

AIM:

Adam is working in an IT company. He has been given a task to reduce the load of a system by killing some of the processes running in the LINUX operating system. Which commands will he use to complete the given task with the help of the following operation?

➤ Kill process by name

```
m309@m309-BY-OEM: ~  
m309@m309-BY-OEM: ~$ ps aux  
USER      PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND  
root         1  0.1  0.1 23736 14604 ?        Ss   15:44    0:06 /sbin/init splash  
root         2  0.0  0.0      0     0 ?        S    15:44    0:00 [kthreadd]  
root         3  0.0  0.0      0     0 ?        S    15:44    0:00 [pool_workqueue_release]  
root         4  0.0  0.0      0     0 ?        I<   15:44    0:00 [kworker/R-rcu_gp]  
root         5  0.0  0.0      0     0 ?        I<   15:44    0:00 [kworker/R-sync_wq]  
root         6  0.0  0.0      0     0 ?        I<   15:44    0:00 [kworker/R-kvfree_rcu_reclaim]  
root         7  0.0  0.0      0     0 ?        I<   15:44    0:00 [kworker/R-slub_flushwq]  
root         8  0.0  0.0      0     0 ?        I<   15:44    0:00 [kworker/R-netns]  
root        11  0.0  0.0      0     0 ?        I<   15:44    0:00 [kworker/0:0H-events_highpri]  
root        13  0.0  0.0      0     0 ?        I<   15:44    0:00 [kworker/R-mm_percpu_wq]  
root        14  0.0  0.0      0     0 ?        I    15:44    0:00 [rcu_tasks_kthread]  
root        15  0.0  0.0      0     0 ?        I    15:44    0:00 [rcu_tasks_rude_kthread]  
root        16  0.0  0.0      0     0 ?        I    15:44    0:00 [rcu_tasks_trace_kthread]  
root        17  0.0  0.0      0     0 ?        S    15:44    0:00 [ksoftirqd/0]  
root        18  0.0  0.0      0     0 ?        I    15:44    0:00 [rcu_preempt]  
root        19  0.0  0.0      0     0 ?        S    15:44    0:00 [rcu_exp_par_gp_kthread_worker/0]  
root        20  0.0  0.0      0     0 ?        S    15:44    0:00 [rcu_exp_gp_kthread_worker]  
root        21  0.0  0.0      0     0 ?        S    15:44    0:00 [migration/0]  
root        22  0.0  0.0      0     0 ?        S    15:44    0:00 [idle_inject/0]  
root        23  0.0  0.0      0     0 ?        S    15:44    0:00 [cpuhp/0]  
root        24  0.0  0.0      0     0 ?        S    15:44    0:00 [cpuhp/1]  
root        25  0.0  0.0      0     0 ?        S    15:44    0:00 [idle_inject/1]  
root        26  0.0  0.0      0     0 ?        S    15:44    0:00 [migration/1]  
root        27  0.0  0.0      0     0 ?        S    15:44    0:00 [ksoftirqd/1]  
root        29  0.0  0.0      0     0 ?        I<   15:44    0:00 [kworker/1:0H-events_highpri]  
root        30  0.0  0.0      0     0 ?        S    15:44    0:00 [cpuhp/2]  
root        31  0.0  0.0      0     0 ?        S    15:44    0:00 [idle_inject/2]  
root        32  0.0  0.0      0     0 ?        S    15:44    0:00 [migration/2]  
root        33  0.0  0.0      0     0 ?        S    15:44    0:00 [ksoftirqd/2]  
  
m309      8938      2290  0 16:14 ?        00:00:00 /usr/libexec/mttcl-x1  
root      9278          2  0 16:19 ?        00:00:00 [kworker/u16:0-events_  
root      9281          2  0 16:20 ?        00:00:00 [kworker/0:1-cgroup_de  
root      9282          2  0 16:20 ?        00:00:00 [kworker/3:1-events]  
root      9335          2  0 16:24 ?        00:00:00 [kworker/1:0-cgroup_de  
m309      9356      2290  0 16:24 ?        00:00:00 gjs /usr/share/gnome-s  
root      9408          2  0 16:24 ?        00:00:00 [kworker/2:1-cgroup_de  
root      9415          2  0 16:28 ?        00:00:00 [kworker/u16:2-flush-8  
root      9421          2  0 16:30 ?        00:00:00 [kworker/2:2]  
root      9425          2  0 16:31 ?        00:00:00 [kworker/0:2]  
m309      9427      7897  0 16:31 pts/0    00:00:00 ps -ef  
m309@m309-BY-OEM ~ % pkill colord  
pkill: killing pid 1643 failed: Operation not permitted  
m309@m309-BY-OEM ~ % pkill rtkik  
m309@m309-BY-OEM ~ % ps -ef|rtkik  
zsh: command not found: rtkik  
m309@m309-BY-OEM ~ %
```

- Kill a process based on the process name

```
m309@m309-BY-OEM:~$ killall sleep
sleep(6479): Operation not permitted
[1]+  Terminated                  sleep 500
m309@m309-BY-OEM:~$ ls
Desktop  Downloads  fork      Music     orphan.c  Public  Templates  zombie
Documents file.txt   fork.c    orphan    Pictures  snap    Videos     zombie.c
m309@m309-BY-OEM:~$
```

- Kill a single process at a time with the given process ID

```
m309@m309-BY-OEM:~$ kill 6481
m309@m309-BY-OEM:~$ ps -ef | grep sleep
root      6479      1663  0 17:20 ?        00:00:00 sleep 3600
m309      6498      3124  0 17:22 pts/0    00:00:00 grep --color=auto sleep
[1]+  Terminated                  sleep 500
m309@m309-BY-OEM:~$ sleep 500 &
[1] 6500
```

2. Write a program for process creation using C

- Orphan Process

```
m309@m309-BY-OEM:~$ nano fork.c
m309@m309-BY-OEM:~$ nano orphan.c
m309@m309-BY-OEM:~$ ./orphan
bash: ./orphan: No such file or directory
m309@m309-BY-OEM:~$ gcc orphan.c -o orphan
m309@m309-BY-OEM:~$ ./orphan
Parent exiting
m309@m309-BY-OEM:~$ Child Process
PID: 6313
PPID: 2095
```

- Zombie Process

```
m309@m309-BY-OEM:~$ nano orphan.c
m309@m309-BY-OEM:~$ nano zombie.c
m309@m309-BY-OEM:~$ gcc zombie.c -o zombie
m309@m309-BY-OEM:~$ ./zombie
Child exiting
Parent sleeping
```

3. Create the process using fork 0 system call

- Child Process creation
- Parent Process creation

```
m309@m309-BY-OEM:~$ nano fork.c
m309@m309-BY-OEM:~$ gcc fork.c -o fork
m309@m309-BY-OEM:~$ ./fork
Parent Process
Parent PID: 5245
Child Process
Child PID: 5246
Parent PID: 5245
m309@m309-BY-OEM:~$ █
```

- PID and PPID

```
m309@m309-BY-OEM:~$ sleep 500 &
[1] 6481
m309@m309-BY-OEM:~$ kill 6481
m309@m309-BY-OEM:~$ ps -ef | grep sleep
root      6479      1663  0 17:20 ?        00:00:00 sleep 3600
m309      6498      3124  0 17:22 pts/0    00:00:00 grep --color=auto sleep
[1]+  Terminated                  sleep 500
m309@m309-BY-OEM:~$ sleep 500 &
[1] 6500
m309@m309-BY-OEM:~$ pkill sleep
pkill: killing pid 6479 failed: Operation not permitted
[1]+  Terminated                  sleep 500
m309@m309-BY-OEM:~$ pgrep sleep
6479
m309@m309-BY-OEM:~$ sleep 500 &
[1] 6507
m309@m309-BY-OEM:~$ killall sleep
sleep(6479): Operation not permitted
[1]+  Terminated                  sleep 500
m309@m309-BY-OEM:~$ ls
Desktop  Downloads  fork      Music     orphan.c  Public    Templates  zombie
Documents  file.txt  fork.c   orphan    Pictures  snap      Videos    zombie.c
m309@m309-BY-OEM:~$
```