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Course/Section: CpE 212 - CPE31S3	**Date Submitted: Nov. 8, 2024**
Instructor: Engr. Robin Valenzuela	**Semester and SY: 1st Sem/2024-202**

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) •S 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)

```
abegail@workstation:~$ git clone git@github.com:wonbe/CPE_MIDEXAM_FRIAS.git
Cloning into 'CPE_MIDEXAM_FRIAS'...
warning: You appear to have cloned an empty repository.
abegail@workstation:~$
```

```
abegail@workstation:~$ ls
abby    CPE_MIDEXAM_FRIAS  Documents  examples.desktop  Pictures  Templates
cpe212  Desktop            Downloads  Music             Public    Videos
abegail@workstation:~$
```

Creating a new repository and cloning it to my ubuntu.

```
abegail@workstation:~/CPE_MIDEXAM_FRIAS$ cat inventory
#[workstation]
#192.168.56.131

[centos]
192.168.56.125

[ubuntu]
192.168.56.134
```

This is my inventory.

```
abegail@workstation:~/CPE_MIDEXAM_FRIAS$ ls
ansible.cfg  elasticsearch       elestic_stack.yml  roles
config.yml   elestick_stack.yml  inventory
abegail@workstation:~/CPE_MIDEXAM_FRIAS$ cd roles
abegail@workstation:~/CPE_MIDEXAM_FRIAS/roles$ mkdir elatic.yml
abegail@workstation:~/CPE_MIDEXAM_FRIAS/roles$ mkdir nagios
abegail@workstation:~/CPE_MIDEXAM_FRIAS/roles$ mkdir elatic
abegail@workstation:~/CPE_MIDEXAM_FRIAS/roles$ mkdir Lamp
abegail@workstation:~/CPE_MIDEXAM_FRIAS/roles$
```

```
abegail@workstation:~/CPE_MIDEXAM_FRIAS/roles$ ls
elatic  elatic.yml  Lamp  nagios
```

Here we are making a roles for the installation.

```
abegail@workstation:~/CPE_MIDEXAM_FRIAS$ cd roles
abegail@workstation:~/CPE_MIDEXAM_FRIAS/roles$ cd elatic
abegail@workstation:~/CPE_MIDEXAM_FRIAS/roles/elatic$ ls
elastic.yml  main.yml  task
abegail@workstation:~/CPE_MIDEXAM_FRIAS/roles/elatic$ cd task
abegail@workstation:~/CPE_MIDEXAM_FRIAS/roles/elatic/task$ sudo nano main.ml
abegail@workstation:~/CPE_MIDEXAM_FRIAS/roles/elatic/task$ sudo nano main.yml
abegail@workstation:~/CPE_MIDEXAM_FRIAS/roles/elatic/task$
```

```
abegail@workstation:~/CPE_MIDEXAM_FRIAS/roles/elatic/task$ cat main.yml
---
- hosts: centos, ubuntu
  become: true
  tasks:
    - name: Install Elasticsearch
      yum:
        name: elasticsearch
        state: present
      when: ansible_distribution == "CentOS"
      apt:
        name: elasticsearch
        state: present
      when: ansible_distribution == "Ubuntu"
      notify: restart elasticsearch

  handlers:
    - name: restart elasticsearch
      service:
        name: elasticsearch
        state: restarted

- hosts: centos, ubuntu
  become: true
  tasks:
    - name: Install Kibana
      yum:
        name: kibana
```

```
    - name: Install Kibana
      yum:
        name: kibana
        state: present
      when: ansible_distribution == "CentOS"
      apt:
        name: kibana
        state: present
      when: ansible_distribution == "Ubuntu"
      notify: restart kibana

  handlers:
    - name: restart kibana
      service:
        name: kibana
        state: restarted

- hosts: centos, ubuntu
  become: true
  tasks:
    - name: Install Logstash
      yum:
        name: logstash
        state: present
      when: ansible_distribution == "CentOS"
      apt:
        name: logstash
```

```
      name: logstash
      state: present
    when: ansible_distribution == "Ubuntu"
    notify: restart logstash

handlers:
  - name: restart logstash
    service:
      name: logstash
      state: restarted
```

This is my elastic stack, logstash and kibana..

```
abegail@workstation:~/CPE_MIDEXAM_FRIAS/roles/nagios$ cd tasks
abegail@workstation:~/CPE_MIDEXAM_FRIAS/roles/nagios/tasks$ touch main.yml
abegail@workstation:~/CPE_MIDEXAM_FRIAS/roles/nagios/tasks$ sudo nano main.yml
abegail@workstation:~/CPE_MIDEXAM_FRIAS/roles/nagios/tasks$
```

```
abegail@workstation:~/CPE_MIDEXAM_FRIAS/roles/nagios/tasks$ cat main.yml
---
- hosts: centos, ubuntu
  become: true
  tasks:
    - name: Install Nagios and dependencies
      yum:
        name:
          - nagios
          - nagios-plugins-all
        state: present
      when: ansible_distribution == "CentOS"
      apt:
        name:
          - nagios
          - nagios-plugins
        state: present
      when: ansible_distribution == "Ubuntu"

    - name: Start and enable Nagios service
      service:
        name: nagios
        state: started
        enabled: true
```

this one is the nagios.

```
abegail@workstation:~/CPE_MIDEXAM_FRIAS/roles$ mkdir monitoring
abegail@workstation:~/CPE_MIDEXAM_FRIAS/roles$ cd monitoring
abegail@workstation:~/CPE_MIDEXAM_FRIAS/roles/monitoring$ mkdir task
abegail@workstation:~/CPE_MIDEXAM_FRIAS/roles/monitoring$ touch main.yml
abegail@workstation:~/CPE_MIDEXAM_FRIAS/roles/monitoring$ cd task
abegail@workstation:~/CPE_MIDEXAM_FRIAS/roles/monitoring/task$ touch main.yml
```

```
abegail@workstation:~/CPE_MIDEXAM_FRIAS/roles/monitoring/task$ cat main.yml
---
-  hosts: workstation
  become: true
  tasks:
    - name: Install InfluxDB
      yum:
        name: influxdb
        state: present
      when: ansible_distribution == "CentOS"
      apt:
        name: influxdb
        state: present
      when: ansible_distribution == "Ubuntu"
      notify: start influxdb

  handlers:
    - name: start influxdb
      service:
        name: influxdb
        state: started

- hosts: Server1
  become: true
  tasks:
    - name: Install Prometheus
      yum:
        name: prometheus
```

```
      name: prometheus
      state: present
    when: ansible_distribution == "CentOS"
    apt:
      name: prometheus
      state: present
    when: ansible_distribution == "Ubuntu"
    notify: start prometheus

  handlers:
    - name: start prometheus
    service:
      name: prometheus
      state: started

- hosts: CentOS
  become: true
  tasks:
    - name: Install Grafana
    yum:
      name: grafana
      state: present
    when: ansible_distribution == "CentOS"
    apt:
      name: grafana
      state: present
    when: ansible_distribution == "Ubuntu"
    notify: start grafana
```

```
    when: ansible_distribution == "CentOS"
    apt:
      name: grafana
      state: present
    when: ansible_distribution == "Ubuntu"
    notify: start grafana

  handlers:
    - name: start grafana
    service:
      name: grafana
      state: started
```

And this is for the prometheus, grafana and influxdb.

```
abegail@workstation:~/CPE_MIDEXAM_FRIAS/roles/Lamp/task$ cat main.yml
---
- hosts: centos, ubuntu
  become: true
  tasks:
    - name: Install Apache and PHP
      yum:
        name:
          - httpd
          - php
        state: present
      when: ansible_distribution == "CentOS"
      apt:
        name:
          - apache2
          - php
        state: present
      when: ansible_distribution == "Ubuntu"
      notify: restart apache

  handlers:
    - name: restart apache
      service:
        name: httpd
        state: restarted
      when: ansible_distribution == "CentOS"
    - name: restart apache
      service:
        name: apache2
      when: ansible_distribution == "Ubuntu"

- hosts: centos, ubuntu
  become: true
  tasks:
    - name: Install MariaDB
      yum:
        name: mariadb-server
        state: present
      when: ansible_distribution == "CentOS"
      apt:
        name: mariadb-server
        state: present
      when: ansible_distribution == "Ubuntu"
      notify: start mariadb

  handlers:
    - name: start mariadb
      service:
        name: mariadb
        state: started
      when: ansible_distribution == "CentOS"
    - name: start mariadb
      service:
        name: mariadb
        state: started
      when: ansible_distribution == "Ubuntu"
```

GitHub link:
https://github.com/wonbe/CPE_MIDEXAM_FRIAS

Conclusions: (link your conclusion from the objective)

Doing this skills exam is very difficult for me but with this, these Ansible playbooks provide a modular and efficient way to install and configure essential services like Nagios, the LAMP stack, monitoring tools (InfluxDB, Prometheus, Grafana), and the Elastic Stack on both CentOS and Ubuntu systems. By using conditional checks for the operating system, each playbook ensures compatibility across different distributions while automating package installation, service management, and configuration. This setup enhances system administration efficiency and streamlines the deployment process for critical infrastructure tools.