OPERATING SYSTEMS LAB

LAB MANUAL # 04

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Contents

LINUX COMMANDS

Commands

A command is a request from a programmer, an operator, or a user to Linux operating systems asking that a specific function be performed.

1. cp Command

cp command is used to copy file or directory from one place to another place.

copy a file into a new file:

Suppose we have one file in desktop namely file1.txt and we want to copy data of file1.txt to file2.txt. file2.txt does not really exist. So, use the following command

cp file1.txt file2.txt: This command will first create file2.txt and then will copy file1.txt data to file2.txt.

copy file to a directory: To copy file to directory use the following command.

cp file2.txt test: This command will copy file2.txt to test directory.

copy multiple files: Use the following command to copy multiple files.

cp file1.txt file2.txt test: This command will copy file1.txt and file2.txt to test directory.

Let suppose file1.txt is already exist in test directory and this command will overwrite file1.txt in test directory. So, to avoid the overwriting you can use -i flag (**i stands for interactive**), which ask before overwriting.

cp -i file1.txt file2.txt test: This command will ask before overwriting. If you want to overwrite then press **y** and if you do not overwrite and press **n**.

cp -r test test1: This command is used to create new directory namely test1 and then will copy data (**content**) of test directory to test1 directory.

cp -vR test test1: Now in this case test directory (with content) will be copied into directory test1.

2. mv command

Move a file from one location to another.

mv file1.txt file3.txt: Will change the file name and contents will remain same.

Move file to another directory: Use the following for moving file from one directory to another directory.

mv file3.txt test: Will move file3.txt to test directory.

mv -i file1.txt test: This command is used to ask for overwriting.

Move directory to another directory: To move directory to another directory use the following command.

mv test1 test: this command will move test1 directory to test directory.

If you want to move directory contents to another directory which really does not exist then use the following command.

mv test1 test7: This command will change the name of test1 directory to test7 and will move the contents of directory test1 to test7. It will only move the contents of test1 to test7.

And if the destination directory already exists then it will transfer directory to another directory.

To know more about mv command:

Use **man mv** command

3. touch command

This command is used to create the new empty files in linux. It is also used to change the time stamps on existing file or directory.

The ***touch*** command is a standard command used in UNIX/Linux operating system which is used to create, change and modify timestamps of a file.

Basically, there are two different commands to create a file in the Linux system which is as follows:

- **cat command**: It is used to create the file with contents.
- **touch command:** It is used to create a file without any content. The file created using touch command is empty. This command can be used when the user doesn't have data to store at the time of file creation.

ls -l

1) To create new empty file

Touch command Syntax to create a new file: You can create a single file at a time using touch command.

Syntax:
touch file_name

e.g. touch newfile3

Touch command to create multiple files: Touch command can be used to create the multiple numbers of files at the same time. These files would be empty while creation.

Syntax:
touch File1_name File2_name File3_name

Note: you cannot create directory using touch command.

You can give extension to a file i.e.

touch newfile4.txt

2) To change the time stamp of file:

If the file does not exist and you use the touch command then it's going to create this file. And if file already exists and you use touch command on this file which already exists then touch command is going to update the time stamp of this file to the current time stamp.

E.g. touch newfile3

4. sudo command

sudo is the command which rules them all. sudo stands for **super user do**. It allows you some extra privileges as an **administrator** or **power** user.

For example, I want to create directory in **etc** directory which is located in root (/) directory. So, first you should go to root directory i.e.

cd /

Then go to **etc** directory using **cd etc**. This **etc** directory contains configuration files.

cd etc

now create directory in etc directory using mkdir command i.e.

mkdir hello: will show the following message.

mkdir: cannot create directory ‘hello’: Permission denied

So, we want to use sudo command to tell the Linux terminal that we want to execute this command as an **administrator**.

Using this sudo command will first ask you password.

sudo mkdir hello: This command will now create directory.

Now I want to remove this directory.

rmdir hello this will again show the following error message.

rmdir: failed to remove 'hello': Permission denied

sudo rmdir hello: This command will now remove this hello directory.

muhammad@muhammad-VirtualBox:/etc$: This shows the user privileges.

sudo -s: This command will change user privileges to root. So, it changes to the root user.

root@muhammad-VirtualBox:/etc#: show root user. # symbol means now you are in super user mode.so now you can do anything as a super user.

5. Linux rm -r

With rm '-r' option, you can delete a directory having sub directories inside it. So, you don't need to delete sub-directories manually.

rm -r <dirname>

e.g. rm -r test

6. Linux rm -i

The option 'i' stands for 'interactivity'. Before deleting a file, it will ask you whether you want to delete it or not. To delete a file use command:

rm -i

and to delete a directory use command:

rm -ri <dirname>

e.g. rm -ri test

7. Alias command

alias command instructs the shell to replace one string with another string while executing the commands.

When we often have to use a single big command multiple times, in those cases, we create something called as ***alias*** for that command. *Alias* is like a shortcut command which will have same functionality as if we are writing the whole command.

Write

alias

Creating an alias:
Syntax:

```
alias name="value"
```

e.g.

```
alias CD="cd Desktop"
```

Creating an Unalias: Removing an existing alias is known as unaliasing.
Syntax:

```
unalias [alias name]
```

e.g.

```
unalias CD
```

Students Practice Activity

To see them working, practice the following set of commands, the # sign represents the shell prompt.

mkdir temporary

cd temporary

temporary# ls

temporary# cat > newfile

Type any text and press CTRL+D

temporary# cat newfile

temporary# mkdir another

temporary# cp newfile another/newest

temporary# cp newfile newester

temporary# cd another

another# ls

another# cp newest newestest

another# cat newestest

another# cd ..

temporary# mv newester another/newester

temporary# ls

temporary# ls another/n*

temporary# cd ..

rm temporary

rm temporary/*

rm temporary

rm temporary -r -f

This rm -r -f command remove a directory forcefully.

Working with Users

How to remove user

userdel -r username

e.g. sudo userdel -r amir

By using **userdel -r** option, you can delete home directory along with user account.

How to move from root to user

su username

e.g. su muhammad

whoami

It tells you about the system's username.

Syntax:

whoami

who command

The who command gives the information about the users logged on to the system.

Syntax:

who

w command

This command tells about the users who are logged in and what are they doing.

Syntax:

w

id command

This command tells about your user id, primary group id, and a list of groups that belongs to you.

Syntax:

id

Linux Create File

Some conventional methods are as follows:

1. using cat command
2. using touch command
3. using redirect '>' symbol
4. using echo command
5. using printf command
6. using a different text editor like vim, nano, vi

1. Using cat command

cat **>** test.txt

cat test.txt

2. Using the touch command

touch test1.txt

3. Using the redirect (>) symbol

> test5.txt

4. Using echo command

The **echo** command is used to create a file, but we should specify the file content on the command line.

echo " File content" **>** test6.txt

5. Using printf command

We can also create a file using **printf** command. For this we need to specify the file content on the command line.

printf " File content" **>** test7.txt

6. Using Nano editor

We can create a file using the **nano** text editor. To create a file, execute the below command:

nano test9.txt

7. Using Vi editor

To create a file with Vi editor, execute the below command:

vi test10.txt

The above command will open the Vi editor. Press i key for the insert mode and enter the file content. Press Esc key and **:wq** to save and exit the file from the editor.

NANO Editor

There are many text editors available for Linux. At the moment you will have access to the nano editor. Nano is an advanced text editor provided by GNU. Simply typing *nano* on the shell will give you the editor. You may also start your nano by explicitly mentioning the file you want to work on. This file may be already existing or you may be creating a new one.

nano <myFile>

Nano is a small and friendly text editor. And besides the text editing nano has many extra features like an interactive search and replace. And it also has some other features like go to line or column number or it can give the indentation in the file etc.

Near the end of your screen you will see a list of shortcuts. The ones which you should get yourself familiar with are as such:
CTRL+X for exit
CTRL+O for saving
CTRL+W for searching
CTRL+K for cutting
CTRL+U for pasting
CTRL+C for displaying cursor position
Other commands are listed at the bottom of the text-editor window.

nano is also used to create a new file.

nano file12.txt

File has been created but has not save, so we need to save it.

Write some text in this file.

Press control+o.

Press enter key. File will be saved.

Press control+x to go out from the nano editor.

Now you can open this file in Nano editor using the same command.

i.e. **nano file12.txt**

control+k is used for cut and cotrol + u is used for past.

Create cpp file using nano command

i.e. **nano hello.cpp**

Good Luck :)