

03. Remote control

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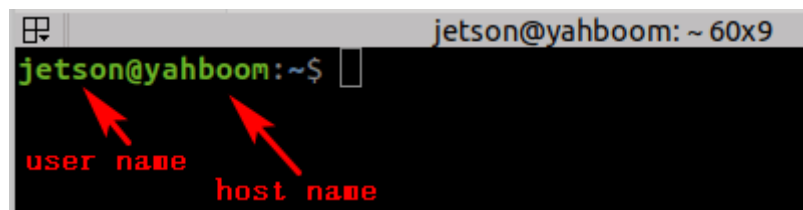
putty: <https://www.chiark.greenend.org.uk/~sgtatham/putty/latest.html>

VNC: <https://www.realvnc.com/en/connect/download/viewer/>

WinSCP: <https://winscp.net/eng/download.php>

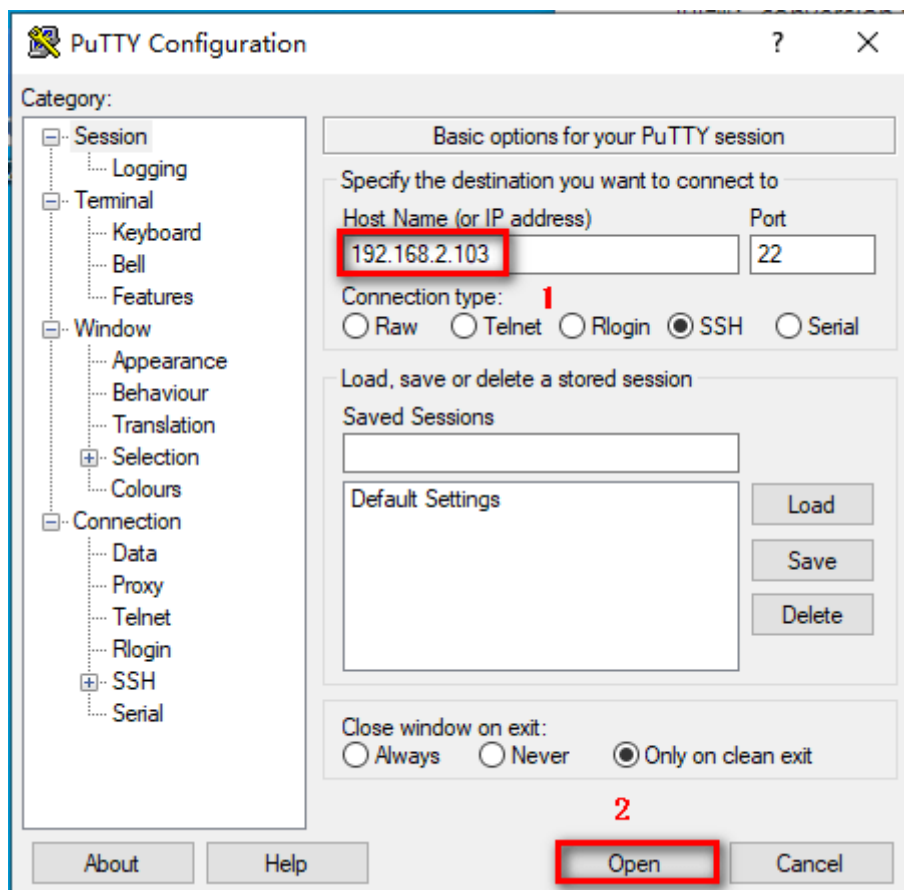
Note: You must know the IP of the robot before you can log in remotely, which can be displayed on an external monitor or OLED.

For example, the following picture: username [jetson], hostname [yahboom].

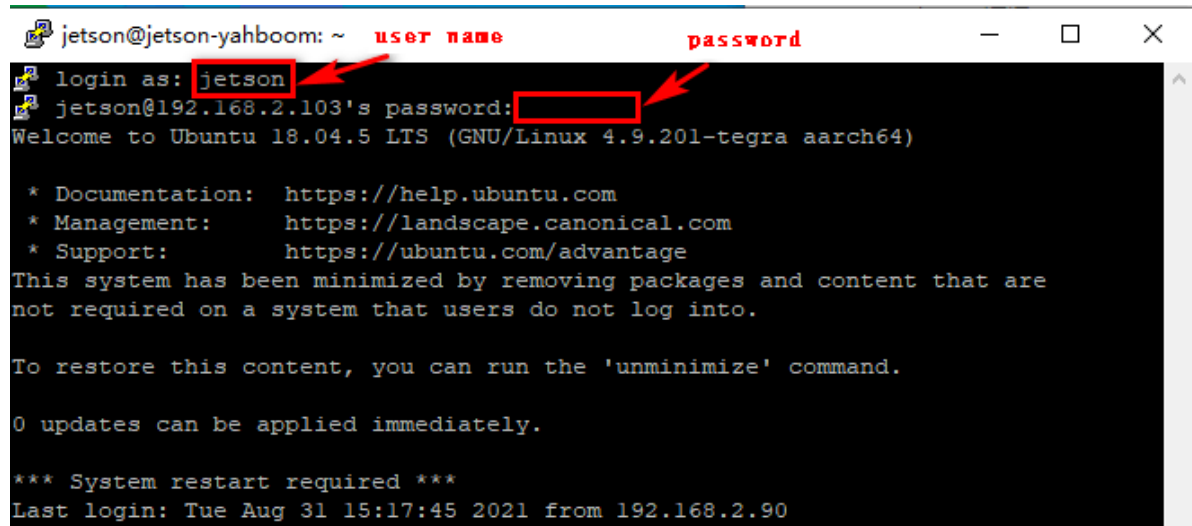


3.1. PuTTY Login

Go to the top related link, download the installation file, double click [.exe] file to install.



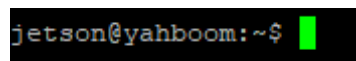
Enter the robot IP address and click [open];



```
jetson@jetson-yahboom: ~  
login as: jetson  
jetson@192.168.2.103's password:  
Welcome to Ubuntu 18.04.5 LTS (GNU/Linux 4.9.201-tegra aarch64)  
  
* Documentation:  https://help.ubuntu.com  
* Management:    https://landscape.canonical.com  
* Support:       https://ubuntu.com/advantage  
This system has been minimized by removing packages and content that are  
not required on a system that users do not log into.  
  
To restore this content, you can run the 'unminimize' command.  
  
0 updates can be applied immediately.  
  
*** System restart required ***  
Last login: Tue Aug 31 15:17:45 2021 from 192.168.2.90
```

Enter the username [jetson] and password [yahboom], enter to confirm.

The sign of successful login appears as shown below



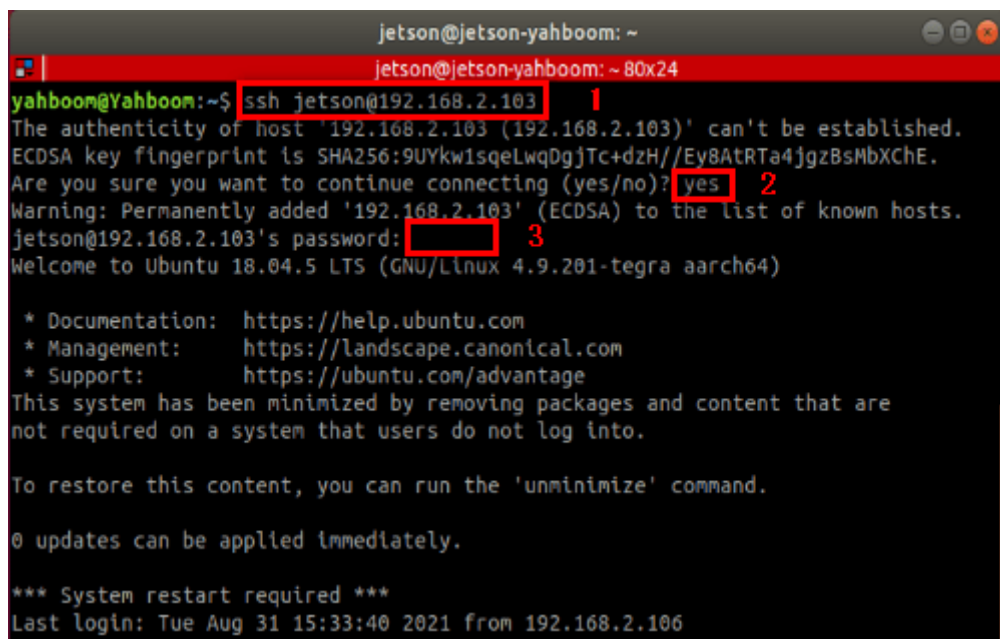
```
jetson@yahboom:~$
```

3.2 SSH

Note: The interface may not be displayed.

- Login

Operation under ubuntu system



```
jetson@jetson-yahboom: ~  
jetson@jetson-yahboom: ~ 80x24  
yahboom@Yahboom:~$ ssh jetson@192.168.2.103  
The authenticity of host '192.168.2.103 (192.168.2.103)' can't be established.  
ECDSA key fingerprint is SHA256:9UYkw1sqeLwqDgjTc+dzH//Ey8AtRTa4jgz8sMbXChE.  
Are you sure you want to continue connecting (yes/no)? yes  
Warning: Permanently added '192.168.2.103' (ECDSA) to the list of known hosts.  
jetson@192.168.2.103's password:  
Welcome to Ubuntu 18.04.5 LTS (GNU/Linux 4.9.201-tegra aarch64)  
  
* Documentation:  https://help.ubuntu.com  
* Management:    https://landscape.canonical.com  
* Support:       https://ubuntu.com/advantage  
This system has been minimized by removing packages and content that are  
not required on a system that users do not log into.  
  
To restore this content, you can run the 'unminimize' command.  
  
0 updates can be applied immediately.  
  
*** System restart required ***  
Last login: Tue Aug 31 15:33:40 2021 from 192.168.2.106
```

1) Enter the following command in the terminal

```
ssh jetson@192.168.2.103
```

2) then enter [yes], 3) enter the password [yahboom]

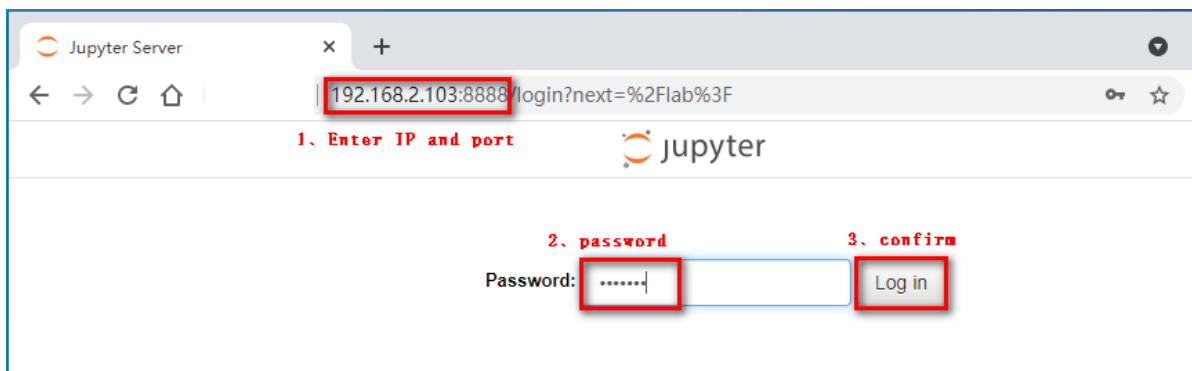
- Copy the file

If jetson's IP is 192.168.2.103, username: jetson; virtual machine username: yahboom

```
scp jetson@192.168.2.103:/home/jetson/xxx.tar.gz /home/yahboom/ # 从远程复制文件到本地 (文件)
# Copy files from remote to local (files)
scp /home/yahboom/xxx.png jetson@192.168.2.103:/home/jetson/ # 从本地复制文件到远程 (文件)
# Copy files from local to remote (files)
scp -r jetson@192.168.2.103:/home/jetson/test /home/yahboom/ # 从远程复制目录到本地 -r (文件夹)
# Copy directory from remote to local -r (folder)
scp -r /home/yahboom/test jetson@192.168.2.103:/home/jetson/ # 从本地复制目录到远程 -r (文件夹)
# Copy directory from local to remote -r (folder)
```

3.3 jupyter lab

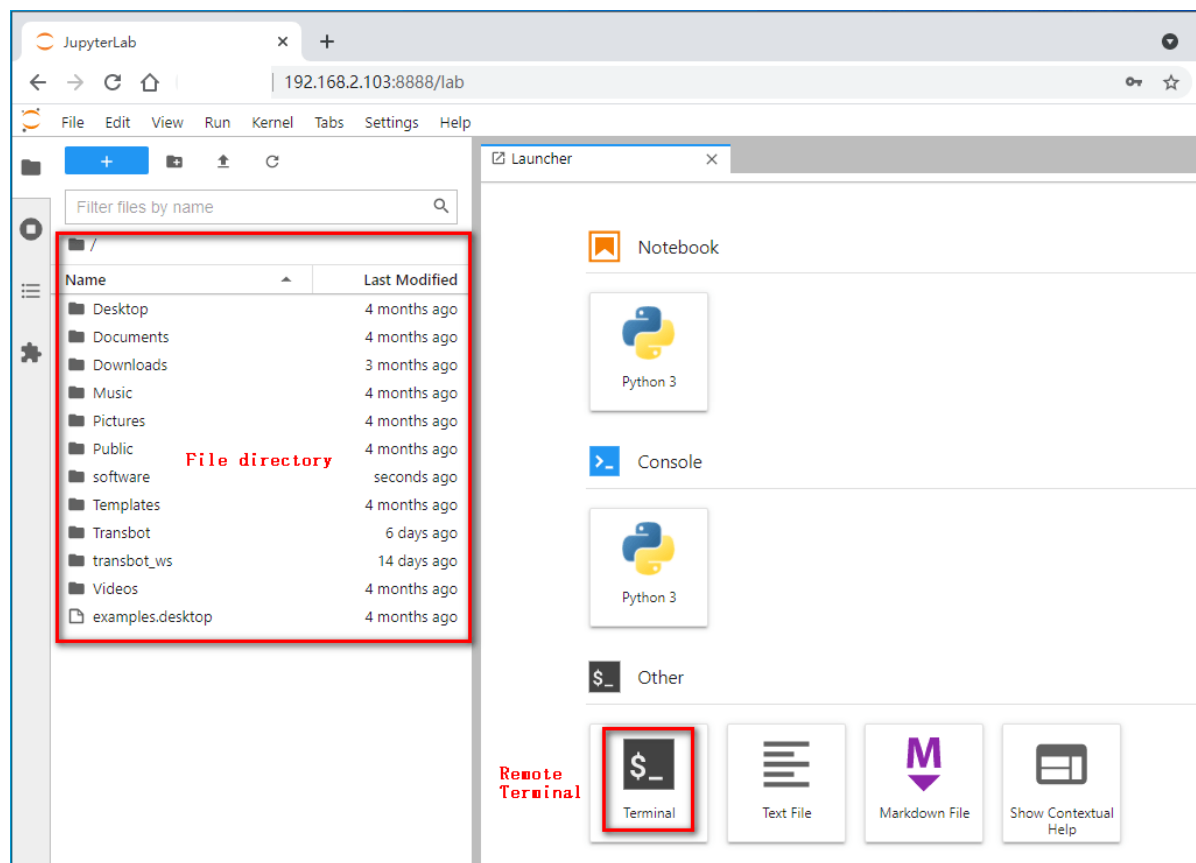
Note: The interface may not be displayed.



English input method, enter the following command, enter, enter the password [yahboom], click [Log in].

```
http://192.168.2.103:8888
```

after landing



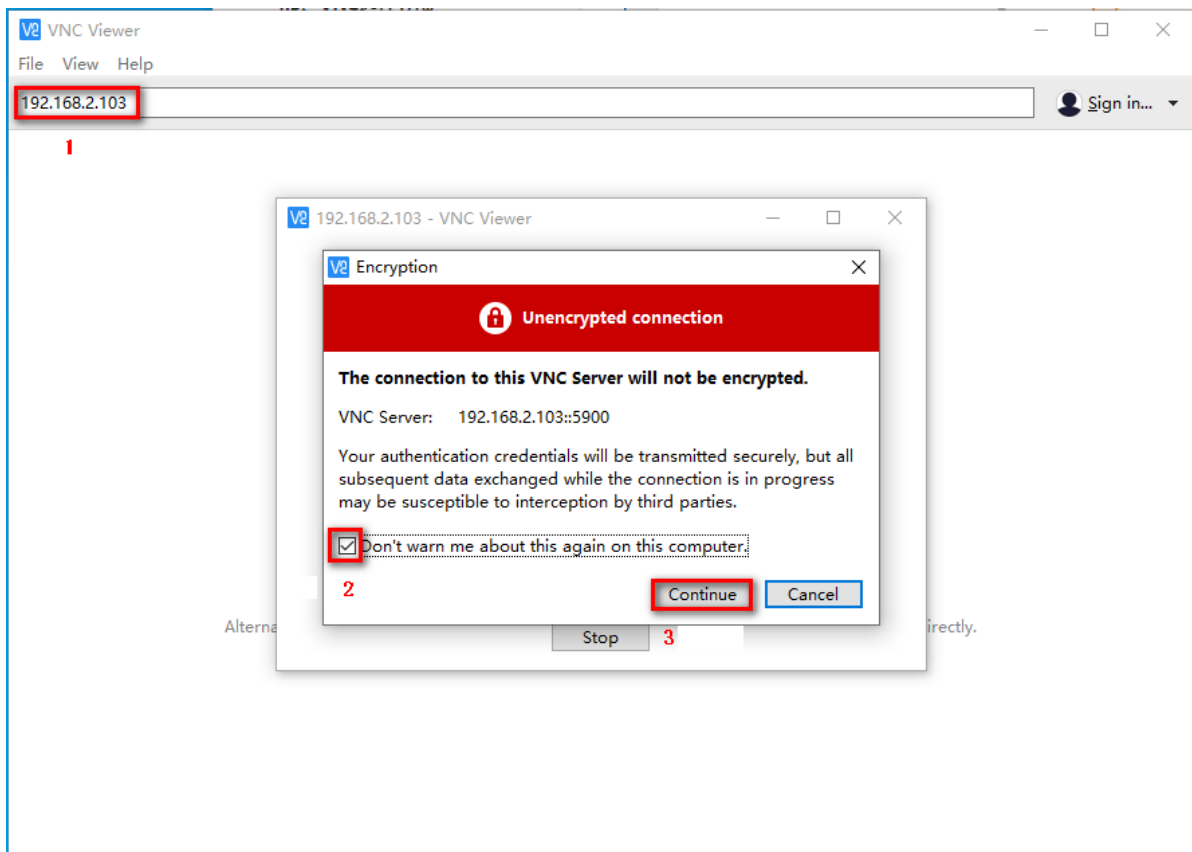
You can enter the folder and modify the contents of the file directly. Click [Terminal] under [Other] to enter the terminal and execute the required commands.

3.4. VNC

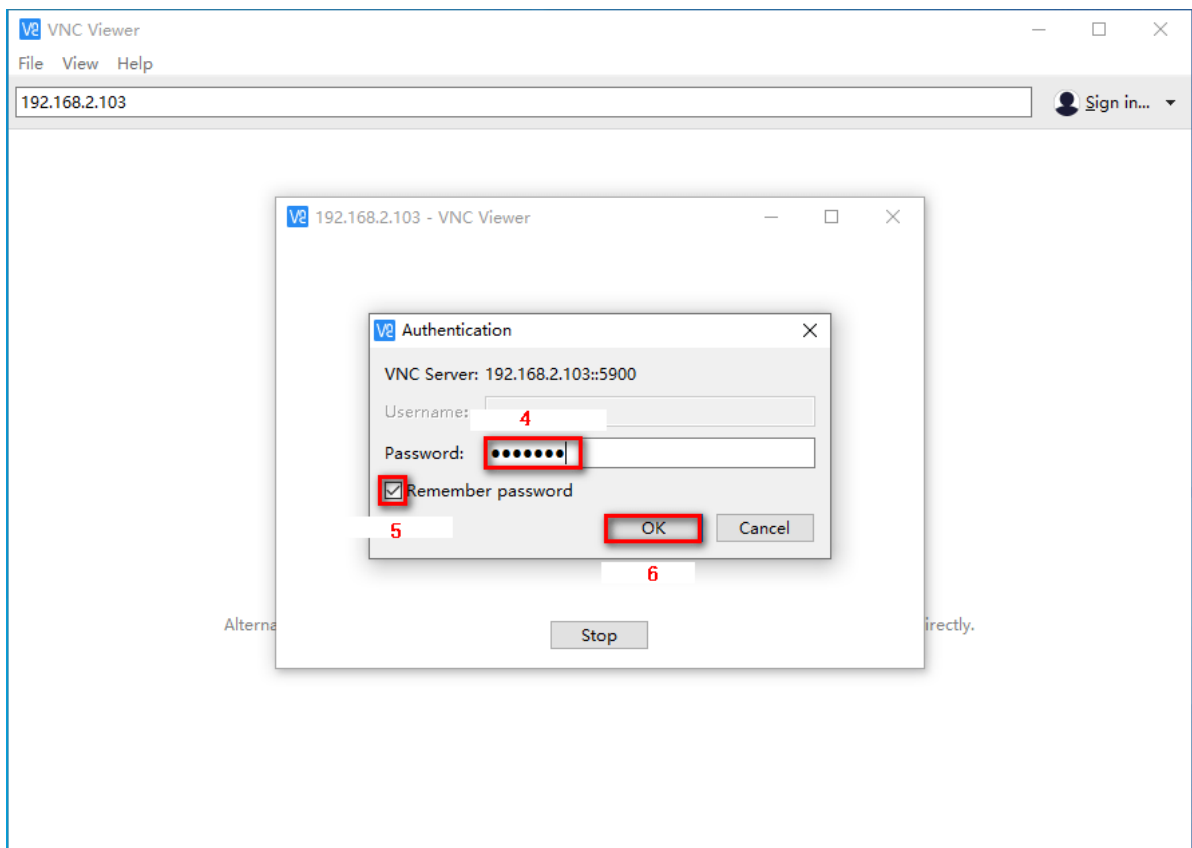
Note: The interface can be displayed.

Go to the link at the top, download the installation file, and double-click the [.exe] file to install it.

The login steps can be followed as shown in the figure. Use vnc viewer software for VNC connection, first need to query the ip address, I found here is [192.168.2.103], enter the IP address and click the keyboard [Enter].



Enter the corresponding VNC user input password [yahboom], check Remember password, click [OK] to enter the VNC interface. You don't need to enter the password again next time when the IP remains unchanged.



Adjusting Resolution

- Jetson nano

Use the command line to adjust as needed, it is only valid for this boot. Open a terminal and enter the following command

```
xrandr --fb 1920x1080
```

- Raspberry Pi

Modify the [config.txt] file permanently. Open the terminal and enter the following command

```
sudo vim /boot/firmware/config.txt
```

For example add at the bottom (set resolution to 1920x1080)

```
hdmi_force_hotplug=1
config_hdmi_boost=4
hdmi_group=2
hdmi_mode=82
hdmi_drive=2
hdmi_ignore_edid=0xa5000080
disable_overscan=1
```

```
device_tree_address=0x03000000

# The following settings are "defaults" expected to be overridden by the
# included configuration. The only reason they are included is, again, to
# support old firmwares which don't understand the "include" command.

enable_uart=1
cmdline=nobtcmd.txt

include syscfg.txt
include usercfg.txt

hdmi_force_hotplug=1
config_hdmi_boost=4
hdmi_group=2
hdmi_mode=82
hdmi_drive=2
hdmi_ignore_edid=0xa5000080
disable_overscan=1
```

A description of the configuration parameters can be found in the blog:<https://blog.csdn.net/coolwriter/article/details/77719003>

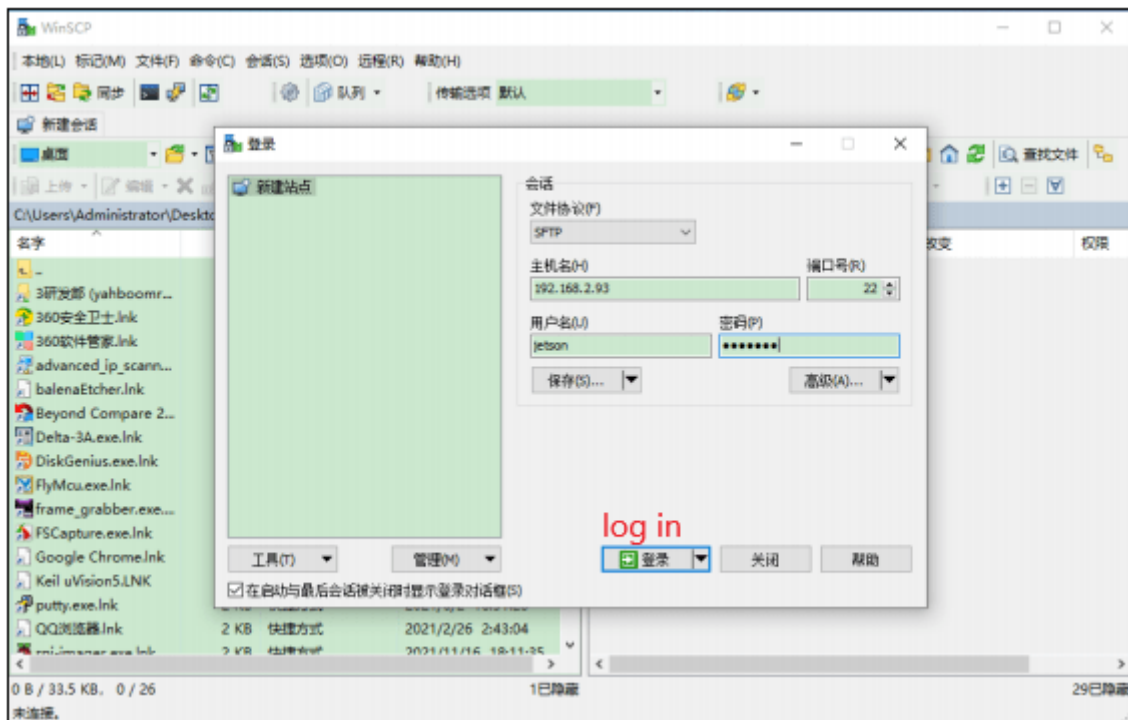
3.5 WinSCP

Go to the relevant link at the top, download the installation file, and double-click the [.exe] file to install it. Double click on the icon below to open the WinSCP software

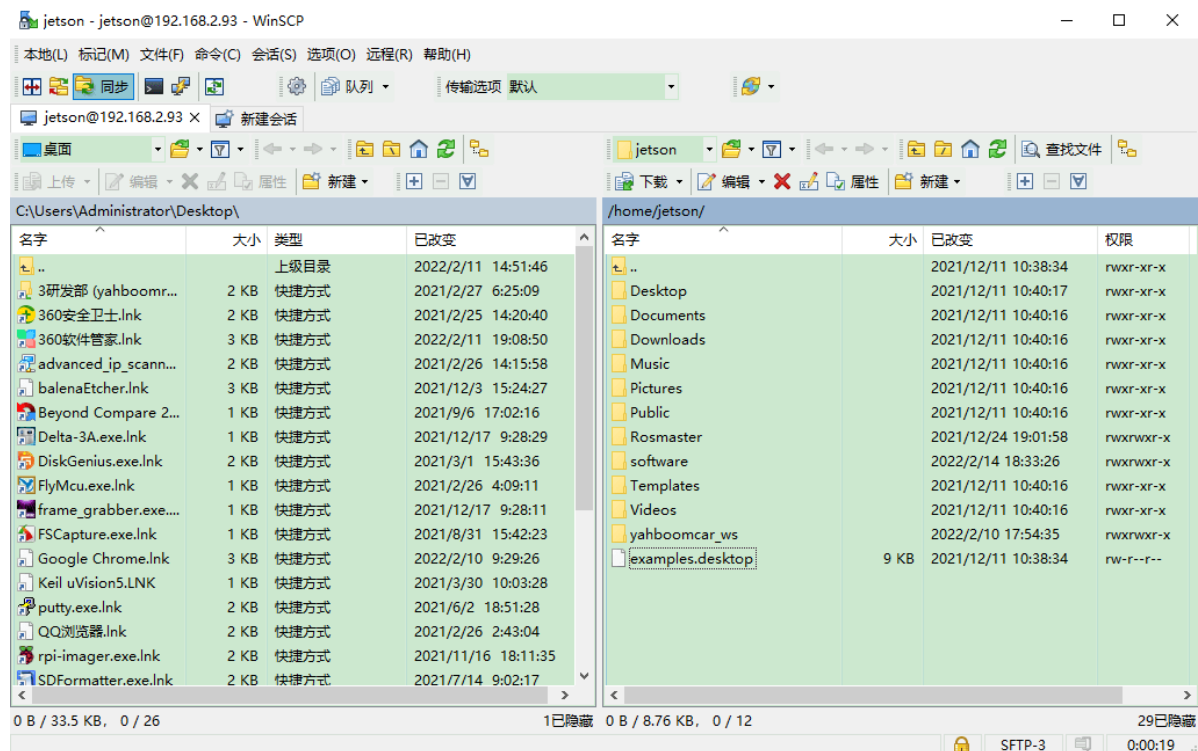


This time the robot IP [192.168.2.93], user name [jetson], password [yahboom].

If the dialog box for login does not pop up, click on the upper left part [New Session], enter the host name (H), user name, password in turn, and click login.



An example of a successful login is as follows



- Transferring files from your computer to the robot [jetson nano].

Simply select the file (folder) you want to transfer and drag it to the right side of the [/home/jetson] column.

- Transferring files from the robot [jetson nano] to the computer

Simply select the file (folder) you want to transfer and drag it to the left side, [C:] column, or directly to the desktop.

