

Command line tools that boosts productivity

An introduction to vim and tmux

Wenhan Zhu (Cosmos)

Apr. 17, 2020

Overview

- ▶ CLI tools
- ▶ Tmux
- ▶ Vim
- ▶ Demos!

CLI vs GUI

- ▶ CLI (Command Line Interface)
- ▶ GUI (Graphical User Interface)

What is Tmux

Tmux is a terminal multiplexer.

A terminal multiplexer allow users to create multiple terminals within the same terminal. It also provides detach/attach functionalities to allow separating processes from a specific terminal.

Tmux introduction

```
q:Quit D:Del U:Undel s:Save m:Mail r:Reply R:Group ?:Help
Licenses [9] 9 1 ! 20/03/30 01:28PM Stephane Madrau Re:
INBOX [3] 30 2 ! 19/10/15 04:49PM Alfred Re:
Important [142/ 336] 3 1 19/03/01 06:01PM Ubisoft Account 2-St
Orders [1] 20 4 ! 18/05/25 10:40AM Matthew Palmer Your
Done 5 1 18/02/23 10:04PM Texpad Your
Sent 7 6 ! 17/09/05 12:45AM Geek Squad Welc
[Airmail] 7 1 17/02/13 06:06AM Paddle Your
Memo 8 1 15/09/02 02:15AM Connectify Supp New
Starred [14] 14 9 ! 15/03/17 12:14PM Alfred Your
Spam 24/ 24
GitHub 9
Drafts
Snooze
Trash [1] 17/ 128
Documents [1] 2
Research 5
To Do
Send Later
Sent Mail 26

---NeoMutt: =Licenses [Msgs:9 Flag:9 Inc:3 137]

17 > 0 0

0:neomutt* 1:zsh-
```

```
~/.vimrc buffers
call plug#begin('~/.vim/plugged')
" More useful status line at bottom-
Plug 'bling/vim-airline'
" vimwiki tool -
Plug 'vimwiki/vimwiki'
" vimwiki tool to take notes -
Plug 'eyvin/vim-boxdraw'
" vimwiki extra background navigation -
Plug 'easymotion/vim-easymotion'
" vimwiki tool to take notes -
Plug 'tpope/vim-commentary'
" vimwiki tool to take notes -
Plug 'tpope/vim-fugitive'
" vimwiki tool to take notes -
Plug 'Raimondi/delimitMate'
N. .vimrc 3X # 5/147 ln : 1

cosmos@zephyr /home/cosmos/Sync/Readings/Books/fluentpython.pdf
Books css.thedefinitiveguide.pdf 73.5 M Fluent Python CLEAR, CONCISE, AND EFFECTIVE
NonPDF d2l-zh.pdf 12.2 M PROGRAMMING
Papers datavisualizationwithjava-.pdf 19 M
Temp doingmathwithpython.pdf 6.66 M Luciano Ramalho
Effective_Modern_C_-.pdf 4.49 M
elegantscipy.pdf 38 M Fluent Python
Essential SQLAlchemy, 2nd-.pdf 4.9 M
fluentpython.pdf 13.4 M Luciano Ramalho
Fundamentals of Physics -.pdf 23.3 M
Fundamentals of Physics -.pdf 30.7 M Beijing
highperformanceimages.pdf 49 M
How To Read A Book by Ad-.pdf 2.28 M Boston Farnham Sebastopol
impracticalpythonprojects.pdf 9.24 M
Introduction to Algorith-.pdf 5.21 M Tokyo
-rw-r--r-- 1 cosmos cosmos 13.4M 2019-11-29 05:15 909M sun, 332G free 26/69 33%
0:neomutt* 1:zsh- zephyr @ 17:29:16 16-Apr-20
```

Figure 1: tmux example screenshot

Left is neomutt (e-mail client), top middle is vim (text editor, more on it later), top right is htop (system monitor), bottom left is ranger (file manager)

How Tmux works

Session

- ▶ Window
 - ▶ Pane

Movement

- ▶ Moving between panes
- ▶ Moving between windows
- ▶ Switching sessions

Detaching and reattaching

Why do we need tmux when we can just open multiple terminals?

Separates the processes with the shell/terminal

Vim

Vim

Vim (Vi IMproved) is a *modal* terminal based text editor.

- ▶ It is one of the two editors that was in the editor holy wars (vim vs emacs)
- ▶ Its movement keys has been adopted by many applications

Popularity of Vim at the moment

Most Popular Development Environments

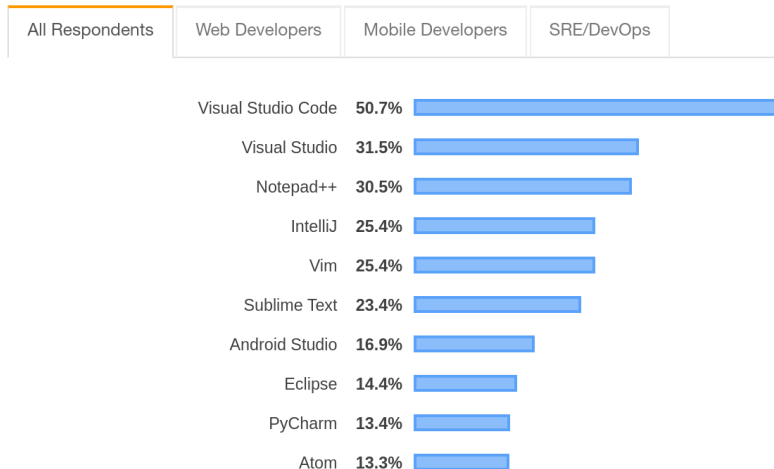


Figure 2: top 10 development environments from Stack Overflow developer survey 2019

Meanwhile on Stack Overflow

Questions tagged [vim]

[Ask Question](#)

Vim is a free and open-source modal text editor available for most major platforms. It allows high efficiency in many text editing tasks but has a steep learning curve. To learn the basics, run `":help vimtutor"`. For non-programming questions please use <https://vi.stackexchange.com/> instead.

[Learn more...](#) [Top users](#) [Synonyms \(5\)](#)

25,185 questions

[Newest](#)[Active](#)[Bountied](#) **2**[Unanswered](#)[More ▾](#)[Filter](#)

3694

How do I exit the Vim editor?

votes

10

answers

I'm stuck and cannot escape. It says: "type `:quit<Enter>` to quit VIM" But when I type that it simply appears in the object body.

[vim](#)[vi](#)

2.1m views

asked Aug 6 '12 at 12:25

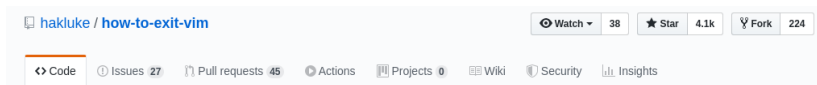


jclancy

34.8k ● 5 ● 22 ● 29

Figure 3: most viewed question for vim

Meanwhile on GitHub



Below are some simple methods for exiting vim.

Figure 4: Repository dedicated to ways to quit vim

In case you're not aware yet

Ways to quit vim

- ▶ `:q` (quit)
- ▶ `:wq` (save and quit)
- ▶ `:x` (same as `:wq`)
- ▶ `ZZ` (same as `:wq`)
- ▶ `Ctrl + W` then `q` (same as `:q`)

Why vim when there are other more modern editors?

Programmers has been arguing about vim vs other editors

- ▶ In the 90s, UltraEdit vs vim
- ▶ Then, Eclipse vs vim
- ▶ Then, TextMate vs vim
- ▶ Then, Sublime Text vs vim
- ▶ Then, Atom vs vim
- ▶ Now VS Code vs vim

There is only one other editor *emacs* which is always there

Why Vim

- ▶ How you use vim today will be how you use it 20 years from now. (proven by users since the 90s)
- ▶ Don't need to learn a new set of editor commands whenever your development environment changes

Basics of Vim

Vim is *modal*

Three modes

- ▶ [Normal]
- ▶ [Insert]
- ▶ [Visual]

Vim motion

Moving left, down, up, right

▶ h, j, k, l

ADM-3A computer terminal



Arrow keys on ADM-3A computer terminal



Figure 6: ADM-3A Keyboard

Vim Motion continued...

Word motion

- ▶ “w” go forward word
- ▶ “b” go back one word

Search

Global search

- ▶ “/” (“?”)
- ▶ Regrex matching

Inline search

- ▶ f (F), t (T)
- ▶ Repeat with “;” and “,”

Basic Actions

- ▶ “y” Yank (Copy)
- ▶ “p” Put (Paste)
- ▶ “d” Delete
- ▶ “c” Change

Basic Actions continued

Undo/Redo

- ▶ `u` (undo)
- ▶ `Ctrl + r` (redo)

Timetravel

- ▶ `:earlier [time]`
- ▶ `:later [time]`

Combine action with motion

Example

- ▶ `d2w` will delete the following two words
- ▶ `c5j` will delete the next 5 lines and enter [Insert]

Vim Text Objects

Text Objects in Vim

- ▶ word (w)
- ▶ sentence (s)
- ▶ quotes (" , ')
- ▶ paragraph
- ▶ brackets ("()", "[]", "{}")
- ▶ tags (<head> </head>, etc)

Apply actions on text objects

Describing a text object

- ▶ `i[text object]` (inner text object)
- ▶ `a[text object]` (a text object)

Adding motion to actions on text objects

- ▶ `di"` Delete all text in quotes
- ▶ `cap` Change a paragraph

Extending upon motions, actions and text objects

- ▶ vim-commentary (add gc as action to comment/uncomment code)
- ▶ vim-surround (add S, cs as actions to modify surroundings of text)

How real programmers code

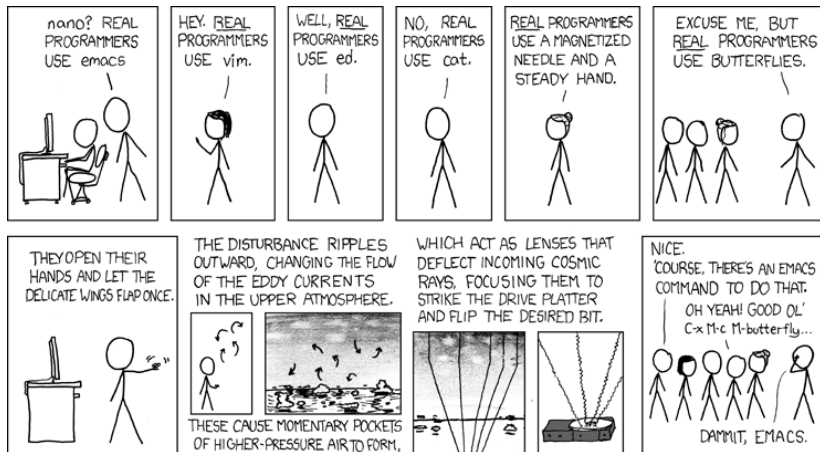


Figure 7: How real programmers code

Thank you!