# Assignment #5: Linux File System (Part 1) [3%]

This assignment relates to the following Course Learning Requirements:

CLR 2 – Using the knowledge of the purpose and function of operating system components, explore commands that provide and configure system information.

CLR 3 – Work with the GUI and command-line interfaces.

Objective of this Assignment:

This assignment covers Linux file system and user management commands.

# Pre-Assignment Instructions:

1. Launch the VMWare Workstation and run the Ubuntu Virtual Machine instance from last week.
2. Launch the Terminal Window.
3. Review the VMWare Cloning instructions (Brightspace -> Content -> Review -> VMWare Workstation VM Cloning)
4. Review the instructions to add a virtual hard drive (Brightspace -> Content -> Review -> VMWare Workstation Add Virtual Hard Drive)

Before you get started...

IMPORTANT – Create a full clone of your Ubuntu virtual machine in case you really mess things up. The instructions to create a clone of your Ubuntu Virtual Machine can be found in Brightspace (Content -> Review -> VMWare Workstation Cloning.

**Assignment Tasks:**

Follow the exercises by entering the commands and recording the results into the word file provided in this assignment. Once completed, upload the Word file to Brightspace.

Note: Whenever you are unsure of a command, you can look up the definition and usage using the keyword **man** (short for **manual page**) and the command name.

**Exercise #1: Viewing existing partitions**

Switch to root user with the command: **su - root**

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

The syntax of the fdisk command is: **fdisk device\_name**

1. Create a directory called **lab** and make it your working directory
2. Type fdisk /dev/sda
3. 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:

1. display/list all partitions: \_\_p\_\_
2. create a new partition: \_\_n\_\_
3. delete a partition: \_d\_\_\_
4. list partition types: \_\_l\_\_
5. change a partition's system identification: \_\_t\_\_
6. save changes made to the partition table: \_\_w\_\_
7. exit fdisk without saving: \_\_q\_

Select the option that lists the partition types and record the system id of the following types:

1. "Linux": \_\_0FC63DAF-8483-4772-8E79-3D69D8477DE4
2. "Linux swap": \_\_0657FD6D-A4AB-43C4-84E5-0933C84B4F4F

**Exercise #2: Creating a partition**

Add a new virtual hard drive in your Ubuntu virtual machine by following the instructions provided in Brightspace . Make it 2 GB in size. DO NOT USE YOUR EXISTING HARD DRIVE (/dev/sda)!!!

Create the following partitions using **fdisk** command:

1. Create a primary partition:

The size of the primary partition is 500MB and is of type “Linux”

1. Create another primary partition:

The size of the primary partition is 200 MB and is of type of “Linux”

1. 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 500MB 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 200MB and is of type "Linux Swap".

1. Print the partition table with **fdisk** command p and record the output:

Disk /dev/sdb: 2 GiB, 2147483648 bytes, 4194304 sectors

Disk model: VMware Virtual S

Units: sectors of 1 \* 512 = 512 bytes

Sector size (logical/physical): 512 bytes / 512 bytes

I/O size (minimum/optimal): 512 bytes / 512 bytes

Disklabel type: dos

Disk identifier: 0xd7681db0

Device Boot Start End Sectors Size Id Type

/dev/sdb1 2048 1026047 1024000 500M 83 Linux

/dev/sdb2 1026048 1435647 409600 200M 83 Linux

/dev/sdb3 1435648 3893247 2457600 1.2G 5 Extended

/dev/sdb5 1437696 2461695 1024000 500M 83 Linux

/dev/sdb6 2463744 3078143 614400 300M 83 Linux

/dev/sdb7 3080192 3489791 409600 200M 82 Linux swap / Solaris

1. Record the information on the partitions which have been created on the new 2GB hard drive and answer questions in the table below:

|  |  |
| --- | --- |
| List all the primary partitions on the new 2GB drive | /dev/sdb1 and /dev/sdb2 |
| Name the extended partition if one exists on the new 2 GB drive | /dev/sdb |
| 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? You can create one more primary partition, since you can have a total of 4 partitions, not counting what is inside of an extended partition |
| Can you create additional logical drives on the new 2GB drive? | Y, N and why? As many as wanted can be created within the extened partition, as long as they all fit within the 1200MB container. |

**Exercise #3: Deleting a partition**

1. Delete the logical drive of 300MB with fdisk command d
2. Print the partition table with fdisk command p
3. What do you notice in terms of the partition numbering?

\_the numbering adjusted itself to not leave a gap where the logical drive had been. In other words, the one named “sdb7” became “sdb6” when the original sdb6 had been deleted\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. Save the changes and quit fdisk with command w

**Exercise #4: Basic commands review**

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

tunr@tunr-virtual-machine:~$

1. What does whoami return? \_\_just my user name, “tunr”\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What does the command uname return? \_\_\_Linux\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. To display Linux kernel version, you should type: \_\_\_uname -v\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Type hostname at command line, record the output: \_\_\_\_tunr-virtual-machine\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. Type pwd. What does it display? \_\_current directory, which for me is “/home/tunr”\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. What does wc -l /etc/passwd display? \_\_50 /etc/passwd\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
7. What is the purpose of wc command? (using man for help) \_word, line, and byte count inside of files\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
8. Type the following commands and record the output: \_\_\_\_ 923004 lab51 969598 lab52 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**touch lab51 lab52**

**ls –i lab51 lab52**

1. Type man ls and see what the -i switch does. Explain what it does. \_\_shows the files unique inode number alongside filename\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. What is the command to take you to your home directory? Be specific. Show two methods. \_\_you can use “cd”, “cd ~” or cd+the absolute path of home\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. How many top-level subdirectories are located under the root(/) of the file system? \_\_\_\_\_17\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. What command do you use to remove an empty directory? \_\_\_\_\_rmdir + directory name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. What command and options do you use to delete a complete directory structure including files stored in it? \_\_\_\_\_\_rm -r directoryname\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. What is the command used to restart Linux immediately? (Assume you log in as root) \_\_\_\_\_\_reboot\_\_\_\_\_\_\_\_\_\_\_\_\_\_