Free your innovation

Freenove is an open-source electronics platform.
www.freenove.com

Warning

When you purchase or use this product, please note the following:

- This product contains small parts. Swallowing or improper operation them can cause serious infections and death. Seek immediate medical attention when the accident happened.
- Do not allow children under 3 years old to play with or near this product. Please place this product in where children under 3 years of age cannot reach.
- Do not allow children lack of ability of safe to use this product alone without parental care.
- Never use this product and its parts near any AC electrical outlet or other circuits to avoid the potential risk of electric shock.
- Never use this product near any liquid and fire.
- Keep conductive materials away from this product.
- Never store or use this product in any extreme environments such as extreme hot or cold, high humidity and etc.
- Remember to turn off circuits when not in use this product or when left.
- Do not touch any moving and rotating parts of this product while they are operating.
- Some parts of this product may become warm to touch when used in certain circuit designs. This is normal. Improper operation may cause excessively overheating.
- Using this product not in accordance with the specification may cause damage to the product.

About

Freenove is an open-source electronics platform. Freenove is committed to helping customer quickly realize the creative idea and product prototypes, making it easy to get started for enthusiasts of programing and electronics and launching innovative open source products. Our services include:

- Electronic components and modules
- Learning kits for Arduino
- Learning kits for Raspberry Pi
- Learning kits for Technology
- Robot kits
- Auxiliary tools for creations

Our code and circuit are open source. You can obtain the details and the latest information through visiting the following web sites:
http://www.freenove.com
https://github.com/freenove

Your comments and suggestions are warmly welcomed, please send them to the following email address:
support@freenove.com

References

You can download the sketches and references used in this product in the following websites:
http://www.freenove.com
https://github.com/freenove
If you have any difficulties, you can send email to technical support for help.

The references for this product is named Freenove Three-wheeled Smart Car Kit for Arduino, which includes the following folders and files:

- Datasheet Datasheet of electronic components and modules
- Libraries Library files of Arduino Software
- Sketches Code of Arduino Software
- Readme.txt Instructions

Support

Freenove provides free and quick technical support, including but not limited to:

- Quality problems of products
- Problems in using products
- Questions for learning and technology
- Opinions and suggestions
- Ideas and thoughts

Please send email to:
support@freenove.com
On working day, we usually reply to you within 24 hours.

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Contents

Preface

After the Raspbian system is updated from Jessie to Stretch, QtWebKit of python-qt4 in Python is removed. The official statements for removing this component can be seen here:
https://lists.debian.org/debian-devel-announce/2015/05/msg00001.html 。
By checking the official component package list, we can see that python-qt4 in Stretch system component package doesn't contain QtWebKit anymore.
https://packages.debian.org/stretch/python-qt4

Python bindings for Qt4

PyQt4 exposes the Qt4 API to Python. The following modules are supported:

* QtCore
* QtDBus
* QtGui
* QtNetwork
* QtXml
* QtScript
* QtSvg
* QtTest
* QtAssistant
* QtOpenGL (in python-qt4-gl)
* QtSql (in python-qt4-sql)
* phonon (in python-qt4-phonon)

But python-qt4 in Jessie system component package still contains QtWebKit.
https://packages.debian.org/jessie/python-qt4

Python bindings for Qt4

PyQt4 exposes the Qt4 API to Python. The following modules are supported:

* QtCore
* QtDBus
* QtGui
* QtNetwork
* QtXml
* QtScript
* QtSvg
* QtTest
* QtAssistant
* QtWebKit
* QtOpenGL (in python-qt4-gl)
* QtSql (in python-qt4-sql)
* phonon (in python-qt4-phonon)

Because in our product "Freenove Three-wheeled Smart Car Kit for Raspberry Pi" (hereinafter referred to as Pi Car), the Client part is using this component, there is some problems which makes the program not run normally. As shown in the following figure:

```
pi@raspberrypi:~/Freenove_Three-wheeled_Smart_Car_Kit_for_Raspberry_Pi/Client $
python main.py
Traceback (most recent call last):
  File "main.py", line 28, in <module>
    from Ui_main import Ui_MainWindow
  File "/home/pi/Freenove_Three-wheeled_Smart_Car_Kit_for_Raspberry_Pi/Client/Ui
_main.py", line 542, in <module>
    from PyQt4 import QtWebKit
ImportError: cannot import name QtWebKit
```

Because Pi Car is designed as a remote control vehicle used for long-distance transportation of real-time video, we hope that only Server program runs on Pi Car, and Client runs on your PC or Android device. If it is not necessary, it is not recommend to try the following method. But if you really want Client to run on Pi Car, please do it according to the following steps patiently.

This article, as a patch document of the user manual, will focus on the problems mentioned above. We will add it to the Tutorial later.

Chapter 0 Raspbian Stretch

Stretch does not open SSH connection by default, and if you want to use SSH to connect to RPi, please open it based on the following operation.

Open ssh

When you complete using Win32 Disk Imager to burn the system to TF card, TF card will have a disk with space of about 40MB under Windows. Then you only need to create a folder named "SSH" in the disk.

Chapter 1 Lack of QtWebKit

The core solution to this problem is not to use the python-qt4 in system component package. Download the complete PyQt4 by yourself, then compile and install it manually.

Operation steps

Uninstall the old files in system package package.

Update system components

```
sudo apt-get update

sudo apt-get upgrade
```

Uninstall the python-qt4 in system package package.

```
sudo apt-get remove python-qt4
```

Uninstall the SIP under python2.7 directory.

```
sudo rm –rf /usr/lib/python2.7/dist-packages/sip*
```

Install SIP

Download the latest version of SIP source. If the latest version is not available, use the latest version that you can use.

```
cd ~/Downloads

wget https://sourceforge.net/projects/pyqt/files/sip/sip-4.19.8/sip-4.19.8.tar.gz
```

If the downloading fails, try to download it manually.

Source Packages

This is the latest stable version of SIP. Older versions can be found here.

sip-4.19.8.tar.gz	Linux, OS X source
sip-4.19.8.zip	Windows source

The change log for the current release is here.

Unzip the downloaded file.

```
tar zxvf sip-4.19.8.tar.gz
```

Then enter the unzip directory and execute configure.py.

```
cd ~/sip-4.19.8

sudo python configure.py
```

“make” . The process will be a bit slow, about 2-3 minutes.

```
sudo make
```

Finally, install the SIP using the command “make install”.

```
sudo make install
```

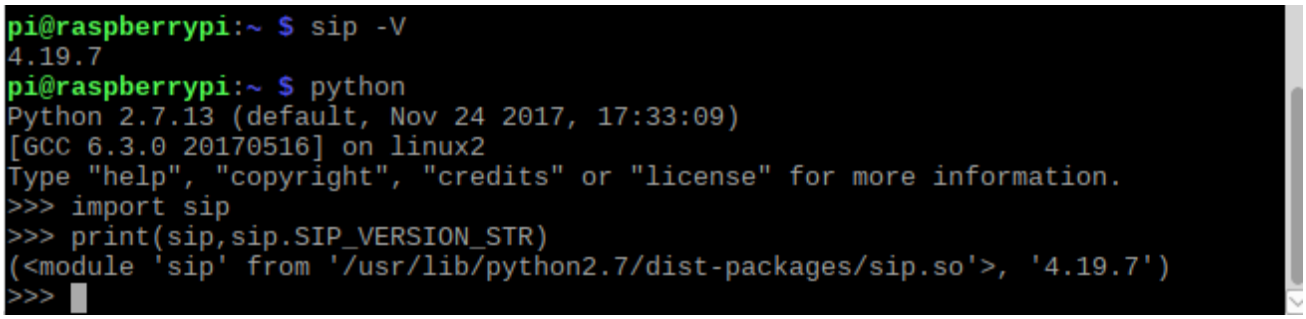
After the installation is successful, check whether version of the SIP in inspection system is consistent with version of the SIP installed in Python.

First, use SIP -V to check the SIP version in the system.

```
sip –V
```

Then check the SIP version in python module.

```
python
import sip
print(sip,sip.SIP_VERSION_STR)
```



As shown in the figure above, if the two SIP version are consistent, continue the following steps. Otherwise, repeat the above steps to reinstall.

Install qt-sdk

Install qt-sdk. The process is a bit slow, and it takes about 20 minutes.

```
sudo apt-get install qt-sdk
```

Verify that qmake is available.

```
qmake -v
```

```
pi@raspberrypi:~ $ qmake -v
QMake version 2.01a
Using Qt version 4.8.7 in /usr/lib/arm-linux-gnueabihf
```

If there is an error: qmake: could not find a Qt installation of ' '

First, delete the original qmake.

```
sudo rm /usr/bin/qmake
```

Then set up a new qmake link.

```
sudo ln -s /usr/share/qt4/bin/qmake /usr/bin/qmake
```

Install module libqtwebkit4 libqtwebkit-dev

These two modules are necessary, and QtWebKit are dependent on them. Otherwise, the QtWebKit won't be installed even if the next PyQt4 installation is successful. Use the following commands to install the two modules. Wait for the installation to complete.

```
sudo apt-get install libqtwebkit4 libqtwebkit-dev
```

Install pyqt4

Download the latest version of PyQt4 source. If the latest version is not available, use the latest version that you can use.

```
cd ~/Downloads

wget http://sourceforge.net/projects/pyqt/files/PyQt4/PyQt-4.12.1/PyQt4_gpl_x11-4.12.1.tar.gz
```

If the downloading fails, try to download it manually.

Source Packages

This is the latest stable version of PyQt4. Older versions can be found here.

PyQt4_gpl_x11-4.12.1.tar.gz	Linux source
PyQt4_gpl_win-4.12.1.zip	Windows source
PyQt4_gpl_mac-4.12.1.tar.gz	OS X source

The change log for the current release is here.

Unzip the downloaded file.

```
tar zxvf PyQt4_gpl_x11-4.12.1.tar.gz
```

Enter the unzip directory and execute configure-ng.py to generate Makefile.

```
cd ~/ PyQt4_gpl_x11-4.12.1

sudo python configure-ng.py
```

Later, enter "yes" and click Enter to accept the agreement when prompted about whether to accept agreement. Wait for completion, and the process takes about 6 minutes.

```
pi@raspberrypi:~/Downloads/PyQt4_gpl_x11-4.12.1 $ sudo python configure-ng.py
Querying qmake about your Qt installation...
Determining the details of your Qt installation...
This is the GPL version of PyQt 4.12.1 (licensed under the GNU General Public
License) for Python 2.7.13 on linux2.

Type 'L' to view the license.
Type 'yes' to accept the terms of the license.
Type 'no' to decline the terms of the license.

Do you accept the terms of the license? yes
```

“make”. The process will be very slow, and it takes about 90 minutes.

```
sudo make
```

Finally, use the command “make install” to install PyQt4. Wait for the installation process to complete.

```
sudo make install
```

Here, the full version of PyQt4 has been installed.
If you connect RPi directly with a monitor, everything can work properly. Client can be opened normally, and PiCar can work properly. If you are using a remote desktop, please continue to read following contents.

xrdp abnormal

PyQt4 installation is complete by following above steps. If you are using xrdp service, and "mstsc.exe" program under windows, login in the Raspberry Pi through remote desktop, and open the Client program, sometimes there will be a conflict with xrdp, like error message "cannot connect to X server: *.0" (* indicates a digital) , which lead to Client can not be opened normally, or disconnection of the remote desktop occurs. At this point, you can choose one of the following two ways to solve it.

Solution 1 (recommended)

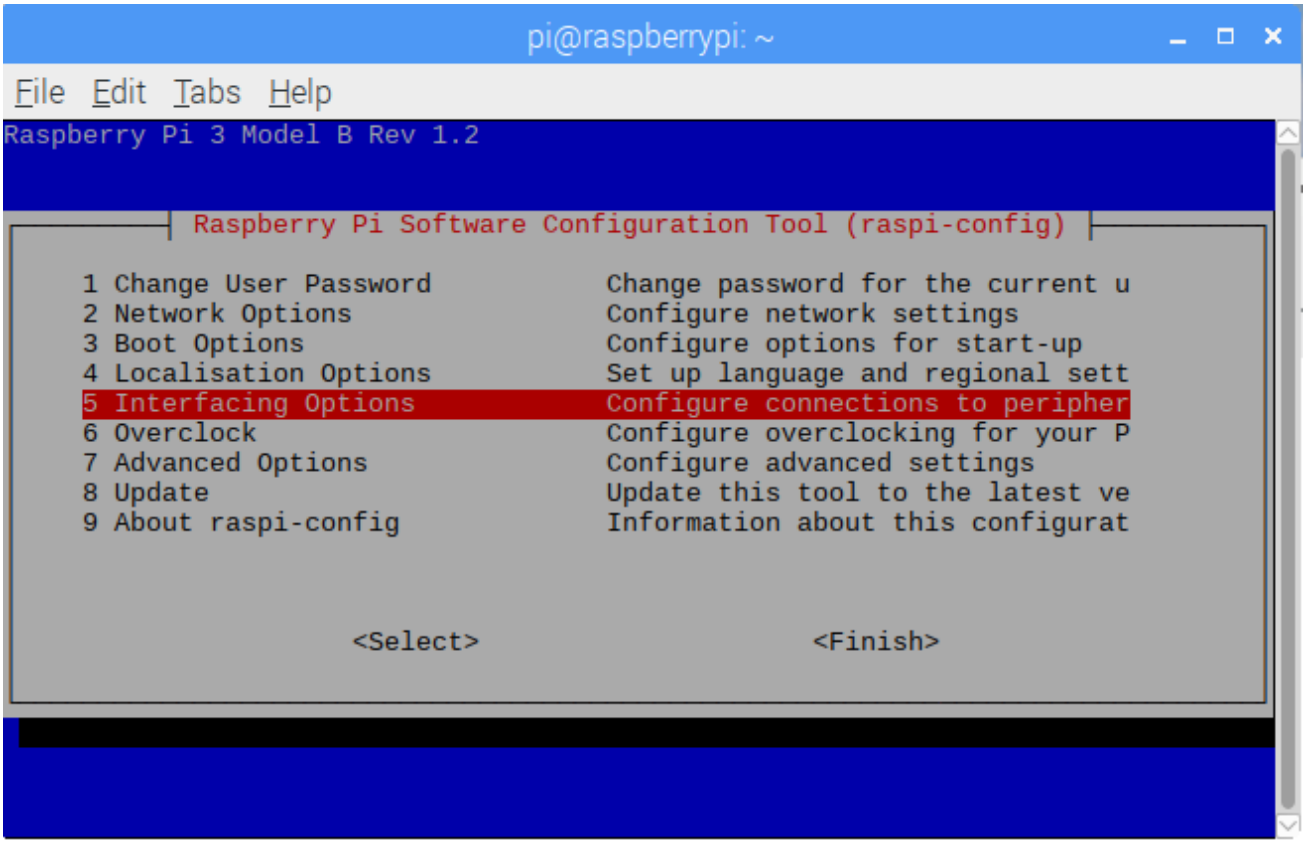
Use other remote desktop tools like realVNC.

realVNC

Open the VNC service on Raspberry Pi. Continue to the following steps:

Type the following command and open configuration options.

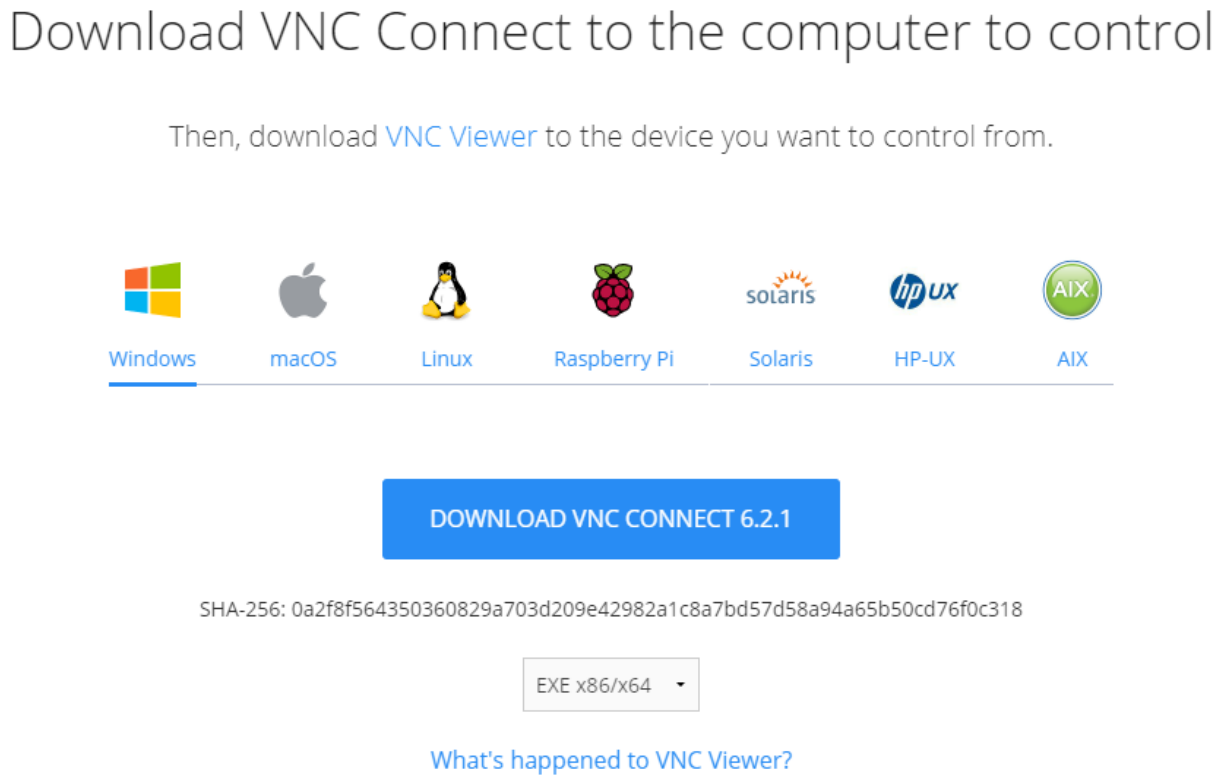
```
sudo raspi-config
```



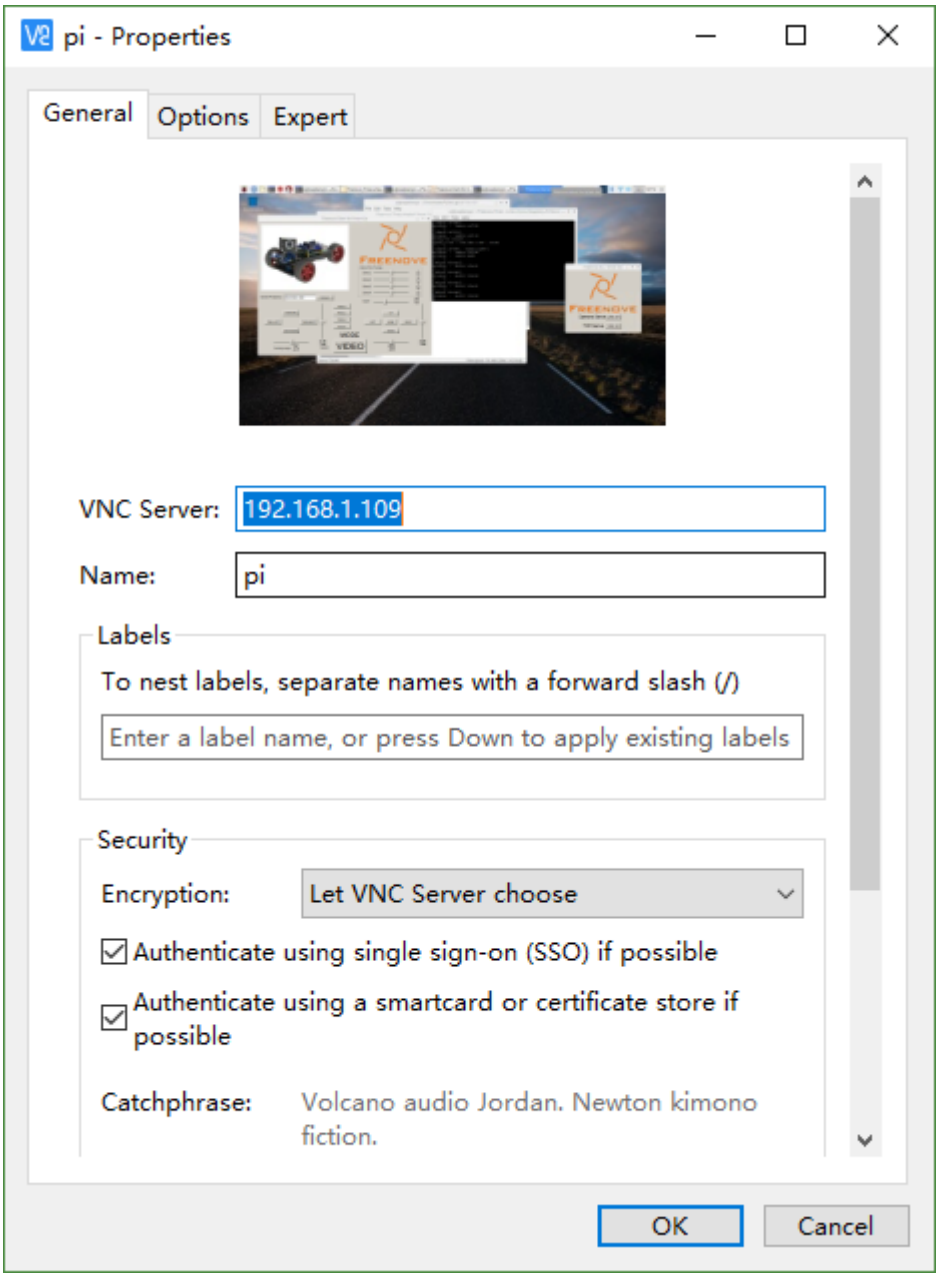
Select “5 Interfacing Options →P3 VNC →Enable Yes” in turn, then the VNC service starts.

Set the resolution.
Select 7 Advance Options →A5 Resolution → Select a suitable resolution →OK→Finish.
If rebooting is required, then reboot.

RealVNC under Windows.
Install realVNC on windows. Download and install.
Download link: http://www.realvnc.com/download/



At this point, you can access Raspberry Pi on windows via realVNC.
Open RealVNC, enter the IP address and username of RPi, and click OK. When you enter the password later, you can log in RPi via RealVNC.



It is recommended to use this method because of the reason

1. The problem can be solved perfectly.
2. As far as the remote desktop itself, realVNC has a better user experience than mstsc.exe, and it is faster and more fluent.

Solution 2

Uninstall xrdp

```
sudo apt-get remove xrdp
```

Reinstall xrdp

Turn off RPi.

```
sudo shutdown –p now
```

Turn off the power and then turn on the power. Wait for the RPi to start. Then reinstall xrdp with putty tool (see the Tutorial).