

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

```
amgad@amgad-virtual-machine:~$ ls /usr/bin/ > /tmp/commands.list
amgad@amgad-virtual-machine:~$ cat /tmp/commands.list
[
aa-enabled
aa-exec
aa-features-abi
aconnect
acpi_listen
add-apt-repository
addpart
airscan-discover
alsabat
alsaloop
```

2. Count the number of user commands

```
amgad@amgad-virtual-machine:~$ wc -l /tmp/commands.list
3643 /tmp/commands.list
```

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

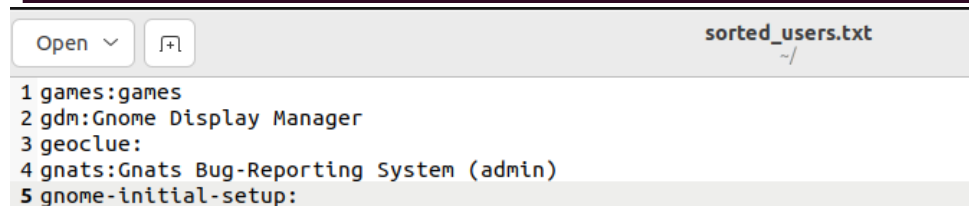
```
amgad@amgad-virtual-machine:~$ cut -d: -f1 /etc/passwd | grep -E '^g'
games
gnats
geoclue
gnome-initial-setup
gdm
amgad@amgad-virtual-machine:~$
```

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

```
amgad@amgad-virtual-machine:~$ cut -d: -f1,5 /etc/passwd | grep -E '^g'
games:games
gnats:Gnats Bug-Reporting System (admin)
geoclue:
gnome-initial-setup:
gdm:Gnome Display Manager
```

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

```
amgad@amgad-virtual-machine:~$ cut -d: -f1,5 /etc/passwd | grep -E '^g' | sort -t: -k5 > sorted_users.txt
amgad@amgad-virtual-machine:~$ gedit sorted_users.txt
```



```
sorted_users.txt
~/
1 games:games
2 gdm:Gnome Display Manager
3 geoclue:
4 gnats:Gnats Bug-Reporting System (admin)
5 gnome-initial-setup:
```

6. Write two commands: first: to search for all files on the system that named .bash_profile. Second: sorts the output of ls command on / recursively, Saving their output and error in 2 different files and sending them to the background.

```
amgad@amgad-virtual-machine:~$ find / -name .bash_profile
find: '/lost+found': Permission denied
find: '/sys/kernel/tracing': Permission denied
find: '/sys/kernel/debug': Permission denied
find: '/sys/fs/pstore': Permission denied
find: '/sys/fs/bpf': Permission denied
find: '/sys/fs/fuse/connections/34': Permission denied
find: '/snap/core20/1974/etc/ssl/private': Permission denied
find: '/tmp/tracker-extract-3-files.128': Permission denied
amgad@amgad-virtual-machine:~$ (ls -R / > / temp/output.txt 2> /temperror.txt &
)
amgad@amgad-virtual-machine:~$ bash: /: Is a directory
```

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

```
amgad@amgad-virtual-machine:~$ who
amgad    tty2          2023-10-21 21:45 (tty2)
amgad@amgad-virtual-machine:~$ who |wc -l
1
```

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

```
amgad@amgad-virtual-machine:~$ 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
amgad@amgad-virtual-machine:~$
```

9. What happens if you execute:

- `cat filename1 | cat filename2`
- `filename1 | cat filename2` : will just display the content of the second file (filename2) and the first file's content is effectively discarded.

```
amgad@amgad-virtual-machine:~$ echo "This is the content of filename1." > filename1
amgad@amgad-virtual-machine:~$ echo "This is the content of filename2." > filename2
amgad@amgad-virtual-machine:~$ cat filename1 | cat filename2
This is the content of filename2.
```

- `ls | rm`

```
amgad@amgad-virtual-machine:~/test$ ls | rm
rm: missing operand
Try 'rm --help' for more information.
amgad@amgad-virtual-machine:~/test$
```

- `ls /etc/passwd | wc -l`

`ls /etc/passwd | wc -l`: This command lists the contents of the /etc/passwd file using ls, which is not the correct way to display the contents of this file. The correct way to display the contents of a file is to use cat. Then, it attempts to count the number of lines in the output using wc -l. However, the ls command won't work properly with /etc/passwd, and this command is not meaningful for displaying the number of lines in that file. If you want to count the lines in the /etc/passwd file, you should use `cat /etc/passwd | wc -l`.

10. Issue the command sleep 100.

The command `sleep 100` will pause the execution of the shell for 100 seconds. It's used to introduce a delay or pause in a script or command sequence. After 100 seconds, the command will complete, and the shell will become active again. We can interrupt the sleep command by pressing `Ctrl+C` in the terminal.

11. Stop the last command.

- We can interrupt the sleep command by pressing `Ctrl+C` in the terminal.

```
amgad@amgad-virtual-machine:~$ sleep 100
^C
amgad@amgad-virtual-machine:~$
```

12. Resume the last command in the background

To resume the last command (`sleep 100`) in the background, we can use the following steps:

- 1- **Suspend the command using `Ctrl+Z`** : This will stop the command and put it in the background. To resume the command in the background, we can use the `bg` command followed by the `%` sign and the job number.

```
amgad@amgad-virtual-machine:~$ sleep 100
^Z
[1]+  Stopped                  sleep 100
amgad@amgad-virtual-machine:~$ jobs
[1]+  Stopped                  sleep 100
amgad@amgad-virtual-machine:~$ bg %1
[1]+ sleep 100 &
amgad@amgad-virtual-machine:~$
```

13. Issue the jobs command and see its output.

```
amgad@amgad-virtual-machine:~$ jobs
[1]+  Done                  sleep 100
```

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

```
amgad@amgad-virtual-machine:~$ fg
bash: fg: current: no such job
amgad@amgad-virtual-machine:~$ sleep 1000
^Z
[1]+  Stopped                  sleep 1000
amgad@amgad-virtual-machine:~$ bg %1
[1]+ sleep 1000 &
amgad@amgad-virtual-machine:~$ fg
sleep 1000
```

15. Kill the sleep command.

```
amgad@amgad-virtual-machine:~$ bg %1
[1]+ sleep 1000 &
[1]+ Terminated              sleep 1000
amgad@amgad-virtual-machine:~$ pkill 6849
amgad@amgad-virtual-machine:~$ ps
  PID TTY          TIME CMD
  5293 pts/0      00:00:00 bash
  6866 pts/0      00:00:00 ps
amgad@amgad-virtual-machine:~$
```

16. Display your processes only

```
amgad@amgad-virtual-machine:~$ ps -u
USER      PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
amgad    1628  0.0  0.1 162388  6272 tty2    Ssl+  08:32   0:00 /usr/libexec/gdm-waylan
amgad    1639  0.0  0.4 223040 15872 tty2    Sl+   08:32   0:00 /usr/libexec/gnome-sess
amgad    5293  0.0  0.1  11544  5632 pts/0    Ss   12:22   0:00 bash
amgad    6871  0.0  0.0  12672  3456 pts/0    R+   15:27   0:00 ps -u
amgad@amgad-virtual-machine:~$
```

17.Display all processes except yours

```
amgad@amgad-virtual-machine:~$ ps aux | pgrep -u amgad
1496
1497
1503
1504
1506
1507
1511
1519
```

18.Use the pgrep command to list your processes only

```
amgad@amgad-virtual-machine:~$ pgrep -u amgad
1581
1582
1588
1589
1590
```

19.Kill your processes only.

```
22 2023 م، أكت، EEST 03:39:27
amgad@amgad-virtual-machine:~$ pkill -u amgad
```