

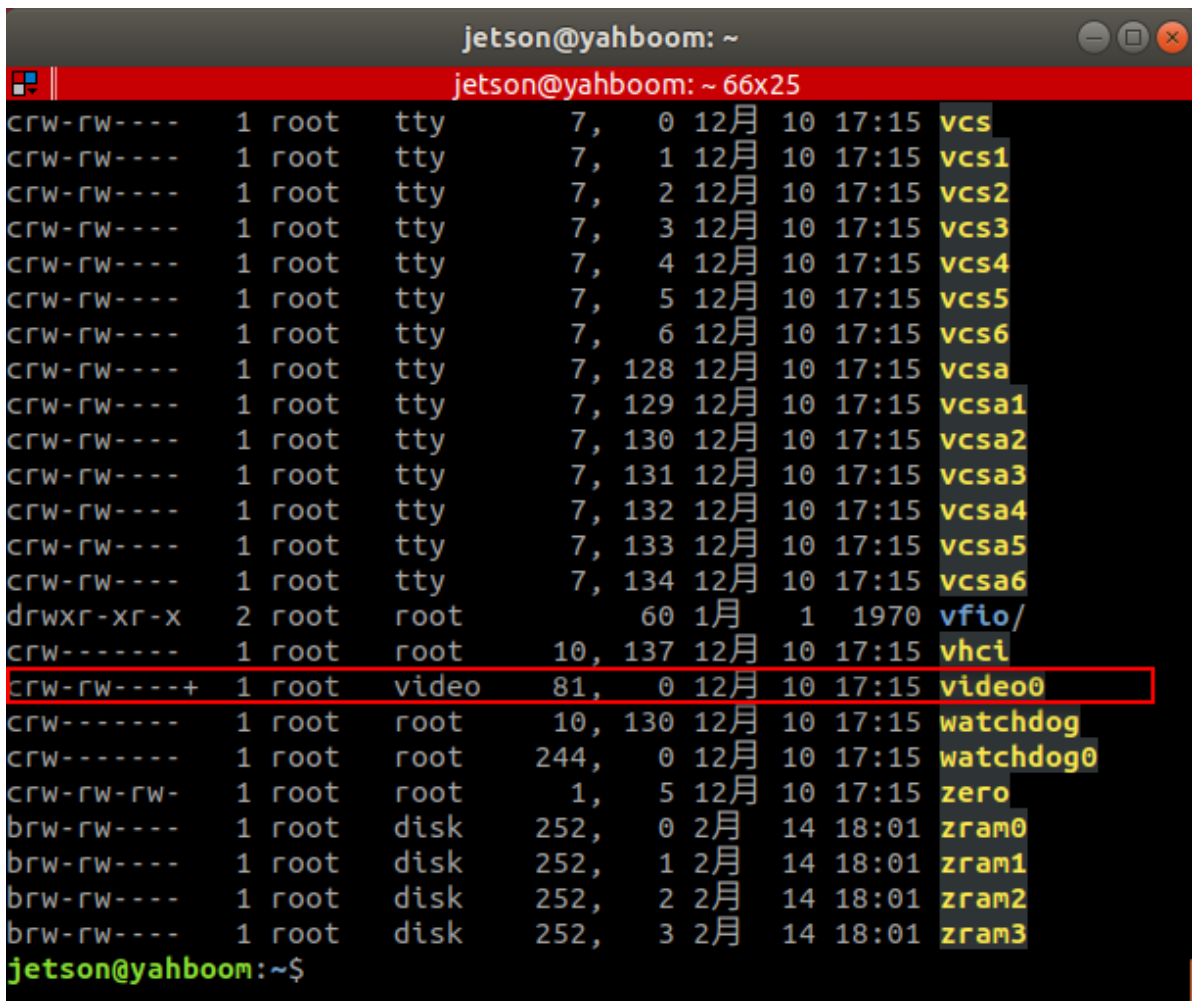
7. Web page real-time monitoring

7.1. Environment Construction

```
sudo apt-get install ros-noetic-async-web-server-cpp ros-noetic-web-video-server  
ros-noetic-usb-cam
```

First, make sure the USB camera is connected correctly. Enter the following command to check that the USB device number exists and is video0.

```
ls /dev
```



```
jetson@yahboom: ~  
jetson@yahboom: ~ 66x25  
crw-rw---- 1 root tty 7, 0 12月 10 17:15 vcs  
crw-rw---- 1 root tty 7, 1 12月 10 17:15 vcs1  
crw-rw---- 1 root tty 7, 2 12月 10 17:15 vcs2  
crw-rw---- 1 root tty 7, 3 12月 10 17:15 vcs3  
crw-rw---- 1 root tty 7, 4 12月 10 17:15 vcs4  
crw-rw---- 1 root tty 7, 5 12月 10 17:15 vcs5  
crw-rw---- 1 root tty 7, 6 12月 10 17:15 vcs6  
crw-rw---- 1 root tty 7, 128 12月 10 17:15 vcsa  
crw-rw---- 1 root tty 7, 129 12月 10 17:15 vcsa1  
crw-rw---- 1 root tty 7, 130 12月 10 17:15 vcsa2  
crw-rw---- 1 root tty 7, 131 12月 10 17:15 vcsa3  
crw-rw---- 1 root tty 7, 132 12月 10 17:15 vcsa4  
crw-rw---- 1 root tty 7, 133 12月 10 17:15 vcsa5  
crw-rw---- 1 root tty 7, 134 12月 10 17:15 vcsa6  
drwxr-xr-x 2 root root 60 1月 1 1970 vfio/  
crw----- 1 root root 10, 137 12月 10 17:15 vhci  
crw-rw----+ 1 root video 81, 0 12月 10 17:15 video0  
crw----- 1 root root 10, 130 12月 10 17:15 watchdog  
crw----- 1 root root 244, 0 12月 10 17:15 watchdog0  
crw-rw-rw- 1 root root 1, 5 12月 10 17:15 zero  
brw-rw---- 1 root disk 252, 0 2月 14 18:01 zram0  
brw-rw---- 1 root disk 252, 1 2月 14 18:01 zram1  
brw-rw---- 1 root disk 252, 2 2月 14 18:01 zram2  
brw-rw---- 1 root disk 252, 3 2月 14 18:01 zram3  
jetson@yahboom:~$
```

If the execution permission is not enough, you need to add execution permission

```
sudo chmod 777 /dev/video*
```

7.2. modify the launch file

```
sudo vim /opt/ros/noetic/share/usb_cam/launch/usb_cam-test.launch
```

Keep clicking [d] on the keyboard to delete everything. Click [i] on the keyboard to enter editing mode and write the following content into it.

```

<launch>
  <arg name="open_view" default="false"/>
  <node name="usb_cam" pkg="usb_cam" type="usb_cam_node" output="screen">
    <param name="video_device" value="/dev/video0"/>
    <param name="image_width" value="640"/>
    <param name="image_height" value="480"/>
    <param name="pixel_format" value="yuyv"/>
    <param name="camera_frame_id" value="usb_cam"/>
    <param name="io_method" value="mmap"/>
  </node>
  <!-- web_video_server -->
  <node pkg="web_video_server" type="web_video_server" name="web_video_server"
output="screen"/>
  <!-- image_view -->
  <group if="$(arg open_view)">
    <node name="image_view" pkg="image_view" type="image_view"
respawn="false" output="screen">
      <remap from="image" to="/usb_cam/image_raw"/>
      <param name="autosize" value="true"/>
    </node>
  </group>
</launch>

```

Click the [ESC] key twice (or multiple times), click the keyboard [shift + ;], enter [wq], and click the [Enter] key.

7.3. effect demonstration

Open the terminal and start

```
roslaunch usb_cam usb_cam-test.launch
```

- View in local web browser

```
http://localhost:8080/
```

- View on other devices (must be in the same LAN, 192.168.2.93 is the IP address of the master)

```
http://192.168.2.93:8080/
```

Note: It is recommended to use Google Chrome or mobile QQ browser, other browsers may not be able to open the image



Available ROS Image Topics:

- /usb_cam/
 - [image_raw](#) (Snapshot)

Click [image_raw] to view the camera image in real time, click [Snapshot] to display only one frame of image.