



# Mawlana Bhashani Science and Technology University

## Lab-Report

Lab Report No: 06

Lab Report Name: Linux command for Process

Course code: ICT-3110

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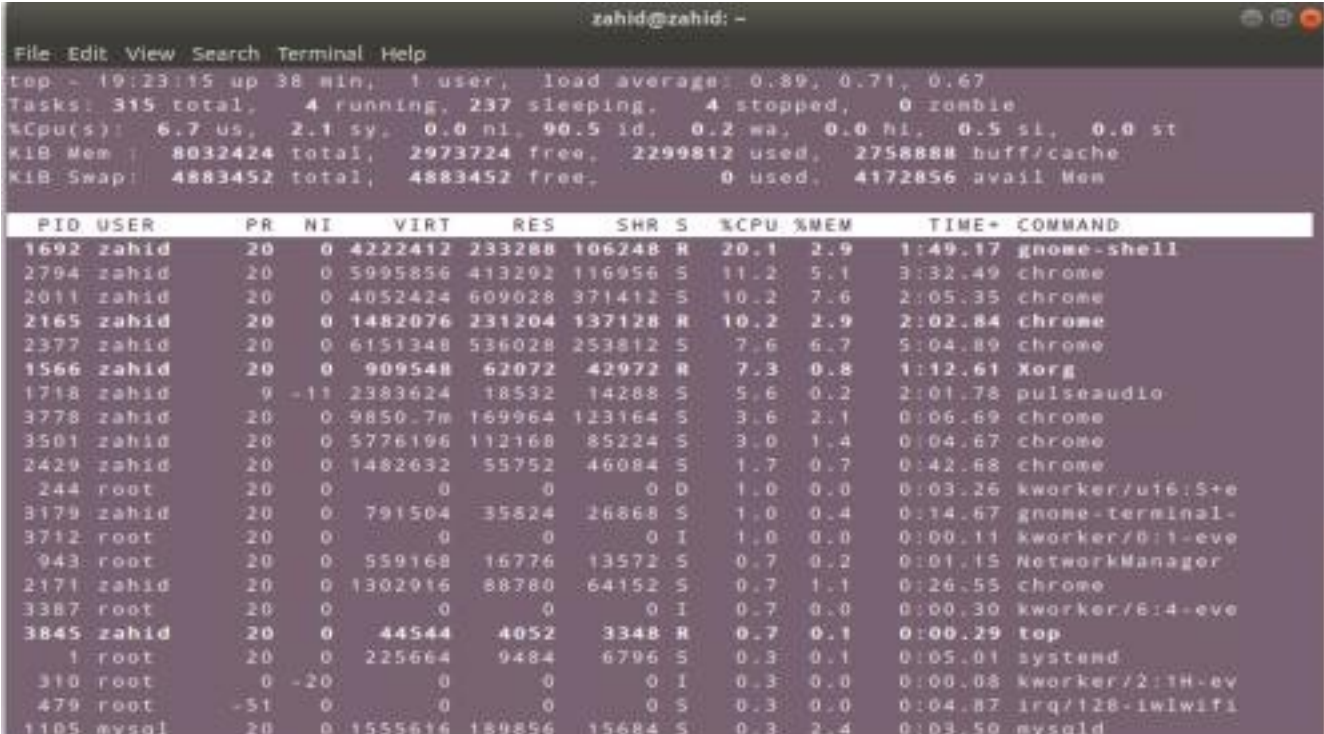
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### Lab 06 - Linux command for process

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.

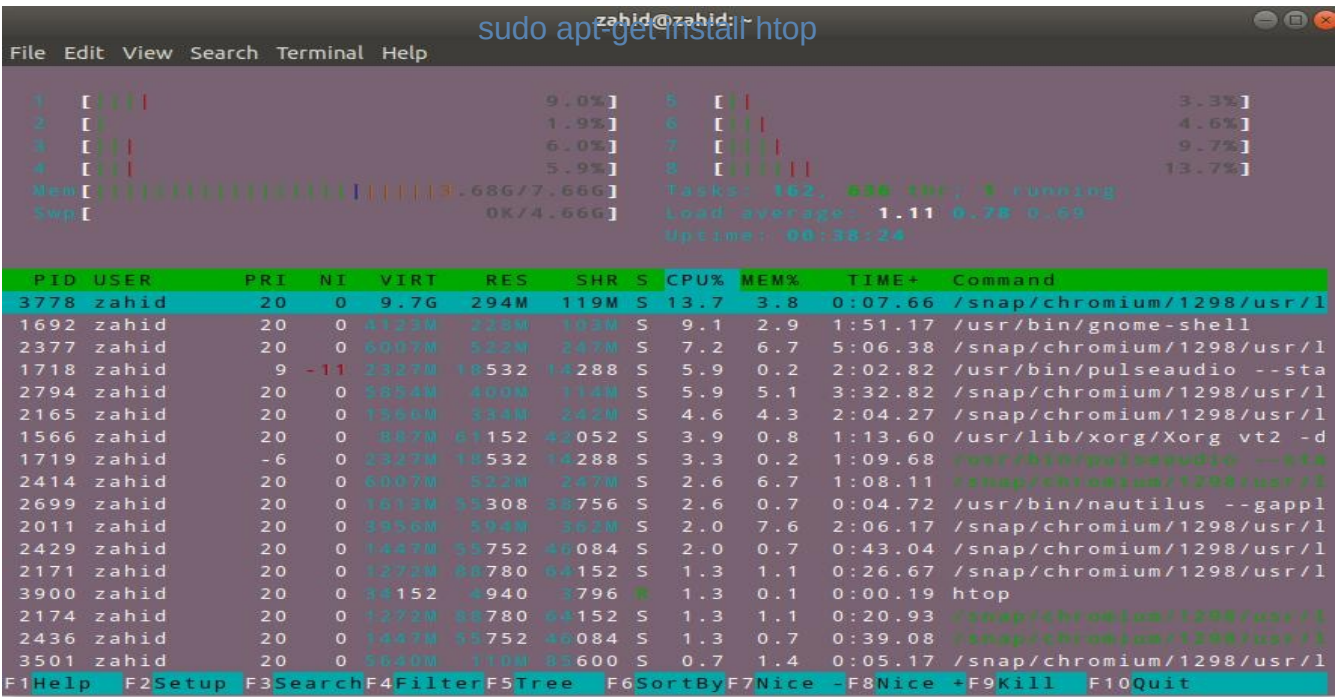


```
File Edit View Search Terminal Help
top - 19:23:15 up 38 min, 1 user, load average: 0.89, 0.71, 0.67
Tasks: 315 total, 4 running, 237 sleeping, 4 stopped, 0 zombie
%Cpu(s): 6.7 us, 2.1 sy, 0.0 ni, 90.5 id, 0.2 wa, 0.0 hi, 0.5 si, 0.0 st
KiB Mem : 8032424 total, 2973724 free, 2299812 used, 2758888 buff/cache
KiB Swap: 4883452 total, 4883452 free, 0 used, 4172856 avail Mem
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
1692	zahid	20	0	4222412	233288	106248	R	20.1	2.9	1:49.17	gnome-shell
2794	zahid	20	0	5995856	413292	116956	S	11.2	5.1	3:32.49	chrome
2011	zahid	20	0	4052424	609028	371412	S	10.2	7.6	2:05.35	chrome
2165	zahid	20	0	1482076	231204	137128	R	10.2	2.9	2:02.84	chrome
2377	zahid	20	0	6151348	536028	253812	S	7.6	6.7	5:04.89	chrome
1566	zahid	20	0	909548	62072	42972	R	7.3	0.8	1:12.61	Xorg
1718	zahid	9	-11	2383624	18532	14288	S	5.6	0.2	2:01.78	pulseaudio
3778	zahid	20	0	9850.7m	169964	123164	S	3.6	2.1	0:06.69	chrome
3501	zahid	20	0	5776196	112168	85224	S	3.0	1.4	0:04.67	chrome
2429	zahid	20	0	1482632	55752	46084	S	1.7	0.7	0:42.68	chrome
244	root	20	0	0	0	0	D	1.0	0.0	0:03.26	kworker/u16:5+e
3179	zahid	20	0	791504	35824	26868	S	1.0	0.4	0:14.67	gnome-terminal-
3712	root	20	0	0	0	0	I	1.0	0.0	0:00.11	kworker/0:1+eve
943	root	20	0	559168	16776	13572	S	0.7	0.2	0:01.15	NetworkManager
2171	zahid	20	0	1302916	88780	64152	S	0.7	1.1	0:26.55	chrome
3387	root	20	0	0	0	0	I	0.7	0.0	0:00.30	kworker/6:4+eve
3845	zahid	20	0	44544	4052	3348	R	0.7	0.1	0:00.29	top
1	root	20	0	225664	9484	6796	S	0.3	0.1	0:05.01	systemd
310	root	0	-20	0	0	0	I	0.3	0.0	0:00.08	kworker/2:1H+ev
479	root	-51	0	0	0	0	S	0.3	0.0	0:04.87	irq/128-iwlwifi
1105	mysql	20	0	1555616	189856	15684	S	0.3	2.4	0:03.50	mysqld

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:



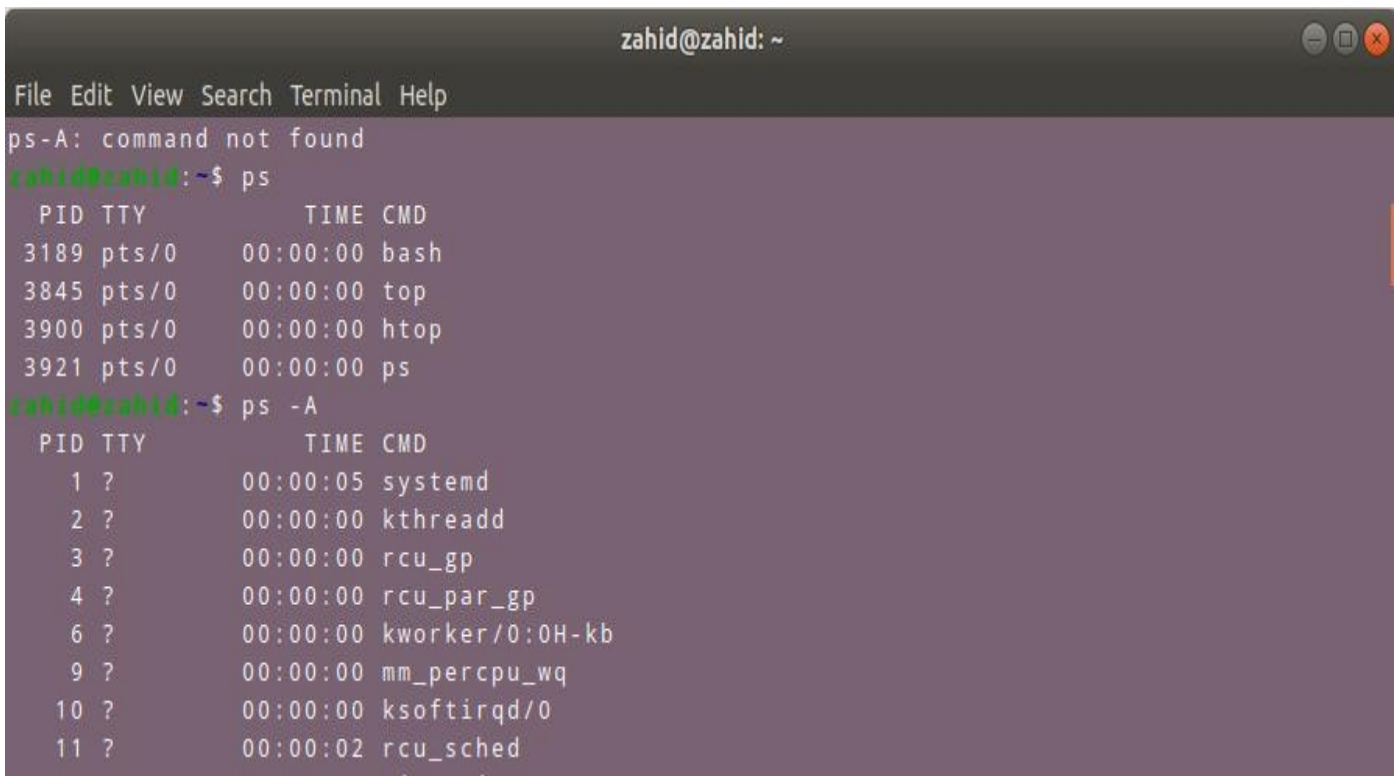
```
File Edit View Search Terminal Help
          sudo apt-get install htop
  1  [||||] 9.0%] 5 [||] 3.3%]
  2  [||] 1.9%] 6 [||||] 4.6%]
  3  [||||] 6.0%] 7 [||||] 9.7%]
  4  [||] 5.9%] 8 [||||] 13.7%]
Mem [|||||] 3.68G/7.66G] Tasks: 162, 636 tot; 8 running
Swap [|||||] 0K/4.66G] Load average: 1.11 0.78 0.69
                                Uptime: 00:38:24
```

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
3778	zahid	20	0	9.7G	294M	119M	S	13.7	3.8	0:07.66	/snap/chromium/1298/usr/l
1692	zahid	20	0	4123M	233M	103M	S	9.1	2.9	1:51.17	/usr/bin/gnome-shell
2377	zahid	20	0	6007M	522M	247M	S	7.2	6.7	5:06.38	/snap/chromium/1298/usr/l
1718	zahid	9	-11	2327M	18532	14288	S	5.9	0.2	2:02.82	/usr/bin/pulseaudio --sta
2794	zahid	20	0	5854M	400M	114M	S	5.9	5.1	3:32.82	/snap/chromium/1298/usr/l
2165	zahid	20	0	1566M	334M	242M	S	4.6	4.3	2:04.27	/snap/chromium/1298/usr/l
1566	zahid	20	0	887M	61152	42052	S	3.9	0.8	1:13.60	/usr/lib/xorg/Xorg vt2 -d
1719	zahid	-6	0	2327M	18532	14288	S	3.3	0.2	1:09.68	/usr/bin/pulseaudio --sta
2414	zahid	20	0	6007M	522M	247M	S	2.6	6.7	1:08.11	/snap/chromium/1298/usr/l
2699	zahid	20	0	1613M	55308	38756	S	2.6	0.7	0:04.72	/usr/bin/nautilus --gapp
2011	zahid	20	0	3956M	594M	362M	S	2.0	7.6	2:06.17	/snap/chromium/1298/usr/l
2429	zahid	20	0	1447M	55752	46084	S	2.0	0.7	0:43.04	/snap/chromium/1298/usr/l
2171	zahid	20	0	1272M	88780	64152	S	1.3	1.1	0:26.67	/snap/chromium/1298/usr/l
3900	zahid	20	0	34152	4940	3796	R	1.3	0.1	0:00.19	htop
2174	zahid	20	0	1272M	88780	64152	S	1.3	1.1	0:20.93	/snap/chromium/1298/usr/l
2436	zahid	20	0	1447M	55752	46084	S	1.3	0.7	0:39.08	/snap/chromium/1298/usr/l
3501	zahid	20	0	5640M	110M	35600	S	0.7	1.4	0:05.17	/snap/chromium/1298/usr/l

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**

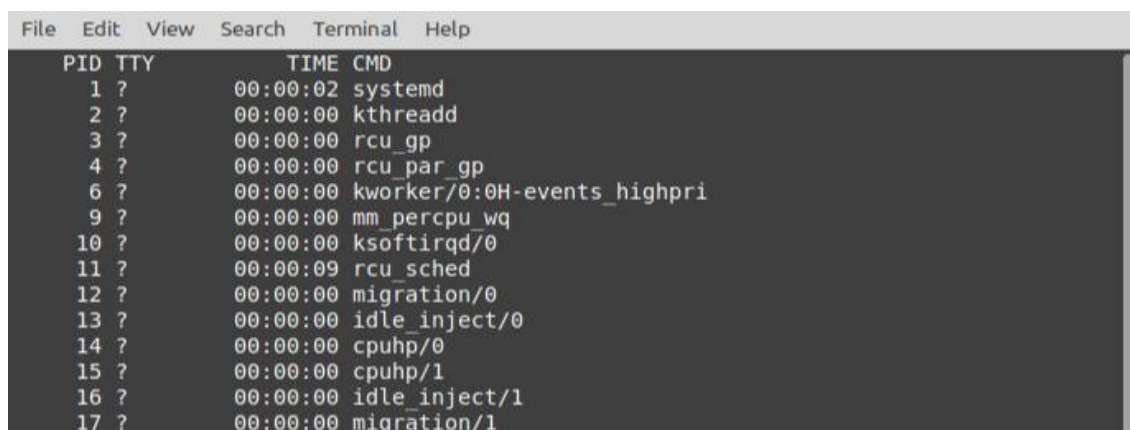


A terminal window titled 'zahid@zahid: ~' showing the execution of the 'ps' command. The first attempt 'ps -A' results in 'command not found'. The second attempt 'ps' shows a list of processes. The third attempt 'ps -A' shows a more comprehensive list of system processes.

```
File Edit View Search Terminal Help
ps-A: command not found
zahid@zahid:~$ ps
  PID TTY          TIME CMD
 3189 pts/0    00:00:00 bash
 3845 pts/0    00:00:00 top
 3900 pts/0    00:00:00 htop
 3921 pts/0    00:00:00 ps
zahid@zahid:~$ ps -A
  PID TTY          TIME CMD
    1 ?           00:00:05 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-kb
    9 ?           00:00:00 mm_percpu_wq
   10 ?           00:00:00 ksoftirqd/0
   11 ?           00:00:02 rcu_sched
```

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**:



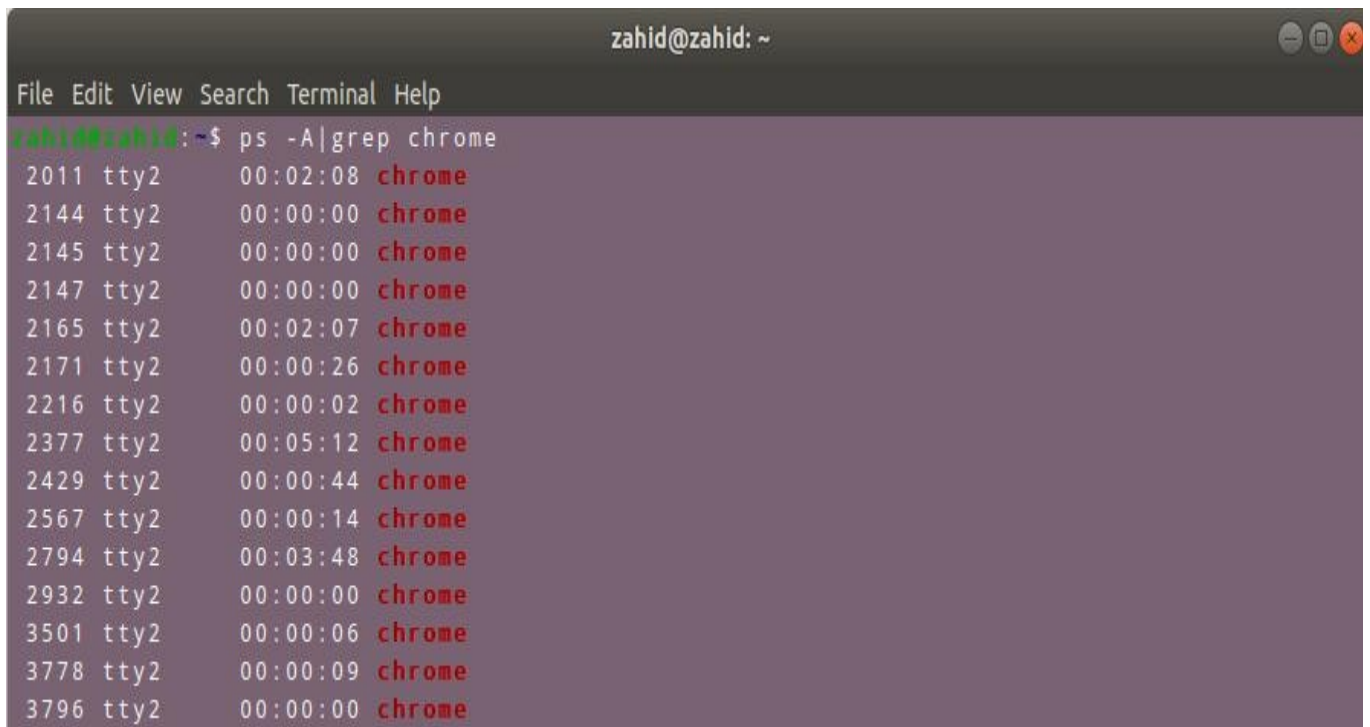
A terminal window showing the output of 'ps -A | less'. The output is displayed in a scrollable list format, showing system processes with their PIDs, TTYS, times, and commands.

```
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`



A terminal window titled 'zahid@zahid: ~' with a menu bar (File, Edit, View, Search, Terminal, Help). The command 'ps -A | grep chrome' has been entered and executed. The output lists 15 processes, all named 'chrome', with their respective PIDs, TTYs, and run times.

PID	TTY	Run Time	Process Name
2011	tty2	00:02:08	chrome
2144	tty2	00:00:00	chrome
2145	tty2	00:00:00	chrome
2147	tty2	00:00:00	chrome
2165	tty2	00:02:07	chrome
2171	tty2	00:00:26	chrome
2216	tty2	00:00:02	chrome
2377	tty2	00:05:12	chrome
2429	tty2	00:00:44	chrome
2567	tty2	00:00:14	chrome
2794	tty2	00:03:48	chrome
2932	tty2	00:00:00	chrome
3501	tty2	00:00:06	chrome
3778	tty2	00:00:09	chrome
3796	tty2	00:00:00	chrome

## 6) pstree:

The **ps**tree command is another way of visualizing processes. It displays them in tree form

```
zahid@zahid: ~  
File Edit View Search Terminal Help  
--  
$ pstree  
systemd--ModemManager--2*[{ModemManager}]  
--NetworkManager--dhclient  
--2*[{NetworkManager}]  
--accounts-daemon--2*[{accounts-daemon}]  
--acpid  
--avahi-daemon--avahi-daemon  
--bluetoothd  
--boltd--2*[{boltd}]  
--colord--2*[{colord}]  
--cron  
--cups-browsed--2*[{cups-browsed}]  
--cupsd  
--dbus-daemon  
--fwupd--4*[{fwupd}]  
--gdm3--gdm-session-wor--gdm-wayland-ses--gnome-session-b--gnome-shell--Xw+  
--ib+  
--24+  
--gsd-ally-settin--  
--gsd-clipboard--  
--gsd-color--7*[{+  
--gsd-datetime--2+  
--gsd-housekeepin--  
--gsd-keyboard--7+
```



## 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

```
zahid@zahid: ~  
File Edit View Search Terminal Help  
3712 ? 00:00:00 kworker/0:1-eve  
3745 ? 00:00:00 kworker/7:1-mm_  
3778 tty2 00:00:13 chrome  
3796 tty2 00:00:00 chrome  
3845 pts/0 00:00:00 top  
3846 ? 00:00:00 kworker/u16:0-e  
3854 ? 00:00:00 zeitgeist-daemo  
3870 ? 00:00:00 zeitgeist-fts  
3875 ? 00:00:00 gvfsd-metadata  
3896 ? 00:00:00 kworker/2:0-eve  
3897 ? 00:00:00 kworker/3:2  
3900 pts/0 00:00:00 htop  
3905 ? 00:00:00 kworker/6:1-eve  
3906 ? 00:00:00 kworker/6:2  
3935 ? 00:00:00 kworker/5:1-eve  
3936 ? 00:00:00 kworker/0:0-eve  
3937 ? 00:00:00 kworker/0:3-eve  
3948 ? 00:00:00 kworker/5:3-eve  
3998 pts/0 00:00:00 ps  
zahid@zahid:~$ kill 3998  
bash: kill: (3998) - No such process  
zahid@zahid:~$ kill 3948  
bash: kill: (3948) - Operation not permitted  
zahid@zahid:~$ kill 3269  
bash: kill: (3269) - Operation not permitted  
zahid@zahid:~$ sudo kill 3269  
[sudo] password for zahid:  
zahid@zahid:~$
```

## 08) r enice:

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*

```
zahid@zahid:~$ renice 19 2011  
2011 (process ID) old priority 0, new priority 19  
zahid@zahid:~$ renice 19 $(pgrep chrome)  
2011 (process ID) old priority 19, new priority 19  
2144 (process ID) old priority 0, new priority 19  
2145 (process ID) old priority 0, new priority 19  
2147 (process ID) old priority 0, new priority 19  
2165 (process ID) old priority 0, new priority 19  
2171 (process ID) old priority 0, new priority 19  
2216 (process ID) old priority 0, new priority 19  
2377 (process ID) old priority 0, new priority 19  
2429 (process ID) old priority 0, new priority 19  
2567 (process ID) old priority 0, new priority 19  
2794 (process ID) old priority 0, new priority 19  
2932 (process ID) old priority 0, new priority 19  
3501 (process ID) old priority 0, new priority 19  
3778 (process ID) old priority 0, new priority 19  
3796 (process ID) old priority 0, new priority 19  
zahid@zahid:~$
```