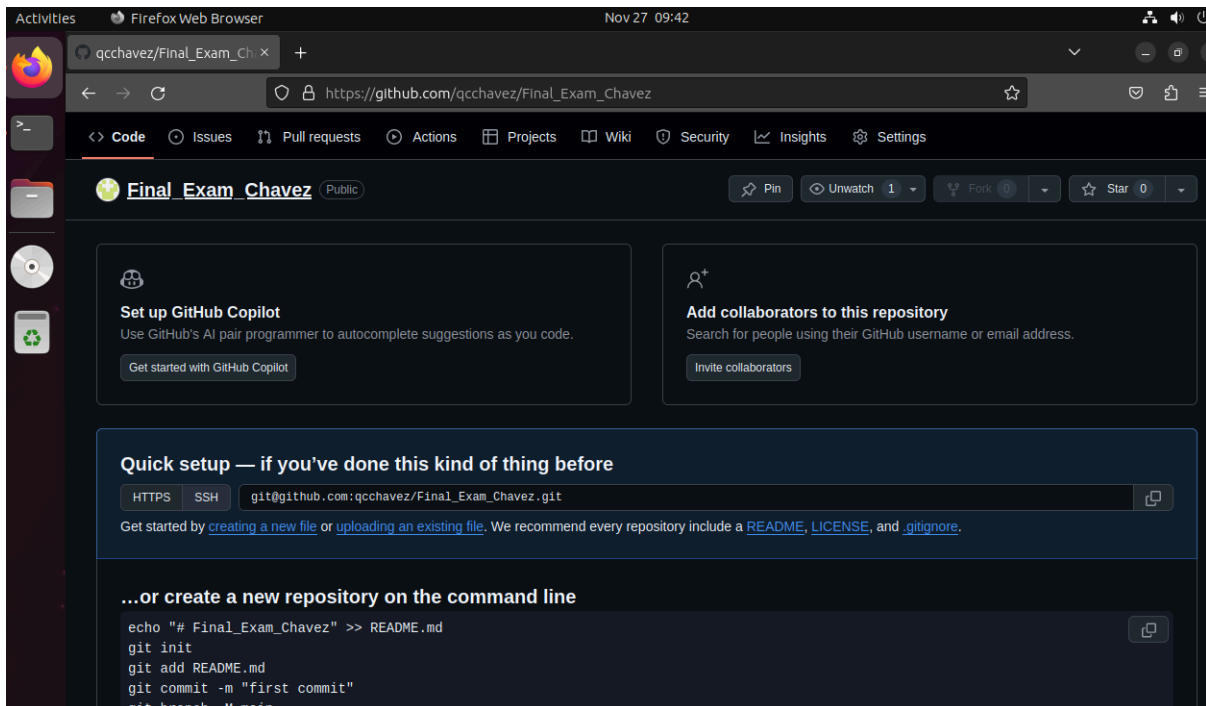
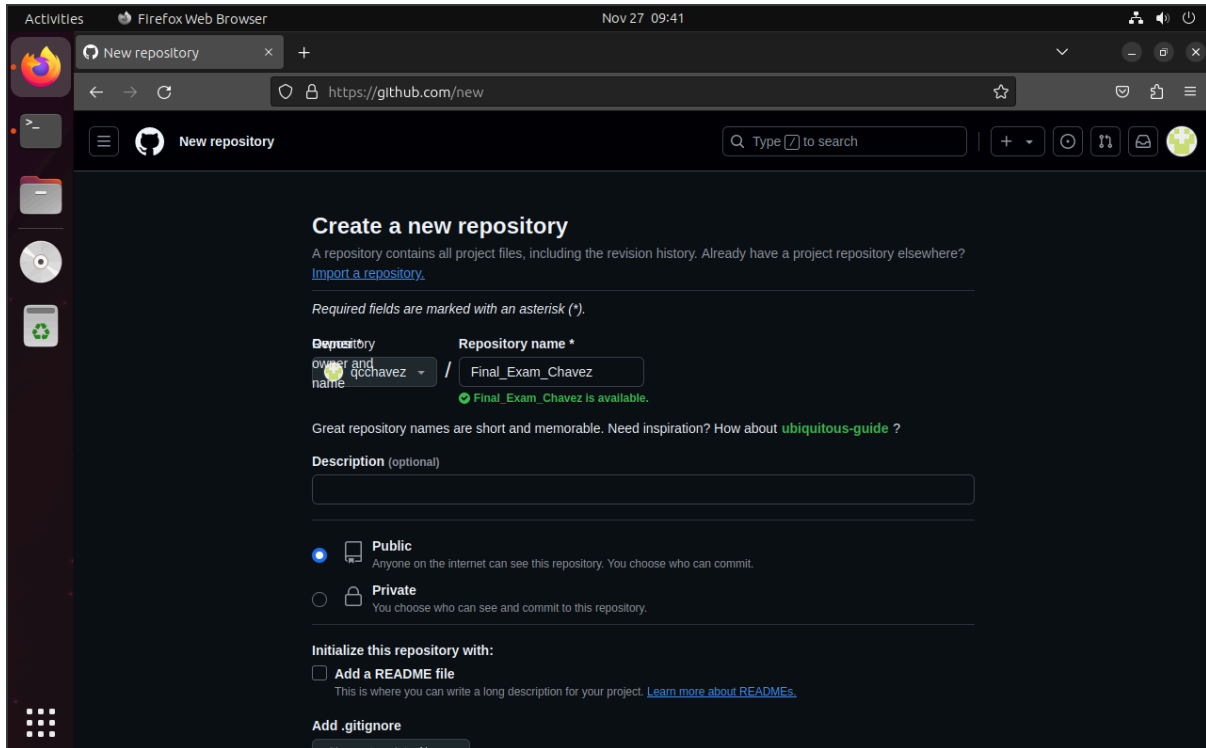


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<b>Course/Section::</b> CPE31S2	<b>Date Submitted:</b> December 4, 2024
<b>Instructor:</b> Engr. Robin Valenzuela	<b>Semester and SY:</b> 1st Sem, 2024-2025
<b>Hands-on Final Exam</b>	
Tools Needed:	
1. VM with Ubuntu, CentOS and Ansible installed  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)  3.3 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.  <u>Note: Extra points if you will implement the said services via containerization.</u>	

## Procedure 1



## Procedure 2

```
qcchavez@workstation: ~/Final_Exam_Chavez
qcchavez@workstation:~$ git clone git@github.com:qcchavez/Final_Exam_Chavez.git
Cloning into 'Final_Exam_Chavez'...
warning: You appear to have cloned an empty repository.
qcchavez@workstation:~$ ls
Chavez_PrelimExam  CPE212_Chavez_HOA7.1  CPE_MidExam_Chavez  Music  Templates
CPE212_Chavez_HOA10.1  CPE212_Chavez_HOA8.1  Desktop  Pictures  Videos
CPE212_Chavez_HOA11.1  CPE212_Chavez_HOA9.1  Documents  Public
CPE212_Chavez_HOA13.1  CPE212_Chavez_MidtermExam  Downloads  README.md
CPE212_Chavez_HOA6.1  CPE232_Chavez_HOA4.1  Final_Exam_Chavez  snap
qcchavez@workstation:~$ cd Final_Exam_Chavez
qcchavez@workstation:~/Final_Exam_Chavez$
```

## Procedure 3

```
qcchavez@workstation: ~/Final_Exam_Chavez
qcchavez@workstation:~/Final_Exam_Chavez$ ls
ansible.cfg  config.yaml  inventory  roles
qcchavez@workstation:~/Final_Exam_Chavez$ cat config.yaml
---
- hosts: all
  become: true
  pre_tasks:

  - name: update repository index (CentOS)
    dnf:
      update_cache: yes
      changed_when: false
      when: ansible_distribution == "CentOS"

  - name: updating repository index (Ubuntu)
    apt:
      update_cache: yes
      changed_when: false
      when: ansible_distribution == "Ubuntu"

  roles:
    - Ubuntu
    - CentOS
qcchavez@workstation:~/Final_Exam_Chavez$

qcchavez@workstation:~/Final_Exam_Chavez$ cat inventory
[Ubuntu]
#Can add more than one
192.168.56.116

[CentOS]
#Can add more than one
192.168.56.119 ansible_user=cchavez
qcchavez@workstation:~/Final_Exam_Chavez$
```

```
qcchavez@workstation:~/Final_Exam_Chavez/roles$ tree
.
├── CentOS
│   └── tasks
│       └── main.yml
└── Ubuntu
    └── tasks
        └── main.yml

5 directories, 2 files
qcchavez@workstation:~/Final_Exam_Chavez/roles$
```

---

### Procedure 3.1

#### Installation of Apache and NetData in Ubuntu

```
- name: Install Netdata
  apt:
    name: netdata
    state: present
    when: ansible_distribution == "Ubuntu"

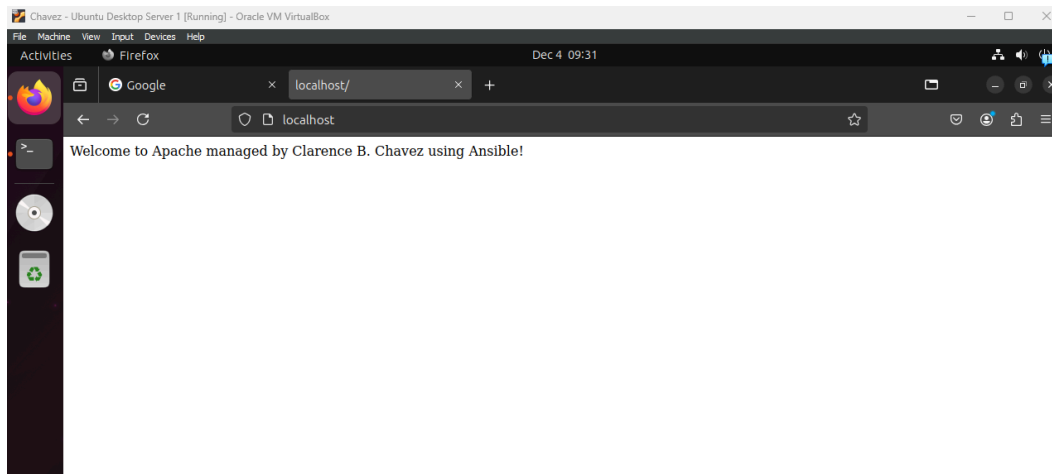
- name: Starting Netdata
  service:
    name: netdata
    state: restarted
    enabled: yes
    when: ansible_distribution == "Ubuntu"
```

```
TASK [Ubuntu : Installing Apache] *****
skipping: [192.168.56.119]
ok: [192.168.56.116]

TASK [Ubuntu : Create a custom index.html for Apache] *****
skipping: [192.168.56.119]
ok: [192.168.56.116]

TASK [Ubuntu : Open firewall for HTTP] *****
skipping: [192.168.56.119]
ok: [192.168.56.116]

TASK [Ubuntu : Starting Apache] *****
skipping: [192.168.56.119]
changed: [192.168.56.116]
```



## Installation of Apache and NetData in CentOS

```
TASK [CentOS : Install Apache] *****
ok: [192.168.56.119]

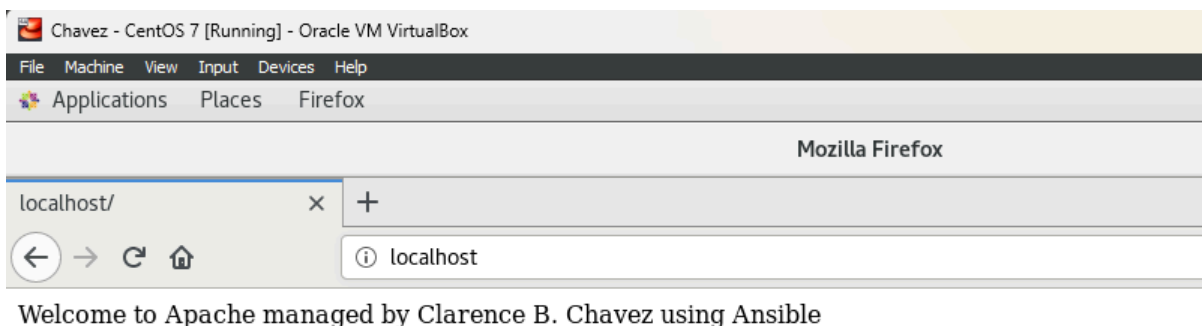
TASK [CentOS : Starting Apache] *****
changed: [192.168.56.119]

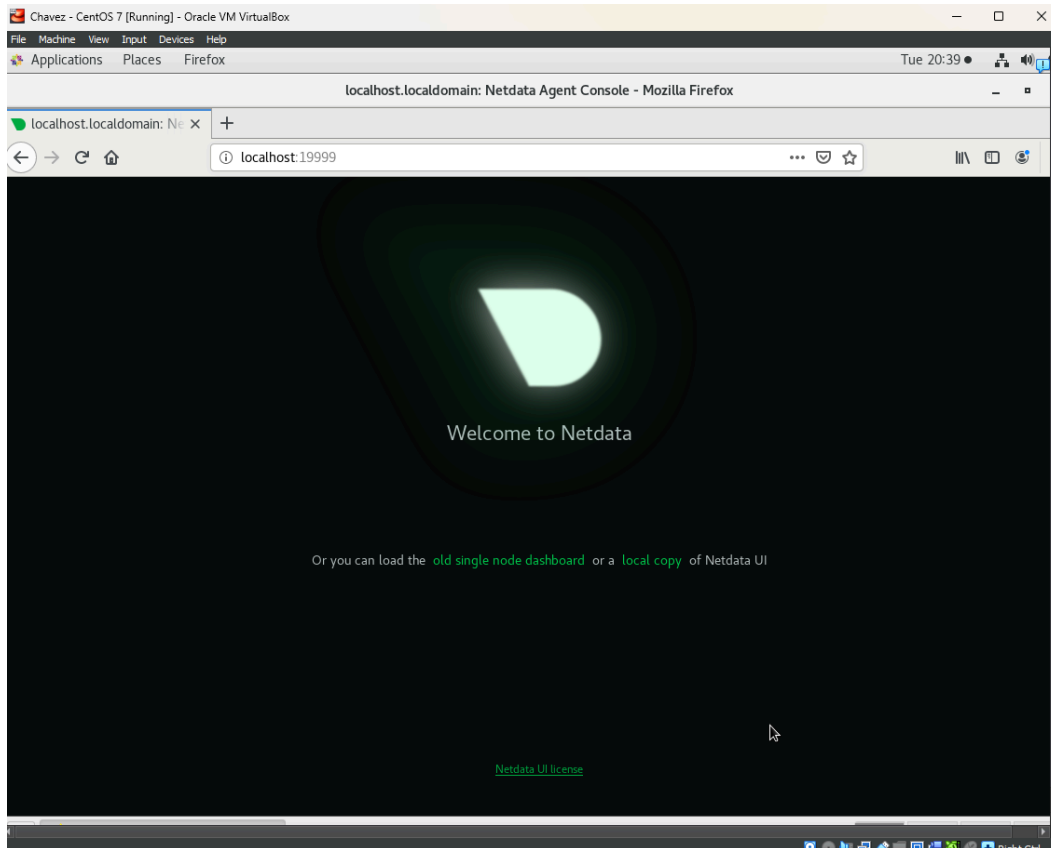
TASK [CentOS : Create a custom index.html for Apache] *****
ok: [192.168.56.119]

TASK [CentOS : Open firewall for HTTP] *****
ok: [192.168.56.119]

TASK [CentOS : Install Netdata] *****
ok: [192.168.56.119]

TASK [CentOS : Starting Netdata] *****
ok: [192.168.56.119]
```





```
only apache.service could not be found.
[cchavez@localhost ~]$ systemctl status httpd
● httpd.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/httpd.service; enabled; vendor preset: disabled)
   Active: active (running) since Tue 2024-11-05 23:14:01 EST; 51s ago
     Docs: man:httpd(8)
           man:apachectl(8)
  Process: 4128 ExecStop=/bin/kill -WINCH ${MAINPID} (code=exited, status=0/SUCCESS)
 Main PID: 4134 (httpd)
    Status: "Total requests: 0; Current requests/sec: 0; Current traffic:  0 B/sec"
    Tasks: 6
   CGroup: /system.slice/httpd.service
           └─4134 /usr/sbin/httpd -DFOREGROUND
             └─4135 /usr/sbin/httpd -DFOREGROUND
               └─4136 /usr/sbin/httpd -DFOREGROUND
                 └─4137 /usr/sbin/httpd -DFOREGROUND
                   └─4138 /usr/sbin/httpd -DFOREGROUND
                     └─4139 /usr/sbin/httpd -DFOREGROUND

Nov 05 23:14:01 localhost.localdomain systemd[1]: Stopped The Apache HTTP Ser...
Nov 05 23:14:01 localhost.localdomain systemd[1]: Starting The Apache HTTP Se...
Nov 05 23:14:01 localhost.localdomain httpd[4134]: AH00558: httpd: Could not ...
Nov 05 23:14:01 localhost.localdomain systemd[1]: Started The Apache HTTP Ser...
Hint: Some lines were ellipsized, use -l to show in full.
[cchavez@localhost ~]$
```

```
[cchavez@localhost ~]$ systemctl status netdata
● netdata.service - Real time performance monitoring
   Loaded: loaded (/usr/lib/systemd/system/netdata.service; enabled; vendor preset: disabled)
   Active: active (running) since Tue 2024-11-05 23:00:39 EST; 13min ago
 Main PID: 28410 (netdata)
    Tasks: 57
   CGroup: /system.slice/netdata.service
           └─28410 /usr/sbin/netdata -D
             └─28433 /usr/sbin/netdata --special-spawn-server
               └─28597 /usr/bin/bash /usr/libexec/netdata/plugins.d/tc-qos-helper...
                 └─28602 /usr/libexec/netdata/plugins.d/apps.plugin 1
                   └─28607 /usr/bin/python3 /usr/libexec/netdata/plugins.d/python.d.p...

Nov 05 23:00:39 localhost.localdomain systemd[1]: Started Real time performan...
Nov 05 23:00:39 localhost.localdomain netdata[28410]: time=2024-11-05T23:00:3...
Nov 05 23:00:39 localhost.localdomain netdata[28410]: time=2024-11-05T23:00:3...
Nov 05 23:00:39 localhost.localdomain netdata[28410]: time=2024-11-05T23:00:3...
Hint: Some lines were ellipsized, use -l to show in full.
```

## Procedure 3.2

### Installation of Nagios in Ubuntu

```
qchavez@workstation: ~/Final_Exam_Chavez/roles/Ubuntu/tasks
GNU nano 7.2 main.yml *
...
## INSTALLATION OF NAGIOS MONITORING TOOL ##

- name: Install required packages
  apt:
    name: nagios4-core
    state: latest
    when: ansible_distribution == "Ubuntu"

- name: Enable Nagios service
  service:
    name: nagios4
    state: restarted
    enabled: true
    when: ansible_distribution == "Ubuntu"

- name: Install Nagios Dependencies
  apt:
    name:
      - libgd-dev
      - libpng-dev
      - libfreetype6-dev
      - gcc
      - libc6-dev
    state: latest
    when: ansible_distribution == "Ubuntu"
```

```
TASK [Ubuntu : Install required packages] *****
skipping: [192.168.56.119]
ok: [192.168.56.116]

TASK [Ubuntu : Enable Nagios service] *****
skipping: [192.168.56.119]
changed: [192.168.56.116]

TASK [Ubuntu : Install Nagios Dependencies] *****
skipping: [192.168.56.119]
ok: [192.168.56.116]
```

```
qcchavez@server1:~$ sudo systemctl status nagios4
● nagios4.service - nagios4
   Loaded: loaded (/lib/systemd/system/nagios4.service; enabled; preset: enabled)
   Active: active (running) since Wed 2024-12-04 09:46:55 PST; 2min 16s ago
     Docs: man:nagios4
  Process: 77014 ExecStartPre=sh -c nagiospipe=$(sed -n "s/^command_file=\\(.*\\)/\\1/p" ${NAGIOSCFG}); [ -z "${nag
 Main PID: 77016 (nagios4)
    Tasks: 8 (limit: 2263)
   Memory: 3.4M
      CPU: 56ms
  CGroup: /system.slice/nagios4.service
          └─77016 /usr/sbin/nagios4 /etc/nagios4/nagios.cfg
             └─77021 /usr/sbin/nagios4 --worker /var/lib/nagios4/rw/nagios.qh
                └─77022 /usr/sbin/nagios4 --worker /var/lib/nagios4/rw/nagios.qh
                   └─77023 /usr/sbin/nagios4 --worker /var/lib/nagios4/rw/nagios.qh
                      └─77024 /usr/sbin/nagios4 --worker /var/lib/nagios4/rw/nagios.qh
                         └─77025 /usr/sbin/nagios4 /etc/nagios4/nagios.cfg
                            └─78025 /usr/lib/nagios/plugins/check_ping -H 127.0.0.1 -w 100.0,20% -c 500.0,60%
                               └─78026 /bin/ping -4 -n -U -w 10 -c 5 127.0.0.1
```



## Installation of Nagios in CentOS

```
qccchavez@workstation: ~/Final_Exam_Chavez/roles/CentOS/tasks
GNU nano 7.2 main.yml *
---
## INSTALLATION OF NAGIOS MONITORING TOOL ##

- name: Installing EPEL repository
  yum:
    name: epel-release
    state: latest
    when: ansible_distribution == "CentOS"

- name: Installing required packages for Nagios
  yum:
    name: nagios
    state: latest
    when: ansible_distribution == "CentOS"

- name: Enabling Nagios service
  service:
    name: nagios
    state: restarted
    enabled: true
    when: ansible_distribution == "CentOS"

- name: Installing Nagios Dependencies
  yum:
    name:
      - gd-devel
      - libpng-devel
      - freetype-devel
      - glibc
```

```
TASK [CentOS : Installing EPEL repository] *****
skipping: [192.168.56.116]
ok: [192.168.56.119]

TASK [CentOS : Installing required packages for Nagios] *****
skipping: [192.168.56.116]
ok: [192.168.56.119]

TASK [CentOS : Enabling Nagios service] *****
skipping: [192.168.56.116]
changed: [192.168.56.119]

TASK [CentOS : Installing Nagios Dependencies] *****
skipping: [192.168.56.116]
ok: [192.168.56.119]
```

```
[cchavez@localhost ~]$ sudo systemctl status nagios
[sudo] password for cchavez:
● nagios.service - Nagios Core 4.4.14
   Loaded: loaded (/usr/lib/systemd/system/nagios.service; enabled; vendor prese
t: disabled)
   Active: active (running) since Tue 2024-12-03 20:47:12 EST; 2min 39s ago
     Docs: https://www.nagios.org/documentation
   Process: 10612 ExecStopPost=/usr/bin/rm -f /var/spool/nagios/cmd/nagios.cmd (c
ode=exited, status=0/SUCCESS)
   Process: 10609 ExecStop=/usr/bin/kill -s TERM ${MAINPID} (code=exited, status=
0/SUCCESS)
   Process: 10617 ExecStart=/usr/sbin/nagios -d /etc/nagios/nagios.cfg (code=exit
ed, status=0/SUCCESS)
   Process: 10614 ExecStartPre=/usr/sbin/nagios -v /etc/nagios/nagios.cfg (code=e
xited, status=0/SUCCESS)
  Main PID: 10620 (nagios)
    Tasks: 6
   CGroup: /system.slice/nagios.service
           └─10620 /usr/sbin/nagios -d /etc/nagios/nagios.cfg
             └─10622 /usr/sbin/nagios --worker /var/spool/nagios/cmd/nagios.qh
               └─10623 /usr/sbin/nagios --worker /var/spool/nagios/cmd/nagios.qh
                 └─10624 /usr/sbin/nagios --worker /var/spool/nagios/cmd/nagios.qh
                   └─10625 /usr/sbin/nagios --worker /var/spool/nagios/cmd/nagios.qh
                     └─10632 /usr/sbin/nagios -d /etc/nagios/nagios.cfg
```

### Procedure 3.3

Change Motd as "Ansible Managed by <username> in Ubuntu

```
TASK [Ubuntu : Change MOTD] *****
skipping: [192.168.56.119]
changed: [192.168.56.116]
```

```
qcchavez@server1:~$ cat /etc/motd
Ansible Managed by qcchavezqcchavez@server1:~$
```

Change Motd as "Ansible Managed by <username> in CentOS

```
TASK [CentOS : Change MOTD]
changed: [192.168.56.119]
```

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

## Procedure 4

### Committing to GitHub

```
qcchavez@workstation:~/Final_Exam_Chavez$ sudo nano /etc/apt/sources.list
[sudo] password for qcchavez:
qcchavez@workstation:~/Final_Exam_Chavez$ cd roles/Ubuntu/tasks
qcchavez@workstation:~/Final_Exam_Chavez/roles/Ubuntu/tasks$ sudo nano main.yml
qcchavez@workstation:~/Final_Exam_Chavez/roles/Ubuntu/tasks$ cd ../../..
qcchavez@workstation:~/Final_Exam_Chavez$ git add .
qcchavez@workstation:~/Final_Exam_Chavez$ git commit -m "File for Finals Skills Exam"
[main 5ef1037] File for Finals Skills Exam
 1 file changed, 12 insertions(+), 12 deletions(-)
qcchavez@workstation:~/Final_Exam_Chavez$ git push origin main
Enumerating objects: 11, done.
Counting objects: 100% (11/11), done.
Compressing objects: 100% (4/4), done.
Writing objects: 100% (6/6), 535 bytes | 535.00 KiB/s, done.
Total 6 (delta 2), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (2/2), completed with 2 local objects.
To github.com:qcchavez/Final_Exam_Chavez.git
   6a6046d..5ef1037  main -> main
qcchavez@workstation:~/Final_Exam_Chavez$
```