Name: John Renzo L. Mendoza	**Date Performed:** December 14, 2023
Course/Section: CPE31S5	**Date Submitted:** December 15, 2023
Instructor: Engr. Roman Richard	**Semester and SY:** 1st Semester, 2023-2024

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

1. Analyze the advantages and disadvantages of cloud services
2. Evaluate different Cloud deployment and service models
3. Create a workflow to install and configure OpenStack base services using Ansible as documentation and execution.

3. Resources

Oracle VirtualBox (Hypervisor)

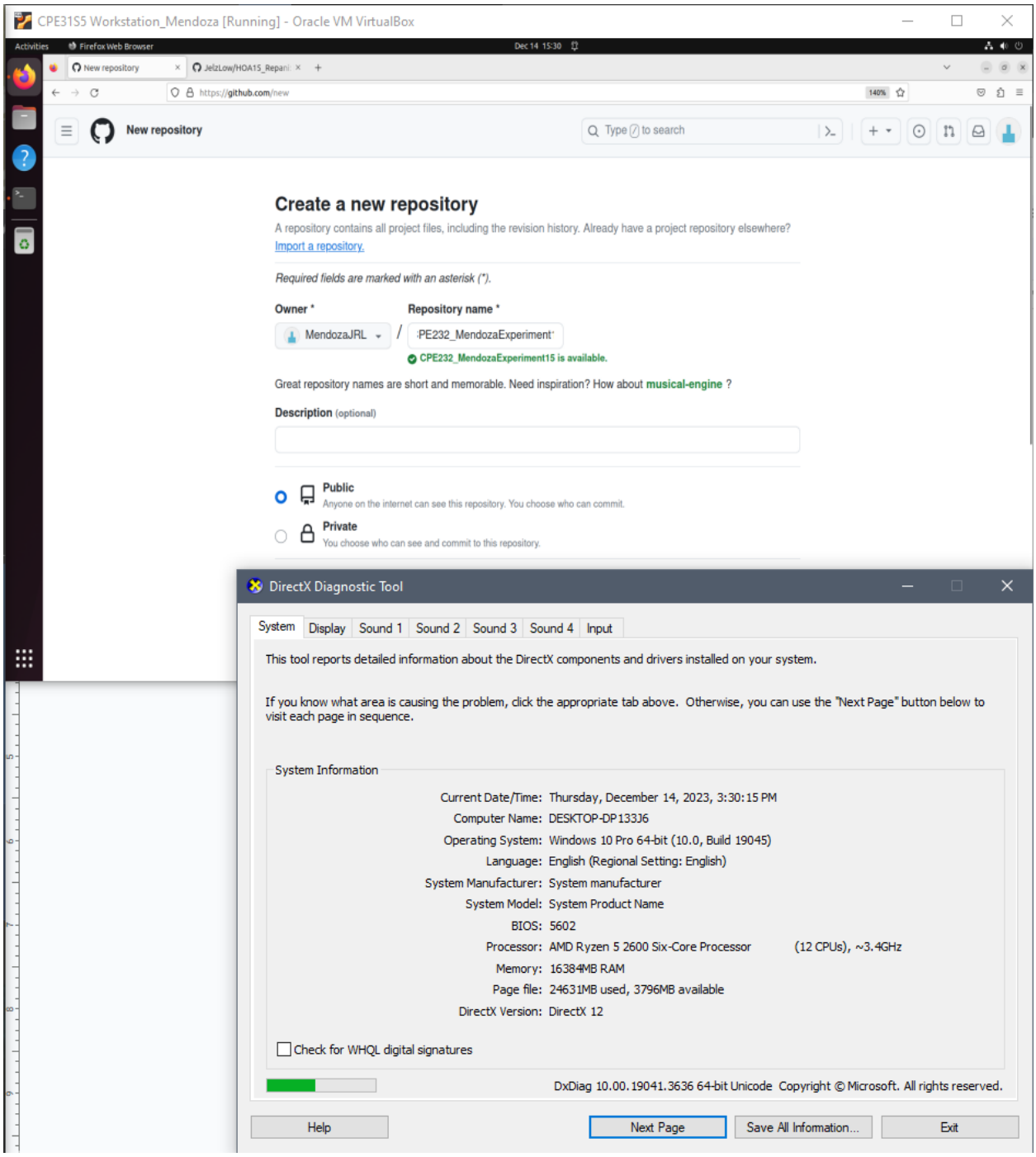
1x Ubuntu VM or Centos VM

4. Tasks

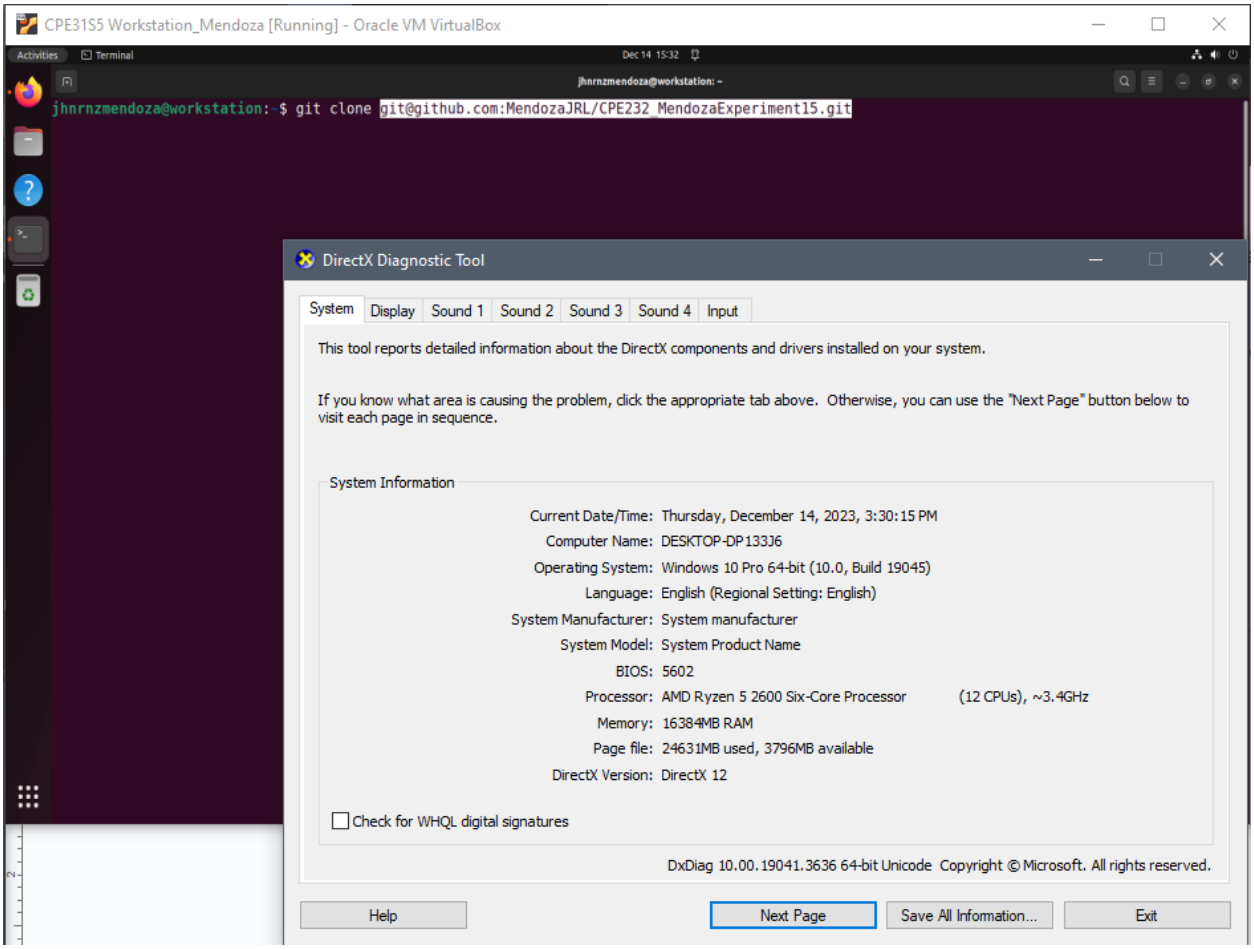
1. Create a new repository for this activity.
2. Create a playbook that converts the steps in the following items in https://docs.openstack.org/install-guide/
   a. Neutron
   b. Horizon
   c. Cinder
   d. Create different plays in installing per server type (controller, compute etc.) and identify it as a group in the Inventory file.
   e. Add, commit and push it to your GitHub repo.

5. **Output** (screenshots and explanations)

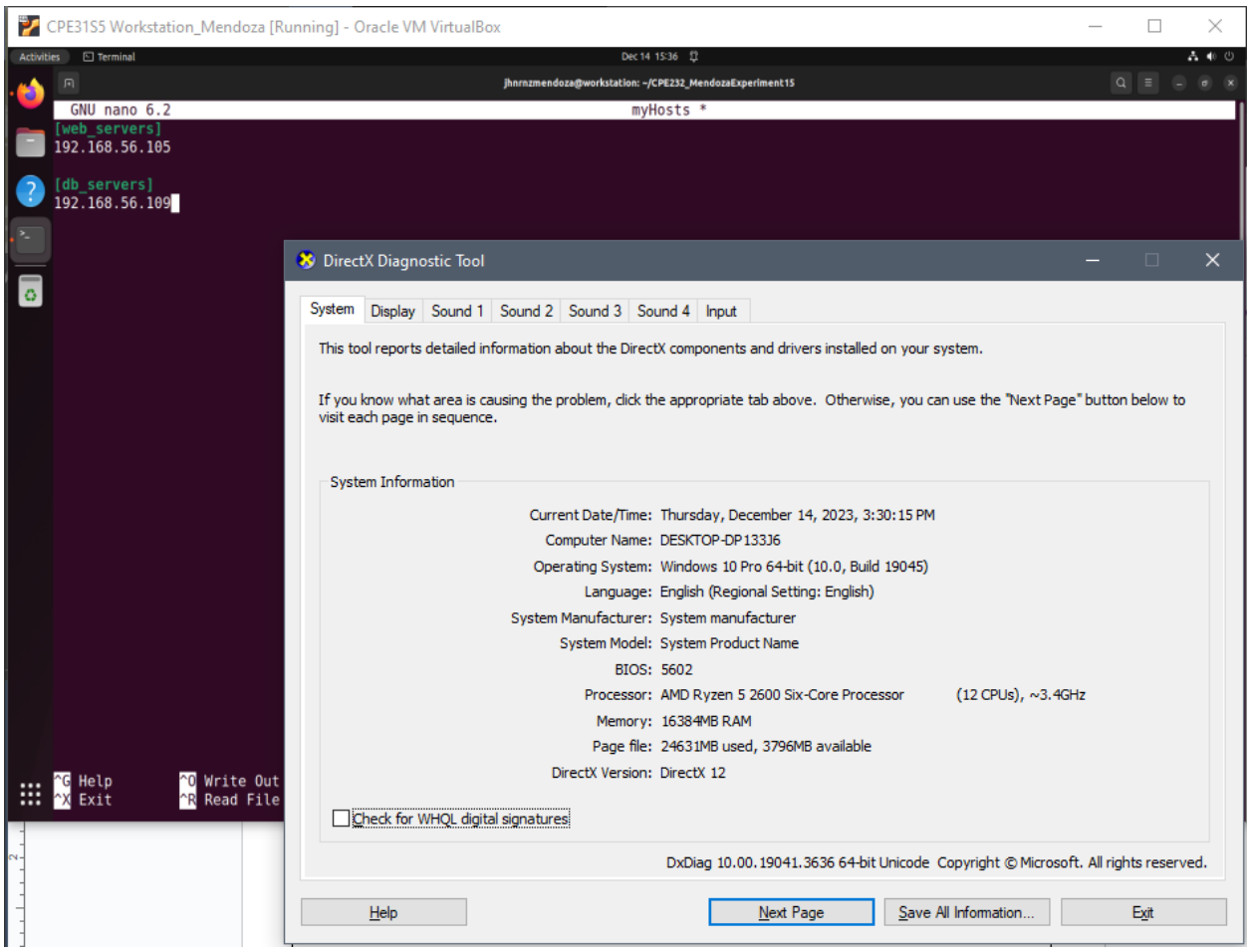
    1. Create a new repository for this activity.



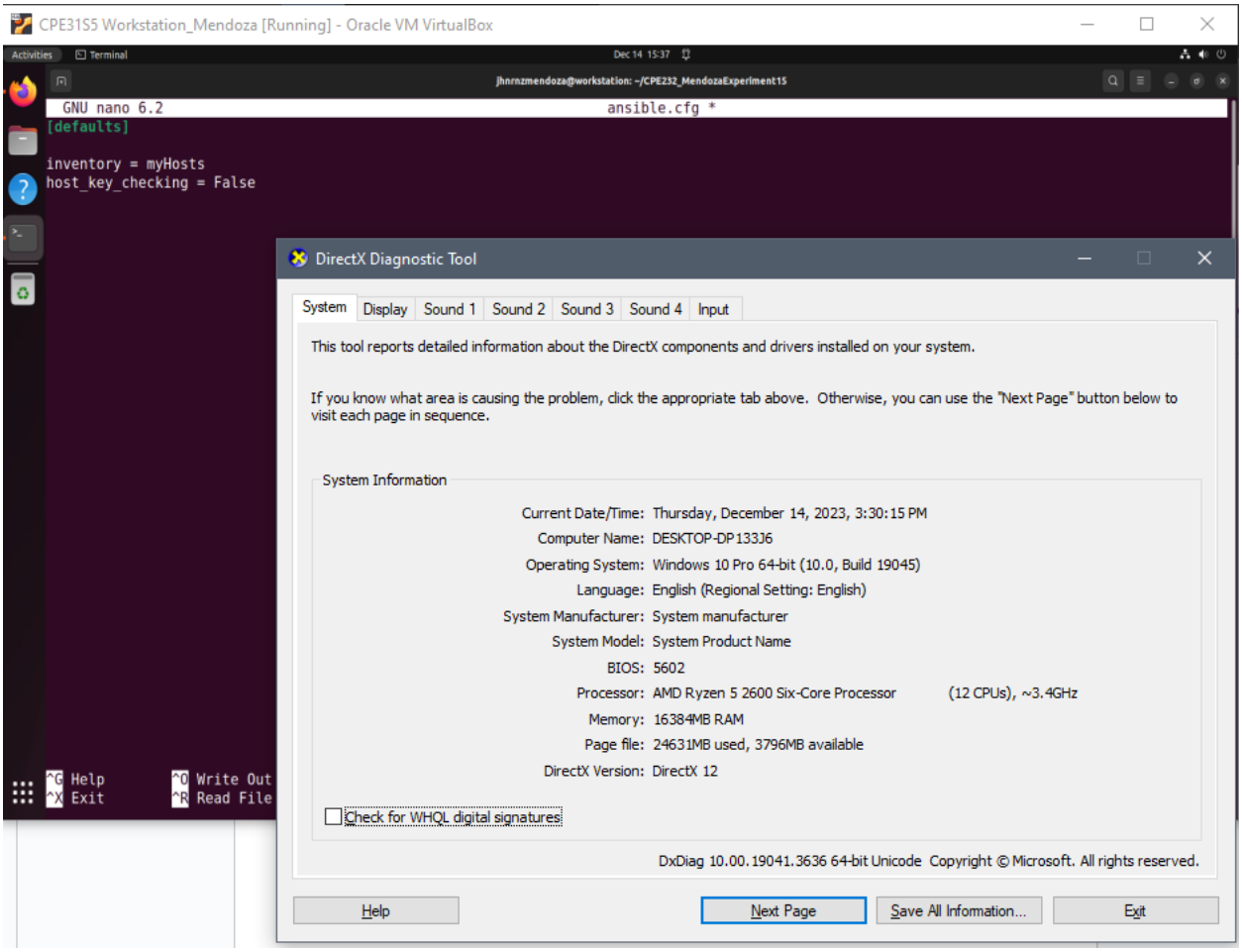
Cloning the Repository to the Local Terminal of the Control Node



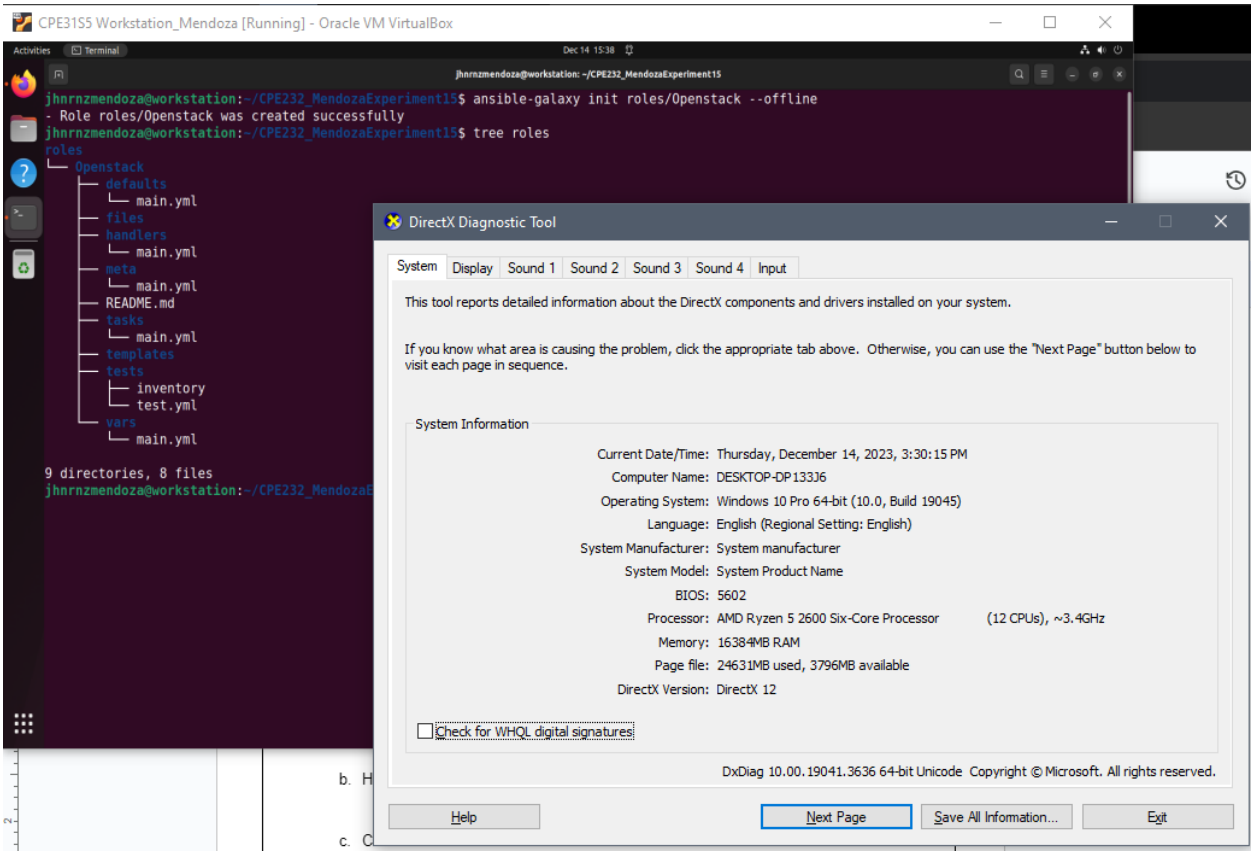
Creation of the Ansible Configuration File.



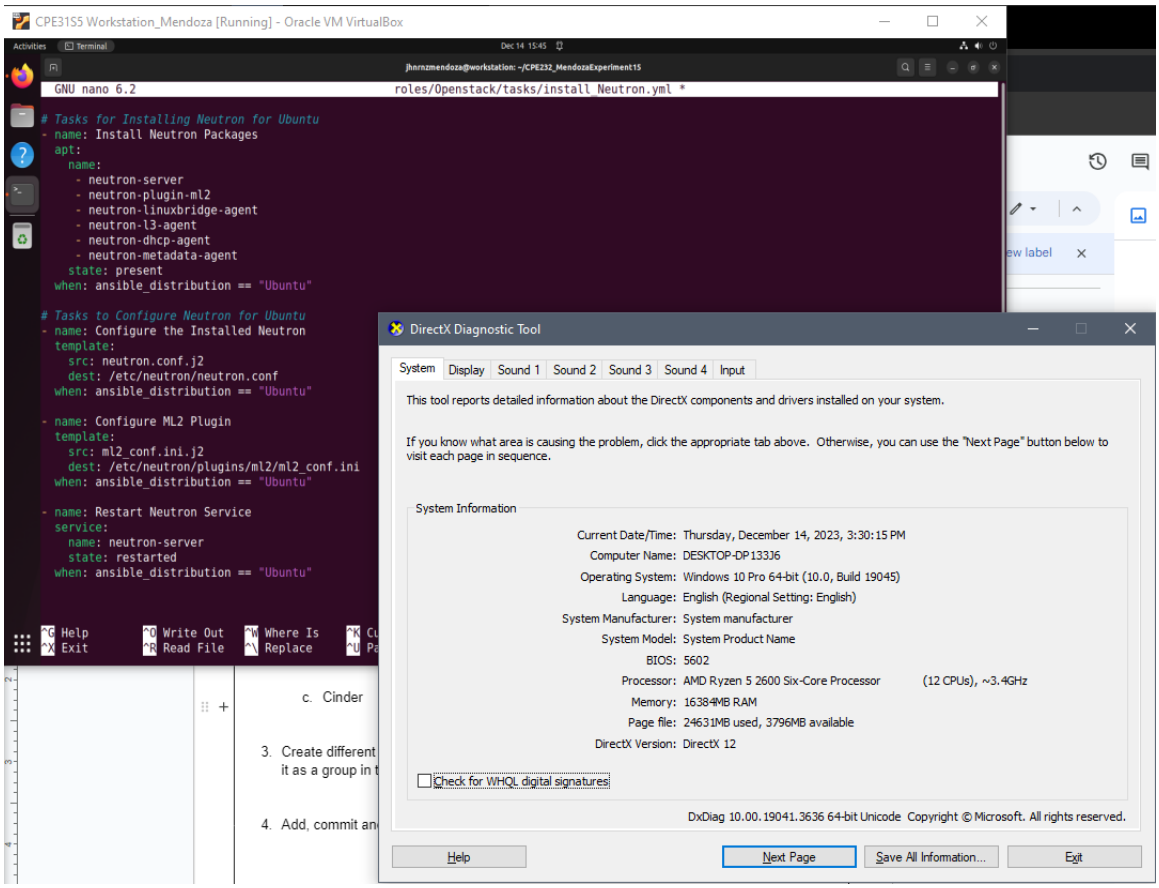
Creation of the Inventory File which defines the Managed Nodes



Creation of Ansible Role “OpenStack” to Organize the Playbook Tasks.



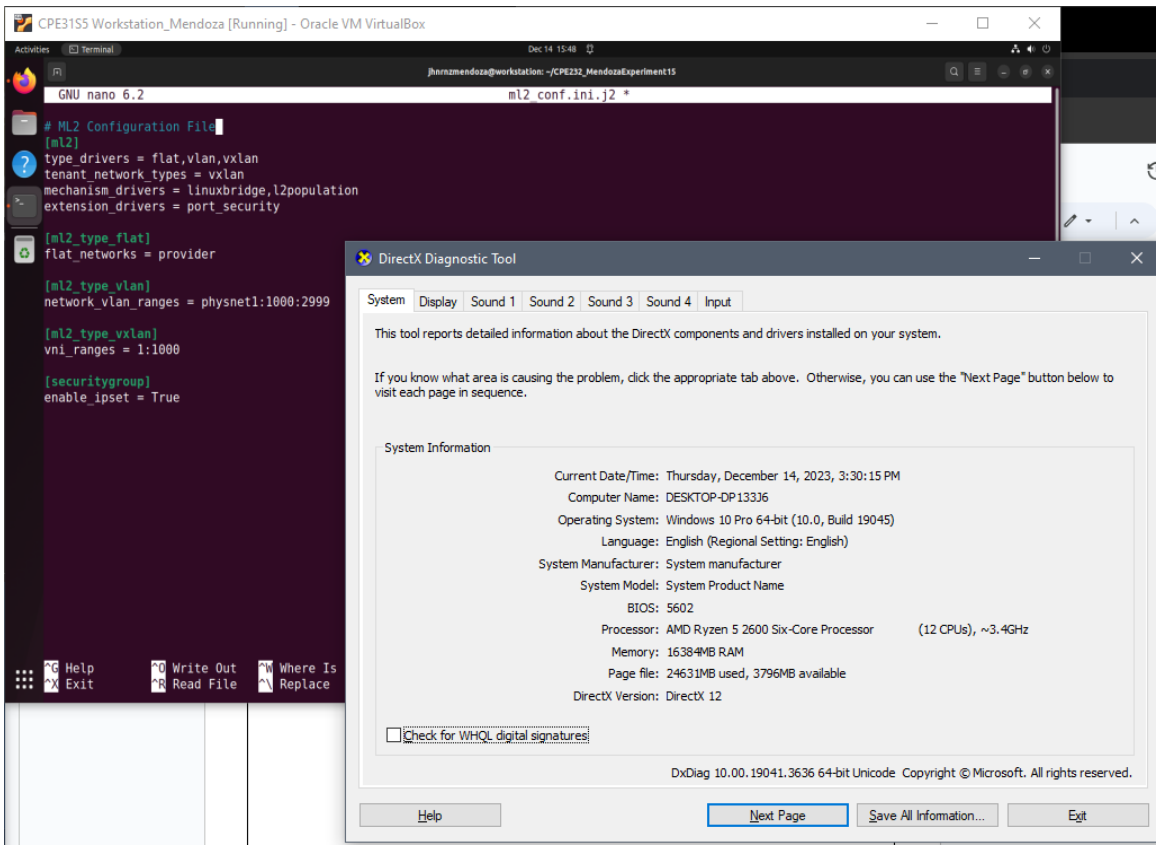
2. Create a playbook that converts the steps in the following items in [OpenStack Installation Guide](#).
    a. Neutron

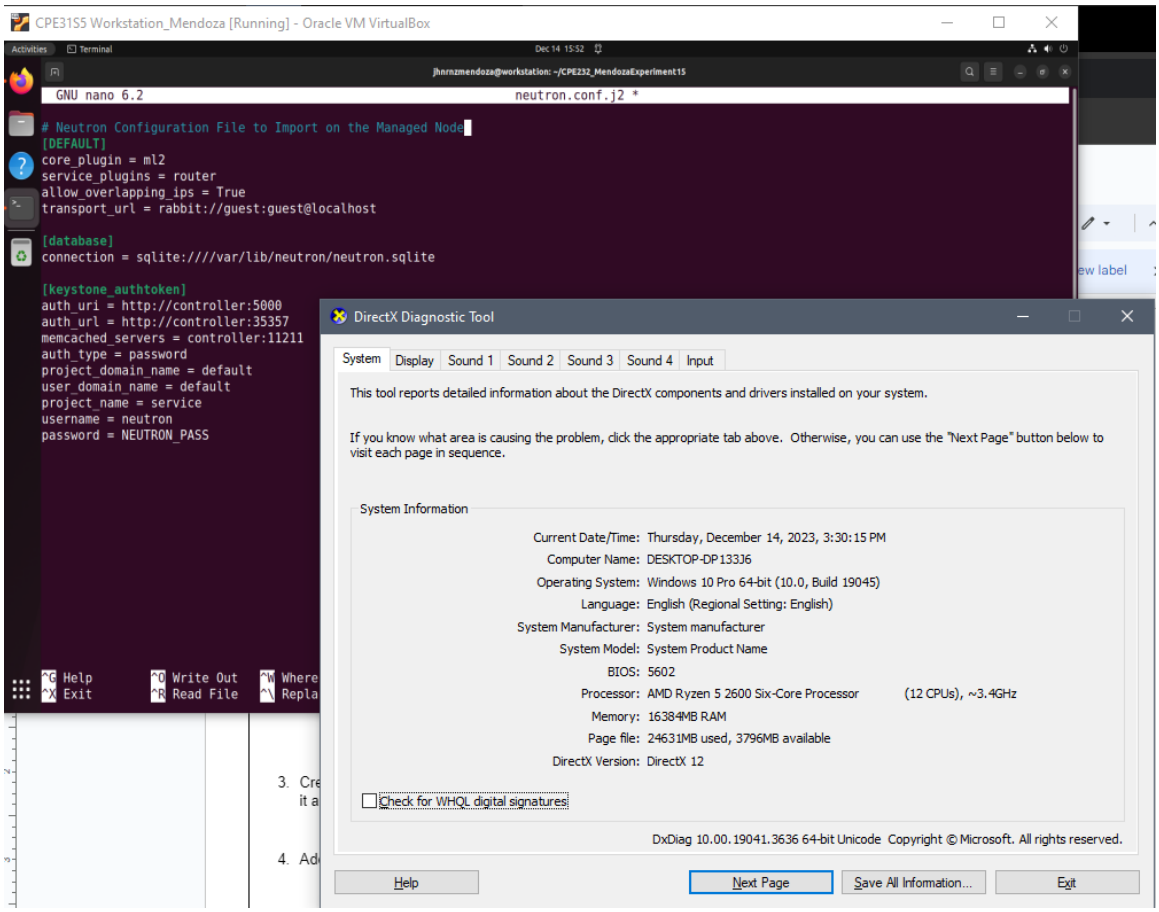


Observation:

- These tasks are on the yml file install_Neutron.yml. It will initially install packages related to Neutron service. Then, it will load the configuration file defined on a separate .j2 file which contains the defaults for the installed package.

Files to Import to the Managed Node

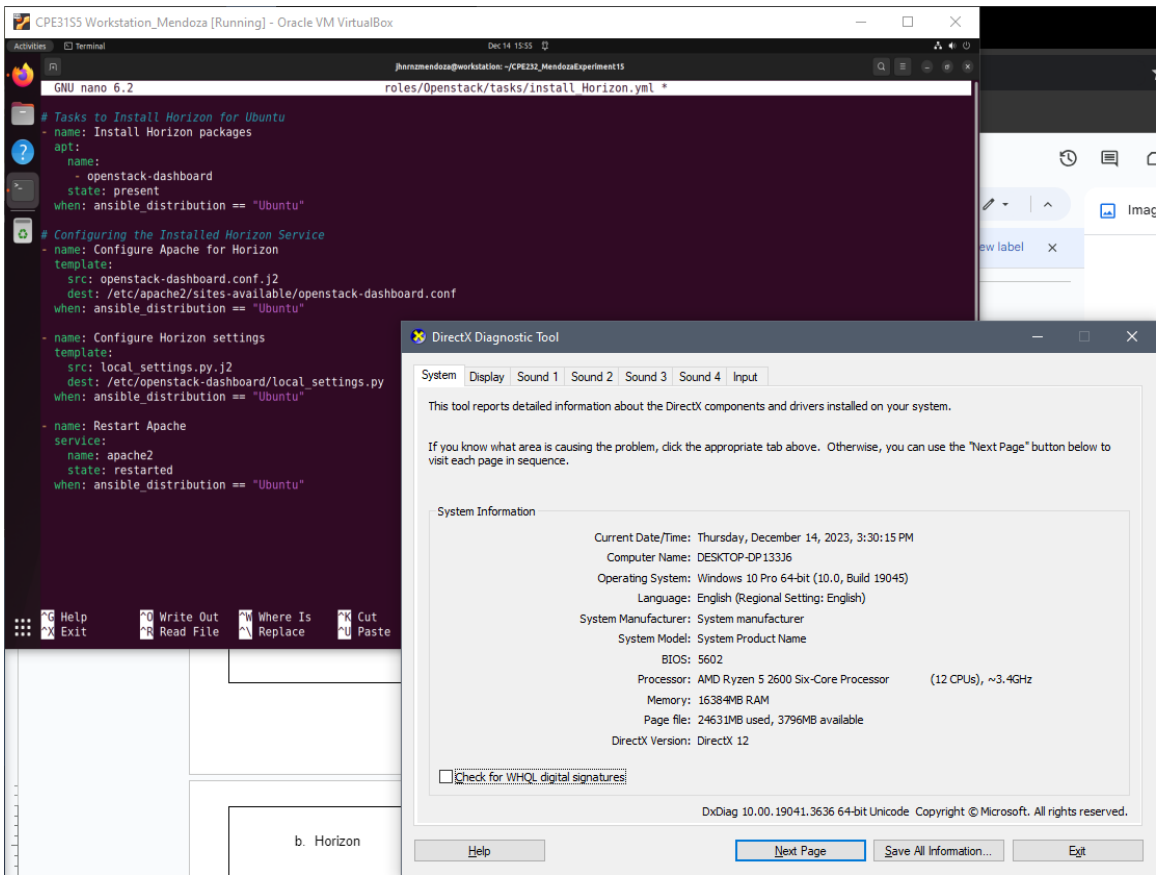




Observation:

- In this Jinja template file, it contains the configurations that will be used by the playbook so that the task would import these configuration data to the remote managed node.

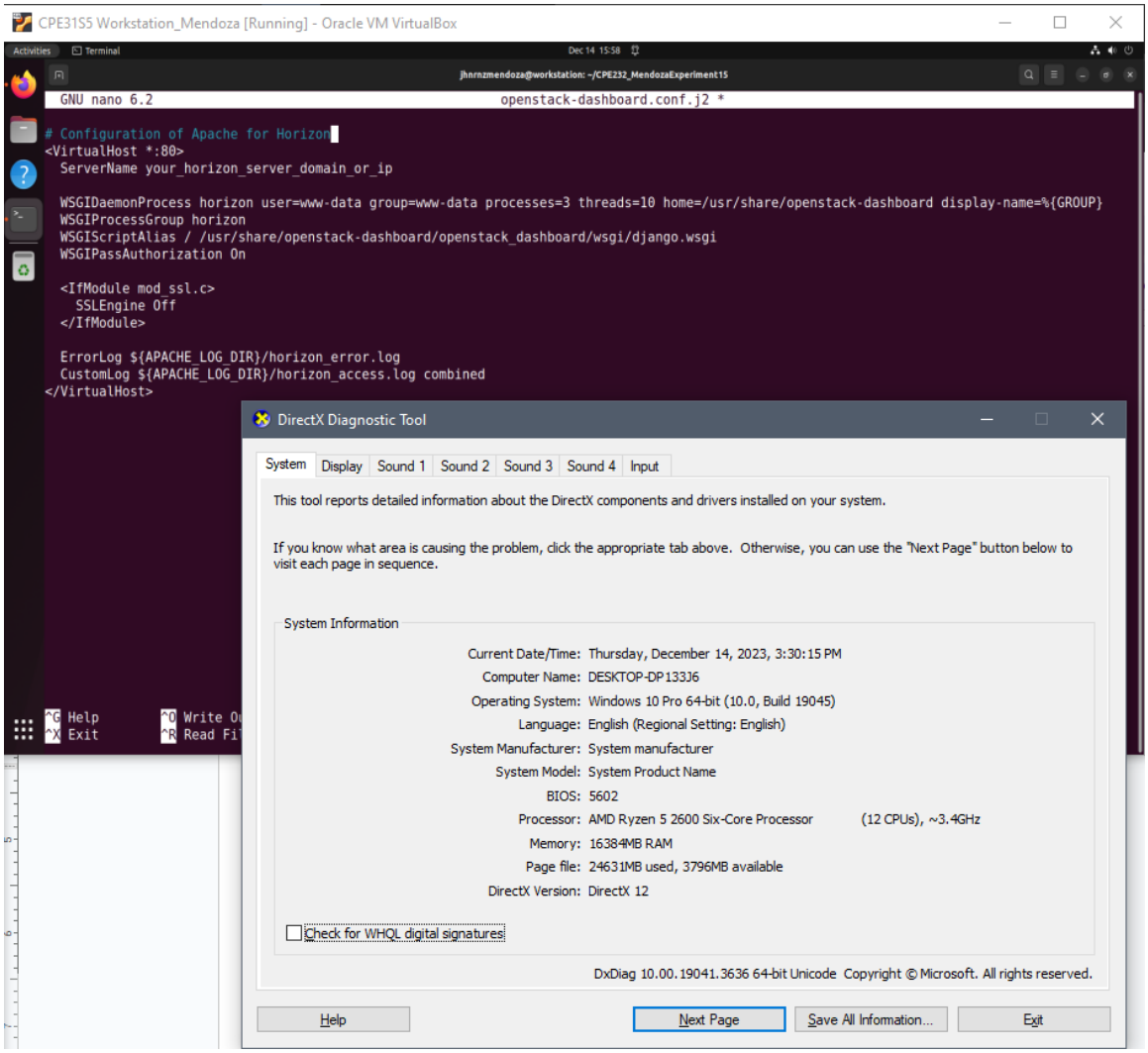
b. Horizon

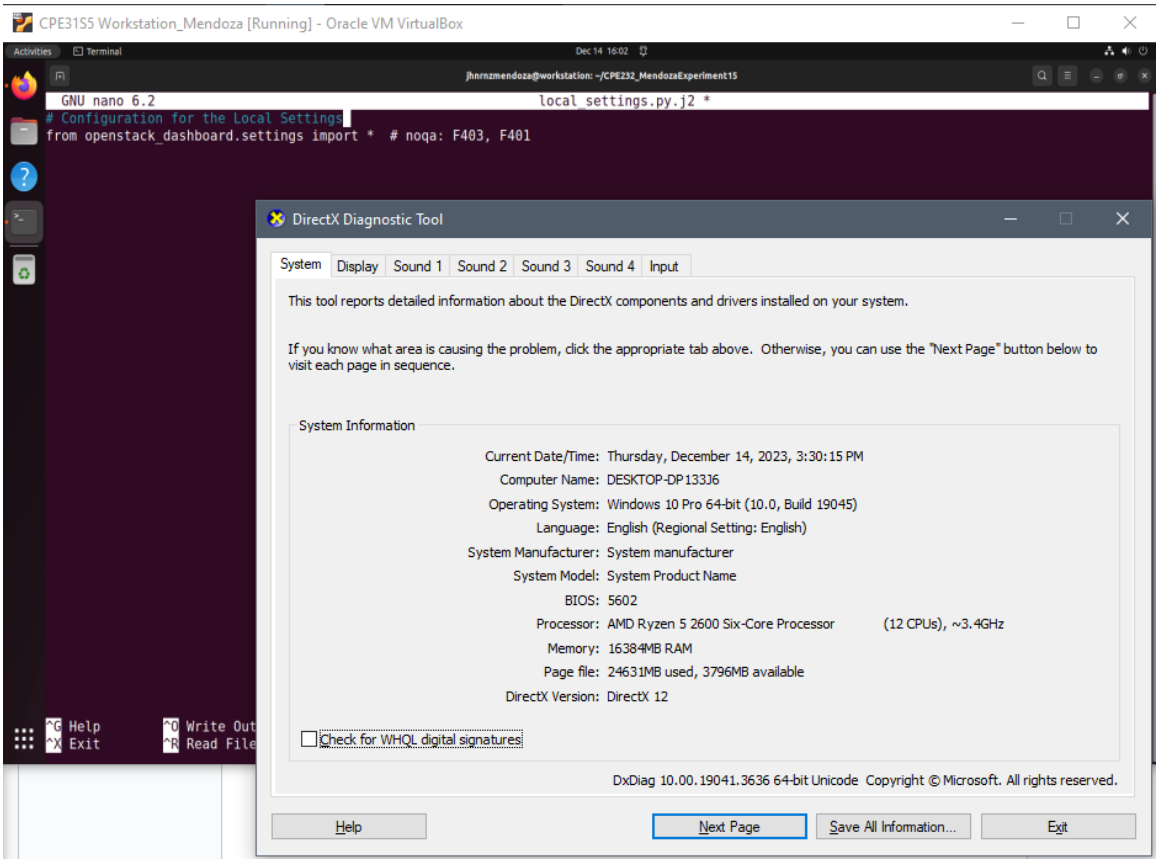


Observation:

- These tasks are on the yml file install_Horizon.yml. It will initially install packages related to Horizon service. Then, it will load the configuration file defined on a separate .j2 file which contains the defaults for the installed package.

Files to Import to the Managed Node

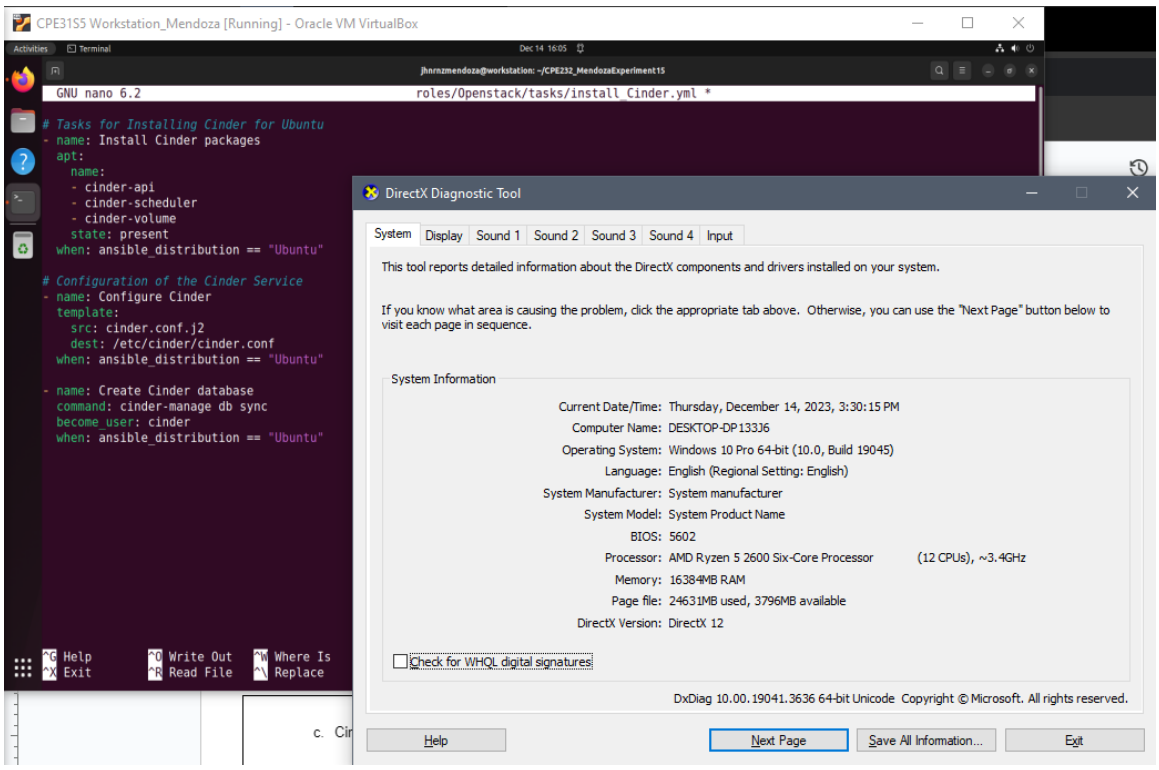




Observation:

- In this Jinja template file, it contains the configurations that will be used by the playbook so that the task would import these configuration data to the remote managed node.

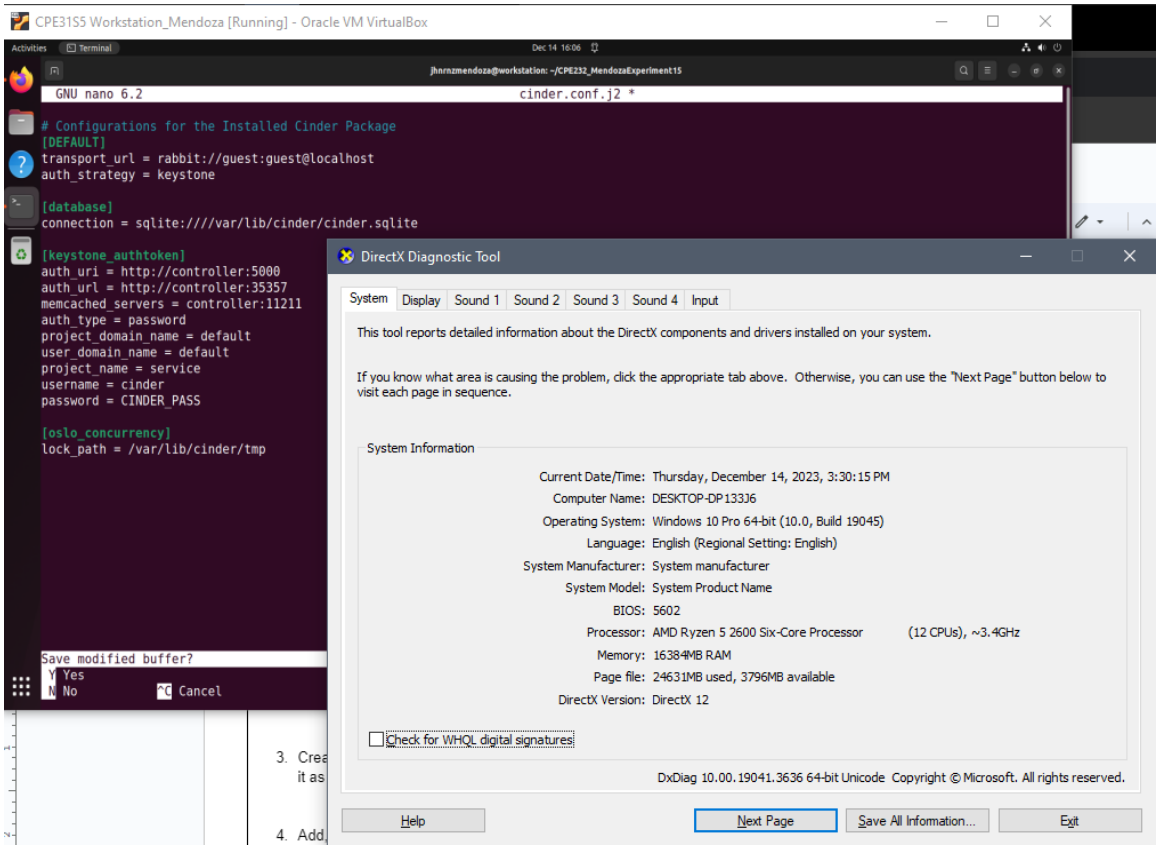
c. Cinder



Observation:

- These tasks are on the yml file install_Cinder.yml. It will initially install packages related to Cinder service. Then, it will load the configuration file defined on a separate .j2 file which contains the defaults for the installed package.

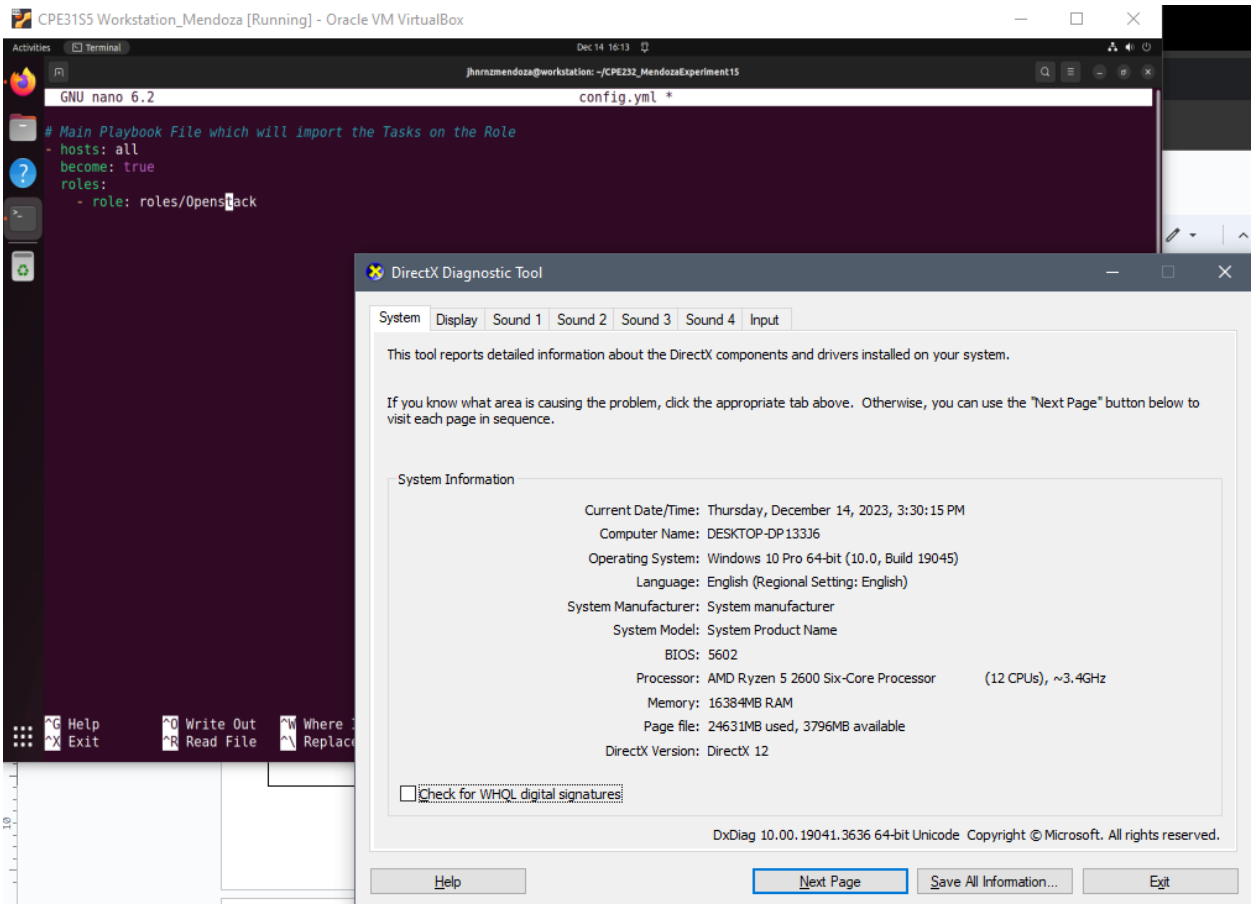
Files to Import to the Managed Node

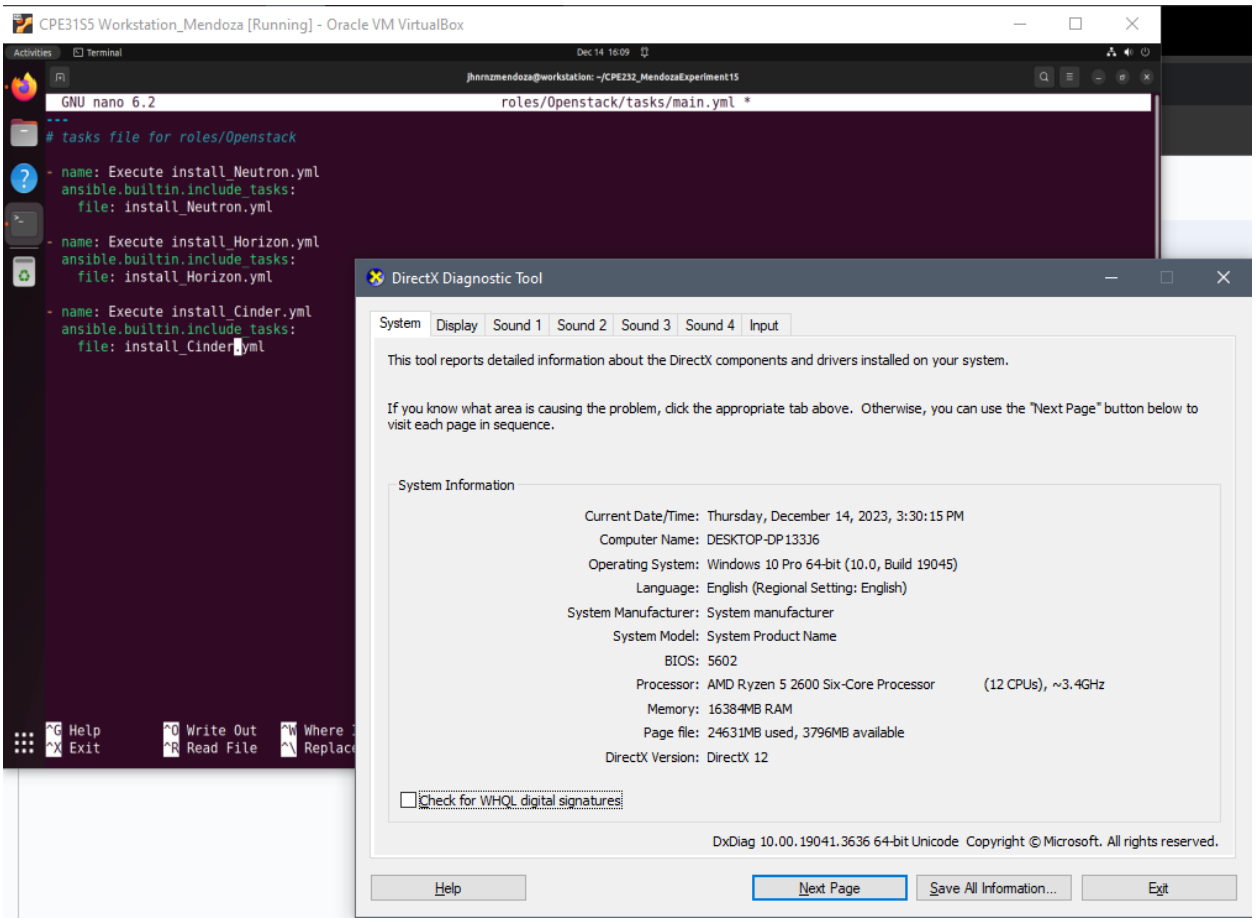


Observation:

- In this Jinja template file, it contains the configurations that will be used by the playbook so that the task would import these configuration data to the remote managed node.

3. Create different plays in installing per server type (controller, compute etc.) and identify it as a group in the Inventory file.

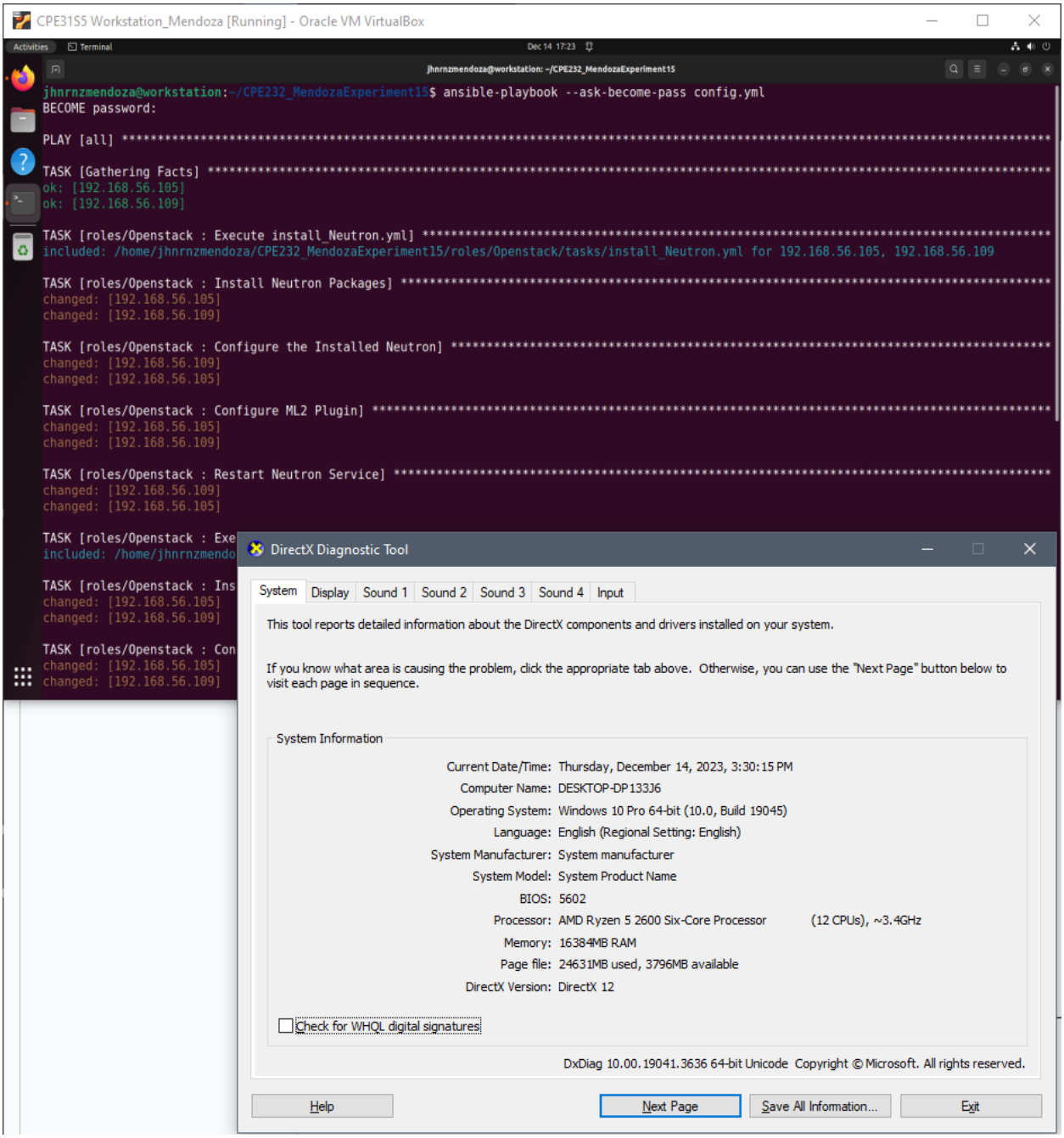


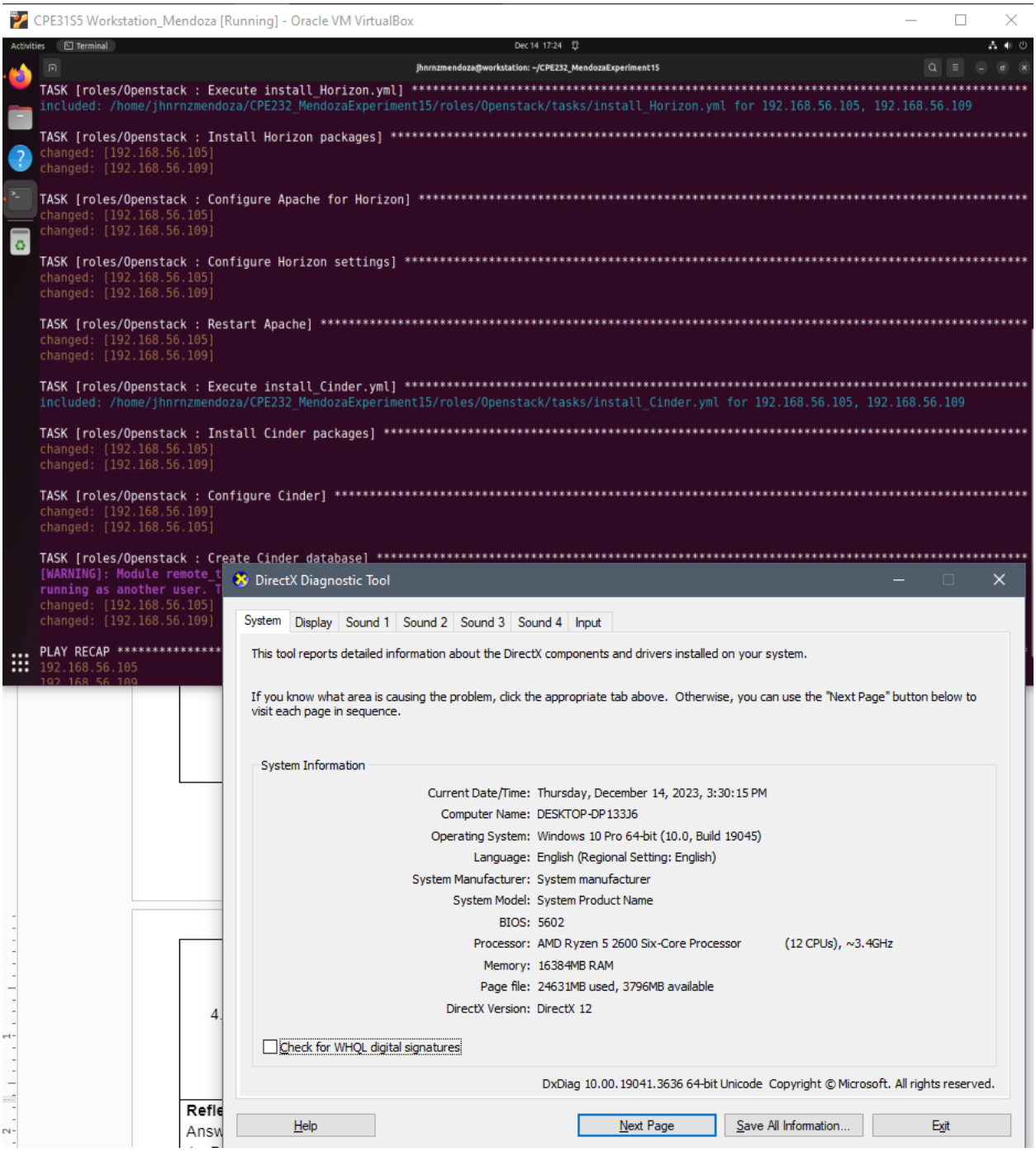


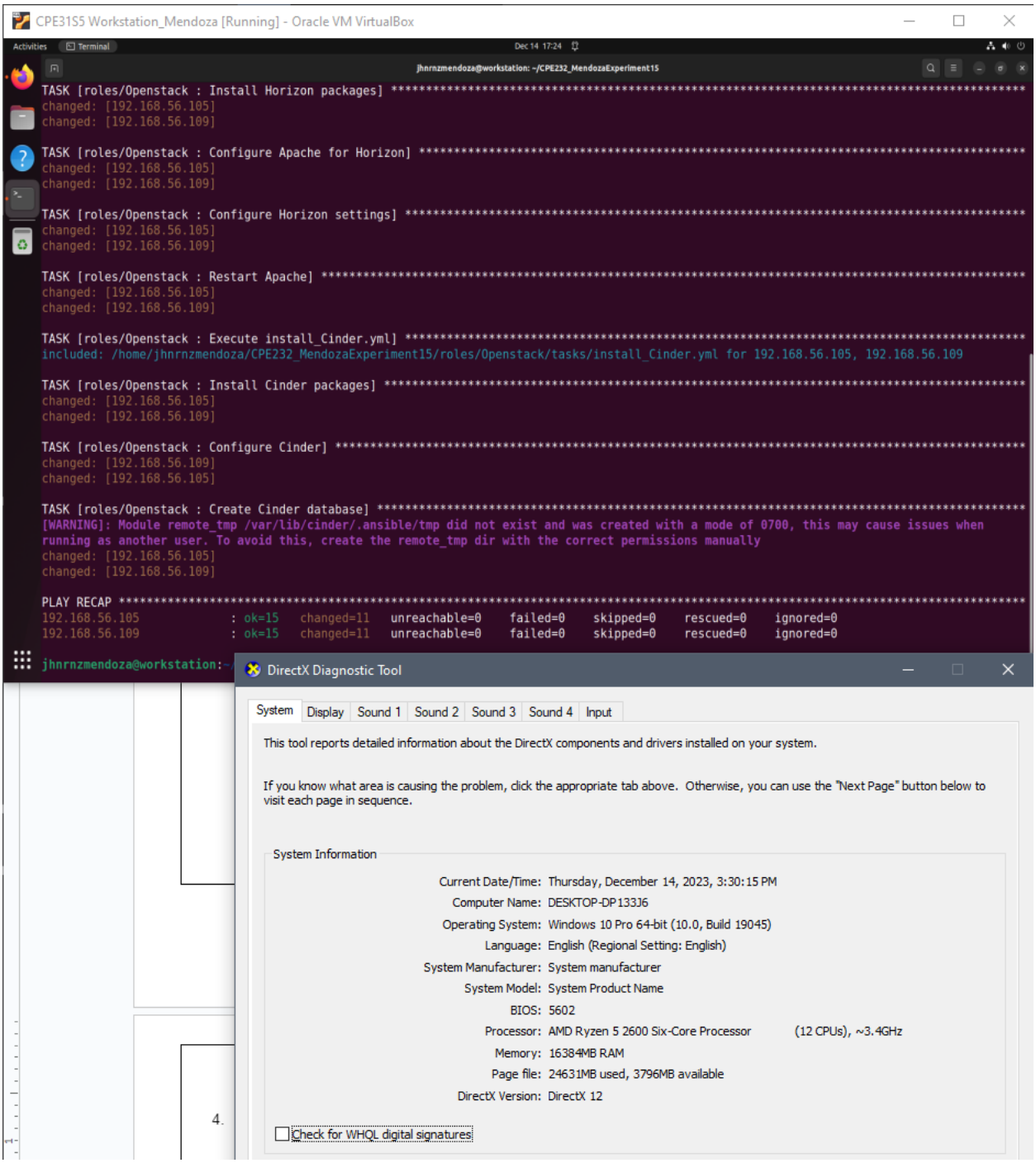
Observation:

- In this main.yml file defined on the roles/Openstack/tasks/ directory, the tasks required to install the services Neutron, Horizon, and Cinder are listed. This is made so that the installation is much organized and just importing the tasks if needed.

Playbook Output



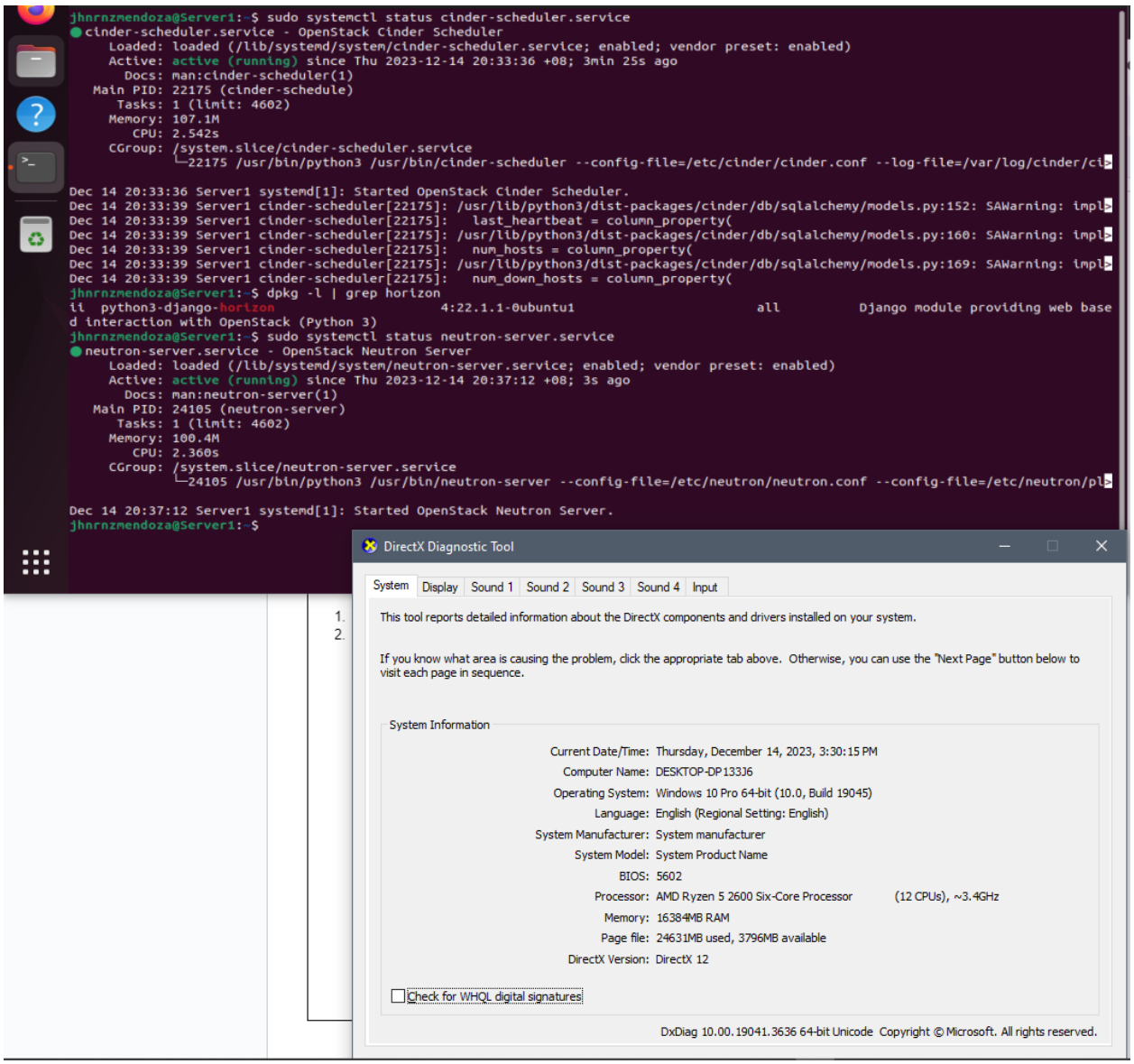

CPE31S5 Workstation_Mendoza [Running] - Oracle VM VirtualBox
Activities
Terminal
Dec 14 17:24
jhnrnzmendoza@workstation: ~/CPE232_MendozaExperiment15
TASK [roles/Openstack : Execute install_Horizon.yml] ********
included: /home/jhnrnzmendoza/CPE232_MendozaExperiment15/roles/Openstack/tasks/install_Horizon.yml for 192.168.56.105, 192.168.56.109
TASK [roles/Openstack : Install Horizon packages] ********
changed: [192.168.56.105]
changed: [192.168.56.109]
TASK [roles/Openstack : Configure Apache for Horizon] ********
changed: [192.168.56.105]
changed: [192.168.56.109]
TASK [roles/Openstack : Configure Horizon settings] ********
changed: [192.168.56.105]
changed: [192.168.56.109]
TASK [roles/Openstack : Restart Apache] ********
changed: [192.168.56.105]
changed: [192.168.56.109]
TASK [roles/Openstack : Execute install_Cinder.yml] ********
included: /home/jhnrnzmendoza/CPE232_MendozaExperiment15/roles/Openstack/tasks/install_Cinder.yml for 192.168.56.105, 192.168.56.109
TASK [roles/Openstack : Install Cinder packages] ********
changed: [192.168.56.105]
changed: [192.168.56.109]
TASK [roles/Openstack : Configure Cinder] ********
changed: [192.168.56.109]
changed: [192.168.56.105]
TASK [roles/Openstack : Create Cinder database] ********
[WARNING]: Module remote_t
running as another user. T
changed: [192.168.56.105]
changed: [192.168.56.109]
PLAY RECAP ********
192.168.56.105
192.168.56.109
DirectX Diagnostic Tool
System
Display
Sound 1
Sound 2
Sound 3
Sound 4
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: Thursday, December 14, 2023, 3:30:15 PM
Computer Name: DESKTOP-DP133J6
Operating System: Windows 10 Pro 64-bit (10.0, Build 19045)
Language: English (Regional Setting: English)
System Manufacturer: System manufacturer
System Model: System Product Name
BIOS: 5602
Processor: AMD Ryzen 5 2600 Six-Core Processor (12 CPUs), ~3.4GHz
Memory: 16384MB RAM
Page file: 24631MB used, 3796MB available
DirectX Version: DirectX 12
Check for WHQL digital signatures
DxDiag 10.00.19041.3636 64-bit Unicode Copyright © Microsoft. All rights reserved.
Help
Next Page
Save All Information...
Exit



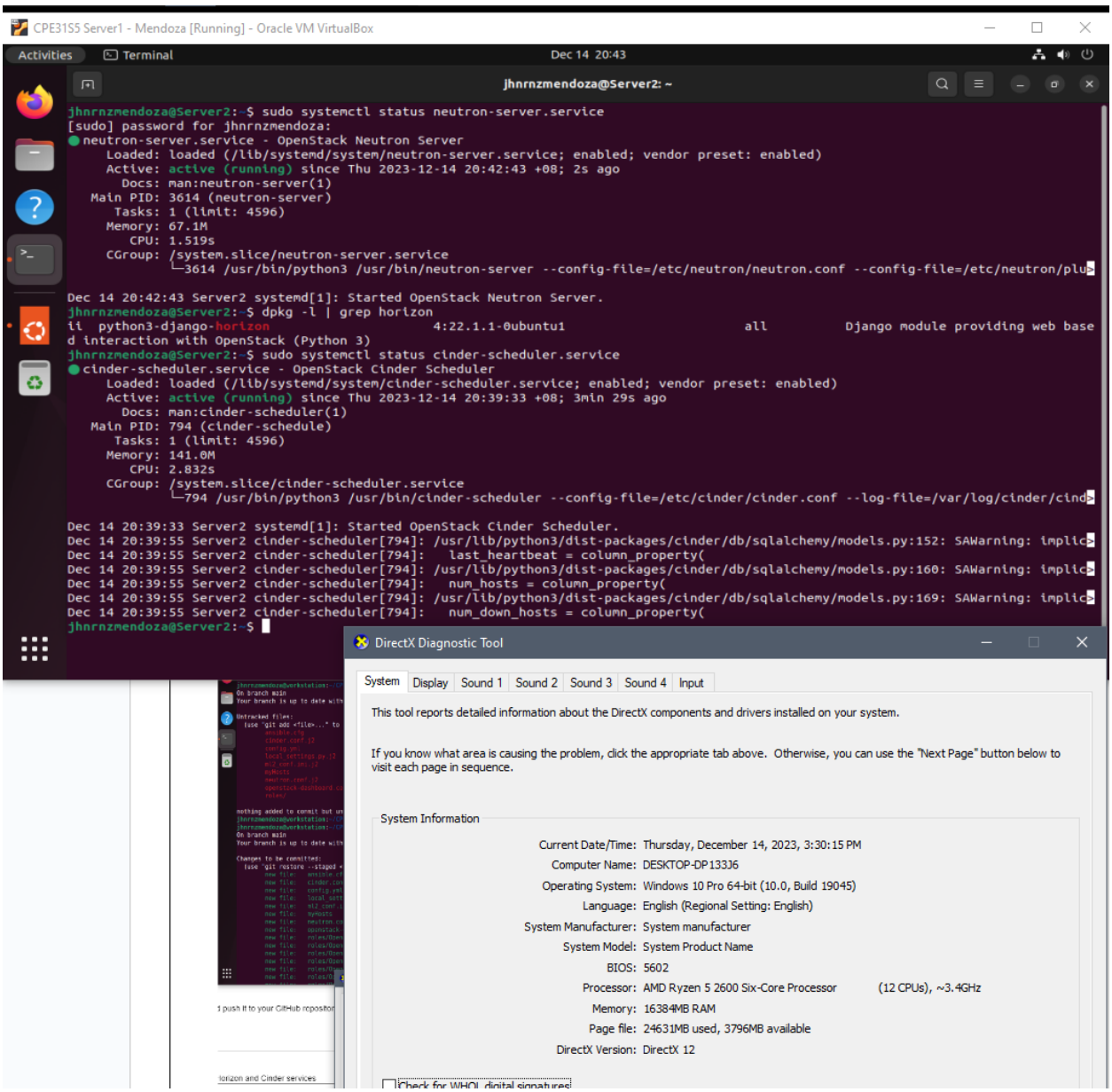
Observation:

- In running the ansible playbook, it has successfully run the tasks from the three sub-playbooks defined under the Openstack role. As observed, both of the servers have been changed and installed the services.

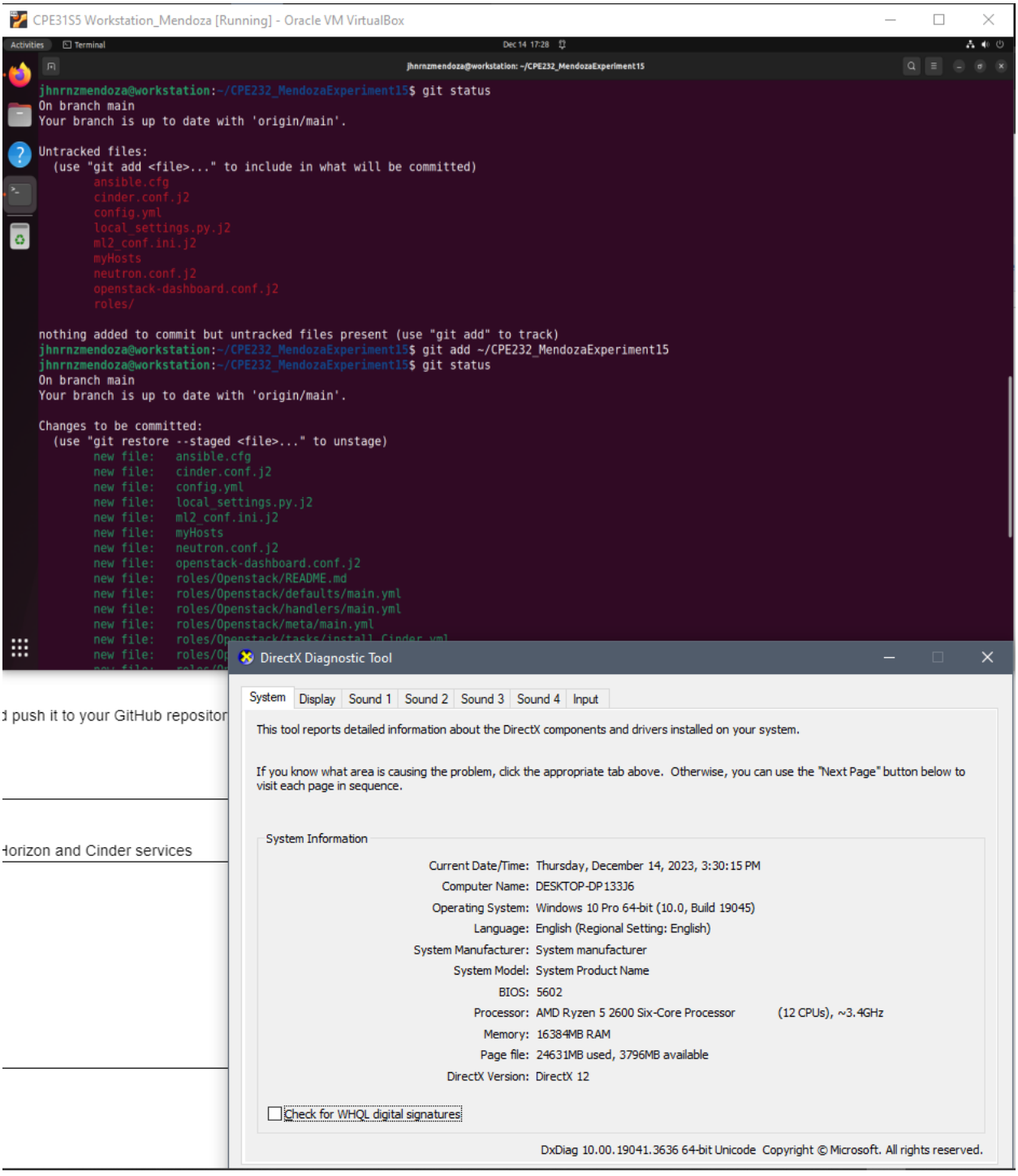
Verification: Installed OpenStack Services on Remote Server 1

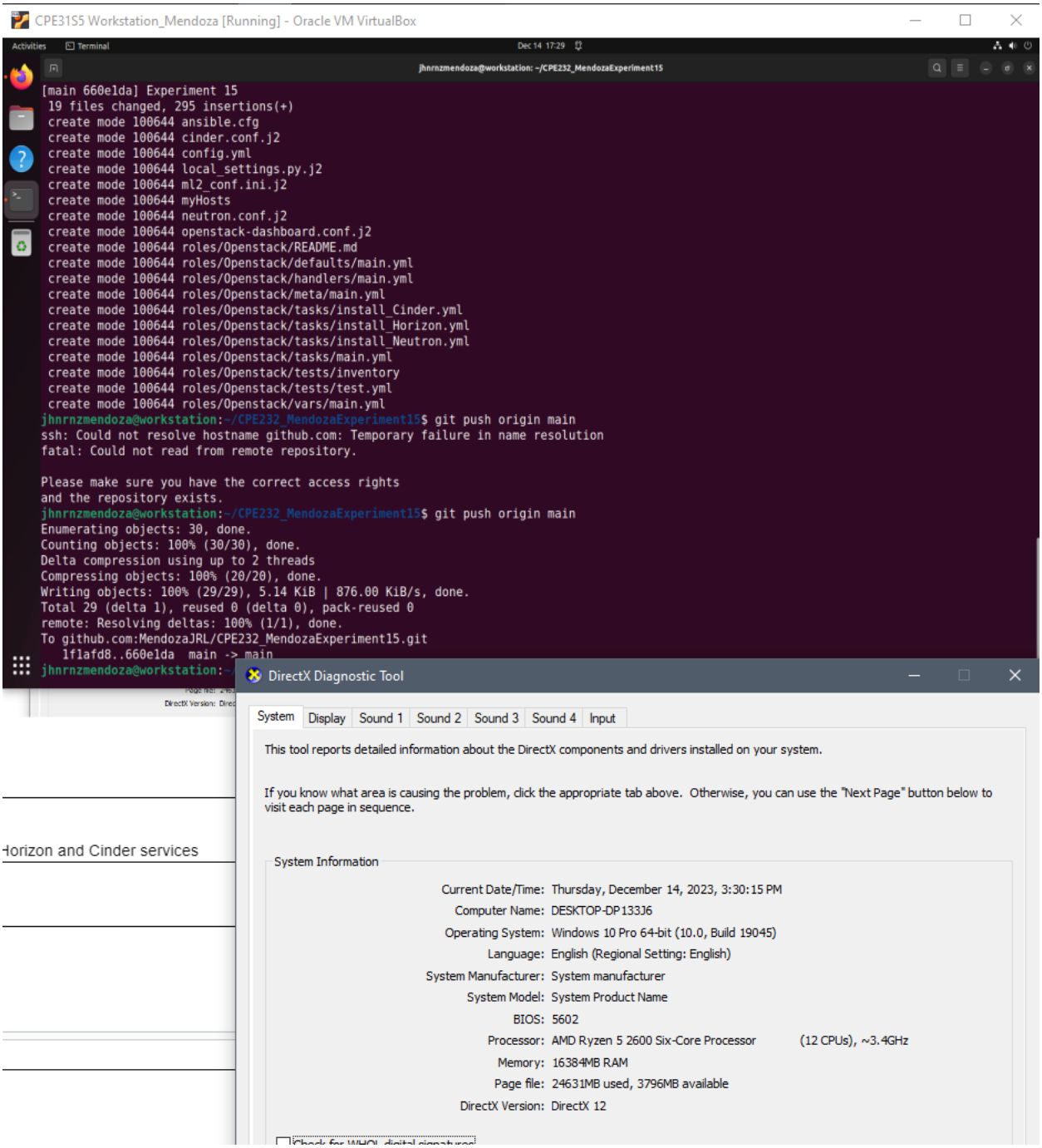


Verification: Installed OpenStack Services on Remote Server 2

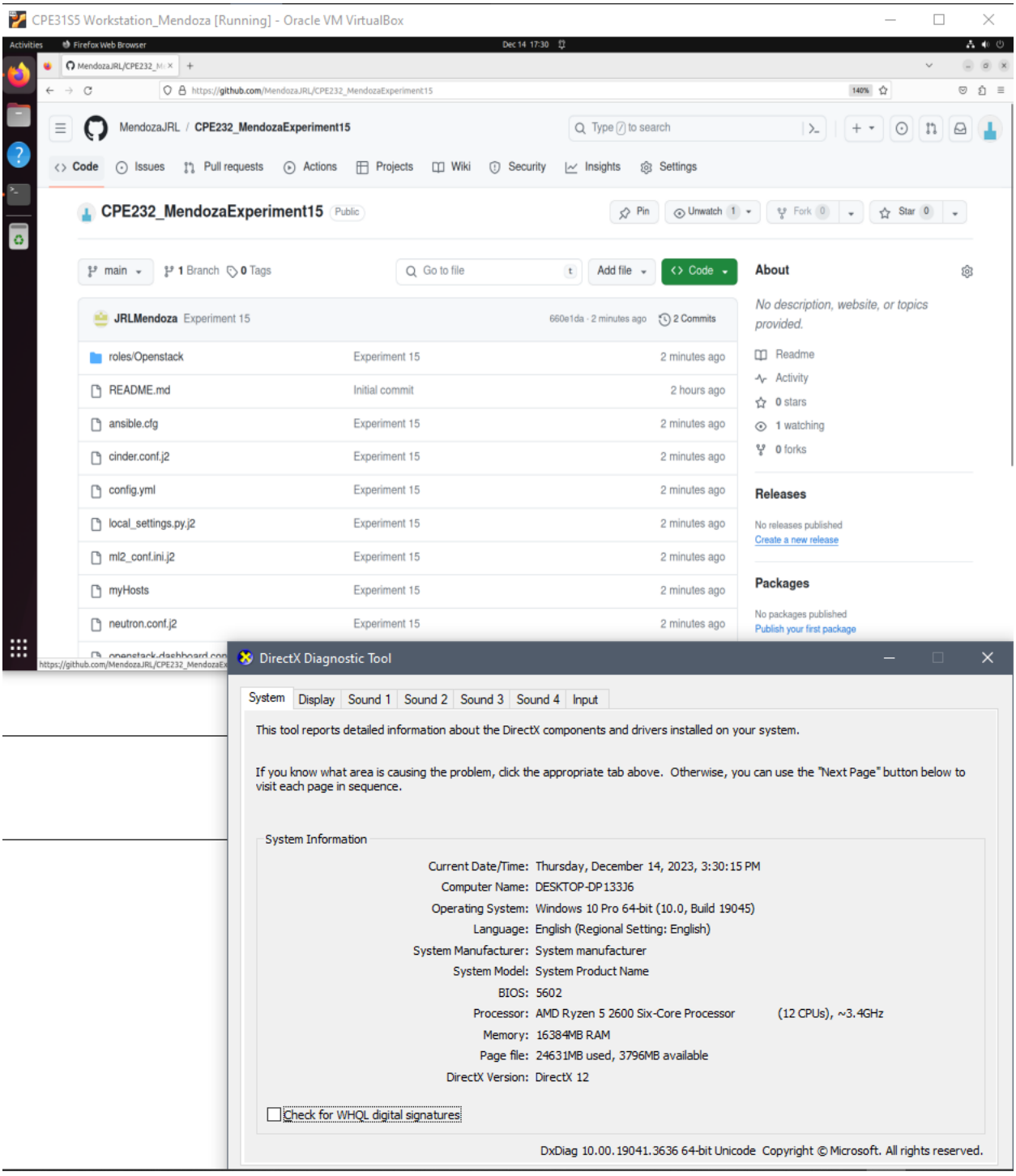


4. Add, commit and push it to your GitHub repository.





Horizon and Cinder services



Observation:

- Using Git commands, the changes on the local repository are added, committed, and has been pushed to the GitHub cloud repository. As observed, we can now access the changes made through the cloud platform.

GitHub Link: https://github.com/MendozaJRL/CPE232_MendozaExperiment15.git

Reflections:

Answer the following:

1. Describe Neutron, Horizon and Cinder services

   Neutron is an OpenStack feature which is responsible for network connections and topologies. For instance, it can help the user set-up a Virtual LAN to its network. Horizon is also an OpenStack feature which is similar to Nova that is responsible for a web-based user interface which offers support on APIs and interfaces. Cinder is an OpenStack feature which is responsible for handling block storages. It essentially controls the data storages of the device or server.

Conclusions:

In this activity, the students are introduced with the concepts of more OpenStack features such as Neutron, Horizon, and Cinder. As explained on the reflection part, Neutron is for network connections, Horizon is for APIs and interfaces, while cinder is for handling block storages. These three features may or may not be related to one another when used on the server environment as it may have different scope.

In addition, the students have successfully installed and implemented the OpenStack features from the installation guide as an Ansible code. The students have used previously learned topics such as creating Ansible Roles to further organize the playbook run. By organizing the tasks and importing them, the system administrator may just import the tasks anytime, if needed. Furthermore, the students may use and implement these learned concepts about OpenStack features on the future activities or projects which may require or may take advantage of these services.