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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.

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS                                  bash

HANS@LocalMachine:~/CPE31S1_VILLASENOR$ ansible-playbook --ask-become-pass site.yaml
TASK [Gathering Facts] *********************************************************************
ok: [192.168.56.102]
ok: [192.168.56.104]

TASK [copy default html file for site] *****************************************************
changed: [192.168.56.102]
changed: [192.168.56.104]

TASK [install apache and php for Ubuntu servers] *******************************************
skipping: [192.168.56.104]
ok: [192.168.56.102]

TASK [install apache and php for CentOs servers] *******************************************
skipping: [192.168.56.102]
                                                  Ln 83, Col 1  Spaces: 2  UTF-8  LF  {} YAML
```

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.

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS                                  ssh

HANS@LocalMachine:~/CPE31S1_VILLASENOR$ ssh HANS@192.168.56.102
Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

Last login: Wed Oct 15 02:17:42 2025 from 192.168.56.101
HANS@Server1:~$ -m -a cat /var/www/html/index.html
-m: command not found
HANS@Server1:~$ -m command -a cat /var/www/html/index.html
-m: command not found
HANS@Server1:~$ cat /var/www/html/index.html
<h1> Hello TIP </h1>

<p> Hello World </p>

HANS@Server1:~$
                                                  Ln 84, Col 1  Spaces: 2  UTF-8  LF  {} YAML
```

```
HANS@LocalMachine:~/CPE31S1_VILLASENOR$ ssh hans@192.168.56.104
Activate the web console with: systemctl enable --now cockpit.socket

Last login: Wed Oct 15 10:13:33 2025 from 192.168.56.101
[hans@localhost ~]$ cat /var/www/html/index.html
<h1> Hello TIP </h1>

<p> Hello World </p>

[hans@localhost ~]$
                                                  Ln 84, Col 1  Spaces: 2  UTF-8  LF  {} YAML
```

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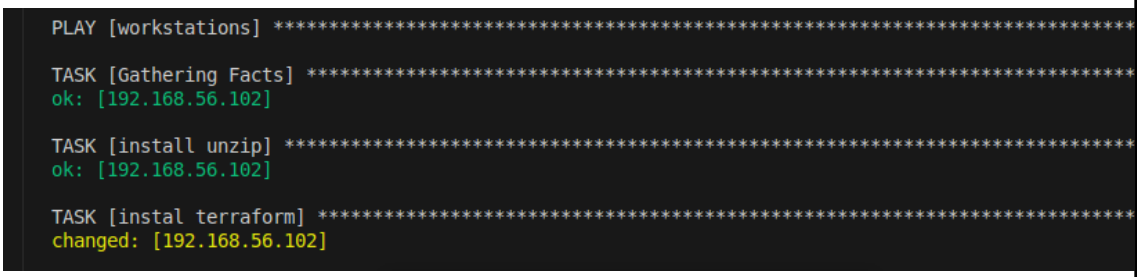
Task 2: Download a file and extract it to a remote server

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.



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

```
HANS@Server1:~$ terraform
Usage: terraform [-version] [-help] <command> [args]

The available commands for execution are listed below.
The most common, useful commands are shown first, followed by
less common or more advanced commands. If you're just getting
started with Terraform, stick with the common commands. For the
other commands, please read the help and docs before usage.

Common commands:
    apply              Builds or changes infrastructure
    console            Interactive console for Terraform interpolations
    destroy            Destroy Terraform-managed infrastructure
    env                Workspace management
    fmt                Rewrites config files to canonical format
    get                Download and install modules for the configuration
    graph              Create a visual graph of Terraform resources
    import             Import existing infrastructure into Terraform
    init               Initialize a Terraform working directory
    login              Obtain and save credentials for a remote host
    logout             Remove locally-stored credentials for a remote host
                                        Not Committed Yet  Ln 33, Col 68  Spaces: 2  UTF-8  LF  {} YAML
```

tas

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)

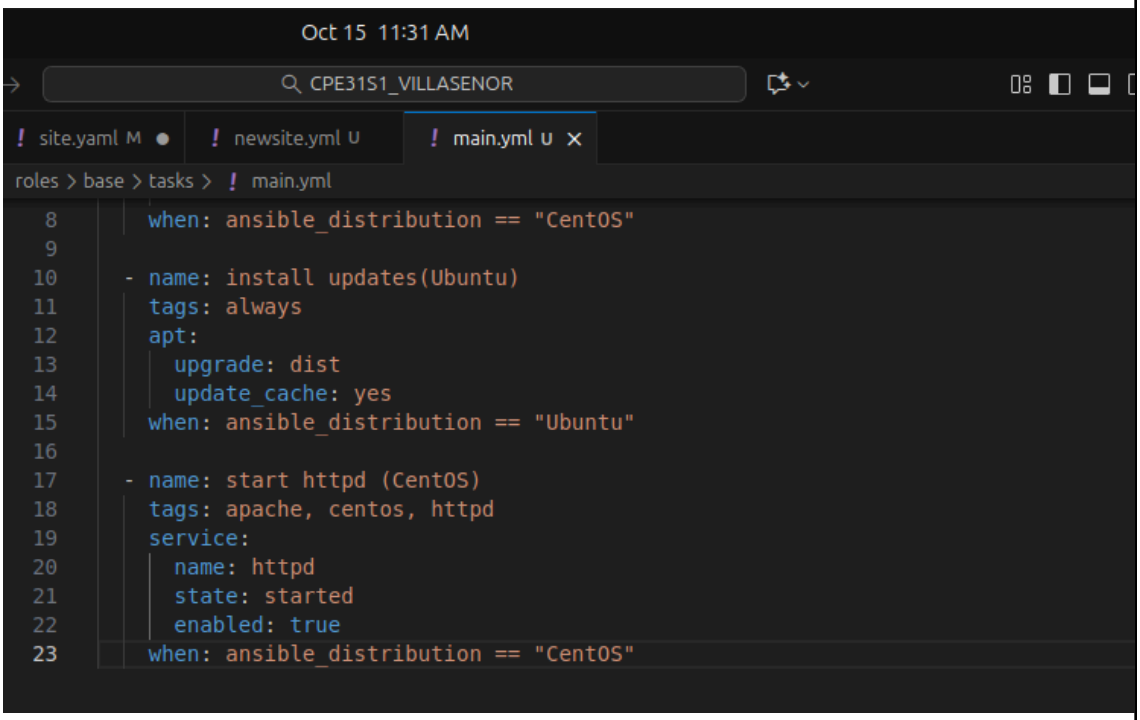
```
---
- hosts: all
  become: true
  pre_tasks:

  - 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
```

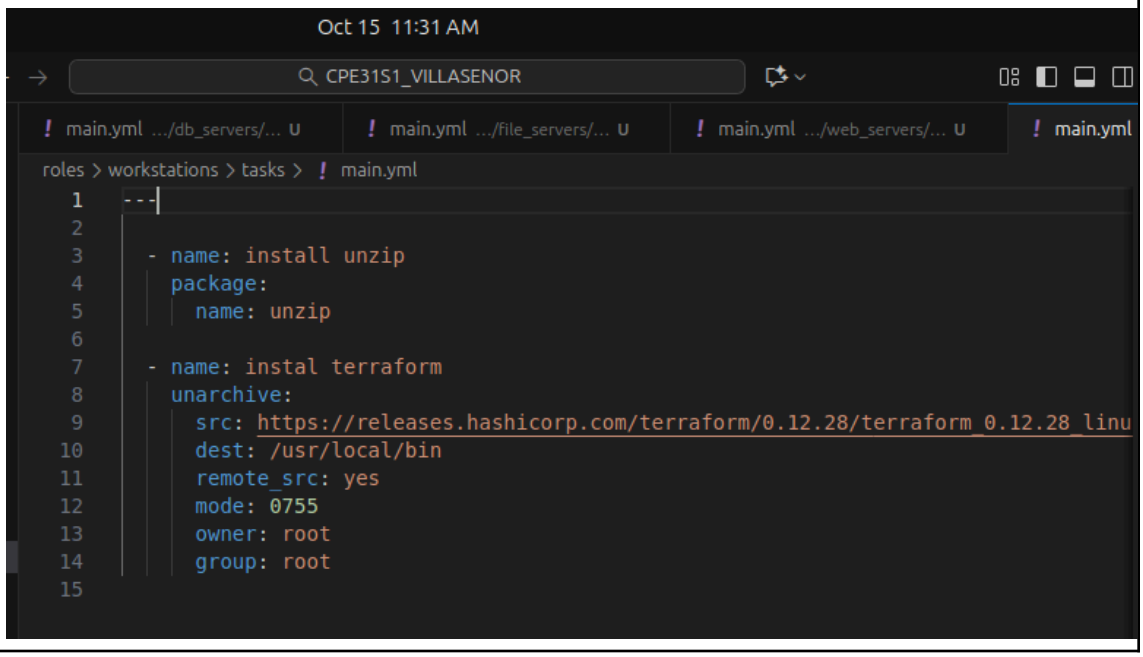
Save the file and exit.

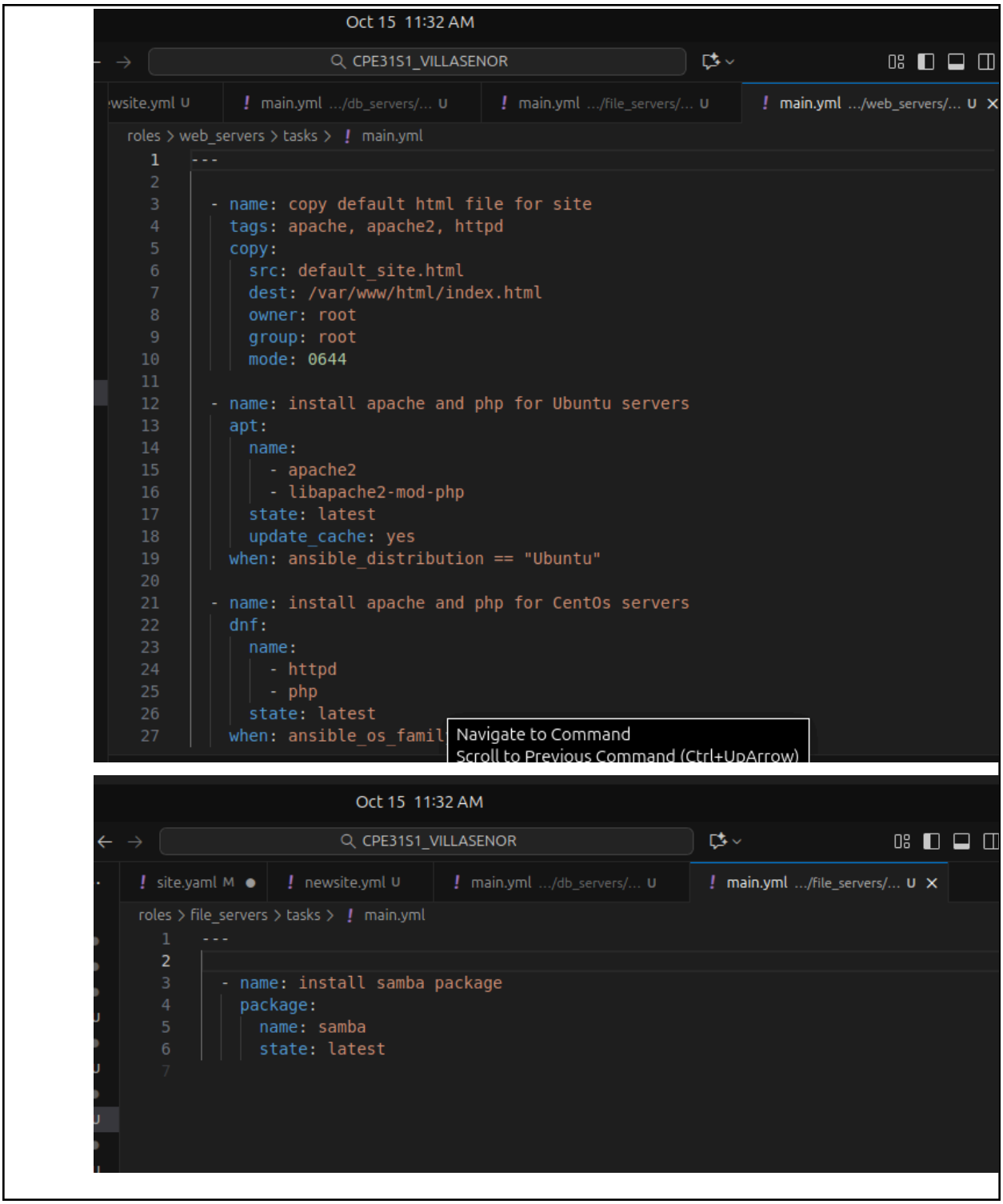
2. Under the same directory, create a new directory and name it roles. Enter the roles directory and create new directories: base, web_servers, file_servers,

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.

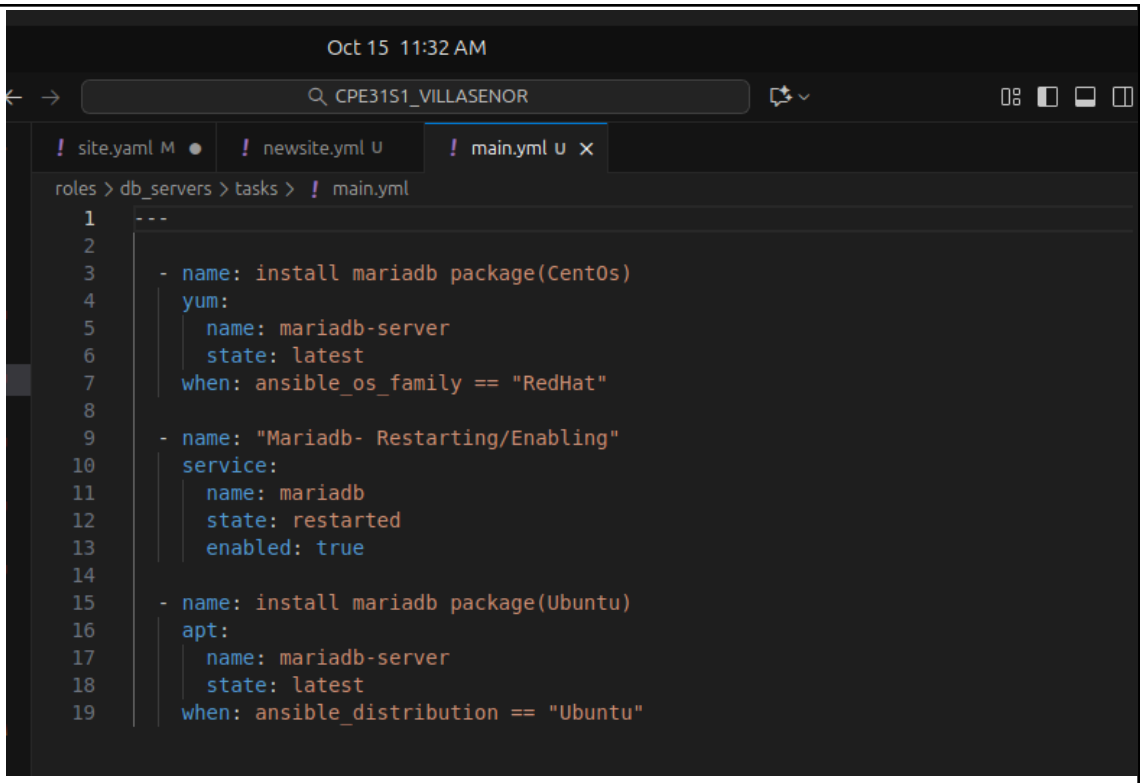





Oct 15 11:32 AM
CPE31S1_VILLASENOR
wsite.yml U
main.yml .../db_servers/... U
main.yml .../file_servers/... U
main.yml .../web_servers/... U
roles > web_servers > tasks > main.yml

- 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: 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_os_famil
Navigate to Command
Scroll to Previous Command (Ctrl+UpArrow)
Oct 15 11:32 AM
CPE31S1_VILLASENOR
site.yaml M
newsite.yml U
main.yml .../db_servers/... U
main.yml .../file_servers/... U
roles > file_servers > tasks > main.yml

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



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

Reflections:

Answer the following:

1. What is the importance of creating roles?
   Roles help keep things organized especially in playbook.
2. What is the importance of managing files?

   Files control how your system works.