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Course/Section: CPE 232-CPE31S5	**Date Submitted: October 17, 2023**
Instructor: Engr. Roman Richard	**Semester and SY: 1st Sem SY 23-24**

Activity 7: Managing Files and Creating Roles in Ansible

1. **Objectives:**

1.1 Manage files in remote servers

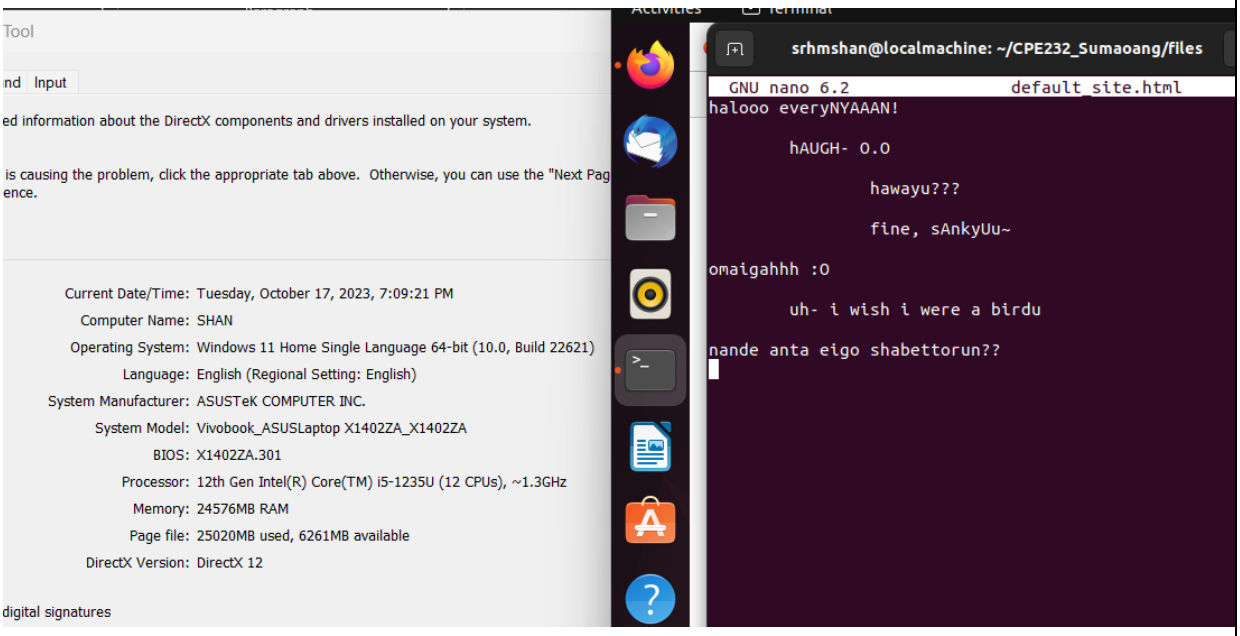
1.2 Implement roles in ansible

2. **Discussion**:

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.

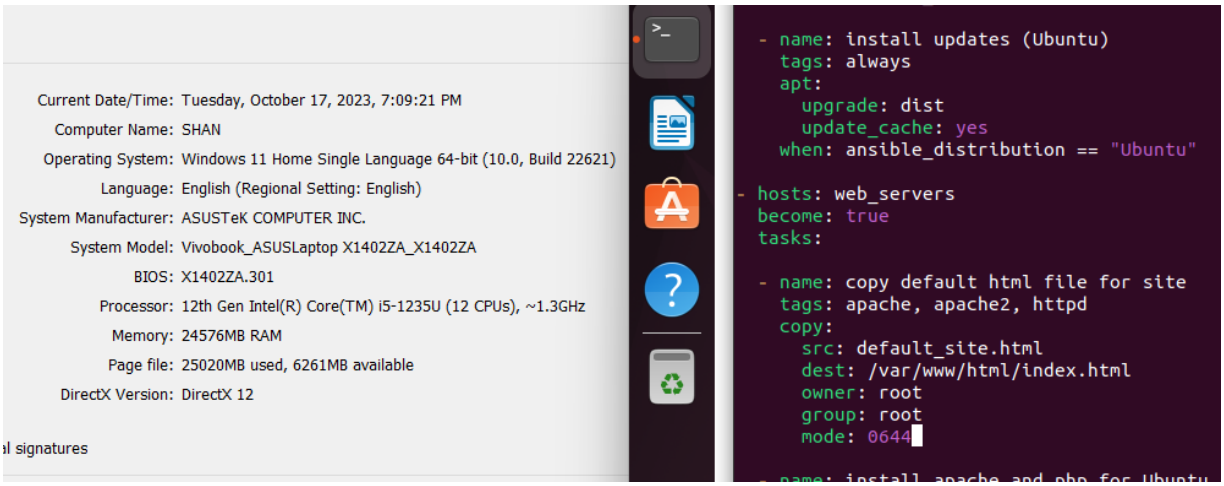
Task 1: Create a file and copy it to remote servers

1. 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.

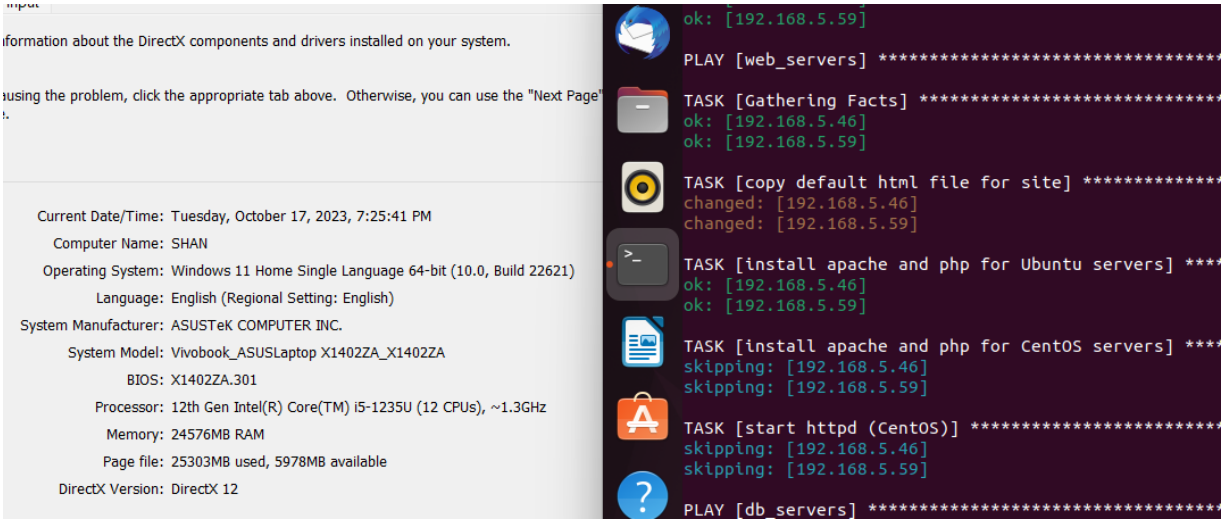


2. Edit the *site.yml* file and just below the *web_servers* play, create a new file to copy the default html file for site:
   - name: copy default html file for site
     tags: apache, apache2, httpd
     copy:

src: default_site.html
dest: /var/www/html/index.html
owner: root
group: root
mode: 0644

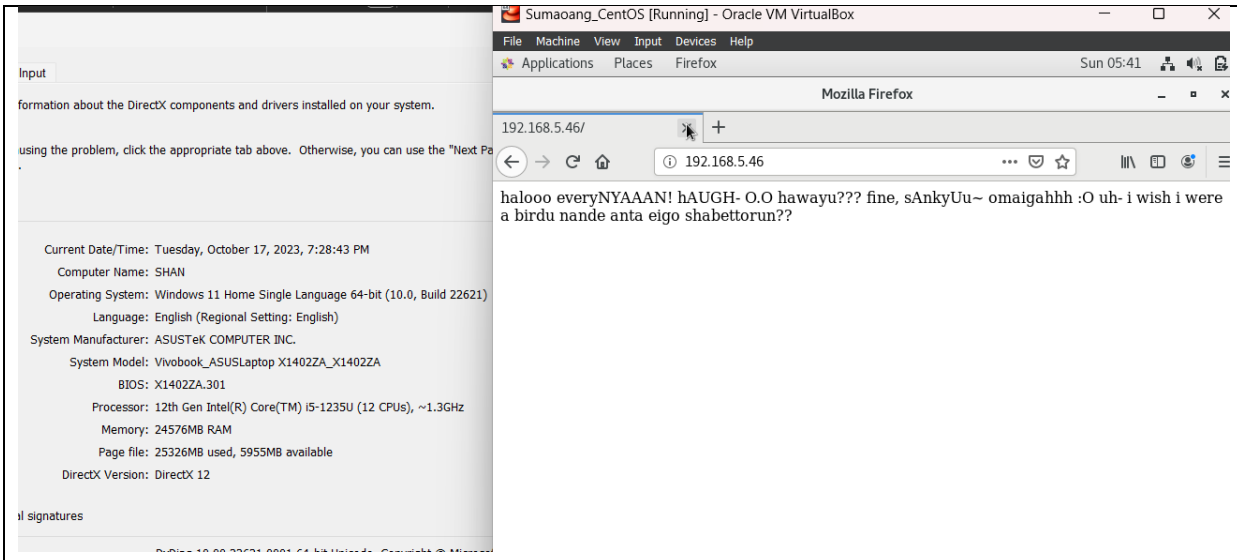


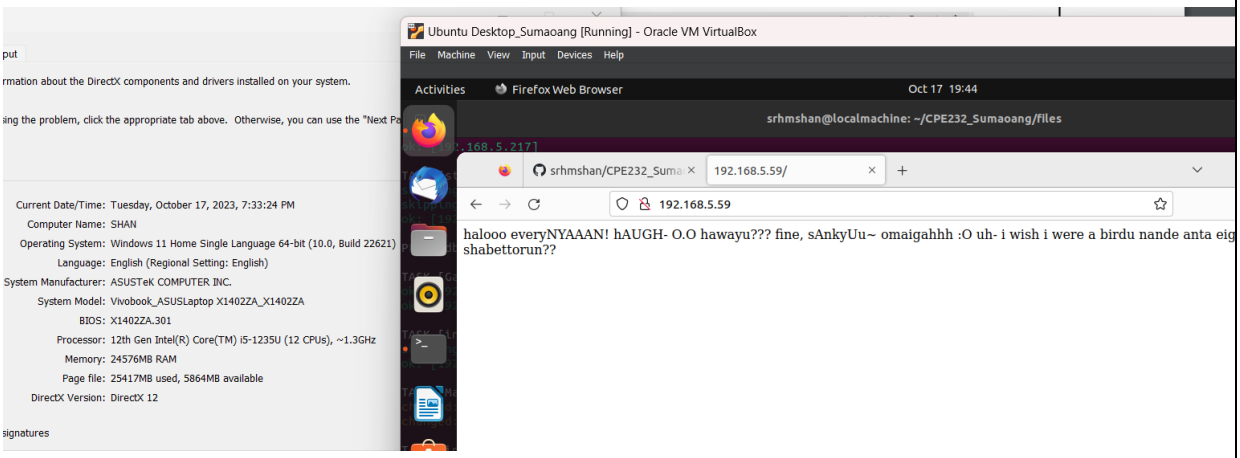
3. Run the playbook *site.yml*. Describe the changes.



The contents of "default_site.html" were copied to the specified destination, which is "/var/www/html/index.html." for the 2 Ubuntu servers that were assigned in the inventory for web_servers.

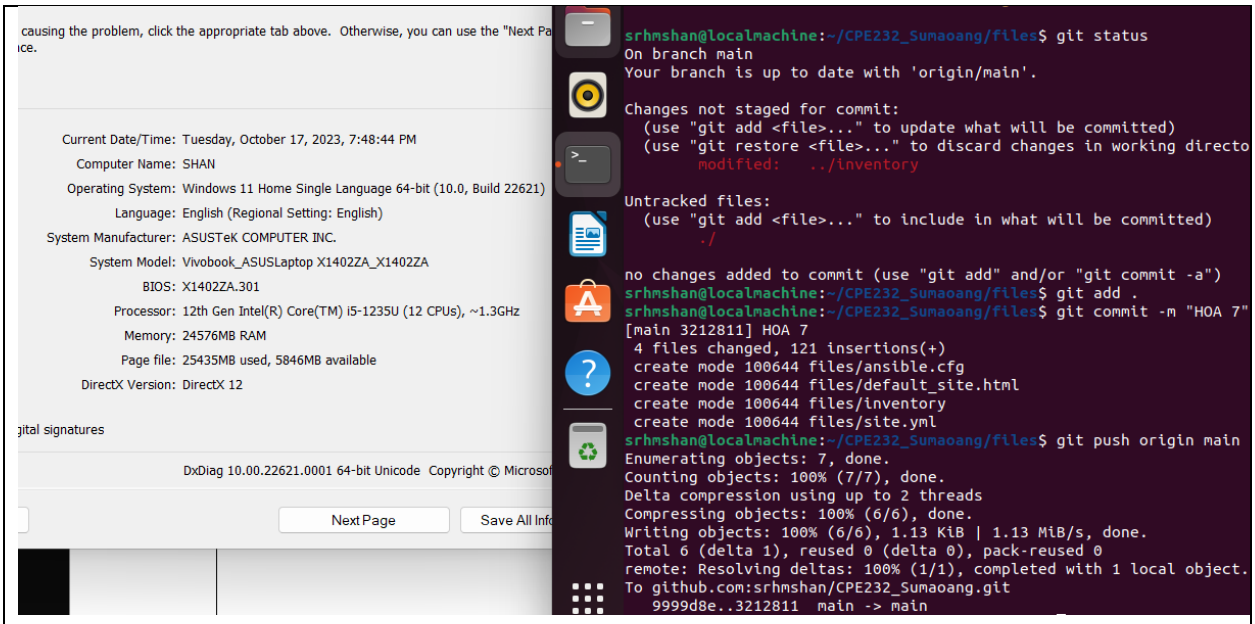
4. Go to the remote servers (*web_servers*) listed in your inventory. Use cat command to check if the index.html is the same as the local repository file (*default_site.html*). Do both for Ubuntu and CentOS servers. On the CentOS server, go to the browser and type its IP address. Describe the output.





This is to verify that the contents of "default_site.html" were copied successfully to the index.html.

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



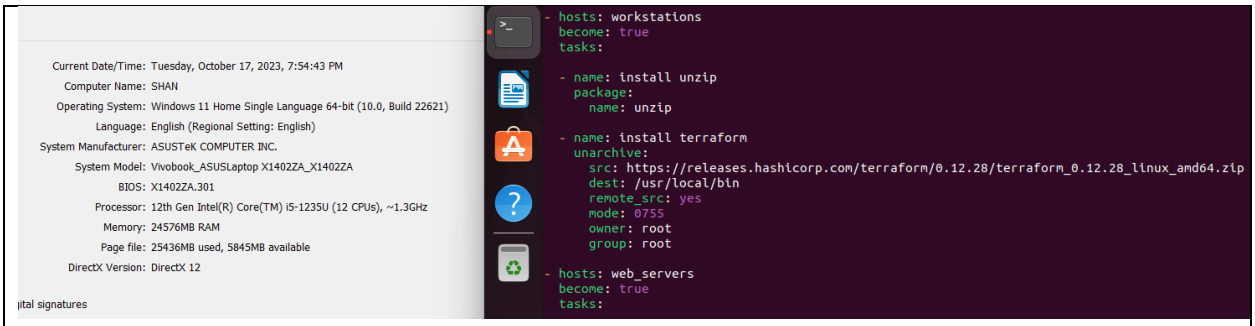
I used the git commands to add, commit and push what I've done so far in the files repository.

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

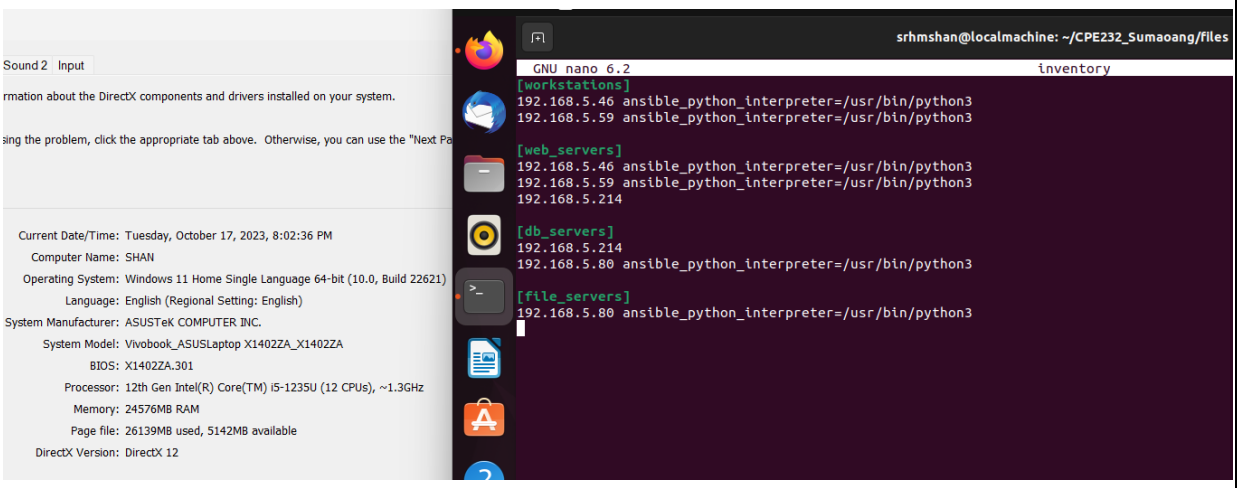
1. Edit the site.yml. Just before the web_servers play, create a new play:
   - hosts: workstations
     become: true
     tasks:

     - name: install unzip
       package:
         name: unzip

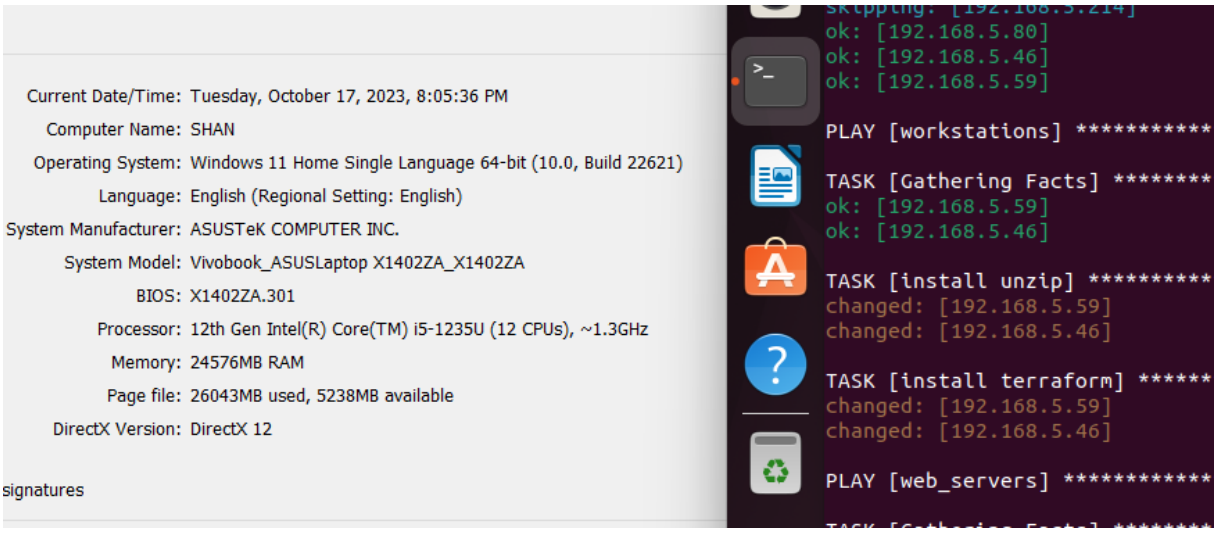
     - name: install terraform
       unarchive:
         src: https://releases.hashicorp.com/terraform/0.12.28/terraform_0.12.28_linux_amd64.zip
         dest: /usr/local/bin
         remote_src: yes
         mode: 0755
         owner: root
         group: root



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

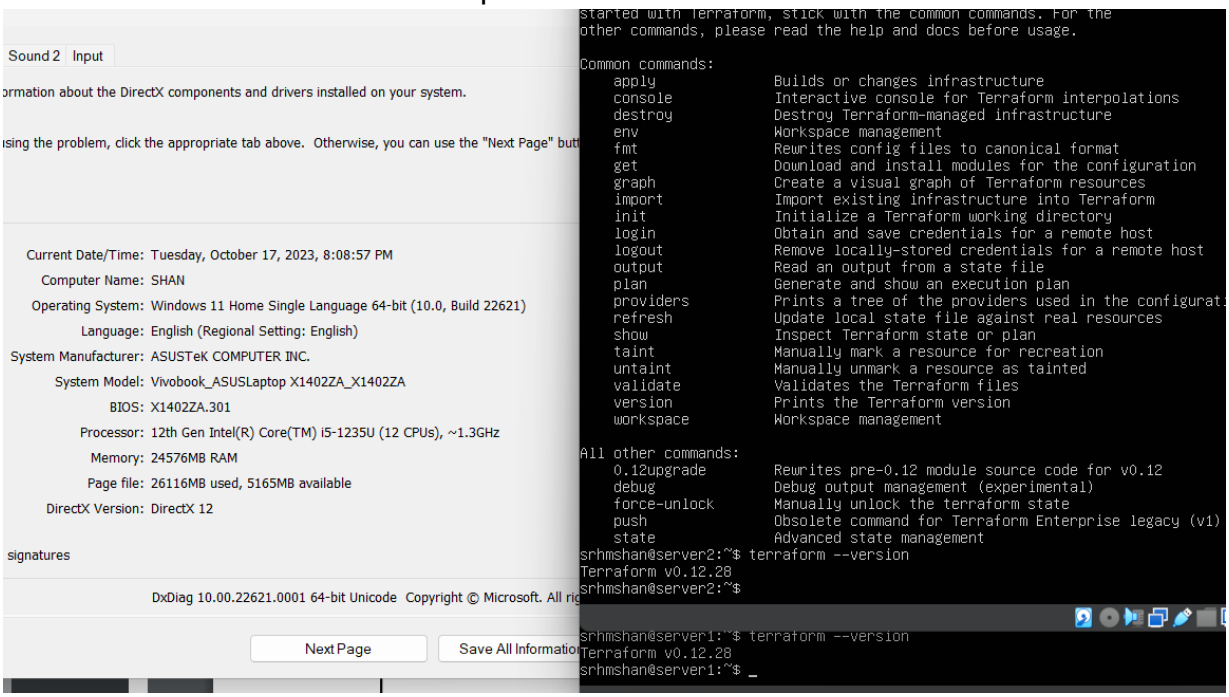


3. Run the playbook. Describe the output.



The installation of unzip and terraform to each Ubuntu server in the workstations group was successful.

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



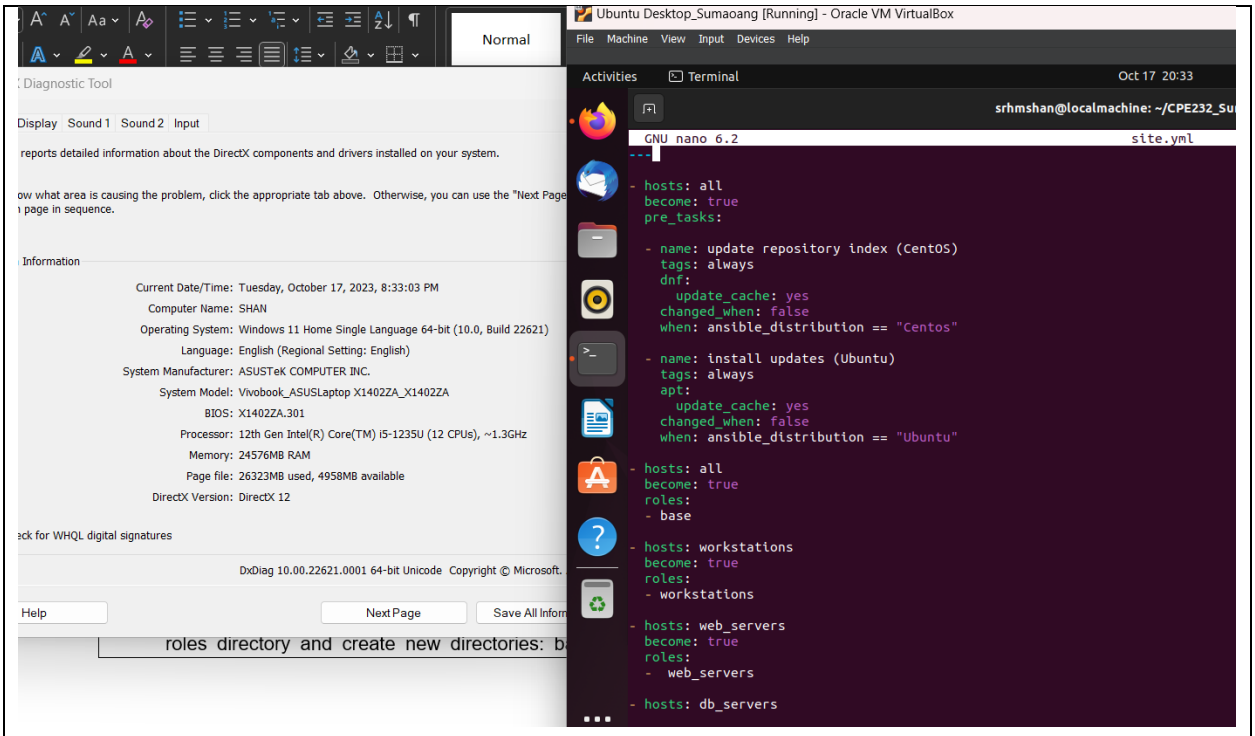
Since the task was successful, I typed "terraform –version" to confirm that the installations were done.

Task 3: Create roles

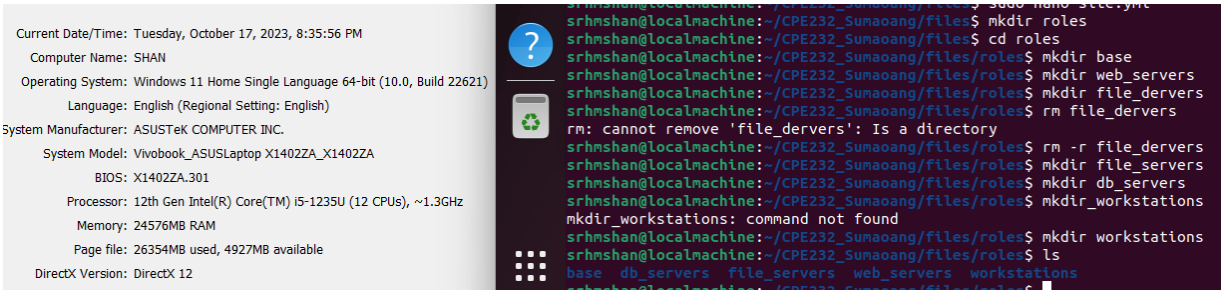
1. Edit the site.yml. Configure roles as follows: (make sure to create a copy of the old site.yml file because you will be copying the specific plays for all groups)

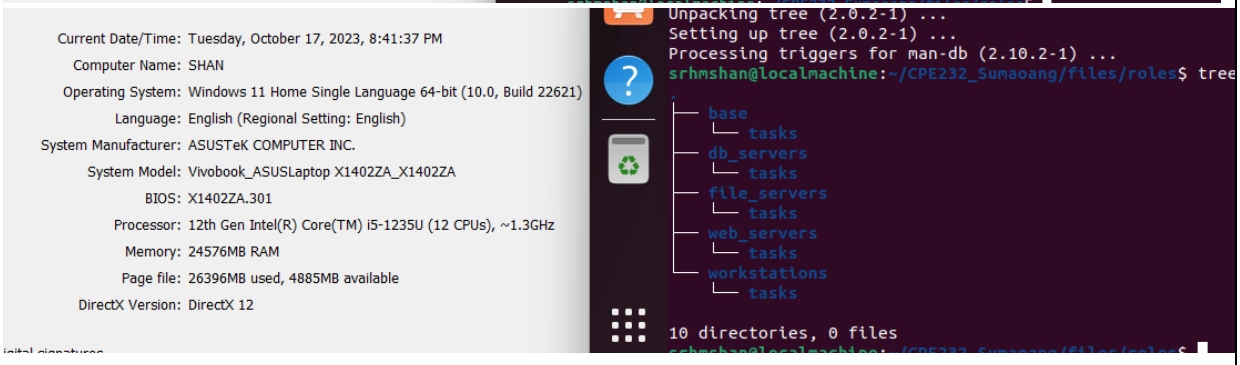
```
---
- hosts: all
  become: true
  pre_tasks:

  - 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.

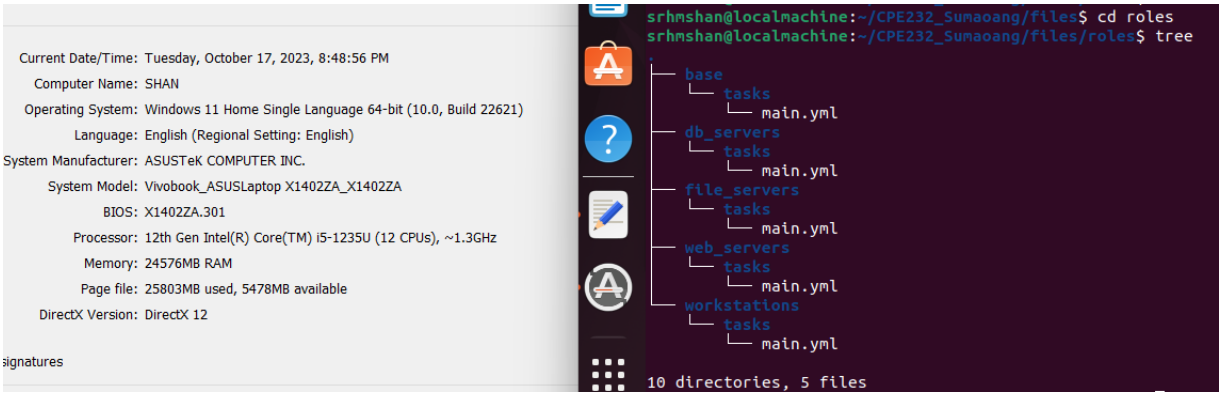


2. Under the same directory, create a new directory and name it roles. Enter the roles directory and create new directories: base, web_servers, file_servers, db_servers and workstations. For each directory, create a directory and name it tasks.

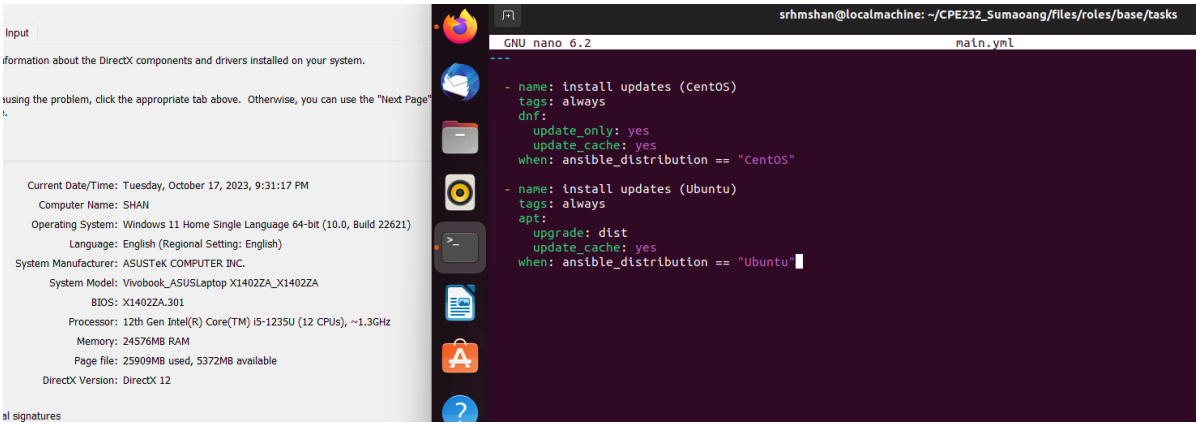




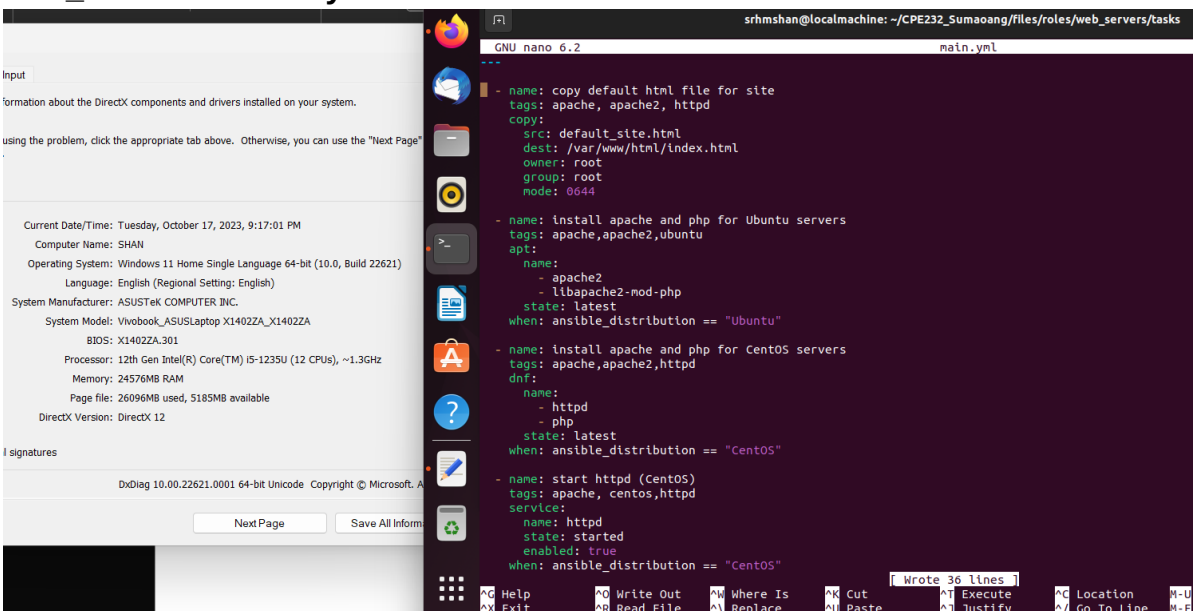
3. Go to tasks for all directory and create a file. Name it main.yml. In each of the tasks for all directories, copy and paste the code from the old site.yml file. Show all contents of main.yml files for all tasks.



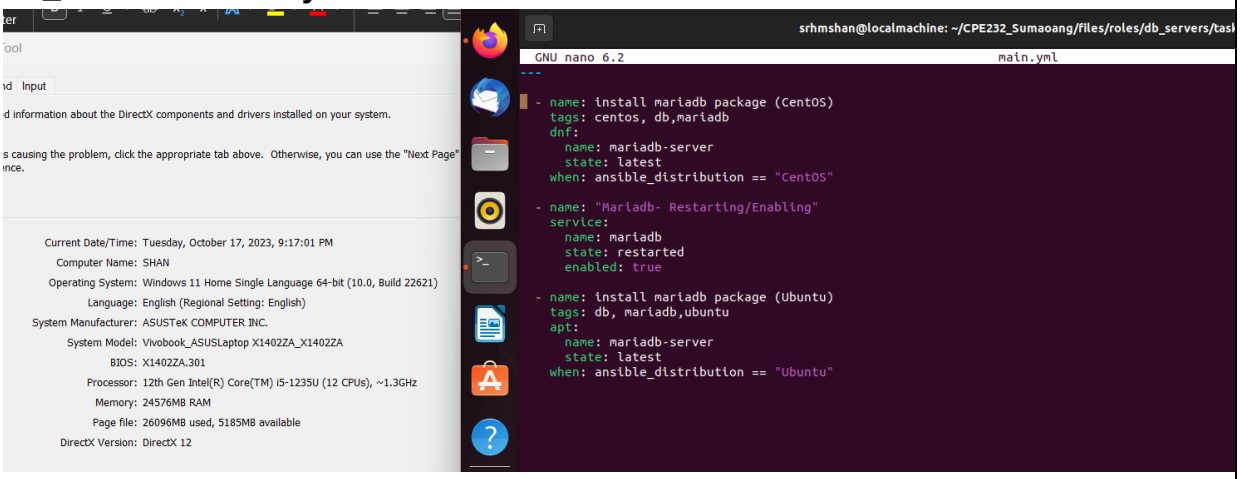
base directory:



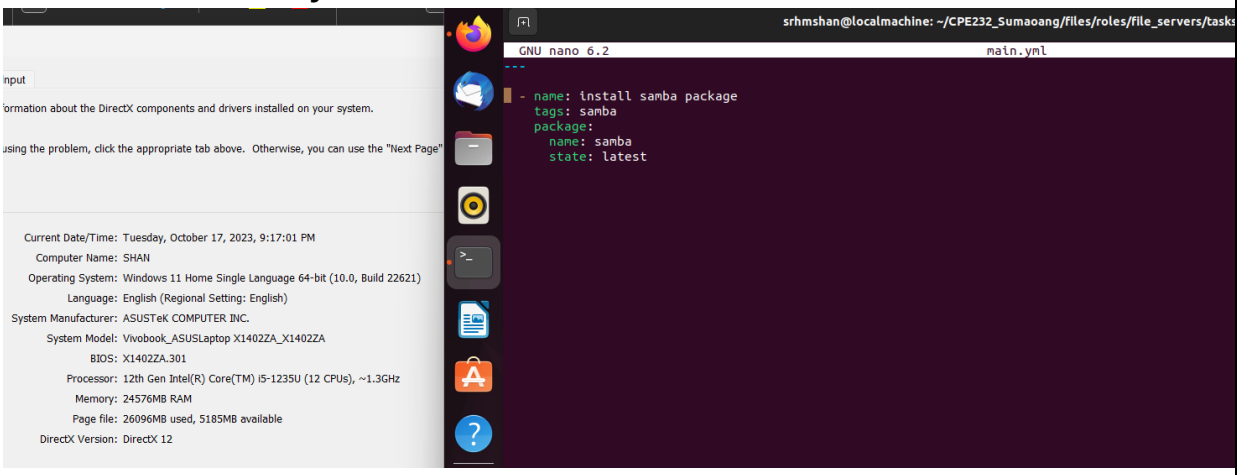
web_servers directory:



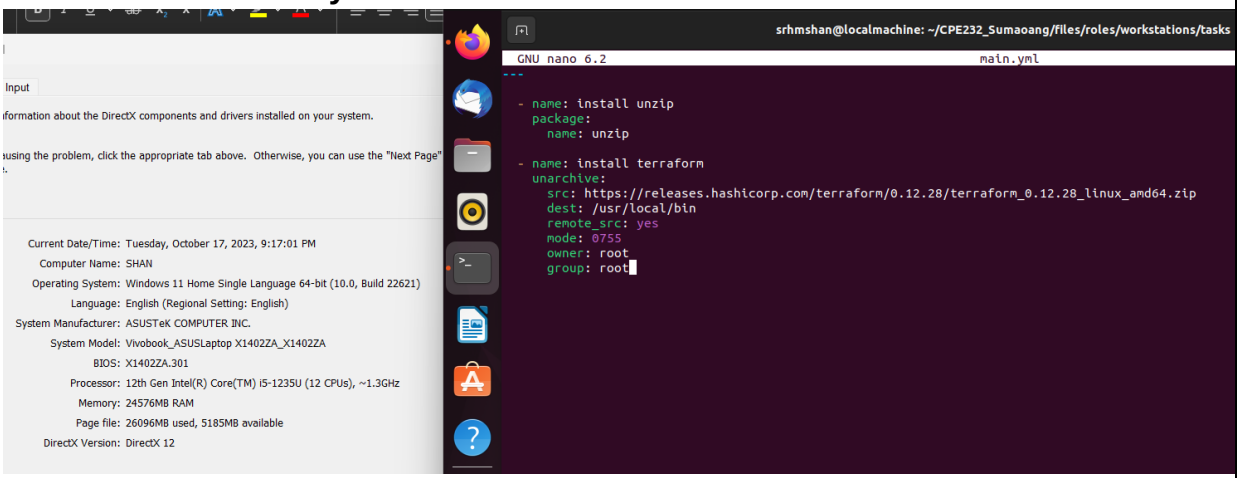
db_servers directory:



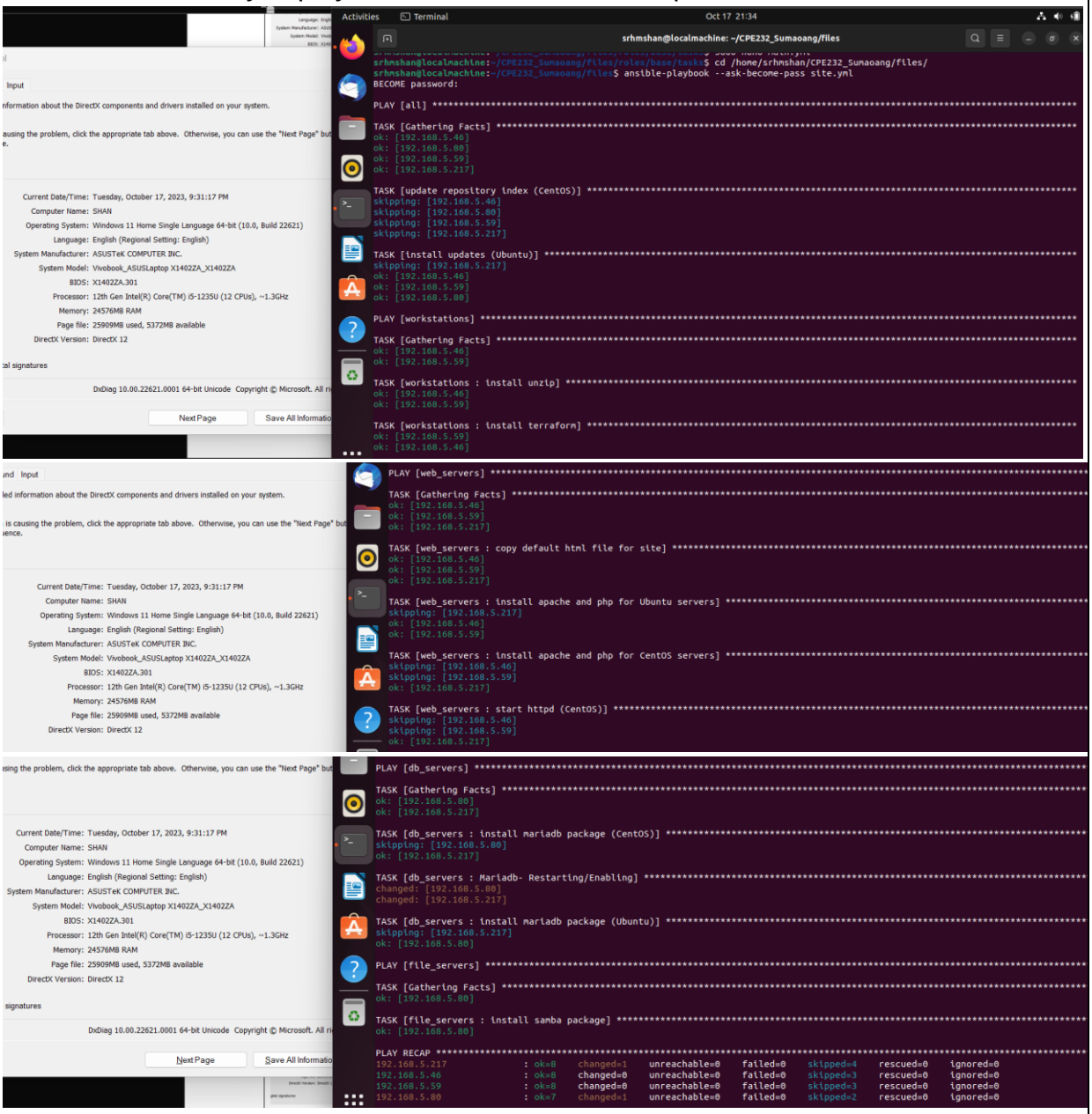
file_servers directory:



workstations directory:



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



After successfully running the playbook, I noticed that creating roles is a way to break down tasks into their respective components. This will help greatly when debugging. It also looks cleaner and more manageable for future configurations.

After the tasks, I added the changes in my GitHub repository:
https://github.com/srhmshan/CPE232_Sumaoang/tree/main/files

Reflections:

Answer the following:

1. What is the importance of creating roles?
   Creating roles in Ansible simplify playbook management by breaking tasks into reusable components. They ensure consistent server configurations and can be shared for collaboration, saving time.

2. What is the importance of managing files?
   File management is vital for accurate configurations and data backups. It gives security against unauthorized access, applies compliance, and optimizes system efficiency.