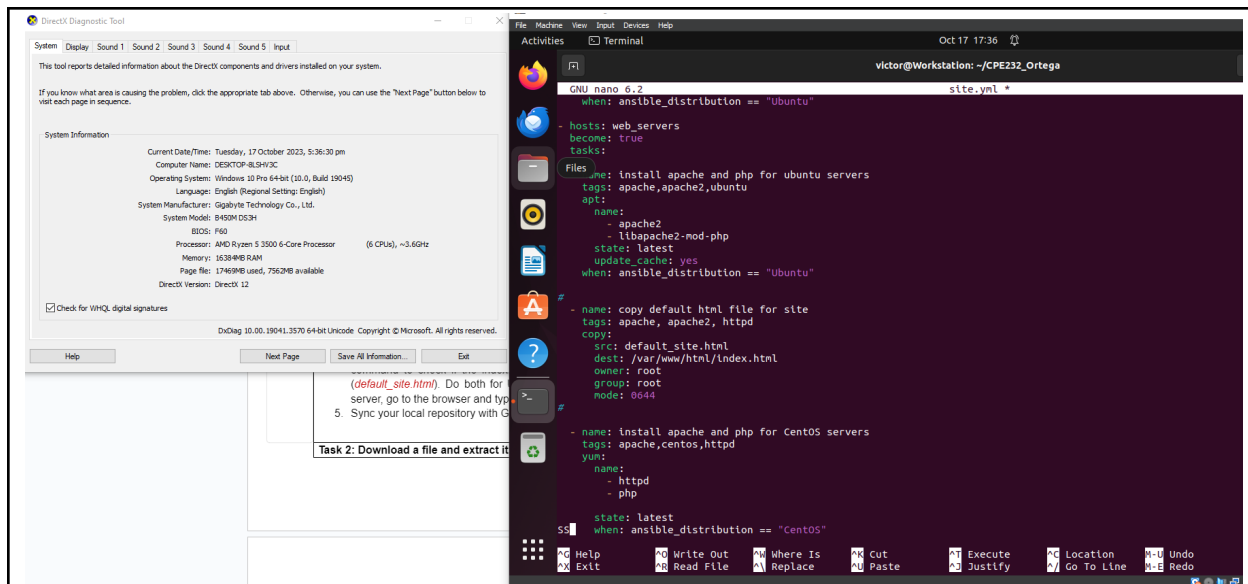
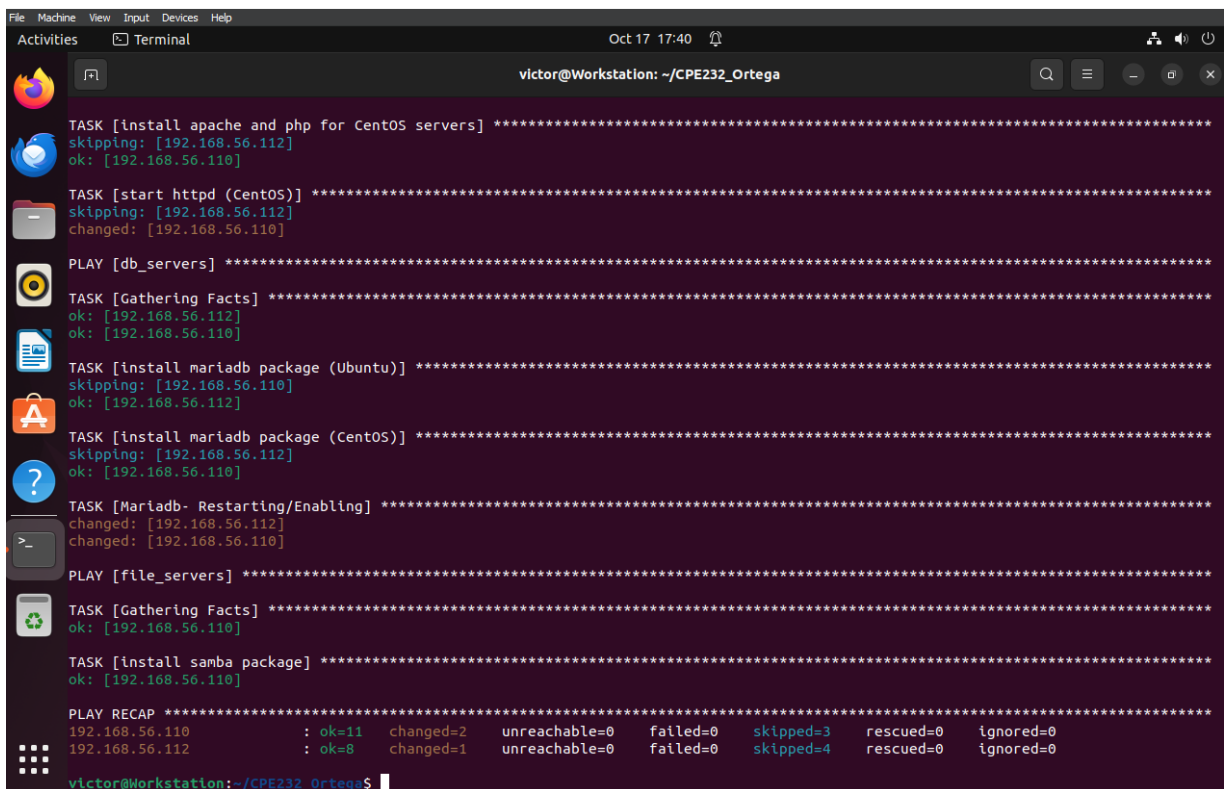


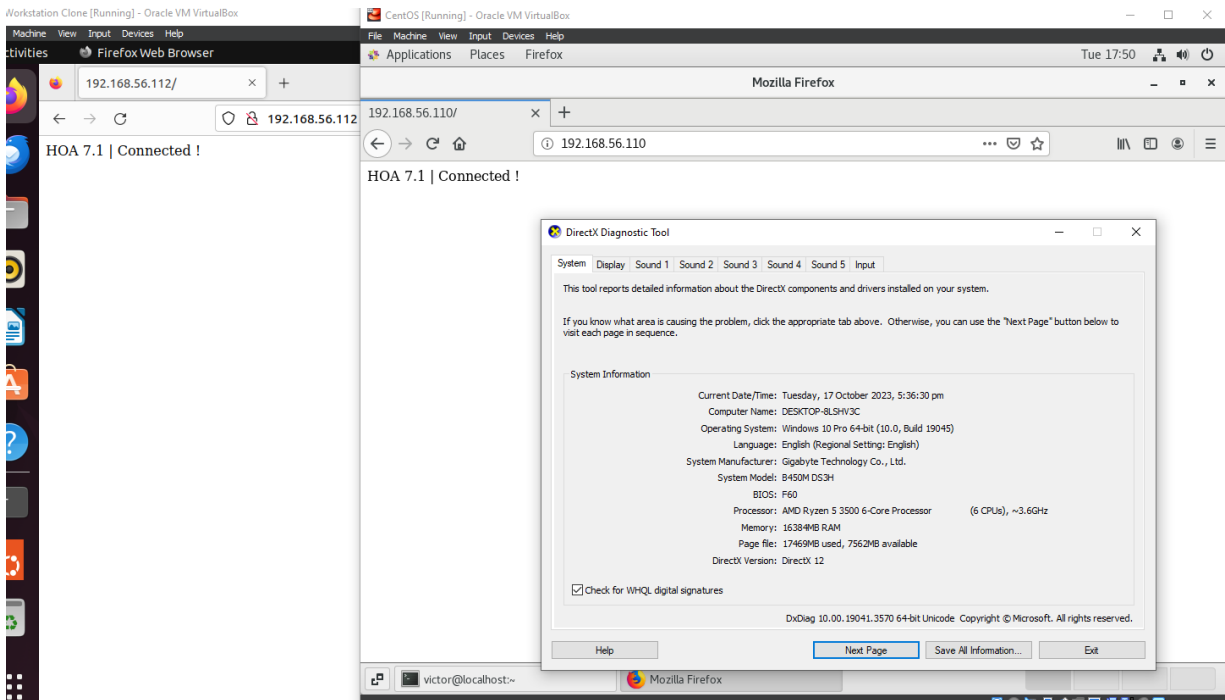
Name: Victor B. ortega	Date Performed: 10/17/23
Course/Section: CPE31S5	Date Submitted: 10/17/23
Instructor: Engr. Roman Richard	Semester and SY: 2023-2024
Activity 7: Managing Files and Creating Roles in Ansible	
1. Objectives: 1.1 Manage files in remote servers 1.2 Implement roles in ansible	
2. Discussion: <p>In this activity, we look at the concept of copying a file to a server. We are going to create a file into our git repository and use Ansible to grab that file and put it into a particular place so that we could do things like customize a default website, or maybe install a default configuration file. We will also implement roles to consolidate plays.</p>	
Task 1: Create a file and copy it to remote servers <ol style="list-style-type: none"> Using the previous directory we created, create a directory, and named it "files." Create a file inside that directory and name it "default_site.html." Edit the file and put basic HTML syntax. Any content will do, as long as it will display text later. Save the file and exit. Edit the site.yml file and just below the web_servers play, create a new file to copy the default html file for site: <ul style="list-style-type: none"> name: copy default html file for site <pre>tags: apache, apache2, httpd copy: src: default_site.html dest: /var/www/html/index.html owner: root group: root mode: 0644</pre> 	



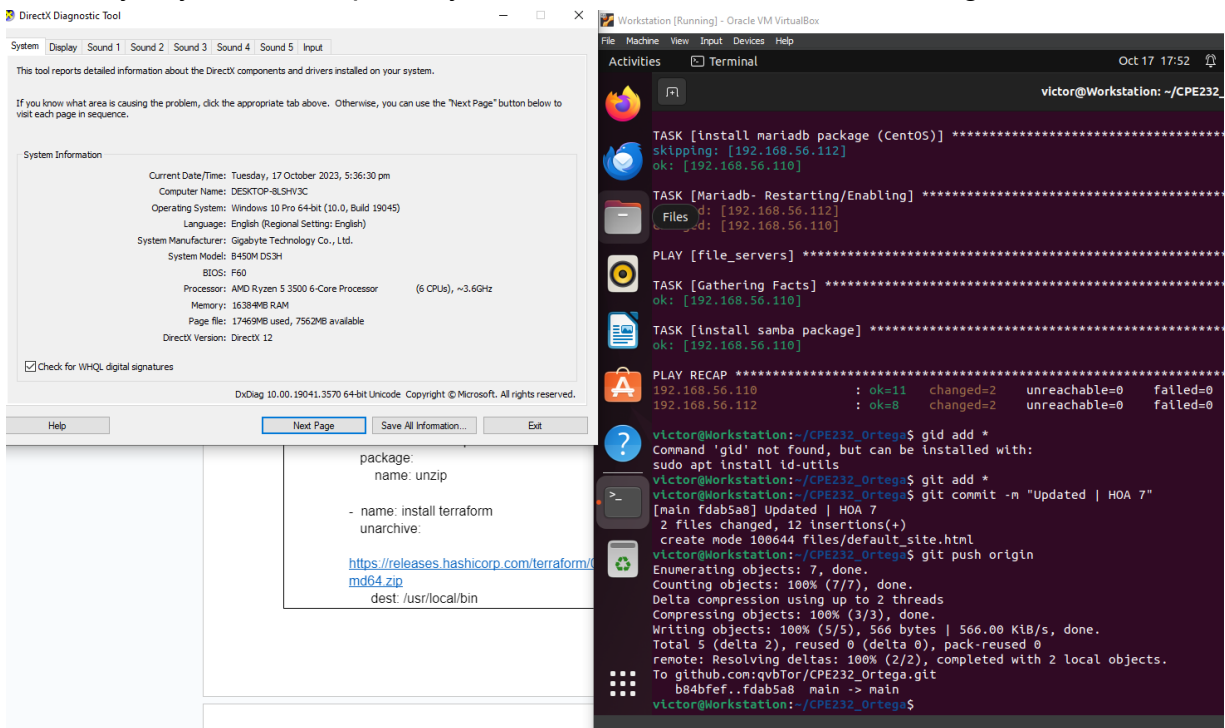
3. Run the playbook *site.yml*. Describe the changes.



4. Go to the remote servers (**web_servers**) listed in your inventory. Use `cat` command to check if the `index.html` is the same as the local repository file (**default_site.html**). Do both for Ubuntu and CentOS servers. On the CentOS server, go to the browser and type its IP address. Describe the output.



5. Sync your local repository with GitHub and describe the changes.



Task 2: Download a file and extract it to a remote server

1. Edit the site.yml. Just before the web_servers play, create a new play:

- hosts: workstations
become: true
tasks:
 - name: install unzip
package:
name: unzip
 - name: install terraform
unarchive:

src:

https://releases.hashicorp.com/terraform/0.12.28/terraform_0.12.28_linux_amd64.zip

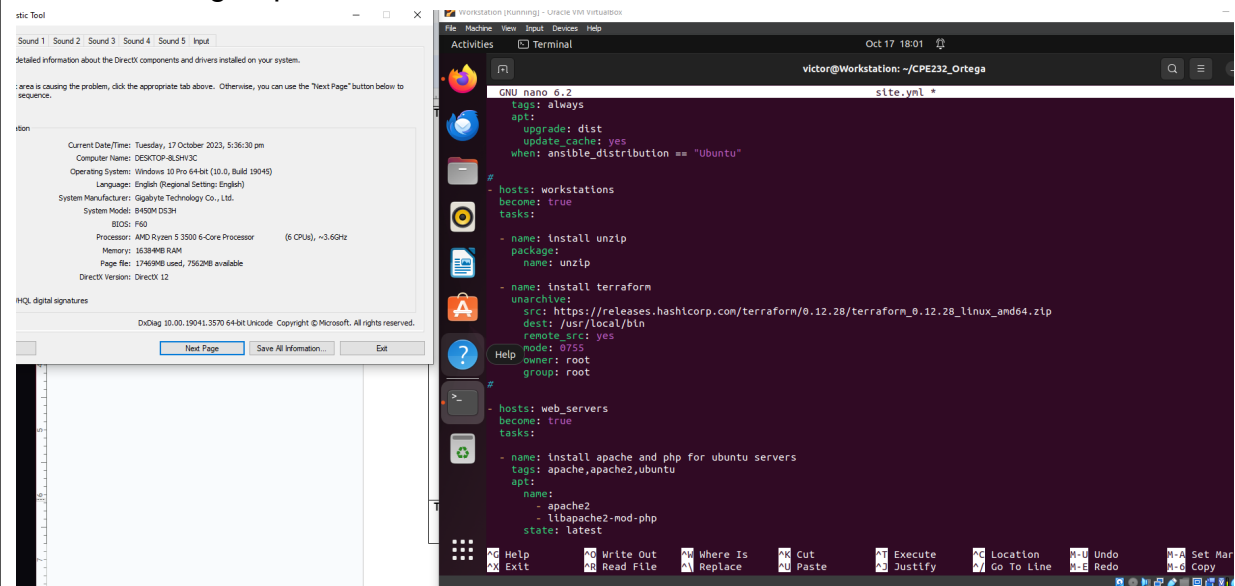
dest: /usr/local/bin

remote_src: yes

mode: 0755

owner: root

group: root



2. Edit the inventory file and add workstations group. Add any Ubuntu remote server. Make sure to remember the IP address.

Workstation [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Oct 17 18:04

victor@Workstation: ~/CPE232_Ortega

```
GNU nano 6.2 hosts *
[localhosts]
#192.168.56.110 ansible_connection=ssh
#192.168.56.103 ansible_connection=local
#192.168.56.102 ansible_connection=local

#192.168.56.102 apache_package=apache2 php_package=libapache2-mod-php
#192.168.56.103 apache_package=apache2 php_package=libapache2-mod-php
#192.168.56.110 apache_package=httpd php_package=php

[workstations]
192.168.56.112

[web_servers]
192.168.56.112 apache_package=httpd php_package=php
192.168.56.110 apache_package=apache2 php_package=libapache2-mod-php

[db_servers]
192.168.56.112 apache_package=httpd php_package=php
192.168.56.110 apache_package=apache2 php_package=libapache2-mod-php

[file_servers]
192.168.56.110 apache_package=apache2 php_package=libapache2-mod-php
```

3. Run the playbook. Describe the output.

ignotric Tool

key Sound 1 Sound 2 Sound 3 Sound 4 Sound 5 Input

orts detailed information about the DirectX components and drivers installed on your system.

what area is causing the problem, click the appropriate tab above. Otherwise, you can use the "Text Page" button below to go in sequence.

formation

Current Date/Time: Tuesday, 17 October 2023, 5:36:30 pm

Computer Name: DESKTOP-BL3H3C

Operating System: Windows 10 Pro 64-bit (10.0, Build 19045)

Language: English (Regional Setting: English)

System Manufacturer: Gigabyte Technology Co., Ltd.

System Model: B450M DS3H

BIOS: F60

Processor: AMD Ryzen 5 3500 6-Core Processor (5 CPUs), ~3.6GHz

Memory: 16384MB RAM

Page File: 12459MB used, 7562MB available

DirectX Version: DirectX 12

for WHQL digital signatures

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Next Page Save All Information Exit

Workstation [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Oct 17 18:05

victor@Workstation: ~/CPE232_Ortega

```
TASK [install apache and php for CentOS servers] *****
skipping: [192.168.56.112]
ok: [192.168.56.110]

TASK [start httpd (CentOS)] *****
skipping: [192.168.56.112]
ok: [192.168.56.110]

PLAY [db_servers] *****

TASK [Gathering Facts] *****
ok: [192.168.56.110]
ok: [192.168.56.112]

TASK [install mariadb package (Ubuntu)] *****
skipping: [192.168.56.110]
ok: [192.168.56.112]

TASK [install mariadb package (CentOS)] *****
skipping: [192.168.56.112]
ok: [192.168.56.110]

TASK [Mariadb- Restarting/Enabling] *****
changed: [192.168.56.112]
changed: [192.168.56.110]

PLAY [file_servers] *****

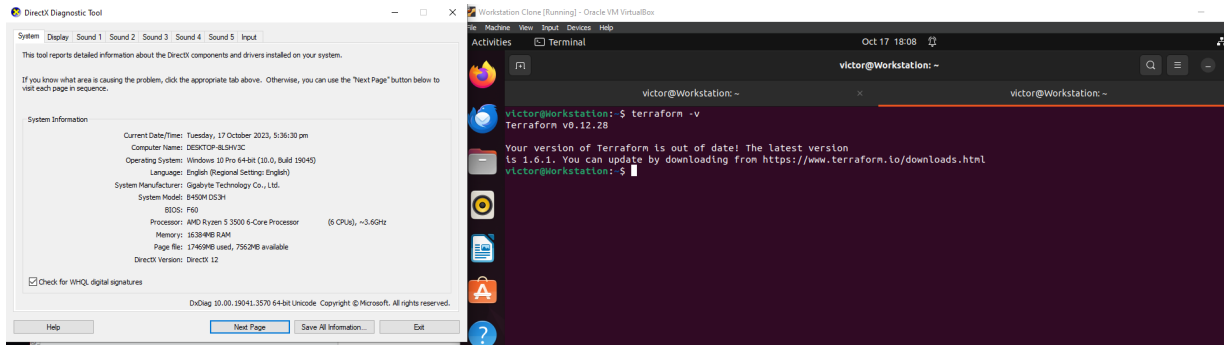
TASK [Gathering Facts] *****
ok: [192.168.56.110]

TASK [install samba package] *****
ok: [192.168.56.110]

PLAY RECAP *****
192.168.56.110 : ok=11 changed=1 unreachable=0 failed=0 skipped=3 rescued=0 ignored=0
192.168.56.112 : ok=11 changed=2 unreachable=0 failed=0 skipped=4 rescued=0 ignored=0

victor@Workstation: ~/CPE232_Ortega$
```

4. On the Ubuntu remote workstation, type terraform to verify installation of terraform. Describe the output.



Task 3: Create roles

1. Edit the site.yml. Configure roles as follows: (make sure to create a copy of the old site.yml file because you will be copying the specific plays for all groups)

```
---
- hosts: all
  become: true
  pre_tasks:

    - name: update repository index (CentOS)
      tags: always
      dnf:
        update_cache: yes
        changed_when: false
        when: ansible_distribution == "CentOS"
    - name: install updates (Ubuntu)
      tags: always
      apt:
        update_cache: yes
        changed_when: false
        when: ansible_distribution == "Ubuntu"

- hosts: all
  become: true
  roles:
    - base

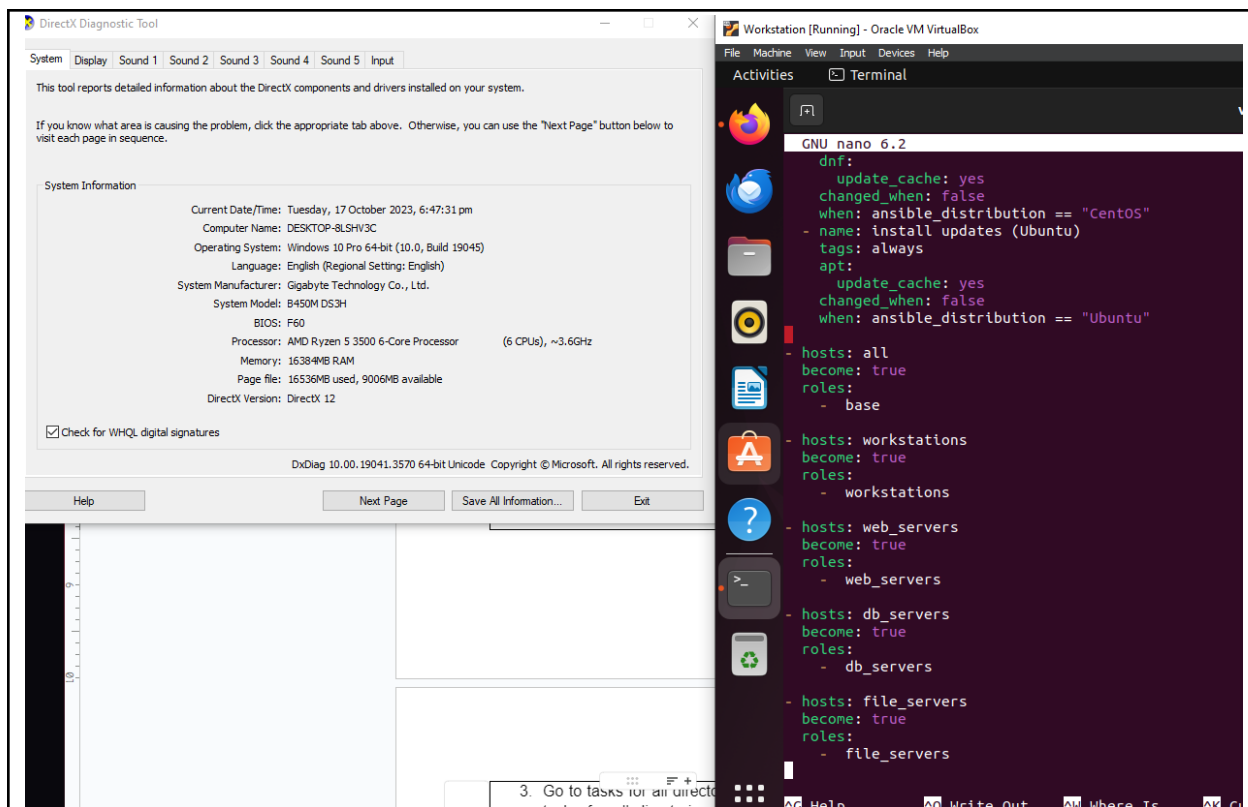
- hosts: workstations
  become: true
  roles:
    - workstations

- hosts: web_servers
  become: true
  roles:
    - web_servers

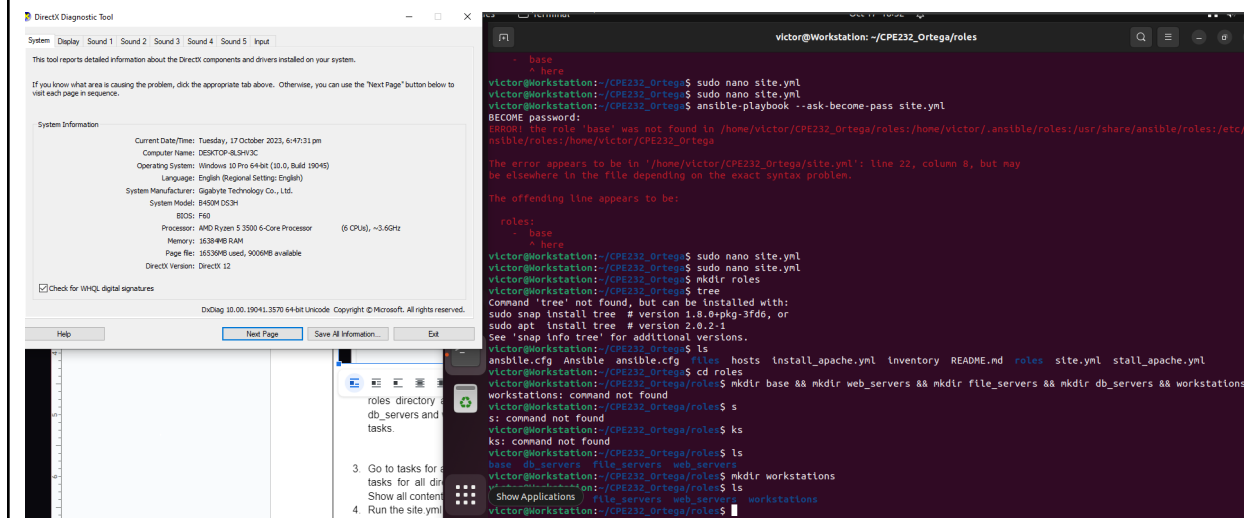
- hosts: db_servers
  become: true
  roles:
    - db_servers

- hosts: file_servers
  become: true
  roles:
    - file_servers
```

Save the file and exit.

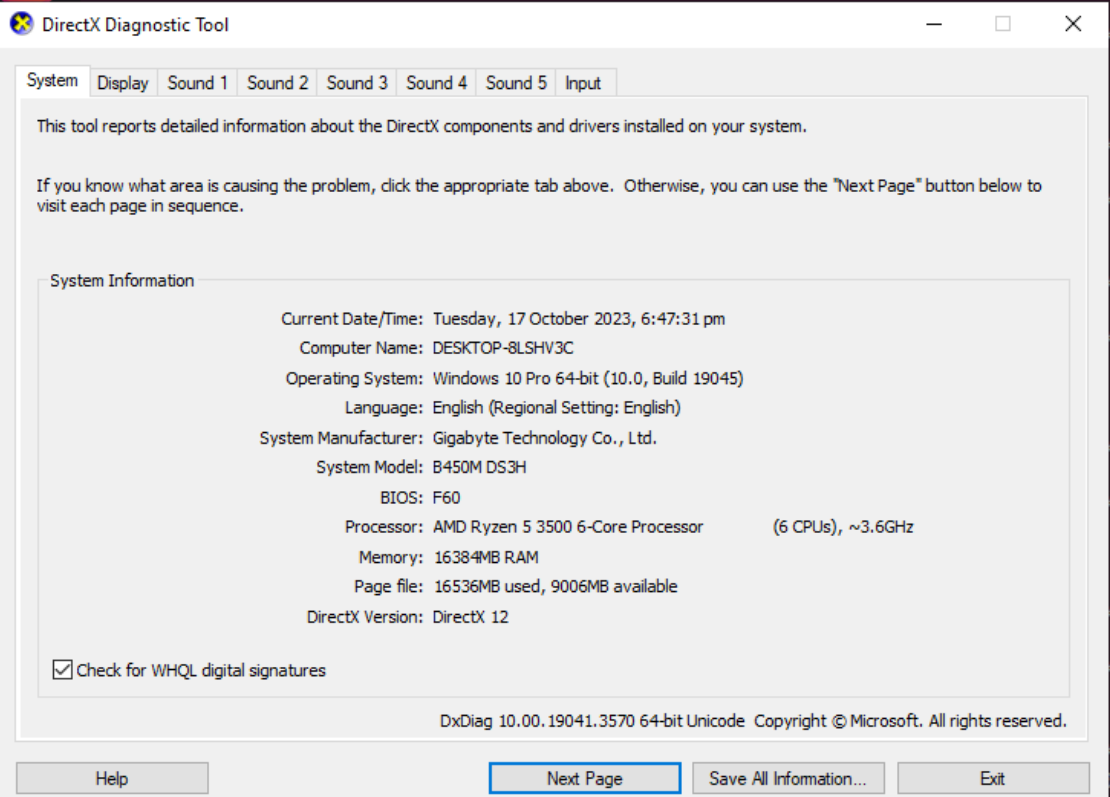


- Under the same directory, create a new directory and name it roles. Enter the roles directory and create new directories: base, web_servers, file_servers, db_servers and workstations. For each directory, create a directory and name it tasks.



3. Go to tasks for all directory and create a file. Name it main.yml. In each of the tasks for all directories, copy and paste the code from the old site.yml file. Show all contents of main.yml files for all tasks.

```
/home/victor/CPE232_Ortega/roles
victor@Workstation:~/CPE232_Ortega/roles$ ls
base db_servers file_servers web_servers workstations
```



The screenshot shows the DirectX Diagnostic Tool window. The 'System' tab is selected, displaying the following information:

- Current Date/Time: Tuesday, 17 October 2023, 6:47:31 pm
- Computer Name: DESKTOP-8LSHV3C
- Operating System: Windows 10 Pro 64-bit (10.0, Build 19045)
- Language: English (Regional Setting: English)
- System Manufacturer: Gigabyte Technology Co., Ltd.
- System Model: B450M DS3H
- BIOS: F60
- Processor: AMD Ryzen 5 3500 6-Core Processor (6 CPUs), ~3.6GHz
- Memory: 16384MB RAM
- Page file: 16536MB used, 9006MB available
- DirectX Version: DirectX 12

At the bottom, there is a checkbox for 'Check for WHQL digital signatures' which is checked. The footer text reads: 'DxDiag 10.00.19041.3570 64-bit Unicode Copyright © Microsoft. All rights reserved.' Buttons for 'Help', 'Next Page', 'Save All Information...', and 'Exit' are visible at the bottom.

```
victor@Workstation:~/CPE232_Ortega$ cd roles
victor@Workstation:~/CPE232_Ortega/roles$ pwd
/home/victor/CPE232_Ortega/roles
victor@Workstation:~/CPE232_Ortega/roles$ ls
base db_servers file_servers web_servers workstations
victor@Workstation:~/CPE232_Ortega/roles$ cd base
victor@Workstation:~/CPE232_Ortega/roles/base$ ls
main.yml
victor@Workstation:~/CPE232_Ortega/roles/base$
```

base:

Workstation [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Oct 17 19:24

victor@Workstation: ~/CPE232_Ortega/roles/base

GNU nano 6.2

```
--
- hosts: all
  become: true
  pre_tasks:

- name: install updates (CentOS)
  tags: always
  yum:
    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
    update_cache: yes
  when: ansible_distribution == "Ubuntu"

#

- name: copy default html file for site
  tags: apache, apache2, httpd
```

Read 95 lines

Help Exit Write Out Read File Where Is Replace Cut Paste Execute Justify Location Go To Line Undo Redo Set Mark Copy

DirectX Diagnostic Tool

System Display Sound 1 Sound 2 Sound 3 Sound 4 Sound 5 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: Tuesday, 17 October 2023, 7:24:05 pm
Computer Name: DESKTOP-8LSHV3C
Operating System: Windows 10 Pro 64-bit (10.0, Build 19045)
Language: English (Regional Setting: English)
System Manufacturer: Gigabyte Technology Co., Ltd.
System Model: B450M DS3H
BIOS: F60
Processor: AMD Ryzen 5 3500 6-Core Processor (6 CPUs), ~3.6GHz
Memory: 16384MB RAM
Page file: 11354MB used, 14188MB available
DirectX Version: DirectX 12

☒ Check for WHQL digital signatures

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Help Next Page Save All Information... Exit

db_servers

Workstation [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Oct 17 19:25

victor@Workstation: ~/CPE232_Ortega/roles/db_servers

GNU nano 6.2

```
--
hosts: all
become: true
pre_tasks:

- name: install updates (CentOS)
  tags: always
  yum:
    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
    update_cache: yes
  when: ansible_distribution == "Ubuntu"

#
- name: copy default html file for site
  tags: apache, apache2, httpd
```

DirectX Diagnostic Tool

System | Display | Sound 1 | Sound 2 | Sound 3 | Sound 4 | Sound 5 | 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: Tuesday, 17 October 2023, 7:24:05 pm
Computer Name: DESKTOP-8LSHV3C
Operating System: Windows 10 Pro 64-bit (10.0, Build 19045)
Language: English (Regional Setting: English)
System Manufacturer: Gigabyte Technology Co., Ltd.
System Model: B450M DS3H
BIOS: F60
Processor: AMD Ryzen 5 3500 6-Core Processor (6 CPUs), ~3.6GHz
Memory: 16384MB RAM
Page file: 11354MB used, 14188MB available
DirectX Version: DirectX 12

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Help Next Page Save All Information... Exit

Read 95 lines

Help Exit Write Out Read File Where Is Replace Cut Paste Execute Justify Location Go To Line Undo Redo Set Mark Copy

Right Ctrl

file_servers:

Workstation [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal

Oct 17 19:27

victor@Workstation: ~/CPE232_Ortega/roles/file_servers

GNU nano 6.2

```
--
- hosts: all
  become: true
  pre_tasks:

- name: install updates (CentOS)
  tags: always
  yum:
    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
    update_cache: yes
  when: ansible_distribution == "Ubuntu"

#
- name: copy default html file for site
  tags: apache, apache2, httpd
```

Read 95 lines

Help

Write Out

Where Is

Cut

Execute

Location

Undo

Set Mark

Exit

Read File

Replace

Paste

Justify

Go To Line

Redo

Copy

DirectX Diagnostic Tool

System Display Sound 1 Sound 2 Sound 3 Sound 4 Sound 5 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: Tuesday, 17 October 2023, 7:24:05 pm

Computer Name: DESKTOP-BLSHV3C

Operating System: Windows 10 Pro 64-bit (10.0, Build 19045)

Language: English (Regional Setting: English)

System Manufacturer: Gigabyte Technology Co., Ltd.

System Model: B450M DS3H

BIOS: F60

Processor: AMD Ryzen 5 3500 6-Core Processor (6 CPUs), ~3.6GHz

Memory: 16384MB RAM

Page file: 11354MB used, 14188MB available

DirectX Version: DirectX 12

☒ Check for WHQL digital signatures

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Help

Next Page

Save All Information...

Exit

web_servers:

Workstation [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Oct 17 19:31

victor@Workstation: ~/CPE232_Ortega/roles/web_servers

GNU nano 6.2

```
hosts: all
become: true
pre_tasks:

- name: install updates (CentOS)
  tags: always
  yum:
    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
    update_cache: yes
  when: ansible_distribution == "Ubuntu"

#
- name: copy default html file for site
  tags: apache, apache2, httpd
```

DirectX Diagnostic Tool

System | Display | Sound 1 | Sound 2 | Sound 3 | Sound 4 | Sound 5 | 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: Tuesday, 17 October 2023, 7:24:05 pm
Computer Name: DESKTOP-8LSHV3C
Operating System: Windows 10 Pro 64-bit (10.0, Build 19045)
Language: English (Regional Setting: English)
System Manufacturer: Gigabyte Technology Co., Ltd.
System Model: B450M DS3H
BIOS: F60
Processor: AMD Ryzen 5 3500 6-Core Processor (6 CPUs), ~3.6GHz
Memory: 16384MB RAM
Page file: 11354MB used, 14183MB available
DirectX Version: DirectX 12

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Help Next Page Save All Information... Exit

Read 95 lines

Help Exit Write Out Read File Where Is Replace Cut Paste Execute Justify Location Go To Line Undo Redo Set Mark Copy Right Ctrl

workstations:

The screenshot shows a Workstation [Running] - Oracle VM VirtualBox window. The main terminal displays the GNU nano 6.2 editor with an Ansible playbook. The playbook includes tasks for installing updates on CentOS and Ubuntu, and installing Apache and PHP on Ubuntu servers. A DirectX Diagnostic Tool window is open in the foreground, showing system information such as the current date/time, computer name, operating system, and hardware details.

```
GNU nano 6.2
---
- hosts: all
  become: true
  pre_tasks:

- name: install updates (CentOS)
  tags: always
  yum:
    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
    update_cache: yes
  when: ansible_distribution == "Ubuntu"

#
- name: copy default html file for site
  tags: apache, apache2, httpd
```

DirectX Diagnostic Tool

System | Display | Sound 1 | Sound 2 | Sound 3 | Sound 4 | Sound 5 | 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: Tuesday, 17 October 2023, 7:24:05 pm
Computer Name: DESKTOP-8LSHV3C
Operating System: Windows 10 Pro 64-bit (10.0, Build 19045)
Language: English (Regional Setting: English)
System Manufacturer: Gigabyte Technology Co., Ltd.
System Model: B450M DS3H
BIOS: F60
Processor: AMD Ryzen 5 3500 6-Core Processor (6 CPUs), ~3.6GHz
Memory: 16384MB RAM
Page file: 11354MB used, 14188MB available
DirectX Version: DirectX 12

☒ Check for WHQL digital signatures

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Help Next Page Save All Information... Exit

4. Run the site.yml playbook and describe the output.

The screenshot shows the same Workstation [Running] - Oracle VM VirtualBox window. The main terminal displays the output of the Ansible playbook execution. The output shows the playbook running successfully on the specified hosts. A DirectX Diagnostic Tool window is still open in the foreground.

```
skipping: [192.168.56.112]
ok: [192.168.56.110]

TASK [Install updates (Ubuntu)] *****
skipping: [192.168.56.110]
ok: [192.168.56.112]

PLAY [all] *****
TASK [Gathering Facts] *****
ok: [192.168.56.112]
ok: [192.168.56.110]

PLAY [workstations] *****
TASK [Gathering Facts] *****
ok: [192.168.56.112]
ok: [192.168.56.110]

PLAY [web_servers] *****
TASK [Gathering Facts] *****
ok: [192.168.56.112]
ok: [192.168.56.110]

PLAY [db_servers] *****
TASK [Gathering Facts] *****
ok: [192.168.56.112]
ok: [192.168.56.110]

PLAY [file_servers] *****
TASK [Gathering Facts] *****
ok: [192.168.56.112]
ok: [192.168.56.110]

PLAY RECAP *****
192.168.56.110 : ok=6 changed=0 unreachable=0 failed=0 skipped=1 rescued=0 ignored=0
192.168.56.112 : ok=6 changed=0 unreachable=0 failed=0 skipped=1 rescued=0 ignored=0

victor@Workstation: ~/CPE232_Ortega$
```

Reflections:

Answer the following:

1. What is the importance of creating roles?

Ansible roles for Ubuntu improve organization, modularity, and reusability, simplifying playbook maintenance and task management by encapsulating functionality into self-contained units that facilitate best practices.

2. What is the importance of managing files?

Organizing system files in a playbook enables efficient configuration, deployment, and upkeep of critical system files. It facilitates seamless automation, version control, and supports the overall infrastructure as code (IaC) paradigm.

Conclusions:

Therefore, managing files and using roles in Ansible playbooks is essential for efficient system configuration and automation. It helps to streamline deployment and maintenance, and makes playbooks more organized, modular, and reusable. This combination of best practices maximizes the power of Ansible and optimizes infrastructure management.