WEB SECURITY: VULNERABLE WEB APPLICATION (DVWA)

RRC Polytech
Full Stack Web Development
Winnipeg, MB Canada



Motivation

➤ Hackers are (or could be) actually good, pleasant and extremely intelligent people who could keep computer criminals on the run (run away, escaping).

Ankit Fadia

VirtualBox Debian

1. VirtualBox Software that you installed

- ➤ VirtualBox
 - https://www.virtualbox.org/
 - deb login:
 - Root password :
 - deb login:
 - User password:

SQLManager for MySQL

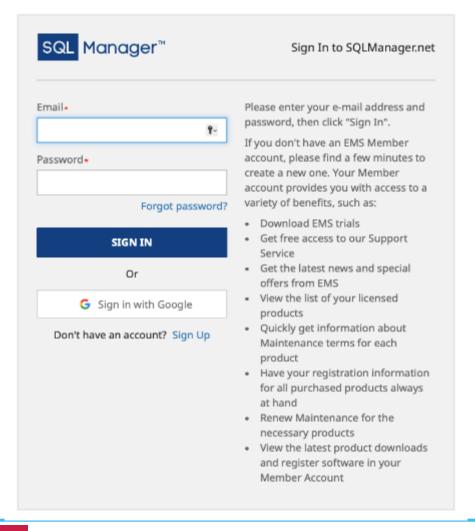
The SQLManager for MySQL

https://www.sqlmanager.net/tools/free



Use Your Google Account (gmail) to Sign

ln



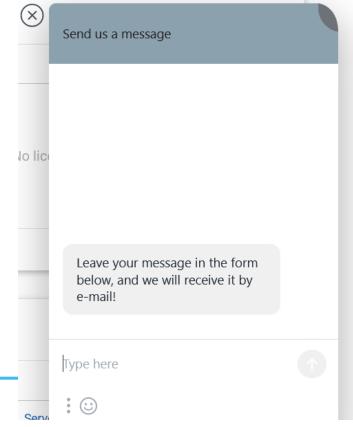
The SQLManager for MySQL

- ➤ The SQLManager for MySQL
 - Click on the link
 - Try to download the software
 - It automatically redirect you to login page. You have the following two options:
 - Sign up using google. You need to login to your gmail account.

The SQLManager for MySQL

Click on the sign up: Fill username and other information. They mention, they will send you a password to your email. They never send any email to your account. Use the message window and gain help from them. They send you a temporary password. Then you can

change your password.



Free Database: SQL Manager for MySQL



SQL Manager for MySQL

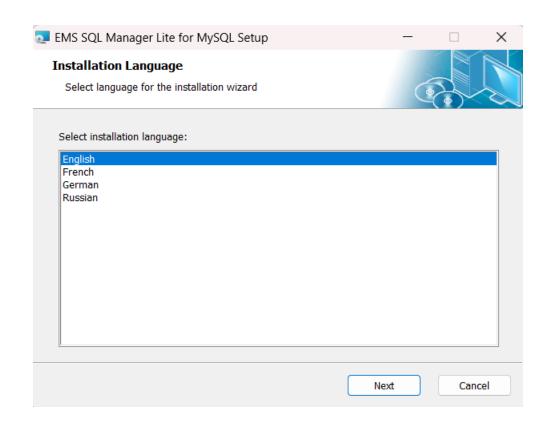
Simplify and automate your MySQL database development process

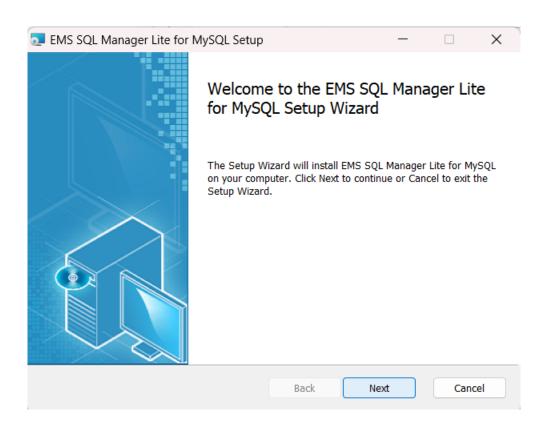
DOWNLOAD FREE VERSION

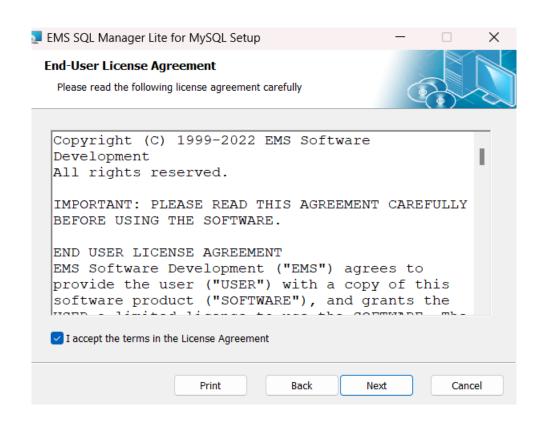
The SQLManager for MySQL Icon

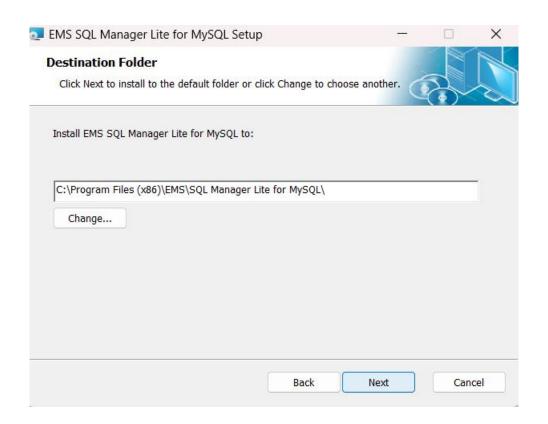


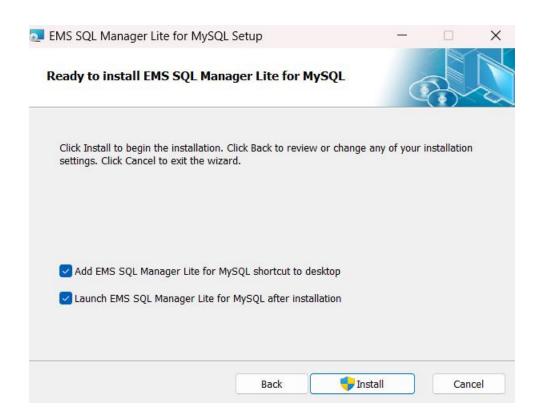
MyManagerLite

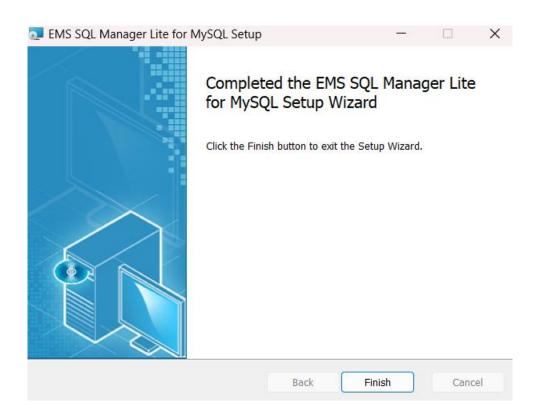


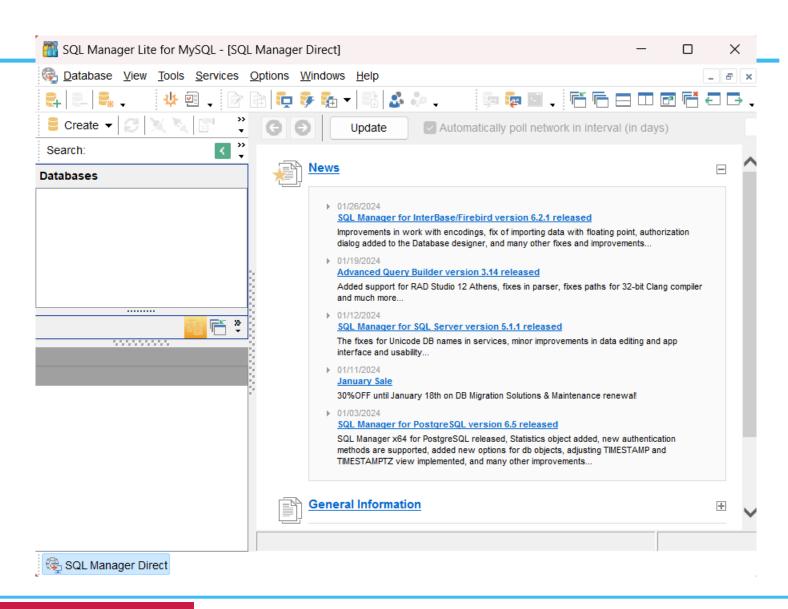












VirtualBox

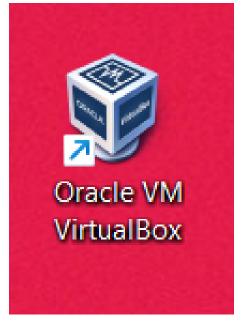
> UTM instead of VirtualBox

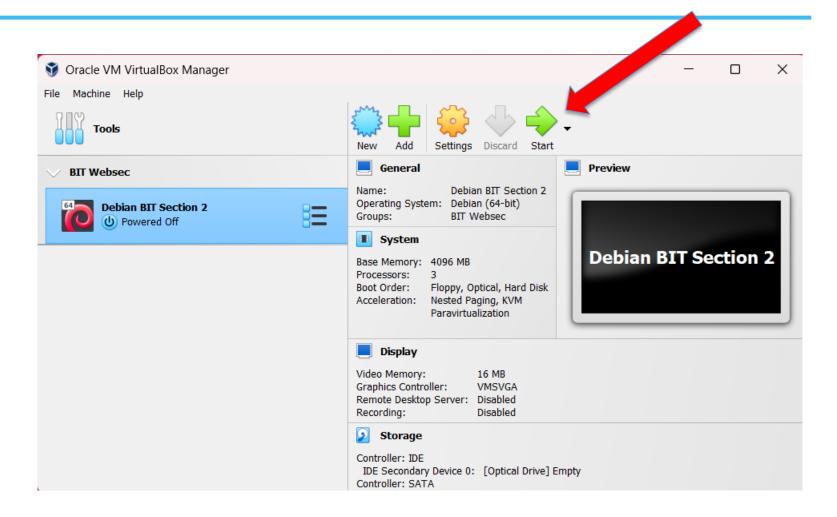
Installing Putty and WinSCP

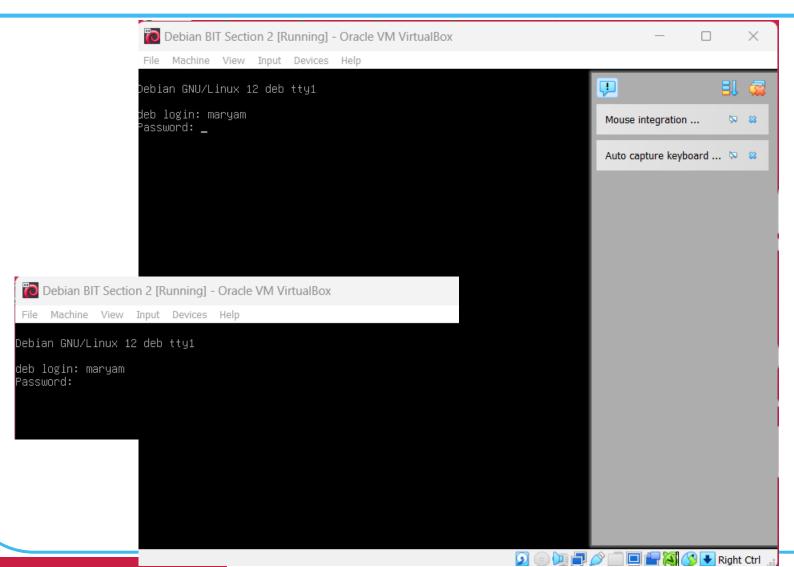
Oracle VM VirtualBox

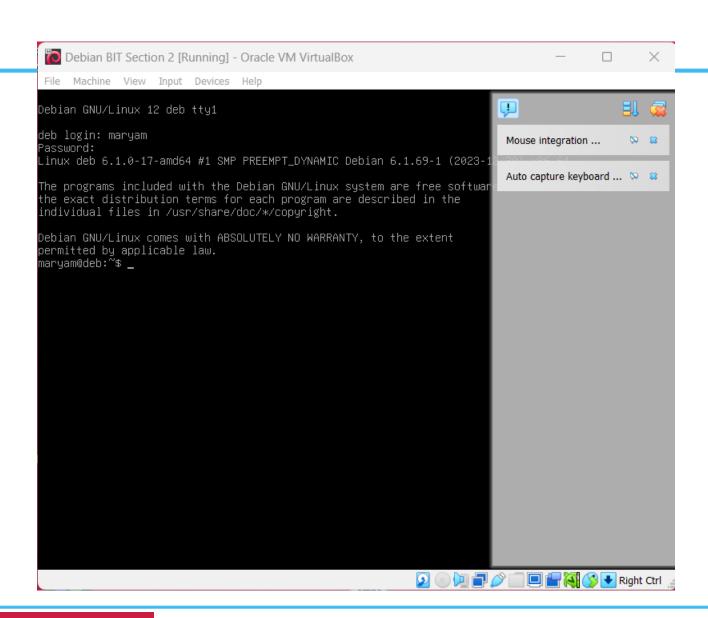
Click the "Oracle VM VirtualBox" on your

desktop









- ➤ In your command type (to prompt to root password)
 - ~\$ su -
 - Enter your password

```
maryam@deb:~$ su -
Password:
root@deb:~#
```

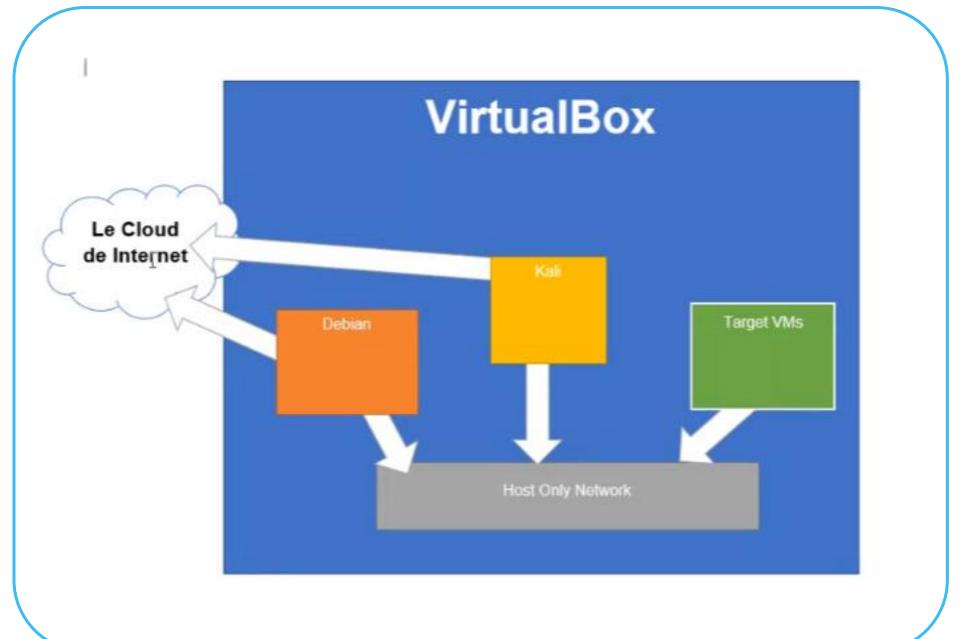
root@deb:~# whoami root

root@deb:~# ip addr

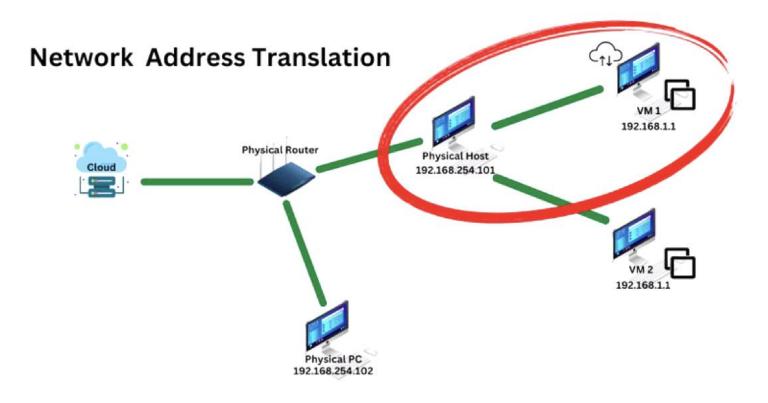
Setup Our Network

Networks

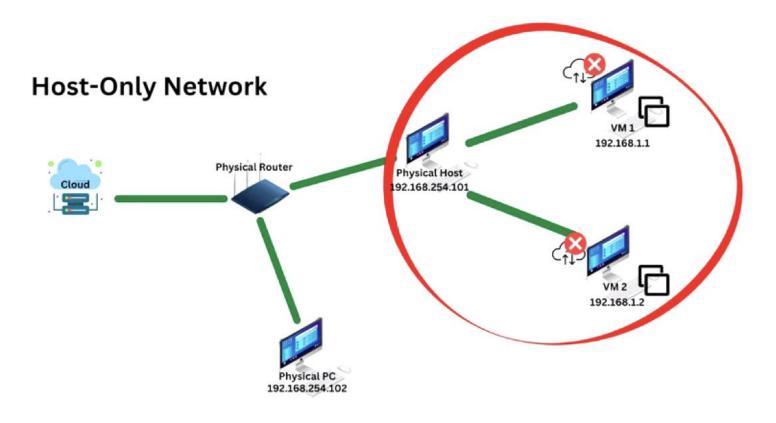
- In virtual machine networking, the IP addresses associated with different network types
 - NAT (Network Address Translation): allows the virtual machine (VM) to access the internet. It starts with 10.x.x.x.
 - Host-Only Network: is used to set up a private network between the host (windows or Mac) and the VM.



Network Address Translation (NAT)



Host-only Network



Debian: look at current network setting

▶ ip addr

```
root@deb:~# ip addr
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default glen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
   ∕inet6 ::1/128 scope host noprefixroute
      valid_lft forever preferred_lft forever
  enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qle
    link/ether 08:00:27:04:70:a0 brd ff:ff:ff:ff:ff
    inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic enp0s3
       valid_lft 85671sec preferred_lft 85671sec
    inet6 fe80::a00:27ff:fe04:70a0/64 scope link
       valid_lft forever preferred_lft forever
3: enp0s8: <BROADCAST,MULTICAST> mtu 1500 qdisc noop state DOWN group default qlen 1000
   link/ether 08:00:27:72:c4:58 brd ff:ff:ff:ff:ff
  ot@deb:~# _
```

Debian IP address vs. MAC address

- ➤ IP Address: It helps in identifying the location of a device on a network (like the internet).
- > Example of IP addresses: IPV4 (e.g., 192.168.1.1)
- ➤ MAC Address: It helps in uniquely identifying a device on a local network and facilitates data transfer between devices on the same network.
- ➤ MAC addresses are usually fixed and burned into the network hardware, typically formatted like 00:1A: 2B: 3C: 4D:5E. It does not change when switching networks.

Setup Networks in Debian

root@deb:~# cat /etc/network/interfaces

```
root@deb:~# cat /etc/network/interfaces
# This file describes the network interfaces available on your system
# and how to activate them. For more information, see interfaces(5).

source /etc/network/interfaces.d/*

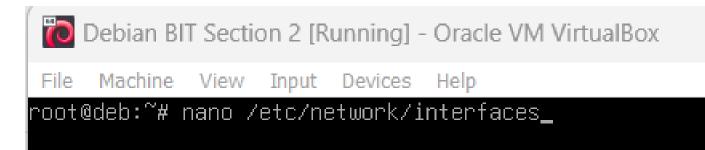
# The loopback network interface
auto lo
iface lo inet loopback

# The primary network interface
allow-hotplug enp0s3
iface enp0s3 inet dhcp
```



"nano" Text Editor

- nano /etc/network/interfaces
- ➤ Use "tab" to reduce syntax error



Add the following text to the end of the document

```
/etc/network/interfaces *
  GNU nano 7.2
  This file describes the network interfaces available on your system
  and how to activate them. For more information, see interfaces(5).
source /etc/network/interfaces.d/*
# The loopback network interface
auto lo
iface lo inet loopback
# The primary network interface
allow-hotplug enp0s3
iface enp0s3 inet dhcp
# the host only network --added by maryam
allow-hotplug enp0s8
iface enp0s8 inet dhcp
```

the host only network --added by maryam allow-hotplug enp0s8 iface enp0s8 inet dhcp

Save the Changes

➤ Left Control + O ---> to save

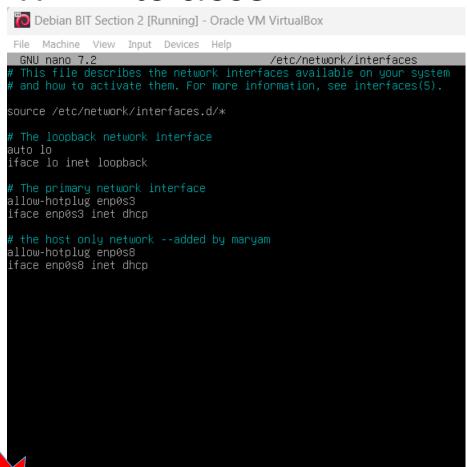
```
File Name to Write: /etc/network/interfaces__
^G Help M-D DOS Format M-A Append M-B Backup File
^C Cancel M-M Mac Format M-P Prepend ^T Browse

\[ \begin{align*}
\text{\subseteq} & \begin{align*}
\text{\subsete
```

> Hit enter

Close the editor

➤ Left Control + X --- > to close





root@deb:~#

Double checking changes



Debian BIT Section 2 [Running] - Oracle VM VirtualBox

File Machine View Input Devices

root@deb:~# nano /etc/network/interfaces_



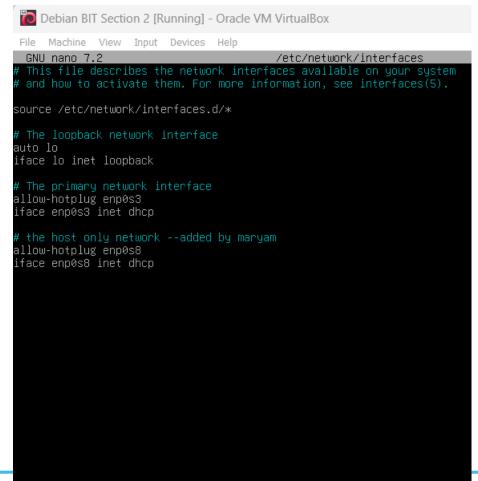
Double checking changes

➤ The changes are visible

```
/etc/network/interfaces *
  GNU nano 7.2
  This file describes the network interfaces available on your system
  and how to activate them. For more information, see interfaces(5).
source /etc/network/interfaces.d/*
 The loopback network interface
auto lo
iface lo inet loopback
 The primary network interface
allow-hotplug enp0s3
iface enp0s3 inet dhcp
 the host only network --added by maryam
allow-hotplug enp0s8
iface enp0s8 inet dhcp
```

Close the editor

➤ Left Control + X --- > to close





root@deb:~#

Debian: checking our adapter working or not

▶ ip addr

```
root@deb:~# ip addr
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default glen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
   ∕inet6 ::1/128 scope host noprefixroute
      valid_lft forever preferred_lft forever
  enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qle
    link/ether 08:00:27:04:70:a0 brd ff:ff:ff:ff:ff:ff
   inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic enp0s3
      valid_lft 85671sec preferred_lft 85671sec
   inet6 fe80::a00:27ff:fe04:70a0/64 scope link
      valid_lft forever preferred_lft forever
3: enp0s8: <BROADCAST,MULTICAST> mtu 1500 qdisc noop state DOWN group default qlen 1000
    link/ether 08:00:27:72:c4:58 brd ff:ff:ff:ff:ff
root@deb:~# _
```

Our adapter does not work

➤ ifup enp0s8

Double checking our adapter

≥ifup enp0s8

```
Tile Machine View Input Devices Help
root@deb:~# ifup enp0s8
ifup: interface enp0s8 already configured
root@deb:~#
```

Debian: look at current network setting

> ip addr

```
root@deb:~# ip addr
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
   link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
      valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host noprefixroute
      valid_lft forever preferred_lft forever
 enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default glen 100
    link/ether 08:00:27:04:70:a0 brd ff:ff:ff:ff:ff
    inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic enp0s3
      valid_lft 83238sec preferred_lft 83238sec
    ≰net6 fe80::a00:27ff:fe04:70a0/64 scope link
      valid_lft forever preferred_lft forever
  enp0s8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default glen 100
    link/ether 08:00:27:72:c4:58 brd ff:ff:ff:ff:ff
    inet 192.168.56.101/24 brd 192.168.56.255 scope global dynamic enp0s8
      valid_lft 536sec preferred_lft 536sec
    inet6 fe80::a00:27ff:fe72:c458/64 scope link
      valid_lft forever preferred_lft forever
```

You have two adapters (enp0s3, enp0s8), so your setting is good.



Debian: rebot to double check

- > reboot
- **>** login
- ➤ Become root: su –

Debian: your IP address is visible

≻ip addr

```
root@deb:~# ip addr
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host noprefixroute
       valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 100
    link/ether 08:00:27:04:70:a0 brd ff:ff:ff:ff:ff:ff
    inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic enp0s3
       valid_lft 86350sec preferred_lft 86350sec
    inet6 fe80::a00:27ff:fe04:70a0/64 scope link
       valid_lft forever preferred_lft forever
3: enp0s8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 100
    link/ether 08:00:27:72:c4:58 brd ff:ff:ff:ff:ff
    inet 192.168.56.101/24 brd 192.168.56.255 scope global dynamic enp0s8
       valid_lft 554sec preferred_lft 554sec
    inet6 fe80::a00:27ff:fe72:c458/64 scope link
       valid_lft forever preferred_lft forever
```

Download PuTTY

- ➤ greenend.org.uk
- https://www.chiark.greenend.org.uk/~sgtatham/putty/latest.html

Download the Package

Download PuTTY: latest release (0.81)

<u>Home</u> | <u>FAQ</u> | <u>Feedback</u> | <u>Licence</u> | <u>Updates</u> | <u>Mirrors</u> | <u>Keys</u> | <u>Links</u> | <u>Team</u> Download: **Stable** · Snapshot | Docs | Changes | Wishlist

This page contains download links for the latest released version of PuTTY. Currently this is 0.81, released on 2024-04-15.

When new releases come out, this page will update to contain the latest, so this is a good page to bookmark or link to. Alternatively, here is a permanent link to the 0.81 release.

Release versions of PuTTY are versions we think are reasonably likely to work well. However, they are often not the most up-to-date version of the code available. If you have a problem with this release, then it might be worth trying out the <u>development snapshots</u>, to see if the problem has already been fixed in those versions.

Package files

You probably want one of these. They include versions of all the PuTTY utilities (except the new and slightly experimental Windows pterm).

(Not sure whether you want the 32-bit or the 64-bit version? Read the <u>FAQ entry.</u>)

We also publish the latest PuTTY installers for all Windows architectures as a free-of-charge download at the Microsoft Store; they usually take a few days to appear there after we release them.

MSI ('Windows Installer')

 64-bit x86:
 putty-64bit-0.81-installer.msi
 (signature)

 64-bit Arm:
 putty-arm64-0.81-installer.msi
 (signature)

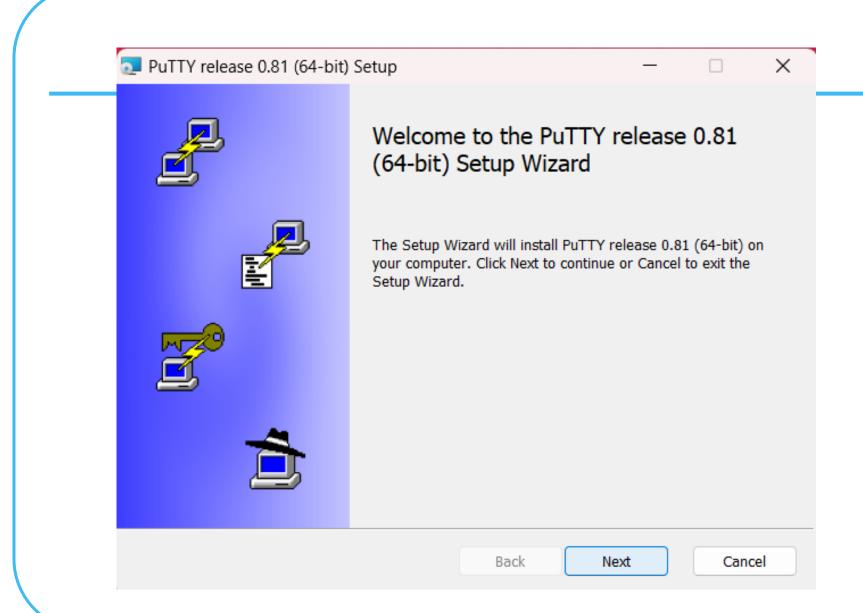
 32-bit x86:
 putty-0.81-installer.msi
 (signature)

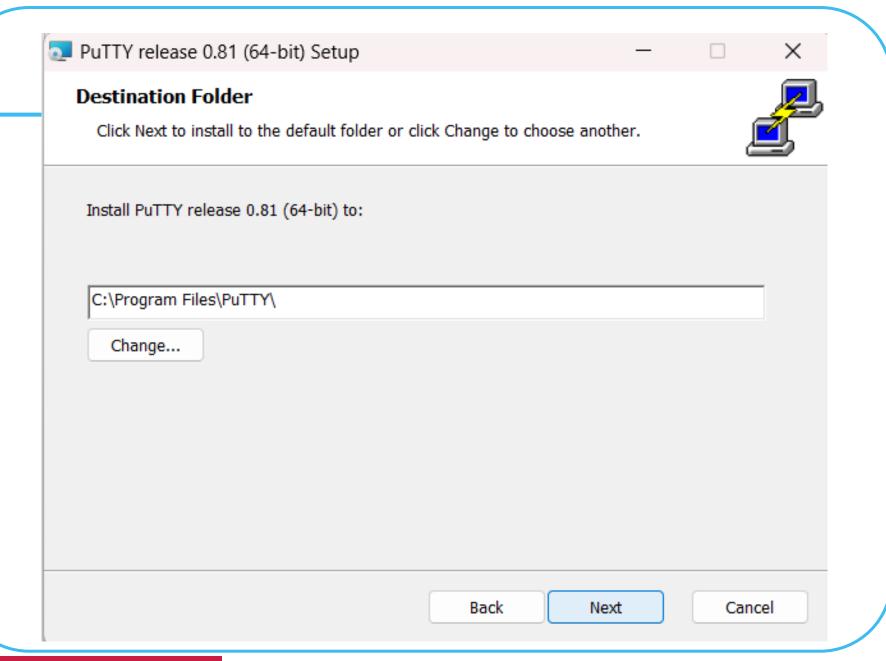
Unix source archive

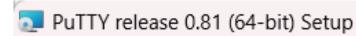
.tar.gz: <u>putty-0.81.tar.gz</u> <u>(signature)</u>



Install PuTTY







_

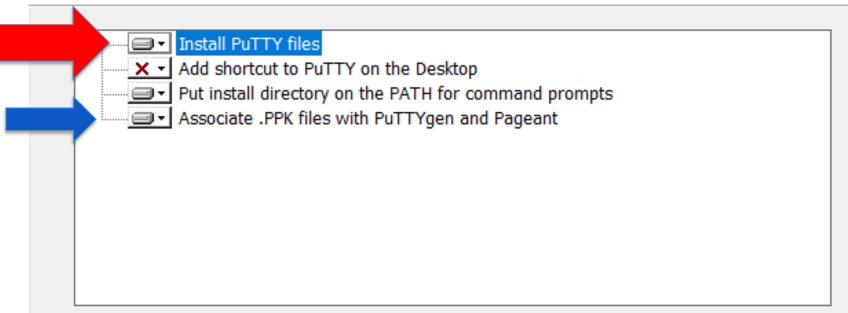




Product Features

Select the way you want features to be installed.





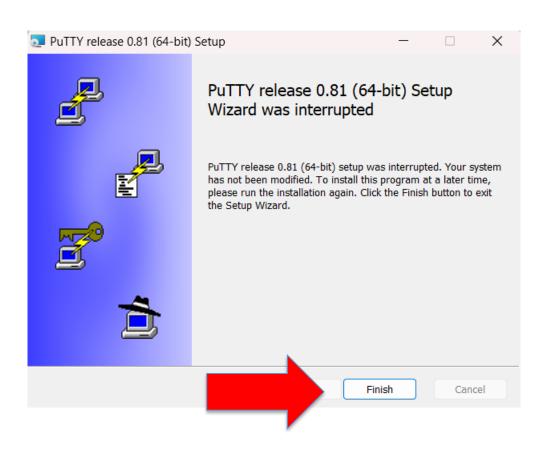
This feature requires 10KB on your hard drive.

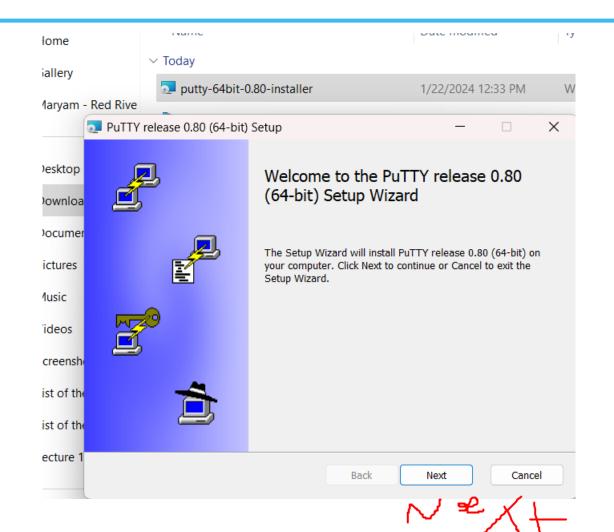
Back



Cancel



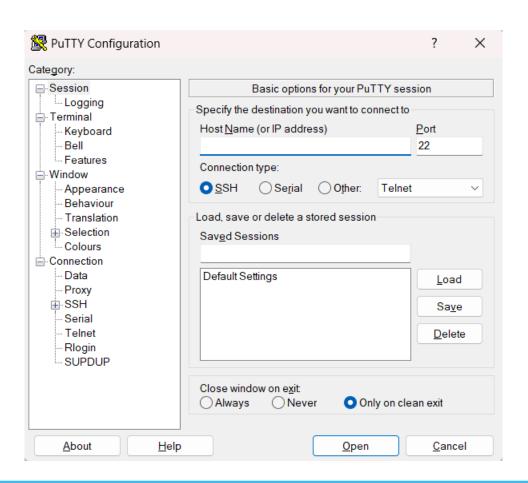


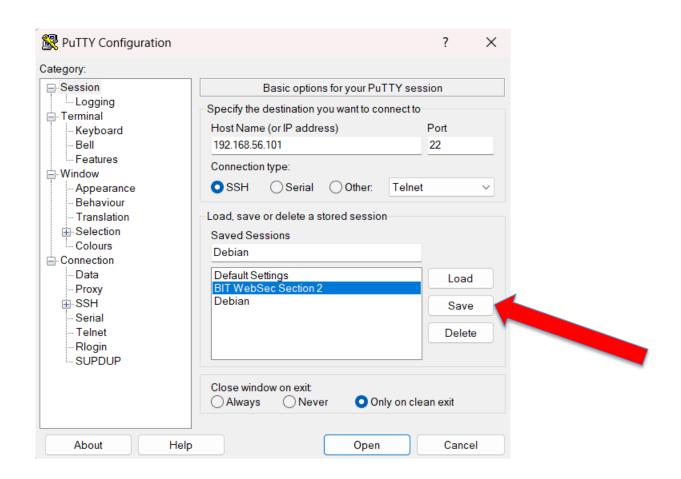


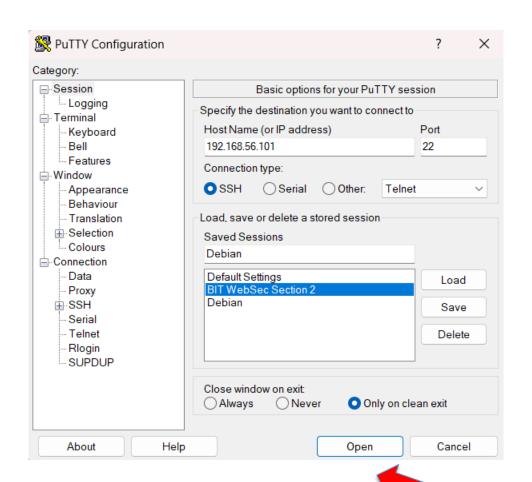
+1

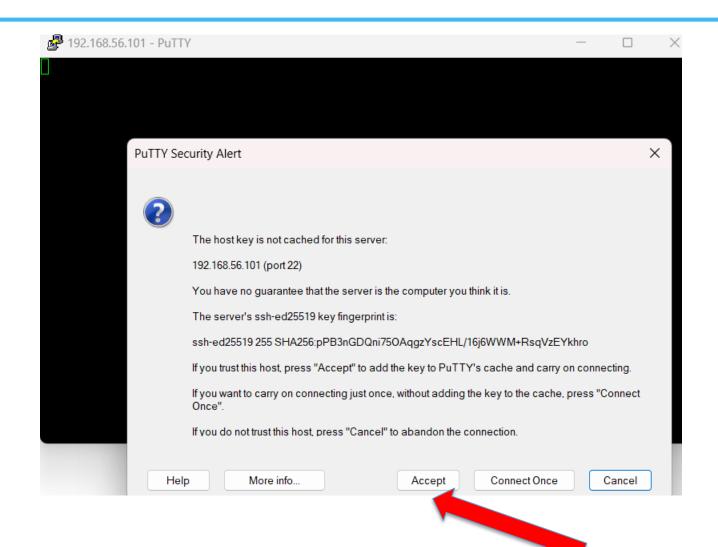
➤ Open PuTTY

Open PuTTY in Windows









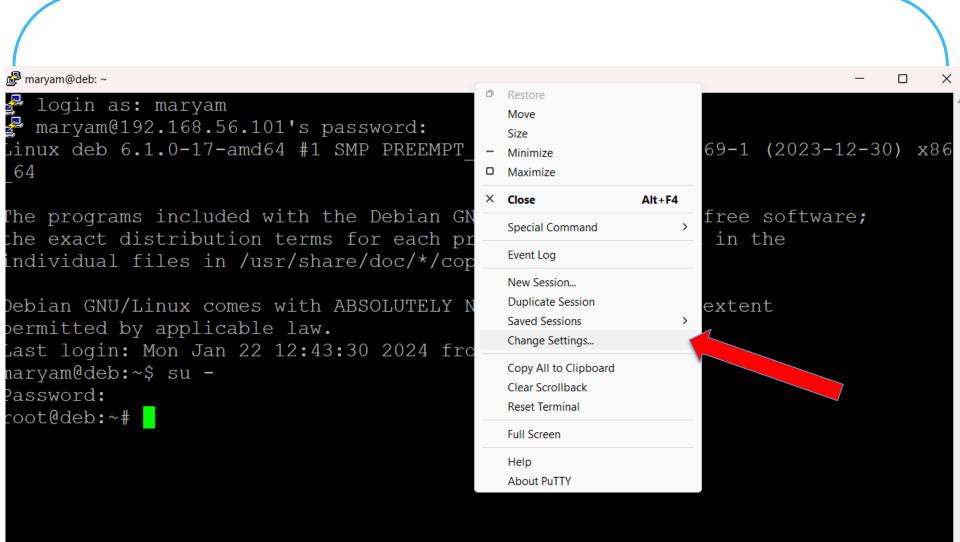
Login as user

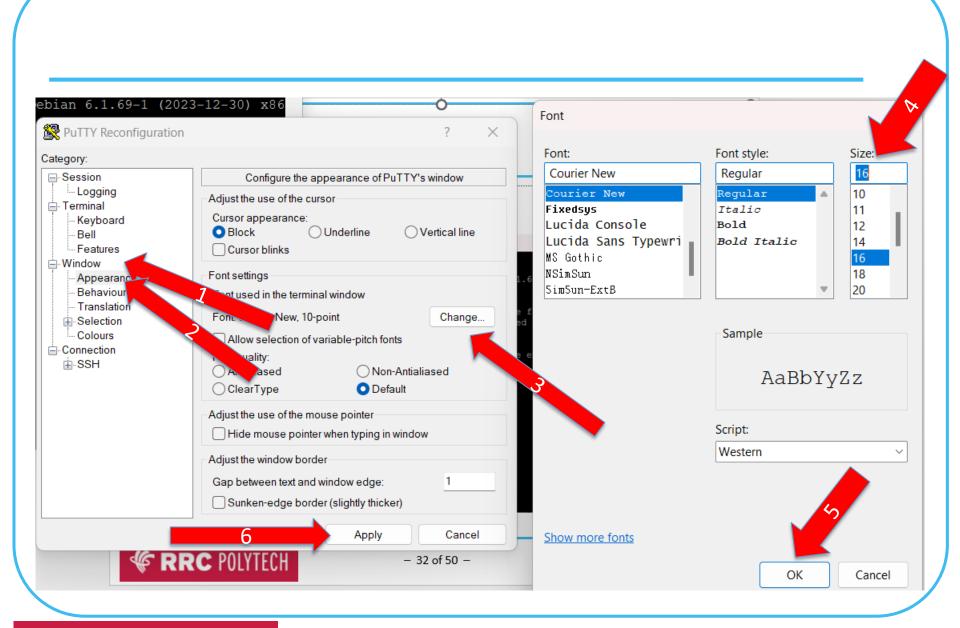
```
🔑 maryam@deb: ~
                                                                              X
💤 login as: maryam
maryam@192.168.56.101's password:
Linux deb 6.1.0-17-amd64 #1 SMP PREEMPT DYNAMIC Debian 6.1.69-1 (2023-12-30) x86
The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Mon Jan 22 12:32:11 2024 from 192.168.56.1
maryam@deb:~$
```

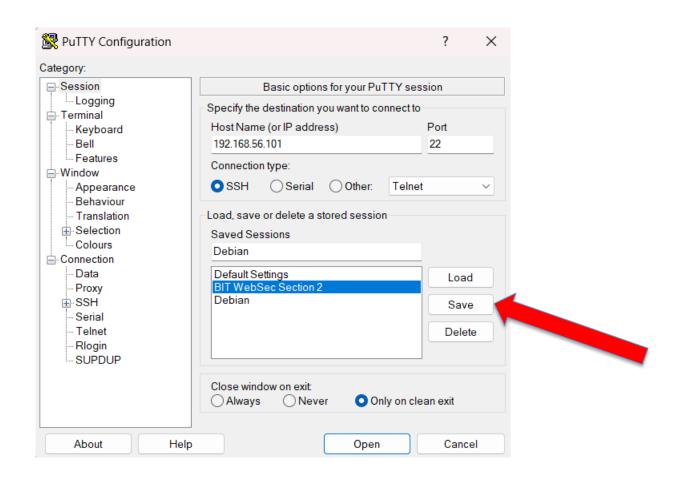
Login as root

≽su -

```
Amaryam@deb: ~
💤 login as: maryam
maryam@192.168.56.101's password:
Linux deb 6.1.0-17-amd64 #1 SMP PREEMPT DYNAMIC Debian 6.1.69-1 (2023-12-30) x86
64
The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Mon Jan 22 12:43:30 2024 from 192.168.56.1
maryam@deb:~$ su -
Password:
root@deb:~#
```





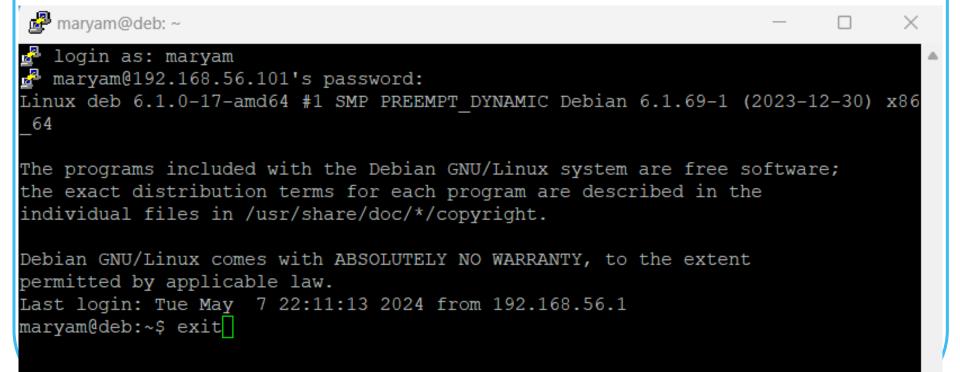


PuTTY Advantages

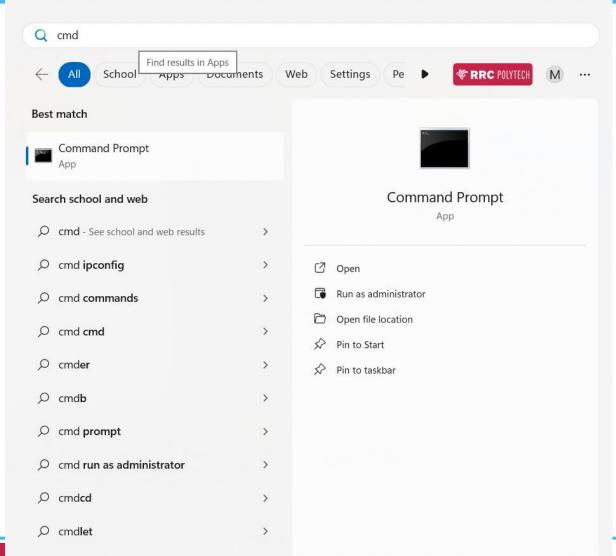
- > When you install PuTTY, you can use mouse.
- > Your screen font is bigger.
- > You can copy and paste text in PuTTY.

Exit PuTTY

- > exit
- ➤ Hit enter



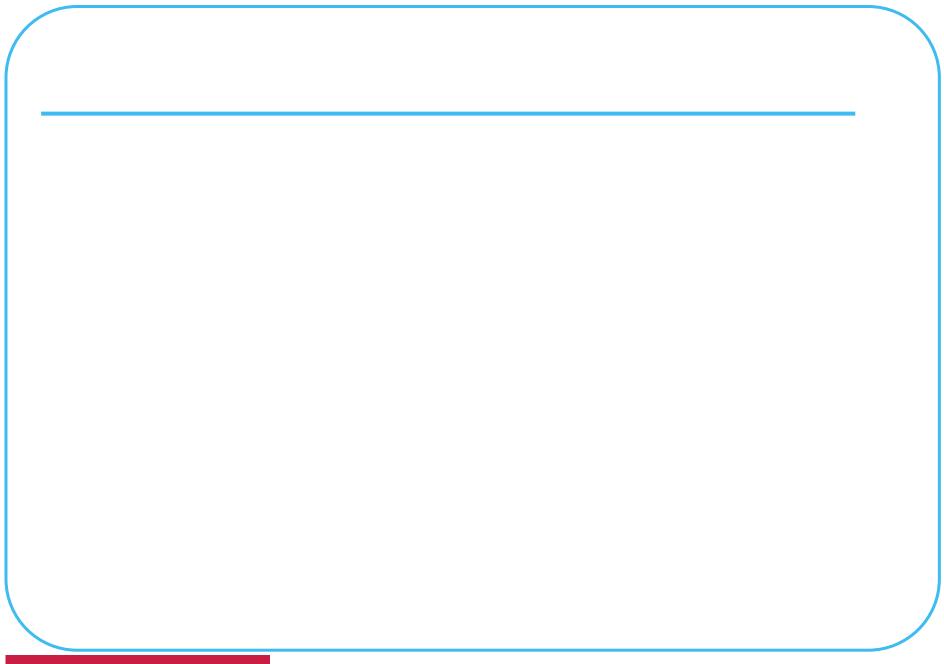
Instead of Putty Configuration



Instead of PuTTY Configuration

> Type sch

C:\Users\mghanbari>ssh maryam@192.168.56.101



Installing WinSCP

WinSCP (to copy files between your computer and remote servers using FTP, FTPS, ...)

- ➤ WinSCP is a popular SFTP client and FTP client for Microsoft Windows.
- Use WinSCP to copy files between your computer and remote servers using FTP, FTPS, SCP, SFTP, WebDAV or S3 file transfer protocols.

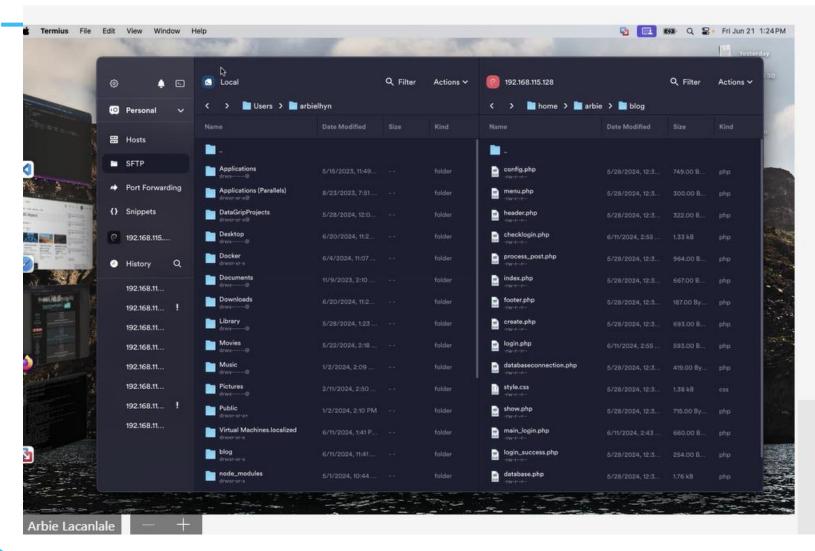
Termius instead of WinSCP FOR

Transferring files for mac

- > termius for mac
- Free SSH client for Mac OSX (termius.com)
- https://termius.com/free-ssh-client-for-mac-os

https://termius.com/download/macos

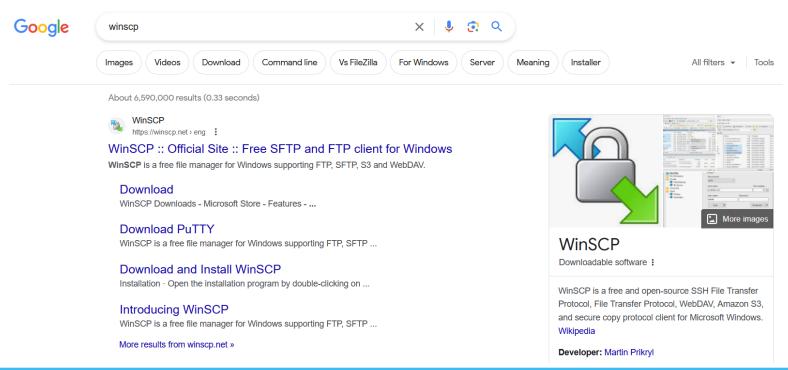
Termius Environment for mac



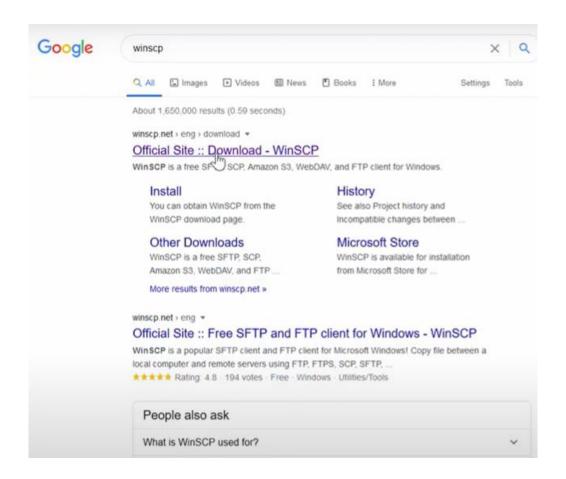
WinSCP

➤ Download WinSCP

 https://www.google.com/search?client=firefox-bd&q=winscp



Download WinSCP



WinSCP 6.3 Download

WinSCP 6.3 is a major application update. New features and enhancements include:

- Single large file can be downloaded using multiple SFTP connections.
- Support for OpenSSH certificates for host verification.
- File hash can be used as criterion for synchronization.
- Improved behavior when duplicating and moving remote files.
- Support for HMAC-SHA-512.
- TLS/SSL core upgraded to OpenSSL 3.
- · List of all changes.

DOWNLOAD WINSCP 6.3.4 (11 MB)

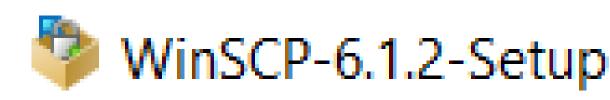


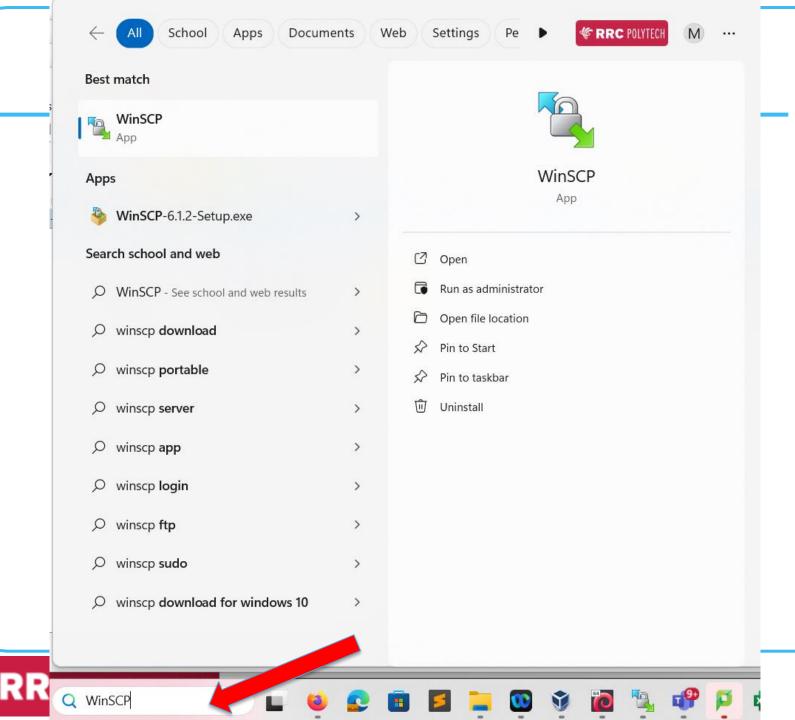
3,388,869 downloads since 2024-06-17

What is this?

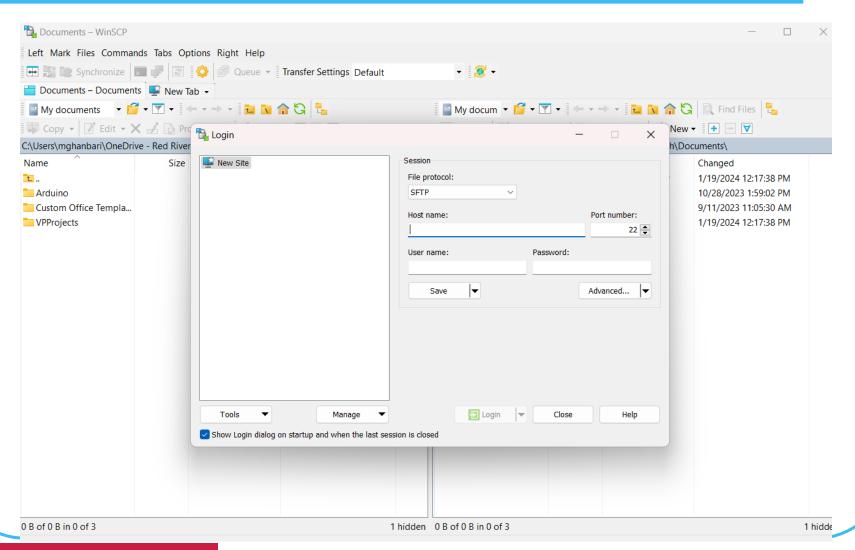


Download WinSCP and Click on it to Install





WinSCP

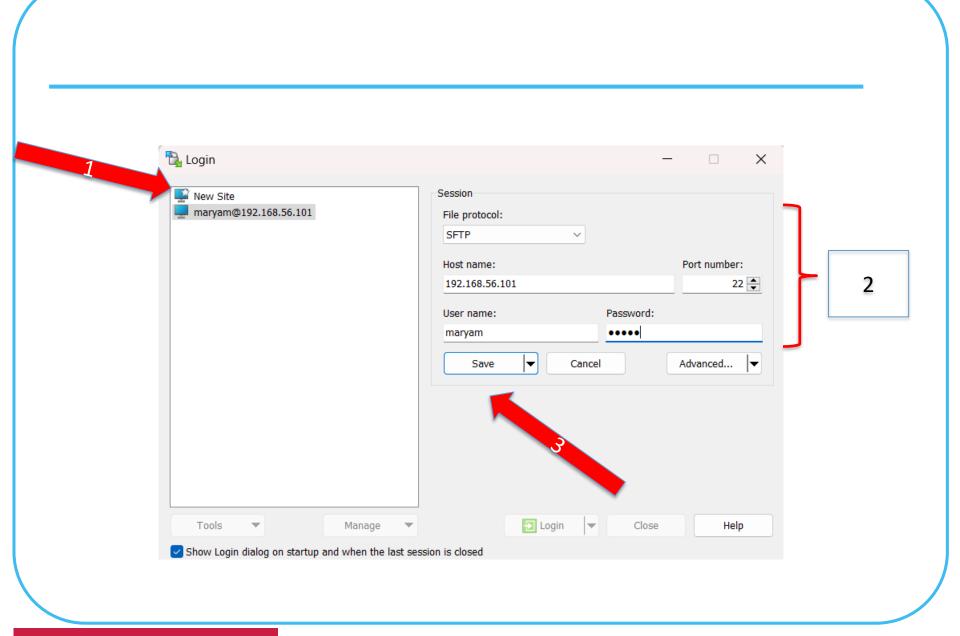


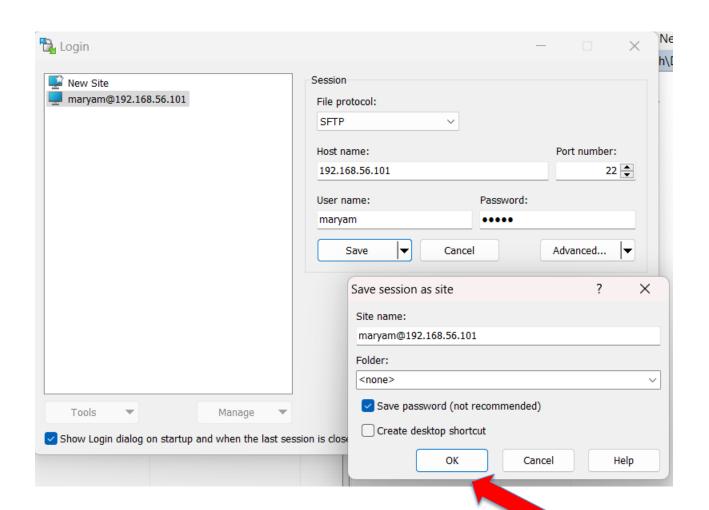
WinSCP

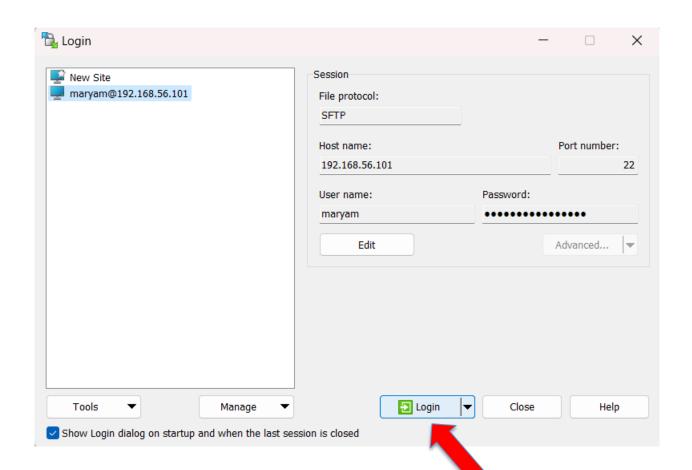
- ➤ What is your IP Address?
- ➤ I have typed in Debian: ip addr
- > My IP address is : 192.168.56.101

inet 192.168.56.101/24 b

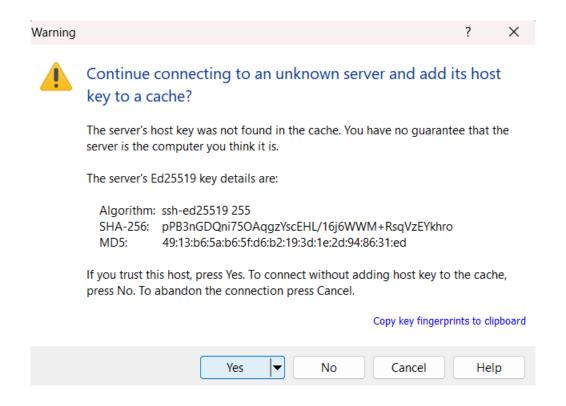




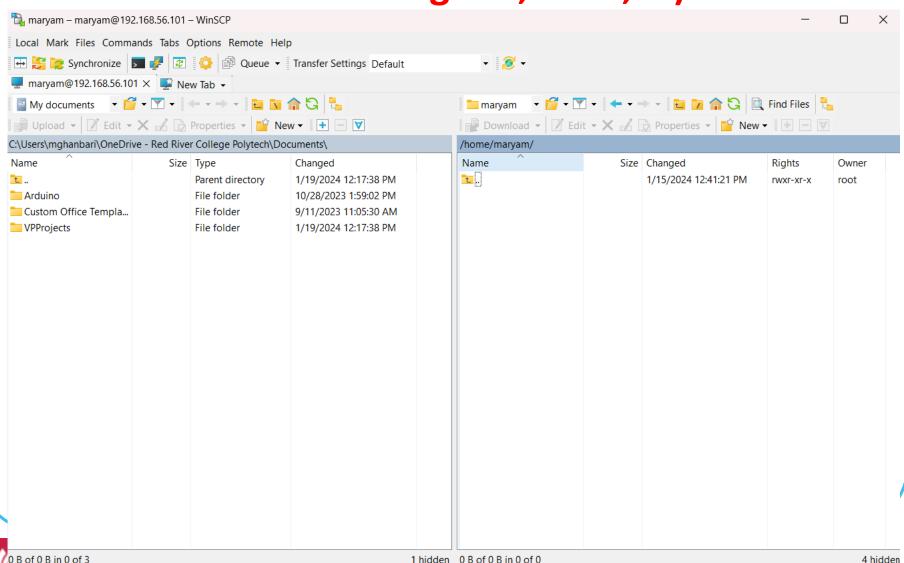




WminSCP (to copy files between your computer and remote servers using FTP, FTPS, ...)



WinSCP (to copy files between your computer and remote servers using FTP, FTPS, ...)



0:03:30

Thank you