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Course/Section: CPE31S5	Date Submitted: 12/02/2023
Instructor: Engr. Roman Richard	Semester and SY: 1st sem, 23-24

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

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)

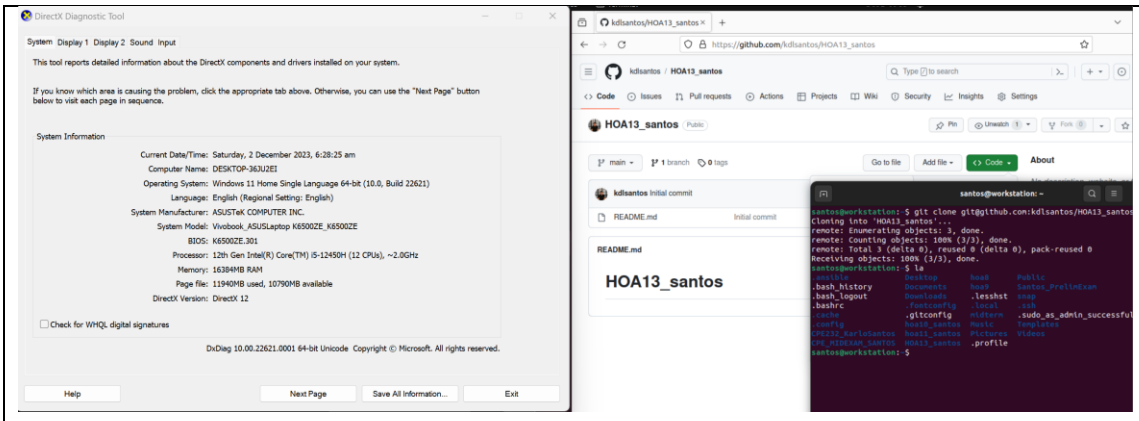
1x Ubuntu VM or Centos VM

4. Tasks

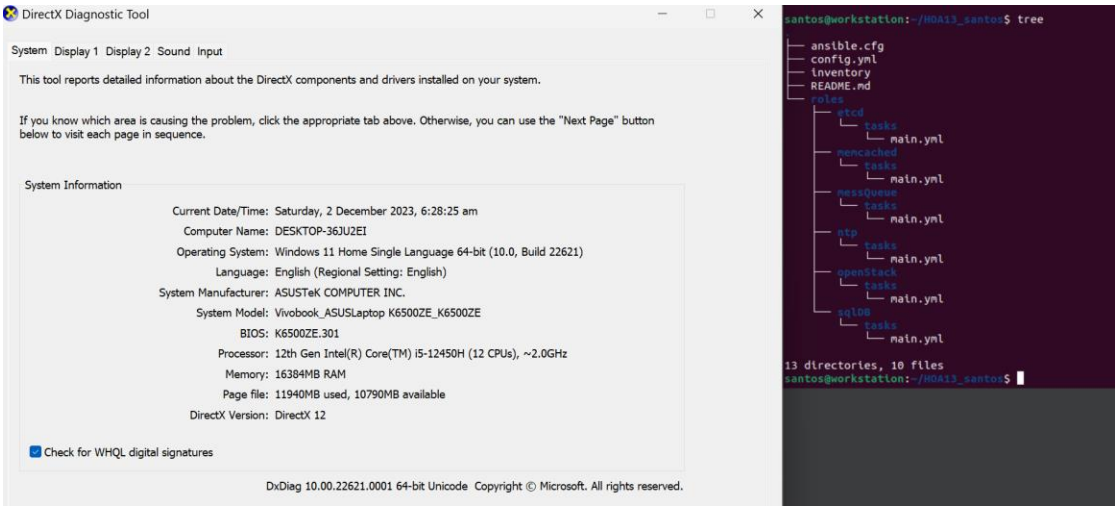
1. Create a new repository for this activity.
2. Create a playbook that converts the steps in the following items in https://docs.openstack.org/install-guide/
    a. NTP
    b. OpenStack packages
    c. SQL Database
    d. Message Queue
    e. Memcached
    f. Etcd
    g. Create different plays in installing 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)

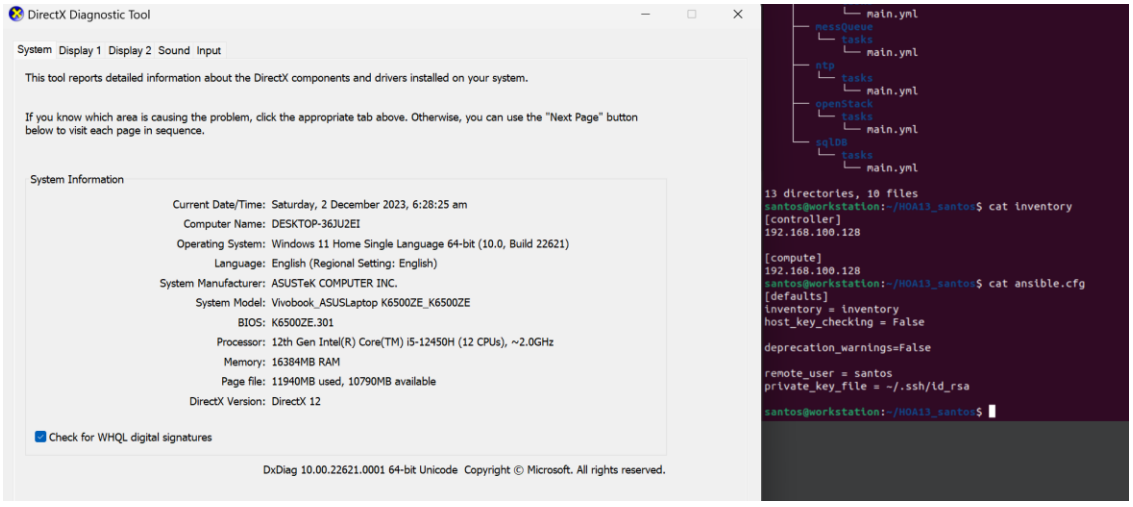
Create a new repository for this activity.



Showing the full tree directory

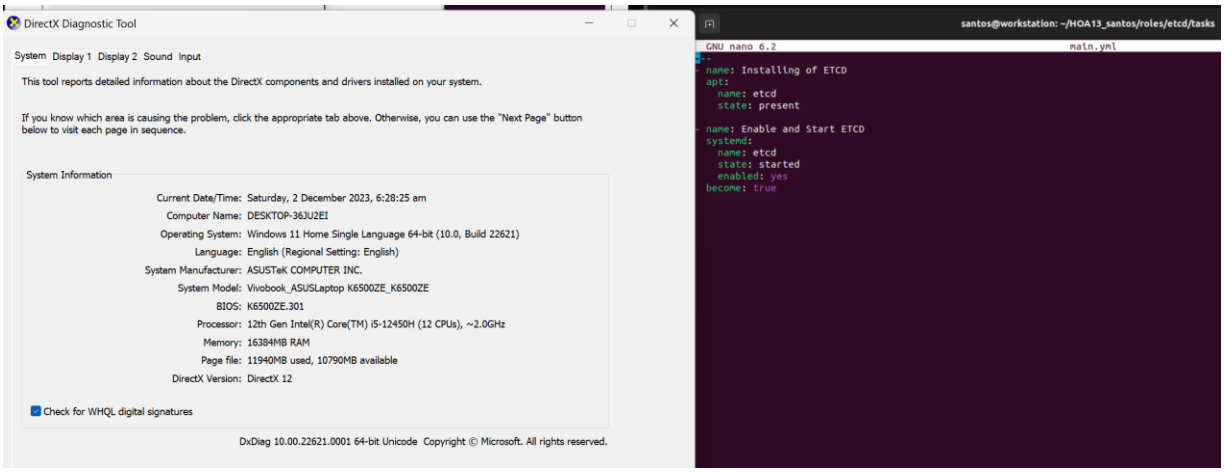


Ansible.cfg and inventory



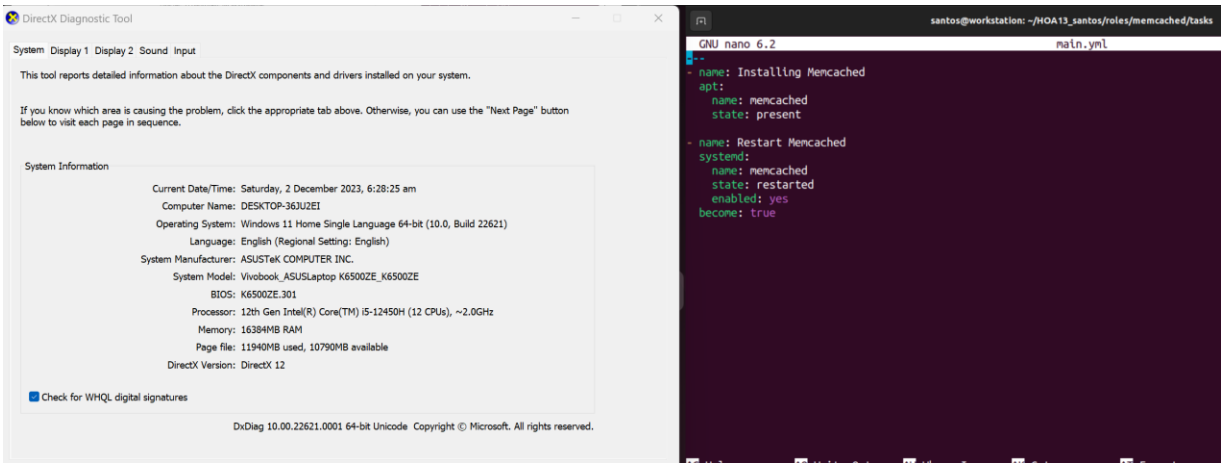
This is the content of the ansible.cfg that will be use in the playbook in this activity. The inventory contain 2 groups but it only contain 1 server which is ubuntu server.

ETCD



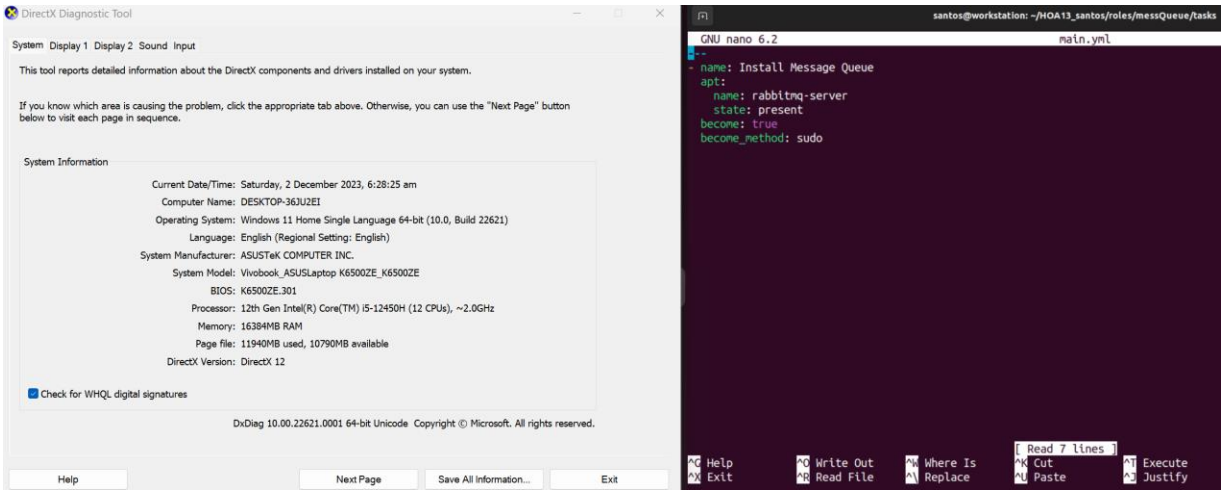
The screenshot shows the tasks under etcd. It will help to install the etcd in the target node. Also, I ensure that it will enable and start it after installing.

Memcached



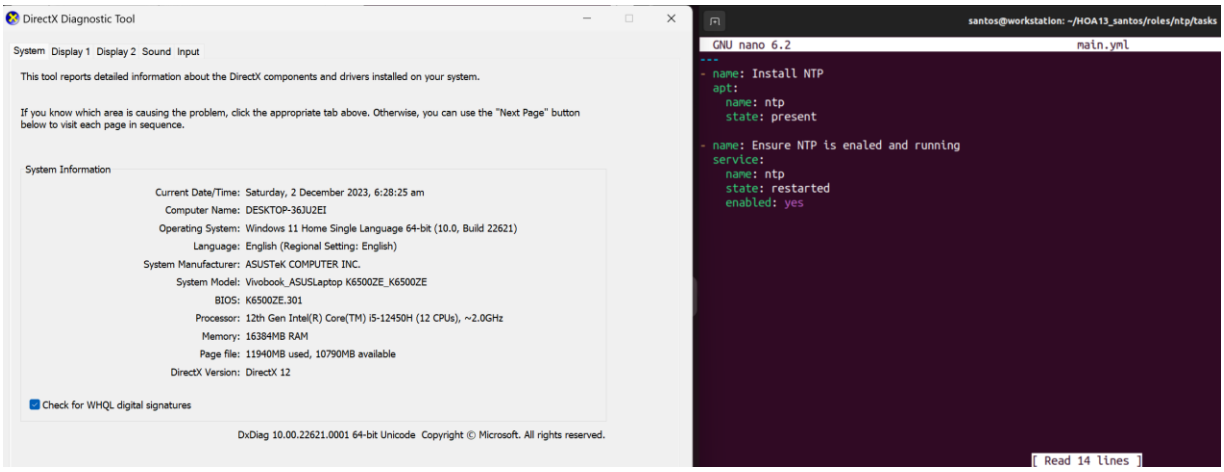
This is the command for the installation of Memcached in the ubuntu server. I also add restart command after installing the Memcached.

Message Queue



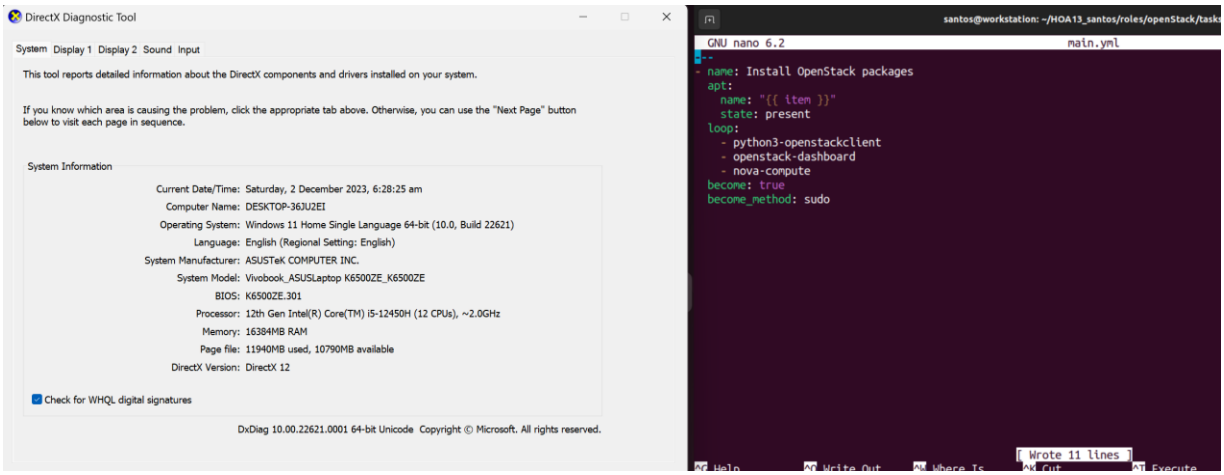
This is the installation of kind of message queue in the target node. It will install the rabbitmq-server and make sure it is running.

NTP



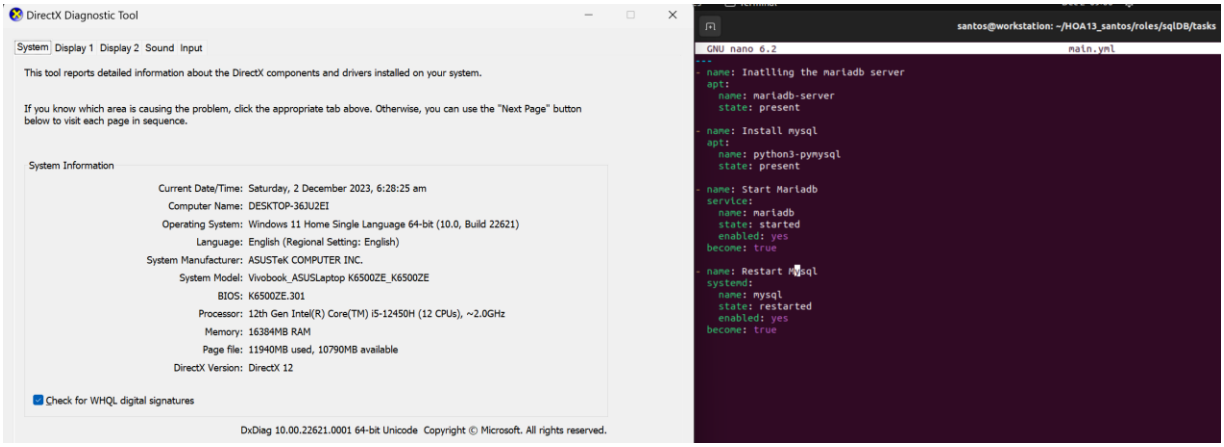
In this part is the task for the installation of NTP. It shows that it will install first the ntp then it will ensure that it is running and enabled in the target node.

OpenStack



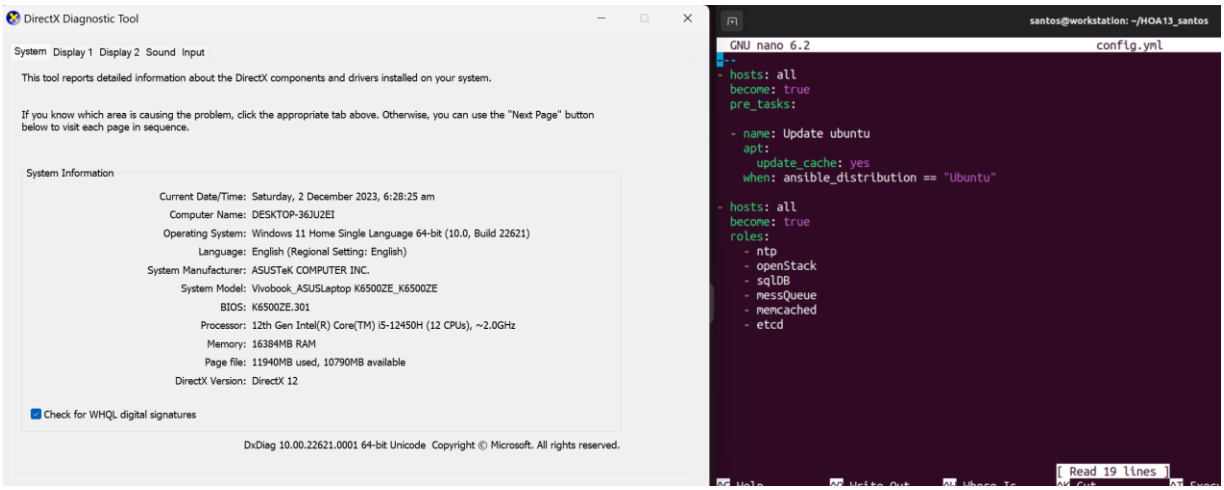
This is the tasks for the OpenStack, it will install the different packages that is needed. It shows that I put 3 packaged to install in the target node.

SQL Database



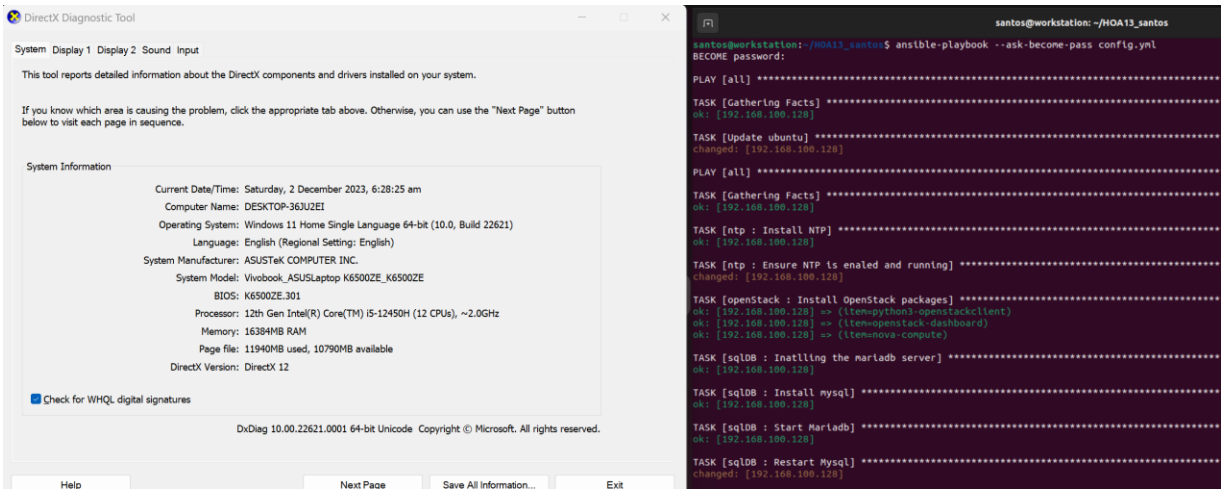
In this part is for the installation of a kind of sql database. I use the MySQL, so it shows that I install the mysql-server and also the python3-pymysql for the installation of MySQL and its server. Next is the tasks to start and restart it in the target server.

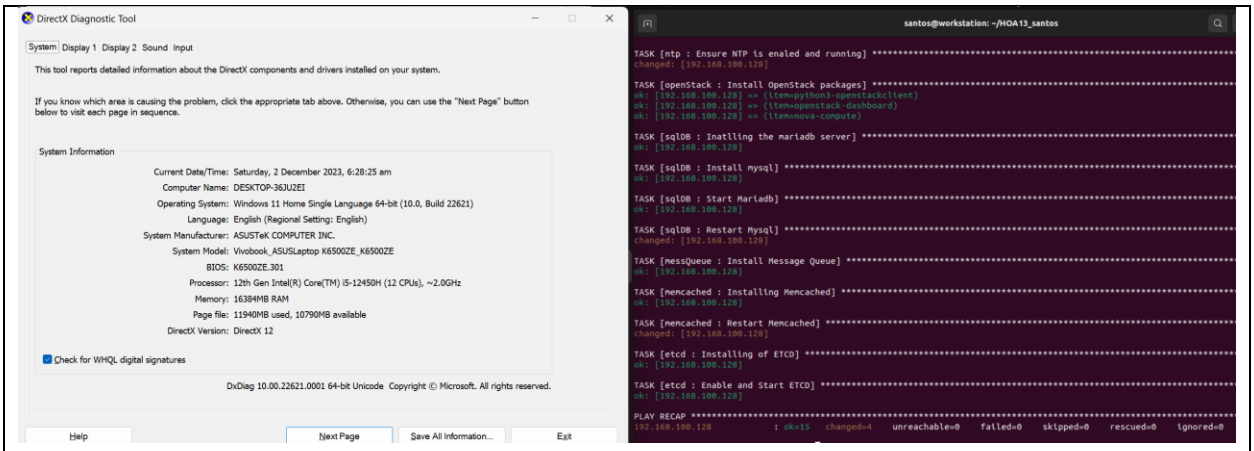
Content of config.yml



This is the content of the config.yml, it shows the pre-tasks where it will update the ubuntu first. After that it will call the different roles that I made earlier.

Running the config.yml

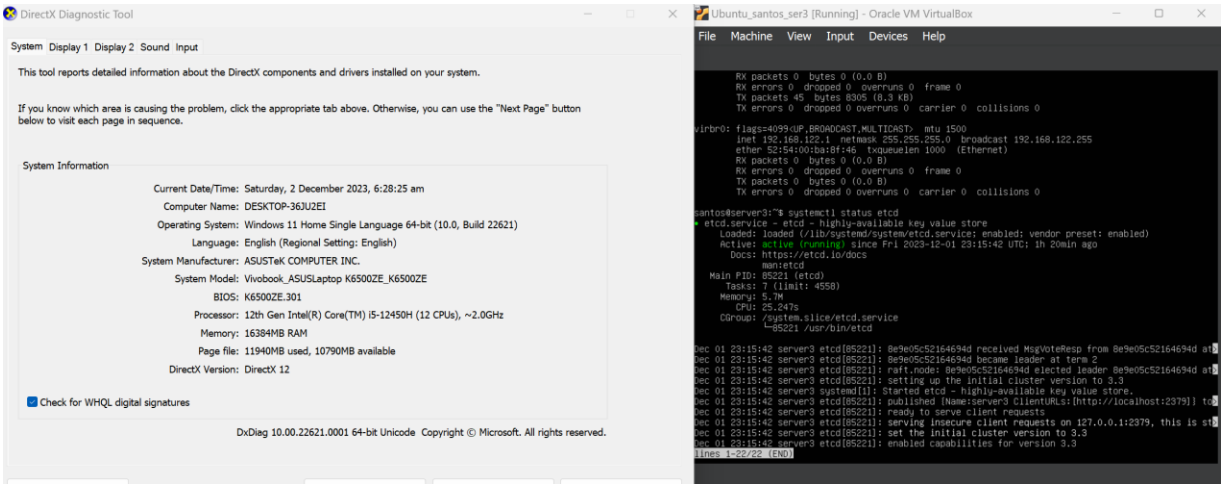




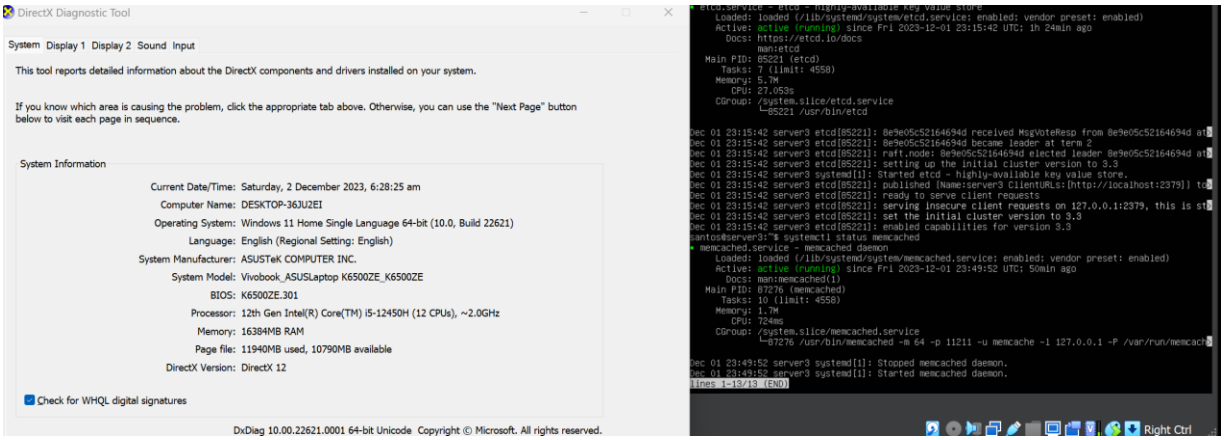
It shows that all the tasks are successfully executed. In the play recap we can see the number of ok and changed, also it shows 0 in the failed.

Verification (will use the command systemctl status)

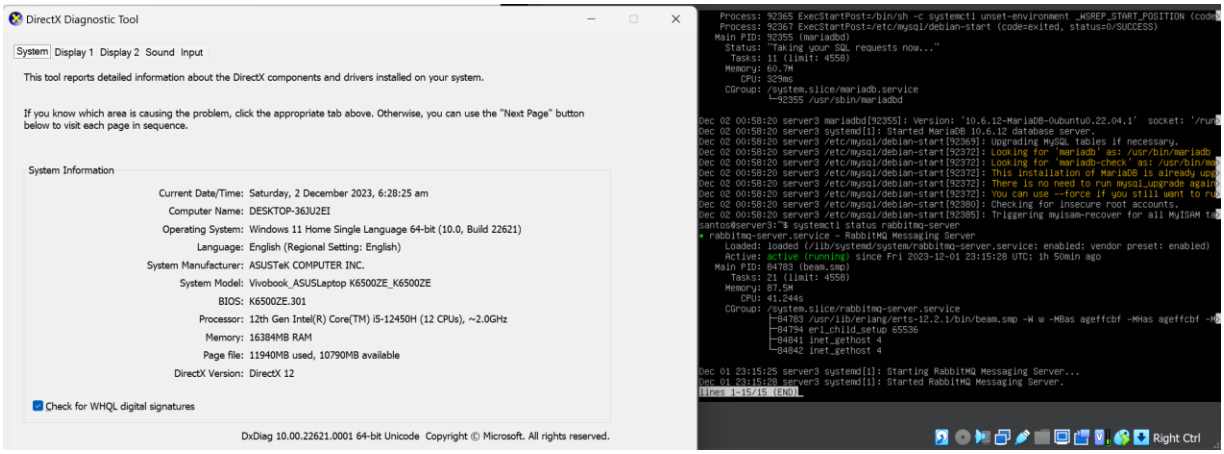
ETCD



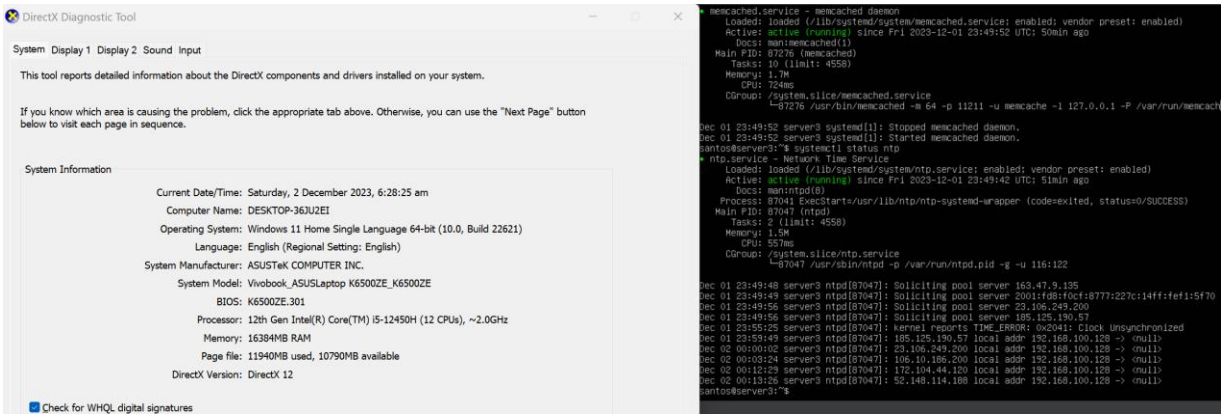
Memcached



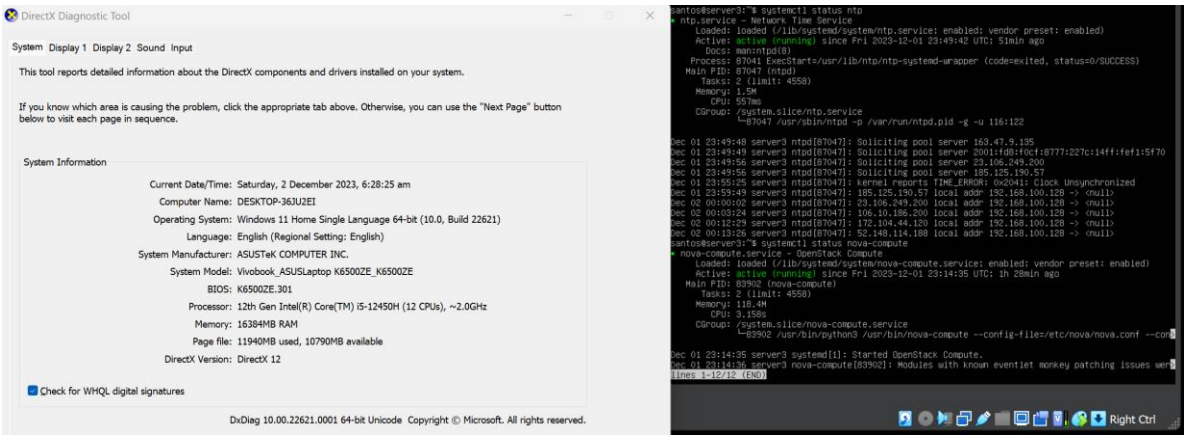
Message Queue



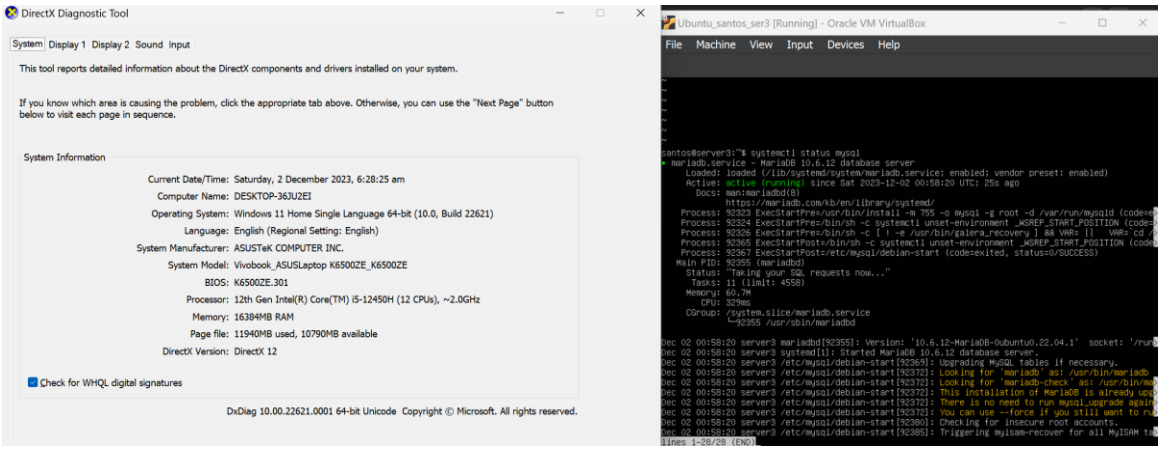
NTP



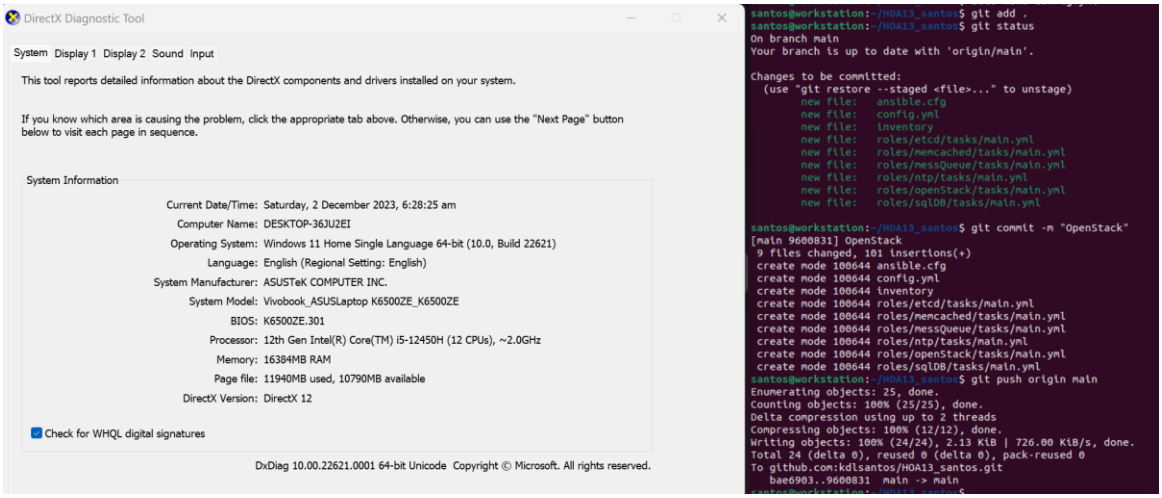
OpenStack



SQL Database

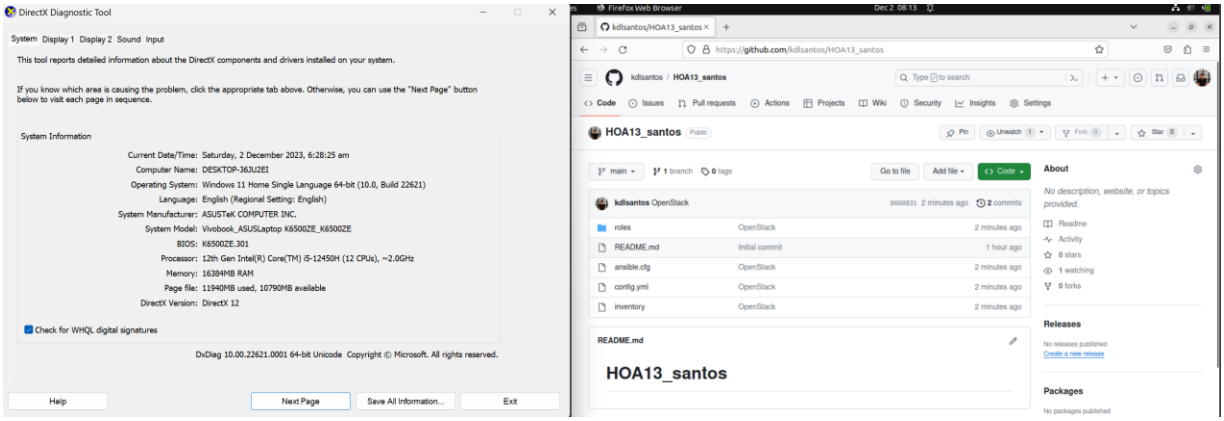


Pushing the files in the GitHub repository.



I use the git add. to add all the files and I check it using git status. After that I use git commit -m and add description of it which OpenStack. After that I push it using git push origin add.

Screenshot of GitHub Repository



GitHub Repository link

https://github.com/kdlsantos/HOA13_santos

Reflections:

Answer the following:

1. What are the benefits of implementing OpenStack?
    - **Implementing the OpenStack can give various benefits to the system. One of this is it can help to manage your scalability, since it will help to scale up or down based on the needs. Another one is it will help in terms of security and compliance, since it has those features. It also includes the access controls, audit trails and also encryption. Being cost efficient is also one of the benefits we will get in OpenStack. Since, it will help to optimize the hardware and also utilize it that will lead in reducing the needs for excess physical server. Flexibility is also one of the features of OpenStack since it is versatile and supports different hypervisors and networking options. It will help to pick the right equipment and technology that will match to the needs. All in all, we can say that implementing OpenStack can gives multiple benefits that can improve the system.**

Conclusions:

This activity focus on installation the different prerequisites of OpenStack. Knowing it and be able to properly configure those prerequisites will give you a proper operational OpenStack cloud. In the given task we are able to install the different thing in the remote server using ansible. To make sure that it is properly organize I user different roles for each needed task. Aside from that I learn the different benefits that we can able to get when I implement the OpenStack with the help of the reflection after doing the activity. It's important to know those things since it can help your system to be more flexible, cost efficient and also manage it properly. It’s also important to check the different needs for OpenStack like hardware and software related requirements to be able to implement it smoothly. I can say that this activity really help to expand my knowledge and be able to dig more about OpenStack and I hope to use this in the future.