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Tutorial : Introduction to Unix/Linux

Computer Architecture and
Systems Programming
(252-0061-00)

Herbstsemester 2012

Unix File System

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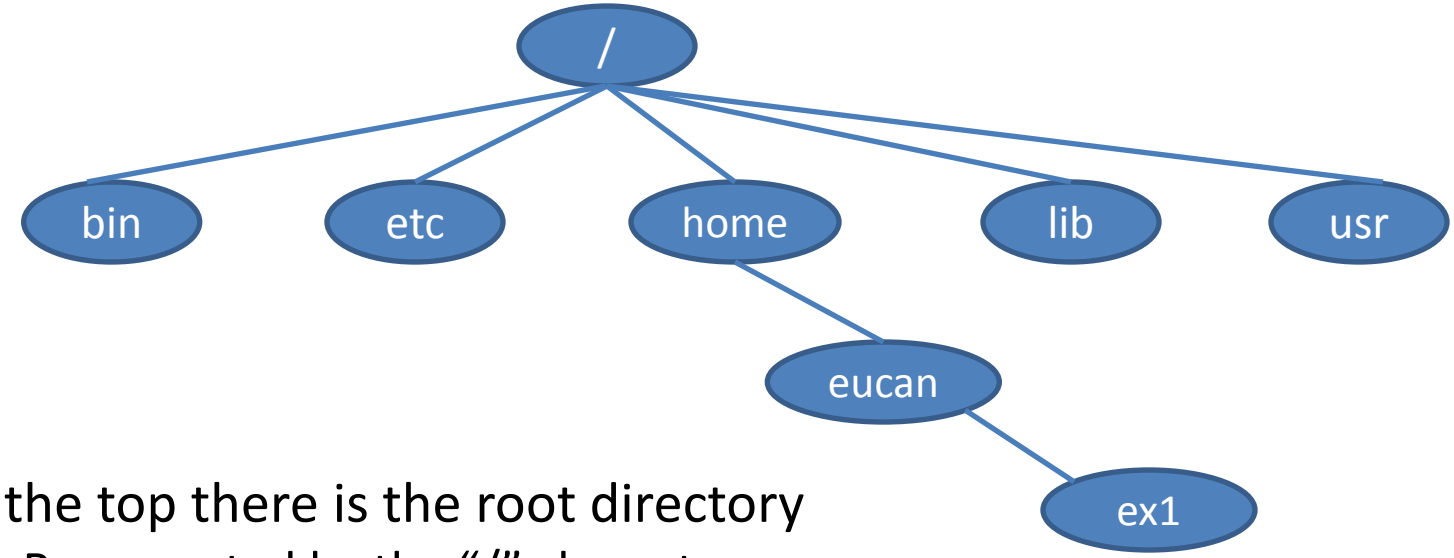
- UNIX organizes user data, programs, etc. into structures called *files*.
- Files are places in *directories*.
- Directories are organized into a hierarchical structure.



- At the top there is the root directory
  - Represented by the "/" character
- Absolute pathname for *ex1* would be /home/eucan/ex1

Browsing basics

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- *whoami*: prints the login name of the current user
- *pwd*: prints the working directory
- *ls*: lists files and directories
  - Has more options such as –F, -a, -l, -all.
- *cd*: changes the current working directory to the given pathname
  - `cd /home/eucan/ex1`
- "." is the current directory and ".." stands for the parent directory and can also be used with cd.

File Management

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- *mkdir*: creates a directory
  - `mkdir /home/eucan/ex1/newfolder`
- *rmdir*: removes a directory
  - will only remove empty directories
- *cp*: copies files/folders from one location to another
  - `cp /etc/hosts /home/eucan`
- *mv*: move/rename existing files/folders
  - `mv /home/eucan/hosts /home/eucan/ex1/newfolder`
- *rm*: removes files/folders
  - `rm /home/eucan/ex1/newfolder/hosts`

Dealing with processes

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- *ps*: see the processes associated with the current shell
  - ps –ef to get a full listing of all processes in the system
- *top*: display the processes using the most CPU time
  - Quit with q
- *kill*: terminates a process
  - Used as ‘kill <ProcessID>’.
  - -9 option to force kill

Misc.

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- *gedit, emacs, vi*: useful text editors for writing your programs and editing files.

- *cat, more, less*: useful to view files
- *grep:* useful for searching text files

- *man*: very useful manual pages for all the commands you have seen and a lot more!
  - Use man whenever you need more information on how to use a Unix command!

ssh

- Secure login to remote machines
- Usage: `ssh <username>@<hostname>`
  - `exit` to close session
- Machines (*.inf.ethz.ch)
  - `slab1.ethz.ch` to `slab8.ethz.ch`
  - `optimus.inf.ethz.ch`
  - `stud{1..27}-h{56,57}.inf.ethz.ch`

- CAB Lab machines, might be turned off at any time or running Windows
- No port-scans allowed (for detecting if machines are running Linux)

More tutorials online

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- *http://people.ischool.berkeley.edu/~kevin/unix-tutorial/toc.html*
- *http://www.ee.surrey.ac.uk/Teaching/Unix/*
- *http://www.unixtutorial.org/commands/*
- *..and just Google for more!*