

Introduction to the Linux OS

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December 5, 2024

Overview and Organization

Introduction to the Operation system Linux, focus on the command line, scripting, basic services and tools used in (not only) physics: tasks automation in data processing and modeling

Organization

- Graded Assessment (KZ): attendance to the lectures, worked out homeworks

Literature

- C. Herborth: Unix a Linux - Názorný průvodce, Computer Press, Praha, 2006
- D. J. Barrett: Linux - Kapesní přehled, Computer Press, Praha, 2006
- M. Sobell: Mistrovství v RedHat a Fedora Linux, Computer Press, Praha, 2006
- M. Sobell: Linux - praktický průvodce, Computer Press, Praha, 2002
- E. Siever: Linux v kostce, Computer Press, Praha, 1999
- **Number of online sources...**

Study materials and homeworks

- <http://kfa.mff.cuni.cz/linux>



- 1 UNIX systems, history, installation, basic applications
- 2 Structure of the Linux OS, file systems, hierarchy of the file system
- 3 Command line, shells, remote access (ssh, ftp)
- 4 Processes and their administration, basic system commands, packages, printing
- 5 Users, file and directory permissions
- 6 Work with files and directories, file compression, links, partition
- 7 Text-file processing commands, redirection, pipeline
- 8 Regular expressions
- 9 Command line based text editors
- 10 User and system variables, output processing
- 11 Scripts: basic construction, conditionals, loops, functions, automation
- 12 Networking, server-client services: http, (s)ftp, scp, ssh, sshfs, nfs
- 13 Programming in Linux (examples of Fortran, C/C++, Python), version control systems, documents in Latex

Download the <http://meop3.troja.mff.cuni.cz:8010/linux/materials/texts.tar.gz> file.
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- 1 Write a regex (and demonstrate using grep and echo "test string") for url. Examples of valid urls are: <http://url.to.some.address.cz>, <https://another.example-with-hyphen.com>, <ftp://some.ftp.url.ac.uk> (the allowed top level domains are .cz, .sk, .uk., .com, .org, .net, there are more but consider only these)
- 2 Write a regex for "rodne cislo" in the form YYMMDD/NNNN or /NNNN, where MM is 01..12 for men and 51..62 for women. YY is anything between 00 and 99, and DD depends on MM (28, 30 or 31, disregard leap years).
- 3 Write a sed command for caesar file which transforms the chapter names from "[XX]" to "Chapter XX" and prints only the first line of text after the chapter on a newline .
So the output should look like this:
Chapter 1
Quita Gallia Caesar, ut constituerat, in Italiam ad conventus agendos
Chapter 2
His rebus agitatis profitentur Carnutes se nullum periculum communis
...
- 4 In the chemicals file, using sed, change the order of chemical code and chemical names and from the code remove the "-". This have to be a one line command!!!
The output should look like this:
p Nitrochlorobenzene 100005
p-Nitroaniline 100016
4-nitrophenol 100027
- 5 In pythoncode.py, add a comment line (e.g. # This is a comment) before each line with function definition (i.e. a line with def ..) and a different comment after each "for" cycle. Use sed only. Hint: sed -e "first inserting" -e "second inserting", the def and for does not have to start always at the beginning of the line.
- 6 Construct the regex (and demonstrate using echo "some good and bad numbers" | grep -E ...) for real numbers (e.g. accepted forms are 1.15, 3.4e-15, +15, -500, -.024, -0.154e15 etc.)