

Universidade Federal de Uberlândia
Curso de Graduação em Engenharia Mecatrônica
Sistemas Embarcados II / Sistemas Digitais para Mecatrônica

Semana 01 - Utilização do Linux

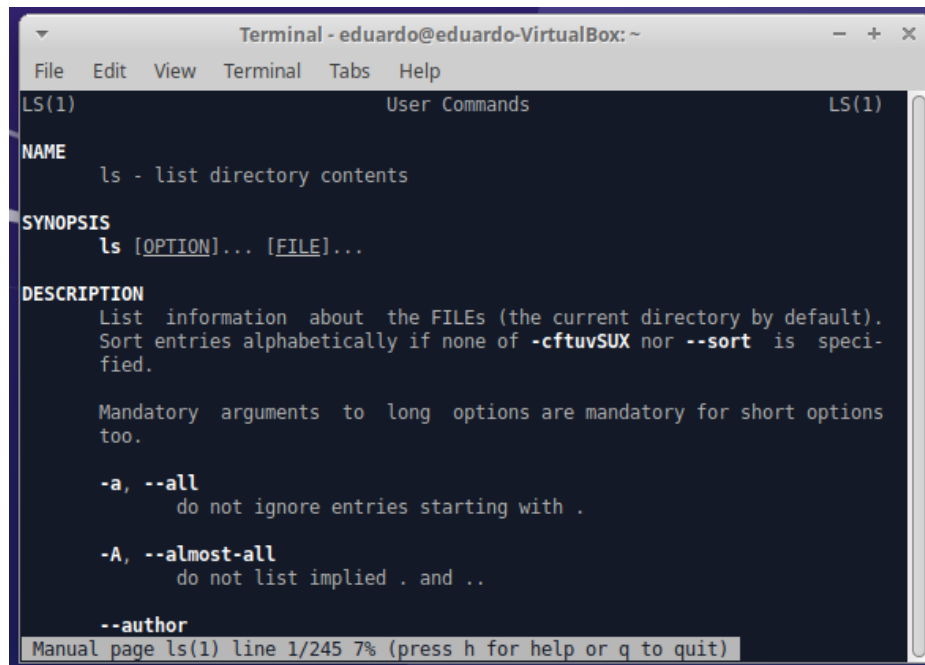
Relatório referente à leitura e reprodução dos comandos apresentados no livro referência, “Linux: Comandos Básicos e Avançados” de Vivas, Araújo, Pitangui e Assis.

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Um dos primeiros comandos apresentados é o Manual de Comando (man). Ele é de extrema importância pois explica o funcionamento dos demais comandos que podem ser executados em um terminal linux.

Na figura a seguir, é exemplificada a sua execução, onde inserindo man ls (onde ls é o comando que lista os diretórios no caminho atual), ele exibe uma breve descrição e outras possibilidades de argumentos para o comando, como por exemplo, listar todos os diretórios incluindo diretórios ocultos, apenas arquivos, entre outros.



```
Terminal - eduardo@eduardo-VirtualBox: ~
File Edit View Terminal Tabs Help
LS(1) User Commands LS(1)
NAME
ls - list directory contents
SYNOPSIS
ls [OPTION]... [FILE]...
DESCRIPTION
List information about the FILES (the current directory by default).
Sort entries alphabetically if none of -cftuvSUX nor --sort is speci-
fied.

Mandatory arguments to long options are mandatory for short options
too.

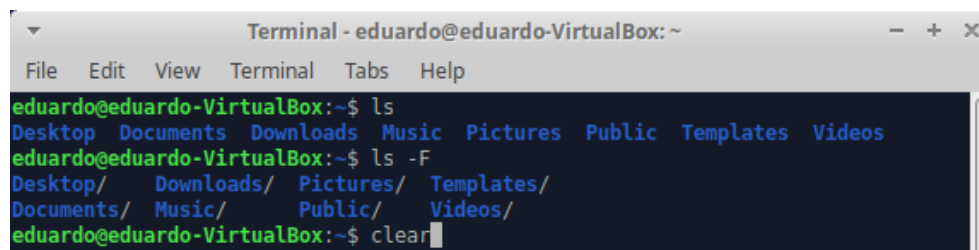
-a, --all
do not ignore entries starting with .

-A, --almost-all
do not list implied . and ..

--author
Manual page ls(1) line 1/245 7% (press h for help or q to quit)
```

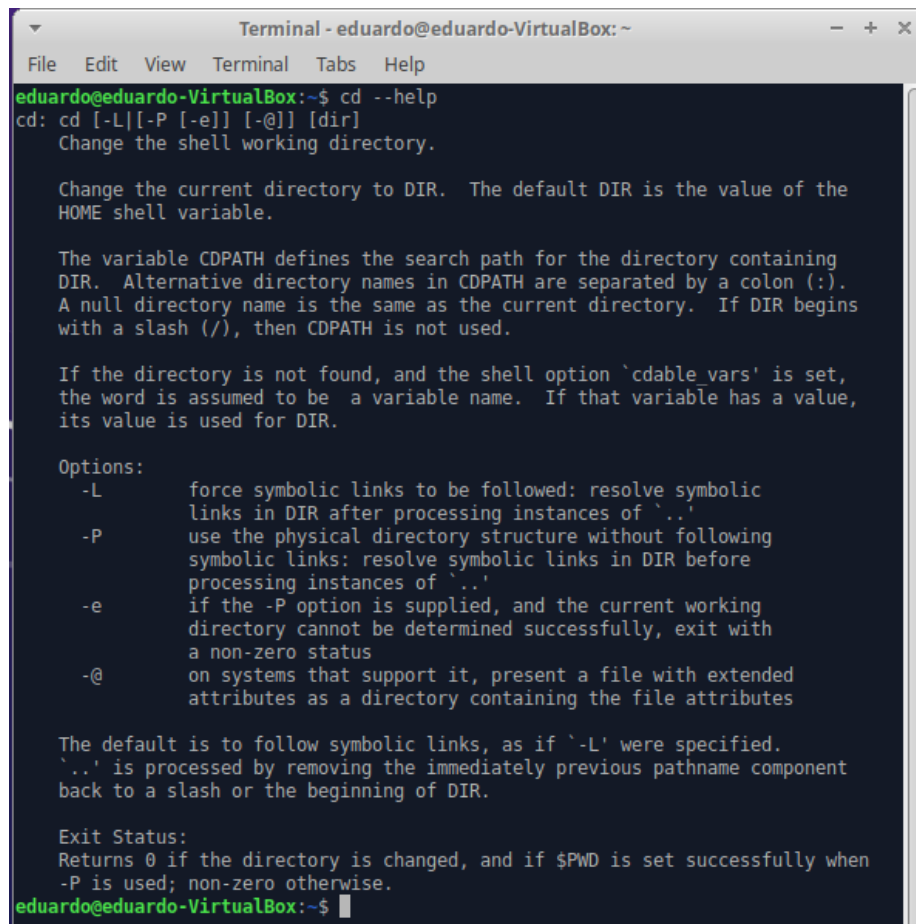
O comando ls lista todo o conteúdo do diretório atual (um comando útil para exibir o caminho atual é o pwd). Além de listar o conteúdo do diretório, o comando ls possui algumas alternativas de uso, como:

- -a: lista todos os arquivos (incluindo arquivos ocultos);
- -h: usado junto com a opção -l, exibe o tamanho do arquivo.
- -i: apresenta o índice de cada arquivo.



```
Terminal - eduardo@eduardo-VirtualBox: ~
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~$ ls
Desktop Documents Downloads Music Pictures Public Templates Videos
eduardo@eduardo-VirtualBox:~$ ls -F
Desktop/ Downloads/ Pictures/ Templates/
Documents/ Music/ Public/ Videos/
eduardo@eduardo-VirtualBox:~$ clear
```

Assim como o comando `man`, é possível obter ajuda ajuda sobre a sintaxe ou opções de um comando, utiliza-se o complemento `--help`.



```
Terminal - eduardo@eduardo-VirtualBox: ~
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~$ 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.

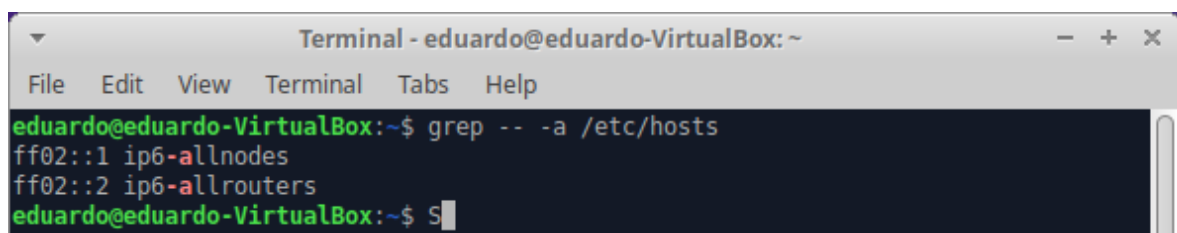
    If the directory is not found, and the shell option `cdable_vars' is set,
    the word is assumed to be a variable name.  If that variable has a value,
    its value is used for DIR.

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 $PWD is set successfully when
-P is used; non-zero otherwise.
eduardo@eduardo-VirtualBox:~$
```

No Unix, o comando `grep` procura padrões especificados através de palavras ou textos e as exibe no terminal.



```
Terminal - eduardo@eduardo-VirtualBox: ~
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~$ grep -- -a /etc/hosts
ff02::1 ip6-allnodes
ff02::2 ip6-allrouters
eduardo@eduardo-VirtualBox:~$ S
```

O comando `echo` mostra textos na saída padrão, tendo alternativas para uso de tabulações e códigos de formatação. O comando segue o formato `echo [opções] [argumento]`. Sendo algumas opções úteis;

- `-n` : não adiciona quebra de linha ao final da mensagem;

- -e : habilita a leitura de barra invertida “”;
- -E : habilita a interpretação de códigos de escape após a barra invertida como, n, a, t.

```

Terminal - eduardo@eduardo-VirtualBox: ~
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~$ echo SHELL
SHELL
eduardo@eduardo-VirtualBox:~$ cat /etc/shells
# /etc/shells: valid login shells
/bin/sh
/bin/bash
/usr/bin/bash
/bin/rbash
/usr/bin/rbash
/usr/bin/sh
/bin/dash
/usr/bin/dash
eduardo@eduardo-VirtualBox:~$ echo teste
teste
eduardo@eduardo-VirtualBox:~$ echo 'teste'
teste
eduardo@eduardo-VirtualBox:~$ echo -e "string1\tstring2\sstring3"
string1 string2\sstring3
eduardo@eduardo-VirtualBox:~$ echo -e "string1\tstring2\nstring3"
string1 string2
string3
eduardo@eduardo-VirtualBox:~$

```

O comando history exibe os comandos utilizados pelo usuário, também possibilitando sua formatação de tamanho e ordem. Além disso, com o argumento -c é possível limpar o histórico de comandos. Também sendo possível alterar a quantidade de comandos armazenados na memória e exibi-los utilizando o comando echo.

```

Terminal - eduardo@eduardo-VirtualBox: ~
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~$ history
1 cd /media/eduardo/VBox_GAs_6.1.34
2 cd /media/user/VBox_GAs_6.1.34
3 cd /media/user/VBox_GAs_6.1.34
4 cd /media/eduardo/VBox_GAs_6.1.34
5 ls
6 sudo
7 sudo ./VBox
8 sudo ./VBoxLinuxAdditions.run
9 sudo reboot
10 man
11 man ls
12 ls
13 ls -F
14 clear
15 ls
16 ls -F
17 clear
18 cd --help
19 clear
20 grep -- -a /etc/hosts
21 clear
22 echo SHELL
23 cat /etc/shells
24 echo teste
25 echo 'teste'
26 echo -e "string1\tstring2\sstring3"
27 echo -e "string1\tstring2\nstring3"
28 clear
29 history
eduardo@eduardo-VirtualBox:~$ S

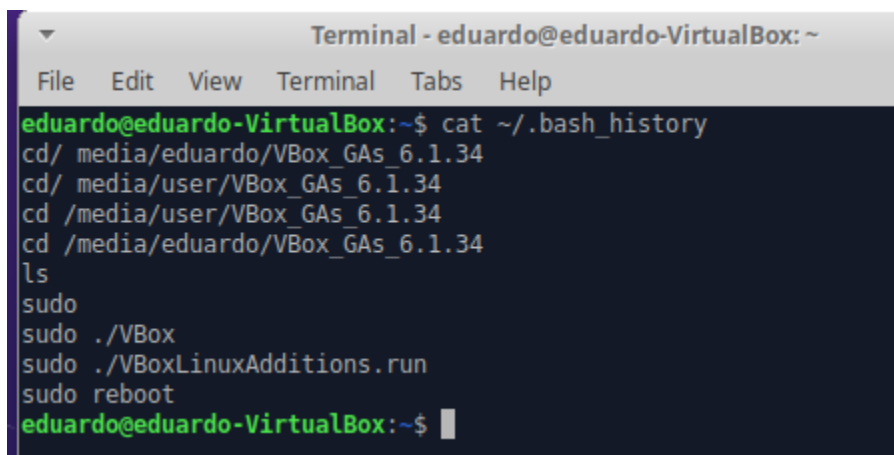
eduardo@eduardo-VirtualBox:~$ history | grep ls
5 ls
11 man ls
12 ls
13 ls -F
15 ls
16 ls -F
23 cat /etc/shells
30 history | grep ls
eduardo@eduardo-VirtualBox:~$ history -c
eduardo@eduardo-VirtualBox:~$ history
1 history
eduardo@eduardo-VirtualBox:~$ echo $HISTSIZE 1000
1000 1000
eduardo@eduardo-VirtualBox:~$ S

```

O comando cat permite a criação de novos arquivos de texto de forma rápida, também possibilitando a leitura de arquivos existentes. Seguindo o padrão cat [opção] [arquivo]. As opções podem ser exploradas utilizando o comando man cat, sendo algumas delas:

- -n: enumera todas as linhas;
- --version : mostra informações sobre o aplicativo.

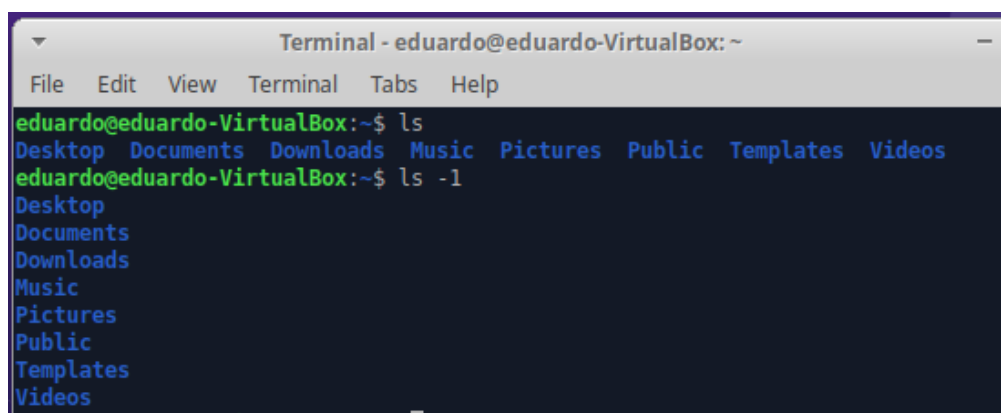
O comando cat possibilita visualizar vários arquivos, manipulá-los, concatenar arquivos, e exibir conteúdos na tela do terminal.



```
Terminal - eduardo@eduardo-VirtualBox: ~
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~$ cat ~/.bash_history
cd/ media/eduardo/VBox_GAs_6.1.34
cd/ media/user/VBox_GAs_6.1.34
cd /media/user/VBox_GAs_6.1.34
cd /media/eduardo/VBox_GAs_6.1.34
ls
sudo
sudo ./VBox
sudo ./VBoxLinuxAdditions.run
sudo reboot
eduardo@eduardo-VirtualBox:~$
```

~

As imagens a seguir, tem como referência os comandos apresentados anteriormente sobre o ls. O comando ls -l lista o conteúdo do diretório adicionando uma entrada (diretório e/ou arquivos) por linha.



```
Terminal - eduardo@eduardo-VirtualBox: ~
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~$ ls
Desktop Documents Downloads Music Pictures Public Templates Videos
eduardo@eduardo-VirtualBox:~$ ls -l
Desktop
Documents
Downloads
Music
Pictures
Public
Templates
Videos
```

Este comando imprime informações adicionais como permissões, dono, data de criação, data de modificação, etc.

```

eduardo@eduardo-VirtualBox:~$ ls -l
total 32
drwxr-xr-x 2 eduardo eduardo 4096 mai 16 12:36 Desktop
drwxr-xr-x 2 eduardo eduardo 4096 mai 16 12:36 Documents
drwxr-xr-x 2 eduardo eduardo 4096 mai 16 12:36 Downloads
drwxr-xr-x 2 eduardo eduardo 4096 mai 16 12:36 Music
drwxr-xr-x 2 eduardo eduardo 4096 mai 16 12:36 Pictures
drwxr-xr-x 2 eduardo eduardo 4096 mai 16 12:36 Public
drwxr-xr-x 2 eduardo eduardo 4096 mai 16 12:36 Templates
drwxr-xr-x 2 eduardo eduardo 4096 mai 16 12:36 Videos

```

Para obter informações sobre um determinado diretório, mas sem listar o conteúdo, utilize-se o comando `ld`.

```

Terminal - eduardo@eduardo-VirtualBox: ~
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~$ ls ld
ls: cannot access 'ld': No such file or directory
eduardo@eduardo-VirtualBox:~$ ls -ld
drwxr-x-- 13 eduardo eduardo 4096 mai 16 13:19 .

```

Para exibir diretórios e arquivos ocultos pode-se utilizar os comandos `ls-a` ou `ls -all`.

```

Terminal - eduardo@eduardo-VirtualBox: ~
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~$ ls -all
total 120
drwxr-x-- 13 eduardo eduardo 4096 mai 16 13:19 .
drwxr-xr-x 3 root root 4096 mai 15 23:02 ..
-rw----- 1 eduardo eduardo 192 mai 16 12:54 .bash_history
-rw-r--r-- 1 eduardo eduardo 220 mai 15 23:02 .bash_logout
-rw-r--r-- 1 eduardo eduardo 3771 mai 15 23:02 .bashrc
drwxrwxr-x 10 eduardo eduardo 4096 mai 16 12:42 .cache
drwxr-xr-x 12 eduardo eduardo 4096 mai 16 12:44 .config
drwxr-xr-x 2 eduardo eduardo 4096 mai 16 12:36 Desktop
drwxr-xr-x 2 eduardo eduardo 4096 mai 16 12:36 Documents
drwxr-xr-x 2 eduardo eduardo 4096 mai 16 12:36 Downloads
-rw----- 1 eduardo eduardo 0 mai 16 12:36 .ICEauthority
-rw----- 1 eduardo eduardo 20 mai 16 13:19 .lessht
drwxrwxr-x 3 eduardo eduardo 4096 mai 16 12:36 .local
drwxr-xr-x 2 eduardo eduardo 4096 mai 16 12:36 Music
drwxr-xr-x 2 eduardo eduardo 4096 mai 16 12:36 Pictures
-rw-r--r-- 1 eduardo eduardo 807 mai 15 23:02 .profile
drwxr-xr-x 2 eduardo eduardo 4096 mai 16 12:36 Public
-rw-r--r-- 1 eduardo eduardo 0 mai 16 12:48 .sudo_as_admin_successful
drwxr-xr-x 2 eduardo eduardo 4096 mai 16 12:36 Templates
-rw-r---- 1 eduardo eduardo 5 mai 16 12:55 .vboxclient-clipboard.pid
-rw-r---- 1 eduardo eduardo 5 mai 16 12:55 .vboxclient-display-svga-x11.pid
-rw-r---- 1 eduardo eduardo 5 mai 16 12:55 .vboxclient-draganddrop.pid
-rw-r---- 1 eduardo eduardo 5 mai 16 12:55 .vboxclient-seamless.pid
drwxr-xr-x 2 eduardo eduardo 4096 mai 16 12:36 Videos
-rw----- 1 eduardo eduardo 63 mai 16 12:55 .Xauthority
-rw-r--r-- 1 eduardo eduardo 1600 mai 15 23:02 .Xdefaults
-rw-r--r-- 1 eduardo eduardo 14 mai 15 23:02 .xscreensaver
-rw----- 1 eduardo eduardo 7685 mai 16 13:32 .xsession-errors
-rw----- 1 eduardo eduardo 8795 mai 16 12:44 .xsession-errors.old

```

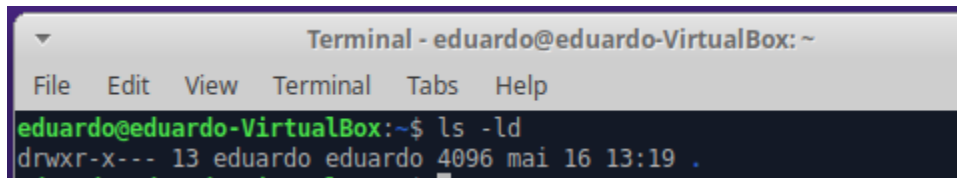
Listando apenas arquivos ocultos com o comando `ls -ld .*?`.

```
Terminal - eduardo@eduardo-VirtualBox: ~
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~$ ls ld.*?
ls: cannot access 'ld.*?': No such file or directory
eduardo@eduardo-VirtualBox:~$ ls -ld.*?
ls: invalid option -- '.'
Try 'ls --help' for more information.
eduardo@eduardo-VirtualBox:~$ ls -ld .*?
drwxr-xr-x 3 root root 4096 mai 15 23:02 ..
-rw----- 1 eduardo eduardo 192 mai 16 12:54 .bash_history
-rw-r--r-- 1 eduardo eduardo 220 mai 15 23:02 .bash_logout
-rw-r--r-- 1 eduardo eduardo 3771 mai 15 23:02 .bashrc
drwxrwxr-x 10 eduardo eduardo 4096 mai 16 12:42 .cache
drwxr-xr-x 12 eduardo eduardo 4096 mai 16 12:44 .config
-rw----- 1 eduardo eduardo 0 mai 16 12:36 .ICEauthority
-rw----- 1 eduardo eduardo 20 mai 16 13:19 .lessht
drwxrwxr-x 3 eduardo eduardo 4096 mai 16 12:36 .local
-rw-r--r-- 1 eduardo eduardo 807 mai 15 23:02 .profile
-rw-r--r-- 1 eduardo eduardo 0 mai 16 12:48 .sudo_as_admin_successful
-rw-r--r-- 1 eduardo eduardo 5 mai 16 12:55 .vboxclient-clipboard.pid
-rw-r--r-- 1 eduardo eduardo 5 mai 16 12:55 .vboxclient-display-svga-x11.pid
-rw-r--r-- 1 eduardo eduardo 5 mai 16 12:55 .vboxclient-draganddrop.pid
-rw-r--r-- 1 eduardo eduardo 5 mai 16 12:55 .vboxclient-seamless.pid
-rw----- 1 eduardo eduardo 63 mai 16 12:55 .Xauthority
-rw-r--r-- 1 eduardo eduardo 1600 mai 15 23:02 .Xdefaults
-rw-r--r-- 1 eduardo eduardo 14 mai 15 23:02 .xscreensaver
-rw----- 1 eduardo eduardo 7685 mai 16 13:32 .xsession-errors
-rw----- 1 eduardo eduardo 8795 mai 16 12:44 .xsession-errors.old
eduardo@eduardo-VirtualBox:~$
```

Imprimindo os arquivos com os tamanhos em bloco utilizando o comando `ls -alF`.

```
Terminal - eduardo@eduardo-VirtualBox: ~
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~$ ls -alF
total 120
drwxr-x--- 13 eduardo eduardo 4096 mai 16 13:19 ./
drwxr-xr-x 3 root root 4096 mai 15 23:02 ../
-rw----- 1 eduardo eduardo 192 mai 16 12:54 .bash_history
-rw-r--r-- 1 eduardo eduardo 220 mai 15 23:02 .bash_logout
-rw-r--r-- 1 eduardo eduardo 3771 mai 15 23:02 .bashrc
drwxrwxr-x 10 eduardo eduardo 4096 mai 16 12:42 .cache/
drwxr-xr-x 12 eduardo eduardo 4096 mai 16 12:44 .config/
drwxr-xr-x 2 eduardo eduardo 4096 mai 16 12:36 Desktop/
drwxr-xr-x 2 eduardo eduardo 4096 mai 16 12:36 Documents/
drwxr-xr-x 2 eduardo eduardo 4096 mai 16 12:36 Downloads/
-rw----- 1 eduardo eduardo 0 mai 16 12:36 .ICEauthority
-rw----- 1 eduardo eduardo 20 mai 16 13:19 .lessht
drwxrwxr-x 3 eduardo eduardo 4096 mai 16 12:36 .local/
drwxr-xr-x 2 eduardo eduardo 4096 mai 16 12:36 Music/
drwxr-xr-x 2 eduardo eduardo 4096 mai 16 12:36 Pictures/
-rw-r--r-- 1 eduardo eduardo 807 mai 15 23:02 .profile
drwxr-xr-x 2 eduardo eduardo 4096 mai 16 12:36 Public/
-rw-r--r-- 1 eduardo eduardo 0 mai 16 12:48 .sudo_as_admin_successful
drwxr-xr-x 2 eduardo eduardo 4096 mai 16 12:36 Templates/
-rw-r--r-- 1 eduardo eduardo 5 mai 16 12:55 .vboxclient-clipboard.pid
-rw-r--r-- 1 eduardo eduardo 5 mai 16 12:55 .vboxclient-display-svga-x11.pid
-rw-r--r-- 1 eduardo eduardo 5 mai 16 12:55 .vboxclient-draganddrop.pid
-rw-r--r-- 1 eduardo eduardo 5 mai 16 12:55 .vboxclient-seamless.pid
drwxr-xr-x 2 eduardo eduardo 4096 mai 16 12:36 Videos/
-rw----- 1 eduardo eduardo 63 mai 16 12:55 .Xauthority
-rw-r--r-- 1 eduardo eduardo 1600 mai 15 23:02 .Xdefaults
-rw-r--r-- 1 eduardo eduardo 14 mai 15 23:02 .xscreensaver
-rw----- 1 eduardo eduardo 7685 mai 16 13:32 .xsession-errors
-rw----- 1 eduardo eduardo 8795 mai 16 12:44 .xsession-errors.old
```

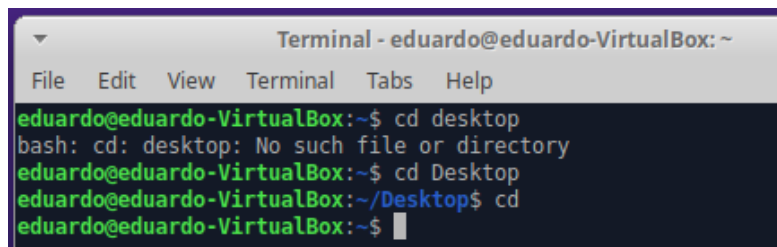
Listando informações do diretório.



```
Terminal - eduardo@eduardo-VirtualBox: ~
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~$ ls -ld
drwxr-x--- 13 eduardo eduardo 4096 mai 16 13:19 .
```

O comando `cd` é utilizado para navegar entre diretórios. Pode-se percorrer toda a árvore de diretórios utilizando o comando `cd`. Onde:

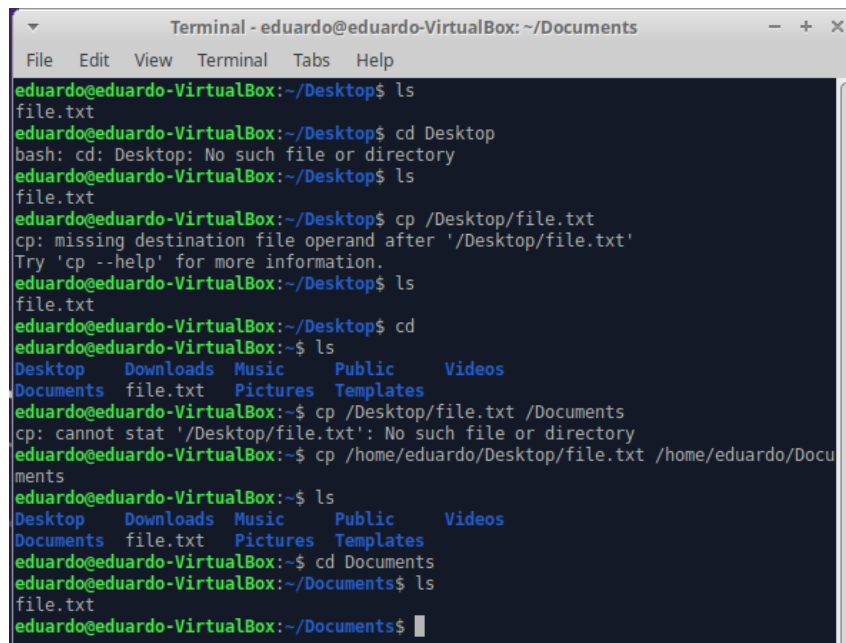
- O acesso ao diretório pai é feito pelo “`cd ..`”;
- Diretório pessoal “`~`”. O comando `cd` é muito utilizado com os comandos, `ls`, `pwd`, `mkdir`, `rm`, entre outros.



```
Terminal - eduardo@eduardo-VirtualBox: ~
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~$ cd desktop
bash: cd: desktop: No such file or directory
eduardo@eduardo-VirtualBox:~$ cd Desktop
eduardo@eduardo-VirtualBox:~/Desktop$ cd
eduardo@eduardo-VirtualBox:~$
```

O comando `cp` permite copiar um ou vários arquivos para um diretório. Seguindo as estruturas:

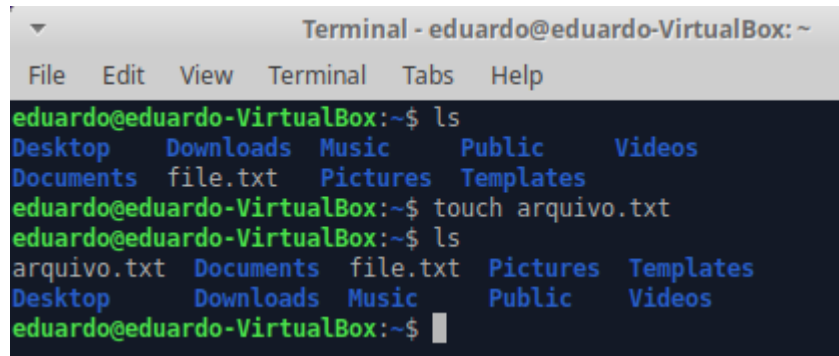
- `cp [opção] [arquivo] [diretório]`
- `cp [opção] [arquivo1] [arquivo2] [arquivo-n] [diretório]`



```
Terminal - eduardo@eduardo-VirtualBox: ~/Documents
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~/Desktop$ ls
file.txt
eduardo@eduardo-VirtualBox:~/Desktop$ cd Desktop
bash: cd: Desktop: No such file or directory
eduardo@eduardo-VirtualBox:~/Desktop$ ls
file.txt
eduardo@eduardo-VirtualBox:~/Desktop$ cp /Desktop/file.txt
cp: missing destination file operand after '/Desktop/file.txt'
Try 'cp --help' for more information.
eduardo@eduardo-VirtualBox:~/Desktop$ ls
file.txt
eduardo@eduardo-VirtualBox:~/Desktop$ cd
eduardo@eduardo-VirtualBox:~$ ls
Desktop Downloads Music Public Videos
Documents file.txt Pictures Templates
eduardo@eduardo-VirtualBox:~$ cp /Desktop/file.txt /Documents
cp: cannot stat '/Desktop/file.txt': No such file or directory
eduardo@eduardo-VirtualBox:~$ cp /home/eduardo/Desktop/file.txt /home/eduardo/Documents
eduardo@eduardo-VirtualBox:~$ ls
Desktop Downloads Music Public Videos
Documents file.txt Pictures Templates
eduardo@eduardo-VirtualBox:~$ cd Documents
eduardo@eduardo-VirtualBox:~/Documents$ ls
file.txt
eduardo@eduardo-VirtualBox:~/Documents$
```


O comando `touch` pode ser utilizado para criar arquivos de texto, com a possibilidade de criá-los com a extensão desejada, e também manipular registros de arquivos ou diretórios. Seguindo a estrutura básica, `touch [opções] [arquivo]`.

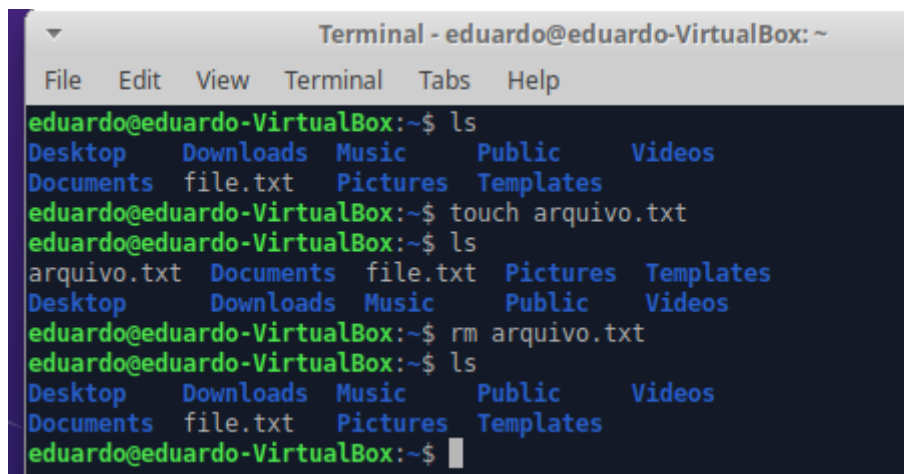
Ao tentar criar um arquivo já existente, o comando `touch` irá atualizar o registro de informações do arquivo anterior. Também é possível criar vários arquivos utilizando uma única instrução, como: `touch file1.txt file2.txt file3.txt`.



```
Terminal - eduardo@eduardo-VirtualBox: ~
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~$ ls
Desktop  Downloads Music      Public  Videos
Documents file.txt Pictures Templates
eduardo@eduardo-VirtualBox:~$ touch arquivo.txt
eduardo@eduardo-VirtualBox:~$ ls
arquivo.txt Documents file.txt Pictures Templates
Desktop Downloads Music      Public  Videos
eduardo@eduardo-VirtualBox:~$
```

O comando `rm` pode ser utilizado para deletar arquivos ou diretórios. Segue a estrutura `rm [opções] arquivo/diretório`. Alguns argumentos são:

- `-r`: deleta arquivos e subdiretórios;
- `-v`: cria uma lista dos arquivos deletados.



```
Terminal - eduardo@eduardo-VirtualBox: ~
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~$ ls
Desktop  Downloads Music      Public  Videos
Documents file.txt Pictures Templates
eduardo@eduardo-VirtualBox:~$ touch arquivo.txt
eduardo@eduardo-VirtualBox:~$ ls
arquivo.txt Documents file.txt Pictures Templates
Desktop Downloads Music      Public  Videos
eduardo@eduardo-VirtualBox:~$ rm arquivo.txt
eduardo@eduardo-VirtualBox:~$ ls
Desktop Downloads Music      Public  Videos
Documents file.txt Pictures Templates
eduardo@eduardo-VirtualBox:~$
```

Ao contrário do `rm`, o comando `mkdir` cria diretórios, seguindo a estrutura: `mkdir diretório`. Alguns argumentos são:

- `-m`: define as permissões do diretório.
- `-p`: cria hierarquia de diretórios.

```
Terminal - eduardo@eduardo-VirtualBox: ~
File Edit View Terminal Tabs Help

eduardo@eduardo-VirtualBox:~$ ls
Desktop Downloads Music Public Videos
Documents file.txt Pictures Templates
eduardo@eduardo-VirtualBox:~$ touch arquivo.txt
eduardo@eduardo-VirtualBox:~$ ls
arquivo.txt Documents file.txt Pictures Templates
Desktop Downloads Music Public Videos
eduardo@eduardo-VirtualBox:~$ rm arquivo.txt
eduardo@eduardo-VirtualBox:~$ ls
Desktop Downloads Music Public Videos
Documents file.txt Pictures Templates
eduardo@eduardo-VirtualBox:~$ mkdir teste
eduardo@eduardo-VirtualBox:~$ ls
Desktop Downloads Music Public teste
Documents file.txt Pictures Templates Videos
eduardo@eduardo-VirtualBox:~$ mkdir Sistemas Digitais
eduardo@eduardo-VirtualBox:~$ ls
Desktop Documents file.txt Pictures Sistemas teste
Digitais Downloads Music Public Templates Videos
eduardo@eduardo-VirtualBox:~$ mkdir -p teste2/teste3
eduardo@eduardo-VirtualBox:~$ ls
Desktop Documents file.txt Pictures Sistemas teste Videos
Digitais Downloads Music Public Templates teste2
eduardo@eduardo-VirtualBox:~$
```

Apagando um diretório com o comando `rm -R`.

```
eduardo@eduardo-VirtualBox:~$ rm teste2
rm: cannot remove 'teste2': Is a directory
eduardo@eduardo-VirtualBox:~$ rmdir teste2
rmdir: failed to remove 'teste2': Directory not empty
eduardo@eduardo-VirtualBox:~$ cd teste2
eduardo@eduardo-VirtualBox:~/teste2$ ls
teste3
eduardo@eduardo-VirtualBox:~/teste2$ rmdir teste3
eduardo@eduardo-VirtualBox:~/teste2$ ls
eduardo@eduardo-VirtualBox:~/teste2$ cd
eduardo@eduardo-VirtualBox:~$ ls
Desktop Documents file.txt Pictures Sistemas teste Videos
Digitais Downloads Music Public Templates teste2
eduardo@eduardo-VirtualBox:~$ rmdir teste2
eduardo@eduardo-VirtualBox:~$ rmdir Sistemas
eduardo@eduardo-VirtualBox:~$ rmdir Digitais
eduardo@eduardo-VirtualBox:~$ ls
Desktop Downloads Music Public teste
Documents file.txt Pictures Templates Videos
eduardo@eduardo-VirtualBox:~$ rm file.txt
eduardo@eduardo-VirtualBox:~$ ls
Desktop Documents Downloads Music Pictures Public Templates teste Videos
eduardo@eduardo-VirtualBox:~$
```

As figuras a seguir fazem referência à uso dos comandos `echo` e `cat` apresentados anteriormente.

```
Terminal - eduardo@eduardo-VirtualBox: ~/Desktop
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~$ touch teste.txt
eduardo@eduardo-VirtualBox:~$ ls
Desktop  Downloads  Pictures  Templates  teste.txt
Documents Music      Public    teste      Videos
eduardo@eduardo-VirtualBox:~$ echo 'Hello World!'
Hello World!
eduardo@eduardo-VirtualBox:~$ echo en 'Hello\tWorld'
en Hello\tWorld
eduardo@eduardo-VirtualBox:~$ echo -en 'Hello\tWorld'
Hello Worldeduardo@eduardo-VirtualBox:~$
eduardo@eduardo-VirtualBox:~$ cat file.txt
cat: file.txt: No such file or directory
eduardo@eduardo-VirtualBox:~$ cat teste.txt
eduardo@eduardo-VirtualBox:~$ cat teste.txt
eduardo@eduardo-VirtualBox:~$ cd Desktop
eduardo@eduardo-VirtualBox:~/Desktop$ cat teste.txt
cat: teste.txt: No such file or directory
eduardo@eduardo-VirtualBox:~/Desktop$ cat file.txt
MG Araguarieduardo@eduardo-VirtualBox:~/Desktop$ seq 1 5 > file1.txt
eduardo@eduardo-VirtualBox:~/Desktop$ seq 6 10 > file2.txt
eduardo@eduardo-VirtualBox:~/Desktop$ cat file1.txt file2txt
1
2
3
4
5
cat: file2txt: No such file or directory
eduardo@eduardo-VirtualBox:~/Desktop$ cat file1.txt file2.txt
1
2
3
4
5
6
7
8
9
10
eduardo@eduardo-VirtualBox:~/Desktop$
```

Comando Cut é utilizado para definir a quantidade de caracteres a serem retornados.

```
eduardo@eduardo-VirtualBox:~/Desktop$ cat file.txt | cut -c 1-2
MG
eduardo@eduardo-VirtualBox:~/Desktop$ cat file.txt | tr '\t' ' '
MG Araguari
eduardo@eduardo-VirtualBox:~/Desktop$ tr 'A-Z' 'a-z' < file.txt
mg araguari
eduardo@eduardo-VirtualBox:~/Desktop$ cat file.txt | tr [:lower] [:upr]
MG Araguari
eduardo@eduardo-VirtualBox:~/Desktop$ cat file.txt | tr [:lower] [:uppecat file.txt | tr [:lower:] [:upper:]
eduardo@eduardo-VirtualBox:~/Desktop$
```

```
Terminal - eduardo@eduardo-VirtualBox: ~/Desktop
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~/Desktop$ head file.txt
MG Araguari
MG Uberlândia
eduardo@eduardo-VirtualBox:~/Desktop$ head -1 file.txt
MG Araguari
eduardo@eduardo-VirtualBox:~/Desktop$ tail file.txt
MG Araguari
MG Uberlândia
eduardo@eduardo-VirtualBox:~/Desktop$ tail -1 file.txt
MG Uberlândia
eduardo@eduardo-VirtualBox:~/Desktop$
```

```

eduardo@eduardo-VirtualBox:~/Desktop$ nl file.txt
 1 MG Araguari
 2 MG Uberlândia
eduardo@eduardo-VirtualBox:~/Desktop$ paste file.txt file1.txt
MG Araguari      1
MG Uberlândia    2
                 3
                 4
                 5
eduardo@eduardo-VirtualBox:~/Desktop$ cat file.txt
MG Araguari
MG Uberlândia
eduardo@eduardo-VirtualBox:~/Desktop$ cat file1.txt
1
2
3
4
5
eduardo@eduardo-VirtualBox:~/Desktop$ paste file.txt file1.txt
MG Araguari      1
MG Uberlândia    2
                 3
                 4
                 5
eduardo@eduardo-VirtualBox:~/Desktop$

```

```

Terminal - eduardo@eduardo-VirtualBox: ~/Desktop
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~/Desktop$ cat file.txt | sort -n
MG Araguari
MG Uberlândia

```

O comando `wc [opções] [arquivo]` retorna uma contagem da quantidade de linhas, palavras, caracteres de arquivos.

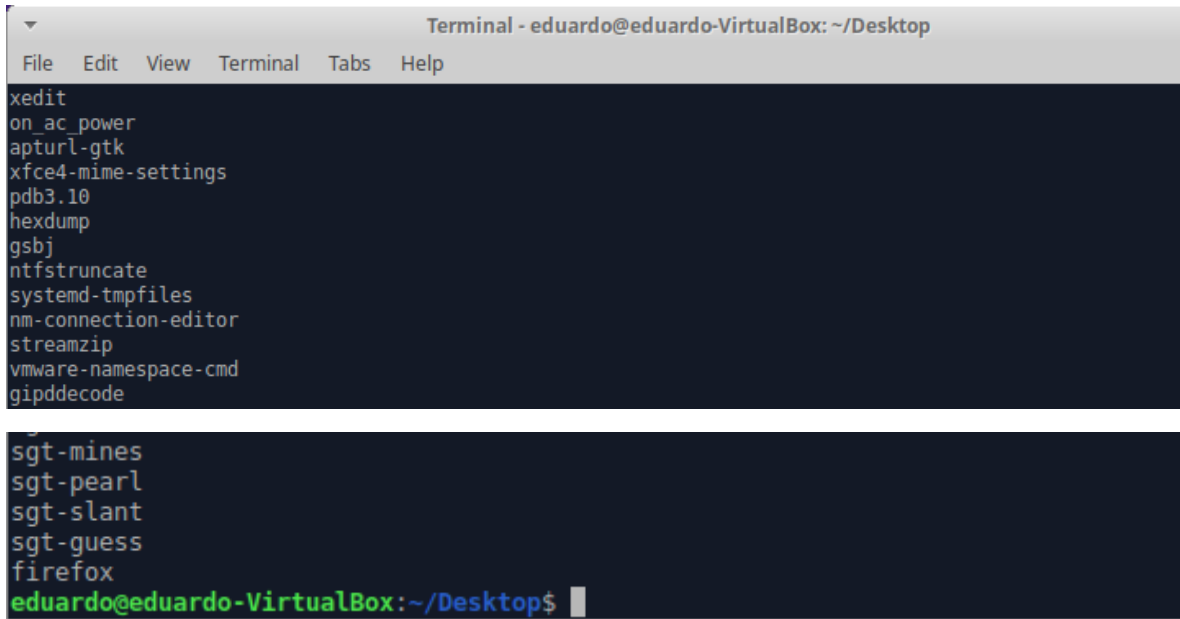
```

Terminal - eduardo@eduardo-VirtualBox: ~/Desktop
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~/Desktop$ cat file.txt | sort -n
MG Araguari
MG Uberlândia
eduardo@eduardo-VirtualBox:~/Desktop$ wc -l file.txt
2 file.txt
eduardo@eduardo-VirtualBox:~/Desktop$ wc -w file.txt
4 file.txt
eduardo@eduardo-VirtualBox:~/Desktop$ wc -c file.txt
27 file.txt
eduardo@eduardo-VirtualBox:~/Desktop$ wc file.txt
 2  4 27 file.txt
eduardo@eduardo-VirtualBox:~/Desktop$ wc file.txt
 2  4 27 file.txt
eduardo@eduardo-VirtualBox:~/Desktop$

```

O comando `compgen` lista todos os comandos e aliases que podem ser executados. Alguns argumentos são:

- `compgen -c`, lista todos os comandos que pode executar;
- `compgen -a`, lista os aliases que se pode executar;
- `compgen -k`, lista as keywords.



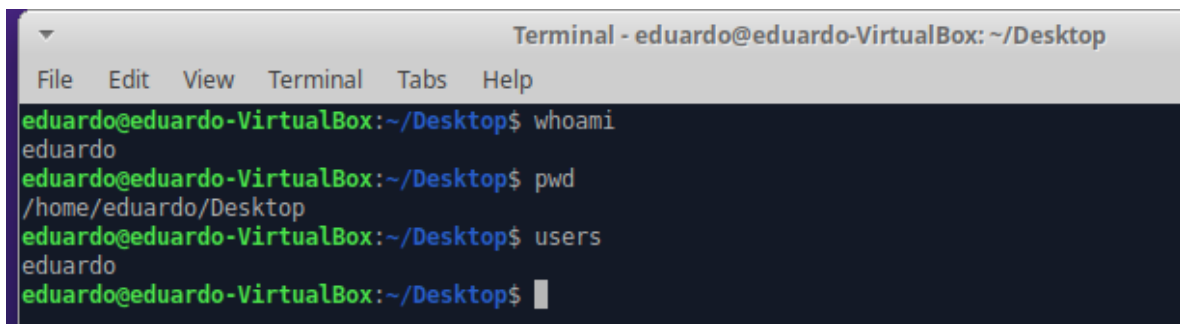
```

Terminal - eduardo@eduardo-VirtualBox: ~/Desktop
File Edit View Terminal Tabs Help
xedit
on_ac_power
apturl-gtk
xfce4-mime-settings
pdb3.10
hexdump
gsbj
ntfstruncate
systemd-tmpfiles
nm-connection-editor
streamzip
vmware-namespace-cmd
gipddcode

sgt-mines
sgt-pearl
sgt-slant
sgt-guess
firefox
eduardo@eduardo-VirtualBox:~/Desktop$

```

O comando `whoami` apresenta o nome de usuário atual.

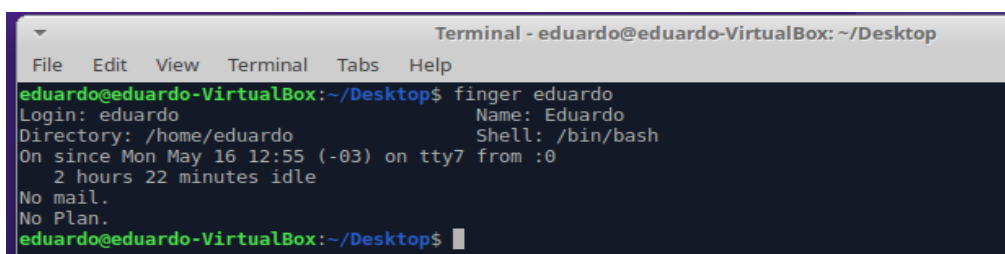


```

Terminal - eduardo@eduardo-VirtualBox: ~/Desktop
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~/Desktop$ whoami
eduardo
eduardo@eduardo-VirtualBox:~/Desktop$ pwd
/home/eduardo/Desktop
eduardo@eduardo-VirtualBox:~/Desktop$ users
eduardo
eduardo@eduardo-VirtualBox:~/Desktop$

```

O comando `finger` apresenta informações adicionais do usuário atual, como nome, versão do shell, diretório base, entre outros.



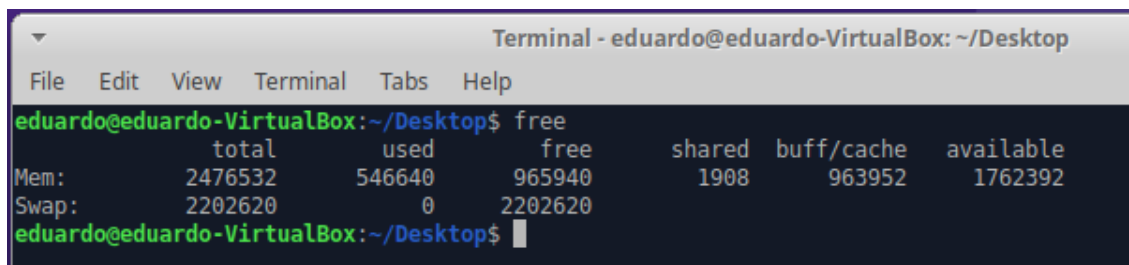
```

Terminal - eduardo@eduardo-VirtualBox: ~/Desktop
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~/Desktop$ finger eduardo
Login: eduardo          Name: Eduardo
Directory: /home/eduardo      Shell: /bin/bash
On since Mon May 16 12:55 (-03) on tty7 from :0
      2 hours 22 minutes idle
No mail.
No Plan.
eduardo@eduardo-VirtualBox:~/Desktop$

```

O comando free pode ser utilizado para monitorar a memória utilizada do sistema. Algumas das opções mais utilizadas são:

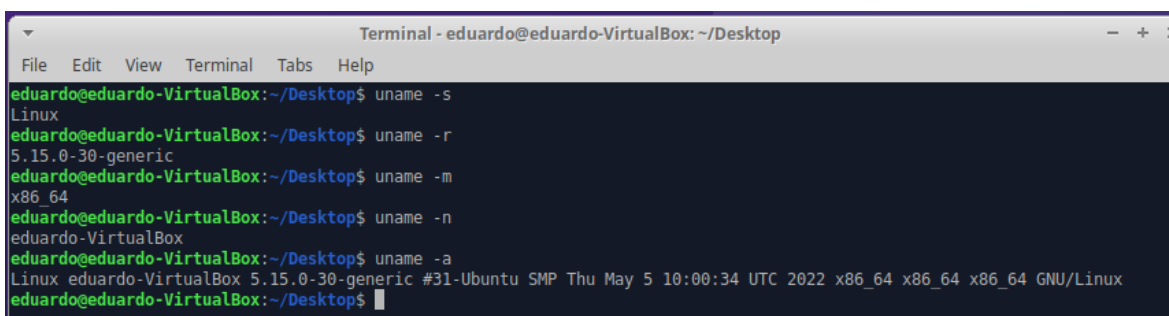
- free -m: Os valores são exibidos em Megabytes;
- free -g: Os valores são exibidos em Gigabytes;
- free -h: Modo “humano”, ou seja, mostra em Mega ou em Giga.



```
Terminal - eduardo@eduardo-VirtualBox: ~/Desktop
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~/Desktop$ free
              total        used        free      shared  buff/cache   available
Mem:           2476532       546640       965940         1908       963952      1762392
Swap:          2202620           0       2202620
```

O comando uname, exibe as seguintes informações do sistema.

- -a: todas as informações ;
- -m: tipo de máquina (ou, hardware);
- -p: características do processador (CPU);
- -r: versão do sistema operacional;
- -s: nome do sistema operacional.



```
Terminal - eduardo@eduardo-VirtualBox: ~/Desktop
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~/Desktop$ uname -s
Linux
eduardo@eduardo-VirtualBox:~/Desktop$ uname -r
5.15.0-30-generic
eduardo@eduardo-VirtualBox:~/Desktop$ uname -m
x86_64
eduardo@eduardo-VirtualBox:~/Desktop$ uname -n
eduardo-VirtualBox
eduardo@eduardo-VirtualBox:~/Desktop$ uname -a
Linux eduardo-VirtualBox 5.15.0-30-generic #31-Ubuntu SMP Thu May 5 10:00:34 UTC 2022 x86_64 x86_64 x86_64 GNU/Linux
eduardo@eduardo-VirtualBox:~/Desktop$
```

O comando uptime exibe informações sobre o período em que o sistema está operando.

```
Terminal - eduardo@eduardo-VirtualBox: ~/Desktop
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~/Desktop$ uptime
15:22:09 up 2:27, 1 user, load average: 0,01, 0,03, 0,00
eduardo@eduardo-VirtualBox:~/Desktop$
```

O comando timeout executa outro comando com um tempo limite para execução.

```
Terminal - eduardo@eduardo-VirtualBox: ~/Desktop
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~/Desktop$ timeout 4 ping www.ufvjm.edu.br
PING www.ufvjm.edu.br (200.131.252.165) 56(84) bytes of data.
64 bytes from www.ufvjm.edu.br (200.131.252.165): icmp_seq=1 ttl=52 time=26.2 ms
64 bytes from www.ufvjm.edu.br (200.131.252.165): icmp_seq=2 ttl=52 time=23.3 ms
64 bytes from www.ufvjm.edu.br (200.131.252.165): icmp_seq=3 ttl=52 time=92.5 ms
64 bytes from www.ufvjm.edu.br (200.131.252.165): icmp_seq=4 ttl=52 time=27.3 ms
eduardo@eduardo-VirtualBox:~/Desktop$
```

O comando whereis pode ser utilizado para encontrar o diretório de programas no sistema.

```
Terminal - eduardo@eduardo-VirtualBox: ~/Desktop
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~/Desktop$ whereis gcc
gcc: /usr/lib/gcc /usr/share/gcc
eduardo@eduardo-VirtualBox:~/Desktop$
```

O comando which localiza o arquivo executável que está associado à algum programa.

```
Terminal - eduardo@eduardo-VirtualBox: ~/Desktop
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~/Desktop$ which ls
/usr/bin/ls
eduardo@eduardo-VirtualBox:~/Desktop$ which gcc
eduardo@eduardo-VirtualBox:~/Desktop$ which pp
eduardo@eduardo-VirtualBox:~/Desktop$ which python3
/usr/bin/python3
eduardo@eduardo-VirtualBox:~/Desktop$
```

O comando who exibe os usuários que estão conectados no sistema.

```
Terminal - eduardo@eduardo-VirtualBox: ~/Desktop
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~/Desktop$ who
eduardo  tty7      2022-05-16 12:55 (:0)
eduardo@eduardo-VirtualBox:~/Desktop$
```

O comando ps exibe informações sobre os processos que estão em execução na máquina. Sendo algumas opções:

- -a : processos de todos os usuários.
- -e : mostra todos os processo.
- -f : mostra a árvore de execução de comandos.
- -u : fornece o nome do usuário e a hora de início do processo.

```
Terminal - eduardo@eduardo-VirtualBox: ~/Desktop
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~/Desktop$ ps -aef
UID        PID     PPID  C  STIME TTY          TIME CMD
root         1         0  0  12:54 ?        00:00:02 /sbin/init splash
root         2         0  0  12:54 ?        00:00:00 [kthreadd]
root         3         2  0  12:54 ?        00:00:00 [rcu_gp]
root         4         2  0  12:54 ?        00:00:00 [rcu_par_gp]
root         6         2  0  12:54 ?        00:00:00 [kworker/0:0H-events_highpri]
root         9         2  0  12:54 ?        00:00:00 [mm_percpu_wq]
root        10         2  0  12:54 ?        00:00:00 [rcu_tasks_rude_]
root        11         2  0  12:54 ?        00:00:00 [rcu_tasks_trace]
root        12         2  0  12:54 ?        00:00:00 [ksoftirqd/0]
root        13         2  0  12:54 ?        00:00:01 [rcu_sched]
root        14         2  0  12:54 ?        00:00:00 [migration/0]
root        15         2  0  12:54 ?        00:00:00 [idle_inject/0]
root        16         2  0  12:54 ?        00:00:00 [cpuhp/0]

root       3681         2  0  14:40 ?        00:00:03 [kworker/1:0-events]
root       3689         2  0  14:41 ?        00:00:00 [kworker/1:3-events]
root       4036         2  0  15:23 ?        00:00:00 [kworker/u4:0-flush-8:0]
root       4055         2  0  15:30 ?        00:00:00 [kworker/u4:1-events_unbound]
eduardo    4059      1574  0  15:31 pts/0    00:00:00 ps -aef
eduardo@eduardo-VirtualBox:~/Desktop$
```

```
Terminal - eduardo@eduardo-VirtualBox: ~/Desktop
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~/Desktop$ ps -aef | grep brave-browser
eduardo    4070      1574  0  15:35 pts/0    00:00:00 grep --color=auto brave-browser
eduardo@eduardo-VirtualBox:~/Desktop$ pstree
systemd--ModemManager--2*[{ModemManager}]
--NetworkManager--2*[{NetworkManager}]
--3*[VBoxClient--VBoxClient--2*[{VBoxClient}]]
--VBoxClient--VBoxClient--3*[{VBoxClient}]
--VBoxService--8*[{VBoxService}]
--accounts-daemon--2*[{accounts-daemon}]
--acpid
--agetty
--avahi-daemon--avahi-daemon
--colord--2*[{colord}]
--cron
--cups-browsed--2*[{cups-browsed}]
--cupsd
--dbus-daemon
--gnome-keyring-d--3*[{gnome-keyring-d}]
--irqbalance--{irqbalance}
--2*[kerneloops]
--lightdm--Xorg--{Xorg}
--lightdm--xfce4-session--Thunar--2*[{Thunar}]
--aplet.py
--ayatana-indicat--2*[{ayatana-indicat}]
--blueman-applet--3*[{blueman-applet}]
--nm-applet--3*[{nm-applet}]
--polkit-gnome-au--2*[{polkit-gnome-au}]
--update-notifier--3*[{update-notifier}]
--xfce4-panel--panel-1-whisker--2*[{panel-1-whisker}]
--panel-5-systray--2*[{panel-5-systray}]
--panel-6-notific--2*[{panel-6-notific}]
--panel-7-indicat--2*[{panel-7-indicat}]
```



```
Terminal - eduardo@eduardo-VirtualBox: ~/Desktop
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~/Desktop$ ps -u eduardo
  PID TTY          TIME CMD
  848 ?        00:00:00 systemd
  849 ?        00:00:00 (sd-pam)
  855 ?        00:00:00 pipewire
  856 ?        00:00:00 pipewire-media-
  857 ?        00:00:00 pulseaudio
  858 ?        00:00:00 xfce4-session
  872 ?        00:00:05 dbus-daemon
 1010 ?        00:00:00 VBoxClient
 1011 ?        00:00:00 VBoxClient
 1022 ?        00:00:00 VBoxClient
 1023 ?        00:00:00 VBoxClient
 1029 ?        00:00:00 VBoxClient
 1030 ?        00:00:41 VBoxClient
 1037 ?        00:00:00 VBoxClient
 1038 ?        00:00:00 VBoxClient
 1122 ?        00:00:00 at-spi-bus-laun
 1128 ?        00:00:00 dbus-daemon
 1132 ?        00:00:00 xfconfd
 1137 ?        00:00:00 at-spi2-registr
 1142 ?        00:00:00 xfce4-screensav
 1145 ?        00:00:00 gvfsd
 1150 ?        00:00:00 gvfsd-fuse
 1160 ?        00:00:00 gnome-keyring-d
 1164 ?        00:00:07 xfwm4
 1179 ?        00:00:00 xfsettingsd
 1187 ?        00:00:01 xfce4-panel
 1191 ?        00:00:01 Thunar
 1196 ?        00:00:05 xfdesktop
 1197 ?        00:00:01 panel-1-whisker
 1198 ?        00:00:00 panel-5-systray
 1199 ?        00:00:00 panel-6-notific
 1200 ?        00:00:00 panel-7-indicat
 1202 ?        00:00:01 panel-8-power-m
 1206 ?        00:00:19 panel-9-pulseau
 1232 ?        00:00:00 xfce4-notifyd
 1248 ?        00:00:00 xcape
 1250 ?        00:00:00 update-notifier
 1252 ?        00:00:00 xiccd
 1260 ?        00:00:00 blueman-applet
 1261 ?        00:00:00 xfce4-power-man
 1269 ?        00:00:00 nm-applet
 1326 ?        00:00:00 polkit-gnome-au
 1334 ?        00:00:00 applet.py
```

```
Terminal - eduardo@eduardo-VirtualBox: ~/Desktop
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~/Desktop$ 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
eduardo@eduardo-VirtualBox:~/Desktop$ cat /etc/group | head -10
root:x:0:
daemon:x:1:
bin:x:2:
sys:x:3:
adm:x:4:syslog,eduardo
tty:x:5:
disk:x:6:
lp:x:7:
mail:x:8:
news:x:9:
eduardo@eduardo-VirtualBox:~/Desktop$
```

```
Terminal - eduardo@eduardo-VirtualBox: ~/Desktop
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~/Desktop$ ping -c 3 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=60 time=4.12 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=2 ttl=60 time=8.96 ms
64 bytes from bulma.dr.ufu.br (200.19.145.55): icmp_seq=3 ttl=60 time=7.78 ms

--- www.ufu.br ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2003ms
rtt min/avg/max/mdev = 4.124/6.954/8.964/2.059 ms
eduardo@eduardo-VirtualBox:~/Desktop$
```

Através do comando dig é possível acessar informações de DNS do endereço fornecido.

```
eduardo@eduardo-VirtualBox:~/Desktop$ dig www.ufu.br

; <<>> DiG 9.18.1-lubuntu1-Ubuntu <<>> www.ufu.br
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 38915
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 3, ADDITIONAL: 7

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

;; ANSWER SECTION:
www.ufu.br.                60      IN      A      200.19.145.55

;; AUTHORITY SECTION:
ufu.br.                    3600    IN      NS      ns3.dr.ufu.br.
ufu.br.                    3600    IN      NS      ns2.dr.ufu.br.
ufu.br.                    3600    IN      NS      ns1.dr.ufu.br.

;; ADDITIONAL SECTION:
ns1.dr.ufu.br.             10800   IN      A      200.19.146.201
ns2.dr.ufu.br.             10800   IN      A      200.131.192.3
ns3.dr.ufu.br.             10800   IN      A      200.19.146.200
ns1.dr.ufu.br.             10800   IN      AAAA   2001:12f0:618:160::2
ns2.dr.ufu.br.             10800   IN      AAAA   2001:12f0:619:340::3
ns3.dr.ufu.br.             10800   IN      AAAA   2001:12f0:618:160::200

;; Query time: 16 msec
;; SERVER: 127.0.0.53#53(127.0.0.53) (UDP)
;; WHEN: Mon May 16 15:45:49 -03 2022
;; MSG SIZE rcvd: 244

eduardo@eduardo-VirtualBox:~/Desktop$ nslookup www.ufu.br
Server:                127.0.0.53
Address:                127.0.0.53#53

Non-authoritative answer:
Name:   www.ufu.br
Address: 200.19.145.55

eduardo@eduardo-VirtualBox:~/Desktop$
```

O comando traceroute exibe a rota que algum determinado pacote percorre até encontrar o outro host. Este comando é bastante útil para identificar onde está ocorrendo algum problema na conexão entre os hosts.

```
Terminal - eduardo@eduardo-VirtualBox: ~/Desktop
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~/Desktop$ traceroute www.ufu.br
traceroute to www.ufu.br (200.19.145.55), 30 hops max, 60 byte packets
 1  _gateway (10.0.2.2)  1.089 ms  1.060 ms  0.981 ms
 2  _gateway (10.0.2.2)  6.654 ms  8.335 ms  8.315 ms
eduardo@eduardo-VirtualBox:~/Desktop$
```

O comando tracepath rastreia um caminho para um endereço de rede designado, relatando o "tempo de vida" ou o atraso TTL.

```
eduardo@eduardo-VirtualBox:~/Desktop$ tracepath www.ufu.br
1?: [LOCALHOST] pmtu 1500
 1:  _gateway 0.436ms
 1:  _gateway 0.747ms
 2:  _gateway 5.915ms reached
Resume: pmtu 1500 hops 2 back 1
eduardo@eduardo-VirtualBox:~/Desktop$
```

O comando nmap pode ser utilizado para encontrar as portas de um host.

```
Terminal - eduardo@eduardo-VirtualBox: ~/De
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~/Desktop$ nmap www.usp.br
Starting Nmap 7.80 ( https://nmap.org ) at 2022-05-16 15:52 -03
Nmap scan report for www.usp.br (200.144.248.41)
Host is up (0.030s latency).
rDNS record for 200.144.248.41: webhost.uspdigital.usp.br
Not shown: 983 filtered ports
PORT      STATE SERVICE
22/tcp    open  ssh
25/tcp    open  smtp
53/tcp    open  domain
80/tcp    open  http
110/tcp   open  pop3
119/tcp   open  nntp
143/tcp   open  imap
443/tcp   open  https
465/tcp   open  smtps
563/tcp   open  snews
587/tcp   open  submission
993/tcp   open  imaps
995/tcp   open  pop3s
2000/tcp  open  cisco-sccp
5060/tcp  open  sip
8008/tcp  open  http
8010/tcp  open  xmpp

Nmap done: 1 IP address (1 host up) scanned in 4.67 seconds
eduardo@eduardo-VirtualBox:~/Desktop$
```

```
Terminal - eduardo@eduardo-VirtualBox: ~/Desktop
File Edit View Terminal Tabs Help

eduardo@eduardo-VirtualBox:~/Desktop$ nmap -v localhost
Starting Nmap 7.80 ( https://nmap.org ) at 2022-05-16 15:53 -03
Initiating Ping Scan at 15:53
Scanning localhost (127.0.0.1) [2 ports]
Completed Ping Scan at 15:53, 0.00s elapsed (1 total hosts)
Initiating Connect Scan at 15:53
Scanning localhost (127.0.0.1) [1000 ports]
Discovered open port 631/tcp on 127.0.0.1
Completed Connect Scan at 15:53, 0.02s elapsed (1000 total ports)
Nmap scan report for localhost (127.0.0.1)
Host is up (0.000091s 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 0.07 seconds
eduardo@eduardo-VirtualBox:~/Desktop$ nmap www.youtube.com www.google.com
Starting Nmap 7.80 ( https://nmap.org ) at 2022-05-16 15:54 -03
Nmap scan report for www.youtube.com (142.250.219.174)
Host is up (0.044s latency).
Other addresses for www.youtube.com (not scanned): 142.251.132.46 142.251.129.206 142.250.218.78 142.250.218.14 142.250.2
19.238 142.251.129.110 142.250.219.142 142.251.132.14 142.251.129.238 142.250.218.174 142.251.129.174 142.251.129.142 142
.250.219.206 142.250.79.206 172.217.173.110 2800:3f0:4001:82f::200e 2800:3f0:4001:830::200e 2800:3f0:4001:82e::200e 2800:
3f0:4001:823::200e
rDNS record for 142.250.219.174: gru06s63-in-f14.1e100.net
Not shown: 985 filtered ports
PORT      STATE SERVICE
25/tcp    open  smtp
53/tcp    open  domain
80/tcp    open  http
110/tcp   open  pop3
119/tcp   open  nntp
143/tcp   open  imap
443/tcp   open  https
563/tcp   open  snews
587/tcp   open  submission
993/tcp   open  imaps
995/tcp   open  pop3s
2000/tcp  open  cisco-sccp
5060/tcp  open  sip
8008/tcp  open  http
8010/tcp  open  xmpp

Nmap scan report for www.google.com (142.251.129.132)
Host is up (0.043s latency).
Other addresses for www.google.com (not scanned): 2800:3f0:4001:82f::2004
rDNS record for 142.251.129.132: gru14s31-in-f4.1e100.net
Not shown: 985 filtered ports
PORT      STATE SERVICE
25/tcp    open  smtp
53/tcp    open  domain
80/tcp    open  http
```

O comando lynx permite ao usuário acessar uma página web com uma estrutura simplificada diretamente no seu shell.

```
Terminal - eduardo@eduardo-VirtualBox: ~/Desktop
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```

Uma prática importante para o desenvolvimento é gerenciar e manter os pacotes do sistema atualizados. A instrução `apt update` muitas vezes requer acesso ao superusuário, através da instrução `sudo`.

```
Terminal - eduardo@eduardo-VirtualBox: ~/Desktop
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~/Desktop$ sudo apt update
Hit:1 http://br.archive.ubuntu.com/ubuntu jammy InRelease
Get:2 http://br.archive.ubuntu.com/ubuntu jammy-updates InRelease [109 kB]
Hit:3 http://br.archive.ubuntu.com/ubuntu jammy-backports InRelease
Ign:4 http://br.archive.ubuntu.com/ubuntu jammy-updates/main i386 Packages
Get:5 http://security.ubuntu.com/ubuntu jammy-security InRelease [110 kB]
Ign:6 http://br.archive.ubuntu.com/ubuntu jammy-updates/main amd64 Packages
Ign:7 http://br.archive.ubuntu.com/ubuntu jammy-updates/main Translation-en
Get:8 http://br.archive.ubuntu.com/ubuntu jammy-updates/main amd64 DEP-11 Metadata [31,9 kB]
Get:9 http://br.archive.ubuntu.com/ubuntu jammy-updates/main amd64 c-n-f Metadata [2.308 B]
Get:10 http://br.archive.ubuntu.com/ubuntu jammy-updates/restricted amd64 Packages [64,4 kB]
Get:11 http://br.archive.ubuntu.com/ubuntu jammy-updates/restricted Translation-en [10,4 kB]
Ign:12 http://br.archive.ubuntu.com/ubuntu jammy-updates/universe i386 Packages
Ign:13 http://br.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 Packages
Ign:14 http://br.archive.ubuntu.com/ubuntu jammy-updates/universe Translation-en
Get:15 http://br.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 DEP-11 Metadata [80,9 kB]
Get:4 http://br.archive.ubuntu.com/ubuntu jammy-updates/main i386 Packages [62,7 kB]
Get:6 http://br.archive.ubuntu.com/ubuntu jammy-updates/main amd64 Packages [132 kB]
Get:7 http://br.archive.ubuntu.com/ubuntu jammy-updates/main Translation-en [33,6 kB]
Get:12 http://br.archive.ubuntu.com/ubuntu jammy-updates/universe i386 Packages [25,7 kB]
Get:13 http://br.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 Packages [80,7 kB]
Get:14 http://br.archive.ubuntu.com/ubuntu jammy-updates/universe Translation-en [24,9 kB]
Get:16 http://security.ubuntu.com/ubuntu jammy-security/main i386 Packages [19,7 kB]
Get:17 http://security.ubuntu.com/ubuntu jammy-security/main amd64 Packages [70,4 kB]
Get:18 http://security.ubuntu.com/ubuntu jammy-security/main Translation-en [19,3 kB]
Get:19 http://security.ubuntu.com/ubuntu jammy-security/main amd64 DEP-11 Metadata [6.632 B]
Get:20 http://security.ubuntu.com/ubuntu jammy-security/universe i386 Packages [10,5 kB]
Get:21 http://security.ubuntu.com/ubuntu jammy-security/universe amd64 Packages [50,8 kB]
Get:22 http://security.ubuntu.com/ubuntu jammy-security/universe Translation-en [14,7 kB]
Fetched 961 kB in 4s (214 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
40 packages can be upgraded. Run 'apt list --upgradable' to see them.
eduardo@eduardo-VirtualBox:~/Desktop$
```

```
Terminal - eduardo@eduardo-VirtualBox: ~/Desktop
File Edit View Terminal Tabs Help

eduardo@eduardo-VirtualBox:~/Desktop$ uname -a
Linux eduardo-VirtualBox 5.15.0-30-generic #31-Ubuntu SMP Thu May 5 10:00:34 UTC 2022 x86_64 x86_64 x86_64 GNU/Linux
eduardo@eduardo-VirtualBox:~/Desktop$ uname -s
Linux
eduardo@eduardo-VirtualBox:~/Desktop$ uname -n
eduardo-VirtualBox
eduardo@eduardo-VirtualBox:~/Desktop$ uname -r
5.15.0-30-generic
eduardo@eduardo-VirtualBox:~/Desktop$ uname -v
#31-Ubuntu SMP Thu May 5 10:00:34 UTC 2022
eduardo@eduardo-VirtualBox:~/Desktop$ head -n1 /etc/issue
Ubuntu 22.04 LTS \n \l
eduardo@eduardo-VirtualBox:~/Desktop$ lscpu
Architecture:          x86_64
CPU op-mode(s):        32-bit, 64-bit
Address sizes:          39 bits physical, 48 bits virtual
Byte Order:            Little Endian
CPU(s):                 2
On-line CPU(s) list:   0,1
Vendor ID:              GenuineIntel
Model name:             Intel(R) Core(TM) i7-7500U CPU @ 2.70GHz
CPU family:             6
Model:                  142
Thread(s) per core:     1
Core(s) per socket:     2
Socket(s):              1
Stepping:               9
BogoMIPS:               5807.99
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 rdtscp lm constant tsc rep_good nopl xtopology nonstop_tsc cpuid tsc_known_freq
                        pni pclmulqdq 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 fl
                        ush_lli
Virtualization features:
  Hypervisor vendor:    KVM
  Virtualization type:  full
Caches (sum of all):
  L1d:                  64 KiB (2 instances)
  L1i:                  64 KiB (2 instances)
  L2:                   512 KiB (2 instances)
  L3:                   8 MiB (2 instances)
NUMA:
  NUMA node(s):         1
  NUMA node0 CPU(s):    0,1
Vulnerabilities:
  Itlb multihit:        KVM: Mitigation: VMX unsupported
  L1tf:                 Mitigation; PTE Inversion
  Mds:                  Mitigation; Clear CPU buffers; SMT Host state unknown
  Meltdown:             Mitigation; PTI
  Spec store bypass:    Vulnerable
  Spectre v1:           Mitigation; usercopy/swapgs barriers and __user pointer sanitization
  Spectre v2:           Mitigation; Retpolines, STIBP disabled, RSB filling
  Srbds:                Unknown: Dependent on hypervisor status
  Tsx async abort:      Not affected
eduardo@eduardo-VirtualBox:~/Desktop$
```

```
Terminal - eduardo@eduardo-VirtualBox: ~/Desktop
File Edit View Terminal Tabs Help

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



```
Terminal - eduardo@eduardo-VirtualBox: ~/Desktop
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~/Desktop$ lsblk
NAME MAJ:MIN RM SIZE RO TYPE MOUNTPOINTS
loop0 7:0 0 155,6M 1 loop /snap/firefox/1232
loop1 7:1 0 61,9M 1 loop /snap/core20/1405
loop2 7:2 0 4K 1 loop /snap/bare/5
loop3 7:3 0 248,8M 1 loop /snap/gnome-3-38-2004/99
loop4 7:4 0 81,3M 1 loop /snap/gtk-common-themes/1534
loop5 7:5 0 43,6M 1 loop /snap/snapd/15177
loop6 7:6 0 44,7M 1 loop /snap/snapd/15534
loop7 7:7 0 61,9M 1 loop /snap/core20/1434
loop8 7:8 0 160,4M 1 loop /snap/firefox/1300
sda 8:0 0 150G 0 disk
├─sda1 8:1 0 2,1G 0 part [SWAP]
└─sda2 8:2 0 147,9G 0 part /
sr0 11:0 1 58,7M 0 rom
eduardo@eduardo-VirtualBox:~/Desktop$ sudo fdisk -l
Disk /dev/loop0: 155,63 MiB, 163188736 bytes, 318728 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/loop1: 61,89 MiB, 64901120 bytes, 126760 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/loop2: 4 KiB, 4096 bytes, 8 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/loop3: 248,76 MiB, 260841472 bytes, 509456 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/loop4: 81,26 MiB, 85209088 bytes, 166424 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/loop5: 43,63 MiB, 45748224 bytes, 89352 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
```

```
Terminal - eduardo@eduardo-VirtualBox: ~/Desktop
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~/Desktop$ free
              total        used        free      shared  buff/cache   available
Mem:           2476532       558668        89244         1968       1828620       1735632
Swap:          2202620           0       2202620

eduardo@eduardo-VirtualBox:~/Desktop$ cat /proc/meminfo
MemTotal:        2476532 kB
MemFree:          89244 kB
MemAvailable:    1735704 kB
Buffers:          70132 kB
Cached:          1664488 kB
SwapCached:         0 kB
Active:          703380 kB
Inactive:        1437932 kB
Active(anon):     1268 kB
Inactive(anon):   407392 kB
Active(file):     702112 kB
Inactive(file):  1030540 kB
Unevictable:       16 kB
Mlocked:          16 kB
SwapTotal:       2202620 kB
SwapFree:        2202620 kB
Dirty:            48 kB
Writeback:         0 kB
AnonPages:       406712 kB
Mapped:          180960 kB
Shmem:           1968 kB
KReclaimable:    94072 kB
Slab:            140920 kB
SReclaimable:    94072 kB
SUnreclaim:      46848 kB
KernelStack:     5072 kB
PageTables:      10156 kB
NFS_Unstable:     0 kB
Bounce:           0 kB
WritebackTmp:     0 kB
CommitLimit:    3440884 kB
Committed_AS:    2290920 kB
VmallocTotal:   34359738367 kB
VmallocUsed:      33132 kB
VmallocChunk:     0 kB
Percpu:          1376 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:     169920 kB
DirectMap2M:     2390016 kB
eduardo@eduardo-VirtualBox:~/Desktop$
```



```
Terminal - eduardo@eduardo-VirtualBox: ~/Desktop
File Edit View Terminal Tabs Help
eduardo@eduardo-VirtualBox:~/Desktop$ vmstat s
vmstat: failed to parse argument: 's'
eduardo@eduardo-VirtualBox:~/Desktop$ vmstat -s
 2476532 K total memory
  558764 K used memory
  703396 K active memory
1438144 K inactive memory
   89020 K free memory
   70148 K buffer memory
1758600 K swap cache
2202620 K total swap
     0 K used swap
2202620 K free swap
   21897 non-nice user cpu ticks
    7508 nice user cpu ticks
   9060 system cpu ticks
2291347 idle cpu ticks
   28576 IO-wait cpu ticks
     0 IRQ cpu ticks
    1765 softirq cpu ticks
     0 stolen cpu ticks
1413233 pages paged in
  989124 pages paged out
     0 pages swapped in
     0 pages swapped out
5855939 interrupts
2666766 CPU context switches
1652716469 boot time
    5494 forks
eduardo@eduardo-VirtualBox:~/Desktop$ lsmen
Command 'lsmen' not found, did you mean:
  command 'lsmem' from deb util-linux (2.37.2-4ubuntu3)
Try: sudo apt install <deb name>
eduardo@eduardo-VirtualBox:~/Desktop$ lsmem
RANGE                                SIZE  STATE REMOVABLE BLOCK
0x0000000000000000-0x000000009fffffff 2,5G online          yes  0-19

Memory block size:      128M
Total online memory:    2,5G
Total offline memory:    0B
eduardo@eduardo-VirtualBox:~/Desktop$
```

```
eduardo@eduardo-VirtualBox:~/Desktop$ dmidecode -t 17
# dmidecode 3.3
/sys/firmware/dmi/tables/smbios_entry_point: Permission denied
Scanning /dev/mem for entry point.
/dev/mem: Permission denied
```

```
Terminal - eduardo@eduardo-VirtualBox: ~/Desktop
File Edit View Terminal Tabs Help

0[|||||] 7.4%] Tasks: 90, 151 thr; 1 running
1[|||] 2.1%] Load average: 0.23 0.08 0.09
Mem[|||||||||||||||||||||||||||||||||||||] 548M/2.36G] Uptime: 03:25:51
Swp[|] 268K/2.10G]

PID USER PRI NI VIRT RES SHR S CPU%MEM% TIME+ Command
830 root 20 0 324M 106M 43060 S 6.1 4.4 1:13.95 /usr/lib/xorg/Xorg -core :0 -seat seat0 -auth /var/run/l
1555 eduardo 20 0 482M 49276 37980 S 3.4 2.0 0:34.05 /usr/bin/xfce4-terminal
841 root 20 0 324M 106M 43060 S 0.7 4.4 0:09.59 /usr/lib/xorg/Xorg -core :0 -seat seat0 -auth /var/run/l
1034 eduardo 20 0 160M 2556 2164 S 0.7 0.1 0:54.49 /usr/bin/VBoxClient --draganddrop
1206 eduardo 20 0 651M 43240 34148 S 0.7 1.7 0:25.56 /usr/lib/x86_64-linux-gnu/xfce4/panel/wrapper-2.0 /usr/l
1360 eduardo 20 0 317M 8244 7216 S 0.7 0.3 0:01.28 /usr/libexec/gvfs-afc-volume-monitor
5719 eduardo 20 0 21704 4888 3596 R 0.7 0.2 0:00.18 htop
1 root 20 0 163M 12820 8032 S 0.0 0.5 0:03.73 /sbin/init splash
233 root 19 -1 47964 17852 16608 S 0.0 0.7 0:00.51 /lib/systemd/systemd-journald
266 root 20 0 27068 7332 4464 S 0.0 0.3 0:00.85 /lib/systemd/systemd-udev
295 systemd-r 20 0 25348 13284 9072 S 0.0 0.5 0:00.31 /lib/systemd/systemd-resolved
466 root 20 0 244M 7500 6660 S 0.0 0.3 0:00.67 /usr/libexec/accounts-daemon
467 root 20 0 2812 1120 1028 S 0.0 0.0 0:01.31 /usr/sbin/acpid
470 avahi 20 0 7624 3172 2828 S 0.0 0.1 0:00.07 avahi-daemon: running [eduardo-VirtualBox.local]
472 root 20 0 19896 3000 2748 S 0.0 0.1 0:00.05 /usr/sbin/cron -f -P
473 messagebu 20 0 10140 5776 3692 S 0.0 0.2 0:05.69 @dbus-daemon --system --address=systemd: --nofork --nopi
474 root 20 0 264M 17796 15164 S 0.0 0.7 0:00.79 /usr/sbin/NetworkManager --no-daemon
493 root 20 0 82696 3848 3508 S 0.0 0.2 0:01.51 /usr/sbin/irqbalance --foreground
496 root 20 0 247M 10320 7068 S 0.0 0.4 0:00.30 /usr/libexec/polkitd --no-debug
499 root 20 0 23496 7340 6352 S 0.0 0.3 0:00.24 /lib/systemd/systemd-logind
500 root 20 0 383M 12556 10204 S 0.0 0.5 0:00.31 /usr/libexec/udisks2/udisksd
502 root 20 0 16492 5756 4944 S 0.0 0.2 0:00.15 /sbin/wpa_supplicant -u -s -O /run/wpa_supplicant
508 root 20 0 82696 3848 3508 S 0.0 0.2 0:00.00 /usr/sbin/irqbalance --foreground
514 root 20 0 244M 7500 6660 S 0.0 0.3 0:00.58 /usr/libexec/accounts-daemon
515 root 20 0 247M 10320 7068 S 0.0 0.4 0:00.00 /usr/libexec/polkitd --no-debug
521 avahi 20 0 7440 344 0 S 0.0 0.0 0:00.00 avahi-daemon: chroot helper
535 root 20 0 383M 12556 10204 S 0.0 0.5 0:00.00 /usr/libexec/udisks2/udisksd
576 root 20 0 244M 7500 6660 S 0.0 0.3 0:00.01 /usr/libexec/accounts-daemon
577 root 20 0 247M 10320 7068 S 0.0 0.4 0:00.07 /usr/libexec/polkitd --no-debug
578 root 20 0 383M 12556 10204 S 0.0 0.5 0:00.00 /usr/libexec/udisks2/udisksd
581 root 20 0 237M 11948 10108 S 0.0 0.5 0:00.13 /usr/sbin/ModemManager
596 root 20 0 264M 17796 15164 S 0.0 0.7 0:00.54 /usr/sbin/NetworkManager --no-daemon
597 root 20 0 264M 17796 15164 S 0.0 0.7 0:00.03 /usr/sbin/NetworkManager --no-daemon
598 root 20 0 237M 11948 10108 S 0.0 0.5 0:00.00 /usr/sbin/ModemManager
601 root 20 0 83272 13556 11452 S 0.0 0.5 0:00.07 /usr/sbin/cupsd -l
603 root 20 0 125M 23364 14680 S 0.0 0.9 0:00.21 /usr/bin/python3 /usr/share/unattended-upgrades/unattend
612 root 20 0 237M 11948 10108 S 0.0 0.5 0:00.00 /usr/sbin/ModemManager
626 root 20 0 383M 12556 10204 S 0.0 0.5 0:00.00 /usr/libexec/udisks2/udisksd
648 root 20 0 383M 12556 10204 S 0.0 0.5 0:00.00 /usr/libexec/udisks2/udisksd
650 kernoops 20 0 13080 456 0 S 0.0 0.0 0:00.02 /usr/sbin/kerneloops --test
652 kernoops 20 0 13080 456 0 S 0.0 0.0 0:00.02 /usr/sbin/kerneloops
704 root 20 0 168M 11076 9664 S 0.0 0.4 0:00.06 /usr/sbin/cups-browsed
706 root 20 0 125M 23364 14680 S 0.0 0.9 0:00.00 /usr/bin/python3 /usr/share/unattended-upgrades/unattend
718 root 20 0 168M 11076 9664 S 0.0 0.4 0:00.00 /usr/sbin/cups-browsed
719 root 20 0 168M 11076 9664 S 0.0 0.4 0:00.00 /usr/sbin/cups-browsed
800 root 20 0 299M 7384 6460 S 0.0 0.3 0:00.02 /usr/sbin/lightdm
809 root 20 0 299M 7384 6460 S 0.0 0.3 0:00.00 /usr/sbin/lightdm
811 root 20 0 299M 7384 6460 S 0.0 0.3 0:00.00 /usr/sbin/lightdm
814 root 20 0 363M 3104 2672 S 0.0 0.1 0:05.24 /usr/sbin/VBoxService --pidfile /var/run/vboxadd-service
F1Help F2Setup F3Search F4Filter F5Tree F6SortBy F7Nice F8Nice F9Kill F10Quit
```