



A história do htop um "making of"

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PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
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Sobre mim

autor original do htop, um projeto iniciado em 2004

<http://hisham.hm/htop/>

desenvolvedor principal do LuaRocks, o gerenciador de pacotes da linguagem Lua

<http://luarocks.org/>

co-fundador da distribuição GoboLinux

<http://gobolinux.org/>

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0 que é o htop

um gerenciador de tarefas interativo

o objetivo era ser um “top melhorado”

o que eu queria dizer com isso: scrolling!

(as versões do top melhoraram muito de lá pra cá!)

```
last pid: 86494; load averages: 0.83, 0.65, 0.69 up 67+22:48:43 14:44:15
227 processes: 1 running, 224 sleeping, 2 zombie
CPU: 20.2% user, 0.0% nice, 6.5% system, 0.2% interrupt, 73.1% idle
Mem: 1657M Active, 1868M Inact, 273M Wired, 190M Cache, 112M Buf, 11M Free
Swap: 4500M Total, 249M Used, 4251M Free, 5% Inuse
```

PID	USERNAME	THR	PRI	NICE	SIZE	RES	STATE	C	TIME	WCPU	COMMAND
86460	www	1	4	0	150M	30204K	accept	1	0:02	11.18%	php-cgi
86458	www	1	4	0	150M	29912K	accept	0	0:02	8.98%	php-cgi
86463	pgsql	1	4	0	949M	99M	sbwait	1	0:01	7.96%	postgres
85885	www	1	4	0	150M	35204K	accept	2	0:07	7.57%	php-cgi
85274	www	1	4	0	149M	40868K	sbwait	3	0:27	5.18%	php-cgi
85267	www	1	4	0	151M	40044K	sbwait	2	0:33	4.59%	php-cgi
85884	www	1	4	0	150M	41584K	accept	2	0:14	4.59%	php-cgi
85887	pgsql	1	4	0	951M	128M	sbwait	1	0:04	4.20%	postgres
85886	pgsql	1	4	0	949M	161M	sbwait	0	0:08	3.37%	postgres
86459	pgsql	1	4	0	949M	75960K	sbwait	2	0:01	3.37%	postgres
85279	pgsql	1	4	0	950M	192M	sbwait	2	0:14	2.39%	postgres
85269	pgsql	1	4	0	950M	199M	sbwait	1	0:19	2.20%	postgres
85268	www	1	4	0	152M	44356K	sbwait	2	0:32	1.17%	php-cgi
85273	pgsql	1	4	0	950M	215M	sbwait	0	0:19	1.17%	postgres
97082	pgsql	1	44	0	26020K	6832K	select	0	46:55	0.00%	postgres
892	root	1	4	0	3160K	8K	-	2	13:33	0.00%	nfsd
1796	root	1	44	0	19780K	13660K	select	3	12:43	0.00%	Xvfb

```

./htop
0 [|||||] 8.4% Tasks: 94, 42 thr; 1 running
1 [|||] 3.8% Load average: 0.47 0.26 0.22
2 [|] 0.6% Uptime: 04:28:22
3 [||] 1.3% Battery: n/a
Mem [|||||||||||||||||||||||||||||||||||||] 1114/3819MB
Swp [|||||] 0/0MB

ID Priority: PID USER PRI NI VIRT RES SHR S CPU% MEM% Command
None (based on nice) 1 root 40 0 1672 572 508 S 0.0 0.0 init [2]
Realtime 0 (High) 15814 hisham 40 0 16140 6284 3856 S 0.0 0.2 | urxvt -cr green -fn *-lode-* -fb *
Realtime 1 15815 hisham 40 0 8804 6004 1692 S 0.0 0.2 | | zsh
Realtime 2 15836 hisham 40 0 45512 30796 13920 S 0.0 0.8 | | | gimp
Realtime 3 16474 hisham 40 0 26020 12624 8792 S 0.6 0.3 | | | | /System/Index/lib/gimp/2.
Realtime 4 16047 hisham 40 0 20552 5344 3236 S 0.0 0.1 | | | | /System/Index/lib/gimp/2.
Realtime 5 15345 hisham 40 0 62852 54784 3920 S 0.0 1.4 | urxvt -cr green -fn *-lode-* -fb *
Realtime 6 15346 hisham 40 0 9132 6460 1868 S 0.0 0.2 | | zsh
Realtime 7 (Low) 15357 hisham 40 0 1716 564 468 T 0.0 0.0 | | | cw: wrapping [find] {pid=153
| | | | find
Best-effort 0 (High) 15358 hisham 40 0 11768 9128 756 S 0.0 0.2 | | | | find
Best-effort 1 15291 hisham 40 0 16332 6492 3920 S 0.0 0.2 | urxvt -cr green -fn *-lode-* -fb *
Best-effort 2 15292 hisham 40 0 9000 6316 1856 S 0.0 0.2 | | zsh
Best-effort 3 15340 hisham 40 0 3116 1852 1148 R 4.4 0.0 | | | ./htop
Best-effort 4 14628 hisham 40 0 16140 6304 3864 S 0.0 0.2 | urxvt -cr green -fn *-lode-* -fb *
Best-effort 5 14629 hisham 40 0 9240 6496 1868 S 0.0 0.2 | | zsh
Best-effort 6 14646 hisham 40 0 1712 548 468 S 0.0 0.0 | | | cw: wrapping [env] {pid=1464
| | | | /bin/bash /System/Links/E
| | | | python /System/Links/E
Best-effort 7 (Low) 16439 hisham 40 0 8012 5340 2348 D 0.6 0.1 | | | | python /System/Links/E
Idle 13475 hisham 40 0 16140 6380 3864 S 0.0 0.2 | urxvt -cr green -fn *-lode-* -fb *
13476 hisham 40 0 8988 6320 1868 S 0.0 0.2 | | zsh
13808 hisham 40 0 3976 1912 1532 S 0.0 0.0 | | | ssh -t loderunner,htop@shell
13384 hisham 40 0 16140 6288 3864 S 0.0 0.2 | urxvt -cr green -fn *-lode-* -fb *
13385 hisham 40 0 9000 6296 1844 S 0.0 0.2 | | zsh
10544 hisham 40 0 26212 16596 3920 S 0.0 0.4 | urxvt -cr green -fn *-lode-* -fb *

Enter Set Esc Cancel

```

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
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Motivações iniciais

Resolver um problema próprio
("scratch your itch")

Aprender!

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
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“Refazer” um programa clássico

!?



PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
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“Refazer” um programa clássico

...não é um bicho de sete cabeças

Os programas que você usa todo dia não são mágicos

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
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Como obter os dados dos processos?

O kernel os apresenta em /proc

Um sistema de arquivos virtual

/proc/12345/mem

/proc/12345/stat

/proc/cpuinfo

...

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
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Como ler esses dados?

Ora, da maneira mais óbvia e simples possível

open()

read()

close()

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
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Mas como o top faz?

`strace top 2> top.log`



```
close(4) = 0
open("/proc/6/statm", O_RDONLY) = 4
read(4, "0 0 0 0 0 0 0\n", 1023) = 14
close(4) = 0
stat("/proc/7", {st_mode=S_IFDIR|0555, st_size=0, ...}) = 0
open("/proc/7/stat", O_RDONLY) = 4
read(4, "7 (watchdog/0) S 2 0 0 0 -1 2216"... , 1023) = 161
close(4) = 0
open("/proc/7/statm", O_RDONLY) = 4
read(4, "0 0 0 0 0 0 0\n", 1023) = 14
close(4) = 0
stat("/proc/21", {st_mode=S_IFDIR|0555, st_size=0, ...}) = 0
open("/proc/21/stat", O_RDONLY) = 4
read(4, "21 (cpuset) S 2 0 0 0 -1 2216722"... , 1023) = 157
close(4) = 0
open("/proc/21/statm", O_RDONLY) = 4
read(4, "0 0 0 0 0 0 0\n", 1023) = 14
close(4) = 0
stat("/proc/22", {st_mode=S_IFDIR|0555, st_size=0, ...}) = 0
open("/proc/22/stat", O_RDONLY) = 4
read(4, "22 (khelper) S 2 0 0 0 -1 221672"... , 1023) = 158
close(4) = 0
open("/proc/22/statm", O_RDONLY) = 4
read(4, "0 0 0 0 0 0 0\n", 1023) = 14
close(4) = 0
stat("/proc/23", {st_mode=S_IFDIR|0555, st_size=0, ...}) = 0
open("/proc/23/stat", O_RDONLY) = 4
read(4, "23 (kdevtmpfs) S 2 0 0 0 -1 2149"... , 1023) = 159
close(4) = 0
open("/proc/23/statm", O_RDONLY) = 4
read(4, "0 0 0 0 0 0 0\n", 1023) = 14
close(4) = 0
stat("/proc/24", {st_mode=S_IFDIR|0555, st_size=0, ...}) = 0
open("/proc/24/stat", O_RDONLY) = 4
read(4, "24 (netns) S 2 0 0 0 -1 22167224"... , 1023) = 156
close(4) = 0
open("/proc/24/statm", O_RDONLY) = 4
:
```

I

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
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Aí “só era questão de programar”

Ler os dados do /proc

“Desenhar” a interface

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
-----	------	-----	----	------	-----	-----	---	------	------	-------	---------

Um detalhe sobre a interface

A arte imita a vida

A vida imita a arte

```
1 2 3 4 5 6 7
1 file 2 irc 3 chat 4 dev 5 web 6 docs 7 sbin
en|!hi|: LI: 35 SI: -76 | CPU 51% | RAM 187/1824MB | Vol 42 | Bat 73%
sh|: |!w|:
if !:len() > longest then
    longest = !:len()
end

local s = uformat(!:"size")
if s:len() > longestSize then
    longestSize = s:len()
end

local u = uformat(!:"used")
if u:len() > longestUsed then
    longestUsed = u:len()
end
end
longest = longest + 8

sh|: |!w|: |!s|: |!l|:
local u = uformat(!:"used")
local s = uformat(!:"size")

if !:"used_p" >= red then
    lines = lines .. "<span color='red'>"
elseif !:"used_p" >= orange then
    lines = lines .. "<span color='orange'>"
else
    lines = lines .. "<span color='green'>"
end

lines = lines .. "\n"
.. 1
.. string.rep(" ", longest + longestSize -
.. !:len() - u:len())
.. u
.. "/"
.. s
```

```
!wikichat ircs://chat.wikileaks.org/
-!w-
!u- Are you seeing this .....?
RL Bradley Manning?
!u- Turn on DM right now.
!D- Who is Bradley Manning !! Call me.
!u- You read this IR PSD thing?
!W- You there D? Tell me you're there.
!u- 1000000
!S- !DXXXXX PFC Manning. Who is this kid/
!Y- !D0 IS !D000000
!u- Nothing Private about Bradley Manning :)
!u- Bradley Manning?
!G- Turn on DM right now
!u- 10000000000000000
```

[42] [irc/freenode] 13:wikichat.(+cnt) [Lag: 0.830]
[Active: 02] [aig5(+X1)]

IRC Chat

```
1 [(.....)]
2 [(.....)]
!m [(.....)] 68.2% Hostname: s|w|
!s [(.....)] 69.5% T...
```

```

R N T PC | S B | 52 37 0 2555M 104M 0 S 0.0 1 | time=21.139 ms
| F1 Help F2 Setup F3 Search F4 Invert F5 Tree F6 SortBy F7 |

```

```

title,"salt":"u8CYIhcQ","md5":"414
labf2e3b53e7","sha1":"ad491ed75cf2
87f7e58094","sha256":"179f46e813e
9e8f874cb84f4c9b196a3c86ce03a4104
1103343099","dob":"46047625","pho
8","cell":"(920)-571-4616","SSN":
ture":{"large":"http://api.random
women/2.jpg","medium":"http://api
raits/med/women/2.jpg","thumbnai
omuser.me/portraits/thumb/women/
"0.4.1"},"seed":"5f477579f6e3ce79

```

```

CPU[|||||] Tasks: 60, 24 thr; 1 ru
Mem[|||||1275 MB] Load average: 0.64
Swp[ ] Uptime: 42 days, 14:08:

```

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	W
17339	mysql	20	0	451M	127M	3440	S	0.5	2
167		20	0	5220	2136	732	S	0.5	
17386		20	0	31320	4912	1788	S	0.0	
17833		20	0	74180	9128	3220	S	0.0	
29565		20	0	74428	9180	3240	S	0.0	

```

| F1 Help F2 Setup F3 Search F4 Filter F5 Tree F6 SortBy F7 |

```

```

1 [I] ] Tasks: 98, 189 thr; 1 ru
2 [||||] ] Load average: 0.43
3 [I] ] Uptime: 09:52:26
4 [I] ]

```

```

Mem[||||521]
Swp[ ]

```

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	W
3386	mc	20	0	10.8G	2237M	26144	S	24.5	1
3427		20	0	10.8G	2237M	26144	S	22.5	1

```

| F1 Help F2 Setup F3 Search F4 Filter F5 Tree F6 SortBy F7 |

```

```

S 92 63 2 56 17 1 442900-QA 4166'6'

```




```
Task: 92, 200, 100, 5, 1000000
Last average: 6.19, 6.29, 7.29
Status: 61/60/61
```

IP	Port	State	Service	Version	OS
192.168.1.101	80	Open	HTTP	Apache/2.4.18 (Ubuntu)	Linux 3.2.0-23-generic
192.168.1.101	443	Open	HTTPS	Apache/2.4.18 (Ubuntu)	Linux 3.2.0-23-generic
192.168.1.101	22	Open	SSH	OpenSSH_6.7p1 Ubuntu-1ubuntu0.2	Linux 3.2.0-23-generic
192.168.1.101	25	Open	SMTP	Postfix	Linux 3.2.0-23-generic
192.168.1.101	53	Open	DNS	dnsmasq	Linux 3.2.0-23-generic
192.168.1.101	111	Open	RPC	rpcbind	Linux 3.2.0-23-generic
192.168.1.101	135	Open	MSRPC	rpcbind	Linux 3.2.0-23-generic
192.168.1.101	139	Open	SMB	Samba	Linux 3.2.0-23-generic
192.168.1.101	143	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	144	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	145	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	146	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	147	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	148	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	149	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	150	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	151	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	152	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	153	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	154	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	155	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	156	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	157	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	158	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	159	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	160	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	161	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	162	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	163	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	164	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	165	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	166	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	167	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	168	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	169	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	170	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	171	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	172	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	173	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	174	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	175	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	176	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	177	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	178	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	179	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	180	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	181	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	182	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	183	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	184	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	185	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	186	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	187	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	188	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	189	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	190	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	191	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	192	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	193	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	194	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	195	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	196	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	197	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	198	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	199	Open	IMAP	Dovecot	Linux 3.2.0-23-generic
192.168.1.101	200	Open	IMAP	Dovecot	Linux 3.2.0-23-generic

```
Len Mich
Driver
Pasted_102...
Other (1)
Pasted_104...
```

```
File Edit View Search Terminal Help
[Ubuntu@192.168.1.101 ~]$ nmap -iL backdoor.jp
Starting Nmap 7.80 ( http://nmap.org ) at 2015-10-19 09:52:00
NSE: Loaded 139 scripts for scanning.
NSE: Script Pre-scanning.
Initiating Ping Scan at 09:52
Scanning backdoor.jp (17.238.254.100) [2 ports]
Completed Ping Scan at 09:52, 5.9% elapsed (1 total hosts)
Initiating Parallel OS detection (1 host) at 09:52
Completed Parallel OS detection of 1 host at 09:52, 6.3% elapsed
Initiating Connect Scan at 09:52
Scanning backdoor.jp (17.238.254.100) [1000 ports]
Discovered open port 141/tcp on 17.238.254.100
Discovered open port 166/tcp on 17.238.254.100
Discovered open port 110/tcp on 17.238.254.100
Discovered open port 22/tcp on 17.238.254.100
Discovered open port 217/tcp on 17.238.254.100
Discovered open port 25/tcp on 17.238.254.100
Discovered open port 80/tcp on 17.238.254.100
Discovered open port 196/tcp on 17.238.254.100
Discovered open port 440/tcp on 17.238.254.100
Discovered open port 560/tcp on 17.238.254.100
Discovered open port 587/tcp on 17.238.254.100
Discovered open port 465/tcp on 17.238.254.100
Connect Scan Timing: Total: 46.46s (46%), 0% (0) hosts remaining
Discovered open port 2443/tcp on 17.238.254.100
```

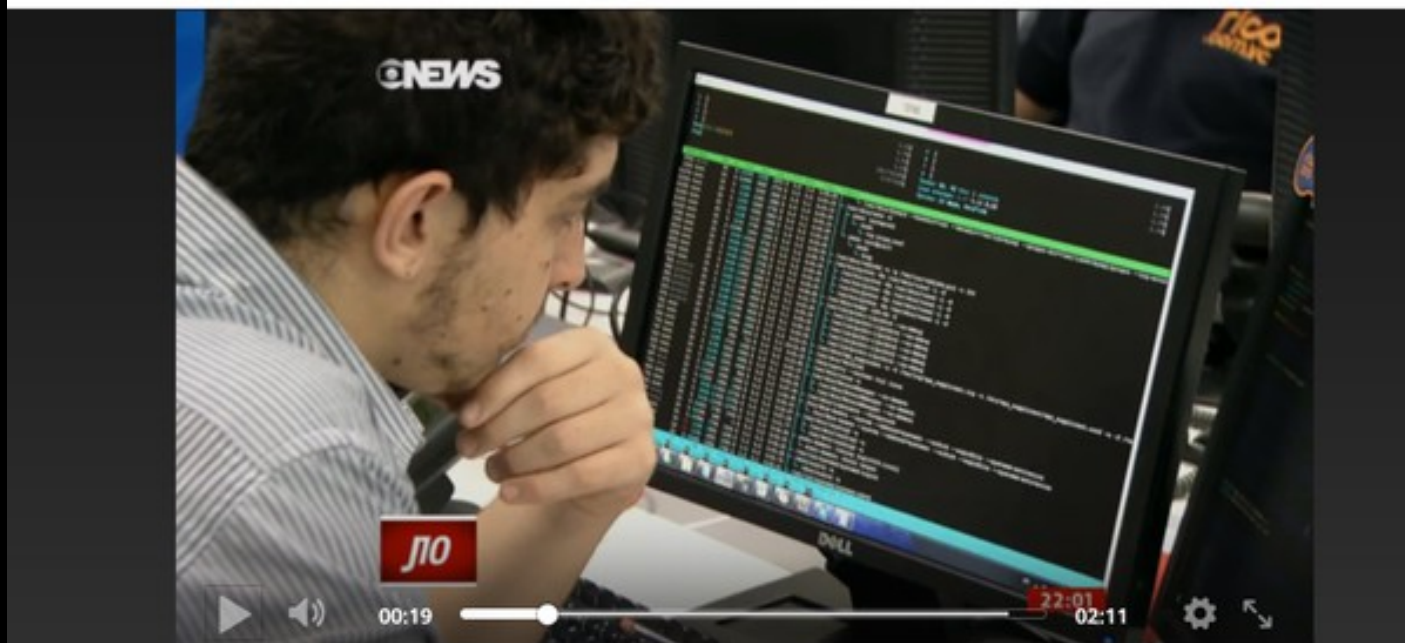
NETWORK



Nunca desliga.

Efeito China provoca queda em bolsas de valores pelo mundo

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PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
-----	------	-----	----	------	-----	-----	---	------	------	-------	---------

Um programa que “deu certo”

Sempre é difícil descobrir o porquê

Alguns palpites sobre fatores que influenciaram

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
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Ubiquidade da plataforma

o terminal!

talvez a única plataforma hoje tão presente
(para desenvolvedores)
quanto a web

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
-----	------	-----	----	------	-----	-----	---	------	------	-------	---------

A linguagem

fazer em C

...mas não pelos motivos “óbvios”

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
-----	------	-----	----	------	-----	-----	---	------	------	-------	---------

Facilidade de compilar em qualquer lugar

Poucas dependências:

ncurses

cores e coordenadas no terminal

todo Linux tem (dependência do Bash)

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
-----	------	-----	----	------	-----	-----	---	------	------	-------	---------

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e só

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
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Facilidade de compilar em qualquer lugar

Build com AutoTools:

`./configure`

`make`

`sudo make install`

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
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Facilidade de empacotar

Fácil de compilar

=

Fácil de empacotar em uma distro

```
PID USER PRI NI VIRT RES SHR S CPU% MEM% TIME+ Command
```

E assim começou o htop

```
Press enter to kill[]
CPU[|||||] 5.8%]
Mem[|||||] 757116KB]
Sup[ ] 0KB]
```

PID	USER	PR	NI	VIRT	RES	SHR	S	CPU%	COMM
5936	hisham	23	3	107236	7148	3628	S	0.0	/usr/bin/pulseaudio --start
5994	root	23	3	6224	1180	856	S	0.0	wpa_supplicant -B -c/etc/wpa_sup
6059	root	23	3	2464	400	208	S	0.0	dhcpd wlan0
6088	hisham	23	3	26092	2804	1820	S	0.0	/Programs/LibreOffice/4.2.3.3/li
6105	hisham	23	3	26157688	480	59032	S	0.0	/Programs/LibreOffice/4.2.3.3/li
6122	hisham	23	3	6016	1516	1156	S	0.0	/bin/sh /usr/bin/firefox
6126	hisham	23	3	81205646535237432			S	0.4	/Programs/Firefox/28.0/bin/./fi
6143	hisham	20	0	25640	2496	2112	S	0.0	/usr/lib/at-spi2-core/at-spi-bus
15278	root	20	0	0	0	0	S	0.0	(kworker/u8:0)
15502	root	20	0	0	0	0	S	0.0	(kworker/2:2)
16607	hisham	23	3	14008847164	12820		S	0.0	terminology
16612	hisham	23	3	7852	3580	2000	S	0.0	/usr/bin/zsh
17981	hisham	23	3	13986449280	12792		S	0.0	terminology
17986	hisham	23	3	7440	3104	1952	S	0.0	/usr/bin/zsh
20667	hisham	23	3	13980445648	12788		S	0.0	terminology
20796	hisham	23	3	7488	3156	1952	S	0.0	/usr/bin/zsh
23164	root	20	0	0	0	0	S	0.0	(kworker/2:0)

htop-0.13.tar.gz

22kB

wc -l *.c

1684

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
-----	------	-----	----	------	-----	-----	---	------	------	-------	---------

Para comparação

```

./htop
 0  [|||||] 0.4% Tasks: 94, 42 thr: 1 running
 1  [||||] 3.8% Load average: 0.47 0.26 0.22
 2  [||] 0.6% Upt ime: 04:28:22
 3  [||] 1.3% Battery: n/a
 Mem [|||||||||||||||||||||] 114/3819MB
 Supl [|||||] 0/0MB

PID Priority: PID USER PRI NI VIRT RES SHR S CPU% MEM% Command
None (based on nice) 1 root 40 0 1672 572 508 S 0.0 0.0 init [2]
Realtime 0 (High) 15814 hisham 40 0 16140 6284 3856 S 0.0 0.2 urxvt -cr green -fn *-lode-* -fb *
Realtime 1 15815 hisham 40 0 8804 6004 1692 S 0.0 0.2 | zsh
Realtime 2 15836 hisham 40 0 45512 30796 13920 S 0.0 0.8 | | gimp
Realtime 3 16474 hisham 40 0 26020 12624 8792 S 0.6 0.3 | | | /System/Index/1 lib/gimp/2.
Realtime 4 16047 hisham 40 0 20552 5344 3236 S 0.0 0.1 | | | | /System/Index/1 lib/gimp/2.
Realtime 5 15345 hisham 40 0 62852 54784 3920 S 0.0 1.4 | urxvt -cr green -fn *-lode-* -fb *
Realtime 6 15346 hisham 40 0 9132 6460 1868 S 0.0 0.2 | | zsh
Realtime 7 (Low) 15357 hisham 40 0 1716 564 468 T 0.0 0.0 | | | cw: wrapping [find] {pid=153
Best-effort 0 (High) 15358 hisham 40 0 11768 9128 756 S 0.0 0.2 | | | | find
Best-effort 1 15291 hisham 40 0 16332 6492 3920 S 0.0 0.2 | urxvt -cr green -fn *-lode-* -fb *
Best-effort 2 15292 hisham 40 0 9000 6316 1856 S 0.0 0.2 | | zsh
Best-effort 3 15340 hisham 40 0 3116 1852 1148 R 4.4 0.0 | | | ./htop
Best-effort 4 14628 hisham 40 0 16140 6304 3864 S 0.0 0.2 | urxvt -cr green -fn *-lode-* -fb *
Best-effort 5 14629 hisham 40 0 9240 6496 1868 S 0.0 0.2 | | zsh
Best-effort 6 14646 hisham 40 0 1712 548 468 S 0.0 0.0 | | | cw: wrapping [env] {pid=1464
Best-effort 7 (Low) 14647 hisham 40 0 5644 2620 1204 S 0.0 0.1 | | | /bin/bash /System/L inks/E
Idle 16439 hisham 40 0 8012 5340 2348 0 0.6 0.1 | | | python /System/L inks/E
13475 hisham 40 0 16140 6380 3864 S 0.0 0.2 | urxvt -cr green -fn *-lode-* -fb *
13476 hisham 40 0 8988 6320 1868 S 0.0 0.2 | | zsh
13808 hisham 40 0 3976 1912 1532 S 0.0 0.0 | | | ssh -t loderunner,htop@she11
13384 hisham 40 0 16140 6288 3864 S 0.0 0.2 | urxvt -cr green -fn *-lode-* -fb *
13385 hisham 40 0 9000 6296 1844 S 0.0 0.2 | | zsh
10544 hisham 40 0 26212 16596 3920 S 0.0 0.4 | urxvt -cr green -fn *-lode-* -fb *
Enter/Set Esc/Cancel

```

htop-2.0.2.tar.gz

476kB

wc -l *.c */*.c

13811

Slide: [| | | | | | | | | | | | | |]

Date:

Talk: A história do htop

Presenter: @hisham_hm

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
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A grande mudança

Tornar o htop portátil

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
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htop off-Linux

alguns usuários já rodavam no **FreeBSD**
usando **linprocfs** (uma camada de emulação)

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
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Backstory

« A wild Mac OS X fork appears! »

um port ad-hoc do htop 0.8.2

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
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Passa o tempo

bug reports começam a aparecer
bugs antigos resolvidos há **anos!**

começa a ficar chato

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
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Crowdfunding

Portar o htop para Mac

1/3 da meta atingida

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
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Tornar o htop portátil

Torná-lo mais fácil de ser portado

Abrir o caminho para novos ports

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
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Como quebrar a dependência de SO da maneira fácil

tente compilar em outro SO!

montar uma VM

primeira tentativa: FreeBSD

desisti rápido

segunda tentativa: **PC-BSD**

mais fácil para um usuário Linux!

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
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Abordagens para aplicações multi-plataforma

bases de código separadas

iOS vs. Android

um spaghetti de `#ifdefs`

às vezes é o jeito

APIs bem definidas entre a parte portátil e não-portável

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
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Isolar a parte Linux

linux/

unsupported/

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
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Isolar a parte Linux

linux/

unsupported/

freebsd/

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
-----	------	-----	----	------	-----	-----	---	------	------	-------	---------

Uma abordagem “00”

Process.c

Process.h

ProcessList.c

ProcessList.h

...

linux/

LinuxProcess.c

LinuxProcessList.c

...

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
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Subi para o GitHub e...

unsupported/

linux/

freebsd/

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
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Subi para o Github e...

unsupported/

linux/

freebsd/ - merged PRs!

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
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Subi para o Github e...

unsupported/

linux/

freebsd/

openbsd/

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
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Subi para o Github e...

unsupported/

linux/

freebsd/

openbsd/

darwin/

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
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Impacto positivo

novas pessoas contribuindo

sempre algo bom!

maior diversidade de contribuições

Galera do OpenBSD e a preocupação com segurança!

alguém quer portar para o NetBSD?

...Cygwin!?

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
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Conclusões

Siga os padrões da sua comunidade
(código, empacotamento)

Portabilidade vale a pena mesmo

“Stratch your itch!”

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
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Obrigado!

<http://hisham.hm/htop>

<http://github.com/hishamhm/htop>

@hisham_hm