Basic Linux Commands (Part 2)

Due date

- End of the day of Week 5 lab class

Evaluation

- 3% of final grade.

Submission

Submit completed lab using **Turnitin Assingment** on BlackBoard before due date.

Materials

1. Student laptop computer
2. Ubuntu 14.04.5 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

- user@localhost :~/lab3ex$ **`cd lab3`**
- user@localhost :~/lab3ex/lab3$ **`mv f1 m1`**
- 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:~/ $ **`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 arch`**
4. **`cp ubuntu fedora arch ~/lab3rv`**
5. **`cp ubuntu mint`**
6. **`mv fedora arch ../`**
7. **`mv ubuntu debian`**

8. `mkdir ~/lab3rv/android ; cd ~/lab3rv/android`
9. `touch lollipop nougat`
10. `cp –r ~/lab3rv/android ~/lab3rv/linux`
11. `cd ../linux`
12. `rm –r ~/lab3rv/android`

Answer the following questions after executing the 12 commands above:

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

   List them using absolute paths:

   ~/lab3rv
   ~/lab3rv/android
   ~/lab3rv/linux
   ~/lab3rv/linux/android

2. How many **regular files** remain in the directory ~/**lab3rv**? **3**
(Do not include files in sub-directories).
List them using absolute paths:
~/lab3rv/arch
~/lab3rv/fedora
~/lab3rv/ubuntu

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/debian

`lab3rv/linux/mint`

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

   `~/lab3rv/linux`

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

List them using absolute paths:

`~/lab3rv/android`