

1. Run top cmd and observe the display, noting the information shown about CPU usage, memory usage, and the list of running processes.

```
[jaysimman@vmware ~]$ top | head -10
top - 18:46:34 up 5:54, 3 users, load average: 1.61, 1.27, 0.57
Tasks: 239 total, 1 running, 238 sleeping, 0 stopped, 0 zombie
%Cpu(s): 35.3 us, 11.8 sy, 0.0 ni, 38.2 id, 0.0 wa, 11.8 hi, 2.9 si, 0.0 st
MiB Mem : 735.2 total, 66.2 free, 568.7 used, 216.3 buff/cache
MiB Swap: 2048.0 total, 1525.0 free, 523.0 used. 166.6 avail Mem

 PID USER      PR  NI    VIRT    RES    SHR S %CPU %MEM TIME+ COMMAND
 5268 jaysimm+ 20   0 226040  4096  3328 R 28.0  0.5  0:00.17 top
 774 root      20   0 457480  3284  2688 S  4.0  0.4  1:30.30 vmtoolsd
 1 root       20   0 173948 12824  8064 S  0.0  1.7  0:15.24 systemd
[jaysimman@vmware ~]$
```

2. Press q to exit top.

Ans: exit successfully.

3. Run top again and while in top

- a. Press M to sort processes by memory

```
top - 19:03:15 up 6:11, 3 users, load average: 0.30, 0.13, 0.24
Tasks: 234 total, 1 running, 233 sleeping, 0 stopped, 0 zombie
%Cpu(s): 4.6 us, 2.0 sy, 0.0 ni, 90.2 id, 0.0 wa, 2.6 hi, 0.7 si, 0.0 st
MiB Mem : 72.7/735.2 [|||||] 90.2% used
MiB Swap: 25.5/2048.0 [|||||] 1.2% used

 PID USER      PR  NI    VIRT    RES    SHR S %CPU %MEM TIME+ COMMAND
 5339 jaysimm+ 20   0 226040  4096  3328 R  1.9  0.5  0:00.46 top
 2531 jaysimm+ 20   0 389424 13176 10072 S  1.6  1.8  1:43.11 vmtoolsd
 774 root      20   0 457480  3284  2688 S  1.3  0.4  1:47.24 vmtoolsd
```

- b. Press P (uppercase) to sort processes by CPU usage.

```
 PID USER      PR  NI    VIRT    RES    SHR S %CPU %MEM TIME+ COMMAND
 2531 jaysimm+ 20   0 389424 13176 10072 S  1.9  1.8  1:46.10 vmtoolsd
 5339 jaysimm+ 20   0 226040  4096  3328 R  1.9  0.5  0:05.00 top
 774 root      20   0 457480  3284  2688 S  1.6  0.4  1:49.81 vmtoolsd
 2321 jaysimm+ 20   0 532468 3200  2816 S  0.3  0.4  0:03.59 goa-identity-se
 4949 root      20   0     0     0     0 I  0.3  0.0  0:03.09 kworker/0:4-ata_sff
 5049 root      20   0 241708  6016  4736 S  0.3  0.8  0:00.78 sssd_kcm
 5273 root      20   0     0     0     0 I  0.3  0.0  0:01.88 kworker/0:5-events_freezable_pwr_ef
 5293 jaysimm+ 20   0 20552  6896  4992 S  0.3  0.9  0:00.52 sshd
 1 root       20   0 173948 12824  8064 S  0.0  1.7  0:15.50 systemd
```

- c. Press N (uppercase) to sort processes by PID.

```
 PID USER      PR  NI    VIRT    RES    SHR S %CPU %MEM TIME+ COMMAND
 5339 jaysimm+ 20   0 226040  4096  3328 R  2.3  0.5  0:06.09 top
 5337 root      20   0     0     0     0 I  0.0  0.0  0:00.00 kworker/0:0-ata_sff
 5322 root      20   0     0     0     0 I  0.0  0.0  0:00.20 kworker/u512:2-events_unbound
 5294 jaysimm+ 20   0 224096  5376  3456 S  0.0  0.7  0:00.14 bash
 5293 jaysimm+ 20   0 20552  6896  4992 S  0.3  0.9  0:00.63 sshd
 5289 root      20   0 20376 11776  9856 S  0.0  1.6  0:00.22 sshd
 5288 root      20   0     0     0     0 I  0.0  0.0  0:00.47 kworker/0:1-events
 5274 root      20   0     0     0     0 I  0.0  0.0  0:00.13 kworker/u512:1-events_unbound
 5273 root      20   0     0     0     0 I  0.0  0.0  0:01.92 kworker/0:5-ata_sff
 5272 root      0 -20     0     0     0 I  0.0  0.0  0:00.06 kworker/0:2H-kblockd
 5173 jaysimm+ 20   0 224112  5504  3584 S  0.0  0.7  0:00.28 bash
 5152 jaysimm+ 39  19 877948 34288 16752 S  0.0  4.6  0:02.13 tracker-miner-f
 5121 jaysimm+ 20   0 526652 10324  7168 S  0.0  1.4  0:00.23 gvfsd-trash
 5100 jaysimm+ 20   0 688152 45568 33284 S  0.0  6.1  0:02.16 gnome-terminal-
 5049 root      20   0 241708  6016  4736 S  0.0  0.8  0:00.79 sssd_kcm
 4963 root      20   0     0     0     0 I  0.0  0.0  0:00.37 kworker/u512:0-events_unbound
 4949 root      20   0     0     0     0 I  0.3  0.0  0:03.33 kworker/0:4-events_freezable_pwr_ef
```

- d. Press T (uppercase) to sort processes by TIME+.

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
774	root	20	0	457480	3284	2688	S	1.3	0.4	1:51.18	vmtoolsd
2531	jaysimm+	20	0	389424	13176	10072	S	1.6	1.8	1:47.67	vmtoolsd
2241	jaysimm+	20	0	3539600	124224	49876	S	0.0	16.5	1:40.87	gnome-shell
1	root	20	0	173948	12824	8064	S	0.0	1.7	0:15.50	systemd
2508	jaysimm+	20	0	983640	21912	10816	S	0.0	2.9	0:15.13	gnome-software
45	root	20	0	0	0	0	S	0.0	0.0	0:11.14	kswapd0
33	root	39	19	0	0	0	S	0.0	0.0	0:09.23	khugepaged
5339	jaysimm+	20	0	226040	4096	3328	R	1.0	0.5	0:06.68	top
947	root	20	0	476396	9244	5812	S	0.0	1.2	0:05.94	NetworkManager
1161	root	20	0	164196	2952	2568	S	0.0	0.4	0:04.83	rsyslogd
2160	jaysimm+	20	0	24632	6292	4480	S	0.0	0.8	0:04.72	systemd
2797	jaysimm+	20	0	595820	5368	4100	S	0.0	0.7	0:04.25	ibus-extension-
16	root	20	0	0	0	0	S	0.0	0.0	0:04.07	ksoftirqd/0
614	root	20	0	31988	3712	3072	S	0.0	0.5	0:03.91	systemd-journal
2321	jaysimm+	20	0	532468	3200	2816	S	0.0	0.4	0:03.62	goa-identity-se
31	root	20	0	0	0	0	S	0.0	0.0	0:03.61	kcompactd0
4949	root	20	0	0	0	0	I	0.6	0.0	0:03.49	kworker/0:4-events
2865	root	20	0	566480	4048	3280	S	0.0	0.5	0:03.44	fwupd

4. While in top

- a. Press I to toggle first line (load summary line)

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
774	root	20	0	457480	3284	2688	S	1.6	0.4	1:53.07	vmtoolsd
2531	jaysimm+	20	0	389424	13176	10072	S	1.6	1.8	1:49.85	vmtoolsd
5339	jaysimm+	20	0	226040	4096	3328	R	1.9	0.5	0:08.97	top
2460	jaysimm+	20	0	603416	2880	2560	S	0.3	0.4	0:03.31	gsd-smartcard
5273	root	20	0	0	0	0	I	0.3	0.0	0:02.43	kworker/0:5-events

- b. Press t- swap the CPU displays to simple ASCII graphs that show the percentage of usage for each CPU

- c. Press "t" again to change the graph display to solid block characters

- d. Press "t" once more to remove the CPU display and task summary line completely.

MiB Mem : 72.7/735.2 [██████████] MiB Swap: 25.5/2048.0 [██████████]

- e. Press m to cycle the memory and swap memory lines through different display options.

MiB Mem : 72.7/735.2 [██████████] MiB Swap: 25.5/2048.0 [██████████]

- f. Press c – to toggle the command name and full command line.

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
774	root	20	0	457480	3284	2688	S	0.9	0.4	1:56.38	/usr/bin/vmtoolsd
2531	jaysimm+	20	0	389424	13176	10072	S	1.8	1.8	1:53.71	/usr/bin/vmtoolsd -n vmusr --blockFd 3 --uinput
5339	jaysimm+	20	0	226068	4096	3328	R	7.3	0.5	0:14.58	top
1161	root	20	0	164196	2952	2568	S	0.9	0.4	0:04.93	/usr/sbin/rsyslogd -n

5. While in top

a. Press d – to change the delay time to 2.0 and back to 3.0.

top - 15:08:44 up 2:20, 2 users, load average: 0.01, 0.09, 0.14												
Tasks: 259 total, 1 running, 258 sleeping, 0 stopped, 0 zombie												
%Cpu(s): 2.8 us, 0.8 sy, 0.0 ni, 95.7 id, 0.0 wa, 0.5 hi, 0.2 si, 0.0 st												
MiB Mem : 1741.8 total, 91.0 free, 1295.7 used, 530.8 buff/cache												
MiB Swap: 2048.0 total, 2038.7 free, 9.3 used. 446.1 avail Mem												
Change delay from 3.0 to 2.0												
PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND	
2241	jaysimm+	20	0	4088964	335024	116476	S	4.3	18.8	3:29.45	gnome-shell	
814	root	20	0	457392	8832	7424	S	0.7	0.5	0:24.53	vmtoolsd	
3126	jaysimm+	20	0	769600	60284	43528	S	0.7	3.4	0:22.84	gnome-terminal	
4788	root	20	0	226044	4352	3456	R	0.7	0.2	0:00.39	top	
2513	jaysimm+	20	0	394512	45844	32760	S	0.3	2.6	0:25.69	vmtoolsd	
4701	root	20	0	0	0	0	D	0.3	0.0	0:01.26	kworker/0:0+usb_hub_wq	
4722	root	20	0	0	0	0	I	0.3	0.0	0:00.36	kworker/1:6-mpt_poll_0	
1	root	20	0	175508	18232	10928	S	0.0	1.0	0:05.80	systemd	
2	root	20	0	0	0	0	S	0.0	0.0	0:00.07	kthreadd	
3	root	20	0	0	0	0	S	0.0	0.0	0:00.00	pool_workqueue	
4	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/R rcu_g	
5	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/R_rcu_p	
6	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/R_slub	
7	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/R_netns	
9	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/0:0H_events_highpri	
10	root	20	0	0	0	0	I	0.0	0.0	0:00.00	kworker/u512:0-events_unbound	
Change delay from 2.0 to 3.0												
PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND	
2241	jaysimm+	20	0	4081748	335024	116476	S	5.0	18.8	3:27.97	gnome-shell	
4788	root	20	0	226044	4352	3456	R	1.0	0.2	0:00.33	top	
566	root	20	0	0	0	0	S	0.5	0.0	0:01.32	xfsaild/dm-0	
2513	jaysimm+	20	0	391448	42772	32760	S	0.5	2.4	0:25.24	vmtoolsd	
1	root	20	0	175508	18232	10928	S	0.0	1.0	0:05.80	systemd	
2	root	20	0	0	0	0	S	0.0	0.0	0:00.07	kthreadd	
3	root	20	0	0	0	0	S	0.0	0.0	0:00.00	pool_workqueue	
4	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/R_rcu_g	
5	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/R_rcu_p	
6	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/R_slub	
7	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/R_netns	
9	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/0:0H_events_highpri	
10	root	20	0	0	0	0	I	0.0	0.0	0:00.00	kworker/u512:0-events_unbound	
11	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/R_mm_pe	
12	root	20	0	0	0	0	I	0.0	0.0	0:00.21	kworker/u512:1-netns	
13	root	20	0	0	0	0	I	0.0	0.0	0:00.00	rcu_tasks_kthre	
14	root	20	0	0	0	0	I	0.0	0.0	0:00.00	rcu_tasks_rude	
15	root	20	0	0	0	0	I	0.0	0.0	0:00.00	rcu_tasks_trace	

b. Press f to change the columns to be displayed in top result (select/unselect using d).

Fields Management for window 1:Def, whose current sort field is %CPU									
Navigate with Up/Dn, Right selects for move then <Enter> or Left commits, 'd' or <Space> toggles display, 's' sets sort. Use 'q' or <Esc> to end!									
* PID	= Process Id	P	= Last Used Cpu (SMP)	nsUTS	= UTS namespace Inode				
* USER	= Effective User Name	TIME	= CPU Time	LXC	= LXC container name				
* PR	= Priority	SWAP	= Swapped Size (KiB)	RSan	= RES Anonymous (KiB)				
* NI	= Nice Value	CODE	= Code Size (KiB)	RSfd	= RES File-based (KiB)				
* VIRT	= Virtual Image (KiB)	DATA	= Data+Stack (KiB)	RSlk	= RES Locked (KiB)				
* RES	= Resident Size (KiB)	nMaj	= Major Page Faults	RSsh	= RES Shared (KiB)				
* SHR	= Shared Memory (KiB)	nMin	= Minor Page Faults	CGNAME	= Control Group name				
* S	= Process Status	nDRT	= Dirty Pages Count	NU	= Last Used NUMA node				
* %CPU	= CPU Usage	WCHAN	= Sleeping in Function						
* %MEM	= Memory Usage (RES)	Flags	= Task Flags <sched.h>						
* TIME+	= CPU Time, hundredths	CGROUPS	= Control Groups						
* COMMAND	= Command Name/Line	SUPGIDS	= Supp Groups IDs						
PPID	= Parent Process pid	SUPGRPS	= Supp Groups Names						
UID	= Effective User Id	TGID	= Thread Group Id						
RUID	= Real User Id	OOMa	= OOMEM Adjustment						
RUSER	= Real User Name	OOMs	= OOMEM Score current						
SUID	= Saved User Id	ENVIRON	= Environment vars						
SUSER	= Saved User Name	vMj	= Major Faults delta						
GID	= Group Id	vMn	= Minor Faults delta						
GROUP	= Group Name	USED	= Res+Swap Size (KiB)						

* **UID** = Effective User Id

UID = Effective User Id

c. Press z to change color of the display.

top - 15:12:07 up 2:23, 2 users, load average: 0.58, 0.20, 0.15
Tasks: 259 total, 1 running, 258 sleeping, 0 stopped, 0 zombie
%Cpu(s): 2.7 us, 0.7 sy, 0.0 ni, 95.5 id, 0.2 wa, 0.5 hi, 0.2 si, 0.0 st
MiB Mem : 1741.8 total, 90.8 free, 1295.9 used, 530.8 buff/cache
MiB Swap: 2048.0 total, 2038.7 free, 9.3 used. 445.8 avail Mem
PID USER PR NI VIRT RES SHR S %CPU %MEM TIME+ COMMAND
2241 jaysimm+ 20 0 4088948 335040 116476 S 4.5 18.8 3:34.36 gnome-shell
814 root 20 0 457392 8832 7424 S 0.5 0.5 0:25.17 vmtoolsd
2513 jaysimm+ 20 0 393108 44292 32760 S 0.5 2.5 0:26.67 vmtoolsd
3126 jaysimm+ 20 0 769600 60284 43528 S 0.5 3.4 0:23.35 gnome-terminal-
4016 apache 20 0 1441152 15260 5760 S 0.5 0.9 0:01.37 httpd
4788 root 20 0 226044 4352 3456 R 0.5 0.2 0:00.56 top
1 root 20 0 175508 18232 10928 S 0.0 1.0 0:05.80 systemd
2 root 20 0 0 0 0 S 0.0 0.0 0:00.07 kthreadd
3 root 20 0 0 0 0 I 0.0 0.0 0:00.00 pool_workqueue_
4 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-rcu_g
5 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-rcu_p
6 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-slub_
7 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-netns
9 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker@0:0H-events_highpri
10 root 20 0 0 0 0 I 0.0 0.0 0:00.00 kworker/u512:0-events_unbound
11 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-mm_pe
12 root 20 0 0 0 0 I 0.0 0.0 0:00.21 kworker/u512:1-netns
13 root 20 0 0 0 0 I 0.0 0.0 0:00.00 rcu_tasks_kthre
14 root 20 0 0 0 0 I 0.0 0.0 0:00.00 rcu_tasks_rude_

d. Press n – to list n number of lines (e.g. press n and then enter 10 to display only 10 lines).

```

top - 15:13:07 up 2:24, 2 users, load average: 0.86, 0.36, 0.21
Tasks: 259 total, 1 running, 258 sleeping, 0 stopped, 0 zombie
%Cpu(s): 4.7 us, 0.7 sy, 0.0 ni, 93.8 id, 0.2 wa, 0.2 hi, 0.2 si, 0.0 st
MiB Mem : 1741.8 total, 90.8 free, 1295.9 used, 530.8 buff/cache
MiB Swap: 2048.0 total, 2038.7 free, 9.3 used. 445.8 avail Mem
Maximum tasks = 10, change to (0 is unlimited)

```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
2241	jaysimm+	20	0	4081748	335040	116476	S	8.4	18.8	3:38.01	gnome-shell
4788	root	20	0	226044	4352	3456	R	1.0	0.2	0:01.02	top
814	root	20	0	457392	8832	7424	S	0.5	0.5	0:25.36	vmtoolsd
2513	jaysimm+	20	0	393244	44420	32760	S	0.5	2.5	0:27.02	vmtoolsd
3126	jaysimm+	20	0	769600	60284	43528	S	0.5	3.4	0:23.69	gnome-terminal-
4722	root	20	0	0	0	0	I	0.5	0.0	0:00.54	kworker/1:6-events_freezable_pwr_ef
1	root	20	0	175508	18232	10928	S	0.0	1.0	0:05.80	systemd
2	root	20	0	0	0	0	S	0.0	0.0	0:00.07	khreadd
3	root	20	0	0	0	0	S	0.0	0.0	0:00.00	pool_workqueue_-
4	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/R-rcu_g

- i. Press = to get the normal display back.

```

top - 15:14:14 up 2:25, 2 users, load average: 0.95, 0.49, 0.27
Tasks: 259 total, 2 running, 257 sleeping, 0 stopped, 0 zombie
%Cpu(s): 3.5 us, 1.2 sy, 0.0 ni, 93.3 id, 1.0 wa, 1.0 hi, 0.0 si, 0.0 st
MiB Mem : 1741.8 total, 90.8 free, 1295.9 used, 530.8 buff/cache
MiB Swap: 2048.0 total, 2038.7 free, 9.3 used. 445.8 avail Mem

```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
2241	jaysimm+	20	0	4088948	335040	116476	S	5.4	18.8	3:39.24	gnome-shell
2513	jaysimm+	20	0	394956	46340	32760	S	1.5	2.6	0:27.36	vmtoolsd
814	root	20	0	457392	8832	7424	S	1.0	0.5	0:25.57	vmtoolsd
3126	jaysimm+	20	0	769600	60284	43528	S	1.0	3.4	0:23.80	gnome-terminal-
17	root	20	0	0	0	0	R	0.5	0.0	0:00.83	rcu_preempt
4018	apache	20	0	1572288	19532	5632	S	0.5	1.1	0:01.59	httpd
4788	root	20	0	226044	4352	3456	R	0.5	0.2	0:01.07	top
1	root	20	0	175508	18232	10928	S	0.0	1.0	0:05.80	systemd
2	root	20	0	0	0	0	S	0.0	0.0	0:00.07	khreadd
3	root	20	0	0	0	0	S	0.0	0.0	0:00.00	pool_workqueue_-
4	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/R-rcu_g
5	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/R-rcu_p
6	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/R-slub_-
7	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/R-netns
9	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/0:0H-events_highpri
10	root	20	0	0	0	0	I	0.0	0.0	0:00.00	kworker/u512:0-events_unbound
11	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/R-mm_pe

6. While in top

- a. Press u – and give the username to filter the process by username (press u -enter root to see all processes run by root etc).

```

top - 15:15:57 up 2:27, 2 users, load average: 0.91, 0.63, 0.35
Tasks: 259 total, 1 running, 258 sleeping, 0 stopped, 0 zombie
%Cpu(s): 4.5 us, 0.7 sy, 0.0 ni, 94.3 id, 0.0 wa, 0.5 hi, 0.0 si, 0.0 st
MiB Mem : 1741.8 total, 90.8 free, 1295.9 used, 530.8 buff/cache
MiB Swap: 2048.0 total, 2038.7 free, 9.3 used. 445.8 avail Mem

```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
2241	jaysimm+	20	0	4081764	335044	116476	S	7.9	18.8	3:48.66	gnome-shell
2765	jaysimm+	20	0	526600	13228	6656	S	1.0	0.7	0:11.98	ibus-daemon
3126	jaysimm+	20	0	769600	60284	43528	S	0.5	3.4	0:24.56	gnome-terminal-
2156	jaysimm+	20	0	24620	14740	10880	S	0.0	0.8	0:01.36	systemd
2158	jaysimm+	20	0	109884	7692	1792	S	0.0	0.4	0:00.00	(sd-pam)
2174	jaysimm+	20	0	452936	6300	5504	S	0.0	0.4	0:00.25	gnome-keyring-d
2178	jaysimm+	20	0	374144	7776	5248	S	0.0	0.4	0:00.00	gdm-wayland-ses
2181	jaysimm+	20	0	10704	4480	4096	S	0.0	0.3	0:00.08	dbus-broker-lau
2183	jaysimm+	20	0	6992	4608	2432	S	0.0	0.3	0:00.66	dbus-broker
2187	jaysimm+	20	0	513144	18976	14976	S	0.0	1.1	0:00.08	gnome-session-b
2220	jaysimm+	20	0	303800	7616	5120	S	0.0	0.4	0:00.00	gnome-session-c
2222	jaysimm+	20	0	874264	22524	15616	S	0.0	1.3	0:00.37	gnome-session-b
2254	jaysimm+	20	0	452576	11956	7040	S	0.0	0.7	0:00.15	gvfsd

- b. Press o to enter the filter option.

- i. Type COMMAND=yourProcessname and press enter

top - 15:18:26 up 2:29, 2 users, load average: 0.11, 0.40, 0.30										
Tasks: 259 total, 1 running, 258 sleeping, 0 stopped, 0 zombie										
%Cpu(s): 5.2 us, 1.0 sy, 0.0 ni, 91.6 id, 1.6 wa, 0.5 hi, 0.0 si, 0.0 st										
MiB Mem : 1741.8 total, 90.8 free, 1295.9 used, 530.8 buff/cache										
MiB Swap: 2048.0 total, 2038.7 free, 9.3 used. 445.9 avail Mem										
add filter #1 (ignoring case) as: [!]FLD?VAL COMMAND=gnome-shell										
PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+ COMMAND
2241	jaysimm+	20	0	4088948	335084	116476	S	7.4	18.8	4:04.69 gnome-shell
4788	root	20	0	235356	7296	5888	R	2.1	0.4	0:02.31 top
3126	jaysimm+	20	0	769600	60284	43528	S	1.1	3.4	0:25.79 gnome-terminal-
4017	apache	20	0	1441152	15204	5760	S	1.1	0.9	0:01.52 httpd
1	root	20	0	175508	18232	10928	S	0.0	1.0	0:05.80 systemd
2	root	20	0	0	0	0	S	0.0	0.0	0:00.07 kthreadd
3	root	20	0	0	0	0	S	0.0	0.0	0:00.00 pool_workqueue_
4	root	0	-20	0	0	0	I	0.0	0.0	0:00.00 kworker/R-rcu_g
5	root	0	-20	0	0	0	I	0.0	0.0	0:00.00 kworker/R-rcu_p
6	root	0	-20	0	0	0	I	0.0	0.0	0:00.00 kworker/R-slub_
7	root	0	-20	0	0	0	I	0.0	0.0	0:00.00 kworker/R-netns
9	root	0	-20	0	0	0	I	0.0	0.0	0:00.00 kworker/0:0H-events_highpri
10	root	20	0	0	0	0	I	0.0	0.0	0:00.00 kworker/u512:0-events_unbound

1. COMMAND=sleep.

top - 15:20:22 up 2:31, 2 users, load average: 0.37, 0.37, 0.30										
Tasks: 260 total, 1 running, 259 sleeping, 0 stopped, 0 zombie										
%Cpu(s): 3.2 us, 0.5 sy, 0.0 ni, 94.7 id, 1.0 wa, 0.5 hi, 0.2 si, 0.0 st										
MiB Mem : 1741.8 total, 90.8 free, 1295.8 used, 530.9 buff/cache										
MiB Swap: 2048.0 total, 2038.7 free, 9.3 used. 445.9 avail Mem										
PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+ COMMAND
4808	root	20	0	220952	1920	1920	S	0.0	0.1	0:00.03 sleep

2. COMMAND=gnome.

top - 15:21:43 up 2:33, 2 users, load average: 0.14, 0.31, 0.27										
Tasks: 260 total, 1 running, 259 sleeping, 0 stopped, 0 zombie										
%Cpu(s): 3.2 us, 0.7 sy, 0.0 ni, 94.5 id, 0.8 wa, 0.7 hi, 0.2 si, 0.0 st										
MiB Mem : 1741.8 total, 90.8 free, 1295.8 used, 530.9 buff/cache										
MiB Swap: 2048.0 total, 2038.7 free, 9.3 used. 445.9 avail Mem										
PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+ COMMAND
2241	jaysimm+	20	0	4081748	335040	116476	S	5.0	18.8	4:29.78 gnome-shell
3126	jaysimm+	20	0	769600	60284	43528	S	0.3	3.4	0:27.54 gnome-terminal-
2174	jaysimm+	20	0	452936	6300	5504	S	0.0	0.4	0:00.25 gnome-keyring-d
2187	jaysimm+	20	0	513144	18976	14976	S	0.0	1.1	0:00.08 gnome-session-b
2220	jaysimm+	20	0	303800	7616	5120	S	0.0	0.4	0:00.00 gnome-session-c
2222	jaysimm+	20	0	874264	22524	15616	S	0.0	1.3	0:00.37 gnome-session-b
2293	jaysimm+	20	0	586468	22004	16512	S	0.0	1.2	0:00.42 gnome-shell-cal
2472	jaysimm+	20	0	977800	110416	47224	S	0.0	6.2	0:07.13 gnome-software

3. COMMAND=kworker.

```

top - 15:22:47 up 2:34, 2 users, load average: 0.21, 0.28, 0.27
Tasks: 260 total, 2 running, 258 sleeping, 0 stopped, 0 zombie
%Cpu(s): 3.0 us, 0.7 sy, 0.0 ni, 95.8 id, 0.0 wa, 0.5 hi, 0.0 si, 0.0 st
MiB Mem : 1741.8 total, 106.9 free, 1279.7 used, 530.9 buff/cache
MiB Swap: 2048.0 total, 2038.7 free, 9.3 used. 462.1 avail Mem

PID USER PR NI VIRT RES SHR S %CPU %MEM TIME+ COMMAND
 4 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-rcu_g
 5 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-rcu_p
 6 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-slub_
 7 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-netns
 9 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/0:0H-events_highpri
10 root 20 0 0 0 0 I 0.0 0.0 0:00.00 kworker/u512:0-events_unbound
11 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-mm_pe
12 root 20 0 0 0 0 I 0.0 0.0 0:00.21 kworker/u512:1-netns
27 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/1:0H-events_highpri
33 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-inet_
41 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-write
46 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-crypt
47 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-kinte
48 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-kblock
49 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-blkcg
51 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-tpm_d
52 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-md_
53 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-md_b
54 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-edac-

```

- ii. Type %CPU>anyvalue and press enter.

```

top - 15:24:27 up 2:35, 2 users, load average: 0.04, 0.20, 0.24
Tasks: 260 total, 1 running, 259 sleeping, 0 stopped, 0 zombie
%Cpu(s): 3.2 us, 0.5 sy, 0.0 ni, 94.5 id, 1.2 wa, 0.5 hi, 0.2 si, 0.0 st
MiB Mem : 1741.8 total, 106.9 free, 1279.7 used, 530.9 buff/cache
MiB Swap: 2048.0 total, 2038.7 free, 9.3 used. 462.1 avail Mem
add filter #3 (ignoring case) as: [!]FLD?VAL %CPU>0.1

PID USER PR NI VIRT RES SHR S %CPU %MEM TIME+ COMMAND
4722 root 20 0 0 0 0 I 0.3 0.0 0:00.89 kworker/1:6-mm_percpu_wq

```

- iii. Type %MEM=anyvalue and press enter.

```

top - 15:26:35 up 2:37, 2 users, load average: 0.00, 0.12, 0.20
Tasks: 259 total, 2 running, 257 sleeping, 0 stopped, 0 zombie
%Cpu(s): 3.7 us, 0.7 sy, 0.0 ni, 94.3 id, 0.8 wa, 0.5 hi, 0.0 si, 0.0 st
MiB Mem : 1741.8 total, 106.9 free, 1279.7 used, 530.9 buff/cache
MiB Swap: 2048.0 total, 2038.7 free, 9.3 used. 462.1 avail Mem
add filter #1 (case sensitive) as: [!]FLD?VAL %MEM=1.9

top - 15:27:42 up 2:39, 2 users, load average: 0.00, 0.10, 0.18
Tasks: 259 total, 1 running, 258 sleeping, 0 stopped, 0 zombie
%Cpu(s): 1.7 us, 0.5 sy, 0.0 ni, 96.5 id, 0.7 wa, 0.5 hi, 0.2 si, 0.0 st
MiB Mem : 1741.8 total, 106.9 free, 1279.7 used, 530.9 buff/cache
MiB Swap: 2048.0 total, 2038.7 free, 9.3 used. 462.1 avail Mem

PID USER PR NI VIRT RES SHR S %CPU %MEM TIME+ COMMAND
2791 jaysimm+ 20 0 595820 33072 20472 S 0.0 1.9 0:03.09 ibus-extension-
3172 jaysimm+ 39 19 877968 33984 19596 S 0.0 1.9 0:01.08 tracker-miner-f

```

- iv. Type !USER=root and press enter.

```

top - 15:35:14 up 2:46, 2 users, load average: 0.25, 0.14, 0.17
Tasks: 259 total, 1 running, 258 sleeping, 0 stopped, 0 zombie
%Cpu(s): 2.2 us, 0.7 sy, 0.0 ni, 96.5 id, 0.2 wa, 0.3 hi, 0.2 si, 0.0 st
MiB Mem : 1741.8 total, 102.9 free, 1283.7 used, 530.9 buff/cache
MiB Swap: 2048.0 total, 2038.7 free, 9.3 used. 458.1 avail Mem
add filter #1 (ignoring case) as: [!]FLD?VAL !USER=root

```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
2241	jaysimm+	20	0	4088964	335200	116476	S	3.0	18.8	5:18.03	gnome-shell
814	root	20	0	457392	8832	7424	S	1.0	0.5	0:29.59	vmtoolsd
2513	jaysimm+	20	0	394956	46340	32760	S	0.3	2.6	0:32.29	vmtoolsd
2846	root	20	0	566472	30952	21564	S	0.3	1.7	0:01.24	fwupd
3126	jaysimm+	20	0	769600	60284	43528	S	0.3	3.4	0:31.69	gnome-terminal-
4816	root	20	0	226044	4352	3456	R	0.3	0.2	0:03.55	top

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
2241	jaysimm+	20	0	4081748	335156	116476	S	4.3	18.8	5:20.71	gnome-shell
3126	jaysimm+	20	0	769600	60284	43528	S	1.0	3.4	0:31.90	gnome-terminal-
2513	jaysimm+	20	0	394956	46340	32760	S	0.3	2.6	0:32.50	vmtoolsd
783	dbus	20	0	10996	4936	4096	S	0.0	0.3	0:00.14	dbus-broker-lau
784	dbus	20	0	8088	5720	2304	S	0.0	0.3	0:01.10	dbus-broker
785	avahi	20	0	16868	6656	5760	S	0.0	0.4	0:00.15	avahi-daemon
790	libstor+	20	0	2704	1920	1792	S	0.0	0.1	0:00.10	lsmd
792	polkitd	20	0	2579608	23388	15324	S	0.0	1.3	0:02.04	polkitd
795	rtkit	21	1	154124	3456	3200	S	0.0	0.2	0:00.22	rtkit-daemon
808	chrony	20	0	84856	4104	3456	S	0.0	0.2	0:00.74	chronyd
820	avahi	20	0	16596	1960	1152	S	0.0	0.1	0:00.00	avahi-daemon
2049	colord	20	0	530420	13996	9820	S	0.0	0.8	0:00.17	colord
2156	jaysimm+	20	0	24620	14740	10880	S	0.0	0.8	0:01.36	systemd
2158	jaysimm+	20	0	109884	7692	1792	S	0.0	0.4	0:00.00	(sd-pam)
2174	jaysimm+	20	0	452936	6300	5504	S	0.0	0.4	0:00.25	gnome-keyring-d
2178	jaysimm+	20	0	374144	7776	5248	S	0.0	0.4	0:00.00	gdm-wayland-ses
2181	jaysimm+	20	0	10704	4480	4096	S	0.0	0.3	0:00.08	dbus-broker-lau

v. Type USER=username and press enter.

```

top - 15:37:14 up 2:48, 2 users, load average: 0.45, 0.23, 0.19
Tasks: 259 total, 1 running, 258 sleeping, 0 stopped, 0 zombie
%Cpu(s): 3.5 us, 1.0 sy, 0.0 ni, 94.0 id, 0.8 wa, 0.5 hi, 0.2 si, 0.0 st
MiB Mem : 1741.8 total, 102.7 free, 1283.9 used, 530.9 buff/cache
MiB Swap: 2048.0 total, 2038.7 free, 9.3 used. 457.8 avail Mem

```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
45	root	39	19	0	0	0	S	0.3	0.0	0:07.56	khugepaged
4815	root	20	0	0	0	0	I	0.3	0.0	0:00.44	kworker/1:3-events_freezable_pwr_ef
4816	root	20	0	226044	4352	3456	R	0.3	0.2	0:03.95	top
4836	root	20	0	0	0	0	I	0.3	0.0	0:00.25	kworker/0:0-events
1	root	20	0	175508	18232	10928	S	0.0	1.0	0:05.88	systemd
2	root	20	0	0	0	0	S	0.0	0.0	0:00.07	kthreadd
3	root	20	0	0	0	0	S	0.0	0.0	0:00.00	pool_workqueue_
4	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/R-rcu_g
5	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/R-rcu_p
6	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/R-slub_
7	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/R-netns

7. While in top

a. Press k – to kill a process (create sleep process to run bg and kill it).

```

top - 15:42:29 up 2:53, 2 users, load average: 0.33, 0.27, 0.21
Tasks: 261 total, 1 running, 260 sleeping, 0 stopped, 0 zombie
%Cpu(s): 2.7 us, 1.0 sy, 0.0 ni, 94.5 id, 1.0 wa, 0.7 hi, 0.2 si, 0.0 st
MiB Mem : 1741.8 total, 118.0 free, 1268.6 used, 530.9 buff/cache
MiB Swap: 2048.0 total, 2038.7 free, 9.3 used. 473.1 avail Mem
PID to signal/kill [default pid = 4843] 4843

```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
4843	root	20	0	220952	1920	1920	S	0.0	0.1	0:00.00	sleep

b. Enter signal 15 and 9 and check.

```

top - 15:56:07 up 3:07, 2 users, load average: 1.11, 0.53, 0.30
Tasks: 261 total, 1 running, 260 sleeping, 0 stopped, 0 zombie
%Cpu(s): 2.2 us, 0.5 sy, 0.0 ni, 96.3 id, 0.5 wa, 0.5 hi, 0.0 si, 0.0 st
MiB Mem : 1741.8 total, 113.0 free, 1273.6 used, 530.9 buff/cache
MiB Swap: 2048.0 total, 2038.7 free, 9.3 used. 468.1 avail Mem
Send pid 4865 signal [15/sigterm] 15

```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
2241	jaysimm+	20	0	4081748	336216	116476	S	3.6	18.9	6:37.86	gnome-shell
784	dbus	20	0	8088	5720	2304	S	0.3	0.3	0:01.18	dbus-broker
814	root	20	0	457392	8832	7424	S	0.3	0.5	0:34.11	vmtoolsd
2513	jaysimm+	20	0	394956	46340	32760	S	0.3	2.6	0:36.98	vmtoolsd
3126	jaysimm+	20	0	769600	60412	43528	S	0.3	3.4	0:38.71	gnome-terminal-
4014	root	20	0	21104	6852	4480	S	0.3	0.4	0:00.46	httpd
4722	root	20	0	0	0	0	I	0.3	0.0	0:01.94	kworker/1:6-mm_percpu_wq
4865	root	20	0	226044	4096	3328	R	0.3	0.2	0:02.18	top
1	root	20	0	175508	18232	10928	S	0.0	1.0	0:06.09	systemd
2	root	20	0	0	0	0	S	0.0	0.0	0:00.07	kthreadd
3	root	20	0	0	0	0	S	0.0	0.0	0:00.00	pool_workqueue_
4	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/R-rcu_g
5	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/R-rcu_p

```

Send pid 4914 signal [15/sigterm] 9

```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
2241	jaysimm+	20	0	4081748	336216	116476	S	55.6	18.9	6:40.81	gnome-shell
4914	root	20	0	226044	4352	3456	R	11.1	0.2	0:00.03	top
814	root	20	0	457392	8960	7424	S	5.6	0.5	0:34.35	vmtoolsd
3126	jaysimm+	20	0	769600	60412	43528	S	5.6	3.4	0:38.96	gnome-terminal-
1	root	20	0	175508	18232	10928	S	0.0	1.0	0:06.09	systemd
2	root	20	0	0	0	0	S	0.0	0.0	0:00.07	kthreadd
3	root	20	0	0	0	0	S	0.0	0.0	0:00.00	pool_workqueue_
4	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/R-rcu_g

c. Kill the top process itself.

```

Tasks: 262 total, 2 running, 260 sleeping, 0 stopped, 0 zombie
%Cpu(s): 6.1 us, 15.5 sy, 6.6 ni, 70.7 id, 0.0 wa, 1.1 hi, 0.0 si, 0.0 st
MiB Mem : 1741.8 total, 77.6 free, 1309.2 used, 530.8 buff/cache
MiB Swap: 2048.0 total, 2038.7 free, 9.3 used. 432.5 avail Mem
Send pid 4918 signal [15/sigterm] 15

```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
4919	root	39	19	379084	69768	31380	S	43.5	3.9	0:03.53	dnf
2241	jaysimm+	20	0	4081748	336216	116476	S	8.7	18.9	6:46.03	gnome-shell
17	root	20	0	0	0	0	I	1.1	0.0	0:01.13	rcu_preempt
814	root	20	0	457392	8960	7424	S	1.1	0.5	0:34.57	vmtoolsd
2513	jaysimm+	20	0	394956	46340	32760	S	1.1	2.6	0:37.49	vmtoolsd
3126	jaysimm+	20	0	769600	60412	43528	R	1.1	3.4	0:39.50	gnome-terminal-
4918	root	20	0	226044	4224	3456	R	1.1	0.2	0:00.17	top
1	root	20	0	175508	18232	10928	S	0.0	1.0	0:06.13	systemd
2	root	20	0	0	0	0	S	0.0	0.0	0:00.07	kthreadd
3	root	20	0	0	0	0	S	0.0	0.0	0:00.00	pool_workqueue_
4	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/R-rcu_g
5	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/R-rcu_p
6	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/R-slub_
7	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/R-netns
9	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/0:0H-events_highpri
10	root	20	0	0	0	0	I	0.0	0.0	0:00.00	kworker/u512:0-events_unbound
11	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/R-mm_pe
12	root	20	0	0	0	0	I	0.0	0.0	0:00.22	kworker/u512:1-netns
13	root	20	0	0	0	0	I	0.0	0.0	0:00.00	rcu_tasks_kthre
14	root	20	0	0	0	0	I	0.0	0.0	0:00.00	rcu_tasks_rude_
15	root	20	0	0	0	0	I	0.0	0.0	0:00.00	rcu_tasks_trace
16	root	20	0	0	0	0	S	0.0	0.0	0:00.61	ksoftirqd/0

8. Create a process with nice value

a. nice -n 10 sleep 100 & and Run ps -eo pid,nice,cmd | grep sleep.

```
[root@localhost jaysimman]# nice -n 10 sleep 100 &
[1] 4955
[root@localhost jaysimman]# ps -eo pid,nice,cmd | grep sleep
 4955 10 sleep 100
 4957  0 grep --color=auto sleep
[root@localhost jaysimman]# █
```

b. nice -n 8 cat and Run ps -eo pid,nice,cmd | grep cat .

```
[jaysimman@localhost ~]$ ps -eo pid,nice,cmd| grep cat
 2225  0 /usr/bin/gjs /usr/share/gnome-shell/org.gnome.Shell.Notifications
 2252  0 /usr/libexec/gsd-print-notifications
 2300  0 /usr/bin/gnome-software --gapplication-service
 2890  8 cat
 2920  0 grep --color=auto cat
[jaysimman@localhost ~]$ █
```

c. nice -n -9 seq 20 (become root) and Run ps -eo pid,nice,cmd | grep seq.

```
[jaysimman@localhost ~]$ ps -eo pid,nice,cmd|grep sed
 758 -4 /usr/sbin/sedispatch
 3544  0 grep --color=auto sed
[jaysimman@localhost ~]$ █
```

9. Change the nice value of a running process using – renice niceval pidofprocess.

```
[jaysimman@localhost ~]$ sudo renice -1 3340
[sudo] password for jaysimman:
3340 (process ID) old priority 0, new priority -1
[jaysimman@localhost ~]$ █
```

10. Check the change using ps -f pidofprocess.

```
[jaysimman@localhost ~]$ ps -f 3340
UID      PID    PPID   C STIME TTY      STAT    TIME CMD
jaysimm+  3340    3310  0 16:05 pts/0      S<     0:00 sleep 200
[jaysimman@localhost ~]$ █
```