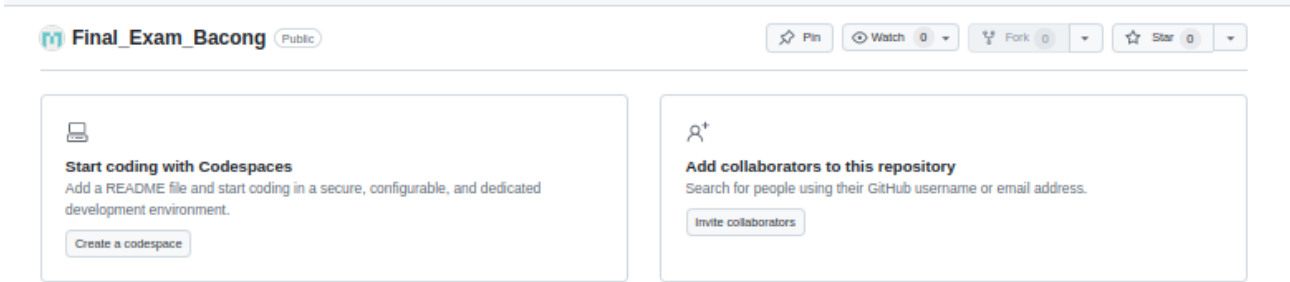
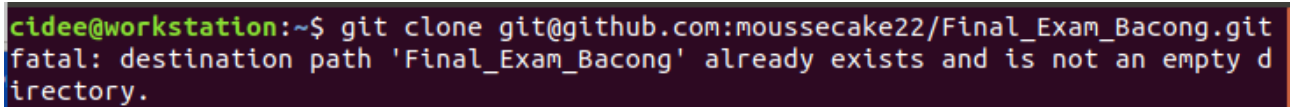


Final Exam Hand On	
Course Code: CPE212	Program: BSCPE
Course Title: Automating Server Management	Date Performed: 14 November 2025
Section: CPE31S4	Date Submitted: 20 November 2025
Name: Bacong, El Cid A.	Instructor: Engr. Robin Valenzuela
Tools Needed	
<ol style="list-style-type: none"> 1. VM with Ubuntu, CentOS and Ansible installed 2. Web browser 	
Procedure:	
<ol style="list-style-type: none"> 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. <ol style="list-style-type: none"> 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) 6. For your final exam to be counted, please paste your repository link as an answer in this exam. <p>Note: Extra points if you will implement the said services via containerization.</p>	
Output	
<p>aadas</p>  <p>The screenshot shows the GitHub interface for a newly created public repository named 'Final_Exam_Bacong'. At the top, there are buttons for 'Pin', 'Watch' (0), 'Fork' (0), and 'Star' (0). Below these are two main action boxes: 'Start coding with Codespaces' with a 'Create a codespace' button, and 'Add collaborators to this repository' with an 'Invite collaborators' button.</p>	
<p>Figure 1. Creating a new repository</p>	
 <pre>cidee@workstation:~\$ git clone git@github.com:moussecake22/Final_Exam_Bacong.git fatal: destination path 'Final_Exam_Bacong' already exists and is not an empty directory.</pre>	
<p>Figure 2. Cloning the repository into the virtual machine</p>	

```
---
- hosts: all
  vars_files:
    - config.yaml

  roles:
    - enterprise_service
    - monitoring_tool
    - motd
```

Figure 3. Creating Ansible Playbook

```
---
- name: Install Apache on Debian
  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: Enable and start service
  service:
    name: "{{ 'apache2' if ansible_os_family == 'Debian' else 'httpd' }}"
    state: started
    enabled: yes
```

Figure 3.1. Installing and configuring one enterprise service (Apache)

```

---
- name: Install NRPE and plugins on Debian
  apt:
    name:
      - nagios-nrpe-server
      - nagios-plugins
    state: present
    update_cache: yes
  when: ansible_os_family == "Debian"

- name: Install NRPE and plugins on CentOS
  yum:
    name:
      - nrpe
      - nagios-plugins-load
      - nagios-plugins-ping
      - nagios-plugins-http
      - nagios-plugins-disk
      - nagios-plugins-procs
    state: present
  when: ansible_os_family == "RedHat"

- name: Enable and start NRPE
  service:
    name: "{{ 'nagios-nrpe-server' if ansible_os_family == 'Debian' else 'nrpe' }}"
    state: started
    enabled: yes

```

Figure 3.2. Installing and configuring monitoring tool (NRPE)

```

---
- name: Change MOTD
  copy:
    dest: /etc/motd
    content: "Ansible Managed by {{ motd_user }}"
    owner: root
    group: root
    mode: 0644

```

Figure 3.3. Changing banner name

```
cidee@workstation:~/Final_Exam_Bacong$ git add *
cidee@workstation:~/Final_Exam_Bacong$ git commit -m "Final Skills Exam Done :>"
[main e8f6031] Final Skills Exam Done :>
 6 files changed, 66 insertions(+), 78 deletions(-)
 create mode 100644 roles/enterprise_service/tasks/main.yaml
 create mode 100644 roles/monitoring_tool/tasks/main.yaml
 create mode 100644 roles/motd/tasks/main.yaml
cidee@workstation:~/Final_Exam_Bacong$ git push origin main
Enumerating objects: 19, done.
Counting objects: 100% (19/19), done.
Compressing objects: 100% (9/9), done.
Writing objects: 100% (15/15), 1.48 KiB | 9.00 KiB/s, done.
Total 15 (delta 2), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Resolving deltas: 100% (2/2), completed with 1 local object.
To github.com:mousseccake22/Final_Exam_Bacong.git
 d089c15..e8f6031  main -> main
```

Figure 4. Saving files into GitHub

```

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

TASK [enterprise_service : Install Apache on Debian] *****
skipping: [192.168.56.104]
ok: [192.168.56.103]

TASK [enterprise_service : Install Apache on CentOS] *****
skipping: [192.168.56.103]
ok: [192.168.56.104]

TASK [enterprise_service : Enable and start service] *****
ok: [192.168.56.103]
ok: [192.168.56.104]

TASK [monitoring_tool : Install NRPE and plugins on Debian] *****
skipping: [192.168.56.104]
ok: [192.168.56.103]

TASK [monitoring_tool : Install NRPE and plugins on CentOS] *****
skipping: [192.168.56.103]
changed: [192.168.56.104]

TASK [monitoring_tool : Enable and start NRPE] *****
ok: [192.168.56.103]
changed: [192.168.56.104]

TASK [motd : Change MOTD] *****
ok: [192.168.56.103]
changed: [192.168.56.104]

PLAY RECAP *****
192.168.56.103      : ok=6    changed=0    unreachable=0    failed=0    skipped=
2    rescued=0    ignored=0
192.168.56.104      : ok=6    changed=3    unreachable=0    failed=0    skipped=
2    rescued=0    ignored=0

```

Figure 5. Running the Playbook

https://github.com/mousseccake22/Final_Exam_Bacong.git

Figure 6. Repository link

Verification

For Ubuntu:

```
cidee@server1:~$ systemctl status apache2
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/apache2.service; enabled; preset: >
   Active: active (running) since Thu 2025-11-20 07:16:10 UTC; 1h 5min ago
 Invocation: 04f76e4ad03e455d9c6b8848a9af107f
    Docs: https://httpd.apache.org/docs/2.4/
   Main PID: 1624 (apache2)
     Tasks: 6 (limit: 1609)
    Memory: 11.4M (peak: 29.6M)
       CPU: 794ms
    CGroup: /system.slice/apache2.service
           └─1624 /usr/sbin/apache2 -k start
              4895 /usr/sbin/apache2 -k start
              4896 /usr/sbin/apache2 -k start
              4897 /usr/sbin/apache2 -k start
              4898 /usr/sbin/apache2 -k start
              4899 /usr/sbin/apache2 -k start

Warning: some journal files were not opened due to insufficient permissions.
lines 1-18/18 (END)
```

Figure 1. Enterprise Service Verification

```
cidee@server1:~$ systemctl status nagios-nrpe-server
● nagios-nrpe-server.service - Nagios Remote Plugin Executor
   Loaded: loaded (/usr/lib/systemd/system/nagios-nrpe-server.service; enable>
   Active: active (running) since Thu 2025-11-20 08:08:23 UTC; 16min ago
 Invocation: d9a83fd33fb342ae9ba879f34f392e96
    Docs: http://www.nagios.org/documentation
   Main PID: 9268 (nrpe)
     Tasks: 1 (limit: 1609)
    Memory: 1.4M (peak: 4.6M)
       CPU: 26ms
    CGroup: /system.slice/nagios-nrpe-server.service
           └─9268 /usr/sbin/nrpe -c /etc/nagios/nrpe.cfg -f

lines 1-11/11 (END)
```

Figure 2. Monitoring Tool Verification

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

Figure 3. Banner Name Verification

For CentOS:

```
[cidee@centos ~]$ systemctl status httpd
● httpd.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/httpd.service; enabled; preset: dis>
   Drop-In: /usr/lib/systemd/system/httpd.service.d
           └─php-fpm.conf
   Active: active (running) since Thu 2025-11-20 15:16:06 PST; 1h 14min ago
     Docs: man:httpd.service(8)
  Main PID: 914 (httpd)
    Status: "Total requests: 0; Idle/Busy workers 100/0; Requests/sec: 0; Bytes>
     Tasks: 177 (limit: 2494)
    Memory: 7.1M (peak: 18.8M)
       CPU: 2.990s
    CGroup: /system.slice/httpd.service
            └─ 914 /usr/sbin/httpd -DFOREGROUND
               1008 /usr/sbin/httpd -DFOREGROUND
               1012 /usr/sbin/httpd -DFOREGROUND
               1014 /usr/sbin/httpd -DFOREGROUND
               1047 /usr/sbin/httpd -DFOREGROUND

Nov 20 15:16:04 centos systemd[1]: Starting The Apache HTTP Server...
Nov 20 15:16:06 centos httpd[914]: AH00558: httpd: Could not reliably determine>
Nov 20 15:16:06 centos httpd[914]: Server configured, listening on: port 80
Nov 20 15:16:06 centos systemd[1]: Started The Apache HTTP Server.
lines 1-22/22 (END)
```

Figure 4. Enterprise Service Verification

```
[cidee@centos ~]$ systemctl status nrpe
● nrpe.service - Nagios Remote Plugin Executor
   Loaded: loaded (/usr/lib/systemd/system/nrpe.service; enabled; preset: dis>
   Active: active (running) since Thu 2025-11-20 16:16:01 PST; 17min ago
     Docs: http://www.nagios.org/documentation
  Main PID: 7290 (nrpe)
    Tasks: 1 (limit: 2494)
   Memory: 176.0K (peak: 2.3M)
      CPU: 29ms
    CGroup: /system.slice/nrpe.service
            └─ 7290 /usr/sbin/nrpe -c /etc/nagios/nrpe.cfg -f

Nov 20 16:16:01 centos systemd[1]: Started Nagios Remote Plugin Executor.
Nov 20 16:16:01 centos nrpe[7290]: Starting up daemon
Nov 20 16:16:01 centos nrpe[7290]: Server listening on 0.0.0.0 port 5666.
Nov 20 16:16:01 centos nrpe[7290]: Server listening on :: port 5666.
Nov 20 16:16:01 centos nrpe[7290]: Listening for connections on port 5666
Nov 20 16:16:01 centos nrpe[7290]: Allowing connections from: 127.0.0.1,::1
lines 1-17/17 (END)
```

Figure 5. Monitoring Tool Verification

```
[cidee@centos ~]$ cat /etc/motd  
Ansible Managed by cidee[cidee@centos ~]$
```

Figure 6. Banner Name Verification