriate tab above. Otherwise, you can use the 'Next Page' button below to visit each page in sequence." The "System Information" section shows: Current Date/Time: Friday, 8 December 2023, 12:23:08 pm; Computer Name: DESKTOP-LFI089G; Operating System: Windows 10 Home 64-bit (10.0, Build 19045); Language: English (Regional Setting: English); System Manufacturer: LENOVO; System Model: 80WK; BIOS: 4KCN27WW; Processor: Intel(R) Core(TM) i7-7700HQ CPU @ 2.80GHz (8 CPUs), ~2.8GHz; Memory: 16384MB RAM; Page file: 15551MB used, 17091MB available; DirectX Version: DirectX 12.

Glance status

The image shows a terminal window and the DirectX Diagnostic Tool. The terminal window displays the following commands and output:

```

bernice@server3-pena:~$ sudo service nova-api status
● nova-api.service - OpenStack Compute API
   Loaded: loaded (/lib/systemd/system/nova-api.service; enabled; vendor preset: enabled)
   Active: active (running) since Fri 2023-12-01 18:30:13 UTC; 16min ago
     Docs: man:nova-api(1)
   Main PID: 38759 (nova-api)
    Tasks: 2 (limit: 2221)
   Memory: 139.8M
      CPU: 6min 24.326s
   CGroup: /system.slice/nova-api.service
           └─38759 /usr/bin/python3 /usr/bin/nova-api --config-file=/etc/nova/nova.conf

Dec 01 18:30:13 server3-pena systemd[1]: Started OpenStack Compute API.
Dec 01 18:30:14 server3-pena nova-api[38759]: Modules with known eventlet monkey patching: 1-12/12 (END)

bernice@server3-pena:~$ sudo service nova-compute status
● nova-compute.service - OpenStack Compute
   Loaded: loaded (/lib/systemd/system/nova-compute.service; enabled; vendor preset: enabled)
   Active: active (running) since Fri 2023-12-01 16:18:08 UTC; 2h 29min ago
     Docs: man:nova-compute(1)
   Main PID: 12543 (nova-compute)
    Tasks: 2 (limit: 2221)
   Memory: 124.2M
      CPU: 5.736s
   CGroup: /system.slice/nova-compute.service
           └─12543 /usr/bin/python3 /usr/bin/nova-compute --config-file=/etc/nova/nova.conf

Dec 01 16:18:08 server3-pena systemd[1]: Started OpenStack Compute.
Dec 01 16:18:11 server3-pena nova-compute[12543]: Modules with known eventlet monkey patching: 1-12/12 (END)

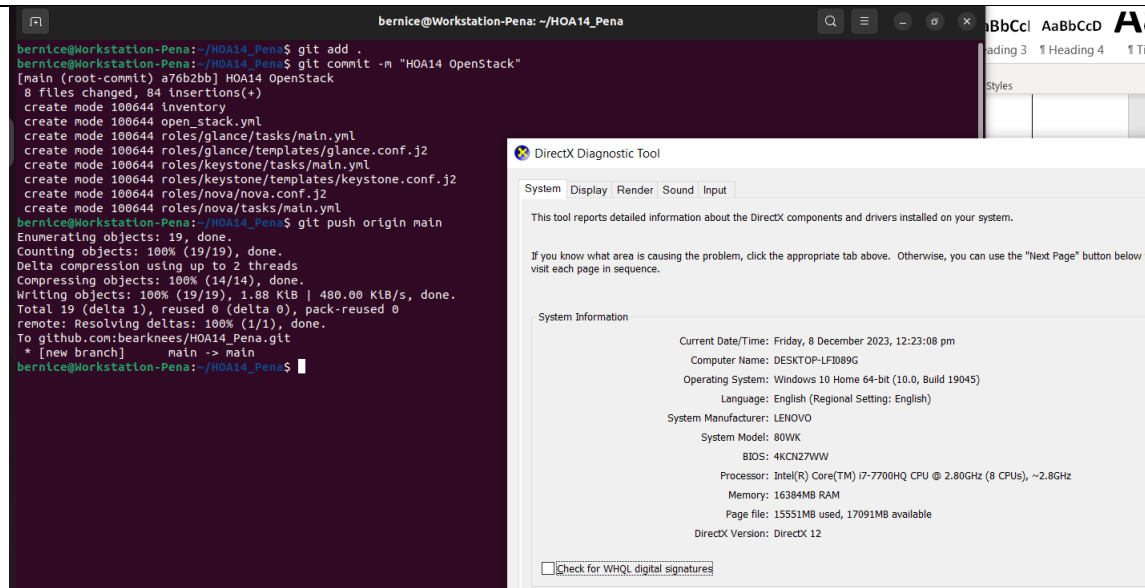
```

The DirectX Diagnostic Tool shows the following system information:

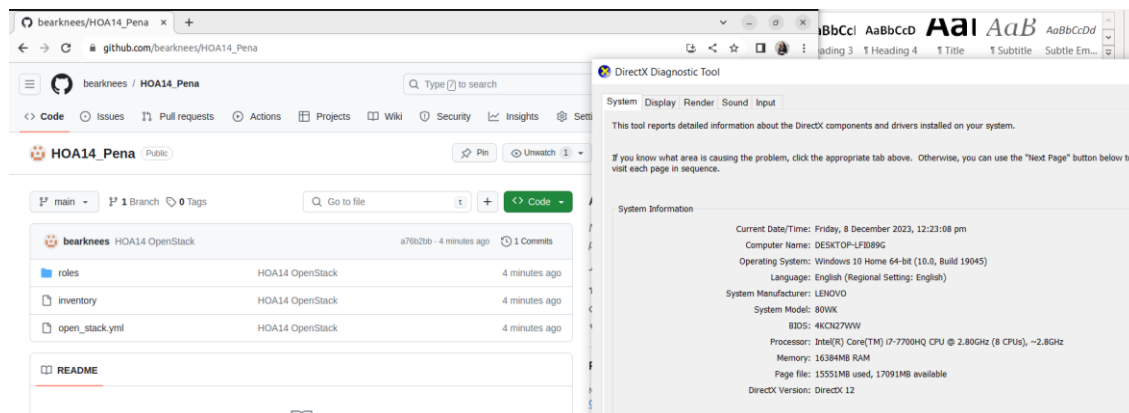
- System Information
 - Current Date/Time: Friday, 8 December 2023, 12:23:08 pm
 - Computer Name: DESKTOP-LF089G
 - Operating System: Windows 10 Home 64-bit (10.0, Build 19045)
 - Language: English (Regional Settings: English)
 - System Manufacturer: LENOVO
 - System Model: 80WK
 - BIOS: 4KCN72WW
 - Processor: Intel(R) Core(TM) i7-7700HQ CPU @ 2.80GHz (8 CPUs), ~2.8GHz
 - Memory: 16384MB RAM
 - Page file: 15551MB used, 17091MB available
 - DirectX Version: DirectX 12
- ☐ Check for WHQL digital signatures

At the bottom of the DirectX Diagnostic Tool window, it says: "DxDiag 10.00.19041.3636 64-bit Unicode Copyright © Microsoft. All rights reserved."

Nova status



I used the add, commit, and push commands in order to have all the files in my GitHub repository



GitHub repository

Reflections:

Answer the following:

1. Describe Keystone, Glance and Nova services

Keystone is an OpenStack cloud computing platform's identifying service. Its main objective is to offer protected access to OpenStack resources through the use of proficient authentication and authorization services. Keystone maintains user identities,

roles, and access rights, serves as a centralized authority for access verification and authorization. This kind of platform plays a crucial role when it comes to developing and maintaining a secure and structured identity and access management system for OpenStack.

Regarding with Glance, it is also an OpenStack's image service, this specializes in managing virtual machine images. Its basic capability includes storing, retrieving, and cataloging photos in various formats. Through providing a single store for images, Glance assists with the process of developing and creating virtual machines.

Nova is an OpenStack's compute service which is critical in managing compute resources in the cloud. Nova is the one that manages in producing and managing virtual machine cases and it also provides a scalable and adaptable framework for having an efficient computing resource management.

Conclusions:

Understanding the troubleshooting and management of OpenStack components like Keystone, Glance, and Nova provide significant ideas and insights with regards to the complexity of cloud infrastructure. Through this activity, I've learned the purposes of Keystone, Glance, and Nova. Keystone serves as the identity service while the Glance is in charge of handling images services. Nova is also an important one since this is the one that produces and manages the virtual machine. With this being said, they play a crucial role in cloud infrastructure. As the cloud computing continues in the field of IT infrastructure, it's important to have best practices and continuous evolving of service interdependencies in order to ensure the smooth operating of cloud platform when it comes to flexibility and scalability.