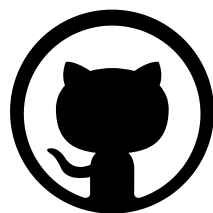


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# DISCLAIMER

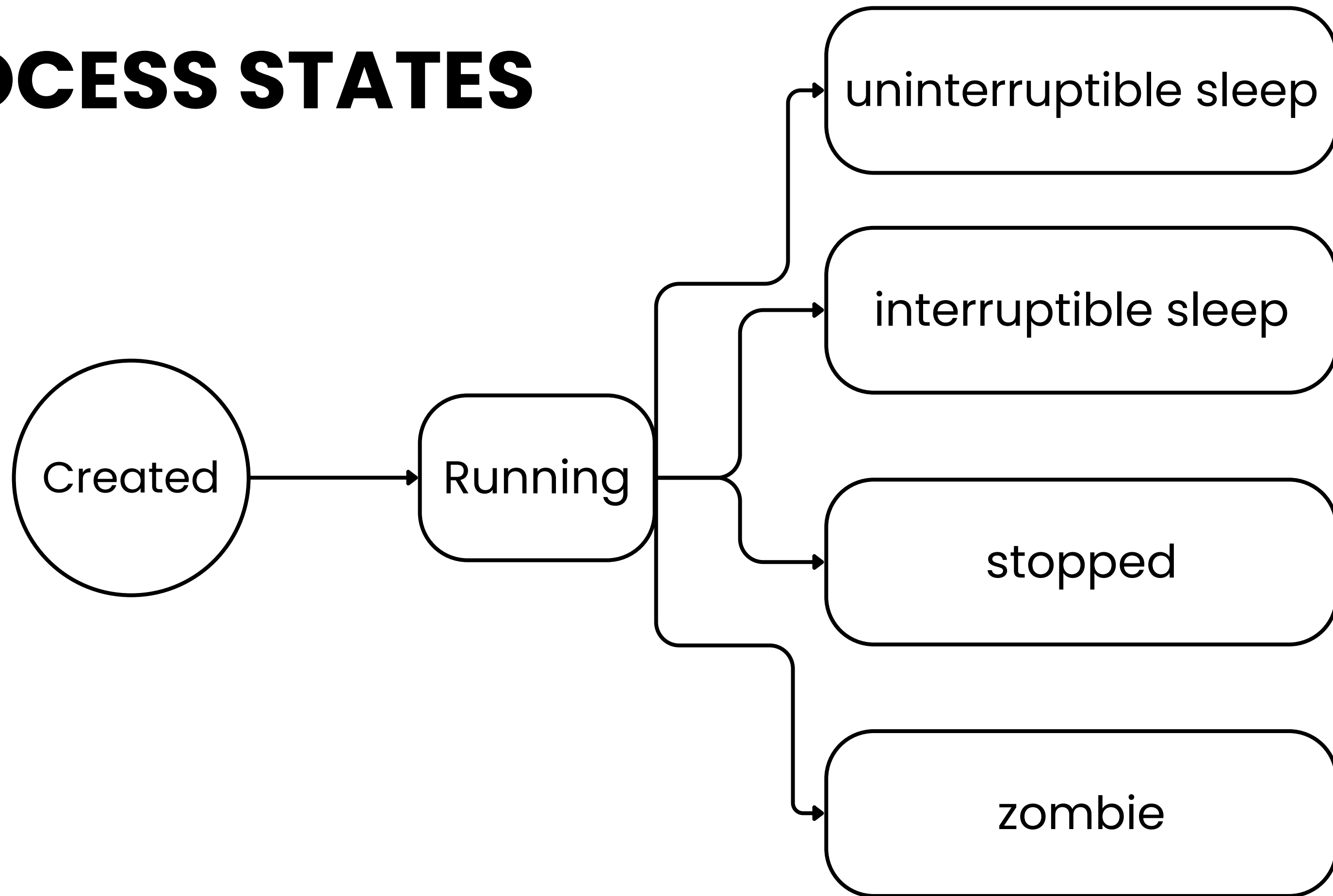


# **MANAGING SYSTEM PROCESSES**

# 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

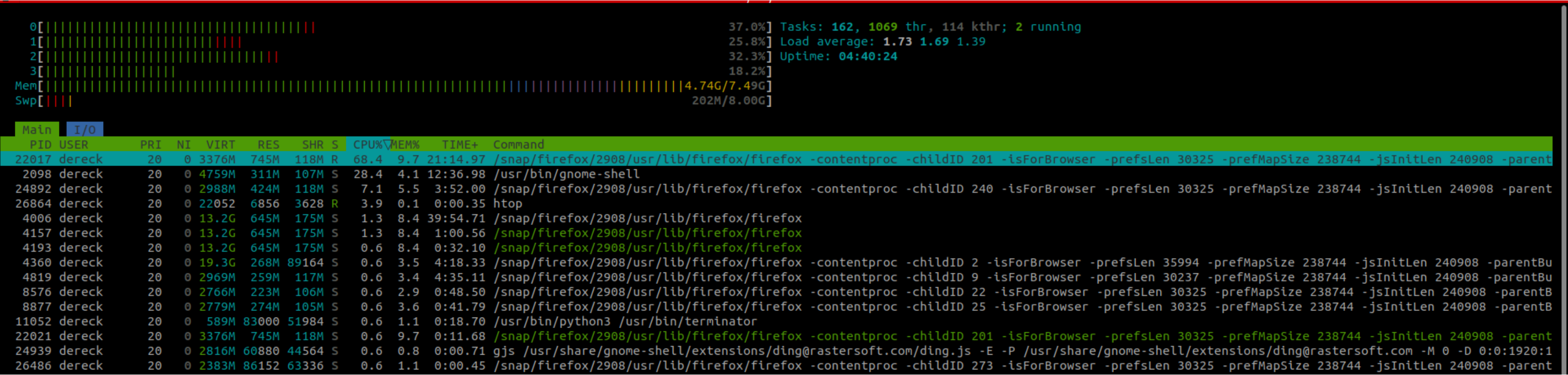
However, unlike **ps** command, output generated is realtime and sorted by its CPU usage by default .

```
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 (SIGTERM)** if the user doesn't specify.
- **9) SIGKILL** is the most common one used.
- Ctrl+Z and Ctrl+C are shortcuts to the kill command.

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>**