

<b>Name: Dean Lenard Perez</b>	<b>Date Performed: 11/10/24</b>
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<b>Instructor: Engr. Robin Valenzuela</b>	<b>Semester and SY: 2024-2025</b>
<b>Activity 7: Managing Files and Creating Roles in Ansible</b>	
<b>1. Objectives:</b> 1.1 Manage files in remote servers 1.2 Implement roles in ansible	
<b>2. Discussion:</b> 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.	
<b>Task 1: Create a file and copy it to remote servers</b>  1. Using the previous directory we created, create a directory, and named it " <b>files</b> ." Create a file inside that directory and name it " <b>default_site.html</b> ." 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. <div> <pre>dldperez@control:~/HOA_7.1/files\$ cat default_site.html &lt;!DOCTYPE html&gt; &lt;html&gt; &lt;body&gt;     &lt;p&gt; This is Linux &lt;/p&gt; &lt;/body&gt; &lt;/html&gt; dldperez@control:~/HOA_7.1/files\$</pre> </div>	
2. Edit the <b>site.yml</b> file and just below the <b>web_servers</b> play, create a new file to copy the default html file for site: <ul style="list-style-type: none"> <li>- name: copy default html file for site <div> <pre>tags: apache, apache2, httpd copy:   src: default_site.html   dest: /var/www/html/index.html   owner: root   group: root   mode: 0644</pre> </div> </li> </ul>	

```
dldperez@control: ~/HOA_7.1
File Edit View Search Terminal Help
GNU nano 2.9.3 site.yml

# owner: root
# group: root

- hosts: web_servers
  become: true
  tasks:

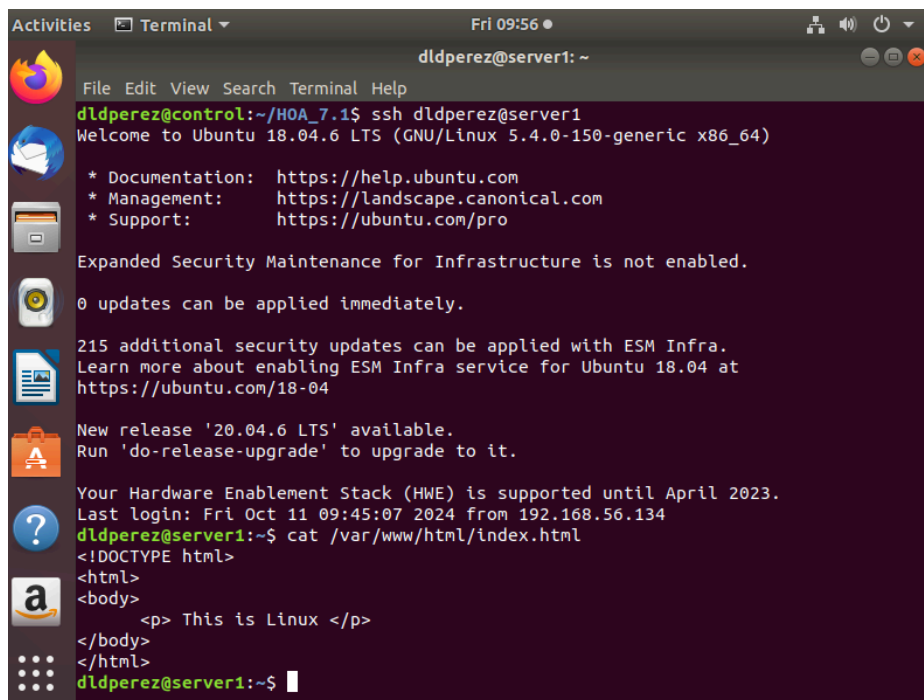
  - name: copy default html file for site
    tags: apache,apache2,httpd
    copy:
      src: default_site.html
      dest: /var/www/html/index.html
      owner: root
      group: root
      mode: 0644
```

### Configured site.yml

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

It changed on the 192.168.56.135 that is the web\_server.

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.



```
Activities Terminal Fri 09:56
dldperez@server1: ~
File Edit View Search Terminal Help
dldperez@control:~/HOA_7.1$ ssh dldperez@server1
Welcome to Ubuntu 18.04.6 LTS (GNU/Linux 5.4.0-150-generic x86_64)

* Documentation:  https://help.ubuntu.com
* Management:    https://landscape.canonical.com
* Support:       https://ubuntu.com/pro

Expanded Security Maintenance for Infrastructure is not enabled.

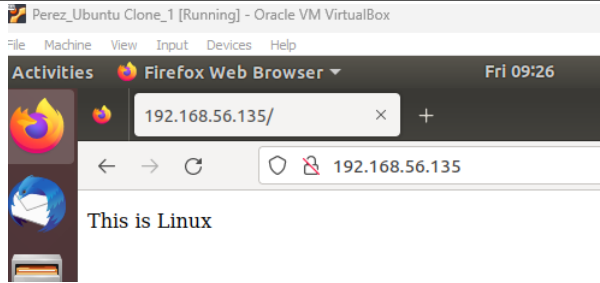
0 updates can be applied immediately.

215 additional security updates can be applied with ESM Infra.
Learn more about enabling ESM Infra service for Ubuntu 18.04 at
https://ubuntu.com/18-04

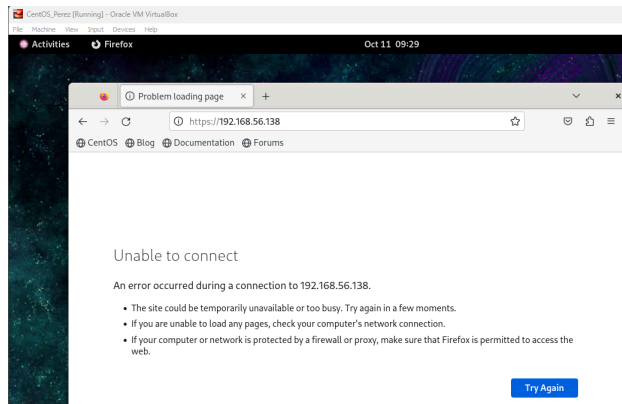
New release '20.04.6 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

Your Hardware Enablement Stack (HWE) is supported until April 2023.
Last login: Fri Oct 11 09:45:07 2024 from 192.168.56.134
dldperez@server1:~$ cat /var/www/html/index.html
<!DOCTYPE html>
<html>
<body>
  <p> This is Linux </p>
</body>
</html>
dldperez@server1:~$
```

It was evident on server1. We can see that it was copied.



The configuration was evident in the web\_server when I put the IP address.

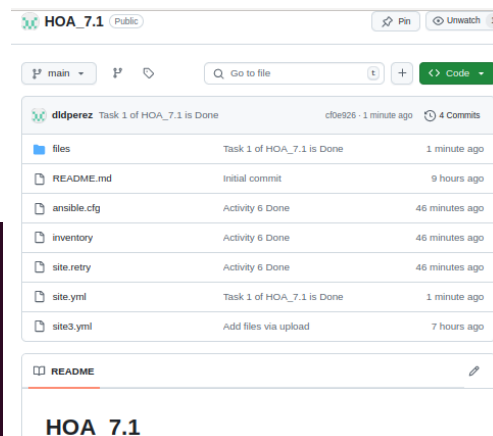


Nothing shown because the configuration is only for the web\_servers not the db\_servers.

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

```
dldperez@control:~/HOA_7.1$ git add .
dldperez@control:~/HOA_7.1$ git commit -m "Task 1 of HOA_7.1 is Done"
[main cf0e926] Task 1 of HOA_7.1 is Done
 2 files changed, 8 insertions(+), 13 deletions(-)
dldperez@control:~/HOA_7.1$ git push origin main
Counting objects: 5, done.
Delta compression using up to 3 threads.
Compressing objects: 100% (4/4), done.
Writing objects: 100% (5/5), 503 bytes | 503.00 KiB/s, done.
Total 5 (delta 2), reused 0 (delta 0)
remote: Resolving deltas: 100% (2/2), completed with 2 local objects.
To github.com:dldperez/HOA_7.1.git
 f7700f5..cf0e926  main -> main
```

Save/Sync



Repository in github

The repository was updated in github.

## 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\\_a  
md64.zip](https://releases.hashicorp.com/terraform/0.12.28/terraform_0.12.28_linux_amd64.zip)

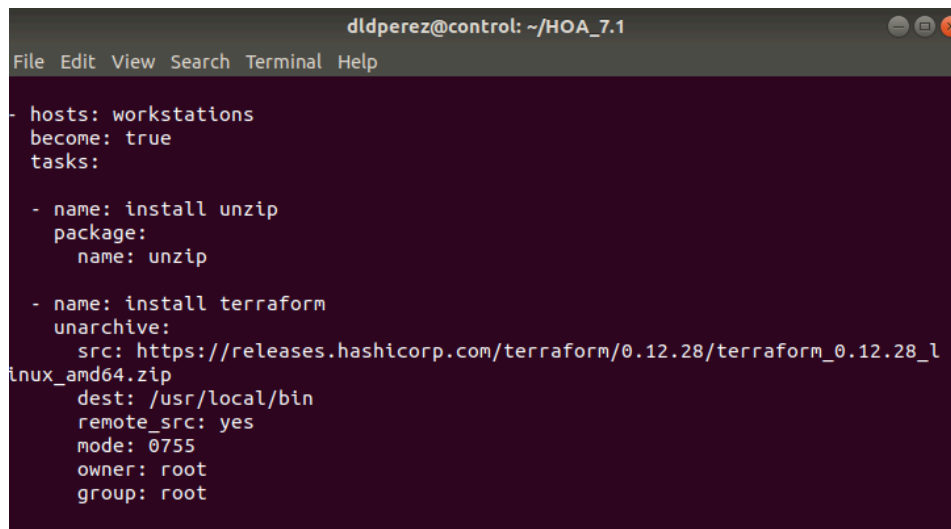
dest: /usr/local/bin

remote\_src: yes

mode: 0755

owner: root

group: root

A screenshot of a terminal window titled 'dldperez@control: ~/HOA\_7.1'. The terminal displays the following Ansible playbook content:

```
- 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
```

Configured site.yml.

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

```
dldperez@control: ~/HOA_7.1
File Edit View Search Terminal Help
GNU nano 2.9.3 inventory

[web_servers]
192.168.56.135 ansible_user=dldperez
#ubuntu server1

[db_servers]
192.168.56.138 ansible_user=dldperez
#centos server2

[file_servers]
192.168.56.139 ansible_user=dldperez
#ubuntu server3

[workstation]
192.168.56.139 ansible_user=dldperez
#ubuntu server3
```

I used the server3 for the remote workstation.

3. Run the playbook. Describe the output.

```
Activities Terminal Fri 10:02
dldperez@control: ~/HOA_7.1
File Edit View Search Terminal Help
ok: [192.168.56.139]
TASK [install unzip] *****
*
ok: [192.168.56.139]
TASK [install terraform] *****
*
changed: [192.168.56.139]
PLAY [web_servers] *****
*
```

The task was successful for installing unzip and installing terraform.

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

```
Activities Terminal Fri 10:14
dldperez@server3: ~
File Edit View Search Terminal Help
dldperez@server3:~$
dldperez@server3:~$
dldperez@server3:~$ terraform --version
Terraform v0.12.28

Your version of Terraform is out of date! The latest version
is 1.9.7. You can update by downloading from https://www.terraform.io/downloads
.html
dldperez@server3:~$
```

The command should “be terraform –version”. This command shows that the terraform is installed and its version is v0.12.28.

**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.

```
dldperez@control:~/HOA_7.1$ cat site.yml
---
- 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_server
  become: true
  roles:
    - file_server
```

I created a new file entitled old\_site.yml to save the old configuration and I configure the site.yml to the new configuration.

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



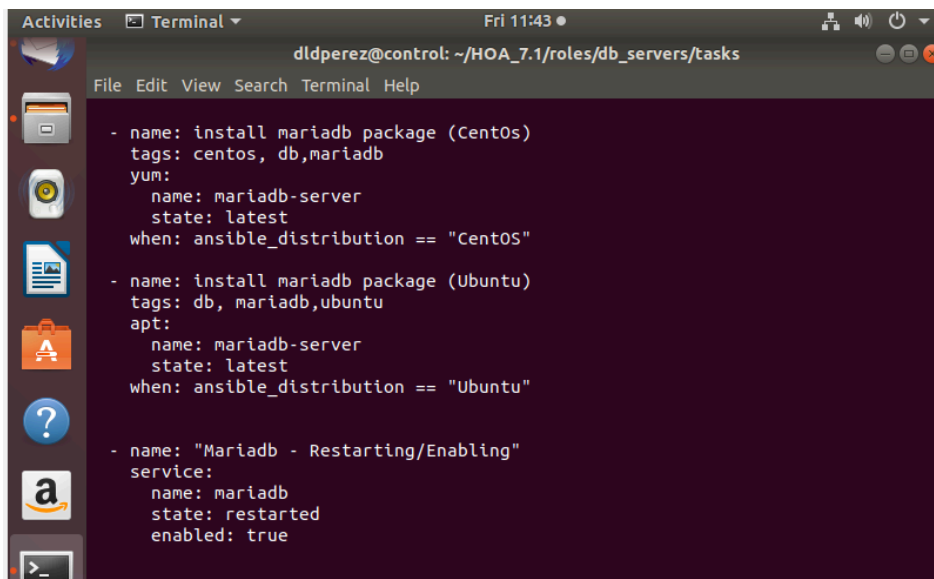
tasks.

```
dldperez@control: ~/HOA_7.1/roles
File Edit View Search Terminal Help
dldperez@control:~/HOA_7.1/roles$ ls
base db_servers file_servers web_servers workstations
```

Directories inside the directory roles. And inside those directories has their own directory named tasks.

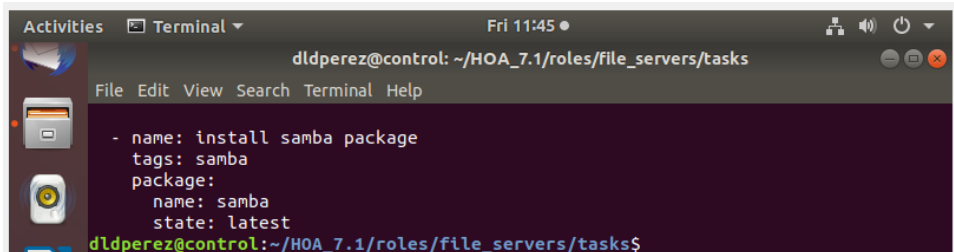
3. Go to tasks for all directory and create a file. Name it main.yml. In each of the tasks for all directories, copy and paste the code from the old site.yml file. Show all contents of main.yml files for all tasks.

I only put the corresponding task for each directories. I commented out the tasks that are not in their own directory.

A terminal window titled 'dldperez@control: ~/HOA\_7.1/roles/db\_servers/tasks' showing the contents of a YAML file. The file contains three tasks: installing mariadb on CentOS, installing mariadb on Ubuntu, and restarting/enabling the mariadb service.

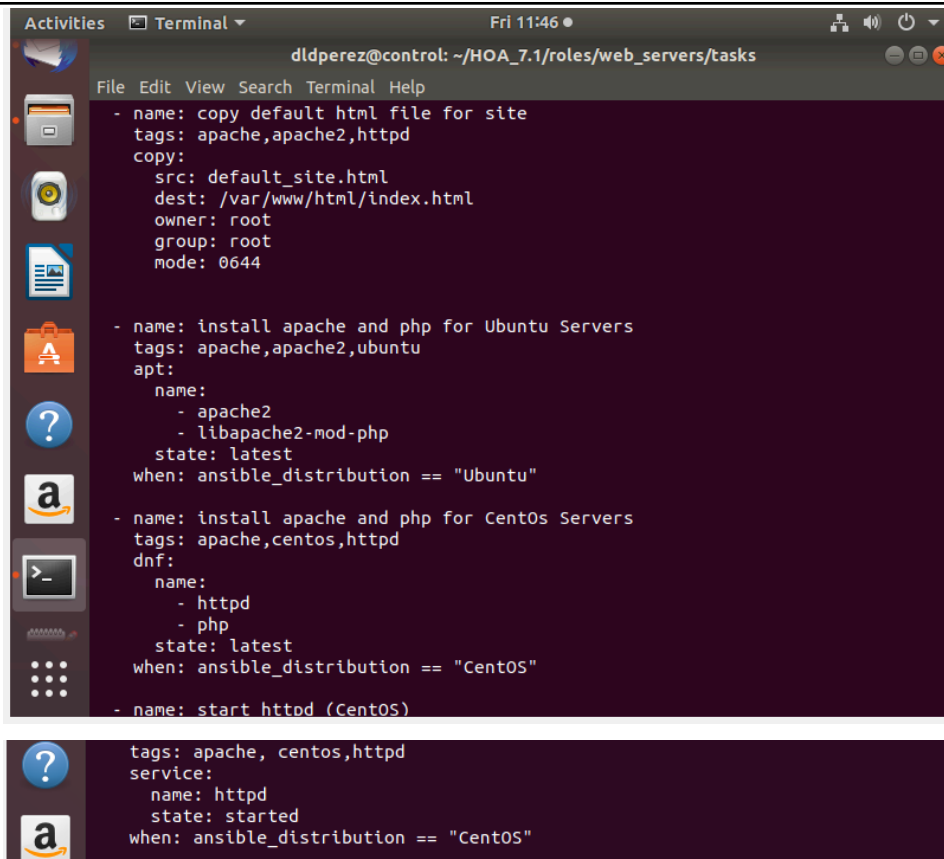
```
dldperez@control: ~/HOA_7.1/roles/db_servers/tasks
File Edit View Search Terminal Help
- name: install mariadb package (CentOs)
  tags: centos, db,mariadb
  yum:
    name: mariadb-server
    state: latest
    when: ansible_distribution == "CentOS"
- name: install mariadb package (Ubuntu)
  tags: db, mariadb,ubuntu
  apt:
    name: mariadb-server
    state: latest
    when: ansible_distribution == "Ubuntu"
- name: "Mariadb - Restarting/Enabling"
  service:
    name: mariadb
    state: restarted
    enabled: true
```

/HOA\_7.1/roles/db\_servers/tasks/main.yml

A terminal window titled 'dldperez@control: ~/HOA\_7.1/roles/file\_servers/tasks' showing the contents of a YAML file. The file contains one task: installing the samba package.

```
dldperez@control: ~/HOA_7.1/roles/file_servers/tasks
File Edit View Search Terminal Help
- name: install samba package
  tags: samba
  package:
    name: samba
    state: latest
dldperez@control:~/HOA_7.1/roles/file_servers/tasks$
```

/HOA\_7.1/roles/file\_servers/tasks/main.yml

A terminal window titled 'Terminal' with the user 'dldperez@control' and the path '~/HOA\_7.1/roles/web\_servers/tasks'. The window displays the content of a YAML file with several tasks for installing and configuring web servers. The tasks are listed with their names, tags, and specific configuration details like source files, destinations, owners, groups, and modes. The tasks are for copying a default HTML file, installing Apache and PHP for Ubuntu and CentOS, and starting the httpd service on CentOS.

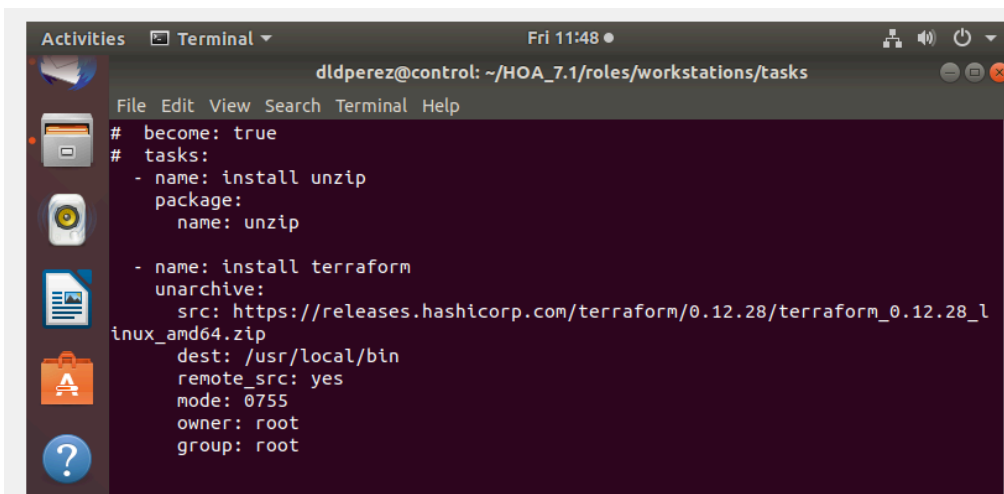
```
dldperez@control: ~/HOA_7.1/roles/web_servers/tasks
File Edit View Search Terminal Help
- name: copy default html file for site
  tags: apache,apache2,httpd
  copy:
    src: default_site.html
    dest: /var/www/html/index.html
    owner: root
    group: root
    mode: 0644

- name: install apache and php for Ubuntu Servers
  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"

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

/HOA\_7.1/roles/web\_servers/tasks/main.yml

A terminal window titled 'Terminal' with the user 'dldperez@control' and the path '~/HOA\_7.1/roles/workstations/tasks'. The window displays the content of a YAML file with tasks for installing unzip and terraform. The tasks are listed with their names, package names, and specific configuration details like source URLs, destinations, and modes. The tasks are for installing unzip and terraform, and unarchiving the terraform binary.

```
dldperez@control: ~/HOA_7.1/roles/workstations/tasks
File Edit View Search Terminal Help
# 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
```

/HOA\_7.1/roles/workstations/tasks/main.yml

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

```
Activities Terminal Fri 11:36 ●
dldperez@control: ~/HOA_7.1
File Edit View Search Terminal Help
dldperez@control:~/HOA_7.1$ nano site.yml
dldperez@control:~/HOA_7.1$ ansible-playbook --ask-become-pass site.yml
SUDO password:

PLAY [all] *****
*

TASK [Gathering Facts] *****
*
ok: [192.168.56.135]
[WARNING]: Module invocation had junk after the JSON data:
AttributeError("module 'platform' has no attribute 'dist'")
ok: [192.168.56.138]
ok: [192.168.56.139]

TASK [Update repository index (CentOS)] *****
*
skipping: [192.168.56.139]
skipping: [192.168.56.135]
fatal: [192.168.56.138]: FAILED! => {"msg": "The conditional check 'ansible_dis
tribution == \"CentOS\"' failed. The error was: error while evaluating conditio
nal (ansible_distribution == \"CentOS\"): 'ansible_distribution' is undefined\n
\nThe error appears to have been in '/home/dldperez/HOA_7.1/site.yml': line 6,
column 5, but may\nbe elsewhere in the file depending on the exact syntax probl
em.\n\nThe offending line appears to be:\n\n\n - name: Update repository index
(CentOS)\n    ^ here\n"}


```

```
Activities Terminal Fri 11:37 ●
dldperez@control: ~/HOA_7.1
File Edit View Search Terminal Help
(CentOS)\n    ^ here\n"}

TASK [install updates (Ubuntu)] *****
*
ok: [192.168.56.135]
ok: [192.168.56.139]

PLAY [all] *****
*

TASK [Gathering Facts] *****
*
ok: [192.168.56.135]
ok: [192.168.56.139]

PLAY [workstations] *****
*

TASK [Gathering Facts] *****
*
ok: [192.168.56.139]

TASK [workstations : install unzip] *****
*
ok: [192.168.56.139]

TASK [workstations : install terraform] *****
*
ok: [192.168.56.139]


```

```
Activities Terminal Fri 11:37 ● dldperez@control: ~/HOA_7.1
File Edit View Search Terminal Help
ok: [192.168.56.139]
TASK [workstations : install terraform] *****
*
ok: [192.168.56.139]
PLAY [web_servers] *****
*
TASK [Gathering Facts] *****
*
ok: [192.168.56.135]
TASK [web_servers : copy default html file for site] *****
*
ok: [192.168.56.135]
TASK [web_servers : install apache and php for Ubuntu Servers] *****
*
ok: [192.168.56.135]
TASK [web_servers : install apache and php for CentOS Servers] *****
*
skipping: [192.168.56.135]
TASK [web_servers : start httpd (CentOS)] *****
*
skipping: [192.168.56.135]
```

```
Activities Terminal Fri 11:37 ● dldperez@control: ~/HOA_7.1
File Edit View Search Terminal Help
skipping: [192.168.56.135]
TASK [web_servers : start httpd (CentOS)] *****
*
skipping: [192.168.56.135]
PLAY [db_servers] *****
*
PLAY [file_servers] *****
*
TASK [Gathering Facts] *****
*
ok: [192.168.56.139]
TASK [file_servers : install samba package] *****
*
ok: [192.168.56.139]
    to retry, use: --limit @/home/dldperez/HOA_7.1/site.retry
PLAY RECAP *****
*
192.168.56.135      : ok=6    changed=0    unreachable=0    failed=0
192.168.56.138      : ok=1    changed=0    unreachable=0    failed=1
192.168.56.139      : ok=8    changed=0    unreachable=0    failed=0
dldperez@control:~/HOA_7.1$
```

The different tasks that are saved in different directories was executed.

**Reflections:**

Answer the following:

1. What is the importance of creating roles?

Creating roles is important because we can configure the servers using different ways when we use this. It allows servers to perform specific functions that we need. One of the advantages of it is that it is convenient because you can specify which servers will you use.

2. What is the importance of managing files?

Managing files is very important because there are a lot of files in a company. Even if it is a small company, you still need to manage the files so that every information that you need will be accessed immediately and it will be protected. If you manage your files poorly, some of the data might be lost, duplicated and corrupted.

Github link: [https://github.com/dldperez/HOA\\_7.1.git](https://github.com/dldperez/HOA_7.1.git)