Setting up your RA playground

Here's how you can access and configure a place to work during your RA practica.

All students will be using Node 9 of the LOFAR CEP3 cluster, which is located at the Rekencentrum in Groningen. This is a Linux system. It is easiest if you also use a Linux-based (or Mac OS) computer to access Node 9, but it is also relatively easy to create the necessary connection with a Windows system (e.g. using Putty or a Virtual Box).

At the first practicum session (Monday March 30th from 15:00-17:00 in SP G0.10) our goal is to get everyone set up so that they can access the necessary computing area for the RA practica. You can use the machines in the practicum room, but it's important that you can log in to Node 9 / CEP3 whenever you want to work on these (i.e. also outside the official practica hours). Therefore, ideally you will be using your own laptop or have regular access to another desktop computer.

The practica form the "homework" of this course, and in addition to the time spent in the scheduled practica sessions you will need up to ~12hrs per week to work on these according to your own schedule.

Commands to type are in *italics.*

If a command doesn't work by copying and pasting (generally it should), try to write it by hand in the terminal (especially on a Mac)

Access to your playground:

- Get your account information from the TAs. The first word represents your personal username, the second is your password. Note that usernames and passwords are personal and reserved; **please don't share them and keep them secret**.
- Open a new terminal (xterm)
- *ssh* username*@portal.lofar.eu*
- *ssh lhd002*
- *use Slurm ; srun -A TUTORIALS --reservation=TUTORIALS_150 -N1 -u bash -i* (ignore the errors)
- Open a new terminal (and keep the other one running)
- *ssh -Y* username*@portal.lofar.eu*
- *ssh -Y lhd002*
- *ssh -Y lof009*

To create a new python file type: *geany* program_name.*py &*
("geany" is a graphical text editor; alternatively, you can use the in-terminal text editor "emacs", i.e.: *emacs program_name.py &*)
To run the python file just use: *python* program_name.*py*
To show a figure type: *display* image_name

Directory structure:

The results of your practicum work should be well organized.

There are two areas you will have files:

1) lof009:/home/username (this is where you'll be by default when you log in)
2) lof009:/data/scratch/UvA_Radio_Astronomy_2015

More information on how to use these two areas will be given once the practica start.

First simple test exercise:

Create a python file named test.py, import the numpy and matplotlib.pyplot modules, load two numpy arrays, one with ten zeros and one with ten elements, from 0 to 9.
Plot the arrays as x- and y-coordinates of a line, both showing it on screen and saving the image. Then open the saved image.

Practical tips:
1. It is possible to create a numpy array with the command numpy.array([*x0,x1,...*])
2. Coordinates can be plotted with the command matplotlib.pyplot.plot(*x_coords,y_coords*)
3. A plot can be shown with the command matplotlib.pyplot.show()
4. A plot can be saved with the command matplotlib.pyplot.savefig(*'name_of_img*.png')
5. Note that after you use the commands show or savefig, the plot is removed. This means that you cannot use the two commands consequentially without re-creating the plot with the command matplotlib.pyplot.plot(*x_coords,y_ccords*)