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|--|-----------------------------------|
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| Course/Section: CPE31S5 | Date Submitted: 10/14/2023 |
| Instructor: Engr. Roman Richard | Semester and SY: 2023-2024 |

Activity 6: Targeting Specific Nodes and Managing Services

1. Objectives:

- 1.1 Individualize hosts
- 1.2 Apply tags in selecting plays to run
- 1.3 Managing Services from remote servers using playbooks

2. Discussion:

In this activity, we try to individualize hosts. For example, we don't want apache on all our servers, or maybe only one of our servers is a web server, or maybe we have different servers like database or file servers running different things on different categories of servers and that is what we are going to take a look at in this activity.

We also try to manage services that do not automatically run using the automations in playbook. For example, when we install web servers or httpd for CentOS, we notice that the service did not start automatically.

Requirement:

In this activity, you will need to create another Ubuntu VM and name it Server 3. Likewise, you need to activate the second adapter to a host-only adapter after the installations. Take note of the IP address of the Server 3. Make sure to use the command **ssh-copy-id** to copy the public key to Server 3. Verify if you can successfully SSH to Server 3.

Task 1: Targeting Specific Nodes

1. Create a new playbook and named it site.yml. Follow the commands as shown in the image below. Make sure to save the file and exit.

```
---
- hosts: all
  become: true
  tasks:

    - name: install apache and php for Ubuntu servers
      apt:
        name:
          - apache2
          - libapache2-mod-php
        state: latest
        update_cache: yes
      when: ansible_distribution == "Ubuntu"

    - name: install apache and php for CentOS servers
      dnf:
        name:
          - httpd
          - php
        state: latest
      when: ansible_distribution == "CentOS"
```

The terminal window displays the following Ansible playbooks:

```
- hosts: web_servers
  become: true
  tasks:
    - name: install apache and php for Ubuntu servers
      apt:
        name:
          - apache2
          - libapache2-mod-php
        state: latest
      when: ansible_distribution == "Ubuntu"

    - name: install apache and php for centOS servers
      dnf:
        name:
          - httpd
          - php
        state: latest
      when: ansible_distribution == "centos"
```

The bottom of the terminal shows a set of keyboard shortcuts:

- ^G Help
- ^O Write Out
- ^W Where Is
- ^K Cut
- ^T Execute
- ^C Location
- ^X Exit
- ^R Read File
- ^A Replace
- ^U Paste
- ^J Justify
- ^/ Go To Line

The second window is the DirectX Diagnostic Tool, titled "DirectX Diagnostic Tool". It has tabs for System, Display 1, Display 2, Sound, and Input. The System tab is selected.

System Information:

- Current Date/Time: Saturday, 14 October 2023, 11:34:28 AM
- Computer Name: LAPTOP-EPN68K8J
- Operating System: Windows 11 Home Single Language 64-bit (10.0, Build 22621)
- Language: English (Regional Setting: English)
- System Manufacturer: ASUSTek COMPUTER INC.
- System Model: ROG Strix G531GV_G531GV
- BIOS: G531GV.306
- Processor: Intel(R) Core(TM) i7-9750H CPU @ 2.60GHz (12 CPUs), ~2.6GHz
- Memory: 16384MB RAM
- Page file: 14952MB used, 6656MB available
- DirectX Version: DirectX 12

Check for WHQL digital signatures:

DxDiag 10.00.22621.0001 64-bit Unicode Copyright © Microsoft. All rights reserved.

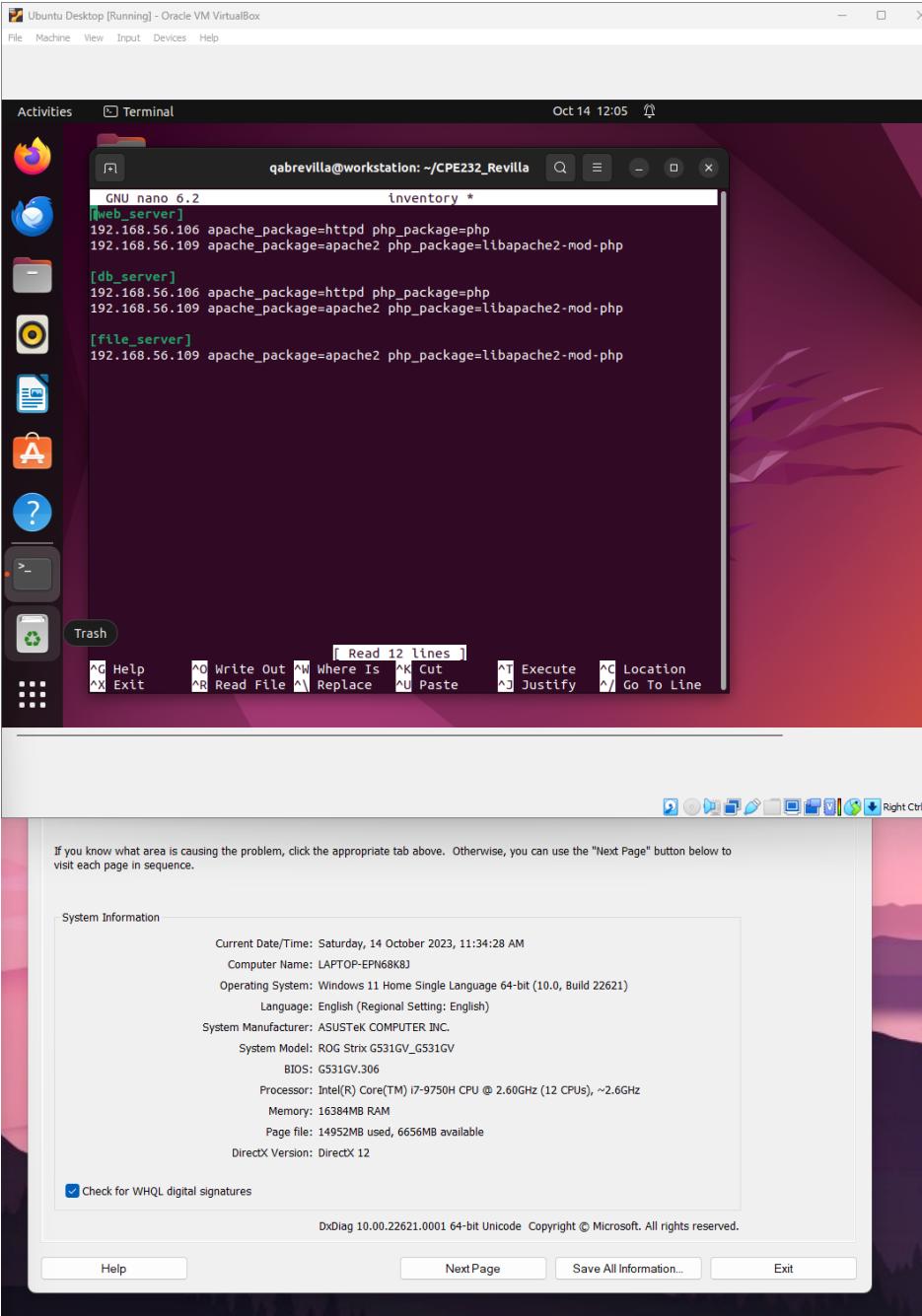
Buttons at the bottom: Help, Next Page, Save All Information..., Exit

2. Edit the inventory file. Remove the variables we put in our last activity and group according to the image shown below:

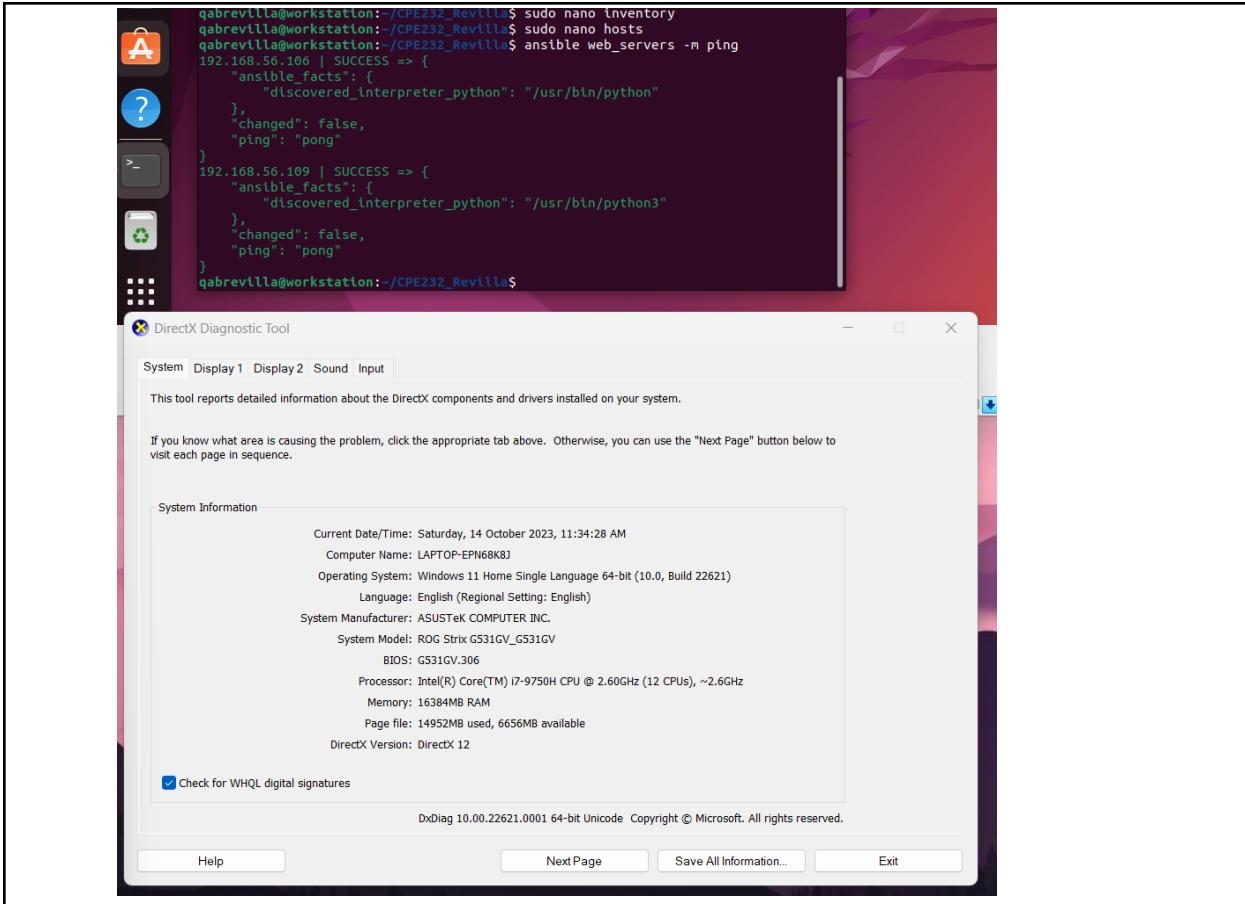
```
[web_servers]
192.168.56.120
192.168.56.121

[db_servers]
192.168.56.122

[file_servers]
192.168.56.123
```



Make sure to save the file and exit.



The screenshot shows a Linux desktop environment with a terminal window and a DirectX Diagnostic Tool window.

Terminal Window:

```
qabrevilla@workstation:~/CPE232_Revilla$ ansible facts --list
qabrevilla@workstation:~/CPE232_Revilla$ ansible hosts -m ping
192.168.56.109 | SUCCESS => {
    "ansible_facts": [
        "discovered_interpreter_python": "/usr/bin/python3"
    ],
    "changed": false,
    "ping": "pong"
}
192.168.56.106 | SUCCESS => {
    "ansible_facts": [
        "discovered_interpreter_python": "/usr/bin/python"
    ],
    "changed": false,
    "ping": "pong"
}
qabrevilla@workstation:~/CPE232_Revilla$ ansible inventory -m ping
192.168.56.109 | SUCCESS => {
    "ansible_facts": [
        "discovered_interpreter_python": "/usr/bin/python3"
    ],
    "changed": false,
    "ping": "pong"
}
qabrevilla@workstation:~/CPE232_Revilla$ ansible db_servers -m ping
192.168.56.109 | SUCCESS => {
    "ansible_facts": [
        "discovered_interpreter_python": "/usr/bin/python3"
    ],
    "changed": false,
    "ping": "pong"
}
qabrevilla@workstation:~/CPE232_Revilla$ ansible file_servers -m ping
192.168.56.109 | SUCCESS => {
    "ansible_facts": [
        "discovered_interpreter_python": "/usr/bin/python3"
    ],
    "changed": false,
    "ping": "pong"
}
qabrevilla@workstation:~/CPE232_Revilla$
```

DirectX Diagnostic Tool Window:

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, 14 October 2023, 11:34:28 AM
- Computer Name: LAPTOP-EPN6K8J
- Operating System: Windows 11 Home Single Language 64-bit (10.0, Build 22621)
- Language: English (Regional Setting: English)
- System Manufacturer: ASUSTeK COMPUTER INC.
- System Model: ROG Strix G531GV_G531GV
- BIOS: G531GV.306
- Processor: Intel(R) Core(TM) i7-9750H CPU @ 2.60GHz (12 CPUs), ~2.6GHz
- Memory: 16384MB RAM
- Page file: 14952MB used, 6656MB available
- DirectX Version: DirectX 12

Check for WHQL digital signatures

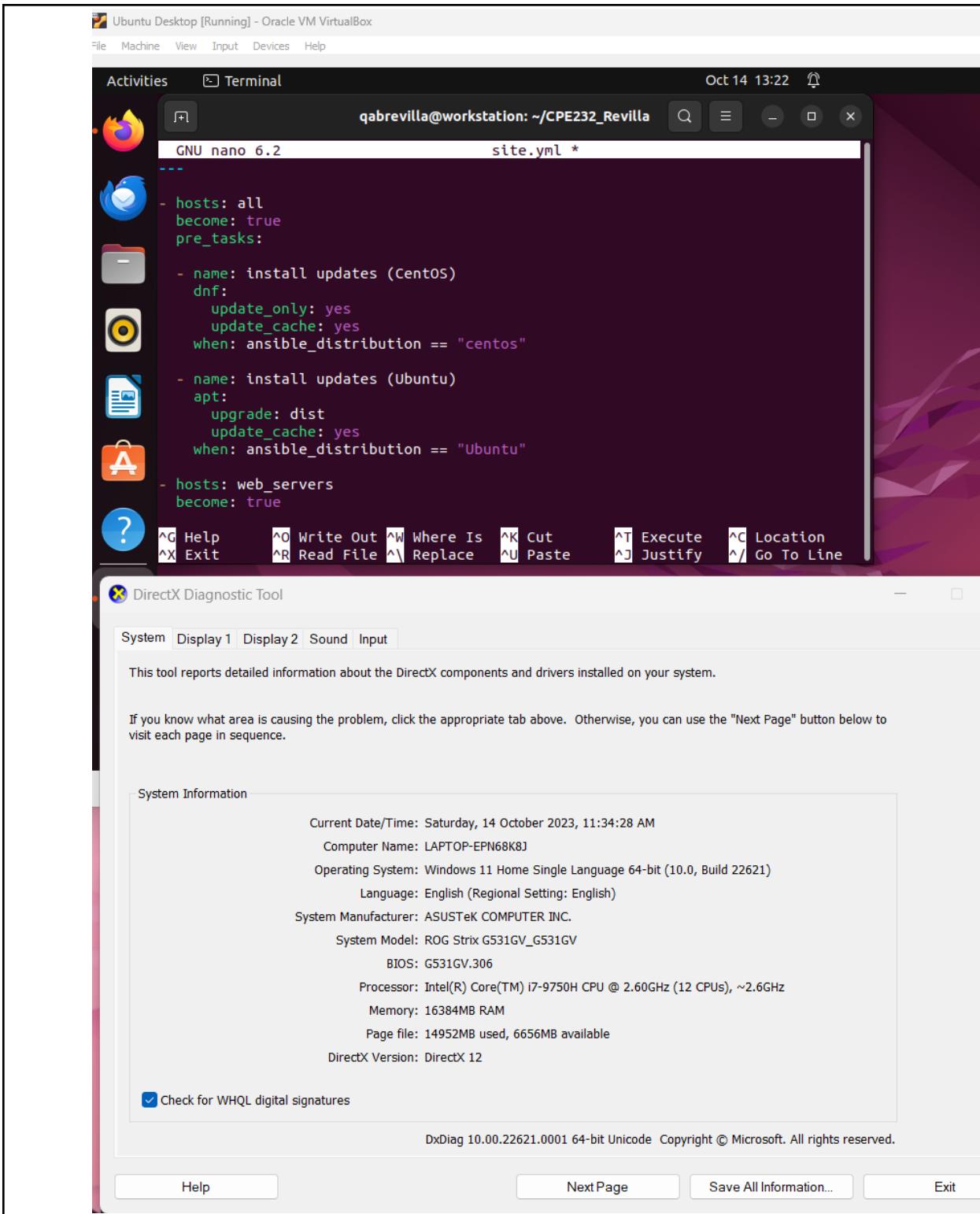
DxDiag 10.00.22621.0001 64-bit Unicode Copyright © Microsoft. All rights reserved.

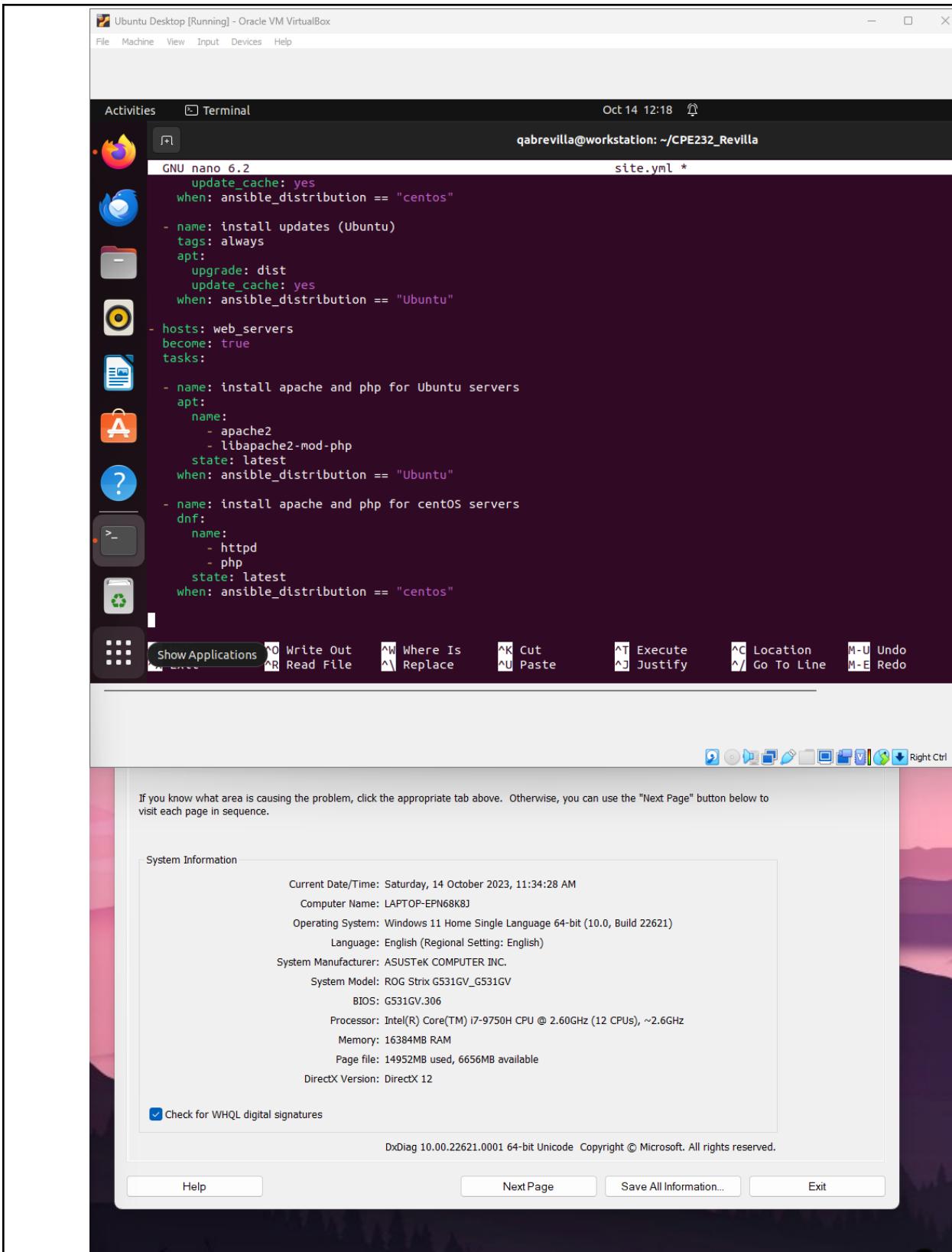
Help Next Page Save All Information... Exit

Right now, we have created groups in our inventory file and put each server in its own group. In other cases, you can have a server be a member of multiple groups, for example you have a test server that is also a web server.

3. Edit the **site.yml** by following the image below:

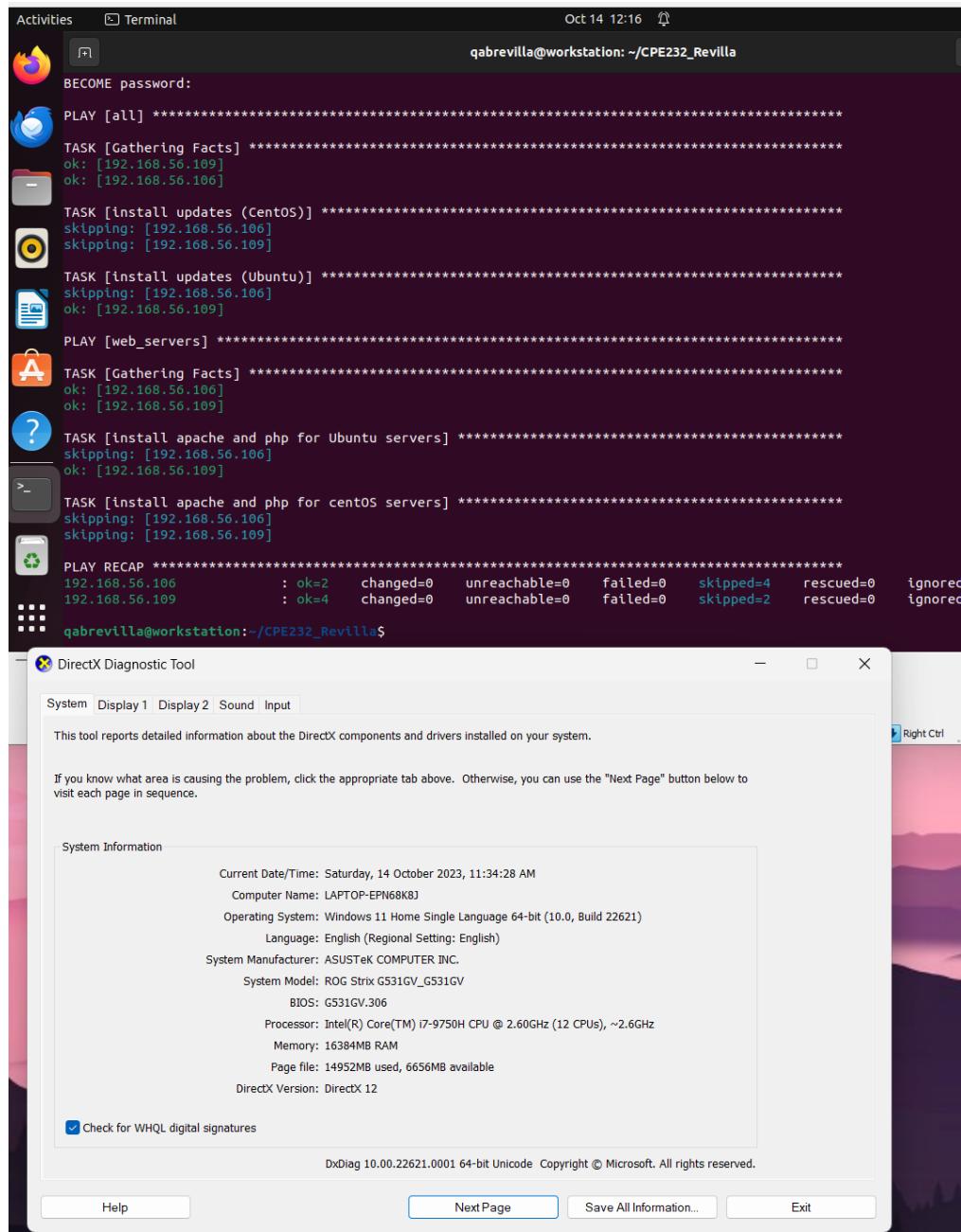
Make sure to save the file and exit.





The **pre-tasks** command tells the ansible to run it before any other thing. In the **pre-tasks**, CentOS will install updates while Ubuntu will upgrade its distribution package. This will run before running the second play, which is targeted at **web_servers**. In the second play, apache and php will be installed on both Ubuntu servers and CentOS servers.

Run the **site.yml** file and describe the result.



The terminal window shows the execution of the `site.yml` Ansible playbook. The output indicates that the first play (Gathering Facts) was successful for both hosts (192.168.56.106 and 192.168.56.109). The second play (Install updates) was skipped for both hosts. The third play (Install apache and php for Ubuntu servers) was also skipped. The fourth play (Install apache and php for CentOS servers) was skipped. The final PLAY RECAP summary shows that host 192.168.56.106 had 2 ok tasks and 4 skipped tasks, while host 192.168.56.109 had 4 ok tasks and 2 skipped tasks. Both hosts have 0 failed, rescued, and ignored tasks.

```
BECOME password:  
PLAY [all] *****  
TASK [Gathering Facts] *****  
ok: [192.168.56.109]  
ok: [192.168.56.106]  
TASK [Install updates (CentOS)] *****  
skipping: [192.168.56.106]  
skipping: [192.168.56.109]  
TASK [Install updates (Ubuntu)] *****  
skipping: [192.168.56.106]  
ok: [192.168.56.109]  
PLAY [web_servers] *****  
TASK [Gathering Facts] *****  
ok: [192.168.56.106]  
ok: [192.168.56.109]  
TASK [Install apache and php for Ubuntu servers] *****  
skipping: [192.168.56.106]  
ok: [192.168.56.109]  
TASK [Install apache and php for CentOS servers] *****  
skipping: [192.168.56.106]  
skipping: [192.168.56.109]  
PLAY RECAP *****  
192.168.56.106 : ok=2    changed=0    unreachable=0    failed=0    skipped=4    rescued=0    ignored=0  
192.168.56.109 : ok=4    changed=0    unreachable=0    failed=0    skipped=2    rescued=0    ignored=0
```

The **DirectX Diagnostic Tool** window shows system information for a Windows 11 Home Single Language 64-bit system. The system has an Intel(R) Core(TM) i7-9750H CPU @ 2.60GHz (12 CPUs), ~2.6GHz, 16384MB RAM, and a Page file of 14952MB used, 6656MB available. The DirectX Version is DirectX 12. The tool also includes a checkbox for "Check for WHQL digital signatures".

In the playbook pre-tasks is used to prioritize tasks before running other thing in playbook, in this scenario pre-tasks is used to update ubuntu and centos servers.

4. Let's try to edit again the *site.yml* file. This time, we are going to add plays targeting the other servers. This time we target the *db_servers* by adding it on the current *site.yml*. Below is an example: (Note add this at the end of the playbooks from task 1.3.

```
- hosts: db_servers
become: true
tasks:

- name: install mariadb package (Centos)
  yum:
    name: mariadb-server
    state: latest
  when: ansible_distribution == "Centos"

- name: "Mariadb- Restarting/Enabling"
  service:
    name: mariadb
    state: restarted
    enabled: true

- name: install mariadb packege (Ubuntu)
  apt:
    name: mariadb-server
    state: latest
  when: ansible_distribution == "Ubuntu"
```

Make sure to save the file and exit.

Ubuntu Desktop [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Oct 14 13:05

qabrevilla@workstation: ~/CPE232_Revilla

GNU nano 6.2 site.yml

```
- name: install apache and php for centOS servers
  dnf:
    name:
      - httpd
      - php
    state: latest
  when: ansible_distribution == "centos"

- hosts: db_servers
  become: true
  tasks:

    - name: install mariadb package (Ubuntu)
      apt:
        name: mariadb-server
        state: latest
      when: ansible_distribution == "Ubuntu"

    - name: install mariadb package (CentOS)
      yum:
        name: mariadb-server
        state: latest
      when: ansible_distribution == "centos"

    - name: "Mariadb- Restarting/Enabling"
      service:
        name: mariadb
        state: restarted
        enabled: true
```

Help Exit Write Out Read File Where Is Replace Cut Paste Execute Justify Location Go To Line

DirectX Diagnostic Tool

System Display 1 Display 2 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: Saturday, 14 October 2023, 11:34:28 AM
Computer Name: LAPTOP-EPN68K8J
Operating System: Windows 11 Home Single Language 64-bit (10.0, Build 22621)
Language: English (Regional Setting: English)
System Manufacturer: ASUSTek COMPUTER INC.
System Model: ROG Strix G531GV_G531GV
BIOS: G531GV.306
Processor: Intel(R) Core(TM) i7-9750H CPU @ 2.60GHz (12 CPUs), ~2.6GHz
Memory: 16384MB RAM
Page file: 14952MB used, 6656MB available
DirectX Version: DirectX 12

Check for WHQL digital signatures

DxDiag 10.00.22621.0001 64-bit Unicode Copyright © Microsoft. All rights reserved.

Help Next Page Save All Information... Exit

Run the *site.yml* file and describe the result.

The screenshot shows two windows in an Oracle VM VirtualBox environment. The top window is a terminal session on an Ubuntu desktop. The command `qabrevilla@workstation: ~/CPE232_Revilla\$` is run, followed by several Ansible playbooks being executed. The output includes:

```
TASK [install apache and php for centOS servers] ****
*****
skipping: [192.168.56.106]
skipping: [192.168.56.109]

PLAY [db_servers] ****
*****
TASK [Gathering Facts] ****
*****
ok: [192.168.56.106]
ok: [192.168.56.109]

TASK [install mariadb package (Ubuntu)] ****
*****
skipping: [192.168.56.106]
ok: [192.168.56.109]

TASK [install mariadb package (Centos)] ****
*****
skipping: [192.168.56.106]
skipping: [192.168.56.109]

TASK [Mariadb-: Restarting/Enabling] ****
*****
changed: [192.168.56.109]
changed: [192.168.56.106]

PLAY RECAP ****
*****
192.168.56.106      : ok=4    changed=1    unreachable=0    failed=0    skipped=6    rescued=0
192.168.56.109      : ok=7    changed=1    unreachable=0    failed=0    skipped=3    rescued=0
qabrevilla@workstation:~/CPE232_Revilla$
```

The bottom window is the DirectX Diagnostic Tool. It shows the System tab with the following information:

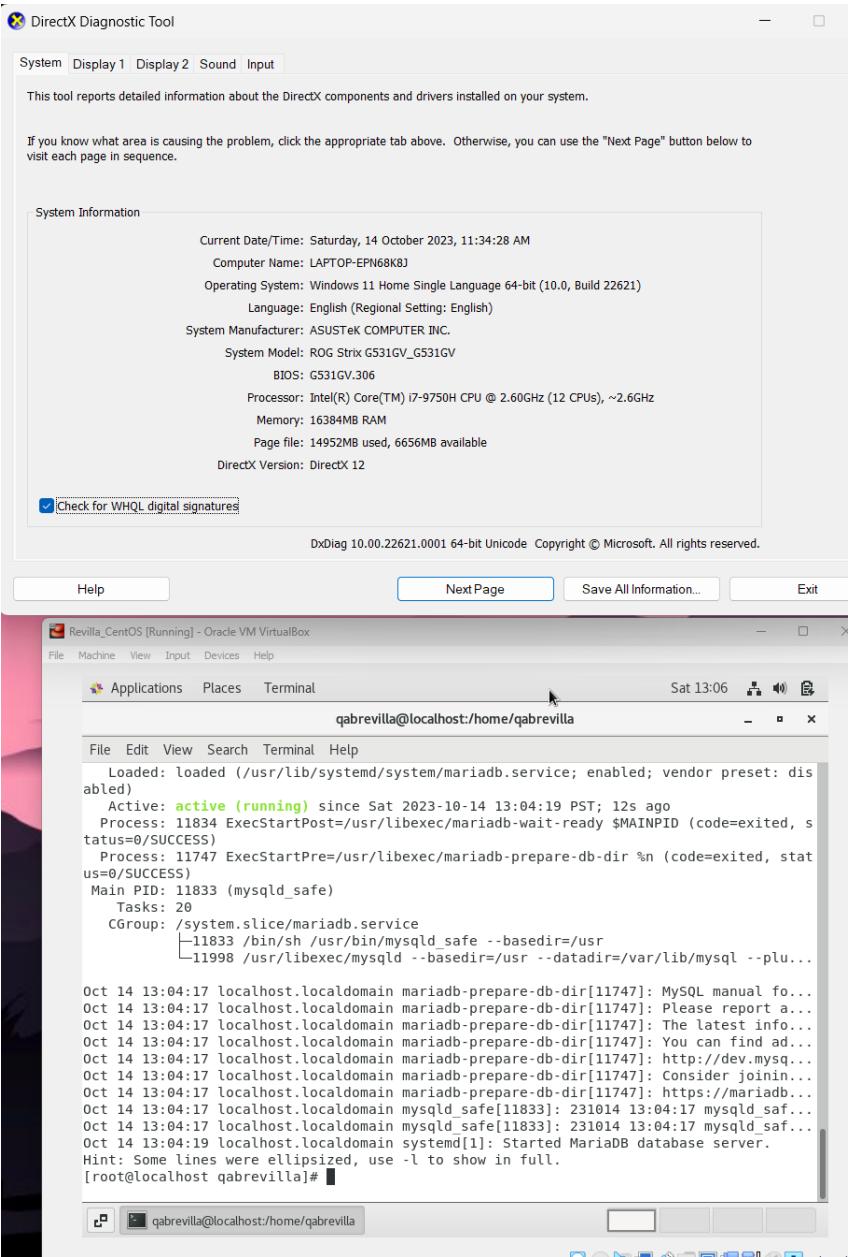
| System Information | |
|--|--|
| Current Date/Time: Saturday, 14 October 2023, 11:34:28 AM | |
| Computer Name: LAPTOP-EPN68K8J | |
| Operating System: Windows 11 Home Single Language 64-bit (10.0, Build 22621) | |
| Language: English (Regional Setting: English) | |
| System Manufacturer: ASUSTeK COMPUTER INC. | |
| System Model: ROG Strix G531GV_G531GV | |
| BIOS: G531GV.306 | |
| Processor: Intel(R) Core(TM) i7-9750H CPU @ 2.60GHz (12 CPUs), ~2.6GHz | |
| Memory: 16384MB RAM | |
| Page file: 14952MB used, 6656MB available | |
| DirectX Version: DirectX 12 | |

At the bottom of the tool, there is a checked checkbox for "Check for WHQL digital signatures".

Before running the command I reassured first that the ubuntu and centos servers are ready and has mariadb. This playbook ran commands that will install and start mariadb.

5. Go to the remote server (Ubuntu) terminal that belongs to the db_servers group and check the status for mariadb installation using the command: ***systemctl status mariadb***. Do this on the CentOS server also.

Describe the output.



The image shows two windows side-by-side. The left window is the 'DirectX Diagnostic Tool' showing system information for a Windows 11 system. The right window is a terminal session on a CentOS VM titled 'Revilla_CentOS [Running] - Oracle VM VirtualBox'. The terminal output shows the status of the MariaDB service.

```

Revilla_CentOS [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Applications Places Terminal Sat 13:06
qabrevilla@localhost:~/.qabrevilla
File Edit View Search Terminal Help
Loaded: loaded (/usr/lib/systemd/system/mariadb.service; enabled; vendor preset: disabled)
Active: active (running) since Sat 2023-10-14 13:04:19 PST; 12s ago
Process: 11834 ExecStartPost=/usr/libexec/mariadb-wait-ready $MAINPID (code=exited, status=0/SUCCESS)
Process: 11747 ExecStartPre=/usr/libexec/mariadb-prepare-db-dir %n (code=exited, status=0/SUCCESS)
Main PID: 11833 (mysqld_safe)
Tasks: 20
CGroup: /system.slice/mariadb.service
└─11833 /bin/sh /usr/bin/mysqld_safe --basedir=/usr
    └─11998 /usr/libexec/mysqld --basedir=/usr --datadir=/var/lib/mysql --plu...
Oct 14 13:04:17 localhost.localdomain mariadb-prepare-db-dir[11747]: MySQL manual fo...
Oct 14 13:04:17 localhost.localdomain mariadb-prepare-db-dir[11747]: Please report a...
Oct 14 13:04:17 localhost.localdomain mariadb-prepare-db-dir[11747]: The latest info...
Oct 14 13:04:17 localhost.localdomain mariadb-prepare-db-dir[11747]: You can find ad...
Oct 14 13:04:17 localhost.localdomain mariadb-prepare-db-dir[11747]: http://dev.mysql...
Oct 14 13:04:17 localhost.localdomain mariadb-prepare-db-dir[11747]: Consider joinin...
Oct 14 13:04:17 localhost.localdomain mariadb-prepare-db-dir[11747]: https://mariadb...
Oct 14 13:04:17 localhost.localdomain mysqld_safe[11833]: 231014 13:04:17 mysqld_saf...
Oct 14 13:04:17 localhost.localdomain mysqld_safe[11833]: 231014 13:04:17 mysqld_saf...
Oct 14 13:04:19 localhost.localdomain systemd[1]: Started MariaDB database server.
Hint: Some lines were ellipsized, use -l to show in full.
[root@localhost qabrevilla]#

```

Ubuntu Desktop [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Oct 14 13:12

qabrevilla@ubuntuserver1: ~

1 additional security update can be applied with ESM Apps.
Learn more about enabling ESM Apps service at <https://ubuntu.com/esm>

Last login: Sat Oct 14 13:04:15 2023 from 192.168.56.101
qabrevilla@ubuntuserver1:~\$ systemctl status mariadb

mariadb.service - MariaDB 10.6.12 database server

 Loaded: loaded (/lib/systemd/system/mariadb.service; enabled; vendor preset: enabled)
 Active: active (running) since Sat 2023-10-14 13:10:57 PST; 1min 50s ago
 Docs: man:mariadb(8)
 <https://mariadb.com/kb/en/library/systemd/>
 Process: 695 ExecStartPre=/usr/bin/install -m 755 -o mysql -g root -d /var/run/mysqld (code=exited, status=0/SUCCESS)
 Process: 736 ExecStartPre=/bin/sh -c systemctl unset-environment _WSREP_START_POSITION (code=exited, status=0/SUCCESS)
 Process: 748 ExecStartPre=/bin/sh -c [! -e /usr/bin/galera_recovery] && VAR= || VAR='cd /usr/bin/galera_recovery; ./galera_recovery' (code=exited, status=0/SUCCESS)
 Process: 893 ExecStartPost=/bin/sh -c systemctl unset-environment _WSREP_START_POSITION (code=exited, status=0/SUCCESS)
 Process: 902 ExecStartPost=/etc/mysql/debian-start (code=exited, status=0/SUCCESS)
 Main PID: 799 (mariadb)
 Status: "Taking your SQL requests now..."
 Tasks: 9 (limit: 2262)
 Memory: 85.5M
 CPU: 425ms
 CGroup: /system.slice/mariadb.service
 └─799 /usr/sbin/mariadb

Oct 14 13:10:57 ubuntuserver1 mariadb[799]: Version: '10.6.12-MariaDB-0ubuntu0.22.04.1' socket: '/tmp/mysql.sock'
Oct 14 13:10:57 ubuntuserver1 systemd[1]: Started MariaDB 10.6.12 database server.
Oct 14 13:10:57 ubuntuserver1 /etc/mysql/debian-start[909]: Upgrading MySQL tables if necessary.
Oct 14 13:10:57 ubuntuserver1 /etc/mysql/debian-start[913]: Looking for 'mariadb' as: /usr/bin/mariadb
Oct 14 13:10:57 ubuntuserver1 /etc/mysql/debian-start[913]: Looking for 'mariadb-check' as: /usr/bin/mariadb-check
Oct 14 13:10:57 ubuntuserver1 /etc/mysql/debian-start[913]: This installation of MariaDB is already up-to-date.
Oct 14 13:10:57 ubuntuserver1 /etc/mysql/debian-start[913]: There is no need to run mysql_upgrade.
Oct 14 13:10:57 ubuntuserver1 /etc/mysql/debian-start[913]: You can use --force if you still want to upgrade.
Oct 14 13:10:57 ubuntuserver1 /etc/mysql/debian-start[965]: Checking for insecure root accounts.
Oct 14 13:10:57 ubuntuserver1 /etc/mysql/debian-start[988]: Triggering myisam-recover for all MyISAM tables.
Lines 1-28/28 (END)

DirectX Diagnostic Tool

System Display 1 Display 2 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: Saturday, 14 October 2023, 11:34:28 AM
Computer Name: LAPTOP-EPN68K8J
Operating System: Windows 11 Home Single Language 64-bit (10.0, Build 22621)
Language: English (Regional Setting: English)
System Manufacturer: ASUSTek COMPUTER INC.
System Model: ROG Strix G531GV_G531GV
BIOS: G531GV.306
Processor: Intel(R) Core(TM) i7-9750H CPU @ 2.60GHz (12 CPUs), ~2.6GHz
Memory: 16384MB RAM
Page file: 14952MB used, 6656MB available
DirectX Version: DirectX 12

Check for WHQL digital signatures

DxDiag 10.00.22621.0001 64-bit Unicode Copyright © Microsoft. All rights reserved.

Help Next Page Save All Information... Exit

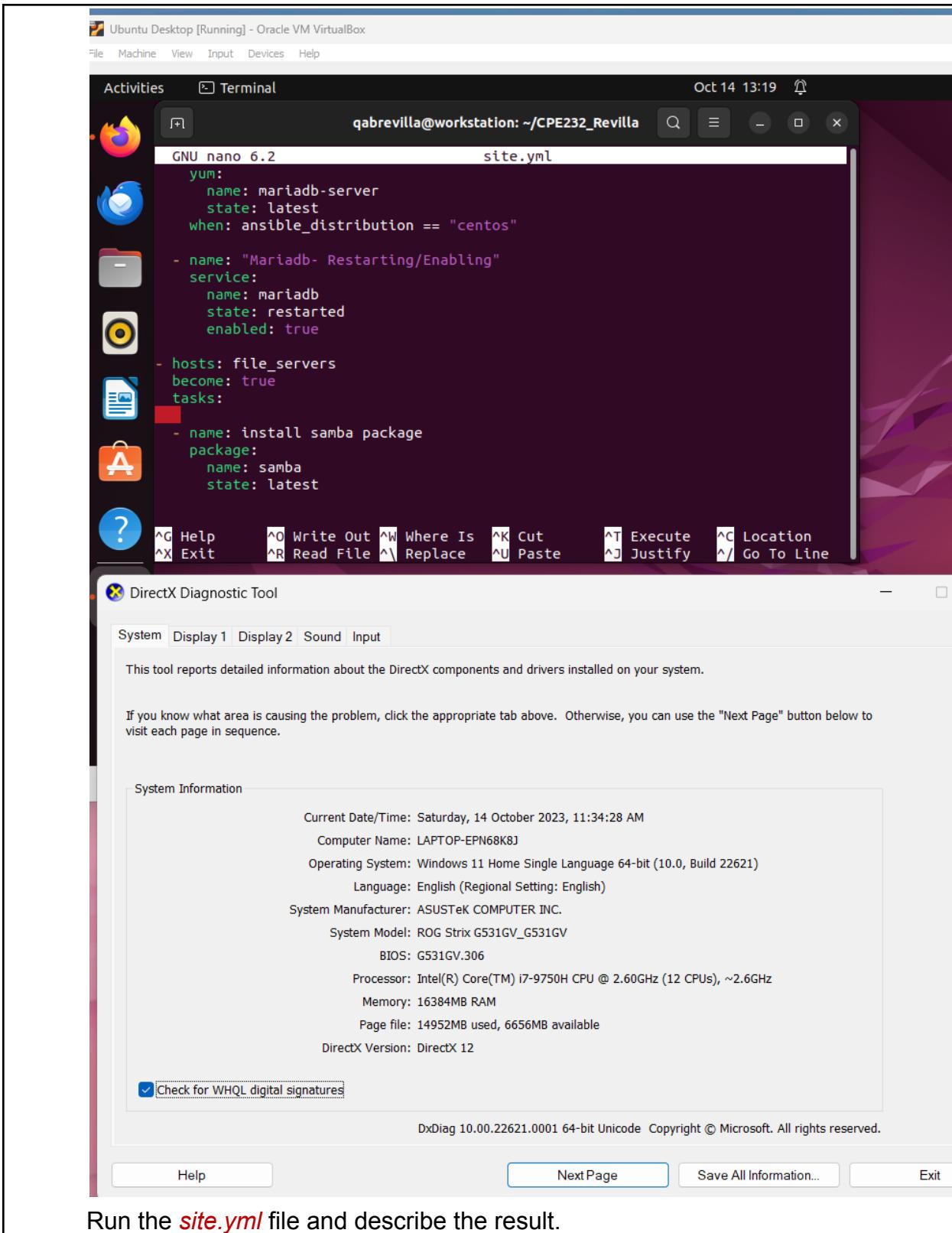
The mariadb service is now active in both centos and ubuntu server after running the playbook

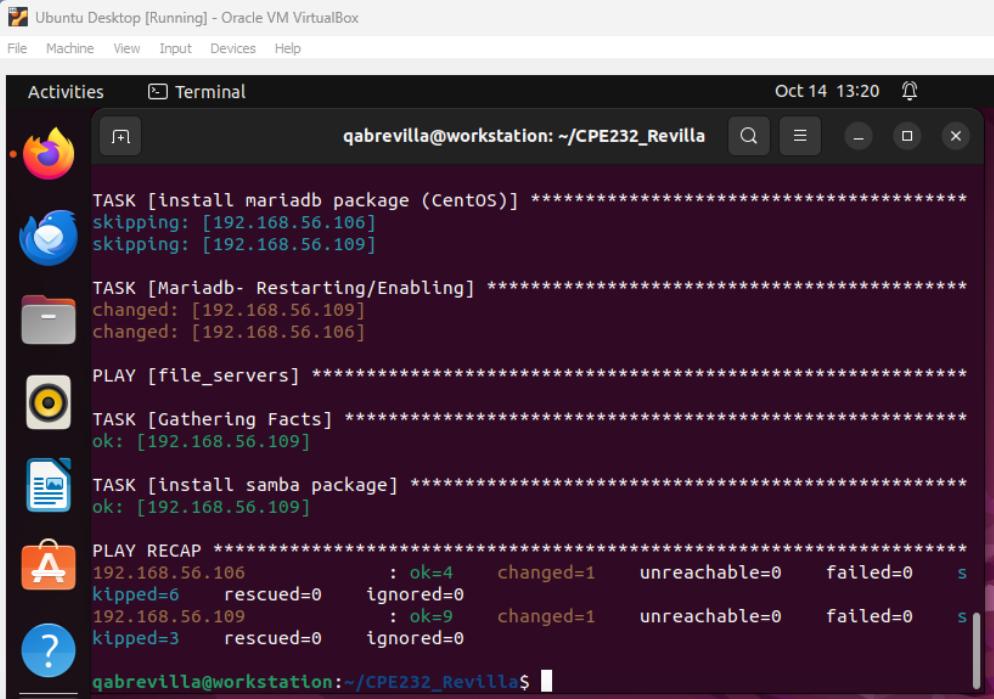
6. Edit the *site.yml* again. This time we will append the code to configure installation on the *file_servers* group. We can add the following on our file.

```
- hosts: file_servers
become: true
tasks:

- name: install samba package
  package:
    name: samba
    state: latest
```

Make sure to save the file and exit.





Ubuntu Desktop [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Oct 14 13:20

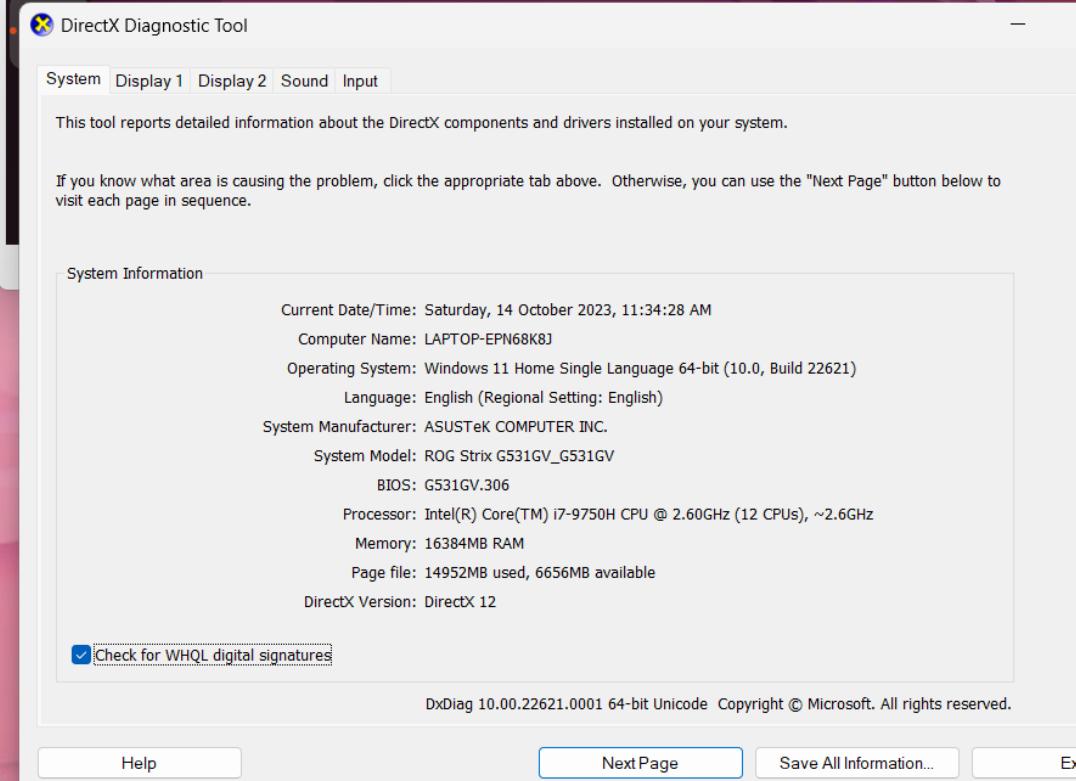
```
qabrevilla@workstation: ~/CPE232_Revilla
TASK [install mariadb package (CentOS)] ****
skipping: [192.168.56.106]
skipping: [192.168.56.109]

TASK [Mariadb- Restarting/Enabling] ****
changed: [192.168.56.109]
changed: [192.168.56.106]

PLAY [file_servers] ****
TASK [Gathering Facts] ****
ok: [192.168.56.109]

TASK [install samba package] ****
ok: [192.168.56.109]

PLAY RECAP ****
192.168.56.106 : ok=4    changed=1    unreachable=0    failed=0    s
kipped=6    rescued=0    ignored=0
192.168.56.109 : ok=9    changed=1    unreachable=0    failed=0    s
kipped=3    rescued=0    ignored=0
qabrevilla@workstation:~/CPE232_Revilla$
```



The playbook was ran successfully and it was able to install samba in the file server.

The testing of the *file_servers* is beyond the scope of this activity, and as well as our topics and objectives. However, in this activity we were able to show that we can target hosts or servers using grouping in ansible playbooks.

Task 2: Using Tags in running playbooks

In this task, our goal is to add metadata to our plays so that we can only run the plays that we want to run, and not all the plays in our playbook.

1. Edit the *site.yml* file. Add tags to the playbook. After the name, we can place the tags: *name_of_tag*. This is an arbitrary command, which means you can use any name for a tag.

```
---
- hosts: all
  become: true
  pre_tasks:
    - name: install updates (CentOS)
      tags: always
      dnf:
        update_only: yes
        update_cache: yes
        when: ansible_distribution == "CentOS"
    - name: install updates (Ubuntu)
      tags: always
      apt:
        upgrade: dist
        update_cache: yes
        when: ansible_distribution == "Ubuntu"
```

```
- hosts: web_servers
become: true
tasks:

- name: install apache and php for Ubuntu servers
  tags: apache,apache2,ubuntu
  apt:
    name:
      - apache2
      - libapache2-mod-php
    state: latest
    when: ansible_distribution == "Ubuntu"

- name: install apache and php for CentOS servers
  tags: apache,centos,httpd
  dnf:
    name:
      - httpd
      - php
    state: latest
  when: ansible_distribution == "CentOS"
```

```
- hosts: db_servers
become: true
tasks:

- name: install mariadb package (Centos)
  tags: centos, db,mariadb
  dnf:
    name: mariadb-server
    state: latest
    when: ansible_distribution == "CentOS"

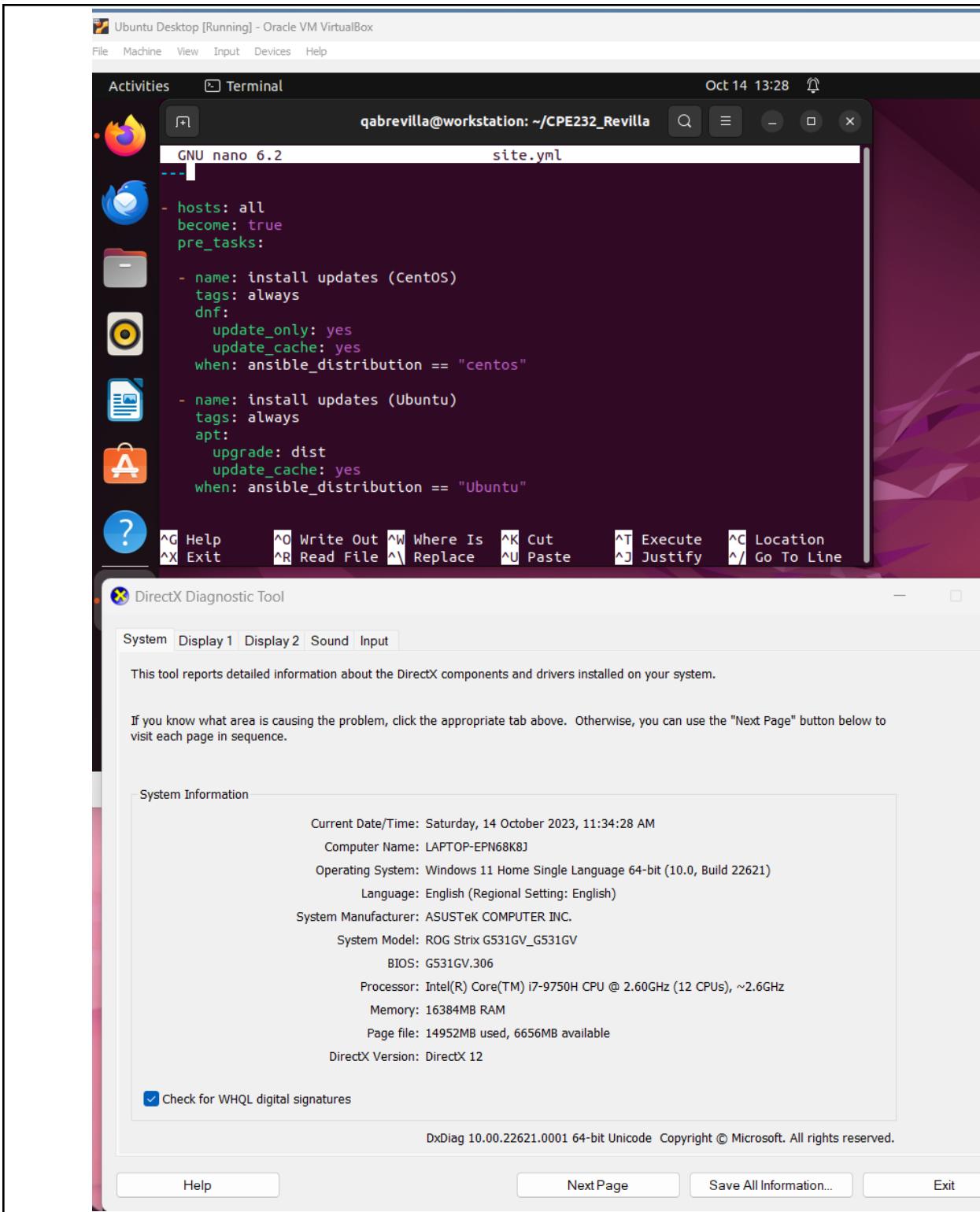
- name: "Mariadb- Restarting/Enabling"
  service:
    name: mariadb
    state: restarted
    enabled: true

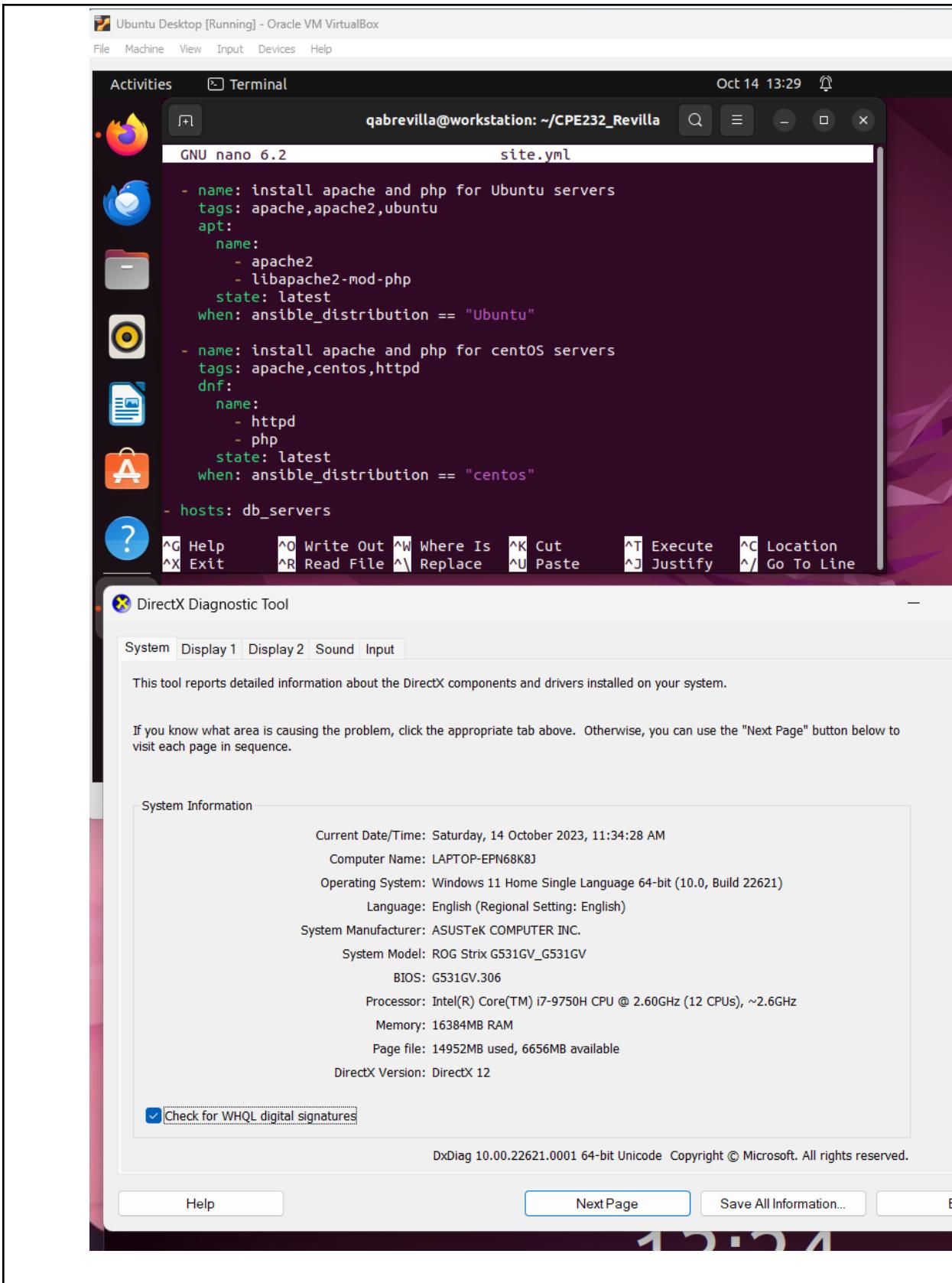
- name: install mariadb packege (Ubuntu)
  tags: db, mariadb,ubuntu
  apt:
    name: mariadb-server
    state: latest
    when: ansible_distribution == "Ubuntu"

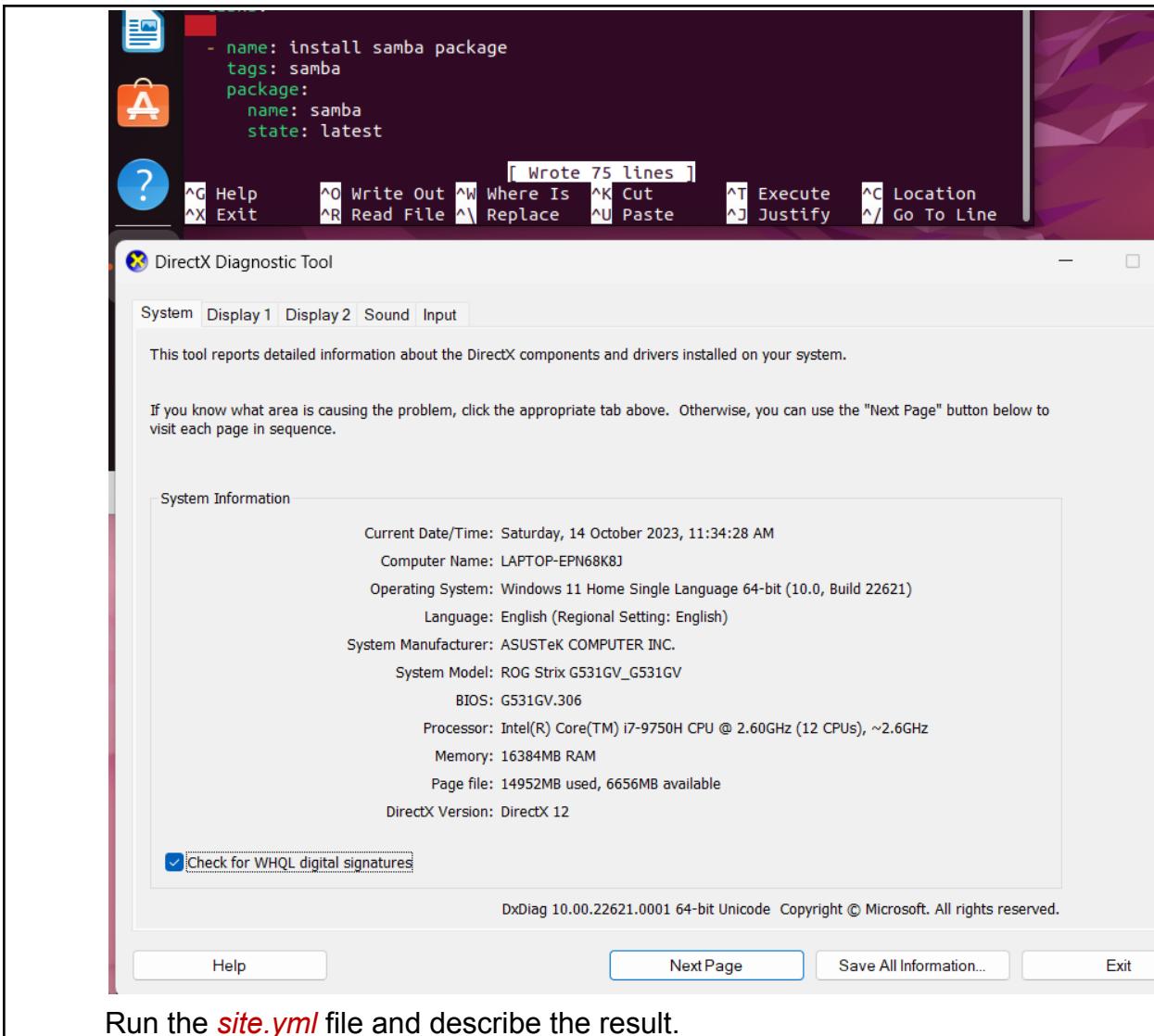
- hosts: file_servers
become: true
tasks:

- name: install samba package
  tags: samba
  package:
    name: samba
    state: latest
```

Make sure to save the file and exit.







The image shows two windows side-by-side. The left window is a terminal window titled 'Terminal' with a dark background. It displays the following command-line session:

```
qabrevilla@workstation:~/CPE232_Revilla$ sudo nano site.yml
qabrevilla@workstation:~/CPE232_Revilla$ ansible-playbook --ask-become-pass site
.yml
BECOME password:
PLAY [all] ****
TASK [Gathering Facts] ****
ok: [192.168.56.106]
ok: [192.168.56.109]
TASK [install updates (CentOS)] ****
skipping: [192.168.56.106]
skipping: [192.168.56.109]
TASK [install updates (Ubuntu)] ****
skipping: [192.168.56.106]
```

The right window is the 'DirectX Diagnostic Tool' application running on Windows. The title bar says 'DirectX Diagnostic Tool'. The main area has tabs for 'System', 'Display 1', 'Display 2', 'Sound', and 'Input'. The 'System' tab is selected. It contains the following system information:

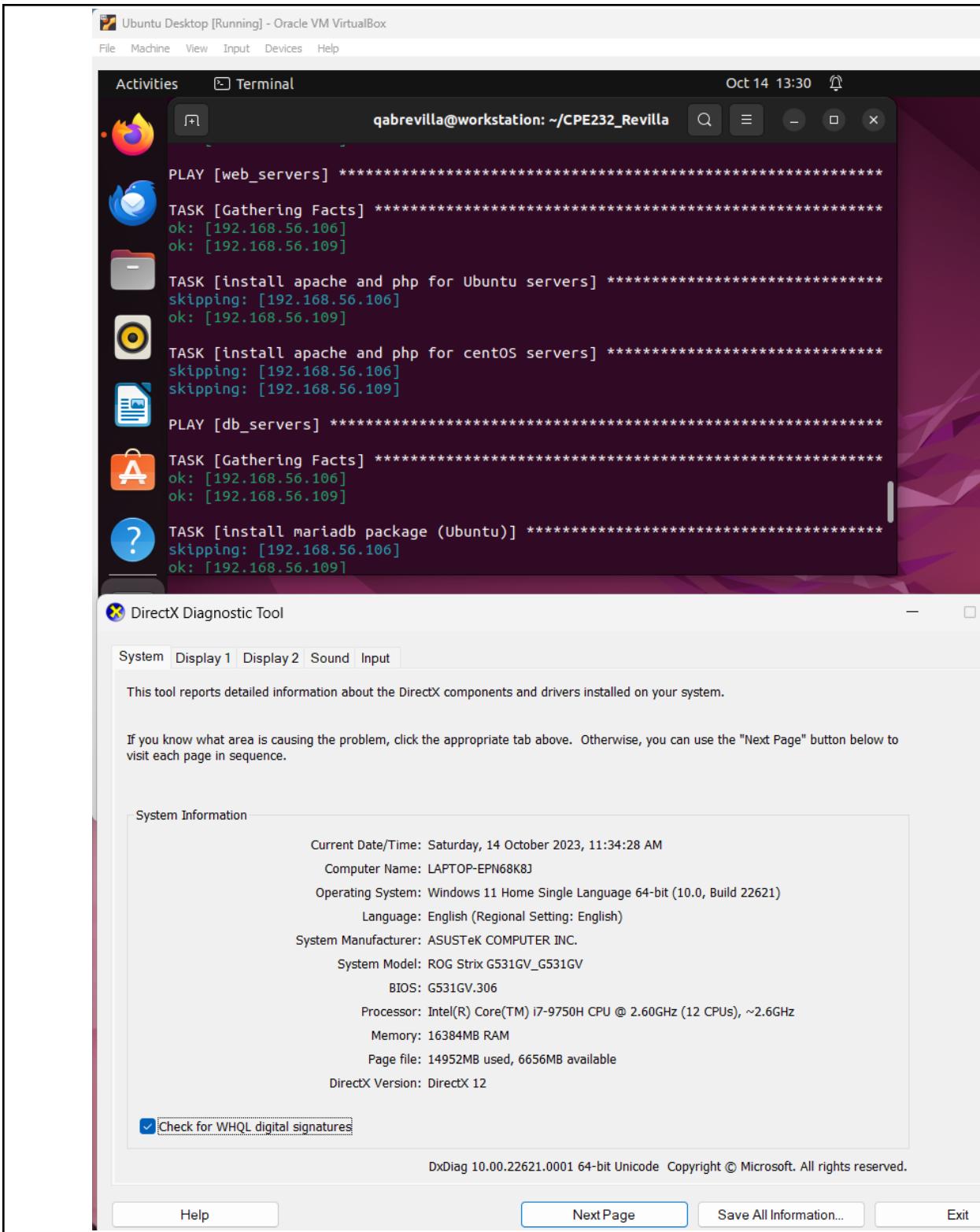
System Information

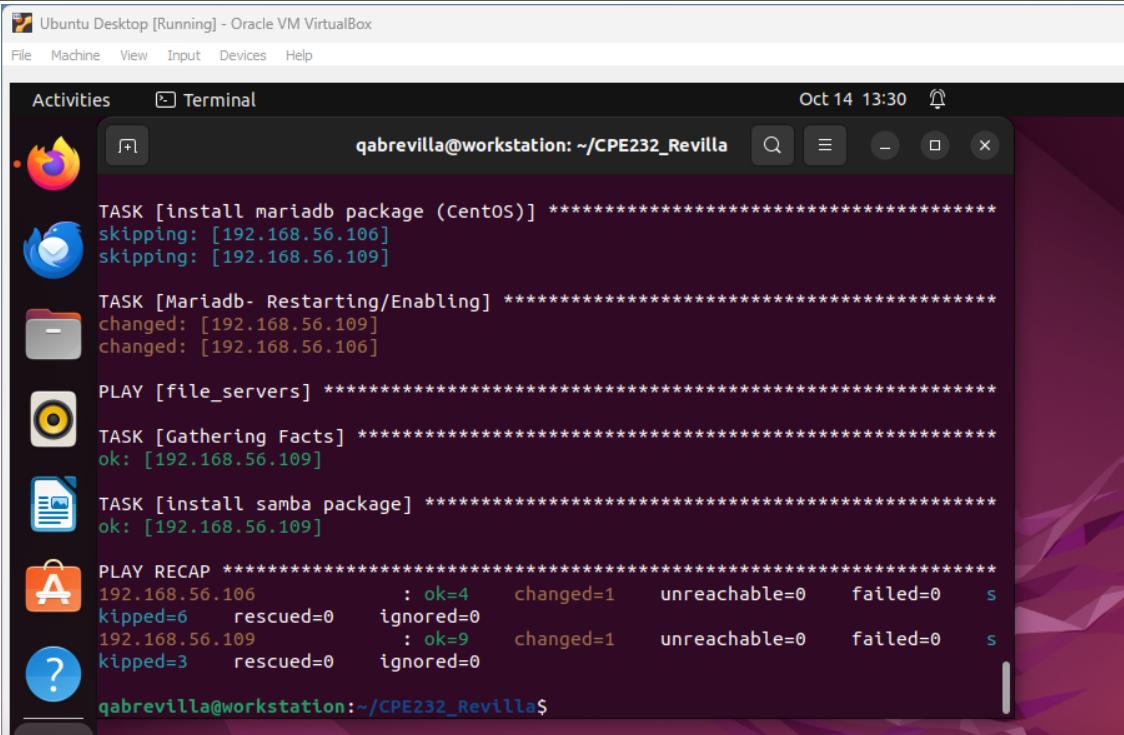
- Current Date/Time: Saturday, 14 October 2023, 11:34:28 AM
- Computer Name: LAPTOP-EPN68K8J
- Operating System: Windows 11 Home Single Language 64-bit (10.0, Build 22621)
- Language: English (Regional Setting: English)
- System Manufacturer: ASUSTek COMPUTER INC.
- System Model: ROG Strix G531GV_G531GV
- BIOS: G531GV.306
- Processor: Intel(R) Core(TM) i7-9750H CPU @ 2.60GHz (12 CPUs), ~2.6GHz
- Memory: 16384MB RAM
- Page file: 14952MB used, 6656MB available
- DirectX Version: DirectX 12

Check for WHQL digital signatures

DxDiag 10.00.22621.0001 64-bit Unicode Copyright © Microsoft. All rights reserved.

Help Next Page Save All Information... Exit





Ubuntu Desktop [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Oct 14 13:30

```
qabrevilla@workstation: ~/CPE232_Revilla
```

TASK [install mariadb package (Centos)] **** skipping: [192.168.56.106]
skipping: [192.168.56.109]

TASK [Mariadb- Restarting/Enabling] **** changed: [192.168.56.109]
changed: [192.168.56.106]

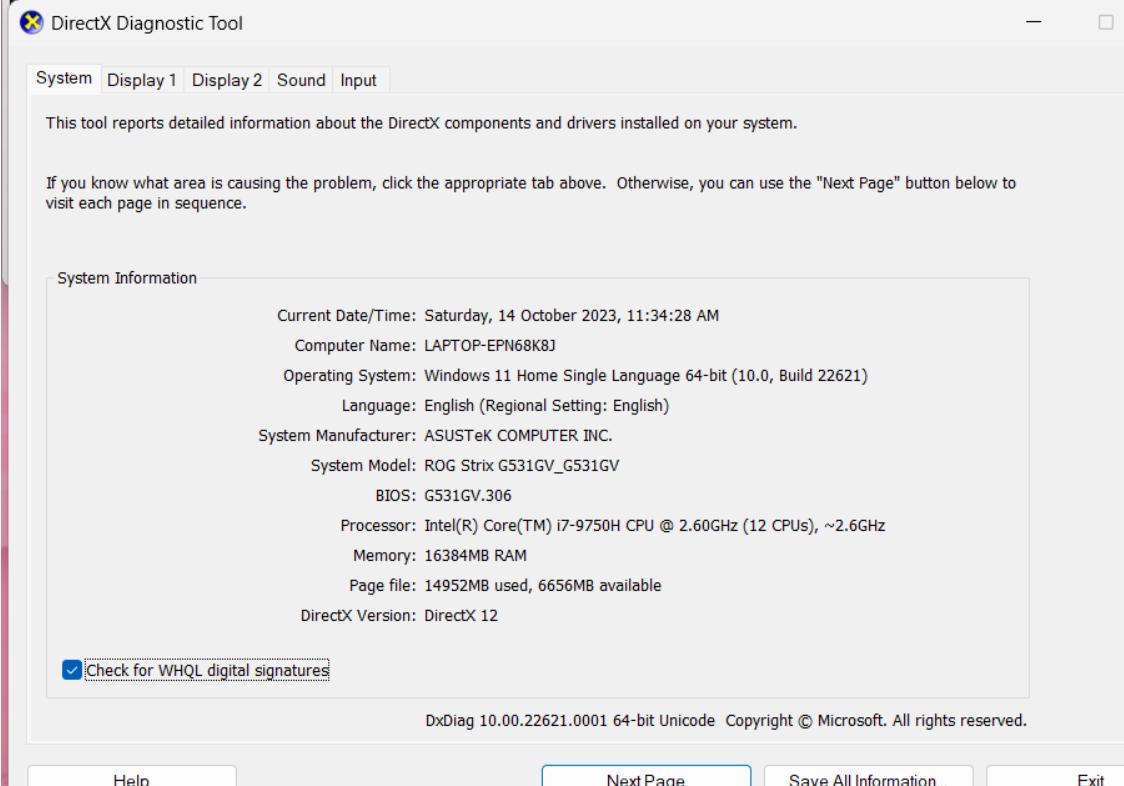
PLAY [file_servers] ****

TASK [Gathering Facts] **** ok: [192.168.56.109]

TASK [install samba package] **** ok: [192.168.56.109]

PLAY RECAP **** 192.168.56.106 : ok=4 changed=1 unreachable=0 failed=0 5
kipped=6 rescued=0 ignored=0
192.168.56.109 : ok=9 changed=1 unreachable=0 failed=0 5
kipped=3 rescued=0 ignored=0

```
qabrevilla@workstation:~/CPE232_Revilla$
```



The playbook added tags for targeting specific nodes and it still runs.

2. On the local machine, try to issue the following commands and describe each result:

2.1 ansible-playbook --list-tags site.yml

The screenshot shows a Linux desktop environment with a terminal window open and a DirectX Diagnostic Tool window visible.

Terminal Window Content:

```
Ubuntu Desktop [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities Terminal Oct 14 13:31 ⓘ
qabrevilla@workstation: ~/CPE232_Revilla
ok: [192.168.56.109]

PLAY RECAP ****
192.168.56.106      : ok=4    changed=1    unreachable=0    failed=0    s
kipped=6  rescued=0  ignored=0
192.168.56.109      : ok=9    changed=1    unreachable=0    failed=0    s
kipped=3  rescued=0  ignored=0

qabrevilla@workstation:~/CPE232_Revilla$ ansible-playbook --list-tags site.yml
playbook: site.yml
  play #1 (all): all    TAGS: []
    TASK TAGS: [always]
  play #2 (web_servers): web_servers    TAGS: []
    TASK TAGS: [apache, apache2, centos, httpd, ubuntu]
  play #3 (db_servers): db_servers    TAGS: []
    TASK TAGS: [centos, db, mariadb, ubuntu]
  play #4 (file_servers): file_servers TAGS: []
    TASK TAGS: [samba]
qabrevilla@workstation:~/CPE232_Revilla$
```

DirectX Diagnostic Tool Window Content:

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, 14 October 2023, 11:34:28 AM
- Computer Name: LAPTOP-EPN68K8J
- Operating System: Windows 11 Home Single Language 64-bit (10.0, Build 22621)
- Language: English (Regional Setting: English)
- System Manufacturer: ASUSTeK COMPUTER INC.
- System Model: ROG Strix G531GV_G531GV
- BIOS: G531GV.306
- Processor: Intel(R) Core(TM) i7-9750H CPU @ 2.60GHz (12 CPUs), ~2.6GHz
- Memory: 16384MB RAM
- Page file: 14952MB used, 6656MB available
- DirectX Version: DirectX 12

Check for WHQL digital signatures

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Help Next Page Save All Information...

The command shows all the tags available in the playbook

2.2 ansible-playbook --tags centos --ask-become-pass site.yml

A screenshot of a Linux desktop environment (Ubuntu) showing two windows. The top window is a terminal window titled 'Terminal' with the command 'ansible-playbook --tags centos --ask-become-pass site.yml' running. The output shows tasks being run on hosts 192.168.56.106 and 192.168.56.109. The bottom window is the 'DirectX Diagnostic Tool' showing system information for a Windows 11 system.

```
qabrevilla@workstation:~/CPE232_Revilla$ ansible-playbook --tags centos --ask-become-pass site.yml
BECOME password:
PLAY [all] *****
*
TASK [Gathering Facts] *****
*
ok: [192.168.56.106]
ok: [192.168.56.109]

TASK [install updates (CentOS)] *****
*
skipping: [192.168.56.106]
skipping: [192.168.56.109]

TASK [install updates (Ubuntu)] *****
*
skipping: [192.168.56.106]
ok: [192.168.56.109]

PLAY [web_servers] *****
*
TASK [Gathering Facts] *****
*
ok: [192.168.56.106]
ok: [192.168.56.109]

TASK [install apache and php for centos servers] *****
*
skipping: [192.168.56.106]
skipping: [192.168.56.109]
```

System Information

- Current Date/Time: Saturday, 14 October 2023, 11:34:28 AM
- Computer Name: LAPTOP-EPN68K8J
- Operating System: Windows 11 Home Single Language 64-bit (10.0, Build 22621)
- Language: English (Regional Setting: English)
- System Manufacturer: ASUSTeK COMPUTER INC.
- System Model: ROG Strix G531GV_G531GV
- BIOS: G531GV.306
- Processor: Intel(R) Core(TM) i7-9750H CPU @ 2.60GHz (12 CPUs), ~2.6GHz
- Memory: 16384MB RAM
- Page file: 14952MB used, 6656MB available
- DirectX Version: DirectX 12

Check for WHQL digital signatures

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Help Next Page Save All Information... Exit

The only part of the playbook that runs are the tags with “centos” tag, otherwise it is skipped.

2.3 ansible-playbook --tags db --ask-become-pass site.yml

The screenshot shows a Linux desktop environment with a terminal window and a DirectX Diagnostic Tool window.

Terminal Window:

```
Ubuntu Desktop [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities Terminal
qabrevilla@workstation:~/CPE232_Revilla$ ansible-playbook --tags db --ask-become-pass site.yml
BECOME password:
PLAY [all] *****
TASK [Gathering Facts] *****
ok: [192.168.56.106]
ok: [192.168.56.109]
TASK [install updates (CentOS)] *****
skipping: [192.168.56.106]
skipping: [192.168.56.109]
TASK [install updates (Ubuntu)] *****
skipping: [192.168.56.106]
ok: [192.168.56.109]
PLAY [web_servers] *****
TASK [Gathering Facts] *****
ok: [192.168.56.106]
ok: [192.168.56.109]
PLAY [db_servers] *****
TASK [Gathering Facts] *****
ok: [192.168.56.106]
ok: [192.168.56.109]
TASK [install mariadb package (Ubuntu)] *****
skipping: [192.168.56.106]
ok: [192.168.56.109]
```

DirectX Diagnostic Tool Window:

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, 14 October 2023, 11:34:28 AM
- Computer Name: LAPTOP-EPN68K8J
- Operating System: Windows 11 Home Single Language 64-bit (10.0, Build 22621)
- Language: English (Regional Setting: English)
- System Manufacturer: ASUSTeK COMPUTER INC.
- System Model: ROG Strix G531GV_G531GV
- BIOS: G531GV.306
- Processor: Intel(R) Core(TM) i7-9750H CPU @ 2.60GHz (12 CPUs), ~2.6GHz
- Memory: 16384MB RAM
- Page file: 14952MB used, 6656MB available
- DirectX Version: DirectX 12

Check for WHQL digital signatures

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Help Next Page Save All Information... Exit

The only part of the playbook that runs are the tags with “db” tag, otherwise it is skipped.

2.4 ansible-playbook --tags apache --ask-become-pass site.yml

Ubuntu Desktop [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help Oct 14 13:35

Activities Terminal qabrevilla@workstation: ~/CPE232_Revilla

```
qabrevilla@workstation:~/CPE232_Revilla$ ansible-playbook --tags apache --ask-become-pass site.yml
BECOME password:

PLAY [all] ****
TASK [Gathering Facts] ****
ok: [192.168.56.106]
ok: [192.168.56.109]

TASK [install updates (CentOS)] ****
skipping: [192.168.56.106]
skipping: [192.168.56.109]

TASK [install updates (Ubuntu)] ****
skipping: [192.168.56.106]
ok: [192.168.56.109]

PLAY [web_servers] ****
TASK [Gathering Facts] ****
ok: [192.168.56.106]
ok: [192.168.56.109]

TASK [install apache and php for Ubuntu servers] ****
skipping: [192.168.56.106]
ok: [192.168.56.109]

TASK [install apache and php for centOS servers] ****
skipping: [192.168.56.106]
skipping: [192.168.56.109]

PLAY [db_servers] ****
```

DirectX Diagnostic Tool

System Display 1 Display 2 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: Saturday, 14 October 2023, 11:34:28 AM
Computer Name: LAPTOP-EPN68K8J
Operating System: Windows 11 Home Single Language 64-bit (10.0, Build 22621)
Language: English (Regional Setting: English)
System Manufacturer: ASUSTeK COMPUTER INC.
System Model: ROG Strix G531GV_G531GV
BIOS: G531GV.306
Processor: Intel(R) Core(TM) i7-9750H CPU @ 2.60GHz (12 CPUs), ~2.6GHz
Memory: 16384MB RAM
Page file: 14952MB used, 6656MB available
DirectX Version: DirectX 12

Check for WHQL digital signatures

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Help Next Page Save All Information... E

The only part of the playbook that runs are the tags with “apache” tag, otherwise it is skipped.

2.5 `ansible-playbook --tags "apache,db" --ask-become-pass site.yml`

The screenshot shows a Linux desktop environment with a terminal window and a DirectX Diagnostic Tool window.

Terminal Window:

```
Ubuntu Desktop [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities Terminal qabrevilla@workstation:~/CPE232_Revilla Oct 14 13:36
qabrevilla@workstation:~/CPE232_Revilla$ ansible-playbook --tags "apache,db" --ask-become-pass site.yml
BECOME password:

PLAY [all] *****
TASK [Gathering Facts] *****
ok: [192.168.56.106]
ok: [192.168.56.109]

TASK [install updates (CentOS)] *****
skipping: [192.168.56.106]
skipping: [192.168.56.109]

TASK [install updates (Ubuntu)] *****
skipping: [192.168.56.106]
ok: [192.168.56.109]

PLAY [web_servers] *****
TASK [Gathering Facts] *****
ok: [192.168.56.106]
ok: [192.168.56.109]

PLAY [db_servers] *****
TASK [Gathering Facts] *****
ok: [192.168.56.106]
ok: [192.168.56.109]

PLAY [file_servers] *****
TASK [Gathering Facts] *****
ok: [192.168.56.109]
```

DirectX Diagnostic Tool Window:

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, 14 October 2023, 11:34:28 AM
- Computer Name: LAPTOP-EPM68K8J
- Operating System: Windows 11 Home Single Language 64-bit (10.0, Build 22621)
- Language: English (Regional Setting: English)
- System Manufacturer: ASUSTeK COMPUTER INC.
- System Model: ROG Strix G531GV_G531GV
- BIOS: G531GV.306
- Processor: Intel(R) Core(TM) i7-9750H CPU @ 2.60GHz (12 CPUs), ~2.6GHz
- Memory: 16384MB RAM
- Page file: 14952MB used, 6656MB available
- DirectX Version: DirectX 12

Check for WHQL digital signatures

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Help Next Page Save All Information... Exit

The only parts of the playbook that run are the tags with “apache” and “db” tags, otherwise it is skipped.

Task 3: Managing Services

1. Edit the file site.yml and add a play that will automatically start the httpd on CentOS server.

```
- name: install apache and php for CentOS servers
  tags: apache,centos,httpd
  dnf:
    name:
      - httpd
      - php
    state: latest
  when: ansible_distribution == "CentOS"

- name: start httpd (CentOS)
  tags: apache, centos,httpd
  service:
    name: httpd
    state: started
  when: ansible_distribution == "CentOS"
```

Figure 3.1.1

Make sure to save the file and exit.

You would also notice from our previous activity that we already created a module that runs a service.

```
- hosts: db_servers
become: true
tasks:

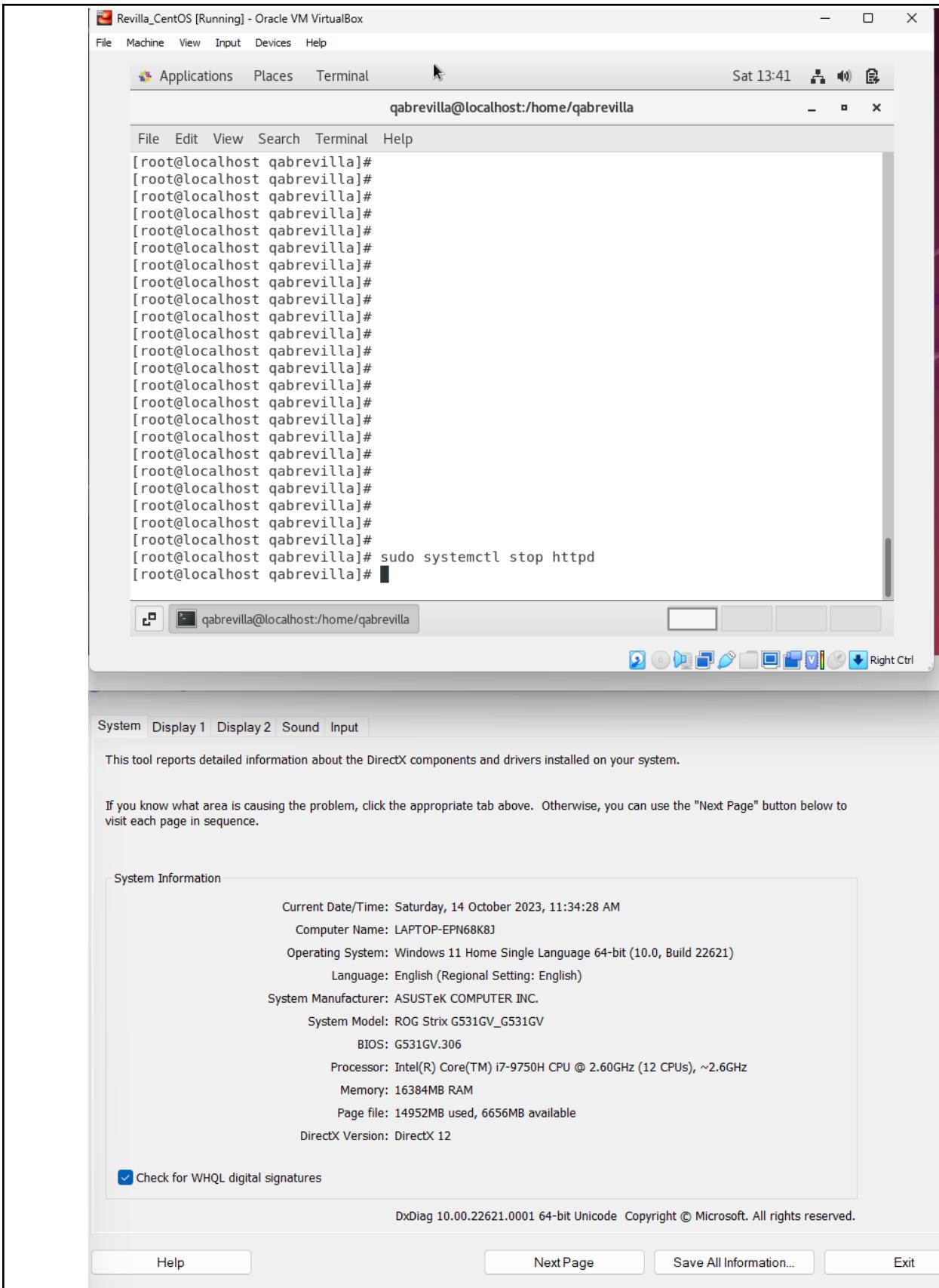
- name: install mariadb package (CentOS)
  tags: centos, db,mariadb
  dnf:
    name: mariadb-server
    state: latest
  when: ansible_distribution == "CentOS"

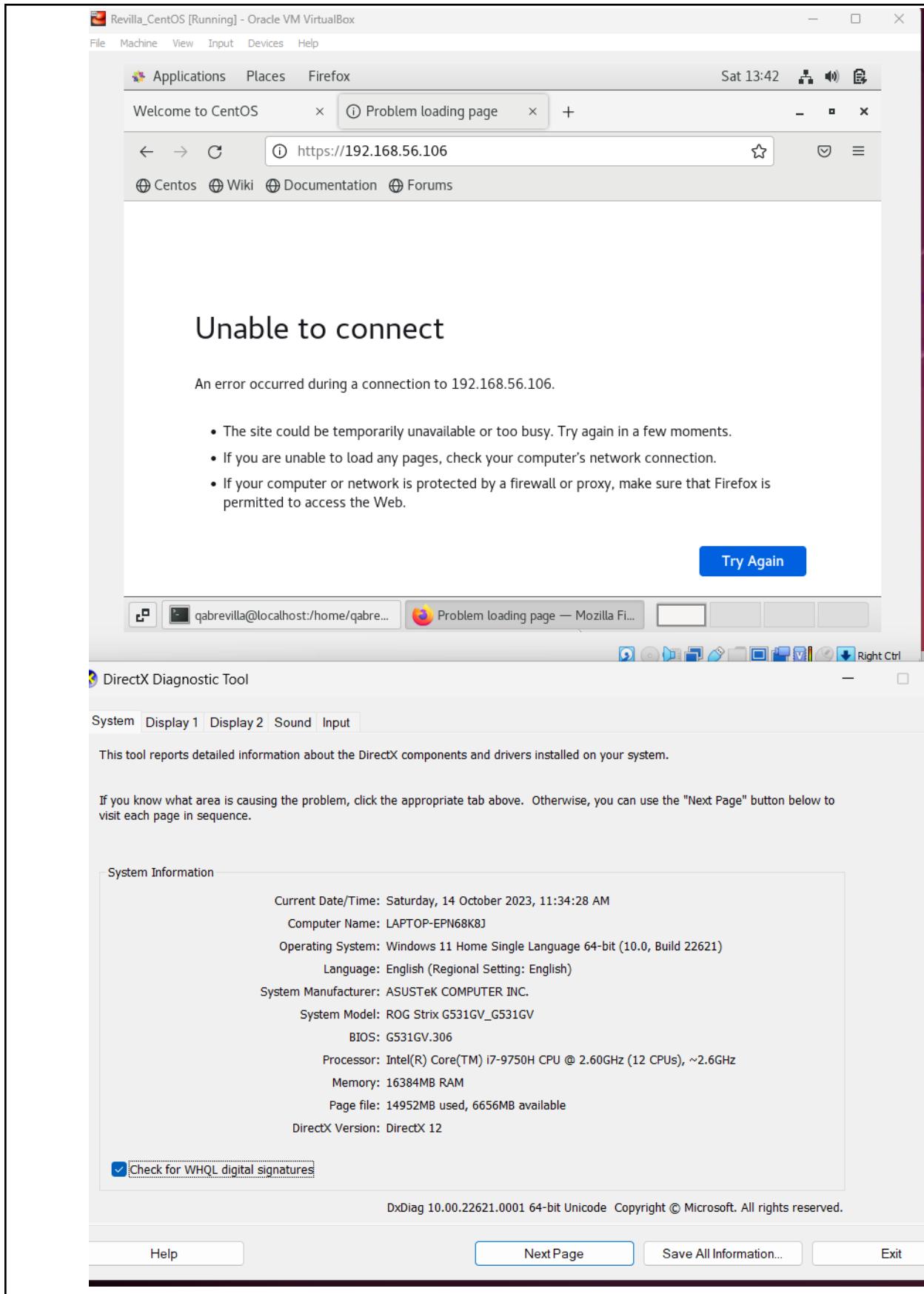
- name: "Mariadb- Restarting/Enabling"
  service:
    name: mariadb
    state: restarted
    enabled: true
```

Figure 3.1.2

This is because in CentOS, installed packages' services are not run automatically. Thus, we need to create the module to run it automatically.

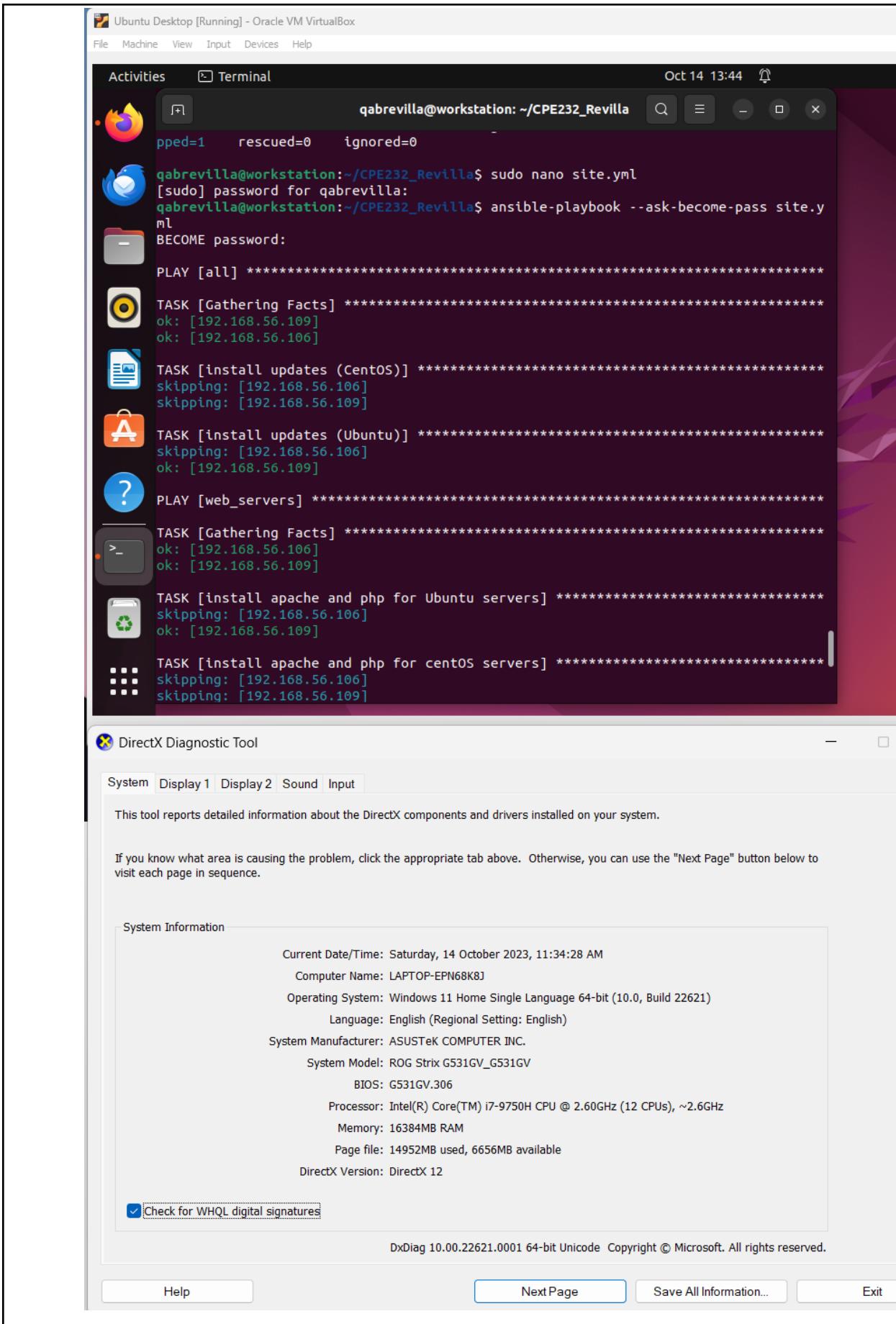
2. To test it, before you run the saved playbook, go to the CentOS server and stop the currently running httpd using the command `sudo systemctl stop httpd`. When prompted, enter the sudo password. After that, open the browser and enter the CentOS server's IP address. You should not be getting a display because we stopped the httpd service already.





3. Go to the local machine and this time, run the `site.yml` file. Then after running the file, go again to the CentOS server and enter its IP address on the browser. Describe the result.

To automatically enable the service every time we run the playbook, use the command `enabled: true` similar to Figure 7.1.2 and save the playbook.



Ubuntu Desktop [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Oct 14 13:44

```
skipping: [192.168.56.109]
PLAY [db_servers] ****
TASK [Gathering Facts] ****
ok: [192.168.56.106]
ok: [192.168.56.109]
TASK [install mariadb package (Ubuntu)] ****
skipping: [192.168.56.106]
ok: [192.168.56.109]
TASK [install mariadb package (CentOS)] ****
skipping: [192.168.56.106]
skipping: [192.168.56.109]
TASK [Mariadb- Restarting/Enabling] ****
changed: [192.168.56.109]
changed: [192.168.56.106]
PLAY [file_servers] ****
TASK [Gathering Facts] ****
ok: [192.168.56.109]
TASK [install samba package] ****
ok: [192.168.56.109]
PLAY RECAP ****
192.168.56.106 : ok=4    changed=1    unreachable=0    failed=0    skipped=7
                  rescued=0    ignored=0
192.168.56.109 : ok=9    changed=1    unreachable=0    failed=0    skipped=4
                  rescued=0    ignored=0
qabrevilla@workstation:~/CPE232_Revilla$
```

DirectX Diagnostic Tool

System Display 1 Display 2 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

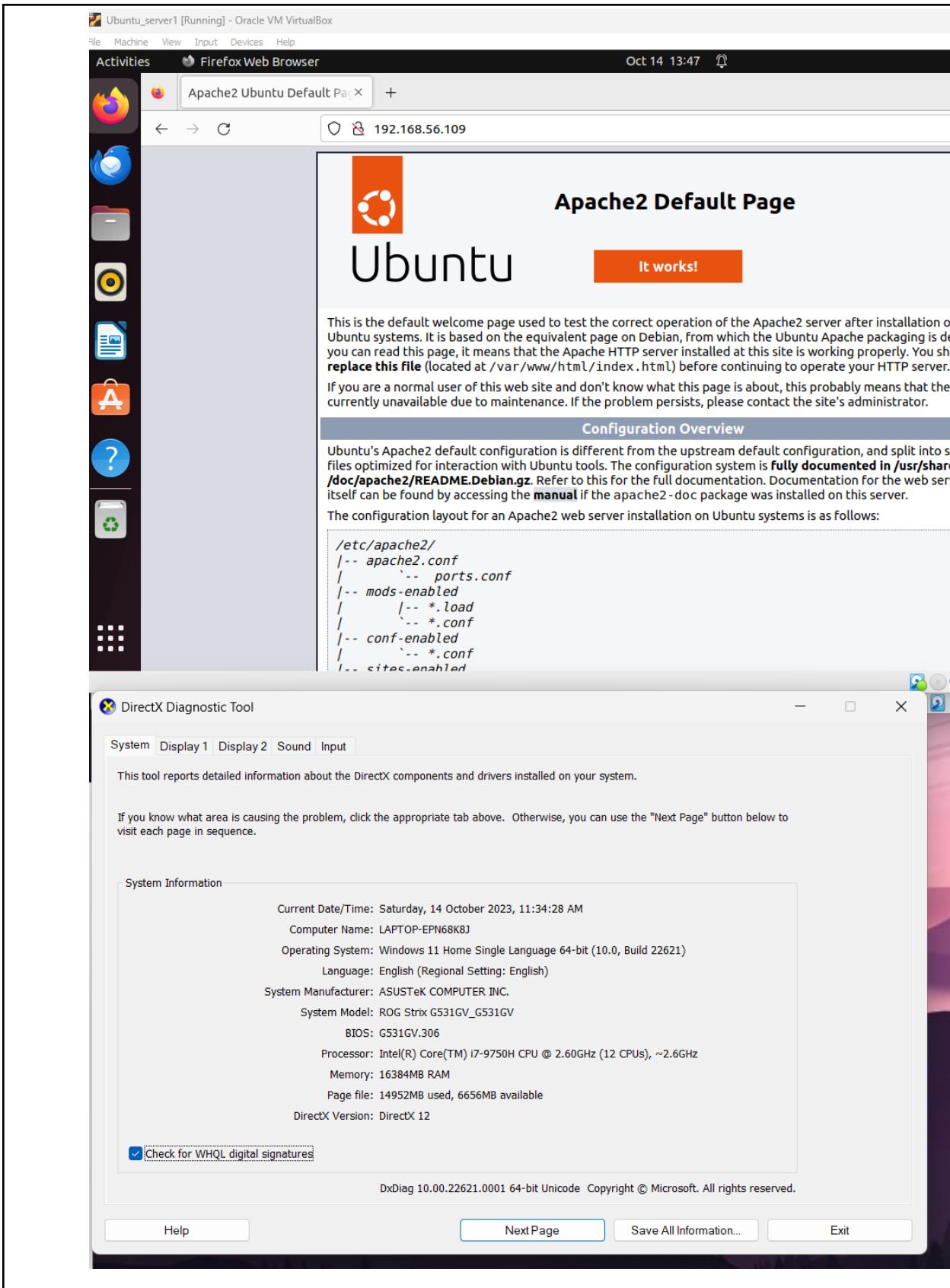
Current Date/Time: Saturday, 14 October 2023, 11:34:28 AM
Computer Name: LAPTOP-EPN68K8J
Operating System: Windows 11 Home Single Language 64-bit (10.0, Build 22621)
Language: English (Regional Setting: English)
System Manufacturer: ASUSTek COMPUTER INC.
System Model: ROG Strix G531GV_G531GV
BIOS: G531GV.306
Processor: Intel(R) Core(TM) i7-9750H CPU @ 2.60GHz (12 CPUs), ~2.6GHz
Memory: 16384MB RAM
Page file: 14952MB used, 6656MB available
DirectX Version: DirectX 12

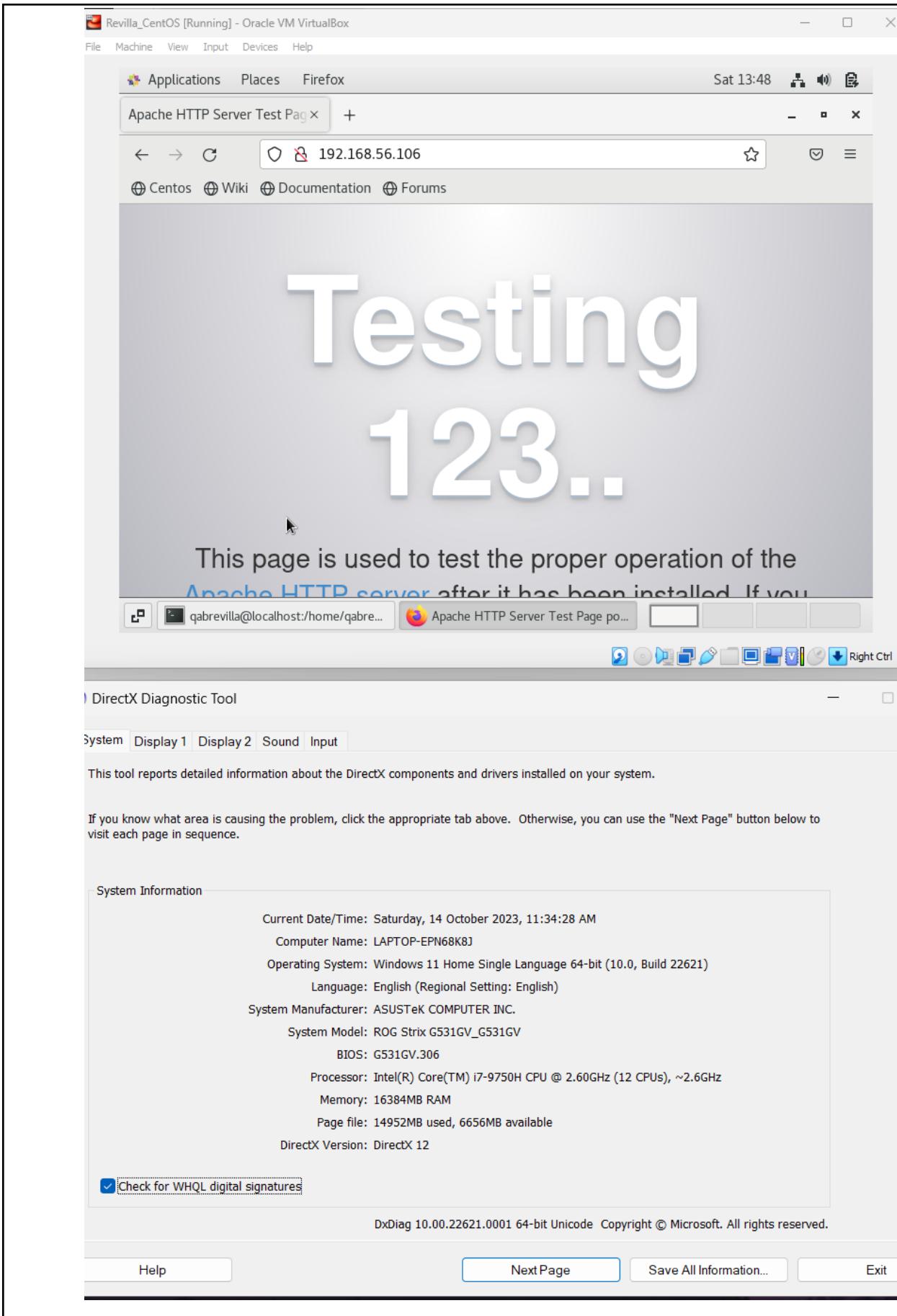
Check for WHQL digital signatures

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Help Next Page Save All Information... Exit

Check:





Reflections:

Answer the following:

1. What is the importance of putting our remote servers into groups?

Putting our remote servers in provides a more effective and organized method for separating the function of the remote servers inside the playbook. It is helpful in a way that we can see and respond quickly if something happens to easily detect the problem.

2. What is the importance of tags in playbooks?

Tags in playbooks provide an important role in control, automation, and efficiency. It filters and helps administrators in finding appropriate commands for certain tasks without affecting other tasks. This will narrow the problem in finding tasks and an easy way to read medium to small scale playbooks.

3. Why do you think some services need to be managed automatically in playbooks?

In the playbook, some commands need other requirements of installing and updating before running other tasks. Doing it manually will be in-efficient and time consuming. Adding commands that will automatically play or run commands will help the user to make time for doing other configurations in remote servers.

Conclusion:

In Hands-on-Activity 6, we focused on targeting specific nodes. In playbooks there are some cases that it will be overloaded with commands and tasks. We learned that there are ways to easily organize and manage these tasks. Before adding more commands, we can classify tasks using tags and separating them by their purpose. In this way administrators can efficiently use playbooks for certain tasks and run specific tasks without affecting on running other tasks. I also learned the command pre-tasks, which are usually found on the top before other commands, that are usually used for automatic run commands played in playbooks.