# Lab: Superusers and the Root Login

So far, user [elliot] has been able to do quite a few things on the system. However, there are a whole lot of things that user [elliot] can't do! To demonstrate, let's try to create a file named [happy] in the [/var] directory:

```
elliot@ubuntu-linux:~$ touch /var/happy
touch: cannot touch '/var/happy': Permission denied
```

Oops! We got a [Permission denied] error.

Now let's try to create a new directory named [games] in [/etc]:

```
elliot@ubuntu-linux:/$ mkdir /etc/games
mkdir: cannot create directory '/etc/games': Permission denied
```

Again! We are getting the same error, [Permission denied]!

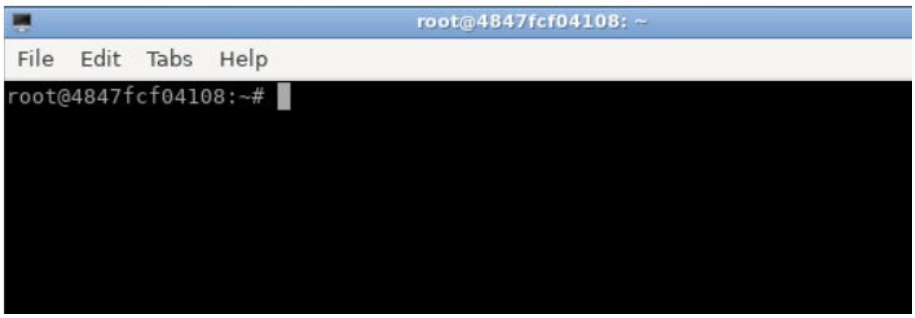
So what's going on here? Well, the user [elliot] doesn't have permission to do whatever he wants on the system! So who then? Who has permission to do anything on the system? It's the root user.

**WHO IS ROOT?**

[root] is a Linux user that has permission to do anything on the system. [root] is also known as the superuser.

# Accessing the root user

Open new terminal to access the [root] user:




Notice how the command prompt changed instead of a dollar sign ([$]), it now shows a [#] to greet the root user.

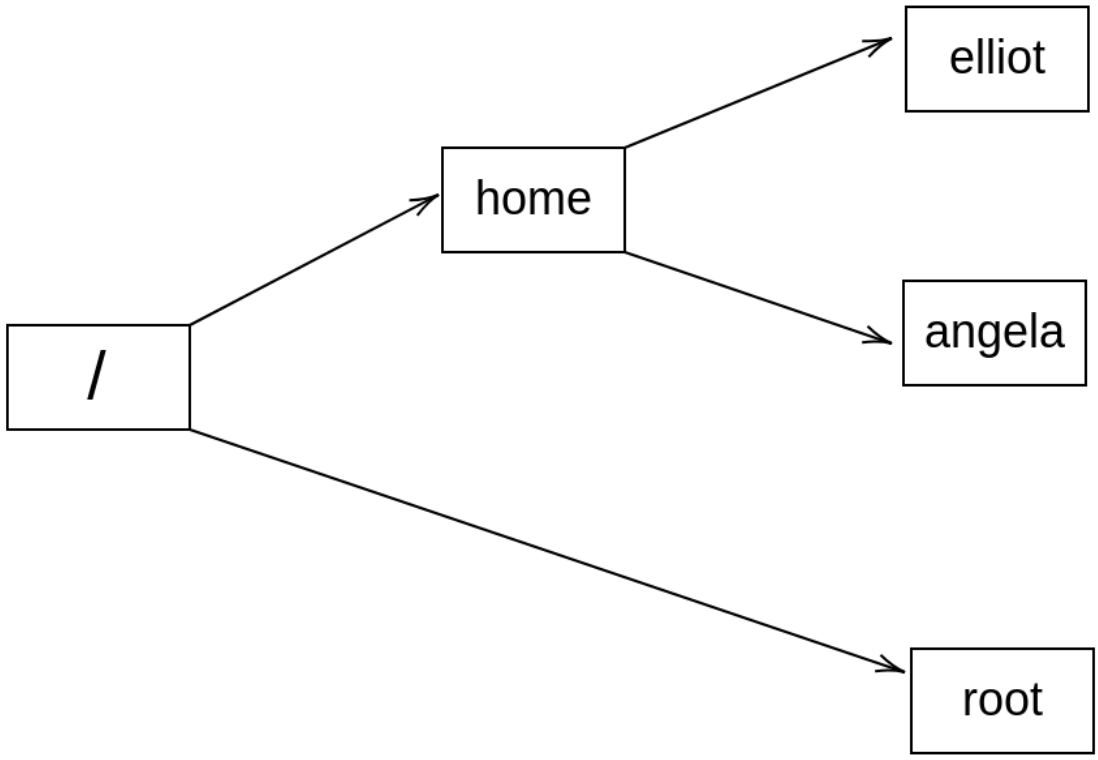
Let's run the [whoami] command to make sure that we are now logged in as the root user:

```
root@ubuntu-linux:~# whoami
root
```

Awesome! Now let's display the current working directory:

```
root@ubuntu-linux:~# pwd
/root
```

Remember earlier that I told you that the home directory for the [root] user is [/root] and not under [/home].




Now let's rerun both commands that we got permission denied for, but this time, we run both commands as the [root] user.

```
root@ubuntu-linux:~# touch /var/happy
root@ubuntu-linux:~# ls -l /var/happy
-rw-r--r-- 1 root root 0 Apr 15 10:53 /var/happy
```

As you can see, nothing can stop the [root] user from doing anything! Now let's create the directory [games] in [/etc]:

```
root@ubuntu-linux:~# mkdir /etc/games
root@ubuntu-linux:~# ls -ld /etc/games
drwxr-xr-x 2 root root 4096 Apr 15 10:55 /etc/games
```

We got no error, and that's because you have the power to do whatever you want as the [root] user. But ALWAYS remember, with great power comes great responsibility.

# Setting the root password

You can also use the [su] command to switch to the [root] user but first, you need to set the [root]'s password:

```
root@ubuntu-linux:~# passwd
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
```

**Note:** Make sure to remember `root` user password for next labs.

Amazing, now exit the [root] user:

```
root@ubuntu-linux:~# exit

elliot@ubuntu-linux:~$ su - elliot

elliot@ubuntu-linux:~$ whoami
```

Now you can use the [su root] command to switch to the [root] user:

```
elliot@ubuntu-linux:~$ su root
Password:
root@ubuntu-linux:/home/elliot# whoami
root
```

# The dash difference

Notice that my current working directory is now [/home/elliot] and not [/root]. If I want to change that, I can exit back to user [elliot] and rerun the [su] command but this time, I will add a dash (hyphen) before [root] as follows:

```
root@ubuntu-linux:/home/elliot# exit
exit
elliot@ubuntu-linux:~$ su - root
Password:
root@ubuntu-linux:~# pwd
/root
```

So what is the difference?

Here's the deal. When you don't add the dash before the username, the shell preserves the current user shell environment settings, which includes the current working directory. On the other hand, when you add the dash, the shell acquires the environment settings of the new user (the user you switched to).

So let's do some practice. If you want to switch to user [elliot] but preserve [root]'s shell environment settings, then you don't need the dash:

```
root@ubuntu-linux:~# pwd
/root
root@ubuntu-linux:~# su elliot
elliot@ubuntu-linux:/root$ pwd
/root
elliot@ubuntu-linux:/root$
```

Notice how the current working directory didn't change when I switched to user [elliot]. Now, let's exit and switch back again to user [elliot], but this time, we will put a dash before the username:

```
elliot@ubuntu-linux:/root$ exit
exit
root@ubuntu-linux:~# pwd
/root
root@ubuntu-linux:~# su - elliot
```

```
elliot@ubuntu-linux:~$ pwd
/home/elliot
```

Now notice how the current working directory changed from [/root] to [/home/elliot]. So here, the shell acquired the environment settings of user [elliot].

**A COOL TIP**

If you run [su] with no username, then [su] will switch to the root user. So if you want to save yourself some typing, you can omit the username every time you want to switch to the root user.

Let's try out our cool tip! As user [elliot], run the [su] command without specifying a username:

```
elliot@ubuntu-linux:~$ su
Password:
root@ubuntu-linux:/home/elliot#
```

You can then enter the [root] password to log in as [root].

You can also use the dash to acquire [root]'s shell environment settings:

```
elliot@ubuntu-linux:~$ su -
Password:
root@ubuntu-linux:~# pwd
/root
```

This time I landed in [/root] because I used the dash.

You have got superpowers when you are the [root] user as you have the permission to do anything on your system. And so if you are not very careful, you can damage your system.

# Knowledge check

For the following exercises, open up your Terminal and try to solve the following tasks:

1. Switch to the [root] user.
2. Change the password for the [root] user.
3. Switch to user [elliot] and land in [/home/elliot].
4. Now switch to user root but preserve the current working directory [/home- /elliot].

## True or false

1. The [root] user is the most powerful user in Linux.
2. Using the [su] command without specifying a username will switch you to the root user.
3. We use the [passroot] command to change the password for the [root] user.