

Use USB Camera

Use USB Camera

[Install FSWebcam](#)

[View USB camera devices](#)

[Take a photo](#)

[Time-lapse photography](#)

[Use Cron \(scheduled tasks\)](#)

[Web preview camera](#)

[Install Motion](#)

[Modify the configuration file](#)

[Start the service](#)

[Web preview screen](#)

Use a standard USB camera to take photos and videos on the Raspberry Pi.

Install FSWebcam

FSWebcam is a simple and straightforward webcam application. The software installation command is as follows:

```
sudo apt install fswebcam
```

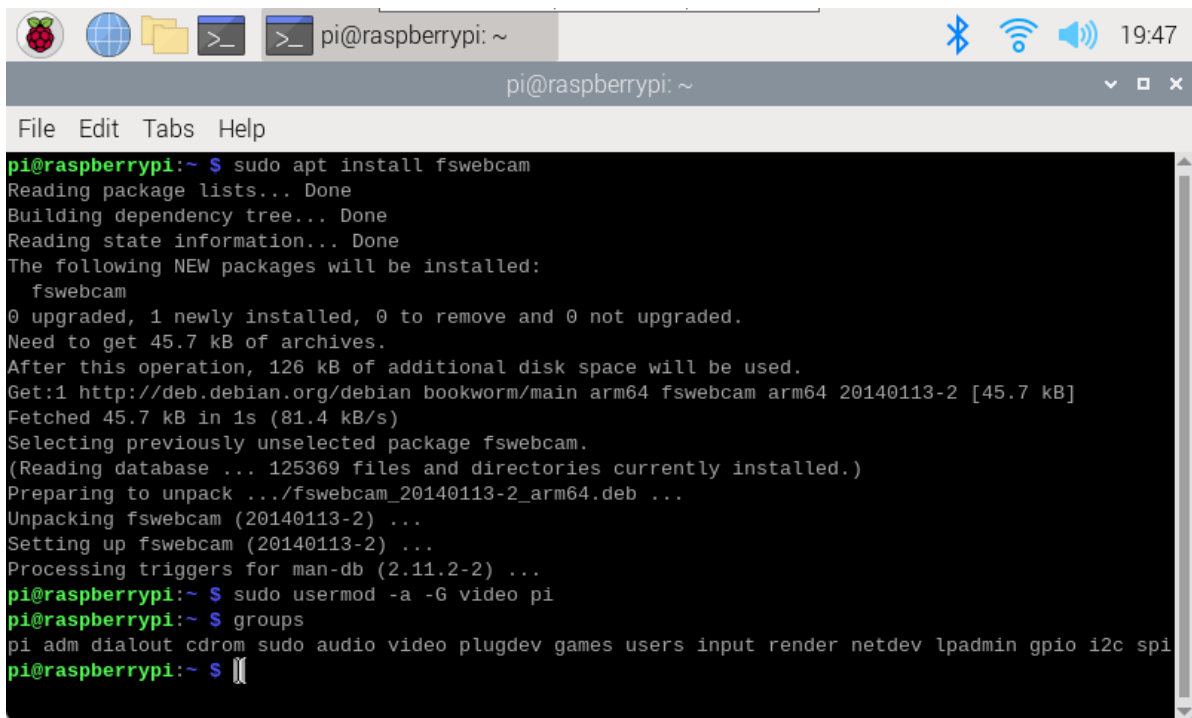
- Add user permissions: `sudo usermod -a -G video`

Example: Add pi user permissions to the group

```
sudo usermod -a -G video pi
```

- Check if the user has been correctly added to the group

Command: `groups`



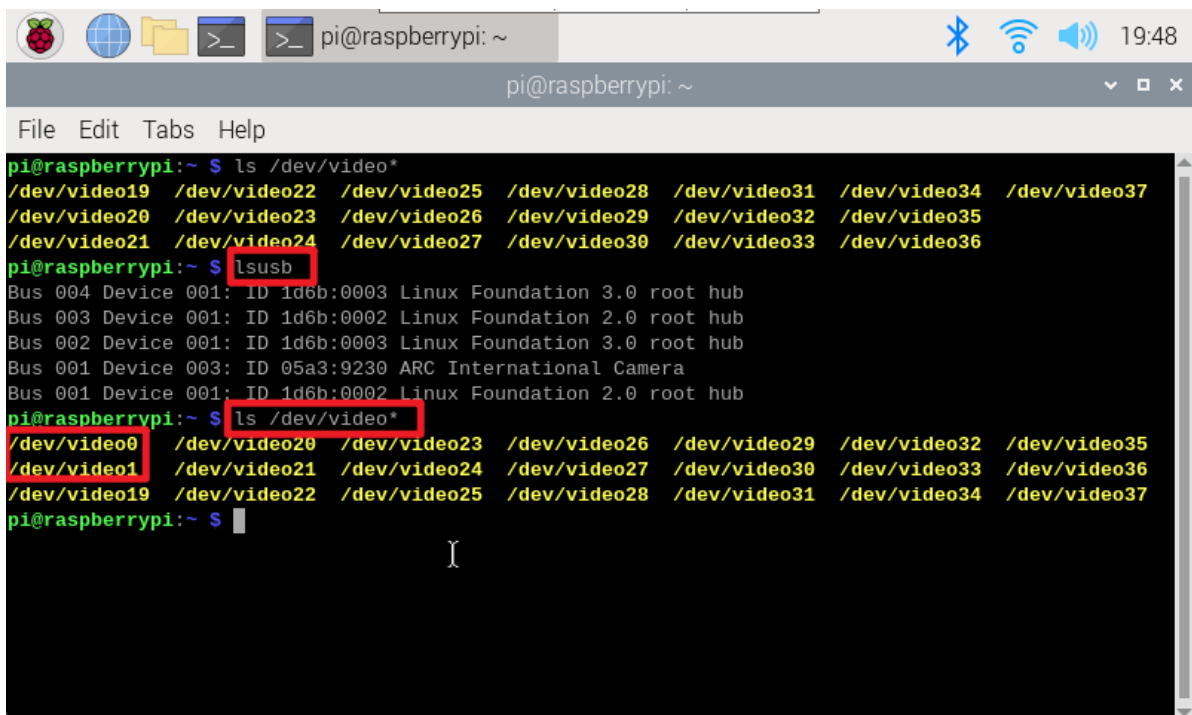
```
pi@raspberrypi: ~  
File Edit Tabs Help  
pi@raspberrypi:~$ sudo apt install fswebcam  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
The following NEW packages will be installed:  
  fswebcam  
0 upgraded, 1 newly installed, 0 to remove and 0 not upgraded.  
Need to get 45.7 kB of archives.  
After this operation, 126 kB of additional disk space will be used.  
Get:1 http://deb.debian.org/debian bookworm/main arm64 fswebcam arm64 20140113-2 [45.7 kB]  
Fetched 45.7 kB in 1s (81.4 kB/s)  
Selecting previously unselected package fswebcam.  
(Reading database ... 125369 files and directories currently installed.)  
Preparing to unpack .../fswebcam_20140113-2_arm64.deb ...  
Unpacking fswebcam (20140113-2) ...  
Setting up fswebcam (20140113-2) ...  
Processing triggers for man-db (2.11.2-2) ...  
pi@raspberrypi:~$ sudo usermod -a -G video pi  
pi@raspberrypi:~$ groups  
pi adm dialout cdrom sudo audio video plugdev games users input render netdev lpadmin gpio i2c spi  
pi@raspberrypi:~$
```

View USB camera devices

Use the `lsusb` command to view all USB devices recognized by the system;

Use the `ls /dev/video*` command to list all video devices recognized by the system.

The following two commands are to detect the information displayed by the camera.
You can compare the differences by yourself:
One is image/video acquisition, and the other is metadata acquisition.



```
pi@raspberrypi: ~  
File Edit Tabs Help  
pi@raspberrypi:~$ ls /dev/video*  
/dev/video19 /dev/video22 /dev/video25 /dev/video28 /dev/video31 /dev/video34 /dev/video37  
/dev/video20 /dev/video23 /dev/video26 /dev/video29 /dev/video32 /dev/video35  
/dev/video21 /dev/video24 /dev/video27 /dev/video30 /dev/video33 /dev/video36  
pi@raspberrypi:~$ lsusb  
Bus 004 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub  
Bus 003 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub  
Bus 002 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub  
Bus 001 Device 003: ID 05a3:9230 ARC International Camera  
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub  
pi@raspberrypi:~$ ls /dev/video*  
/dev/video0 /dev/video20 /dev/video23 /dev/video26 /dev/video29 /dev/video32 /dev/video35  
/dev/video1 /dev/video21 /dev/video24 /dev/video27 /dev/video30 /dev/video33 /dev/video36  
/dev/video19 /dev/video22 /dev/video25 /dev/video28 /dev/video31 /dev/video34 /dev/video37  
pi@raspberrypi:~$
```

Take a photo

- `fswebcam <image_name>`

Example: Take a photo and save it as image.jpg (the default path for saving the file is in the user directory)

```
fswebcam image.jpg
```

- `fswebcam -r resolution <image_name>`

Example: Take an image file with a resolution of 1280x720 and save it as image2.jpg

```
fswebcam -r 1280x720 image2.jpg
```

- `fswebcam -r resolution --no-banner <image_name>`

Example: Take an image file with a resolution of 1280x720, do not display time and other information on the image, and save it as image3.jpg

```
fswebcam -r 1280x720 --no-banner image3.jpg
```

Time-lapse photography

Create a new Webcam folder and enter the file

```
mkdir webcam
```

```
cd webcam
```

Create a new webcam.sh script file and edit the content

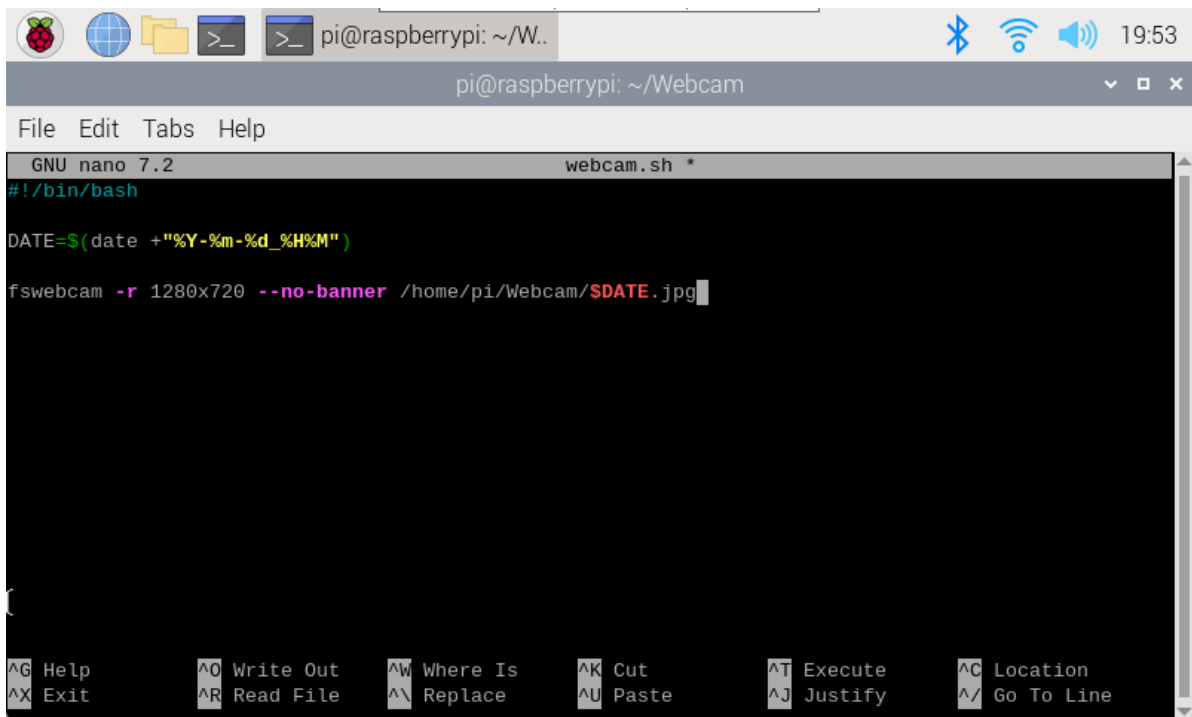
```
sudo nano webcam.sh
```

File content: The file save path needs to be modified by yourself. My system user name directory is yahboom

```
#!/bin/bash

DATE=$(date +"%Y-%m-%d_%H%M")

fswebcam -r 1280x720 --no-banner /home/pi/webcam/$DATE.jpg
```



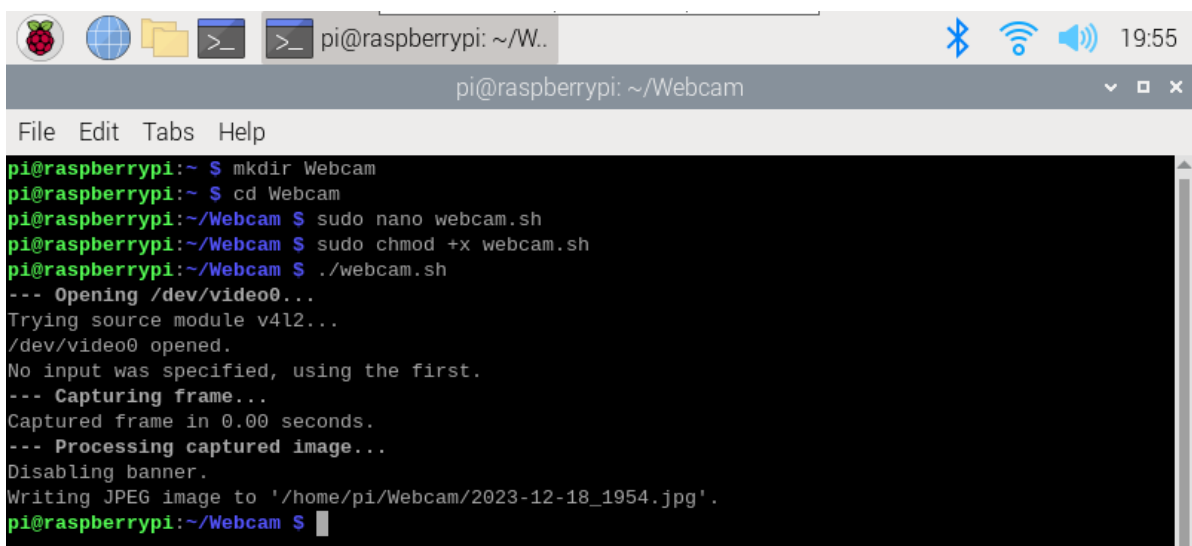
Press Ctrl+X, enter Y, and press Enter.

Add executable permissions

```
sudo chmod +x webcam.sh
```

Run the script

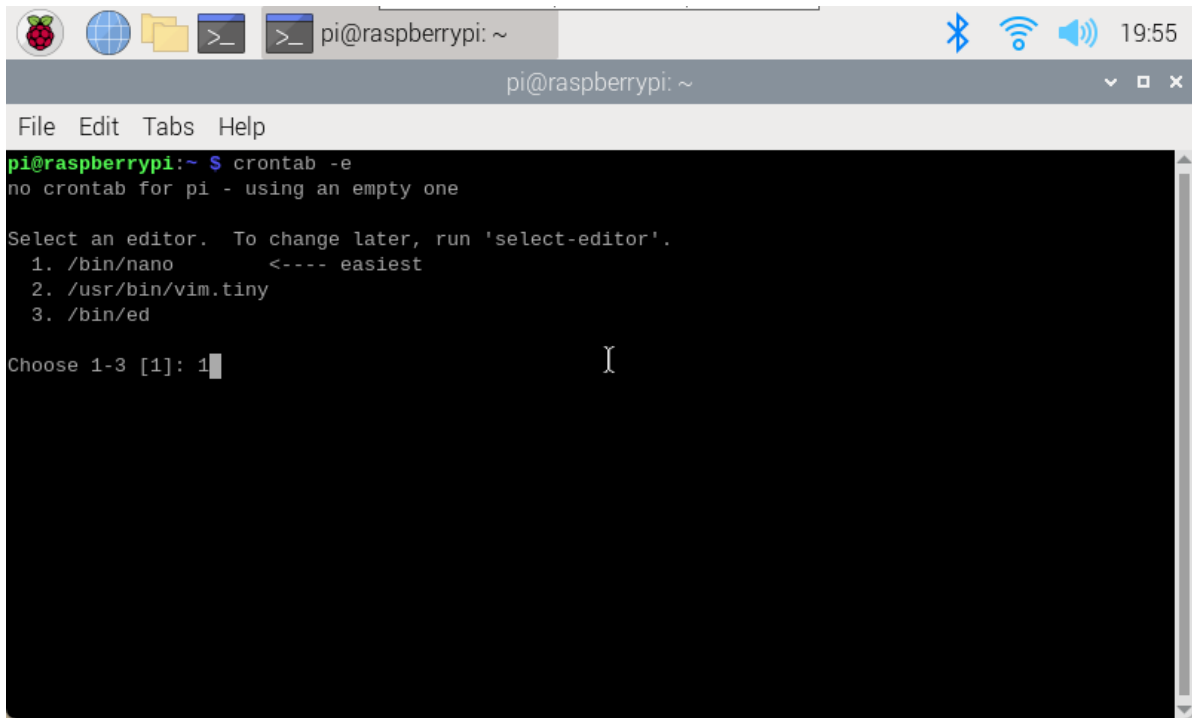
```
./webcam.sh
```



Use Cron (scheduled tasks)

Open the cron table for editing. You will be prompted to select an editor for the first use. It is recommended to use the nano editor

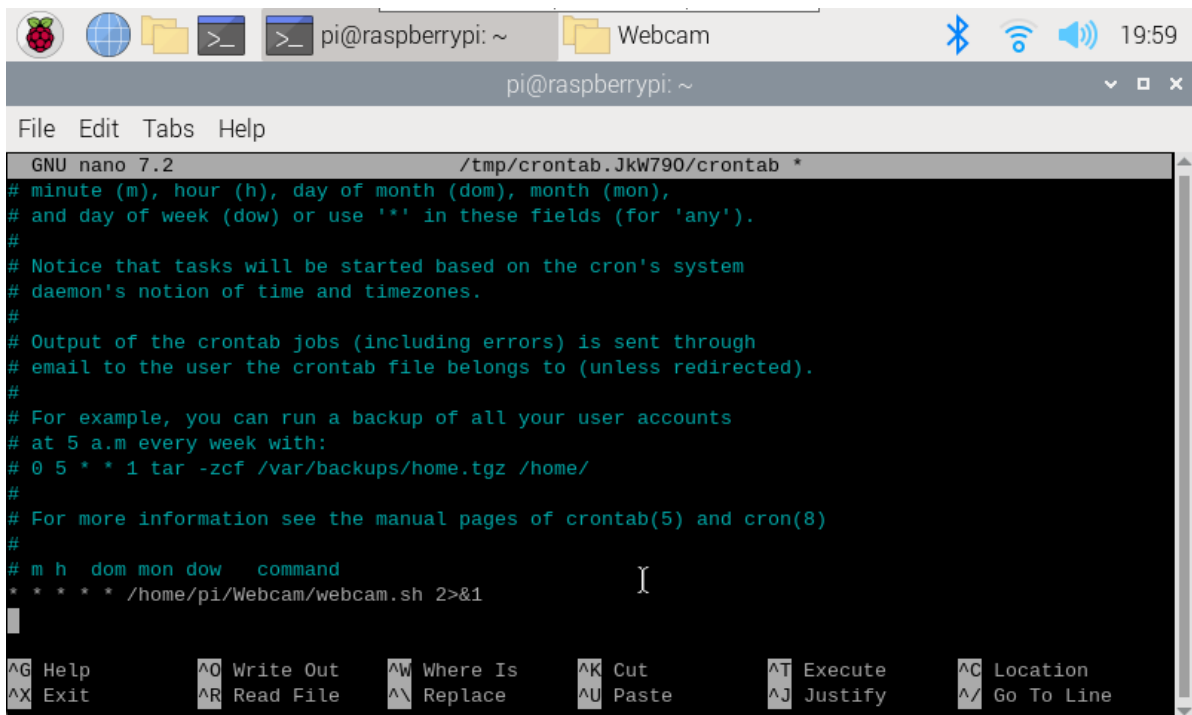
```
crontab -e
```



```
pi@raspberrypi: ~  
File Edit Tabs Help  
pi@raspberrypi:~ $ crontab -e  
no crontab for pi - using an empty one  
  
Select an editor. To change later, run 'select-editor'.  
1. /bin/nano      <---- easiest  
2. /usr/bin/vim.tiny  
3. /bin/ed  
  
Choose 1-3 [1]: 1
```

Add the following code to the edited document: The first 5 * signs represent a timer of 1 minute, and 2>&1 is to input the error output to the standard output

```
* * * * * /home/pi/webcam/webcam.sh 2>&1
```



```
pi@raspberrypi: ~  
File Edit Tabs Help  
GNU nano 7.2 /tmp/crontab.Jkw790/crontab *  
# minute (m), hour (h), day of month (dom), month (mon),  
# and day of week (dow) or use '*' in these fields (for 'any').  
#  
# Notice that tasks will be started based on the cron's system  
# daemon's notion of time and timezones.  
#  
# Output of the crontab jobs (including errors) is sent through  
# email to the user the crontab file belongs to (unless redirected).  
#  
# For example, you can run a backup of all your user accounts  
# at 5 a.m every week with:  
# 0 5 * * 1 tar -zcf /var/backups/home.tgz /home/  
#  
# For more information see the manual pages of crontab(5) and cron(8)  
#  
# m h dom mon dow  command  
* * * * * /home/pi/Webcam/webcam.sh 2>&1
```

After saving the file and exiting, the terminal will output the following:

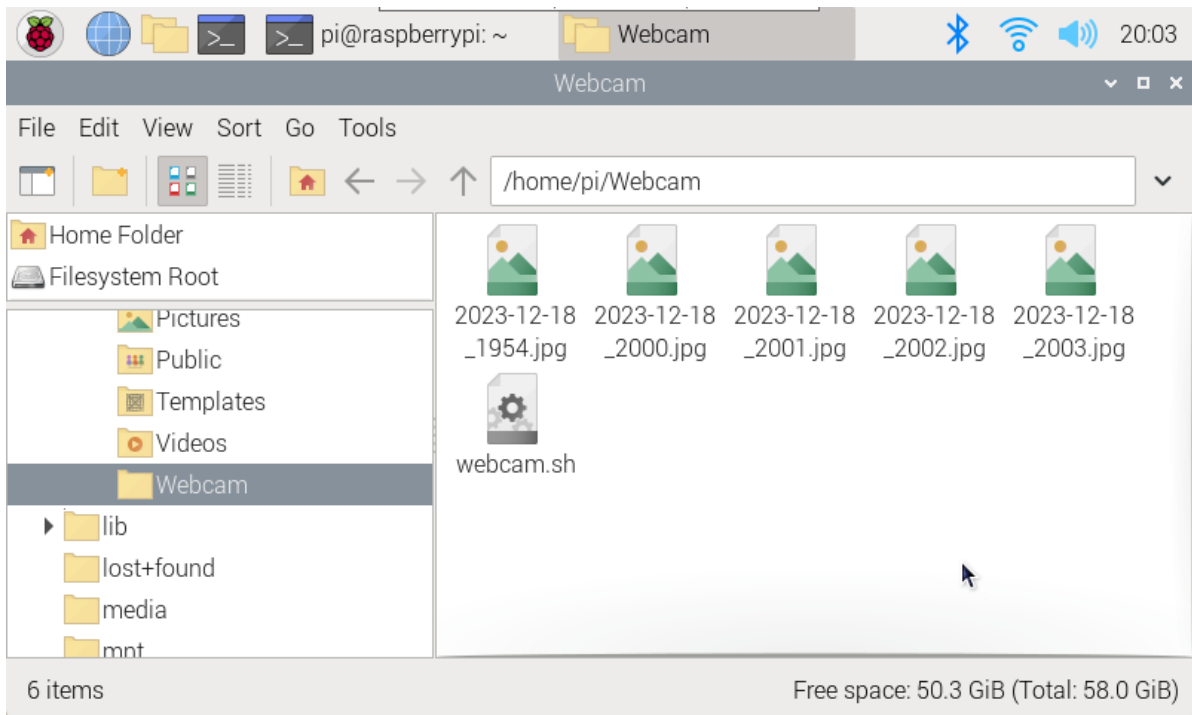
```
crontab: installing new crontab
```

For Cron jobs, you can learn about the format and syntax by yourself!

If the image is not generated after one minute, you can restart the service and check whether the path is correct!

Start cron service: `sudo service cron start`

Stop cron service: `sudo service cron stop`



If the cron service stop command cannot turn off the camera's automatic shooting, it is recommended to use the `crontab -e` command directly to delete the previously edited content!

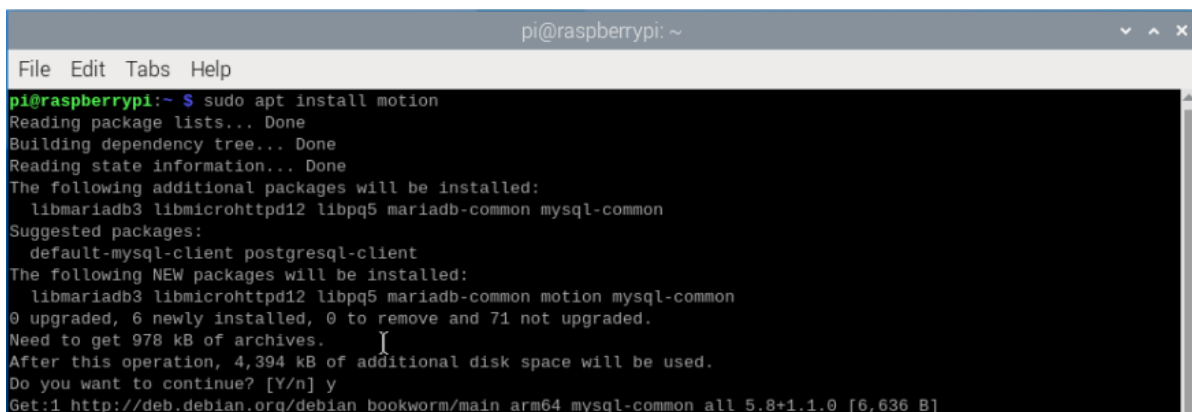
Web preview camera

Use Motion to realize real-time viewing of the video shot by the USB camera on the web page.

CSI cameras cannot use this method to preview the camera!

Install Motion

```
sudo apt install motion
```



Modify the configuration file

- motion.conf

```
sudo nano /etc/motion/motion.conf
```

Add or modify the following content:

```
daemon on
stream_localhost off
picture_output off
movie_output off
stream_maxrate 100
framerate 70
width 640
height 480
```

Note:

1. The above options that are not found in the configuration file can be added directly to the file. For example, the stream_maxrate option needs to be added by yourself, and other options are available.
2. Frame rate: You can modify it yourself (the above parameters are my best results)
3. The nano editor can use the Ctrl+W shortcut key to search for keywords and quickly locate the content that needs to be modified

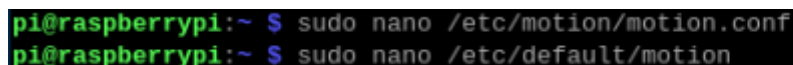
```
stream_maxrate: real-time streaming frame rate
framerate: frame rate
width: image width
height: image height
The above parameters can be adjusted!
```

- motion

```
sudo nano /etc/default/motion
```

Add the following code: motion runs in the background

```
start_motion_daemon=yes
```



```
pi@raspberrypi:~ $ sudo nano /etc/motion/motion.conf
pi@raspberrypi:~ $ sudo nano /etc/default/motion
```

Start the service

- Start the service

```
sudo service motion start
```

- Stop the service

```
sudo service motion stop
```

- Restart the service

```
sudo service motion restart
```

- Start motion

```
sudo motion
```

Web preview screen

Enter the start motion service and start motion commands in the terminal:

```
sudo service motion start  
sudo motion
```

```
pi@raspberrypi:~ $ sudo service motion start  
pi@raspberrypi:~ $ sudo motion  
[0:motion] [NTC] [ALL] conf_load: Processing thread 0 - config file /etc/motion/motion.conf  
[0:motion] [NTC] [ALL] motion_startup: Logging to file (/var/log/motion/motion.log)
```

- Preview screen

After turning on motion, enter the car IP:8081 in the browser on the same LAN to view the real-time camera screen.

Example: 192.168.2.93:8081