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Course/Section: CPE232 - CPE31S21	Date Submitted: 12/13/2024
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Hands-on Final Exam

1. Tools Needed

1. VM with Ubuntu, CentOS and Ansible installed

2. Web browser

2. Instructions

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)

6. 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.

3. **Output** (screenshots and explanations)

```
kier@hostname:~$ git clone git@github.com:jazki23/Final_Exam_SanJose.git
Cloning into 'Final_Exam_SanJose'...
remote: Enumerating objects: 6, done.
remote: Counting objects: 100% (6/6), done.
remote: Compressing objects: 100% (4/4), done.
remote: Total 6 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
Receiving objects: 100% (6/6), done.
```

GNU nano 7.2 install.yml

```yaml
- name: Enterprise Service and Monitoring Setup
  hosts: all
  become: true
  vars:
    username: "kier"
    apache_port: 80
    prometheus_version: "2.46.0"
  tasks:

    - name: Install Apache2 on Ubuntu
      apt:
        name: apache2
        state: present
      when: ansible_os_family == "Debian"

    - name: Install Apache on Centos
      yum:
        name: httpd
        state: present
      when: ansible_os_family == "RedHat"

    - name: Enterprise Service
      service:
        name: "{{ 'apache2' if ansible_os_family == 'Debian' else 'httpd' }}"
        state: started
        enabled: true

    - name: Configure Enterprise
```

GNU nano 7.2 install.yml

```yaml
      when: ansible_os_family == "RedHat"

    - name: Enterprise Service
      service:
        name: "{{ 'apache2' if ansible_os_family == 'Debian' else 'httpd' }}"
        state: started
        enabled: true

    - name: Configure Enterprise
      lineinfile:
        path: "{{ '/etc/apache2/ports.conf' if ansible_os_family == 'Debian' else '/etc/httpd/conf/httpd.conf' }}"
        regexp: "^Listen"
        line: "Listen {{ apache_port }}"
      notify: Restart Apache

    - name: Download Monitoring tools
      get_url:
        url: "https://github.com/prometheus/prometheus/releases/download/v{{ prometheus_version }}/prometheus-{{ prometh
        dest: /tmp/prometheus.tar.gz

    - name: Extract Monitoring tools
      unarchive:
        src: /tmp/prometheus.tar.gz
        dest: /opt
        remote_src: true

    - name: Move Monitoring tool files
      command:
```

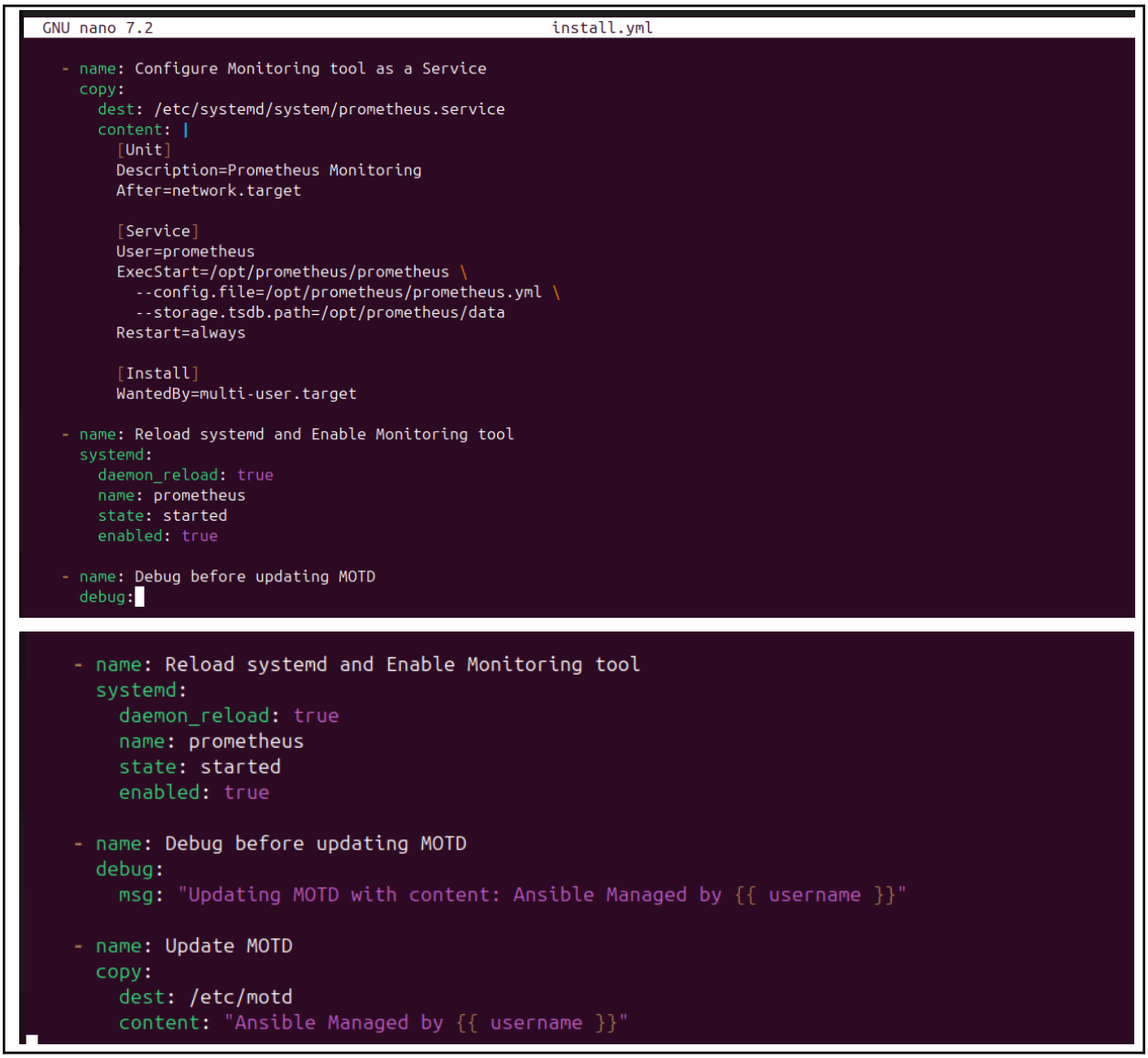
```
GNU nano 7.2                                    install.yml
  - name: Extract Monitoring tools
    unarchive:
      src: /tmp/prometheus.tar.gz
      dest: /opt
      remote_src: true

  - name: Move Monitoring tool files
    command:
      cmd: mv /opt/prometheus-{{ prometheus_version }}.linux-amd64 /opt/prometheus
    args:
      creates: /opt/prometheus

  - name: Create Monitoring tool user
    user:
      name: prometheus
      shell: /sbin/nologin

  - name: Set Monitoring Ownership
    file:
      path: /opt/prometheus
      owner: prometheus
      group: prometheus
      state: directory
      recurse: yes

  - name: Configure Monitoring tool as a Service
    copy:
      dest: /etc/systemd/system/prometheus.service
```


GNU nano 7.2
install.yml
- name: Configure Monitoring tool as a Service
copy:
dest: /etc/systemd/system/prometheus.service
content: |
[Unit]
Description=Prometheus Monitoring
After=network.target
[Service]
User=prometheus
ExecStart=/opt/prometheus/prometheus \
--config.file=/opt/prometheus/prometheus.yml \
--storage.tsdb.path=/opt/prometheus/data
Restart=always
[Install]
WantedBy=multi-user.target
- name: Reload systemd and Enable Monitoring tool
systemd:
daemon_reload: true
name: prometheus
state: started
enabled: true
- name: Debug before updating MOTD
debug:
- name: Reload systemd and Enable Monitoring tool
systemd:
daemon_reload: true
name: prometheus
state: started
enabled: true
- name: Debug before updating MOTD
debug:
msg: "Updating MOTD with content: Ansible Managed by {{ username }}"
- name: Update MOTD
copy:
dest: /etc/motd
content: "Ansible Managed by {{ username }}"

```
kier@host:~/Final_Exam_SanJose$ cat install.yml
- name: Enterprise Service and Monitoring Setup
  hosts: all
  become: true
  vars:
    username: "mark"
    apache_port: 80
    prometheus_version: "2.46.0"
  tasks:

    - name: Install Apache on Ubuntu
      apt:
        name: apache2
        state: present
      when: ansible_os_family == "Debian"

    - name: Install Apache on Centos
      yum:
        name: httpd
        state: present
      when: ansible_os_family == "RedHat"

    - name: Enterprise Service
      service:
        name: "{{ 'apache2' if ansible_os_family == 'Debian' else 'httpd' }}"
        state: started
        enabled: true

    - name: Configure Enterprise
      lineinfile:
        path: "{{ '/etc/apache2/ports.conf' if ansible_os_family == 'Debian' else '/etc/httpd/conf/httpd.conf' }}"
        regexp: "^Listen"
        line: "Listen {{ apache_port }}"
```

```
kier@host:~/Final_Exam_SanJose$ ansible-playbook --ask-become-pass install.yml
BECOME password:

PLAY [Enterprise Service and Monitoring Setup] *********************************************************

TASK [Gathering Facts] *********************************************************************************
ok: [Server1]
ok: [centOS]

TASK [Install Apache on Ubuntu] ************************************************************************
skipping: [centOS]
ok: [Server1]

TASK [Install Apache on Centos] ************************************************************************
skipping: [Server1]
ok: [centOS]

TASK [Enterprise Service] ******************************************************************************
ok: [Server1]
changed: [centOS]

TASK [Configure Enterprise] ****************************************************************************
ok: [centOS]
ok: [Server1]

TASK [Download Monitoring tools] ***********************************************************************
ok: [Server1]
```

```
ok: [centOS]
ok: [Server1]

TASK [Download Monitoring tools] ***********************************************************************************
ok: [Server1]
changed: [centOS]

TASK [Extract Monitoring tools] ************************************************************************************
changed: [centOS]
changed: [Server1]

TASK [Move Monitoring tool files] **********************************************************************************
changed: [centOS]
ok: [Server1]

TASK [Create Monitoring tool user] *********************************************************************************
ok: [Server1]
changed: [centOS]

TASK [Set Monitoring Ownership] ************************************************************************************
changed: [centOS]
ok: [Server1]

TASK [Configure Monitoring tool as a Service] **********************************************************************
changed: [centOS]
ok: [Server1]

TASK [Reload systemd and Enable Monitoring tool] *******************************************************************
ok: [Server1]
changed: [centOS]

TASK [Update MOTD] *************************************************************************************************
changed: [centOS]
```

```
TASK [Reload systemd and Enable Monitoring tool] *******************************************************************
ok: [Server1]
changed: [centOS]

TASK [Update MOTD] *************************************************************************************************
changed: [centOS]
ok: [Server1]

PLAY RECAP *********************************************************************************************************
Server1                    : ok=12   changed=1    unreachable=0    failed=0    skipped=1    rescued=0    ignored=0
centOS                     : ok=12   changed=9    unreachable=0    failed=0    skipped=1    rescued=0    ignored=0

kier@host:~/Final_Exam_SanJose$
```

- I downloaded the Enterprises

```
kier@host:~/Final_Exam_SanJose$ ssh kiersanjose@192.168.56.154
Ansible Managed by kier
Activate the web console with: systemctl enable --now cockpit.socket

Last login: Fri Dec 13 11:26:26 2024 from 192.168.56.156
[kiersanjose@centos ~]$ cat /etc/motd
Ansible Managed by kier[kiersanjose@centos ~]$
```

- MOTD on CentOS

```
[root@centos kiersanjose]# sudo systemctl status prometheus
● prometheus.service - Prometheus Monitoring
     Loaded: loaded (/etc/systemd/system/prometheus.service; enabled; preset: disabled)
     Active: active (running) since Fri 2024-12-13 11:17:34 PST; 12min ago
   Main PID: 94492 (prometheus)
      Tasks: 9 (limit: 33380)
     Memory: 26.8M
        CPU: 244ms
     CGroup: /system.slice/prometheus.service
             └─94492 /opt/prometheus/prometheus --config.file=/opt/prometheus/prometheus.yml --storage.tsdb.path=/opt/p>

Dis 13 11:17:34 centos prometheus[94492]: ts=2024-12-13T03:17:34.722Z caller=head.go:676 level=info component=tsdb msg=>
Dis 13 11:17:34 centos prometheus[94492]: ts=2024-12-13T03:17:34.722Z caller=head.go:684 level=info component=tsdb msg=>
Dis 13 11:17:34 centos prometheus[94492]: ts=2024-12-13T03:17:34.722Z caller=head.go:755 level=info component=tsdb msg=>
Dis 13 11:17:34 centos prometheus[94492]: ts=2024-12-13T03:17:34.722Z caller=head.go:792 level=info component=tsdb msg=>
Dis 13 11:17:34 centos prometheus[94492]: ts=2024-12-13T03:17:34.723Z caller=main.go:1047 level=info fs_type=XFS_SUPER_>
Dis 13 11:17:34 centos prometheus[94492]: ts=2024-12-13T03:17:34.723Z caller=main.go:1050 level=info msg="TSDB started"
Dis 13 11:17:34 centos prometheus[94492]: ts=2024-12-13T03:17:34.723Z caller=main.go:1231 level=info msg="Loading confi>
Dis 13 11:17:34 centos prometheus[94492]: ts=2024-12-13T03:17:34.978Z caller=main.go:1268 level=info msg="Completed loa>
Dis 13 11:17:34 centos prometheus[94492]: ts=2024-12-13T03:17:34.978Z caller=main.go:1011 level=info msg="Server is rea>
Dis 13 11:17:34 centos prometheus[94492]: ts=2024-12-13T03:17:34.978Z caller=manager.go:1009 level=info component="rule>
lines 1-20/20 (END)
```

- Monitoring tool for CentOS

```
kier@server1:~$ sudo systemctl status apache2
[sudo] password for kier:
● apache2.service - The Apache HTTP Server
     Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset: enabled)
    Drop-In: /lib/systemd/system/apache2.service.d
             └─apache2-systemd.conf
     Active: active (running) since Fri 2024-12-13 09:12:06 +08; 2h 19min ago
    Process: 2293 ExecReload=/usr/sbin/apachectl graceful (code=exited, status=0/SUCCESS)
    Process: 896 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/SUCCESS)
   Main PID: 1090 (apache2)
      Tasks: 6 (limit: 4915)
     CGroup: /system.slice/apache2.service
             ├─1090 /usr/sbin/apache2 -k start
             ├─2298 /usr/sbin/apache2 -k start
             ├─2299 /usr/sbin/apache2 -k start
             ├─2300 /usr/sbin/apache2 -k start
             ├─2301 /usr/sbin/apache2 -k start
             └─2302 /usr/sbin/apache2 -k start

Dec 13 09:12:01 server1 systemd[1]: Starting The Apache HTTP Server...
Dec 13 09:12:05 server1 apachectl[896]: AH00558: apache2: Could not reliably determine the server's fully qualified doma
Dec 13 09:12:06 server1 systemd[1]: Started The Apache HTTP Server.
Dec 13 09:16:58 server1 systemd[1]: Reloading The Apache HTTP Server.
Dec 13 09:16:58 server1 apachectl[2293]: AH00558: apache2: Could not reliably determine the server's fully qualified dom
Dec 13 09:16:58 server1 systemd[1]: Reloaded The Apache HTTP Server.
lines 1-23/23 (END)
```

- Enterprise service for Ubuntu

GitHub link:

https://github.com/jazki23/Final_Exam_SanJose.git