

Lab Project - 3

Objective: Linux process management lab

Lab 1 : Process Exploration and

Q1:- Use `ps`, `top`, or `htop` to list all running processes on the system.

Ans:-

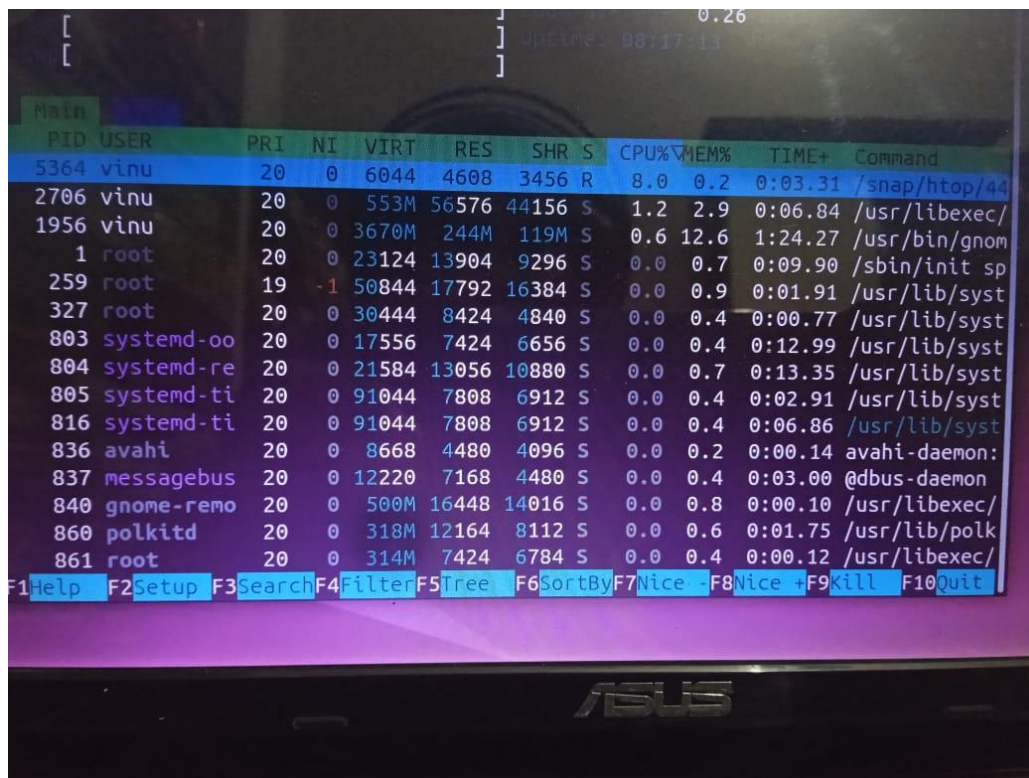
```
>_ Terminal
— 0 bash —
root@rhel:~# ps
  PID TTY          TIME CMD
  2410 pts/0    00:00:00 bash
  2446 pts/0    00:00:00 ps
root@rhel:~# ps -ef
root      1570      1574  0 22:04 ?
root      1694        1  0 22:04 ?
root      1696     1694  0 22:04 ?
root      1841        2  0 22:04 ?
root      2160        2  0 22:05 ?
root      2398        1  0 22:05 ?
root      2409        1  0 22:05 ?
root      2410     2409  0 22:05 pts/0
root      2444     1596  0 22:07 pts/1
root      2445     2444  0 22:07 pts/1
root      2448     2410  0 22:09 pts/0
root@rhel:~# ps -ef
[ rhel-session: bash* ]
```

Top command:- process id

```
— 0 top —
top - 22:10:47 up 6 min,  0 users,  load average: 0.00, 0.07, 0.05
Tasks: 102 total,   2 running, 100 sleeping,   0 stopped,   0 zombie
%Cpu(s):  0.3 us,  0.3 sy,  0.0 ni, 99.3 id,  0.0 wa,  0.0 hi,  0.0 si,  0.
MiB Mem :  3656.8 total,  2669.8 free,   535.9 used,   694.8 buff/cache
MiB Swap:   0.0 total,   0.0 free,   0.0 used.  3121.0 avail Mem

  PID USER      PR  NI   VIRT   RES   SHR S  %CPU  %MEM    TIME+
 2450 root        20   0  10560   3840  3200 R   0.3   0.1   0:00.02
    1 root        20   0 108508  17672 10776 S   0.0   0.5   0:01.39
    2 root        20   0        0        0      0 S   0.0   0.0   0:00.00
    3 root         0 -20        0        0      0 I   0.0   0.0   0:00.00
    4 root         0 -20        0        0      0 I   0.0   0.0   0:00.00
    5 root         0 -20        0        0      0 I   0.0   0.0   0:00.00
```

htop command



PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
5364	vinu	20	0	6044	4608	3456	R	8.0	0.2	0:03.31	/snap/htop/44
2706	vinu	20	0	553M	56576	44156	S	1.2	2.9	0:06.84	/usr/libexec/
1956	vinu	20	0	3670M	244M	119M	S	0.6	12.6	1:24.27	/usr/bin/gnom
1	root	20	0	23124	13904	9296	S	0.0	0.7	0:09.90	/sbin/init sp
259	root	19	-1	50844	17792	16384	S	0.0	0.9	0:01.91	/usr/lib/syst
327	root	20	0	30444	8424	4840	S	0.0	0.4	0:00.77	/usr/lib/syst
803	systemd-oo	20	0	17556	7424	6656	S	0.0	0.4	0:12.99	/usr/lib/syst
804	systemd-re	20	0	21584	13056	10880	S	0.0	0.7	0:13.35	/usr/lib/syst
805	systemd-ti	20	0	91044	7808	6912	S	0.0	0.4	0:02.91	/usr/lib/syst
816	systemd-ti	20	0	91044	7808	6912	S	0.0	0.4	0:06.86	/usr/lib/syst
836	avahi	20	0	8668	4480	4096	S	0.0	0.2	0:00.14	avahi-daemon:
837	messagebus	20	0	12220	7168	4480	S	0.0	0.4	0:03.00	@dbus-daemon
840	gnome-remo	20	0	500M	16448	14016	S	0.0	0.8	0:00.10	/usr/libexec/
860	polkitd	20	0	318M	12164	8112	S	0.0	0.6	0:01.75	/usr/lib/polkit
861	root	20	0	314M	7424	6784	S	0.0	0.4	0:00.12	/usr/libexec/

F1 Help F2 Setup F3 Search F4 Filter F5 Tree F6 SortBy F7 Nice F8 Nice + F9 Kill F10 Quit

2. Find a Specific Process:

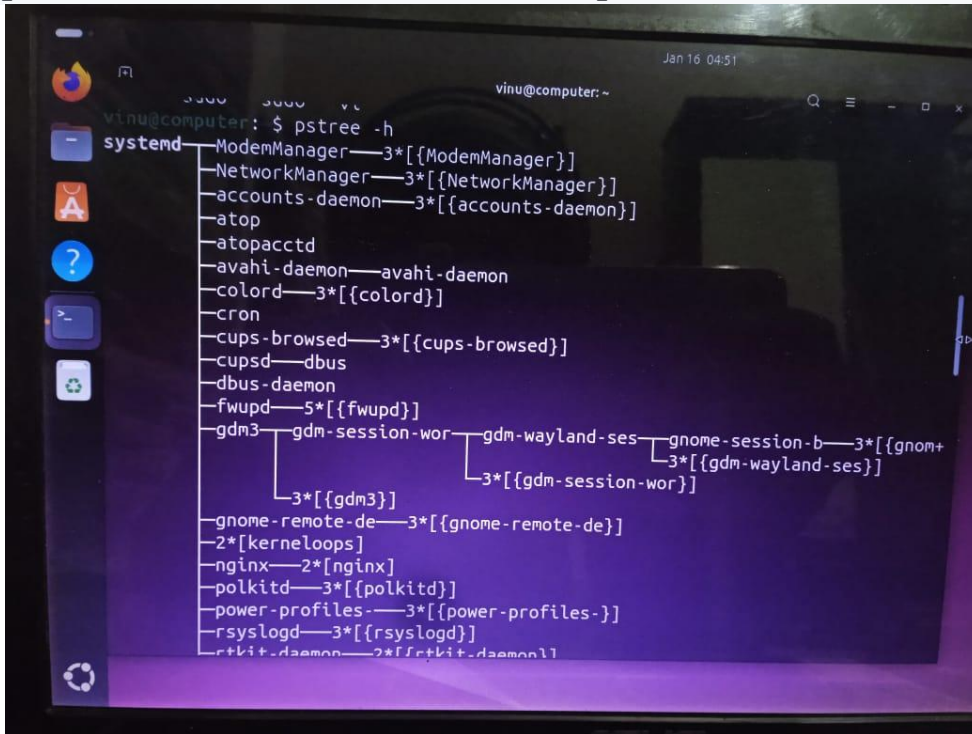
Q1:- Use `pgrep` to find the PID (process ID) of a specific running process like `apache2` or `nginx`.

Ans:- pgrep nginx command:-

```
Jan 16 04:35
vinu@computer: ~
vinu@computer:~$ sudo apt install nginx
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  nginx-common
Suggested packages:
  fcgiwrap nginx-doc
The following NEW packages will be installed:
  nginx nginx-common
0 upgraded, 2 newly installed, 0 to remove and 129 not upgraded
Need to get 552 kB of archives.
After this operation, 1,596 kB of additional disk space will be used.
Do you want to continue? [Y/n]
```

```
Preconfiguring packages ...
Selecting previously unselected package nginx-common.
(Reading database ... 186081 files and directories currently installed.)
Preparing to unpack .../nginx-common_1.24.0-2ubuntu7.1_all.deb ...
Unpacking nginx-common (1.24.0-2ubuntu7.1) ...
Selecting previously unselected package nginx.
Preparing to unpack .../nginx_1.24.0-2ubuntu7.1_amd64.deb ...
Unpacking nginx (1.24.0-2ubuntu7.1) ...
Setting up nginx (1.24.0-2ubuntu7.1) ...
Setting up nginx-common (1.24.0-2ubuntu7.1) ...
Created symlink /etc/systemd/system/multi-user.target.wants/nginx.service.
Processing triggers for ufw (0.36.2-6) ...
Processing triggers for man-db (2.12.0-4build2) ...
vinu@computer:~$ pgrep nginx
7079
7080
7081
vinu@computer:~$
```


Q2:- Use pstree to view a tree of processes and their parent-child relationships.

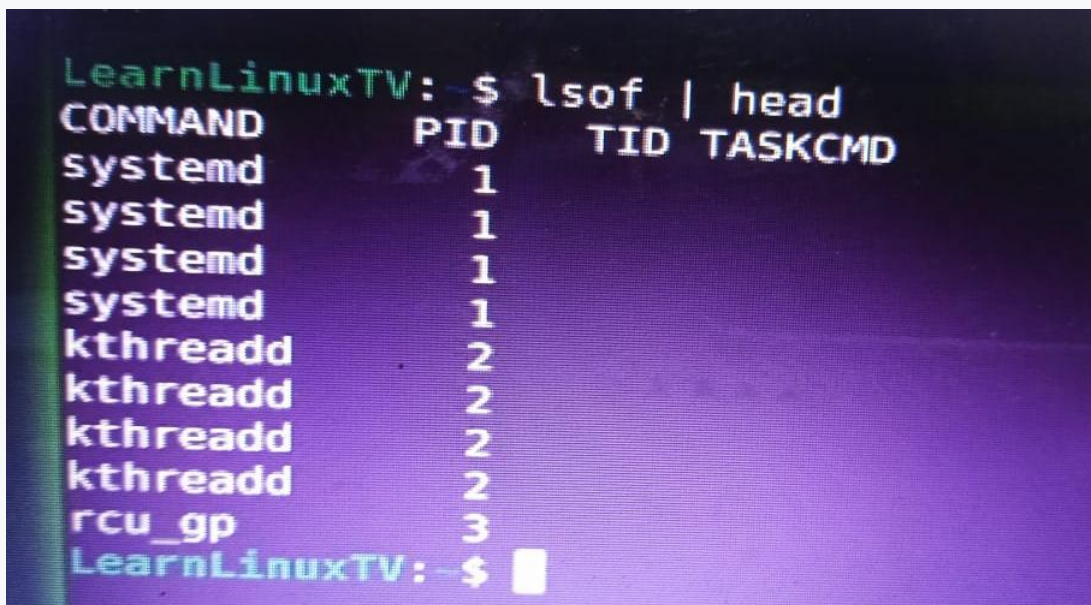


```
vinu@computer: ~  
Jan 16 04:51  
vinu@computer: $ pstree -h  
systemd--ModemManager--3*[{ModemManager}]  
--NetworkManager--3*[{NetworkManager}]  
--accounts-daemon--3*[{accounts-daemon}]  
--atop  
--atopacctd  
--avahi-daemon--avahi-daemon  
--colord--3*[{colord}]  
--cron  
--cups-browsed--3*[{cups-browsed}]  
--cupsd--dbus  
--dbus-daemon  
--fwupd--5*[{fwupd}]  
--gdm3--gdm-session-wor--gdm-wayland-ses--gnome-session-b--3*[{gnom+  
--3*[{gdm3}]--3*[{gdm-session-wor}]--3*[{gdm-wayland-ses}]  
--gnome-remote-de--3*[{gnome-remote-de}]  
--2*[{kerneloops}]  
--nginx--2*[{nginx}]  
--polkitd--3*[{polkitd}]  
--power-profiles--3*[{power-profiles-}]  
--rsyslogd--3*[{rsyslogd}]  
--rtkit-daemon--2*[{rtkit-daemon}]
```

3. Investigate Process Details:

Q1:- Use lsof to identify files opened by a process

Ans:-



```
LearnLinuxTV: $ lsof | head  
COMMAND      PID    TID  TASKCMD  
systemd       1  
systemd       1  
systemd       1  
systemd       1  
kthreadd      2  
kthreadd      2  
kthreadd      2  
kthreadd      2  
rcu_gp        3  
LearnLinuxTV: $
```

Q2:- Check the memory usage and CPU time of a process using `top` `pid,etime,%mem,%cpu,comm`.

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+
1	root	20	0	108504	17680	10776	S	0.0	0.5	0:01.43
2	root	20	0	0	0	0	S	0.0	0.0	0:00.00
3	root	0	-20	0	0	0	I	0.0	0.0	0:00.00
4	root	0	-20	0	0	0	I	0.0	0.0	0:00.00
5	root	0	-20	0	0	0	I	0.0	0.0	0:00.00
6	root	0	-20	0	0	0	I	0.0	0.0	0:00.00
7	root	20	0	0	0	0	I	0.0	0.0	0:00.00
8	root	0	-20	0	0	0	I	0.0	0.0	0:00.00
9	root	20	0	0	0	0	I	0.0	0.0	0:00.39