

M0 – Linux Shell

CS 136L S23 – Week 2

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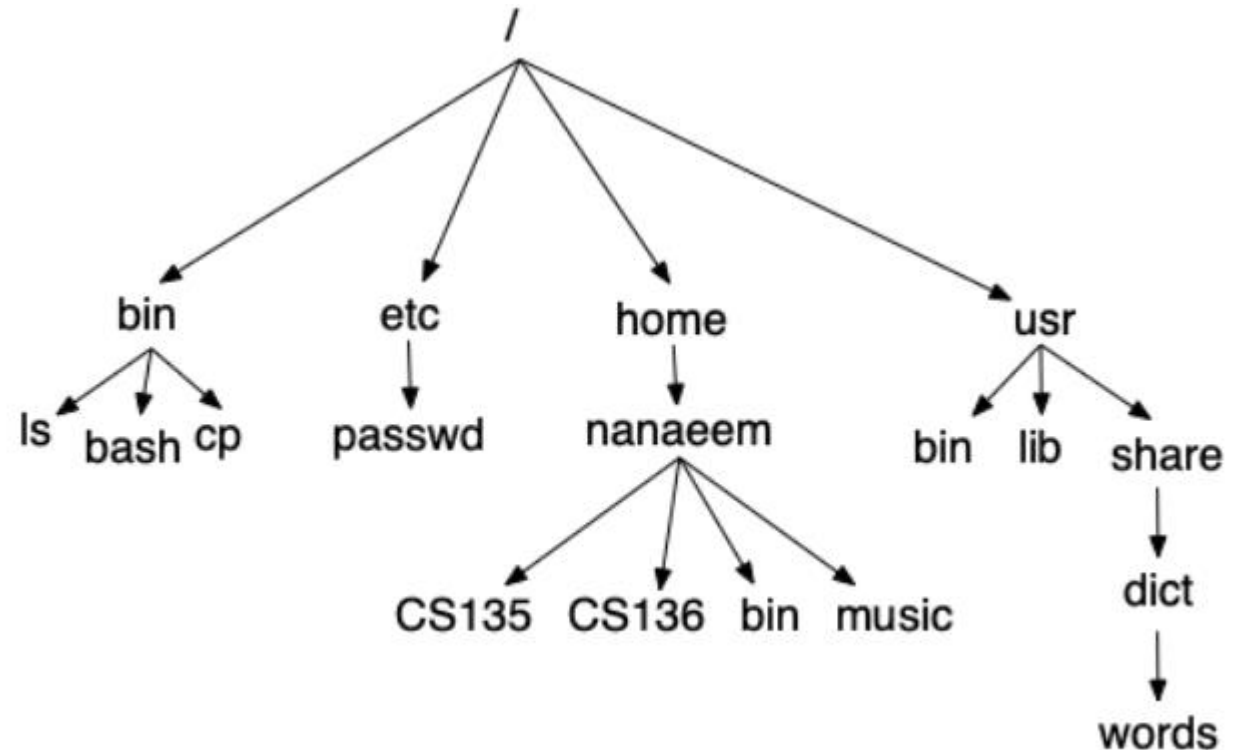
Main Points

- How Linux file system organizes files
- How to navigate file system
 - Change directories
- How to manipulate files
 - Change file name and location
 - Find files
 - Archive files
- How to edit a file
 - vi/vim
- How to copy files to/from a remote host
 - ssh/scp
- I/O Streams and redirection

File Organization

Command	Notes
pwd	
ls	-a -l -r -t
mkdir	dir1 dir1/dir2
cd	. .. - ~ ~userid
rmdir	rm -r (dangerous!)

tree



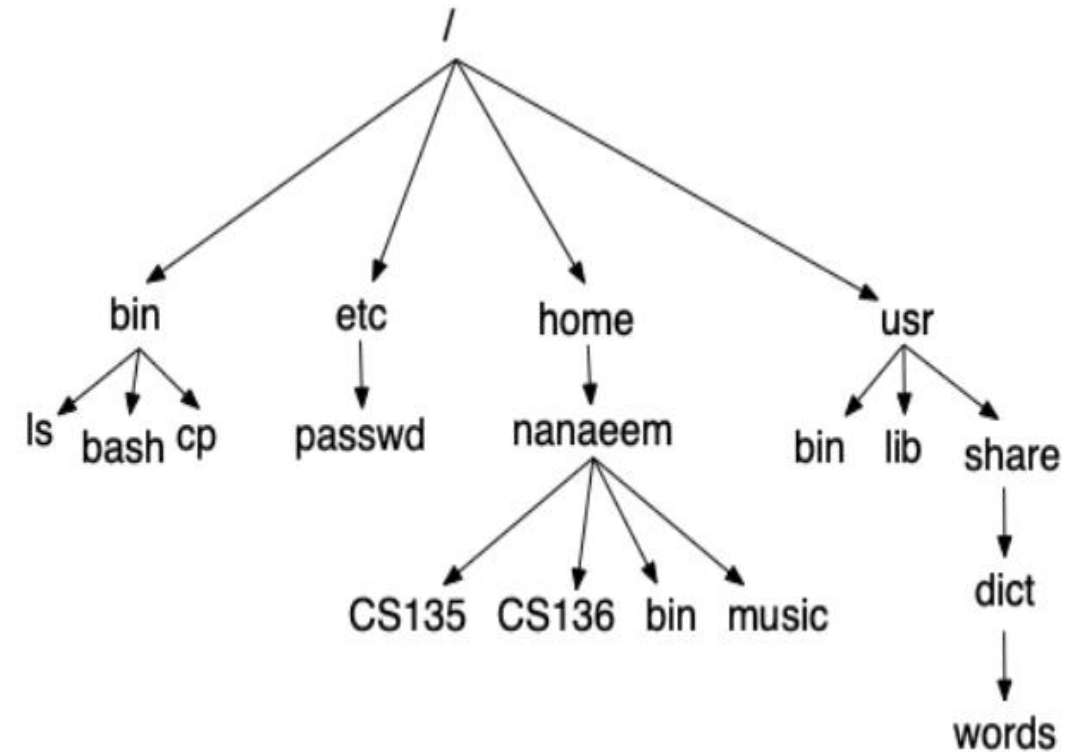
Questions

Which command prints the directory that you are currently located in?

- a) cd
- b) man
- c) ls
- d) pwd

Path

- Absolute Path
 - /home/nanaeem/CS135
 - ~/CS136
- Relative Path
 - Suppose I am at /usr/share
 - dict/
 - dict
 - ./dict
 - ./dict/words
 - ../bin



Questions

Which command is different from others?

- a) `cd var/tmp`
- b) `cd /var/tmp`
- c) `cd ~/var/tmp`
- d) `cd ./var/tmp`

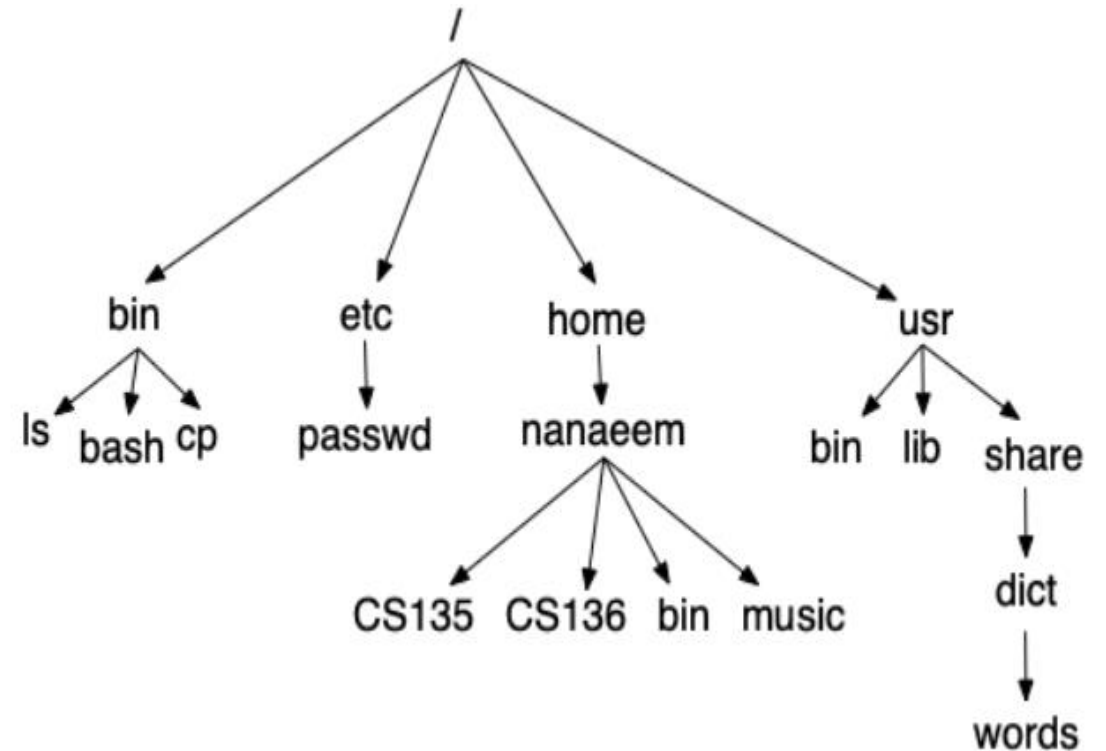
Questions

Can you explain the difference between the following four commands?

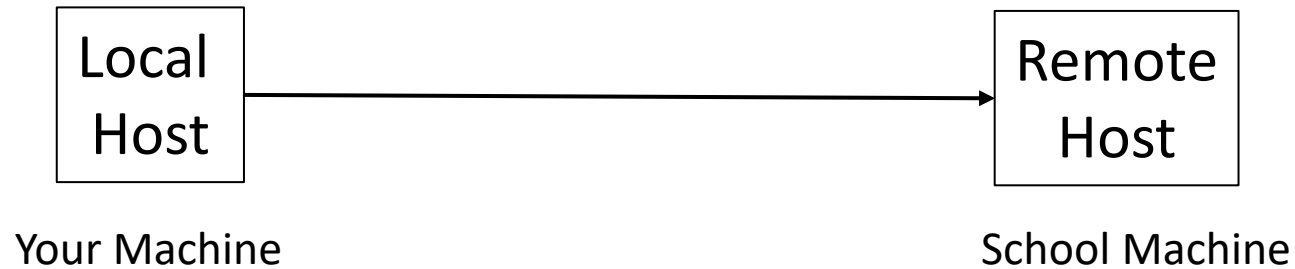
- a) `cd var/tmp`
- b) `cd /var/tmp`
- c) `cd ~/var/tmp`
- d) `cd ./var/tmp`

File Manipulation

Command	Notes
touch	existing vs non-existing files
cat	single and multiple files
mv	name change, path change
cp	
zip	-r
find	-name -type
rm	dangerous! -r (very dangerous!)



ssh and scp



- `ssh userid@remote_host`
- `scp source target`
 - `scp local_file.txt userid@remote_host:path`
 - `scp my_local_file.txt yqhuang@linux.student.cs.uwaterloo.ca:~/cs136l/`
 - `scp yqhuang@linux.student.cs.uwaterloo.ca:/u2/cs136l/pub/start.txt .`

Terminal Shortcuts

- `sleep 300`
- `factor`
- `bc`

Shortcuts	Notes
Ctrl+A	Moves cursor to the start of the line
Ctrl+E	Moves cursor to the end of the line
Ctrl+C	Sends SIG_INT
Ctrl+D	Sends EOF
Ctrl+L	Clears screen
Ctrl+K	
Ctrl+U	Clears a line
Ctrl+Z	Suspends a job
fg	Brings the job to foreground
Ctrl+R	Search command history and re-execute
!!	Execute the most recently issued command
!string	Execute the most recently issued command starting with "string"
!\$	The last argument of the previous command

Vi/Vim Demo

- Insert mode vs command mode
- How to save to a file
- How to search
- How to copy and past
- How to undo and redo
- How to search a string
- How to replace string1 with string2
- How to split windows
- How to quit

I/O Streams and Redirection

```
#!/bin/bash
echo "Input some text (this message was output to stdout)"
read input
echo "You wrote $input (this message was output to stderr)" >&2
```

myprogram



- ls > file1.txt
- cat file1.txt > file2.txt
- ./myprogram
- ./myprogram < in.txt
- ./myprogram < in.txt >out.txt
- &1, &2

Acknowledgement

- Slides by courtesy of Carmen Bruni and Anton Mosunov
- Demo notes from Nomair Naeem
- Demo lectures by Carmen Bruni and Nomair Naeem

References

- CS 136L edX notes at <https://online.cs.uwaterloo.ca/>