

Lab 06 - Linux command for process

1) **top**: The **top** command is the traditional way to view your system's resource usage and see the processes that are taking up the most system resources. Top displays a list of processes, with the ones using the most CPU at the top.

```
tanvir@tanvir-HP-Pavilion-Laptop-15-cc1xx: ~
File Edit View Search Terminal Help
top - 12:14:15 up 2:09, 1 user, load average: 0.60, 0.88, 0.73
Tasks: 285 total, 1 running, 284 sleeping, 0 stopped, 0 zombie
%Cpu(s): 5.7 us, 1.3 sy, 0.0 ni, 92.1 id, 0.3 wa, 0.0 hi, 0.6 si, 0.0 st
MiB Mem : 7847.3 total, 2198.6 free, 2417.1 used, 3231.7 buff/cache
MiB Swap: 3906.0 total, 3906.0 free, 0.0 used, 4478.6 avail Mem

  PID USER      PR  NI   VIRT   RES   SHR  S  %CPU  %MEM     TIME+ COMMAND
 1781 tanvir    20   0 3805116 170240 95416 S  14.0   2.1   6:31.12 cinnamon
 1115 root       20   0 1226252 191292 140020 S  12.6   2.4   6:08.96 Xorg
18255 tanvir    20   0 21.3g 336624 182904 S   8.3   4.2   0:05.65 soffice.bin
18360 tanvir    20   0 391476  39888 31952 S   5.3   0.5   0:00.16 gnome-scre+
 3086 tanvir    20   0 962280 250684 152564 S   1.7   3.1   5:07.34 chrome
 3368 tanvir    20   0 5259776 671736 308144 S   1.7   8.4  19:51.95 chrome
 3229 tanvir    20   0 4682428 122040 79876 S   1.3   1.5   0:23.82 chrome
 8888 mysql      20   0 2398364 374412 35600 S   1.0   4.7   1:09.41 mysqld
18335 tanvir    20   0 462088  39276 30200 S   1.0   0.5   0:00.86 gnome-termi+
 3135 tanvir    20   0 353032  94328 66400 S   0.7   1.2   0:58.91 chrome
 1528 tanvir    20   0  8440  5552  3916 S   0.3   0.1   0:02.45 dbus-daemon
 1617 tanvir    20   0  7620  4584  3844 S   0.3   0.1   0:00.78 dbus-daemon
 3125 tanvir    20   0 663100 153348 83320 S   0.3   1.9   7:37.16 chrome
14998 tanvir    20   0 4666912 136396 88876 S   0.3   1.7   0:21.01 chrome
15241 tanvir    20   0 4647096 127732 90508 S   0.3   1.6   0:06.52 chrome
18355 tanvir    20   0 12320  4004  3360 R   0.3   0.0   0:00.68 top
    1 root      20   0 167796 11660  8376 S   0.0   0.1   0:02.89 systemd
```

To exit top or htop, use the Ctrl-C keyboard shortcut. This keyboard shortcut usually kills the currently running process in the terminal.

2) **htop**: The **htop** command is an improved top. It's not installed by default on most Linux distributions — here's the command you'll need to install it on Ubuntu:

`sudo apt-get install htop`

```
tanvir@tanvir-HP-Pavilion-Laptop-15-cc1xx: ~
File Edit View Search Terminal Help

 1  [|||||] 5.9%  5  [|||||] 3.4%
 2  [|||||] 5.3%  6  [|||||] 6.0%
 3  [|||||] 3.4%  7  [|||||] 3.4%
 4  [|||||] 13.1% 8  [|||||] 3.9%
Mem [|||||] 3.04G/7.66G
Swp [|||||] 0K/3.81G
Tasks: 152, 595 thr; 1 running
Load average: 0.36 0.78 0.71
Uptime: 02:10:07

  PID USER      PRI  NI   VIRT   RES   SHR  S  CPU%  MEM%     TIME+  Command
18335 tanvir    20   0 451M 39276 30200 S  0.7  0.5   0:01.10 /usr/libexec/gnome-
 1115 root       20   0 1266M 195M 145M S 10.6  2.5   6:12.30 /usr/lib/xorg/Xorg
 3368 tanvir    20   0 5137M 657M 300M S  4.0  8.4  19:52.83 /opt/google/chrome/
18425 tanvir    20   0 11344 4336 3260 R  2.6  0.1   0:00.23 htop
 1304 root       20   0 1266M 195M 145M S  1.3  2.5   0:33.08 /usr/lib/xorg/Xorg
 1781 tanvir    20   0 3714M 165M 94380 S 14.5  2.1   6:34.70 cinnamon --replace
 3110 tanvir    20   0  954M 244M 148M S  0.0  3.1   1:13.94 /opt/google/chrome/
 3125 tanvir    20   0  647M 149M 83368 S  0.0  1.9   7:37.31 /opt/google/chrome/
 8888 mysql      20   0 2342M 365M 35600 S  1.3  4.7   1:09.79 /usr/sbin/mysqld
18414 tanvir    20   0 4493M 93520 68968 S  0.0  1.2   0:00.02 /opt/google/chrome/
17606 tanvir    20   0  954M 244M 148M S  0.0  3.1   0:00.58 /opt/google/chrome/
 3086 tanvir    20   0  954M 244M 148M S  2.0  3.1   5:08.22 /opt/google/chrome/
 3229 tanvir    20   0 4572M 119M 79876 S  0.0  1.5   0:24.18 /opt/google/chrome/
F1Help F2Setup F3Search F4Filter F5Tree F6SortBy F7Nice F8Nice F9Kill F10Quit
```

3) ps -A: The **ps** command lists running processes. The following command lists all processes running on your system:

ps -A

```
tanvir@tanvir-HP-Pavilion-Laptop-15-cc1xx: ~  
File Edit View Search Terminal Help  
(base) tanvir@tanvir-HP-Pavilion-Laptop-15-cc1xx:~$ ps  
  PID TTY          TIME CMD  
 18342 pts/0    00:00:00 bash  
 18355 pts/0    00:00:00 top  
 18425 pts/0    00:00:02 htop  
 19221 pts/0    00:00:00 ps  
(base) tanvir@tanvir-HP-Pavilion-Laptop-15-cc1xx:~$ ps -A  
  PID TTY          TIME CMD  
   1 ?           00:00:02 systemd  
   2 ?           00:00:00 kthreadd  
   3 ?           00:00:00 rcu_gp  
   4 ?           00:00:00 rcu_par_gp  
   6 ?           00:00:00 kworker/0:0H-events_highpri  
   9 ?           00:00:00 mm_percpu_wq  
  10 ?           00:00:00 ksoftirqd/0  
  11 ?           00:00:08 rcu_sched  
  12 ?           00:00:00 migration/0  
  13 ?           00:00:00 idle_inject/0  
  14 ?           00:00:00 cpuhp/0  
  15 ?           00:00:00 cpuhp/1  
  16 ?           00:00:00 idle_inject/1  
  17 ?           00:00:00 migration/1  
  18 ?           00:00:00 ksoftirqd/1  
  20 ?           00:00:00 kworker/1:0H-events_highpri  
  21 ?           00:00:00 cpuhp/2  
  22 ?           00:00:00 idle_inject/2  
  23 ?           00:00:00 migration/2
```

4) ps -A | less: **ps -A** may be too many processes to read at one time, so we can pipe the output through the **less** command to scroll through them at own pace.

ps -A | less:

```
File Edit View Search Terminal Help  
  PID TTY          TIME CMD  
   1 ?           00:00:02 systemd  
   2 ?           00:00:00 kthreadd  
   3 ?           00:00:00 rcu_gp  
   4 ?           00:00:00 rcu_par_gp  
   6 ?           00:00:00 kworker/0:0H-events_highpri  
   9 ?           00:00:00 mm_percpu_wq  
  10 ?           00:00:00 ksoftirqd/0  
  11 ?           00:00:09 rcu_sched  
  12 ?           00:00:00 migration/0  
  13 ?           00:00:00 idle_inject/0  
  14 ?           00:00:00 cpuhp/0  
  15 ?           00:00:00 cpuhp/1  
  16 ?           00:00:00 idle_inject/1  
  17 ?           00:00:00 migration/1
```

Press q to exit when you're done.

5) `ps -A | grep` : We could also pipe the output through **grep** to search for a specific process without using any other commands. The following command would search for the Firefox process:

`ps -A | grep firefox`

```
tanvir@tanvir-HP-Pavilion-Laptop-15-cc1xx: ~  
File Edit View Search Terminal Help  
(base) tanvir@tanvir-HP-Pavilion-Laptop-15-cc1xx:~$ ps -A|grep chrome  
3086 ?      00:05:12 chrome  
3097 ?      00:00:00 chrome  
3099 ?      00:00:00 chrome  
3106 ?      00:00:00 chrome  
3125 ?      00:07:39 chrome  
3135 ?      00:01:00 chrome  
3188 ?      00:00:01 chrome  
3229 ?      00:00:27 chrome  
3239 ?      00:00:00 chrome  
3245 ?      00:00:06 chrome  
3368 ?      00:20:12 chrome  
3522 ?      00:00:36 chrome  
13425 ?     00:00:22 chrome
```

6) `pstree`:

The **pstree** command is another way of visualizing processes. It displays them in tree format.

```
tanvir@tanvir-HP-Pavilion-Laptop-15-cc1xx: ~  
File Edit View Search Terminal Help  
(base) tanvir@tanvir-HP-Pavilion-Laptop-15-cc1xx:~$ pstree  
systemd--ModemManager--2*[{ModemManager}]  
         --NetworkManager--3*[{NetworkManager}]  
         --accounts-daemon--2*[{accounts-daemon}]  
         --acpid  
         --agetty  
         --avahi-daemon--avahi-daemon  
         --blueberry-tray--python3--rkill  
                           4*[{blueberry-tray}]  
         --bluetoothd  
         --colord--2*[{colord}]  
         --cron  
         --csd-printer--2*[{csd-printer}]  
         --cups-browsed--2*[{cups-browsed}]  
         --cupsd  
         --dbus-daemon  
         --fwupd--4*[{fwupd}]
```

7) kill :

The **kill** command can kill a process, given its process ID. You can get this information from the **ps -A**, **top** or **pgrep** commands.

kill PID

```
(base) tanvir@tanvir-HP-Pavilion-Laptop-15-cclxx:~$ pgrep code
3465
3469
3492
3508
3518
3567
3576
3607
3646
(base) tanvir@tanvir-HP-Pavilion-Laptop-15-cclxx:~$ kill 3465
(base) tanvir@tanvir-HP-Pavilion-Laptop-15-cclxx:~$
```

8) pgrep :

Given a search term, **pgrep** returns the process IDs that match it. For example, you could use the following command to find Firefox's PID:

pgrep firefox

```
(base) tanvir@tanvir-HP-Pavilion-Laptop-15-cclxx:~$ pgrep code
3465
3469
3492
3508
3518
3567
3576
3607
3646
(base) tanvir@tanvir-HP-Pavilion-Laptop-15-cclxx:~$ kill 3465
(base) tanvir@tanvir-HP-Pavilion-Laptop-15-cclxx:~$
```

9) pkill & killall :

The **pkill** and **killall** commands can kill a process, given its name. Use either command to kill Firefox:

pkill firefox
killall firefox

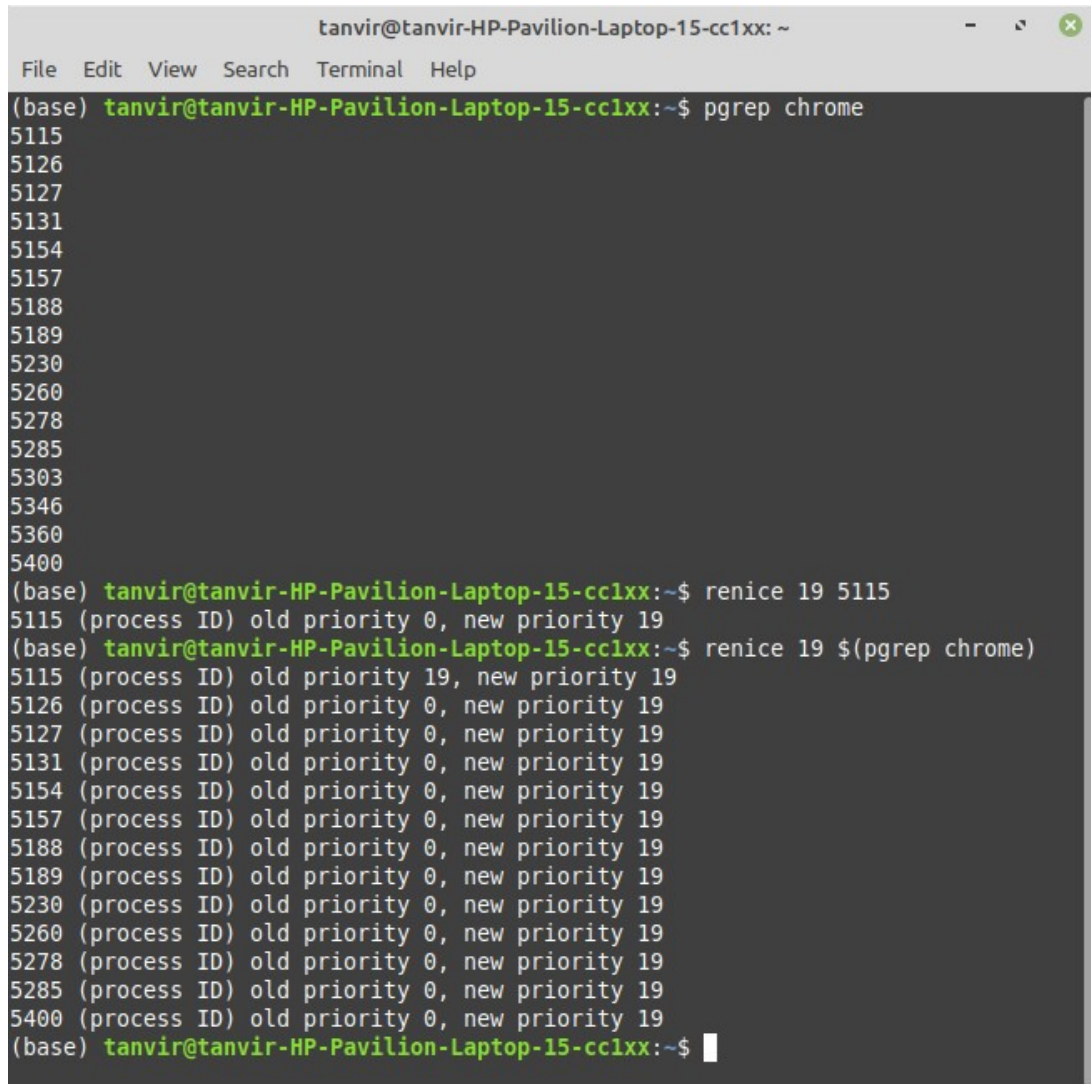
```
File Edit View Search Terminal Help
prince@prince:~$ killall firefox
prince@prince:~$ pkill firefox
prince@prince:~$
```


10) renice:

The **renice** command changes the nice value of an already running process. The nice value determines what priority the process runs with. A value of **-19** is very high priority, while a value of **19** is very low priority. A value of **0** is the default priority.

The renice command requires a process's PID. The following command makes a process run with very low priority:

renice 19 *PID*



```
tanvir@tanvir-HP-Pavilion-Laptop-15-cc1xx: ~  
File Edit View Search Terminal Help  
(base) tanvir@tanvir-HP-Pavilion-Laptop-15-cc1xx:~$ pgrep chrome  
5115  
5126  
5127  
5131  
5154  
5157  
5188  
5189  
5230  
5260  
5278  
5285  
5303  
5346  
5360  
5400  
(base) tanvir@tanvir-HP-Pavilion-Laptop-15-cc1xx:~$ renice 19 5115  
5115 (process ID) old priority 0, new priority 19  
(base) tanvir@tanvir-HP-Pavilion-Laptop-15-cc1xx:~$ renice 19 $(pgrep chrome)  
5115 (process ID) old priority 19, new priority 19  
5126 (process ID) old priority 0, new priority 19  
5127 (process ID) old priority 0, new priority 19  
5131 (process ID) old priority 0, new priority 19  
5154 (process ID) old priority 0, new priority 19  
5157 (process ID) old priority 0, new priority 19  
5188 (process ID) old priority 0, new priority 19  
5189 (process ID) old priority 0, new priority 19  
5230 (process ID) old priority 0, new priority 19  
5260 (process ID) old priority 0, new priority 19  
5278 (process ID) old priority 0, new priority 19  
5285 (process ID) old priority 0, new priority 19  
5400 (process ID) old priority 0, new priority 19  
(base) tanvir@tanvir-HP-Pavilion-Laptop-15-cc1xx:~$
```