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Hands-on Final Exam

1. Tools Needed

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

2. 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)

5. 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.

3. Output (screenshots and explanations)

```
qjltbarquilla@workstation:~$ git clone git@github.com:qjltbarquilla/Final_Exam_
Barquilla.git
Cloning into 'Final_Exam_Barquilla'...
Warning: Permanently added the ECDSA host key for IP address '4.237.22.38' to t
he 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.
qjltbarquilla@workstation:~$ ls
Activity-10_Install-Configure-and-Manage-Log-Monitoring-tools
Activity-11-Containerization
Activity-6_Targeting-Specific-Nodes
Activity-8_-Install-Configure-and-Manage-Availability-Monitoring-tools
Activity-9_-Install-Configure-and-Manage-Performance-Monitoring-tools
CPE_MIDEXAM_BARQUILLA
Desktop
Documents
Downloads
examples.desktop
Final_Exam_Barquilla
```

Figure 1

```
qjltbarquilla@workstation:~/Final_Exam_Barquilla/Enterprise_Service$ ls
ansible.cfg  Install_Nginx.yml  inventory.yaml
```

Figure 2

```
qjltbarquilla@workstation:~/Final_Exam_Barquilla/Enterprise_Service$ cat ansibl
e.cfg
[defaults]
deprecation_warnings=False
interpreter_python = /usr/bin/python3
iventory = ~/Final_Exam_Barquilla/Enterprise_Service/inventory.yaml
remote_user = qjltbarquilla
host_key_checking = True
```

Figure 3

```
qjltbarquilla@workstation:~/Final_Exam_Barquilla/Enterprise_Service$ cat invent
ory.yaml
[nginx]
192.168.56.117
192.168.56.119
```

Figure 4

```
qjltbarquilla@workstation:~/Final_Exam_Barquilla/Enterprise_Service$ cat Instal
l_Nginx.yml
---

- name: Install Nginx on Ubuntu and CentOS
  hosts: nginx
  become: yes
  tasks:

    - name: Install Nginx (Ubuntu)
      apt:
        name: nginx
        state: present
      when: ansible_os_family == "Debian"

    - name: Install Nginx (CentOS)
      yum:
        name: nginx
        state: present
      when: ansible_os_family == "RedHat"
qjltbarquilla@workstation:~/Final_Exam_Barquilla/Enterprise_Service$
```

Figure 5:

```
qjltbarquilla@workstation:~/Final_Exam_Barquilla/Enterprise_Service$ ansible-pl
aybook -i inventory.yaml Install_Nginx.yml --ask-become-pass
BECOME password:

PLAY [Install Nginx on Ubuntu and CentOS] ***********************************
*

TASK [Gathering Facts] ******************************************************
*
ok: [192.168.56.117]
ok: [192.168.56.119]

TASK [Install Nginx (Ubuntu)] ***********************************************
*
skipping: [192.168.56.119]
ok: [192.168.56.117]

TASK [Install Nginx (CentOS)] ***********************************************
*
skipping: [192.168.56.117]
ok: [192.168.56.119]

PLAY RECAP ******************************************************************
*
192.168.56.117             : ok=2    changed=0    unreachable=0    failed=0
skipped=1    rescued=0    ignored=0
192.168.56.119             : ok=2    changed=0    unreachable=0    failed=0
skipped=1    rescued=0    ignored=0
```

Figure 6:

```
qjltbarquilla@server2:~$ systemctl status nginx
● nginx.service - A high performance web server and a reverse proxy server
   Loaded: loaded (/lib/systemd/system/nginx.service; enabled; vendor preset: e
   Active: active (running) since Wed 2024-12-04 08:01:54 +08; 54min ago
     Docs: man:nginx(8)
 Main PID: 1272 (nginx)
    Tasks: 5 (limit: 4915)
   CGroup: /system.slice/nginx.service
           ├─1272 nginx: master process /usr/sbin/nginx -g daemon on; master_pr
           ├─1275 nginx: worker process
           ├─1276 nginx: worker process
           ├─1278 nginx: worker process
           └─1279 nginx: worker process

Warning: Journal has been rotated since unit was started. Log output is incompl
lines 1-14/14 (END)
```

```
[qjltbarquilla@centos ~]$ nginx -version
nginx version: nginx/1.20.1
```

Figure 7:

```
qjltbarquilla@workstation:~/Final_Exam_Barquilla/Monitoring_Tool$ ls
ansible.cfg  Install_Prometheus.yml  inventory.yaml
```

Figure 8:

```
qjltbarquilla@workstation:~/Final_Exam_Barquilla/Monitoring_Tool$ cat ansible.c
fg
[defaults]
deprecation_warnings=False
interpreter_python = /usr/bin/python3
iventory = ~/Final_Exam_Barquilla/Monitoring_Tool/inventory.yaml
remote_user = qjltbarquilla
host_key_checking = True
```

Figure 9

```
qjltbarquilla@workstation:~/Final_Exam_Barquilla/Monitoring_Tool$ cat inventory
.yaml
[prometheus]
192.168.56.117
192.168.56.119
```

Figure 10

```
qjltbarquilla@workstation:~/Final_Exam_Barquilla/Monitoring_Tool$ cat Install_P
rometheus.yml
---

- name: Install Prometheus on Ubuntu and CentOS
  hosts: prometheus
  become: yes
  tasks:

    - name: Install necessary packages for Ubuntu
      when: ansible_facts['os_family'] == "Debian"
      apt:
        name:
          - wget
          - curl
          - tar
        update_cache: yes
        state: present

    - name: Enable EPEL repository in CentOS
      when: ansible_facts['os_family'] == "RedHat"
      dnf:
        name: epel-release
        state: present
```

```
    - name: Install necessary packages for CentOS
      when: ansible_facts['os_family'] == "RedHat"
      dnf:
        name:
          - wget
          - curl
          - tar
        state: present

    - name: Download Prometheus tar.gz
      get_url:
        url: "https://github.com/prometheus/prometheus/releases/download/v2.50.
0/prometheus-2.50.0.linux-amd64.tar.gz"
        dest: "/tmp/prometheus.tar.gz"

    - name: Extract Prometheus binaries
      unarchive:
        src: "/tmp/prometheus.tar.gz"
        dest: /tmp/
        remote_src: yes

    - name: Create a user for Prometheus
      user:
        name: prometheus
        system: yes
        shell: /bin/false
```

Show Applications

```
    shell: /bin/false

- name: Create necessary directories
  file:
    path: "{{ item }}"
    state: directory
    owner: prometheus
    group: prometheus
  loop:
    - /etc/prometheus
    - /var/lib/prometheus

- name: Move Prometheus binaries to /usr/local/bin
  command: mv /tmp/prometheus-2.50.0.linux-amd64/{{ item }} /usr/local/bin/
  with_items:
    - prometheus
    - promtool

- name: Set ownership for Prometheus binaries
  file:
    path: /usr/local/bin/{{ item }}
    owner: prometheus
    group: prometheus
  with_items:
    - prometheus
    - promtool
```

Figure 11

```
TASK [Download Prometheus tar.gz] ******************************************
*
ok: [192.168.56.117]

TASK [Extract Prometheus binaries] *****************************************
*
changed: [192.168.56.117]

TASK [Create a user for Prometheus] ****************************************
*
ok: [192.168.56.117]

TASK [Create necessary directories] ****************************************
*
ok: [192.168.56.117] => (item=/etc/prometheus)
ok: [192.168.56.117] => (item=/var/lib/prometheus)

TASK [Move Prometheus binaries to /usr/local/bin] **************************
*
changed: [192.168.56.117] => (item=prometheus)
changed: [192.168.56.117] => (item=promtool)

TASK [Set ownership for Prometheus binaries] ********************************
*
changed: [192.168.56.117] => (item=prometheus)
changed: [192.168.56.117] => (item=promtool)
```

Show Applications

Figure 12

```
qjltbarquilla@server2:~$ sudo systemctl status prometheus
[sudo] password for qjltbarquilla:
● prometheus.service - Prometheus monitoring system and time series database
     Loaded: loaded (/etc/systemd/system/prometheus.service; enabled; vendor pres
     Active: active (running) since Wed 2024-12-04 08:01:58 +08; 1h 58min ago
   Main PID: 1378 (prometheus)
      Tasks: 12 (limit: 4915)
     CGroup: /system.slice/prometheus.service
             └─1378 /usr/local/bin/prometheus --config.file /etc/prometheus/prome

Dec 04 08:03:40 server2 prometheus[1378]: ts=2024-12-04T00:03:40.409Z caller=co
Dec 04 08:03:40 server2 prometheus[1378]: ts=2024-12-04T00:03:40.411Z caller=he
Dec 04 08:03:40 server2 prometheus[1378]: ts=2024-12-04T00:03:40.412Z caller=ch
Dec 04 08:03:41 server2 prometheus[1378]: ts=2024-12-04T00:03:41.320Z caller=he
Dec 04 08:03:48 server2 prometheus[1378]: ts=2024-12-04T00:03:48.739Z caller=co
Dec 04 08:03:49 server2 prometheus[1378]: ts=2024-12-04T00:03:49.964Z caller=db
Dec 04 08:03:52 server2 prometheus[1378]: ts=2024-12-04T00:03:52.221Z caller=db
Dec 04 08:04:07 server2 prometheus[1378]: ts=2024-12-04T00:04:07.737Z caller=co
Dec 04 08:04:09 server2 prometheus[1378]: ts=2024-12-04T00:04:09.554Z caller=db
Dec 04 08:04:10 server2 prometheus[1378]: ts=2024-12-04T00:04:10.545Z caller=db
lines 1-18/18 (END)
```

Terminal

```
[qjltbarquilla@centos ~]$ prometheus --version
prometheus, version 2.50.0 (branch: HEAD, revision: 814b920e8a6345d35712b5857ebd
4cb5e90fc107)
  build user:       root@384077e1cf50
  build date:       20240222-09:38:19
  go version:       go1.21.7
  platform:         linux/amd64
  tags:             netgo,builtinassets,stringlabels
[qjltbarquilla@centos ~]$
```

Figure 13

Link: https://github.com/qjltbarquilla/Final_Exam_Barquilla.git