

TP N°3 d'Administration Linux

❖ EXERCICE 1 : « Gestion des Processus »

1. Affichage de la liste des processus associés :

```
hayat@hayat-VirtualBox: ~  
hayat@hayat-VirtualBox:~$ ps  
  PID TTY          TIME CMD  
 1479 pts/0    00:00:00 bash  
 2702 pts/0    00:00:00 ps  
hayat@hayat-VirtualBox:~$ ps -l  
F S  UID      PID     PPID  C  PRI  NI ADDR SZ WCHAN  TTY          TIME CMD  
0 S   1000    1479    1441  0   80   0 -  4839 do_wai pts/0    00:00:00 bash  
0 R   1000    2703    1479  0   80   0 -  5229 -      pts/0    00:00:00 ps  
hayat@hayat-VirtualBox:~$
```

On constate que PPID du processus ps = PID du processus bash cela veut dire que **le processus bash est le processus père du ps**

2. Exécution des commandes suivants impliquent :

sigkill (9)

Le processus est tué sans pouvoir de défendre.

sigstop (23)

Le processus s'interrompt.

sigcont (25)

Le processus interrompu redémarre.

```
hayat@hayat-VirtualBox:~$ ps  
  PID TTY          TIME CMD  
 1479 pts/0    00:00:00 bash  
 2845 pts/0    00:00:00 ps  
hayat@hayat-VirtualBox:~$ kill -23 2845
```

3. La commande **nice** pour lancer des commandes ayant une faible priorité où **19** désigne le nombre du processus ⇔ Demande de suspension imbloquentable

```
hayat@hayat-VirtualBox:~$ nice -19 cat GI2  
hello  
hayat@hayat-VirtualBox:~$
```

4. Affichage de **ps tree** : on remarque que le processus **systemd** est la racine où plusieurs processeurs lui héritent comme **ModemManager**, **NetworkManager**, **cron** et n'importe quel processus lancé par le système. L'identifiant de **processus parent (parent process ID)**, ou **ppid**, est simplement l'identifiant du père de processus.



5. La commande **ps | wc** compte deux processus associés aux commandes **ps** et **wc** que vous venez de lancer en utilisant la pipe **|** lorsqu'on lance la commande on a :
- wc : word count** est une commande qui permet de compter le nombre des mots **ps | wc** désigne le nombre de mots trouvés lorsqu'on lance la commande **ps**

- **4** : désigne le nombre maximal des lettres du nom du processus
- **16** : désigne le nombre de bits pour lesquels **ps** est utilisé
- **119** : le nombre total des lignes de la liste des processus lancés, utilisé par l'utilisateur et par le système

```
hayat@hayat-VirtualBox:~$ ps | wc
 4      16     119
hayat@hayat-VirtualBox:~$ ps
PID TTY          TIME CMD
1479 pts/0    00:00:00 bash
2928 pts/0    00:00:00 ps
hayat@hayat-VirtualBox:~$
```

6. Les commandes qui permettent de reprendre l'exécution d'une instruction interrompue par un **^Z** sont : **fg** et **bg**. **fg** permet de poursuivre le déroulement du programme. **bg** le fait aussi mais il relance le programme

❖ EXERCICE 2: « VISUALISATION DES PROCESSUS »

2.1) D'après le TP précédent on a créé un nouvel utilisateur nommé « **students** » il faut ajouter cet utilisateur au groupe sudo par cette commande « **sudo usermod -aG sudo students** » puis on l'accède par cette commande **su - students**

```
students@hayat-VirtualBox: ~  
hayat@hayat-VirtualBox:~$ sudo usermod -aG sudo students  
hayat@hayat-VirtualBox:~$ su - students  
Password:  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
students@hayat-VirtualBox:~$  
hayat@hayat-VirtualBox:~$
```

2.2) Affichage de la liste des processus pour chaque user : **PID** c'est le numéro d'identification du processus **PPID** le numéro d'identification du processus père

```
students@hayat-VirtualBox: ~  
students@hayat-VirtualBox:~$ ps  
  PID TTY          TIME CMD  
 3254 pts/0    00:00:00 bash  
 3327 pts/0    00:00:00 ps  
students@hayat-VirtualBox:~$ ps -l  
F S  UID        PID      PPID  C PRI  NI ADDR SZ WCHAN  TTY          TIME  
CMD  
4 S  1001      3254      3253  0  80   0 - 4823 do_wai pts/0    00:00:00  
bash  
0 R  1001      3329      3254  0  80   0 - 5229 -      pts/0    00:00:00  
ps  
hayat@hayat-VirtualBox: ~  
hayat@hayat-VirtualBox:~$ ps  
  PID TTY          TIME CMD  
 3131 pts/1    00:00:00 bash  
 3324 pts/1    00:00:00 ps  
hayat@hayat-VirtualBox:~$ ps -l  
F S  UID        PID      PPID  C PRI  NI ADDR SZ WCHAN  TTY          TIME  
CMD  
0 S  1000      3131      1441  0  80   0 - 4807 do_wai pts/1    00:00:00  
bash  
0 R  1000      3328      3131  0  80   0 - 5229 -      pts/1    00:00:00  
ps  
hayat@hayat-VirtualBox:~$
```


2.3) L'affichage des processus relatifs à votre terminal tout en affichant le nom de l'utilisateur

```
students@hayat-VirtualBox:~$ ps -u
USER          PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
MAND
students     3254  0.0  0.2  19292  4924 pts/0    S   13:12   0:00 -ba
students     3367  0.0  0.1  21000  3296 pts/0    R+  13:31   0:00 ps
students@hayat-VirtualBox:~$
```



```
hayat@hayat-VirtualBox:~$ ps -u
USER          PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
MAND
hayat         851  0.0  0.2  173528  6536 tty2     Ssl+ 05:13   0:00 /us
hayat         856  0.6  3.0  547840 70788 tty2     Sl+  05:13   3:05 /us
hayat         946  0.0  0.6  198164 14164 tty2     Sl+  05:13   0:00 /us
hayat        1479  0.0  0.2  19356  4896 pts/0    Ss   05:14   0:00 bas
hayat        3131  0.0  0.2  19228  4860 pts/1    Ss   12:57   0:00 bas
hayat        3365  0.0  0.1  21000  3436 pts/1    R+   13:31   0:00 ps
hayat@hayat-VirtualBox:~$
```

2.4) Affichage des processus de l'utilisateur 2 depuis le terminal de l'utilisateur 1 et vice versa

```
students@hayat-VirtualBox:~$ ps -u hayat
PID TTY      TIME COMMAND
800 ?        00:00:06 systemd
805 ?        00:00:00 (sd-pam)
823 ?        00:00:02 pulseaudio
825 ?        00:00:00 tracker-miner-f
829 ?        00:00:04 dbus-daemon
832 ?        00:00:00 gnome-keyring-d
839 ?        00:00:00 gvfsd
851 tty2     00:00:00 gdm-x-session
856 tty2     00:03:13 Xorg
858 ?        00:00:00 gvfsd-fuse
859 ?        00:00:00 gvfs-udisks2-vo
873 ?        00:00:00 gvfs-goa-volume
878 ?        00:00:00 goa-daemon
903 ?        00:00:00 goa-identity-se
911 ?        00:00:00 gvfs-mtp-volume
920 ?        00:00:00 gvfs-gphoto2-vo
924 ?        00:00:02 gvfs-afc-volume
946 tty2     00:00:00 gnome-session-h
```



```
hayat@hayat-VirtualBox:~$ ps -u students
PID TTY      TIME COMMAND
3254 pts/0    00:00:00 bash
hayat@hayat-VirtualBox:~$
```

2.5) Affichage des processus de tous les utilisateurs

```
students@hayat-VirtualBox: ~  
students@hayat-VirtualBox:~$ ps -ef  
UID          PID     PPID  C  STIME TTY          TIME CMD  
root           1         0  0  05:13 ?        00:00:04 /sbin/init splash  
root           2         0  0  05:13 ?        00:00:00 [kthreadd]  
root           3         2  0  05:13 ?        00:00:00 [rcu_gp]  
root           4         2  0  05:13 ?        00:00:00 [rcu_par_gp]  
root           6         2  0  05:13 ?        00:00:00 [kworker/0:0H-kblo  
root           9         2  0  05:13 ?        00:00:00 [mm_percpu_wq]  
root          10         2  0  05:13 ?        00:00:00 [ksoftirqd/0]  
root          11         2  0  05:13 ?        00:00:10 [rcu_sched]  
root          12         2  0  05:13 ?        00:00:00 [migration/0]  
hayat        1372       1113  0  05:14 ?        00:00:00 /usr/libexec/ibus-  
hayat        1438       800  0  05:14 ?        00:00:00 /usr/bin/gnome-cal  
hayat        1440       800  0  05:14 ?        00:00:00 /usr/bin/seahorse  
hayat        1441       800  0  05:14 ?        00:00:32 /usr/libexec/gnome  
hayat        1479      1441  0  05:14 pts/0    00:00:00 bash  
hayat        1527      1073  0  05:15 ?        00:00:02 update-notifier  
hayat        1659       800  0  05:15 ?        00:00:14 /usr/bin/python3 /  
root        2279      1479  0  07:33 pts/0    00:00:00 sudo chown student  
root        2562         1  0  11:20 ?        00:00:01 python3 /usr/lib/s  
root        2721         1  0  11:37 ?        00:00:02 /usr/libexec/fwupd  
hayat        2839       800  0  11:44 ?        00:00:01 /usr/bin/gedit --g  
root        2967       768  0  12:25 ?        00:00:00 gdm-session-worker  
root        3078         2  0  12:55 ?        00:00:00 [kworker/u2:0-even  
root        3126         2  0  12:56 ?        00:00:00 [kworker/0:1-cgrou  
hayat        3131      1441  0  12:57 pts/1    00:00:00 bash  
root        3253      1479  0  13:11 pts/0    00:00:00 su - students  
students     3254      3253  0  13:12 pts/0    00:00:00 -bash  
root        3317         2  0  13:20 ?        00:00:01 [kworker/0:3-event  
root        3322         2  0  13:24 ?        00:00:00 [kworker/u2:2-even  
root        3361         2  0  13:30 ?        00:00:00 [kworker/u2:1-even  
root        3372         1  0  13:33 ?        00:00:00 /usr/sbin/anacron  
students     3375      3254  0  13:34 pts/0    00:00:00 ps -ef
```

```
hayat@hayat-VirtualBox: ~  
hayat@hayat-VirtualBox:~$ ps -ef  
UID          PID     PPID  C  STIME TTY          TIME CMD  
root           1         0  0  05:13 ?        00:00:04 /sbin/init splash  
root           2         0  0  05:13 ?        00:00:00 [kthreadd]  
root           3         2  0  05:13 ?        00:00:00 [rcu_gp]  
root           4         2  0  05:13 ?        00:00:00 [rcu_par_gp]  
root           6         2  0  05:13 ?        00:00:00 [kworker/0:0H-kblo  
root           9         2  0  05:13 ?        00:00:00 [mm_percpu_wq]  
root          10         2  0  05:13 ?        00:00:00 [ksoftirqd/0]  
root          11         2  0  05:13 ?        00:00:10 [rcu_sched]  
hayat        1298       800  0  05:14 ?        00:00:00 /usr/libexec/gsd-p  
colord       1322         1  0  05:14 ?        00:00:00 /usr/libexec/color  
hayat        1372      1113  0  05:14 ?        00:00:00 /usr/libexec/ibus-  
hayat        1438       800  0  05:14 ?        00:00:00 /usr/bin/gnome-cal  
hayat        1440       800  0  05:14 ?        00:00:00 /usr/bin/seahorse  
hayat        1441       800  0  05:14 ?        00:00:34 /usr/libexec/gnome  
hayat        1479      1441  0  05:14 pts/0    00:00:00 bash  
hayat        1527      1073  0  05:15 ?        00:00:02 update-notifier  
hayat        1659       800  0  05:15 ?        00:00:14 /usr/bin/python3 /  
root        2279      1479  0  07:33 pts/0    00:00:00 sudo chown student  
root        2562         1  0  11:20 ?        00:00:01 python3 /usr/lib/s  
hayat        2839       800  0  11:44 ?        00:00:01 /usr/bin/gedit --g  
root        2967       768  0  12:25 ?        00:00:00 gdm-session-worker  
root        3126         2  0  12:56 ?        00:00:00 [kworker/0:1-event  
hayat        3131      1441  0  12:57 pts/1    00:00:00 bash  
root        3253      1479  0  13:11 pts/0    00:00:00 su - students  
students     3254      3253  0  13:12 pts/0    00:00:00 -bash  
root        3317         2  0  13:20 ?        00:00:01 [kworker/0:3-event  
root        3322         2  0  13:24 ?        00:00:00 [kworker/u2:2-ext4  
root        3361         2  0  13:30 ?        00:00:00 [kworker/u2:1-even
```


2.6) Les processus qui sont en cours d'exécution pour chaque utilisateur

```
students@hayat-VirtualBox: ~$ ps -aux
USER          PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME CO
MMAND
root           1  0.0  0.5 103208 11912 ?        Ss   05:13   0:04 /s
bin/init splash
root           2  0.0  0.0      0     0 ?        S    05:13   0:00 [k
threadd]
root           3  0.0  0.0      0     0 ?        I<   05:13   0:00 [r
cu_gp]
root           4  0.0  0.0      0     0 ?        I<   05:13   0:00 [r
cu_par_gp]
root           6  0.0  0.0      0     0 ?        I<   05:13   0:00 [k
worker/0:0H-kblockd]
root           9  0.0  0.0      0     0 ?        I<   05:13   0:00 [m
m_percpu_wq]
root          10  0.0  0.0      0     0 ?        S    05:13   0:00 [k
softirqd/0]
root          11  0.0  0.0      0     0 ?        I    05:13   0:10 [r
cu_sched]
root          12  0.0  0.0      0     0 ?        S    05:13   0:00 [m
```

```
hayat@hayat-VirtualBox: ~$ ps -aux
USER          PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME CO
MMAND
root           1  0.0  0.5 103208 11912 ?        Ss   05:13   0:04 /s
bin/init splash
root           2  0.0  0.0      0     0 ?        S    05:13   0:00 [k
threadd]
root           3  0.0  0.0      0     0 ?        I<   05:13   0:00 [r
cu_gp]
root           4  0.0  0.0      0     0 ?        I<   05:13   0:00 [r
cu_par_gp]
root           6  0.0  0.0      0     0 ?        I<   05:13   0:00 [k
worker/0:0H-kblockd]
root           9  0.0  0.0      0     0 ?        I<   05:13   0:00 [m
m_percpu_wq]
root          10  0.0  0.0      0     0 ?        S    05:13   0:00 [k
softirqd/0]
root          11  0.0  0.0      0     0 ?        I    05:13   0:10 [r
```

2.7) La liste des processus dont vous êtes des propriétaires

```
students@hayat-VirtualBox: ~$ ps -u
USER          PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME CO
MMAND
students      3254  0.0  0.2  19292  4924 pts/0    S    13:12   0:00 -b
ash
students      3549  0.0  0.1  21000  3300 pts/0    R+   14:00   0:00 ps
-u

hayat@hayat-VirtualBox: ~$ ps -u
USER          PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME C
OMMAND
hayat         851  0.0  0.2 173528  6536 tty2     Ssl+  05:13   0:00 /
usr/libexec/gdm-x-session --run-script env GNOME_SHELL_SESSION_MODE=
ub
hayat         856  0.6  2.9 546504 69452 tty2     Sl+   05:13   3:17 /
usr/lib/xorg/Xorg vt2 -displayfd 3 -auth /run/user/1000/gdm/Xauthori
ty
hayat         946  0.0  0.6 198164 14164 tty2     Sl+   05:13   0:00 /
usr/libexec/gnome-session-binary --systemd --session=ubuntu
hayat        1479  0.0  0.2  19356  4896 pts/0    Ss   05:14   0:00 b
ash
hayat        3131  0.0  0.2  19228  4860 pts/1    Ss   12:57   0:00 b
ash
hayat        3546  0.0  0.1  21000  3368 pts/1    R+   14:00   0:00 p
s -u
```

2.8) Voici l'exécution de la commande **top** :

```
students@hayat-VirtualBox: ~
top - 20:16:06 up 9:05, 1 user, load average: 0.23, 0.12, 0.04
Tasks: 178 total, 1 running, 176 sleeping, 1 stopped, 0 zombie
%Cpu(s): 1.7 us, 0.7 sy, 0.0 ni, 97.6 id, 0.0 wa, 0.0 hi, 0.0 s
MiB Mem : 2270.0 total, 793.6 free, 801.6 used, 674.9 buff
MiB Swap: 448.4 total, 448.4 free, 0.0 used. 1305.3 avail

  PID USER      PR  NI  VIRT  RES  SHR  S  %CPU  %MEM
 3647 students 20   0  21360 3664 3156 R   1.0   0.2
   856 hayat  20   0 546328 69388 43088 S   0.7   3.0
 1090 hayat  20   0 3725956 343936 123168 S   0.3  14.8
 1441 hayat  20   0  831176 52076 39096 S   0.3   2.2
    1 root    20   0  103208 11912  8664 S   0.0   0.5
    2 root    20   0         0         0         0 S   0.0   0.0
    3 root     0 -20         0         0         0 I   0.0   0.0
    4 root     0 -20         0         0         0 I   0.0   0.0
    6 root     0 -20         0         0         0 I   0.0   0.0
    9 root     0 -20         0         0         0 I   0.0   0.0
   10 root    20   0         0         0         0 S   0.0   0.0
   11 root    20   0         0         0         0 I   0.0   0.0
   12 root    rt    0         0         0         0 S   0.0   0.0
   13 root   -51   0         0         0         0 S   0.0   0.0
```

```
hayat@hayat-VirtualBox: ~
top - 20:26:22 up 9:15, 1 user, load average: 0.27, 0.13, 0.04
Tasks: 178 total, 1 running, 176 sleeping, 1 stopped, 0 zombie
%Cpu(s): 3.4 us, 0.7 sy, 0.0 ni, 95.9 id, 0.0 wa, 0.0 hi, 0.0 s
MiB Mem : 2270.0 total, 811.6 free, 783.3 used, 675.1 buff
MiB Swap: 448.4 total, 448.4 free, 0.0 used. 1323.5 avail

  PID USER      PR  NI  VIRT  RES  SHR  S  %CPU  %MEM
 3647 students 20   0  21360 3664 3156 S   1.0   0.2
 3731 hayat  20   0  21360 3784 3276 R   1.0   0.2
   856 hayat  20   0 546328 69388 43088 S   0.7   3.0
 1441 hayat  20   0  831176 52076 39096 S   0.7   2.2
   11 root    20   0         0         0         0 I   0.3   0.0
 1090 hayat  20   0 3725956 346728 123172 S   0.3  14.9
 3317 root    20   0         0         0         0 I   0.3   0.0
 3732 root    20   0         0         0         0 I   0.3   0.0
    1 root    20   0  103208 11912  8664 S   0.0   0.5
    2 root    20   0         0         0         0 S   0.0   0.0
    3 root     0 -20         0         0         0 I   0.0   0.0
    4 root     0 -20         0         0         0 I   0.0   0.0
    6 root     0 -20         0         0         0 I   0.0   0.0
    9 root     0 -20         0         0         0 I   0.0   0.0
   10 root    20   0         0         0         0 S   0.0   0.0
```

2.9) L'exécution de la commande **top** :

- ✓ **h** : pour obtenir de l'aide sur la commande top.
- ✓ **R** : pour trier par numéro PID
- ✓ **M** : pour trier par l'utilisation de RAM
- ✓ **u** : appuyez sur u puis sur le nom d'utilisateur pour obtenir uniquement les détails du processus utilisateur
- ✓ **k** : pour tuer un processus, appuyez sur k puis sur le numéro PID puis entrez pour tuer un processus
- ✓ **r** : Pour renommer un processus, appuyez sur r puis sur le PID no puis sur la valeur de renice pour renommer un processus.
- ✓ **q** : Pour quitter la commande top.


```
students@hayat-VirtualBox: ~  
TOP(1) User Commands TOP(1)  
NAME  
top - display Linux processes  
SYNOPSIS  
top -hv|-bcEHtOSs1 -d secs -n max -u|U user -p pid -o fld -w  
[cols]  
The traditional switches '-' and whitespace are optional.  
DESCRIPTION  
The top program provides a dynamic real-time view of a run-  
ning system. It can display system summary information as  
well as a list of processes or threads currently being man-  
aged by the Linux kernel. The types of system summary in-  
formation shown and the types, order and size of information  
displayed for processes are all user configurable and that  
configuration can be made persistent across restarts.  
The program provides a limited interactive interface for  
process manipulation as well as a much more extensive inter-  
Manual page top(1) line 1 (press h for help or q to quit)
```

```
hayat@hayat-VirtualBox: ~  
TOP(1) User Commands TOP(1)  
NAME  
top - display Linux processes  
SYNOPSIS  
top -hv|-bcEHtOSs1 -d secs -n max -u|U user -p pid -o fld  
-w [cols]  
The traditional switches '-' and whitespace are optional.  
DESCRIPTION  
The top program provides a dynamic real-time view of a run-  
ning system. It can display system summary information as  
well as a list of processes or threads currently being man-  
aged by the Linux kernel. The types of system summary in-  
formation shown and the types, order and size of informa-  
tion displayed for processes are all user configurable and  
that configuration can be made persistent across restarts.  
The program provides a limited interactive interface for  
Manual page top(1) line 1 (press h for help or q to quit)
```

2.10) L'activité des processus pour un seul utilisateur :

```
hayat@hayat-VirtualBox: ~  
hayat@hayat-VirtualBox:~$ top -u hayat  
top - 21:37:59 up 10:26, 1 user, load average: 0.02, 0.02, 0.00  
Tasks: 180 total, 1 running, 175 sleeping, 4 stopped, 0 zombie  
%Cpu(s): 1.0 us, 0.7 sy, 0.0 ni, 98.3 id, 0.0 wa, 0.0 hi, 0.0  
MiB Mem : 2270.0 total, 806.9 free, 786.6 used, 676.6 buf  
MiB Swap: 448.4 total, 448.4 free, 0.0 used. 1320.2 ava  


| PID  | USER  | PR | NI | VIRT    | RES    | SHR    | S | %CPU | %MEM |
|------|-------|----|----|---------|--------|--------|---|------|------|
| 4007 | hayat | 20 | 0  | 21360   | 3868   | 3288   | R | 1.0  | 0.2  |
| 1090 | hayat | 20 | 0  | 3725956 | 347100 | 123172 | S | 0.3  | 14.9 |
| 800  | hayat | 20 | 0  | 21180   | 11556  | 8336   | S | 0.0  | 0.5  |
| 805  | hayat | 20 | 0  | 104956  | 3692   | 20     | S | 0.0  | 0.2  |
| 823  | hayat | 20 | 0  | 2204976 | 19672  | 15452  | S | 0.0  | 0.8  |
| 825  | hayat | 39 | 19 | 668200  | 25024  | 16744  | S | 0.0  | 1.1  |
| 829  | hayat | 20 | 0  | 11116   | 7688   | 4156   | S | 0.0  | 0.3  |
| 832  | hayat | 20 | 0  | 248852  | 6900   | 5912   | S | 0.0  | 0.3  |
| 839  | hayat | 20 | 0  | 248392  | 7612   | 6672   | S | 0.0  | 0.3  |
| 851  | hayat | 20 | 0  | 173528  | 6536   | 5884   | S | 0.0  | 0.3  |
| 856  | hayat | 20 | 0  | 546328  | 69408  | 43096  | S | 0.0  | 3.0  |
| 858  | hayat | 20 | 0  | 378344  | 6592   | 5948   | S | 0.0  | 0.3  |
| 859  | hayat | 20 | 0  | 323700  | 9412   | 7992   | S | 0.0  | 0.4  |


```



```

hayat@hayat-VirtualBox: ~
hayat@hayat-VirtualBox:~$ top -u students

top - 21:38:48 up 10:27, 1 user, load average: 0.23, 0.06, 0.02
Tasks: 183 total, 1 running, 177 sleeping, 5 stopped, 0 zombie
%Cpu(s): 22.4 us, 2.7 sy, 10.5 ni, 64.4 id, 0.0 wa, 0.0 hi, 0.0
MiB Mem : 2270.0 total, 782.8 free, 810.2 used, 677.0 buf
MiB Swap: 448.4 total, 448.4 free, 0.0 used. 1296.4 ava

  PID USER      PR  NI  VIRT  RES  SHR  S  %CPU  %MEM
 3254 students 20   0 19292 4928 3452 S   0.0   0.2
 3647 students 20   0 21360 3664 3156 T   0.0   0.2
 3789 students 20   0 18656 4136 2980 S   0.0   0.2
 3798 students 20   0 18504 1156   0 S   0.0   0.0
 3799 students 20   0 17072 2496 2240 S   0.0   0.1

```

2.11) L'envoi du signal SIGKIL=9 au processus top

```

students@hayat-VirtualBox: ~
students@hayat-VirtualBox:~$ man top
students@hayat-VirtualBox:~$ ps
  PID TTY          TIME CMD
 3254 pts/0    00:00:00 bash
 3647 pts/0    00:00:11 top
 4069 pts/0    00:00:00 ps
students@hayat-VirtualBox:~$ kill -9 3647

```

Exercice 3 : « Gestion des jobs »

3.1 Lancement de la commande **top**, on ne peut pas exécuter une nouvelle commande depuis la fenêtre dans laquelle on a lancé **top** :

```

students@hayat-VirtualBox: ~
top - 22:06:47 up 10:55, 1 user, load average: 0.34, 0.13, 0.04
Tasks: 178 total, 1 running, 176 sleeping, 1 stopped, 0 zombie
%Cpu(s): 1.0 us, 0.7 sy, 0.0 ni, 98.3 id, 0.0 wa, 0.0 hi, 0.0 s
MiB Mem : 2270.0 total, 765.3 free, 807.6 used, 697.1 buff
MiB Swap: 448.4 total, 448.4 free, 0.0 used. 1300.3 avai

  PID USER      PR  NI  VIRT  RES  SHR  S  %CPU  %MEM
 4155 students 20   0 21360 3612 3104 R   1.0   0.2
  856 hayat    20   0 546824 69992 41776 S   0.3   3.0
 1441 hayat    20   0 831544 52340 39088 S   0.3   2.3
    1 root      20   0 168744 11924 8664 S   0.0   0.5
    2 root      20   0      0      0      0 S   0.0   0.0
    3 root       0 -20      0      0      0 I   0.0   0.0
    4 root       0 -20      0      0      0 I   0.0   0.0
    6 root       0 -20      0      0      0 I   0.0   0.0
    9 root       0 -20      0      0      0 I   0.0   0.0
   10 root      20   0      0      0      0 S   0.0   0.0
   11 root      20   0      0      0      0 I   0.0   0.0
   12 root      rt    0      0      0      0 S   0.0   0.0
   13 root     -51   0      0      0      0 S   0.0   0.0
   14 root      20   0      0      0      0 S   0.0   0.0
   15 root      20   0      0      0      0 S   0.0   0.0
   16 root       0 -20      0      0      0 I   0.0   0.0

```

3.2 Après qu'on tape le Ctrl-z l'exécution de la commande **top** s'arrête, **la commande jobs nous permet de connaître les processus qui tournent en arrière-plan**

```
10 root      20    0      0      0      0 S    0.0    0.0
11 root      20    0      0      0      0 I    0.0    0.0
12 root      rt     0      0      0      0 S    0.0    0.0
[1]+  Stopped                  top
students@hayat-VirtualBox:~$
```

```
students@hayat-VirtualBox:~$ jobs
[1]+  Stopped                  top
students@hayat-VirtualBox:~$
```

3.3 Lancement de la commande **fg** avec l'arrêt de **top** par Ctrl Z

```
students@hayat-VirtualBox: ~
students@hayat-VirtualBox:~$ fg
```

```
students@hayat-VirtualBox: ~
%Cpu(s):  1.4 us,  1.0 sy,  0.0 ni, 96.6 id,  0.7 wa,  0.0 hi,  0.3 s
MiB Mem : 2270.0 total,  429.6 free,  805.4 used, 1035.0 buff
MiB Swap: 448.4 total,  448.4 free,  0.0 used. 1293.9 avail

  PID USER      PR  NI   VIRT   RES   SHR  S  %CPU  %MEM
 4155 students  20   0   21360   3612   3104 R   1.3   0.2
  117 root       0  -20     0      0      0 I   0.3   0.0
  568 root       20   0    2528    856    784 S   0.3   0.0
  856 hayat     20   0  546824  69992  41776 S   0.3   3.0
 1090 hayat     20   0 3729660 350680 122312 S   0.3  15.1
 1118 hayat     20   0  283280  29868  18000 S   0.3   1.3
 1438 hayat     20   0  721076  56632  43416 S   0.3   2.4
 1441 hayat     20   0  831544  52340  39088 S   0.3   2.3
 1527 hayat     20   0  472576  40364  31556 S   0.3   1.7
 5065 root       20   0      0      0      0 I   0.3   0.0
    1 root       20   0  168744  12020   8664 S   0.0   0.5
    2 root       20   0      0      0      0 S   0.0   0.0
    3 root       0  -20     0      0      0 I   0.0   0.0
    4 root       0  -20     0      0      0 I   0.0   0.0
    6 root       0  -20     0      0      0 I   0.0   0.0
    9 root       0  -20     0      0      0 I   0.0   0.0
[1]+  Stopped                  top
students@hayat-VirtualBox:~$
```

3.4 Affichage de la commande : **bg**, non je n'arrive pas à lancer une nouvelle commande **via cette commande le processus de la commande top continue à s'exécuter mais en arrière plan**

```
students@hayat-VirtualBox:~$ bg
[1]+ top &
students@hayat-VirtualBox:~$
```

3.5 Lancement du processus **top**

```
students@hayat-VirtualBox:~$ top

top - 01:10:33 up 13:20,  1 user,  load average: 0.19, 0.04, 0.01
Tasks: 177 total,  1 running, 174 sleeping,  2 stopped,  0 zombie
%Cpu(s):  1.4 us,  0.3 sy,  0.0 ni, 98.3 id,  0.0 wa,  0.0 hi,  0.0 s
MiB Mem : 2270.0 total,  429.4 free,  805.4 used, 1035.2 buff
MiB Swap: 448.4 total,  448.4 free,  0.0 used. 1293.9 avail

  PID USER      PR  NI   VIRT   RES   SHR  S  %CPU  %MEM
 5298 students  20   0   21360   3648   3140 R   0.7   0.2
  856 hayat     20   0  546824  69992  41776 S   0.3   3.0
 1090 hayat     20   0 3729660 350520 122312 S   0.3  15.1
 4883 root       20   0      0      0      0 I   0.3   0.0
    1 root       20   0  168744  12020   8664 S   0.0   0.5
```



```

11 root      20  0  0  0  0  0  0  0.0  0.0
12 root      rt  0  0  0  0  0  0  0.0  0.0
13 root     -51  0  0  0  0  0  0  0.0  0.0
[2]+  Stopped                  top
students@hayat-VirtualBox:~$

```

3.6 La commande jobs permet de connaître les processus qui tournent en arrière-plan

3.7 Le 1% désigne le numéro de job du processus top

```

students@hayat-VirtualBox:~$ kill -9 %1
[1]-  Killed                  top
students@hayat-VirtualBox:~$

```

3.8 Les voilà

```

students@hayat-VirtualBox:~$ ps
  PID TTY          TIME CMD
 3254 pts/0    00:00:00 bash
 5298 pts/0    00:00:03 top
 5370 pts/0    00:00:00 ps
students@hayat-VirtualBox:~$

```

3.9 Voici les différences entre les 2 commandes :

```

students@hayat-VirtualBox:~$ ps
  PID TTY          TIME CMD
 3254 pts/0    00:00:00 bash
 5298 pts/0    00:00:03 top
 5370 pts/0    00:00:00 ps
students@hayat-VirtualBox:~$ ps -f
UID          PID    PPID  C STIME TTY          TIME CMD
students    3254     3253  0  21:10 pts/0    00:00:00 -bash
students    5298     3254  0  01:10 pts/0    00:00:03 top
students    5402     3254  0  01:29 pts/0    00:00:00 ps -f
students@hayat-VirtualBox:~$

```

3.10 le PID du processus top restant est : **5298**

3.11 Cette commande affiche les processus en cours d'exécution par tous les users

```

students@hayat-VirtualBox:~$ ps -af
UID          PID    PPID  C STIME TTY          TIME CMD
hayat        856      851  0  21:24 tty2    00:04:24 /usr/lib/xorg/
hayat        946      851  0  21:24 tty2    00:00:00 /usr/libexec/g
root        2279     1479  0  21:24 pts/0    00:00:00 sudo chown st
root        3253     1479  0  21:24 pts/0    00:00:00 su - students
students    3254     3253  0  21:24 pts/0    00:00:00 -bash
students    5298     3254  0  01:10 pts/0    00:00:03 top
students    5431     3254  0  01:36 pts/0    00:00:00 ps -af
students@hayat-VirtualBox:~$

```

3.12 Par exemple **3253** est le pid du processus su – students lancé par l'utilisateur root

donc un processus de root on a pas le droit de le tuer

```

students@hayat-VirtualBox:~$ kill -9 3253
-bash: kill: (3253) - Operation not permitted

```

3.13 le voilà :

```
students@hayat-VirtualBox:~$ kill -9 5298
[2]+  Killed                  top
students@hayat-VirtualBox:~$
```

3.14 Non, on ne peut pas exécuter d'autre commande lors lancement du top

```
students@hayat-VirtualBox: ~
top - 01:53:10 up 14:03, 1 user, load average: 0.01, 0.02, 0.00
Tasks: 173 total, 1 running, 171 sleeping, 1 stopped, 0 zombie
Cpu(s):  4.5 us,  2.1 sy,  0.0 ni, 93.5 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
Mem: 2270.0 total, 428.9 free, 804.6 used, 1036.5 buff/cache
Swap: 448.4 total, 448.4 free, 0.0 used, 1294.7 available

  PID USER      PR  NI  VIRT  RES  SHR  S  %CPU  %MEM
1090 hayat     20   0 3729660 350556 122312 S   2.6 15.1
 856 hayat     20   0 546824 69992 41776 S   1.7  3.0
1441 hayat     20   0 831544 52340 39088 S   0.7  2.3
5514 students  20   0  21360  3776  3268 R   0.7  0.2
 924 hayat     20   0 322964 7628 6796 S   0.3  0.3
5468 root       20   0      0      0      0 I   0.3  0.0
  1 root       20   0 168744 12020 8664 S   0.0  0.5
  2 root       20   0      0      0      0 S   0.0  0.0
  3 root        0 -20      0      0      0 I   0.0  0.0
  4 root        0 -20      0      0      0 I   0.0  0.0
```

3.15 le voila

```
students@hayat-VirtualBox:~$ fg
top
Fields Management for window 1:Def, whose current sort field is %CPU
Navigate with Up/Dn, Right selects for move then <Enter> or Left c
'd' or <Space> toggles display, 's' sets sort. Use 'q' or <Esc> t

* PID      = Proc   GROUP    = Grou   TGID     = Thre   NU      = Last
* USER     = Effe   PGRP     = Proc   OOMa     = OOME
* PR       = Prio   TTY      = Cont   OOMS     = OOME
* NI       = Nice  TPGID    = Tty    ENVIRON  = Envi
* VIRT     = Virt  SID      = Sess   VMj      = Majo
* RES      = Resi  nTH      = Numb   vMn      = Mino
* SHR      = Shar  P        = Last   USED     = Res+
* S        = Proc  TIME     = CPU    nsIPC    = IPC
* %CPU     = CPU   SWAP     = Swap   nsMNT    = MNT
* %MEM     = Memo  CODE     = Code   nsNET    = NET
* TIME+    = CPU   DATA    = Data   nsPID    = PID
* COMMAND  = Comm  nMaj     = Majo   nsUSER   = USER
* PPID     = Pare  nMin     = Mino   nsUTS    = UTS
* UID      = Effe  nDRT     = Dirt   LXC      = LXC
* RUID     = Real  WCHAN    = Slee   RSan     = RES
* RUSER    = Real  Flags    = Task   RSfd     = RES
```

3.16 voilà le lancement

```
students@hayat-VirtualBox:~$ bg
[1]+  top &
students@hayat-VirtualBox:~$
```

- ✓ Bg : permet de faire passer le processus en arrière-plan (*background*)
- ✓ Fg : permt de reprendre un processus au premier plan (*foreground*)