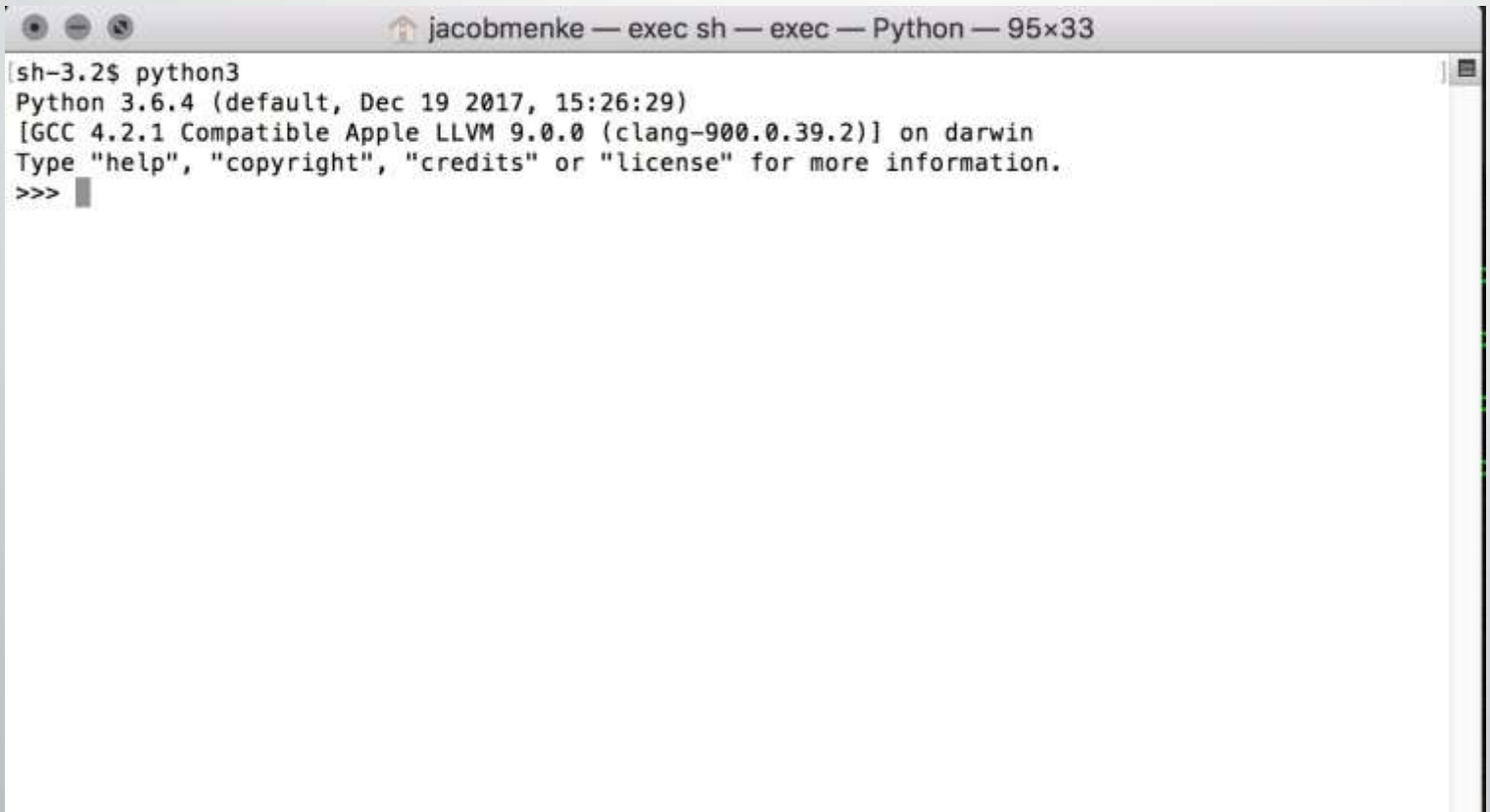




# Ultimate UNIX Setup For Developers

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# Boring and not too usable defaults...

A screenshot of a terminal window with a title bar that reads 'jacobmenke — exec sh — exec — Python — 95x33'. The terminal content shows the command 'sh-3.2\$ python3' being executed, followed by the Python 3.6.4 startup banner: 'Python 3.6.4 (default, Dec 19 2017, 15:26:29) [GCC 4.2.1 Compatible Apple LLVM 9.0.0 (clang-900.0.39.2)] on darwin'. It then prompts the user to 'Type "help", "copyright", "credits" or "license" for more information.' and shows the prompt '>>>>' with a cursor. The window has standard macOS window controls (red, yellow, green buttons) in the top-left corner.

```
sh-3.2$ python3
Python 3.6.4 (default, Dec 19 2017, 15:26:29)
[GCC 4.2.1 Compatible Apple LLVM 9.0.0 (clang-900.0.39.2)] on darwin
Type "help", "copyright", "credits" or "license" for more information.
>>> █
```



# Config Files & YouTube Tutorials

- <https://github.com/MenkeTechnologies/TutorialFiles>
- <https://www.youtube.com/channel/UCLOQFBXPrcVvO2Wb3wna8Ow>
- Recent Topics : GNU Readline Shortcuts in mysql, python3 and various REPLs
- <http://jakobmenke.com/>

# Custom Shell functions

- cd

```
cd(){  
    #builtin is necessary here to distinguish bt function  
    name and builtin cd command  
    #don't want to recursively call this function  
    builtin cd "$@" && clearList  
}
```

- aliases > functions > reserved words > builtins > external commands in PATH > not found



- clearList == bash function
  - essentially: clear && ls -AlhFi

```
clearList () {

    if [[ "$(uname)" == "Darwin" ]]; then
        exists grc && {
            ls_command="grc -c /usr/local/share/grc/conf.gls \

            gls -iFlhA --color=always"
        } || {
            ls_command="ls -iFlhA0"
        }
        lib_command="otool -L"
    else
        exists grc && {
            ls_command="grc -c /usr/share/grc/conf.gls \
            ls -iFlhA --color=always"
        } || {
            ls_command="ls -iFlhA"
        }
        lib_command="ldd -v"
    fi

    if [[ "$1" ]]; then
        for command in "$@"; do
            exists $command && {
                #exe matching
                while read locale;do
                    last_fields="$(echo $locale \
                    | cut -d' ' -f3-10)"
                    [[ -f "$last_fields" ]] && {
                        prettyPrint "$last_fields" && \
                        eval "$ls_command" $last_fields && \
                        prettyPrint "FILE TYPE:" && \
                        eval "file $last_fields" && \
                        prettyPrint "DEPENDENT ON:" && \
                        eval "$lib_command $last_fields";
                        prettyPrint "SIZE:"
                        du -sh "$last_fields"
                        prettyPrint "STATS:"
                        stat "$last_fields"
                        echo
                        echo
                    } || {
                        echo "$locale"
                        echo
                        echo
                    }
                done < <(type -a "$command" | sort | uniq)
            } || {

```

# Functions and aliases

UNIX Spirit – One letter commands. The more cryptic and less typing the better

```
l> m /dev/tty017 x type -f f && alias r t e h d sc dl c emu ig pg cg rg doc ts l l
f () {
    cd "$1"
}
r='cd ..'
t='cd /'
e='cd /etc'
h='cd /usr/local'
d='cd $HOME/Desktop'
sc='cd $SCRIPTS'
dl='cd $HOME/Downloads'
c='cd /Volumes/SD/wcc/cps'
emu='cd /Volumes/SD/emu'
ig='cd $HOME/IdeaProjects'
pg='cd $HOME/PycharmProjects'
cg='cd $HOME/ClionProjects'
rg='cd $HOME/RubymineProjects'
doc='cd $HOME/Documents'
ts='cd $HOME/.Trash'
l=clearList
la=clearList
```



# Aliases Demo



# Package Managers

- Mac => Homebrew, MacPorts, Fink (old)
- Homebrew HomePage => <https://brew.sh/>
- install => `/usr/bin/ruby -e "$(curl -fsSL https://raw.githubusercontent.com/Homebrew/install/master/install)"`

# Homebrew Jargon

- Package == Formula == ruby file
- installed into `/usr/local/Cellar/<package>` with symlinks into `/usr/local/bin`, `/usr/local/lib` etc
- Taps == Github repositories
- Homebrew Core Repo Formulae
  - downloaded to `/usr/local/Homebrew/Library/taps/homebrew/homebrew-core/formula`
- Bottle == binary program already built for macOS (configure and make already done for you)
- Cask == GUI program or font ie microsoft-office, intellij-idea

# Homebrew Formula

brew install zzz

```
1 class Zzz < Formula
2   desc "Command-line tool to put Macs to sleep"
3   homepage "https://github.com/Orc/Zzz"
4   url "https://github.com/Orc/Zzz/archive/v1.tar.gz"
5   sha256 "8c8958b65a74ab1081ce1a950af6d360166828bdb383d71cc8fe37ddb1702576"
6   head "https://github.com/Orc/Zzz.git"
7
8   bottle :unneeded
9
10  # No test is possible: this has no --help or --version, it just
11  # sleeps the Mac instantly.
12  def install
13    system "make", "install", "PREFIX=#{prefix}"
14  end
15
16  test do
17    assert_predicate bin/"Zzz", :exist?
18  end
19 end
```



# Homebrew Exploration

# Homebrew

- brew install <package>
- brew ls
- brew rm <package>
- brew search <package>
- brew cleanup
- brew update
- brew upgrade
- brew cask install <gui-package>
- Brew cask rm <gui-package> (removes .app from /Applications)
- brew cask zap <gui-package> (like brew cask rm but also removes all preferences files etc ie full deinstallation)
- brew cask rm <gui>





# Homebrew Demo

# Package Managers

- Linux
  - Debian based = Debian, Ubuntu, Mint, Raspbian, Kali
    - Dpkg, apt, aptitude
  - RPM based = Red Hat, Fedora, CentOS
    - Rpm, yum

# Apt

- `sudo apt-get install <package>`
- `sudo apt-cache search <package>`
- `sudo apt-get purge <package>`
- `dpkg -l` = list all installed packages
- `dpkg -L <package>` = show files for this package
- `sudo apt-get update`
- `sudo apt-get upgrade`

# Tmux

- Terminal Multiplexer
- `brew install tmux`
- `sudo apt-get install tmux`



```
1  [||| 4.3%] Tasks: 123, 362 thr; 2 running
2  [||| 3.3%] Load average: 0.40 0.40 0.30
3  [||| 4.7%] Uptime: 3 days, 04:44:37
4  [||| 1.4%]
Mem[||||||| 1907/7847MB]
Swp[ 0/0MB]
```

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
20136	ham	20	0	298M	31396	21400	S	4.3	0.4	0:00.36	/usr/bin/gnome
964	ham	20	0	1757M	227M	67600	S	3.8	2.9	7:03.93	/usr/bin/gnome
895	ham	20	0	326M	63060	37040	S	3.8	0.8	8:07.97	/usr/lib/xorg-
19149	ham	20	0	15808	3464	2620	R	0.5	0.0	0:04.49	htop
13720	ham	20	0	471M	41444	24216	S	0.5	0.5	1:17.20	/usr/lib/gnome
599	gdm	20	0	1322M	131M	56328	S	0.5	1.7	2:10.14	gnome-shell --

F1Help F2Setup F3Search F4Filter F5Tree F6SortBy F7Nice - F8Nice + F9Kill F10Qu

```
Content-Type: text/html; charset=UTF-8
Content-Length: 1850
Via: 1.1 vegur
```

```
hamvocke git/master
> cowsay "Hello folks" | lolcat
```

```
-----
< Hello folks >
-----
      \      ^__^
       (oo)\_______
          (__)\       )\/\
              ||----w |
              ||     ||
```

```
hamvocke git/master
>
```

```
curl(1)      Curl Manual      curl(1)
```

## NAME

curl - transfer a URL

## SYNOPSIS

**curl** [**options**] [URL...]

## DESCRIPTION

**curl** is a tool to transfer data from or to a server, using one of the supported protocols (DICT, FILE, FTP, FTPS, GOPHER, HTTP, HTTPS, IMAP, IMAPS, LDAP, LDAPS, POP3, POP3S, RTMP, RTSP).

line 1 (press h for help or q to quit)



—(Sun, M

—(Sun, May 01)—

```

ramonoid@gentoo
OS: Gentoo i686
Kernel: 2.6.37-gentoo-r4
Uptime: 52m
Shell: zsh
Resolution: No X Server
DE: Not Present
WM: WMFS
WM Theme: Not Present
GTK Theme: Not Found
Icon Theme: Not Found
Font: Not Found

```

—(Sun, May01)—


```
52 # ----
53 # Theme
54 # ----
55 setw -g window-status-format " #F#I:#W#F "
56 setw -g window-status-current-format " #F#I:#W#F "
57 setw -g window-status-current-bg red
58 setw -g window-status-current-fg magenta
59 setw -g window-status-current-attr bright
60 setw -g window-status-bg white
61 setw -g window-status-fg black
62 setw -g window-status-attr bright
63 setw -g window-status-alert-fg black
64 setw -g window-status-alert-bg cyan
65 setw -g window-status-alert-attr bright
66
67 set -g message-fg black
68 set -g message-bg white
69 set -g message-attr bright
70
71 set -g pane-active-border-bg default
72 set -g pane-active-border-fg red
73 set -g pane-border-bg default
74 set -g pane-border-fg default
```

[320 kbps] [0:12/4:36]

[320 kbps] [0:12/4:36]

\*1:zsh\*

```
-3:vim-
```



```
.tmux.conf[+] :: [tmux] [unix]
1 change; before #5 2 seconds ago
```

[59%:

[53] [89%] [55]

```
~/Desktop — ssh tmux plugin run new-session -t sr2 — tmux new-session -t sr2 — ssh — ttyp002 — 257x74 — \M2
```

The screenshot shows the output of the 'top' command. At the top, it displays system statistics: 'D tux new-session -r root ...' and 'tux'. Below this, a horizontal bar chart shows the distribution of processes across different states: 1 running, 2 sleeping, 3 idle, 4 zombie, 5 stuck, and 6 total. To the right of the bar chart, the following statistics are displayed: 'tasks: 139, 81 thr: 2 running', 'load average: 0.79 0.66 0.44', 'uptime: 2 days, 21:28:16', 'Avg: 13.2% sys: 45% low: 0.0%', and 'Mem: 338/655MB' and 'Swap: 0/1024MB'.

PID	USER	PRI	NI	VIAT	RES	SHR S	CHP	PERM	TIME+	Command
2334	root	20	0	3550	3288	4778	0	0	0	4:01.37 /fmap -c /home/pl/.lftp.conf
1267	eqsig	20	0	1138	3732	4778	0	0	0	5:27:45 /usr/lib/eqsig - -background --datadir=/var/lib/eqsig --plugin
836	root	20	0	1869	3246	2584	0	0	2.6	5:52:42 /usr/lib/eqsig/eqsig - -font=auto --auth=/usr/lib/eqsig/eqsig
7215	root	20	0	15377	4432	2584	0	0	0.4	6:12:21 /usr/lib/eqsig/eqsig - -font=auto --auth=/usr/lib/eqsig/eqsig
1089	root	20	0	87128	36738	26792	0	0	0.5	6:11:40 /usr/lib/eqsig/eqsig - -font=auto --auth=/usr/lib/eqsig/eqsig
798	daemon-ta	20	0	25572	23844	8988	0	0	2.7	7:02:58 /usr/bin/tar -defaulta -f /usr/share/tor/tor-service-defaults
989	usr-data	20	0	15048	3071	2188	0	0	0	6:12:02 /usr/bin/tar -defaulta -f /usr/share/tor/tor-service-defaults
1372	eqsig	20	0	8138	37328	4778	0	0	0	5:27:17 /usr/lib/eqsig - -background --datadir=/var/lib/eqsig --plugin
807	root	20	0	89528	20832	4956	0	0	0	5:12:01 /usr/bin/tar -defaulta -f /usr/share/tor/tor-service-defaults
1374	eqsig	20	0	8138	37318	4778	0	0	0	5:27:17 /usr/lib/eqsig - -background --datadir=/var/lib/eqsig --plugin
12158	root	20	0	3936	3738	2672	0	0	0	6:08:04 /usr/bin/tar -defaulta -f /usr/share/tor/tor-service-defaults
12440	root	20	0	3436	446	346	0	0	0	6:08:04 /usr/bin/tar -defaulta -f /usr/share/tor/tor-service-defaults
7464	root	20	0	8884	5644	4384	0	0	0	6:08:18 -zsh
2113	root	20	0	35596	12784	11824	0	0	0	6:17:17 /usr/bin/tar -defaulta -f /usr/share/tor/tor-service-defaults
12241	root	20	0	4540	2668	2456	0	0	0	6:08:01 /usr/bin/tar -defaulta -f /usr/share/tor/tor-service-defaults
1372	eqsig	20	0	8138	37328	4778	0	0	0	5:27:17 /usr/lib/eqsig - -background --datadir=/var/lib/eqsig --plugin
7625	root	20	0	4028	2384	2244	0	0	0	6:08:04 /usr/bin/tar -defaulta -f /usr/share/tor/tor-service-defaults
7930	root	20	0	35588	3288	4778	0	0	0	6:23:17 /fmap -c /home/pl/.lftp.conf
586	root	20	0	7268	3352	2978	0	0	0	2:58:37 /usr/bin/tar -defaulta -f /usr/share/tor/tor-service-defaults
7483	root	20	0	9388	8876	3588	0	0	0	6:08:41 -zsh
1233	eqsig	20	0	8138	37328	4778	0	0	0	5:27:17 /usr/lib/eqsig - -background --datadir=/var/lib/eqsig --plugin
575	root	20	0	2268	1458	1332	0	0	0	6:08:24 /usr/bin/tar -defaulta -f /usr/share/tor/tor-service-defaults
687	usr-data	20	0	15048	3071	2188	0	0	0	6:08:01 /usr/bin/tar -defaulta -f /usr/share/tor/tor-service-defaults
886	usr-data	20	0	15048	3088	2112	0	0	0	6:08:01 /usr/bin/tar -defaulta -f /usr/share/tor/tor-service-defaults

```
Dec 25 06:25:33 jakobs-plt-2 syslog-ng[440]: Configuration reload request received, reloading configuration
Dec 25 23:58:54 jakobs-plt-2 kernel: Process accounting resumed
Dec 26 06:25:32 jakobs-plt-2 syslog-ng[440]: Configuration reload request received, reloading configuration
Dec 26 23:58:54 jakobs-plt-2 kernel: Process accounting resumed
Dec 27 06:25:33 jakobs-plt-2 syslog-ng[440]: Configuration reload request received, reloading configuration
```

```
➡ /var/log/mail.err ➡
➡ /var/log/mysql.err ➡
```

```
toktoks--ml--2 (double 11.8 3741 / 11000 4.9 35-474) = TP 182 180 1 183 184 Pub 48 81 164 56 intlen: 3 days 21:28:17
```

```

CPU      7.6%    CPU      26.8%    disk      0.0%    disk_io    451    MEM      45.0%    SWAP      0.0%    LOAD      4.00%
MEM      41.6%    user      1.0%    fs         0.0%    total      825    total     10000  1 min     0.85
swap     0.6%    system    0.0%    fs_io      0.0%    used       360    used       10000  5 min     0.62
         idle    87.6%    swap      0.0%    sw_io      0.0%    free       10000  free       10000  15 min    0.55

```

**NETWORK**    Rx/s    Tx/s    **TASKS** 238 (318 thr), 1 run, 238 s/g, 8 with sorted automatically by cpu percent, Flat view

MEM		CPU		MEM		CPU		PID		USER		TIME		A/s		M/s		Command		
used	total	used	total	used	total	used	total	used	total	used	total	used	total	used	total	used	total	used	total	
146M	160M	38.6%	7.4%	113M	65.5M	7925	root	0	0	0	0	10004.11	0	0	0	0	0	0	0	usr/bin/python /usr/local/bin/...
2M	4M	0.4%	0.4%	5.34M	3.11M	7431	pt	0	0	0	0	1634.34	0	0	0	0	0	0	0	httpd
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	truss -f /home/pt/ld-ss-ssh/pt/...
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	nginx: worker process
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	lftp -c /home/pt/lftp.conf
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	/usr/bin/tor --defaults-torrc /...
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	/usr/bin/redis-server 127.0.0.1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	rcu_sched
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	/usr/sbin/mysqld --basedir=/var
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	/usr/sbin/sshd -p 22
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	ssmfs: daemon - profile 1.0M
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	/usr/lib/lanagent -profile 1.0M

2017-10-27 14:46:43 No warning or critical alert detected

sr2-1 sr2 100 411.715

```

129883 -rw-r--r-- 1 pt pl 20 Nov 13 05:58 /cslsh_history
254931 -rw-r--r-x 3 pt pl 4 Aug Jul 10 13:09 /Templates/
1291003 -rw-r--r-x 3 pt pl 4 Aug Jul 10 13:09 /Temporary Items/
127776 -rw-r--r-x 4 pt pl 4 Aug Jul 10 13:09 /thomas/
255811 -rw-r--r-- 5 pt pl 4 Aug Jul 10 13:09 /thumbnails/
626132 -rw-r--r-x 3 pt pl 4 Aug Jul 10 13:09 /taux/
126747 -rw-r--r-- 1 pt pt 2 Aug Dec 24 23:58 /tmux.conf
128946 -rw-r--r-- 1 pt pt 8 Jul 9 00:00 /tokens.sh
130033 -rw-r--r-- 1 pt pl 409 Oct 25 06:43 /updatelog.txt
254992 -rw-r--r-x 4 pt pl 4 Aug Jul 10 13:09 /Videos/
162187 -rw-r--r-x 6 pt pl 4 Aug Jul 10 13:09 /via_
128838 -rw-r--r-- 1 pt pl 99 Dec 24 23:58 /via-Remarks
128838 -rw-r--r-- 1 pt pl 200 Dec 24 23:58 /viainfo
145916 -rw-r--r-- 1 pt pl 540 Nov 30 23:51 /viarc
366568 -rw-r--r-- 4 pt pl 4 Aug Dec 24 17:18 /vnc
1819026 -rw-r--r-x 12 pt pl 4 Aug Jul 10 13:09 /wechat/
1825540 -rw-r--r-x 3 pt pl 4 Aug Oct 7 05:22 /wireshark/
837482 -rw-r--r-x 11 pt pl 8 Aug Jul 10 13:09 /WolfbrandingLine/
837449 -rw-r--r-x 4 pt pl 4 Aug Jul 10 13:09 /Wolfram Research/
126764 -rw-r--r-- 1 pt pl 978 Dec 24 23:54 /Xauthrity
127752 -rw-r--r-- 1 pt pl 153 Dec 24 17:18 /xsession-errors
128834 -rw-r--r-- 1 pt pl 1818 Dec 24 17:18 /xsession-errors.old
128895 -rw-r--r-- 1 pt pl 1880 Dec 24 23:58 /x
128586 -rw-r--r-- 1 pt pt 0 Sep 27 13:23 /x.24373
128285 -rw-r--r-- 1 pt pt 0 Oct 12 05:22 /x.2121
128633 -rw-r--r-- 1 pt pt 0 Oct 23 02:19 /x.21035
128286 -rw-r--r-- 1 pt pt 0 Jul 29 00:28 /x.6813
128779 -rw-r--r-- 1 pt pl 0 Aug 14 02:01 /x.8152
128266 -rw-r--r-- 1 pt pl 0 Aug 4 02:13 /x.8794
128846 -rw-r--r-- 1 pt pl 475 Nov 30 23:36 /xcomdump
128734 -rw-r--r-- 1 pt pl 960 Sep 28 00:18 /xcomdump-jakobsel-2.18257
131434 -rw-r--r-- 1 pt pl 1258 Jul 21 03:17 /xcomdump-jakobsel-2.2524
128945 -rw-r--r-- 1 pt pl 680 Oct 12 05:22 /xcomdump-jakobsel-2.2855
128995 -rw-r--r-- 1 pt pl 275 Nov 3 21:26 /xcomdump-jakobs-pl-2-5.8.7
129054 -rw-r--r-- 1 pt pl 275 Nov 3 21:32 /xcomdump-jakobs-pl-2-5.8.7
128735 -rw-r--r-- 1 pt pl 275 Nov 3 21:34 /xcomdump-jakobs-pl-2-5.8.7
128185 -rw-r--r-- 1 pt pl 275 Nov 3 21:26 /xcomdump-jakobs-pl-2-5.8.7
129430 -rw-r--r-- 1 pt pl 275 Nov 3 21:23 /xcomdump-jakobs-pl2-5.8.7
128251 -rw-r--r-- 1 pt pl 275 Oct 20 16:16 /xcomdump-jakobsel-2-5.8.7
131366 -rw-r--r-- 1 pt pl 275 Jul 11 22:50 /xcomdump-jakobspl-2-5.8.7
128518 -rw-r--r-- 1 pt pl 425 Nov 30 23:19 /xcomdump-jakobs-pl-2-5.4.2-dev8
3668972 -rw-r--r-- 4 pt pl 4 Aug Oct 23 23:36 /zsh/
128512 -rw-r--r-- 1 pt pl 8 Aug Jul 8 23:56 /zsh
128581 -rw-r--r-- 1 pt pl 1856 Dec 24 23:50 /zsh_History
126172 -rw-r--r-- 1 pt pl 540 Nov 30 23:51 /zshrc
128918 -rw-r--r-- 1 pt pl 13 Dec 12 18:41 /zsh-update

```

```

--plgjnkd--pt--2:-----pts/2-----
/du/pts/2 7483 54911

```

1.91%	3.81%	5.72%	7.63%	9.54%
-------	-------	-------	-------	-------

```
ip6:ash
broadcasthost:7437
net:16064
```

[illegible]

TX:	com:	4.52mb	peak:	96.8kb	rates:	96.8kb	24.8kb	12.9kb
HA:		48.770		5.47kb		3.95kb	1.65kb	2.64kb
TOTAL:		53.290		101kb		101kb	25.4kb	15.4kb

```
^)akdm--pi--2^ 14:46 27-Dec-17 wlan0 addr:192.168.8.101
```



```

34 # export UPDATE_ZSH_DAYS=13
35
36 # Uncomment the following line to disable colors in ls.
37 # DISABLE_LS_COLORS=true
38
39 # Uncomment the following line to disable auto-setting ter
40 # minal title.
41 # DISABLE_AUTO_TITLE=true
42
43 # Uncomment the following line to enable command auto-corr
44 # action.
45 # ENABLE_CONNECTION=true
46
47
48 # Uncomment the following line to display red dots whilst
49 # waiting for completion.
50 # COMPLETION_WAITING_DOTS=true
51
52 # Uncomment the following line if you want to disable mark
53 # ing untracked files
54 # under VCS as dirty. This makes repository status check f
55 # or large repositories much faster.
56 # DISABLE_UNTRACKED_FILES_DIRTY=true
57
58 # Uncomment the following line if you want to change the c
59 # ommand execution time
60 # stamp shown in the history command output.
61 # The optional three formats: "mm/dd/yyyy"|"ds.mm.yyyy"|"y
62 # yy-mm-dd"
63 # HIST_STAMPS="mm/dd/yyyy"
64
65 # Would you like to use another custom folder than $ZSH/cu
66 # stom?
67 # ZSH_CUSTOM=/path/to/new-custom-folder
68
69
70 # Which plugins would you like to load? (plugins can be fo
71 # und in ~/.oh-my-zsh/plugins/*)
72 # Custom plugins may be added to ~/.oh-my-zsh/custom/plugi
73 # ns/
74 # Example format: plugins=(rails git tldr wget ruby lightb
75 # use)
76 # Add wisely, as too many plugins slow down shell startup.
77 plugins=(fzf-zsh zsh-completions zsh-syntax-highlighting z
78 sh-autosuggestions tmux sublime ng ruby yarn glibth gem n
79 m rvm perl oas node brews cpans git gradle pip python scal
80 a man nmap postgress colorize django ruby spring sudo)
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```

# Tmux Commands

- `tmux` = start server
- `tmux new-session -t <session-name>`
- `tmux new-window -t <window-name>`
- `tmux split-window` = horizontal split pane
- `tmux list-sessions` (`tmux ls`) = list sessions
- `tmux list-windows`
- `tmux list-panes`

# Tmux Commands

- `tmux attach -t <session-name>`
- `tmux kill-session [-t <session-name>]`
- `tmux kill-window [-t <window-name>]`
- `tmux kill-pane [-t <pane>]`





# Tmux Demo

# Inside of Tmux

- Prefix = defaults to ^B (Control B) but can be changed
- <prefix> + % => vertical split
- <prefix> + " = horizontal split
- <prefix> + c = new window
- <prefix> + n = next window
- <prefix> + p = previous window
- <prefix> + : => command line inside tmux similar to vim
  - <prefix> + : then kill-pane = kills current pane
  - === tmux kill-pane

# ~/.tmux.conf

- Prefix = defaults to control b but can be changed
- These lines bind:
  - prefix to ^a
  - <prefix> - | to split vertically
  - <prefix> - - to split horizontally

```
1 unbind C-b
2 set -g prefix C-a
3
4 bind-key L last-window
5 bind | split-window -h
6 bind - split-window -v
```



# Tmux Demo

# Tmux scripts

- usually located in ~/.tmux directory

- list of tmux commands
- could be run as tmux script

- ~/.tmux/four-panes

```
1 selectp -t 0 # select the first (0) pane.  
2 splitw -h -p 50 # split it into two halves  
3 selectp -t 0 # select the first (0) pane.  
4 splitw -v -p 50 # it into two halves  
5 selectp -t 2 # select the first (0) pane.  
6  
7 splitw -v -p 50 # split it into two halves  
8 selectp -t 0 # select the first (0) pane.  
9
```

- ~/.tmux.conf

```
#set some batch actions  
bind D source-file ~/.tmux/alt-control-window  
bind F source-file ~/.tmux/four-panes  
bind T source-file ~/.tmux/config-files  
bind r source-file ~/.tmux.conf
```



# Control Window script

```
selectp -t 0 # select the first (0) pane
splitw -h -p 50 # split it into two vertical halves
selectp -t 0 # select the first (0) pane
splitw -v -p 50 # split it into two horizontal halves
selectp -t 0 # select the first (0) pane
send-keys "htop" C-m
selectp -t 1 # select the middle pane
send-keys "bash $SCRIPTS/colorLogger.sh" C-m
splitw -v -p 70 # split it into two horizontal halves
selectp -t 2
send-keys "sudo glances --disable-alert --disable-network" C-m
selectp -t right # select the new, second (1) pane
splitw -v -p 30

send-keys "sudo iftop -c $HOME/.iftop.conf" C-m
```

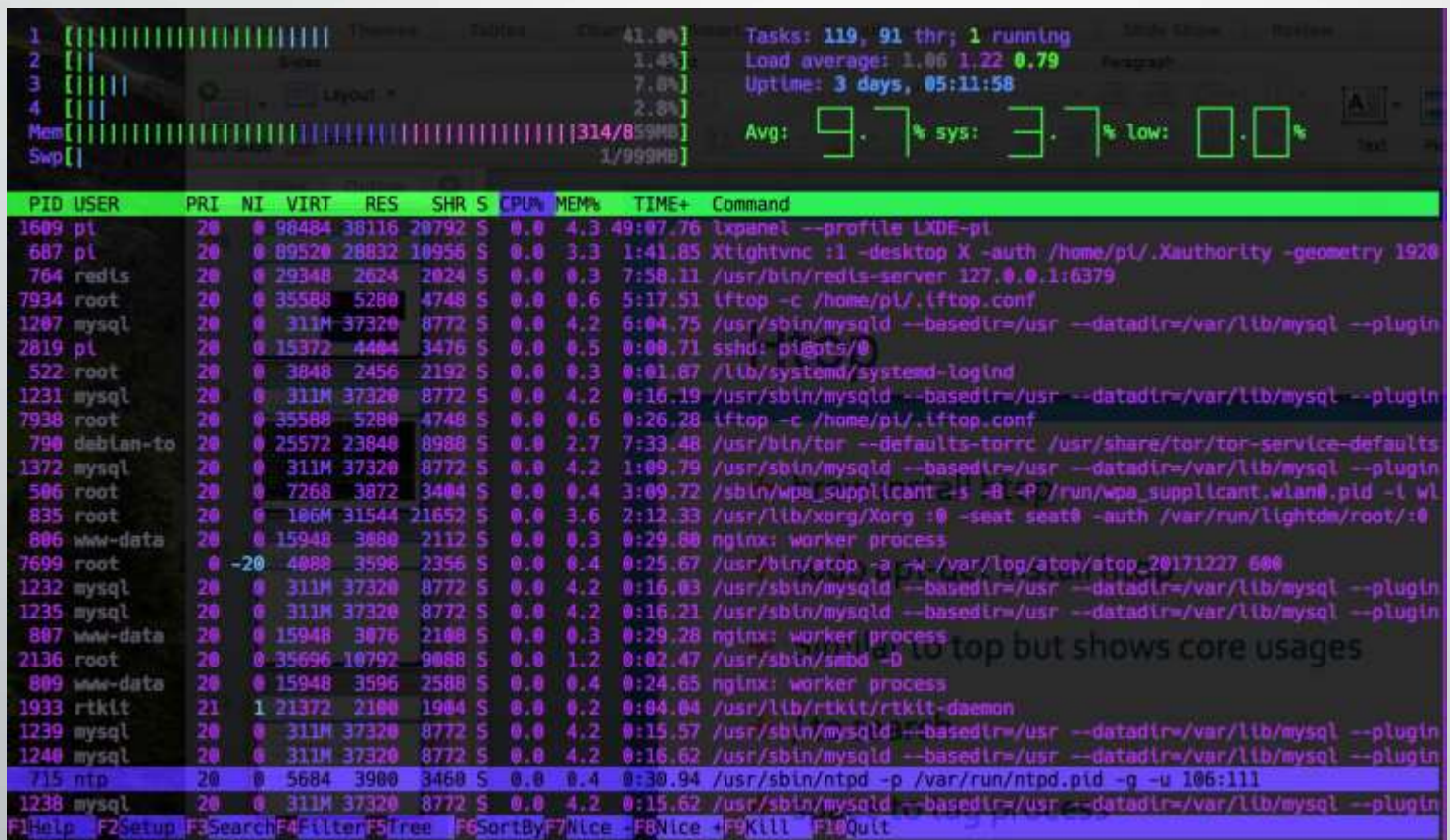


# Tmux Demo

# Htop

- brew install htop
- sudo apt-get install htop
- Similar to top but shows core usages
- / to search
- space to tag process
- k to kill process

# Htop demo



# ccze

- brew install ccze
- sudo apt-get install ccze
- tail -f /var/log/\*\*/\*.\*.log | ccze
- sudo id = shows up in /var/log/system.log on Mac and /var/log/auth.log on Linux

# Logging with color bash script

```
shopt -s globstar
#tailVersion="colortail -k $HOME/.colortailconf"
tailVersion=tail
weHaveCCZE=no

type ccze 1>/dev/null 2>&1 && {
    weHaveCCZE=yes
}

if [[ "$1" ]]; then
    weHaveCCZE=no
fi

#dont care about std err
#exec 2>/dev/null

if [[ $(uname) == Darwin ]]; then
    if [[ $weHaveCCZE == yes ]]; then
        $tailVersion -f /var/log/**/*.log /var/log/**/*.out /var/log/cups/* $HOME/Library/Logs/**/*.log "$HOME"/Library/Logs/**/*.out /Library/Logs/**/*.log /usr/local/var/log/**/*.log | ccze
    else
        $tailVersion -f /var/log/**/*.log /var/log/**/*.out /var/log/cups/* "$HOME"/Library/Logs/**/*.log "$HOME"/Library/Logs/**/*.out /Library/Logs/**/*.log
    fi
else
    #linux
    distroName=$(lsb_release -a | head -1 | awk '{print $3}')

    if [[ $distroName == Raspbian ]]; then

        if [[ $weHaveCCZE == yes ]]; then
            $tailVersion -f /var/**/*.log /var/log/{dmesg,debug,lastlog,messages,syslog} /var/**/*.err "$HOME"//**/*.log |
        else
            $tailVersion -f /var/**/*.log /var/log/{dmesg,debug,lastlog,messages,syslog} /var/**/*.err "$HOME"//**/*.log
        fi
    fi
fi
```





ccze demo



# iftop

- brew install iftop
- sudo apt-get install iftop
- sudo iftop -c ~/.iftop.conf
- while running:
  - t = toggle bar display modes
  - q = quit
  - f = filter
  - h = help

# ~/.iftop.conf

- port-display:on
- line-display:one-line-both
- interface: eno

# iftop - colored

- git clone  
<https://github.com/MenkeTechnologies/iftopcolor>
- ./configure && make
- sudo make install or move executable ./iftop to somewhere in PATH



iftop demo

# grc – general colorizer

- <https://github.com/garabik/grc>
- brew install grc
- sudo apt-get install grc

```
jacobmenke@MenkeTechnologies /dev/ttys018 11429 16:11:24 ✓ 0
➤ brew info grc
grc: stable 1.11.1, HEAD
Colorize logfiles and command output
http://korpus.juls.savba.sk/~garabik/software/grc.html
Conflicts with:
  cc65 (because both install `grc` binaries)
  /usr/local/Cellar/grc/1.11.1 (82 files, 89.5KB) *
  Built from source on 2017-08-04 at 01:56:03
From: https://github.com/Homebrew/homebrew-core/blob/master/Formula/grc.rb
=> Requirements
Required: python3 ✓
=> Caveats
New shell sessions will use GRC if you add the relevant file to your profile e.g.:
  . /usr/local/etc/grc.bashrc
```


# grc config files

- Mac: `/usr/local/share/grc/conf.ls`
- Linux: `/usr/share/grc/conf.ls`
- each command that will be colorized has its corresponding config file
- automatic aliases
- usage: `grc netstat`
- `grc -c /usr/local/share/grc/conf.ls ping google.com`

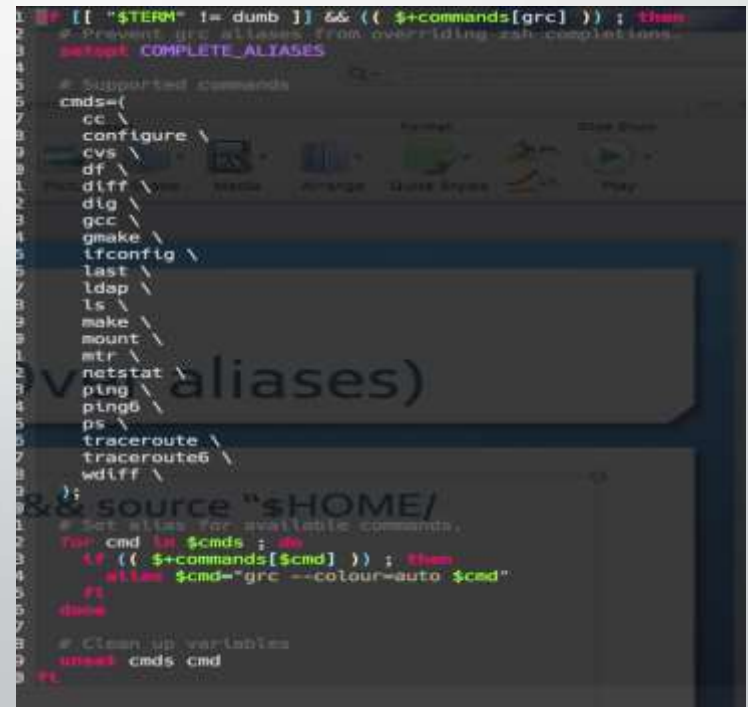


# Automatic Aliasing (Over aliases)

- `curl https://raw.githubusercontent.com/garabik/grc/master/grc.zsh -O $HOME/grc.zsh`
- `~/.zshrc : [[ -s "$HOME/grc.zsh" ]] && source "$HOME/grc.zsh"`
- `ping` is now alias for `grc ping`



```
jacobmenke@MenkeTechnologies ~$  
m /dev/tty018 alias ping  
ping='grc --colour=auto ping'
```



```
[[ "$TERM" != dumb ]] && (( ${+commands[grc]} )) ; then  
# Prevent grc aliases from overriding zsh completions.  
setopt COMPLETE_ALIASES  
  
# Supported commands  
cmds=(  
  cc \\  
  configure \\  
  cvs \\  
  df \\  
  diff \\  
  dig \\  
  gcc \\  
  gmake \\  
  ifconfig \\  
  last \\  
  ldsp \\  
  ls \\  
  make \\  
  mount \\  
  mtr \\  
  netstat \\  
  ping \\  
  ping6 \\  
  ps \\  
  traceroute \\  
  traceroute6 \\  
  wdif \\  
  
);  
&& source "$HOME/  
# Set alias for available commands.  
for cmd in $cmds ; do  
  if (( ${+commands[$cmd]} )) ; then  
    alias $cmd="grc --colour=auto $cmd"  
  fi  
done  
  
# Clean up variables  
unset cmds cmd  
fi
```

# grc uses regex for colorization

```
# size: 1M <= size < 10M
regexp=\s+(\d{7}|\d{1,6}([,\.]\d+)?M)(?=\s[A-Z][a-z]{2}\s)
colours=green
=====

# size: 10M <= size < 100M
regexp=\s+(\d{8}|\d{7}([,\.]\d+)?M)(?=\s[A-Z][a-z]{2}\s)
colours=yellow
=====

# size: 100M <= size < 1G
regexp=\s+(\d{9}|\d{8}([,\.]\d+)?M)(?=\s[A-Z][a-z]{2}\s)
colours=red
=====

# size: 1G <= size
regexp=\s+(\d{10,}|\d{9}([,\.]\d+)?G)(?=\s[A-Z][a-z]{2}\s)
colours=bold red
=====

# device major minor numbers
regexp=\s(\d+),\s+(\d+)\s
colours=default,bright_yellow ,yellow
=====

# time
regexp=(\s|^)[0-2]?[0-5]\d(?:\s|,|$)
colours=white
=====
```

# grc demo

- ping
- ifconfig
- dd
- ps

# Python programs

- Glances = pip package
- Powerline status = pip package
- brew install python = goes into /usr/local/Cellar/python/<version-number>
- pip, package manager for python, should be included
- Mac: pip installs packages to /usr/local/lib/python2.7/site-packages on
- Debian: pip installs packages to /usr/local/lib/python2.7/dist-packages

```
/usr/local/bin/pip
8597658540 lrwxrwxrwx 1 jacobmenke staff 31 Oct  5 00:17 /usr/local/bin/pip -> ../Cellar/python/2.7.14/bin/pip*
FILE TYPE:
/usr/local/bin/pip: Python script text executable, ASCII text
```



# Pip exploration

# pip

- pip install <package>
- pip show <package>
- for package in \$(pip list --outdated);do pip install \$package done

```
jacobmenke@MenkeTechnologies /usr/local/Cellar/python/2.7.14 11407 15:31:03 1
m /dev/tty018 x pip show glances
Name: Glances
Version: 2.11.1
Summary: A cross-platform curses-based monitoring tool
Home-page: https://github.com/nicolargo/glances
Author: Nicolas Hennion
Author-email: nicolas@nicolargo.com
License: LGPLv3
Location: /usr/local/lib/python2.7/site-packages
Requires: psutil
```



# Powerline

- Status bars for vim, tmux
- requires special fonts for triangles such as Nerd Fonts
  - <https://github.com/ryanoasis/nerd-fonts>
- pip install powerline-status
- ~/.tmux.conf

```
run-shell "powerline-daemon -q"  
source '/usr/local/lib/python2.7/site-packages/powerline/  
bindings/tmux/powerline.conf'
```

- ~/.vimrc

```
if os = "Darwin"  
set rtp+="/usr/local/lib/python2.7/site-packages/powerline/  
bindings/vim"  
elseif os = "Linux"  
set rtp+="/usr/local/lib/python2.7/dist-packages/power  
line/bindings/vim/  
endif
```

# Powerline for Vim

- recommend to install latest vim 8+
- brew install vim
- sudo apt-get install vim
- brew install macvim (fastest for mac IMO)
  - `mvim -v <file>` = stay in terminal
  - `mvim <file>` = launch gui

# Powerline for Vim

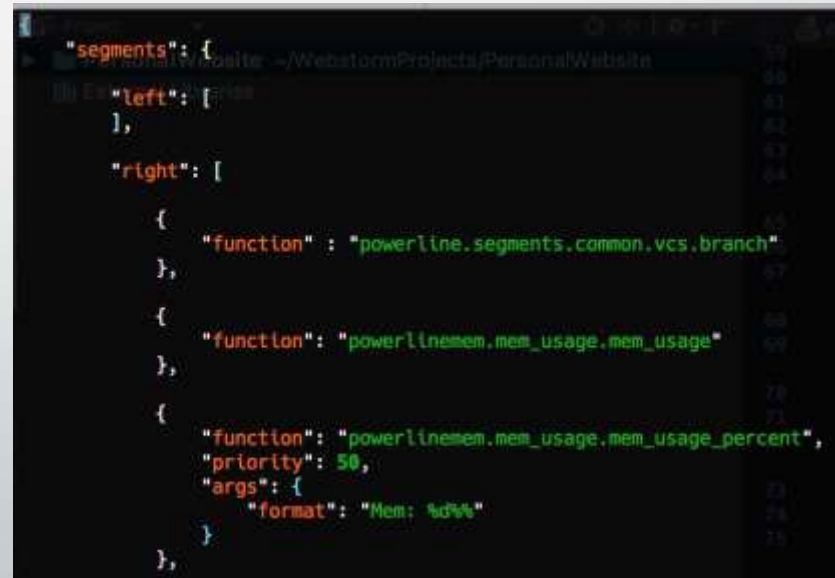
```
300      eval "file $last_fields" && \  
301      prettyPrint "DEPENDENT ON:" && \  
302      eval "$lib_command $last_fields";  
303      prettyPrint "SIZE:"  
304      du -sh "$last_fields"  
305      prettyPrint "STATS:"  
306      stat "$last_fields"  
307      echo  
308      echo  
309  } || {  
NORMAL ~/.shell_aliases_functions.sh 264:21
```



# Macvim Demo

# Powerline Tmux Status Bar

- <http://powerline.readthedocs.io/en/master/usage/other.html#tmux-statusline>
- Define tmux status line in JSON file =>
  - `$HOME/.config/powerline/themes/tmux`



```
{  
  "segments": {  
    "left": [  
    ],  
    "right": [  
      {  
        "function": "powerline.segments.common.vcs.branch"  
      },  
      {  
        "function": "powerlinemem.mem_usage.mem_usage"  
      },  
      {  
        "function": "powerlinemem.mem_usage.mem_usage_percent",  
        "priority": 50,  
        "args": {  
          "format": "Mem: %d%"  
        }  
      }  
    ]  
  }  
}
```



# Powerline Tmux StatusBar Demo



# My Prompt == Powerlevel 9k

- <https://github.com/bhilburn/powerlevel9k>
- using Knack Nerd Font
- brew tap caskroom/fonts
- brew cask install font-hacknerd-font



# Powerlevel9k prompt config

```
ZSH_THEME="powerlevel9k/powerlevel9k"

source "$HOME/.oh-my-zsh/custom/themes/powerlevel9k/powerlevel9k.zsh-theme"

POWERLEVEL9K_LEFT_PROMPT_ELEMENTS=(context dir history ssh renv time vcs root_indicator status)
POWERLEVEL9K_RIGHT_PROMPT_ELEMENTS=(vi_mode command_execution_time dir_writable background_jobs custom_pid swap)

POWERLEVEL9K_MODE='nerdfont-complete'
ZLE_RPROMPT_INDENT=0

POWERLEVEL9K_PROMPT_ON_NEWLINE=true
POWERLEVEL9K_RPROMPT_ON_NEWLINE=true

POWERLEVEL9K_BACKGROUND_JOBS_VERBOSE=true
POWERLEVEL9K_COMMAND_EXECUTION_TIME_THRESHOLD=1
POWERLEVEL9K_COMMAND_EXECUTION_TIME_PRECISION=3
POWERLEVEL9K_TIME_BACKGROUND='green'
POWERLEVEL9K_HISTORY_BACKGROUND='235'
POWERLEVEL9K_HISTORY_FOREGROUND='green'
POWERLEVEL9K_CONTEXT_FOREGROUND='white'
POWERLEVEL9K_CONTEXT_BACKGROUND='235'

POWERLEVEL9K_TIME_FORMAT="%D{%H:%M:%S}"

POWERLEVEL9K_MULTILINE_FIRST_PROMPT_PREFIX="\u256D \n"
POWERLEVEL9K_MULTILINE_SECOND_PROMPT_PREFIX="\u2570-%K(blue)%F(white) \uf136 `tty` \uf168 %f%k%F(blue)%f "

POWERLEVEL9K_VCS_CLEAN_FOREGROUND='white'
POWERLEVEL9K_VCS_CLEAN_BACKGROUND='yellow'
POWERLEVEL9K_VCS_UNTRACKED_FOREGROUND='red'
POWERLEVEL9K_VCS_UNTRACKED_BACKGROUND='green'
POWERLEVEL9K_VCS_MODIFIED_FOREGROUND='black'
POWERLEVEL9K_VCS_MODIFIED_BACKGROUND='blue'

POWERLEVEL9K_VI_MODE_INSERT_FOREGROUND='black'
POWERLEVEL9K_VI_MODE_INSERT_BACKGROUND='red'
```



# Prompt Demo

# glances

- pip install glances
- on Mac installs to /usr/local/lib/python2.7/site-packages/glances
- Debian installs to /usr/local/lib/python2.7/dist-packages
- <https://github.com/nicolargo/glances>

# glances

- `sudo glances [--disable-alert] [--disable-network] [...]`
- To change text color from white to blue:
- Change line 203 in `glances/outputs/glances_curses.py`
- `curses.init_pair(1, curses.COLOR_WHITE, -1)=>`
- `curses.init_pair(1, curses.COLOR_BLUE, -1)`



glances demo

# Oh-my-zsh

- Framework for zsh, geared toward developers
- Tons of prompts and plugins
- <https://github.com/robbyrussell/oh-my-zsh>





# Oh my zsh install

- sh -c "\$(curl -fsSL <https://raw.githubusercontent.com/robbyrussell/oh-my-zsh/master/tools/install.sh>)"

```
7
8 printf "${GREEN}"
9 echo |
0 echo |
1 echo |
2 echo |
3 echo |
4 echo |
5 echo |
6 echo |
7 echo 'Please look over the ~/.zshrc file to select plugins, themes, and options.'
8 echo |
9 echo 'p.s. Follow us at https://twitter.com/ohmyzsh.'
0 echo |
1 echo 'p.p.s. Get stickers and t-shirts at https://shop.planetargon.com.'
2 echo |
3 printf "${NORMAL}"
4 env zsh
5 }
```

# Oh my zsh Plugins

- git clone into ~/.oh-my-zsh/custom/plugins

```
total 0
1741402 drwxrwxrwx 3 jacobmenke staff 96 Aug 1 23:53 example/
1741404 drwxr-xr-x 24 jacobmenke staff 768 Dec 3 14:29 fzf/
1742040 drwxr-xr-x 6 jacobmenke staff 192 Jun 13 2017 fzf-zsh/
1742149 drwxrwxrwx 8 jacobmenke staff 256 Aug 4 01:50 warhol/
1742296 drwxr-xr-x 21 jacobmenke staff 672 Dec 6 17:10 zsh-autosuggestions/
1742433 drwxr-xr-x 10 jacobmenke staff 320 Oct 27 17:25 zsh-completions/
1742729 drwxr-xr-x 21 jacobmenke staff 672 Dec 20 13:14 zsh-syntax-highlighting/
jacobmenke@MenkeTechnologies ~/.oh-my-zsh/custom/plugins 11391 15:13:04 P master 0
m /dev/tty015 X 8938 12/27/17 X 0.00
```

- add to plugins array ~/.zshrc

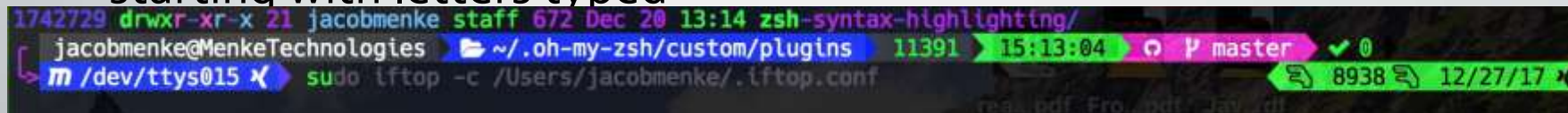
```
54 # Add wisely, as too many plugins slow down shell startup.
55 plugins=(fzf-zsh zsh-completions zsh-syntax-highlighting z
sh-autosuggestions tmux sublime ng ruby yarn github gem np
m rvm perl osx node brews cpanm git gradle pip python scal
a man nmap postgres colorize django ruby spring sudo)
56
57 source $ZSH/oh-my-zsh.sh
58 .use(express.static(../public));
```

# Zsh-autosuggestions

- copy of FISH (friendly interactive shell)'s suggestions

A terminal window showing a prompt 'jacobmenke@MenkeTechnologies' with a blue arrow pointing to a suggestion 'fish'. The prompt is followed by a blue arrow pointing to a suggestion 'set x 5'. The terminal also shows a file path '/dev/tty018' and a status bar with '11440' and '16:12:36'.

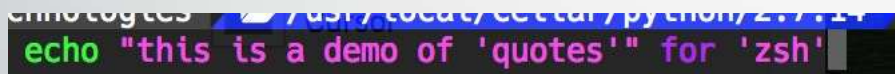
- Searches history (~/.zsh-history) for most recent commands starting with letters typed

A terminal window showing a prompt 'jacobmenke@MenkeTechnologies' with a blue arrow pointing to a suggestion 'sudo lftop -c /Users/jacobmenke/.lftop.conf'. The prompt is followed by a blue arrow pointing to a suggestion '1742729 drwxr-xr-x 21 jacobmenke staff 672 Dec 20 13:14 zsh-syntax-highlighting/'. The terminal also shows a file path '~/.oh-my-zsh/custom/plugins' and a status bar with '11391' and '15:13:04'.

- hit right arrow to complete the suggestion
- git clone <https://github.com/zsh-users/zsh-autosuggestions>  
\$ZSH\_CUSTOM/plugins/zsh-autosuggestions
- add to plugins array in ~/.zshrc

# Zsh-syntax highlighting

- Red if invalid command, green if found in PATH
- highlighting for quotes

A terminal window showing the command 'echo "this is a demo of 'quotes'" for 'zsh'' with syntax highlighting. The word 'echo' is green, the opening quote is red, the text inside the quotes is pink, and the closing quote is red. The prompt 'chmologies' is visible on the line above.

```
chmologies /usr/local/etc/conda/python/2.7.14  
echo "this is a demo of 'quotes'" for 'zsh'
```

- `git clone https://github.com/zsh-users/zsh-syntax-highlighting.git` `${ZSH_CUSTOM:-~/.oh-my-zsh/custom}/plugins/zsh-syntax-highlighting`
- add to plugins array in `~/.zshrc`



# Zsh-completions

```
l> m /dev/ttys015 x caffeinate -s
-<<option>>-
-d -- prevent the display from sleeping
-i -- prevent the system from idle sleeping
-m -- prevent the disk from idle sleeping
-s -- prevent the system from sleeping but only when running on AC power
-t -- assertion timeout value
-u -- declare that user is active
-w -- waits for process to exit
```

- Adds zsh tab completions for many more commands such as caffeinate
- `git clone https://github.com/zsh-users/zsh-completions ~/.oh-my-zsh/custom/plugins/zsh-completions`
- add to plugins array in `~/.zshrc`



# zsh plugins demo

# z command

- creates database of visited directories
- usage: z <directory-name>
- directory-name can be just a few letters of the name
- if there is a match you will cd to that directory otherwise no cd and returns 1

```
jacobmenke@MenkeTechnologies ~ 11439 16:12:31 ✓ 0
m /dev/tty018 ✗ cat .z | head
/Users/jacobmenke/.tokenScripts|1.7716|1510855336
/usr/local/share/figlet/fonts|1.88234|1510574694
/System/Library/CoreServices|2.06473|1510249311
/usr/local/lib/python3.6|2.76374|1512963232
/usr/include/arpa|1.33797|1512441700
/Users/jacobmenke/IdeaProjects/gradle_test|15.9112|1512193601
/private/etc/ssh|15.9464|1509860911
/Users/jacobmenke/IdeaProjects/LyndaJavaFx/src/main|2.31013|1513541141
/private/var/lib|1.42113|1512969770
/Users/jacobmenke/IdeaProjects/JavaMultithreading|25.2174|1510854167
jacobmenke@MenkeTechnologies ~ 11440 16:12:36 ✓ 0
```



# z install

- git clone  
<https://raw.githubusercontent.com/rupa/z/master/z.sh>  
\$HOME
- source ~/z.sh

# Zle line editor in ~/.zshrc

1) Define zsh function

```
gitCommitAndPush(){  
    printf "\e[1m"  
    git add .  
    git commit -m "$1"  
    git push  
    printf "\e[0m"  
}
```

2) Define zsh function to be bound as widget. Calls above function with the contents of current command line as argument

```
function _gitfunc{  
    gitCommitAndPush "$BUFFER"  
    zle kill-whole-line  
    zle .accept-line  
}
```

3) declare zsh function as widget

```
zle -N _gitfunc
```

4) Bind widget function to Control-S key combination

```
bindkey '^S' _gitfunc
```

Type your commit message at prompt no quotes needed and then press Control-S to add, commit and push to remote



z and ZLE demo