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Course/Section: CPE232- CPE31S24	**Date Submitted: 10 / 25 / 2022**
Instructor: Engr. Jonathan V. Taylar	**Semester and SY: 1st Sem SY 2022-2023**

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.

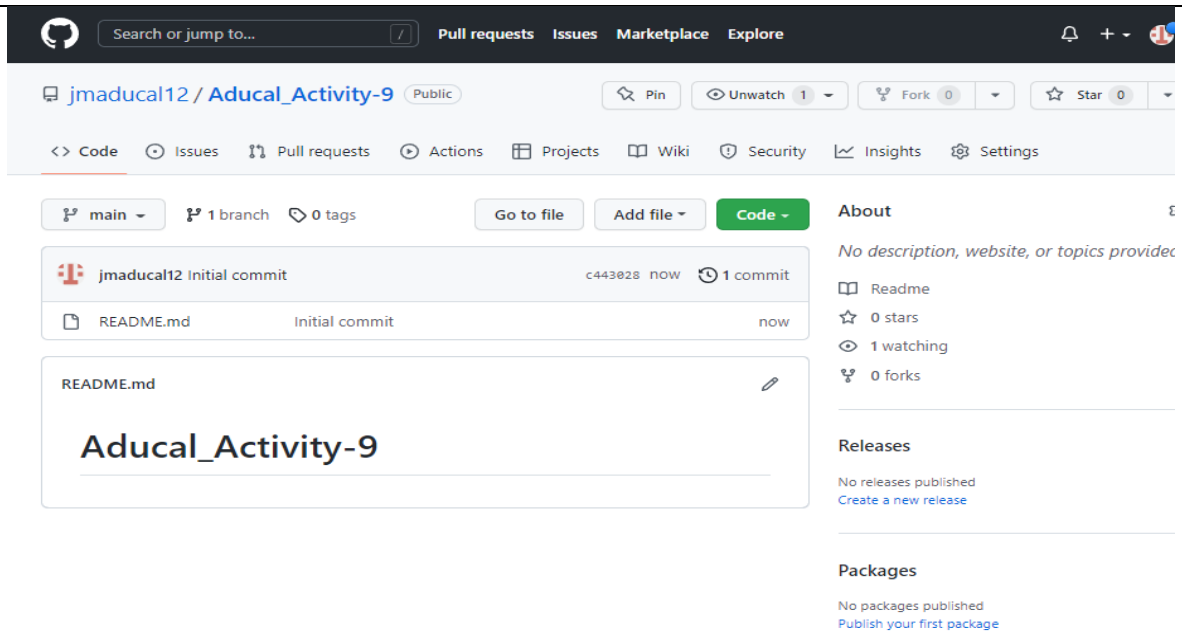
2. Describe how you did step 1. (Provide screenshots and explanations in your report. Make your report detailed such that it will look like a manual.)

3. Show an output of the installed Prometheus for both Ubuntu and CentOS.

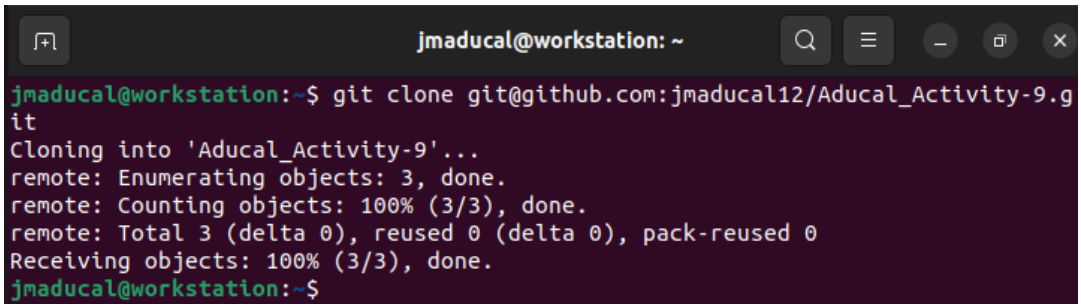
4. Make sure to create a new repository in GitHub for this activity.

4. Output (screenshots and explanations)

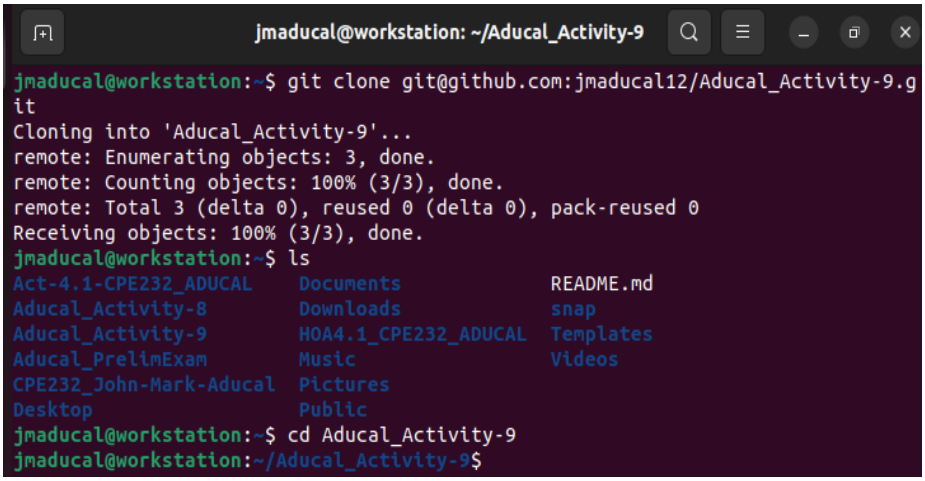
Task 1: Create a new Repository in GitHub



I created a new repository named Aducal_Activity-9

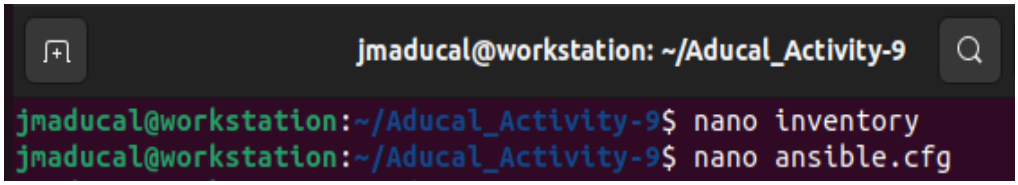


I used git clone command to copy the new repository I have created into my workstation.

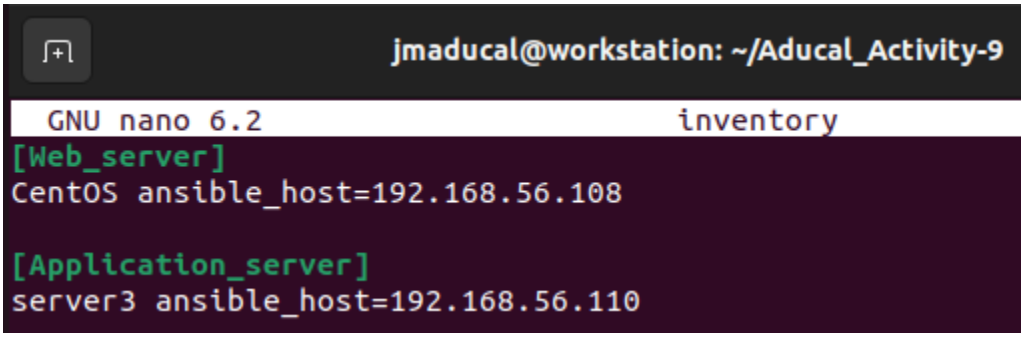


Now we can use the new repository we created earlier, using cd command to change directory into Aducal_Activity-9.

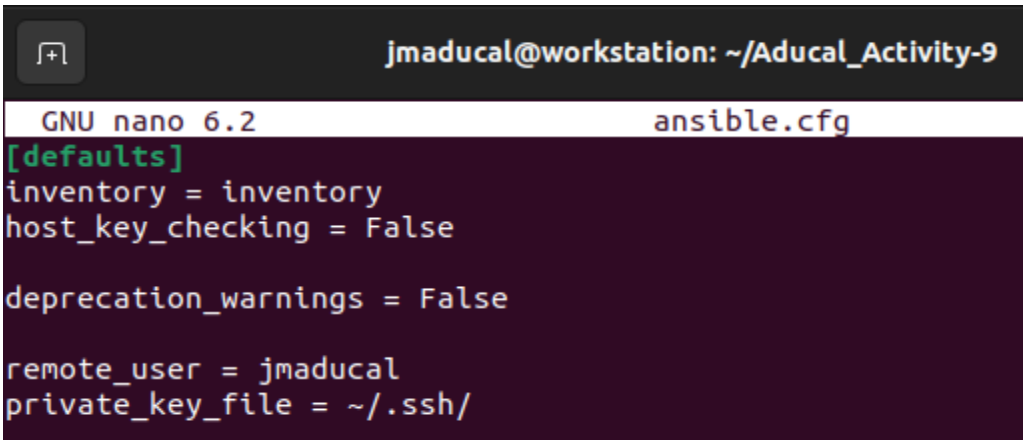
Task 2: Targeting Specific Nodes



I created new inventory and ansible.cfg file

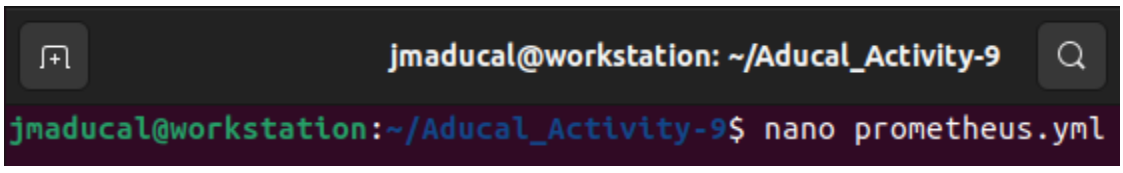


The new Inventory file contains the groups Web_server and Application_server together with the IP Addresses of Ubuntu server3 and CentOS.



The ansible.cfg file contains the ansible configurations need to administer the behavior of the task performed by control node used to manage the remote hosts or managed nodes.

Task 3: Create roles



I create a new file named prometheus.yml

jmaducal@workstation: ~/Aducal_Activity-9

GNU nano 6.2 prometheus.yml

```
---

- hosts: all
  become: true
  pre_tasks:

  - name: install updates (CentOS)
    tags: always
    dnf:
      update_only: yes
      update_cache: yes
    when: ansible_distribution == "CentOS"

  - name: install updates (Ubuntu)
    tags: always
    apt:
      upgrade: dist
      update_cache: yes
    when: ansible_distribution == "Ubuntu"
```

```
- hosts: Web_server
  become: true
  roles:
    - Web_server

- hosts: Application_server
  become: true
  roles:
    - Application_server
```

Inside of prometheus file, there are pre_tasks for installing updates for CentOS and Ubuntu and particular roles for Web_server and Application_server.

```
jmaducal@workstation: ~/Aducal_Activity-9/roles
jmaducal@workstation:~/Aducal_Activity-9$ mkdir roles
jmaducal@workstation:~/Aducal_Activity-9$ cd roles
jmaducal@workstation:~/Aducal_Activity-9/roles$ mkdir Web_server
jmaducal@workstation:~/Aducal_Activity-9/roles$ mkdir Application_server
jmaducal@workstation:~/Aducal_Activity-9/roles$ ls
Application_server  Web_server
jmaducal@workstation:~/Aducal_Activity-9/roles$ cd Web_server
jmaducal@workstation:~/Aducal_Activity-9/roles/Web_server$ mkdir tasks
jmaducal@workstation:~/Aducal_Activity-9/roles/Web_server$ cd tasks
jmaducal@workstation:~/Aducal_Activity-9/roles/Web_server/tasks$ nano main.yml
jmaducal@workstation:~/Aducal_Activity-9/roles/Web_server/tasks$ cd ..
jmaducal@workstation:~/Aducal_Activity-9/roles/Web_server$ cd ..
jmaducal@workstation:~/Aducal_Activity-9/roles$ cd Application_server
jmaducal@workstation:~/Aducal_Activity-9/roles/Application_server$ mkdir tasks
jmaducal@workstation:~/Aducal_Activity-9/roles/Application_server$ cd tasks
jmaducal@workstation:~/Aducal_Activity-9/roles/Application_server/tasks$ nano m
ain.yml
jmaducal@workstation:~/Aducal_Activity-9/roles/Application_server/tasks$ cd ..
jmaducal@workstation:~/Aducal_Activity-9/roles/Application_server$ cd ..
jmaducal@workstation:~/Aducal_Activity-9/roles$ tree
.
├── Application_server
│   └── tasks
│       └── main.yml
└── Web_server
    └── tasks
        └── main.yml

4 directories, 2 files
```

I create a new directory roles inside Aducal_Activity-9 directory. And then, Inside the roles directory, I created Web_server and Application_Server directory. Inside of both directories I create again new directory named tasks. Inside the directory tasks for both directories I created a file named main.yml

```
jmaducal@workstation: ~/Aducal_Activity-9/roles/Web_ser...
  GNU nano 6.2                                main.yml
- name: install prometheus in Ubuntu
  command: apt install prometheus -y
  when: ansible_distribution == "Ubuntu"

- name: install prometheus in CentOS
  command: snap install prometheus --classic
  when: ansible_distribution == "CentOS"
```

The contents of main.yml file inside of tasks of Web_server directory.

```
jmaducal@workstation: ~/Aducal_Activity-9/roles/Applicati...
  GNU nano 6.2                                  main.yml
- name: install prometheus in Ubuntu
  command: apt install prometheus -y
  when: ansible_distribution == "Ubuntu"

- name: install prometheus in CentOS
  command: snap install prometheus --classic
  when: ansible_distribution == "CentOS"
```

The contents of main.yml file inside of tasks of Application_server directory.

```
jmaducal@workstation: ~/Aducal_Activity-9
jmaducal@workstation:~/Aducal_Activity-9$ ansible-playbook --ask-become-pass pr
ometheus.yml
BECOME password:

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

TASK [Gathering Facts] *********************************************************
*
ok: [CentOS]
ok: [server3]

TASK [install updates (CentOS)] ************************************************
*
skipping: [server3]
ok: [CentOS]

TASK [install updates (Ubuntu)] ************************************************
*
skipping: [CentOS]
changed: [server3]
```

```
PLAY [Web_server] **************************************************************
*

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

TASK [Web_server : install prometheus in Ubuntu] *******************************
*
skipping: [CentOS]

TASK [Web_server : install prometheus in CentOS] *******************************
*
changed: [CentOS]
```

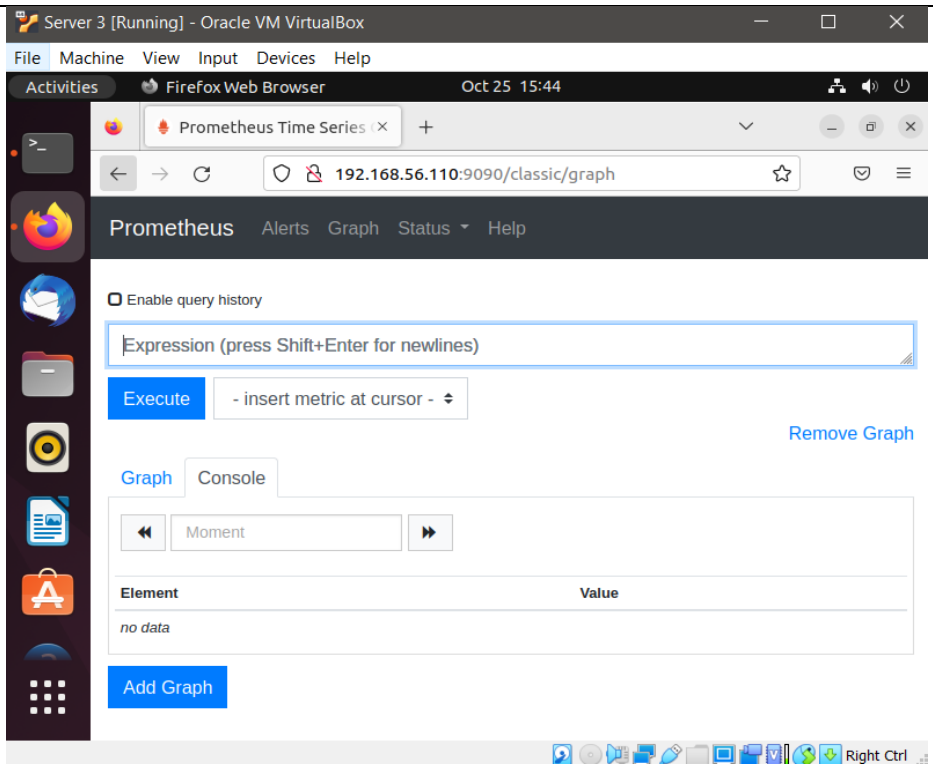
```
PLAY [Application_server] ******************************************************
*

TASK [Gathering Facts] *********************************************************
*
ok: [server3]

TASK [Application_server : install prometheus in Ubuntu] ***********************
*
changed: [server3]

TASK [Application_server : install prometheus in CentOS] ***********************
*
skipping: [server3]

PLAY RECAP *********************************************************************
*
CentOS                     : ok=4    changed=1    unreachable=0    failed=0
skipped=2    rescued=0    ignored=0
server3                    : ok=4    changed=2    unreachable=0    failed=0
skipped=2    rescued=0    ignored=0
```

After executing prometheus.yml, I have notice that roles (Web_server and Application_server) plays the tasks in the main.yml file of Installing the prometheus to remote servers.

After installing prometheus, next step is to check the remote servers (Ubuntu server3 and CentOS) if prometheus monitoring tool is successfully installed.

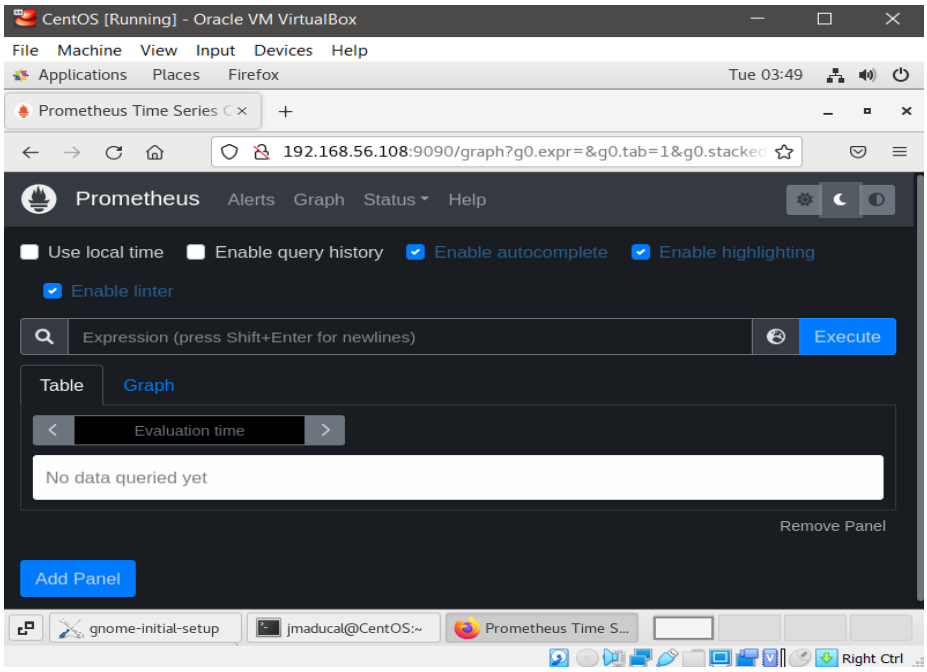
Server 3

Checking the prometheus version in Ubuntu server3.



I have successfully Installed Prometheus Monitoring tools to Server3.

CentOS:

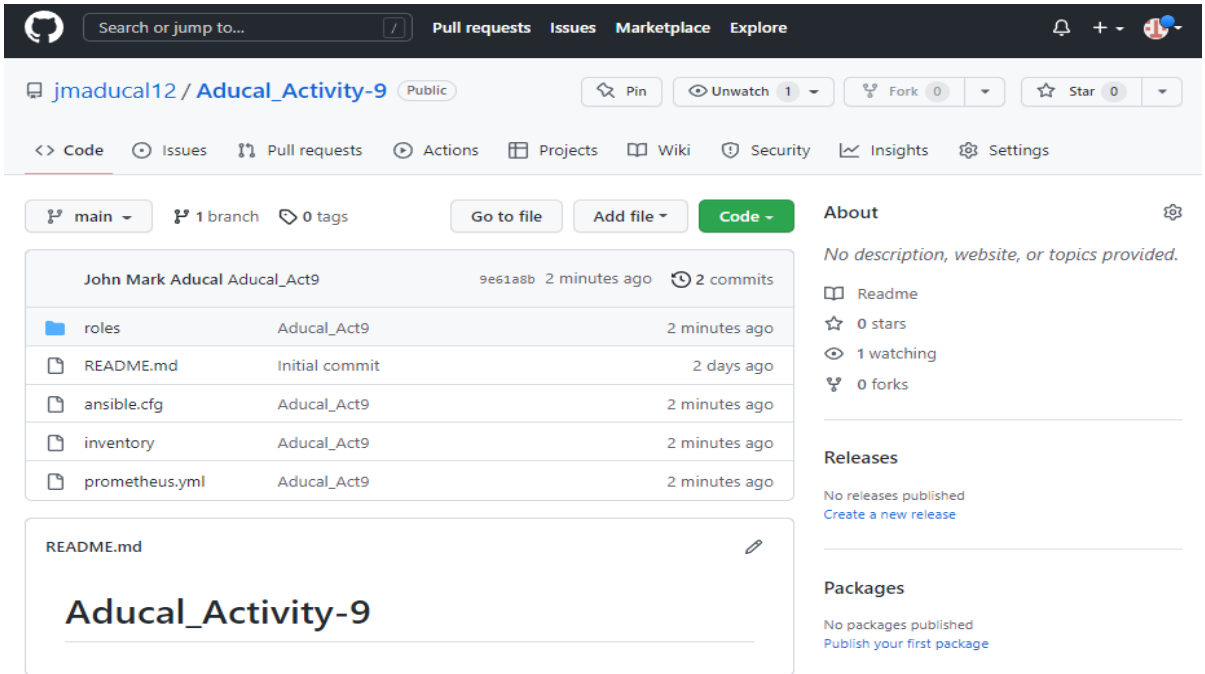


I have successfully Installed Prometheus Monitoring tools to CentOS.

Task 4: Upload and save changes from local repo into Github repo

```
jmaducal@workstation: ~/Aducal_Activity-9
jmaducal@workstation:~/Aducal_Activity-9$ 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
        inventory
        prometheus.yml
        roles/

nothing added to commit but untracked files present (use "git add" to track)
jmaducal@workstation:~/Aducal_Activity-9$ git add ansible.cfg
jmaducal@workstation:~/Aducal_Activity-9$ git add inventory
jmaducal@workstation:~/Aducal_Activity-9$ git add prometheus.yml
jmaducal@workstation:~/Aducal_Activity-9$ git add roles/
jmaducal@workstation:~/Aducal_Activity-9$ git commit -m "Aducal_Act9"
[main 9e61a8b] Aducal_Act9
 5 files changed, 57 insertions(+)
 create mode 100644 ansible.cfg
 create mode 100644 inventory
 create mode 100644 prometheus.yml
 create mode 100644 roles/Application_server/tasks/main.yml
 create mode 100644 roles/Web_server/tasks/main.yml
```

```
jmaducal@workstation:~/Aducal_Activity-9$ git push origin main
Enumerating objects: 13, done.
Counting objects: 100% (13/13), done.
Compressing objects: 100% (8/8), done.
Writing objects: 100% (12/12), 1.16 KiB | 397.00 KiB/s, done.
Total 12 (delta 1), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (1/1), done.
To github.com:jmaducal12/Aducal_Activity-9.git
   c443028..9e61a8b  main -> main
```



GitHub Repository Link:

https://github.com/jmaducal12/Aducal_Activity-9.git

Reflections:

Answer the following:

1. What are the benefits of having a performance monitoring tool? The advantages of having a performance monitoring tool like Prometheus which can be use to monitor a variety of infrastracture and application metrics like service metrics, host metrics etc. Prometheus collects and stores its metrics as time series of data or metrics information is stored with the timestamp at which it was recorded. Prometheus performance monitoring tool designed for reliability, to be the system you go during an outage to allow you to quickly diagnose problems.

Conclusions:

From this activity, I have learned how to install, configure and manage performance monitoring tools using ansible. I able to install Prometheus in both Ubuntu and CentOS server using the localhost or workstation with ansible and applying my knowledge from the past activities such as installing nagios available monitoring tool in remote servers, creating a roles and targeting specific nodes. I conclude that this activity expand my knowledge and made me realize the importance of having a performance monitoring tool such as prometheus to observed the consumption of the workload, log issues, trace and alert DevsecOps if there is some issue in terms of performance system in cloud infrastracture.

HONOR PLEDGE: “I affirm that I will not give or receive any unauthorized help on this activity, and that all work will be my own.”

John Mark Aducal