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Course/Section: CPE31S4	**Date Submitted:** September 5, 2023
Instructor: Dr. Jonathan V. Taylar	**Semester and S.Y.:** First Sem, S.Y. 2023-2024

Activity 3: Install SSH server on CentOS or RHEL 8

1. **Objectives:**

1.1 Install Community Enterprise OS or Red Hat Linux OS

1.2 Configure remote SSH connection from remote computer to CentOS/RHEL-8

2. **Discussion:**

CentOS vs. Debian: Overview

CentOS and Debian are Linux distributions that spawn from opposite ends of the candle.

CentOS is a free downstream rebuild of the commercial Red Hat Enterprise Linux distribution where, in contrast, Debian is the free upstream distribution that is the base for other distributions, including the Ubuntu Linux distribution.

As with many Linux distributions, CentOS and Debian are generally more alike than different; it isn't until we dig a little deeper that we find where they branch.

CentOS vs. Debian: Architecture

The available supported architectures can be the determining factor as to whether a distro is a viable option or not. Debian and CentOS are both very popular for x86_64/AMD64, but what other archs are supported by each?

Both Debian and CentOS support AArch64/ARM64, armhf/armhfp , i386 , ppc64el/ppc64le. (Note: armhf/armhfp and i386 are supported in CentOS 7 only.)

CentOS 7 additionally supports POWER9 while Debian and CentOS 8 do not. CentOS 7 focuses on the x86_64/AMD64 architecture with the other archs released through the AltArch SIG (Alternate Architecture Special Interest Group) with CentOS 8 supporting x86_64/AMD64, AArch64 and ppc64le equally.

Debian supports MIPSel, MIPS64el and s390x while CentOS does not. Much like CentOS 8, Debian does not favor one arch over another —all supported architectures are supported equally.

CentOS vs. Debian: Package Management

Most Linux distributions have some form of package manager nowadays, with some more complex and feature-rich than others.

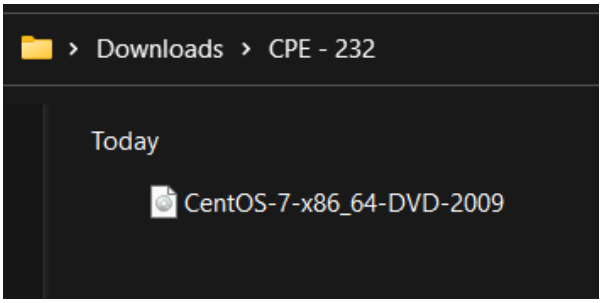
CentOS uses the RPM package format and YUM/DNF as the package manager.

Debian uses the DEB package format and dpkg/APT as the package manager.

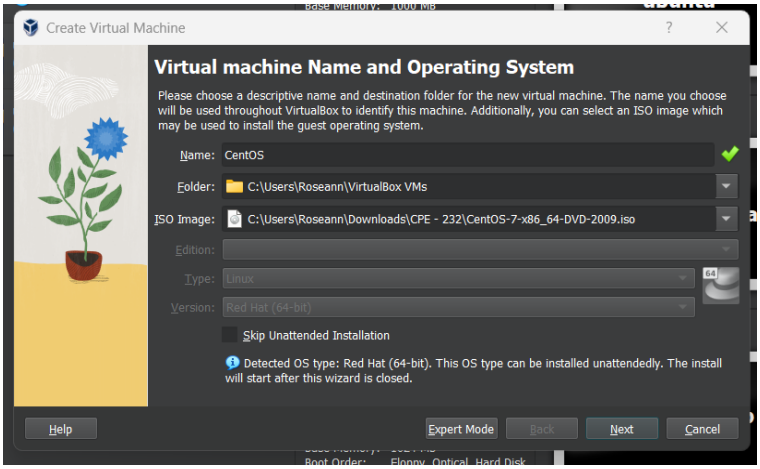
Both offer full-feature package management with network-based repository support, dependency checking and resolution, etc.. If you're familiar with one but not the other, you may have a little trouble switching over, but they're not overwhelmingly different. They both have similar features, just available through a different interface.

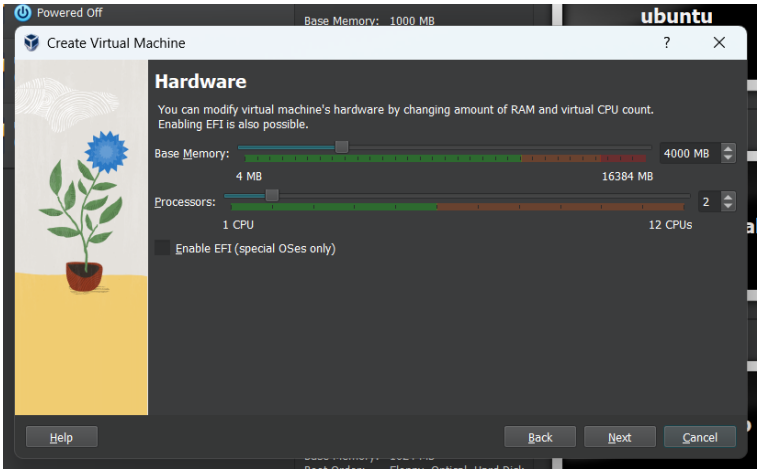
Task 1: Download the CentOS or RHEL-8 image (Create screenshots of the following)

1. Download the image of the CentOS here: http://mirror.rise.ph/centos/7.9.2009/isos/x86_64/

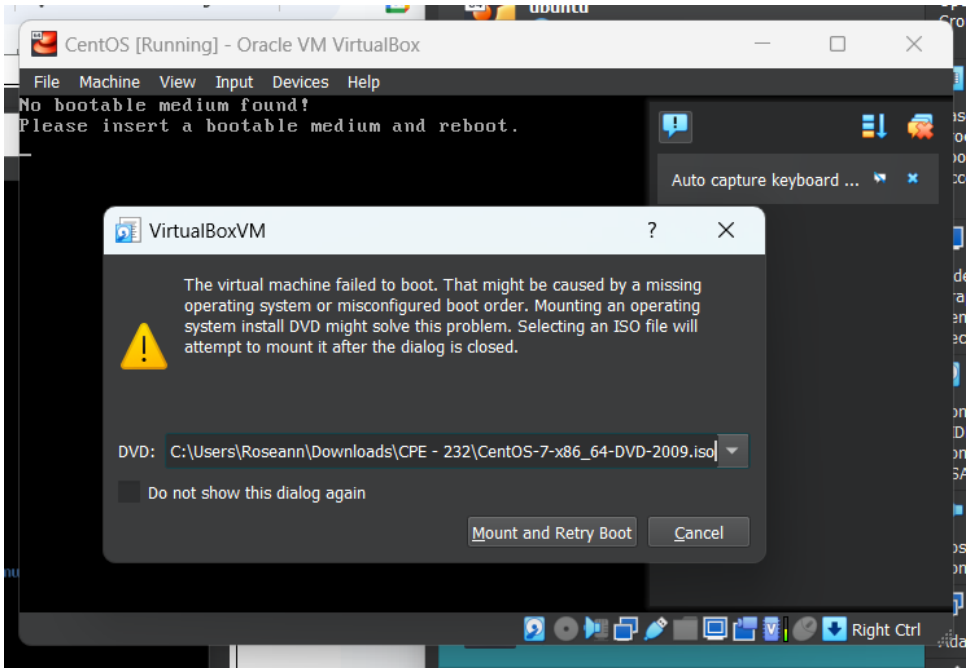


2. Create a VM machine with 2 Gb RAM and 20 Gb HD.

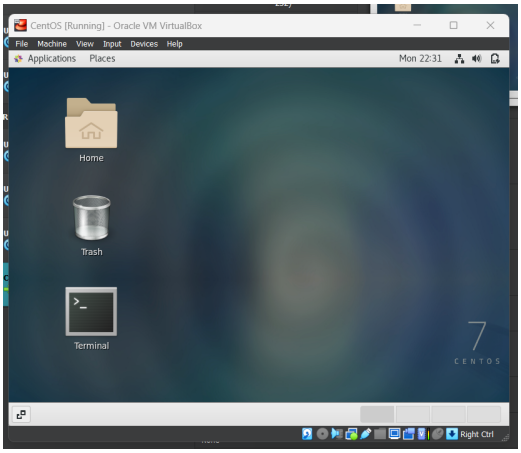


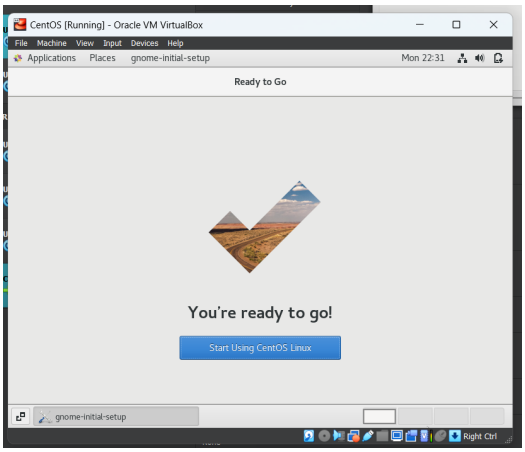


3. Install the downloaded image.



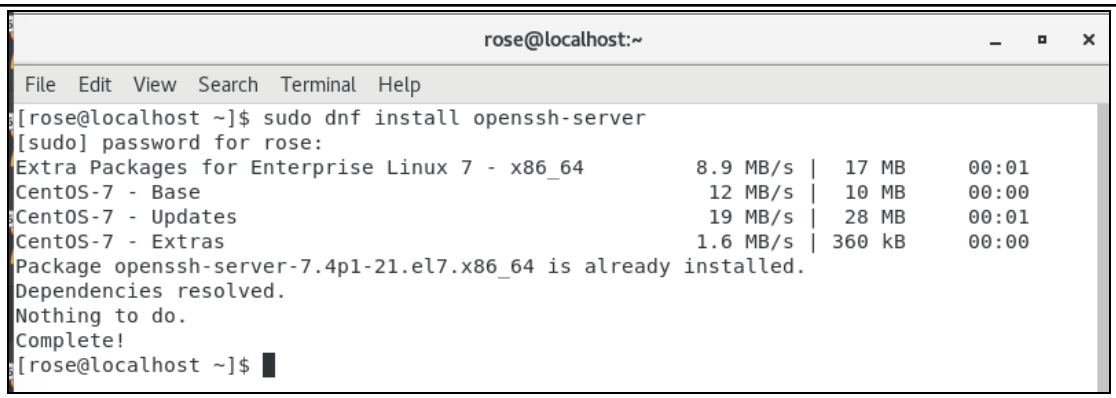
4. Show evidence that the OS was installed already.



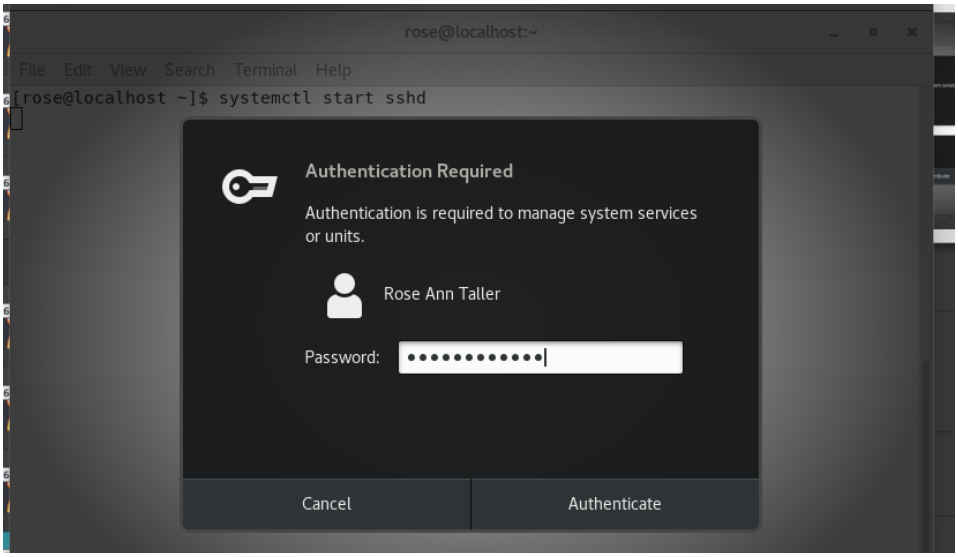


Task 2: Install the SSH server package *openssh*

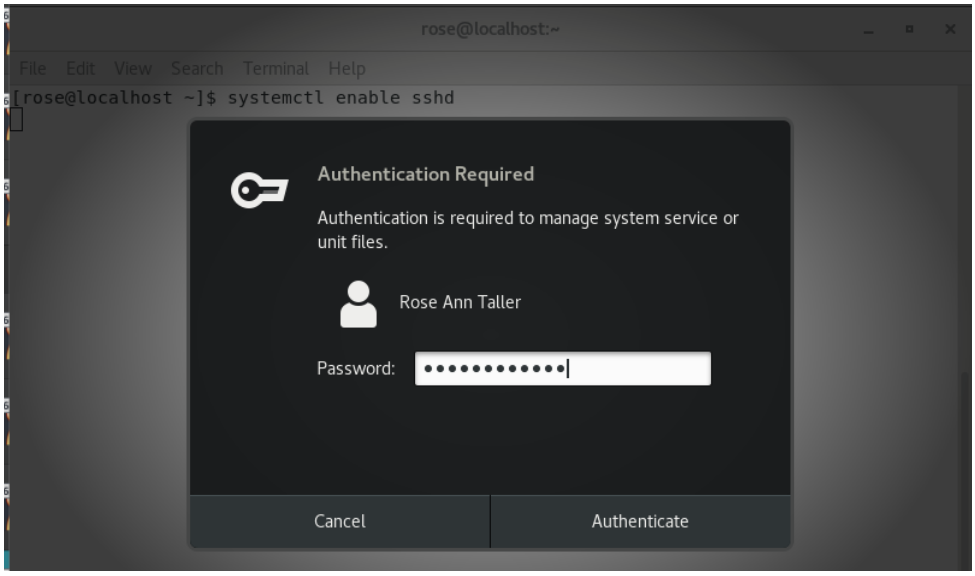
1. Install the ssh server package *openssh* by using the *dnf* command:
   $ dnf install openssh-server



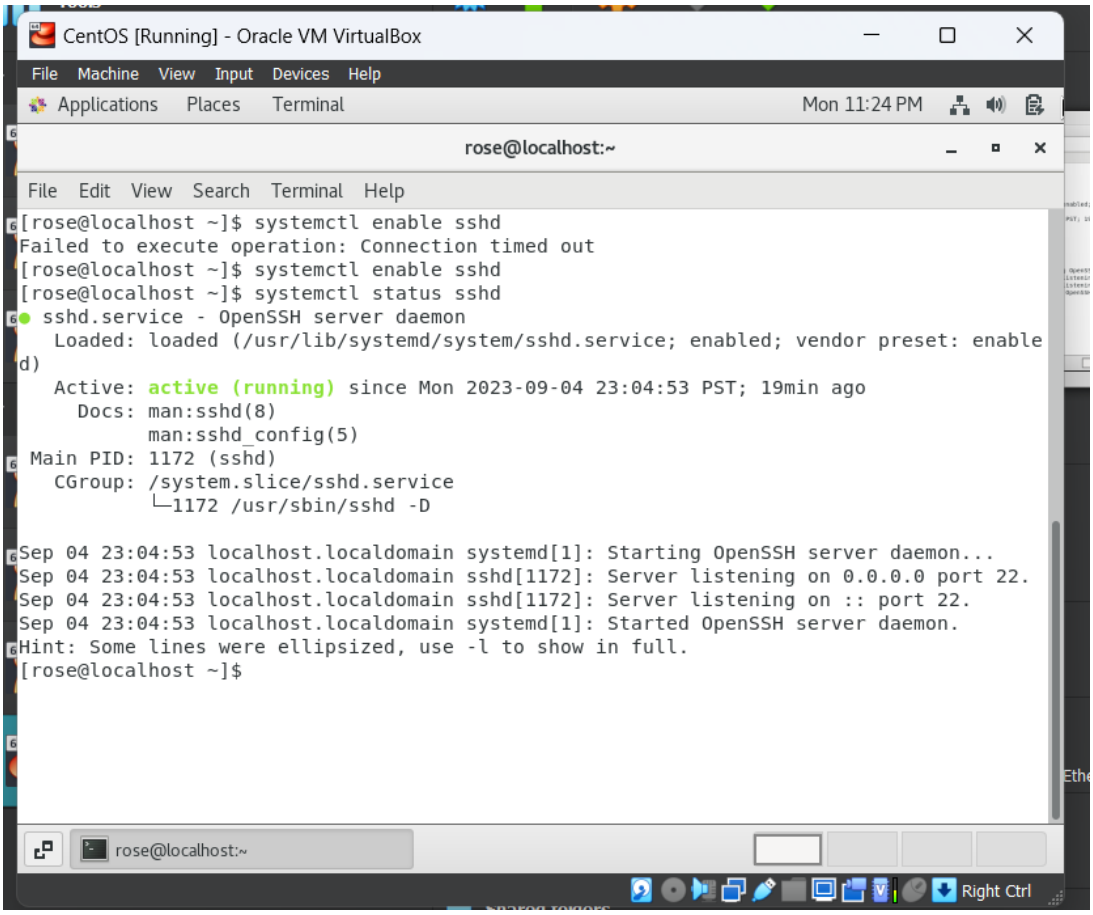
2. Start the *sshd* daemon and set to start after reboot:
   $ systemctl start sshd



$ systemctl enable sshd



3. Confirm that the sshd daemon is up and running:
   $ systemctl status sshd



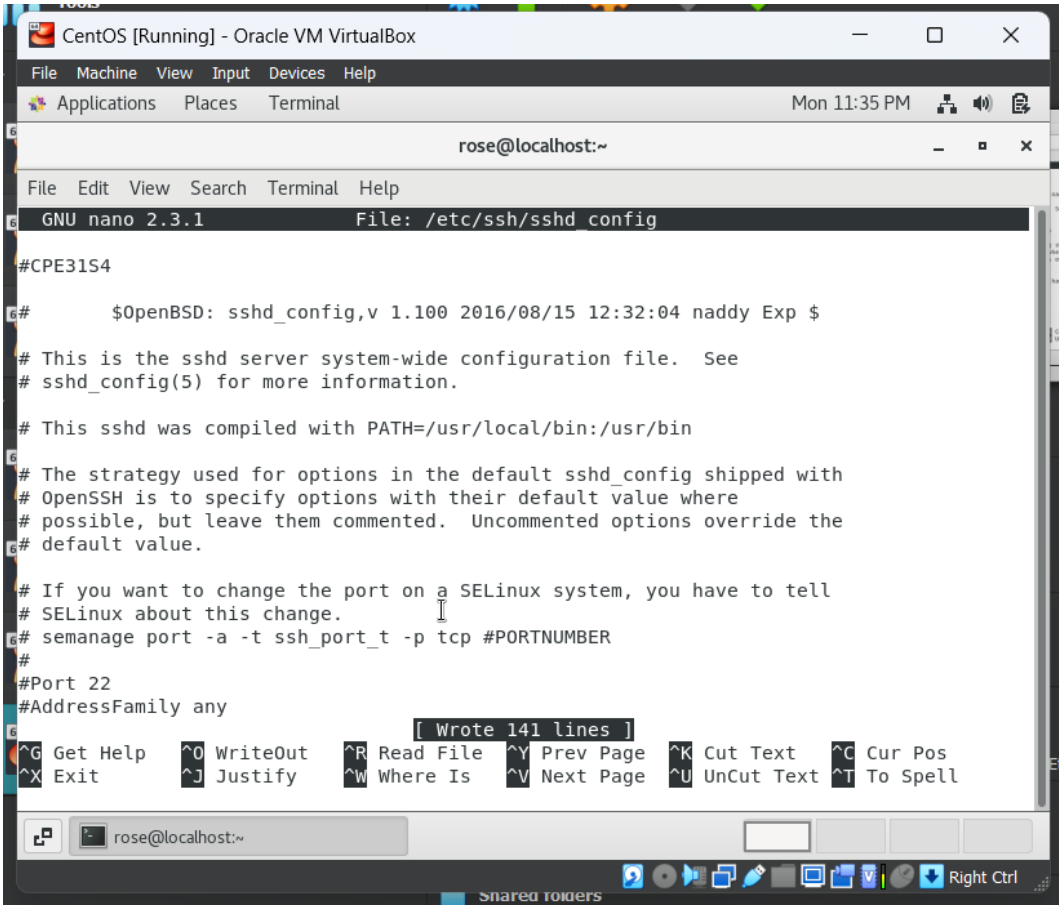
4. Open the SSH port 22 to allow incoming traffic:
   $ firewall-cmd --zone=public --permanent --add-service=ssh

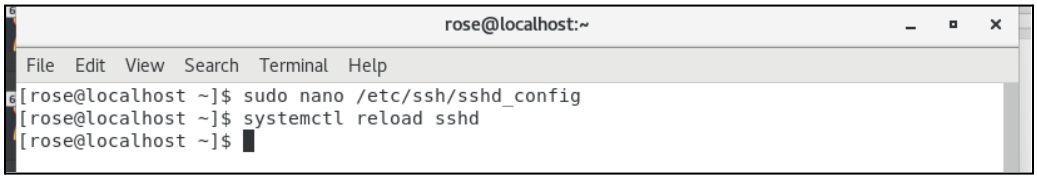
```
rose@localhost:~
File  Edit  View  Search  Terminal  Help
[rose@localhost ~]$ firewall-cmd --zone=public --permanent --add-service=ssh
Warning: ALREADY_ENABLED: ssh
success
[rose@localhost ~]$
```

   $ firewall-cmd --reload

```
rose@localhost:~
File  Edit  View  Search  Terminal  Help
[rose@localhost ~]$ firewall-cmd --reload
success
[rose@localhost ~]$
```

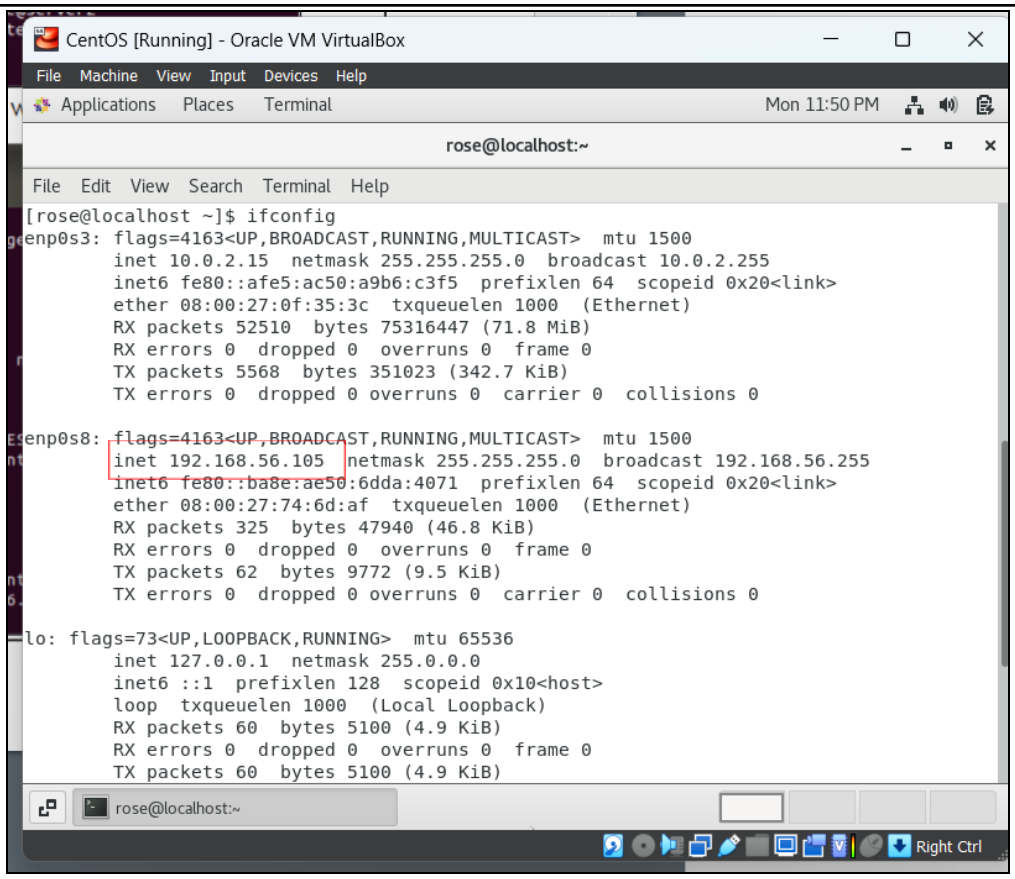
5. Locate the ssh server man config file */etc/ssh/sshd_config* and perform custom configuration. Every time you make any change to the */etc/ssh/sshd-config* configuration file reload the *sshd* service to apply changes:
   $ systemctl reload sshd

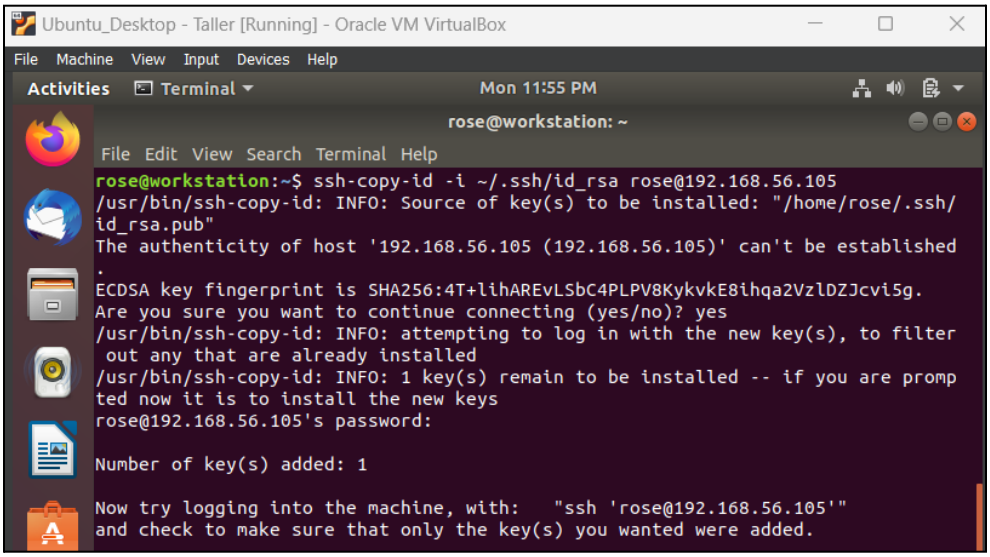




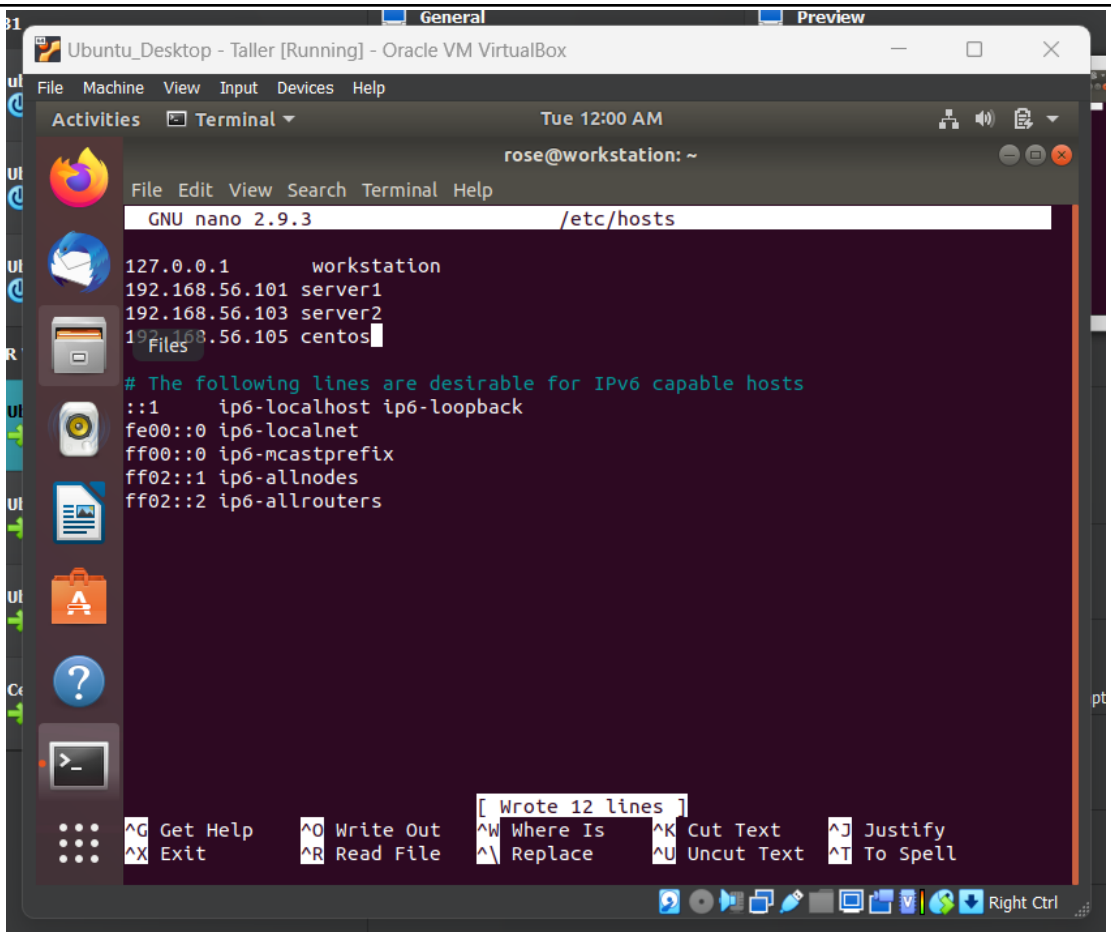
Task 3: Copy the Public Key to CentOS

1. Make sure that *ssh* is installed on the local machine.
2. Using the command *ssh-copy-id*, connect your local machine to CentOS.

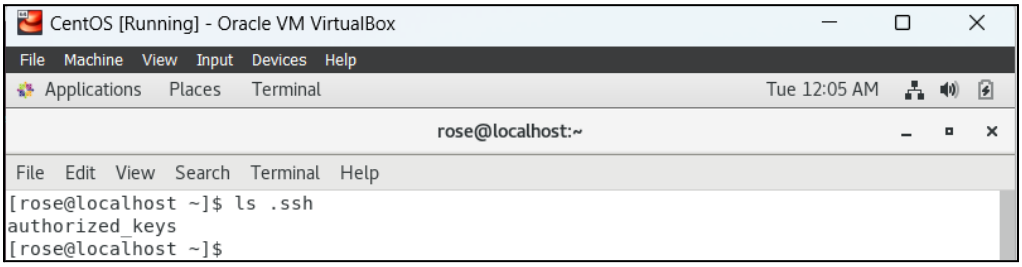





```
rose@workstation:~$ ssh rose@192.168.56.105
Last login: Mon Sep  4 23:05:14 2023
[rose@localhost ~]$
```

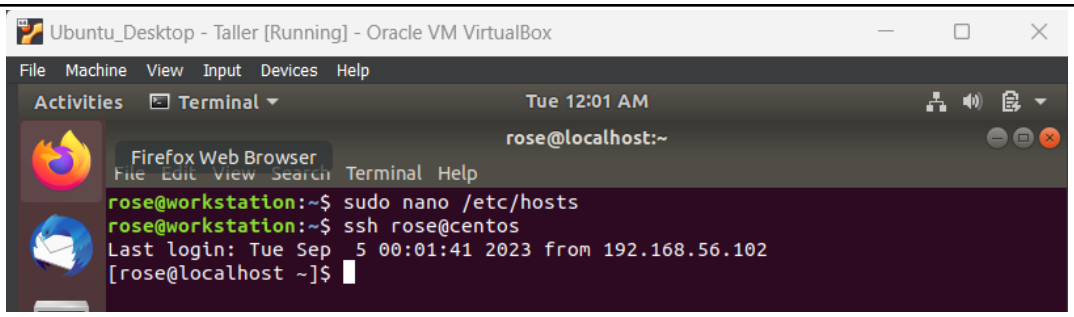


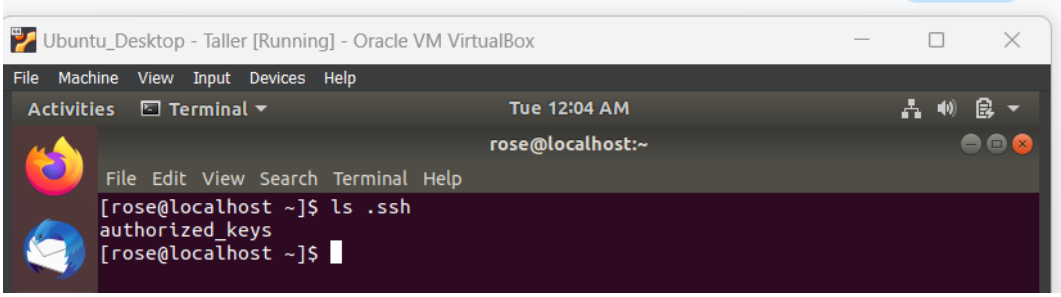
3. On CentOS, verify that you have the *authorized_keys*.



Task 4: Verify ssh remote connection

1. Using your local machine, connect to CentOS using ssh.
2. Show evidence that you are connected.





Reflections:

Answer the following:

1. What do you think we should look for in choosing the best distribution between Debian and Red Hat Linux distributions?
   - *As a student, I think we should look for a Linux distribution that's easy to use, works well with other software, doesn't crash, is dependable, and, most importantly, keeps our stuff safe. Learning becomes faster when the distribution we use has a simple interface that's not confusing. It should also be compatible and provide quality performance.*

2. What are the main differences between Debian and Red Hat Linux distributions?
   - *Debian uses Debian Package Management System (DPKG) and Advanced Packaging Tool (APT) package management while Red Hat uses RedHat Package Manager (RPM) and Yellowdog Updater, Modified (YUM) package management. And based on what I've learned and understood, Debian is a huge community project where volunteers from different places work for its development while Red Hat is like a project which is developed and supported by a company.*

Conclusions/Learnings:

*In this activity, I easily finished Task 1 because the procedure was straightforward. For Task 2, the **dnf** command didn't work when I first tried it, so I had to install and set up the epel repository using the **yum install epel-release** command before I could install **dnf** using **yum install dnf**. I did all this as the root user (superuser).*

When it came to Task 3, I completed it quickly because I was already familiar with the procedures I needed to follow to finish the task. Lastly, I enjoyed Task 4 the most

because it was simply about connecting to the local host in CentOS and verifying the connection.

Overall, I had a good time with this activity, and I've learned how to install and configure remote ssh connections from localhost/workstation to CentOS. I also learned why there are different Linux distributions and understood their purposes better.

Honor Pledge for Graded Activity

"I affirm that I shall not give and receive any unauthorized help on this activity, and that this work is my own."