Hands-on Final Exam	
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CPE212 - CPE31S21	Engr. Robin Valenzuela

Tools Needed:

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

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

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

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)

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

4. Push and commit your files in GitHub

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

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

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

Output:

Github Repo Link: https://github.com/yenabejar/Final_Exam_Abejar

```
  GNU nano 2.9.3                    /etc/ansible/hosts

#green.example.com
#blue.example.com
#192.168.100.1
#192.168.100.10

# Ex 2: A collection of hosts belonging to the 'webservers' group
[ubuntu]
192.168.56.130
[centos]
```

```
danielle@controlnode:~/Final_Exam_Abejar$ cat ansible.cfg
[defaults]
inventory = /etc/ansible/hosts
remote_user = danielle
host_key_checking = True
```

1. Create a repository and label it as "Final_Exam_Surname"
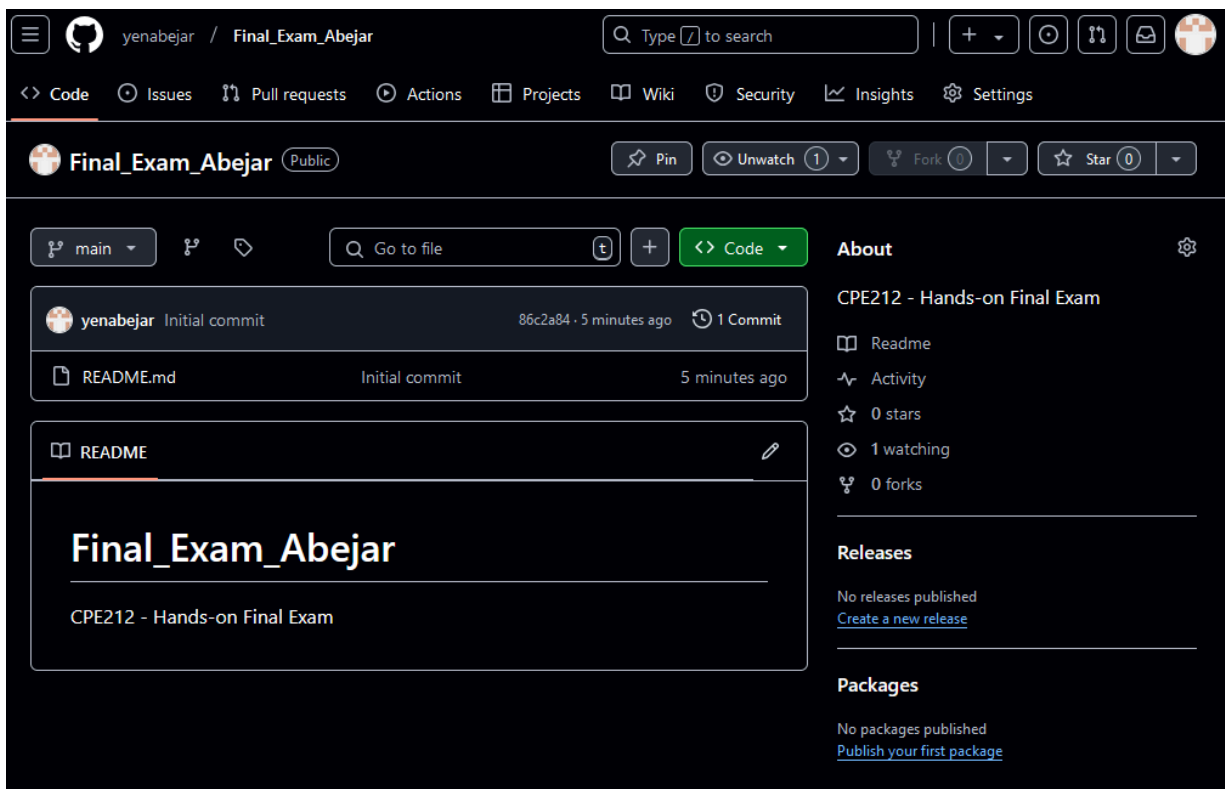
2. Clone your new repository in your VM

```
danielle@controlnode:~$ git clone git@github.com:yenabejar/Final_Exam_Abejar.gi
t
Cloning into 'Final_Exam_Abejar'...
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.
danielle@controlnode:~$
```

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

```
                    danielle@controlnode: ~/Final_Exam_Abejar
  Terminal
File  Edit  View  Search  Terminal  Help
  GNU nano 2.9.3                      config.yaml

---
 - hosts: all
   become: yes
   gather_facts: true
   pre_tasks:

   - name: update repo index & install updates for ubuntu
     tags: always
     apt:
       update_cache: yes
     changed_when: false
     when: ansible_distribution == "Ubuntu"

   - name: update repo index & install updates for centos
     tags: always
     yum:
       name: "*"
       update_cache: yes
     changed_when: false
     when: ansible_distribution == "CentOS"
```

Created the config.yaml playbook

```
danielle@controlnode:~/Final_Exam_Abejar$ tree roles
roles
├── apache2
│   └── tasks
│       └── main.yml
└── prometheus
    └── tasks
        └── main.yml
```

```
danielle@controlnode:~/Final_Exam_Abejar$ cat inventory
[ubuntu]
192.168.56.130

[centos]
192.168.56.132
```

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

```
danielle@controlnode:~/Final_Exam_Abejar$ mkdir roles
danielle@controlnode:~/Final_Exam_Abejar$ cd roles
danielle@controlnode:~/Final_Exam_Abejar/roles$ mkdir apache2 prometheus
danielle@controlnode:~/Final_Exam_Abejar/roles$ cd apache2
danielle@controlnode:~/Final_Exam_Abejar/roles/apache2$ ls
danielle@controlnode:~/Final_Exam_Abejar/roles/apache2$ mkdir tasks
danielle@controlnode:~/Final_Exam_Abejar/roles/apache2$ cd tasks
danielle@controlnode:~/Final_Exam_Abejar/roles/apache2/tasks$ sudo nano main.ym
l
```

Created a roles directory and under the roles, made two new directories called apache2 and prometheus. In apache2, I created a tasks directory and under that is where the main.yml for the enterprise service is located.

File Edit View Search Terminal Help

```
  GNU nano 2.9.3                          main.yml                          M

---
 - name: install apache & php for ubuntu servers
   tags: apache2-ubuntu
   apt:
     name:
       - apache2
       - libapache2-mod-php
     state: latest
     update_cache: yes
   when: ansible_distribution == "Ubuntu"

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

 - name: start httpd for centOS
   tags: centos-httpd
   service:
```

Created the main.yml for apache2 playbook

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)

```
danielle@controlnode:~/Final_Exam_Abejar/roles/apache2/tasks$ cd ..
danielle@controlnode:~/Final_Exam_Abejar/roles/apache2$ cd ..
danielle@controlnode:~/Final_Exam_Abejar/roles$ cd prometheus
danielle@controlnode:~/Final_Exam_Abejar/roles/prometheus$ mkdir tasks
danielle@controlnode:~/Final_Exam_Abejar/roles/prometheus$ cd tasks
danielle@controlnode:~/Final_Exam_Abejar/roles/prometheus/tasks$
```

Changed the directory and went to /prometheus where I made a new /tasks directory which is where I'll store the main.yml playbook for the monitoring tool

```
  GNU nano 2.9.3                        main.yml                          Mo

--█
- name: install prometheus in ubuntu
  tags: prome-ubuntu
  apt:
    name: prometheus
    state: latest
    update_cache: yes
  when: ansible_distribution == "Ubuntu"

- name: install snapd in centos
  tags: prome-centos
  yum:
    name:
      - snapd
    state: latest
    update_cache: yes
  when: ansible_distribution == "CentOS"

- name: enabling sockets
  tags: prome-centos
  command: systemctl enable --now snapd.socket
  when: ansible_distribution == "CentOS"
```

Made a main.yml playbook for prometheus to install in both ubuntu and centOS

```
TASK [update repo index & install updates for centos] ************************
*
skipping: [192.168.56.130]

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

TASK [Gathering Facts] ******************************************************
*
ok: [192.168.56.130]

TASK [prometheus : install prometheus in ubuntu] ****************************
*
changed: [192.168.56.130]

TASK [prometheus : install snapd in centos] *********************************
*
skipping: [192.168.56.130]

TASK [prometheus : enabling sockets] ****************************************
*
skipping: [192.168.56.130]

TASK [prometheus : install prometheus using snapd] **************************
*
skipping: [192.168.56.130]

TASK [apache2 : install apache & php for ubuntu servers] ********************
```

```
TASK [apache2 : install apache & php for ubuntu servers] ********************
*
ok: [192.168.56.130]

TASK [apache2 : install apache & php for centos servers] ********************
*
skipping: [192.168.56.130]

TASK [apache2 : start httpd for centOS] *************************************
*
skipping: [192.168.56.130]
        to retry, use: --limit @/home/danielle/Final_Exam_Abejar/config.retry

PLAY RECAP *****************************************************************
*
192.168.56.130              : ok=5    changed=1    unreachable=0    failed=0
```

```
danielle@server1:~$ systemctl status apache2
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset:
  Drop-In: /lib/systemd/system/apache2.service.d
           └─apache2-systemd.conf
   Active: active (running) since Fri 2024-12-13 09:57:31 +08; 26min ago
  Process: 934 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/SUCCE
 Main PID: 1378 (apache2)
    Tasks: 7 (limit: 2318)
   CGroup: /system.slice/apache2.service
           ├─1378 /usr/sbin/apache2 -k start
           ├─1795 /usr/sbin/apache2 -k start
           ├─1796 /usr/sbin/apache2 -k start
           ├─1799 /usr/sbin/apache2 -k start
           ├─1800 /usr/sbin/apache2 -k start
           ├─1801 /usr/sbin/apache2 -k start
           └─3820 /usr/sbin/apache2 -k start

Warning: Journal has been rotated since unit was started. Log output is incompl
lines 1-18/18 (END)
```

```
danielle@server1:~$ systemctl status prometheus
● prometheus.service - Monitoring system and time series database
   Loaded: loaded (/lib/systemd/system/prometheus.service; enabled; vendor pres
   Active: active (running) since Fri 2024-12-13 09:57:23 +08; 27min ago
     Docs: https://prometheus.io/docs/introduction/overview/
 Main PID: 801 (prometheus)
    Tasks: 9 (limit: 2318)
   CGroup: /system.slice/prometheus.service
           └─801 /usr/bin/prometheus

Warning: Journal has been rotated since unit was started. Log output is incompl
lines 1-10/10 (END)
```

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

```
  GNU nano 2.9.3                        config.yaml

   - name: update repo index & install updates for centos
     tags: always
     yum:
        name: "*"
        update_cache: yes
     changed_when: false
     when: ansible_distribution == "CentOS"

   - name: motd player
     copy:
        content: "Ansible Managed by Abejar\n"
        dest: /etc/motd

- hosts: all
  become: true
  roles:
     - prometheus
     - apache2
```

```
TASK [motd player] ***********************************************************
*
changed: [192.168.56.130]

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

TASK [Gathering Facts] *******************************************************
*
ok: [192.168.56.130]

TASK [prometheus : install prometheus in ubuntu] *****************************
*
ok: [192.168.56.130]
```

```
danielle@controlnode:~/Final_Exam_Abejar$ ssh danielle@192.168.56.130
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.

228 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.
Ansible Managed by Abejar
Last login: Fri Dec 13 10:23:06 2024 from 192.168.56.129
danielle@server1:~$
```

4. Push and commit your files in GitHub

```
danielle@controlnode:~/Final_Exam_Abejar$ git add *
danielle@controlnode:~/Final_Exam_Abejar$ git commit -m "Final Exam"
[main c7a0499] Final Exam
 6 files changed, 94 insertions(+)
 create mode 100644 ansible.cfg
 create mode 100644 config.yaml
 create mode 100644 inventory
 create mode 100644 roles/apache2/tasks/.main.yml.swp
 create mode 100644 roles/apache2/tasks/main.yml
 create mode 100644 roles/prometheus/tasks/main.yml
danielle@controlnode:~/Final_Exam_Abejar$ git push origin main
Counting objects: 13, done.
Delta compression using up to 3 threads.
Compressing objects: 100% (9/9), done.
Writing objects: 100% (13/13), 1.57 KiB | 804.00 KiB/s, done.
Total 13 (delta 0), reused 0 (delta 0)
To github.com:yenabejar/Final_Exam_Abejar.git
   86c2a84..c7a0499  main -> main
danielle@controlnode:~/Final_Exam_Abejar$
```