Final Exam Hand On

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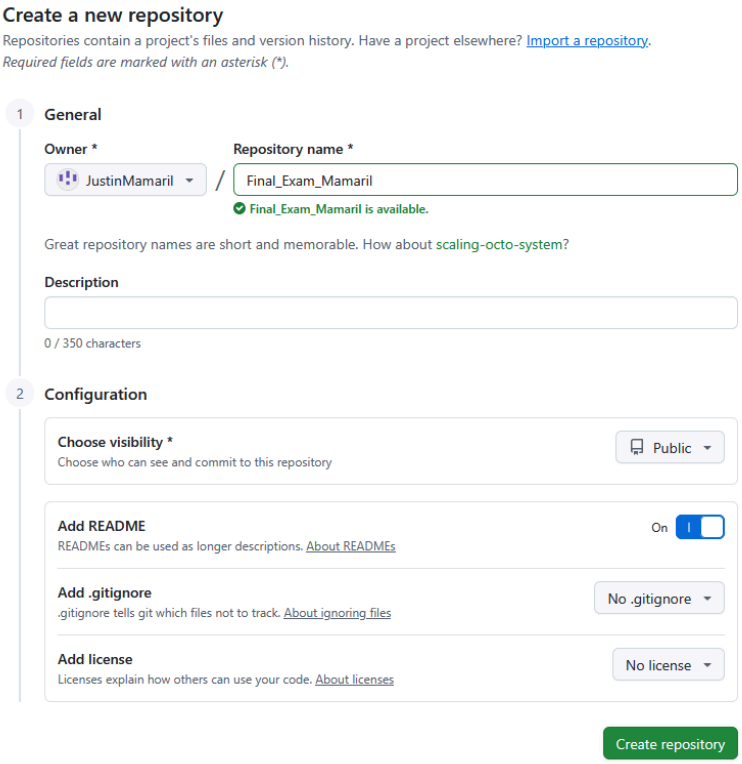
Section: CPE212-CPE31S2	Instructor: Engr. Robin Valenzuela
Tools Need:	
1. VM with Ubuntu, CentOS and Ansible installed 2. Web browser	
Procedure:	
1. Create a repository and label it as "Final_Exam_Surname"	



2. Clone your new repository in your VM

```
pc1@workstation:~/Finals_Mamaril$ git clone https://github.com/JustinMamaril/Final_Exam
_Mamaril.git
Cloning into 'Final_Exam_Mamaril'...
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
Receiving objects: 100% (3/3), done.
```

3. Create an Ansible playbook that does the following with an input of a config.yaml file and structure inventory file.

config.yaml

```
pc1@workstation:~/Finals_Mamaril$ sudo nano config.yaml
[sudo] password for pc1:
```

inventory.ini

```
pc1@workstation:~/Finals_Mamaril$ nano inventory.ini
  GNU nano 7.2                                inventory.ini
[all]
192.168.56.07
192.168.56.09 ansible_user=mamarilcentos
```

ansible.cfg

```
pc1@workstation:~/Finals_Mamaril$ nano ansible.cfg
  GNU nano 7.2                                 ansible.cfg
[default]
inventory=inventory.ini
private_key_file=~/.ssh/ansible
```

3.1 Install and configure one enterprise service that can be installed in Debian and Centos servers

Apache

```
pc1@workstation:~/Final_Exam_Mamaril/roles$ mkdir apache
pc1@workstation:~/Final_Exam_Mamaril/roles$ cd apache
pc1@workstation:~/Final_Exam_Mamaril/roles/apache$ mkdir tasks
pc1@workstation:~/Final_Exam_Mamaril/roles/apache$ cd tasks
pc1@workstation:~/Final_Exam_Mamaril/roles/apache/tasks$ sudo nano main.yaml
```

Main.yml contents

pc1@workstation: ~/Final_Exam_Mamaril/roles/apache/tasks

GNU nano 7.2 main.yaml

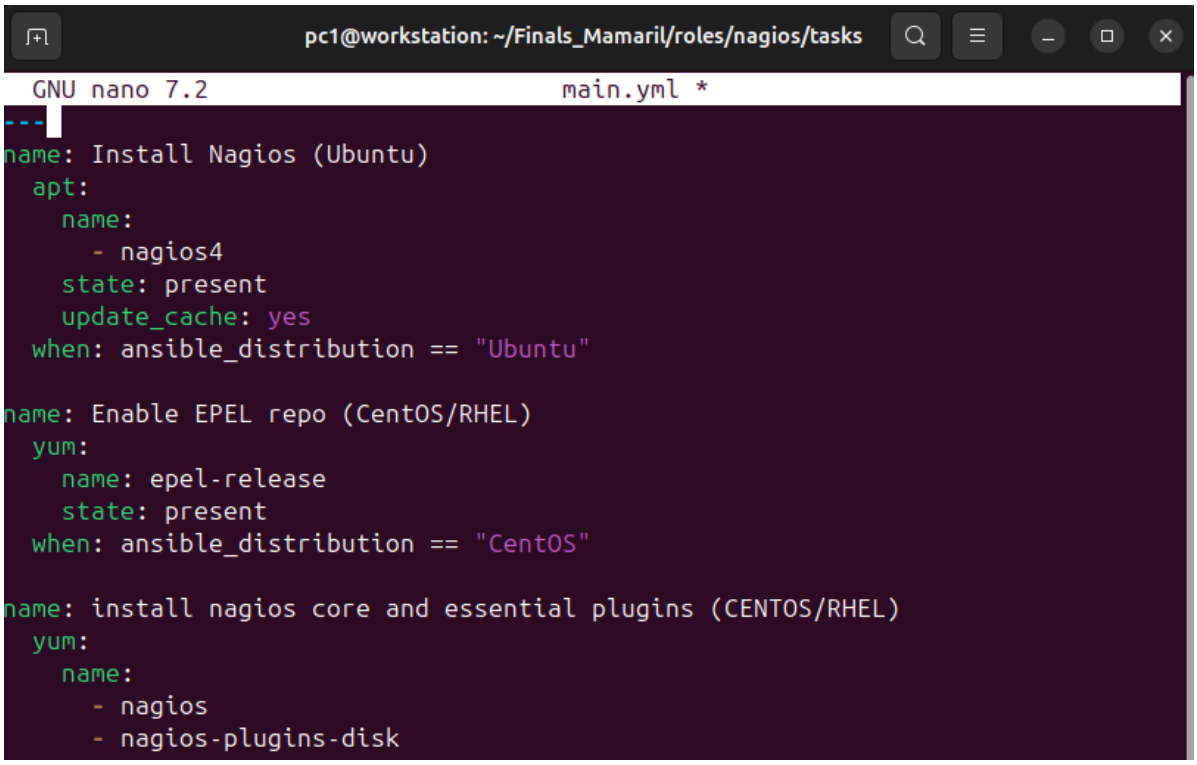
```
---
 - name: INstall apache and php for ubuntu servers
   apt:
   name---
- name: Install apache and php for Ubuntu Servers
  apt:
    name:
      - apache2
      - libapache2-mod-php
    state: latest
  when: ansible_distribution == "Ubuntu"

- name: Install apache and php for CentOS servers
  dnf:
    name:
      - httpd
      - php
    state: latest
  when: ansible_distribution == "CentOS"
```

3.2 Install and configure one monitoring tool that can be installed in Debian and Centos servers (if it is a stack there should be option of different host)

Nagios

```
pc1@workstation:~/Finals_Mamaril$ mkdir roles
pc1@workstation:~/Finals_Mamaril$ cd roles
pc1@workstation:~/Finals_Mamaril/roles$ mkdir nagios
pc1@workstation:~/Finals_Mamaril/roles$ cd nagios
pc1@workstation:~/Finals_Mamaril/roles/nagios$ mkdir tasks
pc1@workstation:~/Finals_Mamaril/roles/nagios$ cd ..
pc1@workstation:~/Finals_Mamaril/roles/nagios/tasks$ sudo nano main.yml
```

Main.yml contents



```
      - nagios-plugins-ping
      - nagios-plugins-procs
      - nagios-plugins-users
    state: present
  when: ansible_distribution == "CentOS"

name: Ensure Nagios service is started and enabled (UBUNTU)
  service:
    name: nagios4
    state: started
    enabled: true
  when: ansible_distribution == "Ubuntu"

name: ensure nagios service is started and enabled (CENTOS/RHEL)
  service:
    name: nagios
    state: started
    enabled: true
  when: ansible_distribution == "CentOS"
```

Config.yaml contents

```
  GNU nano 7.2                          config.yaml
---
hosts: all
  become: true
  pre_tasks:

  - name: Set the MOTD Message
  copy:
    content: "Ansible Managed by {{ ansible_user_id }}"
    dest: /etc/motd
    owner: root
    group: root
    mode: '0644'
```

```
hosts: all
  become: true
  roles:
    - nagios

hosts: all
  become: true
  roles:
    - apache
```

4.4 Change Motd as "Ansible Managed by <username>"

MOTD

```
  GNU nano 7.2                                config.yaml *
---
  - name: Set the MOTD Message
  copy:
    content: "Ansible Managed by {{ ansible_user_id }}"
    dest: /etc/motd
    owner: root
    group: root
    mode: '0644'
```

PROOF

```
pc1@workstation:~/Final_Exam_Mamaril$ ssh mamarilcentos@192.168.56.109
MOTD FOR TODEI:    Ansible Managed by root
Activate the web console with: systemctl enable --now cockpit.socket

Last login: Fri Nov 14 19:07:58 2025 from 192.168.56.108
[mamarilcentos@vbox ~]$
```

```
pc1@workstation:~/Final_Exam_Mamaril$ ssh pc1@192.168.56.106
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.14.0-33-generic x86_64)

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

Expanded Security Maintenance for Applications is not enabled.

87 updates can be applied immediately.
51 of these updates are standard security updates.
To see these additional updates run: apt list --upgradable

1 additional security update can be applied with ESM Apps.
Learn more about enabling ESM Apps service at https://ubuntu.com/esm

MOTD FOR TODEI:    Ansible Managed by root
Last login: Fri Nov 14 11:07:58 2025 from 192.168.56.108
```

4. Push and commit your files in GitHub

```
pc1@workstation:~/Final_Exam_Mamaril$ git push origin main
Enumerating objects: 13, done.
Counting objects: 100% (13/13), done.
Delta compression using up to 5 threads
Compressing objects: 100% (8/8), done.
Writing objects: 100% (12/12), 1.24 KiB | 1.24 MiB/s, done.
Total 12 (delta 0), reused 0 (delta 0), pack-reused 0
To github.com:JustinMamaril/Final_Exam_Mamaril.git
   53c6460..9baac49  main -> main
```

```
pc1@workstation:~/Final_Exam_Mamaril$ git add .
pc1@workstation:~/Final_Exam_Mamaril$ git commit -m "FINALS EXAM"
[main 9baac49] FINALS EXAM
 6 files changed, 69 insertions(+)
 create mode 100644 ansible.cfg
 create mode 100644 config.yaml
 create mode 100644 inventory.ini
 create mode 100644 roles/nagios/tasks/main.yml
 create mode 100644 roles/prometheus/tasks/main.yaml
 create mode 100644 roles/prometheus/tasks/main.yml
```

5. Make sure to show evidence of input (codes) process (codes successfully running) and output (evidence of installation)

Proofs

```
pc1@workstation:~/Final_Exam_Mamaril$ ansible-playbook -i inventory.ini config.y
aml -K
BECOME password:

PLAY [all] *********************************************************************

TASK [Gathering Facts] *********************************************************
ok: [192.168.56.106]
ok: [192.168.56.109]

PLAY [all] *********************************************************************

TASK [Gathering Facts] *********************************************************
ok: [192.168.56.106]
ok: [192.168.56.109]
```

```
TASK [nagios : Install Nagios] *************************************************
skipping: [192.168.56.109]
ok: [192.168.56.106]

TASK [nagios : Ensure Nagios is started and enabled (Ubuntu)] ******************
skipping: [192.168.56.109]
ok: [192.168.56.106]

TASK [nagios : Enable EPEL repo (CentOS)] **************************************
skipping: [192.168.56.106]
ok: [192.168.56.109]

TASK [nagios : Install Nagios core and essential (CentOS)] *********************
skipping: [192.168.56.106]
ok: [192.168.56.109]

TASK [nagios : Ensure Nagios service is started and enabled (CentOS)] **********
skipping: [192.168.56.106]
ok: [192.168.56.109]
```

```
PLAY [all] *********************************************************************

TASK [Gathering Facts] *********************************************************
ok: [192.168.56.109]
ok: [192.168.56.106]

TASK [apache : Install apache and php for Ubuntu Servers] **********************
skipping: [192.168.56.109]
ok: [192.168.56.106]

TASK [apache : Install apache and php for CentOS servers] **********************
skipping: [192.168.56.106]
ok: [192.168.56.109]

PLAY [all] *********************************************************************

TASK [Gathering Facts] *********************************************************
ok: [192.168.56.109]
ok: [192.168.56.106]
```

```
PLAY [all] *********************************************************************

TASK [Gathering Facts] *********************************************************
ok: [192.168.56.109]
ok: [192.168.56.106]

TASK [motd : Set the MOTD message] *********************************************
changed: [192.168.56.106]
changed: [192.168.56.109]

PLAY RECAP *********************************************************************
192.168.56.106             : ok=8    changed=1    unreachable=0    failed=0    s
kipped=4    rescued=0    ignored=0
192.168.56.109             : ok=9    changed=1    unreachable=0    failed=0    s
kipped=3    rescued=0    ignored=0
```

5. For your final exam to be counted, please paste your repository link as an answer in this exam.

https://github.com/JustinMamaril/Final_Exam_Mamaril.git

Note: Extra points if you will implement the said services via containerization.