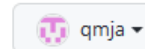


Name: Agpaoa, Ma.Diane J.	Date Performed: 25/10/2022
Course/Section: CPE232-CPE31S22	Date Submitted: 25/10/2022
Instructor: Dr. Jonathan Taylar	Semester and SY: 1st Sem 2022-2023
Midterm Skills Exam: Install, Configure, and Manage Log Monitoring tools	
1. Objectives	
Create and design a workflow that installs, configure and manage enterprise availability, performance and log monitoring tools using Ansible as an Infrastructure as Code (IaC) tool.	
2. Instructions	
<ol style="list-style-type: none"> 1. Create a repository in your GitHub account and label it CPE_MIDEXAM_SURNAME. 2. Clone the repository and do the following: <ol style="list-style-type: none"> 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)	
<ol style="list-style-type: none"> 1. Create a repository in your GitHub account and label it 	

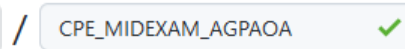
Create a new repository

A repository contains all project files, including the revision history. Already have a project repository elsewhere? [Import a repository.](#)

Owner *



Repository name *



Great repository names are short and memorable. Need inspiration? How about [crispy-octo-robot](#)?

Description (optional)



Public

Anyone on the internet can see this repository. You choose who can commit.



Private

You choose who can see and commit to this repository.

Initialize this repository with:

Skip this step if you're importing an existing repository.

☒ Add a README file

This is where you can write a long description for your project. [Learn more.](#)

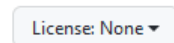
Add .gitignore


Choose which files not to track from a list of templates. [Learn more.](#)



Choose a license

A license tells others what they can and can't do with your code. [Learn more.](#)



This will set  `main` as the default branch. Change the default name in your [settings](#).

 You are creating a public repository in your personal account.

Create repository

Figure 1.1 Creating new repository

I created a new repository and named it “CPE_MIDEXAM_AGPAOA”. I set the repository as public and added a README file

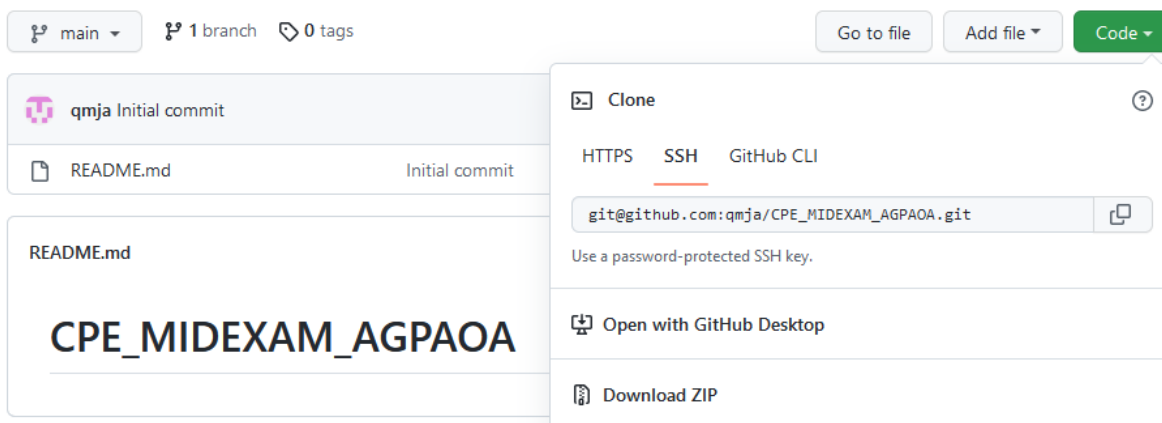


Figure 1.2 Copying the SSH link of the CPE_MIDEXAM_AGPAOA repository

2. Clone the repository and do the following:

```
madiane@workstation:~$ git clone git@github.com:qmja/CPE_MIDEXAM_AGPAOA.git
Cloning into 'CPE_MIDEXAM_AGPAOA'...
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.
```

Figure 2.1 Cloning the CPE_MIDEXAM_AGPAOA repository

```
madiane@workstation:~$ cd CPE_MIDEXAM_AGPAOA
madiane@workstation:~/CPE_MIDEXAM_AGPAOA$ mkdir roles
```

Figure 2.2 Changing directory to CPE_MIDEXAM_AGPAOA and creating roles directory

I changed the directory to CPE_MIDEXAM_AGPAOA by using the cd command. After that I created a new directory and named it “roles”.

```
madiane@workstation:~/CPE_MIDEXAM_AGPAOA/roles$ mkdir elasticstack grafana prometheus influxdb lampstack nagios
madiane@workstation:~/CPE_MIDEXAM_AGPAOA/roles$ ls
elasticstack grafana influxdb lampstack nagios prometheus
```

Figure 2.3 Creating new directories within the roles directory

I created the elasticstack, grafana, prometheus, influxdb, lampstack and nagios directories within the roles directory.

```

madiane@workstation:~/CPE_MIDEXAM_AGPAOA/roles$ cd elasticstack
madiane@workstation:~/CPE_MIDEXAM_AGPAOA/roles/elasticstack$ mkdir tasks
madiane@workstation:~/CPE_MIDEXAM_AGPAOA/roles/elasticstack$ cd tasks
madiane@workstation:~/CPE_MIDEXAM_AGPAOA/roles/elasticstack/tasks$ sudo nano main.yml

madiane@workstation:~/CPE_MIDEXAM_AGPAOA/roles/elasticstack$ cp -r tasks ~/CPE_MIDEXAM_AGPAOA/roles/grafana
madiane@workstation:~/CPE_MIDEXAM_AGPAOA/roles/elasticstack$ cp -r tasks ~/CPE_MIDEXAM_AGPAOA/roles/influxdb
madiane@workstation:~/CPE_MIDEXAM_AGPAOA/roles/elasticstack$ cp -r tasks ~/CPE_MIDEXAM_AGPAOA/roles/lampstack
madiane@workstation:~/CPE_MIDEXAM_AGPAOA/roles/elasticstack$ cp -r tasks ~/CPE_MIDEXAM_AGPAOA/roles/nagios
madiane@workstation:~/CPE_MIDEXAM_AGPAOA/roles/elasticstack$ cp -r tasks ~/CPE_MIDEXAM_AGPAOA/roles/prometheus

```

Figure 2.4 Creating tasks directory and main.yml within the tasks directory which is in the directories inside the roles directory.

First, I created the tasks directory within the elasticstack and within the tasks directory I created the main.yml. After that, I copied the tasks directory to all other directories within the roles directory.

```

madiane@workstation:~/CPE_MIDEXAM_AGPAOA$ sudo nano config.yaml
[sudo] password for madiane:

```

Figure 2.5 Creating the playbook config.yaml

I created the config.yaml playbook by executing the command “sudo nano config.yaml”.

```

madiane@workstation:~/CPE_MIDEXAM_AGPAOA$ ls
ansible.cfg  config.yaml  inventory  README.md  roles

```

Figure 2.6 Initial files within the CPE_MIDEXAM_AGPAOA directory

The CPE_MIDEXAM_AGPAOA now contains ansible.cfg, config.yaml, inventory file, README.md and roles directory.

```

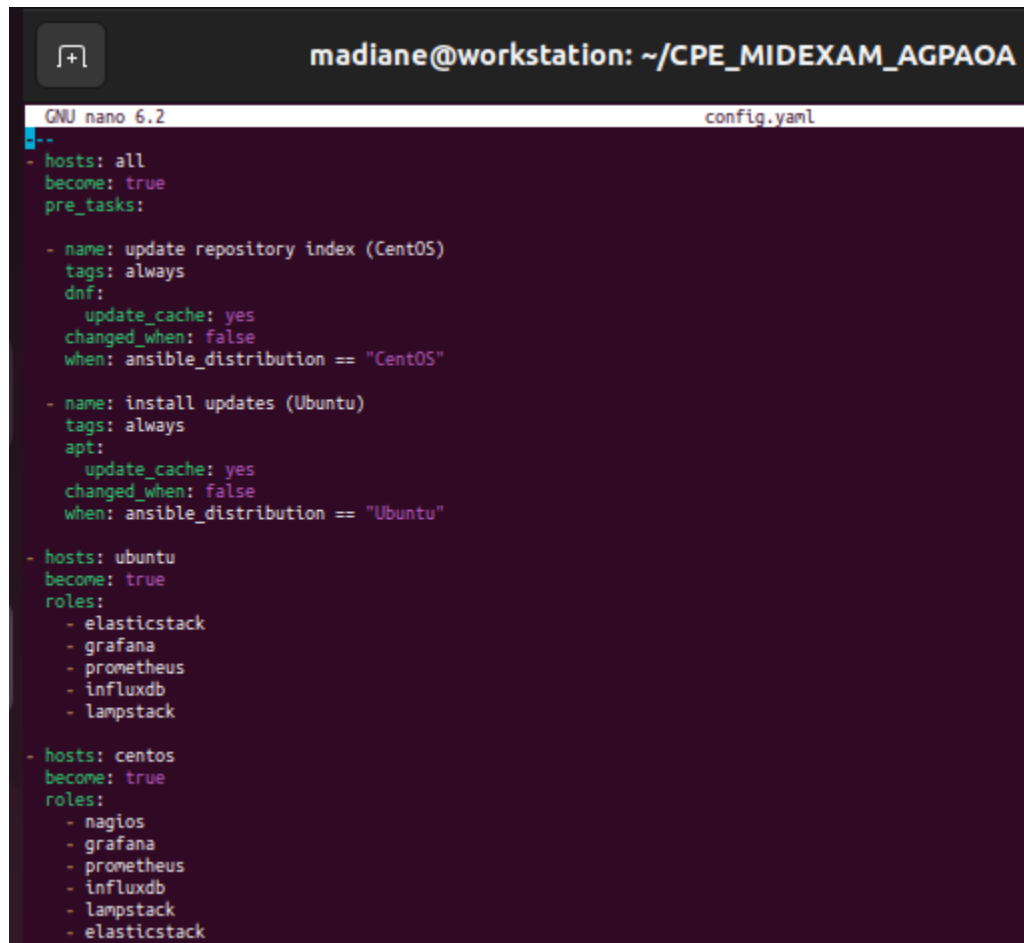
madiane@workstation: ~/CPE_MIDEXAM_AGPAOA
GNU nano 6.2 inventory
[ubuntu]
192.168.56.103

[centos]
192.168.56.120

```

Figure 2.7 Contents of inventory file

The inventory contains the IP addresses of the managed remote servers. The 192.168.56.120 is the remote server with an operating system of CentOS and the 192.168.56.103 is the remote server with an operating system of Ubuntu.



```
GNU nano 6.2 config.yaml
--
- hosts: all
  become: true
  pre_tasks:
    - name: update repository index (CentOS)
      tags: always
      dnf:
        update_cache: yes
        changed_when: false
        when: ansible_distribution == "CentOS"
    - name: install updates (Ubuntu)
      tags: always
      apt:
        update_cache: yes
        changed_when: false
        when: ansible_distribution == "Ubuntu"
- hosts: ubuntu
  become: true
  roles:
    - elasticstack
    - grafana
    - prometheus
    - influxdb
    - lampstack
- hosts: centos
  become: true
  roles:
    - nagios
    - grafana
    - prometheus
    - influxdb
    - lampstack
    - elasticstack
```

Figure 2.8 Contents of the playbook config.yaml

The config.yaml contains the pre-tasks for all the remote servers, the installation of Elastic Stack, Grafana, Prometheus, Influxdb and Lamp stack in separate hosts and the installation of Nagios in one host.

Elastic Stack in separate hosts

Figure 2.9 Contents of main.yml of the elasticstack directory

Nagios in one host

```
madiane@workstation: ~/CPE_MIDEXAM_AGPAOA/roles/na...
GNU nano 6.2 main.yml
- name: Installing required packages for installing Nagios
  tags: dependencies, libraries
  dnf:
    name:
      - gcc
      - glibc
      - glibc-common
      - perl
      - httpd
      - php
      - wget
      - gd
      - gd-devel
      - openssl-devel
      - make
      - gettext
      - autoconf
      - openssl-devel
      - net-snmp
      - net-snmp-utils
      - python2-pip
    state: latest
- name: Installing passlib python package
  pip:
    name: passlib
- name: Creating directory for the downloaded files
  file:
    path: ~/nagios
    state: directory

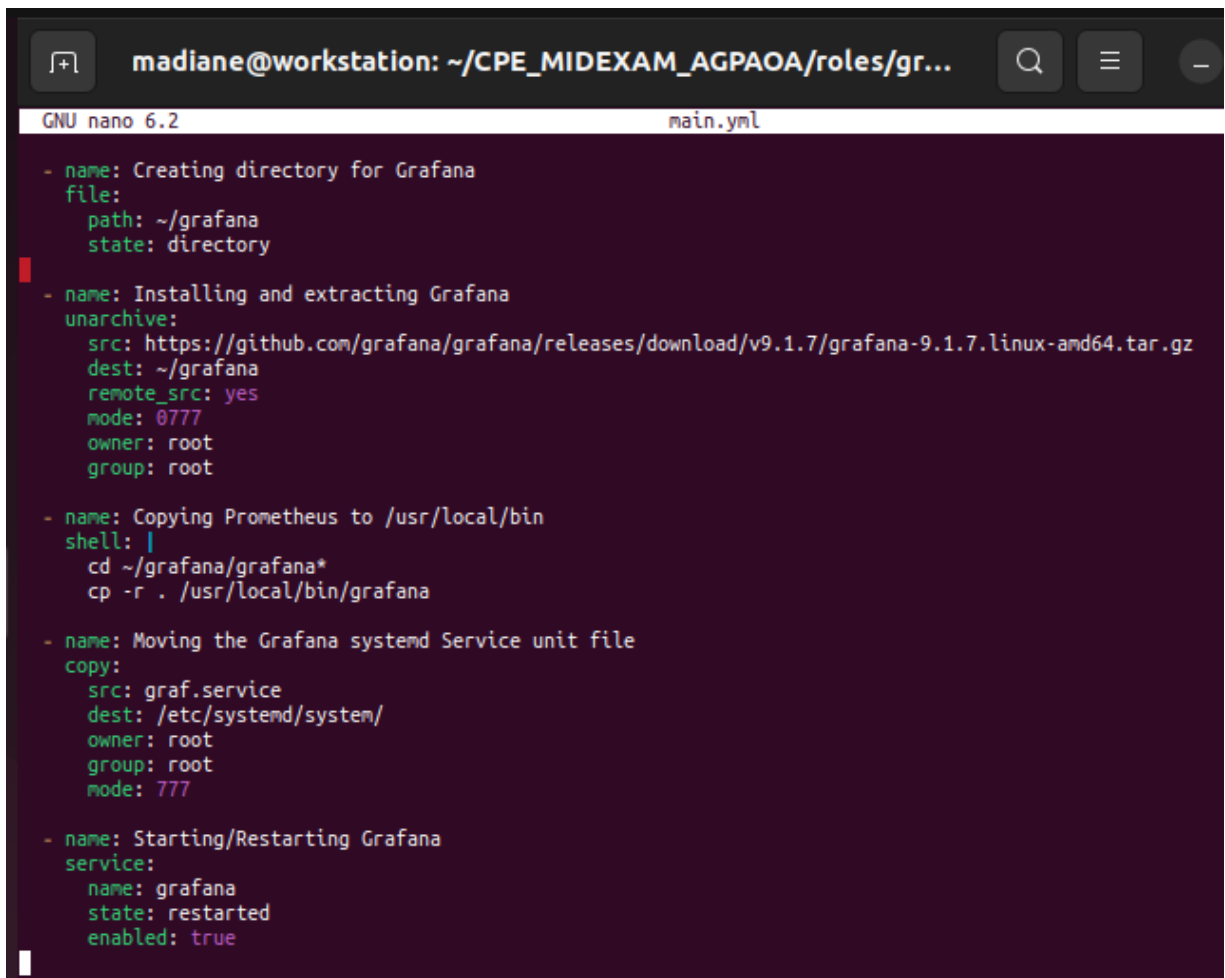
madiane@workstation: ~/CPE_MIDEXAM_AGPAOA/roles/na...
GNU nano 6.2 main.yml
- name: Installing and extracting Nagios
  unarchive:
    src: https://github.com/NagiosEnterprises/nagioscore/archive/nagios-4.4.6.tar.gz
    dest: ~/nagios
    remote_src: yes
    mode: 0777
    owner: root
    group: root
- name: Compiling, installing, and creating users and group for Nagios
  shell: |
    cd ~/nagios/nagioscore-**
    ./configure
    make all
    make install-groups-users
    usermod -s /bin/bash nagios apache
    make install
    make install-daemoninit
    make install-commandmode
    make install-config
    make install-webconf
- name: Installing the Nagios plugins and then extracting it
  unarchive:
    src: https://github.com/nagios-plugins/nagios-plugins/archive/release-2.3.3.tar.gz
    dest: ~/nagios
    remote_src: yes
    mode: 0777
    owner: root
    group: root

- name: Compiling and installing the Nagios plugins
  shell: |
    cd ~/nagios/nagios-plugins*
    ./tools/setup
    ./configure
    make
    make install
- name: Adding a user to a password file
  community.general.htpasswd:
    path: /usr/local/nagios/etc/htpasswd.users
    name: agpaoanagi
    password: mad12
- name: Starting/Restarting Nagios
  service:
    name: nagios
    state: restarted
    enabled: true
- name: Starting/Restarting httpd
  service:
    name: httpd
    state: restarted
    enabled: true
```

Figure 2.10 Contents of main.yml of the nagios directory

Influxdb, Grafana, Prometheus separate hosts

Figure 2.11 Contents of main.yml of the influxdb directory



The image shows a terminal window with a dark background. The title bar at the top reads "madiane@workstation: ~/CPE_MIDEXAM_AGPAOA/roles/gr...". Below the title bar, the terminal header shows "GNU nano 6.2" on the left and "main.yml" on the right. The main content of the terminal is a YAML file named "main.yml" with the following content:

```
- name: Creating directory for Grafana
  file:
    path: ~/grafana
    state: directory

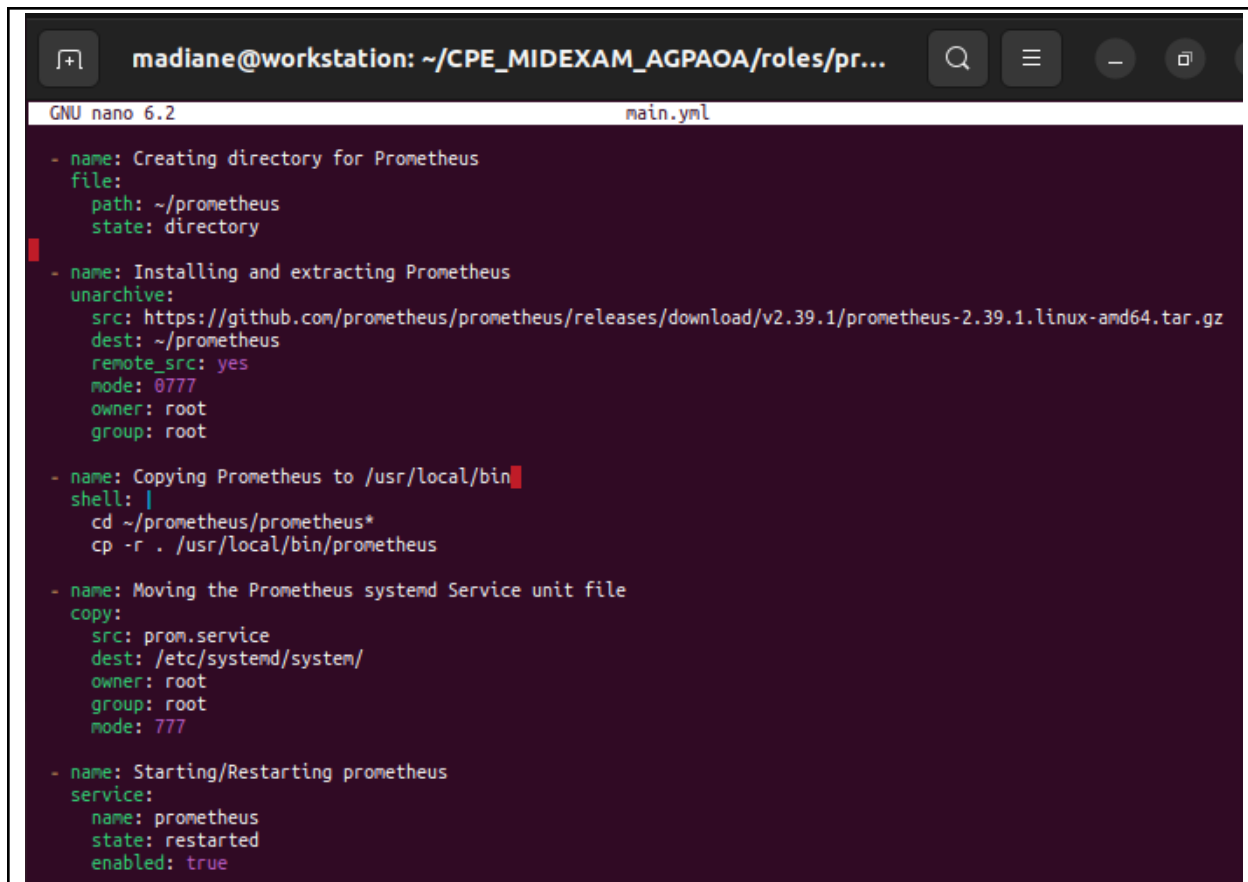
- name: Installing and extracting Grafana
  unarchive:
    src: https://github.com/grafana/grafana/releases/download/v9.1.7/grafana-9.1.7.linux-amd64.tar.gz
    dest: ~/grafana
    remote_src: yes
    mode: 0777
    owner: root
    group: root

- name: Copying Prometheus to /usr/local/bin
  shell: |
    cd ~/grafana/grafana*
    cp -r . /usr/local/bin/grafana

- name: Moving the Grafana systemd Service unit file
  copy:
    src: graf.service
    dest: /etc/systemd/system/
    owner: root
    group: root
    mode: 777

- name: Starting/Restarting Grafana
  service:
    name: grafana
    state: restarted
    enabled: true
```

Figure 2.12 Contents of main.yml of the grafana directory



The screenshot shows a terminal window with the title bar "madiane@workstation: ~/CPE_MIDEXAM_AGPAOA/roles/pr...". The terminal is running GNU nano 6.2 and editing a file named main.yml. The content of the file is a YAML configuration for a Prometheus role, consisting of five tasks. The first task creates a directory for Prometheus. The second task installs and extracts Prometheus from a tarball. The third task copies Prometheus to the system bin directory. The fourth task moves the Prometheus systemd service file. The fifth task starts or restarts the Prometheus service.

```
GNU nano 6.2 main.yml
- name: Creating directory for Prometheus
  file:
    path: ~/prometheus
    state: directory

- name: Installing and extracting Prometheus
  unarchive:
    src: https://github.com/prometheus/prometheus/releases/download/v2.39.1/prometheus-2.39.1.linux-amd64.tar.gz
    dest: ~/prometheus
    remote_src: yes
    mode: 0777
    owner: root
    group: root

- name: Copying Prometheus to /usr/local/bin
  shell: |
    cd ~/prometheus/prometheus*
    cp -r . /usr/local/bin/prometheus

- name: Moving the Prometheus systemd Service unit file
  copy:
    src: prom.service
    dest: /etc/systemd/system/
    owner: root
    group: root
    mode: 777

- name: Starting/Restarting prometheus
  service:
    name: prometheus
    state: restarted
    enabled: true
```

Figure 2.13 Contents of main.yml of the prometheus directory

Lamp Stack in separate hosts

Figure 2.14 Contents of main.yml of the lampstack directory


```
nadiane@workstation:~/CPE_MIDEXAM_AGPA0A$ ansible-playbook --ask-become-pass config.yaml
BECOME password:

PLAY [all] *****

TASK [Gathering Facts] *****
ok: [192.168.56.103]
ok: [192.168.56.120]

TASK [update repository index (CentOS)] *****
skipping: [192.168.56.103]
ok: [192.168.56.120]

TASK [install updates (Ubuntu)] *****
skipping: [192.168.56.120]
ok: [192.168.56.103]

PLAY [centos] *****

TASK [Gathering Facts] *****
ok: [192.168.56.120]

TASK [nagios : Installing required packages for installing Nagios] *****
ok: [192.168.56.120]

TASK [nagios : Installing passlib python package] *****
ok: [192.168.56.120]

TASK [nagios : Creating directory for the downloaded files] *****
ok: [192.168.56.120]

TASK [nagios : Installing and extracting Nagios] *****
ok: [192.168.56.120]

TASK [nagios : Compiling, installing, and creating users and group for Nagios] *****
changed: [192.168.56.120]

TASK [nagios : Installing the Nagios plugins and then extracting it] *****
ok: [192.168.56.120]
```

```
TASK [nagios : Compiling and installing the Nagios plugins] *****
changed: [192.168.56.120]

TASK [nagios : Adding a user to a password file] *****
ok: [192.168.56.120]

TASK [nagios : Starting/Restarting Nagios] *****
changed: [192.168.56.120]

TASK [nagios : Starting/Restarting httpd] *****
changed: [192.168.56.120]

TASK [prometheus : Creating directory for Prometheus] *****
ok: [192.168.56.120]

TASK [prometheus : Installing and extracting Prometheus] *****
ok: [192.168.56.120]

TASK [prometheus : Copying Prometheus to /usr/local/bin] *****
changed: [192.168.56.120]

TASK [prometheus : Moving the Prometheus systemd Service unit file] *****
ok: [192.168.56.120]

TASK [prometheus : Starting/Restarting prometheus] *****
changed: [192.168.56.120]

TASK [grafana : Creating directory for Grafana] *****
ok: [192.168.56.120]

TASK [grafana : Installing and extracting Grafana] *****
ok: [192.168.56.120]

TASK [grafana : Copying Grafana to /usr/local/bin] *****
changed: [192.168.56.120]

TASK [grafana : Moving the Grafana systemd Service unit file] *****
ok: [192.168.56.120]

TASK [grafana : Starting/Restarting Grafana] *****
```

```

TASK [grafana : Moving the Grafana systemd Service unit file] *****
ok: [192.168.56.120]

TASK [grafana : Starting/Restarting Grafana] *****
changed: [192.168.56.120]

PLAY [ubuntu] *****

TASK [Gathering Facts] *****
ok: [192.168.56.103]

TASK [grafana : Creating directory for Grafana] *****
changed: [192.168.56.103]

TASK [grafana : Installing and extracting Grafana] *****
changed: [192.168.56.103]

TASK [grafana : Copying Grafana to /usr/local/bin] *****
changed: [192.168.56.103]

TASK [grafana : Moving the Grafana systemd Service unit file] *****
changed: [192.168.56.103]

TASK [grafana : Starting/Restarting Grafana] *****
changed: [192.168.56.103]

TASK [prometheus : Creating directory for Prometheus] *****
changed: [192.168.56.103]

TASK [prometheus : Installing and extracting Prometheus] *****
changed: [192.168.56.103]

TASK [prometheus : Copying Prometheus to /usr/local/bin] *****
changed: [192.168.56.103]

TASK [prometheus : Moving the Prometheus systemd Service unit file] *****
changed: [192.168.56.103]

TASK [prometheus : Starting/Restarting prometheus] *****
changed: [192.168.56.103]

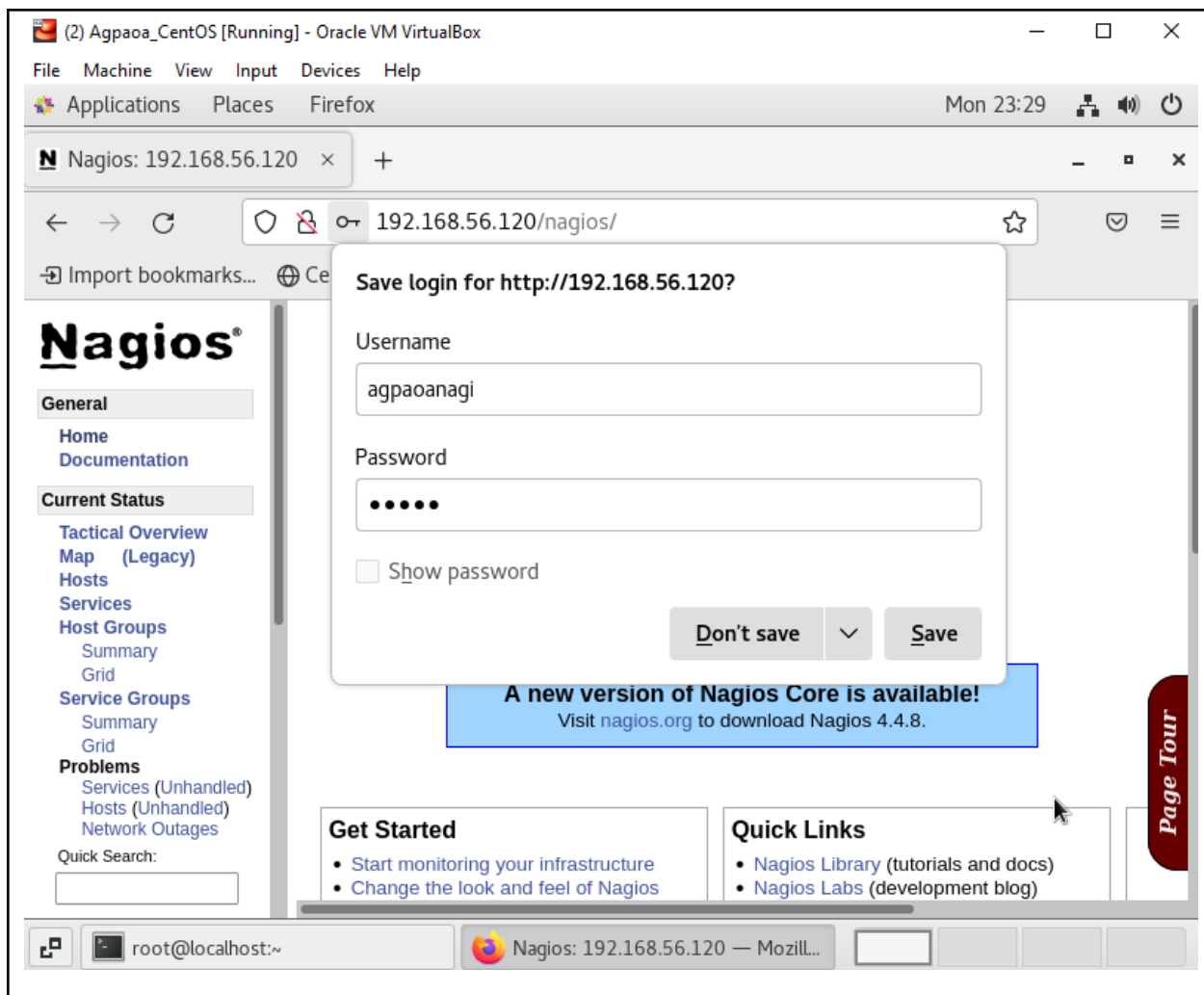
TASK [prometheus : Starting/Restarting prometheus] *****
changed: [192.168.56.103]

PLAY RECAP *****
192.168.56.103      : ok=13  changed=10  unreachable=0  failed=0  skipped=1  rescued=0  ignored=0
192.168.56.120    : ok=23  changed=8   unreachable=0  failed=0  skipped=1  rescued=0  ignored=0

```

Figure 2.15 Running the playbook config.yaml

Installing and configuration of Nagios, Prometheus and Grafana was successful.



(2) Agpaoa_CentOS [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Applications Places Firefox Mon 23:30

N Nagios: 192.168.56.120 x +

192.168.56.120/nagios/

Import bookmarks... Centos Wiki Documentation Forums

Nagios®

General

- Home
- Documentation

Current Status

- Tactical Overview
- Map (Legacy)
- Hosts
- Services
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 - Grid
- Service Groups
 - Summary
 - Grid
- Problems
 - Services (Unhandled)
 - Hosts (Unhandled)
 - Network Outages

Quick Search:

Nagios® Core™

✓ Daemon running with PID 22887

Nagios® Core™
Version 4.4.6
April 28, 2020
[Check for updates](#)

A new version of Nagios Core is available!
Visit nagios.org to download Nagios 4.4.8.

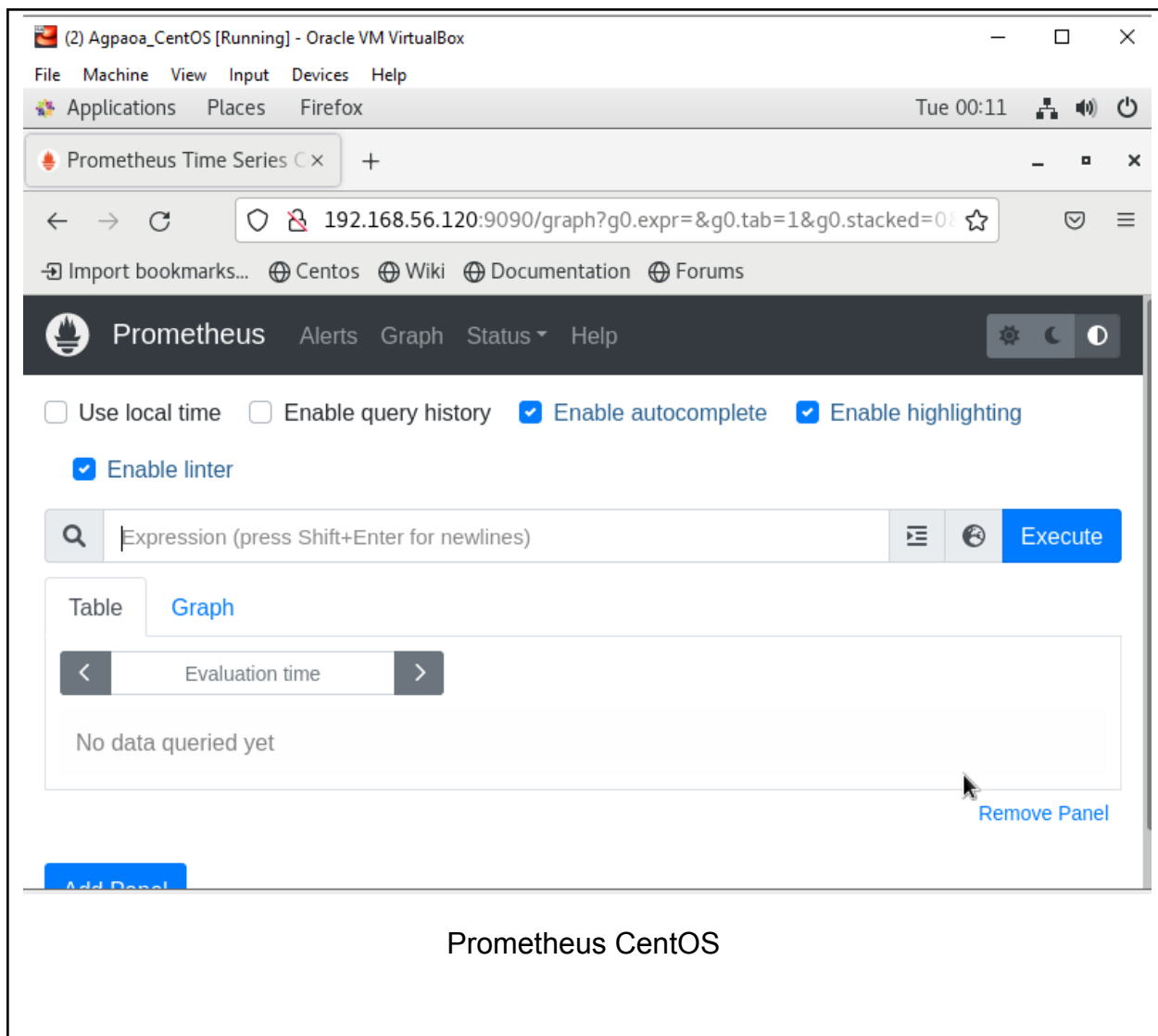
Nagios XI

Easy Configuration
Advanced Reporting

Nagios Log Server

Monitor and analyze
logs from anywhere

Nagios CentOS



Prometheus CentOS

(2) Agpaoa_CentOS [Running] - Oracle VM VirtualBox

FileMachineViewInputDevicesHelp

ApplicationsPlacesTerminalTue 00:17

root@localhost:~

FileEditViewSearchTerminalHelp

```
[root@localhost ~]# systemctl status graf.service
● graf.service - Grafana
   Loaded: loaded (/etc/systemd/system/graf.service; enabled; vendor preset: disabled)
   Active: failed (Result: start-limit) since Tue 2022-10-25 00:14:34 EDT; 2s ago
   Process: 22814 ExecStart=/usr/local/bin/grafana/grafana --config.file=/usr/local/bin/grafana/graf.yml (code=exited, status=203/EXEC)
   Main PID: 22814 (code=exited, status=203/EXEC)

Oct 25 00:14:33 localhost.localdomain systemd[1]: graf.service: main process exited...C
Oct 25 00:14:33 localhost.localdomain systemd[1]: Unit graf.service entered failed ....
Oct 25 00:14:33 localhost.localdomain systemd[1]: graf.service failed.
Oct 25 00:14:34 localhost.localdomain systemd[1]: graf.service holdoff time over, s....
Oct 25 00:14:34 localhost.localdomain systemd[1]: Stopped Grafana.
Oct 25 00:14:34 localhost.localdomain systemd[1]: start request repeated too quickl...e
Oct 25 00:14:34 localhost.localdomain systemd[1]: Failed to start Grafana.
Oct 25 00:14:34 localhost.localdomain systemd[1]: Unit graf.service entered failed ....
Oct 25 00:14:34 localhost.localdomain systemd[1]: graf.service failed.
Hint: Some lines were ellipsized, use -l to show in full.
[root@localhost ~]# systemctl status daemon
Unit daemon.service could not be found.
[root@localhost ~]# cd /etc/sysmd/system
-bash: cd: /etc/sysmd/system: No such file or directory
[root@localhost ~]# cd etc/sysmd/system
-bash: cd: etc/sysmd/system: No such file or directory
[root@localhost ~]#
```

3. Push and Commit from the local repository to GitHub

```
madiane@workstation:~/CPE_MIDEXAM_AGPAA$ git add *
```

```
nadiane@workstation:~/CPE_MIDEXAM_AGPAOA$ git commit -m "MIDTERM EXAM"
[main 5b346f1] MIDTERM EXAM
11 files changed, 227 insertions(+)
create mode 100644 ansible.cfg
create mode 100644 config.yaml
create mode 100644 inventory
create mode 100644 roles/elasticstack/tasks/main.yml
create mode 100644 roles/grafana/graf.service
create mode 100644 roles/grafana/tasks/main.yml
create mode 100644 roles/influxdb/tasks/main.yml
create mode 100644 roles/lampstack/tasks/main.yml
create mode 100644 roles/nagios/tasks/main.yml
create mode 100644 roles/prometheus/prom.service
create mode 100644 roles/prometheus/tasks/main.yml
nadiane@workstation:~/CPE_MIDEXAM_AGPAOA$ git push
Enumerating objects: 21, done.
Counting objects: 100% (21/21), done.
Delta compression using up to 3 threads
Compressing objects: 100% (13/13), done.
Writing objects: 100% (20/20), 2.87 KiB | 1.43 MiB/s, done.
Total 20 (delta 1), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (1/1), done.
To github.com:qmja/CPE_MIDEXAM_AGPAOA.git
58ec366..5b346f1 main -> main
```

GitHub link:

https://github.com/qmja/CPE_MIDEXAM_AGPAOA.git

Conclusions: (link your conclusion from the objective)

In conclusion, I learned how to

Faculty Performance Evaluation:

T.I.P. Faculty Performance Evaluation by the Students (1st Semester, S.Y. 2022-2023, Modular Group 4-part 2)

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