

Guião 01 SO

Bernardo Mota Coelho

n.º mec: 125059

Turma P3

2.

```
bernardoc@BernardoC-ZBook: ~  
bernardoc@BernardoC-ZBook:~$ date  
seg 22 set 2025 09:14:05 WEST  
bernardoc@BernardoC-ZBook:~$
```

3.

```
bernardoc@BernardoC-ZBook:~$ pwd  
/home/bernardoc  
bernardoc@BernardoC-ZBook:~$ ls  
Documentos  install.sh  Música  passwd  Secretária  Transferências  Vídeos  
Imagens     Modelos    myfile  Público  snap        UA  
bernardoc@BernardoC-ZBook:~$ ls -a  
.            Documentos  .local    Público    Transferências  
..           .dotnet     Modelos   .python_history  UA  
.bash_history .fontconfig Música     Secretária      Vídeos  
.bash_logout .gnupg      myfile    snap           .vscode  
.bashrc      Imagens     passwd    .snxrc  
.cache       install.sh  .pki      .ssh  
.config      .lessht    .profile  .sudo_as_admin_successful  
bernardoc@BernardoC-ZBook:~$ ls -l  
total 56  
drwxr-xr-x 2 bernardoc bernardoc 4096 set 23 2024 Documentos  
drwxr-xr-x 3 bernardoc bernardoc 4096 set 22 09:14 Imagens  
-rw-r--r-- 1 root      root      7730 set 17 2024 install.sh  
drwxr-xr-x 2 bernardoc bernardoc 4096 set 23 2024 Modelos  
drwxr-xr-x 2 bernardoc bernardoc 4096 set 23 2024 Música  
-rw-rw-r-- 1 bernardoc bernardoc 132 set 18 10:15 myfile  
-rw-r--r-- 1 bernardoc bernardoc 2963 set 18 10:48 passwd  
drwxr-xr-x 2 bernardoc bernardoc 4096 set 23 2024 Público  
drwxr-xr-x 2 bernardoc bernardoc 4096 set 23 2024 Secretária  
drwx----- 8 bernardoc bernardoc 4096 set 15 18:00 snap  
drwxr-xr-x 4 bernardoc bernardoc 4096 set 18 11:28 Transferências  
drwxrwxr-x 3 bernardoc bernardoc 4096 set 15 17:39 UA  
drwxr-xr-x 2 bernardoc bernardoc 4096 set 23 2024 Vídeos  
bernardoc@BernardoC-ZBook:~$ ls-la  
ls-la: comando não encontrado  
bernardoc@BernardoC-ZBook:~$
```

4.

a)

```
NAME
  ls - list directory contents

SYNOPSIS
  ls [OPTION]... [FILE]...

DESCRIPTION
  List information about the FILES (the current directory by default). Sort entries alpha-
  betically if none of -cftuvSUX nor --sort is specified.

  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
  with -l, print the author of each file

-b, --escape
  print C-style escapes for nongraphic characters

--block-size=SIZE
  with -l, scale sizes by SIZE when printing them; e.g., '--block-size=M'; see SIZE
  format below

-B, --ignore-backups
  do not list implied . and ..

Manual page ls(1) line 1 (press h for help or q to quit)
```

restantes alíneas)

```
mkfifo          zenity
mkfontdir       zfgrep
mkfontscale     zforce
mk_modmap       zgrep
mknod           zip
mksquashfs      zipcloak
mktemp          zipdetails
mmcli           zipgrep
modutil         zipinfo
mokutil         zipnote
monitor-sensor  zipsplit
more            zjsdecode
mount           zless
mountpoint      zmore
mousetweaks     znew
mpris-proxy     zstd
mpstat          zstdcat
mscompress      zstdgrep
msexpand        zstdless
mt              zstdnt

bernardoc@BernardoC-ZBook:~$ pwd
/home/bernardoc
bernardoc@BernardoC-ZBook:~$ cp /etc/passwd .
bernardoc@BernardoC-ZBook:~$ pwd
/home/bernardoc
bernardoc@BernardoC-ZBook:~$ mkdir S0
bernardoc@BernardoC-ZBook:~$ cd S0
bernardoc@BernardoC-ZBook:~/S0$ mv ../passwd .
bernardoc@BernardoC-ZBook:~/S0$ pwd
/home/bernardoc/S0
bernardoc@BernardoC-ZBook:~/S0$
```

5.

a) Funcionalidade dos comandos

bash – abre a shell

pwd – mostra o caminho da diretoria atual

cd – muda de diretoria

ls – lista ficheiros e pastas

cat – vê o conteúdo dos ficheiros

diff – compara dois ficheiros

who – mostra quem está ligado ao sistema

cp – copia ficheiros ou pastas

rm – apaga ficheiros ou pastas

history – vê o histórico de comandos

mkdir – cria uma nova pasta

rmdir – apaga pastas vazias

export – define variáveis de ambiente

b) Comandos internos da bash

Internos (builtins): pwd, cd, history, export

Externos (programas do sistema): ls, cat, diff, who, cp, rm, mkdir, rmdir

c) Exemplos de utilização

bash → abre a shell

pwd → mostra /home/utilizador

cd /etc → muda para /etc

ls -l → lista ficheiros com detalhes

cat /etc/passwd → vê o conteúdo de passwd

diff ficheiro1.txt ficheiro2.txt → compara ficheiros

who → mostra utilizadores ligados

cp ficheiro1.txt backup.txt → copia ficheiro

rm ficheiro1.txt → apaga ficheiro

history | tail -5 → últimos 5 comandos

mkdir Projetos → cria pasta Projetos

rmdir Projetos → apaga pasta vazia

export PATH=\$PATH:/home/utilizador/bin → adiciona caminho ao PATH

6.

ls: impossível aceder a '/home/bernardoc/desktop/S0/aula01': Ficheiro ou pasta inexistente

```
bernardoc@BernardoC-ZBook:~/S0$ ls
aula01  aula01.tar.gz  chaves
bernardoc@BernardoC-ZBook:~/S0$ mkdir -p aula01/etc
bernardoc@BernardoC-ZBook:~/S0$ ls
aula01  aula01.tar.gz  chaves
bernardoc@BernardoC-ZBook:~/S0$ cp /etc/passwd aula01/etc/chaves
bernardoc@BernardoC-ZBook:~/S0$ ls aula01/et
ls: impossível aceder a 'aula01/et': Ficheiro ou pasta inexistente
bernardoc@BernardoC-ZBook:~/S0$ ls aula01/etc
chaves
bernardoc@BernardoC-ZBook:~/S0$ diff /etc/passwd aula01/etc/chaves
bernardoc@BernardoC-ZBook:~/S0$ cd S0/aula01
bash: cd: S0/aula01: Ficheiro ou pasta inexistente
bernardoc@BernardoC-ZBook:~/S0$ cd aula01
bernardoc@BernardoC-ZBook:~/S0/aula01$ rm etc/chaves
bernardoc@BernardoC-ZBook:~/S0/aula01$ tar cfvz aula01_20250922.tar.gz aula01/
tar: aula01: Função stat falhou: Ficheiro ou pasta inexistente
tar: A sair com estado de falha devido a erros prévios
bernardoc@BernardoC-ZBook:~/S0/aula01$ tar cfvz aula01_20250922.tar.gz aula01/.
tar: aula01/.: Função stat falhou: Ficheiro ou pasta inexistente
tar: A sair com estado de falha devido a erros prévios
bernardoc@BernardoC-ZBook:~/S0/aula01$ cd S0
bash: cd: S0: Ficheiro ou pasta inexistente
bernardoc@BernardoC-ZBook:~/S0/aula01$ cd ..
bernardoc@BernardoC-ZBook:~/S0$ tar cfvz aula01_20250922.tar.gz aula01/
aula01/
aula01/etc/
aula01/src/
aula01/src/scripts/
aula01/src/c/
aula01/src/python/
```

```
bernardoc@BernardoC-ZBook:~/S0$ tar xfvz aula01.tar.gz
aula01/
aula01/etc/
aula01/guia0/
aula01/guia0/S0-2526_aula01.pdf
aula01/README
aula01/src/
aula01/src/c/
aula01/src/java/
aula01/src/python/
aula01/src/scripts/
bernardoc@BernardoC-ZBook:~/S0$ pwd
/home/bernardoc/S0
bernardoc@BernardoC-ZBook:~/S0$ ^[[200~cp /etc/passwd S0/aula01/etc/chaves
cp: comando não encontrado
bernardoc@BernardoC-ZBook:~/S0$ mv passwd chaves
bernardoc@BernardoC-ZBook:~/S0$ ls
aula01  aula01.tar.gz  chaves
bernardoc@BernardoC-ZBook:~/S0$ ls
aula01  aula01.tar.gz  chaves
bernardoc@BernardoC-ZBook:~/S0$ cp /etc/passwd S0/aula01/etc/chaves
cp: impossível criar o ficheiro normal 'S0/aula01/etc/chaves': Ficheiro ou pasta inexistente
bernardoc@BernardoC-ZBook:~/S0$ cp chaves aula01
bernardoc@BernardoC-ZBook:~/S0$ ls
aula01  aula01.tar.gz  chaves
bernardoc@BernardoC-ZBook:~/S0$ diff /etc/passwd S0/aula01/etc/chaves
diff: S0/aula01/etc/chaves: Ficheiro ou pasta inexistente
bernardoc@BernardoC-ZBook:~/S0$ ls ~/Desktop/S0/aula01/etc
ls: impossível aceder a '/home/bernardoc/Desktop/S0/aula01/etc': Ficheiro ou pasta inexistente
bernardoc@BernardoC-ZBook:~/S0$ ls ~/Desktop/S0/aula01/et
ls: impossível aceder a '/home/bernardoc/Desktop/S0/aula01/et': Ficheiro ou pasta inexistente
```

7.

who > myfile → guarda lista de utilizadores em myfile

date >> myfile → acrescenta data/hora no fim de myfile

less < /etc/passwd → vê conteúdo de /etc/passwd página a página

cat myfile → mostra conteúdo de myfile no ecrã

cat → lê do teclado e mostra no ecrã

cat myfile > lixo → copia myfile para lixo

cat myfile lixo → mostra conteúdos de myfile e lixo juntos

cat > aaa → cria ou substitui aaa com texto do teclado

8.

```
aula01/guiao/
aula01/guiao/S0-2526_aula01.pdf
bernardoc@BernardoC-ZBook:~/S0$ cd ~/Desktop
bash: cd: /home/bernardoc/Desktop: Ficheiro ou pasta inexistente
bernardoc@BernardoC-ZBook:~/S0$ pwd
/home/bernardoc/S0
bernardoc@BernardoC-ZBook:~/S0$ cd ~/home
bash: cd: /home/bernardoc/home: Ficheiro ou pasta inexistente
bernardoc@BernardoC-ZBook:~/S0$ who > myfile
bernardoc@BernardoC-ZBook:~/S0$ who > myfile
bernardoc@BernardoC-ZBook:~/S0$ cd aula01
bernardoc@BernardoC-ZBook:~/S0/aula01$ ls
aula01_20250922.tar.gz  chaves  etc  guiao  README  src
bernardoc@BernardoC-ZBook:~/S0/aula01$ nano dados1
bernardoc@BernardoC-ZBook:~/S0/aula01$ nano dados2
bernardoc@BernardoC-ZBook:~/S0/aula01$ ls dados1
dados1
bernardoc@BernardoC-ZBook:~/S0/aula01$ ls -l dados1
-rw-rw-r-- 1 bernardoc bernardoc 28 set 22 09:54 dados1
bernardoc@BernardoC-ZBook:~/S0/aula01$ cat dados1
Bernardo Mota Coelho 125059
bernardoc@BernardoC-ZBook:~/S0/aula01$ cat dados1 dados2 > dados
bernardoc@BernardoC-ZBook:~/S0/aula01$ ls
aula01_20250922.tar.gz  chaves  dados  dados1  dados2  etc  guiao  README  src
bernardoc@BernardoC-ZBook:~/S0/aula01$ ls dados
dados
bernardoc@BernardoC-ZBook:~/S0/aula01$ cat dados
Bernardo Mota Coelho 125059
Tiago Francisco Crespo do Vale 125913
bernardoc@BernardoC-ZBook:~/S0/aula01$
```

9.

```
bernardoc@BernardoC-ZBook:~/S0/aula01$ ls /bin > temp.txt
bernardoc@BernardoC-ZBook:~/S0/aula01$ wc -l temp.txt
1584 temp.txt
bernardoc@BernardoC-ZBook:~/S0/aula01$ ls /bin | wc -l
1584
bernardoc@BernardoC-ZBook:~/S0/aula01$ ls /bin | ch
ch: comando não encontrado
bernardoc@BernardoC-ZBook:~/S0/aula01$ ls /bin | grep ch
apt-cache
apt-ftparchive
arch
btattach
chacl
chage
chardet
chardetect
chattr
chcon
check-language-support
chfn
chgrp
chktest
chmod
choom
chown
chrt
chsh
chvt
dpkg-architecture
dpkg-checkbuilddeps
dpkg-genchanges
```

```

json-patch-jsondiff
jsh-schema
ldapsearch
lessecho
linux-check-removal
locale-check
networkd-dispatcher
patch
pathchk
pdfattach
pdfdetach
pkcheck
podchecker
rendercheck
sbattach
setarch
speech-dispatcher
switcherooctl
systemd-machine-id-setup
touch
tracker3-search
ubuntu-core-launcher
vfychain
watch
watchgnupg
which
which.debianutils
x86_64-linux-gnu-gp-archive
xkbwatch
bernardoc@BernardoC-ZBook:~/S0/aula01$ ls /bin | grep -c ch
78
bernardoc@BernardoC-ZBook:~/S0/aula01$

```

10.

```

bernardoc@BernardoC-ZBook:~/S0/aula01$ ls /bin | grep -c ch
78
bernardoc@BernardoC-ZBook:~/S0/aula01$ echo $HOME
/home/bernardoc
bernardoc@BernardoC-ZBook:~/S0/aula01$ echo $PATH
/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr/local/games:/snap/bin:/s
bernardoc@BernardoC-ZBook:~/S0/aula01$ FILE=/etc/passwd
bernardoc@BernardoC-ZBook:~/S0/aula01$ echo $FILE
/etc/passwd
bernardoc@BernardoC-ZBook:~/S0/aula01$ echo $"FILE"
FILE
bernardoc@BernardoC-ZBook:~/S0/aula01$ cat $FILE
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
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin
irc:x:39:39:ircd:/run/ircd:/usr/sbin/nologin
_apt:x:42:65534:/:nonexistent:/usr/sbin/nologin
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
systemd-network:x:998:998:systemd Network Management:/:usr/sbin/nologin
systemd-timesync:x:996:996:systemd Time Synchronization:/:usr/sbin/nologin

```

```

hplip:x:116:7:HPLIP system user,,,:/run/hplip:/bin/false
gnome-remote-desktop:x:988:988:GNOME Remote Desktop:/var/lib/gnome-remote-desktop:/usr/sbin/nologin
polkitd:x:987:987:User for polkitd:/usr/sbin/nologin
rtkit:x:117:119:RealtimeKit,,,:/proc:/usr/sbin/nologin
colord:x:118:120:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/nologin
gnome-initial-setup:x:119:65534:./run/gnome-initial-setup:/bin/false
gdm:x:120:121:Gnome Display Manager:/var/lib/gdm3:/bin/false
nm-openvpn:x:121:122:NetworkManager OpenVPN,,,:/var/lib/openvpn/chroot:/usr/sbin/nologin
nvidia-persistenced:x:122:124:NVIDIA Persistence Daemon,,,:/nonexistent:/usr/sbin/nologin
bernardoc:x:1000:1000:BernardoC:/home/bernardoc:/bin/bash
bernardoc@BernardoC-ZBook:~/S0/aula01$ echo "cat $FILE"
cat /etc/passwd
bernardoc@BernardoC-ZBook:~/S0/aula01$ echo "cat $"FILE""
cat $FILE
bernardoc@BernardoC-ZBook:~/S0/aula01$ echo 'pwd'
pwd
bernardoc@BernardoC-ZBook:~/S0/aula01$ echo $(cat $FILE)
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
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/lib/lp
:9:9:news:/var/spool/news:/usr/sbin/nologin uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin proxy:x:13:13:proxy:/usr/sbin/nologin
n backup:x:34:34:backup:/var/backups:/usr/sbin/nologin list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin
t:/usr/sbin/nologin nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin systemd-network:x:998:998:systemd Network
e Synchronization:/usr/sbin/nologin dhcpcd:x:100:65534:DHCP Client Daemon,,,:/usr/lib/dhcpcd:/bin/false messagebus:x:101:101:
/usr/sbin/nologin systemd-resolve:x:991:991:systemd Resolver:/usr/sbin/nologin uidd:x:103:103:./run/uid:/usr/sbin/nologin
gin tss:x:105:105:TPM software stack,,,:/var/lib/tpm:/bin/false systemd-oom:x:990:990:systemd Userspace OOM Killer:/usr/sbin/nologin
usr/sbin/nologin whoopsie:x:107:109:./nonexistent:/bin/false dnsmasq:x:999:65534:dnsmasq:/var/lib/misc:/usr/sbin/nologin
gin tcpdump:x:109:112:./nonexistent:/usr/sbin/nologin sssd:x:110:113:SSSD system user,,,:/var/lib/sss:/usr/sbin/nologin
:/bin/false cups-pk-helper:x:112:114:user for cups-pk-helper service,,,:/nonexistent:/usr/sbin/nologin fwupd-refresh:x:113:116:./var/lib/saned:/usr/sbin/nologin
geoclue:x:114:117:./var/lib/geoclue:/usr/sbin/nologin cups-browsed:x:115:118:./var/lib/cups-browsed:/usr/sbin/nologin
n/hplip:/bin/false gnome-remote-desktop:x:988:988:GNOME Remote Desktop:/var/lib/gnome-remote-desktop:/usr/sbin/nologin
RealtimeKit,,,:/proc:/usr/sbin/nologin colord:x:118:120:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/nologin
false gdm:x:120:121:Gnome Display Manager:/var/lib/gdm3:/bin/false nm-openvpn:x:121:122:NetworkManager OpenVPN,,,:/var/lib/openvpn/chroot:/usr/sbin/nologin
A Persistence Daemon,,,:/nonexistent:/usr/sbin/nologin bernardoc:x:1000:1000:BernardoC:/home/bernardoc:/bin/bash
bernardoc@BernardoC-ZBook:~/S0/aula01$

```