**Lab 1: Basic Linux** (Chapter 1)

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| **BEFORE YOU START:**   * Rename this document by substituting out FirstNameLastName with your own. * This lab should be completed on any Linux terminal available to you. * Write the commands used to complete each task on the relevant line provided in this lab sheet. * Submit your renamed document to the relevant submission link on Blackboard BEFORE the specified deadline. |

1. **Getting Help with the** man **Command**

The man command provides a manual page for any command, detailing its usage, options, and arguments.

**Tasks:**

a) To find out more about the ls command, type: man ls

* Notice how it provides info such as the name of the command and a description
* To scroll further down the man page, press **Enter** each time, you will be presented with a list of options that can be used with the ls command e.g. -d and -D (upper and lowercase options have different purposes).
* Try pressing the b key – what happens? Rolls back 50 lines
* To exit or quit out of man pages press q.

b) Use the man command to find out what the chmod command does and what its u, g, and o options are for. **Hint:** man chmod

* What does it say that the chmod command does? Change file mod bits
* What it the u option of chmod for? user
* What is the g option of chmod for? group
* What is the o option of chmod for? others
* What option would you use with chmod to make a file readable and writable by the owner but only readable by everyone else? chmod 644

1. **Navigating the Linux Filesystem**

Use basic commands to navigate the Linux filesystem and view directories and files.

**Tasks:**

1. Print the full path of your current directory.
   * **Hint:** Use a command that stands for "print working directory."
   * **What is it?** pwd
2. List all the files and directories in your current directory in long format, including hidden files.
   * **Hint:** There are options for ls to display hidden files and use a long listing format.
   * **What is it?** Ls -l
3. Change your directory to /usr/bin.
   * **Hint:** Use the command to change directories.
   * **What is it?** Cd /usr/bin
4. Use a single command to return to your home directory.
   * **What is it?** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. **Creating, Editing, and Displaying Files**

Work with files by creating, editing, and displaying their contents.

**Tasks:**

1. In your home directory, create an empty file named myfile.txt.
   * **Hint:** Use the command that can create an empty file by updating its timestamp.
   * **What command did you use?** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Open the myfile.txt file in the vi editor, and add the following text:
   * **Hint:** Press i to enter insert mode in vi (refer to chapter 1 on the vi text editor)

Hello, this is a test file.

Let's get started with Systems Administration!

1. Save and exit the vi editor.

Once done, press ESC and type :wq to save and exit.

1. Use a command to display the contents of myfile.txt in the terminal.
   * **Hint**: Use a command that can display the contents of files back onto the screen without opening a text editor.
   * **What command did you use?** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Use a command to append the text "Appended line" to myfile.txt without opening the file in a text editor.
   * **What command did you use?** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Verify that the file was updated by displaying its contents again.
   * **What command did you use?** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. **Searching Inside Files with** grep

You will now learn how to search within files using grep, a command-line utility that searches through files for specific patterns.

**Tasks:**

1. In your home directory, create a new directory called logfiles. Inside logfiles, create three files: log1.txt, log2.txt, and log3.txt.
   * **What commands did you use?** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. Add the following text to log1.txt:

Error: Disk quota exceeded

Warning: Low memory

Info: Task completed successfully

Add the following text to log2.txt:

Error: File not found

Info: Backup completed

Warning: Network issue

Add the following text to log3.txt:

Warning: CPU usage high

Info: System running smoothly

Error: Out of memory

1. Use a single grep command to search for all lines containing the word "Error" in all three log files.
   * **Hint:** You can use wildcards to match multiple files.
   * **What command did you use?** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Modify the command to search for lines that contain the word "Warning", but only in log1.txt and log3.txt.
   * **What command did you use?** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Use grep to search for the word "Info" in all files and make the search case-insensitive.
   * **What command did you use?** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. **Working with Directories and Files**

You will now practice creating, copying, moving, renaming, and removing files and directories.

**Tasks:**

1. Create a new directory called workdir in your home directory.
   * **What command did you use?** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Inside workdir, create three empty files: doc1.txt, doc2.txt, and doc3.txt.
   * **What command did you use?** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Copy doc1.txt and doc2.txt from workdir to the logfiles directory.
   * **Hint:** Use a command that copies files, and make sure to specify the destination directory.
   * **What command did you use?** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Rename doc3.txt to document.txt inside the workdir directory.
   * **What command did you use?** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. Delete the document.txt file from the workdir directory.
   * **What command did you use?** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. Now, remove the entire workdir directory.
   * **What command did you use?** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   * **What happens if the directory is not empty?**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. **File Permissions with** chmod

Explore how to modify file permissions using the chmod command. Permissions control who can read, write, or execute a file.

**Tasks:**

1. In your home directory, create a new file called script.sh. Make this file readable and writable by the owner only and remove all permissions for the group and others.
   * **Hint:** You can use chmod to modify file permissions.
   * **What command did you use?** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Verify the permissions of script.sh using ls -l.
   * **What command did you use?** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   * **What were the permissions?** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Change the permissions of script.sh to make it executable by the owner.
   * **What command did you use?** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_