Environmental preparation before the development of the Raspberry Pi camera

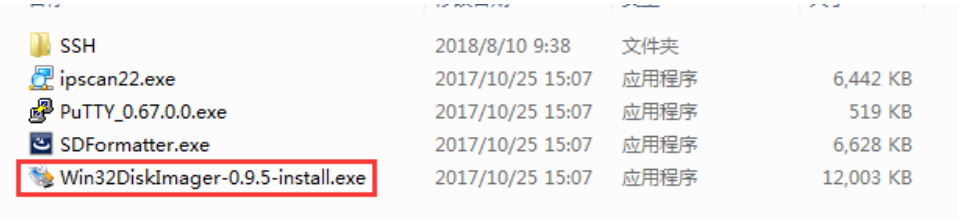
1. Environmental requirements:
   1. Burned the system image of the Raspberry Pi;
   2. Opened the SSH service of the Raspberry Pi;
   3. The Raspberry Pi board can connect to the network;
   4. It is possible to transfer files cross the file system by SSH software;

2. Steps

2.1)Write system image

You need to use Win32DiskImager to write the Raspberry Pi system image.

(Note : This software in the Tools folder)



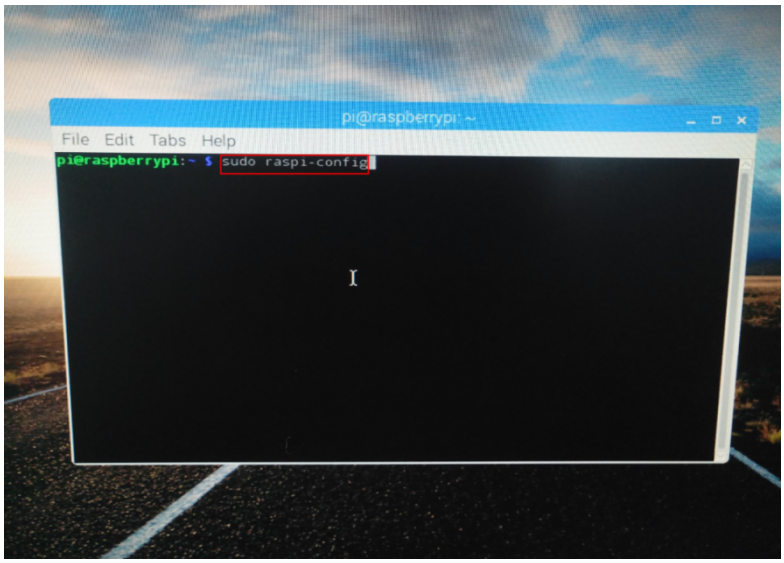
2.2) Opening SSH service:

Case1: (Suitable for users with display screen)

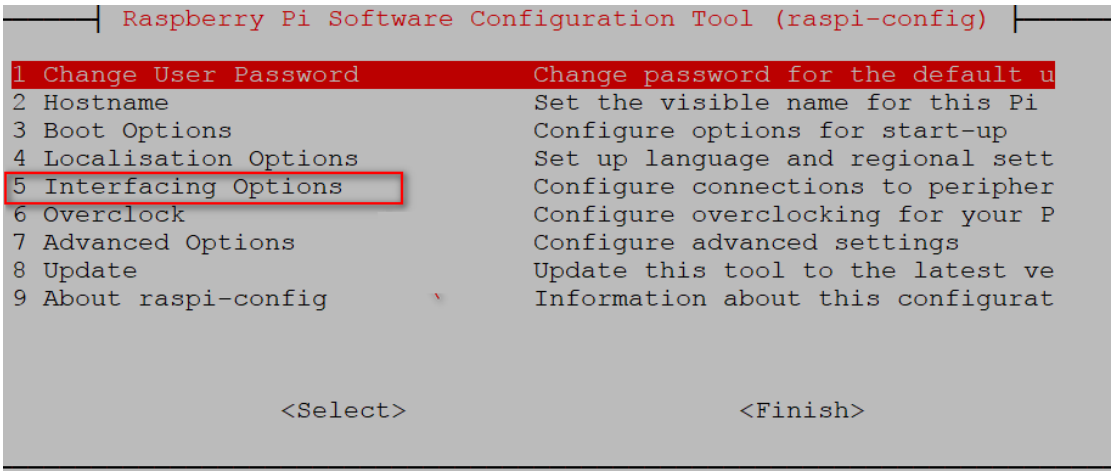
After the system image is written, you should insert the SD card directly into the Raspberry Pi to run. we need to connect the monitor, mouse and keyboard.

(Note:Official original system image of the Raspberry pi without SSH service, so we need to open this service by ourself.)

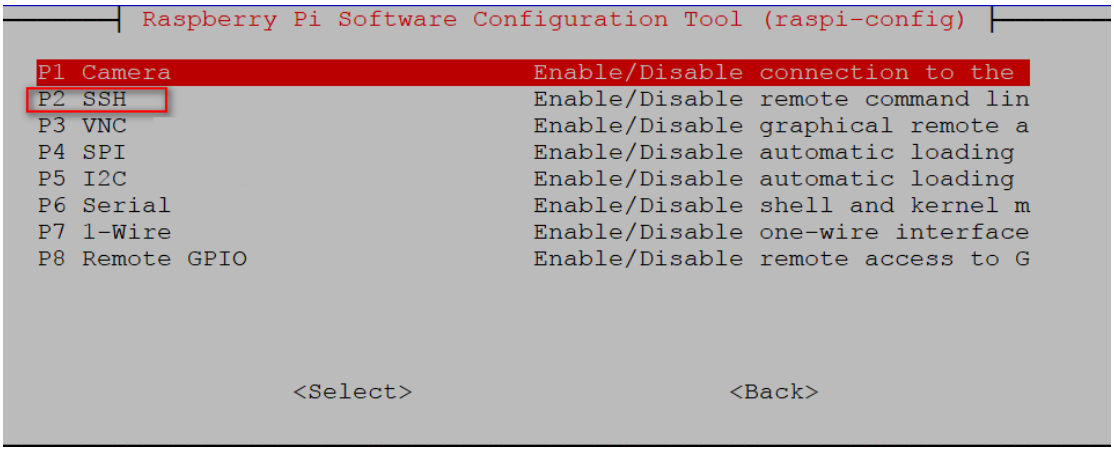
①You need to open the command line terminal in the Raspberry Pi system and input:sudo raspi-config ,as shown in the figure below.



②You should choose :5 Interfacing Options,as shown in the figure below.



③You should choose :P2 SSH, as shown in the figure below.



After the above steps, we have opened the SSH service successfully.

Method to start root:

1)You need to input: sudo passwd root

2) You need to input the root password twice

input: sudo passwd --unlock root

You can switch root privileges for development.

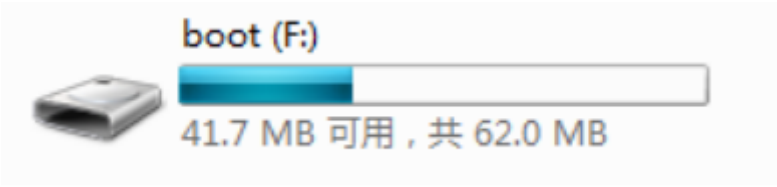
You need to input: su

Then you need to input password of root privileges.

Case2: If you don't possess a monitor

You need to connect the SD card to the computer with a card reader and create a new SSH file(without any format) in this disk.

As shown in the figure below.



2.3)Connect to internet

Case 1: (Suitable for users with display screen)

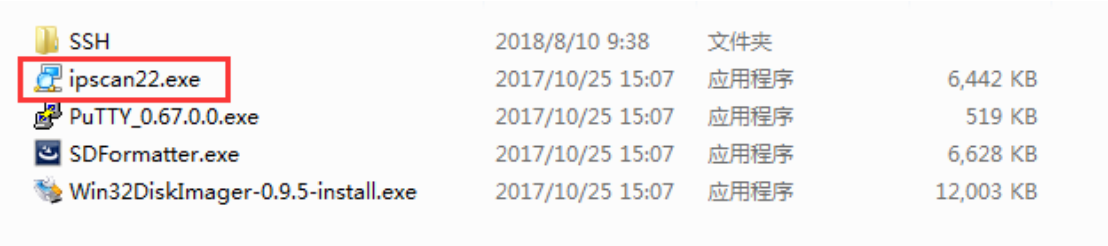
After entering the system, For users who use the screen, you can directly click on the network icon in the upper right corner of the screen to connect to the currently available WIFI(Raspberry Pi 3 Mode B+ can be connected to 5G WIFI). Then, you need to open the command line terminal in the Raspberry Pi system and input：ifconfig to search the IP address of the Raspberry Pi, as shown in the figure below. (Note:just for example:my IP address of the Raspberry Pi is 192.168.0.119)

```
root@raspberrypi:/# ifconfig
eth0      Link encap:Ethernet  HWaddr b8:27:eb:8c:fc:4f
          inet6 addr: fe80::6e5:5863:be3c:1f57/64 Scope:Link
          UP BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:65536  Metric:1
          RX packets:200 errors:0 dropped:0 overruns:0 frame:0
          TX packets:200 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1
          RX bytes:16656 (16.2 KiB)  TX bytes:16656 (16.2 KiB)

wlan0     Link encap:Ethernet  HWaddr b8:27:eb:d9:a9:1a
          inet addr:192.168.0.119  Bcast:192.168.0.255  Mask:255.255.255.0
          inet6 addr: fe80::32f8:a30e:b396:fe6c/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:12670 errors:0 dropped:8551 overruns:0 frame:0
          TX packets:659 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:2598051 (2.4 MiB)  TX bytes:87043 (85.0 KiB)

root@raspberrypi:/#
```

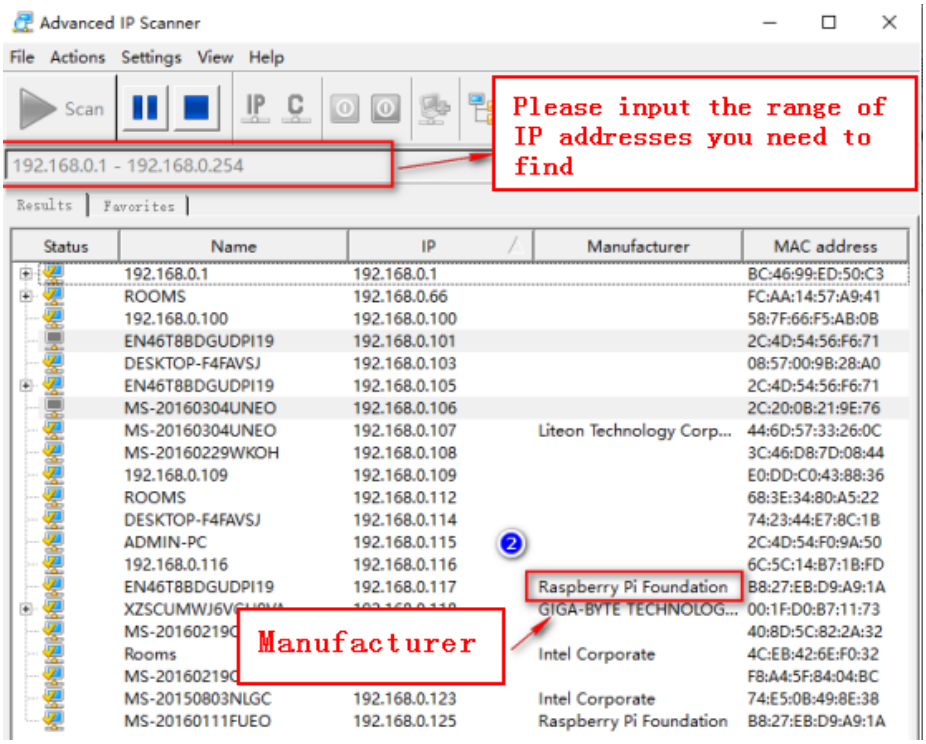
Case 2: If you don't possess a monitor

You need to insert the Internet cable into the Raspberry Pi board, and the indicator light of the Raspberry Pi network port will flash. You can get the IP address of the Raspberry Pi by IP SCAN software.

(Note : This software in the Tools folder)



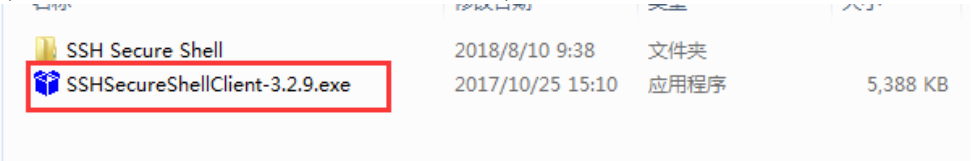
You can double-click to use it.



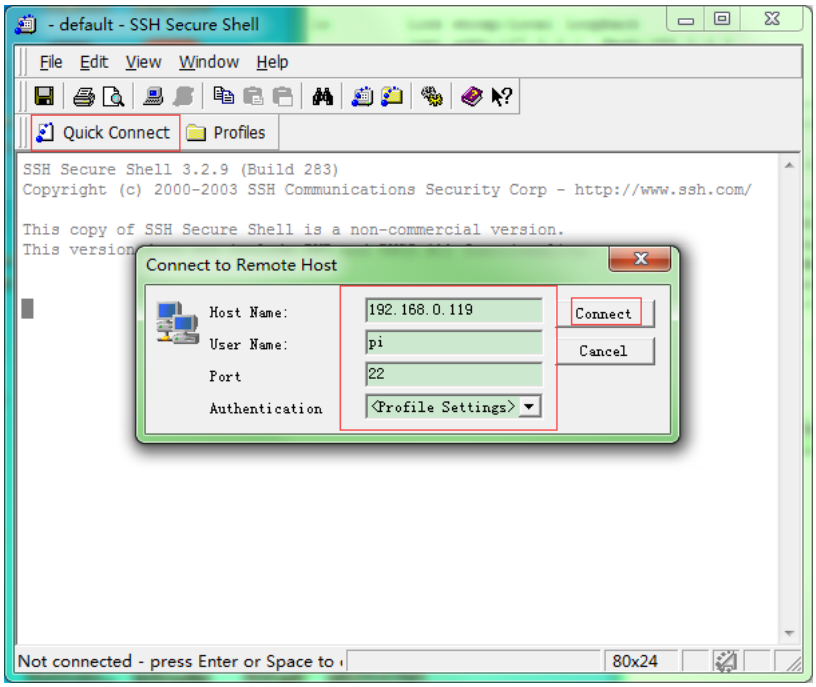
Then you can remote login into the system with this IP address.

2.4) SSH remote transfer file

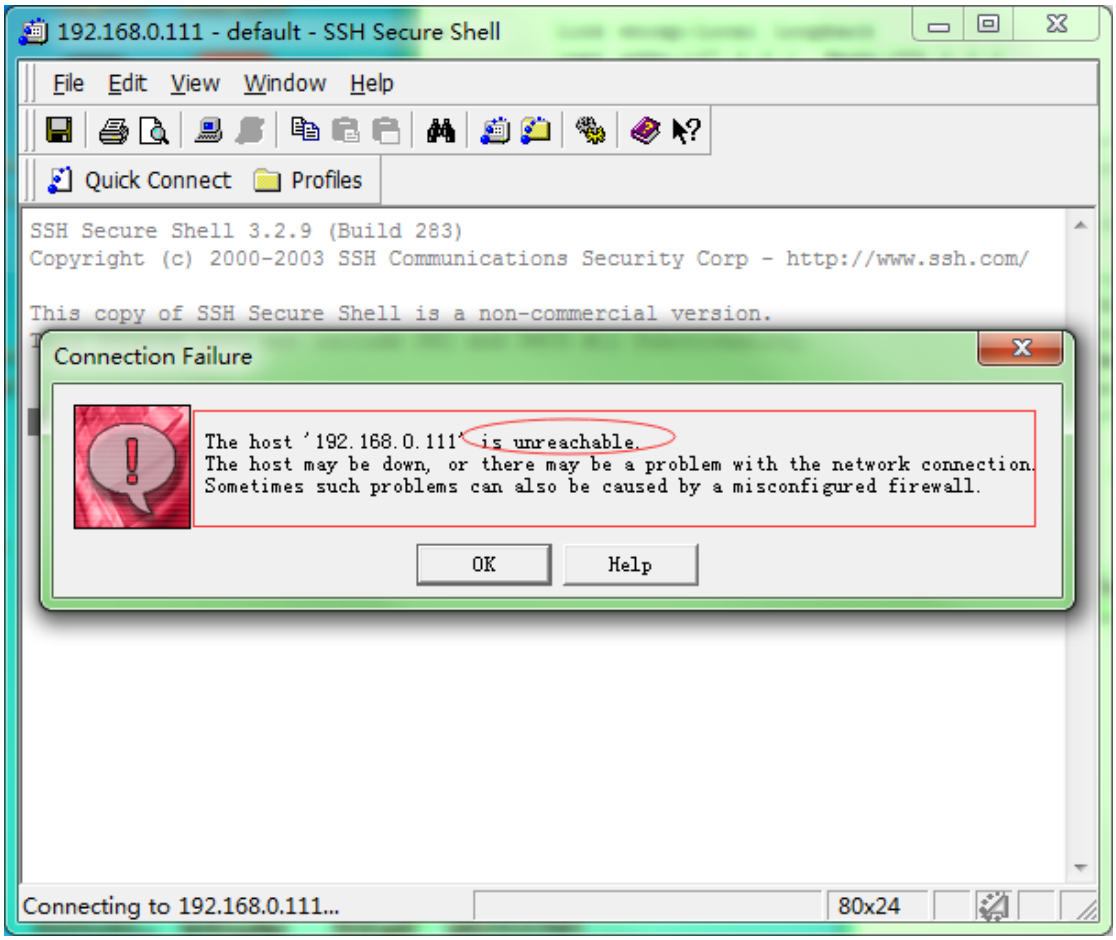
(Note : This software in the SSH folder)



2.4.1)You need to input Host name, User name, Port. As shown in the figure below.



2.4.2) You need to click “connect”, if the prompt shown below is displayed, it indicates that the Raspberry Pi does not enable the ssh service and you needs to be restarted.



You need to input:**sudo service ssh restart**
This command This command is to restart ssh.
If the system prompts this error: server responded “algorithm negotiation failed”
We need to enter Raspberry Pi system by PuTTY and modify the ssh configuration file.
You should input: **sudo vi /etc/ssh/sshd_config**
Add the following code:

Ciphers
aes128-cbc,aes192-cbc,aes256-cbc,aes128-ctr,aes192-ctr,aes256-ctr,3des-cbc,arcfour128,arcfour256,arcfour,blowfish-cbc,cast128-cbc

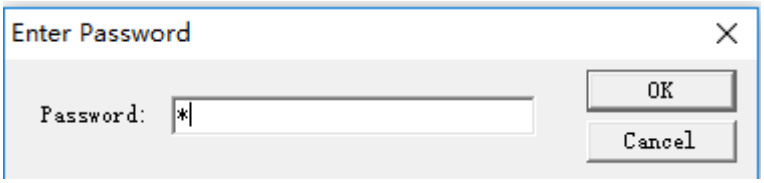
MACs
hmac-md5,hmac-sha1,umac-64@openssh.com,hmac-ripemd160,hmac-sha1-96,hmac-md5-96

KexAlgorithms
diffie-hellman-group1-sha1,diffie-hellman-group14-sha1,diffie-hellman-group-exchan

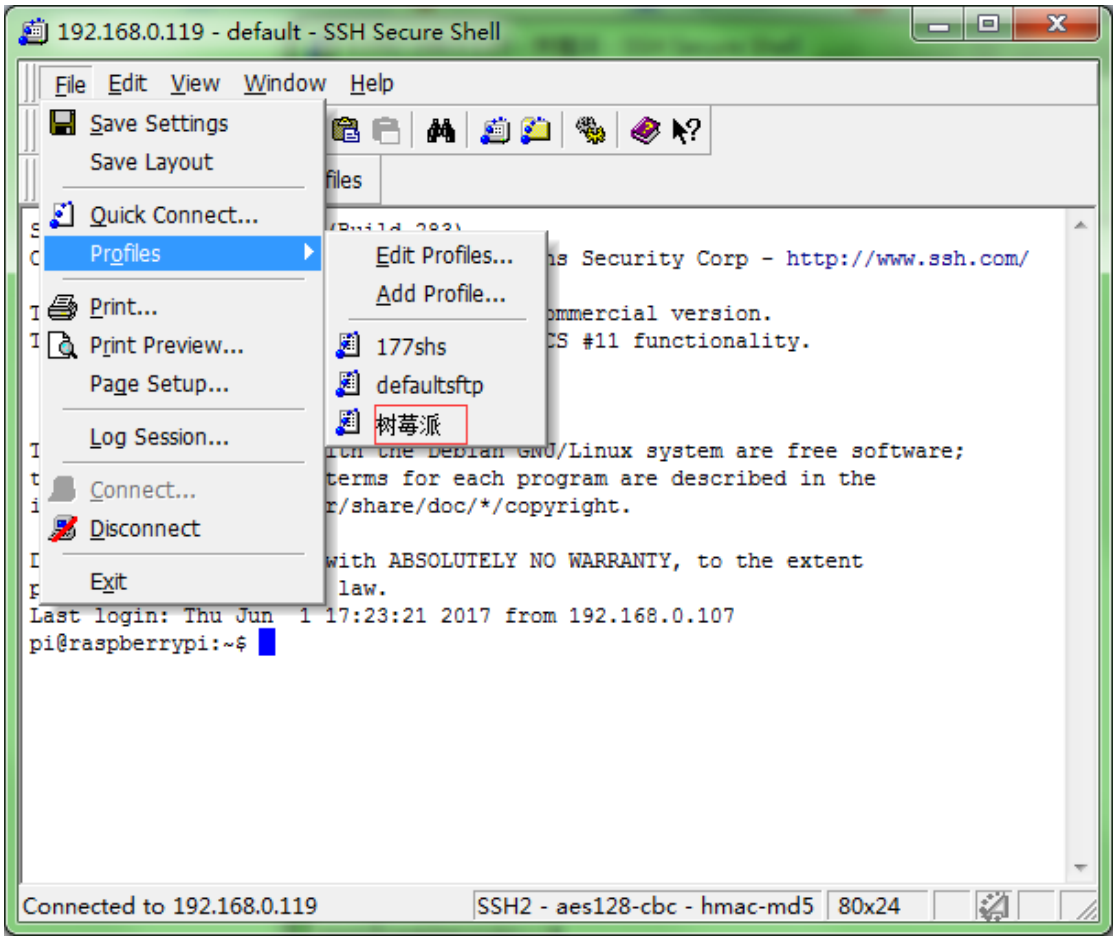
ge-sha1,diffie-hellman-group-exchange-sha256,ecdh-sha2-nistp256,ecdh-sha2-nistp384,ecdh-sha2-nistp521,diffie-hellman-group1-sha1,curve25519-sha256@libssh.org

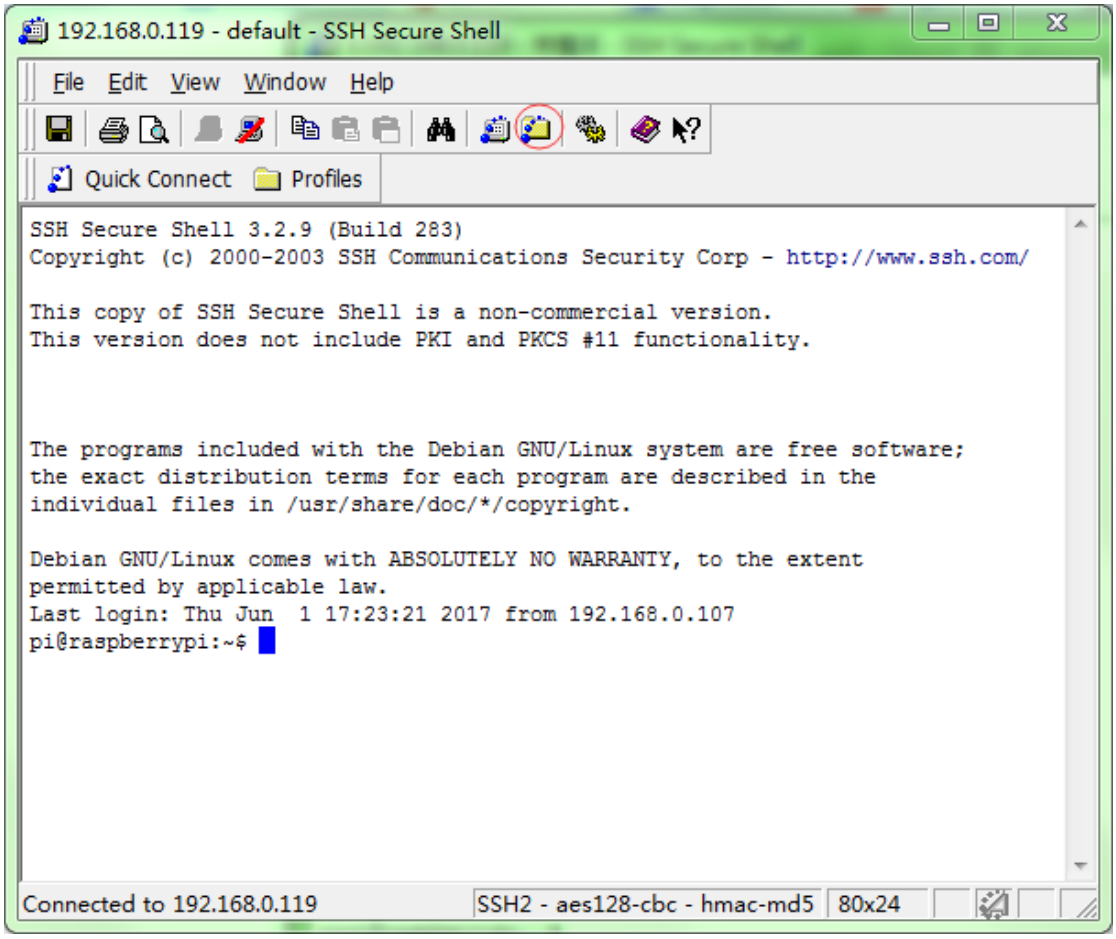
(Note:After the input is complete, you need to save it)
You need to input **sudo service ssh restart.** This command is to restart the ssh service.

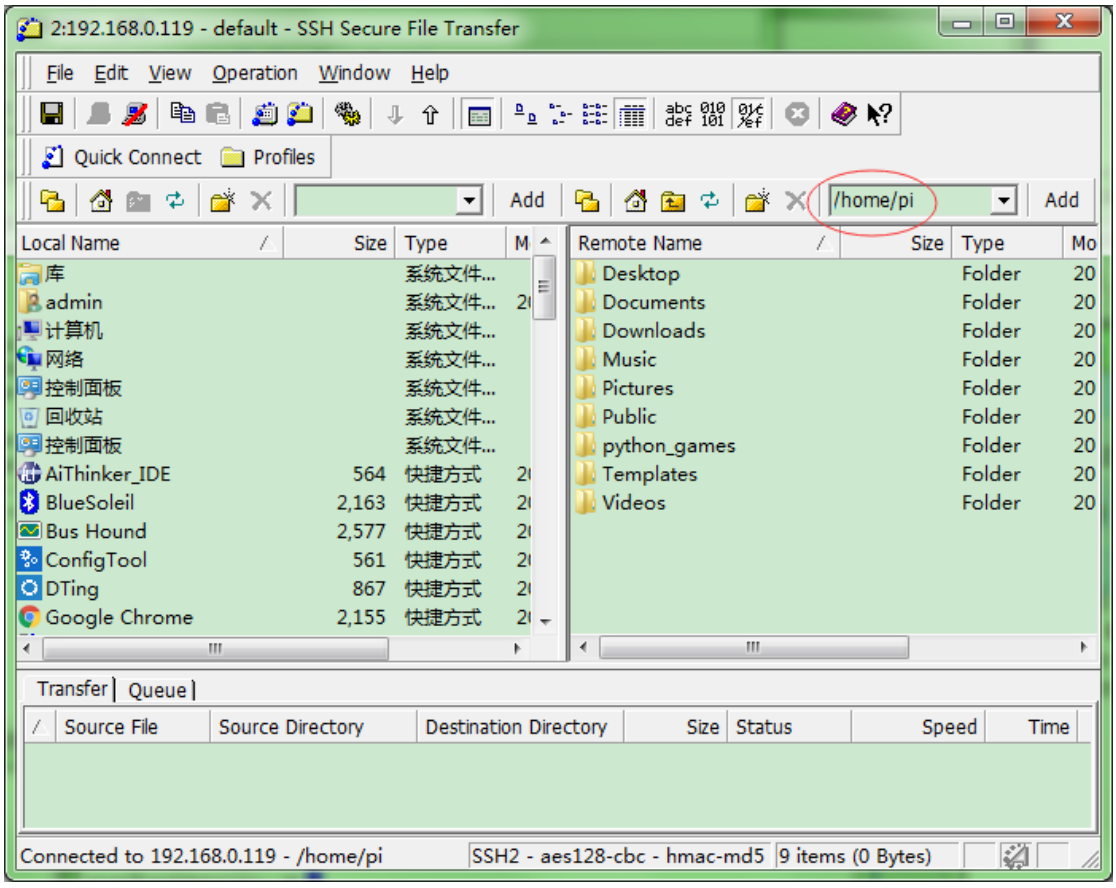
2.4.3) Then we continue to log in:



2.4.4) You can fill in the note in the upper left corner, then click **"Add to profiles"**. Next time you can quickly enter from the menu, just enter the password. As shown in the figure below.




192.168.0.119 - default - SSH Secure Shell
File Edit View Window Help
Quick Connect Profiles
SSH Secure Shell 3.2.9 (Build 283)
Copyright (c) 2000-2003 SSH Communications Security Corp - http://www.ssh.com/
This copy of SSH Secure Shell is a non-commercial version.
This version does not include PKI and PKCS #11 functionality.
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: Thu Jun 1 17:23:21 2017 from 192.168.0.107
pi@raspberrypi:~$
Connected to 192.168.0.119
SSH2 - aes128-cbc - hmac-md5
80x24


2:192.168.0.119 - default - SSH Secure File Transfer
File Edit View Operation Window Help
Quick Connect Profiles
Add
/home/pi
Add
Local Name
Size
Type
Remote Name
Size
Type
Desktop Folder
Documents Folder
Downloads Folder
Music Folder
Pictures Folder
Public Folder
python_games Folder
Templates Folder
Videos Folder
AiThinker_IDE 564 快捷方式
BlueSoleil 2,163 快捷方式
Bus Hound 2,577 快捷方式
ConfigTool 561 快捷方式
DTing 867 快捷方式
Google Chrome 2,155 快捷方式
Transfer Queue
Source File
Source Directory
Destination Directory
Size
Status
Speed
Time
Connected to 192.168.0.119 - /home/pi
SSH2 - aes128-cbc - hmac-md5
9 items (0 Bytes)

You can transfer files between two systems by dragging the folder directly.

If the system prompts this error: Encountedred 1 error during the transfer.
May be because of two question:

1) Question1:In the Raspberry Pi system, the files without permissions.
   Solution: chmod 777 file name
   (For example:chmod 777 SmartCar)

2) Question2: In the Windows system, the files without permissions.
   Solution: We can move this file to the desktop, and the path and file name of the files with ( ) in the Windows system cannot be transferred.

For example: You need to transfer file_A in the Windows system to file_B in the Raspberry Pi system. If the system prompts this error: Encountedred 1 error during the transfer. You need to input chmod 777 file_B and move file_A without( ) to the desktop.