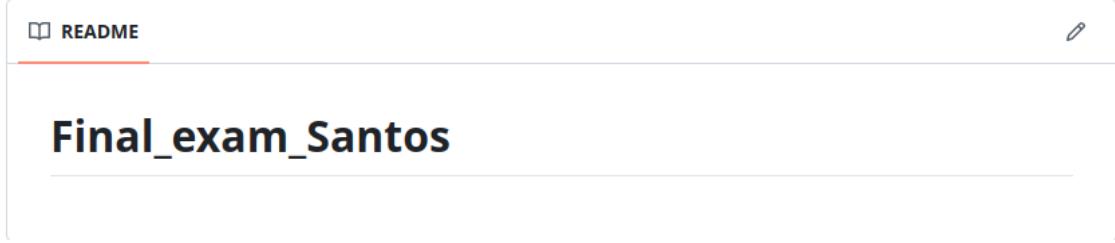


CPE212: FINAL EXAM	
Name: Santos, Emmanuelle Dave G.	Date performed: 11/14/2025
Section: CPE31S2	Date Submitted:
Course: CPE212	Instructor: Engr. Robin Valenzuela

Tools Needed:
1. VM with Ubuntu, CentOS and Ansible installed 2. Web browser
Procedures:
1. Create a repository and label it as "Final_Exam_Surname"  2. Clone your new repository in your VM

A screenshot of a Linux desktop environment. On the left, there's a dock with icons for a browser, file manager, terminal, and system settings. In the center, a terminal window titled "vboxuser@workstation: ~" shows the command: `git clone git@github.com:DaveEmmanuelle/Final_Exam_Santos.git`. The output of the command is displayed, showing the cloning process completed successfully. To the right of the terminal is a GitHub repository page for "Final_Exam_Santos". The "About" section indicates no description or website is provided. The "Releases" and "Packages" sections also show no content.

```
vboxuser@workstation:~$ git clone git@github.com:DaveEmmanuelle/Final_Exam_Santos.git
Cloning into 'Final_Exam_Santos'...
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.
vboxuser@workstation:~$
```

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

A screenshot of a Linux desktop environment. The top window shows a terminal titled "chloe@Workstation: ~/Final_exam_Santos" with the command `cat inventory.yaml` run. The output is an Ansible inventory file with groups [webservers] containing hosts 192.168.51.4 and 192.168.51.5, [centos] containing host 192.168.51.6, and [workstation] containing host 192.168.51.3. Below this is another terminal window titled "vboxuser@workstation: ~/Final_Exam_Santos" with the command `cat ansible.cfg` run. The output is an Ansible configuration file with the following content:

```
[defaults]
inventory=inventory.yaml
private_key_file= ~/.ssh/ansible
```

```
GNU nano 7.2                                     config.yaml
enterprise_service: apache
monitoring_tool: grafana
motd_user: Dave Santos
```

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

```
---
- name: Install Enterprise Service and Monitoring Tool
  hosts: all
  become: true
  vars_files:
    - config.yaml

  tasks:
    - name: Install Apache (Debian)
      apt:
        name: apache2
        state: present
      when: ansible_distribution == "Debian"
      tags:
        - apache
      become: true

    - name: Install Apache (centos)
      dnf:
        name: httpd
        state: present
      when: ansible_distribution == "centos"
      tags:
        - apache
      become: true
```

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)

```
- name: Add Grafana GPG Key (Debian/Ubuntu)
  apt_key:
    url: https://packages.grafana.com/gpg.key
    state: present
  when: ansible_distribution == "Debian"
  tags:
    - monitoring

- name: Download Grafana repo file
  get_url:
    url: https://packages.grafana.com/oss/deb/grafana.list
    dest: /etc/apt/sources.list.d/grafana.list
  when: ansible_distribution == "Debian"
  tags:
    - monitoring

- name: Install Grafana (Debian/Ubuntu)
  apt:
    name: grafana
    state: present
```

```
      state: present
      update_cache: yes
  when: ansible_distribution == "Debian"
  tags:
    - monitoring

- name: Download Grafana repo file for CentOS
  get_url:
    url: https://packages.grafana.com/oss/rpm/grafana.repo
    dest: /etc/yum.repos.d/grafana.repo
  when: ansible_distribution == "centos"
  tags:
    - monitoring

- name: Install Grafana (CentOS)
  yum:
    name: grafana
    state: present
  when: ansible_distribution == "centos"
  tags:
```

```
tags:
  - monitoring

- name: Install Grafana (CentOS)
yum:
  name: grafana
  state: present
when: ansible_distribution == "centos"
tags:
  - monitoring
```

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

```
- name: Update MOTD
lineinfile:
  path: /etc/motd
  line: "Ansible Managed by {{ motd_user }}"
  create: yes
become: true
tags:
  - motd
```

4. Push and commit your files in GitHub

```
[root@Workstation:~/Final_exam_Santos$ git push origin main --force
Enumerating objects: 8, done.
Counting objects: 100% (8/8), done.
Delta compression using up to 4 threads
Compressing objects: 100% (6/6), done.
Writing objects: 100% (8/8), 1.14 KiB | 1.14 MiB/s, done.
Total 8 (delta 0), reused 1 (delta 0), pack-reused 0
To github.com:ChloeMargarettePronebo/Final_exam_Santos.git
 + e0f511a...b6d0dec main -> main (forced update)
```

Codes and Output:

3.1 Service Enterprise (Apache) Output

Debian:

```
chloe@Server1:~$ apache2 -v
Server version: Apache/2.4.58 (Ubuntu)
Server built:   2025-08-11T11:10:09
```

```
chloe@Server2:~$ apache2 -v
Server version: Apache/2.4.58 (Ubuntu)
Server built:   2025-08-11T11:10:09
```

CentOS:

```
chloemargarette@localhost:~$ httpd -v
Server version: Apache/2.4.63 (CentOS Stream)
Server built:   Sep  8 2025 00:00:00
chloemargarette@localhost:~$
```

3.2 Monitoring tool (Grafana) Output

```
TASK [Install Grafana (CentOS)] ****
skipping: [192.168.51.4]
skipping: [192.168.51.5]
skipping: [192.168.51.6]

TASK [Start Grafana] ****
ok: [192.168.51.5]
ok: [192.168.51.4]
ok: [192.168.51.6]

TASK [Update MOTD] ****
ok: [192.168.51.5]
ok: [192.168.51.4]
ok: [192.168.51.6]

PLAY RECAP ****
192.168.51.4      : ok=3    changed=0    unreachable=0    failed=0    s
kipped=7  rescued=0  ignored=0
192.168.51.5      : ok=3    changed=0    unreachable=0    failed=0    s
kipped=7  rescued=0  ignored=0
192.168.51.6      : ok=3    changed=0    unreachable=0    failed=0    s
kipped=7  rescued=0  ignored=0

chloe@Workstation:~/Final_exam_Santos$
```

CentOS:

```
chloemargarette@localhost:~$ grafana-server -v
Deprecation warning: The standalone 'grafana-server' program is deprecated and w
ill be removed in the future. Please update all uses of 'grafana-server' to 'gra
fana server'
Version 10.2.6 (commit: NA, branch: main)
```

```
chloemargarette@localhost:~$ sudo systemctl status grafana-server
[sudo] password for chloemargarette:
● grafana-server.service - Grafana instance
  Loaded: loaded (/usr/lib/systemd/system/grafana-server.service; enabled; p>
  Active: active (running) since Wed 2025-11-19 20:31:41 PST; 29min ago
  Invocation: 670eb47479084036b29a3353d3168ec4
    Docs: http://docs.grafana.org
  Main PID: 23217 (grafana)
    Tasks: 21 (limit: 26361)
   Memory: 95.3M (peak: 97.3M)
      CPU: 9.776s
  CGroup: /system.slice/grafana-server.service
          └─23217 /usr/sbin/grafana server --config=/etc/grafana/grafana.ini>
              ├─23227 /usr/libexec/grafana-pcp/datasources/valkey/pcp_valkey_dat>

Nov 19 20:31:41 localhost.localdomain grafana[23217]: logger=ngalert.multiorg.a>
Nov 19 20:31:41 localhost.localdomain grafana[23217]: logger=ngalert.state.mana>
Nov 19 20:31:41 localhost.localdomain grafana[23217]: logger=ngalert.scheduler >
Nov 19 20:31:41 localhost.localdomain grafana[23217]: logger=ticker t=2025-11-1>
Nov 19 20:31:42 localhost.localdomain grafana[23217]: logger=plugins.update.che>
Nov 19 20:33:40 localhost.localdomain grafana[23217]: logger=infra.usagestats t>
Nov 19 20:41:41 localhost.localdomain grafana[23217]: logger=cleanup t=2025-11->
Nov 19 20:41:43 localhost.localdomain grafana[23217]: logger=plugins.update.che>
```

Ubuntu/Debian:

```
chloe@Server1:~$ sudo systemctl status grafana-server
● grafana-server.service - Grafana instance
  Loaded: loaded (/usr/lib/systemd/system/grafana-server.service; enabled; p>
  Active: active (running) since Wed 2025-11-19 12:11:40 UTC; 46min ago
    Docs: http://docs.grafana.org
  Main PID: 5122 (grafana)
    Tasks: 20 (limit: 5778)
   Memory: 123.8M (peak: 149.4M)
      CPU: 1min 33.964s
  CGroup: /system.slice/grafana-server.service
          └─5122 /usr/share/grafana/bin/grafana server --config=/etc/grafana>

Nov 19 12:21:56 Server1 grafana[5122]: logger=cleanup t=2025-11-19T12:21:56.127>
Nov 19 12:21:57 Server1 grafana[5122]: logger=plugins.update.checker t=2025-11->
Nov 19 12:26:55 Server1 grafana[5122]: logger=sqlstore.transactions t=2025-11-1>
Nov 19 12:31:56 Server1 grafana[5122]: logger=cleanup t=2025-11-19T12:31:56.294>
Nov 19 12:31:57 Server1 grafana[5122]: logger=plugins.update.checker t=2025-11->
Nov 19 12:41:56 Server1 grafana[5122]: logger=cleanup t=2025-11-19T12:41:56.102>
Nov 19 12:41:57 Server1 grafana[5122]: logger=plugins.update.checker t=2025-11->
Nov 19 12:42:31 Server1 grafana[5122]: logger=infra.usagestats t=2025-11-19T12:>
Nov 19 12:51:56 Server1 grafana[5122]: logger=cleanup t=2025-11-19T12:51:56.105>
Nov 19 12:51:57 Server1 grafana[5122]: logger=plugins.update.checker t=2025-11->
lines 1-21/21 (END)
```

```
chloe@Server1:~$ grafana-server -v
Version 12.2.1+security-01 (commit: 1276aa9aacadeeb92e40a6fa5db94998be7ffd8b, br
anch: release-12.2.1+security-01)
chloe@Server1:~$ 

chloe@Server2:~$ sudo systemctl status grafana-server
[sudo] password for chloe:
● grafana-server.service - Grafana instance
    Loaded: loaded (/usr/lib/systemd/system/grafana-server.service; enabled; p>
    Active: active (running) since Wed 2025-11-19 11:59:17 UTC; 1h 0min ago
      Docs: http://docs.grafana.org
      Main PID: 5631 (grafana)
        Tasks: 21 (limit: 5778)
       Memory: 123.9M (peak: 147.9M)
         CPU: 4min 37.856s
      CGroup: /system.slice/grafana-server.service
              └─5631 /usr/share/grafana/bin/grafana server --config=/etc/grafana>

Nov 19 12:17:24 Server2 grafana[5631]: logger=sqlstore.transactions t=2025-11-1>
Nov 19 12:22:32 Server2 grafana[5631]: logger=cleanup t=2025-11-19T12:22:32.624>
Nov 19 12:22:40 Server2 grafana[5631]: logger=plugins.update.checker t=2025-11->
Nov 19 12:32:32 Server2 grafana[5631]: logger=cleanup t=2025-11-19T12:32:32.458>
Nov 19 12:32:38 Server2 grafana[5631]: logger=plugins.update.checker t=2025-11->
Nov 19 12:33:22 Server2 grafana[5631]: logger=infra.usagestats t=2025-11-19T12:>
Nov 19 12:42:32 Server2 grafana[5631]: logger=cleanup t=2025-11-19T12:42:32.387>
Nov 19 12:42:38 Server2 grafana[5631]: logger=plugins.update.checker t=2025-11->
Nov 19 12:52:32 Server2 grafana[5631]: logger=cleanup t=2025-11-19T12:52:32.118>
Nov 19 12:52:38 Server2 grafana[5631]: logger=plugins.update.checker t=2025-11->
Lines 1-21/21 (END)
```

```
chloe@Server2:~$ grafana-server -v
Version 12.2.1+security-01 (commit: 1276aa9aacadeeb92e40a6fa5db94998be7ffd8b, br
anch: release-12.2.1+security-01)
```

4.4 MOTD

```
chloemargarette@localhost:~$ cat /etc/motd
Ansible Managed by Dave Santos
```

```
chloe@Server2:~$ cat /etc/motd
Ansible Managed by Dave Santos
```

```
chloe@Server1:~$ sudo cat /etc/motd
Ansible Managed by Dave Santos
```

Repository link:

<git@github.com>:DaveEmmanuelle/Final_exam_Santos.git

