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Course/Section: CPE 232-CPE31S1	**Date Submitted: 01/04/2024**
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Activity 9: Install, Configure, and Manage Performance Monitoring tools

1. Objectives

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

2. Discussion

Performance monitoring is a type of monitoring tool that identifies current resource consumption of the workload, in this page we will discuss multiple performance monitoring tool.

Prometheus

Prometheus fundamentally stores all data as timeseries: streams of timestamped values belonging to the same metric and the same set of labeled dimensions. Besides stored time series, Prometheus may generate temporary derived time series as the result of queries. Source: Prometheus - Monitoring system & time series database

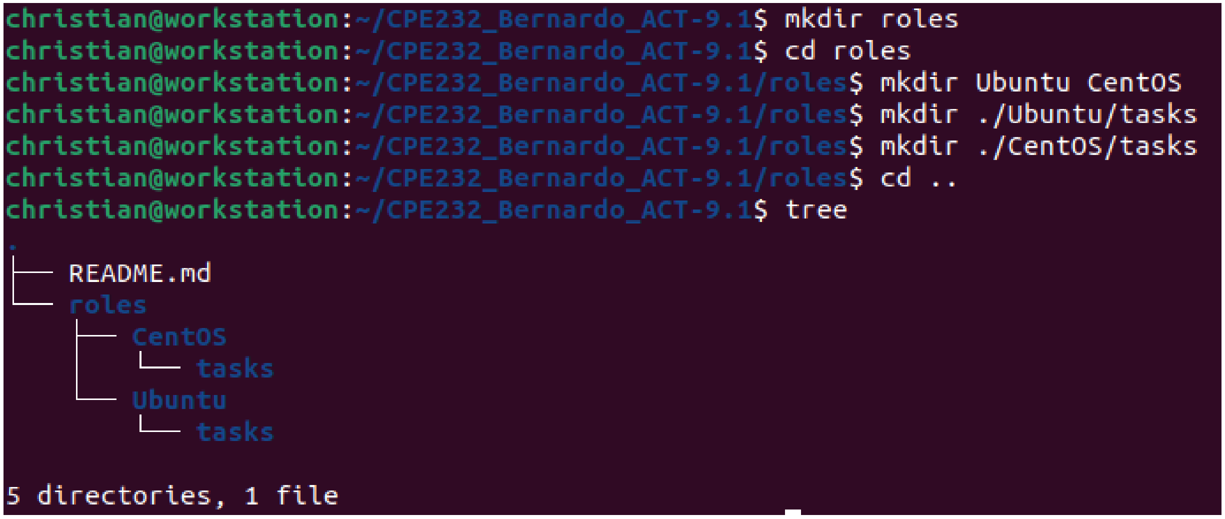
Cacti

Cacti is a complete network graphing solution designed to harness the power of RRDTool's data storage and graphing functionality. Cacti provides a fast poller, advanced graph templating, multiple data acquisition methods, and user management features out of the box. All of this is wrapped in an intuitive, easy to use interface that makes sense for LAN-sized installations up to complex networks with thousands of devices. Source: Cacti® - The Complete RRDTool-based Graphing Solution

3. Tasks

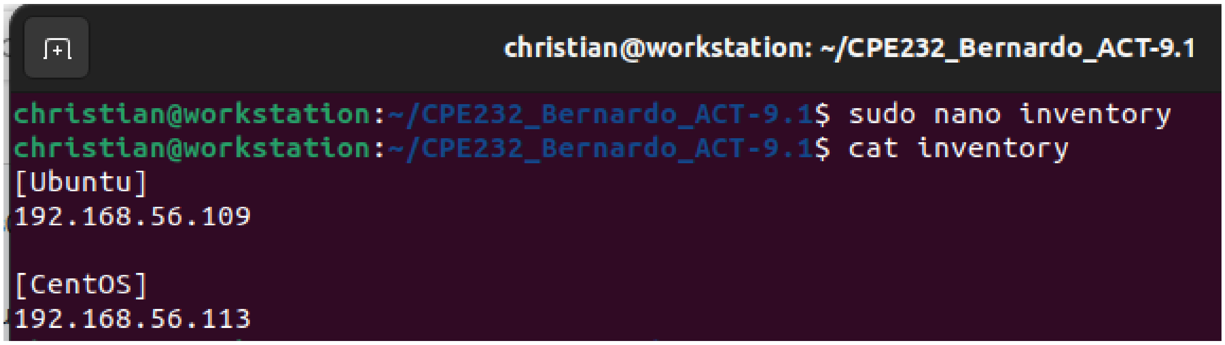
1. Create a playbook that installs Prometheus in both Ubuntu and CentOS. Apply the concept of creating roles.
2. Describe how you did step 1. (Provide screenshots and explanations in your report. Make your report detailed such that it will look like a manual.)
3. Show an output of the installed Prometheus for both Ubuntu and CentOS.
4. Make sure to create a new repository in GitHub for this activity.

4. Output (screenshots and explanations)



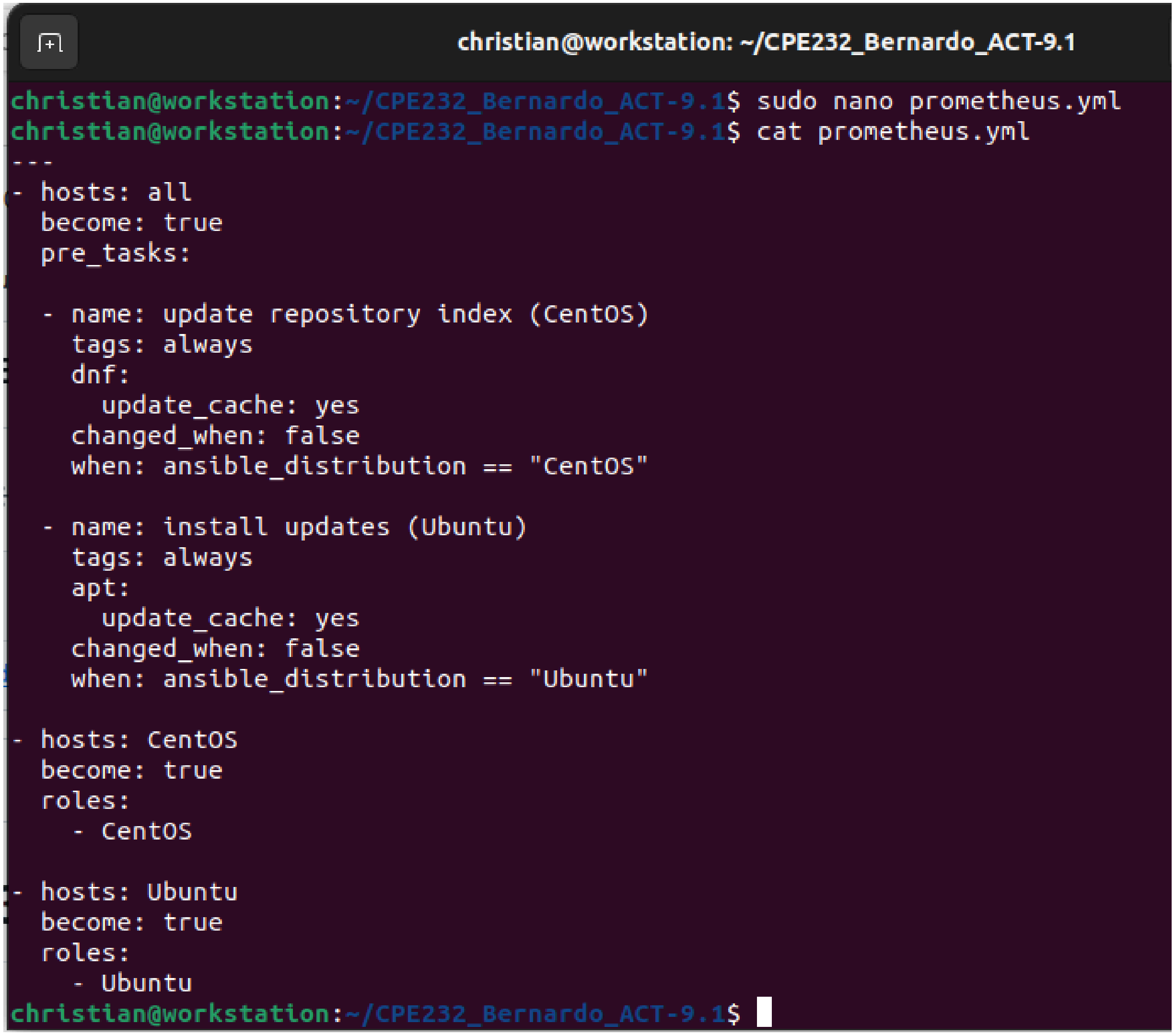
```
christian@workstation:~/CPE232_Bernardo_ACT-9.1$ mkdir roles
christian@workstation:~/CPE232_Bernardo_ACT-9.1$ cd roles
christian@workstation:~/CPE232_Bernardo_ACT-9.1/roles$ mkdir Ubuntu CentOS
christian@workstation:~/CPE232_Bernardo_ACT-9.1/roles$ mkdir ./Ubuntu/tasks
christian@workstation:~/CPE232_Bernardo_ACT-9.1/roles$ mkdir ./CentOS/tasks
christian@workstation:~/CPE232_Bernardo_ACT-9.1/roles$ cd ..
christian@workstation:~/CPE232_Bernardo_ACT-9.1$ tree
.
├── README.md
└── roles
    ├── CentOS
    │   └── tasks
    └── Ubuntu
        └── tasks

5 directories, 1 file
```

step one: making the roles and directories for the .yml, ansible and inventory files



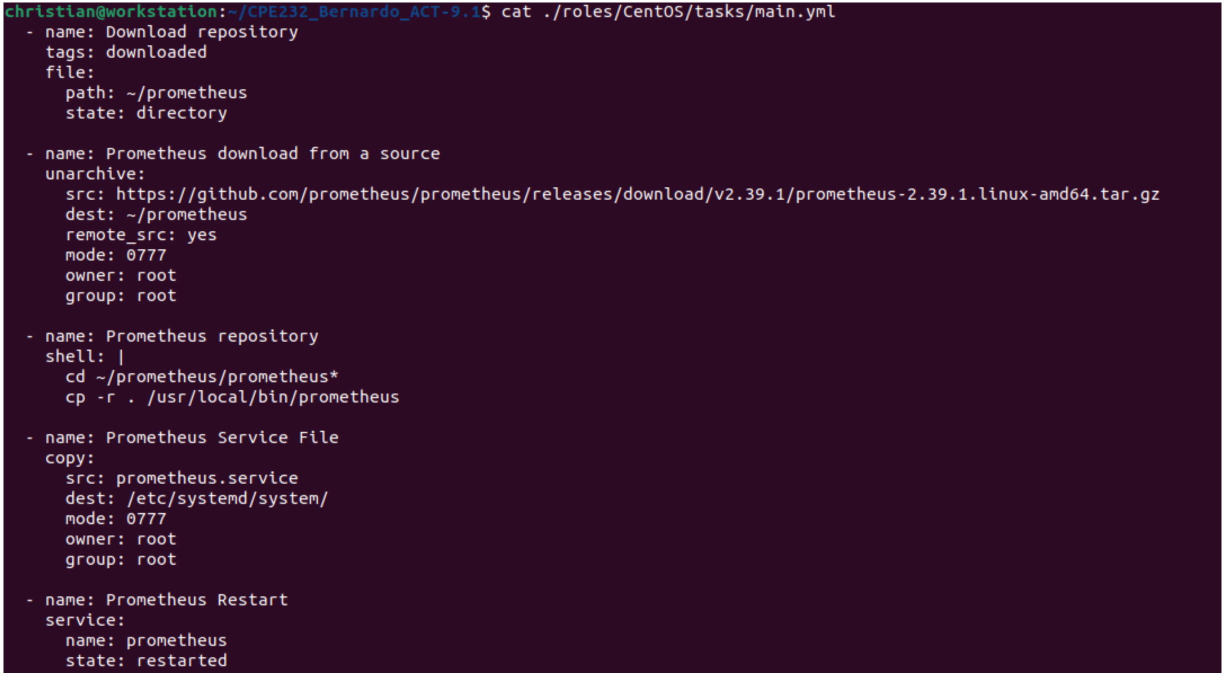
```
christian@workstation:~/CPE232_Bernardo_ACT-9.1$ sudo nano inventory
christian@workstation:~/CPE232_Bernardo_ACT-9.1$ cat inventory
[Ubuntu]
192.168.56.109

[CentOS]
192.168.56.113
```

step two: making the inventory file for the servers.



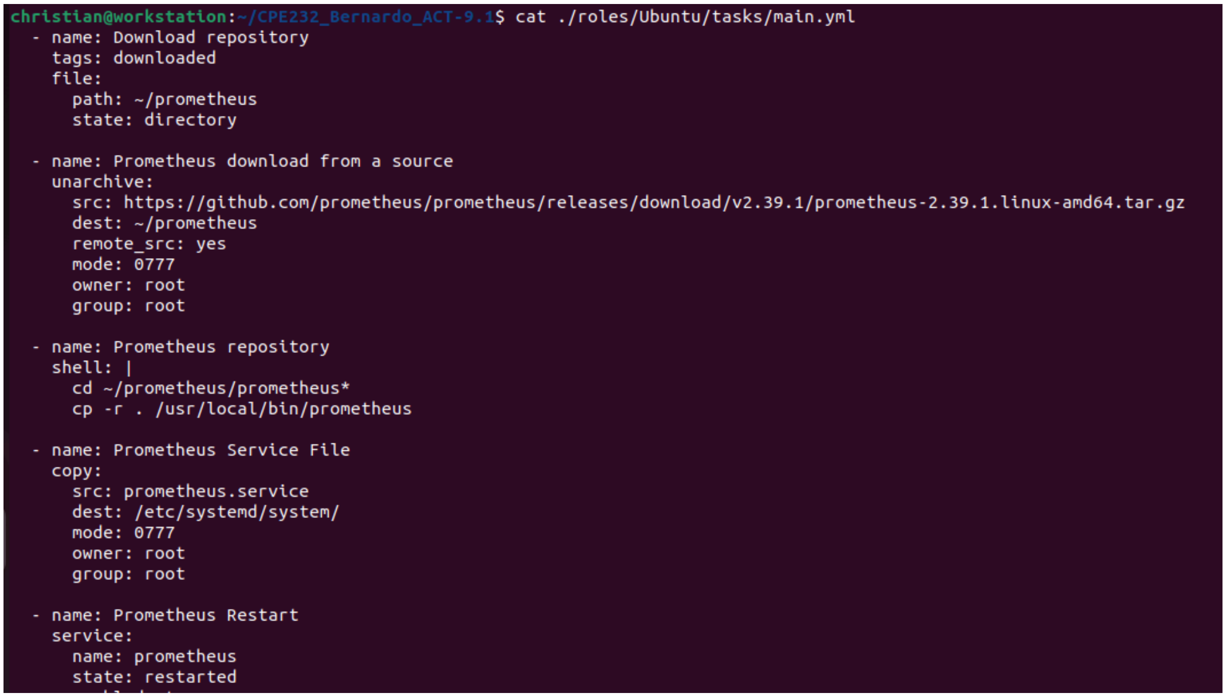
```
christian@workstation:~/CPE232_Bernardo_ACT-9.1$ sudo nano prometheus.yml
christian@workstation:~/CPE232_Bernardo_ACT-9.1$ cat prometheus.yml
---
- hosts: all
  become: true
  pre_tasks:

  - 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: CentOS
  become: true
  roles:
    - CentOS

- hosts: Ubuntu
  become: true
  roles:
    - Ubuntu
christian@workstation:~/CPE232_Bernardo_ACT-9.1$
```

step three: I made the prometheus.yml file that will be used as the main file that will be executed before any other .yml file.



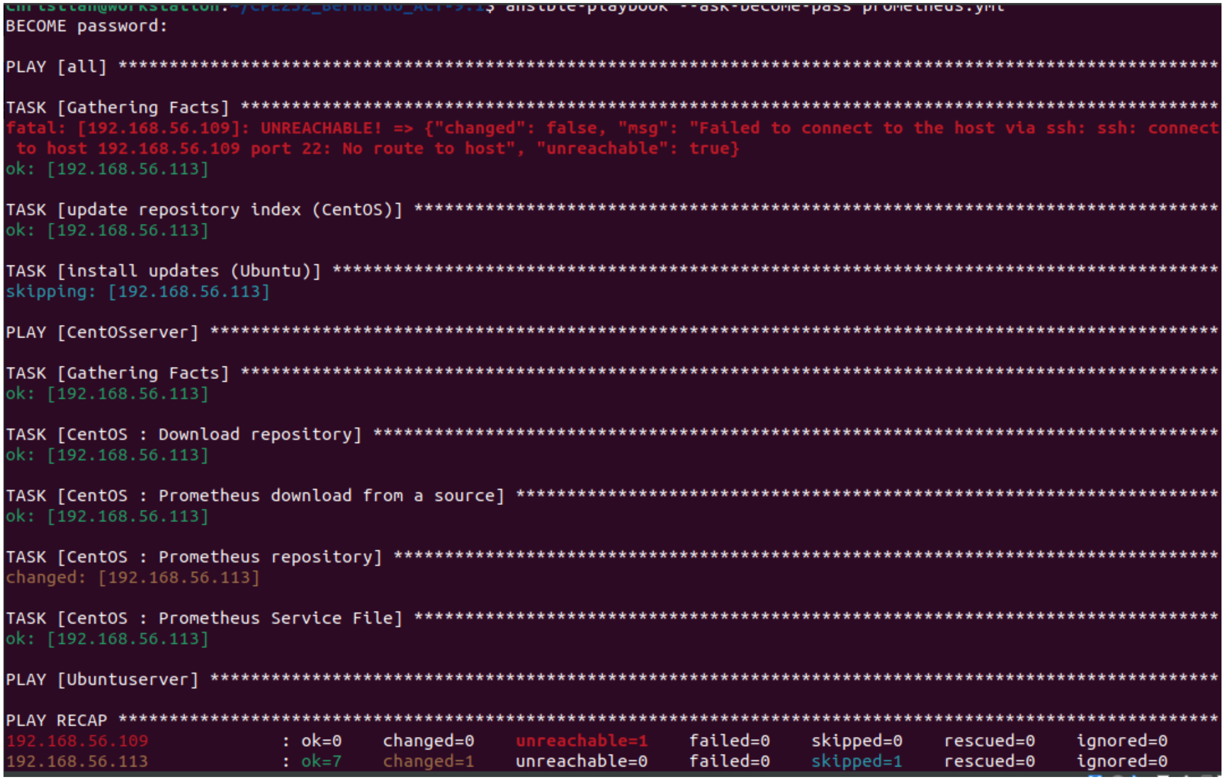
```
christian@workstation:~/CPE232_Bernardo_ACT-9.1$ cat ./roles/CentOS/tasks/main.yml
  - name: Download repository
    tags: downloaded
    file:
      path: ~/prometheus
      state: directory

  - name: Prometheus download from a source
    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: Prometheus repository
    shell: |
      cd ~/prometheus/prometheus*
      cp -r . /usr/local/bin/prometheus

  - name: Prometheus Service File
    copy:
      src: prometheus.service
      dest: /etc/systemd/system/
      mode: 0777
      owner: root
      group: root

  - name: Prometheus Restart
    service:
      name: prometheus
      state: restarted
```

step four: the main file for the CentOS directory it is in the tasks directory



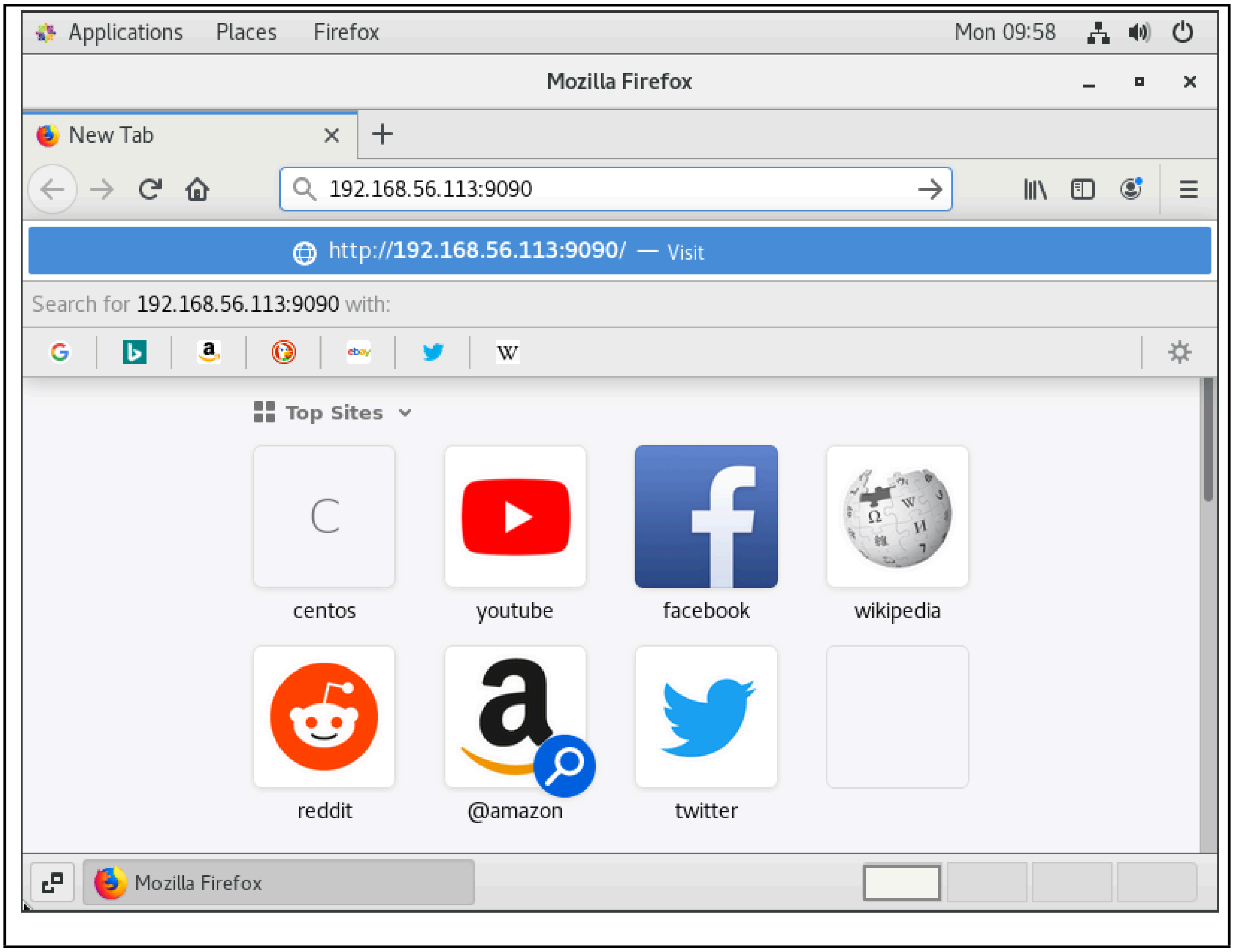
```
christian@workstation:~/CPE232_Bernardo_ACT-9.1$ cat ./roles/Ubuntu/tasks/main.yml
  - name: Download repository
    tags: downloaded
    file:
      path: ~/prometheus
      state: directory

  - name: Prometheus download from a source
    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: Prometheus repository
    shell: |
      cd ~/prometheus/prometheus*
      cp -r . /usr/local/bin/prometheus

  - name: Prometheus Service File
    copy:
      src: prometheus.service
      dest: /etc/systemd/system/
      mode: 0777
      owner: root
      group: root

  - name: Prometheus Restart
    service:
      name: prometheus
      state: restarted
```

step five: this one is the main file of the Ubuntu Directory it is also in the task directory.



```
christian@workstation:~/CPE232_Bernardo_Act-9.1$ ansible-playbook --ask-become-pass prometheus.yml
BECOME password:

PLAY [all] *************************************************************************************************

TASK [Gathering Facts] *************************************************************************************
fatal: [192.168.56.109]: UNREACHABLE! => {"changed": false, "msg": "Failed to connect to the host via ssh: ssh: connect
 to host 192.168.56.109 port 22: No route to host", "unreachable": true}
ok: [192.168.56.113]

TASK [update repository index (CentOS)] ********************************************************************
ok: [192.168.56.113]

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

PLAY [CentOSserver] ****************************************************************************************

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

TASK [CentOS : Download repository] ************************************************************************
ok: [192.168.56.113]

TASK [CentOS : Prometheus download from a source] **********************************************************
ok: [192.168.56.113]

TASK [CentOS : Prometheus repository] **********************************************************************
changed: [192.168.56.113]

TASK [CentOS : Prometheus Service File] ********************************************************************
ok: [192.168.56.113]

PLAY [Ubuntuserver] ****************************************************************************************

PLAY RECAP *************************************************************************************************
192.168.56.109             : ok=0    changed=0    unreachable=1    failed=0    skipped=0    rescued=0    ignored=0
192.168.56.113             : ok=7    changed=1    unreachable=0    failed=0    skipped=1    rescued=0    ignored=0
```

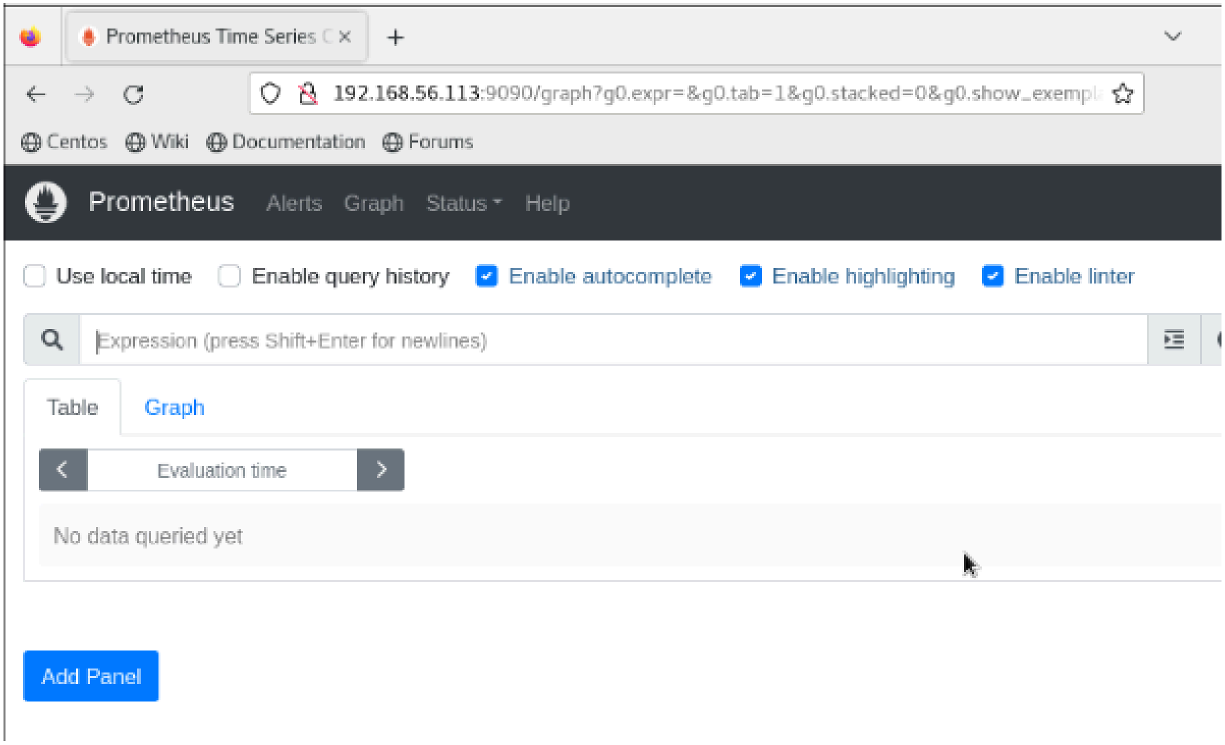
step six: this is the output for the CentOS installation



192.168.56.113:9090

http://192.168.56.113:9090/ — Visit

Search for 192.168.56.113:9090 with:

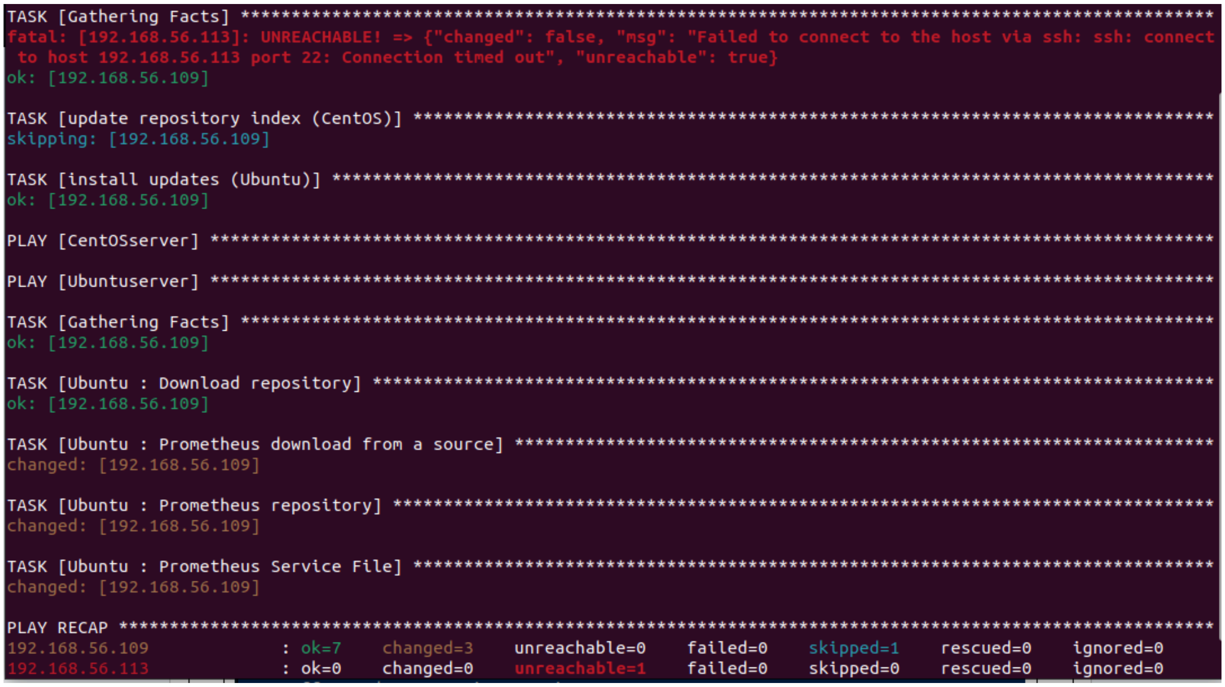


□ Use local time □ Enable query history ☑ Enable autocomplete ☑ Enable highlighting ☑ Enable linter

Expression (press Shift+Enter for newlines)

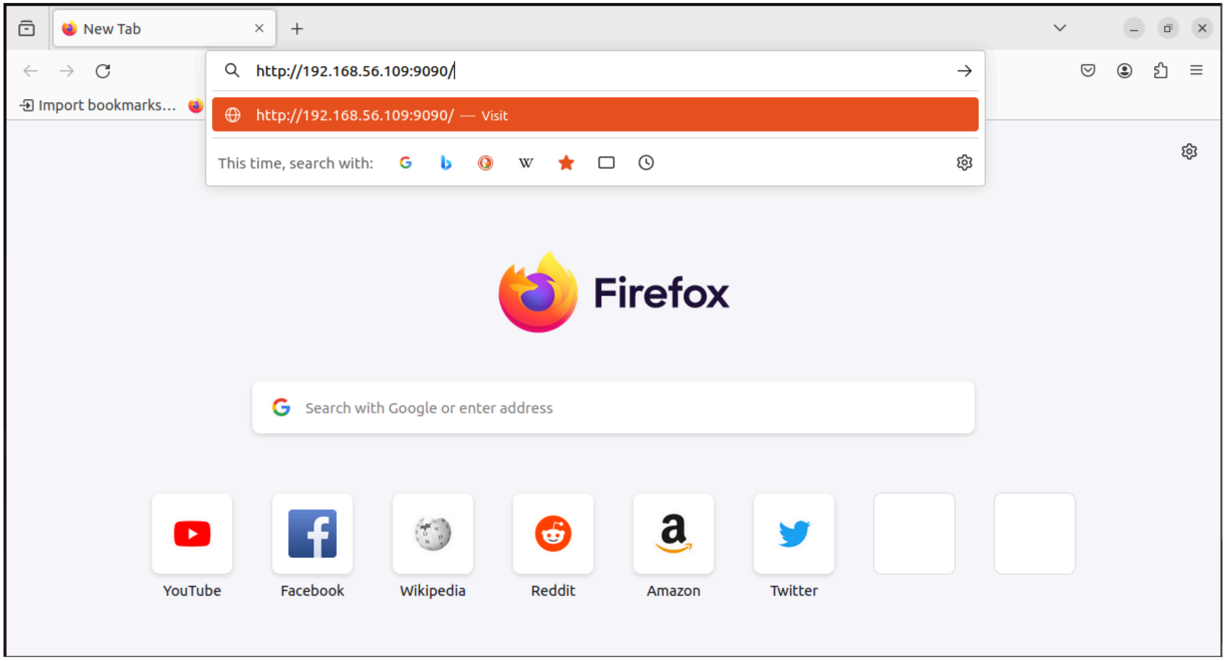
No data queried yet

step seven: the website for the Prometheus, this can be said that it has been successfully installed

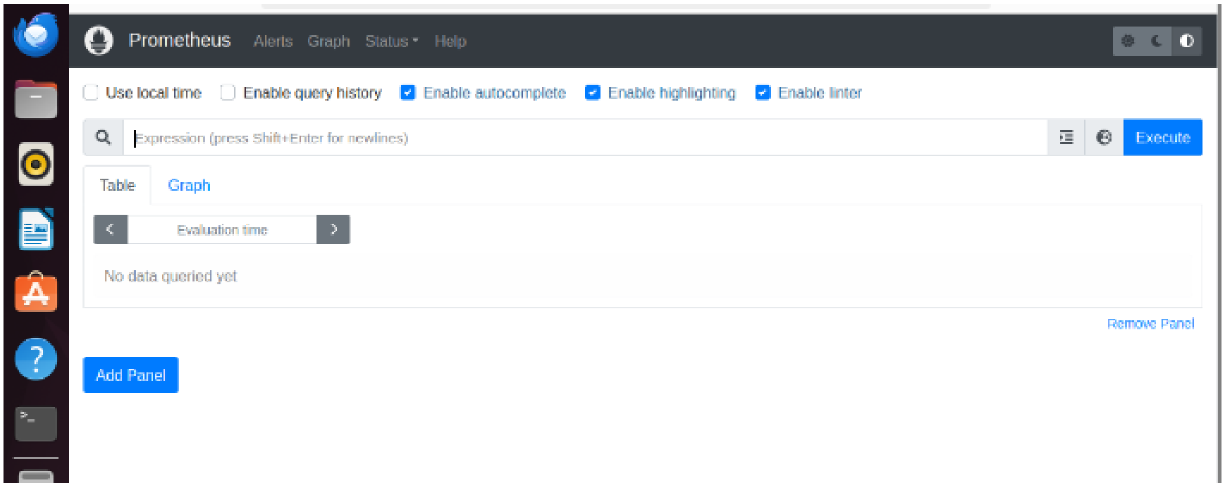


```
TASK [Gathering Facts] *************************************************************************************
fatal: [192.168.56.113]: UNREACHABLE! => {"changed": false, "msg": "Failed to connect to the host via ssh: ssh: connect
 to host 192.168.56.113 port 22: Connection timed out", "unreachable": true}
ok: [192.168.56.109]

TASK [update repository index (CentOS)] ********************************************************************
skipping: [192.168.56.109]

TASK [install updates (Ubuntu)] ****************************************************************************
ok: [192.168.56.109]

PLAY [CentOSserver] ****************************************************************************************

PLAY [Ubuntuserver] ****************************************************************************************

TASK [Gathering Facts] *************************************************************************************
ok: [192.168.56.109]

TASK [Ubuntu : Download repository] ************************************************************************
ok: [192.168.56.109]

TASK [Ubuntu : Prometheus download from a source] **********************************************************
changed: [192.168.56.109]

TASK [Ubuntu : Prometheus repository] **********************************************************************
changed: [192.168.56.109]

TASK [Ubuntu : Prometheus Service File] ********************************************************************
changed: [192.168.56.109]

PLAY RECAP *************************************************************************************************
192.168.56.109             : ok=7    changed=3    unreachable=0    failed=0    skipped=1    rescued=0    ignored=0
192.168.56.113             : ok=0    changed=0    unreachable=1    failed=0    skipped=0    rescued=0    ignored=0
```

step eight: this is the Ubuntu server installation.



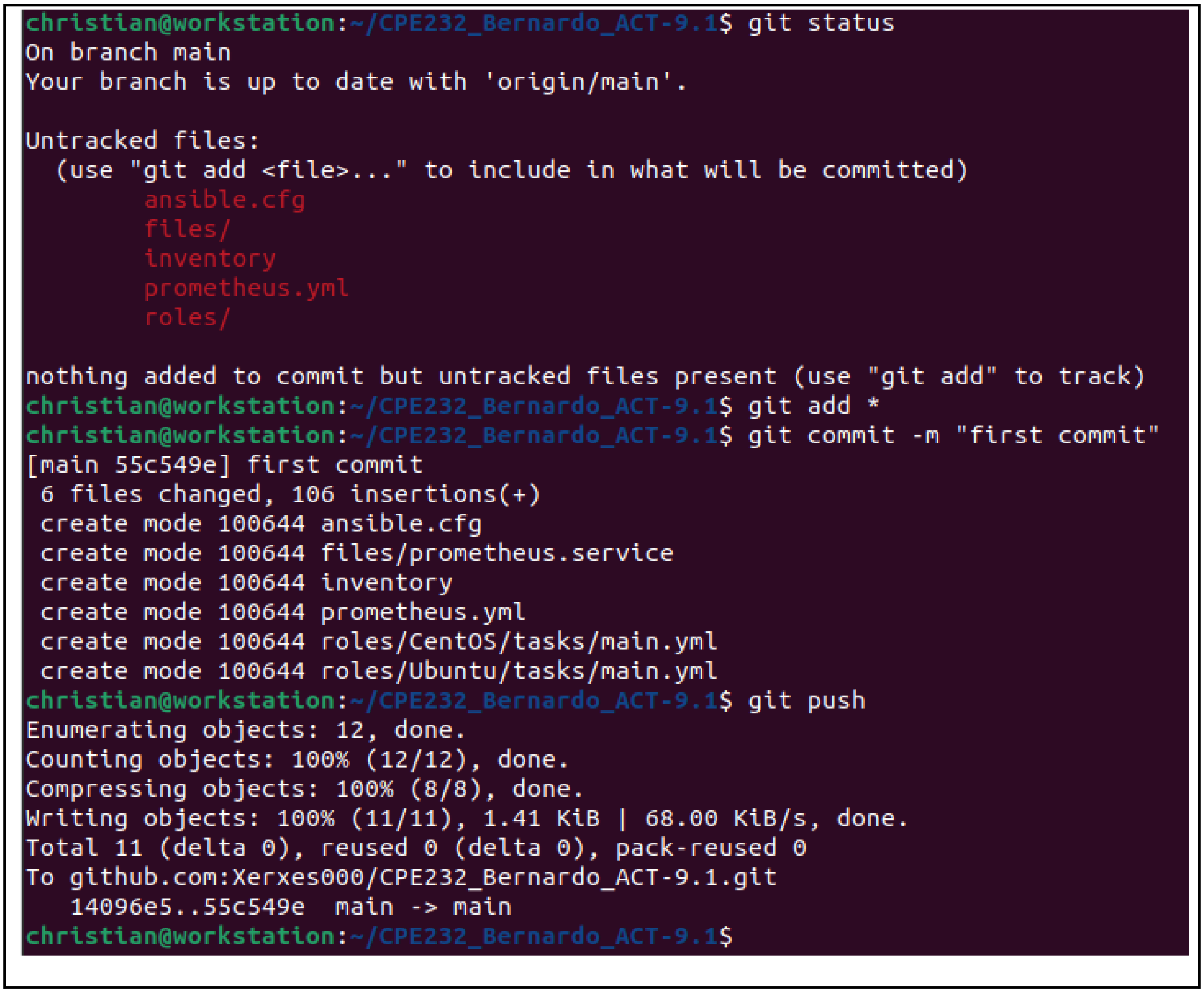
http://192.168.56.109:9090/



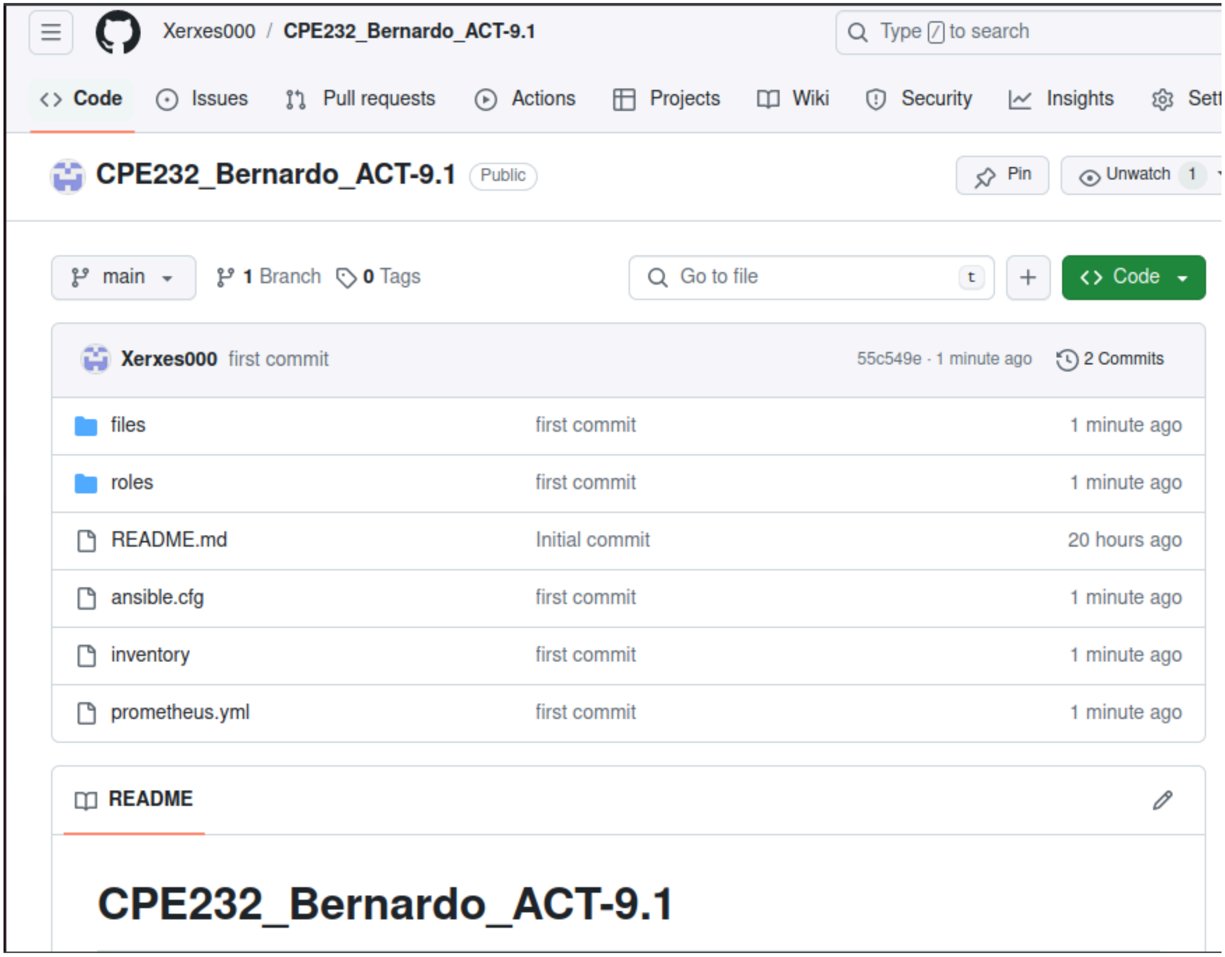
☐ Use local time ☐ Enable query history ☑ Enable autocomplete ☑ Enable highlighting ☑ Enable linter

No data queried yet

step nine: this is the output of the Ubuntu installation of prometheus.



```
christian@workstation:~/CPE232_Bernardo_ACT-9.1$ git status
On branch main
Your branch is up to date with 'origin/main'.

Untracked files:
  (use "git add <file>..." to include in what will be committed)
        ansible.cfg
        files/
        inventory
        prometheus.yml
        roles/

nothing added to commit but untracked files present (use "git add" to track)
christian@workstation:~/CPE232_Bernardo_ACT-9.1$ git add *
christian@workstation:~/CPE232_Bernardo_ACT-9.1$ git commit -m "first commit"
[main 55c549e] first commit
 6 files changed, 106 insertions(+)
 create mode 100644 ansible.cfg
 create mode 100644 files/prometheus.service
 create mode 100644 inventory
 create mode 100644 prometheus.yml
 create mode 100644 roles/CentOS/tasks/main.yml
 create mode 100644 roles/Ubuntu/tasks/main.yml
christian@workstation:~/CPE232_Bernardo_ACT-9.1$ git push
Enumerating objects: 12, done.
Counting objects: 100% (12/12), done.
Compressing objects: 100% (8/8), done.
Writing objects: 100% (11/11), 1.41 KiB | 68.00 KiB/s, done.
Total 11 (delta 0), reused 0 (delta 0), pack-reused 0
To github.com:Xerxes000/CPE232_Bernardo_ACT-9.1.git
   14096e5..55c549e  main -> main
christian@workstation:~/CPE232_Bernardo_ACT-9.1$
```



CPE232_Bernardo_ACT-9.1

Xerxes000 first commit 55c549e · 1 minute ago 2 Commits

files	first commit	1 minute ago
roles	first commit	1 minute ago
README.md	Initial commit	20 hours ago
ansible.cfg	first commit	1 minute ago
inventory	first commit	1 minute ago
prometheus.yml	first commit	1 minute ago

README

CPE232_Bernardo_ACT-9.1

step ten: it can be seen that I git committed the files to update the repository.

Reflections:

Answer the following:

1. What are the benefits of having a performance monitoring tool?
   - Tools for tracking performance have many benefits. Customers can monitor how resources are used, which facilitates quicker data gathering and anticipatory system reactions. These tools also aid in determining how well services or labor are performed. Users can save data for future issue diagnosis and keep an eye on system modifications. Along with process information, the main metrics shown are CPU and memory usage.

Conclusions:

- I was able to install and configure performance monitoring tools on Linux distributions like Ubuntu and CentOS by creating an Ansible playbook in this activity. Using what I knew from the past, I added roles to the playbook so that it could install Prometheus on CentOS and Ubuntu hosts. Configuring installation paths, managing service files, and downloading and installing Prometheus from a source are just a few of the tasks covered in the playbook. I used port 9090 and the IP address of the remote server to access Prometheus and confirm the installation. All things considered, this exercise complements the Nagios Installation exercise and offers valuable information for future playbook development.