

# Proof of Concept Technical Solution for the Marconi Law Firm, LLC. (WordPress Website)

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## Inventory

EQUIPMENT	OPERATING SYSTEM	ADDITIONAL INFO	IP ADDRESS
Router/Custom Network	- (Firewall VM)	-Firewall VM	10.10.229.1
Docker	Rocky 8 (-Docker)	Ghost Container	10.10.229.11
NginX Reverse Proxy	Rocky 8 (-Nginx)	Reverse Proxy	10.10.229.10
WordPress	Ubuntu	LAMP Stack running WordPress	10.10.229.12

## Custom Network

NETWORK NAME	SUBNET IP	SUBNET MASK	DNS	GATEWAY
ITE229	10.10.229.0	255.255.255.0	10.10.229.1	10.10.229.1

## IDs and Passwords

ACCOUNT	USER ID	PASSWORD
Rocky8-Docker Root User	root@DockerRedding	Fullsail1!
Rocky8-Nginx Root User	root@NginxRedding	Fullsail1!
Ubuntu Root User	root@UbuntuRedding	Fullsail1!
MySQL Root User	root@localhost	Fullsail1!
MySQL WordPress User	WordPressUser	Fullsail1!
WordPress Admin	admin	Fullsail1!

# Preface

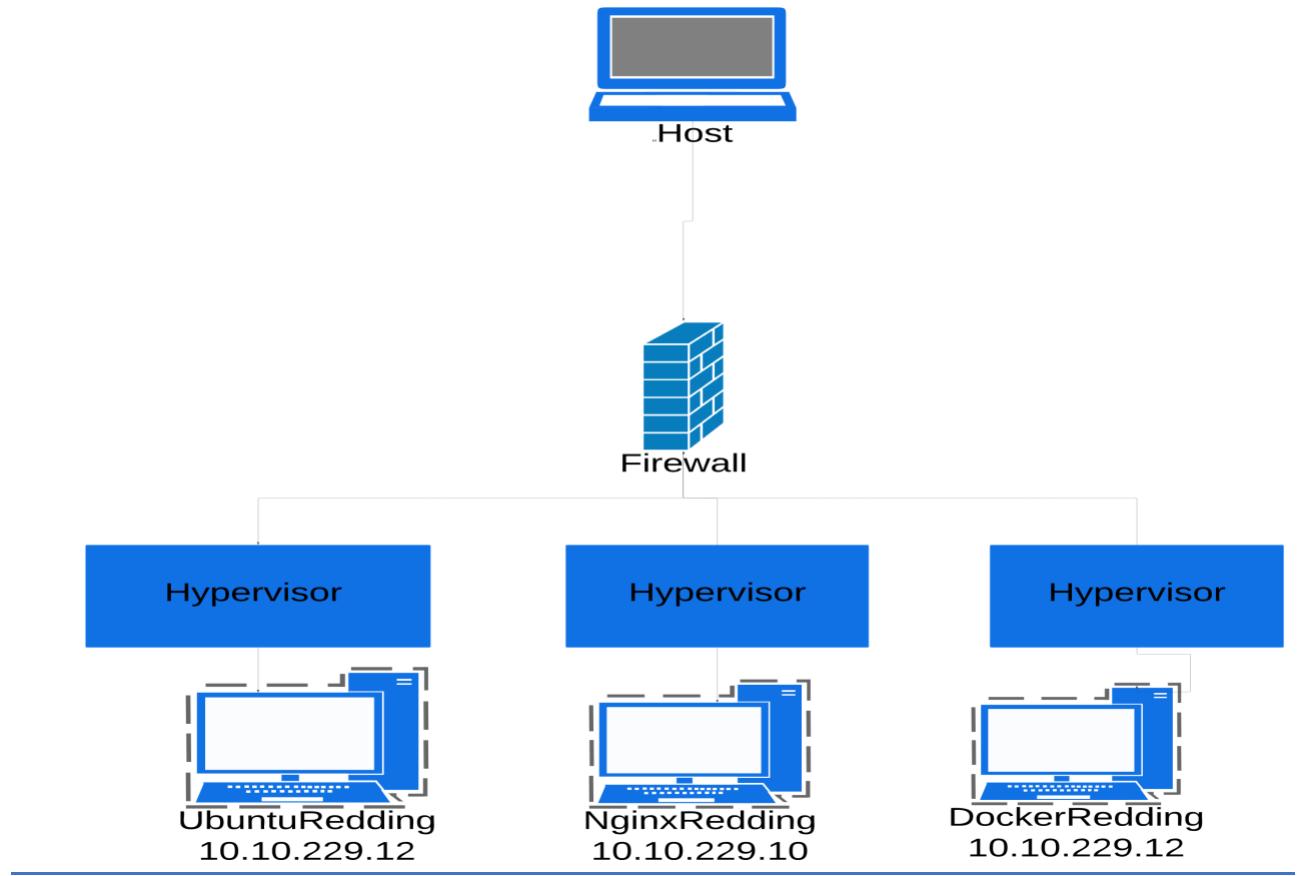
This document will serve as proof of concept to Mr. Marconi for creating his WordPress website for his law firm and as audit documentation.

The purpose of audit documentation is to provide a comprehensive record of the organization's information technology infrastructure and security controls and processes. It plays a crucial role in providing transparency, accountability, and QA/QC regarding an organization's cybersecurity controls and practices. It enables organizations to demonstrate compliance, identify areas for improvement, and make informed decisions to strengthen their overall organizational cybersecurity.

Audit documentation serves several important purposes:

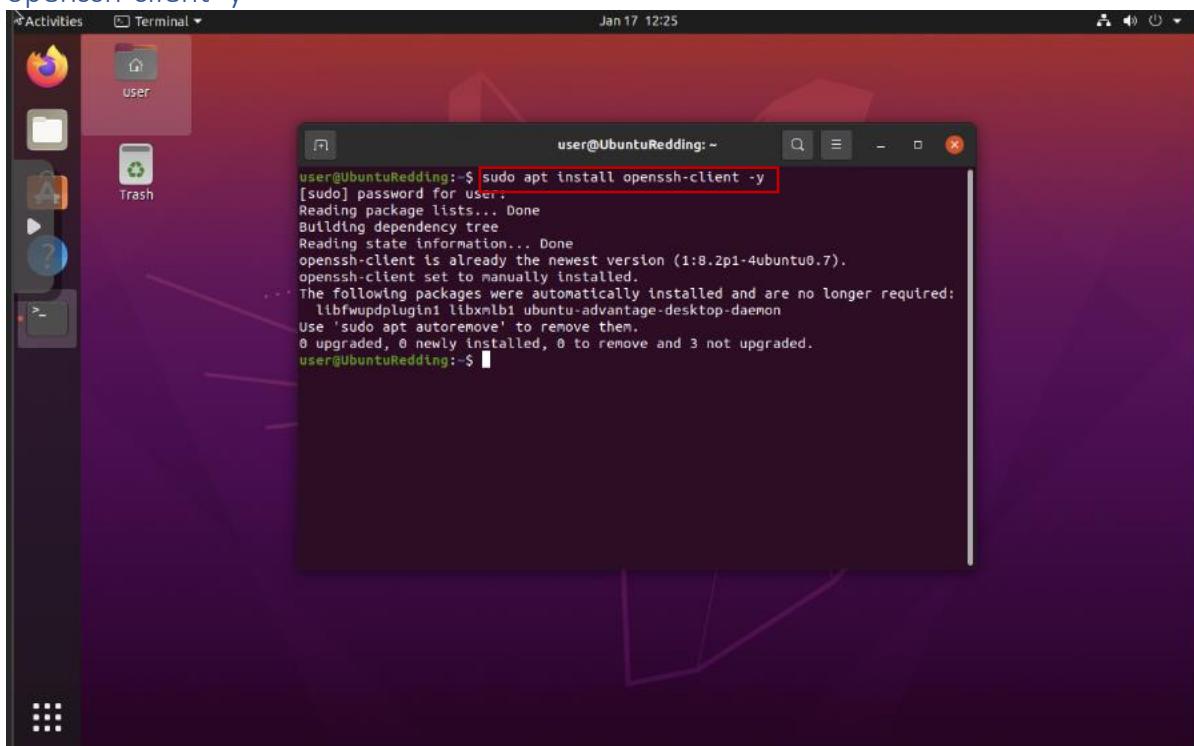
- Compliance: Evidence that an organization has undergone a thorough examination of its systems. It helps validate that the organization has implemented appropriate controls to protect its information systems and sensitive data.
- Validation: Verification of the effectiveness and adequacy of cybersecurity controls. It provides detailed information about the design, implementation, and operation of these controls, enabling reviewers to assess their reliability and identify any gaps or weaknesses.
- Records Maintenance: Historical record of cybersecurity audits conducted over time. It enables organizations to track their progress, identify trends, and evaluate the effectiveness actions taken. It also serves as reference for future audits and allows auditors to understand the current cybersecurity implemented and facilitates a more targeted approach to future cybersecurity updates and audits.
- Decision-making Support: Valuable insights and information that can support decision-making processes. It allows management to make informed decisions about allocating resources, prioritizing cybersecurity investments, and addressing identified risks and vulnerabilities.

## Network Topology Diagram



## SSH Install & Access

OpenSSH Install (Ubuntu): Install ssh by downloading the ssh-client > sudo apt install openssh-client -y

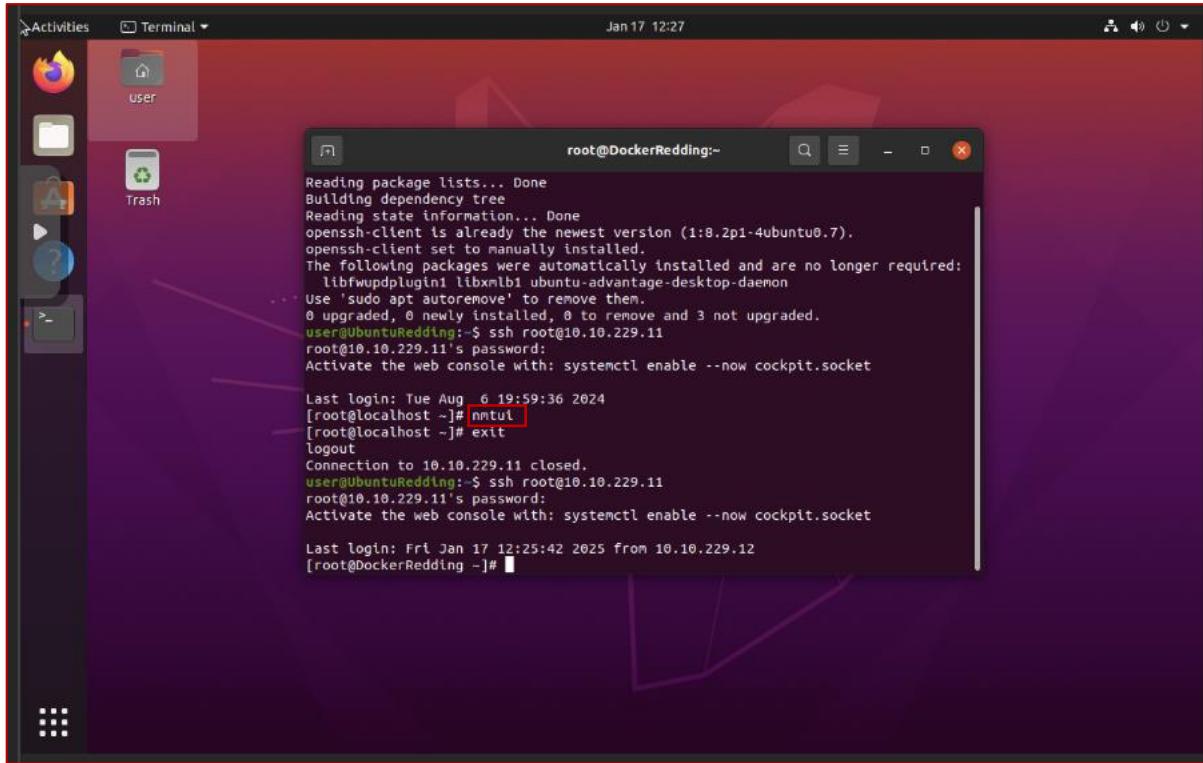


A screenshot of a Linux desktop environment, likely Ubuntu, showing a terminal window. The terminal window title is "user@UbuntuRedding:~". The command entered is "sudo apt install openssh-client -y". The terminal output shows the package manager reading lists, building a dependency tree, and stating that openssh-client is already the newest version. It also mentions that libfwupdplugins, libxml2, and ubuntu-advantage-desktop-daemon are being automatically removed. The terminal window has a red border around the command line.

```
user@UbuntuRedding:~$ sudo apt install openssh-client -y
[sudo] password for user:
Reading package lists... Done
Building dependency tree
Reading state information... Done
openssh-client is already the newest version (1:8.2p1-4ubuntu0.7).
openssh-client set to manually installed.
The following packages were automatically installed and are no longer required:
  libfwupdplugins libxml2 ubuntu-advantage-desktop-daemon
Use 'sudo apt autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 3 not upgraded.
user@UbuntuRedding:~$
```

## Node.js Application (Ghost) on Docker

Update Rocky8-Docker Host Name: Update the hostname to Docker[lastname]. > nmtui

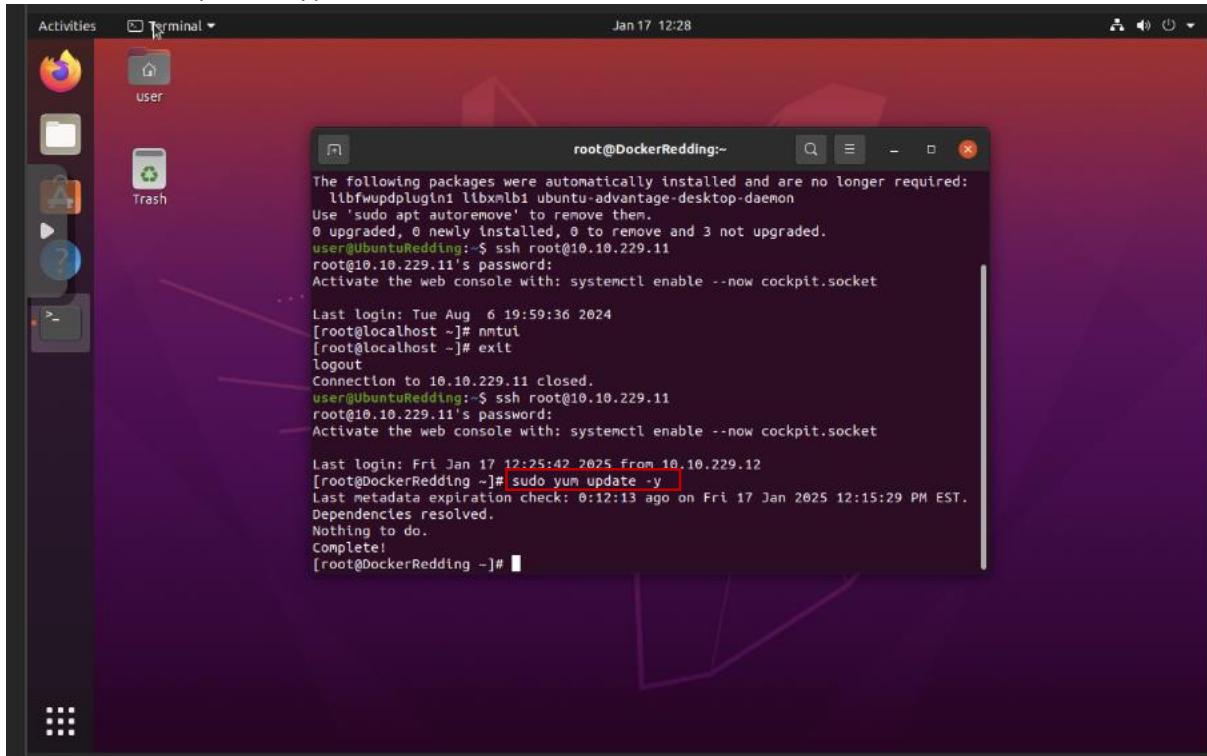


```
root@DockerRedding:~ Reading package lists... Done
Building dependency tree
Reading state information... Done
openSSH-client is already the newest version (1:8.2p1-4ubuntu0.7).
openSSH-client set to manually installed.
The following packages were automatically installed and are no longer required:
  libfwupdplugin1 libximbi1 ubuntu-adantage-desktop-daemon
Use 'sudo apt autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 3 not upgraded.
user@UbuntuRedding:~$ ssh root@10.10.229.11
root@10.10.229.11's password:
Activate the web console with: systemctl enable --now cockpit.socket

Last login: Tue Aug  6 19:59:36 2024
[root@localhost ~]# nmtui
[root@localhost ~]# exit
logout
Connection to 10.10.229.11 closed.
user@UbuntuRedding:~$ ssh root@10.10.229.11
root@10.10.229.11's password:
Activate the web console with: systemctl enable --now cockpit.socket

Last login: Fri Jan 17 12:25:42 2025 from 10.10.229.12
[root@DockerRedding ~]#
```

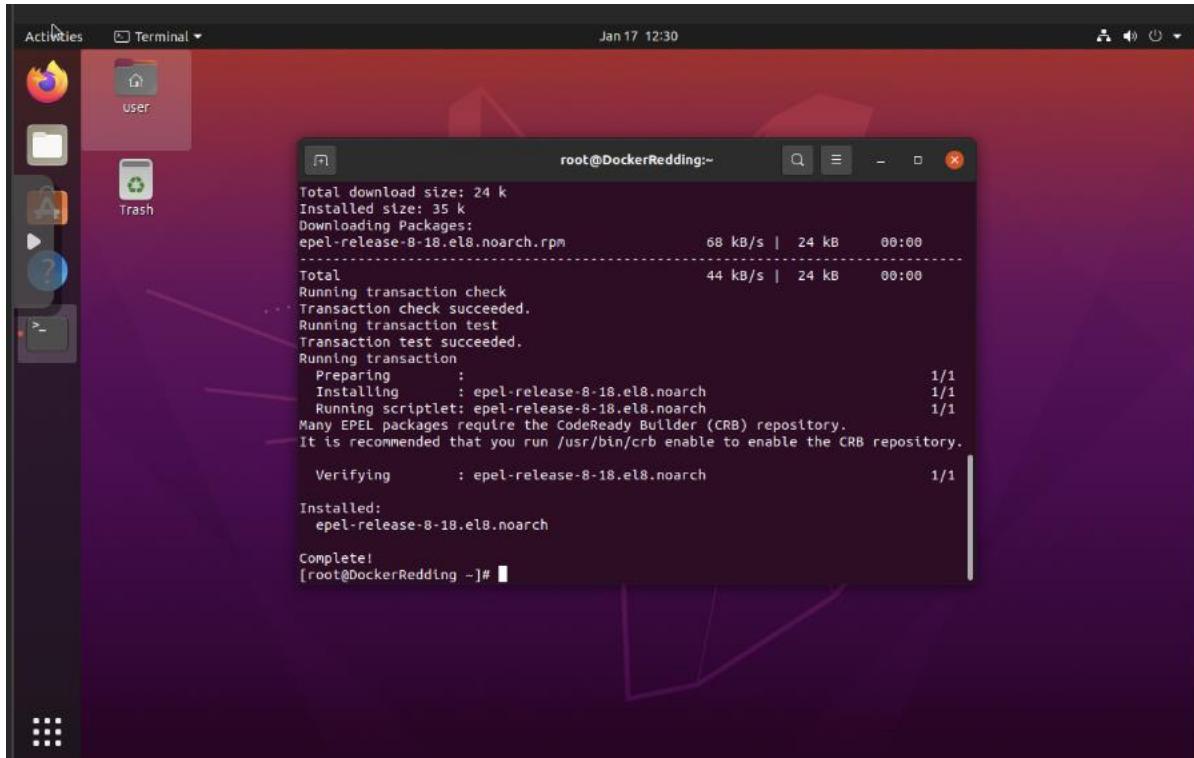
Update Rocky8-Docker: Update your Rocky8-Docker> sudo yum update -y (Enter commands seperately).



```
The following packages were automatically installed and are no longer required:  
libfwupdplugin1 libxml2-ubuntu-advantage-desktop-daemon  
Use 'sudo apt autoremove' to remove them.  
0 upgraded, 0 newly installed, 0 to remove and 3 not upgraded.  
user@UbuntuRedding:~$ ssh root@10.10.229.11  
root@10.10.229.11's password:  
Activate the web console with: systemctl enable --now cockpit.socket  
  
Last login: Tue Aug 6 19:59:36 2024  
[root@localhost ~]# nmtui  
[root@localhost ~]# exit  
logout  
Connection to 10.10.229.11 closed.  
user@UbuntuRedding:~$ ssh root@10.10.229.11  
root@10.10.229.11's password:  
Activate the web console with: systemctl enable --now cockpit.socket  
  
Last login: Fri Jan 17 12:25:42 2025 from 10.10.229.12  
[root@DockerRedding ~]# sudo yum update -y  
Last metadata expiration check: 0:12:13 ago on Fri 17 Jan 2025 12:15:29 PM EST.  
Dependencies resolved.  
Nothing to do.  
Complete!  
[root@DockerRedding ~]#
```

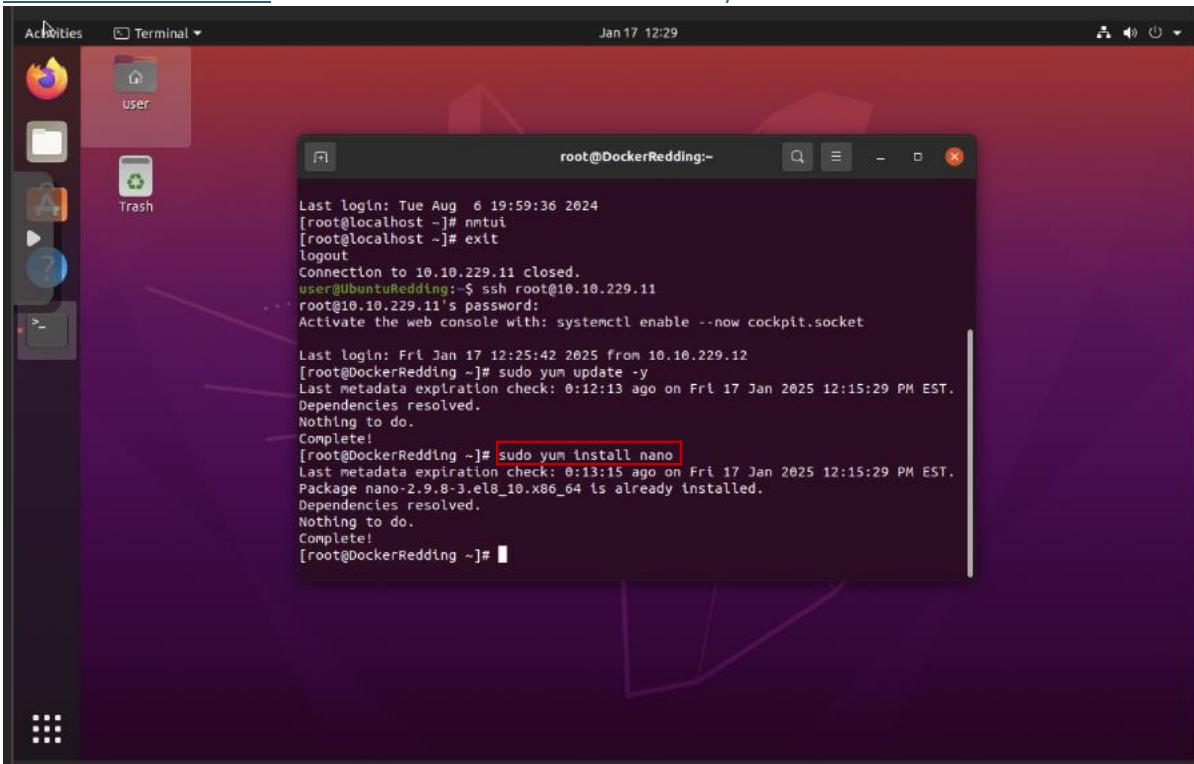
Install EPEL Packages: sudo yum install epel-release -y

\*This is the output of the command



```
Total download size: 24 k  
Installed size: 35 k  
Downloading Packages:  
epel-release-8-18.el8.noarch.rpm  
-----  
Total  
Running transaction check  
Transaction check succeeded.  
Running transaction test  
Transaction test succeeded.  
Running transaction  
Preparing : epel-release-8-18.el8.noarch 1/1  
Installing : epel-release-8-18.el8.noarch 1/1  
Running scriptlet: epel-release-8-18.el8.noarch 1/1  
Many EPEL packages require the CodeReady Builder (CRB) repository.  
It is recommended that you run /usr/bin/crb enable to enable the CRB repository.  
Verifying : epel-release-8-18.el8.noarch 1/1  
  
Installed:  
epel-release-8-18.el8.noarch  
  
Complete!  
[root@DockerRedding ~]#
```

Install Nano Editor: Install Nano text editor. > sudo yum install nano



```
Last login: Tue Aug  6 19:59:36 2024
[root@localhost ~]# nmui
[root@localhost ~]# exit
logout
Connection to 10.10.229.11 closed.
user@UbuntuRedding: ~ ssh root@10.10.229.11
root@10.10.229.11's password:
Activate the web console with: systemctl enable --now cockpit.socket

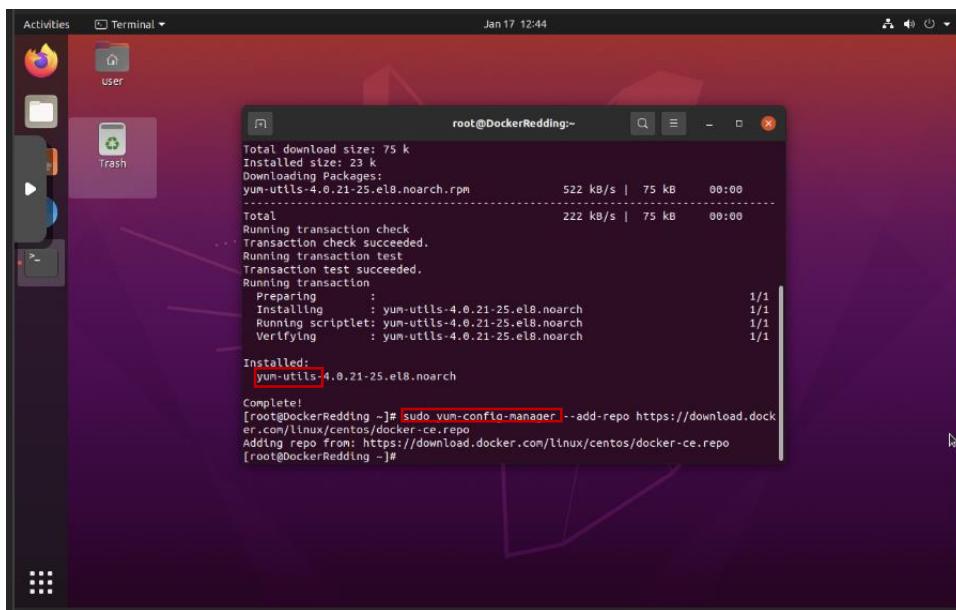
Last login: Fri Jan 17 12:25:42 2025 from 10.10.229.12
[root@DockerRedding ~]# sudo yum update -y
Last metadata expiration check: 0:13:15 ago on Fri 17 Jan 2025 12:15:29 PM EST.
Dependencies resolved.
Nothing to do.
Complete!
[root@DockerRedding ~]# sudo yum install nano
Last metadata expiration check: 0:13:15 ago on Fri 17 Jan 2025 12:15:29 PM EST.
Package nano-2.9.8-3.el8_10.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[root@DockerRedding ~]#
```

Docker CE: Use this command to install the package manager > sudo yum install -y yum-utils

Set up stable repository > sudo yum-config-manager --add-repo

<https://download.docker.com/linux/centos/docker-ce.repo>

\*This command uses a tool to add a specific new repository for Docker CE



```
Total download size: 75 k
Installed size: 23 k
Downloading Packages:
yum-utils-4.0.21-25.el8.noarch.rpm      522 kB/s |  75 kB   00:00
...
Total                                         222 kB/s |  75 kB   00:00
Running transaction check
  Transaction check succeeded.
  Running transaction test
  Transaction test succeeded.
  Running transaction
    Preparing          : 1/1
    Installing        : yum-utils-4.0.21-25.el8.noarch 1/1
    Running scriptlet: yum-utils-4.0.21-25.el8.noarch 1/1
    Verifying         : yum-utils-4.0.21-25.el8.noarch 1/1
Installed:
  yum-utils-4.0.21-25.el8.noarch
Complete!
[root@DockerRedding ~]# sudo yum-config-manager --add-repo https://download.docker.com/linux/centos/docker-ce.repo
Adding repo from: https://download.docker.com/linux/centos/docker-ce.repo
[root@DockerRedding ~]#
```

Install Docker CE: Install the latest version of Docker Engine. > sudo yum install docker-ce docker-ce-cli containerd.io docker-buildx-plugin docker-compose-plugin \*[This is the output of the command.]

```

Activities Terminal Jan 17 12:58 root@DockerRedding:~ 7/14
Installing libcgroup-0.41-19.el8.x86_64 7/14
Running scriptlet: libcgroup-0.41-19.el8.x86_64 7/14
Files alling : fuse-common-3.3.0-19.el8.x86_64 8/14
Files alling : fuse3-3.3.0-19.el8.x86_64 9/14
Installing fuse-overlayfs-1.13-1.module+el8.10.0+1896+b18fa106.x86_64 10/14
Running scriptlet: fuse-overlayfs-1.13-1.module+el8.10.0+1896+b18fa106.x86_64 10/14
Installing libsllrp-4.4.0-2.module+el8.10.0+1896+b18fa106.x86_64 11/14
Installing slirp4netns-1.2.3-1.module+el8.10.0+1896+b18fa106.x86_64 12/14
Installing docker-ce-rootless-extras-26.1.3-1.el8.x86_64 13/14
Running scriptlet: docker-ce-rootless-extras-26.1.3-1.el8.x86_64 13/14
Installing docker-ce-3.26.1.3-1.el8.x86_64 14/14
Running scriptlet: docker-ce-3.26.1.3-1.el8.x86_64 14/14
Running scriptlet: container-selinux-2:2.229.0-2.module+el8.10.0+1896+b18fa106.noarch 14/14
Running scriptlet: docker-ce-3:26.1.3-1.el8.x86_64 14/14
Verifying container-selinux-2:2.229.0-2.module+el8.10.0+1896+b18fa106.noarch 1/14
Verifying fuse-overlayfs-1.13-1.module+el8.10.0+1896+b18fa106.x86_64 2/14
Verifying libsllrp-4.4.0-2.module+el8.10.0+1896+b18fa106.x86_64 3/14
Verifying slirp4netns-1.2.3-1.module+el8.10.0+1896+b18fa106.x86_64 4/14
Verifying fuse-common-3.3.0-19.el8.x86_64 5/14
Verifying fuse3-3.3.0-19.el8.x86_64 6/14
Verifying fuse3-libs-3.3.0-19.el8.x86_64 7/14
Verifying libcgroup-0.41-19.el8.x86_64 8/14
Verifying containerd.io-1.6.32-3.1.el8.x86_64 9/14
Verifying docker-buildx-plugin-0.14.0-1.el8.x86_64 10/14
Verifying docker-ce-3:26.1.3-1.el8.x86_64 11/14
Verifying docker-ce-cll-1:26.1.3-1.el8.x86_64 12/14
Verifying docker-ce-rootless-extras-26.1.3-1.el8.x86_64 13/14
Verifying docker-compose-plugin-2.27.0-1.el8.x86_64 14/14

Installed:
container-selinux-2:2.229.0-2.module+el8.10.0+1896+b18fa106.noarch
docker-buildx-plugin-0.14.0-1.el8.x86_64
docker-ce-cll-1:26.1.3-1.el8.x86_64
docker-compose-plugin-2.27.0-1.el8.x86_64
fuse-overlayfs-1.13-1.module+el8.10.0+1896+b18fa106.x86_64
fuse3-libs-3.3.0-19.el8.x86_64
libsllrp-4.4.0-2.module+el8.10.0+1896+b18fa106.x86_64
root@DockerRedding ~]# Complete!
```

Verify Docker version: Display the current version and verify installation by using the command > docker -v

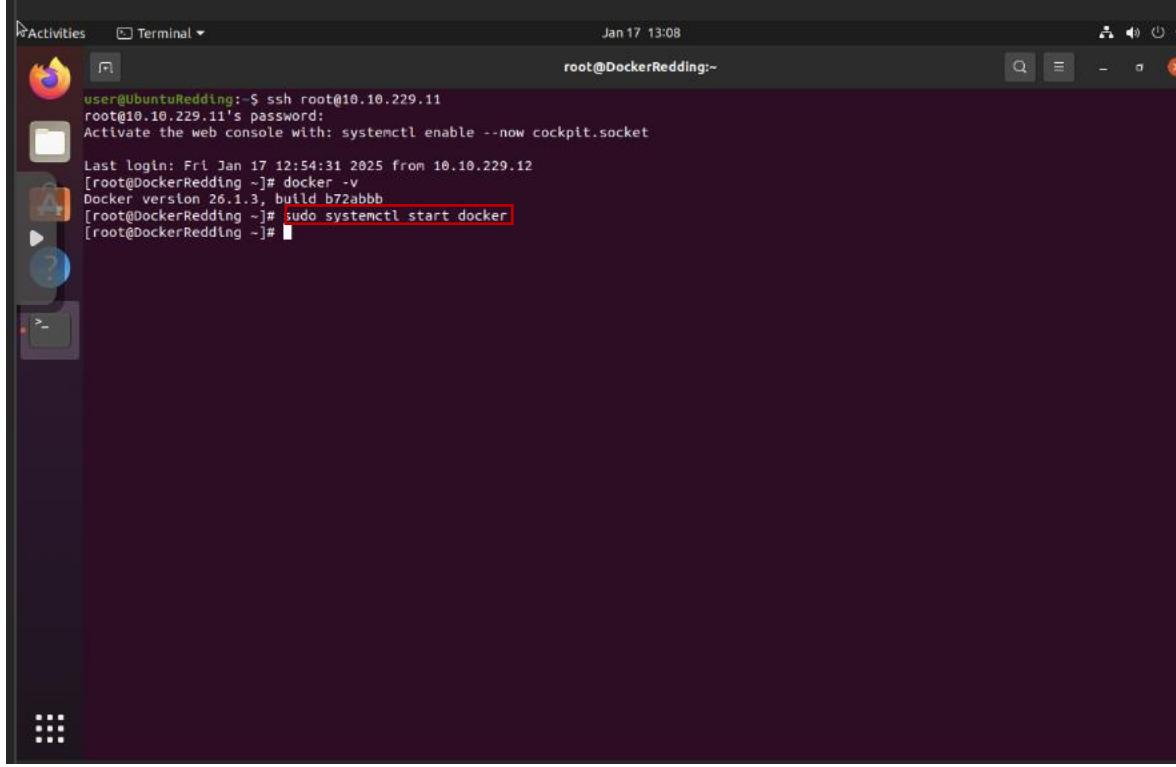
```

Activities Terminal Jan 17 13:07 root@DockerRedding:~ 7/14
user@UbuntuRedding:~$ ssh root@10.10.229.11
root@10.10.229.11's password:
Activate the web console with: systemctl enable --now cockpit.socket

Last login: Fri Jan 17 12:54:31 2025 from 10.10.229.12
[root@DockerRedding ~]# docker -v
Docker version 26.1.3, build b72abbb
[root@DockerRedding ~]#
```

## Initialize Docker

Start Docker > sudo systemctl start docker

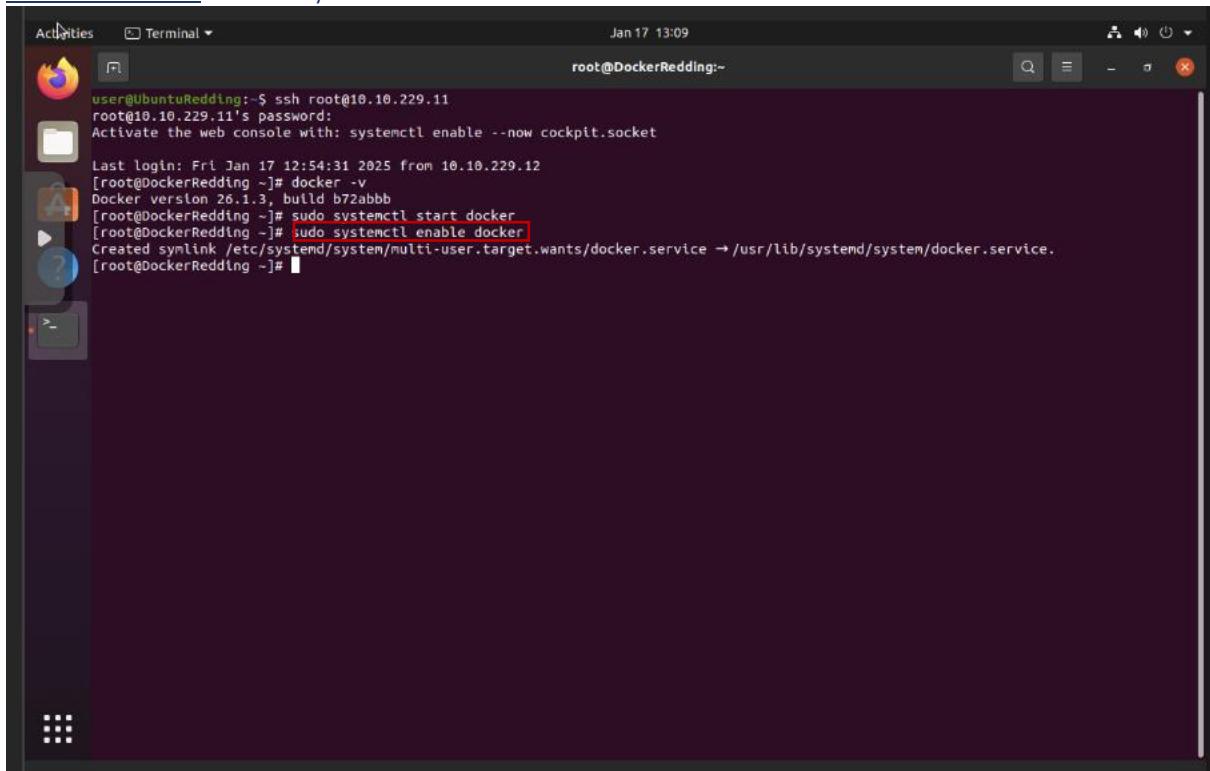


A screenshot of a Linux desktop environment showing a terminal window. The terminal window title is "Activities Terminal" and the subtitle is "root@DockerRedding:~". The terminal shows the following command being run:

```
user@UbuntuRedding:~$ ssh root@10.10.229.11
root@10.10.229.11's password:
Activate the web console with: systemctl enable --now cockpit.socket

Last login: Fri Jan 17 12:54:31 2025 from 10.10.229.12
[root@DockerRedding ~]# docker -v
Docker version 26.1.3, build b72abbb
[root@DockerRedding ~]# sudo systemctl start docker
[root@DockerRedding ~]#
```

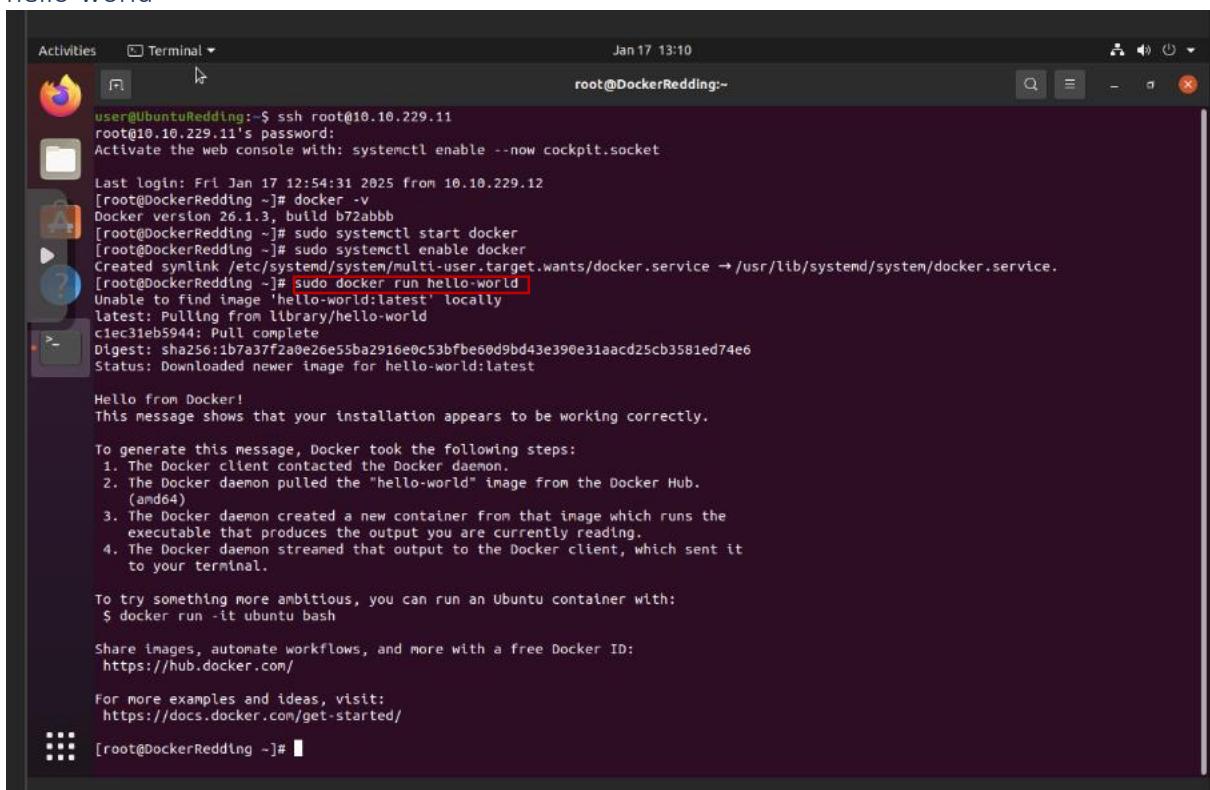
Enable Docker: > sudo systemctl enable docker



```
Activities Terminal Jan 17 13:09
root@DockerRedding:~#
user@UbuntuRedding:~$ ssh root@10.10.229.11
root@10.10.229.11's password:
Activate the web console with: systemctl enable --now cockpit.socket

Last login: Fri Jan 17 12:54:31 2025 from 10.10.229.12
[root@DockerRedding ~]# docker -v
Docker version 26.1.3, build b72abbb
[root@DockerRedding ~]# sudo systemctl start docker
[root@DockerRedding ~]# sudo systemctl enable docker
Created symlink /etc/systemd/system/multi-user.target.wants/docker.service → /usr/lib/systemd/system/docker.service.
[root@DockerRedding ~]#
```

Test Docker (hello-world): Run a docker container, the hello-world “image” > sudo docker run hello-world



```
Activities Terminal Jan 17 13:10
root@DockerRedding:~#
user@UbuntuRedding:~$ ssh root@10.10.229.11
root@10.10.229.11's password:
Activate the web console with: systemctl enable --now cockpit.socket

Last login: Fri Jan 17 12:54:31 2025 from 10.10.229.12
[root@DockerRedding ~]# docker -v
Docker version 26.1.3, build b72abbb
[root@DockerRedding ~]# sudo systemctl start docker
[root@DockerRedding ~]# sudo systemctl enable docker
Created symlink /etc/systemd/system/multi-user.target.wants/docker.service → /usr/lib/systemd/system/docker.service.
[root@DockerRedding ~]# sudo docker run hello-world
Unable to find image 'hello-world:latest' locally
latest: Pulling from library/hello-world
c1ec31eb5944: Pull complete
Digest: sha256:1b7a37f2a0e26e55ba2916e0c53bfbe60d9bd43e390e31aacd25cb3581ed74e6
Status: Downloaded newer image for hello-world:latest

Hello from Docker!
This message shows that your installation appears to be working correctly.

To generate this message, Docker took the following steps:
1. The Docker client contacted the Docker daemon.
2. The Docker daemon pulled the "hello-world" image from the Docker Hub.
   (amd64)
3. The Docker daemon created a new container from that image which runs the
   executable that produces the output you are currently reading.
4. The Docker daemon streamed that output to the Docker client, which sent it
   to your terminal.

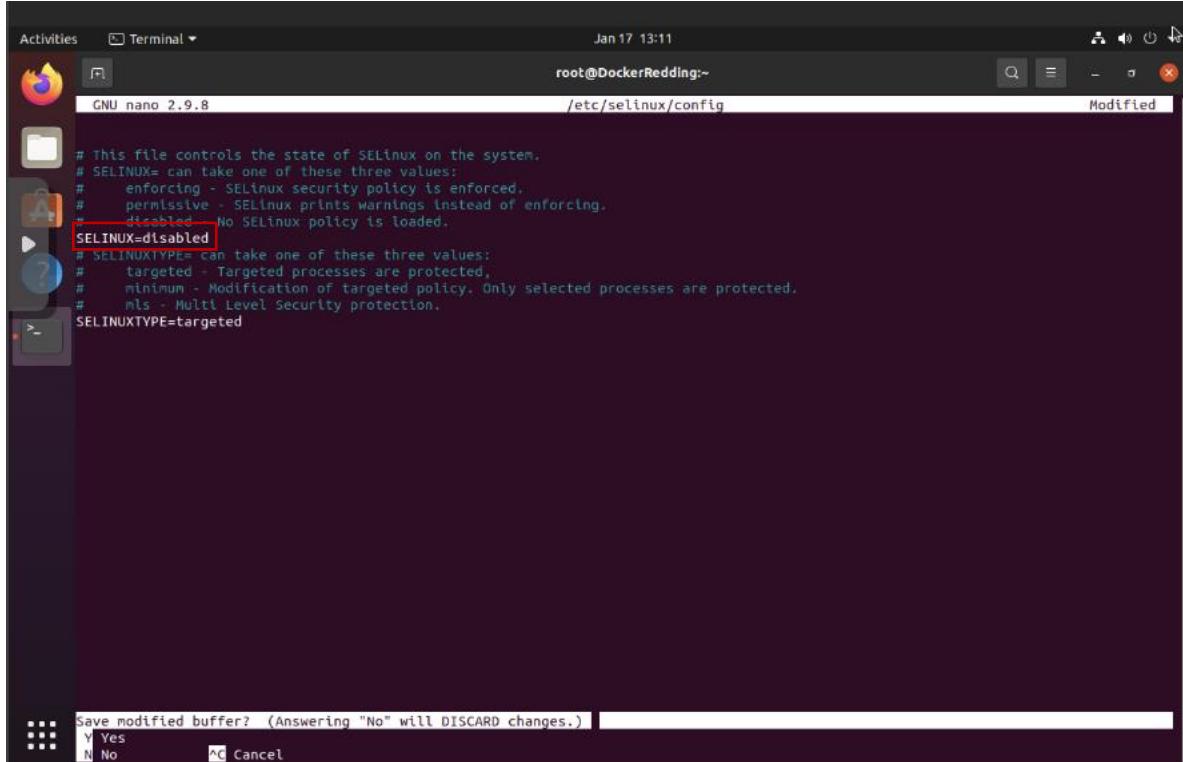
To try something more ambitious, you can run an Ubuntu container with:
$ docker run -it ubuntu bash

Share images, automate workflows, and more with a free Docker ID:
https://hub.docker.com/

For more examples and ideas, visit:
https://docs.docker.com/get-started/
[root@DockerRedding ~]#
```

Disable SELinux (`/etc/selinux/config`): To disable SELinux, locate your SELinux configuration file and modify the setting from "enforcing" to "disabled."

Although SELinux is typically beneficial when enforced, you will turn it off for this assignment to avoid any potential conflicts. > `sudo nano /etc/selinux/config` (This is the output of the command)



```
# This file controls the state of SELinux on the system.
# SELINUX= can take one of these three values:
#     enforcing - SELinux security policy is enforced.
#     permissive - SELinux prints warnings instead of enforcing.
#     disabled - No SELinux policy is loaded.
SELINUX=disabled
# SELINUXTYPE can take one of these three values:
#     targeted - Targeted processes are protected.
#     minimum - Modification of targeted policy. Only selected processes are protected.
#     mls - Multi Level Security protection.
SELINUXTYPE=targeted
```

Save modified buffer? (Answering "No" will DISCARD changes.)  
Y Yes  
N No **^C Cancel**

## Reboot VM: > reboot

The screenshot shows a terminal window titled "Activities Terminal" with the date "Jan 17 13:12" and user "user@UbuntuRedding:~". The terminal output is as follows:

```
Last login: Fri Jan 17 12:54:31 2025 from 10.10.229.12
[root@DockerRedding ~]# docker -v
Docker version 26.1.3, build b72abb
[root@DockerRedding ~]# sudo systemctl start docker
[root@DockerRedding ~]# sudo systemctl enable docker
Created symlink /etc/systemd/system/multi-user.target.wants/docker.service → /usr/lib/systemd/system/docker.service.
[root@DockerRedding ~]# sudo docker run hello-world
Unable to find image 'hello-world:latest' locally
latest: Pulling from library/hello-world
c1ec31eb5944: Pull complete
Digest: sha256:1b7a37f2a0e26e55ba2916e0c53bfbe60d9bd43e390e31aacd25cb3581ed74e6
Status: Downloaded newer image for hello-world:latest

Hello from Docker!
This message shows that your installation appears to be working correctly.

To generate this message, Docker took the following steps:
1. The Docker client contacted the Docker daemon.
2. The Docker daemon pulled the "hello-world" image from the Docker Hub.
   (amd64)
3. The Docker daemon created a new container from that image which runs the
   executable that produces the output you are currently reading.
4. The Docker daemon streamed that output to the Docker client, which sent it
   to your terminal.

To try something more ambitious, you can run an Ubuntu container with:
$ docker run -it ubuntu bash

Share images, automate workflows, and more with a free Docker ID:
https://hub.docker.com/

For more examples and ideas, visit:
https://docs.docker.com/get-started/
[root@DockerRedding ~]# sudo nano /etc/selinux/config
[root@DockerRedding ~]# reboot
Connection to 10.10.229.11 closed by remote host.
Connection to 10.10.229.11 closed.
user@UbuntuRedding:~$
```

## Confirm SELinux Status: >sestatus

The screenshot shows a terminal window titled "Activities Terminal" with the date "Jan 17 13:13" and user "root@DockerRedding:~". The terminal output is as follows:

```
[root@DockerRedding ~]# sudo docker run hello-world
Unable to find image 'hello-world:latest' locally
latest: Pulling from library/hello-world
c1ec31eb5944: Pull complete
Digest: sha256:1b7a37f2a0e26e55ba2916e0c53bfbe60d9bd43e390e31aacd25cb3581ed74e6
Status: Downloaded newer image for hello-world:latest

Hello from Docker!
This message shows that your installation appears to be working correctly.

To generate this message, Docker took the following steps:
1. The Docker client contacted the Docker daemon.
2. The Docker daemon pulled the "hello-world" image from the Docker Hub.
   (amd64)
3. The Docker daemon created a new container from that image which runs the
   executable that produces the output you are currently reading.
4. The Docker daemon streamed that output to the Docker client, which sent it
   to your terminal.

To try something more ambitious, you can run an Ubuntu container with:
$ docker run -it ubuntu bash

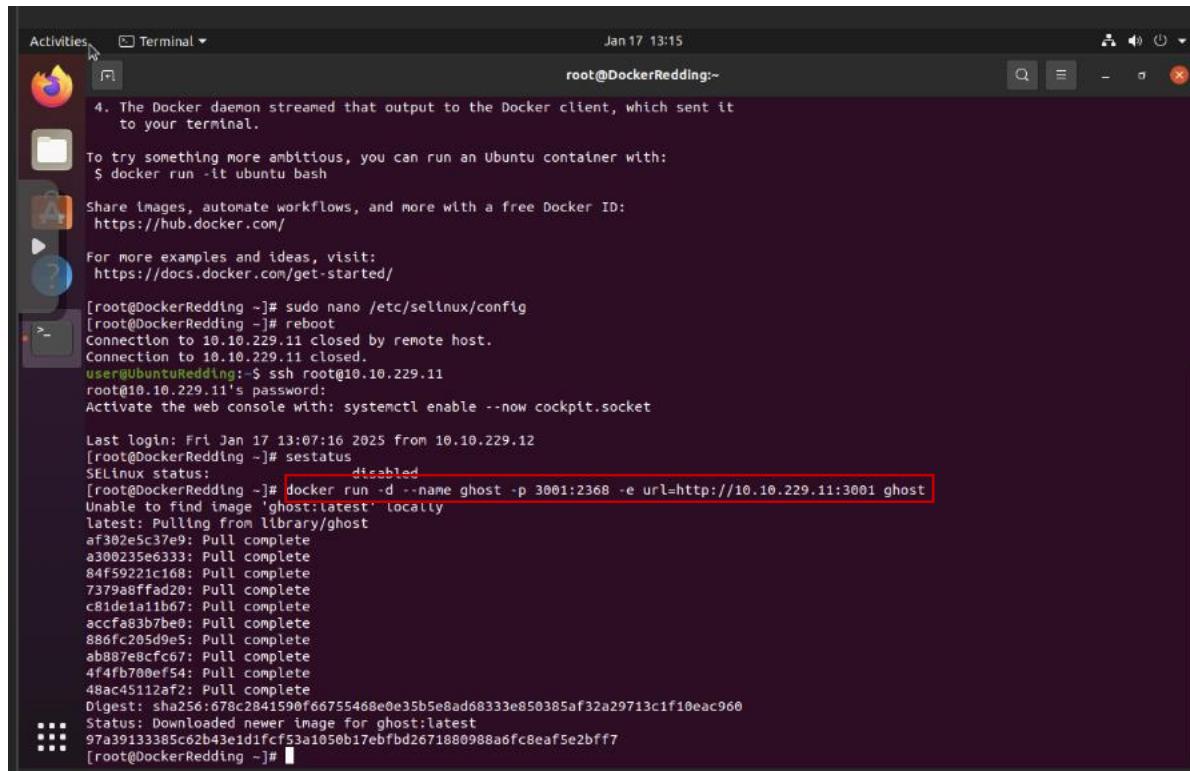
Share images, automate workflows, and more with a free Docker ID:
https://hub.docker.com/

For more examples and ideas, visit:
https://docs.docker.com/get-started/
[root@DockerRedding ~]# sudo nano /etc/selinux/config
[root@DockerRedding ~]# reboot
Connection to 10.10.229.11 closed by remote host.
Connection to 10.10.229.11 closed.
user@UbuntuRedding:~$ ssh root@10.10.229.11
root@10.10.229.11's password:
Activate the web console with: systemctl enable --now cockpit.socket

Last login: Fri Jan 17 13:07:16 2025 from 10.10.229.12
[root@DockerRedding ~]# sestatus
SELinux status:                 disabled
[root@DockerRedding ~]#
```

Install Ghost Docker Container: Using the following command create, start and name a new Docker container > docker run -d --name ghost -p 3001:2368 -e url=http://10.10.229.11:3001 ghost

- **docker run:** This is the command that kicks everything off, instructing Docker to set up and launch your new container.
- **-d:** This option makes sure the container runs in the background, so you can keep using your terminal for other tasks without interruption.
- **name ghost:** Here, we're giving your new container a name—"ghost." This makes it easy to refer to it later when you need to manage or access it.
- **-p 3001:2368:** This part connects your virtual machine's port 3001 to port 2368 inside the container. In simpler terms, it lets you access your Ghost blog by navigating to port 3001 on your virtual machine.
- **-e url=http://10.10.229.11:3001:** This sets up a configuration for the Ghost application, telling it where to find itself on the network.
- **ghost:** Finally, this specifies the Docker image you want to use, which is the Ghost blogging platform.



```
root@DockerRedding:~# docker run -d --name ghost -p 3001:2368 -e url=http://10.10.229.11:3001 ghost
4. The Docker daemon streamed that output to the Docker client, which sent it to your terminal.

To try something more ambitious, you can run an Ubuntu container with:
$ docker run -it ubuntu bash

Share images, automate workflows, and more with a free Docker ID:
https://hub.docker.com/

For more examples and ideas, visit:
https://docs.docker.com/get-started/

[root@DockerRedding ~]# sudo nano /etc/selinux/config
[root@DockerRedding ~]# reboot
Connection to 10.10.229.11 closed by remote host.
Connection to 10.10.229.11 closed.
user@UbuntuRedding:~$ ssh root@10.10.229.11
root@10.10.229.11's password:
Activate the web console with: systemctl enable --now cockpit.socket

Last login: Fri Jan 17 13:07:16 2025 from 10.10.229.12
[root@DockerRedding ~]# sestatus
SELinux status: disabled
[root@DockerRedding ~]# docker run -d --name ghost -p 3001:2368 -e url=http://10.10.229.11:3001 ghost
Unable to find image 'ghost:latest' locally
latest: Pulling from library/ghost
af302e5c37e9: Pull complete
a300235e6333: Pull complete
84f59221c168: Pull complete
7379a8ffad20: Pull complete
c81de1a1b67: Pull complete
accfa83b7be0: Pull complete
886fc205d9e5: Pull complete
ab887e8fcf67: Pull complete
4f4fb700ef54: Pull complete
48ac45112af2: Pull complete
Digest: sha256:678c2841590f66755468e0e35b5e8ad68333e850385af32a29713c1f10eac960
Status: Downloaded newer image for ghost:latest
97a3913385c62b43e1d1fcf53a1050b17ebfb2671880988a6fc8eaf5e2bfff
[root@DockerRedding ~]#
```

Check for Ghost Container (docker ps): Enter command > docker ps -a.

\* This lists all the Docker containers and will display the containerID on the left. (-a means “all”)

Ghost Container ID: 97a39133385c

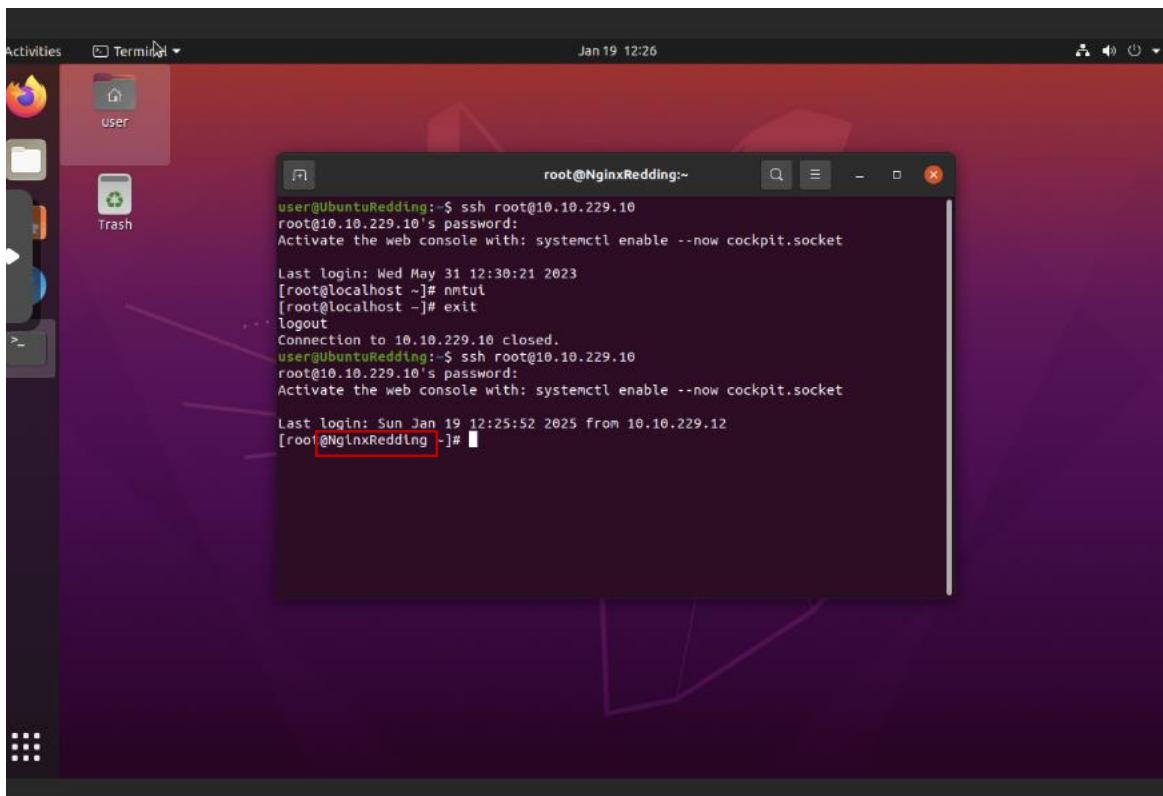
```
Activities Terminal Jan 17 13:16
root@DockerRedding:~ Share images, automate workflows, and more with a free Docker ID:
https://hub.docker.com/
For more examples and ideas, visit:
https://docs.docker.com/get-started/
[root@DockerRedding ~]# sudo nano /etc/selinux/config
[root@DockerRedding ~]# reboot
Connection to 10.10.229.11 closed by remote host.
Connection to 10.10.229.11 closed.
user@UbuntuRedding:~$ ssh root@10.10.229.11
root@10.10.229.11's password:
Activate the web console with: systemctl enable --now cockpit.socket

Last login: Fri Jan 17 13:07:16 2025 from 10.10.229.12
[root@DockerRedding ~]# sestatus
SELinux status:                 disabled
[root@DockerRedding ~]# docker run -d --name ghost -p 3001:2368 -e url=http://10.10.229.11:3001 ghost
Unable to find image 'ghost:latest' locally
latest: Pulling from library/ghost
af302e5c37e9: Pull complete
a300235e6333: Pull complete
84f59221c168: Pull complete
7379a8ffad20: Pull complete
c81de1a1b67: Pull complete
accfa83b7be0: Pull complete
886fc205d9e5: Pull complete
ab887e8cfcc67: Pull complete
4f4fb700ef54: Pull complete
48ac45112af2: Pull complete
Digest: sha256:678c2841590f66755468e0e35b5e8ad08333e850385af32a29713c1f10eac960
Status: Downloaded newer image for ghost:latest
97a39133385c62b43e1d1fcf53a1050b17ebfb2671880988a6fc8eaf5e2bf7
[root@DockerRedding ~]# docker ps -a
CONTAINER ID        IMAGE               COMMAND                  CREATED             STATUS              PORTS               NAMES
97a39133385c        ghost              "docker-entrypoint.s..."   36 seconds ago    Exited (2) 33 seconds ago   ghost
aa7ff63bc1a1b2       hello-world        "/hello"                5 minutes ago     Exited (0) 5 minutes ago   clever_khorana
[root@DockerRedding ~]#
```

## NginX Reverse Proxy

Update Rocky8-Nginx Host Name: Update Hostname Nginx[/lastname]>nmtui

\*This is the result of the command



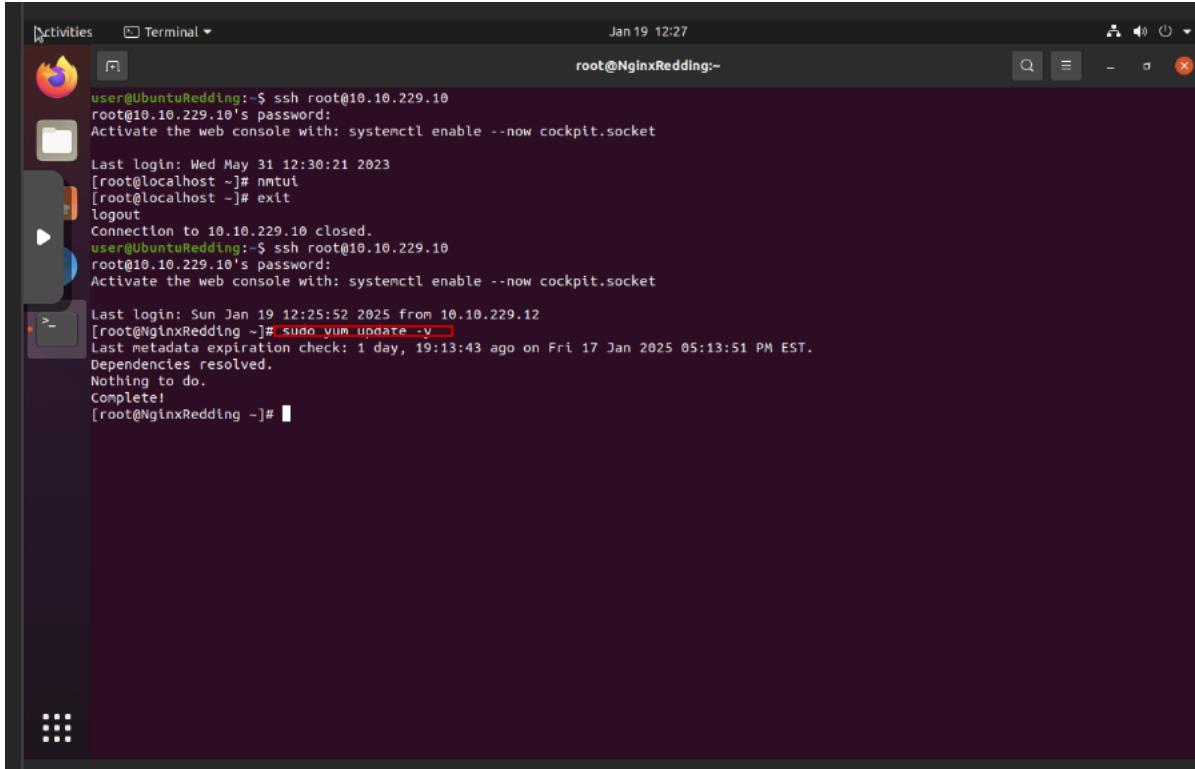
A screenshot of a Linux desktop environment, likely Ubuntu, showing a terminal window with root privileges. The terminal window title is "root@NginxRedding:~". The terminal content shows the following session:

```
root@UbuntuRedding:~$ ssh root@10.10.229.10
root@10.10.229.10's password:
Activate the web console with: systemctl enable --now cockpit.socket

Last login: Wed May 31 12:30:21 2023
[root@localhost ~]# nmtui
[root@localhost ~]# exit
logout
Connection to 10.10.229.10 closed.
user@UbuntuRedding:~$ ssh root@10.10.229.10
root@10.10.229.10's password:
Activate the web console with: systemctl enable --now cockpit.socket

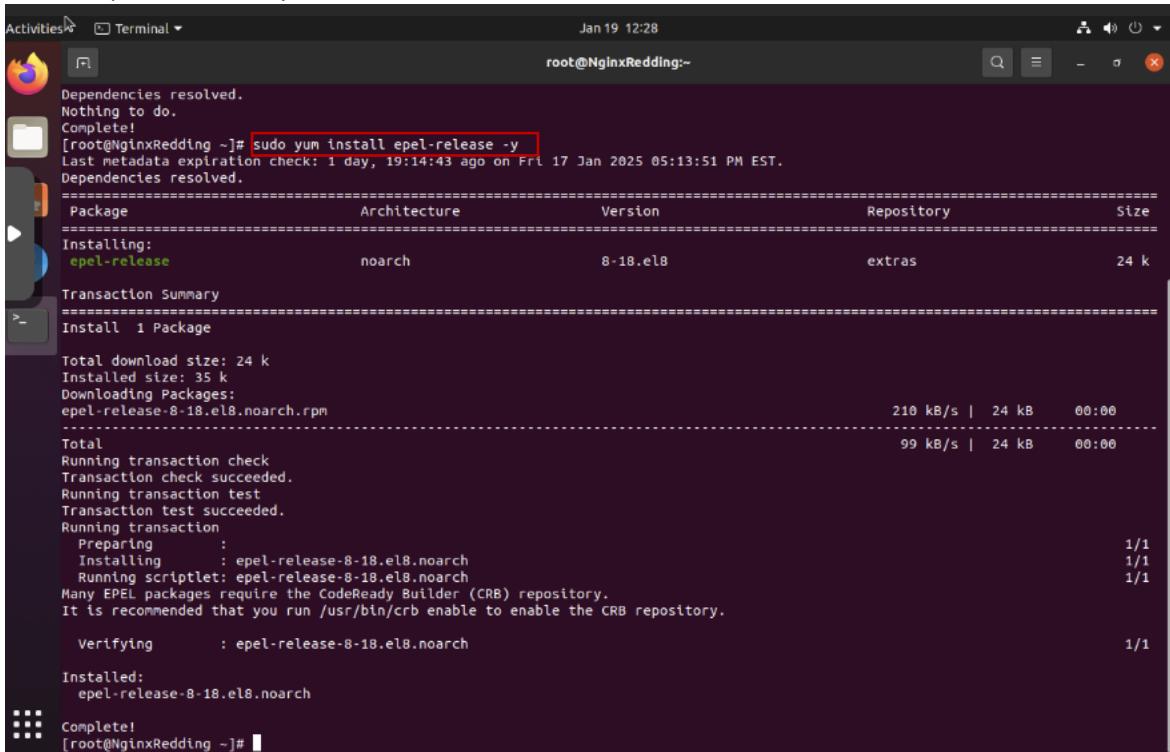
Last login: Sun Jan 19 12:25:52 2025 from 10.10.229.12
[root@NginxRedding ~]#
```

## Update Rocky8-Nginx: Update VM > sudo yum update -y



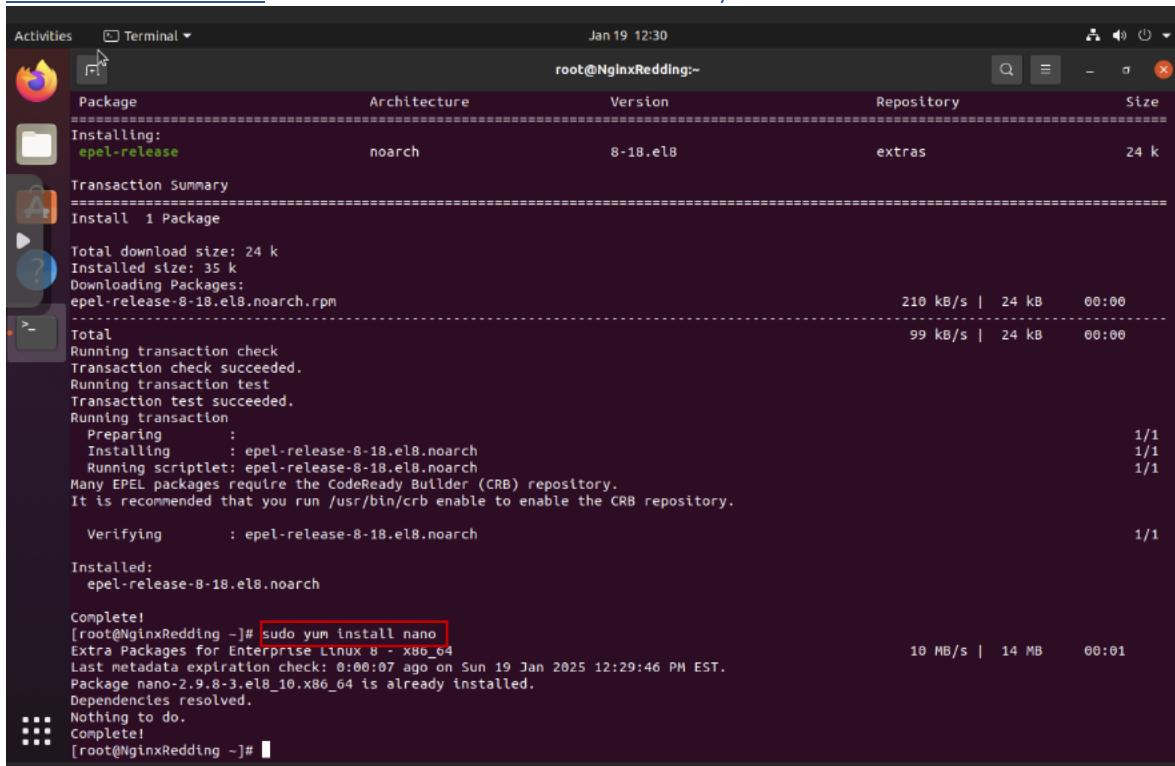
```
Activities Terminal Jan 19 12:27 root@NginxRedding:~ user@UbuntuRedding:~$ ssh root@10.10.229.10 root@10.10.229.10's password: Activate the web console with: systemctl enable --now cockpit.socket Last login: Wed May 31 12:30:21 2023 [root@localhost ~]# nmtui [root@localhost ~]# exit logout Connection to 10.10.229.10 closed. user@UbuntuRedding:~$ ssh root@10.10.229.10 root@10.10.229.10's password: Activate the web console with: systemctl enable --now cockpit.socket Last login: Sun Jan 19 12:25:52 2025 from 10.10.229.12 [root@NginxRedding ~]# sudo yum update -y Last metadata expiration check: 1 day, 19:13:43 ago on Fri 17 Jan 2025 05:13:51 PM EST. Dependencies resolved. Nothing to do. Complete! [root@NginxRedding ~]#
```

## Install EPEL Packages: Install Extra Packages for Enterprise Linux repository. > sudo yum install epel-release -y



```
Activities Terminal Jan 19 12:28 root@NginxRedding:~ user@UbuntuRedding:~$ Dependencies resolved. Nothing to do. Complete! [root@NginxRedding ~]# sudo yum install epel-release -y Last metadata expiration check: 1 day, 19:14:43 ago on Fri 17 Jan 2025 05:13:51 PM EST. Dependencies resolved. ===== Package           Architecture      Version       Repository      Size ====== Installing: epel-release      noarch        8-18.el8     extras          24 k Transaction Summary ====== Install 1 Package Total download size: 24 k Installed size: 35 k Downloading Packages: epel-release-8-18.el8.noarch.rpm               210 kB/s |  24 kB   00:00 ----- Total                                         99 kB/s |  24 kB   00:00 Running transaction check Transaction check succeeded. Running transaction test Transaction test succeeded. Running transaction Preparing : 1/1 Installing  : epel-release-8-18.el8.noarch 1/1 Running scriptlet: epel-release-8-18.el8.noarch 1/1 Many EPEL packages require the CodeReady Builder (CRB) repository. It is recommended that you run /usr/bin/crb enable to enable the CRB repository. Verifying    : epel-release-8-18.el8.noarch 1/1 Installed: epel-release-8-18.el8.noarch Complete! [root@NginxRedding ~]#
```

## Install Nano Editor: Install Nano text editor. > sudo yum install nano



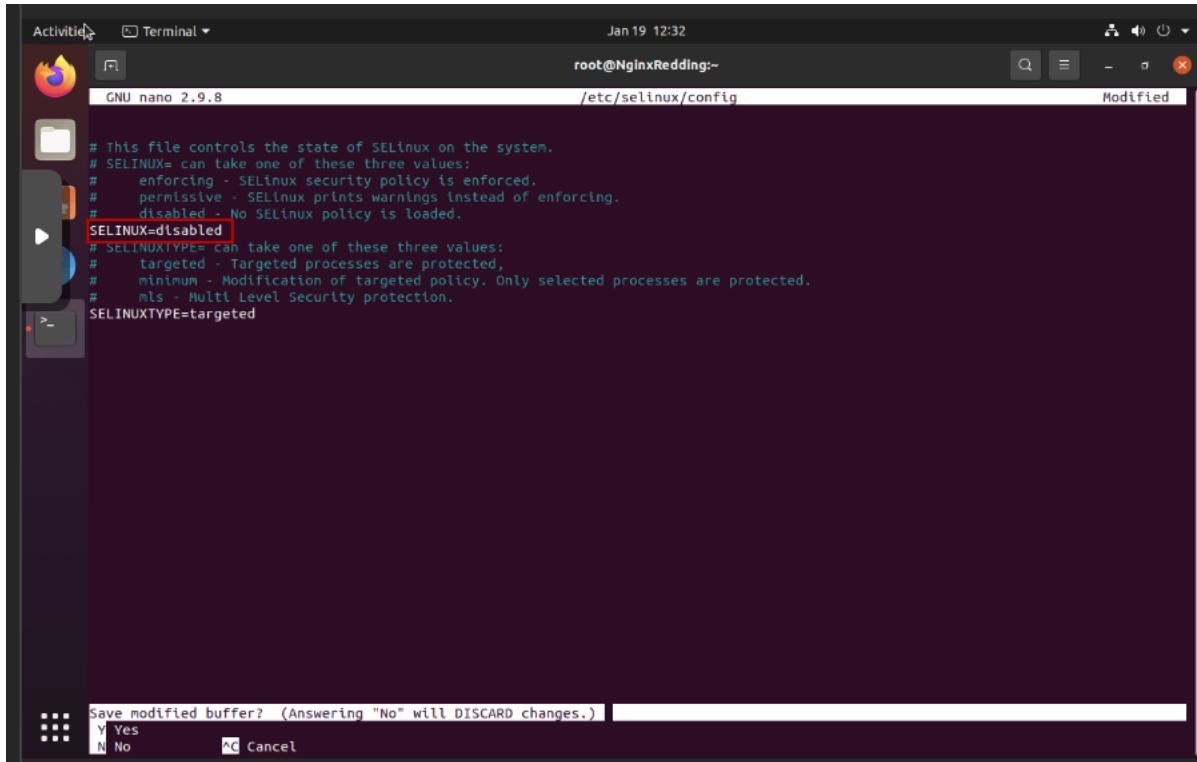
```
Activities Terminal Jan 19 12:30
root@NginxRedding:~ root@NginxRedding:~ [root@NginxRedding ~]# sudo yum install nano
[sudo] password for root:
Package          Architecture Version      Repository  Size
=====
Installing:
  epel-release   noarch      8-18.el8    extras       24 k
Transaction Summary
Install 1 Package
Total download size: 24 k
Installed size: 35 k
Downloading Packages:
epel-release-8-18.el8.noarch.rpm           210 kB/s | 24 kB   00:00
Total                                         99 kB/s | 24 kB   00:00
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
Preparing : 1/1
  Installing : epel-release-8-18.el8.noarch 1/1
  Running scriptlet: epel-release-8-18.el8.noarch 1/1
Many EPEL packages require the CodeReady Builder (CRB) repository.
It is recommended that you run /usr/bin/crb enable to enable the CRB repository.

Verifying : epel-release-8-18.el8.noarch 1/1
Installed:
  epel-release-8-18.el8.noarch

Complete!
[root@NginxRedding ~]# [root@NginxRedding ~]# sudo yum install nano
Extra Packages for Enterprise Linux 8 - x86_64
Last metadata expiration check: 0:00:07 ago on Sun 19 Jan 2025 12:29:46 PM EST.
Package nano-2.9.8-3.el8_10.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[root@NginxRedding ~]#
```

Disable SELinux: ): To disable SELinux, locate your SELinux configuration file and modify the setting from "enforcing" to "disabled."

Although SELinux is typically beneficial when enforced, you will turn it off for this assignment to avoid any potential conflicts. > sudo nano /etc/selinux/config



```
# This file controls the state of SELinux on the system.
# SELINUXTYPE can take one of these three values:
#     enforcing - SELinux security policy is enforced.
#     permissive - SELinux prints warnings instead of enforcing.
#     disabled - No SELinux policy is loaded.
SELINUX=disabled
# SELINUXTYPE can take one of these three values:
#     targeted - Targeted processes are protected,
#     minimum - Modification of targeted policy. Only selected processes are protected.
#     mls - Multi Level Security protection.
SELINUXTYPE=targeted
```

Save modified buffer? (Answering "No" will DISCARD changes.)

Y Yes  
N No

## Reboot VM: > reboot

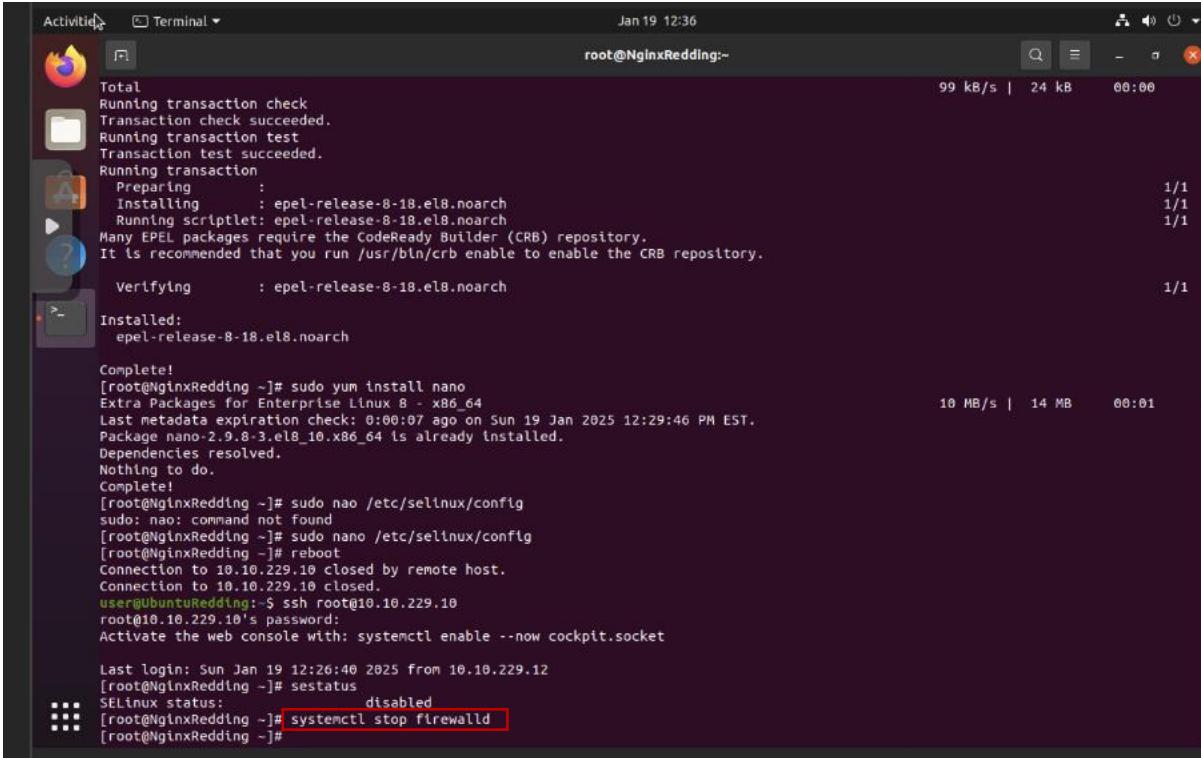
```
Activities Terminal Jan 19 12:33 user@UbuntuRedding:~  
=====  
Install 1 Package  
Total download size: 24 k  
Installed size: 35 k  
Downloading Packages:  
epel-release-8-18.el8.noarch.rpm  
-----  
Total  
Running transaction check  
Transaction check succeeded.  
Running transaction test  
Transaction test succeeded.  
Running transaction  
Preparing : 1/1  
Installing : epel-release-8-18.el8.noarch 1/1  
Running scriptlet: epel-release-8-18.el8.noarch 1/1  
Many EPEL packages require the CodeReady Builder (CRB) repository.  
It is recommended that you run /usr/bin/crb enable to enable the CRB repository.  
Verifying : epel-release-8-18.el8.noarch 1/1  
Installed:  
epel-release-8-18.el8.noarch  
Complete!  
[root@NginxRedding ~]# sudo yum install nano  
Extra Packages for Enterprise Linux 8 - x86_64  
Last metadata expiration check: 0:00:07 ago on Sun 19 Jan 2025 12:29:46 PM EST.  
Package nano-2.9.8-3.el8_10.x86_64 is already installed.  
Dependencies resolved.  
Nothing to do.  
Complete!  
[root@NginxRedding ~]# sudo nano /etc/selinux/config  
sudo: nano: command not found  
[root@NginxRedding ~]# sudo nano /etc/selinux/config  
[root@NginxRedding ~]# reboot  
Connection to 10.10.229.10 closed by remote host.  
Connection to 10.10.229.10 closed.  
user@UbuntuRedding:~$
```

## Confirm SELinux Status: > sestatus

```
Activities Terminal Jan 19 12:34 root@NginxRedding:~  
=====  
Total  
Running transaction check  
Transaction check succeeded.  
Running transaction test  
Transaction test succeeded.  
Running transaction  
Preparing : 1/1  
Installing : epel-release-8-18.el8.noarch 1/1  
Running scriptlet: epel-release-8-18.el8.noarch 1/1  
Many EPEL packages require the CodeReady Builder (CRB) repository.  
It is recommended that you run /usr/bin/crb enable to enable the CRB repository.  
Verifying : epel-release-8-18.el8.noarch 1/1  
Installed:  
epel-release-8-18.el8.noarch  
Complete!  
[root@NginxRedding ~]# sudo yum install nano  
Extra Packages for Enterprise Linux 8 - x86_64  
Last metadata expiration check: 0:00:07 ago on Sun 19 Jan 2025 12:29:46 PM EST.  
Package nano-2.9.8-3.el8_10.x86_64 is already installed.  
Dependencies resolved.  
Nothing to do.  
Complete!  
[root@NginxRedding ~]# sudo nano /etc/selinux/config  
sudo: nano: command not found  
[root@NginxRedding ~]# sudo nano /etc/selinux/config  
[root@NginxRedding ~]# reboot  
Connection to 10.10.229.10 closed by remote host.  
Connection to 10.10.229.10 closed.  
user@UbuntuRedding:~$ ssh root@10.10.229.10  
root@10.10.229.10's password:  
Activate the web console with: systemctl enable --now cockpit.socket  
Last login: Sun Jan 19 12:26:40 2025 from 10.10.229.11  
[root@NginxRedding ~]# sestatus  
SELinux status: disabled  
[root@NginxRedding ~]#
```

## Rocky Firewall

Stop Firewall > `systemctl stop firewalld`



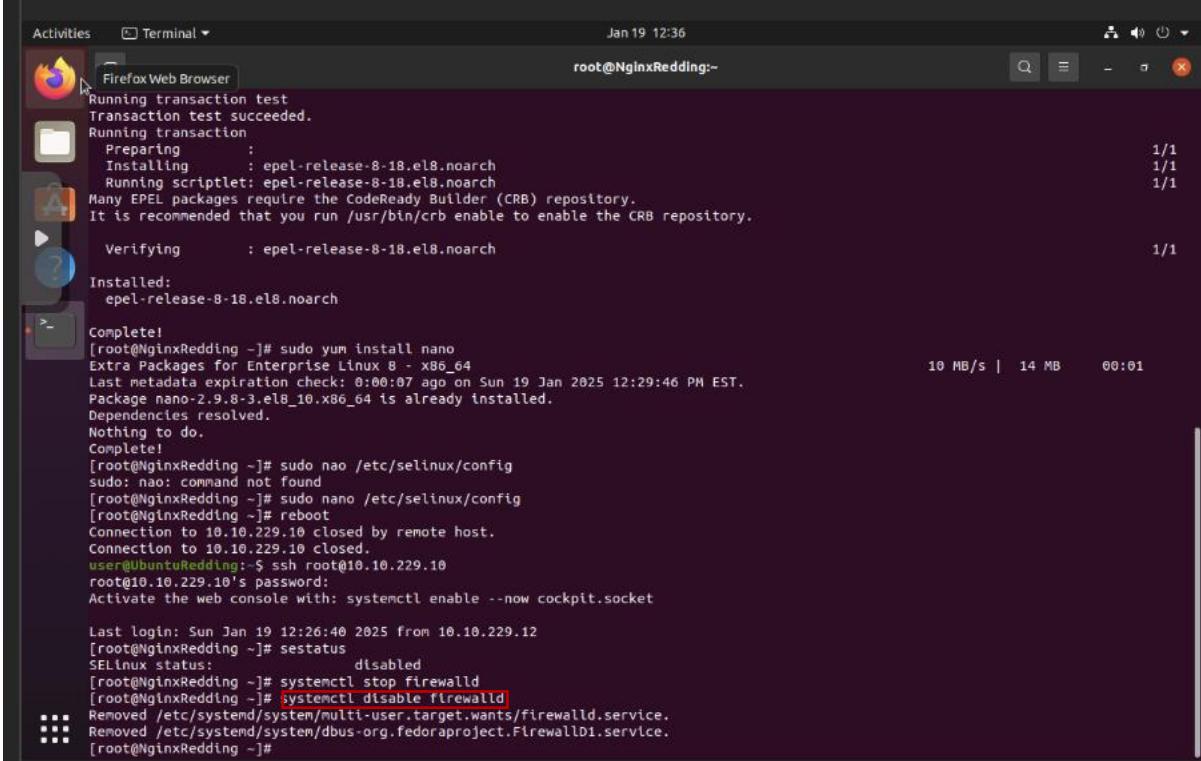
```
Total
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
Preparing : epel-release-8-18.el8.noarch
Installing : epel-release-8-18.el8.noarch
Running scriptlet: epel-release-8-18.el8.noarch
Many EPEL packages require the CodeReady Builder (CRB) repository.
It is recommended that you run /usr/bin/crb enable to enable the CRB repository.

Verifying : epel-release-8-18.el8.noarch
Installed:
epel-release-8-18.el8.noarch

Complete!
[root@NginxRedding ~]# sudo yum install nano
Extra Packages for Enterprise Linux 8 - x86_64
Last metadata expiration check: 0:00:07 ago on Sun 19 Jan 2025 12:29:46 PM EST.
Package nano-2.9.8-3.el8_10.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[root@NginxRedding ~]# sudo nano /etc/selinux/config
sudo: nao: command not found
[root@NginxRedding ~]# sudo nano /etc/selinux/config
[root@NginxRedding ~]# reboot
Connection to 10.10.229.10 closed by remote host.
Connection to 10.10.229.10 closed.
user@ubuntuRedding:~$ ssh root@10.10.229.10
root@10.10.229.10's password:
Activate the web console with: systemctl enable --now cockpit.socket

Last login: Sun Jan 19 12:26:40 2025 from 10.10.229.12
[root@NginxRedding ~]# sestatus
SELinux status: disabled
[root@NginxRedding ~]# systemctl stop firewalld
[root@NginxRedding ~]#
```

Disable Firewall > `systemctl disable firewalld`



```
Activities Terminal ▾ Jan 19 12:36
root@NginxRedding:~# 
Firefox Web Browser
Running transaction test
Transaction test succeeded.
Running transaction
Preparing : epel-release-8-18.el8.noarch
Installing : epel-release-8-18.el8.noarch
Running scriptlet: epel-release-8-18.el8.noarch
Many EPEL packages require the CodeReady Builder (CRB) repository.
It is recommended that you run /usr/bin/crb enable to enable the CRB repository.

Verifying : epel-release-8-18.el8.noarch
Installed:
epel-release-8-18.el8.noarch

Complete!
[root@NginxRedding ~]# sudo yum install nano
Extra Packages for Enterprise Linux 8 - x86_64
Last metadata expiration check: 0:00:07 ago on Sun 19 Jan 2025 12:29:46 PM EST.
Package nano-2.9.8-3.el8_10.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[root@NginxRedding ~]# sudo nano /etc/selinux/config
sudo: nao: command not found
[root@NginxRedding ~]# sudo nano /etc/selinux/config
[root@NginxRedding ~]# reboot
Connection to 10.10.229.10 closed by remote host.
Connection to 10.10.229.10 closed.
user@ubuntuRedding:~$ ssh root@10.10.229.10
root@10.10.229.10's password:
Activate the web console with: systemctl enable --now cockpit.socket

Last login: Sun Jan 19 12:26:40 2025 from 10.10.229.12
[root@NginxRedding ~]# sestatus
SELinux status: disabled
[root@NginxRedding ~]# systemctl disable firewalld
[root@NginxRedding ~]# Removed /etc/systemd/system/multi-user.target.wants/firewalld.service.
Removed /etc/systemd/system/dbus-org.fedoraproject.FirewallD1.service.
[root@NginxRedding ~]#
```

# NginX

Install NginX > sudo yum install nginx -y

```
Activities Terminal Jan 19 12:38
root@NginxRedding:~ root@NginxRedding:~ [1]
sudo: nano: command not found
[root@NginxRedding ~]# sudo nano /etc/selinux/config
[root@NginxRedding ~]# reboot
Connection to 10.10.229.10 closed by remote host.
Connection to 10.10.229.10 closed.
user@UbuntuRedding:~$ ssh root@10.10.229.10
root@10.10.229.10's password:
Activate the web console with: systemctl enable --now cockpit.socket

Last login: Sun Jan 19 12:26:40 2025 from 10.10.229.12
[root@NginxRedding ~]# sestatus
SELinux status: disabled
[root@NginxRedding ~]# systemctl stop firewalld
[root@NginxRedding ~]# systemctl disable firewalld
Removed /etc/systemd/system/multi-user.target.wants/firewalld.service.
Removed /etc/systemd/system/dbus-org.fedoraproject.FirewallD1.service.
[root@NginxRedding ~]# sudo yum install nginx -y
Last metadata expiration check: 0:07:15 ago on Sun 19 Jan 2025 12:29:46 PM EST.
Dependencies resolved.
=====
Package           Architecture Version      Repository  Size
=====
Installing:
nginx            x86_64       1:1.14.1-9.module+el8.4.0+542+81547229  appstream   566 k
Installing dependencies:
gd               x86_64       2.2.5-7.el8                         appstream   143 k
jbigkit-libs     x86_64       2.1-14.el8                          appstream   54 k
libkpm           x86_64       3.5.12-11.el8                      appstream   58 k
libjpeg-turbo    x86_64       1.5.3-12.el8                        appstream   156 k
libtiff          x86_64       4.0.9-33.el8                         appstream   189 k
libwebp          x86_64       1.0.0-10.el8                         appstream   273 k
nginx-all-modules noarch      1:1.14.1-9.module+el8.4.0+542+81547229  appstream   22 k
nginx-filesystem noarch      1:1.14.1-9.module+el8.4.0+542+81547229  appstream   23 k
nginx-mod-http-image-filter x86_64       1:1.14.1-9.module+el8.4.0+542+81547229  appstream   34 k
nginx-mod-http-perl    x86_64       1:1.14.1-9.module+el8.4.0+542+81547229  appstream   45 k
nginx-mod-http-xslt-filter x86_64       1:1.14.1-9.module+el8.4.0+542+81547229  appstream   32 k
nginx-mod-mail     x86_64       1:1.14.1-9.module+el8.4.0+542+81547229  appstream   63 k
nginx-mod-stream   x86_64       1:1.14.1-9.module+el8.4.0+542+81547229  appstream   84 k
perl-Carp          noarch      1.42-396.el8                         baseos     29 k
perl-Data-Dumper   x86_64       2.167-399.el8                        baseos     57 k
perl-Digest        noarch      1.17.395.el8                         baseos     26 k
```

Start NginX > *systemctl start nginx*

Activities Terminal Jan 19 12:40 root@NginxRedding:~

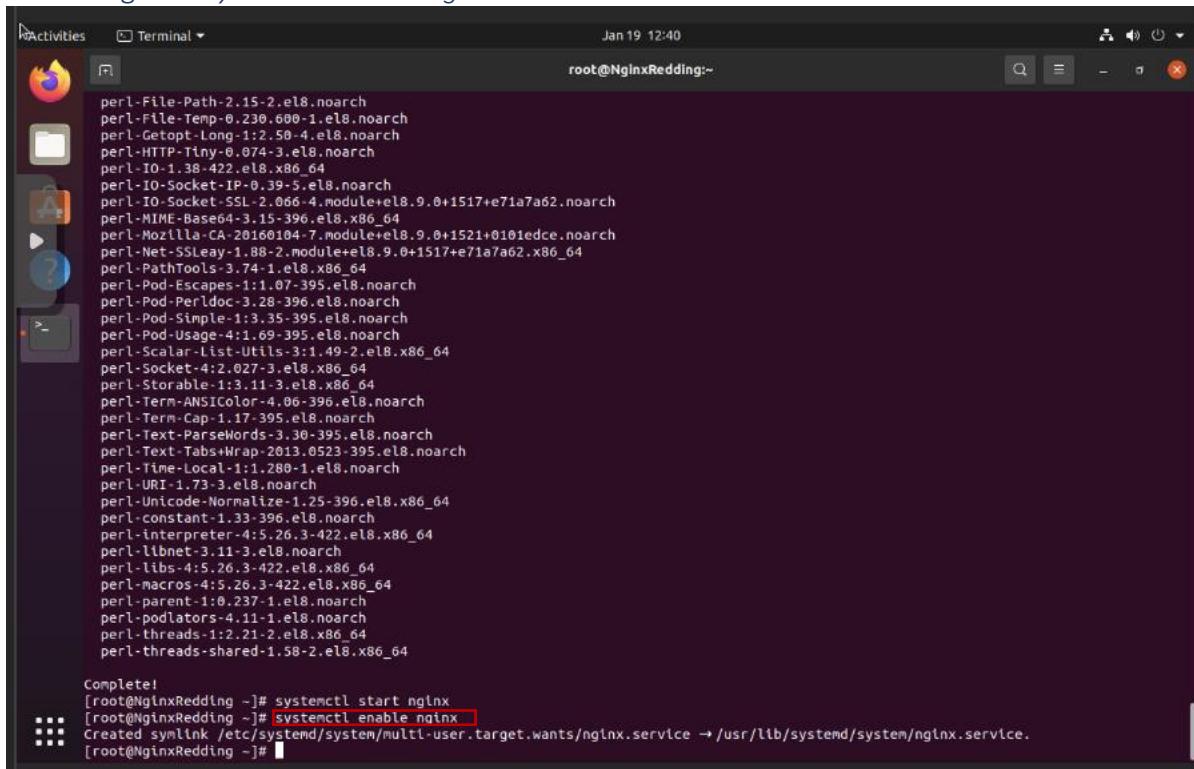
Firefox Web Browser

```
perl-Errno-1.28-422.el8.x86_64
perl-Exporter-5.72-396.el8.noarch
perl-File-Path-2.15-2.el8.noarch
perl-File-Temp-0.230.600-1.el8.noarch
perl-Getopt-Long-1:2.50-4.el8.noarch
perl-HTTP-Tiny-0.074-3.el8.noarch
perl-IO-1.38-422.el8.x86_64
perl-IO-Socket-IP-0.39-5.el8.noarch
perl-IO-Socket-SSL-2.066-4.module+el8.9.0+1517+e71a7a62.noarch
perl-MIME-Base64-3.15-396.el8.x86_64
perl-Mozilla-CA-20160104-7.module+el8.9.0+1521+0101edce.noarch
perl-Net-SSLeay-1.88-2.module+el8.9.0+1517+e71a7a62.x86_64
perl-PathTools-3.74-1.el8.x86_64
perl-Pod-Escapes-1:1.07-395.el8.noarch
perl-Pod-Perldoc-3.28-396.el8.noarch
perl-Pod-Simple-1:3.35-395.el8.noarch
perl-Pod-Usage-4:1.69-395.el8.noarch
perl-Scalar-List-Utils-3:1.49-2.el8.x86_64
perl-Socket-4:2.027-3.el8.x86_64
perl-Storable-1:3.11-3.el8.x86_64
perl-Term-ANSIColor-4.06-396.el8.noarch
perl-Term-Cap-1.17-395.el8.noarch
perl-Text-ParseWords-3.30-395.el8.noarch
perl-Text-Tabs-Wrap-2013.0523-395.el8.noarch
perl-Time-Local-1:1.280-1.el8.noarch
perl-URI-1.73-3.el8.noarch
perl-Unicode-Normalize-1.25-396.el8.x86_64
perl-constant-1.33-396.el8.noarch
perl-interpreter-4:5.26.3-422.el8.x86_64
perl-libnet-3.11-3.el8.noarch
perl-libs-4:5.26.3-422.el8.x86_64
perl-macros-4:5.26.3-422.el8.x86_64
perl-parent-1:0.237-1.el8.noarch
perl-podlators-4.11-1.el8.noarch
perl-threads-1:2.21-2.el8.x86_64
perl-threads-shared-1.58-2.el8.x86_64
```

Complete!

```
[root@NginxRedding ~]# systemctl start nginx
[root@NginxRedding ~]#
```

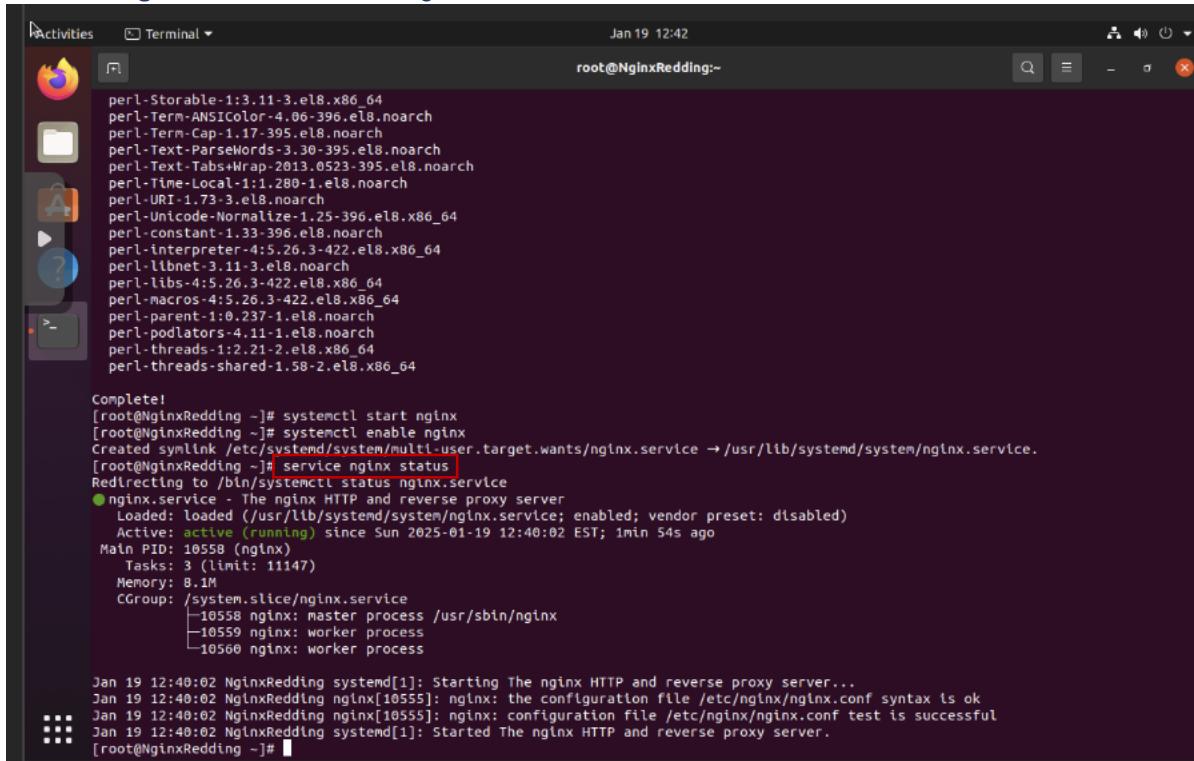
## Enable NginX > `systemctl enable nginx`



```
Activities Terminal Jan 19 12:40
root@NginxRedding:~#
perl-File-Path-2.15-2.el8.noarch
perl-File-Temp-0.230.600-1.el8.noarch
perl-Getopt-Long-1.2.50-4.el8.noarch
perl-HTTP-Tiny-0.074-3.el8.noarch
perl-Io-1.38-422.el8.x86_64
perl-Io-Socket-IP-0.39-5.el8.noarch
perl-Io-Socket-SSL-2.066-4.module+el8.9.0+1517+e71a7a62.noarch
perl-MIME-Base64-3.15-396.el8.x86_64
perl-Mozilla-CA-20160104-7.module+el8.9.0+1521+010iedce.noarch
perl-Net-SSLeay-1.88-2.module+el8.9.0+1517+e71a7a62.x86_64
perl-PathTools-3.74-1.el8.x86_64
perl-Pod-Escapes-1:1.07-395.el8.noarch
perl-Pod-Perldoc-3.28-396.el8.noarch
perl-Pod-Simple-1:3.35-395.el8.noarch
perl-Pod-Usage-4:1.69-395.el8.noarch
perl-Scalar-List-Utils-3:1.49-2.el8.x86_64
perl-Socket-4:2.027-3.el8.x86_64
perl-Storable-1:3.11-3.el8.x86_64
perl-Term-ANSIColor-4.06-396.el8.noarch
perl-Term-Cap-1.17-395.el8.noarch
perl-Text-ParseWords-3.30-395.el8.noarch
perl-Text-TabsWrap-2013.0523-395.el8.noarch
perl-Time-Local-1:1.280-1.el8.noarch
perl-URI-1.73-3.el8.noarch
perl-Unicode-Normalize-1.25-396.el8.x86_64
perl-constant-1.33-396.el8.noarch
perl-interpreter-4:5.26.3-422.el8.x86_64
perl-lbbnet-3.11-3.el8.noarch
perl-libs-4:5.26.3-422.el8.x86_64
perl-macros-4:5.26.3-422.el8.x86_64
perl-parent-1:0.237-1.el8.noarch
perl-podlators-4.11-1.el8.noarch
perl-threads-1:2.21-2.el8.x86_64
perl-threads-shared-1.58-2.el8.x86_64

Complete!
[root@NginxRedding ~]# systemctl start nginx
[root@NginxRedding ~]# systemctl enable nginx
Created symlink /etc/systemd/system/multi-user.target.wants/nginx.service → /usr/lib/systemd/system/nginx.service.
[root@NginxRedding ~]#
```

## Confirm NginX Status > `service nginx status`



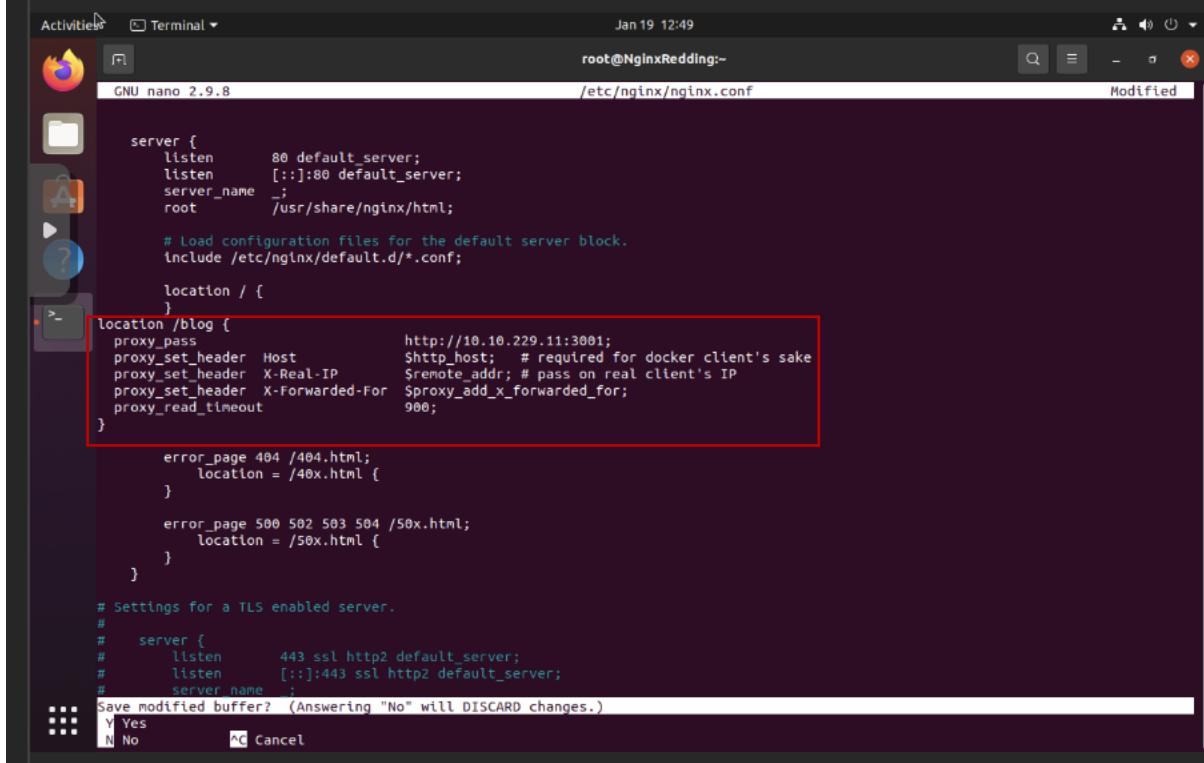
```
Activities Terminal Jan 19 12:42
root@NginxRedding:~#
perl-Storable-1:3.11-3.el8.x86_64
perl-Term-ANSIColor-4.06-396.el8.noarch
perl-Term-Cap-1.17-395.el8.noarch
perl-Text-ParseWords-3.30-395.el8.noarch
perl-Text-TabsWrap-2013.0523-395.el8.noarch
perl-Time-Local-1:1.280-1.el8.noarch
perl-URI-1.73-3.el8.noarch
perl-Unicode-Normalize-1.25-396.el8.x86_64
perl-constant-1.33-396.el8.noarch
perl-interpreter-4:5.26.3-422.el8.x86_64
perl-lbbnet-3.11-3.el8.noarch
perl-libs-4:5.26.3-422.el8.x86_64
perl-macros-4:5.26.3-422.el8.x86_64
perl-parent-1:0.237-1.el8.noarch
perl-podlators-4.11-1.el8.noarch
perl-threads-1:2.21-2.el8.x86_64
perl-threads-shared-1.58-2.el8.x86_64

Complete!
[root@NginxRedding ~]# systemctl start nginx
[root@NginxRedding ~]# systemctl enable nginx
Created symlink /etc/systemd/system/multi-user.target.wants/nginx.service → /usr/lib/systemd/system/nginx.service.
[root@NginxRedding ~]# service nginx status
Redirecting to /bin/systemctl status nginx.service
● nginx.service - The nginx HTTP and reverse proxy server
   Loaded: loaded (/usr/lib/systemd/system/nginx.service; enabled; vendor preset: disabled)
   Active: active (running) since Sun 2025-01-19 12:40:02 EST; 1min 54s ago
     Main PID: 10558 (nginx)
        Tasks: 3 (limit: 11147)
       Memory: 8.1M
      CGroup: /system.slice/nginx.service
              └─10558 nginx: master process /usr/sbin/nginx
                  ├─10559 nginx: worker process
                  ├─10559 nginx: worker process
                  └─10560 nginx: worker process

Jan 19 12:40:02 NginxRedding systemd[1]: Starting The nginx HTTP and reverse proxy server...
Jan 19 12:40:02 NginxRedding nginx[10555]: nginx: the configuration file /etc/nginx/nginx.conf syntax is ok
Jan 19 12:40:02 NginxRedding nginx[10555]: nginx: configuration file /etc/nginx/nginx.conf test is successful
Jan 19 12:40:02 NginxRedding systemd[1]: Started The nginx HTTP and reverse proxy server.
[root@NginxRedding ~]#
```

## Reverse Proxy for Ghost Site

Edit NginX configuration file > `nano /etc/nginx/nginx.conf` \*After opening the file, utilize the directional pad to navigate to the section illustrated in the screenshot below. Once you have reached that location, insert the code exactly as it appears in the screenshot."



```
GNU nano 2.9.8          /etc/nginx/nginx.conf          Modified

server {
    listen      80 default_server;
    listen      [::]:80 default_server;
    server_name ;
    root       /usr/share/nginx/html;

    # Load configuration files for the default server block.
    include /etc/nginx/default.d/*.conf;

    location / {
    }

    location /blog {
        proxy_pass          http://10.10.229.11:3001;
        proxy_set_header Host $http_host; # required for docker client's sake
        proxy_set_header X-Real-IP $remote_addr; # pass on real client's IP
        proxy_set_header X-Forwarded-For $proxy_add_x_forwarded_for;
        proxy_read_timeout 900;
    }

        error_page 404 /404.html;
        location = /40x.html {
    }

        error_page 500 502 503 504 /50x.html;
        location = /50x.html {
    }

    # Settings for a TLS enabled server.
    #
    #   server {
    #     listen      443 ssl http2 default_server;
    #     listen      [::]:443 ssl http2 default_server;
    #     server_name ;
    #   }
}

Save modified buffer? (Answering "No" will DISCARD changes.)
Y Yes  N No  ⌂C Cancel
```

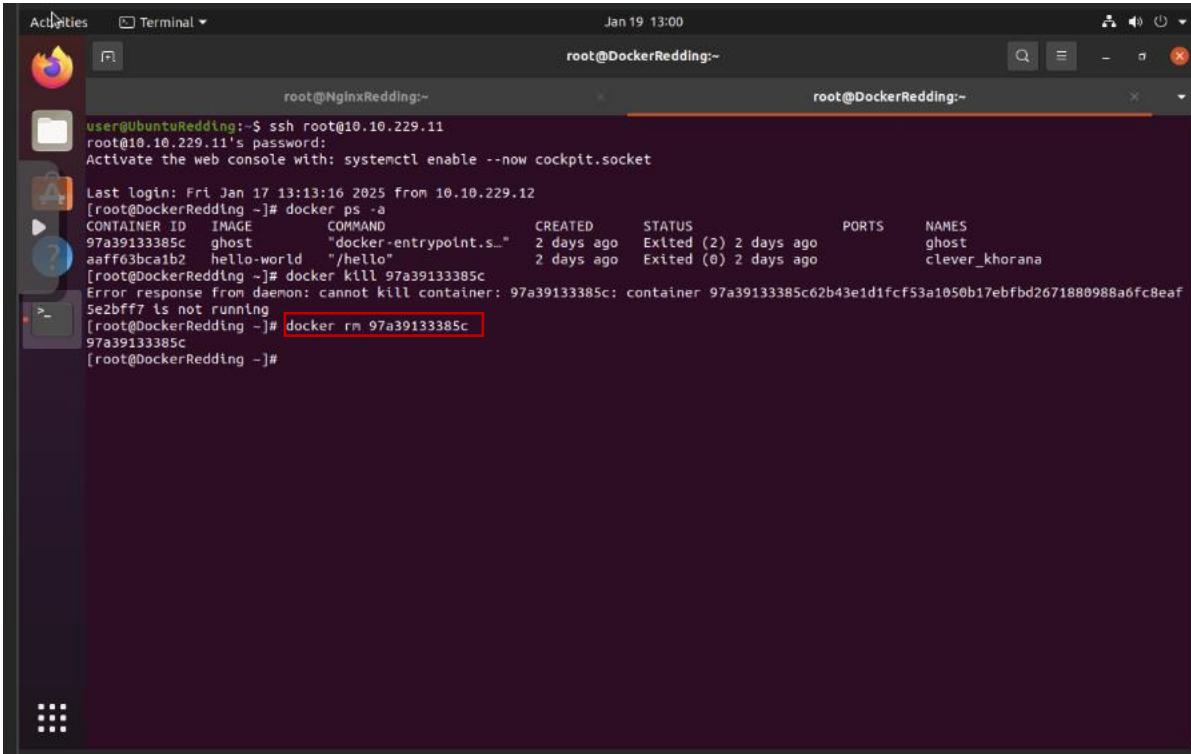
## Reload NginX service > systemctl reload nginx

```
Activities Terminal Jan 19 12:55 root@NginxRedding:~  
perl-Term-Cap-1.17-395.el8.noarch  
perl-Text-ParseWords-3.30-395.el8.noarch  
perl-Text-Tabs+Wrap-2013.0523-395.el8.noarch  
perl-Time-Local-1:1.280-1.el8.noarch  
perl-URI-1.73-3.el8.noarch  
perl-Unicode-Normalize-1.25-396.el8.x86_64  
perl-constant-1.33-396.el8.noarch  
perl-interpreter-4:5.26.3-422.el8.x86_64  
perl-lbbnet-3.11-3.el8.noarch  
perl-libs-4:5.26.3-422.el8.x86_64  
perl-macros-4:5.26.3-422.el8.x86_64  
perl-parent-1:0.237-1.el8.noarch  
perl-podlators-4.11-1.el8.noarch  
perl-threads-1:2.21-2.el8.x86_64  
perl-threads-shared-1.58-2.el8.x86_64  
  
Complete!  
[root@NginxRedding ~]# systemctl start nginx  
[root@NginxRedding ~]# systemctl enable nginx  
Created symlink /etc/systemd/system/multi-user.target.wants/nginx.service → /usr/lib/systemd/system/nginx.service.  
[root@NginxRedding ~]# service nginx status  
Redirecting to /bin/systemctl status nginx.service  
● nginx.service - The nginx HTTP and reverse proxy server  
   Loaded: loaded (/usr/lib/systemd/system/nginx.service; enabled; vendor preset: disabled)  
   Active: active (running) since Sun 2025-01-19 12:40:02 EST; 1min 54s ago  
     Main PID: 10558 (nginx)  
        Tasks: 3 (limit: 11147)  
       Memory: 8.1M  
         CGroup: /system.slice/nginx.service  
             └─10558 nginx: master process /usr/sbin/nginx  
                 ├─10559 nginx: worker process  
                 ├─10560 nginx: worker process  
                 ├─10560 nginx: worker process  
  
Jan 19 12:40:02 NginxRedding systemd[1]: Starting The nginx HTTP and reverse proxy server...  
Jan 19 12:40:02 NginxRedding nginx[10555]: nginx: the configuration file /etc/nginx/nginx.conf syntax is ok  
Jan 19 12:40:02 NginxRedding nginx[10555]: nginx: configuration file /etc/nginx/nginx.conf test is successful  
Jan 19 12:40:02 NginxRedding systemd[1]: Started The nginx HTTP and reverse proxy server.  
[root@NginxRedding ~]# nano /etc/nginx/nginx.conf  
[root@NginxRedding ~]# systemctl reload nginx  
[root@NginxRedding ~]#
```

## Terminate Docker > docker kill [containerID]

```
Activities Terminal Jan 19 12:57 root@DockerRedding:~  
root@NginxRedding:~ x root@DockerRedding:~  
user@UbuntuRedding:~$ ssh root@10.10.229.11  
root@10.10.229.11's password:  
Activate the web console with: systemctl enable --now cockpit.socket  
  
Last login: Fri Jan 13 13:16 2025 from 10.10.229.12  
[root@DockerRedding ~]# docker ps -a  
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES  
97a39133385c ghost "docker-entrypoint.s..." 2 days ago Exited (2) 2 days ago ghost  
aafff63bc1b2 hello-world "/hello" 2 days ago Exited (0) 2 days ago clever_khorana  
[root@DockerRedding ~]# docker kill 97a39133385c  
Error response from daemon: cannot kill container: 97a39133385c: container 97a39133385c62b43e1d1fcf53a1050b17ebfb2671880988a6fc8eaf  
5e2bff7 is not running  
[root@DockerRedding ~]#
```

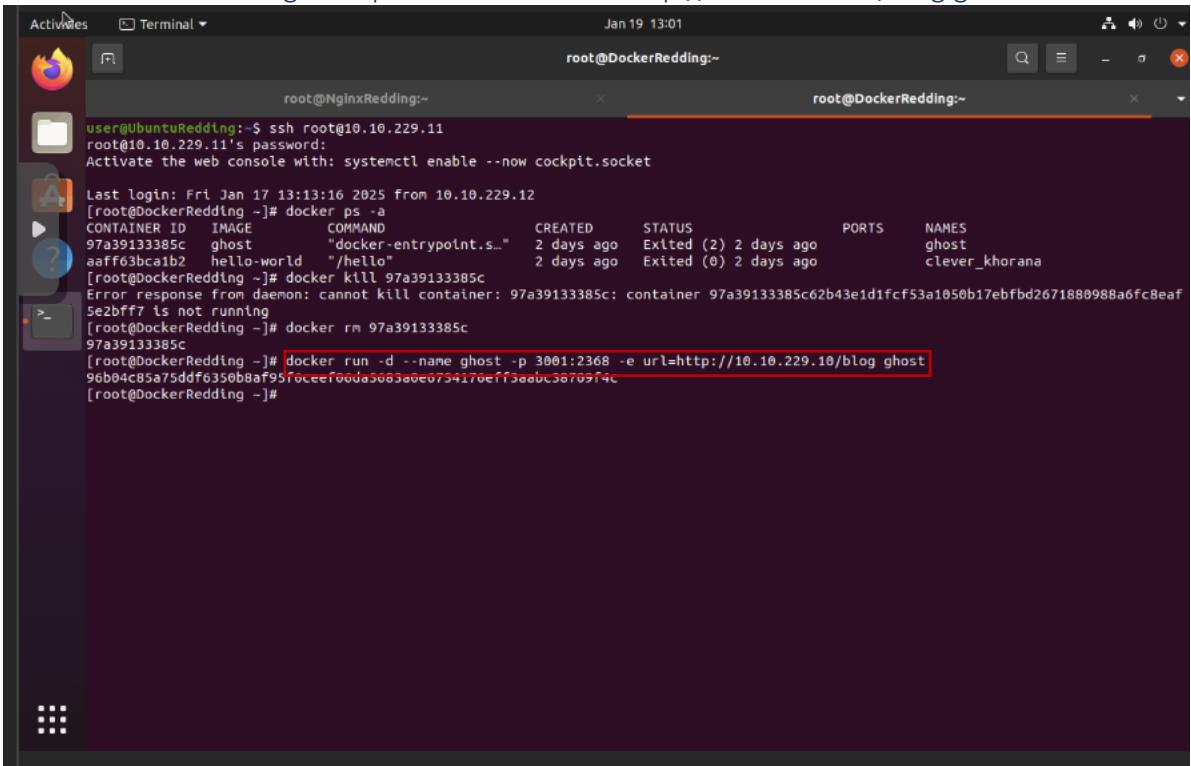
Delete First Ghost Container > `docker rm [containerID]`



```
root@DockerRedding:~# docker rm 97a39133385c
```

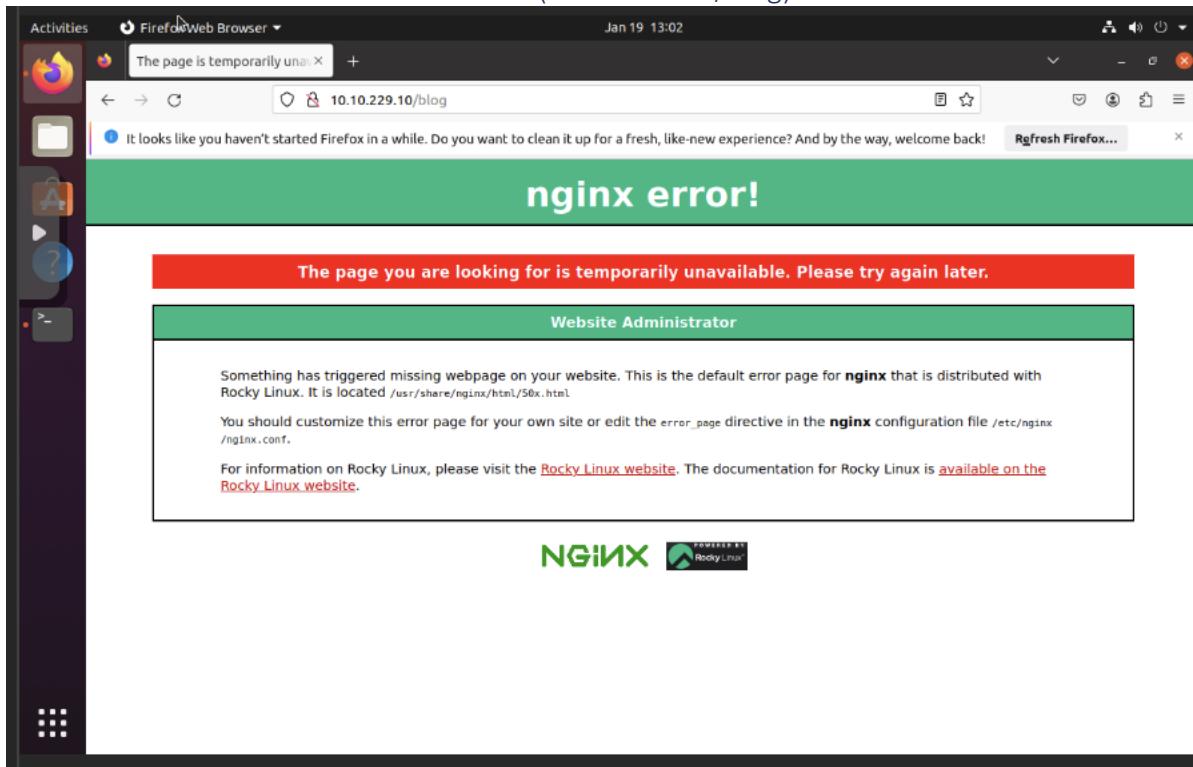
Create New Ghost Container >

`docker run -d --name ghost -p 3001:2368 -e url=http://10.10.229.10/blog ghost`



```
root@DockerRedding:~# docker run -d --name ghost -p 3001:2368 -e url=http://10.10.229.10/blog ghost
```

Browse to Ghost from Firefox on Ubuntu (10.10.229.10/blog)



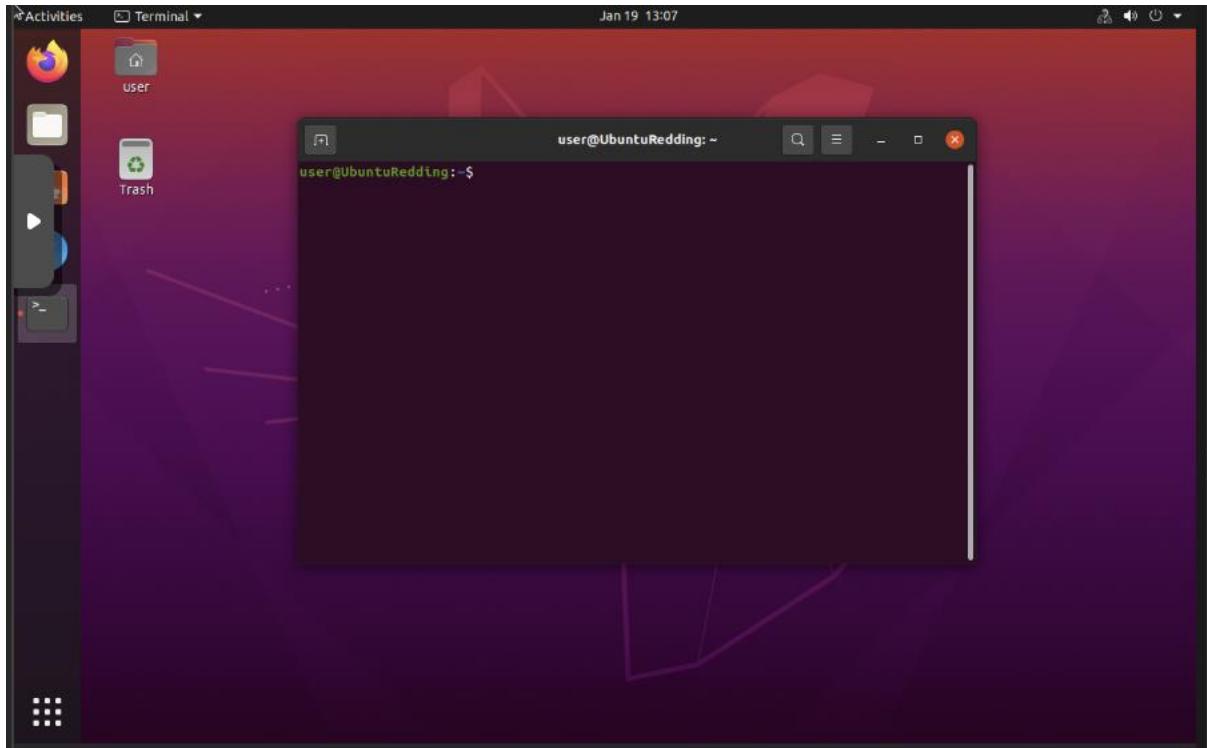
Please remember to complete Appendices A and B at the end of this document for milestone 1 after you have completed the above steps. Use the “tail” command on your reverse proxy VM. You may need to research this command.

# END OF MILESTONE 1

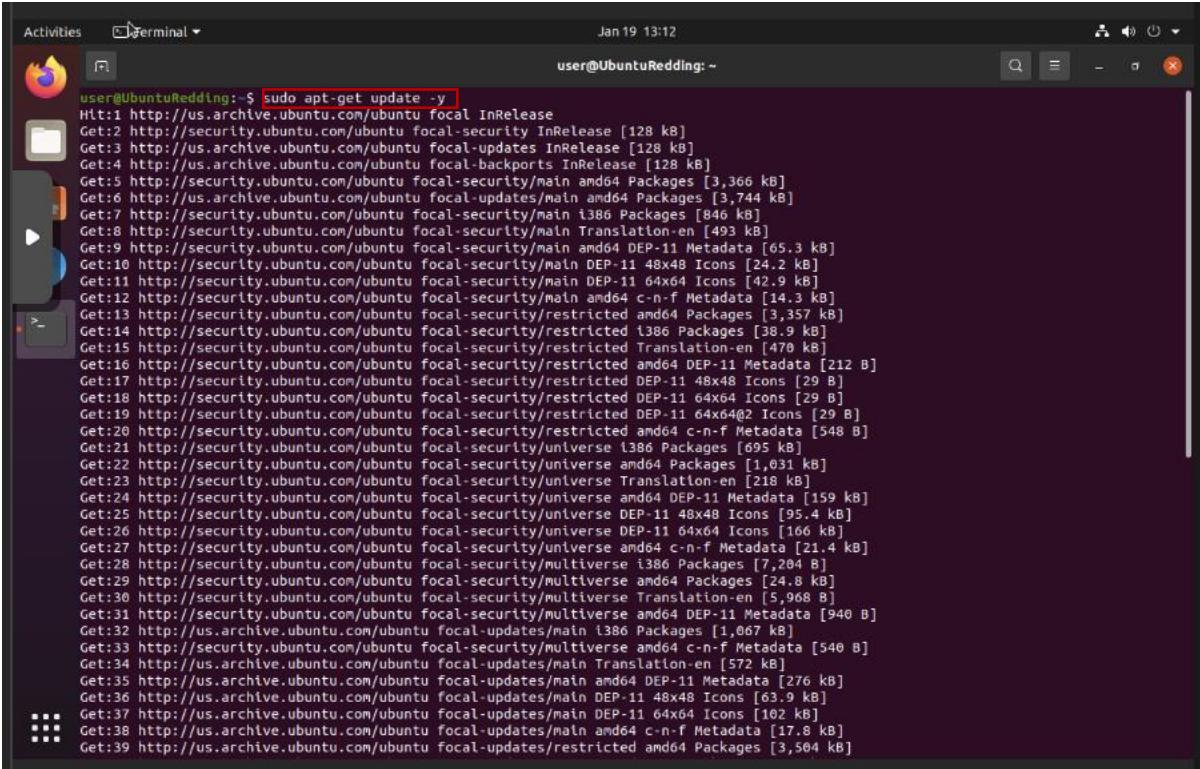
# WordPress on Ubuntu - LAMP Stack

## Update Ubuntu Host Name

\*This is the result of the command

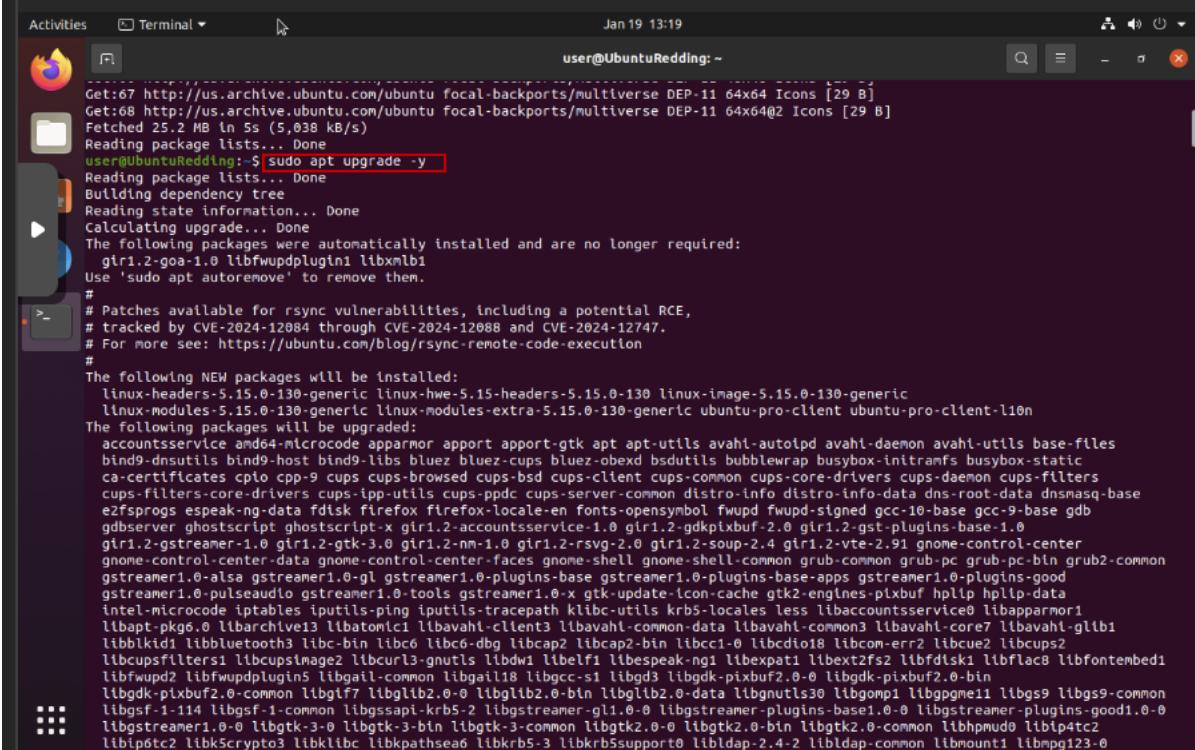


Update Ubuntu > sudo apt-get update -y



```
user@UbuntuRedding:~$ sudo apt-get update -y
Hit:1 http://us.archive.ubuntu.com/ubuntu focal InRelease
Get:2 http://security.ubuntu.com/ubuntu focal-security InRelease [128 kB]
Get:3 http://us.archive.ubuntu.com/ubuntu focal-updates InRelease [128 kB]
Get:4 http://us.archive.ubuntu.com/ubuntu focal-backports InRelease [128 kB]
Get:5 http://security.ubuntu.com/ubuntu focal-security/main amd64 Packages [3,366 kB]
Get:6 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [3,744 kB]
Get:7 http://security.ubuntu.com/ubuntu focal-security/main i386 Packages [846 kB]
Get:8 http://security.ubuntu.com/ubuntu focal-security/main Translation-en [493 kB]
Get:9 http://security.ubuntu.com/ubuntu focal-security/main amd64 DEP-11 Metadata [65.3 kB]
Get:10 http://security.ubuntu.com/ubuntu focal-security/main DEP-11 48x48 Icons [24.2 kB]
Get:11 http://security.ubuntu.com/ubuntu focal-security/main DEP-11 64x64 Icons [42.9 kB]
Get:12 http://security.ubuntu.com/ubuntu focal-security/main amd64 c-n-f Metadata [14.3 kB]
Get:13 http://security.ubuntu.com/ubuntu focal-security/restricted amd64 Packages [3,357 kB]
Get:14 http://security.ubuntu.com/ubuntu focal-security/restricted i386 Packages [38.9 kB]
Get:15 http://security.ubuntu.com/ubuntu focal-security/restricted Translation-en [470 kB]
Get:16 http://security.ubuntu.com/ubuntu focal-security/restricted amd64 DEP-11 Metadata [212 kB]
Get:17 http://security.ubuntu.com/ubuntu focal-security/restricted DEP-11 48x48 Icons [29 kB]
Get:18 http://security.ubuntu.com/ubuntu focal-security/restricted DEP-11 64x64 Icons [29 kB]
Get:19 http://security.ubuntu.com/ubuntu focal-security/restricted DEP-11 64x64@2 Icons [29 kB]
Get:20 http://security.ubuntu.com/ubuntu focal-security/restricted amd64 c-n-f Metadata [548 kB]
Get:21 http://security.ubuntu.com/ubuntu focal-security/universe i386 Packages [695 kB]
Get:22 http://security.ubuntu.com/ubuntu focal-security/universe amd64 Packages [1,031 kB]
Get:23 http://security.ubuntu.com/ubuntu focal-security/universe Translation-en [218 kB]
Get:24 http://security.ubuntu.com/ubuntu focal-security/universe amd64 DEP-11 Metadata [159 kB]
Get:25 http://security.ubuntu.com/ubuntu focal-security/universe DEP-11 48x48 Icons [95.4 kB]
Get:26 http://security.ubuntu.com/ubuntu focal-security/universe DEP-11 64x64 Icons [166 kB]
Get:27 http://security.ubuntu.com/ubuntu focal-security/universe amd64 c-n-f Metadata [21.4 kB]
Get:28 http://security.ubuntu.com/ubuntu focal-security/multiverse i386 Packages [7,204 kB]
Get:29 http://security.ubuntu.com/ubuntu focal-security/multiverse amd64 Packages [24.8 kB]
Get:30 http://security.ubuntu.com/ubuntu focal-security/multiverse Translation-en [5,968 kB]
Get:31 http://security.ubuntu.com/ubuntu focal-security/multiverse amd64 DEP-11 Metadata [940 kB]
Get:32 http://us.archive.ubuntu.com/ubuntu focal-updates/main i386 Packages [1,067 kB]
Get:33 http://security.ubuntu.com/ubuntu focal-security/multiverse amd64 c-n-f Metadata [540 kB]
Get:34 http://us.archive.ubuntu.com/ubuntu focal-updates/main Translation-en [572 kB]
Get:35 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 DEP-11 Metadata [276 kB]
Get:36 http://us.archive.ubuntu.com/ubuntu focal-updates/main DEP-11 48x48 Icons [63.9 kB]
Get:37 http://us.archive.ubuntu.com/ubuntu focal-updates/main DEP-11 64x64 Icons [102 kB]
Get:38 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 c-n-f Metadata [17.8 kB]
Get:39 http://us.archive.ubuntu.com/ubuntu focal-updates/restricted amd64 Packages [3,564 kB]
```

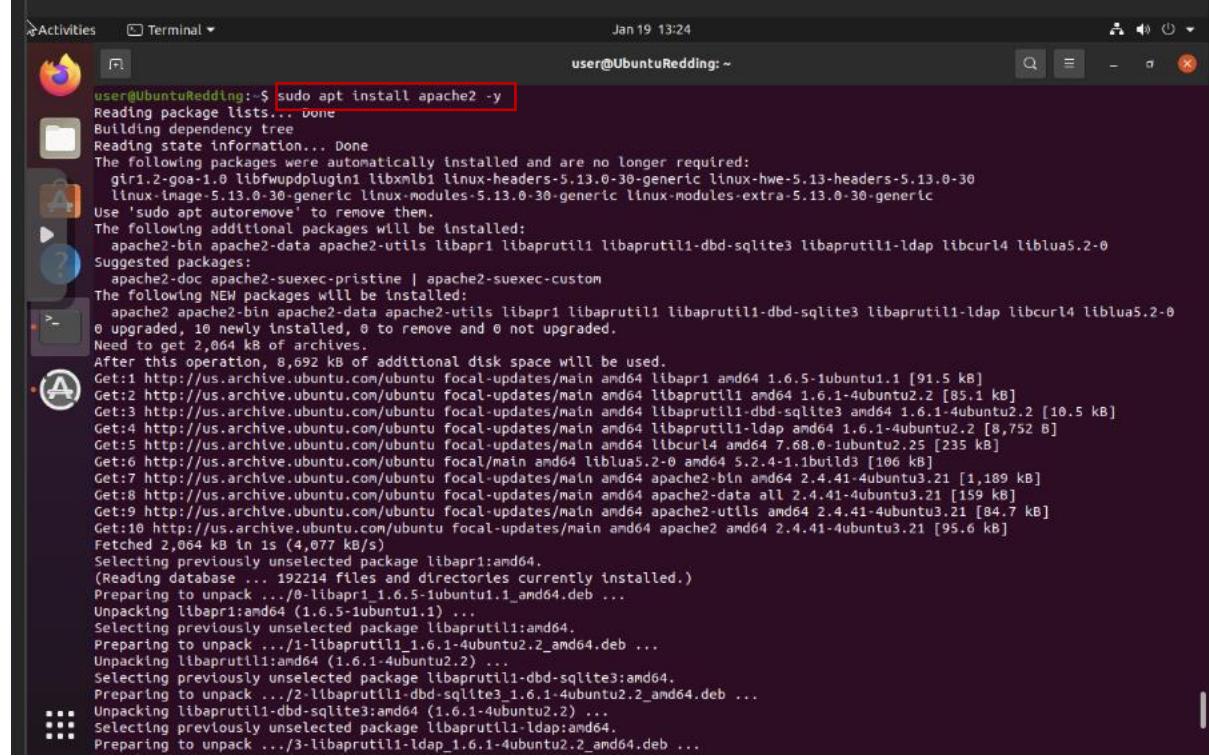
Upgrade Ubuntu > sudo apt upgrade -y



```
user@UbuntuRedding:~$ sudo apt upgrade -y
Reading package lists... Done
Building dependency tree
Reading state information... Done
Calculating upgrade... Done
The following packages were automatically installed and are no longer required:
  gir1.2-goa-1.0 libfwupdplugin1 libxmlb1
Use 'sudo apt autoremove' to remove them.
#
# Patches available for rsync vulnerabilities, including a potential RCE,
# tracked by CVE-2024-12084 through CVE-2024-12088 and CVE-2024-12747.
# For more see: https://ubuntu.com/blog/rsync-remote-code-execution
#
The following NEW packages will be installed:
  linux-headers-5.15.0-130-generic linux-hwe-5.15-headers-5.15.0-130 linux-image-5.15.0-130-generic
  linux-modules-5.15.0-130-generic linux-modules-extra-5.15.0-130-generic ubuntu-pro-client ubuntu-pro-client-l10n
The following packages will be upgraded:
  accountsservice and64-microcode apparmor apport apt apt-utils avahi-autopid avahi-daemon avahi-utils base-files
  bind9-dnsutils bind9-host bind9-libbs bluez bluez-cups bluez-obex bsutils bubblewrap busybox-initramfs busybox-static
  ca-certificates cpio cpp-9 cups-cups-browsed cups-cups-client cups-cups-common cups-cups-core-drivers cups-cups-daemon cups-cups-filters
  cups-cups-filters-cups-ipp-utils cups-ppdc cups-server-common distro-info-distro-distro-info-data dns-root-data dnsmasq-base
  e2fsprogs espeak-ng fdisk firefox firefox-locale-en fonts-opensymbol fwupd fwupd-signed gcc-10-base gcc-9-base gdb
  gdsobserver ghostscript ghostscript-x gir1.2-accountsservice-1.0 gir1.2-gdkpixbuf-2.0 gir1.2-gst-plugins-base-1.0
  gir1.2-gstreamer-1.0 gir1.2-gtk-3.0 gir1.2-mm-1.0 gir1.2-rsvg-2.0 gir1.2-soup-2.4 gir1.2-vte-2.91 gnome-control-center
  gnome-control-center-data gnome-control-center-faces gnome-shell gnome-shell-common grub-common grub-pc grub-pc-bin grub2-common
  gstreamer1.0-alsa gstreamer1.0-glib gstreamer1.0-plugins-base gstreamer1.0-plugins-base-apps gstreamer1.0-plugins-good
  gstreamer1.0-pulseaudio gstreamer1.0-tools gstreamer1.0-x gtk-update-icon-cache gtk2-engines-plxfbuf hplip hplip-data
  intel-microcode iputils iputils-ping iputils-tracepath klibc-utils krb5-locales less libaccountsservice0 libapparmori
  llbapt-pkg6.0 liblarchve13 llbatomlc1 libavahi-client3 libavahi-common-data libavahi-common3 libavahi-core7 libavahi-glib1
  libblkid1 libbluetooth3 libc-bin libc6 libc6-dbg libcap2 libcap2-bin libcc1-0 libcdio18 libcon-err2 libcue2 libcurl2
  libcurlfilters1 libcurlimage2 libcurl3-gnutls libdw1 libelf1 libespeak-ng1 libexpat1 libext2fs2 libfdts1 libflac8 libfontembed1
  libfwupd2 libfwupdplugin5 libgail18 libgcc1 libgd3 libgdk-pixbuf2.0-0 libgdk-pixbuf2.0-bin
  libgdk-pixbuf2.0-common libglib17 libglib2.0-0 libglib2.0-bin libgnutls30 libgomp1 libggme11 libgs9 libgs9-common
  libgsf-1-114 libgsf-1-common libgssapi-krb5-2 libgstreamer-glib1.0-0 libgstreamer-plugins-base1.0-0 libgstreamer-plugins-good1.0-0
  libgstreamer1.0-0 libgtk-3-0 libgtk-3-bin libgtk-3-common libgtk2.0-0 libgtk2.0-bin libgtk2.0-common libhpmd0 libip4tc2
  libip6tc2 libk5crypto3 libklibc libkpathsea6 libkrb5support0 libldap2.4-2 libldap-common libmount1 libmpg123-0
```

Install Nano Editor

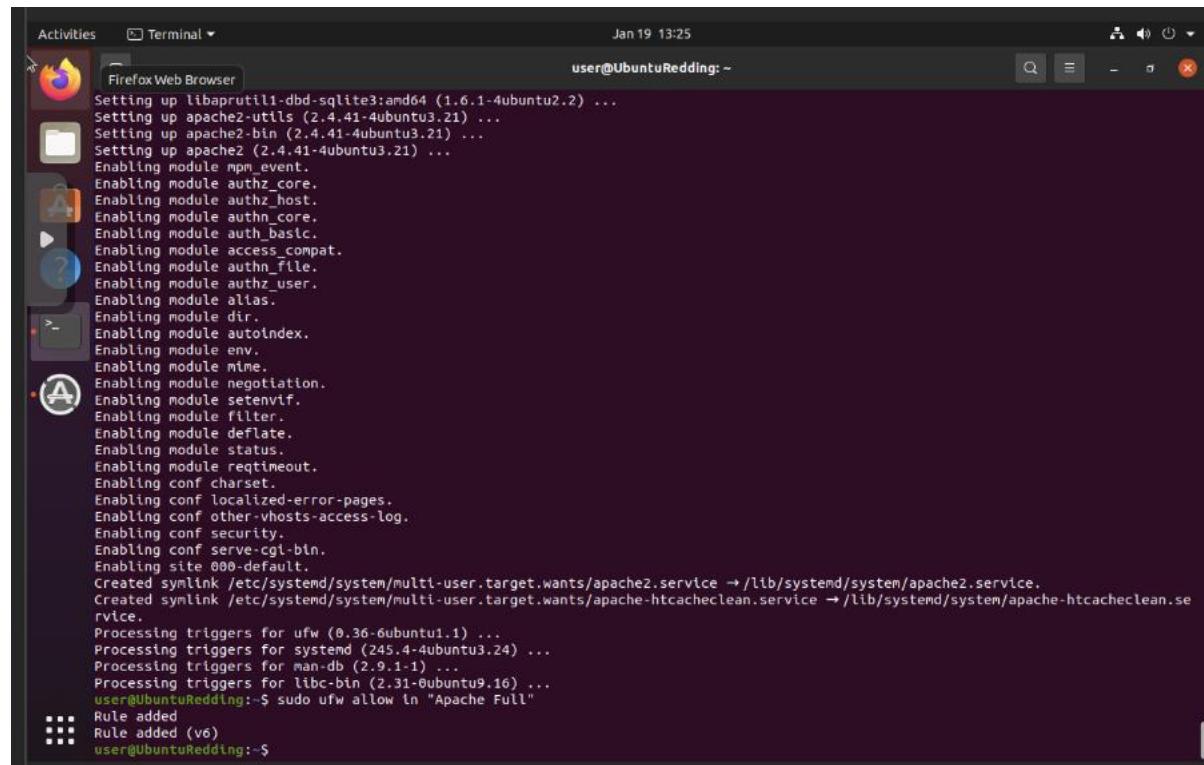
Install Apache2 > *sudo apt install apache2 -y*



```
user@UbuntuRedding:~$ sudo apt install apache2 -y
Reading package lists... done
Building dependency tree
Reading state information... done
The following packages were automatically installed and are no longer required:
  gir1.2-goa-1.0 libfwupdplugin1 libxml2 linux-headers-5.13.0-30-generic linux-hwe-5.13-headers-5.13.0-30
  linux-image-5.13.0-30-generic linux-modules-5.13.0-30-generic linux-modules-extra-5.13.0-30-generic
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  apache2-bin apache2-data apache2-utils libapr1 libaprutil1 libaprutil1-dbd-sqlite3 libaprutil1-ldap libcurl4 liblua5.2-0
Suggested packages:
  apache2-doc apache2-suexec-pristine | apache2-suexec-custom
The following NEW packages will be installed:
  apache2 apache2-bin apache2-data apache2-utils libapr1 libaprutil1 libaprutil1-dbd-sqlite3 libaprutil1-ldap libcurl4 liblua5.2-0
0 upgraded, 10 newly installed, 0 to remove and 0 not upgraded.
Need to get 2,064 kB of archives.
After this operation, 8,692 kB of additional disk space will be used.
Get:1 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 libapr1 amd64 1.6.5-1ubuntu1.1 [91.5 kB]
Get:2 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 libaprutil1 amd64 1.6.1-4ubuntu2.2 [85.1 kB]
Get:3 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 libaprutil1-dbd-sqlite3 amd64 1.6.1-4ubuntu2.2 [10.5 kB]
Get:4 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 libaprutil1-ldap amd64 1.6.1-4ubuntu2.2 [8,752 B]
Get:5 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 libcurl4 amd64 7.68.0-1ubuntu2.25 [235 kB]
Get:6 http://us.archive.ubuntu.com/ubuntu focal/main amd64 liblua5.2-0 amd64 5.2.4-1build3 [106 kB]
Get:7 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 apache2-bin amd64 2.4.41-4ubuntu3.21 [1,189 kB]
Get:8 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 apache2-data amd64 2.4.41-4ubuntu3.21 [159 kB]
Get:9 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 apache2-utils amd64 2.4.41-4ubuntu3.21 [84.7 kB]
Get:10 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 apache2 amd64 2.4.41-4ubuntu3.21 [95.6 kB]
Fetched 2,064 kB in 1s (4,077 kB/s)
Selecting previously unselected package libapr1:amd64.
(Reading database ... 192214 files and directories currently installed.)
Preparing to unpack .../0-libapr1_1.6.5-1ubuntu1.1_amd64.deb ...
Unpacking libapr1:amd64 (1.6.5-1ubuntu1.1) ...
Selecting previously unselected package libaprutil1:amd64.
Preparing to unpack .../1-libaprutil1_1.6.1-4ubuntu2.2_amd64.deb ...
Unpacking libaprutil1:amd64 (1.6.1-4ubuntu2.2) ...
Selecting previously unselected package libaprutil1-dbd-sqlite3:amd64.
Preparing to unpack .../2-libaprutil1-dbd-sqlite3_1.6.1-4ubuntu2.2_amd64.deb ...
Unpacking libaprutil1-dbd-sqlite3:amd64 (1.6.1-4ubuntu2.2) ...
Selecting previously unselected package libaprutil1-ldap:amd64.
Preparing to unpack .../3-libaprutil1-ldap_1.6.1-4ubuntu2.2_amd64.deb ...

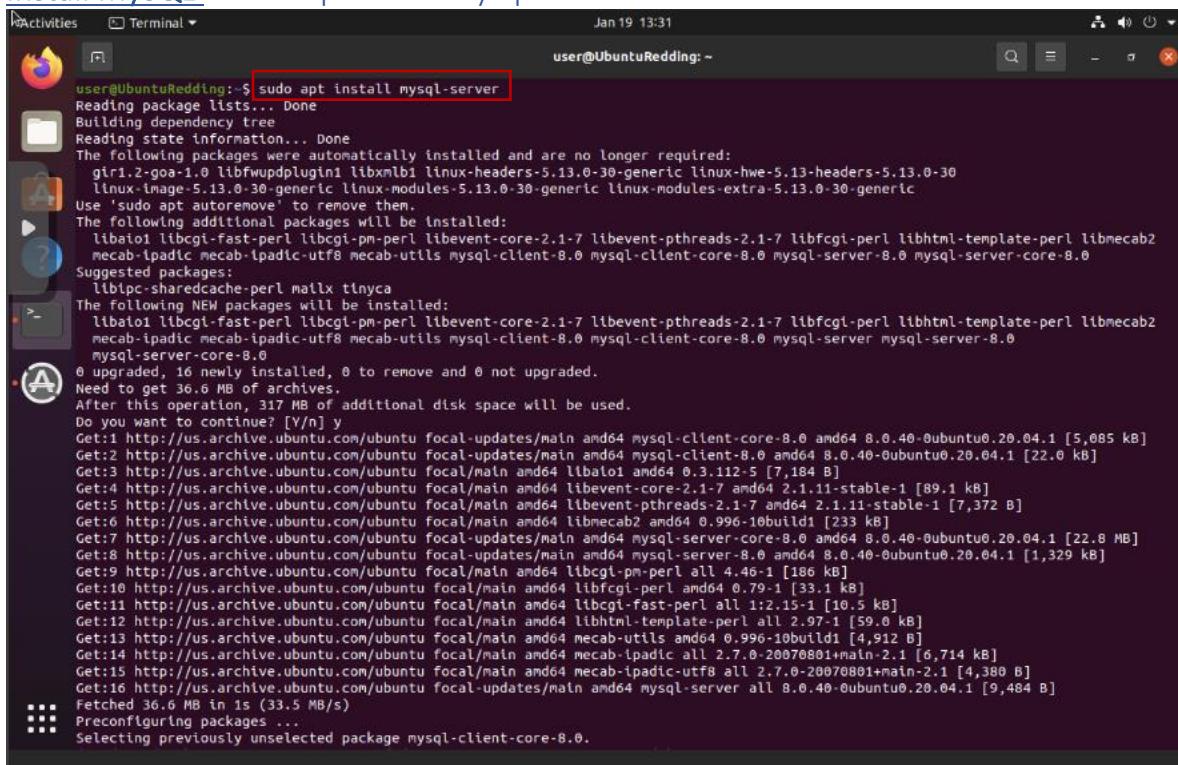
```

Open Firewall Ports 80 and 443 > *sudo ufw allow in "Apache Full"*



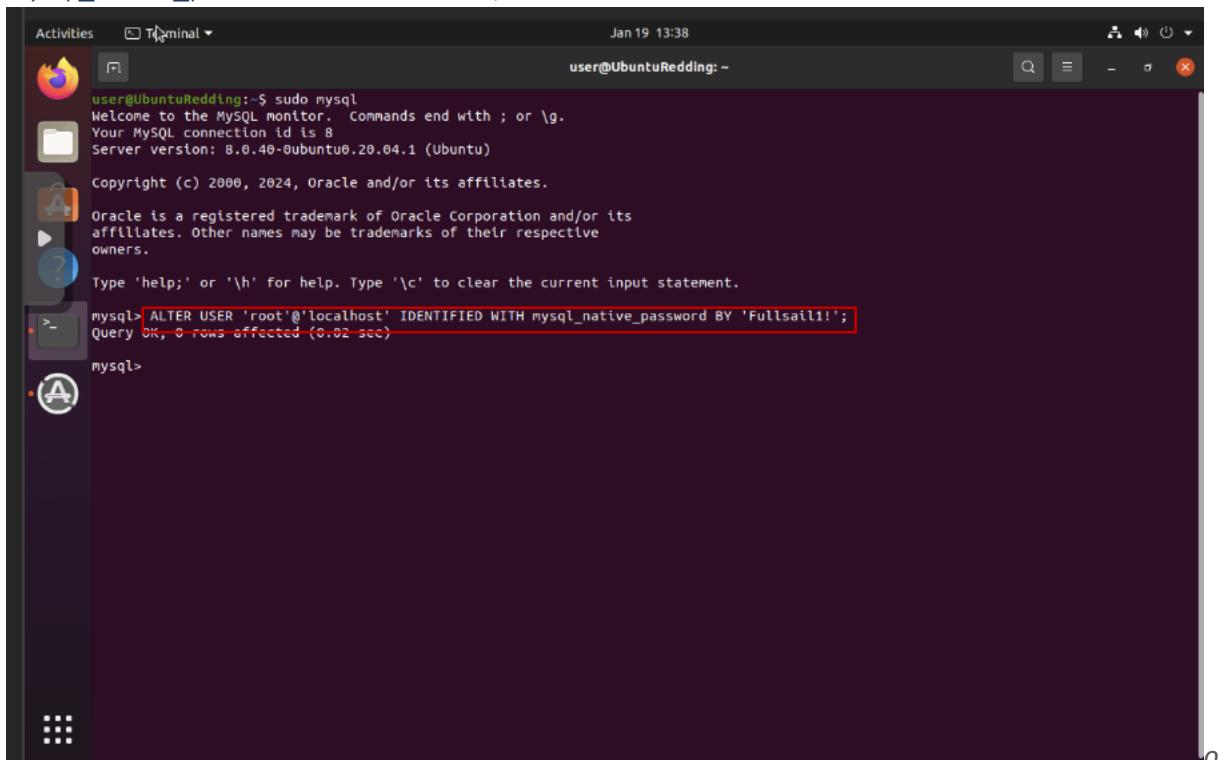
```
user@UbuntuRedding:~$ sudo ufw allow in "Apache Full"
Setting up libaprutil1-dbd-sqlite3:amd64 (1.6.1-4ubuntu2.2) ...
Setting up apache2-utils (2.4.41-4ubuntu3.21) ...
Setting up apache2-bin (2.4.41-4ubuntu3.21) ...
Setting up apache2 (2.4.41-4ubuntu3.21) ...
Enabling module mpm_event.
Enabling module authz_core.
Enabling module authz_host.
Enabling module authn_core.
Enabling module authn_basic.
Enabling module access_compat.
Enabling module authn_file.
Enabling module authz_user.
Enabling module alias.
Enabling module dir.
Enabling module autoindex.
Enabling module env.
Enabling module mime.
Enabling module negotiation.
Enabling module setenvif.
Enabling module filter.
Enabling module deflate.
Enabling module status.
Enabling module reqtimeout.
Enabling conf charset.
Enabling conf localized-error-pages.
Enabling conf other-vhosts-access-log.
Enabling conf security.
Enabling conf serve-cgi-bin.
Enabling site 000-default.
Created symlink /etc/systemd/system/multi-user.target.wants/apache2.service → /lib/systemd/system/apache2.service.
Created symlink /etc/systemd/system/multi-user.target.wants/apache-htcacheclean.service → /lib/systemd/system/apache-htcacheclean.service.
Processing triggers for ufw (0.36-6ubuntu1.1) ...
Processing triggers for systemd (245.4-4ubuntu3.24) ...
Processing triggers for man-db (2.9.1-i) ...
Processing triggers for libc-bin (2.31-0ubuntu9.16) ...
user@UbuntuRedding:~$ sudo ufw allow in "Apache Full"
Rule added
Rule added (v6)
user@UbuntuRedding:~$
```

## Install MySQL > sudo apt install mysql-server



```
user@UbuntuRedding:~$ sudo apt install mysql-server
Reading package lists... Done
Building dependency tree...
The following packages were automatically installed and are no longer required:
  gir1.2-goa-1.0 libfwupdplugin1 libxml2 linux-headers-5.13.0-30-generic linux-hwe-5.13-headers-5.13.0-30
  linux-image-5.13.0-30-generic linux-modules-5.13.0-30-generic linux-modules-extra-5.13.0-30-generic
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  libalio1 libcgifast-perl libcgipm-perl libevent-core-2.1-7 libevent-pthreads-2.1-7 libfcgi-perl libhtml-template-perl libmecab2
  mecab-ipadic mecab-ipadic-utf8 mecab-utils mysql-client-8.0 mysql-client-core-8.0 mysql-server-8.0 mysql-server-core-8.0
Suggested packages:
  liblpc-sharedcache-perl mailx tinyca
The following NEW packages will be installed:
  libalio1 libcgifast-perl libcgipm-perl libevent-core-2.1-7 libevent-pthreads-2.1-7 libfcgi-perl libhtml-template-perl libmecab2
  mecab-ipadic mecab-ipadic-utf8 mecab-utils mysql-client-8.0 mysql-client-core-8.0 mysql-server mysql-server-8.0
  mysql-server-core-8.0
0 upgraded, 16 newly installed, 0 to remove and 0 not upgraded.
Need to get 36.6 MB of archives.
After this operation, 317 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 mysql-client-core-8.0 amd64 8.0.40-0ubuntu0.20.04.1 [5,085 kB]
Get:2 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 mysql-client-8.0 amd64 8.0.40-0ubuntu0.20.04.1 [22.0 kB]
Get:3 http://us.archive.ubuntu.com/ubuntu focal/main amd64 libalio1 amd64 0.3.112.5 [7,184 B]
Get:4 http://us.archive.ubuntu.com/ubuntu focal/main amd64 libevent-core-2.1-7 amd64 2.1.11-stable-1 [89.1 kB]
Get:5 http://us.archive.ubuntu.com/ubuntu focal/main amd64 libevent-pthreads-2.1-7 amd64 2.1.11-stable-1 [7,372 B]
Get:6 http://us.archive.ubuntu.com/ubuntu focal/main amd64 libmecab2 amd64 0.996-10build1 [233 kB]
Get:7 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 mysql-server-core-8.0 amd64 8.0.40-0ubuntu0.20.04.1 [22.8 kB]
Get:8 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 mysql-server-8.0 amd64 8.0.40-0ubuntu0.20.04.1 [1,329 kB]
Get:9 http://us.archive.ubuntu.com/ubuntu focal/main amd64 libcgifast-perl all 4.46-1 [186 kB]
Get:10 http://us.archive.ubuntu.com/ubuntu focal/main amd64 libfcgi-perl amd64 0.79-1 [33.1 kB]
Get:11 http://us.archive.ubuntu.com/ubuntu focal/main amd64 libcgifast-perl all 1:2.15-1 [10.5 kB]
Get:12 http://us.archive.ubuntu.com/ubuntu focal/main amd64 libhtml-template-perl all 2.97-1 [59.0 kB]
Get:13 http://us.archive.ubuntu.com/ubuntu focal/main amd64 mecab-utils amd64 0.996-10build1 [4,912 B]
Get:14 http://us.archive.ubuntu.com/ubuntu focal/main amd64 mecab-ipadic all 2.7.0-20070801+main-2.1 [6,714 kB]
Get:15 http://us.archive.ubuntu.com/ubuntu focal/main amd64 mecab-ipadic-utf8 all 2.7.0-20070801+main-2.1 [4,380 B]
Get:16 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 mysql-server all 8.0.40-0ubuntu0.20.04.1 [9,484 B]
Fetched 36.6 MB in 1s (33.5 MB/s)
Preconfiguring packages ...
Selecting previously unselected package mysql-client-core-8.0.
```

Alter root user password (root@localhost) > ALTER USER 'root'@'localhost' IDENTIFIED WITH mysql\_native\_password BY 'Fullsail1!';



```
user@UbuntuRedding:~$ sudo mysql
Welcome to the MySQL monitor. Commands end with ; or \g.
Your MySQL connection id is 8
Server version: 8.0.40-0ubuntu0.20.04.1 (Ubuntu)

Copyright (c) 2000, 2024, Oracle and/or its affiliates.

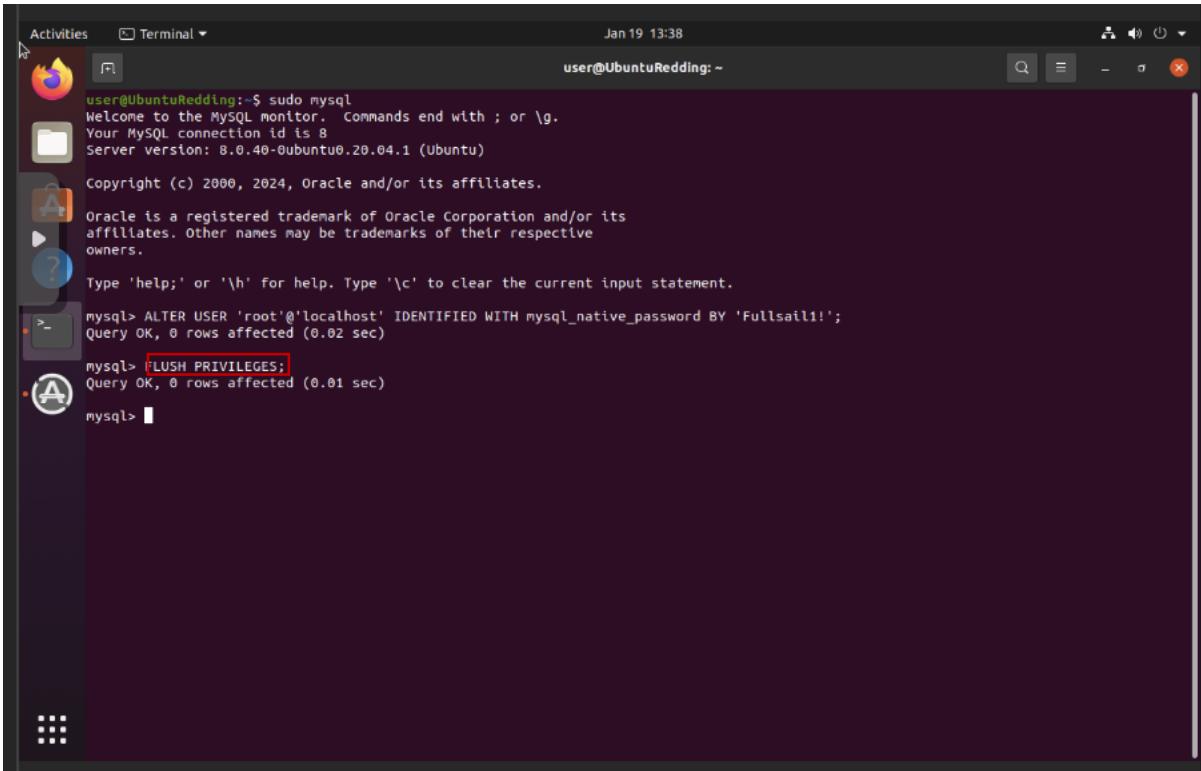
Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> ALTER USER 'root'@'localhost' IDENTIFIED WITH mysql_native_password BY 'Fullsail1!';
Query OK, 0 rows affected (0.02 sec)

mysql>
```

Flush Privileges > FLUSH PRIVILEGES;



```
Activities Terminal Jan 19 13:38
user@UbuntuRedding:~$ sudo mysql
Welcome to the MySQL monitor. Commands end with ; or \g.
Your MySQL connection id is 8
Server version: 8.0.40-Ubuntu0.20.04.1 (Ubuntu)

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Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

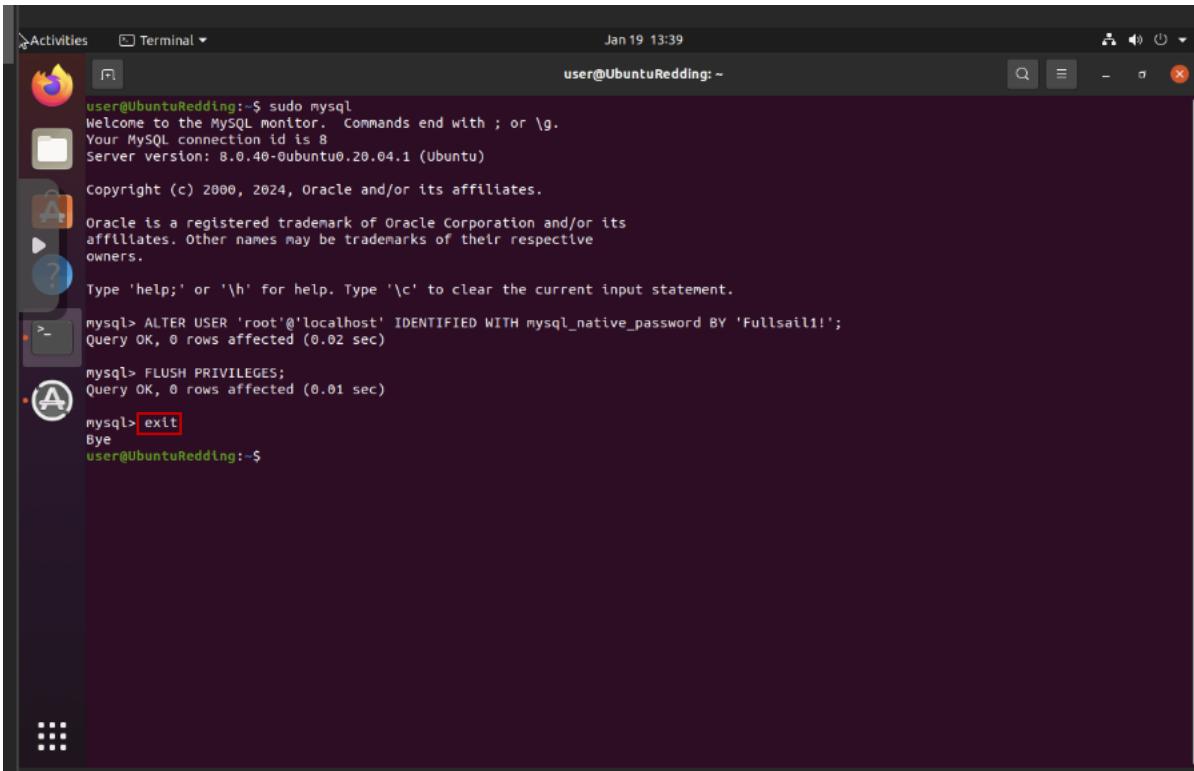
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> ALTER USER 'root'@'localhost' IDENTIFIED WITH mysql_native_password BY 'Fullsail1!';
Query OK, 0 rows affected (0.02 sec)

mysql> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.01 sec)

mysql> 
```

Exit MySQL



```
Activities Terminal Jan 19 13:39
user@UbuntuRedding:~$ sudo mysql
Welcome to the MySQL monitor. Commands end with ; or \g.
Your MySQL connection id is 8
Server version: 8.0.40-Ubuntu0.20.04.1 (Ubuntu)

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Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

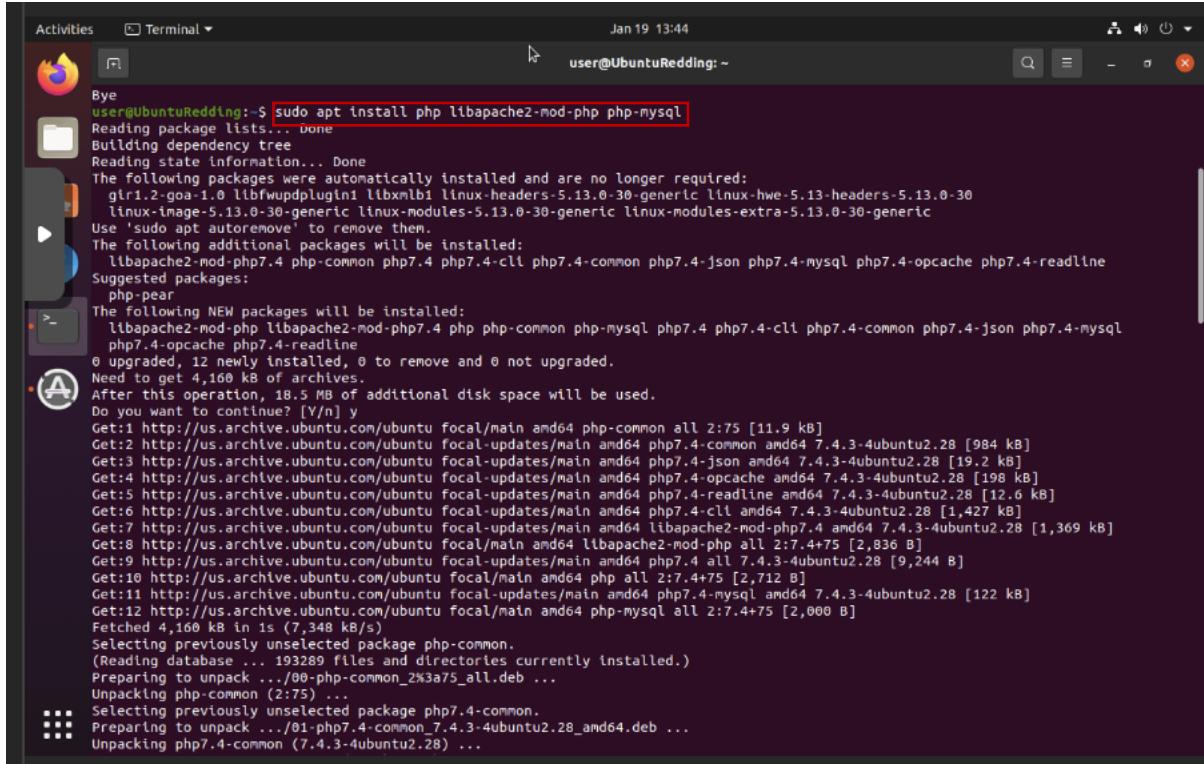
mysql> ALTER USER 'root'@'localhost' IDENTIFIED WITH mysql_native_password BY 'Fullsail1!';
Query OK, 0 rows affected (0.02 sec)

mysql> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.01 sec)

mysql> exit
Bye
user@UbuntuRedding:~$ 
```

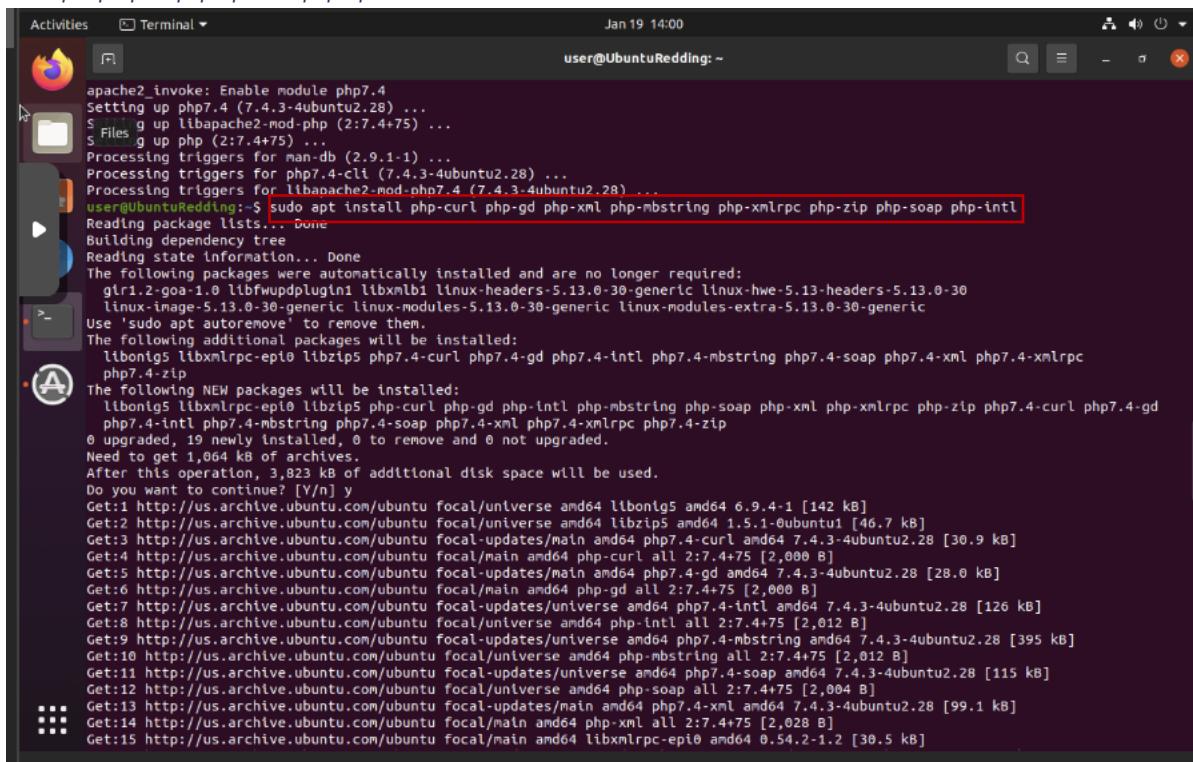
## Install PHP

Install Required PHP Libraries > sudo apt install php libapache2-mod-php php-mysql



```
Activities Terminal Jan 19 13:44 user@UbuntuRedding: ~
Bye
user@UbuntuRedding:~$ sudo apt install php libapache2-mod-php php-mysql
Reading package lists... done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  gir1.2-goa-1.0 libfwupdplugin1 libxmlb1 linux-headers-5.13.0-30-generic linux-hwe-5.13-headers-5.13.0-30
  linux-image-5.13.0-30-generic linux-modules-5.13.0-30-generic linux-modules-extra-5.13.0-30-generic
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  libapache2-mod-php7.4 php-common php7.4 php7.4-cli php7.4-common php7.4-json php7.4-mysql php7.4-opcache php7.4-readline
Suggested packages:
  php-pear
The following NEW packages will be installed:
  libapache2-mod-php libapache2-mod-php7.4 php php-common php-mysql php7.4 php7.4-cli php7.4-common php7.4-json php7.4-mysql
  php7.4-opcache php7.4-readline
0 upgraded, 12 newly installed, 0 to remove and 0 not upgraded.
Need to get 4,160 kB of archives.
After this operation, 18.5 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://us.archive.ubuntu.com/ubuntu focal/main amd64 php-common all 2:7.5 [11.9 kB]
Get:2 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 php7.4-common amd64 7.4.3-4ubuntu2.28 [984 kB]
Get:3 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 php7.4-json amd64 7.4.3-4ubuntu2.28 [19.2 kB]
Get:4 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 php7.4-opcache amd64 7.4.3-4ubuntu2.28 [198 kB]
Get:5 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 php7.4-readline amd64 7.4.3-4ubuntu2.28 [12.6 kB]
Get:6 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 php7.4-cli amd64 7.4.3-4ubuntu2.28 [1,427 kB]
Get:7 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 libapache2-mod-php7.4 amd64 7.4.3-4ubuntu2.28 [1,369 kB]
Get:8 http://us.archive.ubuntu.com/ubuntu focal/main amd64 libapache2-mod-php all 2:7.4+75 [2,836 B]
Get:9 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 php7.4 all 7.4.3-4ubuntu2.28 [9,244 B]
Get:10 http://us.archive.ubuntu.com/ubuntu focal/main amd64 php all 2:7.4+75 [2,712 B]
Get:11 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 php7.4-mysql amd64 7.4.3-4ubuntu2.28 [122 kB]
Get:12 http://us.archive.ubuntu.com/ubuntu focal/main amd64 php-mysql all 2:7.4+75 [2,000 B]
Fetched 4,160 kB in 1s (7,348 kB/s)
Selecting previously unselected package php-common.
(Reading database ... 193289 files and directories currently installed.)
Preparing to unpack .../00-php-common_233a75_all.deb ...
Unpacking php-common (2:7.5) ...
Selecting previously unselected package php7.4-common.
Preparing to unpack .../01-php7.4-common_7.4.3-4ubuntu2.28_amd64.deb ...
Unpacking php7.4-common (7.4.3-4ubuntu2.28) ...
```

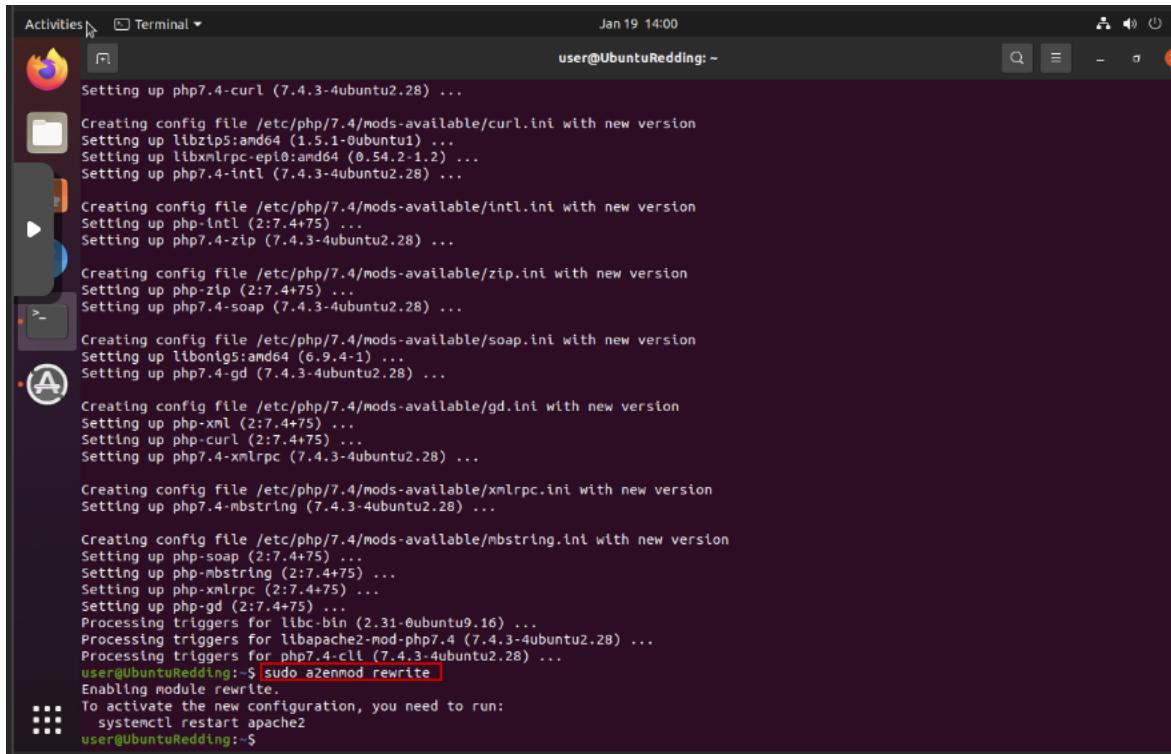
Install Required MySQL Libraries > *sudo apt install php-curl php-gd php-xml php-mbstring php-xmlrpc php-zip php-soap php-intl*



A screenshot of a Linux desktop environment showing a terminal window. The terminal title is "user@UbuntuRedding: ~". The date and time at the top right are "Jan 19 14:00". The terminal window contains the following text:

```
apache2_invoke: Enable module php7.4
Setting up php7.4 (7.4.3-4ubuntu2.28) ...
S: /var/lib/php7.4/libphp7.4.so
S: /var/lib/php7.4/php
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for php7.4-clnt (7.4.3-4ubuntu2.28) ...
Processing triggers for libapache2-mod-php7.4 (7.4.3-4ubuntu2.28) ...
user@UbuntuRedding:~$ sudo apt install php-curl php-gd php-xml php-mbstring php-xmlrpc php-zip php-soap php-intl
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  grr1.2-goa-1.0 libbfwupdplugin1 libxml1b1 linux-headers-5.13.0-30-generic linux-hwe-5.13-headers-5.13.0-30
  linux-image-5.13.0-30-generic linux-modules-5.13.0-30-generic linux-modules-extra-5.13.0-30-generic
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  libbong5 libxmlrpc-epi0 libbzips5 php7.4-curl php7.4-gd php7.4-intl php7.4-mbstring php7.4-soap php7.4-xml php7.4-xmlrpc
  php7.4-zip
The following NEW packages will be installed:
  libbong5 libxmlrpc-epi0 libbzips5 php-curl php-gd php-intl php-mbstring php-soap php-xml php-xmlrpc php-zip php7.4-curl php7.4-gd
  php7.4-intl php7.4-mbstring php7.4-soap php7.4-xml php7.4-xmlrpc php7.4-zip
0 upgraded, 19 newly installed, 0 to remove and 0 not upgraded.
Need to get 1,064 kB of archives.
After this operation, 3,823 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://us.archive.ubuntu.com/ubuntu focal/universe amd64 libbong5 amd64 6.9.4-1 [142 kB]
Get:2 http://us.archive.ubuntu.com/ubuntu focal/universe amd64 libbzips5 amd64 1.5.1-0ubuntu1 [46.7 kB]
Get:3 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 php7.4-curl amd64 7.4.3-4ubuntu2.28 [30.9 kB]
Get:4 http://us.archive.ubuntu.com/ubuntu focal/main amd64 php-curl all 2:7.4-75 [2,000 B]
Get:5 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 php7.4-gd amd64 7.4.3-4ubuntu2.28 [28.0 kB]
Get:6 http://us.archive.ubuntu.com/ubuntu focal/main amd64 php-gd all 2:7.4-75 [2,000 B]
Get:7 http://us.archive.ubuntu.com/ubuntu focal-updates/universe amd64 php7.4-intl amd64 7.4.3-4ubuntu2.28 [126 kB]
Get:8 http://us.archive.ubuntu.com/ubuntu focal/universe amd64 php-intl all 2:7.4+75 [2,012 B]
Get:9 http://us.archive.ubuntu.com/ubuntu focal-updates/universe amd64 php7.4-mbstring amd64 7.4.3-4ubuntu2.28 [395 kB]
Get:10 http://us.archive.ubuntu.com/ubuntu focal/universe amd64 php-mbstring all 2:7.4+75 [2,012 B]
Get:11 http://us.archive.ubuntu.com/ubuntu focal-updates/universe amd64 php7.4-soap amd64 7.4.3-4ubuntu2.28 [115 kB]
Get:12 http://us.archive.ubuntu.com/ubuntu focal/universe amd64 php-soap all 2:7.4+75 [2,004 B]
Get:13 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 php7.4-xml amd64 7.4.3-4ubuntu2.28 [99.1 kB]
Get:14 http://us.archive.ubuntu.com/ubuntu focal/main amd64 php-xml all 2:7.4+75 [2,028 B]
Get:15 http://us.archive.ubuntu.com/ubuntu focal/main amd64 libxmlrpc-epi0 amd64 0.54.2-1.2 [30.5 kB]
```

## Enable URL Rewrites (clean URLs) > sudo a2enmod rewrite



```
Setting up php7.4-curl (7.4.3-4ubuntu2.28) ...
Creating config file /etc/php/7.4/mods-available/curl.ini with new version
Setting up libzips:amd64 (1.5.1-0ubuntu1) ...
Setting up libxmlrpc-epi0:amd64 (0.54.2-1.2) ...
Setting up php7.4-intl (7.4.3-4ubuntu2.28) ...

Creating config file /etc/php/7.4/mods-available/intl.ini with new version
Setting up php-intl (2:7.4+75) ...
Setting up php7.4-zip (7.4.3-4ubuntu2.28) ...

Creating config file /etc/php/7.4/mods-available/zip.ini with new version
Setting up php-zip (2:7.4+75) ...
Setting up php7.4-soap (7.4.3-4ubuntu2.28) ...

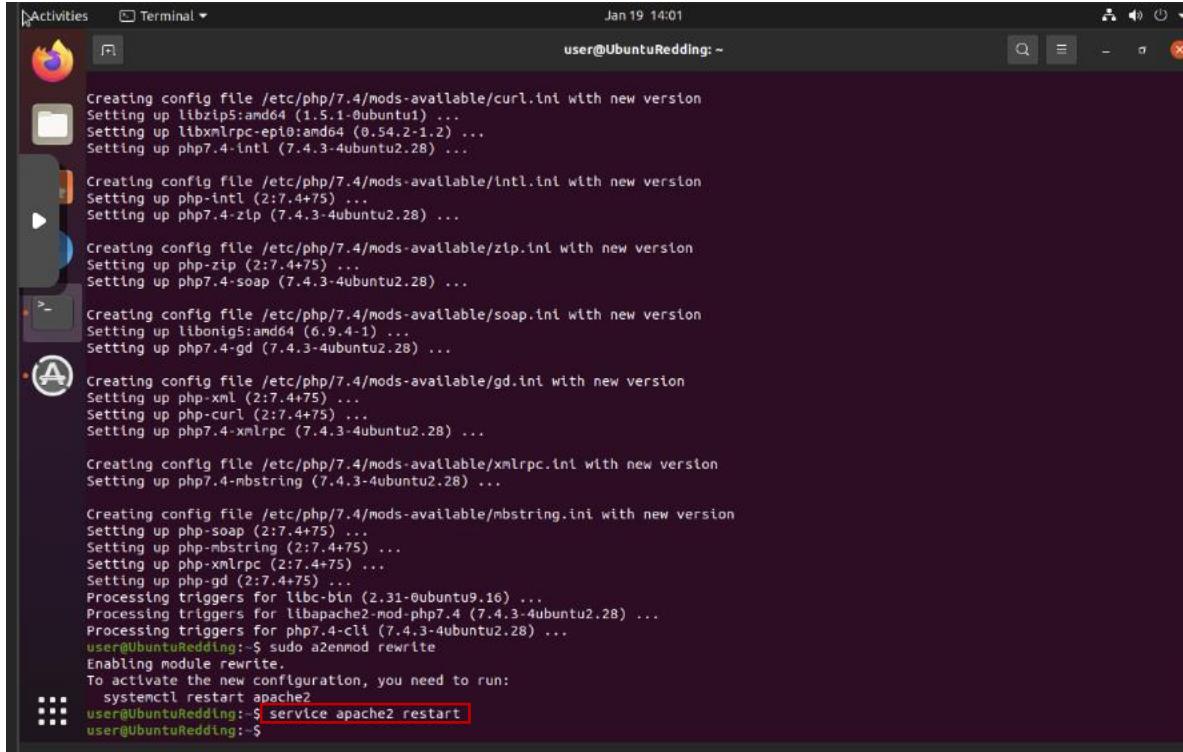
Creating config file /etc/php/7.4/mods-available/soap.ini with new version
Setting up libonig5:amd64 (6.9.4-1) ...
Setting up php7.4-gd (7.4.3-4ubuntu2.28) ...

Creating config file /etc/php/7.4/mods-available/gd.ini with new version
Setting up php-xml (2:7.4+75) ...
Setting up php-curl (2:7.4+75) ...
Setting up php7.4-xmlrpc (7.4.3-4ubuntu2.28) ...

Creating config file /etc/php/7.4/mods-available/xmlrpc.ini with new version
Setting up php7.4-mbstring (7.4.3-4ubuntu2.28) ...

Creating config file /etc/php/7.4/mods-available/mbstring.ini with new version
Setting up php-soap (2:7.4+75) ...
Setting up php-mbstring (2:7.4+75) ...
Setting up php-xmlrpc (2:7.4+75) ...
Setting up php-gd (2:7.4+75) ...
Processing triggers for libc-bin (2.31-0ubuntu9.16) ...
Processing triggers for libapache2-mod-php7.4 (7.4.3-4ubuntu2.28) ...
Processing triggers for php7.4-cli (7.4.3-4ubuntu2.28) ...
user@UbuntuRedding:~$ sudo a2enmod rewrite
Enabling module rewrite.
To activate the new configuration, you need to run:
    systemctl restart apache2
user@UbuntuRedding:~$
```

## Restart Apache Service > service apache2 restart ("systemctl restart apache" may also work)



```
Creating config file /etc/php/7.4/mods-available/curl.ini with new version
Setting up libzips:amd64 (1.5.1-0ubuntu1) ...
Setting up libxmlrpc-epi0:amd64 (0.54.2-1.2) ...
Setting up php7.4-intl (7.4.3-4ubuntu2.28) ...

Creating config file /etc/php/7.4/mods-available/intl.ini with new version
Setting up php-intl (2:7.4+75) ...
Setting up php7.4-zip (7.4.3-4ubuntu2.28) ...

Creating config file /etc/php/7.4/mods-available/zip.ini with new version
Setting up php-zip (2:7.4+75) ...
Setting up php7.4-soap (7.4.3-4ubuntu2.28) ...

Creating config file /etc/php/7.4/mods-available/soap.ini with new version
Setting up libonig5:amd64 (6.9.4-1) ...
Setting up php7.4-gd (7.4.3-4ubuntu2.28) ...

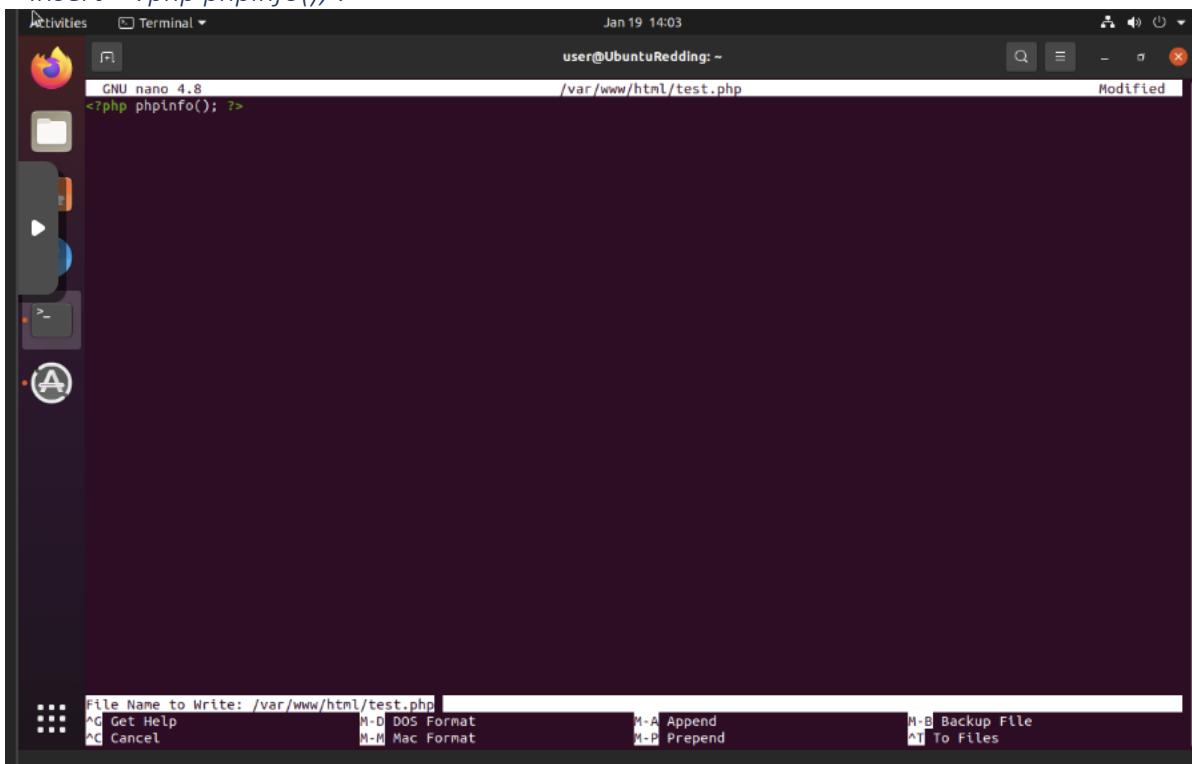
Creating config file /etc/php/7.4/mods-available/gd.ini with new version
Setting up php-xml (2:7.4+75) ...
Setting up php-curl (2:7.4+75) ...
Setting up php7.4-xmlrpc (7.4.3-4ubuntu2.28) ...

Creating config file /etc/php/7.4/mods-available/xmlrpc.ini with new version
Setting up php7.4-mbstring (7.4.3-4ubuntu2.28) ...

Creating config file /etc/php/7.4/mods-available/mbstring.ini with new version
Setting up php-soap (2:7.4+75) ...
Setting up php-mbstring (2:7.4+75) ...
Setting up php-xmlrpc (2:7.4+75) ...
Setting up php-gd (2:7.4+75) ...
Processing triggers for libc-bin (2.31-0ubuntu9.16) ...
Processing triggers for libapache2-mod-php7.4 (7.4.3-4ubuntu2.28) ...
Processing triggers for php7.4-cli (7.4.3-4ubuntu2.28) ...
user@UbuntuRedding:~$ sudo a2enmod rewrite
Enabling module rewrite.
To activate the new configuration, you need to run:
    systemctl restart apache2
user@UbuntuRedding:~$ service apache2 restart
user@UbuntuRedding:~$
```

Create a test.php Web Page > sudo nano /var/www/html/test.php

\* Insert <?php phpinfo(); ?>



The screenshot shows a terminal window titled "Terminal" with the command "GNU nano 4.8" running. The file path is "/var/www/html/test.php". The terminal contains the PHP code: <?php phpinfo(); ?>. The status bar at the bottom of the terminal window displays various keyboard shortcuts for file operations like Get Help (^G), Cancel (^C), DOS Format (^D), Mac Format (^M), Append (^A), Prepend (^P), Backup File (^B), and To Files (^T).

## Test the test.php Web Page

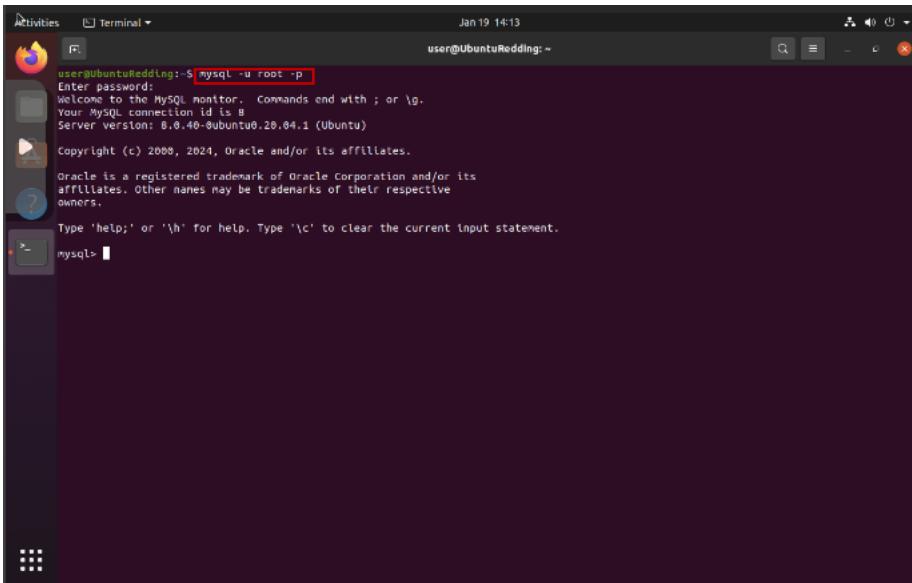
In the Firefox browser's address bar type: <http://10.10.229.12/test.php>

The screenshot shows a Firefox browser window titled "PHP 7.4.3-4ubuntu2.28 - php" with the URL "10.10.229.12/test.php". The page displays the PHP configuration information. At the top, it says "PHP Version 7.4.3-4ubuntu2.28" and features the PHP logo. Below this is a table of configuration details.

System	Linux UbuntuRedding 5.15.0-72-generic #79~20.04.1-Ubuntu SMP Thu Apr 20 22:12:07 UTC 2023 x86_64
Build Date	Dec 13 2024 13:46:46
Server API	Apache 2.0 Handler
Virtual Directory Support	disabled
Configuration File (php.ini) Path	/etc/php/7.4/apache2
Loaded Configuration File	/etc/php/7.4/apache2/php.ini
Scan this dir for additional .ini files	/etc/php/7.4/apache2/conf.d
Additional .ini files parsed	/etc/php/7.4/apache2/conf.d/10-mysqld.ini, /etc/php/7.4/apache2/conf.d/10-opcache.ini, /etc/php/7.4/apache2/conf.d/10-pdo.ini, /etc/php/7.4/apache2/conf.d/15-xml.ini, /etc/php/7.4/apache2/conf.d/20-calendar.ini, /etc/php/7.4/apache2/conf.d/20-ctype.ini, /etc/php/7.4/apache2/conf.d/20-curl.ini, /etc/php/7.4/apache2/conf.d/20-dom.ini, /etc/php/7.4/apache2/conf.d/20-exif.ini, /etc/php/7.4/apache2/conf.d/20-fn.ini, /etc/php/7.4/apache2/conf.d/20-fileinfo.ini, /etc/php/7.4/apache2/conf.d/20-ftp.ini, /etc/php/7.4/apache2/conf.d/20-gd.ini, /etc/php/7.4/apache2/conf.d/20-gettext.ini, /etc/php/7.4/apache2/conf.d/20-iconv.ini, /etc/php/7.4/apache2/conf.d/20-intl.ini, /etc/php/7.4/apache2/conf.d/20-json.ini, /etc/php/7.4/apache2/conf.d/20-mbstring.ini, /etc/php/7.4/apache2/conf.d/20-mysqli.ini, /etc/php/7.4/apache2/conf.d/20-pdo_mysql.ini, /etc/php/7.4/apache2/conf.d/20-phar.ini, /etc/php/7.4/apache2/conf.d/20-posix.ini, /etc/php/7.4/apache2/conf.d/20-readline.ini, /etc/php/7.4/apache2/conf.d/20-soap.ini, /etc/php/7.4/apache2/conf.d/20-sockets.ini, /etc/php/7.4/apache2/conf.d/20-sysvmsg.ini, /etc/php/7.4/apache2/conf.d/20-sysvsem.ini, /etc/php/7.4/apache2/conf.d/20-sysvshm.ini, /etc/php/7.4/apache2/conf.d/20-tokenizer.ini, /etc/php/7.4/apache2/conf.d/20-xmlreader.ini, /etc/php/7.4/apache2/conf.d/20-xmlrpc.ini, /etc/php/7.4/apache2/conf.d/20-xmlwriter.ini, /etc/php/7.4/apache2/conf.d/20-xsl.ini, /etc/php/7.4/apache2/conf.d/20-zip.ini
PHP API	20190902
PHP Extension	20190902
Zend Extension	320190902
Zend Extension Build	API320190902.NTS
PHP Extension Build	API20190902.NTS
Debug Build	no

## Database Configuration in MySQL

Log into MySQL > mysql -u root -p



A screenshot of a terminal window titled "Terminal". The window shows the MySQL command-line interface. The command entered was "mysql -u root -p". The output includes the MySQL monitor welcome message, copyright information, and a prompt for the password. The terminal is running on an Ubuntu system.

```
user@UbuntuRedding:~$ mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 8
Server version: 8.0.40-0ubuntu0.20.04.1 (Ubuntu)

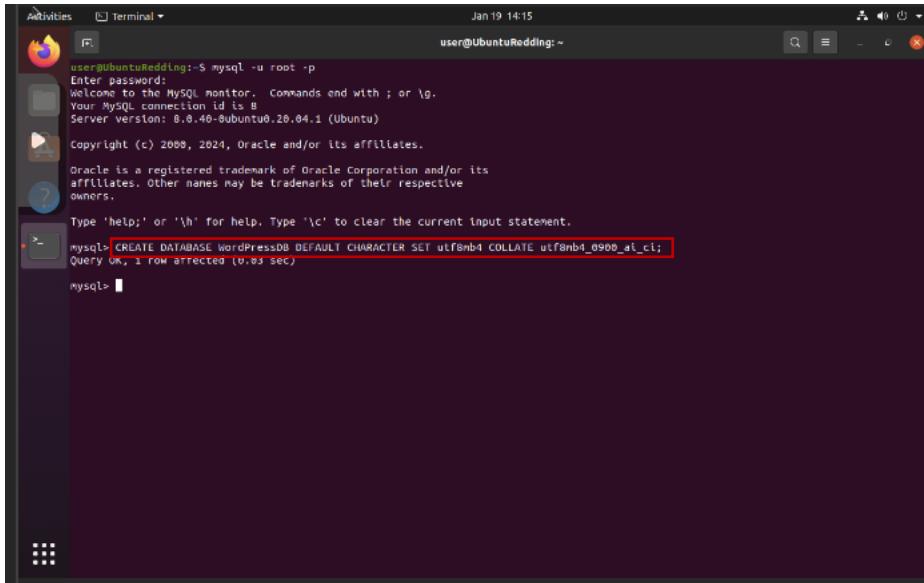
Copyright (c) 2000, 2024, Oracle and/or its affiliates.

Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql>
```

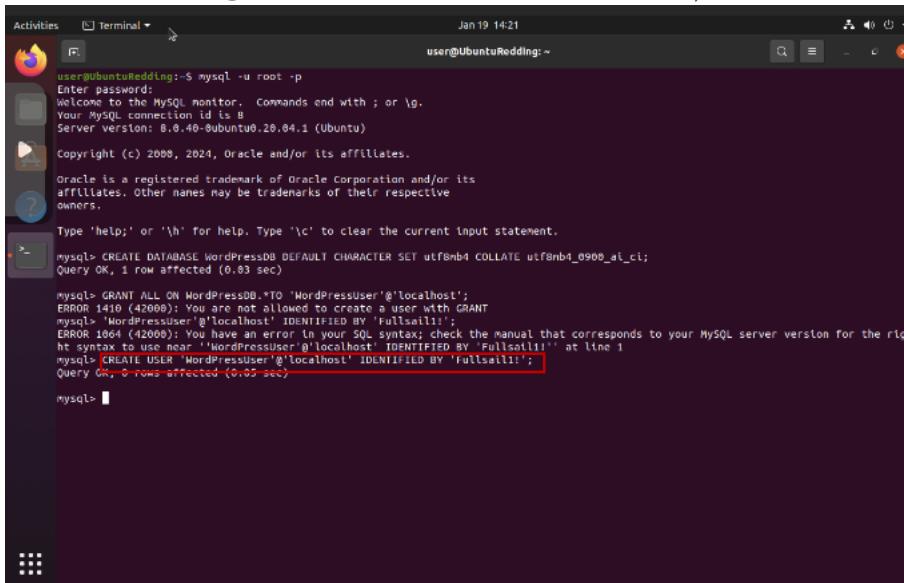
Create MySQL WordPress Database (WordPressDB) > CREATE DATABASE WordPressDB DEFAULT CHARACTER SET utf8mb4 COLLATE utf8mb4\_0900\_ai\_ci;



A screenshot of a terminal window titled "Activities Terminal". The window shows a MySQL prompt for a user named "user" on "UbuntuRedding". The command entered is:

```
mysql> CREATE DATABASE WordPressDB DEFAULT CHARACTER SET utf8mb4 COLLATE utf8mb4_0900_ai_ci;
Query OK, 1 row affected (0.03 sec)
```

Create MySQL WordPress User (WordPressUser)> CREATE USER 'WordPressUser'@'localhost' IDENTIFIED BY 'Fullsail1!';

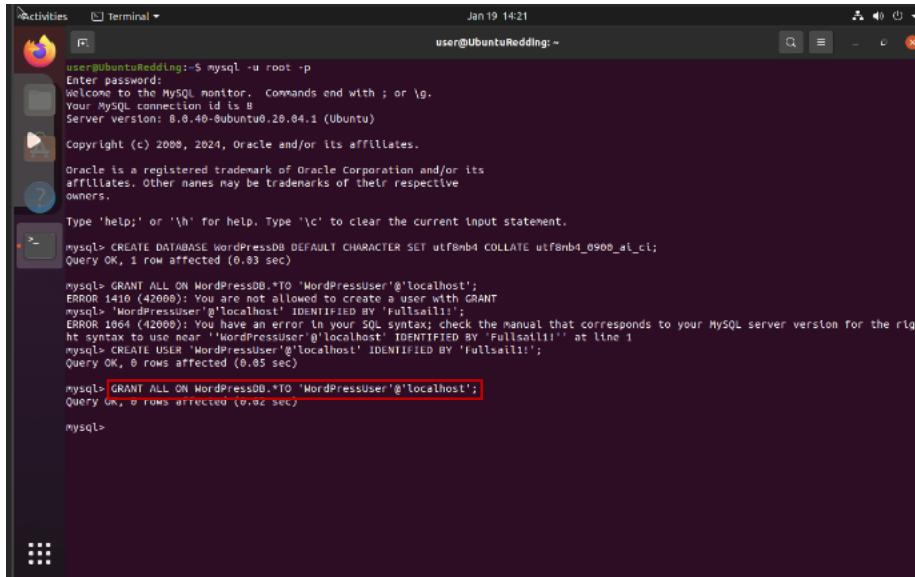


A screenshot of a terminal window titled "Activities Terminal". The window shows a MySQL prompt for a user named "user" on "UbuntuRedding". The commands entered are:

```
mysql> CREATE DATABASE WordPressDB DEFAULT CHARACTER SET utf8mb4 COLLATE utf8mb4_0900_ai_ci;
Query OK, 1 row affected (0.03 sec)

mysql> GRANT ALL ON WordPressDB.* TO 'WordPressUser'@'localhost';
ERROR 1045 (42000): Access denied for user 'user'@'localhost' to database 'WordPressDB'
mysql> GRANT ALL ON WordPressDB.* TO 'WordPressUser'@'localhost' IDENTIFIED BY 'Fullsail1!';
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near ' 'WordPressUser'@'localhost' IDENTIFIED BY 'Fullsail1!' ' at line 1
mysql> CREATE USER 'WordPressUser'@'localhost' IDENTIFIED BY 'Fullsail1!';
Query OK, 0 rows affected (0.05 sec)
```

Grant Privileges to the WordPress Database (WordPressDB) to WordPress User (WordPressUser)  
> GRANT ALL ON WordPressDB.\* TO 'WordPressUser'@'localhost';



```
user@UbuntuRedding:~$ mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 8
Server version: 8.0.40-0ubuntu0.20.04.1 (Ubuntu)

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Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

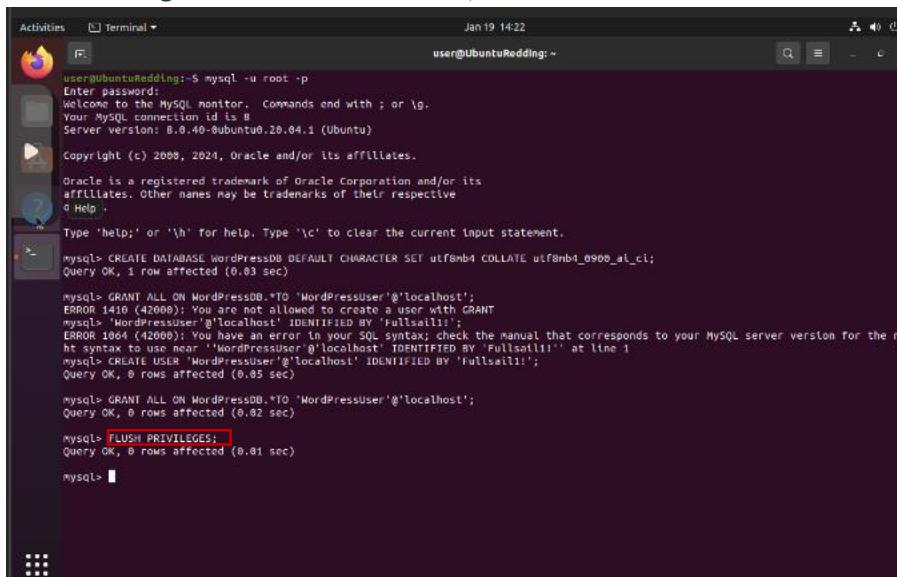
mysql> CREATE DATABASE WordPressDB DEFAULT CHARACTER SET utf8mb4 COLLATE utf8mb4_0900_ai_ci;
Query OK, 1 row affected (0.03 sec)

mysql> GRANT ALL ON WordPressDB.* TO 'WordPressUser'@'localhost';
ERROR 1410 (42000): You are not allowed to create a user with GRANT
mysql> 'WordPressUser'@'localhost' IDENTIFIED BY 'fullsail1!';
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right
syntax to use near ''WordPressUser'@'localhost' IDENTIFIED BY 'fullsail1!'' at line 1
mysql> CREATE USER 'WordPressUser'@'localhost' IDENTIFIED BY 'fullsail1!';
Query OK, 0 rows affected (0.05 sec)

mysql> GRANT ALL ON WordPressDB.* TO 'WordPressUser'@'localhost';
Query OK, 0 rows affected (0.02 sec)

mysql>
```

Flush Privileges > FLUSH PRIVILEGES;



```
user@UbuntuRedding:~$ mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 8
Server version: 8.0.40-0ubuntu0.20.04.1 (Ubuntu)

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affiliates. Other names may be trademarks of their respective
Help .

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> CREATE DATABASE WordPressDB DEFAULT CHARACTER SET utf8mb4 COLLATE utf8mb4_0900_ai_ci;
Query OK, 1 row affected (0.03 sec)

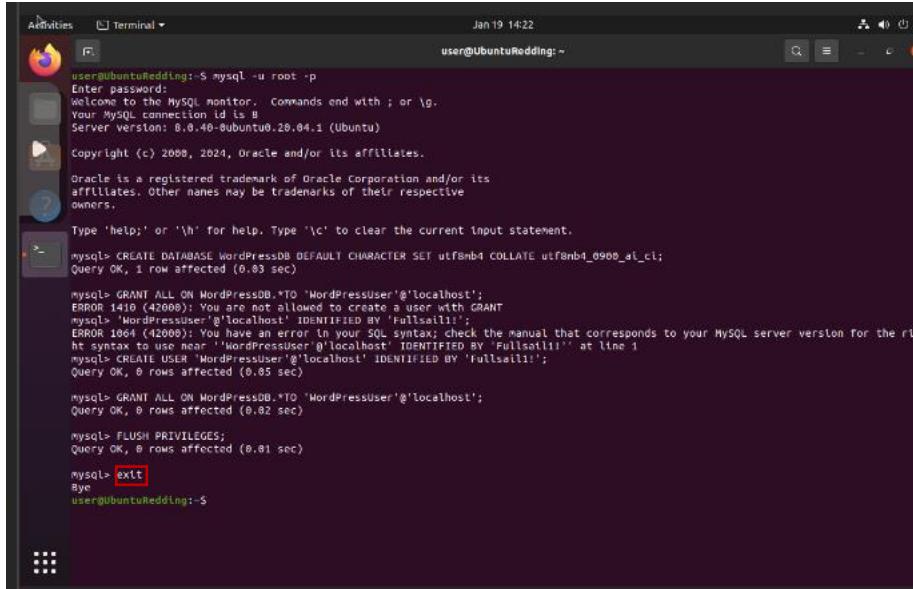
mysql> GRANT ALL ON WordPressDB.* TO 'WordPressUser'@'localhost';
ERROR 1410 (42000): You are not allowed to create a user with GRANT
mysql> 'WordPressUser'@'localhost' IDENTIFIED BY 'fullsail1!';
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right
syntax to use near ''WordPressUser'@'localhost' IDENTIFIED BY 'fullsail1!'' at line 1
mysql> CREATE USER 'WordPressUser'@'localhost' IDENTIFIED BY 'fullsail1!';
Query OK, 0 rows affected (0.05 sec)

mysql> GRANT ALL ON WordPressDB.* TO 'WordPressUser'@'localhost';
Query OK, 0 rows affected (0.02 sec)

mysql> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.01 sec)

mysql>
```

Exit MySQL > exit



```
user@UbuntuRedding:~$ mysql -u root -p
Enter password:
Welcome to the MySQL monitor. Commands end with ; or \g.
Your MySQL connection id is 8
Server version: 8.0.40-0ubuntu0.20.04.1 (Ubuntu)

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Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> CREATE DATABASE WordPressDB DEFAULT CHARACTER SET utf8mb4 COLLATE utf8mb4_0900_ai_ci;
Query OK, 1 row affected (0.03 sec)

mysql> GRANT ALL ON WordPressDB.* TO 'WordPressUser'@'localhost';
ERROR 1410 (42000): You are not allowed to create a user with GRANT
mysql> 'WordPressUser'@'localhost' IDENTIFIED BY 'Fullsalt!';
ERROR 4009 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right
syntax to use near ''WordPressUser'@'localhost' IDENTIFIED BY 'Fullsalt!'' at line 1
mysql> CREATE USER 'WordPressUser'@'localhost' IDENTIFIED BY 'Fullsalt!';
Query OK, 0 rows affected (0.05 sec)

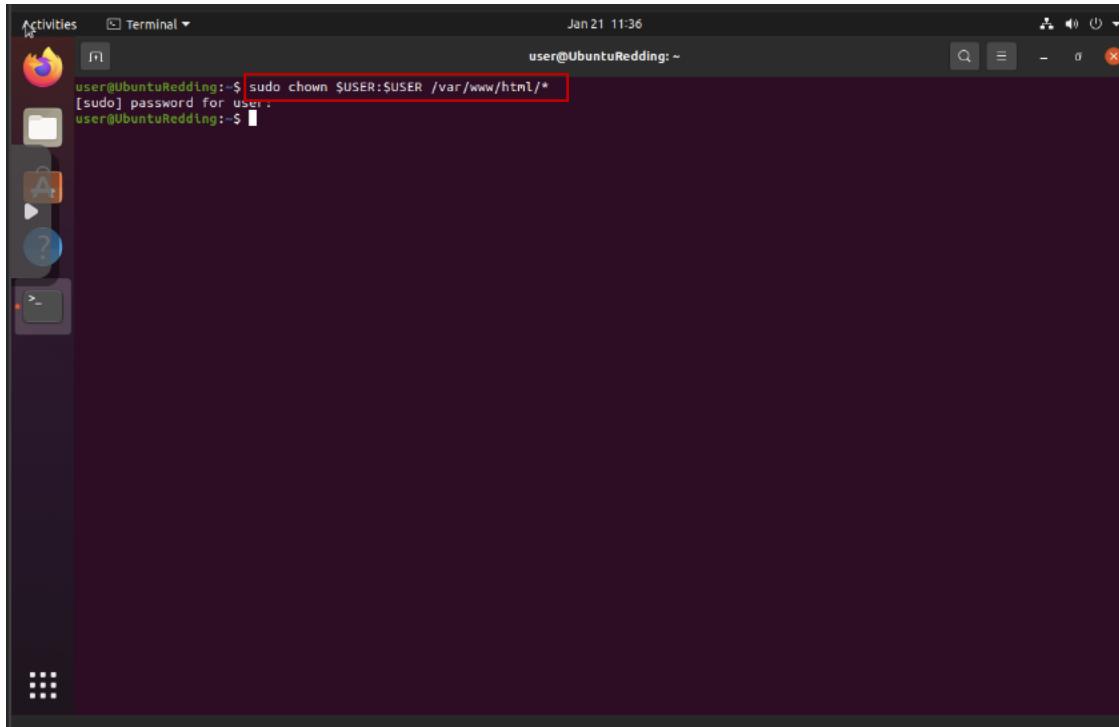
mysql> GRANT ALL ON WordPressDB.* TO 'WordPressUser'@'localhost';
Query OK, 0 rows affected (0.02 sec)

mysql> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.01 sec)

mysql> exit
Bye
user@UbuntuRedding:~$
```

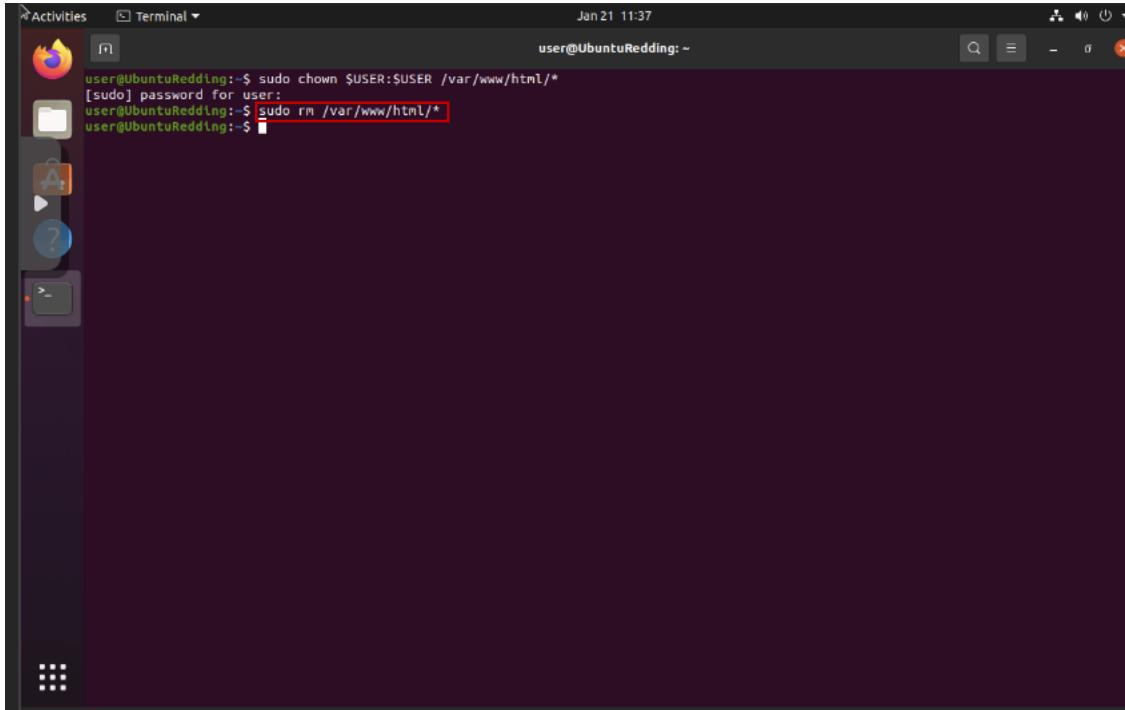
## Install WordPress

Grant Permission to /var/www/html/ Directory to WordPress User > sudo chown \$USER:\$USER /var/www/html/\*



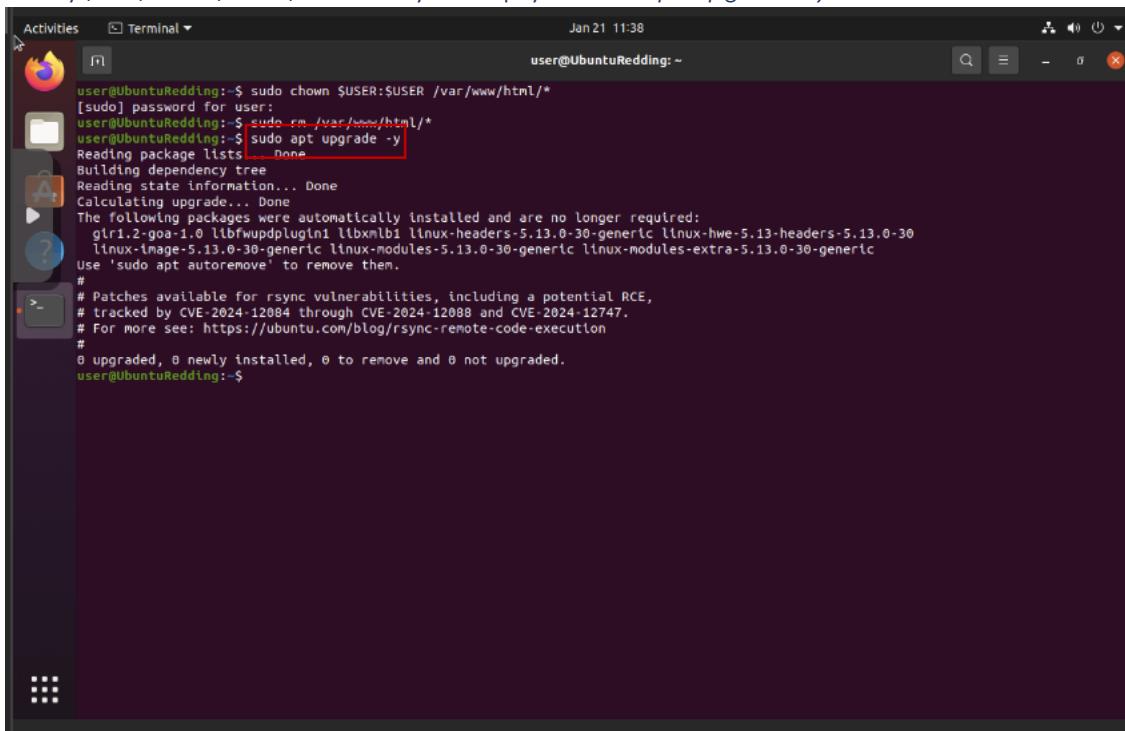
```
user@UbuntuRedding:~$ sudo chown $USER:$USER /var/www/html/*
[sudo] password for user:
user@UbuntuRedding:~$
```

Delete Files from /var/www/html/ Directory > `sudo rm /var/www/html/*`



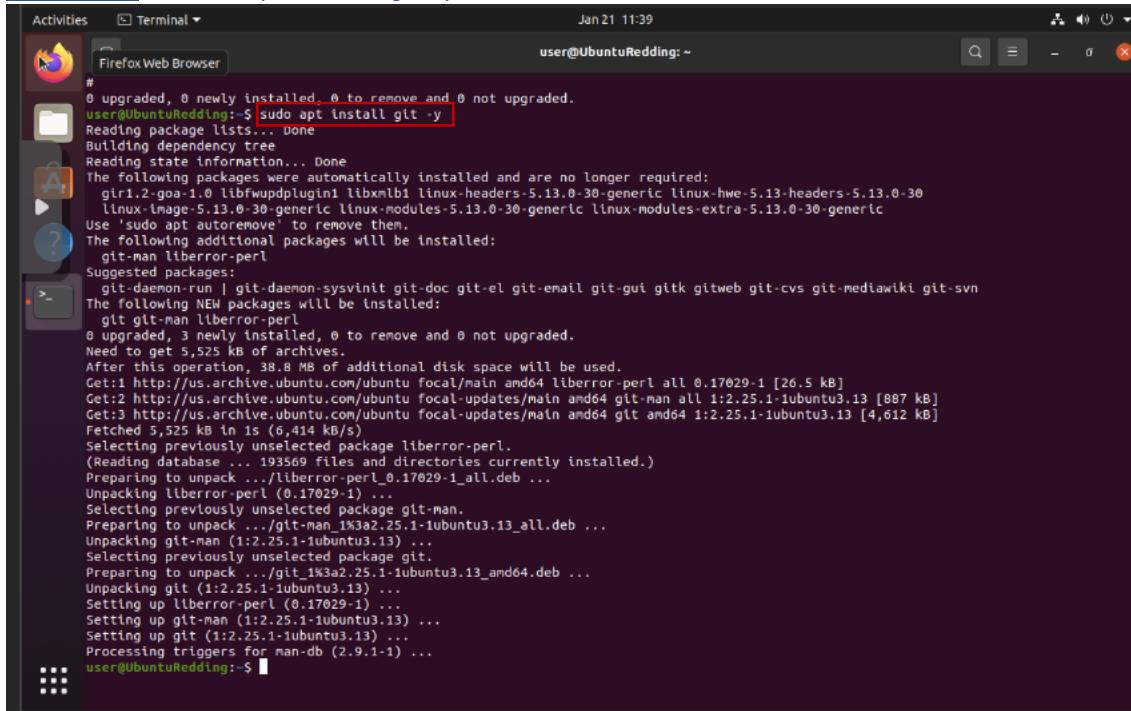
A screenshot of a Linux desktop environment showing a terminal window. The terminal title is "Activities Terminal" and the date and time are "Jan 21 11:37". The user is at the prompt "user@UbuntuRedding:~". The terminal shows the command `sudo rm /var/www/html/*` being entered, with the entire command highlighted in red. After the command is run, the terminal shows the user's password prompt "[sudo] password for user:" followed by a blank line where the password was entered.

Verify /var/www/html/ Directory is Empty > `sudo apt upgrade -y`



A screenshot of a Linux desktop environment showing a terminal window. The terminal title is "Activities Terminal" and the date and time are "Jan 21 11:38". The user is at the prompt "user@UbuntuRedding:~". The terminal shows the command `sudo apt upgrade -y` being entered, with the entire command highlighted in red. The output of the command shows the upgrade process: "Reading package lists... Done", "Building dependency tree", "Reading state information... Done", "Calculating upgrade... Done", and a list of packages being upgraded. At the end, it says "0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded." The user's password prompt "[sudo] password for user:" is also visible at the top of the terminal window.

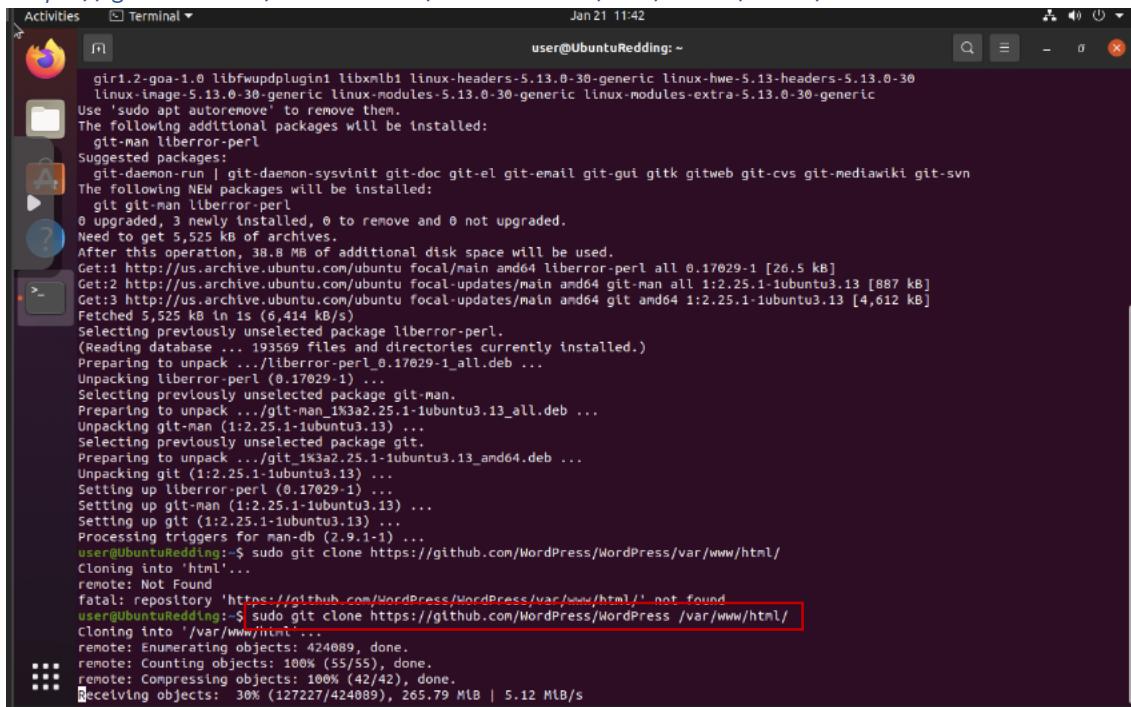
## Install Git > sudo apt install git -y



```
# upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
user@UbuntuRedding:~$ sudo apt install git -y
Reading package lists... done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  gir1.2-goa-1.0 libfwupdplugin1 libxmlb1 linux-headers-5.13.0-30-generic linux-hwe-5.13-headers-5.13.0-30
  linux-image-5.13.0-30-generic linux-modules-5.13.0-30-generic linux-modules-extra-5.13.0-30-generic
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  git-man liberror-perl
Suggested packages:
  git-daemon-run | git-daemon-sysvinit git-doc git-el git-email git-gui gitk gitweb git-cvs git-mediawiki git-svn
The following NEW packages will be installed:
  git git-man liberror-perl
0 upgraded, 3 newly installed, 0 to remove and 0 not upgraded.
Need to get 5,525 kB of archives.
After this operation, 38.8 MB of additional disk space will be used.
Get:1 http://us.archive.ubuntu.com/ubuntu focal/main amd64 liberror-perl all 0.17029-1 [26.5 kB]
Get:2 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 git-man all 1:2.25.1-1ubuntu3.13 [887 kB]
Get:3 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 git amd64 1:2.25.1-1ubuntu3.13 [4,612 kB]
Fetched 5,525 kB in 1s (6,414 kB/s)
Selecting previously unselected package liberror-perl.
(Reading database ... 193569 files and directories currently installed.)
Preparing to unpack .../liberror-perl_0.17029-1_all.deb ...
Unpacking liberror-perl (0.17029-1) ...
Selecting previously unselected package git-man.
Preparing to unpack .../git-man_1%3a2.25.1-1ubuntu3.13_all.deb ...
Unpacking git-man (1:2.25.1-1ubuntu3.13) ...
Selecting previously unselected package git.
Preparing to unpack .../git_1%3a2.25.1-1ubuntu3.13_amd64.deb ...
Unpacking git (1:2.25.1-1ubuntu3.13) ...
Setting up liberror-perl (0.17029-1) ...
Setting up git-man (1:2.25.1-1ubuntu3.13) ...
Setting up git (1:2.25.1-1ubuntu3.13) ...
Processing triggers for man-db (2.9.1-1) ...
user@UbuntuRedding:~$
```

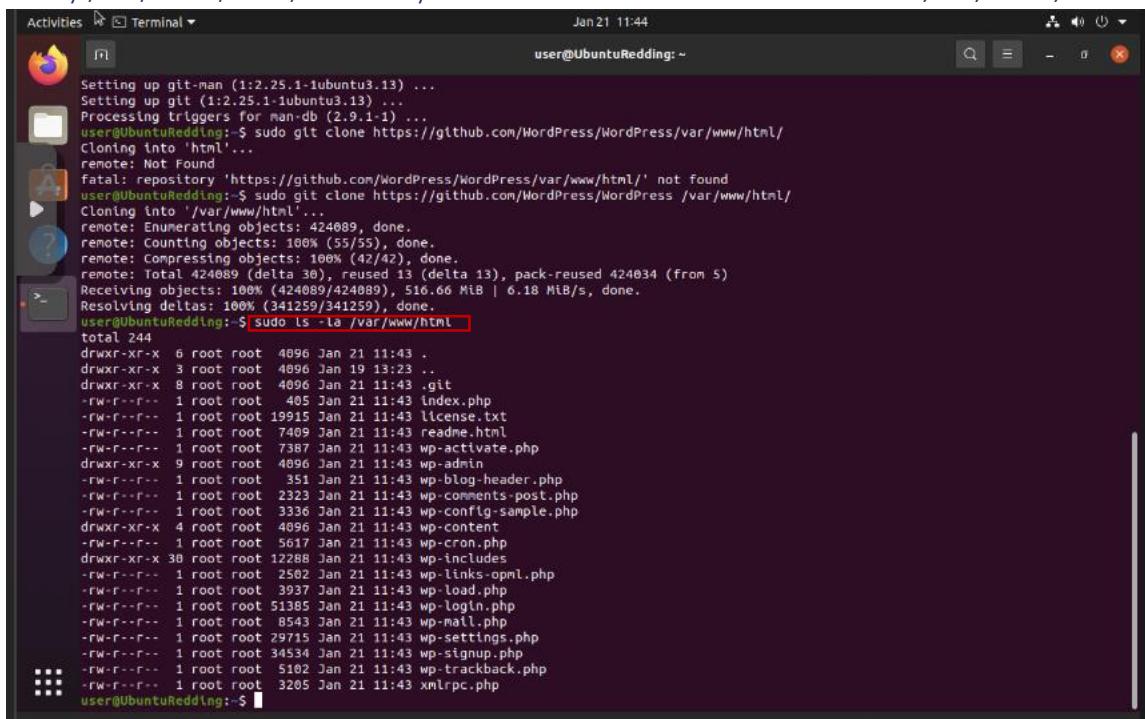
## Clone WordPress to /var/www/html/ Directory > sudo git clone

<https://github.com/WordPress/WordPress> /var/www/html/



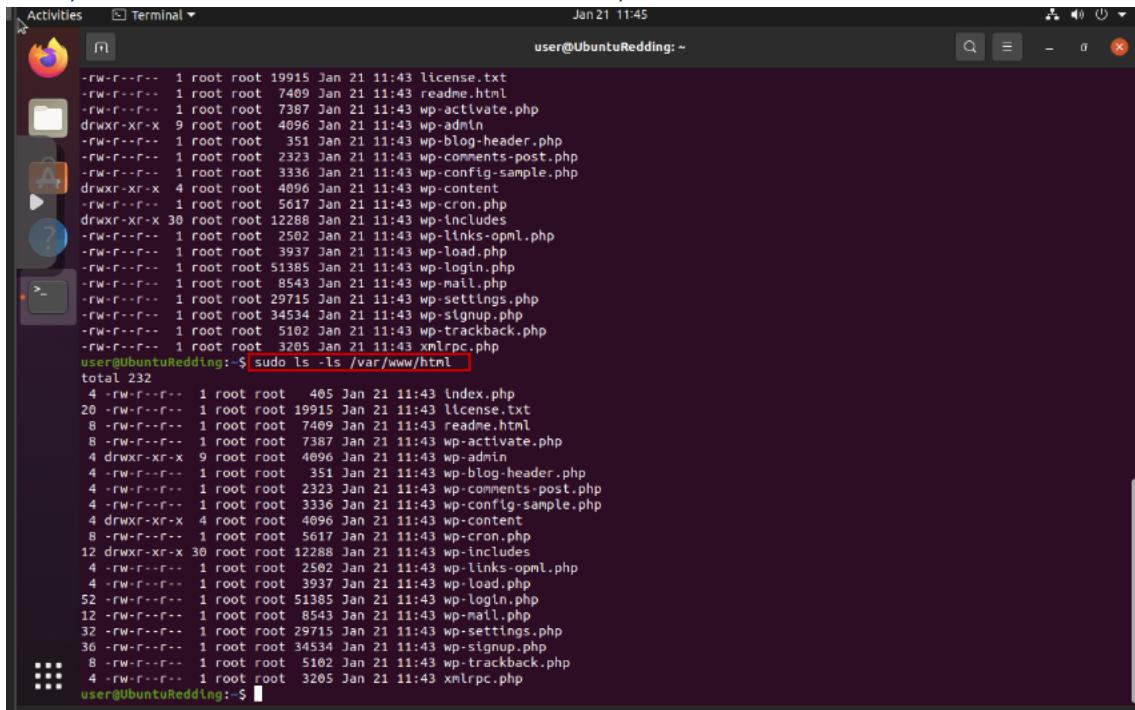
```
gir1.2-goa-1.0 libfwupdplugin1 libxmlb1 linux-headers-5.13.0-30-generic linux-hwe-5.13-headers-5.13.0-30
  linux-image-5.13.0-30-generic linux-modules-5.13.0-30-generic linux-modules-extra-5.13.0-30-generic
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  git-man liberror-perl
Suggested packages:
  git-daemon-run | git-daemon-sysvinit git-doc git-el git-email git-gui gitk gitweb git-cvs git-mediawiki git-svn
The following NEW packages will be installed:
  git git-man liberror-perl
0 upgraded, 3 newly installed, 0 to remove and 0 not upgraded.
Need to get 5,525 kB of archives.
After this operation, 38.8 MB of additional disk space will be used.
Get:1 http://us.archive.ubuntu.com/ubuntu focal/main amd64 liberror-perl all 0.17029-1 [26.5 kB]
Get:2 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 git-man all 1:2.25.1-1ubuntu3.13 [887 kB]
Get:3 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 git amd64 1:2.25.1-1ubuntu3.13 [4,612 kB]
Fetched 5,525 kB in 1s (6,414 kB/s)
Selecting previously unselected package liberror-perl.
(Reading database ... 193569 files and directories currently installed.)
Preparing to unpack .../liberror-perl_0.17029-1_all.deb ...
Unpacking liberror-perl (0.17029-1) ...
Selecting previously unselected package git-man.
Preparing to unpack .../git-man_1%3a2.25.1-1ubuntu3.13_all.deb ...
Unpacking git-man (1:2.25.1-1ubuntu3.13) ...
Selecting previously unselected package git.
Preparing to unpack .../git_1%3a2.25.1-1ubuntu3.13_amd64.deb ...
Unpacking git (1:2.25.1-1ubuntu3.13) ...
Setting up liberror-perl (0.17029-1) ...
Setting up git-man (1:2.25.1-1ubuntu3.13) ...
Setting up git (1:2.25.1-1ubuntu3.13) ...
Processing triggers for man-db (2.9.1-1) ...
user@UbuntuRedding:~$ sudo git clone https://github.com/WordPress/WordPress /var/www/html/
Cloning into 'html'...
remote: Not Found
fatal: repository 'https://github.com/WordPress/WordPress /var/www/html/' not found
user@UbuntuRedding:~$ sudo git clone https://github.com/WordPress/WordPress /var/www/html/
Cloning into '/var/www/html'...
remote: Enumerating objects: 424089, done.
remote: Counting objects: 100% (55/55), done.
remote: Compressing objects: 100% (42/42), done.
Receiving objects: 30% (127227/424089), 265.79 MB | 5.12 MB/s
```

Verify /var/www/html/ Directory Contains WordPress Files > sudo ls -la /var/www/html



```
Setting up git-man (1:2.25.1-1ubuntu3.13) ...
Setting up git (1:2.25.1-1ubuntu3.13) ...
Processing triggers for man-db (2.9.1-1) ...
user@UbuntuRedding:~$ sudo git clone https://github.com/WordPress/WordPress/var/www/html/
Cloning into 'html'...
remote: Not Found
fatal: repository 'https://github.com/WordPress/WordPress/var/www/html/' not found
user@UbuntuRedding:~$ sudo git clone https://github.com/WordPress/WordPress /var/www/html/
Cloning into '/var/www/html'...
remote: Enumerating objects: 424089, done.
remote: Counting objects: 100% (55/55), done.
remote: Compressing objects: 100% (42/42), done.
remote: Total 424089 (delta 30), reused 13 (delta 13), pack-reused 424034 (from 5)
Receiving objects: 100% (424089/424089), 516.66 MiB | 6.18 MiB/s, done.
Resolving deltas: 100% (341259/341259), done.
user@UbuntuRedding:~$ sudo ls -la /var/www/html
total 244
drwxr-xr-x  6 root root  4096 Jan 21 11:43 .
drwxr-xr-x  3 root root  4096 Jan 19 13:23 ..
drwxr-xr-x  8 root root  4096 Jan 21 11:43 .
-rw-r--r--  1 root root   405 Jan 21 11:43 index.php
-rw-r--r--  1 root root 19915 Jan 21 11:43 license.txt
-rw-r--r--  1 root root  7409 Jan 21 11:43 readme.html
-rw-r--r--  1 root root  7387 Jan 21 11:43 wp-activate.php
drwxr-xr-x  9 root root  4096 Jan 21 11:43 wp-admin
-rw-r--r--  1 root root   351 Jan 21 11:43 wp-blog-header.php
-rw-r--r--  1 root root  2323 Jan 21 11:43 wp-comments-post.php
-rw-r--r--  1 root root  3336 Jan 21 11:43 wp-config-sample.php
drwxr-xr-x  4 root root  4096 Jan 21 11:43 wp-content
-rw-r--r--  1 root root  5617 Jan 21 11:43 wp-cron.php
drwxr-xr-x 30 root root 12288 Jan 21 11:43 wp-includes
-rw-r--r--  1 root root  2502 Jan 21 11:43 wp-links-opml.php
-rw-r--r--  1 root root  3937 Jan 21 11:43 wp-load.php
-rw-r--r--  1 root root 51385 Jan 21 11:43 wp-login.php
-rw-r--r--  1 root root  8543 Jan 21 11:43 wp-mail.php
-rw-r--r--  1 root root  29715 Jan 21 11:43 wp-settings.php
-rw-r--r--  1 root root 34534 Jan 21 11:43 wp-signup.php
-rw-r--r--  1 root root  5102 Jan 21 11:43 wp-trackback.php
-rw-r--r--  1 root root  3205 Jan 21 11:43 xmlrpc.php
user@UbuntuRedding:~$
```

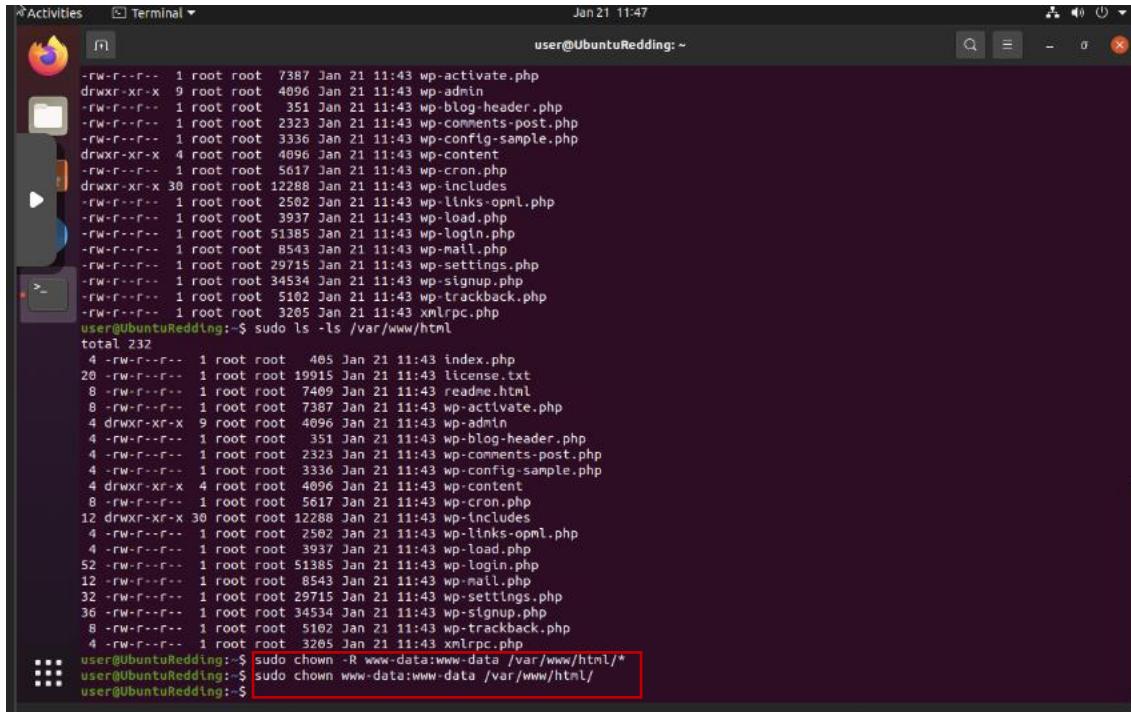
Verify Permissions on /var/www/html/ Directory > sudo ls -ls /var/www/html



```
-rw-r--r--  1 root root 19915 Jan 21 11:43 license.txt
-rw-r--r--  1 root root  7409 Jan 21 11:43 readme.html
-rw-r--r--  1 root root  7387 Jan 21 11:43 wp-activate.php
drwxr-xr-x  9 root root  4096 Jan 21 11:43 wp-admin
-rw-r--r--  1 root root   351 Jan 21 11:43 wp-blog-header.php
-rw-r--r--  1 root root  2323 Jan 21 11:43 wp-comments-post.php
drwxr-xr-x  4 root root  4096 Jan 21 11:43 wp-content
-rw-r--r--  1 root root  5617 Jan 21 11:43 wp-cron.php
drwxr-xr-x 30 root root 12288 Jan 21 11:43 wp-includes
-rw-r--r--  1 root root  2502 Jan 21 11:43 wp-links-opml.php
-rw-r--r--  1 root root  3937 Jan 21 11:43 wp-load.php
-rw-r--r--  1 root root 51385 Jan 21 11:43 wp-login.php
-rw-r--r--  1 root root  8543 Jan 21 11:43 wp-mail.php
-rw-r--r--  1 root root  29715 Jan 21 11:43 wp-settings.php
-rw-r--r--  1 root root 34534 Jan 21 11:43 wp-signup.php
-rw-r--r--  1 root root  5102 Jan 21 11:43 wp-trackback.php
-rw-r--r--  1 root root  3205 Jan 21 11:43 xmlrpc.php
user@UbuntuRedding:~$ sudo ls -ls /var/www/html
total 232
4 -rw-r--r--  1 root root  405 Jan 21 11:43 index.php
20 -rw-r--r--  1 root root 19915 Jan 21 11:43 license.txt
8 -rw-r--r--  1 root root  7409 Jan 21 11:43 readme.html
8 -rw-r--r--  1 root root  7387 Jan 21 11:43 wp-activate.php
4 drwxr-xr-x  9 root root  4096 Jan 21 11:43 wp-admin
4 -rw-r--r--  1 root root   351 Jan 21 11:43 wp-blog-header.php
4 -rw-r--r--  1 root root  2323 Jan 21 11:43 wp-comments-post.php
4 -rw-r--r--  1 root root  3336 Jan 21 11:43 wp-config-sample.php
4 drwxr-xr-x  4 root root  4096 Jan 21 11:43 wp-content
8 -rw-r--r--  1 root root  5617 Jan 21 11:43 wp-cron.php
12 drwxr-xr-x 30 root root 12288 Jan 21 11:43 wp-includes
4 -rw-r--r--  1 root root  2502 Jan 21 11:43 wp-links-opml.php
4 -rw-r--r--  1 root root  3937 Jan 21 11:43 wp-load.php
52 -rw-r--r--  1 root root 51385 Jan 21 11:43 wp-login.php
12 -rw-r--r--  1 root root  8543 Jan 21 11:43 wp-mail.php
32 -rw-r--r--  1 root root  29715 Jan 21 11:43 wp-settings.php
36 -rw-r--r--  1 root root 34534 Jan 21 11:43 wp-signup.php
8 -rw-r--r--  1 root root  5102 Jan 21 11:43 wp-trackback.php
4 -rw-r--r--  1 root root  3205 Jan 21 11:43 xmlrpc.php
user@UbuntuRedding:~$
```

## Edit Ownership

Edit Ownership of and the contents of /var/www/html/ Directory > `sudo chown -R www-data:www-data /var/www/html/*` > `sudo chown www-data:www-data /var/www/html/`



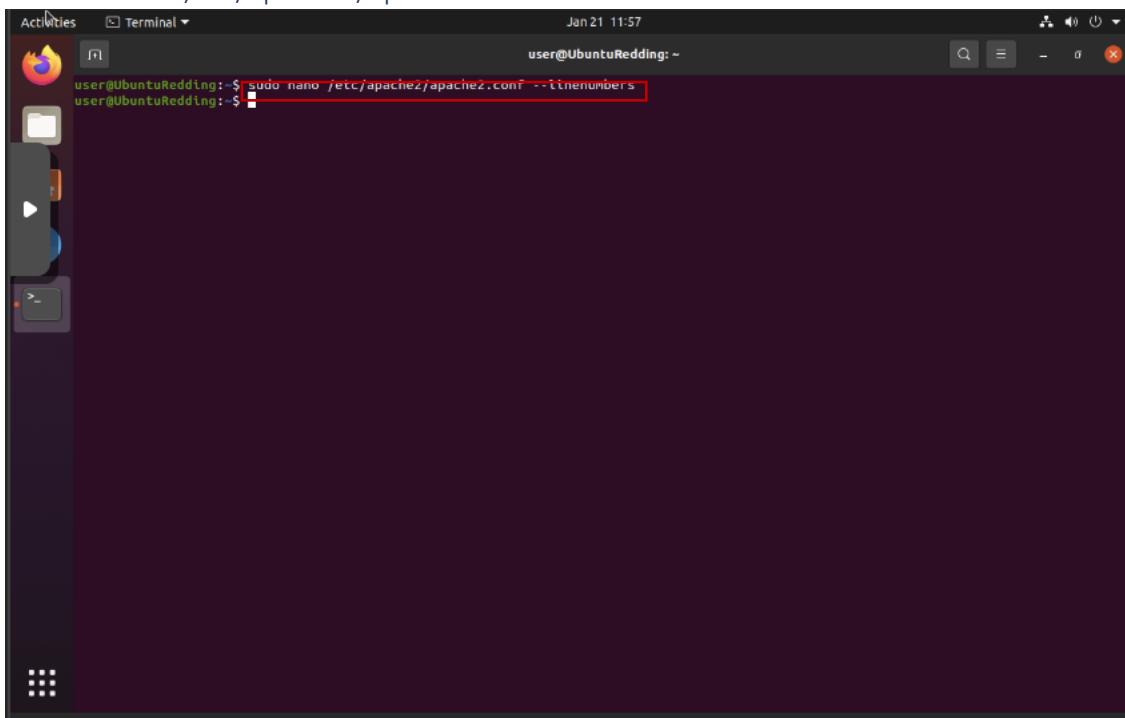
The screenshot shows a terminal window titled "Activities Terminal" with the command line "user@UbuntuRedding: ~". The terminal displays a list of files in the "/var/www/html/" directory, showing their current ownership as "root:root". The user then runs the command "sudo chown -R www-data:www-data /var/www/html/\*" to change the ownership of all files and directories in the directory to "www-data:www-data". Finally, the user runs "sudo chown www-data:www-data /var/www/html/" to change the ownership of the directory itself to "www-data:www-data". The terminal window has a dark theme and includes icons for a browser, file manager, and terminal.

```
user@UbuntuRedding:~$ ls -l /var/www/html/
total 232
drwxr-xr-x  1 root root  7387 Jan 21 11:43 wp-activate.php
drwxr-xr-x  1 root root  4096 Jan 21 11:43 wp-admin
-rw-r--r--  1 root root   351 Jan 21 11:43 wp-blog-header.php
-rw-r--r--  1 root root 2323 Jan 21 11:43 wp-comments-post.php
-rw-r--r--  1 root root 3336 Jan 21 11:43 wp-config-sample.php
drwxr-xr-x  4 root root  4096 Jan 21 11:43 wp-content
-rw-r--r--  1 root root  5617 Jan 21 11:43 wp-cron.php
drwxr-xr-x 30 root root 12288 Jan 21 11:43 wp-includes
-rw-r--r--  1 root root 2502 Jan 21 11:43 wp-links-opml.php
-rw-r--r--  1 root root  3937 Jan 21 11:43 wp-load.php
-rw-r--r--  1 root root 51385 Jan 21 11:43 wp-login.php
-rw-r--r--  1 root root  8543 Jan 21 11:43 wp-mail.php
-rw-r--r--  1 root root 29715 Jan 21 11:43 wp-settings.php
-rw-r--r--  1 root root 34534 Jan 21 11:43 wp-signup.php
-rw-r--r--  1 root root  5102 Jan 21 11:43 wp-trackback.php
-rw-r--r--  1 root root  3205 Jan 21 11:43 xmlrpc.php
user@UbuntuRedding:~$ sudo ls -l /var/www/html/
total 232
-rw-r--r--  1 root root  405 Jan 21 11:43 index.php
-rw-r--r--  1 root root 19915 Jan 21 11:43 license.txt
-rw-r--r--  1 root root  7469 Jan 21 11:43 readme.html
-rw-r--r--  1 root root  7387 Jan 21 11:43 wp-activate.php
drwxr-xr-x  9 root root  4096 Jan 21 11:43 wp-admin
-rw-r--r--  1 root root   351 Jan 21 11:43 wp-blog-header.php
-rw-r--r--  1 root root 2323 Jan 21 11:43 wp-comments-post.php
-rw-r--r--  1 root root 3336 Jan 21 11:43 wp-config-sample.php
drwxr-xr-x  4 root root  4096 Jan 21 11:43 wp-content
-rw-r--r--  1 root root  5617 Jan 21 11:43 wp-cron.php
drwxr-xr-x 30 root root 12288 Jan 21 11:43 wp-includes
-rw-r--r--  1 root root 2502 Jan 21 11:43 wp-links-opml.php
-rw-r--r--  1 root root  3937 Jan 21 11:43 wp-load.php
-rw-r--r--  1 root root 51385 Jan 21 11:43 wp-login.php
-rw-r--r--  1 root root  8543 Jan 21 11:43 wp-mail.php
-rw-r--r--  1 root root 29715 Jan 21 11:43 wp-settings.php
-rw-r--r--  1 root root 34534 Jan 21 11:43 wp-signup.php
-rw-r--r--  1 root root  5102 Jan 21 11:43 wp-trackback.php
-rw-r--r--  1 root root  3205 Jan 21 11:43 xmlrpc.php
user@UbuntuRedding:~$ sudo chown -R www-data:www-data /var/www/html/*
user@UbuntuRedding:~$ sudo chown www-data:www-data /var/www/html/
user@UbuntuRedding:~$
```

## Edit the apache2.conf File

Navigate to the /etc/apache2/apache2.conf file.

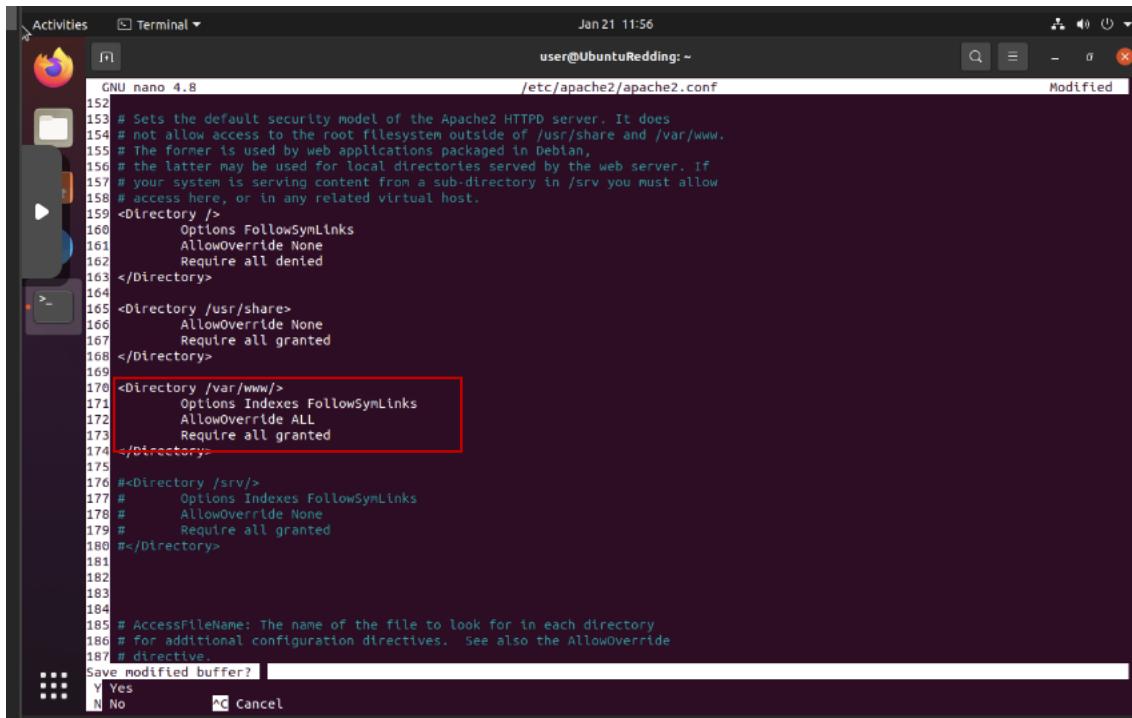
```
> sudo nano /etc/apache2/apache2.conf --linenumbers
```



## Override All Default Apache Directives

\*On roughly line numbers 170-173 you should find "<Directory /var/www/>". Change "AllowOverride None" to "AllowOverride ALL"

\*Save the file and exit.



```
GNU nano 4.8                               Jan 21 11:56
                                              user@UbuntuRedding: ~
/etc/apache2/apache2.conf                         Modified
152
153 # Sets the default security model of the Apache2 HTTPD server. It does
154 # not allow access to the root filesystem outside of /usr/share and /var/www.
155 # The former is used by web applications packaged in Debian,
156 # the latter may be used for local directories served by the web server. If
157 # your system is serving content from a sub-directory in /srv you must allow
158 # access here, or in any related virtual host.
159 <Directory />
160   Options FollowSymLinks
161   AllowOverride None
162   Require all denied
163 </Directory>
164
165 <Directory /usr/share>
166   AllowOverride None
167   Require all granted
168 </Directory>
169
170 <Directory /var/www/>
171   Options Indexes FollowSymLinks
172   AllowOverride ALL
173   Require all granted
174 </Directory>
175
176 <Directory /srv/>
177   Options Indexes FollowSymLinks
178   AllowOverride None
179   Require all granted
180 </Directory>
181
182
183
184
185 # AccessFileName: The name of the file to look for in each directory
186 # for additional configuration directives. See also the AllowOverride
187 # directive.
Save modified buffer? [Y/N]
Y Yes
N No
^C Cancel
```

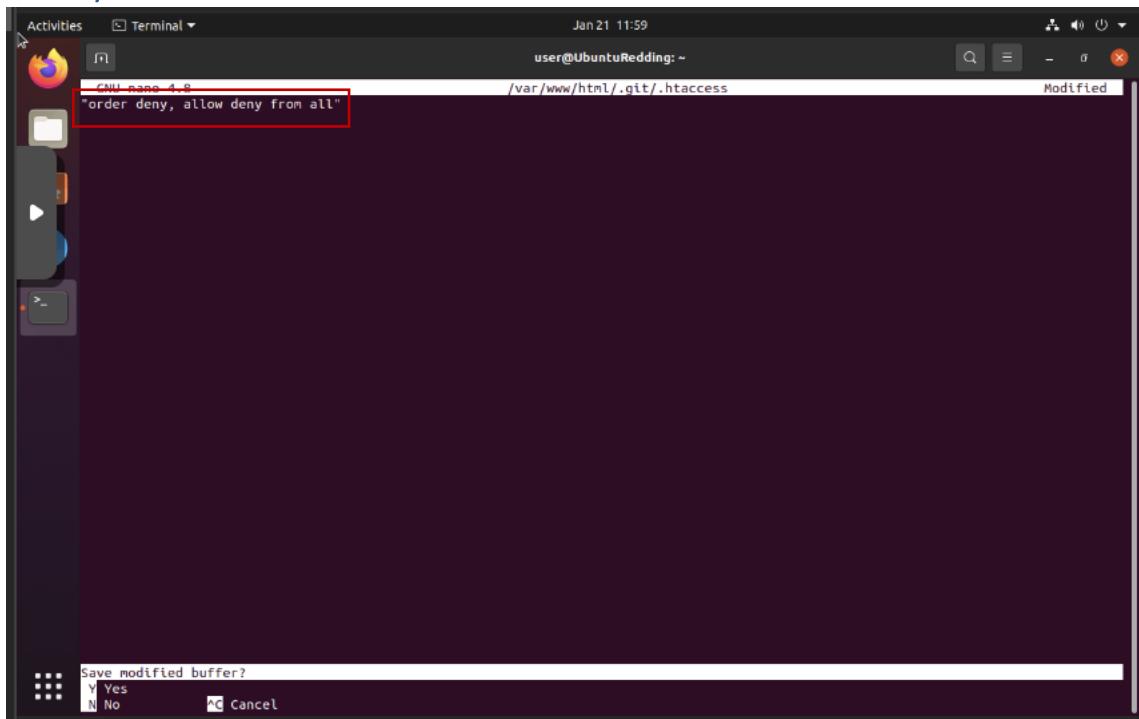
Create a .htaccess File in the /var/www/html/.git/ Directory

sudo nano /var/www/html/.git/.htaccess

>Insert the following text:

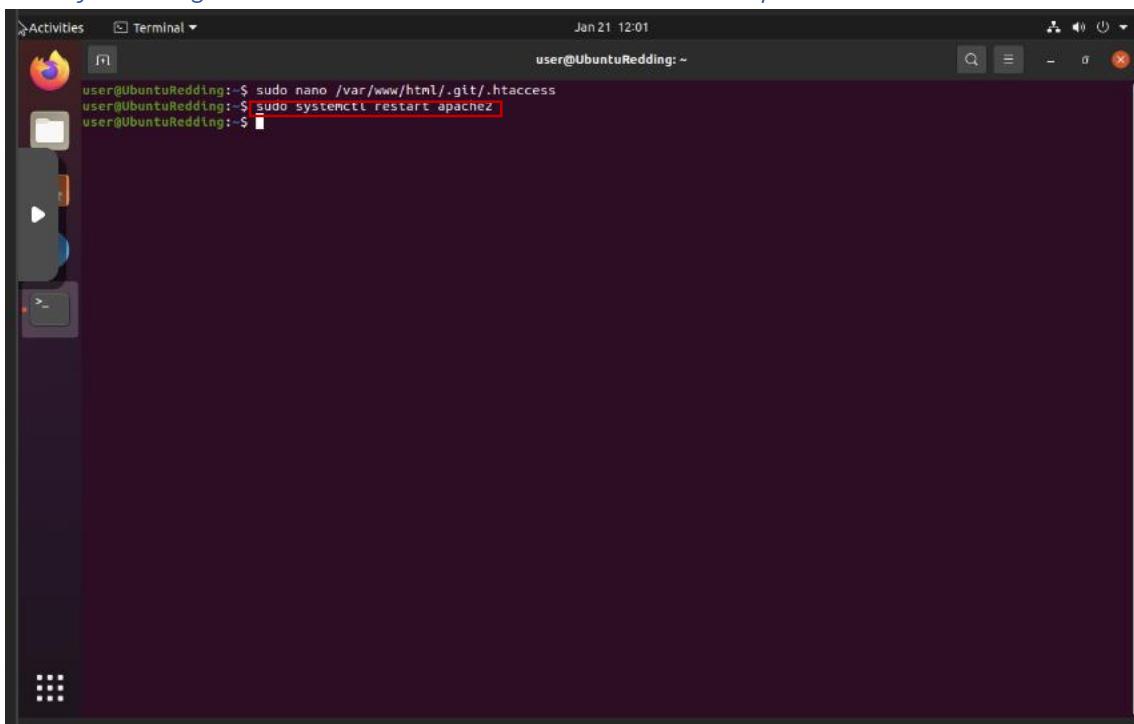
"order deny, allow

deny from all"



[Restart the Apache Service](#) > `sudo systemctl restart apache2`

\*The following command will also work: `sudo service apache2 restart`



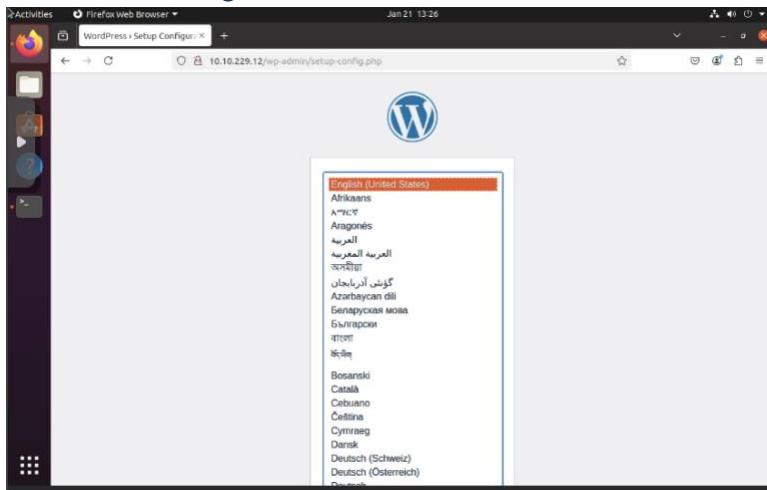
A screenshot of a Linux desktop environment showing a terminal window. The terminal window title is "Terminal". The status bar at the top right shows the date and time as "Jan 21 12:01" and the user as "user@UbuntuRedding: ~". The terminal window contains the following text:

```
user@UbuntuRedding:~$ sudo nano /var/www/html/.git/.htaccess
user@UbuntuRedding:~$ sudo systemctl restart apache2
user@UbuntuRedding:~$
```

## WordPress Configuration

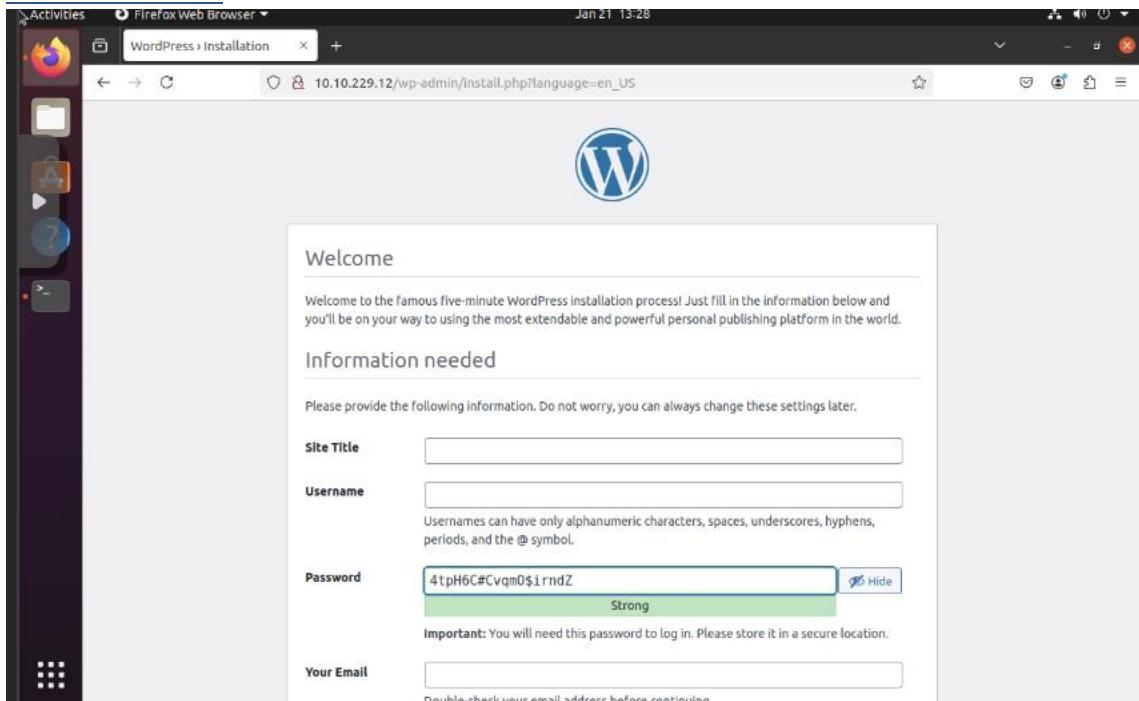
## Configure WordPress

### WordPress Configuration Selections



- **Database Name:** WordPressDB
- **Username:** WordPressUser
- **Password:** *Fullsail1!*
- **Database Host:** localhost
- **Table Prefix:** wp\_

## Run Installation



## Create an Admin WordPress User

### WordPress Site Selections

The screenshot shows the 'Information needed' step of the WordPress installation process. The browser title bar reads 'Firefox Web Browser - WordPress > Installation'. The URL in the address bar is '10.10.229.12/wp-admin/install.php?language=en\_US'. The page content is as follows:

**Information needed**

Please provide the following information. Do not worry, you can always change these settings later.

**Site Title:** Ubuntu LAMP

**Username:** admin

**Password:** Fullsaill! (Weak)

**Confirm Password:**  Confirm use of weak password

**Your Email:** root@localhost.local

**Search engine visibility:**  Discourage search engines from indexing this site

**Install WordPress**

- **Site Title:** Ubuntu LAMP
- **Username:** admin
- **Password:** You will create this
- **Your email:** [root@localhost.local](mailto:root@localhost.local)
- **Search Engine Visibility:** leave unchecked

## Test WordPress Website

The screenshot shows the WordPress admin interface in a Firefox browser window. The title bar says "Test WordPress Website". The address bar shows "10.10.229.12/wp-admin/edit.php?post\_type=post". The top navigation bar includes "Activities", "Dashboard", "Posts", "All Posts", "Add New Post", "Categories", "Tags", "Media", "Pages", "Comments", "Appearance", "Plugins", "Users", "Tools", "Settings", and "Collapse menu". The "Posts" menu item is highlighted. The main content area is titled "Posts" with a "Add New Post" button. It shows a list of 2 items:

Title	Author	Categories	Tags	Date
TEST	admin	Uncategorized	—	Published 2025/01/21 at 6:33 pm
Hello world!	admin	Uncategorized	—	Published 2025/01/21 at 6:31 pm

At the bottom, there are "Bulk actions" and "Apply" buttons. A footer message says "Thank you for creating with WordPress." and "You are using a development version (6.8-alpha-59673). Cool! Please stay updated."

# END OF MILESTONE 2

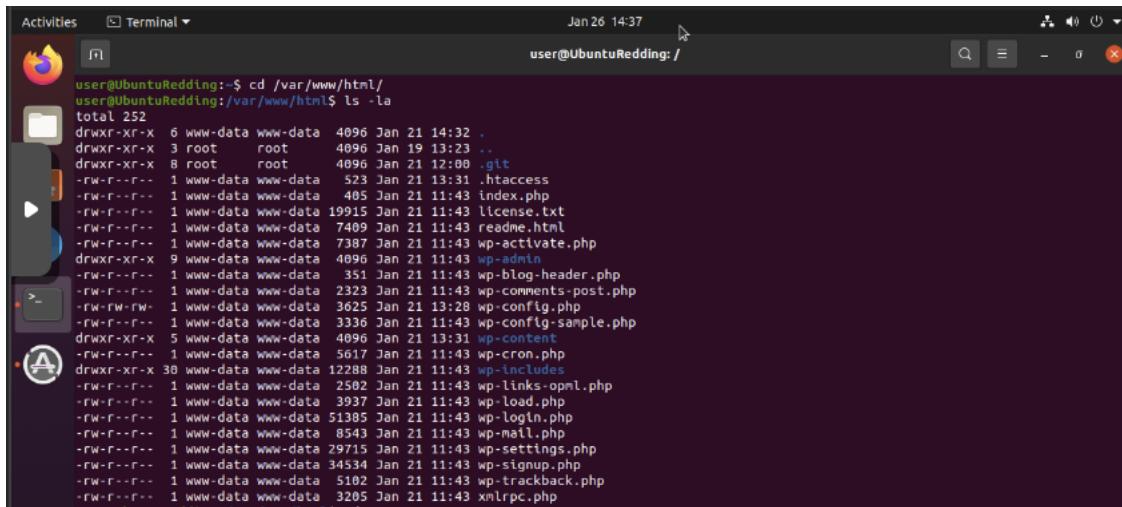
# WordPress Security Settings and Configurations

## File Permissions

```
cd /var/www/html/ ; ls -la
```

### Vulnerability

After entering the directory > “cd /var/www/html” use the command > “ls -la”. This gives a listing of all files. Here can be seen the file “wp-config.php” has “rw” (read-write) permissions for all users creating exposure. This must be changed to the admin only having rw permissions.

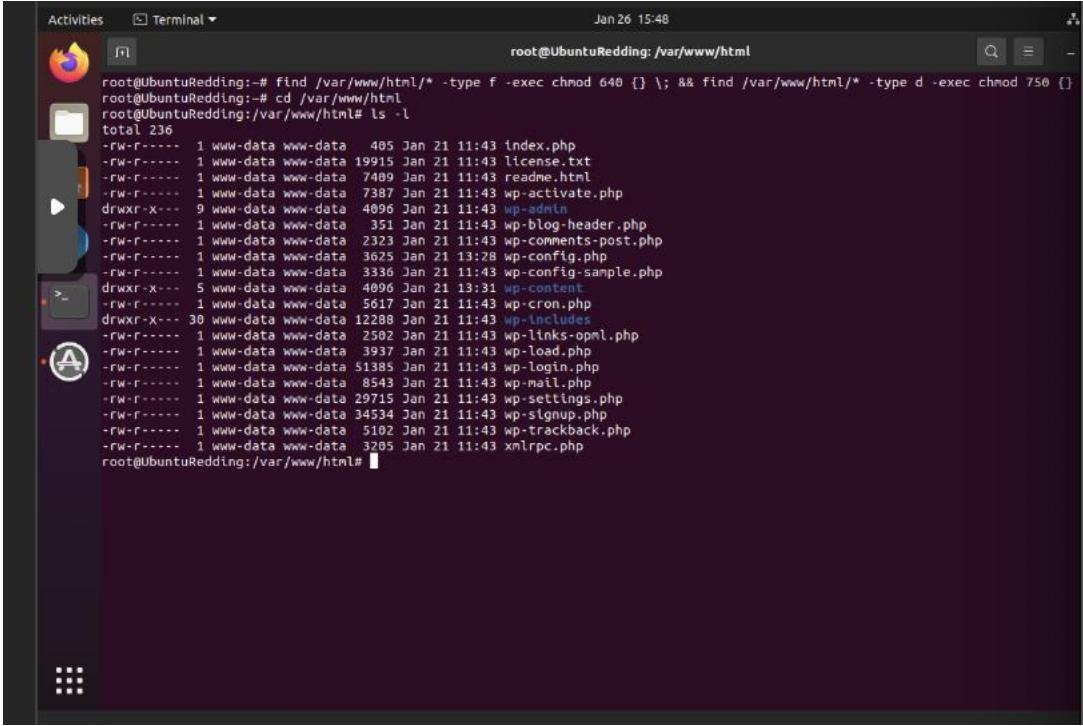


```
Activities Terminal ▾ Jan 26 14:37 user@UbuntuRedding:/var/www/html$ cd /var/www/html/ user@UbuntuRedding:/var/www/html$ ls -la total 252 drwxr-xr-x 6 www-data www-data 4096 Jan 21 14:32 . drwxr-xr-x 3 root root 4096 Jan 19 13:23 .. drwxr-xr-x 8 root root 4096 Jan 21 12:00 .git -rw-r--r-- 1 www-data www-data 523 Jan 21 13:31 .htaccess -rw-r--r-- 1 www-data www-data 405 Jan 21 11:43 index.php -rw-r--r-- 1 www-data www-data 19915 Jan 21 11:43 license.txt -rw-r--r-- 1 www-data www-data 7409 Jan 21 11:43 readme.html -rw-r--r-- 1 www-data www-data 7387 Jan 21 11:43 wp-activate.php drwxr-xr-x 9 www-data www-data 4096 Jan 21 11:43 wp-admin -rw-r--r-- 1 www-data www-data 351 Jan 21 11:43 wp-blog-header.php -rw-r--r-- 1 www-data www-data 2323 Jan 21 11:43 wp-comments-post.php -rw-rw-r-- 1 www-data www-data 3625 Jan 21 13:28 wp-config.php -rw-r--r-- 1 www-data www-data 3336 Jan 21 11:43 wp-config-sample.php drwxr-xr-x 5 www-data www-data 4096 Jan 21 13:31 wp-content -rw-r--r-- 1 www-data www-data 5617 Jan 21 11:43 wp-cron.php drwxr-xr-x 38 www-data www-data 12288 Jan 21 11:43 wp-includes -rw-r--r-- 1 www-data www-data 2502 Jan 21 11:43 wp-links-opml.php -rw-r--r-- 1 www-data www-data 3937 Jan 21 11:43 wp-load.php -rw-r--r-- 1 www-data www-data 51385 Jan 21 11:43 wp-login.php -rw-r--r-- 1 www-data www-data 8543 Jan 21 11:43 wp-mail.php -rw-r--r-- 1 www-data www-data 29715 Jan 21 11:43 wp-settings.php -rw-r--r-- 1 www-data www-data 34534 Jan 21 11:43 wp-signup.php -rw-r--r-- 1 www-data www-data 5102 Jan 21 11:43 wp-trackback.php -rw-r--r-- 1 www-data www-data 3205 Jan 21 11:43 xmlrpc.php
```

### Configuration

`sudo find /var/www/html/* -type d -exec chmod 750 {} \;` >This sets permissions to “rwx-r-x-”(read,write,execute - read,execute - no permissions) on subdirectories within /var/www/html.

`sudo find /var/www/html/* -type f -exec chmod 640 {} \;` >This sets permissions to “rw-r-”(read,write – read – no permissions) on files within /var/www/html.

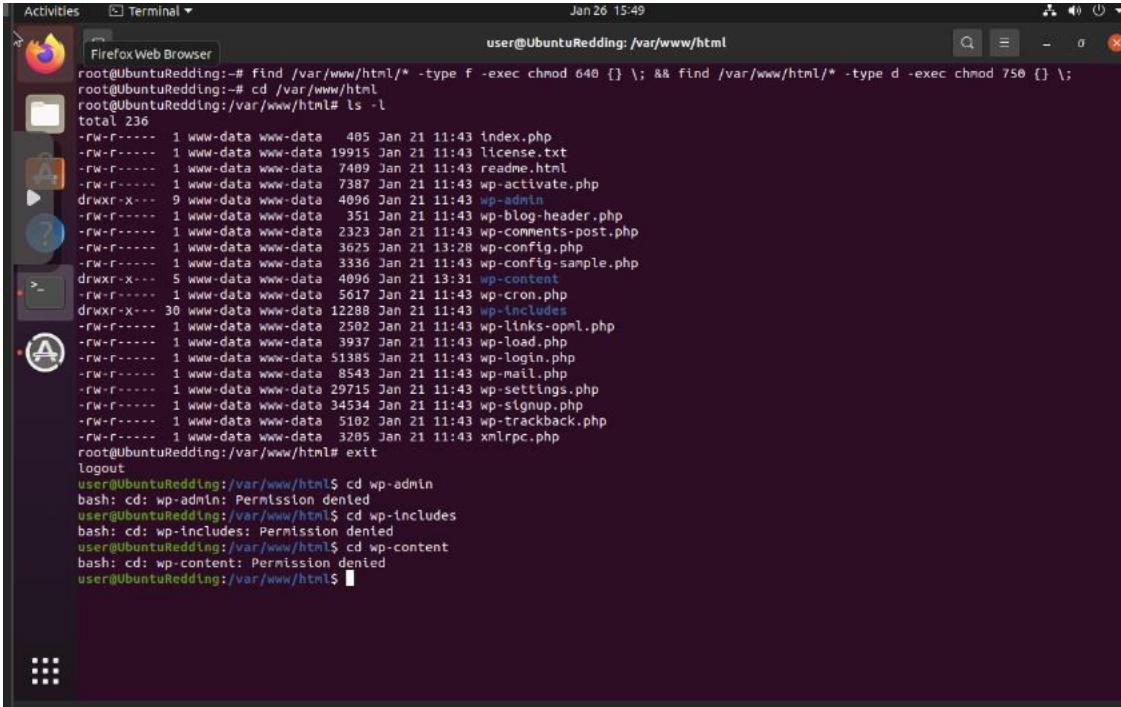


```
Activities Terminal Jan 26 15:48
root@UbuntuRedding:/var/www/html
root@UbuntuRedding:~# find /var/www/html/* -type f -exec chmod 640 {} \; && find /var/www/html/* -type d -exec chmod 750 {}
root@UbuntuRedding:/var/www/html# ls -l
total 236
-rw-r----- 1 www-data www-data 405 Jan 21 11:43 index.php
-rw-r----- 1 www-data www-data 19915 Jan 21 11:43 license.txt
-rw-r----- 1 www-data www-data 7489 Jan 21 11:43 readme.html
-rw-r----- 1 www-data www-data 7387 Jan 21 11:43 wp-activate.php
drwxr-x--- 9 www-data www-data 4096 Jan 21 11:43 wp-admin
-rw-r----- 1 www-data www-data 351 Jan 21 11:43 wp-blog-header.php
-rw-r----- 1 www-data www-data 2323 Jan 21 11:43 wp-comments-post.php
-rw-r----- 1 www-data www-data 3625 Jan 21 13:28 wp-config.php
-rw-r----- 1 www-data www-data 3336 Jan 21 11:43 wp-config-sample.php
drwxr-x--- 5 www-data www-data 4096 Jan 21 13:31 wp-content
-rw-r----- 1 www-data www-data 5617 Jan 21 11:43 wp-cron.php
drwxr-x--- 30 www-data www-data 12288 Jan 21 11:43 wp-includes
-rw-r----- 1 www-data www-data 2502 Jan 21 11:43 wp-links-opml.php
-rw-r----- 1 www-data www-data 3937 Jan 21 11:43 wp-load.php
-rw-r----- 1 www-data www-data 51385 Jan 21 11:43 wp-login.php
-rw-r----- 1 www-data www-data 8543 Jan 21 11:43 wp-mail.php
-rw-r----- 1 www-data www-data 29715 Jan 21 11:43 wp-settings.php
-rw-r----- 1 www-data www-data 34534 Jan 21 11:43 wp-signup.php
-rw-r----- 1 www-data www-data 5102 Jan 21 11:43 wp-trackback.php
-rw-r----- 1 www-data www-data 3285 Jan 21 11:43 xmlrpc.php
root@UbuntuRedding:/var/www/html#
```

## Validation

Now only the root user/admin can access the subdirectories, wp-admin, wp-content, and wp-includes.

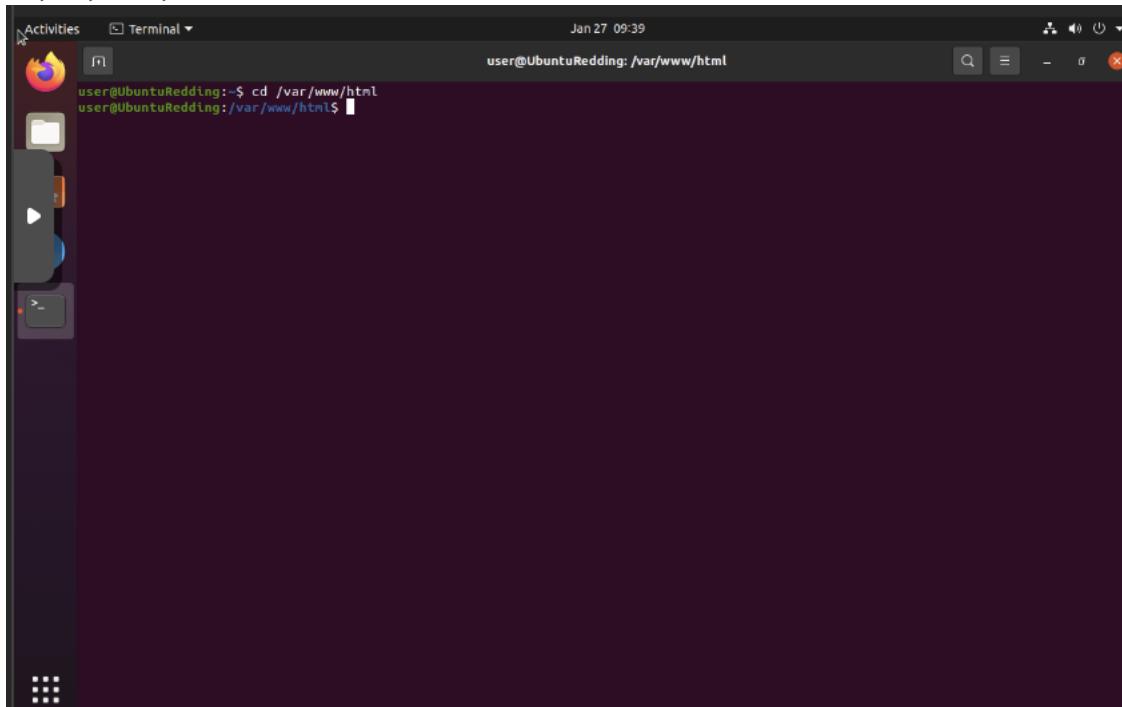
This can be validated by "cd" (change directory) into any of these subdirectories.



```
Activities Terminal Jan 26 15:49
Firefox Web Browser
user@UbuntuRedding:/var/www/html
user@UbuntuRedding:~# find /var/www/html/* -type f -exec chmod 640 {} \; && find /var/www/html/* -type d -exec chmod 750 {}
user@UbuntuRedding:/var/www/html# ls -l
total 236
-rw-r----- 1 www-data www-data 405 Jan 21 11:43 index.php
-rw-r----- 1 www-data www-data 19915 Jan 21 11:43 license.txt
-rw-r----- 1 www-data www-data 7489 Jan 21 11:43 readme.html
-rw-r----- 1 www-data www-data 7387 Jan 21 11:43 wp-activate.php
drwxr-x--- 9 www-data www-data 4096 Jan 21 11:43 wp-admin
-rw-r----- 1 www-data www-data 351 Jan 21 11:43 wp-blog-header.php
-rw-r----- 1 www-data www-data 2323 Jan 21 11:43 wp-comments-post.php
-rw-r----- 1 www-data www-data 3625 Jan 21 13:28 wp-config.php
-rw-r----- 1 www-data www-data 3336 Jan 21 11:43 wp-config-sample.php
drwxr-x--- 5 www-data www-data 4096 Jan 21 13:31 wp-content
-rw-r----- 1 www-data www-data 5617 Jan 21 11:43 wp-cron.php
drwxr-x--- 30 www-data www-data 12288 Jan 21 11:43 wp-includes
-rw-r----- 1 www-data www-data 2502 Jan 21 11:43 wp-links-opml.php
-rw-r----- 1 www-data www-data 3937 Jan 21 11:43 wp-load.php
-rw-r----- 1 www-data www-data 51385 Jan 21 11:43 wp-login.php
-rw-r----- 1 www-data www-data 8543 Jan 21 11:43 wp-mail.php
-rw-r----- 1 www-data www-data 29715 Jan 21 11:43 wp-settings.php
-rw-r----- 1 www-data www-data 34534 Jan 21 11:43 wp-signup.php
-rw-r----- 1 www-data www-data 5102 Jan 21 11:43 wp-trackback.php
-rw-r----- 1 www-data www-data 3285 Jan 21 11:43 xmlrpc.php
root@UbuntuRedding:/var/www/html# exit
logout
user@UbuntuRedding:/var/www/html$ cd wp-admin
bash: cd: wp-admin: Permission denied
user@UbuntuRedding:/var/www/html$ cd wp-includes
bash: cd: wp-includes: Permission denied
user@UbuntuRedding:/var/www/html$ cd wp-content
bash: cd: wp-content: Permission denied
user@UbuntuRedding:/var/www/html$
```

## Securing wp-config.php

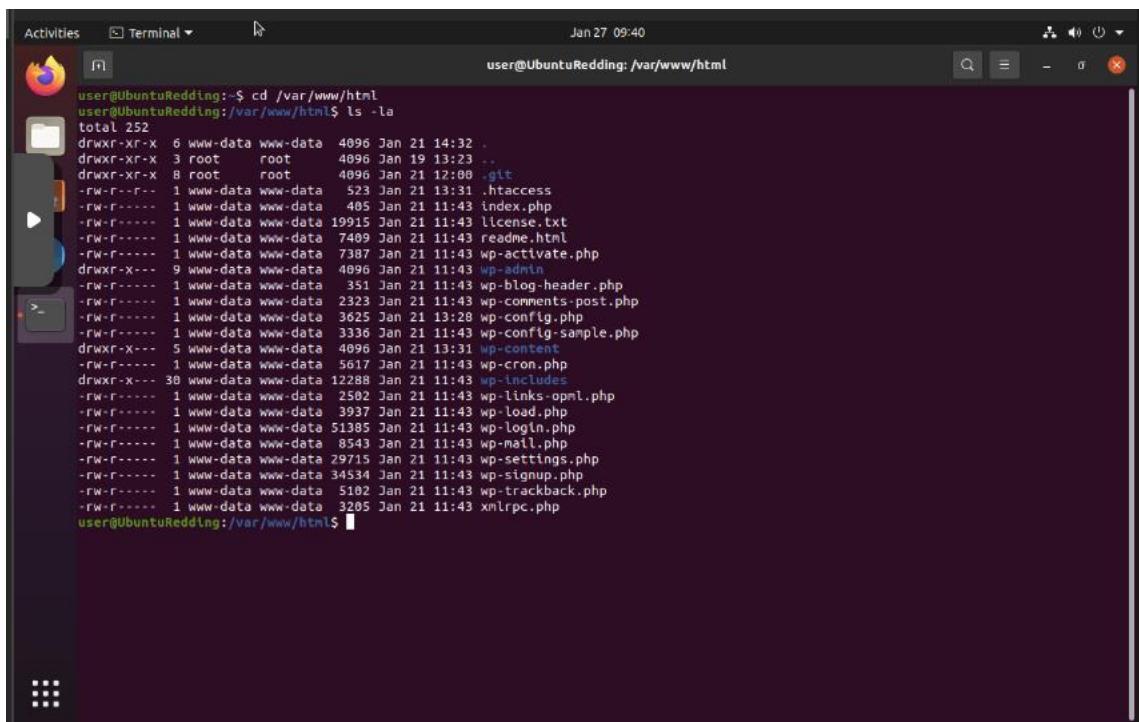
cd /var/www/html



```
Activities Terminal Jan 27 09:39
user@UbuntuRedding:~$ cd /var/www/html
user@UbuntuRedding:/var/www/html$
```

## Vulnerability

> ls -la

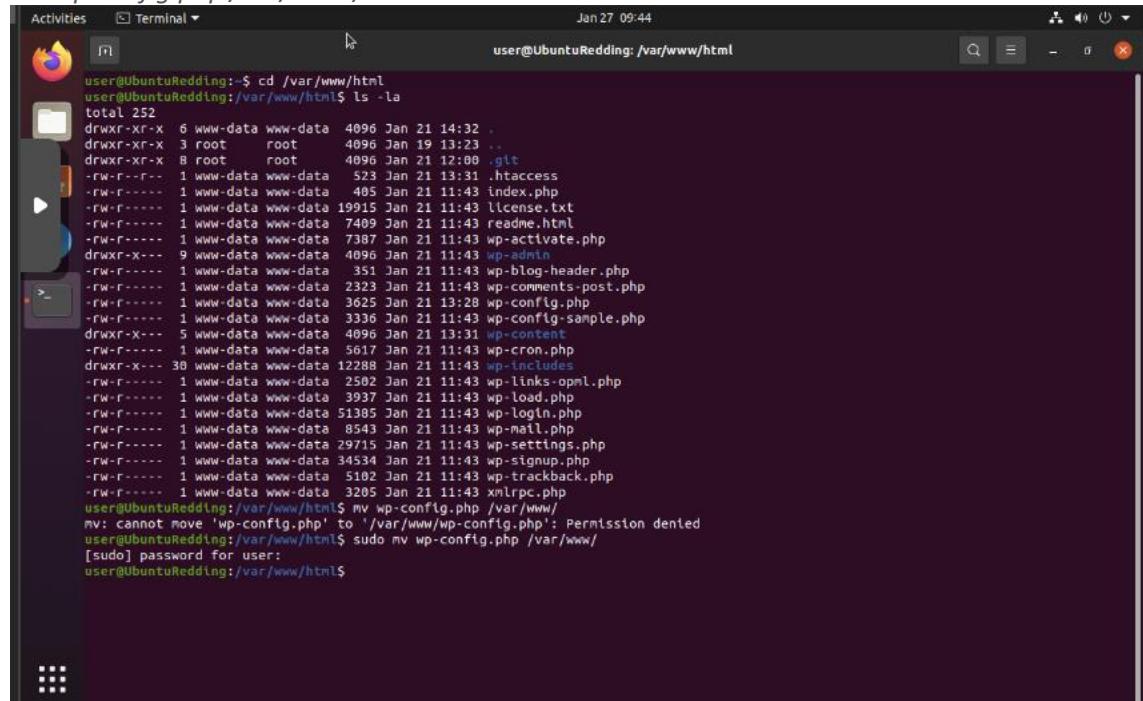


```
Activities Terminal Jan 27 09:40
user@UbuntuRedding:~$ cd /var/www/html
user@UbuntuRedding:/var/www/html$ ls -la
total 252
drwxr-xr-x  6 www-data www-data  4096 Jan 21 14:32 .
drwxr-xr-x  3 root    root     4096 Jan 19 13:23 ..
drwxr-xr-x  8 root    root     4096 Jan 21 12:00 .git
-rw-r--r--  1 www-data www-data  523 Jan 21 13:31 .htaccess
-rw-r--r--  1 www-data www-data  405 Jan 21 11:43 index.php
-rw-r--r--  1 www-data www-data 19915 Jan 21 11:43 license.txt
-rw-r--r--  1 www-data www-data 7409 Jan 21 11:43 readme.html
-rw-r--r--  1 www-data www-data 7387 Jan 21 11:43 wp-activate.php
drwxr-xr-x  9 www-data www-data  4096 Jan 21 11:43 wp-admin
-rw-r--r--  1 www-data www-data  351 Jan 21 11:43 wp-blog-header.php
-rw-r--r--  1 www-data www-data 2323 Jan 21 11:43 wp-comments-post.php
-rw-r--r--  1 www-data www-data 3625 Jan 21 13:28 wp-config.php
-rw-r--r--  1 www-data www-data 3336 Jan 21 11:43 wp-config-sample.php
drwxr-xr-x  5 www-data www-data  4096 Jan 21 13:31 wp-content
-rw-r--r--  1 www-data www-data 5617 Jan 21 11:43 wp-cron.php
drwxr-xr-x 30 www-data www-data 12288 Jan 21 11:43 wp-includes
-rw-r--r--  1 www-data www-data 2502 Jan 21 11:43 wp-links-opml.php
-rw-r--r--  1 www-data www-data 3937 Jan 21 11:43 wp-load.php
-rw-r--r--  1 www-data www-data 51385 Jan 21 11:43 wp-login.php
-rw-r--r--  1 www-data www-data 8543 Jan 21 11:43 wp-mail.php
-rw-r--r--  1 www-data www-data 29715 Jan 21 11:43 wp-settings.php
-rw-r--r--  1 www-data www-data 34534 Jan 21 11:43 wp-signup.php
-rw-r--r--  1 www-data www-data 5102 Jan 21 11:43 wp-trackback.php
-rw-r--r--  1 www-data www-data 3205 Jan 21 11:43 xmlrpc.php
user@UbuntuRedding:/var/www/html$
```

ls -la

## Configuration

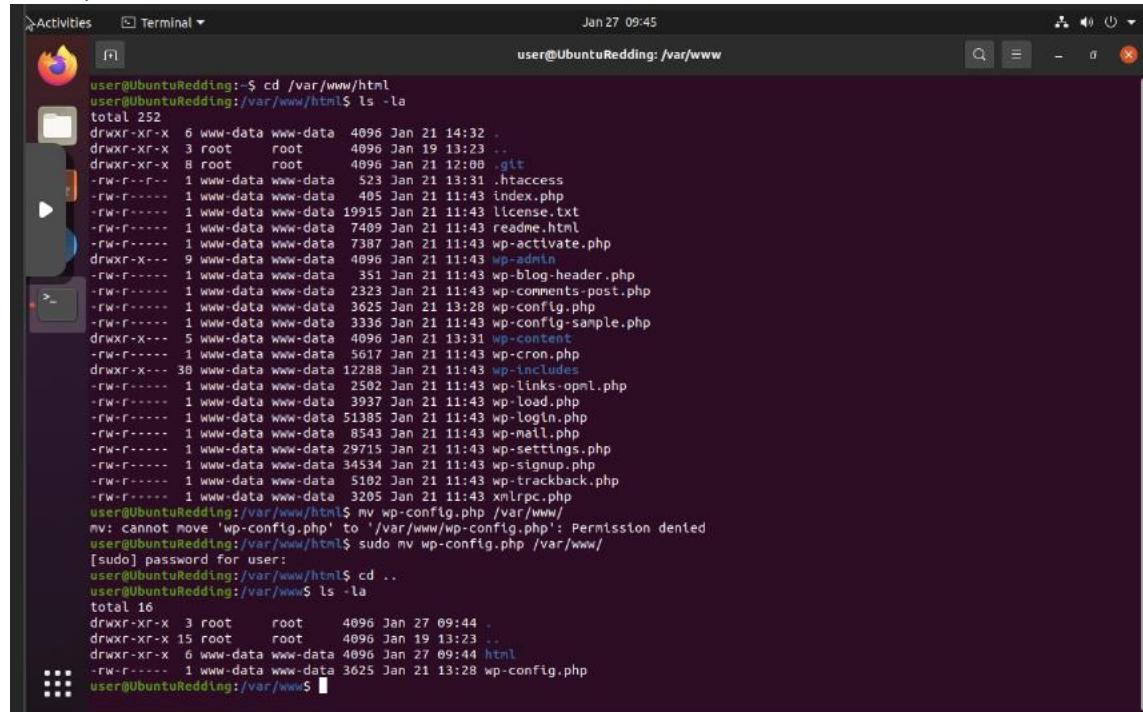
```
mv wp-config.php /var/www/
```



```
Activities Terminal Jan 27 09:44
user@UbuntuRedding:~$ cd /var/www/html
user@UbuntuRedding:/var/www/html$ ls -la
total 252
drwxr-xr-x  6 www-data www-data 4096 Jan 21 14:32 .
drwxr-xr-x  3 root    root   4096 Jan 19 13:23 ..
drwxr-xr-x  8 root    root   4096 Jan 21 12:00 .git
-rw-r--r--  1 www-data www-data 523 Jan 21 13:31 .htaccess
-rw-r--r--  1 www-data www-data 405 Jan 21 11:43 index.php
-rw-r--r--  1 www-data www-data 19915 Jan 21 11:43 license.txt
-rw-r--r--  1 www-data www-data 7409 Jan 21 11:43 readme.html
-rw-r--r--  1 www-data www-data 7387 Jan 21 11:43 wp-activate.php
drwxr-x---  9 www-data www-data 4096 Jan 21 11:43 wp-admin
-rw-r--r--  1 www-data www-data 351 Jan 21 11:43 wp-blog-header.php
-rw-r--r--  1 www-data www-data 2323 Jan 21 11:43 wp-comments-post.php
-rw-r--r--  1 www-data www-data 3625 Jan 21 13:28 wp-config.php
-rw-r--r--  1 www-data www-data 3336 Jan 21 11:43 wp-config-sample.php
drwxr-x---  5 www-data www-data 4096 Jan 21 13:31 wp-content
-rw-r--r--  1 www-data www-data 5617 Jan 21 11:43 wp-cron.php
drwxr-x--- 30 www-data www-data 12288 Jan 21 11:43 wp-includes
-rw-r--r--  1 www-data www-data 2502 Jan 21 11:43 wp-links-ompl.php
-rw-r--r--  1 www-data www-data 3937 Jan 21 11:43 wp-load.php
-rw-r--r--  1 www-data www-data 51385 Jan 21 11:43 wp-login.php
-rw-r--r--  1 www-data www-data 8543 Jan 21 11:43 wp-mail.php
-rw-r--r--  1 www-data www-data 29715 Jan 21 11:43 wp-settings.php
-rw-r--r--  1 www-data www-data 34534 Jan 21 11:43 wp-signup.php
-rw-r--r--  1 www-data www-data 5102 Jan 21 11:43 wp-trackback.php
-rw-r--r--  1 www-data www-data 3205 Jan 21 11:43 xmlrpc.php
user@UbuntuRedding:/var/www/html$ mv wp-config.php /var/www/
mv: cannot move 'wp-config.php' to '/var/www/wp-config.php': Permission denied
user@UbuntuRedding:/var/www/html$ sudo mv wp-config.php /var/www/
[sudo] password for user:
user@UbuntuRedding:/var/www/html$
```

## Validation

```
>cd .. ;>ls -la
```

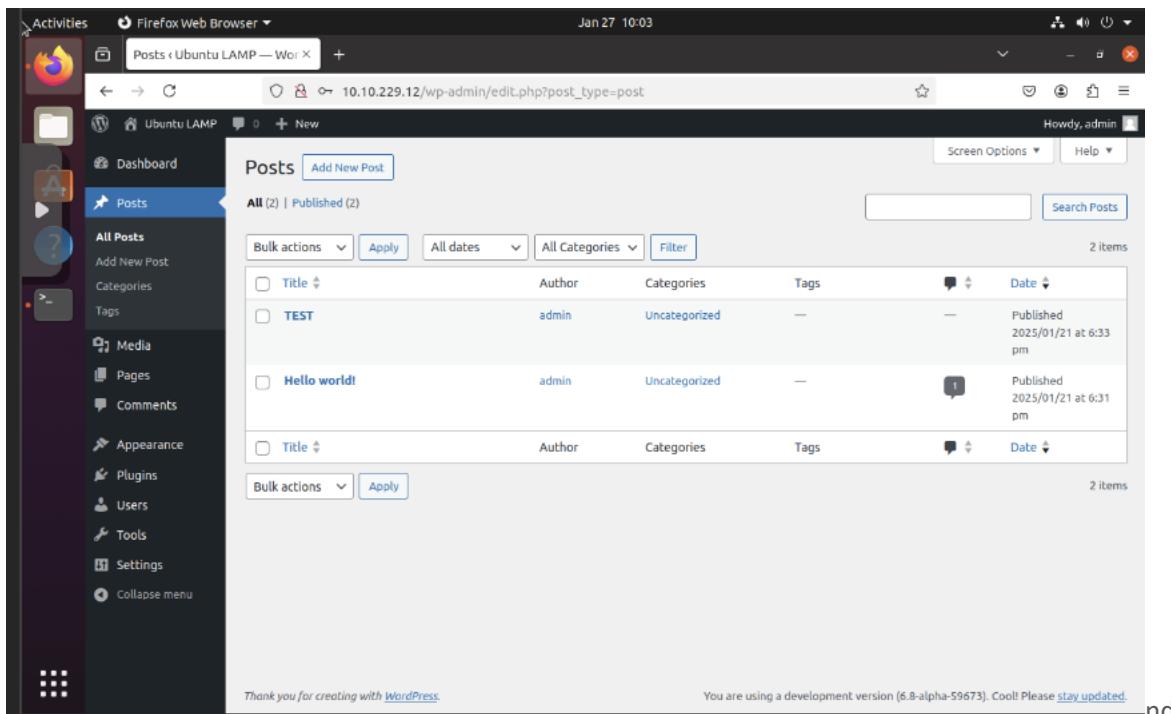


```
Activities Terminal Jan 27 09:45
user@UbuntuRedding:~$ cd /var/www/html
user@UbuntuRedding:/var/www/html$ ls -la
total 252
drwxr-xr-x  6 www-data www-data 4096 Jan 21 14:32 .
drwxr-xr-x  3 root    root   4096 Jan 19 13:23 ..
drwxr-xr-x  8 root    root   4096 Jan 21 12:00 .git
-rw-r--r--  1 www-data www-data 523 Jan 21 13:31 .htaccess
-rw-r--r--  1 www-data www-data 405 Jan 21 11:43 index.php
-rw-r--r--  1 www-data www-data 19915 Jan 21 11:43 license.txt
-rw-r--r--  1 www-data www-data 7409 Jan 21 11:43 readme.html
-rw-r--r--  1 www-data www-data 7387 Jan 21 11:43 wp-activate.php
drwxr-x---  9 www-data www-data 4096 Jan 21 11:43 wp-admin
-rw-r--r--  1 www-data www-data 351 Jan 21 11:43 wp-blog-header.php
-rw-r--r--  1 www-data www-data 2323 Jan 21 11:43 wp-comments-post.php
-rw-r--r--  1 www-data www-data 3625 Jan 21 13:28 wp-config.php
-rw-r--r--  1 www-data www-data 3336 Jan 21 11:43 wp-config-sample.php
drwxr-x---  5 www-data www-data 4096 Jan 21 13:31 wp-content
-rw-r--r--  1 www-data www-data 5617 Jan 21 11:43 wp-cron.php
drwxr-x--- 30 www-data www-data 12288 Jan 21 11:43 wp-includes
-rw-r--r--  1 www-data www-data 2502 Jan 21 11:43 wp-links-ompl.php
-rw-r--r--  1 www-data www-data 3937 Jan 21 11:43 wp-load.php
-rw-r--r--  1 www-data www-data 51385 Jan 21 11:43 wp-login.php
-rw-r--r--  1 www-data www-data 8543 Jan 21 11:43 wp-mail.php
-rw-r--r--  1 www-data www-data 29715 Jan 21 11:43 wp-settings.php
-rw-r--r--  1 www-data www-data 34534 Jan 21 11:43 wp-signup.php
-rw-r--r--  1 www-data www-data 5102 Jan 21 11:43 wp-trackback.php
-rw-r--r--  1 www-data www-data 3205 Jan 21 11:43 xmlrpc.php
user@UbuntuRedding:/var/www/html$ mv wp-config.php /var/www/
mv: cannot move 'wp-config.php' to '/var/www/wp-config.php': Permission denied
user@UbuntuRedding:/var/www/html$ sudo mv wp-config.php /var/www/
[sudo] password for user:
user@UbuntuRedding:/var/www/html$ cd ..
user@UbuntuRedding:/var/www$ ls -la
total 16
drwxr-xr-x  3 root    root   4096 Jan 27 09:44 .
drwxr-xr-x 15 root    root   4096 Jan 19 13:23 ..
drwxr-xr-x  6 www-data www-data 4096 Jan 27 09:44 html
-rw-r--r--  1 www-data www-data 3625 Jan 21 13:28 wp-config.php
user@UbuntuRedding:/var/www$
```

## Firewall (Shield)

### Vulnerability

Site has no security profile or features besides w



Title	Author	Categories	Tags	Date
TEST	admin	Uncategorized	—	Published 2025/01/21 at 6:33 pm
Hello world	admin	Uncategorized	—	Published 2025/01/21 at 6:31 pm

### Configuration

Begin by clicking > Plugins > new plugin. After I suggest you download Shield or WordFence firewalls. Go through the configuration process making sure to click activate after download and selected the most appropriate security profile strength. Here I chose strong because of included access control security features and a host of additional features.

The screenshot shows the 'Shield Security' plugin dashboard for a WordPress site. The main header reads 'Dashboard » Security Overview'. Below it, there's a section titled 'High-Level System Security Summary' with a brief description and a 'View All Security Grades' link. To the right, there are four cards: 'WordPress Files' (0 Scan Results), 'Malware' (0 Scan Results), 'Vulnerable Assets' (0), and 'Abandoned Plugin' (0). On the left sidebar, under the 'Shield Security' heading, there are several sections: 'Security Dashboard', 'Security Zones', 'IP Manager', 'Scans', 'Activity Logs', 'Custom Rules', and 'Tools'. The 'Activity Logs' section is currently active.

## Validation

Validate the firewall has been added and proactive measures are being taken for security.

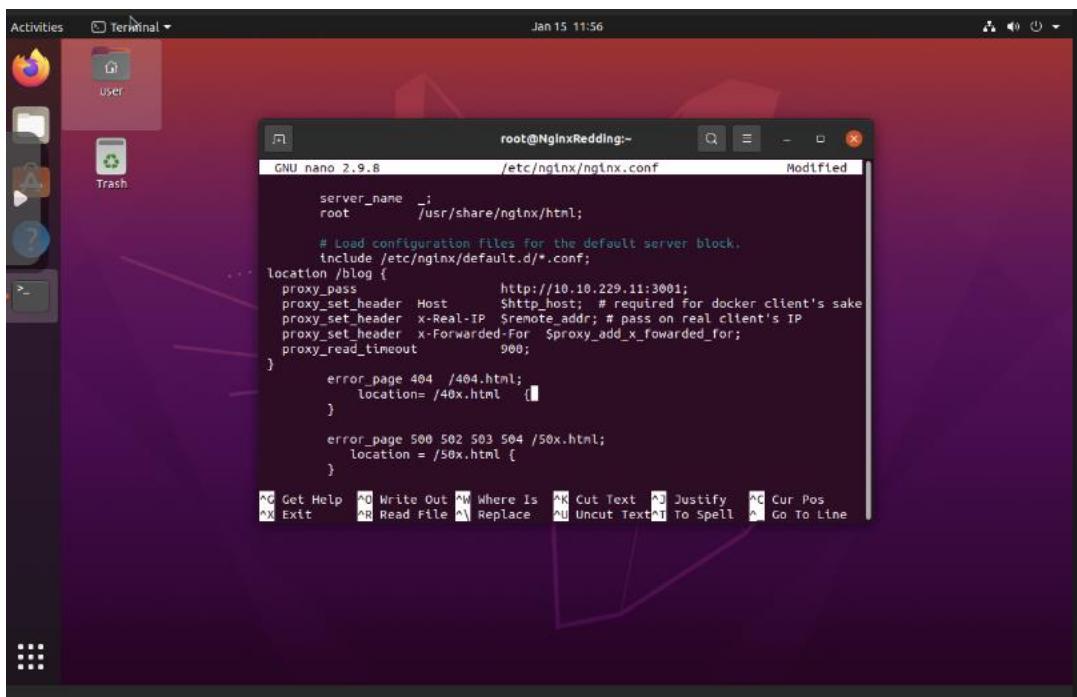
The screenshot shows the WordPress dashboard. The main header reads 'Dashboard'. A prominent 'Welcome to WordPress!' message is displayed, along with a link to learn about the 6.8 version. Below this, there are three featured sections: 'Author rich content with blocks and patterns', 'Start Customizing', and 'Discover a new way to build your site'. At the bottom, there are two tabs: 'Site Health Status' and 'Quick Draft'.

# Conclusion

In conclusion, Mr.Marconi. I am pleased to present the development of your new WordPress site and the completion of your proof of Concept Technical Solution document for the Marconi Law Firm, LLC. This document is not only an audit or proof of completion but is an outline showing the steps taken to implement the Defense-in-Depth concept throughout this project. Beginning with the install and configuration of SSH. For the ability to perform the necessary changes wanted remotely, first I began with downloading, installing, and configuring the ssh-client needed to remotely access the appropriate machines needed for this project. After accessing the machines remotely, I then began preparing for the installation of Docker CE on the Rocky-8 Docker machine (IP: 10.10.229.11).

## Appendix A

### NginX Config File



A screenshot of a Linux desktop environment, likely Ubuntu, showing a terminal window titled "GNU nano 2.9.8 /etc/nginx/nginx.conf". The terminal displays the Nginx configuration file content:

```
root_name    _;
root        /usr/share/nginx/html;

# Load configuration files for the default server block;
include /etc/nginx/default.d/*.conf;

location /blog {
    proxy_pass          http://10.10.229.11:3001;
    proxy_set_header Host      $http_host; # required for docker client's sake
    proxy_set_header X-Real-IP $remote_addr; # pass on real client's IP
    proxy_set_header X-Forwarded-For $proxy_add_x_forwarded_for;
    proxy_read_timeout    900;
}

error_page 404 /404.html;
location= /40x.html {

}

error_page 500 502 503 504 /50x.html;
location = /50x.html {
```

The terminal window has a dark background and light-colored text. The bottom of the window shows the nano editor's command-line interface with various keyboard shortcuts.

## Appendix B

### NginX Access Log File

A screenshot of a terminal window titled "root@NginxRedding:~". The window shows the command "GNU nano 2.9.8" and the file path "/var/log/nginx/access.log". The status bar indicates "Modified". The terminal window has a dark background with white text. The bottom of the window displays a menu bar with various keyboard shortcuts for text editing.

### NginX Error Log File

A screenshot of a terminal window titled "root@NginxRedding:~". The window shows the command "GNU nano 2.9.8" and the file path "/var/log/nginx/error.log". The status bar indicates "Modified". The terminal window has a dark background with white text. The bottom of the window displays a menu bar with various keyboard shortcuts for text editing. Two error messages are visible in the log file:

```
2025/01/15 11:57:34 [emerg] 3850#0: unknown directive "location=" in /etc/nginx/nginx.conf:54
2025/01/15 12:13:43 [emerg] 769#0: unknown directive "location=" in /etc/nginx/nginx.conf:54
```