

2. Voice control module port binding

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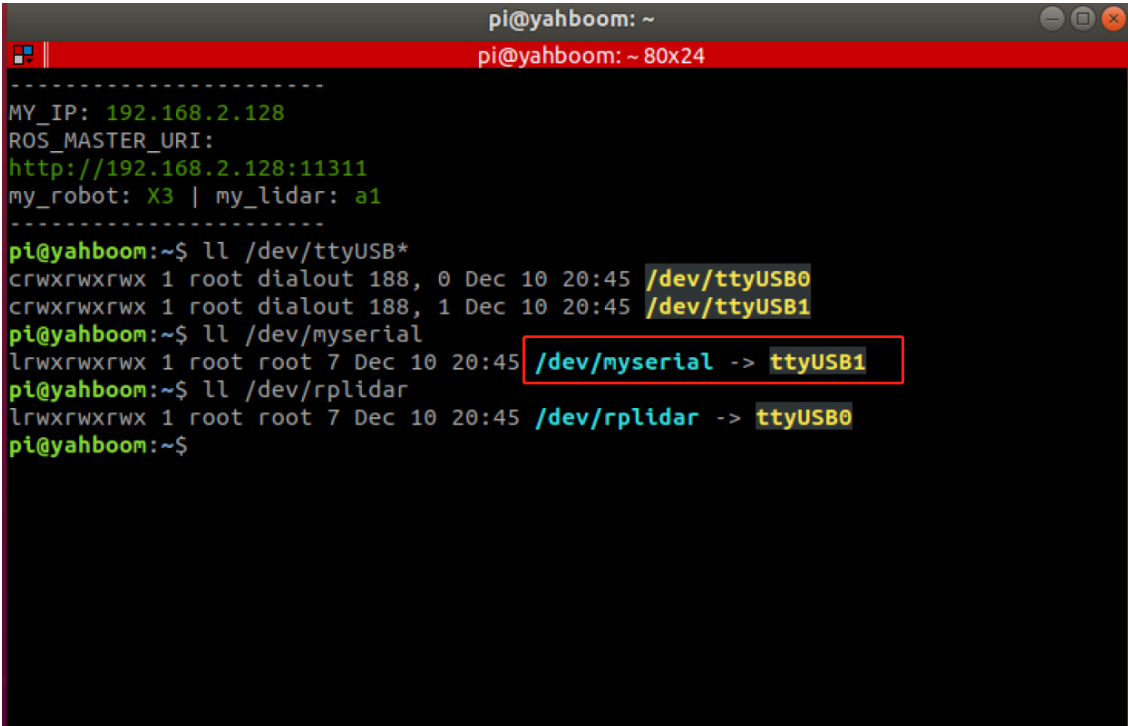
- 2.1. Bind the device number of the HUB board
- 2.2. Bind the port number of the speech recognition board
- 2.3. Test

Foreword: Because the ID device numbers of the HUB board and the voice control module are the same, the ID device numbers cannot be bound to them according to the method in the previous tutorial. **Not binding ports may cause port conflicts or identify device errors, and the bound ports cannot be arbitrarily changed**, otherwise the binding will be invalid. This section uses Raspberry Pi as an example to demonstrate.

2.1. Bind the device number of the HUB board

```
ll /dev/ttyUSB*
ll /dev/myserial
ll /dev/rplidar
```

- First, do not connect to the voice control board, you can get the radar and the PCB board are ttyUSB0 and ttyUSB1

- A terminal window titled 'pi@yahboom: ~' with a red title bar. The terminal shows the following commands and output:

MY_IP: 192.168.2.128
ROS_MASTER_URI:
http://192.168.2.128:11311
my_robot: X3 | my_lidar: a1

pi@yahboom:~\$ ll /dev/ttyUSB*
crwxrwxrwx 1 root dialout 188, 0 Dec 10 20:45 /dev/ttyUSB0
crwxrwxrwx 1 root dialout 188, 1 Dec 10 20:45 /dev/ttyUSB1
pi@yahboom:~\$ ll /dev/myserial
lrwxrwxrwx 1 root root 7 Dec 10 20:45 /dev/myserial -> ttyUSB1
pi@yahboom:~\$ ll /dev/rplidar
lrwxrwxrwx 1 root root 7 Dec 10 20:45 /dev/rplidar -> ttyUSB0
pi@yahboom:~\$

- Then, we first check the port information of the HUB board, mainly to check the device path information, terminal input

```
udevadm info --attribute-walk --name=/dev/ttyUSB1 |grep devpath
```

The following information is obtained. The red box indicates the path information of the device.

```

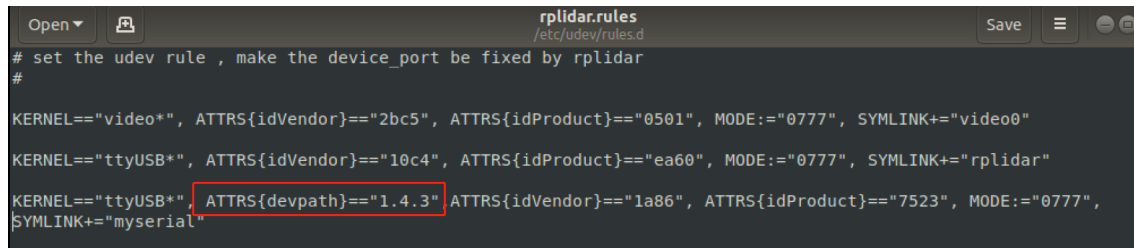
pi@yahboom:~$ udevadm info --attribute-walk --name=/dev/ttyUSB1 |grep devpath
Udevadm info starts with the device specified by the devpath and then
ATTRS{devpath}=="1.4.3"
ATTRS{devpath}=="1.4"
ATTRS{devpath}=="1"
ATTRS{devpath}=="0"

```

- Then, we modify the /etc/udev/rules.d/rplidar.rules file, first bind the port number of the HUB board, input the terminal,

```
sudo gedit /etc/udev/rules.d/rplidar.rules
```

Find the myseial column in the file, as shown in the figure below, add the content,



```

# set the udev rule , make the device_port be fixed by rplidar
#
KERNEL=="video*", ATTRS{idVendor}=="2bc5", ATTRS{idProduct}=="0501", MODE=="0777", SYMLINK+="video0"
KERNEL=="ttyUSB*", ATTRS{idVendor}=="10c4", ATTRS{idProduct}=="ea60", MODE=="0777", SYMLINK+="rplidar"
KERNEL=="ttyUSB*", ATTRS{devpath}=="1.4.3" ATTRS{idVendor}=="1a86", ATTRS{idProduct}=="7523", MODE=="0777",
SYMLINK+="myserial"

```

- After saving, exit, enter the following three commands in the terminal to reload the device

```
sudo udevadm trigger
```

```
sudo service udev reload
```

```
sudo service udev restart
```

2.2. Bind the port number of the speech recognition board

- Enter the following command in the terminal to view the device number,

```
ll /dev/ttyUSB*
```

```

pi@yahboom:~$ ll /dev/ttyUSB*
crwxrwxrwx 1 root root 188, 0 Apr 21 20:09 /dev/ttyUSB0
crwxrwxrwx 1 root root 188, 1 Apr 21 20:09 /dev/ttyUSB1
crwxrwxrwx 1 root dialout 188, 2 Apr 21 20:09 /dev/ttyUSB2
pi@yahboom:~$ ll /dev/rplidar
lrwxrwxrwx 1 root root 7 Apr 21 20:09 /dev/rplidar -> ttyUSB0
pi@yahboom:~$ ll /dev/myserial
lrwxrwxrwx 1 root root 7 Apr 21 20:09 /dev/myserial -> ttyUSB1
pi@yahboom:~$

```

Here we find that the system recognizes the voice board as /dev/ttyUSB2 by the system, then we enter the following command to view the device path information

```
udevadm info --attribute-walk --name=/dev/ttyUSB2 |grep devpath
```

to get the following picture,

```

pi@yahboom:~$ udevadm info --attribute-walk --name=/dev/ttyUSB2 |grep devpath
Udevadm info starts with the device specified by the devpath and then
ATTRS{devpath}=="1.4.2"
ATTRS{devpath}=="1.4"
ATTRS{devpath}=="1"
ATTRS{devpath}=="0"

```

- Then, we modify the /etc/udev/rules.d/rplidar.rules file, bind the port number of the voice board, input the terminal,

```
sudo gedit /etc/udev/rules.d/rplidar.rules
```

Add the content as shown in the image below,

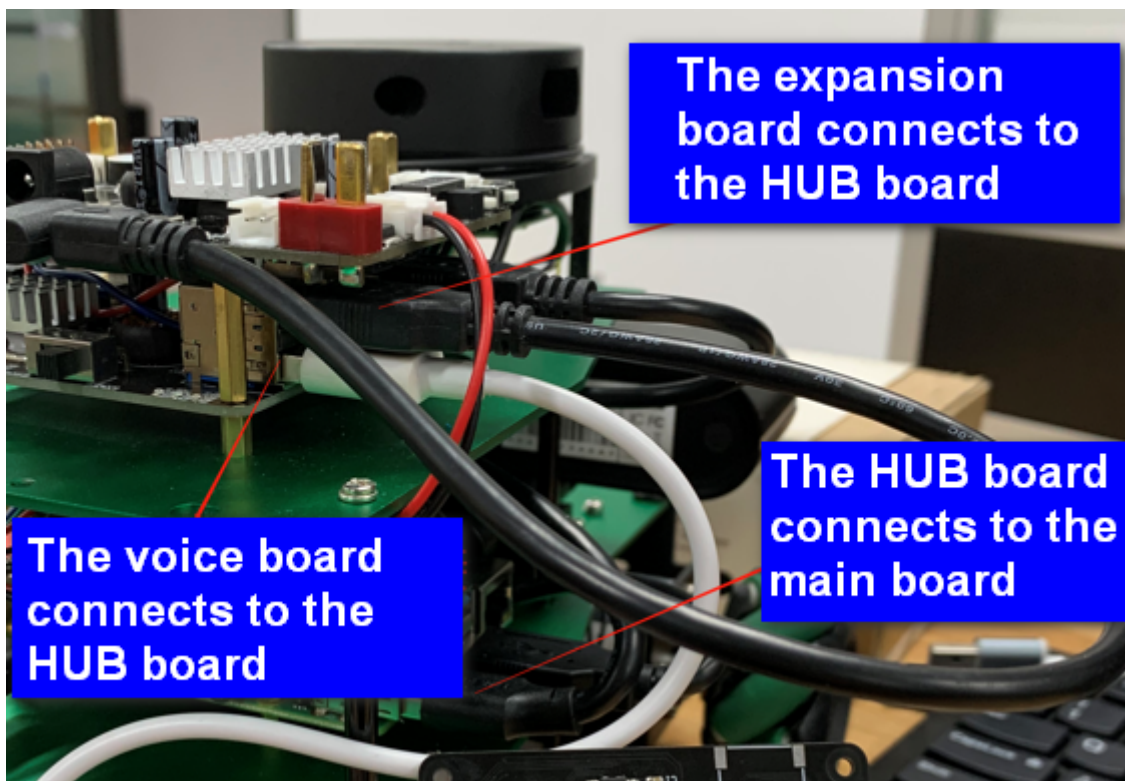
```
KERNEL=="ttyUSB*" ATTRS{devpath}=="1.4.2", MODE:="0777", ATTRS{idVendor}=="1a86", ATTRS{idProduct}=="7523",  
SYMLINK+="myspeech"
```

- Save and exit, enter the following statement in the terminal to reload the system device

```
sudo udevadm trigger  
sudo service udev reload  
sudo service udev restart
```

2.3. Test

Finally, the physical connection diagram of the port after binding, as shown in the following figure,



Pay attention to where they are wired. This is fixed after binding, and the location cannot be changed at will, otherwise the system will not recognize the device.

```
python3 voice_ctrl_test.py
```

- After successfully connecting the voice module. "Speech Serial Opened! Baudrate=115200" will be displayed in the terminal.
- After saying "Hello, Xiaoya" to the module, the voice answers "Yes".
- After unplugging the voice control module, the program will report an error and exit.

If the actual operation result is consistent with the above three points, it means that the device is successfully bound.

Note: The bound HUB and voice board cannot be plugged into other ports, otherwise the device number will not be recognized.