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**Topics: Navigation. Searching. Permissions. Deleting. Globbing**

This lab exercise is to be submitted **at the end** of the lab session!

*Today we will obtain a number of functions helpful and relevant for the administration of the system. We start with navigation, changing directory, finding files, etc.*

Go into directory /usr/share/doc/apt/examples/. Which **single** command do you use?

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List ('long list') all files in this directory whose file name starts with an 'a'. Of course, you could just *look* at them, and note those starting with an 'a' here.

Though you could as well use ***globbing*** (see lecture slides), and type:

**ls -l [a]\***

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From there, **change** into **directory** man8 by writing the **relative path** (see lecture slides). The ***target*** directory is actually /usr/share/man/man8/; so from

/usr/share/doc/apt/examples/

you need to

- go up three times (/examples, /apt, /doc)

using ../ three times, and then - go down to man/ and /man8

Enter the correct command here:

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Confirm that you are in the right **target** directory, **after** changing directories, using **pwd:**

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Note the details of the **last** file that **ls -l** shows in this directory:

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Go back to your home directory. You use which command?:

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Then go into that same directory, /usr/share/man/man8/, using its **absolute path**. The **command** is:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Note the name(s) of the file(s) whose file name starts with an upper-case M: (If it is not visible, try globbing for it!)

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You have probably noticed that the files have by default been sorted in **alphabetic** order. It is possible to sort them differently. If you need them sorted in terms of creation / last modification?

Read the manual pages of the command 'ls': **man ls**, and find the correct **option** for 'sort by modification time' (**not** 'time of last modification of file status information', please!). You can quit (leave - exit) any man page with '**q**'.

Run 'ls -l' another time, and add the option that you found in the man page. Which is the **oldest** file in that directory?

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*There is a nice trick, loved by system administrators, who have to type things over and over. It is called* ***Tab-Completion****. We will experience this one in the next part of this exercise.*

What is the content of the file /usr/share/doc/apt/examples/sources.list? The usual command would be:

**cat usr/share/doc/apt/examples/sources.list**

That's ***looong*** and some parts are redundant. Locate the **Tab-key** on your keyboard and use it, whenever I typed **<tab>** in the following:

**cat /u <tab> sh <tab> do <tab> /apt/e <tab> s <tab>**

and press 'Enter'

You will notice that the tab key will complete the **path** and the **filename**, as long as they are unambiguous.

Try again:

**cat /u <tab> s <tab>**

This can't complete, because there are a number of possible targets.

However, if you press <tab> twice (or more often), all the possibilities will be displayed, helping you to get further. Try it out:

**cat /u <tab> /s <tab> <tab>** shows the three alternatives: sbin/ share/ src/.

Once you type another 'b', it will autocomplete to /usr/sbin:

**cat /u <tab> s <tab> <tab> b <tab>**

Tab-Completion works well for paths and filenames, but also for (system) commands:

On the prompt, type

**b <tab> <tab>**

and you see all commands starting with 'b'.

Try

**i <tab> <tab>**

for all commands starting with 'i'.

Which commands are available that start with the letters 'time'?

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*Now we will experience some action of files and directories, like creating and deleting files and directories.*

*Next we will look at permissions and ownerships.*

File 'file1' is noted with the permissions \_\_\_\_\_\_\_\_\_\_

This represents which 3 -digit number?:

\_\_\_\_\_\_\_\_\_\_

Which command is needed to change the permissions to rwxr-xr-- ? (Fill in the 3 digits)

**chmod** \_\_\_\_\_\_\_\_\_\_ **file1**

Change the owner to root:

**chown root file1**

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Why would this not work? Which command would you have to add to make it work?:

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Change the group to operator:

**chgrp operator file1**

Why would this not work? Which command would you have to add to make it work?:

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file1 now looks like this here (ls -l, please!):

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Now let's start deleting some stuff.

Go back to your home directory, then pwd as usual, and ls -l shows the **d**irectory explore:

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You can clearly see the 'd' at the start of the line, at the very left. It shows that it is a **d**irectory.

We are going to delete it:

**rmdir explore**

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Oops, that didn't work. There are still files in that directory. Let's use the recursion to do that:

**rm -R explore** [answer 'no' when asked]

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Still not. Why? There are some files belonging to another user and another group (file1,remember, belonging to root and operator). We need to be more brutal ('f' ==force):

**rm -Rf explore**

Use ls -l to prove that the directory and all its files are gone.

*Do not forget to shut down your machine; like we did at the end of lab exercise 1, close Virtualbox, and log out.*

*It is still suggested that you export your installation after the shutdown for reasons of security. Don't forget to submit your lab sheet!*