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Course/Section: CPE232 S6	Date Submitted: 10/12/2023
Instructor: Dr. Jonathan Taylar	Semester and SY: 1st sem 2022-2023

Activity 8: Install, Configure, and Manage Availability Monitoring tools

1. Objectives

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

2. Discussion

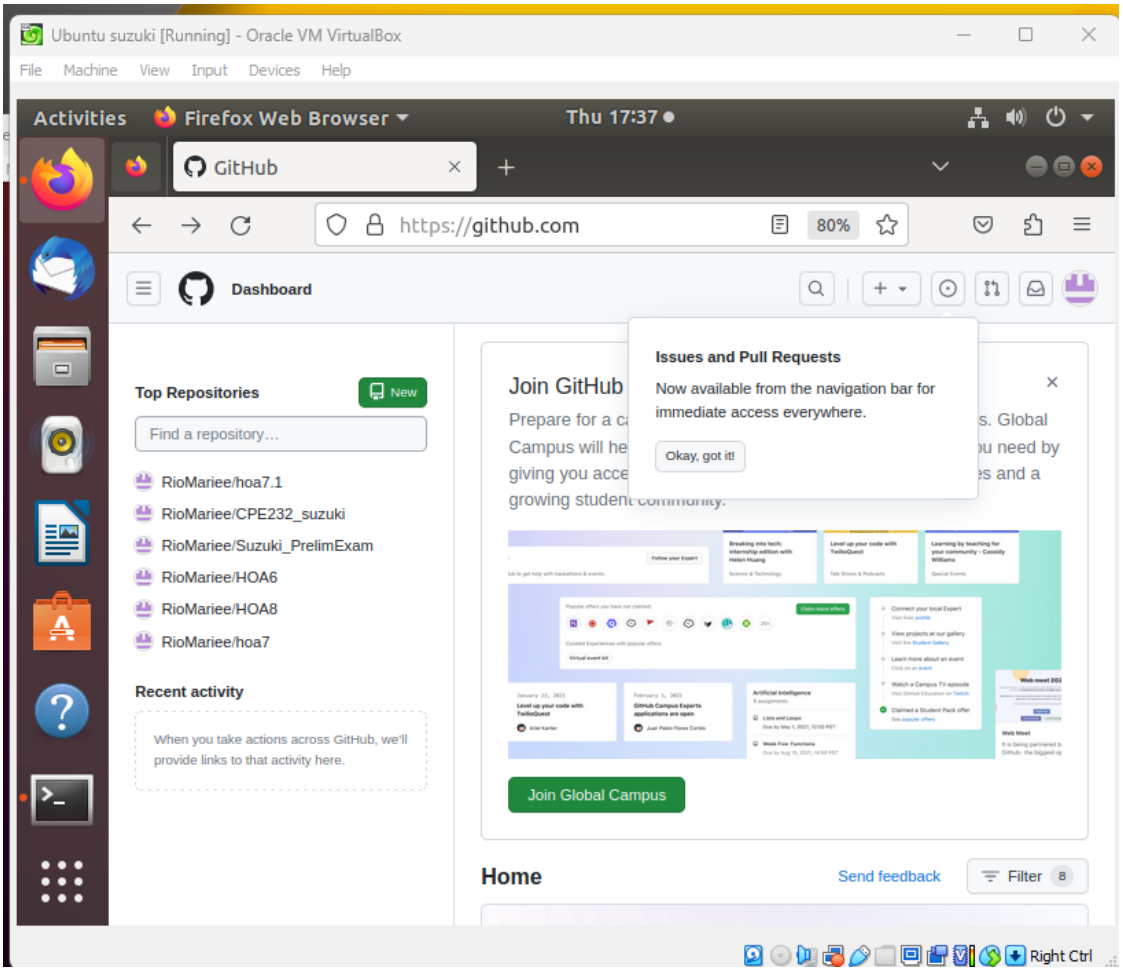
Availability monitoring is a type of monitoring tool that we use if the certain workload is up or reachable on our end. Site downtime can lead to loss of revenue, reputational damage and severe distress. Availability monitoring prevents adverse situations by checking the uptime of infrastructure components such as servers and apps and notifying the webmaster of problems before they impact on business.

3. Tasks

1. Create a playbook that installs Nagios 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 Nagios for both Ubuntu and CentOS.
4. Make sure to create a new repository in GitHub for this activity.

4. **Output** (screenshots and explanations)

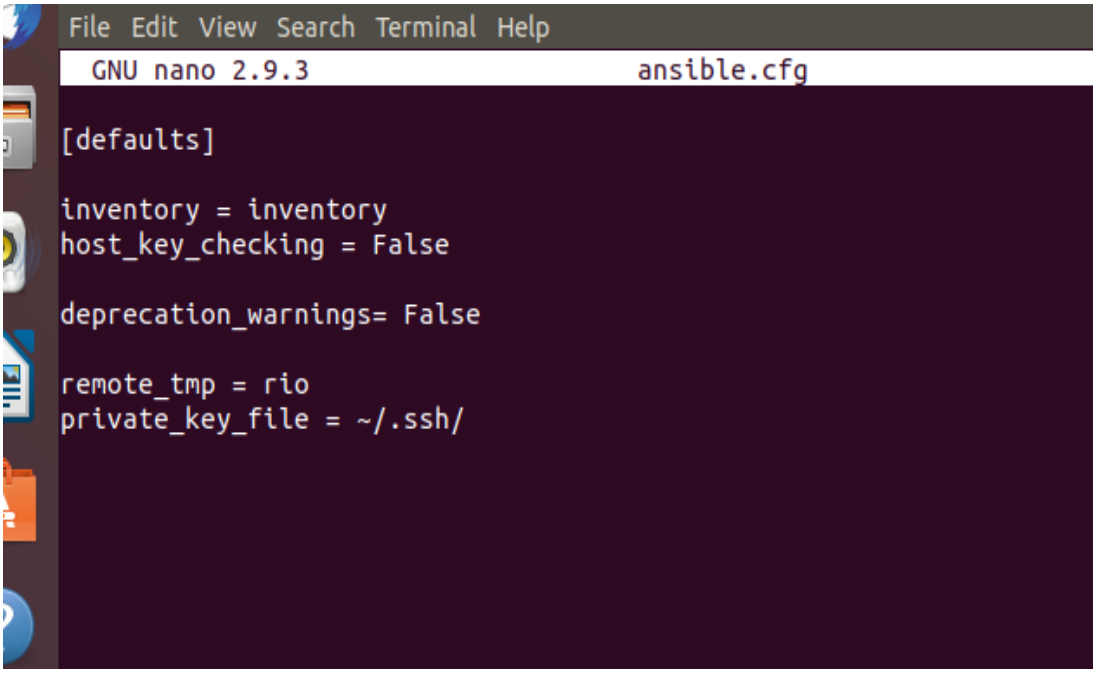
Step 1: Go to github.com and login your account, make a new repository for this activity (HOA8).



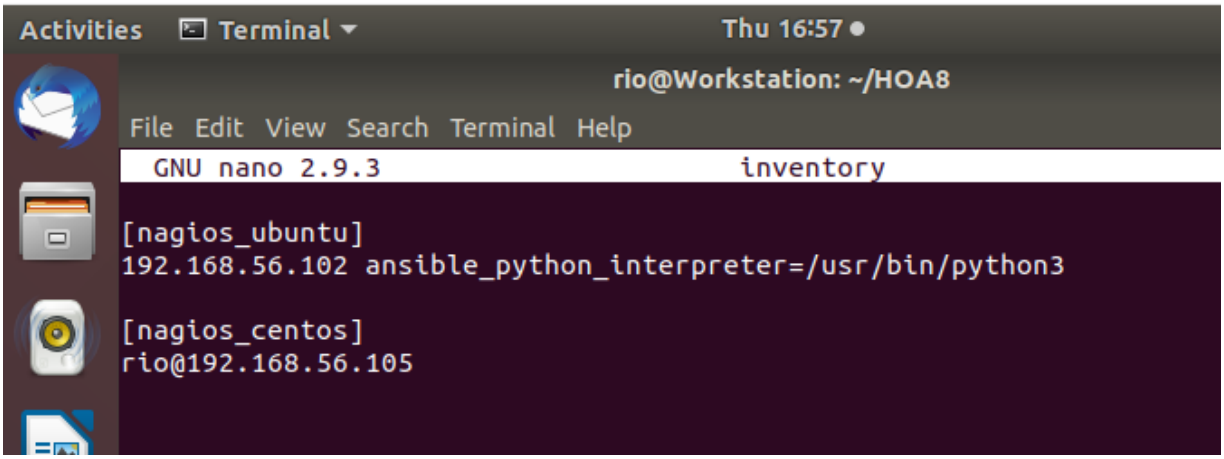
Step 2: Clone your github repository and copy the repository link and in the ubuntu terminal with the code “Git clone (paste your link here)”

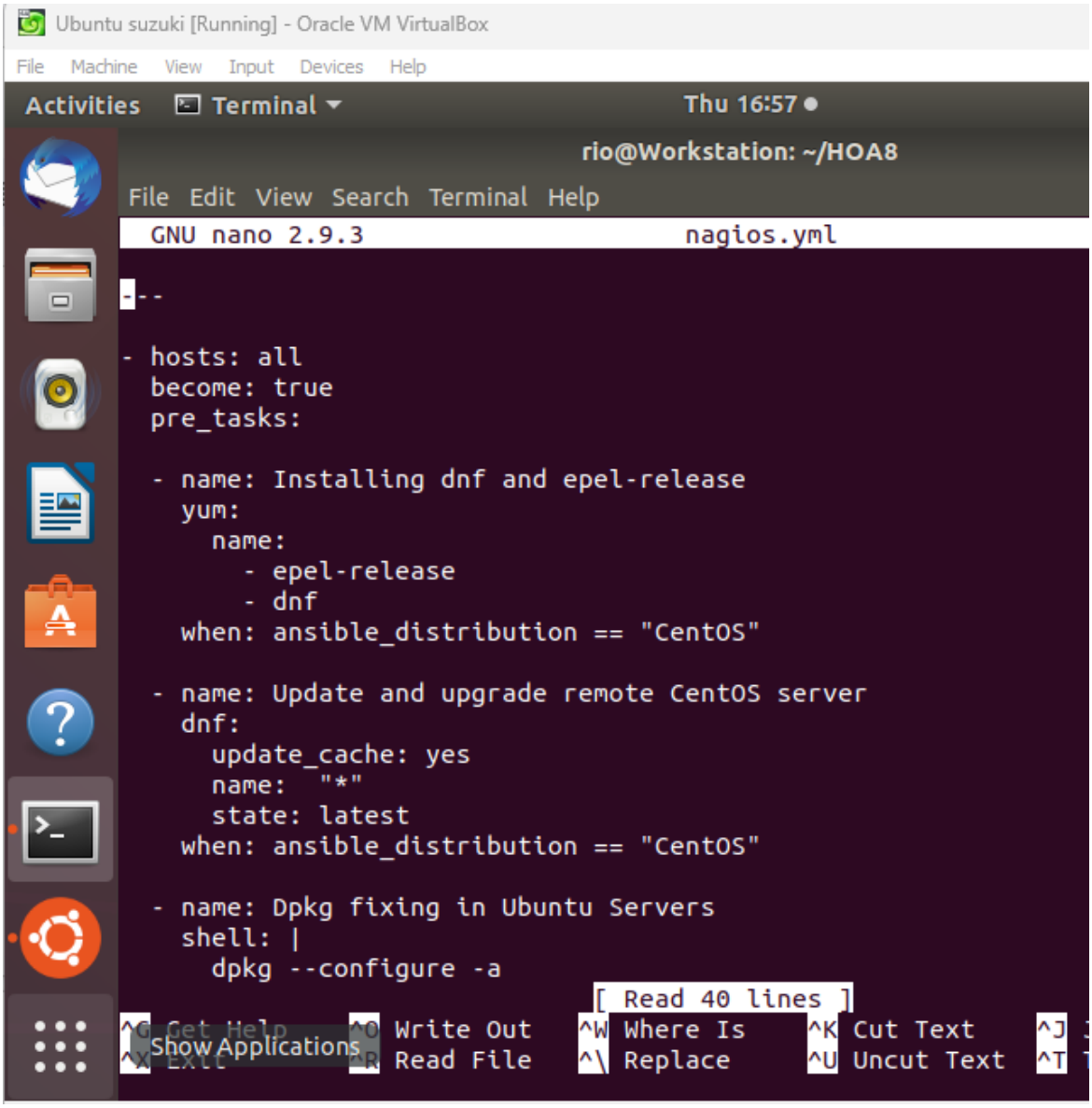
```
rio@Workstation:~$ git clone git@github.com:RioMariee/HOA8.git
Cloning into 'HOA8'...
Warning: Permanently added the ECDSA host key for IP address '20.205.243.166' t
o the list of known hosts.
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
Receiving objects: 100% (3/3), done.
rio@Workstation:~$ ls
'{'              examples.desktop  'id_rsa\'         Public
 ansible.cfg     files             id_rsa.pub      site.yml
 config.yaml     HOA6             'id_rsa\.pub'    Suzuki_PrelimExam
 CPE232_suzuki   hoa7              inventory       Templates
 Desktop         hoa7.1            Music           token
 Documents       HOA8              Pictures        Videos
 Downloads       id_rsa            playbook.yaml   Workstation
rio@Workstation:~$ cd HOA8
rio@Workstation:~/HOA8$ tree
.
└── README.md

0 directories, 1 file
rio@Workstation:~/HOA8$ sudo nano ansible.cfg
[sudo] password for rio:
Sorry, try again.
[sudo] password for rio:
rio@Workstation:~/HOA8$ sudo nano inventory
```

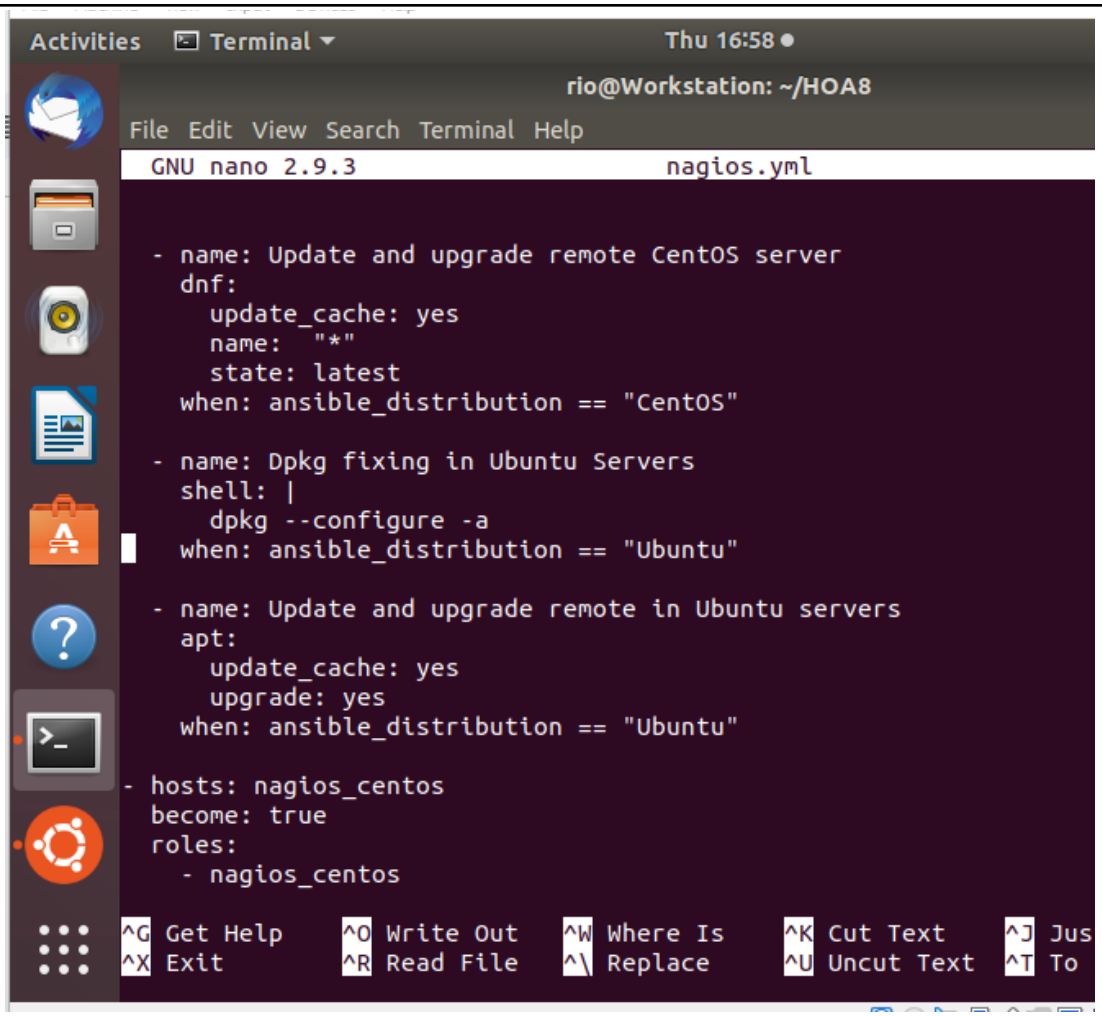
Step 3: Check if the repository has been cloned in the ubuntu and change directory to HOA8 (the name of your repository).



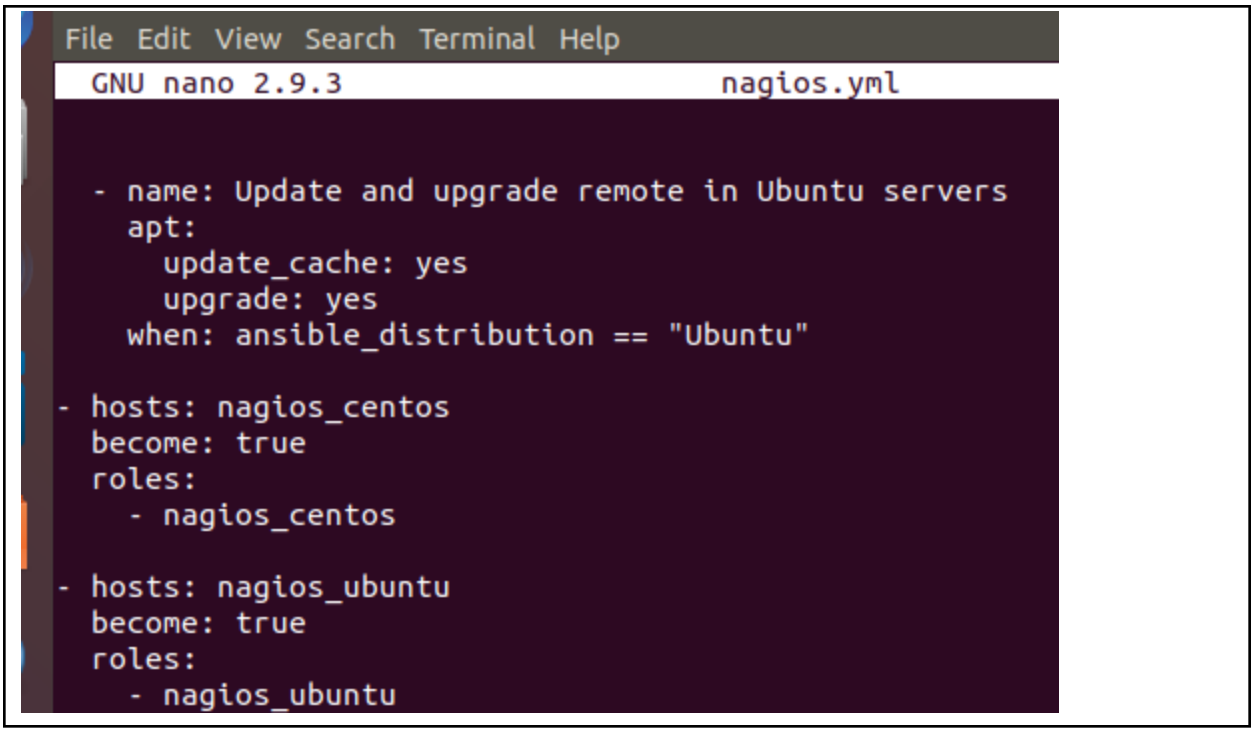
Step 4. Create an ansible.cfg and copy the contents of it in the new directory (HOA8)

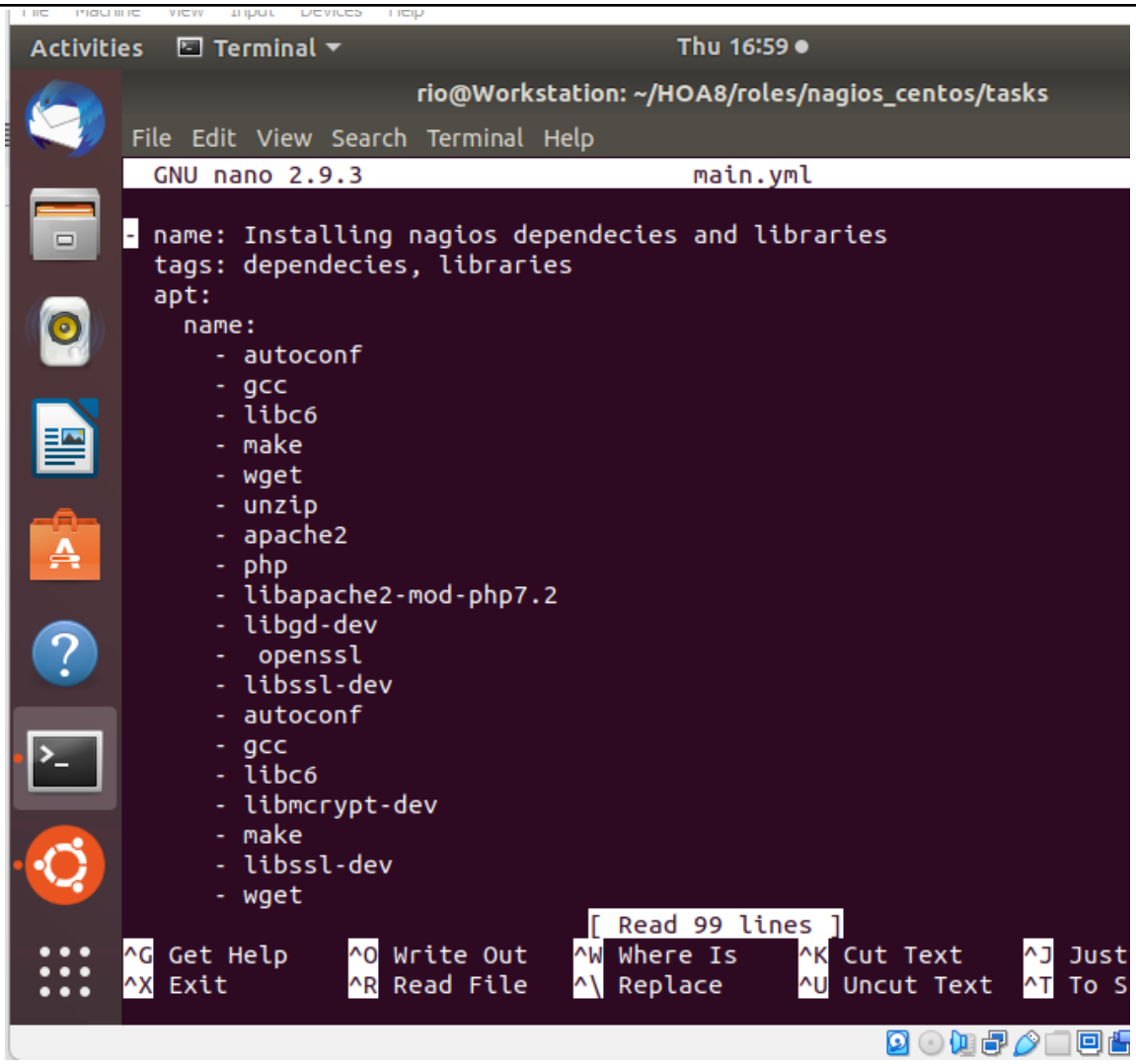




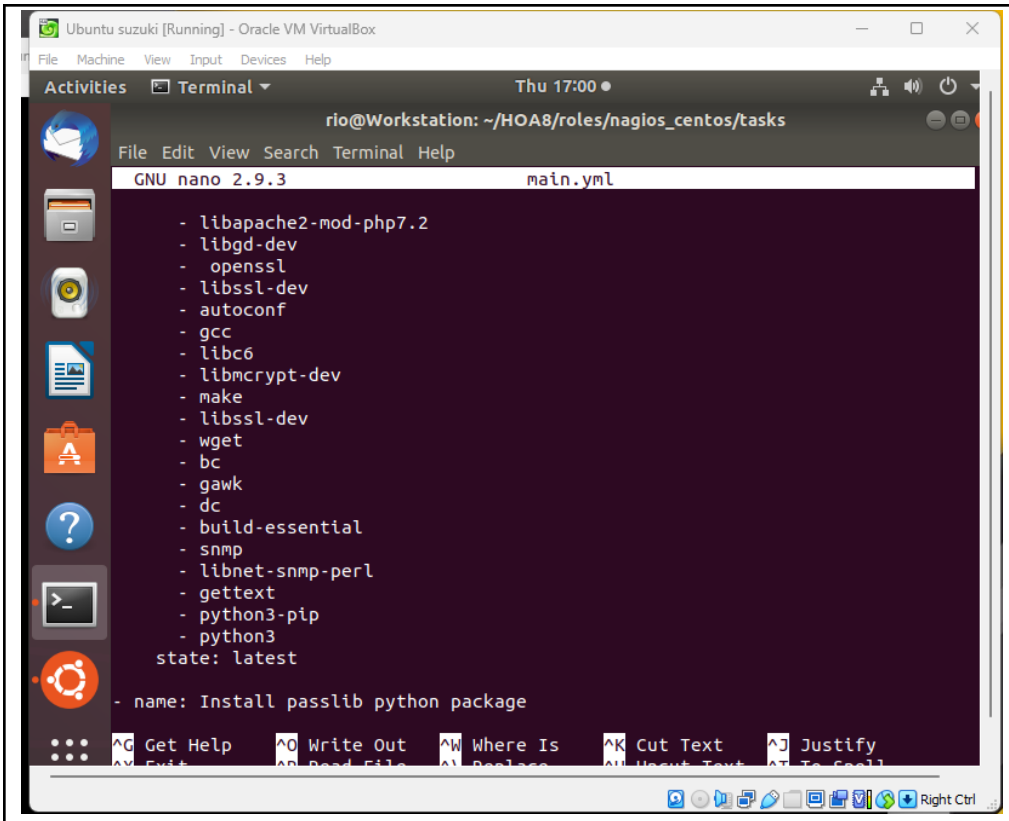


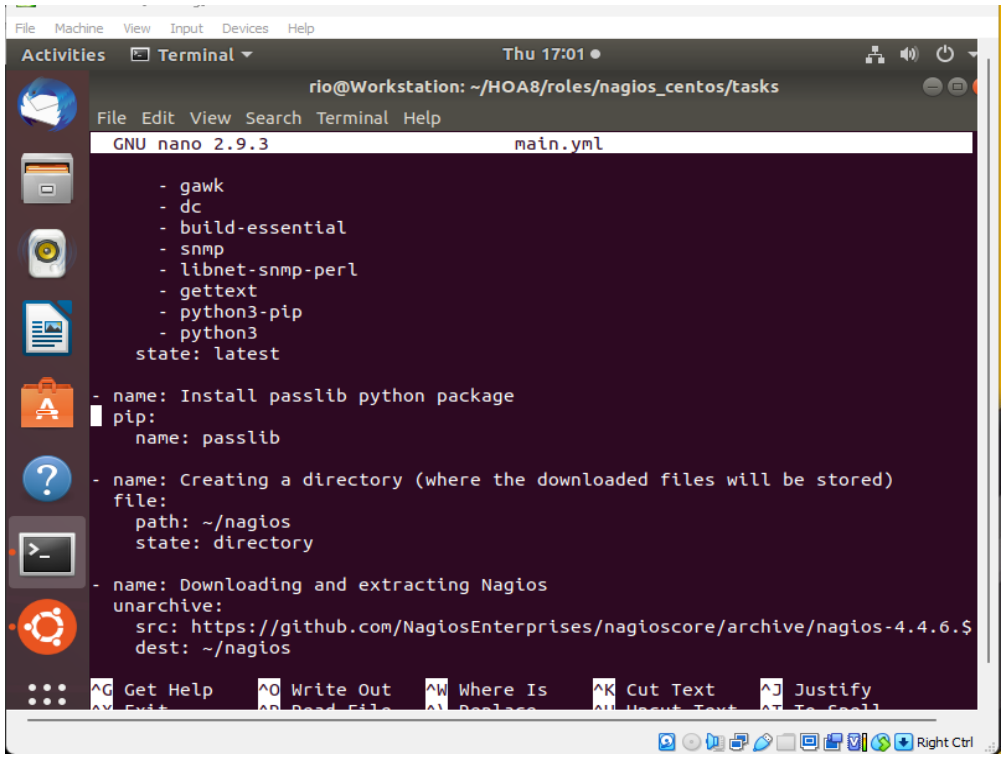
Step 5. To conduct a "epel-release" and a "dnf" package that targets CentOS, you must install the necessary tasks.

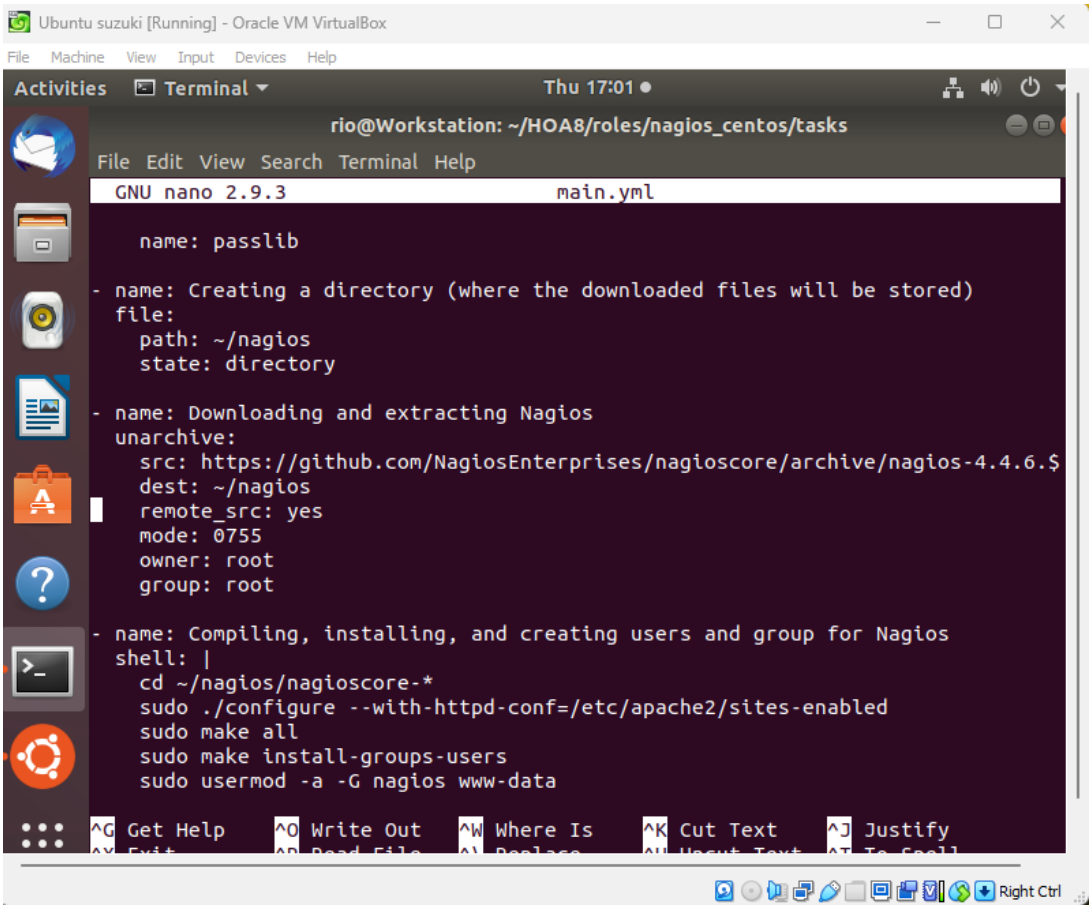

File Edit View Search Terminal Help
GNU nano 2.9.3 nagios.yml
- name: Update and upgrade remote in Ubuntu servers
apt:
update_cache: yes
upgrade: yes
when: ansible_distribution == "Ubuntu"
- hosts: nagios_centos
become: true
roles:
- nagios_centos
- hosts: nagios_ubuntu
become: true
roles:
- nagios_ubuntu

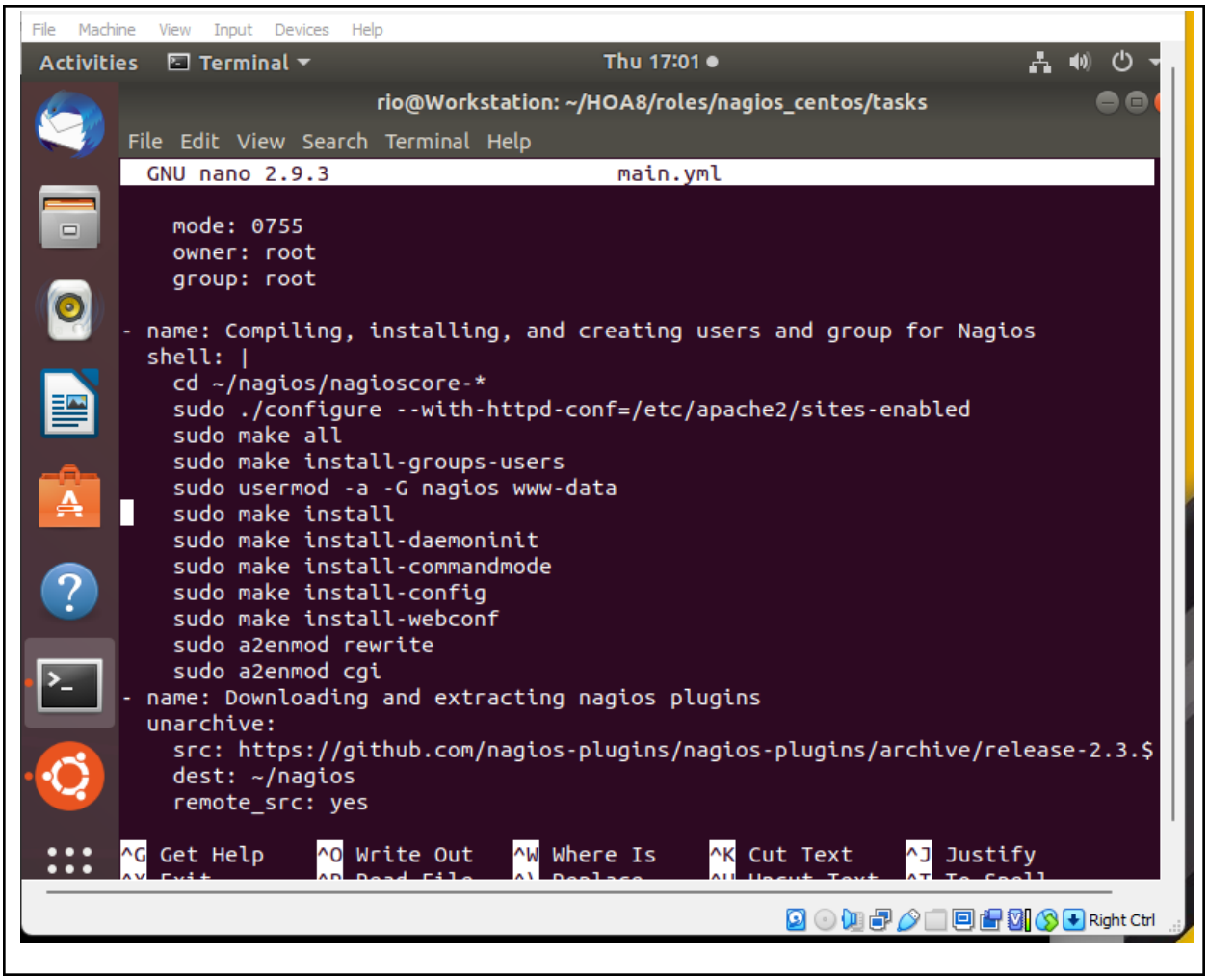


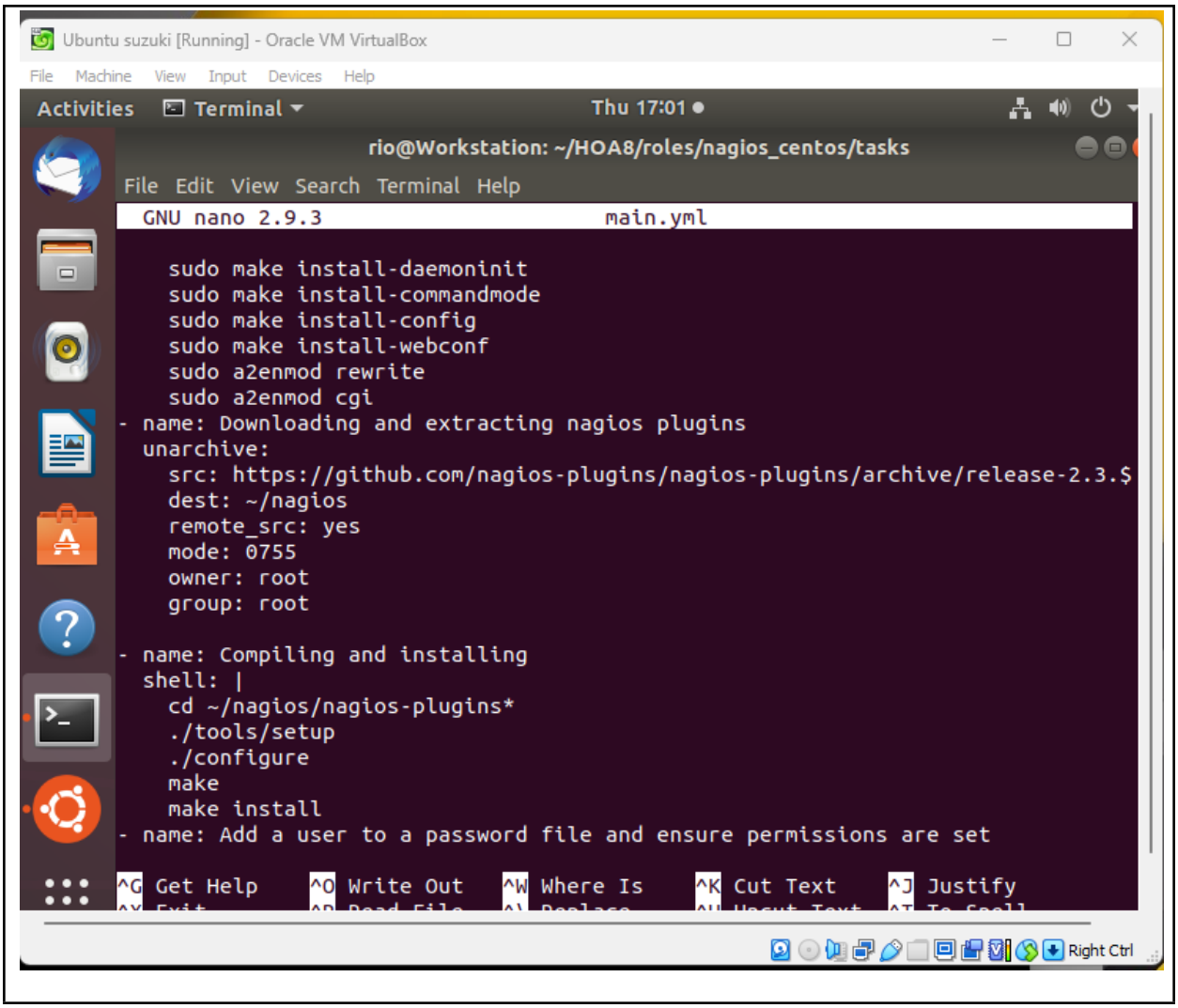
Step 6: Use this command in conjunction with the one before it to install the required Python module. You utilize the passlib and pip modules, which employ the password for validation. To download and extract the Nagios code, use "unarchive". Include this in your playbook so you can compile, install, and add users and groups to Nagios. The URL will re-export the files. Plug-in installation is also a part of it.

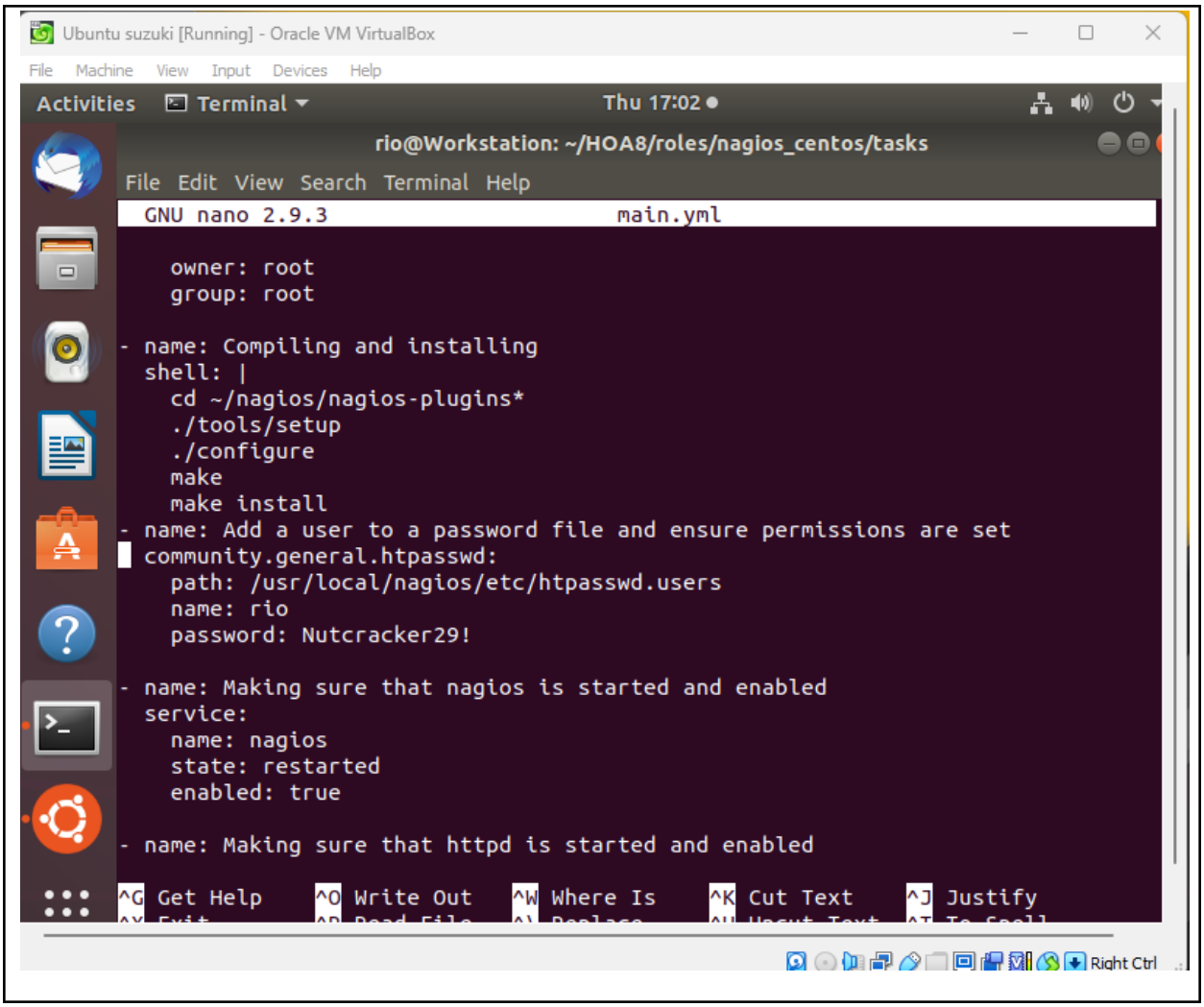

Ubuntu suzuki [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities
Terminal
Thu 17:00
rio@Workstation: ~/HOA8/roles/nagios_centos/tasks
File Edit View Search Terminal Help
GNU nano 2.9.3 main.yml
- libapache2-mod-php7.2
- libgd-dev
- openssl
- libssl-dev
- autoconf
- gcc
- libc6
- libmcrypt-dev
- make
- libssl-dev
- wget
- bc
- gawk
- dc
- build-essential
- snmp
- libnet-snmp-perl
- gettext
- python3-pip
- python3
state: latest
- name: Install passlib python package
^G Get Help
^O Write Out
^W Where Is
^K Cut Text
^J Justify
Right Ctrl

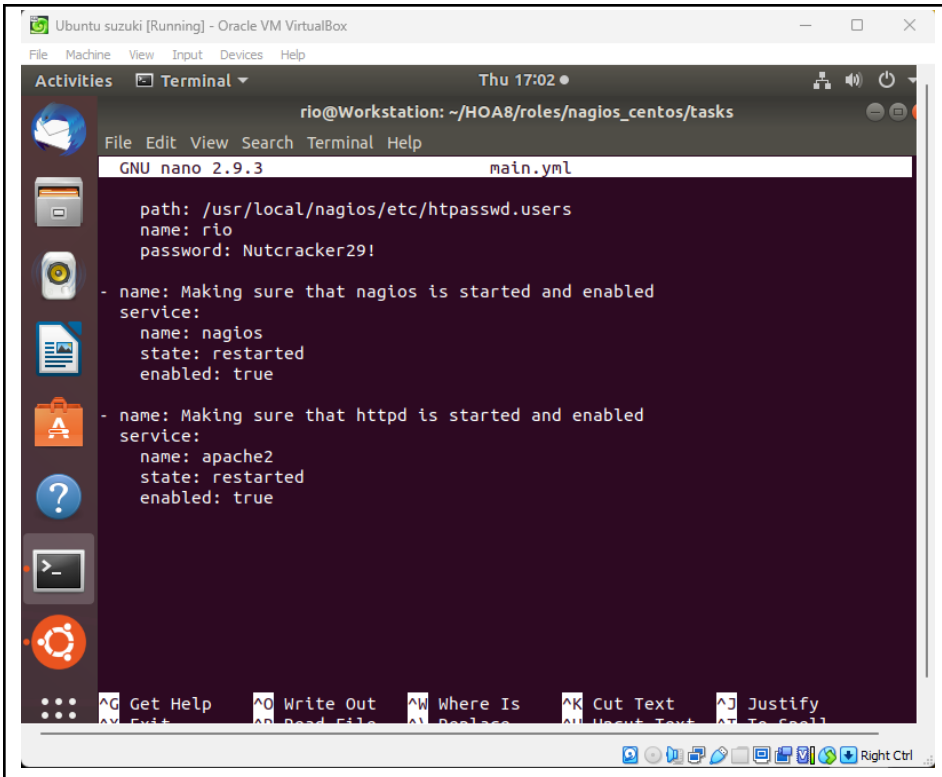

File Machine View Input Devices Help
Activities
Terminal
Thu 17:01
rio@Workstation: ~/HOA8/roles/nagios_centos/tasks
File Edit View Search Terminal Help
GNU nano 2.9.3 main.yml
- gawk
- dc
- build-essential
- snmp
- libnet-snmp-perl
- gettext
- python3-pip
- python3
state: latest
- name: Install passlib python package
pip:
name: passlib
- name: Creating a directory (where the downloaded files will be stored)
file:
path: ~/nagios
state: directory
- name: Downloading and extracting Nagios
unarchive:
src: https://github.com/NagiosEnterprises/nagioscore/archive/nagios-4.4.6.$
dest: ~/nagios
^G Get Help
^O Write Out
^W Where Is
^K Cut Text
^J Justify
Right Ctrl


Ubuntu suzuki [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities
Terminal
Thu 17:01
rio@Workstation: ~/HOA8/roles/nagios_centos/tasks
File Edit View Search Terminal Help
GNU nano 2.9.3 main.yml
name: passlib
- name: Creating a directory (where the downloaded files will be stored)
file:
path: ~/nagios
state: directory
- name: Downloading and extracting Nagios
unarchive:
src: https://github.com/NagiosEnterprises/nagioscore/archive/nagios-4.4.6.$
dest: ~/nagios
remote_src: yes
mode: 0755
owner: root
group: root
- name: Compiling, installing, and creating users and group for Nagios
shell: |
cd ~/nagios/nagioscore-*
sudo ./configure --with-httpd-conf=/etc/apache2/sites-enabled
sudo make all
sudo make install-groups-users
sudo usermod -a -G nagios www-data
^G Get Help
^O Write Out
^W Where Is
^K Cut Text
^J Justify
Right Ctrl


File Machine View Input Devices Help
Activities
Terminal
Thu 17:01
rio@Workstation: ~/HOA8/roles/nagios_centos/tasks
File Edit View Search Terminal Help
GNU nano 2.9.3 main.yml
mode: 0755
owner: root
group: root
- name: Compiling, installing, and creating users and group for Nagios
shell: |
cd ~/nagios/nagioscore-*
sudo ./configure --with-httpd-conf=/etc/apache2/sites-enabled
sudo make all
sudo make install-groups-users
sudo usermod -a -G nagios www-data
sudo make install
sudo make install-daemoninit
sudo make install-commandmode
sudo make install-config
sudo make install-webconf
sudo a2enmod rewrite
sudo a2enmod cgi
- name: Downloading and extracting nagios plugins
unarchive:
src: https://github.com/nagios-plugins/nagios-plugins/archive/release-2.3.$
dest: ~/nagios
remote_src: yes
^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify
Right Ctrl


Ubuntu suzuki [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities
Terminal
Thu 17:01
rio@Workstation: ~/HOA8/roles/nagios_centos/tasks
File Edit View Search Terminal Help
GNU nano 2.9.3 main.yml
sudo make install-daemoninit
sudo make install-commandmode
sudo make install-config
sudo make install-webconf
sudo a2enmod rewrite
sudo a2enmod cgi
- name: Downloading and extracting nagios plugins
unarchive:
src: https://github.com/nagios-plugins/nagios-plugins/archive/release-2.3.$
dest: ~/nagios
remote_src: yes
mode: 0755
owner: root
group: root
- name: Compiling and installing
shell: |
cd ~/nagios/nagios-plugins*
./tools/setup
./configure
make
make install
- name: Add a user to a password file and ensure permissions are set
^G Get Help
^O Write Out
^W Where Is
^K Cut Text
^J Justify
Right Ctrl


Ubuntu suzuki [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities
Terminal
Thu 17:02
rio@Workstation: ~/HOA8/roles/nagios_centos/tasks
File Edit View Search Terminal Help
GNU nano 2.9.3 main.yml
owner: root
group: root
- name: Compiling and installing
shell: |
cd ~/nagios/nagios-plugins*
./tools/setup
./configure
make
make install
- name: Add a user to a password file and ensure permissions are set
community.general.htpasswd:
path: /usr/local/nagios/etc/htpasswd.users
name: rio
password: Nutcracker29!
- name: Making sure that nagios is started and enabled
service:
name: nagios
state: restarted
enabled: true
- name: Making sure that httpd is started and enabled
^G Get Help
^O Write Out
^W Where Is
^K Cut Text
^J Justify
Right Ctrl

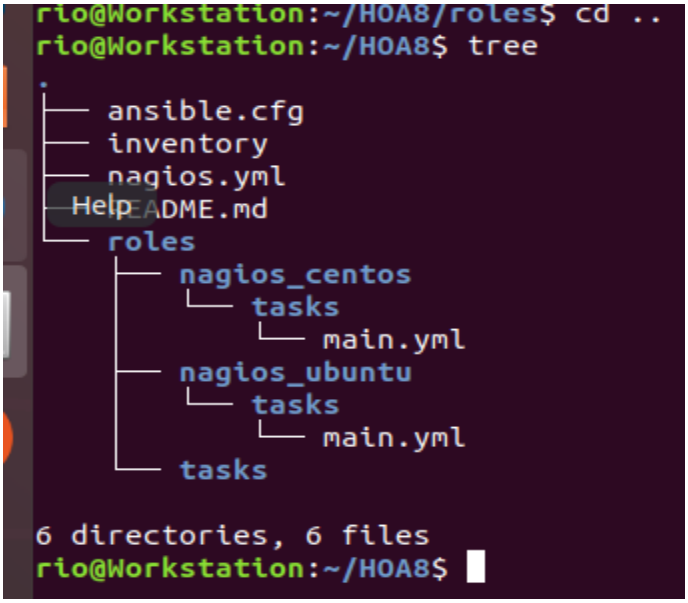


Step 6. To install the required packages on your Ubuntu and CentOS, you must first build a tree and then a playbook file called main.yml.

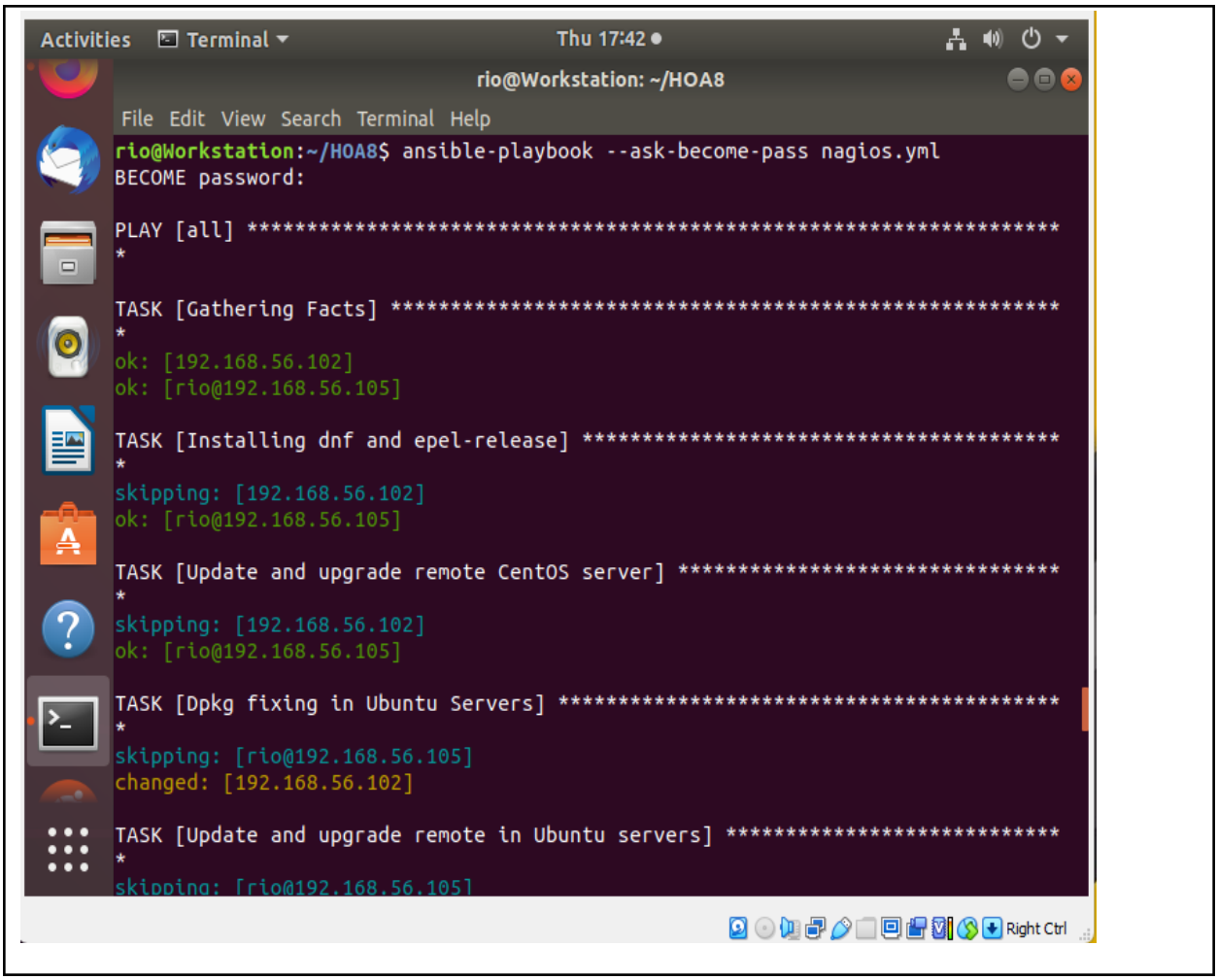
```
rio@Workstation:~/HOA8$ sudo nano inventory
rio@Workstation:~/HOA8$ sudo nano nagios.yml
rio@Workstation:~/HOA8$ mkdir roles
rio@Workstation:~/HOA8$ cd roles
rio@Workstation:~/HOA8/roles$ mkdir nagios_centos
rio@Workstation:~/HOA8/roles$ cd nagios_centos
rio@Workstation:~/HOA8/roles/nagios_centos$ mkdir tasks
rio@Workstation:~/HOA8/roles/nagios_centos$ cd tasks
rio@Workstation:~/HOA8/roles/nagios_centos/tasks$ sudo nano main.yml
rio@Workstation:~/HOA8/roles/nagios_centos/tasks$ cd ..
rio@Workstation:~/HOA8/roles/nagios_centos$ cd ..
rio@Workstation:~/HOA8/roles$ cd ..
rio@Workstation:~/HOA8$ cd roles
rio@Workstation:~/HOA8/roles$ mkdir nagios_ubuntu
rio@Workstation:~/HOA8/roles$ mkdir tasks
rio@Workstation:~/HOA8/roles$ rm tasks
rm: cannot remove 'tasks': Is a directory
rio@Workstation:~/HOA8/roles$ rm -r tasks
rio@Workstation:~/HOA8/roles$ cd nagios_ubuntu
rio@Workstation:~/HOA8/roles/nagios_ubuntu$ mkdir tasks
rio@Workstation:~/HOA8/roles/nagios_ubuntu$ cd tasks
rio@Workstation:~/HOA8/roles/nagios_ubuntu/tasks$ sudo nano main.yml
rio@Workstation:~/HOA8/roles/nagios_ubuntu/tasks$ cd ..
rio@Workstation:~/HOA8/roles/nagios_ubuntu$ cd ..
rio@Workstation:~/HOA8/roles$ mkdir tasks
rio@Workstation:~/HOA8/roles$ cd tasks
rio@Workstation:~/HOA8/roles/tasks$ cd ..
```

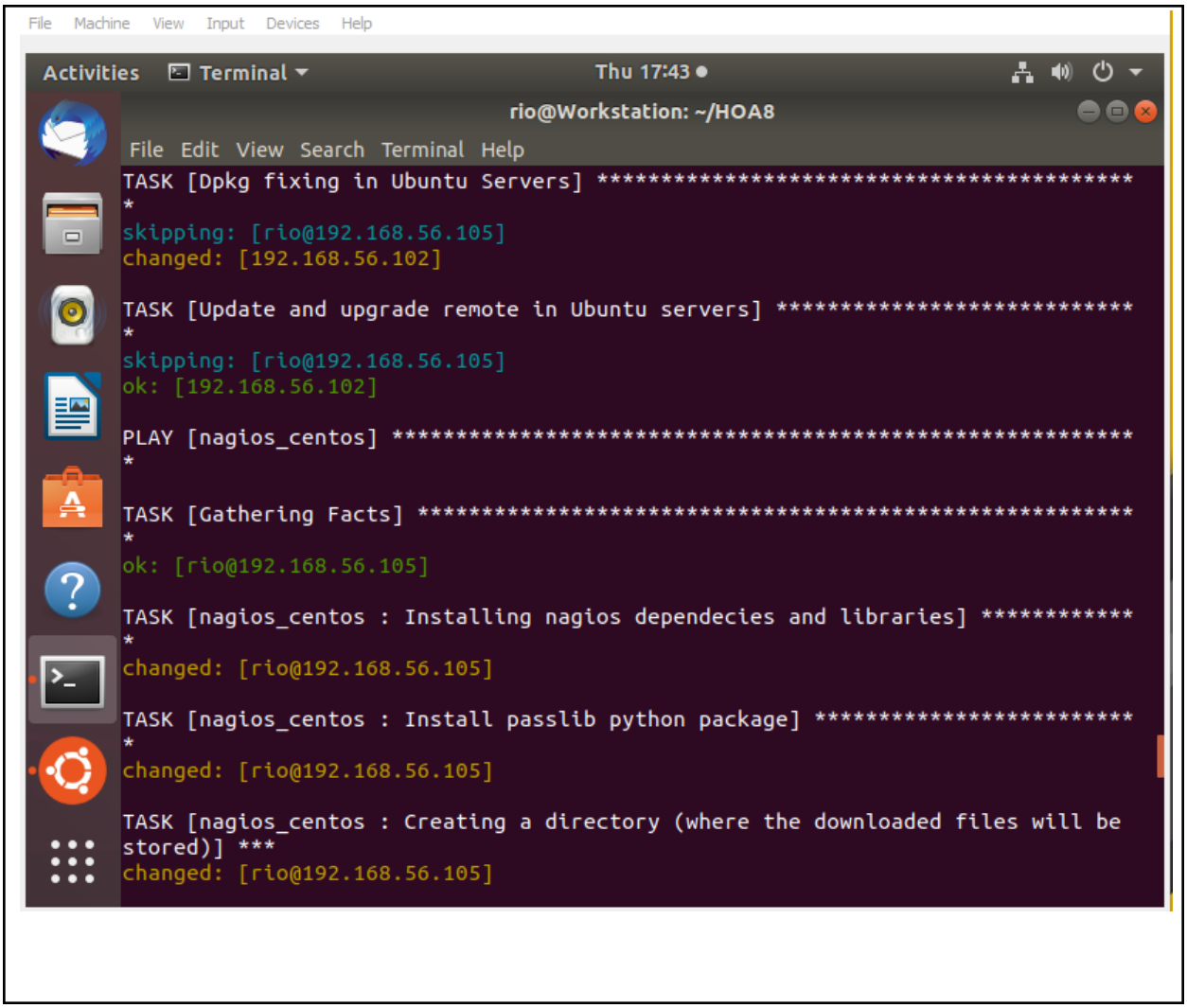
Step 7. create a role with a directories needed inside. In creating a role you should use the command “mkdir” to make the directory of roles. Don’t forget to change

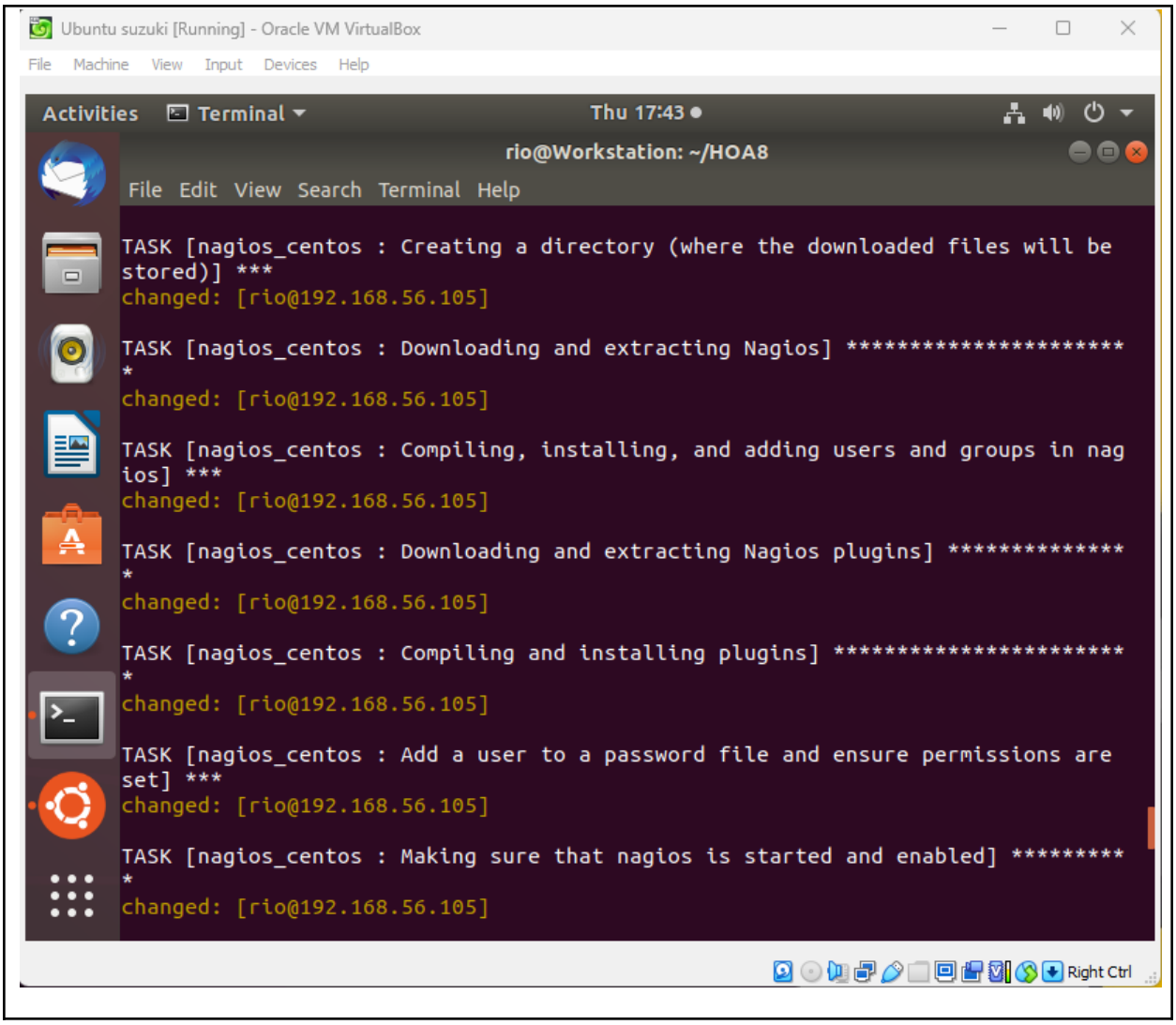
directory and make another directory under the roles and do the same thing for the other directory until it looks like the tree given below.

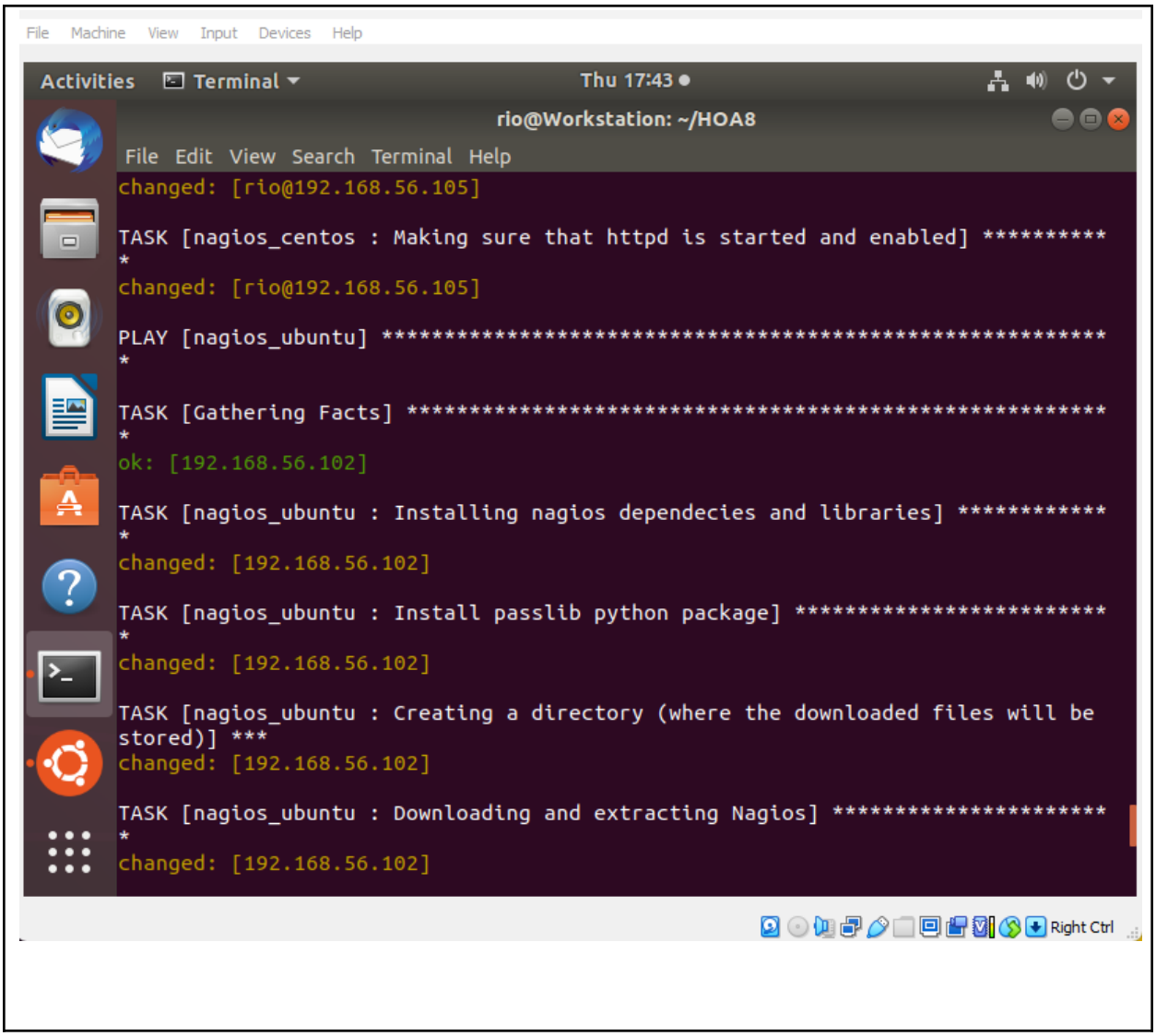


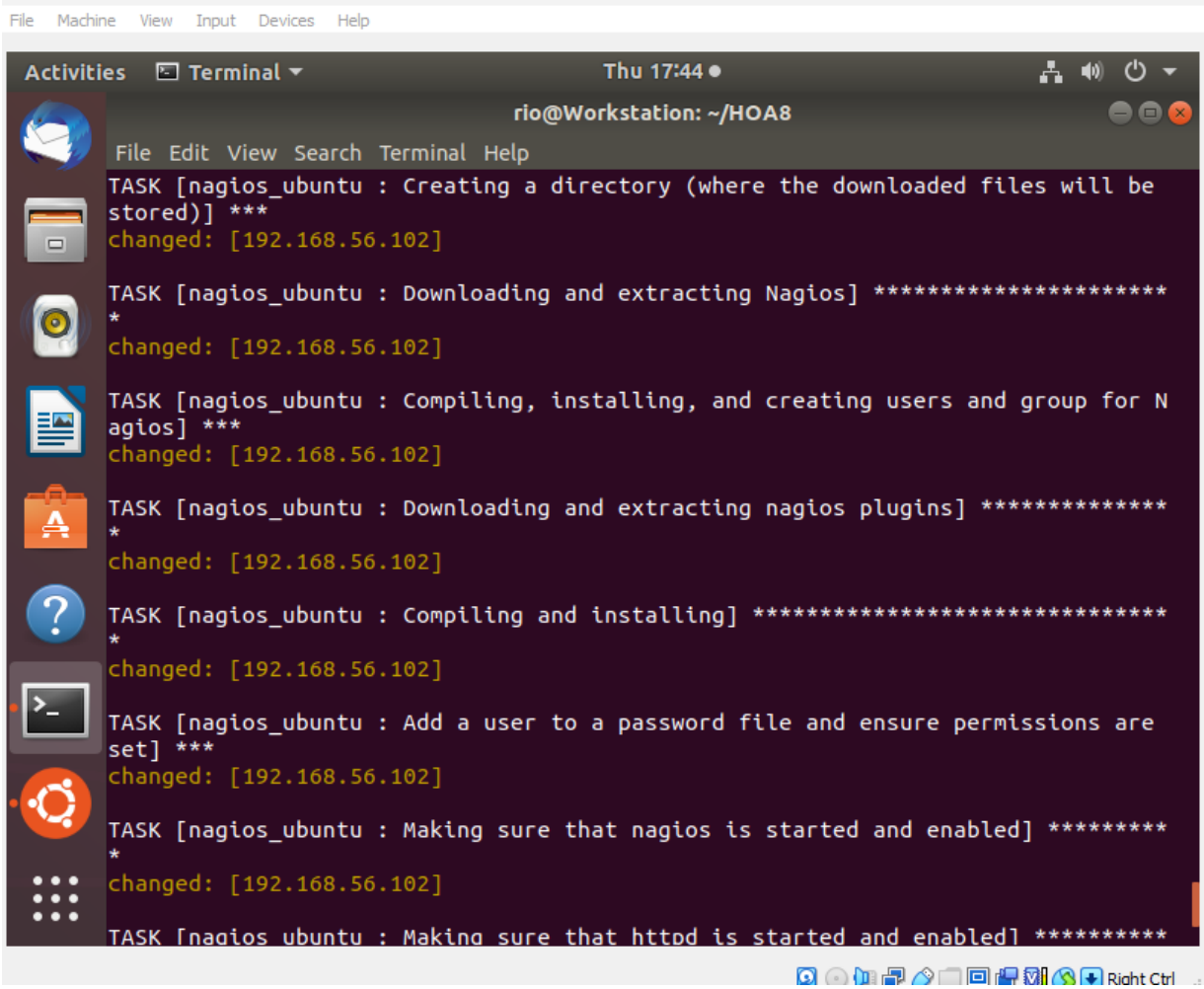
Step 8. This figure is the tree we need to accomplish in the activity. You can use this as a reference.


Activities
Terminal
Thu 17:42
rio@Workstation: ~/HOA8
File Edit View Search Terminal Help
rio@Workstation:~/HOA8$ ansible-playbook --ask-become-pass nagios.yml
BECOME password:
PLAY [all] ***
*
TASK [Gathering Facts] ***
*
ok: [192.168.56.102]
ok: [rio@192.168.56.105]
TASK [Installing dnf and epel-release] ***
*
skipping: [192.168.56.102]
ok: [rio@192.168.56.105]
TASK [Update and upgrade remote CentOS server] ***********************************
*
skipping: [192.168.56.102]
ok: [rio@192.168.56.105]
TASK [Dpkg fixing in Ubuntu Servers] ***
*
skipping: [rio@192.168.56.105]
changed: [192.168.56.102]
TASK [Update and upgrade remote in Ubuntu servers] *******************************
*
Right Ctrl


File Machine View Input Devices Help
Activities
Terminal
Thu 17:43
rio@Workstation: ~/HOA8
File Edit View Search Terminal Help
TASK [Dpkg fixing in Ubuntu Servers] ***********************************
*
skipping: [rio@192.168.56.105]
changed: [192.168.56.102]
TASK [Update and upgrade remote in Ubuntu servers] *********************
*
skipping: [rio@192.168.56.105]
ok: [192.168.56.102]
PLAY [nagios_centos] ***
*
TASK [Gathering Facts] ***
*
ok: [rio@192.168.56.105]
TASK [nagios_centos : Installing nagios dependecies and libraries] *****
*
changed: [rio@192.168.56.105]
TASK [nagios_centos : Install passlib python package] ******************
*
changed: [rio@192.168.56.105]
TASK [nagios_centos : Creating a directory (where the downloaded files will be
stored)] ***
changed: [rio@192.168.56.105]

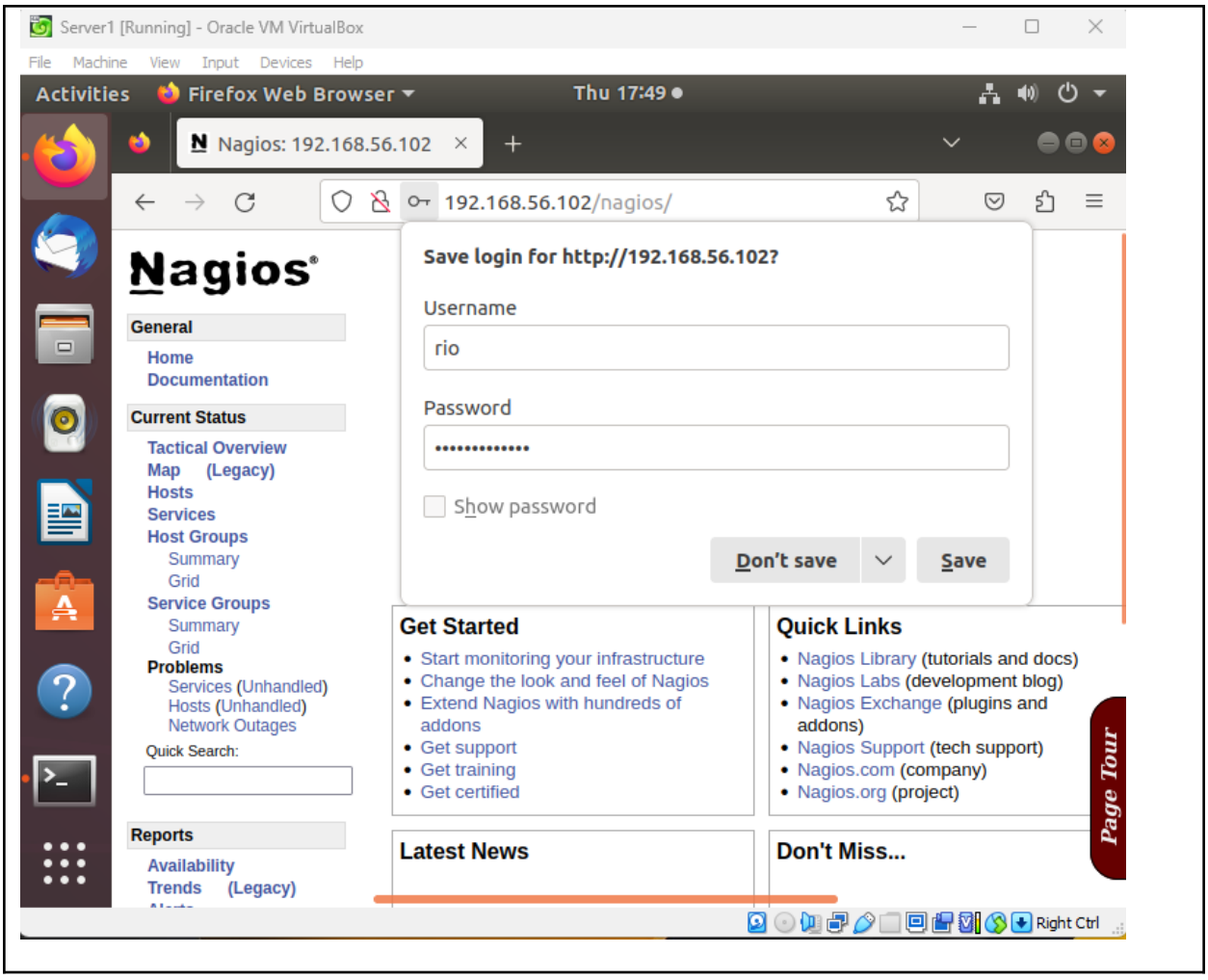

Ubuntu suzuki [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities
Terminal
Thu 17:43
rio@Workstation: ~/HOA8
File Edit View Search Terminal Help
TASK [nagios_centos : Creating a directory (where the downloaded files will be stored)] ***
changed: [rio@192.168.56.105]
TASK [nagios_centos : Downloading and extracting Nagios] ***********************
changed: [rio@192.168.56.105]
TASK [nagios_centos : Compiling, installing, and adding users and groups in nagios] ***
changed: [rio@192.168.56.105]
TASK [nagios_centos : Downloading and extracting Nagios plugins] **************
changed: [rio@192.168.56.105]
TASK [nagios_centos : Compiling and installing plugins] ************************
changed: [rio@192.168.56.105]
TASK [nagios_centos : Add a user to a password file and ensure permissions are set] ***
changed: [rio@192.168.56.105]
TASK [nagios_centos : Making sure that nagios is started and enabled] *********
changed: [rio@192.168.56.105]
Right Ctrl


File Machine View Input Devices Help
Activities
Terminal
Thu 17:43
rio@Workstation: ~/HOA8
File Edit View Search Terminal Help
changed: [rio@192.168.56.105]
TASK [nagios_centos : Making sure that httpd is started and enabled] **********
*
changed: [rio@192.168.56.105]
PLAY [nagios_ubuntu] ***
*
TASK [Gathering Facts] ***
*
ok: [192.168.56.102]
TASK [nagios_ubuntu : Installing nagios dependecies and libraries] ************
*
changed: [192.168.56.102]
TASK [nagios_ubuntu : Install passlib python package] ************************
*
changed: [192.168.56.102]
TASK [nagios_ubuntu : Creating a directory (where the downloaded files will be
stored)] ***
changed: [192.168.56.102]
TASK [nagios_ubuntu : Downloading and extracting Nagios] **********************
*
changed: [192.168.56.102]
Right Ctrl

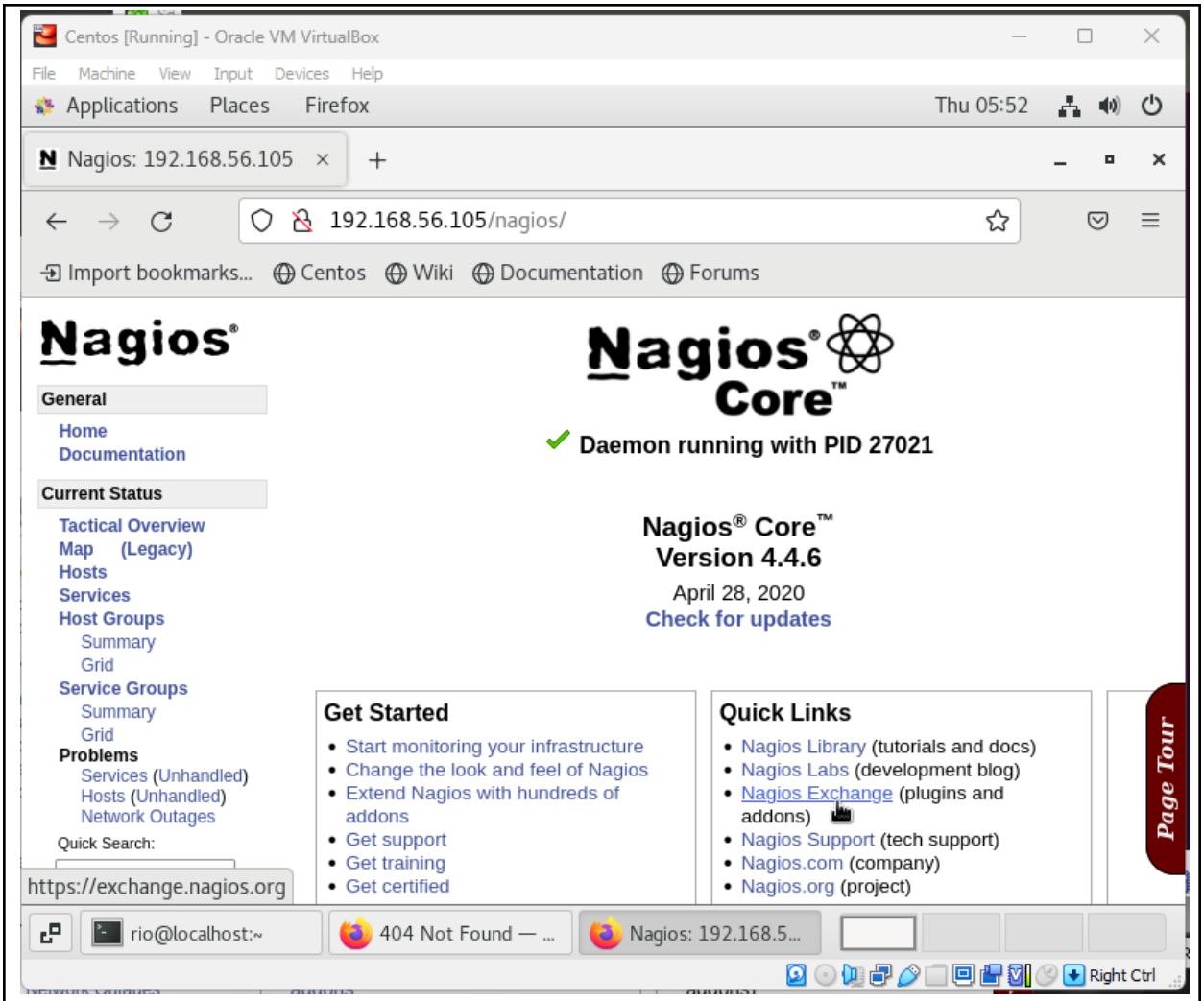



```
TASK [nagios_ubuntu : Making sure that nagios is started and enabled] *********
changed: [192.168.56.102]

TASK [nagios_ubuntu : Making sure that httpd is started and enabled] **********
changed: [192.168.56.102]

PLAY RECAP *********************************************************************
192.168.56.102             : ok=14   changed=11   unreachable=0    failed=0
skipped=2    rescued=0    ignored=0
rio@192.168.56.105         : ok=14   changed=10   unreachable=0    failed=0
skipped=2    rescued=0    ignored=0

rio@Workstation:~/HOA8$
```

Step 9. Run the command ansible-playbook –ask-become-pass nagios.yml, and there should be no error in the output.


Server1 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities
Firefox Web Browser
Thu 17:49
Nagios: 192.168.56.102
192.168.56.102/nagios/
Nagios
Save login for http://192.168.56.102?
Username
rio
Password
Show password
Don't save
Save
General
Home
Documentation
Current Status
Tactical Overview
Map (Legacy)
Hosts
Services
Host Groups
Summary
Grid
Service Groups
Summary
Grid
Problems
Services (Unhandled)
Hosts (Unhandled)
Network Outages
Quick Search:
Reports
Availability
Trends (Legacy)
Get Started
Start monitoring your infrastructure
Change the look and feel of Nagios
Extend Nagios with hundreds of addons
Get support
Get training
Get certified
Quick Links
Nagios Library (tutorials and docs)
Nagios Labs (development blog)
Nagios Exchange (plugins and addons)
Nagios Support (tech support)
Nagios.com (company)
Nagios.org (project)
Page Tour
Latest News
Don't Miss...
Right Ctrl

Step 10. In this part you will be asked to sign in to see if the result is correct you will see the nagios site. If the playbook runs properly, you can check by entering your IP address in Mozilla Fox and adding /nagios at the end. This is the desired result.



Step 10: If the playbook runs properly, go to Centos and you can check by entering your IP address in Mozilla Fox and adding /nagios at the end. This is the desired result.

Reflections:

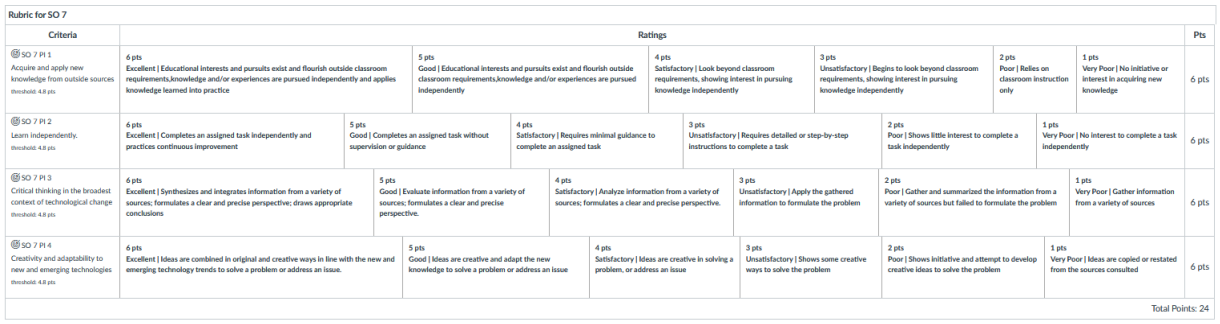
Answer the following:

1. What are the benefits of having an availability monitoring tool?
   - The benefits of having an availability monitoring tool are truly invaluable. This tool ensures that the digital services and applications are always up and running. It's like having a diligent sentry that keeps a constant eye on the health of my systems. This not only prevents downtime but also boosts my reputation by providing a seamless experience to my users. With an availability monitoring tool in place, I gain the power to proactively identify and resolve

issues before they impact my business. It's not just a tool; it's my shield against disruptions and my gateway to a reliable, high-performing digital presence.

Conclusions:

In conclusion, the process of crafting a workflow for designing, installing, configuring, and managing enterprise monitoring tools using Ansible as an Infrastructure as Code (IaC) tool is a transformative journey in optimizing IT operations. This personalized approach to orchestrating monitoring solutions empowers me to create a robust, adaptable, and efficient infrastructure. By leveraging Ansible's capabilities, I ensure that I can respond dynamically to the evolving needs of my organization, enhancing the reliability, security, and performance of our IT environment. This is not just a technical endeavor; it's a testament to my commitment to driving innovation and efficiency in the world of enterprise monitoring.



Rubric for SO 7

Criteria	Ratings						Pts
SO 7 PI 1 Acquire and apply new knowledge from outside sources threshold: 4.8 pts	6 pts Excellent | Educational interests and pursuits exist and flourish outside classroom requirements,knowledge and/or experiences are pursued independently and applies knowledge learned into practice	5 pts Good | Educational interests and pursuits exist and flourish outside classroom requirements,knowledge and/or experiences are pursued independently	4 pts Satisfactory | Look beyond classroom requirements, showing interest in pursuing knowledge independently	3 pts Unsatisfactory | Begins to look beyond classroom requirements, showing interest in pursuing knowledge independently	2 pts Poor | Relies on classroom instruction only	1 pts Very Poor | No initiative or interest in acquiring new knowledge	6 pts
SO 7 PI 2 Learn independently. threshold: 4.8 pts	6 pts Excellent | Completes an assigned task independently and practices continuous improvement	5 pts Good | Completes an assigned task without supervision or guidance	4 pts Satisfactory | Requires minimal guidance to complete an assigned task	3 pts Unsatisfactory | Requires detailed or step-by-step instructions to complete a task	2 pts Poor | Shows little interest to complete a task independently	1 pts Very Poor | No interest to complete a task independently	6 pts
SO 7 PI 3 Critical thinking in the broadest context of technological change threshold: 4.8 pts	6 pts Excellent | Synthesizes and integrates information from a variety of sources; formulates a clear and precise perspective; draws appropriate conclusions	5 pts Good | Evaluate information from a variety of sources; formulates a clear and precise perspective.	4 pts Satisfactory | Analyze information from a variety of sources; formulates a clear and precise perspective.	3 pts Unsatisfactory | Apply the gathered information to formulate the problem	2 pts Poor | Gather and summarized the information from a variety of sources but failed to formulate the problem	1 pts Very Poor | Gather information from a variety of sources	6 pts
SO 7 PI 4 Creativity and adaptability to new and emerging technologies threshold: 4.8 pts	6 pts Excellent | Ideas are combined in original and creative ways in line with the new and emerging technology trends to solve a problem or address an issue.	5 pts Good | Ideas are creative and adapt the new knowledge to solve a problem or address an issue	4 pts Satisfactory | Ideas are creative in solving a problem, or address an issue	3 pts Unsatisfactory | Shows some creative ways to solve the problem	2 pts Poor | Shows initiative and attempt to develop creative ideas to solve the problem	1 pts Very Poor | Ideas are copied or restated from the sources consulted	6 pts

Total Points: 24