Going cross-platform
how htop was made portable

Hisham Muhammad

@hisham_hm http://hisham.hm

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

About me

original author of htop, a project started in 2004

http://hisham.hm/htop/

lead developer of LuaRocks, the package manager for the Lua

http://luarocks.org/

co-founder of the GoboLinux distribution

http://gobolinux.org/

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

What is htop

an interactive process manager

intended to be "a better top"

   by this I originally meant: scrolling!

(versions of top improved a lot since!)

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

Hello, htop!

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

Linux-only

entire logic for gathering process data is based on the /proc filesystem

that's how top did it too, seemed right

UI was dependent only on the portable library ncurses

so far so good, for many years

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

htop off-Linux

users got htop running on FreeBSD
using linprocfs (a Linux procfs emulation layer)

users sent patches and asked for minor tweaks
for that scenario

   happy to merge!

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

Backstory

« A wild Mac OS X fork appears! »

an ad-hoc port of htop 0.8.2

deleted all Linux-specific code

by the time I took note of it, the codebase had diverged

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

Fast-forward a few years

bug reports popping up in htop's bugtracker

old bugs, fixed in htop mainline for years!

it started to get annoying and look bad

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

A fundraiser

summer job: port it to Mac OS X "the right way"

reached 1/3 of its goal

so I decided not to port it to the Mac, but to at least make htop portable

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

Making it portable

by this I mean making it amenable to be ported

so initially I didn't really port it

but I paved the way so that whoever did it, could do it cleanly

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

Breaking Linux dependency the easy way

try to compile it on another OS

    set up a VM

first try: FreeBSD

    gave up quickly

second try: PC-BSD

    path of least resistance for a Linux user!

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

Approaches for multi-platform apps

separate codebases

  sometimes it really makes sense: iOS vs. Android

a spaghetti of #ifdefs

  sometimes it's the right thing to do

Clean interfaces (APIs) between portable and platform-specific parts

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

Isolated the Linux-specific code

Created two sub-directories

linux/

unsupported/

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

Isolated the Linux-specific code

Created two sub-directories

linux/

unsupported/

And, for fun

freebsd/

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

An "OOP" approach

Process.c

Process.h

ProcessList.c

ProcessList.h

...

linux/

   LinuxProcess.c

   LinuxProcessList.c

   ...

Date: 31/01/2016
Talk: Going cross-platform
Presenter: @hisham_hm

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

Upload to GitHub and...

unsupported/

linux/

freebsd/

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

Upload to GitHub and...

unsupported/

linux/

freebsd/ - merged PRs!

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

Upload to GitHub and...

unsupported/

linux/

freebsd/

openbsd/

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

Upload to GitHub and...

unsupported/

linux/

freebsd/

openbsd/

darwin/

Date: 31/01/2016
Talk: Going cross-platform
Presenter: @hisham_hm

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

Positive social impact

more, new contributors

   always a good thing!

more diverse contributors

   OpenBSD people and their security concerns!

   anyone wants to port it to NetBSD?

   ...Cygwin!?

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

htop 2.0

The code is ready!

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

Packages reaching your repositories soon!

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

Thanks!

All fundraiser contributors!

David Hunt - Darwin support

Martin Misuth (etosan)

Christian Hesse (eworm-de)

Michael McConville (mmcco)

Michael Klein (mklein-de)

Kang-Che Sung (Explorer09)

and many others who sent in patches and bug reports!!