

Ubuntu Handbook

For beginners

Don't fear the terminal. Start with a few commands. This section is for people who just installed Ubuntu: what to do after installing, installing software with APT and Snap, basic terminal commands, desktop shortcuts and where each setting lives.

```
user@ubuntu:~$ sudo apt update
```

user your username · **ubuntu** the computer name · **~** the folder you are in (your home folder) · **\$** means a normal user, **#** means root (administrator). Nothing appears on screen while you type a password; that is normal.

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Yellow italic text (like *<package>*) marks the parts you fill in. In the terminal, paste is Ctrl+Shift+V and copy is Ctrl+Shift+C. Commands that start with `sudo` change the system; read what they do before running them.

After installing

After a clean Ubuntu install, going through these in order is a good start. You can do each step on its own.

1 Update the system

Updates both APT packages and Snap apps. Restart when done.

```
$ sudo apt update && sudo apt upgrade
```

```
$ sudo snap refresh
```

2 Install additional drivers

Proprietary drivers for NVIDIA graphics or some Wi-Fi cards. Graphical route: Software & Updates > Additional Drivers.

```
$ ubuntu-drivers devices
```

```
$ sudo ubuntu-drivers install
```

3 Install codecs and Microsoft fonts

MP3, MP4, H.264 and fonts like Arial and Times. A license screen appears during installation: press Tab to reach "OK", Enter, then "Yes".

```
$ sudo apt install ubuntu-restricted-extras
```

4 Turn on the firewall

ufw comes installed but disabled.

```
$ sudo ufw enable
```

5 Add Flathub (optional)

App Center shows the Snap store. For Flathub apps, install Flatpak and the GNOME Software plugin, then restart.

```
$ sudo apt install flatpak gnome-software-plugin-flatpak
```

```
$ flatpak remote-add --if-not-exists flathub  
https://dl.flathub.org/repo/flathub.flatpakrepo
```

6 Install Tweaks and Extension Manager

For fonts, startup apps and GNOME extensions.

```
$ sudo apt install gnome-tweaks gnome-shell-extension-manager
```

7 Update firmware

Ubuntu includes the “Firmware Updater” app; you can also do it from the terminal.

```
$ fwupdmgr refresh && fwupdmgr get-updates
```

```
$ fwupdmgr update
```

8 Set up backups

Timeshift takes system snapshots; Backups (Déjà Dup) backs up your home folder.

```
$ sudo apt install timeshift deja-dup
```

9 Attach Ubuntu Pro (optional)

Free for personal use on up to 5 machines: extended security updates for the universe repository and kernel patching without rebooting (Livepatch). Get a token at ubuntu.com/pro.

```
$ sudo pro attach <token>
```

Meet the terminal

The terminal is the window where you give the computer commands by typing. On Ubuntu the quickest way is **Ctrl** + **Alt** + **T**. Or press Super, type “terminal” and press Enter.

TIP Linux is case-sensitive: `Documents` and `documents` are different folders. Put names with spaces in quotes: `cd "New Folder"`.

TIP Type part of a name and press **Tab**: the command or file name completes itself. Press it twice to list the options. This habit saves more time than anything else.

```
$ man <command>
```

Opens the manual page for a command. Quit with **q**, search inside with **/word**.

```
$ <command> --help
```

Shows a short help text and the command's options.

```
$ sudo <command>
```

Runs the command with administrator (root) rights. It asks for your own password; nothing shows while you type.

```
$ clear
```

Clears the screen. Shortcut: **Ctrl** + **L** .

```
$ history
```

Lists the commands you typed before. You can also step back with **↑** .

```
$ which <command>
```

Shows which file a command runs from.

```
$ exit
```

Closes the terminal (or a remote session).

WARNING To stop a running command, press **Ctrl** + **C** . In the terminal, copy is **Ctrl** + **Shift** + **C** and paste is **Ctrl** + **Shift** + **V** .

Files and folders

~ means your home folder (/home/username). **.** is the current folder, **..** the one above it.

```
$ pwd
```

Prints the folder you are in.

```
$ ls
```

Lists the files in the current folder.

```
$ ls -la
```

Detailed list including hidden files (size, date, permissions). Names starting with a dot are hidden.

```
$ ls -lh
```

Shows sizes in readable KB/MB/GB.

```
$ cd <folder>
```

Enters a folder. Example: **cd Documents** .

```
$ cd ..
```

Goes up one folder.

```
$ cd
```

On its own, goes back to your home folder.

`cd -` returns to the previous folder.

```
$ mkdir <folder>
```

Creates a folder. For nested folders: `mkdir -p a/b/c`.

```
$ touch <file>
```

Creates an empty file (or updates the date of an existing one).

```
$ cp <source> <target>
```

Copies a file. For folders use `cp -r`.

```
$ mv <source> <target>
```

Moves or renames. Example: `mv old.txt new.txt`.

```
$ rm <file>
```

Deletes a file. It does not go to the trash and cannot be undone.

```
$ rm -r <folder>
```

Deletes a folder and everything in it. Add `-i` to confirm each file.

```
$ gio trash <file>
```

Sends the file to the Trash instead of deleting it, so it can be restored like on the desktop.

```
$ find ~ -name "*.pdf"
```

Finds every file ending in .pdf in your home folder.

```
$ ln -s <target> <link-name>
```

Creates a shortcut (symbolic link) to a file or folder.

WARNING Never run commands from the internet that start with `sudo rm -rf` unless you understand them. They can wipe the system in seconds.

Reading and editing files

A simple editor that runs in the terminal is enough for changing configuration files. nano is the easiest. It comes preinstalled on Ubuntu.

```
$ cat <file>
```

Prints a short file to the screen.

```
$ less <file>
```

Reads a long file page by page. Space: next page, / search, q quit.

```
$ head -n 20 <file>
```

Shows the first 20 lines.

```
$ tail -n 50 <file>
```

Shows the last 50 lines. `tail -f` follows new lines live.

```
$ nano <file>
```

Opens the file in nano. For system files add sudo: `sudo nano /etc/hosts`.

Ctrl + O

nano: save (then Enter).

Ctrl + X

nano: quit. Asks if there are unsaved changes.

Ctrl + W

nano: search in the file.

Ctrl + K or Ctrl + U

nano: cut / paste a line.

```
$ xdg-open <file>
```

Opens the file with its default app (PDF, image, folder...). `xdg-open .` opens the current folder in the file manager.

Installing software: APT

APT is Ubuntu's package manager: it downloads software from the repositories, installs, updates and removes it. `apt update` only refreshes the package list; `apt upgrade` does the actual updating.

```
$ sudo apt update
```

Refreshes the package list from the repositories. Run it before installing or upgrading.

```
$ sudo apt upgrade
```

Updates installed packages.

```
$ sudo apt full-upgrade
```

Also allows removing packages if an upgrade requires it (needed for kernel transitions).

```
$ sudo apt install <package>
```

Installs software. You can list several: `sudo apt install vlc gimp`.

```
$ sudo apt remove <package>
```

Removes software; system-wide config files stay.

```
$ sudo apt purge <package>
```

Removes software together with its config files.

```
$ sudo apt autoremove
```

Cleans up packages that nothing needs anymore.

```
$ apt search <word>
```

Searches package names and descriptions.

```
$ apt show <package>
```

Shows a package's version, size and description.

```
$ apt list --installed
```

Lists all installed packages. To filter: `apt list --installed | grep firefox`.

```
$ apt list --upgradable
```

Packages with pending updates.

```
$ sudo apt install ./<file>.deb
```

Installs a downloaded .deb file with its dependencies. The leading `./` matters.

TIP `apt` is for everyday use. `apt-get`, which you'll see in scripts and older guides, does the same job; its output doesn't change between versions, so scripts prefer it.

Snap and App Center

Ubuntu's own app format is Snap; even Firefox and Thunderbird come as snaps. App Center shows the Snap store and APT packages.

Super > **App Center**

Search, install, remove. The Manage tab at the top right shows updates.

```
$ snap find <word>
```

Searches the Snap store.

```
$ sudo snap install <package>
```

Installs a snap. Some developer tools need `--classic`: `sudo snap install code --classic`.

```
$ snap list
```

Installed snaps, their versions and channels.

```
$ sudo snap refresh
```

Updates all snaps now (normally they update themselves a few times a day).

```
$ sudo snap remove <package>
```

Removes a snap. Add `--purge` to also delete the backup of its data.

```
$ snap info <package>
```

Publisher, description and channel versions (stable, candidate, beta, edge).

```
$ sudo snap revert <package>
```

Goes back to the previous version.

```
$ sudo snap refresh --hold=72h <package>
```

Postpones automatic updates for a while.

```
$ snap connections <package>
```

The app's permissions (interfaces). For access to external drives: `sudo snap connect <package>:removable-media`.

TIP Snap apps can be a little slow on first launch; later launches are faster.

Installing apps with Flatpak

Flatpak apps run isolated from the system and bring their own libraries. When the distribution's version is old or missing, this is the easiest way to get desktop apps.

```
$ sudo apt install flatpak gnome-software-plugin-flatpak
```

Installs Flatpak and the GNOME Software plugin.

```
$ flatpak remote-add --if-not-exists flathub https://dl.flathub.org/repo/flathub.flatpakrepo
```

Adds the Flathub repository. Log out and back in afterwards.

```
$ flatpak search <name>
```

Searches Flathub and shows the full app ID (e.g. com.spotify.Client).

```
$ flatpak install flathub <app-id>
```

Installs the app. Example: `flatpak install flathub com.discordapp.Discord`.

```
$ flatpak update
```

Updates all Flatpak apps.

```
$ flatpak list --app
```

Lists installed Flatpak apps.

```
$ flatpak uninstall <app-id>
```

Removes the app. Add `--delete-data` to remove its data too.

```
$ flatpak uninstall --unused
```

Frees space by removing runtimes nothing uses anymore.

```
$ flatpak run <app-id>
```

Starts the app from the terminal; handy for seeing error messages.

TIP To edit Flatpak permissions (file access, camera, etc.) visually, install Flatseal: `flatpak install flathub com.github.tchx84.Flatseal`.

TIP If you downloaded an AppImage, make it executable: `chmod +x App.AppImage`, then `./App.AppImage`. On Ubuntu 24.04, if it doesn't start you need `sudo apt install libfuse2t64`.

System information and resources

The equivalent of Windows Task Manager is System Monitor on both GNOME and KDE. The same information is available in the terminal.

```
$ cat /etc/os-release
```

Distribution name and version.

```
$ hostnamectl
```

Computer name, operating system, kernel and hardware summary.

```
$ uname -r
```

Version of the running Linux kernel.

```
$ df -h
```

Shows how much free space is left on each disk.

```
$ du -sh *
```

Space used by each file and folder in the current folder.

```
$ free -h
```

RAM and swap usage.

```
$ top
```

Live process list. Quit with `q`. For a nicer one: `sudo apt install htop` or `btop`.

```
$ sudo apt install fastfetch
```

A tool that shows a system summary with a logo; run `fastfetch` after installing.

```
$ lscpu
```

Processor information.

```
$ lspci
```

Lists PCI devices such as the graphics and network cards.

```
$ lsusb
```

Lists connected USB devices.

```
$ pkill <program-name>
```

Closes a frozen program by name. Example: `pkill firefox`.

```
$ kill -9 <PID>
```

Force-kills a process by number (PID). `top` or `pgrep firefox` gives you the PID.

Shut down, restart, sessions

You can also use the desktop's power menu; the terminal equivalents are:

```
$ systemctl poweroff
```

Shuts the computer down.

```
$ systemctl reboot
```

Restarts.

```
$ systemctl suspend
```

Puts it to sleep (suspend).

```
$ loginctl terminate-session $XDG_SESSION_ID
```

Logs out (works regardless of desktop).

Super + **L**

Locks the screen (GNOME and KDE).

Ctrl + **Alt** + **Delete**

Opens the log out / power off dialog.

GNOME desktop shortcuts

Super is the Windows key on your keyboard. GNOME is designed to be used largely from the keyboard.

Super

Activities overview: open windows, workspaces and search. Start typing right away to find apps, files and settings.

Super + **A**

List of all apps.

Super + **1** ... **Super** + **9**

Opens or switches to the 1st ... 9th app in the dash.

Alt + **Tab**

Switch between apps. Super+Tab does the same.

Alt + **`**

Switch between windows of the same app (the key above Tab).

Super + **↑** or **Super** + **↓**

Maximize / restore the window.

Super + **←** or **Super** + **→**

Snap the window to the left / right half of the screen.

Super + **H**

Hide (minimize) the window.

Alt + **F4**

Close the window. In most apps Ctrl+Q quits the app.

Super + **Page Up** or **Super** + **Page Down**

Go to the previous / next workspace.

Super + **Shift** + **Page Up** or **Super** + **Shift** + **Page Down** Move the window to the previous / next workspace.

Super + **Shift** + **←** or **Super** + **Shift** + **→** Move the window to the other monitor.

Super + **V** Notification list and calendar.

Super + **S** Quick settings menu (Wi-Fi, sound, brightness, power mode).

Super + **Space** Switch keyboard layouts.

Print Screen Screenshot tool: area, window or full screen; picture or video.

Shift + **Print Screen** Takes a full-screen screenshot immediately. Saved to Pictures > Screenshots.

Alt + **Print Screen** Takes a screenshot of the active window.

Ctrl + **Alt** + **Shift** + **R** Starts / stops screen recording. Saved to Videos > Screencasts.

Alt + **F2** Run a command dialog.

Ctrl + **Alt** + **T** Opens a terminal (built in on Ubuntu).

Terminal and Bash shortcuts

The first group belongs to the terminal window (mostly the same in GNOME Terminal, Console, Konsole and Ptyxis), the second to the command line itself (Bash).

Ctrl + **Shift** + **T** New tab.

Ctrl + **Shift** + **N** New window.

Ctrl + **Shift** + **W**

Close tab.

Ctrl + **Page Up** or **Ctrl** + **Page Down**

Switch between tabs.

Ctrl + **Shift** + **C** or **Ctrl** + **Shift** + **V**

Copy / paste.

Ctrl + **+** or **Ctrl** + **-**

Bigger / smaller text. Ctrl+0 resets.

Ctrl + **Shift** + **F**

Search the output.

F11

Full screen.

Tab

Complete a command or file name. Twice: list the options.

↑ or **↓**

Previous / next command.

Ctrl + **R**

Search history: finds an old command as you type. Ctrl+R again goes further back, Enter runs it.

Ctrl + **C**

Stop the running command or cancel the line you typed.

Ctrl + **D**

Log out (same as exit on an empty line).

Ctrl + **L**

Clear the screen.

Ctrl + **A** or **Ctrl** + **E**

Move to the start / end of the line.

Ctrl + **U** or **Ctrl** + **K**

Delete from the cursor to the start / end of the line.

Ctrl + **W**

Delete the word before the cursor.

Alt + **B** or **Alt** + **F**

Move back / forward one word.

Ctrl + **Z**

Pause the running command and send it to the background. `fg` brings it back.

!!

Repeats the last command. Common use: `sudo !!` reruns the last command with `sudo`.

Files (Nautilus) shortcuts

GNOME's file manager is the Files app. Most shortcuts are the same in KDE's Dolphin.

Ctrl + **H**

Show / hide hidden files.

Ctrl + **L**

Type a path into the address bar (e.g. `/etc`).

F2

Rename. With several files selected, batch rename opens.

Ctrl + **Shift** + **N**

New folder.

Delete or **Shift** + **Delete**

Move to Trash / delete permanently.

Ctrl + **F**

Search in the folder.

Alt + **↑**

Go up to the parent folder.

Alt + **←** or **Alt** + **→**

Back / forward.

Ctrl + **T**

New tab.

Ctrl + **1** or **Ctrl** + **2**

List / grid view.

Ctrl + **I**

Properties of the selected item.

Space

Quick preview of the selected file (needs the sushi package: `sudo apt install sushi`).

TIP To add a folder to the sidebar, right-click it > Add to Bookmarks, or press Ctrl+D.

Ubuntu-specific settings

Ubuntu adds its own dock and a few extra settings pages to GNOME.

Settings > **Ubuntu Desktop**

Dock position, auto-hide, icon size, desktop icons, window tiling (Enhanced Tiling).

Software & Updates > **Ubuntu Software**

main/universe/restricted/multiverse components and the download server.

Software & Updates > **Other Software**

Turn added PPAs and third-party repositories on or off.

Software & Updates > **Updates**

Automatic security updates, new release notifications (LTS only / any release).

Software & Updates > **Additional Drivers**

Choose between NVIDIA and other proprietary drivers.

Software & Updates > **Ubuntu Pro**

Pro subscription and Livepatch.

Ctrl + **Alt** + **T**

Opens a terminal (built in on Ubuntu).

Super + **1** ... **Super** + **9**

Opens the apps in the Ubuntu dock in order.

Where is that setting? (GNOME)

On GNOME almost everything is in the Settings app. The quickest way in: press Super and type the setting's name (e.g. "display", "sound", "bluetooth"). Menu names can differ slightly between GNOME versions.

Settings > **Wi-Fi**

Connect to wireless networks, forget saved ones, share with a QR code.

Settings > **Network**

Wired connection, adding a VPN, proxy.

Settings > Bluetooth

Pair headphones, mice, phones.

Settings > Displays

Resolution, refresh rate, scaling (125%, 150%...), multi-monitor layout, Night Light.

Settings > Sound

Output/input device, volume levels, per-app volume.

Settings > Power

Power mode (Power Saver / Balanced / Performance), screen blank timeout, automatic suspend, battery percentage.

Settings > Multitasking

Hot corner, number of workspaces, edge tiling.

Settings > Appearance

Light/dark style, accent color, wallpaper.

Settings > Apps

App permissions and notifications; Default Apps (browser, mail, music, video).

Settings > Notifications

Do Not Disturb, lock screen notifications, per-app notifications.

Settings > Online Accounts

Add Google, Microsoft or Nextcloud accounts; Drive/OneDrive appear in Files.

Settings > Mouse & Touchpad

Pointer speed, tap to click, natural scrolling.

Settings > Keyboard

Input sources, Compose key, View and Customize Shortcuts.

Settings > Keyboard >

View and Customize Shortcuts >

Custom Shortcuts

Add your own shortcut. Example: Name "Terminal", Command `gnome-terminal`, Shortcut Ctrl+Alt+T.

Settings > Printers

Add printers; network printers are usually found automatically.

Settings > Accessibility

Large text, zoom, screen reader, sticky keys, cursor size.

Settings > Privacy & Security

Screen lock delay, location services, file history and automatic trash emptying.

Settings > System > Region & Language

Interface language, date/number/currency formats.

Settings > System > Date & Time

Time zone, automatic time, 24-hour format.

Settings > System > Users

New users, passwords, administrator rights, automatic login.

Settings > System > About

Version, processor, RAM and disk information.

Tweaks > Windows Titlebars

Minimize / maximize buttons.

Tweaks > Fonts

Interface, document and monospace fonts; font scaling.

Tweaks > Startup Applications

Apps that start automatically when you log in.

Disks app

Format disks, create partitions, SMART health data, write disk images.

Look and feel, GNOME extensions

GNOME ships minimal; you add what you miss with extensions. Search and install them with one click in Extension Manager.

```
$ sudo apt install gnome-tweaks
```

Tweaks: fonts, title bar buttons, startup applications.

```
$ sudo apt install gnome-shell-extension-  
manager
```

Extension Manager: search, install and configure extensions.

TIP Popular extensions: **Dash to Dock** (always-visible dock), **AppIndicator and KStatusNotifierItem Support** (tray icons for apps like Discord and Steam), **Blur my Shell** (blurred panel), **Clipboard Indicator** (clipboard history), **Caffeine** (keeps the screen on).

```
$ gsettings set  
org.gnome.desktop.wm.preferences button-  
layout 'appmenu:minimize,maximize,close'
```

Adds minimize and maximize buttons without Tweak.

```
$ gsettings set org.gnome.desktop.interface  
show-battery-percentage true
```

Shows the battery percentage in the top bar.

```
$ gnome-extensions list --enabled
```

Lists enabled extensions.

WARNING After a big GNOME update some extensions may stop working for a while. If the desktop acts strangely, try disabling extensions first.

USB drives and disks

USB drives appear in the file manager's sidebar and are mounted under `/media/` or `/run/media/`. Click the  icon next to it before unplugging.

```
$ lsblk
```

Shows all disks and partitions as a tree (sda, nvme0n1, etc.).

```
$ lsblk -f
```

Also shows each partition's file system (ext4, btrfs, ntfs, exfat) and label.

```
$ udiskctl mount -b /dev/<sdb1>
```

Mounts a partition without sudo.

```
$ udiskctl unmount -b /dev/<sdb1>
```

Unmounts it safely.

Disks > **select the device** > **:** >
Format Disk

Wipes the USB drive. To use it on both Windows and Linux, create an exFAT partition.

```
$ flatpak install flathub  
io.gitlab.adhami3310.Impression
```

Impression: writes an ISO file to a USB drive to make an install drive.

WARNING When writing a disk with `dd` in the terminal, picking the wrong target (`/dev/sdX`) erases that whole disk. Check twice with `lsblk` first.

Common problems

The situations new Ubuntu users most often get stuck on, and the first thing to try.

TIP “Could not get lock /var/lib/dpkg/lock-frontend”. Automatic security updates (unattended-upgrades) or App Center may be running after boot. Wait a few minutes; don't delete the lock file.

TIP An ApplImage won't start. Ubuntu 24.04 doesn't ship the FUSE 2 library: `sudo apt install libfuse2t64` . If an Electron-based ApplImage gives a “sandbox” error, that's the AppArmor restriction; see the AppArmor section below.

TIP A snap app can't see an external drive or USB. `sudo snap connect <package>:removable-media` .

TIP “NO_PUBKEY” or 404 errors. Usually a PPA's key is missing or the PPA doesn't support the new Ubuntu release. Turn that PPA off in Software & Updates > Other Software.

TIP Wi-Fi or NVIDIA doesn't work. Pick the recommended driver in Software & Updates > Additional Drivers, or run `sudo ubuntu-drivers install` .

TIP Videos won't play, fonts on websites look odd. `sudo apt install ubuntu-restricted-extras` .

```
$ systemctl --user restart pipewire
wireplumber
```

If sound suddenly stops, restarts the sound system without logging out.

TIP The whole desktop froze. Switch to a text console with Ctrl+Alt+F3, log in and run `sudo systemctl restart display-manager` . Open work will be lost.

TIP “command not found”. Ubuntu usually suggests which package (apt or snap) to install; run the command it suggests.

Glossary

Words you'll often see in forums and documentation.

LTS	Long Term Support. The .04 releases that come out every two years in April (24.04, 26.04) get 5 years of standard updates. Interim releases are supported for 9 months.
Terminal / shell	The terminal is the window you type in; the shell is the program that interprets the commands. The default shell is Bash.
sudo	Means "run this command as administrator". On Ubuntu the root account is locked; everything is done with sudo.
APT / .deb	Ubuntu's package system, inherited from Debian, and its package format.
Snap	Canonical's sandboxed app format; updates automatically.
PPA	An extra repository published on Launchpad by individuals or teams.
main / universe / restricted / multiverse	Canonical-supported / community-supported / proprietary drivers / software with copyright or license restrictions.
Flatpak / Flathub	A distribution-independent app format / its main store.
HWE	Hardware Enablement stack: brings a newer kernel and graphics stack to an LTS release.
AppArmor	A security layer that limits what programs can access.
/etc, /usr, /var, /home	System settings / programs / changing data and logs / user folders.

Commands are written for Ubuntu 24.04 LTS and later (GNOME, APT, Snap). Menu names follow the English interface. Commands that start with `sudo` change the system; read what they do before running them.