DERECK LAM HON WAH

3rd Year BSc. Computer Science (System Engineering)
Student from Middlesex University Mauritius

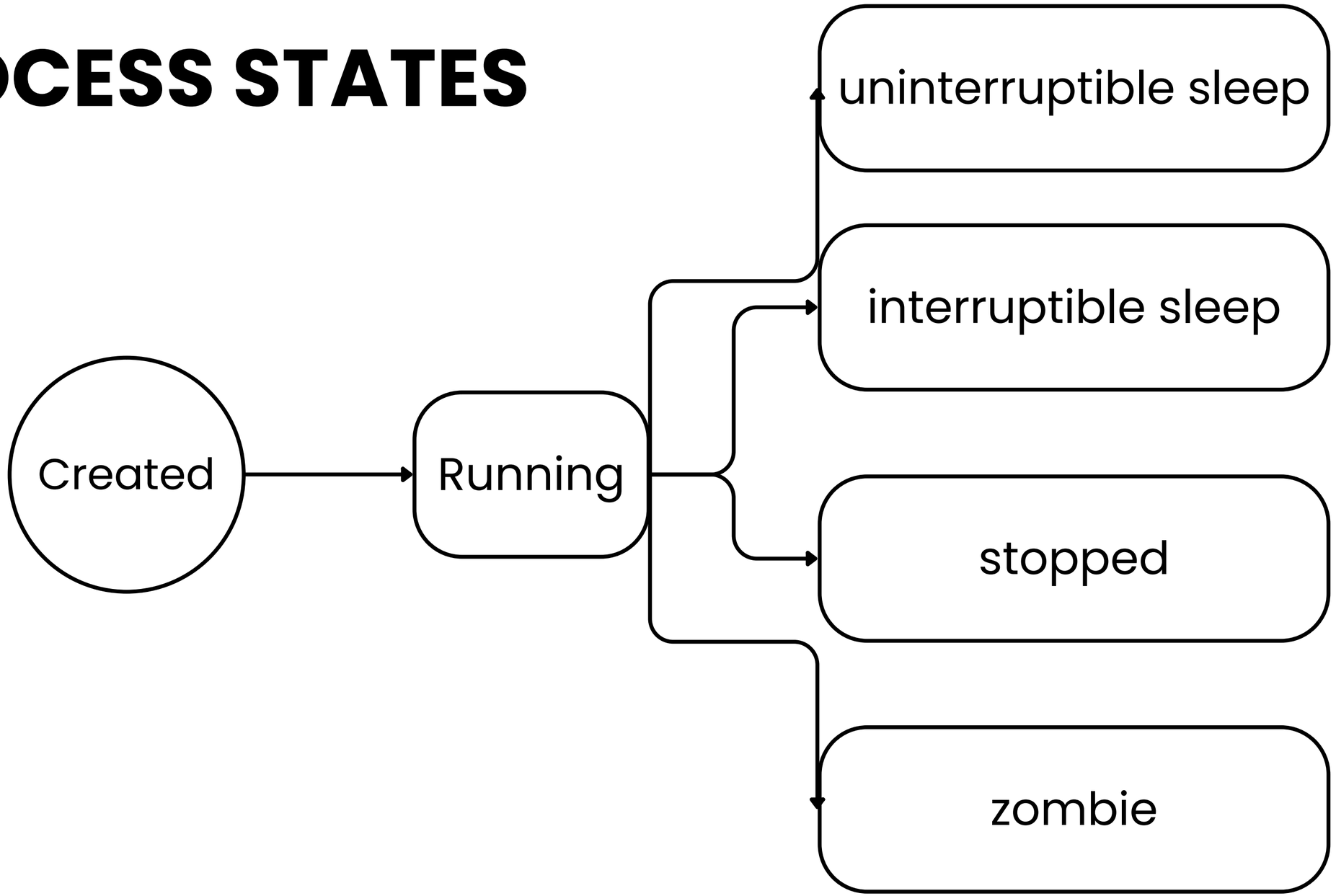
linkedin.com/in/dereck-lam-hon-wah-315039227
https://github.com/derecklhw

MANAGING SYSTEM PROCESSES

PROCESS

- A running instance of a program.
- Types of Processes:
  - Foreground - E.g: Libre Programs
  - Background - E.g: Antivirus

PROCESS STATES



CONVERT TO A BACKGROUND PROCESS

Start the program
$ping google.com

Press Ctrl + Z
[1]+ Stopped ping google.com

List all the jobs (running and sleep)
$jobs

Make the foreground into a background program
$bg <job_id>

CONVERT TO A FOREGROUND PROCESS

Make a foreground into a background program in **one** command
$ping google.com &

Make the background into a foreground program
$fg <job_id>

PROCESS MANAGEMENT COMMAND

Ps

To display the currently-running processes.

Top

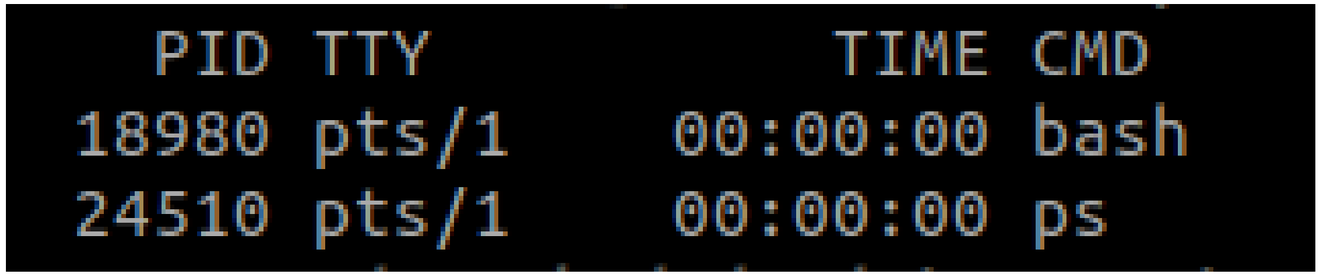
To track the running processes on the machine

PS

PROCESS STATUS

To show running processes on the current terminal

$ps



PS

To show running processes for the current user
$ps -u

To show a specific running process for the current user
$ps -u | grep <program_name>

To show all processes for the current user
$ps -aux

PGREP

PS -U | GREP

To obtain the PID of a specific running process for the current user
$pgrep <program_name>

TOP

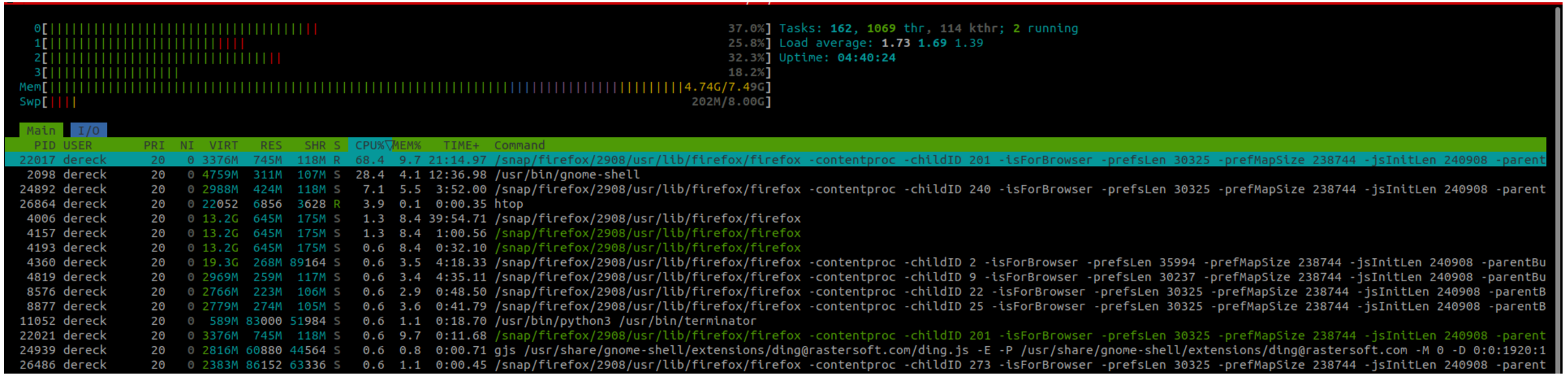
However, unlike **ps** command, output generated is realtime and sorted by its CPU usage .

```
top - 14:46:48 up  3:58,  1 user,  load average: 0.96, 1.20, 1.22
Tasks: 276 total,   1 running, 275 sleeping,   0 stopped,   0 zombie
%Cpu(s):  4.1 us,  1.6 sy,  0.0 ni, 93.9 id,  0.0 wa,  0.0 hi,  0.4 si,  0.0 st
MiB Mem :   7673.7 total,    463.9 free,   4475.0 used,   2734.7 buff/cache
MiB Swap:   8192.0 total,   7933.2 free,    258.8 used.   1960.2 avail Mem

    PID USER      PR  NI    VIRT    RES    SHR S  %CPU  %MEM     TIME+ COMMAND
   4819 dereck    20   0 3049196 301532 121400 S   7.0   3.8   4:01.02 Isolated Web Co
    214 root     -51   0       0      0      0 S   3.0   0.0   1:51.32 irq/143-DELL0AB0:00
   2098 dereck    20   0 4878844 322696 122272 S   2.7   4.1  10:31.55 gnome-shell
   4006 dereck    20   0   12.9g 675520 186248 S   2.3   8.6  33:14.56 firefox
    704 root     -51   0       0      0      0 S   2.0   0.0   2:17.96 irq/153-rtw88_pci
```

HTOP

BEAUTIFUL TOP



KILL

- To stop a running process
- **kill** command needs the process ID as an argument.
- Sends a kill signal to the process.

To list all the kill signals

```
02:48:30 dereck@dodoadmin-Inspiron-15-3511 html →kill -L
 1) SIGHUP       2) SIGINT       3) SIGQUIT      4) SIGILL       5) SIGTRAP
 6) SIGABRT      7) SIGBUS       8) SIGFPE       9) SIGKILL     10) SIGUSR1
11) SIGSEGV     12) SIGUSR2     13) SIGPIPE     14) SIGALRM     15) SIGTERM
16) SIGSTKFLT   17) SIGCHLD     18) SIGCONT     19) SIGSTOP     20) SIGTSTP
21) SIGTTIN     22) SIGTTOU     23) SIGURG      24) SIGXCPU     25) SIGXFSZ
26) SIGVTALRM   27) SIGPROF     28) SIGWINCH    29) SIGIO       30) SIGPWR
31) SIGSYS      34) SIGRTMIN    35) SIGRTMIN+1  36) SIGRTMIN+2  37) SIGRTMIN+3
38) SIGRTMIN+4  39) SIGRTMIN+5  40) SIGRTMIN+6  41) SIGRTMIN+7  42) SIGRTMIN+8
43) SIGRTMIN+9  44) SIGRTMIN+10 45) SIGRTMIN+11 46) SIGRTMIN+12 47) SIGRTMIN+13
48) SIGRTMIN+14 49) SIGRTMIN+15 50) SIGRTMAX-14 51) SIGRTMAX-13 52) SIGRTMAX-12
53) SIGRTMAX-11 54) SIGRTMAX-10 55) SIGRTMAX-9  56) SIGRTMAX-8  57) SIGRTMAX-7
58) SIGRTMAX-6  59) SIGRTMAX-5  60) SIGRTMAX-4  61) SIGRTMAX-3  62) SIGRTMAX-2
63) SIGRTMAX-1  64) SIGRTMAX
```

KILL

- The default kill signal is **15** if the user doesn't specify.
- **Ctrl+Z** and **Ctrl+C** are shortcuts for the kill command.
- **9) SIGKILL** is the most common one used.

To kill one running program
$kill -<signal_id> <program_id>

To kill all instances of a running program
$pkill -<signal_id> <program_name>

NICE

- Can prioritize between processes.