Basic Linux Commands for Beginners

What Is Linux?

Linux is an operating system's kernel. You might have heard of UNIX. Well, Linux is a UNIX clone. But it was actually created by Linus Torvalds from Scratch. Linux is free and open-source, that means that you can simply change anything in Linux and redistribute it in your own name! There are several Linux Distributions, commonly called “distros”.

- Ubuntu Linux
- Red Hat Enterprise Linux
- Linux Mint
- Debian
- Fedora

Linux is Mainly used in servers. About 90% of the internet is powered by Linux servers. This is because Linux is fast, secure, and free! The main problem of using Windows servers are their cost. This is solved by using Linux servers. The OS that runs in about 80% of the smartphones in the world, Android, is also made from the Linux kernel. Most of the viruses in the world run on Windows, but not on Linux!

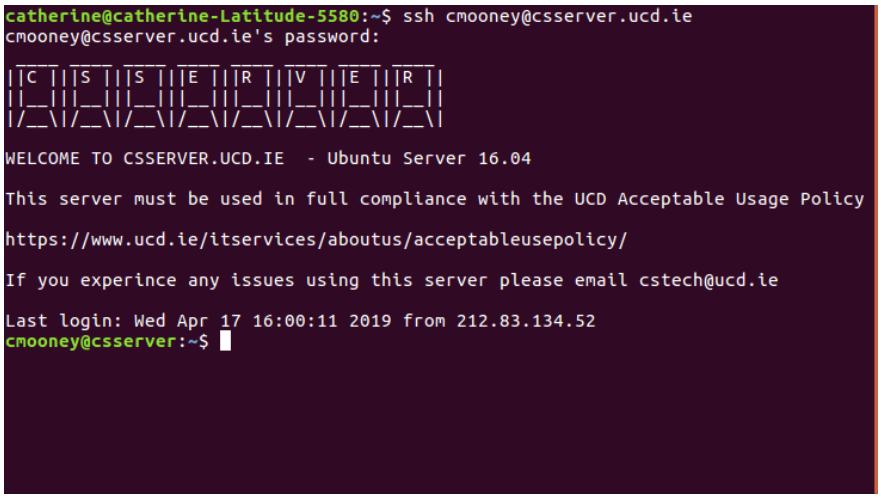
Linux Shell or “Terminal”

So, basically, a shell is a program that receives commands from the user and gives it to the OS to process, and it shows the output. Linux's shell is its main part. Its distros come in GUI (graphical user interface), but basically, Linux has a CLI (command line interface). In this tutorial, we are going to cover the basic commands that we use in the shell of Linux.

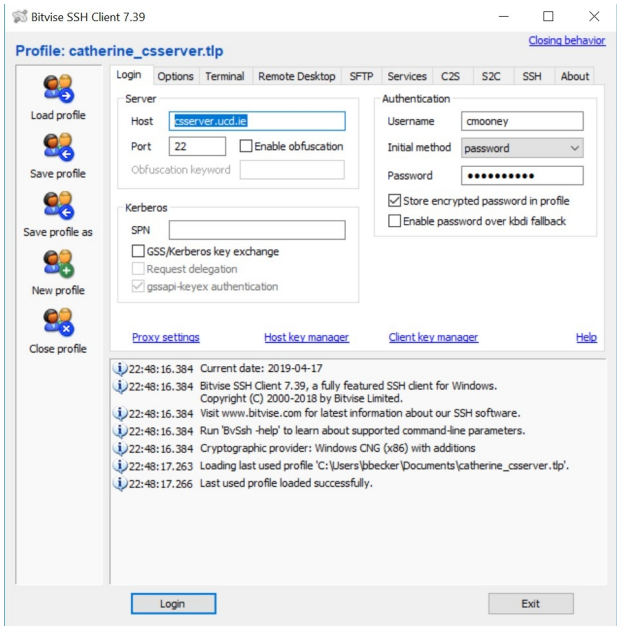
SSH to CS Server

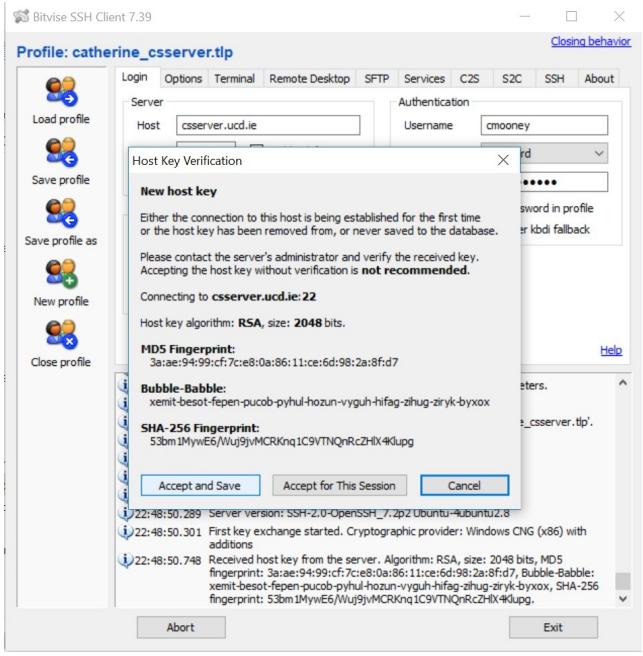
You were all sent an email from the School of Computer Science in UCD with your username and password for CS Server.

Open a terminal if you are using macOS, Windows 10 or Linux. SSH to CS Server using your username and password like this: ssh username@csserver.ucd.ie



If you are using an older version of Windows then you will need to download and install Bitvise SSH Client: https://www.bitvise.com/ssh-client





Linux Commands

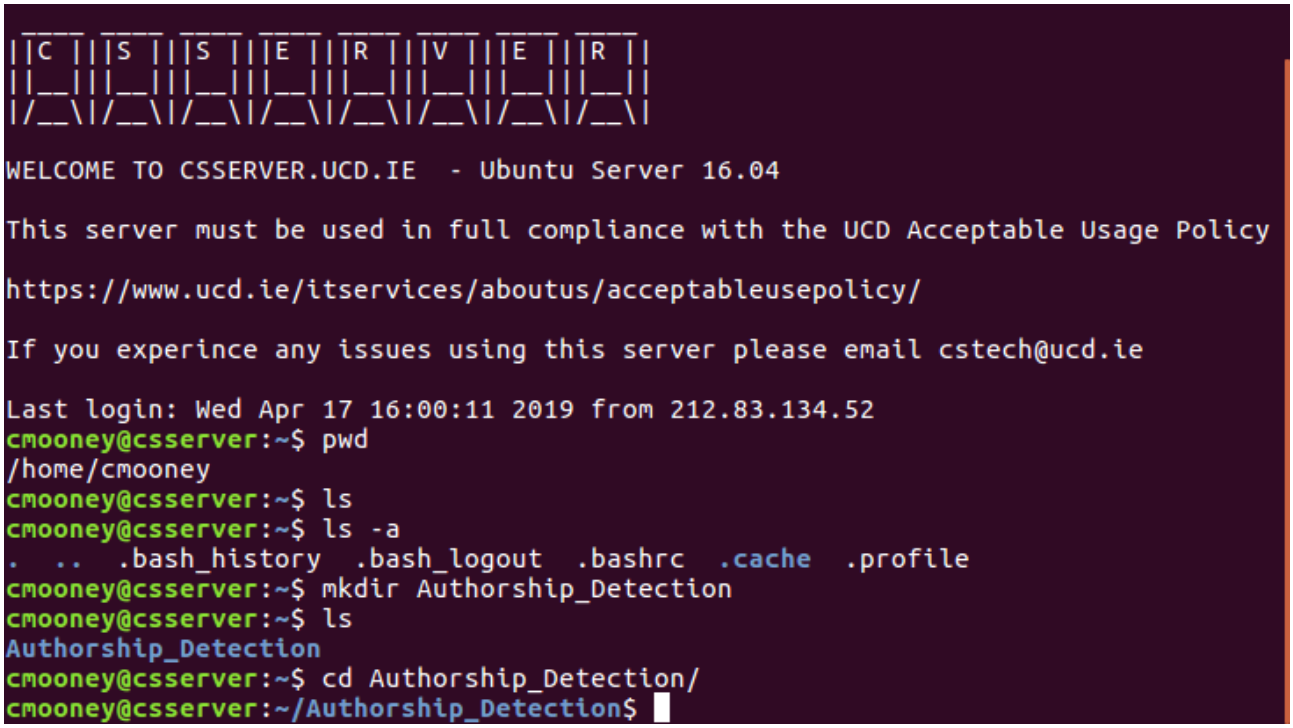
Basic Commands

1. pwd — When you first open the terminal, you are in the home directory of your user. To know which directory you are in, you can use the "**pwd"** command. It gives us the absolute path, which means the path that starts from the root. The root is the base of the Linux file system. It is denoted by a forward slash(/). The user directory is usually something like "/home/username".

2. ls — Use the "**ls**" command to know what files are in the directory you are in. You can see all the hidden files by using the command "**ls -a"**.

```
catherine@catherine-Latitude-5580:~$ ssh cmooney@csserver.ucd.ie
cmooney@csserver.ucd.ie's password:

 ____ ____ ____ ____ ____ ____ ____ ____
||C |||S |||S |||E |||R |||V |||E |||R ||
||__|||__|||__|||__|||__|||__|||__|||__||
|/__\|/__\|/__\|/__\|/__\|/__\|/__\|/__\|

WELCOME TO CSSERVER.UCD.IE  - Ubuntu Server 16.04

This server must be used in full compliance with the UCD Acceptable Usage Policy

https://www.ucd.ie/itservices/aboutus/acceptableusepolicy/

If you experince any issues using this server please email cstech@ucd.ie

Last login: Wed Apr 17 16:00:11 2019 from 212.83.134.52
cmooney@csserver:~$ pwd
/home/cmooney
cmooney@csserver:~$ ls
cmooney@csserver:~$ ls -a
.  ..  .bash_history  .bash_logout  .bashrc  .cache  .profile
cmooney@csserver:~$
```

3. mkdir — Use the **mkdir** command when you need to create a folder or a directory. For example, if you want to make a directory called “Authorship_Detection”, then you can type “**mkdir Authorship_Detection**”.

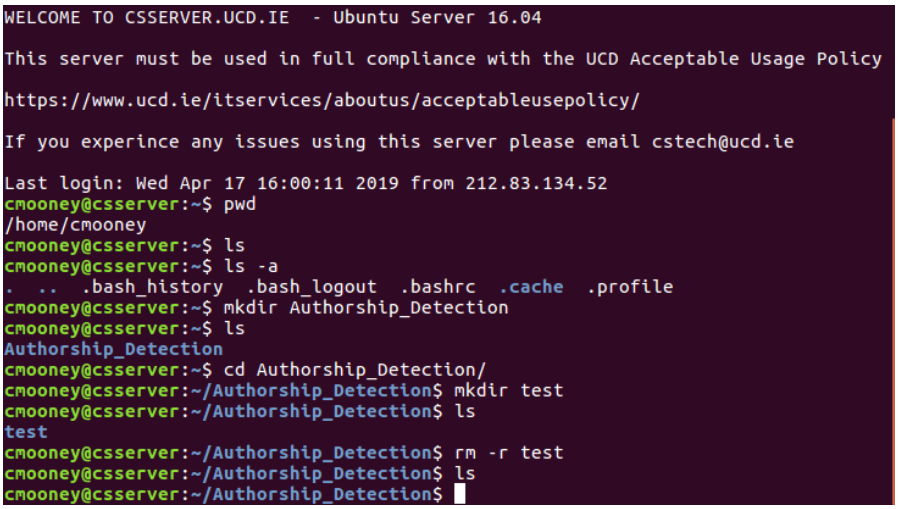


4. cd — Use the **"cd"** command to go to a directory. For example, if you are in the home folder, and you want to go to the Authorship_Detection folder, then you can type in “**cd Authorship_Detection”**. Remember, this command is case sensitive, and you have to type in the name of the folder exactly as it is.

If you just type “**cd”** and press enter, it takes you to the home directory.

To go back from a folder to the folder before that, you can type “**cd** ..” . The two dots represent back.

5. rm - Use the **rm** command to delete files and **rm -r** to delete a directory.



6. touch — The **touch** command is used to create a file. It can be anything, from an empty txt file to an empty zip file. For example, "**touch new.txt**".

```
If you experince any issues using this server please email cstech@ucd.ie

Last login: Wed Apr 17 16:00:11 2019 from 212.83.134.52
cmooney@csserver:~$ pwd
/home/cmooney
cmooney@csserver:~$ ls
cmooney@csserver:~$ ls -a
.  ..  .bash_history  .bash_logout  .bashrc  .cache  .profile
cmooney@csserver:~$ mkdir Authorship_Detection
cmooney@csserver:~$ ls
Authorship_Detection
cmooney@csserver:~$ cd Authorship_Detection/
cmooney@csserver:~/Authorship_Detection$ mkdir test
cmooney@csserver:~/Authorship_Detection$ ls
test
cmooney@csserver:~/Authorship_Detection$ rm -r test
cmooney@csserver:~/Authorship_Detection$ ls
cmooney@csserver:~/Authorship_Detection$ touch new.txt
cmooney@csserver:~/Authorship_Detection$ ls
new.txt
cmooney@csserver:~/Authorship_Detection$ rm new.txt
cmooney@csserver:~/Authorship_Detection$ ls
cmooney@csserver:~/Authorship_Detection$
```

7. cp — Use the **cp** command to copy files through the command line. It takes two arguments: The first is the location of the file to be copied, the second is where to copy.

8. chmod – Use **chmod** to make a file executable and to change the permissions granted to it in Linux. Imagine you have a python code named numbers.py in your computer. You'll need to run "python numbers.py" every time you need to run it. Instead of that, when you make it executable, you'll just need to run "numbers.py" in the terminal to run the file. To make a file executable, you can use the command "chmod +x numbers.py" in this case. You can use "chmod 755 numbers.py" to give it root permissions or "sudo chmod +x numbers.py" for root executable.

```
cmooney@csserver:~/Authorship_Detection$ cp -r /opt/MysteryTextFiles .
cmooney@csserver:~/Authorship_Detection$ ls
MysteryTextFiles
cmooney@csserver:~/Authorship_Detection$ cd MysteryTextFiles/
-bash: cd: MysteryTextFiles/: Permission denied
cmooney@csserver:~/Authorship_Detection$ ls
MysteryTextFiles
cmooney@csserver:~/Authorship_Detection$ chmod 755 MysteryTextFiles/
cmooney@csserver:~/Authorship_Detection$ ls
MysteryTextFiles
cmooney@csserver:~/Authorship_Detection$ ls -al
total 12
drwxrwxr-x 3 cmooney cmooney 4096 Apr 17 16:24 .
drwxr-xr-x 4 cmooney cmooney 4096 Apr 17 16:14 ..
drwxr-xr-x 2 cmooney cmooney 4096 Apr 17 16:24 MysteryTextFiles
cmooney@csserver:~/Authorship_Detection$ cd MysteryTextFiles/
cmooney@csserver:~/Authorship_Detection/MysteryTextFiles$ ls
mystery1.txt  mystery2.txt  mystery3.txt  mystery4.txt  mystery5.txt
cmooney@csserver:~/Authorship_Detection/MysteryTextFiles$
```

9. mv — Use the **mv** command to move files through the command line. We can also use the **mv** command to rename a file. For example, if we want to rename the file "**text**" to "**new**", we can use "**mv text new**". It takes the two arguments, just like the **cp** command.

```
cmooney@csserver:~/Authorship_Detection/MysteryTextFiles$ cd ../
cmooney@csserver:~/Authorship_Detection$ cp -r /opt/SignatureFiles .
cmooney@csserver:~/Authorship_Detection$ ls
MysteryTextFiles  SignatureFiles
cmooney@csserver:~/Authorship_Detection$ cd SignatureFiles/
-bash: cd: SignatureFiles/: Permission denied
cmooney@csserver:~/Authorship_Detection$ ls -al
total 16
drwxrwxr-x 4 cmooney cmooney 4096 Apr 17 16:29 .
drwxr-xr-x 4 cmooney cmooney 4096 Apr 17 16:14 ..
drwxr-xr-x 2 cmooney cmooney 4096 Apr 17 16:24 MysteryTextFiles
drw-r-xr-x 2 cmooney cmooney 4096 Apr 17 16:29 SignatureFiles
cmooney@csserver:~/Authorship_Detection$ chmod 755 SignatureFiles/
cmooney@csserver:~/Authorship_Detection$ cd SignatureFiles/
cmooney@csserver:~/Authorship_Detection/SignatureFiles$ ls
agatha.christie.stats  emily.bronte.stats       mark.twain.stats
alexandre.dumas.stats  fyodor.dostoevsky.stats  sir.arthur.conan.doyle.stats
brothers.grim.stats    james.joyce.stats        william.shakespeare.stats
charles.dickens.stats  jane.austen.stats
douglas.adams.stats    lewis.caroll.stats
cmooney@csserver:~/Authorship_Detection/SignatureFiles$ cd ..
cmooney@csserver:~/Authorship_Detection$
```

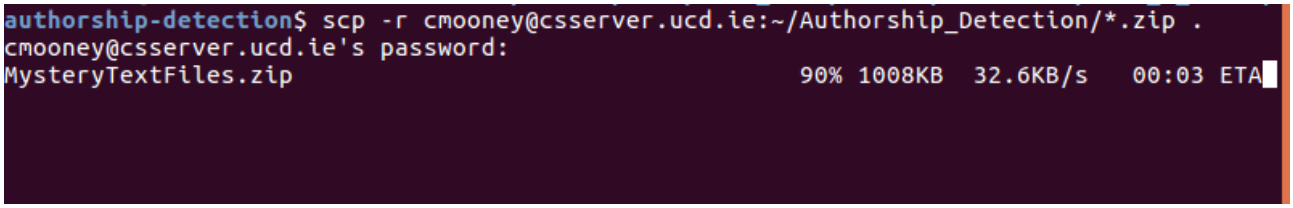
10. zip — Create a **zip** file which you will copy from CS Server to your laptops

```
  adding: MysteryTextFiles/mystery4.txt (deflated 62%)
  adding: MysteryTextFiles/mystery3.txt (deflated 62%)
  adding: MysteryTextFiles/mystery1.txt (deflated 63%)
cmooney@csserver:~/Authorship_Detection$ ls
MysteryTextFiles  MysteryTextFiles.zip  SignatureFiles
cmooney@csserver:~/Authorship_Detection$ zip -r SignatureFiles.zip SignatureFile
s
  adding: SignatureFiles/ (stored 0%)
  adding: SignatureFiles/james.joyce.stats (deflated 14%)
  adding: SignatureFiles/mark.twain.stats (deflated 14%)
  adding: SignatureFiles/sir.arthur.conan.doyle.stats (deflated 12%)
  adding: SignatureFiles/alexandre.dumas.stats (deflated 17%)
  adding: SignatureFiles/emily.bronte.stats (deflated 15%)
  adding: SignatureFiles/fyodor.dostoevsky.stats (deflated 14%)
  adding: SignatureFiles/charles.dickens.stats (deflated 16%)
  adding: SignatureFiles/william.shakespeare.stats (deflated 15%)
  adding: SignatureFiles/douglas.adams.stats (deflated 15%)
  adding: SignatureFiles/lewis.caroll.stats (deflated 15%)
  adding: SignatureFiles/jane.austen.stats (deflated 13%)
  adding: SignatureFiles/agatha.christie.stats (deflated 18%)
  adding: SignatureFiles/brothers.grim.stats (deflated 13%)
cmooney@csserver:~/Authorship_Detection$ ls
MysteryTextFiles  MysteryTextFiles.zip  SignatureFiles  SignatureFiles.zip
cmooney@csserver:~/Authorship_Detection$
```

10. exit — exit from CS Server

11. scp — You can secure copy the zip files from CS Server to your laptop by opening a new terminal on your laptop and the using the **scp** command as follows:

scp -r username@csserver.ucd.ie:~/Authorship_Detection/*.zip .



For more Linux commands see : https://maker.pro/education/basic-linux-commands-for-beginners