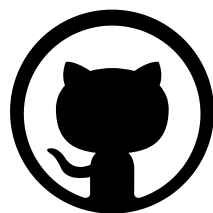# DERECK LAM HON WAH

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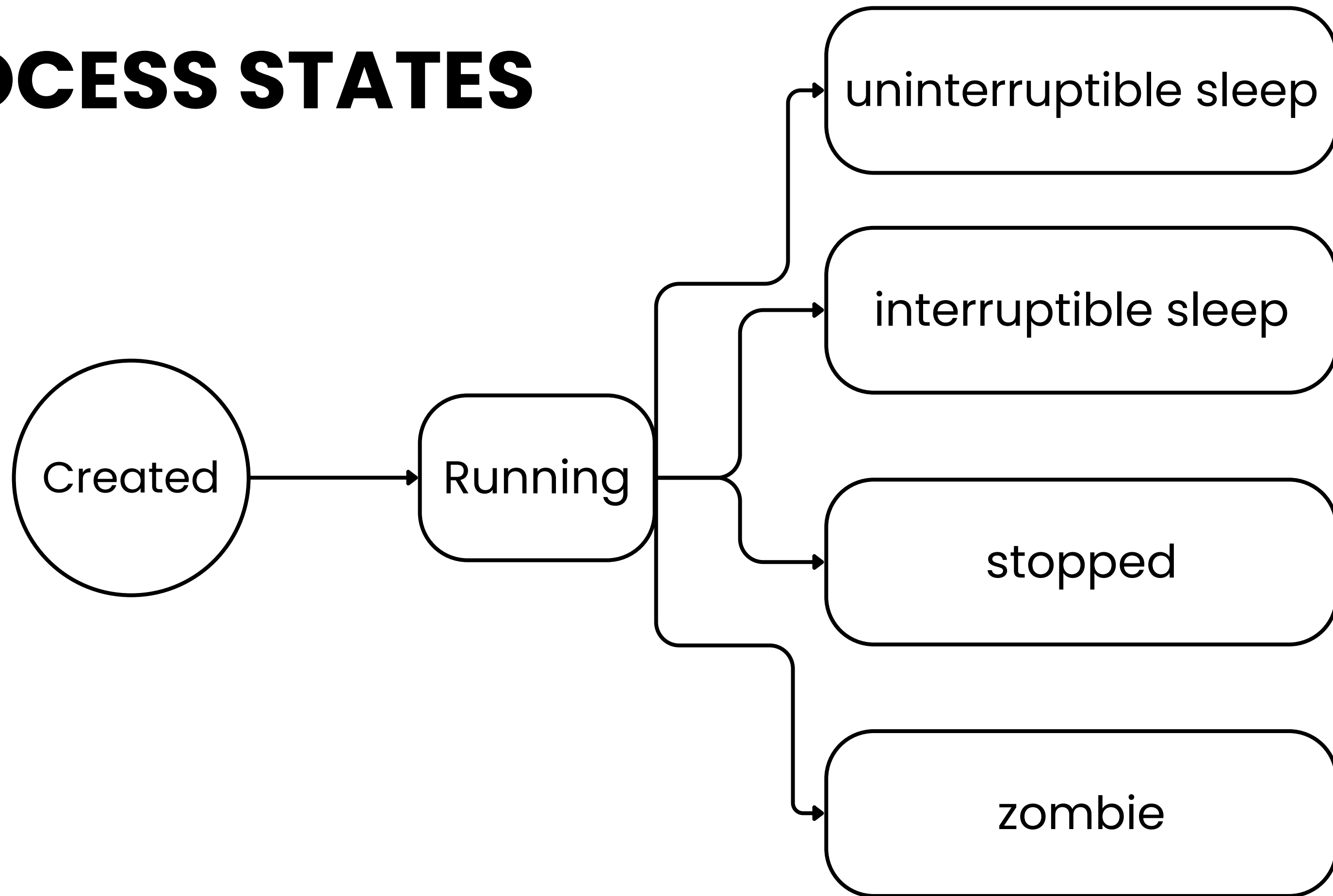
Dereck Lam Hon Wah

derecklhw

DISCLAIMER 🐧

MANAGING
SYSTEM PROCESSES

PROCESS

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

PROCESS STATES

FOREGROUND TO BACKGROUND PROCESS

Start the program
$ ping google.com

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

List all the jobs running in the background
$ jobs
[1]+ Stopped ping google.com

Convert the foreground into a background program
$ bg ‹job_id›

CONVERT TO A FOREGROUND PROCESS

Execute a foreground into a background program in **one** line
$ ping google.com &

List all the jobs running in the background
$ jobs

[1]+ Running   ping google.com &

Make the background into a foreground program
$ fg ‹job_id›

PS

PROCESS STATUS

To show running processes on the current terminal

$ ps

```
  PID TTY          TIME CMD
18980 pts/1    00:00:00 bash
24510 pts/1    00:00:00 ps
```

PS

To show running processes for the current user

$ ps -u

```
USER         PID %CPU %MEM    VSZ    RSS TTY      STAT START   TIME COMMAND
dereck      2136  0.0  0.0 170776   6104 tty2     Ssl+ 15:10   0:00 /usr/libexec/gdm-wayland-session env GNOME_SHELL_SESSION_MODE=ubuntu /usr/bin/gnome-session --session=ubuntu
dereck      2140  0.0  0.1 232464  14764 tty2     Sl+  15:10   0:00 /usr/libexec/gnome-session-binary --session=ubuntu
dereck      8730  0.0  0.1  26912  12512 pts/0    Ss+  15:36   0:00 /bin/bash
dereck      9664  0.0  0.1  26912  12540 pts/1    Ss   15:41   0:00 /bin/bash
dereck     10649  0.0  0.0  21436   3652 pts/1    R+   15:57   0:00 ps -u
```

To show all processes for the current user

$ ps -aux

To show a specific running process for the current user

$ ps -u | grep <program_name>

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 by default .

```
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
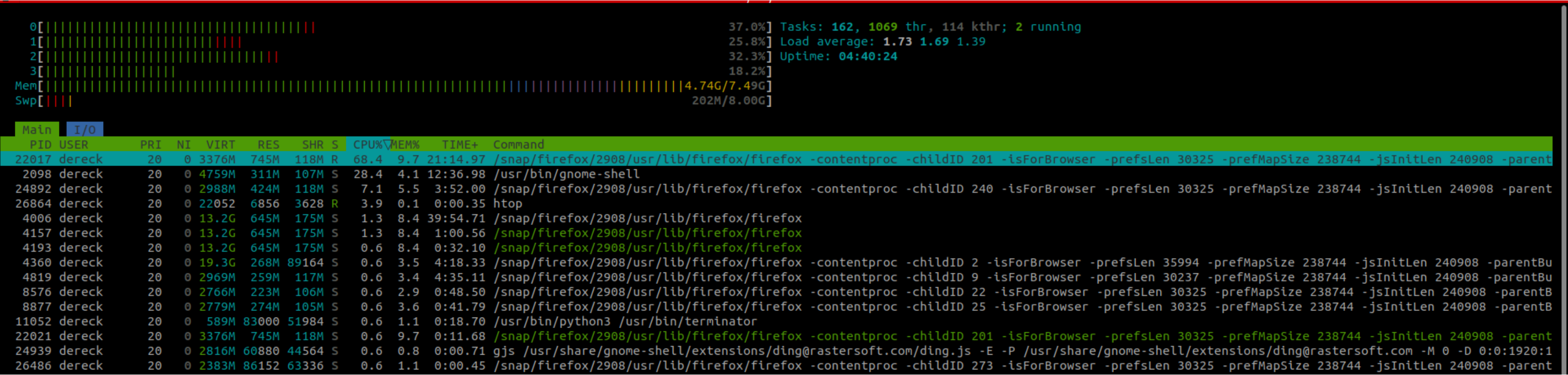
KILL

- 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

- To tell your machine to prioritise processes.
- The priority value is called **Niceness**.
- It has a value between -20 to 19.
- Default value of all processes is 0.

```
PID USER        PR   NI
6100 dereck      20    0
4662 dereck      20    0
2218 dereck      20    0
1171 mysql       20    0
 703 root       -51    0
5107 dereck      20    0
2121 dereck      20    0
2562 dereck      20    0
5993 root        20    0
7633 dereck      20    0
7723 dereck      20    0
8710 dereck      20    0
   1 root        20    0
   2 root        20    0
   3 root         0  -20
   4 root         0  -20
   5 root         0  -20
   6 root         0  -20
   8 root         0  -20
  10 root         0  -20
  11 root        20    0
  12 root        20    0
```

NICE

To start a process and give it a nice value other than the default
$ nice -n <niceness_index> <process_name>

To change nice value of a running process
$ renice <niceness_index> -p <pid>