

LAB 13: Analyze system status

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System environment for analyzing

Window tool	Linux command	Remarks
Process Explorer		
CurrPorts		
Process Monitor		
Tcpview		

Select one model and exercise

[A]: Execute Process Explorer and analyze the system status

1 Invesgate & practice Linux command or package to check

what process in system, which process is using higher memory or

CPU, how long a process is running, List of running backgrounds,

process ID

statistics of virtual memory, kernerl threads, disks, system processes,

I/O blocks, interrupts, CPU activity

top – Linux Process Monitoring

- Dipslay all the running and active real-time processes in ordered list and updates it regularly.

- CPU usage, Memory usage, Swap Memory, Cache Size, Buffer Size, Process PID, User, Commands and much more. It also shows high memory and cpu utilization of a running processess.

```
khoab2014926@khoab2014926-VirtualBox: ~  
erbird Mail 7:13 up 52 min, 1 user, load average: 2,06, 2,99, 3,59  
Tasks: 227 total, 3 running, 224 sleeping, 0 stopped, 0 zombie  
%Cpu(s): 51,4 us, 21,9 sy, 0,0 ni, 26,1 id, 0,0 wa, 0,0 hi, 0,7 si, 0,0 st  
MiB Mem : 2940,4 total, 80,2 free, 2108,3 used, 751,9 buff/cache  
MiB Swap: 3220,0 total, 2349,4 free, 870,6 used. 629,0 avail Mem  
  
PID USER PR NI VIRT RES SHR S %CPU %MEM TIME+ COMMAND  
8235 khoab20+ 20 0 4111048 362228 115676 R 54,5 12,0 6:16.91 firefox  
8924 khoab20+ 20 0 2723060 207584 80640 S 27,4 6,9 2:08.82 Isolate+  
1537 khoab20+ 20 0 4536208 161108 52108 S 18,8 5,4 7:31.38 gnome-s+  
9753 khoab20+ 20 0 2523212 189784 63316 S 12,5 6,3 0:15.64 Isolate+  
10215 khoab20+ 20 0 2452220 125508 65180 S 3,0 4,2 0:10.40 Isolate+  
9782 khoab20+ 20 0 2459772 101788 76444 S 2,3 3,4 0:13.74 Isolate+  
10722 khoab20+ 20 0 2446880 110908 58800 R 2,3 3,7 0:08.07 Isolate+  
2148 khoab20+ 20 0 223772 22272 18488 S 2,0 0,7 0:37.68 Xwayland  
10731 khoab20+ 20 0 10,4g 150288 69188 S 2,0 5,0 0:12.39 Isolate+  
10018 khoab20+ 20 0 2397760 72148 59004 S 1,7 2,4 0:04.62 Isolate+  
8908 khoab20+ 20 0 2724032 245988 78964 S 1,3 8,2 0:54.22 Isolate+  
9141 khoab20+ 20 0 2416460 85560 69272 S 1,3 2,8 0:05.23 Isolate+  
9143 khoab20+ 20 0 2417912 79132 68504 S 1,3 2,6 0:05.81 Isolate+  
10303 khoab20+ 20 0 2436164 102788 62504 S 1,3 3,4 0:10.70 Isolate+  
10412 khoab20+ 20 0 2400804 74288 60024 S 1,3 2,5 0:04.36 Isolate+  
10727 khoab20+ 20 0 2399776 74852 60308 S 1,3 2,5 0:04.23 Isolate+  
813 mysql 20 0 1783732 49832 2176 S 1,0 1,7 0:35.45 mysqld
```

Check the process status in real time with the following command.

- Through this process, it is possible to check abnormalities in the backrunning daemon

```
khoab2014926@khoab2014926-VirtualBox:~$ top | grep firefox
 8235 khoab20+  20    0 4111016 369332 109680 S  11,1  12,3   6:50.06 firefox
 8235 khoab20+  20    0 4111016 369568 109680 S  21,9  12,3   6:50.72 firefox
 8235 khoab20+  20    0 4111016 366096 109680 S  10,9  12,2   6:51.05 firefox
 8235 khoab20+  20    0 4110312 359060 108980 R  30,0  11,9   6:51.96 firefox
 8235 khoab20+  20    0 4110312 359444 108980 S  53,6  11,9   6:53.58 firefox
 8235 khoab20+  20    0 4111016 360840 109620 S  32,6  12,0   6:54.57 firefox
 8235 khoab20+  20    0 4111016 360568 109620 S   9,6  12,0   6:54.86 firefox
 8235 khoab20+  20    0 4110640 361936 109620 R  65,2  12,0   6:56.83 firefox

khoab2014926@khoab2014926-VirtualBox:~$ sudo apt-get install htop
[sudo] password for khoab2014926:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Suggested packages:
  lm-sensors
The following NEW packages will be installed:
  htop
0 upgraded, 1 newly installed, 0 to remove and 29 not upgraded.
Need to get 128 kB of archives.
After this operation, 342 kB of additional disk space will be used.
Get:1 http://vn.archive.ubuntu.com/ubuntu jammy/main amd64 htop amd64 3.0.5-7buil
ld2 [128 kB]
Fetched 128 kB in 0s (825 kB/s)
Selecting previously unselected package htop.
(Reading database ... 203231 files and directories currently installed.)
Preparing to unpack .../htop_3.0.5-7build2_amd64.deb ...
Unpacking htop (3.0.5-7build2) ...
Setting up htop (3.0.5-7build2) ...
Processing triggers for mailcap (3.70+nmu1ubuntu1) ...
Processing triggers for desktop-file-utils (0.26-1ubuntu3) ...
Processing triggers for hicolor-icon-theme (0.17-2) ...
```

Htop – Linux Process Monitoring

```
0[|||||||] 12.7%] Tasks: 164, 1027 thr; 1 running
1[|||||||] 11.8%] Load average: 1.44 1.52 2.62
Mem[|||||||] 2.15G/2.87G] Uptime: 01:00:53
Swp[|||||||] 937M/3.14G]

 PID USER   PRI  NI  VIRT   RES   SHR  S  CPU% MEM%   TIME+  Command
28160 khoab2014 20    0 15280 6016  3584  R   9.0   0.2   0:01.04 htop
1537  khoab2014 20    0 4446M 149M 46952  S   7.1   5.1   8:33.70 /usr/bin/gnome-shell
8235  khoab2014 20    0 4017M 351M 104M  S   5.8  12.0   7:59.34 /snap/firefox/2987/usr/lib/firefox/firefox
8924  khoab2014 20    0 2675M 219M 75896  S   5.2   7.5   3:09.88 /snap/firefox/2987/usr/lib/firefox/firefox -contentproc -childID 4
1584  khoab2014 20    0 4446M 149M 46952  S   1.9   5.1   2:51.19 /usr/bin/gnome-shell
1585  khoab2014 20    0 4446M 149M 46952  S   1.9   5.1   2:53.20 /usr/bin/gnome-shell
813   mysql      20    0 1741M 45224 2176  S   1.3   1.5   0:40.70 /usr/sbin/mysqld
8412  khoab2014 20    0 4017M 351M 104M  S   1.3  12.0   1:54.42 /snap/firefox/2987/usr/lib/firefox/firefox
14183 khoab2014 20    0 2437M 149M 82048  S   1.3   5.1   0:13.97 /snap/firefox/2987/usr/lib/firefox/firefox -contentproc -childID 30
18144 khoab2014 20    0 548M 46016 32948  S   1.3   1.5   0:07.78 /usr/libexec/gnome-terminal-server
28101 khoab2014 20    0 0 0 0  D   1.3   0.0   0:01.17 /usr/bin/nautilus --gapplication-service
935   mysql      20    0 1741M 45224 2176  S   0.6   1.5   0:01.78 /usr/sbin/mysqld
937   mysql      20    0 1741M 45224 2176  S   0.6   1.5   0:23.10 /usr/sbin/mysqld
1041  mysql      20    0 1741M 45224 2176  S   0.6   1.5   0:02.06 /usr/sbin/mysqld
8408  khoab2014 20    0 4017M 351M 104M  S   0.6  12.0   0:15.99 /snap/firefox/2987/usr/lib/firefox/firefox
8423  khoab2014 20    0 4017M 351M 104M  S   0.6  12.0   0:14.15 /snap/firefox/2987/usr/lib/firefox/firefox
8481  khoab2014 20    0 4017M 351M 104M  S   0.6  12.0   0:23.99 /snap/firefox/2987/usr/lib/firefox/firefox
8964  khoab2014 20    0 2675M 219M 75896  S   0.6   7.5   0:05.26 /snap/firefox/2987/usr/lib/firefox/firefox -contentproc -childID 4
9143  khoab2014 20    0 2361M 74012 65816  S   0.6   2.5   0:07.57 /snap/firefox/2987/usr/lib/firefox/firefox -contentproc -childID 7
1    root      20    0 162M 11264 7808  S   0.0   0.4   0:13.57 /lib/systemd/systemd --system --deserialize 65 splash
186   root      19   -1 48420 10752 9600  S   0.0   0.4   0:01.78 /lib/systemd/systemd-journald
231   root      20    0 26816 3528 1864  S   0.0   0.1   0:01.50 /lib/systemd/systemd-udev
392  systemd-r  20    0 26188 4704 3072  S   0.0   0.2   0:10.39 /lib/systemd/systemd-resolved
396  systemd-t  20    0 89376 3200 2560  S   0.0   0.1   0:00.49 /lib/systemd/systemd-timesyncd
476  systemd-t  20    0 89376 3200 2560  S   0.0   0.1   0:00.00 /lib/systemd/systemd-timesyncd
547   root      20    0 237M 4032 3264  S   0.0   0.1   0:00.61 /usr/libexec/accounts-daemon
```

process is using higher memory or CPU

Terminal												
0[]				12.7%				Tasks: 164, 1027 thr; 1 running				
1[]				11.8%				Load average: 1.44 1.52 2.62				
Mem[]				2.15G/2.87G				Uptime: 01:00:53				
Swp[]				937M/3.14G								
PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command	
28160	khoab2014	20	0	15280	6016	3584	R	9.0	0.2	0:01.04	htop	
1537	khoab2014	20	0	4446M	149M	46952	S	7.1	5.1	8:33.70	/usr/bin/gnome-shell	
8235	khoab2014	20	0	4017M	351M	104M	S	5.8	12.0	7:59.34	/snap/firefox/2987/usr/lib/firefox/firefox	
8924	khoab2014	20	0	2675M	219M	75896	S	5.2	7.5	3:09.88	/snap/firefox/2987/usr/lib/firefox/firefox -contentproc -childID 4	
1584	khoab2014	20	0	4446M	149M	46952	S	1.9	5.1	2:51.19	/usr/bin/gnome-shell	
1585	khoab2014	20	0	4446M	149M	46952	S	1.9	5.1	2:53.20	/usr/bin/gnome-shell	
813	mysql	20	0	1741M	45224	2176	S	1.3	1.5	0:40.70	/usr/sbin/mysqld	
8412	khoab2014	20	0	4017M	351M	104M	S	1.3	12.0	1:54.42	/snap/firefox/2987/usr/lib/firefox/firefox	
14183	khoab2014	20	0	2437M	149M	82048	S	1.3	5.1	0:13.97	/snap/firefox/2987/usr/lib/firefox/firefox -contentproc -childID 30	
18144	khoab2014	20	0	548M	40016	32948	S	1.3	1.5	0:07.78	/usr/libexec/gnome-terminal-server	
28101	khoab2014	20	0	0	0	0	D	1.3	0.0	0:01.17	/usr/bin/nautilus --gapplication-service	
935	mysql	20	0	1741M	45224	2176	S	0.6	1.5	0:01.78	/usr/sbin/mysqld	
937	mysql	20	0	1741M	45224	2176	S	0.6	1.5	0:23.10	/usr/sbin/mysqld	
1041	mysql	20	0	1741M	45224	2176	S	0.6	1.5	0:02.06	/usr/sbin/mysqld	
8408	khoab2014	20	0	4017M	351M	104M	S	0.6	12.0	0:15.99	/snap/firefox/2987/usr/lib/firefox/firefox	
8423	khoab2014	20	0	4017M	351M	104M	S	0.6	12.0	0:14.15	/snap/firefox/2987/usr/lib/firefox/firefox	
8481	khoab2014	20	0	4017M	351M	104M	S	0.6	12.0	0:23.99	/snap/firefox/2987/usr/lib/firefox/firefox	
8964	khoab2014	20	0	2675M	219M	75896	S	0.6	7.5	0:05.26	/snap/firefox/2987/usr/lib/firefox/firefox -contentproc -childID 4	
9143	khoab2014	20	0	2361M	74012	65816	S	0.6	2.5	0:07.57	/snap/firefox/2987/usr/lib/firefox/firefox -contentproc -childID 7	
1	root	20	0	162M	11264	7808	S	0.0	0.4	0:13.57	/lib/systemd/systemd --system --deserialize 65 splash	
186	root	19	-1	48420	10752	9600	S	0.0	0.4	0:01.78	/lib/systemd/systemd-journald	
231	root	20	0	26816	3528	1864	S	0.0	0.1	0:01.50	/lib/systemd/systemd-udev	
392	systemd-r	20	0	26188	4704	3072	S	0.0	0.2	0:10.39	/lib/systemd/systemd-resolved	
396	systemd-t	20	0	89376	3200	2560	S	0.0	0.1	0:00.49	/lib/systemd/systemd-timesyncd	
476	systemd-t	20	0	89376	3200	2560	S	0.0	0.1	0:00.00	/lib/systemd/systemd-timesyncd	
547	root	20	0	237M	4032	3264	S	0.0	0.1	0:00.61	/usr/libexec/accounts-daemon	

Virtual Memory Statistics

- Linux VmStat command used to display statistics of virtual memory, kernel threads, disks, system processes, I/O blocks, interrupts, CPU activity and much more.

khoab2014926@khoab2014926-VirtualBox:~\$ vmstat																
procs	-----	memory	-----	---swap--	-----	io----	-----	system--	-----	cpu-----						
r	b	swpd	free	buff	cache	si	so	bi	bo	in	cs	us	sy	id	wa	st
0	0	954480	135704	28308	661192	30	215	836	1074	874	2355	42	15	41	2	0
khoab2014926@khoab2014926-VirtualBox:~\$																

Iotop – Monitor Linux Disk I/O

- Iotop is also much similar to top command and Htop program, but it has accounting function to monitor and display real time Disk I/O and processes.

khoab2014926@khoab2014926-VirtualBox: ~

T R: 0,00B W: 23,88K C R: 0,00B W: 0,00B

TID	PRIO	USER	DISK READ	DISK WRITE	GRAPH	R+^COMMAND
1	be/4	root	0,00 B/s	0,00 B/s		systemd
2	be/4	root	0,00 B/s	0,00 B/s		kthreadd
3	be/0	root	0,00 B/s	0,00 B/s		rcu_gp
4	be/0	root	0,00 B/s	0,00 B/s		rcu_par_gp
5	be/0	root	0,00 B/s	0,00 B/s		slub_flushwq
6	be/0	root	0,00 B/s	0,00 B/s		netns
8	be/0	root	0,00 B/s	0,00 B/s		kworker/0:0H-events_hi
10	be/0	root	0,00 B/s	0,00 B/s		mm_percpu_wq
11	be/4	root	0,00 B/s	0,00 B/s		rcu_tasks_kthread
12	be/4	root	0,00 B/s	0,00 B/s		rcu_tasks_rude_kthread
13	be/4	root	0,00 B/s	0,00 B/s		rcu_tasks_trace_kthrea
14	be/4	root	0,00 B/s	0,00 B/s		ksoftirqd/0
15	be/4	root	0,00 B/s	0,00 B/s		rcu_preempt
16	rt/4	root	0,00 B/s	0,00 B/s		migration/0
17	rt/4	root	0,00 B/s	0,00 B/s		idle_inject/0
19	be/4	root	0,00 B/s	0,00 B/s		cpuhp/0
20	be/4	root	0,00 B/s	0,00 B/s		cpuhp/1
21	rt/4	root	0,00 B/s	0,00 B/s		idle_inject/1
22	rt/4	root	0,00 B/s	0,00 B/s		migration/1
23	be/4	root	0,00 B/s	0,00 B/s		ksoftirqd/1
26	be/4	root	0,00 B/s	0,00 B/s		kdevtmpfs
27	be/0	root	0,00 B/s	0,00 B/s		inet_frag_wq

ps aux command

- Arrange process list and check process status

khoab2014926@khoab2014926-VirtualBox:~\$ ps aux

USER	PID	%CPU	%MEM	VSZ	RSS	TTY	STAT	START	TIME	COMMAND
root	1	0.3	0.3	166700	10496	?	Ss	13:34	0:13	/lib/systemd/
root	2	0.0	0.0	0	0	?	S	13:34	0:00	[kthreadd]
root	3	0.0	0.0	0	0	?	I<	13:34	0:00	[rcu_gp]
root	4	0.0	0.0	0	0	?	I<	13:34	0:00	[rcu_par_gp]
root	5	0.0	0.0	0	0	?	I<	13:34	0:00	[slub_flushwq
root	6	0.0	0.0	0	0	?	I<	13:34	0:00	[netns]
root	8	0.0	0.0	0	0	?	I<	13:34	0:00	[kworker/0:0H
root	10	0.0	0.0	0	0	?	I<	13:34	0:00	[mm_percpu_wq
root	11	0.0	0.0	0	0	?	I	13:34	0:00	[rcu_tasks_kt
root	12	0.0	0.0	0	0	?	I	13:34	0:00	[rcu_tasks_ru
root	13	0.0	0.0	0	0	?	I	13:34	0:00	[rcu_tasks_tr
root	14	0.0	0.0	0	0	?	S	13:34	0:01	[ksoftirqd/0]
root	15	0.1	0.0	0	0	?	I	13:34	0:07	[rcu_preempt]
root	16	0.0	0.0	0	0	?	S	13:34	0:00	[migration/0]
root	17	0.0	0.0	0	0	?	S	13:34	0:00	[idle_inject/
root	19	0.0	0.0	0	0	?	S	13:34	0:00	[cpuhp/0]
root	20	0.0	0.0	0	0	?	S	13:34	0:00	[cpuhp/1]
root	21	0.0	0.0	0	0	?	S	13:34	0:00	[idle_inject/
root	22	0.0	0.0	0	0	?	S	13:34	0:00	[migration/1]
root	23	0.1	0.0	0	0	?	S	13:34	0:05	[ksoftirqd/1]
root	26	0.0	0.0	0	0	?	S	13:34	0:00	[kdevtmpfs]
root	27	0.0	0.0	0	0	?	I<	13:34	0:00	[inet_frag_wq

Process Status

- Information on currently running processes

```
khoab2014926@khoab2014926-VirtualBox:~$ ps
  PID TTY          TIME CMD
 18277 pts/1    00:00:00 bash
 27825 pts/1    00:00:01 top
 28465 pts/1    00:00:00 ps
khoab2014926@khoab2014926-VirtualBox:~$
```

Display whole process

```
khoab2014926@khoab2014926-VirtualBox:~$ ps -e
  PID TTY          TIME CMD
    1 ?           00:00:13 systemd
    2 ?           00:00:00 kthreadd
    3 ?           00:00:00 rcu_gp
    4 ?           00:00:00 rcu_par_gp
    5 ?           00:00:00 slub_flushwq
    6 ?           00:00:00 netns
    8 ?           00:00:00 kworker/0:0H-events_highpri
   10 ?           00:00:00 mm_percpu_wq
   11 ?           00:00:00 rcu_tasks_kthread
   12 ?           00:00:00 rcu_tasks_rude_kthread
   13 ?           00:00:00 rcu_tasks_trace_kthread
   14 ?           00:00:01 ksoftirqd/0
   15 ?           00:00:07 rcu_preempt
   16 ?           00:00:00 migration/0
   17 ?           00:00:00 idle_inject/0
   19 ?           00:00:00 cpuhp/0
   20 ?           00:00:00 cpuhp/1
   21 ?           00:00:00 idle_inject/1
   22 ?           00:00:00 migration/1
   23 ?           00:00:05 ksoftirqd/1
```



```

14210 ?      00:00:00 Isolated Web Co
17509 ?      00:00:00 cupsd
17511 ?      00:00:00 cups-browsed
18069 ?      00:00:03 systemd-oomd
18144 ?      00:00:11 gnome-terminal-
18277 pts/1    00:00:00 bash
18714 ?      00:00:01 Isolated Web Co
26164 ?      00:00:01 Isolated Web Co
26572 ?      00:00:00 Isolated Web Co
26612 ?      00:00:00 Isolated Web Co
26749 ?      00:00:00 Isolated Web Co
27000 ?      00:00:00 Web Content
27002 ?      00:00:00 Web Content
27011 ?      00:00:00 Web Content
27693 ?      00:00:00 kworker/0:0-cgroup_destroy
27817 ?      00:00:00 kworker/u4:2-events_unbound
27825 pts/1    00:00:01 top
28024 ?      00:00:00 kworker/1:0
28025 ?      00:00:00 kworker/u4:3-ext4-rsv-conversion
28160 pts/0    00:00:15 htop
28261 ?      00:00:00 kworker/u4:1-flush-8:0
28463 ?      00:00:00 kworker/0:1-events
28471 pts/1    00:00:00 ps
khoab2014926@khoab2014926-VirtualBox:~$

```

Display full status information

```

khoab2014926@khoab2014926-VirtualBox:~$ ps -f
UID          PID    PPID  C STIME TTY          TIME CMD
khoab20+    18277    18144  0 14:13 pts/1        00:00:00 bash
khoab20+    27825    18277  0 14:26 pts/1        00:00:01 top
khoab20+    28497    18277  0 14:41 pts/1        00:00:00 ps -f
khoab2014926@khoab2014926-VirtualBox:~$

```

Linux pipe

```
khoab2014926@khoab2014926-VirtualBox:~$ ps -ef | grep MyServer
khoab20+  28506  18277  0 14:42 pts/1    00:00:00 grep --color=auto MyServer
khoab2014926@khoab2014926-VirtualBox:~$
```

```
khoab2014926@khoab2014926-VirtualBox:~$ ps -ef | grep firefox
khoab20+  8235    1537 25 14:07 ?        00:09:14 /snap/firefox/2987/usr/lib/f
irefox/firefox
khoab20+  8492    8235  0 14:07 ?        00:00:00 /snap/firefox/2987/usr/lib/f
irefox/firefox -contentproc -parentBuildID 20230807082803 -prefsLen 28253 -prefM
apSize 232928 -appDir /snap/firefox/2987/usr/lib/firefox/browser {2b1c5553-ce2f-
43de-bf89-299dcd886eb6} 8235 true socket
khoab20+  8517    8235  0 14:07 ?        00:00:03 /snap/firefox/2987/usr/lib/f
irefox/firefox -contentproc -childID 1 -isForBrowser -prefsLen 28329 -prefMapSiz
e 232928 -jsInitLen 242416 -parentBuildID 20230807082803 -appDir /snap/firefox/2
987/usr/lib/firefox/browser {44f11f09-1ca8-4627-9e5a-a16ca7aaec50} 8235 true tab
khoab20+  8693    8235  0 14:07 ?        00:00:02 /snap/firefox/2987/usr/lib/f
irefox/firefox -contentproc -childID 2 -isForBrowser -prefsLen 33873 -prefMapSiz
e 232928 -jsInitLen 242416 -parentBuildID 20230807082803 -appDir /snap/firefox/2
987/usr/lib/firefox/browser {bf244084-5149-4f76-b059-e5ba7082460f} 8235 true tab
khoab20+  8908    8235  2 14:07 ?        00:01:00 /snap/firefox/2987/usr/lib/f
irefox/firefox -contentproc -childID 3 -isForBrowser -prefsLen 29519 -prefMapSiz
e 232928 -jsInitLen 242416 -parentBuildID 20230807082803 -appDir /snap/firefox/2
987/usr/lib/firefox/browser {2467e2db-f83b-45f7-b401-90d1c1679493} 8235 true tab
khoab20+  8924    8235 11 14:07 ?        00:04:02 /snap/firefox/2987/usr/lib/f
```

Check running backgrounds

List of running backgrounds

+

khoab2014926@khoab2014926-VirtualBox: ~

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```
top - 15:00:01 up 1:25, 1 user, load average: 1,08, 0,82, 1,29
Tasks: 229 total, 1 running, 227 sleeping, 1 stopped, 0 zombie
%Cpu(s): 9,0 us, 4,8 sy, 0,0 ni, 85,9 id, 0,2 wa, 0,0 hi, 0,2 si, 0,0 st
MiB Mem : 2940,4 total, 85,6 free, 2266,8 used, 588,0 buff/cache
MiB Swap: 3220,0 total, 2184,7 free, 1035,3 used. 465,6 avail Mem
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
1537	khoab20+	20	0	4540392	189280	77060	S	9,6	6,3	10:24.73	gnome-s+
28160	khoab20+	20	0	15280	6016	3584	S	7,3	0,2	1:36.56	htop
8924	khoab20+	20	0	2768788	227156	53664	S	4,6	7,5	5:45.96	Isolate+
8235	khoab20+	20	0	4207428	337524	78096	S	2,3	11,2	11:07.49	firefox
813	mysql	20	0	1783732	37672	2176	S	1,0	1,3	0:56.71	mysqld
2148	khoab20+	20	0	223924	22164	18380	S	1,0	0,7	0:50.45	Xwayland
18144	khoab20+	20	0	562488	43840	31284	S	1,0	1,5	0:20.28	gnome-t+
14	root	20	0	0	0	0	S	0,3	0,0	0:02.71	ksoftir+
8230	root	20	0	0	0	0	I	0,3	0,0	0:02.70	kworker+
14152	khoab20+	20	0	2489300	124300	52864	S	0,3	4,1	0:15.44	Isolate+
28811	khoab20+	20	0	16092	4352	3584	R	0,3	0,1	0:00.22	top
1	root	20	0	166700	10240	6784	S	0,0	0,3	0:13.61	systemd
2	root	20	0	0	0	0	S	0,0	0,0	0:00.00	kthreadd
3	root	0	-20	0	0	0	I	0,0	0,0	0:00.00	rcu_gp
4	root	0	-20	0	0	0	I	0,0	0,0	0:00.00	rcu_par+
5	root	0	-20	0	0	0	I	0,0	0,0	0:00.00	slub_fl+
6	root	0	-20	0	0	0	I	0,0	0,0	0:00.00	netns


```
khoab2014926@khoab2014926-VirtualBox:~$ jobs
[1]+  Stopped                  top
```

More details with option -l. Unique job id

Print process ID

```
khoab2014926@khoab2014926-VirtualBox:~$ jobs -l
[1]+ 27825 Stopped (signal)      top
khoab2014926@khoab2014926-VirtualBox:~$ jobs -p
27825
khoab2014926@khoab2014926-VirtualBox:~$
```

```
khoab2014926@khoab2014926-VirtualBox:~$ mpstat -P ALL
Linux 6.2.0-36-generic (khoab2014926-VirtualBox)      07/11/2023      _x86_64_
(2 CPU)

15:07:59   CPU   %usr   %nice    %sys %iowait    %irq   %soft  %steal  %guest
 %gnice   %idle
15:07:59   all    29,25    3,69   11,12    1,58    0,00    0,80    0,00    0,00
          0,00   53,55
15:07:59     0    29,13    3,56   11,35    1,93    0,00    0,26    0,00    0,00
          0,00   53,78
15:07:59     1    29,38    3,82   10,90    1,24    0,00    1,34    0,00    0,00
          0,00   53,32
khoab2014926@khoab2014926-VirtualBox:~$
```

```
khoab2014926@khoab2014926-VirtualBox:~$ iostat
Linux 6.2.0-36-generic (khoab2014926-VirtualBox)      07/11/2023      _x86_64_
(2 CPU)

avg-cpu:  %user   %nice %system %iowait  %steal   %idle
           29,05    3,70   11,86    1,57    0,00   53,82

Device            tps    kB_read/s    kB_wrtn/s    kB_dscd/s    kB_read    kB_w
Device
rtn   kB_dscd
loop0      0,28         3,56         0,00         0,00       20203
  0         0
loop1      0,00         0,00         0,00         0,00         17
  0         0
loop10     0,01         0,07         0,00         0,00        415
  0         0
loop11     0,46        18,61         0,00         0,00      105525
  0         0
loop12     0,18         1,56         0,00         0,00       8829
  0         0
loop13     0,01         0,19         0,00         0,00       1093
  0         0
loop14     0,00         0,00         0,00         0,00         27
  0         0
loop2      0,07         1,17         0,00         0,00       6646
  0         0
```

```
khoab2014926@khoab2014926-VirtualBox:~$ sudo ps aux
```

USER	PID	%CPU	%MEM	VSZ	RSS	TTY	STAT	START	TIME	COMMAND
root	1	0.4	0.3	168024	10880	?	Ss	13:34	0:23	/lib/systemd/
root	2	0.0	0.0	0	0	?	S	13:34	0:00	[kthreadd]
root	3	0.0	0.0	0	0	?	I<	13:34	0:00	[rcu_gp]
root	4	0.0	0.0	0	0	?	I<	13:34	0:00	[rcu_par_gp]
root	5	0.0	0.0	0	0	?	I<	13:34	0:00	[slub_flushwq]
root	6	0.0	0.0	0	0	?	I<	13:34	0:00	[netns]
root	8	0.0	0.0	0	0	?	I<	13:34	0:00	[kworker/0:0H]
root	10	0.0	0.0	0	0	?	I<	13:34	0:00	[mm_percpu_wq]
root	11	0.0	0.0	0	0	?	I	13:34	0:00	[rcu_tasks_kt]
root	12	0.0	0.0	0	0	?	I	13:34	0:00	[rcu_tasks_ru]
root	13	0.0	0.0	0	0	?	I	13:34	0:00	[rcu_tasks_tr]
root	14	0.0	0.0	0	0	?	S	13:34	0:03	[ksoftirqd/0]
root	15	0.1	0.0	0	0	?	I	13:34	0:08	[rcu_preempt]
root	16	0.0	0.0	0	0	?	S	13:34	0:00	[migration/0]
root	17	0.0	0.0	0	0	?	S	13:34	0:00	[idle_inject/]
root	19	0.0	0.0	0	0	?	S	13:34	0:00	[cpuhp/0]
root	20	0.0	0.0	0	0	?	S	13:34	0:00	[cpuhp/1]
root	21	0.0	0.0	0	0	?	S	13:34	0:00	[idle_inject/]
root	22	0.0	0.0	0	0	?	S	13:34	0:00	[migration/1]
root	23	0.1	0.0	0	0	?	S	13:34	0:07	[ksoftirqd/1]
root	26	0.0	0.0	0	0	?	S	13:34	0:00	[kdevtmpfs]
root	27	0.0	0.0	0	0	?	I<	13:34	0:00	[inet_frag_wq]