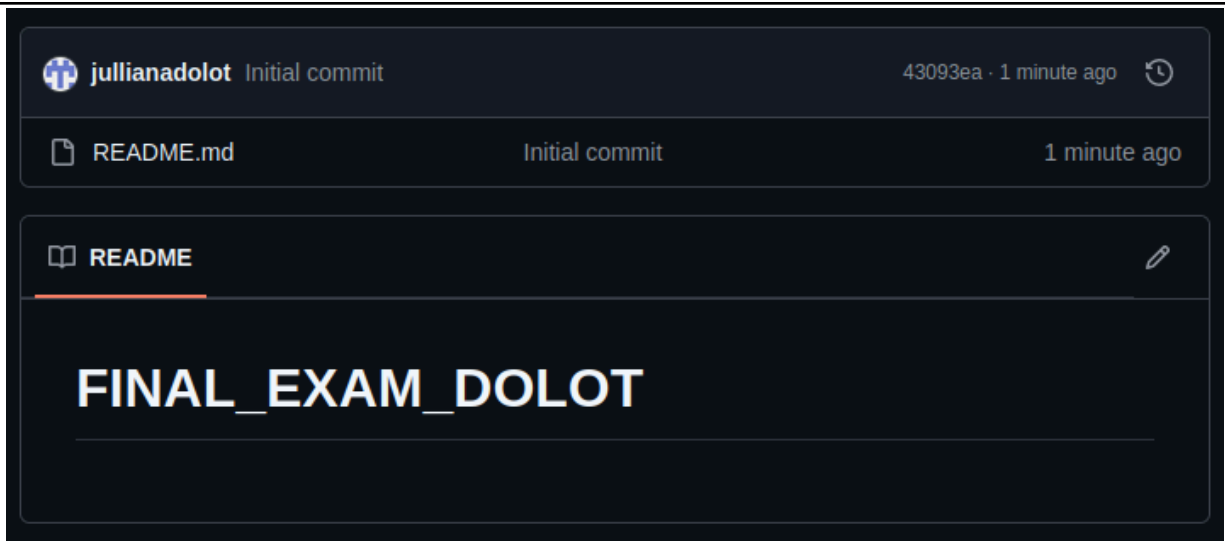| Name: DOLOT, JULLIANA MAE C.	Date Performed: 12/13/24
Course/Section: CPE212 - CPE31S21	Date Submitted: 12/13/24
Instructor: Engr. Robin Valenzuela	Semester and SY: 1st Sem ; 2024 - 2025

HANDS-ON FINAL EXAM

1. Tools Needed

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

2. 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.

   - Install and configure one enterprise service that can be installed in Debian and Centos servers
   - 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)
   - 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.

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

3. Output (screenshots and explanations)

Figure 3.1

Figure 3.1 shows the newly created github repository for this finals skills exam. It is titled "FINAL_EXAM_DOLOT".

```
qjmdolot@Workstation:~$ git clone git@github.com:jullianadolot/FINAL_EXAM_DOLOT
.git
Cloning into 'FINAL_EXAM_DOLOT'...
Warning: Permanently added the ECDSA host key for IP address '4.237.22.38' to t
he list of known hosts.
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.
```

Figure 3.2

Shown in Figure 3.2 is the successfully cloned repository in the virtual machine.

```
qjmdolot@Workstation:~/FINAL_EXAM_DOLOT$ ansible all -m ping -i inventory
server1 | SUCCESS => {
    "changed": false,
    "ping": "pong"
}
server3 | SUCCESS => {
    "changed": false,
    "ping": "pong"
}
```

Figure 3.3

The checking of connection for ansible is shown in Figure 3.3. One Ubuntu Server, and CentOS Server. The command "ansible all -m ping -i inventory" is used to check the connection.

```
  GNU nano 2.9.3                    FinalExam.yaml

---

- hosts: all
  become: true
  vars_files:
    - config.yaml

  tasks:
    - name: Install Apache (Ubuntu) or HTTPD (CentOS)
      package:
        name: "{{ apache_ubuntu if ansible_distribution == 'Ubuntu' else apach$
        state: present

    - name: Start and enable Apache/HTTPD service
      service:
        name: "{{ apache_ubuntu if ansible_distribution == 'Ubuntu' else apach$
        state: started
        enabled: true

    - name: Install prerequisites for Prometheus
      package:
        name: "wget"
        state: present
```

Figure 3.4

```
  GNU nano 2.9.3                    FinalExam.yaml

    - name: Download Prometheus tarball
      get_url:
        url: "https://github.com/prometheus/prometheus/releases/download/v2.22$
        dest: /tmp/prometheus.tar.gz

    - name: Extract Prometheus
      unarchive:
        src: /tmp/prometheus.tar.gz
        dest: /opt/
        remote_src: yes

    - name: Create Prometheus user
      user:
        name: prometheus
        system: yes

    - name: Set ownership for Prometheus directories
      file:
        path: "/opt/prometheus-{{ prometheus_version }}.linux-amd64"
        owner: prometheus
        group: prometheus
        state: directory
        recurse: yes
```

```
GNU nano 2.9.3                    FinalExam.yaml

  - name: Create Prometheus systemd service file
    copy:
      dest: /etc/systemd/system/prometheus.service
      content:
        [Unit]
        Description=Prometheus
        Wants=network-online.target
        After=network-online.target

        [Service]
        User=Prometheus
        Group=prometheus
        ExecStart=/opt/prometheus-{{ prometheus_version }}.linux-amd64/prome$
          --config.file=/opt/prometheus-{{ prometheus_version }}..linux-amd6$
          -- storage.tsdb.path/opt/prometheus-{{ prometheus_version }}.linux$

        [Install]
        WantedBy=multi-user.target

  - name: Reload systemd and start Prometheus
    shell:
      systemctl daemon-reload
      systemctl start prometheus
```

Figure 3.6

```
GNU nano 2.9.3                    FinalExam.yaml

        ExecStart=/opt/prometheus-{{ prometheus_version }}.linux-amd64/prome$
          --config.file=/opt/prometheus-{{ prometheus_version }}..linux-amd6$
          -- storage.tsdb.path/opt/prometheus-{{ prometheus_version }}.linux$

        [Install]
        WantedBy=multi-user.target

  - name: Reload systemd and start Prometheus
    shell:
      systemctl daemon-reload
      systemctl start prometheus
      systemctl enable prometheus

  - name: Update MOTD to "Ansible Managed by <username>"
    copy:
      content: "Ansible Managed by <username> \n"
      dest: /etc/motd
```

Figure 3.7

The Figures 3.4 - 3.7 shows the ansible playbook for the creation and installation of enterprise and monitoring tools that will be installed in Debian and CentOS servers.

```
qjmdolot@Workstation:~/FINAL_EXAM_DOLOT$ ansible-playbook --ask-become-pass Fin
alExam.yaml -i inventory
SUDO password:

PLAY [Enterprise Service and Monitoring Setup] ********************************
*

TASK [Gathering Facts] *******************************************************
*
ok: [server1]
 [WARNING]: Module invocation had junk after the JSON data:
AttributeError("module 'platform' has no attribute 'dist'")

ok: [server3]

TASK [Install Apache on Ubuntu] **********************************************
*
fatal: [server3]: FAILED! => {"msg": "The conditional check 'ansible_os_family
== \"Debian\"' failed. The error was: error while evaluating conditional (ansib
le_os_family == \"Debian\"): 'ansible_os_family' is undefined\n\nThe error appe
ars to have been in '/home/qjmdolot/FINAL_EXAM_DOLOT/FinalExam.yaml': line 10,
column 7, but may\nbe elsewhere in the file depending on the exact syntax probl
em.\n\nThe offending line appears to be:\n\n\n    - name: Install Apache on Ubu
ntu\n      ^ here\n"}
ok: [server1]
```

Figure 3.8

```
TASK [Install Apache on Centos] **********************************************
*
skipping: [server1]

TASK [Start and Enable Apache Service] ***************************************
*
ok: [server1]

TASK [Configure Apache Port] *************************************************
*
ok: [server1]

TASK [Download Prometheus] ***************************************************
*
ok: [server1]

TASK [Extract Prometheus] ****************************************************
*
changed: [server1]

TASK [Move Prometheus Files] *************************************************
*
ok: [server1]

TASK [Create Prometheus User] ***********************************************
*
ok: [server1]
```

Figure 3.9

```
TASK [Create Prometheus User] ********************************************
*
ok: [server1]

TASK [Set Prometheus Ownership] ******************************************
*
ok: [server1]

TASK [Configure Prometheus as a Service] *********************************
*
ok: [server1]

TASK [Reload systemd and Enable Prometheus] ******************************
*
ok: [server1]

TASK [Update MOTD] *******************************************************
*
ok: [server1]
        to retry, use: --limit @/home/qjmdolot/FINAL_EXAM_DOLOT/FinalExam.retry

PLAY RECAP ***************************************************************
*
server1                    : ok=12    changed=1    unreachable=0    failed=0
server3                    : ok=1     changed=0    unreachable=0    failed=1
```

Figure 3.10

Figure 3.8 to Figure 3.10 shows the installation of the enterprise and monitoring tool in server 1 and server 3 which are the Debian and Centos servers however an error is found in the Centos server because it is unreachable. To run the playbook the command "ansible-playbook –ask-become-pass FinalExam.yaml -i inventory".

```
qjmdolot@Workstation:~/FINAL_EXAM_DOLOT$ git commit -m "Final Skills Exam"
[main 4847b7a] Final Skills Exam
 4 files changed, 100 insertions(+)
 create mode 100644 FinalExam.yaml
 create mode 100644 ansible.cfg
 create mode 100644 config.yaml
 create mode 100644 inventory
qjmdolot@Workstation:~/FINAL_EXAM_DOLOT$ git push
Counting objects: 6, done.
Delta compression using up to 2 threads.
Compressing objects: 100% (5/5), done.
Writing objects: 100% (6/6), 1.41 KiB | 1.41 MiB/s, done.
Total 6 (delta 0), reused 0 (delta 0)
To github.com:jullianadolot/FINAL_EXAM_DOLOT.git
   43093ea..4847b7a  main -> main
```

Figure 3.11

Shown in Figure 3.11 the successfully committed files in the github repository.

GitHub link:

https://github.com/jullianadolot/FINAL_EXAM_DOLOT

Conclusions: (link your conclusion from the objective)

In this final skills exam, we are asked to create an ansible playbook that installs and configures a monitoring tool, and enterprise that can be installed in Debian And Centos servers. In creating this activity, errors are still encountered especially with the Centos Server because it is failing in this server. However, this activity helped me understand docker and ansible better. All the learning I got from docker and ansible will help me in the future.