Raspberry Pi 5 controls the servo of the servo board to rotate

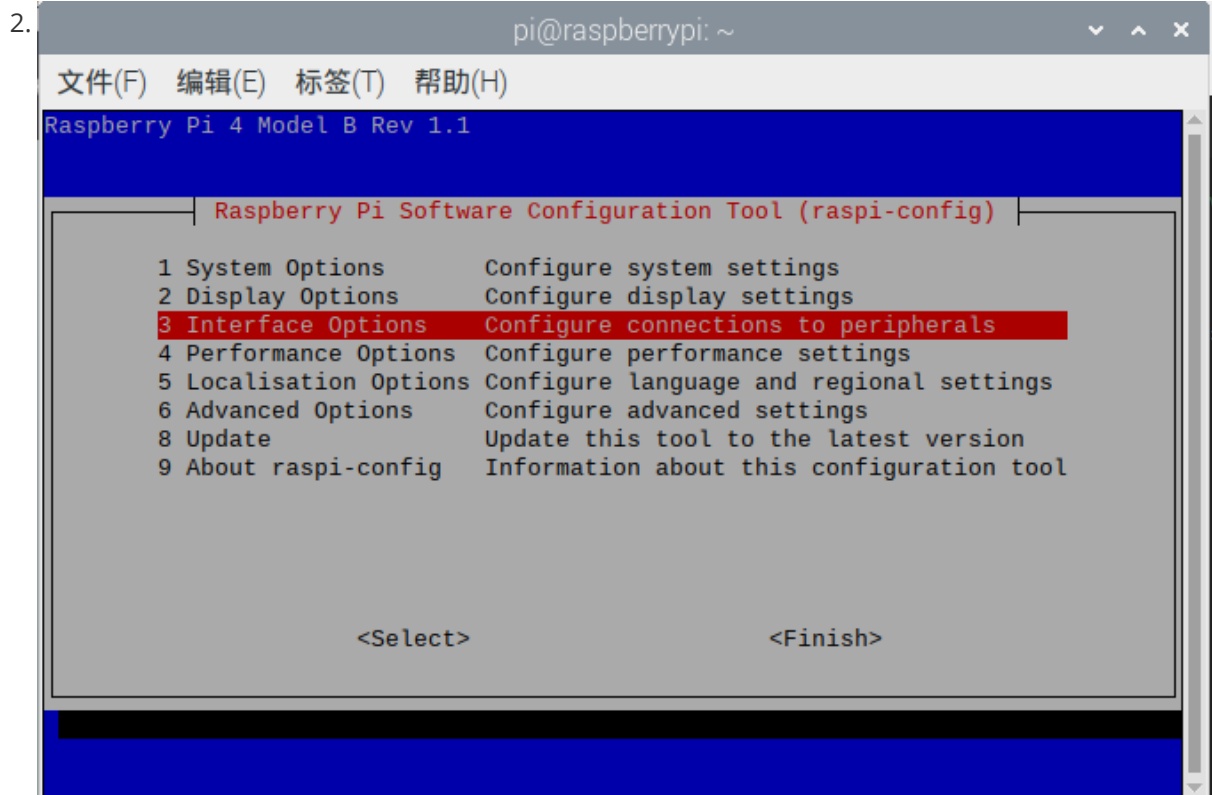## 1.Raspberry Pi 5 controls the rotation of the servo board

According to the schematic diagram of the servo board, it can be seen that the serial port 3 is specially used to communicate with the host computer. This section discusses how the Raspberry Pi controls the rotation of the servo on the servo board according to the communication protocol.

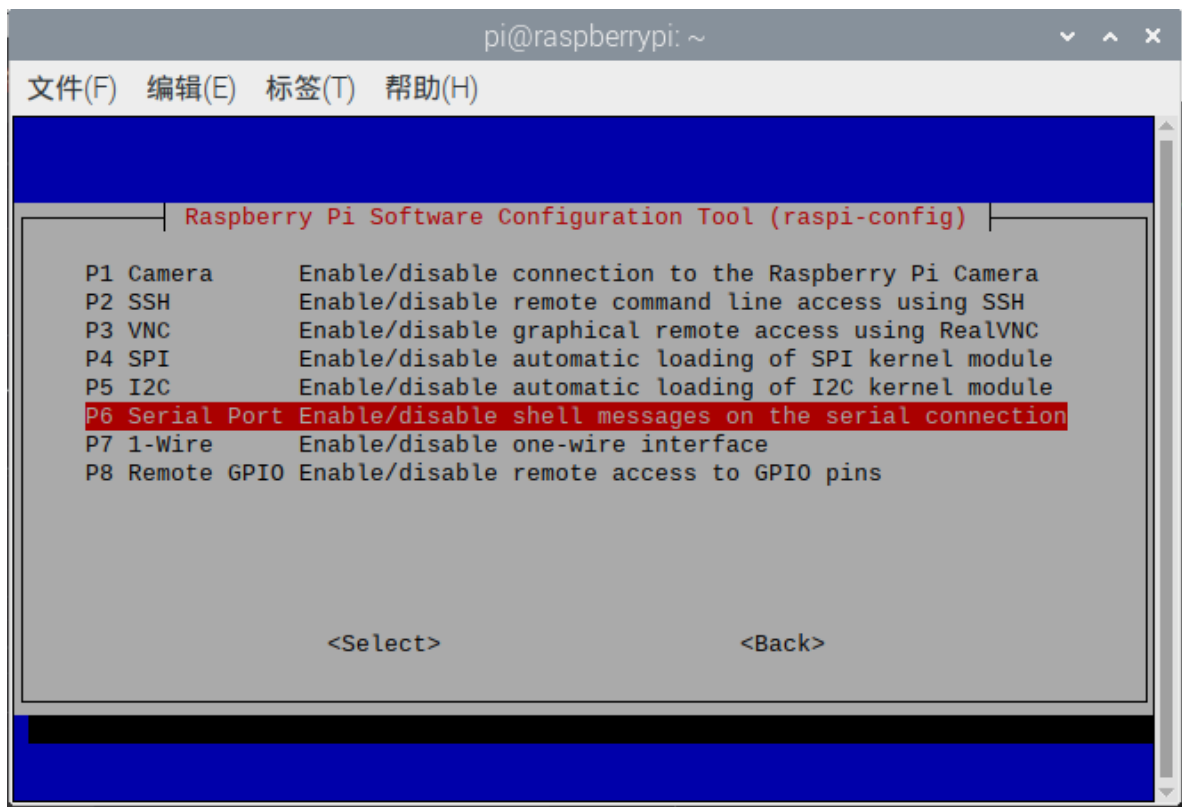*** Environment configuration ***

- Beforehand, configure the Raspberry Pi serial port, because the hard serial port of the Raspberry Pi is used for Bluetooth, and the mini serial port is unstable to use. This experiment uses the hard serial port.

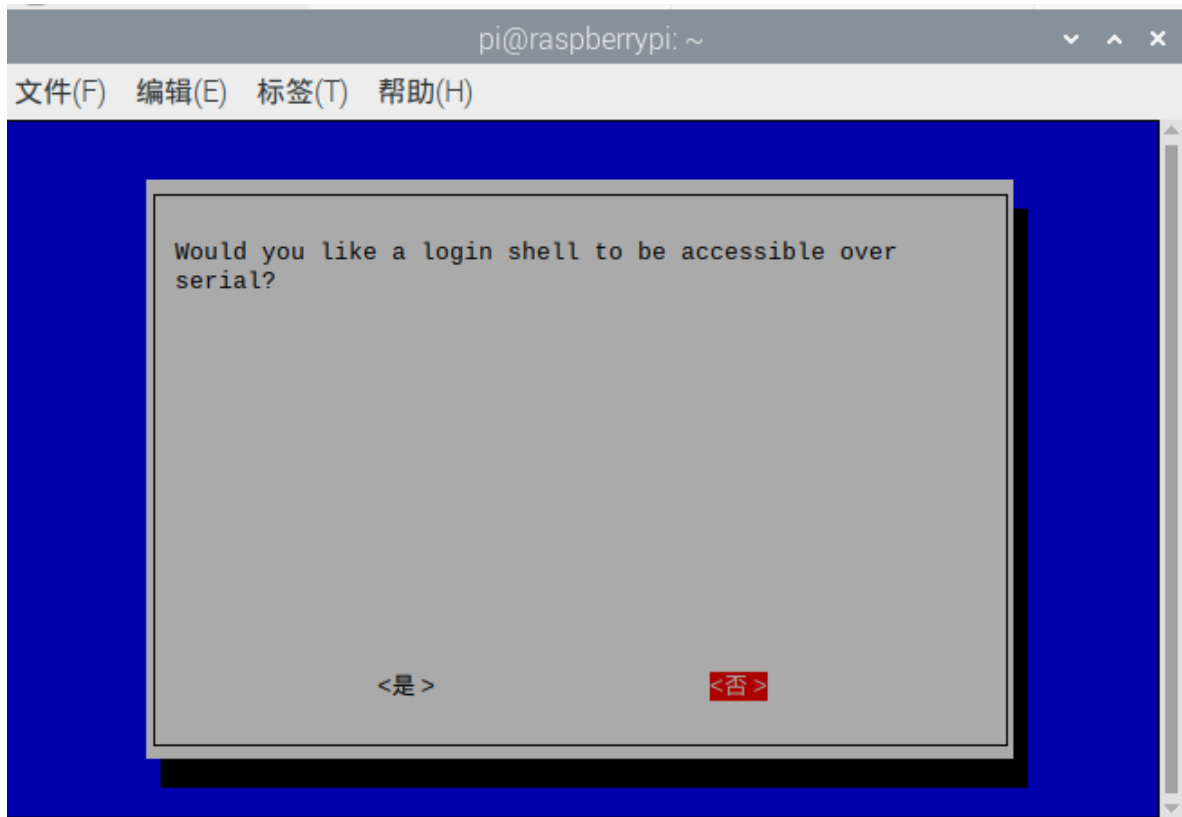1. First perform the following operations to map the serial port
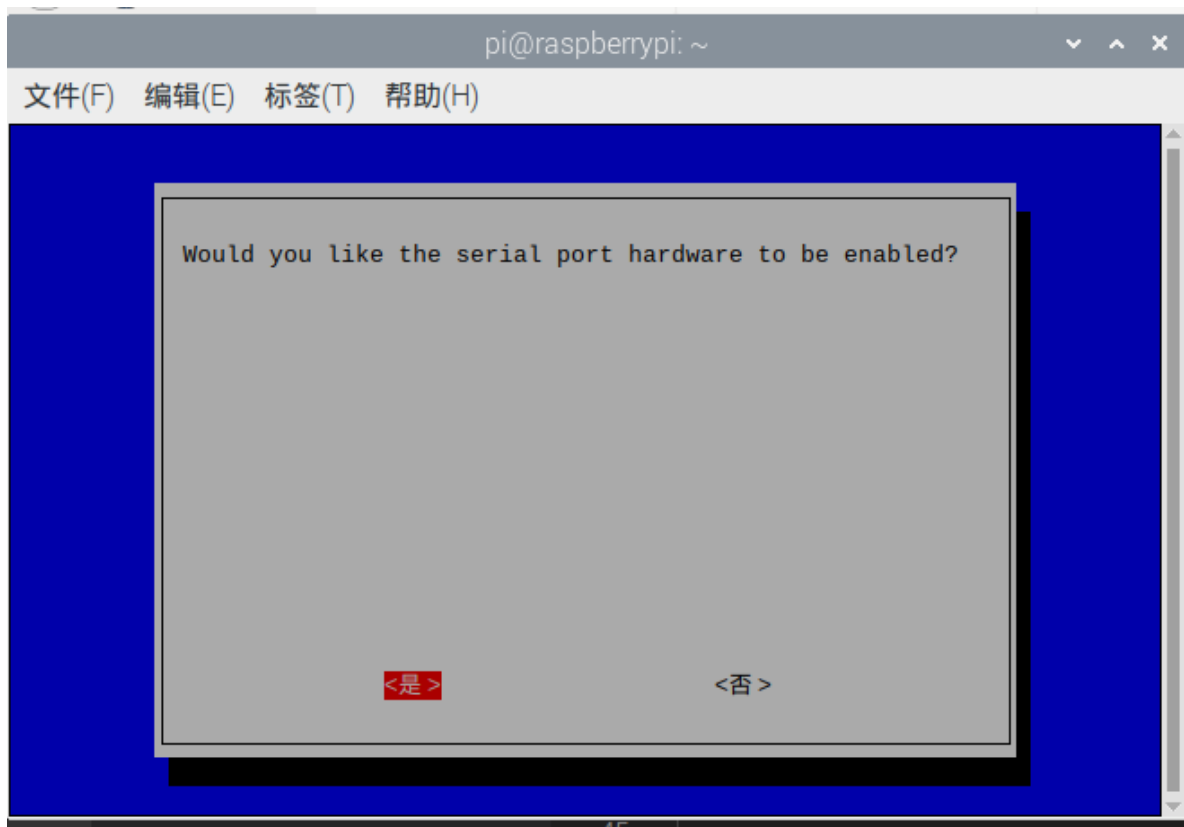   Enter sudo raspi-config in the terminal

2.

3.

Raspberry Pi Software Configuration Tool (raspi-config)

P1 Camera   Enable/disable connection to the Raspberry Pi Camera
P2 SSH   Enable/disable remote command line access using SSH
P3 VNC   Enable/disable graphical remote access using RealVNC
P4 SPI   Enable/disable automatic loading of SPI kernel module
P5 I2C   Enable/disable automatic loading of I2C kernel module
P6 Serial Port   Enable/disable shell messages on the serial connection
P7 1-Wire   Enable/disable one-wire interface
P8 Remote GPIO   Enable/disable remote access to GPIO pins

                 <Select>   <Back>

4.

Would you like a login shell to be accessible over serial?

                 <是 >   <否 >

5.

Would you like the serial port hardware to be enabled?

<是>   <否>

6. After the configuration is completed, save and exit, and restart according to the prompts.

Start experimenting

1. The pin diagram of Raspberry Pi is as follows：

Raspberry Pi 40 pin comparison table

wiringPi 编码	BCM 编码	Pin function name	物理引脚 BOARD编码		Pin function name	BCM 编码	wiringPi 编码
		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 wiring between Raspberry Pi and servo board is as shown in the figure

3. Transfer the Raspberry Pi source code (serial_pi_cor.py) of this routine to the Raspberry Pi
   You can use winScp software for file transfer
   Link：http://www.yahboom.net/study/raspberry4B
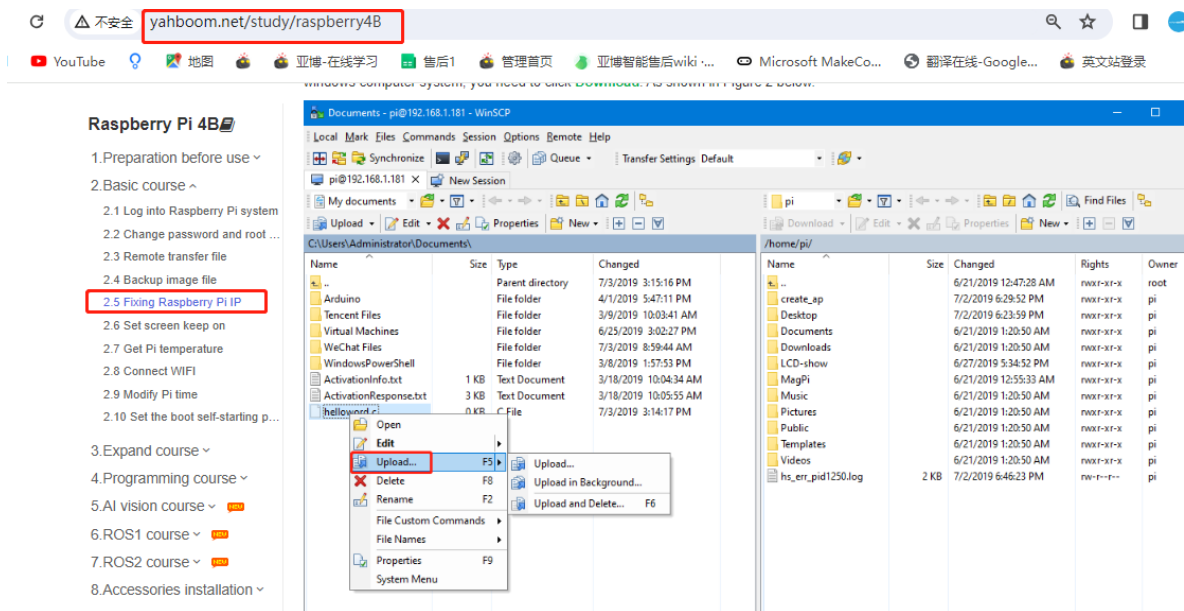
4. Run the following code in the Raspberry Pi 5 terminal：

```
python3 serial_pi_cor.py
#If you encounter an error that the module cannot be found, you can use the
following command to install it.
sudo pip install serial
sudo pip install pyserial
```

Refer to the 16-channel servo control board communication protocol

Serial communication (baud rate 9600)				
	Start bit	Servo number	Servo angle	End bit
Data	'$'	'A-P'	'0-180'	'#'
Eg	Servo1 turn to180°：$A180#			

For example: if you want the servo of channel 4 to rotate to 100 degrees, enter D in the terminal first, press Enter, and then enter 100 degrees. That is, the desired result can be achieved.

Press ctrl+c to end the running program.