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| **Course/Section:** CPE31S4 - CPE212 | **Date Submitted:** 10/16/2025 |
| **Instructor:** Engr. Robin Valenzuela | **Semester and SY:** 2025-2026 1st Sem |

**Activity 7: Managing Files and Creating Roles in Ansible**

1. **Objectives:**

1.1 Manage files in remote servers

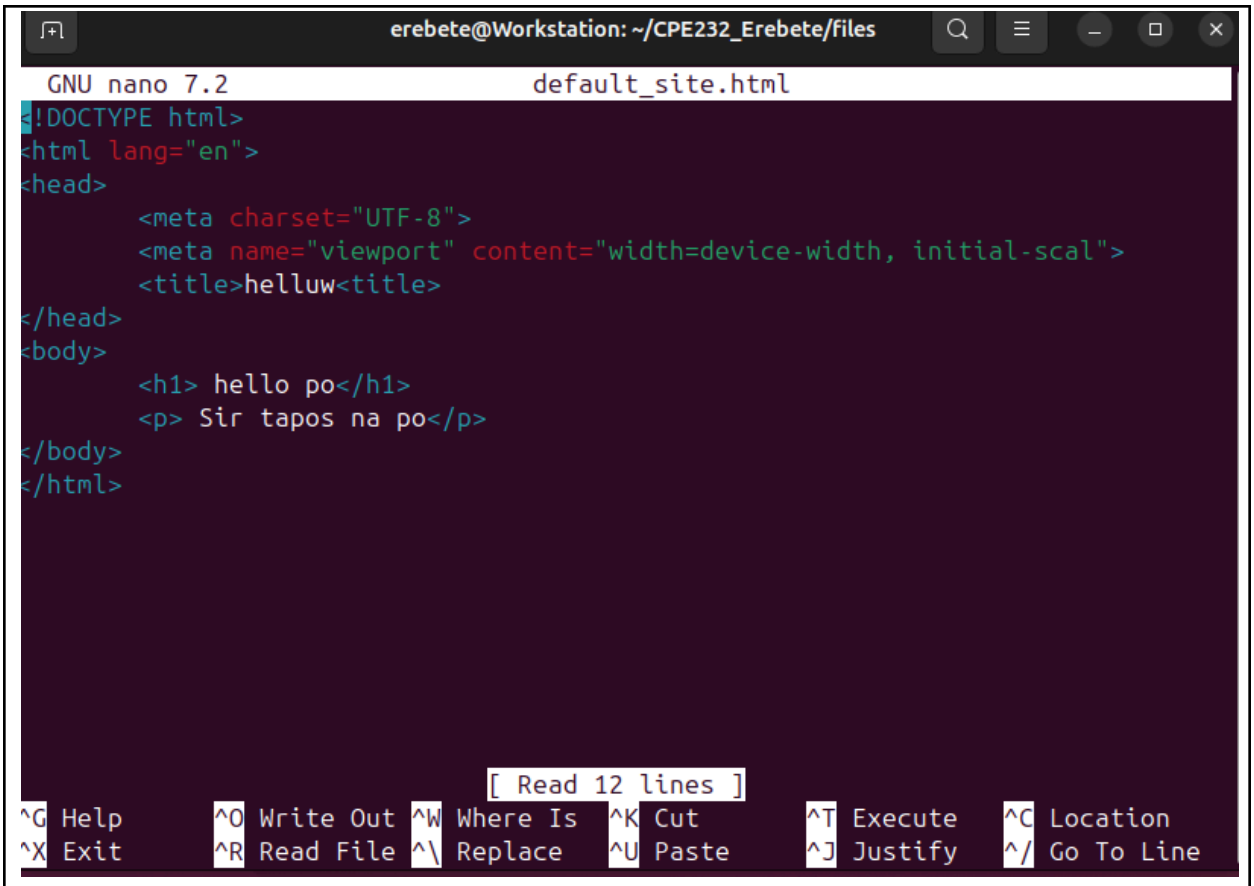
1.2 Implement roles in ansible

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

```
- 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.

```
skipping: [192.168.56.104]
ok: [192.168.56.102]

PLAY [file_servers] ************************************************
********

TASK [Gathering Facts] *********************************************
********
ok: [192.168.56.102]

TASK [install samba packages] **************************************
********
ok: [192.168.56.102]

PLAY RECAP *********************************************************
********
192.168.56.102             : ok=10   changed=2    unreachable=0    faile
d=0    skipped=4    rescued=0    ignored=0
192.168.56.104             : ok=9    changed=2    unreachable=0    faile
d=0    skipped=3    rescued=0    ignored=0
```

- it works on running it

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

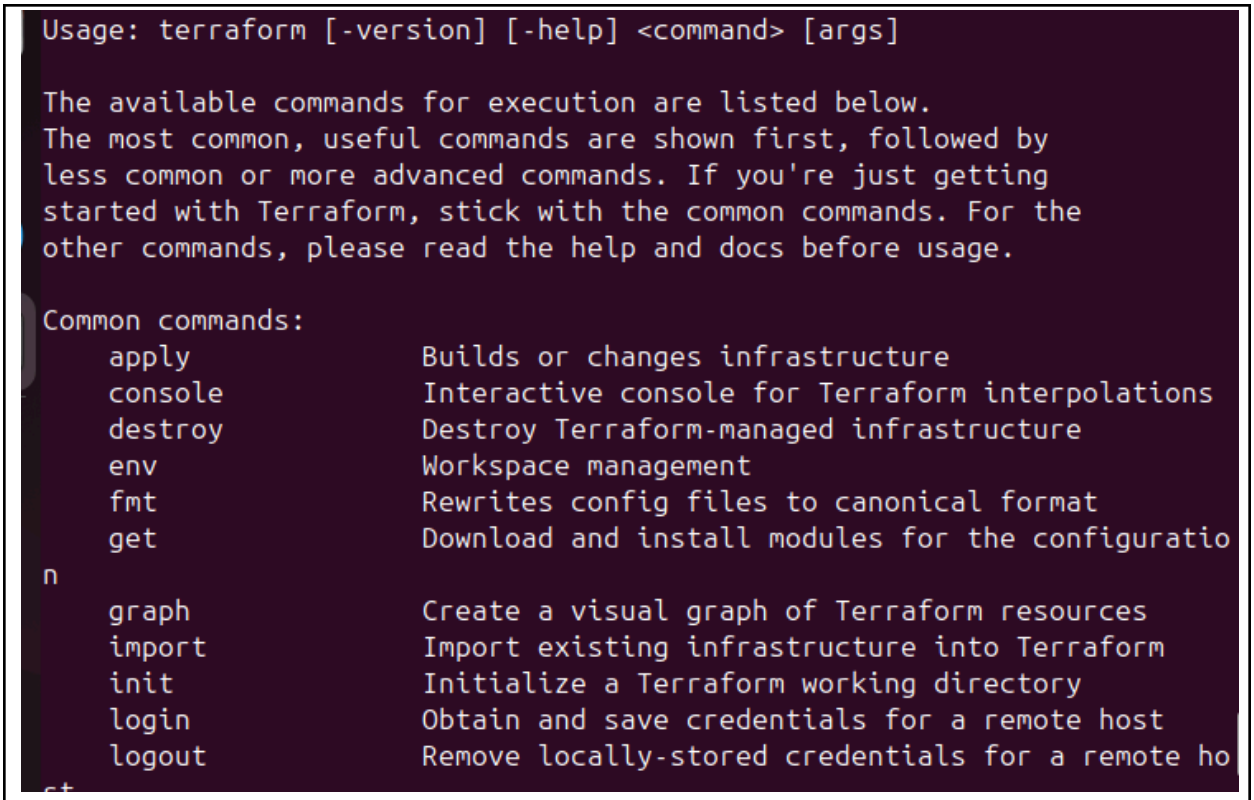
```
- host: workstations
  become: true
  tasks:

  - name: install unzip
    package:
      name: unzip

  - name: install terraform
    unarchive:
      src: https://releases.hashicorp.com/terraform/0.12.28/terraform_0>
      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.


- it works on running it

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




- terraform successfully is installed

**Task 3: Create roles**

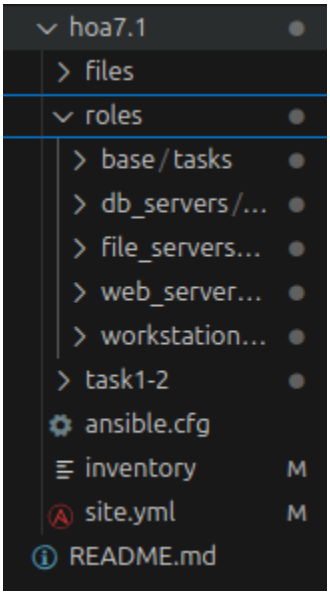
1. Edit the site.yml. Configure roles as follows: (make sure to create a copy of the old site.yml file because you will be copying the specific plays for all groups)

```
---
- 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
```

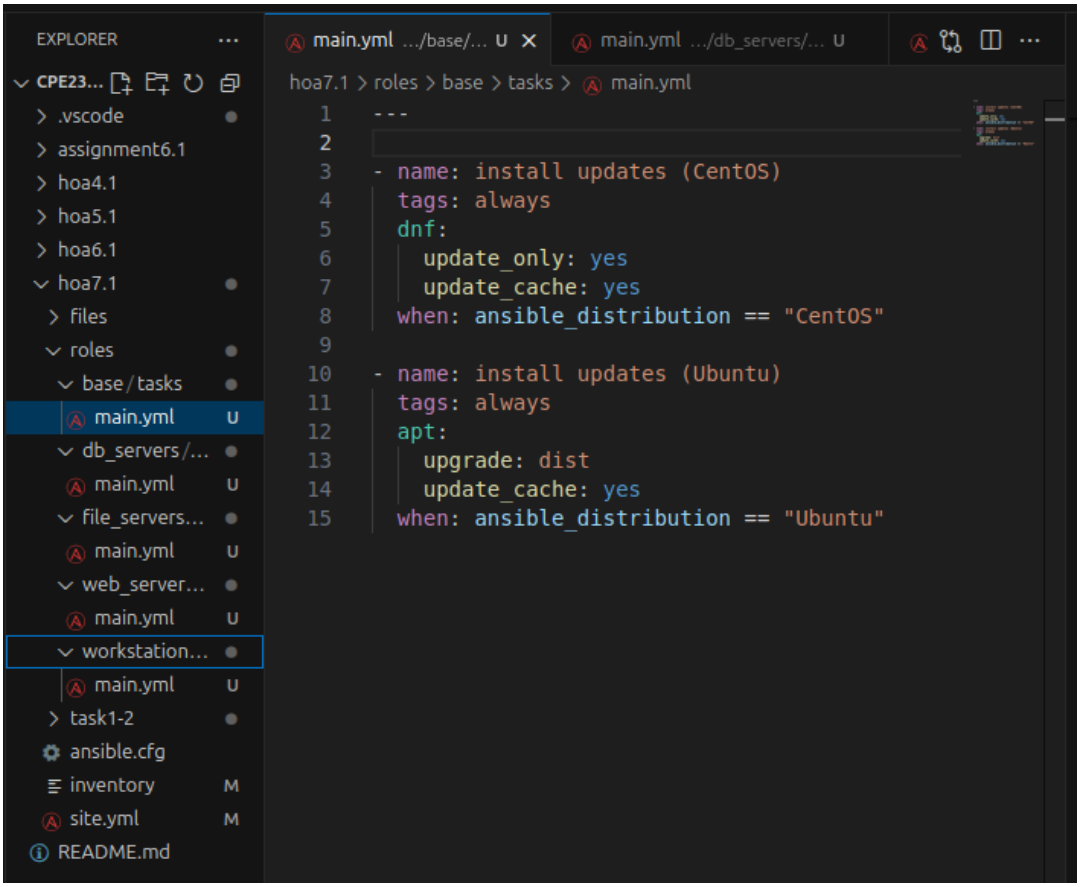
Save the file and exit.

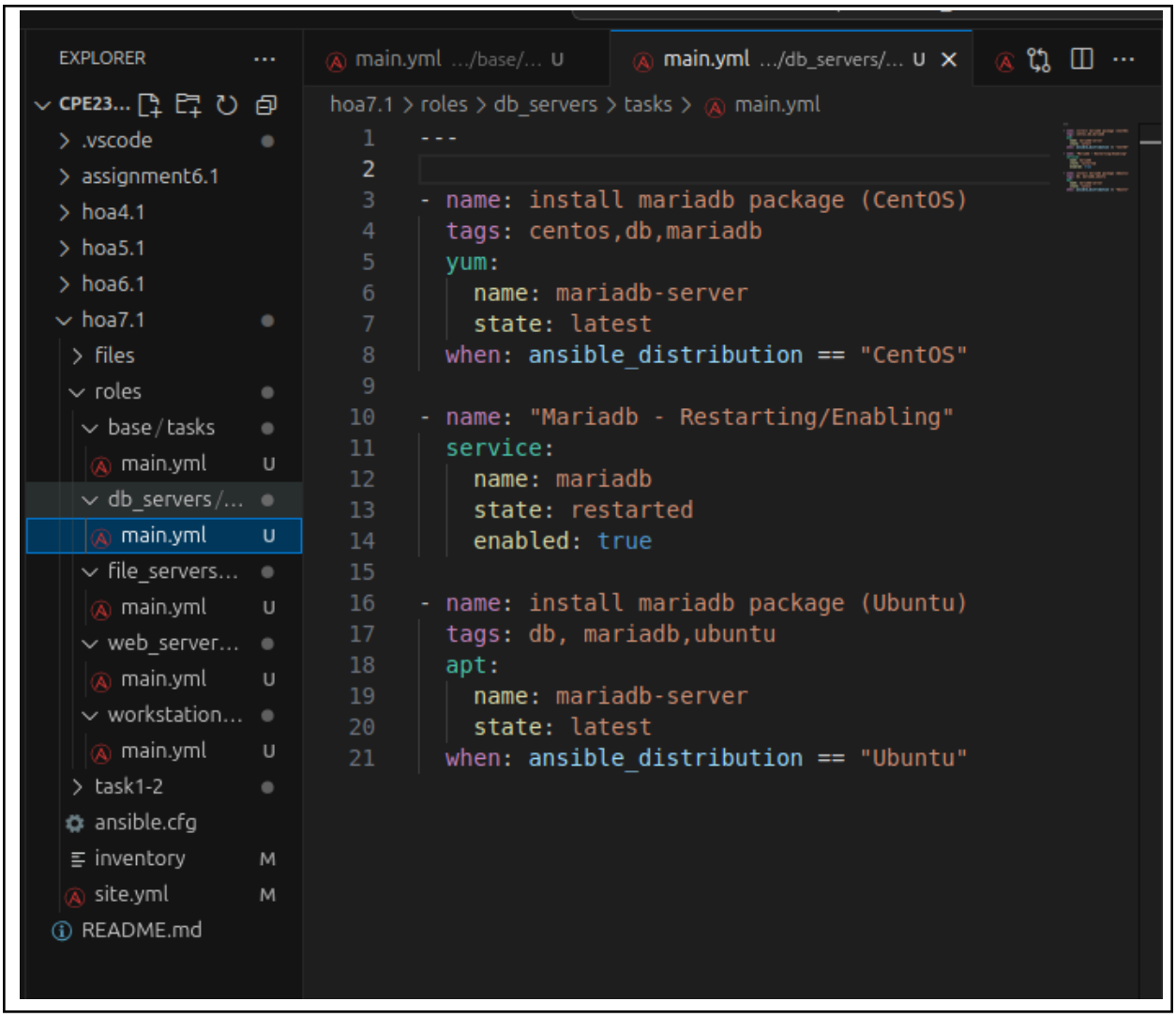
2. Under the same directory, create a new directory and name it roles. Enter the roles directory and create new directories: base, web_servers, file_servers,

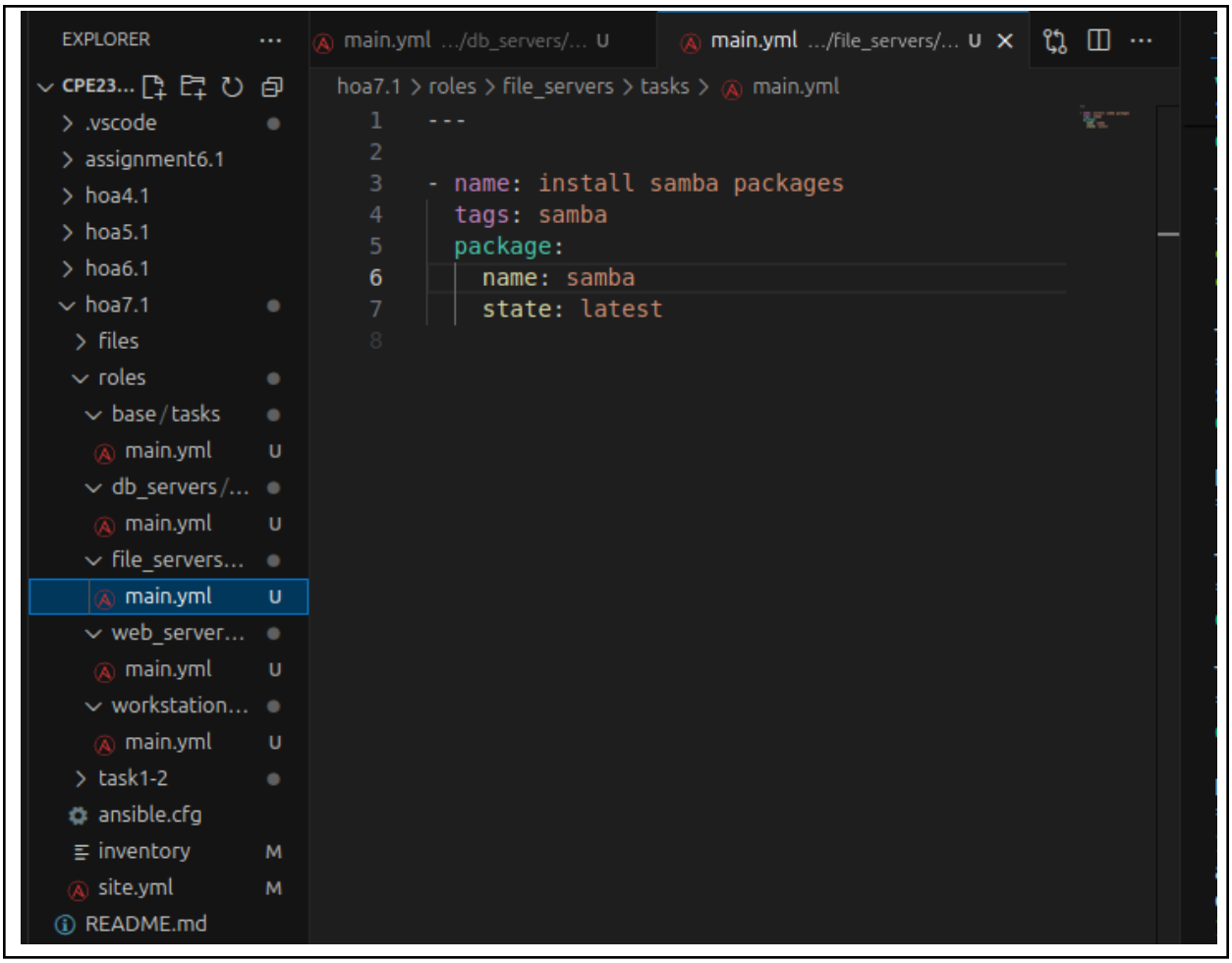
db_servers and workstations. For each directory, create a directory and name it tasks.




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.




EXPLORER
CPE23...
.vscode
assignment6.1
hoa4.1
hoa5.1
hoa6.1
hoa7.1
files
roles
base / tasks
main.yml U
db_servers /...
main.yml U
file_servers...
main.yml U
web_server...
main.yml U
workstation...
main.yml U
task1-2
ansible.cfg
inventory M
site.yml M
README.md
main.yml .../base/... U
main.yml .../db_servers/... U
hoa7.1 > roles > db_servers > tasks > main.yml
1 ---
2
3 - name: install mariadb package (CentOS)
4 tags: centos,db,mariadb
5 yum:
6 name: mariadb-server
7 state: latest
8 when: ansible_distribution == "CentOS"
9
10 - name: "Mariadb - Restarting/Enabling"
11 service:
12 name: mariadb
13 state: restarted
14 enabled: true
15
16 - name: install mariadb package (Ubuntu)
17 tags: db, mariadb,ubuntu
18 apt:
19 name: mariadb-server
20 state: latest
21 when: ansible_distribution == "Ubuntu"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task1-2
ansible.cfg
inventory M
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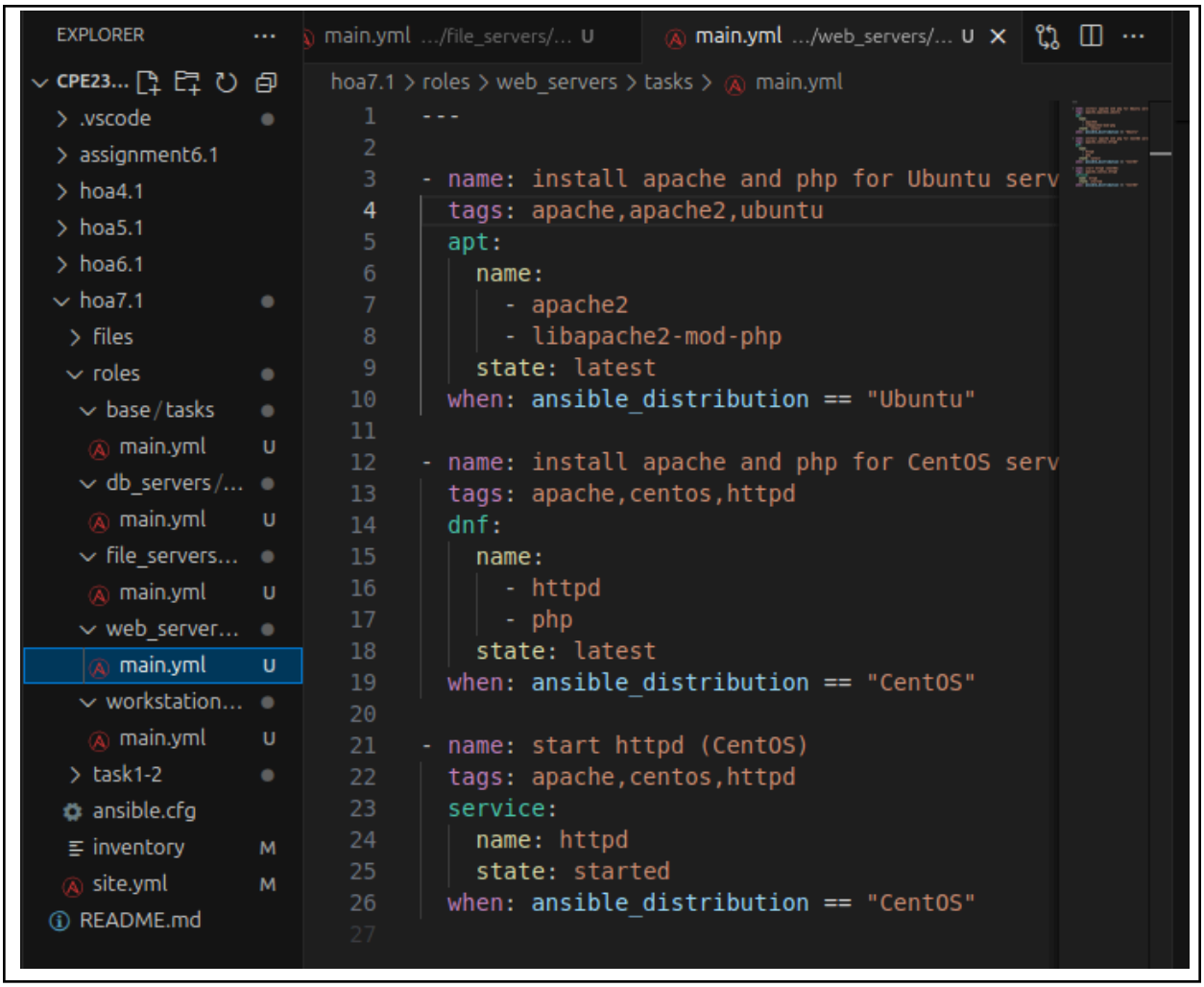
main.yml .../file_servers/... U
hoa7.1 > roles > file_servers > tasks > main.yml
1 ---
2
3 - name: install samba packages
4 tags: samba
5 package:
6 name: samba
7 state: latest
8


EXPLORER
main.yml .../file_servers/... U
main.yml .../web_servers/... U
hoa7.1 > roles > web_servers > tasks > main.yml
CPE23...
.vscode
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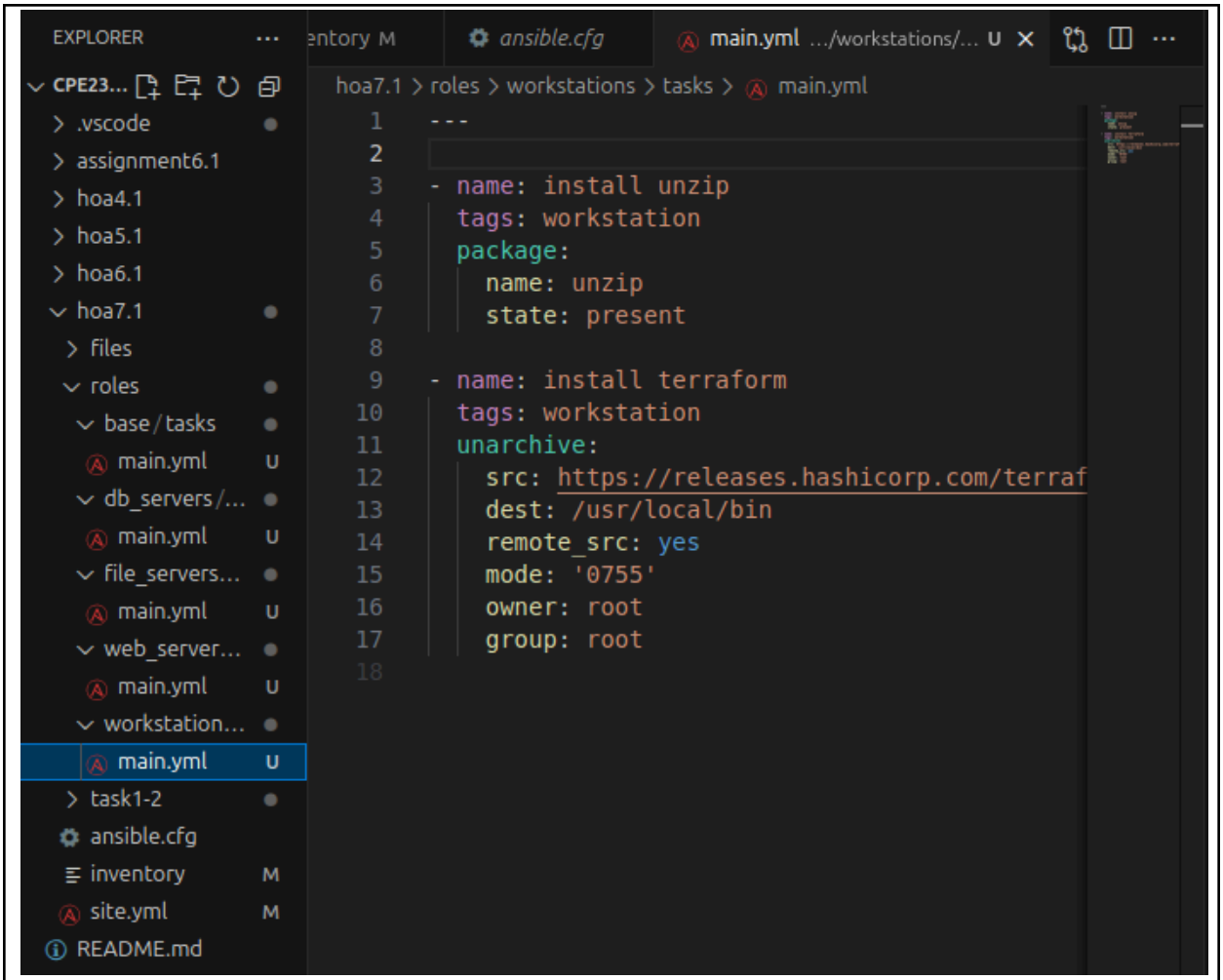
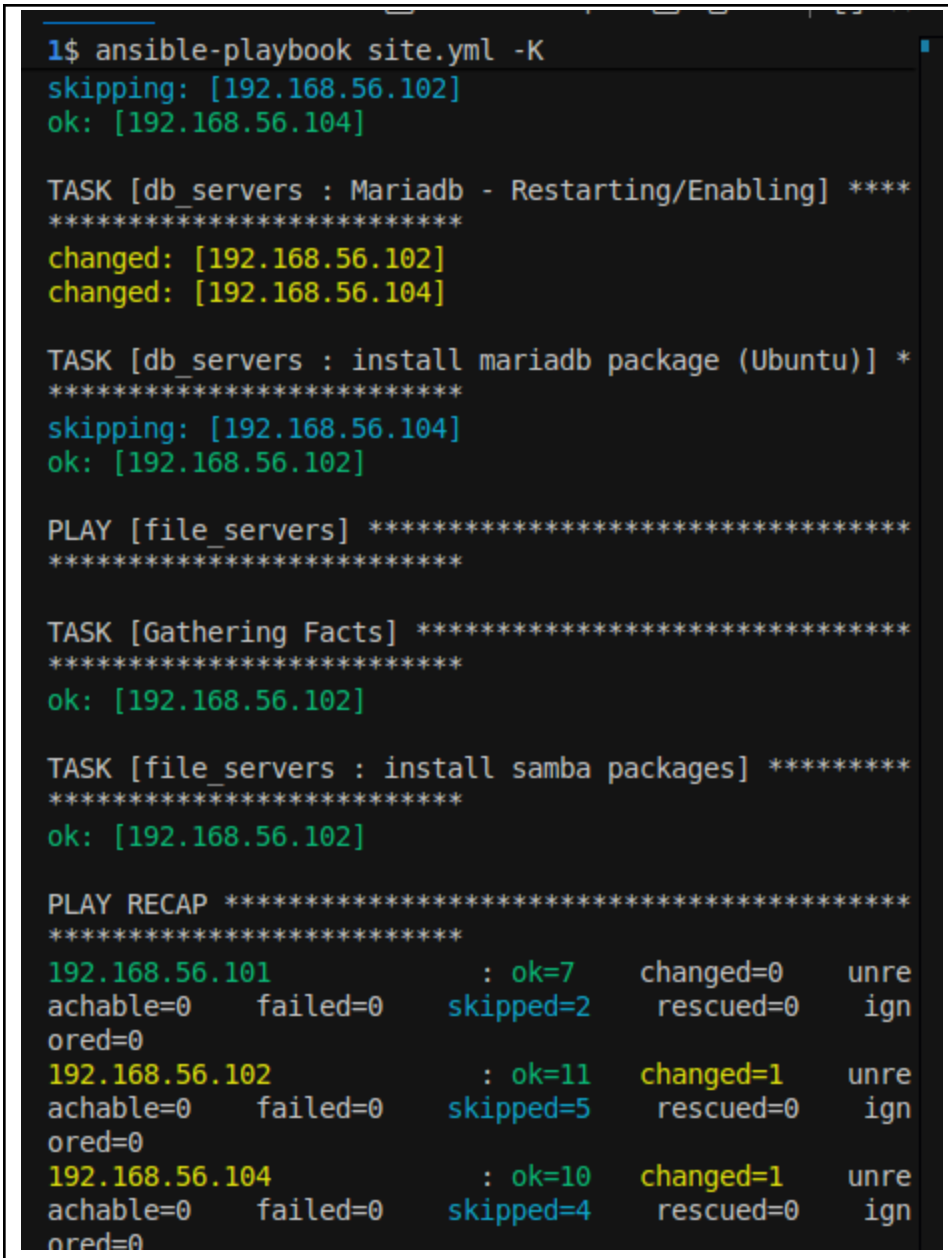
base / tasks
main.yml U
db_servers/...
main.yml U
file_servers...
main.yml U
web_server...
main.yml U
workstation...
main.yml U
task1-2
ansible.cfg
inventory M
site.yml M
README.md
1 ---
2
3 - name: install apache and php for Ubuntu serv
4 tags: apache,apache2,ubuntu
5 apt:
6 name:
7 - apache2
8 - libapache2-mod-php
9 state: latest
10 when: ansible_distribution == "Ubuntu"
11
12 - name: install apache and php for CentOS serv
13 tags: apache,centos,httpd
14 dnf:
15 name:
16 - httpd
17 - php
18 state: latest
19 when: ansible_distribution == "CentOS"
20
21 - name: start httpd (CentOS)
22 tags: apache,centos,httpd
23 service:
24 name: httpd
25 state: started
26 when: ansible_distribution == "CentOS"
27




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




- Omitted the rest, but as shown, the roles helped consolidate plays to only ‘hit’ the aforementioned IPs stated in the inventory file.

**Reflections:**

Answer the following:

1. **What is the importance of creating roles?**

- Defining roles in Ansible is essential for building clean, scalable automation workflows. Rather than cramming all tasks into a single bulky playbook, roles break things down into organized components like tasks, handlers, templates, variables, and files each housed in its own directory. This structure improves readability, simplifies maintenance, and makes it easier to expand your automation over time. Roles also encourage reuse: you can apply the same role across different hosts or projects without duplicating code. Ultimately, roles introduce modularity, streamline development, and boost efficiency in managing infrastructure.

**2. What is the importance of managing files?**

- Managing files in Ansible is key to keeping systems consistent and secure. It makes sure the right versions of config files, scripts, and binaries are deployed across all servers. This avoids mismatches, sets correct permissions, and saves time by automating file setup. It also helps keep all systems aligned with your intended setup.