

CHPC Systems: The Users' View

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Summary of commands used in this demonstration along with their meanings

Command	Meaning
ssh	Secure Shell login to remote servers
pwd	Present working directory
ls	List files and folders in current directory
mkdir	Make a directory
touch	Create an empty file
rm	Remove a file or directory

- You should be logged into the cluster or you will not have the same output as I do. If you are not logged in, then just type **ssh username@lengau.chpc.ac.za** (where username is your cluster username).
- To find out where you are when you first login to the cluster you type:
pwd
- You should find that you are in the directory (or folder) called **/home/username**. This is known as your home directory. When you login to any remote Linux machine the first place you will land is in your home directory.

```
06/07/2020 09:43.41 /home/mobaxterm ssh krishna@lengau.chpc.ac.za
krishna@lengau.chpc.ac.za's password:
Last login: Mon Jul 6 09:33:59 2020 from 146.64.235.118

Welcome to LENGAU

#####
#
# In order to receive notifications via email from the CHPC all users should #
# be subscribed to the CHPC user distribution list. If you are not part of the #
# distribution list you can subscribe at the following link: #
# https://lists.chpc.ac.za/mailman/listinfo/chpc-users #
#
#####
[krishna@login2 ~]$ pwd
/home/krishna
```

- At this point it is worth mentioning that Linux commands are case sensitive, so it is imperative that you type the commands as you see them in all demonstrations, or you will end up with an error.
- In the case of the LENGAU cluster you have a maximum amount of 15 GB that you can make use of in your home directory. Typically, this is a good place to store your input files and any scripts that you may use for analysis. This is **NOT** the place to be keeping your simulation data. The location for generating your simulation data shall be provided in other sections of this course.
- To see the items (files and folders) that are in your current location you type:

ls

```
[krishna@login2 ~]$ ls
Desktop Documents Downloads lustre Music Pictures Public Templates Videos Work
[krishna@login2 ~]$
```

- You may not see all the directories as I have above, but what you should at least see is the directory called **lustre** (we will look at this in more detail in sections that appear later in the course)
- You will notice that the color of everything in the screenshot above is **blue**. This indicates everything listed corresponds to a directory.
- Let's make a new directory called **test** and list the items in our current folder again:

mkdir test

ls

Here is the new folder



```
[krishna@login2 ~]$ mkdir test
[krishna@login2 ~]$ ls
Desktop Documents Downloads lustre Music Pictures Public Templates test Videos Work
[krishna@login2 ~]$
```

- Now you will move into this new folder, check your present working directory and list the contents of the directory:

cd test

pwd

ls

```
[krishna@login2 ~]$ cd test
[krishna@login2 test]$ pwd
/home/krishna/test
[krishna@login2 test]$ ls
[krishna@login2 test]$
```

- You will notice that your active directory is now **/home/username/test**, indicating that you are not only in your home directory, but inside an additional subdirectory called test.

In addition, you will see that **ls** has produced nothing and this is something which is expected since the directory was just created and not populated with any additional files or directories.

- Now create an empty file called **myfile.txt** and list the items in the current directory

touch myfile.txt

ls

```
[krishna@login2 test]$ touch myfile.txt
[krishna@login2 test]$ ls
myfile.txt
[krishna@login2 test]$
```

- You will notice that this time **ls** shows that there is a file present called **myfile.txt**. You will also notice that unlike directories, which are **blue** in color, files are white in color. This is how you can distinguish between files and directories.
- When creating files or directories in any Linux environment (such as the CHPC) it is always a good idea **NOT** to use spaces in the names. Rather make use of underscores or hyphens, E.g. **my_first_file.txt** or **my-first-file.txt** instead of **my first file.txt**. This is because Linux treats spaces as a special character and it could cause major problems for you later when you try to access information from the file or directory.

- You can also display the contents of a directory in a different format, which provides you with additional information about the file or directory:

ls -l

Permissions							
User	Group	Other	User	Group	Size	Creation date and time	
[krishna@login2 test]\$ ls -l							
total 0							
-rw-	rw-	r--	1	krishna	krishna	0	Jul 6 12:57 myfile.txt
[krishna@login2 test]\$							

- The information provided includes the permissions of the file/directory (who is allowed to access and make changes to the contents), the User that created the file, which Group the user belongs to, the Size of the file and the Date and Time when the file/directory was created or changed
- Since we are in the test subdirectory let's return to the home directory. There are various methods by which this can be achieved:

```
cd ..
pwd
cd test
pwd
cd
pwd
cd test
pwd
cd ~username
pwd
```

```
[krishna@login2 test]$ cd ..
[krishna@login2 ~]$ pwd
/home/krishna
[krishna@login2 ~]$ cd test
[krishna@login2 test]$ pwd
/home/krishna/test
[krishna@login2 test]$ cd
[krishna@login2 ~]$ pwd
/home/krishna
[krishna@login2 ~]$ cd test
[krishna@login2 test]$ pwd
/home/krishna/test
[krishna@login2 test]$ cd ~krishna
[krishna@login2 ~]$ pwd
/home/krishna
[krishna@login2 ~]$
```

- The first command takes you only one directory back (remember we only moved forward once, into the subdirectory called test, so we need only move one directory back to end up in the home directory).

With the remaining commands above you will be moving into the test subdirectory and then back to your home. Of course you only need to use one of the commands above to get to your home directory and the various options are shown here merely for illustration purposes.

- Finally remove the folder called test, by first making sure you are in the correct directory (/home/username). Then confirm that the directory was removed:

There is no recycle bin in Linux and this cannot be undone, so be very careful

pwd
rm -rv test
ls

```
[krishna@login2 ~]$ pwd
/home/krishna
[krishna@login2 ~]$ rm -rv test
removed 'test/myfile.txt'
removed directory: 'test'
[krishna@login2 ~]$ ls
Desktop Documents Downloads lustre Music Pictures Public Templates Videos Work
[krishna@login2 ~]$
```

- The **rm -r test** is used to remove the folder called test and anything that is contained therein. The additional **-v** is used to show you what is happening when the files and directories are being removed.

You can see with the aid of **ls** that the directory did get removed as it is no longer present.

- It is worth mentioning that all commands that you type on the terminal are stored in a history file and you can access these by typing **history**.

Another way is to hit the  on the keyboard and it will cycle through commands that you have executed previously.

- Now that you have familiarized yourself with the landing page of the cluster (your home directory), created and removed both files and directories within your home directory and navigated to a subdirectory, we will look at navigating to different locations on the cluster. This shall be covered in the next section (Moving around the file system).