



## Mawlana Bhashani Science And Technology University

# Lab-Report

Lab Report No: 06

Lab Report Name: Threads on operating system

Course code: ICT-3110

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Objects:

i) How to Manage Processes from the Linux Terminal?

ii) Run the following process commands in Linux.

Top, htop, Ps, pstree, kill, pgrep, pkill ,killall, renice, xkill,

i)Check running process in Linux:

The procedure to monitor the running process in Linux using the command line is as follows:

1. Open the terminal window on Linux
2. For remote Linux server use the ssh command for log in purpose
3. Type the ps aux command to see all running process in Linux
4. Alternatively, you can issue the top command or htop command to view running process in Linux

The `ps` command is a traditional Linux command to lists running processes. The following command shows all processes running on your Linux based server or system:

```
shariful@shariful-VirtualBox: ~  
File Edit View Search Terminal Help  
shariful@shariful-VirtualBox:~$ ps -aux  
USER      PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND  
root         1   1.2   0.3 159936   6628 ?        Ss   20:18   0:11 /sbin/init spl  
root         2   0.0   0.0      0       0 ?        S    20:18   0:00 [kthreadd]  
root         3   0.0   0.0      0       0 ?        I<   20:18   0:00 [rcu_gp]  
root         4   0.0   0.0      0       0 ?        I<   20:18   0:00 [rcu_par_gp]  
root         6   0.0   0.0      0       0 ?        I<   20:18   0:00 [kworker/0:0H-  
root         7   0.0   0.0      0       0 ?        I    20:18   0:00 [kworker/u4:0-  
root         8   0.0   0.0      0       0 ?        I<   20:18   0:00 [mm_percpu_wq]  
root         9   0.0   0.0      0       0 ?        S    20:18   0:00 [ksoftirqd/0]  
root        10   0.1   0.0      0       0 ?        I    20:18   0:01 [rcu_sched]  
root        11   0.0   0.0      0       0 ?        S    20:18   0:00 [migration/0]  
root        12   0.0   0.0      0       0 ?        S    20:18   0:00 [idle_inject/0]  
root        13   0.1   0.0      0       0 ?        I    20:18   0:01 [kworker/0:1-e  
root        14   0.0   0.0      0       0 ?        S    20:18   0:00 [rcu_hb/0]
```

```

root      1881   0.1   1.3 569448 26756 ?        Ssl  20:21   0:01 /usr/lib/udev/udevadm
shariful  1946   0.0   1.0 789992 21160 tty2     Sl+  20:22   0:00 /usr/lib/deja-
shariful  1978   0.7   2.6 942852 52972 ?        Sl   20:22   0:05 evince /home/s
shariful  1985   0.0   0.2 187736  4136 ?        Ssl  20:22   0:00 /usr/lib/evinc
root      2027   0.0   0.0      0      0 ?        I    20:23   0:00 [kworker/u4:2-
shariful  2061   0.0   0.3 152888  6300 tty2     Sl+  20:25   0:00 /usr/lib/libre
shariful  2080  13.2   9.9 1177808 196724 tty2     Sl+  20:25   1:04 /usr/lib/libre
shariful  2103   0.5   4.0 2558988 79148 tty2     Sl+  20:26   0:02 /usr/lib/firef
root      2180   0.0   0.0      0      0 ?        I    20:29   0:00 [kworker/u4:1-
root      2226   0.0   0.0      0      0 ?        I    20:33   0:00 [kworker/1:0-c
shariful  2233  18.1   1.8 801992 37020 ?        Rsl  20:33   0:02 /usr/lib/gnome
shariful  2242   1.6   0.2 29888  4632 pts/0    Ss   20:33   0:00 bash
shariful  2250   0.0   0.1 47100  3732 pts/0    R+   20:33   0:00 ps -aux
shariful@shariful-VirtualBox:~$ █

```

## Linux pgrep command :

Many variants of Linux comes with the **pgrep** command to search/find process. The syntax is:

```
vivek@nixcraft:~$ pgrep {process}
```

```
vivek@nixcraft:~$ sudo pgrep sshd
```

```
vivek@nixcraft:~$ pgrep vim
```

```
vivek@nixcraft:~$ pgrep firefox
```

```
vivek@nixcraft:~$ pgrep -l nginx
```

```

shariful@shariful-VirtualBox: ~
File Edit View Search Terminal Help
shariful@shariful-VirtualBox:~$ pgrep firefox
1637
shariful@shariful-VirtualBox:~$ pgrep nginx
shariful@shariful-VirtualBox:~$
shariful@shariful-VirtualBox:~$ pgrep -l firefox
1637 firefox
shariful@shariful-VirtualBox:~$ pgrep sshd
shariful@shariful-VirtualBox:~$ pgrep ssh
1258
shariful@shariful-VirtualBox:~$ pgrep -l ssh
1258 ssh-agent
shariful@shariful-VirtualBox:~$ █

```

## Linux top command:

The **top** command is another highly recommended method to see your Linux servers resource usage.

One can see a list of top process that using the most memory or CPU or disk.

```

shariful@shariful-VirtualBox: ~
File Edit View Search Terminal Help
shariful@shariful-VirtualBox:~$ top

top - 20:49:11 up 31 min,  1 user,  load average: 0.70, 0.75, 0.89
Tasks: 232 total,   2 running, 192 sleeping,   0 stopped,   0 zombie
%Cpu(s): 41.4 us,  3.9 sy,  0.0 ni, 53.9 id,  0.6 wa,  0.0 hi,  0.2 si,  0.0 st
KiB Mem : 1977236 total, 123580 free, 1462676 used,  390980 buff/cache
KiB Swap: 483800 total, 431820 free,  51980 used. 320212 avail Mem

  PID USER      PR  NI   VIRT   RES   SHR  S  %CPU  %MEM     TIME+ COMMAND
 1304 shariful  20   0 3482356 266320 91836 S   95.4  13.5   7:27.48 gnome-she+
 1150 shariful  20   0 595516 122996 58440 S    6.6   6.2   1:17.94 Xorg
 2401 shariful  20   0  51660   4100  3444 R    3.6   0.2   0:00.56 top
    1 root      20   0 159936  6812   5024 S    0.7   0.3   0:12.83 systemd

```

## Linux htop command

The **htop** command is an interactive process viewer and recommended method for Linux users. One can see a list of top process that using the most memory or CPU or disk and more:

```

shariful@shariful-VirtualBox: ~
File Edit View Search Terminal Help

 1 [|||||] 200.0% ] Tasks: 151, 452 top; 2 running
 2 [||||] ] Load average: 0.89 0.75 0.85
 Mem [|||||] 27.40% / 1.89G ] Uptime: 00:34:27
 Swp [||||] ]

  PID USER      PRI  NI  VIRT   RES   SHR  S  CPU%  MEM%   TIME+  Command
 1304 shariful  20   0 3400M  259M 92208 S   2.4  13.5   8:09.71 /usr/bin/gnome-s
 2425 shariful  20   0  1048    680  1756 R  18.0   0.2   0:04.49 htop
 2318 shariful  20   0  7000  30716 21624 S   0.0   2.0   0:13.31 /usr/lib/gnome-t
 1150 shariful  20   0  5010   1200 50472 S   0.0   6.2   1:29.26 /usr/lib/xorg/Xo
 1310 shariful  20   0  34000  2590 91208 S   1.6  13.5   1:15.60 /usr/bin/gnome-s
 1311 shariful  20   0  34000  2590 91208 S   1.6  13.5   1:12.72 /usr/bin/gnome-s
 1158 shariful  20   0  5010   1200 50472 S   0.0   6.2   0:12.28 /usr/lib/xorg/Xo
    1      20   0  1500    6812  5024 S   0.0   0.3   0:13.04 /sbin/init splas
 1800 shariful  20   0 25190  1990 78324 S   0.0   5.2   0:04.90 /usr/lib/firefox
 1637 shariful  20   0 20220  2000  1000 S  131.  13.5   2:56.59 /usr/lib/firefox
 1323 shariful  20   0  34000  2590 91208 S   0.0  13.5   0:00.71 /usr/bin/gnome-s
  280      19  -1 95240  8444  1764 S   0.0   0.5   0:02.51 /lib/systemd/sys
  302      20   0 40780  1676  1420 S   0.0   0.1   0:02.62 /lib/systemd/sys
  456      20   0  1420  1520  1520 S   0.0   0.1   0:00.00 /lib/systemd/sys
  426      20   0  1420  1520  1520 S   0.0   0.1   0:00.49 /lib/systemd/sys
  428      20   0 70884  4452  4188 S   0.0   0.2   0:00.94 /lib/systemd/sys
  575      20   0  1070  1808  1804 S   0.0   0.1   0:00.00 /usr/sbin/irqbal
  561      20   0  1070  1808  1804 S   0.0   0.1   0:00.36 /usr/sbin/irqbal
  611      20   0  5050  8392  1580 S   0.0   0.5   0:00.00 /usr/sbin/irqbal
  629      20   0  5050  8392  1580 S   0.0   0.5   0:00.02 /usr/sbin/irqbal
F1Help F2Setup F3SearchF4FilterF5Tree F6SortByF7Nice F8Nice F9Kill F10Quit

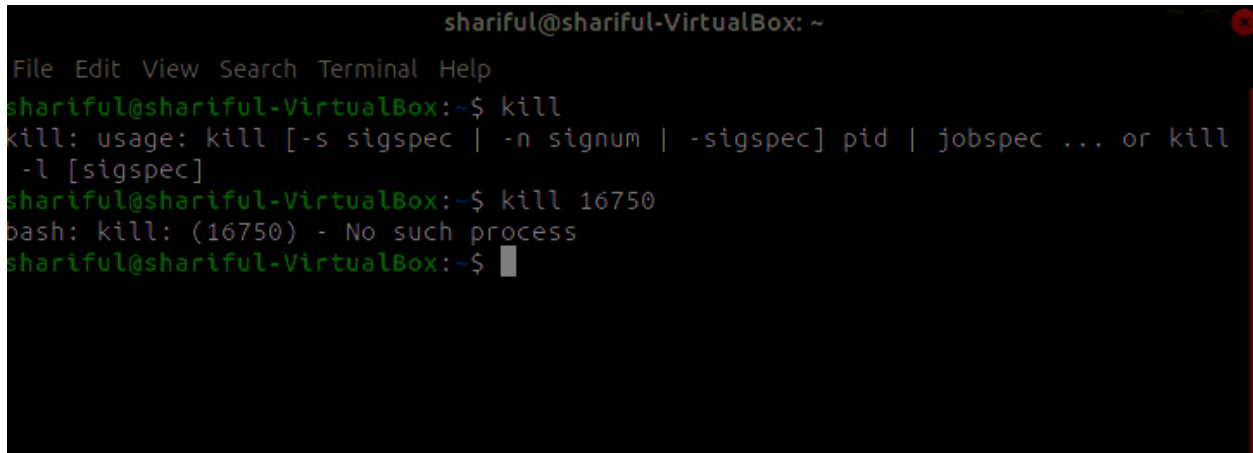
```

## Linux kill command:

Want to kill a process? Try **kill** command. The syntax is:

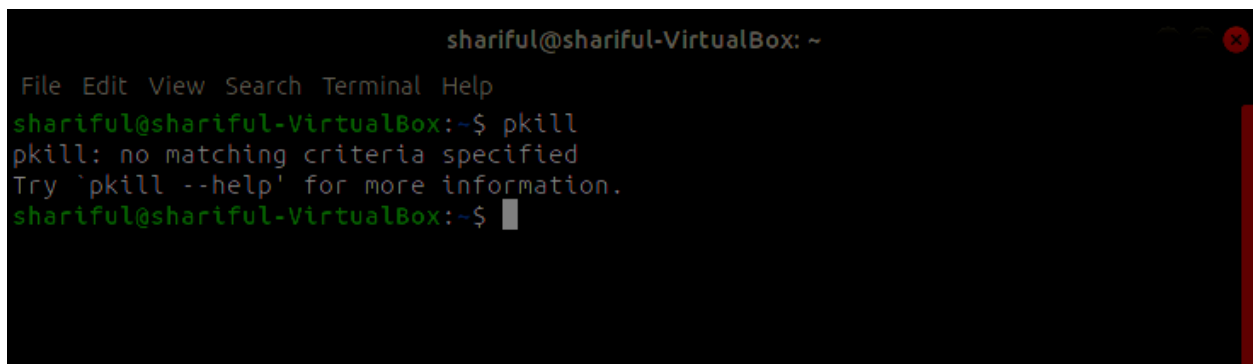
vivek@nixcraft:~\$ kill pid

vivek@nixcraft:~\$ kill -signal pid

A screenshot of a Linux terminal window titled 'shariful@shariful-VirtualBox: ~'. The terminal shows the following commands and output:

```
shariful@shariful-VirtualBox:~$ kill
kill: usage: kill [-s sigspec | -n signum | -sigspec] pid | jobspec ... or kill
-l [sigspec]
shariful@shariful-VirtualBox:~$ kill 16750
bash: kill: (16750) - No such process
shariful@shariful-VirtualBox:~$
```

## Linux pkill command:

A screenshot of a Linux terminal window titled 'shariful@shariful-VirtualBox: ~'. The terminal shows the following commands and output:

```
shariful@shariful-VirtualBox:~$ pkill
pkill: no matching criteria specified
Try 'pkill --help' for more information.
shariful@shariful-VirtualBox:~$
```

ii)) The following process commands in Linux:

Top, htop, Ps, pstree, kill, pgrep, pkill ,killall, renice, xkill,

Top:

```

shariful@shariful-VirtualBox: ~
File Edit View Search Terminal Help
shariful@shariful-VirtualBox:~$ top

top - 20:49:11 up 31 min,  1 user,  load average: 0.70, 0.75, 0.89
Tasks: 232 total,  2 running, 192 sleeping,  0 stopped,  0 zombie
%Cpu(s): 41.4 us,  3.9 sy,  0.0 ni, 53.9 id,  0.6 wa,  0.0 hi,  0.2 si,  0.0 st
KiB Mem : 1977236 total, 123580 free, 1462676 used,  390980 buff/cache
KiB Swap: 483800 total, 431820 free,  51980 used. 320212 avail Mem

  PID USER      PR  NI   VIRT   RES   SHR  S  %CPU  %MEM     TIME+ COMMAND
 1304 shariful  20   0 3482356 266320 91836 S   95.4  13.5   7:27.48 gnome-she+
 1150 shariful  20   0 595516 122996 58440 S    6.6   6.2   1:17.94 Xorg
 2401 shariful  20   0  51660   4100  3444 R    3.6   0.2   0:00.56 top
    1 root      20   0 159936  6812   5024 S    0.7   0.3   0:12.83 systemd

```

htop:

```

shariful@shariful-VirtualBox: ~
File Edit View Search Terminal Help

 1 [|||||] Tasks: 151, 452 top; 2 running
 2 [||||] Load average: 0.89 0.75 0.85
 Mem [|||||] Optime: 00:34:27
 Swp [||||]

  PID USER      PRI  NI   VIRT   RES   SHR  S  CPU%  MEM%   TIME+  Command
1304 shariful  20   0 3400M  259M 92208 S   2.4  13.5  8:09.71 /usr/bin/gnome-s
2425 shariful  20   0  1048   680  3756 R  18.0   0.2  0:04.49 htop
2318 shariful  20   0  7000 30716 20624 S   0.0   2.0  0:13.31 /usr/lib/gnome-t
1150 shariful  20   0  5010  1200 50472 S   0.0   6.2  1:29.26 /usr/lib/xorg/Xo
1310 shariful  20   0 34000  2590 92208 S   1.6  13.5  1:15.60 /usr/bin/gnome-s
1311 shariful  20   0 34000  2590 92208 S   1.6  13.5  1:12.72 /usr/bin/gnome-s
1158 shariful  20   0  5010  1200 50472 S   0.0   6.2  0:12.28 /usr/lib/xorg/Xo
    1      20   0  1500   6812  5024 S   0.0   0.3  0:13.04 /sbin/init splas
1800 shariful  20   0 25190  1890 70324 S   0.0   5.2  0:04.90 /usr/lib/firefox
1637 shariful  20   0 20220  2600  1000 S  131.  13.5  2:56.59 /usr/lib/firefox
1323 shariful  20   0 34000  2590 92208 S   0.0  13.5  0:00.71 /usr/bin/gnome-s
  280      19  -1 85240  3444  1764 S   0.0   0.5  0:02.51 /lib/systemd/sys
  302      20   0 40780  2676  1420 S   0.0   0.1  0:02.62 /lib/systemd/sys
  456      20   0  1420  1520  1520 S   0.0   0.1  0:00.00 /lib/systemd/sys
  426      20   0  1420  1520  1520 S   0.0   0.1  0:00.49 /lib/systemd/sys
  428      20   0 70884  4452  4188 S   0.0   0.2  0:00.94 /lib/systemd/sys
  575      20   0  1070  1808  1804 S   0.0   0.1  0:00.00 /usr/sbin/irqbal
  561      20   0  1070  1808  1804 S   0.0   0.1  0:00.36 /usr/sbin/irqbal
  611      20   0  5050  3392  1580 S   0.0   0.5  0:00.00 /usr/sbin/irqbal
  629      20   0  5050  3392  1580 S   0.0   0.5  0:00.02 /usr/sbin/irqbal
F1Help F2Setup F3SearchF4FilterF5Tree F6SortByF7Nice -F8Nice +F9Kill F10Quit

```

$P_S:$ 

```

shariful@shariful-VirtualBox: ~
File Edit View Search Terminal Help
shariful@shariful-VirtualBox:~$ ps
  PID TTY          TIME CMD
  2533 pts/2    00:00:00 bash
  2541 pts/2    00:00:00 ps
shariful@shariful-VirtualBox:~$ █

graph LR
    gvfsd-fuse --- 5*[{gvfsd-fuse}]
    gvfsd-metadata --- 2*[{gvfsd-metadata}]
    ibus-portal --- 2*[{ibus-portal}]
    nautilus --- 3*[{nautilus}]
    xdg-permission- --- 2*[{xdg-permission-}]
    systemd-journal
    systemd-logind
    systemd-resolve
    systemd-timesyn --- {systemd-timesyn}
    systemd-udev
    udisksd --- 4*[{udisksd}]
    unattended-upgr --- {unattended-upgr}
    upowerd --- 2*[{upowerd}]
    whoopsie --- 2*[{whoopsie}]
    wpa_supplicant
shariful@shariful-VirtualBox:~$ █

```

*pstree:*

```

shariful@shariful-VirtualBox: ~
File Edit View Search Terminal Help
shariful@shariful-VirtualBox:~$ pstree
systemd--ModemManager--2*[{ModemManager}]
      |--NetworkManager--dhclient
      |                  --2*[{NetworkManager}]
      |--accounts-daemon--2*[{accounts-daemon}]
      |--acpid
      |--avahi-daemon--avahi-daemon
      |--boltd--2*[{boltd}]
      |--colord--2*[{colord}]
      |--cron
      |--cups-browsed--2*[{cups-browsed}]
      |--cupsd--6*[{dbus}]
      |--dbus-daemon
      |--firefox--Web Content--18*[{Web Content}]

```

```
gvfsd-fuse—5*[{gvfsd-fuse}]
gvfsd-metadata—2*[{gvfsd-metadata}]
ibus-portal—2*[{ibus-portal}]
nautilus—3*[{nautilus}]
xdg-permission—2*[{xdg-permission-}]
systemd-journal
systemd-logind
systemd-resolve
systemd-timesyn—{systemd-timesyn}
systemd-udev
udisksd—4*[{udisksd}]
unattended-upgr—{unattended-upgr}
upowerd—2*[{upowerd}]
whoopsie—2*[{whoopsie}]
wpa_supplicant
sharifful@sharifful-VirtualBox:~$
```

*kill:*

```
sharifful@sharifful-VirtualBox: ~
File Edit View Search Terminal Help
sharifful@sharifful-VirtualBox:~$ kill
kill: usage: kill [-s sigspec | -n signum | -sigspec] pid | jobspec ... or kill
-l [sigspec]
sharifful@sharifful-VirtualBox:~$ kill 16750
bash: kill: (16750) - No such process
sharifful@sharifful-VirtualBox:~$
```

*pgrep:*

```
sharifful@sharifful-VirtualBox: ~
File Edit View Search Terminal Help
sharifful@sharifful-VirtualBox:~$ pgrep firefox
1637
sharifful@sharifful-VirtualBox:~$ pgrep nginx
sharifful@sharifful-VirtualBox:~$
sharifful@sharifful-VirtualBox:~$ pgrep -l firefox
1637 firefox
sharifful@sharifful-VirtualBox:~$ pgrep sshd
sharifful@sharifful-VirtualBox:~$ pgrep ssh
1258
sharifful@sharifful-VirtualBox:~$ pgrep -l ssh
1258 ssh-agent
sharifful@sharifful-VirtualBox:~$
```



*killall:*

```
shariful@shariful-VirtualBox: ~  
File Edit View Search Terminal Help  
shariful@shariful-VirtualBox:~$ killall  
Usage: killall [ -Z CONTEXT ] [ -u USER ] [ -y TIME ] [ -o TIME ] [ -eIgiqrvw ]  
        [ -s SIGNAL | -SIGNAL ] NAME...  
        killall -l, --list  
        killall -V, --version  
  
-e,--exact          require exact match for very long names  
-I,--ignore-case    case insensitive process name match  
-g,--process-group  kill process group instead of process  
-y,--younger-than   kill processes younger than TIME  
-o,--older-than     kill processes older than TIME  
-i,--interactive    ask for confirmation before killing  
-l,--list           list all known signal names  
-q,--quiet          don't print complaints  
-r,--regex          interpret NAME as an extended regular expression  
-s,--signal SIGNAL  send this signal instead of SIGTERM  
-u,--user USER      kill only process(es) running as USER  
-v,--verbose        report if the signal was successfully sent  
-V,--version        display version information  
-w,--wait           wait for processes to die  
-n,--ns PID         match processes that belong to the same namespaces  
                    as PID or 0 for all namespaces  
-Z,--context REGEXP kill only process(es) having context  
                    (must precede other arguments)  
  
shariful@shariful-VirtualBox:~$
```

*renice:*

```
shariful@shariful-VirtualBox: ~  
File Edit View Search Terminal Help  
shariful@shariful-VirtualBox:~$ renice  
renice: not enough arguments  
Try 'renice --help' for more information.  
shariful@shariful-VirtualBox:~$
```

*xkill:*