Week 4 – Linux

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**Class:**

**Student numbers:**

**Student names:**

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Version 1.0

# Linux and Netkit

In this week assignments all students must install an extension of Linux distribution.

Task 1: Install Linux Environment

Follow these steps:

1. Make sure you have 20 GB of free disk space
2. Download and Install virtual machine application. VMWare from the VMWare Store on Fontys portal.

Use VMWare Workstation software for Windows PC and VMWare Fusion software for MACs.

1. Download the Linux OS image. You have 2 options:

* Option one: download any Linux extensions that you are familiar with. Ubuntu is recommended: <https://ubuntu.com/>
* Option two: Use the preconfigure Linux guest: [www.fhict.nl/docent/downloads/TI/P4/netkit\_Lubuntu\_14.04-32.vmwarevm.zip](http://www.fhict.nl/docent/downloads/TI/P4/netkit_Lubuntu_14.04-32.vmwarevm.zip)

1. Install the Linux OS using the virtual machine application.   
   In case you are using the preconfigured OS provided, use the following steps:
   * Unzip the downloaded file and start the Linux guest OS. Your password is “student”. If VMWare asks you whether you moved or copied the image, choose “I copied it”.
   * Check if you can open a terminal, use one of available terminals.
   * Try a few commands like
     + uname –a
     + ping [www.fontys.nl](http://www.fontys.nl)
     + wireshark
   * Note: sudo will ask for your password: student.

Task 2: Do Linux Tutorial

Go to <http://www.ee.surrey.ac.uk/Teaching/Unix/unix1.html> and do the 1st basic Unix tutorial. Do this tutorial individually.

Provide screenshots of all exercises in section 1.6 for both persons in the group.

# Introduction to the Command-Line Interface

It's exciting, right?! You'll write your first line of code in just a few minutes! :)

**Let us introduce you to your first new friend: the command line!**

The following steps will show you how to use the black window all hackers use. It might look a bit scary at first but really it's just a prompt waiting for commands from you.

**Note** Please note that throughout this book we use the terms 'directory' and 'folder' interchangeably, but they are one and the same thing.

#### What is the command line?

The window, which is usually called the **command line** or **command-line interface**, is a text-based application for viewing, handling, and manipulating files on your computer. It's much like Windows Explorer or Finder on the Mac, but without the graphical interface. Other names for the command line are: CMD, CLI, prompt, console or terminal.

#### Open the command-line interface

To start some experiments we need to open our command-line interface first.

**Opening: Windows**

Go to Start menu → Windows System → Command Prompt.

On older versions of Windows, look in Start menu → All Programs → Accessories → Command Prompt.

**Opening: OS X**

Go to Applications → Utilities → Terminal.

**Opening: Linux**

It's probably under Applications → Accessories → Terminal, but that may depend on your system. If it's not there, you can try to Google it. :)

#### Prompt

You now should see a white or black window that is waiting for your commands.

**Prompt: OS X and Linux**

If you're on Mac or Linux, you probably see a $, like this:

command-line

$

**Prompt: Windows**

On Windows, you probably see a >, like this:

command-line

>

Take a look at the Linux section just above now -- you'll see something more like that when you get to PythonAnywhere later in the tutorial.

Each command will be prepended by a $ or > and one space, but you should not type it. Your computer will do it for you. :)

Just a small note: in your case there may be something like C:\Users\ola> or Olas-MacBook-Air:~ ola$ before the prompt sign, and this is 100% OK.

The part up to and including the $ or the > is called the command line prompt, or prompt for short. It prompts you to input something there.

In the tutorial, when we want you to type in a command, we will include the $ or >, and occasionally more to the left. Ignore the left part and only type in the command, which starts after the prompt.

#### Your first command (YAY!)

Let's start by typing this command:

**Your first command: OS X and Linux**

command-line

$ whoami

**Your first command: Windows**

command-line

> whoami

And then hit enter. This is our result:

command-line

$ whoami

olasitarska

As you can see, the computer has just printed your username. Neat, huh? :)

Try to type each command; do not copy-paste. You'll remember more this way!

#### Basics

Each operating system has a slightly different set of commands for the command line, so make sure to follow instructions for your operating system. Let's try this, shall we?

#### Current directory

It'd be nice to know where are we now, right? Let's see. Type this command and hit enter:

**Current directory: OS X and Linux**

command-line

$ pwd

/Users/olasitarska

Note: 'pwd' stands for 'print working directory'.

**Current directory: Windows**

command-line

> cd

C:\Users\olasitarska

Note: 'cd' stands for 'change directory'. With powershell you can use pwd just like on Linux or Mac OS X.

You'll probably see something similar on your machine. Once you open the command line you usually start at your user's home directory.

#### Learn more about a command

Many commands you can type at the command prompt have built-in help that you can display and read! For example, to learn more about the current directory command:

**Command help: OS X and Linux**

OS X and Linux have a man command, which gives you help on commands. Try man pwd and see what it says, or put man before other commands to see their help. The output of man is normally paged. Use the space bar to move to the next page, and q to quit looking at the help.

**Current directory: Windows**

Adding a /? suffix to most commands will print the help page. You may need to scroll your command window up to see it all. Try cd /?.

#### List files and directories

So what's in it? It'd be cool to find out. Let's see:

**List files and directories: OS X and Linux**

command-line

$ ls

Applications

Desktop

Downloads

Music

...

**List files and directories: Windows**

command-line

> dir

Directory of C:\Users\olasitarska

05/08/2014 07:28 PM <DIR> Applications

05/08/2014 07:28 PM <DIR> Desktop

05/08/2014 07:28 PM <DIR> Downloads

05/08/2014 07:28 PM <DIR> Music

...

Note: In powershell you can also use 'ls' like on Linux and Mac OS X.

#### Change current directory

Now, let's go to our Desktop directory:

**Change current directory: OS X and Linux**

command-line

$ cd Desktop

**Change current directory: Windows**

command-line

> cd Desktop

Check if it's really changed:

**Check if changed: OS X and Linux**

command-line

$ pwd

/Users/olasitarska/Desktop

**Check if changed: Windows**

command-line

> cd

C:\Users\olasitarska\Desktop

Here it is!

PRO tip: if you type cd D and then hit tab on your keyboard, the command line will automatically fill in the rest of the name so you can navigate faster. If there is more than one folder starting with "D", hit the tab key twice to get a list of options.

#### Create directory

How about creating a practice directory on your desktop? You can do it this way:

**Create directory: OS X and Linux**

command-line

$ mkdir practice

**Create directory: Windows**

command-line

> mkdir practice

This little command will create a folder with the name practice on your desktop. You can check if it's there by looking on your Desktop or by running a ls or dir command! Try it. :)

PRO tip: If you don't want to type the same commands over and over, try pressing the up arrowand down arrow on your keyboard to cycle through recently used commands.

#### Exercise!

A small challenge for you: in your newly created practice directory, create a directory called test. (Use the cd and mkdir commands.)

#### Solution:

**Exercise solution: OS X and Linux**

command-line

$ cd practice

$ mkdir test

$ ls

test

**Exercise solution: Windows**

command-line

> cd practice

> mkdir test

> dir

05/08/2014 07:28 PM <DIR> test

Congrats! :)

#### Clean up

We don't want to leave a mess, so let's remove everything we did until that point.

First, we need to get back to Desktop:

**Clean up: OS X and Linux**

command-line

$ cd ..

**Clean up: Windows**

command-line

> cd ..

Using .. with the cd command will change your current directory to the parent directory (that is, the directory that contains your current directory).

Check where you are:

**Check location: OS X and Linux**

command-line

$ pwd

/Users/olasitarska/Desktop

**Check location: Windows**

command-line

> cd

C:\Users\olasitarska\Desktop

Now time to delete the practice directory:

**Attention**: Deleting files using del, rmdir or rm is irrecoverable, meaning the deleted files will be gone forever! So be very careful with this command.

**Delete directory: Windows Powershell, OS X and Linux**

command-line

$ rm -r practice

**Delete directory: Windows Command Prompt**

command-line

> rmdir /S practice

practice, Are you sure <Y/N>? Y

Done! To be sure it's actually deleted, let's check it:

**Check deletion: OS X and Linux**

command-line

$ ls

**Check deletion: Windows**

command-line

> dir

#### Exit

That's it for now! You can safely close the command line now. Let's do it the hacker way, alright? :)

**Exit: OS X and Linux**

command-line

$ exit

**Exit: Windows**

command-line

> exit

Cool, huh? :)

#### Summary

Here is a summary of some useful commands:

|  |  |  |  |
| --- | --- | --- | --- |
| Command (Windows) | Command  (OS X, Linux) | Description | Example |
| exit | exit | close the window | **exit** |
| cd | cd | change directory | **cd test** |
| cd | pwd | show the current directory | **cd** (Windows) or **pwd** (Mac OS / Linux) |
| dir | ls | list directories/files | **dir** |
| copy | cp | copy file | **copy c:\test\test.txt c:\windows\test.txt** |
| move | mv | move file | **move c:\test\test.txt c:\windows\test.txt** |
| mkdir | mkdir | create a new directory | **mkdir testdirectory** |
| rmdir (or del) | rm | delete a file | **del c:\test\test.txt** |
| rmdir /S | rm -r | delete a directory | **rm -r testdirectory** |
| [CMD] /? | man [CMD] | get help for a command | **cd /?** (Windows) or **man cd** (Mac OS / Linux) |

These are just a very few of the commands you can run in your command line, but you're not going to use anything more than that today.