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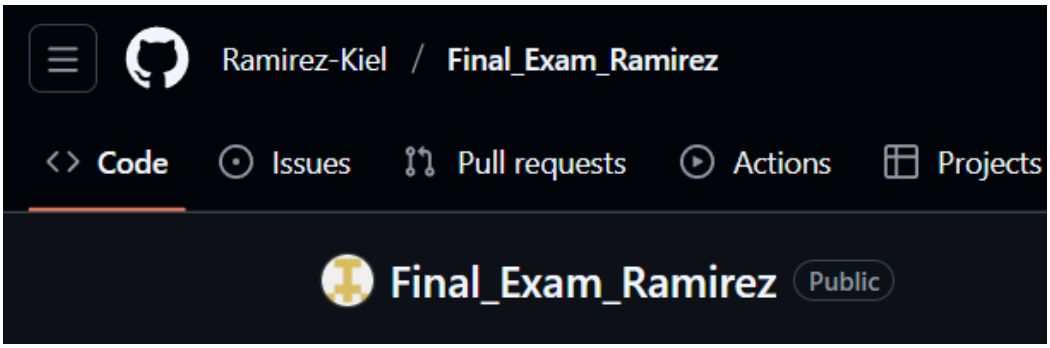
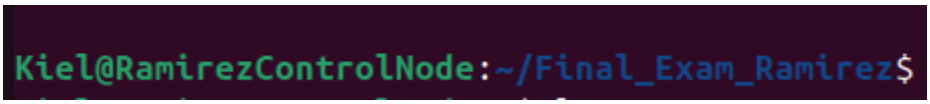
CPE31S1	Sir Robin

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.

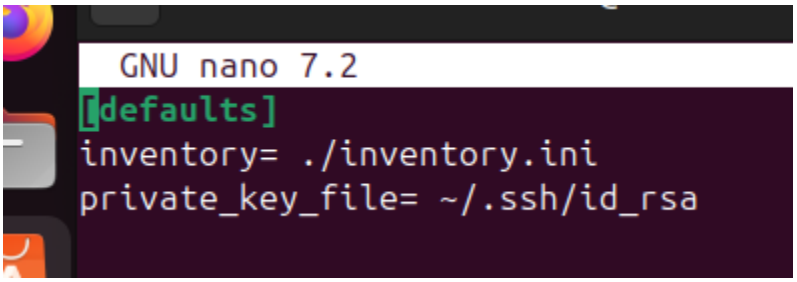
1.

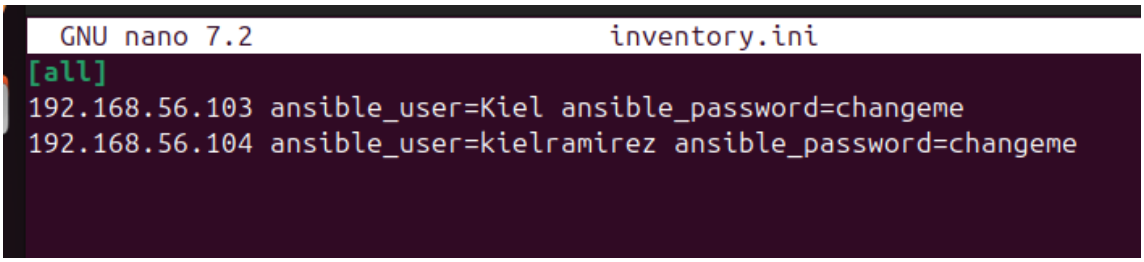

Ramirez-Kiel / Final_Exam_Ramirez
Code
Issues
Pull requests
Actions
Projects
Final_Exam_Ramirez
Public

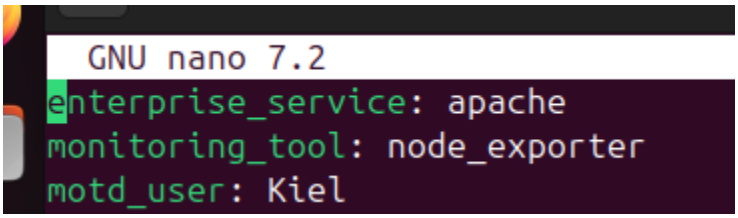
2.

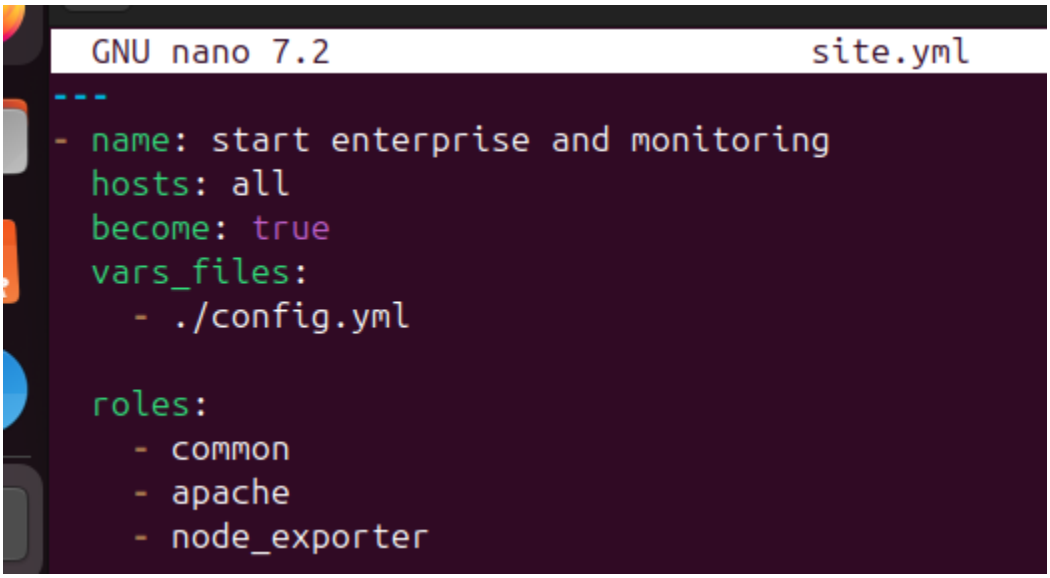

Kiel@RamirezControlNode:~/Final_Exam_Ramirez$

3.


GNU nano 7.2
[defaults]
inventory= ./inventory.ini
private_key_file= ~/.ssh/id_rsa


GNU nano 7.2 inventory.ini
[all]
192.168.56.103 ansible_user=Kiel ansible_password=changeme
192.168.56.104 ansible_user=kielramirez ansible_password=changeme


GNU nano 7.2
enterprise_service: apache
monitoring_tool: node_exporter
motd_user: Kiel



Roles:

```
Kiel@RamirezControlNode:~/Final_Exam_Ramirez$ cd roles
Kiel@RamirezControlNode:~/Final_Exam_Ramirez/roles$ ls
apache  common  node_exporter
```

```
Kiel@RamirezControlNode:~/Final_Exam_Ramirez/roles$ cd apache
Kiel@RamirezControlNode:~/Final_Exam_Ramirez/roles/apache$ ls
defaults  handlers  meta  README.md  tasks  tests  vars
Kiel@RamirezControlNode:~/Final_Exam_Ramirez/roles/apache$ cd tasks
Kiel@RamirezControlNode:~/Final_Exam_Ramirez/roles/apache/tasks$ ls
main.yml
Kiel@RamirezControlNode:~/Final_Exam_Ramirez/roles/apache/tasks$
```

```
Kiel@RamirezControlNode:~/Final_Exam_Ramirez/roles$ cd common
Kiel@RamirezControlNode:~/Final_Exam_Ramirez/roles/common$ cd tasks
Kiel@RamirezControlNode:~/Final_Exam_Ramirez/roles/common/tasks$ ls
main.yml
```

```
Kiel@RamirezControlNode:~/Final_Exam_Ramirez/roles$ cd node_exporter
Kiel@RamirezControlNode:~/Final_Exam_Ramirez/roles/node_exporter$ cd tasks
Kiel@RamirezControlNode:~/Final_Exam_Ramirez/roles/node_exporter/tasks$ ls
main.yml
```

Tasks:

```
 GNU nano 7.2                                  main.yml
---
- name: update apt
  ansible.builtin.apt:
    update_cache: yes
  when: ansible_os_family == 'Debian'

- name: update dnf
  ansible.builtin.dnf:
    update_cache: yes
  when: ansible_os_family == 'RedHat'

- name: motd
  ansible.builtin.copy:
    dest: /etc/motd
    content: "Ansible Managed by {{ motd_user | default('unknown_user') }}\n"
    owner: root
    group: root
    mode: '0644'
```

```
 GNU nano 7.2                                  main.yml
---
- name: tar
  ansible.builtin.package:
    name: tar
    state: present
  when: monitoring_tool is defined and monitoring_tool == "node_exporter"

- name: node exporter
  ansible.builtin.get_url:
    url: "https://github.com/prometheus/node_exporter/releases/download/v1.8.1/>
    dest: /tmp/node_exporter.tar.gz
    mode: '0644'
  when: monitoring_tool is defined and monitoring_tool == "node_exporter"

- name: extract node
  ansible.builtin.unarchive:
    src: /tmp/node_exporter.tar.gz
    dest: /usr/local/bin/
    remote_src: yes
    extra_opts: [--strip-components=1]
```

```
 GNU nano 7.2                                  main.yml
  when: monitoring_tool is defined and monitoring_tool == "node_exporter"

- name: checking node exporter
  ansible.builtin.file:
    path: /usr/local/bin/node_exporter
    mode: '0755'
    owner: root
    group: "{{ 'nogroup' if ansible_os_family == 'Debian' else 'nobody' }}"
  when: monitoring_tool is defined and monitoring_tool == "node_exporter"

- name: system service
  ansible.builtin.copy:
    dest: /etc/systemd/system/node_exporter.service
    content: |
      [Unit]
      Description=Prometheus Node Exporter
      After=network.target

      [Service]
      ExecStart=/usr/local/bin/node_exporter
```

```
 GNU nano 7.2                                  main.yml
      ExecStart=/usr/local/bin/node_exporter
      User=nobody
      Group={{ 'nogroup' if ansible_os_family == 'Debian' else 'nobody' }}

      [Install]
      WantedBy=multi-user.target
  when: monitoring_tool is defined and monitoring_tool == "node_exporter"

- name: reload systemd
  ansible.builtin.systemd:
    daemon_reload: yes
  when: monitoring_tool is defined and monitoring_tool == "node_exporter"

- name: start and enable
  ansible.builtin.systemd:
    name: node_exporter
    state: started
    enabled: yes
  when: monitoring_tool is defined and monitoring_tool == "node_exporter"
```

```
Kiel@RamirezControlNode:~/Final_Exam_Ramirez$ ssh Kiel@192.168.56.103
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.14.0-29-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.

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

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

Ansible Managed by Kiel
Last login: Sun Nov 16 18:01:10 2025 from 192.168.56.103
```

Installation:

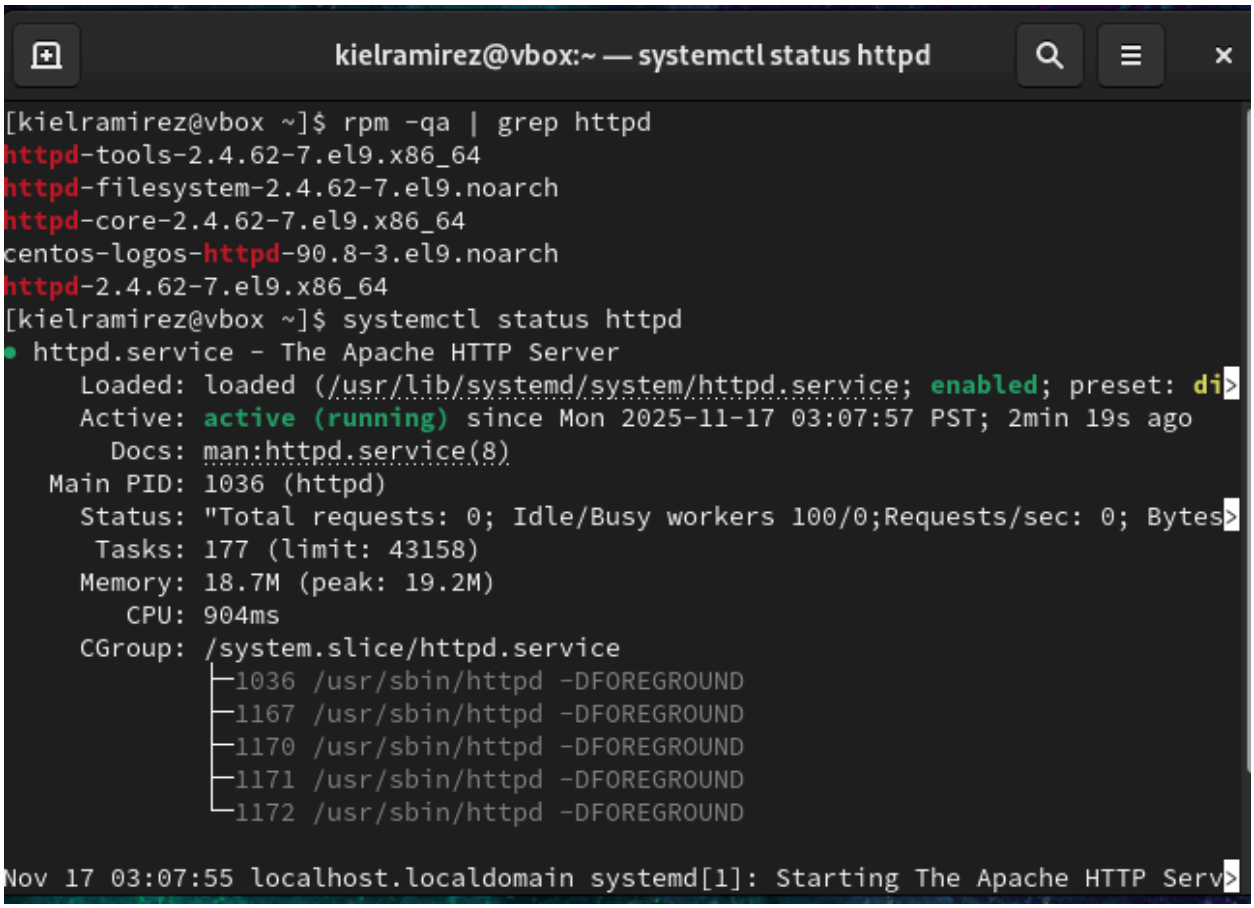
```
Kiel@RamirezControlNode:~/Final_Exam_Ramirez$ ansible-playbook site.yml --ask-become -K
BECOME password:

PLAY [start enterprise and monitoring] *************************************

TASK [Gathering Facts] *****************************************************
ok: [192.168.56.103]
ok: [192.168.56.104]

TASK [common : update apt] *************************************************
skipping: [192.168.56.104]
changed: [192.168.56.103]

TASK [common : update dnf] *************************************************
skipping: [192.168.56.103]
ok: [192.168.56.104]

TASK [common : motd] *******************************************************
ok: [192.168.56.103]
ok: [192.168.56.104]

TASK [apache : apache server] **********************************************
ok: [192.168.56.103]
ok: [192.168.56.104]

TASK [apache : apache service] *********************************************
ok: [192.168.56.103]
ok: [192.168.56.104]
```

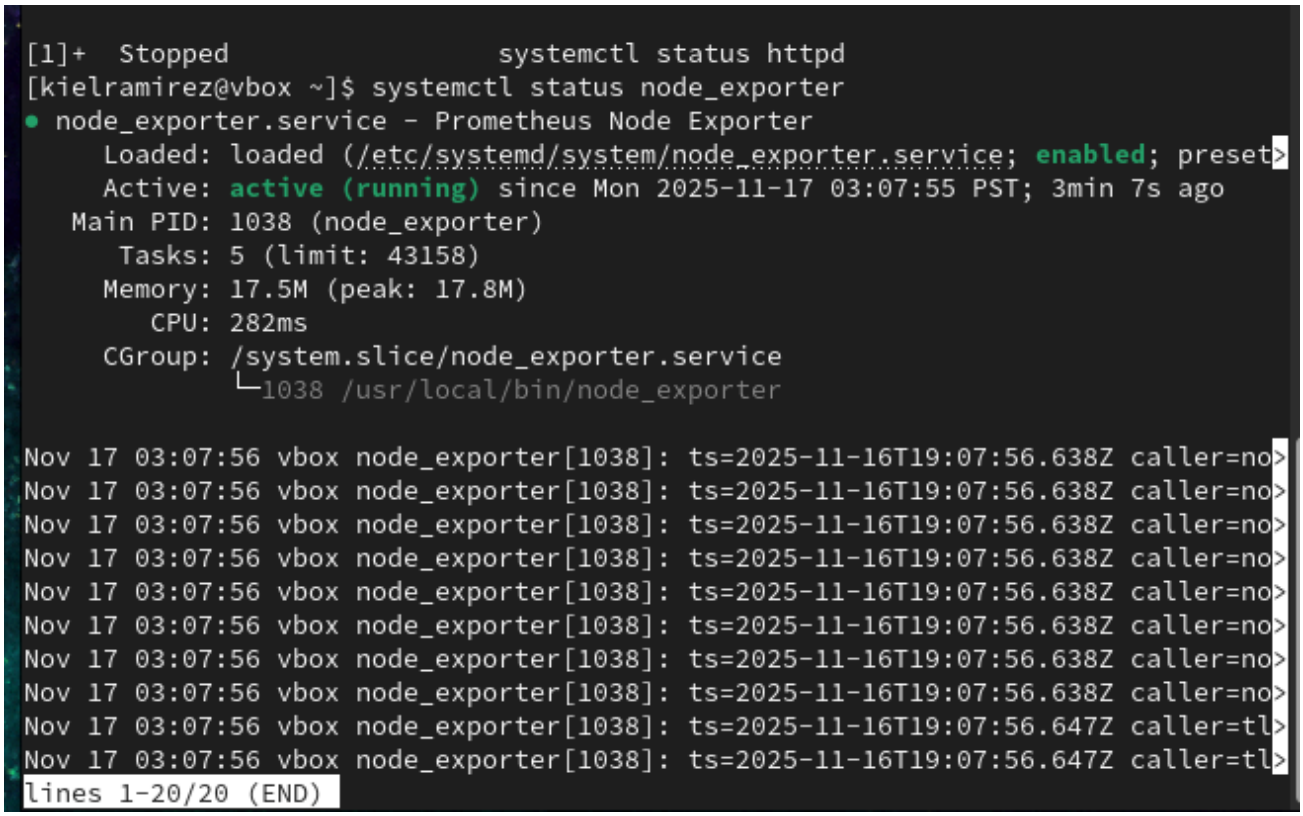
```
TASK [node_exporter : tar] *************************************************
ok: [192.168.56.103]
ok: [192.168.56.104]

TASK [node_exporter : node exporter] ***************************************
ok: [192.168.56.104]
changed: [192.168.56.103]

TASK [node_exporter : extract node] ****************************************
changed: [192.168.56.103]
changed: [192.168.56.104]

TASK [node_exporter : checking node exporter] ******************************
changed: [192.168.56.103]
changed: [192.168.56.104]

TASK [node_exporter : system service] **************************************
ok: [192.168.56.103]
ok: [192.168.56.104]

TASK [node_exporter : reload systemd] **************************************
ok: [192.168.56.103]
ok: [192.168.56.104]

TASK [node_exporter : start and enable] ************************************
ok: [192.168.56.103]
ok: [192.168.56.104]
```

```
PLAY RECAP *********************************************************************
192.168.56.103             : ok=12   changed=4    unreachable=0    failed=0    skipped=1
192.168.56.104             : ok=12   changed=2    unreachable=0    failed=0    skipped=1
```

```
Kiel@RamirezControlNode:~/Final_Exam_Ramirez$ dpkg -l | grep apache2
ii  apache2                                 2.4.58-1ubuntu8.8
er
ii  apache2-bin                             2.4.58-1ubuntu8.8
er (modules and other binary files)
ii  apache2-data                            2.4.58-1ubuntu8.8
er (common files)
ii  apache2-utils                           2.4.58-1ubuntu8.8
er (utility programs for web servers)
```

```
Kiel@RamirezControlNode:~/Final_Exam_Ramirez$ systemctl status apache2
● apache2.service - The Apache HTTP Server
     Loaded: loaded (/usr/lib/systemd/system/apache2.service; enabled; preset: enabled)
     Active: active (running) since Sun 2025-11-16 18:33:47 UTC; 32min ago
       Docs: https://httpd.apache.org/docs/2.4/
   Main PID: 1192 (apache2)
      Tasks: 55 (limit: 8214)
     Memory: 8.2M (peak: 8.7M)
        CPU: 643ms
     CGroup: /system.slice/apache2.service
             ├─1192 /usr/sbin/apache2 -k start
             ├─1193 /usr/sbin/apache2 -k start
             └─1194 /usr/sbin/apache2 -k start

Warning: some journal files were not opened due to insufficient permissions.
Kiel@RamirezControlNode:~/Final_Exam_Ramirez$
```


kielramirez@vbox:~ — systemctl status httpd
[kielramirez@vbox ~]$ rpm -qa | grep httpd
httpd-tools-2.4.62-7.el9.x86_64
httpd-filesystem-2.4.62-7.el9.noarch
httpd-core-2.4.62-7.el9.x86_64
centos-logos-httpd-90.8-3.el9.noarch
httpd-2.4.62-7.el9.x86_64
[kielramirez@vbox ~]$ systemctl status httpd
● httpd.service - The Apache HTTP Server
Loaded: loaded (/usr/lib/systemd/system/httpd.service; enabled; preset: di
Active: active (running) since Mon 2025-11-17 03:07:57 PST; 2min 19s ago
Docs: man:httpd.service(8)
Main PID: 1036 (httpd)
Status: "Total requests: 0; Idle/Busy workers 100/0;Requests/sec: 0; Bytes
Tasks: 177 (limit: 43158)
Memory: 18.7M (peak: 19.2M)
CPU: 904ms
CGroup: /system.slice/httpd.service
├─1036 /usr/sbin/httpd -DFOREGROUND
├─1167 /usr/sbin/httpd -DFOREGROUND
├─1170 /usr/sbin/httpd -DFOREGROUND
├─1171 /usr/sbin/httpd -DFOREGROUND
└─1172 /usr/sbin/httpd -DFOREGROUND
Nov 17 03:07:55 localhost.localdomain systemd[1]: Starting The Apache HTTP Serv


[1]+ Stopped systemctl status httpd
[kielramirez@vbox ~]$ systemctl status node_exporter
● node_exporter.service - Prometheus Node Exporter
Loaded: loaded (/etc/systemd/system/node_exporter.service; enabled; preset
Active: active (running) since Mon 2025-11-17 03:07:55 PST; 3min 7s ago
Main PID: 1038 (node_exporter)
Tasks: 5 (limit: 43158)
Memory: 17.5M (peak: 17.8M)
CPU: 282ms
CGroup: /system.slice/node_exporter.service
└─1038 /usr/local/bin/node_exporter
Nov 17 03:07:56 vbox node_exporter[1038]: ts=2025-11-16T19:07:56.638Z caller=no
Nov 17 03:07:56 vbox node_exporter[1038]: ts=2025-11-16T19:07:56.638Z caller=no
Nov 17 03:07:56 vbox node_exporter[1038]: ts=2025-11-16T19:07:56.638Z caller=no
Nov 17 03:07:56 vbox node_exporter[1038]: ts=2025-11-16T19:07:56.638Z caller=no
Nov 17 03:07:56 vbox node_exporter[1038]: ts=2025-11-16T19:07:56.638Z caller=no
Nov 17 03:07:56 vbox node_exporter[1038]: ts=2025-11-16T19:07:56.638Z caller=no
Nov 17 03:07:56 vbox node_exporter[1038]: ts=2025-11-16T19:07:56.638Z caller=no
Nov 17 03:07:56 vbox node_exporter[1038]: ts=2025-11-16T19:07:56.638Z caller=no
Nov 17 03:07:56 vbox node_exporter[1038]: ts=2025-11-16T19:07:56.647Z caller=tl
Nov 17 03:07:56 vbox node_exporter[1038]: ts=2025-11-16T19:07:56.647Z caller=tl
lines 1-20/20 (END)

```
Kiel@RamirezControlNode:~$ cat /etc/motd
Ansible Managed by Kiel
Kiel@RamirezControlNode:~$
```

```
[kielramirez@vbox ~]$ cat /etc/motd
Ansible Managed by Kiel
[kielramirez@vbox ~]$
```

Github link:
https://github.com/Ramirez-Kiel/Final_Exam_Ramirez