

# Moderne Kommandozeilenwerkzeuge

(Edition „Eiche RUSTikal“)



#Froscon2024  
#froscon19

LEYRER@chaos.social

Der Leyrer ...  
Du, Leyrer ...



Sven Guckes

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(Edition „Eiche RUSTikal“)



# The UNIX philosophy

Doug McIlroy, Bell System Technical Journal 1978

[http://emulator.pdp-11.org.ru/misc/1978.07\\_-\\_Bell\\_System\\_Technical\\_Journal.pdf](http://emulator.pdp-11.org.ru/misc/1978.07_-_Bell_System_Technical_Journal.pdf)

# The UNIX philosophy

Erstelle Programme so, dass sie eine Aufgabe richtig erfüllen. Wenn es eine neue Aufgabe gibt, beginne ein neues Programm anstatt das andere zu verkomplizieren.

# The UNIX philosophy

Gehe davon aus, dass die Ausgaben eines Programms die Eingabe eines anderen sein können, selbst wenn Du dieses noch nicht kennst. Programme sollten nicht schwafeln, halte die Ausgaben kurz und einfach verarbeitbar.

# The UNIX philosophy

Lass Computer-Tools die Arbeit für Dich machen,  
nicht die Hilfskräfte.



# The UNIX philosophy

Peter H. Salus in “A Quarter-Century of Unix” (1994):

- Write programs that do one thing and do it well.
- Write programs to work together.
- Write programs to handle text streams, because that is a universal interface.



**bluca**

[@bluca@fosstodon.org](mailto:@bluca@fosstodon.org)

#systemd v256 has been released! Available soon in your nearest distro, now with 42% less Unix philosophy

[github.com/systemd/systemd/rel...](https://github.com/systemd/systemd/releases)

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# Thematische Schwerpunkte der FrOSCon 2024

In Rust we trust - Memory safe languages

# bat

- A cat clone with wings
- syntax highlighting for a large number of programming and markup languages
- git support
- <https://github.com/sharkdp/bat>

► `bat test.md`

File `test.md`

`# Markdown example`

Note how we can correctly syntax-highlight the code blocks `*inside*` the Markdown document.

Python example:

```
``` python
cmd = "bat"
print("Hello from {}".format(cmd))
```
```

Ruby example:

```
``` ruby
cmd = "bat"
puts "Hello from #{cmd}"
```
```

► **bat** src/index.html

File **src/index.html**

|      |  |
|------|--|
| 1    | <!DOCTYPE html>                          |
| 2    | <html lang="en">                         |
| 3    | <head>                                   |
| 4    | <meta charset="utf-8">                   |
| 5 ~  | <title>a changed title</title>           |
| 6    | <link rel="stylesheet" href="style.css"> |
| 7    | </head>                                  |
| 8    | <body>                                   |
| 9 +  | New lines that have been                 |
| 10 + | added since last commit.                 |
| 11   | </body>                                  |
| 12   | </html>                                  |

► bat -A non-printable.txt

File: non-printable.txt

```
1 .....space-indented•line LF
2 |-----|tab-indented•line LF
3 |-----|.....mixed-indented•line LF
4 LF
5 backspace•character•in•quotes:•" BS" LF
6 escape•character•in•quotes:•" ESC" LF
7 LF
8 line•with•trailing•space••• LF
9 LF
10 line•that•ends•with•carriage•return CRLF
11 last•line LF
```



# zoxide

- a smarter cd command, inspired by z and autojump
  - „jump“ to directories
  - works on all major shells
- 
- <https://github.com/ajeetdsouza/zoxide>



# xcp

- partial clone of the Unix cp command
- displays a progress-bar
- Optimised for 'modern' systems (i.e. multiple cores, copious RAM, SSD/NVMe)
- aggressive parallelism for systems with parallel IO
- <https://github.com/tarka/xcp>

kdash on  main [\$?] is  v0.3.5 via  v1.65.0

→ xcp -r target target1

[00:00:00] [#####] 4.18GiB/4.18GiB (0s)

# dysk

- A linux utility listing your filesystems
  - Replaces df
  - Json output
- 
- <https://github.com/Canop/dysk>

19:06:02~/dev/lfs dysk -c label+default+dev

| label                                      | filesystem | type | disk  | used | use | free | size | mount point          | dev  |
|--|------------|------|-------|------|-----|------|------|----------------------|------|
| Asterix<br>gris-plat<br>KINGSTON<br>IDEFIX | /dev/sdb1  | xfs  | SSD   | 499G | 50% | 501G | 1.0T | /home/dys/dev        | 8:17 |
|  | /dev/sda1  | ext4 | SSD   | 152G | 63% | 90G  | 243G | /                    | 8:1  |
|  | /dev/sdc   | vfat | remov | 9.1G | 28% | 23G  | 32G  | /media/dys/gris-plat | 8:32 |
|  | /dev/sdd1  | vfat | remov | 26G  | 84% | 4.8G | 31G  | /media/dys/KINGSTON  | 8:49 |
|  | /dev/sde1  | vfat | remov | 1.5G | 72% | 568M | 2.1G | /media/dys/IDEFIX    | 8:65 |

```
18:15:01~/dev dysk -f 'type=vfat' -j | jq '[.[] | {"mount-point", size: .stats.size}]'
```

```
[  
  {  
    "mount-point": "/media/dys/KINGSTON",  
    "size": "31G"  
  },  
  {  
    "mount-point": "/media/dys/17E3-708C",  
    "size": "15G"  
  },  
  {  
    "mount-point": "/boot/efi",  
    "size": "310M"  
  }  
]
```

# diffastic

- structural diff tool
  - compares files based on their syntax
  - understands nesting
- 
- <https://github.com/Wilfred/diffastic>





## Terminal



```
$ diff javascript_simple_before.js javascript_simple_after.js
```

```
javascript_simple_after.js --- JavaScript
```

```
1 // hello
```

```
.
```

```
2 foo();
```

```
3 bar(1);
```

```
4 baz();
```

```
.
```

```
5
```

```
6 var people = [
```

```
7   "john", "harry", "dick", "eric",
```

```
8   "jenny", "alexandra",
```

```
9 ];
```

```
$
```

```
1 // hello
```

```
2 if (true) {
```

```
3   foo();
```

```
4   bar(2);
```

```
5   baz();
```

```
6 }
```

```
7
```

```
8 var people = [
```

```
9   "john", "harry", "dick", "yvonne",
```

```
10  "eric", "jenny", "alexandra",
```

```
11 ];
```

# dust

- Like du but more intuitive
  - Sane defaults
  - Less error messages
- 
- <https://github.com/bootandy/dust>

\$ dust

```
902M registry
1019M .cargo
1.0G entries
1.0G cache2
1.0G hlifv2zf.default
1.0G firefox
1.0G mozilla
1.5G .cache
888M lib
1.2G nightly-x86_64-unknown-linux-gnu
2.0G toolchains
2.0G .rustup
1010M target
1.0G hack
2.2G rust
3.0G dev
810M LoversInADangerousSpacetime_Data
854M Lovers in a Dangerous Spacetime
923M dist
1.3G Proton 3.7
2.5G assets
2.6G Xenonauts
6.1G common
6.4G steamapps
6.8G steam
8.3G .steam
18G .
```

[20:16:53]



# erdtree (erd)

- Filesystem and disk-usage utility
- Respects hidden file and gitignore rules by default.
- Supports an ls -l-like view
- Supports regular expressions searching
- Comes with several layouts
- <https://github.com/solidiquis/erdtree>

erdtree::master

erd --level 1 --hidden --no-ignore --long --group

|             |                |       |    |     |       |    |       |     |                            |
|-------------|----------------|-------|----|-----|-------|----|-------|-----|----------------------------|
| .rw-r--r--  | benjaminnguyen | staff | 25 | May | 13:32 | 23 | 4.0   | KiB | gear Cargo.toml            |
| .rw-r--r--  | benjaminnguyen | staff | 21 | Jan | 22:12 | 23 | 4.0   | KiB | key LICENSE                |
| .rw-r--r--  | benjaminnguyen | staff | 12 | Feb | 22:23 | 23 | 4.0   | KiB | git .gitignore             |
| .rw-r--r--  | benjaminnguyen | staff | 25 | Apr | 22:09 | 23 | 4.0   | KiB | notepad CONTRIBUTING.md    |
| .rw-r--r--  | benjaminnguyen | staff | 25 | Apr | 21:45 | 23 | 4.0   | KiB | notepad SECURITY.md        |
| .rw-r--r--  | benjaminnguyen | staff | 25 | Apr | 00:08 | 23 | 8.0   | KiB | notepad CODE_OF_CONDUCT.md |
| .rw-r--r--  | benjaminnguyen | staff | 29 | Mar | 15:35 | 23 | 8.0   | KiB | apple .DS_Store            |
| .rw-r--r--  | benjaminnguyen | staff | 25 | May | 14:01 | 23 | 12.0  | KiB | notepad CHANGELOG.md       |
| drwxr-xr-x  | benjaminnguyen | staff | 21 | Jan | 22:12 | 23 | 12.0  | KiB | folder .github             |
| .rw-r--r--  | benjaminnguyen | staff | 25 | May | 13:32 | 23 | 28.0  | KiB | notepad README.md          |
| .rw-r--r--  | benjaminnguyen | staff | 25 | May | 13:32 | 23 | 32.0  | KiB | lock Cargo.lock            |
| drwxr-xr-x  | benjaminnguyen | staff | 25 | May | 13:32 | 23 | 84.0  | KiB | folder tests               |
| drwxr-xr-x  | benjaminnguyen | staff | 25 | May | 13:32 | 23 | 304.0 | KiB | folder src                 |
| drwxr-xr-x  | benjaminnguyen | staff | 25 | May | 13:32 | 23 | 5.0   | MiB | folder assets              |
| drwxr-xr-x  | benjaminnguyen | staff | 25 | May | 14:53 | 23 | 41.8  | MiB | folder .git                |
| drwxr-xr-x@ | benjaminnguyen | staff | 22 | Apr | 22:22 | 23 | 6.1   | GiB | folder target              |
| drwxr-xr-x  | benjaminnguyen | staff | 25 | May | 14:01 | 23 | 6.1   | GiB | folder erdtree             |

5065 directories, 92573 files, 1 link

erdtree::master

erd |

```
erdtree::v3.0::<+195|-50>
└─ 🍹 erd --level 2 --follow
  4096 B ── Cargo.toml
  4096 B ── LICENSE
  4096 B ── CONTRIBUTING.md
  4096 B ── SECURITY.md
  8192 B ── CODE_OF_CONDUCT.md
  12288 B ── CHANGELOG.md
  24576 B ── README.md
  32768 B ── Cargo.lock
  4096 B ── ── line_count.rs
  4096 B ── ── utils
  4096 B ── ── suppress_size.rs
  4096 B ── ── level.rs
  4096 B ── ── hardlink.rs
  4096 B ── ── prune.rs
  4096 B ── ── hardlinks
  4096 B ── ── glob.rs
  4096 B ── ── regex.rs
  4096 B ── ── dirs_only.rs
  4096 B ── ── sort.rs
  4096 B ── ── symlink.rs
  4096 B ── ── flat.rs
  24576 B ── ── data
  77824 B ── tests
  4096 B ── ── gitui
  24576 B ── ── wezterm → /Users/benjaminnguyen/dotfiles/wezterm/
  122880 B ── ── nvim → /Users/benjaminnguyen/dotfiles/nvim
  151552 B ── foo → /Users/benjaminnguyen/.config
  4096 B ── ── ansi.rs
  4096 B ── ── main.rs
  4096 B ── ── utils.rs
  8192 B ── ── progress.rs
```

# fd

- Simple, fast and user-friendly alternative to find
- Sensible / opinionated defaults
- Respects hidden file and gitignore rules by default
- Supports regular expressions searching
- The command name is 50% shorter\* than find
- <https://github.com/sharkdp/fd>

```
> fd netfl
```

```
Software/python/imdb-ratings/netflix-details.py
```

```
> fd '^x.*rc$'
```

```
X11/xinit/xinitrc
```

```
X11/xinit/xserverrc
```

```
> fd -e md
```

```
CONTRIBUTING.md
```

```
README.md
```



# ripgrep (rg)

- Line-oriented search tool
- FAST
- Respects hidden file and gitignore rules by default
- <https://github.com/BurntSushi/ripgrep/>

| Tool                                  | Command   | Line count | Time               |
|---------------------------------------|---|------------|--------------------|
| ripgrep<br>(Unicode)                  | <code>rg -n -w '[A-Z]+_SUSPEND'</code>                                  | 536        | 0.082s<br>(1.00x)  |
| <a href="#">hypergrep</a>             | <code>hgrep -n -w '[A-Z]+_SUSPEND'</code>                               | 536        | 0.167s<br>(2.04x)  |
| <a href="#">git grep</a>              | <code>git grep -P -n -w '[A-Z]+_SUSPEND'</code>                         | 536        | 0.273s<br>(3.34x)  |
| <a href="#">The Silver Searcher</a>   | <code>ag -w '[A-Z]+_SUSPEND'</code>                                     | 534        | 0.443s<br>(5.43x)  |
| <a href="#">ugrep</a>                 | <code>ugrep -r --ignore-files --no-hidden -I -w '[A-Z]+_SUSPEND'</code> | 536        | 0.639s<br>(7.82x)  |
| <a href="#">git grep</a>              | <code>LC_ALL=C git grep -E -n -w '[A-Z]+_SUSPEND'</code>                | 536        | 0.727s<br>(8.91x)  |
| <a href="#">git grep</a><br>(Unicode) | <code>LC_ALL=en_US.UTF-8 git grep -E -n -w '[A-Z]+_SUSPEND'</code>      | 536        | 2.670s<br>(32.70x) |
| <a href="#">ack</a>                   | <code>ack -w '[A-Z]+_SUSPEND'</code>                                    | 2677       | 2.935s<br>(35.94x) |

DID YOU PERFORM  
ANY BENCHMAR-

BLAZINGLY  
FAST!!



# eza

- modern, maintained replacement for ls
- Better defaults
- Colourful
- Recursive
- Support git
- <https://github.com/eza-community/eza>

src/git/test-git-repos on 7 main [\$!?!]

> eza -l --git --git-repos --header

| Permissions | Size | User | Date   | Modified | Git | Repo      | Name     |
|-------------|------|------|--------|----------|-----|-----------|----------|
| drwxr-xr-x  | -    | ces  | 30 Jul | 09:19    | -I  | - pr-1190 | eza      |
| drwxr-xr-x  | -    | ces  | 30 Jul | 09:18    | -I  | v6.5-rc3  | linux    |
| drwxr-xr-x  | -    | ces  | 30 Jul | 09:20    | -I  | - master  | nixpkgs  |
| drwxr-xr-x  | -    | ces  | 30 Jul | 08:42    | -I  | v1.15.0   | starship |

src/git/test-git-repos on 7 main [\$!?!]

+ > eza -l --git -T --hyperlink --header eza/src/output/

| Permissions | Size | User | Date   | Modified | Git | Name                     |
|-------------|------|------|--------|----------|-----|--------------------------|
| drwxr-xr-x  | -    | ces  | 30 Jul | 08:30    | --  | eza/src/output           |
| .rw-r--r--  | 8.5k | ces  | 30 Jul | 08:30    | --  | — cell.rs                |
| .rw-r--r--  | 19k  | ces  | 30 Jul | 08:30    | --  | — details.rs             |
| .rw-r--r--  | 845  | ces  | 30 Jul | 08:30    | --  | — escape.rs              |
| .rw-r--r--  | 15k  | ces  | 30 Jul | 08:30    | --  | — file_name.rs           |
| .rw-r--r--  | 2.0k | ces  | 30 Jul | 08:30    | --  | — grid.rs                |
| .rw-r--r--  | 10k  | ces  | 30 Jul | 08:30    | --  | — <u>grid_details.rs</u> |
| .rw-r--r--  | 17k  | ces  | 30 Jul | 08:30    | --  | — icons.rs               |
| .rw-r--r--  | 968  | ces  | 30 Jul | 08:30    | --  | — lines.rs               |
| .rw-r--r--  | 1.4k | ces  | 30 Jul | 08:30    | --  | — mod.rs                 |
| drwxr-xr-x  | -    | ces  | 30 Jul | 08:30    | --  | render                   |
| .rw-r--r--  | 1.2k | ces  | 30 Jul | 08:30    | --  | — blocks.rs              |
| .rw-r--r--  | 999  | ces  | 30 Jul | 08:30    | --  | — filetype.rs            |
| .rw-r--r--  | 4.0k | ces  | 30 Jul | 08:30    | --  | — git.rs                 |
| .rw-r--r--  | 3.7k | ces  | 30 Jul | 08:30    | --  | — groups.rs              |
| .rw-r--r--  | 564  | ces  | 30 Jul | 08:30    | --  | — inode.rs               |
| .rw-r--r--  | 2.1k | ces  | 30 Jul | 08:30    | --  | — links.rs               |

# lsd

- A rewrite of GNU ls with lots of added features
- Colours
- Icons
- Tree view
- <https://github.com/lsd-rs/lsd>



```

~ Code > Perso > lsd > master 1↑ % ⚙ prodild prod lsd -l target/debug
drwxr-xr-x peltoche users - Thu Dec 13 12:27:23 2018 📁 build
drwxr-xr-x peltoche users - Thu Dec 13 15:28:44 2018 📁 deps
drwxr-xr-x peltoche users - Thu Dec 13 10:51:57 2018 📁 examples
drwxr-xr-x peltoche users - Thu Dec 13 14:58:34 2018 📁 incremental
drwxr-xr-x peltoche users - Thu Dec 13 10:51:57 2018 📁 native
.rw-r--r-- peltoche users 879 B Thu Dec 13 14:29:26 2018 📄 liblsd.d
.rw-r--r-- peltoche users 0 B Thu Dec 13 15:28:44 2018 📄 liblsd.rmeta
.rwxr-xr-x peltoche users 11.7 MB Thu Dec 13 14:50:47 2018 📄 lsd
.rwxr-xr-x peltoche users 9.2 MB Thu Dec 13 15:28:41 2018 📄 lsd-e1fd8883f3461759
.rw-r--r-- peltoche users 887 B Thu Dec 13 15:27:01 2018 📄 lsd-e1fd8883f3461759.d
.rw-r--r-- peltoche users 870 B Thu Dec 13 10:52:06 2018 📄 lsd.d

```

```
if hash eza 2>/dev/null; then
    alias ls='eza'
    alias l='eza -l --all --group-directories-first --git'
    alias ll='eza -l --all --all --group-directories-first --git'
    alias lt='eza -T --git-ignore --level=2 --group-directories-first'
    alias llt='eza -lT --git-ignore --level=2 --group-directories-first'
    alias lT='eza -T --git-ignore --level=4 --group-directories-first'
elif hash lsd 2>/dev/null; then
    alias ls='lsd'
    alias l='lsd -l --all --group-directories-first'
    alias ll='lsd -l --all --group-directories-first'
    alias lt='lsd --tree --depth=2 --group-directories-first'
    alias llt='lsd -l --tree --depth=2 --group-directories-first'
    alias lT='lsd --tree --depth=4 --group-directories-first'
else
    alias l='ls -lah'
    alias ll='ls -alF'
    alias la='ls -A'
fi
```



# procs

- Colored and human-readable output
- Automatic theme detection based on terminal background
- Multi-column keyword search
- Pager support
- Watch mode (like top)
- Tree view
- <https://github.com/dalance/procs>

| PID:▲ | User | State | Nice | TTY | CPU<br>[%] | MEM<br>[%] | VmPeak<br>[bytes] | VmSize<br>[bytes] | VmRSS<br>[bytes] | TCP   | UDP   | Read<br>[B/s] | Write<br>[B/s] | CPU      | Time       | Start | Docker | Command             |
|-------|------|-------|------|-----|------------|------------|-------------------|-------------------|------------------|-------|-------|---------------|----------------|----------|------------|-------|--------|---------------------|
| 1     | root | S     | 0    |     | 0.0        | 0.0        | 252.957M          | 188.957M          | 3.82M            | [111] | [111] | 0             | 0              | 03:04:20 | 2018/12/26 | 19:23 |        | /usr/lib/systemd/sy |
| 2     | root | S     | 0    |     | 0.0        | 0.0        | 0                 | 0                 | 0                | □     | □     | 0             | 0              | 00:01:38 | 2018/12/26 | 19:23 |        | kthreadd            |
| 3     | root | S     | 0    |     | 0.0        | 0.0        | 0                 | 0                 | 0                | □     | □     | 0             | 0              | 00:18:54 | 2018/12/26 | 19:23 |        | ksoftirqd/0         |
| 8     | root | S     | 0    |     | 0.0        | 0.0        | 0                 | 0                 | 0                | □     | □     | 0             | 0              | 00:01:56 | 2018/12/26 | 19:23 |        | migration/0         |
| 9     | root | S     | 0    |     | 0.0        | 0.0        | 0                 | 0                 | 0                | □     | □     | 0             | 0              | 00:00:00 | 2018/12/26 | 19:23 |        | rcu_bh              |
| 10    | root | S     | 0    |     | 0.0        | 0.0        | 0                 | 0                 | 0                | □     | □     | 0             | 0              | 02:46:26 | 2018/12/26 | 19:23 |        | rcu_sched           |
| 11    | root | S     | -20  |     | 0.0        | 0.0        | 0                 | 0                 | 0                | □     | □     | 0             | 0              | 00:00:00 | 2018/12/26 | 19:23 |        | lru-add-drain       |
| 12    | root | S     | 0    |     | 0.0        | 0.0        | 0                 | 0                 | 0                | □     | □     | 0             | 0              | 00:00:17 | 2018/12/26 | 19:23 |        | watchdog/0          |
| 13    | root | S     | 0    |     | 0.0        | 0.0        | 0                 | 0                 | 0                | □     | □     | 0             | 0              | 00:00:17 | 2018/12/26 | 19:23 |        | watchdog/1          |
| 14    | root | S     | 0    |     | 0.0        | 0.0        | 0                 | 0                 | 0                | □     | □     | 0             | 0              | 00:01:44 | 2018/12/26 | 19:23 |        | migration/1         |
| 15    | root | S     | 0    |     | 0.0        | 0.0        | 0                 | 0                 | 0                | □     | □     | 0             | 0              | 00:14:25 | 2018/12/26 | 19:23 |        | ksoftirqd/1         |
| 18    | root | S     | 0    |     | 0.0        | 0.0        | 0                 | 0                 | 0                | □     | □     | 0             | 0              | 00:00:13 | 2018/12/26 | 19:23 |        | watchdog/2          |
| 19    | root | S     | 0    |     | 0.0        | 0.0        | 0                 | 0                 | 0                | □     | □     | 0             | 0              | 00:01:40 | 2018/12/26 | 19:23 |        | migration/2         |
| 20    | root | S     | 0    |     | 0.0        | 0.0        | 0                 | 0                 | 0                | □     | □     | 0             | 0              | 00:14:06 | 2018/12/26 | 19:23 |        | ksoftirqd/2         |
| 23    | root | S     | 0    |     | 0.0        | 0.0        | 0                 | 0                 | 0                | □     | □     | 0             | 0              | 00:00:14 | 2018/12/26 | 19:23 |        | watchdog/3          |
| 24    | root | S     | 0    |     | 0.0        | 0.0        | 0                 | 0                 | 0                | □     | □     | 0             | 0              | 00:01:41 | 2018/12/26 | 19:23 |        | migration/3         |
| 25    | root | S     | 0    |     | 0.0        | 0.0        | 0                 | 0                 | 0                | □     | □     | 0             | 0              | 00:14:40 | 2018/12/26 | 19:23 |        | ksoftirqd/3         |
| 28    | root | S     | 0    |     | 0.0        | 0.0        | 0                 | 0                 | 0                | □     | □     | 0             | 0              | 00:00:13 | 2018/12/26 | 19:23 |        | watchdog/4          |
| 29    | root | S     | 0    |     | 0.0        | 0.0        | 0                 | 0                 | 0                | □     | □     | 0             | 0              | 00:01:40 | 2018/12/26 | 19:23 |        | migration/4         |
| 30    | root | S     | 0    |     | 0.0        | 0.0        | 0                 | 0                 | 0                | □     | □     | 0             | 0              | 00:14:10 | 2018/12/26 | 19:23 |        | ksoftirqd/4         |
| 33    | root | S     | 0    |     | 0.0        | 0.0        | 0                 | 0                 | 0                | □     | □     | 0             | 0              | 00:00:14 | 2018/12/26 | 19:23 |        | watchdog/5          |
| 34    | root | S     | 0    |     | 0.0        | 0.0        | 0                 | 0                 | 0                | □     | □     | 0             | 0              | 00:01:45 | 2018/12/26 | 19:23 |        | migration/5         |
| 35    | root | S     | 0    |     | 0.0        | 0.0        | 0                 | 0                 | 0                | □     | □     | 0             | 0              | 00:15:11 | 2018/12/26 | 19:23 |        | ksoftirqd/5         |
| 38    | root | S     | 0    |     | 0.0        | 0.0        | 0                 | 0                 | 0                | □     | □     | 0             | 0              | 00:00:13 | 2018/12/26 | 19:23 |        | watchdog/6          |
| 39    | root | S     | 0    |     | 0.0        | 0.0        | 0                 | 0                 | 0                | □     | □     | 0             | 0              | 00:01:44 | 2018/12/26 | 19:23 |        | migration/6         |
| 40    | root | S     | 0    |     | 0.0        | 0.0        | 0                 | 0                 | 0                | □     | □     | 0             | 0              | 00:14:46 | 2018/12/26 | 19:23 |        | ksoftirqd/6         |
| 43    | root | S     | 0    |     | 0.0        | 0.0        | 0                 | 0                 | 0                | □     | □     | 0             | 0              | 00:00:13 | 2018/12/26 | 19:23 |        | watchdog/7          |
| 44    | root | S     | 0    |     | 0.0        | 0.0        | 0                 | 0                 | 0                | □     | □     | 0             | 0              | 00:01:43 | 2018/12/26 | 19:23 |        | migration/7         |
| 45    | root | S     | 0    |     | 0.0        | 0.0        | 0                 | 0                 | 0                | □     | □     | 0             | 0              | 00:21:12 | 2018/12/26 | 19:23 |        | ksoftirqd/7         |
| 48    | root | S     | 0    |     | 0.0        | 0.0        | 0                 | 0                 | 0                | □     | □     | 0             | 0              | 00:00:18 | 2018/12/26 | 19:23 |        | watchdog/8          |
| 49    | root | S     | 0    |     | 0.0        | 0.0        | 0                 | 0                 | 0                | □     | □     | 0             | 0              | 00:02:09 | 2018/12/26 | 19:23 |        | migration/8         |
| 50    | root | S     | 0    |     | 0.0        | 0.0        | 0                 | 0                 | 0                | □     | □     | 0             | 0              | 00:10:19 | 2018/12/26 | 19:23 |        | ksoftirqd/8         |
| 52    | root | S     | -20  |     | 0.0        | 0.0        | 0                 | 0                 | 0                | □     | □     | 0             | 0              | 00:00:00 | 2018/12/26 | 19:23 |        | kworker/8:0H        |
| 54    | root | S     | 0    |     | 0.0        | 0.0        | 0                 | 0                 | 0                | □     | □     | 0             | 0              | 00:00:15 | 2018/12/26 | 19:23 |        | watchdog/9          |
| 55    | root | S     | 0    |     | 0.0        | 0.0        | 0                 | 0                 | 0                | □     | □     | 0             | 0              | 00:01:59 | 2018/12/26 | 19:23 |        | migration/9         |
| 56    | root | S     | 0    |     | 0.0        | 0.0        | 0                 | 0                 | 0                | □     | □     | 0             | 0              | 00:09:51 | 2018/12/26 | 19:23 |        | ksoftirqd/9         |
| 59    | root | S     | 0    |     | 0.0        | 0.0        | 0                 | 0                 | 0                | □     | □     | 0             | 0              | 00:00:15 | 2018/12/26 | 19:23 |        | watchdog/10         |
| 60    | root | S     | 0    |     | 0.0        | 0.0        | 0                 | 0                 | 0                | □     | □     | 0             | 0              | 00:01:55 | 2018/12/26 | 19:23 |        | migration/10        |

| PID    | User | State | Nice | TTY    | CPU | MEM | VmPeak   | VmSize   | VmRSS   | TCP     | UDP           | Read  | Write | CPU      | Time       | Start | Docker | Command  |
|--------|------|-------|------|--------|-----|-----|----------|----------|---------|---------|---------------|-------|-------|----------|------------|-------|--------|----------|
|        |      |       |      |        | [%] | [%] | [bytes]  | [bytes]  | [bytes] |         |               | [B/s] | [B/s] |          |            |       |        |          |
| 1      |      | S     | 0    |        | 0.0 | 0.0 | 252.957M | 188.957M | 3.82M   | [111]   | [111]         | 0     | 0     | 03:04:21 | 2018/12/26 | 19:23 |        | /usr/lib |
| 2143   |      | S     | 0    |        | 0.0 | 0.0 | 2.094M   | 2.094M   | 116K    | [60001] | []            | 0     | 0     | 00:00:00 | 2019/03/10 | 12:54 |        | /home/ha |
| 353209 |      | S     | 0    |        | 0.0 | 0.0 | 188.813M | 188.809M | 3.277M  | [60000] | []            | 0     | 0     | 00:00:26 | 2019/03/29 | 03:02 |        | /usr/bin |
| 30366  |      | S     | 0    |        | 0.0 | 0.0 | 303.582M | 138.605M | 76.781M | []      | []            | 0     | 0     | 00:25:12 | 2018/12/26 | 19:23 |        | /usr/lib |
| 30401  |      | S     | 0    |        | 0.0 | 0.0 | 409.914M | 401.91M  | 668K    | []      | []            | 0     | 0     | 00:00:00 | 2018/12/26 | 19:23 |        | /usr/sbi |
| 30418  |      | S     | 0    |        | 0.0 | 0.0 | 45.305M  | 44.57M   | 1.441M  | []      | []            | 0     | 0     | 00:03:13 | 2018/12/26 | 19:23 |        | /usr/lib |
| 32261  |      | S     | 0    |        | 0.0 | 0.0 | 251.59M  | 251.57M  | 1M      | []      | []            | 0     | 0     | 00:00:05 | 2019/04/01 | 19:52 |        | /usr/sbi |
| 32262  |      | S     | 0    |        | 0.0 | 0.0 | 302.234M | 302.023M | 6.02M   | []      | []            | 0     | 0     | 00:00:03 | 2019/04/01 | 19:52 |        | /usr/lib |
| 32265  |      | S     | 0    |        | 0.0 | 0.0 | 275.234M | 275.23M  | 2.52M   | []      | []            | 0     | 0     | 00:00:02 | 2019/04/01 | 19:52 |        | /usr/lib |
| 32266  |      | S     | 0    |        | 0.0 | 0.0 | 239.207M | 239.203M | 2.258M  | []      | []            | 0     | 0     | 00:00:01 | 2019/04/01 | 19:52 |        | /usr/lib |
| 32267  |      | S     | 0    |        | 0.0 | 0.0 | 230.723M | 230.723M | 908K    | []      | []            | 0     | 0     | 00:00:00 | 2019/04/01 | 19:52 |        | /usr/lib |
| 60228  |      | S     | 0    |        | 0.0 | 0.0 | 44.879M  | 44.879M  | 136K    | []      | []            | 0     | 0     | 00:00:00 | 2018/12/26 | 19:24 |        | /usr/sbi |
| 60229  |      | S     | -4   |        | 0.0 | 0.0 | 60.59M   | 60.59M   | 596K    | []      | []            | 0     | 0     | 00:01:10 | 2018/12/26 | 19:24 |        | /sbin/au |
| 60231  |      | S     | -8   |        | 0.0 | 0.0 | 146.57M  | 82.57M   | 332K    | []      | []            | 0     | 0     | 00:01:12 | 2018/12/26 | 19:24 |        | /sbin/au |
| 60233  |      | S     | -4   |        | 0.0 | 0.0 | 54.324M  | 54.324M  | 404K    | []      | []            | 0     | 0     | 00:00:45 | 2018/12/26 | 19:24 |        | /usr/sbi |
| 60256  |      | S     | 0    |        | 0.0 | 0.0 | 21.301M  | 21.297M  | 732K    | []      | []            | 0     | 0     | 00:49:44 | 2018/12/26 | 19:24 |        | /usr/sbi |
| 60259  |      | S     | 0    |        | 0.0 | 0.0 | 223.25M  | 223.125M | 1.043M  | []      | []            | 0     | 0     | 00:00:03 | 2018/12/26 | 19:24 |        | /usr/sbi |
| 60260  |      | S     | 0    |        | 0.0 | 0.0 | 72.066M  | 72.004M  | 816K    | [111]   | [111, 647]    | 0     | 0     | 00:00:09 | 2018/12/26 | 19:24 |        | /sbin/rp |
| 60264  |      | S     | 0    |        | 0.0 | 0.0 | 158M     | 115.023M | 832K    | []      | [323]         | 0     | 0     | 00:00:05 | 2018/12/26 | 19:24 |        | /usr/sbi |
| 60265  |      | S     | 1    |        | 0.0 | 0.0 | 258.133M | 194.133M | 244K    | []      | []            | 0     | 0     | 00:00:46 | 2018/12/26 | 19:24 |        | /usr/lib |
| 60288  |      | S     | 0    |        | 0.0 | 0.0 | 423.016M | 420.508M | 1.039M  | []      | []            | 0     | 0     | 00:01:07 | 2018/12/26 | 19:24 |        | /usr/sbi |
| 60290  |      | S     | 0    |        | 0.0 | 0.0 | 8.48M    | 8.375M   | 148K    | []      | []            | 0     | 0     | 00:00:11 | 2018/12/26 | 19:24 |        | /usr/bin |
| 60291  |      | S     | 0    |        | 0.0 | 0.0 | 224.508M | 220.512M | 1.496M  | []      | []            | 0     | 0     | 00:00:35 | 2018/12/26 | 19:24 |        | /usr/bin |
| 60293  |      | S     | 0    |        | 0.0 | 0.0 | 220.551M | 220.512M | 1.238M  | []      | []            | 0     | 0     | 00:00:00 | 2018/12/26 | 19:24 |        | /usr/bin |
| 60296  |      | S     | 0    |        | 0.0 | 0.0 | 629.453M | 629.449M | 13.063M | []      | []            | 0     | 0     | 00:07:59 | 2018/12/26 | 19:24 |        | /usr/lib |
| 60301  |      | S     | 0    |        | 0.0 | 0.0 | 88.277M  | 88.273M  | 136K    | []      | []            | 0     | 0     | 00:45:13 | 2018/12/26 | 19:24 |        | /sbin/rn |
| 60302  |      | S     | 0    |        | 0.0 | 0.0 | 78.375M  | 60.23M   | 2.176M  | []      | []            | 0     | 0     | 00:31:35 | 2018/12/26 | 19:24 |        | /usr/bin |
| 60325  |      | S     | 0    |        | 0.0 | 0.0 | 614.391M | 551.496M | 2.926M  | []      | []            | 0     | 0     | 00:47:26 | 2018/12/26 | 19:24 |        | /usr/sbi |
| 60326  |      | S     | 0    |        | 0.0 | 0.0 | 24.441M  | 23.918M  | 536K    | []      | []            | 0     | 0     | 00:00:00 | 2018/12/26 | 19:24 |        | /usr/sbi |
| 60329  |      | S     | 0    |        | 0.0 | 0.0 | 443.07M  | 443.066M | 1.711M  | []      | []            | 0     | 0     | 00:08:30 | 2018/12/26 | 19:24 |        | /usr/lib |
| 60331  |      | S     | 0    |        | 0.0 | 0.0 | 71.113M  | 70.98M   | 1.102M  | []      | [5353, 34945] | 0     | 0     | 00:08:32 | 2018/12/26 | 19:24 |        | avahi-da |
| 60332  |      | S     | 0    |        | 0.0 | 0.0 | 70.613M  | 70.613M  | 84K     | []      | []            | 0     | 0     | 00:00:00 | 2018/12/26 | 19:24 |        | avahi-da |
| 60352  |      | S     | 0    |        | 0.0 | 0.0 | 115.398M | 115.398M | 3.508M  | []      | []            | 0     | 0     | 00:10:55 | 2018/12/26 | 19:24 |        | /bin/bas |
| 310925 |      | S     | 0    |        | 0.0 | 0.0 | 105.422M | 105.422M | 616K    | []      | []            | 0     | 0     | 00:00:00 | 2019/04/03 | 10:27 |        | sleep 60 |
| 60366  |      | S     | 0    |        | 0.0 | 0.0 | 36.512M  | 36.254M  | 1.477M  | []      | []            | 0     | 0     | 00:04:54 | 2018/12/26 | 19:24 |        | /usr/lib |
| 60368  |      | S     | 0    |        | 0.0 | 0.0 | 398.648M | 398.371M | 3.133M  | []      | []            | 0     | 0     | 00:01:54 | 2018/12/26 | 19:24 |        | /usr/lib |
| 60658  |      | S     | 0    |        | 0.0 | 0.0 | 77.992M  | 77.91M   | 55.879M | []      | []            | 0     | 0     | 00:18:52 | 2019/02/22 | 17:47 |        | tmux     |
| 37171  |      | S     | 0    | pts/91 | 0.0 | 0.0 | 124.383M | 124.383M | 1.809M  | []      | []            | 0     | 0     | 00:00:00 | 2019/03/01 | 11:26 |        | -bash    |

| PID:▲  | User    | State | Nice | TTY | CPU<br>[%] | MEM<br>[%] | VmPeak<br>[bytes] | VmSize<br>[bytes] | VmRSS<br>[bytes] | TCP | UDP | Read<br>[B/s] | Write<br>[B/s] | CPU Time | Start            | Docker                | Command   |
|--------|---------|-------|------|-----|------------|------------|-------------------|-------------------|------------------|-----|-----|---------------|----------------|----------|------------------|-----------------------|---|
| 179726 | polkitd | S     | 0    |     | 6.6        | 0.1        | 1.015G            | 1.015G            | 133.281M         |     |     |               |                | 03:29:07 | 2019/03/17 17:51 | growi_mongo_1         | mongod  |
| 179733 | root    | S     | 0    |     | 0.0        | 0.0        | 3.469M            | 1.48M             | 20K              |     |     |               |                | 00:00:00 | 2019/03/17 17:51 | growi_elasticsearch_1 | sh -c ./bin/elasticsearch-plugin list   grep -q analysi |
| 179973 | root    | S     | 0    |     | 0.0        | 0.0        | 291.309M          | 291.211M          | 20.195M          |     |     |               |                | 00:00:00 | 2019/03/17 17:51 | growi_app_1           | npm   |
| 180224 | root    | S     | 0    |     | 0.0        | 0.0        | 250.742M          | 250.246M          | 11.469M          |     |     |               |                | 00:00:00 | 2019/03/17 17:51 | growi_app_1           | node /opt/growi/node_modules/.bin/env-cmd config/env.pr |
| 180231 | root    | S     | 0    |     | 0.0        | 0.1        | 425.836M          | 407.941M          | 76.078M          |     |     |               |                | 01:11:23 | 2019/03/17 17:51 | growi_app_1           | node src/server/app.js                                  |
| 180323 | 100     | S     | 0    |     | 0.0        | 0.5        | 1.887G            | 1.886G            | 470.586M         |     |     |               |                | 00:31:03 | 2019/03/17 17:51 | growi_elasticsearch_1 | /usr/lib/jvm/java-1.8-openjdk/jre/bin/java -XX:+UseConc |

|       | Docker                | Command                           |
|-------|-----------------------|-----------------------------------|
| 17:51 | growi_mongo_1         | mongod                            |
| 17:51 | growi_elasticsearch_1 | sh -c ./bin/elasticsearch-plugin  |
| 17:51 | growi_app_1           | npm                               |
| 17:51 | growi_app_1           | node /opt/growi/node_modules/.bin |
| 17:51 | growi_app_1           | node src/server/app.js            |
| 17:51 | growi_elasticsearch_1 | /usr/lib/jvm/java-1.8-openjdk/jre |

# rip (Rm ImProved)

- Command-line deletion tool
- Deleted files get sent to the graveyard
- Does not implement the xdg-trash spec
- rip is made for lazy people
- <https://github.com/nivekuil/rip>

```
$ rip -i file1
dir1: file, 1337 bytes including:
> Position: Shooting Guard and Small Forward ■ Shoots: Right
> 6-6, 185lb (198cm, 83kg)
Send file1 to the graveyard? (y/n) y
```

```
$ rip -s
/tmp/graveyard-jack/home/jack/file1
```

```
$ rip -su
Returned /tmp/graveyard-jack/home/jack/dir1 to /home/jack/dir1
Returned /tmp/graveyard-jack/home/jack/file1~1 to /home/jack/file1~1
```

# sd - search & displace

- Find & replace CLI
- Painless regular expressions
- String-literal mode
- Smart, common-sense defaults
- <https://github.com/chmln/sd>



# sed vs. sd

sed s/before/after/g

sd before after

sed ':a;N;\$!ba;s/\n/,/g'

sd '\n' ','

sed -i -e 's/before/after/g' file.txt

sd before after file.txt



**FroSCon**

**Bonus Content**

# tailspin

- A log file highlighter
- Highlights numbers, dates, IP-addresses, UUIDs, URLs and more
- All highlight groups are customizable
- Uses less under the hood for scrollbar, search and filtering
- <https://github.com/bensadeh/tailspin>

```
2022-08-29 08:10:00 | INFO | MessageMonitor: Outgoing message process already started for th
2022-08-29 08:10:00 | INFO | New ProcessId [c66a5398-2aa5-11ec-8631-0242ac110089] for user 1
2022-08-29 08:11:00 | TRACE | User 123456 has [0] new messages
2022-08-29 08:11:00 | TRACE | Syncing tables and updating modules for user 123456
2022-08-29 08:11:00 | DEBUG | Ping to 192.168.0.1 failed
2022-08-29 08:11:00 | DEBUG | MessageMonitor: Checking outgoing messages on thread [5]
2022-08-29 08:11:00 | DEBUG | MessageMonitor: Checking outgoing messages on thread [4]
2022-08-29 08:11:00 | ERROR | MessageValidator: Could not parse message, input was null
2022-08-29 08:11:01 | ERROR | Could not generate key, "hasMoreResults" was false
2022-08-29 08:11:36 | TRACE | No new messages on queue 5
2022-08-29 08:11:37 | TRACE | No new messages on queue 4
2022-08-29 08:10:00 | INFO | skip non existing resourceDirectory /var/logs
2022-08-29 08:10:00 | INFO | Using JarLifecycleMapping lifecycle mapping for Project
2022-08-29 08:11:00 | INFO | Using "ASCII" encoding to copy filtered resources
2022-08-29 08:11:00 | INFO | Using "ASCII" encoding to copy filtered properties files
2022-08-29 08:11:00 | TRACE | User 123456 has [0] new messages
2022-08-29 08:11:00 | TRACE | Syncing tables and updating modules for user 123456
2022-08-29 08:11:00 | WARN | ProcessId [c66a5398-2aa5-11ec-8631-0242ac110089] finished early
2022-08-29 08:11:36 | WARN | Fetching contact points for user 123456, but no contact points
2022-08-29 08:11:36 | WARN | POST to https://www.google.com/search?field=value failed
2022-08-29 08:11:00 | DEBUG | Using "ASCII" encoding to copy filtered resources
2022-08-29 08:11:01 | DEBUG | Using "ASCII" encoding to copy filtered properties files
2022-08-29 08:11:00 | INFO | MessageMonitor: Outgoing message process already started for th
```

# spacer

- insert spacers when command output stops
- <https://github.com/samwho/spacer>

Welcome to fish, the friendly interactive shell  
Type `help` for instructions on how to use fish



# csvlens

- Command line CSV file viewer
- Like less but made for CSV
- <https://github.com/YS-L/csvlens>

|    | #  | Name                       | Type 1 | Type 2 | Total | HP | Attack | Defen... |
|----|----|----------------------------|--------|--------|-------|----|--------|----------|
| 1  | 1  | Bulbasaur                  | Grass  | Poison | 318   | 45 | 49     | 49       |
| 2  | 2  | Ivysaur                    | Grass  | Poison | 405   | 60 | 62     | 63       |
| 3  | 3  | Venusaur                   | Grass  | Poison | 525   | 80 | 82     | 83       |
| 4  | 3  | VenusaurMega Venusaur      | Grass  | Poison | 625   | 80 | 100    | 123      |
| 5  | 4  | Charmander                 | Fire   |        | 309   | 39 | 52     | 43       |
| 6  | 5  | Charmeleon                 | Fire   |        | 405   | 58 | 64     | 58       |
| 7  | 6  | Charizard                  | Fire   | Flying | 534   | 78 | 84     | 78       |
| 8  | 6  | CharizardMega Charizard... | Fire   | Dragon | 634   | 78 | 130    | 111      |
| 9  | 6  | CharizardMega Charizard... | Fire   | Flying | 634   | 78 | 104    | 78       |
| 10 | 7  | Squirtle                   | Water  |        | 314   | 44 | 48     | 65       |
| 11 | 8  | Wartortle                  | Water  |        | 405   | 59 | 63     | 80       |
| 12 | 9  | Blastoise                  | Water  |        | 530   | 79 | 83     | 100      |
| 13 | 9  | BlastoiseMega Blastoise    | Water  |        | 630   | 79 | 103    | 120      |
| 14 | 10 | Caterpie                   | Bug    |        | 195   | 45 | 30     | 35       |
| 15 | 11 | Metapod                    | Bug    |        | 205   | 50 | 20     | 55       |
| 16 | 12 | Butterfree                 | Bug    | Flying | 395   | 60 | 45     | 50       |
| 17 | 13 | Weedle                     | Bug    | Poison | 195   | 40 | 35     | 30       |
| 18 | 14 | Kakuna                     | Bug    | Poison | 205   | 45 | 25     | 50       |
| 19 | 15 | Beedrill                   | Bug    | Poison | 395   | 65 | 90     | 40       |
| 20 | 15 | BeedrillMega Beedrill      | Bug    | Poison | 495   | 65 | 150    | 40       |
| 21 | 16 | Pidgey                     | Normal | Flying | 251   | 40 | 45     | 40       |

Pokemon.csv [Row 1/800, Col 1/13]

# dog

- command-line DNS client like dig
  - Colourful output
  - Understands normal command-line argument syntax
  - Supports DNS-over-TLS, DNS-over-HTTPS protocols
  - Can emit JSON
- 
- <https://github.com/ogham/dog>





```
$ dog example.net A AAAA NS MX TXT
```

```
A example.net.      23h49m37s    93.184.216.34
```

```
AAAA example.net.   23h49m37s    2606:2800:220:1:248:1893:25c8:1946
```

```
NS example.net.     23h50m08s    "a.iana-servers.net."
```

```
NS example.net.     23h50m08s    "b.iana-servers.net."
```

```
A a.iana-servers.net. 17m59s + 199.43.135.53
```

```
AAAA a.iana-servers.net. 3m28s + 2001:500:8f::53
```

```
A b.iana-servers.net. 27m23s + 199.43.133.53
```

```
AAAA b.iana-servers.net. 6m07s + 2001:500:8d::53
```

```
MX example.net.     23h49m37s    0 ""
```

```
TXT example.net.    23h49m37s    "v=spf1 -all"
```

```
$ dog TXT txt-example.lookup.dog @https://cloudflare-dns.com/dns-query --https
```

```
TXT txt-example.lookup.dog. 16m03s    "Cache Invalidation and Naming Things"
```

```
$
```

# fselect

- Find files with SQL-like queries
  - SQL-like grammar (easily understandable by humans)
  - aggregate, statistics, date, and other functions
  - search within archives
- 
- <https://github.com/jhspetersson/fselect>

```
fselect size, path from /home/user where name = '*.cfg' or name =  
 '*.tmp'
```

```
fselect size, abspath from ./tmp where size gt 2g
```

```
fselect "MIN(size), MAX{size}, AVG(size), SUM{size}, COUNT(*) from  
/home/user/Downloads"
```

```
fselect path from /home/user where created = 2017-05-01
```

```
fselect path from /home/user where modified = today
```

# htmlq

- Like jq, but for HTML
- Use CSS selectors to extract bits of content from HTML files
- <https://github.com/mgdm/htmlq>

```
$ curl --silent https://froscon.org/ | htmlq --attribute href a  
/news/  
/info/  
/info/helfen/  
/info/team/  
/programm/  
https://programm.froscon.org  
/programm/aussteller/  
/programm/projektraeume/  
/programm/kinder/  
https://media.ccc.de/b/conferences/froscon  
...
```

```
$ curl --silent https://programm.froscon.org/2024/events/3039.html |  
htmlq 'body' | bat --language html
```

```
44 <div id="main-content">  
45 <p class="release">Version 2.1_second_flush</p>  
46 <h2>Lecture: Next-Gen Desktops: Ublue-OS immutable desktop</h2>  
47 <h3 class="title">Booten wir in einen Container</h3>  
48 <div class="column left" id="basic">  
49 <div class="image large"></div>  
50 <p class="abstract">Der Vortrag präsentiert den Immutable Desktop mit Ublue-OS als wegweisende Entwicklung im Bereich des Desktop-Computings. Ublue-OS bootet direkt in einen OCI-Container, was die Erstellung eines immutable Desktops vereinfacht und für eine robuste Sicherheit und Stabilität sorgt. Durch die Trennung von Betriebssystem und Anwendungen mittels Technologien wie Flatpak sowie die Integration von Distrobox für die nahtlose Verwaltung von Anwendungen, bietet der Immutable Desktop eine sichere, stabile und benutzerfreundliche Desktop-Umgebung. Praktische Demonstrationen verdeutlichen die einfache Erstellung und Anpassung des Desktops sowie die Durchführung von Updates und Rollbacks. Der Vortrag zeigt auf, wie Ublue-OS den Brückenschlag zwischen Desktop und Cloud-Technologien vollzieht und somit die Zukunft des Desktop-Computings maßgeblich gestaltet.</p>  
51 <p class="description">Der Immutable Desktop mit Ublue-OS markiert einen Wendepunkt in der Evolution des Desktop-Computings. In einer Zeit, in der Sicherheit und Stabilität oberste Priorität haben, bietet dieser Ansatz eine revolutionäre Lösung für die Herausforderungen, denen herkömmliche Desktop-Betriebssysteme gegenüberstehen.</p>  
52  
53 <p class="description">Ublue-OS bootet direkt in einen OCI-Container, was bedeutet, dass die Erstellung eines immutable Desktops kein spezielles Know-how erfordert, wie es bei NixOS der Fall ist. Stattdessen können Sie einfach ContainerFiles (Dockerfiles) verwenden, um Ihren individuellen Desktop nach Ihren Bedürfnissen zu erstellen und anzupassen.</p>  
54
```

# Inlyne

- A GPU powered, browserless, markdown + html viewer
- Inlyne will monitor your markdown file for any write modifications and automatically refresh the document
- <https://github.com/Inlyne-Project/inlyne>

Though Markdown files are text based, at times it would be handy to have syntax highlighting or rendering of the document for ease of reading in the Linux terminal. Viewers usually solve this by providing a simple, light weight and fast user experience. Let's find out what these solutions have to offer.

## Bat

The software application here is not directly intended as a markdown viewer, but rather as cat clone with syntax highlighting and Git integration. However, it does work quite well. The project is primarily written in Rust and describes Bat as "A cat clone with wings". When launching the application, you are presented with a nice clean interface, with filename at the top and a column on the



# Alacritty

- A fast, cross-platform, OpenGL terminal emulator
- vi mode allows moving around Alacritty's viewport and scrollback using the keyboard
- Uses OpenGL for rendering to be the fastest terminal emulator available
- <https://alacritty.org/>

```

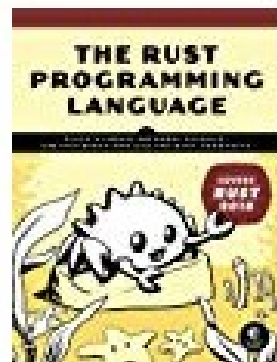
122 /// Run main Alacritty entrypoint.
123 ///
124 /// Alacritty indeed looks just like a terminal emulator.
125 ///
126 /// Creates a window, the terminal state, PTY, I/O event loop, input processor,
127 /// config change monitor, and runs the main display loop.
128 fn alacritty(options: Options) -> Result<(), Box<dyn Error>> {
129     // Setup winit event loop.
130     let window_event_loop = WinitEventLoopBuilder::<Event>::with_user_event().build();
131
132     // Initialize the logger as soon as possible as to capture output from other subsystems.
133     let log_file = logging::initialize(&options, window_event_loop.create_proxy())
134         .expect("Unable to initialize logger");
135
136     info!("Welcome to Alacritty");
137     info!("Version {}", env!("VERSION"));
138
139     let showing_off_undercurl = []
140
141     // Load configuration file.
142     let config = config::load(&options);
143     log_config_path(&config);
144

```

# Rust

- Respects hidden file and gitignore rules by default
- Sane defaults
- Colourful
- Fast

Frequently bought together



+



+

# More Rust based tools

- <https://github.com/sts10/rust-command-line-utilities?tab=readme-ov-file>
- <https://lib.rs/command-line-utilities>
- <https://github.com/rust-unofficial/awesome-rust>
- <https://github.com/TaKO8Ki/awesome-alternatives-in-rust>
- <https://github.com/rust-embedded/awesome-embedded-rust>
- <https://matduggan.com/battle-of-the-text-editors/>

# Fragen, Anregungen, weitere Tools?

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