| Final Exam Hand On | |
|---|---|
| Final Exam Submission | |
| **Course Code:** CPE 212 | **Program:** BSCPE |
| **Course Title:** Automating Server Management | **Date Performed:** Nov 14, 2025 |
| **Section:** CPE31S4 | **Date Submitted:** Nov 20, 2025 |
| **Name:** Atian, Catherine Joy D. | **Instructor:** Engr. Robin Vaenzuela |

**Tools Needed:**

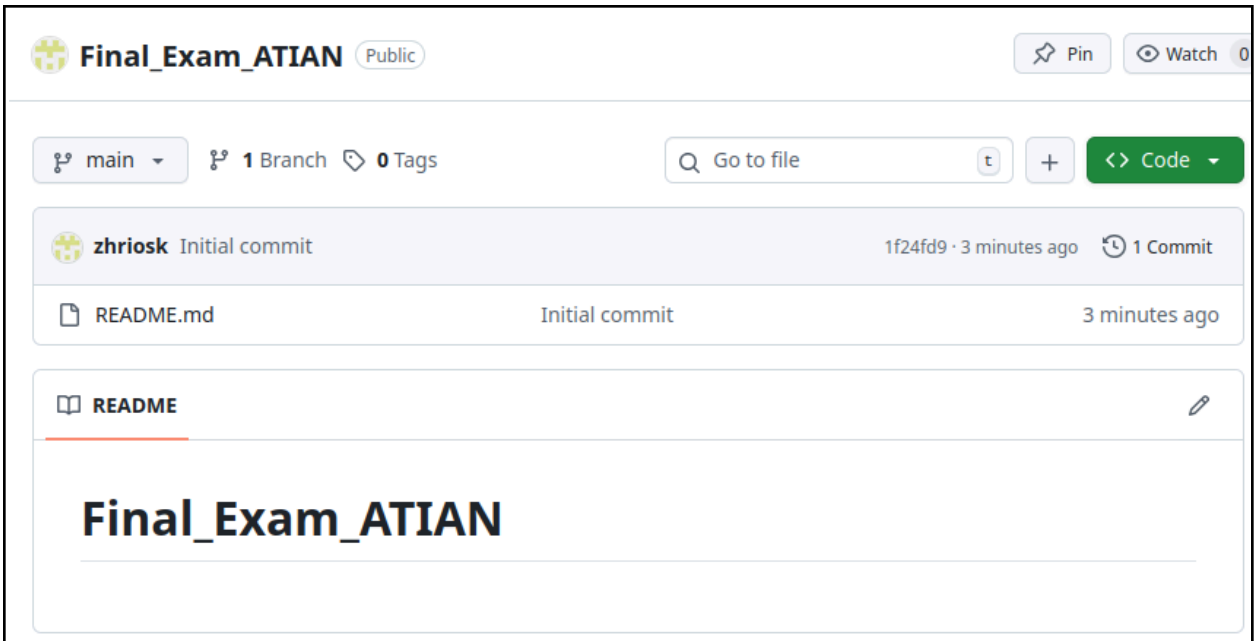
1. VM with Ubuntu, CentOS and Ansible installed
2. Web browser

**Procedure:**

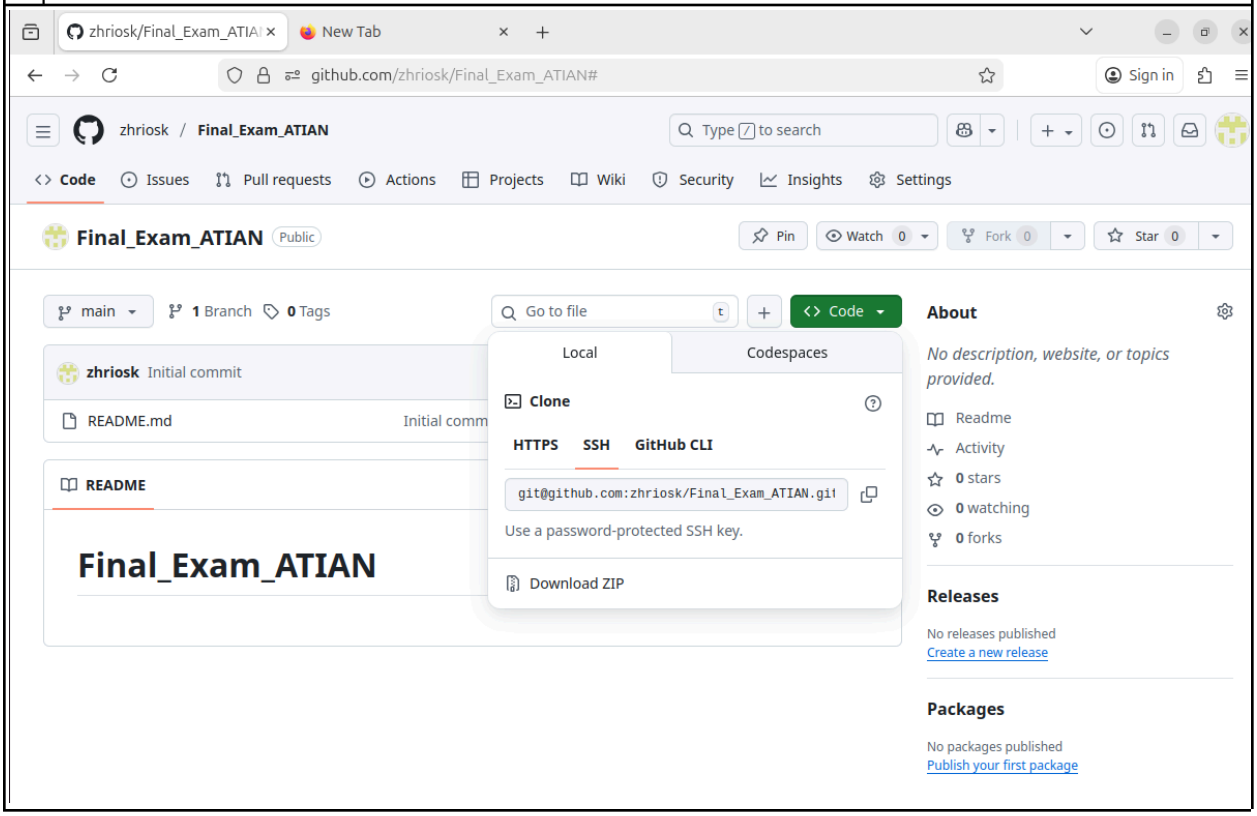
1. Create a repository and label it as "Final_Exam_Surname"
2. Clone your new repository in your VM
3. Create an Ansible playbook that does the following with an input of a config.yaml file and structure inventory file.
3.1 Install and configure one enterprise service that can be installed in Debian 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.

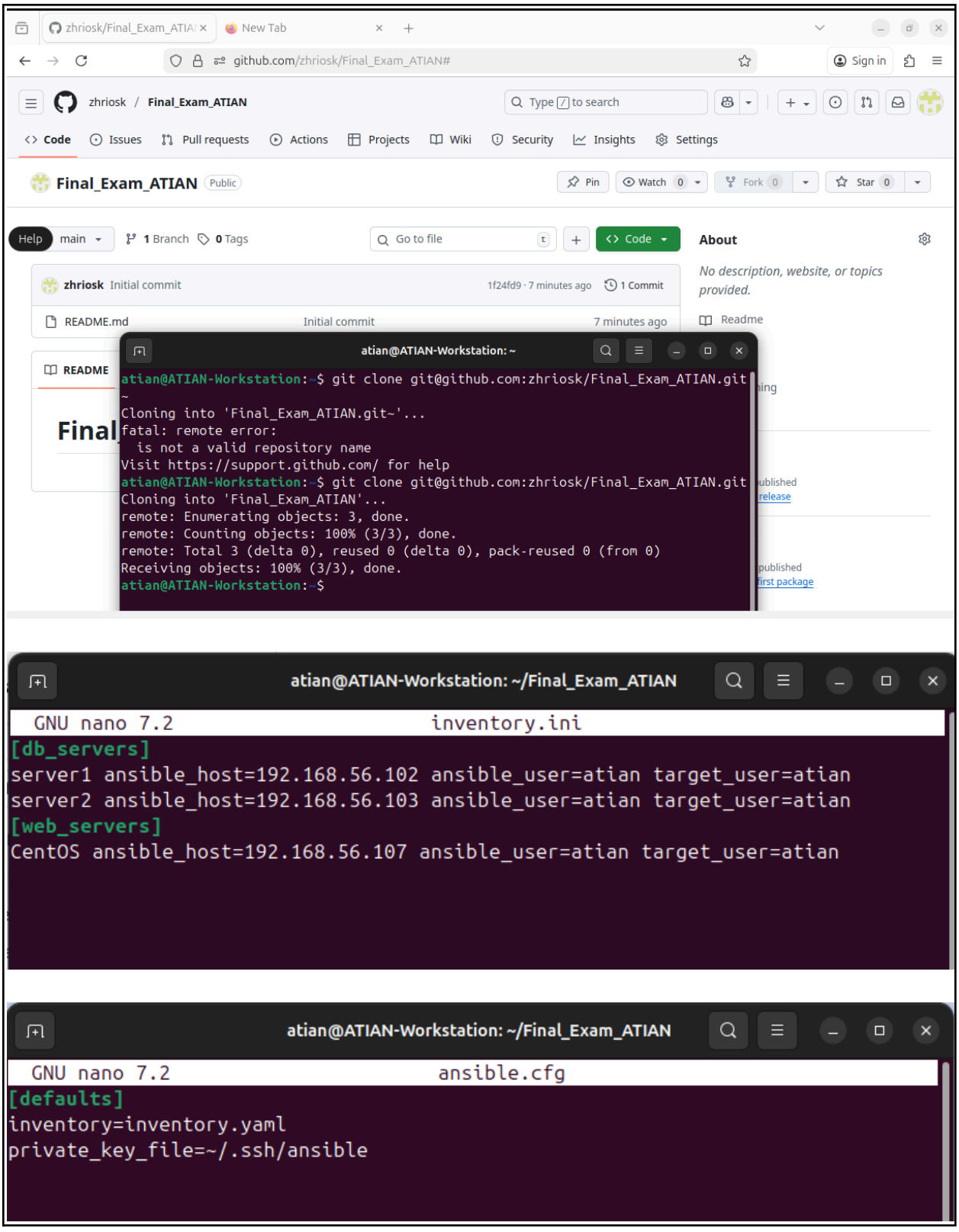
**Output:**

Step 1:


Final_Exam_ATIAN
Public
Pin
Watch 0
main
1 Branch
0 Tags
Go to file
t
Code
zhriosk Initial commit
1f24fd9 · 3 minutes ago
1 Commit
README.md
Initial commit
3 minutes ago
README
Final_Exam_ATIAN

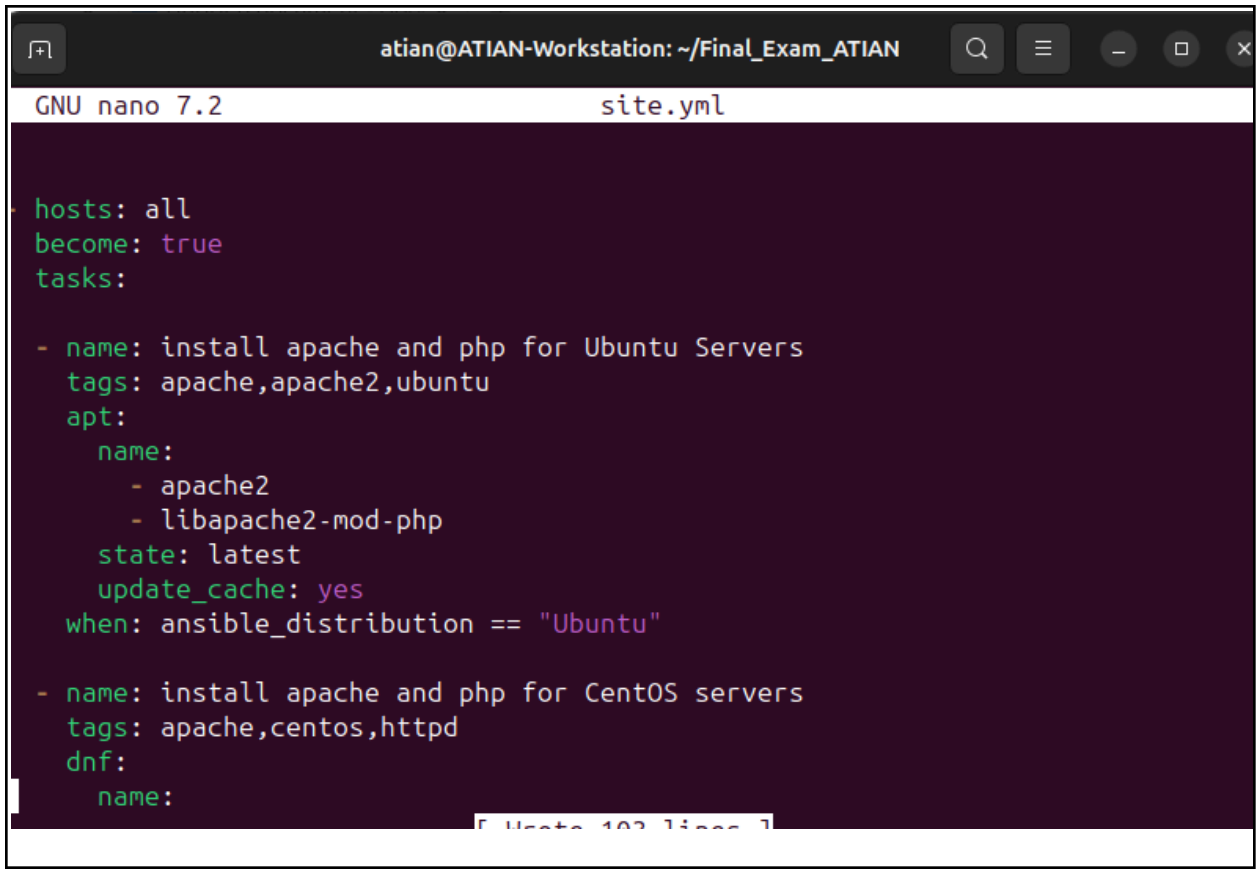
Step 2:


zhriosk/Final_Exam_ATIA
New Tab
github.com/zhriosk/Final_Exam_ATIAN#
Sign in
zhriosk / Final_Exam_ATIAN
Type / to search
Code
Issues
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
Final_Exam_ATIAN
Public
Pin
Watch 0
Fork 0
Star 0
main
1 Branch
0 Tags
Go to file
t
Code
Local
Codespaces
Clone
HTTPS
SSH
GitHub CLI
git@github.com:zhriosk/Final_Exam_ATIAN.gi
Use a password-protected SSH key.
Download ZIP
zhriosk Initial commit
README.md
README
Final_Exam_ATIAN
About
No description, website, or topics provided.
Readme
Activity
0 stars
0 watching
0 forks
Releases
No releases published
Create a new release
Packages
No packages published
Publish your first package


zhriosk/Final_Exam_ATIA
New Tab
github.com/zhriosk/Final_Exam_ATIAN#
Sign in
zhriosk / Final_Exam_ATIAN
Type / to search
Code
Issues
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
Final_Exam_ATIAN
Public
Pin
Watch 0
Fork 0
Star 0
Help
main
1 Branch
0 Tags
Go to file
Code
About
No description, website, or topics provided.
zhriosk Initial commit
1f24fd9 · 7 minutes ago
1 Commit
README.md
Initial commit
7 minutes ago
README
Readme
atian@ATIAN-Workstation: ~
atian@ATIAN-Workstation:~$ git clone git@github.com:zhriosk/Final_Exam_ATIAN.git
~
Cloning into 'Final_Exam_ATIAN.git~'...
fatal: remote error:
is not a valid repository name
Visit https://support.github.com/ for help
atian@ATIAN-Workstation:~$ git clone git@github.com:zhriosk/Final_Exam_ATIAN.git
Cloning into 'Final_Exam_ATIAN'...
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
Receiving objects: 100% (3/3), done.
atian@ATIAN-Workstation:~$
published
release
published
first package

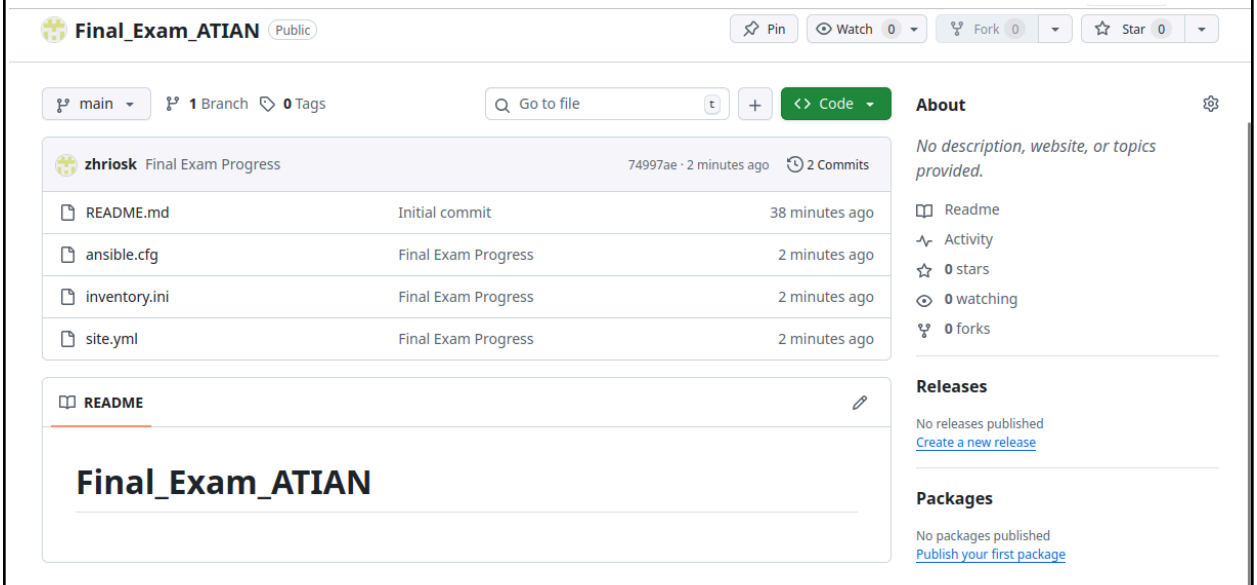

atian@ATIAN-Workstation: ~/Final_Exam_ATIAN
GNU nano 7.2
inventory.ini
[db_servers]
server1 ansible_host=192.168.56.102 ansible_user=atian target_user=atian
server2 ansible_host=192.168.56.103 ansible_user=atian target_user=atian
[web_servers]
CentOS ansible_host=192.168.56.107 ansible_user=atian target_user=atian


atian@ATIAN-Workstation: ~/Final_Exam_ATIAN
GNU nano 7.2
ansible.cfg
[defaults]
inventory=inventory.yaml
private_key_file=~/.ssh/ansible


atian@ATIAN-Workstation: ~/Final_Exam_ATIAN
GNU nano 7.2 site.yml
hosts: all
become: true
tasks:
- name: install apache and php for Ubuntu Servers
tags: apache,apache2,ubuntu
apt:
name:
- apache2
- libapache2-mod-php
state: latest
update_cache: yes
when: ansible_distribution == "Ubuntu"
- name: install apache and php for CentOS servers
tags: apache,centos,httpd
dnf:
name:

```
atian@ATIAN-Workstation: ~/Final_Exam_ATIAN
inventory.ini  README.md
atian@ATIAN-Workstation:~/Final_Exam_ATIAN$ sudo nano inventory.ini
atian@ATIAN-Workstation:~/Final_Exam_ATIAN$ sudo nano ansible.cfg
atian@ATIAN-Workstation:~/Final_Exam_ATIAN$ sudo nano site.yml
atian@ATIAN-Workstation:~/Final_Exam_ATIAN$ ls
ansible.cfg  inventory.ini  README.md  site.yml
atian@ATIAN-Workstation:~/Final_Exam_ATIAN$ git add .
atian@ATIAN-Workstation:~/Final_Exam_ATIAN$ git add README.md
atian@ATIAN-Workstation:~/Final_Exam_ATIAN$ git commit -m "Final Exam Progress"
[main 74997ae] Final Exam Progress
 3 files changed, 111 insertions(+)
 create mode 100644 ansible.cfg
 create mode 100644 inventory.ini
 create mode 100644 site.yml
atian@ATIAN-Workstation:~/Final_Exam_ATIAN$ git push origin main
Enumerating objects: 6, done.
Counting objects: 100% (6/6), done.
Delta compression using up to 4 threads
Compressing objects: 100% (5/5), done.
Writing objects: 100% (5/5), 936 bytes | 936.00 KiB/s, done.
Total 5 (delta 0), reused 0 (delta 0), pack-reused 0
To github.com:zhriosk/Final_Exam_ATIAN.git
   1f24fd9..74997ae  main -> main
atian@ATIAN-Workstation:~/Final_Exam_ATIAN$
```

Strp



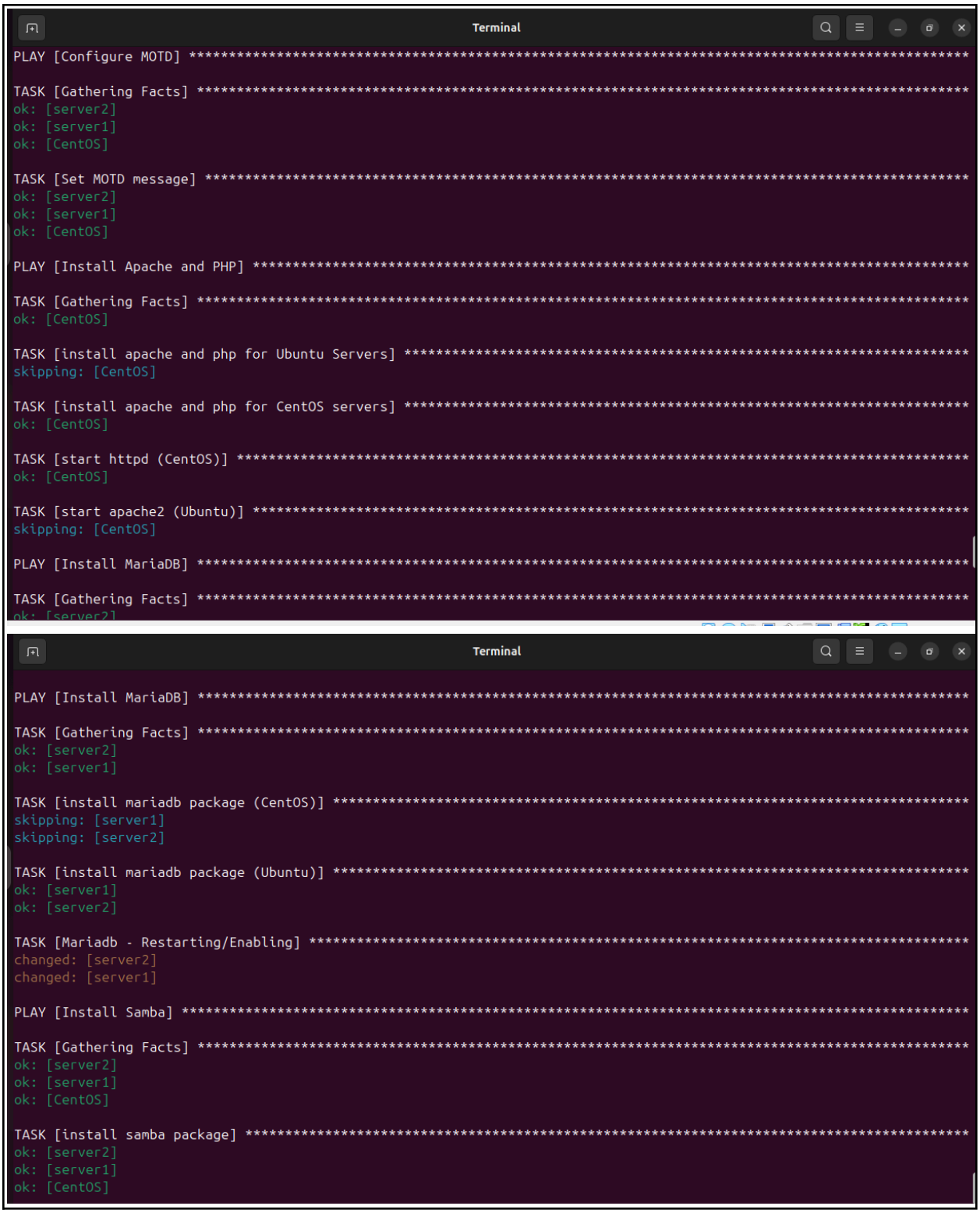

Step 3:

```
 GNU nano 7.2                                        config.yaml
---
motd_message: "Ansible Managed by Catherine Joy D. Atian"
```

```
 GNU nano 7.2                                        inventory.ini
[db_servers]
server1 ansible_host=192.168.56.102 ansible_user=atian target_user=atian
server2 ansible_host=192.168.56.101 ansible_user=atian target_user=atian
[web_servers]
CentOS ansible_host=192.168.56.104 ansible_user=atian target_user=atian
[all_servers:children]
db_servers
web_servers
```

Step 3.1:

```
atian@Workstation:~/Final_Exam_ATIAN$ sudo nano site.yaml
atian@Workstation:~/Final_Exam_ATIAN$ ansible-playbook site.yaml --ask-become-pass
BECOME password:

PLAY [Update all systems] ******************************************************************************************

TASK [Gathering Facts] *********************************************************************************************
ok: [server2]
ok: [server1]
ok: [CentOS]

TASK [install updates (CentOS)] ************************************************************************************
skipping: [server1]
skipping: [server2]
ok: [CentOS]

TASK [install updates (Ubuntu)] ************************************************************************************
skipping: [CentOS]
ok: [server2]
ok: [server1]

PLAY [Configure MOTD] **********************************************************************************************

TASK [Gathering Facts] *********************************************************************************************
ok: [server2]
ok: [server1]
```


Terminal
PLAY [Configure MOTD] ***********
TASK [Gathering Facts] ***********
ok: [server2]
ok: [server1]
ok: [CentOS]
TASK [Set MOTD message] ***********
ok: [server2]
ok: [server1]
ok: [CentOS]
PLAY [Install Apache and PHP] ***********
TASK [Gathering Facts] ***********
ok: [CentOS]
TASK [install apache and php for Ubuntu Servers] ***********
skipping: [CentOS]
TASK [install apache and php for CentOS servers] ***********
ok: [CentOS]
TASK [start httpd (CentOS)] ***********
ok: [CentOS]
TASK [start apache2 (Ubuntu)] ***********
skipping: [CentOS]
PLAY [Install MariaDB] ***********
TASK [Gathering Facts] ***********
Terminal
PLAY [Install MariaDB] ***********
TASK [Gathering Facts] ***********
ok: [server2]
ok: [server1]
TASK [install mariadb package (CentOS)] ***********
skipping: [server1]
skipping: [server2]
TASK [install mariadb package (Ubuntu)] ***********
ok: [server1]
ok: [server2]
TASK [Mariadb - Restarting/Enabling] ***********
changed: [server2]
changed: [server1]
PLAY [Install Samba] ***********
TASK [Gathering Facts] ***********
ok: [server2]
ok: [server1]
ok: [CentOS]
TASK [install samba package] ***********
ok: [server2]
ok: [server1]
ok: [CentOS]

```
PLAY [Install Java] ************************************************************************************************

TASK [Gathering Facts] *********************************************************************************************
ok: [server2]
ok: [server1]
ok: [CentOS]

TASK [Update cache apt] ********************************************************************************************
skipping: [CentOS]
ok: [server2]
ok: [server1]

TASK [Install OpenJDK] *********************************************************************************************
ok: [server2]
ok: [server1]
ok: [CentOS]

PLAY [Install PostgreSQL Database] *********************************************************************************

TASK [Gathering Facts] *********************************************************************************************
ok: [server2]
ok: [server1]
ok: [CentOS]

TASK [install postgresql (Ubuntu)] *********************************************************************************
skipping: [CentOS]
ok: [server2]
ok: [server1]

TASK [install postgresql (CentOS)] *********************************************************************************
skipping: [server1]
skipping: [server2]
```

Terminal

```
TASK [install postgresql (Ubuntu)] *********************************************************************************
skipping: [CentOS]
ok: [server2]
ok: [server1]

TASK [install postgresql (CentOS)] *********************************************************************************
skipping: [server1]
skipping: [server2]
changed: [CentOS]

TASK [Initialize PostgreSQL database (CentOS)] *********************************************************************
skipping: [server1]
skipping: [server2]
changed: [CentOS]

TASK [start postgresql (Ubuntu)] ***********************************************************************************
skipping: [CentOS]
ok: [server2]
ok: [server1]

TASK [start postgresql (CentOS)] ***********************************************************************************
skipping: [server1]
skipping: [server2]
changed: [CentOS]

PLAY RECAP *********************************************************************************************************
CentOS                     : ok=18   changed=3    unreachable=0    failed=0    skipped=7    rescued=0    ignored=0
server1                    : ok=17   changed=1    unreachable=0    failed=0    skipped=7    rescued=0    ignored=0
server2                    : ok=17   changed=1    unreachable=0    failed=0    skipped=7    rescued=0    ignored=0

atian@Workstation:~/Final_Exam_ATIAN$
```

Step 3.2:

```
PLAY [Install Monitoring Tool (htop)] ******************************************************************************

TASK [Gathering Facts] *********************************************************************************************
ok: [server1]
ok: [server2]
ok: [CentOS]

TASK [enable EPEL repository] **************************************************************************************
skipping: [server1]
skipping: [server2]
ok: [CentOS]

TASK [install htop (CentOS)] ***************************************************************************************
skipping: [server1]
skipping: [server2]
ok: [CentOS]

TASK [install htop (Ubuntu)] ***************************************************************************************
skipping: [CentOS]
ok: [server2]
ok: [server1]
```

Step 4:

```
PLAY [Configure MOTD] **********************************************************************************************

TASK [Gathering Facts] *********************************************************************************************
ok: [server2]
ok: [server1]
ok: [CentOS]

TASK [Set MOTD message] ********************************************************************************************
ok: [server2]
ok: [server1]
ok: [CentOS]
```

Step 4.1:

Step 5:

ansible.cfg M

ansible.cfg

```
[defaults]
inventory=inventory.ini
private_key_file=~/.ssh/ansible
host_key_checking = False
remote_user = atian

[privilege_escalation]
become = True
become_method = sudo
become_user = root
become_ask_pass = True
```

config.yaml U

config.yaml > ...

```yaml
---
motd_message: "Ansible Managed by Catherine Joy D. Atian"

```

docker-installation.yaml U

docker-installation.yaml > { } 0 > [ ] tasks > { } 3 > { } service

```yaml
---
- name: Fix Docker installation issues
  hosts: all_servers
  become: yes
  tasks:
    - name: Install pip3 on Ubuntu
      apt:
        name: python3-pip
        state: present
      when: ansible_distribution == "Ubuntu"


    - name: Install pip3 on CentOS
      dnf:
        name: python3-pip
        state: present
      when: ansible_distribution == "CentOS"


    - name: Install Docker SDK for Python
      pip:
        name: docker
        state: present


    - name: Ensure Docker service is running
      service:
        name: docker
        state: started
        enabled: yes

```

docker-playbook.yaml U

docker-playbook.yaml

```yaml
---
- name: Install Docker using system packages
  hosts: all
  become: yes
  tasks:
    - name: Install Docker using system packages (Ubuntu)
      tags: docker,ubuntu
      apt:
        name:
          - docker.io
          - docker-compose
        state: present
        update_cache: yes
      when: ansible_distribution == "Ubuntu"

    - name: Install Docker using system packages (CentOS)
      tags: docker,centos
      dnf:
        name:
          - docker
          - docker-compose
        state: present
      when: ansible_distribution == "CentOS"

    - name: Start and enable Docker service
      service:
        name: docker
        state: started
        enabled: yes

- name: Deploy and manage Nginx container
  hosts: all
  become: yes
  vars:
```

docker-playbook.yaml U

docker-playbook.yaml

```yaml

- name: Deploy and manage Nginx container
  hosts: all
  become: yes
  vars:
    container_name: webserver_prod
    image_name: nginx:latest
    host_port: 8080
  tasks:
    - name: Pull the latest Nginx image
      community.docker.docker_image:
        name: "{{ image_name }}"
        source: pull

    - name: Create and run the Nginx container
      community.docker.docker_container:
        name: "{{ container_name }}"
        image: "{{ image_name }}"
        state: started
        restart_policy: always
        ports:
          - "{{ host_port }}:80"


```

inventory.ini M

inventory.ini

```ini
[db_servers]
server1 ansible_host=192.168.56.102 ansible_user=atian target_user=atian
server2 ansible_host=192.168.56.101 ansible_user=atian target_user=atian
[web_servers]
CentOS ansible_host=192.168.56.104 ansible_user=atian target_user=atian
[all_servers:children]
db_servers
web_servers

```

playbook.yaml U

playbook.yaml

```yaml
---
- hosts: all
  become: true
  tasks:
    - name: Ping
      ansible.builtin.ping:

```

site.yaml U

site.yaml

```yaml
---
- name: Update all systems
  hosts: all
  become: true

  pre_tasks:
    - name: install updates (CentOS)
      tags: always
      dnf:
        update_only: yes
        update_cache: yes
      when: ansible_distribution == "CentOS"

    - name: install updates (Ubuntu)
      tags: always
      apt:
        upgrade: dist
        update_cache: yes
      when: ansible_distribution == "Ubuntu"

- name: Configure MOTD
  hosts: all
  become: true
  vars_files:
    - config.yaml
  tasks:
    - name: Set MOTD message
      copy:
        content: "{{ motd_message }}"
        dest: /etc/motd

- name: Install Apache and PHP
  hosts: web_servers
```

site.yaml U

site.yaml

```
21    - name: Configure MOTD
31
32    - name: Install Apache and PHP
33      hosts: web_servers
34      become: true
35      tasks:
36        - name: install apache and php for Ubuntu Servers
37          tags: apache, apache2, ubuntu
38          apt:
39            name:
40              - apache2
41              - libapache2-mod-php
42            state: latest
43            update_cache: yes
44          when: ansible_distribution == "Ubuntu"
45
46        - name: install apache and php for CentOS servers
47          tags: apache, centos, httpd
48          dnf:
49            name:
50              - httpd
51              - php
52            state: latest
53          when: ansible_distribution == "CentOS"
54
55        - name: start httpd (CentOS)
56          tags: apache, centos, httpd
57          service:
58            name: httpd
59            state: started
60            enabled: true
61          when: ansible_distribution == "CentOS"
62
63        - name: start apache2 (Ubuntu)
```

site.yaml U

site.yaml

```
32   - name: Install Apache and PHP
35     tasks:
55       - name: start httpd (CentOS)
62
63       - name: start apache2 (Ubuntu)
64         tags: apache, ubuntu
65         service:
66           name: apache2
67           state: started
68           enabled: true
69         when: ansible_distribution == "Ubuntu"
70
71   - name: Install MariaDB
72     hosts: db_servers
73     become: true
74     tasks:
75       - name: install mariadb package (CentOS)
76         tags: centos, db, mariadb
77         dnf:
78           name: mariadb-server
79           state: latest
80         when: ansible_distribution == "CentOS"
81
82       - name: install mariadb package (Ubuntu)
83         tags: db, mariadb, ubuntu
84         apt:
85           name: mariadb-server
86           state: latest
87         when: ansible_distribution == "Ubuntu"
88
89       - name: Mariadb - Restarting/Enabling
90         service:
91           name: mariadb
92           state: restarted
```

site.yaml U

site.yaml

```
71   - name: Install MariaDB
74     tasks:
89       - name: Mariadb - Restarting/Enabling
90         service:
92           state: restarted
93           enabled: true
94
95   - name: Install Samba
96     hosts: all
97     become: true
98     tasks:
99       - name: install samba package
100        tags: samba
101        package:
102          name: samba
103          state: latest
104
105  - name: Install Monitoring Tool (htop)
106    hosts: all
107    become: true
108    tasks:
109
110      - name: enable EPEL repository
111        dnf:
112          name: epel-release
113          state: present
114        when: ansible_distribution == "CentOS"
115
116      - name: install htop (CentOS)
117        dnf:
118          name: htop
119          state: present
120        when: ansible_distribution == "CentOS"
121
```

site.yaml U

site.yaml

```
105   - name: Install Monitoring Tool (htop)
108     tasks:
116       - name: install htop (CentOS)
120         when: ansible_distribution == "CentOS"
121
122       - name: install htop (Ubuntu)
123         apt:
124           name: htop
125           state: present
126         when: ansible_distribution == "Ubuntu"
127
128   - name: Install Java
129     hosts: all
130     become: true
131     tasks:
132       - name: Update cache apt
133         apt:
134           update_cache: yes
135           cache_valid_time: 3600
136         when: ansible_distribution == "Ubuntu"
137
138       - name: Install OpenJDK
139         package:
140           name: "{{ 'openjdk-11-jdk' if ansible_distribution == 'Ubuntu' else 'j
141           state: present
142
143   - name: Install PostgreSQL Database
144     hosts: all
145     become: true
146     tasks:
147       - name: install postgresql (Ubuntu)
148         tags: db,postgresql,ubuntu
149         apt:
150           name: postgresql
```

site.yaml U

site.yaml

```yaml
- name: Install PostgreSQL Database
  tasks:
    - name: install postgresql (Ubuntu)
      apt:
        name: postgresql
        state: present
      when: ansible_distribution == "Ubuntu"

    - name: install postgresql (CentOS)
      tags: db,postgresql,centos
      dnf:
        name: postgresql-server
        state: latest
      when: ansible_distribution == "CentOS"

    - name: Initialize PostgreSQL database (CentOS)
      shell: postgresql-setup --initdb
      when: ansible_distribution == "CentOS"

    - name: start postgresql (Ubuntu)
      tags: db,postgresql,ubuntu
      service:
        name: postgresql
        state: started
        enabled: true
      when: ansible_distribution == "Ubuntu"

    - name: start postgresql (CentOS)
      tags: db,postgresql,centos
      service:
        name: postgresql
        state: started
        enabled: true
      when: ansible_distribution == "CentOS"
```

```
atian@Server1:~$ htop --version
htop 3.3.0
atian@Server1:~$ http://192.168.56.102
bash: http://192.168.56.102: No such file or directory
atian@Server1:~$ curl http://192.168.56.102
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
<style>
html { color-scheme: light dark; }
body { width: 35em; margin: 0 auto;
font-family: Tahoma, Verdana, Arial, sans-serif; }
</style>
</head>
<body>
<h1>Welcome to nginx!</h1>
<p>If you see this page, the nginx web server is successfully installed and
working. Further configuration is required.</p>

<p>For online documentation and support please refer to
<a href="http://nginx.org/">nginx.org</a>.<br/>
Commercial support is available at
<a href="http://nginx.com/">nginx.com</a>.</p>

<p><em>Thank you for using nginx.</em></p>
</body>
</html>
atian@Server1:~$ systemctl status mariadb
● mariadb.service - MariaDB 10.11.13 database server
     Loaded: loaded (/usr/lib/systemd/system/mariadb.service; enabled; preset: enabled)
```

```
atian@Server1:~$ systemctl status postgresql
● postgresql.service - PostgreSQL RDBMS
     Loaded: loaded (/usr/lib/systemd/system/postgresql.service; enabled; preset: enabled)
     Active: active (exited) since Thu 2025-11-20 21:03:23 PST; 59min ago
    Process: 15575 ExecStart=/bin/true (code=exited, status=0/SUCCESS)
   Main PID: 15575 (code=exited, status=0/SUCCESS)
        CPU: 17ms

Nov 20 21:03:23 Server1 systemd[1]: Starting postgresql.service - PostgreSQL RDBMS...
Nov 20 21:03:23 Server1 systemd[1]: Finished postgresql.service - PostgreSQL RDBMS.
atian@Server1:~$
```

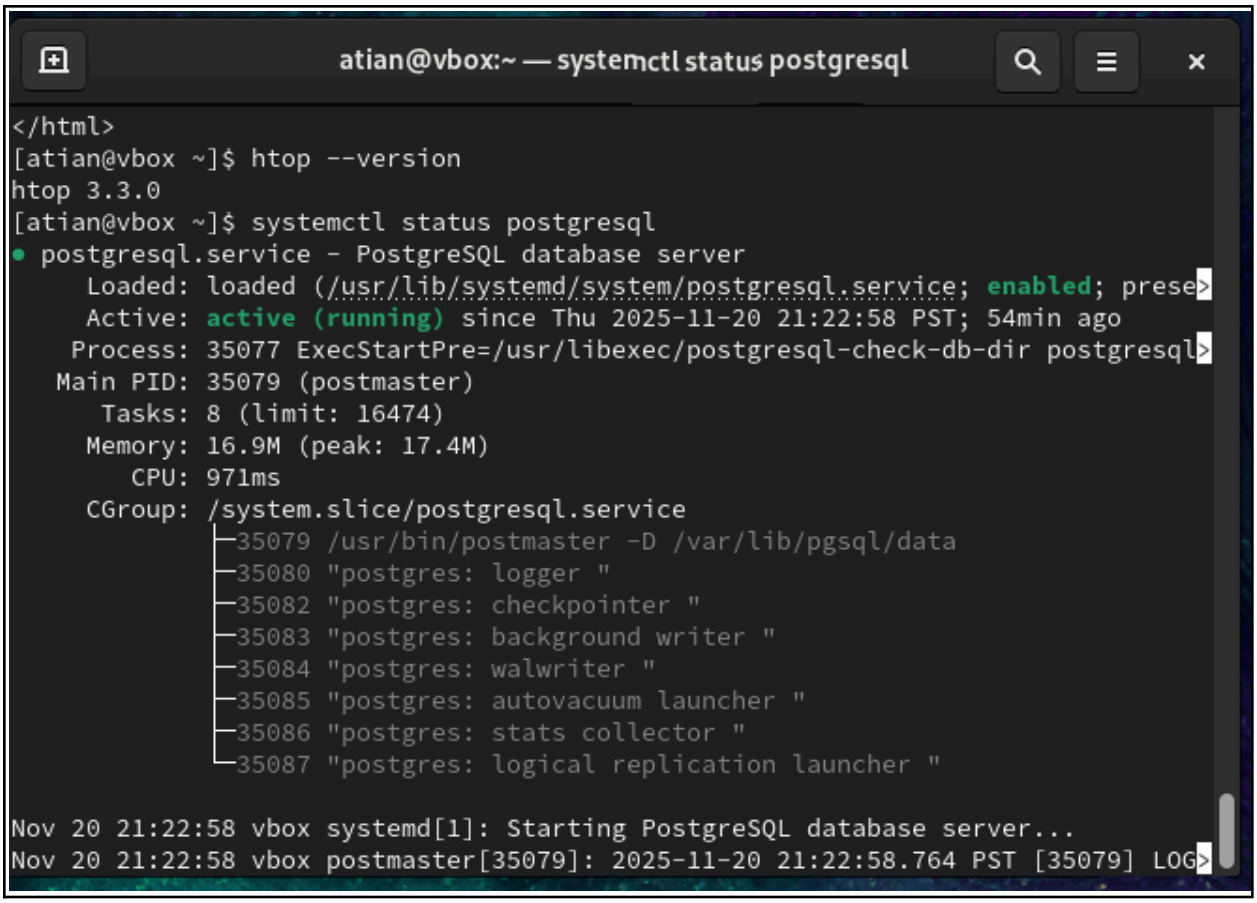
```
atian@Server1:~$ systemctl status smbd
● smbd.service - Samba SMB Daemon
     Loaded: loaded (/usr/lib/systemd/system/smbd.service; enabled; preset: enabled)
     Active: active (running) since Thu 2025-11-20 20:07:49 PST; 1h 59min ago
       Docs: man:smbd(8)
             man:samba(7)
             man:smb.conf(5)
   Main PID: 1411 (smbd)
     Status: "smbd: ready to serve connections..."
      Tasks: 3 (limit: 3974)
     Memory: 12.2M (peak: 12.9M)
        CPU: 1.297s
     CGroup: /system.slice/smbd.service
             ├─1411 /usr/sbin/smbd --foreground --no-process-group
             ├─1432 "smbd: notifyd" .
             └─1433 "smbd: cleanupd "

Nov 20 20:07:44 Server1 systemd[1]: Starting smbd.service - Samba SMB Daemon...
Nov 20 20:07:45 Server1 (smbd)[1411]: smbd.service: Referenced but unset environment variable evaluates to an empty str>
Nov 20 20:07:49 Server1 systemd[1]: Started smbd.service - Samba SMB Daemon.
lines 1-19/19 (END)
```

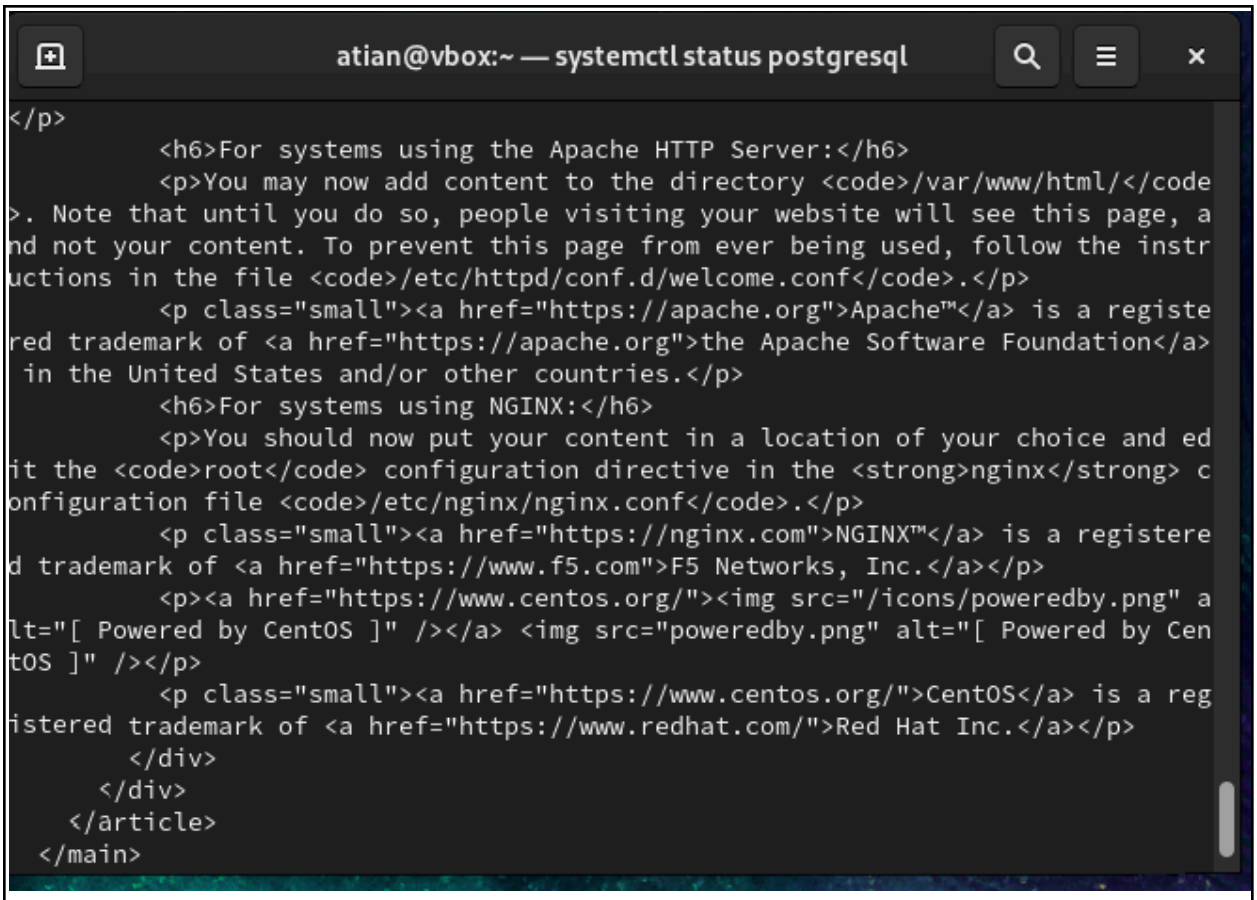
Terminal

```
atian@Server2:~$ htop --version
htop 3.3.0
atian@Server2:~$ curl http:/192.168.56.101
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
<style>
html { color-scheme: light dark; }
body { width: 35em; margin: 0 auto;
font-family: Tahoma, Verdana, Arial, sans-serif; }
</style>
</head>
<body>
<h1>Welcome to nginx!</h1>
<p>If you see this page, the nginx web server is successfully installed and
working. Further configuration is required.</p>

<p>For online documentation and support please refer to
<a href="http://nginx.org/">nginx.org</a>.<br/>
Commercial support is available at
<a href="http://nginx.com/">nginx.com</a>.</p>

<p><em>Thank you for using nginx.</em></p>
</body>
</html>
atian@Server2:~$ systemctl status postgresql
● postgresql.service - PostgreSQL RDBMS
     Loaded: loaded (/usr/lib/systemd/system/postgresql.service; enabled; preset: enabled)
     Active: active (exited) since Thu 2025-11-20 21:03:24 PST; 1h 7min ago
    Process: 15273 ExecStart=/bin/true (code=exited, status=0/SUCCESS)
   Main PID: 15273 (code=exited, status=0/SUCCESS)
        CPU: 23ms
```

```
atian@Server2:~$ systemctl status smbd
● smbd.service - Samba SMB Daemon
     Loaded: loaded (/usr/lib/systemd/system/smbd.service; enabled; preset: enabled)
     Active: active (running) since Thu 2025-11-20 20:07:55 PST; 2h 4min ago
       Docs: man:smbd(8)
             man:samba(7)
             man:smb.conf(5)
   Main PID: 1371 (smbd)
     Status: "smbd: ready to serve connections..."
      Tasks: 3 (limit: 3974)
     Memory: 12.2M (peak: 13.0M)
        CPU: 1.280s
     CGroup: /system.slice/smbd.service
             ├─1371 /usr/sbin/smbd --foreground --no-process-group
             ├─1421 "smbd: notifyd" .
             └─1422 "smbd: cleanupd "

Nov 20 20:07:49 Server2 systemd[1]: Starting smbd.service - Samba SMB Daemon...
Nov 20 20:07:50 Server2 (smbd)[1371]: smbd.service: Referenced but unset environment variable evaluates to an empty str>
Nov 20 20:07:55 Server2 systemd[1]: Started smbd.service - Samba SMB Daemon.
lines 1-19/19 (END)
```

```
atian@Server2:~$ systemctl status mariadb
● mariadb.service - MariaDB 10.11.13 database server
     Loaded: loaded (/usr/lib/systemd/system/mariadb.service; enabled; preset: enabled)
     Active: active (running) since Thu 2025-11-20 21:21:48 PST; 50min ago
       Docs: man:mariadbd(8)
             https://mariadb.com/kb/en/library/systemd/
    Process: 17984 ExecStartPre=/usr/bin/install -m 755 -o mysql -g root -d /var/run/mysqld (code=exited, status=0/SUCC>
    Process: 17987 ExecStartPre=/bin/sh -c systemctl unset-environment _WSREP_START_POSITION (code=exited, status=0/SUC>
    Process: 17989 ExecStartPre=/bin/sh -c [ ! -e /usr/bin/galera_recovery ] && VAR= ||   VAR=`/usr/bin/galera_recovery>
    Process: 18061 ExecStartPost=/bin/sh -c systemctl unset-environment _WSREP_START_POSITION (code=exited, status=0/SU>
    Process: 18063 ExecStartPost=/etc/mysql/debian-start (code=exited, status=0/SUCCESS)
   Main PID: 18049 (mariadbd)
     Status: "Taking your SQL requests now..."
      Tasks: 10 (limit: 26231)
     Memory: 78.6M (peak: 81.8M)
        CPU: 2.743s
     CGroup: /system.slice/mariadb.service
             └─18049 /usr/sbin/mariadbd

Nov 20 21:21:48 Server2 mariadbd[18049]: 2025-11-20 21:21:48 0 [Note] Plugin 'FEEDBACK' is disabled.
Nov 20 21:21:48 Server2 mariadbd[18049]: 2025-11-20 21:21:48 0 [Note] InnoDB: Loading buffer pool(s) from /var/lib/mysq>
Nov 20 21:21:48 Server2 mariadbd[18049]: 2025-11-20 21:21:48 0 [Warning] You need to use --log-bin to make --expire-log>
Nov 20 21:21:48 Server2 mariadbd[18049]: 2025-11-20 21:21:48 0 [Note] Server socket created on IP: '127.0.0.1'.
Nov 20 21:21:48 Server2 mariadbd[18049]: 2025-11-20 21:21:48 0 [Note] InnoDB: Buffer pool(s) load completed at 251120 2>
Nov 20 21:21:48 Server2 mariadbd[18049]: 2025-11-20 21:21:48 0 [Note] /usr/sbin/mariadbd: ready for connections.
Nov 20 21:21:48 Server2 mariadbd[18049]: Version: '10.11.13-MariaDB-0ubuntu0.24.04.1'  socket: '/run/mysqld/mysqld.sock>
Nov 20 21:21:48 Server2 systemd[1]: Started mariadb.service - MariaDB 10.11.13 database server.
Nov 20 21:21:48 Server2 /etc/mysql/debian-start[18066]: Upgrading MariaDB tables if necessary.
Nov 20 21:21:48 Server2 /etc/mysql/debian-start[18078]: Checking for insecure root accounts.
lines 1-28/28 (END)
```


atian@vbox:~ — systemctl status postgresql
</html>
[atian@vbox ~]$ htop --version
htop 3.3.0
[atian@vbox ~]$ systemctl status postgresql
● postgresql.service - PostgreSQL database server
Loaded: loaded (/usr/lib/systemd/system/postgresql.service; enabled; prese>
Active: active (running) since Thu 2025-11-20 21:22:58 PST; 54min ago
Process: 35077 ExecStartPre=/usr/libexec/postgresql-check-db-dir postgresql>
Main PID: 35079 (postmaster)
Tasks: 8 (limit: 16474)
Memory: 16.9M (peak: 17.4M)
CPU: 971ms
CGroup: /system.slice/postgresql.service
├─35079 /usr/bin/postmaster -D /var/lib/pgsql/data
├─35080 "postgres: logger "
├─35082 "postgres: checkpointer "
├─35083 "postgres: background writer "
├─35084 "postgres: walwriter "
├─35085 "postgres: autovacuum launcher "
├─35086 "postgres: stats collector "
└─35087 "postgres: logical replication launcher "
Nov 20 21:22:58 vbox systemd[1]: Starting PostgreSQL database server...
Nov 20 21:22:58 vbox postmaster[35079]: 2025-11-20 21:22:58.764 PST [35079] LOG>

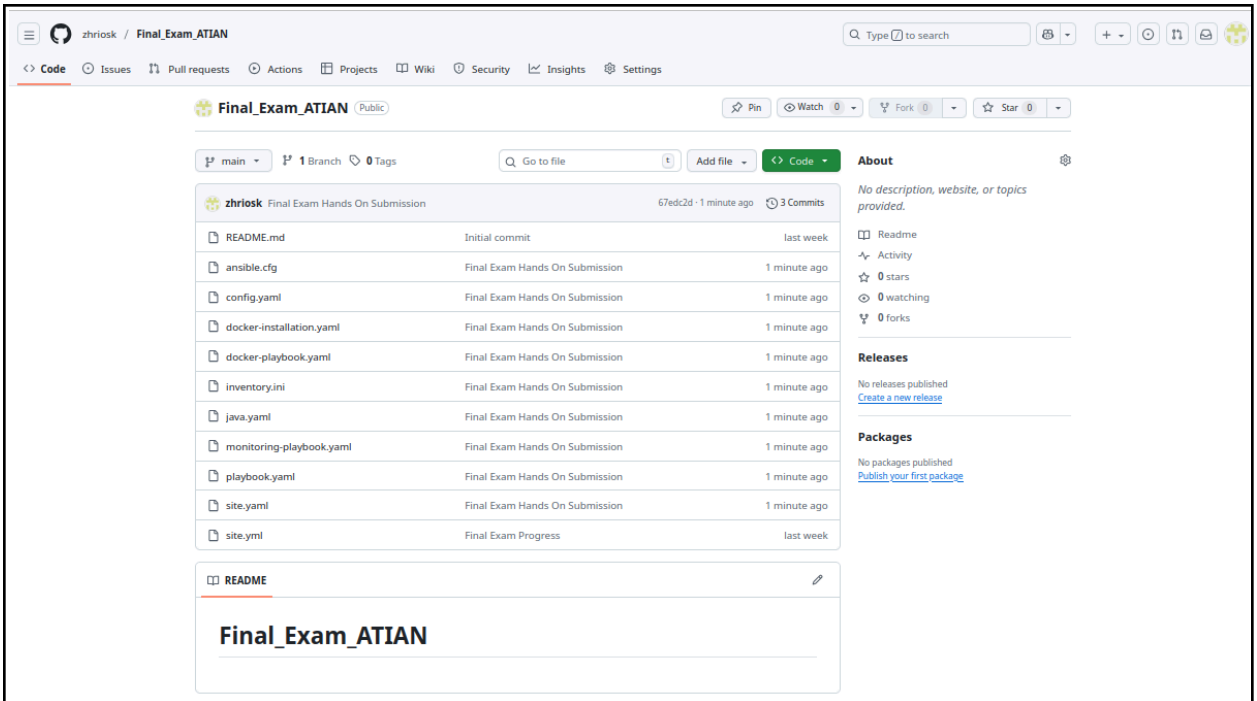



```
atian@Workstation:~/Final_Exam_ATIAN$ ssh atian@192.168.56.102
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.14.0-35-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/pro

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

4 additional security updates can be applied with ESM Apps.
Learn more about enabling ESM Apps service at https://ubuntu.com/esm

Ansible Managed by Catherine Joy D. Atian
Last login: Thu Nov 20 22:20:01 2025 from 192.168.56.103
```

```
atian@Workstation:~/Final_Exam_ATIAN$ ssh atian@192.168.56.101
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.14.0-35-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.

0 updates can be applied immediately.

4 additional security updates can be applied with ESM Apps.
Learn more about enabling ESM Apps service at https://ubuntu.com/esm

Ansible Managed by Catherine Joy D. Atian
Last login: Thu Nov 20 22:23:33 2025 from 192.168.56.102
atian@Server2:~$
logout
Connection to 192.168.56.101 closed.
atian@Workstation:~/Final_Exam_ATIAN$ ssh atian@192.168.56.104
Ansible Managed by Catherine Joy D. Atian
Activate the web console with: systemctl enable --now cockpit.socket

Last login: Thu Nov 20 22:20:02 2025 from 192.168.56.103
[atian@vbox ~]$
```

Step 5.1:

```
atian@Workstation:~/Final_Exam_ATIAN$ git add .
atian@Workstation:~/Final_Exam_ATIAN$ git commit -m "Final Exam Hands On Submission"
[main 67edc2d] Final Exam Hands On Submission
 9 files changed, 474 insertions(+), 3 deletions(-)
 create mode 100644 config.yaml
 create mode 100644 docker-installation.yaml
 create mode 100644 docker-playbook.yaml
 create mode 100644 java.yaml
 create mode 100644 monitoring-playbook.yaml
 create mode 100644 playbook.yaml
 create mode 100644 site.yaml
atian@Workstation:~/Final_Exam_ATIAN$ git push origin main
Enumerating objects: 14, done.
Counting objects: 100% (14/14), done.
Delta compression using up to 4 threads
Compressing objects: 100% (11/11), done.
Writing objects: 100% (11/11), 3.57 KiB | 1.19 MiB/s, done.
Total 11 (delta 2), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (2/2), completed with 1 local object.
To github.com:zhriosk/Final_Exam_ATIAN.git
   74997ae..67edc2d  main -> main
atian@Workstation:~/Final_Exam_ATIAN$
```




**Github Repository Link:**

`https://github.com/zhriosk/Final_Exam_ATIAN`

**Conclusion:**

This final examination project has provided me with valuable hands-on experience in automating server management using Ansible. Through this practical implementation, I successfully deployed multiple enterprise services across both Ubuntu and CentOS environments, demonstrating the power of infrastructure automation.

The examination enabled me to configure three primary enterprise services: Apache web server with PHP support, MariaDB database management system, and Nginx web server. Additionally, I expanded the infrastructure to include PostgreSQL database, Samba file sharing services, and comprehensive monitoring solutions featuring htop, Prometheus, and Grafana.

One of the significant achievements was implementing the customized MOTD message "Ansible Managed by Catherine Joy D. Atian" across all managed servers, which served as visible proof of centralized configuration management. The containerization aspect using Docker further enhanced my understanding of modern deployment methodologies.

Throughout this time, I encountered various technical challenges, particularly with service conflicts and package dependencies. However, these obstacles provided valuable learning opportunities in troubleshooting and problem-solving. The process of writing, testing, and refining Ansible playbooks deepened my understanding of automation best practices and cross-platform compatibility.