

RPi_Jetson control servo board

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- 1.RPi control servo board
- 2.jetson control servo board

1.RPi control servo board

According to the schematic diagram of the servo control board, serial port 3 is specially used for communication with controller.

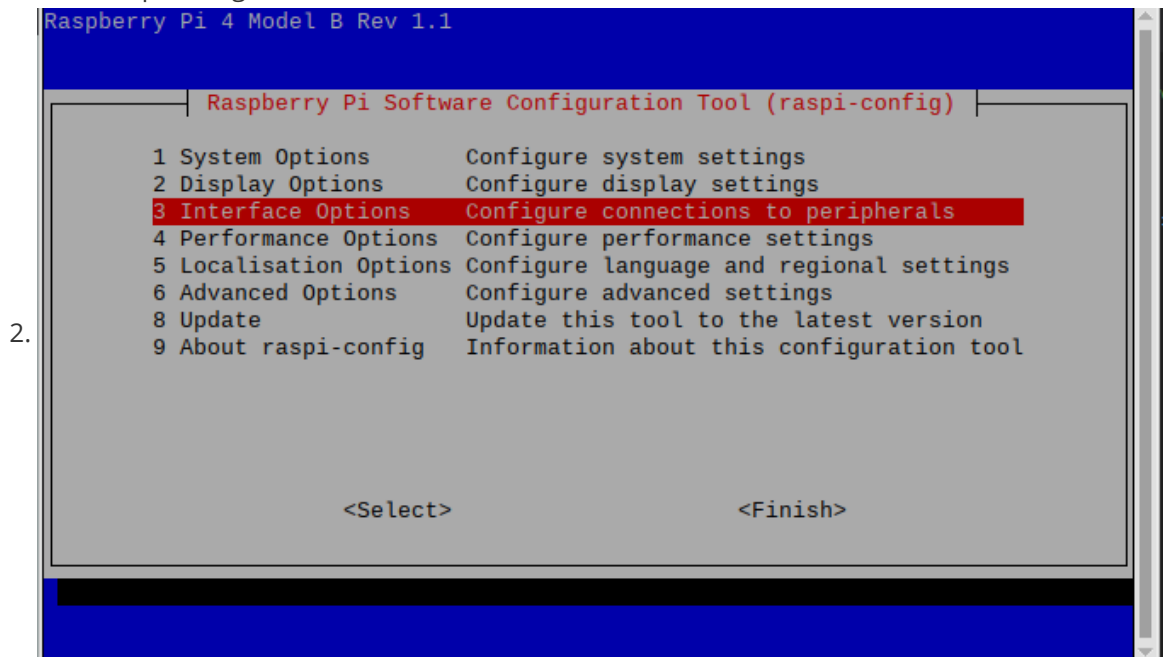
In this lesson, we will explain how to realize the Raspberry Pi to control the servo to rotate through the drive board.

Environment Configuration

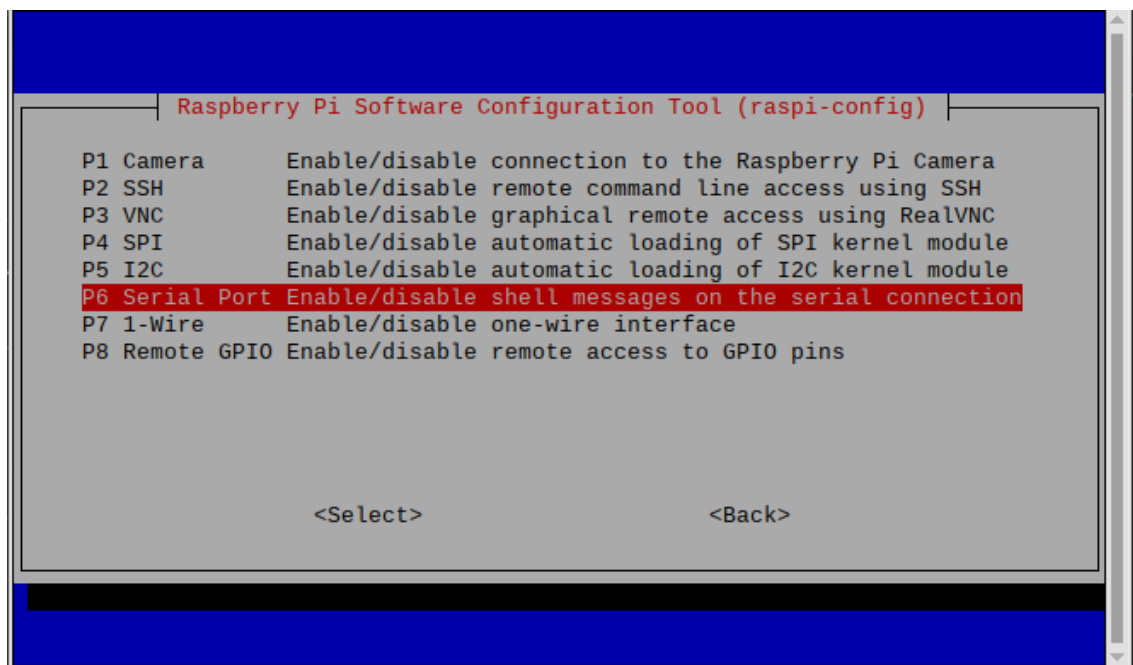
- Because the Raspberry Pi hard serial port is used for Bluetooth, and the mini serial port is unstable, we need to configure the Raspberry Pi serial port so that we can use the hard serial port normally.

1. Input following command:

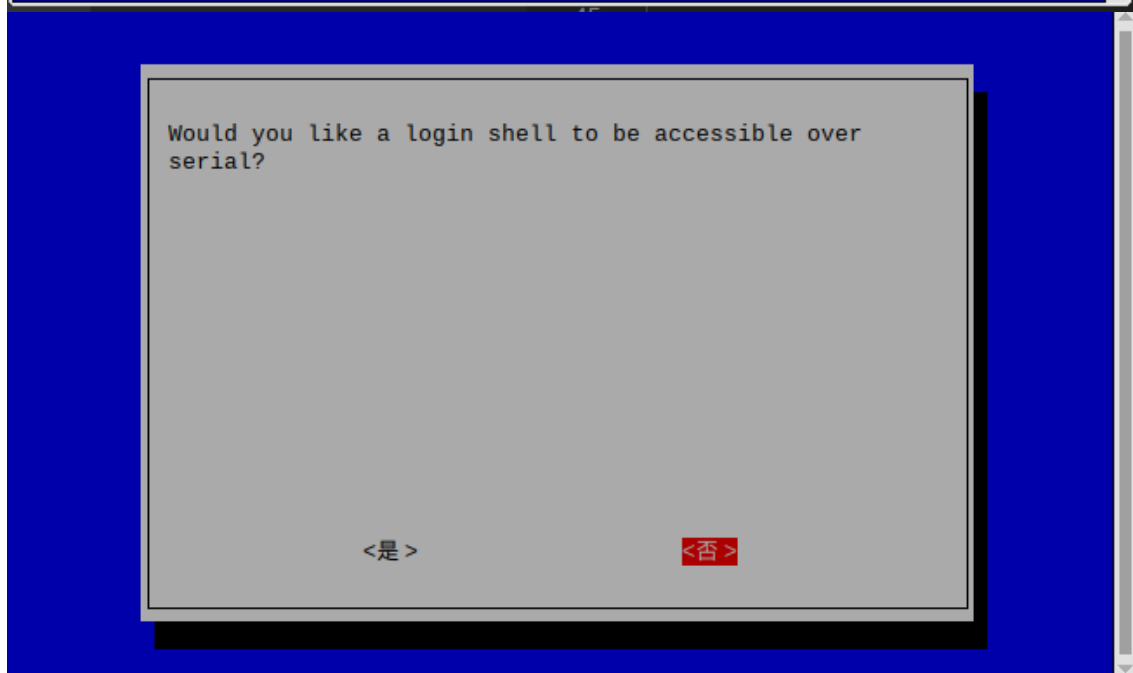
```
sudo raspi-config
```



3.



4.



5.



- Set the hardware serial port to GPIO serial port, and edit with root permission /boot/config.txt file.

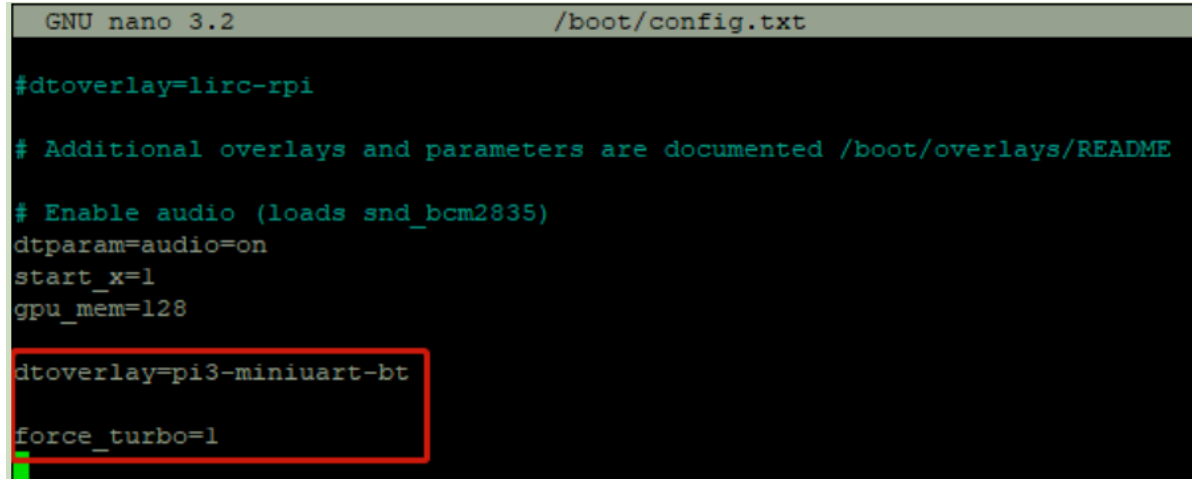
Input following command:

```
sudo nano /boot/config.txt
```

After opening the file, add two lines at the end

dtoverlay=miniuart-bt

force_turbo=1



```
GNU nano 3.2 /boot/config.txt

#dtoverlay=lirc-rpi

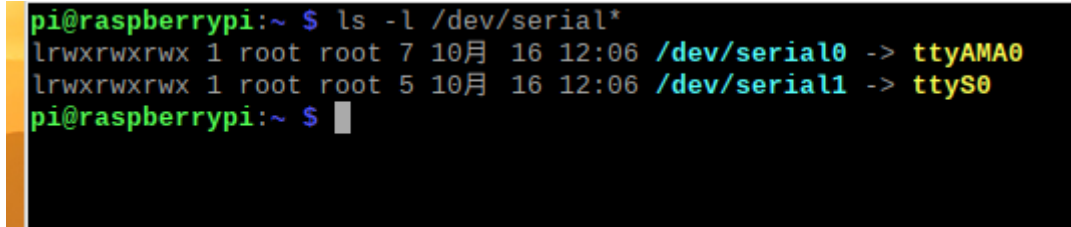
# Additional overlays and parameters are documented /boot/overlays/README

# Enable audio (loads snd_bcm2835)
dtparam=audio=on
start_x=1
gpu_mem=128

dtoverlay=pi3-miniuart-bt
force_turbo=1
```

Save: Ctrl+O, exit Ctrl+X.

- After saving and exiting, restart the Raspberry Pi. You can see that the serial ports are switched.



```
pi@raspberrypi:~ $ ls -l /dev/serial*
lrwxrwxrwx 1 root root 7 10月 16 12:06 /dev/serial0 -> ttyAMA0
lrwxrwxrwx 1 root root 5 10月 16 12:06 /dev/serial1 -> ttyS0
pi@raspberrypi:~ $
```

*** Start up ***

1. The pin diagram of Raspberry Pi, as shown below.

wiringPi	BCM	Function	Physical pin		Function	BCM	wiringPi
		3.3V	1	2	5V		
8	2	SDA.1	3	4	5V		
9	3	SCL.1	5	6	GND		
7	4	GPIO.7	7	8	TXD	14	15
		GND	9	10	RXD	15	16
0	17	GPIO.0	11	12	GPIO.1	18	1
2	27	GPIO.2	13	14	GND		
3	22	GPIO.3	15	16	GPIO.4	23	4
		3.3V	17	18	GPIO.5	24	5
12	10	MOSI	19	20	GND		
13	9	MISO	21	22	GPIO.6	25	6
14	11	SCLK	23	24	CE0	8	10
		GND	25	26	CE1	7	11
30	0	SDA.0	27	28	SCL.0	1	31
21	5	GPIO.21	29	30	GND		
22	6	GPIO.22	31	32	GPIO.26	12	26
23	13	GPIO.23	33	34	GND		
24	19	GPIO.24	35	36	GPIO.27	16	27
25	26	GPIO.25	37	38	GPIO.28	20	28
		GND	39	40	GPIO.29	21	29

2. The connection between Raspberry Pi and servo board, as is shown in the figure.



3. Use winScp software to transfer the source code of raspberry pie (serial_pi_cor. py) of this routine to the raspberry pie system

4. Run code

```
python3 serial_pi_cor.py
#If the system prompts that some modules do not exist, you can use the following
command to install them
sudo pip install serial
sudo pip install pyserial
```

According to the communication protocol

Serial communication (baud rate 9600)				
	First	servo number	Servo angle	Last
Data	'\$'	'A-P'	'0-180'	'#'
Eg.	Steering gear 1 angle 10 degrees: \$A010			

For example, if you want the fourth channel servo rotate to 100°.

Enter D at the terminal. Then, pressing "Enter" key. Next, input 100°.

You can see that servo to rotate to 100°.

```
pi@yahboom:~/wewe$ python3 serial_pi.py
serial start ...
CTRL + c is end!
please input way(A-X):A → First channel servo
please input angle(0-180): 100 → 100°
please input way(A-X):A
please input angle(0-180): 50
please input way(A-X):B → Second channel servo
please input angle(0-180): 50
please input way(A-X):B
please input angle(0-180): 180
please input way(A-X):^Cpi@yahboom:~/wewe$
```

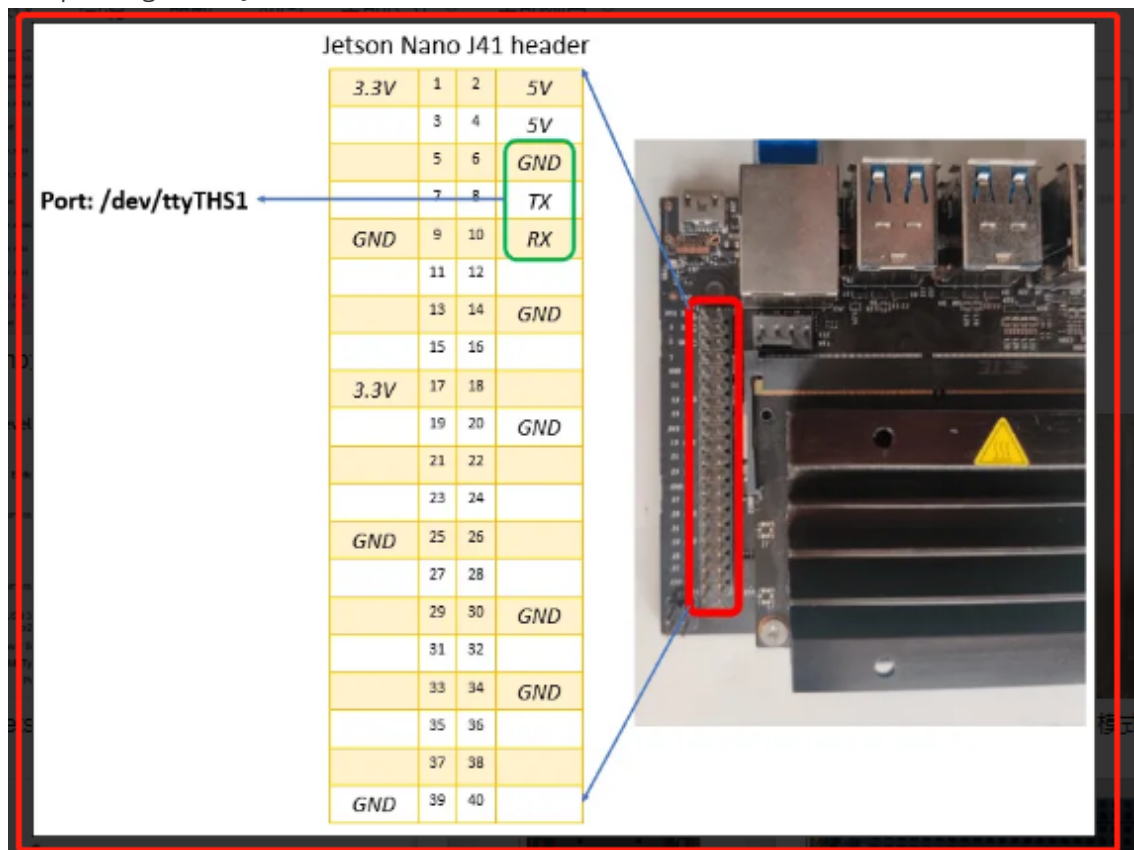
Press ctrl+c to ending program.

2.jetson control servo board

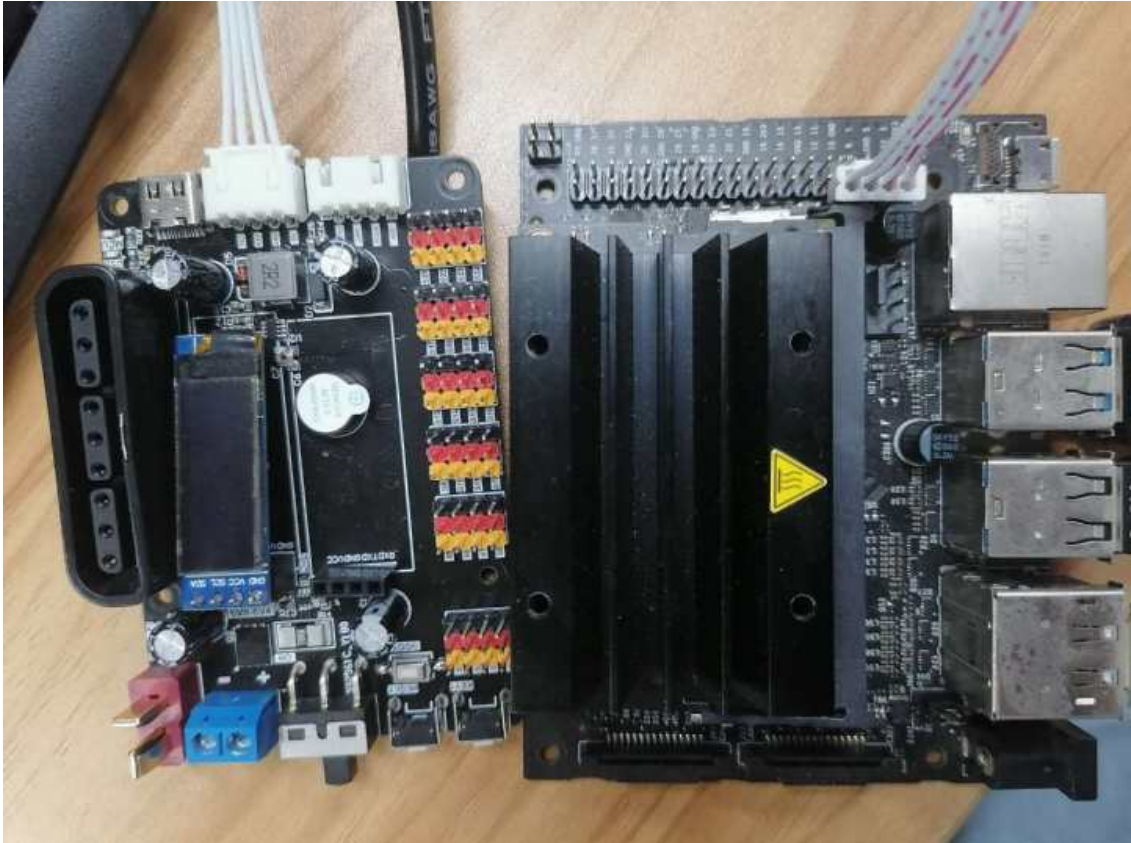
According to the schematic diagram of the servo control board, serial port 3 is specially used for communication with controller.

In this lesson, we will explain how to realize the Jetson NANO to control the servo to rotate through the drive board.

1. The pin diagram of Jetson NANO,as shown below.



2. The connection between jetson NANO and servo board, as is shown in the figure.



3. Use winScp software to transfer the source code of raspberry pie (serial_jetson_cor. py) of this routine to the raspberry pie system

4. Run code

```
sudo python3 serial_jetson_cor.py #Then, input password
#If the system prompts that some modules do not exist, you can use the following
command to install them
sudo pip install serial
sudo pip install pyserial
```

According to the communication protocol

Serial communication (baud rate 9600)				
	First	servo number	Servo angle	Last
Data	'\$'	'A-P'	'0-180'	'#'
Eg.	Steering gear 1 angle 10 degrees: \$A010			

For example, if you

want the fourth channel servo rotate to 100°.

Enter D at the terminal. Then, pressing "Enter" key. Next, input 100°.

You can see that servo to rotate to 100°.

```
jetson@jetson-h :~$ sudo python3 serial_jetson_cor.py
serial start ...
CTRL + c is end!
please input way(A-X):A
please input angle(0-180) : 100
please input way(A-X):B
please input angle(0-180) : 50
please input way(A-X):^C
jetson@jetson-h :~$
```

Press ctrl+c to ending program.