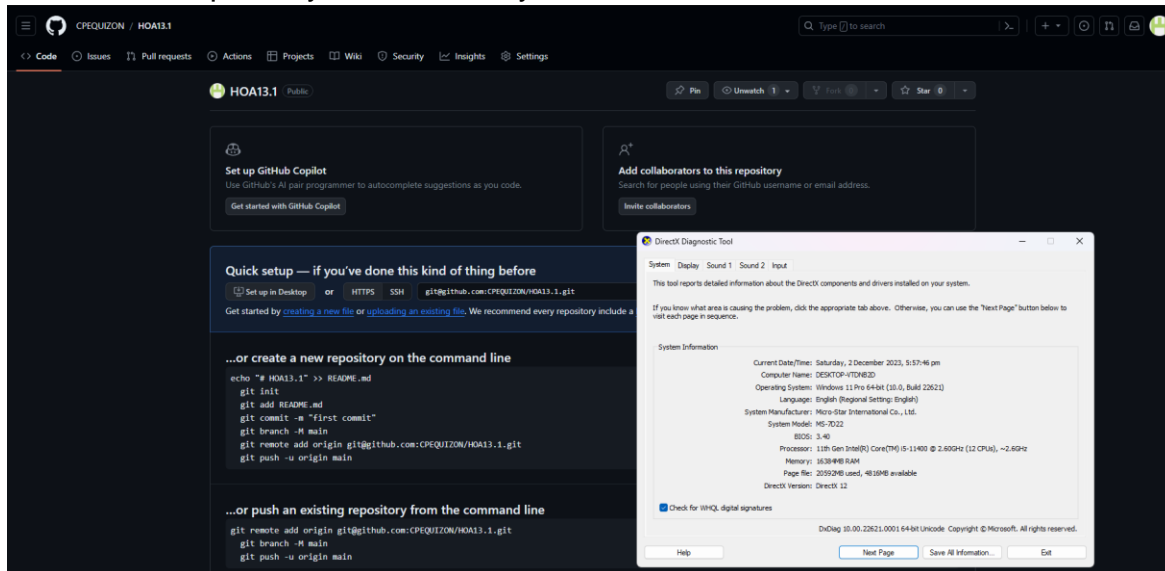


Name: Nowell Gabriel C. Quizon	Date Performed: 12/01/2023
Course/Section: CPE31S5	Date Submitted: 12/02/2023
Instructor: Engr. Roman Richard	Semester and SY: 1 st semester – 2023-2024
Activity 13: OpenStack Prerequisite Installation	
1. Objectives	
Create a workflow to install OpenStack using Ansible as your Infrastructure as Code (IaC).	
2. Intended Learning Outcomes	
<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. 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



GitHub repository page for CPEQUIZON / HOA13.1. The page displays options to set up GitHub Copilot, add collaborators, and quick setup instructions. A 'DirectX Diagnostic Tool' window is overlaid on the right side of the page.

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

Set up in Desktop or HTTPS SSH `git@github.com:CPEQUIZON/HOA13.1.git`

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

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

```
echo "# HOA13.1" >> README.md
git init
git add README.md
git commit -m "first commit"
git branch -M main
git remote add origin git@github.com:CPEQUIZON/HOA13.1.git
git push -u origin main
```

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

```
git remote add origin git@github.com:CPEQUIZON/HOA13.1.git
git branch -M main
git push -u origin main
```

DirectX Diagnostic Tool

System | Display | 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 below to visit each page in sequence.

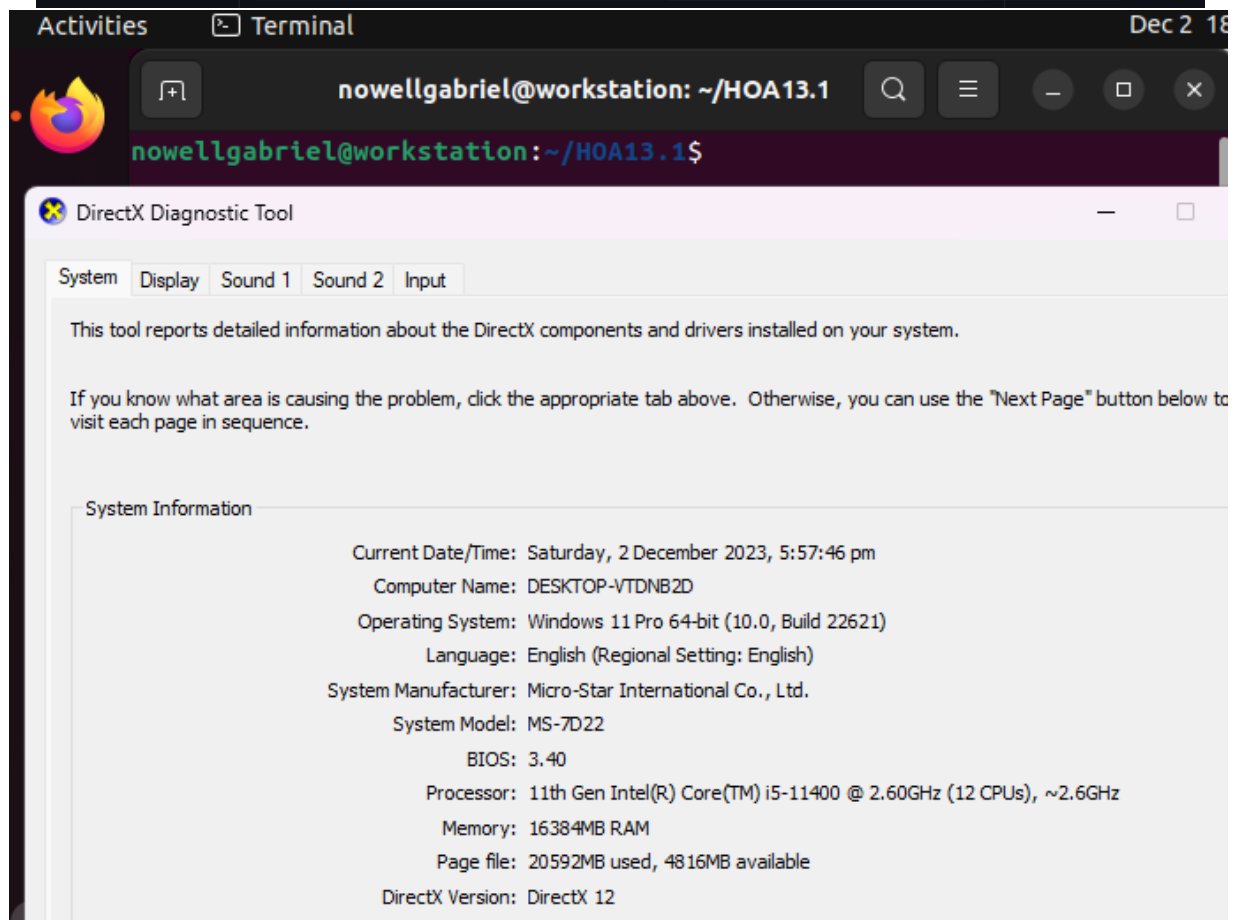
System Information

Current Date/Time: Saturday, 2 December 2023, 5:57:46 pm
Computer Name: DESKTOP-VTDNB2D
Operating System: Windows 11 Pro 64-bit (10.0, Build 22H2)
Language: English (Regional Setting: English)
System Manufacturer: Micro-Star International Co., Ltd.
System Model: MS-7D22
BIOS: 3.40
Processor: 11th Gen Intel(R) Core(TM) i5-11400 @ 2.60GHz (12 CPUs), ~2.6GHz
Memory: 16384MB RAM
Page file: 20592MB used, 4816MB available
DirectX Version: DirectX 12

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[Help](#) [Next Page](#) [Save All Information...](#) [Exit](#)



Activities Terminal Dec 2 18

nowellgabriel@workstation: ~/HOA13.1

nowellgabriel@workstation: ~/HOA13.1\$

DirectX Diagnostic Tool

System | Display | Sound 1 | Sound 2 | Input

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Memory: 16384MB RAM
Page file: 20592MB used, 4816MB available
DirectX Version: DirectX 12

- Ansible.cfg and inventory file

```
nowellgabriel@workstation: ~/HOA13.1$ tree
.
├── ansible.cfg
└── inventory

0 directories, 2 files
```

Diagnostic Tool

Display Sound 1 Sound 2 Input

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DirectX Version: DirectX 12

Check for WHQL digital signatures

Create a playbook that converts the steps in the following items in <https://docs.openstack.org/install-guide/>

a.) NTP

```
nowellgabriel@workstation: ~/HOA13.1/ntp/t...$ nano main.yml
GNU nano 6.2 main.yml
- name: Installing Chrony (Ubuntu)
  apt:
    name: chrony
    state: latest

- replace:
  dest: /etc/chrony/chrony.conf
  regexp: server NTP_SERVER iburst
  replace: server 192.168.56.102 iburst
  backup: yes

- name: add key to chrony.conf
  ansible.builtin.lineinfile:
    dest: /etc/chrony/chrony.conf
    line: allow 10.0.0.0/24
    backup: yes

- name: Verifying Installation (Chrony for Ubuntu)
  service:
    name: chrony
    state: restarted
    enabled: true
```

DirectX Diagnostic Tool

System Display Sound 1 Sound 2 Input

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System Information

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Memory: 16384MB RAM
Page file: 20592MB used, 4816MB available
DirectX Version: DirectX 12

☒ Check for WHQL digital signatures

b.) OpenStack packages

```
GNU nano 6.2 main.yml
- name: Installing OpenStack (Ubuntu)
  apt:
    name:
      - nova-compute
      - python3-openstackclient
    state: latest
```

DirectX Diagnostic Tool

System Display Sound 1 Sound 2 Input

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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: Saturday, 2 December 2023, 5:57:46 pm
Computer Name: DESKTOP-VTDNB2D
Operating System: Windows 11 Pro 64-bit (10.0, Build 22621)
Language: English (Regional Setting: English)
System Manufacturer: Micro-Star International Co., Ltd.
System Model: MS-7D22
BIOS: 3.40
Processor: 11th Gen Intel(R) Core(TM) i5-11400 @ 2.60GHz (12 CPUs), ~2.6GHz
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Page file: 20592MB used, 4816MB available
DirectX Version: DirectX 12

c.) SQL Database

```
GNU nano 6.2 main.yml *
- name: Installing Packages (SQL for Ubuntu)
  apt:
    name:
      - mariadb-server
      - python3-pymysql
    state: latest

- name: Create Config File
  file:
    path: /etc/mysql/mariadb.conf.d/99-openstack.cnf
    state: touch
    owner: root
    group: root
    mode: 0777

- name: Editing Config File
  lineinfile:
    dest: /etc/mysql/mariadb.conf.d/99-openstack.cnf
    line: "{{ item }}"
    state: present
    backup: yes
  with_items:
    - '[mysqld]'
    - 'bind-address = 10.0.0.11'
    - 'default-storage-engine = innodb'
    - 'innodb_file_per_table = on'
    - 'max_connections = 4096'
    - 'collation-server = utf8_general_ci'
    - 'character-set-server = utf8'

- name: Restarting Service
  service:
    name: mysql
    state: restarted
    enabled: true

- name: Finalizing Installation
  expect:
    command: mysql_secure_installation
    responses:
      'Enter current password for root:' ' '
      'Set root password:' 'n'
      'Remove anonymous users:' 'y'
      'Disallow root login remotely:' 'y'
      'Remove test database:' 'y'
      'Reload privilege tables now:' 'y'
    timeout: 1
  register: secure_mariadb
  failed_when: "'... Failed!' in secure_mariadb.stdout_lines"
```

DirectX Diagnostic Tool

System Display Sound 1 Sound 2 Input

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Help Next Page Save All Information... Exit

d.) Message Queue

```
nowellgabriel@workstation: ~/HOA13.1/mes...
GNU nano 6.2 main.yml *
- name: Install Message Queue
  apt:
    name: rabbitmq-server
    state: present
    update_cache: yes

- name: Starting service
  service:
    name: rabbitmq-server.service
    state: started
    enabled: true
```

DirectX Diagnostic Tool

System Display Sound 1 Sound 2 Input

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

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Computer Name: DESKTOP-VTDNB2D
Operating System: Windows 11 Pro 64-bit (10.0, Build 22621)
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Page file: 20592MB used, 4816MB available
DirectX Version: DirectX 12

e.) Memcached

```
nowellgabriel@workstation: ~/HOA13.1/mem...
GNU nano 6.2 main.yml *
- name: Installing MemCached (Ubuntu)
  apt:
    name:
      - memcached
      - python3-memcache
    state: latest

- name: Editing Config File
  lineinfile:
    dest: /etc/memcached.conf
    regexp: "-l 127.0.0.1"
    line: "-l 10.0.0.11"
    state: present
    backup: yes

- name: Restart Service
  service:
    name: memcached
    state: restarted
    enabled: true
```

DirectX Diagnostic Tool

System Display 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 below to visit each page in sequence.

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Computer Name: DESKTOP-VTDNB2D
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f.) Etcd

```
nowellgabriel@workstation: ~/HOA13.1/etcd/...
GNU nano 6.2 main.yml *
- name: Installing Packages (etcd for Ubuntu)
  apt:
    name:
      - etcd
    state: latest

- name: Editing Config File
  lineinfile:
    dest: /etc/default/etcd
    regexp: '{{ item.regexp }}'
    line: '{{ item.line }}'
    state: present
    backup: yes

with_items:
  - { regexp: 'ETCD_INITIAL_CLUSTER=', line: 'ETCD_INITIAL_CLUSTER=' }
  - { regexp: 'ETCD_INITIAL_ADVERTISE_PEER_URLS=', line: 'ETCD_INITIAL_ADVERTISE_PEER_URLS=' }
  - { regexp: 'ETCD_ADVERTISE_CLIENT_URLS=', line: 'ETCD_ADVERTISE_CLIENT_URLS=' }
  - { regexp: 'ETCD_LISTEN_PEER_URLS=', line: 'ETCD_LISTEN_PEER_URLS=' }
  - { regexp: 'ETCD_LISTEN_CLIENT_URLS=', line: 'ETCD_LISTEN_CLIENT_URLS=' }
```

DirectX Diagnostic Tool

System Display Sound 1 Sound 2 Input

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

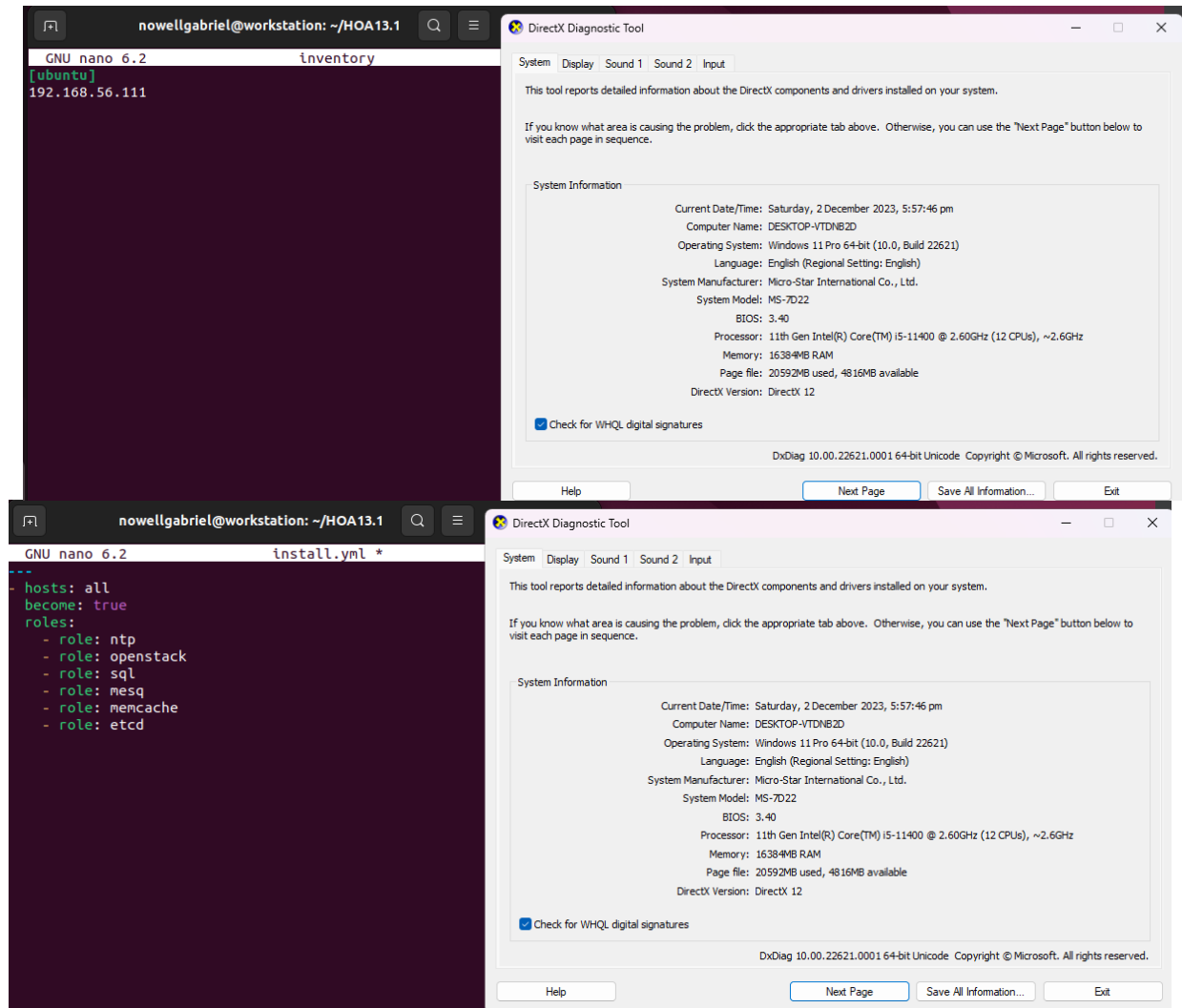
If you know what area is causing the problem, click the appropriate tab above. Otherwise, you can use the "Next Page" button below to visit each page in sequence.

System Information

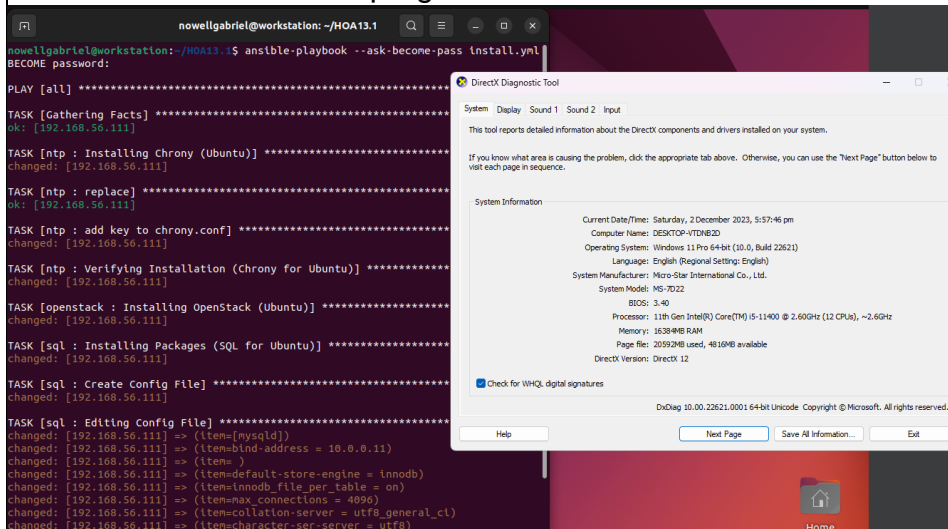
Current Date/Time: Saturday, 2 December 2023, 5:57:46 pm
Computer Name: DESKTOP-VTDNB2D
Operating System: Windows 11 Pro 64-bit (10.0, Build 22621)
Language: English (Regional Setting: English)
System Manufacturer: Micro-Star International Co., Ltd.
System Model: MS-7D22
BIOS: 3.40
Processor: 11th Gen Intel(R) Core(TM) i5-11400 @ 2.60GHz (12 CPUs), ~2.6GHz
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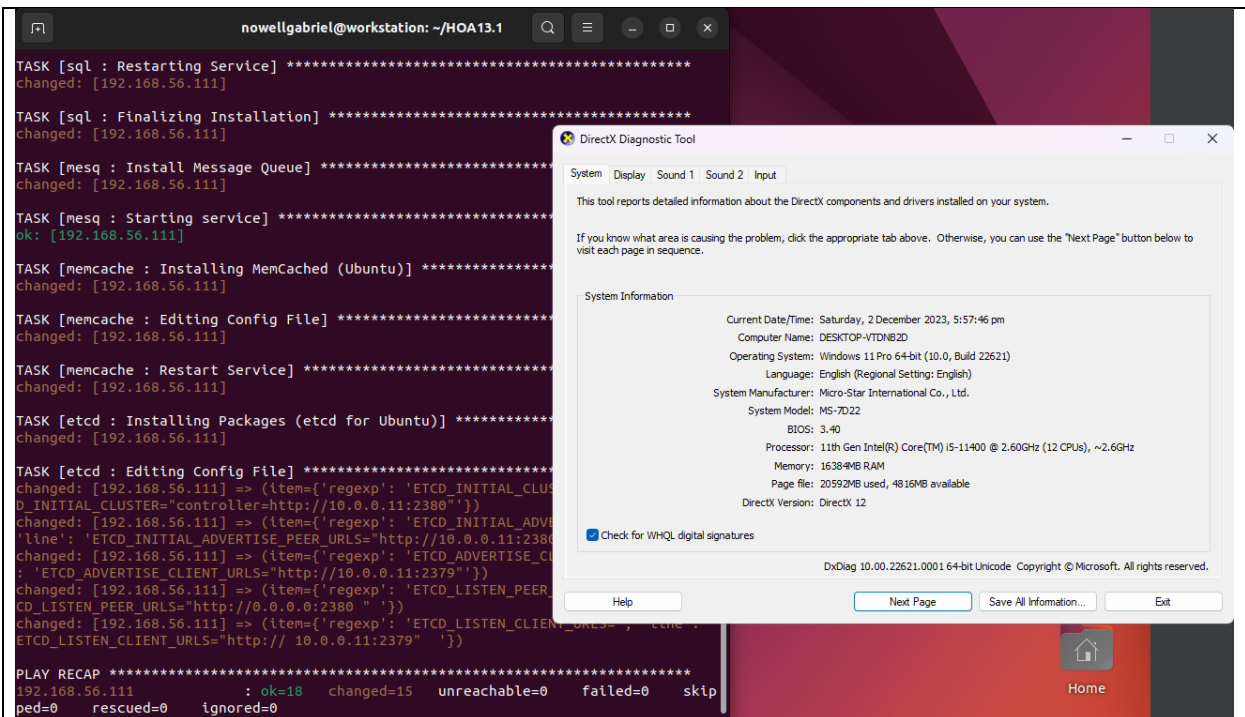
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g.) Create different plays in installing per server type (controller, compute etc.) and identify it as a group in Inventory file.



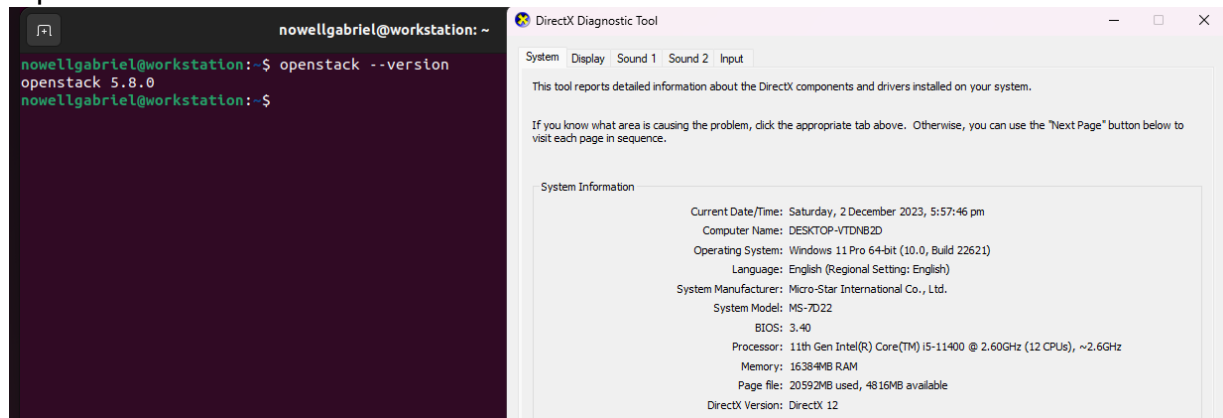
- Installation progress and success



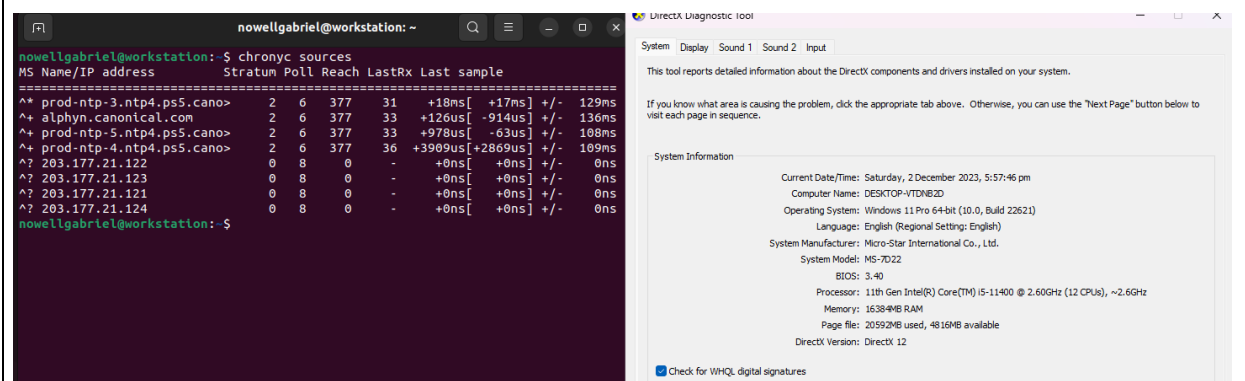


Proof of the installed tasks

Openstack:



NTP:



SQL:

```
● mariadb.service - MariaDB 10.6.12 database server
   Loaded: loaded (/lib/systemd/system/mariadb.service; enabled; vendor prese
   Active: active (running) since Sat 2023-12-02 19:06:18 +08; 7min ago
     Docs: man:mariadb(8)
           https://mariadb.com/kb/en/library/systemd/
   Main PID: 38200 (mariabdd)
   Status: "Taking your SQL requests now..."
     Tasks: 9 (limit: 4599)
    Memory: 61.2M
       CPU: 324ms
    CGroup: /system.slice/mariadb.service
           └─38200 /usr/sbin/mariabdd

Dec 02 19:06:18 workstation mariabdd[38200]: Version: '10.6.12-MariaDB-0ubuntu0
Dec 02 19:06:18 workstation systemd[1]: Started MariaDB 10.6.12 database server.
Dec 02 19:06:18 workstation /etc/mysql/debian-start[38221]: Warning: World-writ
Dec 02 19:06:18 workstation /etc/mysql/debian-start[38221]: Looking for 'mariad
Dec 02 19:06:18 workstation /etc/mysql/debian-start[38221]: Looking for 'mariad
Dec 02 19:06:18 workstation /etc/mysql/debian-start[38221]: This installation o
Dec 02 19:06:18 workstation /etc/mysql/debian-start[38221]: There is no need to
Dec 02 19:06:18 workstation /etc/mysql/debian-start[38221]: You can use --force
Dec 02 19:06:18 workstation /etc/mysql/debian-start[38229]: Checking for insecur
Dec 02 19:06:18 workstation /etc/mysql/debian-start[38234]: Triggering mysam-r
```

```
nowellgabriel@workstation: ~
● mariadb.service - MariaDB 10.6.12 database server
   Loaded: loaded (/lib/systemd/system/mariadb.service; enabled; vendor prese
   Active: active (running) since Sat 2023-12-02 19:06:18 +08; 8min ago
     Docs: man:mariabdd(8)
           https://mariadb.com/kb/en/library/systemd/
   Main PID: 38200 (mariabdd)
   Status: "Taking your SQL requests now..."
     Tasks: 8 (limit: 4599)
    Memory: 61.1M
       CPU: 331ms
    CGroup: /system.slice/mariadb.service
           └─38200 /usr/sbin/mariabdd

Dec 02 19:06:18 workstation mariabdd[38200]: Version: '10.6.12-MariaDB-0ubuntu0
Dec 02 19:06:18 workstation systemd[1]: Started MariaDB 10.6.12 database server.
Dec 02 19:06:18 workstation /etc/mysql/debian-start[38221]: Warning: World-writ
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Dec 02 19:06:18 workstation /etc/mysql/debian-start[38221]: This installation o
Dec 02 19:06:18 workstation /etc/mysql/debian-start[38221]: There is no need to
Dec 02 19:06:18 workstation /etc/mysql/debian-start[38221]: You can use --force
Dec 02 19:06:18 workstation /etc/mysql/debian-start[38229]: Checking for insecur
Dec 02 19:06:18 workstation /etc/mysql/debian-start[38234]: Triggering mysam-r
lines 1-23/23 (END)
```

System Display Sound 1 Sound 2 Input

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System Information

Current Date/Time: Saturday, 2 December 2023, 5:57:46 pm
Computer Name: DESKTOP-VTDN8ZD
Operating System: Windows 11 Pro 64-bit (10.0, Build 22H2)
Language: English (Regional Setting: English)
System Manufacturer: Micro-Star International Co., Ltd.
System Model: MS-7D22
BIOS: 3.40
Processor: 11th Gen Intel(R) Core(TM) i5-11400 @ 2.60GHz (12 CPUs), ~2.6GHz
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Help Next Page Save All Information... Exit

MesQ:

```
nowellgabriel@workstation: ~
● rabbitmq-server.service - RabbitMQ Messaging Server
   Loaded: loaded (/lib/systemd/system/rabbitmq-server.service; enabled; vend
   Active: active (running) since Sat 2023-12-02 19:06:57 +08; 8min ago
     Main PID: 39185 (beam.smp)
       Tasks: 27 (limit: 4599)
      Memory: 86.4M
         CPU: 5.446s
    CGroup: /system.slice/rabbitmq-server.service
           └─39185 /usr/lib/erlang/erts-12.2.1/bin/beam.smp -W w -MBas ageffc
           └─39196 erl_child_setup 65536
           └─39255 inet_gethost 4
           └─39256 inet_gethost 4

Dec 02 19:06:52 workstation systemd[1]: Starting RabbitMQ Messaging Server...
Dec 02 19:06:57 workstation systemd[1]: Started RabbitMQ Messaging Server.
lines 1-15/15 (END)
```

System Display Sound 1 Sound 2 Input

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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

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Language: English (Regional Setting: English)
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System Model: MS-7D22
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Processor: 11th Gen Intel(R) Core(TM) i5-11400 @ 2.60GHz (12 CPUs), ~2.6GHz
Memory: 16384MB RAM
Page file: 20592MB used, 4816MB available
DirectX Version: DirectX 12

☒ Check for WHQL digital signatures

MemCache:

```
nowellgabriel@workstation:~$ sudo systemctl status memcached
* memcached.service - memcached daemon
   Loaded: loaded (/lib/systemd/system/memcached.service; enabled; vendor pre-
   Active: failed (Result: exit-code) since Sat 2023-12-02 19:16:54 +08; 15s
   Docs: man:memcached(1)
   Main PID: 40896 (code=exited, status=1/FAILURE)
   CPU: 41ms

Dec 02 19:16:54 workstation systemd[1]: memcached.service: Failed with result '
Dec 02 19:16:54 workstation systemd[1]: memcached.service: Scheduled restart job
Dec 02 19:16:54 workstation systemd[1]: Stopped memcached daemon.
Dec 02 19:16:54 workstation systemd[1]: memcached.service: Start request repeat
Dec 02 19:16:54 workstation systemd[1]: memcached.service: Failed with result '
Dec 02 19:16:54 workstation systemd[1]: Failed to start memcached daemon.
lines 1-13/13 (END)
```

System Information

Current Date/Time: Saturday, 2 December 2023, 5:57:46 pm
Computer Name: DESKTOP-VTDN62D
Operating System: Windows 11 Pro 64-bit (10.0, Build 22H2)
Language: English (Regional Setting: English)
System Manufacturer: Micro-Star International Co., Ltd.
System Model: MS-7022
BIOS: 3.40
Processor: 11th Gen Intel(R) Core(TM) i5-11400 @ 2.60GHz (12 CPUs), ~2.6GHz
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h.) Add, commit and push it to your GitHub repo.

The screenshot displays a terminal window where the user 'nowellgabriel' is working in the directory '~/.HOA13.1'. The user runs the following commands:

```
nowellgabriel@workstation:~/.HOA13.1$ git add *
nowellgabriel@workstation:~/.HOA13.1$ git commit -m "HOA13.1 Done"
[main (root-commit) e450a69] HOA13.1 Done
 9 files changed, 150 insertions(+)
 create mode 100644 ansible.cfg
 create mode 100644 etcd/tasks/main.yml
 create mode 100644 install.yml
 create mode 100644 inventory
 create mode 100644 memcache/tasks/main.yml
 create mode 100644 mesq/tasks/main.yml
 create mode 100644 ntp/tasks/main.yml
 create mode 100644 openstack/tasks/main.yml
 create mode 100644 sql/tasks/main.yml
nowellgabriel@workstation:~/.HOA13.1$ git push origin
Enumerating objects: 23, done.
Counting objects: 100% (23/23), done.
Delta compression using up to 4 threads
Compressing objects: 100% (10/10), done.
Writing objects: 100% (23/23), 2.82 KiB | 1.41 MiB/s, done.
Total 23 (delta 0), reused 0 (delta 0), pack-reused 0
To github.com:CPEQUIZON/HOA13.1.git
 * [new branch]      main -> main
nowellgabriel@workstation:~/.HOA13.1$
```

Simultaneously, a Windows System Information window is open, showing details about the system, including the operating system (Windows 11 Pro 64-bit), processor (11th Gen Intel(R) Core(TM) i5-11400), and memory (16384MB RAM).

Below the terminal, the GitHub repository page for 'CPEQUIZON / HOA13.1' is visible. The repository is public and has 1 branch (main) and 0 tags. The file list shows the following files:

- etcd/tasks
- memcache/tasks
- mesq/tasks
- ntp/tasks
- openstack/tasks
- sql/tasks
- ansible.cfg
- install.yml
- inventory

The repository page also includes a 'Code' button and a 'About' section.

Reflections:

Answer the following:

1. What are the benefits of implementing OpenStack?

OpenStack is a free and open-source cloud computing platform that offers a wealth of benefits for organizations, including cost savings, agility and innovation,

scalability and flexibility, control and choice, security and compliance, and a vibrant community and support. By embracing OpenStack, businesses can take control of their IT destiny and transform their IT into a powerful enabler of success.

Conclusions:

In conclusion, in this activity, I created different yml files that contain codes to install open stack and other different packages. Ansible's automation capabilities reduce mistakes and manual labor while maintaining consistent deployment across all OpenStack nodes. The power of Ansible paired with OpenStack creates a reliable and adaptable cloud architecture.