Mastering the Linux File System (S4)

Structure of the Linux File System

- Tree structure
- See cheat sheet for standard paths

Navigating the File System

- pwd → current path
- ls → use man page if you don't know it
- cd → use man page if you don't know it

File Extensions in Linux

- file command to see file type
- file extensions don't matter in Linux OS, header is important
    - Linux programs will still struggle with wrong extensions

Wildcards

- http://tldp.org/LDP/GNU-Linux-Tools-Summary/html/x11655.htm

Creating Files and Folders

- touch → see man page
    - brace expansion to create multiple files (in multiple folders too)
        - touch {a,b,c}_{1..3}/file{1..100} → creates 100 files in every folder
- mkdir → see man page
    - –p entire path gets created
    - brace expansion to create multiple folders:
        - mkdir {a,b,c}_{1..3} → creates 9 folders

Deleting Files and Folders

- rm → see man page
    - also works with wildcards
    - –r to delete recursive
    - –f to force
    - –i interactive
    - Brace expansion also works
- rmdir → see manpage (good to remove empty directories)

Copying Files and Folders

- cp → see manpage
    - –r to copy recursive (folders)

Moving + Renaming Files and Folders

- mv → see manpage

Editing Files using Nano

- https://www.nano-editor.org/dist/latest/cheatsheet.html
- nano settings under /etc/nanorc

Locate Command

- get path of searched term using a db
  - wildcards etc. are possible
  - –i → case insensitive
  - –e → checks if files exist
- locate –S → locate db info
  - Updated once a day or with sudo updatedb

Find Command

- For a lot of search tasks without use of db(always up to date/slower)
- find [-H] [-L] [-P] [-D debugopts] [-Olevel] [starting-point...] [expression]
  - –maxdepth <number> → only searches amount of levels down
    - Should be put first
  - –type <type> → search for files(f), directories(d), …
  - –name "<pattern>" → search for a name pattern
    - -iname for case insensitive
  - –size +|-<size> → search files with size bigger/smaller than size
  - –exec <command> → execute command on every find
    - Use –ok instead -exec for user confirmation
    - E.g.: sudo find Schreibtisch/ -size +100k -size -5M -type f -exec cp {} ~/copy_here \;

Viewing Files

- cat → read files
- tac → reads file in reversed lines
  - also works with mp3 (nice to know)
- rev → reversed content of the lines
- less → read file/input scrollable (pipe standard input in it)
- head –n <number> → read first n lines of file/input
- tail –n <number> → read last n lines of file/input
- wc → word count
  - –l → line count

Sorting Data

- sort → sorts input
  - –r → reversed
  - –n → for numbers
  - –h → for human readable data
  - –M → sort by month
  - –u → unique results
  - –k <columnNumber>[sort options] → sort by column number

Searching File Content

- grep → see man page
  - –i → case insensitive
  - –a → count
  - –v → invert search(find lines who don't contain search)

- Good in combination(pipe) to filter output of other commands like ls, man

File Archiving and Compressing

- tar → see man page
  - –c → create
  - –v → verbose, for output
  - –f → for files
  - –t → test, to see what's inside the file
  - –x → extract files
  - –z → use gzip for compression
  - -j → use bzip2 for compression
- gzip → see manpage
  - gunzip → see manpage
- bzip2 → takes more time than gzip, but gets mostly more compression
  - better for bigger files
  - bunzip2
- zip → no need to create a tar before, not as compressed but works for windows too
  - unzip