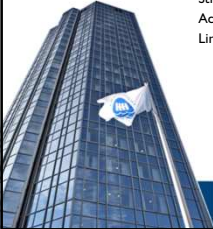


# The Linux File System

Structure  
Access control  
Links



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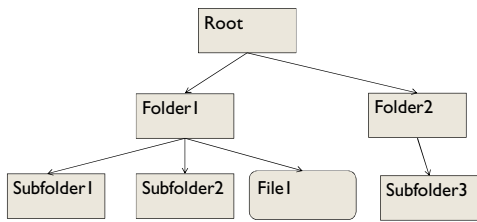
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# Hierarchical File Structure



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# Filename/ Foldername limits

- Characters
- Length
- Case sensitivity
  
- Avoid blanks and coded characters

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## Filename Extensions

- compute.c
- compute.o
- compute
- memo.0410.txt
- memo.pdf
- memo.ps
- memo.Z

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## Hidden Filenames

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## Hidden Filenames

- Hidden files start with .
- Even hidden folders

- .csh
- .netscape
- .cache

- Shows up with the command `ls -a`

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## Toolbox

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## Print Working Directory

- pwd

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## ls (list files)

- ls
- ls -l
- ls -a
- ls -la
- ls \*.txt
- ls -la \*.txt

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## Hidden files/ Startup files



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## Absolute and Relative paths

- Absolute paths start with / (the root)
- Relative paths start with . (this folder)



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## ~ (tilde)

- Tilde is a lookup macro that finds the home of a user.
- ~adam/ -> /home/adam/
- ~root/ -> /root/
  
- No explicit user -> you
- ~/ -> /home4/itn/weck



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## rmdir/ mkdir/ cd

- rmdir – remove directory
- mkdir – make directory
- cd – change directory



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## . and ..

- . -> this folder
- .. -> parent folder



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## Example usage

- touch -> updates the "written" date of a file. If no such file exists; create it.
- cd
- pwd
- /home/wecksten
- touch letter.txt
- cp letter.txt emails/archive/letter.10
- vim.tiny emails/archive/letter.10
- cd emails/archive
- pwd
- /home/wecksten/emails/archive
- vim.tiny letter.10
- cd ..
- pwd
- /home/wecksten/emails



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## mv/ cp

- mv -> move
- cp -> copy



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## The file structure

- /
- /bin
- /boot
- /dev
- /etc
- /home
- /mnt
- /proc
- /root
- /sbin
- /tmp
- /usr
- /usr/bin
- /usr/sbin
- /usr/local
- /var
- /var/log
- /var/spool



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## Access permissions

- ls -l shows access permissions
- `-rwxrwxr-x+` 3 max pubs 2048 2010-08-12 13:15 memo



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## Access permissions

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## Access permissions

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## chmod (Change permissions)



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## setuid/ setgid

- setuid -> execute programs as a specific user
- setgid -> group rights



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## ACL (Access Control Lists)

- Finer grained access control
- Performance loss



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## Links

”Links associate a filename with a place on the disk that holds the information you want.”



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## Hard links

- To be able to analyze harddisks you must understand hard links.
- Within same file system
- A new file pointer (inode)



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## Soft links

- A "macro" or "alias" for a filename.
- No restrictions.
- Might disappear.



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## Exercise I

Come up with an exercise that exemplifies how file access rights are used.

What files and folders are you going to use?

What users?

What access rights?



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