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<b>Activity 9: Install, Configure, and Manage Performance Monitoring tools</b>	
<b>1. Objectives</b>	
Create and design a workflow that installs, configure and manage enterprise performance tools using Ansible as an Infrastructure as Code (IaC) tool.	
<b>2. Discussion</b>	
<p>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.</p> <p><b>Prometheus</b></p> <p>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: <a href="#">Prometheus - Monitoring system &amp; time series database</a></p> <p><b>Cacti</b></p> <p>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: <a href="#">Cacti® - The Complete RRDTool-based Graphing Solution</a></p>	
<b>3. Tasks</b>	
<ol style="list-style-type: none"> <li>1. Create a playbook that installs Prometheus in both Ubuntu and CentOS. Apply the concept of creating roles.</li> <li>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.)</li> <li>3. Show an output of the installed Prometheus for both Ubuntu and CentOS.</li> <li>4. Make sure to create a new repository in GitHub for this activity.</li> </ol>	
<b>4. Output</b> (screenshots and explanations)	
The first step is to create a new repository for Hands on Activity 9 and then clone this into the workstation	

 **HOA9\_Repani** Public

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**Set up GitHub Copilot**  
Use GitHub's AI pair programmer to autocomplete suggestions as you code.  
[Get started with GitHub Copilot](#)

**Add collaborators to this repository**  
Search for people using their GitHub username or email address.  
[Invite collaborators](#)

**Quick setup — if you've done this kind of thing before**  
or HTTPS SSH    
Get started by [creating a new file](#) or [uploading an existing file](#). We recommend every repository include a [README](#), [LICENSE](#), and [.gitignore](#).

```
jello@workstation:~$ git clone git@github.com:JelzLow/HOA9_Repani.git
Cloning into 'HOA9_Repani'...
warning: You appear to have cloned an empty repository.
```

We then copy the ansible.cfg and inventory files from the previous activities to the new repository

```
jello@workstation:~/HOA8_Repani$ ls\
> \
> /
bash: ls/: No such file or directory
jello@workstation:~/HOA8_Repani$ ls
ansible.cfg  inventory  main.yml  nagios_test.yml  nagios.yml  roles
jello@workstation:~/HOA8_Repani$ cp ansible.cfg ~/HOA9_Repani
jello@workstation:~/HOA8_Repani$ cp inventory ~/HOA9_Repani
jello@workstation:~/HOA8_Repani$
```

We edit the inventory file using sudo nano and remove the interpreter python part since it is not needed in this activity.

jello@workstation: ~/HOA9\_Repani

File Edit View Search Terminal Help

GNU nano 2.9.3inventoryModified

[ubuntu]
192.168.56.102

[centos]
192.168.56.104

The roles directory is then created with the similar structure to the previous activities

```
jello@workstation:~/HOA9_Repani$ tree
```

```
.
├── ansible.cfg
├── inventory
├── roles
│   ├── centos
│   │   └── tasks
│   │       └── main.yml
│   └── ubuntu
│       └── tasks
│           └── main.yml
```

```
5 directories, 4 files
```

The prometheus.yml file is created. This is the command that will update the systems and call on the main.yml files in their respective roles.

```
jello@workstation: ~/HOA9_Repani
File Edit View Search Terminal Help
GNU nano 2.9.3 prometheus.yml Modified

- hosts: all
  become: true
  pre_tasks:
    - name: install updates (CentOS)
      dnf:
        update_only: yes
        update_cache: yes
      when: ansible_distribution == "Centos"
    - name: install updates (Ubuntu)
      apt:
        upgrade: dist
        update_cache: yes
      when: ansible_distribution == "Ubuntu"
- hosts: ubuntu
  become: true
  roles:
    - ubuntu

- hosts: centos
  become: true
  roles:
    - centos
```

Next we will have to edit the main.yml in the centos tasks. The tasks contains the installation of Prometheus, configuring of prometheus, changing the ownership of the files, configuring the service file, reloading the system service and then lastly running the prometheus.

```
jello@workstation: ~/HOA9_Repani
File Edit View Search Terminal Help
GNU nano 2.9.3 ./roles/centos/tasks/main.yml Modified

- name: Prometheus PATH directory
  file:
    path: ~/prometheus
    state: directory

- name: Creating directory for Prometheus files
  file:
    path:
      - /etc/prometheus
      - /var/lib/prometheus
    mode: 0777
    state: directory

- name: Install Prometheus (CentOS)
  unarchive:
    src: https://github.com/prometheus/prometheus/releases/download/v2.8.1/p$
    dest: ~/prometheus
    remote_src: yes
    mode: 0777
    owner: root
    group: root

- name: Install Prometheus (CentOS)
  unarchive:
    src: https://github.com/prometheus/prometheus/releases/download/v2.8.1/p$
    dest: ~/prometheus
    remote_src: yes
    mode: 0777
    owner: root
    group: root

- name: Configuring Prometheus
  shell: |
    cd ~/prometheus/prometheus*
    cp -r . /usr/local/bin/prometheus

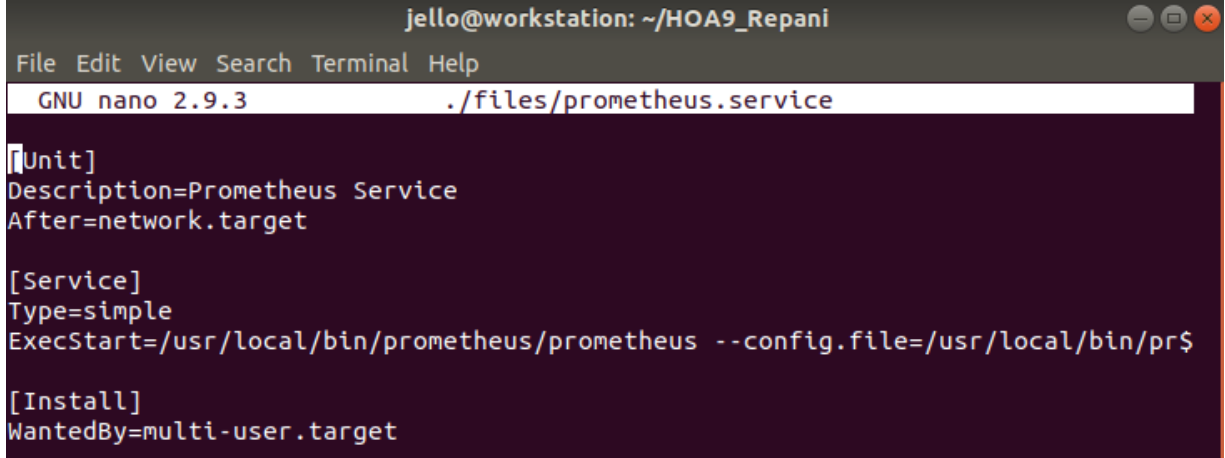
- name: Prometheus config file duplicate
  copy:
    src: prometheus.service
    dest: /etc/systemd/system
    mode: 7777
    owner: root
    group: root
```

```
- name: Prometheus Start/Enable Check
  service:
    name: prometheus.service
    state: restarted
    enabled: true

- name: httpd Start/Enable Check
  service:
    name: httpd
    state: restarted
    enabled: true
```

In order to make the main.yml playbook for the CentOS work, we will need a files directory in the repository containing a file named prometheus.service. This file contains commands which would enable the playbook to callback on the prometheus service in order to function

```
└─ files
   └─ prometheus.service
```



```
jello@workstation: ~/HOA9_Repani
File Edit View Search Terminal Help
GNU nano 2.9.3 ./files/prometheus.service

[Unit]
Description=Prometheus Service
After=network.target

[Service]
Type=simple
ExecStart=/usr/local/bin/prometheus/prometheus --config.file=/usr/local/bin/pr$

[Install]
WantedBy=multi-user.target
```

The ubuntu main.yml file on the other hand is way simpler compared to the centos one since it only needs a few syntax in order to run. It will install the prometheus and

start check the prometheus service before finally running the service.

```
jello@workstation: ~/HOA9_Repani
File Edit View Search Terminal Help
GNU nano 2.9.3 ./roles/ubuntu/tasks/main.yml Modified

---
- name: Install Prometheus (Ubuntu)
  apt:
    name: prometheus
    state: latest

- name: Prometheus Start/Enable Check service
  service:
    name: prometheus
    state: restarted
    enabled: true

- name: Apache Start/Enable Check
  service:
    name: prometheus
    state: restarted
    enabled: true
```

Running the playbook prometheus.yml

```
jello@workstation:~/HOA9_Repani$ ansible-playbook --ask-become-pass prometheus.
yml
BECOME password:

PLAY [all] *****
*

TASK [Gathering Facts] *****
*
ok: [192.168.56.102]
ok: [192.168.56.104]

TASK [install updates (CentOS)] *****
*
skipping: [192.168.56.102]
skipping: [192.168.56.104]

TASK [install updates (Ubuntu)] *****
*
skipping: [192.168.56.104]
ok: [192.168.56.102]

PLAY [ubuntu] *****
*

TASK [Gathering Facts] *****
*
ok: [192.168.56.102]
```

```
TASK [ubuntu : Install Prometheus (Ubuntu)] *****
*
ok: [192.168.56.102]

TASK [ubuntu : Prometheus Start/Enable Check service] *****
*
changed: [192.168.56.102]

TASK [ubuntu : Apache Start/Enable Check] *****
*
changed: [192.168.56.102]

PLAY [centos] *****
*

TASK [Gathering Facts] *****
*
ok: [192.168.56.104]

TASK [centos : Prometheus PATH directory] *****
*
ok: [192.168.56.104]

TASK [centos : Creating directory for Prometheus files] *****
*
ok: [192.168.56.104]
```

```
TASK [centos : Install Prometheus (CentOS)] *****
*
ok: [192.168.56.104]

TASK [centos : Configuring Prometheus] *****
*
changed: [192.168.56.104]

TASK [centos : Prometheus config file duplicate] *****
*
changed: [192.168.56.104]

TASK [centos : Prometheus Start/Enable Check] *****
*
changed: [192.168.56.104]

TASK [centos : httpd Start/Enable Check] *****
*
changed: [192.168.56.104]

PLAY RECAP *****
*
192.168.56.102      : ok=6    changed=2    unreachable=0    failed=0
skipped=1    rescued=0    ignored=0
192.168.56.104      : ok=9    changed=4    unreachable=0    failed=0
skipped=2    rescued=0    ignored=0
```

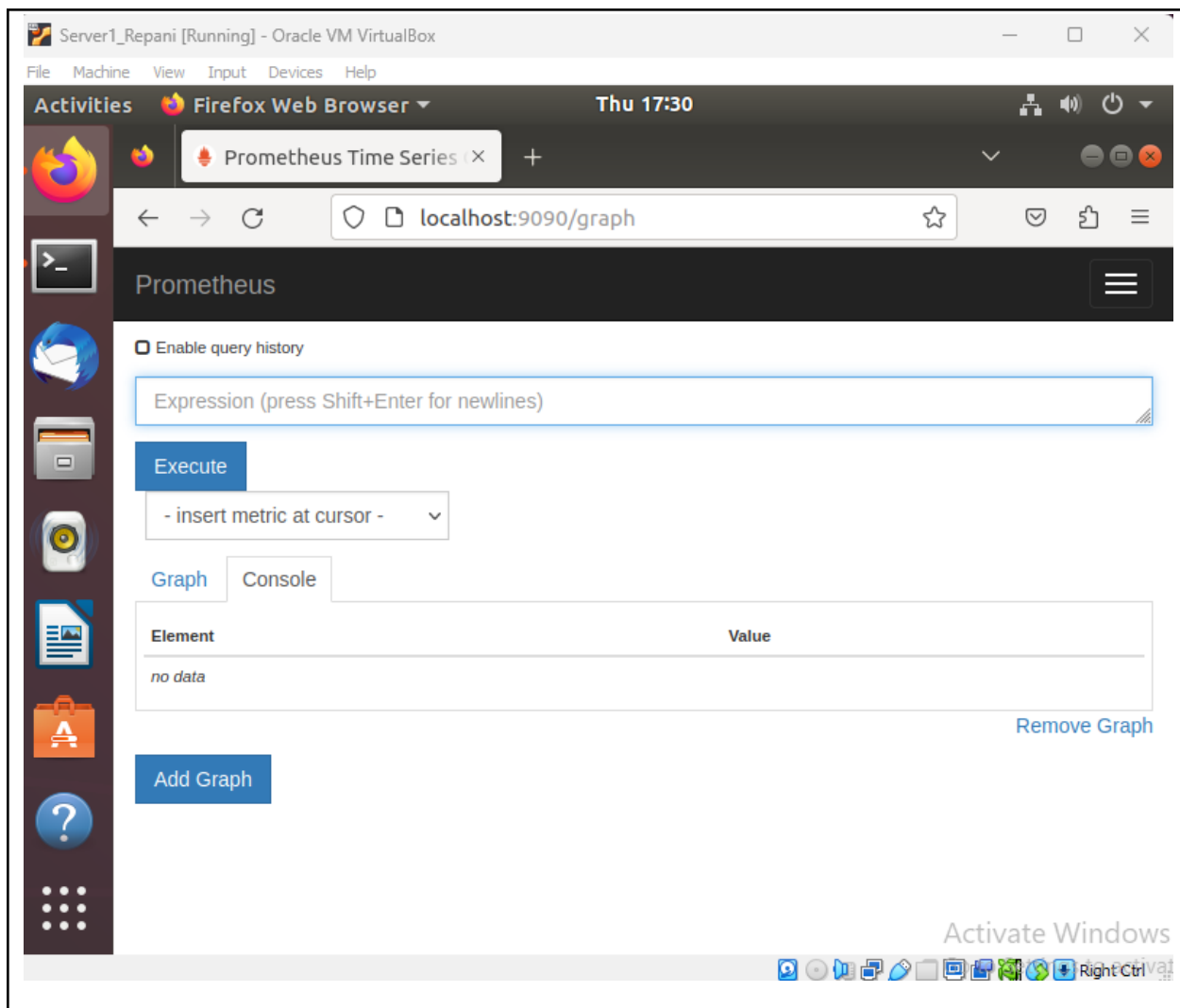
## Proof of Prometheus installed

```
jello@server1:~$ sudo systemctl status prometheus
[sudo] password for jello:
● prometheus.service - Monitoring system and time series database
   Loaded: loaded (/lib/systemd/system/prometheus.service; enabled; vendor preset: enabled)
   Active: active (running) since Thu 2023-10-19 16:52:39 PST; 14min ago
     Docs: https://prometheus.io/docs/introduction/overview/
   Main PID: 7853 (prometheus)
    Tasks: 8 (limit: 4656)
   CGroup: /system.slice/prometheus.service
           └─7853 /usr/bin/prometheus

Oct 19 16:52:39 server1 prometheus[7853]: level=info ts=2023-10-19T08:52:39.488
Oct 19 16:52:39 server1 prometheus[7853]: level=info ts=2023-10-19T08:52:39.488
Oct 19 16:52:39 server1 prometheus[7853]: level=info ts=2023-10-19T08:52:39.488
Oct 19 16:52:39 server1 prometheus[7853]: level=info ts=2023-10-19T08:52:39.489
Oct 19 16:52:39 server1 prometheus[7853]: level=info ts=2023-10-19T08:52:39.496
Oct 19 16:52:39 server1 prometheus[7853]: level=info ts=2023-10-19T08:52:39.496
Oct 19 16:52:39 server1 prometheus[7853]: level=info ts=2023-10-19T08:52:39.536
Oct 19 16:52:39 server1 prometheus[7853]: level=info ts=2023-10-19T08:52:39.536
Oct 19 16:52:39 server1 prometheus[7853]: level=info ts=2023-10-19T08:52:39.536
Oct 19 16:52:39 server1 prometheus[7853]: level=info ts=2023-10-19T08:52:39.536

[1]+  Stopped                  sudo systemctl status prometheus
```





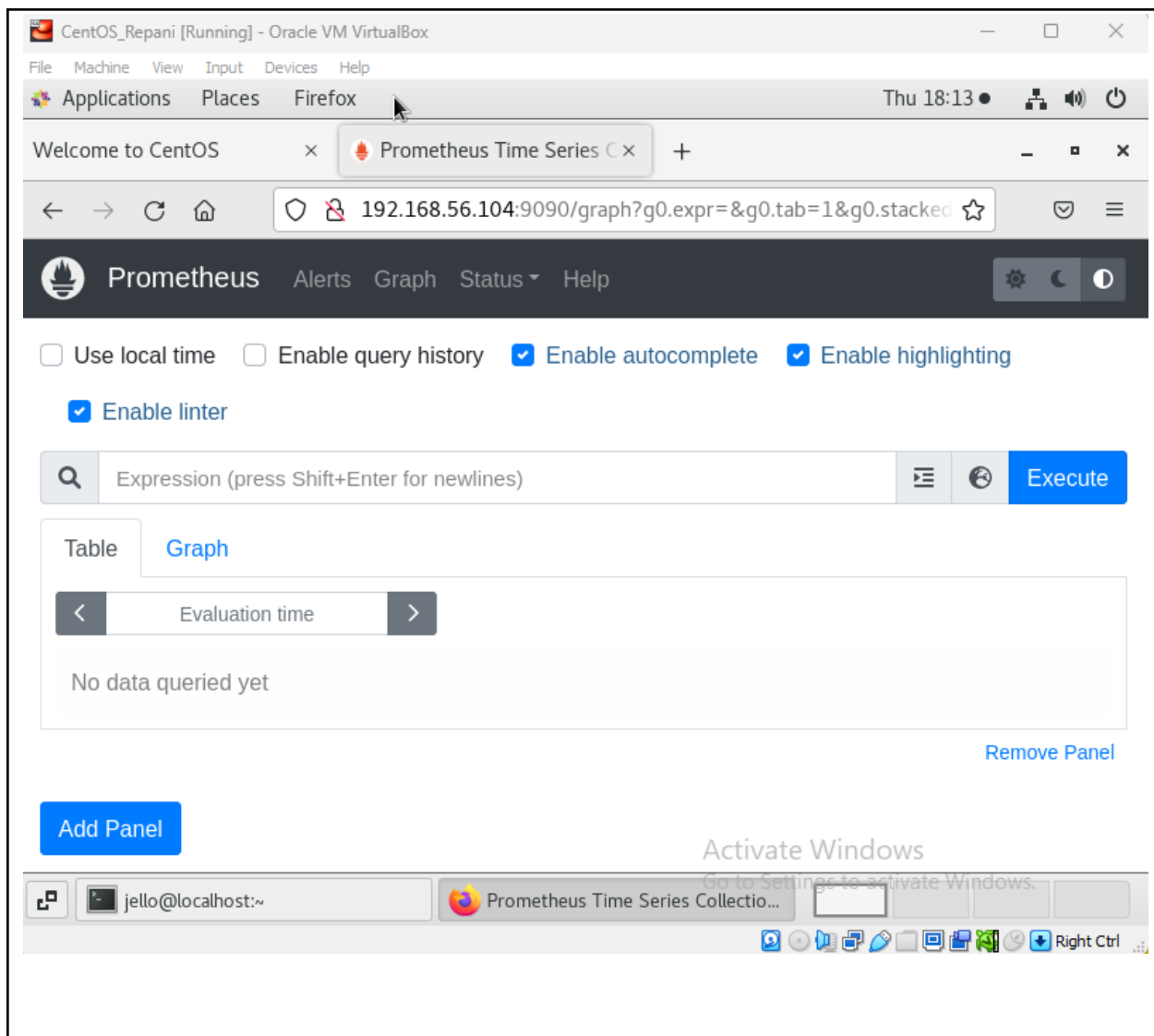
```
CentOS_Repani [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Applications Places Terminal Thu 18:12 ● [network icon] [volume icon] [power icon]

jello@localhost:~
File Edit View Search Terminal Help

Hint: Some lines were ellipsized, use -l to show in full.
[jello@localhost ~]$ sudo systemctl daemon-reload
[jello@localhost ~]$ sudo systemctl start prometheus
[jello@localhost ~]$ sudo systemctl status prometheus
● prometheus.service - Prometheus Service
   Loaded: loaded (/etc/systemd/system/prometheus.service; enabled; vendor preset: disabled)
   Active: active (running) since Thu 2023-10-19 18:12:04 PST; 4s ago
   Main PID: 6910 (prometheus)
     Tasks: 7
    CGroup: /system.slice/prometheus.service
            └─6910 /usr/local/bin/prometheus/prometheus --config.file=/usr/local/bin/...

Oct 19 18:12:04 localhost.localdomain prometheus[6910]: ts=2023-10-19T10:12:04.817Z...6µs
Oct 19 18:12:04 localhost.localdomain prometheus[6910]: ts=2023-10-19T10:12:04.817Z..."
Oct 19 18:12:04 localhost.localdomain prometheus[6910]: ts=2023-10-19T10:12:04.817Z...0
Oct 19 18:12:04 localhost.localdomain prometheus[6910]: ts=2023-10-19T10:12:04.818Z...2µs
Oct 19 18:12:04 localhost.localdomain prometheus[6910]: ts=2023-10-19T10:12:04.819Z...C
Oct 19 18:12:04 localhost.localdomain prometheus[6910]: ts=2023-10-19T10:12:04.819Z..."
Oct 19 18:12:04 localhost.localdomain prometheus[6910]: ts=2023-10-19T10:12:04.819Z...l
Oct 19 18:12:04 localhost.localdomain prometheus[6910]: ts=2023-10-19T10:12:04.820Z...µs
Oct 19 18:12:04 localhost.localdomain prometheus[6910]: ts=2023-10-19T10:12:04.820Z..."
Oct 19 18:12:04 localhost.localdomain prometheus[6910]: ts=2023-10-19T10:12:04.820Z..."
Hint: Some lines were ellipsized, use -l to show in full.
[jello@localhost ~]$
```

Activate Windows  
Go to Settings to activate Windows.



## Git synchronization

```
jello@workstation:~/HOA9_Repani$ git add *
jello@workstation:~/HOA9_Repani$ git commit -m "tyl"
[master (root-commit) 77c1e02] tyl
6 files changed, 116 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
jello@workstation:~/HOA9_Repani$ git push origin
Counting objects: 14, done.
Delta compression using up to 2 threads.
Compressing objects: 100% (9/9), done.
Writing objects: 100% (14/14), 1.67 KiB | 1.67 MiB/s, done.
Total 14 (delta 0), reused 0 (delta 0)
To github.com:JelzLow/HOA9_Repani.git
* [new branch]      master -> master
jello@workstation:~/HOA9_Repani$
```

HOA9\_Repani Public

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master 1 branch 0 tags Go to file Add file <> Code

JelzLow tyl 77c1e02 now 1 commit

File	Commit	Time
files	tyl	now
roles	tyl	now
ansible.cfg	tyl	now
inventory	tyl	now
prometheus.yml	tyl	now

Help people interested in this repository understand your project by adding a README. Add a README

About Hands on Activity 9 - CPE232

Activity 0 stars 1 watching 0 forks

Releases No releases published Create a new release

Packages

[https://github.com/JelzLow/HOA9\\_Repani](https://github.com/JelzLow/HOA9_Repani)

## Reflections:

Answer the following:

1. What are the benefits of having a performance monitoring tool?
  - The benefit of having a performance monitoring tool is that we are able to accurately assess how the machine works by looking at its performance. Through this we can determine the condition of the machine whether its performance is within the expected level, making it efficient, or if it is working slower than it should be.

**Conclusions:**

Hands on activity 9 is about the installation, configuration, and management of performance monitoring tools in our Ubuntu and CentOS servers. The specific performance monitoring tool installed is Prometheus. This is done with the use of an ansible playbook implementing the roles folder for efficient and clean use of codes for the different roles, in this case Ubuntu and CentOS servers. This activity is very challenging because there are a lot of errors encountered when installing Prometheus on CentOS while it went smoothly for Ubuntu.

**Honor Pledge:**

*"I affirm that I have not given or received any unauthorized help on this assignment, and that this work is my own."*