

Linux Users, Groups, and Permissions

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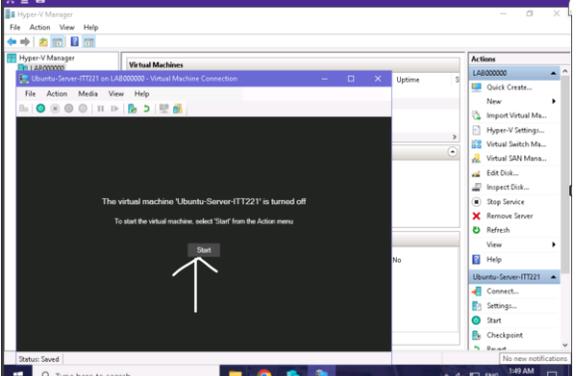
ITT 221: Linux System Administration and Maintenance

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GRAND CANYON UNIVERSITY™

ITT-221 Step by Step Template

<p>First, we will log into our Virtual Service</p>	 A screenshot of a Windows desktop environment. The background is a scenic view of a city at sunset. A large, semi-transparent purple banner with the text "GRAND CANYON UNIVERSITY™" is overlaid across the center of the screen. The Windows taskbar is visible at the bottom, showing the search bar and system tray.
<p>Now we will "Open" Hyper-V Manager</p>	 A screenshot of a Windows desktop environment, identical to the first one. A white arrow points to the "Hyper-V Manager" icon on the Windows taskbar.
<p>In Hyper-V Manager "Open" the Linux Server VM by "double-clicking it". You will see a "Start" option, one pop-up screen "click" the start option.</p>	 A screenshot of the Hyper-V Manager application window. The "Virtual Machines" pane on the left shows a list of virtual machines. The "Start" button for the selected virtual machine is highlighted with a white arrow. The "Actions" pane on the right shows the "Start" option selected. A message box is displayed in the foreground, stating "The virtual machine 'Ubuntu-Server-ITT221' is turned off. To start the virtual machine, select 'Start' from the Action menu." The "Start" button in the message box is also highlighted with a white arrow.

In the Linux Server Command Terminal type “sudo addgroup webdevs” and press “enter”

```
linuser@ubuntu-server-1142211:~$ sudo addgroup webdevs
```

You will be asked to for your password. Once you input your password you will see that Linux generated the “weddevs groups”

```
linuser@ubuntu-server-1142211:~$ sudo addgroup webdevs
(sudo) password for linuser:
info: selecting GID from range 1000 to 59999 ...
info: adding group webdevs (GID 1001) ...
```

In the command lind type “sudo cat /etc/group” and press “enter”

```
linuser@ubuntu-server-1142211:~$ sudo cat /etc/group
```

You will now see that Linux has created the webdevs group

```
linuser@ubuntu-server-1142211:~$ sudo cat /etc/group
nfsnobody:x:65534:65534:/:/sbin/nfs:
nfsnobody:x:65535:65535:/:/sbin/nfs:
nfsnobody:x:65536:65536:/:/sbin/nfs:
nfsnobody:x:65537:65537:/:/sbin/nfs:
nfsnobody:x:65538:65538:/:/sbin/nfs:
nfsnobody:x:65539:65539:/:/sbin/nfs:
nfsnobody:x:65540:65540:/:/sbin/nfs:
nfsnobody:x:65541:65541:/:/sbin/nfs:
nfsnobody:x:65542:65542:/:/sbin/nfs:
nfsnobody:x:65543:65543:/:/sbin/nfs:
nfsnobody:x:65544:65544:/:/sbin/nfs:
nfsnobody:x:65545:65545:/:/sbin/nfs:
linuser:x:1000:1000:linuser:/:/bin/bash:
staff:x:1001:1001:staff:/:/bin/bash:
games:x:1002:1002:games:/:/bin/bash:
users:x:1003:1003:users:/:/bin/bash:
nogroup:x:65534:65534:/:/sbin/nfs:
systemd-journald:x:999:999:systemd-journal:/:/bin/bash:
systemd-networkd:x:998:998:systemd-networkd:/:/bin/bash:
systemd-timesyncd:x:997:997:systemd-timesyncd:/:/bin/bash:
input:x:996:996:input:/:/bin/bash:
lpk:x:995:995:lpk:/:/bin/bash:
hwm:x:994:994:hwm:/:/bin/bash:
render:x:993:993:render:/:/bin/bash:
ddp:x:101:linuser:mesapp@x:102:sd:x:103:polk:1101:x:104:crash:1102:syslog:x:104:audit:x:105:rtm:x:106:tcpdump:x:107:rtm:x:108:landscape:x:109:hapd-refres:x:109:linuser:x:1000:webdevs:x:1001:linuser@ubuntu-server-1142211:~$
```

Now in the command line type “sudo useradd user1” and press “enter”

```
Linux ubuntu:~# cat /etc/passwd
narr-data:x:332:
hdd:x:42:
operator:x:37:
l1st:x:38:
erc:x:39:
src:x:40:
chadown:x:42:
utmp:x:43:
Vidiot:x:44:
sas1:x:45:
pljgdevr:x:46:Linuxuser
staff:x:50:
games:x:60:
users:x:100:
nogroup:x:65534:
systemd-journal:x:999:
systemd-network:x:998:
systemd-timesync:x:997:
input:x:996:
sgx:x:995:
Avni:x:994:
remder:x:993:
lxd:x:101:Linuxuser
messagebus:x:102:
systemd-resolve:x:992:
_ssh:x:103:
polkitd:x:991:
cronatb:x:990:
syslog:x:104:
uuidd:x:105:
rmd:x:106:
tcpdump:x:107:
tss:x:108:
landisage:x:109:
fwupd-refresh:x:909:
Linuxuser:x:1000:
sssd:x:110:
webdevr:x:1001:
Linuxuser@ubuntu-server-11221:~$ sudo useradd user1
```

Now in the command line type “sudo useradd user2” and press “enter”

```
Linux ubuntu:~# cat /etc/passwd
narr-data:x:332:
hdd:x:42:
operator:x:37:
l1st:x:38:
erc:x:39:
src:x:40:
chadown:x:42:
utmp:x:43:
Vidiot:x:44:
sas1:x:45:
pljgdevr:x:46:Linuxuser
staff:x:50:
games:x:60:
users:x:100:
nogroup:x:65534:
systemd-journal:x:999:
systemd-network:x:998:
systemd-timesync:x:997:
input:x:996:
sgx:x:995:
Avni:x:994:
remder:x:993:
lxd:x:101:Linuxuser
messagebus:x:102:
systemd-resolve:x:992:
_ssh:x:103:
polkitd:x:991:
cronatb:x:990:
syslog:x:104:
uuidd:x:105:
rmd:x:106:
tcpdump:x:107:
tss:x:108:
landisage:x:109:
fwupd-refresh:x:909:
Linuxuser:x:1000:
sssd:x:110:
webdevr:x:1001:
Linuxuser@ubuntu-server-11221:~$ sudo useradd user1
Command 'sudo' not found, did you mean:
  Command 'sudo' from deb sudo (1.9.15p5-Subuntus.24.04.1)
  Command 'sudo' from deb sudo-ldap (1.9.15p5-Subuntus.24.04.1)
Try: sudo apt install deb name
Linuxuser@ubuntu-server-11221:~$ sudo useradd user2
Linuxuser@ubuntu-server-11221:~$ sudo useradd user1
```

Now in the command line type “sudo useradd user3” and press “enter”

```
Linux ubuntu:~# cat /etc/passwd
narr-data:x:332:
hdd:x:42:
operator:x:37:
l1st:x:38:
erc:x:39:
src:x:40:
chadown:x:42:
utmp:x:43:
Vidiot:x:44:
sas1:x:45:
pljgdevr:x:46:Linuxuser
staff:x:50:
games:x:60:
users:x:100:
nogroup:x:65534:
systemd-journal:x:999:
systemd-network:x:998:
systemd-timesync:x:997:
input:x:996:
sgx:x:995:
Avni:x:994:
remder:x:993:
lxd:x:101:Linuxuser
messagebus:x:102:
systemd-resolve:x:992:
_ssh:x:103:
polkitd:x:991:
cronatb:x:990:
syslog:x:104:
uuidd:x:105:
rmd:x:106:
tcpdump:x:107:
tss:x:108:
landisage:x:109:
fwupd-refresh:x:909:
Linuxuser:x:1000:
sssd:x:110:
webdevr:x:1001:
Linuxuser@ubuntu-server-11221:~$ sudo useradd user1
Command 'sudo' not found, did you mean:
  Command 'sudo' from deb sudo (1.9.15p5-Subuntus.24.04.1)
  Command 'sudo' from deb sudo-ldap (1.9.15p5-Subuntus.24.04.1)
Try: sudo apt install deb name
Linuxuser@ubuntu-server-11221:~$ sudo useradd user1
Linuxuser@ubuntu-server-11221:~$ sudo useradd user3
Linuxuser@ubuntu-server-11221:~$ sudo useradd user2
```

Now we will assign passwords for the users. In the command line type “sudo passwd user1” and press “enter”

```
Linux ubuntu:~# cat /etc/passwd
narr-data:x:332:
hdd:x:42:
operator:x:37:
l1st:x:38:
erc:x:39:
src:x:40:
chadown:x:42:
utmp:x:43:
Vidiot:x:44:
sas1:x:45:
pljgdevr:x:46:Linuxuser
staff:x:50:
games:x:60:
users:x:100:
nogroup:x:65534:
systemd-journal:x:999:
systemd-network:x:998:
systemd-timesync:x:997:
input:x:996:
sgx:x:995:
Avni:x:994:
remder:x:993:
lxd:x:101:Linuxuser
messagebus:x:102:
systemd-resolve:x:992:
_ssh:x:103:
polkitd:x:991:
cronatb:x:990:
syslog:x:104:
uuidd:x:105:
rmd:x:106:
tcpdump:x:107:
tss:x:108:
landisage:x:109:
fwupd-refresh:x:909:
Linuxuser:x:1000:
sssd:x:110:
webdevr:x:1001:
Linuxuser@ubuntu-server-11221:~$ sudo useradd user1
Command 'sudo' not found, did you mean:
  Command 'sudo' from deb sudo (1.9.15p5-Subuntus.24.04.1)
  Command 'sudo' from deb sudo-ldap (1.9.15p5-Subuntus.24.04.1)
Try: sudo apt install deb name
Linuxuser@ubuntu-server-11221:~$ sudo useradd user1
Linuxuser@ubuntu-server-11221:~$ sudo useradd user0
Linuxuser@ubuntu-server-11221:~$ sudo useradd users
Linuxuser@ubuntu-server-11221:~$ sudo passwd user1
```

You will then be asked to type in the users password. Then press “enter”. You will be asked to verify the password again. After typing the same password again press “enter”

```
ganesix:~$ sudo useradd user1
passwd: password updated successfully
Linux user@ubuntu-server:~$ sudo passwd user1
Linux user@ubuntu-server:~$
```

We will repeat this process for user 2. Now we will assign passwords for the users. In the command line type “sudo passwd user2” and press “enter”

```
Linux user@ubuntu-server:~$ sudo passwd user2
passwd: password updated successfully
Linux user@ubuntu-server:~$ sudo passwd user3
passwd: password updated successfully
Linux user@ubuntu-server:~$
```

You will then be asked to type in the users password. Then press “enter”. You will be asked to verify the password again. After typing the same password again press “enter”

```
Linux user@ubuntu-server:~$ sudo passwd user2
passwd: password updated successfully
Linux user@ubuntu-server:~$ sudo passwd user3
passwd: password updated successfully
Linux user@ubuntu-server:~$
```

We will repeat this process for user 3. Now we will assign passwords for the users. In the command line type “sudo passwd user3” and press “enter”

```
Linux user@ubuntu-server:~$ sudo passwd user3
passwd: password updated successfully
Linux user@ubuntu-server:~$
```

You will then be asked to type in the users password. Then press “enter”. You will be asked to verify the password again. After typing the same password again press “enter”

```
LinuxServer:~# sudo useradd user1
Command 'sudo' not found, did you mean:
Command 'suds' from deb sudo (1.9.1505-3ubuntu5.24.04.1)
Command 'suds' from deb sudo-ldap (1.9.1505-3ubuntu5.24.04.1)
Try: sudo apt install deb name.
LinuxServer:~# sudo useradd user1
LinuxServer:~# sudo useradd user2
LinuxServer:~# sudo useradd user3
LinuxServer:~# sudo passwd user1
New password:
Retype new password:
passwd: password updated successfully
LinuxServer:~# sudo passwd user2
New password:
Retype new password:
passwd: password updated successfully
LinuxServer:~# sudo passwd user3
New password:
Retype new password:
passwd: password updated successfully
LinuxServer:~#
```

We will now type “sudo usermod -aG webdevs user1” into the command line and press “enter”

```
LinuxServer:~# sudo usermod -aG webdevs user1
LinuxServer:~#
```

We will repeat this step again for user2. We will now type “sudo usermod -aG webdevs user2” into the command line and press “enter”

```
LinuxServer:~# sudo usermod -aG webdevs user2
LinuxServer:~#
```

We will repeat this step again for user2. We will now type “sudo usermod -aG webdevs user3” into the command line and press “enter”

```
LinuxServer:~# sudo usermod -aG webdevs user3
LinuxServer:~#
```

In the command line, type “sudo cat /etc/group” and press “enter”

```
Linux user@ubuntu-server-110211:~$ sudo cat /etc/group
root:x:0:0:root:/:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/usr/sbin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
cron:x:4:4:cron:/usr/sbin:/usr/sbin/nologin
kublet:x:100:100:Kubernetes Kubelet:/usr/bin:/usr/sbin/nologin
nfsnobody:x:65534:65534:-2::-/usr/sbin/nologin
systemd-journal:x:999:systemd-journal:/usr/bin:/usr/sbin/nologin
systemd-networkd:x:998:systemd-networkd:/usr/bin:/usr/sbin/nologin
systemd-timesyncd:x:997:systemd-timesyncd:/usr/bin:/usr/sbin/nologin
input:x:996:input:/usr/bin:/usr/sbin/nologin
sgx:x:995:sgx:/usr/bin:/usr/sbin/nologin
kvm:x:994:kvm:POSIX shell
render:x:993:render:POSIX shell
lxd:x:101:101:lxd:/usr/bin:/usr/sbin/nologin
messagebus:x:102:102:Message Bus:/usr/bin:/usr/sbin/nologin
systemd-resolve:x:992:systemd-resolve:/usr/bin:/usr/sbin/nologin
_apt:x:103:103:apt:/usr/bin:/usr/sbin/nologin
polkitd:x:991:polkitd:/usr/bin:/usr/sbin/nologin
cronitd:x:990:cronitd:/usr/bin:/usr/sbin/nologin
syslog:x:104:104:syslog:/usr/bin:/usr/sbin/nologin
uuidd:x:105:105:uuidd:/usr/bin:/usr/sbin/nologin
rdma:x:106:106:rdma:/usr/bin:/usr/sbin/nologin
tcpdump:x:107:107:tcpdump:/usr/bin:/usr/sbin/nologin
tss:x:108:108:tss:/usr/bin:/usr/sbin/nologin
landscaper:x:109:landscaper:POSIX shell
linuxuser:x:1000:linuxuser:POSIX shell
sssd:x:110:110:SSSD:/usr/bin:/usr/sbin/nologin
webdevs:x:1001:user1,user2,user3
user1:x:1002:
user2:x:1003:
user3:x:1004:
```

You will see that the user groups have been updated.

```
Linux user@ubuntu-server-110211:~$ sudo cat /etc/group
root:x:0:0:root:/:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/usr/sbin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
cron:x:4:4:cron:/usr/sbin:/usr/sbin/nologin
kublet:x:100:100:Kubernetes Kubelet:/usr/bin:/usr/sbin/nologin
nfsnobody:x:65534:65534:-2::-/usr/sbin/nologin
systemd-journal:x:999:systemd-journal:/usr/bin:/usr/sbin/nologin
systemd-networkd:x:998:systemd-networkd:/usr/bin:/usr/sbin/nologin
systemd-timesyncd:x:997:systemd-timesyncd:/usr/bin:/usr/sbin/nologin
input:x:996:input:/usr/bin:/usr/sbin/nologin
sgx:x:995:sgx:/usr/bin:/usr/sbin/nologin
kvm:x:994:kvm:POSIX shell
render:x:993:render:POSIX shell
lxd:x:101:101:lxd:/usr/bin:/usr/sbin/nologin
messagebus:x:102:102:Message Bus:/usr/bin:/usr/sbin/nologin
systemd-resolve:x:992:systemd-resolve:/usr/bin:/usr/sbin/nologin
_apt:x:103:103:apt:/usr/bin:/usr/sbin/nologin
polkitd:x:991:polkitd:/usr/bin:/usr/sbin/nologin
cronitd:x:990:cronitd:/usr/bin:/usr/sbin/nologin
syslog:x:104:104:syslog:/usr/bin:/usr/sbin/nologin
uuidd:x:105:105:uuidd:/usr/bin:/usr/sbin/nologin
rdma:x:106:106:rdma:/usr/bin:/usr/sbin/nologin
tcpdump:x:107:107:tcpdump:/usr/bin:/usr/sbin/nologin
tss:x:108:108:tss:/usr/bin:/usr/sbin/nologin
landscaper:x:109:landscaper:POSIX shell
linuxuser:x:1000:linuxuser:POSIX shell
sssd:x:110:110:SSSD:/usr/bin:/usr/sbin/nologin
webdevs:x:1001:user1,user2,user3
user1:x:1002:
user2:x:1003:
user3:x:1004:
```

In the command line type “sudo getent group webdevs” and press “enter”

```
Linux user@ubuntu-server-110211:~$ sudo getent group webdevs
webdevs:x:1001:user1,user2,user3
```

You will see that user1, 2, and 3 have populated ensuring they have been created.

```
Linux user@ubuntu-server-110211:~$ sudo getent group webdevs
webdevs:x:1001:user1,user2,user3
user1:x:1002:
user2:x:1003:
user3:x:1004:
```

In the command prompt type “sudo mkdir -p /var/www” and press “enter”

```
LinuxServer:~# sudo mkdir -p /var/www
LinuxServer:~#
```

Now in the command prompt type “sudo mkdir -p /var/www/website” and press “enter”

```
LinuxServer:~# sudo mkdir -p /var/www/website
LinuxServer:~#
```

In the command line type “cd /var/www/website” and press “enter”

```
LinuxServer:~# cd /var/www/website
LinuxServer:~/website#
```

In the command line type “ls -l” and press “enter”

```
LinuxServer:~/website# ls -l
total 0
drwxr-xr-x 2 root root 4096 Nov 14 12:00 .
drwxr-xr-x 3 root root 4096 Nov 14 12:00 ..
```

As we can see we have 0 files right now.

```
plugdev@x461:~$ ls -la /var/www/website
total 0
drwxr-xr-x 2 root root 4096 Nov 14 12:00 .
drwxr-xr-x 3 root root 4096 Nov 14 12:00 ..

```

We will now type “sudo chown root:webdevs /var/www” and press “enter”

```
plugdev@x461:~$ ls -la /var/www/website
total 0
drwxr-xr-x 2 root root 4096 Nov 14 12:00 .
drwxr-xr-x 3 root root 4096 Nov 14 12:00 ..

```

Now type “sudo cd /website” in the command line and press “enter”

```
plugdev@x461:~$ ls -la /var/www/website
total 0
drwxr-xr-x 2 root root 4096 Nov 14 12:00 .
drwxr-xr-x 3 root root 4096 Nov 14 12:00 ..

```

In the command line, type “sudo touch index.html styles.css script.js” and press “enter”

```
plugdev@x461:~$ ls -la /var/www/website
total 0
drwxr-xr-x 2 root root 4096 Nov 14 12:00 .
drwxr-xr-x 3 root root 4096 Nov 14 12:00 ..

```


In the command line type “ls -l” and press “enter”

```
Linuxuser@ubuntu-server:~$ cd /var/www/website
Linuxuser@ubuntu-server:~/website$ ls -l
total 0
Linuxuser@ubuntu-server:~/website$ sudo chown root:webdev /var/www
sudo: cd: command not found
sudo: cd: command not found
sudo: 'cd' is a shell built-in command, it cannot be run directly.
sudo: the -s option may be used to run a privileged shell.
sudo: the -D option may be used to run a command in a specific directory.
Linuxuser@ubuntu-server:~/website$ cd website
-bash: cd: website: no such file or directory
Linuxuser@ubuntu-server:~/website$ cd /var/www
Linuxuser@ubuntu-server:~/website$ ls
total 0
Linuxuser@ubuntu-server:~/website$ cd /var/www/website
Linuxuser@ubuntu-server:~/website$ pwd
/var/www/website
Linuxuser@ubuntu-server:~/website$ sudo touch index.html styles.css script.js
Linuxuser@ubuntu-server:~/website$ ls -l
total 0
-rw-r--r-- 1 root root 0 Feb 15 02:41 index.html
-rw-r--r-- 1 root root 0 Feb 15 02:41 script.js
-rw-r--r-- 1 root root 0 Feb 15 02:41 styles.css
sudo: chown: command not found
Linuxuser@ubuntu-server:~/website$ sudo chown root:webdev *
sudo: chown: command not found
Linuxuser@ubuntu-server:~/website$ sudo chown root:webdev *
chown: invalid group: 'root:webdev'
Linuxuser@ubuntu-server:~/website$ chown root:webdev *
chown: invalid group: 'root:webdev'
Linuxuser@ubuntu-server:~/website$ chown root:webdevs *
chown: changing ownership of 'index.html': Operation not permitted
chown: changing ownership of 'styles.css': Operation not permitted
Linuxuser@ubuntu-server:~/website$ sudo chown root:webdevs *
Linuxuser@ubuntu-server:~/website$ sudo chown root:webdevs *
Linuxuser@ubuntu-server:~/website$ sudo chown d64 *
Linuxuser@ubuntu-server:~/website$ ls -l
```

We can see that we have 3 files in the directory

```
Linuxuser@ubuntu-server:~/website$ ls -l
total 0
-rw-r--r-- 1 root webdevs 0 Feb 15 02:41 index.html
-rw-r--r-- 1 root webdevs 0 Feb 15 02:41 script.js
-rw-r--r-- 1 root webdevs 0 Feb 15 02:41 styles.css
Linuxuser@ubuntu-server:~/website$
```