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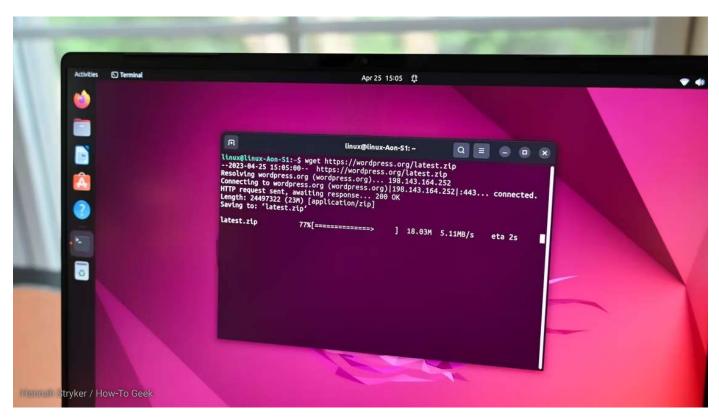


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# The Best Keyboard Shortcuts for Bash (aka the Linux and macOS Terminal)

Bash is the default command-line shell on most Linux distributions, from Ubuntu and Debian to Red Hat and Fedora.

BY LOWELL HEDDINGS UPDATED AUG 21, 2023



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#### **≡** KEY TAKEAWAYS

- Bash is the default command-line shell on Linux, macOS, and most WSL Virtual Machines. It features various keyboard shortcuts for managing processes, controlling the screen, moving the cursor, deleting text, fixing typos, cutting and pasting, capitalizing characters, and using tab completion.
- Use shortcuts like Ctrl+C, Ctrl+Z, and Ctrl+D to interrupt or close processes in bash, clear the screen, and exit the shell. Ctrl+S stops output, while Ctrl+Q resumes it.
- Navigate and edit commands effectively with shortcuts like Ctrl+A, Ctrl+E,
   Alt+B, Ctrl+B, and more. Use tab completion by pressing Tab.

### Ad

Bash is the default <u>command-line shell</u> on most Linux distributions, from Ubuntu and Debian to Red Hat and Fedora. Bash is also the default shell included with macOS, and you can <u>install a</u> Linux-based bash environment on Windows 10.

Ine pash shell reatures a wide variety of keyboard shortcuts you can use. These will work in bash on any operating system. Some of them may not work if you're accessing bash remotely through an SSH or telnet session, depending on how you have your keys mapped.

# **Working With Processes**

Use the following shortcuts to manage running processes.

- Ctrl+C: Interrupt (kill) the current foreground process running in in the terminal. This
  sends the <u>SIGINT</u> signal to the process, which is technically just a request most
  processes will honor it, but some may ignore it.
- Ctrl+Z: Suspend the current foreground process running in bash. This sends the SIGTSTP signal to the process. To return the process to the foreground later, use the fg process\_name command.
- **Ctrl+D**: Close the bash shell. This sends an EOF (End-of-file) marker to bash, and bash exits when it receives this marker. This is similar to running the exit command.

# **Controlling the Screen**

The following shortcuts allow you to control what appears on the screen.

- Ctrl+L: Clear the screen. This is similar to running the "clear" command.
- **Ctrl+S**: Stop all output to the screen. This is particularly useful when running commands with a lot of long, verbose output, but you don't want to stop the command itself with Ctrl+C.
- Ctrl+Q: Resume output to the screen after stopping it with Ctrl+S.

## **Moving the Cursor**

Use the following shortcuts to quickly move the cursor around the current line while typing a command.

- Ctrl+A or Home: Go to the beginning of the line.
- Ctrl+E or End: Go to the end of the line.
- Alt+B: Go left (back) one word.
- Ctrl+B: Go left (back) one character.
- Alt+F: Go right (forward) one word.
- Ctrl+F: Go right (forward) one character.
- Ctrl+XX: Move between the beginning of the line and the current position of the cursor. This allows you to press Ctrl+XX to return to the start of the line, change something, and then press Ctrl+XX to go back to your original cursor position. To use this shortcut, hold the Ctrl key and tap the X key twice.

## **Deleting Text**

Use the following shortcuts to quickly delete characters:

- Ctrl+D or Delete: Delete the character under the cursor.
- Alt+D: Delete all characters after the cursor on the current line.
- Ctrl+H or Backspace: Delete the character before the cursor.

# **Fixing Typos**

These shortcuts allow you to fix typos and undo your key presses.

- Alt+T: Swap the current word with the previous word.
- **Ctrl+T**: Swap the last two characters before the cursor with each other. You can use this to quickly fix typos when you type two characters in the wrong order.
- Ctrl+\_: Undo your last key press. You can repeat this to undo multiple times.

# **Cutting and Pasting**

Bash includes some basic cut-and-paste features.

- Ctrl+W: Cut the word before the cursor, adding it to the clipboard.
- **Ctrl+K**: Cut the part of the line after the cursor, adding it to the clipboard.
- Ctrl+U: Cut the part of the line before the cursor, adding it to the clipboard.

Ltri+γ: Paste the last thing you cut from the clipboard. The y here stands for "yank".

## Ad

## **Capitalizing Characters**

The bash shell can quickly convert characters to upper or lower case:

- Alt+U: Capitalize every character from the cursor to the end of the current word, converting the characters to upper case.
- Alt+L: Uncapitalize every character from the cursor to the end of the current word, converting the characters to lower case.
- Alt+C: Capitalize the character under the cursor. Your cursor will move to the end of the current word.

## **Tab Completion**

<u>Tab completion</u> is a very useful bash feature. While typing a file, directory, or command name, press Tab and bash will automatically complete what you're typing, if possible. If not, bash will show you various possible matches and you can continue typing and pressing Tab to finish typing.

• **Tab**: Automatically complete the file, directory, or command you're typing.

For example, if you have a file named really\_long\_file\_name in /home/chris/ and it's the only file name starting with "r" in that directory, you can type /home/chris/r, press Tab, and bash will automatically fill in /home/chris/really\_long\_file\_name for you. If you have multiple files or

airectories starting with r", bash will inform you of your possibilities. You can start typing one of them and press "Tab" to continue.

## Ad

```
chris@ubuntu:~

chris@ubuntu:~$ cp /home/chris/r

random_file really_long_file_name

chris@ubuntu:~$ cp /home/chris/re
```

## **Working With Your Command History**

You can quickly scroll through your recent commands, which are stored in your user account's bash history file:

- **Ctrl+P** or **Up Arrow**: Go to the previous command in the command history. Press the shortcut multiple times to walk back through the history.
- **Ctrl+N** or **Down Arrow**: Go to the next command in the command history. Press the shortcut multiple times to walk forward through the history.
- Alt+R: Revert any changes to a command you've pulled from your history if you've edited it.

Bash also has a special "recall" mode you can use to search for commands you've previously run:

- LTTI+R: Recall the last command matching the characters you provide. Press this shortcut and start typing to search your bash history for a command.
- Ctrl+O: Run a command you found with Ctrl+R.
- Ctrl+G: Leave history searching mode without running a command.

# emacs vs. vi Keyboard Shortcuts

The above instructions assume you're using the default keyboard shortcut configuration in bash. By default, bash uses emacs -style keys. If you're more used to the vi text editor, you can switch to vi-style keyboard shortcuts.

The following command will put bash into vi mode:

```
set -o vi
```

The following command will put bash back into the default emacs mode:

```
set -o emacs
```

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```
chris@ubuntu:~$ set -o vi
chris@ubuntu:~$ set -o emacs
chris@ubuntu:~$
```

With a few of these in your toolbelt, you'll be a Terminal master in no time.

	Linux Commands
Files	$\begin{array}{c} tar \cdot pv \cdot cat \cdot tac \cdot chmod \cdot grep \cdot diff \cdot sed \cdot ar \cdot man \cdot pushd \cdot popd \cdot fsck \cdot \\ testdisk \cdot seq \cdot fd \cdot pandoc \cdot cd \cdot \$PATH \cdot awk \cdot join \cdot jq \cdot fold \cdot uniq \cdot \\ journalctl \cdot tail \cdot stat \cdot ls \cdot fstab \cdot echo \cdot less \cdot chgrp \cdot chown \cdot rev \cdot look \cdot \\ strings \cdot type \cdot rename \cdot zip \cdot unzip \cdot mount \cdot umount \cdot install \cdot fdisk \cdot mkfs \cdot \\ rm \cdot rmdir \cdot rsync \cdot df \cdot gpg \cdot vi \cdot nano \cdot mkdir \cdot du \cdot ln \cdot patch \cdot convert \cdot \\ rclone \cdot shred \cdot srm \cdot scp \cdot gzip \cdot chattr \cdot cut \cdot find \cdot umask \cdot wc \cdot tr \end{array}$
Processes	alias · screen · top · nice · renice · progress · strace · systemd · tmux · chsh · history · at · batch · free · which · dmesg · chfn · usermod · ps · chroot · xargs · tty · pinky · lsof · vmstat · timeout · wall · yes · kill · sleep · sudo · su · time · groupadd · usermod · groups · lshw · shutdown · reboot · halt · poweroff · passwd · lscpu · crontab · date · bg · fg · pidof · nohup · pmap
Networking	netstat · ping · traceroute · ip · ss · whois · fail2ban · bmon · dig · finger · nmap · ftp · curl · wget · who · whoami · w · iptables · ssh-keygen · ufw · arping · firewalld

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# **Apple iPhone 15 Pro Review: Titanium and USB-C Steal the Show**

The iPhone 15 Pro might not have gotten the flashiest updates, but its improvements make it the nicest iPhone Pro, possibly ever.

BY TYLER HAYES PUBLISHED 1 DAY AGO



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iPhone 15 Pro Battery Life
Upgrading From a 14 Pro to the 15 Pro
Price and Availability
Should You Buy the Apple iPhone 15 Pro?

#### **≡ KEY TAKEAWAYS**

- The Apple iPhone 15 Pro has a lighter titanium frame and refined design, making it elegant and comfortable to hold.
- The USB-C port allows for convenient charging and can also be used for data transfers and connecting to storage devices.
- The camera system has minor improvements, offering more detail in photos and the ability to toggle between different focal lengths.

while even more elegant in the hand. The camera system gains enhancements, too. Even the USB-C port allows for more charging convenience. The iPhone 15 Pro, while better, is just less interesting than the 14 Pro was when it introduced an always-on display and Dynamic Island. The iPhone 15 Pro might not be the splashiest phone ever released by Apple, but its details are what make it worth the purchase.

iphone-15-pro-finish-select-202309-6-1inch\_GEO\_US-removebg-preview

## **Apple iPhone 15 Pro**





/ 10

The Apple iPhone 15 Pro features a titanium design with Action button, A17 Pro chip, USB-C port, and a 48MP camera.

#### SoC

A17 Pro

#### **Display**

6.1-inch, 2556 x 1179 resolution

#### **RAM**

8GB

#### **Storage**

128GB, 256GB, 512GB, 1T

#### **Ports**

USB-C

#### **Operating System**

iOS 17

#### **Colors**

Wide color (P3)

#### Weight

6.60oz (187g)

#### IP Rating

**IP68** 

#### Material

Titanium, glass

#### **Main Camera**

48MP 24 mm, f/1.78 aperture

#### Wide-Angle Camera

12MP 13 mm, f/2.2 aperture

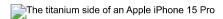
#### **Telephoto**

12MP 3x 77 mm, f/2.8 aperture

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# The Design of a Mature iPhone Pro



#### Tyler Hayes / How-To Geek

Apple touted a new design of the iPhone 15 Pro at the phone's launch event, but until you hold it in your hand, those design tweaks are almost imperceptible. It looks like the last few phones before it.

Once you do palm the 15 Pro, its refinements are immediately evident. For example, its 19g weight loss compared to the 14 Pro is roughly a 10% difference. It felt lighter to hold in a way that could be meaningful throughout the day. The subtly rounded edges of the titanium frame also felt great.

Altogether, the phone felt utterly polished, in a way only a constantly refined product could be. It actually felt so great in my hand that I dreaded putting a case on it—so far, I haven't. The titanium sides will get smudgy from fingerprints. I don't care. For now, it still looked good and felt smooth between my fingers.

In the same vein of the exterior being elevated rather than changed, the Action button doesn't *look* all that different from the previous mute switch. It's about the same size and shape. In function, however, it's completely different with the ability to personalize what it does. My first instinct was to use the button to launch the camera, making it the shutter button once the camera was in use.

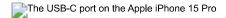
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To use the Action button it does require a slight hold delay. If you simply tap the button quickly, the iPhone will display an icon in the Dynamic Island of what it's programmed to do and then

instruct you το ποια τηε putton down longer to activate it. I didn't find it annoying or difficult to master. It did feel odd to use as my go-to trigger switch at first, though.

After several days of tinkering with the customizable button, I'm unsure if I'll ever be able to decide on a single function. Most likely, I'll keep changing what it does. I love its addition to the Pro line. For now, I've landed on using it for a Shortcut that brings up a menu of items, such as toggling orientation lock or launching the Sonos app—we'll see how long that lasts.

## **USB-C Is Super Fun and Weird!**



Tyler Hayes / Hew-To Goots

The Lightning port had a good run, but it's time for USB-C. It doesn't matter *why* the new port is here now. It's only important that it *is* here.

Because this is a "Pro" phone, the port gets <u>USB 3 speeds</u>, which, in this case, means 10Gbps transfer speeds. This phone can also be connected to a storage device and used as direct storage when shooting video.

What I was most interested in was using the new port for charging—in all kinds of ways. Although people buying the Pro iPhone could be more likely to use it for video transfers or something more advanced, nearly everyone will plug their phone in for power at some point.

I tried all sorts of USB-C cables—cheap ones and more expensive ones. All of them performed fine and powered the iPhone 15 Pro. The braided USB-C cable the iPhone 15 Pro comes with was satisfying to plug in the first time.

The iPhone itself can share power with other devices like AirPods, Apple Watch, and even another iPhone. Of course, the iPhone 15 Pro will only provide 4.5W of power, so it is best suited to boost small accessories. But it did work.

Even though the USB-C port is boring—Hi, Android phone owners—it's still the part of the phone that gets interacted with on a regular basis. The port is a solid addition that <u>doesn't get locked</u> down in any strange ways.

#### Other USB-C notes

- I bought a <u>Ugreen USB-C to 3.5mm headphone jack</u> for under \$10, and it worked instantly. The same adapter worked on my iPad and Mac too.
- The USB-C to Lightning cable I used to charge my AirPods 3 from the iPhone was the one that came in the box last year with the iPhone 14 Pro.
- The new Beats Studio Pro headphones can plug in directly to the 15 Pro to play lossless audio over the included USB-C cable.

## The Minor Improvements of the iPhone 15 Pro Camera

The Apple iPhone 15 Pro's three lens camera system

Tyler Hayes / Hew-Te Coels

The first thought for discussing the 15 Pro camera system might be the photos themselves. They're good, but all iPhones have done well at taking "good" pictures for the last five years, at least. My first thought was to try the different camera focal lengths.

If you tap on the 1x icon in the Camera app, it will toggle between 24mm, 28mm, and 35mm focal lengths—also shown as 1x, 1.2x, and 1.5x. Last year's 14 Pro, with its default 24mm focal length, pushed the distance farther away than it had been in the past. It was something that continually tripped me up as I shot product pictures for reviews.

Not only can you change these focal lengths, but in the settings for the Camera app, you can pick a default one and turn any of them off that you don't want to toggle through. Until recently, I would have hesitated about doing this and relying on a digital zoom. In this case, there isn't any part of the iPhone's camera system that isn't digital or processed. The picture-taking pipeline bins pixels and enhances the end photo for all focal lengths and in nearly every setting.

Based on the specs Apple has made public, the camera sensors in the 15 Pro are the same as the ones in the 14 Pro. The camera system this year does have more capabilities, however. Likely enabled by the A17 Pro chip, the camera shoots 24MP photos by default, which have more detail.

So there will be some differences in the pictures taken by the 14 Pro and 15 Pro phones, but it's not because of any hardware enhancements—it's because of digital processing upgrades, probably tied to the better phone chip.

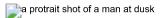
I could tell a difference between iPhone 14 Pro and 15 Pro pictures, but only when comparing them directly next to each other. When separated, it was harder to tell. You will need to consider how much you're willing to spend to get minor year-over-year improvements in this area.

The sample images below haven't been retouched or edited in any way—only converted from .heic to .jpeg at full resolution. The landscape gallery shows a progression of 24mm, 28mm, 35mm, 2x, and 3x. The picture of the succulent shows a progression of 24mm, 28mm, and 35mm.

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The 3x zoom helped extend reach, but as you can see above, there is a noticeable difference between the main camera and the telephoto one. The zoom feature alone would not be worth upgrading from the iPhone 15 to the 15 Pro. (It would need to be that, plus other aspects of the Pro phone.) Interestingly, the 15 Pro Max's new 5x telephoto camera has a bigger sensor which results in better pictures. But you'll have to read How-To Geek's full review on that phone to get the scoop on that camera system.

In terms of the front-facing camera, there are no surprises here. It's the same 12MP camera as it was last year. There are tiny enhancements on the software side like Smart HDR 5, instead of Smart HDR 4 on the 14 Pro. But really, the photos look the same. A sample photo from the front-facing camera is below.



Tyler Hayes / How-To Goots

A picture from the front-facing camera

# iPhone 15 Pro Performance With a Pro Chip

The A17 Pro is Apple's first 3nm chip. The smaller the fabrication process, the potential for more power or more energy savings, or a combination of the two, comes into play. In this case, Apple claims a 10% processing gain while stating the same battery life as last year's 14 Pro. There is a 6-core GPU in the 15 Pro. while there was a 5-core GPU in the previous model. So this year's Pro

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pnone snould be 20% taster for graphics processing simply because more capability was added to the chip.

## Ad

I don't have many examples of how this faster A17 Pro chip delivered speedier experiences. Most likely, what's happening is that Apple is enabling more experiences in the Camera app, in photo processing, and how the system continues to keep everything running smoothly. And, of course, playing games. The casual games I play don't push the boundaries in any way. But all of them ran smoothly and loaded a touch quicker.

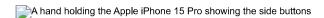
## iOS 17 on iPhone 15 Pro

The star of the show for iOS 17 on iPhone 15 Pro is StandBy mode. Although anyone with an iOS 17-compatible phone can experience the ambient information displayed from clocks and widgets, only iPhone 14 Pro owners, or now people with an iPhone 15 Pro—phones that have an always-on display—can experience it continually, as a nightstand display.

## iPhone 15 Pro Battery Life

Having only limited time with the phone initially, long-term battery life is to be determined. I don't think it's worth hollowly posturing about what could be after a short time. I will say that in early use, my battery life seemed to be about the same as it was on the 14 Pro. It was aggressively average and didn't stick out as better in any way. Make of that what you will.

# **Upgrading From a 14 Pro to the 15 Pro**



Tyler Hayes / Hew-Te Geek

There's very little reason to justifiably upgrade from a 14 Pro to a 15 Pro. But here's what I've noticed initially.

- The USB-C port has already been convenient for the cables I have around my house.
- The 15 Pro's weight reduction is more noticeable at first and becomes the new normal within a day or two.
- Battery life was fine on the new phone, even through heavy initial use, but ultimately about the same between last year and this year.
- Photos from the 15 Pro are better when comparing them directly to ones from the 14
   Pro but most people will have a hard time telling the two results apart.

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Ine 14 Pros mute switch immediately felt antiquated going back to it a few days later—
 it only does one thing!

Ad

# **Price and Availability**

The iPhone 15 Pro starts at \$999 for 128GB of storage and goes up from there. It's available in four shades of gray: white, blue, natural, and black.

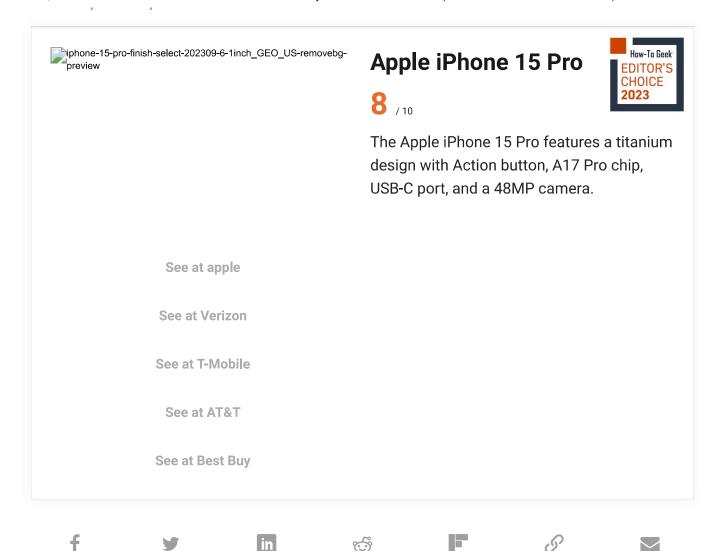
# **Should You Buy the Apple iPhone 15 Pro?**

Tyler Hayes / Hew-Te Cosk

ro, showing the back glass

This is an expensive question. Unfortunately, there is no formula that says when each person should upgrade their iPhone—or pick a Pro model versus the regular one. My recommendation is that most people should probably upgrade every three years, general enthusiasts every two years, and early adopters will find a way to justify a new iPhone every year.

You should know where you fall within that spectrum. As a final parting note. The iPhone 14 Pro seemed like the most advanced Pro phone in a while, with its visible always-on display and Dynamic Island. The iPhone 15 Pro, however, feels like the nicest, most premium iPhone—possibly ever.



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