



## Essentials\_0x03

---

**Start where you are.  
Use what you have.  
Do what you can.**

—ARTHUR ASHE,  
AMERICAN TENNIS PLAYER

---

Information technology has **made the education process more effective and productive**. It has increased the well-being of the students. Developed methods of

education have made this process easier, such as the replacement of books with tablets and laptops,

Books can always become old, but information on the internet can always be updated, this revolution allows us to grasp the world's information in an instant, at a very less cost

---

## Virtualization

Virtualization is a technology which **relies on software to simulate hardware functionality and create a virtual computer system**

This enables everyone to run more than one virtual system – and multiple operating systems and applications – on a single computer. The resulting benefits include economies of scale and greater efficiency, and much more productivity and flow of information

In short, Virtualization enables us to get rid of dependency barriers and install any desired Operating System's environment without affecting our main machine

So how do we go about doing it? we would first need virtualising software, the two leading solutions in the market are: **VMware** and **VirtualBox**

### Introducing VMware Cross-Cloud Services



Run any app on any cloud on any device with a digital foundation built on VMware solutions for modern apps, multi-cloud, digital workspace, security & networking.

 <https://www.vmware.com/>

### Oracle VM VirtualBox

New September 2nd, 2022 VirtualBox 6.1.38 released! Oracle today released a 6.1 maintenance release which improves stability and fixes regressions. See the Changelog for details.

 <https://www.virtualbox.org/>



Although VMware is said to be professional by some people, Virtualbox is the thing for beginners and that is something you should start with



You can install VirtualBox using the above link

## Linux

Linux is a powerful Open-Source Operating system that allows humans to play with computers

It is a free and open-source operating system that powers many of the world's computer systems. Learn the basics of the Linux kernel, how it relates to GNU, and essential Linux commands

Linux tends to be a **highly reliable and secure system** than any other operating system (OS). Linux and Unix-based OS have fewer security flaws, as the code is reviewed by a huge number of developers constantly. And anyone has access to its source code

<https://www.youtube.com/watch?v=rrB13utjYV4>



**Linux give you the best environment for programming, out of the box**

<https://www.youtube.com/watch?v=42iQKuQodW4>

I suggest you watch these videos here themselves because they both are just 100 seconds long and give you a quick grasp of the Linux Operating system

Even now If you don't understand the need for Linux, You should know that Microsoft Windows and macOS are proprietary and closed-source software.

They are spying on you, using your microphone without your permission, capturing keystrokes and tracking you for their benefit. Also, If you take a deep dive into the operating system's source code and study about detailed working of API calls, hardware and software management, Linux is the only operating system you can use because Microsoft Windows and macOS are both closed-source operating systems which means, you are charged for their licences, and you are not allowed to change the core of the operating system



## Uninstalling Microsoft's Edge browser will brick your entire operating system

But I don't mean to say you have to uninstall windows and use the open source alternative, rather, we can utilize the virtualization technology to instal Linux and use it

**There are many resources for learning Linux, I'd suggest the one I started from, but be vigilant, one resource is never enough, in this field we must gather information from whatever resources we can get our hands down on.**

### Linux Tutorial for Beginners Playlist

Official playlist for thenewboston Linux for Beginners tutorials!

▶ <https://youtube.com/playlist?list=PL6gx4Cwl9DGCKg2uj3PxUWhMDuTw3VKjM>



## Getting Linux

As you've seen in the above videos, Linux has many **distros** or distributions derived from it. Linux is the kernel, Linux is not an operating system in itself. (For example in Android, you have skins for it like; LineageOS, ColorOS, OxygenOS, OneUI, MIUI, etc)

You have many distros to pick from, all ranging from difficulty and experience:

### The Operating System

Debian is an operating system and a distribution of Free Software. It is maintained and updated through the work of many users who volunteer their time and effort.

🔗 <https://www.debian.org/>



### Arch Linux

2022-09-23 Python 2 went end of life January 2020. Since then we have been actively cutting down the number of projects depending on python2 in our repositories, and we have finally

⚠️ <https://archlinux.org/>

**ETZNE**

## Manjaro

We are on a mission to get the popular Manjaro Linux to the masses and get it working on your hardware straight out of the box. Our partners are already benefiting from what open source software has to offer, it is reliable, cost effective and has better security by default.

 <https://manjaro.org/>

## Enterprise Open Source and Linux | Ubuntu

Introducing the Ubuntu Desktop for Raspberry Pi, the latest desktop features and micro clouds. Publisher of Ubuntu.

Security. Support. Managed Services. Contact Canonical

 <https://ubuntu.com/>



## Home - Linux Mint

Is it free? Yes, Linux Mint is completely free of charge. Almost everything in Linux Mint is also open-source. Will it work on my computer? Yes, Linux Mint works on most computers. It can also

 <https://linuxmint.com/>



## Zorin OS - Make your computer better.

better. faster. easier. more powerful. more secure. more reliable. Zorin OS is the alternative to Windows and macOS designed to make your computer faster, more powerful, secure, and privacy-

 <https://zorin.com/os/>



## Pop!\_OS by System76

Imagine an OS for the software developer, maker and computer science professional who uses their computer as a tool to discover and create. Welcome to Pop!\_OS.

 <https://pop.system76.com/>



## Home - Linux Mint

Is it free? Yes, Linux Mint is completely free of charge. Almost everything in Linux Mint is also open-source. Will it work on my computer? Yes, Linux Mint works on most computers. It can also

 <https://linuxmint.com/>



### CutefishOS

Cutefish OS Built on Ubuntu

🔗 <https://cutefish-ubuntu.github.io/>



### Get Fedora

Choose Freedom. Choose Fedora. Pick a flavor of Fedora streamlined for your needs, and get to work right away.

🔗 <https://getfedora.org/>



I suggest you visit all of these sites and get a good look at them, btw these are just a handful of distros. The Linux family tree contains hundreds of distros available to pick and download

We're going to install **Ubuntu** in this writeup (you are free to pick whatever you like)

## Enabling Virtualization

If you have a modern computer, your **manufacturer might've already enabled** this option by default,

In case they didn't, you would need to get into your machine's BIOS yourself and enable virtualisation technology



Keep in mind that in this process, steps vary for different computers, but just in case, I have attached the process of enabling virtualization in popular manufacturers

### How to enable Intel Virtualization Technology in BIOS?

NOTE: Please make sure that the BIOS is updated before proceeding. 1. Turn on the computer. 2. Press F2 while the VAIO Logo appears during boot up. 3. In the BIOS page, go to

🔗 <https://www.sony-asia.com/electronics/support/articles/S500016173>

**SONY**

## How to enable Virtualization Technology on Lenovo PC computers - Lenovo Support IN

How to enable Virtualization Technology (VT-X) to help accelerating VirtualBox, VMware, Hyper-V, and other virtual machine applications in Lenovo, idea, ThinkPad and ThinkCentre system

L <https://support.lenovo.com/in/en//solutions/ht500006-how-to-enable-virtualization-technology-on-lenovo-computers>

## Enable virtualization on Windows 11 PCs

These instructions may apply if you upgraded your PC from Windows 10 to Windows 11. Note: Many Windows 10 PCs-and all PCs that come preinstalled with Windows 11-already have Virtual Machine Platform enabled, so you may not need to follow these steps.

G <https://support.microsoft.com/en-us/windows/enable-virtualization-on-windows-11-pcs-c5578302-6e43-4b4b-a449-8ced115f58e1>



You have to search google/youtube tutorials on how to enable VT depending on your PC manufacturer

For example:

The screenshot shows three YouTube video thumbnails side-by-side, each demonstrating how to enable virtualization on an HP laptop:

- How to enable Virtualization VT-X**: A thumbnail showing a laptop with the Dell and HP logos, with the text "8:08".
- How to enable virtualization technology on Laptop or Desktop windows 10 (VT-x) 1. Using a Dell Laptop (F2 Or Fn + F2) ...**: A thumbnail showing a hand pointing at a laptop screen, with the text "7 key moments in this video".
- How to Enable Virtualization Technology (VT) | For Hp Laptop**: A thumbnail showing a hand pointing at a laptop screen, with the text "1:52 PREVIEW".

Below the thumbnails, there are links to the full YouTube videos:  
www.youtube.com/watch  
How to Enable Virtualization Technology (VT) | For Hp Laptop  
www.youtube.com/watch  
How to enable virtualization in HP elitebook 840 - YouTube

The third video thumbnail is partially visible, showing a screen with text about upgrading SSD in an HP 840 G1 EliteBook, 840 G2 or 840 G3 Laptop, Solid State Hard Drive, cobuman, cobuman. • 80K...  
YouTube · Yvan Novoa · 29-Mar-2016  
1:29 PREVIEW



In case you find it hard to enable VT, or simply, if you do not want to, I have an alternative section for it, but you won't get the benefit of running standalone Linux, you'd just get single terminal access, (which you can of course leverage its possibilities if you are determined)

## Installing Linux under Virtualization

I hope you have enabled VT-X technology and installed Virtualbox on your computer, now its time to install **Ubuntu Linux**



If you want to use your USB devices in Linux, you need to install VirtualBox Extensions Pack, which I won't show, because it's easy and you should push yourself to gather information and be resourceful

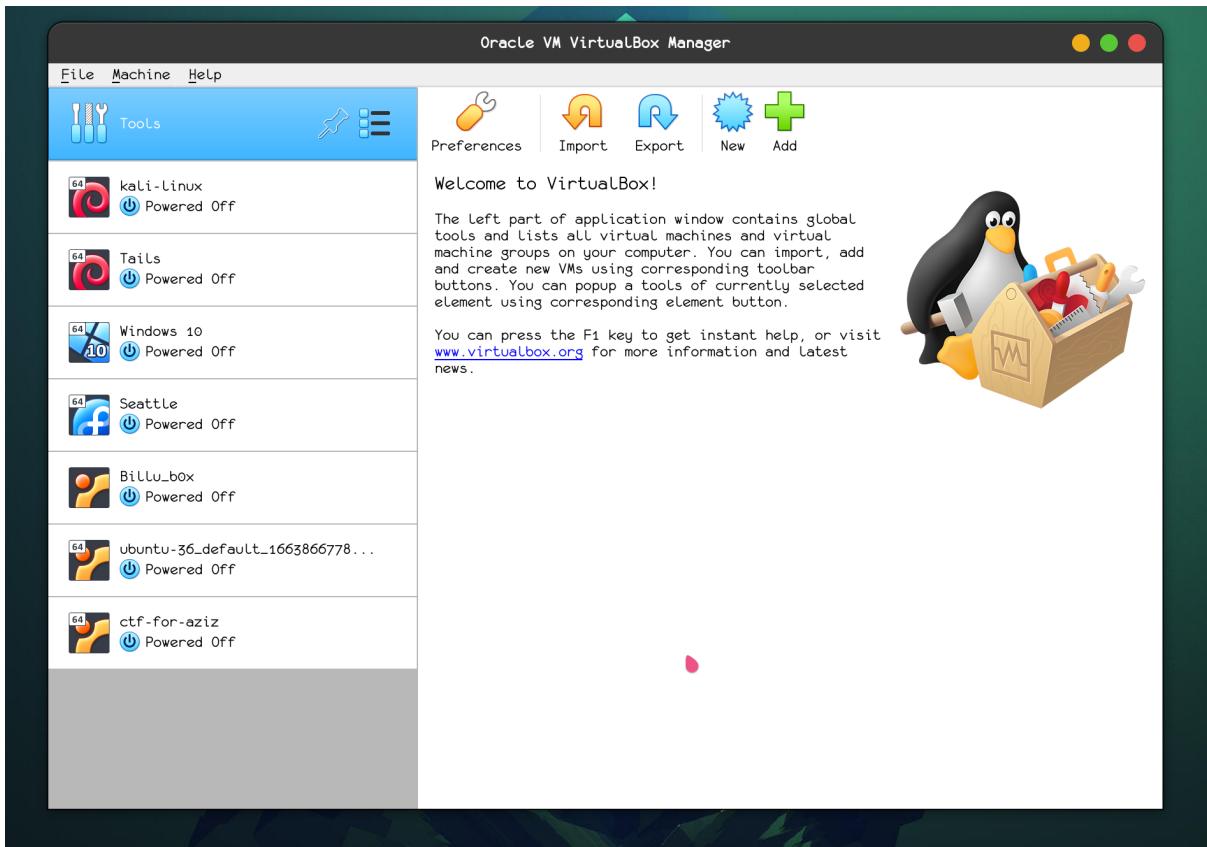
### Enterprise Open Source and Linux | Ubuntu

Introducing the Ubuntu Desktop for Raspberry Pi, the latest desktop features and micro clouds. Publisher of Ubuntu. Security. Support. Managed Services. Contact Canonical

 <https://ubuntu.com/>

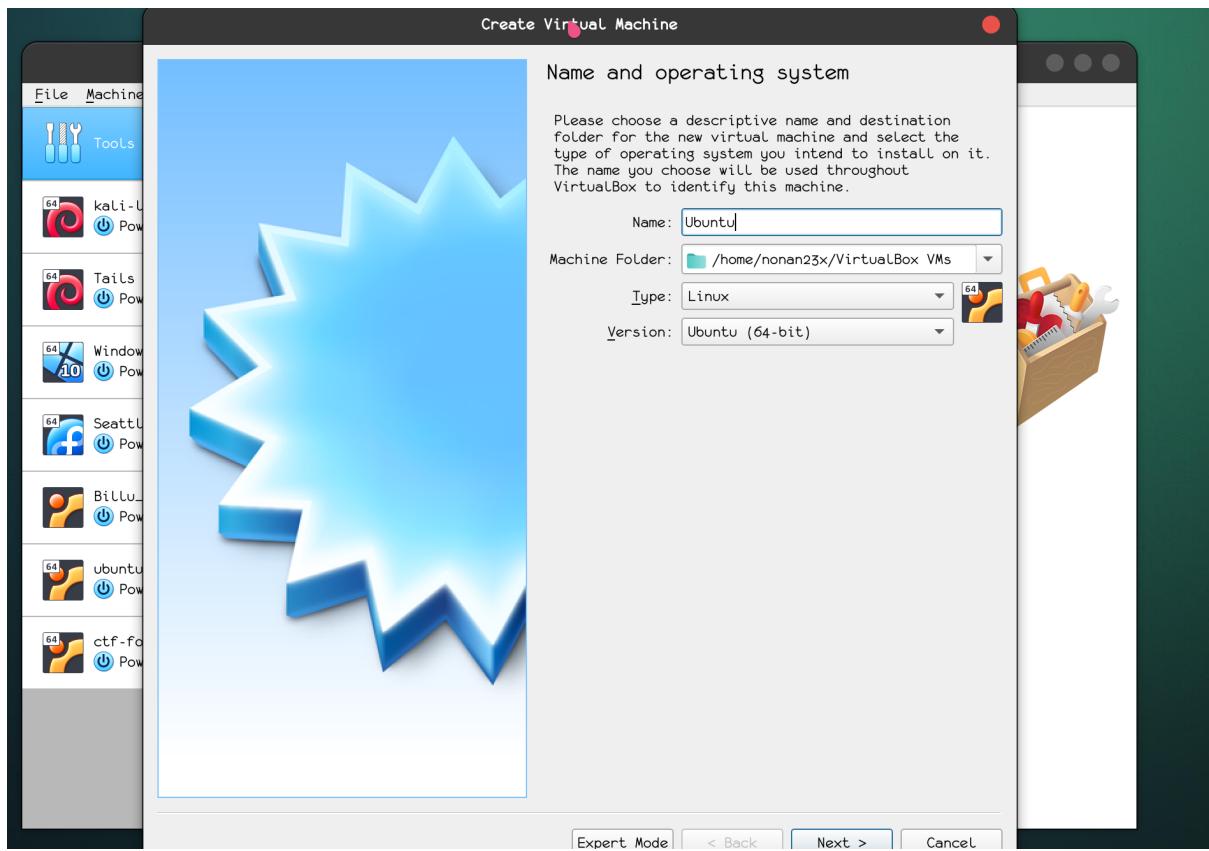


Visit the Website and go to the downloads section, then install the latest release, after downloading, open Virtual Box

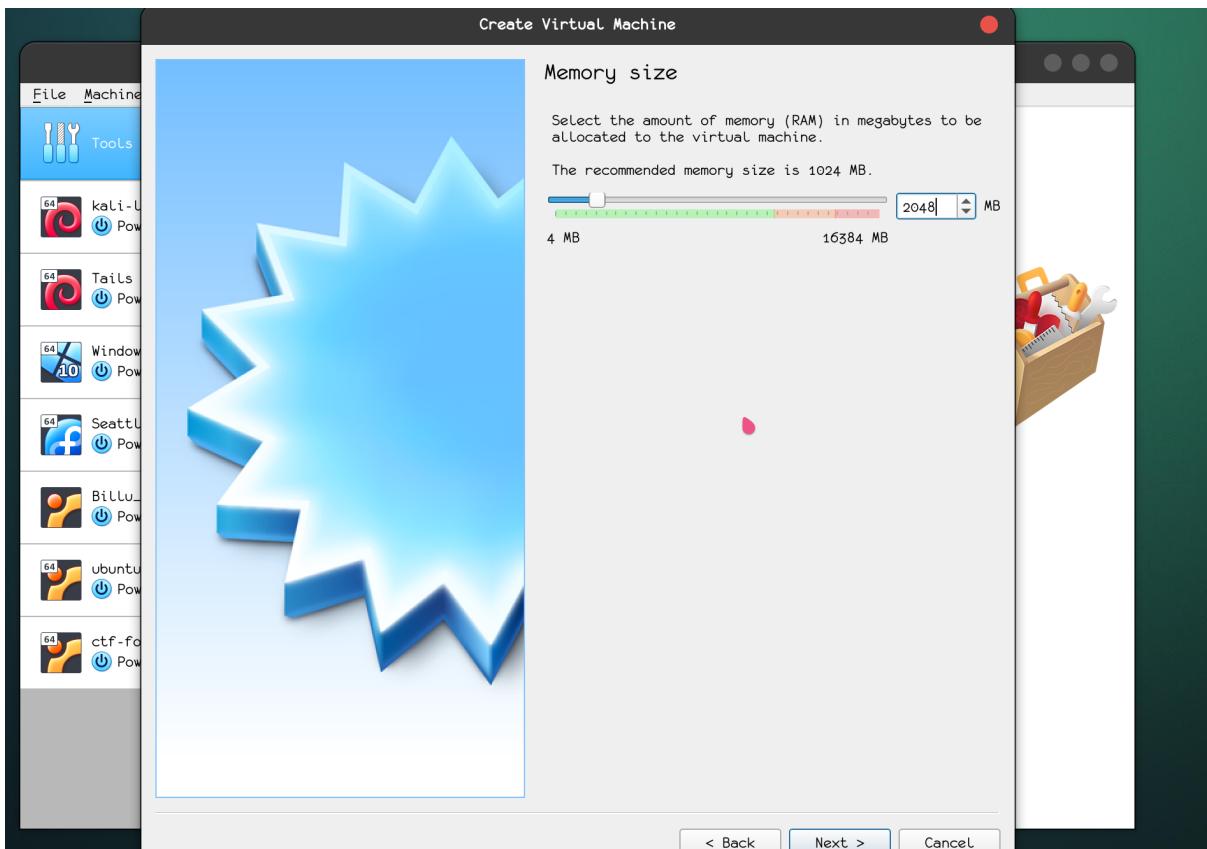


(you won't have the entries which I do on the right side, so just ignore them)

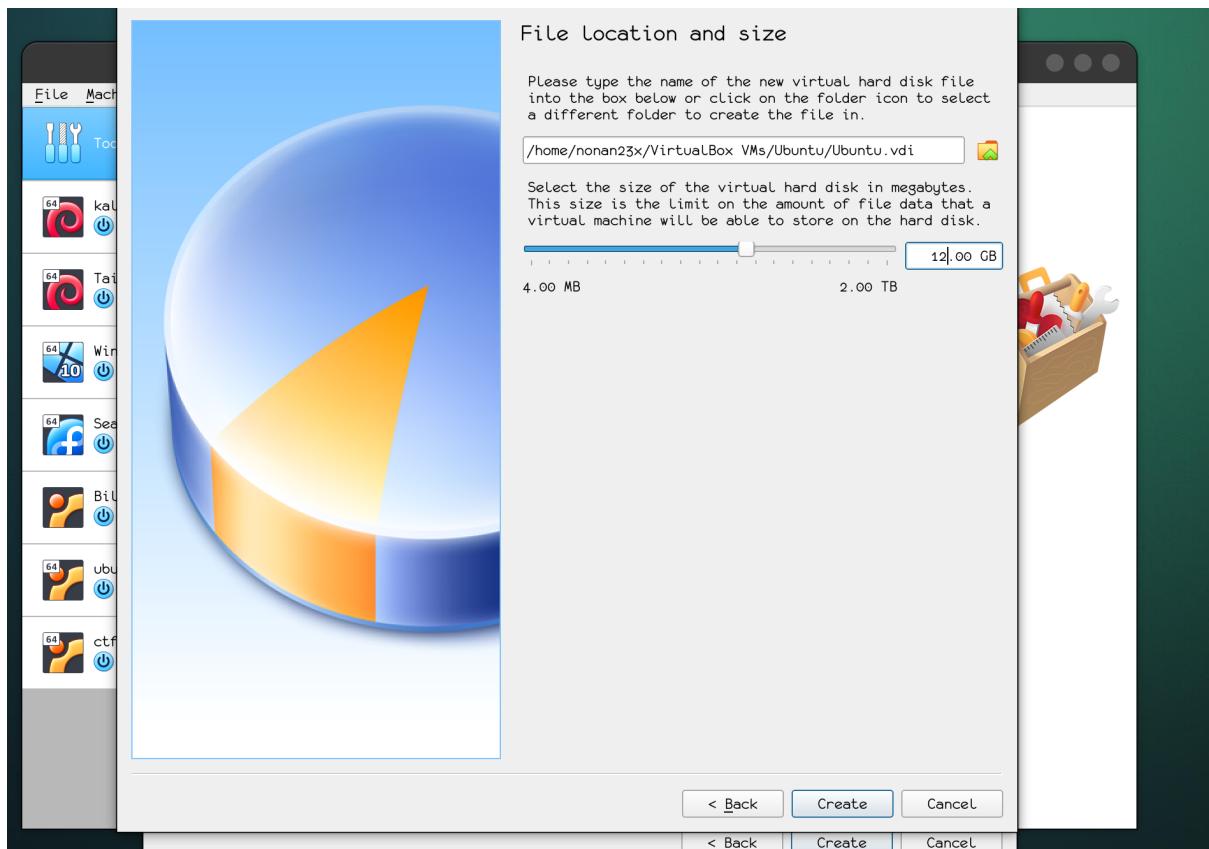
Click on the **New** button



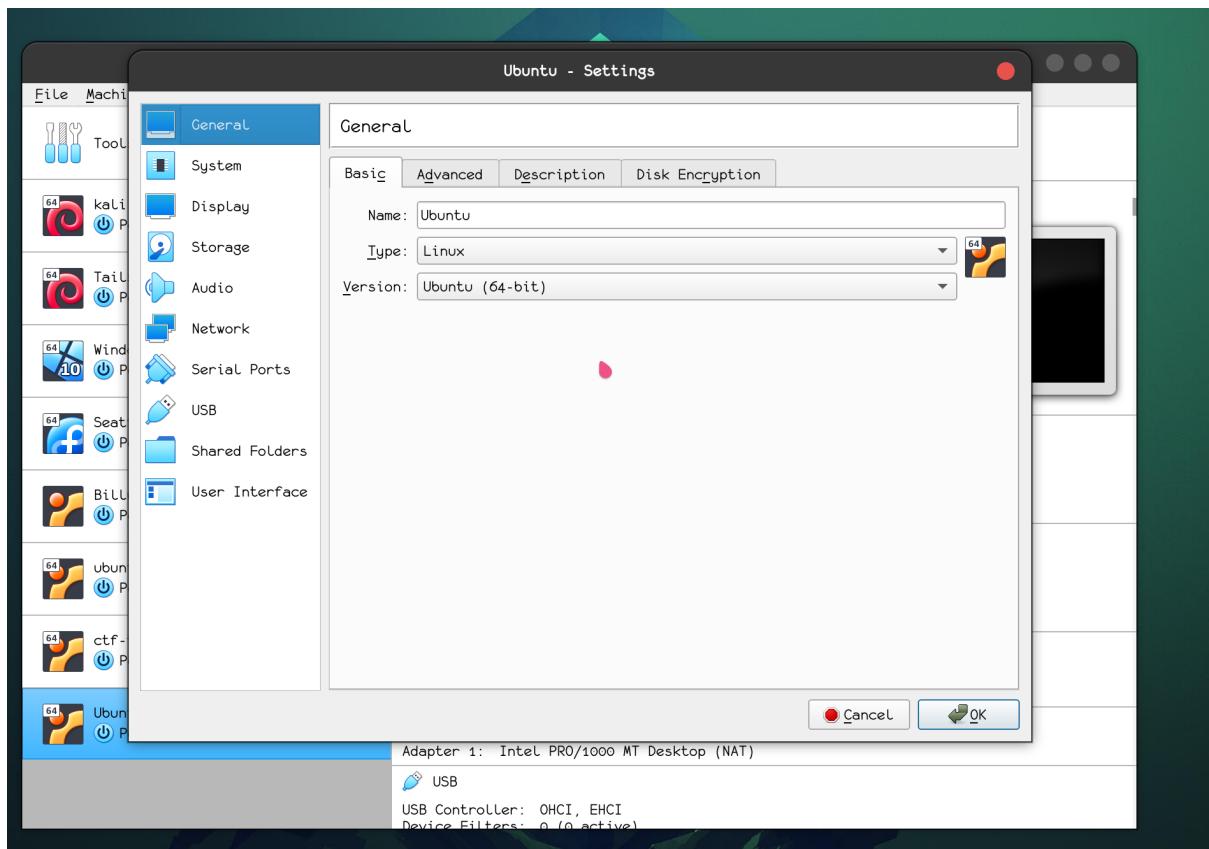
After clicking on new, type out Ubuntu as the name, and notice the **Type** and **Version** already got filled by themselves, click on **Next**



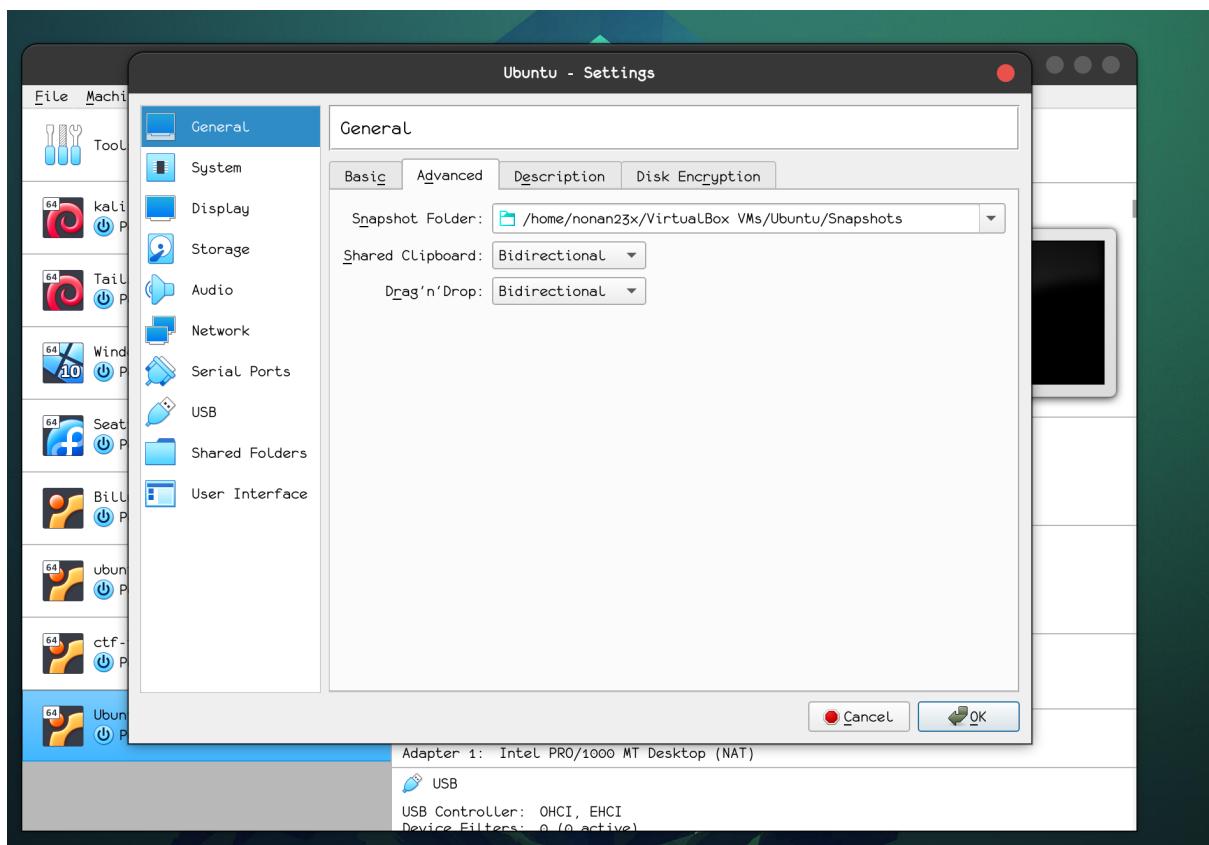
Allocate at least 2GB of ram, click **Next** > **Create** > **Next** > **Next** Allocate 12 GB, then create



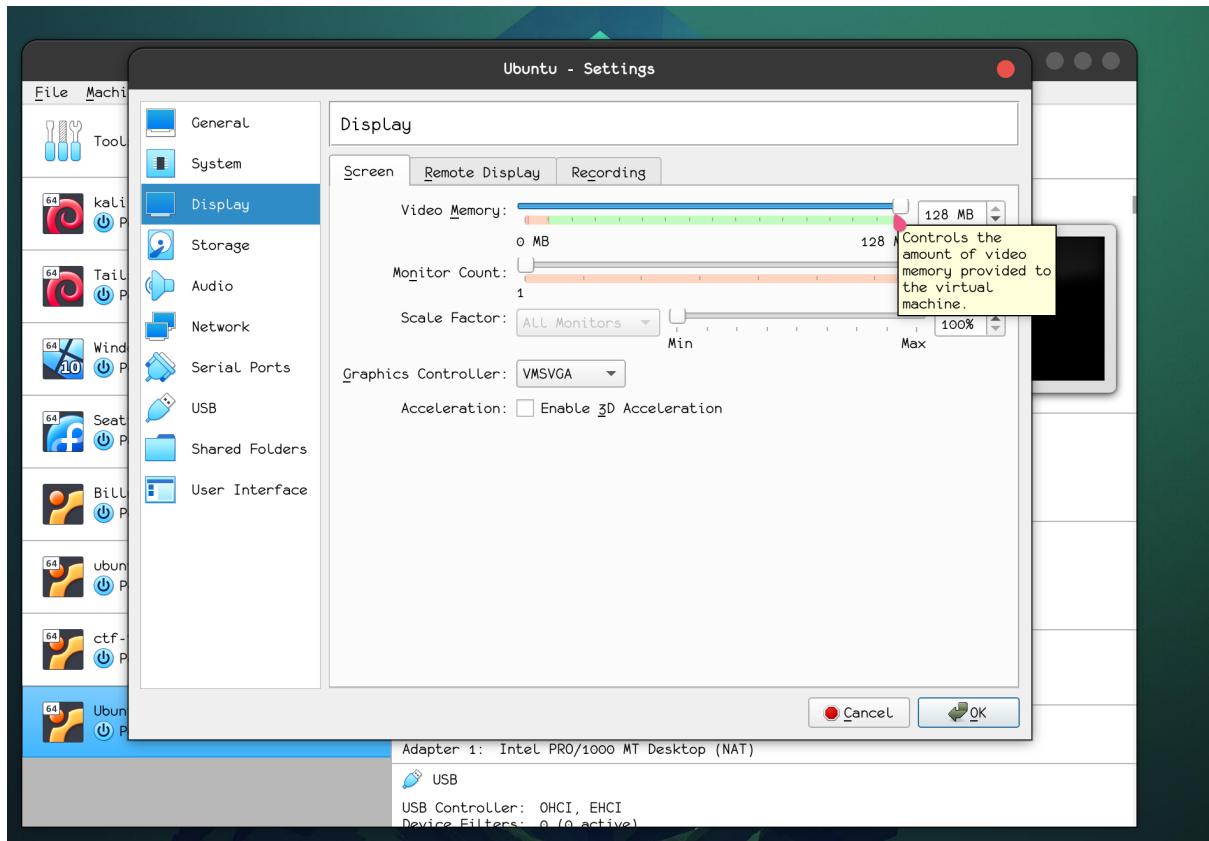
Now select the newly created entry that you have on the left side, And open the settings page, It would look like this



I'd like you to go to advanced and set the options to bidirectional



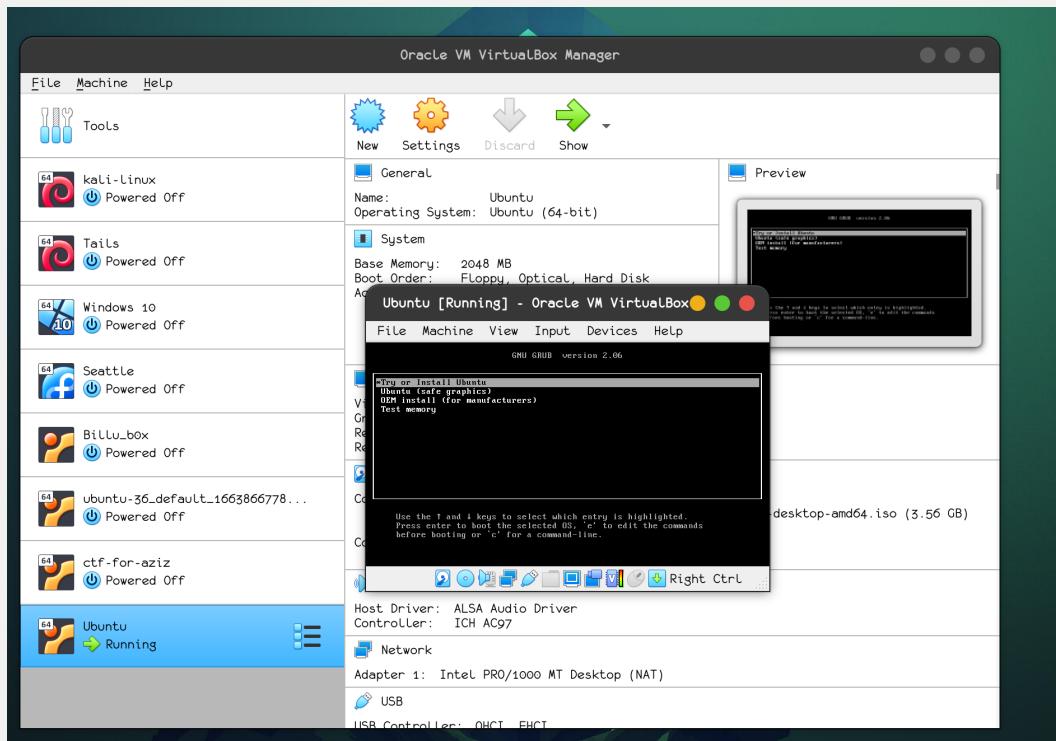
Then go to Display and allocate **video memory** to the fullest



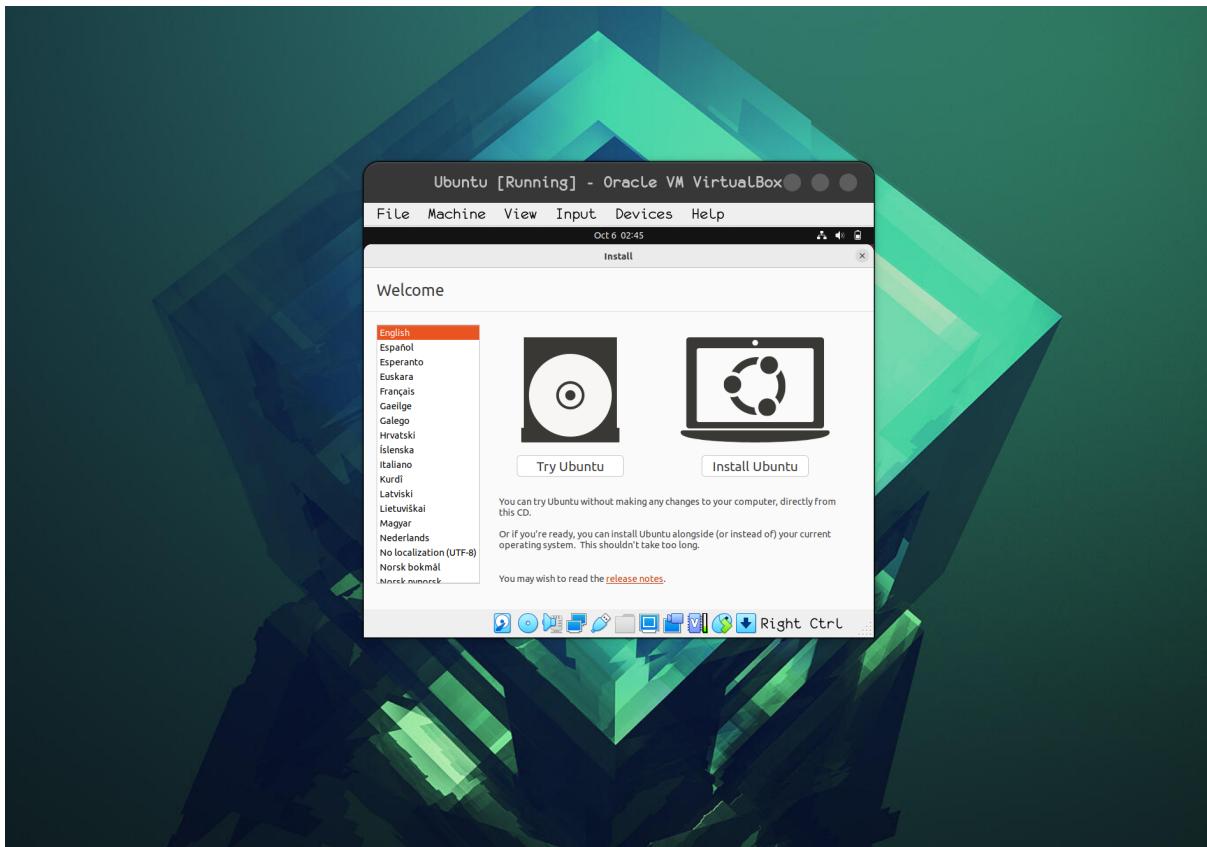
You can now click OK, and use the green arrow to start the machine. Now a window will pop up saying startup disk selected, this is where we have to select the **Ubuntu** ISO we downloaded from its website earlier, click on the folder icon, then select 'Add' then I hope you are able to navigate to the downloads directory and select the downloaded ISO file, if you can do so, then select it and run the machine with it



If you've done everything correctly, and if your system has enabled Virtualization technology, you will see the ubuntu page start up like this



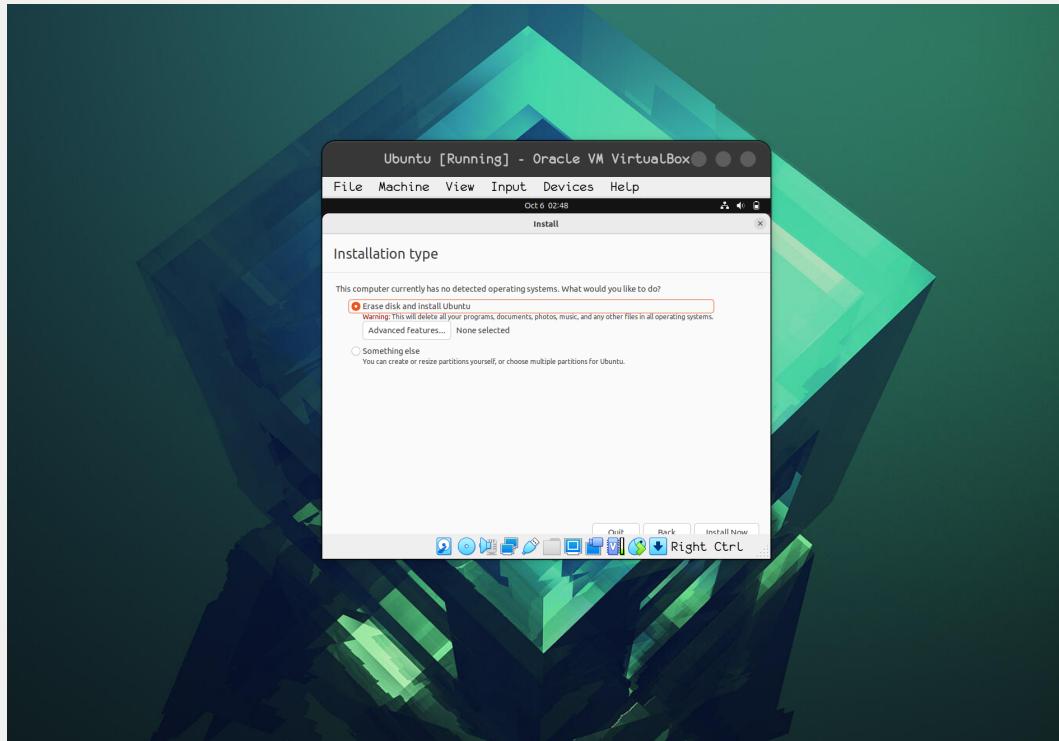
Wait for a while, you are now greeted by this page



As you can see we have everything small and resizing won't work, that's because now you have to install the actual Virtual machine in this step, I hope you are able to follow the on-screen instructions and install **Ubuntu**, this won't be hard, since it is targeted towards simplicity, beauty and abstraction, in case this is still ambiguous to you, I suggest following a tutorial on the internet



Click on Install Ubuntu and follow the instructions



Dont worry at this step, it won't do anything to your hard disk, just select the first option and hit **Install now** > continue

**This is gonna take some time so be patient!**

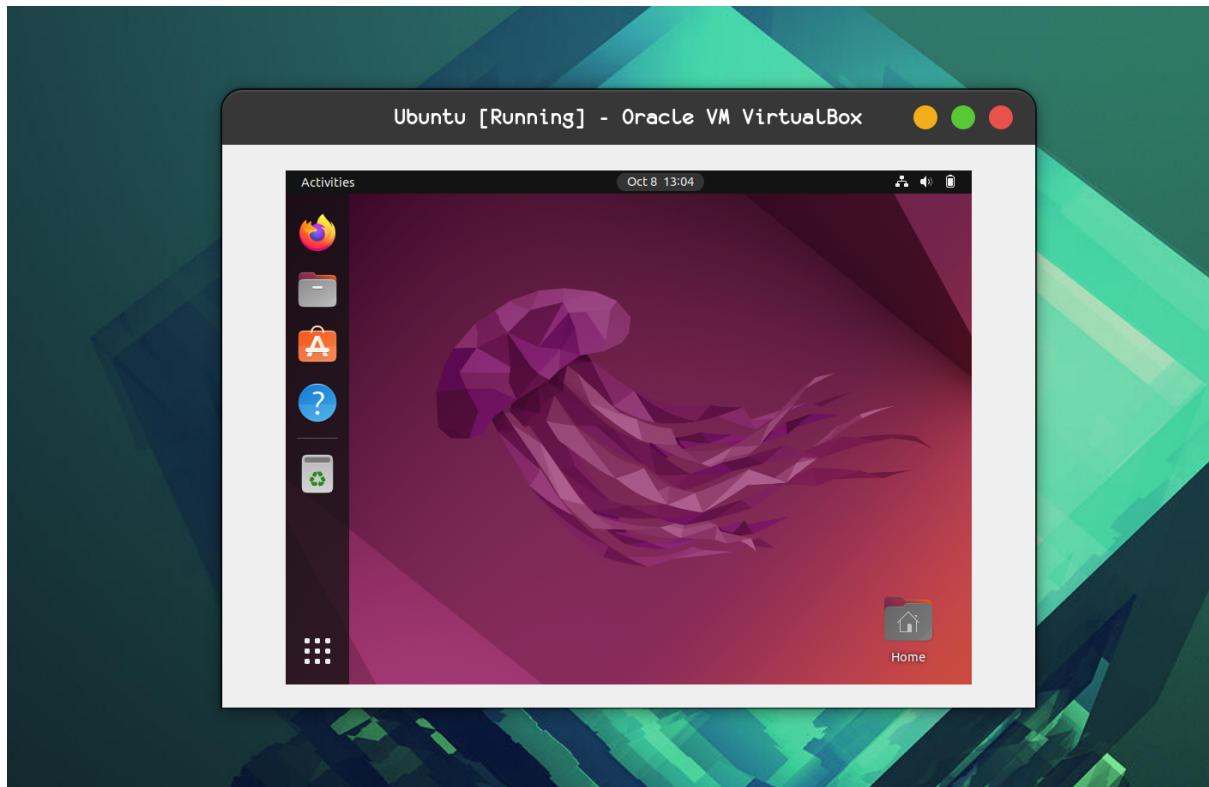
(After the process, a window will pop up within the virtual machine prompting you to restart, which you need to, and when you press it, a screen would say remove the installation media and hit enter, no need to do anything here, just hit enter) and now you've installed Linux on your computer using Virtualization

## Extras

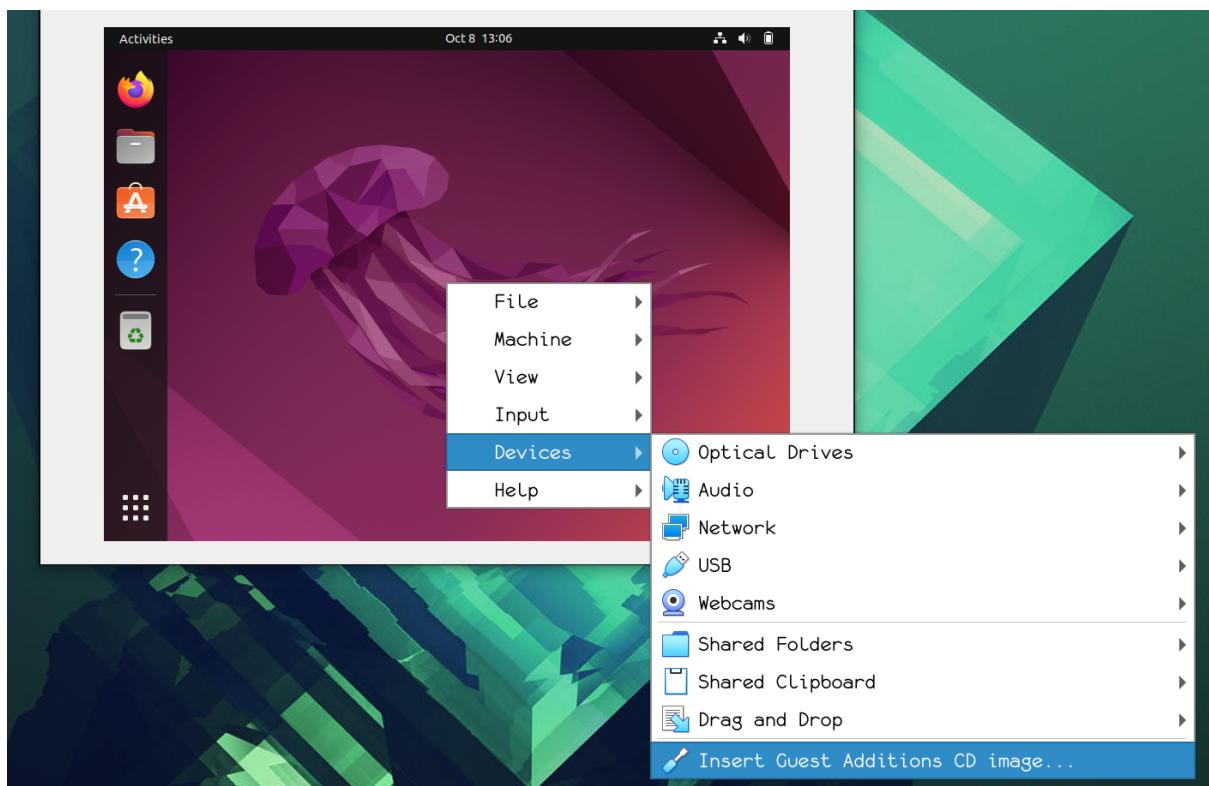


**If you want clean aesthetics and integrations between your main PC and Linux, If you want to drag and drop files to and from different machines and make the window resizable, you should follow this section, if not, you are free to skip over this**

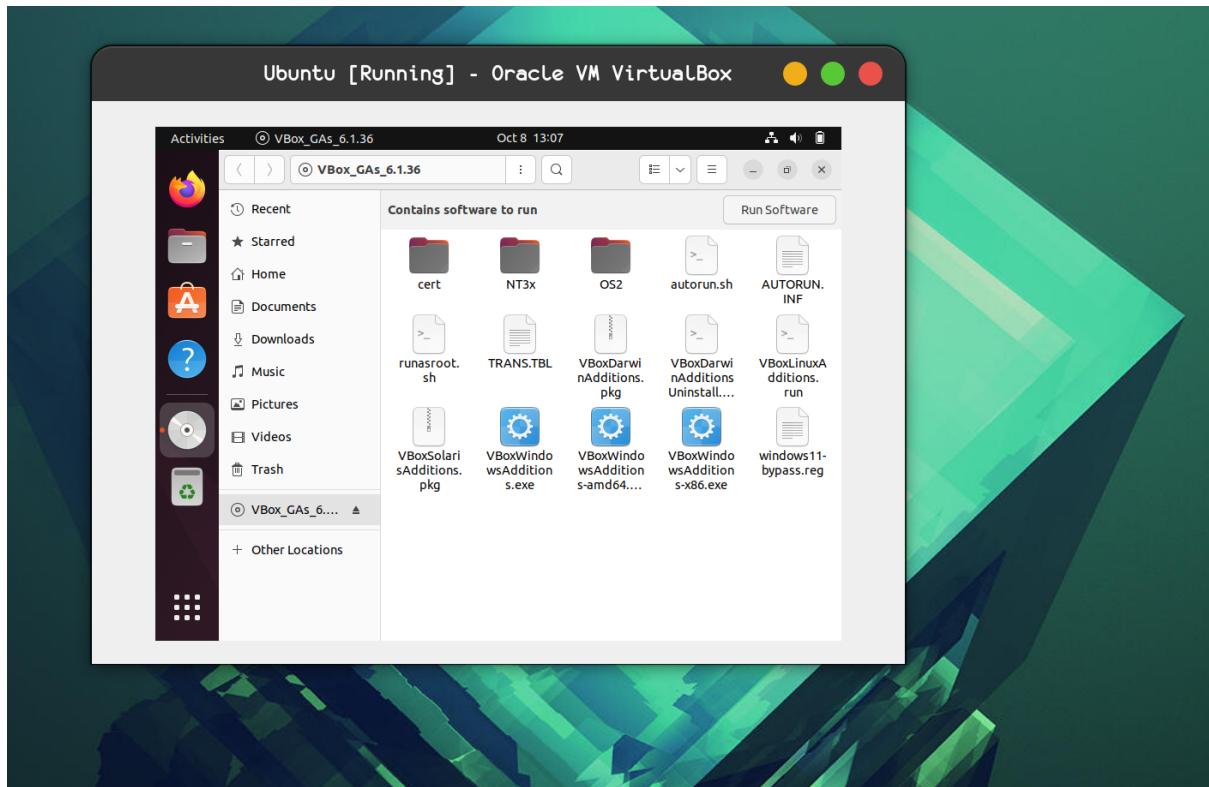
The default installation of ubuntu would look like this:



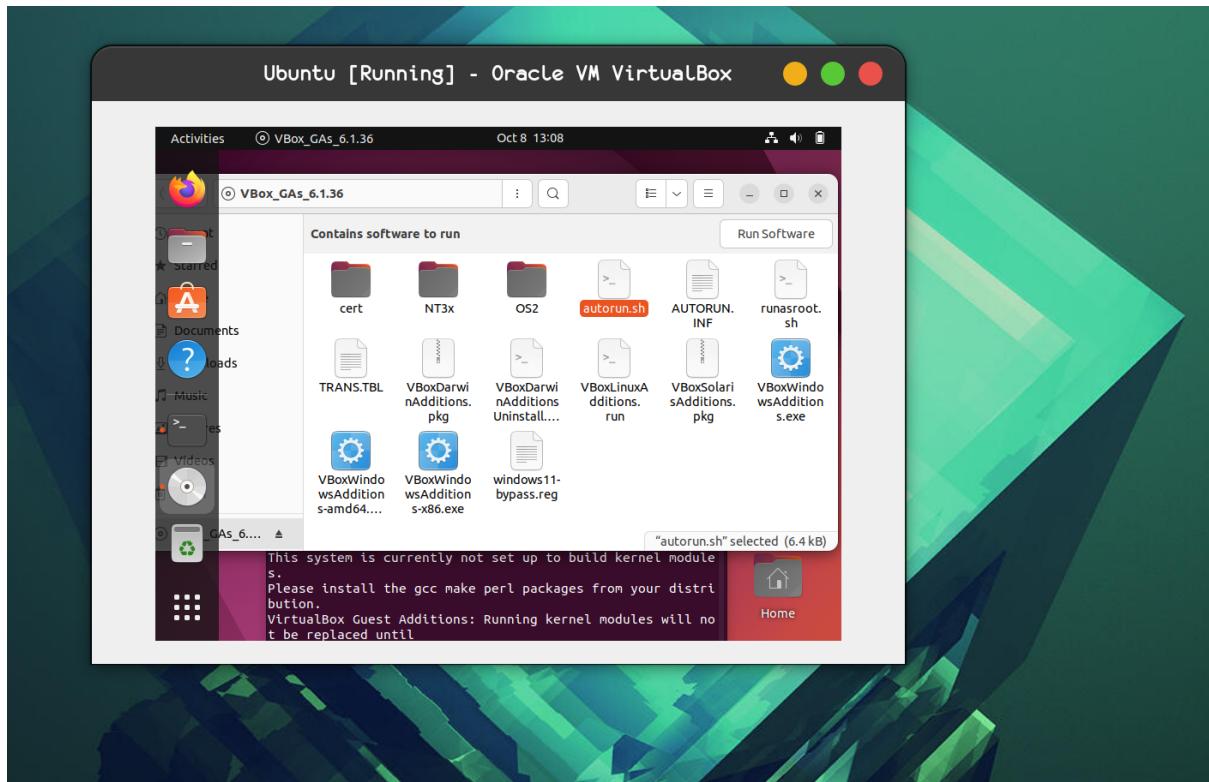
You would see a bar that says, File, menu, devices, etc, click on devices and insert guest additions



There would be an icon on the left bar, open it

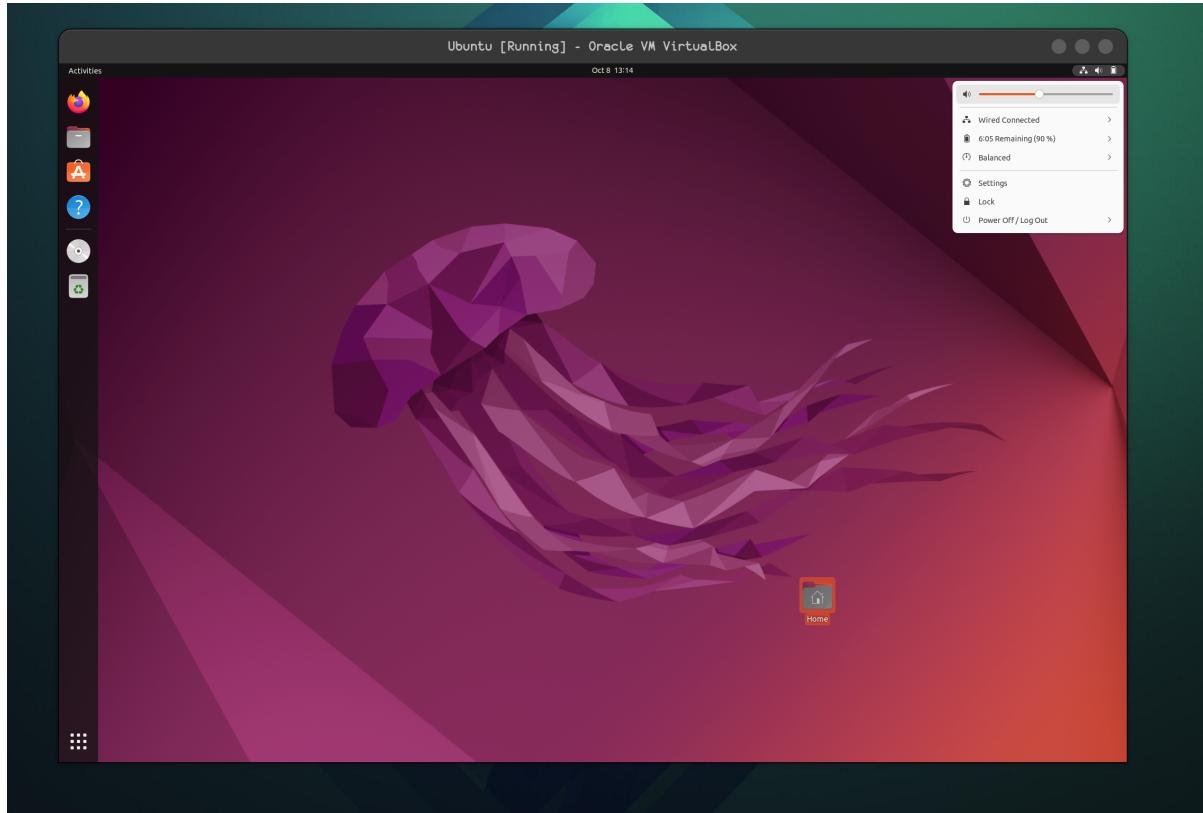


right click on autorun.sh and run as a program, It will ask for a password, so give it the password you registered during the setup and you're done



You'd see a terminal will open and perform some actions, after this screen just hit enter and restart ubuntu

You can see that you are now able to resize your [Ubuntu](#) machine as you wish

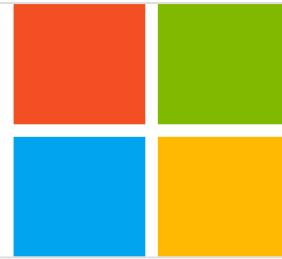


## Installing Linux via WSL



Although Installing Linux via [WSL](#) is the best option some people think, there's a limitation, you won't get a graphical user interface like this one, instead, you are locked with terminal access, If you are not able to enable virtualization, or simply if you do not want to, you can try setting up [WSL](#) (Windows Subsystem to Linux) on your PC

I won't be covering this here but I will attach few resources on that matter:



## Install WSL

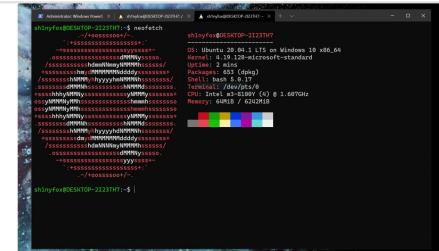
This guide will show you how to install a Linux distribution (such as Ubuntu, OpenSUSE, Kali, Debian, Arch Linux, and more) using the Windows Subsystem for Linux. WSL enables you to

 <https://learn.microsoft.com/en-us/windows/wsl/install>

## How to install Linux WSL2 on Windows 10 and Windows 11

WSL2 is a significant upgrade over the initial version of the Windows Subsystem for Linux but installing it requires a bit of process. Whether you have WSL currently running or not, ...

 <https://www.windowscentral.com/how-install-wsl2-windows-10>



## Install Ubuntu on WSL2 on Windows 10 | Ubuntu

Windows Subsystem for Linux (WSL) allows you to install a complete Ubuntu terminal environment in minutes on your Windows machine, allowing you to develop cross-platform

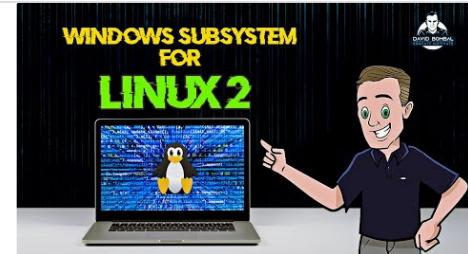
 <https://ubuntu.com/tutorials/install-ubuntu-on-wsl2-on-windows-10#1-overview>



## WSL 2: Getting started

The Windows Subsystem for Linux 2 (WSL 2) is here. It's now easy to get started with Linux and integrate Ubuntu 20.04 LTS quickly from within Windows 10. WSL2 is part of Windows 10,

 [https://youtu.be/\\_fntjriRe48](https://youtu.be/_fntjriRe48)



# Recap



In this writeup we,

- Enabled virtualization
- Installed Linux using Virtualization (or)
- Installed Linux using WSL
- Enabled seamless transitions and resizable window

Now you have everything you need to embark on this journey, all that's left is for you to practise and put in the effort

