

3. Remote control

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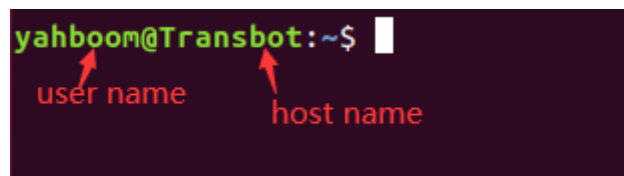
putty: <https://www.chiark.greenend.org.uk/~sgtatham/putty/latest.html>

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

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

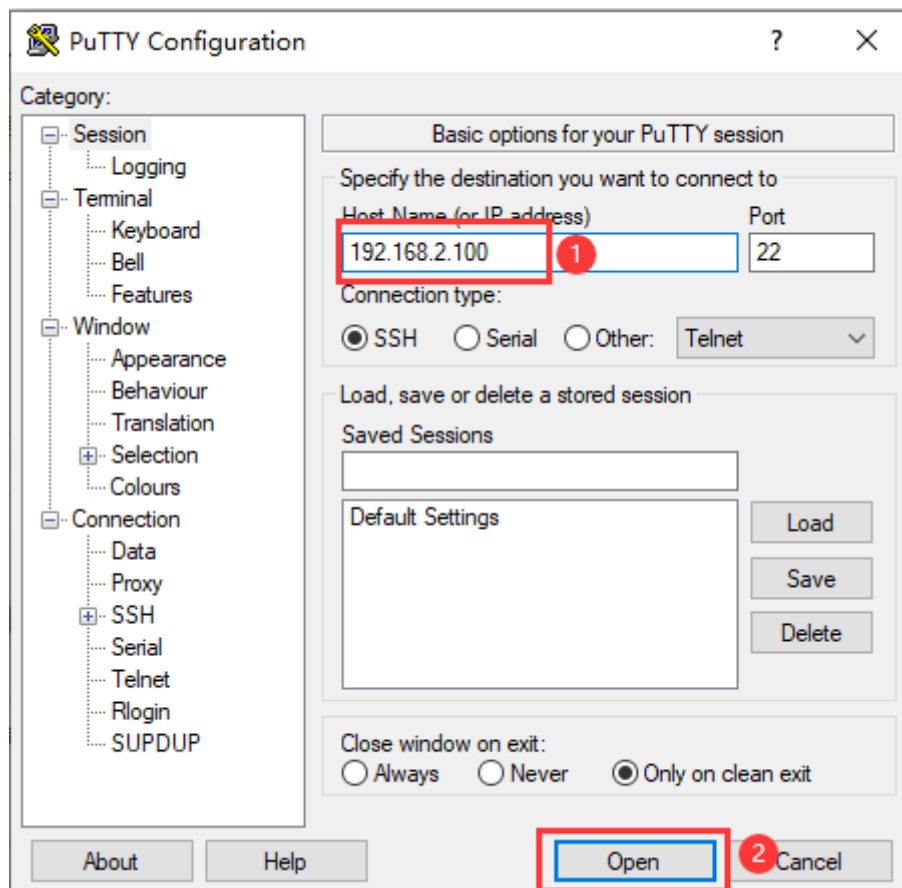
Note: Before logging in remotely, you must know the IP of the robot, which can be displayed on an external monitor or OLED.

For example, the following figure: Username [jetson], hostname [Transbot].



3.1. PuTTY login

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



After entering the IP address of the robot, click [open];

```
jetson@Transbot: ~  
login as: jetson  
jetson@192.168.2.100's password:  
Welcome to Ubuntu 18.04.6 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.  
  
111 updates can be applied immediately.  
89 of these updates are standard security updates.  
To see these additional updates run: apt list --upgradable  
  
Last login: Wed Feb 15 11:54:47 2023 from 192.168.2.99  
-----  
MY_IP: 192.168.2.100  
ROS_MASTER_URI:  
http://192.168.2.100:11311  
-----  
jetson@Transbot: ~$
```

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

The sign of successful login appears as shown below

```
jetson@Transbot: ~$
```

3.2. SSH

Note: The interface cannot be displayed.

- Log in

operate under ubuntu system

```
yahboom@Transbot:~$ ssh jetson@192.168.2.100
The authenticity of host '192.168.2.100 (192.168.2.100)' can't be established.
ECDSA key fingerprint is SHA256:9UYkw1sqeLwqDgjTc+dzH//Ey8AtRTa4jgzBsMbXChE.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '192.168.2.100' (ECDSA) to the list of known hosts.
jetson@192.168.2.100's password:
Welcome to Ubuntu 18.04.6 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.

111 updates can be applied immediately.
89 of these updates are standard security updates.
To see these additional updates run: apt list --upgradable

Last login: Thu Aug 26 22:23:31 2021 from 192.168.1.94
```

1. Enter the following command in the terminal

```
ssh jetson@192.168.2.100
```

2. Then enter [yes], 3) Enter the password [yahboom]

- copy file

If jetson's IP is 192.168.2.100, username: jetson; virtual machine username: yahboom

```
scp jetson@192.168.2.103:/home/jetson/xxx.tar.gz /home/yahboom/ # Copy files
from remote to local (file)
scp /home/yahboom/xxx.png jetson@192.168.2.103:/home/jetson/ # from local to
remote (file)
scp -r jetson@192.168.2.103:/home/jetson/test /home/yahboom/ # from remote to
local -r (folder)
scp -r /home/yahboom/test jetson@192.168.2.103:/home/jetson/ # from local to
remote (folder)
```

3.3. jupyter lab

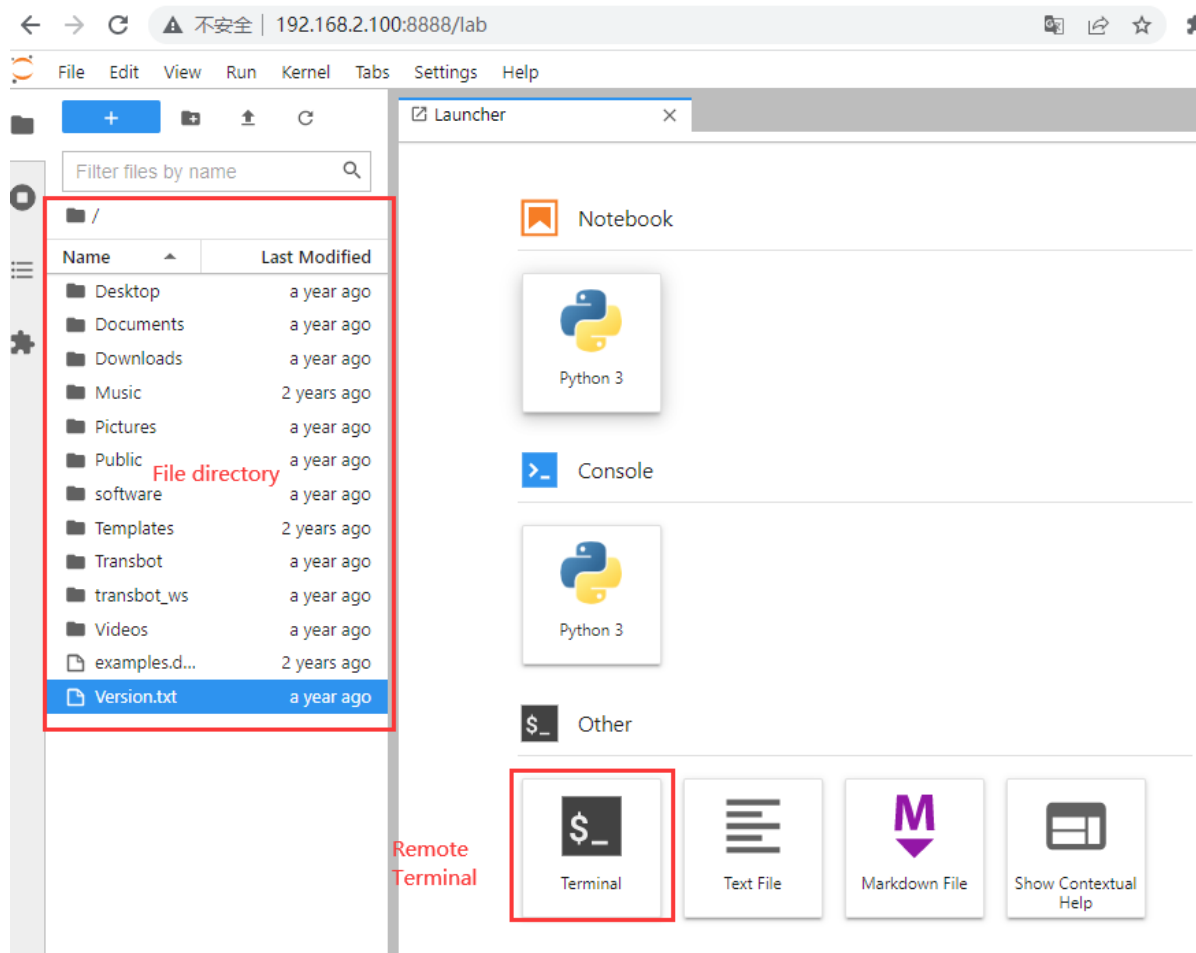
Note: The interface cannot be displayed.



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

```
http://192.168.2.100:8888
```

after login



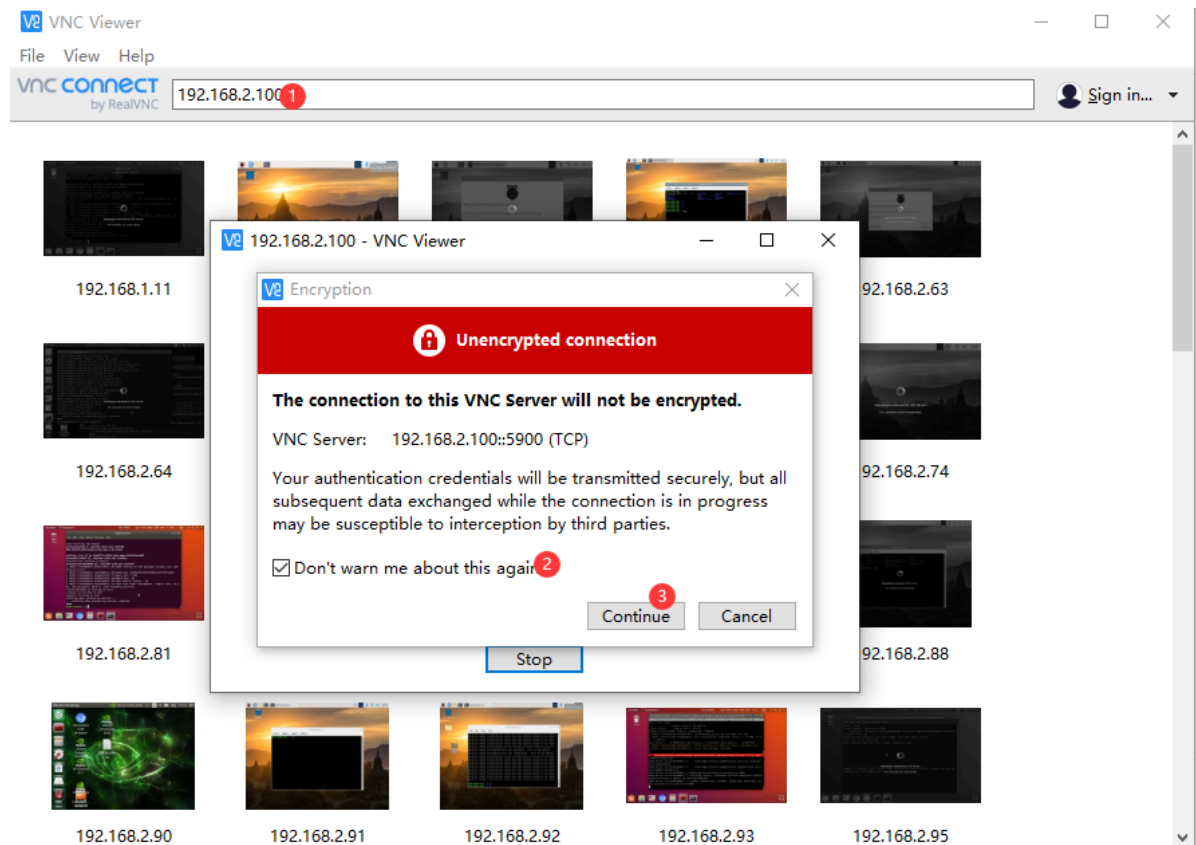
You can enter the folder, modify the contents of the file directly, click [Terminal] under [Other], enter the terminal, and execute the required command.

3.4. VNC

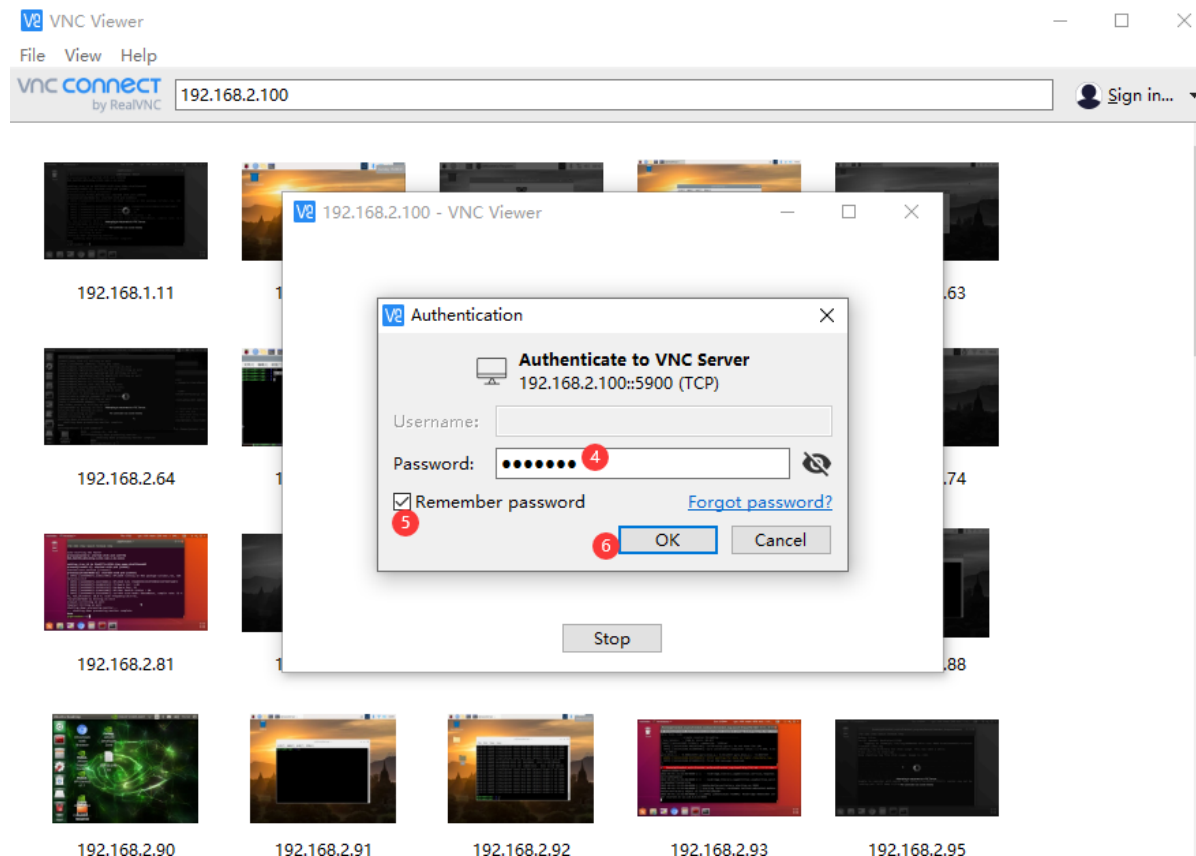
Note: The interface can be displayed.

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

The login steps are as shown in the picture. To use the vnc viewer software for VNC connection, you first need to query the IP address. What I found here is [192.168.2.103]. After entering the IP address, click [Enter] on the keyboard.



Enter the corresponding VNC user and enter the password [yahboom], select Remember password, and click [OK] to enter the VNC interface. The next time the IP remains unchanged, you do not need to enter the password again.



Adjust resolution

- Jetson nano

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

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

- raspberry pie

Modify the [config.txt] file to be permanently valid. Open a terminal and enter the following command

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

For example, add it at the bottom (set the 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
```

For the introduction of configuration parameters, please refer to the blog:

<https://blog.csdn.net/coolwriter/article/details/77719003>

3.5. WinSCP

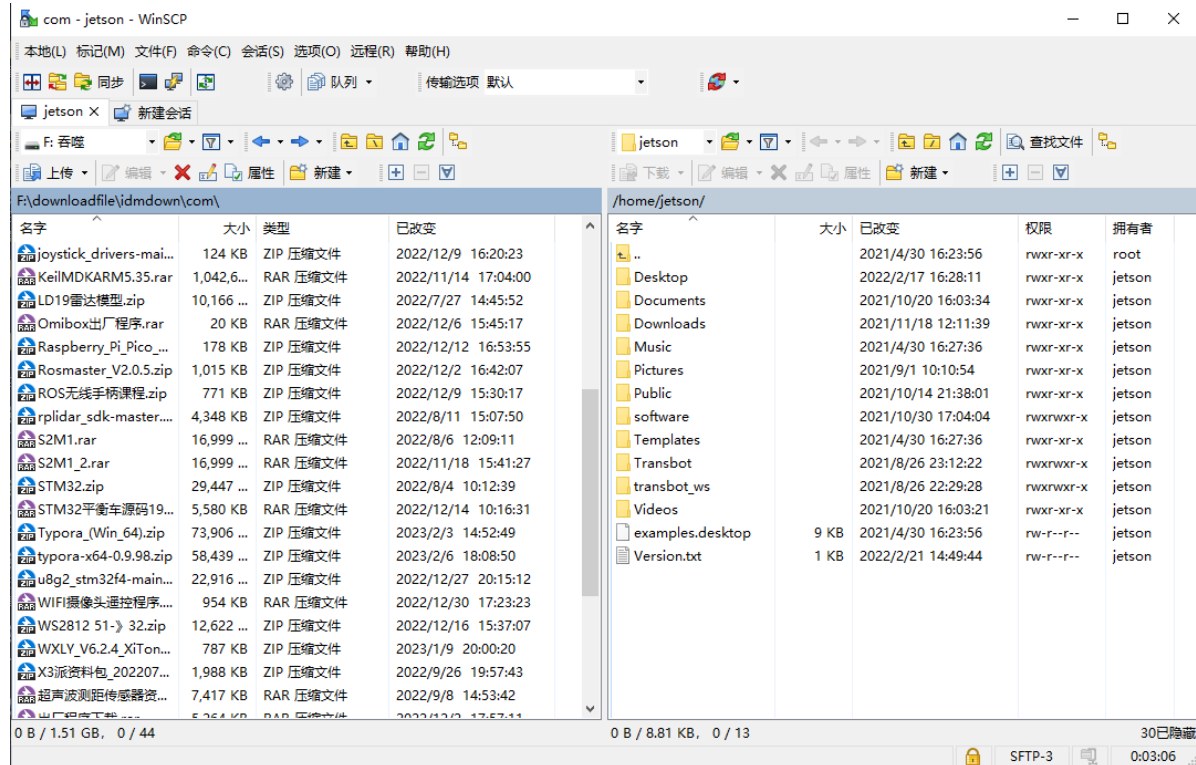
Go to the top related link, download the installation file, and double-click the [.exe] file to install. Double-click the icon below to open the WinSCP software



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

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

An example of a successful login is as follows



- Transfer files from computer to robot [jetson nano]

Just select the file (folder) that needs to be transferred and drag it to the right, then the column of [/home/jetson/],

- Robot [jetson nano] transfer files to computer

Just select the file (folder) that needs to be transferred and drag it to the left, the column of [C:], or drag it directly to the desktop.