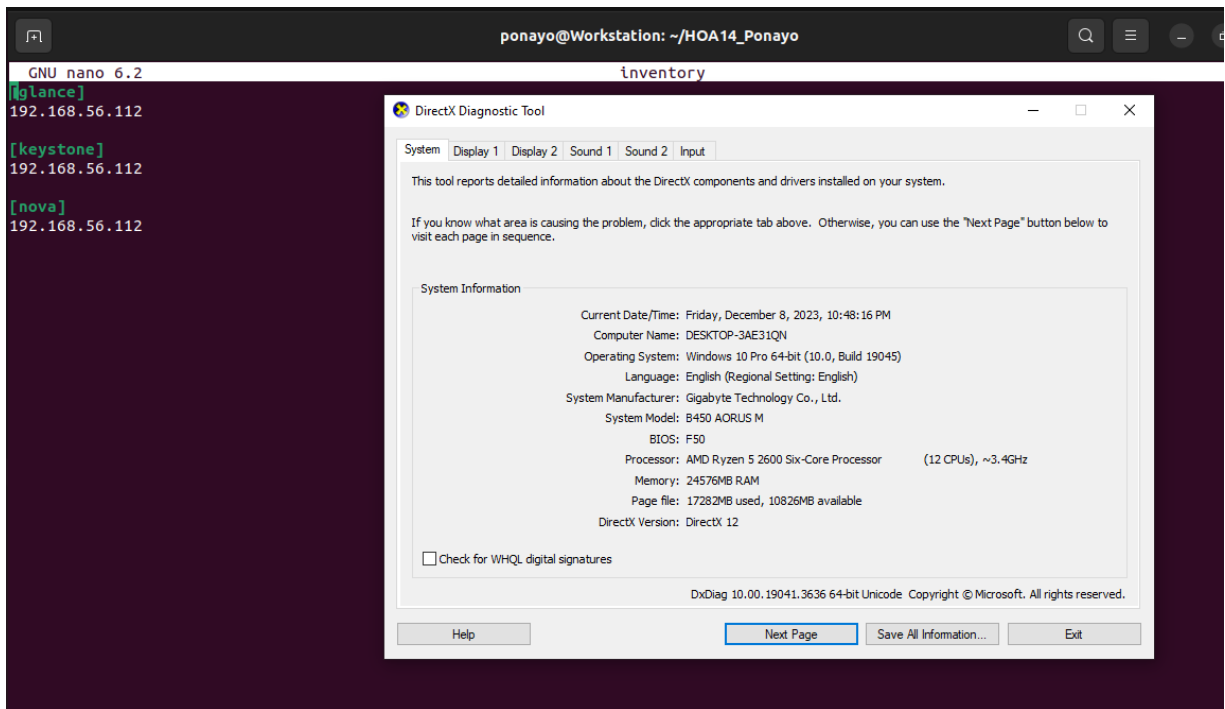
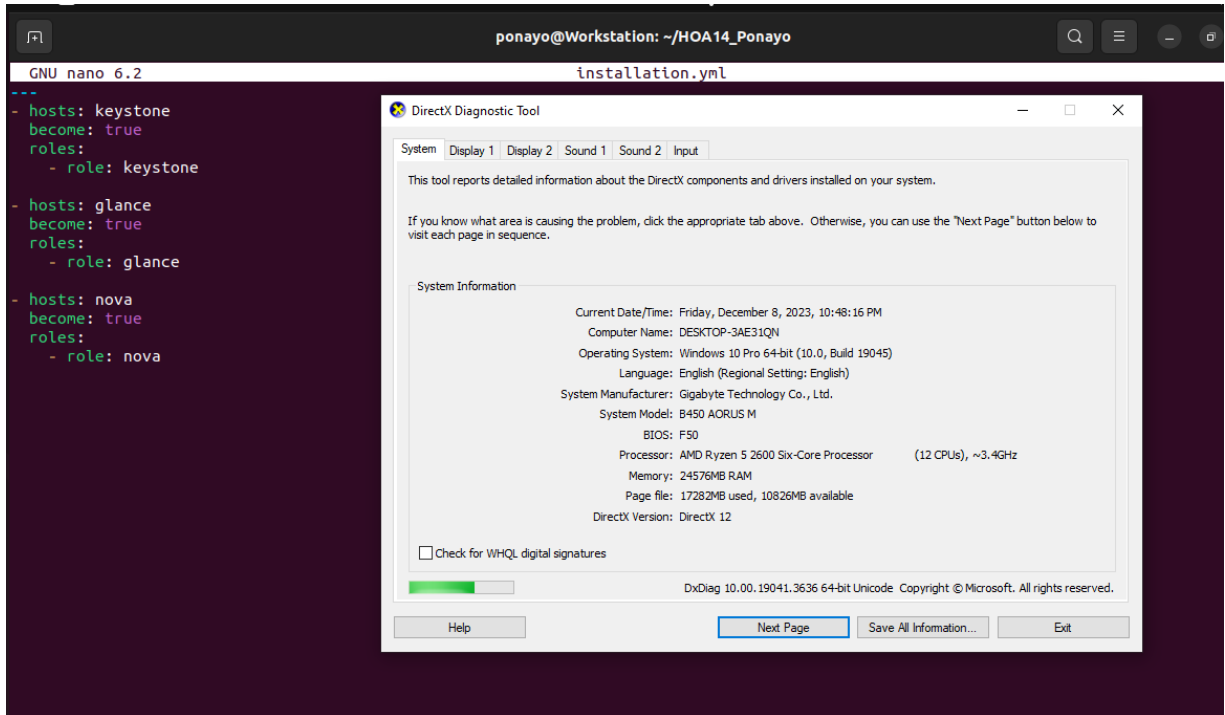
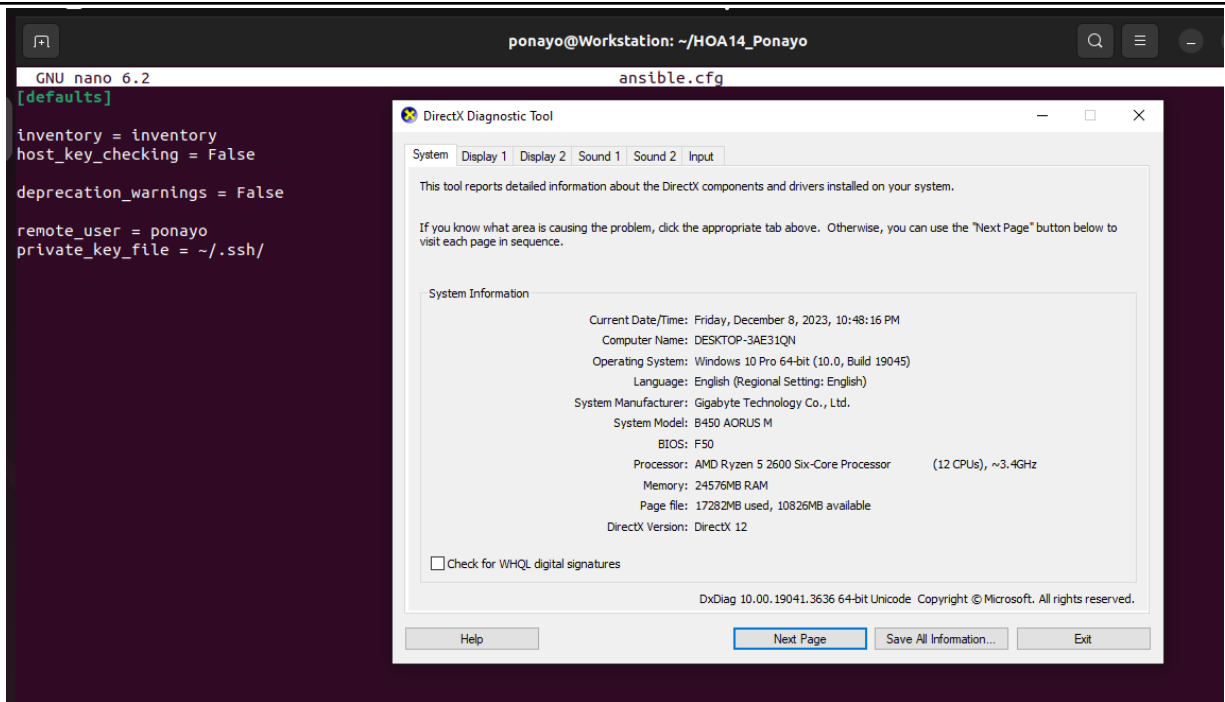


Name: Mark Andrei Ponayo	Date Performed: Dec 8, 2023
Course/Section: BSCPE31S5	Date Submitted: Dec 10, 2023
Instructor: Engr. Roman Richard	Semester and SY: 1st sem 2022 - 2023
Activity 14: OpenStack Installation (Keystone, Glance, Nova)	
1. Objectives	
Create a workflow to install OpenStack using Ansible 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)	

Creating installation.yml, inventory, ansible.cfg

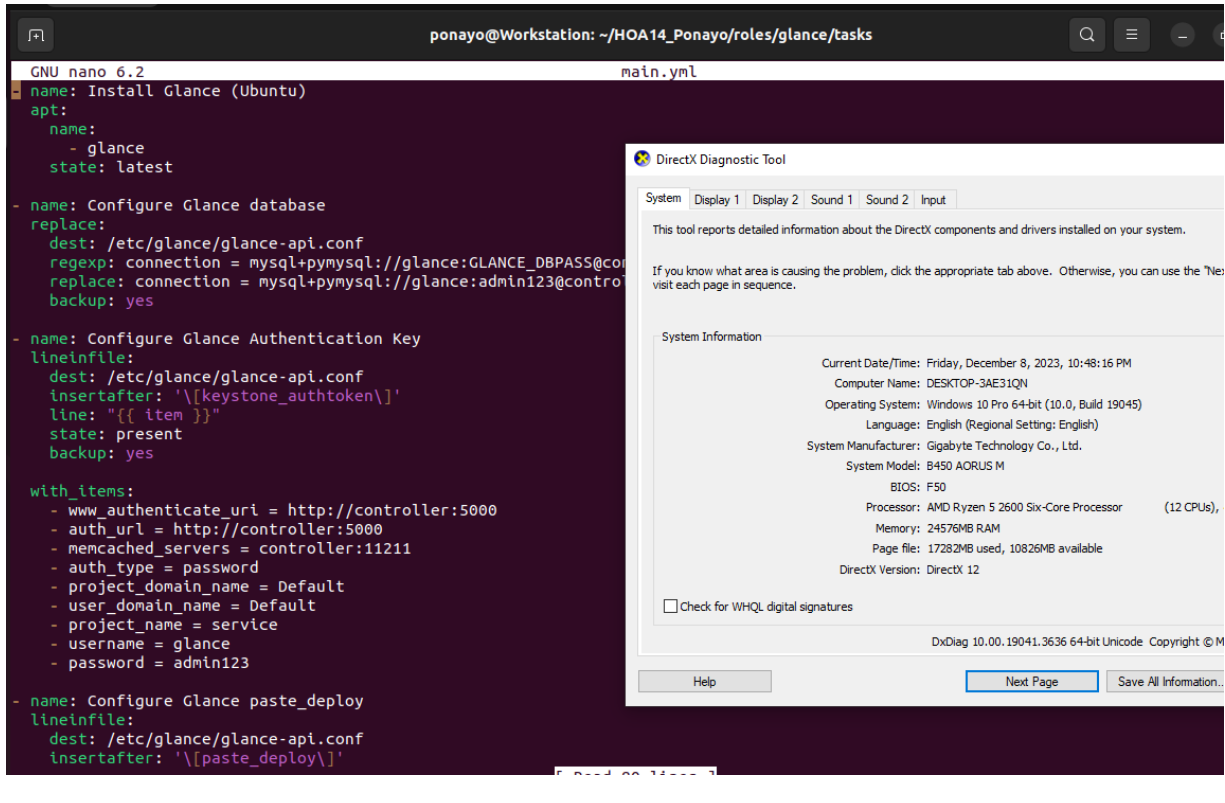
I created the following files to set the ip address, the path of the glance, keystone, and nova, and the default configuration. By creating this, it will help to easily install the nova, glances, and keystone.

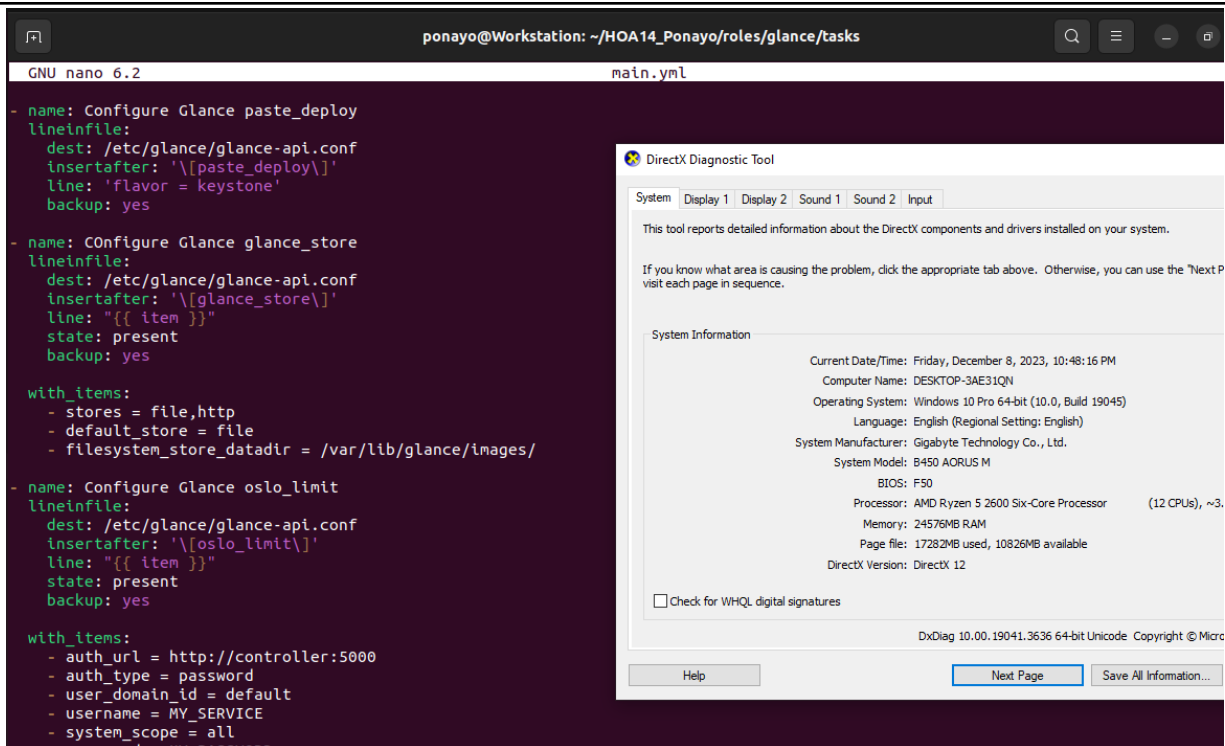




Glance

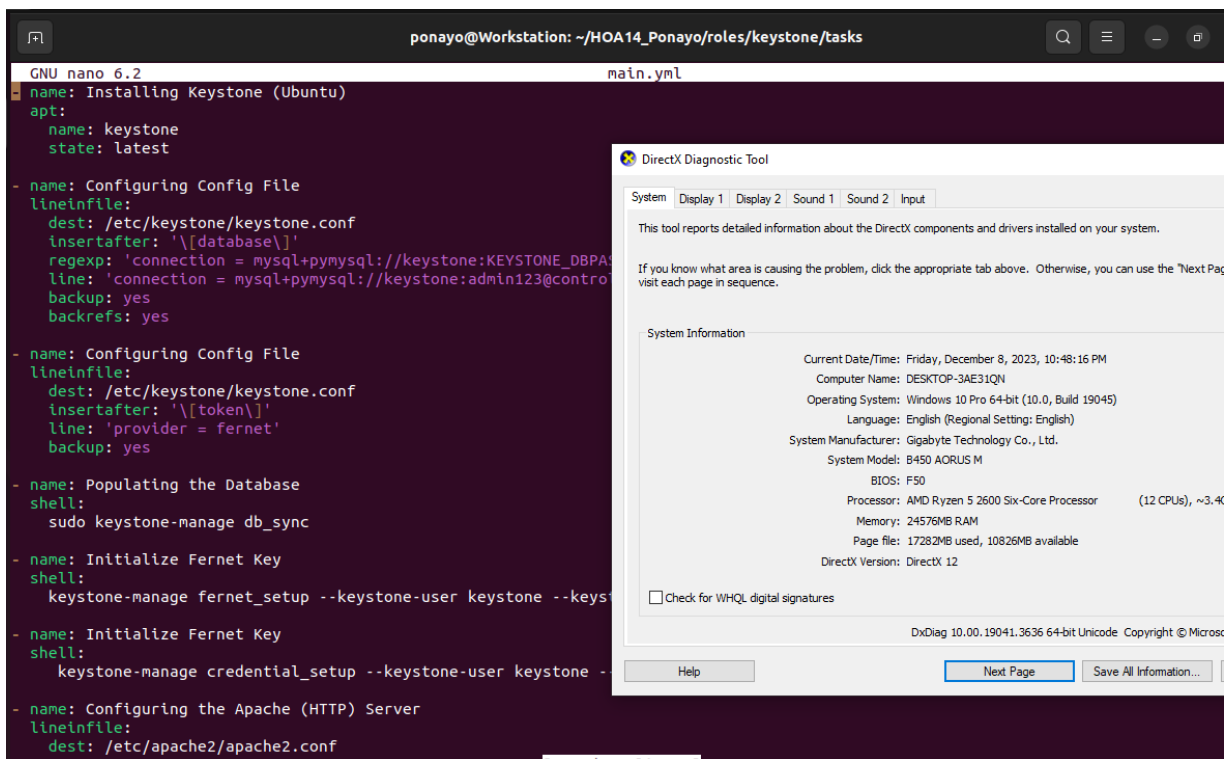
On this file, it will show the following commands to install the glance.





Keystone

On this file, it will show the following commands to install the keystone.



ponayo@Workstation: ~/HOA14_Ponayo/roles/keystone/tasks

```
GNU nano 6.2 main.yml
- name: Configuring Config File
  lineinfile:
    dest: /etc/keystone/keystone.conf
    insertafter: '\[token\]'
    line: 'provider = fernet'
    backup: yes

- name: Populating the Database
  shell:
    sudo keystone-manage db_sync

- name: Initialize Fernet Key
  shell:
    keystone-manage fernet_setup --keystone-user keystone --keystone-pass somepassword

- name: Initialize Fernet Key
  shell:
    keystone-manage credential_setup --keystone-user keystone --keystone-pass somepassword

- name: Configuring the Apache (HTTP) Server
  lineinfile:
    dest: /etc/apache2/apache2.conf
    line: 'ServerName controller'
    state: present
    backup: yes

- name: Configure Administrative Account Environmental Variables
  shell:
    export OS_USERNAME=admin
    export OS_PASSWORD=ADMIN_PASS
    export OS_PROJECT_NAME=admin
    export OS_USER_DOMAIN_NAME=Default
    export OS_PROJECT_DOMAIN_NAME=Default
    export OS_AUTH_URL=http://controller:5000/v3
    export OS_IDENTITY_API_VERSION=3
```

DirectX Diagnostic Tool

System | Display 1 | Display 2 | Sound 1 | Sound 2 | 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 to visit each page in sequence.

System Information

Current Date/Time: Friday, December 8, 2023, 10:48:16 PM
Computer Name: DESKTOP-3AE31QN
Operating System: Windows 10 Pro 64-bit (10.0, Build 19045)
Language: English (Regional Setting: English)
System Manufacturer: Gigabyte Technology Co., Ltd.
System Model: B450 AORUS M
BIOS: F50
Processor: AMD Ryzen 5 2600 Six-Core Processor (12 CPUs), ~3.4
Memory: 24576MB RAM
Page file: 17282MB used, 10826MB available
DirectX Version: DirectX 12

☐ Check for WHQL digital signatures

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Help Next Page Save All Information...

Nova

On this file, it will show the following command to install the Nova

ponayo@Workstation: ~/HOA14_Ponayo/roles/nova/nova

```
GNU nano 6.2 main.yml
- name: Installing Nova (Ubuntu)
  apt:
    name:
      - nova-api
      - nova-conductor
      - nova-novncproxy
      - nova-scheduler
    state: latest

- name: Configuring Nova API
  lineinfile:
    dest: /etc/nova/nova.conf
    regexp: connection = mysql+pymysql://nova:NOVA_DBPASS@controller/nova
    line: connection = mysql+pymysql://nova:admin123@controller/nova
    backup: yes
    backrefs: yes

- name: Configure Nova API
  lineinfile:
    dest: /etc/nova/nova.conf
    insertafter: '\[api\]'
    line: 'auth_strategy = keystone'
    state: present
    backup: yes

- name: Configuring Nova Database
  lineinfile:
    dest: /etc/nova/nova.conf
    regexp: mysql+pymysql://nova:NOVA_DBPASS@controller/nova
    line: mysql+pymysql://nova:admin123@controller/nova
    backup: yes
    backrefs: yes

- name: Configure Nova Authentication Token (for Keystone)
  lineinfile:
    dest: /etc/glance/glance-api.conf
```

DirectX Diagnostic Tool

System | Display 1 | Display 2 | Sound 1 | Sound 2 | 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 to visit each page in sequence.

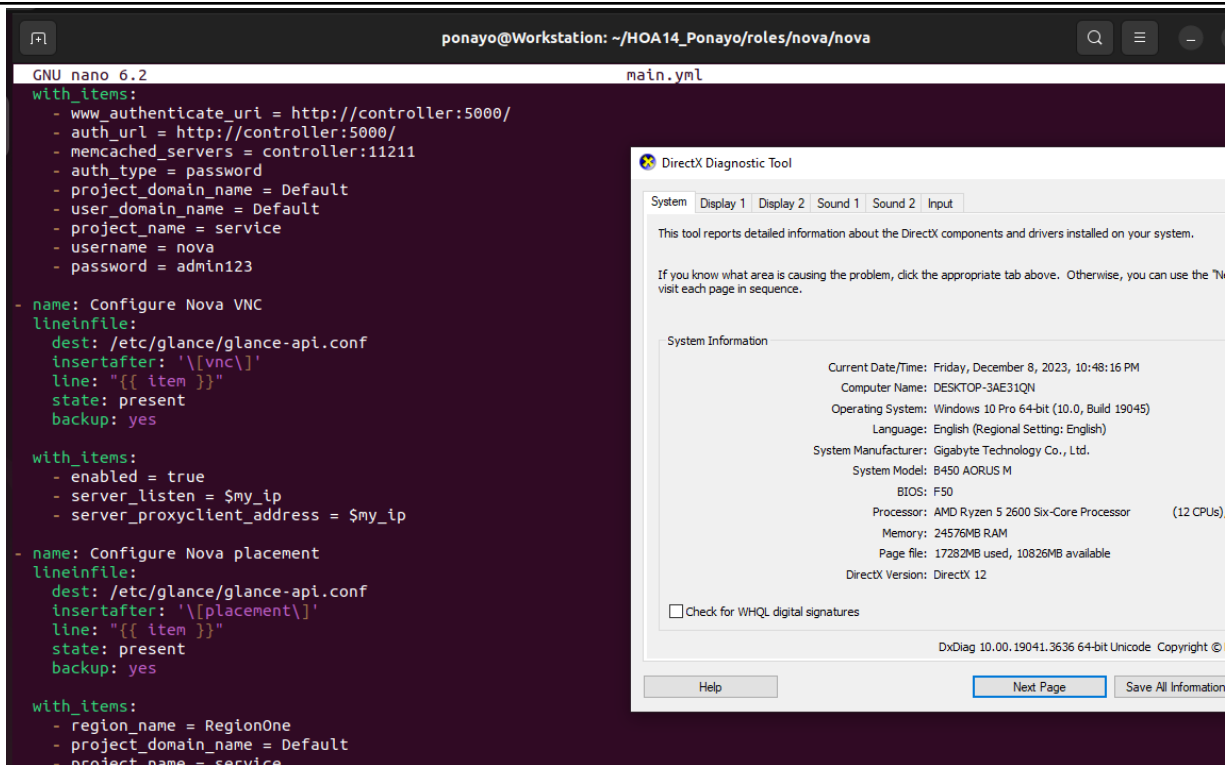
System Information

Current Date/Time: Friday, December 8, 2023, 10:48:16 PM
Computer Name: DESKTOP-3AE31QN
Operating System: Windows 10 Pro 64-bit (10.0, Build 19045)
Language: English (Regional Setting: English)
System Manufacturer: Gigabyte Technology Co., Ltd.
System Model: B450 AORUS M
BIOS: F50
Processor: AMD Ryzen 5 2600 Six-Core Processor (12 CPUs), ~3.4G
Memory: 24576MB RAM
Page file: 17282MB used, 10826MB available
DirectX Version: DirectX 12

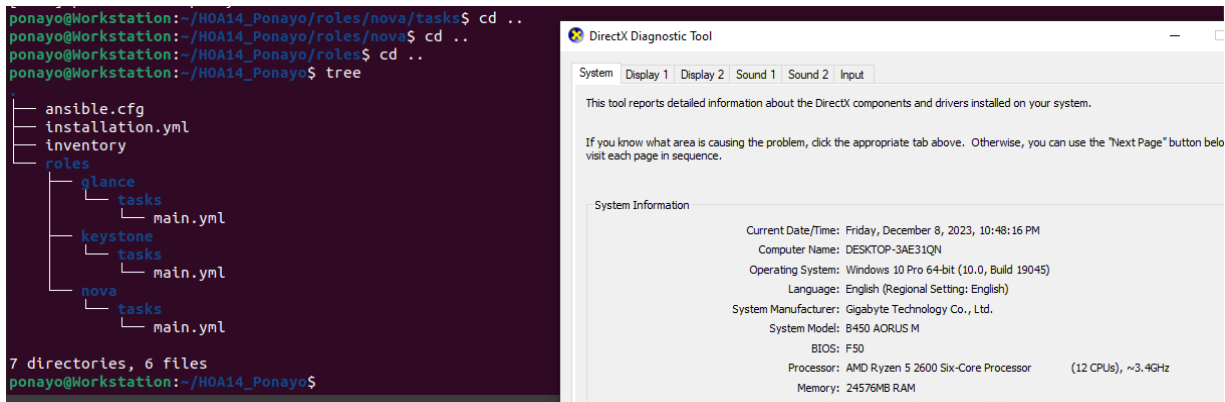
☐ Check for WHQL digital signatures

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Help Next Page Save All Information...



On the following step, I use the tree command to see the following files and use the ansible-playbook command to run the installation.



```
ponayo@Workstation:~/H0A14_Ponayo$ ansible-playbook --ask-become-pass installation.yml
BECOME password:
```

```
PLAY [keystone] *****

TASK [Gathering Facts] *****
ok: [192.168.56.112]

TASK [keystone : Installing Keystone (Ubuntu)] *****
changed: [192.168.56.112]

TASK [keystone : Configuring Config File] *****
ok: [192.168.56.112]

TASK [keystone : Configuring Config File] *****
changed: [192.168.56.112]

TASK [keystone : Populating the Database] *****
changed: [192.168.56.112]

TASK [keystone : Initialize Fernet Key] *****
changed: [192.168.56.112]

TASK [keystone : Initialize Fernet Key] *****
changed: [192.168.56.112]

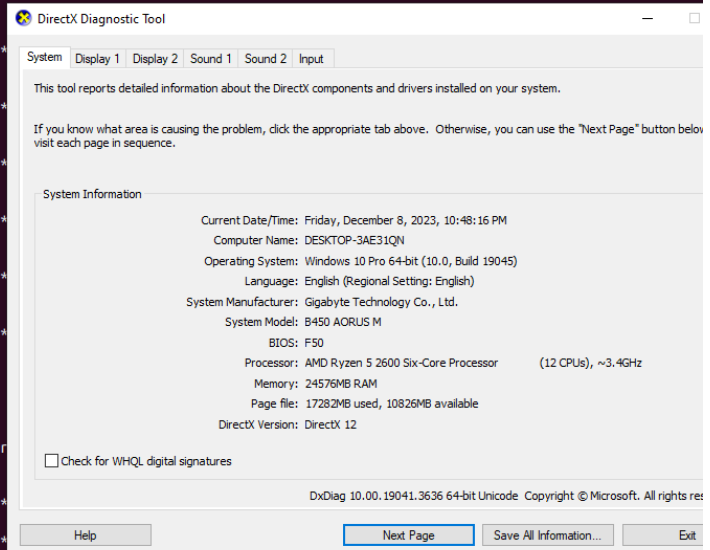
TASK [keystone : Configuring the Apache (HTTP) Server] *****
changed: [192.168.56.112]

TASK [keystone : Configure Administrative Account Environment] *****
changed: [192.168.56.112]

PLAY [glance] *****

TASK [Gathering Facts] *****
ok: [192.168.56.112]

TASK [glance : Install Glance (Ubuntu)] *****
changed: [192.168.56.112]
```



```
TASK [glance : Install Glance (Ubuntu)] *****
changed: [192.168.56.112]

TASK [glance : Configure Glance database] *****
ok: [192.168.56.112]

TASK [glance : Configure Glance Authentication Key] *****
changed: [192.168.56.112] => (item=www_authenticate_url = http://controller:5000)
changed: [192.168.56.112] => (item=auth_url = http://controller:5000)
changed: [192.168.56.112] => (item=memcached_servers = controller:5000)
changed: [192.168.56.112] => (item=auth_type = password)
changed: [192.168.56.112] => (item=project_domain_name = Default)
changed: [192.168.56.112] => (item=user_domain_name = Default)
changed: [192.168.56.112] => (item=project_name = service)
changed: [192.168.56.112] => (item=username = glance)
changed: [192.168.56.112] => (item=password = admin123)

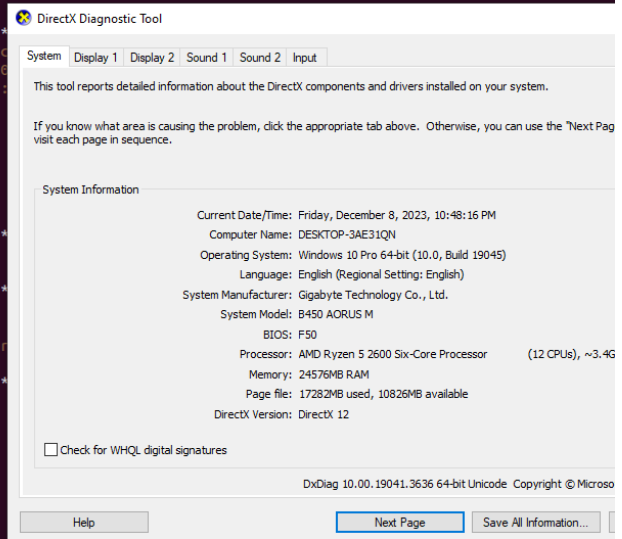
TASK [glance : Configure Glance paste_deploy] *****
changed: [192.168.56.112]

TASK [glance : Configure Glance glance_store] *****
changed: [192.168.56.112] => (item=stores = file,http)
changed: [192.168.56.112] => (item=default_store = file)
changed: [192.168.56.112] => (item=filesystem_store_datadir = /var/lib/containers/glance)

TASK [glance : Configure Glance oslo_limit] *****
ok: [192.168.56.112] => (item=auth_url = http://controller:5000)
ok: [192.168.56.112] => (item=auth_type = password)
changed: [192.168.56.112] => (item=user_domain_id = default)
changed: [192.168.56.112] => (item=username = MY_SERVICE)
changed: [192.168.56.112] => (item=system_scope = all)
changed: [192.168.56.112] => (item=password = MY_PASSWORD)
changed: [192.168.56.112] => (item=endpoint_id = ENDPOINT_ID)
changed: [192.168.56.112] => (item=region_name = RegionOne)

TASK [glance : Configure Glance DEFAULT] *****
changed: [192.168.56.112]

TASK [glance : Populating Image Service Database] *****
```




```
changed: [192.168.56.112] => (item=auth_type = password)
changed: [192.168.56.112] => (item=project_domain_name = Default)
changed: [192.168.56.112] => (item=user_domain_name = Default)
changed: [192.168.56.112] => (item=project_name = service)
changed: [192.168.56.112] => (item=username = glance)
changed: [192.168.56.112] => (item=password = admin123)
```

```
TASK [glance : Configure Glance paste_deploy] *****
changed: [192.168.56.112]
```

```
TASK [glance : Configure Glance glance_store] *****
changed: [192.168.56.112] => (item=stores = file,http)
changed: [192.168.56.112] => (item=default_store = file)
changed: [192.168.56.112] => (item=filesystem_store_datadir = /var
```

```
TASK [glance : Configure Glance oslo_limit] *****
ok: [192.168.56.112] => (item=auth_url = http://controller:5000)
ok: [192.168.56.112] => (item=auth_type = password)
changed: [192.168.56.112] => (item=user_domain_id = default)
changed: [192.168.56.112] => (item=username = MY_SERVICE)
changed: [192.168.56.112] => (item=system_scope = all)
changed: [192.168.56.112] => (item=password = MY_PASSWORD)
changed: [192.168.56.112] => (item=endpoint_id = ENDPOINT_ID)
changed: [192.168.56.112] => (item=region_name = RegionOne)
```

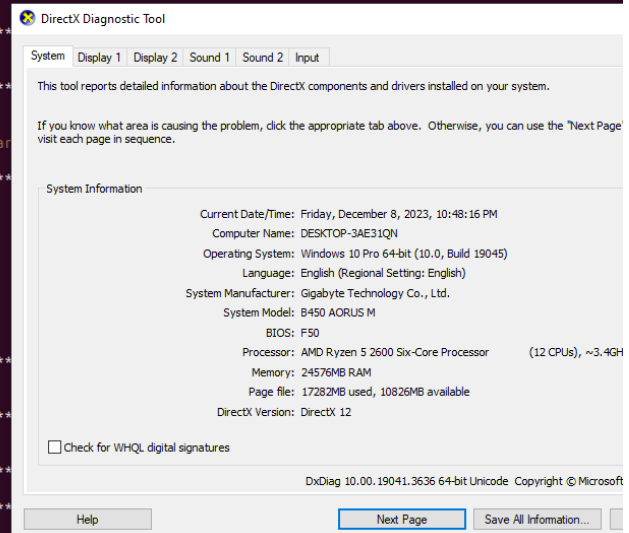
```
TASK [glance : Configure Glance DEFAULT] *****
changed: [192.168.56.112]
```

```
TASK [glance : Populating Image Service Database] *****
changed: [192.168.56.112]
```

```
PLAY [nova] *****
```

```
TASK [Gathering Facts] *****
ok: [192.168.56.112]
```

```
PLAY RECAP *****
192.168.56.112 : ok=19 changed=14 unreachable=0 failed=0 skipped=0 rescued=0 ignored=0
```



```
TASK [glance : Populating Image Service Database] *****
changed: [192.168.56.112]
```

```
TASK [nova : install the packages] *****
changed: [192.168.56.112]
```

```
TASK [nova : configuring RabbitMQ message queue access] *****
changed: [192.168.56.112]
```

```
TASK [nova : configuring identity service access (1)] *****
changed: [192.168.56.112]
```

```
TASK [nova : configuring identity service access (2)] *****
changed: [192.168.56.112]
```

```
TASK [nova : enable and configure remote console access] *****
changed: [192.168.56.112]
```

```
TASK [nova : configure the location of the image service API] *****
changed: [192.168.56.112]
```

```
TASK [nova : configure the lock path] *****
changed: [192.168.56.112]
```

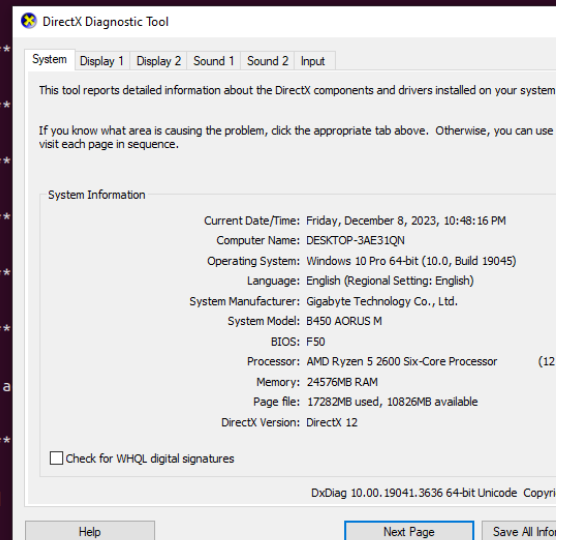
```
TASK [nova : configure the placement API] *****
changed: [192.168.56.112]
```

```
TASK [nova : configuring to make the computer node to support hardware a
changed: [192.168.56.112]
```

```
TASK [nova : restarting the computer service] *****
changed: [192.168.56.112]
```

```
TASK [nova : Verifying if already running and active the nova-compute.]
changed: [192.168.56.112]
```

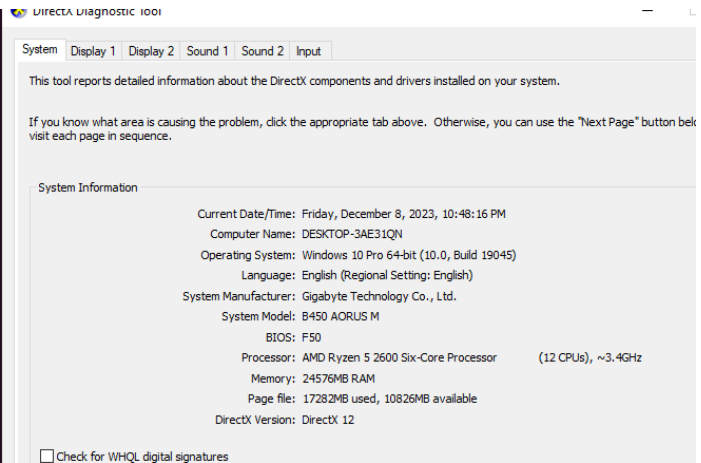
```
TASK [nova : debug] *****
ok: [192.168.56.112] => {
```



Checking if the installation is successful

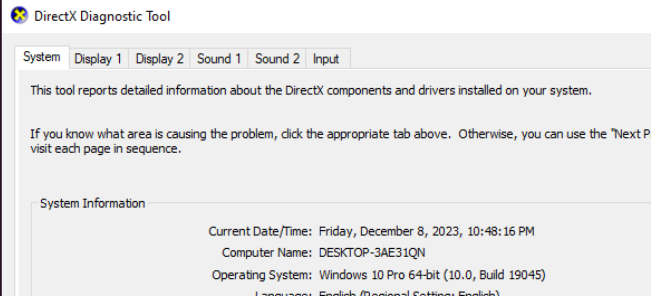
Glance

```
ponayo@Workstation:~$ pip show glance
Name: glance
Version: 24.2.1
Summary: OpenStack Image Service
Home-page: https://docs.openstack.org/glance/latest/
Author: OpenStack
Author-email: openstack-discuss@lists.openstack.org
License: UNKNOWN
Location: /usr/lib/python3/dist-packages
Requires:
Required-by:
ponayo@Workstation:~$
```



Keystone

```
ponayo@Workstation:~$ pip show keystone
Name: keystone
Version: 21.0.1
Summary: OpenStack Identity
Home-page: https://docs.openstack.org/keystone/latest/
Author: OpenStack
Author-email: openstack-discuss@lists.openstack.org
License: UNKNOWN
Location: /usr/lib/python3/dist-packages
Requires:
Required-by:
ponayo@Workstation:~$
```



Nova

```
ponayo@Workstation:~$ pip show nova
WARNING: Package(s) not found: nova
ponayo@Workstation:~$ pip show nova
Name: nova
Version: 25.2.1
Summary: Cloud computing fabric controller
Home-page: https://docs.openstack.org/nova/latest/
Author: OpenStack
Author-email: openstack-discuss@lists.openstack.org
License: UNKNOWN
Location: /usr/lib/python3/dist-packages
Requires: cryptography, SQLAlchemy, websockify
Required-by:
ponayo@Workstation:~$
```

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

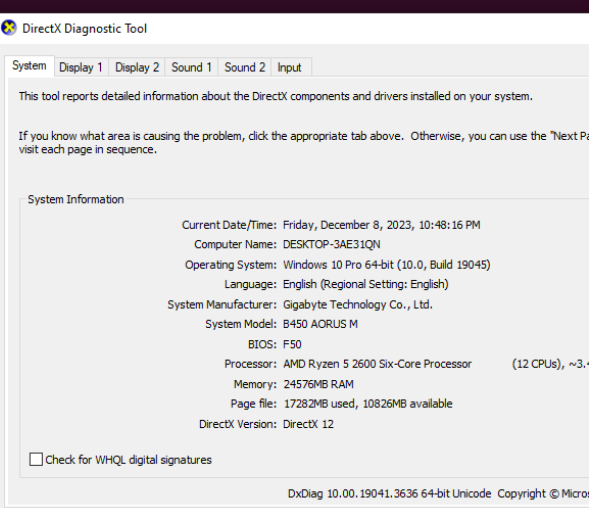
Current Date/Time: Friday, December 8, 2023, 10:48:16 PM
Computer Name: DESKTOP-3AE31QN
Operating System: Windows 10 Pro 64-bit (10.0, Build 19045)
Language: English (Regional Setting: English)
System Manufacturer: Gigabyte Technology Co., Ltd.
System Model: B450 AORUS M
BIOS: F50
Processor: AMD Ryzen 5 2600 Six-Core Processor (12 CPUs), ~3.4GHz
Memory: 24576MB RAM
Page file: 17282MB used, 10826MB available
DirectX Version: DirectX 12

☐ Check for WHQL digital signatures

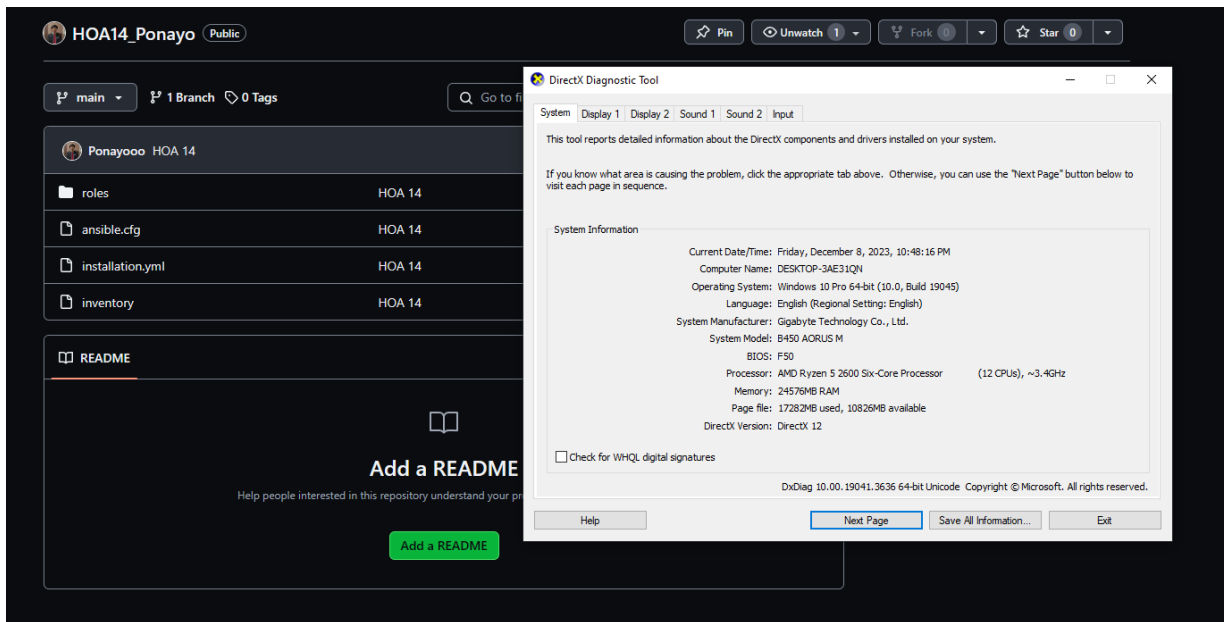
Git push and Proof

```
ponayo@Workstation:~/HOA14_Ponayo/roles/nova$ cd ..
ponayo@Workstation:~/HOA14_Ponayo/roles$ cd ..
ponayo@Workstation:~/HOA14_Ponayo$ git add *
ponayo@Workstation:~/HOA14_Ponayo$ git commit -m "HOA 14"
git: 'commit' is not a git command. See 'git --help'.

The most similar command is
    commit
ponayo@Workstation:~/HOA14_Ponayo$ git commit -m "HOA 14"
[main (root-commit) b58412d] HOA 14
6 files changed, 279 insertions(+)
create mode 100644 ansible.cfg
create mode 100644 installation.yml
create mode 100644 inventory
create mode 100644 roles/glance/tasks/main.yml
create mode 100644 roles/keystone/tasks/main.yml
create mode 100644 roles/nova/nova/main.yml
ponayo@Workstation:~/HOA14_Ponayo$ git push origin main
Enumerating objects: 15, done.
Counting objects: 100% (15/15), done.
Delta compression using up to 2 threads
Compressing objects: 100% (9/9), done.
Writing objects: 100% (15/15), 2.74 KiB | 1.37 MiB/s, done.
Total 15 (delta 1), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (1/1), done.
To github.com:Ponayooo/HOA14_Ponayo.git
 * [new branch]      main -> main
ponayo@Workstation:~/HOA14_Ponayo$
```



The screenshot shows the DirectX Diagnostic Tool window. It has tabs for System, Display 1, Display 2, Sound 1, Sound 2, and Input. The System tab is selected. The tool reports detailed information about the DirectX components and drivers installed on the system. The System Information section includes: Current Date/Time: Friday, December 8, 2023, 10:48:16 PM; Computer Name: DESKTOP-3AE31QN; Operating System: Windows 10 Pro 64-bit (10.0, Build 19045); Language: English (Regional Setting: English); System Manufacturer: Gigabyte Technology Co., Ltd.; System Model: B450 AORUS M; BIOS: F50; Processor: AMD Ryzen 5 2600 Six-Core Processor (12 CPUs), ~3.4GHz; Memory: 24576MB RAM; Page file: 17282MB used, 10826MB available; DirectX Version: DirectX 12. There is a checkbox for 'Check for WHQL digital signatures' which is unchecked. The footer text is 'DxDiag 10.00.19041.3636 64-bit Unicode Copyright © Microsoft'.



The screenshot shows a GitHub repository page for 'HOA14_Ponayo' by user 'Ponayooo'. The repository is public and has 1 branch and 0 tags. The file list shows: roles (HOA 14), ansible.cfg (HOA 14), installation.yml (HOA 14), and inventory (HOA 14). There is a 'README' section with a 'Add a README' button. The 'DirectX Diagnostic Tool' window is overlaid on the right side of the page, showing the same system information as the previous screenshot.

https://github.com/Ponayooo/HOA14_Ponayo

Reflections:

Answer the following:

1. Describe Keystone, Glance and Nova services

- The core services of the OpenStack cloud computing platform are Keystone, Glance, and Nova. Each service is essential to the management of various cloud infrastructure components. Keystone is the identity service in OpenStack, responsible for authentication and authorization. Glance is the image service that manages and catalogs virtual machine images used by OpenStack. Nova is the compute service in OpenStack, responsible for managing and provisioning compute resources.

Conclusions:

In conclusion, using Ansible to deploy Glance, Keystone, and Nova in OpenStack makes the installation and configuration procedure, resulting in a more automated and effective solution. Ansible is a powerful automation tool that makes it possible to deploy these essential services consistently and repeatedly, which lowers the possibility of mistakes and guarantees a standardized setup. We can specify the intended state of their OpenStack environment and carry out the deployment process across several nodes using Ansible playbooks and roles. This method improves not just the first installation but also upcoming updates and maintenance.