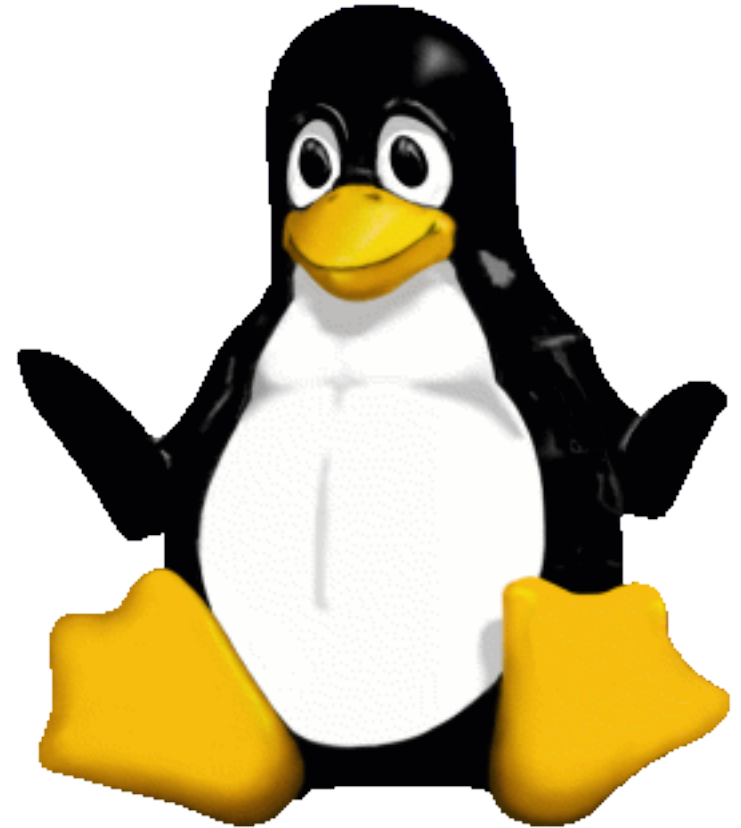


# Unix Tips, Tricks, and Quirks

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# Unix Tips, Tricks, and Quirks

- Helpful hints
- Oddities
- Silliness
- Oopsies
- Non-Unix quirksiness

# Helpful Hints

## Virtual Linux machine

- Docker
  - Free for personal use
  - Pay for business use
  - <https://www.docker.com>
- Podman
  - Open source
  - Docker-compatible
  - <https://www.podman.io>

# Helpful Hints

## Session persistence

- screen
  - Create session
    - `screen -e ^]^[`
  - Attach to session
    - `screen -rd`
- tmux

# Helpful Hints

emacs shell mode

- Like “script”, but interactive

# Helpful Hints

## Quoting

- Double quotes: variables are expanded
- Single quotes: variables are not expanded
- `$*` vs. `$@` vs. `"$@"`

# Helpful Hints

## Output redirection

- Many commands accept “-” to mean stdout (or stdin)
- For those that don't, try `/dev/stdout`

# Helpful Hints

## Process information

- `/proc`
  - Virtual file system
  - Information about running processes
- `/proc/self`
  - Symbolic link to actual process ID
- Use “`xargs -0`” to deal with NUL separators



# Oddities

## Where am I?

- These are the same:
  - /home/me
  - /home//me
  - /home///me
- So are these:
  - /tmp
  - ///tmp
- But not these:
  - /tmp
  - //tmp

# Oddities

## Where am I?

- <https://pubs.opengroup.org/onlinepubs/9699919799/utilities/cd.html>
  - 8.c. An implementation may further simplify curpath by removing any trailing <slash> characters that are not also leading <slash> characters, replacing multiple non-leading consecutive <slash> characters with a single <slash>, and replacing three or more leading <slash> characters with a single <slash>.
- [https://pubs.opengroup.org/onlinepubs/009604599/basedefs/xbd\\_chap04.html#tag\\_04\\_11](https://pubs.opengroup.org/onlinepubs/009604599/basedefs/xbd_chap04.html#tag_04_11)
  - A pathname that begins with two successive slashes may be interpreted in an implementation-defined manner, although more than two leading slashes shall be treated as a single slash.

# Oddities

## Where am I?

- This doesn't work:
  - `rmdir .`
- But this does:
  - `rmdir $(pwd)`
- Where am I now?

# Oddities

## I/O redirection

- The following are equivalent:
  - `cat < hello > kitty`
  - `<hello>kitty cat`
  - `>kitty<hello cat`

# Oddities

## File permissions

- `chmod 046 foo`
  - User can't do anything
  - Group members (other than user) can read but not write
  - Non-group members have full permission
    - But beware the sticky bit (`drwxrwxrwt`)

# Oddities

## Gregorian calendar

- `cal 9 1752`

September 1752

Su	Mo	Tu	We	Th	Fr	Sa
		1	2	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

# Silliness

emacs doctor mode

- Eliza in emacs

# Silliness

emacs web browser

- eww



# Silliness

cowsay

- cowsay "Moo"

```
-----  
< Moo >  
-----  
  
 \      ^  ^  
 \      --  
 \ (oo)\_____   
  (__) \           )\/\   
      ||-----w |   
      ||         ||
```

# Silliness

## C arrays

- Count of elements in array

```
int x[5];  
int count = sizeof x / sizeof *x;
```

- The following are all equivalent:

- `x[3]`
- `3[x]`
- `*(3+x)`

# Silliness

## Performance tests

- Whetstone
  - Floating-point performance
- Dhrystone
  - Integer performance
- Fhlushstone
  - Data movement performance
  - `time dd if=/dev/zero of=/dev/null bs=1M count=1M`
  - Don't do this with `/dev/random`!

# Oops

## Shell script editing

- Don't modify an executing shell script!

# Non-Unix Quirks

## JavaScript

- 'B' + 'a'+ + 'k' + 'a'
  - 'BaNaNNa'

# Non-Unix Quirks

## Windows (apocryphal)

- Daylight saving time: spring
  - 1:59 -> 3:00
  - 3:59 -> 4:00
  - All good!
- Daylight saving time: fall
  - 1:59 -> 1:00
  - 1:59 -> 1:00
  - 1:59 -> 1:00
  - ...

# Non-Unix Quirks

## Multics

- User quota bypass
  - Can't store exceeding quota in files
  - Can encode in ring 5 initial ACL (no quota!)
    - Legitimate: username.project
    - Hack: arbitrary.alpha

# Non-Unix Quirks

## CDC NOS

- Privileged “access” subsystem
  - Regular users can’t change their subsystem to this
  - ...but can make it their initial subsystem
- Password file (plain text)
  - System file, not in users’ file space
  - System scripts are callable
  - Calling the password file leaves it in the user’s space
- $O(n)$  password guessing
  - Should be  $O(2^n)$
  - Put first character of guess at end of valid address space
    - “Invalid”: wrong guess
    - \*crash\*: right guess!
  - Put correct first character and second character of guess at end
  - Repeat for remaining characters



# Non-Unix Quirks

## Apple II

- Parallel card (printer) driver
  - Must wait until ready for next character
    - Instruction: JMP <here>
    - WTF?
  - When ready, card remaps memory with other page of instructions

# Thank You

