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Lab report no. :06

Lab report name: Lab report on Linux command for process.

Aim and objectives: Linux is a multiprocessing operating system. How process work in Linux , how to manipulate and process and see all the running process , to store them in a local file and thus have the basic understanding of the whole thing .

Explanation:

- i) **Manage processes from Linux terminal:** The Linux terminal has a number of useful commands that can display running processes, kill them, and change their priority level. This post lists the classic, traditional commands, as well as some more useful, modern ones. These useful commands helps to manage the processes of Linux .some example of these command : top,htop,kill,pgrep,renice etc .

ii) Run the process command in Linux:

top command : The top command is the traditional way to view your system's resource usage and see the processes that are taking up the most system resources. Top displays a list of processes, with the ones using the most CPU at the top.

```
File Edit View Search Terminal Help
zafrul_hasan_nasim@zafrul-hasan-nasim-VirtualBox:~$ top

top - 20:26:19 up 1:48, 1 user, load average: 2.36, 2.22, 2.08
Tasks: 181 total, 5 running, 140 sleeping, 0 stopped, 1 zombie
%Cpu(s): 55.8 us, 44.2 sy, 0.0 ni, 0.0 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st
KiB Mem : 2845504 total, 1044456 free, 1131876 used, 669172 buff/cache
KiB Swap: 1509796 total, 1509796 free, 0 used. 1545744 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR S  %CPU  %MEM    TIME+  COMMAND
 1846 root        20   0   33964    6560   5892 R   49.0   0.2   44:42.01 mysql_secu+
 1811 root        20   0   33964    6668   6008 R   48.7   0.2   45:39.99 mysql_secu+
   10 root        20   0     0         0     0 R    1.0   0.0    0:58.53 ksoftirqd/0
1034 zafrul_+    20   0 3041028 408852 105744 S    0.7  14.4   1:14.61 gnome-shell
    1 root        20   0   160284    9488   6724 S    0.0   0.3    0:02.09 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_gp
    6 root         0 -20     0         0     0 I    0.0   0.0    0:00.00 kworker/0:0
    9 root         0 -20     0         0     0 I    0.0   0.0    0:00.00 mm_percpu_+
   11 root        20   0     0         0     0 R    0.0   0.0    0:03.83 rcu_sched
   12 root        rt    0     0         0     0 S    0.0   0.0    0:00.01 migration/0
   13 root       -51   0     0         0     0 S    0.0   0.0    0:00.00 idle_injec+
   14 root        20   0     0         0     0 S    0.0   0.0    0:00.00 cpuhp/0
   15 root        20   0     0         0     0 S    0.0   0.0    0:00.00 kdevtmpfs
   16 root         0 -20     0         0     0 I    0.0   0.0    0:00.00 netns
   17 root        20   0     0         0     0 S    0.0   0.0    0:00.00 rcu_tasks_+
   18 root        20   0     0         0     0 S    0.0   0.0    0:00.00 kauditd
   19 root        20   0     0         0     0 S    0.0   0.0    0:00.00 khungtaskd
   20 root        20   0     0         0     0 S    0.0   0.0    0:00.00 oom reaper
```

htop command : htop is not installed by default , so I have install by 'sudo apt-get install htop' command . htop displays the same information with an easier-to-understand layout. It also lets you select processes with the arrow keys and perform actions, such as killing them or changing their priority, with the F keys.

```
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CPU[|||||||||||||||||100.0%] Tasks: 112, 273 thr; 1 running
Mem[|||||||||||||||1.16G/2.71G] Load average: 2.81 2.29 2.12
Swp[|||||0K/1.44G] Uptime: 02:56:12

  PID USER      PRI  NI  VIRT   RES   SHR  S  CPU% MEM%   TIME+  Command
1846 root        20   0 33964   6560  5892  R  49.7  0.2   1h17:38 mysql_secure_ins
1811 root        20   0 33964   6668  6008  R  49.0  0.2   1h18:36 mysql_secure_ins
3901 zafrul_ha   20   0 33792   4644  3820  R   0.7  0.2   0:00.05 httpd
850  zafrul_ha   20   0 371M   71404 41304  S   0.7  2.5   0:36.69 /usr/lib/xorg/Xo
1034 zafrul_ha   20   0 2973M   417M 103M   S   0.0 15.0   1:50.05 /usr/bin/gnome-s
3801 zafrul_ha   20   0 773M   36760 27880  S   0.0  1.3   0:00.23 /usr/lib/gnome-t
1  root        20   0 156M   9488   6724  S   0.0  0.3   0:02.25 /sbin/init splas
215 root        19  -1 95132  18656 17644  S   0.0  0.7   0:00.42 /lib/systemd/sys
243 root        20   0 47680   5880  3244  S   0.0  0.2   0:00.52 /lib/systemd/sys
485 systemd-t   20   0 142M   3348   2776  S   0.0  0.1   0:00.00 /lib/systemd/sys
456 systemd-t   20   0 142M   3348   2776  S   0.0  0.1   0:00.06 /lib/systemd/sys
457 systemd-r   20   0 70768   6228   5524  S   0.0  0.2   0:00.27 /lib/systemd/sys
713 root        20   0 166M   17456  9544  S   0.0  0.6   0:00.00 /usr/bin/python3
523 root        20   0 166M   17456  9544  S   0.0  0.6   0:00.16 /usr/bin/python3
582 syslog      20   0 256M   4296   3528  S   0.0  0.2   0:00.02 /usr/sbin/rsyslo
583 syslog      20   0 256M   4296   3528  S   0.0  0.2   0:00.00 /usr/sbin/rsyslo
584 syslog      20   0 256M   4296   3528  S   0.0  0.2   0:00.02 /usr/sbin/rsyslo
524 syslog      20   0 256M   4296   3528  S   0.0  0.2   0:00.06 /usr/sbin/rsyslo
526 root        20   0 98M    8216   6928  S   0.0  0.3   0:00.07 /usr/sbin/cupsd
530 root        20   0 70740   6252   5460  S   0.0  0.2   0:00.19 /lib/systemd/sys
626 root        20   0 659M  29032 15088  S   0.0  1.0   0:00.11 /usr/lib/snapd/s

F1Help F2Setup F3Search F4Filter F5Tree F6SortBy F7Nice F8Nice F9Kill F10Quit
```

ps command : The ps command lists running processes. The following command lists all processes running on your system.

```

zafrul_hasan_nasim@zafrul-hasan-nasim-VirtualBox:~$ ps
  PID TTY          TIME CMD
 2782 pts/2    00:00:00 bash
 2824 pts/2    00:00:00 ps
zafrul_hasan_nasim@zafrul-hasan-nasim-VirtualBox:~$ ps -a
  PID TTY          TIME CMD
   850 tty1      00:00:22 Xorg
   894 tty1      00:00:00 gnome-session-b
   985 tty1      00:00:00 xbrlapi <defunct>
 1034 tty1      00:01:17 gnome-shell
 1082 tty1      00:00:04 ibus-daemon
 1094 tty1      00:00:00 ibus-dconf
 1096 tty1      00:00:00 ibus-x11
 1168 tty1      00:00:00 gsd-power
 1170 tty1      00:00:00 gsd-print-notif
 1172 tty1      00:00:00 gsd-rfkill
 1173 tty1      00:00:00 gsd-screensaver
 1174 tty1      00:00:00 gsd-sharing
 1181 tty1      00:00:00 gsd-sound
 1190 tty1      00:00:00 gsd-xsettings
 1195 tty1      00:00:00 gsd-wacom
 1198 tty1      00:00:00 gsd-smartcard
 1210 tty1      00:00:00 gsd-clipboard
 1211 tty1      00:00:00 gsd-a11y-settin
 1214 tty1      00:00:00 gsd-datetime
 1216 tty1      00:00:00 gsd-color
 1220 tty1      00:00:00 gsd-keyboard
 1222 tty1      00:00:00 gsd-housekeepin

```

pstree command : The pstree command is visualizing processes in tree format.

kill command : The kill commands can kill a process, given its name.

```
File Edit View Search Terminal Help
zafarul_hasan_nasim@zafarul-hasan-nasim-VirtualBox:~$ pkill firefox
zafarul_hasan_nasim@zafarul-hasan-nasim-VirtualBox:~$
```

Killall command: killall command is a used to terminating running processes on your system based on name.

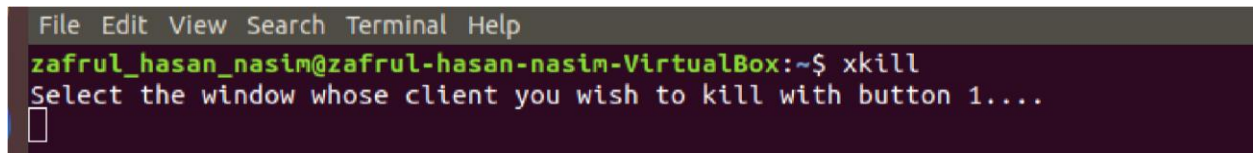
```
zafarul_hasan_nasim@zafarul-hasan-nasim-VirtualBox:~$ killall
Usage: killall [ -Z CONTEXT ] [ -u USER ] [ -y TIME ] [ -o TIME ] [ -eIgiqrwv ]
        [ -s SIGNAL | -SIGNAL ] NAME...
        killall -l, --list
        killall -V, --version

-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)
```

renice command : The renice command changes the nice value of an already running process. The nice value determines what priority the process runs with.

```
File Edit View Search Terminal Help
zafarul_hasan_nasim@zafarul-hasan-nasim-VirtualBox:~$ ps -el | grep terminal
0 S  1000  3174   798  0  80   0 - 198015 poll_s ?      00:00:00 gnome-terminal
l-
zafarul_hasan_nasim@zafarul-hasan-nasim-VirtualBox:~$ renice -n 15 -p 3174
3174 (process ID) old priority 0, new priority 15
zafarul_hasan_nasim@zafarul-hasan-nasim-VirtualBox:~$ ps -el | grep terminal
0 S  1000  3174   798  0  95  15 - 198015 poll_s ?      00:00:00 gnome-terminal
l-
zafarul_hasan_nasim@zafarul-hasan-nasim-VirtualBox:~$
```

xkill command : The xkill command is a way of easily killing graphical programs. Run it and your cursor will turn into an x sign. Click a program's window to kill that program.

A screenshot of a Linux terminal window. The title bar at the top shows 'File Edit View Search Terminal Help'. The terminal text shows the user 'zafrul_hasan_nasim' at the prompt 'zafrul-hasan-nasim-VirtualBox:~\$' typing the command 'xkill'. Below the command, a message says 'Select the window whose client you wish to kill with button 1....'. A small white square cursor is visible on the line below the message.

```
File Edit View Search Terminal Help
zafrul_hasan_nasim@zafrul-hasan-nasim-VirtualBox:~$ xkill
Select the window whose client you wish to kill with button 1....
█
```

Conclusion: From this lab ,I have a basic grasp of process in Linux operating system ,how to manage process, how to kill them, how to save there data in memory we also learnt about pipes. We learnt several methods to kill a process in linux both in GUI and command line , by using name and PID .At the end , this lab is very helpful for process handling.