ANSIBLE DOCUMENTATION

1. Installation of Ansible

sudo apt-get update
sudo apt-get install ansible –y

```
PS D:\Ansible> wsl
cesar@MFSPUSLACNT:/mnt/d/Ansible$ ansible --version
ansible 2.10.8
  config file = None
  configured module search path = ['/home/cesar/.ansible/plugins/modules', '/usr/share/ansible/plugins/modules']
  ansible python module location = /usr/lib/python3/dist-packages/ansible
  executable location = /usr/bin/ansible
  python version = 3.10.12 (main, Jun 11 2023, 05:26:28) [GCC 11.4.0]
```

2. Set up SSH keys

ssh-keygen -t rsa

ssh-copy-id vagrant@192.168.33.15

```
cesar@MFSPUSLACNT:/mnt/d/Ansible$ ssh vagrant@192.168.33.15
Linux bullseye 5.10.0-32-amd64 #1 SMP Debian 5.10.223-1 (2024-08-10) x86_64

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the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

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permitted by applicable law.
Last login: Tue Sep 24 09:18:47 2024 from 10.0.2.2
vagrant@bullseye:~$
```

3. Create an inventory file and run Ansible ad-hoc command

cesar@MFSPUSLACNT: /mnt/d/Ansible

```
[web_servers]
192.168.33.15 ansible_ssh_user=vagrant
```

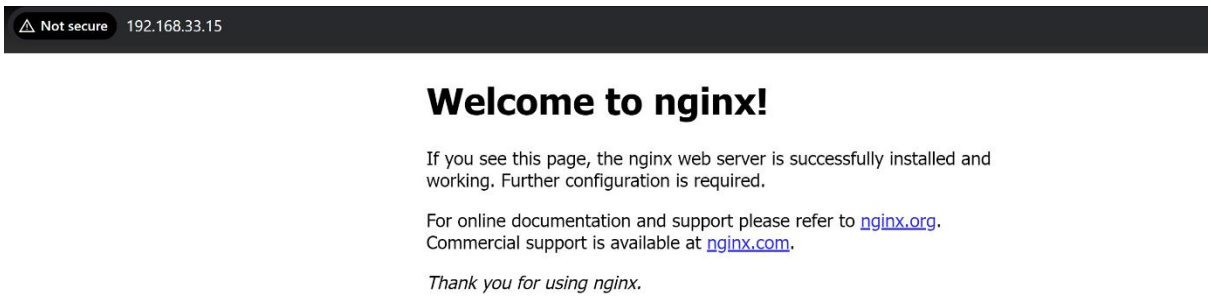
```
cesar@MFSPUSLACNT:/mnt/d/Ansible$ ansible -i hosts.ini -m ping all
192.168.33.15 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3"
    },
    "changed": false,
    "ping": "pong"
}
cesar@MFSPUSLACNT:/mnt/d/Ansible$
```

4. Create INGNIX Playbook and run the Playbook

```
esar@MFSPUSLACNT:/mnt/d/Ansible$ cat nginx_playbook.yml
---
- hosts: web_server
  become: yes
  tasks:
    - name: Install Nginx
      apt:
        name: nginx
        state: present
    - name:  Starting Nginx
      service:
        name: nginx
        state: started
        enabled: yes
```

```
esar@MFSPUSLACNT:/mnt/d/Ansible$ ansible-playbook -i hosts.ini nginx_playbook.yml

LAY [web_server] ***************************************************************************************************

ASK [Gathering Facts] **********************************************************************************************
k: [192.168.33.15]

ASK [Install Nginx] ************************************************************************************************
hanged: [192.168.33.15]

ASK [Staring N] ****************************************************************************************************
k: [192.168.33.15]

LAY RECAP **********************************************************************************************************
92.168.33.15               : ok=3    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

5. Verify Nginx Installation



6. Create a user to sudoers group using Ansible and copy SSH keys

```yaml
---
- hosts: web_server
  become: yes
  tasks:
    - name: Create user joe
      user:
        name: joe
        shell: /bin/bash
        groups: sudo
    - name: Create .ssh directory for 'joe'
      file:
        path: /home/joe/.ssh
        state: directory
        owner: joe
        group: joe
        mode: '0700'
    - name: Set up SSH authorized keys for 'joe'
      copy:
        src: /home/cesar/.ssh/id_rsa.pub
        dest: /home/joe/.ssh/authorized_keys
        owner: joe
        group: joe
        mode: '0600'
```

```
cesar@MFSPUSLACNT:/mnt/d/Ansible$ ansible-playbook -i hosts.ini user_playbook.yml

PLAY [web_server] ***********************************************************************************************************************************************************

TASK [Gathering Facts] ******************************************************************************************************************************************************
ok: [192.168.33.15]

TASK [Create user joe] ******************************************************************************************************************************************************
ok: [192.168.33.15]

TASK [Create .ssh directory for 'joe'] **************************************************************************************************************************************
changed: [192.168.33.15]

TASK [Set up SSH authorized keys for 'joe'] *********************************************************************************************************************************
changed: [192.168.33.15]

PLAY RECAP ******************************************************************************************************************************************************************
192.168.33.15              : ok=4    changed=2    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

```
cesar@MFSPUSLACNT:/mnt/d/Ansible$ ssh joe@192.168.33.15
Linux bullseye 5.10.0-32-amd64 #1 SMP Debian 5.10.223-1 (2024-08-10) x86_64

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joe@bullseye:~$
joe@bullseye:~$
joe@bullseye:~$ exit
```

7. **Deploy a based web application using Ansible.**

- Welcome page

```
 GNU nano 6.2
<!DOCTYPE html>
<html>
<head>
    <title>Welcome</title>
</head>
<body>
    <h1>Welcome to My Web Application!</h1>
    <p>This is the welcome page deployed using Ansible</p>
    <a href="about.html">About</a>
</body>
</html>
```

- About page

```
 GNU nano 6.2
<!DOCTYPE html>
<html>
<head>
    <title>About</title>
</head>
<body>
    <h1>About This Application</h1>
    <p>This is the about page.</p>
    <a href="welcome.html">Home</a>
</body>
</html>
```

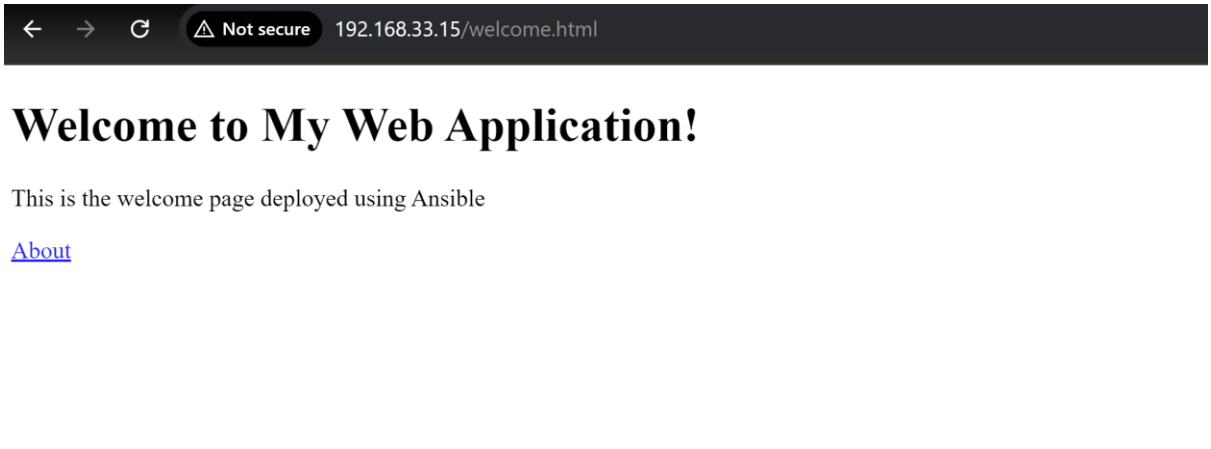
- webapp deployment playbook

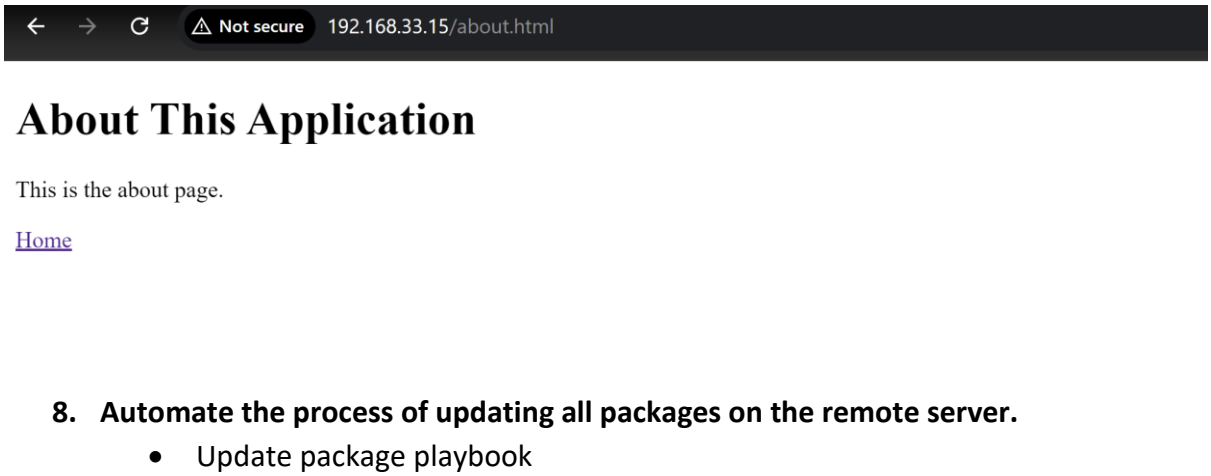
```
---
 name: Deploy HTML Web Application
 hosts: web_server
 become: yes

 tasks:
   - name: Copy HTML files to Nginx web directory
     copy:
       src: "{{ item }}"
       dest: /var/www/html/
       owner: www-data
       group: www-data
       mode: '0644'
     with_items:
       - welcome.html
       - about.html
```

- Run the playbook

```
cesar@MFSPUSLACNT:/mnt/d/Ansible/html_files$ ansible-playbook -i ../hosts.ini webapp_deployement.yml

PLAY [Deploy HTML Web Application] *********************************************************************

TASK [Gathering Facts] *********************************************************************************
ok: [192.168.33.15]

TASK [Copy HTML files to Nginx web directory] **********************************************************
changed: [192.168.33.15] => (item=welcome.html)
changed: [192.168.33.15] => (item=about.html)

PLAY RECAP *********************************************************************************************
192.168.33.15              : ok=2    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

- Verify the Web Application





8. **Automate the process of updating all packages on the remote server.**
    - Update package playbook

```
  GNU nano 6.2
- hosts: web_server
  become: yes
  tasks:
    - name: Update all packages
      apt:
        update_cache: yes
        upgrade: dist
```

- Cron job for updating the package playbook

```yaml
---
- name: Set up cron job for system updates
  hosts: web_server
  become: yes

  tasks:
    - name: Schedule system update
      cron:
        name: "system update"
        minute: "0"
        hour: "3"  # Runs at 3 AM daily
        job: "ansible-playbook /mnt/d/Ansible/system_update.yml"
        user: "vagrant"
```

```
cesar@MFSPUSLACNT:/mnt/d/Ansible$ ansible-playbook -i hosts.ini cron_jon.yml

PLAY [Set up cron job for system updates] ***************************************************************************************

TASK [Gathering Facts] *********************************************************************************************************
ok: [192.168.33.15]

TASK [Schedule system update] **************************************************************************************************
changed: [192.168.33.15]

PLAY RECAP *********************************************************************************************************************
192.168.33.15              : ok=2    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

- Check the crontab on the remote server

```
cesar@MFSPUSLACNT:/mnt/d/Ansible$ ssh vagrant@192.168.33.15
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Last login: Tue Sep 24 13:31:30 2024 from 192.168.33.1
vagrant@bullseye:~$ crontab -l
#Ansible: system update
0 3 * * * ansible-playbook /mnt/d/Ansible/system_update.yml
vagrant@bullseye:~$
```