

# Hands-on Final Exam

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Section: CPE31S2

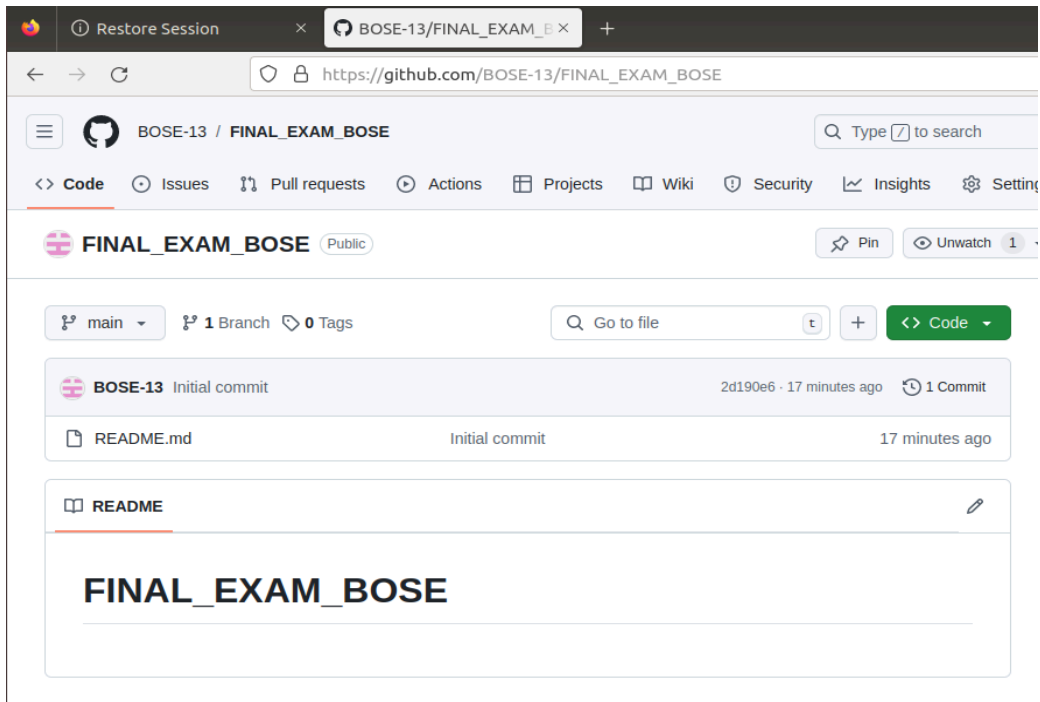
Instructor: Engr. Robin Valenzuela

## Tools Needed:

1. VM with Ubuntu, CentOS and Ansible installed
2. Web browser

## Procedure:

1. Create a repository and label it as "Final\_Exam\_Surname"



2. Clone your new repository in your VM

```
vbbose@workstation:~$ git clone git@github.com:BOSE-13/FINAL_EXAM_BOSE.git
Cloning into 'FINAL_EXAM_BOSE'...
Warning: Permanently added the ECDSA host key for IP address '4.237.22.38' to the list of known hosts.
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
Receiving objects: 100% (3/3), done.
```

3. Create an Ansible playbook that does the following with an input of a config.yaml file and structure inventory file.

```
GNU nano 2.9.3 ansible.cfg
[defaults]
inventory = inventory
remote_user = vbbose
host_key_checking = True
```

```

vbbose@workstation:~/FINAL_EXAM_BOSE$ ansible all -m ping
[DEPRECATION WARNING]: Distribution Ubuntu 18.04 on host 192.168.56.106 should
use /usr/bin/python3, but is using /usr/bin/python for backward compatibility
with prior Ansible releases. A future Ansible release will default to using the
discovered platform python for this host. See https://docs.ansible.com/ansible
/2.9/reference_appendices/interpreter_discovery.html for more information. This
feature will be removed in version 2.12. Deprecation warnings can be disabled
by setting deprecation_warnings=False in ansible.cfg.
192.168.56.106 | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python"
  },
  "changed": false,
  "ping": "pong"
}
[DEPRECATION WARNING]: Distribution centos 9 on host 192.168.56.113 should use
/usr/libexec/platform-python, but is using /usr/bin/python for backward
compatibility with prior Ansible releases. A future Ansible release will
default to using the discovered platform python for this host. See https://docs
.ansible.com/ansible/2.9/reference_appendices/interpreter_discovery.html for
more information. This feature will be removed in version 2.12. Deprecation
warnings can be disabled by setting deprecation_warnings=False in ansible.cfg.
192.168.56.113 | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python"
  },
  "changed": false,
  "ping": "pong"
}

```

## ANSIBLE.CFG

```

GNU nano 2.9.3                                inventory
[defaults]
192.168.56.106
192.168.56.113 ansible_user=vbbose

```

## UBUNTU SERVER1 AND CENTOS

```
GNU nano 2.9.3 config.yaml
- hosts: all
  become: true
  pre_tasks:
    - name: update repository index (CentOS)
      dnf:
        update_cache: yes
        changed_when: false
        when: ansible_distribution == "CentOS"

    - name: install updates (Ubuntu)
      apt:
        update_cache: yes
        changed_when: false
        when: ansible_distribution == "Ubuntu"


    - name: motd player
      copy:
        content: "Ansible Managed by Bose\n"
        dest: /etc/motd

    - name: turn on httpd service
      service:
        name: httpd
        state: started
        when: ansible_distribution == "CentOS"

- hosts: all
  become: true
  roles:
    - Prometheus
    - apache2
```

### CONFIG.YAML file

3.1 Install and configure one enterprise service that can be installed in Debian and Centos servers

```
Open ▾  main.yml
~/FINAL_EXAM_BOSE/roles/apache2/tasks

- name: install apache and php for Ubuntu servers
  apt:
    name:
      - apache2
      - libapache2-mod-php
    state: latest
    update_cache: yes
    when: ansible_distribution == "Ubuntu"

- name: install apache and php for CentOS servers
  yum:
    name:
      - httpd
      - php
    state: latest
    when: ansible_distribution == "CentOS"
```

## MAIN.YML OF APACHE2

```
TASK [apache2 : install apache and php for Ubuntu servers] *****
ok: [192.168.56.106]

TASK [apache2 : install apache and php for CentOS servers] *****
skipping: [192.168.56.106]
```

```
vbbose@server1:~$ systemctl status apache2
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset:
   Drop-In: /lib/systemd/system/apache2.service.d
            └─apache2-systemd.conf
   Active: active (running) since Wed 2024-12-04 08:00:55 +08; 1h 47min ago
   Process: 5532 ExecReload=/usr/sbin/apachectl graceful (code=exited, status=0/
   Main PID: 1586 (apache2)
     Tasks: 6 (limit: 4915)
    CGroup: /system.slice/apache2.service
            └─1586 /usr/sbin/apache2 -k start
               5536 /usr/sbin/apache2 -k start
               5537 /usr/sbin/apache2 -k start
               5538 /usr/sbin/apache2 -k start
               5539 /usr/sbin/apache2 -k start
               5540 /usr/sbin/apache2 -k start
```

## APACHE 2

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)

Open ▾



main.yml

~/FINAL\_EXAM\_BOSE/roles/Prometheus/tasks

```
- name: Installing Prometheus on Ubuntu
  apt:
    name: prometheus
    state: latest
    update_cache: yes
  when: ansible_distribution == "Ubuntu"

- name: Installing snapd on Centos
  dnf:
    name:
      - snapd
    state: latest
    update_cache: yes
  when: ansible_distribution == "CentOS"

- name: enabling sockets
  tags: snapd,centos
  command: systemctl enable --now snapd.socket
  when: ansible_distribution == "CentOS"

- name: installing prometheus using snapd
  tags: centos, prometheus
  command: snap install prometheus
  when: ansible_distribution == "CentOS"

- name: starting prometheus on ubuntu
  tags: prometheus
  command: systemctl start --now prometheus
  when: ansible_distribution == "Ubuntu"

- name: enabling prometheus on ubuntu
  tags: prometheus
  command: systemctl start --now prometheus
```

MAIN.YML OF PROMETHEUS

```

TASK [Installing Prometheus on Ubuntu] *****
skipping: [192.168.56.113]
ok: [192.168.56.106]

TASK [Prometheus : Installing snapd on Centos] *****
skipping: [192.168.56.106]
ok: [192.168.56.113]

TASK [Prometheus : enabling sockets] *****
skipping: [192.168.56.106]
changed: [192.168.56.113]

TASK [Prometheus : installing prometheus using snapd] *****
skipping: [192.168.56.106]
changed: [192.168.56.113]

TASK [Prometheus : starting prometheus on ubuntu] *****
skipping: [192.168.56.113]
changed: [192.168.56.106]

TASK [Prometheus : enabling prometheus on ubuntu] *****
changed: [192.168.56.106]
changed: [192.168.56.113]

```

```

● prometheus.service - Prometheus
   Loaded: loaded (/etc/systemd/system/prometheus.service; enabled; preset: disabled)
   Active: active (running) since Wed 2024-12-04 09:24:50 PST; 37min ago
     Main PID: 1147 (prometheus)
        Tasks: 8 (limit: 10950)
       Memory: 32.5M
          CPU: 868ms
      CGroup: /system.slice/prometheus.service
              └─1147 /usr/local/bin/prometheus --config.file /etc/prometheus/prometheus.yml>

Dec 04 09:25:00 BOSECENTOS prometheus[1147]: level=info ts=2024-12-04T01:25:00.422Z calle>
Dec 04 09:25:00 BOSECENTOS prometheus[1147]: level=info ts=2024-12-04T01:25:00.423Z calle>
Dec 04 09:25:00 BOSECENTOS prometheus[1147]: level=info ts=2024-12-04T01:25:00.426Z calle>
Dec 04 09:25:00 BOSECENTOS prometheus[1147]: level=info ts=2024-12-04T01:25:00.426Z calle>
Dec 04 09:25:00 BOSECENTOS prometheus[1147]: level=info ts=2024-12-04T01:25:00.536Z calle>
Dec 04 09:25:00 BOSECENTOS prometheus[1147]: level=info ts=2024-12-04T01:25:00.536Z calle>
Dec 04 09:25:13 BOSECENTOS prometheus[1147]: level=info ts=2024-12-04T01:25:13.291Z calle>
Dec 04 09:25:13 BOSECENTOS prometheus[1147]: level=info ts=2024-12-04T01:25:13.291Z calle>
Dec 04 09:25:13 BOSECENTOS prometheus[1147]: level=info ts=2024-12-04T01:25:13.626Z calle>
Dec 04 09:25:14 BOSECENTOS prometheus[1147]: level=info ts=2024-12-04T01:25:14.306Z calle>

```

## PROMETHEUS

### 4.4 Change Motd as "Ansible Managed by <username>"

```

- name: motd player
  copy:
    content: "Ansible Managed by Bose\n"
    dest: /etc/motd

```

#### 4. Push and commit your files in GitHub

```
vbbosc@workstation:~/FINAL_EXAM_BOSE$ git add *
vbbosc@workstation:~/FINAL_EXAM_BOSE$ git commit -m "DONE"
[main 635db4e] DONE
 5 files changed, 81 insertions(+)
 create mode 100644 ansible.cfg
 create mode 100644 config.yml
 create mode 100644 inventory
 create mode 100644 roles/Prometheus/tasks/main.yml
 create mode 100644 roles/apache2/tasks/main.yml
vbbosc@workstation:~/FINAL_EXAM_BOSE$ git push
Counting objects: 12, done.
Delta compression using up to 4 threads.
Compressing objects: 100% (8/8), done.
Writing objects: 100% (12/12), 1.43 KiB | 1.43 MiB/s, done.
Total 12 (delta 0), reused 0 (delta 0)
To github.com:BOSE-13/FINAL_EXAM_BOSE.git
 2d190e6..635db4e  main -> main
```

#### 5. Make sure to show evidence of input (codes) process (codes successfully running) and output (evidence of installation)

```
vbbosc@workstation:~/FINAL_EXAM_BOSE$ ansible-playbook --ask-become-pass config.yml
BECOME password:

PLAY [all] *****

TASK [Gathering Facts] *****
[DEPRECATION WARNING]: Distribution Ubuntu 18.04 on host 192.168.56.106 should
use /usr/bin/python3, but is using /usr/bin/python for backward compatibility
with prior Ansible releases. A future Ansible release will default to using the
discovered platform python for this host. See https://docs.ansible.com/ansible
/2.9/reference_appendices/interpreter_discovery.html for more information. This
feature will be removed in version 2.12. Deprecation warnings can be disabled
by setting deprecation_warnings=False in ansible.cfg.
ok: [192.168.56.106]
[DEPRECATION WARNING]: Distribution centos 9 on host 192.168.56.113 should use
/usr/libexec/platform-python, but is using /usr/bin/python for backward
compatibility with prior Ansible releases. A future Ansible release will
default to using the discovered platform python for this host. See https://docs
.ansible.com/ansible/2.9/reference_appendices/interpreter_discovery.html for
more information. This feature will be removed in version 2.12. Deprecation
warnings can be disabled by setting deprecation_warnings=False in ansible.cfg.
ok: [192.168.56.113]

TASK [install updates (Ubuntu)] *****
skipping: [192.168.56.113]
ok: [192.168.56.106]
```



```

TASK [motd player] *****
ok: [192.168.56.106]
ok: [192.168.56.113]

TASK [turn on httpd service] *****
skipping: [192.168.56.106]
ok: [192.168.56.113]

PLAY [all] *****

TASK [Gathering Facts] *****
ok: [192.168.56.106]
ok: [192.168.56.113]

TASK [Installing Prometheus on Ubuntu] *****
skipping: [192.168.56.113]
ok: [192.168.56.106]

TASK [Prometheus : Installing snapd on Centos] *****
skipping: [192.168.56.106]
ok: [192.168.56.113]

TASK [Prometheus : enabling sockets] *****
skipping: [192.168.56.106]
changed: [192.168.56.113]

TASK [Prometheus : installing prometheus using snapd] *****
skipping: [192.168.56.106]
changed: [192.168.56.113]

TASK [Prometheus : starting prometheus on ubuntu] *****
skipping: [192.168.56.113]
changed: [192.168.56.106]

TASK [Prometheus : enabling prometheus on ubuntu] *****
changed: [192.168.56.106]
changed: [192.168.56.113]

TASK [apache2 : install apache and php for Ubuntu servers] *****
skipping: [192.168.56.113]
ok: [192.168.56.106]

TASK [apache2 : install apache and php for CentOS servers] *****
skipping: [192.168.56.106]
ok: [192.168.56.113]

PLAY RECAP *****
192.168.56.106      : ok=8    changed=2    unreachable=0    failed=0    skipped=5    rescued=0    ignored=0
192.168.56.113      : ok=9    changed=3    unreachable=0    failed=0    skipped=4    rescued=0    ignored=0

```

6. For your final exam to be counted, please paste your repository link as an answer in this exam.

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