

Working with a Unix-shell

A shell, also called terminal or console, is a command-line interpreter, which reads a text line and executes it as a command. Just like the *Finder* (in Mac OS X), the shell is an interface between the user and the computer system; however, it doesn't offer a graphical view. The nesting of the directories, meaning the place where a folder can be found, is the same.

Opening a terminal: on the dock (the *quick launch bar*) at the lower side of the desktop of a Mac, there is an icon *X11* (or *Xquartz*) and an icon *terminal*. In Windows you can look for *Shell* and you will find *Powershell* or a similar program. With a click, they all open up a new terminal window, where there is a *Prompt*, meaning a short text, which shows that we can type something. This *Prompt* consists of the computer name and the directory, where we are at the moment, e.g.:

```
[multiple-man:~] cluser %
```

Just like upon the opening of a new *Finder* window, we are always in the Home directory of the user (here: *cluser*). This is also expressed with the tilde (~). In order to execute a Python script, we need to give the system the path to the directory, where the script is.

With the command *ls* (=list) all directories and files, which the computer can directly control from this place, are being displayed. In the Home directory, these are usually folders like *Desktop*, *Documents*, *Downloads*, etc.

Let's suppose that the Python script we want to execute is in a folder, which itself is on the desktop. In order to go there, we need to change the directory by typing the command **cd** (=change directory) and our goal-folder; here *Desktop*:

```
cd Desktop
```

Now we are in the folder *Desktop* (this is also displayed at the Prompt). If we want, we can get the available directories displayed once again by typing *ls*. Subsequently, we change the directories and folders by typing *cd*, until we are there where our script is.

Now we can just execute it by typing: `python3 scriptname.pl`

Attention: when the name of a folder or of a script includes spaces (e.g. *SoSe 2014*), then it cannot be recognized in the command line. That's why it is better to use underscores or hyphens for the files' and folders' names or to write them altogether.

Overview of the Commands:

cd directory name: switches to a direct sub-directory

cd ..: switches to a direct super-directory. Important is the space between *cd* and the dots.

cd~: switches to the home directory. Alternative: `cd home`

ls: displays a list of folders and files, which can be controlled from the present place

pwd: (=print working directory) displays the name of the path, where we are at the moment

python3 scriptname.pl: executes the python script

Ctrl+ C: stops the execution of the command, when something is taking too long or doesn't do what it is supposed to

Ctrl+ D: when the Ctrl+C command doesn't respond (it happens sometimes), then you can also try this command. This will definitely stop everything, sometimes even close the terminal.

Practical tips:

Page up/down: with the arrow keys up and down you can go through the *History* of the commands already used before. This saves you the continuous typing of a command you have just used, especially when you have to execute many different scripts. You have to press the arrow keys so long that you reach the desired command; when you reach it, you can also slightly change it, if you want, and then press enter.

Tab: when you have typed the first letters of a command or of a file or folder and you press the tab key, the rest of the command will automatically be completed. When there are more options for the completion of the command, you can get those after pressing the tab key for a second time or after typing so many more letters that there is only one option left. On this way, you can avoid typos and save time.

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