

The Linux File System (Part 1)

Due date

- End of Week 7 lab class

Evaluation

- 3% of final grade.

Hand in or email (in email subject line: CST8102-15W lab5 submission) completed lab before due date.

Materials

- Student laptop computer
- Ubuntu 14.04.1 installed in VMWare Workstation

Before you get started...

IMPORTANT – Create a full clone of your Ubuntu virtual machine in case you really mess things up. You should already have the clone that was created in lab1. In case you don't have it in place, create it again following the instructions in lab1.

Procedure

Exercise #1: Viewing existing partitions

To manage partitions, use the `/sbin/fdisk` command.

The syntax of the `fdisk` command is: `fdisk device_name`

- Create a directory called lab and make it your working directory
- Type `fdisk /dev/sda`
- Within the `fdisk` utility type `m` for a list of menu options at the "Command (`m` for help):" prompt
- Record the (one-character) `fdisk` command to:
 - display/list all partitions: `_p__`
 - create a new partition: `_n__`
 - delete a partition: `_d__`
 - list partition types: `_l__`
 - change a partition's system identification: `_t__`
 - save changes made to the partition table: `_w__`
 - exit `fdisk` without saving: `_q__`

- Select the option that lists the partition types and record the **system id** of the following types:
 - "Linux": `__83__`
 - "Linux swap": `__82__`

Exercise #2: Creating a partition

Add a new virtual hard drive in your Ubuntu virtual machine as demonstrated in the lecture period. Make it **2 GB** in size. **DO NOT USE YOUR EXISTING PARTITION (/dev/sda)!!!**

- 1) Create an primary partition:
 - The size of the primary partition is **400MB** and is of type "Linux"

- 2) Create another primary partition:
 - The size of the primary partition is **300 MB** and is of type of "Linux"
- 3) Create an extended partition to host three logical drives as the following: (keep in mind that you must make it large enough to encapsulate the logical drive described below. HINT: There will be problems if you try to make it exactly **1000MB**. You will need to experiment and perform some math):
 - The size of the first logical drive is **200MB** and is of type "Linux".
 - The size of the second logical drive is **300MB** and is of type "Linux".
 - The size of the third logical drive is **400MB** and is of type "Linux Swap".
- 4) Record the information on the partitions which have been created on the new 1.0GB hard drive:

List all the primary partitions on the new 2GB drive	/dev/sdb1 /dev/sdb2
Name the extended partition if one exists on the new 2 GB drive	/dev/sdb3
List all logical drives if they exist on the new 2GB drive	/dev/sdb5 /dev/sdb6 /dev/sdb7
Can you create additional primary partitions on the new 2GB drive?	Y, N and Why? One more primary partition can be created if there is free space available
Can you create additional logical drives on the new 2GB drive?	Y, N and why? More logical drives can be created if there is free space left in the extended partition

- Save the changes.
- Reboot by typing reboot.

Exercise #3: Deleting a partition

- Delete the logical drive of **200MB**.
- Save the changes.
- Reboot with command **reboot**
- What do you notice in terms of the partition numbering?

_____ **The previous /dev/sda7 is now dev/sda6** _____

Exercise #4: Basic commands review

- 1) Log in as the default user, what is your default prompt?

Answer varies

- 2) What does **whoami** return?

Answer varies

- 3) What does the command **uname** return?

Linux

- 4) To display Linux kernel version, you should type:

uname -r

- 5) Type **hostname** at command line, record the output

Answer varies

- 6) Type **pwd**. What does it display?

Answer varies

- 7) What does **wc -l /etc/passwd** display?

Answer varies

- 8) What is the purpose of **wc** command? (using **man** for help)

displays a count of lines, words, and characters in a file

- 9) Type the following commands and record the output:

```
touch lab51 lab52
```

```
ls -li lab51 lab52
```

Answer varies

10) Type **man ls** and see what the **-i** switch does. Explain what it does.

Display file index node number

11) What is the command to take you to your home directory? Be specific. Show two methods.

cd
cd ~

12) How many top-level subdirectories are located under the root(/) of the file system?

Answer varies

13) What command do you use to remove an empty directory?

rmdir

14) What command and options do you use to delete a complete directory structure including files stored in it?

rm -r

15) What is the command used to shutdown Linux immediately at command line? (Assume you log in as root)

shutdown -h now