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

1. Objectives

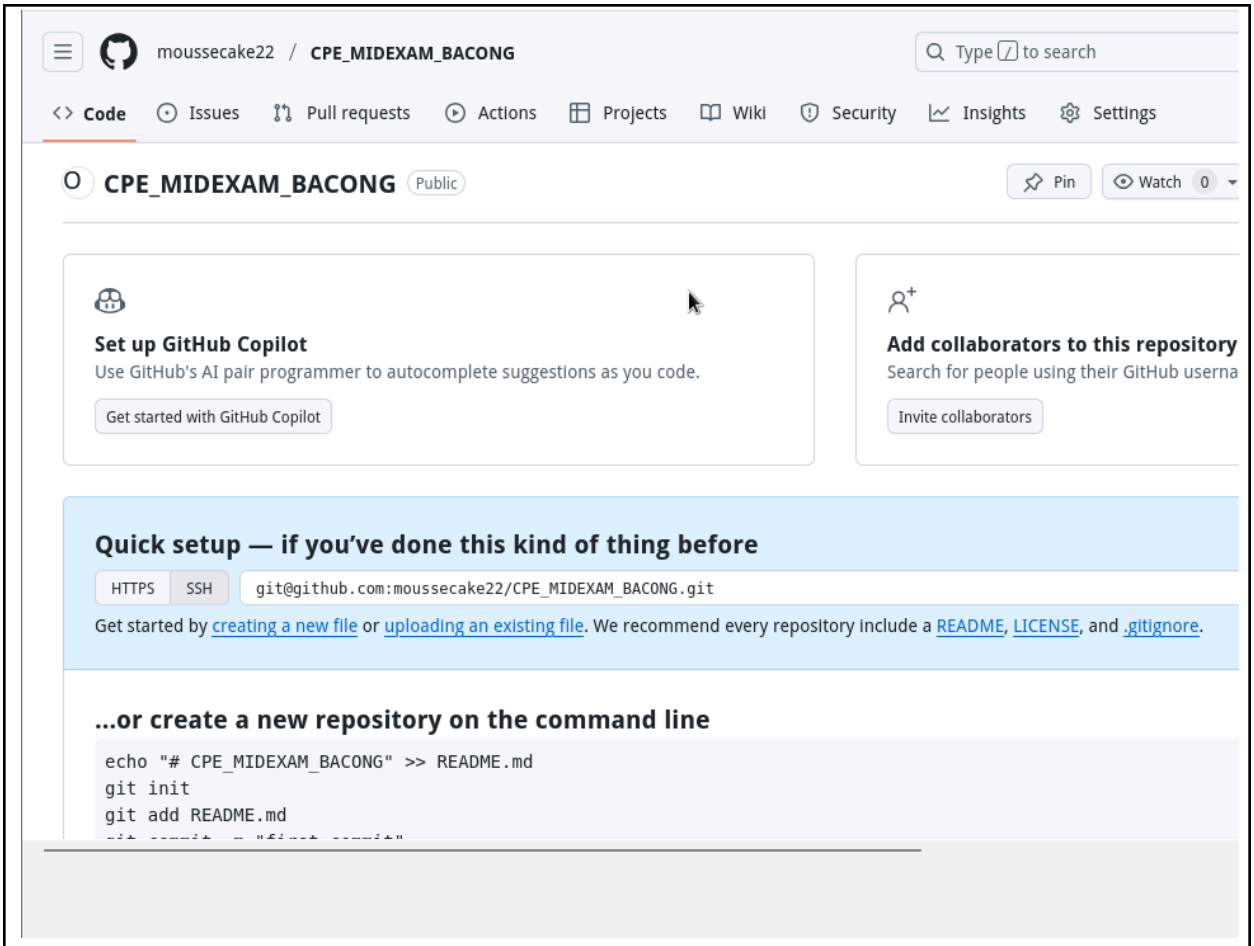
Create and design a workflow that installs, configure and manage enterprise availability, performance and log monitoring tools using Ansible as an Infrastructure as Code (IaC) tool.

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)

1. Creating repository in GitHub



I created a repository where I will be putting my tasks files etc.

2. Create playbook

```
cidee@workstation:~/CPE_MIDEXAM_BACONG$ ls
ansible.cfg  config.yaml  files  inventory.
```

created config.yaml where I'll be putting my prompt for Elastic Search

- Installing and configure Elastic Stack in separate hosts (Elastic Search, Kibana, Logstash) • Install Nagios in one host

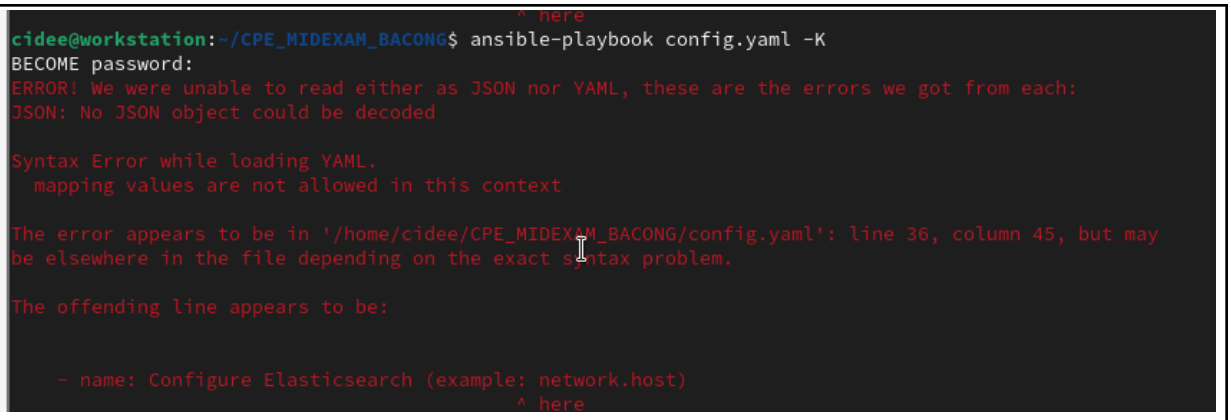
None

```
---
- name: Install and configure Elasticsearch
  hosts: elasticsearch_host
  become: yes
  vars:
    elastic_version: "8.x"
  tasks:
```

```
    - name: Install apt-transport-https
      apt:
        name: apt-transport-https
        state: present
        update_cache: yes

    - name: Add Elasticsearch GPG key
      apt_key:
        url: https://artifacts.elastic.co/GPG-KEY-elasticsearch
        state: present

    - name: Add Elasticsearch repository
      apt_repository:
        repo: "deb https://artifacts.elastic.co/packages/{{ elastic_version
}}/apt stable main"
        state: present

    - name: Install Elasticsearch
      apt:
        name: elasticsearch
        state: present
        update_cache: yes

    - name: Enable and start Elasticsearch
      systemd:
        name: elasticsearch
        enabled: yes
        state: started

    - name: Configure Elasticsearch (example: network.host)
      lineinfile:
        path: /etc/elasticsearch/elasticsearch.yml
        regexp: '^network.host:'
        line: 'network.host: 0.0.0.0'
        insertafter: EOF
      notify:
        - restart elasticsearch

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

- name: Install and configure Kibana
  hosts: kibana_host
  become: yes
  vars:
    elastic_version: "8.x"
    elasticsearch_host_ip: "<elasticsearch_ip>"
```

```
  tasks:
    - name: Install apt-transport-https
      apt:
        name: apt-transport-https
        state: present
        update_cache: yes

    - name: Add Elasticsearch GPG key
      apt_key:
        url: https://artifacts.elastic.co/GPG-KEY-elasticsearch
        state: present

    - name: Add Kibana repository
      apt_repository:
        repo: "deb https://artifacts.elastic.co/packages/{{ elastic_version
}}/apt stable main"
        state: present

    - name: Install Kibana
      apt:
        name: kibana
        state: present
        update_cache: yes

    - name: Configure Kibana to connect to Elasticsearch
      lineinfile:
        path: /etc/kibana/kibana.yml
        regexp: '^elasticsearch.hosts:'
        line: "elasticsearch.hosts: [\"http://{{ elasticsearch_host_ip
}}:9200\"]"
        insertafter: EOF
      notify:
        - restart kibana

    - name: Enable and start Kibana
      systemd:
        name: kibana
        enabled: yes
        state: started

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

- name: Install and configure Logstash
  hosts: logstash_host
  become: yes
  vars:
```

```
    elastic_version: "8.x"
    elasticsearch_host_ip: "<elasticsearch_ip>"
  tasks:
    - name: Install apt-transport-https
      apt:
        name: apt-transport-https
        state: present
        update_cache: yes

    - name: Add Elasticsearch GPG key
      apt_key:
        url: https://artifacts.elastic.co/GPG-KEY-elasticsearch
        state: present

    - name: Add Logstash repository
      apt_repository:
        repo: "deb https://artifacts.elastic.co/packages/{{ elastic_version
}}/apt stable main"
        state: present

    - name: Install Logstash
      apt:
        name: logstash
        state: present
        update_cache: yes

    - name: Create a basic Logstash pipeline config
      copy:
        dest: /etc/logstash/conf.d/logstash-simple.conf
        content: |
          input { stdin { } }
          output {
            elasticsearch {
              hosts => ["{{ elasticsearch_host_ip }}:9200"]
            }
            stdout { codec => rubydebug }
          }

    - name: Enable and start Logstash
      systemd:
        name: logstash
        enabled: yes
        state: started
```



failed because I couldn't fixed my destination on time and my prompt have some errors.

- Installing Lamp Stack

```
None
---
- name: Install and configure LAMP stack on webserver
  hosts: web_servers
  become: true
  vars:
       mysql_root_password: "changeme"

  tasks:
       - name: Patching the system
       yum:
       name: "*"
       state: latest

       - name: Installing Apache
       yum:
       name: httpd
       state: present

       - name: Enabling httpd and start the service
       service:
       name: httpd
       state: started
       enabled: yes

       - name: Open firewall port
       firewalld:
       service: http
       permanent: true
       state: enabled

       - name: Installing MariaDB and required packages
       yum:
       name:
```

```
- mariadb-server
- python3-PyMySQL
- mariadb
state: present

- name: Installing MariaDB and required packages
yum:
name:
- mariadb-server
- python3-PyMySQL
- mariadb
state: present

- name: Start MariaDB service
service:
name: mariadb
state: started
enabled: yes

- name: Secure MySQL installation
mysql_user:
login_user: root
login_password: ""
user: root
password: "{{ mysql_root_password }}"
host: "{{ inventory_hostname }}"
check_implicit_admin: yes
update_password: always
login_unix_socket: /var/lib/mysql/mysql.sock

- name: Installing PHP and PHP-MySQL extension
yum:
name:
- php
- php-mysqlnd
state: present

- name: Copying the PHP file to the root directory of the webserver
copy:
src: /home/cidee/CPE_MIDEXAM_BACONG/index.php
dest: /car/www/html/index.php
```

```
cidee@workstation: ~/CPE_MIDEXAM_BACONG                    cidee@cent
ok: [server2]
ok: [centos]

PLAY [web_servers] ************************************************************

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

TASK [install apache and php for Ubuntu servers] ******************************
skipping: [centos]

TASK [install apache and php for CentOS servers] ******************************
ok: [centos]

TASK [start httpd (CentOS)] ***************************************************
ok: [centos]

PLAY [db_servers] *************************************************************

TASK [Gathering Facts] ********************************************************
ok: [server2]
ok: [server1]
ok: [centos]

TASK [install mariadb package (CentOS)] ***************************************
skipping: [server1]
skipping: [server2]
ok: [centos]

TASK [Mariadb- Restarting/Enabling] *******************************************
fatal: [server2]: FAILED! => {"changed": false, "msg": "Could not find the requested service mariadb: host"}
fatal: [server1]: FAILED! => {"changed": false, "msg": "Could not find the requested service mariadb: host"}
changed: [centos]

TASK [install mariadb package (Ubuntu)] ***************************************
skipping: [centos]

PLAY RECAP ********************************************************************
centos                     : ok=7    changed=1    unreachable=0    failed=0    skipped=2    rescued=0    ignored=0
server1                    : ok=2    changed=0    unreachable=0    failed=1    skipped=1    rescued=0    ignored=0
server2                    : ok=2    changed=0    unreachable=0    failed=1    skipped=1    rescued=0    ignored=0
server3                    : ok=1    changed=0    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

Created lamp.yaml for my prompt for Lamp Stack

4. Git Push

```
cidee@workstation:~/CPE_MIDEXAM_BACONG$ git add .
cidee@workstation:~/CPE_MIDEXAM_BACONG$ git commit -m .
[master (root-commit) 77bfd9e] .
 12 files changed, 891 insertions(+)
 create mode 100644 ansible.cfg
 create mode 100644 config.yaml
 create mode 100644 files/default_site.html
 create mode 100644 inventory.ini
 create mode 100644 lamp.yaml
 create mode 100644 lampy.yaml
 create mode 100644 playbook.yml
 create mode 100644 roles/base/main.yml
 create mode 100644 roles/db_servers/main.yml
 create mode 100644 roles/file_servers/main.yml
 create mode 100644 roles/web_servers/main.yml
 create mode 100644 roles/workstations/main.yml
cidee@workstation:~/CPE_MIDEXAM_BACONG$ git push origin main
error: src refspec main does not match any.
error: failed to push some refs to 'git@github.com:moussecake22/CPE_MIDEXAM_BACONG.git'
```

GitHub link:
https://github.com/moussecake22/CPE_MIDEXAM_BACONG.git

Conclusions: (link your conclusion from the objective)

This midterm exam challenged me a lot. I was unfortunately struggling while installing the required installations to do. Overall, It was very challenging activity and I hope to do better next time.