Final Skills Exam	
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Course/Section: CPE 232 / CPE31S22	**Date Submitted:** Dec 13, 2022
Instructor: Dr. Jonathan Taylar	**Semester and SY:** 1st Sem, 2022 - 2023

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). Create a word document report for this final exam. For your final exam to be counted, please paste your repository link as an answer in your report. No point will be given if you forgot to paste your repo link.

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

Tools Needed:

1. VM with Ubuntu, CentOS and Ansible installed

2. Web browser

Output (input, process, output)

INPUTS

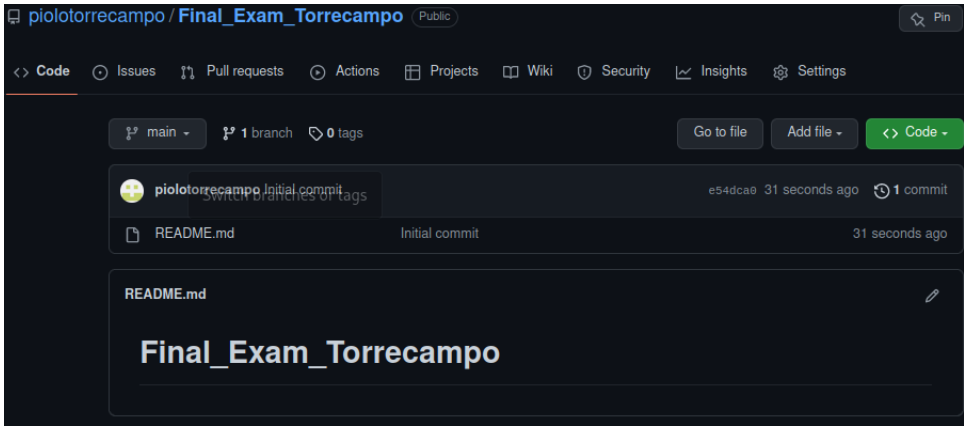


Figure 1. The image above shows the newly created page for this activity.

```
~/Documents/repos ❯ git clone git@github.com:piolotorrecampo/Final_Exam_Torrecampo.git
Cloning into 'Final_Exam_Torrecampo'...
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
Receiving objects: 100% (3/3), done.
~/Documents/repos took 5s ❯
```

Figure 2. Cloning the created repository to the local machine.

```
Final_Exam_Torrecampo on  main [?] ❯ tree
.
├── ansible.cfg
├── config.yml
├── inventory
├── library
│   └── mysql_secure_installation.py
├── README.md
└── roles
    ├── apache
    │   ├── defaults
    │   │   └── main.yml
    │   ├── files
    │   │   └── Dockerfile
    │   ├── handlers
    │   │   └── main.yml
    │   └── tasks
    │       ├── configure.yml
    │       ├── install.yml
    │       └── main.yml
    ├── httpd
    │   ├── handlers
    │   │   └── main.yml
    │   ├── tasks
    │   │   ├── configure.yml
    │   │   ├── install.yml
    │   │   └── main.yml
    │   └── vars
    │       └── main.yml
```

```
├── motd
│   ├── files
│   │   └── motd
│   └── tasks
│       ├── configure.yml
│       └── main.yml
└── prometheus
    ├── files
    │   └── prometheus.service
    ├── tasks
    │   ├── configure.yml
    │   ├── install.yml
    │   └── main.yml
    └── vars
        └── main.yml

18 directories, 24 files
Final_Exam_Torrecampo on ᚠ main [?] ❯
```

Figure 3. The picture above shows the file structure of the activity.

Prerequisite Files in Running the Playbook	
File Name	**Ansible Script**
config.yml	

```
Final_Exam_Torrecampo on ᚠ main [?] ❯ cat config.yml
---

- hosts: all
  become: true
  pre_tasks:

  - name: Installing dnf and epel-release
    yum:
      name:
        - epel-release
        - yum-utils
        - dnf
    when: ansible_distribution == "CentOS"

  - name: Update and upgrade remote CentOS server
    dnf:
      update_cache: yes
      name:  "*"
      state: latest
    when: ansible_distribution == "CentOS"

  - name: Dpkg fixing in Ubuntu Servers
    shell: |
      dpkg --configure -a
    when: ansible_distribution == "Ubuntu"

  - name: Update and upgrade remote in Ubuntu servers
    apt:
      update_cache: yes
      upgrade: yes
```

	``yaml
	  when: ansible_distribution == "Ubuntu"
	
	- hosts: all
	  become: true
	  roles:
	  - motd
	  - prometheus
	
	- hosts: centos
	  become: true
	  roles:
	  - httpd
	
	- hosts: ubuntu
	  become: true
	  roles:
	  - apache
	``
	[illustration_1]

inventory	``` Final_Exam_Torrecampo on ᚠ main [?] ❯ cat inventory [centos] 192.168.30.178 ansible_user=cserver [ubuntu] 192.168.30.179 ansible_user=userver ``` [illustration_2]
ansible.cfg	``` Final_Exam_Torrecampo on ᚠ main [?] ❯ cat ansible.cfg [defaults] inventory = inventory host_key_checking = False deprecation_warnings = False private_key_file = ~/.ssh/id_rsa ``` [illustration_3]
library/mysql_secure_installation.py (not all contents are included due to its massive number of lines)	``` #!/usr/bin/python 1 # -*- coding: utf-8 -*- 2 3 # Copyright: (c) 2020, eslam.gomaa <linkedin.com/in/eslam-sa3dany> 4 5 DOCUMENTATION = ''' 6 --- 7 module: mysql_secure_installation 8 9 short_description: An idempotent module to perform "mysql_secure_installation" script steps 10 11 version_added: "1.0" 12 13 description: 14 - An idempotent module to perform "mysql_secure_installation" script steps 15 - Change MySQL Root Password - for a list of hosts i.e [localhost, 127.0.0.1, ::1,] .etc. 16 - Remove Anonymous User 17 - Disallow Root Login Remotely 18 - Remove Test Database 19 20 options: 21 login_password: 22 description: 23 - Root's password to login to MySQL 24 required: true 25 type: str ``` [illustration_4]

```
    new_password:
        description:
            - New desired Root password
        required: true
        type: str
  user:
        description:
            - MySQL user to login
        default: "root"
        type: str

  login_host:
        description:
            - host to connect to
        default: "localhost"
        type: str
    hosts:
        description:
            - List of hosts for the provided user i.e ['localhost', '127.0.0.1', '::1'], Note - all wi
        default: ["localhost"]
        type: list
    change_root_password:
```

Table 1. The table above shows the contents of install_kgn.yml, ansible.cfg, and inventory.

ROLES AND ITS CONTENTS

Apache		
tasks	main.yml	main.yml 1 - import_tasks: install.yml 2 - import_tasks: configure.yml
	install.yml	install.yml - name: Uninstall old Docker versions apt: name: - docker - docker-engine - docker.io - containerd - runc state: absent - name: Creating a directory for packages file: path: /home/userver/docker-deb state: directory - name: Downloading docker components get_url: url: "https://download.docker.com/linux/ubuntu/dists/jammy/pool/stable/amd64/{{ item }}" dest: /home/userver/docker-deb with_items: - containerd.io_1.6.9-1_amd64.deb - docker-ce-cli_20.10.21~3-0~ubuntu-jammy_amd64.deb - docker-ce_20.10.21~3-0~ubuntu-jammy_amd64.deb - docker-compose-plugin_2.6.0~ubuntu-jammy_amd64.deb - name: Installing docker components shell: | cd /home/userver/docker-deb dpkg -i "{{ item }}" with_items: - containerd.io_1.6.9-1_amd64.deb - docker-ce-cli_20.10.21~3-0~ubuntu-jammy_amd64.deb - docker-ce_20.10.21~3-0~ubuntu-jammy_amd64.deb - docker-compose-plugin_2.6.0~ubuntu-jammy_amd64.deb - name: Fixing /var/run/docker.sock error shell: chmod 666 /var/run/docker.sock

```yaml
- name: Ensure group docker exists
  group:
    name: docker
    state: present

- name: Adding docker to the group of the current user
  user:
    name: userver
    groups: docker
    append: yes

- name: Start docker services
  service:
    name: "{{ item }}"
    state: started
  with_items:
    - docker
    - containerd

- name: Install python
  apt:
    name: python3-pip

- name: Install python sdk
  become_user: "{{ ansible_env.SUDO_USER }}"
  pip:
    name:
      - docker
      - docker-compose
```

```yaml
- block:
  - name: Verifying docker service
    shell: systemctl list-unit-files | grep docker
    register: docker_service

  - debug:
      msg="{{ docker_service }}"

- block:
  - name: Verifying user groups
    shell: groups userver
    register: user_groups

  - debug:
      msg="{{ user_groups }}"

- block:
  - name: Verifying docker installation
    shell: docker --version
    register: docker_installation

  - debug:
      msg="{{ docker_installation }}"
```

configure.yml

configure.yml

```yaml

- name: Creating a directory for Dockerfile
  file:
    path: /home/userver/docker_config
    state: directory

- name: Copying the Dockerfile
  copy:
    src: Dockerfile
    dest: /home/userver/docker_config
    owner: userver
    group: userver

- name: Creating volume
  file:
    path: /home/userver/pages
```

<table>
<tr>
<td></td>
<td></td>
<td>

```yaml
    state: directory

- name: Building image
  community.docker.docker_image:
    name: lamp-userver
    tag: 1.0
    build:
      path: /home/userver/docker_config
    source: build
```

```yaml
- name: Deploying container
  community.docker.docker_container:
    name: lamp-userver
    image: lamp-userver:1.0
    state: started
    exposed_ports:
      - "80"
    ports:
      - "8080:80"
    volumes:
      - /home/userver/pages:/var/www/html

- block:
  - name: Verify if lamp-userver container is running
    shell: docker ps
    register: container_status

  - debug:
      msg="{{ container_status }}"
```

</td>
</tr>
<tr>
<td>handlers</td>
<td>main.yml</td>
<td>

main.yml

```yaml
- name: Start docker
  service:
    name: "{{ item }}"
    state: restarted
    enabled: true
  with_items:
    - docker
    - containerd
```

</td>
</tr>
<tr>
<td>files</td>
<td>Dockerfile</td>
<td>

Dockerfile

```dockerfile
FROM ubuntu:latest
MAINTAINER torrecampo <qjpstorrecampo@tip.edu.ph>

ARG DEBIAN_FRONTEND=noninteractive

RUN apt-get update -y
RUN apt-get upgrade -y

RUN apt-get install apache2 -y
RUN apt-get install php libapache2-mod-php -y
RUN apt-get install mariadb-server mariadb-client -y

RUN /etc/init.d/apache2 start

ENTRYPOINT apache2ctl -D FOREGROUND
```

</td>
</tr>
</table>

Table 2. The table above shows the file and its contents for the apache role.

HTTPD		

tasks	main.yml	```yaml
		- import_tasks: install.yml
		- import_tasks: configure.yml
		
		- block:
		  - name: Verifying httpd service
		  shell: systemctl status httpd.service
		  register: httpd_service
		
		  - debug:
		  msg="{{ httpd_service }}"
		
		- block:
		  - name: Verifying mariadb service
		  shell: systemctl status mariadb
		  register: mariadb_service
		
		  - debug:
		  msg="{{ mariadb_service }}"
		``

	install.yml	```yaml
		- name: Installing LAMP server components
		  yum:
		  name: "{{ item }}"
		  with_items:
		  - httpd
		  - mariadb-server
		  - mariadb
		  - php
		  - php-mysql
		  - python2-PyMySQL
		
		- name: Start service
		  service:
		  name: "{{ item }}"
		  state: started
		  enabled: true
		  with_items:
		  - httpd
		  - mariadb
		``

	configure.yml	```yaml
		- name: use "mysql_secure_installation" for Fresh
		  mysql_secure_installation:
		  login_password: ''
		  new_password: "{{ root_password }}"
		  user: root
		  login_host: localhost
		  hosts: ['localhost', '127.0.0.1', '::1']
		  change_root_password: true
		  remove_anonymous_user: true
		  disallow_root_login_remotely: true
		  remove_test_db: true
		  register: secure
		
		- debug:
		  var: secure
		
		- name: Adding mysql service to firewall
		  ansible.posix.firewalld:
		  service: "{{ item }}"
		  permanent: yes
		  state: enabled
		  with_items:
		  - http
		  - https
		
		  notify: Reloading firewall
		``

handlers	main.yml	

```yaml
- name: Reloading firewall
  command: firewall-cmd --reload
```

vars	main.yml	

```yaml
---
root_password: "server54321"
```

Table 3. The table above shows the file and its contents for the httpdrole.

Prometheus		
tasks	main.yml	

```yaml
- import_tasks: install.yml
- import_tasks: configure.yml

- block:
  - name: Verifying prometheus service
    shell: systemctl status prometheus
    register: prometheus_service

  - debug:
      msg="{{ prometheus_service }}"
```

	install.yml	

```yaml
- name: Creating a directory (where the downloaded files will be stored)
  tags: directory
  file:
    path: ~/prometheus
    state: directory

- name: Downloading and extracting Prometheus
  tags: source
  unarchive:
    src: "{{source}}"
    dest: ~/prometheus
    remote_src: yes
    mode: 0777
    owner: root
    group: root

- name: Stopping the service
  service:
    name: prometheus
    state: stopped
  failed_when: false
  no_log: true

- name: Adding the Prometheus executables to a PATH
  tags: executables
  shell: |
    cd ~/prometheus/prometheus*
    cp -r . /usr/local/bin/prometheus
```

	configure.yml	```yml
		- name: Copying the Prometheus service file
		  tags: servicefile
		  copy:
		  src: prometheus.service
		  dest: /etc/systemd/system/
		  owner: root
		  group: root
		  mode: 777
		
		- name: Making sure that Prometheus is started and enabled
		  tags: serviceon
		  service:
		  name: prometheus
		  state: restarted
		  enabled: true
		``
		black-concept
		HP Notebook
		6.0.11-arch1-1
		08:53:48

vars	main.yml	```yml
		--- 	
		source: https://github.com/prometheus/prometheus/releases/download/v2.39.1/prometheus-2.39.1.linux-a
		``
		black-concept
		Arch Linux

files	prometheus.service	``` [Unit] Description=Prometheus Service After=network.target [Service] Type=simple ExecStart=/usr/local/bin/prometheus/prometheus --config.file=/usr/local/bin/prometheus/prometheus.yml [Install] WantedBy=multi-user.target ``` black-concept Arch Linux

Table 4. The table above shows the file and its contents for the prometheus role.

MOTD		

tasks	main.yml	```yml
		- import_tasks: configure.yml
		
		- block:
		  - name: Verifying the contents of /etc/motd
		  shell: cat /etc/motd
		  register: motd_content
		
		  - debug:
		  msg="{{ motd_content }}"
		``
		black-concept
		Arch Linux

	configure.yml	```yml
		- name: Changing MOTD
		  copy:
		  src: motd
		  dest: /etc/motd
		  owner: root
		  group: root
		  mode: 0644
		``
		black-concept
		Arch Linux

files	motd	``` Hello, World! ``` black-concept Arch Linux

Table 5. The table above shows the file and its contents for the motd role.

```
Final_Exam_Torrecampo on ᚠ main [?] ❯ ansible all -m ping
192.168.30.178 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python"
    },
    "changed": false,
    "ping": "pong"
}
192.168.30.179 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3"
    },
    "changed": false,
    "ping": "pong"
}
```

Figure 4. Checking the connection between controller node and the servers.

PROCESS

```
Final_Exam_Torrecampo on ᚠ main [?] + ❯ ansible-playbook --ask-become-pass config.yml
BECOME password:

PLAY [all] ***********************************************************************************************************************************

TASK [Gathering Facts] ***********************************************************************************************************************
ok: [192.168.30.178]
ok: [192.168.30.179]

TASK [Installing dnf and epel-release] *******************************************************************************************************
skipping: [192.168.30.179]
ok: [192.168.30.178]

TASK [Update and upgrade remote CentOS server] ***********************************************************************************************
skipping: [192.168.30.179]
ok: [192.168.30.178]

TASK [Dpkg fixing in Ubuntu Servers] *********************************************************************************************************
skipping: [192.168.30.178]
changed: [192.168.30.179]

TASK [Update and upgrade remote in Ubuntu servers] *******************************************************************************************
skipping: [192.168.30.178]
ok: [192.168.30.179]

PLAY [all] ***********************************************************************************************************************************

TASK [Gathering Facts] ***********************************************************************************************************************
ok: [192.168.30.178]
ok: [192.168.30.179]

TASK [motd : Changing MOTD] ******************************************************************************************************************
ok: [192.168.30.178]
ok: [192.168.30.179]

TASK [motd : Verifying the contents of /etc/motd] ********************************************************************************************
changed: [192.168.30.179]
changed: [192.168.30.178]

TASK [motd : debug] **************************************************************************************************************************
ok: [192.168.30.178] => {
    "msg": {
        "changed": true,
        "cmd": "cat /etc/motd",
        "delta": "0:00:00.014882",
        "end": "2022-12-12 20:07:36.722776",
        "failed": false,
        "msg": "",
        "rc": 0,
```

```
        "start": "2022-12-12 20:07:36.707894",
        "stderr": "",
        "stderr_lines": [],
        "stdout": "Hello, World! ",
        "stdout_lines": [
            "Hello, World! "
        ]
    }
}
ok: [192.168.30.179] => {
    "msg": {
        "changed": true,
        "cmd": "cat /etc/motd",
        "delta": "0:00:00.012804",
        "end": "2022-12-12 20:07:36.631456",
        "failed": false,
        "msg": "",
        "rc": 0,
        "start": "2022-12-12 20:07:36.618652",
        "stderr": "",
        "stderr_lines": [],
        "stdout": "Hello, World! ",
        "stdout_lines": [
            "Hello, World! "
        ]
    }
}

TASK [prometheus : Creating a directory (where the downloaded files will be stored)] *********************************************************
ok: [192.168.30.179]
ok: [192.168.30.178]
```

```
TASK [prometheus : Downloading and extracting Prometheus] ************************************************************************************************************************************************
ok: [192.168.30.178]
ok: [192.168.30.179]

TASK [prometheus : Stopping the service] ****************************************************************************************************************************************************************
changed: [192.168.30.178]
changed: [192.168.30.179]

TASK [prometheus : Adding the Prometheus executables to a PATH] *****************************************************************************************************************************************
changed: [192.168.30.178]
changed: [192.168.30.179]

TASK [prometheus : Copying the Prometheus service file] *************************************************************************************************************************************************
ok: [192.168.30.178]
ok: [192.168.30.179]
```

```
TASK [prometheus : Making sure that Prometheus is started and enabled] ***********************************************************************************************************************************
changed: [192.168.30.178]
changed: [192.168.30.179]

TASK [prometheus : Verifying prometheus service] ********************************************************************************************************************************************************
changed: [192.168.30.178]
changed: [192.168.30.179]

TASK [prometheus : debug] *******************************************************************************************************************************************************************************
ok: [192.168.30.178] => {
    "msg": {
        "changed": true,
        "cmd": "systemctl status prometheus",
        "delta": "0:00:00.026803",
        "end": "2022-12-12 20:10:41.628151",
        "failed": false,
        "msg": "",
        "rc": 0,
        "start": "2022-12-12 20:10:41.601348",
        "stderr": "",
        "stderr_lines": [],
        "stdout": "● prometheus.service - Prometheus Service\n   Loaded: loaded (/etc/systemd/system/prometheus.service; enabled; vendor preset: disabled)\n   Active: active (running) since Mon 2022-12-12 20:10:36 EST; 5s
 ago\n Main PID: 17119 (prometheus)\n    Tasks: 6\n   CGroup: /system.slice/prometheus.service\n           └─17119 /usr/local/bin/prometheus/prometheus --config.file=/usr/local/bin/prometheus/prometheus.yml\n\nDec 12 20:1
0:36 localhost.localdomain prometheus[17119]: ts=2022-12-13T01:10:36.647Z caller=head.go:672 level=info component=tsdb msg=\"WAL segment loaded\" segment=11 maxSegment=13\nDec 12 20:10:36 localhost.localdomain prometheus[
17119]: ts=2022-12-13T01:10:36.653Z caller=head.go:672 level=info component=tsdb msg=\"WAL segment loaded\" segment=12 maxSegment=13\nDec 12 20:10:36 localhost.localdomain prometheus[17119]: ts=2022-12-13T01:10:36.653Z ca
ller=head.go:672 level=info component=tsdb msg=\"WAL segment loaded\" segment=13 maxSegment=13\nDec 12 20:10:36 localhost.localdomain prometheus[17119]: ts=2022-12-13T01:10:36.654Z caller=head.go:709 level=info component=
tsdb msg=\"WAL replay completed\" checkpoint_replay_duration=17.198423ms wal_replay_duration=25.472386ms wbl_replay_duration=142ns total_replay_duration=43.22418ms\nDec 12 20:10:36 localhost.localdomain prometheus[17119]:
 ts=2022-12-13T01:10:36.667Z caller=main.go:1001 level=info fs_type=XFS_SUPER_MAGIC\nDec 12 20:10:36 localhost.localdomain prometheus[17119]: ts=2022-12-13T01:10:36.667Z caller=main.go:1004 level=info msg=\"TSDB started\"
\nDec 12 20:10:36 localhost.localdomain prometheus[17119]: ts=2022-12-13T01:10:36.667Z caller=main.go:1184 level=info msg=\"Loading configuration file\" filename=/usr/local/bin/prometheus/prometheus.yml\nDec 12 20:10:36 l
ocalhost.localdomain prometheus[17119]: ts=2022-12-13T01:10:36.669Z caller=main.go:1221 level=info msg=\"Completed loading of configuration file\" filename=/usr/local/bin/prometheus/prometheus.yml totalDuration=2.546389ms
 db_storage=11.732µs remote_storage=5.846µs web_handler=666ns query_engine=1.238µs scrape=1.695659ms scrape_sd=58.488µs notify=155.423µs notify_sd=75.595µs rules=8.528µs tracing=40.536µs\nDec 12 20:10:36 localhost.localdo
main prometheus[17119]: ts=2022-12-13T01:10:36.669Z caller=main.go:965 level=info msg=\"Server is ready to receive web requests.\"\nDec 12 20:10:36 localhost.localdomain prometheus[17119]: ts=2022-12-13T01:10:36.670Z call
er=manager.go:943 level=info component=\"rule manager\" msg=\"Starting rule manager...\"",
        "stdout_lines": [
            "● prometheus.service - Prometheus Service",
            "   Loaded: loaded (/etc/systemd/system/prometheus.service; enabled; vendor preset: disabled)",
            "   Active: active (running) since Mon 2022-12-12 20:10:36 EST; 5s ago",
            " Main PID: 17119 (prometheus)",
            "    Tasks: 6",
            "   CGroup: /system.slice/prometheus.service",
            "           └─17119 /usr/local/bin/prometheus/prometheus --config.file=/usr/local/bin/prometheus/prometheus.yml",
            "",
            "Dec 12 20:10:36 localhost.localdomain prometheus[17119]: ts=2022-12-13T01:10:36.647Z caller=head.go:672 level=info component=tsdb msg=\"WAL segment loaded\" segment=11 maxSegment=13",
            "Dec 12 20:10:36 localhost.localdomain prometheus[17119]: ts=2022-12-13T01:10:36.653Z caller=head.go:672 level=info component=tsdb msg=\"WAL segment loaded\" segment=12 maxSegment=13",
            "Dec 12 20:10:36 localhost.localdomain prometheus[17119]: ts=2022-12-13T01:10:36.653Z caller=head.go:672 level=info component=tsdb msg=\"WAL segment loaded\" segment=13 maxSegment=13",
            "Dec 12 20:10:36 localhost.localdomain prometheus[17119]: ts=2022-12-13T01:10:36.654Z caller=head.go:709 level=info component=tsdb msg=\"WAL replay completed\" checkpoint_replay_duration=17.198423ms wal_replay
_duration=25.472386ms wbl_replay_duration=142ns total_replay_duration=43.22418ms",
            "Dec 12 20:10:36 localhost.localdomain prometheus[17119]: ts=2022-12-13T01:10:36.667Z caller=main.go:1001 level=info fs_type=XFS_SUPER_MAGIC",
```

```
            "Dec 12 20:10:36 localhost.localdomain prometheus[17119]: ts=2022-12-13T01:10:36.667Z caller=main.go:1004 level=info msg=\"TSDB started\"",
            "Dec 12 20:10:36 localhost.localdomain prometheus[17119]: ts=2022-12-13T01:10:36.667Z caller=main.go:1184 level=info msg=\"Loading configuration file\" filename=/usr/local/bin/prometheus/prometheus.yml",
            "Dec 12 20:10:36 localhost.localdomain prometheus[17119]: ts=2022-12-13T01:10:36.669Z caller=main.go:1221 level=info msg=\"Completed loading of configuration file\" filename=/usr/local/bin/prometheus/prometheu
s.yml totalDuration=2.546389ms db_storage=11.732µs remote_storage=5.846µs web_handler=666ns query_engine=1.238µs scrape=1.695659ms scrape_sd=58.488µs notify=155.423µs notify_sd=75.595µs rules=8.528µs tracing=40.536µs",
            "Dec 12 20:10:36 localhost.localdomain prometheus[17119]: ts=2022-12-13T01:10:36.669Z caller=main.go:965 level=info msg=\"Server is ready to receive web requests.\"",
            "Dec 12 20:10:36 localhost.localdomain prometheus[17119]: ts=2022-12-13T01:10:36.670Z caller=manager.go:943 level=info component=\"rule manager\" msg=\"Starting rule manager...\""
        ]
    }
}
ok: [192.168.30.179] => {
    "msg": {
        "changed": true,
        "cmd": "systemctl status prometheus",
        "delta": "0:00:00.028396",
        "end": "2022-12-12 20:10:43.848712",
        "failed": false,
        "msg": "",
        "rc": 0,
        "start": "2022-12-12 20:10:43.820316",
        "stderr": "",
        "stderr_lines": [],
        "stdout": "● prometheus.service - Prometheus Service\n     Loaded: loaded (/etc/systemd/system/prometheus.service; enabled; vendor preset: enabled)\n     Active: active (running) since Mon 2022-12-12 20:10:39 EST;
 3s ago\n Main PID: 43706 (prometheus)\n    Tasks: 7 (limit: 1788)\n     Memory: 22.8M\n        CPU: 250ms\n     CGroup: /system.slice/prometheus.service\n             └─43706 /usr/local/bin/prometheus/prometheus --co
nfig.file=/usr/local/bin/prometheus/prometheus.yml\n\nDec 12 20:10:40 ubuntu-server prometheus[43706]: ts=2022-12-13T01:10:40.585Z caller=head.go:672 level=info component=tsdb msg=\"WAL segment loaded\" segment=6 maxSegme
nt=8\nDec 12 20:10:40 ubuntu-server prometheus[43706]: ts=2022-12-13T01:10:40.724Z caller=head.go:672 level=info component=tsdb msg=\"WAL segment loaded\" segment=7 maxSegment=8\nDec 12 20:10:40 ubuntu-server prometheus[4
3706]: ts=2022-12-13T01:10:40.725Z caller=head.go:672 level=info component=tsdb msg=\"WAL segment loaded\" segment=8 maxSegment=8\nDec 12 20:10:40 ubuntu-server prometheus[43706]: ts=2022-12-13T01:10:40.726Z caller=head.g
o:709 level=info component=tsdb msg=\"WAL replay completed\" checkpoint_replay_duration=57.080941ms wal_replay_duration=166.757709ms wbl_replay_duration=300ns total_replay_duration=225.486703ms\nDec 12 20:10:40 ubuntu-ser
ver prometheus[43706]: ts=2022-12-13T01:10:40.728Z caller=main.go:1001 level=info fs_type=EXT4_SUPER_MAGIC\nDec 12 20:10:40 ubuntu-server prometheus[43706]: ts=2022-12-13T01:10:40.729Z caller=main.go:1004 level=info msg=\
"TSDB started\"\nDec 12 20:10:40 ubuntu-server prometheus[43706]: ts=2022-12-13T01:10:40.729Z caller=main.go:1184 level=info msg=\"Loading configuration file\" filename=/usr/local/bin/prometheus/prometheus.yml\nDec 12 20:
10:40 ubuntu-server prometheus[43706]: ts=2022-12-13T01:10:40.730Z caller=main.go:1221 level=info msg=\"Completed loading of configuration file\" filename=/usr/local/bin/prometheus/prometheus.yml totalDuration=1.363478ms
 db_storage=2.203µs remote_storage=2.189µs web_handler=1.051µs query_engine=1.36µs scrape=383.903µs scrape_sd=32.129µs notify=54.78µs notify_sd=26.076µs rules=2.574µs tracing=10.298µs\nDec 12 20:10:40 ubuntu-server prometh
eus[43706]: ts=2022-12-13T01:10:40.731Z caller=main.go:965 level=info msg=\"Server is ready to receive web requests.\"\nDec 12 20:10:40 ubuntu-server prometheus[43706]: ts=2022-12-13T01:10:40.731Z caller=manager.go:943 le
vel=info component=\"rule manager\" msg=\"Starting rule manager...\"",
        "stdout_lines": [
            "● prometheus.service - Prometheus Service",
            "   Loaded: loaded (/etc/systemd/system/prometheus.service; enabled; vendor preset: enabled)",
            "   Active: active (running) since Mon 2022-12-12 20:10:39 EST; 3s ago",
            " Main PID: 43706 (prometheus)",
            "    Tasks: 7 (limit: 1788)",
            "     Memory: 22.8M",
            "        CPU: 250ms",
            "     CGroup: /system.slice/prometheus.service",
            "             └─43706 /usr/local/bin/prometheus/prometheus --config.file=/usr/local/bin/prometheus/prometheus.yml",
            "",
            "Dec 12 20:10:40 ubuntu-server prometheus[43706]: ts=2022-12-13T01:10:40.585Z caller=head.go:672 level=info component=tsdb msg=\"WAL segment loaded\" segment=6 maxSegment=8",
            "Dec 12 20:10:40 ubuntu-server prometheus[43706]: ts=2022-12-13T01:10:40.724Z caller=head.go:672 level=info component=tsdb msg=\"WAL segment loaded\" segment=7 maxSegment=8",
            "Dec 12 20:10:40 ubuntu-server prometheus[43706]: ts=2022-12-13T01:10:40.725Z caller=head.go:672 level=info component=tsdb msg=\"WAL segment loaded\" segment=8 maxSegment=8",
            "Dec 12 20:10:40 ubuntu-server prometheus[43706]: ts=2022-12-13T01:10:40.726Z caller=head.go:709 level=info component=tsdb msg=\"WAL replay completed\" checkpoint_replay_duration=57.080941ms wal_replay_duratio
```

```
            "Dec 12 20:10:40 ubuntu-server prometheus[43706]: ts=2022-12-13T01:10:40.726Z caller=head.go:709 level=info component=tsdb msg=\"WAL replay completed\" checkpoint_replay_duration=57.080941ms wal_replay_duratio
n=166.757709ms wbl_replay_duration=300ns total_replay_duration=225.486703ms",
            "Dec 12 20:10:40 ubuntu-server prometheus[43706]: ts=2022-12-13T01:10:40.728Z caller=main.go:1001 level=info fs_type=EXT4_SUPER_MAGIC",
            "Dec 12 20:10:40 ubuntu-server prometheus[43706]: ts=2022-12-13T01:10:40.729Z caller=main.go:1004 level=info msg=\"TSDB started\"",
            "Dec 12 20:10:40 ubuntu-server prometheus[43706]: ts=2022-12-13T01:10:40.729Z caller=main.go:1184 level=info msg=\"Loading configuration file\" filename=/usr/local/bin/prometheus/prometheus.yml",
            "Dec 12 20:10:40 ubuntu-server prometheus[43706]: ts=2022-12-13T01:10:40.730Z caller=main.go:1221 level=info msg=\"Completed loading of configuration file\" filename=/usr/local/bin/prometheus/prometheus.yml to
talDuration=1.363478ms db_storage=2.203µs remote_storage=2.189µs web_handler=1.051µs query_engine=1.36µs scrape=383.903µs scrape_sd=32.129µs notify=54.78µs notify_sd=26.076µs rules=2.574µs tracing=10.298µs",
            "Dec 12 20:10:40 ubuntu-server prometheus[43706]: ts=2022-12-13T01:10:40.731Z caller=main.go:965 level=info msg=\"Server is ready to receive web requests.\"",
            "Dec 12 20:10:40 ubuntu-server prometheus[43706]: ts=2022-12-13T01:10:40.731Z caller=manager.go:943 level=info component=\"rule manager\" msg=\"Starting rule manager...\""
        ]
    }
}
```

```
PLAY [centos] ***********************************************************************************************************************************************

TASK [Gathering Facts] **************************************************************************************************************************************
ok: [192.168.30.178]

TASK [httpd : Installing LAMP server components] ************************************************************************************************************
ok: [192.168.30.178] => (item=httpd)
ok: [192.168.30.178] => (item=mariadb-server)
ok: [192.168.30.178] => (item=mariadb)
ok: [192.168.30.178] => (item=php)
ok: [192.168.30.178] => (item=php-mysql)
ok: [192.168.30.178] => (item=python2-PyMySQL)

TASK [httpd : Start service] ********************************************************************************************************************************
ok: [192.168.30.178] => (item=httpd)
ok: [192.168.30.178] => (item=mariadb)

TASK [httpd : use "mysql_secure_installation" for Fresh MySQL Installation] *********************************************************************************
[WARNING]: Module did not set no_log for change_root_password
ok: [192.168.30.178]

TASK [httpd : debug] ****************************************************************************************************************************************
ok: [192.168.30.178] => {
    "secure": {
        "changed": false,
        "failed": false,
        "meta": {
            "change_root_pwd": "False -- meets the desired state",
            "connected_with_socket?": false,
            "disallow_root_remotely": "False -- meets the desired state",
            "hosts_failed": [],
            "hosts_success": [],
            "mysql_version_above_10_3?": false,
            "new_password_correct?": true,
            "remove_anonymous_user": "False -- meets the desired state",
            "remove_test_db": "False -- meets the desired state",
```

```
        "warnings": [
            "Module did not set no_log for change_root_password"
        ]
    }
}

TASK [httpd : Adding mysql service to firewall] *************************************************************************************************************
ok: [192.168.30.178] => (item=http)
ok: [192.168.30.178] => (item=https)

TASK [httpd : Verifying httpd service] ******************************************************************************************************************
changed: [192.168.30.178]

TASK [httpd : debug] ****************************************************************************************************************************************
ok: [192.168.30.178] => {
    "msg": {
        "changed": true,
        "cmd": "systemctl status httpd.service",
        "delta": "0:00:00.023717",
        "end": "2022-12-12 20:11:03.439149",
        "failed": false,
        "msg": "",
        "rc": 0,
        "start": "2022-12-12 20:11:03.415432",
        "stderr": "",
        "stderr_lines": [],
        "stdout": "● httpd.service - The Apache HTTP Server\n   Loaded: loaded (/usr/lib/systemd/system/httpd.service; enabled; vendor preset: disabled)\n   Active: active (running) since Mon 2022-12-12 19:14:11 EST; 56mi
n ago\n     Docs: man:httpd(8)\n           man:apachectl(8)\n Main PID: 1149 (httpd)\n   Status: \"Total requests: 0; Current requests/sec: 0; Current traffic:   0 B/sec\"\n    Tasks: 6\n   CGroup: /system.slice/httpd.ser
vice\n           ├─1149 /usr/sbin/httpd -DFOREGROUND\n           ├─1917 /usr/sbin/httpd -DFOREGROUND\n           ├─1918 /usr/sbin/httpd -DFOREGROUND\n           ├─1919 /usr/sbin/httpd -DFOREGROUND\n           ├─1922 /usr/
sbin/httpd -DFOREGROUND\n           └─1924 /usr/sbin/httpd -DFOREGROUND\n\nDec 12 19:13:29 localhost.localdomain systemd[1]: Starting The Apache HTTP Server...\nDec 12 19:13:57 localhost.localdomain httpd[1149]: AH00558:
httpd: Could not reliably determine the server's fully qualified domain name, using localhost.localdomain. Set the 'ServerName' directive globally to suppress this message\nDec 12 19:14:11 localhost.localdomain systemd[1]
: Started The Apache HTTP Server.",
        "stdout_lines": [
            "● httpd.service - The Apache HTTP Server",
            "   Loaded: loaded (/usr/lib/systemd/system/httpd.service; enabled; vendor preset: disabled)",
            "   Active: active (running) since Mon 2022-12-12 19:14:11 EST; 56min ago",
            "     Docs: man:httpd(8)",
            "           man:apachectl(8)",
            " Main PID: 1149 (httpd)",
            "   Status: \"Total requests: 0; Current requests/sec: 0; Current traffic:   0 B/sec\"",
            "    Tasks: 6",
            "   CGroup: /system.slice/httpd.service",
            "           ├─1149 /usr/sbin/httpd -DFOREGROUND",
            "           ├─1917 /usr/sbin/httpd -DFOREGROUND",
            "           ├─1918 /usr/sbin/httpd -DFOREGROUND",
            "           ├─1919 /usr/sbin/httpd -DFOREGROUND",
            "           ├─1922 /usr/sbin/httpd -DFOREGROUND",
```

```
            "Dec 12 19:13:29 localhost.localdomain systemd[1]: Starting The Apache HTTP Server...",
            "Dec 12 19:13:57 localhost.localdomain httpd[1149]: AH00558: httpd: Could not reliably determine the server's fully qualified domain name, using localhost.localdomain. Set the 'ServerName' directive globally t
o suppress this message",
            "Dec 12 19:14:11 localhost.localdomain systemd[1]: Started The Apache HTTP Server."
        ]
    }
}

TASK [httpd : Verifying mariadb service] ********************************************************************************************************************
changed: [192.168.30.178]

TASK [httpd : debug] ****************************************************************************************************************************************
ok: [192.168.30.178] => {
    "msg": {
        "changed": true,
        "cmd": "systemctl status mariadb",
        "delta": "0:00:00.023821",
        "end": "2022-12-12 20:11:04.495792",
        "failed": false,
        "msg": "",
        "rc": 0,
        "start": "2022-12-12 20:11:04.471971",
        "stderr": "",
        "stderr_lines": [],
        "stdout": "● mariadb.service - MariaDB database server\n   Loaded: loaded (/usr/lib/systemd/system/mariadb.service; enabled; vendor preset: disabled)\n   Active: active (running) since Mon 2022-12-12 19:14:35 EST;
 56min ago\n  Process: 1260 ExecStartPost=/usr/libexec/mariadb-wait-ready $MAINPID (code=exited, status=0/SUCCESS)\n  Process: 1135 ExecStartPre=/usr/libexec/mariadb-prepare-db-dir %n (code=exited, status=0/SUCCESS)\n Mai
n PID: 1257 (mysqld_safe)\n    Tasks: 20\n   CGroup: /system.slice/mariadb.service\n           ├─1257 /bin/sh /usr/bin/mysqld_safe --basedir=/usr\n           └─1485 /usr/libexec/mysqld --basedir=/usr --datadir=/var/lib/my
sql --plugin-dir=/usr/lib64/mysql/plugin --log-error=/var/log/mariadb/mariadb.log --pid-file=/var/run/mariadb/mariadb.pid --socket=/var/lib/mysql/mysql.sock\n\nDec 12 19:13:28 localhost.localdomain systemd[1]: Starting Ma
riaDB database server...\nDec 12 19:13:45 localhost.localdomain mariadb-prepare-db-dir[1135]: Database MariaDB is probably initialized in /var/lib/mysql already, nothing is done.\nDec 12 19:13:47 localhost.localdomain mys
qld_safe[1257]: 221212 19:13:47 mysqld_safe Logging to '/var/log/mariadb/mariadb.log'.\nDec 12 19:13:48 localhost.localdomain mysqld_safe[1257]: 221212 19:13:48 mysqld_safe Starting mysqld daemon with databases from /var/
lib/mysql\nDec 12 19:14:35 localhost.localdomain systemd[1]: Started MariaDB database server.",
        "stdout_lines": [
            "● mariadb.service - MariaDB database server",
            "   Loaded: loaded (/usr/lib/systemd/system/mariadb.service; enabled; vendor preset: disabled)",
            "   Active: active (running) since Mon 2022-12-12 19:14:35 EST; 56min ago",
            "  Process: 1260 ExecStartPost=/usr/libexec/mariadb-wait-ready $MAINPID (code=exited, status=0/SUCCESS)",
            "  Process: 1135 ExecStartPre=/usr/libexec/mariadb-prepare-db-dir %n (code=exited, status=0/SUCCESS)",
            " Main PID: 1257 (mysqld_safe)",
            "    Tasks: 20",
            "   CGroup: /system.slice/mariadb.service",
            "           ├─1257 /bin/sh /usr/bin/mysqld_safe --basedir=/usr",
```

```
└─1485 /usr/libexec/mysqld --basedir=/usr --datadir=/var/lib/mysql --plugin-dir=/usr/lib64/mysql/plugin --log-error=/var/log/mariadb/mariadb.log --pid-file=/var/run/mariadb/mariadb.pid --socket=/var/lib/mysql/mysql.sock",
        "Dec 12 19:13:28 localhost.localdomain systemd[1]: Starting MariaDB database server...",
        "Dec 12 19:13:45 localhost.localdomain mariadb-prepare-db-dir[1135]: Database MariaDB is probably initialized in /var/lib/mysql already, nothing is done.",
        "Dec 12 19:13:47 localhost.localdomain mysqld_safe[1257]: 221212 19:13:47 mysqld_safe Logging to '/var/log/mariadb/mariadb.log'.",
        "Dec 12 19:13:48 localhost.localdomain mysqld_safe[1257]: 221212 19:13:48 mysqld_safe Starting mysqld daemon with databases from /var/lib/mysql",
        "Dec 12 19:14:35 localhost.localdomain systemd[1]: Started MariaDB database server."
```

```
}

PLAY [ubuntu] ***********************************************************************************************************************************************************************

TASK [Gathering Facts] **************************************************************************************************************************************************************
ok: [192.168.30.179]

TASK [apache : Uninstall old Docker versions] ***************************************************************************************************************************************
ok: [192.168.30.179]

TASK [apache : Creating a directory for packages] ***********************************************************************************************************************************
ok: [192.168.30.179]

TASK [apache : Downloading docker components] ***************************************************************************************************************************************
ok: [192.168.30.179] => (item=containerd.io_1.6.9-1_amd64.deb)
ok: [192.168.30.179] => (item=docker-ce-cli_20.10.21~3-0~ubuntu-jammy_amd64.deb)
ok: [192.168.30.179] => (item=docker-ce_20.10.21~3-0~ubuntu-jammy_amd64.deb)
ok: [192.168.30.179] => (item=docker-compose-plugin_2.6.0~ubuntu-jammy_amd64.deb)

TASK [apache : Installing docker components] ****************************************************************************************************************************************
changed: [192.168.30.179] => (item=containerd.io_1.6.9-1_amd64.deb)
changed: [192.168.30.179] => (item=docker-ce-cli_20.10.21~3-0~ubuntu-jammy_amd64.deb)
changed: [192.168.30.179] => (item=docker-ce_20.10.21~3-0~ubuntu-jammy_amd64.deb)
changed: [192.168.30.179] => (item=docker-compose-plugin_2.6.0~ubuntu-jammy_amd64.deb)

TASK [apache : Fixing /var/run/docker.sock error] ***********************************************************************************************************************************
changed: [192.168.30.179]

TASK [apache : Ensure group docker exists] ******************************************************************************************************************************************
ok: [192.168.30.179]

TASK [apache : Adding docker to the group of the current user] **********************************************************************************************************************
ok: [192.168.30.179]

TASK [apache : Start docker services] ***********************************************************************************************************************************************
ok: [192.168.30.179] => (item=docker)
ok: [192.168.30.179] => (item=containerd)

TASK [apache : Install python] ******************************************************************************************************************************************************
ok: [192.168.30.179]

TASK [apache : Install python sdk] **************************************************************************************************************************************************
ok: [192.168.30.179]

TASK [apache : Verifying docker service] ********************************************************************************************************************************************
changed: [192.168.30.179]

TASK [apache : debug] ***************************************************************************************************************************************************************
ok: [192.168.30.179] => {
```

```
ok: [192.168.30.179] => {
    "msg": {
        "changed": true,
        "cmd": "systemctl list-unit-files | grep docker",
        "delta": "0:00:05.809887",
        "end": "2022-12-12 20:16:14.894116",
        "failed": false,
        "msg": "",
        "rc": 0,
        "start": "2022-12-12 20:16:09.084229",
        "stderr": "",
        "stderr_lines": [],
        "stdout": "docker.service                                enabled         enabled\ndocker.socket                                 enabled         enabled",
        "stdout_lines": [
            "docker.service                                enabled         enabled",
            "docker.socket                                 enabled         enabled"
        ]
    }
}

TASK [apache : Verifying user groups] ***********************************************************************************************************************************************
changed: [192.168.30.179]

TASK [apache : debug] ***************************************************************************************************************************************************************
ok: [192.168.30.179] => {
    "msg": {
        "changed": true,
        "cmd": "groups userver",
        "delta": "0:00:00.044010",
        "end": "2022-12-12 20:16:16.265673",
        "failed": false,
        "msg": "",
        "rc": 0,
        "start": "2022-12-12 20:16:16.221663",
        "stderr": "",
        "stderr_lines": [],
        "stdout": "userver : userver adm cdrom sudo dip plugdev lpadmin lxd sambashare docker",
        "stdout_lines": [
            "userver : userver adm cdrom sudo dip plugdev lpadmin lxd sambashare docker"
        ]
    }
}

TASK [apache : Verifying docker installation] ***************************************************************************************************************************************
changed: [192.168.30.179]

TASK [apache : debug] ***************************************************************************************************************************************************************
```

```
TASK [apache : debug] ***************************************************************************************************************************************************************
ok: [192.168.30.179] => {
    "msg": {
        "changed": true,
        "cmd": "docker --version",
        "delta": "0:00:00.059500",
        "end": "2022-12-12 20:16:17.073680",
        "failed": false,
        "msg": "",
        "rc": 0,
        "start": "2022-12-12 20:16:17.014180",
        "stderr": "",
        "stderr_lines": [],
        "stdout": "Docker version 20.10.21, build baeda1f",
        "stdout_lines": [
            "Docker version 20.10.21, build baeda1f"
        ]
    }
}

TASK [apache : Creating a directory for Dockerfile] *********************************************************************************************************************************
```

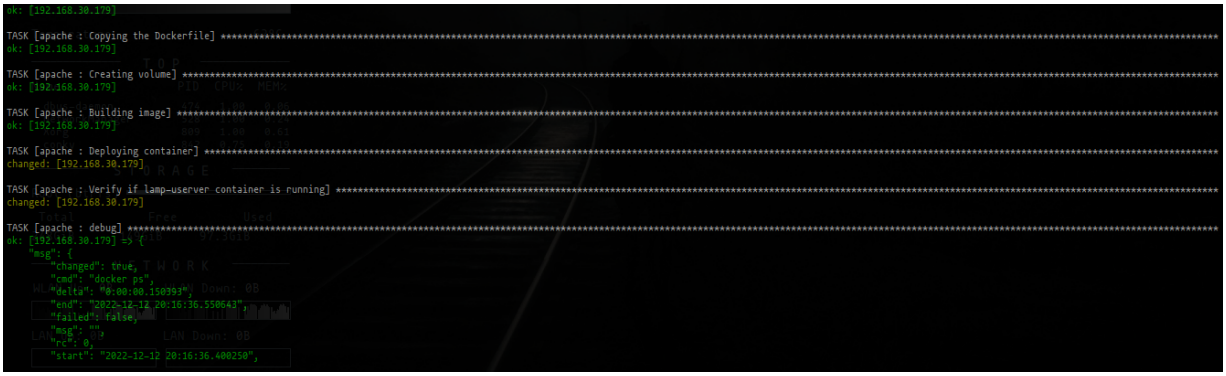
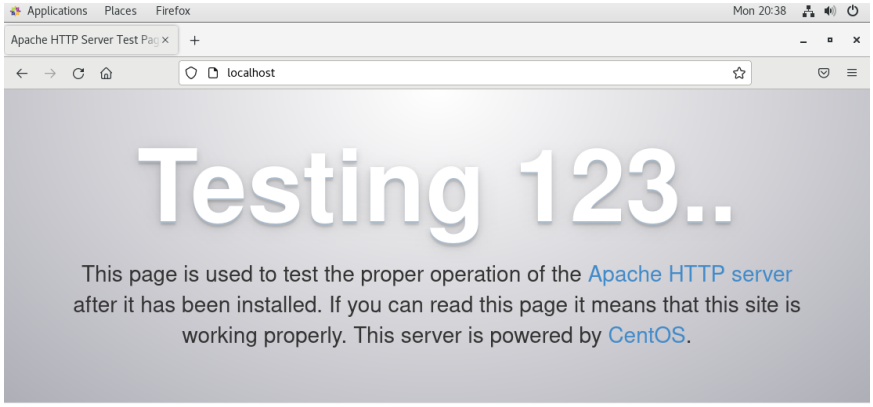
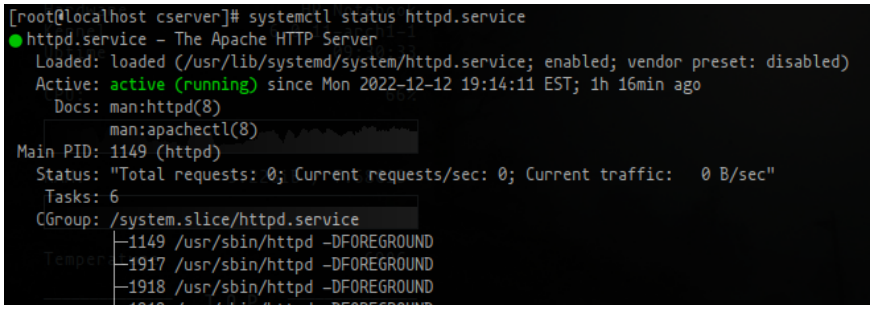


Figure 5. The screenshots above shows the output after running the ansible playbook file.

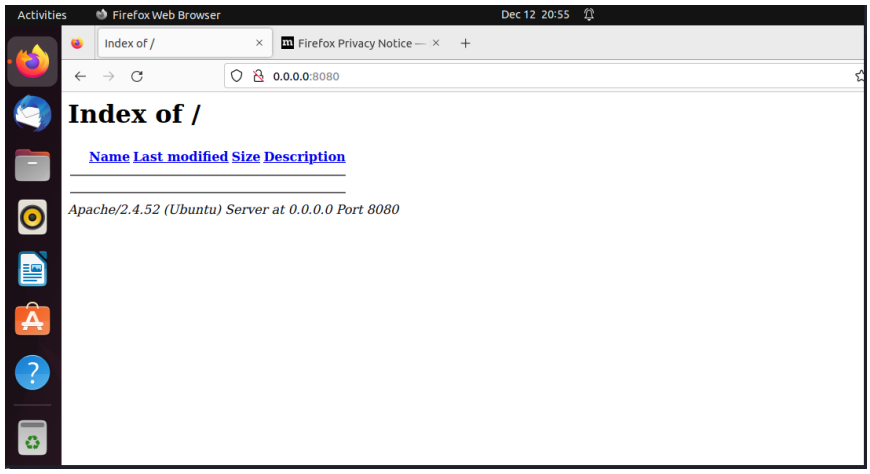
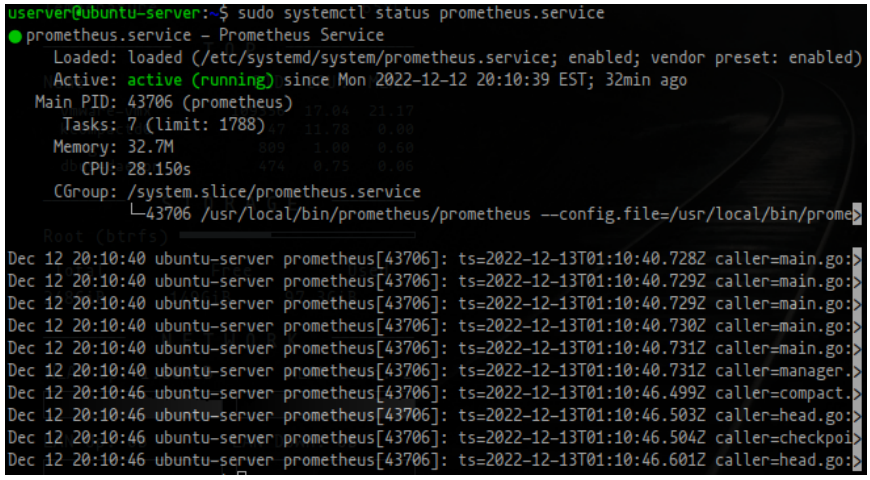
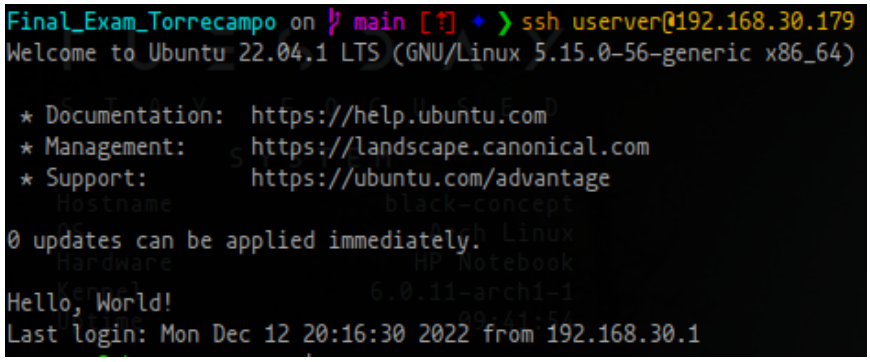
VERIFICATION OF WEB SERVER, PROMETHEUS, AND MOTD

Verifying services in Centos		
Web Server Service (LAMP Server)	httpd.service	 

		``
├─1919 /usr/sbin/httpd -DFOREGROUND ├─1922 /usr/sbin/httpd -DFOREGROUND └─1924 /usr/sbin/httpd -DFOREGROUND Dec 12 19:13:29 localhost.localdomain systemd[1]: Starting The Apache HTTP Server... Dec 12 19:13:57 localhost.localdomain httpd[1149]: AH00558: httpd: Could not reliably de...ge Dec 12 19:14:11 localhost.localdomain systemd[1]: Started The Apache HTTP Server. Hint: Some lines were ellipsized, use -l to show in full. [root@localhost cserver]# ```
	mariadb.service	``` [root@localhost cserver]# systemctl status mariadb.service ● mariadb.service - MariaDB database server Loaded: loaded (/usr/lib/systemd/system/mariadb.service; enabled; vendor preset: disabled) Active: active (running) since Mon 2022-12-12 19:14:35 EST; 1h 16min ago Process: 1260 ExecStartPost=/usr/libexec/mariadb-wait-ready $MAINPID (code=exited, status=0 /SUCCESS) Process: 1135 ExecStartPre=/usr/libexec/mariadb-prepare-db-dir %n (code=exited, status=0/SU CCESS) Main PID: 1257 (mysqld_safe) Tasks: 20 CGroup: /system.slice/mariadb.service ├─1257 /bin/sh /usr/bin/mysqld_safe --basedir=/usr └─1485 /usr/libexec/mysqld --basedir=/usr --datadir=/var/lib/mysql --plugin-dir... Dec 12 19:13:28 localhost.localdomain systemd[1]: Starting MariaDB database server... Dec 12 19:13:45 localhost.localdomain mariadb-prepare-db-dir[1135]: Database MariaDB is pr... Dec 12 19:13:47 localhost.localdomain mysqld_safe[1257]: 221212 19:13:47 mysqld_safe Logg.... Dec 12 19:13:48 localhost.localdomain mysqld_safe[1257]: 221212 19:13:48 mysqld_safe Star...l Dec 12 19:14:35 localhost.localdomain systemd[1]: Started MariaDB database server. Hint: Some lines were ellipsized, use -l to show in full. ```
Prometheus	prometheus.service	``` [root@localhost cserver]# systemctl status prometheus.service ● prometheus.service - Prometheus Service Loaded: loaded (/etc/systemd/system/prometheus.service; enabled; vendor preset: disabled) Active: active (running) since Mon 2022-12-12 20:10:36 EST; 20min ago Main PID: 17119 (prometheus) Tasks: 7 CGroup: /system.slice/prometheus.service └─17119 /usr/local/bin/prometheus/prometheus --config.file=/usr/local/bin/prome... Dec 12 20:10:36 localhost.localdomain prometheus[17119]: ts=2022-12-13T01:10:36.667Z call...C Dec 12 20:10:36 localhost.localdomain prometheus[17119]: ts=2022-12-13T01:10:36.667Z call..." Dec 12 20:10:36 localhost.localdomain prometheus[17119]: ts=2022-12-13T01:10:36.667Z call...l Dec 12 20:10:36 localhost.localdomain prometheus[17119]: ts=2022-12-13T01:10:36.669Z calle µs Dec 12 20:10:36 localhost.localdomain prometheus[17119]: ts=2022-12-13T01:10:36.669Z call..." Dec 12 20:10:36 localhost.localdomain prometheus[17119]: ts=2022-12-13T01:10:36.670Z call..." Dec 12 20:10:47 localhost.localdomain prometheus[17119]: ts=2022-12-13T01:10:47.967Z call...s Dec 12 20:10:47 localhost.localdomain prometheus[17119]: ts=2022-12-13T01:10:47.969Z call...s Dec 12 20:10:47 localhost.localdomain prometheus[17119]: ts=2022-12-13T01:10:47.970Z call...0 Dec 12 20:10:48 localhost.localdomain prometheus[17119]: ts=2022-12-13T01:10:48.135Z call...s Hint: Some lines were ellipsized, use -l to show in full. [root@localhost cserver]# ```
Motd File	/etc/motd	``` Final_Exam_Torrecampo on main [!] ❯ ssh cserver@192.168.30.178 Last login: Mon Dec 12 20:28:12 2022 Hello, World! ``` ``` [root@localhost cserver]# cat /etc/motd Hello, World! [root@localhost cserver]# ```

Table 5. The table above shows verification of services and files in Centos server.

Verifying services in Ubuntu

Web Server (LAMP Server through docker)	Docker	
Prometheus	prometheus.service	
motd	/etc/motd	

		userver@ubuntu-server:~$ sudo cat /etc/motd [sudo] password for userver: Hello, World!

Table 6. The table above shows verification of docker container, service and file in Ubuntu server.

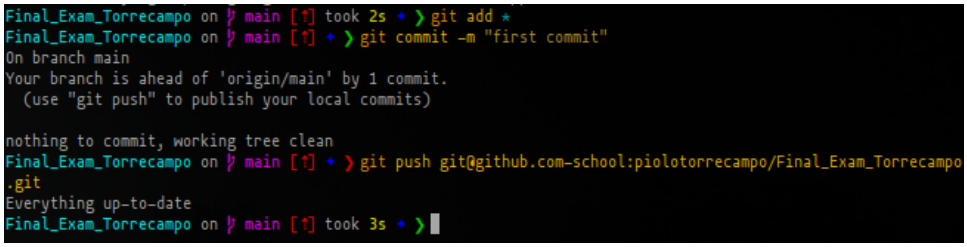


Figure 6. Pushing the repository contents in Github.

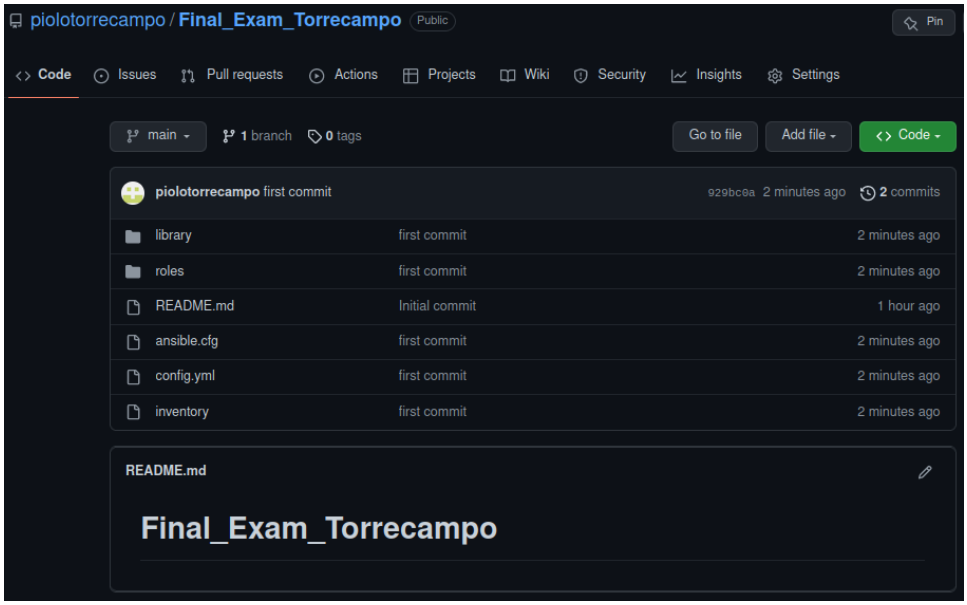


Figure 7. The image above shows the updated Github page.

Figure 8. Proof in answering the final evaluation form.

Links:

Github: https://github.com/piolotorrecampo/Final_Exam_Torrecampo.git

Honor Pledge:

"I affirm that I will not give or receive unauthorized help on this activity and that all will be my own."