

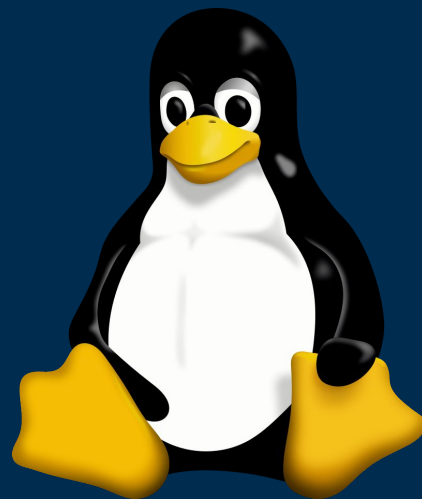
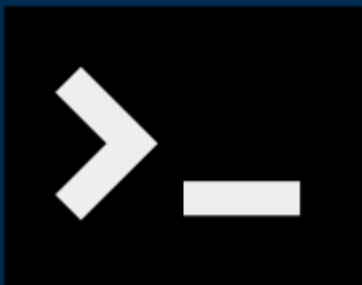
Summer School 2025

# Introducción a Bash

Markel Mencía

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**¿Qué es la terminal?**



- **Funciona con comandos**
- **Estructura simple (solo texto)**
- **Uso complejo y avanzado**
- **Mucho control y flexibilidad**
- **Recomendado para desarrolladores/as**



- **Funciona con interacciones**
- **Estructura compleja (varios elementos)**
- **Uso simple e intuitivo**
- **Control más limitado**
- **Recomendado para usuarios finales**

**Usuario**



**Escribe un comando**

**Terminal**



**Intermediario**

**Shell**



**Interpreta y ejecuta**



**¿Qué es un comando?**

**Comando**      **Argumentos**



A terminal window titled "TERMINAL" with a window title bar "bash - markel". The terminal shows a command prompt and a command being executed. Annotations with arrows point to parts of the command and its output.

```
• [markel@smint ~]$ echo hello world
hello world
○ [markel@smint ~]$
```

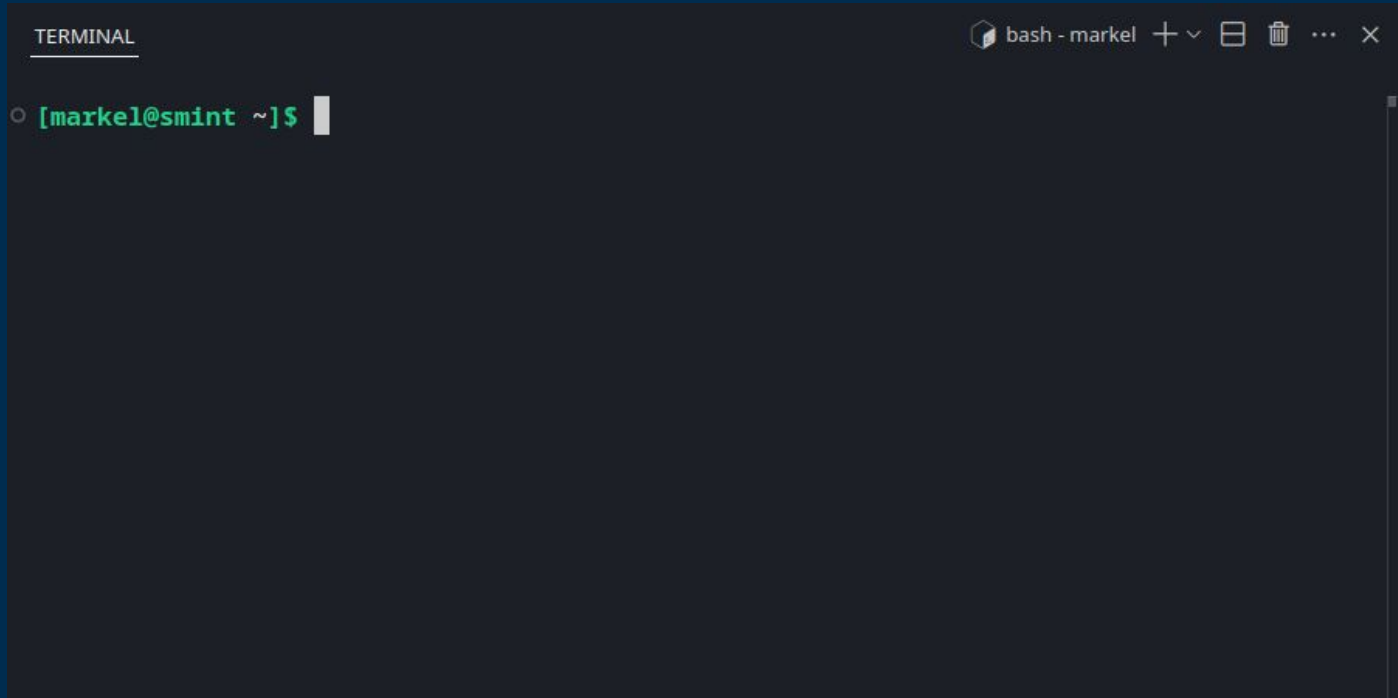
The annotations are:

- An arrow from **Comando** points to the word `echo`.
- Two arrows from **Argumentos** point to the words `hello` and `world`.
- An arrow from **Salida** points to the output `hello world`.

**\$ shutdown**

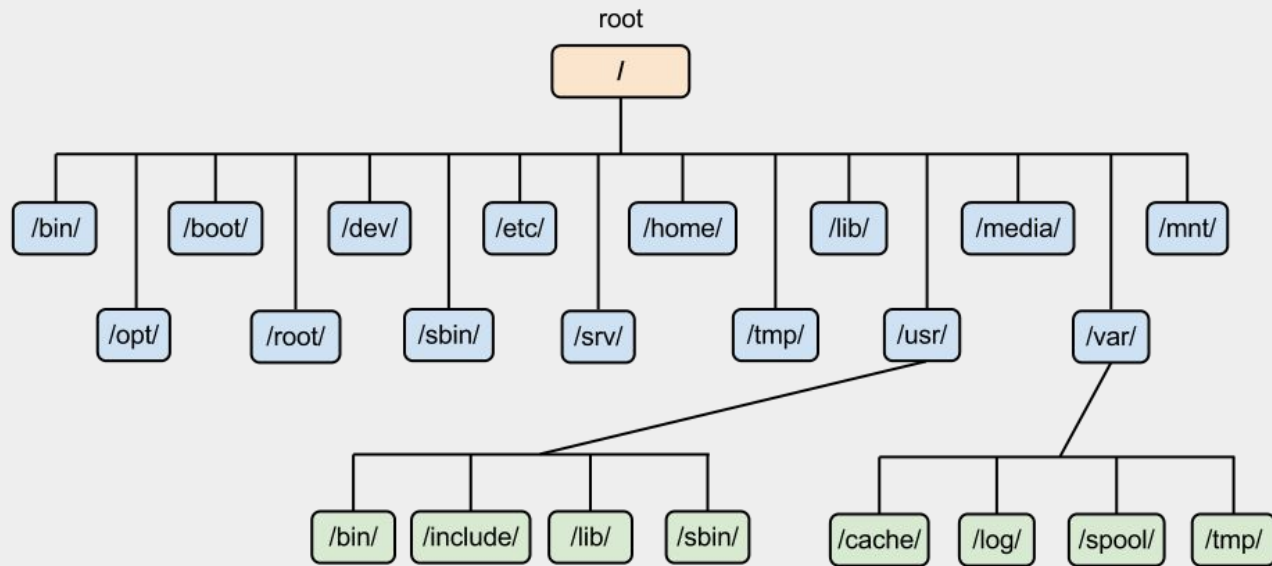
**\$ shutdown -r**



A terminal window with a dark background. The title bar at the top left says "TERMINAL" and is underlined. The top right of the window contains window control icons (a cube icon, a plus sign, a downward arrow, a square icon, a trash icon, an ellipsis, and a close 'X' icon) followed by the text "bash - markel". The main area of the terminal shows a green prompt "[markel@smint ~]\$" followed by a white cursor bar.

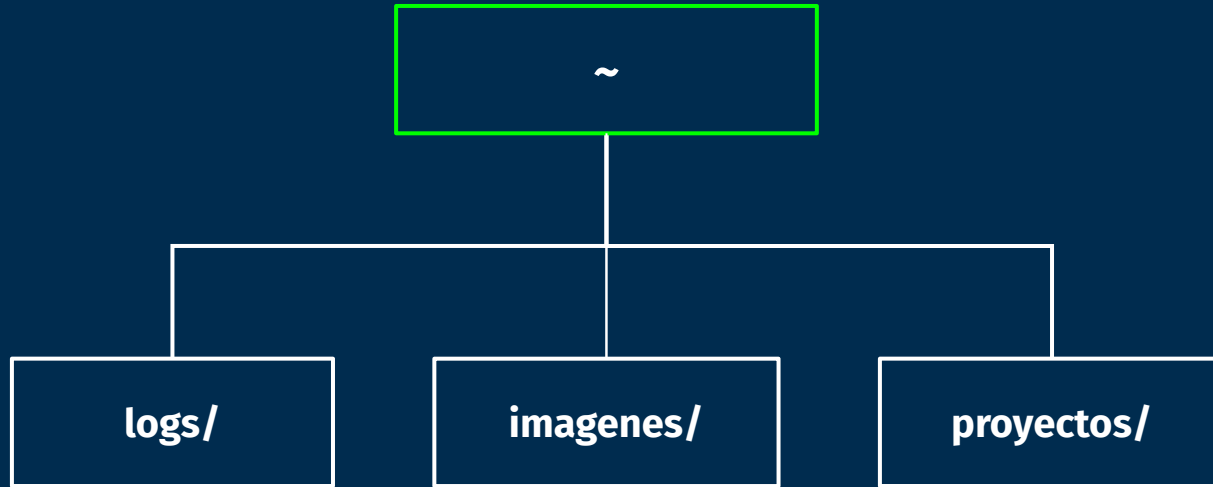
```
TERMINAL bash - markel + v [trash] ... X  
[markel@smint ~]$
```

**[usuario@hostname <path>]\$**



**~ = /home/<usuario actual>**

# Navegar a imagenes/

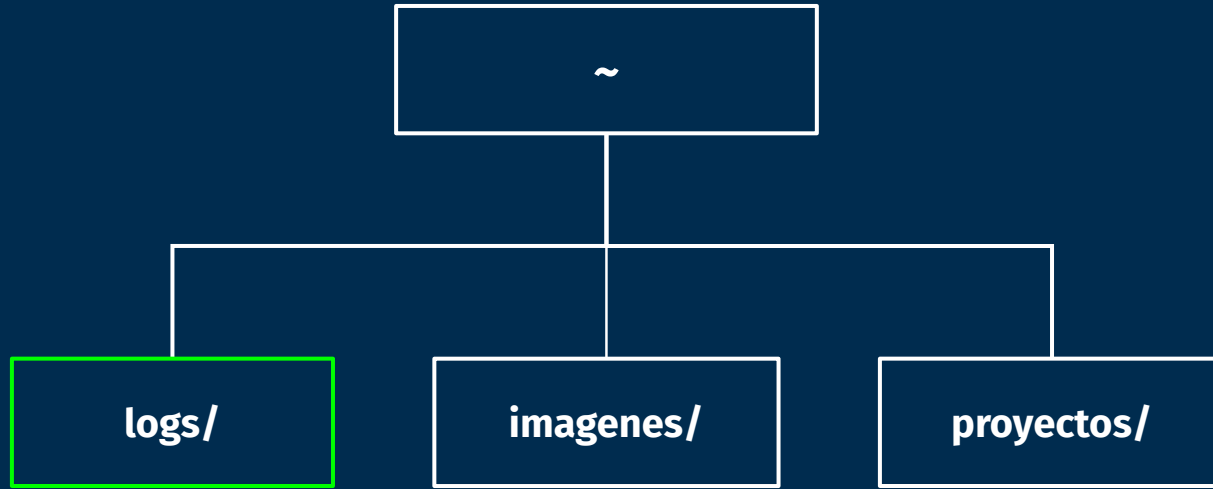


**\$ cd /home/<usuario>/imagenes/**

**\$ cd ~/imagenes**

**\$ cd imagenes/**

# Navegar al directorio de usuario



`$ cd /home/<usuario>/`

`$ cd ~`

`$ cd ..`

**bash**

# man

- **Utilidad:** manual de referencia del sistema
- **Forma de uso:** man <comando>
- **Alternativa:** <comando> --help

```
TERMINAL
man + v [icon] ... x

PWD(1) User Commands PWD(1)

NAME
pwd - print name of current/working directory

SYNOPSIS
pwd [OPTION]...

DESCRIPTION
Print the full filename of the current working directory.

-L, --logical
    use PWD from environment, even if it contains symlinks

-P, --physical
    resolve all symlinks

--help display this help and exit

--version
    output version information and exit

If no option is specified, -P is assumed.

Your shell may have its own version of pwd, which usually supersedes the version described here. Please refer to your shell's documentation for details about the options it supports.

AUTHOR
Written by Jim Meyering.

REPORTING BUGS
GNU coreutils online help: <https://www.gnu.org/software/coreutils/>
Report any translation bugs to <https://translationproject.org/team/>

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This is free software: you are free to change and redistribute it. There is NO WARRANTY, to the extent permitted by law.

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





# Comandos de navegación básicos

---

# mkdir

- **Utilidad:** Crear directorios
- **Forma de uso:** mkdir <dirección del directorio>

## TERMINAL

```
• [markel@smint ~]$ mkdir nuevo_directorio
• [markel@smint ~]$ cd nuevo_directorio/
○ [markel@smint nuevo_directorio]$
```

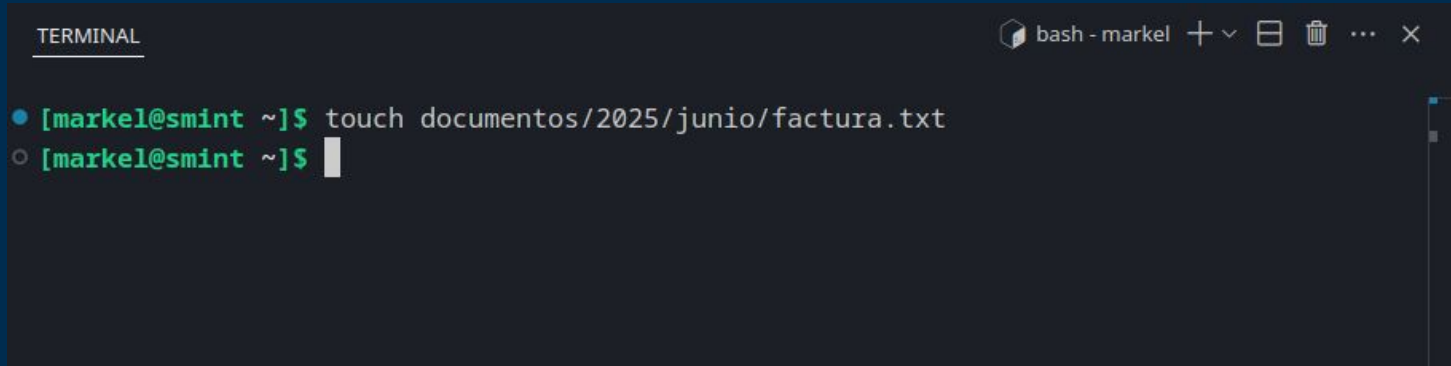
## TERMINAL

```
• [markel@smint ~]$ mkdir -p documentos/2025/junio
• [markel@smint ~]$ cd documentos/2025/junio/
• [markel@smint junio]$ mkdir ../../2024
• [markel@smint junio]$ cd ../../2024
○ [markel@smint 2024]$
```

---

# touch

- **Utilidad:** Crear ficheros
- **Forma de uso:** touch <dirección del fichero>



```
TERMINAL bash - markel + v [icon] [icon] ... x
• [markel@smint ~]$ touch documentos/2025/junio/factura.txt
○ [markel@smint ~]$
```

A terminal window titled "TERMINAL" with a dark background. The window shows two lines of text. The first line is a command prompt followed by the command "touch documentos/2025/junio/factura.txt". The second line is a new command prompt with a cursor. The window has a title bar with "bash - markel" and standard window controls.

---

# rm

- **Utilidad:** Elimina ficheros/directorios
- **Forma de uso:** rm <dirección del elemento>

## TERMINAL

```
• [markel@smint ~]$ touch documentos/2025/junio/factura2.txt
• [markel@smint ~]$ rm documentos/2025/junio/factura2.txt
○ [markel@smint ~]$
```

## TERMINAL

```
• [markel@smint ~]$ rm -r documentos/
⊗ [markel@smint ~]$ cd documentos
bash: cd: documentos: No such file or directory
○ [markel@smint ~]$
```

# ls

- **Utilidad:** Lista el contenido de un directorio
- **Forma de uso:** `ls <directorio>`

```
TERMINAL
bash + v [icon] [icon] ... x

• [markel@smint ~]$ cd /
• [markel@smint /]$ ls
bin  desktopfs-pkgs.txt  etc  lib  mnt  proc  rootfs-pkgs.txt  sbin  sys  usr
boot dev              home lib64 opt  root  run             srv  tmp  var
○ [markel@smint /]$
```

# cp

- **Utilidad:** Copia un fichero a un directorio
- **Forma de uso:** cp <fichero> <dirección>

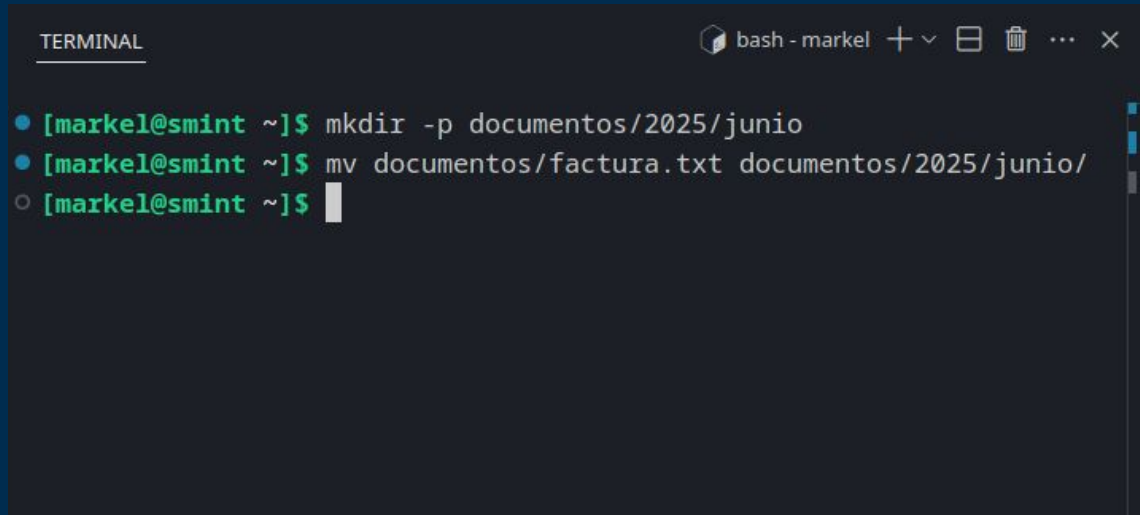
```
TERMINAL bash - markel + v [icon] [icon] ... X

• [markel@smint ~]$ mkdir documentos
• [markel@smint ~]$ touch documentos/factura.txt
• [markel@smint ~]$ cp documentos/factura.txt .
○ [markel@smint ~]$
```

---

# mv

- **Utilidad:** Mueve un fichero de un directorio a otro
- **Forma de uso:** mv <fichero> <dirección>

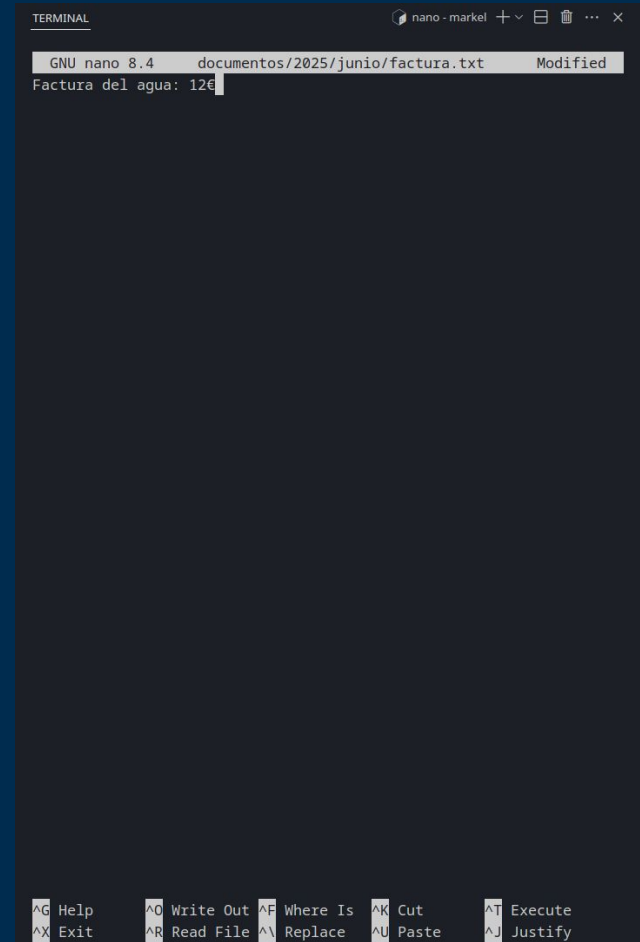
A terminal window titled 'TERMINAL' with a tab labeled 'bash - markel'. It shows three lines of command execution: 1. 'mkdir -p documentos/2025/junio' with a blue dot icon. 2. 'mv documentos/factura.txt documentos/2025/junio/' with a blue dot icon. 3. A blank prompt with a white circle icon. The prompt is '[markel@smint ~]\$' and the cursor is at the end of the third line.

```
TERMINAL bash - markel + - [ ] ... X

● [markel@smint ~]$ mkdir -p documentos/2025/junio
● [markel@smint ~]$ mv documentos/factura.txt documentos/2025/junio/
○ [markel@smint ~]$
```

# nano

- **Utilidad:** Abre un editor de texto básico
- **Forma de uso:** nano <fichero>
- **Ctrl + O** para guardar
- **Ctrl + X** para salir



The screenshot shows a terminal window titled "TERMINAL" with a window manager bar at the top showing "nano - markel" and standard window controls. The nano editor interface has a status bar at the top displaying "GNU nano 8.4", the file path "documentos/2025/junio/factura.txt", and the word "Modified". The main editing area contains the text "Factura del agua: 12€" followed by a cursor. At the bottom, a help menu lists various keyboard shortcuts: ^G Help, ^O Write Out, ^F Where Is, ^K Cut, ^T Execute, ^X Exit, ^R Read File, ^\ Replace, ^U Paste, and ^J Justify.

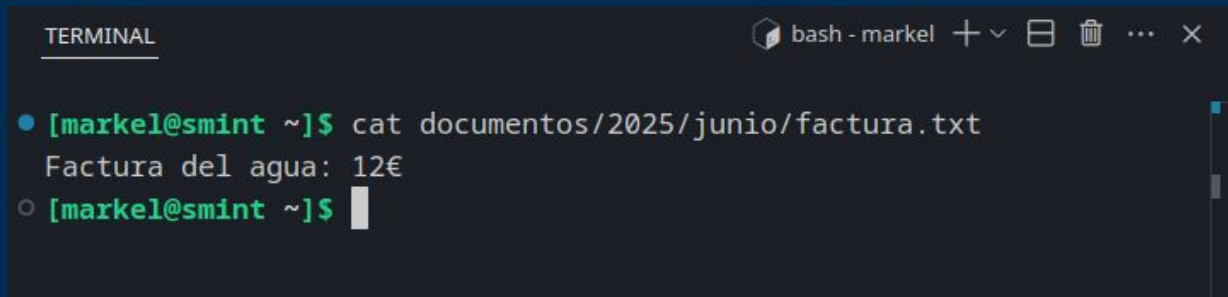
**\$ nano documentos/2025/junio/factura.txt**



---

# cat

- **Utilidad:** Imprime el contenido de un fichero
- **Forma de uso:** cat <fichero>

A terminal window titled 'TERMINAL' with a window control bar showing 'bash - markel' and standard window icons. The terminal shows a command prompt '[markel@smint ~]\$' followed by the command 'cat documentos/2025/junio/factura.txt'. The output of the command is 'Factura del agua: 12€'. Below the output, the prompt '[markel@smint ~]\$' is shown again with a cursor, indicating the command has finished execution.

```
TERMINAL bash - markel + v [icon] [icon] ... x

● [markel@smint ~]$ cat documentos/2025/junio/factura.txt
Factura del agua: 12€
○ [markel@smint ~]$
```

# Usuarios



**Usuario personal**



**Usuario root  
(sudo)**

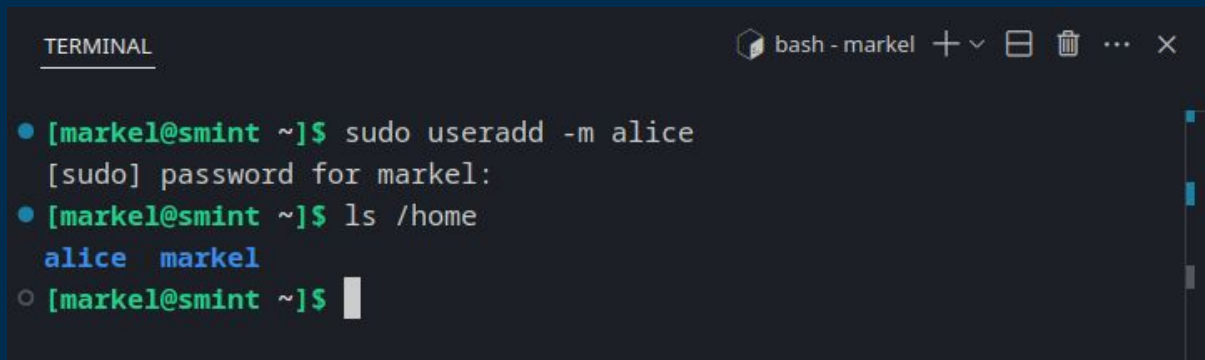


**Usuario del sistema**

---

# useradd

- **Utilidad:** Crea un usuario
- **Forma de uso:** `sudo useradd [-m] <nombre de usuario>`



```
TERMINAL bash - markel + - [ ] [ ] ... X

• [markel@smint ~]$ sudo useradd -m alice
[sudo] password for markel:
• [markel@smint ~]$ ls /home
alice markel
○ [markel@smint ~]$
```

A terminal window titled "TERMINAL" with a window bar showing "bash - markel" and standard window controls. The terminal output shows a user named "markel" at a host named "smint" in the directory "~". They execute the command "sudo useradd -m alice". The system prompts for the password for "markel", which is entered. Then, they execute "ls /home", which lists "alice" and "markel" as directories. The prompt returns to the user.

# passwd

- **Utilidad:** Establece una contraseña a un usuario
- **Forma de uso:** `sudo passwd <usuario>`

```
TERMINAL bash - markel + v [icon] [icon] ... X

● [markel@smint ~]$ sudo passwd alice
New password:
Retype new password:
passwd: password updated successfully
○ [markel@smint ~]$
```

# SU

- **Utilidad:** Permite cambiar de usuario
- **Forma de uso:** **sudo** su <usuario>

```
TERMINAL bash - markel + v [icon] [icon] ... x
[markel@smint ~]$ su alice
Password:
[alice@smint markel]$ whoami
alice
[alice@smint markel]$
```

?

---

# userdel

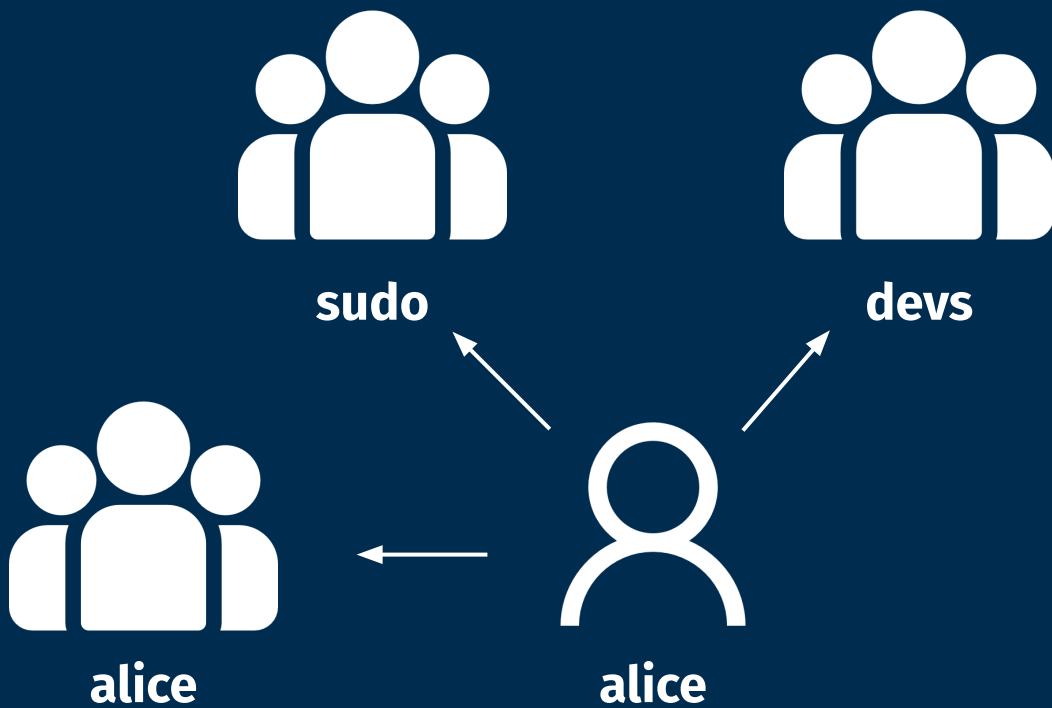
- **Utilidad:** Permite eliminar un usuario
- **Forma de uso:** `sudo userdel [-r] <usuario>`

```
TERMINAL bash - markel + v [icon] [icon] ... x

• [markel@smint ~]$ sudo userdel -r alice
userdel: alice mail spool (/var/spool/mail/alice) not found
• [markel@smint ~]$ ls /home
markel
○ [markel@smint ~]$
```

# Grupos

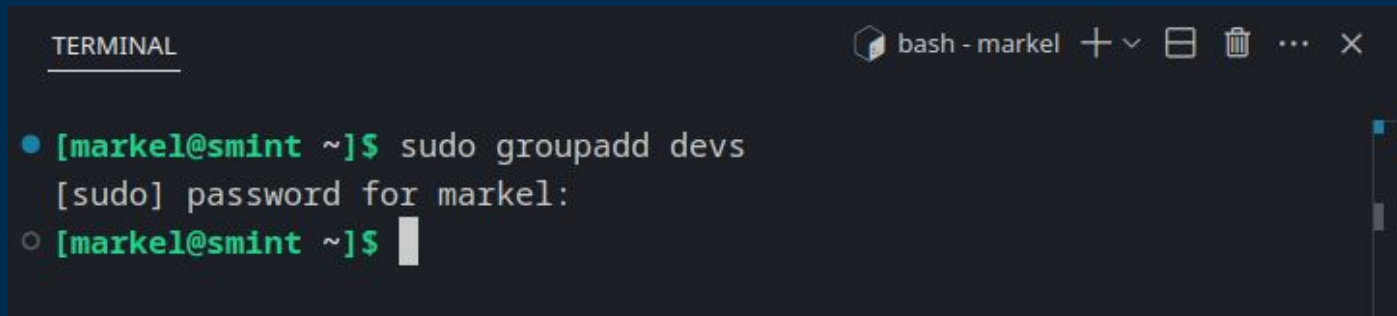




---

# groupadd

- **Utilidad:** Crea un grupo
- **Forma de uso:** `sudo groupadd <nombre>`



```
TERMINAL bash - markel + - [ ] [ ] ... X

● [markel@smint ~]$ sudo groupadd devs
[sudo] password for markel:
○ [markel@smint ~]$
```

A terminal window titled "TERMINAL" with a tab labeled "bash - markel". The window shows a command prompt where the user enters `sudo groupadd devs`. The system prompts for a password: `[sudo] password for markel:`. The user then enters a password, indicated by a white bar. The prompt returns to `[markel@smint ~]$`.

---

# usermod

- **Utilidad:** Permite cambiar varias características de un usuario
- **Forma de uso:** `sudo usermod [OPCIÓN] <usuario>`

```
TERMINAL bash - markel + v [icon] [icon] ... x

• [markel@smint ~]$ sudo useradd -m alice
• [markel@smint ~]$ sudo usermod -a -G devs alice
• [markel@smint ~]$ groups alice
alice : alice devs
○ [markel@smint ~]$
```

# Permisos



TERMINAL

bash - markel + ▾ ☐ 🗑️ ⋮ ✕

```
● [markel@smint ~]$ ls -l documentos/2025/junio/factura.txt
-rw-r--r-- 1 markel markel 24 jun 21 20:59 documentos/2025/junio/factura.txt
○ [markel@smint ~]$
```

**\$ ls -l <fichero>**

**-rw-r--r-- 1 markel markel**

Directorio/  
Fichero → **-rw-r--r-- 1 markel markel**

Propietario (u) ↓  
Otros (o) ↓  
U. Propietario ↓  
Gpo. Propietario ↓

↑  
Gpo. Propietario (g)



# chmod

- **Utilidad:** Cambia los permisos de un fichero
- **Forma de uso: (sudo) chmod <permiso> <fichero>**

```
TERMINAL bash - markel + v [icon] [icon] ... x

• [markel@smint ~]$ chmod u+x documentos/2025/junio/factura.txt
• [markel@smint ~]$ chmod g+w documentos/2025/junio/factura.txt
• [markel@smint ~]$ chmod o-r documentos/2025/junio/factura.txt
• [markel@smint ~]$ ls -l documentos/2025/junio/factura.txt
-rwxrW---- 1 markel markel 24 jun 21 20:59 documentos/2025/junio/factura.txt
○ [markel@smint ~]$
```

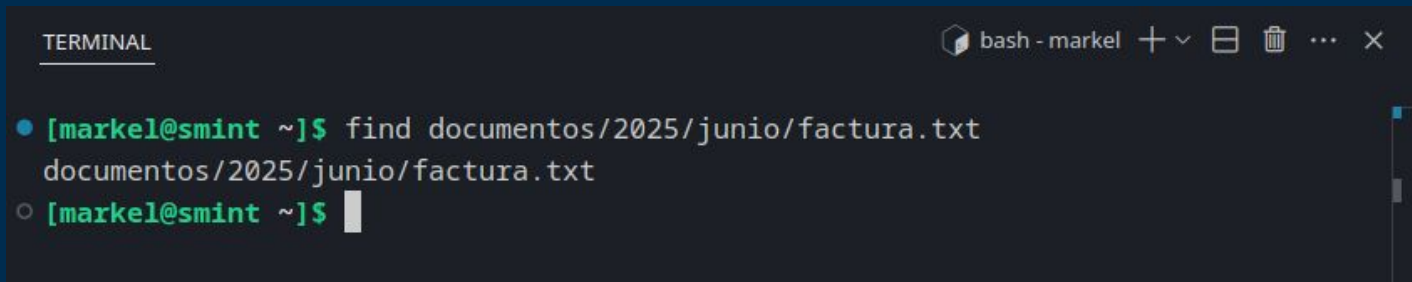
**<objetivo><operación><permiso(s)>**

**Comodines de texto**

---

# find

- **Utilidad:** Imprime la dirección relativa de un fichero.
- **Forma de uso:** find <fichero>

A terminal window with a dark background. The title bar at the top says "TERMINAL" on the left and "bash - markel" followed by window control icons on the right. The terminal shows a command prompt [markel@smint ~]\$ where the command "find documentos/2025/junio/factura.txt" has been entered. The output of the command is "documentos/2025/junio/factura.txt". A second prompt [markel@smint ~]\$ is shown below the output with a cursor.

```
TERMINAL bash - markel + - [ ] [X] ... X

● [markel@smint ~]$ find documentos/2025/junio/factura.txt
  documentos/2025/junio/factura.txt
○ [markel@smint ~]$
```

TERMINAL

bash - markel + ▾ 🗑️ ... ✕

```
● [markel@smint ~]$ find /dev/std*  
/dev/stderr  
/dev/stdin  
/dev/stdout  
○ [markel@smint ~]$
```

TERMINAL

bash - markel + ▾ 🗑️ ... ✕

```
● [markel@smint ~]$ find /*/std*  
/bin/stdbuf  
/dev/stderr  
/dev/stdin  
/dev/stdout  
/sbin/stdbuf  
○ [markel@smint ~]$
```

TERMINAL

bash - markel + ▾ 🗄️ ⋮ ✕

- [markel@smint ~]\$ find /dev/?tdin  
/dev/stdin
- [markel@smint ~]\$ █

# TERMINAL

bash - markel + ▾ □ ☒ ... ✕

• [markel@smint ~]\$ mkdir documentos/202{6,7,8,9}

• [markel@smint ~]\$ ls documentos/

2025 2026 2027 2028 2029

○ [markel@smint ~]\$

# Redirección

**Usuario**



**Escribe un comando**



**Shell**



**Interpreta y ejecuta**



**stdout**

**stderr**



**Usuario**



**Escribe un comando**



**Shell**



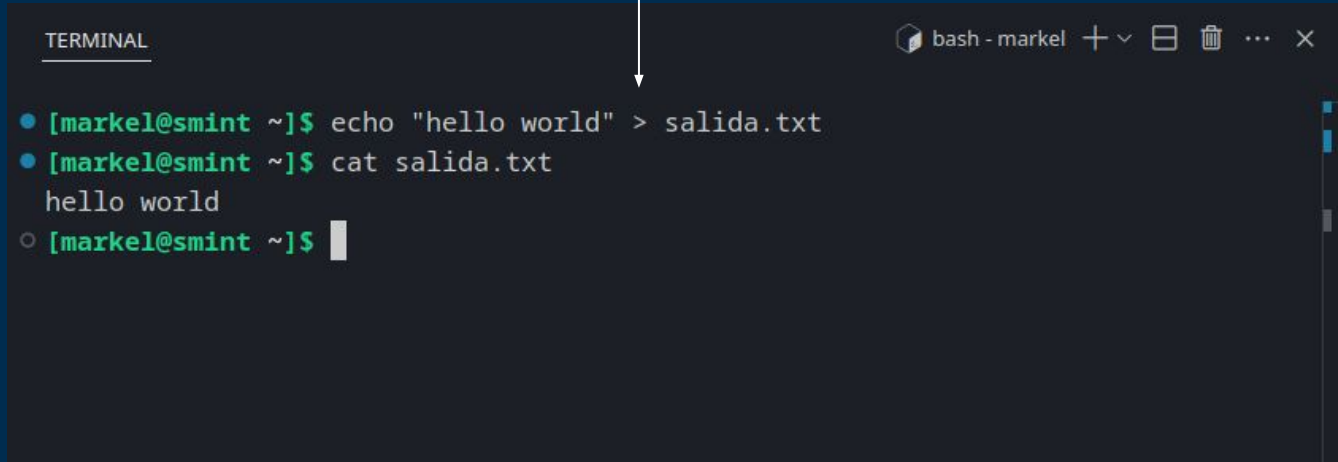
**Interpreta y ejecuta**



**fichero1**

**fichero2**

“manda la salida estándar a salida.txt”



A terminal window titled "TERMINAL" with a tab labeled "bash - markel". The window shows a list of commands and their outputs. A white arrow points from the text above to the first command. The commands are: `echo "hello world" > salida.txt`, `cat salida.txt` (output: `hello world`), and `[markel@smint ~]$` (with a cursor). The terminal has a dark background and green text for the prompt.

```
TERMINAL bash - markel + v [icon] [icon] ... x
```

- [markel@smint ~]\$ echo "hello world" > salida.txt
- [markel@smint ~]\$ cat salida.txt  
hello world
- [markel@smint ~]\$

TERMINAL

bash - markel + ▾ ☐ 🗑️ ⋮ ✕

- [markel@smint ~]\$ echo "bye" >> salida.txt
- [markel@smint ~]\$ cat salida.txt  
hello world  
bye
- [markel@smint ~]\$

TERMINAL

bash - markel + ▾ □ 🗑️ ⋮ ✕

• [markel@smint ~]\$ expr 9 + 10 > resultado.txt

• [markel@smint ~]\$ cat resultado.txt

19

○ [markel@smint ~]\$ █

TERMINAL

bash - markel + ▾ 🗑️ ⋮ ✕

❌ [markel@smint ~]\$ expr 1 / 0 2> resultado.txt

● [markel@smint ~]\$ cat resultado.txt

expr: division by zero

○ [markel@smint ~]\$

TERMINAL

bash - markel + ▾ □ 🗑️ ⋮ ✕

⊗ [markel@smint ~]\$ expr 1 / 0 > salida\_std.txt 2> salida\_err.txt

● [markel@smint ~]\$ cat salida\_\*.txt

expr: division by zero

○ [markel@smint ~]\$

**Siguientes pasos**

main 1 Branch 0 Tags

Go to file

Add file

Code

About

markelmencia Small fixes and group name change 56e013e · now 29 Commits

ejercicios	Add exercise README.md	4 months ago
LICENSE	Initial commit	5 months ago
README.md	Change group name	3 minutes ago
gnu-linux_apuntes.pdf	Small fixes and group name change	now
ubuntu_instalacion_dual_boot.pdf	Add Ubuntu installation manual	3 months ago

README GPL-3.0 license

## 0xDECODE: GNU/Linux

Curso introductorio sobre GNU/Linux para el grupo 0xDECODE.

Este curso se centra en los fundamentos del sistema operativo libre **GNU/Linux**, desde su historia brevemente descrita hasta el uso de la terminal de comandos.

### Objetivo

El objetivo del curso es proporcionar al interesado o interesada una guía a seguir para el aprendizaje del uso del sistema operativo, hasta el punto de poder utilizarlo de forma **cotidiana** para realizar tareas informáticas, tanto de forma gráfica como mediante una terminal.

Curso introductorio sobre GNU/Linux para el grupo 0xDECODE

gnu-linux curso

Readme

GPL-3.0 license

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Shell 100.0%



**¡Gracias!**