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Course/Section: CPE212 - CPE31S2	Date Submitted: 10 / 10 / 2025
Instructor: Robin Valenzuela	Semester and SY: 1st, 2025-2026

Midterm Skills Exam: Install, Configure, and Manage Log Monitoring tools

1. Objectives

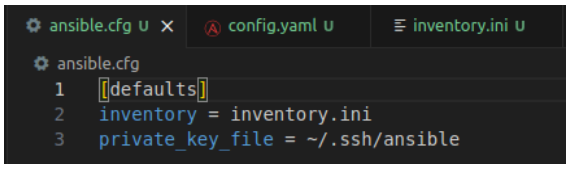
Create and design a workflow that installs, configure and manage enterprise availability, performance and log monitoring tools using Ansible as an Infrastructure as Code (IaC) tool.

2. Instructions

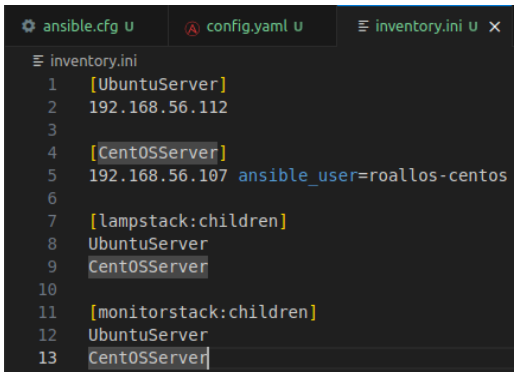
1. Create a repository in your GitHub account and label it CPE_MIDEXAM_SURNAME.
2. Clone the repository and do the following:
   2.1. Create an Ansible playbook that does the following with an input of a config.yaml file and arranged Inventory file:
   2.2. Install and configure Elastic Stack in separate hosts (Elastic Search, Kibana, Logstash) • Install Nagios in one host
   2.3. Install Grafana,Prometheus and Influxdb in seperate hosts (Influxdb,Grafana,Prometheus)
   2.4. Install Lamp Stack in separate hosts (Httpd + Php,Mariadb)
3. Document all your tasks using this document. Provide proofs of all the ansible playbooks codes and successful installations.
4. Document the push and commit from the local repository to GitHub.
5. Finally, paste also the link of your GitHub repository in the documentation.

3. Output (screenshots and explanations)

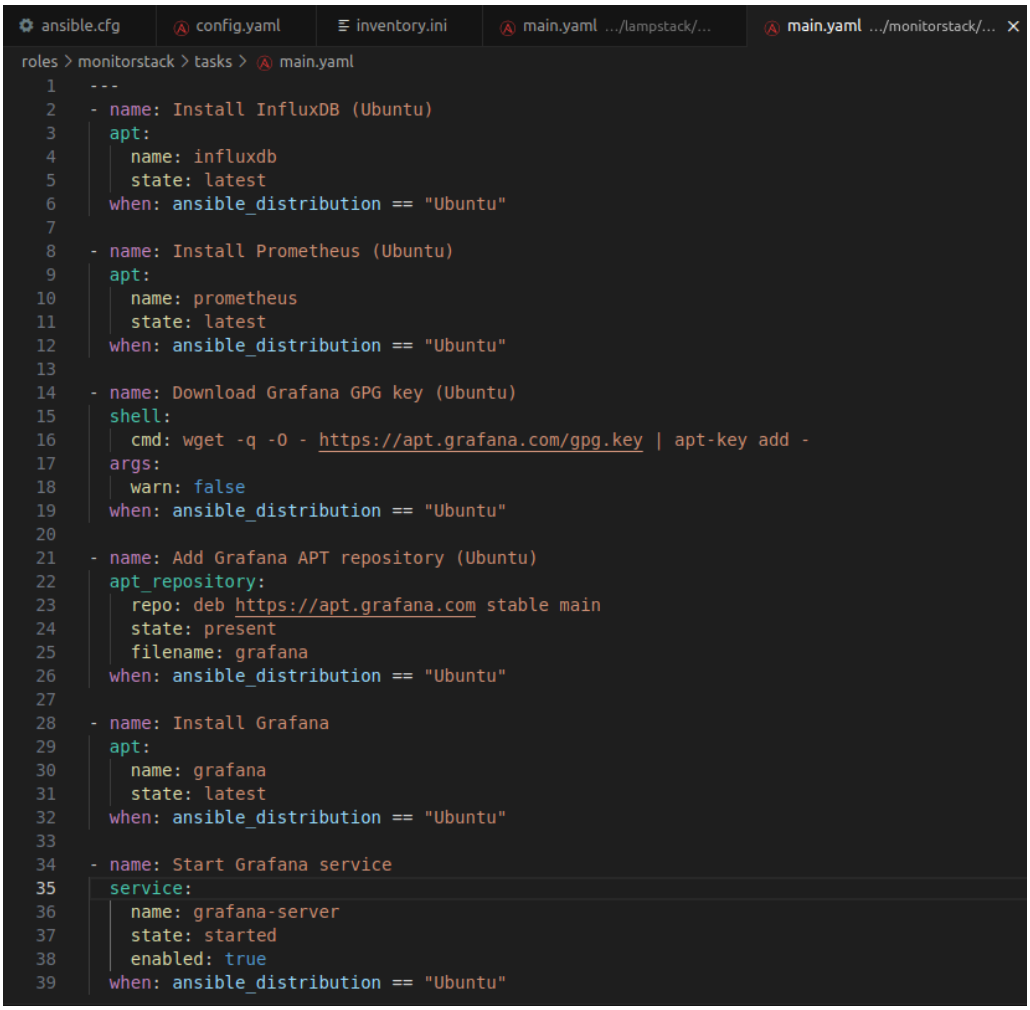
ansible.cfg file:



inventory.ini file:



roles/monitorstack/tasks/main.yaml



Installing monitorstack:

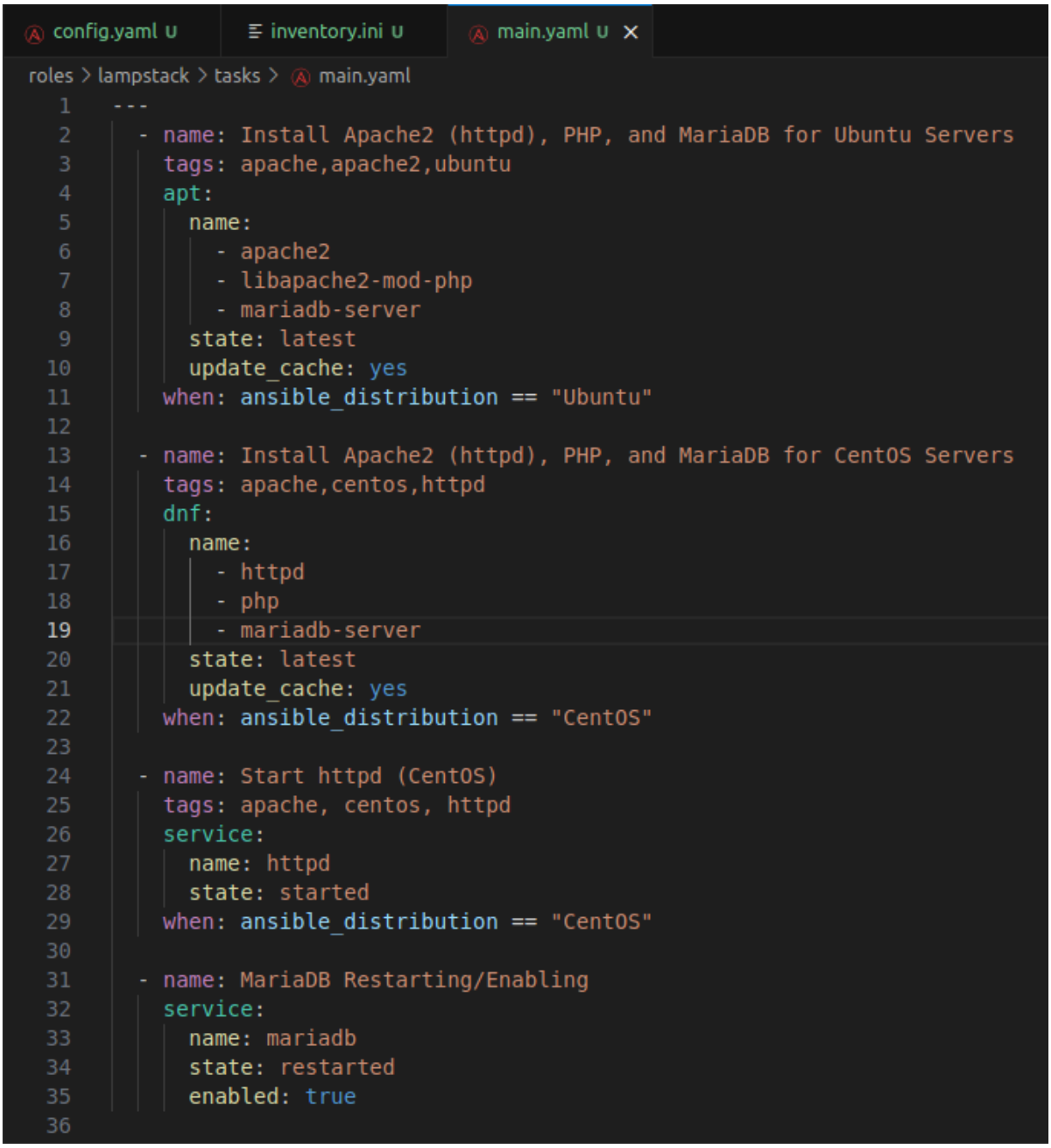
```
PLAY [monitorstack] ************************************************************************************************

TASK [Gathering Facts] *********************************************************************************************
ok: [192.168.56.112]
ok: [192.168.56.107]

TASK [monitorstack : Install InfluxDB (Ubuntu)] ********************************************************************
skipping: [192.168.56.107]
ok: [192.168.56.112]

TASK [monitorstack : Install Prometheus (Ubuntu)] ******************************************************************
skipping: [192.168.56.107]
ok: [192.168.56.112]

TASK [monitorstack : Download Grafana GPG key (Ubuntu)] ************************************************************
skipping: [192.168.56.107]
changed: [192.168.56.112]

TASK [monitorstack : Add Grafana APT repository (Ubuntu)] **********************************************************
skipping: [192.168.56.107]
ok: [192.168.56.112]

TASK [monitorstack : Install Grafana] ******************************************************************************
skipping: [192.168.56.107]
ok: [192.168.56.112]

TASK [monitorstack : Start Grafana service] ************************************************************************
skipping: [192.168.56.107]
changed: [192.168.56.112]

PLAY RECAP *********************************************************************************************************
192.168.56.107             : ok=7    changed=1    unreachable=0    failed=0    skipped=8    rescued=0    ignored=0
192.168.56.112             : ok=12   changed=3    unreachable=0    failed=0    skipped=3    rescued=0    ignored=0
```

Proof of Installed Services:

```
roallos-ubuntu@server1: ~
roallos-ubuntu@server1:~$ systemctl status influxdb
● influxdb.service - InfluxDB is an open-source, distributed, time series database
     Loaded: loaded (/lib/systemd/system/influxdb.service; enabled; vendor preset: enabled)
     Active: active (running) since Fri 2025-10-10 19:04:22 +08; 7min ago
       Docs: man:influxd(1)
   Main PID: 11866 (influxd)
      Tasks: 11 (limit: 4624)
     Memory: 5.7M
     CGroup: /system.slice/influxdb.service
             └─11866 /usr/bin/influxd -config /etc/influxdb/influxdb.conf
roallos-ubuntu@server1:~$ systemctl status prometheus
● prometheus.service - Monitoring system and time series database
     Loaded: loaded (/lib/systemd/system/prometheus.service; enabled; vendor preset: enabled)
     Active: active (running) since Fri 2025-10-10 19:04:53 +08; 6min ago
       Docs: https://prometheus.io/docs/introduction/overview/
   Main PID: 14082 (prometheus)
      Tasks: 10 (limit: 4624)
     Memory: 22.5M
     CGroup: /system.slice/prometheus.service
             └─14082 /usr/bin/prometheus
roallos-ubuntu@server1:~$ systemctl status grafana-server
● grafana-server.service - Grafana instance
     Loaded: loaded (/usr/lib/systemd/system/grafana-server.service; enabled; vendor preset: enabled)
     Active: active (running) since Fri 2025-10-10 19:09:02 +08; 2min 46s ago
       Docs: http://docs.grafana.org
   Main PID: 22143 (grafana)
      Tasks: 14 (limit: 4624)
     Memory: 132.9M
     CGroup: /system.slice/grafana-server.service
             └─22143 /usr/share/grafana/bin/grafana server --config=/etc/grafana/grafana.ini --pidfile=/run/grafana
roallos-ubuntu@server1:~$
```

I have installed the required services in the monitorstack (influxdb, prometheus, grafana/grafana-server), although only in the Ubuntu system because I had trouble working with the CentOS dependencies (GPG key and additional repositories).

roles/lampstack/tasks/main.yaml:

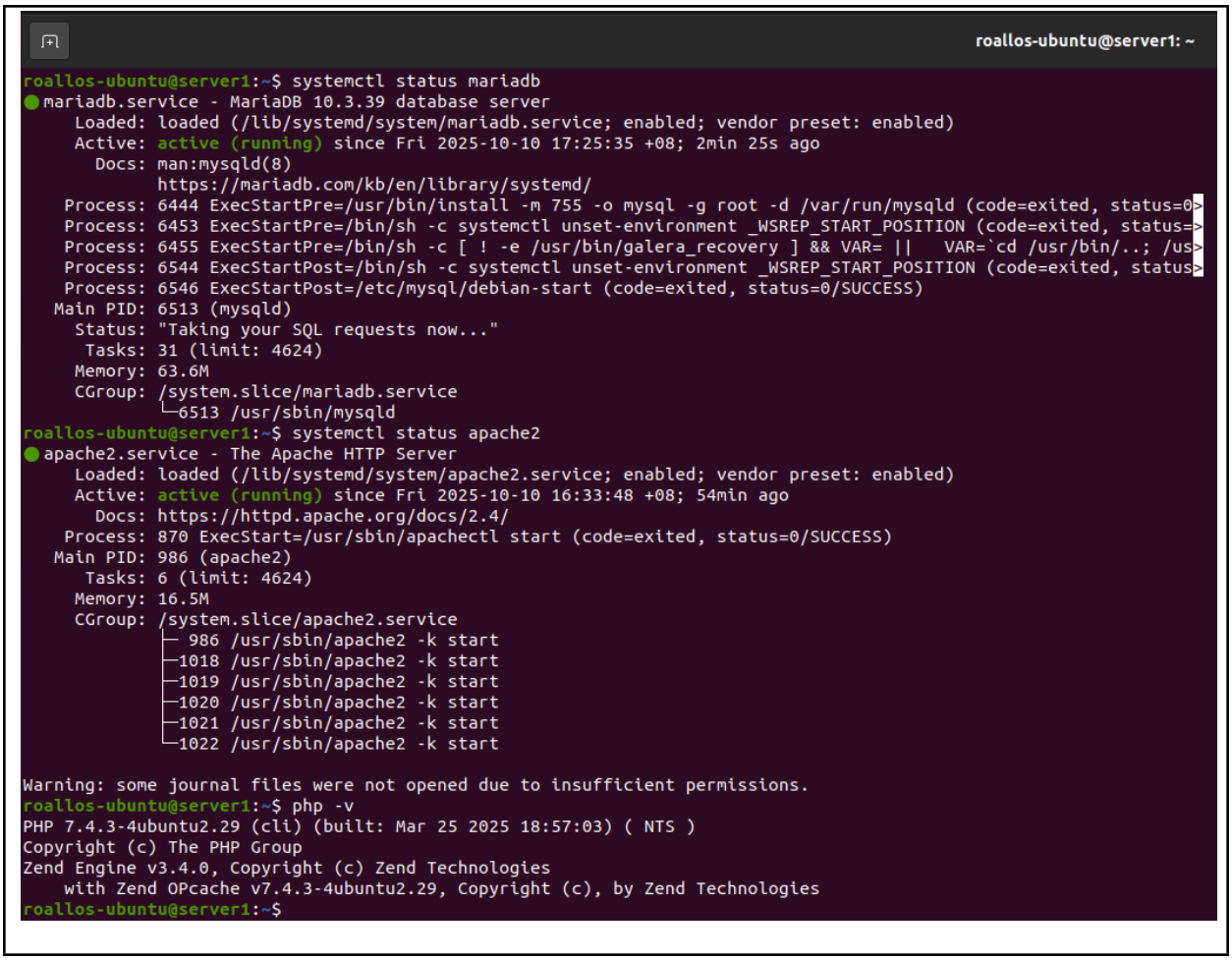


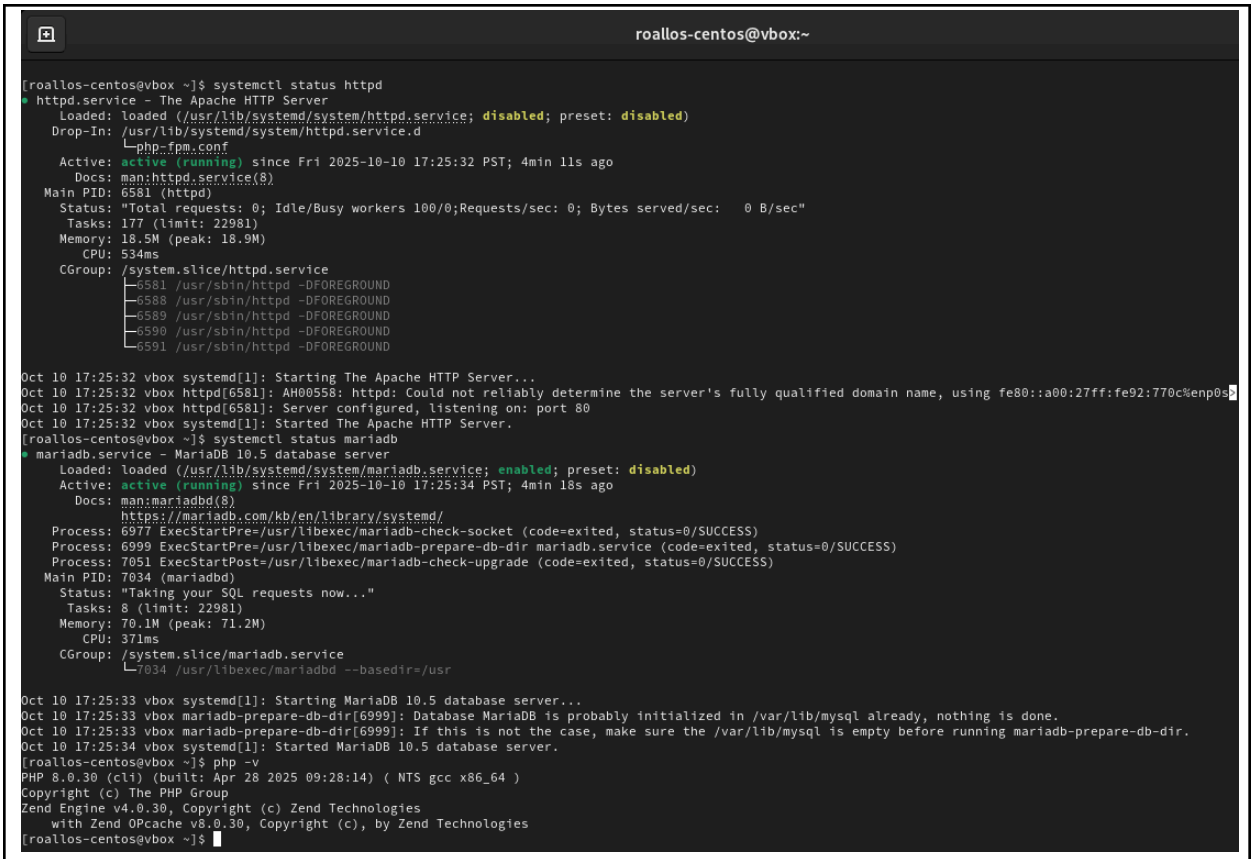
This Ansible playbook installs the required services for the lamp stack group (httpd/apache, php, mariadb). I made sure to install the latest version by declaring the 'state: latest' during install. Because CentOS defaults to not starting installed services (httpd and mariadb), there were extra plays to start and restart specific services, making sure that they are enabled and up.

Installing Lampstack:

```
roallos-ubuntu@workstation:~/CPE_MIDEXAM_ROALLOS$ ansible-playbook config.yaml -K
information. This feature will be removed in version 2.12. Deprecation warnings can be disabled by setting deprecation_warnings=False in ansible.cfg.
ok: [192.168.56.112]
[DEPRECATION WARNING]: Distribution centos 9 on host 192.168.56.107 should use /usr/libexec/platform-python, but is using /usr/bin/python for backward compatibility with prior Ansible
releases. A future Ansible release will default to using the discovered platform python for this host. See
https://docs.ansible.com/ansible/2.9/reference_appendices/interpreter_discovery.html for more information. This feature will be removed in version 2.12. Deprecation warnings can be disabled
by setting deprecation_warnings=False in ansible.cfg.
ok: [192.168.56.107]

TASK [Install Updates (CentOS)] ************************************************************************************************************************************************************
skipping: [192.168.56.112]
ok: [192.168.56.107]

TASK [Install Updates (Ubuntu)] ************************************************************************************************************************************************************
skipping: [192.168.56.107]
ok: [192.168.56.112]

PLAY [lampstack] ***************************************************************************************************************************************************************************

TASK [Gathering Facts] *********************************************************************************************************************************************************************
ok: [192.168.56.112]
ok: [192.168.56.107]

TASK [lampstack : Install Apache2 (httpd), PHP, and MariaDB for Ubuntu Servers] ************************************************************************************************
skipping: [192.168.56.107]
ok: [192.168.56.112]

TASK [lampstack : Install Apache2 (httpd), PHP, and MariaDB for CentOS Servers] ************************************************************************************************
skipping: [192.168.56.112]
changed: [192.168.56.107]

TASK [lampstack : Start httpd (CentOS)] ****************************************************************************************************************************************************
skipping: [192.168.56.112]
changed: [192.168.56.107]

TASK [lampstack : MariaDB Restarting/Enabling] *********************************************************************************************************************************************
changed: [192.168.56.107]
changed: [192.168.56.112]

PLAY RECAP *********************************************************************************************************************************************************************************
192.168.56.107             : ok=6    changed=3    unreachable=0    failed=0    skipped=2    rescued=0    ignored=0
192.168.56.112             : ok=5    changed=1    unreachable=0    failed=0    skipped=3    rescued=0    ignored=0

roallos-ubuntu@workstation:~/CPE_MIDEXAM_ROALLOS$
```

Proof of Installed Services:


roallos-ubuntu@server1: ~
roallos-ubuntu@server1:~$ systemctl status mariadb
mariadb.service - MariaDB 10.3.39 database server
Loaded: loaded (/lib/systemd/system/mariadb.service; enabled; vendor preset: enabled)
Active: active (running) since Fri 2025-10-10 17:25:35 +08; 2min 25s ago
Docs: man:mysqld(8)
https://mariadb.com/kb/en/library/systemd/
Process: 6444 ExecStartPre=/usr/bin/install -m 755 -o mysql -g root -d /var/run/mysqld (code=exited, status=0>
Process: 6453 ExecStartPre=/bin/sh -c systemctl unset-environment _WSREP_START_POSITION (code=exited, status=>
Process: 6455 ExecStartPre=/bin/sh -c [! -e /usr/bin/galera_recovery] && VAR= || VAR=`cd /usr/bin/..; /us>
Process: 6544 ExecStartPost=/bin/sh -c systemctl unset-environment _WSREP_START_POSITION (code=exited, status>
Process: 6546 ExecStartPost=/etc/mysql/debian-start (code=exited, status=0/SUCCESS)
Main PID: 6513 (mysqld)
Status: "Taking your SQL requests now..."
Tasks: 31 (limit: 4624)
Memory: 63.6M
CGroup: /system.slice/mariadb.service
└─6513 /usr/sbin/mysqld
roallos-ubuntu@server1:~$ systemctl status apache2
apache2.service - The Apache HTTP Server
Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset: enabled)
Active: active (running) since Fri 2025-10-10 16:33:48 +08; 54min ago
Docs: https://httpd.apache.org/docs/2.4/
Process: 870 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/SUCCESS)
Main PID: 986 (apache2)
Tasks: 6 (limit: 4624)
Memory: 16.5M
CGroup: /system.slice/apache2.service
├─ 986 /usr/sbin/apache2 -k start
├─1018 /usr/sbin/apache2 -k start
├─1019 /usr/sbin/apache2 -k start
├─1020 /usr/sbin/apache2 -k start
├─1021 /usr/sbin/apache2 -k start
└─1022 /usr/sbin/apache2 -k start
Warning: some journal files were not opened due to insufficient permissions.
roallos-ubuntu@server1:~$ php -v
PHP 7.4.3-4ubuntu2.29 (cli) (built: Mar 25 2025 18:57:03) (NTS)
Copyright (c) The PHP Group
Zend Engine v3.4.0, Copyright (c) Zend Technologies
with Zend OPcache v7.4.3-4ubuntu2.29, Copyright (c), by Zend Technologies
roallos-ubuntu@server1:~$



GitHub link:

https://github.com/jgvroallos/CPE_MIDEXAM_ROALLOS/tree/main

Conclusions: (link your conclusion from the objective)

In this midterm examination, I have (partially) installed the necessary IaC services to the managed nodes. Although I have some difficulties in setting up and translating the local commands to run through Ansible playbooks especially in the CentOS managed node.