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Course/Section: CPE31S5	Date Submitted: 10/24/23
Instructor: Engr. Roman Richard	Semester and SY: 2023-2024
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	
<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>Prometheus</p> <p>Prometheus fundamentally stores all data as time series: 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</p> <p>Cacti</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: Cacti® - The Complete RRDTool-based Graphing Solution</p>	
3. Tasks	
<ol style="list-style-type: none"> 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)	

Step 1: Making a repository.

Create a new repository

A repository contains all project files, including the revision history. Already have a project repository elsewhere?
[Import a repository.](#)

Required fields are marked with an asterisk (*).

Owner * qybTor / Repository name * CPE232_HOA9

✔ Your new repository will be created as CPE232_HOA9. The repository name can only contain ASCII letters, digits, and hyphens.

Great repository names are short and memorable. Need inspiration? [How to choose a name](#)

Description (optional)

☒ Public
Anyone on the internet can see this repository. You choose who can commit to it.

☐ Private
You choose who can see and commit to this repository.

Initialize this repository with:

☐ Add a README file
This is where you can write a long description for your project. [Learn more about READMEs](#)

Add .gitignore

.gitignore template: None

Choose which files not to track from a list of templates. [Learn more about ignoring files.](#)

DirectX Diagnostic Tool

System | Display | Sound 1 | Sound 2 | Sound 3 | Sound 4 | Sound 5 | Input

This tool reports detailed information about the DirectX components and drivers installed on your system.

If you know what area is causing the problem, click the appropriate tab above. Otherwise, you can use the "Next Page" button below to visit each page in sequence.

System Information

Current Date/Time: Tuesday, 24 October 2023, 7:31:25 pm
Computer Name: DESKTOP-8LSHV3C
Operating System: Windows 10 Pro 64-bit (10.0, Build 19045)
Language: English (Regional Setting: English)
System Manufacturer: Gigabyte Technology Co., Ltd.
System Model: B450M DS3H
BIOS: F60
Processor: AMD Ryzen 5 3500 6-Core Processor (6 CPUs), ~3.6GHz
Memory: 16384MB RAM
Page file: 16464MB used, 8055MB available
DirectX Version: DirectX 12

☒ Check for WHQL digital signatures

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Help Next Page Save All Information... Exit

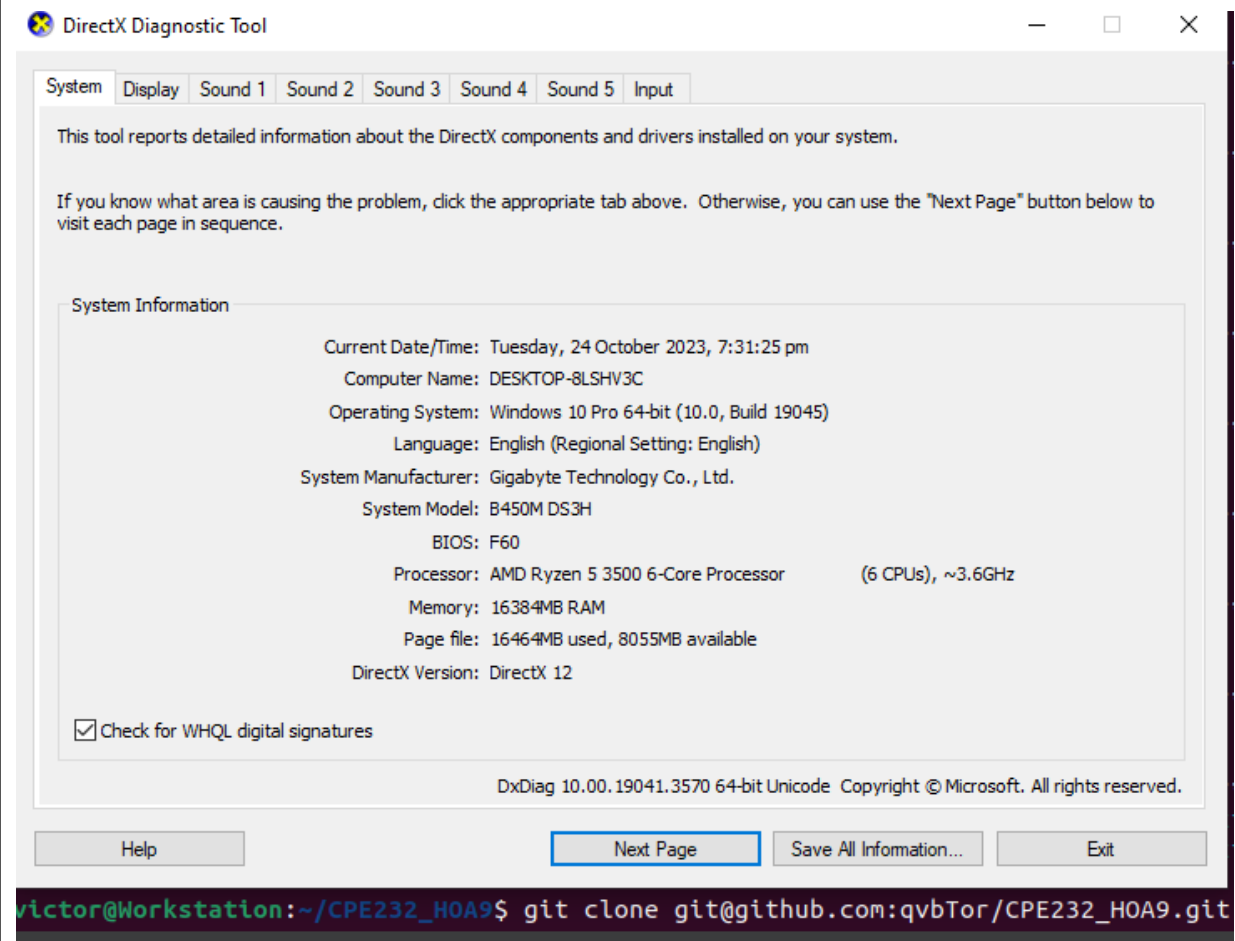
CPE232_HOA9 Public Pin Unwatch 1 Fork 0 Star 0

main 1 branch 0 tags Go to file Add file Code About

qybTor Update main.yml 103c821 35 minutes ago 26 commits

No description, website, or topics provided.

Step 2: git cloning



The image shows a Windows window titled "DirectX Diagnostic Tool". It has a tabbed interface with tabs for "System", "Display", "Sound 1", "Sound 2", "Sound 3", "Sound 4", "Sound 5", and "Input". The "System" tab is selected. The window contains the following text:

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Buttons at the bottom: Help, Next Page (highlighted with a blue border), Save All Information..., Exit.

Below the window, a terminal window shows the command: `victor@Workstation:~/CPE232_H0A9$ git clone git@github.com:qvbTor/CPE232_H0A9.git`

Step 3: Setting up for playbook such as ansible.cfg and inventory then creating galaxy as well.

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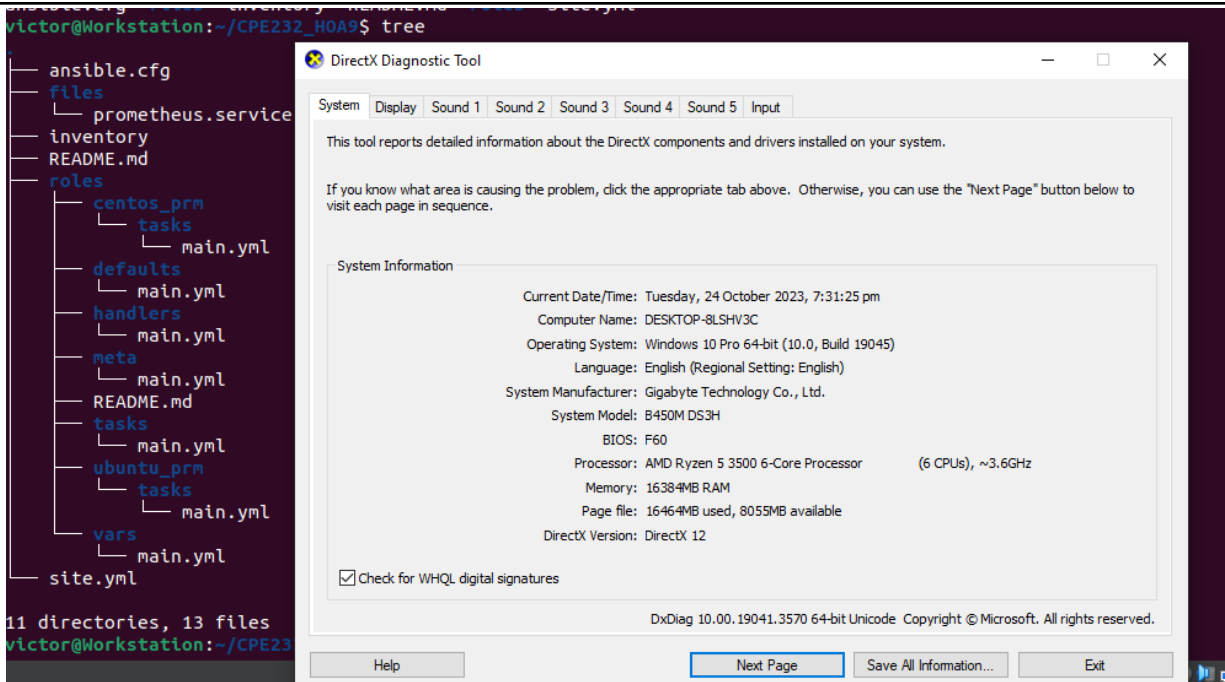
☒ Check for WHQL digital signatures

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Buttons at the bottom: Help, Next Page, Save All Information..., Exit.

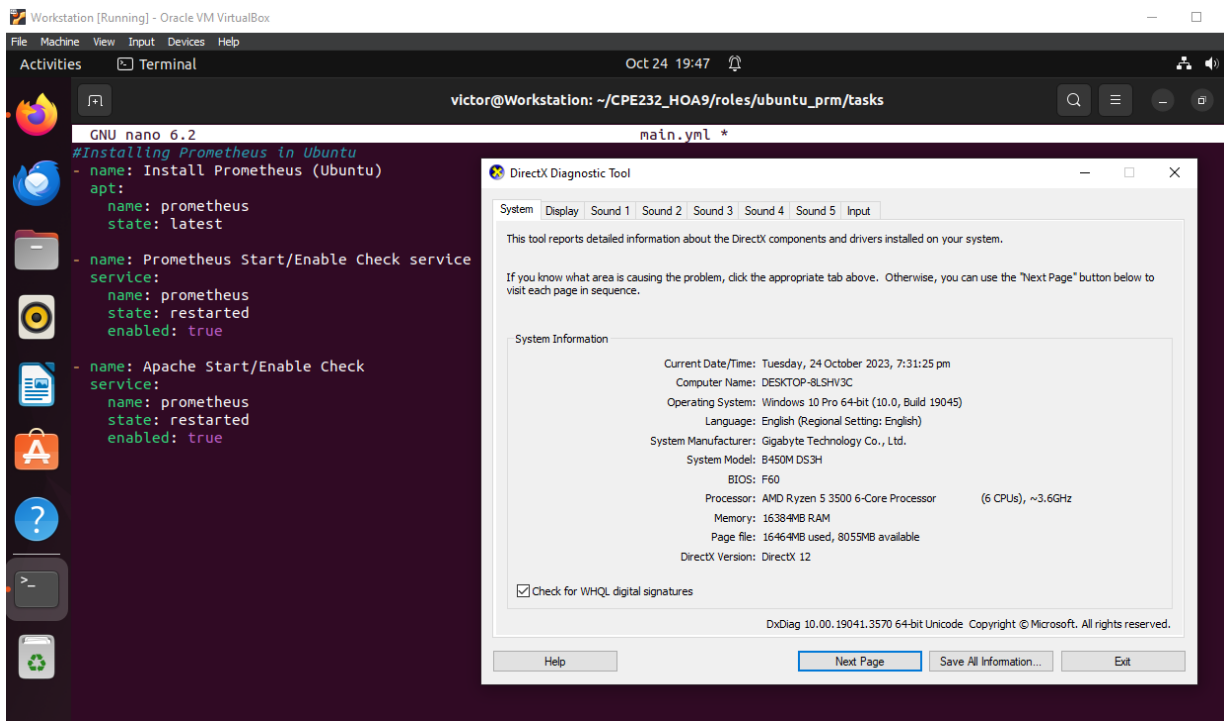
Below the window, a terminal window shows the command:

```
victor@Workstation:~/CPE232_H0A9$ ansible-galaxy init roles --offline
```



Step 4: Creating main.yml, and adding installation command of prometheus both ubuntu and centos.

Ubuntu:



Centos:

Workstation [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Oct 24 19:50

victor@Workstation: ~/CPE232_HOA9/roles/centos_prm/tasks

Firefox Web Browser

GNU nano 6.2

Installing Prometheus in CentOS

```
- 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
    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
```

main.yml

DirectX Diagnostic Tool

System Display Sound 1 Sound 2 Sound 3 Sound 4 Sound 5 Input

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System Information

Current Date/Time: Tuesday, 24 October 2023, 7:31:25 pm
Computer Name: DESKTOP-BLSHV3C
Operating System: Windows 10 Pro 64-bit (10.0, Build 19045)
Language: English (Regional Setting: English)
System Manufacturer: Gigabyte Technology Co., Ltd.
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Help Next Page Save All Information... Exit

Read 49 lines (Converted from DOS format)

Help Write Out Where Is Cut Execute Location M-U Undo M-A Set Mark
Exit Read File Replace Paste Justify Go To Line M-E Redo M-G Copy

Right Ctrl

Setup 6: Calling the main.yml under centos_prm and ubuntu_prm directories using roles.

The screenshot shows a Workstation [Running] - Oracle VM VirtualBox interface. The terminal window displays the following Ansible playbooks:

```
GNU nano 6.2 site.yml
- hosts: all
  become: true
  pre_tasks:

- name: install updates (CentOS)
  yum:
    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_prm

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

The DirectX Diagnostic Tool window is open, showing system information:

System Information

- Current Date/Time: Tuesday, 24 October 2023, 8:00:03 pm
- Computer Name: DESKTOP-8LSHV3C
- Operating System: Windows 10 Pro 64-bit (10.0, Build 19045)
- Language: English (Regional Setting: English)
- System Manufacturer: Gigabyte Technology Co., Ltd.
- System Model: B450M DS3H
- BIOS: F60
- Processor: AMD Ryzen 5 3500 6-Core Processor (6 CPUs), ~3.6GHz
- Memory: 16384MB RAM
- Page file: 16483MB used, 8035MB available
- DirectX Version: DirectX 12

At the bottom of the DirectX Diagnostic Tool window, there is a checkbox labeled "Check for WHQL digital signatures" which is checked. Below the checkbox, the text "DxDiag 10.00.19041.3570 64-bit Unicode Copyright © Microsoft. All rights reserved." is displayed. At the bottom of the window, there are buttons for "Help", "Next Page", "Save All Information...", and "Exit".

Step 7: Run the playbook.

The terminal window shows the execution of an Ansible playbook on a CentOS system. The output indicates that the playbook is skipping hosts 192.168.56.110 and 192.168.56.112. The DirectX Diagnostic Tool window is open, displaying system information for a Windows 10 Pro 64-bit system. The tool reports the following details:

- Current Date/Time: Tuesday, 24 October 2023, 8:00:03 pm
- Computer Name: DESKTOP-8LSHV3C
- Operating System: Windows 10 Pro 64-bit (10.0, Build 19045)
- Language: English (Regional Setting: English)
- System Manufacturer: Gigabyte Technology Co., Ltd.
- System Model: B450M DS3H
- BIOS: F60
- Processor: AMD Ryzen 5 3500 6-Core Processor (6 CPUs), ~3.6GHz
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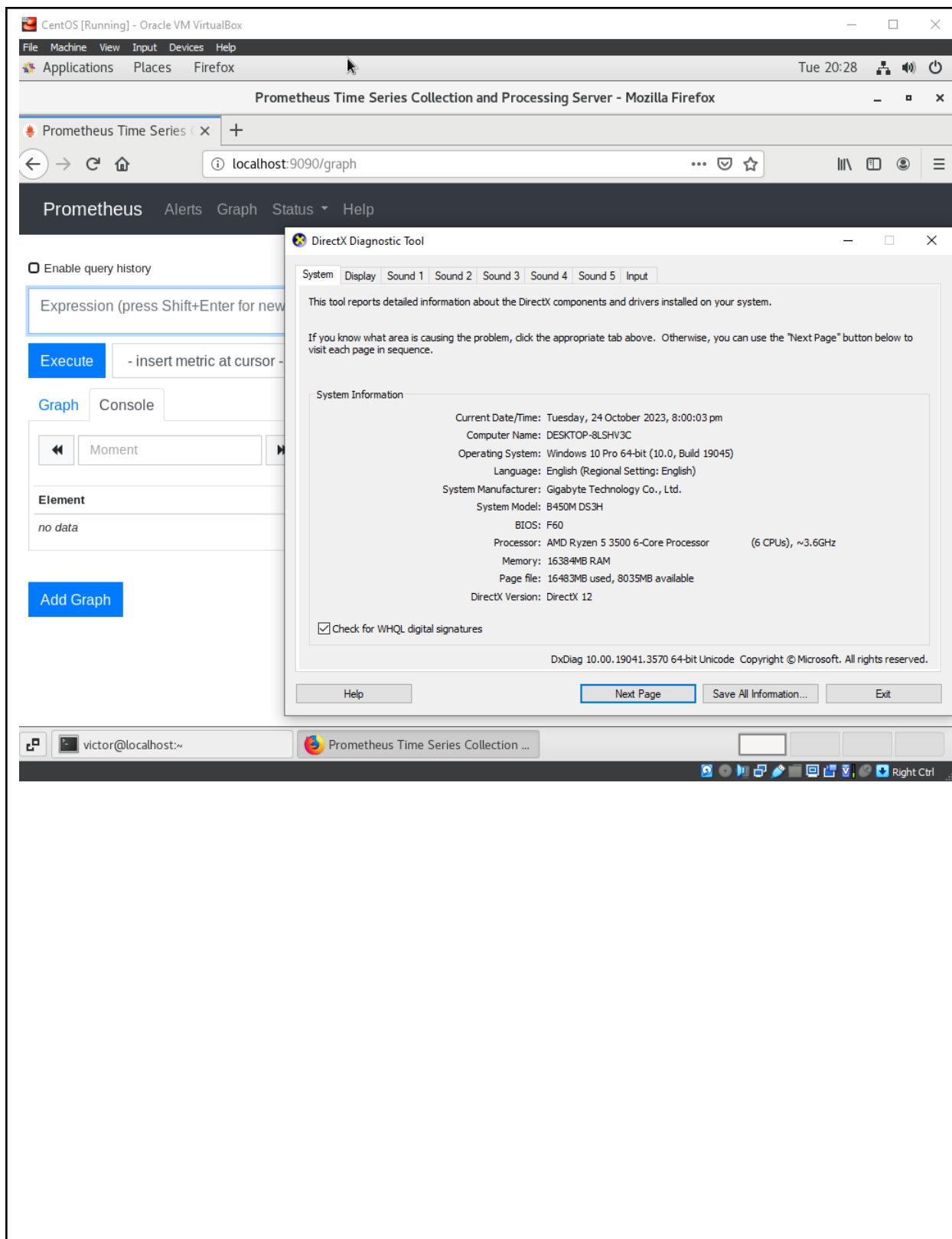
The terminal output also shows the results of the playbook execution, indicating that the playbook was successful on all hosts.

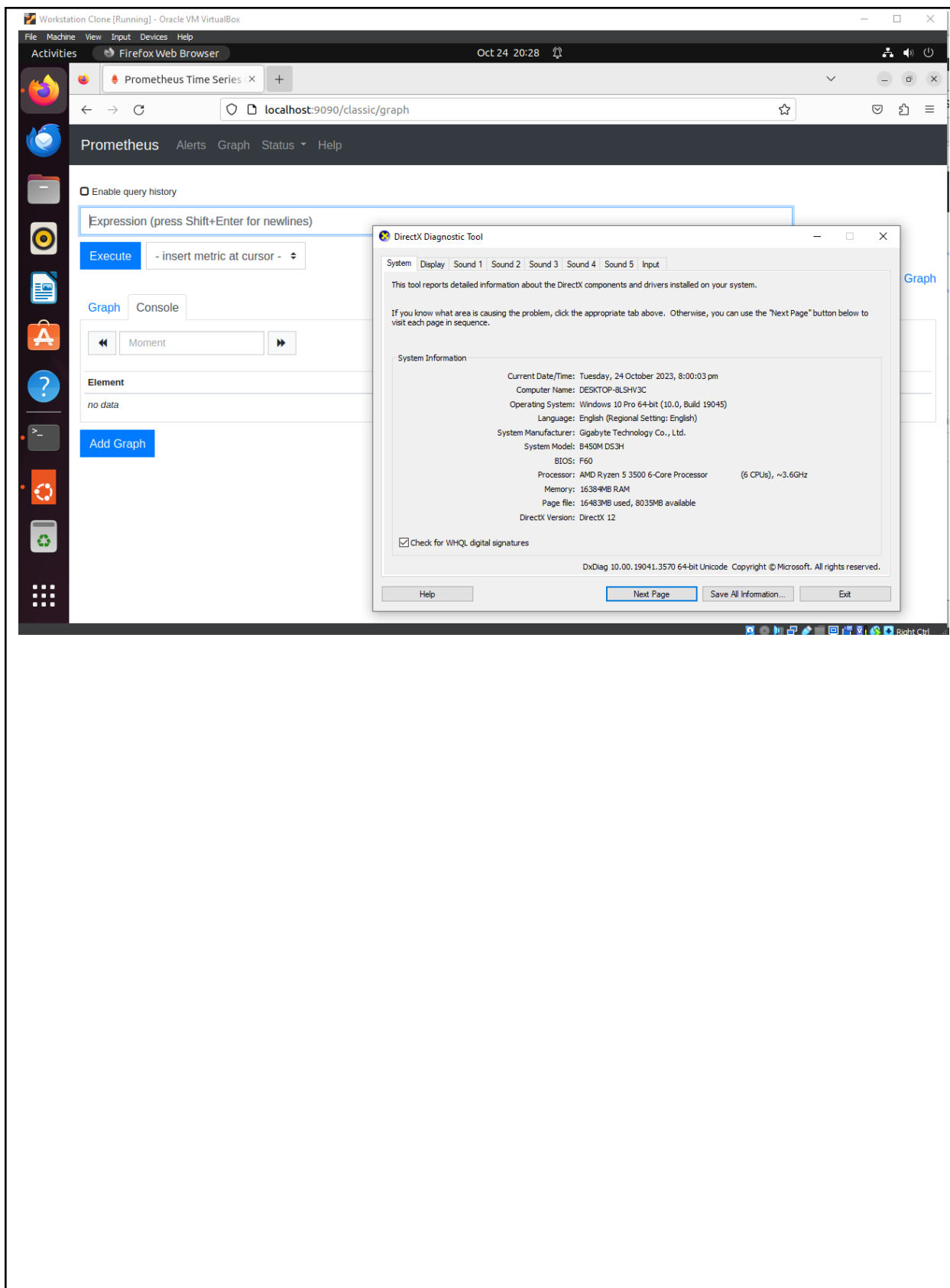
Step 8: Checking if prometheus is installed.

The terminal window shows the status of the Prometheus service. The output indicates that the service is active (running) and has been running since Tuesday, 2023-10-24 19:56:11 PST, 15min ago. The service is running on the localhost.localdomain with PID 1162. The service is running as the prometheus user.

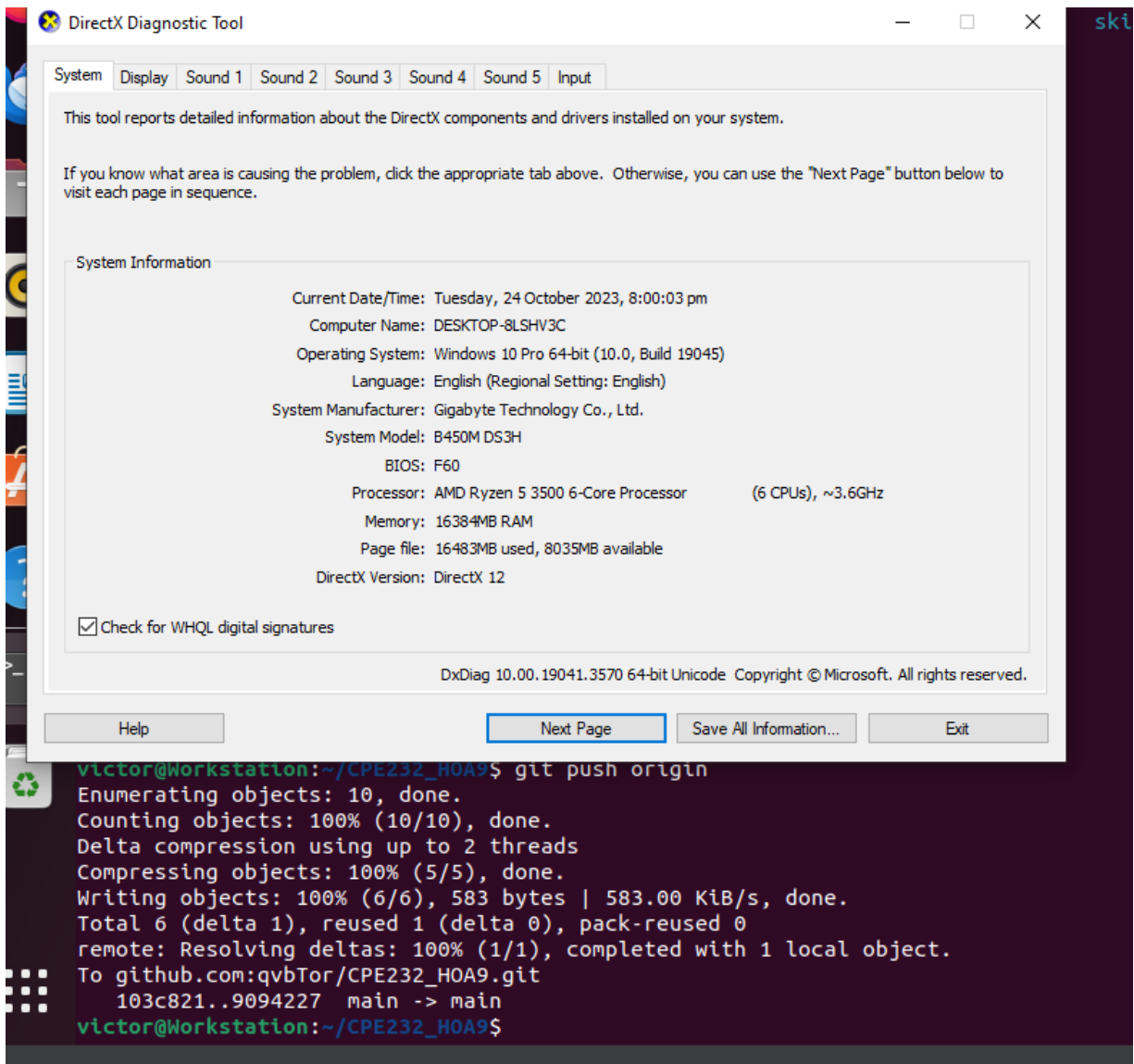
```
bash: prometheus: command not found...
[victor@localhost ~]$ sudo systemctl status prometheus
[sudo] password for victor:
● prometheus.service - Prometheus Service
   Loaded: loaded (/etc/systemd/system/prometheus.service; enabled; vendor preset: disabled)
   Active: active (running) since Tue 2023-10-24 19:56:11 PST; 15min ago
   Main PID: 1162 (prometheus)
   Tasks: 10
   CGroup: /system.slice/prometheus.service
           └─1162 /usr/local/bin/prometheus/prometheus --config.file=/usr/loc...

Oct 24 19:56:20 localhost.localdomain prometheus[1162]: level=info ts=2023-10...
Oct 24 19:56:20 localhost.localdomain prometheus[1162]: level=info ts=2023-10...
Oct 24 19:56:20 localhost.localdomain prometheus[1162]: level=info ts=2023-10...
Oct 24 19:56:20 localhost.localdomain prometheus[1162]: level=info ts=2023-10...
Oct 24 19:56:20 localhost.localdomain prometheus[1162]: level=info ts=2023-10...
Oct 24 19:56:20 localhost.localdomain prometheus[1162]: level=warn ts=2023-10...
Oct 24 19:56:20 localhost.localdomain prometheus[1162]: level=info ts=2023-10...
Oct 24 19:56:20 localhost.localdomain prometheus[1162]: level=info ts=2023-10...
Oct 24 19:56:20 localhost.localdomain prometheus[1162]: level=info ts=2023-10...
Oct 24 19:56:20 localhost.localdomain prometheus[1162]: level=info ts=2023-10...
Hint: Some lines were ellipsized, use -l to show in full.
[victor@localhost ~]$
```



Step 9: Updating git repository.



The image shows two overlapping windows. The top window is the 'DirectX Diagnostic Tool' with the 'System' tab selected. It displays system information including the current date/time, computer name, operating system, language, system manufacturer, system model, BIOS, processor, memory, page file, and DirectX version. The bottom window is a terminal showing the output of a 'git push origin' command, indicating a successful push to the remote repository.

DirectX Diagnostic Tool - System Information

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Buttons: Help, Next Page, Save All Information..., Exit

Terminal Output:

```
victor@Workstation:~/CPE232_H0A9$ git push origin
Enumerating objects: 10, done.
Counting objects: 100% (10/10), done.
Delta compression using up to 2 threads
Compressing objects: 100% (5/5), done.
Writing objects: 100% (6/6), 583 bytes | 583.00 KiB/s, done.
Total 6 (delta 1), reused 1 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To github.com:qvbTor/CPE232_H0A9.git
   103c821..9094227  main -> main
victor@Workstation:~/CPE232_H0A9$
```

Reflections:

Answer the following:

1. What are the benefits of having a performance monitoring tool?

System performance monitoring tools proactively detect and promptly resolve potential problems, preventing over-provisioning and underutilization of hardware. This optimizes resource allocation, resulting in a smoother user experience, increased satisfaction, and strategic cost savings.

Conclusions:

Therefore, using Prometheus playbook roles streamlines the deployment of a comprehensive performance monitoring system. This enables proactive problem resolution, effective resource allocation, resulting in an enhanced user experience. Moreover, the tool's trend analysis capabilities further empower strategic decision-making, contributing to sustainable cost savings and operational excellence.