

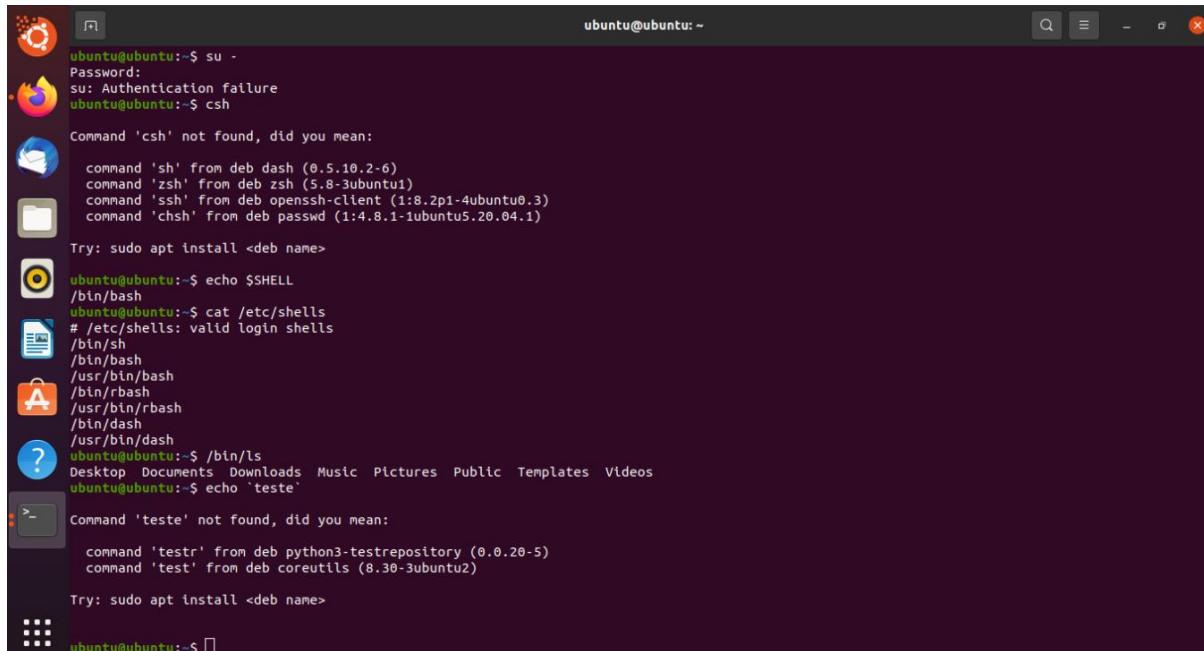
**UNIVERSIDADE FEDERAL DE UBERLÂNDIA
FACULDADE DE ENGENHARIA ELÉTRICA
ENGENHARIA DE CONTROLE E AUTOMAÇÃO**

ATIVIDADE 1 - UTILIZAÇÃO DO LINUX

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Uberlândia
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Capítulo 1 - Conceitos Básicos

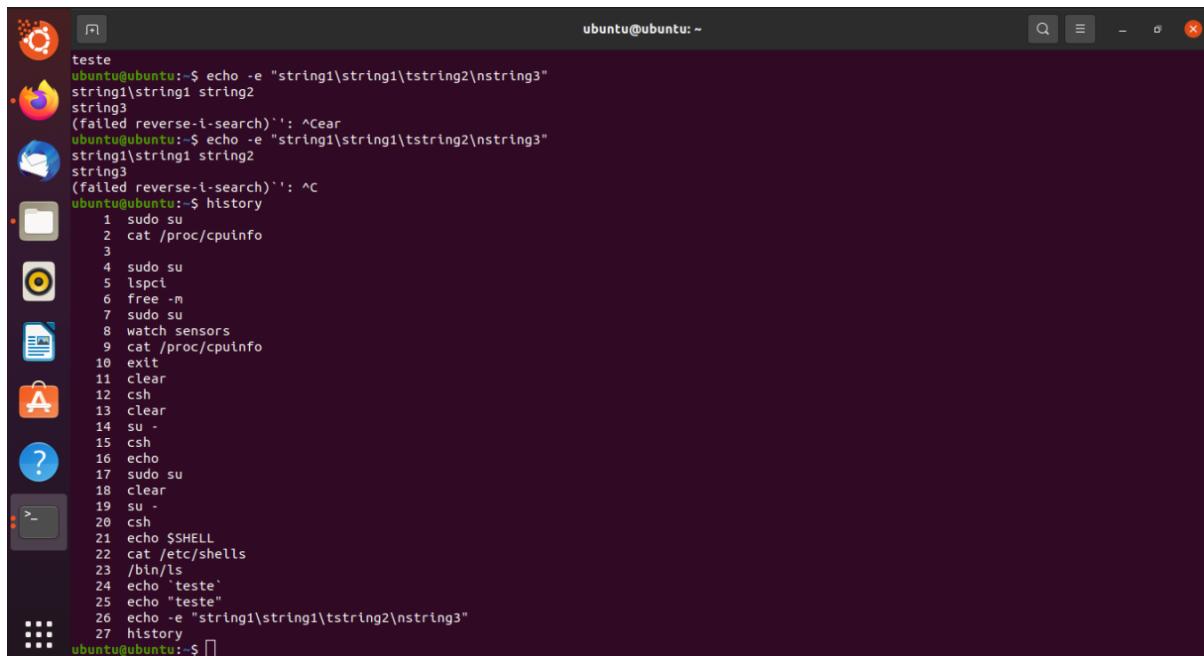


```
ubuntu@ubuntu:~$ su -
Password:
su: Authentication failure
ubuntu@ubuntu:~$ csh
Command 'csh' not found, did you mean:
  command 'sh' from deb dash (0.5.10.2-6)
  command 'zsh' from deb zsh (5.8-3ubuntu1)
  command 'ssh' from deb openssh-client (1:8.2p1-4ubuntu0.3)
  command 'chsh' from deb passwd (1:4.8.1-1ubuntu5.20.04.1)
Try: sudo apt install <deb name>
ubuntu@ubuntu:~$ echo $$SHELL
/bin/bash
ubuntu@ubuntu:~$ cat /etc/shells
# /etc/shells: valid login shells
/bin/sh
/bin/bash
/usr/bin/bash
/bin/rbash
/usr/bin/rbash
/bin/dash
/usr/bin/dash
ubuntu@ubuntu:~$ /bin/ls
Desktop Documents Downloads Music Pictures Public Templates Videos
ubuntu@ubuntu:~$ echo 'teste'
Command 'teste' not found, did you mean:
  command 'testr' from deb python3-testrepository (0.0.20-5)
  command 'test' from deb coreutils (8.30-3ubuntu2)
Try: sudo apt install <deb name>
ubuntu@ubuntu:~$
```

Por meio do comando “su -” notamos que não é possível acessar o sistema como gerenciador, visto que essa versão do sistema encontra-se em um “pen drive bootável”, portanto o acesso de gerenciador é feito via o comando “sudo su”.

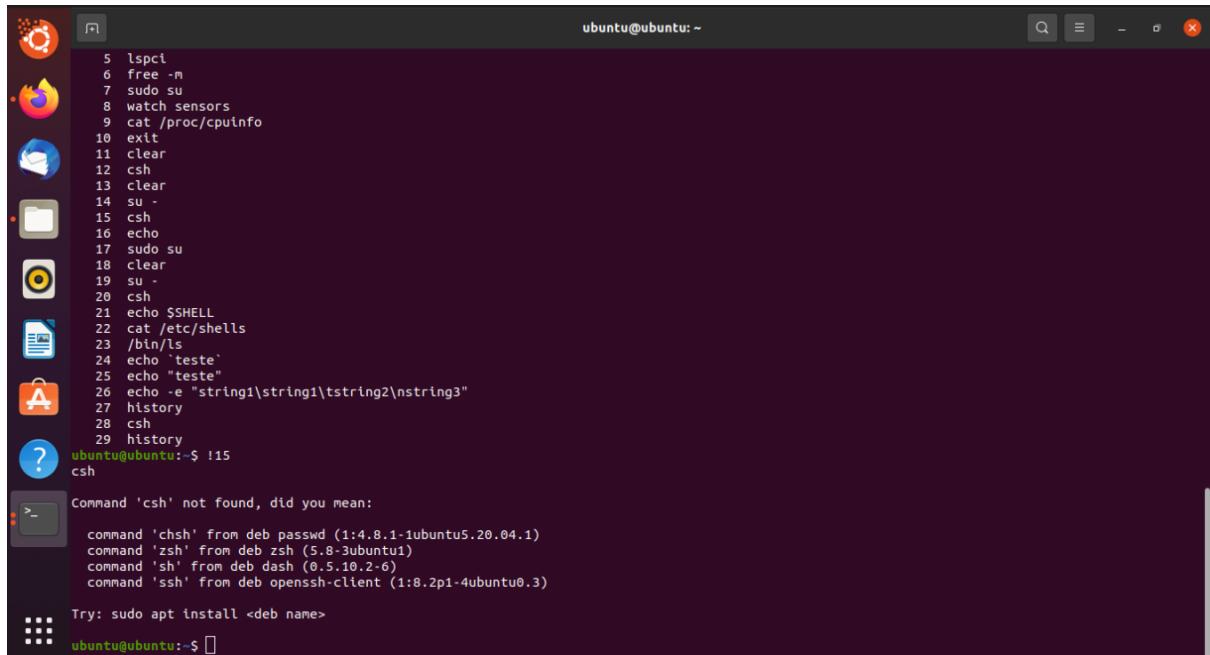
O comando “echo” imprime variáveis de ambiente, utilizando este junto ao “\$shell” podemos listar o shell utilizado na máquina.

O comando “cat” faz a concatenação de arquivos, imprimindo o resultado de saída com base na entrada.



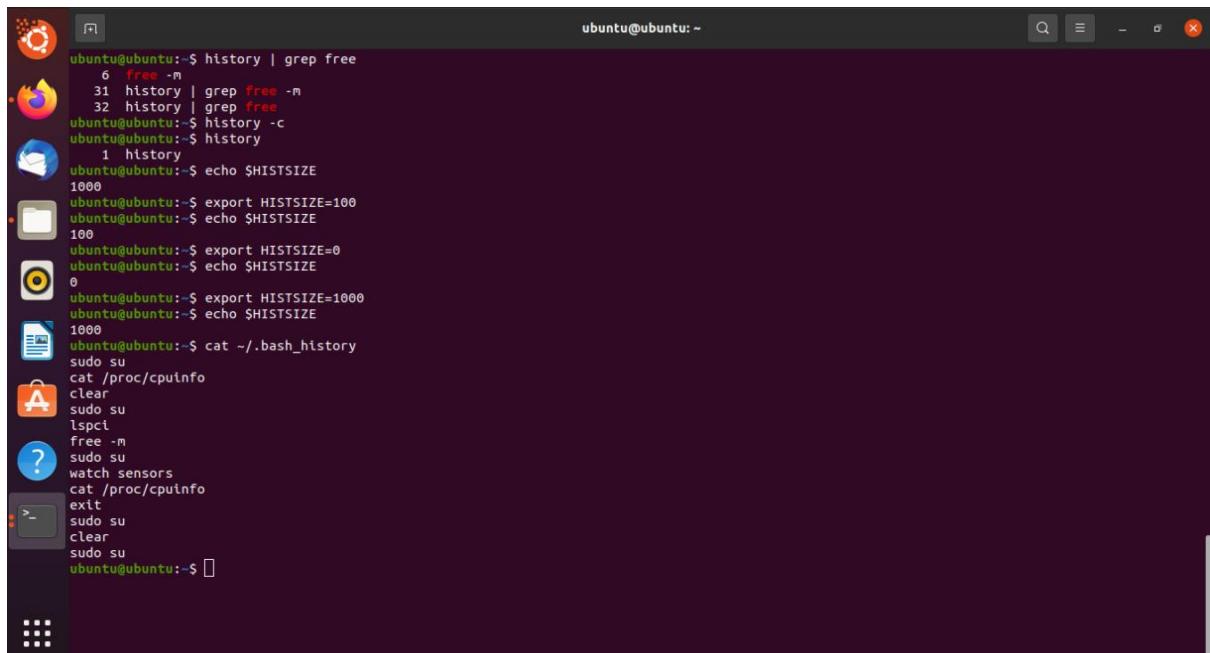
```
teste
ubuntu@ubuntu:~$ echo -e "string1\string1\tstring2\nstring3"
string1string1 string2
string3
(failed reverse-i-search)''; ^Clear
ubuntu@ubuntu:~$ echo -e "string1\string1\tstring2\nstring3"
string1string1 string2
string3
(failed reverse-i-search)''; ^Clear
ubuntu@ubuntu:~$ history
 1 sudo su
 2 cat /proc/cpuinfo
 3
 4 sudo su
 5 lspci
 6 free -m
 7 sudo su
 8 watch sensors
 9 cat /proc/cpuinfo
10 exit
11 clear
12 csh
13 clear
14 su -
15 csh
16 echo
17 sudo su
18 clear
19 su -
20 csh
21 echo $$SHELL
22 cat /etc/shells
23 /bin/ls
24 echo 'teste'
25 echo "teste"
26 echo -e "string1\string1\tstring2\nstring3"
27 history
ubuntu@ubuntu:~$
```

Comando “echo” foi utilizado em um diretório expressando a composição do mesmo.
Comando “history” imprime na tela o histórico de comando utilizados na máquina.



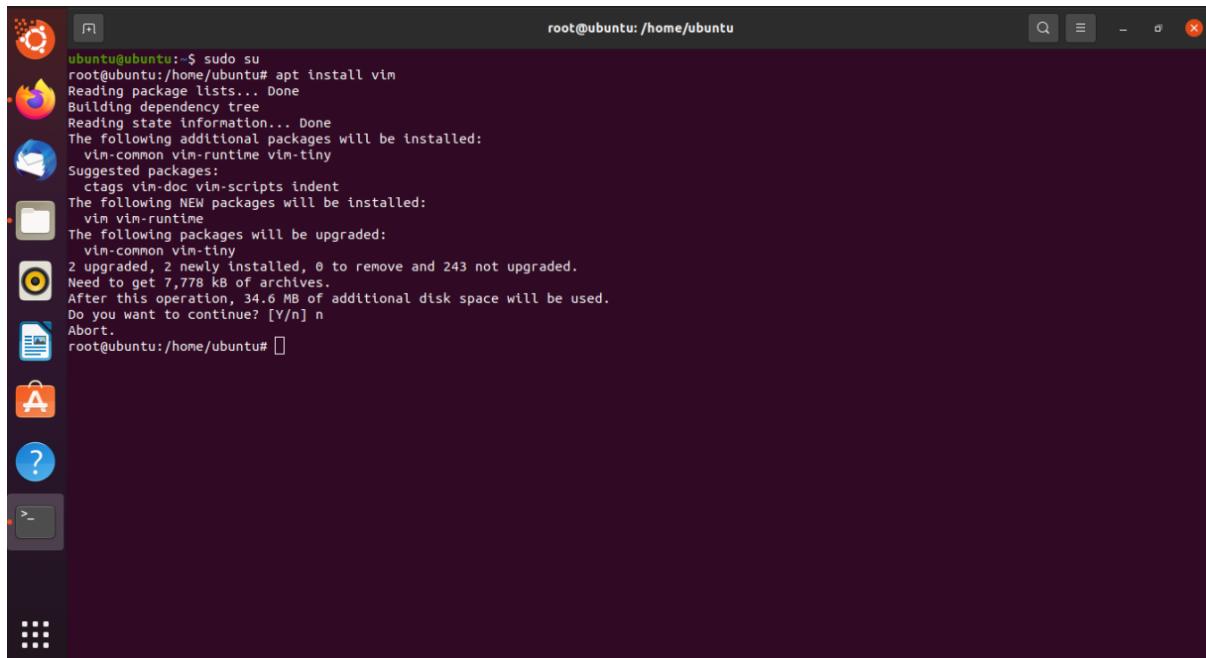
```
ubuntu@ubuntu:~$ lscpi
5 free -m
6 sudo su
7 watch sensors
8 cat /proc/cpuinfo
9 extt
10 clear
11 csh
12 csh
13 clear
14 su -
15 csh
16 echo
17 sudo su
18 clear
19 su -
20 csh
21 echo $SHELL
22 cat /etc/shells
23 /bin/ls
24 echo `teste`
25 echo "teste"
26 echo -e "string1\string1\tstring2\nstring3"
27 history
28 csh
29 history
30 history
31 history
32 history | grep free -m
ubuntu@ubuntu:~$ !15
csh
Command 'csh' not found, did you mean:
  command 'chsh' from deb passwd (1:4.8.1-1ubuntu5.20.04.1)
  command 'zsh' from deb zsh (5.8-3ubuntu1)
  command 'sh' from deb dash (0.5.10.2-6)
  command 'ssh' from deb openssh-client (1:8.2p1-4ubuntu0.3)
Try: sudo apt install <deb name>
ubuntu@ubuntu:~$
```

Podemos ver uma seleção feita com base no histórico mediante o uso do comando “!15” que seleciona o 15º comando utilizado.



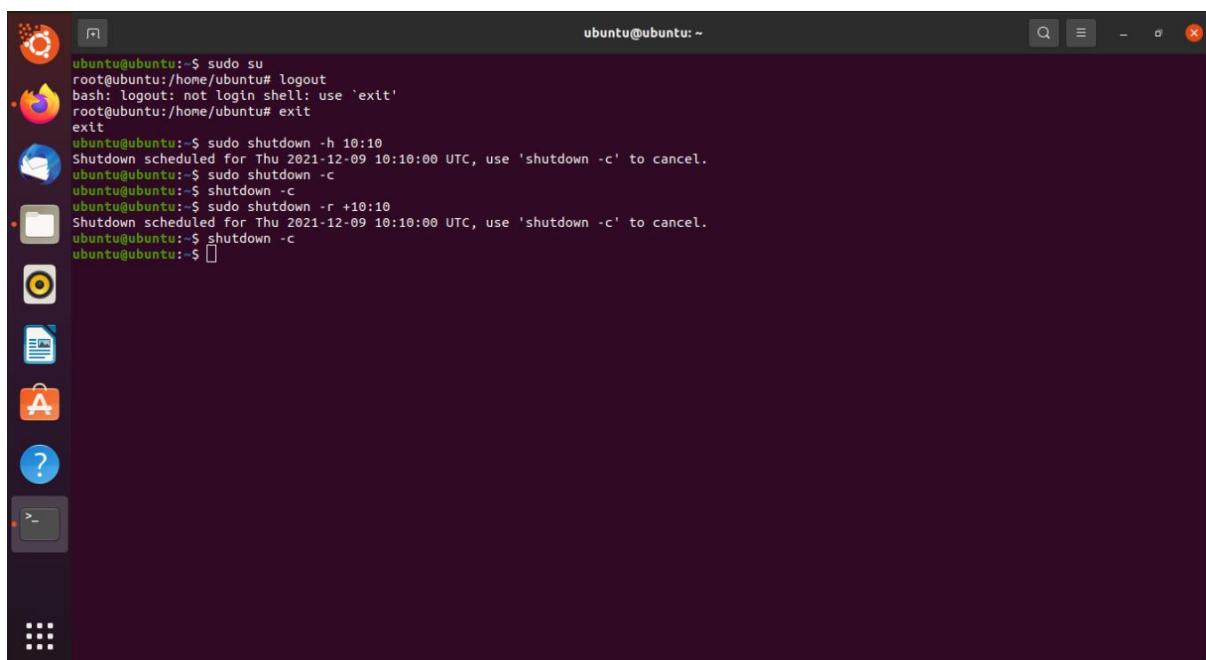
```
ubuntu@ubuntu:~$ history | grep free
6 free -m
31 history | grep free -m
32 history | grep free
ubuntu@ubuntu:~$ history -c
ubuntu@ubuntu:~$ history
1 histroy
ubuntu@ubuntu:~$ echo $HISTSIZE
1000
ubuntu@ubuntu:~$ export HISTSIZE=100
ubuntu@ubuntu:~$ echo $HISTSIZE
100
ubuntu@ubuntu:~$ export HISTSIZE=0
ubuntu@ubuntu:~$ echo $HISTSIZE
0
ubuntu@ubuntu:~$ export HISTSIZE=1000
ubuntu@ubuntu:~$ echo $HISTSIZE
1000
ubuntu@ubuntu:~$ cat ~/.bash_history
sudo su
cat /proc/cpuinfo
clear
sudo su
lscpi
free -m
sudo su
watch sensors
cat /proc/cpuinfo
extt
sudo su
clear
sudo su
ubuntu@ubuntu:~$
```

Comando “grep” sendo utilizado junto ao “history” para busca de um comando específico que começa com “free”. Novamente o comando “echo” expressa a composição quantitativa do histórico, sendo alterado logo em seguida.



```
ubuntu@ubuntu:~$ sudo su
root@ubuntu:/home/ubuntu# apt install vim
Reading package lists... Done
Building dependency tree...
Reading state information... Done
The following additional packages will be installed:
  vim-common vim-runtime vim-tiny
Suggested packages:
  ctags vim-doc vim-scripts indent
The following NEW packages will be installed:
  vim vim-runtime
The following packages will be upgraded:
  vim-common vim-tiny
2 upgraded, 2 newly installed, 0 to remove and 243 not upgraded.
Need to get 7,778 kB of archives.
After this operation, 34.6 MB of additional disk space will be used.
Do you want to continue? [Y/n] n
Abort.
root@ubuntu:/home/ubuntu#
```

Capítulo 2 - Ligando e desligando o Linux

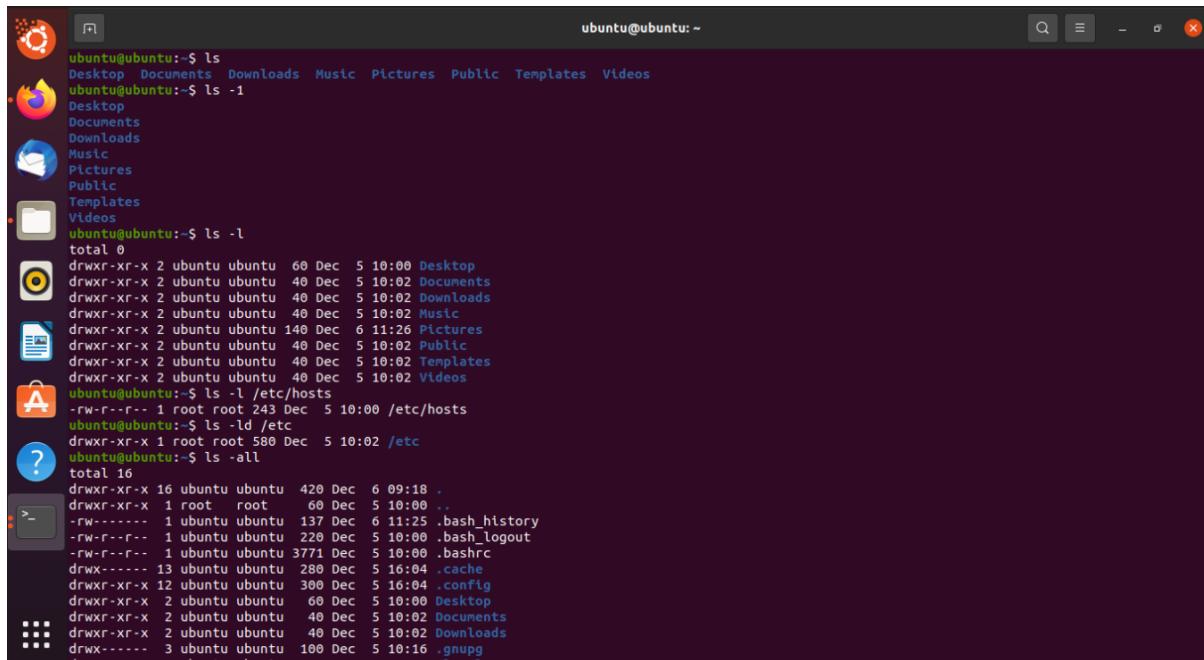


```
ubuntu@ubuntu:~$ sudo su
root@ubuntu:/home/ubuntu# logout
bash: logout: not login shell: use `exit'
root@ubuntu:/home/ubuntu# exit
exit
ubuntu@ubuntu:~$ sudo shutdown -h 10:10
Shutdown scheduled for Thu 2021-12-09 10:10:00 UTC, use 'shutdown -c' to cancel.
ubuntu@ubuntu:~$ sudo shutdown -c
ubuntu@ubuntu:~$ sudo shutdown -r +10:10
Shutdown scheduled for Thu 2021-12-09 10:10:00 UTC, use 'shutdown -c' to cancel.
ubuntu@ubuntu:~$ shutdown -c
ubuntu@ubuntu:~$
```

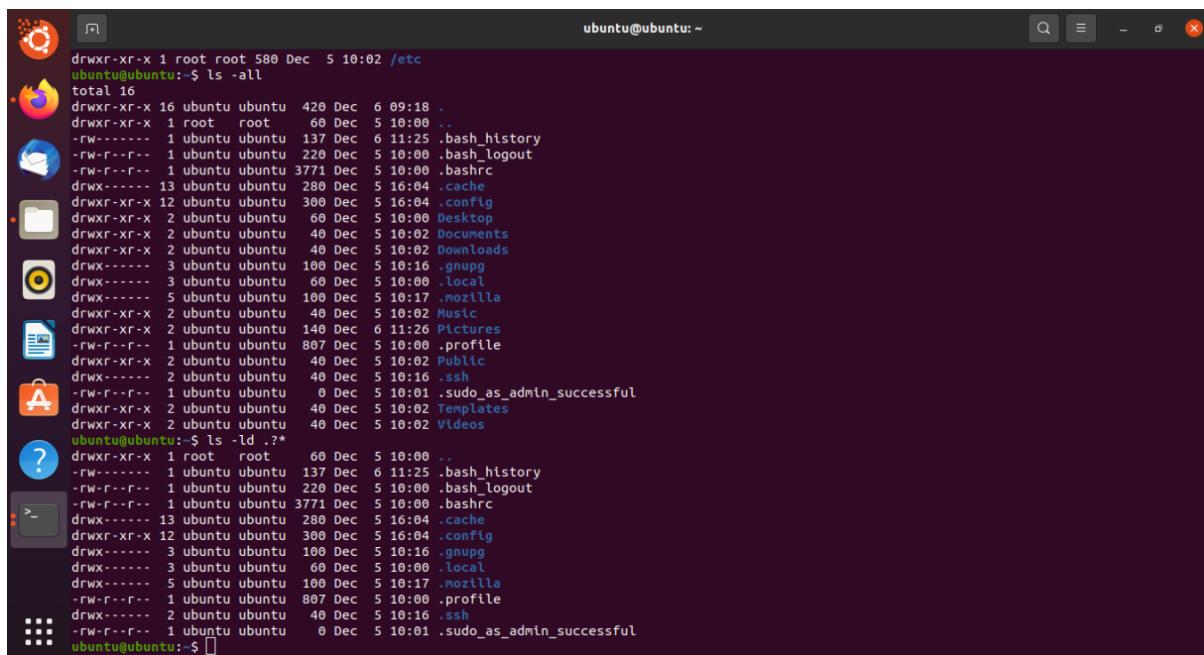
O comando “logout” pode ser utilizado para sair da conta utilizada para acessar o sistema. O comando “shutdown -h 10:10” permite um desligamento em horário marcado, no exemplo foi programado para 10:10.

O comando “shutdown -r +10:10” realiza a mesma função, ambos podem ser cancelados pelo comando “shutdown -c”. As demais maneiras de desligar o Linux não foram realizadas pois o sistema não se encontra instalado na máquina, portanto essa informação não ficaria salva no histórico.

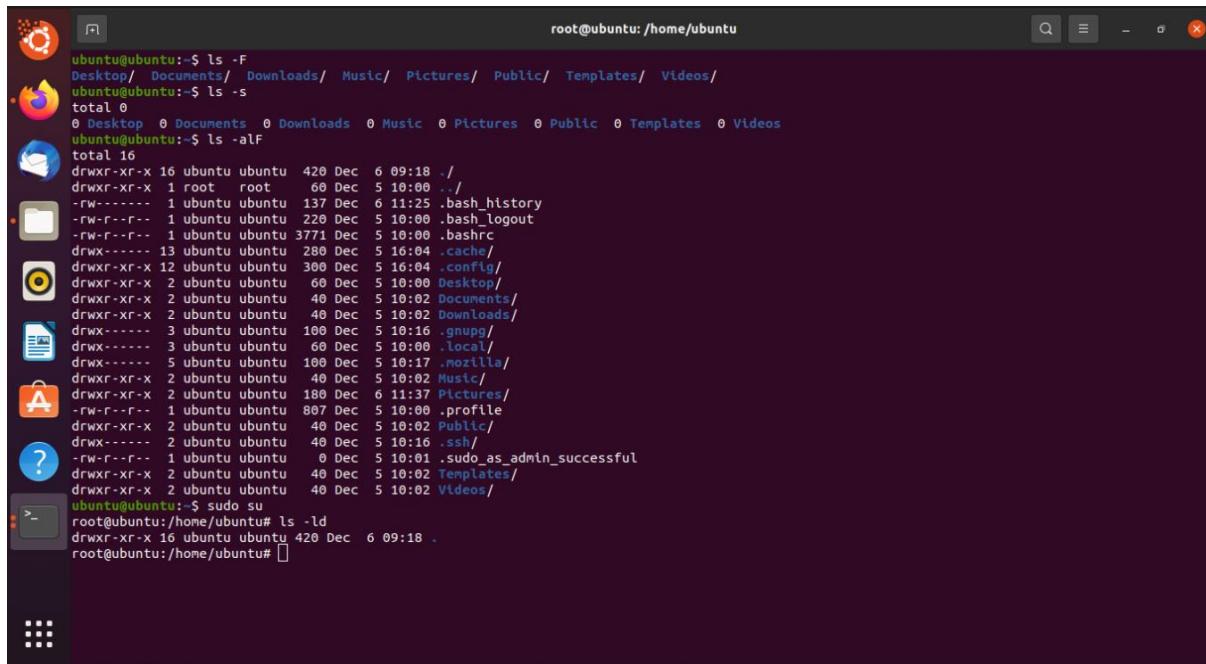
Capítulo 3 - Operações em diretórios e arquivos



```
ubuntu@ubuntu:~$ ls
Desktop Documents Downloads Music Pictures Public Templates Videos
ubuntu@ubuntu:~$ ls -1
Desktop
Documents
Downloads
Music
Pictures
Public
Templates
Videos
ubuntu@ubuntu:~$ ls -l
total 0
drwxr-xr-x 2 ubuntu ubuntu 60 Dec 5 10:00 Desktop
drwxr-xr-x 2 ubuntu ubuntu 40 Dec 5 10:02 Documents
drwxr-xr-x 2 ubuntu ubuntu 40 Dec 5 10:02 Downloads
drwxr-xr-x 2 ubuntu ubuntu 40 Dec 5 10:02 Music
drwxr-xr-x 2 ubuntu ubuntu 140 Dec 6 11:26 Pictures
drwxr-xr-x 2 ubuntu ubuntu 40 Dec 5 10:02 Public
drwxr-xr-x 2 ubuntu ubuntu 40 Dec 5 10:02 Templates
drwxr-xr-x 2 ubuntu ubuntu 40 Dec 5 10:02 Videos
ubuntu@ubuntu:~$ ls -l /etc/hosts
-rw-r--r-- 1 root root 243 Dec 5 10:00 /etc/hosts
ubuntu@ubuntu:~$ ls -l /etc
drwxr-xr-x 1 root root 580 Dec 5 10:02 /etc
ubuntu@ubuntu:~$ ls -all
total 16
drwxr-xr-x 16 ubuntu ubuntu 420 Dec 6 09:18 .
drwxr-xr-x 1 root root 60 Dec 5 10:00 ..
-rw----- 1 ubuntu ubuntu 137 Dec 6 11:25 .bash_history
-rw-r--r-- 1 ubuntu ubuntu 220 Dec 5 10:00 .bash_logout
-rw-r--r-- 1 ubuntu ubuntu 3771 Dec 5 10:00 .bashrc
drwx----- 13 ubuntu ubuntu 280 Dec 5 16:04 .cache
drwxr-xr-x 12 ubuntu ubuntu 300 Dec 5 16:04 .config
drwxr-xr-x 2 ubuntu ubuntu 60 Dec 5 10:00 Desktop
drwxr-xr-x 2 ubuntu ubuntu 40 Dec 5 10:02 Documents
drwxr-xr-x 2 ubuntu ubuntu 40 Dec 5 10:02 Downloads
drwx----- 3 ubuntu ubuntu 100 Dec 5 10:16 .gnupg
drwx----- 2 ubuntu ubuntu 60 Dec 5 10:00 .local
drwxr-xr-x 1 root root 580 Dec 5 10:02 /etc
```

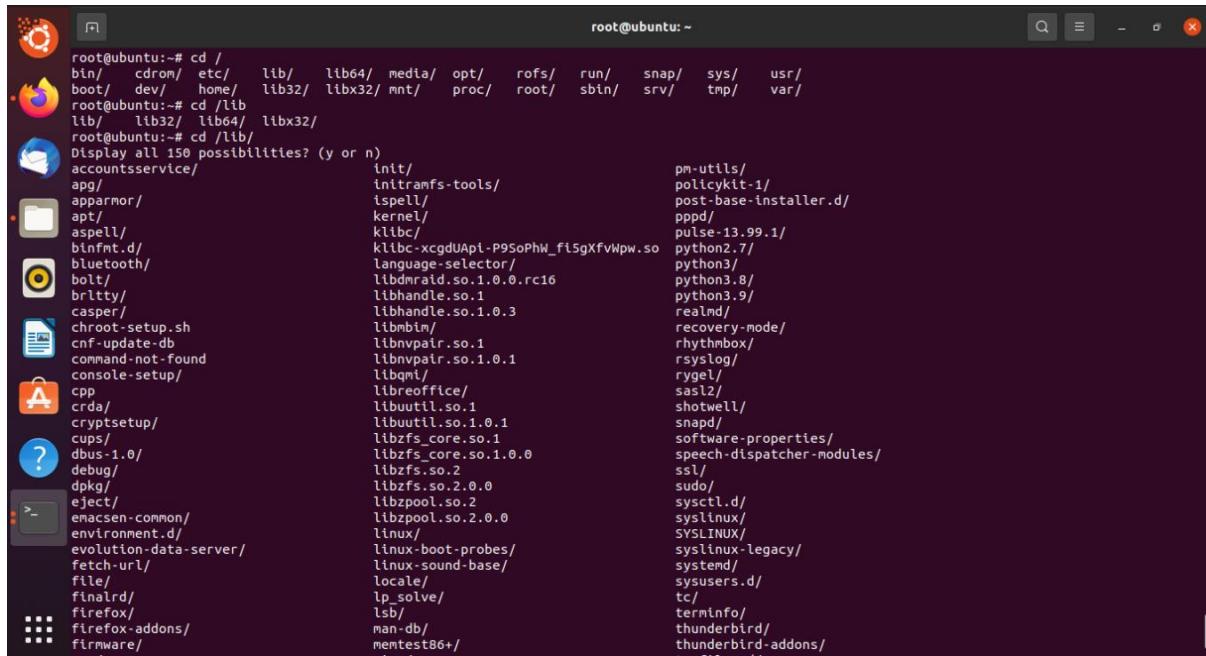


```
ubuntu@ubuntu:~$ ls -all
total 16
drwxr-xr-x 1 root root 580 Dec 5 10:02 /etc
ubuntu@ubuntu:~$ ls -all
total 16
drwxr-xr-x 16 ubuntu ubuntu 420 Dec 6 09:18 .
drwxr-xr-x 1 root root 60 Dec 5 10:00 ..
-rw----- 1 ubuntu ubuntu 137 Dec 6 11:25 .bash_history
-rw-r--r-- 1 ubuntu ubuntu 220 Dec 5 10:00 .bash_logout
-rw-r--r-- 1 ubuntu ubuntu 3771 Dec 5 10:00 .bashrc
drwx----- 13 ubuntu ubuntu 280 Dec 5 16:04 .cache
drwxr-xr-x 12 ubuntu ubuntu 300 Dec 5 16:04 .config
drwxr-xr-x 2 ubuntu ubuntu 60 Dec 5 10:00 Desktop
drwxr-xr-x 2 ubuntu ubuntu 40 Dec 5 10:02 Documents
drwxr-xr-x 2 ubuntu ubuntu 40 Dec 5 10:02 Downloads
drwx----- 3 ubuntu ubuntu 60 Dec 5 10:00 .local
drwx----- 3 ubuntu ubuntu 100 Dec 5 10:17 .mozilla
drwxr-xr-x 2 ubuntu ubuntu 40 Dec 5 10:02 Music
drwxr-xr-x 2 ubuntu ubuntu 140 Dec 6 11:26 Pictures
-rw-r--r-- 1 ubuntu ubuntu 807 Dec 5 10:00 .profile
drwxr-xr-x 2 ubuntu ubuntu 40 Dec 5 10:02 Public
drwx----- 2 ubuntu ubuntu 40 Dec 5 10:16 .ssh
-rw-r--r-- 1 ubuntu ubuntu 0 Dec 5 10:01 .sudo_as_admin_successful
drwxr-xr-x 2 ubuntu ubuntu 40 Dec 5 10:02 Templates
drwxr-xr-x 2 ubuntu ubuntu 40 Dec 5 10:02 Videos
ubuntu@ubuntu:~$ ls -ld ./*
drwxr-xr-x 1 root root 60 Dec 5 10:00 ..
-rw----- 1 ubuntu ubuntu 137 Dec 6 11:25 .bash_history
-rw-r--r-- 1 ubuntu ubuntu 220 Dec 5 10:00 .bash_logout
-rw-r--r-- 1 ubuntu ubuntu 3771 Dec 5 10:00 .bashrc
drwx----- 13 ubuntu ubuntu 280 Dec 5 16:04 .cache
drwxr-xr-x 12 ubuntu ubuntu 300 Dec 5 16:04 .config
drwx----- 3 ubuntu ubuntu 100 Dec 5 10:16 .gnupg
drwx----- 3 ubuntu ubuntu 60 Dec 5 10:00 .local
drwx----- 5 ubuntu ubuntu 100 Dec 5 10:17 .mozilla
-rw-r--r-- 1 ubuntu ubuntu 807 Dec 5 10:00 .profile
drwx----- 2 ubuntu ubuntu 40 Dec 5 10:16 .ssh
drwx----- 2 ubuntu ubuntu 40 Dec 5 10:01 .sudo_as_admin_successful
ubuntu@ubuntu:~$ 
```



```
root@ubuntu:/home/ubuntu
ubuntu@ubuntu:~$ ls -F
Desktop/ Documents/ Downloads/ Music/ Pictures/ Public/ Templates/ Videos/
ubuntu@ubuntu:~$ ls -s
total 0
0 Desktop 0 Documents 0 Downloads 0 Music 0 Pictures 0 Public 0 Templates 0 Videos
ubuntu@ubuntu:~$ ls -alF
total 16
drwxr-xr-x 16 ubuntu ubuntu 420 Dec  6 09:18 .
drwxr-xr-x  1 root  root   60 Dec  5 10:00 ..
-rw-----  1 ubuntu ubuntu 137 Dec  6 11:25 .bash_history
-rw-r--r--  1 ubuntu ubuntu 220 Dec  5 10:00 .bash_logout
-rw-r--r--  1 ubuntu ubuntu 3771 Dec  5 10:00 .bashrc
drwx----- 13 ubuntu ubuntu 280 Dec  5 16:04 .cache/
drwxr-xr-x 12 ubuntu ubuntu 300 Dec  5 16:04 .config/
drwxr-xr-x  2 ubuntu ubuntu  60 Dec  5 10:00 Desktop/
drwxr-xr-x  2 ubuntu ubuntu  40 Dec  5 10:02 Documents/
drwxr-xr-x  2 ubuntu ubuntu  40 Dec  5 10:02 Downloads/
drwx-----  3 ubuntu ubuntu 100 Dec  5 10:16 .gnupg/
drwx-----  3 ubuntu ubuntu  60 Dec  5 10:00 .local/
drwx-----  5 ubuntu ubuntu 100 Dec  5 10:17 .mozilla/
drwxr-xr-x  2 ubuntu ubuntu  40 Dec  5 10:02 Music/
drwxr-xr-x  2 ubuntu ubuntu 180 Dec  6 11:37 Pictures/
-rw-r--r--  1 ubuntu ubuntu 807 Dec  5 10:00 .profile
drwxr-xr-x  2 ubuntu ubuntu  40 Dec  5 10:02 Public/
drwx-----  2 ubuntu ubuntu  40 Dec  5 10:16 .ssh/
-rw-r--r--  1 ubuntu ubuntu  8 Dec  5 10:01 .sudo_as_admin_successful
drwxr-xr-x  2 ubuntu ubuntu  40 Dec  5 10:02 Templates/
drwxr-xr-x  2 ubuntu ubuntu  40 Dec  5 10:02 Videos/
ubuntu@ubuntu:~$ sudo su
root@ubuntu:/home/ubuntu# ls -ld
drwxr-xr-x 16 ubuntu ubuntu 420 Dec  6 09:18 .
root@ubuntu:/home/ubuntu#
```

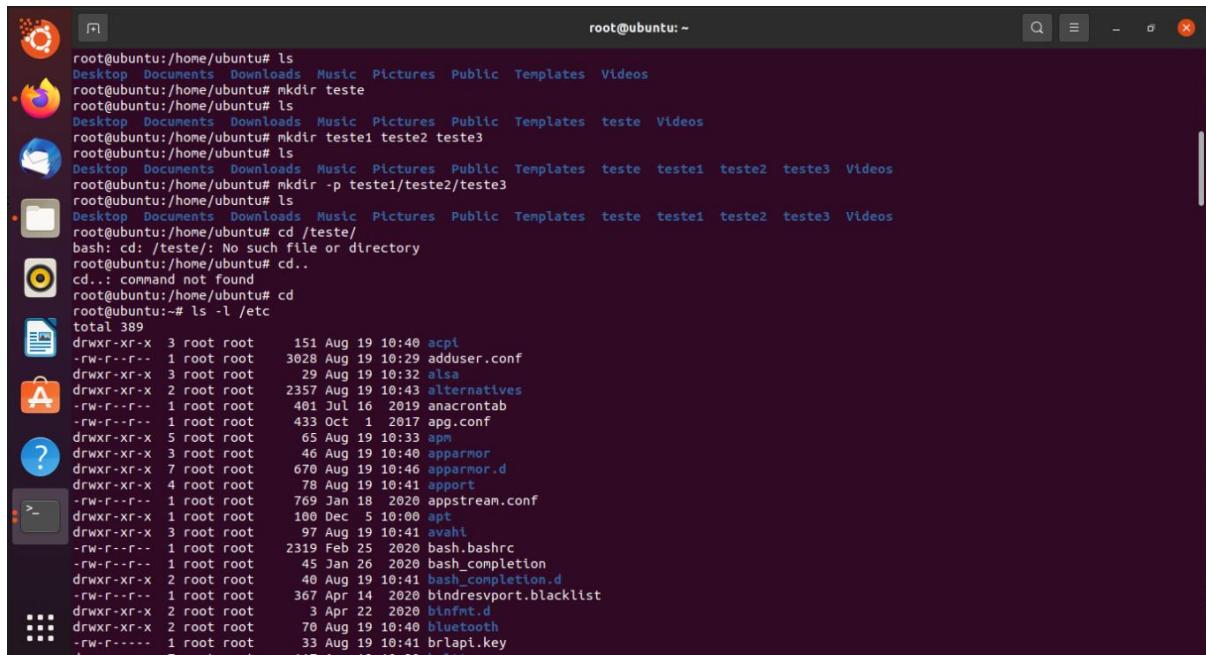
Comando “ls” lista todos os arquivos/pastas presentes no diretório de interesse ou no diretório presente. Algumas variações com base na opção podem listar ou exibir arquivos ocultos.



```
root@ubuntu:~# cd /
bin/  cdrom/  etc/  lib/  lib64/  media/  opt/  rofs/  run/  snap/  sys/  usr/
boot/  dev/  home/  lib32/  libx32/  mnt/  proc/  root/  sbin/  srv/  tmp/  var/
root@ubuntu:~# cd /lib/
lib/  lib32/  lib64/  libx32/
root@ubuntu:~# cd /lib/
Display all 150 possibilities? (y or n)
accountservice/          init/                  pm-utils/
apg/                      inotify-tools/        policykit-1/
apparmor/                 ispell/                post-base-installer.d/
apt/                      kernel/               pppd/
aspell/                   klibc/                pulse-13.99.1/
binfmt.d/                 klibc-xcdUApi-P95oPhW_fi5gXfvWpw.so python2.7/
bluetooth/                language-selector/    python3/
bolt/                     libblkdev-mapper.so.1.0.0.rc16 python3.8/
brltty/                   libblkdev-mapper.so.1.0.0.rc16 python3.9/
casper/                   libblkdev-mapper.so.1.0.0.rc16 realmd/
chroot-setup.sh           libblkdev-mapper.so.1.0.0.rc16 recovery-mode/
cups/                      libblkdev-mapper.so.1.0.0.rc16 rhythmbox/
cnf-update-db              libblkdev-mapper.so.1.0.0.rc16 rsyslog/
command-not-found         libblkdev-mapper.so.1.0.0.rc16 rygel/
console-setup/            libblkdev-mapper.so.1.0.0.rc16 sasl2/
cpp/                      libblkdev-mapper.so.1.0.0.rc16 shotwell/
crda/                     libblkdev-mapper.so.1.0.0.rc16 snapd/
cryptsetup/                libblkdev-mapper.so.1.0.0.rc16 software-properties/
cups/                      libblkdev-mapper.so.1.0.0.rc16 speech-dispatcher-modules/
dbus-1.0/                 libblkdev-mapper.so.1.0.0.rc16 ssl/
debug/                    libblkdev-mapper.so.1.0.0.rc16 sudo/
dpkg/                     libblkdev-mapper.so.1.0.0.rc16 sysctl.d/
eject/                    libblkdev-mapper.so.1.0.0.rc16 syslinux/
emacs-common/             libblkdev-mapper.so.1.0.0.rc16 SYSLINUX/
environment.d/            libblkdev-mapper.so.1.0.0.rc16 syslinux-legacy/
evolution-data-server/    libblkdev-mapper.so.1.0.0.rc16 systemd/
fetch-url/                libblkdev-mapper.so.1.0.0.rc16 sysusers.d/
file/                      libblkdev-mapper.so.1.0.0.rc16 tc/
finalrd/                 libblkdev-mapper.so.1.0.0.rc16 terminfo/
firefox/                 libblkdev-mapper.so.1.0.0.rc16 thunderbird/
firefox-addons/           libblkdev-mapper.so.1.0.0.rc16 thunderbird-addons/
firmware/                 libblkdev-mapper.so.1.0.0.rc16
```

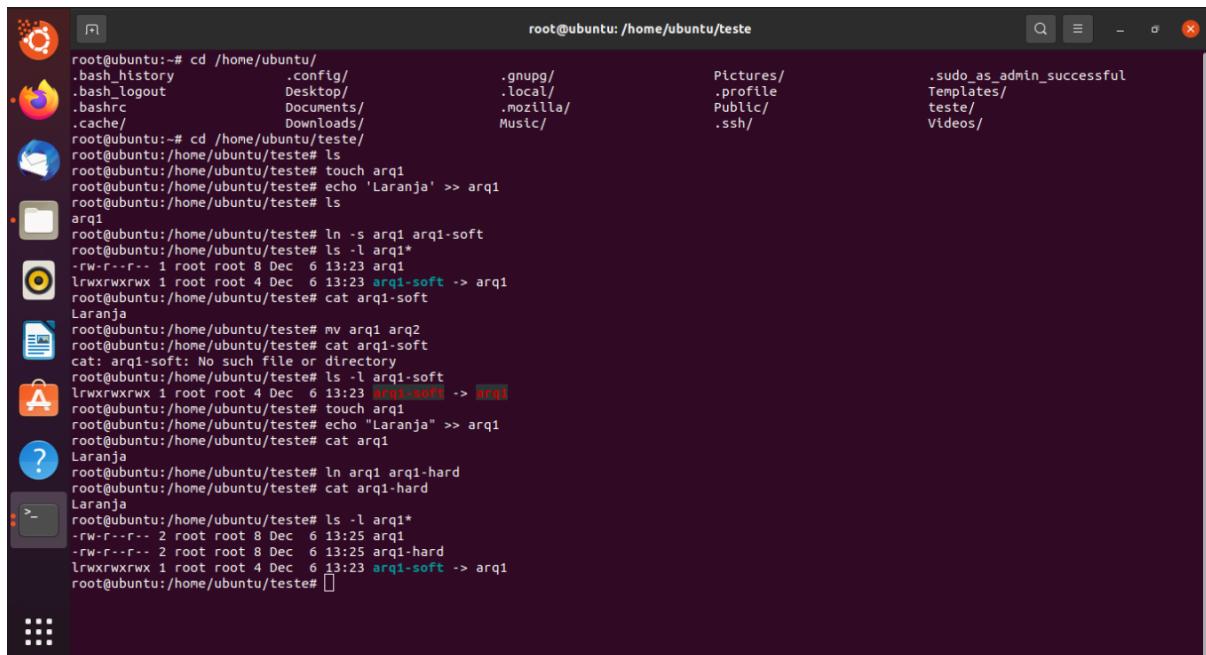
```
root@ubuntu:~$ sudo su
root@ubuntu:/home/ubuntu# cd ~
root@ubuntu:~# pwd
/root
root@ubuntu:~# cd /
bin/  cdrom/  etc/  lib/  lib64/  media/  opt/  rofs/  run/  snap/  sys/  usr/
boot/  dev/  home/  lib32/  libx32/  mnt/  proc/  root/  sbin/  srv/  tmp/  var/
root@ubuntu:~/media/cdrom/
root@ubuntu:/media/cdrom# pwd
/media/cdrom
root@ubuntu:/media/cdrom# ls
boot casper dirs EFI install isolinux md5sum.txt pool preseed ubuntu
root@ubuntu:/media/cdrom# cd
root@ubuntu:~# cd /home/ubuntu/
.bash_history  .config/  .gnupg/  Pictures/  .sudo_as_admin_successful
.bash_logout    Desktop/  .local/  .profile  Templates/
.bashrc        Documents/  .mozilla/  Public/  teste/
.cache/        Downloads/  Music/   .ssh/   Videos/
root@ubuntu:~# cd /home/ubuntu/teste/
root@ubuntu:/home/ubuntu/teste# ls
cap1-1.png
root@ubuntu:/home/ubuntu/teste# cp cap1-1.png /home/ubuntu/teste
cp: 'cap1-1.png' and '/home/ubuntu/teste/cap1-1.png' are the same file
root@ubuntu:/home/ubuntu/teste# cd
root@ubuntu:~# cd /home/ubuntu/
.bash_history  .config/  .gnupg/  Pictures/  .sudo_as_admin_successful
.bash_logout    Desktop/  .local/  .profile  Templates/
.bashrc        Documents/  .mozilla/  Public/  teste/
.cache/        Downloads/  Music/   .ssh/   Videos/
root@ubuntu:~# cd /home/ubuntu/Pictures/
root@ubuntu:/home/ubuntu/Pictures# ls
cap1-1.png  cap1-2.png  cap1-3.png  cap1-4.png  cap1-5.png  cap3-1.png  cap3-2.png  cap3-3.png  cap3-4.png
root@ubuntu:/home/ubuntu/Pictures# cd cap1-2.png /home/ubuntu/teste
bash: cd: too many arguments
root@ubuntu:/home/ubuntu/Pictures# cd cap1-2.png /home/ubuntu/teste/
bash: cd: too many arguments
root@ubuntu:/home/ubuntu/Pictures# 
```

```
root@ubuntu:~# TMPFILE=$(mktemp)
root@ubuntu:~# echo $TMPFILE
/tmp/OnPL7WEqgS
root@ubuntu:~# echo "temp_file" > $TMPFILE
root@ubuntu:~# CAT $TMPFILE
CAT: command not found
root@ubuntu:~# cat $TMPFILE
temp_file
root@ubuntu:~# rm $TMPFILE
root@ubuntu:~# ls $TMPFILE
ls: cannot access '/tmp/OnPL7WEqgS': No such file or directory
root@ubuntu:~# ^C
root@ubuntu:~# rm teste.c
rm: cannot remove 'teste.c': No such file or directory
root@ubuntu:~# cd /home/ubuntu/
.bash_history  .config/  .gnupg/  Pictures/  .sudo_as_admin_successful
.bash_logout    Desktop/  .local/  .profile  Templates/
.bashrc        Documents/  .mozilla/  Public/  teste/
.cache/        Downloads/  Music/   .ssh/   Videos/
root@ubuntu:~# cd /home/ubuntu/teste/
root@ubuntu:/home/ubuntu/teste# ls
cap1-1.png
root@ubuntu:/home/ubuntu/teste# rm cap1-1.png
root@ubuntu:/home/ubuntu/teste# ls
root@ubuntu:/home/ubuntu/teste# cd ..
root@ubuntu:/home/ubuntu# ls
Desktop  Documents  Downloads  Music  Pictures  Public  Templates  teste  Videos
root@ubuntu:/home/ubuntu# rm -R teste/
root@ubuntu:/home/ubuntu# ls
Desktop  Documents  Downloads  Music  Pictures  Public  Templates  Videos
root@ubuntu:/home/ubuntu# 
```

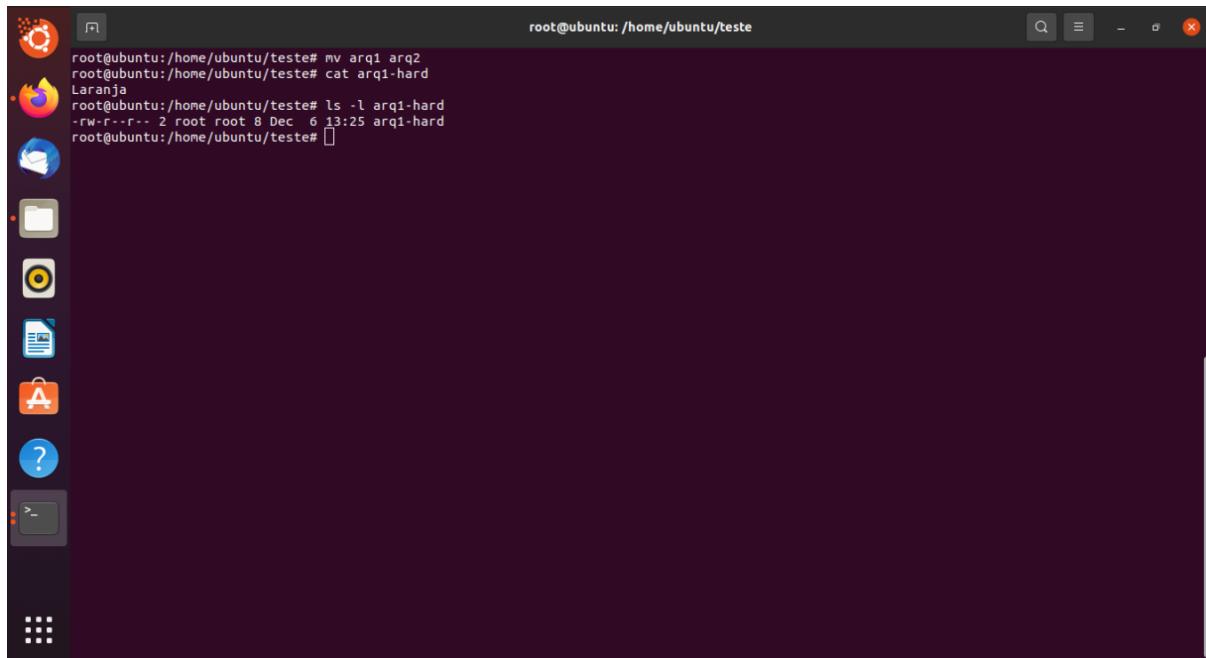


```
root@ubuntu:/home/ubuntu# ls
Desktop Documents Downloads Music Pictures Public Templates Videos
root@ubuntu:/home/ubuntu# mkdir teste
root@ubuntu:/home/ubuntu# ls
Desktop Documents Downloads Music Pictures Public Templates teste
root@ubuntu:/home/ubuntu# mkdir teste1 teste2 teste3
root@ubuntu:/home/ubuntu# ls
Desktop Documents Downloads Music Pictures Public Templates teste teste1 teste2 teste3 Videos
root@ubuntu:/home/ubuntu# cd /teste/
bash: cd: /teste/: No such file or directory
root@ubuntu:/home/ubuntu# cd ..
cd: ..: command not found
root@ubuntu:/home/ubuntu# cd
root@ubuntu:~# ls -l /etc
total 389
drwxr-xr-x 3 root root 151 Aug 19 10:40 acpi
-rw-r--r-- 1 root root 3028 Aug 19 10:29 adduser.conf
drwxr-xr-x 3 root root 29 Aug 19 10:32 alsa
drwxr-xr-x 2 root root 2357 Aug 19 10:43 alternatives
-rw-r--r-- 1 root root 401 Jul 16 2019 anacrontab
-rw-r--r-- 1 root root 433 Oct 1 2017 apg.conf
drwxr-xr-x 5 root root 65 Aug 19 10:33 apt
drwxr-xr-x 3 root root 46 Aug 19 10:40 apparmor
drwxr-xr-x 7 root root 670 Aug 19 10:46 apparmor.d
drwxr-xr-x 4 root root 78 Aug 19 10:41 appport
-rw-r--r-- 1 root root 769 Jan 18 2020 appstream.conf
drwxr-xr-x 1 root root 100 Dec 5 10:00 apt
drwxr-xr-x 3 root root 97 Aug 19 10:41 avahi
-rw-r--r-- 1 root root 2319 Feb 25 2020 bash.bashrc
-rw-r--r-- 1 root root 45 Jan 26 2020 bash_completion
drwxr-xr-x 2 root root 48 Aug 19 10:41 bash_completion.d
-rw-r--r-- 1 root root 367 Apr 14 2020 bindresvport.blacklist
drwxr-xr-x 2 root root 3 Apr 22 2020 binfmt.d
drwxr-xr-x 2 root root 70 Aug 19 10:40 bluetooth
-rw-r----- 1 root root 33 Aug 19 10:41 brlapi.key
```

Exemplos de navegação entre diretórios com uso do comando “cd” e exemplificação de comandos anteriormente citados.



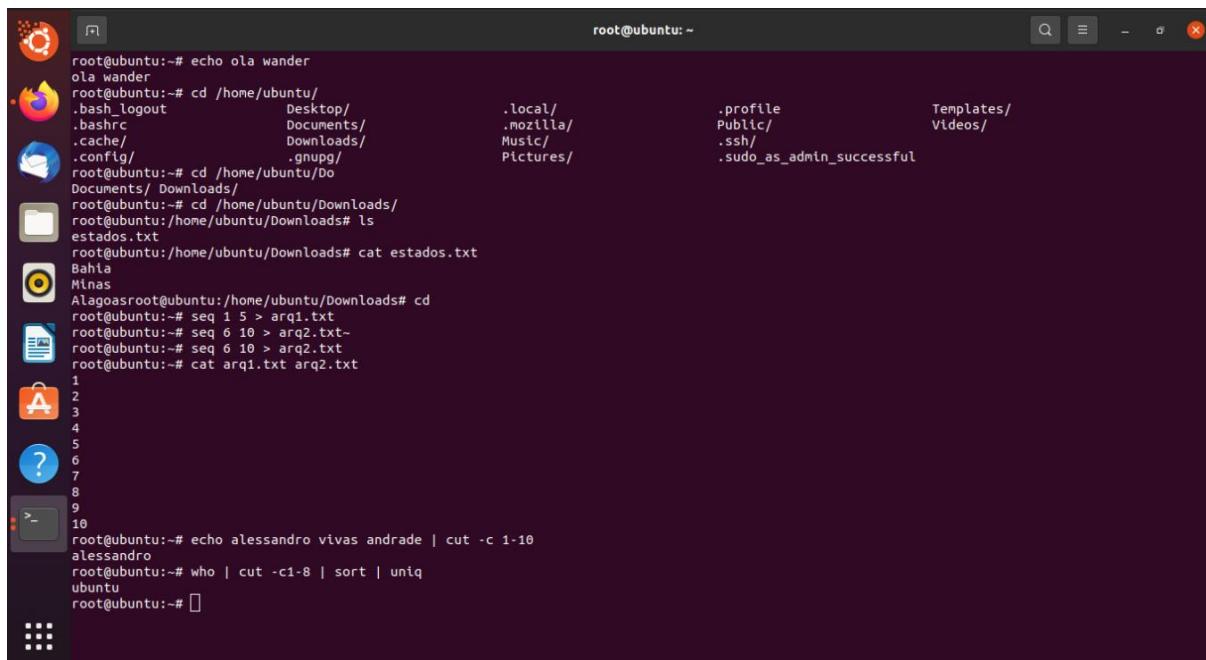
```
root@ubuntu:~# cd /home/ubuntu/
.bash_history .config/ .gnupg/ Pictures/ .sudo_as_admin_successful
.bash_logout Desktop/ .local/ .mozilla/ Templates/
.bashrc Documents/ .Downloads/ Music/ .Public/ teste/
.cache/ .Downloads/ .ssh/ .Videos/
root@ubuntu:~# cd /home/ubuntu/teste/
root@ubuntu:/home/ubuntu/teste# ls
root@ubuntu:/home/ubuntu/teste# touch arq1
root@ubuntu:/home/ubuntu/teste# echo 'Laranja' >> arq1
root@ubuntu:/home/ubuntu/teste# ls
arq1
root@ubuntu:/home/ubuntu/teste# ln -s arq1 arq1-soft
root@ubuntu:/home/ubuntu/teste# ls -l arq1*
-rw-r--r-- 1 root root 8 Dec 6 13:23 arq1
lrwxrwxrwx 1 root root 4 Dec 6 13:23 arq1-soft -> arq1
root@ubuntu:/home/ubuntu/teste# cat arq1-soft
Laranja
root@ubuntu:/home/ubuntu/teste# mv arq1 arq2
root@ubuntu:/home/ubuntu/teste# cat arq1-soft
cat: arq1-soft: No such file or directory
root@ubuntu:/home/ubuntu/teste# ls -l arq1-soft
lrwxrwxrwx 1 root root 4 Dec 6 13:23 arq1-soft -> arq1
root@ubuntu:/home/ubuntu/teste# touch arq1
root@ubuntu:/home/ubuntu/teste# echo "Laranja" >> arq1
root@ubuntu:/home/ubuntu/teste# cat arq1
Laranja
root@ubuntu:/home/ubuntu/teste# ln arq1 arq1-hard
root@ubuntu:/home/ubuntu/teste# cat arq1-hard
Laranja
root@ubuntu:/home/ubuntu/teste# ls -l arq1*
-rw-r--r-- 2 root root 8 Dec 6 13:25 arq1
-rw-r--r-- 2 root root 8 Dec 6 13:25 arq1-hard
lrwxrwxrwx 1 root root 4 Dec 6 13:23 arq1-soft -> arq1
root@ubuntu:/home/ubuntu/teste# 
```



```
root@ubuntu:/home/ubuntu/teste# mv arq1 arq2
root@ubuntu:/home/ubuntu/teste# cat arq1-hard
Laranja
root@ubuntu:/home/ubuntu/teste# ls -l arq1-hard
-rw-r--r-- 2 root root 8 Dec  6 13:25 arq1-hard
root@ubuntu:/home/ubuntu/teste#
```

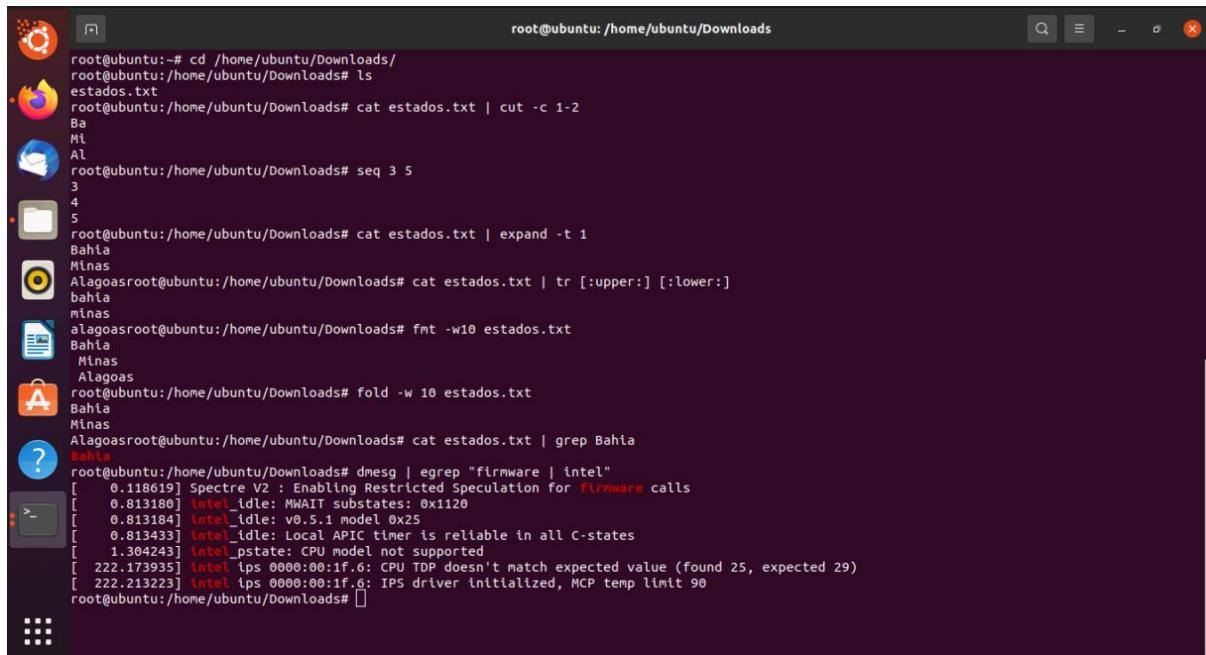
Criando arquivos/diretórios temporários e manuseando os mesmos.

Capítulo 4 - Comandos para Manipulação de Arquivos Texto



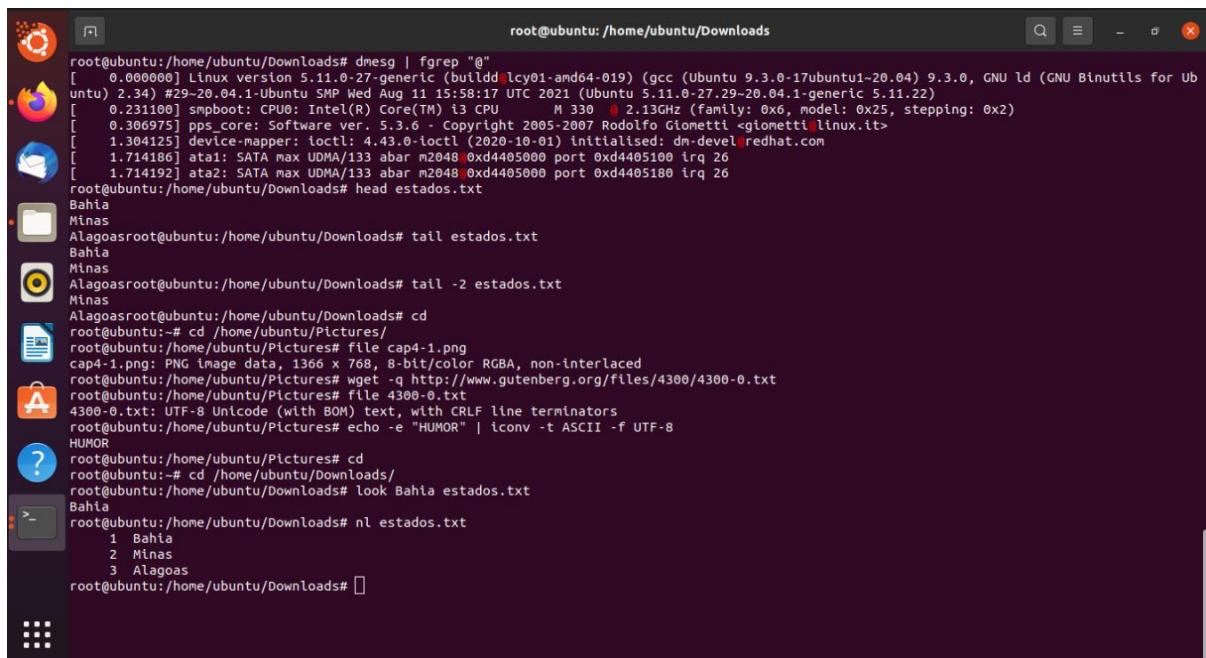
```
root@ubuntu:~# echo ola wander
ola wander
root@ubuntu:~# cd /home/ubuntu/
.bash_logout          Desktop/           .local/           .profile           Templates/
.bashrc               Documents/        Downloads/       .mozilla/        Videos/
.cache/              Downloads/       .Music/          Public/          .ssh/
.config/             .gnupg/          Pictures/       .sudo_as_admin_successful
root@ubuntu:~# cd /home/ubuntu/Do
Documents/ Downloads/
root@ubuntu:~# cd /home/ubuntu/Downloads/
root@ubuntu:/home/ubuntu/Downloads# ls
estados.txt
root@ubuntu:/home/ubuntu/Downloads# cat estados.txt
Bahia
Minas
Alagoas
root@ubuntu:/home/ubuntu/Downloads# cd
root@ubuntu:~# seq 1 5 > arq1.txt
root@ubuntu:~# seq 6 10 > arq2.txt
root@ubuntu:~# cat arq1.txt arq2.txt
1
2
3
4
5
6
7
8
9
10
root@ubuntu:~# echo alessandro vivas andrade | cut -c 1-10
alessandro
root@ubuntu:~# who | cut -c1-8 | sort | uniq
ubuntu
root@ubuntu:~#
```

Novamente exibindo os comandos “echo” (exibe uma linha de texto) e “cat” (imprime o resultado padrão da saída).



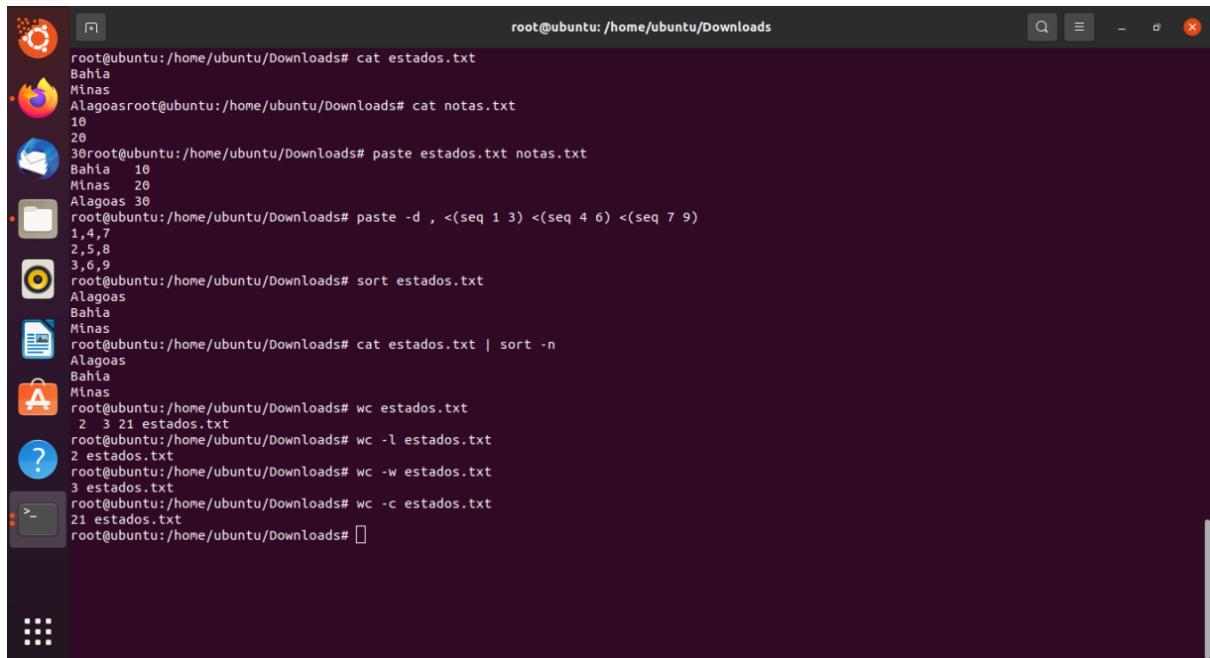
```
root@ubuntu:~# cd /home/ubuntu/Downloads/
root@ubuntu:/home/ubuntu/Downloads# ls
estados.txt
root@ubuntu:/home/ubuntu/Downloads# cat estados.txt | cut -c 1-2
Ba
Mi
Al
root@ubuntu:/home/ubuntu/Downloads# seq 3 5
3
4
5
root@ubuntu:/home/ubuntu/Downloads# cat estados.txt | expand -t 1
Bahia
Minas
Alagoas
Alagoasroot@ubuntu:/home/ubuntu/Downloads# cat estados.txt | tr [:upper:] [:lower:]
bahia
minas
alagoas
alagoasroot@ubuntu:/home/ubuntu/Downloads# fmt -w10 estados.txt
Bahia
Minas
Alagoas
Alagoas
root@ubuntu:/home/ubuntu/Downloads# fold -w 10 estados.txt
Bahia
Minas
Alagoas
Alagoasroot@ubuntu:/home/ubuntu/Downloads# cat estados.txt | grep Bahia
Bahia
root@ubuntu:/home/ubuntu/Downloads# dmesg | egrep "firmware | intel"
[ 0.118619] Spectre V2 : Enabling Restricted Speculation for #firmware calls
[ 0.813180] intel_idle: MWAIT substates: 0x120
[ 0.813184] intel_idle: v0.5.1 model 0x25
[ 0.813433] intel_idle: Local APIC timer is reliable in all C-states
[ 1.304243] intel_pstate: CPU model not supported
[ 222.173935] intel_ips 0000:00:1f.6: CPU TDP doesn't match expected value (found 25, expected 29)
[ 222.213223] intel_ips 0000:00:1f.6: IPS driver initialized, MCP temp limit 90
root@ubuntu:/home/ubuntu/Downloads# []
```

O comando “grep” é utilizado para procurar padrões em arquivos de texto, além de poder listar essa mesma busca. Já o comando “egrep” é utilizado para criar expressões regulares.



```
root@ubuntu:/home/ubuntu/Downloads# dmesg | fgrep "@"
[ 0.000000] Linux version 5.11.0-27-generic (buildd@lcy01-and64-019) (gcc (Ubuntu 9.3.0-17ubuntu1-20.04) 9.3.0, GNU ld (GNU Binutils for Ubuntu) 2.34) #29-20.04.1-Ubuntu SMP Wed Aug 11 15:58:17 UTC 2021 (Ubuntu 5.11.0-27.29-20.04.1-generic 5.11.22)
[ 0.231100] smpboot: CPU0: Intel(R) Core(TM) i3 CPU M 330 @ 2.13GHz (family: 0x6, model: 0x25, stepping: 0x2)
[ 0.306975] pps_core: Software ver. 5.3.6 - Copyright 2005-2007 Rodolfo Giometti <giometti@linux.it>
[ 1.304125] device-mapper: ioctl: 4.43.0-ioctl (2020-10-01) initialised: dm-devel@redhat.com
[ 1.714186] ata1: SATA max UDMA/133 abar m2048@0xd4405000 port 0xd4405100 irq 26
[ 1.714192] ata2: SATA max UDMA/133 abar m2048@0xd4405000 port 0xd4405100 irq 26
root@ubuntu:/home/ubuntu/Downloads# head estados.txt
Bahia
Minas
Alagoas
Alagoasroot@ubuntu:/home/ubuntu/Downloads# tail estados.txt
Bahia
Minas
Alagoas
Alagoasroot@ubuntu:/home/ubuntu/Downloads# tail -2 estados.txt
Minas
Alagoasroot@ubuntu:/home/ubuntu/Downloads# cd
root@ubuntu:~# cd /home/ubuntu/Pictures/
root@ubuntu:/home/ubuntu/Pictures# file cap4-1.png
cap4-1.png: PNG image data, 1366 x 768, 8-bit/color RGBA, non-interlaced
root@ubuntu:/home/ubuntu/Pictures# wget -q http://www.gutenberg.org/files/4300/4300-0.txt
root@ubuntu:/home/ubuntu/Pictures# file 4300-0.txt
4300-0.txt: UTF-8 Unicode (with BOM) text, with CRLF line terminators
root@ubuntu:/home/ubuntu/Pictures# echo -e "HUMOR" | iconv -t ASCII -f UTF-8
HUMOR
root@ubuntu:/home/ubuntu/Pictures# cd
root@ubuntu:~# cd /home/ubuntu/Downloads/
root@ubuntu:/home/ubuntu/Downloads# look Bahia estados.txt
Bahia
root@ubuntu:/home/ubuntu/Downloads# nl estados.txt
    1 Bahia
    2 Minas
    3 Alagoas
root@ubuntu:/home/ubuntu/Downloads# []
```

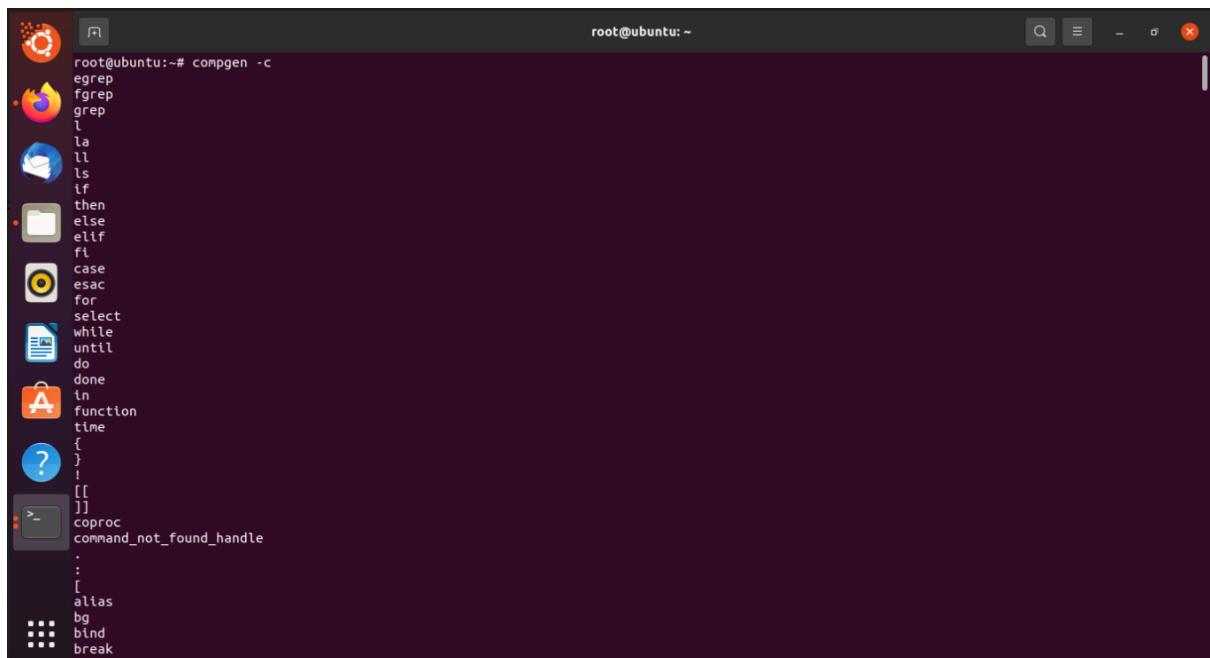
O comando “fgrep” é utilizado para filtrar caracteres especiais na amostra desejada. Já o comando “tail” é utilizado para imprimir as n linhas finais de um arquivo.



```
root@ubuntu:/home/ubuntu/Downloads# cat estados.txt
Bahia
Minas
Alagoas
root@ubuntu:/home/ubuntu/Downloads# cat notas.txt
10
20
30
root@ubuntu:/home/ubuntu/Downloads# paste estados.txt notas.txt
Bahia 10
Minas 20
Alagoas 30
root@ubuntu:/home/ubuntu/Downloads# paste -d , <(seq 1 3) <(seq 4 6) <(seq 7 9)
1,4,7
2,5,8
3,6,9
root@ubuntu:/home/ubuntu/Downloads# sort estados.txt
Alagoas
Bahia
Minas
root@ubuntu:/home/ubuntu/Downloads# cat estados.txt | sort -n
Alagoas
Bahia
Minas
root@ubuntu:/home/ubuntu/Downloads# wc estados.txt
2 3 21 estados.txt
root@ubuntu:/home/ubuntu/Downloads# wc -l estados.txt
2 estados.txt
root@ubuntu:/home/ubuntu/Downloads# wc -w estados.txt
3 estados.txt
root@ubuntu:/home/ubuntu/Downloads# wc -c estados.txt
21 estados.txt
root@ubuntu:/home/ubuntu/Downloads#
```

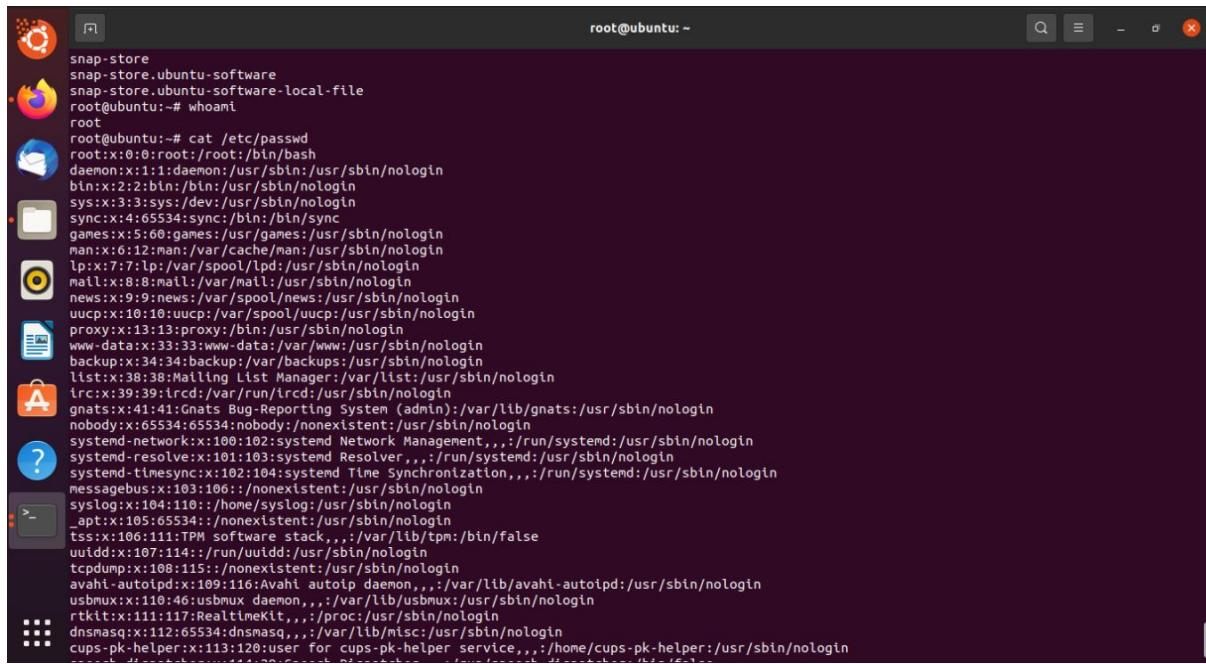
O comando “nl” enumera as linhas de um arquivo.

Capítulo 5 - Comandos de Sistema



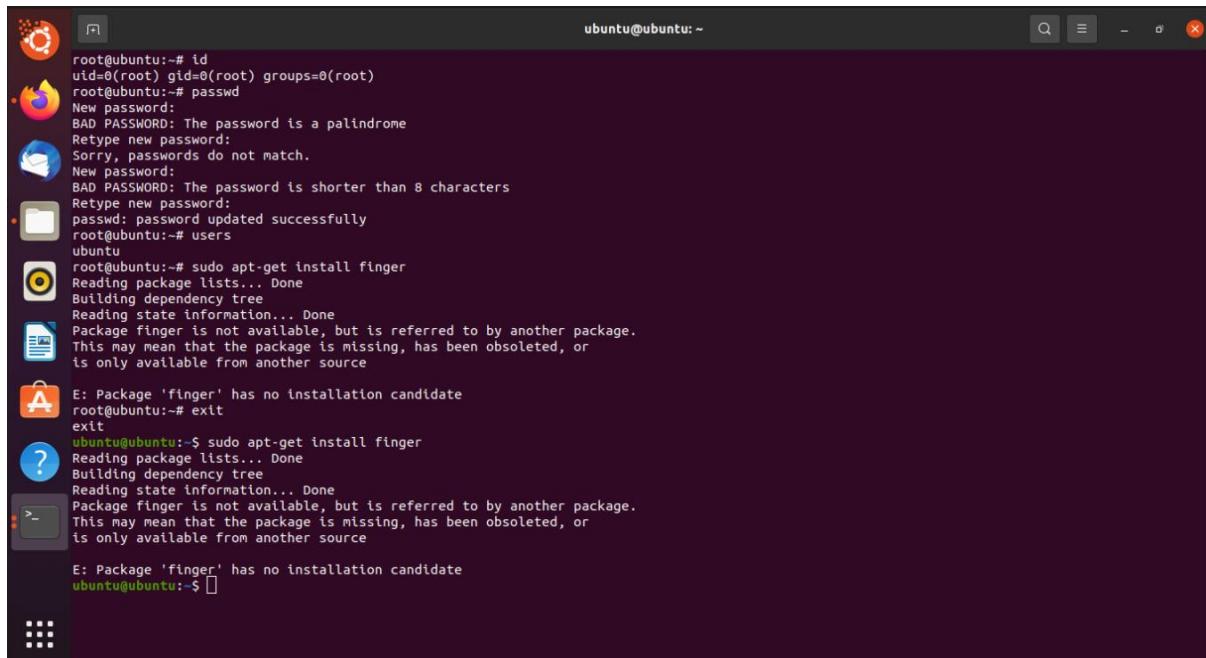
```
root@ubuntu:~# compgen -c
egrep
grep
l
la
ll
ls
if
then
else
elif
fi
case
esac
for
select
while
until
do
done
in
function
time
{
}
!
[[
]]
coproc
command_not_found_handle
:
[
alias
bg
bind
break
true
```

O comando “compgen” exibe todos os comandos incluídos em sua distribuição, a opção de listagem vem pelo “-c”.

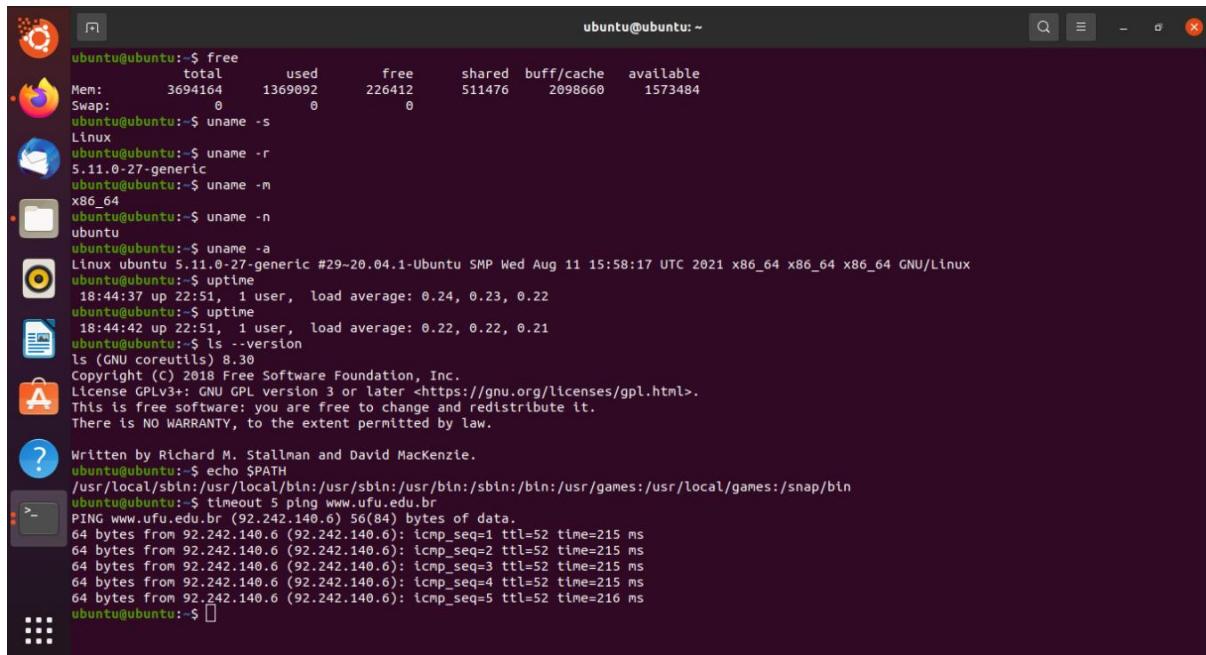


```
root@ubuntu:~# whoami
root
root@ubuntu:~# cat /etc/passwd
root:x:0:0:root:/bin/bash
daemon:x:1::daemon:/usr/sbin/nologin
bin:x:2:bin:/bin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/sync
games:x:5:60:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
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
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
proxy:x:13:13:proxy:/bin:/nologin
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
list:x:38:38:Mallina List Manager:/var/list:/usr/sbin/nologin
ircd:x:39:39:ircd:/var/run/ircd:/usr/sbin/nologin
gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
systemd-networkd-wait-online:x:100:102:systemd Network Management,,,:/run/systemd:/usr/sbin/nologin
systemd-resolve:x:101:103:systemd Resolver,,,:/run/systemd:/usr/sbin/nologin
systemd-timesyncd:x:102:104:system Time Synchronization,,,:/run/systemd:/usr/sbin/nologin
messagebus:x:103:106:/:/nonexistent:/usr/sbin/nologin
syslog:x:104:110:/home/syslog:/usr/sbin/nologin
_apt:x:105:65534:/:/nonexistent:/usr/sbin/nologin
tss:x:106:111:TPM software stack,,,:/var/lib/tpm:/bin/false
uuid:x:107:114:/:/run/uuid:/usr/sbin/nologin
tcpdump:x:108:115:/:/nonexistent:/usr/sbin/nologin
avahi-autoipd:x:109:116:Avahi autoip daemon,,,:/var/lib/avahi-autoipd:/usr/sbin/nologin
usbmux:x:118:46:usbmux daemon,,,:/var/lib/usbmux:/usr/sbin/nologin
rtkit:x:111:117:RealtimeKit,,,:/proc:/usr/sbin/nologin
dnsmasq:x:112:65534:dnsmasq,,,:/var/lib/misc:/usr/sbin/nologin
cups-pk-helper:x:113:120:user for cups-pk-helper service,,,:/home/cups-pk-helper:/usr/sbin/nologin
```

Quando o cadastro é feito no S.O. é criada uma entrada no arquivo “etc/passwd”, usando a concatenação podemos exibi-lo via diretório.



```
root@ubuntu:~# id
uid=0(root) gid=0(root) groups=0(root)
root@ubuntu:~# passwd
New password:
BAD PASSWORD: The password is a palindrome
Retype new password:
Sorry, passwords do not match.
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: password updated successfully
root@ubuntu:~# users
ubuntu
root@ubuntu:~# sudo apt-get install finger
Reading package lists... Done
Building dependency tree
Reading state information... Done
Package finger is not available, but is referred to by another package.
This may mean that the package is missing, has been obsoleted, or
is only available from another source
E: Package 'finger' has no installation candidate
root@ubuntu:~# exit
exit
ubuntu@ubuntu:~$ sudo apt-get install finger
Reading package lists... Done
Building dependency tree
Reading state information... Done
Package finger is not available, but is referred to by another package.
This may mean that the package is missing, has been obsoleted, or
is only available from another source
E: Package 'finger' has no installation candidate
ubuntu@ubuntu:~$ 
```

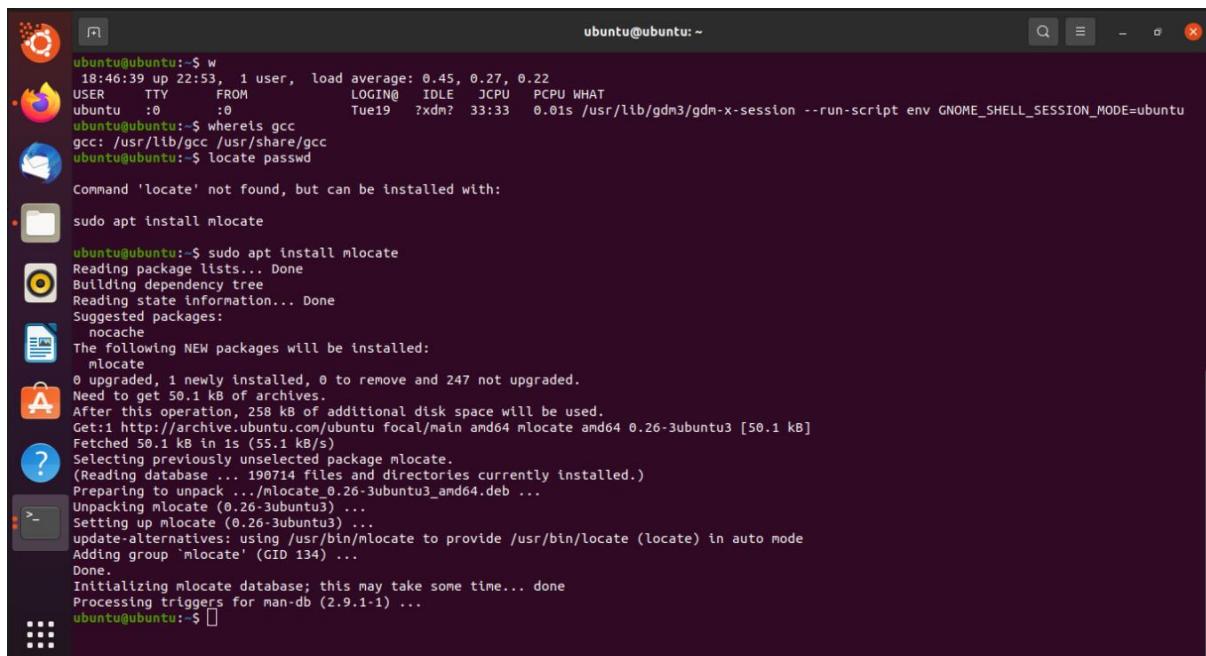


```
ubuntu@ubuntu:~$ free
total        used        free      shared  buff/cache   available
Mem:    3694164     1369092     226412      511476    2098660     1573484
Swap:            0          0          0
ubuntu@ubuntu:~$ uname -s
Linux
ubuntu@ubuntu:~$ uname -r
5.11.0-27-generic
ubuntu@ubuntu:~$ uname -m
x86_64
ubuntu@ubuntu:~$ uname -n
ubuntu
ubuntu@ubuntu:~$ uname -a
Linux ubuntu 5.11.0-27-generic #29~20.04.1-Ubuntu SMP Wed Aug 11 15:58:17 UTC 2021 x86_64 x86_64 x86_64 GNU/Linux
ubuntu@ubuntu:~$ uptime
18:44:37 up 22:51,  1 user,  load average: 0.24, 0.23, 0.22
ubuntu@ubuntu:~$ uptime
18:44:42 up 22:51,  1 user,  load average: 0.22, 0.22, 0.21
ubuntu@ubuntu:~$ ls --version
ls (GNU coreutils) 8.30
Copyright (C) 2018 Free Software Foundation, Inc.
License GPLv3+: GNU GPL version 3 or later <https://gnu.org/licenses/gpl.html>.
This is free software: you are free to change and redistribute it.
There is NO WARRANTY, to the extent permitted by law.

Written by Richard M. Stallman and David MacKenzie.
ubuntu@ubuntu:~$ echo $PATH
/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr/local/games:/snap/bin
ubuntu@ubuntu:~$ timeout 5 ping www.ufu.edu.br
PING www.ufu.edu.br (92.242.140.6) 56(84) bytes of data.
64 bytes from 92.242.140.6 (92.242.140.6): icmp_seq=1 ttl=52 time=215 ms
64 bytes from 92.242.140.6 (92.242.140.6): icmp_seq=2 ttl=52 time=215 ms
64 bytes from 92.242.140.6 (92.242.140.6): icmp_seq=3 ttl=52 time=215 ms
64 bytes from 92.242.140.6 (92.242.140.6): icmp_seq=4 ttl=52 time=215 ms
64 bytes from 92.242.140.6 (92.242.140.6): icmp_seq=5 ttl=52 time=216 ms
ubuntu@ubuntu:~$
```

O comando “free” mostra a estatística de uso de memória, incluindo memória livre total, memória utilizada, memória física, memória swap, memória compartilhada e buffers pelo kernel.

O comando uname é utilizado para apresentar informações sobre o sistema operacional, suas variações conforme opção determinam uma parte específica do sistema como S.O., Kernel, etc.

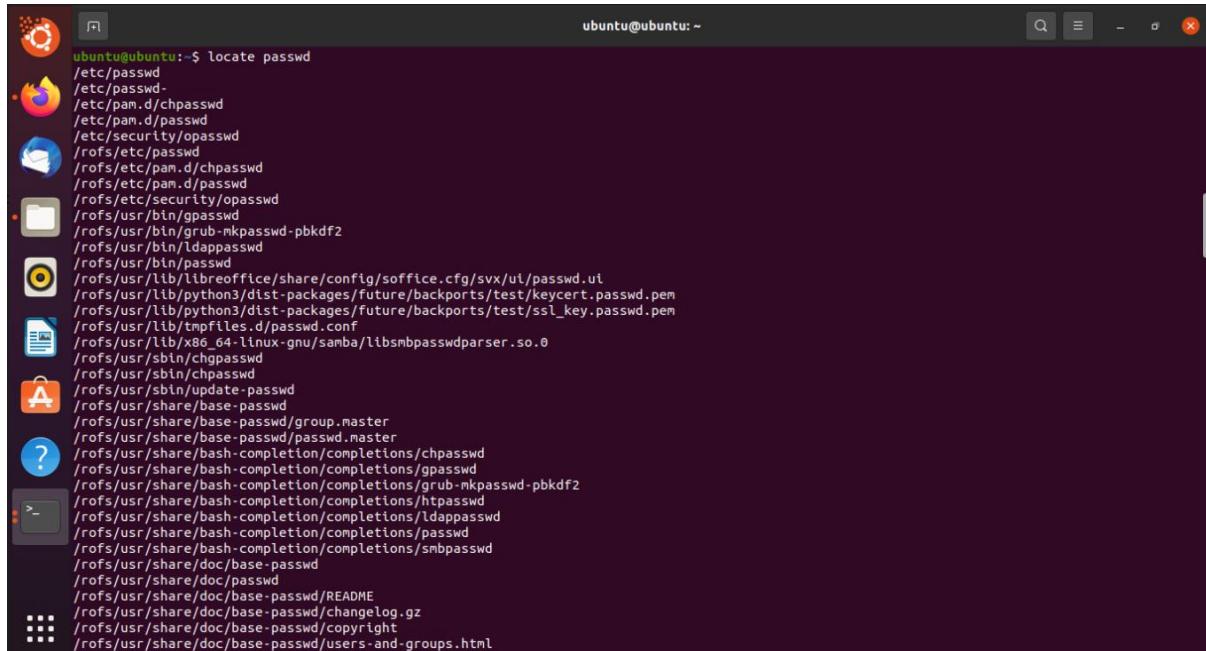


```
ubuntu@ubuntu:~$ w
18:46:39 up 22:53,  1 user,  load average: 0.45, 0.27, 0.22
USER   TTY   FROM           LOGIN@  IDLE   JCPU   PCPU WHAT
ubuntu :0 :0   Tue19 ?xdm?  33:33   0.01s /usr/lib/gdm3/gdm-x-session --run-script env GNOME_SESSION_MODE=ubuntu
ubuntu@ubuntu:~$ whereis gcc
gcc: /usr/lib/gcc /usr/share/gcc
ubuntu@ubuntu:~$ locate passwd
Command 'locate' not found, but can be installed with:
sudo apt install mlocate
ubuntu@ubuntu:~$ sudo apt install mlocate
Reading package lists... Done
Building dependency tree
Reading state information... Done
Suggested packages:
  nocache
The following NEW packages will be installed:
  mlocate
0 upgraded, 1 newly installed, 0 to remove and 247 not upgraded.
Need to get 50.1 kB of archives.
After this operation, 258 kB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu focal/main amd64 mlocate amd64 0.26-3ubuntu3 [50.1 kB]
Fetched 50.1 kB in 1s (55.1 kB/s)
Selecting previously unselected package mlocate.
(Reading database ... 190714 files and directories currently installed.)
Preparing to unpack .../mlocate_0.26-3ubuntu3_amd64.deb ...
Unpacking mlocate (0.26-3ubuntu3) ...
Setting up mlocate (0.26-3ubuntu3) ...
update-alternatives: using /usr/bin/mlocate to provide /usr/bin/locate (locate) in auto mode
Adding group 'mlocate' (GID 134) ...
Done.
Initializing mlocate database; this may take some time... done
Processing triggers for man-db (2.9.1-1) ...
ubuntu@ubuntu:~$
```

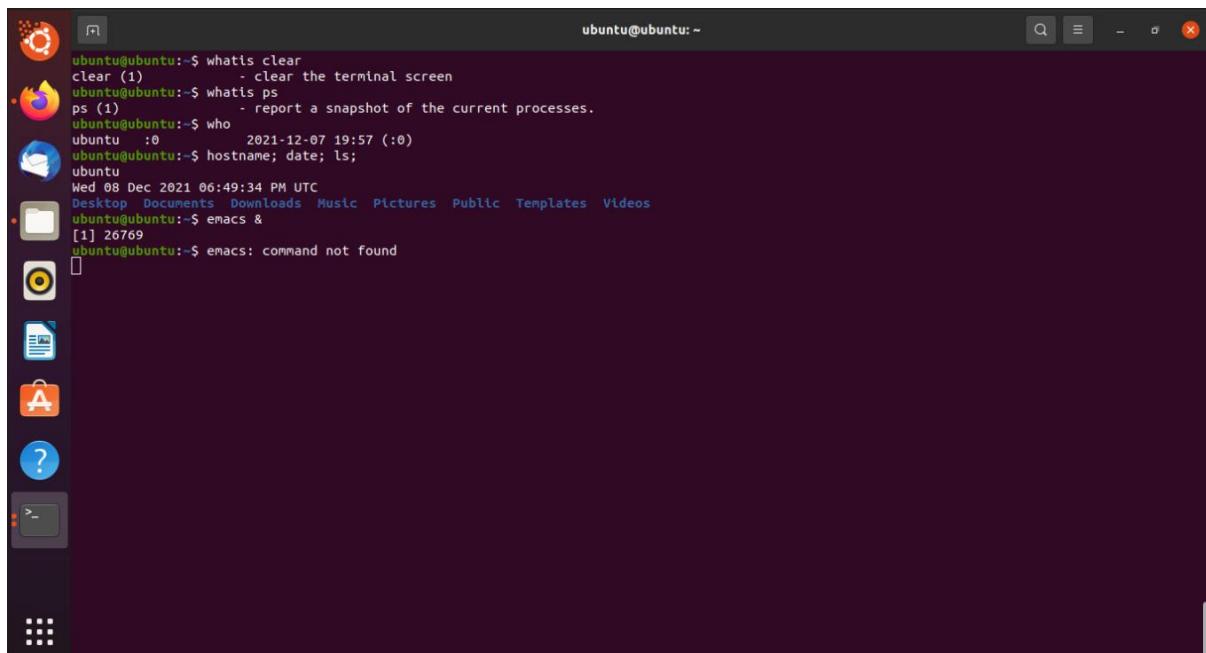
O comando “uptime” exibe o tempo decorrido desde a última vez que a máquina foi iniciada, caso a máquina desligue o uptime é resetado.

O comando “timeout” executa um comando com limite de tempo.

O comando “w” verifica quais usuários estão logados e o que eles estão fazendo.



```
ubuntu@ubuntu:~$ locate passwd
/etc/passwd
/etc/pwd
/etc/pam.d/chpasswd
/etc/pam.d/passwd
/etc/security/opasswd
/rofs/etc/passwd
/rofs/etc/pam.d/chpasswd
/rofs/etc/pam.d/passwd
/rofs/etc/security/opasswd
/rofs/usr/bin/gpasswd
/rofs/usr/bin/grub-mkpasswd-pbkdf2
/rofs/usr/bin/ldappasswd
/rofs/usr/bin/passwd
/rofs/usr/lib/libreoffice/share/config/soffice.cfg/svx/ui/passwd.ui
/rofs/usr/lib/python3/dist-packages/future/backports/test/keycert.passwd.pem
/rofs/usr/lib/python3/dist-packages/future/backports/test/ssl_key.passwd.pem
/rofs/usr/lib/tmpfiles.d/passwd.conf
/rofs/usr/lib/x86_64-linux-gnu/samba/libsmbpasswdparser.so.0
/rofs/usr/sbin/chpasswd
/rofs/usr/sbin/chpasswd
/rofs/usr/share/base-passwd
/rofs/usr/share/base-passwd/group.master
/rofs/usr/share/base-passwd/passwd.master
/rofs/usr/share/bash-completion/completions/chpasswd
/rofs/usr/share/bash-completion/completions/gpasswd
/rofs/usr/share/bash-completion/completions/grub-mkpasswd-pbkdf2
/rofs/usr/share/bash-completion/completions/httpasswd
/rofs/usr/share/bash-completion/completions/ldappasswd
/rofs/usr/share/bash-completion/completions/passwd
/rofs/usr/share/bash-completion/completions/smbpasswd
/rofs/usr/share/doc/base-passwd
/rofs/usr/share/doc/base-passwd/README
/rofs/usr/share/doc/base-passwd/changelog.gz
/rofs/usr/share/doc/base-passwd/copyright
/rofs/usr/share/doc/base-passwd/users-and-groups.html
```



```
ubuntu@ubuntu:~$ whatis clear
clear (1)           - clear the terminal screen
ubuntu@ubuntu:~$ whatis ps
ps (1)              - report a snapshot of the current processes.
ubuntu@ubuntu:~$ who
ubuntu :0          2021-12-07 19:57 (:0)
ubuntu@ubuntu:~$ hostname; date; ls;
ubuntu
Wed 08 Dec 2021 06:49:34 PM UTC
Desktop Documents Downloads Music Pictures Public Templates Videos
ubuntu@ubuntu:~$ emacs &
[1] 26769
ubuntu@ubuntu:~$ emacs: command not found
```

O comando “whatis” pode ser utilizado para buscar informações de comando no banco de dados do sistema.

Capítulo 6 - Gerenciamento de Processos

```
ubuntu@ubuntu:~$ ps -aef
UID      PID  PPID  C STIME TTY      TIME CMD
root      1     0  0 Dec07 ?    00:00:11 /sbin/init splash --- maybe-ubiquity
root      2     0  0 Dec07 ?    00:00:00 [kthreadd]
root      3     2  0 Dec07 ?    00:00:00 [rcu_gp]
root      4     2  0 Dec07 ?    00:00:00 [rcu_par_gp]
root      6     2  0 Dec07 ?    00:00:00 [kworker/0:0H-events_highpri]
root      8     2  0 Dec07 ?    00:00:00 [mm_percpu_wq]
root      9     2  0 Dec07 ?    00:00:00 [rcu_tasks_rude_]
root     10     2  0 Dec07 ?    00:00:00 [rcu_tasks_trace]
root     11     2  0 Dec07 ?    00:00:00 [ksoftirqd/0]
root     12     2  0 Dec07 ?    00:00:09 [rcu_sched]
root     13     2  0 Dec07 ?    00:00:00 [migration/0]
root     14     2  0 Dec07 ?    00:00:00 [idle_inject/0]
root     16     2  0 Dec07 ?    00:00:00 [cpuhp/0]
root     17     2  0 Dec07 ?    00:00:00 [cpuhp/1]
root     18     2  0 Dec07 ?    00:00:00 [idle_inject/1]
root     19     2  0 Dec07 ?    00:00:00 [migration/1]
root     20     2  0 Dec07 ?    00:00:00 [ksoftirqd/1]
root     22     2  0 Dec07 ?    00:00:00 [kworker/1:0H-events_highpri]
root     23     2  0 Dec07 ?    00:00:00 [cpuhp/2]
root     24     2  0 Dec07 ?    00:00:00 [idle_inject/2]
root     25     2  0 Dec07 ?    00:00:00 [migration/2]
root     26     2  0 Dec07 ?    00:00:01 [ksoftirqd/2]
root     28     2  0 Dec07 ?    00:00:00 [kworker/2:0H-events_highpri]
root     29     2  0 Dec07 ?    00:00:00 [cpuhp/3]
root     30     2  0 Dec07 ?    00:00:00 [idle_inject/3]
root     31     2  0 Dec07 ?    00:00:00 [migration/3]
root     32     2  0 Dec07 ?    00:00:01 [ksoftirqd/3]
root     34     2  0 Dec07 ?    00:00:00 [kworker/3:0H-events_highpri]
root     35     2  0 Dec07 ?    00:00:00 [kdevtmpfs]
root     36     2  0 Dec07 ?    00:00:00 [netns]
root     37     2  0 Dec07 ?    00:00:00 [inet_frag_wq]
root     38     2  0 Dec07 ?    00:00:00 [kauditfd]
root     39     2  0 Dec07 ?    00:00:00 [khungtaskd]
root     40     2  0 Dec07 ?    00:00:00 [oom_reaper]
root     41     2  0 Dec07 ?    00:00:00 [writeback]
root     42     2  0 Dec07 ?    00:00:02 [kcompactd0]
root     43     2  0 Dec07 ?    00:00:00 kcmd
```

```
ubuntu@ubuntu:~$ ps -u root
PID TTY      TIME CMD
1 ?    00:00:11 systemd
2 ?    00:00:00 kthreadd
3 ?    00:00:00 rcu_gp
4 ?    00:00:00 rcu_par_gp
6 ?    00:00:00 kworker/0:0H-events_highpri
8 ?    00:00:00 mm_percpu_wq
9 ?    00:00:00 rcu_tasks_rude_
10 ?   00:00:00 rcu_tasks_trace
11 ?   00:00:00 ksoftirqd/0
12 ?   00:00:09 rcu_sched
13 ?   00:00:00 migration/0
14 ?   00:00:00 idle_inject/0
16 ?   00:00:00 cpuhp/0
17 ?   00:00:00 cpuhp/1
18 ?   00:00:00 idle_inject/1
19 ?   00:00:00 migration/1
20 ?   00:00:00 ksoftirqd/1
22 ?   00:00:00 kworker/1:0H-events_highpri
23 ?   00:00:00 cpuhp/2
24 ?   00:00:00 idle_inject/2
25 ?   00:00:00 migration/2
26 ?   00:00:01 ksoftirqd/2
28 ?   00:00:00 kworker/2:0H-events_highpri
29 ?   00:00:00 cpuhp/3
30 ?   00:00:00 idle_inject/3
31 ?   00:00:00 migration/3
32 ?   00:00:01 ksoftirqd/3
34 ?   00:00:00 kworker/3:0H-events_highpri
35 ?   00:00:00 kdevtmpfs
36 ?   00:00:00 netns
37 ?   00:00:00 inet_frag_wq
38 ?   00:00:00 kauditfd
39 ?   00:00:00 khungtaskd
40 ?   00:00:00 oom_reaper
41 ?   00:00:00 writeback
42 ?   00:00:02 kcompactd0
43 ?   00:00:00 kcmd
```

```

ubuntu@ubuntu:~$ ps -aef -r | head -5
  PID TTY      STAT   TIME COMMAND
25803 ?        00:00:01 kworker/3:0-events
25991 ?        00:00:00 kworker/0:0-events
26031 pts/0     00:00:00 sudo
26032 pts/0     00:00:00 su
26033 pts/0     00:00:00 bash
26295 ?        00:00:00 packagekitd
26381 ?        00:00:00 kworker/3:2-cgroup_destroy
26382 ?        00:00:00 kworker/2:1-events
26405 ?        00:00:00 kworker/1:2-events
26430 ?        00:00:00 kworker/0:2-events
26736 ?        00:00:00 kworker/u16:1
26746 ?        00:00:00 kworker/3:1-events
26788 ?        00:00:00 kworker/2:0-events
26829 ?        00:00:00 kworker/0:1-events
ubuntu@ubuntu:~$ ps -aef -r | head -5
  PID TTY      STAT   TIME COMMAND
26842 pts/1     R+   0:00 ps -aef -r SHELL=/bin/bash SESSION_MANAGER=local/ubuntu:@/tmp/.ICE-unix/4450,unix/ubuntu:/tmp/.ICE-unix/4450 QT_A
CCETERM=1 COLORTERM=truecolor XDG_CONFIG_DIRS=/etc/xdg XDG_MENU_PREFIX=gnome- GNOME_DESKTOP_SESSION_ID=this-is-deprec
ated GNOME_SHELL_SESSION_MODE=ubuntu SSH_AUTH_SOCK=/run/user/999/keyring/ssh XMODIFIERS=@im=ibus DESKTOP_SESSION=ubuntu SSH_AGENT_PID=4401 GTK
_MODULES=gail:atk:bridge PWD=/home/ubuntu LOGNAME=ubuntu XDG_SESSION_DESKTOP=ubuntu XDG_SESSION_TYPE=x11 GPG_AGENT_INFO=/run/user/999/gnupg/S.
gpg-agent:0:1 XAUTHORITY=/run/user/999/gdm/Xauthority WINDOWPATH=2 HOME=/home/ubuntu USERNAME=ubuntu IM_CONFIG_PHASE=1 LANG=en_US.UTF-8 LS_COL
ORS=s=0:di=0;34:ln=0;136:hh=0:pi=40;33:so=0;135:do=0;135:bd=40;33:01:cd=40;33:01:or=40;31:01:mi=00:su=37:41:sg=30;43:ca=30;41:tw=30;42:ow=3
4;42:de=37;44:ex=01;32*:tar=01;31*:tgz=01;31*:arc=01;31*:arj=01;31*:taz=01;31*:lha=01;31*:lzd=01;31*:lzh=01;31*:lzma=01;31*:tlz=01;3
1*:txz=01;31*:tzo=01;31*:t7z=01;31*:zip=01;31*:z=01;31*:dz=01;31*:gz=01;31*:lrz=01;31*:lz=01;31*:lzo=01;31*:xz=01;31*:zst=01;31*
tzst=01;31*:tar=01;31*:tzo=01;31*:t7z=01;31*:zip=01;31*:z=01;31*:dz=01;31*:gz=01;31*:lrz=01;31*:lz=01;31*:lzo=01;31*:xz=01;31*:zst=01;31*
*.rar=01;31*:alz=01;31*:ace=01;31*:zoo=01;31*:cpio=01;31*:7z=01;31*:rz=01;31*:cab=01;31*:win=01;31*:swm=01;31*:dwm=01;31*:esd=01;31
*:jpg=01;35*:jpeg=01;35*:mjpg=01;35*:mjpeg=01;35*:glf=01;35*:bpm=01;35*:ppm=01;35*:tga=01;35*:xbm=01;35*:xpm=01;35*:tif=01;35*:tiff=01;35*:png=01;35*:svga=01;35*:svga=01;35*:mng=01;35*:pcx=01;35*:mov=01;35*:mpg=01;35*:mpeg=01;35*:m2v=01;35
*:mkv=01;35*:webm=01;35*:ogg=01;35*:mp4=01;35*:m4v=01;35*:mp4v=01;35*:vob=01;35*:qt=01;35*:nuv=01;35*:asf=01;35*:rm=01;3
5*:rmvb=01;35*:flc=01;35*:avi=01;35*:fli=01;35*:flv=01;35*:gl=01;35*:xcf=01;35*:xwd=01;35*:yuv=01;35*:cgm=01;35*:emf=01;
35*:ogg=01;35*:ogx=01;35*:aac=00;36*:au=00;36*:flac=00;36*:m4a=00;36*:mid=00;36*:mka=00;36*:mp3=00;36*:mpc=00;36*:ogg=
00;36*:ra=00;30*:wav=00;36*:oga=00;36*:opus=00;36*:spx=00;36*:xspf=00;36*: XDG_CURRENT_DESKTOP=ubuntu:GNOME_VTE_VERSION=6003 GNOME_TERMINAL_AL_SCREEN=/org/gnome/Terminal/screen/02f1bbe5_720c_4ef2_97f2_36444bb906b INVOCATION_ID=c54b2bdf8b74466d8707bf49c5825c56 MANAGERPID=1661 LESSC_LOSE=/usr/bin/lesspipe %s XDG_SESSION_CLASS=user TERM=xterm-256color LESSOPEN=| /usr/bin/lesspipe %s USER=ubuntu GNOME_TERMINAL_SERVICE=1.162 DISPLAY=:0 SHLVL=0 QT_IM_MODULE=ibus XDG_RUNTIME_DIR=/run/user/999 JOURNAL_STREAM=8:47477 XDG_DATA_DIRS=/usr/share/ubuntu:/usr/local/share/:/usr/share/:/var/lib/snapd/desktop PATH=/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr/local/games:/snap/bin GDMSESSION=ubuntu DBUS_SESSION_BUS_ADDRESS=unix:path=/run/user/999/bus _=/usr/bin/p
ubuntu@ubuntu:~$ 
```

O comando “ps” com a opção “-u” pode ser utilizado para visualizar todos os processos de um determinado usuário.

```

LOSE=/usr/bin/lesspipe %s %s XDG_SESSION_CLASS=user TERM=xterm-256color LESSOPEN=| /usr/bin/lesspipe %s USER=ubuntu GNOME_TERMINAL_SERVICE=1.
162 DISPLAY=:0 SHLVL=0 QT_IM_MODULE=ibus XDG_RUNTIME_DIR=/run/user/999 JOURNAL_STREAM=8:47477 XDG_DATA_DIRS=/usr/share/ubuntu:/usr/local/share
:/usr/share/:/var/lib/snapd/desktop PATH=/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr/local/games:/snap/bin G
DMSESSION=ubuntu DBUS_SESSION_BUS_ADDRESS=unix:path=/run/user/999/bus _=/usr/bin/p
ubuntu@ubuntu:~$ pstree
systemd--ModemManager--2*[{ModemManager}]
--NetworkManager--2*[{NetworkManager}]
--accounts-daemon--2*[{accounts-daemon}]
--acpid
--avahi-daemon--avahi-daemon
--colorl--2*[{colorl}]
--cron
--cups-browsed--2*[{cups-browsed}]
--cupsd
--dbus-daemon
--gdm3--gdm-session-wor--gdm-x-session--Xorg--9*[{Xorg}]
--irqbalance--irqbalance
--kerneloops
--networkd-dispat
--polkitd--2*[{polkitd}]
--rsyslogd--3*[{rsyslogd}]
--rtkit-daemon--2*[{rtkit-daemon}]
--snapd--17*[{snapd}]
--switcheroo-cont--2*[{switcheroo-cont}]
--systemd--sd-pam
--at-spi-bus-laun--dbus-daemon
--at-spi2-registr--2*[{at-spi2-registr}]
--dbus-daemon
--dconf-service--2*[{dconf-service}]
--evolution-addre--5*[{evolution-addre}]
--evolution-calen--8*[{evolution-calen}]
--evolution-sourc--3*[{evolution-sourc}]
--file-fuse-fusefs--2*[{file-fuse-fusefs}] 
```

O comando “pstree” apresenta todos os comandos em execução no formato de uma árvore relacionando a dependência entre eles.

```

top - 18:54:47 up 23:01, 1 user, load average: 0.20, 0.37, 0.31
Tasks: 229 total, 1 running, 228 sleeping, 0 stopped, 0 zombie
%Cpu(s): 3.2 us, 0.7 sy, 0.0 ni, 96.0 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st
MiB Mem : 3607.6 total, 330.1 free, 1311.9 used, 1965.6 buff/cache
MiB Swap: 0.0 total, 0.0 free, 0.0 used. 1504.1 avail Mem

PID USER PR NI VIRT RES SHR S %CPU %MEM TIME+ COMMAND
4465 ubuntu 20 0 4444864 255372 86276 S 9.8 6.9 7:28.43 gnome-shell
24973 ubuntu 20 0 2540148 163296 101356 S 4.9 4.4 3:15.19 Web Content
4319 ubuntu 20 0 789628 71488 32088 S 2.0 1.9 2:59.91 Xorg
5885 ubuntu 20 0 922576 76840 51648 S 1.0 2.1 0:48.93 gnome-terminal-
26867 ubuntu 20 0 20648 4056 3268 R 1.0 0.1 0:00.12 top
1 root 20 0 167768 11800 8500 S 0.0 0.3 0:11.78 systemd
2 root 20 0 0 0 0 S 0.0 0.0 0:00.02 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
6 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/0:0H-events_highpri
8 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 mm_percpu_wq
9 root 20 0 0 0 0 S 0.0 0.0 0:00.00 rcu_tasks_rude_
10 root 20 0 0 0 0 S 0.0 0.0 0:00.00 rcu_tasks_trace
11 root 20 0 0 0 0 S 0.0 0.0 0:00.94 ksoftirqd/0
12 root 20 0 0 0 0 I 0.0 0.0 0:09.53 rCU_sched
13 root rt 0 0 0 0 S 0.0 0.0 0:00.28 migration/0
14 root -51 0 0 0 0 S 0.0 0.0 0:00.00 idle_inject/0
16 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/0
17 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/1
18 root -51 0 0 0 0 S 0.0 0.0 0:00.00 idle_inject/1
19 root rt 0 0 0 0 S 0.0 0.0 0:00.52 migration/1
20 root 20 0 0 0 0 S 0.0 0.0 0:00.68 ksoftirqd/1
22 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/1:0H-events_highpri
23 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/2
24 root -51 0 0 0 0 S 0.0 0.0 0:00.00 idle_inject/2
25 root rt 0 0 0 0 S 0.0 0.0 0:00.50 migration/2
26 root 20 0 0 0 0 S 0.0 0.0 0:01.02 ksoftirqd/2
28 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/2:0H-events_highpri
29 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/3
30 root -51 0 0 0 0 S 0.0 0.0 0:00.00 idle_inject/3
31 root rt 0 0 0 0 S 0.0 0.0 0:00.52 migration/3

```

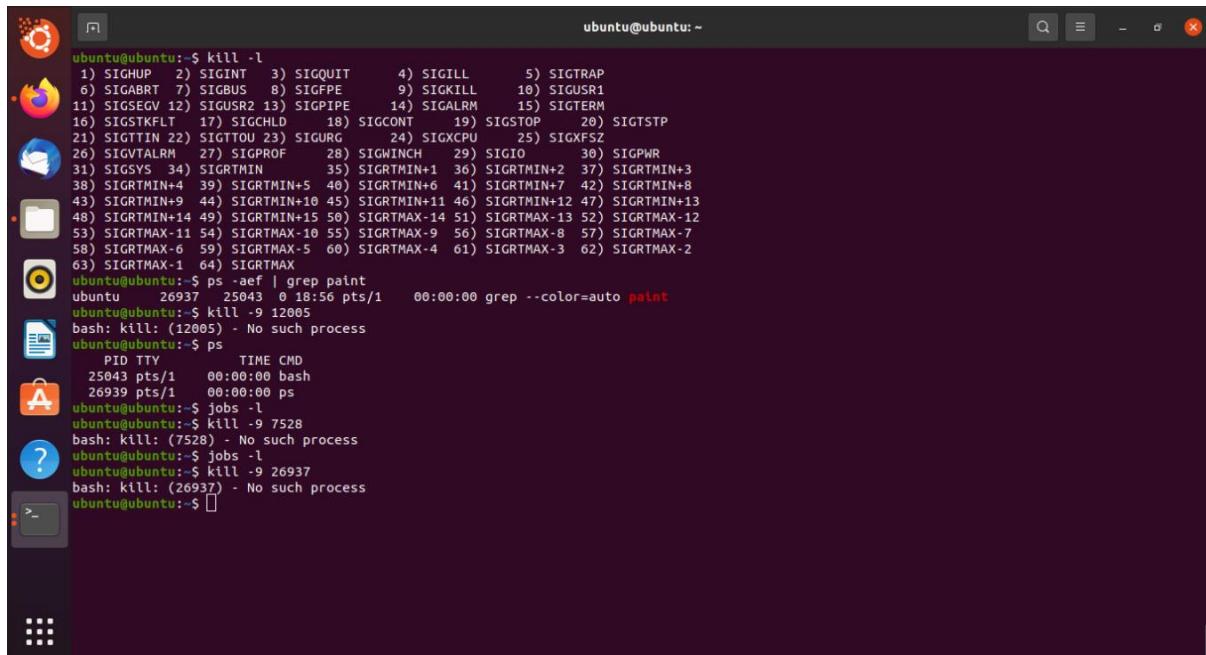
```

top - 18:55:27 up 23:02, 1 user, load average: 0.43, 0.42, 0.33
Tasks: 230 total, 1 running, 229 sleeping, 0 stopped, 0 zombie
%Cpu(s): 0.9 us, 0.6 sy, 0.0 ni, 98.5 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st
MiB Mem : 3607.6 total, 297.7 free, 1351.4 used, 1958.5 buff/cache
MiB Swap: 0.0 total, 0.0 free, 0.0 used. 1472.0 avail Mem

PID USER PR NI VIRT RES SHR S %CPU %MEM TIME+ COMMAND
24973 ubuntu 20 0 2540148 163668 101356 S 4.6 4.4 3:17.29 Web Content
4319 ubuntu 20 0 789920 71516 32116 S 1.0 1.9 3:01.76 Xorg
26917 ubuntu 20 0 20648 4056 3268 R 1.0 0.1 0:00.05 top
4937 ubuntu 20 0 3559796 436360 172108 S 0.7 11.8 9:50.04 firefox
5358 ubuntu 20 0 2929384 279460 114812 S 0.7 7.6 4:55.80 Web Content
4465 ubuntu 20 0 4444888 255320 86276 S 0.3 6.9 7:30.13 gnome-shell
1 root 20 0 167768 11800 8500 S 0.0 0.3 3:58.74 systemd
2 root 20 0 0 0 0 S 0.0 0.0 0:00.02 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
6 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/0:0H-events_highpri
8 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 mm_percpu_wq
9 root 20 0 0 0 0 S 0.0 0.0 0:00.00 rCU_tasks_rude_
10 root 20 0 0 0 0 S 0.0 0.0 0:00.00 rCU_tasks_trace
11 root 20 0 0 0 0 S 0.0 0.0 0:00.94 ksoftirqd/0
12 root 20 0 0 0 0 I 0.0 0.0 0:09.55 rCU_sched
13 root rt 0 0 0 0 S 0.0 0.0 0:00.28 migration/0
14 root -51 0 0 0 0 S 0.0 0.0 0:00.00 idle_inject/0
16 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/0
17 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/1
18 root -51 0 0 0 0 S 0.0 0.0 0:00.00 idle_inject/1
19 root rt 0 0 0 0 S 0.0 0.0 0:00.52 migration/1
20 root 20 0 0 0 0 S 0.0 0.0 0:00.68 ksoftirqd/1
22 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/1:0H-events_highpri
23 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/2
24 root -51 0 0 0 0 S 0.0 0.0 0:00.00 idle_inject/2
25 root rt 0 0 0 0 S 0.0 0.0 0:00.50 migration/2
26 root 20 0 0 0 0 S 0.0 0.0 0:01.02 ksoftirqd/2
28 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/2:0H-events_highpri
29 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/3
30 root -51 0 0 0 0 S 0.0 0.0 0:00.00 idle_inject/3
31 root rt 0 0 0 0 S 0.0 0.0 0:00.52 migration/3

```

O comando “top” é utilizado para obter informações sobre os processos que estão rodando na máquinas.

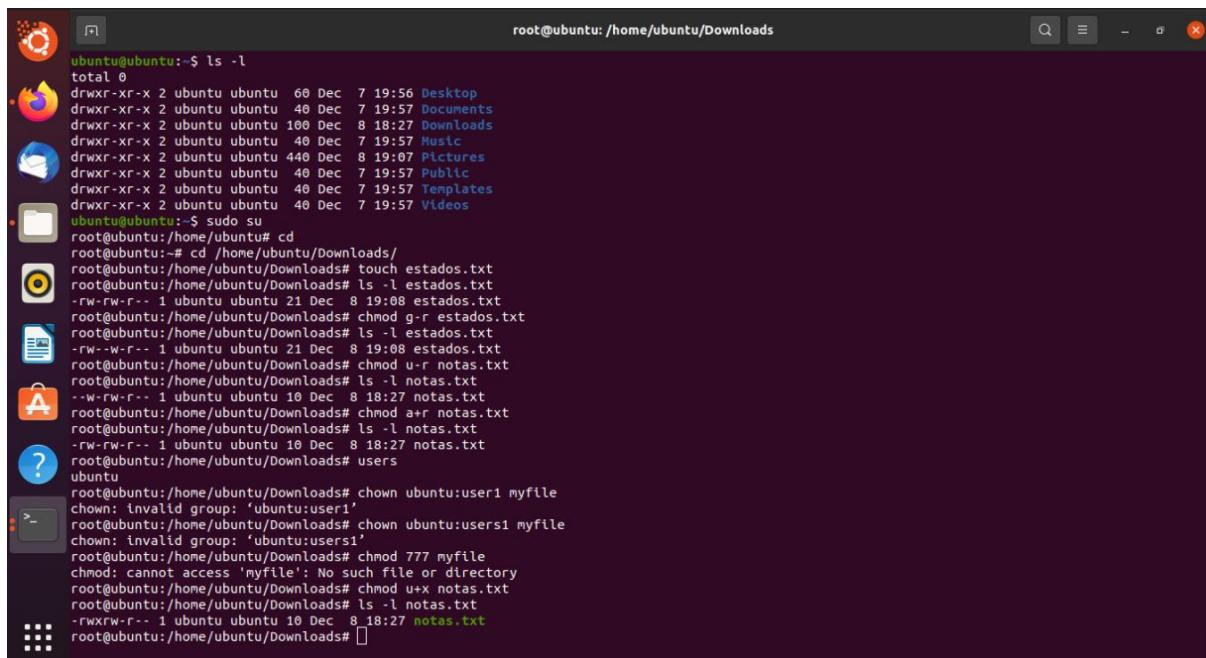


```
ubuntu@ubuntu:~$ kill -l
 1) SIGHUP   2) SIGINT   3) SIGQUIT   4) SIGILL   5) SIGTRAP
 6) SIGABRT  7) SIGBUS   8) SIGFPE   9) SIGKILL  10) SIGUSR1
11) SIGSEGV 12) SIGUSR2 13) SIGPIPE  14) SIGALRM  15) SIGTERM
16) SIGSTKFLT 17) SIGCHLD 18) SIGCONT  19) SIGSTOP  20) SIGTSTP
21) SIGTTIN 22) SIGTTOU 23) SIGURG   24) SIGXCPU  25) SIGXFSS
26) SIGVTALRM 27) SIGPROF 28) SIGWINCH 29) SIGIO   30) SIGPWR
31) SIGSYS  34) SIGRTMIN 35) SIGRTMIN+1 36) SIGRTMIN+2 37) SIGRTMIN+3
38) SIGRTMIN+4 39) SIGRTMIN+5 40) SIGRTMIN+6 41) SIGRTMIN+7 42) SIGRTMIN+8
43) SIGRTMIN+9 44) SIGRTMIN+10 45) SIGRTMIN+11 46) SIGRTMIN+12 47) SIGRTMIN+13
48) SIGRTMIN+14 49) SIGRTMIN+15 50) SIGRTMAX-14 51) SIGRTMAX-13 52) SIGRTMAX-12
53) SIGRTMAX-11 54) SIGRTMAX-10 55) SIGRTMAX-9 56) SIGRTMAX-8 57) SIGRTMAX-7
58) SIGRTMAX-6 59) SIGRTMAX-5 60) SIGRTMAX-4 61) SIGRTMAX-3 62) SIGRTMAX-2
63) SIGRTMAX-1 64) SIGRTMAX

ubuntu@ubuntu:~$ ps -afe | grep paint
ubuntu 26937 25043 0 18:56 pts/1 00:00:00 grep --color=auto paint
ubuntu@ubuntu:~$ kill -9 12005
bash: kill: (12005) - No such process
ubuntu@ubuntu:~$ ps
  PID TTY      TIME CMD
25043 pts/1 00:00:00 bash
26939 pts/1 00:00:00 ps
ubuntu@ubuntu:~$ jobs -l
ubuntu@ubuntu:~$ kill -9 7528
bash: kill: (7528) - No such process
ubuntu@ubuntu:~$ jobs -l
ubuntu@ubuntu:~$ kill -9 26937
bash: kill: (26937) - No such process
ubuntu@ubuntu:~$ 
```

O comando “kill” é utilizado para “matar” um processo, por meio dele é possível enviar sinais para um processo.

Capítulo 7 - Permissão e Propriedade

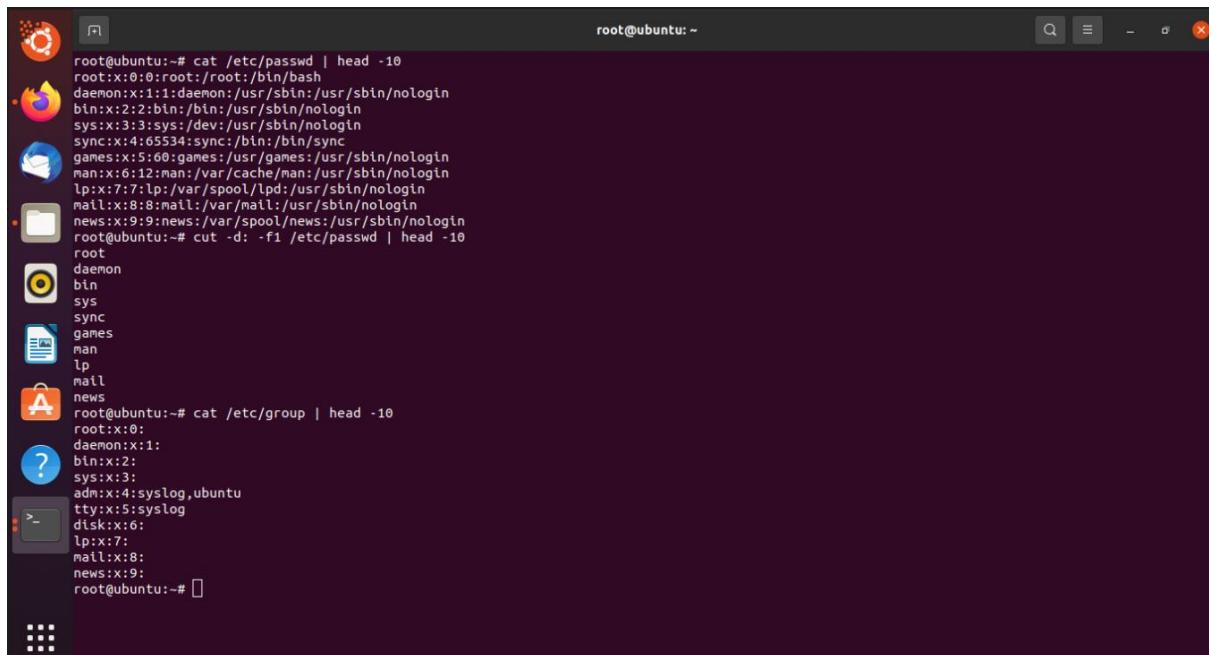


```
ubuntu@ubuntu:~$ ls -l
total 0
drwxr-xr-x 2 ubuntu ubuntu 60 Dec 7 19:56 Desktop
drwxr-xr-x 2 ubuntu ubuntu 40 Dec 7 19:57 Documents
drwxr-xr-x 2 ubuntu ubuntu 100 Dec 8 18:27 Downloads
drwxr-xr-x 2 ubuntu ubuntu 40 Dec 7 19:57 Music
drwxr-xr-x 2 ubuntu ubuntu 440 Dec 8 19:07 Pictures
drwxr-xr-x 2 ubuntu ubuntu 40 Dec 7 19:57 Public
drwxr-xr-x 2 ubuntu ubuntu 40 Dec 7 19:57 Templates
drwxr-xr-x 2 ubuntu ubuntu 40 Dec 7 19:57 Videos
ubuntu@ubuntu:~$ sudo su
root@ubuntu:/home/ubuntu# cd /home/ubuntu/Downloads/
root@ubuntu:~/home/ubuntu/Downloads# touch estados.txt
root@ubuntu:~/home/ubuntu/Downloads# ls -l estados.txt
-rw-rw-r-- 1 ubuntu ubuntu 21 Dec 8 19:08 estados.txt
root@ubuntu:~/home/ubuntu/Downloads# chmod g-r estados.txt
root@ubuntu:~/home/ubuntu/Downloads# ls -l estados.txt
-rw--w-r-- 1 ubuntu ubuntu 21 Dec 8 19:08 estados.txt
root@ubuntu:~/home/ubuntu/Downloads# chmod u-r notas.txt
root@ubuntu:~/home/ubuntu/Downloads# ls -l notas.txt
--w-rw-r-- 1 ubuntu ubuntu 10 Dec 8 18:27 notas.txt
root@ubuntu:~/home/ubuntu/Downloads# chmod a+r notas.txt
root@ubuntu:~/home/ubuntu/Downloads# ls -l notas.txt
-rw-rw-r-- 1 ubuntu ubuntu 10 Dec 8 18:27 notas.txt
root@ubuntu:~/home/ubuntu/Downloads# users
ubuntu
root@ubuntu:~/home/ubuntu/Downloads# chown ubuntu:user1 myfile
chown: invalid group: 'ubuntu:user1'
root@ubuntu:~/home/ubuntu/Downloads# chown ubuntu:users1 myfile
chown: invalid group: 'ubuntu:users1'
root@ubuntu:~/home/ubuntu/Downloads# chmod 777 myfile
chmod: cannot access 'myfile': No such file or directory
root@ubuntu:~/home/ubuntu/Downloads# chmod u+x notas.txt
root@ubuntu:~/home/ubuntu/Downloads# ls -l notas.txt
-rwxrwxr-- 1 ubuntu ubuntu 10 Dec 8 18:27 notas.txt
root@ubuntu:~/home/ubuntu/Downloads# 
```

No sistema UNIX todos os usuários podem acessar o mesmo arquivo, sendo assim, permissões e propriedades devem ser definidas caso determinados arquivos/diretórios sejam acessados por usuários específicos.

Por meio do comando “chmod” e as opções como “g-r” podemos permitir a leitura para o grupo.

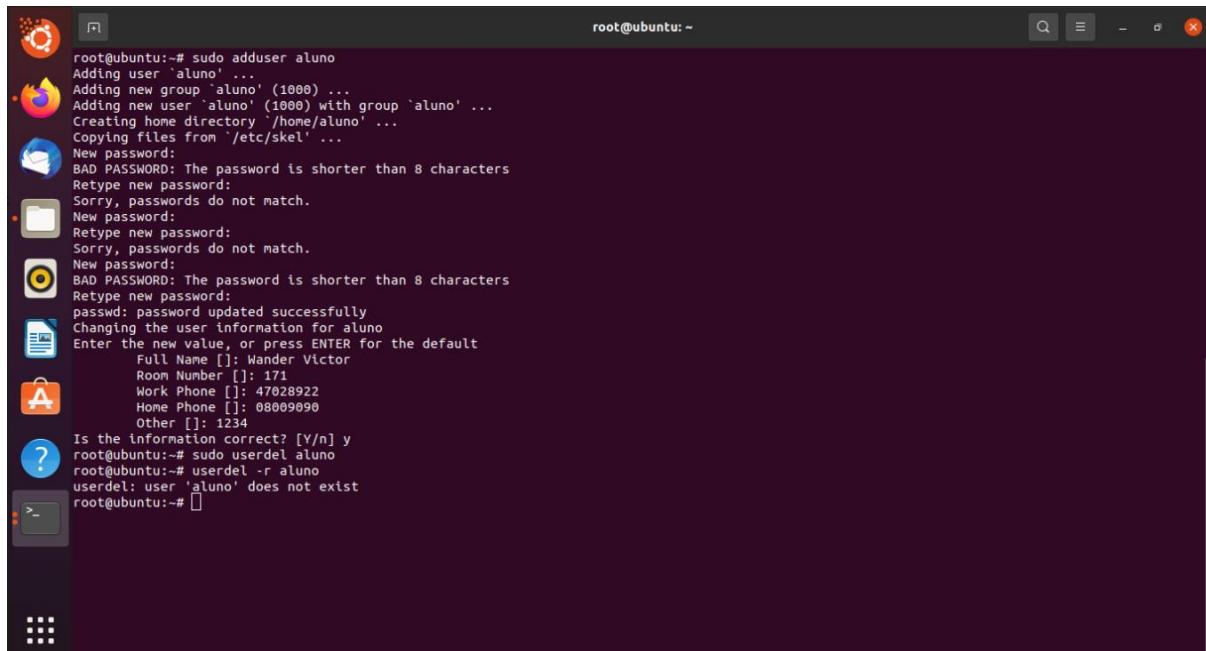
Capítulo 8 - Gerenciando Usuários



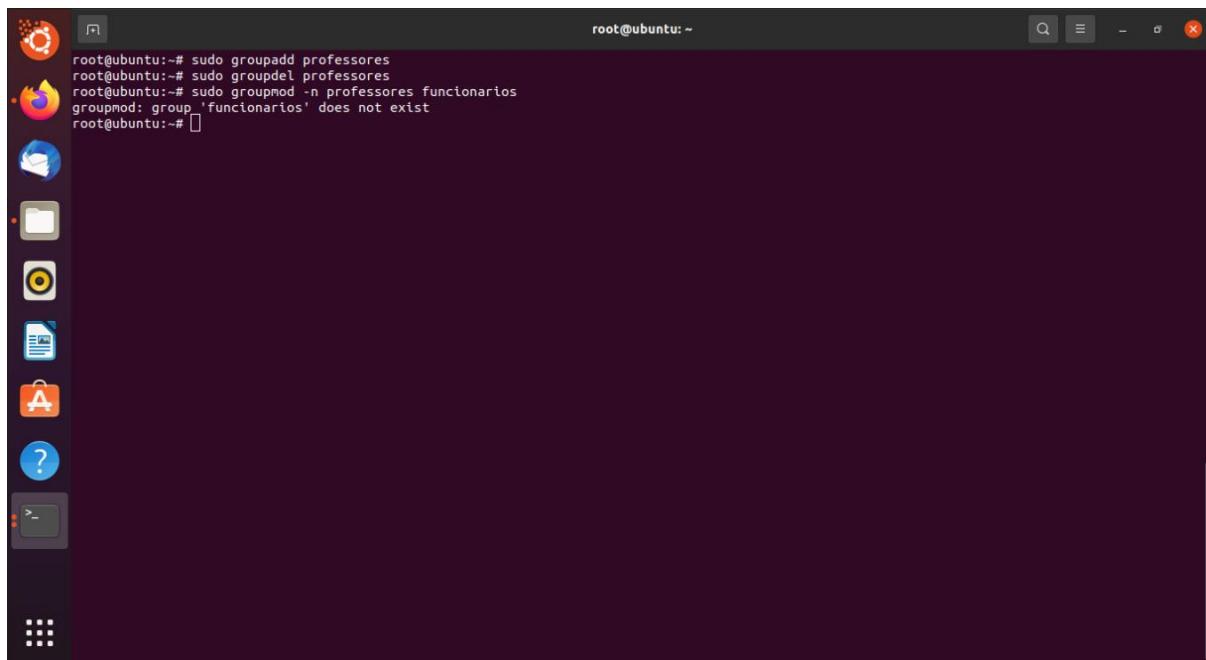
```
root@ubuntu:~# cat /etc/passwd | head -10
root:x:0:0:root:/root:/bin/bash
daemon:x::1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/bin/sync
games:x:5:60:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
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
root@ubuntu:~# cut -d: -f1 /etc/passwd | head -10
root
daemon
bin
sys
sync
games
man
lp
mail
news
root@ubuntu:~# cat /etc/group | head -10
root:x:0:
daemon:x::1:
bin:x:2:
sys:x:3:
adm:x:4:syslog,ubuntu
tty:x:5:syslog
disk:x:6:
lp:x:7:
mail:x:8:
news:x:9:
root@ubuntu:~#
```

Podemos listar todos os usuários do sistema Linux por meio do diretório /etc/passwd, portanto basta aplicar o comando “cat” à este diretório. O complemento “head -10” lista os primeiros 10 da lista.

Pode-se também utilizar o “cut” junto ao “head” para limitar os 10 primeiros.



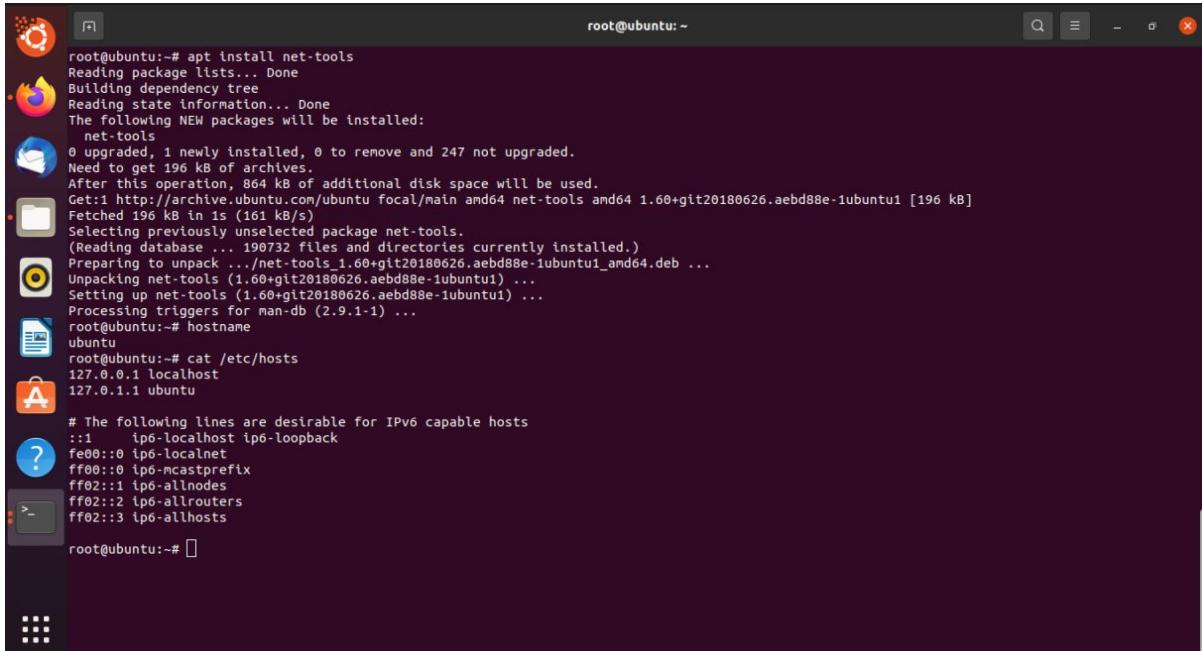
```
root@ubuntu:~# sudo adduser aluno
Adding user `aluno' ...
Adding new group `aluno' (1000) ...
Adding new user `aluno' (1000) with group `aluno' ...
Creating home directory `/home/aluno' ...
Copying files from `/etc/skel' ...
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
Sorry, passwords do not match.
New password:
Retype new password:
Sorry, passwords do not match.
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: password updated successfully
Changing the user information for aluno
Enter the new value, or press ENTER for the default
  Full Name []: Wander Victor
  Room Number []: 171
  Work Phone []: 47028922
  Home Phone []: 08009990
  Other []: 1234
Is the information correct? [Y/n] y
root@ubuntu:~# sudo userdel aluno
root@ubuntu:~# userdel -r aluno
userdel: user 'aluno' does not exist
root@ubuntu:~#
```



```
root@ubuntu:~# sudo groupadd professores
root@ubuntu:~# sudo groupdel professores
root@ubuntu:~# sudo groupmod -n professores funcionarios
groupmod: group 'funcionarios' does not exist
root@ubuntu:~#
```

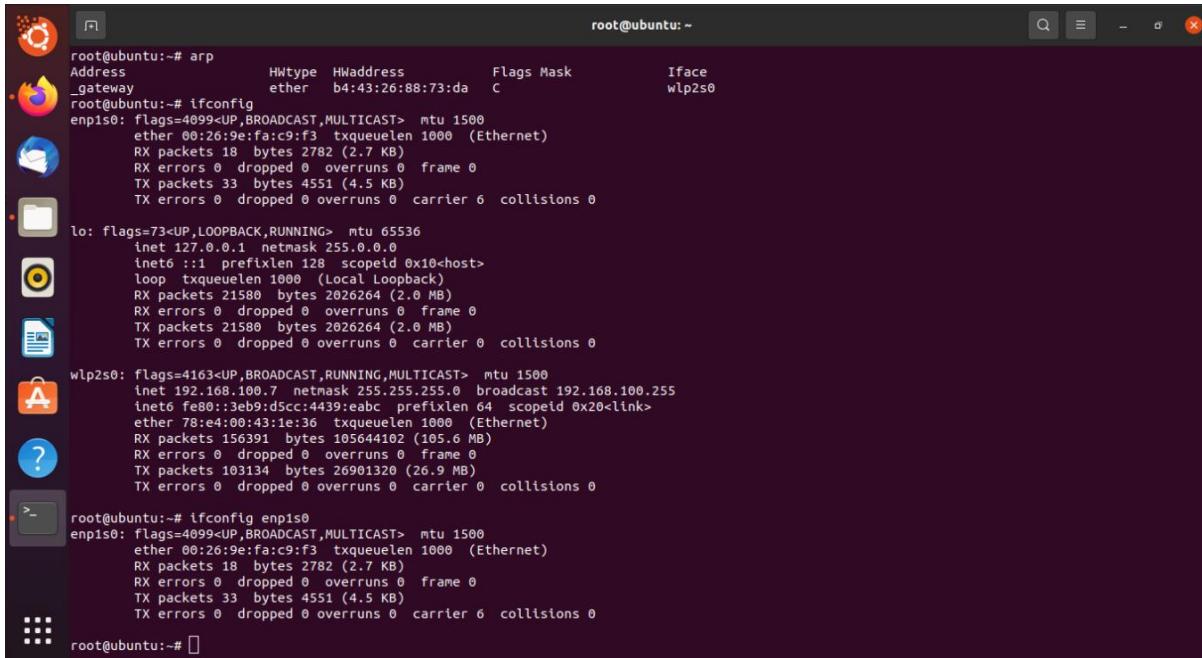
Para adicionar usuários, basta utilizar o comando “adduser”, para essa operação é necessário utilizar o sistema como “root”.

Capítulo 9 - Comandos para Redes de Computadores



```
root@ubuntu:~# apt install net-tools
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
  net-tools
0 upgraded, 1 newly installed, 0 to remove and 247 not upgraded.
Need to get 196 kB of archives.
After this operation, 864 kB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu focal/main amd64 net-tools amd64 1.60+git20180626.aebd88e-1ubuntu1 [196 kB]
Fetched 196 kB in 1s (161 kB/s)
Selecting previously unselected package net-tools.
(Reading database ... 190732 files and directories currently installed.)
Preparing to unpack .../net-tools_1.60+git20180626.aebd88e-1ubuntu1_amd64.deb ...
Unpacking net-tools (1.60+git20180626.aebd88e-1ubuntu1) ...
Setting up net-tools (1.60+git20180626.aebd88e-1ubuntu1) ...
Processing triggers for man-db (2.9.1-1) ...
root@ubuntu:~# hostname
ubuntu
root@ubuntu:~# cat /etc/hosts
127.0.0.1 localhost
127.0.1.1 ubuntu
# The following lines are desirable for IPv6 capable hosts
::1      ip6-localhost ip6-loopback
fe00::0 ip6-localnet
ff00::0 ip6-mcastprefix
ff02::1 ip6-allnodes
ff02::2 ip6-allrouters
ff02::3 ip6-allhosts
root@ubuntu:~#
```

Para utilizar as ferramentas de rede é necessário a instalação do pacote “net-tools”. Feito isso podemos identificar o nome da máquina no diretório /etc/hosts, novamente o comando “cat” sendo utilizado para esta função.



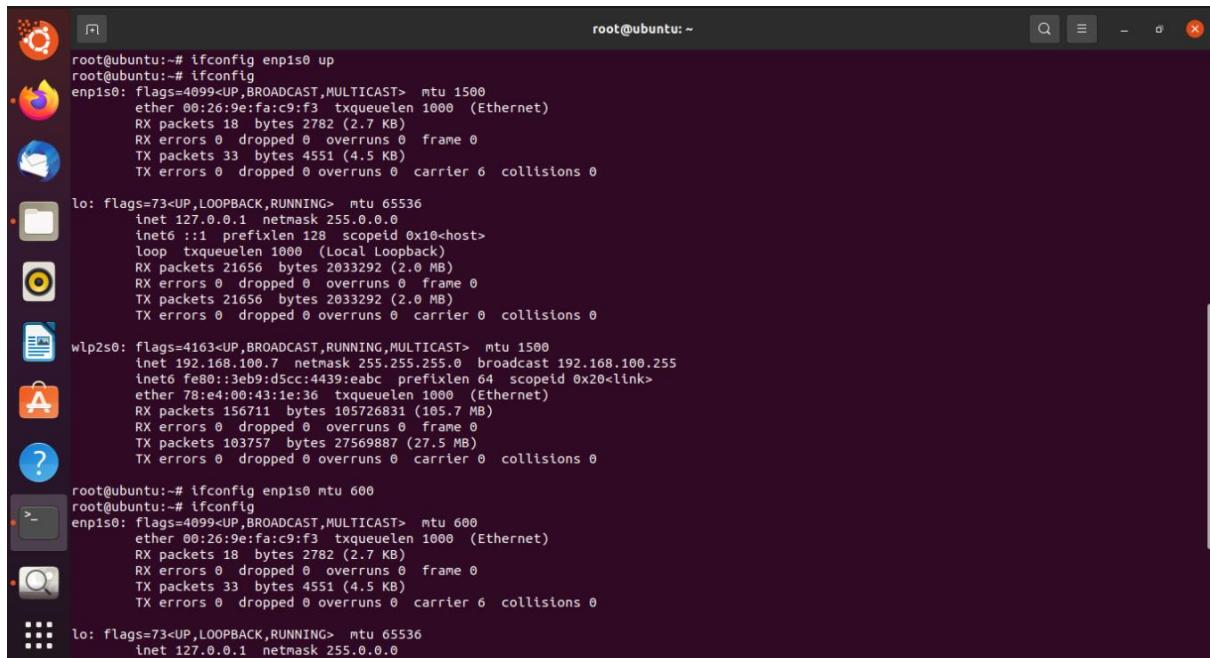
```
root@ubuntu:~# arp
Address           Hwtype   Hwaddress       Flags Mask          Iface
_gateway          ether    b4:43:26:88:73:da C             wlp2s0
root@ubuntu:~# ifconfig
enp1s0: flags=4099<UP,BROADCAST,MULTICAST>  mtu 1500
        ether 00:26:9e:fa:c9:f3  txqueuelen 1000  (Ethernet)
        RX packets 18  bytes 2782 (2.7 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 33  bytes 4551 (4.5 KB)
        TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopelid 0x10<host>
loop  txqueuelen 1000  (Local Loopback)
        RX packets 21580  bytes 2026264 (2.0 MB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 21580  bytes 2026264 (2.0 MB)
        TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0

wlp2s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.100.7  netmask 255.255.255.0  broadcast 192.168.100.255
        inet6 fe80::3eb9:dscc:4439:abc  prefixlen 64  scopelid 0x20<link>
        ether 78:e4:00:43:1e:36  txqueuelen 1000  (Ethernet)
        RX packets 156391  bytes 105644102 (105.6 MB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 103134  bytes 26901320 (26.9 MB)
        TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0

root@ubuntu:~# ifconfig enp1s0
enp1s0: flags=4099<UP,BROADCAST,MULTICAST>  mtu 1500
        ether 00:26:9e:fa:c9:f3  txqueuelen 1000  (Ethernet)
        RX packets 18  bytes 2782 (2.7 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 33  bytes 4551 (4.5 KB)
        TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0
root@ubuntu:~#
```

O comando “arp -a” lista os dados do protocolo ARP utilizados para comunicação em tabelas de roteamento, como adress e getway. Por meio do comando “ifconfig” podemos verificar o IP da máquina.



```
root@ubuntu:~# ifconfig enp1s0 up
root@ubuntu:~# ifconfig
enp1s0: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500
      ether 00:26:9e:fa:c9:f3 txqueuelen 1000 (Ethernet)
      RX packets 18 bytes 2782 (2.7 KB)
      RX errors 0 dropped 0 overruns 0 frame 0
      TX packets 33 bytes 4551 (4.5 KB)
      TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

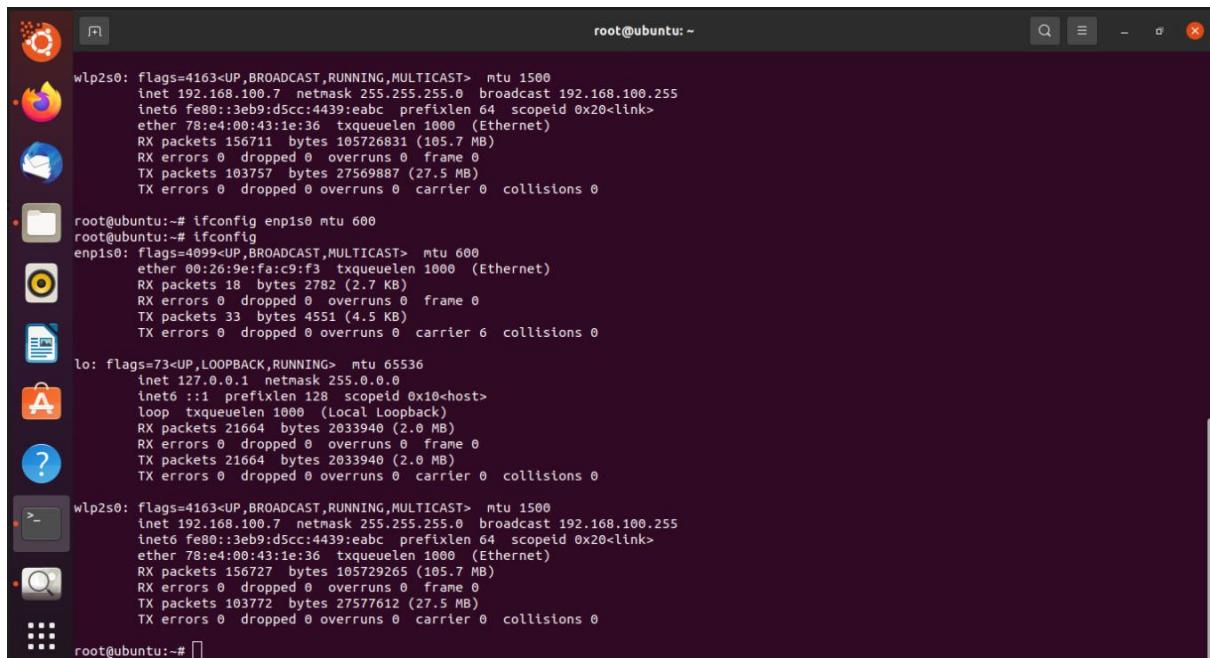
lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
      inet 127.0.0.1 netmask 255.0.0.0
      inet6 ::1 prefixlen 128 scopeid 0x10<host>
        loop txqueuelen 1000 (Local Loopback)
        RX packets 21656 bytes 2033292 (2.0 MB)
        RX errors 0 dropped 0 overruns 0 frame 0
        TX packets 21656 bytes 2033292 (2.0 MB)
        TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

wlp2s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
      inet 192.168.100.7 netmask 255.255.255.0 broadcast 192.168.100.255
      inet6 fe80::3eb9:d5cc:4439:abc prefixlen 64 scopeid 0x20<link>
        ether 78:e4:00:43:1e:36 txqueuelen 1000 (Ethernet)
        RX packets 156711 bytes 105726831 (105.7 MB)
        RX errors 0 dropped 0 overruns 0 frame 0
        TX packets 103757 bytes 27569887 (27.5 MB)
        TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

root@ubuntu:~# ifconfig enp1s0 mtu 600
root@ubuntu:~# ifconfig
enp1s0: flags=4099<UP,BROADCAST,MULTICAST> mtu 600
      ether 00:26:9e:fa:c9:f3 txqueuelen 1000 (Ethernet)
      RX packets 18 bytes 2782 (2.7 KB)
      RX errors 0 dropped 0 overruns 0 frame 0
      TX packets 33 bytes 4551 (4.5 KB)
      TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
      inet 127.0.0.1 netmask 255.0.0.0
```

Para verificar o status da rede ethernet, por exemplo, basta utilizar o comando “ifconfig” junto ao nome da rede. Pode-se também alterar o MTU da máquina via comando “mtu”.



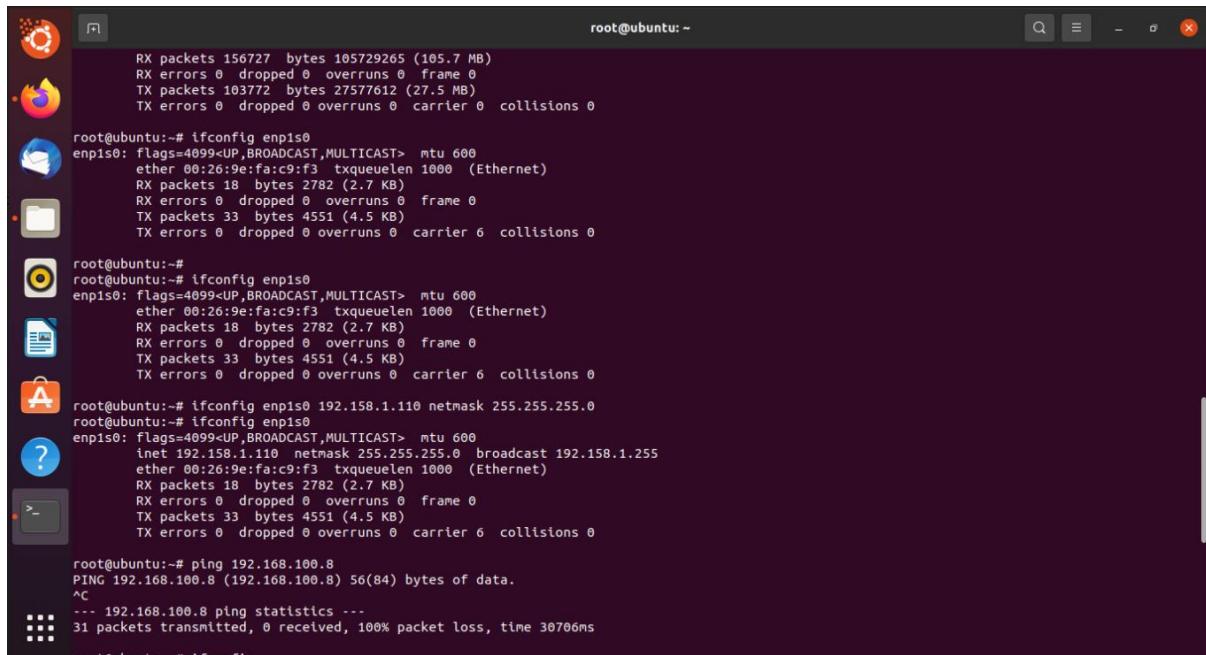
```
wlp2s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
      inet 192.168.100.7 netmask 255.255.255.0 broadcast 192.168.100.255
      inet6 fe80::3eb9:d5cc:4439:abc prefixlen 64 scopeid 0x20<link>
        ether 78:e4:00:43:1e:36 txqueuelen 1000 (Ethernet)
        RX packets 156711 bytes 105726831 (105.7 MB)
        RX errors 0 dropped 0 overruns 0 frame 0
        TX packets 103757 bytes 27569887 (27.5 MB)
        TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

root@ubuntu:~# ifconfig enp1s0 mtu 600
root@ubuntu:~# ifconfig
enp1s0: flags=4099<UP,BROADCAST,MULTICAST> mtu 600
      ether 00:26:9e:fa:c9:f3 txqueuelen 1000 (Ethernet)
      RX packets 18 bytes 2782 (2.7 KB)
      RX errors 0 dropped 0 overruns 0 frame 0
      TX packets 33 bytes 4551 (4.5 KB)
      TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
      inet 127.0.0.1 netmask 255.0.0.0
      inet6 ::1 prefixlen 128 scopeid 0x10<host>
        loop txqueuelen 1000 (Local Loopback)
        RX packets 21664 bytes 2033940 (2.0 MB)
        RX errors 0 dropped 0 overruns 0 frame 0
        TX packets 21664 bytes 2033940 (2.0 MB)
        TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

wlp2s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
      inet 192.168.100.7 netmask 255.255.255.0 broadcast 192.168.100.255
      inet6 fe80::3eb9:d5cc:4439:abc prefixlen 64 scopeid 0x20<link>
        ether 78:e4:00:43:1e:36 txqueuelen 1000 (Ethernet)
        RX packets 156727 bytes 105729265 (105.7 MB)
        RX errors 0 dropped 0 overruns 0 frame 0
        TX packets 103772 bytes 27577612 (27.5 MB)
        TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

root@ubuntu:~#
```



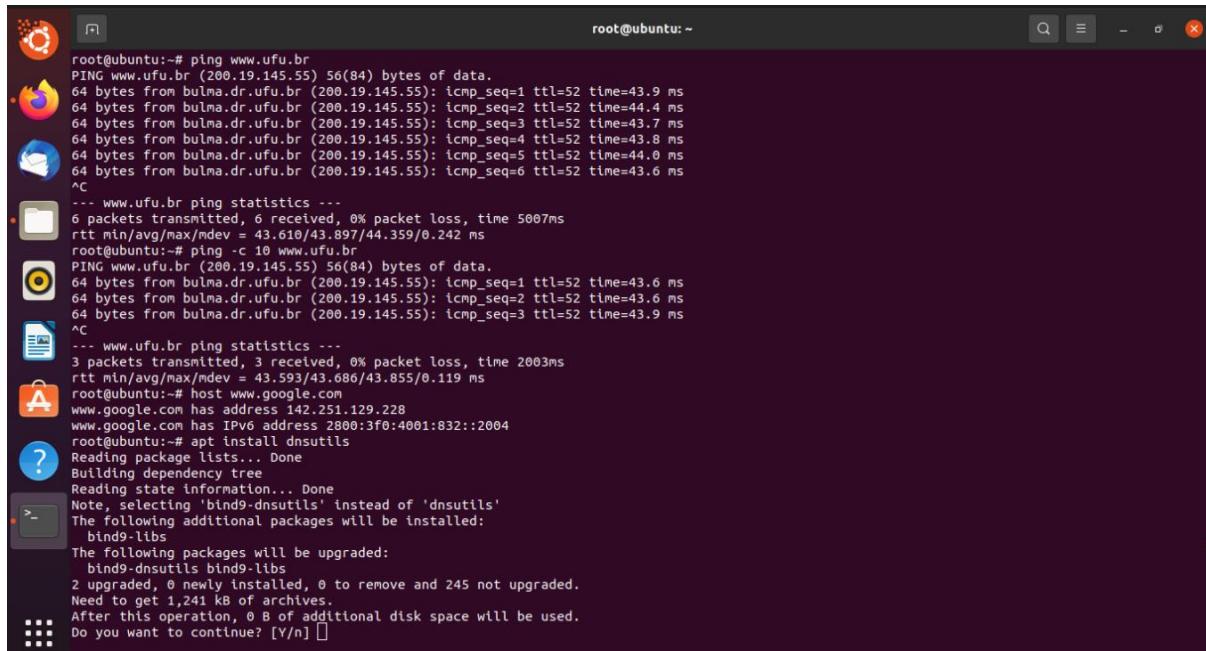
```
root@ubuntu:~# ifconfig enp1s0
enp1s0: flags=4099UP,BROADCAST,MULTICAST mtu 600
        ether 00:26:9e:f1:c9:f3 txqueuelen 1000 (Ethernet)
        RX packets 156727 bytes 105729265 (105.7 MB)
        RX errors 0 dropped 0 overruns 0 frame 0
        TX packets 103772 bytes 27577612 (27.5 MB)
        TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

root@ubuntu:~# ifconfig enp1s0
enp1s0: flags=4099UP,BROADCAST,MULTICAST mtu 600
        ether 00:26:9e:f1:c9:f3 txqueuelen 1000 (Ethernet)
        RX packets 18 bytes 2782 (2.7 KB)
        RX errors 0 dropped 0 overruns 0 frame 0
        TX packets 33 bytes 4551 (4.5 KB)
        TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

root@ubuntu:~# ifconfig enp1s0
enp1s0: flags=4099UP,BROADCAST,MULTICAST mtu 600
        ether 00:26:9e:f1:c9:f3 txqueuelen 1000 (Ethernet)
        RX packets 18 bytes 2782 (2.7 KB)
        RX errors 0 dropped 0 overruns 0 frame 0
        TX packets 33 bytes 4551 (4.5 KB)
        TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

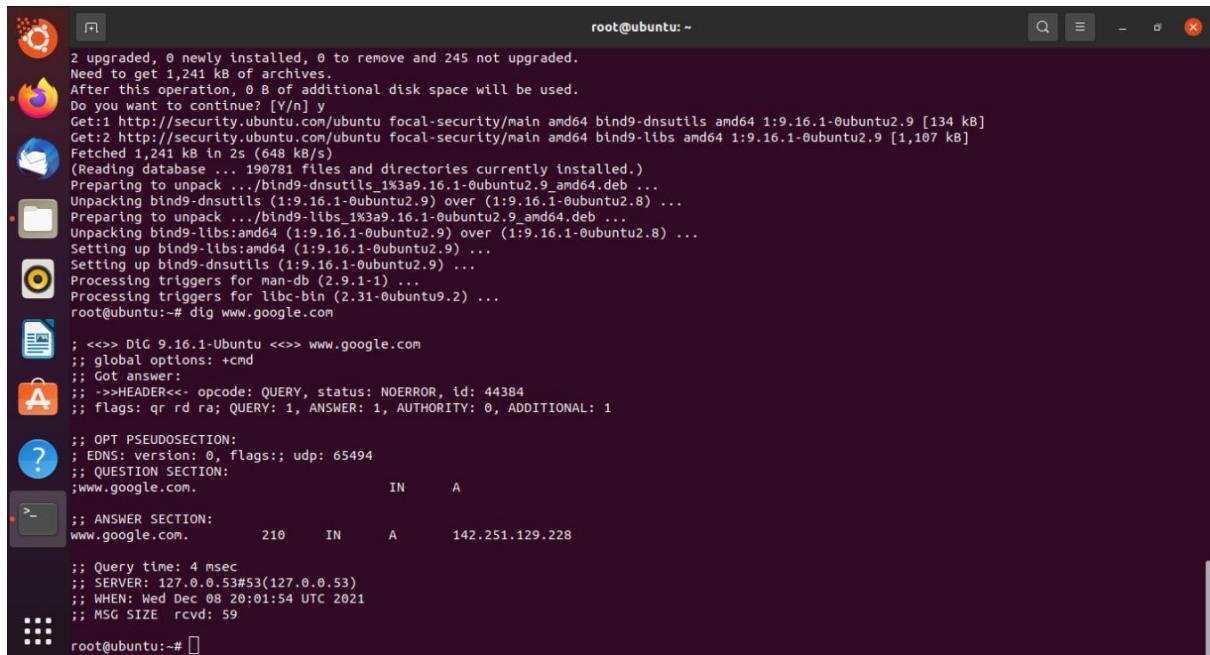
root@ubuntu:~# ifconfig enp1s0 192.158.1.110 netmask 255.255.255.0
root@ubuntu:~# ifconfig enp1s0
enp1s0: flags=4099UP,BROADCAST,MULTICAST mtu 600
        inet 192.158.1.110 netmask 255.255.255.0 broadcast 192.158.1.255
              ether 00:26:9e:f1:c9:f3 txqueuelen 1000 (Ethernet)
        RX packets 18 bytes 2782 (2.7 KB)
        RX errors 0 dropped 0 overruns 0 frame 0
        TX packets 33 bytes 4551 (4.5 KB)
        TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

root@ubuntu:~# ping 192.168.100.8
PING 192.168.100.8 (192.168.100.8) 56(84) bytes of data.
^C
--- 192.168.100.8 ping statistics ---
31 packets transmitted, 0 received, 100% packet loss, time 30706ms
```



```
root@ubuntu:~# ping www.ufu.br
PING www.ufu.br (200.19.145.55) 56(84) bytes of data.
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=1 ttl=52 time=43.9 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=2 ttl=52 time=44.4 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=3 ttl=52 time=43.7 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=4 ttl=52 time=43.8 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=5 ttl=52 time=44.0 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=6 ttl=52 time=43.6 ms
^C
--- www.ufu.br ping statistics ---
6 packets transmitted, 6 received, 0% packet loss, time 5007ms
rtt min/avg/max/mdev = 43.610/43.897/44.359/0.242 ms
root@ubuntu:~# ping -c 10 www.ufu.br
PING www.ufu.br (200.19.145.55) 56(84) bytes of data.
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=1 ttl=52 time=43.6 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=2 ttl=52 time=43.6 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=3 ttl=52 time=43.9 ms
^C
--- www.ufu.br ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2003ms
rtt min/avg/max/mdev = 43.593/43.686/43.855/0.119 ms
root@ubuntu:~# host www.google.com
www.google.com has address 142.251.129.228
www.google.com has IPv6 address 2800:3f0:4001:832::2004
root@ubuntu:~# apt install dnsutils
Reading package lists... Done
Building dependency tree
Reading state information... Done
Note, selecting 'bind9-dnsutils' instead of 'dnsutils'
The following additional packages will be installed:
  bind9-libs
The following packages will be upgraded:
  bind9-dnsutils bind9-libs
2 upgraded, 0 newly installed, 0 to remove and 245 not upgraded.
Need to get 1,241 kB of archives.
After this operation, 0 B of additional disk space will be used.
Do you want to continue? [Y/n] 
```

É possível estabelecer comando com um ip via DNS com o comando “ping + DNS do site”. Por meio deste é possível confirmar a conexão e caracterizar a mesma por envio de pacotes e pacotes recebidos.



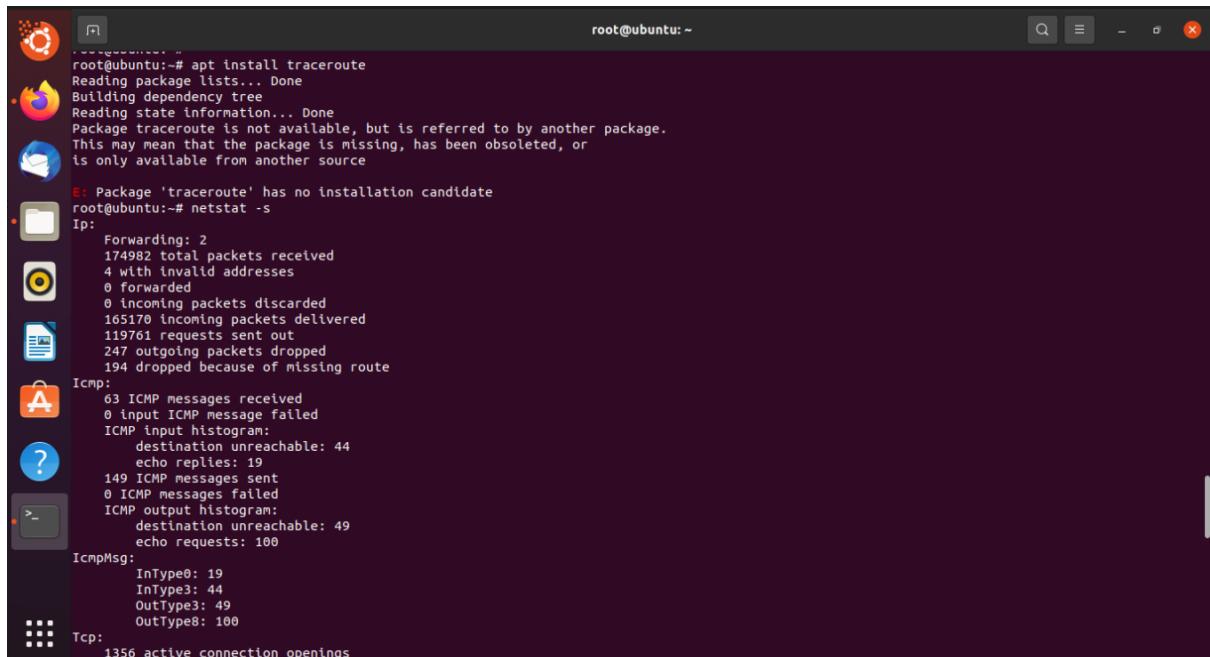
```
root@ubuntu:~# apt upgrade
2 upgraded, 0 newly installed, 0 to remove and 245 not upgraded.
Need to get 1,241 kB of archives.
After this operation, 0 B of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://security.ubuntu.com/ubuntu focal-security/main amd64 bind9-dnsutils amd64 1:9.16.1-0ubuntu2.9 [134 kB]
Get:2 http://security.ubuntu.com/ubuntu focal-security/main amd64 bind9-libs amd64 1:9.16.1-0ubuntu2.9 [1,107 kB]
Fetched 1,241 kB in 2s (648 kB/s)
(Reading database ... 190781 files and directories currently installed.)
Preparing to unpack .../bind9-dnsutils_1%3a9.16.1-0ubuntu2.9_amd64.deb ...
Unpacking bind9-dnsutils (1:9.16.1-0ubuntu2.9) over (1:9.16.1-0ubuntu2.8) ...
Preparing to unpack .../bind9-libs_1%3a9.16.1-0ubuntu2.9_amd64.deb ...
Unpacking bind9-libs_amd64 (1:9.16.1-0ubuntu2.9) over (1:9.16.1-0ubuntu2.8) ...
Setting up bind9-libs_amd64 (1:9.16.1-0ubuntu2.9) ...
Setting up bind9-dnsutils (1:9.16.1-0ubuntu2.9) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for libc-bin (2.31-0ubuntu9.2) ...
root@ubuntu:~# dig www.google.com

; <>> DIG 9.16.1-Ubuntu <>> www.google.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<- opcode: QUERY, status: NOERROR, id: 44384
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 65494
; QUESTION SECTION:
www.google.com.           IN      A

;; ANSWER SECTION:
www.google.com.        210     IN      A      142.251.129.228

;; Query time: 4 msec
;; SERVER: 127.0.0.53#53(127.0.0.53)
;; WHEN: Wed Dec 08 20:01:54 UTC 2021
;; MSG SIZE rcvd: 59
root@ubuntu:~#
```



```
root@ubuntu:~# apt install traceroute
Reading package lists... Done
Building dependency tree
Reading state information... Done
Package traceroute is not available, but is referred to by another package.
This may mean that the package is missing, has been obsoleted, or
is only available from another source

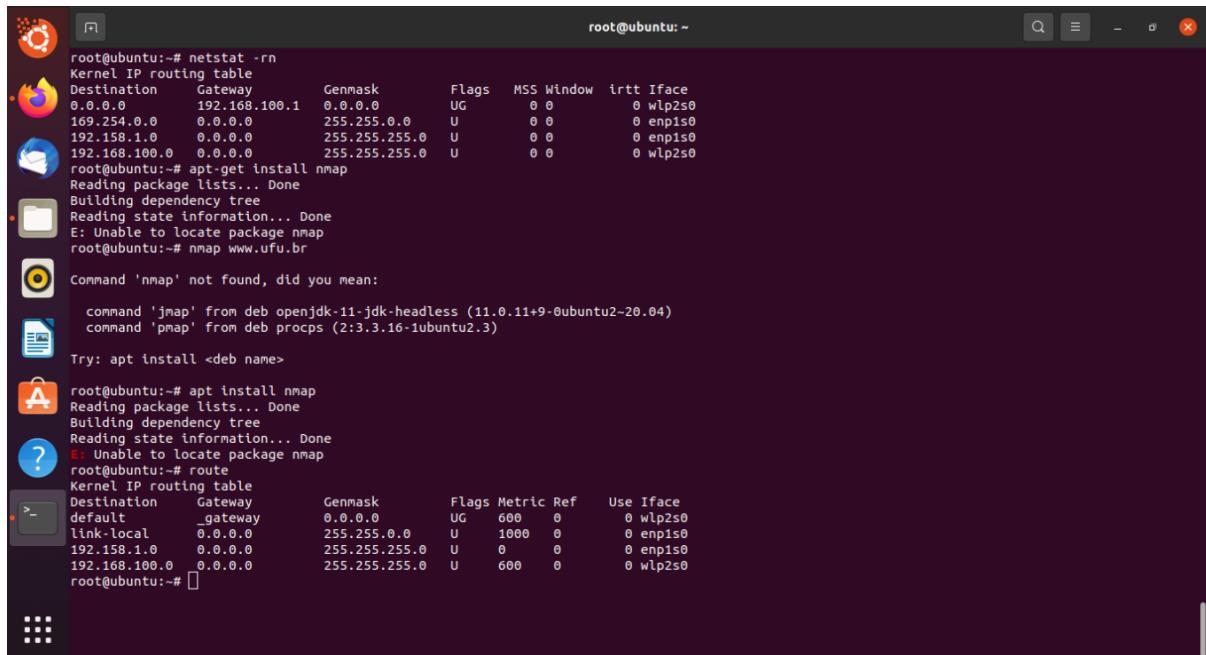
E: Package 'traceroute' has no installation candidate
root@ubuntu:~# netstat -s
Ip:
    Forwarding: 2
    174982 total packets received
    4 with invalid addresses
    0 forwarded
    0 incoming packets discarded
    165170 incoming packets delivered
    119761 requests sent out
    247 outgoing packets dropped
    194 dropped because of missing route

Icmp:
    63 ICMP messages received
    0 input ICMP message failed
    ICMP input histogram:
        destination unreachable: 44
        echo replies: 19
    149 ICMP messages sent
    0 ICMP messages failed
    ICMP output histogram:
        destination unreachable: 49
        echo requests: 100

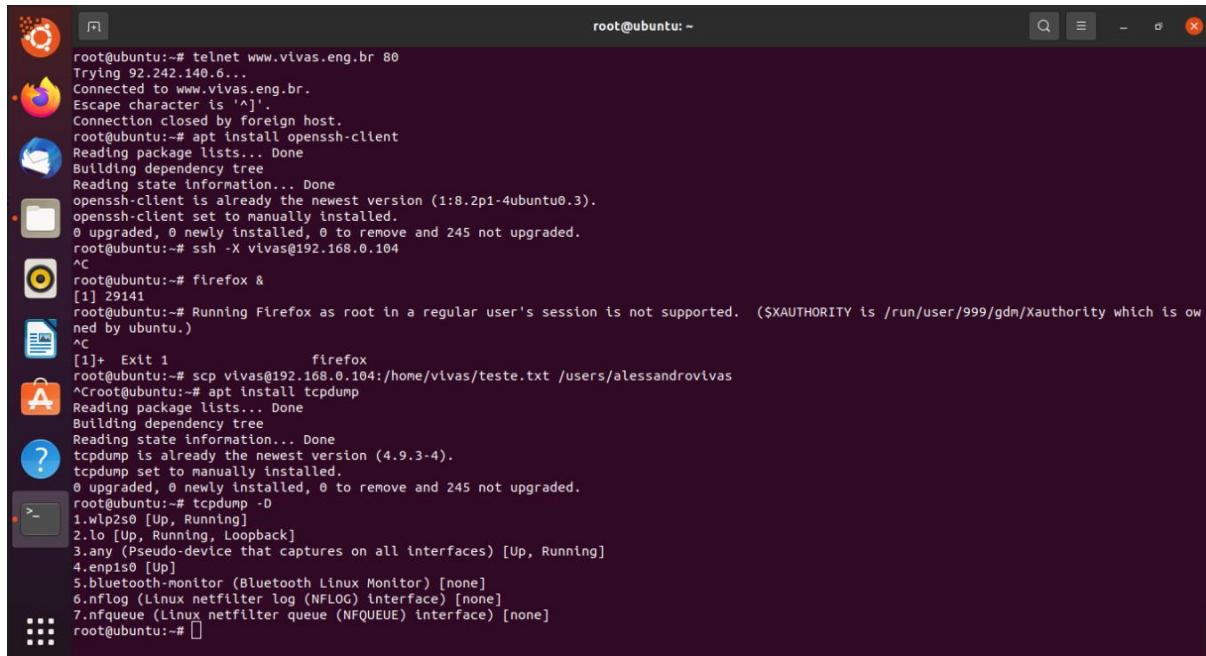
IcmpMsg:
    InType0: 19
    InType3: 44
    OutType3: 49
    OutType8: 100

Tcp:
    1356 active connection openings
```

Também é possível verificar a tabela de roteamento via comando “traceroute”, este deve ser instalado também.



```
root@ubuntu:~# netstat -rn
Kernel IP routing table
Destination     Gateway         Genmask        Flags   MSS Window irtt Iface
0.0.0.0         192.168.100.1  0.0.0.0       UG        0 0          0 wlp2s0
169.254.0.0    0.0.0.0       255.255.0.0   U         0 0          0 enp1s0
192.158.1.0    0.0.0.0       255.255.255.0 U         0 0          0 enp1s0
192.168.100.0  0.0.0.0      255.255.255.0 U         0 0          0 wlp2s0
root@ubuntu:~# apt-get install nmap
Reading package lists... Done
Building dependency tree
Reading state information... Done
E: Unable to locate package nmap
root@ubuntu:~# nmap www.ufu.br
Command 'nmap' not found, did you mean:
 command 'jmap' from deb openjdk-11-jdk-headless (11.0.11+9-0ubuntu2-20.04)
 command 'pmap' from deb procps (2:3.3.16-1ubuntu2.3)
Try: apt install <deb name>
root@ubuntu:~# apt install nmap
Reading package lists... Done
Building dependency tree
Reading state information... Done
E: Unable to locate package nmap
root@ubuntu:~# route
Kernel IP routing table
Destination     Gateway         Genmask        Flags Metric Ref  Use Iface
default         _gateway      0.0.0.0       UG    600    0      0 wlp2s0
link-local      0.0.0.0       255.255.0.0   U     1000   0      0 enp1s0
192.158.1.0    0.0.0.0       255.255.255.0 U     0      0      0 enp1s0
192.168.100.0  0.0.0.0      255.255.255.0 U     600    0      0 wlp2s0
root@ubuntu:~#
```



```
root@ubuntu:~# telnet www.vivas.eng.br 80
Trying 92.242.140.6...
Connected to www.vivas.eng.br.
Escape character is '^].
Connection closed by foreign host.
root@ubuntu:~# apt install openssh-client
Reading package lists... Done
Building dependency tree
Reading state information... Done
openssh-client is already the newest version (1:8.2p1-4ubuntu0.3).
openssh-client set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 245 not upgraded.
root@ubuntu:~# ssh -X vivas@192.168.0.104
^C
root@ubuntu:~# firefox &
[1] 29141
root@ubuntu:~# Running Firefox as root in a regular user's session is not supported. ($XAUTHORITY is /run/user/999/gdm/Xauthority which is owned by ubuntu.)
^C
[1]+  Exit 1                  firefox
root@ubuntu:~# scp vivas@192.168.0.104:/home/vivas/teste.txt /users/alessandrovivas
^Croot@ubuntu:~# apt install tcpdump
Reading package lists... Done
Building dependency tree
Reading state information... Done
tcpdump is already the newest version (4.9.3-4).
tcpdump set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 245 not upgraded.
root@ubuntu:~# tcpdump -D
1.wlp2s0 [Up, Running, Loopback]
2.lo [Up, Running, Loopback]
3.any [Pseudo-device that captures on all interfaces] [Up, Running]
4.enp1s0 [Up]
5.bluetooth-monitor (Bluetooth Linux Monitor) [none]
6.nflog (Linux netfilter log (NFLOG) interface) [none]
7.nfqueue (Linux netfilter queue (NFQUEUE) interface) [none]
root@ubuntu:~#
```

O comando “netstat” pode ser utilizado por administradores de rede para realizar o rastreamento das portas utilizadas no computador.

```

root@ubuntu:~# ifconfig
enp1s0: flags=4099<UP,BROADCAST,MULTICAST> mtu 600
    inet 192.158.1.110 netmask 255.255.255.0 broadcast 192.158.1.255
        ether 00:26:9e:fa:c9:f3 txqueuelen 1000 (Ethernet)
        RX packets 18 bytes 2782 (2.7 KB)
        RX errors 0 dropped 0 overruns 0 frame 0
        TX packets 33 bytes 4551 (4.5 KB)
        TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
        loop txqueuelen 128 scopeid 0x10<host>
        RX packets 1000 (Local Loopback)
        RX bytes 22149 bytes 2080658 (2.0 MB)
        RX errors 0 dropped 0 overruns 0 frame 0
        TX packets 22149 bytes 2080658 (2.0 MB)
        TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

wlp2s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.100.7 netmask 255.255.255.0 broadcast 192.168.100.255
        inet6 fe80::3eb9:d5cc:4439:eabc prefixlen 64 scopeid 0x20<link>
            ether 78:e4:00:43:1e:36 txqueuelen 1000 (Ethernet)
            RX packets 159657 bytes 107934832 (107.9 MB)
            RX errors 0 dropped 0 overruns 0 frame 0
            TX packets 30198579 (30.1 MB)
            TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

root@ubuntu:~# tcptrace -i enp1s0 icmp
tcptrace: verbose output suppressed, use -v or -vv for full protocol decode
listening on enp1s0, link-type EN10MB (Ethernet), capture size 262144 bytes
^C
0 packets captured
0 packets received by filter
0 packets dropped by kernel
root@ubuntu:~#

```

O comando “telnet” permite o acesso remoto do equipamento conectado à rede, pode ser feito via web também.

Capítulo 10 - Gerenciamento de Pacotes

```

root@ubuntu:~# apt update
Ign1: cdrom://Ubuntu 20.04.3 LTS _Focal Fossa_ - Release amd64 (20210819) focal InRelease
Hit:2 cdrom://Ubuntu 20.04.3 LTS _Focal Fossa_ - Release amd64 (20210819) focal Release
Hit:4 http://archive.ubuntu.com/ubuntu focal InRelease
Get:5 http://archive.ubuntu.com/ubuntu focal-security InRelease [114 kB]
Get:6 http://archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Get:7 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [1,391 kB]
Fetched 1,618 kB in 3s (559 kB/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
245 packages can be upgraded. Run 'apt list --upgradable' to see them.
root@ubuntu:~# apt upgrade
Reading package lists... Done
Building dependency tree
Reading state information... Done
Calculating upgrade... Done
The following NEW packages will be installed:
  linux-headers-5.11.0-41-generic linux-hwe-5.11.0-41 linux-image-5.11.0-41-generic linux-modules-5.11.0-41-generic
  linux-modules-extra-5.11.0-41-generic python3-ldb
The following packages will be upgraded:
  accountsservice alsu-ucm-conf apport apport-gtk bluez bluez-cups bluez-obexd busybox-initramfs busybox-static ca-certificates
  cpio distro-info-data firefox firefox-locale-de firefox-locale-en firefox-locale-es firefox-locale-fr firefox-locale-it firefox-locale-pt
  firefox-locale-ru firefox-locale-zh-hans fonts-opensymbol ghostscript ghostscript-pdf gir1.2-accountsservice-1.0
  gir1.2-javascriptcoregtk-4.0 gir1.2-mutter-6 gir1.2-udisks-2.0 gir1.2-webkit2-4.0 gnome-control-center gnome-control-center-data
  gnome-control-center-faces gnome-shell-extension-desktop-icons libaccounts-service libasound2 libasound2-data libatopology2 libbluetooth3
  libcaca0 libcurl3-gnutls libcurl4 libdrm-amdgpu1 libdrm-common libdrm-intel1 libdrm-nouveau2 libdrm-radeon1 libdrm1 libegl-mesa0
  libfreerdp-client2-2 libfreerdp2-2 libgbm1 libgcrypt20 libgd3 libglib-mesa0 libglapi-mesa libglx-mesa0 libgrilo-0.3-0 libgs9
  libgs9-common libicu66 libipa-hbac0 libjavascriptcoregtk-4.0-18 libjuh-java libjurt-java libl10n12 libl10n12 libmbim-glib4 libmbim-proxy
  libmm-glib libmutter-6-0 libmysqclient21 libnautilus-extension1 libnetplan1 libnss-sss libnss-systemd libnss3 libntfs-3g883
  libnpapi1linux libpam-modules libpam-modules-bin libpam-runtime libpam-sss libpam-systemd libpam0g libprocps8 libpulse-mainloop-glib0
  libpulse0 libpulsedsp libpython3.8 libpython3.8-minimal libpython3.8-stdlib libqmi-proxy libreoffice-base-core
  libreoffice-calc libreoffice-common libreoffice-core libreoffice-draw libreoffice-gnome libreoffice-gtk3 libreoffice-help-common
  libreoffice-help-de libreoffice-help-en-gb libreoffice-help-en-us libreoffice-help-es libreoffice-help-fr libreoffice-help-it
  libreoffice-help-pt libreoffice-help-pt-br libreoffice-help-ru libreoffice-help-zh-cn libreoffice-help-zh-tw libreoffice-impress
  libreoffice-l10n-de libreoffice-l10n-en-gb libreoffice-l10n-en-za libreoffice-l10n-es libreoffice-l10n-fr libreoffice-l10n-it
  libreoffice-l10n-pt libreoffice-l10n-pt-br libreoffice-l10n-ru libreoffice-l10n-zh-cn libreoffice-l10n-zh-tw libreoffice-math
  libreoffice-ogltrans libreoffice-pdfimport libreoffice-style-breeze libreoffice-style-coibre libreoffice-style-elementary

```

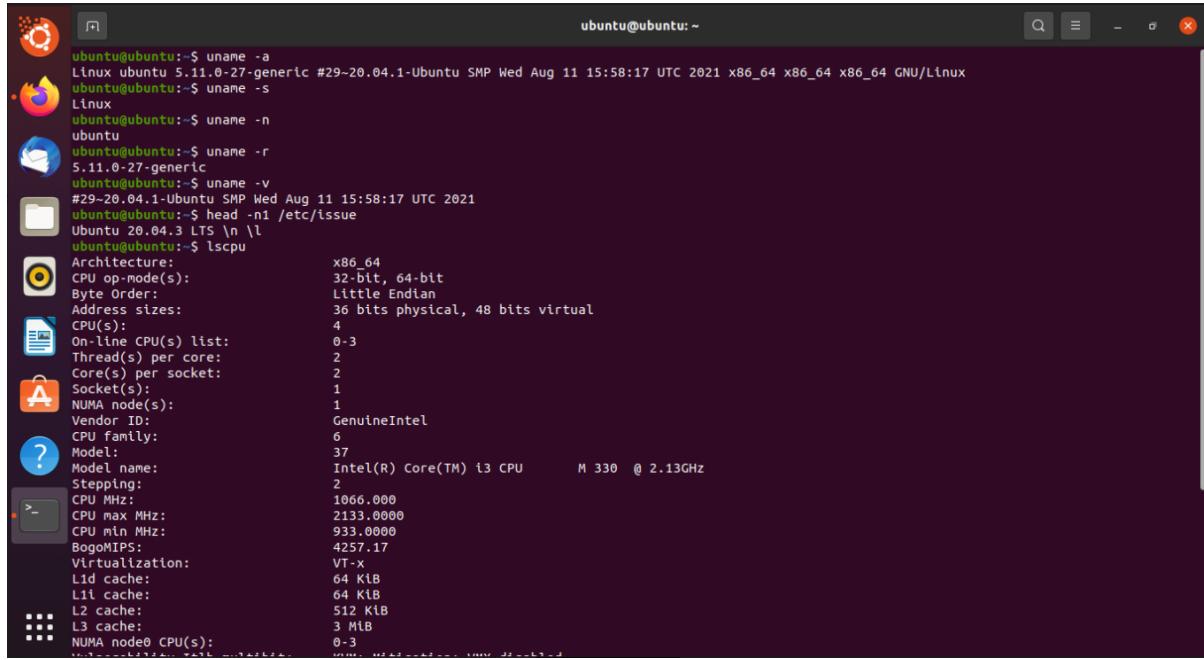
O comando “apt update” atualiza a lista de pacotes do sistema.

```
root@ubuntu:~  
linux-modules-extra-5.11.0-41-generic python3-ldb  
The following packages will be upgraded:  
accountsservice alsasound-conf apport apport-gtk bind9-host bluez bluez-cups bluez-obexd busybox-initramfs busybox-static ca-certificates  
cpio distro-info-data firefox firefox-locale-de firefox-locale-en firefox-locale-es firefox-locale-fr firefox-locale-it firefox-locale-pt  
firefox-locale-ru firefox-locale-zh-hans fonts-opensymbol ghostscript ghostscript-x gir1.2-accountsservice-1.0  
gir1.2-javascriptcoregtk-4.0 gir1.2-mutter-6 gir1.2-udisks-2.0 gir1.2-webkit2-4.0 gnome-control-center gnome-control-center-data  
gnome-control-center-faces gnome-shell-extension-desktop-icons libaccounts-service libasound2 libasound2-data libatopology2 libbluetooth3  
libcaca0 libcurl3-gnutls libcurl libdrm libdrm-common libdrm-intel libdrm-nouveau libdrm-radeon libdrm2 libegl-mesa0  
libfreerdp-client2-2 libfreerdp2-2 libgbm libgcrypt20 libgd libglapi-mesa libglx-mesa0 libgrilo-0.3-0 libgs9  
libgs9-common libicu66 libipa-hbaco libjavasciptcoregtk-4.0-18 libjhui-java libjurt-java liblbd2 liblwm12 libmbm-glib4 libmbm-proxy  
libnmpairlinux libpam-modules libpam-modules-bin libpam-runtime libpam-syslog libpam-systemd libpam0 libpam0g libpam0s libpulse-mainloop-glib0  
libpulse0 libpulsedsp libpython3.8 libpython3.8-minimal libpython3.8-stdlib libqmi-glib5 libqmi-proxy libreoffice-base-core  
libreoffice-calc libreoffice-common libreoffice-core libreoffice-draw libreoffice-gnome libreoffice-gtk3 libreoffice-help-common  
libreoffice-help-de libreoffice-help-en-gb libreoffice-help-en-us libreoffice-help-es libreoffice-help-fr libreoffice-help-it  
libreoffice-help-pt libreoffice-help-ru libreoffice-help-zh-cn libreoffice-help-zh-tw libreoffice-impress  
libreoffice-l10n-de libreoffice-l10n-en-gb libreoffice-l10n-en-zh libreoffice-l10n-es libreoffice-l10n-fr libreoffice-l10n-it  
libreoffice-l10n-pt libreoffice-l10n-pt-br libreoffice-l10n-ru libreoffice-l10n-zh libreoffice-l10n-zh-tw libreoffice-math  
libreoffice-ogltrans libreoffice-pdfimport libreoffice-style-breeze libreoffice-style-colibre libreoffice-style-elementary  
libreoffice-style-tango libreoffice-writer libridl-java libssm1 libssm-certmap0 libssm-idmap0 libssm-nss-idmap0  
libsss-sudo libsystemd libtalloc2 libtdb1 libtevent libtiffs libudev1 libudisks2-0 libuno-cppu libuno-cppuhelpergcc3-2  
libuno-purprenvhelpergcc3-3 libuno-sal3 libuno-salhelpergcc3-3 libunoloader-java libuutillinux libwbclient0 libwebkit2gtk-4.0-37  
libwinpr2-2 libxatracker2 libzfs2linux libzpool2linux linux-base linux-firmware linux-generic-hwe-20.04 linux-headers-generic-hwe-20.04  
linux-image-generic-hwe-20.04 mesa-vulkan-drivers modemmanager mutter mutter-common nautilus nautilus-data netplan.io nfts-3g openssl  
procps pulseaudio pulseaudio-module-bluetooth pulseaudio-utils python-apr-common python3-apport python3-api python3-problem-report  
python3-software-properties python3-ssh python3-talloc python3-uno python3-update-manager python3.8 python3.8-minimal rsync samba-libs  
snapd software-properties-common software-properties-gtk squashfs-tools sssd sssd-ad sssd-ad-common sssd-common sssd-ipa sssd-krb5  
sssd-krb5-common sssd-ldap sssd-proxy systemd systemd-sysv timesyncd thermald thunderbird thunderbird-gnome-support  
thunderbird-locale-de thunderbird-locale-en thunderbird-locale-en-gb thunderbird-locale-en-us thunderbird-locale-es  
thunderbird-locale-es-ar thunderbird-locale-es-es thunderbird-locale-fr thunderbird-locale-it thunderbird-locale-pt  
thunderbird-locale-pt-br thunderbird-locale-pt-pt thunderbird-locale-ru thunderbird-locale-zh-cn thunderbird-locale-zh-hans  
thunderbird-locale-zh-hant thunderbird-locale-zh-tw tzdata ubuntu-advantage-tools udev udisks2 ufw uno-libs-private update-manager  
update-manager-core ure vim-common vim-tiny wget wireless-regdb xxd zfs-initramfs zfs-zed zfsutils-linux  
245 upgraded, 6 newly installed, 0 to remove and 0 not upgraded.  
156 standard security updates  
Need to get 595 MB of archives.  
After this operation, 514 MB of additional disk space will be used.  
Do you want to continue? [Y/n] 
```

```
root@ubuntu:~  
cannot copy extracted data for './usr/lib/libreoffice/program/resource/de/LC_MESSAGES/cui.mo' to '/usr/lib/libreoffice/program/resource/de/LC_MESSAGES/cui.mo.dpkg-new': failed to write (No space left on device)  
No apt report written because MaxReports is reached already  
dpkg-deb: error: paste subprocess was killed by signal (Broken pipe)  
Preparing to unpack .../150-libreoffice-l10n-zh-tw_1%3a6.4.7-0ubuntu0.20.04.2_all.deb ...  
Unpacking libreoffice-l10n-zh-tw (1:6.4.7-0ubuntu0.20.04.2) over (1:6.4.7-0ubuntu0.20.04.1) ...  
dpkg: error processing archive /tmp/apt-dpkg-install-p8s0QB/150-libreoffice-l10n-zh-tw_1%3a6.4.7-0ubuntu0.20.04.2_all.deb (--unpack):  
cannot copy extracted data for './usr/lib/libreoffice/program/resource/de/LC_MESSAGES/cui.mo' to '/usr/lib/libreoffice/program/resource/de/LC_MESSAGES/cui.mo.dpkg-new': failed to write (No space left on device)  
No apt report written because MaxReports is reached already  
dpkg-deb: error: paste subprocess was killed by signal (Broken pipe)  
Preparing to unpack .../151-libreoffice-l10n-zh-cn_1%3a6.4.7-0ubuntu0.20.04.2_all.deb ...  
Unpacking libreoffice-l10n-zh-cn (1:6.4.7-0ubuntu0.20.04.2) over (1:6.4.7-0ubuntu0.20.04.1) ...  
dpkg: error processing archive /tmp/apt-dpkg-install-p8s0QB/151-libreoffice-l10n-zh-cn_1%3a6.4.7-0ubuntu0.20.04.2_all.deb (--unpack):  
unable to make backup link of './usr/lib/libreoffice/program/resource/zh_TW/LC_MESSAGES/cui.mo' before installing new version: No space left on device  
No apt report written because MaxReports is reached already  
dpkg-deb: error: paste subprocess was killed by signal (Broken pipe)  
Preparing to unpack .../152-libreoffice-l10n-ru_1%3a6.4.7-0ubuntu0.20.04.2_all.deb ...  
Unpacking libreoffice-l10n-ru (1:6.4.7-0ubuntu0.20.04.2) over (1:6.4.7-0ubuntu0.20.04.1) ...  
dpkg: error processing archive /tmp/apt-dpkg-install-p8s0QB/152-libreoffice-l10n-ru_1%3a6.4.7-0ubuntu0.20.04.2_all.deb (--unpack):  
cannot copy extracted data for './usr/lib/libreoffice/program/resource/ru/LC_MESSAGES/chart.mo' to '/usr/lib/libreoffice/program/resource/ru/LC_MESSAGES/chart.mo.dpkg-new': failed to write (No space left on device)  
No apt report written because MaxReports is reached already  
dpkg-deb: error: paste subprocess was killed by signal (Broken pipe)  
Preparing to unpack .../153-libreoffice-l10n-pt-br_1%3a6.4.7-0ubuntu0.20.04.2_all.deb ...  
Unpacking libreoffice-l10n-pt-br (1:6.4.7-0ubuntu0.20.04.2) over (1:6.4.7-0ubuntu0.20.04.1) ...  
dpkg: error processing archive /tmp/apt-dpkg-install-p8s0QB/153-libreoffice-l10n-pt-br_1%3a6.4.7-0ubuntu0.20.04.2_all.deb (--unpack):  
unable to make backup link of './usr/lib/libreoffice/program/resource/pt_BR/LC_MESSAGES/avmedia.mo' before installing new version: No space left on device  
No apt report written because MaxReports is reached already  
dpkg-deb: error: paste subprocess was killed by signal (Broken pipe)  
Preparing to unpack .../154-libreoffice-l10n-pt_1%3a6.4.7-0ubuntu0.20.04.2_all.deb ...  
dpkg: unrecoverable fatal error, aborting:  
unable to flush /var/lib/dpkg/updates/tmp.i after padding: No space left on device  
E: Sub-process /usr/bin/dpkg returned an error code (2)  
root@ubuntu:~# 
```

Já o comando “apt upgrade” mantém atualizações de segurança sempre instaladas, visto que a cada semana as mesmas surgem.

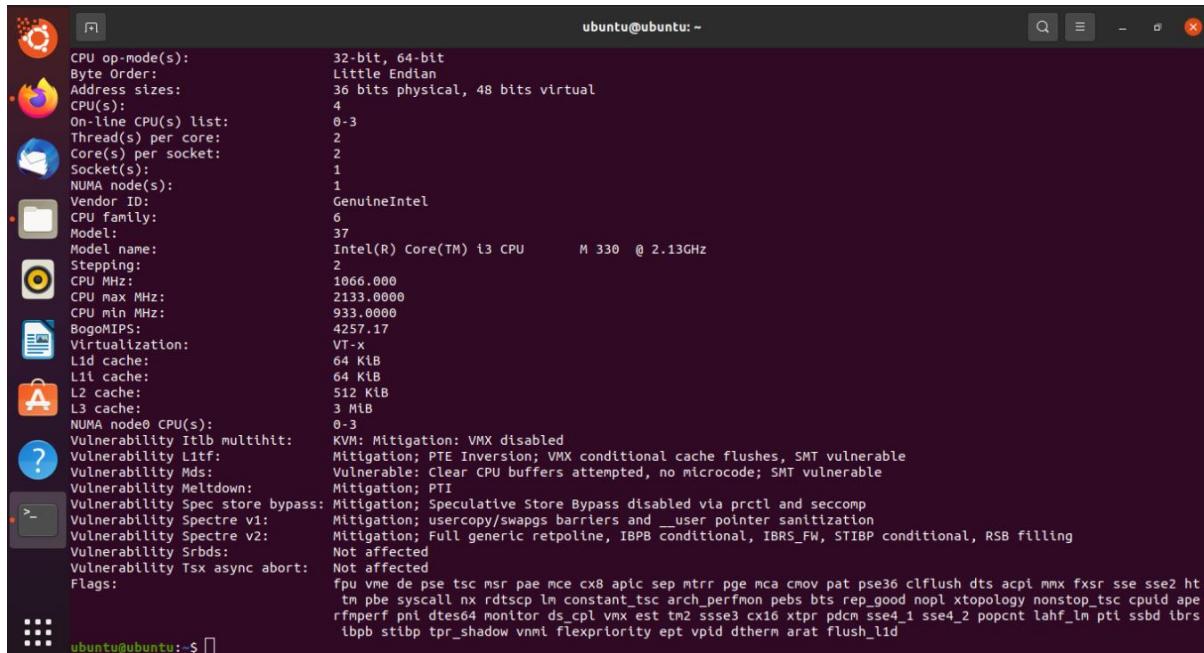
Capítulo 14 - Verificando Configuração de Hardware e Software



A screenshot of an Ubuntu desktop environment. In the top-left corner, there's a dock with icons for Dash, Home, Applications, and Help. The main window is a terminal window titled "ubuntu@ubuntu: ~". It displays several commands and their outputs:

```
ubuntu@ubuntu:~$ uname -a
Linux ubuntu 5.11.0-27-generic #29~20.04.1-Ubuntu SMP Wed Aug 11 15:58:17 UTC 2021 x86_64 x86_64 x86_64 GNU/Linux
ubuntu@ubuntu:~$ uname -s
Linux
ubuntu@ubuntu:~$ uname -n
ubuntu
ubuntu@ubuntu:~$ uname -r
5.11.0-27-generic
ubuntu@ubuntu:~$ uname -v
#29~20.04.1-Ubuntu SMP Wed Aug 11 15:58:17 UTC 2021
ubuntu@ubuntu:~$ head -n1 /etc/issue
Ubuntu 20.04.3 LTS \n \l
ubuntu@ubuntu:~$ lscpu
Architecture:           x86_64
CPU op-mode(s):        32-bit, 64-bit
Byte Order:             Little Endian
Address sizes:          36 bits physical, 48 bits virtual
CPU(s):                4
On-line CPU(s) list:   0-3
Thread(s) per core:    2
Core(s) per socket:    2
Socket(s):              1
NUMA node(s):           1
Vendor ID:              GenuineIntel
CPU family:             6
Model:                 37
Model name:             Intel(R) Core(TM) i3 CPU       M 330 @ 2.13GHz
Stepping:               2
CPU MHz:                1066.000
CPU max MHz:            2133.0000
CPU min MHz:            933.0000
BogoMIPS:               4257.17
Virtualization:         VT-x
L1d cache:              64 Kib
L1i cache:              64 Kib
L2 cache:                512 Kib
L3 cache:                3 MiB
NUMA node0 CPU(s):      0-3
```

O comando “uname” e suas variações exibem informações a respeito do S.O. Para mais informações sobre distribuições do sistema é possível via diretório /etc/issue. O comando “lscpu” lista informações sobre o processador.



A screenshot of an Ubuntu desktop environment, similar to the previous one. The terminal window shows more detailed processor information and vulnerability mitigations:

```
ubuntu@ubuntu:~$ lscpu
CPU op-mode(s):        32-bit, 64-bit
Byte Order:             Little Endian
Address sizes:          36 bits physical, 48 bits virtual
CPU(s):                4
On-line CPU(s) list:   0-3
Thread(s) per core:    2
Core(s) per socket:    2
Socket(s):              1
NUMA node(s):           1
Vendor ID:              GenuineIntel
CPU family:             6
Model:                 37
Model name:             Intel(R) Core(TM) i3 CPU       M 330 @ 2.13GHz
Stepping:               2
CPU MHz:                1066.000
CPU max MHz:            2133.0000
CPU min MHz:            933.0000
BogoMIPS:               4257.17
Virtualization:         VT-x
L1d cache:              64 Kib
L1i cache:              64 Kib
L2 cache:                512 Kib
L3 cache:                3 MiB
NUMA node0 CPU(s):      0-3
Vulnerability Itlb multithit: KVM: Mitigation: VMX disabled
Vulnerability L1tf:      Mitigation; PTE Inversion; VMX conditional cache flushes, SMT vulnerable
Vulnerability Mds:       Vulnerable: Clear CPU buffers attempted, no microcode; SMT vulnerable
Vulnerability Meltdown:  Mitigation; PTI
Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via prctl and seccomp
Vulnerability Spectre v1: Mitigation; usercopy/swaps barriers and __user pointer sanitization
Vulnerability Spectre v2: Mitigation; Full generic Retpoline, IBRS_FW, STIBP conditional, RSB filling
Vulnerability Srbds:     Not affected
Vulnerability Tsx async abort: Not affected
Flags:                  fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36 clflush dts acpi mmx fxsr sse sse2 ht tm pbe syscall nx rdtsvp lm constant_tsc arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid ape rmpfperf pni dtes64 monitor ds_cpl vmx est tn2 ssse3 cx16 xtrp pdcm sse4_1 sse4_2 popcnt lahf_lm pt1 ssbd tbrs ibpb stibp tpr_shadow vnmi flexpriority ept vpid dtherm arat flush_lid
```

```

ubuntu@ubuntu:~$ lsusb
Bus 002 Device 007: ID 0101:0007
Bus 002 Device 002: ID 8087:0020 Intel Corp. Integrated Rate Matching Hub
Bus 002 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 001 Device 004: ID 050f:6387 Alcor Micro Corp. Flash Drive
Bus 001 Device 003: ID 064e:a219 Suyin Corp. 1.3M Webcam (notebook emachines E730, Acer sub-brand)
Bus 001 Device 002: ID 8087:0020 Intel Corp. Integrated Rate Matching Hub
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
ubuntu@ubuntu:~$ lspci
00:00.0 Host bridge: Intel Corporation Core Processor DRAM Controller (rev 12)
00:02.0 VGA compatible controller: Intel Corporation Core Processor Integrated Graphics Controller (rev 12)
00:16.0 Communication controller: Intel Corporation 5 Series/3400 Series Chipset HECI Controller (rev 06)
00:1a.0 USB controller: Intel Corporation 5 Series/3400 Series Chipset USB2 Enhanced Host Controller (rev 05)
00:1b.0 Audio device: Intel Corporation 5 Series/3400 Series Chipset High Definition Audio (rev 05)
00:1c.0 PCI bridge: Intel Corporation 5 Series/3400 Series Chipset PCI Express Root Port 1 (rev 05)
00:1c.5 PCI bridge: Intel Corporation 5 Series/3400 Series Chipset PCI Express Root Port 6 (rev 05)
00:1d.0 USB controller: Intel Corporation 5 Series/3400 Series Chipset USB2 Enhanced Host Controller (rev 05)
00:1e.0 PCI bridge: Intel Corporation 82801 Mobile PCI Bridge (rev a5)
00:1f.0 ISA bridge: Intel Corporation HM55 Chipset LPC Interface Controller (rev 05)
00:1f.2 SATA controller: Intel Corporation 5 Series/3400 Series Chipset 4 port SATA AHCI Controller (rev 05)
00:1f.3 SMBus: Intel Corporation 5 Series/3400 Series Chipset SMBus Controller (rev 05)
00:1f.6 Signal processing controller: Intel Corporation 5 Series/3400 Series chipset Thermal Subsystem (rev 05)
00:00.0 Ethernet controller: Qualcomm Atheros AR8151 v1.0 Gigabit Ethernet (rev c0)
02:00.0 Network controller: Qualcomm Atheros AR928X Wireless Network Adapter (PCI-Express) (rev 01)
7f:00.0 Host bridge: Intel Corporation Core Processor QuickPath Architecture Generic Non-core Registers (rev 02)
7f:00.1 Host bridge: Intel Corporation Core Processor QuickPath Architecture System Address Decoder (rev 02)
7f:02.0 Host bridge: Intel Corporation Core Processor QPI Link 0 (rev 02)
7f:02.1 Host bridge: Intel Corporation 1st Generation Core i3/5/7 Processor QPI Physical 0 (rev 02)
7f:02.2 Host bridge: Intel Corporation 1st Generation Core i3/5/7 Processor Reserved (rev 02)
7f:02.3 Host bridge: Intel Corporation 1st Generation Core i3/5/7 Processor Reserved (rev 02)
ubuntu@ubuntu:~$ lsblk
NAME MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
loop0 7:0 0 2G 1 loop /rofs
loop1 7:1 0 55.4M 1 loop /snap/core18/2128
loop2 7:2 0 219M 1 loop /snap/gnome-3-34-1804/72
loop3 7:3 0 65.1M 1 loop /snap/gtk-common-themes/1515
loop4 7:4 0 51M 1 loop /snap/snap-store/547
loop5 7:5 0 32.3M 1 loop /snap/snapd/12704
sda 8:0 0 465.8G 0 disk
  |-sda1 8:1 0 100M 0 part
  |-sda2 8:2 0 156.2G 0 part
  |-sda3 8:3 0 309.5G 0 part
  sdb 8:16 1 29G 0 disk
    |-sdb1 8:17 1 2.9G 0 part /cdrom
    |-sdb2 8:18 1 3.9M 0 part
    sdb3 8:19 1 26.2G 0 part /var/crash
sr0 11:0 1 1024M 0 rom
ubuntu@ubuntu:~$ 
```

O comando “lsusb” lista informações sobre as portas usb presentes na máquina e o que está conectado a cada uma. Já pelo comando “lspci” podemos ler todas as informações disponibilizadas pela pciexpress da máquina, além do componente conectado a mesma.

Já o comando “lsblk” lista todos os dispositivos de bloco da máquina.

```

ubuntu@ubuntu:~$ lsusb
Bus 002 Device 007: ID 0101:0007
Bus 002 Device 002: ID 8087:0020 Intel Corp. Integrated Rate Matching Hub
Bus 002 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 001 Device 004: ID 050f:6387 Alcor Micro Corp. Flash Drive
Bus 001 Device 003: ID 064e:a219 Suyin Corp. 1.3M Webcam (notebook emachines E730, Acer sub-brand)
Bus 001 Device 002: ID 8087:0020 Intel Corp. Integrated Rate Matching Hub
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
ubuntu@ubuntu:~$ lspci
00:00.0 Host bridge: Intel Corporation Core Processor DRAM Controller (rev 12)
00:02.0 VGA compatible controller: Intel Corporation Core Processor Integrated Graphics Controller (rev 12)
00:16.0 Communication controller: Intel Corporation 5 Series/3400 Series Chipset HECI Controller (rev 06)
00:1a.0 USB controller: Intel Corporation 5 Series/3400 Series Chipset USB2 Enhanced Host Controller (rev 05)
00:1b.0 Audio device: Intel Corporation 5 Series/3400 Series Chipset High Definition Audio (rev 05)
00:1c.0 PCI bridge: Intel Corporation 5 Series/3400 Series Chipset PCI Express Root Port 1 (rev 05)
00:1c.5 PCI bridge: Intel Corporation 5 Series/3400 Series Chipset PCI Express Root Port 6 (rev 05)
00:1d.0 USB controller: Intel Corporation 5 Series/3400 Series Chipset USB2 Enhanced Host Controller (rev 05)
00:1e.0 PCI bridge: Intel Corporation 82801 Mobile PCI Bridge (rev a5)
00:1f.0 ISA bridge: Intel Corporation HM55 Chipset LPC Interface Controller (rev 05)
00:1f.2 SATA controller: Intel Corporation 5 Series/3400 Series Chipset 4 port SATA AHCI Controller (rev 05)
00:1f.3 SMBus: Intel Corporation 5 Series/3400 Series Chipset SMBus Controller (rev 05)
00:1f.6 Signal processing controller: Intel Corporation 5 Series/3400 Series chipset Thermal Subsystem (rev 05)
00:00.0 Ethernet controller: Qualcomm Atheros AR8151 v1.0 Gigabit Ethernet (rev c0)
02:00.0 Network controller: Qualcomm Atheros AR928X Wireless Network Adapter (PCI-Express) (rev 01)
7f:00.0 Host bridge: Intel Corporation Core Processor QuickPath Architecture Generic Non-core Registers (rev 02)
7f:00.1 Host bridge: Intel Corporation Core Processor QuickPath Architecture System Address Decoder (rev 02)
7f:02.0 Host bridge: Intel Corporation Core Processor QPI Link 0 (rev 02)
7f:02.1 Host bridge: Intel Corporation 1st Generation Core i3/5/7 Processor QPI Physical 0 (rev 02)
7f:02.2 Host bridge: Intel Corporation 1st Generation Core i3/5/7 Processor Reserved (rev 02)
7f:02.3 Host bridge: Intel Corporation 1st Generation Core i3/5/7 Processor Reserved (rev 02)
ubuntu@ubuntu:~$ lsblk
NAME MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
loop0 7:0 0 2G 1 loop /rofs
loop1 7:1 0 55.4M 1 loop /snap/core18/2128
loop2 7:2 0 219M 1 loop /snap/gnome-3-34-1804/72
loop3 7:3 0 65.1M 1 loop /snap/gtk-common-themes/1515
loop4 7:4 0 51M 1 loop /snap/snap-store/547
loop5 7:5 0 32.3M 1 loop /snap/snapd/12704
sda 8:0 0 465.8G 0 disk
  |-sda1 8:1 0 100M 0 part
  |-sda2 8:2 0 156.2G 0 part
  |-sda3 8:3 0 309.5G 0 part
  sdb 8:16 1 29G 0 disk
    |-sdb1 8:17 1 2.9G 0 part /cdrom
    |-sdb2 8:18 1 3.9M 0 part
    sdb3 8:19 1 26.2G 0 part /var/crash
sr0 11:0 1 1024M 0 rom
ubuntu@ubuntu:~$ 
```

Para verificação das partições de disco basta utilizar o comando “fdisk -l” como administrador.

```
ubuntu@ubuntu:~$ cat /proc/partitions
major minor #blocks name
7       0   2109384 loop0
7       1   56768 loop1
7       2   224256 loop2
7       3   66660 loop3
7       4   52180 loop4
7       5   33072 loop5
8       0  488386584 sda
8       1  102400 sda1
8       2 163737600 sda2
8       3 324544512 sda3
11      0 1048575 sr0
8      16 30434304 sdb
8      17 2999936 sdb1
8      18   4000 sdb2
8      19 27433984 sdb3
ubuntu@ubuntu:~$ sudo fdisk -l
Disk /dev/loop0: 2.1 GiB, 2160009216 bytes, 4218768 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/loop1: 55.45 MiB, 58130432 bytes, 113536 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/loop2: 219 MiB, 229638144 bytes, 448512 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/loop3: 65.1 MiB, 68259840 bytes, 133320 sectors
```

```
I/O size (minimum/optimal): 512 bytes / 512 bytes

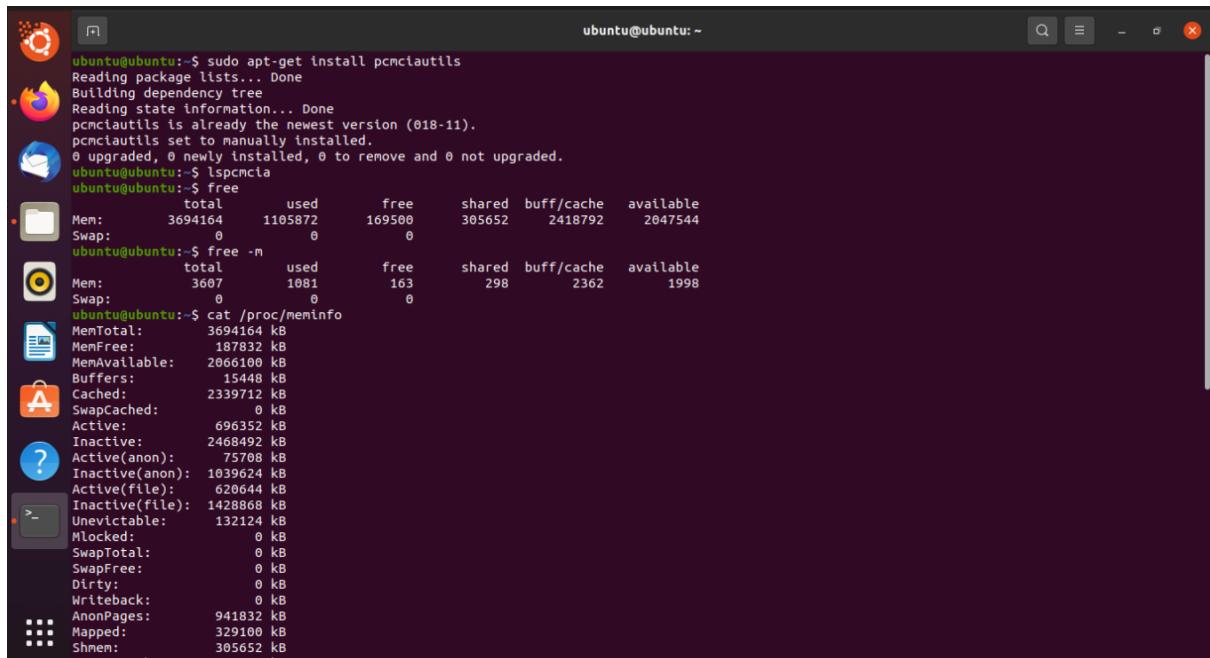
Disk /dev/loop5: 32.3 MiB, 33865728 bytes, 66144 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/sda: 465.78 GiB, 500107862016 bytes, 976773168 sectors
Disk model: WDC WD5000BEVT-2
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0x8eb16ee9

Device     Boot   Start     End   Sectors   Size Id Type
/dev/sda1    *      2048  206847   204800  100M  7 HPFS/NTFS/exFAT
/dev/sda2        206848 327682047 327475200 156.2G  7 HPFS/NTFS/exFAT
/dev/sda3        327682048 976771071 649089024 309.5G  7 HPFS/NTFS/exFAT

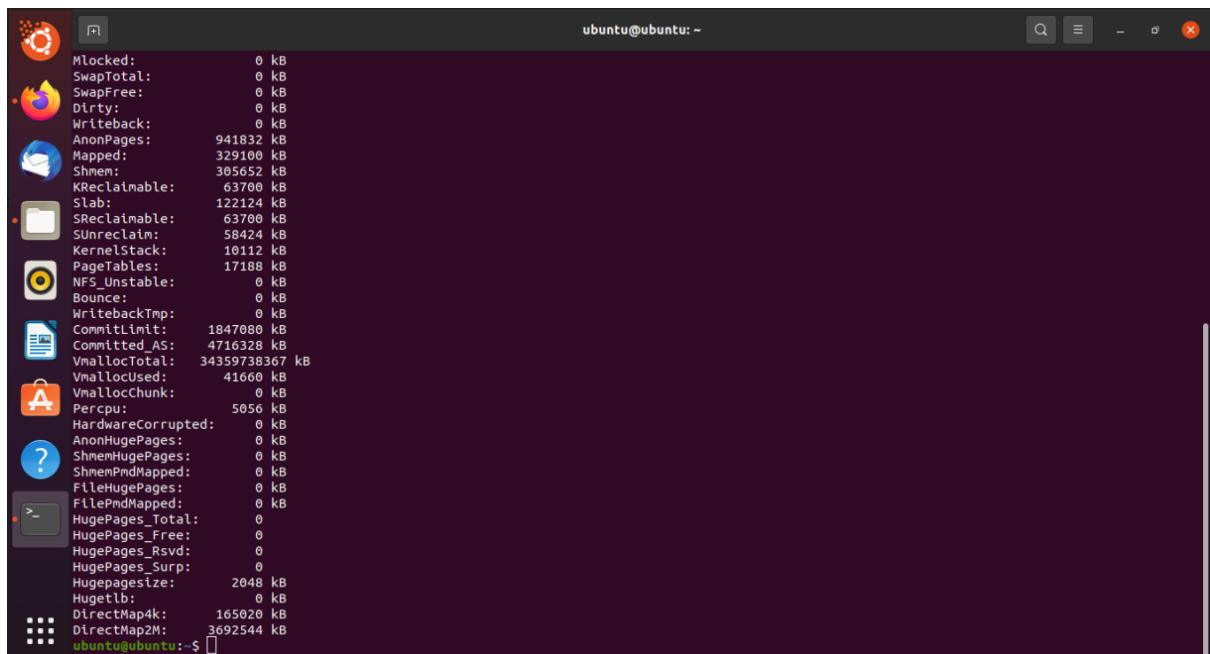
Disk /dev/sdb: 29.3 GiB, 31164727296 bytes, 60868608 sectors
Disk model: Flash Disk
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0x2cf4ba3a

Device     Boot   Start     End   Sectors   Size Id Type
/dev/sdb1    *          0 5999871  5999872 2.9G  0 Empty
/dev/sdb2        5271500 5279499   8000  3.9M ef EFI (FAT-12/16/32)
/dev/sdb3        6000640 60868667 54867968 26.2G 83 Linux
ubuntu@ubuntu:~$
```

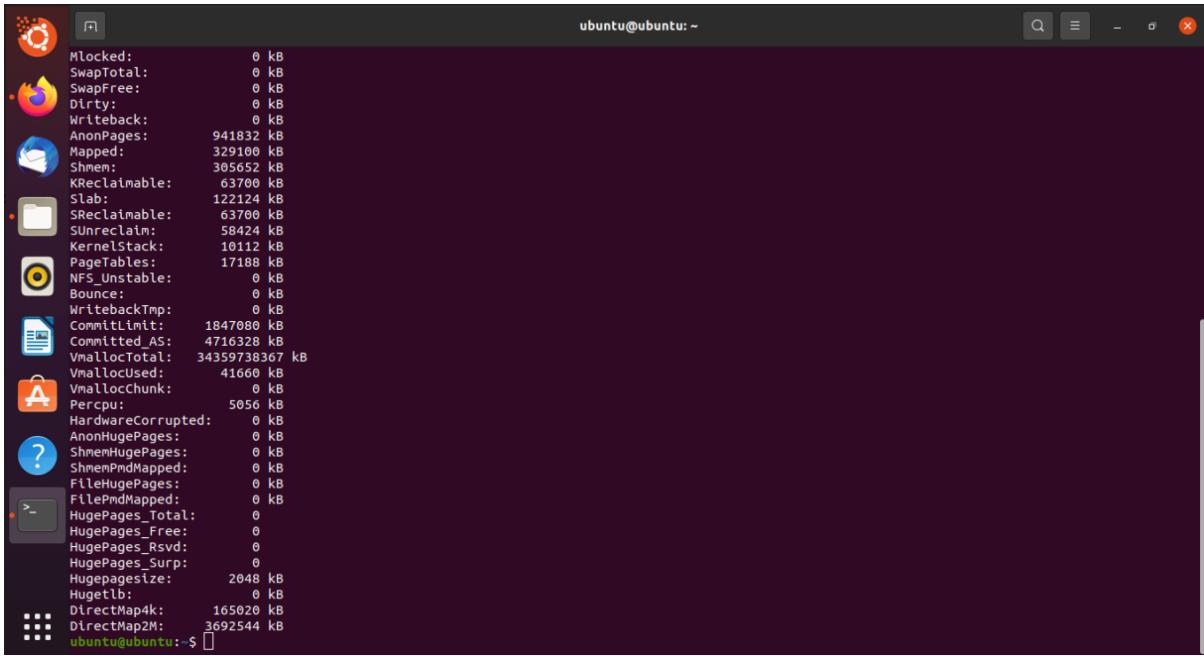


```
ubuntu@ubuntu:~$ sudo apt-get install pcmciautils
Reading package lists... Done
Building dependency tree
Reading state information... Done
pcmciautils is already the newest version (018-11).
pcmciautils set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
ubuntu@ubuntu:~$ lspcmcia
ubuntu@ubuntu:~$ free -m
total        used        free      shared  buff/cache   available
Mem:    3694164     1105872    169500    305652    2418792    2047544
Swap:      0          0         0
ubuntu@ubuntu:~$ free -m
total        used        free      shared  buff/cache   available
Mem:    3607       1081       163     298     2362       1998
Swap:      0          0         0
ubuntu@ubuntu:~$ cat /proc/meminfo
MemTotal:       3694164 kB
MemFree:        187032 kB
MemAvailable:   2066100 kB
Buffers:        15448 kB
Cached:         2339712 kB
SwapCached:      0 kB
Active:         696352 kB
Inactive:       2468492 kB
Active(anon):   75708 kB
Inactive(anon): 1039624 kB
Active(file):   620644 kB
Inactive(file): 1428868 kB
Unevictable:    132124 kB
Mlocked:        0 kB
SwapTotal:      0 kB
SwapFree:       0 kB
Dirty:          0 kB
Writeback:      0 kB
AnonPages:      941832 kB
Mapped:         329100 kB
Shmem:          305652 kB
```

Para listar dispositivos compatíveis com o PCMCIA basta digitar o comando “lspcmcia”, este necessita ser instalado via pacote “pcmciautils”. O comando “free” e suas variações exibem informações sobre memória do computador, essas informações também podem ser acessar via comando “lsmem”.

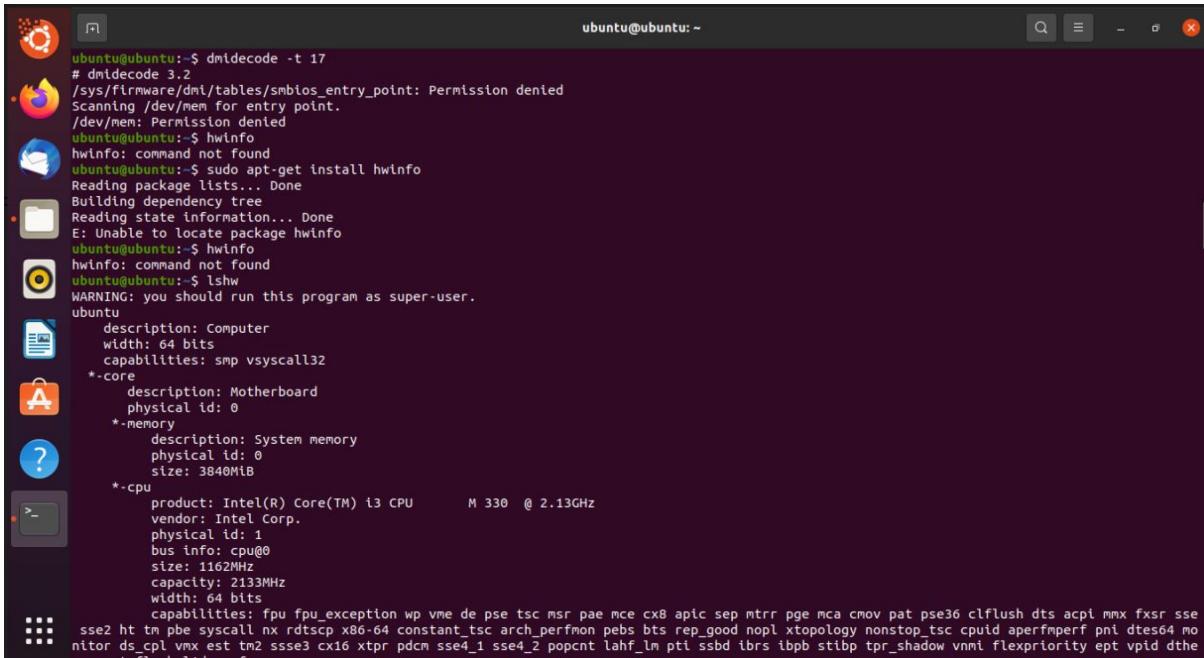


```
ubuntu@ubuntu:~$ lsmem
Mlocked:          0 kB
SwapTotal:        0 kB
SwapFree:         0 kB
Dirty:            0 kB
Writeback:        0 kB
AnonPages:        941832 kB
Mapped:           329100 kB
Shmem:            305652 kB
KReclaimable:    63700 kB
Slab:             122124 kB
SReclaimable:    63700 kB
SUreclaim:        58424 kB
KernelStack:      10112 kB
PageTables:       17188 kB
NFs_Unstable:    0 kB
Bounce:           0 kB
WritebackTmp:     0 kB
CommitLimit:     1847080 kB
Committed_AS:    4716328 kB
VmallocTotal:    34359738367 kB
VmallocUsed:     41666 kB
VmallocChunk:     0 kB
Percpu:           5056 kB
HardwareCorrupted: 0 kB
AnonHugePages:    0 kB
ShmemHugePages:   0 kB
ShmemPmdMapped:  0 kB
FileHugePages:    0 kB
FilePmdMapped:   0 kB
HugePages_Total:  0
HugePages_Free:   0
HugePages_Rsvd:   0
HugePages_Surp:   0
Hugepagesize:     2048 kB
HugeTLB:          0 kB
DirectMap4k:      165020 kB
DirectMapM:       3692544 kB
ubuntu@ubuntu:~$
```



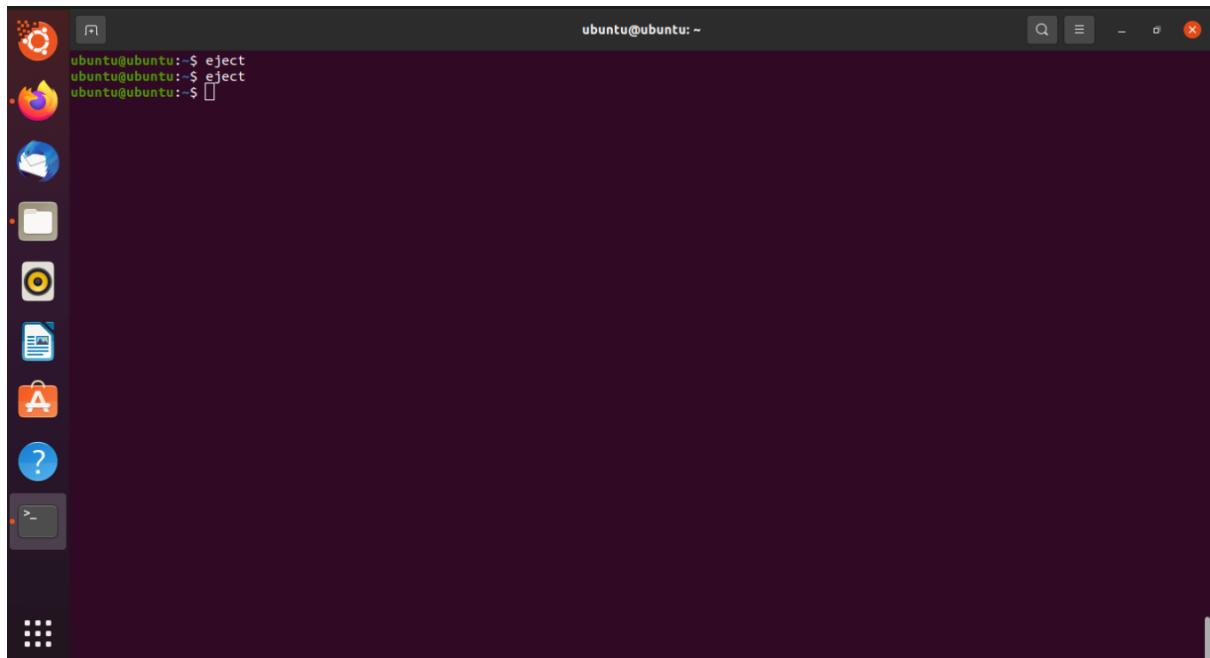
```
ubuntu@ubuntu:~$ free -h
              total        used        free      shared  buff/cache available
Mem:            3.8G       1.1G       2.7G       0.0B       0.0G       1.7G
Swap:          1.0G          0B       1.0G
```

```
ubuntu@ubuntu:~$ cat /proc/meminfo
Mlocked:          0 kB
SwapTotal:        0 kB
SwapFree:         0 kB
Dirty:            0 kB
Writeback:        0 kB
AnonPages:    941832 kB
Mapped:        329106 kB
Shmem:        305652 kB
KReclaimable:   63700 kB
Slab:        122124 kB
SReclaimable:   63700 kB
SUncache:        58424 kB
KernelStack:     10112 kB
PageTables:     17188 kB
NFS_Unstable:    0 kB
Bounce:           0 kB
WritebackTmp:    0 kB
CommitLimit:    1847086 kB
Committed_AS:  4716328 kB
VmallocTotal:  34359738367 kB
VmallocUsed:   41660 kB
VmallocChunk:    0 kB
Percpu:        5056 kB
HardwareCorrupted: 0 kB
AnonHugePages:   0 kB
ShmemHugePages:   0 kB
ShmemPmdMapped:   0 kB
FileHugePages:   0 kB
FilePmdMapped:   0 kB
HugePages_Total:  0
HugePages_Free:   0
HugePages_Rsvd:   0
HugePages_Surp:   0
Hugepagesize:    2048 kB
HugeTLB:          0 kB
DirectMap4k:    165028 kB
DirectMap2M:   3692544 kB
ubuntu@ubuntu:~$
```



```
ubuntu@ubuntu:~$ dmidecode -t 17
# dmidecode 3.2
/sys/firmware/dmi/tables/smbios_entry_point: Permission denied
Scanning /dev/nem for entry point.
/dev/nem: Permission denied
ubuntu@ubuntu:~$ hwinfo
hwinfo: command not found
ubuntu@ubuntu:~$ sudo apt-get install hwinfo
Reading package lists... Done
Building dependency tree
Reading state information... Done
E: Unable to locate package hwinfo
ubuntu@ubuntu:~$ hwinfo
hwinfo: command not found
ubuntu@ubuntu:~$ lshw
WARNING: you should run this program as super-user.
ubuntu
      description: Computer
      width: 64 bits
      capabilities: smp vsyscall32
      *-core
        description: Motherboard
        physical id: 0
        *-memory
          description: System memory
          physical id: 0
          size: 3840MB
      *-cpu
        product: Intel(R) Core(TM) i3 CPU M 330 @ 2.13GHz
        vendor: Intel Corp.
        physical id: 1
        bus info: cpu@0
        size: 1162MHz
        capacity: 2133MHz
        width: 64 bits
        capabilities: fpu fpu_exception wp vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36 clflush dts acpi mmx fxsr sse
        sse2 ht tm pbe syscall nx rdtsvp x86-64 constant_tsc arch_perfmon pebs bts rep_good nopl xttopology nonstop_tsc cpuid aperf mperf pni dtes64 mo
        nitor ds_cpl vmx est tm2 ssse3 cx16 xtpr pdcm sse4_1 sse4_2 popcnt lahf_lm ptl ssbd ibrs ibpb stibp tpr_shadow vnmi flexpriority ept vpid dthe
```

O comando “dmidecode -t 17” lista informações sobre a memória.



O comando “eject” ejeta unidades de CDROMs ou DVDs. Comando bastante divertido por sinal (para aqueles que ainda possuem unidade de CD em sua máquina).