

1. Run command `ps aux | less` and find descriptions for column titles used in output.

USER	PID	%CPU	%MEM	VSZ	RSS	TTY	STAT	START	TIME	COMMAND
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By default, `ps` selects all processes with the same effective user ID (`euid=EUID`) as the current user and associated with the same terminal as the invoker. It displays the process ID (`pid=PID`), the terminal associated with the process (`tname=TTY`), the cumulated CPU time in `[DD-]hh:mm:ss` format (`time=TIME`), and the executable name (`ucmd=CMD`). Output is unsorted by default.

2. What is the default delay for `top` commands screen updates? Change this update time to 0.5 seconds.

Defaults time is 3.0 seconds

```
user@AC4892-Ubuntu:~$ top
```

Press `d`

Then change the time

```
top - 23:15:16 up 12 days, 12:22, 2 users, load average: 0.00, 0.00, 0.00
Tasks: 198 total, 1 running, 197 sleeping, 0 stopped, 0 zombie
%Cpu(s): 6.2 us, 0.0 sy, 0.0 ni, 93.8 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st
MiB Mem : 976.8 total, 93.6 free, 169.5 used, 713.8 buff/cache
MiB Swap: 1962.0 total, 1949.9 free, 12.1 used. 644.4 avail Mem
Change delay from 3.0 to 0.5
PID USER PR NT VIRT RES SHR S %CPU %MEM TIME+ COMMAND
```

3. Open another SSH connection to your Ubuntu (for example using Putty) and shutdown this connection using `kill` command (Tip: use PID of opened SSH connection).

To find the PID of a opened connection

```
user@AC4892-Ubuntu:~$ ps -fp $$
```

```
user@AC4892-Ubuntu:~$ ps -fp $$
UID          PID     PPID  C  STIME TTY          TIME CMD
user        457166   457165  0  23:03 pts/1        00:00:00 -bash
user@AC4892-Ubuntu:~$
```

Now open another connection

```
user@AC4892-Ubuntu:~$ user@AC4892-Ubuntu:~$
user@AC4892-Ubuntu:~$ kill 457166
```

Previous connection got closed

```
user@AC4892-Ubuntu:~$ logout
Connection to 172.21.6.28 closed.
PS C:\Users\STZ>
```

4. Open another SSH connection again to your Ubuntu. Print the tree view of processes when SSH connection has been established. Now shutdown the second SSH connection and print the tree view again. How is SSH connection displayed in tree view on both cases (connection established and connection closed)?

```
user@AC4892-Ubuntu:~$ pstree
```

```

systemd—ModemManager—2*[{ModemManager}]
      |—VGAAuthService
      |—accounts-daemon—2*[{accounts-daemon}]
      |—agetty
      |—atd
      |—cron
      |—dbus-daemon
      |—multipathd—6*[{multipathd}]
      |—networkd-dispat
      |—polkitd—2*[{polkitd}]
      |—rsyslogd—3*[{rsyslogd}]
      |—snapd—9*[{snapd}]
      |—sshd—sshd—sshd—bash—python3
      |   |—sshd—sshd—bash
      |   |—sshd—sshd—bash—pstree
      |—systemd—(sd-pam)
      |—systemd-journal
      |—systemd-logind
      |—systemd-network
      |—systemd-resolve
      |—systemd-timesyn—{systemd-timesyn}
      |—systemd-udev
      |—udisksd—4*[{udisksd}]
      |—unattended-upgr—{unattended-upgr}
      |—vmtoolsd—3*[{vmtoolsd}]

```

```

user@AC4892-Ubuntu:~$ kill 457960
user@AC4892-Ubuntu:~$ pstree
systemd—ModemManager—2*[{ModemManager}]

```

```
systemd—ModemManager—2*[{ModemManager}]
—VGAAuthService
—accounts-daemon—2*[{accounts-daemon}]
—agetty
—atd
—cron
—dbus-daemon
—multipathd—6*[{multipathd}]
—networkd-dispatcher
—polkitd—2*[{polkitd}]
—rsyslogd—3*[{rsyslogd}]
—snapd—9*[{snapd}]
—sshd—sshd—sshd—bash—python3
—sshd—sshd—sshd—bash—pstree
—systemd—(sd-pam)
—systemd-journal
—systemd-logind
—systemd-networkd
—systemd-resolved
—systemd-timesyncd—{systemd-timesyncd}
—systemd-udev
```

As soon as the connection was close ssh displayed without a branch

5. **Why is SSH displayed in tree view even when there is no SSH client connection open from Putty? Important: In VLE environment you will always have SSH client connection open!**

Even though there is no ssh connection opened from putty ssh displayed in the tree view

- ### 6. How can you shutdown SSH connection through top program?

```
user@AC4892-Ubuntu:~$ sudo top
```

Press K to kill the process

```
top - 07:31:24 up 12 days, 20:38, 1 user, load average: 0.00, 0.01, 0.00
Tasks: 200 total, 1 running, 199 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, 0.0 st
MiB Mem : 976.8 total, 208.7 free, 166.1 used, 602.1 buff/cache
MiB Swap: 1962.0 total, 1947.7 free, 14.3 used, 646.2 avail Mem
Send pid 482964 signal [15/sigterm] Connection to 172.21.6.28 closed by remote host.
Connection to 172.21.6.28 closed.
```

				RES	SHR	S	%CPU	%MEM	TIME+	COMMAND	
PS	C:\Users\STZ>	20	0	14064	5992	4508	S	0.7	0.6	0:00.02	sshd
	716 root	20	0	309544	4744	3416	S	0.3	0.5	13:08.87	vmtoolsd
	1 root	20	0	169456	10972	6788	S	0.0	1.1	0:09.48	systemd
	2 root	20	0	0	0	0	S	0.0	0.0	0:00.07	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