

\$ Term Life

\$ Neki od zabavnih programa za rad iz komandne linije

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§ Sadržaj

1. O komandnoj liniji

2. Terminal emulatori

Termite

Terminator

Gnome terminal

Konsole

3. Shell

Bash

Zsh

Fish

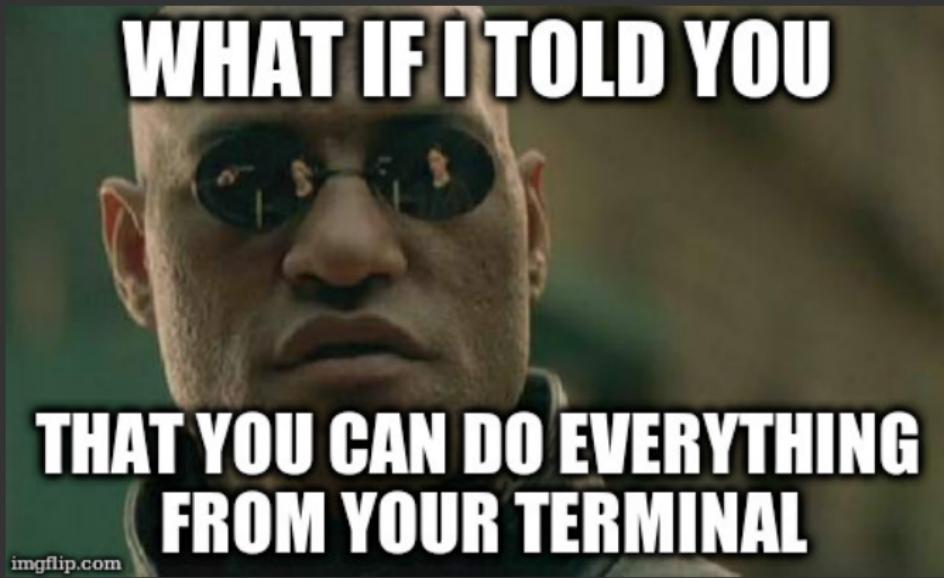
4. Tmux

5. Editovanje teksta

Vim

Emacs

Ostali editori





"You take the **blue** pill, the story ends. You wake up in your bed and believe whatever you want to believe. You take the **red** pill, you stay in Wonderland, and I show you how deep the rabbit hole goes."

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§ Nastanak terminala

- › TTY (teletypewriter) - mehanički uređaj za slanje i primanje poruka
- › Nastao iz potrebe da se izbegne potreba poznavanja Morzeove azbuke
- › Kasnije našli primenu kao I/O uređaji mainframe računara



§ Terminal emulator

- › Predstavlja program
- › Teško precizno definisati i postaviti granicu šta je tačno
- › Omogućava korišćenje računara...
 - * naravno, iz komandne linije



§ Terminal emulator

- > I danas se izuzetno koristi
- > Jedan od glavnih alata pri radu sa serverima
- > GitHub je izuzetno doprineo popularnosti
- > U poslednjih nekoliko godina razvijeno puno alata
 - * koji su naravno otvorenog koda :)

§ Terminal emulator

The screenshot shows a terminal window with the following details:

- Top status bar: 1 2 3 4 ⌂ (File, Edit, View, Profiles, Help) | ↶ 58% | res 2.76 sup 0.06 disk 3516 | in 0k out 0k | cpu 0.25% 40.25% | 2017-03-06 16:12 | Eminem - Beautiful (Produced By Eminem) | ↷ 0us
- Code editor area:
 - File: main.cpp
 - Content:

```
1 main.cpp
2 // =====
3 const auto words = istream_range<std::string>(std::cin)
4     | view::transform(string_to_lower)
5     | view::transform(only_alnum)
6     | view::remove_if(&std::string::empty)
7     | to_vector
8     | action::sort
9     ;
10    std::cout << "Stage 1 complete." << std::endl;
11    for (const auto & e : words)
12        std::cout << e << " ";
13    std::cout << std::endl << std::endl;
```
 - Bottom status bar: N... main.cpp cpp ↶ 54% ≡ 4: 9
- Terminal bottom bar:
 - File: main.cpp
 - Text: :q

§ Terminal emulator

```
1 2 3 4 5 ↵ 140% | mem 2.9G swap 0.06 disk 351G | in 0k out 0k | cpu 4.50% 4.53% | 22% ID (08:54) | 2017-03-05 16:37 | Termus

'Rock i Metal'
'rock-new'
'ROCK - The Very Best Of - 80 Classic Anthems'
'Samurai Japanese Traditional Music.mp3'
'Serj Tankian - Baby.mp3'
'Serj Tankian - Empty Walls .mp3'
'Serj Tankian - Feed us.mp3'
'Serj Tankian - Gate 21 (rock remix).mp3'
'Serj Tankian - Harakiri.mp3'
'Serj Tankian - Saving us.mp3'
'Serj Tankian - The Unthinking Majority.mp3'
'S.E.X..mp3'
'Shinedown - 45.mp3'
'Shinedown - Devour.mp3'
'Shinedown - Enemies.mp3'
'Shinedown - Second Chance (320kbps).mp3'
'Shinedown - Simple Man.mp3'
'Skillet - Awake And Alive.mp3'
'Skillet - Better Than Drugs.mp3'
'Skillet - Comatose.mp3'
'Skillet - Falling Inside The Black.mp3'
'Skillet - Hero.mp3'
'Skillet - Monster.mp3'
'Skillet - Open wounds.mp3'
'Skillet - Rebirthing.mp3'
'Skillet - The Last Night.mp3'
'Skillet - Unleashed (2016) [MP3~320kbps]~[Hunter] [FRG]~'
'Skillet - Whispers In The Dark.mp3'
'Something In Your Mouth.mp3'
'Stone Sour - 30-30-150.mp3'
'Stone Sour - Absolute Zero.mp3'
'Stone Sour - Bother.mp3'
'Stone Sour - Get Inside.mp3'
'Stone Sour - Zzyzx Rd..mp3'
'Three Days Grace - Chalk Outline.mp3'
'Three Days Grace - I Hate Everything About You.mp3'
'Three_Days_Grace_-_Pain.mp3'
'Van Canto - 01 - If I Die in Battle.mp3'
'/Music' ↵

"/e/artificial_intelligence chmod +x *.pdf"
"/e/artificial_intelligence ls"
'Artificial Intelligence A Modern Approach.pdf'
"/e/artificial_intelligence pdflatex
/home/termininja/ebooks/artificial_intelligence
"/e/artificial_intelligence' ↵
```

§ Zašto savladati rad iz komandne linije?

- › Zato što ćete biti brži?



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- > Zapravo zato što je dosta cool!

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- > Zapravo zato što je dosta cool!
- > Kao i sve gore navedeno naravno :)

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§ Termite

- › Jednostavan terminal emulator
- › Konfiguriše se iz datoteke
 - * npr. /home/USERNAME/.config/termite/config
- › Dizajniran da se koristi uz tiling w^m¹
- › Donekle inspirisan i Vim-om
 - * Po startovanju, termite je u insert modu
 - * **ctrl+shift+space** – prelazi u command mode (inspirisan normal modom u Vim-u)
 - * **escape** – vraća nazad u insert mode

¹Window manager

§ Termite

1 ↵ 2 ⌂ 3 ⌂ 4 ⌂ 5

↳ 148% | mem 2.95 swap 0.06 disk 3516 | in 0k out 0k | cpu 4.53% 4.53% | 22% ↗ (08:54) | 2017-03-05 16:37 | Termite

```
'Rock i Metal'/
rock-new/
'ROCK - The Very Best Of - 80 Classic Anthems'/
'Samurai Japanese Traditional Music.mp3'
'Serj Tankian - Baby.mp3'
'Serj Tankian - Empty Walls .mp3'
'Serj Tankian - Feed us.mp3'
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'Skillet - Open wounds.mp3'
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'Skillet - The Last Night.mp3'
'Skillet - Unleashed (2016) [MP3~320kbps]~[Hunter] [FRG]'/
'Skillet - Whispers In The Dark.mp3'
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'Three_Days_Grace_-_Pain.mp3'
'Van Canto - 01 - If I Die in Battle.mp3'
'"/Music" ↵
```

```
"/e/artificial_intelligence" chmod +x *.pdf
"/e/artificial_intelligence" ls
'Artificial Intelligence A Modern Approach.pdf'
'Artificial intelligence a modern approach-Russell S., Norvig P-2003.pdf'
"/e/artificial_intelligence" pwd
'/home/termininja/ebooks/artificial_intelligence'
"/e/artificial_intelligence" ↵
```

§ Terminator

- > Omogućava da se više terminala pokrene unutar jednog prozora
- > Možete sačuvati pozicije terminala
- > Poseduje pravljenje tabova
- > Puno prečica
- > Može se konfigurisati kroz grafički korisnički interfejs

§ Terminator

Activities Terminator

```
michael@nighthaven:~ 80x30
[Spirewall Official Channel - Visit our website http://spirewall.sourceforge.net]
22:28 < Skulk_ lol
22:28 < mshindo_ just wanted to make sure, some people dont like there email
22:28 < mshindo_ address broadcast
22:28 < Skulk_ a really annoying tester
22:28 < mshindo_ yeah, you a pain in the ass, that's what you are lol
22:28 < Skulk_ in fact we do need testers lol
22:29 < myx_ :(
22:30 < mshindo_ zeb, I have you down as a developer on the site, I cannot be bothered splitting it. Might add a column, "area of expertise"
22:42 < myx_ mshindo
22:42 < mshindo waves at myx
22:43 < myx_ maybe it would be good if add receives a Packet as input, generating the connection object, and returns pointer to it
22:43 < mshindo_ yes, can do
22:43 < mshindo_ I will add that to my list :)
22:44 < myx_ I'll do just asking
22:45 < mshindo_ ok, so don't have to ask ;), just watch those threads and concurrently, or else it'll jump out and bite you
22:47 < mshindo_ damit, keep getting distracted from this ubuntu 9.10 issue
22:48 < mshindo_ Skulk, your very quiet ?
22:51 < mshindo_ holey crap, they removed vim in ubuntu 9.1
22:51 < mshindo_ *9.18
22:51 < mshindo_ WTF
22:51 < linucks_ mshindo: just working on something else atm
22:51 < mshindo_ ooh yeah
22:51 < linucks_ yeah but working on that also
[22:59] [linucks@el1] (2:freenode/#spirewall(+cnt)) [Act: 3]
[spirewall]]
```

```
michael@nighthaven:~ -nosbuild/0.0.3-2/pkgs 80x29
[michael@nighthaven:~]$ ssh linucks@spirewall.net
linucks@spirewall.net's password:
Linux loft4610.serverloft.com 2.6.26-2-and64 #1 SMP Thu Nov 5 08:23:12 UTC 2009

Dear customer,

Important information regarding kernel updates:

If you want to use your own kernel, please make sure you don't touch the
kernel boot parameters (append) as some of our hardware requires the
parameters acpi=ht and/or noapic.

Last login: Mon Jan 11 03:07:23 2010 from 60.234.145.247
linucks@loft4610:~$ ls
archive.log public_html nosbuild
linucks@loft4610:~$ csh nosbuild/0.0.3-2/pkgs/
linucks@loft4610:~$ nosbuild/0.0.3-2/pkgs$ -l
>Last 750
-rw-r--r-- 1 linucks linucks 772834 2010-01-10 06:51 spirewall_0.9.4.5-1.i386.d
eb
linucks@loft4610:~$ nosbuild/0.0.3-2/pkgs$
```

linucks@loft4610:~\$ nosbuild/0.0.3-2/pkgs - Terminator

Mon 10:59 PM

```
michael@nighthaven:~ 124x30
#!/bin/bash
if [ ! -f /update/no_update ]
then
    echo '$OS Updater: /update/no_update exists - will not perform any SpireOS system updates'
    exit 0;
else
    # perform system updates
    echo -e '$OS Updater: Performing system updates...'
    cd /update/
    wget http://mirror.spirewall.net/updates/current-update.tar.gz >0 /current-update.tar.gz
    if [ ! -f /current-update.tar.gz ]
    then
        cd /
        echo '$OS Updater: Extracting updates to / ...'
        tar -xvf /current-update.tar.gz
        echo '$OS Updater: Removing update gzip...'
        rm -rf /current-update.tar.gz
    else
        echo '$OS Updater: Failed to get current-updates.tar.gz, please check your internet connection.'
        exit 1;
    fi
fi
```

/etc/cron.hourly/fee.sh [noeo1] 23L, 693C

michael@flux:~/home/michael/code/gps 73x29

```
printf("Querying: w...\\n");
gps_queryGPS, "w\\n";
gps_setRearGPS, WATCH_ENABLE, NULL;
printf("Ready to poll!\\n");
long double a[2];
long double b[2];
int i;
char x;
while (i<2)
{
    cout << "\\nReady for point " << i+1 << " y/m: ";
    cin >> x;
    if (x=='y' && i == 0)
    {
        gps_pollGPS();
        a[0] = GPS->fix.latitude;
        cout << GPS->fix.latitude << endl;
        a[1] = GPS->fix.longitude;
        i++;
    }
    else if (x=='y' && i == 1)
    {
        gps_pollGPS();
        b[0] = GPS->fix.latitude;
        b[1] = GPS->fix.longitude;
        i++;
    }
}
```

michael@nighthaven:~ 48x29

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU
15706	michael	20	0	963m	15m	23m	5	3.7
32547	michael	20	0	1288m	162m	48m	5	3.7
32305	michael	20	0	624m	11m	6532	5	2.8
1459	root	20	0	678m	58m	20m	5	1.3
2389	michael	20	0	868m	187m	28m	5	1.0
1723	michael	9	-11	649m	6412	6536	5	0.7
2746	michael	20	0	201m	32m	19m	5	0.7
16795	michael	20	0	710m	21m	120m	5	0.6
2	root	20	0	4058m	738m	576m	0	0.0
2	root	15	-5	0	0	0	0	0.0
3	root	RT	-5	0	0	0	0	0.0
4	root	15	-5	0	0	0	0	0.0
5	root	RT	-5	0	0	0	0	0.0
6	root	RT	-5	0	0	0	0	0.0
7	root	15	-5	0	0	0	0	0.0
8	root	RT	-5	0	0	0	0	0.0
9	root	15	-5	0	0	0	0	0.0
10	root	15	-5	0	0	0	0	0.0
11	root	15	-5	0	0	0	0	0.0
12	root	15	-5	0	0	0	0	0.0
13	root	15	-5	0	0	0	0	0.0
14	root	15	-5	0	0	0	0	0.0

84, 3 17 75%

§ Terminator

§ Gnome terminal

- › Terminal emulator koji razvija Gnome
- › Dolazi preinstaliran uz Gnome Shell

§ Gnome terminal

james@debian: ~

File Edit View Search Terminal Help

```
_ ,met$$$$$gg.  
,g$$$$$$$$$$$$$P..  
,g$$P"" """"Y$$. ".  
, $$P' `$$$.  
, $$P , ggs. '$$b:  
'd$$' , $P'' . $$$  
$$P d$' , $$P  
$$: $$. - , d$$'  
$$\; Y$b. , d$P'  
Y$$. ` "Y$$$$$P"  
` $$b " - __  
`Y$$  
`Y$$.  
` $$b.  
`Y$$b.  
` "Y$b.  
` .....
```

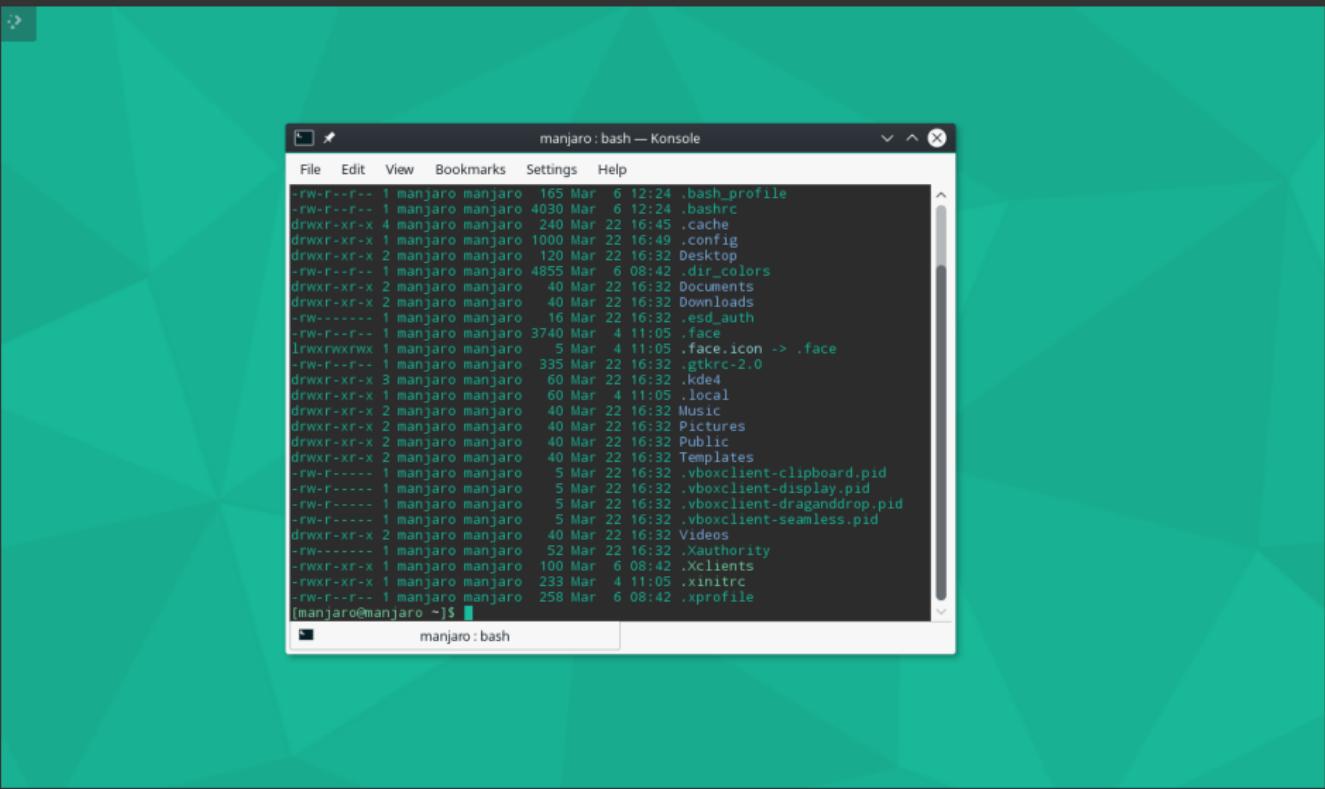
james@debian
OS: Debian 8.5 jessie
Kernel: x86_64 Linux 3.16.0-4-amd64
Uptime: 3h 22m
Packages: 1891
Shell: zsh 5.0.7
Resolution: 1920x1080
WM: GNOME Shell
WM Theme: Arc-Darker

j ames@debian:~ \$ █

§ Konsole

- › Terminal emulator koji razvija organizacija KDE
- › Dolazi preinstaliran uz grafičko okruženje KDE Plasma

§ Konsole



The screenshot shows a terminal window titled "manjaro: bash — Konsole". The window contains a command-line interface showing a directory listing. The listing includes files like ".bash_profile", ".bashrc", ".cache", ".config", "Desktop", ".dir_colors", "Documents", "Downloads", ".esd_auth", ".face", ".face.icon", ".gtkrc-2.0", ".kde4", ".local", "Music", "Pictures", "Public", "Templates", ".vboxclient-clipboard.pid", ".vboxclient-display.pid", ".vboxclient-draganddrop.pid", ".vboxclient-seamless.pid", ".Videos", ".Xauthority", ".xclients", ".xinitrc", and ".xprofile". The terminal prompt "(manjaro@manjaro ~)\$" is visible at the bottom.

```
-rw-r--r-- 1 manjaro manjaro 165 Mar  6 12:24 .bash_profile
-rw-r--r-- 1 manjaro manjaro 4030 Mar  6 12:24 .bashrc
drwxr-xr-x  4 manjaro manjaro 240 Mar 22 16:45 .cache
drwxr-xr-x  1 manjaro manjaro 1000 Mar 22 16:49 .config
drwxr-xr-x  2 manjaro manjaro 120 Mar 22 16:32 Desktop
-rw-r--r--  1 manjaro manjaro 4855 Mar  6 08:42 .dir_colors
drwxr-xr-x  2 manjaro manjaro 40 Mar 22 16:32 Documents
drwxr-xr-x  2 manjaro manjaro 40 Mar 22 16:32 Downloads
-rw-----  1 manjaro manjaro 16 Mar 22 16:32 .esd_auth
-rw-r--r--  1 manjaro manjaro 3740 Mar  4 11:05 .face
lrwxrwxrwx 1 manjaro manjaro 5 Mar  4 11:05 .face.icon -> .face
-rw-r--r--  1 manjaro manjaro 335 Mar 22 16:32 .gtkrc-2.0
drwxr-xr-x  3 manjaro manjaro 60 Mar 22 16:32 .kde4
drwxr-xr-x  1 manjaro manjaro 60 Mar  4 11:05 .local
drwxr-xr-x  2 manjaro manjaro 40 Mar 22 16:32 Music
drwxr-xr-x  2 manjaro manjaro 40 Mar 22 16:32 Pictures
drwxr-xr-x  2 manjaro manjaro 40 Mar 22 16:32 Public
drwxr-xr-x  2 manjaro manjaro 40 Mar 22 16:32 Templates
-rw-r----- 1 manjaro manjaro 5 Mar 22 16:32 .vboxclient-clipboard.pid
-rw-r----- 1 manjaro manjaro 5 Mar 22 16:32 .vboxclient-display.pid
-rw-r----- 1 manjaro manjaro 5 Mar 22 16:32 .vboxclient-draganddrop.pid
-rw-r----- 1 manjaro manjaro 5 Mar 22 16:32 .vboxclient-seamless.pid
drwxr-xr-x  2 manjaro manjaro 40 Mar 22 16:32 Videos
-rw-----  1 manjaro manjaro 52 Mar 22 16:32 .Xauthority
-rwxr-xr-x  1 manjaro manjaro 100 Mar  6 08:42 .xclients
-rwxr-xr-x  1 manjaro manjaro 233 Mar  4 11:05 .xinitrc
-rw-r--r--  1 manjaro manjaro 258 Mar  6 08:42 .xprofile
(manjaro@manjaro ~)$
```

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§ Bash

- › Bourne Again SHell
- › Standardni shell koji je preinstaliran na GNU/Linux sistemu
- › Nalazi se na /bin/bash ili /usr/bin/bash
- › Konfiguriše se iz datoteke /home/USER/.bashrc

- › Skraćeno od Z shell
- › Inspiracija – Bash
- › Predstavlja proširenje Bash shell-a
- › Postoji dodatni paket koji se zove oh-my-zsh koji dodaje plugin menadžer, teme i slično
- › Konfiguriše se iz datoteke /home/USER/.zshrc



```
~ ➤ cd testproject
~/testproject ➤ ↵ master ➤ gco detached-head-state -q
~/testproject ➤ ↵ fdffaf6 ➤ touch dirty-working-directory
~/testproject ➤ ↵ fdffaf6± ➤ cd
~ ➤ ssh milly
Welcome to Ubuntu 11.04 (GNU/Linux 2.6.18-308.8.2.el5.028stab101.1 x86_64)
Last login: Wed Sep 26 03:42:49 2012 from 71-215-222-90.mpls.qwest.net
agnoster@milly ~
Connection to milly.agnoster.net closed.
~ ➤ sudo -s
Password:
⚡ root@Arya ~ ➤ top &
[1] 34523
[1] + 34523 suspended (tty output) top
⚡ ⚡ root@Arya ~ ➤ rm no-such-file
rm: no-such-file: No such file or directory
✗ ⚡ ⚡ root@Arya ~ ➤ kill %
[1] + 34523 terminated top
⚡ root@Arya ~
~ ➤
```

§ Zsh

```
> ..war.github.io
~ Desktop > Github_Page > Vishal-Singh-Panwar.github.io > master ✓ % git commit -m "changed post name"
[master 6d439f1] changed post name
1 file changed, 0 insertions(+), 0 deletions(-)
rename _posts/{2014-3-3-Hello-World.md => 2014-3-3-VSDropdown.md} (100%)
~ Desktop > Github_Page > Vishal-Singh-Panwar.github.io > master ↑ % git push origin master
Counting objects: 3, done.
Delta compression using up to 4 threads.
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 328 bytes | 0 bytes/s, done.
Total 3 (delta 1), reused 0 (delta 0)
To https://github.com/Vishal-Singh-Panwar/Vishal-Singh-Panwar.github.io.git
 c659735..6d439f1  master -> master
~ Desktop > Github_Page > Vishal-Singh-Panwar.github.io > master % git add .
~ Desktop > Github_Page > Vishal-Singh-Panwar.github.io > master ✓ % git commit -m "changed post date"
[master 1176e29] changed post date
1 file changed, 0 insertions(+), 0 deletions(-)
rename _posts/{2014-3-3-VSDropdown.md => 2014-6-27-VSDropdown.md} (100%)
~ Desktop > Github_Page > Vishal-Singh-Panwar.github.io > master ↑ % git push origin master
Counting objects: 3, done.
Delta compression using up to 4 threads.
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 330 bytes | 0 bytes/s, done.
Total 3 (delta 1), reused 0 (delta 0)
To https://github.com/Vishal-Singh-Panwar/Vishal-Singh-Panwar.github.io.git
 6d439f1..1176e29  master -> master
~ Desktop > Github_Page > Vishal-Singh-Panwar.github.io > master %
~ Desktop > Github_Page > Vishal-Singh-Panwar.github.io > master %
```

§ Fish

- > Shell poput Bash-a
- > Dolazi uz sopstveni skript jezik
- > Izuzetno jednostavan za upotrebu
- > Poseduje odličan autocomplete
- > Pamti istorijat prethodnih komandi
 - * Koji izuzetno kulturno sugerije :)
- > Postoji dodatni paket oh-my-fish (inspirisan sa oh-my-zsh)
- > Novije verzije poseduju Vim mode (modalni rad u terminalu)
- > Konfiguriše se iz datoteke
`/home/USER/.config/fish/config.fish`



NAPOMENA

- > Ne postavljati fish kao sistemski shell
- > Često linux distribucije poseduju bash skriptove koji inicijalizuju sve i svašta
- > Fish ne može da interpretira bash skriptove

Rešenje:

- > Npr pokretati terminal sa flegom -e² (koji execuje proces)
 - * termite -e fish
- > Naterati tmux da sam pokrene fish
 - * set-option -g default-shell "/usr/bin/fish"

²Ako terminal emulator poseduje fleg

§ Fish

```
1 ▶ 2 ⏎ 3  
~▶ vim ~/.tmux.conf
```

```
~▶ xrandr --brightness  
--above          (Set position relative to the output)  
--addmode        (Add a mode to the set of valid modes for a..)  
--auto           (Enable connected but disabled outputs)  
--below          (Set position relative to the output)  
--brightness    (Set brightness. Multiplies gamma values.)  
--crtc            (Set the crtc)  
--current         (Print current screen configuration)  
--delmode        (Remove a mode from the set of valid modes ...)  
rows 1 to 8 of 44
```

```
~▶ cd ~/matf/master_studiјe/funkcionalno_programiranje/my_exercises/cpp/04_rangev3/
```

```
fish showcase ▶ 1 ▶ fish ▶
```

```
2017-03-09 < 15:43 aurora
```

§ Tmux

- > Tmux - terminal multiplexer
- > Omogućava da se jedan terminal podeli na više prozora, tabova...
- > Tmux sesija može da postane pozadinski proces iako je aplikacija za terminal isključena
 - * Korisnik se onda može zakačiti (eng. attach) na postojeću sesiju
 - * Neće imati utisak da je nešto bilo ugašeno
 - * Izuzetno zgodno za ssh konekcije ka serveru
- > Konfiguriše se iz datoteke /home/USERNAME/.tmux.conf



6 Tmux

cpp utf-8[unix] 57% 44/77 9

```
terminj@aurora:~$ cat /etc/issue
Arch Linux x86_64
HP 250 G4 Notebook
4.9.11-1+RHC
1 hour, 46 mins
777
fish 2.5.0
1366x768
lxqt
i3
AdwaitaTerminjina [G]
Numix [GTK2/3]
Intel i5-5200U (4) @ 2.70GHz
Intel Integrated Graphics
Radeon HD 8670A/B
1505MB / 3872MHz
```

1 \ main 2 \ server 3 \ bug reports

2013-03-09 11:14:23 315553

6 Tmux

09:53:05

```
1 [|||||] 52.3% Battery: 99.0% (Running on A/C)  
2 [|||||] 45.2% Tasks: 256 total, 6 running  
3 [|||||] 48.7% CPU Temp: 32.6 °C  
4 [|||||] 42.9% Fan RPM: 5284 RPM  
Mon Oct 10 14:40:00 2016 Sun 0 / 1000 Mhz
```

```
>>> A = j c H v 2 v 3 l A v k - ) o v M Q w B - I s F V i < V 1 . - x W x u x p k g E V G b z j o y E Z x G l G C x k j w l E Z >
```

```
[tweets (1194)] [mentions (18)] [favorites (20)] [messages (13)] []

ReStateThings - 6 minutes ago  
"I need to stop," I whispered as I clicked next episode

hemantmhta - 6 minutes ago  
Generation Atheist Is Free on Amazon Through Easter Sunday  
tinyurl.com/nvvezdx

bbcscitech - 6 minutes ago  
Ancient life 'frozen' by space impact bbc.in/1tgicb

markckruse RT gronicle - 6 minutes ago  
@Realscientists If anyone tells you they know what ANY
```

jdotmazin - 7 minutes ago
TODES FOR GAME WINNA

Nick_Kostich27 - 9 minutes ago
Crawford is lights out right now! Glove save after glove save

bryzton_RI_rynpoolie - 18 minutes ago126
Butt naked nasty or how? pic.twitter.com/5H3ayGtwP

IfFreddyMaxin RT ryappleone - 10 minutes ago21
Taylor Swift at her prom [\(pic\)](#) [\(pic.twitter.in/cddSM](#)

FabFreakNature - 11 minutes ago
What a Fckin day. If I spoke of it, no one would believe I was telling the truth. The 4 ppl I engaged w/ranged from incompetent to incompetent.

PromotionNew2 RT confusabeatz - 11 minutes ago2
Get into DevBeat for one day, one track: \$99 : [socialmedia-nieuws.nl/algemeen-nieuw](#). [#socialmedia](#)

wilw - 12 minutes ago
Okay, @lakings, let's do this. [pic.twitter.com/VYoYk5sdFn](#)

PromotionNew2 RT confusabeatz - 12 minutes ago3
Infiniti wishes its new legendary F1 driver Sebastian Vettel weren't so good : [socialmedia-nieuws.nl/algemeen-nieuw](#). [#socialmedia](#)

SocialSavvyGeek - 12 minutes ago
F-Secure: WannaCry Ransomware, and Backdoors on Google Play

3:17/6:38	Hoover Street	Vol. 53K
[playing]	Schoolboy Q - Oxymoron	[r-----]
4:38 Let Nas Down	J. Cole	Born Sinner-(Deluxe Edition)
3:30 Born Sinner (Feat. James Fauntleroy)	J. Cole	Born Sinner-(Deluxe Edition)
5:30 Gangsta	Schoolboy Q	Oxymoron
4:14 Los Awesome	Schoolboy Q	Oxymoron
5:01 Collard Greens	Schoolboy Q	Oxymoron
4:29 What They Want	Schoolboy Q	Oxymoron
3:38 Hoover Street	Schoolboy Q	Oxymoron
4:50 Studio	Schoolboy Q	Oxymoron
7:11 Prescription/Oxymoron	Schoolboy Q	Oxymoron
4:55 The Purge	Schoolboy Q	Oxymoron
4:31 Blind Threats	Schoolboy Q	Oxymoron
4:34 Hell Of A Night	Schoolboy Q	Oxymoron

/ There are two ways to write error-free

~ /COMP SCI

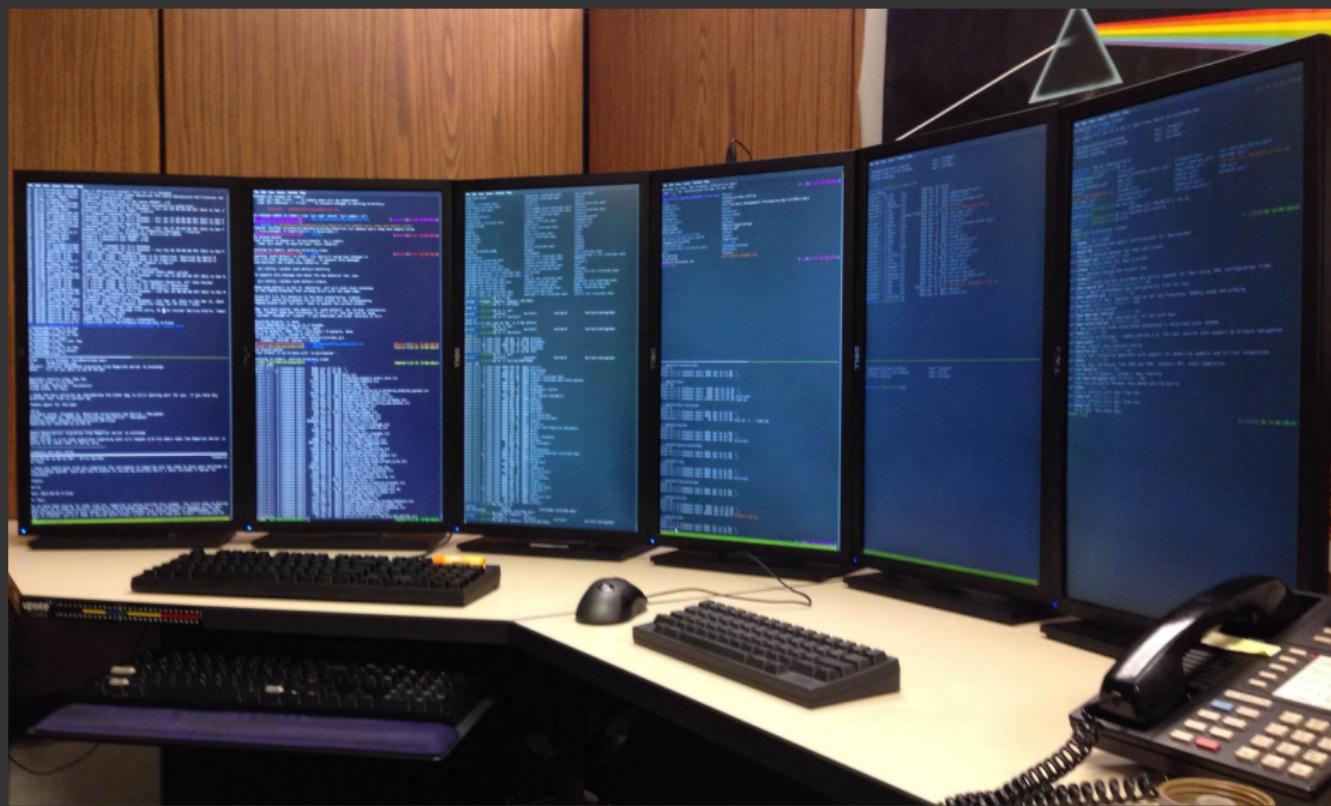
```

29 % define matrix for 2-pt Finite difference
30 % representation of Laplacian for sparse matrices
31
32 e1 = ones(N,1);
33 Lapl1 = spdiags([e1 -2*e1 e1], [-1 0 1], N, N)./(dx^2);
34
35
36
37
38 nmodes = input('Please enter the number of energy levels: ');
39
40 H1 = -(hbar.^2/(2*m)).*(Lapl1 + apdiags(U1,0,N));
41 Knmodes = 30;
42 options.disp = 0;
43 opts.tol = 2.^(1074);
44 options.tol = 2.^(1074);
45 [E,V1,E_harm,flag] = eig(H1,nmodes,'sa',opts);
46 [V1,E_harm,flag] = eig(H1,nmodes,'sa',opts);
47 E_harm
48 %Flag_harm = FLAG
49 [E_harm,ind1] = sort(diag(E_harm));
50 E_harm
51 %Lambda = eigen(H1,0,opts);
52 %KVI = A.*V1(:,ind1);
53
54 i1 = 0:nmodes-1;
55

```

Schoolboy Q - Hoover Street 09:53 04/17/2014

§ Tmux



1. O komandnoj liniji

2. Terminal emulatori

Termite

Terminator

Gnome terminal

Konsole

3. Shell

Bash

Zsh

Fish

4. Tmux

5. Editovanje teksta

Vim

Emacs

Ostali editori

§ Editovanje teksta

- › Veliki deo programerskog posla
- › Da li iko u tome može biti bolji od programera?
- › Uvek treba da se trudimo da povećamo svoju efikasnost

§ Poznati editori

Neki od poznatijih tekst editora:

- > Vim
- > Emacs
- > Sublime
- > Notepad++
- > Kate
- > Gedit
- > Atom
- > Visual Studio Code

§ Vim - Vi improved

- > Nastao iz editora Vi
- > Modalni tekstualni editor
- > Editovanju teksta pristupa radikalno drugačije od ostalih editora
- > Ima vrlo bogat sistem plugin-ova
- > Postoji konzolna verzija programa kao i GTK i Qt frontend
- > Konfiguriše se iz datoteke /home/USERNAME/.vimrc



> Kako to izgleda?

```
yy  
p  
%s/bar/foo/g  
d4d  
ddp  
:13,18y  
/bar<CR>wwi
```

> zabavno :)

> kao da ste promašili tastere za po jedan



§ Šta Vim može?

- › Da efikasno transformiše tekst
- › Promeni vaš način razmišljanja tokom editovanja teksta
- › Utiče na to da zavolite prečice

§ Šta mogu pluginovi?

- > Inline kompilator (youcompleteme)
- > Autocomplete (youcompleteme)
- > Git integracija (gitgutter, vim-fugitive)
- > Snipeti za razne jezike (vim-snippets, ultisnips)
- > Provera sintakse (syntastic)
- > File explorer (nerdtree)
- > Crtanje markdown tabele (vim-table-mode)
- > Fuzzy pretraga (ctrlp, commandT)
- > ...

§ Kako izgleda Vim?

```
~/.vimrc
330 let g:NERDSnippets_key = '<c-h>'
331
332 augroup myfiletypes
333   "clear old autocmds in group
334   autocmd!
335   "for ruby, autoindent with two spaces, always expand tabs
336   autocmd FileType ruby,haml,eruby,yaml,html,javascript,sass set ai sw=2 sts=2 et
337   autocmd FileType python set sw=4 sts=4 et
338 augroup END
339
340 set switchbuf=useopen
341
342 autocmd BufRead,BufNewFile *.html source ~/.vim/indent/html_grb.vim
343 autocmd FileType htmldjango source ~/.vim/indent/html_grb.vim
344 autocmd! BufRead,BufNewFile *.sass setfiletype sass
345
346 " Map ,e and ,v to open files in the same directory as the current file
347 nnoremap %% <C-R>=expand('%:h').'/`<cr>
348 map <leader>e :edit %%
349 map <leader>v :view %%
350 function! RenameFile()
351   let old_name = expand('%')
352   let new_name = input('New file name: ', expand('%'))
353   if new_name != '' && new_name != old_name
354     exec ':saveas' . new_name
355     exec ':silent !rm ' . old_name
356     redraw!
357   endif
358 endfunction
359 map <leader>n :call RenameFile()<cr>
360
361 if has("python")
362   source ~/.vim/ropevim/rope.vim
363 endif
364
365 autocmd BufRead,BufNewFile *.feature set sw=4 sts=4 et
~/.vimrc (vim)
```

347,01

§ Kako može da izgleda Vim?

```
1 >_ @ █ 49% | mem 2.2G swap 0.8G | disk 390G | in 5k out 8k | cpu 5.50% 5.50% | 2017-02-28 13:47 | Metallica - Fade To Black | ?aus ▼
2 NERD_tree_1 ➤ X └NERD_tree_1 main.cpp
.. (up a dir) 17 #include <range/v3/to_container.hpp>
</my_exercises/cpp/ 18
▼ 01_mostly_stl_algos/ 19 using namespace ranges::v3;
  tasks/ 20
    01.cpp 21 std::string string_to_lower(const std::string& s)
    02.cpp 22 {
01_accumulate_transform.cpp 23     return s | view::transform(tolower);
02_unstable_partition.cpp 24 }
03_stable_partition.cpp 25
04_moving_selection.cpp 26 std::string only_alpha_num(const std::string& s)
05_filter.cpp 27 {
06_remove_if.cpp 28     return s | view::filter(isalnum);
07_functional_object.cpp 29 }
08_functional_objects.cpp 30
09_functional_object_move.cpp 31 int main(int argc, char *argv[])
10_lambdas.cpp 32 {
11_copy.cpp 33     int how_much = argc == 1 ? 10 : atoi(argv[1]);
12_copy_if.cpp 34
13_accumulate.cpp 35 // -----
14_boost_phoenix.cpp 36 // Stage 1
15 // -----
16 const auto words = istream_range(std::string{std::cin})
  maybe_monad/ 37   | view::transform(string_to_lower)
  std.bind/ 38   | view::transform(only_alpha_num)
  main.cpp 39   | view::remove_if(&std::string::empty)
  Makefile 40   | to_vector
  ▼ std.function/ 41   | action::sort
  main.cpp 42   ;
  Makefile 43
  Person.hpp 44
  ► std.invoke/ 45 std::cout << "Stage 1 complete." << std::endl;
  01_decltype.cpp 46 for (const auto & e : words)
  47     std::cout << e << " ";
  48 std::cout << std::endl << std::endl;
  ► 03_move/ 49 // -----
  ▼ 04_rangev3/ 50 // -----
  ► 01_sum_even_odd/ 51 // Stage 2
  ▼ 02_filter_transform/ 52 // -----
  main.cpp 53 const auto results = words
  Makefile 54   | view::group_by(std::equal_to<>())
  ▼ 03_get_quote/ 55   | view::transform([](const auto & w) {
  ▼ 04_word_count/ 56       const auto begin = std::begin(w);
  main.cpp 57       const auto end = std::end(w);
  Makefile 58       int dist = distance(begin, end);
  ► 05_exam_prep/ 59
  NERD ➤ main.cpp
  work ➤ 1 > vim ➤ main.cpp
  cpp utf-8(unix) 67% 52/77h : 1
  2017-02-28 < 13:48 aurora
```

§ Kako može da izgleda Vim?

The screenshot shows a terminal window with a Vim editor running. The file being edited is `main.cpp`. The code implements a word count program using C++ ranges and algorithms. The terminal status bar at the bottom provides system information like CPU usage and date.

```
1 main.cpp+ X main.cpp+
10 int how_much = argc == 1 ? 10 : atoi(argv[1]);
9
8 // -----
7 // Stage 1
6 // -----
5 const auto words = istream_range<std::string>(std::cin)
4 | view::transform(string_to_lower)
3 | view::transform(only_alpha)
2 | view::remove_if(&std::string::empty)
1 | to_vector
43 | action::sort
1   : sort      v const action<ranges::action::sort_fn>
2 std::cout << sort_fn    s
3 for (const auto& w : stable_sort) v const action<ranges::action::stable_sort_fn>
4   std::cout stable_sort_fn s
5 std::cout << push_front      v const with_braced_init_args<action<adl_push_front_detail::push_front_fn> >
6   transform      v const action<ranges::action::transform_fn>
7 // ----- transform_fn s
8 // Stage 2
9 // -----
10 const auto results = words
11 | view::group_by(std::equal_to<>())           // group the same words
12 | view::transform([](const auto& w) {           // calculate the length of the groups
13   const auto begin = std::begin(w);
14   const auto end = std::end(w);
15   int dist = distance(begin, end);
16   const std::string word = *begin;
17   return std::make_pair(dist, word);
18 })
19 | to_vector
20 | action::sort
-- INSERT --
```

Bottom status bar:

- INSERT ➤ +0 "0 -0 <kogramiranje/my_exercises/cpp/04_rangev3/04_word_count/main.cpp[+]" cpp utf-8[unix]
- 55% 43/77 21

§ Kako može da izgleda Vim?

```
21 has_many :user_watch_products, :depe 1 var search_attributes = {};  
22 has_many :watched_products, :through 2  
23 has_many :received_feedbacks, :class 3 $(document).ready(function() {  
24 has_many :sent_feedbacks, :class 4  
25 has_many :service_invoices 5 $(".products-grid").imagesLoaded(fu  
26 has_many :saved_searches, :dependent 6 $('.products-grid').masonry({  
27 has_many :notifications, :class_name 7 itemSelector: '.product',  
28  
29 has_attached_file :shop_banner, 8 gutterWidth: 12  
30   :styles 9});  
31   :convert_options 10});  
32   :default_style 11 // Save search filter AJAX handler  
33   :hash_secret 12 $("#save_search_filter").click(func  
34   :path 13 var button = $(this);  
35  
36 validates :email, :presence => true 14 e.preventDefault();  
37 validates :login, :presence => true 15 $.post(button.attr('href'), {save  
38 validates :first_name, :presence => 16 if (resp.success) {  
-- VISUAL LINE -- 17 alert('Search has been saved!')  
18 })})
```



- > Radikalno drugačiji pogled na editovanje teksta
- > Efikasnost
- > Zabava
- > Vim možete prilagoditi sebi
- > Puno fantastičnih plugin-ova
- > Mogućnost da pravite sopstvene plugin-ove
- > Portabilnost
- > Ne treba vam miš (i ne želite ga ikada više :))
- > Besplatan i otvorenog koda
- > Dostupan za sve platforme

Nekoliko komandi kako bi se stekao osećaj kako izgledaju:

- > h - pomeri kurzor levo
- > j - pomeri kurzor dole
- > k - pomeri kurzor gore
- > l - pomeri kurzor desno
- > i - uđi u `insert` mod
- > ESC - napusti `insert` mod
- > dd - obriši tekuću liniju
- > d5d - obriši 5 narednih linija od tekuće linije
- > w - pomeri kurzor na sledeću reč
- > ddp - zameni trenutnu liniju sa narednom

§ Vim - komande



§ Vim - loše strane



>



- › Zahteva da promenite način editovanja teksta
- › Prelazak ume da bude bolan u početku (h j k l)
- › Nekada ipak ne može kompletno zameniti profesionalno razvojno okruženje³

³But it goes down fighting!

§ Kako naučiti Vim?

Kratka napomena:

- › Najpre, nije teško ali nije za svakoga
- › Razmislite prvo da li ste spremni da posvetite vreme učenju
 - * Ali zapravo osnove Vim-a zaista nije teško naučiti
 - * No ipak ih nije trivijalno **provaliti** bez tutorial-a

Prvi koraci:

- › Pokrenuti program **vimtutor** i zavšiti mini tutorial
- › Odslušati dodatni uvodni tutorial na YouTube-u
- › Odštampati neku ilustraciju prečica koje se koriste
- › Probati neku od dostupnih video igara koje uče Vim prečice

Savet:

- › **Zaboravite strelice.**
- › Hajde da vidimo kako to izgleda **uživo...**

§ Emacs

- › Objavljen 1976. godine
- › I danas popularan i izuzetno moćan
- › Glavni neprijatelj Vim-a u ratu editora u unix svetu
- › Bliži standardnom načinu editovanju teksta
- › Poseduje bogat plugin sistem
- › Veliki broj izuzetno korisnik prečica



- › Autor nije stručan za Emacs, više o njemu neke naredne prilike

§ Emacs

The screenshot shows an Emacs interface with several windows. On the left, there are two buffers:

- /home/exu/.emacs.d/init.el**: A file containing Emacs configuration code. Lines 49-59 show loading personal settings and a message about Prelude being ready.
- AppKernel.php**: A Symfony kernel class definition. It includes imports for Kernel and LoaderInterface, and defines an AppKernel class that extends Kernel and registers several bundles.

On the right, there is a timeline of tweets:

- 1 [] - Press Enter here to update --
- 2  patriknw, about 1 hour ago:
Read ch 4 of @derekwyatt's Akka book. It's an awesome intro to the toolbox. Deep thoughts mixed with humor. <http://www.artima.com/samples/AkkaDoesConcurrencyCh4.pdf> // from web [Stockholm] (retweeted by derekwyatt)
- 3 []
- 4 []
- 5 []
- 6 []
- 7 []
- 8 []
- 9 []
- 10  ronaldofsousa, about 4 hours ago:
From .NET to Node.js. Really cool case study:
<http://highscalability.com/blog/2012/10/15/simpler-cheaper-faster-nodejs-redis> // from web [Portugal]
- 11 []
- 12 []
- 13 []
- 14 []

The status bar at the bottom indicates the current buffer is `init.el`, the mode is Bot of 2.3k (59,21), and the project state is (No workgroups) Git:master. Other status items include `:home`, `(P)`, `(curl icon)`, and `Top of 4.2k (1,0)`.

§ Sublime Text

- > Objavljen 2009. godine
- > Nije besplatan
- > Izuzetno bogat plugin sistem



§ Sublime Text

OPEN FILES

cuckoo.js

```
132    };
133    /**
134     * Custom events
135     */
136    /**
137     * Cuckoo.Event = {
138         bind: function(ev, callback) {
139             var calls = this._callbacks || (this._callbacks = {});
140             var list  = this._callbacks[ev] || (this._callbacks[ev] = []);
141             list.push(callback);
142             return this;
143         },
144         unbind: function(ev, callback) {
145             var calls;
146             if (!ev) {
147                 this._callbacks = {};
148             }
149             else if (calls === this._callbacks) {
150                 if (!callback) {
151                     calls[ev] = [];
152                 }
153                 else {
154                     var list = calls[ev];
155                     if (!list) return this;
156                     for (var i = 0, l = list.length; i < l; i++) {
157                         if (callback === list[i]) {
158                             list[i] = null;
159                             break;
160                         }
161                     }
162                 }
163             }
164             return this;
165         },
166         fire: function(ev) {
167             var calls = this._callbacks[ev];
168             var args = Array.prototype.slice.call(arguments, 1);
169             var i, len;
170
171             for (i = 0, len = calls.length; i < len; i++) {
172                 calls[i].apply(this, args);
173             }
174             return this;
175         }
176     };
177
178     /**
179      * Model
180      */
181     /**
182      * Cuckoo.Model = Class.extend({
183         storageKey : null,
184         ...
185     });
186
187     /**
188      * View
189      */
190     /**
191      * View
192      */
193     /**
194      * View
195      */
196     /**
197      * View
198      */
199     /**
200      * View
201      */
202     /**
203      * View
204      */
205     /**
206      * View
207      */
208     /**
209      * View
210      */
211     /**
212      * View
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214     /**
215      * View
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217     /**
218      * View
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220     /**
221      * View
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223     /**
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226     /**
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§ Notepad++

- › Tekstualni editor za Windows
- › I danas izuzetno korišćen
- › Neki ga koriste i iz navike
- › Vrlo jednostavan, brz i elegantan editor



§ Notepad++

PHP Hv length : 139209 lines : 4673

Ln: 2595 Col: 26 Sel: 0

UNIX

ANSI as UTF-8

INS

- > Editor KDE organizacije
- > Glavi alat na ispitima studenata Matf-a :)
- > Od skoro postoji i verzija za Windows



FvSchemes — Kate

File Edit View Build Projects Bookmarks Sessions Tools Settings Help

setFieldsDict controlDict (2) fvSchemes (2) fvSolution (2) fvSchemes (2) fvSchemes (2) fvSchemes (2) fvSchemes (2)

Documents

pureBreakup
system
controlDict
fvSolution
setFieldsDict
fvSchemes
fvSchemes
fvSolution

```

FoamFile
{
    version 2.0;
    format ascii;
    class dictionary;
    location "system";
    object fvSchemes;
}

// * * * * * 

ddtSchemes
{
    default Euler;
}

gradSchemes
{
    default Gauss linear;
}

divSchemes
{
    default none;
    div(phi, alpha, oil) Gauss vanLeer;
    div(phi, alpha, oil) Gauss vanLeer;
    "div((phi, n, k))" Gauss vanLeer;

    "div((alphaRhoPhi, *, U, k))" Gauss limitedLinearV;
    "div((phi, *, p))" Gauss limitedLinearV;
    "div((phi, *, nk))" Gauss vanLeer;

    div(phi, oil, kappa, oil) Gauss vanLeer;

    "div((alphahPhi, *, (n, k))" Gauss limitedLinearV;
    "div((alphahPhi, *, K, k))" Gauss limitedLinearV;
    "div((alphaPhi, *, p))" Gauss limitedLinearV;
    "div((phi, nk))" Gauss vanLeer;

    "div((alphaPhi, *, (kEpsilon, k))" Gauss limitedLinearV;
    "div((phi, *, kEpsilon, k))" Gauss limitedLinearV;

    "div((\(\alpha, \thermo, rho, v)\)nutff, v)\)nubff\(\(grad(v, v))\)\)\)\)" Gauss linear;
}

```

LaplacianSchemes

Line 1, Column 1

kokipughost:/openFOAM/test/integration/M0M/pureBreakup/systems

INSERT Soft Tabs 4 (8) UTF-8 C

Search and Replace Terminal Build Output Current Project

Pitanja?

Hvala na pažnji!