| Final Examination	
Name: Ilagan, Carlo Hideki D.	Date Submitted: 12/4/2024
Instructor: Engr. Robin Valenzuela	Section: CPE31S2

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.

Repository:

Inventory file:

```
[ubcent]
192.168.56.113
192.168.56.103
```
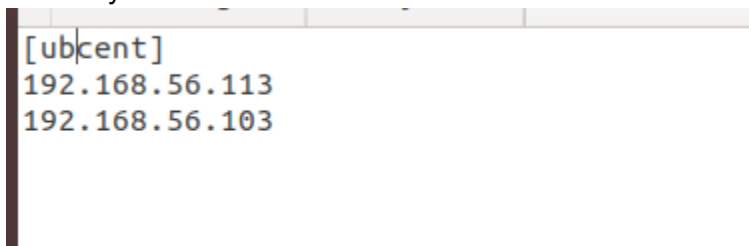
Config.yml

```yaml
---
- hosts: ubcent
  become: true
  tasks:

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

  - name: install apache and php for Ubuntu servers
    tags: apache, apache2, ubuntu
    apt:
      name:
        - apache2
        - libapache2-mod-php
      state: latest
      update_cache: yes
    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"

  - name: Add GPG key for the Prometheus repository (Ubuntu)
```

```yaml
- name: Add Prometheus APT repository (Ubuntu)
  apt_repository:
    repo: deb https://packages.grafana.com/oss/deb stable main
    state: present
    filename: grafana
  when: ansible_distribution == "Ubuntu"

- name: Install Prometheus (Ubuntu)
  apt:
    name: prometheus
    state: present
  when: ansible_distribution == "Ubuntu"

- name: Enable and start Prometheus service (Ubuntu)
  service:
    name: prometheus
    enabled: yes
    state: started
  when: ansible_distribution == "Ubuntu"

- name: Open port 9090 for Prometheus (Ubuntu)
  ufw:
    rule: allow
    port: 9090
    proto: tcp
    state: enabled
  when: ansible_distribution == "Ubuntu"

- name: Download Prometheus(CentOS)
  get_url:
    url: "https://github.com/prometheus/prometheus/releases/download/v3.0.0-beta.1/prometheus-3.0.0-beta.1.linux-amd64.tar.gz"
    dest: /tmp/prometheus.tar.gz
  when: ansible_distribution == "CentOS"

- name: Extract Prometheus (CentOS)
  ansible.builtin.shell: tar -zxvf /tmp/prometheus.tar.gz -C /tmp/
  when: ansible_distribution == "CentOS"

- name: Create Prometheus user (CentOS)
  ansible.builtin.user:
    name: prometheus
    state: present
  when: ansible_distribution == "CentOS"

- name: Create Prometheus directory (CentOS)
  ansible.builtin.file:
    path: /opt/prometheus
    state: directory
  when: ansible_distribution == "CentOS"

- name: Set ownership and permissions for Prometheus (CentOS)
  ansible.builtin.file:
    path: /opt/prometheus
    owner: prometheus
    group: prometheus
    mode: '0755'
  when: ansible_distribution == "CentOS"

- name: Create Prometheus service file (CentOS)
  ansible.builtin.template:
    src: prometheus.service.j2
    dest: /etc/systemd/system/prometheus.service
  when: ansible_distribution == "CentOS"

- name: Reload systemd (CentOS)
  ansible.builtin.command: systemctl daemon-reload
  when: ansible_distribution == "CentOS"

- name: Start Prometheus service (CentOS)
  ansible.builtin.service:
    name: prometheus
    enabled: yes
    state: started
  when: ansible_distribution == "CentOS"
```

```yaml
  - name: Ensure firewalld service is running (CentOS)
    ansible.builtin.service_facts:
      gather_subset:
        - services
    when: ansible_distribution == "CentOS"

  - name: Check if firewalld is active (CentOS)
    ansible.builtin.debug:
      msg: "Firewalld is running"
    when: ansible_distribution == "CentOS" and ansible_facts.services['firewalld'] is defined and
ansible_facts.services['firewalld'].state == 'running'

  - name: Open port 9090 for Prometheus using nft (CentOS, if firewalld not active)
    ansible.builtin.shell: nft add rule inet filter input tcp dport 9090 accept
    when: ansible_distribution == "CentOS" and (ansible_facts.services['firewalld'] is not defined or
ansible_facts.services['firewalld'].state != 'running')

  - name: Open port 9090 for Prometheus using firewalld (CentOS, if firewalld is active)
    ansible.builtin.firewalld:
      service: prometheus
      port: 9090/tcp
      permanent: yes
      state: enabled
    when: ansible_distribution == "CentOS" and ansible_facts.services['firewalld'].state == 'running'

  - name: Ensure Prometheus on system boot (CentOS)
    ansible.builtin.service:
      name: prometheus
      enabled: yes
    when: ansible_distribution == "CentOS"
```

Process:

```
hideki@workstation: ~/Final_Exam_Ilagan

File  Edit  View  Search  Terminal  Help

TASK [install apache and php for Ubuntu servers] ******************************
skipping: [192.168.56.111]
ok: [192.168.56.113]


TASK [install apache and php for CENTOS servers] ******************************
skipping: [192.168.56.113]
ok: [192.168.56.111]


TASK [start httpd (CentOS)] ****************************************************
skipping: [192.168.56.113]
ok: [192.168.56.111]


TASK [Add GPG key for the Prometheus repository (Ubuntu)] *********************
skipping: [192.168.56.111]
ok: [192.168.56.113]


TASK [Add Prometheus APT repository (Ubuntu)] *********************************
skipping: [192.168.56.111]
ok: [192.168.56.113]


TASK [Install Prometheus (Ubuntu)] *******************************************
skipping: [192.168.56.111]
ok: [192.168.56.113]
```

File Edit View Search Terminal Help

```
[WARNING]: The value 9090 (type int) in a string field was converted to '9090'
(type string). If this does not look like what you expect, quote the entire
value to ensure it does not change.
ok: [192.168.56.113]

TASK [Download Prometheus(CentOS)] **********************************************
skipping: [192.168.56.113]
ok: [192.168.56.111]

TASK [Extract Prometheus (CentOS)] **********************************************
skipping: [192.168.56.113]
[WARNING]: Consider using the unarchive module rather than running 'tar'.  If
you need to use command because unarchive is insufficient you can add 'warn:
false' to this command task or set 'command_warnings=False' in ansible.cfg to
get rid of this message.
changed: [192.168.56.111]

TASK [Create Prometheus user (CentOS)] ******************************************
skipping: [192.168.56.113]
ok: [192.168.56.111]

TASK [Create Prometheus directory (CentOS)] *************************************
skipping: [192.168.56.113]
ok: [192.168.56.111]
```

```
TASK [Create Prometheus directory (CentOS)] *************************************
skipping: [192.168.56.113]
ok: [192.168.56.111]

TASK [Set ownership and permissions for Prometheus (CentOS)] *******************
skipping: [192.168.56.113]
ok: [192.168.56.111]

TASK [Create Prometheus service file (CentOS)] *********************************
skipping: [192.168.56.113]
ok: [192.168.56.111]

TASK [Reload systemd (CentOS)] *************************************************
skipping: [192.168.56.113]
changed: [192.168.56.111]

TASK [Start Prometheus service (CentOS)] **************************************
skipping: [192.168.56.113]
changed: [192.168.56.111]

TASK [Ensure firewalld service is running (CentOS)] ***************************
```

```
                    hideki@workstation: ~/Final_Exam_Ilagan

 File  Edit  View  Search  Terminal  Help
TASK [Check if firewalld is active (CentOS)] ****************************
skipping: [192.168.56.113]

TASK [Open port 9090 for Prometheus using nft (CentOS, if firewalld not active)]
 ***
skipping: [192.168.56.113]

TASK [Open port 9090 for Prometheus using firewalld (CentOS, if firewalld is act
ive)] ***
skipping: [192.168.56.113]

TASK [Ensure Prometheus on system boot (CentOS)] ***********************
skipping: [192.168.56.113]

PLAY RECAP ************************************************************
192.168.56.111           : ok=12    changed=3    unreachable=0    failed=0    s
kipped=6     rescued=0    ignored=0
192.168.56.113           : ok=8     changed=0    unreachable=0    failed=0    s
kipped=15    rescued=0    ignored=0
```

Apache on Ubuntu:

```
hideki@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 Wed 2024-12-04 09:14:50 +08; 12min ago
 Main PID: 1887 (apache2)
    Tasks: 6 (limit: 4915)
   CGroup: /system.slice/apache2.service
           ├─1887 /usr/sbin/apache2 -k start
           ├─1984 /usr/sbin/apache2 -k start
           ├─1985 /usr/sbin/apache2 -k start
           ├─1988 /usr/sbin/apache2 -k start
           ├─1989 /usr/sbin/apache2 -k start
           └─1990 /usr/sbin/apache2 -k start
```

Prometheus on Ubuntu:

```
hideki@server1:~$ systemctl status prometheus
● prometheus.service - Monitoring system and time series database
   Loaded: loaded (/lib/systemd/system/prometheus.service; enabled; vendor prese
   Active: active (running) since Wed 2024-12-04 09:14:26 +08; 12min ago
     Docs: https://prometheus.io/docs/introduction/overview/
 Main PID: 818 (prometheus)
    Tasks: 10 (limit: 4915)
   CGroup: /system.slice/prometheus.service
           └─818 /usr/bin/prometheus
```

Apache on Centos:

```
[hideki@localhost ~]$ systemctl status httpd
● httpd.service - The Apache HTTP Server
     Loaded: loaded (/usr/lib/systemd/system/httpd.service; enabled; preset: di>
   Drop-In: /usr/lib/systemd/system/httpd.service.d
            └─php-fpm.conf
     Active: active (running) since Wed 2024-12-04 08:22:01 PST; 1h 12min ago
       Docs: man:httpd.service(8)
   Main PID: 1056 (httpd)
     Status: "Total requests: 15; Idle/Busy workers 100/0;Requests/sec: 0.00347>
      Tasks: 230 (limit: 22270)
     Memory: 10.7M
        CPU: 934ms
     CGroup: /system.slice/httpd.service
             ├─1056 /usr/sbin/httpd -DFOREGROUND
             ├─1296 /usr/sbin/httpd -DFOREGROUND
             ├─1297 /usr/sbin/httpd -DFOREGROUND
             ├─1298 /usr/sbin/httpd -DFOREGROUND
             ├─1299 /usr/sbin/httpd -DFOREGROUND
             └─2511 /usr/sbin/httpd -DFOREGROUND
```

Prometheus on Centos:

```
[hideki@localhost ~]$ systemctl status prometheus
● prometheus.service - Prometheus Server
     Loaded: loaded (/etc/systemd/system/prometheus.service; enabled; preset: d>
     Active: active (running)           since Wed 2024-12-04 10:06:10 PST; 5s a>
```

Repository Finished: