How to install Linux

Given that we need to be able to install onto a Linux platform **when** we document the steps involved for different methods of installing Linux (as a *Wish Case*) **then** anyone new to the Linux world will be able to as well, (anytime our instructions do not cover all the basics we will document the alternate methods to resolve the issue as an *Alternate Case*)

Prerequistes

- Internet connection
- Windows, Linux or Mac based computer
- **sudo privilages** on that computer
- Adequate ram and disk space

Quick links PDF

Simplified instructions:

- for **cloud hosted** here
- for **Docker install** here
- for **Flutter install** here
- for **multipass install** here
- for **native install** here
- for **Parallels Desktop install** here
- for **Qt install** here
- for **Windows 10/11 install** here
- for **WSL/WSL2 install** here
- for **virtual install** here
- for **VirtualBox install** here
- for **Troubleshooting tips** here

Wish Case:

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Installing Linux as the host operating system (native install)

Linux comes in many flavours can be installed either natively or as a virtual machine.

- Step 1: Choose a Linux Distribution
    - Research and choose a Linux distribution that suits your needs.
    - Popular Linux distributions:
        - Debian-based
            - Ubuntu-based
            - Knoppix-based
            - Other Debian-based
        - Pacman-based

        - Arch Linux-based
        - Other Pacman-based
    - RPM-based
        - Fedora-based
        - RHEL-based
        - Other Fedora-based
        - openSUSE-based
        - Mandriva-based
        - Other RPM-based
    - Gentoo-based
    - Slackware-based
    - Android-based
    - Source-based
    - see List of Linux distributions

- Step 2: Download the Installation Media
    - Visit the official website of the chosen Linux distribution and download the ISO image for installation.
- Step 3: Create Installation Media
    - Create a bootable USB drive using the downloaded ISO image.
    - You can use tools like Rufus (for Windows) or Etcher (for Linux and macOS) for this purpose.
- Step 4: Boot from Installation Media
    - Insert the bootable USB drive into your system and restart it.
    - Access the BIOS or UEFI settings and set the boot order to prioritize booting from the USB drive.
    - Save the changes and exit the BIOS/UEFI settings.
    - Your system should now boot from the installation media.

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- Step 5: Begin Installation
    - Once the installation media boots up, you'll be presented with the option to try Linux or install it.
    - Choose the "Install" option.
- Step 6: Follow Installation Wizard
    - Follow the on-screen instructions provided by the installation wizard.
    - You'll be prompted to select language, time zone, keyboard layout, and other basic settings.
- Step 7: Partitioning
    - Decide on the disk partitioning scheme.

    - For beginners, choosing the option to install Linux alongside existing operating systems (when any) is recommended.

- Step 8: Create User Account
    - Provide necessary information to create a user account, including username and password.
- Step 9: Complete Installation
    - Once all required information is provided, proceed with the installation process.
    - The installer will copy necessary files and configure the system.
- Step 10: Reboot
    - After the installation completes, you'll be prompted to reboot your system.
    - Remove the installation media and restart your computer.
- Step 11: Log In
    - Upon rebooting, you'll be presented with the login screen.
    - Enter the username and password you created during the installation process.
- Step 12: Post-Installation Setup
    - After logging in, you may need to perform additional setup tasks, such as installing updates, drivers, and software packages.

Alternate Case

Troubleshooting tips

When you encounter any issues during the installation process, such as driver compatibility problems or partitioning errors, refer to the official documentation of your chosen Linux distribution for troubleshooting steps. Alternatively, you can seek help from online forums and communities dedicated to Linux users, where experienced users can provide assistance and guidance.

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- Linus Torvalds (Wikipedia)
- Slack.com (best)
- Slack AI (AI)
- LinuxQuestions.org (free)
- Linux.org (free)
- FeedSpot.com/ (ads)
- craftypenguins.net (paid)

Alternate Case

Installing Linux on top of an existing system (virtual machine)

There are various methods to install Linux on your computer, depending on the type of computer you own and the existing operating system. Installing Linux as a virtual machine atop a native operating system is often preferred. Especially for software development purposes, (as it proves to be more

practical). While installing Linux natively is also an option, it can pose challenges for development, particularly when it comes to restoring the Linux operating system in case of malfunction. In practice, it proves to be much simpler to restore a backup and retrace your steps (to recreate the malfunction) than to attempt to isolate the issue.

Cross-platform API:
Before we list the VM managers that have been tested with `injections.io(C++17)` it is important to mention that it is possible to develop applications on one type of operating system for use on another type of operating system, (without being inside the target environment itself). **Note**: One key disadvantage to this approach is that a failure in the host operating system itself (aka. mere spamware) can often be mistaken as a malfunction in the beta software functionality under development.

Cross-platform API	Free	Eval	GUI	Wiki	Gurus
Flutter	yes	no	yes	wiki	udemy
Qt	no	yes	yes	wiki	udemy

List of VM managers: Being inside the target operating system when developing applications for that operating system has the advantage being able to contain everything the new application is experiencing during it's development, (even freeze/capture the entire instance in the event of a malfunction). Managing multiple instances of entire operating systems (as mere zip files) quickly and easily.

VM manager	Free	Eval	GUI	x11	MRDT	Wiki	Gurus
DigitalOcean	no	yes	no	yes	no	wiki	udemy
Docker	yes	no	no	yes	no	wiki	udemy
multipass	yes	no	no	yes	yes	wiki	ubuntu
VirtualBox	yes	no	yes	yes	no	wiki	udemy
Mac only	**Free**	**Eval**	**GUI**	**x11**	**MRDT**	**Wiki**	**Gurus**
Parallels Desktop	no	yes	yes	yes	no	wiki	udemy
Windows only	**Free**	**Eval**	**GUI**	**x11**	**MRDT**	**Wiki**	**Gurus**
WSL/WSL2	yes	no	no	yes	no	wiki	udemy

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- **x11**: GUI support *possible* (using x11 protocol)
- **MRDT**: *Microsoft Remote Desktop tested* (by the author)
- **Chrome Remote Desktop** *Microsoft Remote Desktop* alternative
- Which ever VM platform you choose make sure that platform is installed properly onto your native operating system, (using the documentation supplied on their respective websites).
- However, below you will find Wish Cases for select VM platforms and select Linux distributions (usually Ubuntu) that will have step-by-step instructions for that particular version of VM

platform and Linux distribution.

Alternate Case

DigitalOcean (cloud hosted)

We recommend setting up a virtual machine that can be accessed remotely (via SSH) using digitalocean.com as it offers a 60-day, $200 coupon to new users (*credit card required*):

- How to install Ubuntu 22.04 using `digitalocean`

Alternate Case

Windows 10/11 (Windows install)

While it is possible to use Linux on Windows 10/11 through multipass, VirtualBox, Parallels Desktop, WSL2 or Docker you will have to work out the details on your own as the specific steps to do so keep changing with each and every upgrade.

> However the approach recommended is to merely install VSC onto the Windows 10/11 environment by itself. With just a SSH public key generated for remotely accessing a Linux box, (either on the web or anywhere on the network). In this way almost no additional packages or modifications to settings are required for the delicate Windows 10/11 environment. Moreover, backing up and restoring the actual development environment is all but completely independent of Windows 10/11.

- Install Windows 10/11 on your computer natively
- Install Visual Studio Code (VSC) on Windows installation
- Create a SSH public key for your account (using CMD.exe is fine).

  ```
  ssh-keygen -t ed25519 -C "your_email@example.com"
  ```

  Just hit enter till you see the prompt again then:

  ```
  cd .ssh
  type id_ed25519.pub
  ```

  - Copy the whole line of text to the clipboard
  - When you see the `New SSH Key` button paste the clipboard contents

- Create an instance of Ubuntu somewhere on the cloud
  - see How to install Ubuntu 22.04 using `digitalocean`
- Connect to the Ubuntu instance using VSC.

    - see How to install injections.io(C++17)

Alternate Case

Qt (Linux, Windows, macOS, Android or embedded systems install)

While Qt is not an operating system, (nor is it directly capable of hosting a Linux instance). It does provide an alternative solution to developing applications for the Linux platform, (therefore deserves a mention here)

> **Qt** (pronounced "cute" or as an initialism) is cross-platform application development framework for creating graphical user interfaces as well as cross-platform applications that run on various software and hardware platforms such as Linux, Windows, macOS, Android or embedded systems with little or no change in the underlying codebase while still being a native application with native capabilities and speed.
> -- source Wikipedia

- Qt website
- Qt wiki
- Qt tutorials

Alternate Case

WSL/WSL2 (Windows install)

It is usually the first thing to install whenever there is any mention of using Linux on a Windows 10/11 platform. But for our purposes `multipass` is easier to use (and **recommended** over WSL/WSL2). However, WSL/WSL2 would be a better and easier to manage alternative to VirtualBox, (albiet setting it up to work with a GUI can be bit of a challenge).

- WSL/WSL2 website
- WSL/WSL2 wiki
- WSL/WSL2 tutorials

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Alternate Case

multipass (Linux, Mac or Windows)

Installing a Linux distribution locally can be achieved easily using multipass. It does not matter whether you are using Windows, Mac or are using Linux on your system already. Just follow either of these links and you can install Linux using `multipass`:

- How to install Ubuntu 22.04 using `multipass` on Mac (OS X)
- How to install Ubuntu 22.04 using `multipass` on Windows (OS X)
- How to install Ubuntu 22.04 using `multipass` on Linux (OS X)

Alternate Case

Docker (Linux, Mac or Windows)

Installing a Linux distribution using Docker is a possible as it is a forerunner to `multipass`. But for our purposes `multipass` is easier to use (and **recommended** over Docker). However, Docker would be a better and easier to manage alternative to VirtualBox, (albiet setting it up to work with a GUI can be bit of a challenge).

- Docker website here
- Docker wiki here
- Docker tutorials here

Alternate Case

VirtualBox (Windows only)

VirtualBox has been around for quite some time and their developers have been really diligent in keeping it up to date. The following are instructions on how to install VirtualBox for one particular situation. However, what is written there can be applicable for newer versions of Ubuntu:

- How to setup ubuntu-20.04.4-desktop-amd64 (on VirtualBox)
- Complete listing of latest VirtualBox releases
- Latest stable version (number only)
- VirtualBox website here
- VirtualBox wiki here
- VirtualBox tutorials here

Alternate Case

Flutter (web, Fuchsia, Android, iOS, Linux, macOS, and Windows)

While Flutter is not an operating system, (nor is it directly capable of hosting a Linux instance). It does provide an alternative solution to developing applications for the Linux platform, (therefore deserves a mention here)

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> **Flutter** is an open-source UI software development kit created by Google. It can be used to develop cross platform applications from a single codebase for the web, Fuchsia, Android, iOS, Linux, macOS, and Windows. First described in 2015, Flutter was released in May 2017. Flutter is used internally by Google in apps such as Google Pay and Google Earth as well as by other software developers including ByteDance and Alibaba.
> -- source Wikipedia

- Flutter website
- Flutter wiki
- Flutter tutorials

Alternate Case

Parallels Desktop (Mac only)

Parallels Desktop is essentially a much more modern approach to setting up virtual machines for the desktop, (albeit a low and competitively priced yearly subscription is required). But for that rather low and insignificant significant subscription price you tend to get a service that works out of the box. As you have at your disposal a small army of professional developers taking care of all the tiny little issues for you.

- How to install Ubuntu 22.04 using Parallels Desktop
- see Find the Parallels solution that works best for you
- Currently Parallels Desktop does offer an evaluation period, (free for 14 days)
- How to install a Linux Platform (Ubuntu 20.04.4) on macOS
- How to install a Linux Platform (Ubuntu 20.04.4)

Summary

You now have a selection of methods for setting up a Linux distribution, (either natively or through a VM manager). At this point in time the number one recommendation is to utilize `DigitalOcean` provided you have a good Internet connection, (and a credit card). The number two recommendation is `multipass` as it is free and can support a GUI interface via `Microsoft Remote Desktop`, (albeit somewhat laggy). `VirtualBox` comes in as a strong number three as it also free and does do a fairly good GUI interface (but takes longer to setup properly and much more fragile compared to `Parallels Desktop`). `Docker` (a forerunner to `multipass`) is number five but requires a course off Udemy.com to know how to use it properly. `WSl/WSL2` provides a Linux-style interface to a natively-installed Windows instance but is dependent on the ever-changing Windows desktop environment to make it practical for software development (when compared to software development in a pure Linux environment).

- **Cross-platform tool**: `Qt` certainly is an option to consider as it promises to be an all-in-one solution for all three major operating systems plus strong Android support, (but requires a paid subscription and a strong learning curve, see **Qt courses available on Udemy**)
- **Cross-platform tool**: `Flutter` is an open-source UI software development kit created by Google. It can be used to develop cross platform applications from a single codebase for the web, Fuchsia, Android, iOS, Linux, macOS, and Windows, (see **Flutter courses available on Udemy**)

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Next Steps

- How to install injections.io(C++17)

Disclaimer

> That `word` is not to appear anywhere on this page, (except here)