

WORK

A diagram consisting of three main elements: a teal rectangle on the left containing the word "WORK" in black capital letters; a teal arrow pointing from the right side of the rectangle towards the right; and a teal diamond shape on the right containing the word "FLOWS" in black capital letters.

FLOWS

Jack Dinsmore
MASS January 2024

Please help.

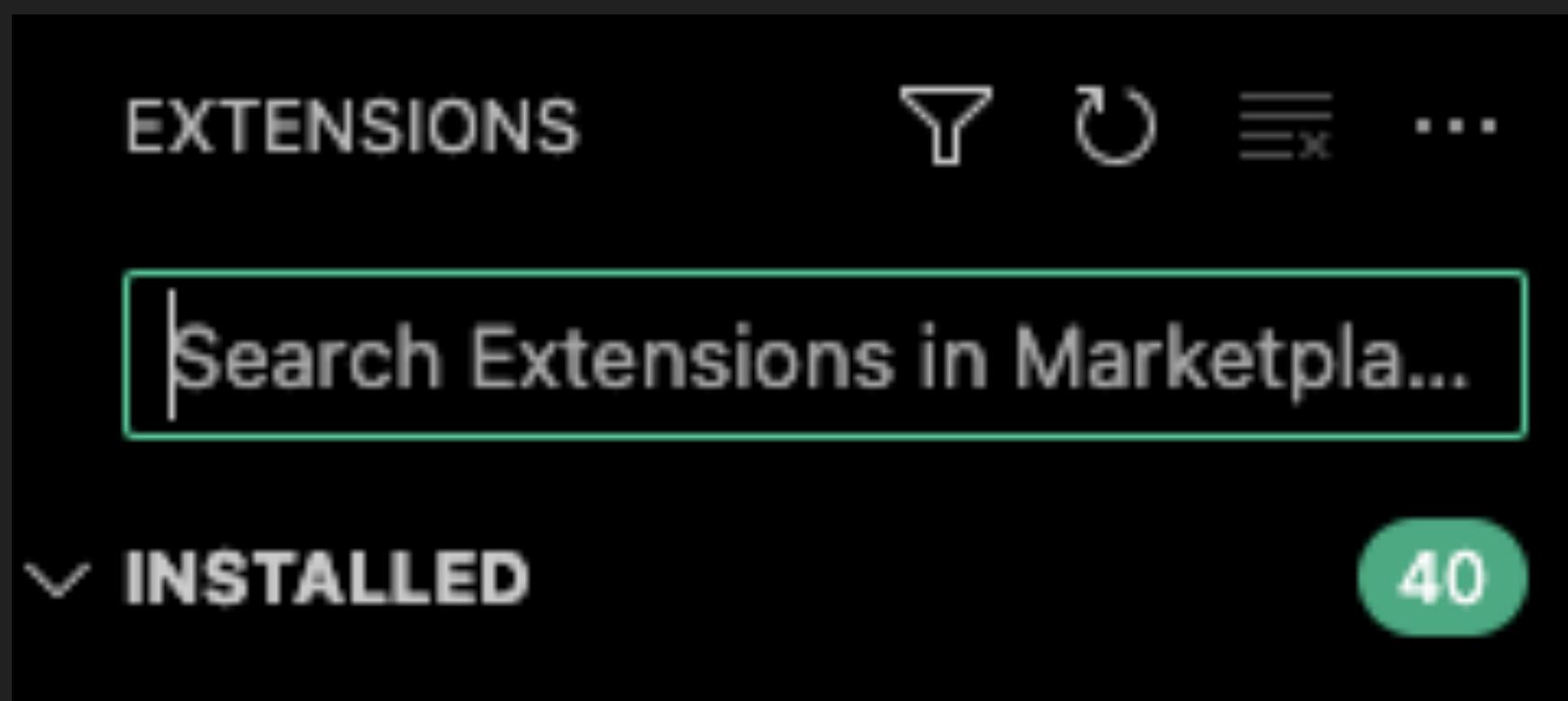
Example Principles

Example Principles

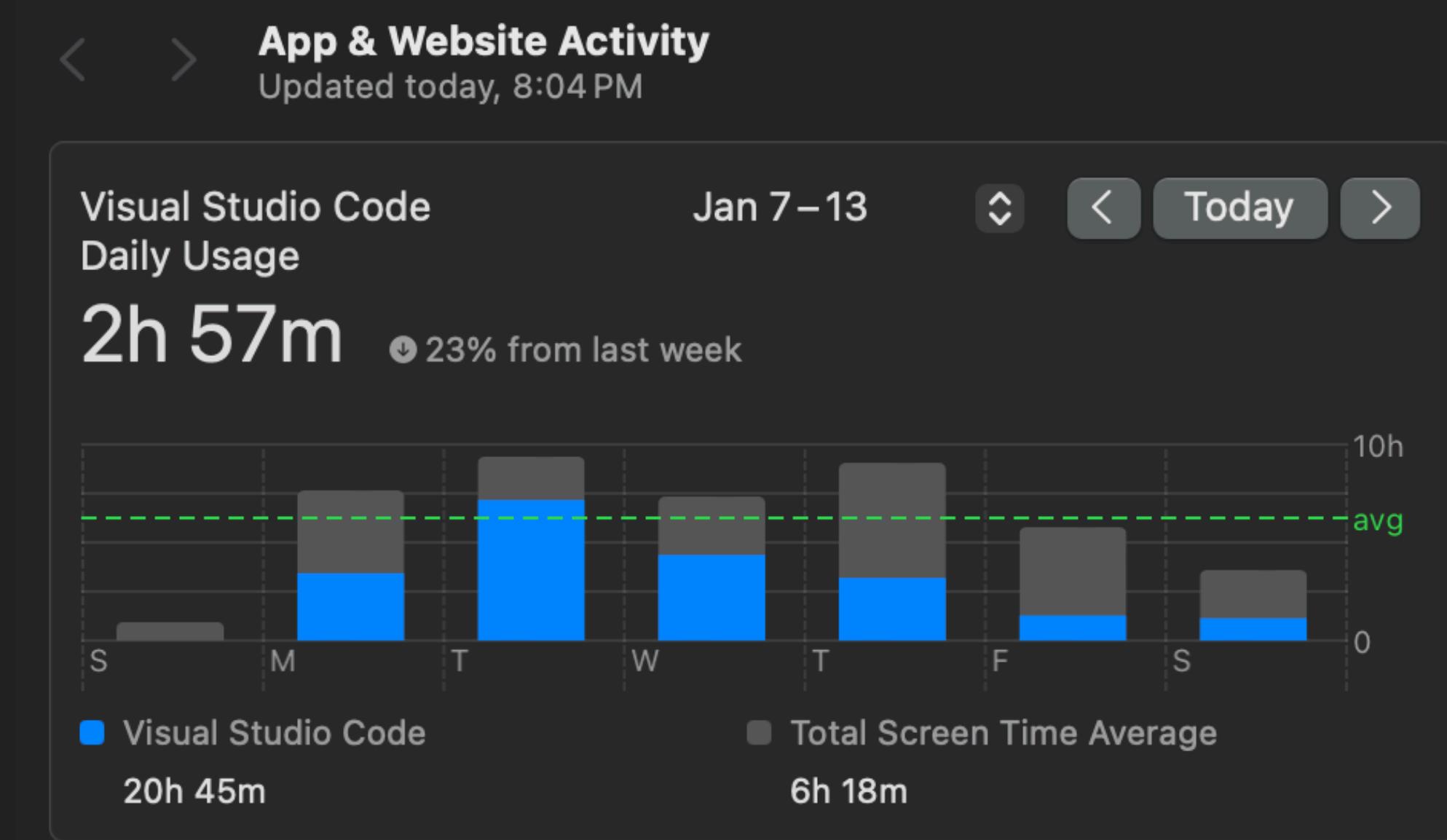
- Everything is a nail

Example Principles

- Everything is a nail



```
{} settings.json 3 ×  
Users > jtd > Library >  
2535    "workbench"  
2536    }
```

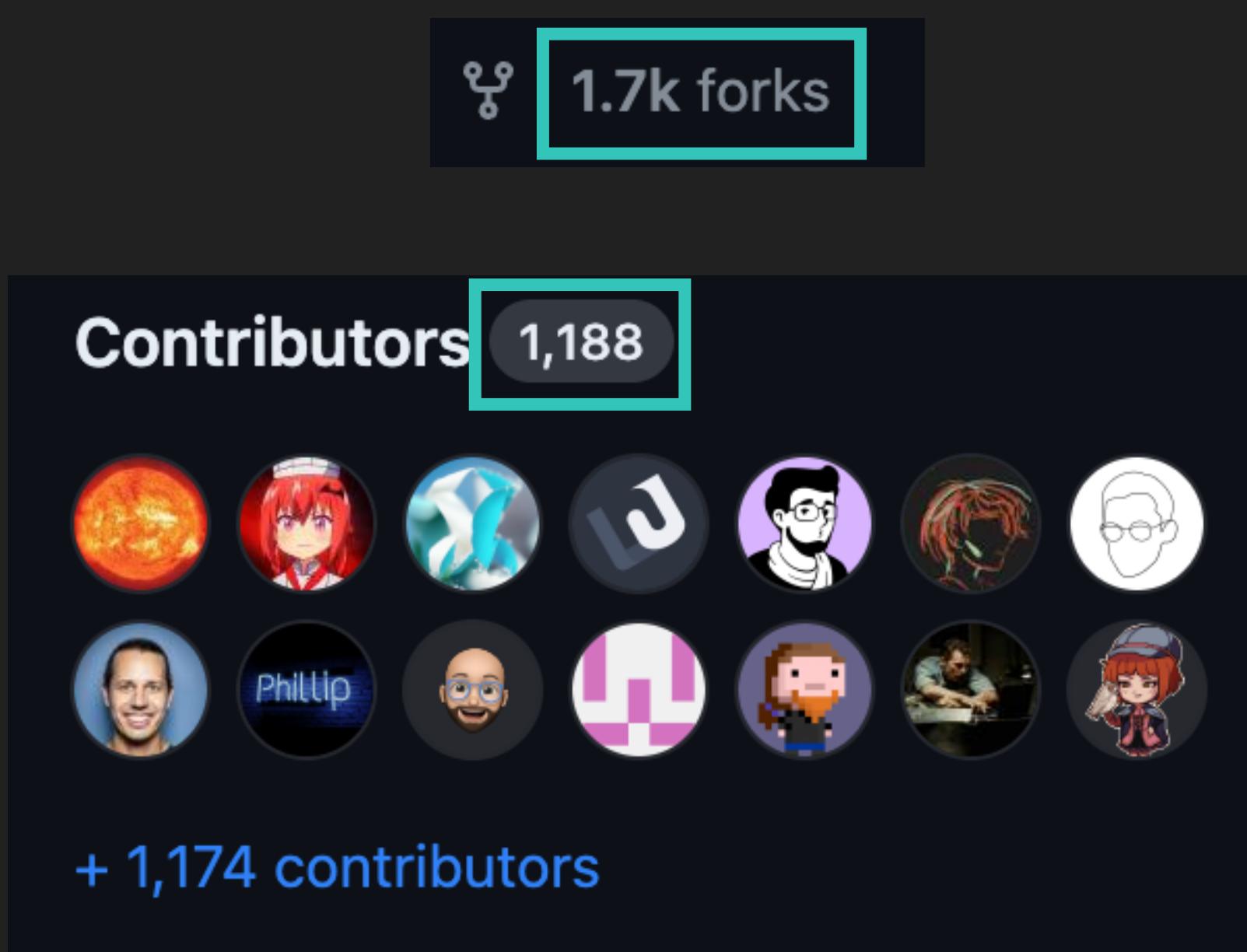
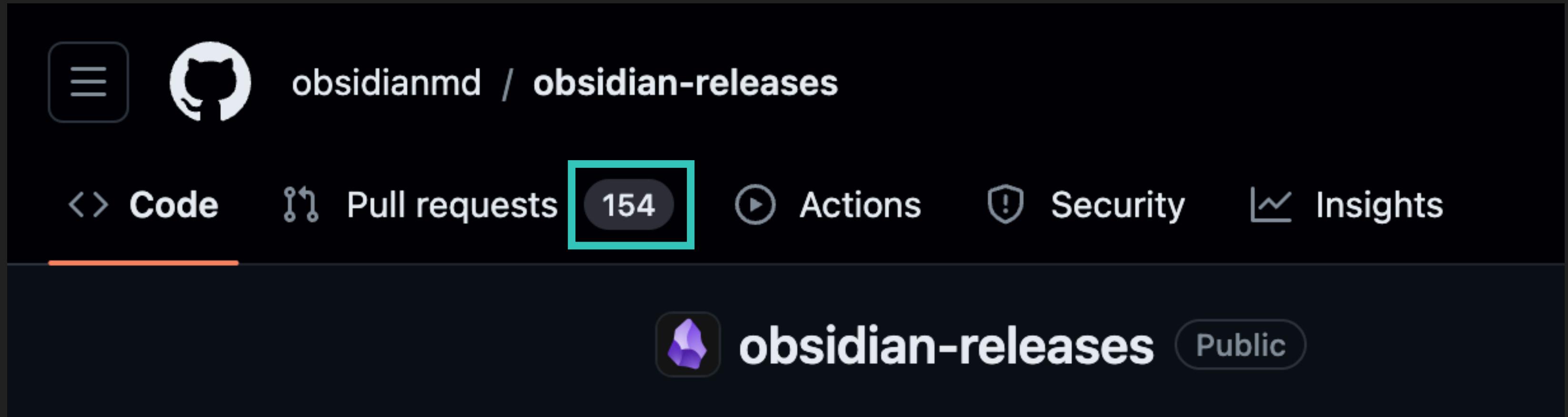


Show Apps ⚡

Apps	Time	Limits
All Apps	44h 11m	
Visual Studio Code	20h 45m	
Google Chrome	9h 59m	
Google Chrome	3h 45m	
Mail	1h 13m	
Preview	1h 4m	
Python	15m	
Obsidian	8m	
Finder	6m	
System Settings	6m	
iTerm	2m	

Example Principles

- Everything is a nail
- Free, open source software

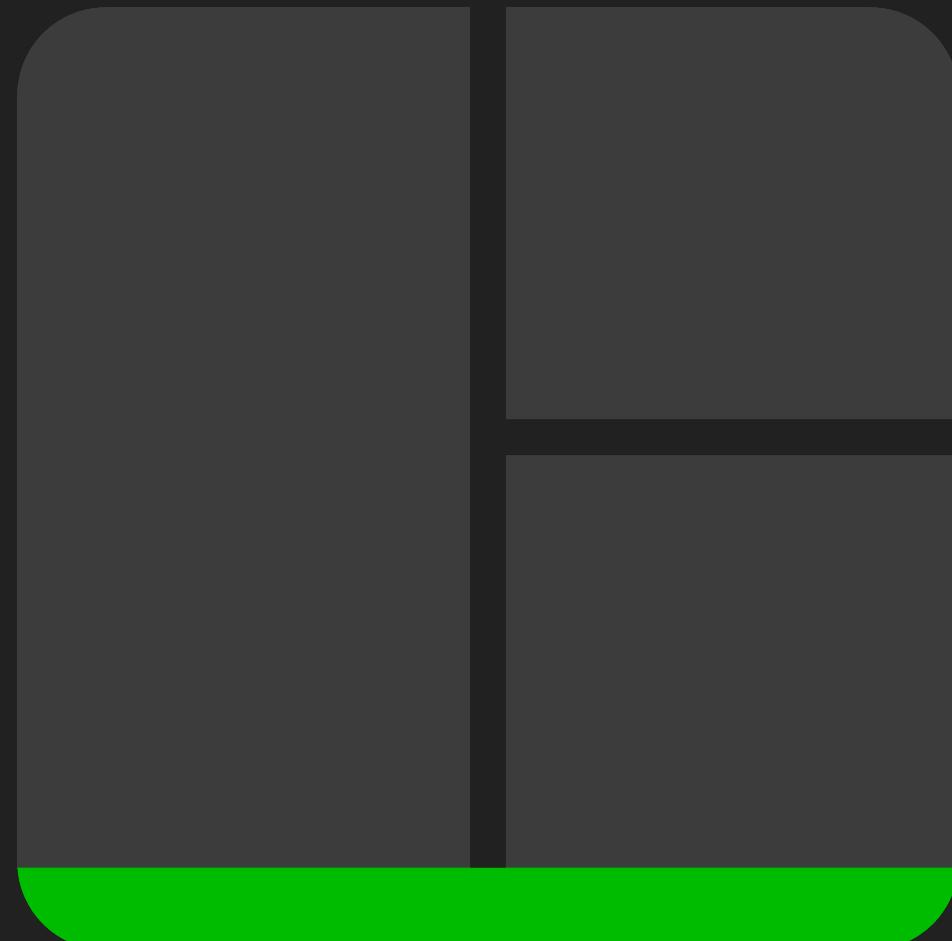


Example Principles

- Everything is a nail
- Free, open source software
- No internet connection



Remote computing

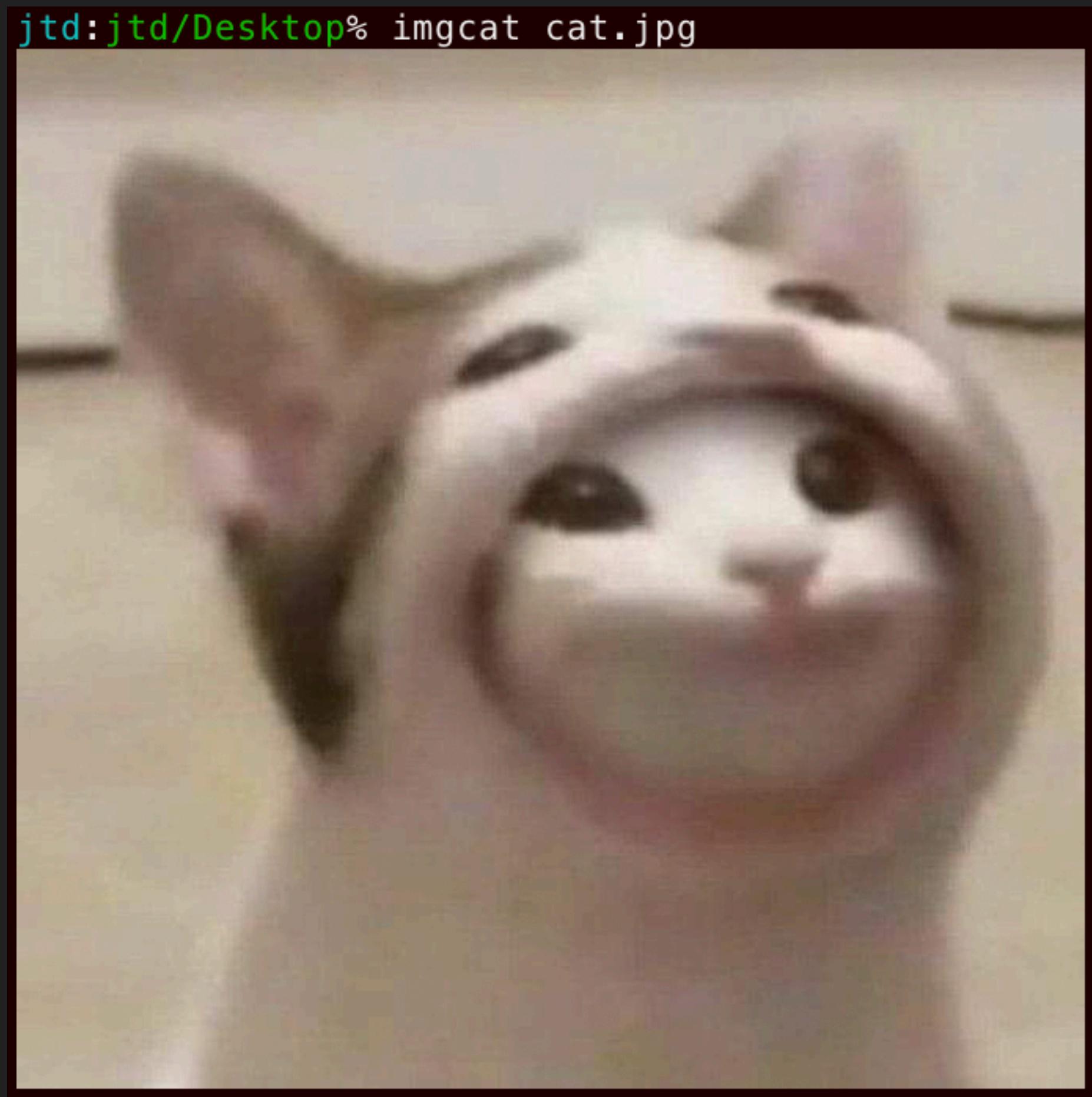


Disconnect & reconnect from processes
without killing them

tmux

Remote computing

imgcat



<https://iterm2.com/utilities/imgcat>

Remote computing

caffeinate

Stop your computer from disconnecting
from the Internet or falling asleep

Mac users only

Remote computing



Windows subsystem for Linux

Use Linux shell commands on a
Windows machine.

Coding



vim

- Ubiquitous (available on Sherlock)
- Lightweight & fast
- Extensible
- Not emacs

Coding

- Delete unused code and revert changes without loss of data



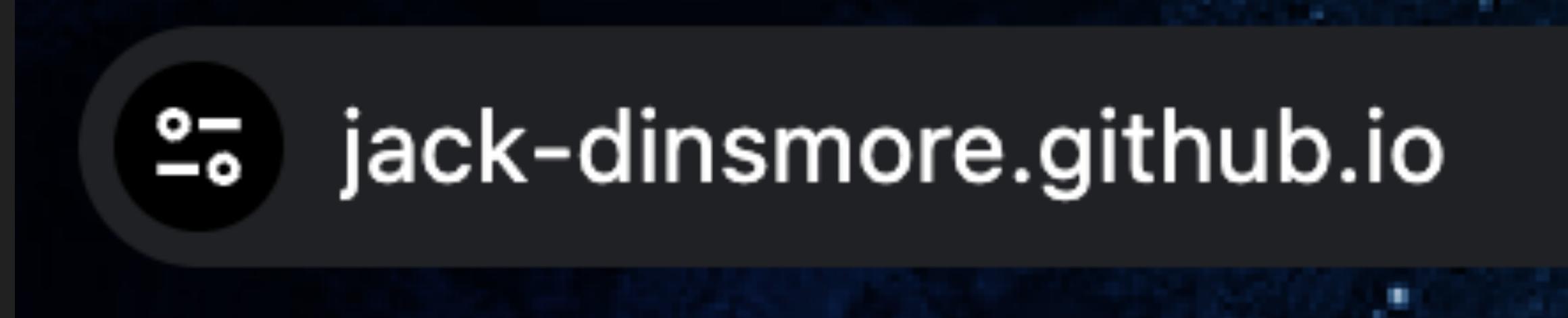
git

Coding



git

- Delete unused code and revert changes without loss of data
- Publish free websites & store unlimited data with GitHub



Coding



git

- Delete unused code and revert changes without loss of data
- Publish free websites & store unlimited data with GitHub
- Git works without GitHub!
`$ git init
(time passes)
$ gh repo create`

Note taking



obsidian

- Free, open source, offline
- Ubiquitous markdown
formatting



notion

- Easily sharable &
collaborative
- Easier setup

Reading



Zotero

- Sync paper annotations between devices
- Generates .bib files when ready

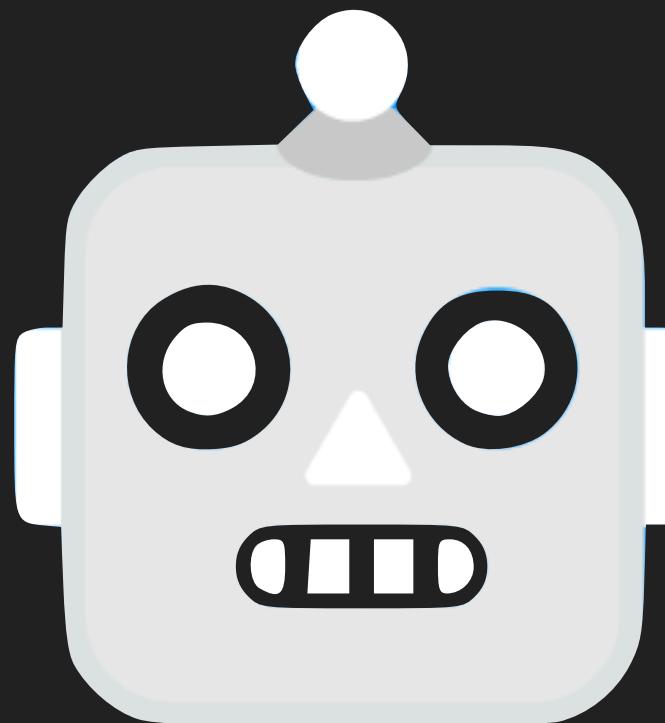


Mendeley

Reading



KIPAC
teabot

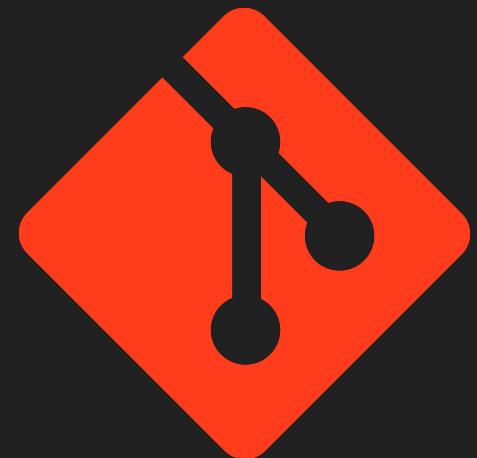


Writing



overleaf

+



git

+



vscode

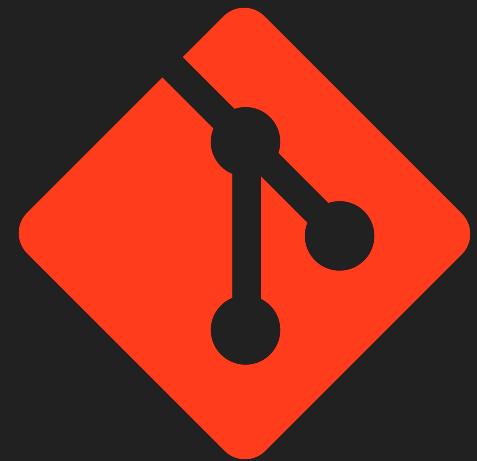
- Share papers with collaborators in a format they know

Writing



overleaf

+



git

+



vscode

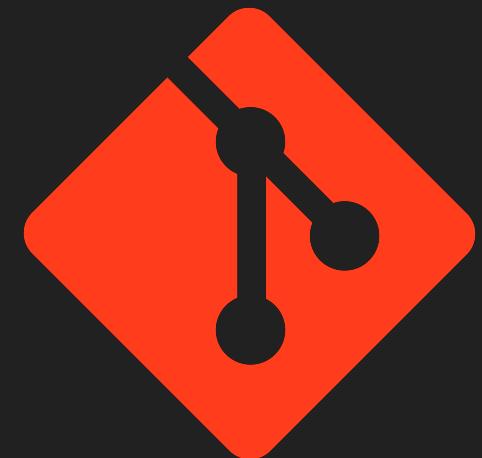
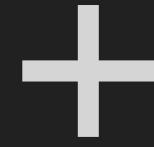
- Share papers with collaborators in a format they know

- Edit your papers offline
- View changes easily
- Switch between versions
- Push changes when you're ready
- Git branches
- ...

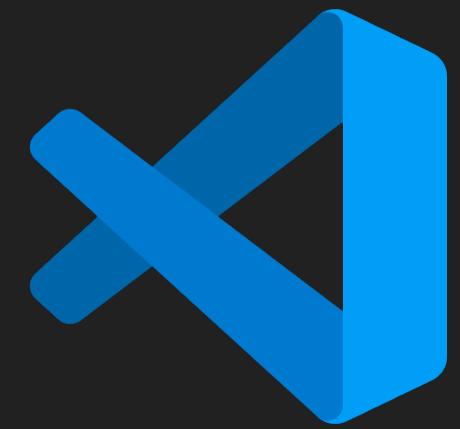
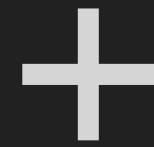
Writing



overleaf



git



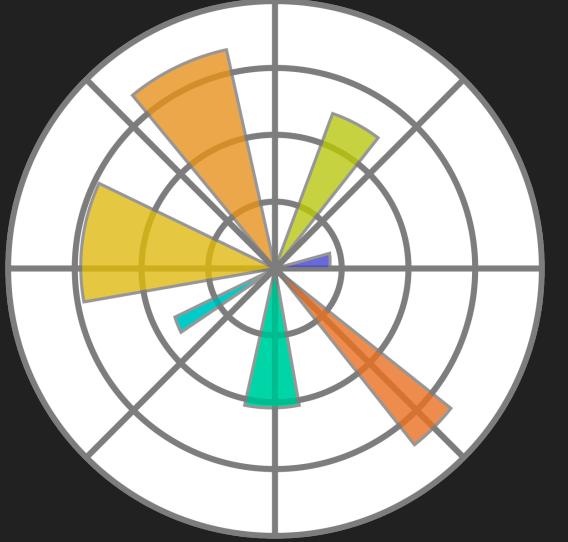
vscode

- Share papers with collaborators in a format they know
- Edit your papers offline
- View changes easily
- Switch between versions
- Push changes when you're ready
- Git branches
- ...
- Keep your key bindings
- Add and delete files easily

Plotting

Choose your own colors

```
axes.prop_cycle : cycler('color', ["cadetblue", "darkorange",
"darkmagenta", "dodgerblue", "rebeccapurple", "firebrick",
"goldenrod", "forestgreen", "slateblue", "saddlebrown"] )
```

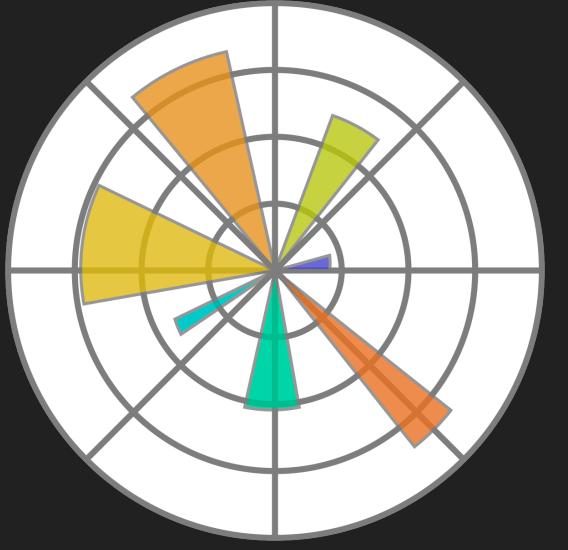


matplotlib
Rcparams

Plotting

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```



matplotlib
Rcparams

Generate LaTeX-formatted plots faster

```
font.family : Computer Modern
```

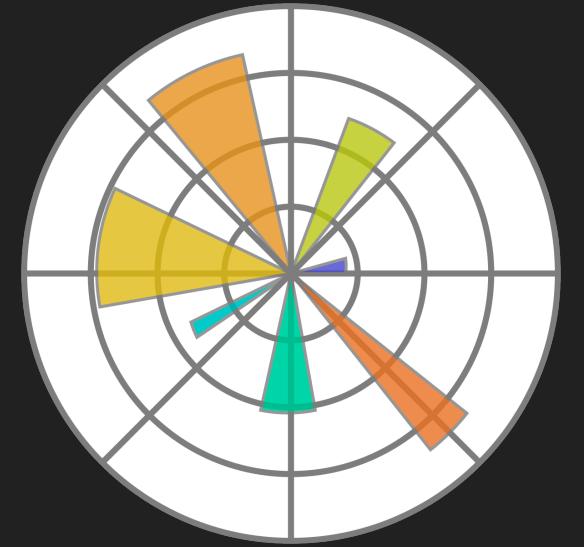
```
mathtext.fontset : custom
```

```
mathtext.rm : Computer Modern
```

```
mathtext.it : Computer Modern:italic
```

```
mathtext.bf : Computer Modern:bold
```

Plotting



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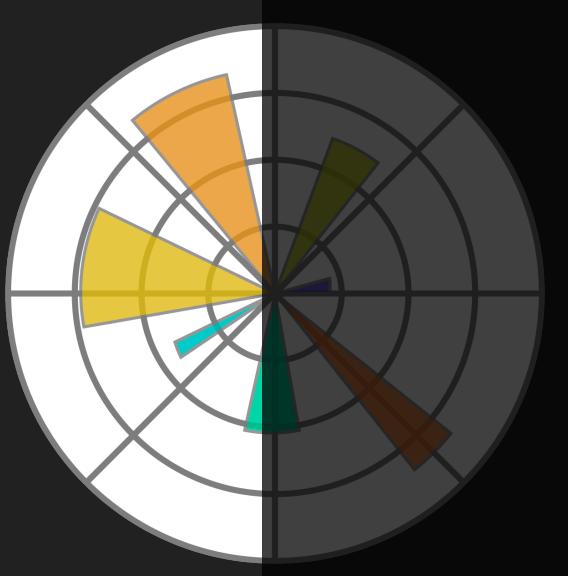
Tight layout but it's default and actually works

```
savefig.bbox: tight
```

Plotting

Choose your own colors

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```



matplotlib
Rcparams

Generate LaTeX-formatted plots faster

```
plt.style.use("your_name_here")
```

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```

```
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Tight layout but it's default and actually works

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Math



mathematica

- We might not do much math but...
- Incredibly expansive set of tools
- Faster than a lot of online calculators
- Saves your calculations to disk
- Comes with plotting tools

VSCode extensions



Jupyter

- Run Jupyter notebooks without opening terminal & keeping all your settings



Settings Cycler

- Make arbitrary key bindings



Latex Workshop

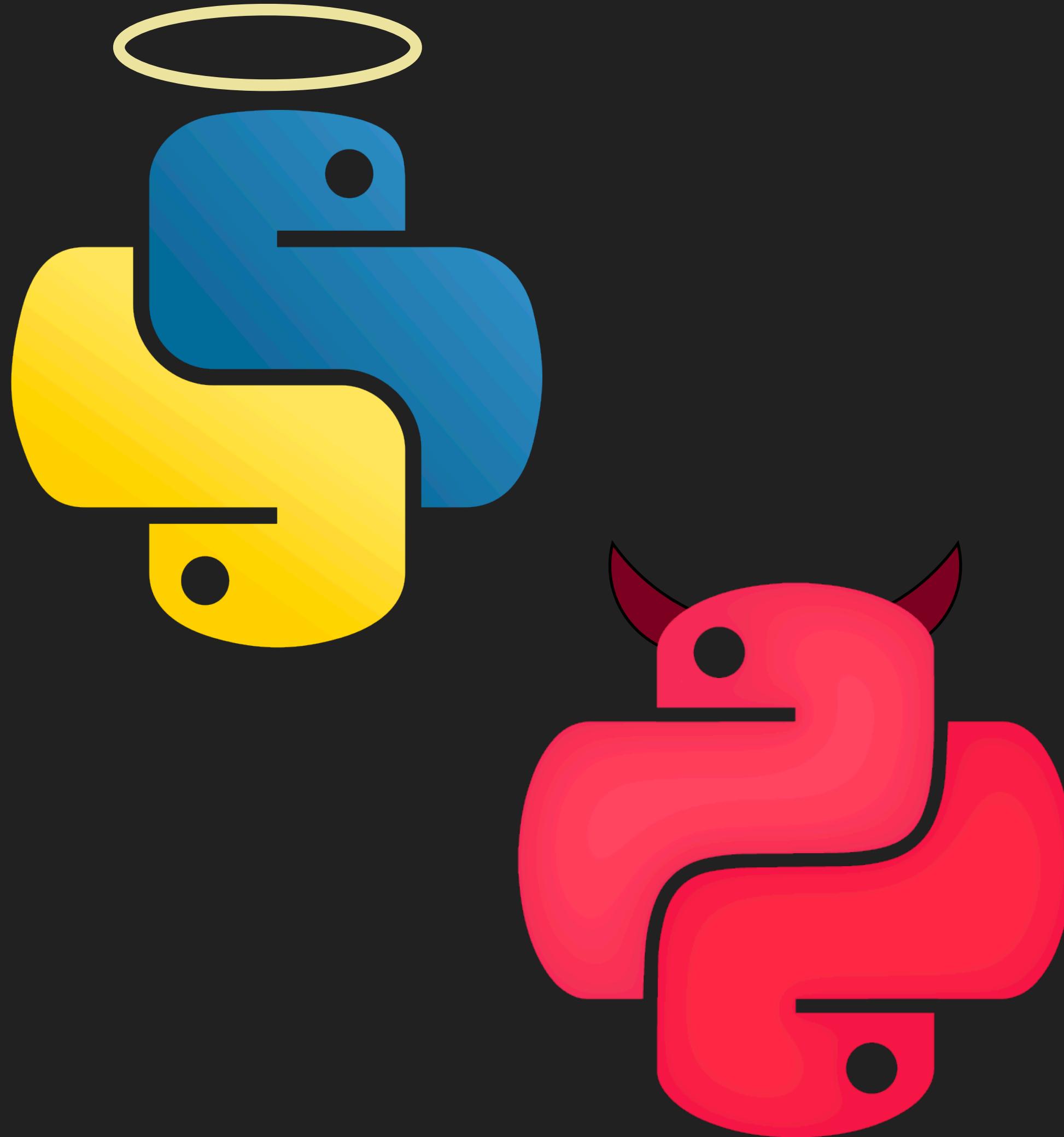
- Most painless LaTeX installation I've ever seen

VSCode tricks

Multiple cursors

Ctrl + D

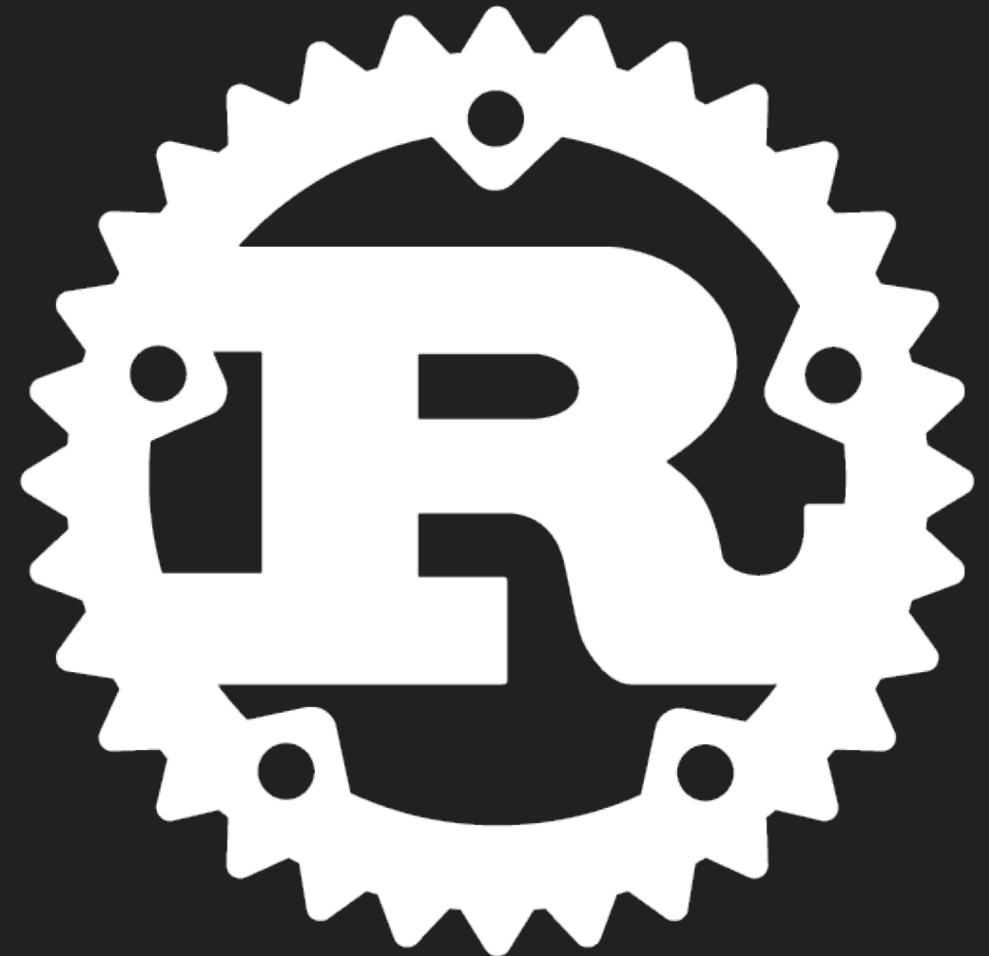
Programming languages



Python is wonderful, but for large programs, sometimes

- Python is slow
- Python hurts the environment
- Python is very hard to debug because neither you nor the computer can tell what your code is supposed to do

Programming languages



rust

I'm definitely biased
I just really like rust

- Efficient
 - Longer initial writing time than Python
 - Shorter debugging time than Python?
 - Much shorter runtime than Python

Programming languages



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 - Guaranteed memory safety

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 - Linter to inform you of helpful standard library functions
 - Warnings for common mistake

Programming languages

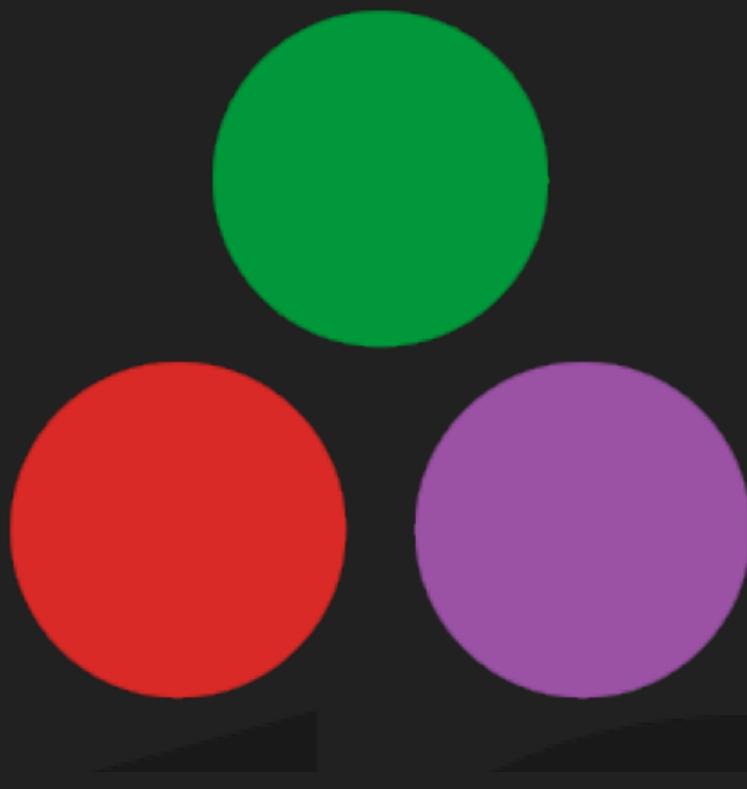


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 - Linter to inform you of helpful standard library functions
 - Warnings for common mistake
- Most loved programming language
- Can be executed from Python
- Not much astrophysics support

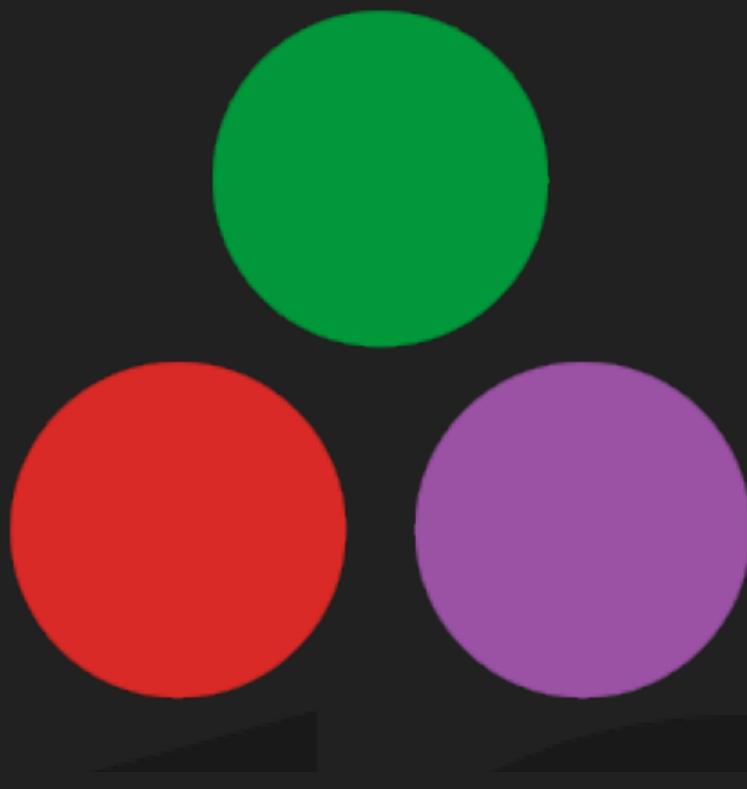
Programming languages



julia

- Efficient
 - ↳ Much faster than Python
 - ↳ Very easy to parallelize

Programming languages



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- Scientific
 - ↳ Made by scientists for science
 - ↳ Interpreted, just-in-time compiled, kinda like Python

Programming languages



julia

- Efficient
 - ↳ Much faster than Python
 - ↳ Very easy to parallelize
- Scientific
 - ↳ Made by scientists for science
 - ↳ Interpreted, just-in-time compiled, kinda like Python
- A great, environmentally and PhD-length friendly programming language
- Can be executed from Python
- Kinda scuffed tbh imho ngl. Bad syntax & documentation

Programming languages

- Extremely efficient
 - One of the fastest languages of all time



C++

Programming languages



C++

- Extremely efficient
 - One of the fastest languages of all time
- Versatile
 - Has been coded in by scientists for decades

Programming languages



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 - Has been coded in by scientists for decades
- Flexible
 - Assumes you know what you're doing and doesn't give you trouble if you're a maverick who likes to live dangerously

Programming languages



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- Can be executed from Python
- Ancient
- Ancient