

## Experiment 06

**Learning Objective:** Use of Anonymity tools like Hide.me, AnonymoX, Tmac and Tails OS to Enhance Privacy, Anonymity, Protection from ISP Throttling, Secure Public Wi-Fi, and Safeguarding Personal Data.

**Tools:** Hide.me, AnonymoX, Tmac, Tails.

### **Theory:**

It is important to secure our identity, i.e., our IP Address before attacking the target or before doing any other malicious things. We all use torrents daily, some of you might have come across the websites which is blocked in our country like the one which is showed below. So, we have to change our IP address to we can visit blocked websites. To hide our identity, we use something called as a proxy.

### **Types of Proxy:**

**Web proxy:** Web proxies provide a quick and easy way to change your IP address while surfing the Internet. Web proxies are extremely portable as they do not require the installation of additional software or modification to computer networking settings. Web proxies are limited to specific tab of your browser. There are many which web proxy sites, like hide.me, proxysite.com etc.

**IP proxy:** Like in web proxy, we used websites like hide.me which allowed us to change our IP ADDRESS. In IP proxy, we will use an add-on named: anonymoX. IP proxies enables proxy setting to whole browser.

**MAC Address Spoofing:** MAC spoofing is a technique for changing a factory-assigned Media Access Control (MAC) address of a network interface on a networked device.

**Tails - The Amnesic Incognito Live System:** It is a security-focused **Debian-based Linux distribution** that helps to maintain privacy and anonymity. It is designed to be booted as a live USB and DVD, and it does not leave a digital footprint on the machine unless it is explicitly ordered to. It can also be operated as a virtual system, but it comes with its own set of security concerns. It only links to the internet via the Tor anonymity network.

## Learning Objective 01: Using Web Proxy and Other Proxy Extension in browser

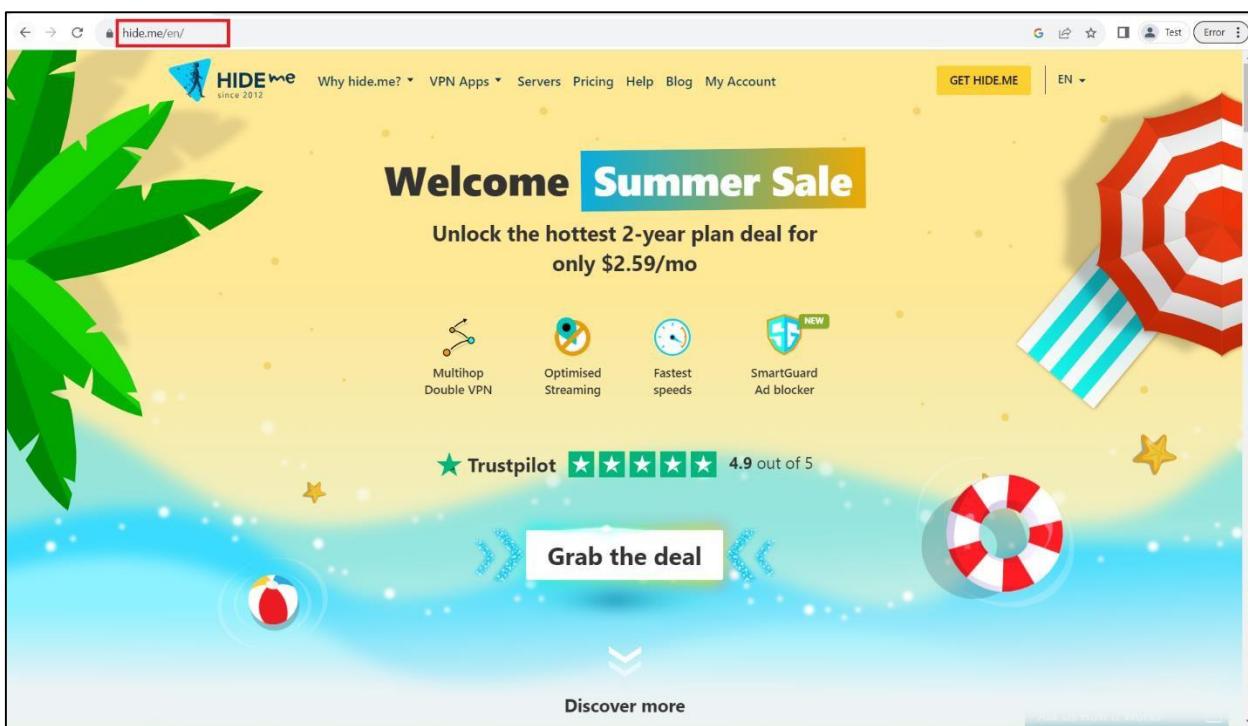
### Using Hide.me

It is a feature-rich VPN service that prioritizes user privacy and security. With strong encryption, a strict no-logs policy, and multiple VPN protocols, it ensures the anonymity and protection of online activities. The global server network allows access to geo-restricted content, while unlimited bandwidth ensures seamless browsing, streaming, and downloading. Compatible with various devices, hide.me offers split tunneling, ad, and malware blocking and secure Wi-Fi making it a reliable choice for safeguarding internet connections and ensuring a secure online experience.

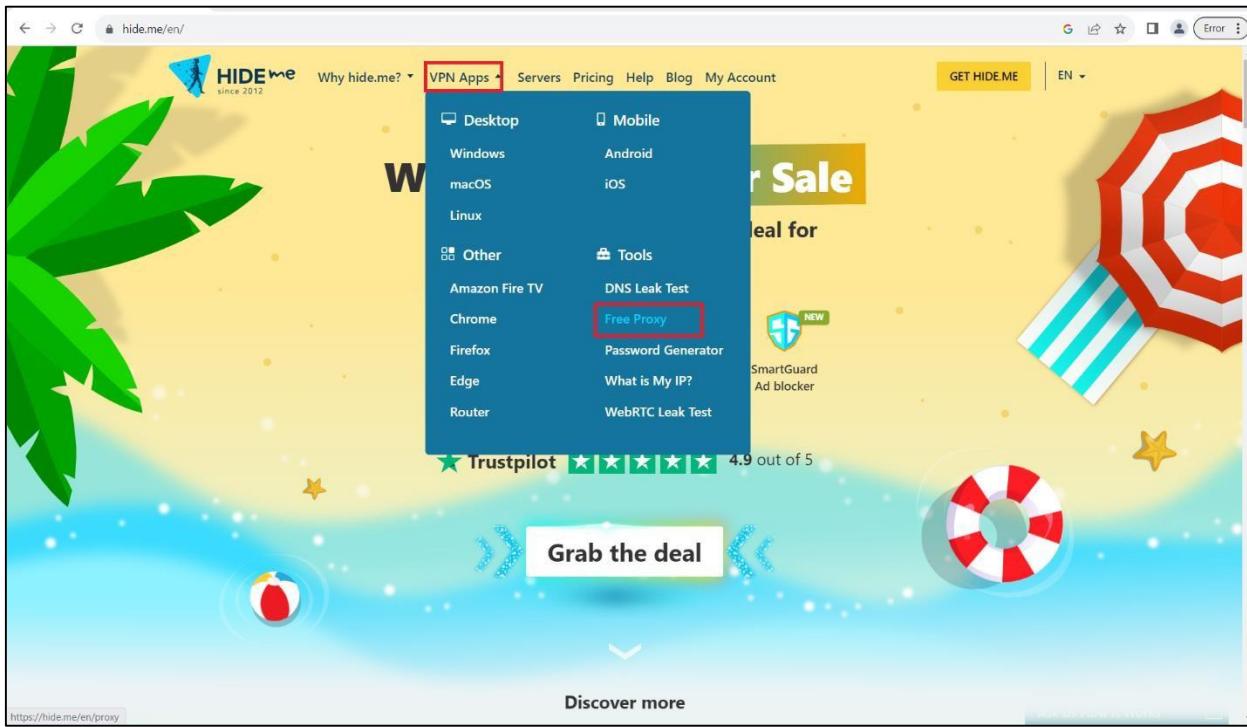
### Steps to use to Hide.me

If we want to use the hide.me VPN, we can use the following steps:

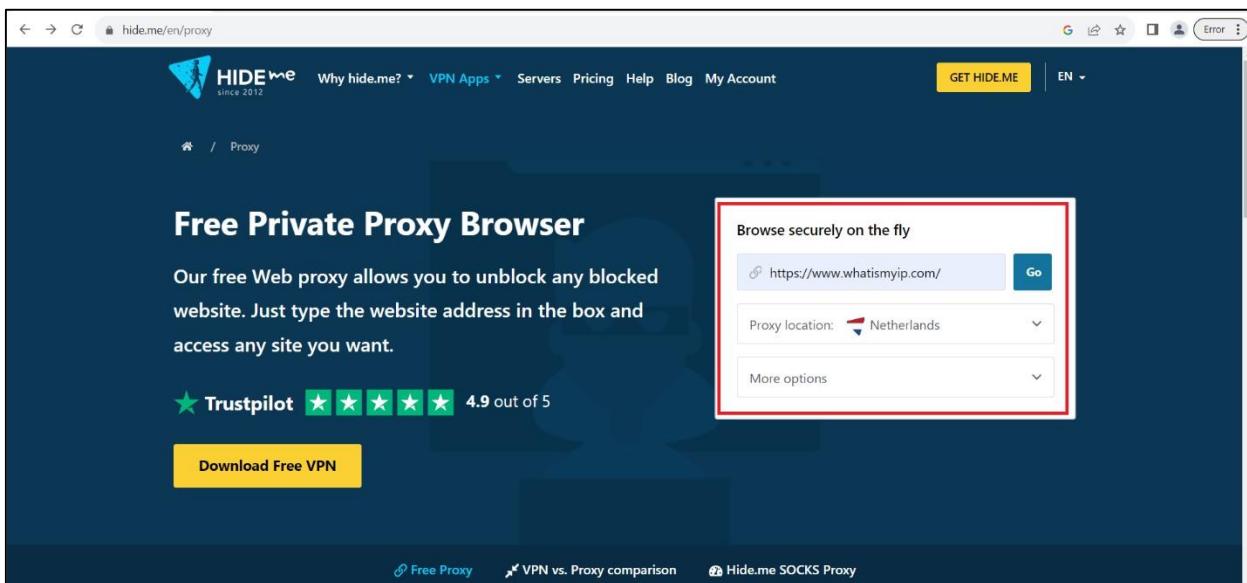
**Step 1:** First, we need to go to the hide.me Website through the <https://hide.me/en/> in the system's internet browser. It is the link where we will use the Web based proxy.



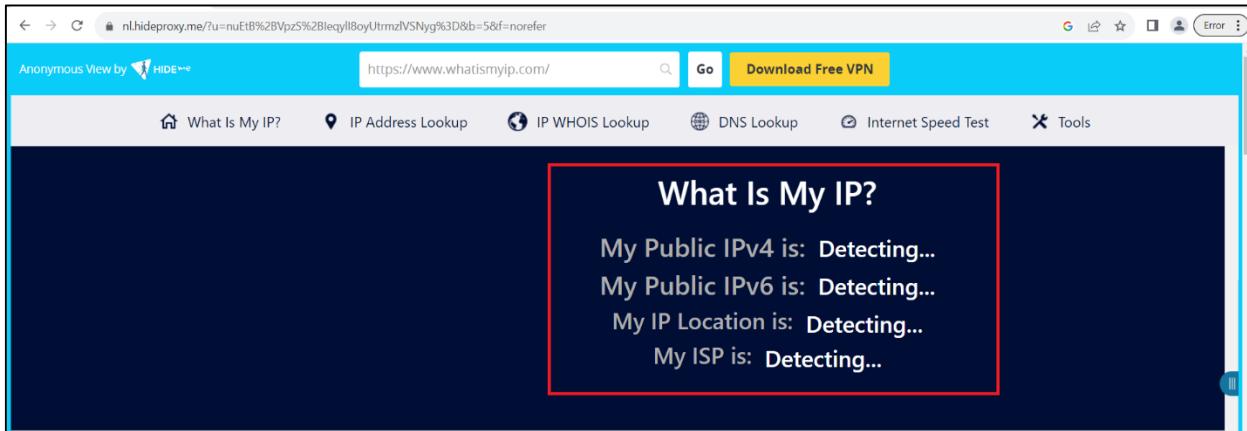
**Step 2:** Click on the VPN Apps => Free Proxy, which appears on a navbar on the page.



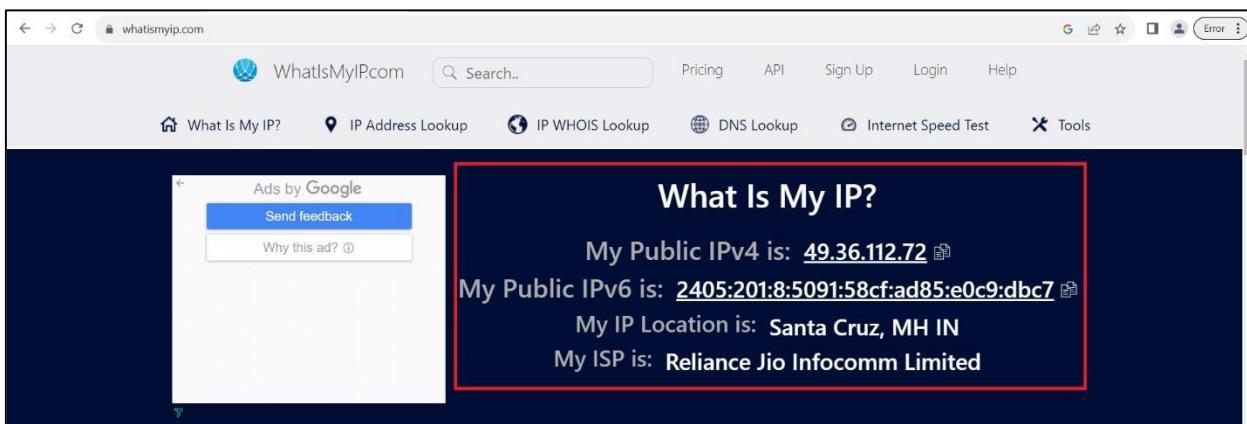
**Step 3:** Now, enter a website link and change the location and click on Go.



**Step 4:** This page will show you another IP address which is proxy address (not the one you are using right now).



**Step 5:** To know your original IP address, open a new tab and scan for your IP address. This page will show you the original IP address of your device.



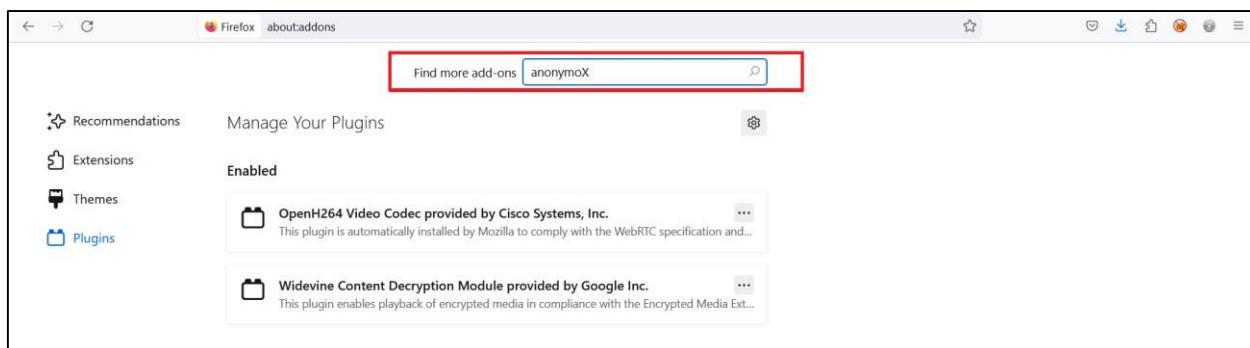
## Using AnonymoX

AnonymoX offers a range of features to enhance online privacy and browsing freedom. With a click of a button, users can change their IP address and location, providing anonymity and access to geographically restricted content. AnonymoX supports multiple proxy servers worldwide, ensuring reliable and fast connections. It also provides the option to block website elements, like social media buttons and tracking scripts, for a more private and streamlined browsing experience. Additionally, the extension encrypts data transmissions, securing internet activities from potential threats. Whether you want to bypass content restrictions, protect your identity, or enjoy a more secure browsing environment, AnonymoX delivers a versatile and user-friendly solution.

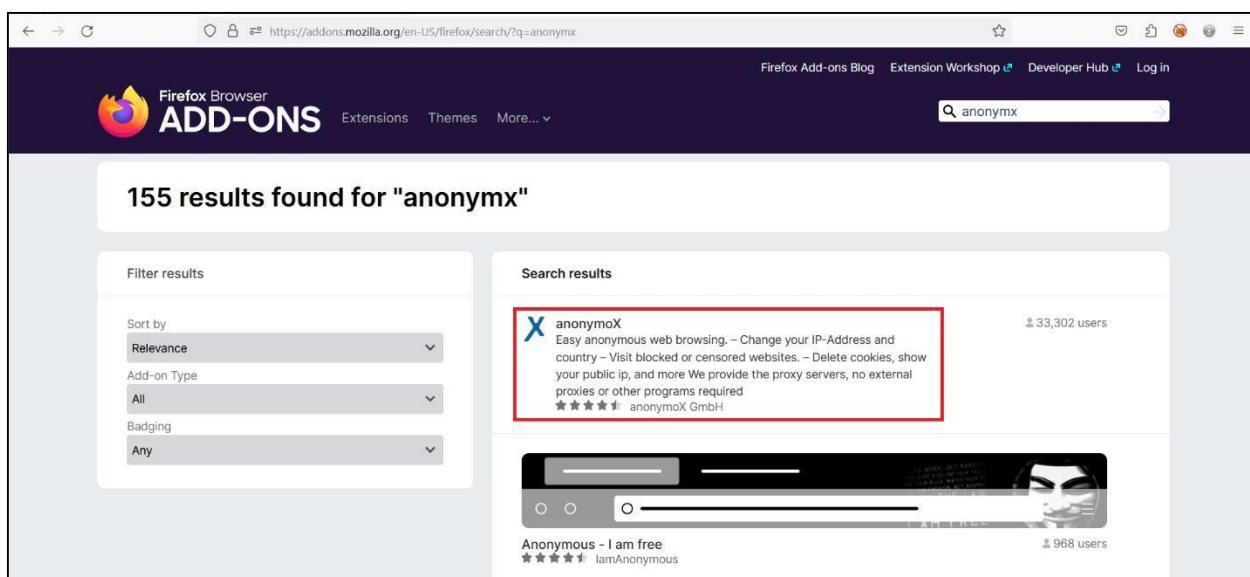
### Steps to use to AnonymoX

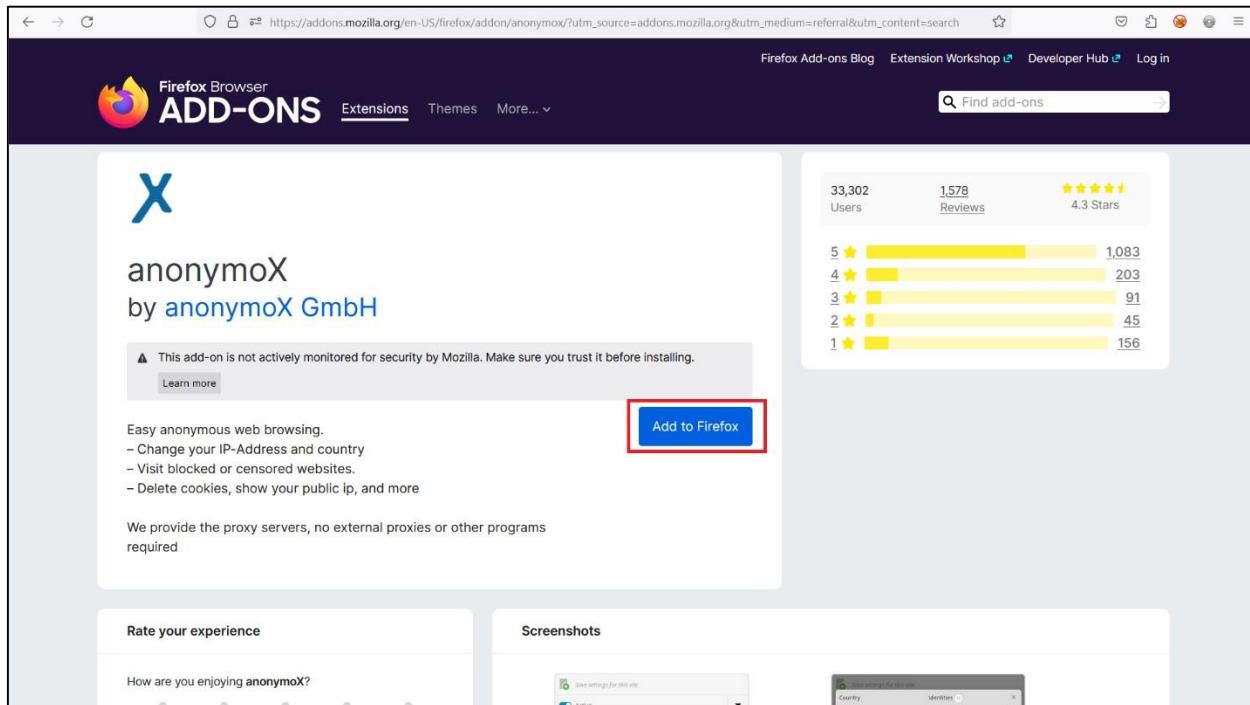
If we want to use the AnonymoX, we can use the following steps:

**Step 1:** Then click the three-line icon in the top corner, then select menu “Add-ons”.

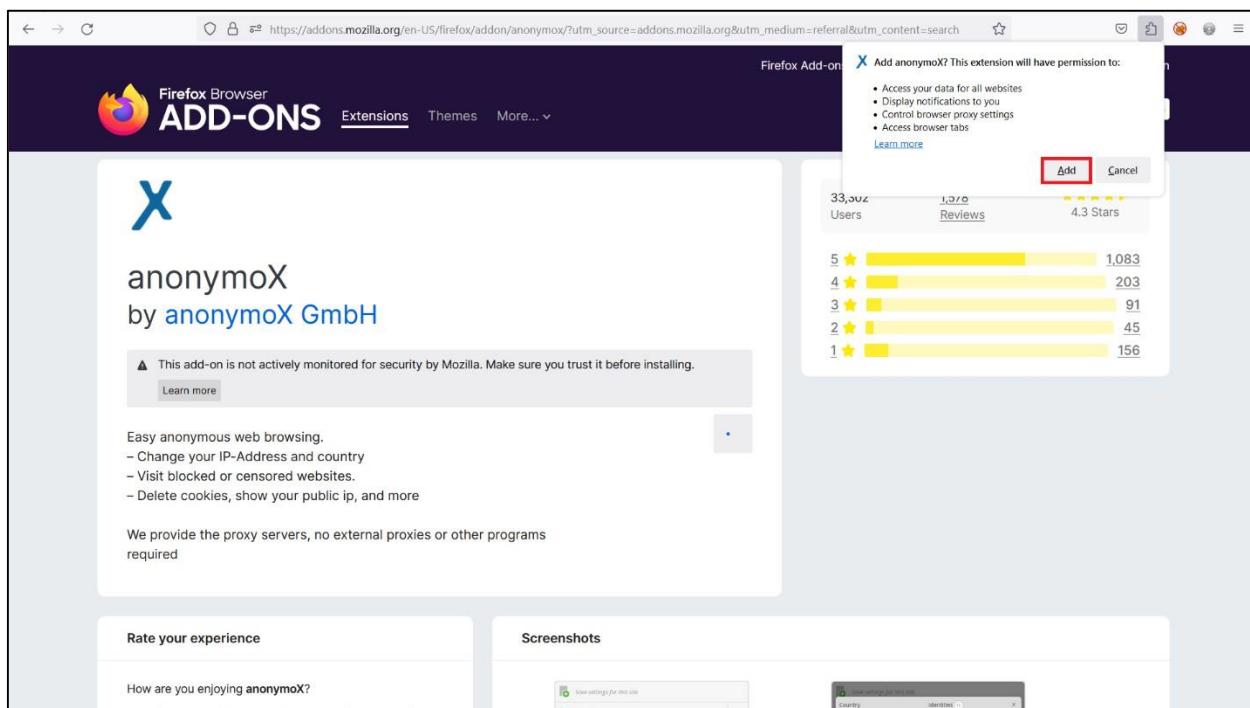


**Step 2:** Please choose “Extensions” then in the search field please write “Anonymox” to search for it and press enter to continue.



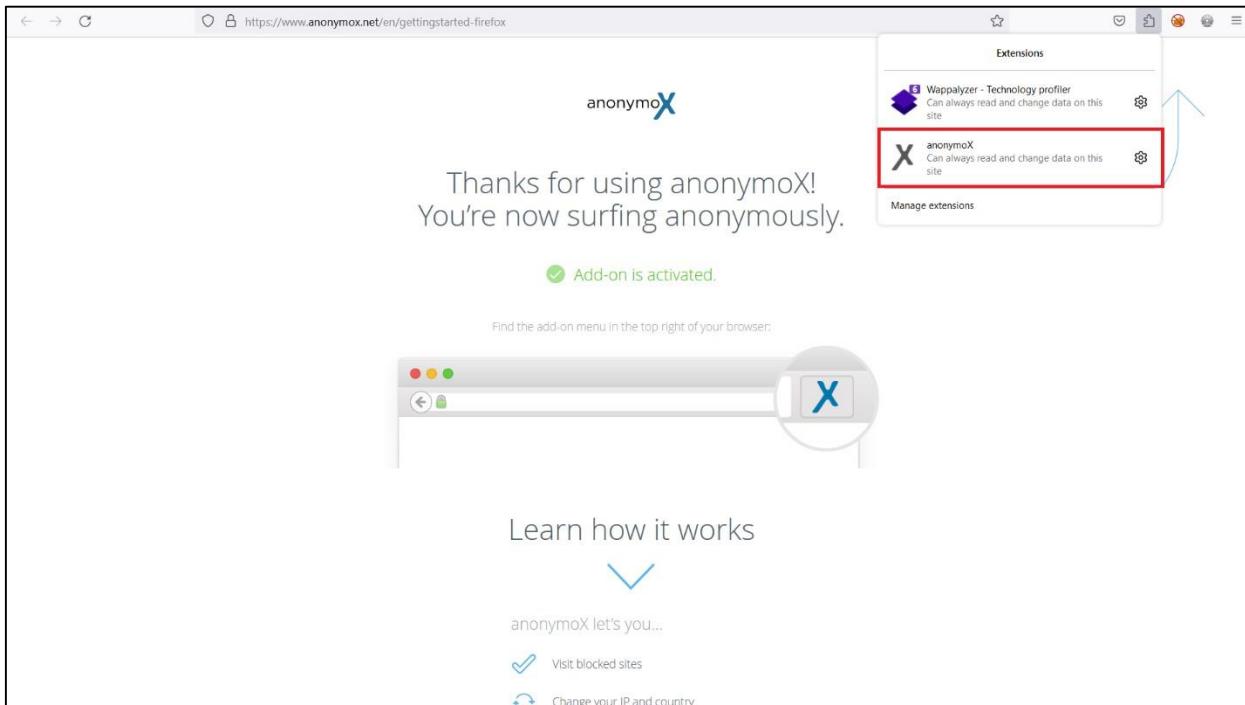
**Step 3:** Click on Add to Firefox.

The screenshot shows the Firefox Add-ons page for the 'anonymox' extension. The extension has 33,302 users, 1,578 reviews, and a 4.3 Stars rating. The 'Add to Firefox' button is highlighted with a red box. The extension description mentions easy anonymous web browsing, changing IP-Address and country, visiting blocked or censored websites, and deleting cookies. It also states that no external proxies or other programs are required. The 'Screenshots' section shows two screenshots of the extension in use.

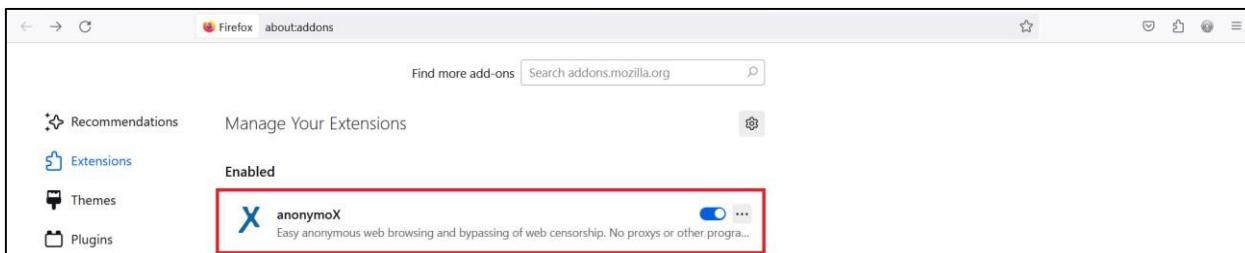
**Step 4:** Click on Add in the prompt

The screenshot shows a permission prompt from Firefox asking if the user wants to add the 'anonymox' extension. The prompt lists several permissions that will be granted: Access your data for all websites, Display notifications to you, Control browser proxy settings, and Access browser tabs. The 'Add' button is highlighted with a red box.

**Step 5:** You can see that anonymoX is installed successfully.



**Step 6:** Check whether it is enabled by default. If not, then enable it.



**Step 7:** Check your IP address on the web. Your IP address gets changed on enabling the plugin.



## Learning Objective 02: Using TMAC and MAC Changer to change MAC Address

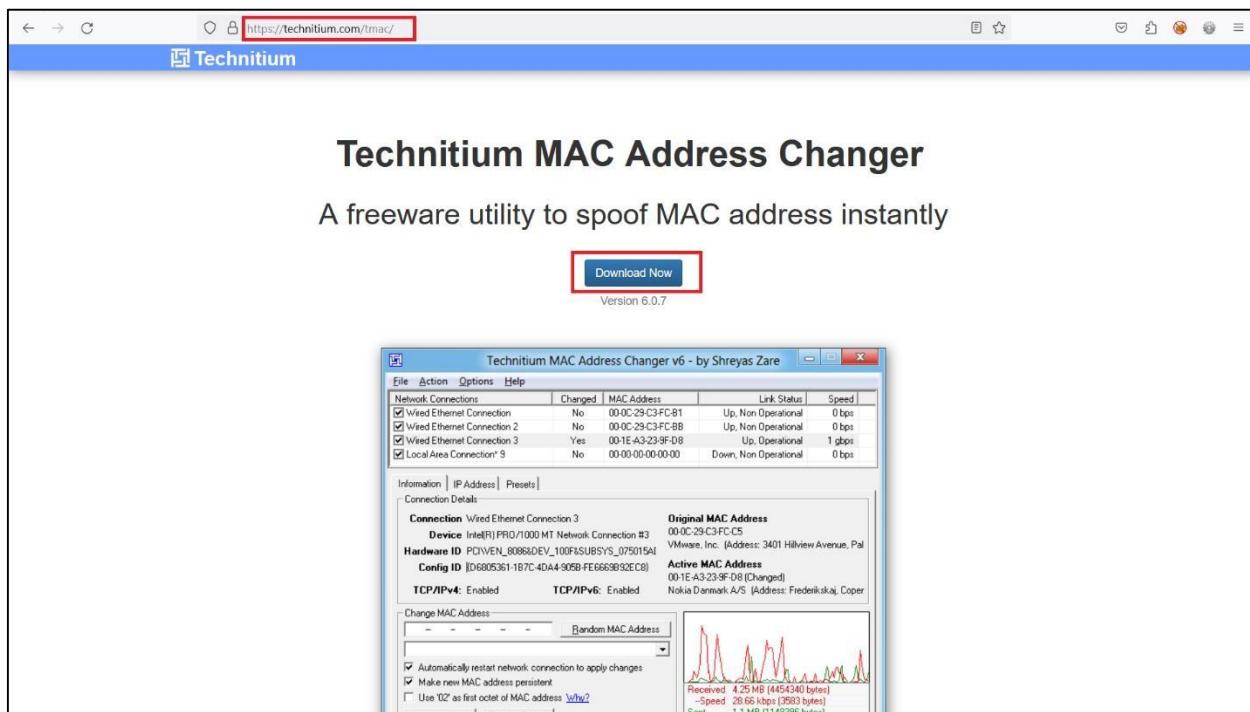
### Using TMAC

TMAC (Technitium MAC Address Changer) is a network tool that enables users to modify the Media Access Control (MAC) address of their network adapter. With TMAC, users can easily change their MAC address to enhance privacy, bypass MAC-based restrictions, or troubleshoot network issues. The tool supports various network adapters and provides options to generate random MAC addresses or set custom ones. TMAC also allows users to restore their original MAC address or revert to the default settings. With its user-friendly interface and reliable functionality, TMAC offers a straightforward solution for MAC address modification and network management.

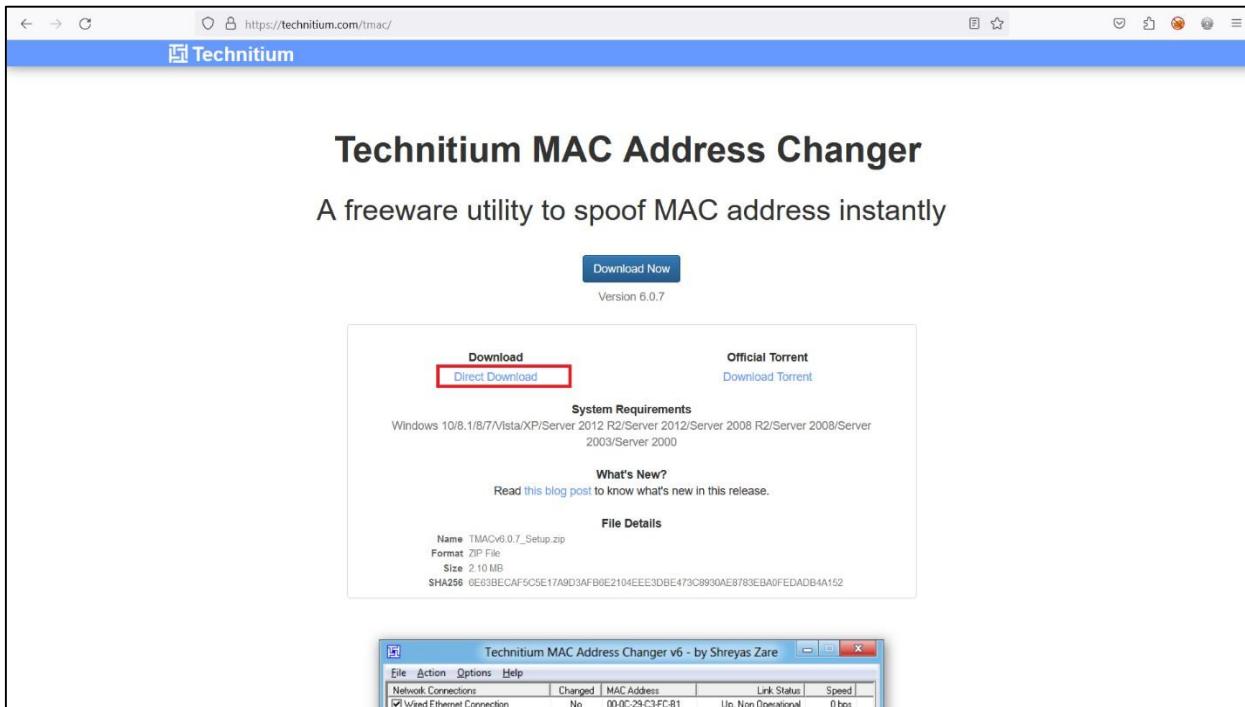
### Installation of TMAC

If we want to install the TMAC in windows, we can use the following steps:

**Step 1:** First, we need to go to the TMAC Website through the <https://technitium.com/tmac/> in the system's internet browser. It is the link where we will download the TMAC setup file.



**Step 2:** Click on the direct download button to download setup file.



The screenshot shows the official website for Technitium MAC Address Changer. At the top, there's a navigation bar with links like Home, About, Products, Services, Contact, and Support. Below the navigation, the main title is "Technitium MAC Address Changer" followed by the subtitle "A freeware utility to spoof MAC address instantly". A prominent blue "Download Now" button is at the top right. Below it, a smaller button says "Version 6.0.7". In the center, there are two download options: "Download" and "Official Torrent", with "Direct Download" highlighted with a red box. Underneath these, there's a section for "System Requirements" listing Windows versions from 2000 to 2012. A "What's New?" section includes a link to a blog post. At the bottom, there's a "File Details" table with columns for Name, Format, Size, and SHA256 hash. The table shows one entry: Name: TMACv6.0.7\_Setup.zip, Format: ZIP File, Size: 2.10 MB, and SHA256: 0E83BECAF5C5E17A9D3AFB6E2104EE3DBE473C8930AE8783EBA0FEDADB4A152. Below the table, a screenshot of the application window titled "Technitium MAC Address Changer v6 - by Shreyas Zare" is shown, displaying network connection details.

**Step 3:** Now, extract the zip file we just downloaded.



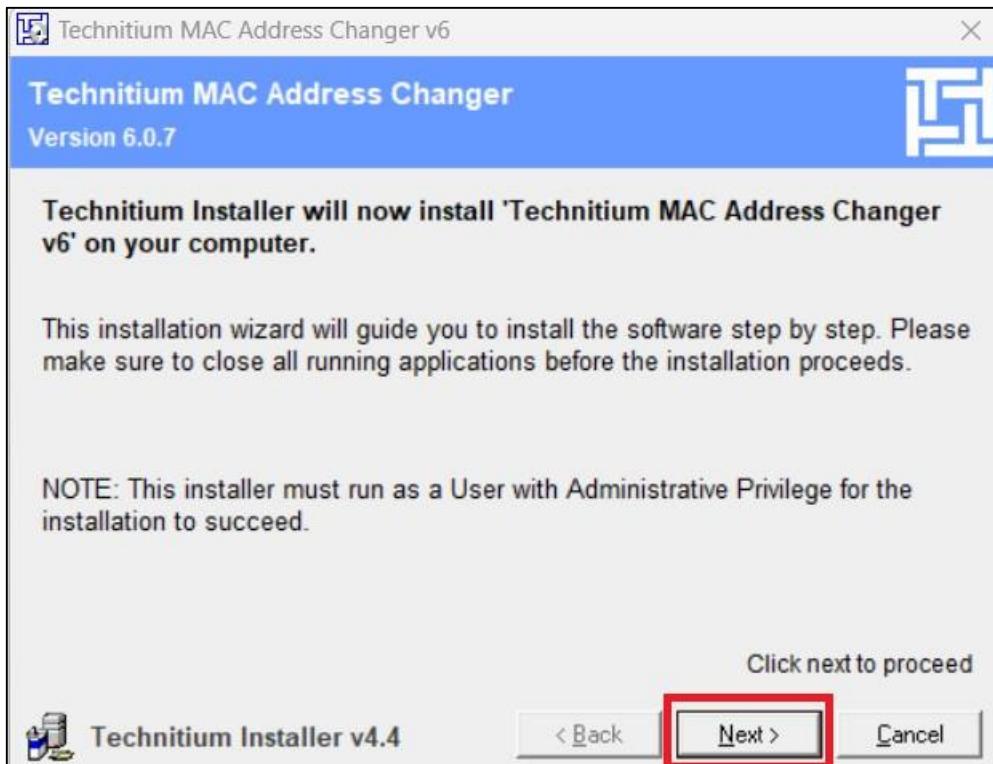
The screenshot shows a Windows File Explorer window with the path "This PC > OS (C) > Users > jashs > Downloads". Inside the Downloads folder, there is a single file named "TMACv6.0.7\_Setup". This file is highlighted with a red box.

**Step 4:** launch the application file.

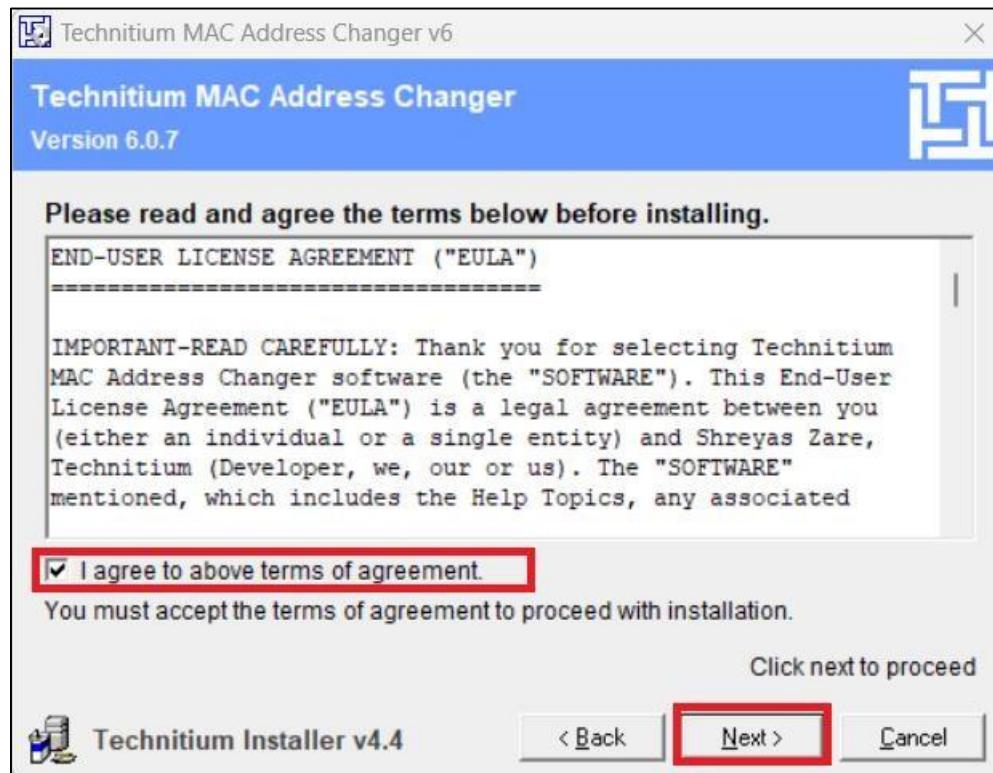


The screenshot shows the same Windows File Explorer window as the previous step, but now the "TMACv6.0.7\_Setup" file has been extracted. It is no longer a ZIP archive but an "Application" file, as indicated by the file type column in the File Explorer. The file is highlighted with a red box.

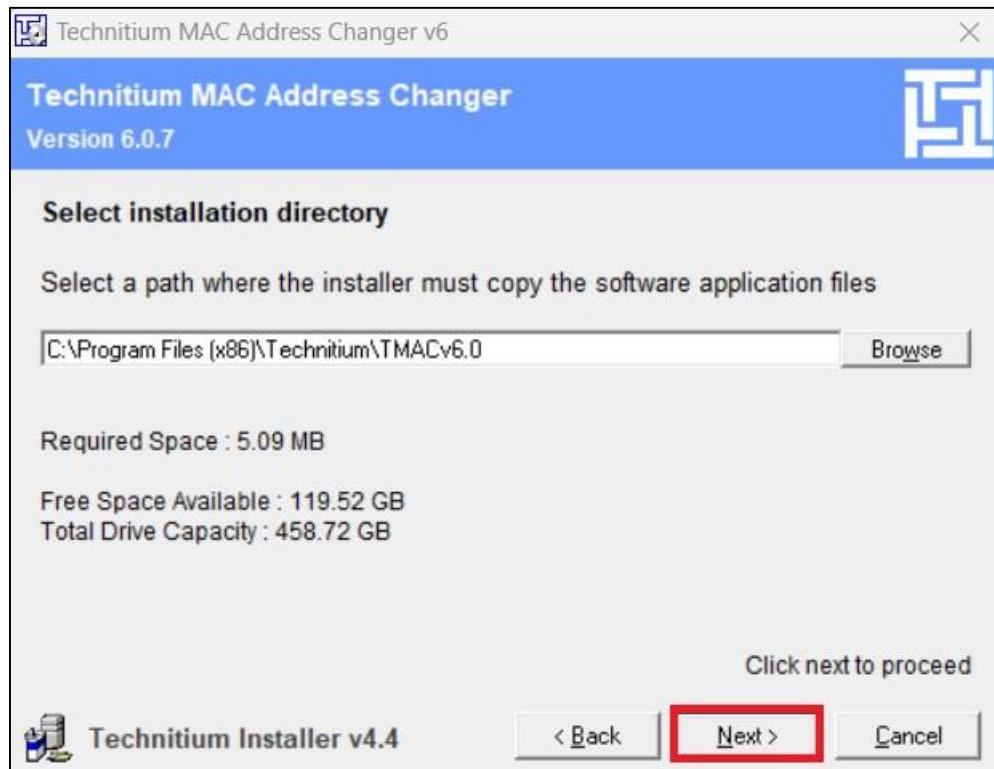
**Step 5:** Click on the Next button.



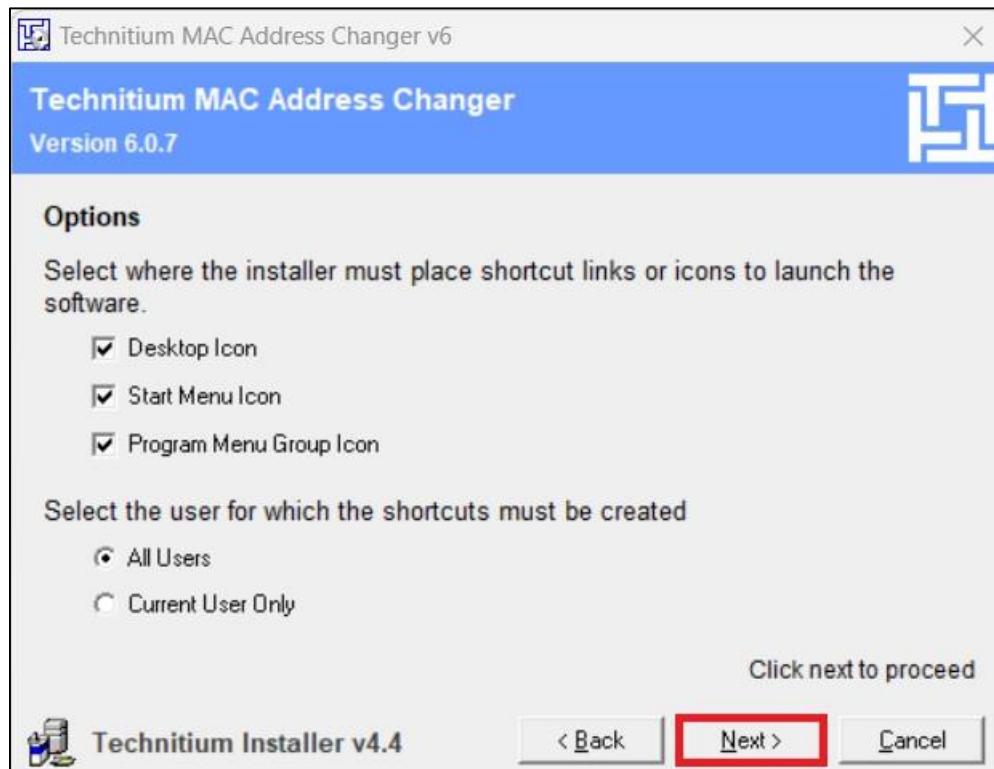
**Step 6:** Select the checkbox and click on Next button.



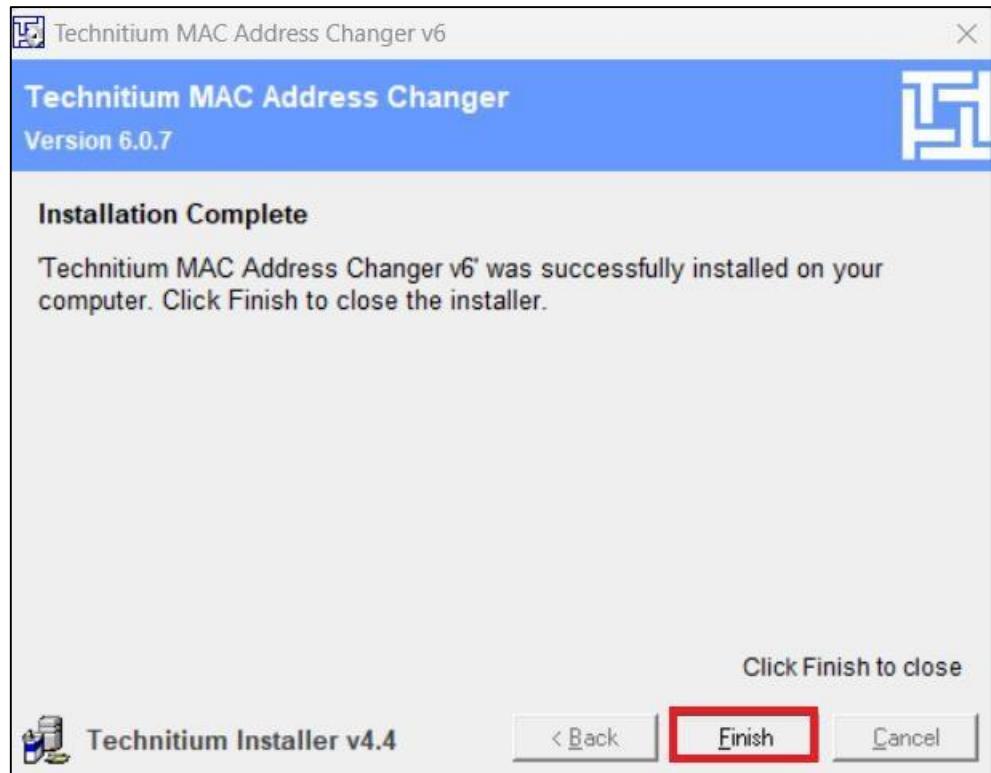
**Step 7:** Click on the Next button



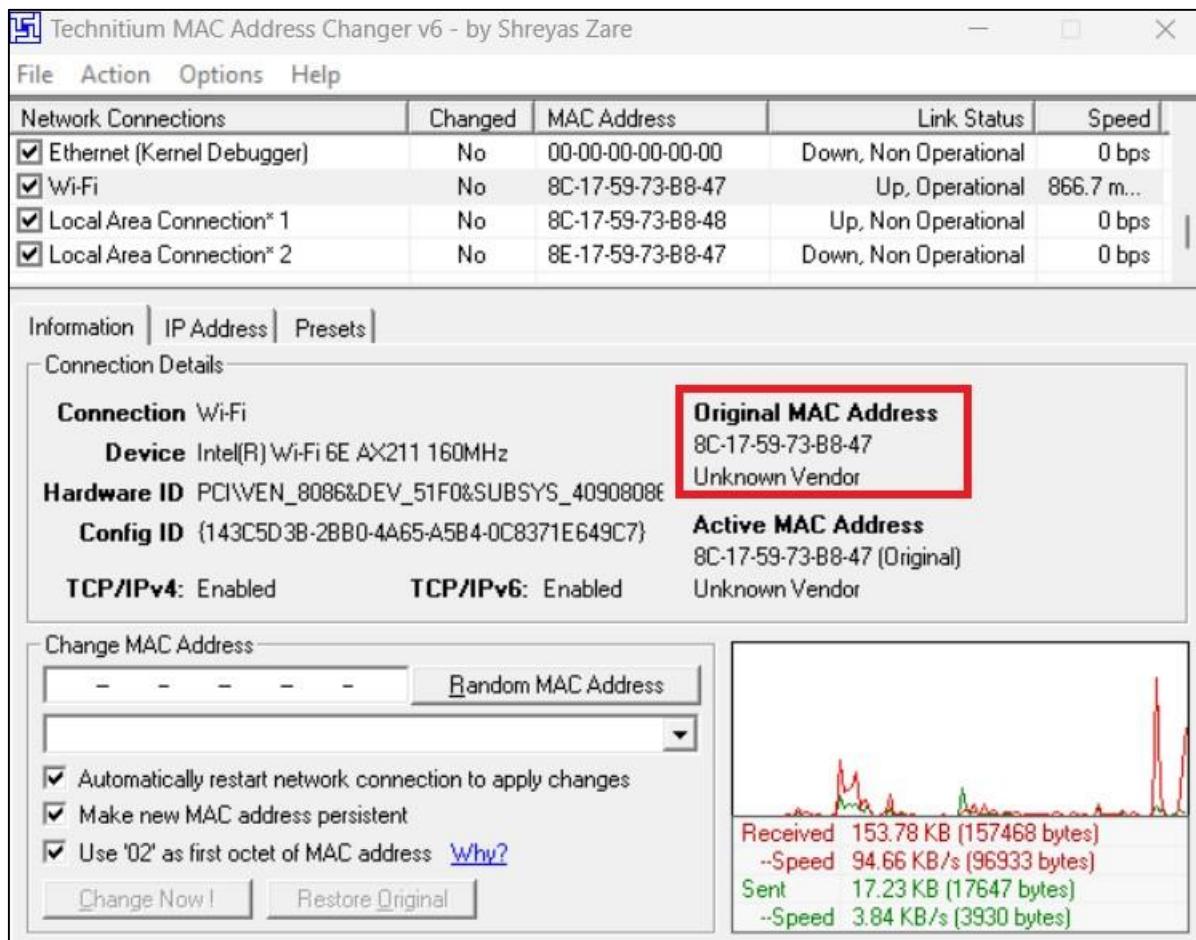
**Step 8:** Click on the Next button.



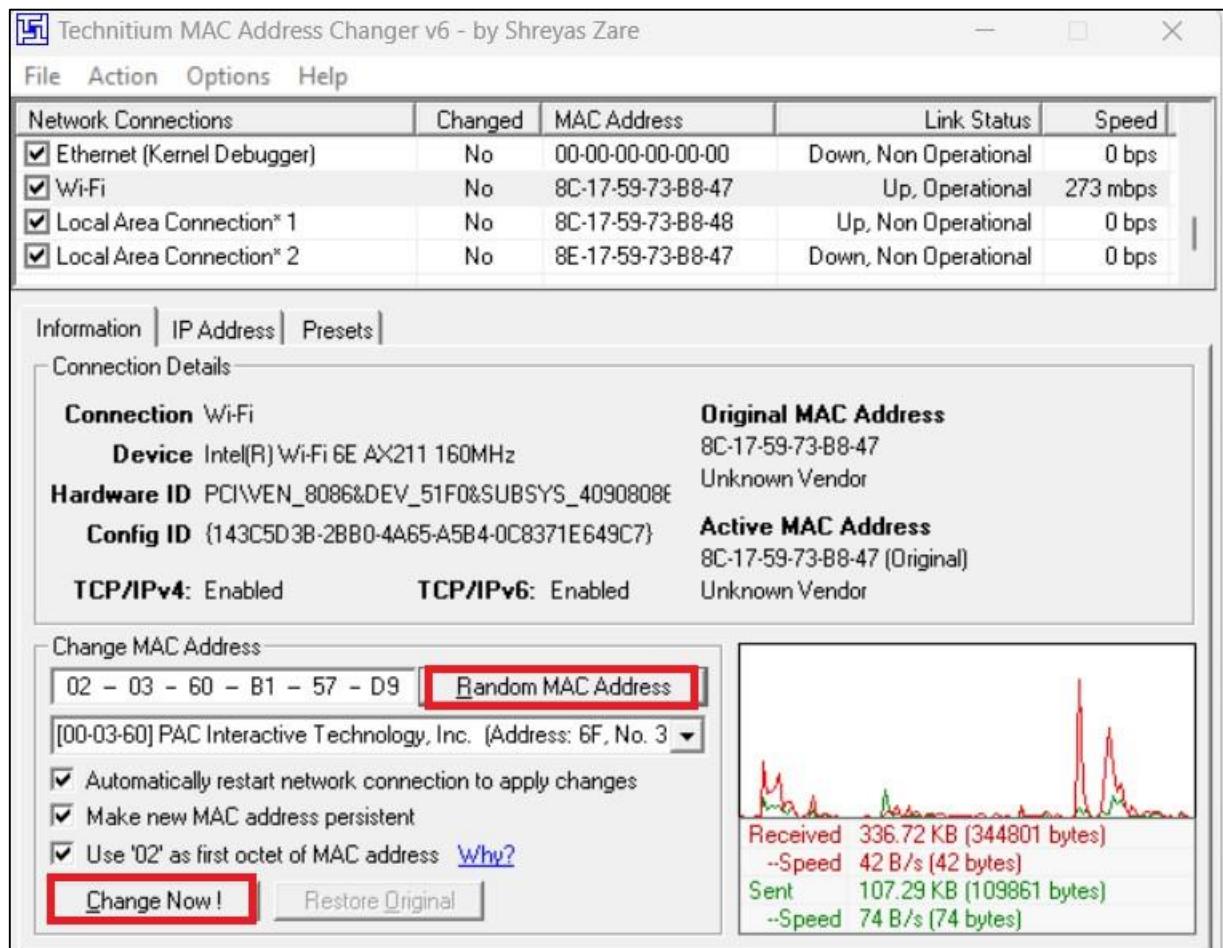
**Step 9:** Click on the Finish button.



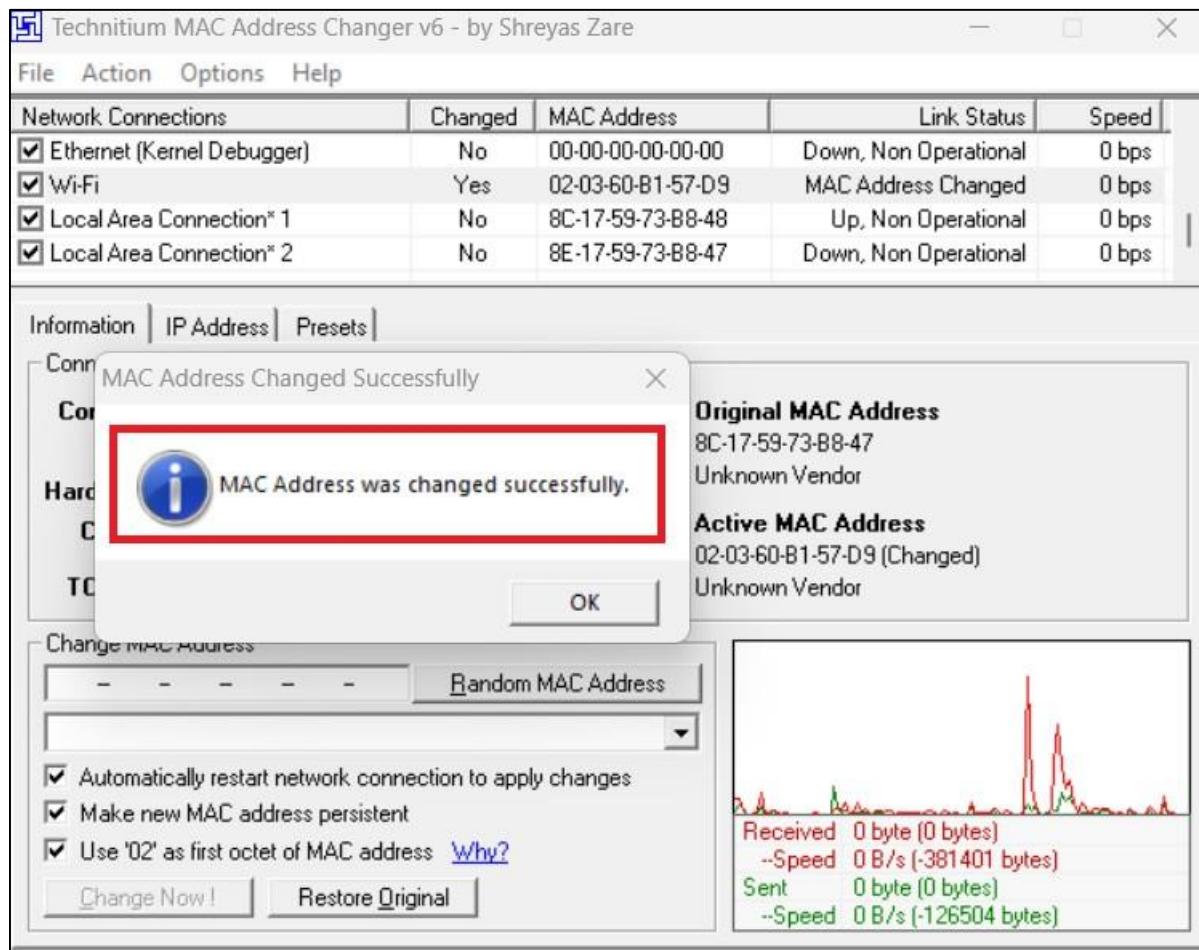
**Step 10:** Start the application we just installed.



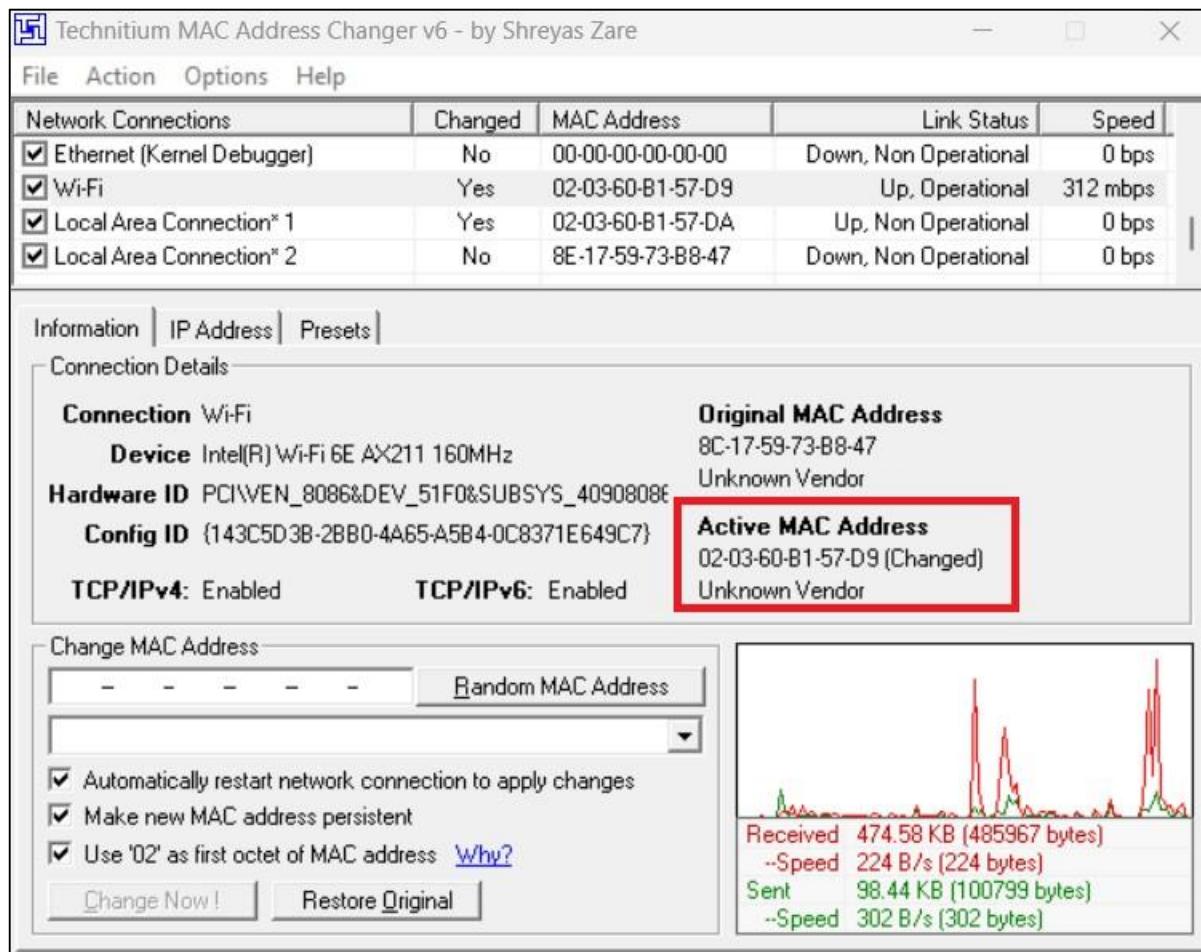
**Step 11:** Click on the Random MAC Address => Change Now!



**Step 12:** The active MAC Address is successfully changed.



**Step 13:** The new MAC Address is visible.

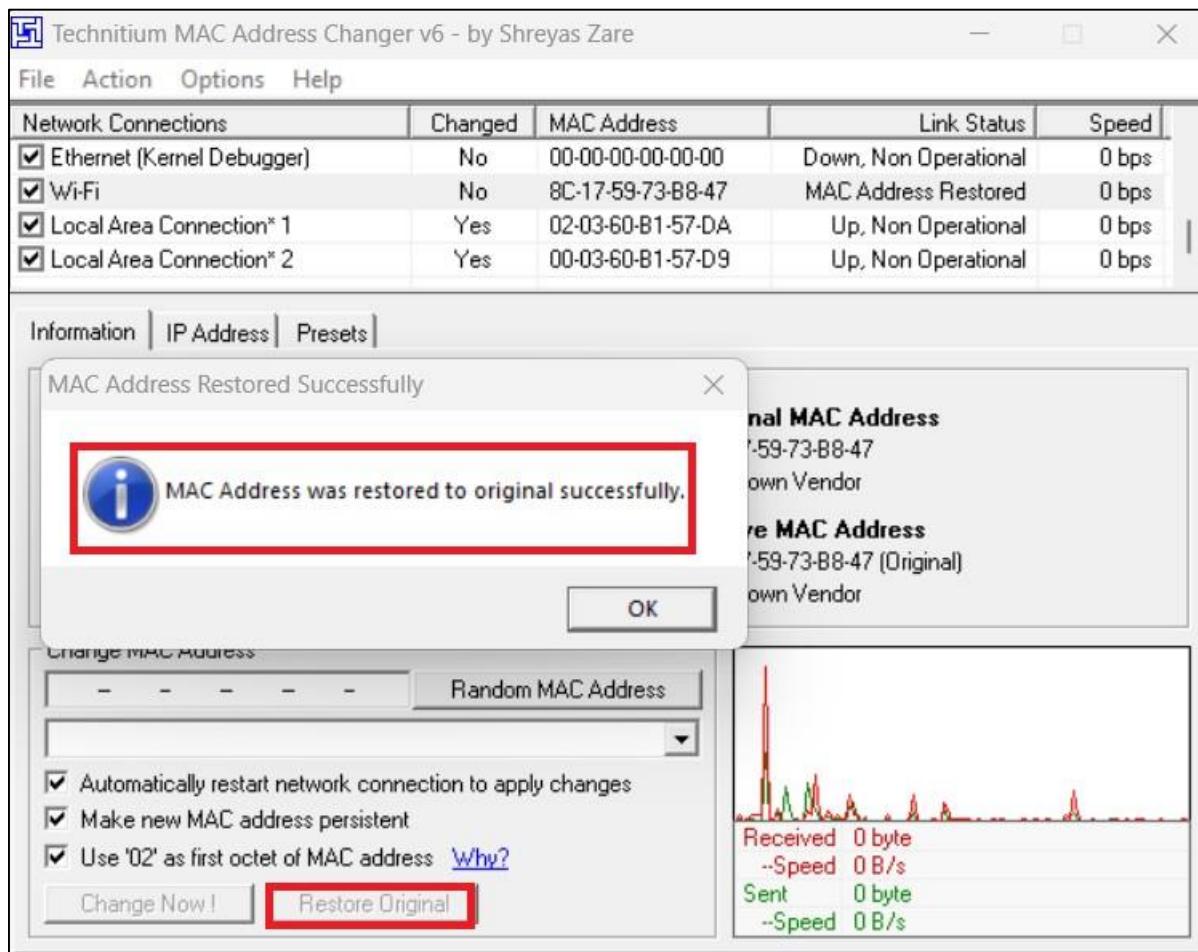


**Step 14:** Open CLI and Type the command **ipconfig/all** to check your MAC address.

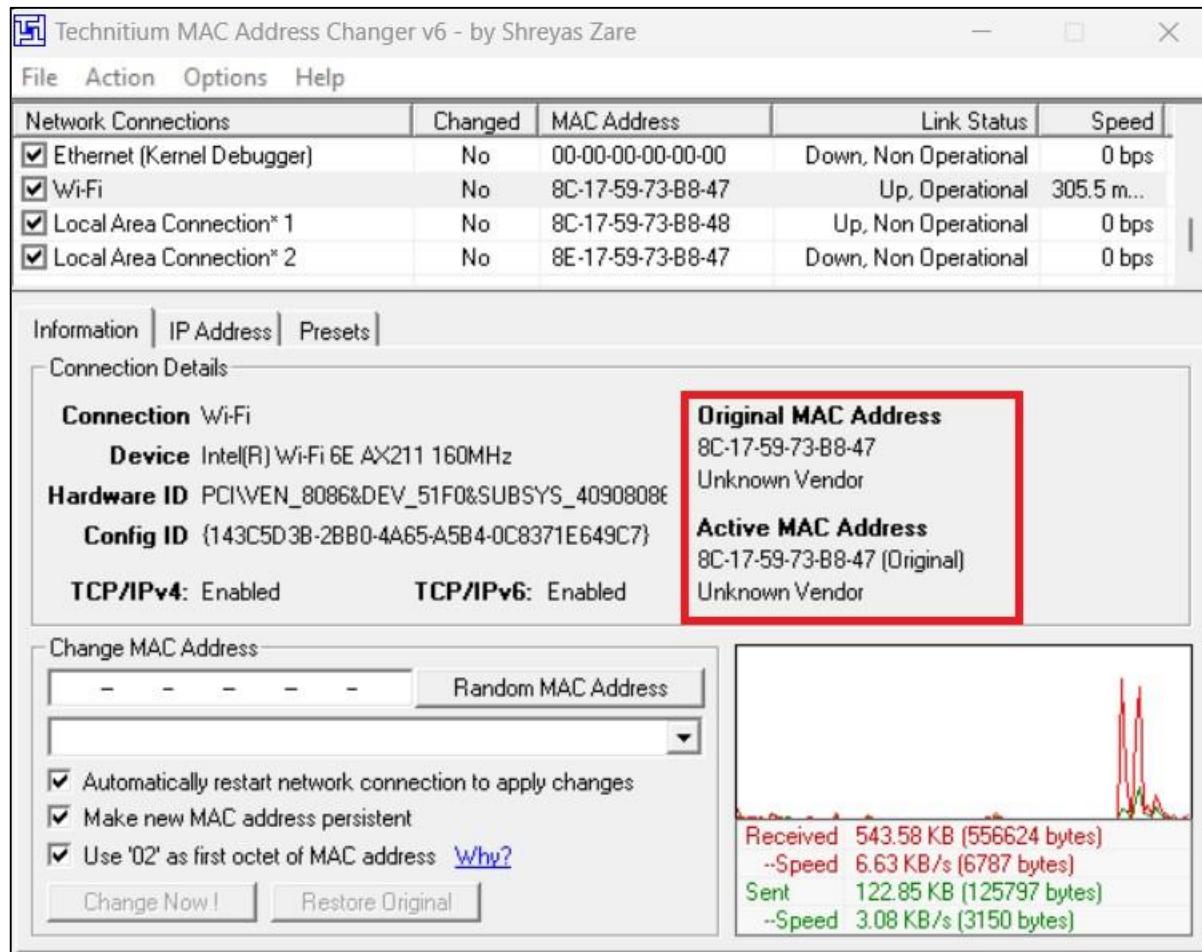
```
Wireless LAN adapter Wi-Fi:

Connection-specific DNS Suffix . . . . . : 
Description . . . . . : Intel(R) Wi-Fi 6E AX211 160MHz
Physical Address. . . . . : 02-03-60-B1-57-D9
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . . : Yes
IPv6 Address. . . . . : 2405:201:8:5091:226:c4bd:ed47:a12b(Preferred)
Temporary IPv6 Address. . . . . : 2405:201:8:5091:f9dc:968:cca0:bd43(Preferred)
Link-local IPv6 Address . . . . . : fe80::966:33be:1903:c72a%6(Preferred)
IPv4 Address. . . . . : 192.168.29.231(Preferred)
Subnet Mask . . . . . : 255.255.255.0
Lease Obtained. . . . . : 27 July 2023 12:38:13
Lease Expires . . . . . : 27 July 2023 20:38:13
Default Gateway . . . . . : fe80::aada:cff:feb4:aac4%6
                                         192.168.29.1
DHCP Server . . . . . : 192.168.29.1
DHCPv6 IAID . . . . . : 59512665
DHCPv6 Client DUID. . . . . : 00-01-00-01-2A-F2-DE-43-00-6C-5C-68-1F-7E
DNS Servers . . . . . : 2405:201:8:5091::c0a8:1d01
                                         192.168.29.1
NetBIOS over Tcpip. . . . . : Enabled
```

**Step 15:** Click on Restore Original to get back to your original MAC address.



**Step 16:** Your original MAC address is active again.



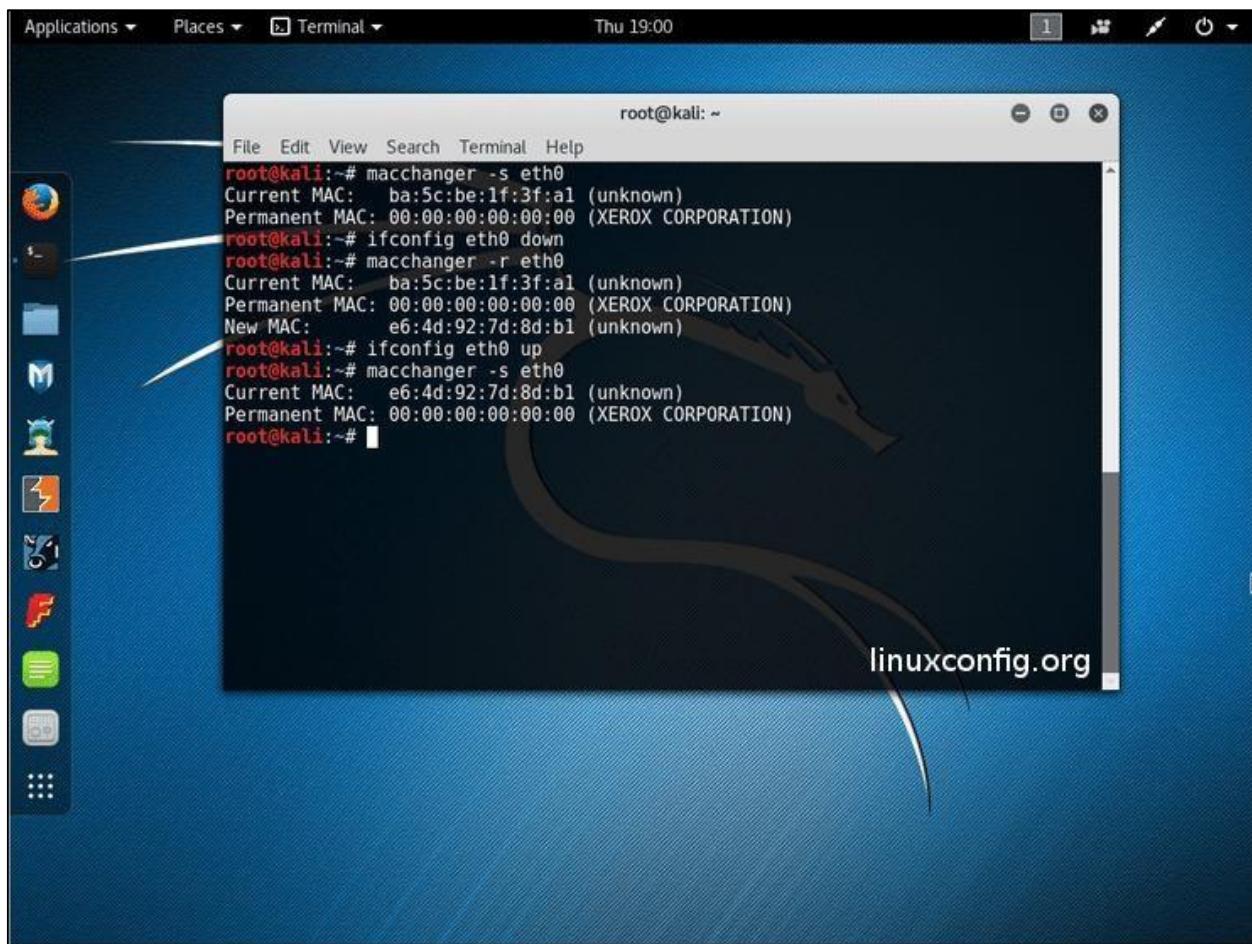
**Step 17:** Open CLI and run command **ipconfig/all** to check your current MAC address

```
Wireless LAN adapter Wi-Fi:

Connection-specific DNS Suffix . . . . . : 
Description . . . . . : Intel(R) Wi-Fi 6E AX211 160MHz
Physical Address. . . . . : 8C-17-59-73-B8-47
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . . : Yes
IPv6 Address. . . . . : 2405:201:8:5091:d7dd:4021:33fc:2ble(Preferred)
Temporary IPv6 Address. . . . . : 2405:201:8:5091:b575:dc79:acfe:8e21(Preferred)
Link-local IPv6 Address . . . . . : fe80::3d75:fff2:eede:c45e%6(Preferred)
IPv4 Address. . . . . : 192.168.29.245(Preferred)
Subnet Mask . . . . . : 255.255.255.0
Lease Obtained. . . . . : 27 July 2023 12:41:55
Lease Expires . . . . . : 27 July 2023 20:41:55
Default Gateway . . . . . : fe80::aada:cff:feb4:aac4%6
                           192.168.29.1
DHCP Server . . . . . : 192.168.29.1
DHCPv6 IAID . . . . . : 59512665
DHCPv6 Client DUID. . . . . : 00-01-00-01-2A-F2-DE-43-00-6C-5C-68-1F-7E
DNS Servers . . . . . : 2405:201:8:5091::c0a8:1d01
                           192.168.29.1
NetBIOS over Tcpip. . . . . : Enabled
```

## Using Macchanger to change MAC address in Kali Linux OS

Macchanger is a versatile network tool that allows users to modify the Media Access Control (MAC) address of their network interfaces. With Macchanger, users can easily change their MAC address to enhance privacy, bypass MAC-based restrictions, or troubleshoot network issues. The tool supports a wide range of network interfaces, including Ethernet, Wi-Fi, and Bluetooth, making it compatible with various devices. Macchanger provides options to generate random MAC addresses or set custom ones, ensuring flexibility and anonymity while connecting to networks. By empowering users to control and customize their MAC address, Macchanger serves as a valuable tool for enhancing network privacy and security.



## Learning Objective 03: Installing TOR browser

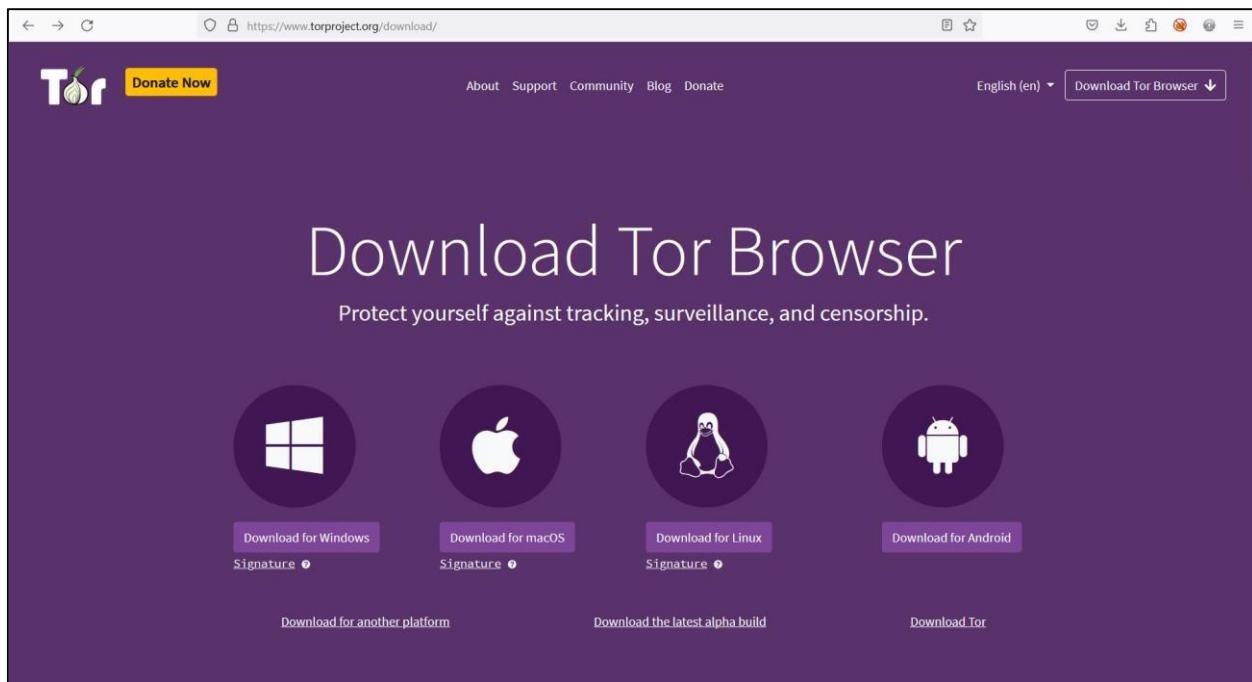
### Using Tor

Tor is a free and open-source software that provides anonymous communication and privacy on the internet. It achieves this by routing users' internet traffic through a global network of volunteer-operated servers, known as relays or nodes. As the traffic passes through multiple relays, it becomes encrypted and anonymized, making it challenging for anyone to trace the original source or destination. Tor enables users to access the internet privately, bypass censorship and content restrictions, and protect against surveillance and tracking. It also includes features like onion services, allowing users to host and access websites or services without revealing their location. With a focus on user anonymity and data privacy, Tor is a powerful tool for those seeking to browse the internet securely and anonymously.

### Installation of Tor

If we want to install the Tor browser in windows, we can use the following steps:

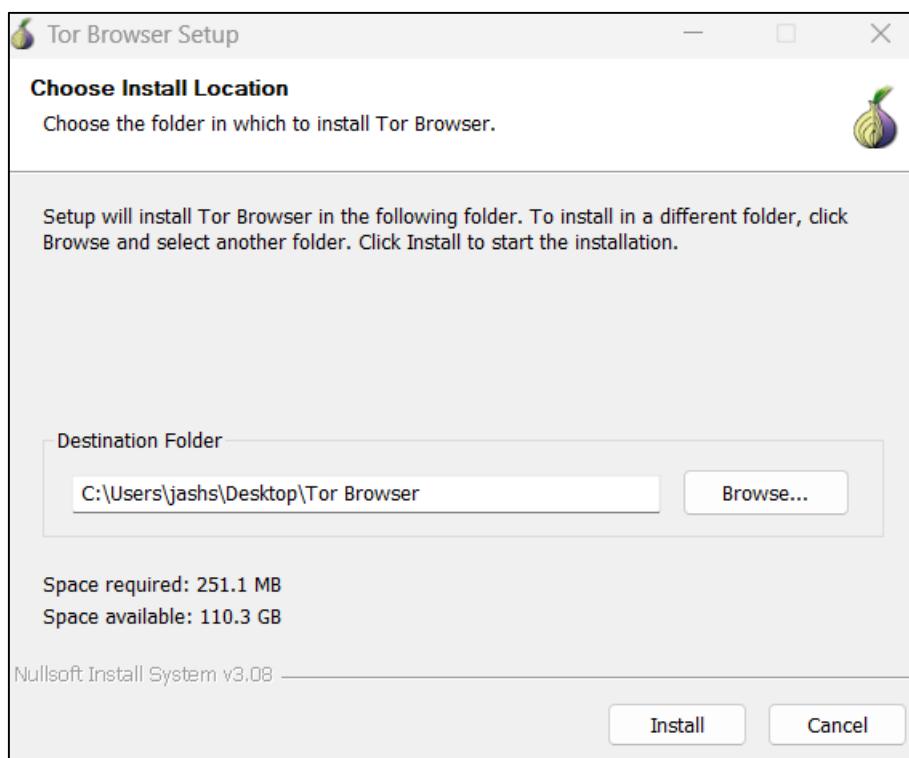
**Step 1:** First, we need to go to the Tor website through the <https://www.torproject.org/download/> in the system's internet browser. It is the link where we will download the Tor setup file.



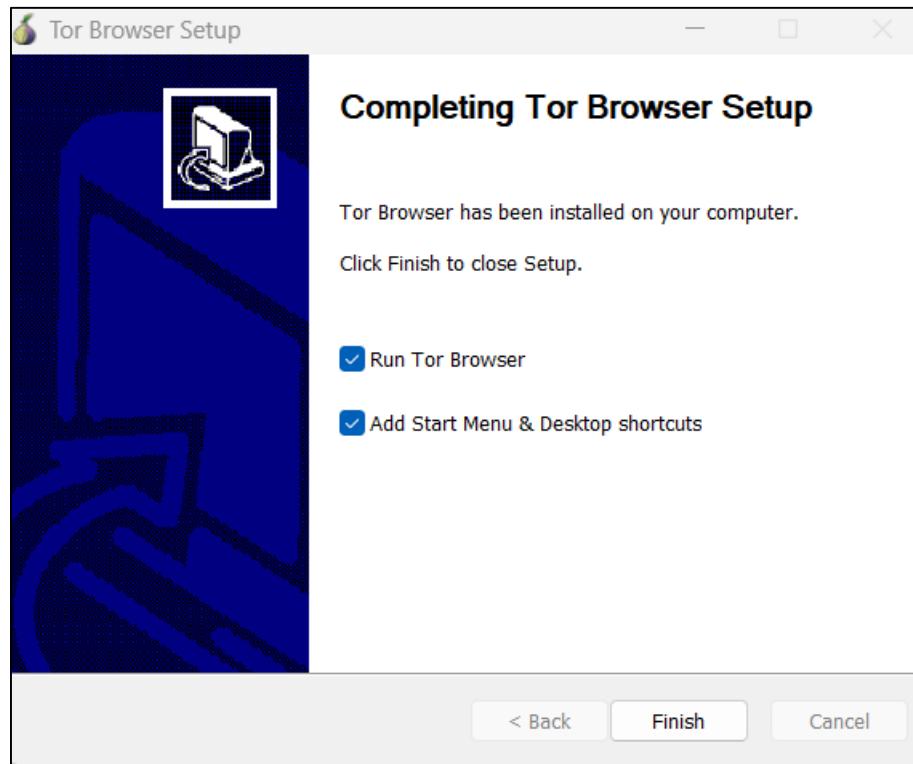
**Step 2:** Select your language and click on OK.



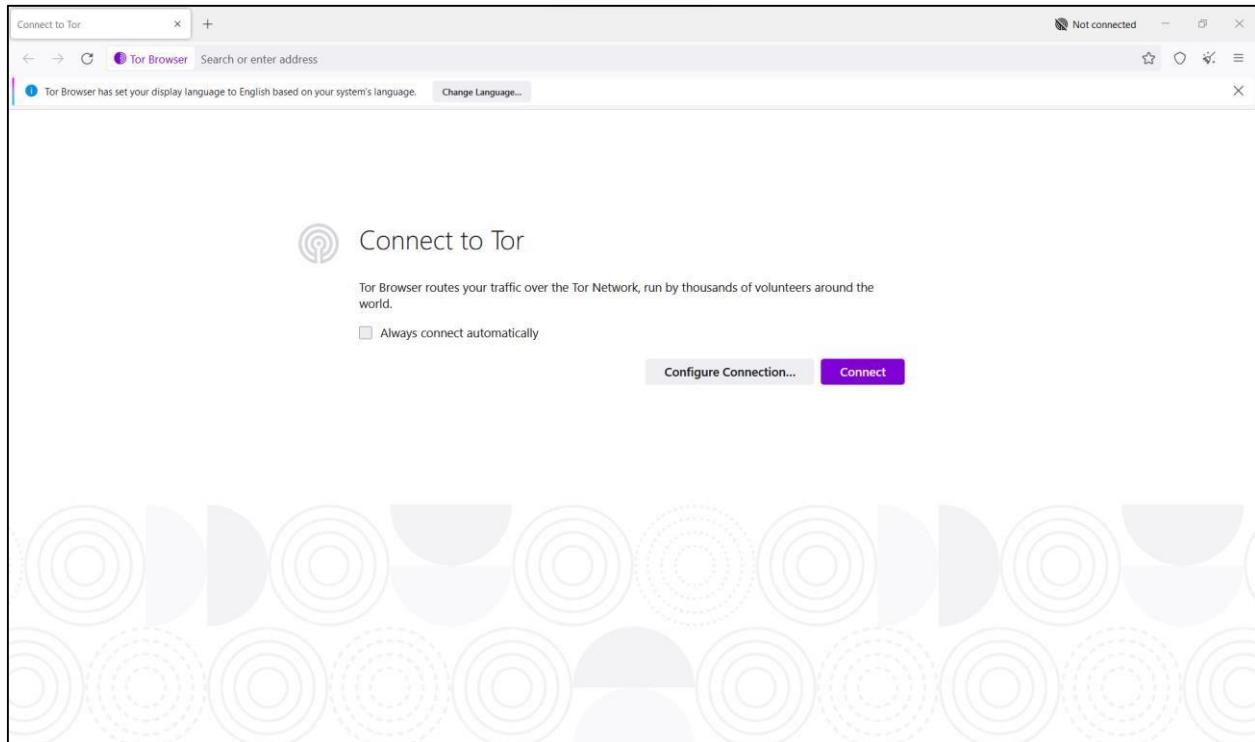
**Step 3:** Now, click on install.



**Step 4:** Click on Finish button.



**Step 5:** Tor browser is started.



## Learning Objective 04: Installing Tails OS in Virtual Box

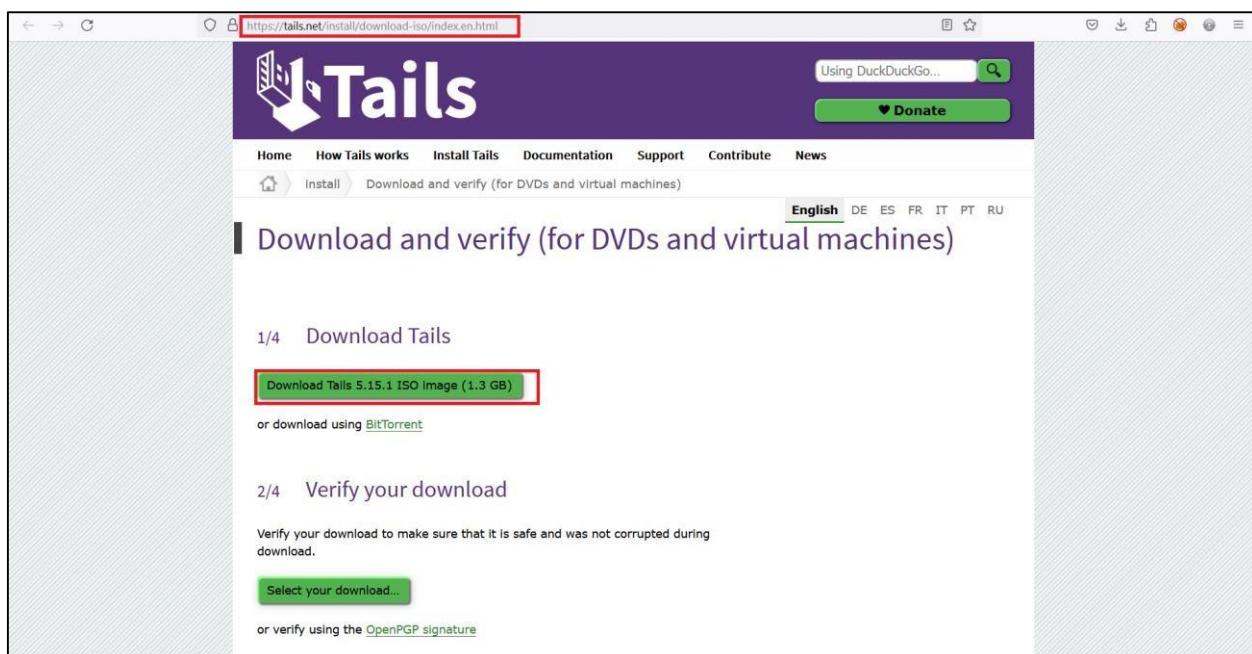
### Using Tails OS

Tails (The Amnesic Incognito Live System) is a privacy-focused operating system that prioritizes anonymity and security. Tails routes internet connections through the Tor network, ensuring encrypted and anonymous online browsing. It includes built-in tools for secure communication, file encryption, and data wiping, making it ideal for sensitive tasks. With its emphasis on privacy and easy-to-use design, Tails provides a powerful solution for individuals seeking a secure and private computing experience.

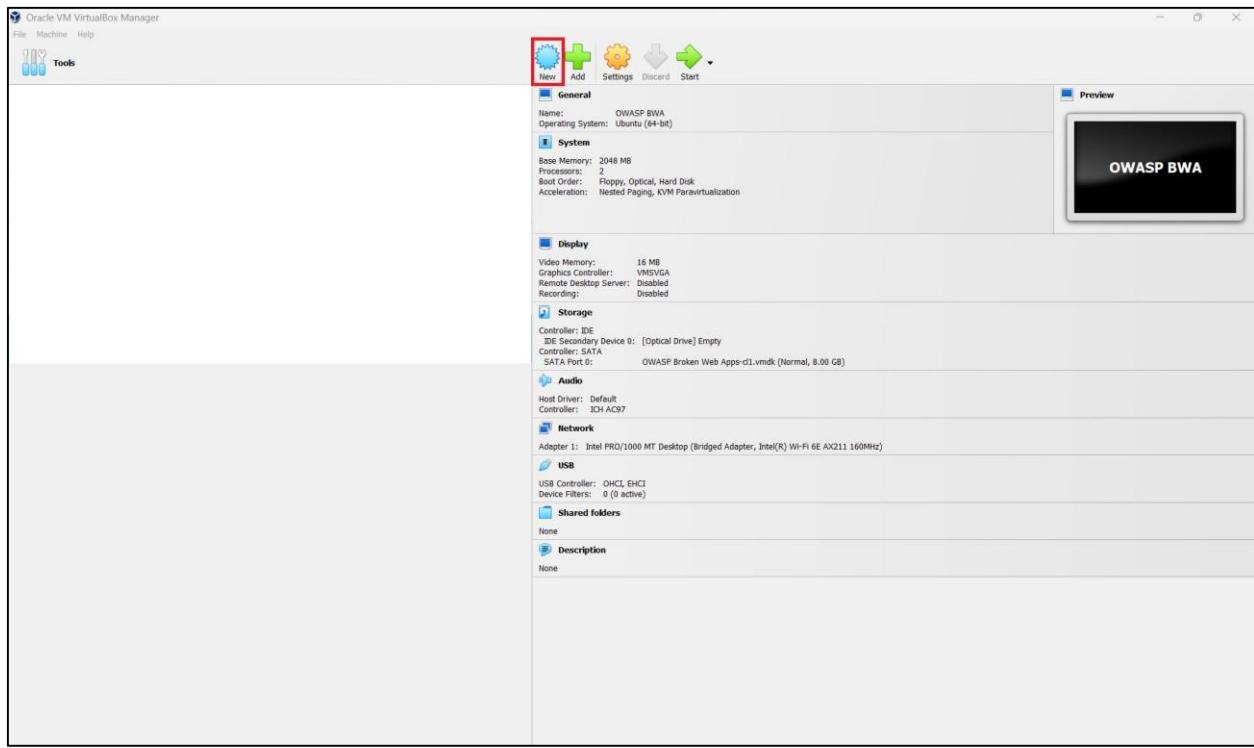
### Installation of Tails

If we want to install the Tails in VirtualBox, we can use the following steps:

**Step 1:** First, we need to go to the Tails Website through the <https://tails.net/install/download-iso/index.en.html> in the system's internet browser. It is the link where we will download the Tails ISO file.



**Step 2:** Open VirtualBox and click on New.

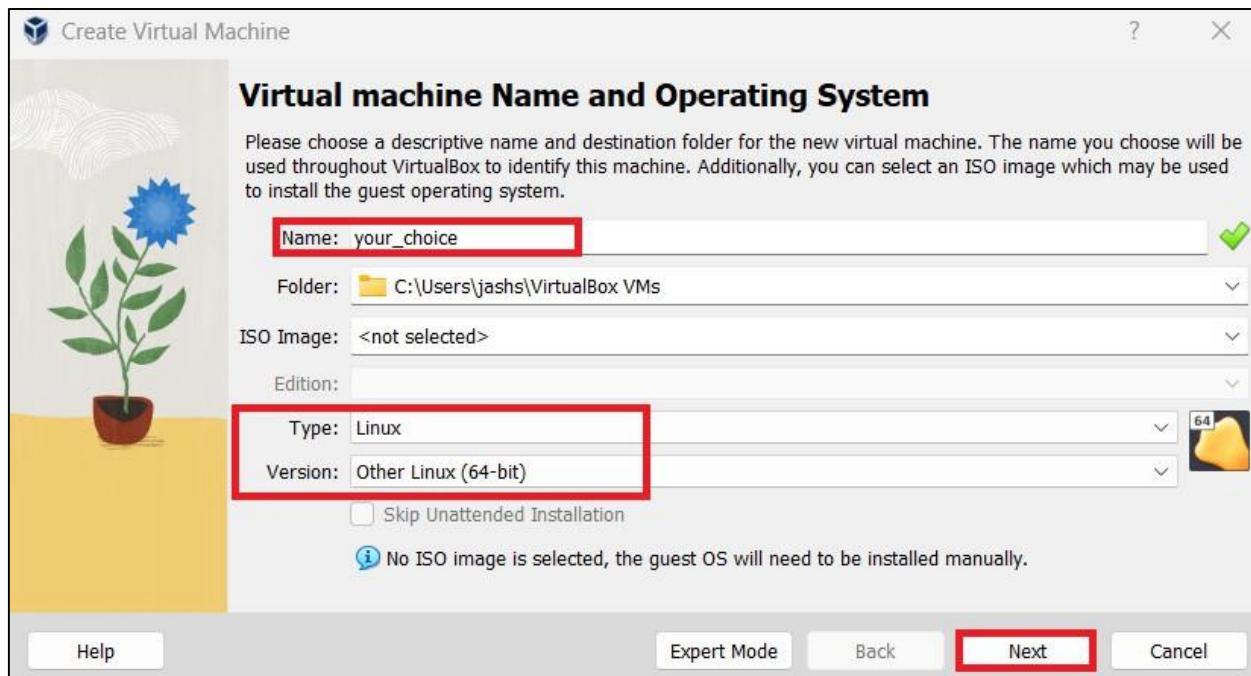


**Step 3: Specify:** A name of your choice

Type: Linux

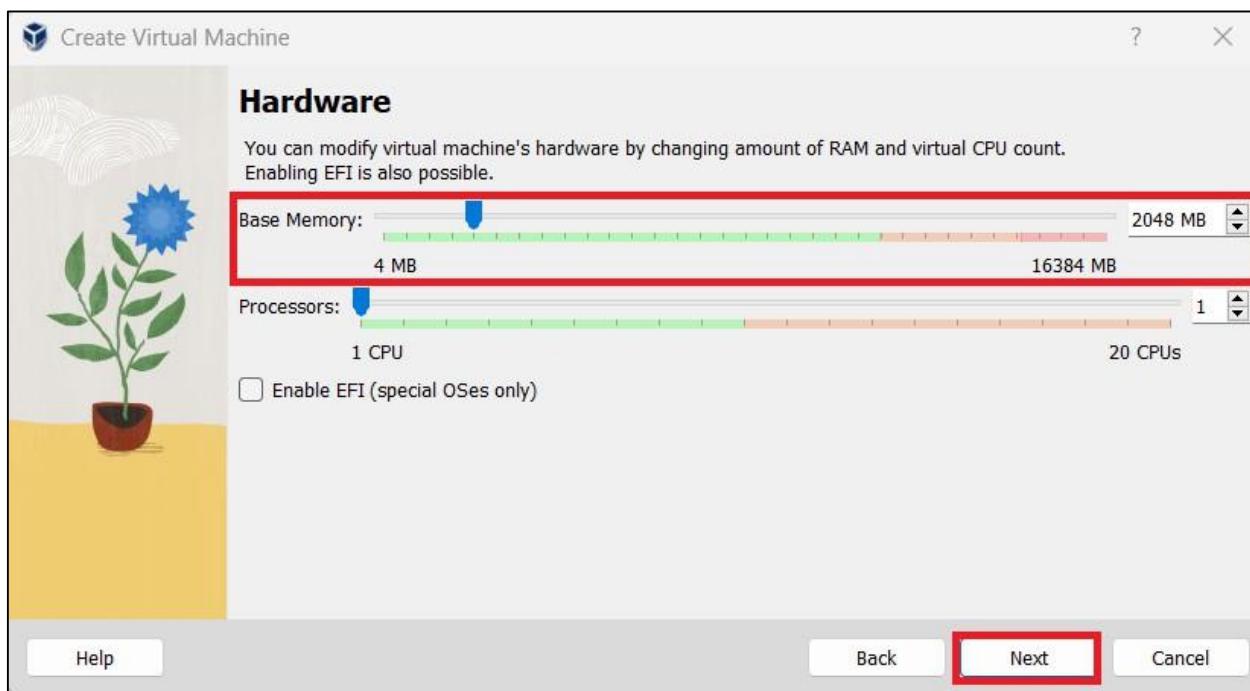
Version: Other Linux (64 bit)

Click **Next**.



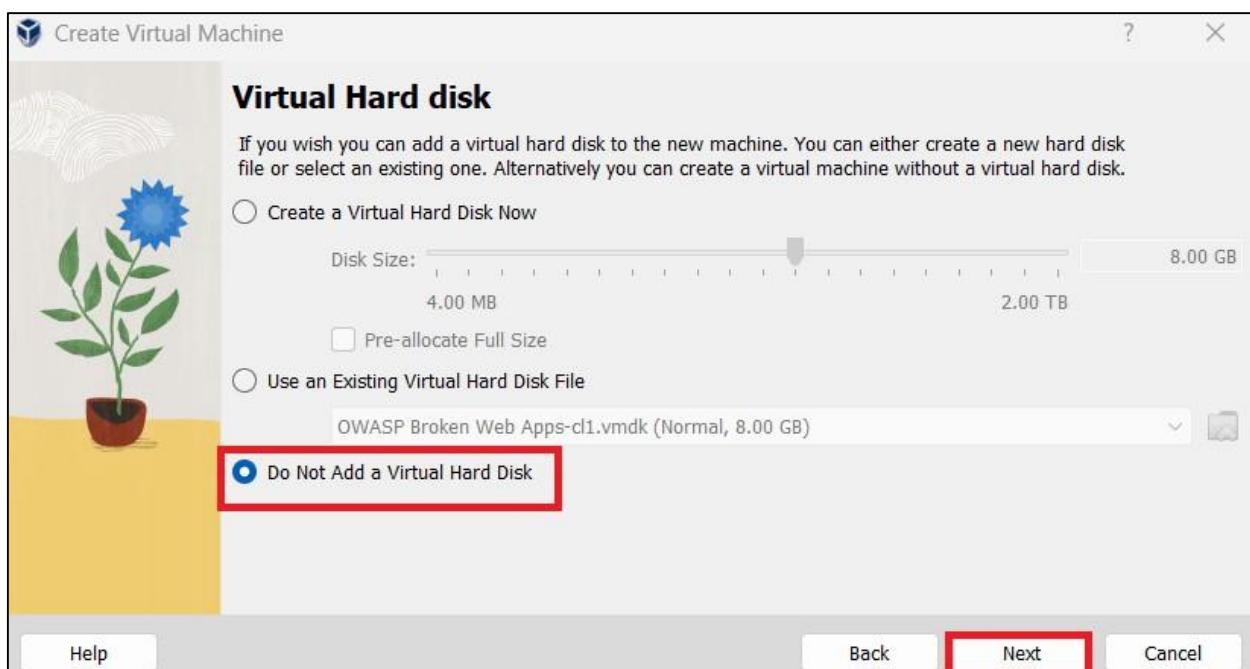
**Step 4:** In the Memory size screen: Allocate at least 2048 MB of RAM.

Click **Next**.

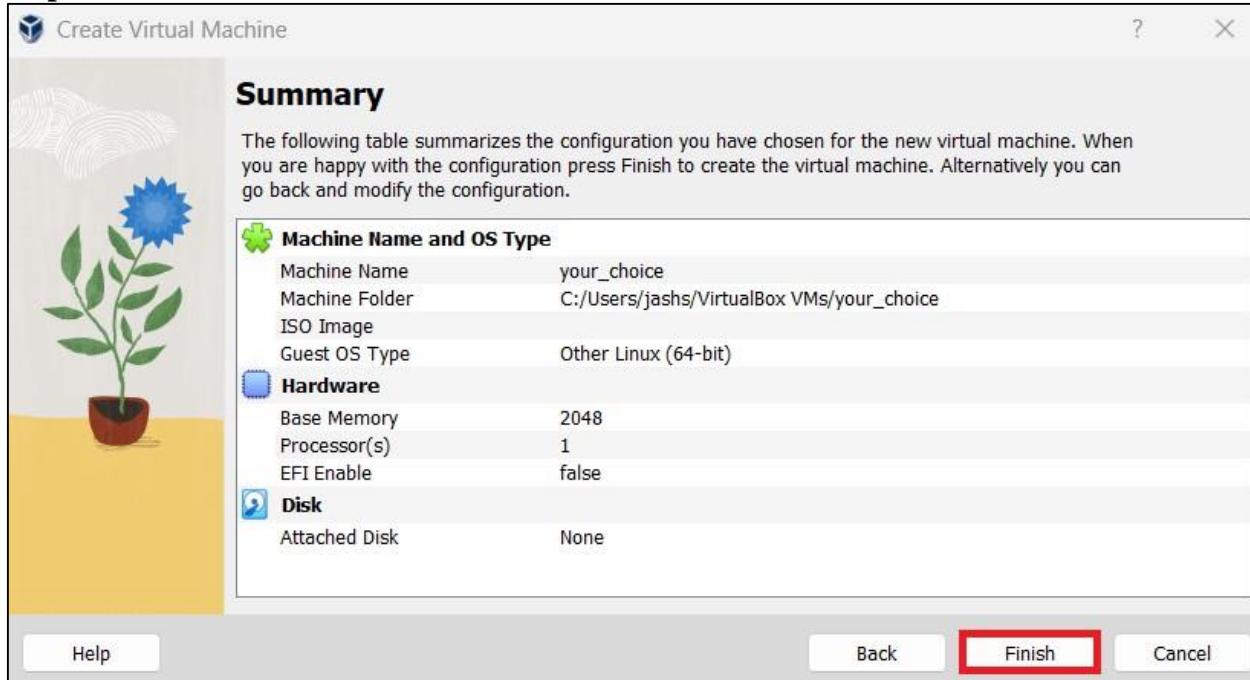


**Step 5:** In the Hard drive screen: Choose Do not add a virtual hard drive.

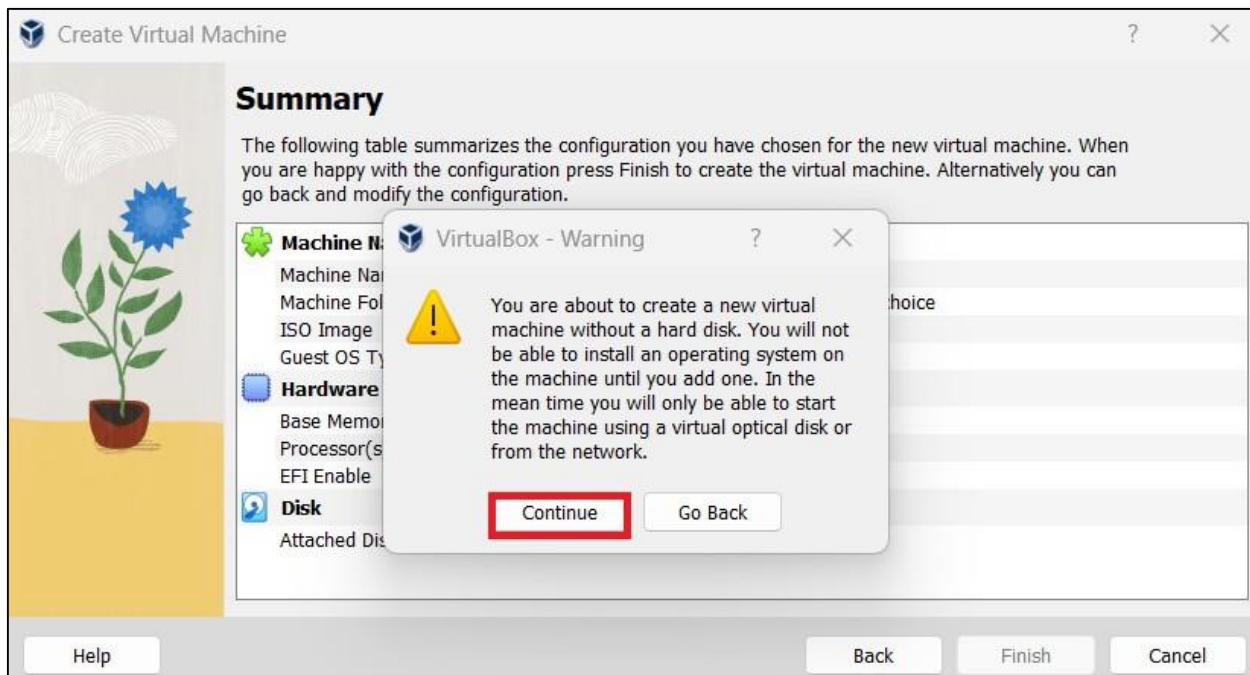
Click **Next**.



**Step 6:** Click on the Finish button.



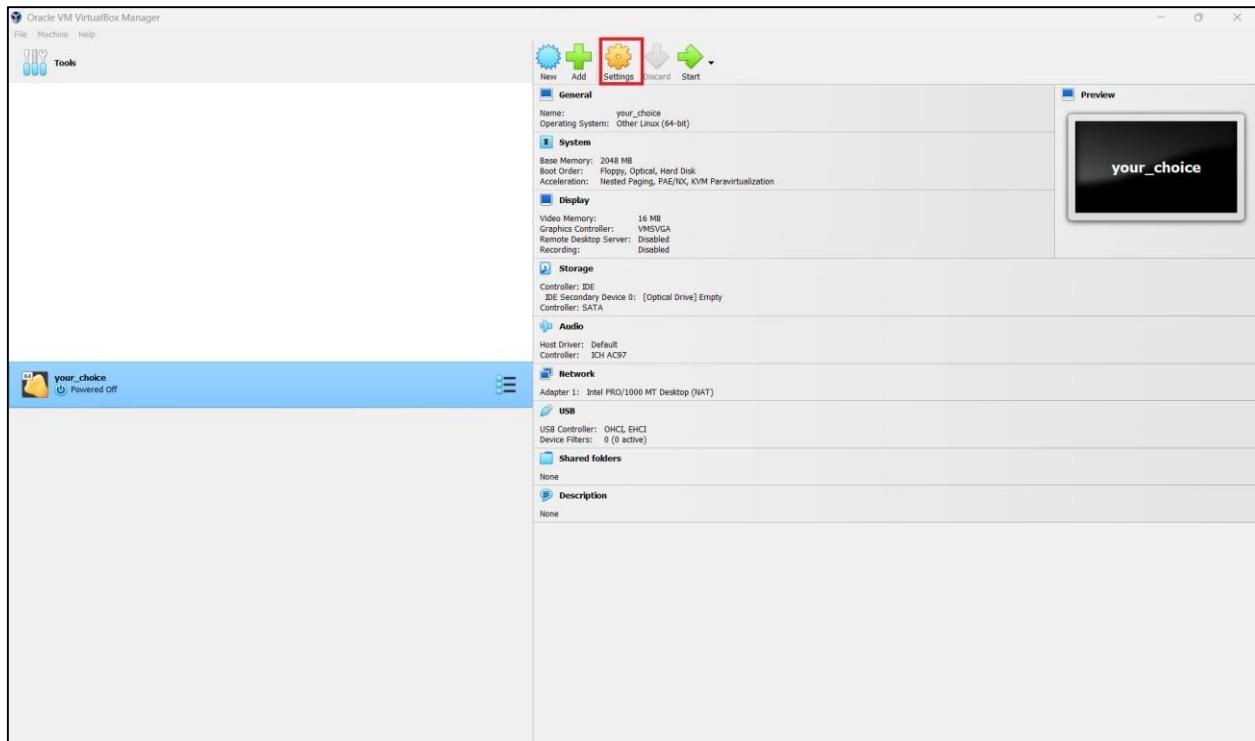
**Step 7:** Click Continue in the warning dialog about creating a virtual machine without a hard drive



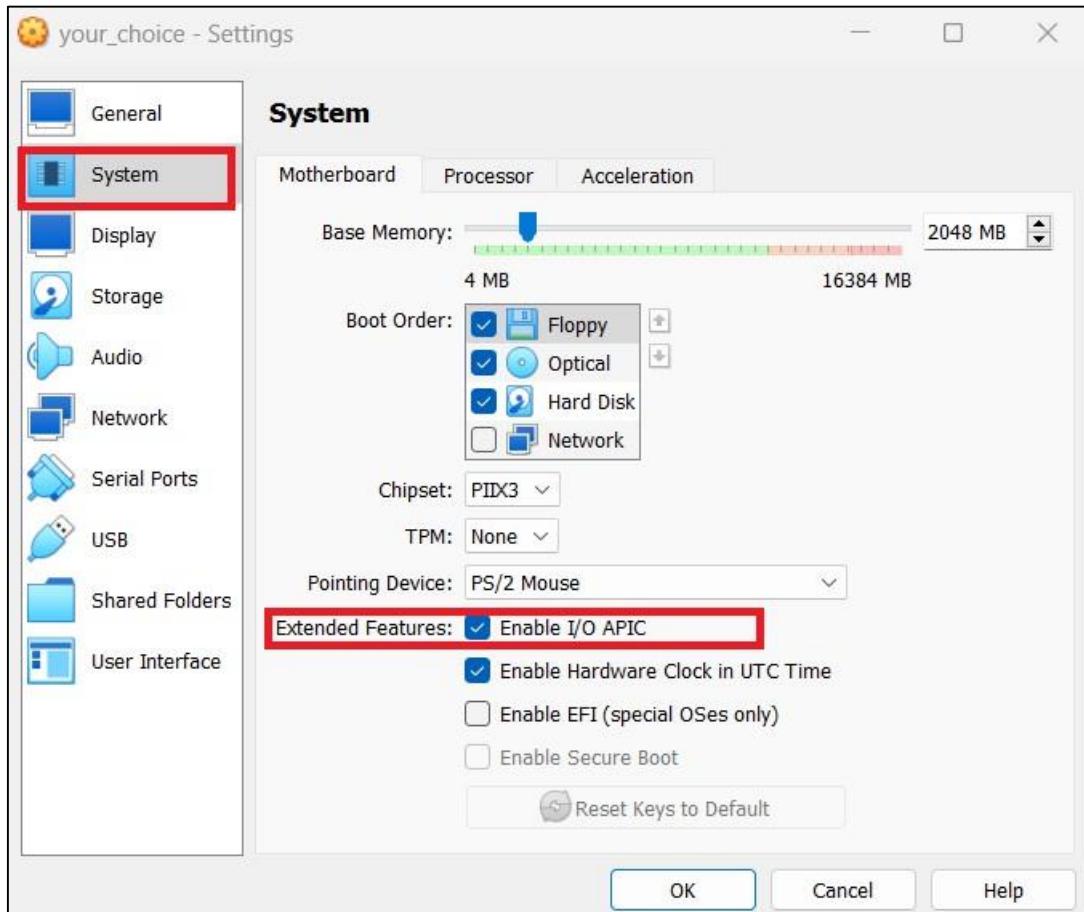
**To configure the virtual machine to start from an ISO image:**

**Step 8:** Select the new virtual machine in the left pane

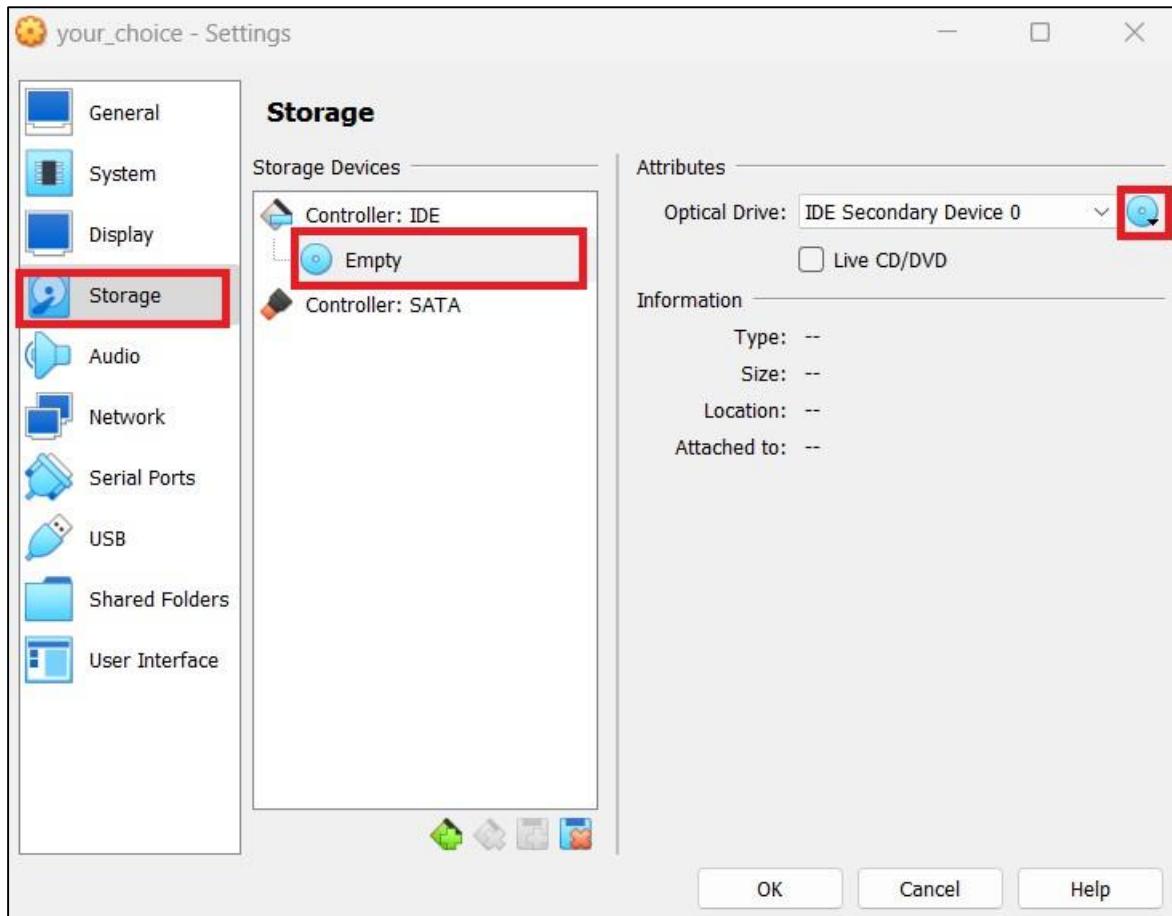
Choose Machine=> Settings.



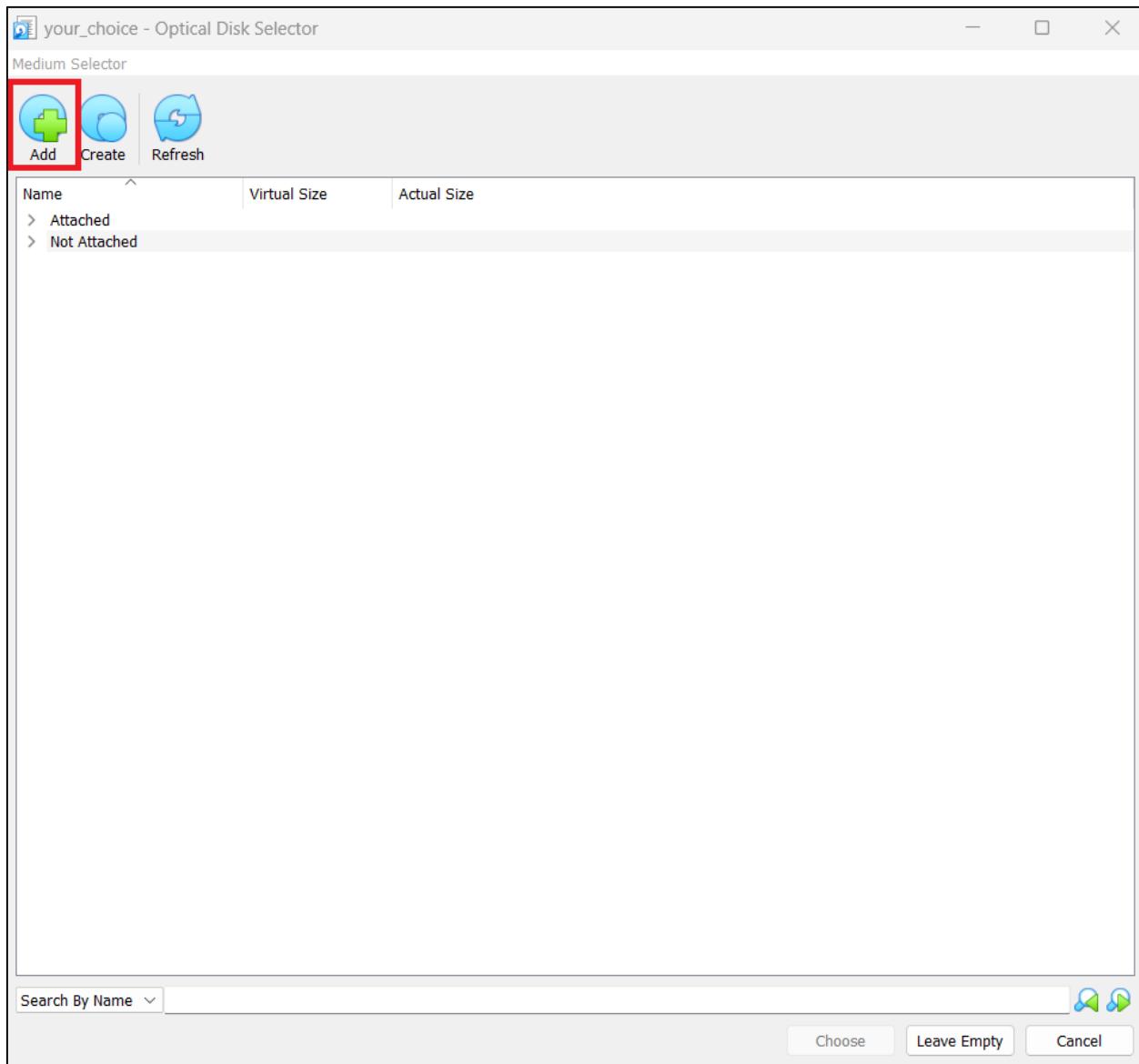
**Step 9:** Select System in the left pane. In the Extended Features section of the Motherboard tab, make sure that Enable I/O APIC is enabled.



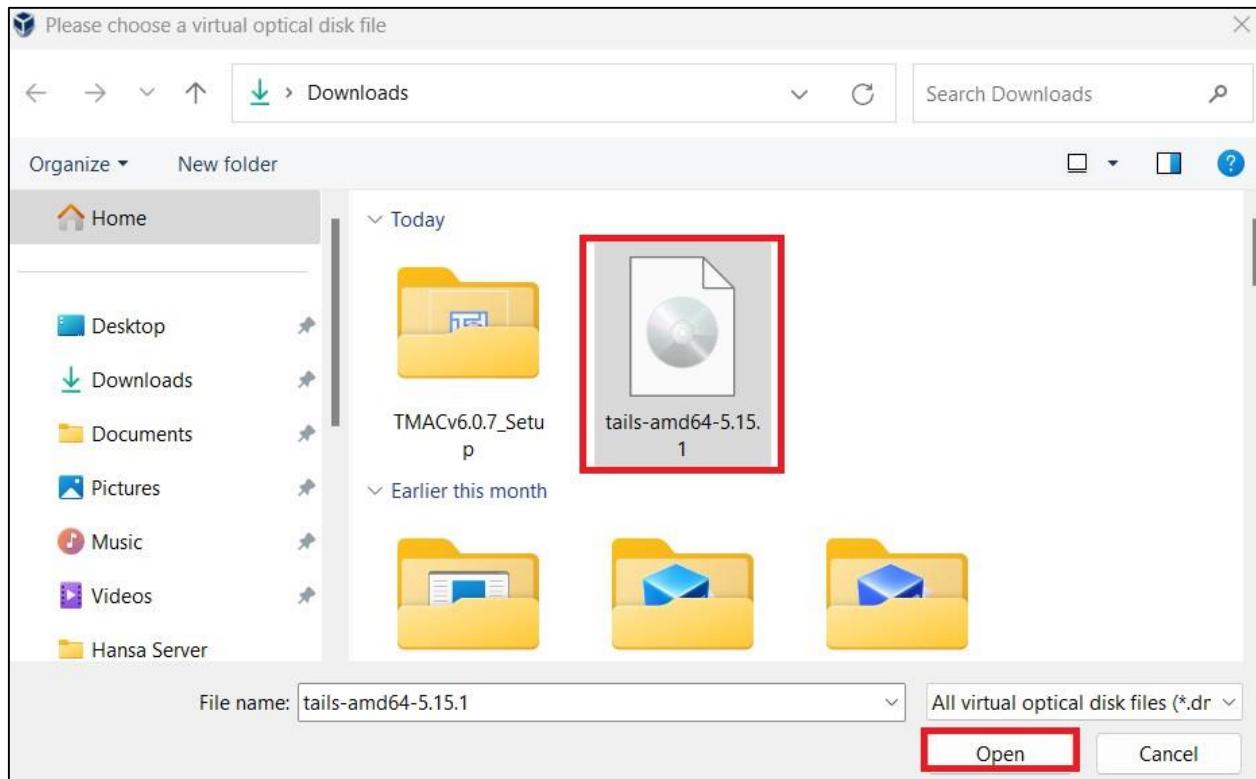
**Step 10:** Select Storage in the left pane. Select Empty below Controller IDE in the Storage selection list in the right pane. Click on the CD icon on the right of the window and select Choose a virtual CD/DVD disk file... to browse for the ISO image you want to start Tails from.



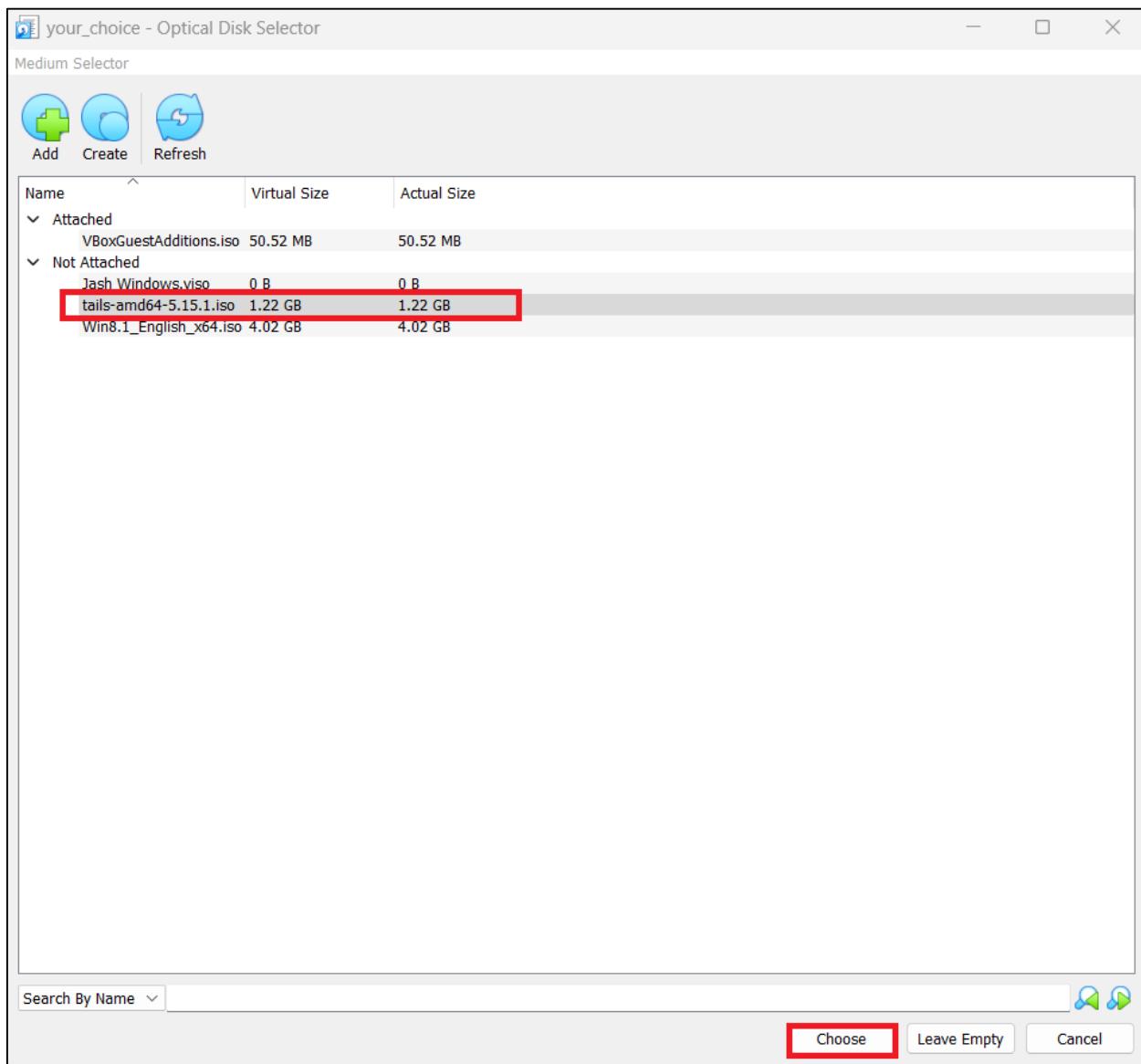
**Step 11:** Click on Add-to-add file from your system.



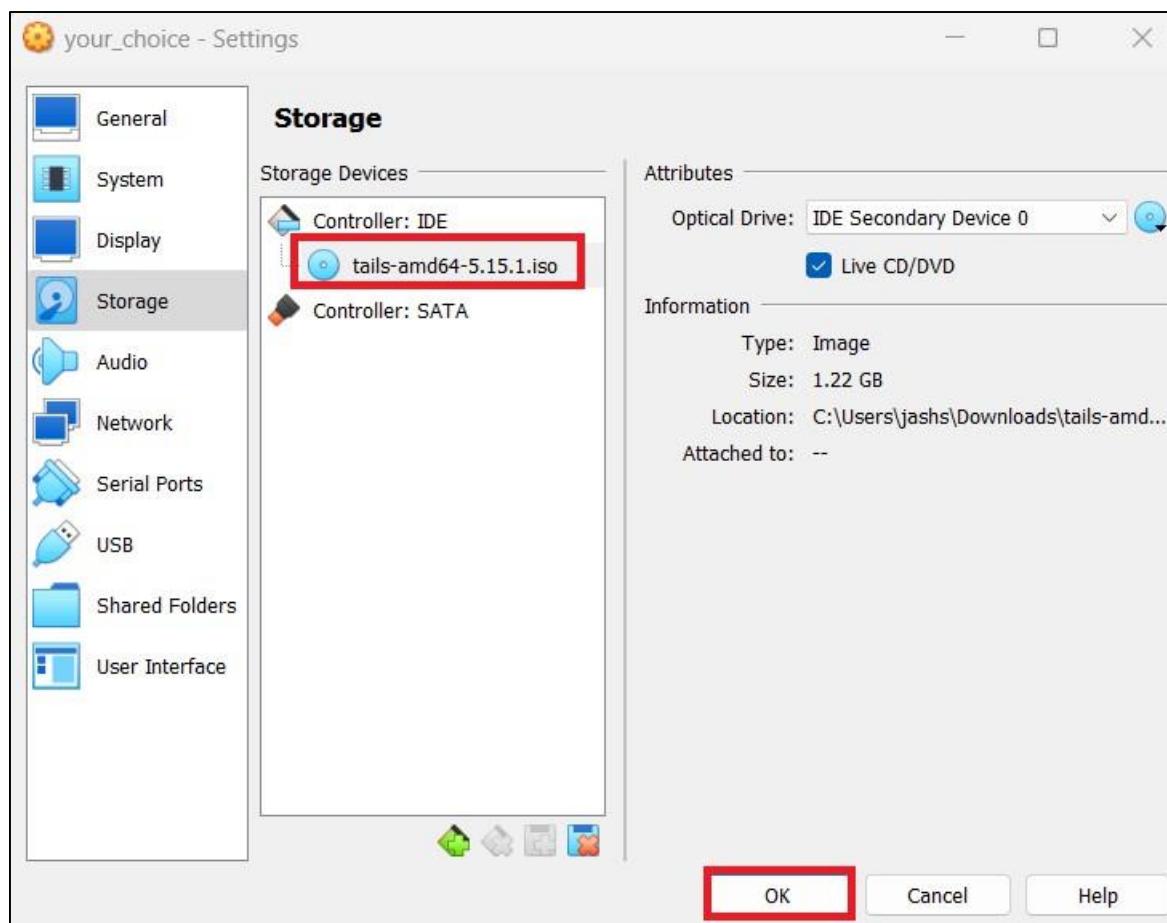
**Step 12:** Select Tails ISO file and click on Open.



**Step 13:** Select the ISO file from list and click on Choose.



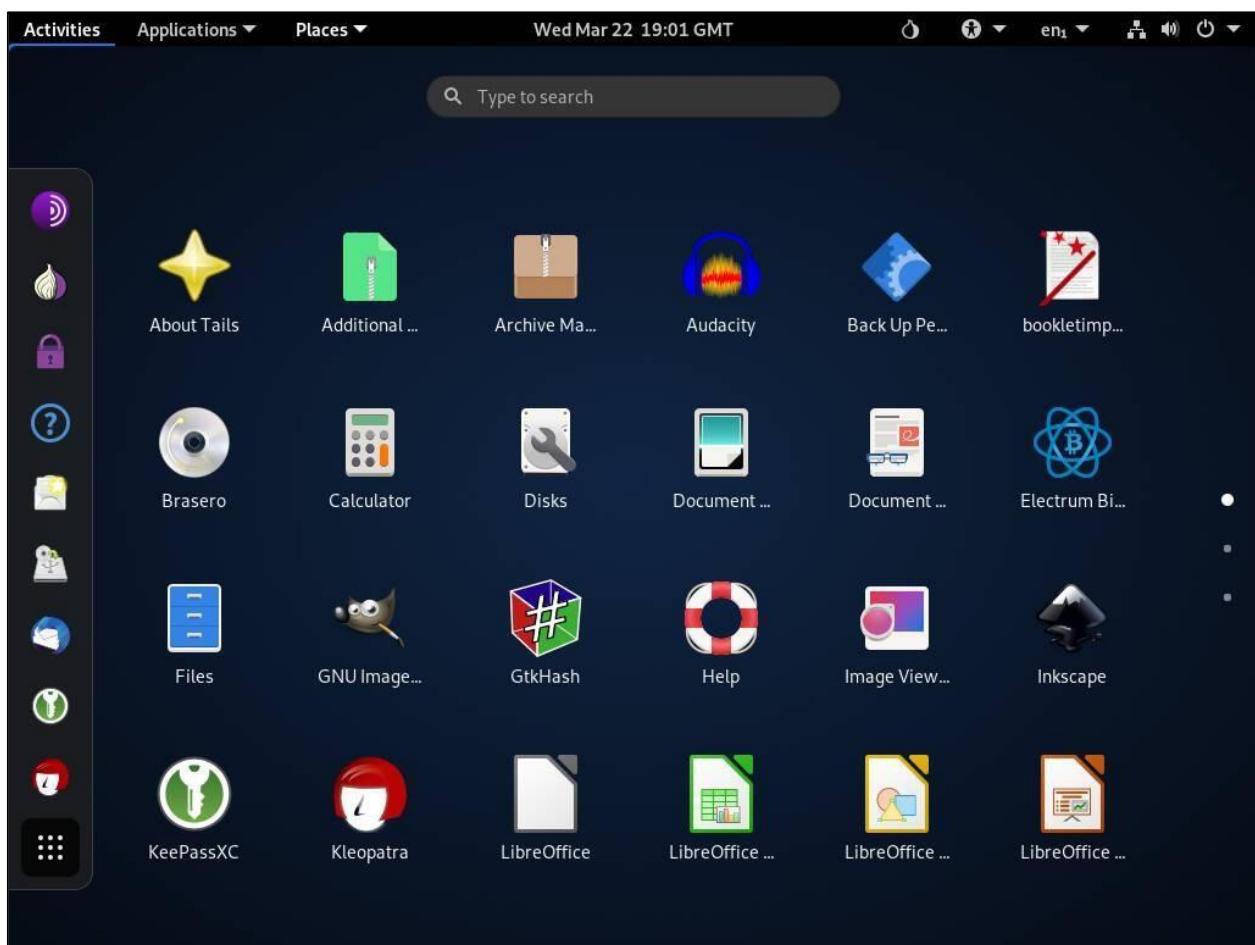
**Step 14:** Check the **Live CD/DVD** option and click on OK.



**To start the new virtual machine:**

**Step 15:** Select the virtual machine in the left pane.

Click Start.



**Learning Outcomes:** The student should have the ability to:

LO1: Understand the usage of Web Proxy & IP Proxy

LO2: Understand the Installation of TOR browser

LO3: Changing MAC Address on Windows and Linux

LO4: Usages of Tails OS

**Course Outcomes:** Upon completion of the course students will be able to understand the concept of Anonymity and will be able to use Anonymity Tools for security purposes.

**Conclusion:** Through this experiment we learned the concept of Anonymity and we used several tools like Hide.me, AnonymoX, Tmac, Tails to protect our real identity from being exposed to others.

For Faculty Use:

Correction Parameters	Formative Assessment [40%]	Timely completion of Practical [40%]	Attendance / Learning Attitude [20%]	
Marks Obtained				