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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

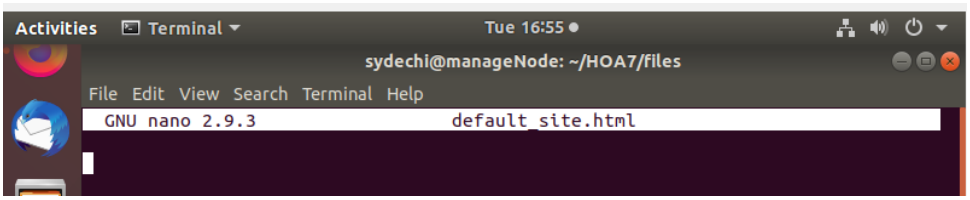
2. **Discussion**:

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, created 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.

```
sydechi@manageNode:~/HOA7$ cd files
sydechi@manageNode:~/HOA7/files$ sudo nano default_site.html
```



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
```

```
- 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
     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: copy default html file for site
```

```
File  Edit  View  Search  Terminal  Help
  GNU nano 2.9.3                    site.yml


  - name: install apache and php for CentOS servers
    tags: apache, centos, httpd
    dnf:
      name:
        - httpd
        - php
      state: latest
    when: ansible_distribution == "Centos"

  - name: copy default html file for site
    tags: apache, centos, 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.

```
ok: [192.168.56.7]
ok: [192.168.56.6]

TASK [install apache and php for Ubuntu servers] ******************************
*
ok: [192.168.56.7]
ok: [192.168.56.6]

TASK [install apache and php for CentOS servers] ******************************
*
skipping: [192.168.56.6]
skipping: [192.168.56.7]

TASK [copy default html file for site] ****************************************
*
ok: [192.168.56.6]
ok: [192.168.56.7]

PLAY RECAP ********************************************************************
*
192.168.56.6               : ok=3    changed=0    unreachable=0    failed=0
skipped=1    rescued=0    ignored=0
192.168.56.7               : ok=3    changed=0    unreachable=0    failed=0
skipped=1    rescued=0    ignored=0
```

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.
3. Run the playbook. Describe the output.
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.

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

Reflections:

Answer the following:

1. What is the importance of creating roles?
   - Ansible roles enable efficient file management and automation configuration, boosting code reuse and decreasing redundancy. They improve team collaboration, version control, and ensure automation is dependable and up to date. This simplifies file and configuration management in infrastructure automation.
2. What is the importance of managing files?
   - When paired with role-based automation, Ansible's file management simplifies system configurations, data, and applications, reducing manual errors and promoting efficient automation, resulting in a more manageable, scalable, and dependable infrastructure.

Conclusion:

- Through this activity it’s been kind of hard for me doing this because everytime we have activity my pc always has an error. I think someone is trippin my pc because my centOS is always being deleted or created by someone. but if my pc was not having an error this would be an easy task. overall this activity helps me to improve my skills in managing files and creating files in playbook then perform it through ansible.