OPERATING SYSTEMS LAB

LAB MANUAL # 03

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Contents

LINUX COMMANDS

Command

A command is a request from a programmer, an operator, or a user to Linux operating systems asking that a specific function be performed. **For Example**, a request to list all files in your current directory will be the command **ls**.

Syntax

The general way commands are entered in Linux is as such:

command -option(s) argument(s)

Here,

- A command tells the operating system what to do.
- Option(s) tells the way of action to be performed. **For example**, **ls** command displays directory contents, and **-r** option tells the way in which the directory should be displayed. Here **-r** displays directory contents in reverse (alphabetically) order.
- Argument tells that on what objects (file, directory, devices, etc.) the command and its arguments are applied. **For example**, if we need to display all files starting with alphabet **a**, you will give "**ls a***" and press enter.

Note Make sure you don't forget that there is always a space between the command, the options, and the arguments.

The Asterisk *

The asterisk * symbol is basically a wildcard. It can be used in a number of contexts.

For example:

- It can be used to denote *everything*. For example, in MS-DOS, typing ***delete** **** will delete all files in a current directory. With Linux, you can use ***rm** **** to do the same thing.
- It can be used as a filter. **For example**, typing ***ls ab**** will print all file/folder names that start with ab.

Case Sensitivity

Linux Commands are case-sensitive. All standard Linux commands are given in lower case letters only. As an example, typing ls will print the directory contents. Typing Ls, or LS, or lS will result in a command syntax error.

Auto-Completion

Auto-Completion is a short-cut feature for quickly entering commands that are long or you have forgotten their spelling. To practice, just type f and press the TAB key. You will see the list of all commands starting with an f. Type fd and press TAB, you will see all commands staring with fd. Type fdi and press TAB, you will see a list of commands all starting with fdi, so on and so forth.

You can also use the auto-completion to detect directories. For example, you want to access the home directory of a user who for some strange reason is called *abcdefghijklmnopqrstuvwxyz.* From the root directory (*/*), you will type *cd /home/a* and press TAB (in my case ***cd /home/muhammad/a***). The rest of the characters *bcdefghijklmnopqrstuvwxyz* will be given automatically and you will be spared the time and effort of writing such a large name.

Practicing Commands

Some of the most commonly used commands are given below. Try and practice each one of them and see what they do.

ls: Print the contents of the current directory.

cd: Change directory

mkdir: Create a new directory

rmdir: Remove a directory (if it is empty).

cat: View contents of a file, or write contents to a file. The **cat** (short for “concatenate “) **command** is one of the most frequently used **command in Linux/Unix** like operating systems. **cat command** allows us to create single or multiple files, view contain of file, concatenate files and redirect output in terminal or files.

cp: Copy a file from one location to another

mv: Move a file from one location to another
rm: Remove file(s) and/or directoy(ies)

cd Command: cd command is used to change directory.

cd /: This command is used to go to root directory.

pwd: command is used to check currently working directory.

cd ~ / or (cd ~): cd with tilde symbol is used to go home directory.

cd ..: This command is used to go to the parent directory of the current working directory.

cat Command

It has 3 related functions with regard to text files.

1. One is displaying text file.
2. Second one is combining copies of text files.
3. Third one is creating new text files.

For echo purpose

cat is used for echoing something write cat in terminal i.e. hello it will echo this hello word.

To exit this cat command, you should press control+d command which means the end of the file.

1) Display the content of the text file.

cat filename.file extention i.e. cat output.txt

display the contents of the two files

cat output.txt output1.txt

add line number to the non-blank line i.e. **cat -b output.txt.**

add line number to the blank line also i.e. **cat -n output.txt.**

man cat: To know more about cat command.

q: Is used to quit this man pages.

Redirection

Redirection simply means capturing output from a file, command or program and sending it as an input to another file command or program.

You can use the > and < symbols to redirect your output. The types of redirection are as such:

- > Output redirection to a file.
- 1 > Same as >
- 2 > Error output redirection to a file
- < Output redirection from file to terminal

Try it using the following set of commands

cd

ls

touch newfile

ls

ls > newfile

cat < newfile

rm newfile

cat > hello.txt: this command will create hello.txt file in current working directory. Press **Control+d** command after content writing.

cat hello.txt: this command will show the contents of this file.

Again

cat > hello.txt: after writing contents here will override the old contents in **hello.txt** file with the newly written contents.

If you want to append to this file means you want that this file should not be overridden use and **angle brackets (>>)**.

cat >> hello.txt: this command will append the text with the old text.

If you want to take the contents from file one and file two and transfer it to new file.

Use the following command.

cat output.txt output1.txt > combinefile.txt

mkdir command: This command is used to create directory.

Syntax: mkdir directoryname

mkdir images: Will create directory namely images in current working directory.

mkdir images/pictures: This command will create sub directory namely pictures in images directory.

When you create subdirectory in another directory (parent directory) but parent directory does not exist.

i.e. mkdir Images/pictures means you are creating pictures directory in Images directory but Images directory does not exist, then it will show an **No Such file or directory**.

So, in order to create the directory structure, you need to use this **flag** with mkdir.

mkdir -p Images/pictures

or

mkdir --p Images/pictures

or

mkdir –parent Images/pictures

if you want to create several directories in your parent directory then use the following command.

mkdir -p Pictures /{alipic,aslampic,khanpic}

Note: don't use space between commas.

rm and rmdir Command:

rmdir command: rmdir command is used to remove a directory or directory structure.

To remove a single directory:

rmdir test: this command will remove test directory.

To remove a directory Structure:

First create directory structure i.e. mkdir -p Images/pictures/AsadPics

ls -R: this command is used to check directory structure.

To Remove it:

rmdir Images/pictures/AsadPics

this command will only delete AsadPics subdirectory only.

To remove parent directory as well as subdirectory (whole directory structure) use the following command with -p flag i.e.

rmdir -p Images/pictures/AsadPics

rmdir -pv Images/pictures/AsadPics: This -pv flag show the step by step removal of directory structure. It works from the top-level directory to the parent directory. v flag is used to show the extended informations.

Note: If a directory contains a file then rmdir command will not delete directory. It will only delete empty directory.

Create directory structure

mkdir -p a/b/c/d/e

Go to c directory i.e. cd a/b/c

cat > file.txt : create a file in this c subdirectory.

ls -R use this command.

Go back to desktop directory ------> cd .. again cd .. again cd ..

Now if you use rmdir -pv a/b/c/d/e command this will show an error because directory d is not empty in this case. If directory contains a file then rmdir command will not work.

This command has deleted directory d and e only.

For deleting directory and its files use rm command i.e.

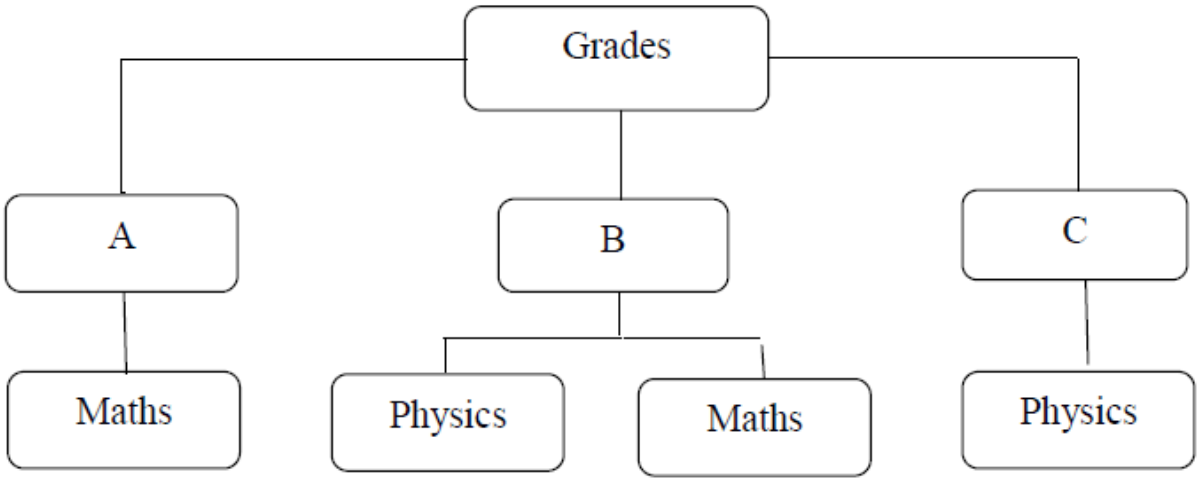
rm -rv a/b/c: This command will delete c directory and file in c directory as well i.e it will not delete a and b directory.

If you want to delete directory the whole directory structure. Use the following command.

rm -r a: This command will delete a directory and its subdirectory and files in these directories.

Exercise 1

Implement the following directory tree using ubuntu using commands.



Good Luck :)