

# Linux Shell Essentials

This paper tries to provide a short and practical introduction to the essential commands and keystrokes required to survive in the text adventure called Linux.

**Shell** also known as **Console**, **Commandline** or **Terminal**, is a textual representation of a file manager. A Shell provides all features of a good file-manager like browsing directories, starting programs, editing/ copying/ renaming/ deleting/ finding/ searching files.

A shell can be started in various ways:

- right-click on empty desktop → choose start terminal
- right-click on empty desktop → choose execute command → <COMMAND>

Where <COMMAND> may be (among others):

**xterm/ konsole/ teminal/ yakuake**

Like a graphical filemanager, a Shell is always located somewhere in the filesystem. The current path is often printed at each input prompt.

E.g.: gregor@neutron:~/Source/tricopter1> \_

Here „~/Source/tricopter1“ is the current working directory. („~“ means your homefolder).

Important keystrokes in Shells:

**Tabulator** (→|) tries to complete current input line by checking filesystem

E.g.: fir(→|) completes to firefox

**Ctrl + c** cancels current foreground process

**Ctrl + z** sends current foreground process to sleep

- **bg + Return** wake up process and send to background
- **fg + Return** wake up process and bring into foreground

Shell commands come in two flavors

- Shell builtin commands (if-then-else/ foreach/ exit)
- Executables: Every file in the filesystem that is
  - marked with the x-Bit as being executable
  - allowed to be read by the current user
- Executables are found by searching the **PATH**-Variable. This variable stores a double colon separated list of directories where to search for executables. (E.g.: /usr/local/bin:/usr/bin:/bin:/usr/bin/X11)
- Note: Executables in the current directory must be prefixed by ./ to be found! (E.g. ./install.sh)

Essential Shell Commands

- |   | <i>Example</i>             |
|---|----------------------------|
| • <b>ll</b> alias <b>ls -l</b> (list long)<br>lists content of current directory or any other given directory   | <i>ll Source/</i>          |
| • <b>pwd</b> (print working directory)<br>displays the current location of the shell in the filesystem  | <i>pwd</i>                 |
| • <b>cd</b> (change directory)<br>moves to another location in the filesystem   | <i>cd Source/</i>          |
| • <b>rm [-R] -[f] &lt;ENTRY&gt;</b><br>removes file or directory <ENTRY>. -R = recursive (for directories); -f = force remove even protected entries  | <i>rm -Rf Source/</i>      |
| • <b>sudo &lt;COMMAND&gt;</b><br>Executes <COMMAND> as superuser. Use with caution!   | <i>sudo rm -Rf Source/</i> |
| • <b>chmod [u][g][o]+ - [r][w][x] &lt;FILE&gt;</b><br>Changes modification bits of file <FILE><br>u = user (owner of file); g = group; o = others; r = readable; w = writable; x = executable | <i>chmod +x install.sh</i> |
| • <b>echo \$&lt;VARIABLE&gt;</b><br>Prints content of variable <VARIABLE>.  | <i>echo \$PATH</i>         |