

Basic Linux Commands (Part 2)

Due date

- End of Week 4 lab class

Evaluation

- 3% of final grade.

Submission

Hand in or email (in email subject line: CST8102-15W lab3 submission) completed lab before due date.

Materials

- Student laptop computer
- Ubuntu 14.04.1 installed in VMWare Workstation

Procedure

Command touch

The **touch** command updates different time stamps. As a side benefit it is used to create empty files.

Exercise #1: Creating empty files & updating the modification time

1) user@localhost :~\$ **touch clock**

2) user@localhost :~\$ **ls -l clock**

- Record the time stamp:

```
-rw-rw-r-- 1 user1 user1 0 Jan 18 10:05 clock
```

3) user@localhost :~\$ **sleep 61**

Wait for one minute.

4) user@localhost :~\$ **touch clock**

5) user@localhost :~\$ **ls -l clock**

- Record the time stamp:

```
-rw-rw-r-- 1 user1 user1 0 Jan 18 10:07 clock
```

Command: cp

The **cp** command makes a copy of an existing set of files or directories into another area of the system.

The syntax for the cp command is:

- **cp [-r] source destination**

Exercise #2: Copying files to a directory

1) user@localhost :~\$ **mkdir lab3ex**

2) user@localhost :~\$ **cd lab3ex**

3) user@localhost :~/lab3ex\$ **touch f1 f2 f3**

4) user@localhost :~/lab3ex\$ **ls**

- What is the output of that command?

```
f1 f2 f3
```

5) user@localhost :~/lab3ex\$ **mkdir lab3**

6) user@localhost :~/lab3ex\$ **ls**

- What is the output of that command?

f1 f2 f3 lab3

7) user@localhost :~/lab3ex\$ **cp f1 f2 f3 lab3**

8) user@localhost :~/lab3ex\$ **ls lab3**

- What is the output of that command?

f1 f2 f3

9) user@localhost :~/lab3ex\$ **mkdir coffee**

10) user@localhost :~/lab3ex\$ **cd coffee**

11) user@localhost :~/lab3ex/coffee\$ **touch cream sugar**

12) user@localhost :~/lab3ex/coffee\$ **cd ..**

13) user@localhost :~/lab3ex\$ **cp coffee/cream coffee/sugar lab3**

14) user@localhost :~/lab3ex\$ **ls lab3**

- What is the output of the command?

cream f1 f2 f3 sugar

Exercise #3: Copying directories to a directory (-r option)

1) user@localhost :~/lab3ex\$ **mkdir dir1 dir2 dir3**

- Record the command that you use to verify that the directories have been created? ls

2) user@localhost :~/lab3ex\$ **cp dir1 dir2 dir3 lab3**

- Record one of the messages displayed on the screen:

cp: omitting directory 'dir1'

3) user@localhost :~/lab3ex\$ **ls lab3**

- Have the directories been copied? No

4) user@localhost :~/lab3ex\$ **cp -r dir1 dir2 dir3 lab3**

5) user@localhost :~/lab3ex\$ **ls lab3**

- Have the directories been copied? Yes

6) user@localhost:~/lab3ex\$ **sudo apt-get install tree**

- *(hint: the above command installs “tree” command which is not included in the default Ubuntu installation)*

7) user@localhost:~/lab3ex\$ **tree**

Exercise #4: Copying directories to a directory , cont'd (-r & --parents option)

1) user@localhost :~/lab3ex\$ **mkdir -p parent/child**

2) user@localhost :~/lab3ex\$ **cd parent ; touch f1 ; cd ..**

3) user@localhost :~/lab3ex\$ **cp -r --parents parent/child lab3**

4) user@localhost :~/lab3ex\$ **tree lab3**

What is the output of the command?

```
lab3
├── cream
├── dir1
├── dir2
├── dir3
├── f1
├── f2
├── f3
├── parent
│   └── child
└── sugar
```

Command: mv

The **mv**, for Move File or Directory, command moves files and directories to a different directory. It is also used to rename files within the same directory.

The syntax for the mv command is:

- **mv source destination**

Exercise #5: Renaming files

- 1) user@localhost :~/lab3ex\$ **cd lab3**
- 2) user@localhost :~/lab3ex/lab3\$ **mv f1 m1**
- 3) user@localhost :~/lab3ex/lab3\$ **ls**
 - Has the file been renamed from **f1** to **m1**?

Yes

Exercise #6: Moving files

- 1) user@localhost :~/lab3ex/lab3\$ **touch red green blue**
- 2) user@localhost :~/lab3ex/lab3\$ **mkdir colors**
- 3) user@localhost :~/lab3ex/lab3\$ **mv red green blue**
- 4) Record the error message:
 - **mv: target 'blue' is not a directory**
- 5) user@localhost :~/lab3ex/lab3\$ **mv red green blue colors**
- 6) user@localhost :~/lab3ex/lab3\$ **ls**
 - Are the files red, green and blue still in the current directory?

No

- 7) user@localhost :~/lab3ex/lab3\$ **ls colors**
 - Have the files been moved?

Yes

Exercise #7: Moving directories

1) user@localhost :~/lab3ex/lab3\$ **mkdir toddlers children sandbox**

2) user@localhost :~/lab3ex/lab3\$ **mv toddlers children sandbox**

- Are the toddlers and children in the **sandbox**?

Yes

3) user@localhost :~/lab3ex/lab3\$ **cd ..**

Command: rm

The **rm** or Remove Files or Directory command allows you to delete the content of any directory. It is both a dangerous and useful command because of its flexibility. Unlike DOS and Windows, a file that is deleted in Linux is gone.

The syntax for the rm command is:

- **rm file_list**

Exercise #8: Deleting files

1) user@localhost :~/lab3ex\$ **cd lab3/sandbox**

2) user@localhost :~/lab3ex/lab3/sandbox\$ **touch child1 child2 child3**

3) user@localhost :~/lab3ex/lab3/sandbox\$ **ls**

- Are child1,child2 and child3 in the sandbox? Yes

4) user@localhost :~/lab3ex/lab3/sandbox\$ **rm child1 child2 child3**

5) user@localhost :~/lab3ex/lab3/sandbox\$ **ls**

- Are child1,child2 and child3 still in the sandbox? No

- 6) user@localhost :~/lab3ex/lab3/sandbox\$ **cd ..**
- 7) user@localhost :~/lab3ex/lab3\$ **rmdir sandbox**

- Record the error message

rmdir: failed to remove 'sandbox': Directory not empty

- 8) user@localhost :~/lab3ex/lab3\$ **cd ..**

Exercise #9: Deleting directories

- 1) user@localhost :~/lab3ex\$ **rmdir lab3**

- Record the error message:

rmdir: failed to remove 'lab3': Directory not empty

- 2) user@localhost :~/lab3ex\$ **rm -r lab3**

- Has the directory been deleted?

_____ yes _____

Command: cat

Cat is an utility to view, create, or append to small files.

Exercise #10: Viewing files with cat

- 1) user@localhost :~/lab3ex\$ **cd ; cat /etc/issue**
- 2) user@localhost :~\$ **cat /etc/fstab**
- 3) user@localhost :~\$ **cat /etc/issue /etc/fstab**
- 4) user@localhost :~\$ **cat .bashrc | more**

Exercise #11: Clear screen with command clear

- user@localhost :~\$ **clear**

Output redirection

Exercise #12: Redirect output to a file

- user@localhost:~\$ **ls -al ~/ > lsout**
- user@localhost:~\$ **cat lsout**
- user@localhost:~\$ **ls -al / > lsout**
- user@localhost:~\$ **cat lsout**

Is “lsout” overwritten? _____ **Yes** _____

- user@localhost:~/ \$ **ls -a /etc >> lsout**
- user@localhost:~/lab6\$ **cat lsout | more**

Is “lsout” overwritten? _____ **No** _____

Exercise #13: Not to overwrite a file

- user@localhost:~\$ **set -C**
- user@localhost:~\$ **ls /home > lsout**

Record the message: **bash: lsout: cannot overwrite existing file**

Review exercise

Assume that the commands listed below are executed in the **user’s home directory**.

1. **cd ; mkdir -p ~/lab3rv/linux**

2. `cd lab3rv/linux`
3. `touch ubuntu fedora`
4. `cp ubuntu fedora ../`
5. `cp fedora mint`
6. `mv fedora ~/lab3rv`
7. `mv ubuntu arch`
8. `mkdir -p ~/lab3rv/windows ; cd ~/lab3rv/windows`
9. `touch win7 win8`
10. `cp -r ~/lab3rv/windows ~/lab3rv/linux`
11. `cd ..`
12. `rm -r ~/lab3rv/windows`

Answer the following questions after executing the 12 commands above:

1. How many **directories** are created during the review exercise? (Including deleted directories) **4**

List them using absolute paths:

~/lab3rv
~/lab3rv/linux
~/lab3rv/windows
~/lab3rv/linux/windows

2. How many **regular files** remain in the directory **~/lab3rv**? 2
(Do not include files in sub-directories).

List them using absolute paths:

~/lab3rv/ubuntu

`~/lab3rv/fedora`

3. How many **regular files** are left in the directory `~/lab3rv/linux`?

_____ **2** _____

(Do not include files in sub-directories).

List them using relative paths (Assume the current directory is the user's home directory):

`lab3rv/linux/arch`

`lab3rv/linux/mint`

4. What is the **current** directory at the end of the review exercise?

`~/lab3rv`

5. How many directories are deleted successfully? _____ **1** _____

List them using absolute paths:

`~/lab3rv/windows`