

Sistemas Embarcados II

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Capítulo 1

Neste capítulo, é feita uma breve introdução do Linux e algumas demonstrações de comandos principais, tais como **cd**, **ls**, **pwd**, **cp**, **echo** e **history**.

Figura 1 – Comandos do capítulo 1.

```
rafael@rafael-VirtualBox:/home$ cd rafael
rafael@rafael-VirtualBox:~$ ls
Desktop  Documents  Downloads  Music  Pictures  Public  Templates  teste.txt  Videos
rafael@rafael-VirtualBox:~$ cp -p texto.txt Documents
cp: cannot stat 'texto.txt': No such file or directory
rafael@rafael-VirtualBox:~$ cp -p teste.txt Documents
rafael@rafael-VirtualBox:~$ ls
Desktop  Documents  Downloads  Music  Pictures  Public  Templates  teste.txt  Videos
rafael@rafael-VirtualBox:~$ cd Documents
rafael@rafael-VirtualBox:~/Documents$ ls
teste.txt
rafael@rafael-VirtualBox:~/Documents$ ls -a -l
total 12
drwxr-xr-x  2 rafael rafael 4096 mai 13 10:14 .
drwxr-xr-x 15 rafael rafael 4096 mai 13 10:10 ..
-rw-rw-r--  1 rafael rafael  17 mai 13 10:10 teste.txt
rafael@rafael-VirtualBox:~/Documents$ ls -all
total 12
drwxr-xr-x  2 rafael rafael 4096 mai 13 10:14 .
drwxr-xr-x 15 rafael rafael 4096 mai 13 10:10 ..
-rw-rw-r--  1 rafael rafael  17 mai 13 10:10 teste.txt
rafael@rafael-VirtualBox:~/Documents$ pwd --version
bash: pwd: --: invalid option
pwd: usage: pwd [-LP]
rafael@rafael-VirtualBox:~/Documents$ cd --help
cd: cd [-L|[-P [-e]] [-@]] [dir]
Change the shell working directory.

Change the current directory to DIR. The default DIR is the value of the
HOME shell variable.

The variable CDPATH defines the search path for the directory containing
DIR. Alternative directory names in CDPATH are separated by a colon (:).
A null directory name is the same as the current directory. If DIR begins
with a slash (/), then CDPATH is not used.

If the directory is not found, and the shell option 'cdable_vars' is set,
the word is assumed to be a variable name. If that variable has a value,
its value is used for DIR.

Options:
-L      force symbolic links to be followed: resolve symbolic
        links in DIR after processing instances of '..'
-P      use the physical directory structure without following
        symbolic links: resolve symbolic links in DIR before
        processing instances of '..'
-e      if the -P option is supplied, and the current working
        directory cannot be determined successfully, exit with
        a non-zero status
-@      on systems that support it, present a file with extended
        attributes as a directory containing the file attributes

The default is to follow symbolic links, as if '-L' were specified.
'..' is processed by removing the immediately previous pathname component
back to a slash or the beginning of DIR.

Exit Status:
Returns 0 if the directory is changed, and if $PWD is set successfully when
-P is used; non-zero otherwise.
rafael@rafael-VirtualBox:~/Documents$
```

```

rafael@rafael-VirtualBox:~/Documents$ echo $SHELL
/bin/bash
rafael@rafael-VirtualBox:~/Documents$ 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
rafael@rafael-VirtualBox:~/Documents$ echo teste
teste
rafael@rafael-VirtualBox:~/Documents$ echo -e "teste \n teste"
teste
teste
rafael@rafael-VirtualBox:~/Documents$ history
1 cd
2 cd /
3 cd
4 ls
5 sudo apt install google chrome
6 git init
7 su -
8 passwd
9 passwd
10 su -
11 passwd
12 ls
13 ls -LF
14 ls
15 ls -LF
16 cd
17 cd ..
18 pwd
19 cp -p texto.txt /Documents
20 cp -p teste.txt /Documents
21 ls
22 cd /rafael
23 /rafael
24 cd rafael
25 ls
26 cp -p texto.txt Documents
27 cp -p teste.txt Documents
28 ls
29 cd Documents
30 ls
31 clear
32 ls -a -l
36 ls --version
37 clear
38 ls -a -l
39 ls -all
40 pwd --version
41 cd --help
42 echo $SHELL
43 cat /etc/shells
44*
45 echo -e "teste \n teste"
46 history
rafael@rafael-VirtualBox:~/Documents$ history | grep sshd
47 history | grep sshd
rafael@rafael-VirtualBox:~/Documents$ history -c
rafael@rafael-VirtualBox:~/Documents$ history
1 history
rafael@rafael-VirtualBox:~/Documents$ histsize
histsize: command not found
rafael@rafael-VirtualBox:~/Documents$ echo $HISTSIZE
1000
rafael@rafael-VirtualBox:~/Documents$ HISTSIZE
HISTSIZE: command not found
rafael@rafael-VirtualBox:~/Documents$ export HISTSIZE = 20
bash: export: `=': not a valid identifier
bash: export: `20': not a valid identifier
rafael@rafael-VirtualBox:~/Documents$ export HISTSIZE=20
rafael@rafael-VirtualBox:~/Documents$ echo $HISTSIZE
20
rafael@rafael-VirtualBox:~/Documents$ su -
Password:
su: Authentication failure
rafael@rafael-VirtualBox:~/Documents$ sudo apt install vim
[sudo] password for rafael:
Sorry, try again.
[sudo] password for rafael:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  vim-runtime
Suggested packages:
  ctags vim-doc vim-scripts
The following NEW packages will be installed:
  vim vim-runtime
0 upgraded, 2 newly installed, 0 to remove and 145 not upgraded.
Need to get 7.110 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.

```

Capítulo 2

No segundo capítulo, os comandos apresentados são voltados ao desligamento e logout do sistema. Alguns principais comandos que fiz uso está na imagem a seguir.

Figura 2 – Comandos do capítulo 2.

```

rafael@rafael-VirtualBox:~$ shutdown -h +3
Shutdown scheduled for Fri 2022-05-13 10:51:38 -03, use 'shutdown -c' to cancel.
rafael@rafael-VirtualBox:~$ shutdown -c
rafael@rafael-VirtualBox:~$ █

```

Capítulo 3

No capítulo 3, os comandos de navegação e operação em diretórios são apresentados. São esses: **cd**, **ls**, **pwd**, **cp**, **touch**, **rm**, **mkdir**, **rmdir**, **cat** e **ln**.

Figura 3 – Comandos do capítulo 3.

```
rafael@rafael-VirtualBox:~$ ls -s
total 36
4 Desktop 4 Documents 4 Downloads 4 Music 4 Pictures 4 Public 4 Templates 4 teste.txt 4 Videos
rafael@rafael-VirtualBox:~$ ls -alF
total 108
drwxr-xr-x 15 raphael raphael 4096 mai 13 10:47 ./
drwxr-xr-x 3 root root 4096 mai 10 18:04 ../
-rw-r--r-- 1 raphael raphael 271 mai 13 10:47 .bash_history
-rw-r--r-- 1 raphael raphael 220 mai 10 18:04 .bash_logout
-rw-r--r-- 1 raphael raphael 3771 mai 10 18:04 .bashrc
drwxr-xr-x 12 raphael raphael 4096 mai 13 10:47 .cache/
drwxr-xr-x 12 raphael raphael 4096 mai 13 10:10 .config/
drwxr-xr-x 2 raphael raphael 4096 mai 13 10:08 Desktop/
drwxr-xr-x 2 raphael raphael 4096 mai 13 10:14 Documents/
drwxr-xr-x 2 raphael raphael 4096 mai 10 18:22 Downloads/
drwx----- 3 raphael raphael 4096 mai 10 18:22 .gnupg/
-rw-r--r-- 1 raphael raphael 0 mai 10 18:22 .ICEauthority
drwxr-xr-x 3 raphael raphael 4096 mai 10 18:22 .local/
drwx----- 4 raphael raphael 4096 mai 10 18:41 .mozilla/
drwxr-xr-x 2 raphael raphael 4096 mai 10 18:22 Music/
drwxr-xr-x 2 raphael raphael 4096 mai 10 18:22 Pictures/
-rw-r--r-- 1 raphael raphael 807 mai 10 18:04 .profile
drwxr-xr-x 2 raphael raphael 4096 mai 10 18:22 Public/
-rw-r--r-- 1 raphael raphael 0 mai 10 18:40 .sudo_as_admin_successful
drwxr-xr-x 2 raphael raphael 4096 mai 10 18:22 Templates/
-rw-rw-r-- 1 raphael raphael 17 mai 13 10:10 teste.txt
drwxr-xr-x 2 raphael raphael 4096 mai 10 18:22 Videos/
-rw-r--r-- 1 raphael raphael 62 mai 13 10:47 .Xauthority
-rw-r--r-- 1 raphael raphael 1600 mai 10 18:04 .Xdefaults
-rw-r--r-- 1 raphael raphael 14 mai 10 18:04 .xscreensaver
-rw-r--r-- 1 raphael raphael 7839 mai 13 11:01 .xsession-errors
-rw-r--r-- 1 raphael raphael 7867 mai 13 10:47 .xsession-errors.old
rafael@rafael-VirtualBox:~$ ls -ld /usr/
drwxr-xr-x 14 root root 4096 fev 23 05:48 /usr/

rafael@rafael-VirtualBox:~$ ls -ld /usr/
drwxr-xr-x 14 root root 4096 fev 23 05:48 /usr/
rafael@rafael-VirtualBox:~$ ls -R
.:
Desktop Documents Downloads Music Pictures Public Templates teste.txt Videos
./Desktop:
exo-terminal-emulator.desktop
./Documents:
teste.txt
./Downloads:
./Music:
./Pictures:
./Public:
./Templates:
'OpenDocument Spreadsheet.ods' 'OpenDocument Text.odt' 'Plain Text.txt'
./Videos:
rafael@rafael-VirtualBox:~$ cd Documents
rafael@rafael-VirtualBox:~/Documents$ ls
teste.txt
rafael@rafael-VirtualBox:~/Documents$ cd ..
rafael@rafael-VirtualBox:~$ pwd
/home/rafael

rafael@rafael-VirtualBox:~$ ls
Desktop Documents Downloads Music Pictures Public Templates teste.txt Videos
rafael@rafael-VirtualBox:~$ cp /home/rafael/teste.txt /home/rafael/Documents
rafael@rafael-VirtualBox:~$ cd Documents
rafael@rafael-VirtualBox:~/Documents$ ls
teste.txt
rafael@rafael-VirtualBox:~/Documents$
```

```

rafael@rafael-VirtualBox:~/Documents$ cd ..
rafael@rafael-VirtualBox:~$ cp -r /home/rafael/Music /home/rafael/Videos /home/rafael/Downloads
rafael@rafael-VirtualBox:~$
rafael@rafael-VirtualBox:~$ cd Downloads
rafael@rafael-VirtualBox:~/Downloads$ ls
Music  Videos
rafael@rafael-VirtualBox:~/Downloads$

```

```

rafael@rafael-VirtualBox:~$
rafael@rafael-VirtualBox:~$ mv teste.txt arquivo.txt
rafael@rafael-VirtualBox:~$ ls
arquivo.txt  Desktop  Documents  Downloads  Music  Pictures  Public  Templates  Videos
rafael@rafael-VirtualBox:~$ touch teste.txt
rafael@rafael-VirtualBox:~$ ls
arquivo.txt  Desktop  Documents  Downloads  Music  Pictures  Public  Templates  teste.txt  Videos
rafael@rafael-VirtualBox:~$ temporario=$(mktemp)
rafael@rafael-VirtualBox:~$ ls
arquivo.txt  Desktop  Documents  Downloads  Music  Pictures  Public  Templates  teste.txt  Videos
rafael@rafael-VirtualBox:~$ echo $temporario
/tmp/tmp.QPTKgFXPLK
rafael@rafael-VirtualBox:~$ rm teste.txt
rafael@rafael-VirtualBox:~$ ls
arquivo.txt  Desktop  Documents  Downloads  Music  Pictures  Public  Templates  Videos
rafael@rafael-VirtualBox:~$ touch teste.txt
rafael@rafael-VirtualBox:~$ ls
arquivo.txt  Desktop  Documents  Downloads  Music  Pictures  Public  Templates  teste.txt  Videos
rafael@rafael-VirtualBox:~$ rm *.txt
rafael@rafael-VirtualBox:~$ ls
Desktop  Documents  Downloads  Music  Pictures  Public  Templates  Videos
rafael@rafael-VirtualBox:~$ rm -r Videos
rafael@rafael-VirtualBox:~$ ls
Desktop  Documents  Downloads  Music  Pictures  Public  Templates
rafael@rafael-VirtualBox:~$ mkdir Videos
rafael@rafael-VirtualBox:~$ ls
Desktop  Documents  Downloads  Music  Pictures  Public  Templates  Videos
rafael@rafael-VirtualBox:~$ rmdir Videos
rafael@rafael-VirtualBox:~$ ls
Desktop  Documents  Downloads  Music  Pictures  Public  Templates
rafael@rafael-VirtualBox:~$ mkdir -p Videos/video1
rafael@rafael-VirtualBox:~$ cd Videos
rafael@rafael-VirtualBox:~/Videos$ ls
video1
rafael@rafael-VirtualBox:~/Videos$ cd ..
rafael@rafael-VirtualBox:~$ ls
Desktop  Documents  Downloads  Music  Pictures  Public  Templates  Videos
rafael@rafael-VirtualBox:~$ touch teste.txt
rafael@rafael-VirtualBox:~$ ln -s teste.txt link
rafael@rafael-VirtualBox:~$ cat link
rafael@rafael-VirtualBox:~$ echo 'rafael' >> teste.txt
rafael@rafael-VirtualBox:~$ cat link
rafael
rafael@rafael-VirtualBox:~$ ln teste.txt hard-link
ln: failed to access 'teste.txt': No such file or directory
rafael@rafael-VirtualBox:~$ ln teste.txt hard-link
rafael@rafael-VirtualBox:~$ cat hard-link
rafael
rafael@rafael-VirtualBox:~$

```

Capítulo 4

O capítulo 4 foca nos comandos de edição de texto. São eles: **echo**, **cat**, **cut**, **seq**, **expand**, **tr**, **fmt**, **fold**, **grep**, **egrep**, **fgrep**, **head**, **tail**, **file**, **iconv**, **look**, **more**, **nl**, **paste**, **rev**, **sort**, **uniq** e **wc**.

Figura 4 – Comandos do capítulo 4.

```
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ echo 'hello world'
hello world
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ echo 'rafael' > teste.txt
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ cat teste.txt
rafael
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ echo 'dias pereira' > teste2.txt
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ cat teste.txt teste2.txt
rafael
dias pereira
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ echo 'rafael dias pereira' | cut -c 1-6
rafael
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ seq 5 2 11
5
7
9
11
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ tr 'a-z' 'A-Z' < teste.txt
RAFAEL
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ fmt -w2 teste.txt
rafael
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ fmt -w2 teste2.txt
dias
pereira
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ fold -w2 teste.txt
ra
fa
el
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ cat teste2.txt | grep dias
dias pereira
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ dmesg | egrep "firmware|amd"
[ 0.000000] Linux version 5.13.0-41-generic (buildd@lcy02-amd64-017) (gcc (Ubuntu 9.4.0-1ubuntu1~20.04.1) 9.4.0, GNU ld (GNU Bin
utils for Ubuntu) 2.34) #46~20.04.1-Ubuntu SMP Wed Apr 20 13:16:21 UTC 2022 (Ubuntu 5.13.0-41.46~20.04.1-generic 5.13.19)
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ dmesg | fgrep "@"
[ 0.000000] Linux version 5.13.0-41-generic (buildd@lcy02-amd64-017) (gcc (Ubuntu 9.4.0-1ubuntu1~20.04.1) 9.4.0, GNU ld (GNU Bin
utils for Ubuntu) 2.34) #46~20.04.1-Ubuntu SMP Wed Apr 20 13:16:21 UTC 2022 (Ubuntu 5.13.0-41.46~20.04.1-generic 5.13.19)
[ 0.203900] pps_core: Software ver. 5.3.6 - Copyright 2005-2007 Rodolfo Giometti <giometti@linux.it>
[ 0.525801] device-mapper: ioctl: 4.45.0-ioctl (2021-03-22) initialised: dm-devel@redhat.com
[ 0.776777] ata3: SATA max UDMA/133 abar m8192@0xf0806000 port 0xf0806100 irq 21
[ 2.300000] systemd[1]: modprobe@drm.service: Succeeded.
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ head -1 teste2.txt
dias pereira
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ fold -w2 teste.txt > teste3.txt
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ tail -1 teste3.txt
el
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ file teste3.txt
teste3.txt: ASCII text
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ iconv -f iso-8859-1 -t utf-8 teste3.txt > teste4.txt
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ file teste4.txt
teste4.txt: ASCII text
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ look ra teste3.txt
ra
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ nl teste3.txt
1 ra
2 fa
3 el
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ paste teste3.txt seq 1 3
paste: seq: No such file or directory
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ seq 1 3 > teste4.txt
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ paste teste3.txt teste4.txt
ra 1
fa 2
el 3
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ rev teste.txt
leafar
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ sort teste3.txt
el
fa
ra
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ sort /usr/share/dict/words | uniq | wc -w
102401
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ wc teste3.txt
3 3 9 teste3.txt
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$
```

Capítulo 5

Neste capítulo, é estudado os comandos de sistema do Linux. São vistos os comandos **compugen, whoami, pwd, id, passwd, finger, free, su, uname, uptime, version, PATH, timeout, w, whereis, locate, witch, whatis, who** e **emacs**.

Figura 5 – Comandos do capítulo 5.

```
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ whoami
rafael
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ pwd
/home/rafael/Documents/semb2/Semana01
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ id
uid=1000(rafael) gid=1000(rafael) groups=1000(rafael),4(adm),24(cdrom),27(sudo),30(dip),46(plugdev),121(lpadmin),131
(lxd),132(sambashare)
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ passwd
Changing password for raphael.
Current password:
New password:
Retype new password:

rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ users
rafael
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ sudo apt install finger
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following package was automatically installed and is no longer required:
  libfwupdplugin1
Use 'sudo apt autoremove' to remove it.
The following NEW packages will be installed:
  finger
0 upgraded, 1 newly installed, 0 to remove and 4 not upgraded.
Need to get 16,9 kB of archives.
After this operation, 51,2 kB of additional disk space will be used.
Get:1 http://br.archive.ubuntu.com/ubuntu focal/universe amd64 finger amd64 0.17-17 [16,9 kB]
Fetched 16,9 kB in 0s (143 kB/s)
Selecting previously unselected package finger.
(Reading database ... 201792 files and directories currently installed.)
Preparing to unpack .../finger_0.17-17_amd64.deb ...
Unpacking finger (0.17-17) ...
Setting up finger (0.17-17) ...
Processing triggers for man-db (2.9.1-1) ...
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ finger raphael
Login: raphael                Name: raphael
Directory: /home/rafael      Shell: /bin/bash
On since Thu May 19 19:23 (-03) on tty7 from :0
    53 minutes 32 seconds idle
No mail.
No Plan.
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ free
              total        used        free      shared  buff/cache   available
Mem:      2980072      490764      1534052        1796       955256      2308460
Swap:      2440188           0       2440188

rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ su
Password:
12332su: Authentication failure
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ uname -s
Linux
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ uname -r
5.13.0-41-generic
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ uname -m
x86_64
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ uname -n
rafael-VirtualBox
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ uname -a
Linux raphael-VirtualBox 5.13.0-41-generic #46-20.04.1-Ubuntu SMP Wed Apr 20 13:16:21 UTC 2022 x86_64 x86_64 x86_64 GNU/Linux
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ uptime
 20:18:46 up 55 min,  1 user,  load average: 0,02, 0,03, 0,00
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ 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.
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ echo $PATH
/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr/local/games:/snap/bin
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ timeout 5 ping felt.ufu.br
ping: felt.ufu.br: No address associated with hostname
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ timeout 5 ping www.felt.ufu.br
PING vegeta.dr.ufu.br (200.19.145.56) 56(84) bytes of data.
64 bytes from vegeta.dr.ufu.br (200.19.145.56): icmp_seq=1 ttl=50 time=30.7 ms
```

```

rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ w
 20:22:56 up 59 min,  1 user,  load average: 0,06, 0,05, 0,00
USER      TTY      FROM          LOGIN@   IDLE   JCPU   PCPU WHAT
rafael    tty7      :0            19:23   59:11  25.86s 0.24s xfce4-session
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ whereis gcc
gcc: /usr/bin/gcc /usr/lib/gcc /usr/share/gcc /usr/share/man/man1/gcc.1.gz
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ locate passwd
/etc/passwd
/etc/passwd-
/etc/pam.d/chpasswd
/etc/pam.d/passwd
/etc/security/opasswd
/usr/bin/gpasswd
/usr/bin/grub-mkpasswd-pbkdf2
/usr/bin/passwd
/usr/include/rpcsvc/yppasswd.h
/usr/include/rpcsvc/yppasswd.x
/usr/lib/libreoffice/share/config/soffice.cfg/svx/ui/passwd.ui
/usr/lib/tmpfiles.d/passwd.conf
/usr/lib/x86_64-linux-gnu/samba/libsmbpasswdparser.so.0
/usr/sbin/chgpasswd
/usr/sbin/chpasswd
/usr/sbin/update-passwd
/usr/share/base-passwd
/usr/share/base-passwd/group.master
/usr/share/base-passwd/passwd.master
/usr/share/bash-completion/completions/chpasswd
/usr/share/bash-completion/completions/gpasswd
/usr/share/bash-completion/completions/grub-mkpasswd-pbkdf2
/usr/share/bash-completion/completions/htpasswd
/usr/share/bash-completion/completions/ldappasswd
/usr/share/bash-completion/completions/passwd
/usr/share/bash-completion/completions/smbpasswd
/usr/share/doc/base-passwd
/usr/share/doc/passwd
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ whatis ls
ls (1)          - list directory contents
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ who
rafael    tty7      2022-05-19 19:23 (:0)
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ hostname; date; ls
rafael-VirtualBox
qui 19 mai 2022 20:24:44 -03
arquivo.txt teste2.txt teste3.txt teste4.txt teste.txt
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ emacs &

```


Capítulo 6

No capítulo 6, são vistos os comandos de gerenciamento de processos, como: **ps**, **top** e **kill**.

Figura 6 – Comandos do capítulo 6.

```
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ ps -aef
UID          PID    PPID  C STIME TTY          TIME CMD
root         1        0  0 19:23 ?        00:00:00 /sbin/init splash
root         2        0  0 19:23 ?        00:00:00 [kthreadd]
root         3        2  0 19:23 ?        00:00:00 [rcu_gp]
root         4        2  0 19:23 ?        00:00:00 [rcu_par_gp]
root         6        2  0 19:23 ?        00:00:00 [kworker/0:0H-events_highpri]
root         7        2  0 19:23 ?        00:00:00 [kworker/0:1-mm_percpu_wq]
root         9        2  0 19:23 ?        00:00:00 [mm_percpu_wq]
root        10        2  0 19:23 ?        00:00:00 [rcu_tasks_rude_]
root        11        2  0 19:23 ?        00:00:00 [rcu_tasks_trace]
root        12        2  0 19:23 ?        00:00:00 [ksoftirqd/0]
root        13        2  0 19:23 ?        00:00:00 [rcu_sched]
root        14        2  0 19:23 ?        00:00:00 [migration/0]
root        15        2  0 19:23 ?        00:00:00 [idle_inject/0]
root        16        2  0 19:23 ?        00:00:00 [cpuhp/0]
root        17        2  0 19:23 ?        00:00:00 [cpuhp/1]
root        18        2  0 19:23 ?        00:00:00 [idle_inject/1]
root        19        2  0 19:23 ?        00:00:00 [migration/1]
root        20        2  0 19:23 ?        00:00:00 [ksoftirqd/1]
root        22        2  0 19:23 ?        00:00:00 [kworker/1:0H-events_highpri]
root        23        2  0 19:23 ?        00:00:00 [cpuhp/2]
root        24        2  0 19:23 ?        00:00:00 [idle_inject/2]
root        25        2  0 19:23 ?        00:00:00 [migration/2]
root        26        2  0 19:23 ?        00:00:00 [ksoftirqd/2]
root        28        2  0 19:23 ?        00:00:00 [kworker/2:0H-events_highpri]
root        29        2  0 19:23 ?        00:00:00 [cpuhp/3]
root        30        2  0 19:23 ?        00:00:00 [idle_inject/3]
root        31        2  0 19:23 ?        00:00:00 [migration/3]
root        32        2  0 19:23 ?        00:00:00 [ksoftirqd/3]
root        34        2  0 19:23 ?        00:00:00 [kworker/3:0H-events_highpri]
root        35        2  0 19:23 ?        00:00:00 [kdevtmpfs]
root        36        2  0 19:23 ?        00:00:00 [netns]
root        37        2  0 19:23 ?        00:00:00 [inet_frag_wq]
root        38        2  0 19:23 ?        00:00:00 [kauditd]
root        39        2  0 19:23 ?        00:00:00 [khungtaskd]
root        40        2  0 19:23 ?        00:00:00 [oom_reaper]
root        41        2  0 19:23 ?        00:00:00 [writeback]
root        42        2  0 19:23 ?        00:00:00 [kcompactd0]
root        43        2  0 19:23 ?        00:00:00 [ksmd]
root        44        2  0 19:23 ?        00:00:00 [khugepaged]
root        91        2  0 19:23 ?        00:00:00 [kintegrityd]
root        92        2  0 19:23 ?        00:00:00 [kblockd]
root        93        2  0 19:23 ?        00:00:00 [blkcg_punt_bio]
root        94        2  0 19:23 ?        00:00:00 [tpm_dev_wq]
root        95        2  0 19:23 ?        00:00:00 [ata_sff]
root        96        2  0 19:23 ?        00:00:00 [md]
root        97        2  0 19:23 ?        00:00:00 [edac-poller]
root        98        2  0 19:23 ?        00:00:00 [devfreq_wq]
root        99        2  0 19:23 ?        00:00:00 [kworker/2:1-events]
root       100        2  0 19:23 ?        00:00:00 [watchdogd]
root       102        2  0 19:23 ?        00:00:00 [kworker/2:1H-kblockd]
root       105        2  0 19:23 ?        00:00:00 [kswapd0]
root       106        2  0 19:23 ?        00:00:00 [ecryptfs-kthrea]
root       108        2  0 19:23 ?        00:00:00 [kthrotld]
root       109        2  0 19:23 ?        00:00:00 [acpi_thermal_pm]
root       111        2  0 19:23 ?        00:00:00 [scsi_eh_0]
root       112        2  0 19:23 ?        00:00:00 [scsi_tmf_0]
root       113        2  0 19:23 ?        00:00:00 [scsi_eh_1]
root       114        2  0 19:23 ?        00:00:00 [scsi_tmf_1]
root       115        2  0 19:23 ?        00:00:00 [vfio-irqfd-clea]
root       116        2  0 19:23 ?        00:00:00 [mld]
```



```

top - 20:43:39 up 1:19, 1 user, load average: 0,11, 0,03, 0,01
Tasks: 175 total, 1 running, 174 sleeping, 0 stopped, 0 zombie
%Cpu(s): 0,2 us, 0,0 sy, 0,0 ni, 99,8 id, 0,0 wa, 0,0 hi, 0,0 si, 0,0 st
MiB Mem : 2910,2 total, 1495,4 free, 480,5 used, 934,4 buff/cache
MiB Swap: 2383,0 total, 2383,0 free, 0,0 used. 2253,1 avail Mem

```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
678	root	20	0	309708	116732	39668	S	5,3	3,9	0:34.36	Xorg
1144	rafael	20	0	474424	47084	36860	S	4,3	1,6	0:14.73	xfce4-terminal
871	rafael	20	0	1044164	86388	63576	S	0,3	2,9	0:05.18	xfwm4
1	root	20	0	167144	11168	8272	S	0,0	0,4	0:00.59	systemd
2	root	20	0	0	0	0	S	0,0	0,0	0:00.00	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
7	root	20	0	0	0	0	I	0,0	0,0	0:00.58	kworker/0:1-ata_sff
9	root	0	-20	0	0	0	I	0,0	0,0	0:00.00	mm_percpu_wq
10	root	20	0	0	0	0	S	0,0	0,0	0:00.00	rcu_tasks_rude
11	root	20	0	0	0	0	S	0,0	0,0	0:00.00	rcu_tasks_trace
12	root	20	0	0	0	0	S	0,0	0,0	0:00.01	ksoftirqd/0
13	root	20	0	0	0	0	I	0,0	0,0	0:00.47	rcu_sched
14	root	rt	0	0	0	0	S	0,0	0,0	0:00.01	migration/0
15	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	0:00.16	migration/1
20	root	20	0	0	0	0	S	0,0	0,0	0:00.01	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	0:00.16	migration/2
26	root	20	0	0	0	0	S	0,0	0,0	0:00.01	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	0:00.16	migration/3
32	root	20	0	0	0	0	S	0,0	0,0	0:00.01	ksoftirqd/3
34	root	0	-20	0	0	0	I	0,0	0,0	0:00.00	kworker/3:0H-events_highpri
35	root	20	0	0	0	0	S	0,0	0,0	0:00.00	kdevtmpfs
36	root	0	-20	0	0	0	I	0,0	0,0	0:00.00	netns
37	root	0	-20	0	0	0	I	0,0	0,0	0:00.00	inet_frag_wq
38	root	20	0	0	0	0	S	0,0	0,0	0:00.00	kauditd
39	root	20	0	0	0	0	S	0,0	0,0	0:00.00	khungtaskd
40	root	20	0	0	0	0	S	0,0	0,0	0:00.00	oom_reaper
41	root	0	-20	0	0	0	I	0,0	0,0	0:00.00	writeback
42	root	20	0	0	0	0	S	0,0	0,0	0:00.12	kcompactd0
43	root	25	5	0	0	0	S	0,0	0,0	0:00.00	ksmd
44	root	39	19	0	0	0	S	0,0	0,0	0:00.00	khugepaged
91	root	0	-20	0	0	0	I	0,0	0,0	0:00.00	kintegrityd
92	root	0	-20	0	0	0	I	0,0	0,0	0:00.00	kblockd
93	root	0	-20	0	0	0	I	0,0	0,0	0:00.00	blkcg_punt_bio
94	root	0	-20	0	0	0	I	0,0	0,0	0:00.00	tpm_dev_wq
95	root	0	-20	0	0	0	I	0,0	0,0	0:00.00	ata_sff
96	root	0	-20	0	0	0	I	0,0	0,0	0:00.00	md
97	root	0	-20	0	0	0	I	0,0	0,0	0:00.00	edac-poller
98	root	0	-20	0	0	0	I	0,0	0,0	0:00.00	devfreq_wq
99	root	20	0	0	0	0	I	0,0	0,0	0:00.06	kworker/2:1-events

```

rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ 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) SIGXFSZ
- 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

```

rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$

```

Capítulo 7

No capítulo 7, são vistos os conceitos de permissão e propriedade no Linux. Para isso, o autor apresenta os conceitos herdados do UNIX, utilizando os comandos **chmod** e **chown**.

Figura 7 – Comandos do capítulo 7.

```
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ ls -l teste.txt
-rw-rw-r-- 1 rafael rafael 7 mai 19 19:36 teste.txt
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ chmod g-r teste.txt
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ ls -l teste.txt
-rw--w-r-- 1 rafael rafael 7 mai 19 19:36 teste.txt
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ chmod u+x teste.txt
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ ls -l teste.txt
-rwx-w-r-- 1 rafael rafael 7 mai 19 19:36 teste.txt
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ chown rafael:user2 teste.txt
chown: invalid group: 'rafael:user2'
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ chmod 777 teste.txt
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ ls -l
arquivo.txt teste2.txt teste3.txt teste4.txt teste.txt
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ ls -l teste.txt
-rwxrwxrwx 1 rafael rafael 7 mai 19 19:36 teste.txt
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$
```

Capítulo 8

O capítulo 8 nos apresenta os comandos de gerenciamento de usuários. É estudado os comandos de listagem, adição, edição e remoção de usuários e grupos através do comando **sudo**.

Figura 8 – Comandos do capítulo 8.

```
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ 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
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ cat /etc/group | head -10
root:x:0:
daemon:x:1:
bin:x:2:
sys:x:3:
adm:x:4:syslog,rafael
tty:x:5:syslog
disk:x:6:
lp:x:7:
mail:x:8:
news:x:9:
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ sudo adduser user2
[sudo] password for rafael:
Adding user `user2' ...
Adding new group `user2' (1001) ...
Adding new user `user2' (1001) with group `user2' ...
Creating home directory `/home/user2' ...
Copying files from `/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for user2
Enter the new value, or press ENTER for the default
    Full Name []:
    Room Number []:
    Work Phone []:
    Home Phone []:
    Other []:
Is the information correct? [Y/n] y
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ users
rafael
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ sudo userdel user2
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ sudo groupadd grupo
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ sudo groupdel grupo
groupdel: group 'grupo' does not exist
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$ sudo groupdel grupo
rafael@rafael-VirtualBox:~/Documents/semb2/Semana01$
```

Capítulo 9

O capítulo 9 nos apresenta os comandos de redes e computadores. É estudado os comandos: **hostname**, **arp**, **ifconfig**, **ping**, **dig**, **traceroute**, **netstat**, **nmap**, **telnet**, **ssh**, **scp**, **tcpdump** e **lynx**.

Figura 9 – Comandos do capítulo 9.

```
rafael@rafael-VirtualBox:~$ apt install net-tools
E: Could not open lock file /var/lib/dpkg/lock-frontent - open (13: Permission denied)
E: Unable to acquire the dpkg frontend lock (/var/lib/dpkg/lock-frontent), are you root?
rafael@rafael-VirtualBox:~$ sudo apt install net-
rafael@rafael-VirtualBox:~$ sudo apt install net-tools
[sudo] password for rafael:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following package was automatically installed and is no longer required:
  libfwupdplugin1
Use 'sudo apt autoremove' to remove it.
The following NEW packages will be installed:
  net-tools
0 upgraded, 1 newly installed, 0 to remove and 4 not upgraded.
Need to get 196 kB of archives.
After this operation, 864 kB of additional disk space will be used.
Get:1 http://br.archive.ubuntu.com/ubuntu focal/main amd64 net-tools amd64 1.60+git20180626.aebd88e-lubuntu1 [196 kB]
Fetched 196 kB in 0s (410 kB/s)
Selecting previously unselected package net-tools.
(Reading database ... 201798 files and directories currently installed.)
Preparing to unpack .../net-tools_1.60+git20180626.aebd88e-lubuntu1_amd64.deb ...
Unpacking net-tools (1.60+git20180626.aebd88e-lubuntu1) ...
Setting up net-tools (1.60+git20180626.aebd88e-lubuntu1) ...
Processing triggers for man-db (2.9.1-1) ...
rafael@rafael-VirtualBox:~$ hostname
rafael-VirtualBox
rafael@rafael-VirtualBox:~$ cat /etc/hosts
127.0.0.1    localhost
127.0.1.1    rafael-VirtualBox

# 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
rafael@rafael-VirtualBox:~$ arp -a
gateway (10.0.2.2) at 52:54:00:12:35:02 [ether] on enp0s3
rafael@rafael-VirtualBox:~$ ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
    inet 10.0.2.15  netmask 255.255.255.0  broadcast 10.0.2.255
    inet6 fe80::b8cf:3a3a:6f74:919d  prefixlen 64  scopeid 0x20<link>
    ether 08:00:27:22:e8:5f  txqueuelen 1000  (Ethernet)
    RX packets 199  bytes 218744 (218.7 KB)
    RX errors 0  dropped 0  overruns 0  frame 0
    TX packets 127  bytes 13114 (13.1 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 166  bytes 13826 (13.8 KB)
    RX errors 0  dropped 0  overruns 0  frame 0
    TX packets 166  bytes 13826 (13.8 KB)
    TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0
```

```

rafael@rafael-VirtualBox:~$ ping
ping: usage error: Destination address required
rafael@rafael-VirtualBox:~$ ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 10.0.2.15 netmask 255.255.255.0 broadcast 10.0.2.255
    inet6 fe80::b8cf:3a3a:6f74:919d prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:22:e8:5f txqueuelen 1000 (Ethernet)
    RX packets 199 bytes 218744 (218.7 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 127 bytes 13114 (13.1 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 166 bytes 13826 (13.8 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 166 bytes 13826 (13.8 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

rafael@rafael-VirtualBox:~$ ping 127.0.0.1
PING 127.0.0.1 (127.0.0.1) 56(84) bytes of data.
64 bytes from 127.0.0.1: icmp_seq=1 ttl=64 time=0.020 ms
64 bytes from 127.0.0.1: icmp_seq=2 ttl=64 time=0.030 ms
64 bytes from 127.0.0.1: icmp_seq=3 ttl=64 time=0.031 ms
64 bytes from 127.0.0.1: icmp_seq=4 ttl=64 time=0.031 ms
64 bytes from 127.0.0.1: icmp_seq=5 ttl=64 time=0.034 ms
64 bytes from 127.0.0.1: icmp_seq=6 ttl=64 time=0.025 ms
64 bytes from 127.0.0.1: icmp_seq=7 ttl=64 time=0.031 ms
64 bytes from 127.0.0.1: icmp_seq=8 ttl=64 time=0.032 ms
64 bytes from 127.0.0.1: icmp_seq=9 ttl=64 time=0.029 ms
64 bytes from 127.0.0.1: icmp_seq=10 ttl=64 time=0.026 ms
64 bytes from 127.0.0.1: icmp_seq=11 ttl=64 time=0.022 ms
64 bytes from 127.0.0.1: icmp_seq=12 ttl=64 time=0.028 ms
64 bytes from 127.0.0.1: icmp_seq=13 ttl=64 time=0.049 ms
64 bytes from 127.0.0.1: icmp_seq=14 ttl=64 time=0.029 ms
64 bytes from 127.0.0.1: icmp_seq=15 ttl=64 time=0.024 ms
64 bytes from 127.0.0.1: icmp_seq=16 ttl=64 time=0.030 ms
64 bytes from 127.0.0.1: icmp_seq=17 ttl=64 time=0.030 ms
64 bytes from 127.0.0.1: icmp_seq=18 ttl=64 time=0.032 ms
64 bytes from 127.0.0.1: icmp_seq=19 ttl=64 time=0.029 ms
64 bytes from 127.0.0.1: icmp_seq=20 ttl=64 time=0.030 ms
64 bytes from 127.0.0.1: icmp_seq=21 ttl=64 time=0.031 ms
64 bytes from 127.0.0.1: icmp_seq=22 ttl=64 time=0.029 ms
64 bytes from 127.0.0.1: icmp_seq=23 ttl=64 time=0.030 ms
64 bytes from 127.0.0.1: icmp_seq=24 ttl=64 time=0.029 ms
64 bytes from 127.0.0.1: icmp_seq=25 ttl=64 time=0.028 ms
64 bytes from 127.0.0.1: icmp_seq=26 ttl=64 time=0.031 ms
64 bytes from 127.0.0.1: icmp_seq=27 ttl=64 time=0.027 ms
64 bytes from 127.0.0.1: icmp_seq=28 ttl=64 time=0.030 ms
64 bytes from 127.0.0.1: icmp_seq=29 ttl=64 time=0.031 ms
64 bytes from 127.0.0.1: icmp_seq=30 ttl=64 time=0.030 ms
64 bytes from 127.0.0.1: icmp_seq=31 ttl=64 time=0.032 ms
64 bytes from 127.0.0.1: icmp_seq=32 ttl=64 time=0.026 ms
^C
--- 127.0.0.1 ping statistics ---
32 packets transmitted, 32 received, 0% packet loss, time 38562ms

```

```

rafael@rafael-VirtualBox:~$ host www.feelt.ufu.br
www.feelt.ufu.br is an alias for vegeta.dr.ufu.br.
vegeta.dr.ufu.br has address 200.19.145.56
rafael@rafael-VirtualBox:~$ sudo apt install dnsutils
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following package was automatically installed and is no longer required:
  libfwupdplugin1
Use 'sudo apt autoremove' to remove it.
The following NEW packages will be installed:
  dnsutils
0 upgraded, 1 newly installed, 0 to remove and 4 not upgraded.
Need to get 2.760 B of archives.
After this operation, 47,1 kB of additional disk space will be used.
Get:1 http://br.archive.ubuntu.com/ubuntu focal-updates/universe amd64 dnsutils all 1:9.16.1-0ubuntu2.10 [2.760 B]
Fetched 2.760 B in 0s (12,2 kB/s)
Selecting previously unselected package dnsutils.
(Reading database ... 201847 files and directories currently installed.)
Preparing to unpack .../dnsutils_1%3a9.16.1-0ubuntu2.10_all.deb ...
Unpacking dnsutils (1:9.16.1-0ubuntu2.10) ...
Setting up dnsutils (1:9.16.1-0ubuntu2.10) ...
rafael@rafael-VirtualBox:~$ dig www.feelt.ufu.br

; <<>> DiG 9.16.1-Ubuntu <<>> www.feelt.ufu.br
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 9764
;; flags: qr rd ra; QUERY: 1, ANSWER: 2, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
;; EDNS: version: 0, flags:;, udp: 65494
;; QUESTION SECTION:
;www.feelt.ufu.br.                IN      A

;; ANSWER SECTION:
www.feelt.ufu.br.                561     IN      CNAME   vegeta.dr.ufu.br.
vegeta.dr.ufu.br.                561     IN      A       200.19.145.56

;; Query time: 0 msec
;; SERVER: 127.0.0.53#53(127.0.0.53)
;; WHEN: sex mai 20 13:17:00 -03 2022
;; MSG SIZE rcvd: 85

rafael@rafael-VirtualBox:~$ nslookup www.feelt.ufu.br
Server:                127.0.0.53
Address:                127.0.0.53#53

Non-authoritative answer:
www.feelt.ufu.br       canonical name = vegeta.dr.ufu.br.
Name:   vegeta.dr.ufu.br
Address: 200.19.145.56

```

```

rafael@rafael-VirtualBox:~$ sudo apt install traceroute
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following package was automatically installed and is no longer required:
  libfwupdplugin1
Use 'sudo apt autoremove' to remove it.
The following NEW packages will be installed:
  traceroute
0 upgraded, 1 newly installed, 0 to remove and 4 not upgraded.
Need to get 45,4 kB of archives.
After this operation, 152 kB of additional disk space will be used.
Get:1 http://br.archive.ubuntu.com/ubuntu focal/universe amd64 traceroute amd64 1:2.1.0-2 [45,4 kB]
Fetched 45,4 kB in 0s (134 kB/s)
Selecting previously unselected package traceroute.
(Reading database ... 201851 files and directories currently installed.)
Preparing to unpack .../traceroute_1%3a2.1.0-2_amd64.deb ...
Unpacking traceroute (1:2.1.0-2) ...
Setting up traceroute (1:2.1.0-2) ...
update-alternatives: using /usr/bin/traceroute.db to provide /usr/bin/traceroute (traceroute) in auto mode
update-alternatives: using /usr/bin/lft.db to provide /usr/bin/lft (lft) in auto mode
update-alternatives: using /usr/bin/traceproto.db to provide /usr/bin/traceproto (traceproto) in auto mode
update-alternatives: using /usr/sbin/tcptraceroute.db to provide /usr/sbin/tcptraceroute (tcptraceroute) in auto mode
Processing triggers for man-db (2.9.1-1) ...
rafael@rafael-VirtualBox:~$ traceroute www.feelt.ufu.br
traceroute to www.feelt.ufu.br (200.19.145.56), 30 hops max, 60 byte packets
 1 _gateway (10.0.2.2) 0.175 ms 0.155 ms 0.144 ms
 2 * * *
 3 * * *
 4 * * *
 5 * * *
 6 * * *
 7 * * *
 8 * * *
 9 * * *
10 * * *
11 * * *
12 * * *
13 * * *
14 * * *
15 * * *
16 * * *
17 * * *
18 * * *
19 * * *
20 * * *
21 * * *
22 * * *
23 * * *
24 * * *
25 * * *
26 * * *
27 * * *
28 * * *
29 * * *
30 * * *
rafael@rafael-VirtualBox:~$

```



```

rafael@rafael-VirtualBox:~$ tracepath www.feelt.ufu.br
17: [LOCALHOST] pmtu 1500
1: _gateway 0.234ms
1: _gateway 0.202ms
2: no reply
3: no reply
4: _gateway 0.328ms !N
Resume: pmtu 1500
rafael@rafael-VirtualBox:~$ netstat -s
Ip:
  Forwarding: 2
  410 total packets received
  1 with invalid addresses
  0 forwarded
  0 incoming packets discarded
  407 incoming packets delivered
  509 requests sent out
  20 outgoing packets dropped
Icmp:
  110 ICMP messages received
  0 input ICMP message failed
  ICMP input histogram:
    destination unreachable: 41
    timeout in transit: 5
    echo requests: 32
    echo replies: 32
  136 ICMP messages sent
  0 ICMP messages failed
  ICMP output histogram:
    destination unreachable: 40
    echo requests: 64
    echo replies: 32
IcmpMsg:
  InType0: 32
  InType3: 41
  InType8: 32
  InType11: 5
  OutType0: 32
  OutType3: 40
  OutType8: 64
Tcp:
  7 active connection openings
  0 passive connection openings
  2 failed connection attempts
  1 connection resets received
  0 connections established
  69 segments received
  73 segments sent out
  0 segments retransmitted
  0 bad segments received
  4 resets sent
Udp:
  186 packets received
  40 packets to unknown port received
  0 packet receive errors
  330 packets sent
  0 receive buffer errors
  0 send buffer errors
rafael@rafael-VirtualBox:~$ netstat -i
Kernel Interface table
Iface MTU RX-OK RX-ERR RX-DRP RX-OVR TX-OK TX-ERR TX-DRP TX-OVR Flg
enp0s3 1500 272 0 0 0 273 0 0 0 BMRU
lo 65536 277 0 0 0 277 0 0 0 LRU
rafael@rafael-VirtualBox:~$ netstat -rn
Kernel IP routing table
Destination Gateway Genmask Flags MSS Window irtt Iface
0.0.0.0 10.0.2.2 0.0.0.0 UG 0 0 0 enp0s3
10.0.2.0 0.0.0.0 255.255.255.0 U 0 0 0 enp0s3
169.254.0.0 0.0.0.0 255.255.0.0 U 0 0 0 enp0s3
rafael@rafael-VirtualBox:~$ sudo apt -get install nmap
E: Command line option 'g' [from -get] is not understood in combination with the other options.
rafael@rafael-VirtualBox:~$ sudo apt-get install nmap

```

```

rafael@rafael-VirtualBox:~$ nmap www.feelt.ufu.br
Starting Nmap 7.80 ( https://nmap.org ) at 2022-05-20 13:23 -03
Nmap scan report for www.feelt.ufu.br (200.19.145.56)
Host is up (0.079s latency).
rDNS record for 200.19.145.56: vegeta.dr.ufu.br
Not shown: 997 filtered ports
PORT      STATE SERVICE
80/tcp    open  http
443/tcp   open  https
8008/tcp   open  http

Nmap done: 1 IP address (1 host up) scanned in 8.18 seconds
rafael@rafael-VirtualBox:~$ route
Kernel IP routing table
Destination Gateway         Genmask         Flags Metric Ref    Use Iface
default    _gateway         0.0.0.0         UG    100    0        0 enp0s3
10.0.2.0   0.0.0.0         255.255.255.0   U    100    0        0 enp0s3
link-local 0.0.0.0         255.255.0.0     U    1000   0        0 enp0s3
rafael@rafael-VirtualBox:~$ telnet www.feelt.ufu.br
Trying 200.19.145.56...
^C
rafael@rafael-VirtualBox:~$ telnet www.feelt.ufu.br -80
telnet: invalid option -- '0'
Usage: telnet [-4] [-6] [-8] [-E] [-L] [-a] [-d] [-e char] [-l user]
        [-n tracefile] [-b addr] [-r] [host-name [port]]
rafael@rafael-VirtualBox:~$ telnet www.feelt.ufu.br -8
Trying 200.19.145.56...
^C
rafael@rafael-VirtualBox:~$ sudo apt-get install openssh-client
Reading package lists... Done
Building dependency tree
Reading state information... Done
openssh-client is already the newest version (1:8.2p1-4ubuntu0.5).
openssh-client set to manually installed.
The following package was automatically installed and is no longer required:
  libfwupdplugin1
Use 'sudo apt autoremove' to remove it.
0 upgraded, 0 newly installed, 0 to remove and 4 not upgraded.
rafael@rafael-VirtualBox:~$ sudo apt-get install openssh-server
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following package was automatically installed and is no longer required:
  libfwupdplugin1
Use 'sudo apt autoremove' to remove it.
The following additional packages will be installed:
  ncurses-term openssh-sftp-server ssh-import-id
Suggested packages:
  molly-guard monkeysphere ssh-askpass
The following NEW packages will be installed:
  ncurses-term openssh-server openssh-sftp-server ssh-import-id
0 upgraded, 4 newly installed, 0 to remove and 4 not upgraded.
Need to get 688 kB of archives.
After this operation, 6.010 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://br.archive.ubuntu.com/ubuntu focal/main amd64 ncurses-term all 6.2-0ubuntu2 [249 kB]
Get:2 http://br.archive.ubuntu.com/ubuntu focal-updates/main amd64 openssh-sftp-server amd64 1:8.2p1-4ubuntu0.5 [51,5 kB]
Get:3 http://br.archive.ubuntu.com/ubuntu focal-updates/main amd64 openssh-server amd64 1:8.2p1-4ubuntu0.5 [377 kB]
rafael@rafael-VirtualBox:~$ sudo apt install tcpdump
Reading package lists... Done
Building dependency tree
Reading state information... Done
tcpdump is already the newest version (4.9.3-4ubuntu0.1).
tcpdump set to manually installed.
The following package was automatically installed and is no longer required:
  libfwupdplugin1
Use 'sudo apt autoremove' to remove it.
0 upgraded, 0 newly installed, 0 to remove and 4 not upgraded.
rafael@rafael-VirtualBox:~$ tcpdump -d
tcpdump: enp0s3: You don't have permission to capture on that device
(socket: Operation not permitted)
rafael@rafael-VirtualBox:~$ tcpdump -D
1.enp0s3 [Up, Running]
2.lo [Up, Running, Loopback]
3.any (Pseudo-device that captures on all interfaces) [Up, Running]
4.bluetooth-monitor (Bluetooth Linux Monitor) [none]
5.nflog (Linux netfilter log (NFLOG) interface) [none]
6.nfqueue (Linux netfilter queue (NFQUEUE) interface) [none]
rafael@rafael-VirtualBox:~$ tcpdump -i -enol
tcpdump: -enol: You don't have permission to capture on that device
(socket: Operation not permitted)
rafael@rafael-VirtualBox:~$ sudo apt install lynx
rafael@rafael-VirtualBox:~$ lynx www.google.com.br

```

Exiting via interrupt: 2

```
rafael@rafael-VirtualBox:~$ █
```

Capítulo 10

O capítulo 10 nos apresenta os comandos de gerenciamento de pacotes. É estudado os comandos: **apt**, combinado com **install** e **remove**.

Figura 10 – Comandos do capítulo 9.

```
rafael@rafael-VirtualBox:~$ sudo apt list --upgradable
Listing... Done
appport-gtk/focal-updates,focal-updates,focal-security,focal-security 2.20.11-0ubuntu27.24 all [upgradable from: 2.20.11-0ubuntu27.23]
appport/focal-updates,focal-updates,focal-security,focal-security 2.20.11-0ubuntu27.24 all [upgradable from: 2.20.11-0ubuntu27.23]
apt-utils/focal-updates 2.0.8 amd64 [upgradable from: 2.0.6]
apt/focal-updates 2.0.8 amd64 [upgradable from: 2.0.6]
code/stable 1.67.2-1652812855 amd64 [upgradable from: 1.67.1-1651841865]
libapt-pkg6.0/focal-updates 2.0.8 amd64 [upgradable from: 2.0.6]
libpcre3/focal-updates,focal-security 2:8.39-12ubuntu0.1 amd64 [upgradable from: 2:8.39-12build1]
linux-firmware/focal-updates,focal-updates 1.187.31 all [upgradable from: 1.187.30]
login/focal-updates 1:4.8.1-1ubuntu5.20.04.2 amd64 [upgradable from: 1:4.8.1-1ubuntu5.20.04.1]
passwd/focal-updates 1:4.8.1-1ubuntu5.20.04.2 amd64 [upgradable from: 1:4.8.1-1ubuntu5.20.04.1]
python3-appport/focal-updates,focal-updates,focal-security,focal-security 2.20.11-0ubuntu27.24 all [upgradable from: 2.20.11-0ubuntu27.23]
python3-problem-report/focal-updates,focal-updates,focal-security,focal-security 2.20.11-0ubuntu27.24 all [upgradable from: 2.20.11-0ubuntu27.23]
ubuntu-advantage-tools/focal-updates 27.8-20.04.1 amd64 [upgradable from: 27.7-20.04.1]
rafael@rafael-VirtualBox:~$ sudo apt install vim
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following package was automatically installed and is no longer required:
  libfwupdplugin1
Use 'sudo apt autoremove' to remove it.
The following additional packages will be installed:
  vim-runtime
Suggested packages:
  ctags vim-doc vim-scripts
The following NEW packages will be installed:
  vim vim-runtime
0 upgraded, 2 newly installed, 0 to remove and 13 not upgraded.
Need to get 7.110 kB of archives.
After this operation, 34,6 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://br.archive.ubuntu.com/ubuntu focal-updates/main amd64 vim-runtime all 2:8.1.2269-1ubuntu5.7 [5.872 kB]
Get:2 http://br.archive.ubuntu.com/ubuntu focal-updates/main amd64 vim amd64 2:8.1.2269-1ubuntu5.7 [1.238 kB]
Fetched 7.110 kB in 1s (13,4 MB/s)
Selecting previously unselected package vim-runtime.
(Reading database ... 205707 files and directories currently installed.)
Preparing to unpack .../vim-runtime_2%3a8.1.2269-1ubuntu5.7_all.deb ...
Adding 'diversion of /usr/share/vim/vim81/doc/help.txt to /usr/share/vim/vim81/doc/help.txt.vim-tiny by vim-runtime'
Adding 'diversion of /usr/share/vim/vim81/doc/tags to /usr/share/vim/vim81/doc/tags.vim-tiny by vim-runtime'
Unpacking vim-runtime (2:8.1.2269-1ubuntu5.7) ...
Selecting previously unselected package vim.
Preparing to unpack .../vim_2%3a8.1.2269-1ubuntu5.7_amd64.deb ...
Unpacking vim (2:8.1.2269-1ubuntu5.7) ...
Setting up vim-runtime (2:8.1.2269-1ubuntu5.7) ...
Setting up vim (2:8.1.2269-1ubuntu5.7) ...
update-alternatives: using /usr/bin/vim.basic to provide /usr/bin/vim (vim) in auto mode
update-alternatives: using /usr/bin/vim.basic to provide /usr/bin/vimdiff (vimdiff) in auto mode
update-alternatives: using /usr/bin/vim.basic to provide /usr/bin/rvim (rvim) in auto mode
update-alternatives: using /usr/bin/vim.basic to provide /usr/bin/rview (rview) in auto mode
update-alternatives: using /usr/bin/vim.basic to provide /usr/bin/vi (vi) in auto mode
update-alternatives: using /usr/bin/vim.basic to provide /usr/bin/view (view) in auto mode
update-alternatives: using /usr/bin/vim.basic to provide /usr/bin/ex (ex) in auto mode
Processing triggers for man-db (2.9.1-1) ...
rafael@rafael-VirtualBox:~$
```

```
rafael@rafael-VirtualBox:~$ sudo apt remove vim
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  libfswupdplugin1 vim-runtime
Use 'sudo apt autoremove' to remove them.
The following packages will be REMOVED:
  vim
0 upgraded, 0 newly installed, 1 to remove and 13 not upgraded.
After this operation, 3.112 kB disk space will be freed.
Do you want to continue? [Y/n] y
(Reading database ... 207543 files and directories currently installed.)
Removing vim (2:8.1.2269-1ubuntu5.7) ...
update-alternatives: using /usr/bin/vim.tiny to provide /usr/bin/vi (vi) in auto mode
update-alternatives: using /usr/bin/vim.tiny to provide /usr/bin/view (view) in auto mode
update-alternatives: using /usr/bin/vim.tiny to provide /usr/bin/ex (ex) in auto mode
update-alternatives: using /usr/bin/vim.tiny to provide /usr/bin/rview (rview) in auto mode
rafael@rafael-VirtualBox:~$
```

Capítulo 14

Por fim, estudaremos o capítulo 14, onde nos apresenta os comandos para configuração de software e hardware. É visto os comandos: **uname**, **lscpu**, **lsusb**, **lspci**, **lsblk**, **fdisk**, **lspcmcia**, **free**, **vmstat**, **lsmem**, **dmidecode**, **htop**, **hwinfo** e **eject**.

Figura 11 – Comandos do capítulo 14.

```
rafael@rafael-VirtualBox:~$ uname -a
Linux rafael-VirtualBox 5.13.0-41-generic #46~20.04.1-Ubuntu SMP Wed Apr 20 13:16:21 UTC 2022 x86_64 x86_64 x86_64 GNU/Linux
rafael@rafael-VirtualBox:~$ head -n1 /etc/issue
Ubuntu 20.04.4 LTS \n \l
rafael@rafael-VirtualBox:~$ lscpu
Architecture:                x86_64
CPU op-mode(s):              32-bit, 64-bit
Byte Order:                  Little Endian
Address sizes:               48 bits physical, 48 bits virtual
CPU(s):                      4
On-line CPU(s) list:        0-3
Thread(s) per core:         1
Core(s) per socket:         4
Socket(s):                   1
NUMA node(s):               1
Vendor ID:                   AuthenticAMD
CPU family:                  25
Model:                      80
Model name:                  AMD Ryzen 5 5600H with Radeon Graphics
Stepping:                   0
CPU MHz:                    3293.808
BogoMIPS:                   6587.61
Hypervisor vendor:          KVM
Virtualization type:        full
L1d cache:                  128 KiB
L1i cache:                  128 KiB
L2 cache:                   2 MiB
L3 cache:                   16 MiB
NUMA node0 CPU(s):         0-3
Vulnerability Itlb multihit: Not affected
Vulnerability L1tf:         Not affected
Vulnerability Mds:          Not affected
Vulnerability Meltdown:     Not affected
Vulnerability Spec store bypass: Vulnerable
Vulnerability Spectre v1:    Mitigation; usercopy/swapgs barriers and __user pointer sanitization
Vulnerability Spectre v2:    Mitigation; Retpolines, STIBP disabled, 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 mmx fxsr sse sse2 ht
                             syscall nx mmxext fxsr_opt rdtscp lm constant_tsc rep_good nopl nonstop_tsc cpuid extd_apicid tsc_kno
                             wn_freq pni pclmulqdq ssse3 cx16 sse4_1 sse4_2 x2apic movbe popcnt aes xsave avx rdrand hypervisor la
                             hf_lm cmp_legacy cr8_legacy abm sse4a misalignsse 3dnowprefetch vmmcall fsgsbase avx2 invpcid rdseed
                             clflushopt arat
rafael@rafael-VirtualBox:~$ lsusb
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 002 Device 002: ID 80ee:0021 VirtualBox USB Tablet
Bus 002 Device 001: ID 1d6b:0001 Linux Foundation 1.1 root hub
rafael@rafael-VirtualBox:~$ lspci
00:00.0 Host bridge: Intel Corporation 440FX - 82441FX PMC [Natoma] (rev 02)
00:01.0 ISA bridge: Intel Corporation 82371SB PIIX3 ISA [Natoma/Triton II]
00:01.1 IDE interface: Intel Corporation 82371AB/EB/MB PIIX4 IDE (rev 01)
00:02.0 VGA compatible controller: VMware SVGA II Adapter
00:03.0 Ethernet controller: Intel Corporation 82540EM Gigabit Ethernet Controller (rev 02)
00:04.0 System peripheral: InnoTek Systemberatung GmbH VirtualBox Guest Service
00:05.0 Multimedia audio controller: Intel Corporation 82801AA AC'97 Audio Controller (rev 01)
00:06.0 USB controller: Apple Inc. KeyLargo/Intrepid USB
00:07.0 Bridge: Intel Corporation 82371AB/EB/MB PIIX4 ACPI (rev 08)
00:0b.0 USB controller: Intel Corporation 82801FB/FBM/FR/FW/FRW (ICH6 Family) USB2 EHCI Controller
00:0d.0 SATA controller: Intel Corporation 82801HM/HEM (ICH8M/ICH8M-E) SATA Controller [AHCI mode] (rev 02)
rafael@rafael-VirtualBox:~$
```

```

rafael@rafael-VirtualBox:~$ lsblk
NAME MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
sda   8:0    0 100G 0 disk
├─sda1 8:1    0 2,3G 0 part [SWAP]
├─sda2 8:2    0 1K   0 part
├─sda5 8:5    0 97,7G 0 part /
└─sr0  11:0   1 58,7M 0 rom
rafael@rafael-VirtualBox:~$ cat /proc/partitions
major minor #blocks name
11        0      60096 sr0
8         0 104857600 sda
8         1  2440192 sda1
8         2      1 sda2
8         5 102414336 sda5
rafael@rafael-VirtualBox:~$ sudo fdisk -l
fdisk: invalid option -- 'l'
Try 'fdisk --help' for more information.
rafael@rafael-VirtualBox:~$ sudo fdisk -l
Disk /dev/sda: 100 GiB, 107374182400 bytes, 209715200 sectors
Disk model: VBOX HARDDISK
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: 0xc34ef535

Device Boot Start End Sectors Size Id Type
/dev/sda1 * 2048 4882431 4880384 2,3G 82 Linux swap / Solaris
/dev/sda2 4884478 209713151 204828674 97,7G 5 Extended
/dev/sda5 4884480 209713151 204828672 97,7G 83 Linux
rafael@rafael-VirtualBox:~$ sudo apt install pcmlautils
Reading package lists... Done
Building dependency tree
Reading state information... Done
E: Unable to locate package pcmlautils
rafael@rafael-VirtualBox:~$ sudo apt install pcmciautils
Reading package lists... Done
Building dependency tree
Reading state information... Done
pcmlautils is already the newest version (018-11).
pcmlautils set to manually installed.
The following packages were automatically installed and are no longer required:
  libfwupdplugin1 vim-runtime
Use 'sudo apt autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 13 not upgraded.
rafael@rafael-VirtualBox:~$ lspcmcia
rafael@rafael-VirtualBox:~$ free
              total        used        free      shared  buff/cache   available
Mem:      2980072      446404      1517288        1568       1016380       2343980
Swap:      2440188           0       2440188
rafael@rafael-VirtualBox:~$ cat /proc/meminfo
MemTotal:      2980072 kB
MemFree:       1517288 kB
MemAvailable:  2344104 kB
Buffers:        88832 kB
Cached:        821816 kB
SwapCached:        0 kB
Active:        385716 kB
Inactive:      860396 kB
Active(anon):   1244 kB
Inactive(anon): 335788 kB

```

```
rafael@rafael-VirtualBox:~$ lsmem
RANGE                                SIZE STATE REMOVABLE BLOCK
0x0000000000000000-0x00000000bfffffff 3G online      yes  0-23
```

```
Memory block size:    128M
Total online memory:   3G
Total offline memory:  0B
```

```
rafael@rafael-VirtualBox:~$ dmidecode -t 17
# dmidecode 3.2
/sys/firmware/dmi/tables/smbios_entry_point: Permission denied
Scanning /dev/mem for entry point.
/dev/mem: Permission denied
rafael@rafael-VirtualBox:~$ top
```

```
top - 14:04:02 up 1:03, 1 user, load average: 0,09, 0,08, 0,02
Tasks: 172 total, 1 running, 171 sleeping, 0 stopped, 0 zombie
%Cpu(s): 0,9 us, 0,5 sy, 0,0 ni, 98,7 id, 0,0 wa, 0,0 hi, 0,0 si, 0,0 st
MiB Mem : 2910,2 total, 1481,9 free, 435,4 used, 993,0 buff/cache
MiB Swap: 2383,0 total, 2383,0 free, 0,0 used. 2289,6 avail Mem
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
674	root	20	0	299784	106052	38940	S	5,0	3,6	0:22.04	Xorg
1234	rafael	20	0	388032	39364	30064	S	2,2	1,3	0:13.72	xfce4-terminal
951	rafael	20	0	316368	46428	28272	S	0,9	1,6	0:02.27	xfdesktop
13	root	20	0	0	0	0	I	0,3	0,0	0:00.33	rcu_sched
867	rafael	20	0	1044716	86680	63796	S	0,3	2,9	0:02.23	xfwm4
958	rafael	20	0	508412	40072	32576	S	0,3	1,3	0:01.61	panel-10-pulsea
995	rafael	20	0	187132	15696	13892	S	0,3	0,5	0:00.06	polkit-gnome-au
7538	rafael	20	0	11996	3800	3204	R	0,3	0,1	0:00.01	top
1	root	20	0	168584	12316	7988	S	0,0	0,4	0:01.34	systemd
2	root	20	0	0	0	0	S	0,0	0,0	0:00.00	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
7	root	20	0	0	0	0	I	0,0	0,0	0:00.49	kworker/0:1-ata_sff
8	root	20	0	0	0	0	I	0,0	0,0	0:00.38	kworker/u8:0-events_freezable_power_
9	root	0	-20	0	0	0	I	0,0	0,0	0:00.00	mm_percpu_wq
10	root	20	0	0	0	0	S	0,0	0,0	0:00.00	rcu_tasks_rude_
11	root	20	0	0	0	0	S	0,0	0,0	0:00.00	rcu_tasks_trace
12	root	20	0	0	0	0	S	0,0	0,0	0:00.01	ksoftirqd/0
14	root	rt	0	0	0	0	S	0,0	0,0	0:00.01	migration/0
15	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	0:00.15	migration/1
20	root	20	0	0	0	0	S	0,0	0,0	0:00.02	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	0:00.16	migration/2
26	root	20	0	0	0	0	S	0,0	0,0	0:00.01	ksoftirqd/2


```

rafael@rafael-VirtualBox:~$ hwinfo --short
cpu:
    AMD Ryzen 5 5600H with Radeon Graphics, 3293 MHz
    AMD Ryzen 5 5600H with Radeon Graphics, 3293 MHz
    AMD Ryzen 5 5600H with Radeon Graphics, 3293 MHz
    AMD Ryzen 5 5600H with Radeon Graphics, 3293 MHz
keyboard:
    /dev/input/event2    AT Translated Set 2 keyboard
mouse:
    /dev/input/mice      VirtualBox USB Tablet
    /dev/input/mice      ImExPS/2 Generic Explorer Mouse
    /dev/input/mice      VirtualBox mouse integration
graphics card:
    VMware VMWARE0405
sound:
    Intel 82801AA AC'97 Audio Controller
storage:
    Intel 82801HM/HEM (ICH8M/ICH8M-E) SATA Controller [AHCI mode]
    Intel 82371AB/EB/MB PIIX4 IDE
network:
    enp0s3                Intel PRO/1000 MT Desktop Adapter
network interface:
    lo                    Loopback network interface
    enp0s3                Ethernet network interface
disk:
    /dev/sda              VBOX HARDDISK
partition:
    /dev/sda1             Partition
    /dev/sda2             Partition
    /dev/sda5             Partition
cdrom:
    /dev/sr0              VBOX CD-ROM
usb controller:
    Apple KeyLargo/Intrepid USB
    Intel 82801FB/FBM/FR/FW/FRW (ICH6 Family) USB2 EHCI Controller
bios:
    BIOS
bridge:
    Intel 82371SB PIIX3 ISA [Natoma/Triton II]
    Intel 82371AB/EB/MB PIIX4 ACPI
    Intel 440FX - 82441FX PMC [Natoma]
hub:
    Linux Foundation 2.0 root hub
    Linux Foundation 1.1 root hub
memory:
    Main Memory
unknown:
    FPU
    DMA controller
    PIC
    Keyboard controller
    /dev/input/mice      InnoTek Systemberatung VirtualBox Guest Service
rafael@rafael-VirtualBox:~$ eject
rafael@rafael-VirtualBox:~$

```