# Assignment – Process Management

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## 1) List out highest priority process in the system

```
ubuntu@ip-172-31-44-14:~$ ps -eo pid,ppid,pri,ni,cmd --sort=-pri
   PID    PPID PRI  NI CMD
    37       2   0  19 [khugepaged]
    36       2  14   5 [ksmd]
     1       0  19   0 /usr/lib/systemd/systemd --system --deserialize=62
     2       0  19   0 [kthreadd]
     3       2  19   0 [pool_workqueue_release]
    10       2  19   0 [kworker/0:1-events]
    13       2  19   0 [rcu_tasks_rude_kthread]
    14       2  19   0 [rcu_tasks_trace_kthread]
    15       2  19   0 [ksoftirqd/0]
    16       2  19   0 [rcu_sched]
    19       2  19   0 [cpuhp/0]
    20       2  19   0 [cpuhp/1]
    23       2  19   0 [ksoftirqd/1]
    26       2  19   0 [kdevtmpfs]
    29       2  19   0 [kauditd]
    30       2  19   0 [kworker/1:1-events]
    31       2  19   0 [khungtaskd]
    32       2  19   0 [oom_reaper]
    35       2  19   0 [kcompactd0]
    50       2  19   0 [kswapd0]
    51       2  19   0 [ecryptfs-kthread]
    83       2  19   0 [jbd2/nvme0n1p1-8]
   311       2  19   0 [jbd2/nvme0n1p16-8]
   584       1  19   0 /usr/sbin/acpid
```

Used –sort=-pri, where we got results sorted based on priority.

## 2) Open terminal with 2 tabs or sessions

### a) run command "vmstat 1"

```
ubuntu@ip-172-31-44-14:~$ vmstat 1
procs -----------memory---------- ---swap-- -----io---- -system-- -------cpu------
 r  b   swpd   free   buff  cache   si   so    bi    bo   in   cs us sy id wa st gu
 1  0  43008  71596  23224 435224    0   12   463  1055  329    2  2  1 96  1  1  0
 0  0  43008  71596  23224 435264    0    0     0     0  219  317  1  1 99  0  0  0
 0  0  43008  71596  23224 435264    0    0     0     0  205  295  1  0 99  0  1  0
 0  0  43008  71596  23240 435264    0    0     0   156  276  384  1  1 98  1  0  0
 0  0  43008  71596  23240 435264    0    0     0    20  226  313  1  0 98  0  1  0
 0  0  43008  69328  23240 435260    0    0     0     4  279  383  1  1 99  0  0  0
 0  0  43008  69328  23240 435268    0    0     0     0  235  317  1  0 99  0  1  0
 0  0  43008  69328  23240 435268    0    0     0     0  221  308  1  0 99  0  1  0
```

(Terminal 1)

### b) switch to another tab, pause running vmstat command for few seconds and

### resume it again

### use appropriate SIGNALS to do this activity.

```
Last login: Wed Apr  9 09:52:42 2025 from 223.187.122.82
ubuntu@ip-172-31-44-14:~$ pgrep vmstat
23310
ubuntu@ip-172-31-44-14:~$ ps aux | grep vmstat
ubuntu     23310  0.0  0.3   9884  3200 pts/5    S+   09:56   0:00 vmstat 1
ubuntu     23440  0.0  0.2   7076  2176 pts/6    S+   10:00   0:00 grep --col
auto vmstat
ubuntu@ip-172-31-44-14:~$ kill -SIGSTOP 23310
ubuntu@ip-172-31-44-14:~$ 
```

(Terminal 2)

Got pid of the "vmstat" process as "23310" and then stoped it using cmd "kill -SIGSTOP 23310"

```
procs -----------memory---------- ---swap-- -----io---- -system-- -------cpu-      ubuntu@ip-172-31-44-14:~$ ps aux | grep vmstat
 r  b   swpd   free   buff  cache   si   so    bi    bo   in   cs us sy id wa      ubuntu     23310  0.0  0.3   9884  3200 pts/5    S+   09:56   0:00 vmstat 1
 1  0  43008  70848  23500 435904    0    0     0    20  107  142  1  0 100         ubuntu     23440  0.0  0.2   7076  2176 pts/6    S+   10:00   0:00 grep --col
 0  0  43008  70848  23500 435904    0    0     0     0   96  149  0  0 100         auto vmstat
                                                                                   ubuntu@ip-172-31-44-14:~$ kill -SIGSTOP 23310
[1]+  Stopped                 vmstat 1                                             ubuntu@ip-172-31-44-14:~$ kill -SIGCONT 23310
ubuntu@ip-172-31-44-14:~$  2  0  43008  72504  23628 435908    0    0     0        ubuntu@ip-172-31-44-14:~$
2652 18836 29682  0  0 100  0  0  0
 0  0  43008  72504  23628 435908    0    0     0     0   83  124  0  0 100
 0  1  0
 0  0  43008  72504  23628 435908    0    0     0     0   78  120  0  0 100
 0  0  0
```

(Terminal 1)                                              (Terminal 2)

Here we found that, after using "kill -SIGSTOP 23301", "vmstat" terminal 1 stopped and we resumed it using cmd "kill -SIGCONT 23310" and verified it from terminal 1.

**3) Find the process which is sleeping in "wait" state.**

```
ubuntu@ip-172-31-44-14:~$ ps -eo pid,state,cmd | grep ' S '
    PID S CMD
      1 S /usr/lib/systemd/systemd --system --deserialize=62
      2 S [kthreadd]
      3 S [pool_workqueue_release]
     15 S [ksoftirqd/0]
     17 S [migration/0]
     18 S [idle_inject/0]
     19 S [cpuhp/0]
     20 S [cpuhp/1]
     21 S [idle_inject/1]
     22 S [migration/1]
     23 S [ksoftirqd/1]
     26 S [kdevtmpfs]
     29 S [kauditd]
     31 S [khungtaskd]
     32 S [oom_reaper]
     35 S [kcompactd0]
     36 S [ksmd]
     37 S [khugepaged]
     41 S [irq/9-acpi]
     48 S [watchdogd]
```

Showing pid, state, and cmd along with grep ' S ' to search all the process in sleeping state. (interruptible sleep)