



Título de la actividad: PAQUETES ROTOS Y
DEPENDENCIAS EN LINUX

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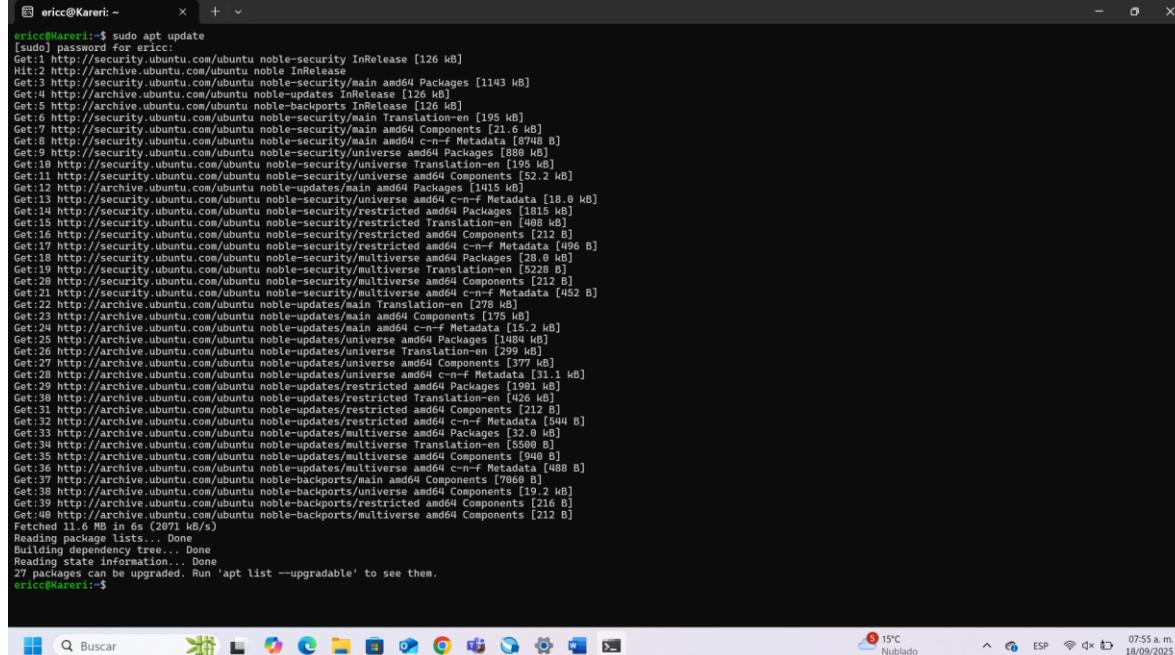
Unidad de Aprendizaje (UA): Sistemas Operativos

Periodo escolar: 2025B

Institución: Centro Universitario UAEM
Zumpango

1. ¿Cuál es la diferencia entre upgrade y update?

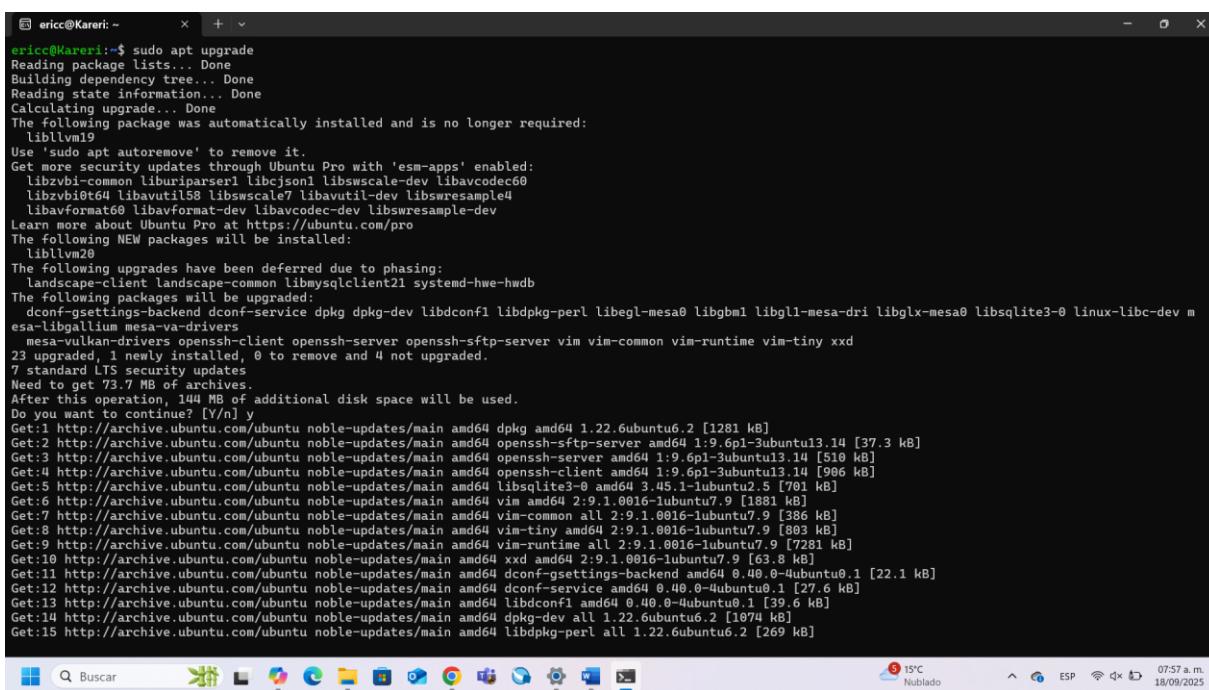
- **update:** Actualiza la lista de paquetes disponibles desde los repositorios. No instala nada, solo sincroniza la base de datos local.
 - Comando: `sudo apt update`



```
ericc@Karer:~$ sudo apt update
[sudo] password for ericc:
[sudo] password for ericc:
Get:1 http://archive.ubuntu.com/ubuntu noble=security InRelease [126 kB]
Get:2 http://archive.ubuntu.com/ubuntu noble InRelease [126 kB]
Get:3 http://security.ubuntu.com/ubuntu noble-security/main amd64 Packages [1143 kB]
Get:4 http://archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:5 http://archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:6 http://security.ubuntu.com/ubuntu noble=security/main Translation-en [195 kB]
Get:7 http://security.ubuntu.com/ubuntu noble=security/main amd64 Components [21.6 kB]
Get:8 http://security.ubuntu.com/ubuntu noble=security/main amd64 c-n-f Metadata [8748 kB]
Get:9 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Packages [888 kB]
Get:10 http://security.ubuntu.com/ubuntu noble-security/universe Translation-en [195 kB]
Get:11 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Components [52.2 kB]
Get:12 http://archive.ubuntu.com/ubuntu noble-security/main amd64 Packages [140 kB]
Get:13 http://archive.ubuntu.com/ubuntu noble-security/universe amd64 c-n-f Metadata [18.8 kB]
Get:14 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Packages [1815 kB]
Get:15 http://security.ubuntu.com/ubuntu noble-security/restricted Translation-en [408 kB]
Get:16 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Components [212 kB]
Get:17 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 c-n-f Metadata [496 kB]
Get:18 http://archive.ubuntu.com/ubuntu noble-security/multiverse amd64 Packages [1494 kB]
Get:19 http://security.ubuntu.com/ubuntu noble-security/multiverse Translation-en [5228 kB]
Get:20 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 Components [212 kB]
Get:21 http://archive.ubuntu.com/ubuntu noble-security/multiverse amd64 c-n-f Metadata [452 kB]
Get:22 http://archive.ubuntu.com/ubuntu noble-updates/main Translation-en [278 kB]
Get:23 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 Components [175 kB]
Get:24 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 c-n-f Metadata [18.2 kB]
Get:25 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 Packages [1494 kB]
Get:26 http://archive.ubuntu.com/ubuntu noble-updates/universe Translation-en [299 kB]
Get:27 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 Components [377 kB]
Get:28 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 c-n-f Metadata [31.1 kB]
Get:29 http://archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Packages [198 kB]
Get:30 http://archive.ubuntu.com/ubuntu noble-updates/restricted amd64 c-n-f Metadata [18.2 kB]
Get:31 http://archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Components [212 kB]
Get:32 http://archive.ubuntu.com/ubuntu noble-updates/restricted amd64 c-n-f Metadata [544 kB]
Get:33 http://archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Packages [32.0 kB]
Get:34 http://archive.ubuntu.com/ubuntu noble-updates/multiverse Translation-en [558 kB]
Get:35 http://archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Components [948 kB]
Get:36 http://archive.ubuntu.com/ubuntu noble-backports/main amd64 Packages [1494 kB]
Get:37 http://archive.ubuntu.com/ubuntu noble-backports/main amd64 Components [7868 kB]
Get:38 http://archive.ubuntu.com/ubuntu noble-backports/universe amd64 Components [19.2 kB]
Get:39 http://archive.ubuntu.com/ubuntu noble-backports/restricted amd64 Components [216 kB]
Get:40 http://archive.ubuntu.com/ubuntu noble-backports/multiverse amd64 Components [212 kB]
Fetched 1,404 MB in 20:01 (kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Reading state information... Done
27 packages can be upgraded. Run 'apt list --upgradable' to see them.
ericc@Karer:~$
```

- **upgrade:** Instala las versiones más recientes de los paquetes ya instalados en el sistema.

- Comando: `sudo apt upgrade`



```
ericc@Karer:~$ sudo apt upgrade
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Calculating upgrade... Done
The following package was automatically installed and is no longer required:
  libllvm19
Use 'sudo apt autoremove' to remove it.
Get more security updates through Ubuntu Pro with 'esm-apps' enabled:
  libzvbi-common liburiparser1 libwscale-dev libavcodec60
  libzvbi0t64 libavutil58 libwscale7 libavutil-dev libwsresample4
  libavformat60 libavformat-dev libavcodec-dev libwsresample-dev
Learn more about Ubuntu Pro at https://ubuntu.com/pro
The following NEW packages will be installed:
  libllvm20
The following upgrades have been deferred due to phasing:
  landscape-client landscape-common libmysqldclient21 systemd-hwe-hwdb
The following packages will be upgraded:
  dconf-gsettings-backend dconf-service dpkg dpkg-dev libdpkg-perl libegl-mesa0 libgbm1 libgl1-mesa-dri libglx-mesa0 libssqlite3-0 linux-libc-dev m
  esa-libgalium mesa-va-drivers
  mesa-vulkan-drivers openssh-client openssh-sftp-server vim vim-common vim-runtime vim-tiny xxd
23 upgraded, 1 newly installed, 0 to remove and 4 not upgraded.
7 standard LTS security updates
Need to get 73.7 MB of archives.
After this operation, 144 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 dpkg amd64 1.22.6ubuntu6.2 [1281 kB]
Get:2 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 openssh-sftp-server amd64 1:9.6p1-3ubuntu13.14 [37.3 kB]
Get:3 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 openssh-server amd64 1:9.6p1-3ubuntu13.14 [510 kB]
Get:4 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 openssh-client amd64 1:9.6p1-3ubuntu13.14 [966 kB]
Get:5 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 libssqlite3-0 amd64 3.45.1-lubuntu2.5 [701 kB]
Get:6 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 vim amd64 2:9.1.0016-1ubuntu7.9 [1881 kB]
Get:7 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 vim-common all 2:9.1.0016-1ubuntu7.9 [386 kB]
Get:8 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 vim-tiny amd64 2:9.1.0016-1ubuntu7.9 [803 kB]
Get:9 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 vim-runtime all 2:9.1.0016-1ubuntu7.9 [7281 kB]
Get:10 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 xxd amd64 2:9.1.0016-1ubuntu7.9 [63.6 kB]
Get:11 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 dconf-gsettings-backend amd64 0.40.0-4ubuntu0.1 [22.1 kB]
Get:12 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 dconf-service amd64 0.40.0-4ubuntu0.1 [27.6 kB]
Get:13 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 libdconf1 amd64 0.40.0-4ubuntu0.1 [39.6 kB]
Get:14 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 dpkg-dev all 1.22.6ubuntu6.2 [1074 kB]
Get:15 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 libdpkg-perl all 1.22.6ubuntu6.2 [269 kB]
```

2. ¿Qué es un paquete roto en Linux?

Un paquete roto es aquel que no puede instalarse, configurarse o ejecutarse correctamente. Esto puede deberse a:

- Interrupciones durante la instalación
- Dependencias faltantes o incompatibles
- Conflictos con otros paquetes

3. ¿Qué son las dependencias?

Las dependencias son otros paquetes o bibliotecas que un programa necesita para funcionar correctamente. El gestor de paquetes (como APT) se encarga de resolverlas automáticamente.

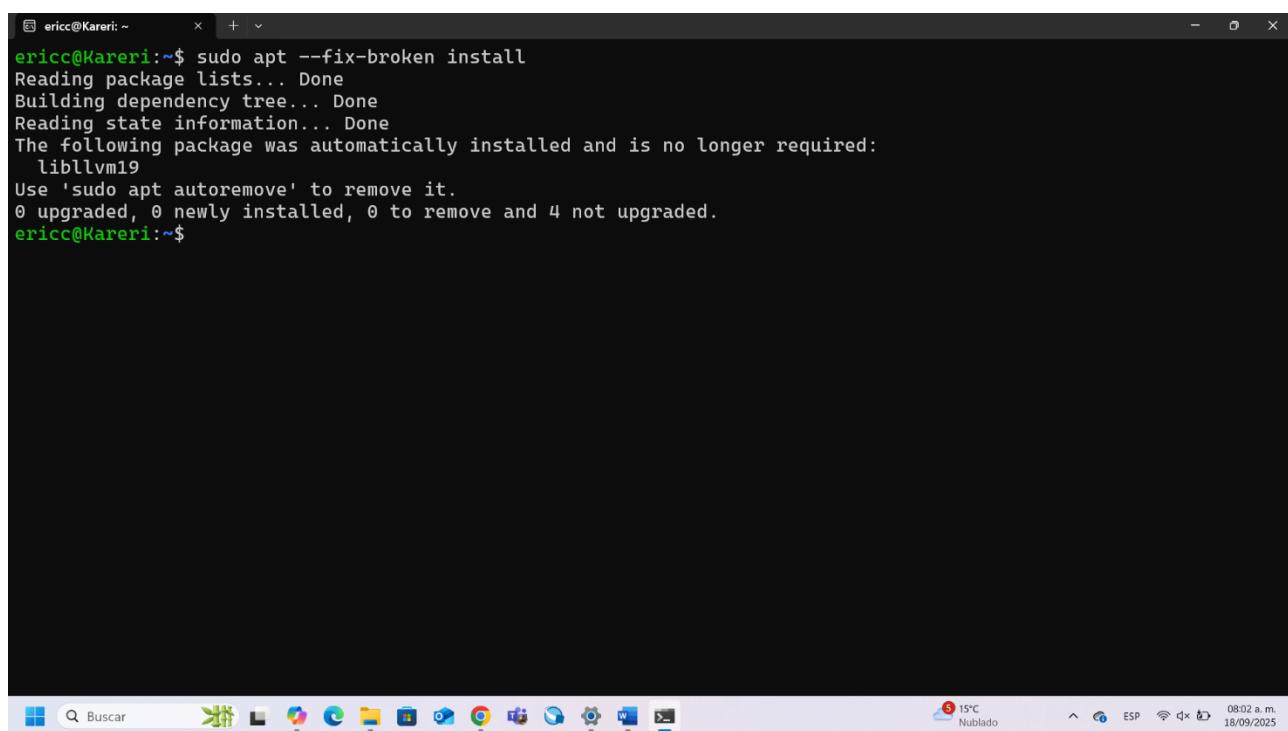
Ejemplo: gimp depende de libgtk, libgegl, entre otros.

4. ¿Cómo reparar paquetes rotos y dependencias incumplidas?

Para reparar paquetes rotos y dependencias incumplidas, se utilizan los siguientes comandos:

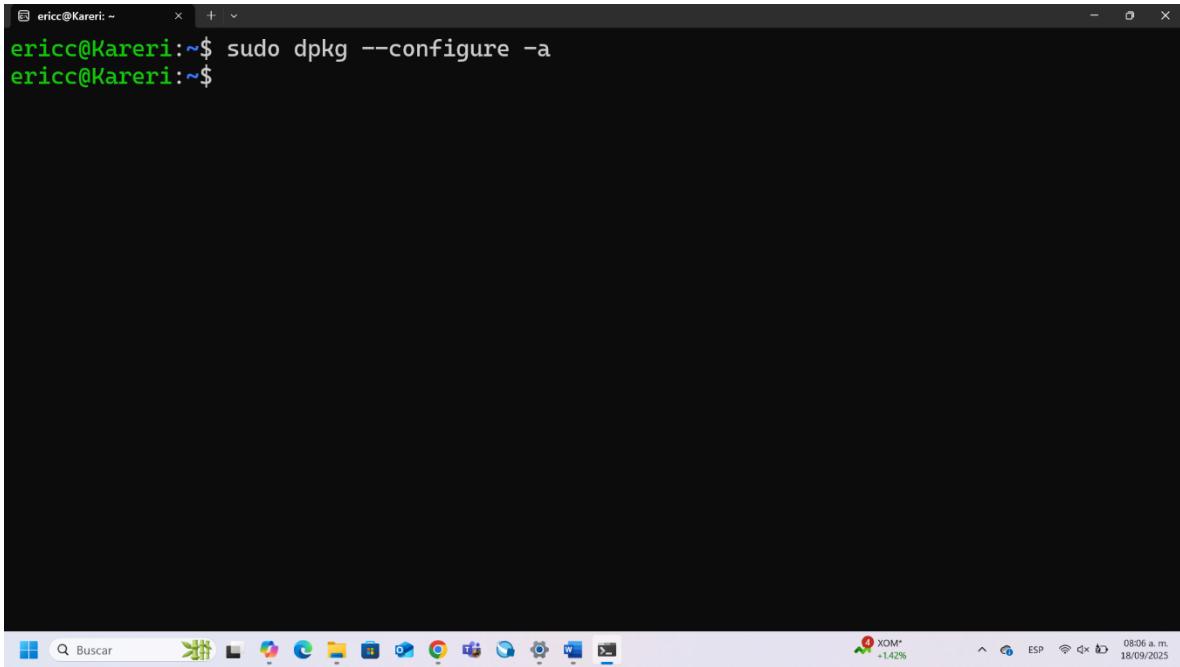
- **sudo apt --fix-broken install**

Instala dependencias faltantes y corrige errores de instalación.



```
ericc@Karer:~$ sudo apt --fix-broken install
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following package was automatically installed and is no longer required:
  libllvm19
Use 'sudo apt autoremove' to remove it.
0 upgraded, 0 newly installed, 0 to remove and 4 not upgraded.
ericc@Karer:~$
```

- **sudo dpkg --configure -a**
Reconfigura paquetes parcialmente instalados.



A screenshot of a Linux desktop environment showing a terminal window. The terminal window has a dark background and contains the following text:

```
ericc@Karer:~$ sudo dpkg --configure -a
ericc@Karer:~$
```

The terminal window is titled "ericc@Karer: ~". Below the terminal window, the desktop interface is visible, featuring a taskbar with various application icons and system status indicators. The system tray shows network connectivity, battery level (142%), and the date and time (08:06 a.m. 18/09/2025).

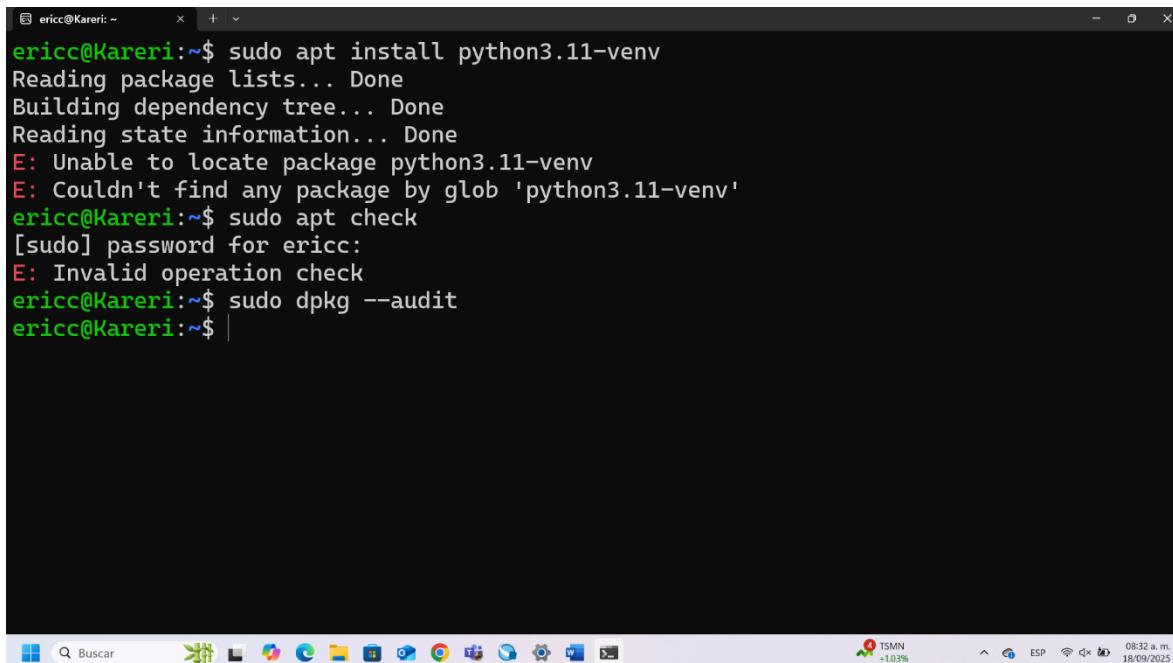
La ausencia de salida indica que no había paquetes pendientes de configuración. En sistemas Linux, cuando **dpkg --configure -a** no encuentra tareas por realizar, simplemente finaliza sin mostrar texto. Esto se considera un resultado exitoso y confirma que no existen paquetes en estado “**half-installed**” o parcialmente configurados.

5. ¿Qué significa “dependencias insatisfechas”?

Significa que un paquete requiere otros que:

- No están disponibles en los repositorios
- No son compatibles con la versión del sistema
- No pueden instalarse por conflictos

Esto impide su instalación o funcionamiento.



The screenshot shows a terminal window with the following command and output:

```
ericc@Karer:~$ sudo apt install python3.11-venv
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
E: Unable to locate package python3.11-venv
E: Couldn't find any package by glob 'python3.11-venv'
ericc@Karer:~$ sudo apt check
[sudo] password for ericc:
E: Invalid operation check
ericc@Karer:~$ sudo dpkg --audit
ericc@Karer:~$ |
```

The terminal window is titled "ericc@Karer:~". The desktop environment visible at the bottom includes icons for file manager, browser, and system tools. The system tray shows battery status (TSMN +1.03%), network connection, and the date/time (08:32 a.m. 18/09/2025).

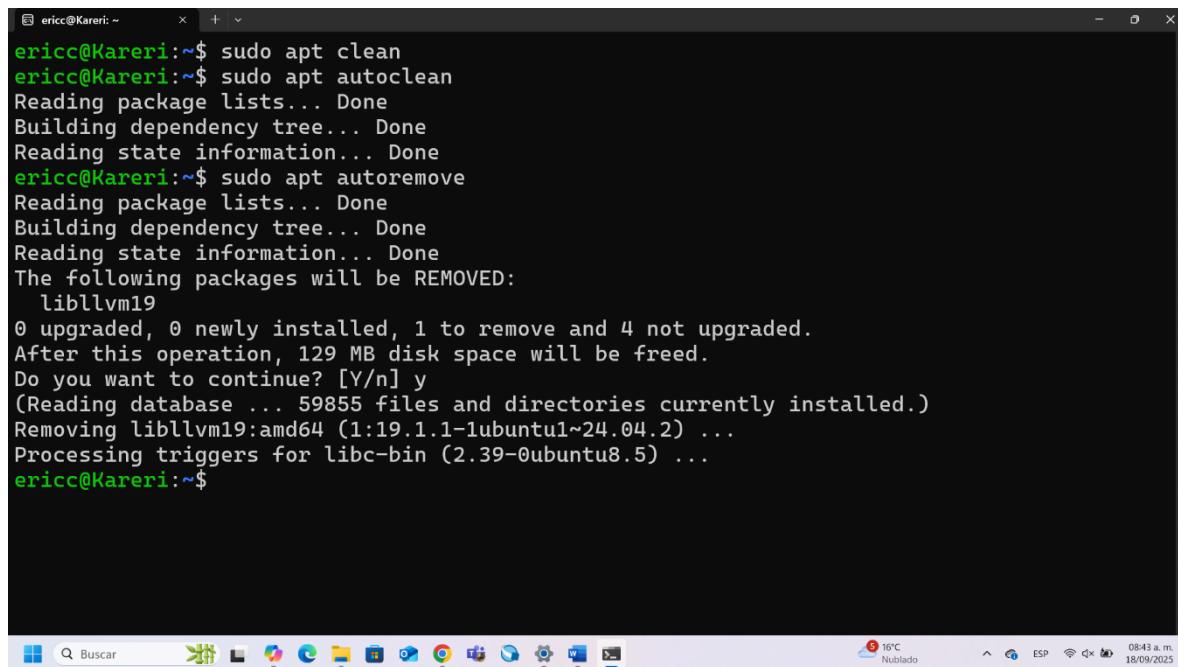
El intento de instalación falló por dependencia insatisficha, pero el sistema se encuentra limpio y sin paquetes rotos al momento de la verificación

6. ¿Cómo limpiar la caché de paquetes en Linux?

La caché de paquetes es el lugar donde el sistema guarda copias de los paquetes .deb descargados. Limpiarla puede liberar espacio en disco, aunque se perderá la capacidad de reinstalar paquetes sin conexión.

Comandos disponibles:

- **sudo apt clean**
Elimina todos los archivos .deb del directorio de caché (/var/cache/apt/archives).
- **sudo apt autoclean**
Elimina solo los paquetes .deb que ya no pueden ser descargados (obsoletos).
- **sudo apt autoremove**
Elimina paquetes que fueron instalados como dependencias, pero, ya no son necesarios.



```
ericc@Karerri:~$ sudo apt clean
ericc@Karerri:~$ sudo apt autoclean
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
ericc@Karerri:~$ sudo apt autoremove
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages will be REMOVED:
  libllvm19
0 upgraded, 0 newly installed, 1 to remove and 4 not upgraded.
After this operation, 129 MB disk space will be freed.
Do you want to continue? [Y/n] y
(Reading database ... 59855 files and directories currently installed.)
Removing libllvm19:amd64 (1:19.1.1-1ubuntu1~24.04.2) ...
Processing triggers for libc-bin (2.39-0ubuntu8.5) ...
ericc@Karerri:~$
```

¿Cuándo usarlo?

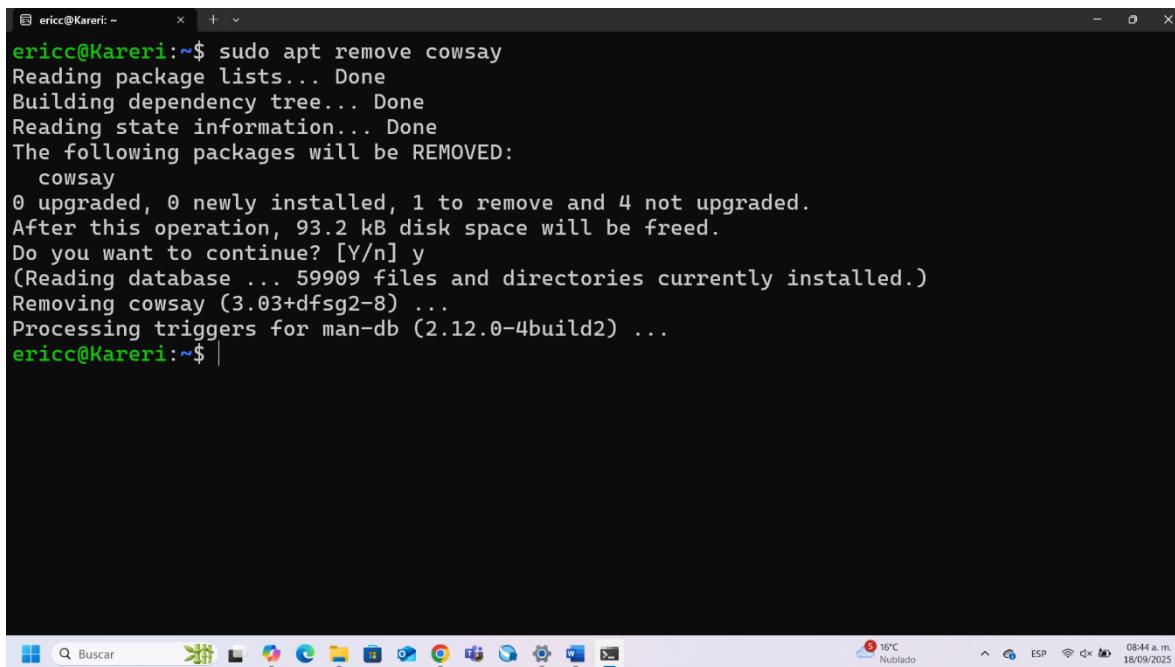
- Cuando el sistema tiene poco espacio en disco
- Después de muchas actualizaciones o instalaciones
- Para mantener el sistema limpio y eficiente

7. ¿Cómo eliminar paquetes (remove, purge, dpkg)?

Usando APT:

- **sudo apt remove nombre-del-paquete**

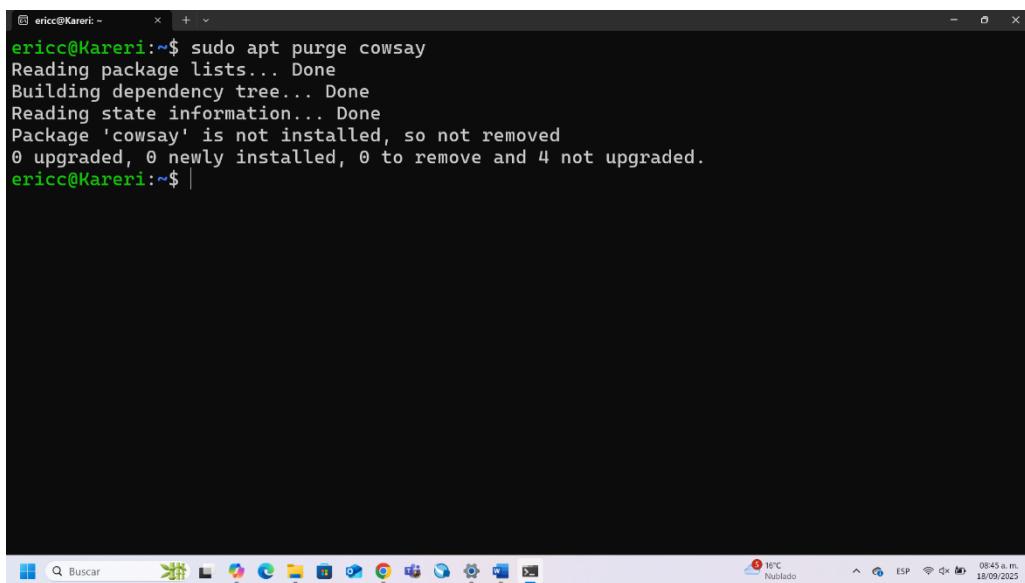
Elimina el paquete pero conserva archivos de configuración.



```
ericc@Karerri:~$ sudo apt remove cowsay
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages will be REMOVED:
  cowsay
0 upgraded, 0 newly installed, 1 to remove and 4 not upgraded.
After this operation, 93.2 kB disk space will be freed.
Do you want to continue? [Y/n] y
(Reading database ... 59909 files and directories currently installed.)
Removing cowsay (3.03+dfsg2-8) ...
Processing triggers for man-db (2.12.0-4build2) ...
ericc@Karerri:~$ |
```

- **sudo apt purge nombre-del-paquete**

Elimina el paquete y sus archivos de configuración.

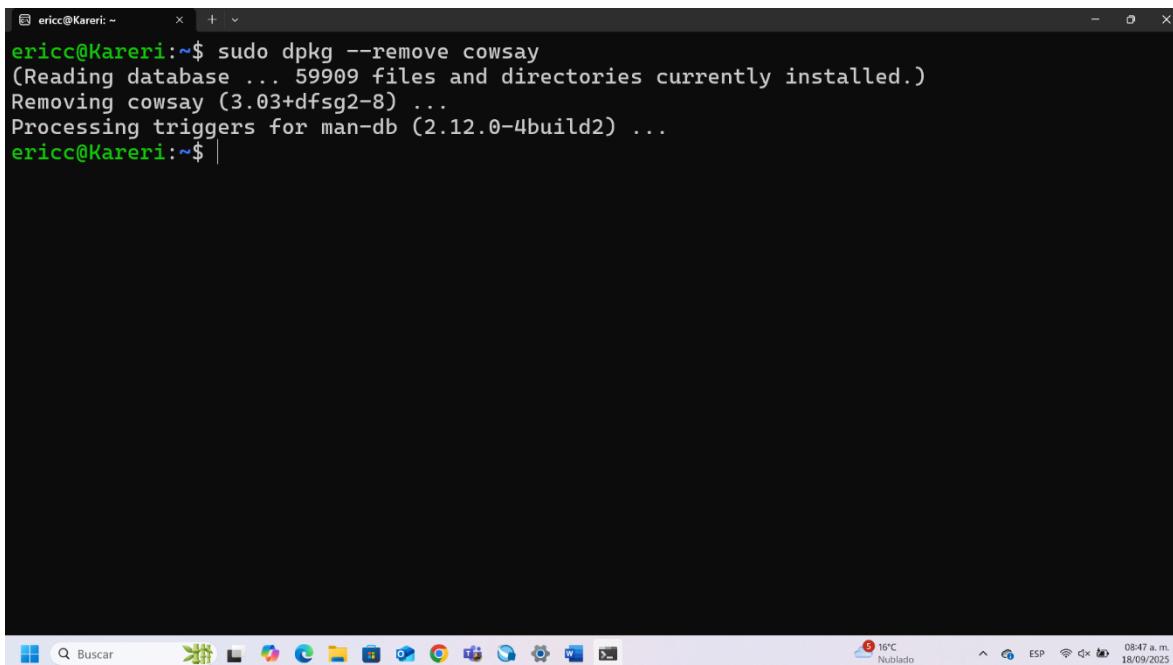


```
ericc@Karerri:~$ sudo apt purge cowsay
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Package 'cowsay' is not installed, so not removed
0 upgraded, 0 newly installed, 0 to remove and 4 not upgraded.
ericc@Karerri:~$ |
```

Usando DPKG:

- **sudo dpkg --remove nombre-del-paquete**

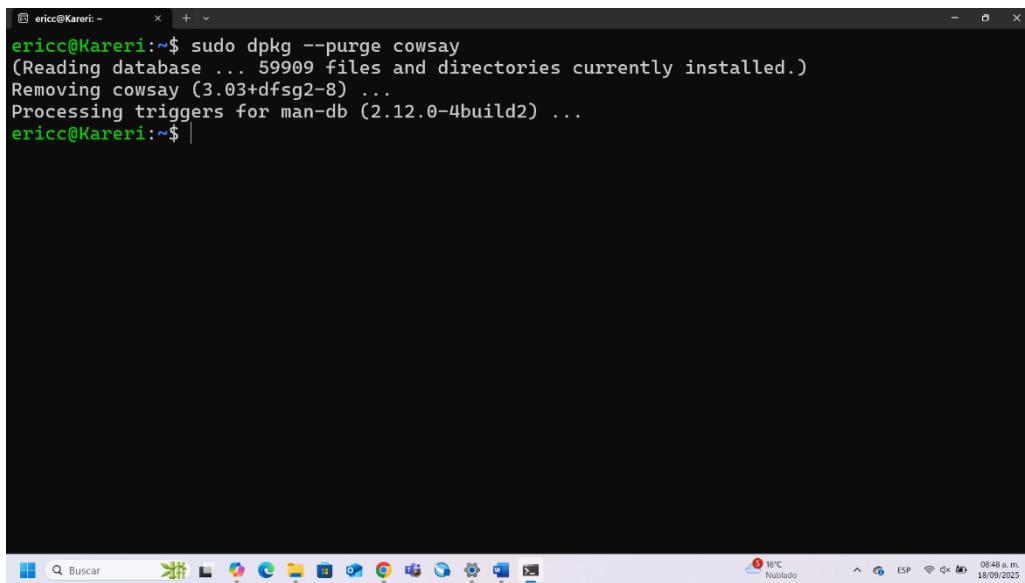
Elimina el paquete sin resolver dependencias ni borrar configuración.



```
ericc@Karerri:~$ sudo dpkg --remove cowsay
(Reading database ... 59909 files and directories currently installed.)
Removing cowsay (3.03+dfsg2-8) ...
Processing triggers for man-db (2.12.0-4build2) ...
ericc@Karerri:~$ |
```

- **sudo dpkg --purge nombre-del-paquete**

Elimina el paquete y su configuración, sin resolver dependencias.



```
ericc@Karerri:~$ sudo dpkg --purge cowsay
(Reading database ... 59909 files and directories currently installed.)
Removing cowsay (3.03+dfsg2-8) ...
Processing triggers for man-db (2.12.0-4build2) ...
ericc@Karerri:~$ |
```

8. ¿Cuál es la diferencia entre remove y purge?

La diferencia entre remove y purge radica en el alcance de la eliminación del paquete. El comando **remove** **elimina el paquete del sistema, pero conserva sus archivos de configuración**, lo que permite que, si se reinstala en el futuro, mantenga sus preferencias anteriores. En cambio, el comando **purge** **elimina completamente el paquete y todos sus archivos de configuración**, dejando el sistema como si el paquete nunca hubiera estado instalado.

Además, si se utiliza **dpkg --remove**, se logra el mismo efecto que **apt remove**, pero sin resolver automáticamente las dependencias. Por otro lado, **dpkg --purge** equivale a **apt purge**, eliminando también la configuración, pero sin gestionar dependencias.

Referencias

- [1] Ubuntu Developers, “APT - Advanced Package Tool,” *Ubuntu Documentation*. [Online]. Available: <https://help.ubuntu.com/community/AptGet>. [Accessed: Sep. 18, 2025].
- [2] Debian Project, “APT User Guide,” *Debian Wiki*. [Online]. Available: <https://wiki.debian.org/Apt>. [Accessed: Sep. 18, 2025].
- [3] Canonical Ltd., “dpkg Manual,” *Ubuntu Manpages*. [Online]. Available: <https://manpages.ubuntu.com/manpages/focal/en/man8/dpkg.8.html>. [Accessed: Sep. 18, 2025].