Informatics for Astronomers - WS2021

Roland Ottensamer, Marina Dütsch, Miguel Verdugo, Andreas Schanz

Exercise sheet 2 - Linux & Python Basics

The following will be also part of the assessment:

(1) Try to present exercises in a way that everyone can understand (even those who didn't do the exercises), so please explain the vital parts of your solution in a clear way.

(2) Try to also include some background information where applicable, and/or explain the possible context/motivation for the given exercise.

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1. Start a (Linux) terminal/shell.
   - Practice navigation in the directory structure: Opening of directories, listing of directory content, going one level up again.
   - Create a directory and create a new file within it. Use an editor to write some content in that file, rename the file and copy it to another location.
2. An important characteristic of Linux is the strict handling of (user)permissions. Enter `ls -l` and explain the output. How can file/directory permissions (`rwx`), and user/group membership (of files/directories) be changed?
3. What are processes under Linux? How can you get a good overview over currently running processes (in a Linux terminal)? What do the most important parts of the output of `top` or `htop` mean?
   - How do you terminate a program in Linux?
4. Redirect the output of the command `ls` to a file. What is the difference of an output redirection with `>` compared to one with `>>`?
   - Try to come up with a reasonable use-case of the input redirection (`<`) and explain it
5. What does the pipe `|` do? Please explain it with few examples.
6. There are a few ways to run `python` code, e.g.
   - `python` shell
   - `ipython`
   - scripts
   - `jupyter` notebooks

   Explain some of the advantages and disadvantages of these methods. In which cases you should use each of them?