Use USB Camera

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
```

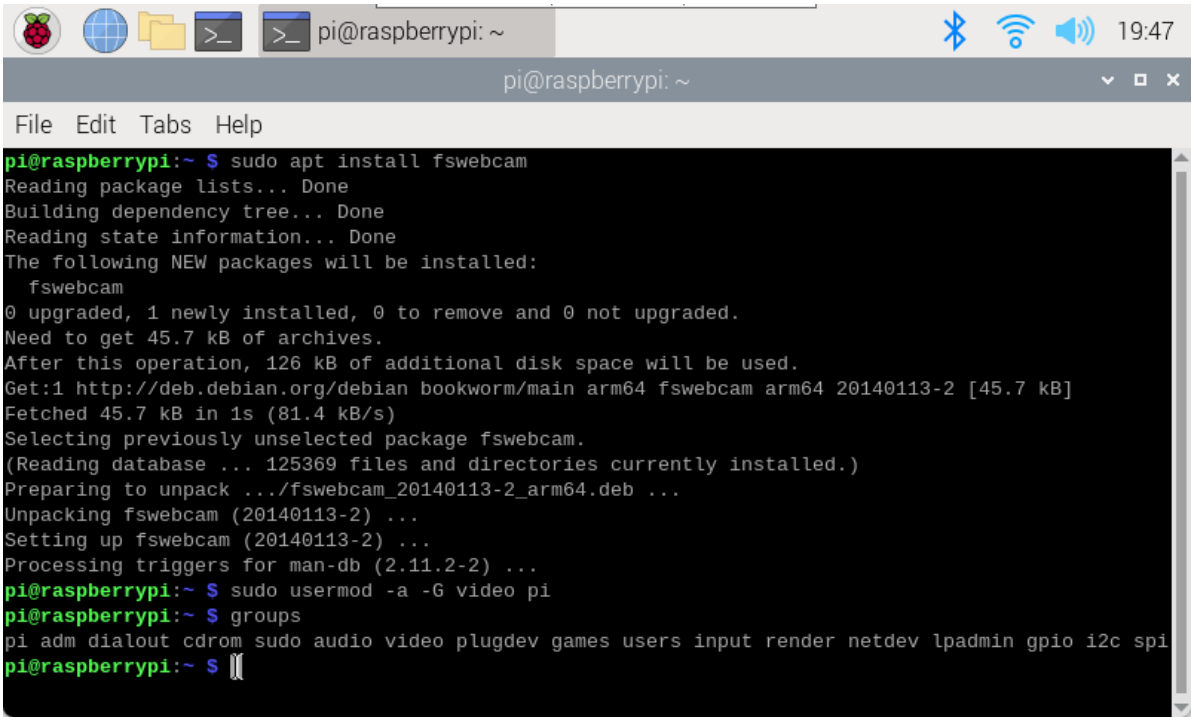
- Add user permissions: sudo usermod -a -G video

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

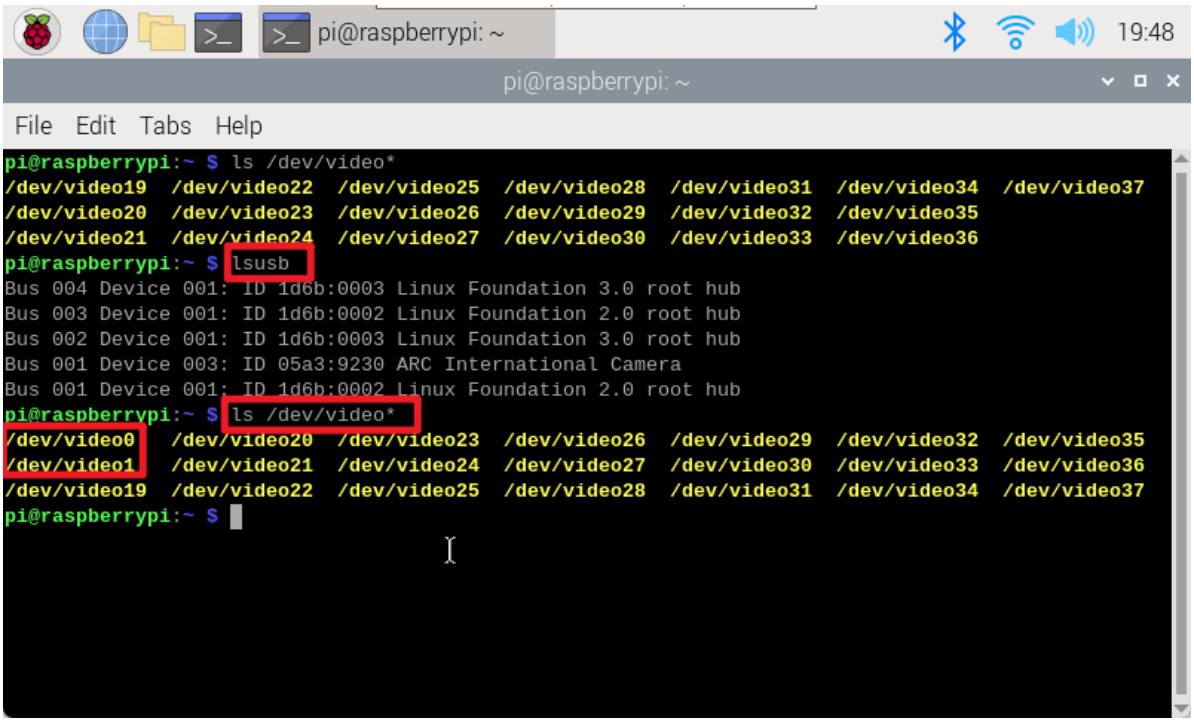


View USB camera devices

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.
```



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

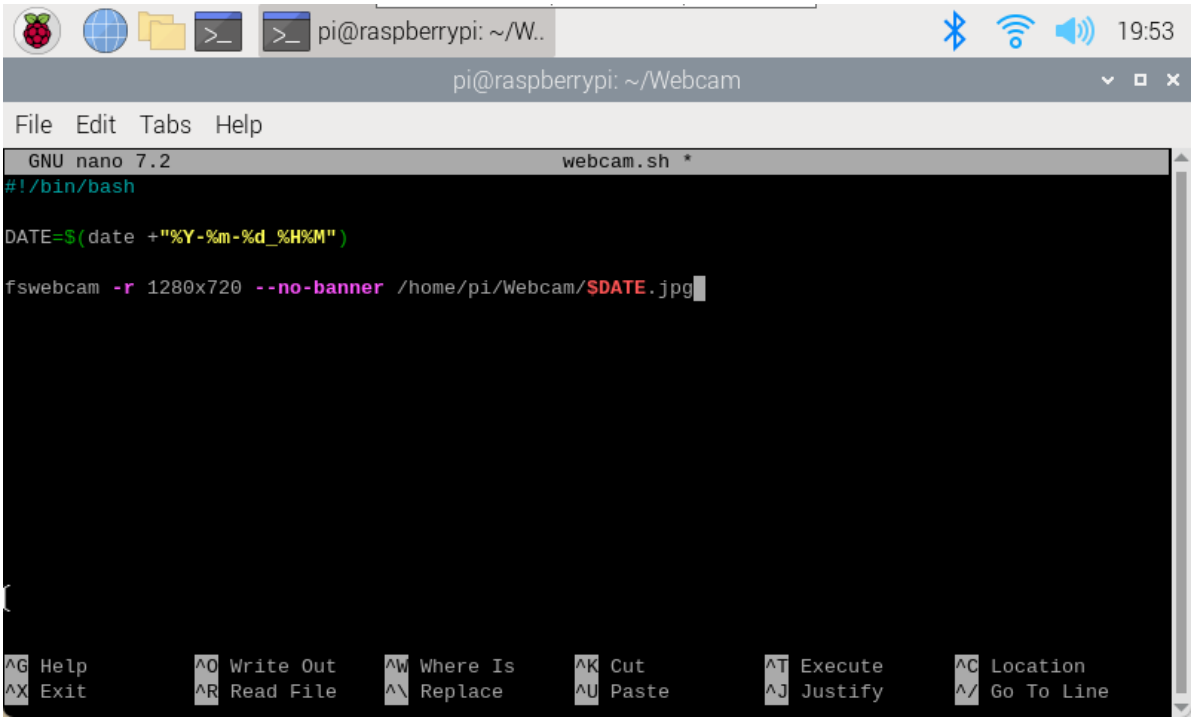
```
sudo nano webcam.sh
```

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
```



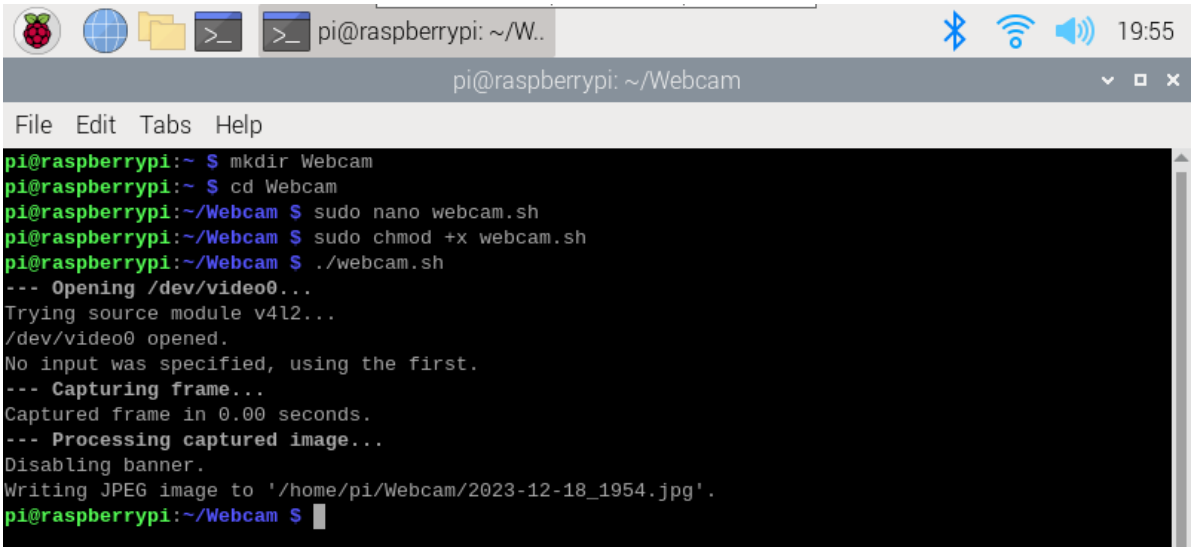
Press Ctrl+X, enter Y, and press Enter.

Add executable permissions

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

Run the script

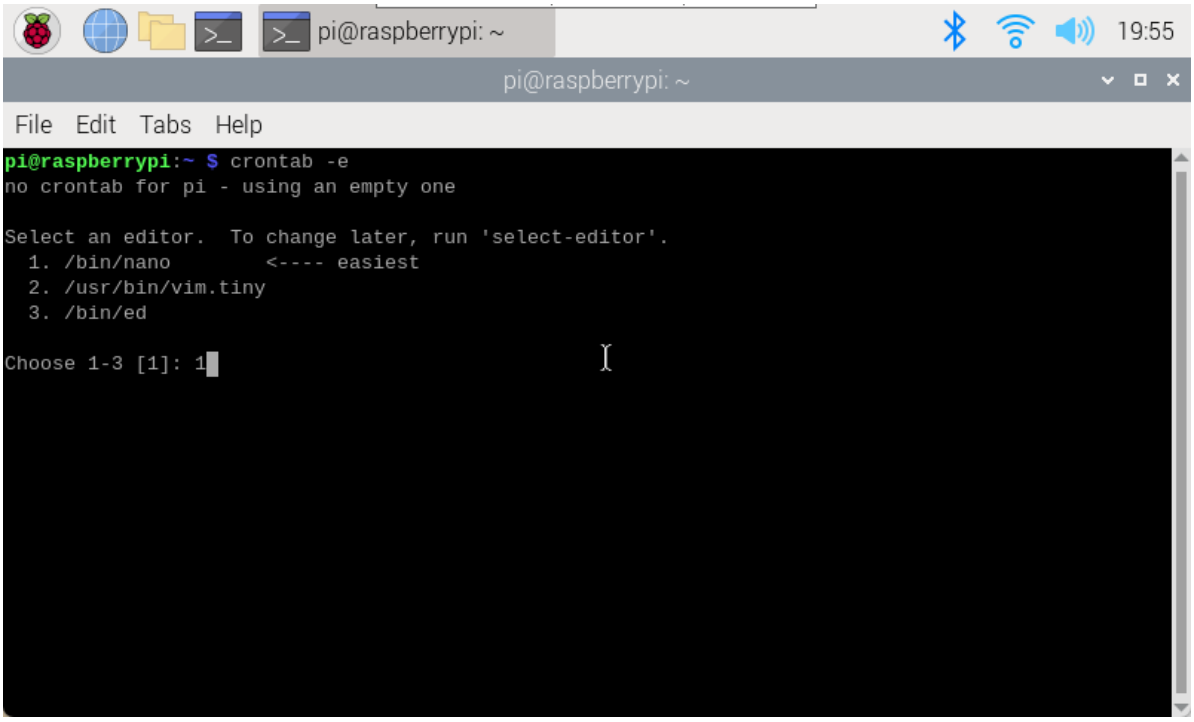
```
./webcam.sh
```



Use Cron (scheduled tasks)

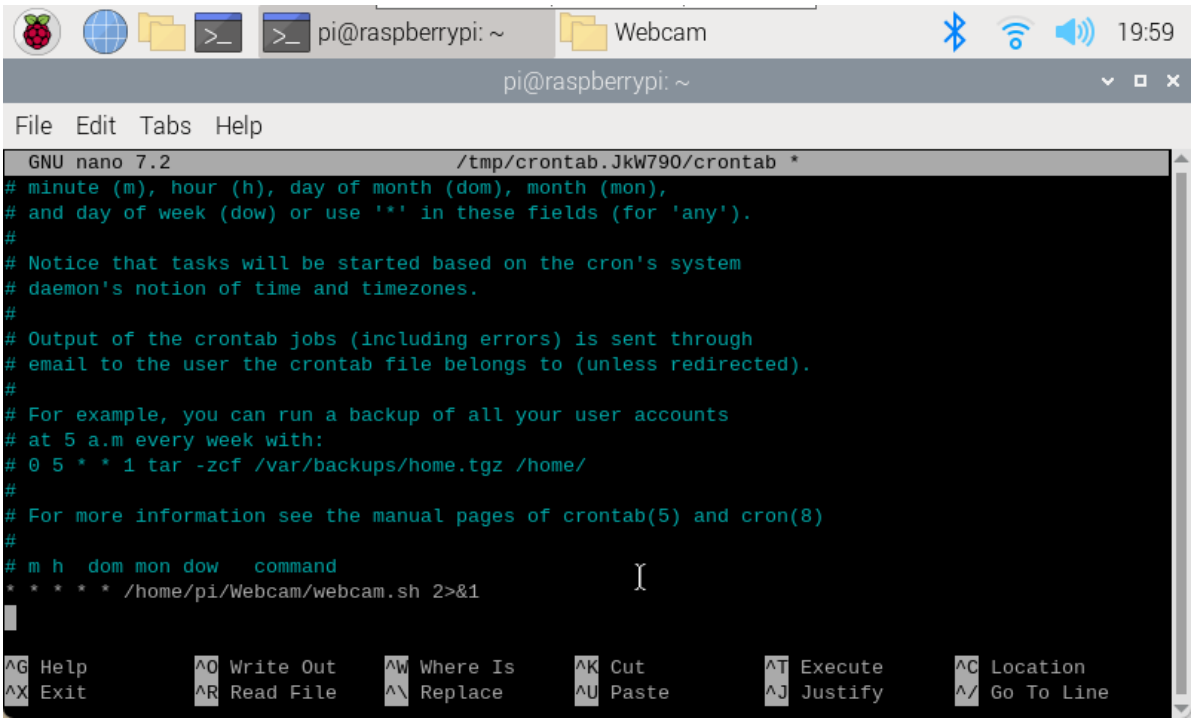
Open the cron table for editing. You will be prompted to select an editor for the first use. It is recommended to use the nano editor

```
crontab -e
```



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
```

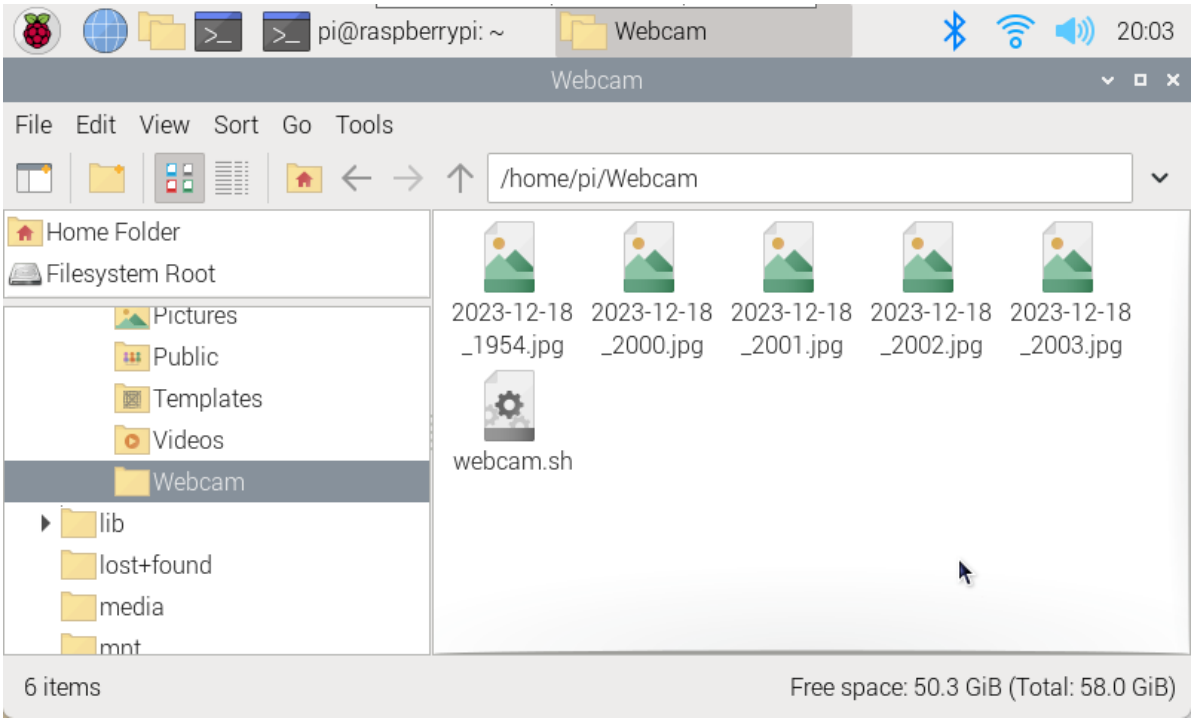


After saving the file and exiting, the terminal will output the following:

```
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!
```

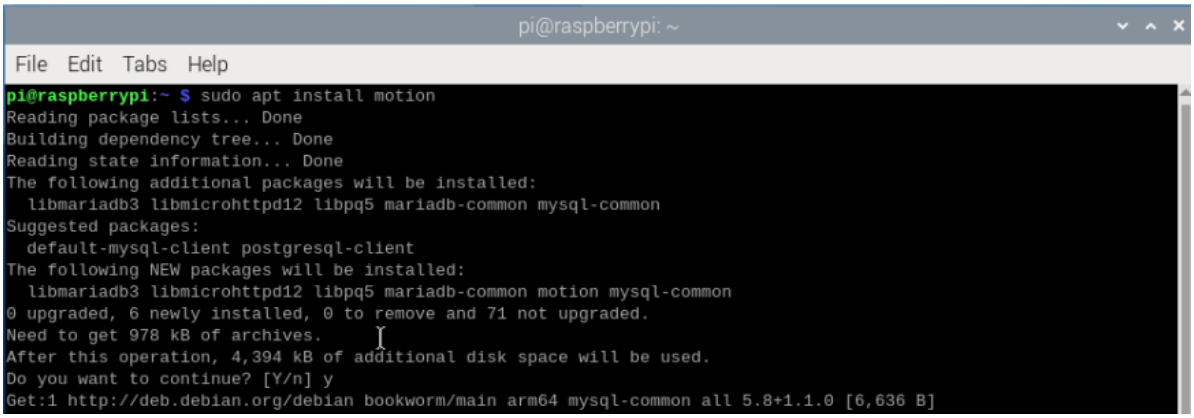
Web preview camera

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
```

Start the service

- Start the service

```
sudo service motion start
```

- Stop the service

```
sudo service motion stop
```

- Restart the service

```
sudo service motion restart
```

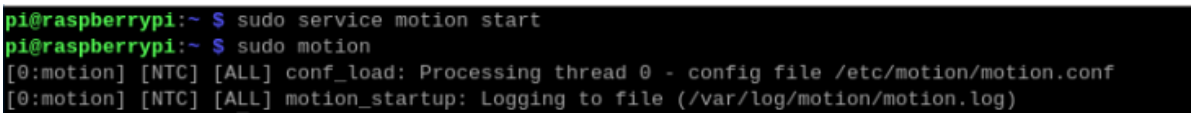
- Start motion

```
sudo motion
```

Web preview screen

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

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



- 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