LINUX ADMIN 1

LAB 3
EDITORS
PROCESSES

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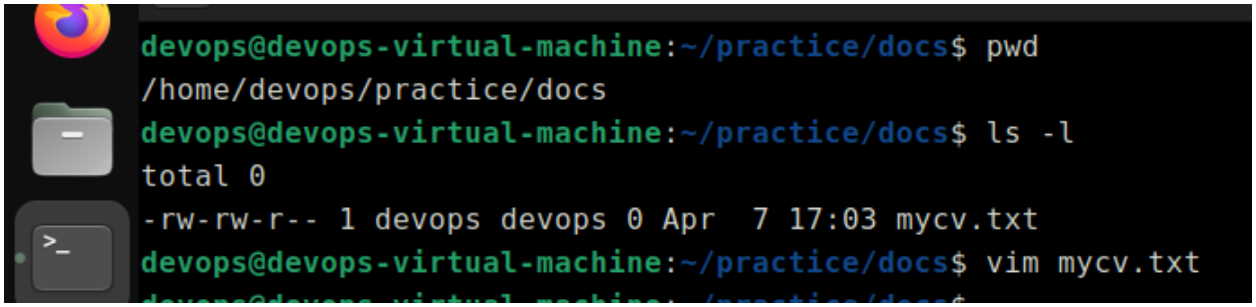
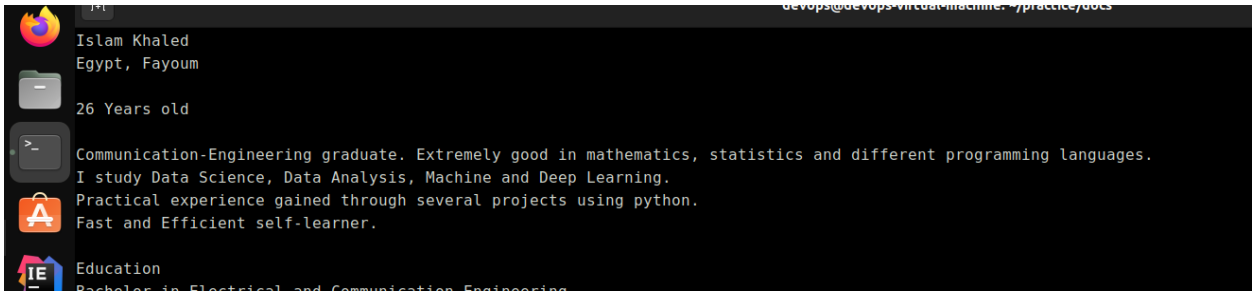
14 Abril 2023

1. Using vi, write your CV in the file mycv. Your CV should include your name, age, school, college, experience,...



2. Open mycv file using vi command then: Without using arrows state how to:



a. Move the cursor down one line at a time.

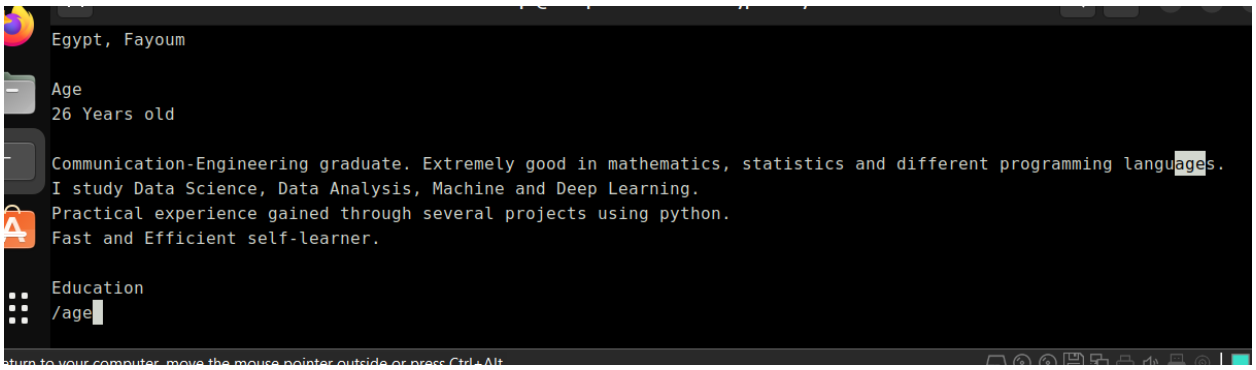
In command more : j

b. Move the cursor up one line at a time.

In command mode : k

c. Search for word age

In command mode : /age



d. Step to line 5 (assuming that you are in line 1 and the file is more than 5 lines).

In command mode : 5G

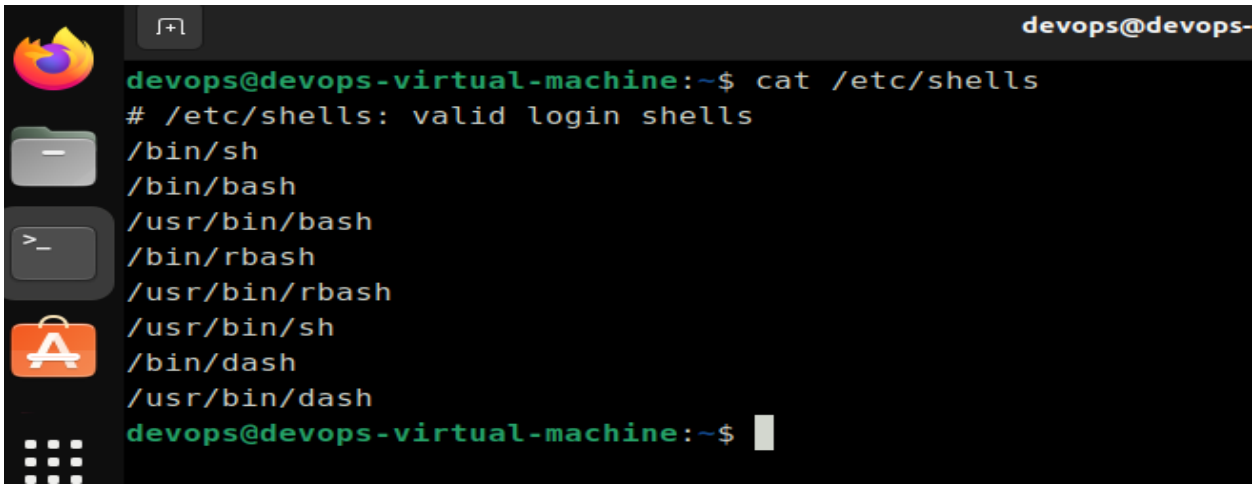
e. Delete the line you are on and line 5.

In command mode : dd (notice that I'm on line 5)

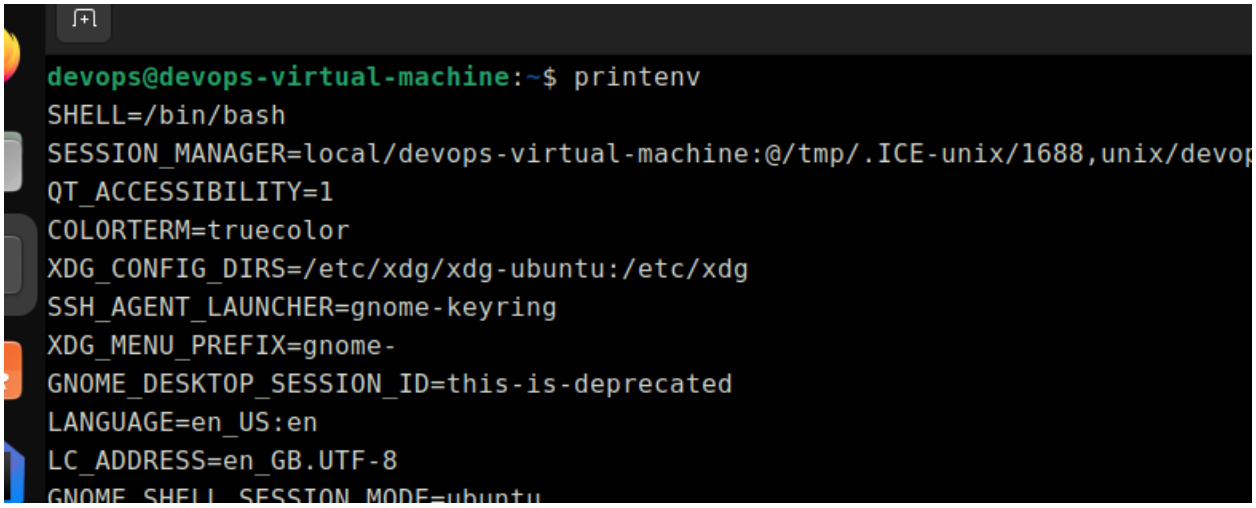
f. How to step to the end of line and change to writing mode in one-step.

In command mode : A

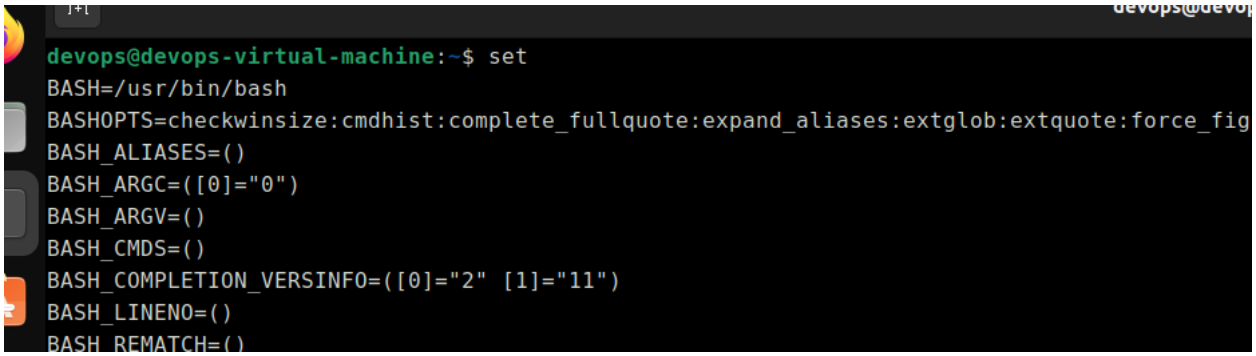
3. List the available shells in your system.

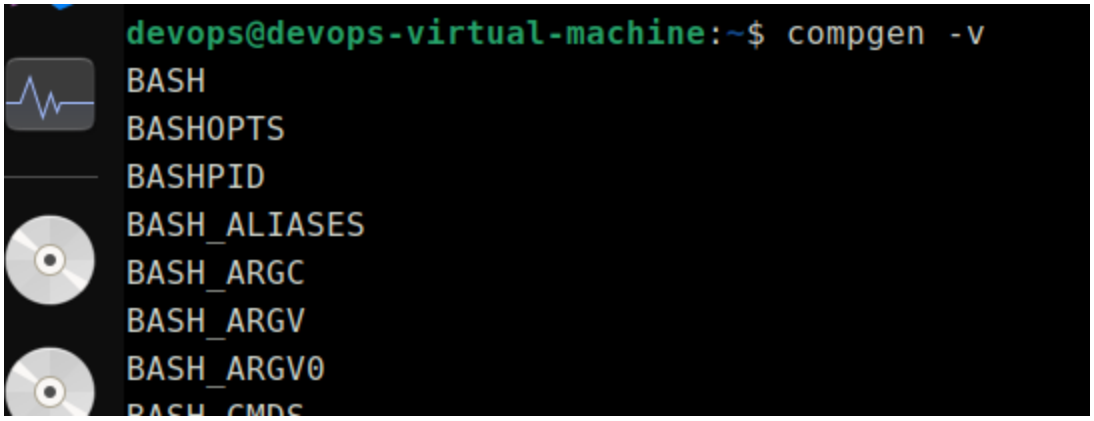


4. List the environment variables in your current shell.

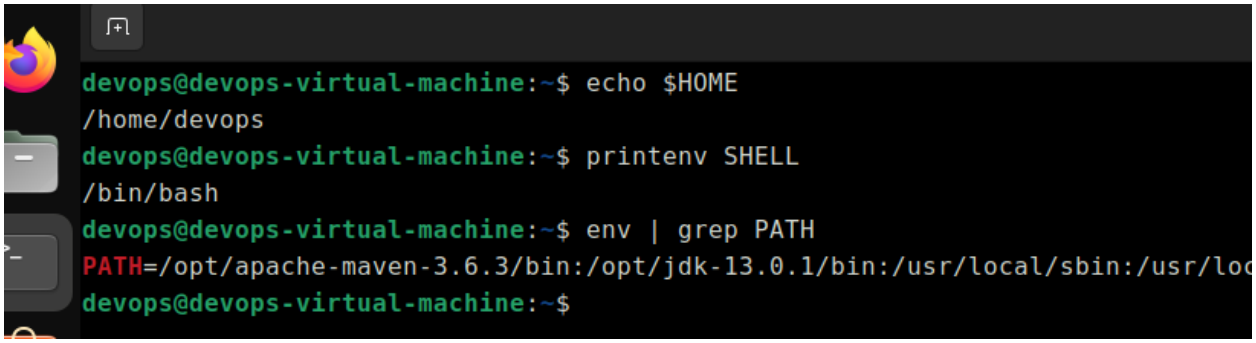


5. List all of the environment variables for the bash shell.

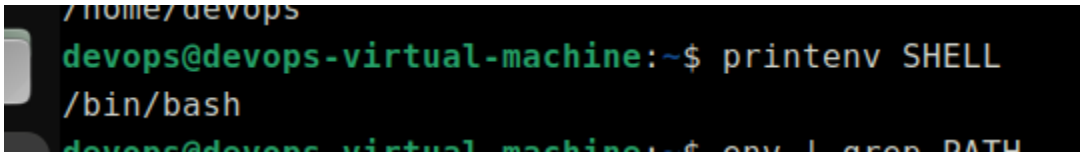




6. What are the commands that list the value of a specific variable?



7. Display your current shell name.



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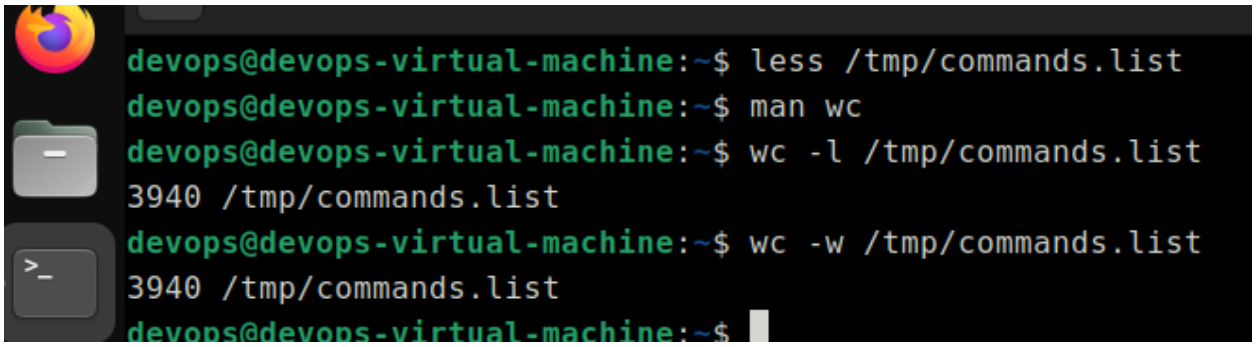
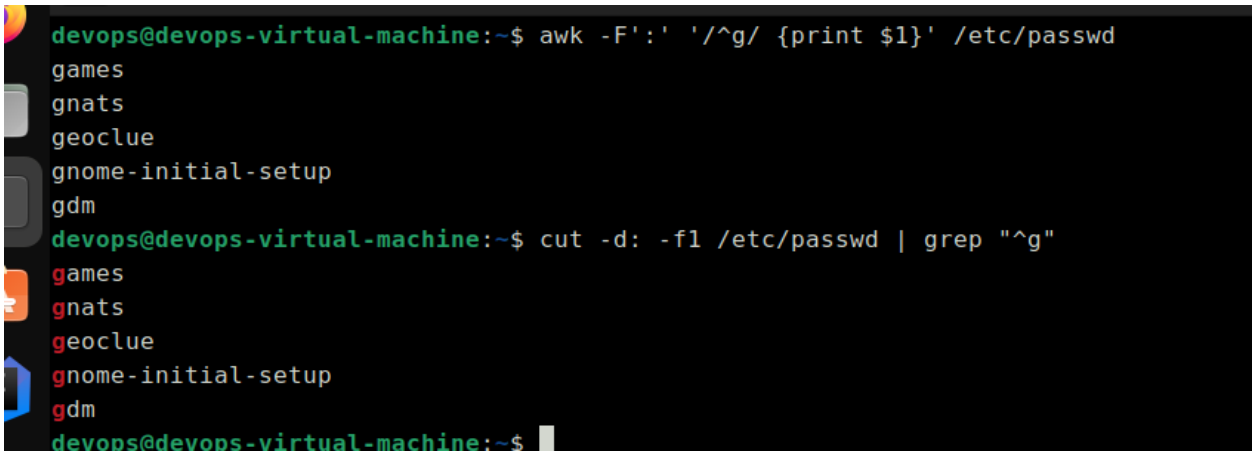
1. List the user commands and redirect the output to /tmp/commands.list

2. Count the number of user commands



3. Get all the users' names whose first character in their login is 'g'.



4. Get the logins name and full names (comment) of logins starts with “g”.

```
devops@devops-virtual-machine:~$ cut -d: -f1,5 /etc/passwd | grep "^g"
games:games
gnats:Gnats Bug-Reporting System (admin)
geoclue:
gnome-initial-setup:
gdm:Gnome Display Manager
devops@devops-virtual-machine:~$ awk -F: '/^g/ {print $1,$5}' /etc/passwd
games games
gnats Gnats Bug-Reporting System (admin)
geoclue
gnome-initial-setup
gdm Gnome Display Manager
devops@devops-virtual-machine:~$
```

awk -F’delimiter’ ‘/pattern/ {print $feild1, $feild2, ...}’ file-location

5. Save the output of the last command sorted by their full names in a file.

```
devops@devops-virtual-machine:~/practice/docs$ awk -F: '/^g/ {print $1,$5}' /etc/passwd | sort -k2 > sorted-awk-output
devops@devops-virtual-machine:~/practice/docs$ cat sorted-awk-output
geoclue
gnome-initial-setup
games games
gnats Gnats Bug-Reporting System (admin)
gdm Gnome Display Manager
devops@devops-virtual-machine:~/practice/docs$
```

6. Write two commands:

First: to search for all files on the system that is named .bash_profile.

```
devops@devops-virtual-machine:~/practice/docs$ sudo find / -name ".bash_profile"
find: ‘/proc/1039/task/1039/net’: Invalid argument
find: ‘/proc/1039/net’: Invalid argument
find: ‘/run/user/1000/doc’: Permission denied
find: ‘/run/user/1000/gvfs’: Permission denied
devops@devops-virtual-machine:~/practice/docs$
```

```
devops@devops-virtual-machine:~/practice/docs$ su -
Password:
root@devops-virtual-machine:~# find / -name .bash_profile 2> /home/devops/practice/docs/errors2.txt
root@devops-virtual-machine:~# cat /home/devops/practice/docs/errors2.txt
find: '/proc/1039/task/1039/net': Invalid argument
find: '/proc/1039/net': Invalid argument
find: '/run/user/1000/doc': Permission denied
find: '/run/user/1000/gvfs': Permission denied
root@devops-virtual-machine:~# su - devops
devops@devops-virtual-machine:~$
```

```
devops@devops-virtual-machine:~/practice/docs$ sudo apt install plocate
Reading package lists... Done
Building dependency tree... Done
```

```
devops@devops-virtual-machine:~/practice/docs$ man plocate
devops@devops-virtual-machine:~/practice/docs$ locate .bash_profile
/usr/share/doc/adduser/examples/adduser.local.conf.examples/skel/dot.bash_profile
```

I don't know why there are no files called .bash_profile in my VM. To resolve this and go on with the lab,I replaced .bash_profile by .profile.

```
devops@devops-virtual-machine:~$ sudo find / -name .profile
find: '/proc/1038/task/1038/net': Invalid argument
find: '/proc/1038/net': Invalid argument
/home/devops/.profile
/root/.profile
/snap/core/14946/etc/skel/.profile
/snap/core/14946/root/.profile
/snap/core22/583/etc/skel/.profile
/snap/core22/583/root/.profile
/snap/core22/607/etc/skel/.profile
/snap/core22/607/root/.profile
/snap/core20/1852/etc/skel/.profile
/snap/core20/1852/root/.profile
/snap/core20/1695/etc/skel/.profile
/snap/core20/1695/root/.profile
/snap/core18/2721/etc/skel/.profile
/snap/core18/2721/root/.profile
/snap/core18/2620/etc/skel/.profile
/snap/core18/2620/root/.profile
find: '/run/user/1000/doc': Permission denied
find: '/run/user/1000/gvfs': Permission denied
/etc/skel/.profile
devops@devops-virtual-machine:~$
```

Second: sorts the output of ls command on / recursively, Saving their output and error in 2 different files and sending them to the background.

```
devops@devops-virtual-machine:~/practice/docs$ pwd && ls
/home/devops/practice/docs
sorted-awk-output
devops@devops-virtual-machine:~/practice/docs$ ls -R / > ls-root.txt 2> ls-root-error.txt &
[1] 5814
devops@devops-virtual-machine:~/practice/docs$ jobs
[1]+  Running                 ls --color=auto -R / > ls-root.txt 2> ls-root-error.txt &
devops@devops-virtual-machine:~/practice/docs$ ls -l
total 14284
-rw-rw-r-- 1 devops devops   122266 Apr 14 17:14 ls-root-error.txt
-rw-rw-r-- 1 devops devops 14498467 Apr 14 17:14 ls-root.txt
-rw-rw-r-- 1 devops devops      109 Apr 14 17:07 sorted-awk-output
[1]+  Exit 1                  ls --color=auto -R / > ls-root.txt 2> ls-root-error.txt
devops@devops-virtual-machine:~/practice/docs$ jobs
devops@devops-virtual-machine:~/practice/docs$
```

7. Display the number of users who are logged now to the system.

```
devops@devops-virtual-machine:~/practice/docs$ who | wc -l
1
devops@devops-virtual-machine:~/practice/docs$
```

8. Display lines 7 to line 10 of /etc/passwd file

```
devops@devops-virtual-machine:~/practice/docs$ head -n 10 /etc/passwd | tail -n 4
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
devops@devops-virtual-machine:~/practice/docs$ man sed
devops@devops-virtual-machine:~/practice/docs$ sed -n '7,10p' /etc/passwd
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
devops@devops-virtual-machine:~/practice/docs$ awk 'NR>=7 && NR<=10' /etc/passwd
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
devops@devops-virtual-machine:~/practice/docs$
```

9. What happens if you execute:

- **cat filename1 | cat filename2**

```
devops@devops-virtual-machine:~/practice/docs$ ls
cat-pipe  ls-root-error.txt  ls-root.txt  sorted-awk-output
devops@devops-virtual-machine:~/practice/docs$ cat sorted-awk-output | cat cat-pipe
This is the secend file in the pipe
filename2
```

Second cat will ignore the standard input and take its argument as an input then prints out its content.

- **ls | rm**

```
devops@devops-virtual-machine:~/practice/docs$ ls
cat  cat-pipe  ls-root-error.txt  ls-root.txt  sorted-awk-output
devops@devops-virtual-machine:~/practice/docs$ ls | rm
rm: missing operand
Try 'rm --help' for more information.
```

rm does not read any input from standard input, the rm command will simply execute without any arguments resulting in error.

- **ls /etc/passwd | wc –l**

```
devops@devops-virtual-machine:~/practice/docs$ ls /etc/passwd | wc -l
1
devops@devops-virtual-machine:~/practice/docs$ ls /etc/passwd
/etc/passwd
```

ls command produces a single line of output.

10. Issue the command sleep 100.

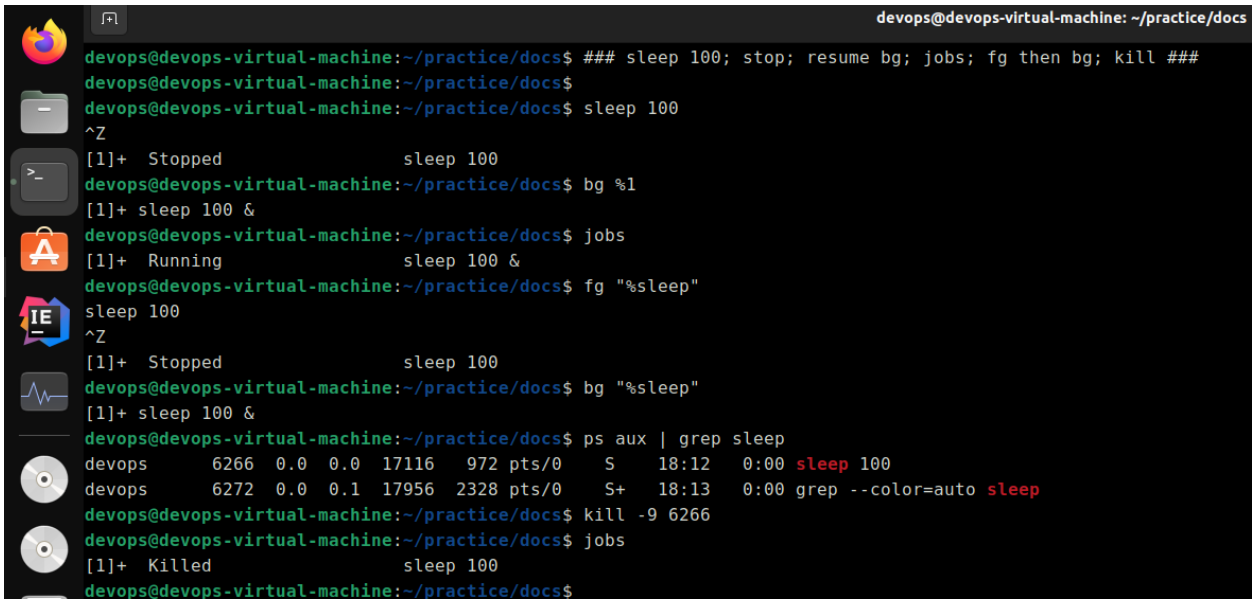
11. Stop the last command.

12. Resume the last command in the background

13. Issue the jobs command and see its output.

14. Send the sleep command to the foreground and send it again to the background.

15. Kill the sleep command.



I could've used **pkill sleep**, it will work properly in this case but it's more recommended to use PID as some processes names overlap.

16. Display your processes only

```
devops@devops-virtual-machine:~$ ps ux
USER         PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
devops      1606  0.0  0.4  25228  9932 ?        Ss   16:25   0:05 /lib/systemd/systemd --user
devops      1607  0.0  0.0 170084    84 ?        S    16:25   0:00 (sd-pam)
devops      1613  0.0  0.0  48320   476 ?        S<sl 16:25   0:00 /usr/bin/pipewire
devops      1614  0.0  0.0  32204   604 ?        Ssl  16:25   0:00 /usr/bin/pipewire-media-session
devops      1615  0.0  0.2 1430988 5280 ?        S<sl 16:25   0:09 /usr/bin/pulseaudio --daemonize=no --log-t
devops      1617  0.0  0.0  76300     4 ?        Ss   16:25   0:06 /snap/snapd-desktop-integration/57/usr/bin
devops      1624  0.0  0.1 249656  2784 ?        Sl   16:25   0:00 /usr/bin/gnome-keyring-daemon --daemonize
devops      1629  0.0  0.3  14988  7232 ?        Ss   16:25   0:05 /usr/bin/dbus-daemon --session --address=s
devops      1633  0.0  0.0 249380  1736 ?        Ssl  16:25   0:00 /usr/libexec/gvfsd
devops      1638  0.0  0.0 380884  1688 ?        Sl   16:25   0:00 /usr/libexec/gvfsd-fuse /run/user/1000/gvf
devops      1646  0.0  0.0 171128  1676 tty2     Ssl+ 16:25   0:00 /usr/libexec/gdm-wayland-session env GNOME
devops      1651  0.0  0.0 231772   840 tty2     Sl+  16:25   0:00 /usr/libexec/gnome-session-binary --sessio
devops      1673  0.0  0.3 644344  6644 ?        SNsl 16:25   0:04 /usr/libexec/tracker-miner-fs-3
devops      1695  0.0  0.0 100648   244 ?        Ssl  16:25   0:00 /usr/libexec/gnome-session-ctl --monitor
devops      1709  0.0  0.1 601676  3088 ?        Ssl  16:25   0:01 /usr/libexec/gnome-session-binary --system
```

17. Display all processes except yours

```
devops@devops-virtual-machine:~$ ps aux | grep -v devops
USER         PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root           1  0.0  0.3 250128  6808 ?        Ss   16:22   0:08 /sbin/init auto noprompt splash
root           2  0.0  0.0      0     0 ?        S    16:22   0:00 [kthreadd]
root           3  0.0  0.0      0     0 ?        I<   16:22   0:00 [rcu_gp]
root           4  0.0  0.0      0     0 ?        I<   16:22   0:00 [rcu_par_gp]
root           5  0.0  0.0      0     0 ?        I<   16:22   0:00 [slub_flushwq]
root           6  0.0  0.0      0     0 ?        I<   16:22   0:00 [netns]
root           8  0.0  0.0      0     0 ?        I<   16:22   0:00 [kworker/0:0H-events_highpri]
root          10  0.0  0.0      0     0 ?        I<   16:22   0:00 [mm_percpu_wq]
```

18. Use the pgrep command to list your processes only

```
devops@devops-virtual-machine:~$ pgrep -u devops
1606
1607
1613
1614
1615
1617
1624
1629
1633
1638
1646
```

19. Kill your processes only.

pkill -9 -u $(whoami) > killed

pkill -15 -u $USER > Terminated

1. Which command gives an overview of all current shell jobs?

jobs

```
devops@devops-virtual-machine:~$ jobs
[1]-  Running                 xlogo &
[2]+  Running                 sleep 100 &
devops@devops-virtual-machine:~$
```

2. How do you stop the current shell job to continue running it in the background?

Ctrl - z then bg %(job-id or job-name)

```
devops@devops-virtual-machine:~$ xlogo
^Z
[1]+  Stopped                 xlogo
devops@devops-virtual-machine:~$ bg %xlogo
[1]+ xlogo &
devops@devops-virtual-machine:~$ jobs
[1]+  Running                 xlogo &
devops@devops-virtual-machine:~$
```

3. Which keystroke combination can you use to cancel the current shell job?

Ctrl - c

```
devops@devops-virtual-machine:~$ fg "%xlogo"
xlogo
^C
devops@devops-virtual-machine:~$
```

4. A user is asking you to cancel one of the jobs he has started. You cannot access the shell that user currently is working from. What can you do to cancel his job anyway?

ps aux | grep user-job
Get the PID as the user id will be displayed
sudo kill PID (Terminate)

```
devops@devops-virtual-machine:~$ su - jhon
Password:
jhon@devops-virtual-machine:~$ whoami
jhon
jhon@devops-virtual-machine:~$ jobs
jhon@devops-virtual-machine:~$ sleep 3600 &
[1] 6835
jhon@devops-virtual-machine:~$ jobs
[1]+  Running                 sleep 3600 &
jhon@devops-virtual-machine:~$
jhon@devops-virtual-machine:~$
jhon@devops-virtual-machine:~$ su - devops
Password:
devops@devops-virtual-machine:~$ ps aux | grep sleep
jhon        6835  0.0  0.0  17116   976 pts/0    S    20:14   0:00 sleep 3600
devops      6846  0.0  0.1  17956  2292 pts/0    S+   20:14   0:00 grep --color=auto sleep
devops@devops-virtual-machine:~$ sudo kill 6835
devops@devops-virtual-machine:~$ ps aux | grep sleep
devops      6852  0.0  0.1  17956  2316 pts/0    S+   20:14   0:00 grep --color=auto sleep
devops@devops-virtual-machine:~$
devops@devops-virtual-machine:~$
devops@devops-virtual-machine:~$ su - jhon
Password:
jhon@devops-virtual-machine:~$ jobs
jhon@devops-virtual-machine:~$
```

5. Which command would you use to show parent-child relationships between processes?

~$ pstree (options) (pid)

```
devops@devops-virtual-machine:~$ ps aux | grep sbin
root           1  0.0  0.3 250128  6528 ?        Ss   16:22   0:09 /sbin/init auto noprompt splash
root         865  0.0  0.0   2812     0 ?        Ss   16:23   0:00 /usr/sbin/acpid
root         870  0.0  0.0  18240   672 ?        Ss   16:23   0:01 /usr/sbin/cron -f -P
root         872  0.0  0.2 269788  5056 ?        Ssl  16:23   0:05 /usr/sbin/NetworkManager --no-daemon
root         878  0.0  0.0  82828   656 ?        Ssl  16:23   0:01 /usr/sbin/irqbalance --foreground
syslog       882  0.0  0.0 222400   352 ?        Ssl  16:23   0:01 /usr/sbin/rsyslogd -n -iNONE
root         906  0.0  0.0  16496    20 ?        Ss   16:23   0:00 /sbin/wpa_supplicant -u -s -O /run/wpa_supplicant
root         975  0.0  0.1 244212  2104 ?        Ssl  16:23   0:00 /usr/sbin/ModemManager
root         981  0.0  0.1  81756  2288 ?        Ss   16:23   0:03 /usr/sbin/cupsd -l
root        1016  0.0  0.1 250096  2424 ?        Ssl  16:23   0:00 /usr/sbin/gdm3
root        1058  0.0  0.0 172612   612 ?        Ssl  16:23   0:00 /usr/sbin/cups-browsed
kernoops    1070  0.0  0.0  13080   720 ?        Ss   16:23   0:00 /usr/sbin/kerneloops --test
kernoops    1084  0.0  0.0  13080   776 ?        Ss   16:23   0:00 /usr/sbin/kerneloops
devops      7024  0.0  0.1  17956  2332 pts/0    S+   20:28   0:00 grep --color=auto sbin
devops@devops-virtual-machine:~$ pstree -hpu 7024
devops@devops-virtual-machine:~$ pstree -hpu 1084
kerneloops(1084,kernoops)
devops@devops-virtual-machine:~$ pstree -hpu 1070
kerneloops(1070,kernoops)
devops@devops-virtual-machine:~$ pstree -hpu 882
rsyslogd(882,syslog)─┬─{rsyslogd}(919)
                     ├─{rsyslogd}(920)
                     └─{rsyslogd}(921)
devops@devops-virtual-machine:~$
```

6. Which command enables you to change the priority of PID 1234 to a higher priority?

~$ renice -n -15 1234

7. On your system, 20 **dd** processes are currently running. What is the easiest way to stop all of them?

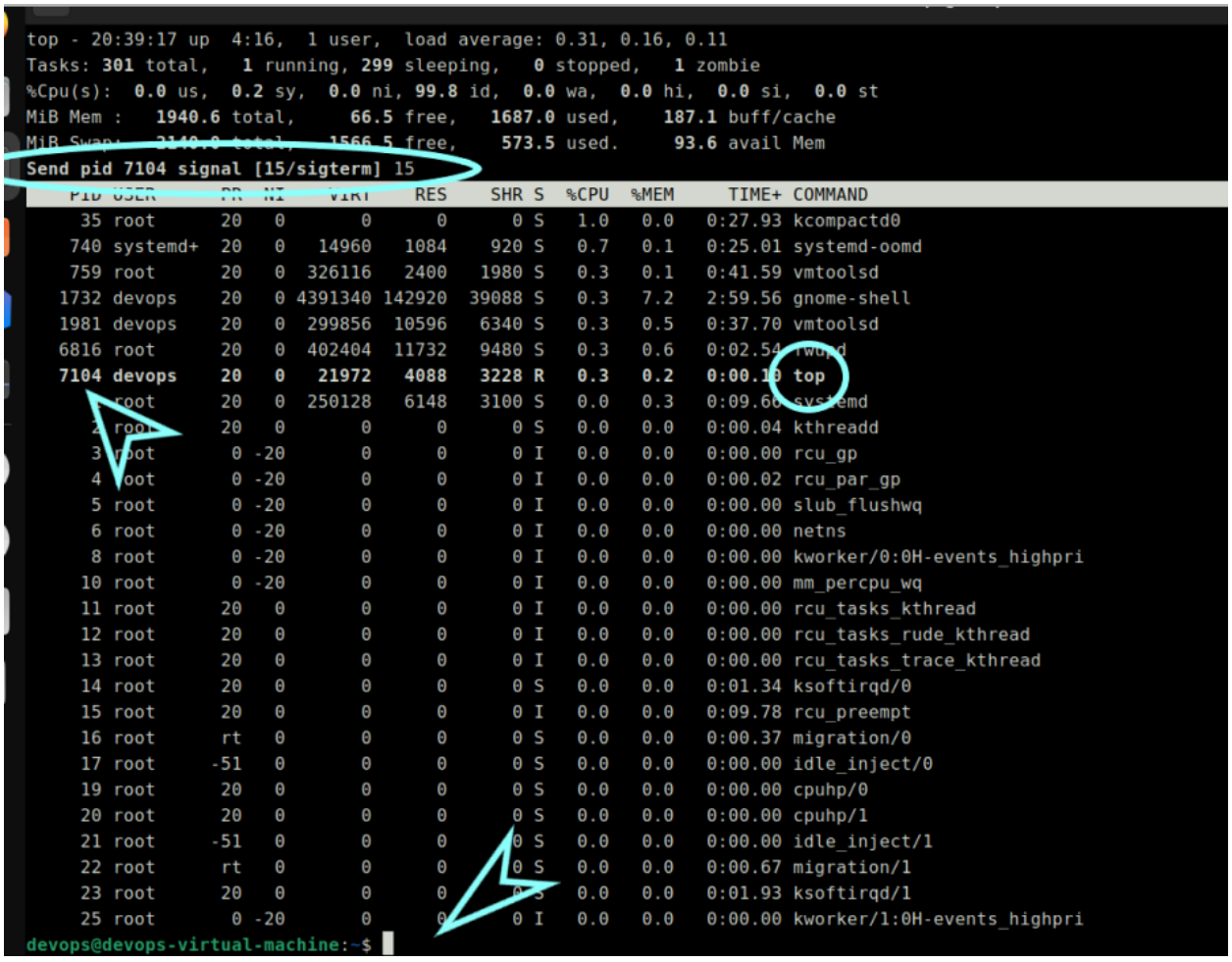
~$ pkill dd

8. Which command enables you to stop the command with the name **mycommand**?

~$ pkill -f mycommnd

9. Which command do you use from **top** to kill a process?

~$ top > press k > enter PID > enter signal



10. What is required to select a performance profile that best matches your system needs?

The most common tool for this purpose is tuned, which is a system daemon that monitors system activity and can apply different performance profiles depending on the workload.