

Output:-

1. 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 Processes by name**

```
himani@DELL: $ ps -ef
UID          PID    PPID  C  STIME TTY          TIME CMD
root         1        0  0  13:55 ?        00:00:00 /sbin/init
root         2        1  0  13:55 ?        00:00:00 /init
root         8        2  0  13:55 ?        00:00:00 plan9 --control-socket 7 --log-level 4 --server-fd 8 --pipe-fd 10 --log-truncate
root        44        1  0  13:55 ?        00:00:00 /usr/lib/systemd/systemd-journald
root        96        1  0  13:55 ?        00:00:00 /usr/lib/systemd/systemd-udevd
systemd+   106        1  0  13:55 ?        00:00:00 /usr/lib/systemd/systemd-resolved
systemd+   107        1  0  13:55 ?        00:00:00 /usr/lib/systemd/systemd-timesyncd
root       156        1  0  13:55 ?        00:00:00 /usr/sbin/cron -f -P
message+   157        1  0  13:55 ?        00:00:00 @dbus-daemon --system --address=systemd: --nofork --nopidfile --systemd-activation --syslog-only
root       177        1  0  13:55 ?        00:00:00 /usr/lib/systemd/systemd-logind
root       181        1  0  13:55 ?        00:00:00 /usr/libexec/wsl-pro-service -vv
root       199        1  0  13:55 hvc0      00:00:00 /sbin/agetty -o -p -- \u --noclear --keep-baud - 115200,38400,9600 vt220
syslog     217        1  0  13:55 ?        00:00:00 /usr/sbin/rsyslogd -n -iNONE
root       225        1  0  13:55 tty1      00:00:00 /sbin/agetty -o -p -- \u --noclear - linux
root       267        1  0  13:55 ?        00:00:00 /usr/bin/python3 /usr/share/unattended-upgrades/unattended-upgrade-shutdown --wait-for-signal
root       349        2  0  13:55 pts/1     00:00:00 /bin/login -f
himani     395        1  0  13:55 ?        00:00:00 /usr/lib/systemd/systemd --user
himani     397       395  0  13:55 ?        00:00:00 (sd-pam)
himani     458       349  0  13:55 pts/1     00:00:00 -bash
root       747        2  0  14:08 ?        00:00:00 /init
root       749       747  0  14:08 ?        00:00:00 /init
himani     754       749  0  14:08 pts/0     00:00:00 -bash
root       773        2  0  14:09 ?        00:00:00 /init
root       775       773  0  14:09 ?        00:00:00 /init
himani     778       775  0  14:09 pts/2     00:00:00 -bash
root       793        2  0  14:09 ?        00:00:00 /init
root       795       793  0  14:09 ?        00:00:00 /init
himani     798       795  0  14:09 pts/3     00:00:00 -bash
root       813        2  0  14:09 ?        00:00:00 /init
root       815       813  0  14:09 ?        00:00:00 /init
himani     819       815  0  14:09 pts/4     00:00:00 -bash
himani     844       754  0  14:11 pts/0     00:00:00 ps -ef
himani@DELL: $ pkill himani
himani@DELL: $ ps -ef|himani
himani: command not found
```

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

```
himani@DELL: $ ps -ef
UID          PID    PPID  C  STIME TTY          TIME CMD
root         1        0  0  13:55 ?        00:00:00 /sbin/init
root         2        1  0  13:55 ?        00:00:00 /init
root         8        2  0  13:55 ?        00:00:00 plan9 --control-socket 7 --log-level 4 --server-fd 8 --pipe-fd 10 --log-truncate
root        44        1  0  13:55 ?        00:00:00 /usr/lib/systemd/systemd-journald
root        96        1  0  13:55 ?        00:00:00 /usr/lib/systemd/systemd-udevd
systemd+   106        1  0  13:55 ?        00:00:00 /usr/lib/systemd/systemd-resolved
systemd+   107        1  0  13:55 ?        00:00:00 /usr/lib/systemd/systemd-timesyncd
root       156        1  0  13:55 ?        00:00:00 /usr/sbin/cron -f -P
message+   157        1  0  13:55 ?        00:00:00 @dbus-daemon --system --address=systemd: --nofork --nopidfile --systemd-activation --syslog-only
root       177        1  0  13:55 ?        00:00:00 /usr/lib/systemd/systemd-logind
root       181        1  0  13:55 ?        00:00:00 /usr/libexec/wsl-pro-service -vv
root       199        1  0  13:55 hvc0      00:00:00 /sbin/agetty -o -p -- \u --noclear --keep-baud - 115200,38400,9600 vt220
syslog     217        1  0  13:55 ?        00:00:00 /usr/sbin/rsyslogd -n -iNONE
root       225        1  0  13:55 tty1      00:00:00 /sbin/agetty -o -p -- \u --noclear - linux
root       267        1  0  13:55 ?        00:00:00 /usr/bin/python3 /usr/share/unattended-upgrades/unattended-upgrade-shutdown --wait-for-signal
root       349        2  0  13:55 pts/1     00:00:00 /bin/login -f
himani     395        1  0  13:55 ?        00:00:00 /usr/lib/systemd/systemd --user
himani     397       395  0  13:55 ?        00:00:00 (sd-pam)
himani     458       349  0  13:55 pts/1     00:00:00 -bash
root       773        2  0  14:09 ?        00:00:00 /init
root       775       773  0  14:09 ?        00:00:00 /init
himani     778       775  0  14:09 pts/2     00:00:00 -bash
root       793        2  0  14:09 ?        00:00:00 /init
root       795       793  0  14:09 ?        00:00:00 /init
himani     798       795  0  14:09 pts/3     00:00:00 -bash
root       813        2  0  14:09 ?        00:00:00 /init
root       815       813  0  14:09 ?        00:00:00 /init
himani     819       815  0  14:09 pts/4     00:00:00 -bash
himani     982       778  0  14:28 pts/2     00:00:00 ps -ef
himani@DELL: $ sleep 300 &
[1] 983
himani@DELL: $ kill 983
himani@DELL: $ ps -ef|983
983: command not found
[1]+  Terminated                  sleep 300
himani@DELL: $
```

- Kill a process based on the process name

```

himani@DELL: $ ps -ef
UID      PID     PPID  C  STIME TTY          TIME CMD
root      1       0  0 13:55 ?        00:00:00 /sbin/init
root      2       1  0 13:55 ?        00:00:00 /init
root      8       2  0 13:55 ?        00:00:00 plan9 --control-socket 7 --log-level 4 --server-fd 8 --pipe-fd 10 --log-truncate
root     44      1  0 13:55 ?        00:00:00 /usr/lib/systemd/systemd-journald
root     96      1  0 13:55 ?        00:00:00 /usr/lib/systemd/systemd-udev
systemd+ 106     1  0 13:55 ?        00:00:00 /usr/lib/systemd/systemd-resolved
systemd+ 107     1  0 13:55 ?        00:00:00 /usr/lib/systemd/systemd-timesyncd
root    156     1  0 13:55 ?        00:00:00 /usr/sbin/cron -f -P
message+ 157     1  0 13:55 ?        00:00:00 @dbus-daemon --system --address=systemd: --nofork --nopidfile --systemd-activation --syslog-only
root    177     1  0 13:55 ?        00:00:00 /usr/lib/systemd/systemd-logind
root    181     1  0 13:55 ?        00:00:00 /usr/libexec/wsl-pro-service -vv
root    199     1  0 13:55 hvc0     00:00:00 /sbin/agetty -o -p -- \u --noclear --keep-baud - 115200,38400,9600 vt220
syslog   217     1  0 13:55 ?        00:00:00 /usr/sbin/rsyslogd -n -iNONE
root    225     1  0 13:55 tty1     00:00:00 /sbin/agetty -o -p -- \u --noclear - linux
root    267     1  0 13:55 ?        00:00:00 /usr/bin/python3 /usr/share/unattended-upgrades/unattended-upgrade-shutdown --wait-for-signal
root    349     2  0 13:55 pts/1    00:00:00 /bin/login -f
himani   395     1  0 13:55 ?        00:00:00 /usr/lib/systemd/systemd --user
himani   397    395  0 13:55 ?        00:00:00 (sd-pam)
himani   458    349  0 13:55 pts/1    00:00:00 -bash
root    773     2  0 14:09 ?        00:00:00 /init
root    775    773  0 14:09 ?        00:00:00 /init
himani   778    775  0 14:09 pts/2    00:00:00 -bash
root    793     2  0 14:09 ?        00:00:00 /init
root    795    793  0 14:09 ?        00:00:00 /init
himani   798    795  0 14:09 pts/3    00:00:00 -bash
root    813     2  0 14:09 ?        00:00:00 /init
root    815    813  0 14:09 ?        00:00:00 /init
himani   819    815  0 14:09 pts/4    00:00:00 -bash
himani   963    778  0 14:27 pts/2    00:00:00 sleep 300
himani   964    778  0 14:27 pts/2    00:00:00 sleep 300
himani   967    778  0 14:27 pts/2    00:00:00 sleep 300
himani   968    778  0 14:27 pts/2    00:00:00 sleep 300
himani   969    778  0 14:27 pts/2    00:00:00 sleep 300
himani   970    778  0 14:27 pts/2    00:00:00 sleep 300
himani   971    778  0 14:27 pts/2    00:00:00 sleep 300
himani   973    778  0 14:27 pts/2    00:00:00 ps -ef
himani@DELL: $ ps -ef |grep sleep
himani   963    778  0 14:27 pts/2    00:00:00 sleep 300
himani   964    778  0 14:27 pts/2    00:00:00 sleep 300
himani   967    778  0 14:27 pts/2    00:00:00 sleep 300
himani   968    778  0 14:27 pts/2    00:00:00 sleep 300
himani   969    778  0 14:27 pts/2    00:00:00 sleep 300
himani   970    778  0 14:27 pts/2    00:00:00 sleep 300
himani   971    778  0 14:27 pts/2    00:00:00 sleep 300
himani   975    778  0 14:27 pts/2    00:00:00 grep --color=auto sleep
himani@DELL: $ killall sleep
[1] Terminated                  sleep 300
[2] Terminated                  sleep 300
[3] Terminated                  sleep 300
[4] Terminated                  sleep 300
[5] Terminated                  sleep 300
[6] Terminated                  sleep 300
[7]+ Terminated                  sleep 300
himani@DELL: $

```

2. Write a program for process creation using C

- **Orphan Process**

```
himani@DELL:~$ gcc orphan.c -o orphan./orphan
/usr/bin/ld: cannot open output file orphan./orphan: No such file or directory
collect2: error: ld returned 1 exit status
himani@DELL:~$ gcc orphan.c -o orphan
himani@DELL:~$ ./orphan
Parent Process exiting
himani@DELL:~$ Child Process
PID: 2638
PPID: 775
ps -ef|grep orphan
himani      2646      778  0 14:46 pts/2    00:00:00 grep --color=auto orphan
himani@DELL:~$
```

- **Zombie Process**

```
himani@DELL:~$ nano zombie
himani@DELL:~$ nano zombie.c
himani@DELL:~$ gcc zombie.c -o zombie
himani@DELL:~$ ./zombie
Child process exiting
ps Parent process running
himani@DELL:~$ ps -ef|grep Z
F S  UID      PID    PPID  C PRI  NI ADDR SZ WCHAN  TTY          TIME CMD
himani@DELL:~$
```

3. Create the process using fork 0 system call

- Child Process creation
- Parent Process creation

```
himani@DELL:~$ nano fork.c
himani@DELL:~$ gcc fork.c -o fork
himani@DELL:~$ ./fork
Parent Process
PID: 2751
Child PID: 2752
Child Process
PID: 2752
PPID: 775
himani@DELL:~$ █
```

- PID and PPID

```
himani@DELL:~$ sleep 300&
[1] 2754
himani@DELL:~$ ps -ef|grep sleep
himani      2754      778  0 14:57 pts/2    00:00:00 sleep 300
himani      2758      778  0 14:58 pts/2    00:00:00 grep --color=auto sleep
himani@DELL:~$ kill 2754
himani@DELL:~$ killall sleep
sleep: no process found
[1]+  Terminated                  sleep 300
himani@DELL:~$ █
```