Universidad del Caribe
Sistemas Operativos POSIX
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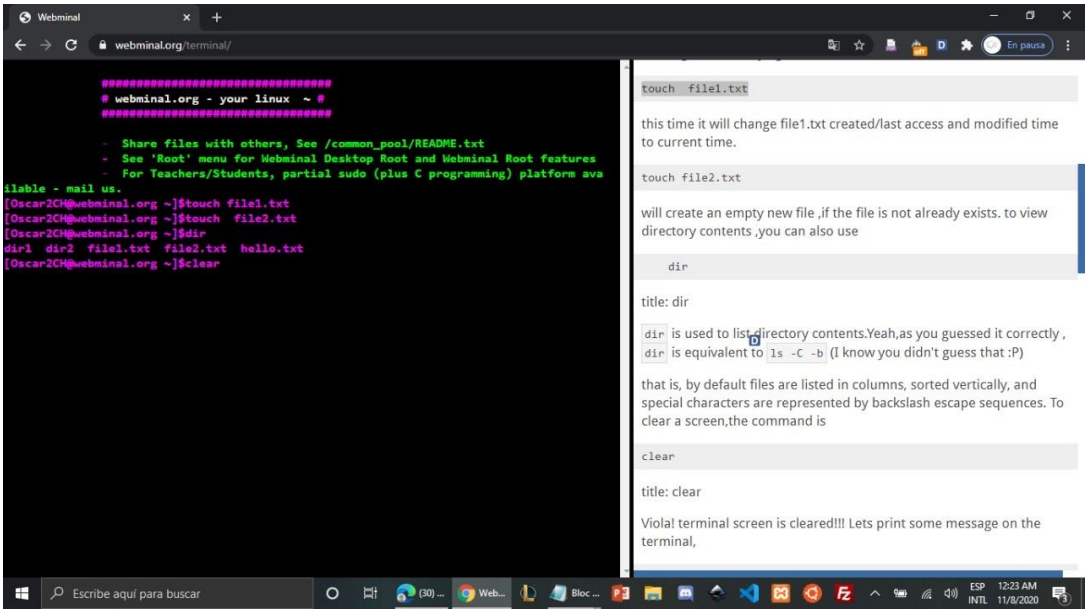
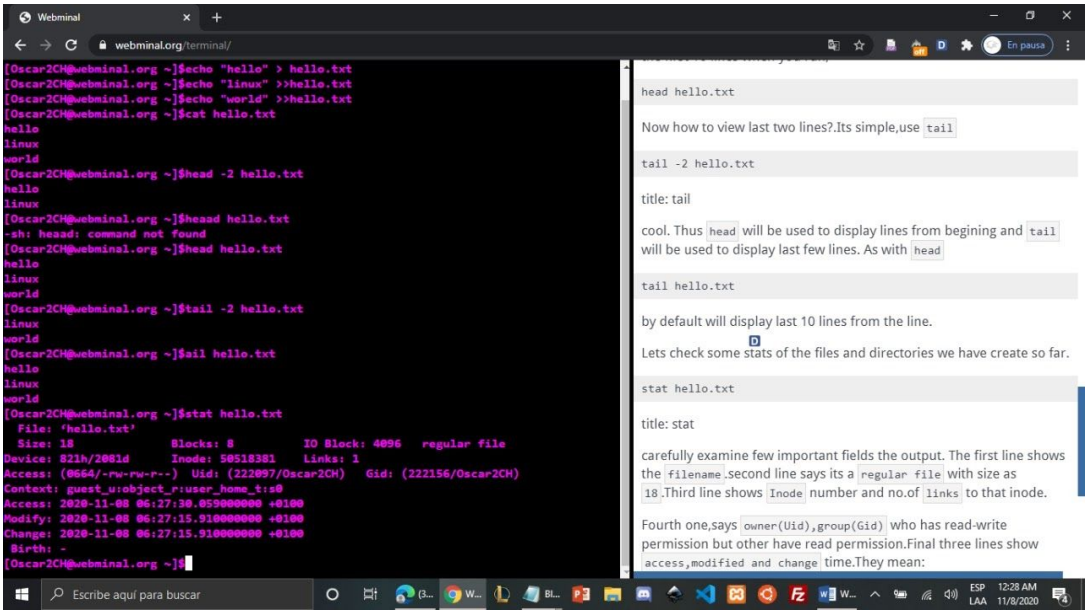
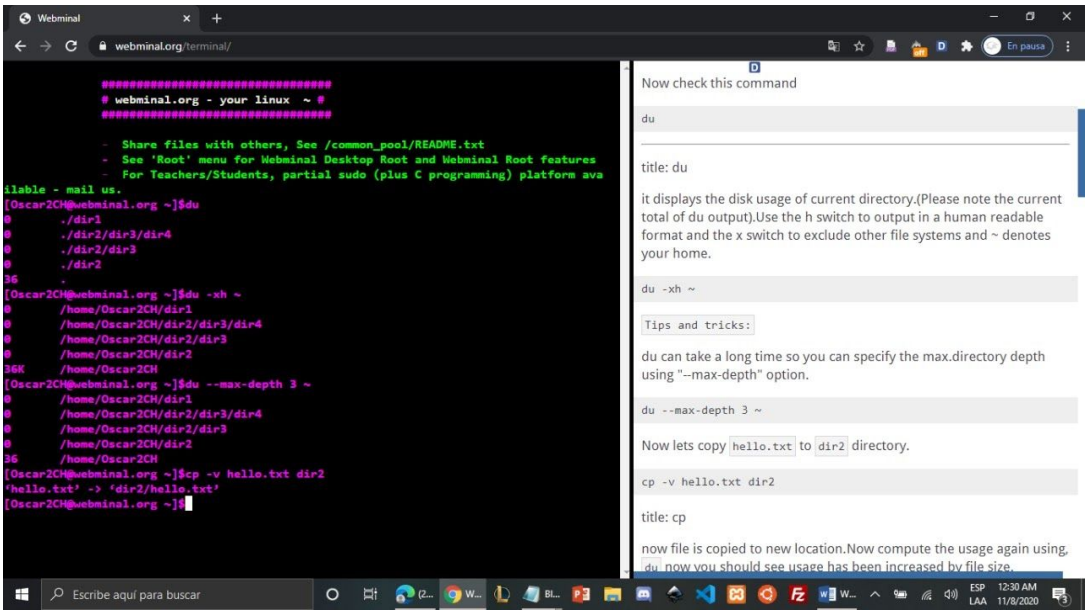
Lesson 2





Lesson 3


Webminal
webminal.org/terminal/
En pausa
webminal.org - your linux ~
- Share files with others, See /common_pool/README.txt
- See 'Root' menu for Webminal Desktop Root and Webminal Root features
- For Teachers/Students, partial sudo (plus C programming) platform ava
ilable - mail us.
[Oscar2CH@webminal.org ~]$du
0 ./dir1
0 ./dir2/dir3/dir4
0 ./dir2/dir3
0 ./dir2
36 .
[Oscar2CH@webminal.org ~]$du -xh ~
0 /home/Oscar2CH/dir1
0 /home/Oscar2CH/dir2/dir3/dir4
0 /home/Oscar2CH/dir2/dir3
0 /home/Oscar2CH/dir2
36K /home/Oscar2CH
[Oscar2CH@webminal.org ~]$du --max-depth 3 ~
0 /home/Oscar2CH/dir1
0 /home/Oscar2CH/dir2/dir3/dir4
0 /home/Oscar2CH/dir2/dir3
0 /home/Oscar2CH/dir2
36 /home/Oscar2CH
[Oscar2CH@webminal.org ~]$cp -v hello.txt dir2
'hello.txt' -> 'dir2/hello.txt'
[Oscar2CH@webminal.org ~]$
Now check this command
du
title: du
it displays the disk usage of current directory.(Please note the current total of du output).Use the h switch to output in a human readable format and the x switch to exclude other file systems and ~ denotes your home.
du -xh ~
Tips and tricks:
du can take a long time so you can specify the max.directory depth using "--max-depth" option.
du --max-depth 3 ~
Now lets copy hello.txt to dir2 directory.
cp -v hello.txt dir2
title: cp
now file is copied to new location.Now compute the usage again using, du now you should see usage has been increased by file size.
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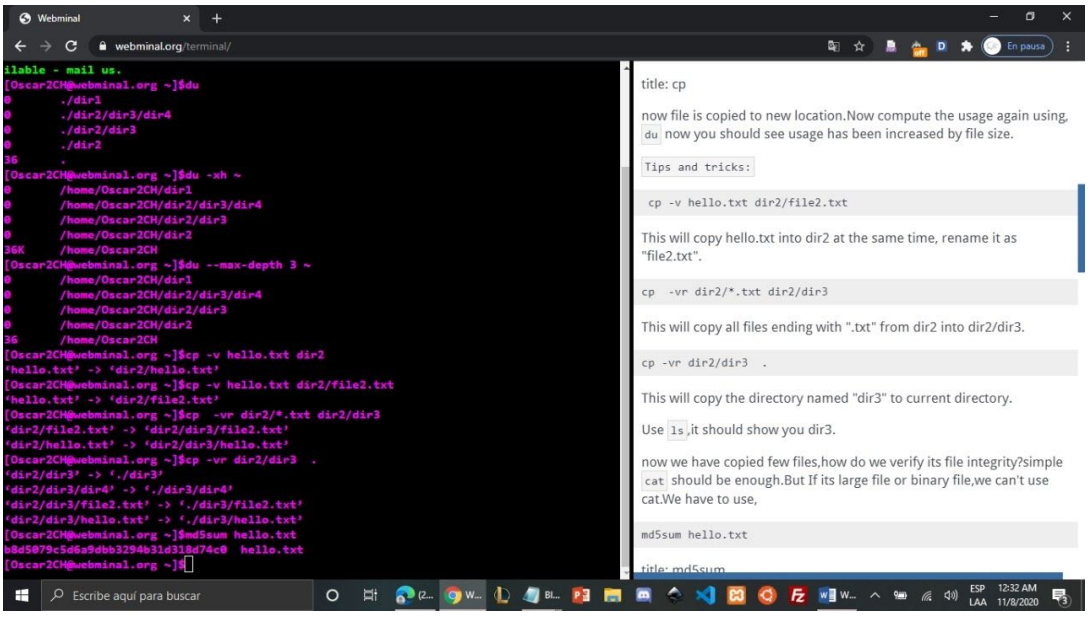
Webminal
webminal.org/terminal/
En pausa
ilable - mail us.
[Oscar2CH@webminal.org ~]$du
0 ./dir1
0 ./dir2/dir3/dir4
0 ./dir2/dir3
0 ./dir2
36 .
[Oscar2CH@webminal.org ~]$du -xh ~
0 /home/Oscar2CH/dir1
0 /home/Oscar2CH/dir2/dir3/dir4
0 /home/Oscar2CH/dir2/dir3
0 /home/Oscar2CH/dir2
36K /home/Oscar2CH
[Oscar2CH@webminal.org ~]$du --max-depth 3 ~
0 /home/Oscar2CH/dir1
0 /home/Oscar2CH/dir2/dir3/dir4
0 /home/Oscar2CH/dir2/dir3
0 /home/Oscar2CH/dir2
36 /home/Oscar2CH
[Oscar2CH@webminal.org ~]$cp -v hello.txt dir2
'hello.txt' -> 'dir2/hello.txt'
[Oscar2CH@webminal.org ~]$cp -v hello.txt dir2/file2.txt
'hello.txt' -> 'dir2/file2.txt'
[Oscar2CH@webminal.org ~]$cp -vr dir2/*.txt dir2/dir3
'dir2/file2.txt' -> 'dir2/dir3/file2.txt'
'dir2/hello.txt' -> 'dir2/dir3/hello.txt'
[Oscar2CH@webminal.org ~]$cp -vr dir2/dir3 .
'dir2/dir3' -> './dir3'
'dir2/dir3/dir4' -> './dir3/dir4'
'dir2/dir3/file2.txt' -> './dir3/file2.txt'
'dir2/dir3/hello.txt' -> './dir3/hello.txt'
[Oscar2CH@webminal.org ~]$md5sum hello.txt
b8d5079c5d6a9dbb3294b31d318d74c0 hello.txt
[Oscar2CH@webminal.org ~]$
title: cp
now file is copied to new location.Now compute the usage again using, du now you should see usage has been increased by file size.
Tips and tricks:
cp -v hello.txt dir2/file2.txt
This will copy hello.txt into dir2 at the same time, rename it as "file2.txt".
cp -vr dir2/*.txt dir2/dir3
This will copy all files ending with ".txt" from dir2 into dir2/dir3.
cp -vr dir2/dir3 .
This will copy the directory named "dir3" to current directory.
Use ls ,it should show you dir3.
now we have copied few files,how do we verify its file integrity?simple cat should be enough.But If its large file or binary file,we can't use cat.We have to use,
md5sum hello.txt
title: md5sum
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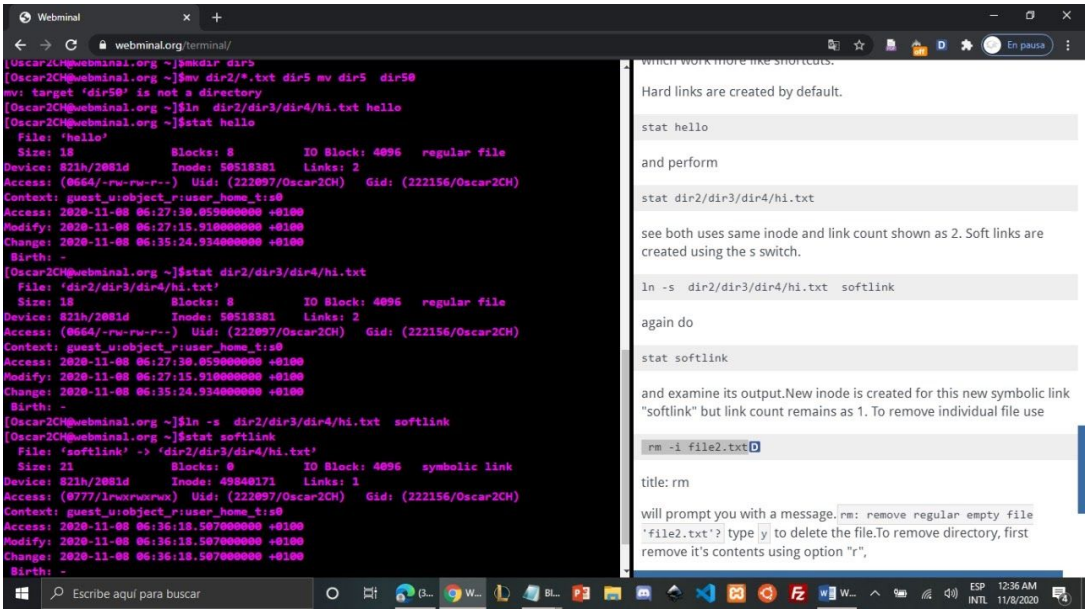
Webminal
webminal.org/terminal/
[Oscar2CH@webminal.org ~]$mkdir dir5
[Oscar2CH@webminal.org ~]$mv dir2/*.txt dir5 mv dir5 dir50
mv: target 'dir50' is not a directory
[Oscar2CH@webminal.org ~]$ln dir2/dir3/dir4/hi.txt hello
[Oscar2CH@webminal.org ~]$stat hello
File: 'hello'
Size: 18 Blocks: 8 IO Block: 4096 regular file
Device: 821h/2081d Inode: 50518381 Links: 2
Access: (0664/-rw-rw-r--) Uid: (222097/Oscar2CH) Gid: (222156/Oscar2CH)
Context: guest_u:object_r:user_home_t:s0
Access: 2020-11-08 06:27:30.059000000 +0100
Modify: 2020-11-08 06:27:15.910000000 +0100
Change: 2020-11-08 06:35:24.934000000 +0100
Birth: -
[Oscar2CH@webminal.org ~]$stat dir2/dir3/dir4/hi.txt
File: 'dir2/dir3/dir4/hi.txt'
Size: 18 Blocks: 8 IO Block: 4096 regular file
Device: 821h/2081d Inode: 50518381 Links: 2
Access: (0664/-rw-rw-r--) Uid: (222097/Oscar2CH) Gid: (222156/Oscar2CH)
Context: guest_u:object_r:user_home_t:s0
Access: 2020-11-08 06:27:30.059000000 +0100
Modify: 2020-11-08 06:27:15.910000000 +0100
Change: 2020-11-08 06:35:24.934000000 +0100
Birth: -
[Oscar2CH@webminal.org ~]$ln -s dir2/dir3/dir4/hi.txt softlink
[Oscar2CH@webminal.org ~]$stat softlink
File: 'softlink' -> 'dir2/dir3/dir4/hi.txt'
Size: 21 Blocks: 0 IO Block: 4096 symbolic link
Device: 821h/2081d Inode: 49840171 Links: 1
Access: (0777/lrwxrwxrwx) Uid: (222097/Oscar2CH) Gid: (222156/Oscar2CH)
Context: guest_u:object_r:user_home_t:s0
Access: 2020-11-08 06:36:18.507000000 +0100
Modify: 2020-11-08 06:36:18.507000000 +0100
Change: 2020-11-08 06:36:18.507000000 +0100
Birth: -
En pausa
which work more like shortcuts.
Hard links are created by default.
stat hello
and perform
stat dir2/dir3/dir4/hi.txt
see both uses same inode and link count shown as 2. Soft links are created using the s switch.
ln -s dir2/dir3/dir4/hi.txt softlink
again do
stat softlink
and examine its output.New inode is created for this new symbolic link "softlink" but link count remains as 1. To remove individual file use
rm -i file2.txt
title: rm
will prompt you with a message. rm: remove regular empty file 'file2.txt'? type y to delete the file.To remove directory, first remove it's contents using option "r",
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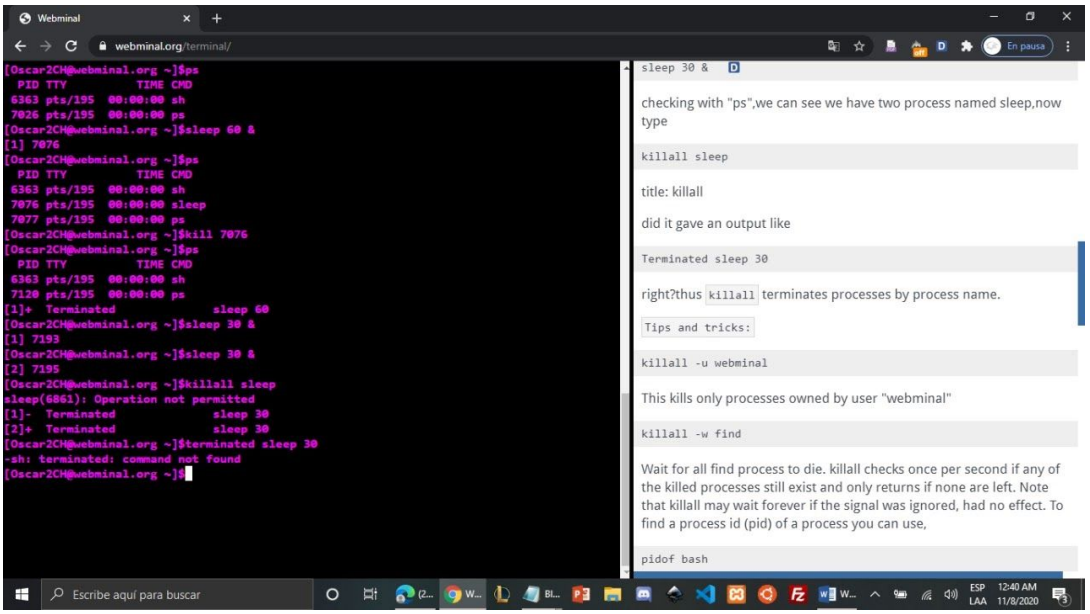
Lesson 4


Webminal
webminal.org/terminal/
[Oscar2CH@webminal.org ~]$ps
PID TTY TIME CMD
6363 pts/195 00:00:00 sh
7026 pts/195 00:00:00 ps
[Oscar2CH@webminal.org ~]$sleep 60 &
[1] 7076
[Oscar2CH@webminal.org ~]$ps
PID TTY TIME CMD
6363 pts/195 00:00:00 sh
7076 pts/195 00:00:00 sleep
7077 pts/195 00:00:00 ps
[Oscar2CH@webminal.org ~]$kill 7076
[Oscar2CH@webminal.org ~]$ps
PID TTY TIME CMD
6363 pts/195 00:00:00 sh
7120 pts/195 00:00:00 ps
[1]+ Terminated sleep 60
[Oscar2CH@webminal.org ~]$sleep 30 &
[1] 7193
[Oscar2CH@webminal.org ~]$sleep 30 &
[2] 7195
[Oscar2CH@webminal.org ~]$killall sleep
sleep(6861): Operation not permitted
[1]- Terminated sleep 30
[2]+ Terminated sleep 30
[Oscar2CH@webminal.org ~]$terminated sleep 30
-sh: terminated: command not found
[Oscar2CH@webminal.org ~]$
sleep 30 &
checking with "ps",we can see we have two process named sleep,now type
killall sleep
title: killall
did it gave an output like
Terminated sleep 30
right?thus killall terminates processes by process name.
Tips and tricks:
killall -u webminal
This kills only processes owned by user "webminal"
killall -w find
Wait for all find process to die. killall checks once per second if any of the killed processes still exist and only returns if none are left. Note that killall may wait forever if the signal was ignored, had no effect. To find a process id (pid) of a process you can use,
pidof bash
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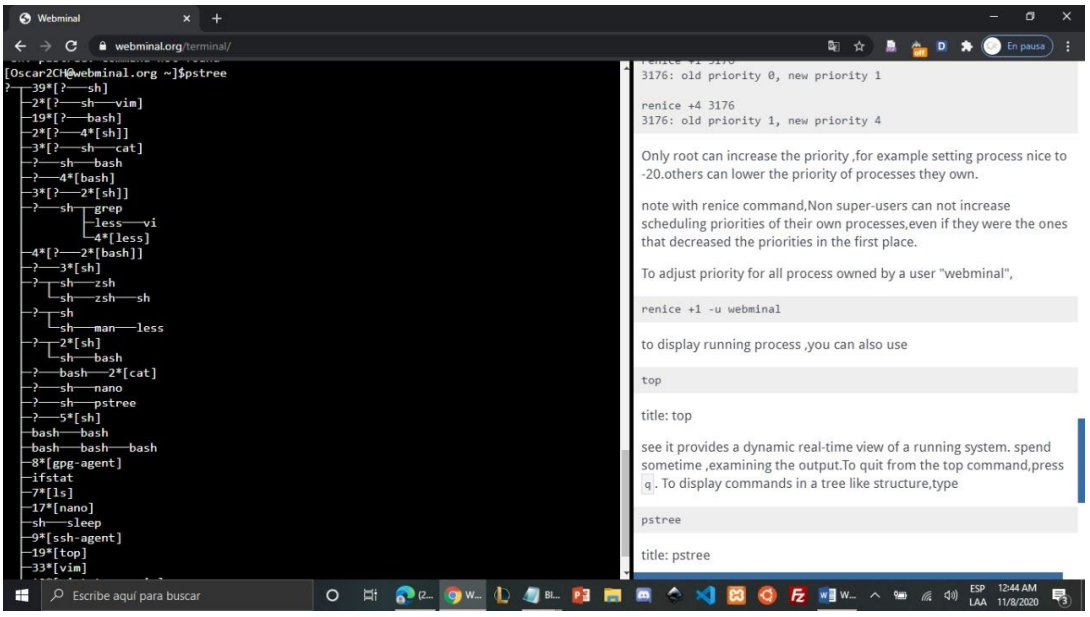
Webminal
webminal.org/terminal/
[Oscar2CH@webminal.org ~]$pstree
?─┬─39*[?───sh]
├─2*[?───sh───vim]
├─19*[?───bash]
├─2*[?───4*[sh]]
├─3*[?───sh───cat]
├─?───sh───bash
├─?───4*[bash]
├─3*[?───2*[sh]]
├─?───sh─┬─grep
│ ├─less───vi
│ └─4*[less]
├─4*[?───2*[bash]]
├─?───3*[sh]
├─?─┬─sh───zsh
│ └─sh───zsh───sh
├─?─┬─sh
│ └─sh───man───less
├─?─┬─2*[sh]
│ └─sh───bash
├─?───bash───2*[cat]
├─?───sh───nano
├─?───sh───pstree
├─?───5*[sh]
├─bash───bash
├─bash───bash───bash
├─8*[gpg-agent]
├─ifstat
├─7*[ls]
├─17*[nano]
├─sh───sleep
├─9*[ssh-agent]
├─19*[top]
├─33*[vim]
3176: old priority 0, new priority 1
renice +4 3176
3176: old priority 1, new priority 4
Only root can increase the priority ,for example setting process nice to -20.others can lower the priority of processes they own.
note with renice command,Non super-users can not increase scheduling priorities of their own processes,even if they were the ones that decreased the priorities in the first place.
To adjust priority for all process owned by a user "webminal",
renice +1 -u webminal
to display running process ,you can also use
top
title: top
see it provides a dynamic real-time view of a running system. spend sometime ,examining the output.To quit from the top command,press q. To display commands in a tree like structure,type
pstree
title: pstree
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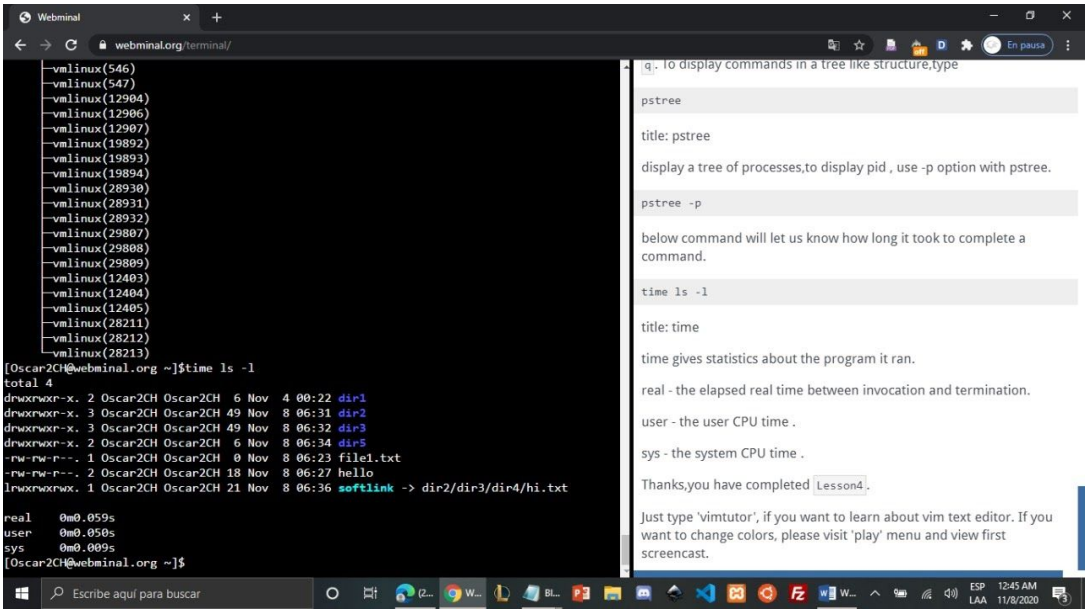
Webminal
webminal.org/terminal/
En pausa
├─vmlinux(546)
├─vmlinux(547)
├─vmlinux(12904)
├─vmlinux(12906)
├─vmlinux(12907)
├─vmlinux(19892)
├─vmlinux(19893)
├─vmlinux(19894)
├─vmlinux(28930)
├─vmlinux(28931)
├─vmlinux(28932)
├─vmlinux(29807)
├─vmlinux(29808)
├─vmlinux(29809)
├─vmlinux(12403)
├─vmlinux(12404)
├─vmlinux(12405)
├─vmlinux(28211)
├─vmlinux(28212)
└─vmlinux(28213)
[Oscar2CH@webminal.org ~]$time ls -l
total 4
drwxrwxr-x. 2 Oscar2CH Oscar2CH 6 Nov 4 00:22 dir1
drwxrwxr-x. 3 Oscar2CH Oscar2CH 49 Nov 8 06:31 dir2
drwxrwxr-x. 3 Oscar2CH Oscar2CH 49 Nov 8 06:32 dir3
drwxrwxr-x. 2 Oscar2CH Oscar2CH 6 Nov 8 06:34 dir5
-rw-rw-r--. 1 Oscar2CH Oscar2CH 0 Nov 8 06:23 file1.txt
-rw-rw-r--. 2 Oscar2CH Oscar2CH 18 Nov 8 06:27 hello
lrwxrwxrwx. 1 Oscar2CH Oscar2CH 21 Nov 8 06:36 softlink -> dir2/dir3/dir4/hi.txt
real 0m0.059s
user 0m0.050s
sys 0m0.009s
[Oscar2CH@webminal.org ~]$
q. To display commands in a tree like structure,type
pstree
title: pstree
display a tree of processes,to display pid , use -p option with pstree.
pstree -p
below command will let us know how long it took to complete a command.
time ls -l
title: time
time gives statistics about the program it ran.
real - the elapsed real time between invocation and termination.
user - the user CPU time .
sys - the system CPU time .
Thanks,you have completed Lesson4.
Just type 'vimtutor', if you want to learn about vim text editor. If you want to change colors, please visit 'play' menu and view first screencast.
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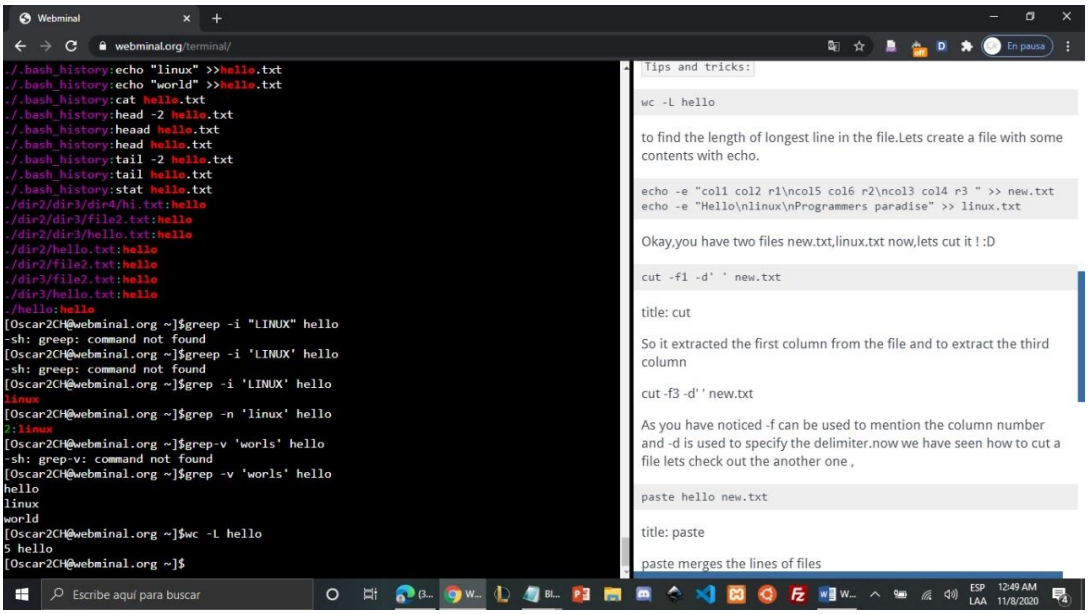
Lesson 5


Webminal
webminal.org/terminal/
./.bash_history:echo "linux" >>hello.txt
./.bash_history:echo "world" >>hello.txt
./.bash_history:cat hello.txt
./.bash_history:head -2 hello.txt
./.bash_history:heaad hello.txt
./.bash_history:head hello.txt
./.bash_history:tail -2 hello.txt
./.bash_history:tail hello.txt
./.bash_history:stat hello.txt
./dir2/dir3/dir4/hi.txt:hello
./dir2/dir3/file2.txt:hello
./dir2/dir3/hello.txt:hello
./dir2/hello.txt:hello
./dir2/file2.txt:hello
./dir3/file2.txt:hello
./dir3/hello.txt:hello
./hello:hello
[Oscar2CH@webminal.org ~]$greep -i "LINUX" hello
-sh: greep: command not found
[Oscar2CH@webminal.org ~]$greep -i 'LINUX' hello
-sh: greep: command not found
[Oscar2CH@webminal.org ~]$grep -i 'LINUX' hello
linux
[Oscar2CH@webminal.org ~]$grep -n 'linux' hello
2:linux
[Oscar2CH@webminal.org ~]$grep-v 'worls' hello
-sh: grep-v: command not found
[Oscar2CH@webminal.org ~]$grep -v 'worls' hello
hello
linux
world
[Oscar2CH@webminal.org ~]$wc -L hello
5 hello
[Oscar2CH@webminal.org ~]$
Tips and tricks:
wc -L hello
to find the length of longest line in the file.Lets create a file with some contents with echo.
echo -e "col1 col2 r1\ncol5 col6 r2\ncol3 col4 r3 " >> new.txt
echo -e "Hello\nlinux\nProgrammers paradise" >> linux.txt
Okay,you have two files new.txt,linux.txt now,lets cut it ! :D
cut -f1 -d' ' new.txt
title: cut
So it extracted the first column from the file and to extract the third column
cut -f3 -d' ' new.txt
As you have noticed -f can be used to mention the column number and -d is used to specify the delimiter.now we have seen how to cut a file lets check out the another one ,
paste hello new.txt
title: paste
paste merges the lines of files
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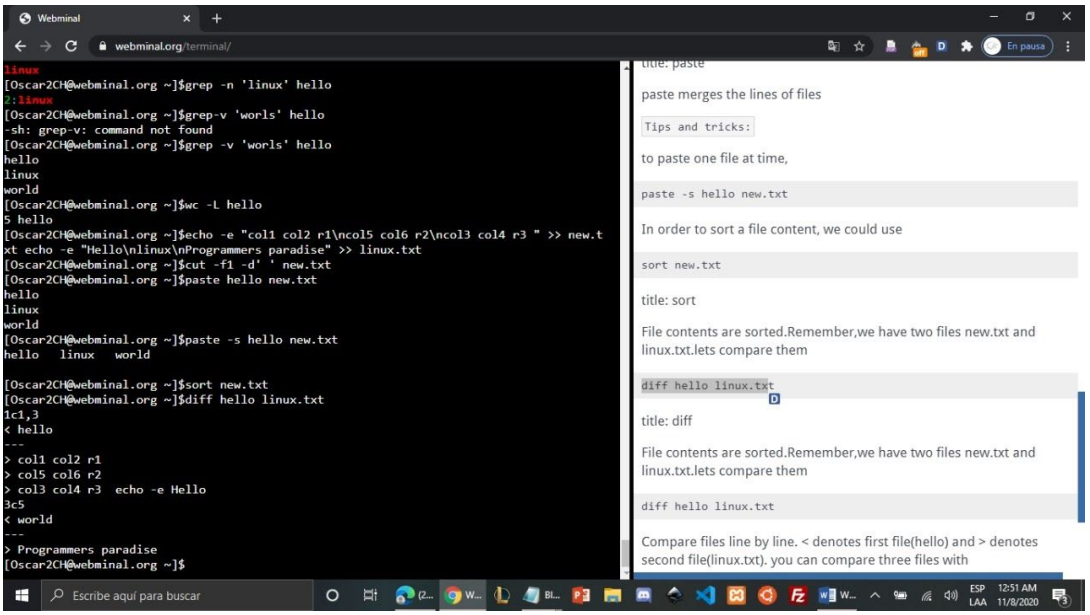
Webminal
webminal.org/terminal/
linux
[Oscar2CH@webminal.org ~]$grep -n 'linux' hello
2:linux
[Oscar2CH@webminal.org ~]$grep-v 'worls' hello
-sh: grep-v: command not found
[Oscar2CH@webminal.org ~]$grep -v 'worls' hello
hello
linux
world
[Oscar2CH@webminal.org ~]$wc -L hello
5 hello
[Oscar2CH@webminal.org ~]$echo -e "col1 col2 r1\ncol5 col6 r2\ncol3 col4 r3 " >> new.t
xt echo -e "Hello\nlinux\nProgrammers paradise" >> linux.txt
[Oscar2CH@webminal.org ~]$cut -f1 -d' ' new.txt
[Oscar2CH@webminal.org ~]$paste hello new.txt
hello
linux
world
[Oscar2CH@webminal.org ~]$paste -s hello new.txt
hello linux world
[Oscar2CH@webminal.org ~]$sort new.txt
[Oscar2CH@webminal.org ~]$diff hello linux.txt
1c1,3
< hello

> col1 col2 r1
> col5 col6 r2
> col3 col4 r3 echo -e Hello
3c5
< world

> Programmers paradise
[Oscar2CH@webminal.org ~]$
paste merges the lines of files
Tips and tricks:
to paste one file at time,
paste -s hello new.txt
In order to sort a file content, we could use
sort new.txt
title: sort
File contents are sorted.Remember,we have two files new.txt and linux.txt.lets compare them
diff hello linux.txt
title: diff
File contents are sorted.Remember,we have two files new.txt and linux.txt.lets compare them
diff hello linux.txt
Compare files line by line. < denotes first file(hello) and > denotes second file(linux.txt). you can compare three files with
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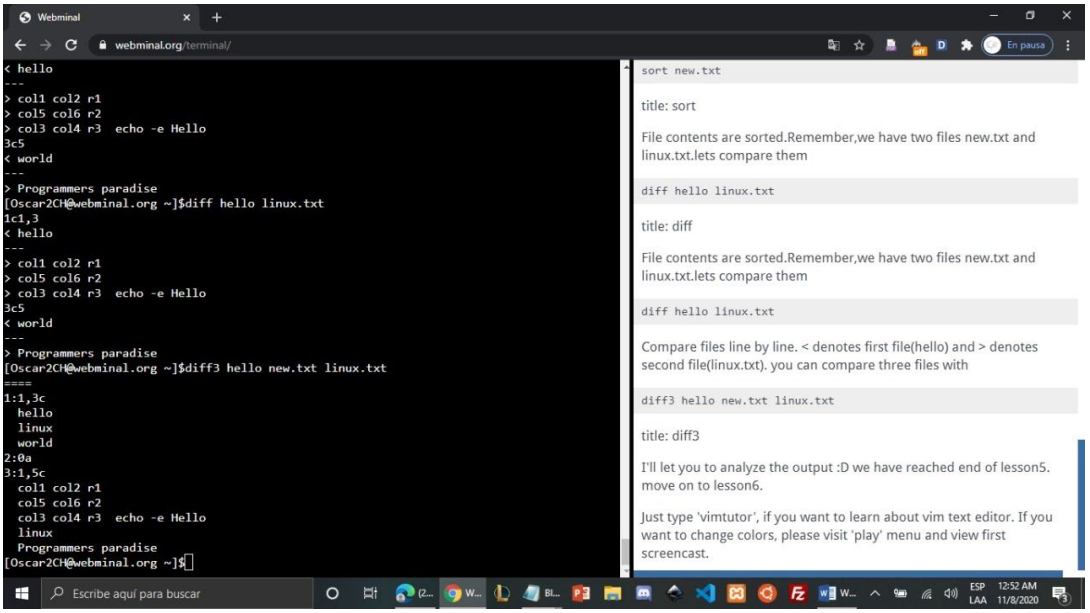
Webminal
webminal.org/terminal/
En pausa
< hello

> col1 col2 r1
> col5 col6 r2
> col3 col4 r3 echo -e Hello
3c5
< world

> Programmers paradise
[Oscar2CH@webminal.org ~]$diff hello linux.txt
1c1,3
< hello

> col1 col2 r1
> col5 col6 r2
> col3 col4 r3 echo -e Hello
3c5
< world

> Programmers paradise
[Oscar2CH@webminal.org ~]$diff3 hello new.txt linux.txt
====
1:1,3c
  hello
  linux
  world
2:0a
3:1,5c
  col1 col2 r1
  col5 col6 r2
  col3 col4 r3 echo -e Hello
  linux
  Programmers paradise
[Oscar2CH@webminal.org ~]$
sort new.txt
title: sort
File contents are sorted.Remember,we have two files new.txt and linux.txt.lets compare them
diff hello linux.txt
title: diff
File contents are sorted.Remember,we have two files new.txt and linux.txt.lets compare them
diff hello linux.txt
Compare files line by line. < denotes first file(hello) and > denotes second file(linux.txt). you can compare three files with
diff3 hello new.txt linux.txt
title: diff3
I'll let you to analyze the output :D we have reached end of lesson5. move on to lesson6.
Just type 'vimtutor', if you want to learn about vim text editor. If you want to change colors, please visit 'play' menu and view first screencast.
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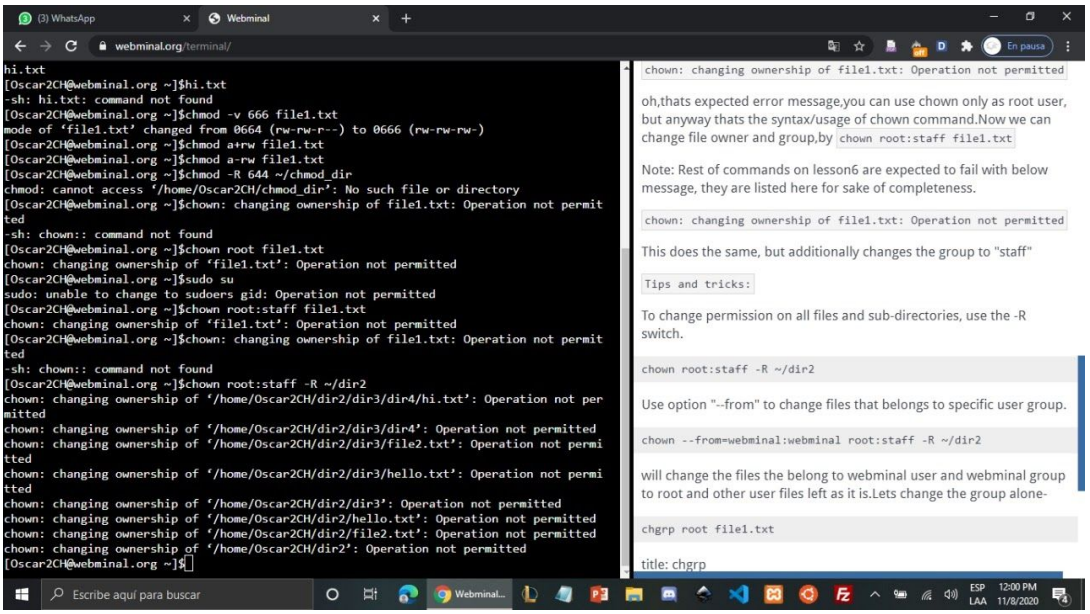
Lesson 6



```
hi.txt
[Oscar2CH@webminal.org ~]$hi.txt
-sh: hi.txt: command not found
[Oscar2CH@webminal.org ~]$chmod -v 666 file1.txt
mode of ‘file1.txt’ changed from 0664 (rw-rw-r--) to 0666 (rw-rw-rw-)
[Oscar2CH@webminal.org ~]$chmod a+rw file1.txt
[Oscar2CH@webminal.org ~]$chmod a-rw file1.txt
[Oscar2CH@webminal.org ~]$chmod -R 644 ~/chmod_dir
chmod: cannot access ‘/home/Oscar2CH/chmod_dir’: No such file or directory
[Oscar2CH@webminal.org ~]$chown: changing ownership of file1.txt: Operation not permit
ted
-sh: chown:: command not found
[Oscar2CH@webminal.org ~]$chown root file1.txt
chown: changing ownership of ‘file1.txt’: Operation not permitted
[Oscar2CH@webminal.org ~]$sudo su
sudo: unable to change to sudoers gid: Operation not permitted
[Oscar2CH@webminal.org ~]$chown root:staff file1.txt
chown: changing ownership of ‘file1.txt’: Operation not permitted
[Oscar2CH@webminal.org ~]$chown: changing ownership of file1.txt: Operation not permit
ted
-sh: chown:: command not found
[Oscar2CH@webminal.org ~]$chown root:staff -R ~/dir2
chown: changing ownership of ‘/home/Oscar2CH/dir2/dir3/dir4/hi.txt’: Operation not per
mitted
chown: changing ownership of ‘/home/Oscar2CH/dir2/dir3/dir4’: Operation not permitted
chown: changing ownership of ‘/home/Oscar2CH/dir2/dir3/file2.txt’: Operation not permi
tted
chown: changing ownership of ‘/home/Oscar2CH/dir2/dir3/hello.txt’: Operation not permi
tted
chown: changing ownership of ‘/home/Oscar2CH/dir2/dir3’: Operation not permitted
chown: changing ownership of ‘/home/Oscar2CH/dir2/hello.txt’: Operation not permitted
chown: changing ownership of ‘/home/Oscar2CH/dir2/file2.txt’: Operation not permitted
chown: changing ownership of ‘/home/Oscar2CH/dir2’: Operation not permitted
[Oscar2CH@webminal.org ~]$
```

`chown: changing ownership of file1.txt: Operation not permitted`

oh,thats expected error message,you can use chown only as root user, but anyway thats the syntax/usage of chown command.Now we can change file owner and group,by `chown root:staff file1.txt`

Note: Rest of commands on lesson6 are expected to fail with below message, they are listed here for sake of completeness.

`chown: changing ownership of file1.txt: Operation not permitted`

This does the same, but additionally changes the group to "staff"

`Tips and tricks:`

To change permission on all files and sub-directories, use the -R switch.

```
chown root:staff -R ~/dir2
```

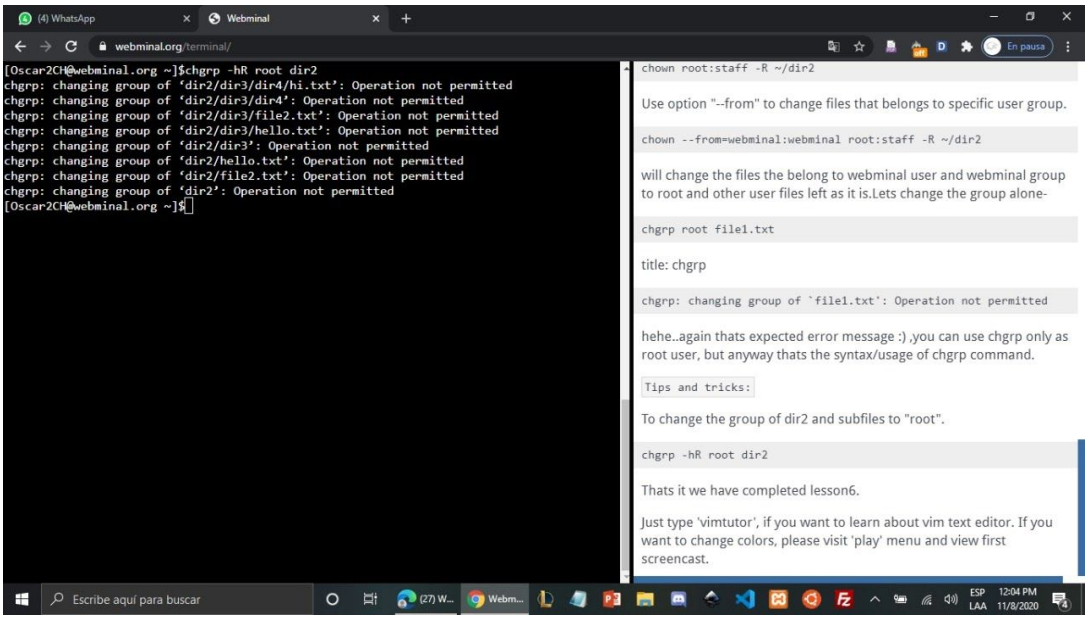
Use option "--from" to change files that belongs to specific user group.

```
chown --from=webminal:webminal root:staff -R ~/dir2
```

will change the files the belong to webminal user and webminal group to root and other user files left as it is.Lets change the group alone-

```
chgrp root file1.txt
```

title: chgrp



```
[Oscar2CH@webminal.org ~]$chgrp -hR root dir2
chgrp: changing group of ‘dir2/dir3/dir4/hi.txt’: Operation not permitted
chgrp: changing group of ‘dir2/dir3/dir4’: Operation not permitted
chgrp: changing group of ‘dir2/dir3/file2.txt’: Operation not permitted
chgrp: changing group of ‘dir2/dir3/hello.txt’: Operation not permitted
chgrp: changing group of ‘dir2/dir3’: Operation not permitted
chgrp: changing group of ‘dir2/hello.txt’: Operation not permitted
chgrp: changing group of ‘dir2/file2.txt’: Operation not permitted
chgrp: changing group of ‘dir2’: Operation not permitted
[Oscar2CH@webminal.org ~]$
```


```
chown root:staff -R ~/dir2
```

Use option "--from" to change files that belongs to specific user group.

```
chown --from=webminal:webminal root:staff -R ~/dir2
```

will change the files the belong to webminal user and webminal group to root and other user files left as it is.Lets change the group alone-

```
chgrp root file1.txt
```

title: chgrp

`chgrp: changing group of `file1.txt': Operation not permitted`

hehe..again thats expected error message :) ,you can use chgrp only as root user, but anyway thats the syntax/usage of chgrp command.

`Tips and tricks:`

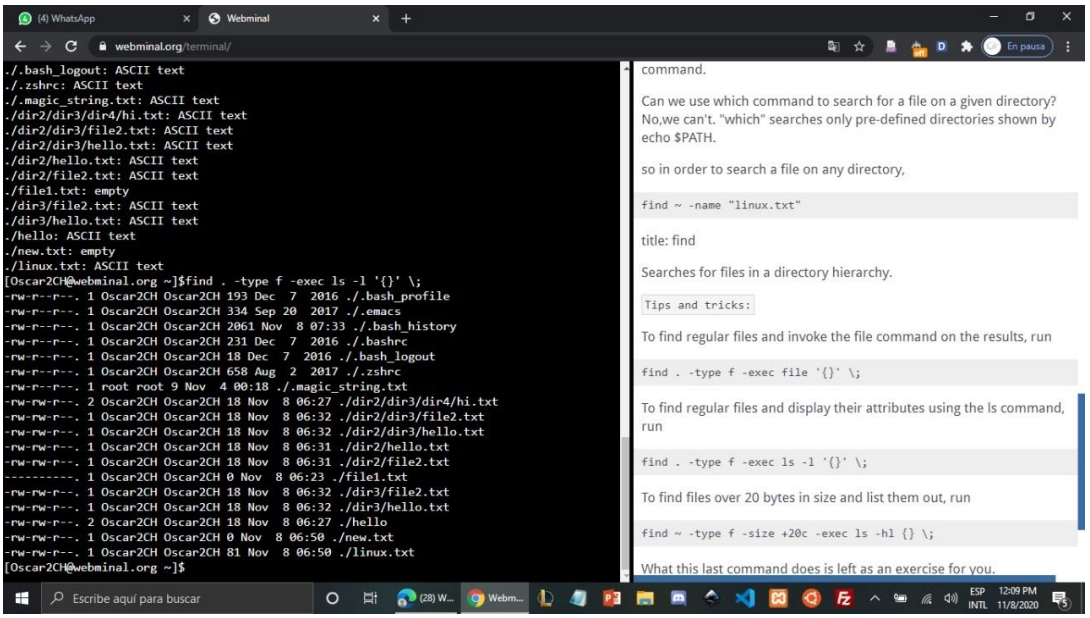
To change the group of dir2 and subfiles to "root".

```
chgrp -hR root dir2
```

Thats it we have completed lesson6.

Just type 'vimtutor', if you want to learn about vim text editor. If you want to change colors, please visit 'play' menu and view first screencast.

Lesson 7



```
./.bash_logout: ASCII text
./.zshrc: ASCII text
./.magic_string.txt: ASCII text
./dir2/dir3/dir4/hi.txt: ASCII text
./dir2/dir3/file2.txt: ASCII text
./dir2/dir3/hello.txt: ASCII text
./dir2/hello.txt: ASCII text
./dir2/file2.txt: ASCII text
./file1.txt: empty
./dir3/file2.txt: ASCII text
./dir3/hello.txt: ASCII text
./hello: ASCII text
./new.txt: empty
./linux.txt: ASCII text
[Oscar2CH@webminal.org ~]$find . -type f -exec ls -l '{}' \;
-rw-r--r--. 1 Oscar2CH Oscar2CH 193 Dec  7  2016 ./.bash_profile
-rw-r--r--. 1 Oscar2CH Oscar2CH 334 Sep 20  2017 ./.emacs
-rw-r--r--. 1 Oscar2CH Oscar2CH 2061 Nov  8 07:33 ./.bash_history
-rw-r--r--. 1 Oscar2CH Oscar2CH 231 Dec  7  2016 ./.bashrc
-rw-r--r--. 1 Oscar2CH Oscar2CH 18 Dec  7  2016 ./.bash_logout
-rw-r--r--. 1 Oscar2CH Oscar2CH 658 Aug  2  2017 ./.zshrc
-rw-r--r--. 1 root root 9 Nov  4 00:18 ./.magic_string.txt
-rw-rw-r--. 2 Oscar2CH Oscar2CH 18 Nov  8 06:27 ./dir2/dir3/dir4/hi.txt
-rw-rw-r--. 1 Oscar2CH Oscar2CH 18 Nov  8 06:32 ./dir2/dir3/file2.txt
-rw-rw-r--. 1 Oscar2CH Oscar2CH 18 Nov  8 06:32 ./dir2/dir3/hello.txt
-rw-rw-r--. 1 Oscar2CH Oscar2CH 18 Nov  8 06:31 ./dir2/hello.txt
-rw-rw-r--. 1 Oscar2CH Oscar2CH 18 Nov  8 06:31 ./dir2/file2.txt
----------. 1 Oscar2CH Oscar2CH 0 Nov  8 06:23 ./file1.txt
-rw-rw-r--. 1 Oscar2CH Oscar2CH 18 Nov  8 06:32 ./dir3/file2.txt
-rw-rw-r--. 1 Oscar2CH Oscar2CH 18 Nov  8 06:32 ./dir3/hello.txt
-rw-rw-r--. 2 Oscar2CH Oscar2CH 18 Nov  8 06:27 ./hello
-rw-rw-r--. 1 Oscar2CH Oscar2CH 0 Nov  8 06:50 ./new.txt
-rw-rw-r--. 1 Oscar2CH Oscar2CH 81 Nov  8 06:50 ./linux.txt
[Oscar2CH@webminal.org ~]$
```

command.

Can we use which command to search for a file on a given directory? No,we can't. "which" searches only pre-defined directories shown by echo $PATH.

so in order to search a file on any directory,

```
find ~ -name "linux.txt"
```

title: find

Searches for files in a directory hierarchy.

```
Tips and tricks:
```

To find regular files and invoke the file command on the results, run

```
find . -type f -exec file '{}' \;
```

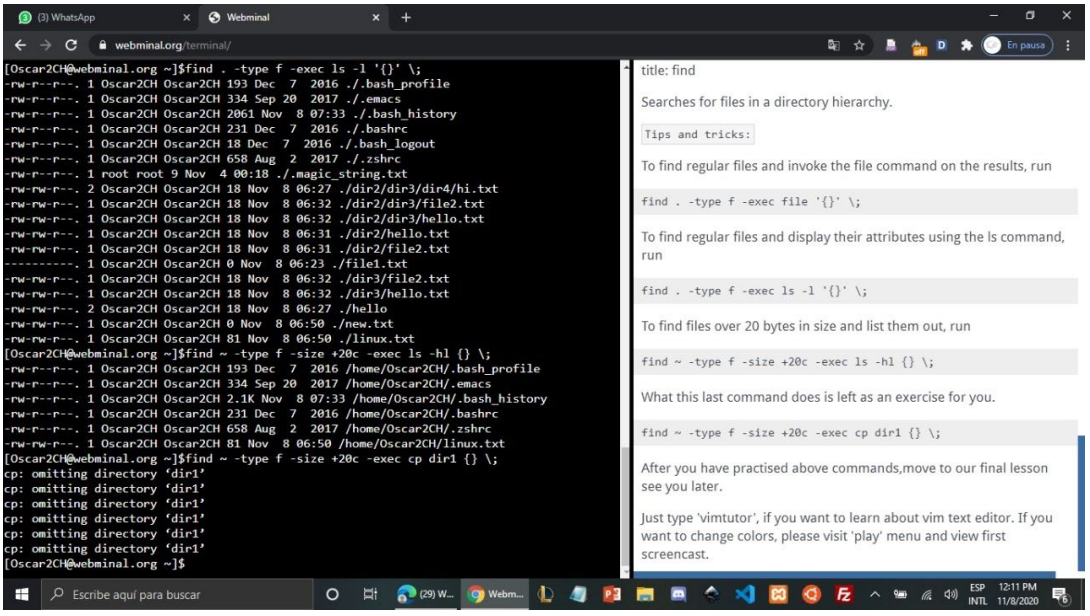
To find regular files and display their attributes using the ls command, run

```
find . -type f -exec ls -l '{}' \;
```

To find files over 20 bytes in size and list them out, run

```
find ~ -type f -size +20c -exec ls -hl {} \;
```

What this last command does is left as an exercise for you.



```
[Oscar2CH@webminal.org ~]$find . -type f -exec ls -l '{}' \;
-rw-r--r--. 1 Oscar2CH Oscar2CH 193 Dec  7  2016 ./.bash_profile
-rw-r--r--. 1 Oscar2CH Oscar2CH 334 Sep 20  2017 ./.emacs
-rw-r--r--. 1 Oscar2CH Oscar2CH 2061 Nov  8 07:33 ./.bash_history
-rw-r--r--. 1 Oscar2CH Oscar2CH 231 Dec  7  2016 ./.bashrc
-rw-r--r--. 1 Oscar2CH Oscar2CH 18 Dec  7  2016 ./.bash_logout
-rw-r--r--. 1 Oscar2CH Oscar2CH 658 Aug  2  2017 ./.zshrc
-rw-r--r--. 1 root root 9 Nov  4 00:18 ./.magic_string.txt
-rw-rw-r--. 2 Oscar2CH Oscar2CH 18 Nov  8 06:27 ./dir2/dir3/dir4/hi.txt
-rw-rw-r--. 1 Oscar2CH Oscar2CH 18 Nov  8 06:32 ./dir2/dir3/file2.txt
-rw-rw-r--. 1 Oscar2CH Oscar2CH 18 Nov  8 06:32 ./dir2/dir3/hello.txt
-rw-rw-r--. 1 Oscar2CH Oscar2CH 18 Nov  8 06:31 ./dir2/hello.txt
-rw-rw-r--. 1 Oscar2CH Oscar2CH 18 Nov  8 06:31 ./dir2/file2.txt
----------. 1 Oscar2CH Oscar2CH 0 Nov  8 06:23 ./file1.txt
-rw-rw-r--. 1 Oscar2CH Oscar2CH 18 Nov  8 06:32 ./dir3/file2.txt
-rw-rw-r--. 1 Oscar2CH Oscar2CH 18 Nov  8 06:32 ./dir3/hello.txt
-rw-rw-r--. 2 Oscar2CH Oscar2CH 18 Nov  8 06:27 ./hello
-rw-rw-r--. 1 Oscar2CH Oscar2CH 0 Nov  8 06:50 ./new.txt
-rw-rw-r--. 1 Oscar2CH Oscar2CH 81 Nov  8 06:50 ./linux.txt
[Oscar2CH@webminal.org ~]$find ~ -type f -size +20c -exec ls -hl {} \;
-rw-r--r--. 1 Oscar2CH Oscar2CH 193 Dec  7  2016 /home/Oscar2CH/.bash_profile
-rw-r--r--. 1 Oscar2CH Oscar2CH 334 Sep 20  2017 /home/Oscar2CH/.emacs
-rw-r--r--. 1 Oscar2CH Oscar2CH 2.1K Nov  8 07:33 /home/Oscar2CH/.bash_history
-rw-r--r--. 1 Oscar2CH Oscar2CH 231 Dec  7  2016 /home/Oscar2CH/.bashrc
-rw-r--r--. 1 Oscar2CH Oscar2CH 658 Aug  2  2017 /home/Oscar2CH/.zshrc
-rw-rw-r--. 1 Oscar2CH Oscar2CH 81 Nov  8 06:50 /home/Oscar2CH/linux.txt
[Oscar2CH@webminal.org ~]$find ~ -type f -size +20c -exec cp dir1 {} \;
cp: omitting directory ‘dir1’
cp: omitting directory ‘dir1’
cp: omitting directory ‘dir1’
cp: omitting directory ‘dir1’
cp: omitting directory ‘dir1’
cp: omitting directory ‘dir1’
[Oscar2CH@webminal.org ~]$
```

title: find

Searches for files in a directory hierarchy.

Tips and tricks:

To find regular files and invoke the file command on the results, run

find . -type f -exec file '{}' \;

To find regular files and display their attributes using the ls command, run

find . -type f -exec ls -l '{}' \;

To find files over 20 bytes in size and list them out, run

find ~ -type f -size +20c -exec ls -hl {} \;

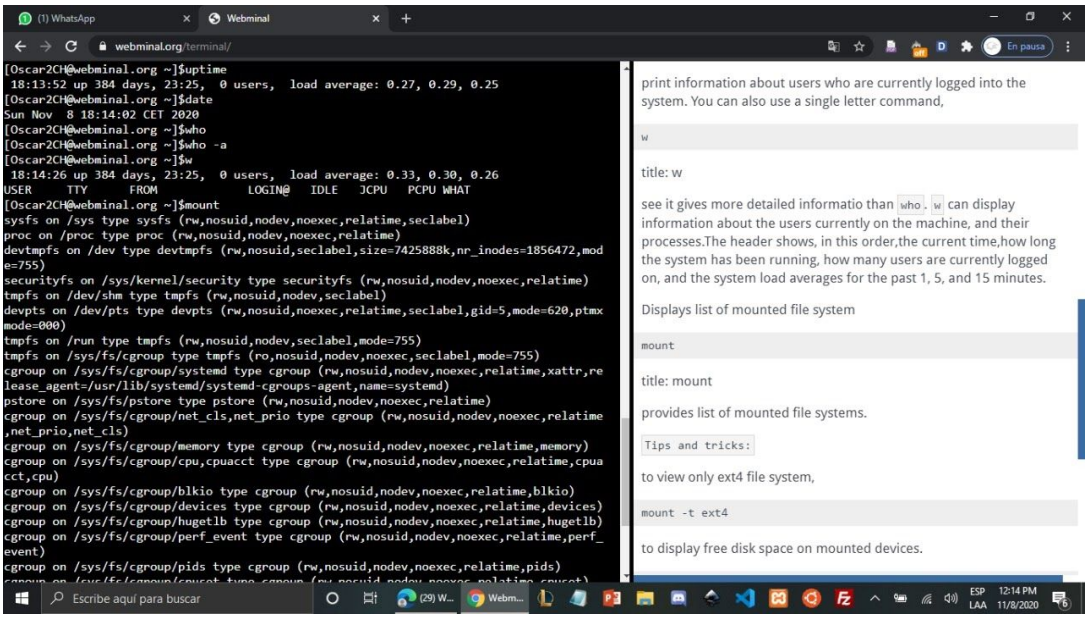
What this last command does is left as an exercise for you.

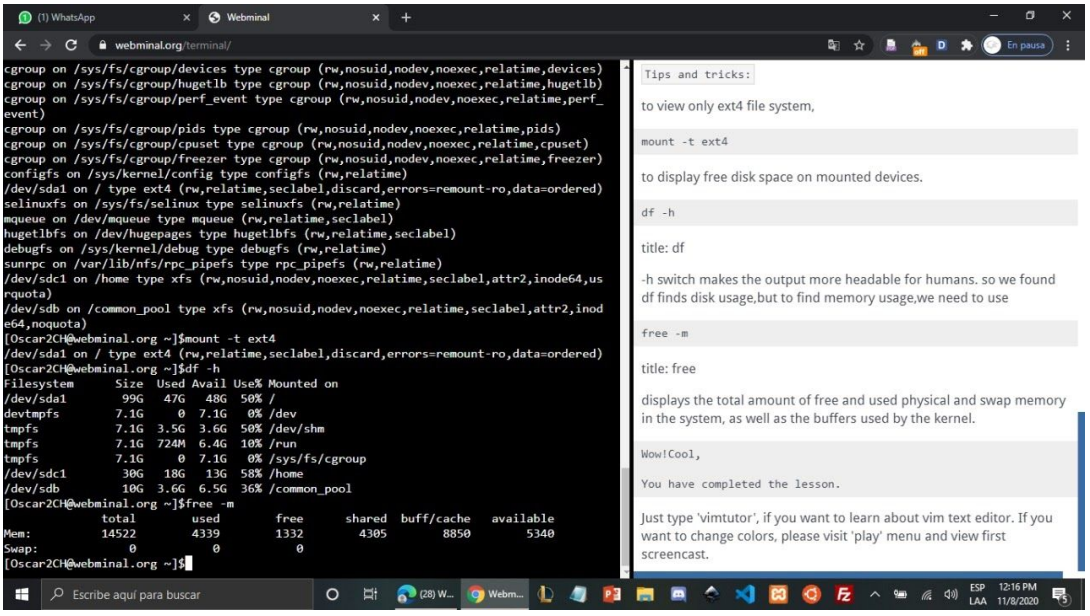
```
find ~ -type f -size +20c -exec cp dir1 {} \;
```

After you have practised above commands,move to our final lesson see you later.

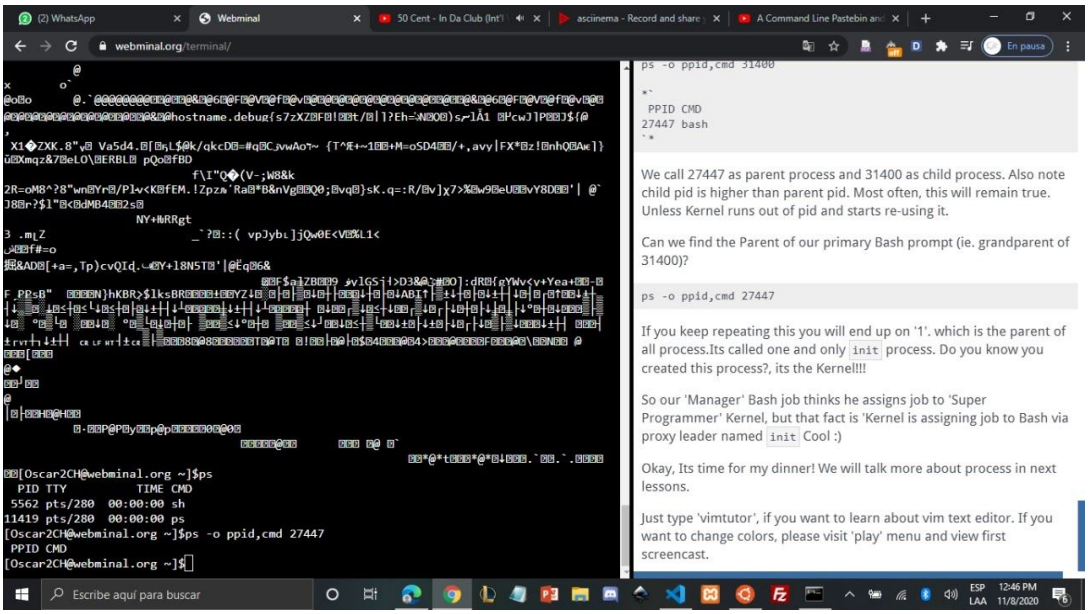
Just type 'vimtutor', if you want to learn about vim text editor. If you want to change colors, please visit 'play' menu and view first screencast.

Lesson 8

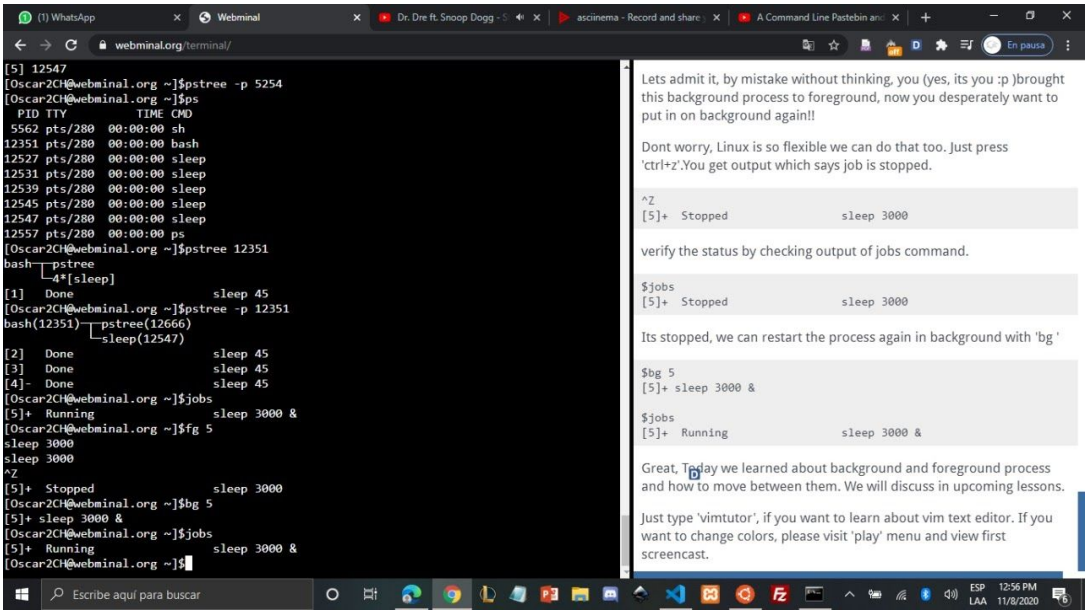

(1) WhatsApp
Webminal
webminal.org/terminal/
[Oscar2CH@webminal.org ~]$uptime
18:13:52 up 384 days, 23:25, 0 users, load average: 0.27, 0.29, 0.25
[Oscar2CH@webminal.org ~]$date
Sun Nov 8 18:14:02 CET 2020
[Oscar2CH@webminal.org ~]$who
[Oscar2CH@webminal.org ~]$who -a
[Oscar2CH@webminal.org ~]$w
18:14:26 up 384 days, 23:25, 0 users, load average: 0.33, 0.30, 0.26
USER TTY FROM LOGIN@ IDLE JCPU PCPU WHAT
[Oscar2CH@webminal.org ~]$mount
sysfs on /sys type sysfs (rw,nosuid,nodev,noexec,relatime,seclabel)
proc on /proc type proc (rw,nosuid,nodev,noexec,relatime)
devtmpfs on /dev type devtmpfs (rw,nosuid,seclabel,size=7425888k,nr_inodes=1856472,mode=755)
securityfs on /sys/kernel/security type securityfs (rw,nosuid,nodev,noexec,relatime)
tmpfs on /dev/shm type tmpfs (rw,nosuid,nodev,seclabel)
devpts on /dev/pts type devpts (rw,nosuid,noexec,relatime,seclabel,gid=5,mode=620,ptmxmode=000)
tmpfs on /run type tmpfs (rw,nosuid,nodev,seclabel,mode=755)
tmpfs on /sys/fs/cgroup type tmpfs (ro,nosuid,nodev,noexec,seclabel,mode=755)
cgroup on /sys/fs/cgroup/systemd type cgroup (rw,nosuid,nodev,noexec,relatime,xattr,release_agent=/usr/lib/systemd/systemd-cgroups-agent,name=systemd)
pstore on /sys/fs/pstore type pstore (rw,nosuid,nodev,noexec,relatime)
cgroup on /sys/fs/cgroup/net_cls,net_prio type cgroup (rw,nosuid,nodev,noexec,relatime,net_prio,net_cls)
cgroup on /sys/fs/cgroup/memory type cgroup (rw,nosuid,nodev,noexec,relatime,memory)
cgroup on /sys/fs/cgroup/cpu,cpuacct type cgroup (rw,nosuid,nodev,noexec,relatime,cpuacct,cpu)
cgroup on /sys/fs/cgroup/blkio type cgroup (rw,nosuid,nodev,noexec,relatime,blkio)
cgroup on /sys/fs/cgroup/devices type cgroup (rw,nosuid,nodev,noexec,relatime,devices)
cgroup on /sys/fs/cgroup/hugetlb type cgroup (rw,nosuid,nodev,noexec,relatime,hugetlb)
cgroup on /sys/fs/cgroup/perf_event type cgroup (rw,nosuid,nodev,noexec,relatime,perf_event)
cgroup on /sys/fs/cgroup/pids type cgroup (rw,nosuid,nodev,noexec,relatime,pids)
print information about users who are currently logged into the system. You can also use a single letter command,
w
title: w
see it gives more detailed informatio than who . w can display information about the users currently on the machine, and their processes.The header shows, in this order,the current time,how long the system has been running, how many users are currently logged on, and the system load averages for the past 1, 5, and 15 minutes.
Displays list of mounted file system
mount
title: mount
provides list of mounted file systems.
Tips and tricks:
to view only ext4 file system,
mount -t ext4
to display free disk space on mounted devices.
Escribe aquí para buscar
ESP LAA 12:14 PM 11/8/2020


(1) WhatsApp
Webminal
webminal.org/terminal/
cgroup on /sys/fs/cgroup/devices type cgroup (rw,nosuid,nodev,noexec,relatime,devices)
cgroup on /sys/fs/cgroup/hugetlb type cgroup (rw,nosuid,nodev,noexec,relatime,hugetlb)
cgroup on /sys/fs/cgroup/perf_event type cgroup (rw,nosuid,nodev,noexec,relatime,perf_event)
cgroup on /sys/fs/cgroup/pids type cgroup (rw,nosuid,nodev,noexec,relatime,pids)
cgroup on /sys/fs/cgroup/cpuset type cgroup (rw,nosuid,nodev,noexec,relatime,cpuset)
cgroup on /sys/fs/cgroup/freezer type cgroup (rw,nosuid,nodev,noexec,relatime,freezer)
configfs on /sys/kernel/config type configfs (rw,relatime)
/dev/sda1 on / type ext4 (rw,relatime,seclabel,discard,errors=remount-ro,data=ordered)
selinuxfs on /sys/fs/selinux type selinuxfs (rw,relatime)
mqueue on /dev/mqueue type mqueue (rw,relatime,seclabel)
hugetlbfs on /dev/hugepages type hugetlbfs (rw,relatime,seclabel)
debugfs on /sys/kernel/debug type debugfs (rw,relatime)
sunrpc on /var/lib/nfs/rpc_pipefs type rpc_pipefs (rw,relatime)
/dev/sdc1 on /home type xfs (rw,nosuid,nodev,noexec,relatime,seclabel,attr2,inode64,usrquota)
/dev/sdb on /common_pool type xfs (rw,nosuid,nodev,noexec,relatime,seclabel,attr2,inode64,noquota)
[Oscar2CH@webminal.org ~]$mount -t ext4
/dev/sda1 on / type ext4 (rw,relatime,seclabel,discard,errors=remount-ro,data=ordered)
[Oscar2CH@webminal.org ~]$df -h
Filesystem Size Used Avail Use% Mounted on
/dev/sda1 99G 47G 48G 50% /
devtmpfs 7.1G 0 7.1G 0% /dev
tmpfs 7.1G 3.5G 3.6G 50% /dev/shm
tmpfs 7.1G 724M 6.4G 10% /run
tmpfs 7.1G 0 7.1G 0% /sys/fs/cgroup
/dev/sdc1 30G 18G 13G 58% /home
/dev/sdb 10G 3.6G 6.5G 36% /common_pool
[Oscar2CH@webminal.org ~]$free -m
total used free shared buff/cache available
Mem: 14522 4339 1332 4305 8850 5340
Swap: 0 0 0
[Oscar2CH@webminal.org ~]$
Tips and tricks:
to view only ext4 file system,
mount -t ext4
to display free disk space on mounted devices.
df -h
title: df
-h switch makes the output more headable for humans. so we found df finds disk usage,but to find memory usage,we need to use
free -m
title: free
displays the total amount of free and used physical and swap memory in the system, as well as the buffers used by the kernel.
Wow!Cool,
You have completed the lesson.
Just type 'vimtutor', if you want to learn about vim text editor. If you want to change colors, please visit 'play' menu and view first screencast.
Escribe aquí para buscar
ESP LAA 12:16 PM 11/8/2020

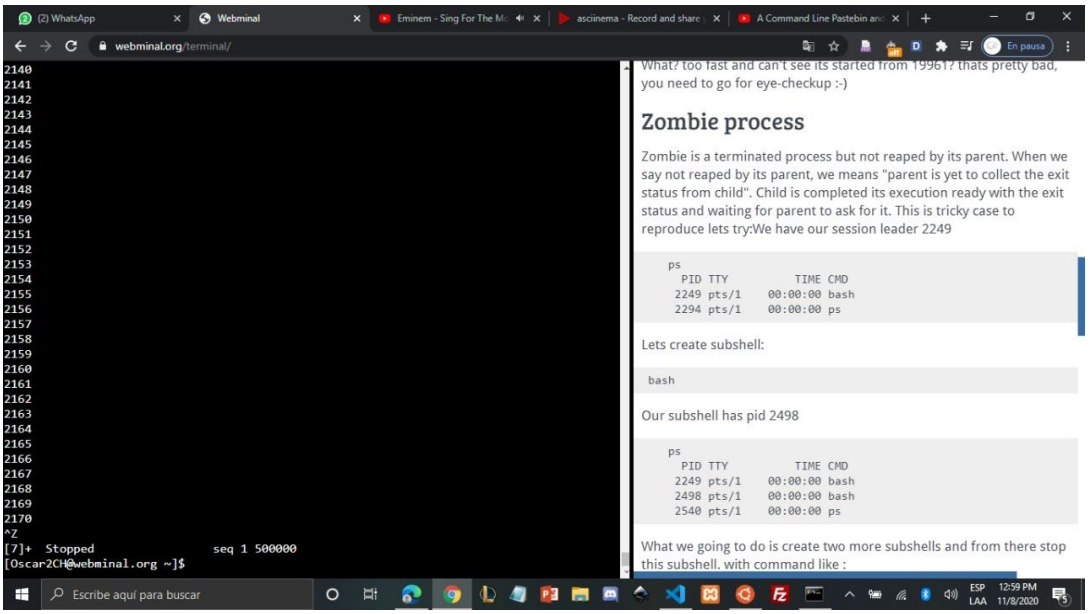
Lesson 9

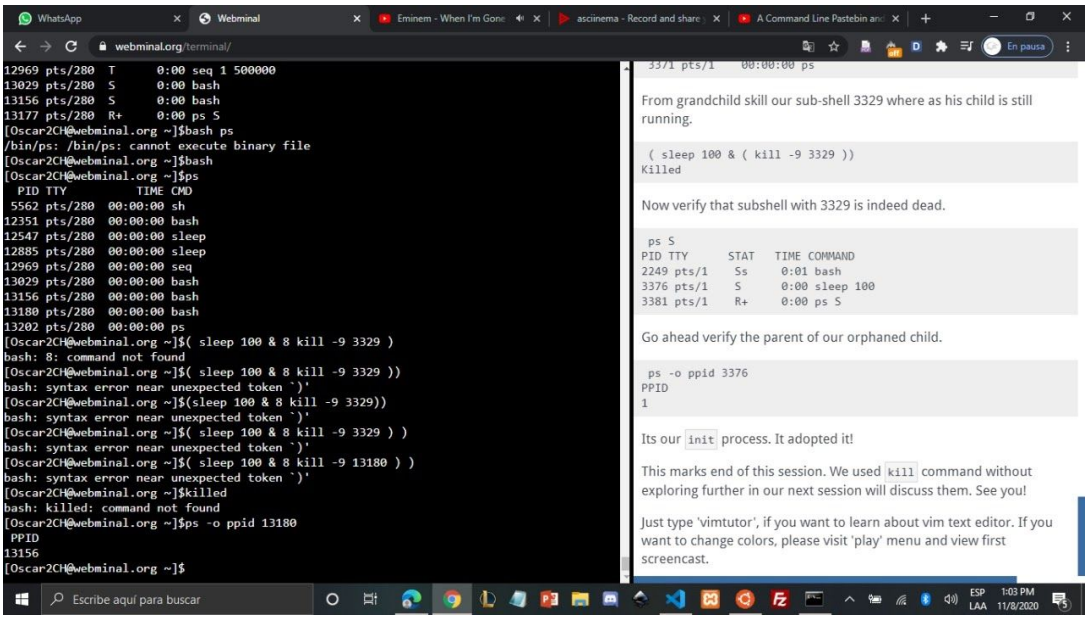


Lesson 10



Lesson 11


webminal.org/terminal/
2140
2141
2142
2143
2144
2145
2146
2147
2148
2149
2150
2151
2152
2153
2154
2155
2156
2157
2158
2159
2160
2161
2162
2163
2164
2165
2166
2167
2168
2169
2170
^Z
[7]+ Stopped seq 1 500000
[Oscar2CH@webminal.org ~]$
What? too fast and can't see its started from 19961? thats pretty bad, you need to go for eye-checkup :-)
Zombie process
Zombie is a terminated process but not reaped by its parent. When we say not reaped by its parent, we means "parent is yet to collect the exit status from child". Child is completed its execution ready with the exit status and waiting for parent to ask for it. This is tricky case to reproduce lets try:We have our session leader 2249
ps
PID TTY TIME CMD
2249 pts/1 00:00:00 bash
2294 pts/1 00:00:00 ps
Lets create subshell:
bash
Our subshell has pid 2498
ps
PID TTY TIME CMD
2249 pts/1 00:00:00 bash
2498 pts/1 00:00:00 bash
2540 pts/1 00:00:00 ps
What we going to do is create two more subshells and from there stop this subshell. with command like :


webminal.org/terminal/
12969 pts/280 T 0:00 seq 1 500000
13029 pts/280 S 0:00 bash
13156 pts/280 S 0:00 bash
13177 pts/280 R+ 0:00 ps S
[Oscar2CH@webminal.org ~]$bash ps
/bin/ps: /bin/ps: cannot execute binary file
[Oscar2CH@webminal.org ~]$bash
[Oscar2CH@webminal.org ~]$ps
PID TTY TIME CMD
5562 pts/280 00:00:00 sh
12351 pts/280 00:00:00 bash
12547 pts/280 00:00:00 sleep
12885 pts/280 00:00:00 sleep
12969 pts/280 00:00:00 seq
13029 pts/280 00:00:00 bash
13156 pts/280 00:00:00 bash
13180 pts/280 00:00:00 bash
13202 pts/280 00:00:00 ps
[Oscar2CH@webminal.org ~]$(sleep 100 & 8 kill -9 3329)
bash: 8: command not found
[Oscar2CH@webminal.org ~]$(sleep 100 & 8 kill -9 3329))
bash: syntax error near unexpected token `)'
[Oscar2CH@webminal.org ~]$(sleep 100 & 8 kill -9 3329))
bash: syntax error near unexpected token `)'
[Oscar2CH@webminal.org ~]$(sleep 100 & 8 kill -9 3329))
bash: syntax error near unexpected token `)'
[Oscar2CH@webminal.org ~]$(sleep 100 & 8 kill -9 13180))
bash: syntax error near unexpected token `)'
[Oscar2CH@webminal.org ~]$killed
bash: killed: command not found
[Oscar2CH@webminal.org ~]$ps -o ppid 13180
PPID
13156
[Oscar2CH@webminal.org ~]$
From grandchild skill our sub-shell 3329 where as his child is still running.
(sleep 100 & (kill -9 3329))
Killed
Now verify that subshell with 3329 is indeed dead.
ps S
PID TTY STAT TIME COMMAND
2249 pts/1 Ss 0:01 bash
3376 pts/1 S 0:00 sleep 100
3381 pts/1 R+ 0:00 ps S
Go ahead verify the parent of our orphaned child.
ps -o ppid 3376
PPID
1
Its our init process. It adopted it!
This marks end of this session. We used kill command without exploring further in our next session will discuss them. See you!
Just type 'vimtutor', if you want to learn about vim text editor. If you want to change colors, please visit 'play' menu and view first screencast.