



**UNIVERSIDADE FEDERAL DE UBERLÂNDIA**  
**FACULDADE DE ENGENHARIA MECÂNICA**  
**ENGENHARIA MECATRÔNICA**  
**Sistemas Digitais**

Linux Instalação e Uso

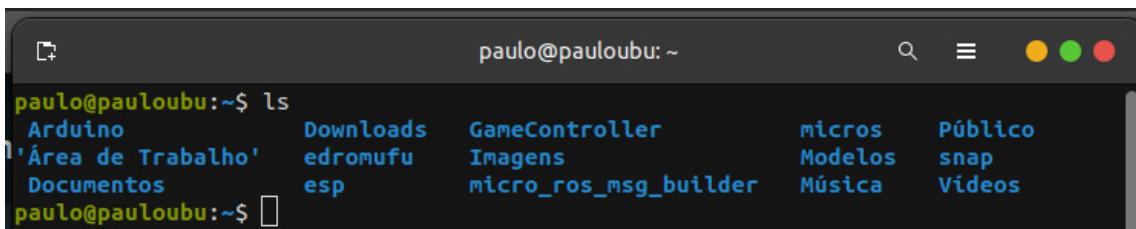
Paulo Henrique Barbosa Botelho

12011EMT021

**UBERLÂNDIA**

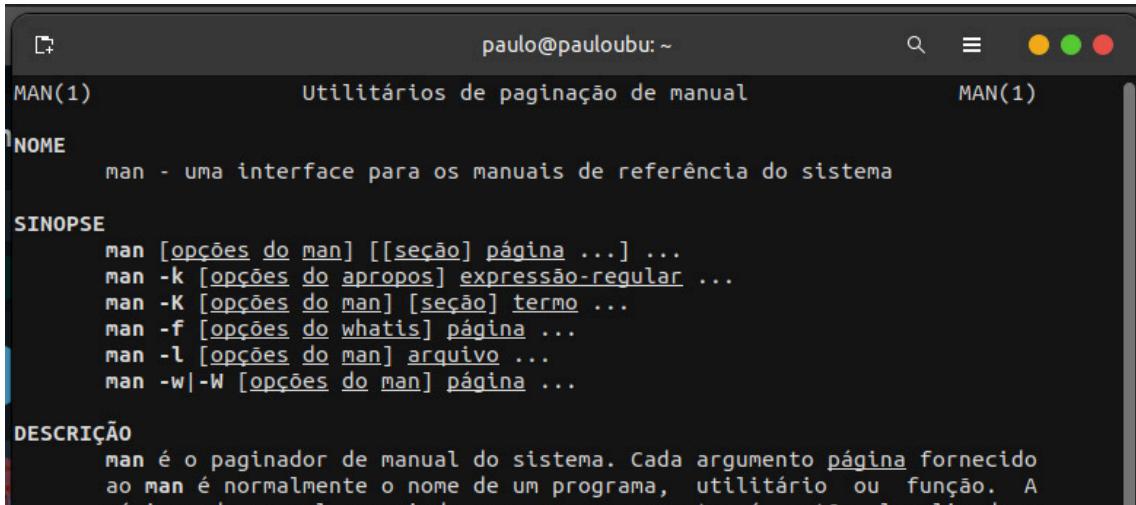
**2024**

2.A)



```
paulo@pauloubu:~$ ls
Arduino          Downloads      GameController      micros       Público
'Área de Trabalho' edromufu    Imagens           Modelos     snap
Documentos        esp           micro_ros_msg_builder Música     Videos
paulo@pauloubu:~$
```

ls = mostra as pastas e arquivos dentro da pasta atual.

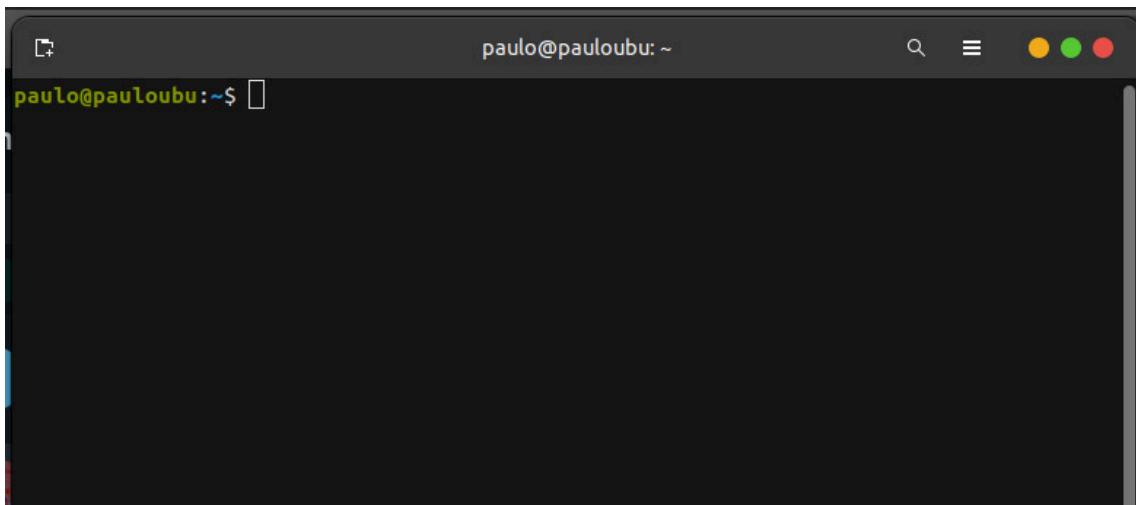


```
man(1)           Utilitários de paginação de manual           MAN(1)
NOME
man - uma interface para os manuais de referência do sistema

SINOPSE
man [opções do man] [[seção] página ...] ...
man -k [opções do apropos] expressão-regular ...
man -K [opções do man] [seção] termo ...
man -f [opções do whatis] página ...
man -l [opções do man] arquivo ...
man -w|-W [opções do man] página ...

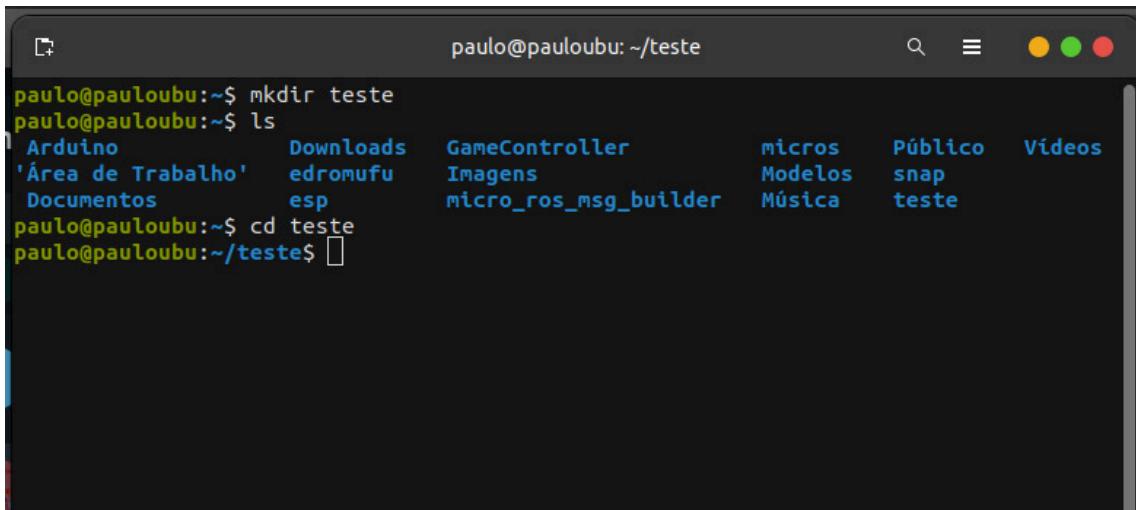
Descrição
man é o paginador de manual do sistema. Cada argumento página fornecido
ao man é normalmente o nome de um programa, utilitário ou função. A
```

man = mostra o manual do comando desejado. ex: man ls.



```
paulo@pauloubu:~$
```

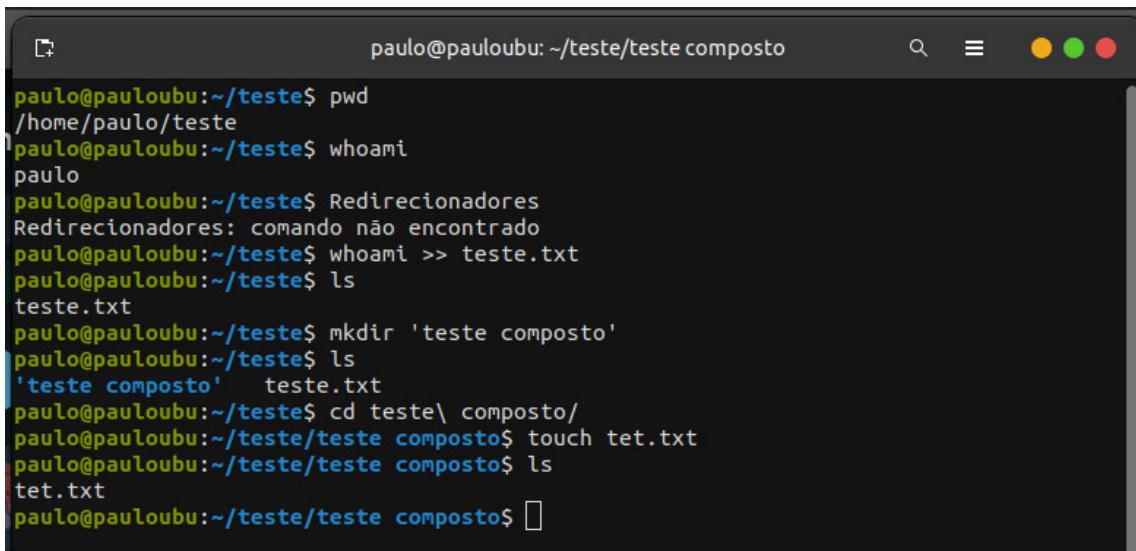
clear = limpa o terminal.



```
paulo@pauloubu:~$ mkdir teste
paulo@pauloubu:~$ ls
Arduino          Downloads  GameController      micros    Público   Vídeos
'Área de Trabalho' edromufu  Imagens           Modelos   snap
Documentos        esp       micro_ros_msg_builder Música   teste
paulo@pauloubu:~$ cd teste
paulo@pauloubu:~/teste$
```

`mkdir` = cria uma pasta vazia.

`cd` = vai até o caminho desejado.



```
paulo@pauloubu:~/teste$ pwd
/home/paulo/teste
paulo@pauloubu:~/teste$ whoami
paulo
paulo@pauloubu:~/teste$ Redirecionadores
Redirecionadores: comando não encontrado
paulo@pauloubu:~/teste$ whoami >> teste.txt
paulo@pauloubu:~/teste$ ls
teste.txt
paulo@pauloubu:~/teste$ mkdir 'teste composto'
paulo@pauloubu:~/teste$ ls
'teste composto'  teste.txt
paulo@pauloubu:~/teste$ cd teste\ composto\
paulo@pauloubu:~/teste/teste composto$ touch tet.txt
paulo@pauloubu:~/teste/teste composto$ ls
tet.txt
paulo@pauloubu:~/teste/teste composto$
```

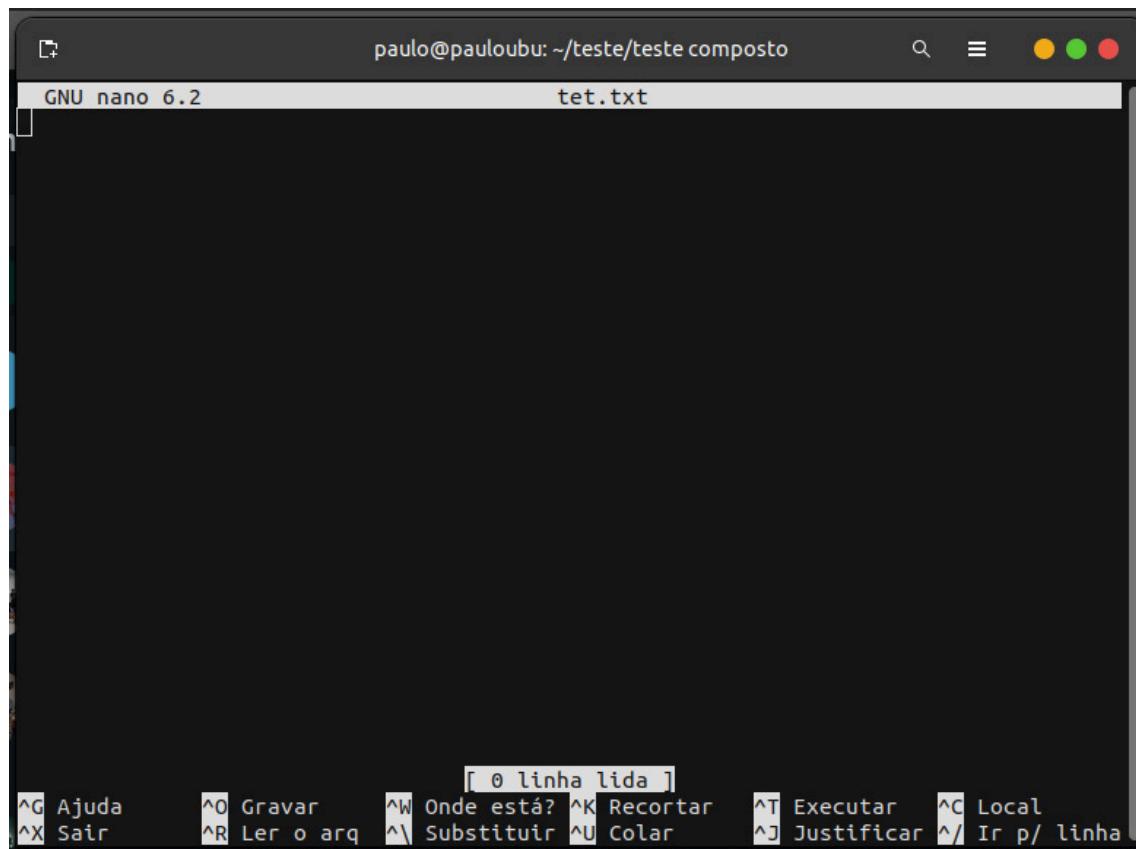
`pwd` = exibe em que pasta que você está e o caminho até ela.

`whoami` = exibe o usuário atual.

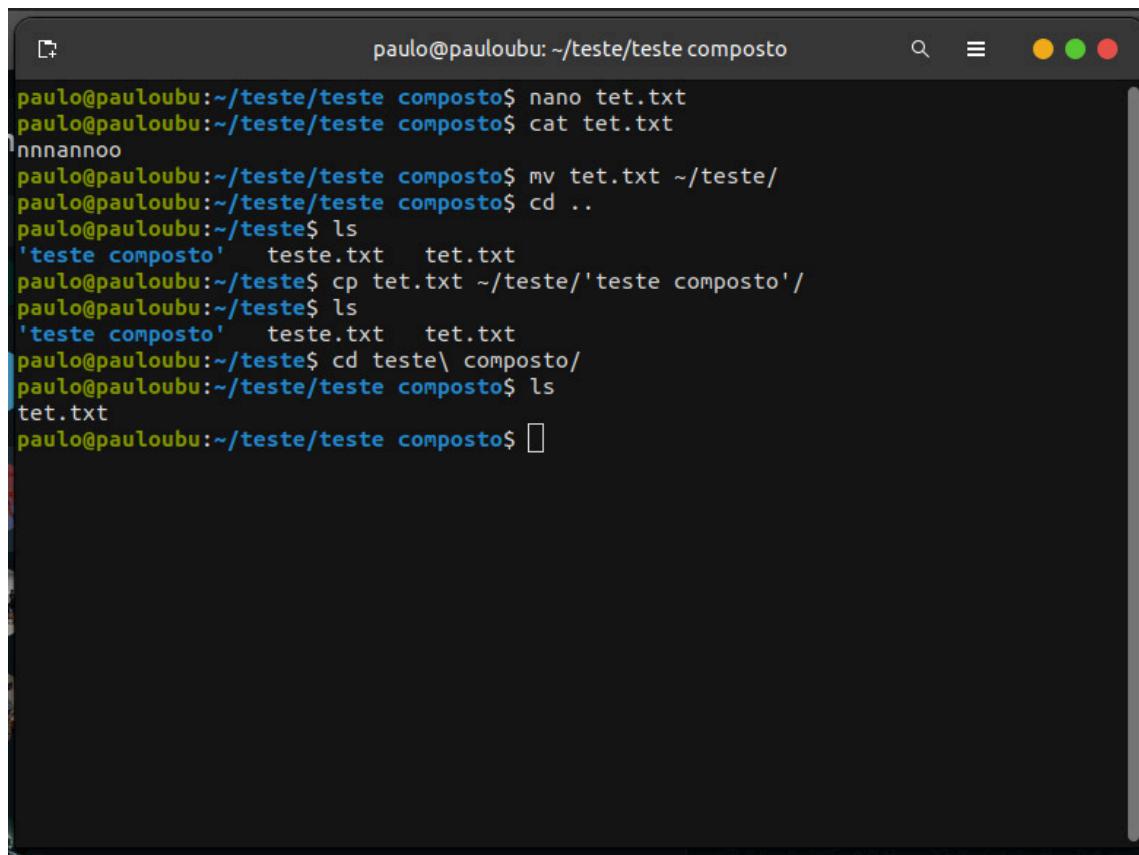
`Redirecionadores` = `>>` = redireciona o resultado do comando para um arquivo ou lugar fora do terminal.

`nomes compostos` = para acessar pastas com nomes compostos podemos utilizar as aspas simples('') ou a contrabarra (\).

`touch` = “atualiza os tempos de acesso e modificação de cada arquivo especificado”, normalmente utilizado para criar arquivos.



`nano` = editar arquivos de texto no terminal.



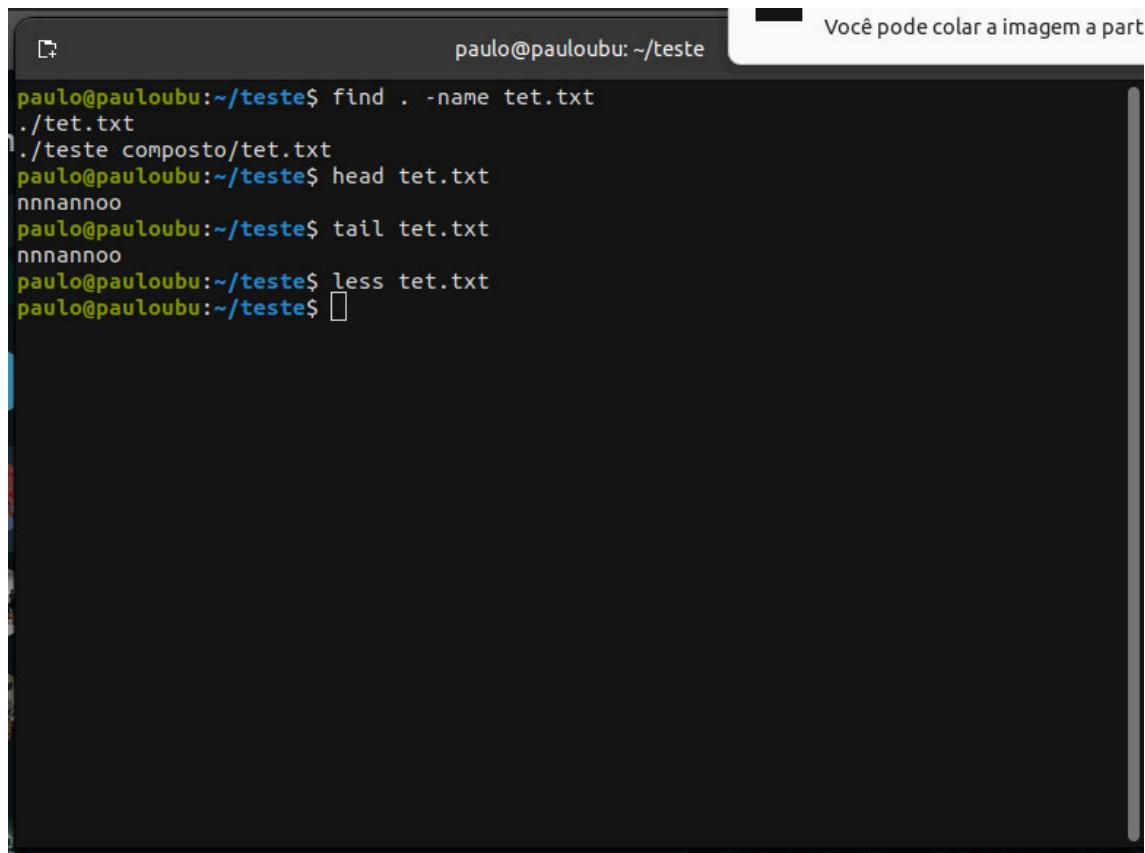
A screenshot of a terminal window titled "paulo@pauloubu: ~/teste/teste composto". The terminal shows the following command-line session:

```
paulo@pauloubu:~/teste/teste composto$ nano tet.txt
paulo@pauloubu:~/teste/teste composto$ cat tet.txt
nnnannoo
paulo@pauloubu:~/teste/teste composto$ mv tet.txt ~/teste/
paulo@pauloubu:~/teste/teste composto$ cd ..
paulo@pauloubu:~/teste$ ls
'teste composto'  teste.txt  tet.txt
paulo@pauloubu:~/teste$ cp tet.txt ~/teste/'teste composto'/
paulo@pauloubu:~/teste$ ls
'teste composto'  teste.txt  tet.txt
paulo@pauloubu:~/teste/teste composto$ ls
tet.txt
paulo@pauloubu:~/teste/teste composto$ 
```

**cat** = exibe o conteúdo do arquivo de texto no terminal.

**mv** = move o arquivo para o caminho desejado, podendo renomear o arquivo.

**cp** = copia o arquivo para o caminho desejado.



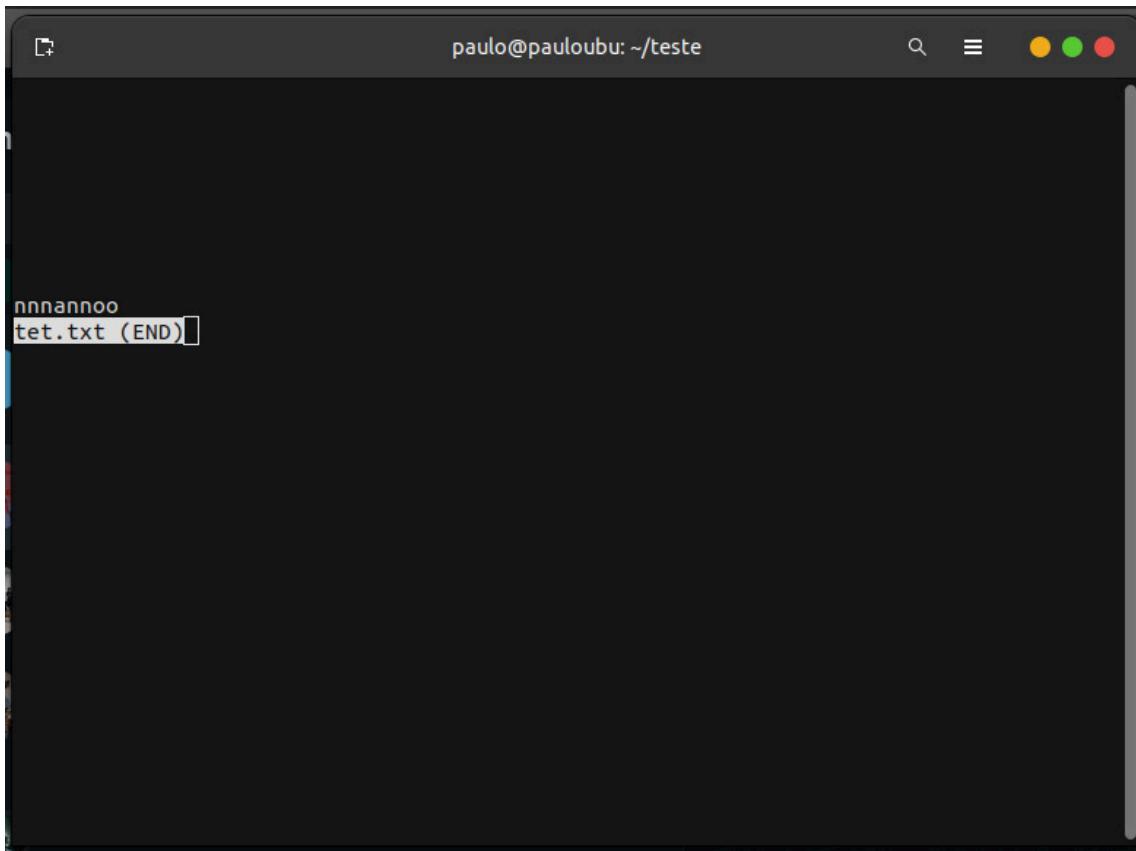
A screenshot of a terminal window titled "paulo@pauloubu: ~/teste". The window shows a command-line session with the following history:

```
paulo@pauloubu:~/teste$ find . -name tet.txt
./tet.txt
./teste composta/tet.txt
paulo@pauloubu:~/teste$ head tet.txt
nnnannoo
paulo@pauloubu:~/teste$ tail tet.txt
nnnannoo
paulo@pauloubu:~/teste$ less tet.txt
paulo@pauloubu:~/teste$
```

find = encontrar arquivos ou pastas desejadas.

head = exibe o início do conteúdo do arquivo de texto.

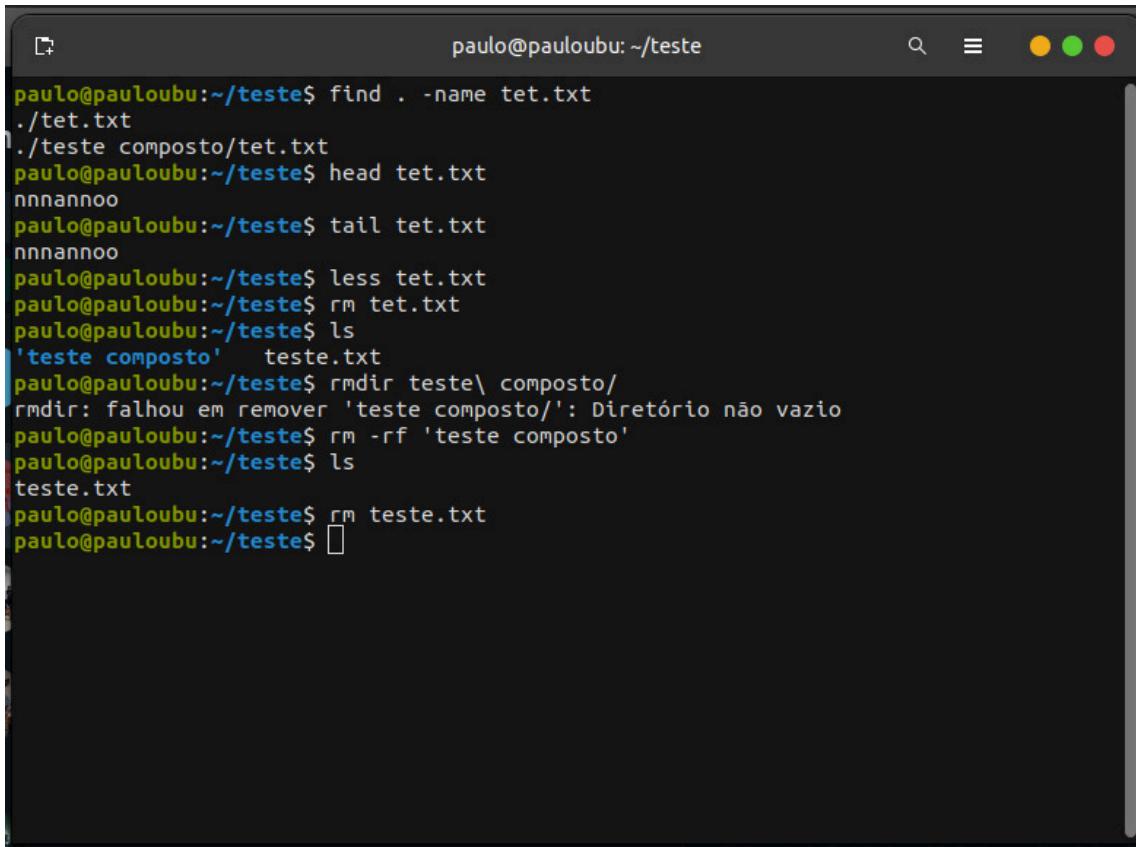
tail = exibe o final do conteúdo do arquivo de texto.



paulo@pauloubu: ~/teste

```
nnnannoo
tet.txt (END)
```

less = exibe o conteúdo do arquivo de texto por partes.

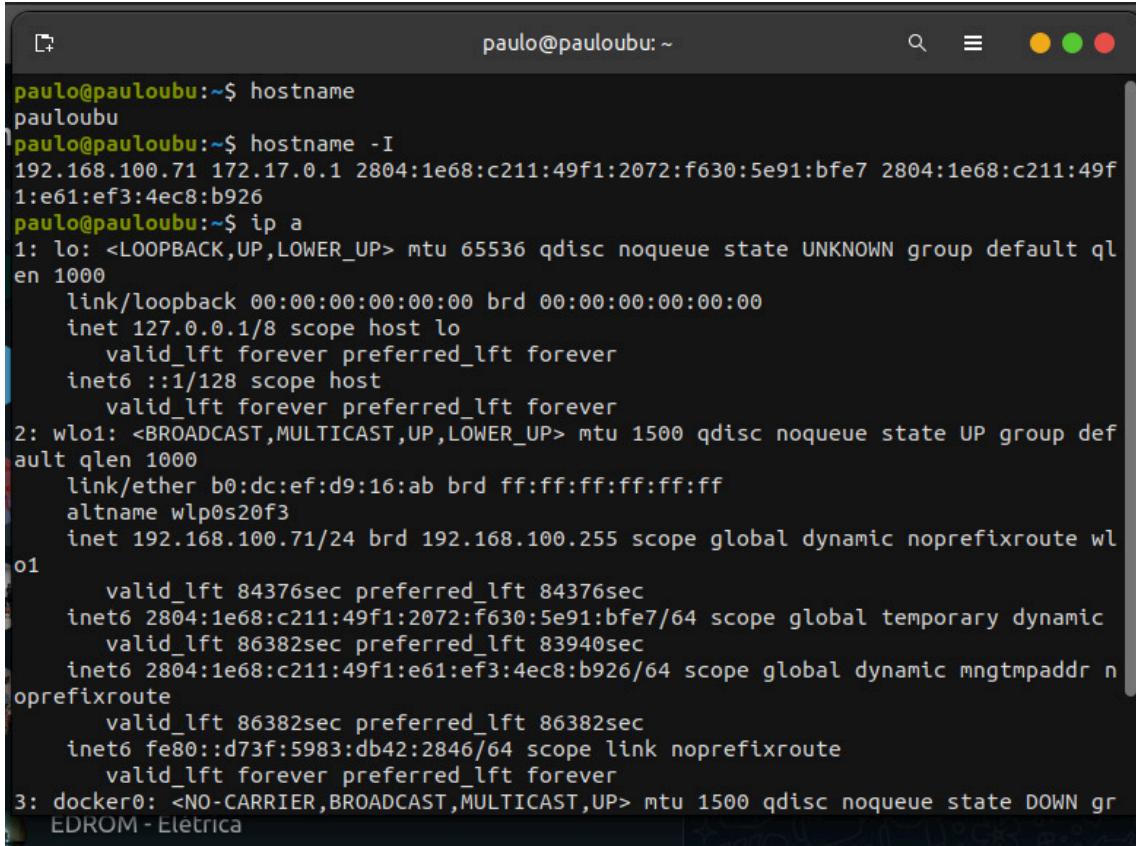


```
paulo@pauloubu:~/teste$ find . -name tet.txt
./tet.txt
./teste composto/tet.txt
paulo@pauloubu:~/teste$ head tet.txt
nnnannoo
paulo@pauloubu:~/teste$ tail tet.txt
nnnannoo
paulo@pauloubu:~/teste$ less tet.txt
paulo@pauloubu:~/teste$ rm tet.txt
paulo@pauloubu:~/teste$ ls
'teste composto' teste.txt
paulo@pauloubu:~/teste$ rmdir teste\ composto/
rmdir: falhou em remover 'teste composto/': Diretório não vazio
paulo@pauloubu:~/teste$ rm -rf 'teste composto'
paulo@pauloubu:~/teste$ ls
teste.txt
paulo@pauloubu:~/teste$ rm teste.txt
paulo@pauloubu:~/teste$ 
```

rm = exclui um arquivo.

rmdir = exclui uma pasta vazia.

rm -rf = exclui pasta ou arquivo recursivamente e forçadamente.

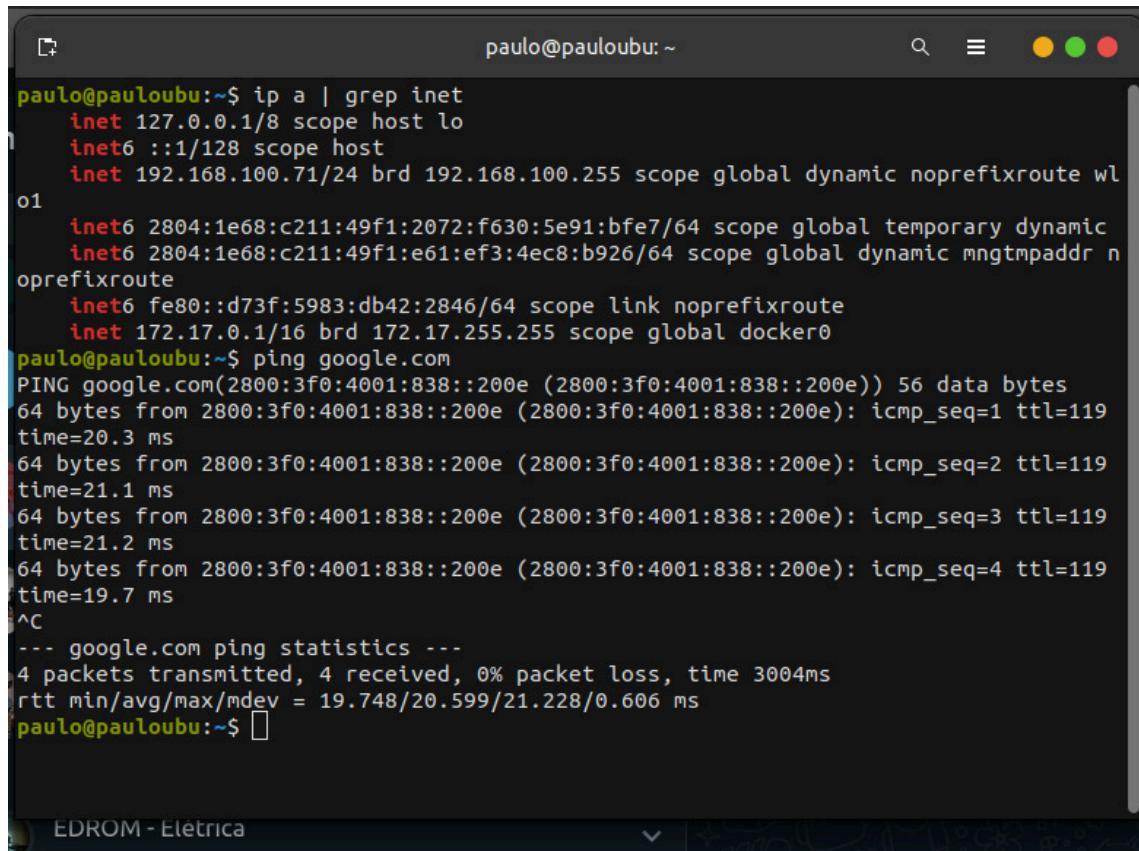


```
paulo@pauloubu:~$ hostname
pauloubu
paulo@pauloubu:~$ hostname -I
192.168.100.71 172.17.0.1 2804:1e68:c211:49f1:2072:f630:5e91:bfe7 2804:1e68:c211:49f
1:e61:ef3:4ec8:b926
paulo@pauloubu:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default ql
en 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: wlo1: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UP group def
ault qlen 1000
    link/ether b0:dc:ef:d9:16:ab brd ff:ff:ff:ff:ff:ff
    altnet wlp0s20f3
    inet 192.168.100.71/24 brd 192.168.100.255 scope global dynamic noprefixroute wl
o1
        valid_lft 84376sec preferred_lft 84376sec
    inet6 2804:1e68:c211:49f1:2072:f630:5e91:bfe7/64 scope global temporary dynamic
        valid_lft 86382sec preferred_lft 83940sec
    inet6 2804:1e68:c211:49f1:e61:ef3:4ec8:b926/64 scope global dynamic mngtmpaddr n
oprefixroute
        valid_lft 86382sec preferred_lft 86382sec
    inet6 fe80::d73f:5983:db42:2846/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
3: docker0: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc noqueue state DOWN gr
EDROM - Elétrica
```

hostname = mostra o nome do computador.

hostname -l = mostra o ip do computador.

ip a = mostra todos os ips do computador.



```
paulo@pauloubu:~$ ip a | grep inet
    inet 127.0.0.1/8 scope host lo
        inet6 ::1/128 scope host
            inet 192.168.100.71/24 brd 192.168.100.255 scope global dynamic noprefixroute wl
o1
    inet6 2804:1e68:c211:49f1:2072:f630:5e91:bfe7/64 scope global temporary dynamic
    inet6 2804:1e68:c211:49f1:e61:ef3:4ec8:b926/64 scope global dynamic mngtmpaddr n
oprefixroute
    inet6 fe80::d73f:5983:db42:2846/64 scope link noprefixroute
    inet 172.17.0.1/16 brd 172.17.255.255 scope global docker0
paulo@pauloubu:~$ ping google.com
PING google.com(2800:3f0:4001:838::200e (2800:3f0:4001:838::200e)) 56 data bytes
64 bytes from 2800:3f0:4001:838::200e (2800:3f0:4001:838::200e): icmp_seq=1 ttl=119
time=20.3 ms
64 bytes from 2800:3f0:4001:838::200e (2800:3f0:4001:838::200e): icmp_seq=2 ttl=119
time=21.1 ms
64 bytes from 2800:3f0:4001:838::200e (2800:3f0:4001:838::200e): icmp_seq=3 ttl=119
time=21.2 ms
64 bytes from 2800:3f0:4001:838::200e (2800:3f0:4001:838::200e): icmp_seq=4 ttl=119
time=19.7 ms
^C
--- google.com ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3004ms
rtt min/avg/max/mdev = 19.748/20.599/21.228/0.606 ms
paulo@pauloubu:~$
```

grep = dentro do resultado do comando anterior ele procura a palavra desejada.

ping = verifica o conectividade com o site/ip desejado.

```
paulo@pauloubu:~$ free -h
total      usada      livre  compart.  buff/cache  disponível
Mem.:       15Gi      3,0Gi     8,6Gi      599Mi      3,7Gi      11Gi
Swap:        2,8Gi      0B      2,8Gi
paulo@pauloubu:~$ free -m
total      usada      livre  compart.  buff/cache  disponível
Mem.:    15653      3091     8794      598      3767    11637
Swap:     2860        0      2860
paulo@pauloubu:~$
```

free -h = mostra a RAM utilizada em Gi

free -m = mostra a RAM utilizada em bytes

```
paulo@pauloubu:~$ top - 17:54:50 up 37 min,  1 user,  load average: 0,88, 0,70, 0,74
Tarefas: 342 total,  1 em exec., 340 dormindo,  0 parado,  1 zumbi
%CPU(s): 2,0 us, 1,0 sy, 0,0 ni, 97,0 id, 0,0 wa, 0,0 hi, 0,0 si, 0,0 st
MB mem : 15653,0 total, 8752,4 livre, 3105,3 usados, 3795,3 buff/cache
MB swap: 2861,0 total, 2861,0 livre, 0,0 usados, 11596,8 mem dispon.

          PID USUARIO PR NI VIRT RES SHR S %CPU %MEM TEMPO+ COMANDO
    997 paulo   9 -11 2579568 27688 21032 S 13,3 0,2 3:07.09 pulseaudio
  1061 paulo   20   0 26,2g 170672 115544 S 6,7 1,1 3:37.94 Xorg
  1705 paulo   20   0 6003192 343544 139264 S 6,7 2,1 2:20.16 gnome-shell
  2390 paulo   20   0 2166264 645040 73352 S 6,7 4,0 14:58.16 hidamari-pl+
 20646 paulo   20   0 13488 4272 3376 R 6,7 0,0 0:00.02 top
    1 root    20   0 168404 12876 8012 S 0,0 0,1 0:02.05 systemd
    2 root    20   0      0      0      0 S 0,0 0,0 0:00.00 kthreadd
    3 root    0 -20      0      0      0 I 0,0 0,0 0:00.00 rcu_gp
    4 root    0 -20      0      0      0 I 0,0 0,0 0:00.00 rcu_par_gp
    5 root    0 -20      0      0      0 I 0,0 0,0 0:00.00 slub_flushwq
    6 root    0 -20      0      0      0 I 0,0 0,0 0:00.00 netns
    8 root    0 -20      0      0      0 I 0,0 0,0 0:00.00 kworker/0:0+
    9 root    20   0      0      0      0 I 0,0 0,0 0:00.32 kworker/0:1+
   11 root    0 -20      0      0      0 I 0,0 0,0 0:00.00 mm_percpu_wq
   12 root    20   0      0      0      0 I 0,0 0,0 0:00.00 rcu_tasks_k+
   13 root    20   0      0      0      0 I 0,0 0,0 0:00.00 rcu_tasks_r+
   14 root    20   0      0      0      0 I 0,0 0,0 0:00.00 rcu_tasks_t+
   15 root    20   0      0      0      0 S 0,0 0,0 0:00.07 ksoftirqd/0
   16 root    20   0      0      0      0 I 0,0 0,0 0:04.73 rcu_preempt
   17 root    rt   0      0      0      0 S 0,0 0,0 0:00.30 migration/0
   18 root   -51   0      0      0      0 S 0,0 0,0 0:00.00 idle_inject+
paulo@pauloubu:~$
```

top = mostra os processos rodando no computador.

The screenshot shows the top command running in a terminal window. The title bar says "paulo@pauloubu: ~". The window has a header with CPU usage bars for each core, showing values like 0.7%, 10.1%, 2.6%, etc. Below this is memory information: Mem[ 3.61G/15.3G ] and Swap[ 0K/2.79G ]. The status line shows Tasks: 150, 858 thr; 1 running, Load average: 0.70 0.68 0.73, and Uptime: 00:38:43. The main table lists processes with columns: PID, USER, PRI, NI, VIRT, RES, SHR, S, CPU%, %MEM, TIME+, and Command. Notable processes include multiple instances of pulseaudio, firefox, hidamari-player-0, and snap/firefox/4757/. The bottom of the screen shows a menu bar with F1 through F10 keys and their corresponding functions: Help, Setup, Search, Filter, Tree, SortBy, Nice -, Nice +, Kill, and Quit.

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	%MEM	TIME+	Command
997	paulo	9	-11	2519M	27688	21032	S	11.9	0.2	3:12.84	/usr/bin/pulseaudid
1132	paulo	-6	0	2519M	27688	21032	S	11.9	0.2	3:05.99	/usr/bin/pulseaudio
1061	paulo	20	0	26.8G	166M	112M	S	6.0	1.1	3:41.38	/usr/lib/xorg/Xorg
4034	paulo	20	0	11.9G	498M	227M	S	6.0	3.2	1:35.83	/snap/firefox/4757/
1705	paulo	20	0	5849M	337M	136M	S	5.3	2.2	2:23.51	/usr/bin/gnome-shel
4651	paulo	20	0	2933M	438M	111M	S	5.3	2.8	1:45.65	/snap/firefox/4757/
2390	paulo	20	0	2115M	630M	73352	S	4.6	4.0	15:00.29	hidamari-player-0
2649	paulo	20	0	2115M	630M	73352	S	3.3	4.0	2:12.84	hidamari-player-0
4360	paulo	20	0	11.9G	498M	227M	S	2.0	3.2	0:10.29	/snap/firefox/4757/
4193	paulo	20	0	11.9G	498M	227M	S	1.3	3.2	0:05.86	/snap/firefox/4757/
4257	paulo	20	0	11.9G	498M	227M	S	1.3	3.2	0:10.23	/snap/firefox/4757/
4362	paulo	20	0	11.9G	498M	227M	S	1.3	3.2	0:08.89	/snap/firefox/4757/
21260	paulo	20	0	12020	5364	3444	R	1.3	0.0	0:00.22	htop
573	systemd- <b>d</b>	20	0	14836	6756	5988	S	0.7	0.0	0:03.26	/lib/systemd/system
736	root	20	0	2408M	44004	31232	S	0.7	0.3	0:03.11	/usr/bin/containerd
2510	paulo	20	0	2115M	630M	73352	S	0.7	4.0	0:05.10	hidamari-player-0
4195	paulo	20	0	11.9G	498M	227M	S	0.7	3.2	0:03.85	/snap/firefox/4757/
4256	paulo	20	0	11.9G	498M	227M	S	0.7	3.2	0:00.96	/snap/firefox/4757/
4271	paulo	20	0	11.9G	498M	227M	S	0.7	3.2	0:03.73	/snap/firefox/4757/

htop = mostra os processos rodando no computador de forma mais visual com mais funcionalidades, como matar um processo

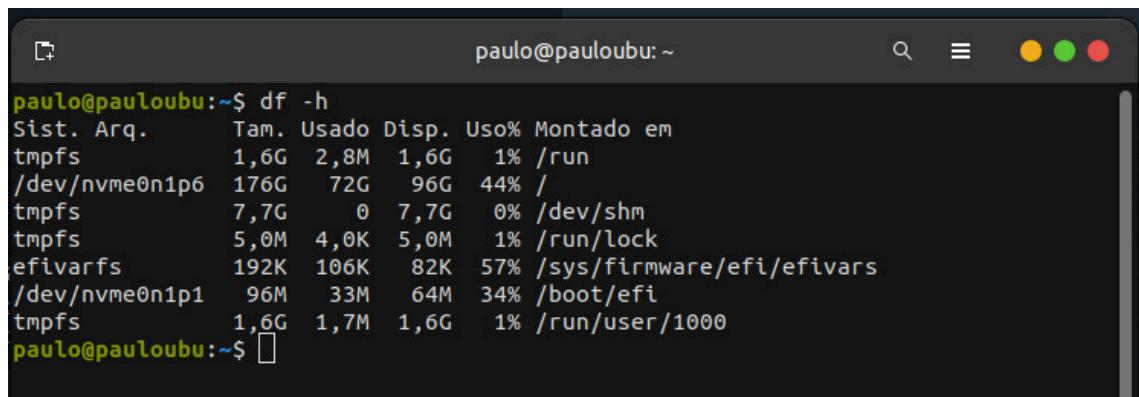
```
paulo@pauloubu:~$ htop
paulo@pauloubu:~$ ps
  PID TTY      TIME CMD
 3887 pts/0    00:00:00 bash
 21683 pts/0    00:00:00 ps
paulo@pauloubu:~$ ps aux
USER      PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root        1  0.0  0.0 168404 12876 ?      Ss  17:16  0:02 /sbin/init splash
root        2  0.0  0.0      0     0 ?      S  17:16  0:00 [kthreadd]
root        3  0.0  0.0      0     0 ?      I< 17:16  0:00 [rcu_gp]
root        4  0.0  0.0      0     0 ?      I< 17:16  0:00 [rcu_par_gp]
root        5  0.0  0.0      0     0 ?      I< 17:16  0:00 [slub_flushwq]
root        6  0.0  0.0      0     0 ?      I< 17:16  0:00 [netns]
root        8  0.0  0.0      0     0 ?      I< 17:16  0:00 [kworker/0:0H-eve]
root        9  0.0  0.0      0     0 ?      I  17:16  0:00 [kworker/0:1-even]
root       11  0.0  0.0      0     0 ?      I< 17:16  0:00 [mm_percpu_wq]
root       12  0.0  0.0      0     0 ?      I  17:16  0:00 [rcu_tasks_kthrea]
root       13  0.0  0.0      0     0 ?      I  17:16  0:00 [rcu_tasks_rude_k]
root       14  0.0  0.0      0     0 ?      I  17:16  0:00 [rcu_tasks_trace_]
root       15  0.0  0.0      0     0 ?      S  17:16  0:00 [ksoftirqd/0]
root       16  0.2  0.0      0     0 ?      I  17:16  0:04 [rcu_preempt]
root       17  0.0  0.0      0     0 ?      S  17:16  0:00 [migration/0]
root       18  0.0  0.0      0     0 ?      S  17:16  0:00 [idle_inject/0]
root       19  0.0  0.0      0     0 ?      S  17:16  0:00 [cpuhp/0]
root       20  0.0  0.0      0     0 ?      S  17:16  0:00 [cpuhp/2]
root       21  0.0  0.0      0     0 ?      S  17:16  0:00 [idle_inject/2]
root       22  0.0  0.0      0     0 ?      S  17:16  0:00 [migration/2]
root       23  0.0  0.0      0     0 ?      S  17:16  0:00 [ksoftirqd/2]
root       25  0.0  0.0      0     0 ?      I< 17:16  0:00 [kworker/2:0H-eve]
```

ps = mostra os processos que estão rodando no mesmo terminal.

ps aux = mostra o estado dos processos que estão rodando em todo o computador.

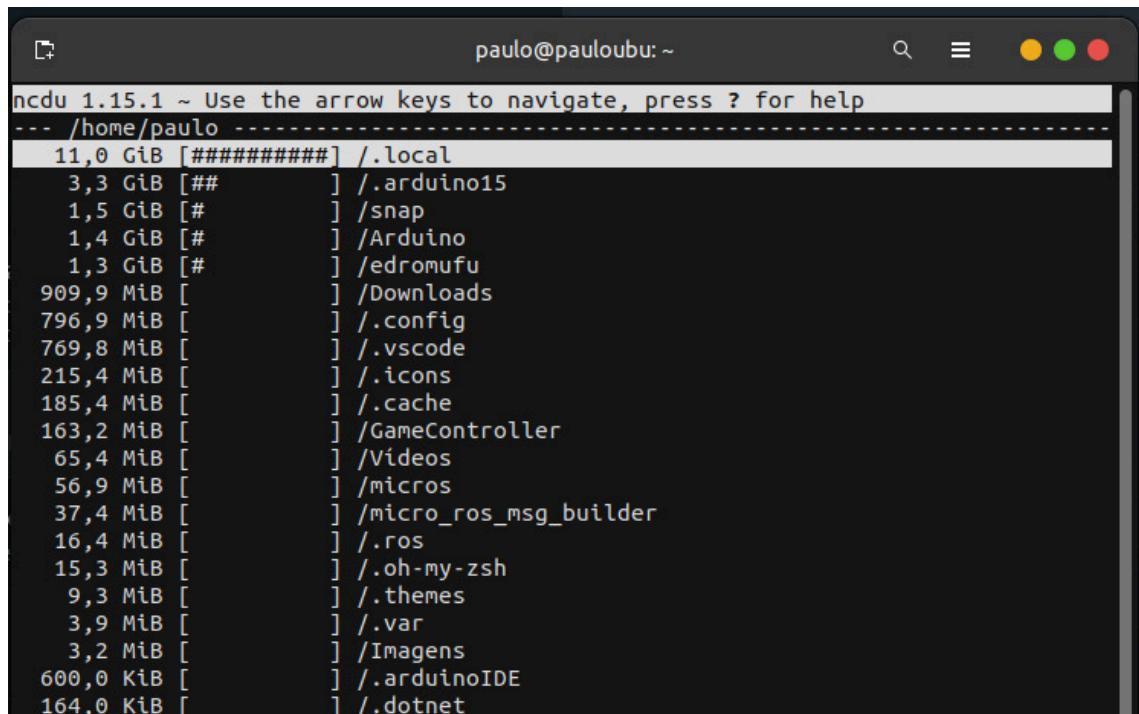
```
paulo@pauloubu:~$ pgrep terminal
3859
3862
3865
22658
22662
paulo@pauloubu:~$ kill []
```

kill = encerra um processo.



```
paulo@pauloubu:~$ df -h
Sist. Arq.      Tam. Usado Disp. Uso% Montado em
tmpfs           1,6G   2,8M  1,6G   1% /run
/dev/nvme0n1p6  176G   72G   96G   44% /
tmpfs           7,7G    0    7,7G   0% /dev/shm
tmpfs           5,0M   4,0K  5,0M   1% /run/lock
efivarfs        192K   106K   82K   57% /sys/firmware/efi/efivars
/dev/nvme0n1p1   96M   33M   64M   34% /boot/efi
tmpfs           1,6G   1,7M  1,6G   1% /run/user/1000
paulo@pauloubu:~$
```

df -h = exibe a memória utilizada no HD ou SSD do computador, bem como suas partições.



```
ncdu 1.15.1 ~ Use the arrow keys to navigate, press ? for help
--- /home/paulo ---
11,0 GiB [#####] /.local
 3,3 GiB [##] /.arduino15
 1,5 GiB [#] /snap
 1,4 GiB [#] /Arduino
 1,3 GiB [#] /edromufu
 909,9 MiB [ ] /Downloads
 796,9 MiB [ ] /.config
 769,8 MiB [ ] /.vscode
 215,4 MiB [ ] /.icons
 185,4 MiB [ ] /.cache
 163,2 MiB [ ] /GameController
 65,4 MiB [ ] /Videos
 56,9 MiB [ ] /micros
 37,4 MiB [ ] /micro_ros_msg_builder
 16,4 MiB [ ] /.ros
 15,3 MiB [ ] /.oh-my-zsh
 9,3 MiB [ ] /.themes
 3,9 MiB [ ] /.var
 3,2 MiB [ ] /Imagens
 600,0 KiB [ ] /.arduinoIDE
 164,0 KiB [ ] /.dotnet
```

ncdu = exibe o tamanho das pastas na pasta em que você está.

```
paulo@pauloubu:~$ uname  
Linux  
paulo@pauloubu:~$ uname -r  
6.5.0-45-generic  
paulo@pauloubu:~$ 
```

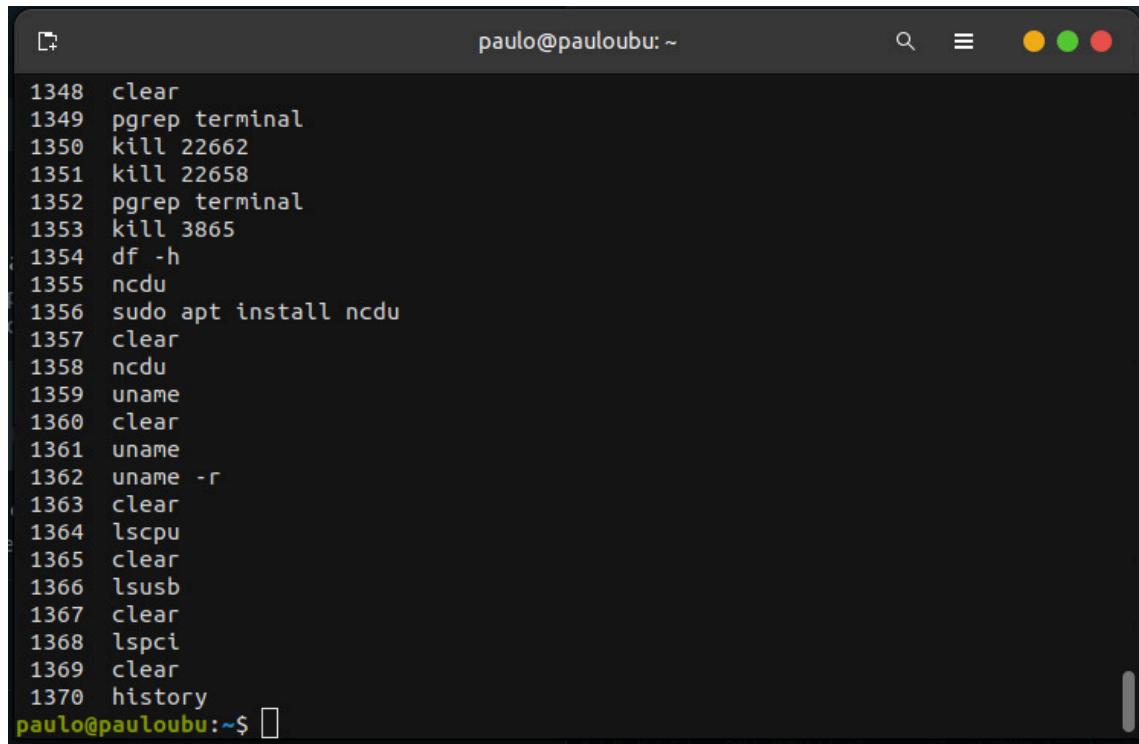
uname = mostra o nome da distribuição que está sendo usada.

```
paulo@pauloubu:~$ lscpu  
Arquitetura: x86_64  
Modo(s) operacional da CPU: 32-bit, 64-bit  
Address sizes: 39 bits physical, 48 bits virtual  
Ordem dos bytes: Little Endian  
CPU(s): 12  
Lista de CPU(s) on-line: 0-11  
ID de fornecedor: GenuineIntel  
Nome do modelo: 12th Gen Intel(R) Core(TM) i5-12450H  
Família da CPU: 6  
Modelo: 154  
Thread(s) per núcleo: 2  
Núcleo(s) por soquete: 8  
Soquete(s): 1  
Step: 3  
CPU MHz máx.: 4400,0000  
CPU MHz mín.: 400,0000  
BogoMIPS: 4992.00  
Opções: fpu vme de pse tsc msr pae mce apic sep mttr p  
ge mca cmov pat pse36 clflush dts acpi mmx fxsr ss  
e sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp lm c  
onstant_tsc art arch_perfmon pebs bts rep_good nop  
l xtopology nonstop_tsc cpuid aperf mperf tsc_known
```

```
paulo@pauloubu:~$ lsusb  
Bus 002 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub  
Bus 001 Device 002: ID 3277:0036 ShineTech USB2.0 HD UVC WebCam  
Bus 001 Device 004: ID 413c:4503 Dell Computer Corp. Dell Universal Receiver  
Bus 001 Device 003: ID 8087:0033 Intel Corp.  
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub  
paulo@pauloubu:~$ 
```

`lscpu` = mostra detalhes da ou das cpus utilizadas.

`lsusb` = mostra detalhes do que está conectado aos usbs do computador.



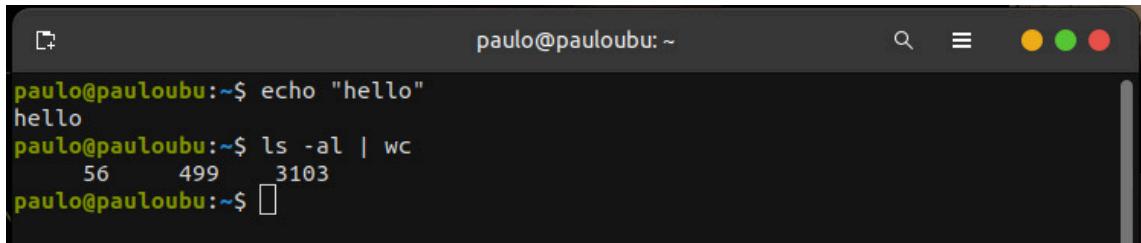
A screenshot of a terminal window titled "paulo@pauloubu: ~". The window shows a command history from line 1348 to 1370. The commands listed are:

```
1348 clear
1349 pgrep terminal
1350 kill 22662
1351 kill 22658
1352 pgrep terminal
1353 kill 3865
1354 df -h
1355 ncd
1356 sudo apt install ncd
1357 clear
1358 ncd
1359 uname
1360 clear
1361 uname
1362 uname -r
1363 clear
1364 lscpu
1365 clear
1366 lsusb
1367 clear
1368 lspci
1369 clear
1370 history
```

The prompt at the bottom is `paulo@pauloubu:~$`.

`history` = exibe o histórico de comandos utilizados.

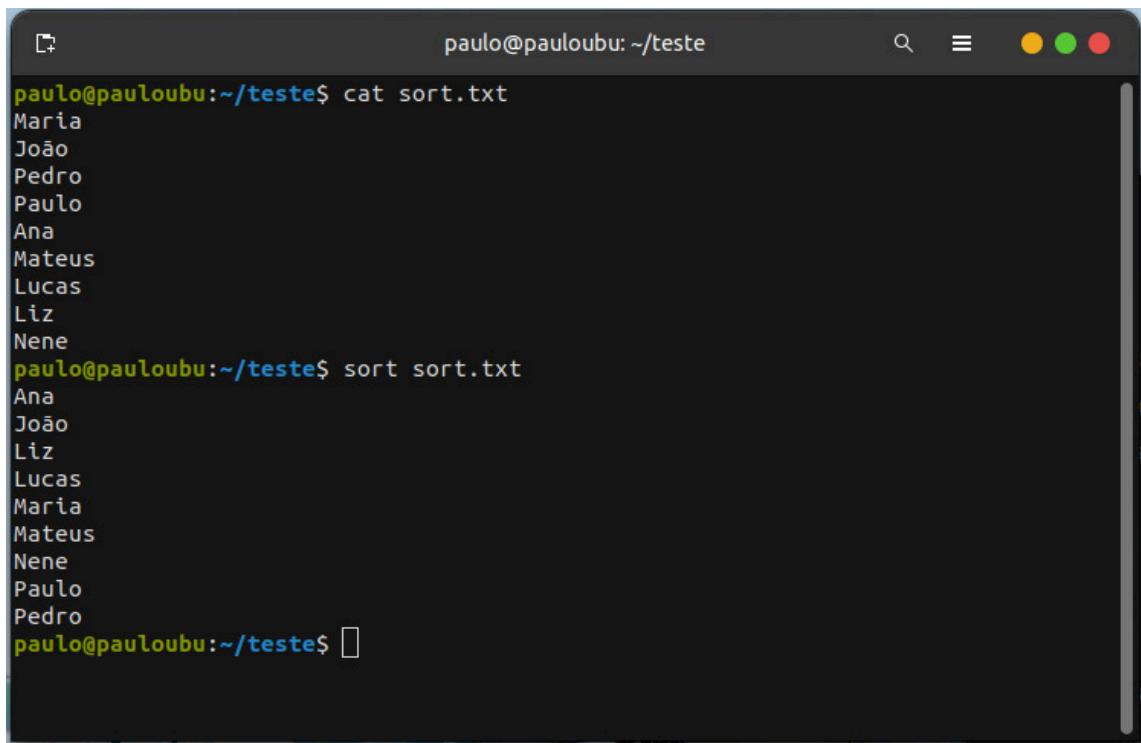
B)



```
paulo@pauloubu:~$ echo "hello"
hello
paulo@pauloubu:~$ ls -al | wc
    56      499     3103
paulo@pauloubu:~$
```

echo = printa a mensagem no terminal ou em algum arquivo usando o “>>”.

wc = mostra o numero de linhas, palavras e bytes do input inserido.



```
paulo@pauloubu:~/teste$ cat sort.txt
Maria
João
Pedro
Paulo
Ana
Mateus
Lucas
Liz
Nene
paulo@pauloubu:~/teste$ sort sort.txt
Ana
João
Liz
Lucas
Maria
Mateus
Nene
Paulo
Pedro
paulo@pauloubu:~/teste$
```

sort = coloca em ordem alfabética/crescente o input inserido.

```
paulo@pauloubu:~/teste$ echo "Paulo" >> sort.txt
paulo@pauloubu:~/teste$ echo "Paulo" >> sort.txt
paulo@pauloubu:~/teste$ cat sort.txt
Maria
João
Pedro
Paulo
Ana
Mateus
Lucas
Liz
Nene
Paulo
Paulo
paulo@pauloubu:~/teste$ cat sort.txt | uniq
Maria
João
Pedro
Paulo
Ana
Mateus
Lucas
Liz
Nene
Paulo
paulo@pauloubu:~/teste$ 
```

uniq = retira valores que são sequencialmente repetidos.

```
paulo@pauloubu:~/teste$ echo *.???
sort.txt
paulo@pauloubu:~/teste$ touch {sd,as,fg,sd,as}.txt
paulo@pauloubu:~/teste$ ls
as.txt fg.txt sd.txt sort.txt
paulo@pauloubu:~/teste$ 
```

expansão = alguns símbolos podem ser utilizados para representar outras coisas. como ~ que é a home, ? que é um caractere qualquer e etc.

```
paulo@pauloubu:~/teste$ cat sd.txt
Maria
João
Pedro
Paulo
Ana
Mateus
Lucas
Liz
Nene

paulo@pauloubu:~/teste$ cat sort.txt
Maria
João
Pedro
Paulo
Ana
Mateus
Lucas
Liz
Nene
Paulo
Paulo

paulo@pauloubu:~/teste$ diff sd.txt sort.txt
10c10,11
<
---
> Paulo
> Paulo
paulo@pauloubu:~/teste$ 
```

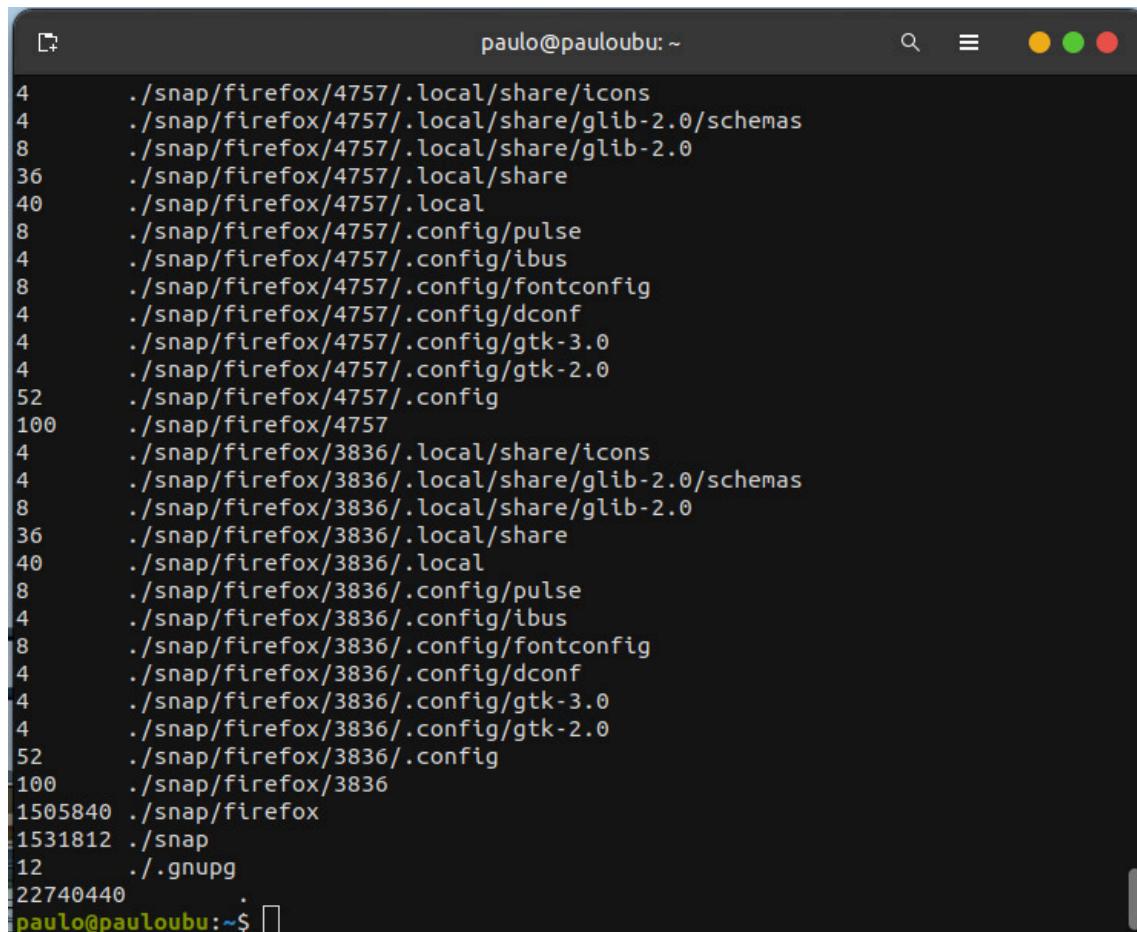
diff = mostra a diferença entre dois arquivos.

```
paulo@pauloubu:~/teste$ find . -name tet.txt
./tet.txt
./teste composta/tet.txt
paulo@pauloubu:~/teste$ head tet.txt
nnnannoo
paulo@pauloubu:~/teste$ tail tet.txt
nnnannoo
paulo@pauloubu:~/teste$ less tet.txt
paulo@pauloubu:~/teste$ 
```

find = encontrar arquivos ou pastas desejadas.

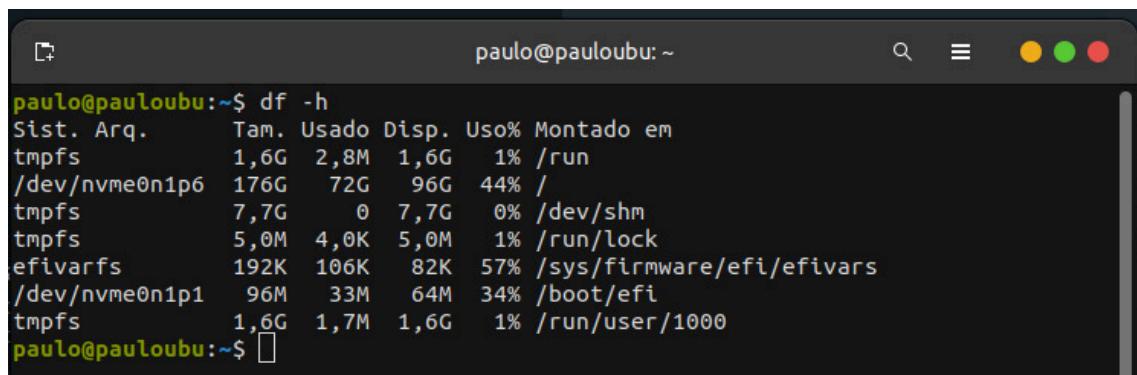
```
paulo@pauloubu:~$ ip a | grep inet
    inet 127.0.0.1/8 scope host lo
        inet6 ::1/128 scope host
            inet 192.168.100.71/24 brd 192.168.100.255 scope global dynamic noprefixroute wl
o1
        inet6 2804:1e68:c211:49f1:2072:f630:5e91:bfe7/64 scope global temporary dynamic
            inet6 2804:1e68:c211:49f1:e61:ef3:4ec8:b926/64 scope global dynamic mngtmpaddr n
oprefixroute
        inet6 fe80::d73f:5983:db42:2846/64 scope link noprefixroute
    inet 172.17.0.1/16 brd 172.17.255.255 scope global docker0
```

grep = dentro do resultado do comando anterior ele procura a palavra desejada.



```
paulo@pauloubu: ~
4 ./snap/firefox/4757/.local/share/icons
4 ./snap/firefox/4757/.local/share/glib-2.0/schemas
8 ./snap/firefox/4757/.local/share/glib-2.0
36 ./snap/firefox/4757/.local/share
40 ./snap/firefox/4757/.local
8 ./snap/firefox/4757/.config/pulse
4 ./snap/firefox/4757/.config/ibus
8 ./snap/firefox/4757/.config/fontconfig
4 ./snap/firefox/4757/.config/dconf
4 ./snap/firefox/4757/.config/gtk-3.0
4 ./snap/firefox/4757/.config/gtk-2.0
52 ./snap/firefox/4757/.config
100 ./snap/firefox/4757
4 ./snap/firefox/3836/.local/share/icons
4 ./snap/firefox/3836/.local/share/glib-2.0/schemas
8 ./snap/firefox/3836/.local/share/glib-2.0
36 ./snap/firefox/3836/.local/share
40 ./snap/firefox/3836/.local
8 ./snap/firefox/3836/.config/pulse
4 ./snap/firefox/3836/.config/ibus
8 ./snap/firefox/3836/.config/fontconfig
4 ./snap/firefox/3836/.config/dconf
4 ./snap/firefox/3836/.config/gtk-3.0
4 ./snap/firefox/3836/.config/gtk-2.0
52 ./snap/firefox/3836/.config
100 ./snap/firefox/3836
1505840 ./snap/firefox
1531812 ./snap
12 ./gnupg
22740440 .
paulo@pauloubu:~$
```

du = na pasta atual, mostra a utilização do disco rígido.



```
paulo@pauloubu:~$ df -h
Sist. Arq.      Tam. Usado Disp. Uso% Montado em
tmpfs           1,6G  2,8M  1,6G  1% /run
/dev/nvme0n1p6  176G   72G   96G  44% /
tmpfs           7,7G    0   7,7G  0% /dev/shm
tmpfs           5,0M  4,0K  5,0M  1% /run/lock
efivarfs        192K  106K   82K  57% /sys/firmware/efi/efivars
/dev/nvme0n1p1   96M   33M   64M  34% /boot/efi
tmpfs           1,6G  1,7M  1,6G  1% /run/user/1000
paulo@pauloubu:~$
```

df -h = exibe a memória utilizada no HD ou SSD do computador, bem como suas partições.

```

paulo@pauloubu:~$ htop
paulo@pauloubu:~$ ps
  PID TTY      TIME CMD
 3887 pts/0    00:00:00 bash
 21683 pts/0    00:00:00 ps
paulo@pauloubu:~$ ps aux
USER      PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root        1  0.0  0.0 168404 12876 ?      Ss  17:16  0:02 /sbin/init splash
root        2  0.0  0.0      0     0 ?      S   17:16  0:00 [kthreadd]
root        3  0.0  0.0      0     0 ?      I<  17:16  0:00 [rcu_gp]
root        4  0.0  0.0      0     0 ?      I<  17:16  0:00 [rcu_par_gp]
root        5  0.0  0.0      0     0 ?      I<  17:16  0:00 [slub_flushwq]
root        6  0.0  0.0      0     0 ?      I<  17:16  0:00 [netns]
root        8  0.0  0.0      0     0 ?      I<  17:16  0:00 [kworker/0:0H-eve]
root        9  0.0  0.0      0     0 ?      I   17:16  0:00 [kworker/0:1-even]
root       11  0.0  0.0      0     0 ?      I<  17:16  0:00 [mm_percpu_wq]
root       12  0.0  0.0      0     0 ?      I   17:16  0:00 [rcu_tasks_kthrea]
root       13  0.0  0.0      0     0 ?      I   17:16  0:00 [rcu_tasks_rude_k]
root       14  0.0  0.0      0     0 ?      I   17:16  0:00 [rcu_tasks_trace_]
root       15  0.0  0.0      0     0 ?      S   17:16  0:00 [ksoftirqd/0]
root       16  0.2  0.0      0     0 ?      I   17:16  0:04 [rcu_preempt]
root       17  0.0  0.0      0     0 ?      S   17:16  0:00 [migration/0]
root       18  0.0  0.0      0     0 ?      S   17:16  0:00 [idle_inject/0]
root       19  0.0  0.0      0     0 ?      S   17:16  0:00 [cpuhp/0]
root       20  0.0  0.0      0     0 ?      S   17:16  0:00 [cpuhp/2]
root       21  0.0  0.0      0     0 ?      S   17:16  0:00 [idle_inject/2]
root       22  0.0  0.0      0     0 ?      S   17:16  0:00 [migration/2]
root       23  0.0  0.0      0     0 ?      S   17:16  0:00 [ksoftirqd/2]
root       25  0.0  0.0      0     0 ?      I<  17:16  0:00 [kworker/2:0H-eve]

```

ps = mostra os processos que estão rodando no mesmo terminal.

```

top - 17:54:50 up 37 min,  1 user,  load average: 0,88, 0,70, 0,74
Tarefas: 342 total,  1 em exec., 340 dormindo,  0 parado,  1 zumbi
%CPU(s): 2,0 us, 1,0 sy, 0,0 ni, 97,0 id, 0,0 wa, 0,0 hi, 0,0 si, 0,0 st
MB mem : 15653,0 total, 8752,4 livre, 3105,3 usados, 3795,3 buff/cache
MB swap: 2861,0 total, 2861,0 livre, 0,0 usados, 11596,8 mem dispon.

          PID USUARIO PR NI VIRT   RES   SHR S %CPU %MEM TEMPO+ COMANDO
    997 paulo      9 -11 2579568 27688 21032 S 13,3  0,2 3:07.09 pulseaudio
  1061 paulo     20   0 26,2g 170672 115544 S  6,7  1,1 3:37.94 Xorg
  1705 paulo     20   0 6003192 343544 139264 S  6,7  2,1 2:20.16 gnome-shell
  2390 paulo     20   0 2166264 645040 73352 S  6,7  4,0 14:58.16 hidamari-pl+
  20646 paulo    20   0 13488  4272  3376 R  6,7  0,0 0:00.02 top
    1 root      20   0 168404 12876  8012 S  0,0  0,1 0:02.05 systemd
    2 root      20   0      0     0      0 S  0,0  0,0 0:00.00 kthreadd
    3 root      0 -20      0     0      0 I  0,0  0,0 0:00.00 rcu_gp
    4 root      0 -20      0     0      0 I  0,0  0,0 0:00.00 rcu_par_gp
    5 root      0 -20      0     0      0 I  0,0  0,0 0:00.00 slub_flushwq
    6 root      0 -20      0     0      0 I  0,0  0,0 0:00.00 netns
    8 root      0 -20      0     0      0 I  0,0  0,0 0:00.00 kworker/0:0+
    9 root      20   0      0     0      0 I  0,0  0,0 0:00.32 kworker/0:1+
   11 root      0 -20      0     0      0 I  0,0  0,0 0:00.00 mm_percpu_wq
   12 root      20   0      0     0      0 I  0,0  0,0 0:00.00 rcu_tasks_k+
   13 root      20   0      0     0      0 I  0,0  0,0 0:00.00 rcu_tasks_r+
   14 root      20   0      0     0      0 I  0,0  0,0 0:00.00 rcu_tasks_t+
   15 root      20   0      0     0      0 S  0,0  0,0 0:00.07 ksoftirqd/0
   16 root      20   0      0     0      0 I  0,0  0,0 0:04.73 rcu_preempt
   17 root      rt   0      0     0      0 S  0,0  0,0 0:00.30 migration/0
   18 root     -51   0      0     0      0 S  0,0  0,0 0:00.00 idle_inject+

```

top = mostra os processos rodando no computador.

```
paulo@pauloubu:~$ pgrep terminal
3859
3862
3865
22658
22662
paulo@pauloubu:~$ kill [REDACTED]
```

kill = encerra um processo.

```
paulo@pauloubu:~$ killall -9 terminal [REDACTED]
```

killall = encerra todos os processos com o nome inserido.

```
paulo@pauloubu:~$ jobs
[2]-  Parado                  top
[3]+  Parado                  top
paulo@pauloubu:~$ bg 2
[2]- top &
```

```
paulo@pauloubu:~$ jobs
[2]+  Parado                  top
[3]-  Parado                  top
paulo@pauloubu:~$ fg 2 [REDACTED]
```

jobs = mostra os processos que estão em pausa ou rodando no background.

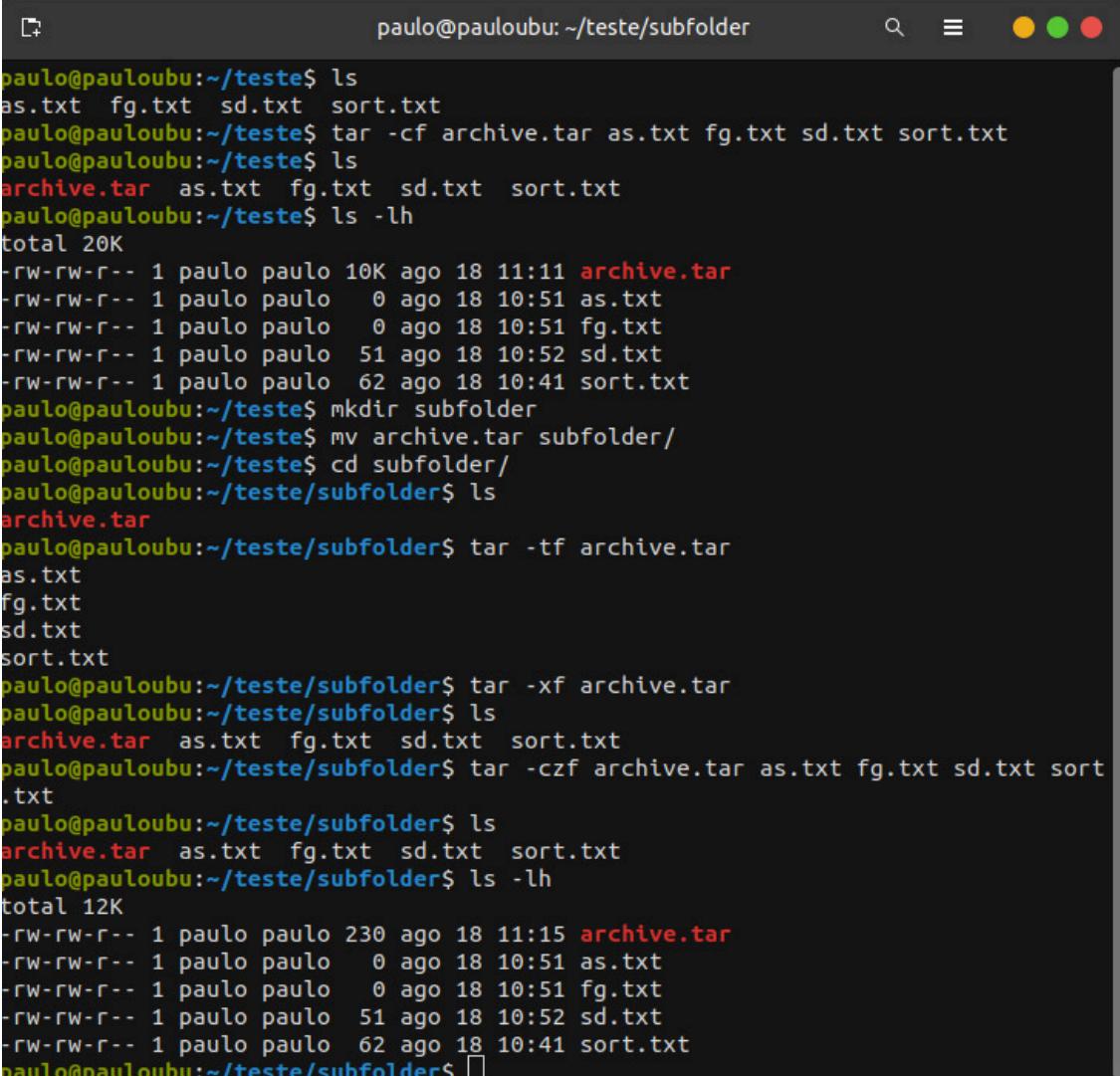
fg = inicia um processo que estava parado, no foreground do terminal.

bg = inicia um processo que estava parado, no background do terminal.

```
paulo@pauloubu:~$ cd teste/
paulo@pauloubu:~/teste$ ls
as.txt fg.txt sd.txt sort.txt
paulo@pauloubu:~/teste$ gzip sort.txt
paulo@pauloubu:~/teste$ ls
as.txt fg.txt sd.txt sort.txt.gz
paulo@pauloubu:~/teste$ gzip -k sd.txt
paulo@pauloubu:~/teste$ ls
as.txt fg.txt sd.txt sd.txt.gz sort.txt.gz
paulo@pauloubu:~/teste$ gzip -d sort.txt.gz
paulo@pauloubu:~/teste$ ls
as.txt fg.txt sd.txt sd.txt.gz sort.txt
paulo@pauloubu:~/teste$ [REDACTED]
```

gzip = comprimir um arquivo.

gunzip = descomprimir um arquivo.



```
paulo@pauloubu:~/teste$ ls
as.txt fg.txt sd.txt sort.txt
paulo@pauloubu:~/teste$ tar -cf archive.tar as.txt fg.txt sd.txt sort.txt
paulo@pauloubu:~/teste$ ls
archive.tar as.txt fg.txt sd.txt sort.txt
paulo@pauloubu:~/teste$ ls -lh
total 20K
-rw-rw-r-- 1 paulo paulo 10K ago 18 11:11 archive.tar
-rw-rw-r-- 1 paulo paulo    0 ago 18 10:51 as.txt
-rw-rw-r-- 1 paulo paulo    0 ago 18 10:51 fg.txt
-rw-rw-r-- 1 paulo paulo   51 ago 18 10:52 sd.txt
-rw-rw-r-- 1 paulo paulo   62 ago 18 10:41 sort.txt
paulo@pauloubu:~/teste$ mkdir subfolder
paulo@pauloubu:~/teste$ mv archive.tar subfolder/
paulo@pauloubu:~/teste$ cd subfolder/
paulo@pauloubu:~/teste/subfolder$ ls
archive.tar
paulo@pauloubu:~/teste/subfolder$ tar -tf archive.tar
as.txt
fg.txt
sd.txt
sort.txt
paulo@pauloubu:~/teste/subfolder$ tar -xf archive.tar
paulo@pauloubu:~/teste/subfolder$ ls
archive.tar as.txt fg.txt sd.txt sort.txt
paulo@pauloubu:~/teste/subfolder$ tar -czf archive.tar as.txt fg.txt sd.txt sort.txt
paulo@pauloubu:~/teste/subfolder$ ls -lh
total 12K
-rw-rw-r-- 1 paulo paulo 230 ago 18 11:15 archive.tar
-rw-rw-r-- 1 paulo paulo    0 ago 18 10:51 as.txt
-rw-rw-r-- 1 paulo paulo    0 ago 18 10:51 fg.txt
-rw-rw-r-- 1 paulo paulo   51 ago 18 10:52 sd.txt
-rw-rw-r-- 1 paulo paulo   62 ago 18 10:41 sort.txt
paulo@pauloubu:~/teste/subfolder$ 
```

tar = transforma arquivos em um archive. Podendo ser comprimido com gzip também.

The screenshot shows a terminal window titled "paulo@pauloubu: ~/teste/teste composto". Inside the terminal, the command "nano tet.txt" is run, opening a new file named "tet.txt". The nano editor interface is visible, with a menu bar at the top and a status bar at the bottom. The status bar displays keyboard shortcuts for various functions like Help (^G), Save (^O), Find (^W), Cut (^K), Paste (^T), Local (^C), Exit (^X), Read (^R), Replace (^H), Paste (^U), Justify (^J), and Line Number (^L). The message "[ 0 linha lida ]" is shown in the center of the editor area.

nano = editar arquivos de texto no terminal.

The screenshot shows a terminal window titled "paulo@pauloubu: ~/teste". The user runs several commands to demonstrate alias creation. They first change directory to a subfolder, remove it, and then list files. They then define a new alias "myal" which points to "ls -al". When they try to use "myal", they receive an error message stating "comando não encontrado". Finally, they use the defined alias "myls" to list files, which successfully outputs the contents of the folder. The terminal also shows other aliases like "alias alert='notify-send --urgency=low -i \"\$([ \$? = 0 ] && echo terminal || echo error)" \$(history|tail -n1|sed -e '\''s/^|\s\*[0-9]\+\|\s\*//;s/[;&]\|\s\*alert\$/'\\')'" and "alias egrep='egrep --color=auto'".

alias = cria um comando personalizado.

```
paulo@pauloubu:~/teste$ ls | sort
as.txt
fg.txt
sd.txt
sort.txt
paulo@pauloubu:~/teste$ cat sd.txt
as.txt
fg.txt
paulo@pauloubu:~/teste$ cat sd.txt | rm
rm: falta operando
Tente "rm --help" para mais informações.
paulo@pauloubu:~/teste$ cat sd.txt | xargs rm
paulo@pauloubu:~/teste$ ls
sd.txt  sort.txt
paulo@pauloubu:~/teste$ 
```

xargs = transforma o input em argumentos para o comando que normalmente não aceita input por piping.

```
paulo@pauloubu:~/Área de Trabalho$ ln -s ~/Downloads/arduino-ide_2.3.2_Linux_64bit.AppImage Arduino.AppImage
paulo@pauloubu:~/Área de Trabalho$ ls
Arduino.AppImage
paulo@pauloubu:~/Área de Trabalho$ myls
total 12
drwxr-xr-x  2 paulo paulo 4096 ago 18 11:31 .
drwxr-x--- 40 paulo paulo 4096 ago 18 10:39 ..
lrwxrwxrwx  1 paulo paulo   60 ago 18 11:31 Arduino.AppImage -> /home/paulo/Downloads/arduino-ide_2.3.2_Linux_64bit.AppImage
paulo@pauloubu:~/Área de Trabalho$ 
```

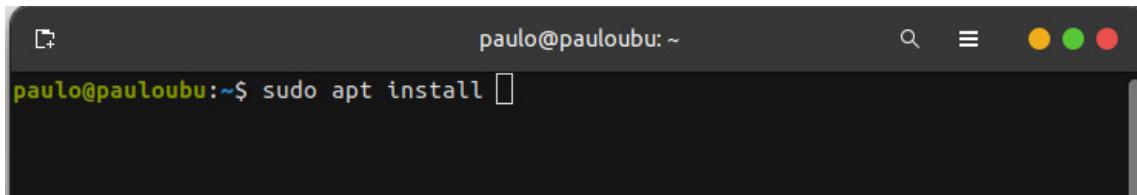
ln = cria um link entre dois arquivos.

```
paulo@pauloubu:~$ who
paulo      :0        2024-08-17 17:17 (:0)
paulo@pauloubu:~$ 
```

who = mostra os usuários conectados no computador.

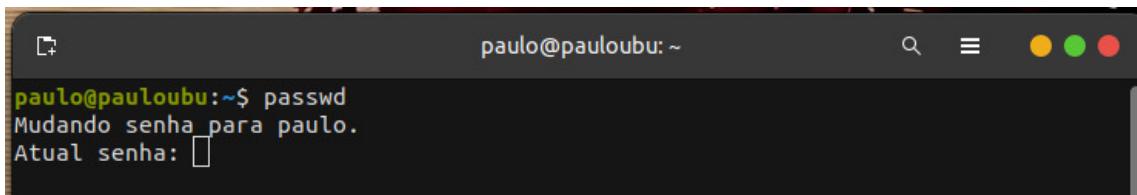
```
paulo@pauloubu:~$ su paulo
Senha:
paulo@pauloubu:~$ 
```

su = muda de usuário.



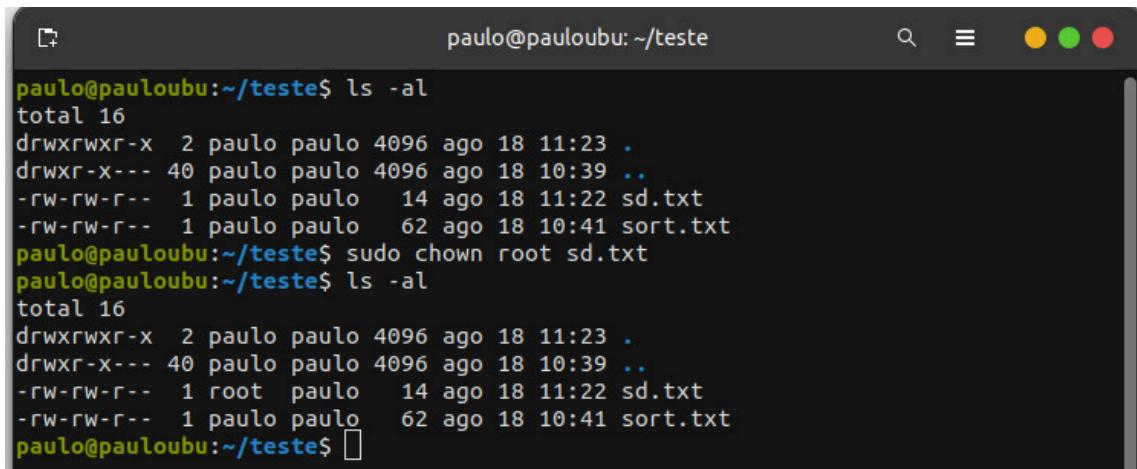
```
paulo@pauloubu:~$ sudo apt install
```

sudo = garante permissão de superusuário na execução daquele comando.



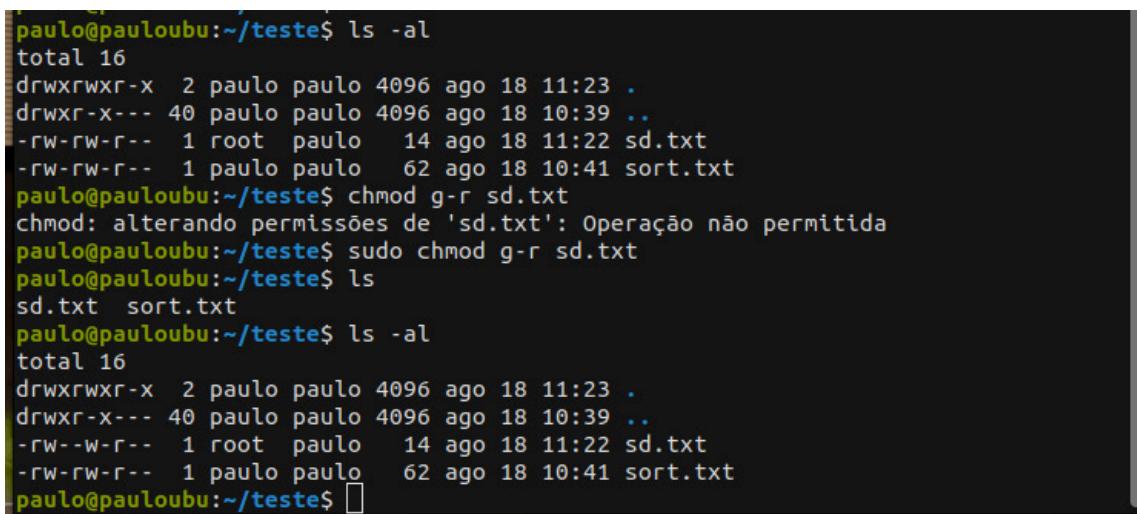
```
paulo@pauloubu:~$ passwd
Mudando senha para paulo.
Atual senha: 
```

passwd = muda a senha do usuário atual ou desejado.



```
paulo@pauloubu:~/teste$ ls -al
total 16
drwxrwxr-x  2 paulo paulo 4096 ago 18 11:23 .
drwxr-x--- 40 paulo paulo 4096 ago 18 10:39 ..
-rw-rw-r--  1 paulo paulo   14 ago 18 11:22 sd.txt
-rw-rw-r--  1 paulo paulo   62 ago 18 10:41 sort.txt
paulo@pauloubu:~/teste$ sudo chown root sd.txt
paulo@pauloubu:~/teste$ ls -al
total 16
drwxrwxr-x  2 paulo paulo 4096 ago 18 11:23 .
drwxr-x--- 40 paulo paulo 4096 ago 18 10:39 ..
-rw-rw-r--  1 root  paulo   14 ago 18 11:22 sd.txt
-rw-rw-r--  1 paulo paulo   62 ago 18 10:41 sort.txt
paulo@pauloubu:~/teste$ 
```

chown = muda o dono de um arquivo ou pasta.



```
paulo@pauloubu:~/teste$ ls -al
total 16
drwxrwxr-x  2 paulo paulo 4096 ago 18 11:23 .
drwxr-x--- 40 paulo paulo 4096 ago 18 10:39 ..
-rw-rw-r--  1 root  paulo   14 ago 18 11:22 sd.txt
-rw-rw-r--  1 paulo paulo   62 ago 18 10:41 sort.txt
paulo@pauloubu:~/teste$ chmod g-r sd.txt
chmod: alterando permissões de 'sd.txt': Operação não permitida
paulo@pauloubu:~/teste$ sudo chmod g-r sd.txt
paulo@pauloubu:~/teste$ ls
sd.txt sort.txt
paulo@pauloubu:~/teste$ ls -al
total 16
drwxrwxr-x  2 paulo paulo 4096 ago 18 11:23 .
drwxr-x--- 40 paulo paulo 4096 ago 18 10:39 ..
-rw-rw-r--  1 root  paulo   14 ago 18 11:22 sd.txt
-rw-rw-r--  1 paulo paulo   62 ago 18 10:41 sort.txt
paulo@pauloubu:~/teste$ 
```

chmod = muda as permissões para um arquivo ou pasta.

3)

