Hands-on Final Exam	
Name: CHRISTIAN KIM P. SAPORNA	**Date Performed:** 12/04/2024
Course/Section: CPE 212-CPE31S2	**Date Submitted:** 12/04/2024
Instructor: ENGR. Robin Valenzuela	**Semester and SY:** 1st semester 3rd year and 2024-2025

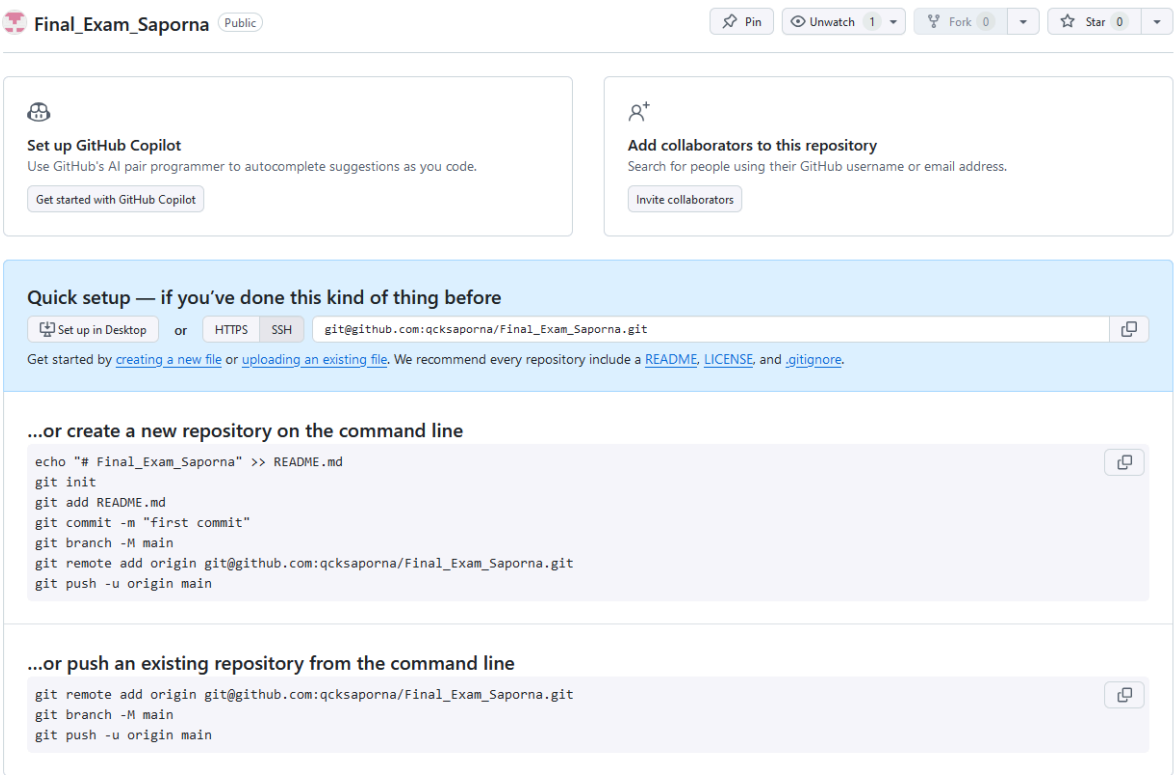
Tools Needed:

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

```
qcksaporna1@Local-Machine:~$ git clone git@github.com:qcksaporna/Final_Exam_Sap
orna.git
Cloning into 'Final_Exam_Saporna'...
warning: You appear to have cloned an empty repository.
```

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

```
qcksaporna1@Local-Machine:~/Final_Exam_Saporna$ ls
ansible.cfg  inventory  playbook.yml
```

```
qcksaporna1@Local-Machine:~/Final_Exam_Saporna$ cat playbook.yml
---
- name: Install and configure Apache HTTP Server and Netdata on Debian and CentOS
  hosts: all
  become: yes

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

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

    # Ensure Apache service is running
    - name: Ensure Apache is running
      service:
        name: apache2
        state: started
        enabled: yes
      when: ansible_os_family == "Debian"

    - name: Ensure Apache is running on CentOS
      service:
        name: httpd
        state: started
        enabled: yes
```

```
    when: ansible_os_family == "RedHat"

  # Create a custom Apache welcome page
  - name: Create a custom index.html for Apache
    copy:
      content: "Welcome to Apache managed by Ansible!"
      dest: "/var/www/html/index.html"
    when: ansible_os_family == "Debian"

  - name: Create a custom index.html for Apache on CentOS
    copy:
      content: "Welcome to Apache managed by Ansible!"
      dest: "/var/www/html/index.html"
    when: ansible_os_family == "RedHat"

  # Open HTTP port in the firewall for Debian-based systems
  - name: Open firewall for HTTP (Debian)
    ufw:
      rule: allow
      name: 'Apache'
    when: ansible_os_family == "Debian"

  # Open HTTP port in the firewall for CentOS-based systems
  - name: Open firewall for HTTP (CentOS)
    firewalld:
      service: http
      permanent: true
      state: enabled
    when: ansible_os_family == "RedHat"

  # Install Netdata for monitoring
```

```
  - name: Open firewall for HTTP (CentOS)
    firewalld:
      service: http
      permanent: true
      state: enabled
    when: ansible_os_family == "RedHat"

  # Install Netdata for monitoring
  - name: Install Netdata on Debian or Ubuntu
    apt:
      name: netdata
      state: present
    when: ansible_os_family == "Debian"

  - name: Install Netdata on CentOS
    yum:
      name: netdata
      state: present
    when: ansible_os_family == "RedHat"

  # Ensure Netdata service is running
  - name: Ensure Netdata is running
    service:
      name: netdata
      state: started
      enabled: yes

  # Modify MOTD (Message of the Day)
  - name: Change MOTD
    copy:
      content: "Ansible Managed by {{ ansible_user }}"
      dest: "/etc/motd"
    become: yes
qcksaporna1@Local-Machine:~/Final_Exam_Saporna$
```

```
qcksaporna1@Local-Machine:~/Final_Exam_Saporna$ cat inventory
[centos]
192.168.56.115 ansible_user=qcksaporna

[ubuntu]
192.168.56.114
qcksaporna1@Local-Machine:~/Final_Exam_Saporna$
```

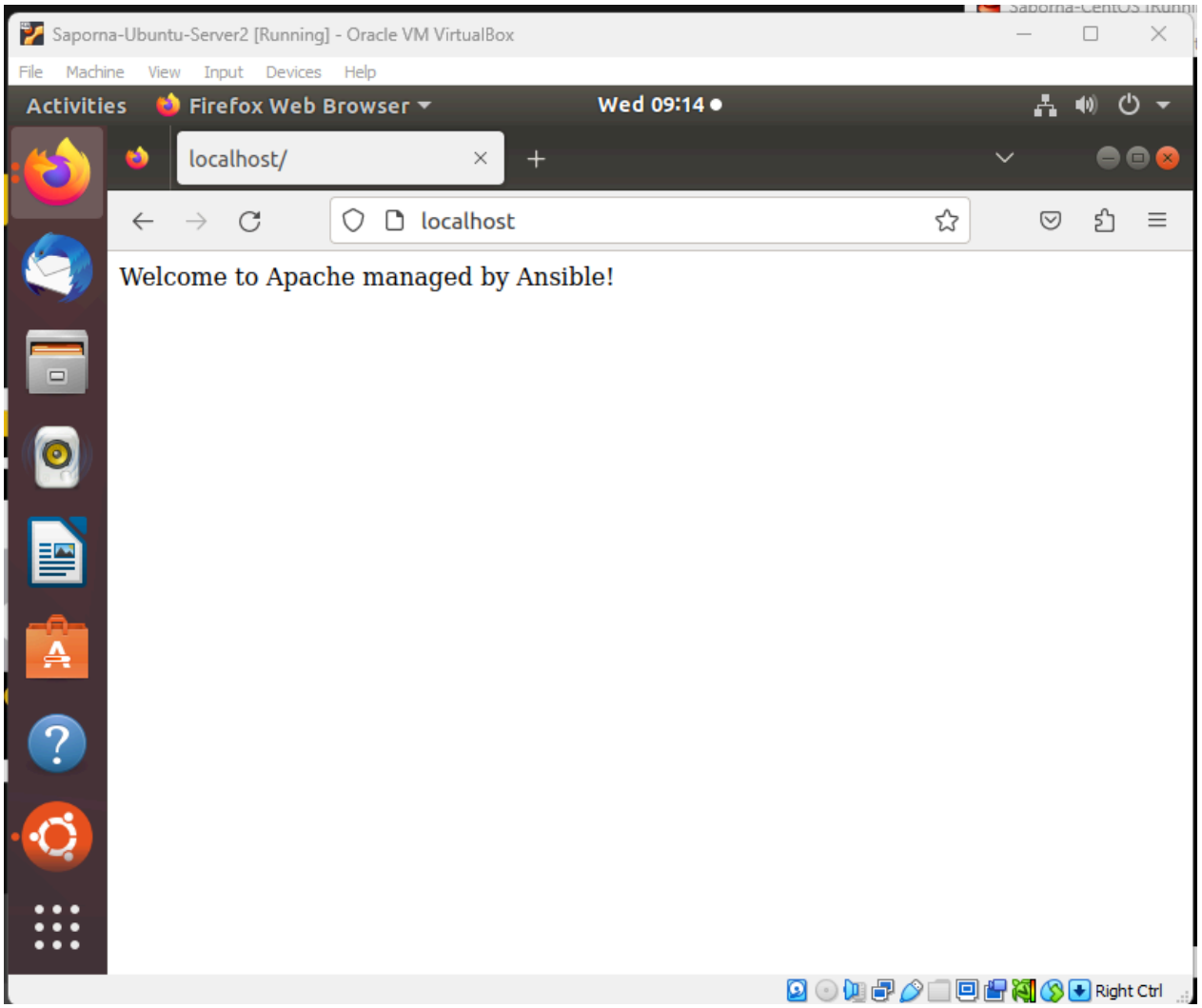
```
qcksaporna1@Local-Machine:~/Final_Exam_Saporna$ cat ansible.cfg
[defaults]
inventory = inventory
remote_user = qcksaporna1
host_key_checking = True
qcksaporna1@Local-Machine:~/Final_Exam_Saporna$
```

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

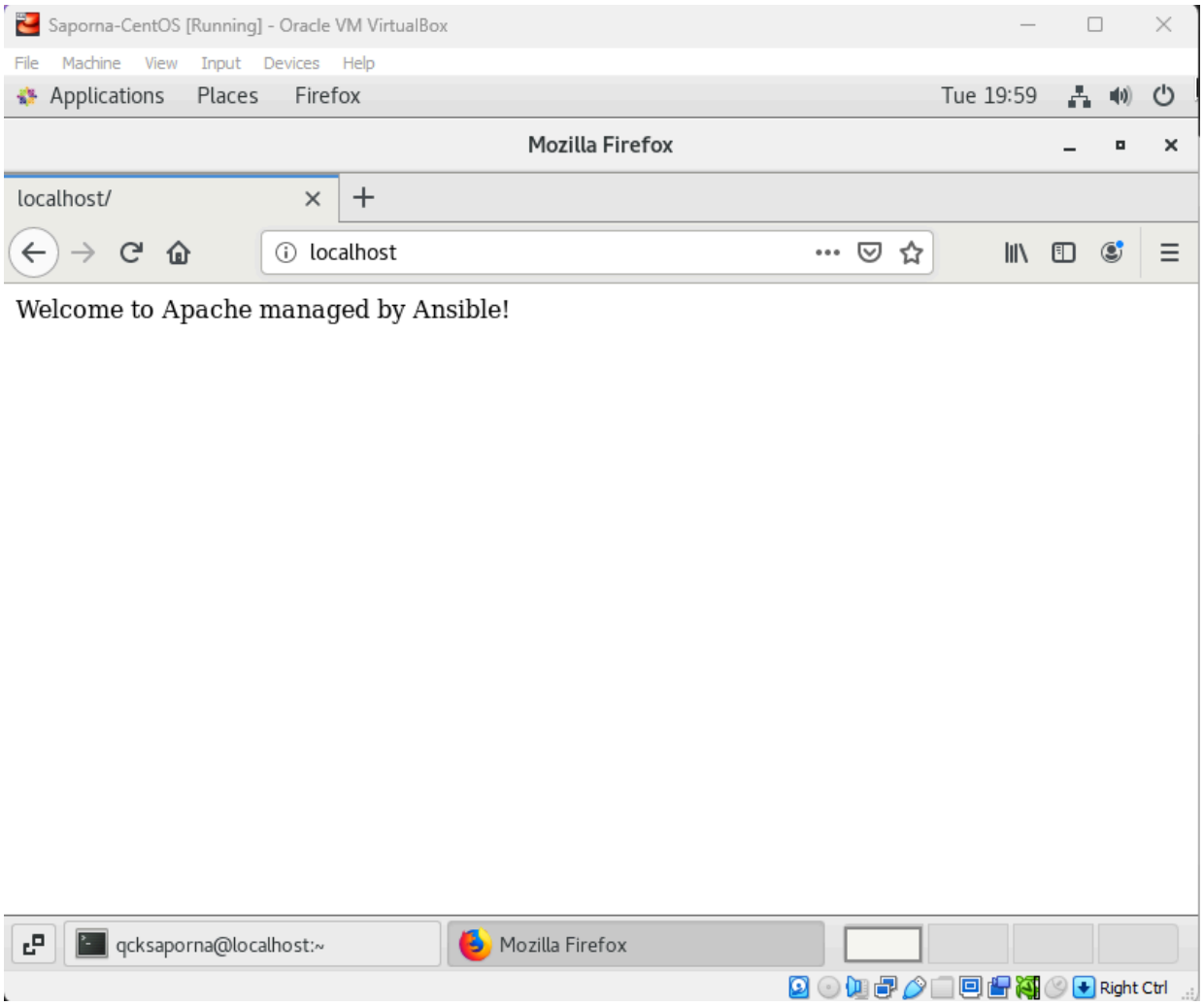
```
qcksaporna1@Local-Machine:~/Final_Exam_Saporna$ ansible-playbook --ask-become-pass playbook.yml
BECOME password:

PLAY [Install and configure Apache HTTP Server and Netdata on Debian and CentOS] ***

TASK [Gathering Facts] *********************************************************
ok: [192.168.56.115]
[DEPRECATION WARNING]: Distribution Ubuntu 18.04 on host 192.168.56.114 should
use /usr/bin/python3, but is using /usr/bin/python for backward compatibility
with prior Ansible releases. A future Ansible release will default to using the
 discovered platform python for this host. See https://docs.ansible.com/ansible
/2.9/reference_appendices/interpreter_discovery.html for more information. This
 feature will be removed in version 2.12. Deprecation warnings can be disabled
by setting deprecation_warnings=False in ansible.cfg.
ok: [192.168.56.114]

TASK [Install Apache on Debian or Ubuntu] **************************************
skipping: [192.168.56.115]
ok: [192.168.56.114]

TASK [Install Apache on CentOS] ************************************************
skipping: [192.168.56.114]
ok: [192.168.56.115]

TASK [Ensure Apache is running] ************************************************
skipping: [192.168.56.115]
ok: [192.168.56.114]

TASK [Ensure Apache is running on CentOS] **************************************
skipping: [192.168.56.114]
ok: [192.168.56.115]

TASK [Create a custom index.html for Apache] ***********************************
skipping: [192.168.56.115]
```

```
changed: [192.168.56.114]

TASK [Create a custom index.html for Apache on CentOS] ************************
skipping: [192.168.56.114]
changed: [192.168.56.115]

TASK [Open firewall for HTTP (Debian)] ****************************************
skipping: [192.168.56.115]
changed: [192.168.56.114]

TASK [Open firewall for HTTP (CentOS)] ****************************************
skipping: [192.168.56.114]
changed: [192.168.56.115]
```

```
qcksaporna1@Server2:~$ 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 2024-11-27 09:24:15 +08; 1h 56min ago
   Main PID: 2146 (apache2)
      Tasks: 66 (limit: 2318)
     CGroup: /system.slice/apache2.service
             ├─2146 /usr/sbin/apache2 -k start
             ├─2367 (wsgi:horizon)    -k start
             ├─2369 (wsgi:horizon)    -k start
             ├─2370 (wsgi:horizon)    -k start
             ├─2371 (wsgi:keystone-pu -k start
             ├─2372 (wsgi:keystone-pu -k start
             ├─2373 (wsgi:keystone-pu -k start
             ├─2374 (wsgi:keystone-pu -k start
             ├─2375 (wsgi:keystone-pu -k start
             ├─2376 /usr/sbin/apache2 -k start
             ├─2377 /usr/sbin/apache2 -k start
             ├─2378 /usr/sbin/apache2 -k start
             ├─2379 /usr/sbin/apache2 -k start
             ├─2380 /usr/sbin/apache2 -k start
             └─9644 /usr/sbin/apache2 -k start

Warning: Journal has been rotated since unit was started. Log output is incompl
lines 1-25/25 (END)
```



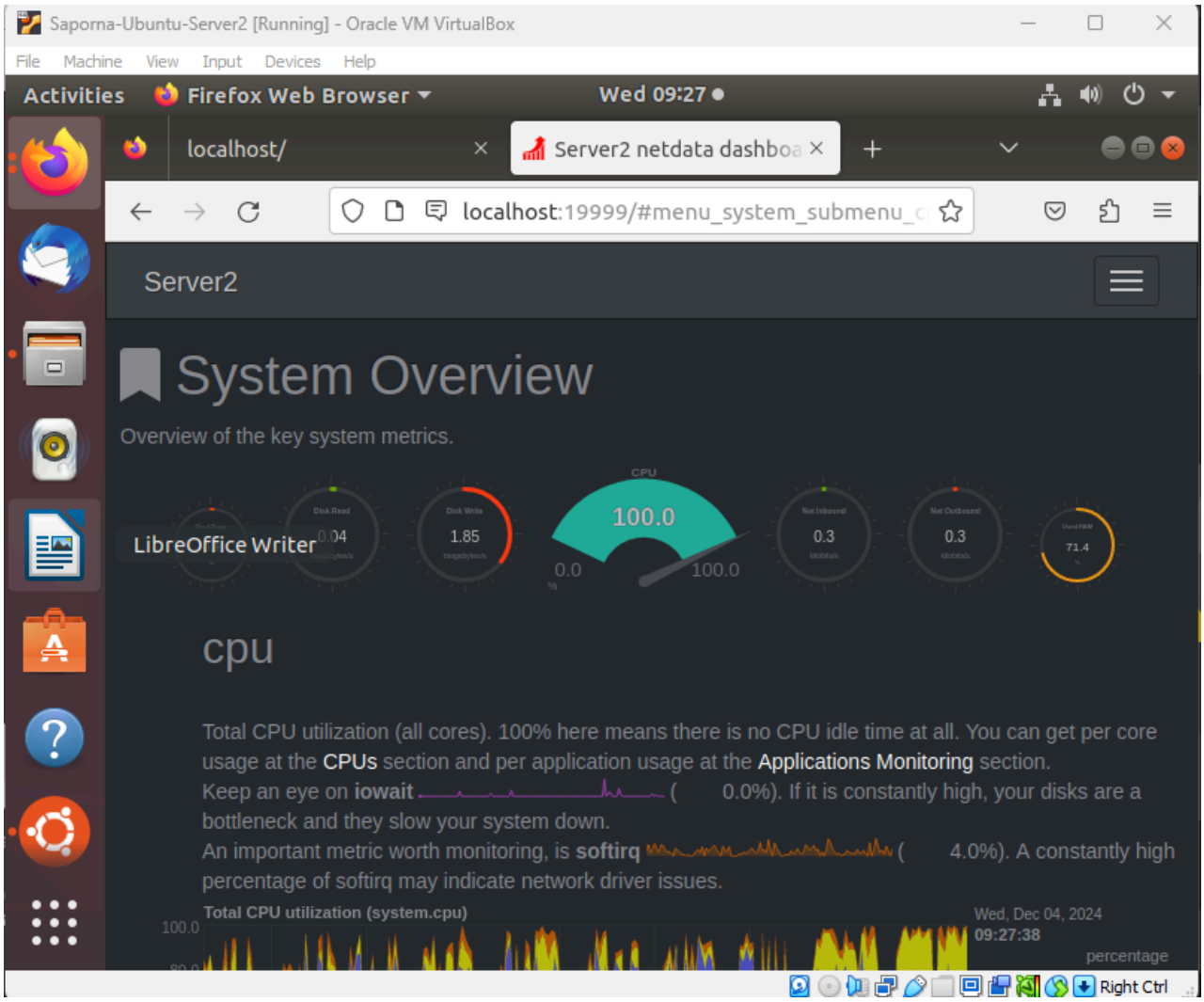

```
Ansible Managed by qcksaporna[qcksaporna@localhost ~]$ systemctl status httpd
● httpd.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/httpd.service; enabled; vendor preset: disab
led)
   Active: active (running) since Tue 2024-12-03 18:54:55 EST; 1h 0min ago
     Docs: man:httpd(8)
           man:apachectl(8)
 Main PID: 1145 (httpd)
   Status: "Total requests: 0; Current requests/sec: 0; Current traffic:   0 B/sec"
    Tasks: 6
   CGroup: /system.slice/httpd.service
           ├─1145 /usr/sbin/httpd -DFOREGROUND
           ├─5664 /usr/sbin/httpd -DFOREGROUND
           ├─5665 /usr/sbin/httpd -DFOREGROUND
           ├─5666 /usr/sbin/httpd -DFOREGROUND
           ├─5667 /usr/sbin/httpd -DFOREGROUND
           └─5668 /usr/sbin/httpd -DFOREGROUND
[qcksaporna@localhost ~]$
```



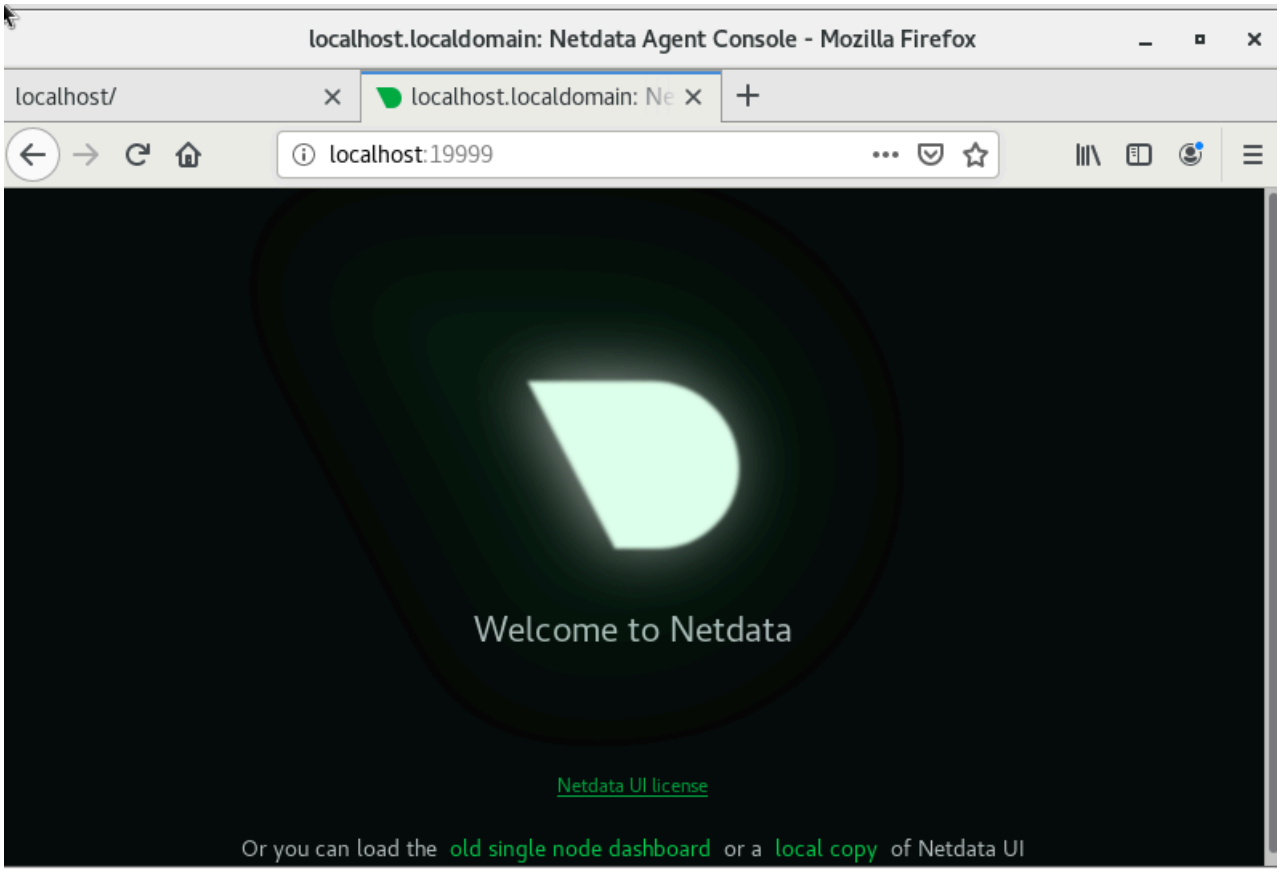
3.2 Install and configure one monitoring tool that can be installed in Debian and Centos servers (if it is a stack there should be option of different host)

```
TASK [Install Netdata on Debian or Ubuntu] ***********************************
skipping: [192.168.56.115]
changed: [192.168.56.114]

TASK [Install Netdata on CentOS] *********************************************
skipping: [192.168.56.114]
changed: [192.168.56.115]

TASK [Ensure Netdata is running] *********************************************
changed: [192.168.56.115]
ok: [192.168.56.114]
```

```
qcksaporna1@Server2:~$ systemctl status netdata
● netdata.service - netdata - Real-time performance monitoring
   Loaded: loaded (/lib/systemd/system/netdata.service; enabled; vendor preset:
   Active: active (running) since Wed 2024-12-04 09:12:31 +08; 2min 51s ago
     Docs: man:netdata
           file:///usr/share/doc/netdata/html/index.html
           https://github.com/firehol/netdata
 Main PID: 2187 (netdata)
    Tasks: 14 (limit: 4656)
   CGroup: /system.slice/netdata.service
           ├─2187 /usr/sbin/netdata -D
           ├─2335 bash /usr/lib/x86_64-linux-gnu/netdata/plugins.d/tc-qos-helpe
           └─2351 /usr/lib/x86_64-linux-gnu/netdata/plugins.d/apps.plugin 1

Warning: Journal has been rotated since unit was started. Log output is incompl
lines 1-14/14 (END)
```



```
[qcksaporna@localhost ~]$ systemctl status netdata
● netdata.service - Real time performance monitoring
   Loaded: loaded (/usr/lib/systemd/system/netdata.service; enabled; vendor preset: dis
abled)
   Active: active (running) since Tue 2024-12-03 19:39:22 EST; 24min ago
 Main PID: 7423 (netdata)
    Tasks: 57
   CGroup: /system.slice/netdata.service
           ├─7423 /usr/sbin/netdata -D
           ├─7446 /usr/sbin/netdata --special-spawn-server
           ├─7610 /usr/bin/bash /usr/libexec/netdata/plugins.d/tc-qos-helper.sh 1
           ├─7615 /usr/libexec/netdata/plugins.d/apps.plugin 1
           └─7620 /usr/bin/python3 /usr/libexec/netdata/plugins.d/python.d.plugin 1
[qcksaporna@localhost ~]$
```



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

```
TASK [Change MOTD] *******************************************************
changed: [192.168.56.114]
changed: [192.168.56.115]
```

```
qcksaporna1@Server2:~$ cat /etc/motd
Ansible Managed by qcksaporna1qcksaporna1@Server2:~$
```

```
[qcksaporna@localhost ~]$ cat /etc/motd
Ansible Managed by qcksaporna[qcksaporna@localhost ~]$
```

4. Push and commit your files in GitHub

```
qcksaporna1@Local-Machine:~/Final_Exam_Saporna$ git add .
qcksaporna1@Local-Machine:~/Final_Exam_Saporna$ git commit -m "FINAL SKILLS EXAM FILES"
[master (root-commit) 8525c92] FINAL SKILLS EXAM FILES
 3 files changed, 98 insertions(+)
 create mode 100644 ansible.cfg
 create mode 100644 inventory
 create mode 100644 playbook.yml
qcksaporna1@Local-Machine:~/Final_Exam_Saporna$ git push origin master
Counting objects: 5, done.
Delta compression using up to 2 threads.
Compressing objects: 100% (5/5), done.
Writing objects: 100% (5/5), 1.02 KiB | 1.02 MiB/s, done.
Total 5 (delta 0), reused 0 (delta 0)
To github.com:qcksaporna/Final_Exam_Saporna.git
 * [new branch]      master -> master
qcksaporna1@Local-Machine:~/Final_Exam_Saporna$
```

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

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

https://github.com/qcksaporna/Final_Exam_Saporna

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