



UNIVERSIDADE FEDERAL DE UBERLÂNDIA

FACULDADE DE ENGENHARIA MECÂNICA

ENGENHARIA MECATRÔNICA

SISTEMAS DIGITAIS PARA MECATRÔNICA

(FEELT 49081)

PROF. ÉDER ALVES DE MOURA



Relatório 1ª Semana

TAREFA SEMANA 01B - INSTALAÇÃO E CONFIGURAÇÃO DO LINUX

LEONARDO GUERREIRO NASCIMBEM NAVA

11811EMT010

UBERLÂNDIA

2022

2. Utilizando o livro: “Linux: Comandos Básicos e Avançados”(2ª edição)de Vivas, Araújo, Pitangui e Assis, reproduza os comandos apresentados do capítulo 1 ao 10 e 14. Tire printscreen dos resultados dos comandos apresentados e produza um relatório, explicado e organizado,a ser submetido na plataforma TEAMS.

Capítulo 1:

Listagem 1.1: Acessando o Sistema

```
Ubuntu 20.04.5 LTS leonardonava-VirtualBox tty1
leonardonava-VirtualBox login: leonardonava
Password:
Welcome to Ubuntu 20.04.5 LTS (GNU/Linux 5.15.0-48-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

0 updates can be applied immediately.

Your Hardware Enablement Stack (HWE) is supported until April 2025.

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 1.8: Shell Utilizado

```
leonardonava@leonardonava-VirtualBox:~$ echo $SHELL
/bin/bash
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 1.9: Shells Instalados

```
leonardonava@leonardonava-VirtualBox:~$ 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
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 1.10: Caminho Completo

```
leonardonava@leonardonava-VirtualBox:~$ /bin/ls
Desktop Documents Downloads Music Pictures Public Templates Videos
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 1.11: Limpando a Tela

```
leonardonava@leonardonava-VirtualBox:~$ clear
```

Listagem 1.12: Exibindo Mensagens no Terminal

```
leonardonava@leonardonava-VirtualBox:~$ echo teste
teste
leonardonava@leonardonava-VirtualBox:~$ echo 'teste'
teste
leonardonava@leonardonava-VirtualBox:~$ echo "teste"
teste
leonardonava@leonardonava-VirtualBox:~$ echo -e "string1\tstring2\nstring3"
string1 string2
string3
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 1.13: Histórico

```
leonardonava@leonardonava-VirtualBox:~$ cat_/etc/shells
```

Listagem 1.14: Comando history

```
leonardonava@leonardonava-VirtualBox:~$ history
 1  echo $SHELL/bin/bash
 2  clear
 3  echo
 4  clear
 5  echo $SHELL
 6  clear
 7  cat
 8  clear
 9  cat/etc/shells
10  clear
11  cat /etc/shells
12  clear
13  //caminho completo
14  clear
15  /bin/ls
16  clear
17  echo teste
18  echo 'teste'
19  echo "teste"
20  echo -e "string1\tstring2\nstring3"
21  clear
22  cat /etc/shells
23  clear
24  history
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 1.15: Executar um determinado comando do history

```
leonardonava@leonardonava-VirtualBox:~$ !3
echo
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 1.16: Exemplo de busca no history

```
leonardonava@leonardonava-VirtualBox:~$ history | grep sshd
28 history | grep sshd
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 1.17: Limpar o histórico

```
leonardonava@leonardonava-VirtualBox:~$ history -c
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 1.18: Tamanho do histórico

```
leonardonava@leonardonava-VirtualBox:~$ echo $HISTSIZE
1000
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 1.19: Aumentando o Tamanho de Comandos Armazenados

```
leonardonava@leonardonava-VirtualBox:~$ export HISTSIZE=100
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 1.20: Reduzindo o Tamanho de Comandos Armazenados

```
leonardonava@leonardonava-VirtualBox:~$ export HISTSIZE=0
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 1.21: Arquivo contendo o histórico de comandos

```
leonardonava@leonardonava-VirtualBox:~$ cat ~/.bash_history
cat: /home/leonardonava/.bash_history: No such file or directory
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 1.22: Usuário Root no Debian

```
leonardonava@leonardonava-VirtualBox:~$ su -
Password: _
```

Listagem 1.23: Usuário Root no Ubuntu

```
leonardonava@leonardonava-VirtualBox:~$ sudo apt install vim
[sudo] password for leonardonava:
```

Capítulo 2:

Listagem 2.1: Comando logout

```
leonardonava@leonardonava-VirtualBox:~$ logout_
```

Listagem 2.2: Comando exit

```
leonardonava@leonardonava-VirtualBox:~$ exit_
```

Listagem 2.3: Desligando Imediatamente com shutdown

```
leonardonava@leonardonava-VirtualBox:~$ shutdown -h now
```

Listagem 2.4: Desligando Imediatamente com poweroff

```
leonardonava@leonardonava-VirtualBox:~$ sudo poweroff
```

Listagem 2.5: Desligando Após Determinado Intervalo de Tempo

```
leonardonava@leonardonava-VirtualBox:~$ sudo shutdown -h +3 "Desligando_"
```

Listagem 2.7: Desligando Imediatamente

```
leonardonava@leonardonava-VirtualBox:~$ sudo shutdown -h 10:10 "Desligando_"
```

Listagem 2.8: Desligando em 5 minutos

```
leonardonava@leonardonava-VirtualBox:~$ sudo shutdown -h +5 "Desligando_em_5_minutos"
```

Listagem 2.9: Cancelando Shutdown

```
leonardonava@leonardonava-VirtualBox:~$ sudo shutdown -c  
[sudo] password for leonardonava: _
```

Listagem 2.10: Reiniciando com reboot

```
leonardonava@leonardonava-VirtualBox:~$ sudo reboot_
```

Listagem 2.11: Reiniciando com shutdown

```
leonardonava@leonardonava-VirtualBox:~$ sudo shutdown -r now_
```

Listagem 2.12: Reiniciando a Máquina após Determinado Intervalo de Tempo

```
leonardonava@leonardonava-VirtualBox:~$ sudo shutdown -r +3 "Reboot_em_3_minutos" _
```

Listagem 2.13: Reiniciando a Máquina em Horário Específico

```
leonardonava@leonardonava-VirtualBox:~$ sudo shutdown -r +16:20 "Reboot_as_16:20h"
```

Capítulo 3:

Listagem 3.1: Listando o Conteúdo de um Diretório

```
leonardonava@leonardonava-VirtualBox:~$ ls  
Desktop Documents Downloads Music Pictures Public Templates Videos  
leonardonava@leonardonava-VirtualBox:~$ _
```


Listagem 3.2: Uma Entrada por Linha

```
leonardonava@leonardonava-VirtualBox:~$ ls -l
Desktop
Documents
Downloads
Music
Pictures
Public
Templates
Videos
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 3.3: Comando ls no formato longo

```
leonardonava@leonardonava-VirtualBox:~$ ls -l
total 32
drwxr-xr-x 2 leonardonava leonardonava 4096 out  8 14:33 Desktop
drwxr-xr-x 2 leonardonava leonardonava 4096 out  8 14:33 Documents
drwxr-xr-x 2 leonardonava leonardonava 4096 out  8 14:33 Downloads
drwxr-xr-x 2 leonardonava leonardonava 4096 out  8 14:33 Music
drwxr-xr-x 2 leonardonava leonardonava 4096 out  8 14:33 Pictures
drwxr-xr-x 2 leonardonava leonardonava 4096 out  8 14:33 Public
drwxr-xr-x 2 leonardonava leonardonava 4096 out  8 14:33 Templates
drwxr-xr-x 2 leonardonava leonardonava 4096 out  8 14:33 Videos
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 3.7: Obtendo informações sobre diretórios

```
leonardonava@leonardonava-VirtualBox:~$ ls -ld
drwxr-xr-x 14 leonardonava leonardonava 4096 out  9 12:10 .
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 3.8: Listando Todos os Arquivos Inclusive os Ocultos

```
leonardonava@leonardonava-VirtualBox:~$ ls -a
.          .cache    .gnupg    .profile   .Xauthority
..         .config   .ICEauthority Public      .Xdefaults
.bash_history Desktop   .local     .sudo_as_admin_successful .xscreensaver
.bash_logout Documents Music       Templates  .xsession-errors
.bashrc    Downloads Pictures    Videos     .xsession-errors.old
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 3.9: Listando Apenas os Arquivos Ocultos

```
leonardonava@leonardonava-VirtualBox:~$ ls -ld .**
drwxr-xr-x 3 root root 4096 out 8 14:11 ..
-rw----- 1 leonardonava leonardonava 82 out 9 12:09 .bash_history
-rw-r--r-- 1 leonardonava leonardonava 220 out 8 14:11 .bash_logout
-rw-r--r-- 1 leonardonava leonardonava 3771 out 8 14:11 .bashrc
drwxrwxr-x 9 leonardonava leonardonava 4096 out 9 12:10 .cache
drwxr-xr-x 11 leonardonava leonardonava 4096 out 8 14:34 .config
drwx----- 3 leonardonava leonardonava 4096 out 8 14:33 .gnupg
-rw----- 1 leonardonava leonardonava 0 out 8 14:33 .ICEauthority
drwxrwxr-x 3 leonardonava leonardonava 4096 out 8 14:33 .local
-rw-r--r-- 1 leonardonava leonardonava 807 out 8 14:11 .profile
-rw-r--r-- 1 leonardonava leonardonava 0 out 9 11:49 .sudo_as_admin_successful
-rw----- 1 leonardonava leonardonava 68 out 9 12:10 .Xauthority
-rw-r--r-- 1 leonardonava leonardonava 1600 out 8 14:11 .Xdefaults
-rw-r--r-- 1 leonardonava leonardonava 14 out 8 14:11 .xscreensaver
-rw----- 1 leonardonava leonardonava 6359 out 9 12:25 .xsession-errors
-rw----- 1 leonardonava leonardonava 6308 out 9 11:57 .xsession-errors.old
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 3.10: Classificando Arquivos e Diretórios

```
leonardonava@leonardonava-VirtualBox:~$ ls -F
Desktop/ Documents/ Downloads/ Music/ Pictures/ Public/ Templates/ Videos/
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 3.11: Tamanho em Blocos

```
leonardonava@leonardonava-VirtualBox:~$ ls -ls
total 32
4 Desktop 4 Documents 4 Downloads 4 Music 4 Pictures 4 Public 4 Templates 4 Videos
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 3.13: Combinando Opções do Comando Is

```
leonardonava@leonardonava-VirtualBox:~$ ls -alF
total 100
drwxr-xr-x 14 leonardonava leonardonava 4096 out 9 12:10 ./
drwxr-xr-x  3 root         root         4096 out 8 14:11 ../
-rw-----  1 leonardonava leonardonava   82 out 9 12:09 .bash_history
-rw-r--r--  1 leonardonava leonardonava  220 out 8 14:11 .bash_logout
-rw-r--r--  1 leonardonava leonardonava 3771 out 8 14:11 .bashrc
drwxrwxr-x  9 leonardonava leonardonava 4096 out 9 12:10 .cache/
drwxr-xr-x 11 leonardonava leonardonava 4096 out 8 14:34 .config/
drwxr-xr-x  2 leonardonava leonardonava 4096 out 8 14:33 Desktop/
drwxr-xr-x  2 leonardonava leonardonava 4096 out 8 14:33 Documents/
drwxr-xr-x  2 leonardonava leonardonava 4096 out 8 14:33 Downloads/
drwx-----  3 leonardonava leonardonava 4096 out 8 14:33 .gnupg/
-rw-----  1 leonardonava leonardonava    0 out 8 14:33 .ICEauthority
drwxrwxr-x  3 leonardonava leonardonava 4096 out 8 14:33 .local/
drwxr-xr-x  2 leonardonava leonardonava 4096 out 8 14:33 Music/
drwxr-xr-x  2 leonardonava leonardonava 4096 out 8 14:33 Pictures/
-rw-r--r--  1 leonardonava leonardonava  807 out 8 14:11 .profile
drwxr-xr-x  2 leonardonava leonardonava 4096 out 8 14:33 Public/
-rw-r--r--  1 leonardonava leonardonava    0 out 9 11:49 .sudo_as_admin_successful
drwxr-xr-x  2 leonardonava leonardonava 4096 out 8 14:33 Templates/
drwxr-xr-x  2 leonardonava leonardonava 4096 out 8 14:33 Videos/
-rw-----  1 leonardonava leonardonava   68 out 9 12:10 .Xauthority
-rw-r--r--  1 leonardonava leonardonava 1600 out 8 14:11 .Xdefaults
-rw-r--r--  1 leonardonava leonardonava   14 out 8 14:11 .xscreensaver
-rw-----  1 leonardonava leonardonava 6359 out 9 12:25 .xsession-errors
-rw-----  1 leonardonava leonardonava 6308 out 9 11:57 .xsession-errors.old
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 3.14: Visualizando Informações sobre o Diretório

```
leonardonava@leonardonava-VirtualBox:~$ ls -ld /usr/
drwxr-xr-x 14 root root 4096 ago 31 03:53 /usr/
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 3.15: Listando Recursivamente

```
leonardonava@leonardonava-VirtualBox:~$ ls -R
.:
Desktop Documents Downloads Music Pictures Public Templates Videos

./Desktop:

./Documents:

./Downloads:

./Music:

./Pictures:

./Public:

./Templates:
'OpenDocument Spreadsheet.ods' 'OpenDocument Text.odt' 'Plain Text.txt'

./Videos:
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 3.16: Comando cd

```
leonardonava@leonardonava-VirtualBox:~$ cd /home
leonardonava@leonardonava-VirtualBox:/home$ _
```

Listagem 3.17: Atalho para o Diretório Raiz do Usuário

```
leonardonava@leonardonava-VirtualBox:/home$ cd
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 3.18: Significado de

```
leonardonava@leonardonava-VirtualBox:~$ echo ~
/home/leonardonava
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 3.19: Comando cd Sem Opções

```
leonardonava@leonardonava-VirtualBox:~$ cd
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 3.20: Retornando ao Diretório do Usuário

```
leonardonava@leonardonava-VirtualBox:~$ cd /home/leonardonava
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 3.21: Comando pwd

```
leonardonava@leonardonava-VirtualBox:~$ pwd
/home/leonardonava
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 3.24: Copiando Arquivo para Diretório

```
leonardonava@leonardonava-VirtualBox:~$ cp code.c /home/leonardonava/documents
cp: cannot stat 'code.c': No such file or directory
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 3.27: Copiando um Arquivo em Outro

```
leonardonava@leonardonava-VirtualBox:~$ cp code.c main.c
cp: cannot stat 'code.c': No such file or directory
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 3.28: Copiando com a Opção -i

```
leonardonava@leonardonava-VirtualBox:~$ cp -i code.c main.c
cp: cannot stat 'code.c': No such file or directory
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 3.30: Renomeando Arquivos com rename

```
leonardonava@leonardonava-VirtualBox:~$ rename teste.txt teste2.txt
Command 'rename' not found, but can be installed with:
sudo apt install rename
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 3.31: Criando Arquivos com touch

```
leonardonava@leonardonava-VirtualBox:~$ touch teste.txt
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 3.33: Apagando um Arquivo

```
leonardonava@leonardonava-VirtualBox:~$ rm teste.c
rm: cannot remove 'teste.c': No such file or directory
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 3.36: Apagando Diretório com rmdir

```
leonardonava@leonardonava-VirtualBox:~$ mkdir teste
leonardonava@leonardonava-VirtualBox:~$ rmdir teste
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 3.42: Criando um Arquivo

```
leonardonava@leonardonava-VirtualBox:~$ touch arq1
leonardonava@leonardonava-VirtualBox:~$ echo "Laranja" >> arq1
> _
```

Listagem 3.43: Criando um Link Simbólico

```
leonardonava@leonardonava-VirtualBox:~$ ln -s arq1 arq1-soft
leonardonava@leonardonava-VirtualBox:~$ ls -l arq1*
-rw-rw-r-- 1 leonardonava leonardonava 0 out  9 15:34 arq1
lrwxrwxrwx 1 leonardonava leonardonava 4 out  9 15:37 arq1-soft -> arq1
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 3.44: Verificando o Conteúdo do Arquivo

```
leonardonava@leonardonava-VirtualBox:~$ cat arq1-soft
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 3.45: Movendo o Arquivo

```
leonardonava@leonardonava-VirtualBox:~$ mv arq1 arq2
leonardonava@leonardonava-VirtualBox:~$ cat arq1-soft
cat: arq1-soft: No such file or directory
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 3.46: Visualizando os Links

```
leonardonava@leonardonava-VirtualBox:~$ ls -l arq1-soft
lrwxrwxrwx 1 leonardonava leonardonava 4 out  9 15:37 arq1-soft -> arq1
leonardonava@leonardonava-VirtualBox:~$ _
```

Capítulo 4

Listagem 4.1: Comando echo

```
leonardonava@leonardonava-VirtualBox:~$ echo 'Hello world'
Hello world
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 4.2: Comando echo

```
leonardonava@leonardonava-VirtualBox:~$ echo -en 'Hello\tWorld'
Hello  Worldleonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 4.3: Comando cat

```
leonardonava@leonardonava-VirtualBox:~$ cat cidades.txt
cat: cidades.txt: No such file or directory
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 4.4: Comando cat com dois arquivos

```
leonardonava@leonardonava-VirtualBox:~$ seq 1 5 > arq1.txt
leonardonava@leonardonava-VirtualBox:~$ seq 6 10 > arq2.txt
leonardonava@leonardonava-VirtualBox:~$ cat arq1.txt arq2.txt
1
2
3
4
5
6
7
8
9
10
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 4.5: Comando cut

```
leonardonava@leonardonava-VirtualBox:~$ echo 'leonardo nava' | cut -c 1-10
leonardo n
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 4.6: Usando o comando cut para listar os usuários logados

```
leonardonava@leonardonava-VirtualBox:~$ who | cut -c1-8 | sort | uniq
leonardo
leonardonava@leonardonava-VirtualBox:~$
```


Listagem 4.9: Gerando uma sequência de números

```
leonardonava@leonardonava-VirtualBox:~$ seq 3
1
2
3
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 4.10: Gerando uma sequência de números

```
leonardonava@leonardonava-VirtualBox:~$ seq 3 5
3
4
5
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 4.11: Gerando uma sequência de números

```
leonardonava@leonardonava-VirtualBox:~$ seq 1.1 0.1 1.3
1,1
1,2
1,3
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 4.20: Substituir chaves por parênteses

```
leonardonava@leonardonava-VirtualBox:~$ echo 'a{1}, b{2}' | tr '{}' '()'
a(1), b(2)
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 4.32: Filtrando com egrep

```
leonardonava@leonardonava-VirtualBox:~$ dmesg | egrep "firmware|amd"
[    0.000000] Linux version 5.15.0-48-generic (buildd@lcy02-amd64-043) (gcc (Ubuntu 9.4.0-1ubuntu1~20.04.1) 9.4.0, GNU ld (GNU Binutils for Ubuntu) 2.34) #54~20.04.1-Ubuntu SMP Thu Sep 1 16:17:26 UTC 2022 (Ubuntu 5.15.0-48.54~20.04.1-generic 5.15.53)
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 4.33: Filtrando com fgrep

```
leonardonava@leonardonava-VirtualBox:~$ dmesg | fgrep "@"
[ 0.000000] Linux version 5.15.0-48-generic (buildd@lcy02-amd64-043) (gcc (Ubuntu 9.4.0-1ubuntu1~20.04.1) 9.4.0, GNU ld (GNU Binutils for Ubuntu) 2.34) #54~20.04.1-Ubuntu SMP Thu Sep 1 16:17:26 UTC 2022 (Ubuntu 5.15.0-48.54~20.04.1-generic 5.15.53)
[ 0.390438] smpboot: CPU0: Intel(R) Core(TM) i7-7500U CPU @ 2.70GHz (family: 0x6, model: 0x8e, stepping: 0x9)
[ 0.944484] pps_core: Software ver. 5.3.6 - Copyright 2005-2007 Rodolfo Giometti <giometti@linux.it>
[ 1.225723] device-mapper: ioctl: 4.45.0-ioctl (2021-03-22) initialised: dm-devel@redhat.com
[ 1.959959] ata3: SATA max UDMA/133 abar m8192@0xf0806000 port 0xf0806100 irq 21
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 4.38: Determinando o tipo do arquivo lena.jpg

```
leonardonava@leonardonava-VirtualBox:~$ file lena.jpg
lena.jpg: cannot open 'lena.jpg' (No such file or directory)
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 4.39: Determinando o tipo de um arquivo .txt

```
leonardonava@leonardonava-VirtualBox:~$ wget -q http://www.gutenberg.org/files/4300/4300-0.txt
leonardonava@leonardonava-VirtualBox:~$ file 4300-0.txt
4300-0.txt: UTF-8 Unicode (with BOM) text, with CRLF line terminators
leonardonava@leonardonava-VirtualBox:~$ file CETENFOLHA
CETENFOLHA: cannot open 'CETENFOLHA' (No such file or directory)
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 4.47: Combinando arquivos para formar um arquivo CSV

```
leonardonava@leonardonava-VirtualBox:~$ paste -d , <(seq 1 3) <(seq 4 6) <(seq 7 9)
1,4,7
2,5,8
3,6,9
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 4.48: Comando para Inverter os Caracteres - rev

```
leonardonava@leonardonava-VirtualBox:~$ cat arquivo | rev
cat: arquivo: No such file or directory
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 4.49: Invertendo Caracteres com rev

```
leonardonava@leonardonava-VirtualBox:~$ echo 'teste' | rev
etset
leonardonava@leonardonava-VirtualBox:~$ _
```

Capítulo 5

Listagem 5.1: Opções Múltiplas

```
gnome-sudoku
sgt-signpost
sgt-filling
sgt-tents
sgt-dominosa
sgt-netslide
sgt-launcher
sgt-mines
sgt-pegs
sgt-fifteen
sgt-range
sgt-tracks
sgt-solo
sgt-net
sgt-galaxies
sgt-cube
sgt-twiddle
sgt-palisade
sgt-lightup
sgt-samegame
sgt-pearl
gnome-mines
sgt-bridges
sgt-undead
sgt-slant
sgt-flood
sgt-flip
sgt-keen
sgt-map
sgt-singles
sgt-untangle
sgt-magnets
sgt-guess
sgt-blackbox
sgt-rect
sgt-towers
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 5.2: Comando whoami e pwd

```
leonardonava@leonardonava-VirtualBox:~$ whoami
leonardonava
leonardonava@leonardonava-VirtualBox:~$ pwd
/home/leonardonava
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 5.4: Identificadores no Mac

```
leonardonava@leonardonava-VirtualBox:~$ id
uid=1000(leonardonava) gid=1000(leonardonava) groups=1000(leonardonava),4(adm),24(cdrom),27(sudo),30
(dip),46(plugdev),121(lpadmin),131(lxd),132(sambashare)
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 5.7: Usuários Logados

```
leonardonava@leonardonava-VirtualBox:~$ users
leonardonava leonardonava
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 5.8: Instalação do finger

```
leonardonava@leonardonava-VirtualBox:~$ sudo apt-get install finger
[sudo] password for leonardonava:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
  finger
0 upgraded, 1 newly installed, 0 to remove and 13 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 1s (23,9 kB/s)
Selecting previously unselected package finger.
(Reading database ... 191826 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) ...
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 5.9: Comando finger

```
leonardonava@leonardonava-VirtualBox:~$ finger leonardonava
Login: leonardonava          Name: leonardonava
Directory: /home/leonardonava  Shell: /bin/bash
On since Sun Oct  9 15:37 (-03) on tty1   3 seconds idle
      (messages off)
On since Sun Oct  9 15:36 (-03) on tty7 from :0
      30 minutes 9 seconds idle
No mail.
No Plan.
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 5.11: Comando finger no Linux

```
leonardonava@leonardonava-VirtualBox:~$ finger
Login      Name      Tty      Idle   Login Time   Office   Office Phone
leonardonava leonardonava *tty1      Oct  9 15:37
leonardonava leonardonava tty7       30    Oct  9 15:36 (:0)
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 5.13: Comando free

```
leonardonava@leonardonava-VirtualBox:~$ free
              total        used        free      shared  buff/cache   available
Mem:           2474828         441100        1476792         1392       556936       1877300
Swap:          2440188           0         2440188
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 5.14: Logar como Super Usuário

```
leonardonava@leonardonava-VirtualBox:~$ su -
Password:
su: Authentication failure
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 5.15: Verificar Informações sobre o Linux

```
leonardonava@leonardonava-VirtualBox:~$ uname -s
Linux
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 5.17: Verificar sua Versão do kernel

```
leonardonava@leonardonava-VirtualBox:~$ uname -r
5.15.0-48-generic
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 5.18: Verificando a Plataforma

```
leonardonava@leonardonava-VirtualBox:~$ uname -m
x86_64
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 5.19: Verificar o Nome de sua Máquina

```
leonardonava@leonardonava-VirtualBox:~$ uname -n
leonardonava-VirtualBox
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 5.20: Apresenta todas as informações sobre seu sistema operacional

```
leonardonava@leonardonava-VirtualBox:~$ uname -a
Linux leonardonava-VirtualBox 5.15.0-48-generic #54~20.04.1-Ubuntu SMP Thu Sep 1 16:17:26 UTC 2022 x
86_64 x86_64 x86_64 GNU/Linux
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 5.21: Tempo de Funcionamento

```
leonardonava@leonardonava-VirtualBox:~$ uptime
16:09:49 up 33 min, 2 users, load average: 0,01, 0,05, 0,08
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 5.22: Versão de um comando

```
leonardonava@leonardonava-VirtualBox:~$ 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.
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 5.24: Variável PATH

```
leonardonava@leonardonava-VirtualBox:~$ echo $PATH
/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr/local/games:/snap/bin
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 5.25: Comando timeout

```
leonardonava@leonardonava-VirtualBox:~$ timeout 5 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=55 time=34.3 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=2 ttl=55 time=31.5 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=3 ttl=55 time=31.1 ms
```

Listagem 5.26: Comando w

```
leonardonava@leonardonava-VirtualBox:~$ w
 16:11:52 up 36 min,  2 users,  load average: 0,00, 0,03, 0,06
USER      TTY      FROM            LOGIN@   IDLE   JCPU   PCPU WHAT
leonardo  tty1     -               15:37    0.00s  1.01s  0.00s w
leonardo  tty7     :0              15:36   35:26  2.34s  0.71s xfce4-session
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 5.27: Comando whereis

```
leonardonava@leonardonava-VirtualBox:~$ whereis gcc
gcc: /usr/lib/gcc /usr/share/gcc
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 5.28: Comando locate

```
/usr/share/man/man1/passwd.1ss1.gz
/usr/share/man/man5/passwd.5.gz
/usr/share/man/man8/chgpasswd.8.gz
/usr/share/man/man8/chpasswd.8.gz
/usr/share/man/man8/update-passwd.8.gz
/usr/share/man/pl/man8/update-passwd.8.gz
/usr/share/man/pt_BR/man1/gpasswd.1.gz
/usr/share/man/pt_BR/man5/passwd.5.gz
/usr/share/man/ru/man1/gpasswd.1.gz
/usr/share/man/ru/man1/passwd.1.gz
/usr/share/man/ru/man5/passwd.5.gz
/usr/share/man/ru/man8/chpasswd.8.gz
/usr/share/man/ru/man8/update-passwd.8.gz
/usr/share/man/sv/man1/passwd.1.gz
/usr/share/man/sv/man5/passwd.5.gz
/usr/share/man/tr/man1/passwd.1.gz
/usr/share/man/tr/man5/passwd.5.gz
/usr/share/man/zh_CN/man1/gpasswd.1.gz
/usr/share/man/zh_CN/man1/passwd.1.gz
/usr/share/man/zh_CN/man5/passwd.5.gz
/usr/share/man/zh_CN/man8/chpasswd.8.gz
/usr/share/man/zh_TW/man5/passwd.5.gz
/usr/share/man/zh_TW/man8/chpasswd.8.gz
/var/lib/dpkg/info/base-passwd.list
/var/lib/dpkg/info/base-passwd.md5sums
/var/lib/dpkg/info/base-passwd.postinst
/var/lib/dpkg/info/base-passwd.postrm
/var/lib/dpkg/info/base-passwd.preinst
/var/lib/dpkg/info/base-passwd.templates
/var/lib/dpkg/info/passwd.conf files
/var/lib/dpkg/info/passwd.list
/var/lib/dpkg/info/passwd.md5sums
/var/lib/dpkg/info/passwd.postinst
/var/lib/dpkg/info/passwd.postrm
/var/lib/dpkg/info/passwd.preinst
/var/lib/dpkg/info/passwd.prerm
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 5.29: Comando which

```
leonardonava@leonardonava-VirtualBox:~$ which ls
/usr/bin/ls
leonardonava@leonardonava-VirtualBox:~$ which gcc
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 5.30: Comando whatis

```
leonardonava@leonardonava-VirtualBox:~$ whatis clear
clear (1)          - clear the terminal screen
leonardonava@leonardonava-VirtualBox:~$ _
```


Listagem 5.31: Comando who

```
leonardonava@leonardonava-VirtualBox:~$ who
leonardonava tty1      2022-10-09 15:37
leonardonava tty7      2022-10-09 15:36 (:0)
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 5.32: Rodando Múltiplos Comandos

```
leonardonava@leonardonava-VirtualBox:~$ hostname; date; ls
leonardonava-VirtualBox
dom 09 out 2022 16:14:16 -03
4300-0.txt  arg1.txt  arg2.txt  Documents Music      Public      teste.txt
arg1-soft  arg2      Desktop  Downloads Pictures  Templates  Videos
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 5.34: Rodando Comando em Background

```
leonardonava@leonardonava-VirtualBox:~$ emacs &
[1] 1957
leonardonava@leonardonava-VirtualBox:~$
Command 'emacs' not found, but can be installed with:

sudo snap install emacs      # version 28.2, or
sudo apt install e3          # version 1:2.71-2
sudo apt install emacs-gtk   # version 1:26.3+1-1ubuntu2
sudo apt install emacs-lucid # version 1:26.3+1-1ubuntu2
sudo apt install emacs-nox   # version 1:26.3+1-1ubuntu2
sudo apt install jove        # version 4.17.2.7-1

See 'snap info emacs' for additional versions.
_
```

Capítulo 6

Listagem 6.1: Todos os Processos em Execução

```
leonard+ 867      1  0 15:37 ?      00:00:00 xfsettingsd
leonard+ 868     711  0 15:37 ?      00:00:00 xfce4-panel
root     874      1  0 15:37 ?      00:00:00 /usr/lib/upower/upowerd
leonard+ 883     711  0 15:37 ?      00:00:00 Thunar --daemon
leonard+ 888     868  0 15:37 ?      00:00:00 /usr/lib/x86_64-linux-gnu/xfce4/panel/wrapper-2.
leonard+ 889     868  0 15:37 ?      00:00:00 /usr/lib/x86_64-linux-gnu/xfce4/panel/wrapper-2.
leonard+ 890     868  0 15:37 ?      00:00:00 /usr/lib/x86_64-linux-gnu/xfce4/panel/wrapper-2.
leonard+ 891     868  0 15:37 ?      00:00:00 /usr/lib/x86_64-linux-gnu/xfce4/panel/wrapper-2.
leonard+ 892     868  0 15:37 ?      00:00:00 /usr/lib/x86_64-linux-gnu/xfce4/panel/wrapper-2.
leonard+ 895     868  0 15:37 ?      00:00:00 /usr/lib/x86_64-linux-gnu/xfce4/panel/wrapper-2.
leonard+ 896     868  0 15:37 ?      00:00:04 /usr/lib/x86_64-linux-gnu/xfce4/panel/wrapper-2.
leonard+ 905     711  0 15:37 ?      00:00:00 xfdesktop
leonard+ 918     704  0 15:37 ?      00:00:00 /usr/lib/x86_64-linux-gnu/xfce4/notified/xfce4-no
leonard+ 923     704  0 15:37 ?      00:00:00 /usr/lib/x86_64-linux-gnu/indicator-messages/ind
leonard+ 929     711  0 15:37 ?      00:00:00 /usr/lib/policykit-1-gnome/polkit-gnome-authenti
leonard+ 933     711  0 15:37 ?      00:00:00 /usr/bin/python3 /usr/share/system-config-printe
leonard+ 946      1  0 15:37 ?      00:00:00 xfce4-power-manager
leonard+ 950     711  0 15:37 ?      00:00:00 nm-applet
leonard+ 958     711  0 15:37 ?      00:00:00 update-notifier
leonard+ 974     711  0 15:37 ?      00:00:00 xiccd
leonard+ 975     711  0 15:37 ?      00:00:00 /usr/bin/python3 /usr/bin/blueman-applet
colord   981      1  0 15:37 ?      00:00:00 /usr/libexec/colord
leonard+ 996      1  0 15:37 ?      00:00:00 /usr/bin/python3 /usr/bin/blueman-tray
leonard+ 1000     704  0 15:37 ?      00:00:00 /usr/lib/bluetooth/obexd
leonard+ 1018     704  0 15:37 ?      00:00:00 /usr/libexec/gvfs-udisks2-volume-monitor
leonard+ 1024     704  0 15:37 ?      00:00:00 /usr/libexec/gvfs-gphoto2-volume-monitor
leonard+ 1029     704  0 15:37 ?      00:00:00 /usr/libexec/gvfs-goa-volume-monitor
leonard+ 1033     704  0 15:37 ?      00:00:00 /usr/libexec/gvfs-afc-volume-monitor
leonard+ 1039     704  0 15:37 ?      00:00:00 /usr/libexec/gvfs-mtp-volume-monitor
leonard+ 1047     818  0 15:37 ?      00:00:00 /usr/libexec/gvfsd-trash --spawner :1.8 /org/gtk
leonard+ 1052     704  0 15:37 ?      00:00:00 /usr/libexec/gvfsd-metadata
leonard+ 1160     661  0 15:37 tty1    00:00:01 -bash
root     1931      2  0 16:11 ?      00:00:00 [kworker/1:1-events]
root     1970      2  0 16:17 ?      00:00:00 [kworker/u4:0-events_unbound]
root     1973      2  0 16:27 ?      00:00:00 [kworker/u4:1-events_unbound]
leonard+ 1981    1160  0 16:32 tty1    00:00:00 ps -aef
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 6.2: Todos os Processos em Execução de um Usuário Específico

```
838 ?      00:00:00 xfconfd
844 ?      00:00:00 at-spi2-registr
848 ?      00:00:00 xfce4-screensav
854 ?      00:00:00 gnome-keyring-d
857 ?      00:00:01 xfwm4
867 ?      00:00:00 xfsettingsd
868 ?      00:00:00 xfce4-panel
883 ?      00:00:00 Thunar
888 ?      00:00:00 panel-1-whisker
889 ?      00:00:00 panel-5-systray
890 ?      00:00:00 panel-6-notific
891 ?      00:00:00 panel-7-indicat
892 ?      00:00:00 panel-8-statusn
895 ?      00:00:00 panel-9-power-m
896 ?      00:00:04 panel-10-pulsea
905 ?      00:00:00 xfdesktop
918 ?      00:00:00 xfce4-notifyd
923 ?      00:00:00 indicator-messa
929 ?      00:00:00 polkit-gnome-au
933 ?      00:00:00 applet.py
946 ?      00:00:00 xfce4-power-man
950 ?      00:00:00 nm-applet
958 ?      00:00:00 update-notifier
974 ?      00:00:00 xiccd
975 ?      00:00:00 bluedevil-applet
996 ?      00:00:00 bluedevil-tray
1000 ?     00:00:00 obexd
1018 ?     00:00:00 gvfs-udisks2-vo
1024 ?     00:00:00 gvfs-gphoto2-vo
1029 ?     00:00:00 gvfs-goa-volume
1033 ?     00:00:00 gvfs-afc-volume
1039 ?     00:00:00 gvfs-mtp-volume
1047 ?     00:00:00 gvfsd-trash
1052 ?     00:00:00 gvfsd-metadata
1160 tty1   00:00:01 bash
1984 tty1   00:00:00 ps
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 6.3: Processos que Mais Consomem CPU

```
leonardonava@leonardonava-VirtualBox:~$ ps -aef -r | head -5
PID TTY STAT TIME COMMAND
1987 tty1 D+ 0:00 -bash INVOCATION_ID=0b91ea2640bc407ebcac9ff4a9db3879 TERM=linux JOURNAL_STREAM=8:23361 HOME=/home/leonardonava SHELL=/bin/bash USER=leonardonava LOGNAME=leonardonava PATH=/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr/local/games:/snap/bin MOTD_SHOWN=pam LANG=en_US.UTF-8 LC_NUMERIC=pt_BR.UTF-8 LC_TIME=pt_BR.UTF-8 LC_MONETARY=pt_BR.UTF-8 LC_PAPER=pt_BR.UTF-8 LC_NAME=pt_BR.UTF-8 LC_ADDRESS=pt_BR.UTF-8 LC_TELEPHONE=pt_BR.UTF-8 LC_MEASUREMENT=pt_BR.UTF-8 LC_IDENTIFICATION=pt_BR.UTF-8 MAIL=/var/mail/leonardonava XDG_SESSION_ID=2 XDG_RUNTIME_DIR=/run/user/1000 DBUS_SESSION_BUS_ADDRESS=unix:path=/run/user/1000/bus XDG_SESSION_TYPE=tty XDG_SESSION_CLASS=user XDG_SEAT=seat0 XDG_VTNR=1 HUSHLOGIN=FALSE
1986 tty1 R+ 0:00 ps -aef -r SHELL=/bin/bash LC_ADDRESS=pt_BR.UTF-8 LC_NAME=pt_BR.UTF-8 LC_MONETARY=pt_BR.UTF-8 XDG_SEAT=seat0 PWD=/home/leonardonava LOGNAME=leonardonava XDG_SESSION_TYPE=ty ty MOTD_SHOWN=pam HOME=/home/leonardonava LC_PAPER=pt_BR.UTF-8 LANG=en_US.UTF-8 LS_COLORS=rs=0:di=01;34:ln=01;36:mh=00:pi=40;33:so=01;35:do=01;35: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=34;42:st=37;44:ex=01;32:*.tar=01;31:*.tgz=01;31:*.arc=01;31:*.arj=01;31:*.taz=01;31:*.lha=01;31:*.lz4=01;31:*.lzh=01;31:*.lzma=01;31:*.tlz=01;31:*.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:*.bz2=01;31:*.bz=01;31:*.tbz=01;31:*.tbz2=01;31:*.tz=01;31:*.deb=01;31:*.rpm=01;31:*.jar=01;31:*.war=01;31:*.ear=01;31:*.sar=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:*.wim=01;31:*.swm=01;31:*.dwm=01;31:*.esd=01;31:*.jpg=01;35:*.jpeg=01;35:*.mjpg=01;35:*.mjpeg=01;35:*.gif=01;35:*.bmp=01;35:*.pbm=01;35:*.pgm=01;35:*.ppm=01;35:*.tga=01;35:*.xbm=01;35:*.xpm=01;35:*.tif=01;35:*.tiff=01;35:*.png=01;35:*.svg=01;35:*.svgz=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:*.ogm=01;35:*.mp4=01;35:*.m4v=01;35:*.mp4v=01;35:*.vob=01;35:*.qt=01;35:*.nuv=01;35:*.wmv=01;35:*.asf=01;35:*.rm=01;35:*.rmvb=01;35:*.flc=01;35:*.avi=01;35:*.fli=01;35:*.flv=01;35:*.gl=01;35:*.dl=01;35:*.xcf=01;35:*.xwd=01;35:*.yuv=01;35:*.cgm=01;35:*.emf=01;35:*.ogv=01;35:*.ogx=01;35:*.aac=00;36:*.au=00;36:*.flac=00;36:*.m4a=00;36:*.mid=00;36:*.midi=00;36:*.mka=00;36:*.mp3=00;36:*.mpc=00;36:*.ogg=00;36:*.ra=00;36:*.wav=00;36:*.oga=00;36:*.opus=00;36:*.spx=00;36:*.xspf=00;36: INVOCATION_ID=0b91ea2640bc407ebcac9ff4a9db3879 LESSCLOSE=/usr/bin/lesspipe %s %s XDG_SESSION_CLASS=user LC_IDENTIFICATION=pt_BR.UTF-8 TERM=linux LESSOPEN=| /usr/bin/lesspipe %s USER=leonardonava SHLVL=0 LC_TELEPHONE=pt_BR.UTF-8 LC_MEASUREMENT=pt_BR.UTF-8 XDG_VTNR=1 XDG_SESSION_ID=2 LC_CTYPE=pt_BR.UTF-8 XDG_RUNTIME_DIR=/run/user/1000 LC_TIME=pt_BR.UTF-8 JOURNAL_STREAM=8:23361 XDG_DATA_DIRS=/usr/local/share:/usr/share:/var/lib/snapd/desktop HUSHLOGIN=FALSE PATH=/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr/local/games:/snap/bin DBUS_SESSION_BUS_ADDRESS=unix:path=/run/user/1000/bus MAIL=/var/mail/leonardonava LC_NUMERIC=pt_BR.UTF-8 _=/usr/bin/ps
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 6.4: Processos que Mais Consomem CPU

```
leonardonava@leonardonava-VirtualBox:~$ ps -aef -m | head -5
UID PID PPID C STIME TTY TIME CMD
root 1 0 0 15:35 ? 00:00:02 /sbin/init splash
root - - 0 15:35 - 00:00:02 -
root 2 0 0 15:35 ? 00:00:00 [kthreadd]
root - - 0 15:35 - 00:00:00 -
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 6.5: Obtendo Informações de um Processo Específico

```
leonardonava@leonardonava-VirtualBox:~$ ps -aef | grep firefox
leonard+ 1993 1160 0 16:33 tty1 00:00:00 grep --color=auto firefox
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 6.6: Obtendo a Lista de Processos em forma de Árvore

```
-networkd-dispat
-polkitd—2*[{polkitd}]
-rsyslogd—3*[{rsyslogd}]
-rtkit-daemon—2*[{rtkit-daemon}]
-systemd—(sd-pam)
  -at-spi-bus-laun—dbus-daemon
    -3*[{at-spi-bus-laun}]
  -at-spi2-registr—2*[{at-spi2-registr}]
  -dbus-daemon
  -gvfs-afc-volume—3*[{gvfs-afc-volume}]
  -gvfs-goa-volume—2*[{gvfs-goa-volume}]
  -gvfs-gphoto2-vo—2*[{gvfs-gphoto2-vo}]
  -gvfs-mtp-volume—2*[{gvfs-mtp-volume}]
  -gvfs-udisks2-vo—3*[{gvfs-udisks2-vo}]
  -gvfsd—gvfsd-trash—2*[{gvfsd-trash}]
    -2*[{gvfsd}]
  -gvfsd-fuse—5*[{gvfsd-fuse}]
  -gvfsd-metadata—2*[{gvfsd-metadata}]
  -indicator-messa—3*[{indicator-messa}]
  -obexd
  -pulseaudio—3*[{pulseaudio}]
  -xfce4-notifyd—2*[{xfce4-notifyd}]
  -xfce4-screensav—2*[{xfce4-screensav}]
  -xfconfd—2*[{xfconfd}]
-systemd-journal
-systemd-logind
-systemd-resolve
-systemd-timesyn—{systemd-timesyn}
-systemd-udev
-udisksd—4*[{udisksd}]
-unattended-upgr—{unattended-upgr}
-upowerd—2*[{upowerd}]
-whoopsie—2*[{whoopsie}]
-wpa_supplicant
-xfce4-power-man—2*[{xfce4-power-man}]
-xfsettingsd—2*[{xfsettingsd}]
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 6.9: Comando kill

```
leonardonava@leonardonava-VirtualBox:~$ 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
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 6.10: Comando kill

```
leonardonava@leonardonava-VirtualBox:~$ ps -aef | grep paint
leonard+    2000    1160  0 16:35 tty1    00:00:00 grep --color=auto paint
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 6.11: Matando o Processo Firefox

```
leonardonava@leonardonava-VirtualBox:~$ kill -9 12005
-bash: kill: (12005) - No such process
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 6.13: Controlando Processos

```
leonardonava@leonardonava-VirtualBox:~$ ps
  PID TTY          TIME CMD
  1160 tty1      00:00:01 bash
  2003 tty1      00:00:00 ps
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 6.14: Controlando Processos

```
838 ?      00:00:00 xfconfd
844 ?      00:00:00 at-spi2-registr
848 ?      00:00:00 xfce4-screensav
854 ?      00:00:00 gnome-keyring-d
857 ?      00:00:01 xfwm4
867 ?      00:00:00 xfsettingsd
868 ?      00:00:00 xfce4-panel
883 ?      00:00:00 Thunar
888 ?      00:00:00 panel-1-whisker
889 ?      00:00:00 panel-5-systray
890 ?      00:00:00 panel-6-notific
891 ?      00:00:00 panel-7-indicat
892 ?      00:00:00 panel-8-statusn
895 ?      00:00:00 panel-9-power-m
896 ?      00:00:05 panel-10-pulsea
905 ?      00:00:00 xfdesktop
918 ?      00:00:00 xfce4-notifyd
923 ?      00:00:00 indicator-messa
929 ?      00:00:00 polkit-gnome-au
933 ?      00:00:00 applet.py
946 ?      00:00:00 xfce4-power-man
950 ?      00:00:00 nm-applet
958 ?      00:00:00 update-notifier
974 ?      00:00:00 xiccd
975 ?      00:00:00 bluelman-applet
996 ?      00:00:00 bluelman-tray
1000 ?     00:00:00 obexd
1018 ?     00:00:00 gvfs-udisks2-vo
1024 ?     00:00:00 gvfs-gphoto2-vo
1029 ?     00:00:00 gvfs-goa-volume
1033 ?     00:00:00 gvfs-afc-volume
1039 ?     00:00:00 gvfs-mtp-volume
1047 ?     00:00:00 gvfsd-trash
1052 ?     00:00:00 gvfsd-metadata
1160 tty1   00:00:01 bash
2006 tty1   00:00:00 ps
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 6.15: Controlando Processos

```
leonardonava@leonardonava-VirtualBox:~$ top &
[1] 2008
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 6.16: Controlando Processos

```
leonardonava@leonardonava-VirtualBox:~$ jobs -l
[1]+  2008 Stopped (signal)                  top
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 6.22: Controlando Processos

```
leonard+ 883 0.0 0.9 354912 23876 ? S1 15:37 0:00 Thunar --daemon
leonard+ 888 0.0 1.5 326396 39200 ? S1 15:37 0:00 /usr/lib/x86_64-linux-gnu/xfce4/p
leonard+ 889 0.0 0.9 206080 23788 ? S1 15:37 0:00 /usr/lib/x86_64-linux-gnu/xfce4/p
leonard+ 890 0.0 1.5 251072 38556 ? S1 15:37 0:00 /usr/lib/x86_64-linux-gnu/xfce4/p
leonard+ 891 0.0 1.0 283492 26816 ? S1 15:37 0:00 /usr/lib/x86_64-linux-gnu/xfce4/p
leonard+ 892 0.0 1.5 398772 39088 ? S1 15:37 0:00 /usr/lib/x86_64-linux-gnu/xfce4/p
leonard+ 895 0.0 1.5 251192 38920 ? S1 15:37 0:00 /usr/lib/x86_64-linux-gnu/xfce4/p
leonard+ 896 0.1 1.6 519132 40588 ? S1 15:37 0:05 /usr/lib/x86_64-linux-gnu/xfce4/p
leonard+ 905 0.0 1.5 320248 39508 ? S1 15:37 0:00 xfdesktop
leonard+ 918 0.0 0.7 276680 19040 ? Ssl 15:37 0:00 /usr/lib/x86_64-linux-gnu/xfce4/n
leonard+ 923 0.0 0.4 327036 10316 ? Ssl 15:37 0:00 /usr/lib/x86_64-linux-gnu/indicat
leonard+ 929 0.0 0.6 197468 15560 ? S1 15:37 0:00 /usr/lib/policykit-1-gnome/polkit
leonard+ 933 0.0 1.3 69708 34512 ? S 15:37 0:00 /usr/bin/python3 /usr/share/syste
leonard+ 946 0.0 0.8 206464 21240 ? Ssl 15:37 0:00 xfce4-power-manager
leonard+ 950 0.0 1.2 363756 32072 ? S1 15:37 0:00 nm-applet
leonard+ 958 0.0 1.1 427952 27664 ? S1 15:37 0:00 update-notifier
leonard+ 974 0.0 0.4 853808 10624 ? S1 15:37 0:00 xiccd
leonard+ 975 0.0 1.8 446808 45732 ? S1 15:37 0:00 /usr/bin/python3 /usr/bin/blueman
colord 981 0.0 0.6 259324 16576 ? Ssl 15:37 0:00 /usr/libexec/colord
leonard+ 996 0.0 1.6 369048 40980 ? S1 15:37 0:00 /usr/bin/python3 /usr/bin/blueman
leonard+ 1000 0.0 0.2 43992 6528 ? Ss 15:37 0:00 /usr/lib/bluetooth/obexd
leonard+ 1018 0.0 0.4 327528 11480 ? Ssl 15:37 0:00 /usr/libexec/gvfs-udisks2-volume-
leonard+ 1024 0.0 0.2 248324 6968 ? Ssl 15:37 0:00 /usr/libexec/gvfs-gphoto2-volume-
leonard+ 1029 0.0 0.2 246220 6196 ? Ssl 15:37 0:00 /usr/libexec/gvfs-goa-volume-moni
leonard+ 1033 0.0 0.3 327068 8632 ? Ssl 15:37 0:00 /usr/libexec/gvfs-afc-volume-moni
leonard+ 1039 0.0 0.2 246048 6240 ? Ssl 15:37 0:00 /usr/libexec/gvfs-mtp-volume-moni
leonard+ 1047 0.0 0.4 327760 10680 ? S1 15:37 0:00 /usr/libexec/gvfsd-trash --spawne
leonard+ 1052 0.0 0.2 172488 6164 ? Ssl 15:37 0:00 /usr/libexec/gvfsd-metadata
leonard+ 1160 0.0 0.2 21644 5524 tty1 S 15:37 0:01 -bash
root 1931 0.0 0.0 0 0 ? I 16:11 0:00 [kworker/1:1-events]
root 1970 0.0 0.0 0 0 ? I 16:17 0:00 [kworker/u4:0-events_power_effici
root 1973 0.0 0.0 0 0 ? I 16:27 0:00 [kworker/u4:1-events_unbound]
root 1982 0.0 0.0 0 0 ? I 16:32 0:00 [kworker/u4:2-events_unbound]
root 2005 0.9 0.0 0 0 ? I 16:36 0:00 [kworker/0:0-events]
leonard+ 2008 0.0 0.1 21588 3260 tty1 T 16:36 0:00 top
leonard+ 2013 0.0 0.1 21836 3256 tty1 R+ 16:37 0:00 ps aux
leonardonava@leonardonava-VirtualBox:~$ _
```

Capítulo 7

Listagem 7.1: Listando o Proprietário e as Permissões dos Arquivos

```
leonardonava@leonardonava-VirtualBox:~$ ls -l
total 1592
-rw-rw-r-- 1 leonardonava leonardonava 1586336 mar 1 2021 4300-0.txt
lrwxrwxrwx 1 leonardonava leonardonava 4 out 9 15:37 arq1-soft -> arq1
-rw-rw-r-- 1 leonardonava leonardonava 10 out 9 15:48 arq1.txt
-rw-rw-r-- 1 leonardonava leonardonava 0 out 9 15:34 arq2
-rw-rw-r-- 1 leonardonava leonardonava 11 out 9 15:48 arq2.txt
drwxr-xr-x 2 leonardonava leonardonava 4096 out 8 14:33 Desktop
drwxr-xr-x 2 leonardonava leonardonava 4096 out 8 14:33 Documents
drwxr-xr-x 2 leonardonava leonardonava 4096 out 8 14:33 Downloads
drwxr-xr-x 2 leonardonava leonardonava 4096 out 8 14:33 Music
drwxr-xr-x 2 leonardonava leonardonava 4096 out 8 14:33 Pictures
drwxr-xr-x 2 leonardonava leonardonava 4096 out 8 14:33 Public
drwxr-xr-x 2 leonardonava leonardonava 4096 out 8 14:33 Templates
-rw-rw-r-- 1 leonardonava leonardonava 0 out 9 15:31 teste.txt
drwxr-xr-x 2 leonardonava leonardonava 4096 out 8 14:33 Videos
leonardonava@leonardonava-VirtualBox:~$
```


Listagem 7.2: Criando arquivo cidadex.txt

```
leonardonava@leonardonava-VirtualBox:~$ touch arquivo.txt
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 7.3: Criando arquivo cidadex.txt

```
leonardonava@leonardonava-VirtualBox:~$ ls -l cidades.txt
ls: cannot access 'cidades.txt': No such file or directory
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 7.10: Trocando as Permissões de um Arquivo

```
leonardonava@leonardonava-VirtualBox:~$ chmod 777 mylife
chmod: cannot access 'mylife': No such file or directory
leonardonava@leonardonava-VirtualBox:~$
```

Capítulo 8

Listagem 8.1: Listando Todos os Usuários do Linux

```
leonardonava@leonardonava-VirtualBox:~$ 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
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 8.2: Listando Todos os Usuários do Linux

```
leonardonava@leonardonava-VirtualBox:~$ cut -d: -f1 /etc/passwd | head -10
root
daemon
bin
sys
sync
games
man
lp
mail
news
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 8.3: Listando Todos os Usuários do Linux

```
leonardonava@leonardonava-VirtualBox:~$ cat /etc/group | head -10
root:x:0:
daemon:x:1:
bin:x:2:
sys:x:3:
adm:x:4:syslog,leonardonava
tty:x:5:syslog
disk:x:6:
lp:x:7:
mail:x:8:
news:x:9:
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 8.9: Adicionando um Novo Grupo

```
leonardonava@leonardonava-VirtualBox:~$ sudo groupadd professores
[sudo] password for leonardonava: _
```

Capítulo 9

Listagem 9.1: Instalação do net-tools

```
leonardonava@leonardonava-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?
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 9.2: Comando hostname

```
leonardonava@leonardonava-VirtualBox:~$ hostname
leonardonava-VirtualBox
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 9.3: Nome da Máquina com cat

```
leonardonava@leonardonava-VirtualBox:~$ cat /etc/hosts
127.0.0.1    localhost
127.0.1.1    leonardonava-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
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 9.4: Tabela ARP

```
leonardonava@leonardonava-VirtualBox:~$ arp -a
Command 'arp' not found, but can be installed with:
sudo apt install net-tools
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 9.5: Verificando o Endereço IP

```
leonardonava@leonardonava-VirtualBox:~$ ifconfig
Command 'ifconfig' not found, but can be installed with:
sudo apt install net-tools
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 9.6: Verificando Status da Rede Ethernet

```
leonardonava@leonardonava-VirtualBox:~$ ifconfig eno1
Command 'ifconfig' not found, but can be installed with:
sudo apt install net-tools
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 9.11: Verificando MTU da Rede Ethernet

```
leonardonava@leonardonava-VirtualBox:~$ ifconfig eno1
Command 'ifconfig' not found, but can be installed with:
sudo apt install net-tools
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 9.13: Verificando o Endereço IP

```
leonardonava@leonardonava-VirtualBox:~$ ifconfig eno1
Command 'ifconfig' not found, but can be installed with:
sudo apt install net-tools
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 9.15: Comando ping

```
leonardonava@leonardonava-VirtualBox:~$ ping 10.1.212.1
PING 10.1.212.1 (10.1.212.1) 56(84) bytes of data.
```

Listagem 9.16: Exemplo do Comando ping

```
leonardonava@leonardonava-VirtualBox:~$ ping www.ufu.br
^[[1~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=55 time=84.7 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=2 ttl=55 time=35.7 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=3 ttl=55 time=38.3 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=4 ttl=55 time=36.2 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=5 ttl=55 time=36.7 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=6 ttl=55 time=33.1 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=7 ttl=55 time=36.9 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=8 ttl=55 time=34.1 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=9 ttl=55 time=36.5 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=10 ttl=55 time=32.9 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=11 ttl=55 time=36.9 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=12 ttl=55 time=44.3 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=13 ttl=55 time=37.4 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=14 ttl=55 time=36.9 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=15 ttl=55 time=35.5 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=16 ttl=55 time=35.8 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=17 ttl=55 time=62.3 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=18 ttl=55 time=33.7 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=19 ttl=55 time=36.7 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=20 ttl=55 time=35.5 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=21 ttl=55 time=37.6 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=22 ttl=55 time=36.8 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=23 ttl=55 time=38.4 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=24 ttl=55 time=66.7 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=25 ttl=55 time=33.7 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=26 ttl=55 time=36.1 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=27 ttl=55 time=39.4 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=28 ttl=55 time=33.9 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=29 ttl=55 time=100 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=30 ttl=55 time=35.2 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=31 ttl=55 time=34.5 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=32 ttl=55 time=39.4 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=33 ttl=55 time=31.5 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=34 ttl=55 time=35.6 ms
```

Listagem 9.17: Comando ping

```
leonardonava@leonardonava-VirtualBox:~$ 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=55 time=35.0 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=2 ttl=55 time=39.0 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=3 ttl=55 time=37.4 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=4 ttl=55 time=35.4 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=5 ttl=55 time=75.7 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=6 ttl=55 time=34.7 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=7 ttl=55 time=46.9 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=8 ttl=55 time=37.6 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=9 ttl=55 time=36.5 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=10 ttl=55 time=33.6 ms

--- www.ufu.br ping statistics ---
10 packets transmitted, 10 received, 0% packet loss, time 9072ms
rtt min/avg/max/mdev = 33.618/41.172/75.666/12.029 ms
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 9.18: Comando ping com Opção de Tempo

```
leonardonava@leonardonava-VirtualBox:~$ ping -i 5 -c 3 www.google.com
PING www.google.com (142.250.219.164) 56(84) bytes of data.
64 bytes from gru06s63-in-f4.1e100.net (142.250.219.164): icmp_seq=1 ttl=118 time=36.8 ms
64 bytes from gru06s63-in-f4.1e100.net (142.250.219.164): icmp_seq=2 ttl=118 time=20.4 ms
64 bytes from gru06s63-in-f4.1e100.net (142.250.219.164): icmp_seq=3 ttl=118 time=29.9 ms

--- www.google.com ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 10075ms
rtt min/avg/max/mdev = 20.363/29.004/36.780/6.730 ms
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 9.19: Descobrimo o Endereço Ip de um Host

```
leonardonava@leonardonava-VirtualBox:~$ host www.google.com
www.google.com has address 142.250.219.164
www.google.com has IPv6 address 2800:3f0:4001:824::2004
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 9.20: Instalação do dnsutils

```
leonardonava@leonardonava-VirtualBox:~$ sudo apt install dnsutils
[sudo] password for leonardonava:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
  dnsutils
0 upgraded, 1 newly installed, 0 to remove and 13 not upgraded.
Need to get 2.756 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 1:9.16.1-0ubuntu
2.11 [2.756 B]
Fetched 2.756 B in 1s (3.761 B/s)
Selecting previously unselected package dnsutils.
(Reading database ... 191832 files and directories currently installed.)
Preparing to unpack .../dnsutils_1%3a9.16.1-0ubuntu2.11_all.deb ...
Unpacking dnsutils (1:9.16.1-0ubuntu2.11) ...
Setting up dnsutils (1:9.16.1-0ubuntu2.11) ...
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 9.21: Descobrir Informações sobre um Domínio

```
leonardonava@leonardonava-VirtualBox:~$ dig www.google.br

; <<>> DiG 9.16.1-Ubuntu <<>> www.google.br
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NXDOMAIN, id: 15043
;; flags: qr rd ra; QUERY: 1, ANSWER: 0, AUTHORITY: 0, ADDITIONAL: 1

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

;; Query time: 72 msec
;; SERVER: 127.0.0.53#53(127.0.0.53)
;; WHEN: dom out 09 17:07:44 -03 2022
;; MSG SIZE rcvd: 42

leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 9.22: Utilizando o comando nslookup

```
leonardonava@leonardonava-VirtualBox:~$ nslookup www.google.com
Server:      127.0.0.53
Address:     127.0.0.53#53

Non-authoritative answer:
Name:   www.google.com
Address: 142.250.219.164
Name:   www.google.com
Address: 2800:3f0:4001:824::2004

leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 9.23: Instalação do Traceroute

```
leonardonava@leonardonava-VirtualBox:~$ sudo apt install traceroute
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
  traceroute
0 upgraded, 1 newly installed, 0 to remove and 13 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 1s (46,3 kB/s)
Selecting previously unselected package traceroute.
(Reading database ... 191836 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/tcptraceproto.db to provide /usr/sbin/tcptraceproto (tcptraceproto) in auto mode
Processing triggers for man-db (2.9.1-1) ...
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 9.24: Rotas

```
leonardonava@leonardonava-VirtualBox:~$ traceroute www.google.com
traceroute to www.google.com (142.250.219.164), 30 hops max, 60 byte packets
 1 _gateway (10.0.2.2)  7.266 ms  7.788 ms  7.734 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 * * *
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 9.26: Rotas com tracepath

```
leonardonava@leonardonava-VirtualBox:~$ tracepath www.ufu.br
1?: [LOCALHOST] pmtu 1500
 1: _gateway 6.056ms
 1: _gateway 4.540ms
 2: no reply
 3: _gateway 1.395ms !N
    Resume: pmtu 1500
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 9.27: Estatísticas de Rede com netstat

```
leonardonava@leonardonava-VirtualBox:~$ netstat -s
Command 'netstat' not found, but can be installed with:
sudo apt install net-tools
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 9.28: Comando netstat -i

```
leonardonava@leonardonava-VirtualBox:~$ netstat -i
Command 'netstat' not found, but can be installed with:
sudo apt install net-tools
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 9.29: Visualizando Tabela de Roteamento com netstat

```
leonardonava@leonardonava-VirtualBox:~$ netstat -rn
Command 'netstat' not found, but can be installed with:
sudo apt install net-tools
leonardonava@leonardonava-VirtualBox:~$ _
```


Listagem 9.30: Instalação do nmap

```
Need to get 5.528 kB of archives.  
After this operation, 26,3 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/universe amd64 liblinear4 amd64 2.3.0+dfsg-3build1 [41,7 kB]  
Get:2 http://br.archive.ubuntu.com/ubuntu focal/main amd64 liblua5.3-0 amd64 5.3.3-1.1ubuntu2 [116 kB]  
Get:3 http://br.archive.ubuntu.com/ubuntu focal/universe amd64 lua-lpeg amd64 1.0.2-1 [31,4 kB]  
Get:4 http://br.archive.ubuntu.com/ubuntu focal/universe amd64 nmap-common all 7.80+dfsg1-2build1 [31,676 kB]  
Get:5 http://br.archive.ubuntu.com/ubuntu focal/universe amd64 nmap amd64 7.80+dfsg1-2build1 [1.662 kB]  
Fetched 5.528 kB in 17s (333 kB/s)  
Selecting previously unselected package liblinear4:amd64.  
(Reading database ... 191856 files and directories currently installed.)  
Preparing to unpack .../liblinear4_2.3.0+dfsg-3build1_amd64.deb ...  
Unpacking liblinear4:amd64 (2.3.0+dfsg-3build1) ...  
Selecting previously unselected package liblua5.3-0:amd64.  
Preparing to unpack .../liblua5.3-0_5.3.3-1.1ubuntu2_amd64.deb ...  
Unpacking liblua5.3-0:amd64 (5.3.3-1.1ubuntu2) ...  
Selecting previously unselected package lua-lpeg:amd64.  
Preparing to unpack .../lua-lpeg_1.0.2-1_amd64.deb ...  
Unpacking lua-lpeg:amd64 (1.0.2-1) ...  
Selecting previously unselected package nmap-common.  
Preparing to unpack .../nmap-common_7.80+dfsg1-2build1_all.deb ...  
Unpacking nmap-common (7.80+dfsg1-2build1) ...  
Selecting previously unselected package nmap.  
Preparing to unpack .../nmap_7.80+dfsg1-2build1_amd64.deb ...  
Unpacking nmap (7.80+dfsg1-2build1) ...  
Setting up lua-lpeg:amd64 (1.0.2-1) ...  
Setting up liblinear4:amd64 (2.3.0+dfsg-3build1) ...  
Setting up nmap-common (7.80+dfsg1-2build1) ...  
Setting up liblua5.3-0:amd64 (5.3.3-1.1ubuntu2) ...  
Setting up nmap (7.80+dfsg1-2build1) ...  
Processing triggers for man-db (2.9.1-1) ...  
Processing triggers for libc-bin (2.31-0ubuntu9.9) ...  
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 9.31: Verificando Portas Abertas

```
leonardonava@leonardonava-VirtualBox:~$ nmap www.ufu.br  
Starting Nmap 7.80 ( https://nmap.org ) at 2022-10-09 17:29 -03  
Nmap scan report for www.ufu.br (200.19.145.55)  
Host is up (0.051s latency).  
rDNS record for 200.19.145.55: bulma.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 6.52 seconds  
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 9.32: Comando nmap com opção -v

```
leonardonava@leonardonava-VirtualBox:~$ nmap -v localhost
Starting Nmap 7.80 ( https://nmap.org ) at 2022-10-09 17:29 -03
Initiating Ping Scan at 17:29
Scanning localhost (127.0.0.1) [2 ports]
Completed Ping Scan at 17:29, 0.00s elapsed (1 total hosts)
Initiating Connect Scan at 17:29
Scanning localhost (127.0.0.1) [1000 ports]
Discovered open port 631/tcp on 127.0.0.1
Completed Connect Scan at 17:29, 0.04s elapsed (1000 total ports)
Nmap scan report for localhost (127.0.0.1)
Host is up (0.00014s latency).
Not shown: 999 closed ports
PORT      STATE SERVICE
631/tcp   open ipp

Read data files from: /usr/bin/../share/nmap
Nmap done: 1 IP address (1 host up) scanned in 0.14 seconds
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 9.34: Rastreando Múltiplos Domínios

```
leonardonava@leonardonava-VirtualBox:~$ nmap 192.168.0.1 192.168.0.104
Starting Nmap 7.80 ( https://nmap.org ) at 2022-10-09 17:30 -03
Nmap done: 2 IP addresses (0 hosts up) scanned in 3.13 seconds
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 9.35: Rastreando uma Sub-rede

```
leonardonava@leonardonava-VirtualBox:~$ nmap 192.168.0.*
Starting Nmap 7.80 ( https://nmap.org ) at 2022-10-09 17:31 -03
Nmap done: 256 IP addresses (0 hosts up) scanned in 105.73 seconds
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 9.36: Visualizando a Tabela de Roteamento

```
leonardonava@leonardonava-VirtualBox:~$ route

Command 'route' not found, but can be installed with:

sudo apt install net-tools

leonardonava@leonardonava-VirtualBox:~$
```

Listagem 9.37: Uso do Telnet

```
leonardonava@leonardonava-VirtualBox:~$ telnet www.ufu.br
Trying 200.19.145.55...
telnet: Unable to connect to remote host: Connection timed out
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 9.41: Instalando ssh

```
Get:4 http://br.archive.ubuntu.com/ubuntu focal/main amd64 ssh-import-id all 5.10-0ubuntu1 [10,0 kB]
Fetched 688 kB in 2s (289 kB/s)
Preconfiguring packages ...
Selecting previously unselected package ncurses-term.
(Reading database ... 192737 files and directories currently installed.)
Preparing to unpack .../ncurses-term_6.2-0ubuntu2_all.deb ...
Unpacking ncurses-term (6.2-0ubuntu2) ...
Selecting previously unselected package openssh-sftp-server.
Preparing to unpack .../openssh-sftp-server_1%3a8.2p1-4ubuntu0.5_amd64.deb ...
Unpacking openssh-sftp-server (1:8.2p1-4ubuntu0.5) ...
Selecting previously unselected package openssh-server.
Preparing to unpack .../openssh-server_1%3a8.2p1-4ubuntu0.5_amd64.deb ...
Unpacking openssh-server (1:8.2p1-4ubuntu0.5) ...
Selecting previously unselected package ssh-import-id.
Preparing to unpack .../ssh-import-id_5.10-0ubuntu1_all.deb ...
Unpacking ssh-import-id (5.10-0ubuntu1) ...
Setting up openssh-sftp-server (1:8.2p1-4ubuntu0.5) ...
Setting up openssh-server (1:8.2p1-4ubuntu0.5) ...

Creating config file /etc/ssh/sshd_config with new version
Creating SSH2 RSA key; this may take some time ...
3072 SHA256:SiIoxrAzyT46uRz8gb0TrIqrSSBSgcoL1/YshI5YYqs root@leonardonava-VirtualBox (RSA)
Creating SSH2 ECDSA key; this may take some time ...
256 SHA256:m59R+9gM7lpbWxJ5uhK/C03N858Yi3BhA0f3bMXUFdE root@leonardonava-VirtualBox (ECDSA)
Creating SSH2 ED25519 key; this may take some time ...
256 SHA256:k0tFoLs4UnSuh8f/MHntLyizRcZwFyBFq0tqlaL7lKg root@leonardonava-VirtualBox (ED25519)
Created symlink /etc/systemd/system/ssh.service → /lib/systemd/system/ssh.service.
Created symlink /etc/systemd/system/multi-user.target.wants/ssh.service → /lib/systemd/system/ssh.service.
rescue-ssh.target is a disabled or a static unit, not starting it.
Setting up ssh-import-id (5.10-0ubuntu1) ...
Attempting to convert /etc/ssh/ssh_import_id
Setting up ncurses-term (6.2-0ubuntu2) ...
Processing triggers for systemd (245.4-4ubuntu3.17) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for ufw (0.36-6ubuntu1) ...
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 9.46: Abrindo Firefox Remotamente

```
leonardonava@leonardonava-VirtualBox:~$ firefox &
[1] 4555
leonardonava@leonardonava-VirtualBox:~$ Error: no DISPLAY environment variable specified
```

Listagem 9.49: Instalação do tcpdump

```
leonardonava@leonardonava-VirtualBox:~$ apt install tcpdump
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?
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 9.50: Interfaces que podem ser utilizadas com tcpdump

```
leonardonava@leonardonava-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]
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 9.51: Capturando Pacotes da Interface de Rede

```
leonardonava@leonardonava-VirtualBox:~$ tcpdump -i eno1
tcpdump: eno1: You don't have permission to capture on that device
(socket: Operation not permitted)
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 9.53: Instalação do lynx

```
leonardonava@leonardonava-VirtualBox:~$ sudo apt install lynx
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  lynx-common
The following NEW packages will be installed:
  lynx lynx-common
0 upgraded, 2 newly installed, 0 to remove and 13 not upgraded.
Need to get 1.539 kB of archives.
After this operation, 5.481 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/universe amd64 lynx-common all 2.9.0dev.5-1 [914 kB]
Get:2 http://br.archive.ubuntu.com/ubuntu focal/universe amd64 lynx amd64 2.9.0dev.5-1 [626 kB]
Fetched 1.539 kB in 5s (329 kB/s)
Selecting previously unselected package lynx-common.
(Reading database ... 195584 files and directories currently installed.)
Preparing to unpack .../lynx-common_2.9.0dev.5-1_all.deb ...
Unpacking lynx-common (2.9.0dev.5-1) ...
Selecting previously unselected package lynx.
Preparing to unpack .../lynx_2.9.0dev.5-1_amd64.deb ...
Unpacking lynx (2.9.0dev.5-1) ...
Setting up lynx-common (2.9.0dev.5-1) ...
Setting up lynx (2.9.0dev.5-1) ...
update-alternatives: using /usr/bin/lynx to provide /usr/bin/www-browser (www-browser) in auto mode
Processing triggers for doc-base (0.10.9) ...
Processing 1 added doc-base file...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for mime-support (3.64ubuntu1) ...
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 9.54: Utilizando o lynx

```
Pesquisa_Imagens Maps Play YouTube Notícias Gmail Drive Mais »
Histórico da Web | Configurações | Fazer login

Google

-----
Pesquisa Google  Estou com sorte  Pesquisa avançada

Disponibilizado pelo Google em: English

Soluções de publicidade  Soluções empresariais  Sobre o Google  Google.com.br

© 2022 - Privacidade - Termos

(NORMAL LINK) Use right-arrow or <return> to activate.
Arrow keys: Up and Down to move.  Right to follow a link; Left to go back.
H)elp O)ptions P)rint G)o M)ain screen Q)uit /=search [delete]=history list
```

Listagem 9.55: Baixando Sites com wget

```
leonardonava@leonardonava-VirtualBox:~$ wget --recursive www.ufu.br
--2022-10-09 17:43:45-- http://www.ufu.br/
Resolving www.ufu.br (www.ufu.br)... 200.19.145.55
Connecting to www.ufu.br (www.ufu.br)|200.19.145.55|:80... connected.
HTTP request sent, awaiting response... 301 Moved Permanently
Location: https://ufu.br/ [following]
--2022-10-09 17:43:45-- https://ufu.br/
Resolving ufu.br (ufu.br)... 200.19.145.55
Connecting to ufu.br (ufu.br)|200.19.145.55|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: unspecified [text/html]
Saving to: 'www.ufu.br/index.html'

www.ufu.br/index.html      [ <=> ] 99,78K  --.-KB/s  in 0,1s

2022-10-09 17:43:46 (936 KB/s) - 'www.ufu.br/index.html' saved [102174]

FINISHED --2022-10-09 17:43:46--
Total wall clock time: 0,9s
Downloaded: 1 files, 100K in 0,1s (936 KB/s)
leonardonava@leonardonava-VirtualBox:~$
```

Capítulo 10

Listagem 10.1: Atualização da Lista de Pacotes Disponíveis

```
leonardonava@leonardonava-VirtualBox:~$ apt update
Reading package lists... Done
E: Could not open lock file /var/lib/apt/lists/lock - open (13: Permission denied)
E: Unable to lock directory /var/lib/apt/lists/
W: Problem unlinking the file /var/cache/apt/pkgcache.bin - RemoveCaches (13: Permission denied)
W: Problem unlinking the file /var/cache/apt/srcpkgcache.bin - RemoveCaches (13: Permission denied)
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 10.2: Atualização de Pacotes

```
leonardonava@leonardonava-VirtualBox:~$ apt upgrade
E: Could not open lock file /var/lib/dpkg/lock-frontend - open (13: Permission denied)
E: Unable to acquire the dpkg frontend lock (/var/lib/dpkg/lock-frontend), are you root?
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 10.3: Lista de Pacotes para Upgrade

```
leonardonava@leonardonava-VirtualBox:~$ apt list --upgradable
Listing... Done
gir1.2-notify-0.7/focal-updates 0.7.9-1ubuntu3.20.04.2 amd64 [upgradable from: 0.7.9-1ubuntu2]
libnotify-bin/focal-updates 0.7.9-1ubuntu3.20.04.2 amd64 [upgradable from: 0.7.9-1ubuntu2]
libnotify4/focal-updates 0.7.9-1ubuntu3.20.04.2 amd64 [upgradable from: 0.7.9-1ubuntu2]
libnss-systemd/focal-updates 245.4-4ubuntu3.18 amd64 [upgradable from: 245.4-4ubuntu3.17]
libpam-systemd/focal-updates 245.4-4ubuntu3.18 amd64 [upgradable from: 245.4-4ubuntu3.17]
libsystemd0/focal-updates 245.4-4ubuntu3.18 amd64 [upgradable from: 245.4-4ubuntu3.17]
libtss2-esys0/focal-updates 2.3.2-1ubuntu0.20.04.1 amd64 [upgradable from: 2.3.2-1]
systemd-sysv/focal-updates 245.4-4ubuntu3.18 amd64 [upgradable from: 245.4-4ubuntu3.17]
systemd-timesyncd/focal-updates 245.4-4ubuntu3.18 amd64 [upgradable from: 245.4-4ubuntu3.17]
systemd/focal-updates 245.4-4ubuntu3.18 amd64 [upgradable from: 245.4-4ubuntu3.17]
ubuntu-advantage-tools/focal-updates 27.11.2~20.04.1 amd64 [upgradable from: 27.10.1~20.04.1]
xserver-xorg-video-amdgpu/focal-updates 19.1.0-1ubuntu0.1 amd64 [upgradable from: 19.1.0-1]
zlib1g/focal-updates 1:1.2.11.dfsg-2ubuntu1.4 amd64 [upgradable from: 1:1.2.11.dfsg-2ubuntu1.3]
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 10.4: Instalação do Pacote vim

```
leonardonava@leonardonava-VirtualBox:~$ apt install vim
E: Could not open lock file /var/lib/dpkg/lock-frontend - open (13: Permission denied)
E: Unable to acquire the dpkg frontend lock (/var/lib/dpkg/lock-frontend), are you root?
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 10.5: Removendo o Pacote vim

```
leonardonava@leonardonava-VirtualBox:~$ apt remove vim
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?
leonardonava@leonardonava-VirtualBox:~$
```

Capítulo 14

Listagem 14.1: Versão do Kernel

```
leonardonava@leonardonava-VirtualBox:~$ uname -a
Linux leonardonava-VirtualBox 5.15.0-48-generic #54~20.04.1-Ubuntu SMP Thu Sep 1 16:17:26 UTC 2022 x
86_64 x86_64 x86_64 GNU/Linux
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 14.2: Versão do Kernel

```
leonardonava@leonardonava-VirtualBox:~$ uname -s
Linux
leonardonava@leonardonava-VirtualBox:~$ uname -n
leonardonava-VirtualBox
leonardonava@leonardonava-VirtualBox:~$ uname -r
5.15.0-48-generic
leonardonava@leonardonava-VirtualBox:~$
```


Listagem 14.4: Verificando Informações sobre a CPU

```
Thread(s) per core:      1
Core(s) per socket:     2
Socket(s):               1
NUMA node(s):           1
Vendor ID:               GenuineIntel
CPU family:              6
Model:                   142
Model name:              Intel(R) Core(TM) i7-7500U CPU @ 2.70GHz
Stepping:                9
CPU MHz:                 2903.996
BogoMIPS:                5807.99
Hypervisor vendor:      KVM
Virtualization type:     full
L1d cache:               64 KiB
L1i cache:               64 KiB
L2 cache:                 512 KiB
L3 cache:                 8 MiB
NUMA node0 CPU(s):      0,1
Vulnerability Itlb multihit: KVM: Mitigation: VMX unsupported
Vulnerability L1tf:       Mitigation; PTE Inversion
Vulnerability Mds:        Mitigation; Clear CPU buffers; SMT Host state unknown
Vulnerability Meltdown:   Mitigation; PTI
Vulnerability Mmio stale data: Mitigation; Clear CPU buffers; SMT Host state unknown
Vulnerability Retbleed:    Vulnerable
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:       Unknown: Dependent on hypervisor status
Vulnerability Tsx async abort: Not affected
Flags:                     fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat p
se36 clflush mmx fxsr sse sse2 ht syscall nx rdtscp lm constant_tsc
rep_good nopl xtopology nonstop_tsc cpuid tsc_known_freq pni pclmu
lqdtq ssse3 cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt aes xsave av
x rdrand hypervisor lahf_lm abm 3dnowprefetch invpcid_single pti fs
gsbase avx2 invpcid rdseed clflushopt md_clear flush_l1d
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 14.5: Verificando a CPU

```
leonardonava@leonardonava-VirtualBox:~$ grep "model_name" /proc/cpuinfo
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 14.6: Verificando a CPU

```
leonardonava@leonardonava-VirtualBox:~$ lsusb
Bus 001 Device 002: ID 80ee:0021 VirtualBox USB Tablet
Bus 001 Device 001: ID 1d6b:0001 Linux Foundation 1.1 root hub
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 14.7: Listando Dispositivos PCI

```
leonardonava@leonardonava-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)
00:0d.0 SATA controller: Intel Corporation 82801HM/HEM (ICH8M/ICH8M-E) SATA Controller [AHCI mode] (rev 02)
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 14.8: Listando Dispositivos Bloco

```
leonardonava@leonardonava-VirtualBox:~$ lsblk
NAME        MAJ:MIN RM   SIZE RO TYPE MOUNTPOINT
sda          8:0    0   150G  0 disk
├─sda1       8:1    0    2,3G  0 part [SWAP]
└─sda2       8:2    0   147,7G  0 part /
sr0         11:0    1    61M  0 rom
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 14.9: Imprimindo as Partições

```
leonardonava@leonardonava-VirtualBox:~$ cat /proc/partitions
major minor #blocks name
11        0      62390 sr0
 8         0  157286400 sda
 8         1   2440192 sda1
 8         2  154844160 sda2
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 14.11: Instalando o pacote pacmciautils

```
leonardonava@leonardonava-VirtualBox:~$ apt-get install pacmciautils
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?
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 14.12: Listando Dispositivos PCMCIA

```
leonardonava@leonardonava-VirtualBox:~$ lspcmcia
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 14.13: Listando Informações sobre a Memória

```
leonardonava@leonardonava-VirtualBox:~$ free
              total        used        free      shared  buff/cache   available
Mem:          2474828      445440      1360840          1408        668548       1867148
Swap:          2440188           0         2440188
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 14.14: Listando Informações sobre a Memória

```
leonardonava@leonardonava-VirtualBox:~$ free -m
              total        used        free      shared  buff/cache   available
Mem:           2416         435         1328           1         652         1823
Swap:           2382           0         2382
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 14.15: Listando Informações sobre a Memória

```
SwapTotal:      2440188 kB
SwapFree:       2440188 kB
Dirty:          32 kB
Writeback:       0 kB
AnonPages:      322944 kB
Mapped:         146028 kB
Shmem:          1408 kB
KReclaimable:   55456 kB
Slab:           96128 kB
SReclaimable:   55456 kB
SUnreclaim:     40672 kB
KernelStack:    4592 kB
PageTables:     9356 kB
NFS_Unstable:   0 kB
Bounce:         0 kB
WritebackTmp:   0 kB
CommitLimit:    3677600 kB
Committed_AS:   1794708 kB
VmallocTotal:   34359738367 kB
VmallocUsed:     31956 kB
VmallocChunk:    0 kB
Percpu:         1560 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:    147392 kB
DirectMap2M:    2412544 kB
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 14.16: Listando Informações sobre a Memória

```
leonardonava@leonardonava-VirtualBox:~$ vmstat -s
2474828 K total memory
445792 K used memory
286840 K active memory
649420 K inactive memory
1360336 K free memory
37716 K buffer memory
630984 K swap cache
2440188 K total swap
0 K used swap
2440188 K free swap
12231 non-nice user cpu ticks
4942 nice user cpu ticks
17980 system cpu ticks
506544 idle cpu ticks
13114 IO-wait cpu ticks
0 IRQ cpu ticks
22574 softirq cpu ticks
0 stolen cpu ticks
554849 pages paged in
379260 pages paged out
0 pages swapped in
0 pages swapped out
739571 interrupts
664572 CPU context switches
1665345642 boot time
5333 forks
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 14.17: Listando Informações sobre a Memória

```
leonardonava@leonardonava-VirtualBox:~$ lsmen
Command 'lsmen' not found, did you mean:
  command 'lsmem' from deb util-linux (2.34-0.1ubuntu9.3)
Try: sudo apt install <deb name>
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 14.19: Instalando hwinfo

```
leonardonava@leonardonava-VirtualBox:~$ sudo apt-get install hwinfo
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  libhd21 libx86emu2
The following NEW packages will be installed:
  hwinfo libhd21 libx86emu2
0 upgraded, 3 newly installed, 0 to remove and 13 not upgraded.
Need to get 793 kB of archives.
After this operation, 3.498 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/universe amd64 libx86emu2 amd64 2.4-1 [45,5 kB]
Get:2 http://br.archive.ubuntu.com/ubuntu focal/universe amd64 libhd21 amd64 21.68-1 [729 kB]
Get:3 http://br.archive.ubuntu.com/ubuntu focal/universe amd64 hwinfo amd64 21.68-1 [18,0 kB]
Fetched 793 kB in 4s (193 kB/s)
Selecting previously unselected package libx86emu2:amd64.
(Reading database ... 195692 files and directories currently installed.)
Preparing to unpack .../libx86emu2_2.4-1_amd64.deb ...
Unpacking libx86emu2:amd64 (2.4-1) ...
Selecting previously unselected package libhd21:amd64.
Preparing to unpack .../libhd21_21.68-1_amd64.deb ...
Unpacking libhd21:amd64 (21.68-1) ...
Selecting previously unselected package hwinfo.
Preparing to unpack .../hwinfo_21.68-1_amd64.deb ...
Unpacking hwinfo (21.68-1) ...
Setting up libx86emu2:amd64 (2.4-1) ...
Setting up libhd21:amd64 (21.68-1) ...
Setting up hwinfo (21.68-1) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for libc-bin (2.31-0ubuntu9.9) ...
leonardonava@leonardonava-VirtualBox:~$ _
```

Listagem 14.20: Analisando os Dispositivos de Hardware

```
,sse,sse2,ht,syscall,nx,rdtscp,lm,constant_tsc,rep_good,nopl,xtopology,nonstop_tsc,cpuid,tsc_known_f
reg,pni,pc1mulqdq,ssse3,cx16,pcid,sse4_1,sse4_2,x2apic,movbe,popcnt,aes,xsave,avx,rdrand,hypervisor,
lahf_lm,abm,3dnowprefetch,invpcid_single,pti,fsgsbase,avx2,invpcid,rdseed,clflushopt,md_clear,flush_
11d
  Clock: 2903 MHz
  Bogomips: 5807.99
  Cache: 4096 kb
  Units/Processor: 2
  Config Status: cfg=new, avail=yes, need=no, active=unknown

32: None 00:0: 10701 Ethernet
  [Created at net.126]
  Unique ID: wbsj.ndpeucax6V1
  Parent ID: Fybr.GkSpXDNdaaB
  SysFS ID: /class/net/enp0s3
  SysFS Device Link: /devices/pci0000:00/0000:00:03.0
  Hardware Class: network interface
  Model: "Ethernet network interface"
  Driver: "e1000"
  Driver Modules: "e1000"
  Device File: enp0s3
  HW Address: 08:00:27:3a:15:41
  Permanent HW Address: 08:00:27:3a:15:41
  Link detected: yes
  Config Status: cfg=new, avail=yes, need=no, active=unknown
  Attached to: #16 (Ethernet controller)

33: None 00:0: 10700 Loopback
  [Created at net.126]
  Unique ID: ZsBS.GQNX7L4uPNA
  SysFS ID: /class/net/lo
  Hardware Class: network interface
  Model: "Loopback network interface"
  Device File: lo
  Link detected: yes
  Config Status: cfg=new, avail=yes, need=no, active=unknown
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 14.21: Versão Resumida do Relatório do Lshw

```
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:
    enp0s3      Ethernet network interface
    lo          Loopback network interface
disk:
    /dev/sda    VBOX HARDDISK
partition:
    /dev/sda1   Partition
    /dev/sda2   Partition
cdrom:
    /dev/sr0    VBOX CD-ROM
usb controller:
    Apple KeyLargo/Intrepid USB
bios:
    BIOS
bridge:
    Intel 82371SB PIIX3 ISA [Natoma/Triton II]
    Intel 82371AB/EB/MB PIIX4 ACPI
    Intel 440FX - 82441FX PMC [Natoma]
hub:
    Linux Foundation 1.1 root hub
memory:
    Main Memory
unknown:
    FPU
    DMA controller
    PIC
    Keyboard controller
    PS/2 Controller
    /dev/input/mice InnoTek Systemberatung VirtualBox Guest Service
leonardonava@leonardonava-VirtualBox:~$
```

Listagem 14.22: Comando para remover CDROM

```
leonardonava@leonardonava-VirtualBox:~$ eject
leonardonava@leonardonava-VirtualBox:~$ _
```