

Expand course ---8.IR control expand

Note:

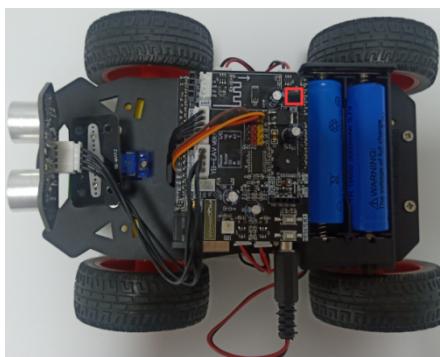
1. In order to avoid the interference of sunlight on infrared sensor, we need to carry out this experiment indoors.
2. If you switch between different modes will have a short delay, which is normal.
3. During remote control, the infrared remote control needs to face the infrared receiver on the expansion board.

1. Learning goal

In this lesson, we will learn how to control the car by infrared controller.

2. Preparation

2.1 The position of the infrared receiver on the robot car. As shown below.



2.2 The pin of UNO board is connected the infrared receiver.

3. Principle of experimental

From the hardware interface manual, we can know that infrared receiver are driven by Uno board.

Classification	Function	The number of Drive chip PCA9685	Drive Method	Connection with CPU	Uno board
Left Motor	Left front motor forward	LINB(13)	PCA9685	I2C_SDA/I2C_SCL	A4/A5
	Left front motor reverse	LINA(12)			
	Left rear motor forward	RINB(15)			
	Left rear motor reverse	RINA(14)			
Right Motor	Right front motor forward	LED10			
	Right front motor reverse	LED11			
	Right rear motor forward	LED8			
	Right rear motor reverse	LED9			
Servo	Control S1	LED0			
	Control S2	LED1			
	Control S3	LED2			
	Control S4	S1 (3)			
LOGO light	Control bluelight	LED7			
Tracking sensor	Left tracking sensor				A0
	Middle tracking sensor				A1
	Right tracking sensor				A2
Ultrasonic sensor	Ultrasonic Echo		Uno board drive directly		12
	Ultrasonic RGB light				11
Key	K1				7
IR	IR control				A3
Bluetooth interface	RX				0
	TX				1
On board RGB Light	RGB Light on expansion board				6
Buzzer	Control buzzer				10

4. About code

For the code of this course, please refer to: [IR_Control_expand.ino](#) in the [IR_Control_expand](#) folder.

5. Compiling and downloading code

5.1 We need to open the [IR_Control_expand .ino](#) file by Arduino IDE software. Then click“√”under the menu bar to compile the code, and wait for the word “**Done compiling** ” in the lower left corner, as shown in the figure below.

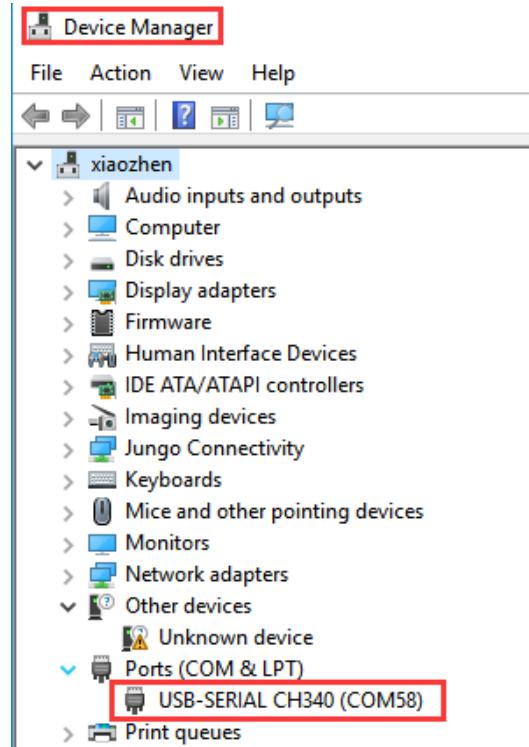
IR_Control_expand | Arduino 1.8.5

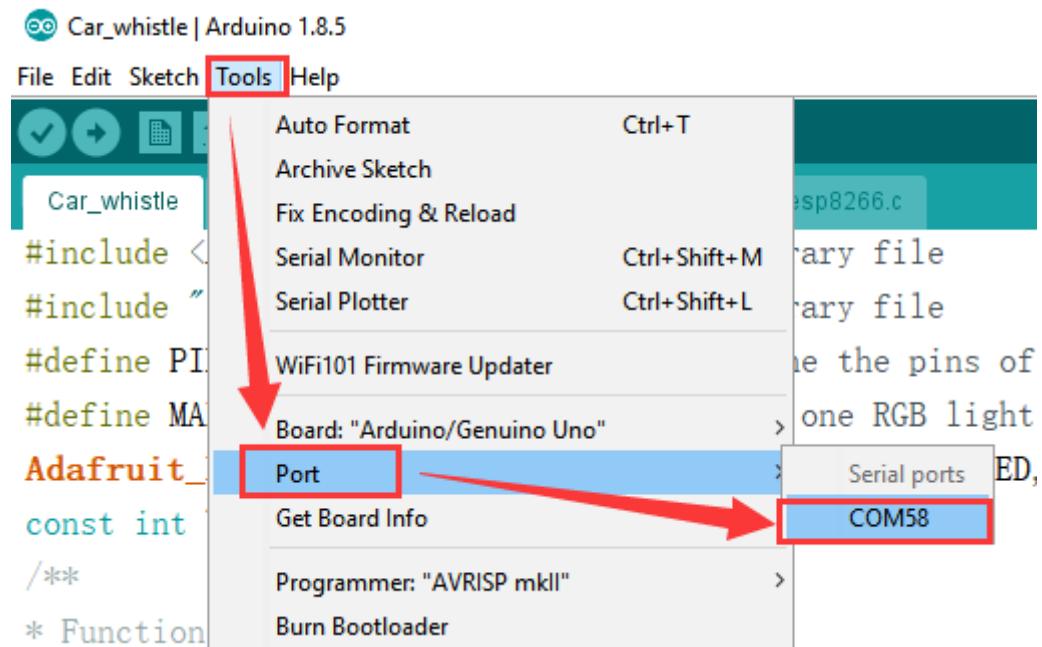
File Edit Sketch Tools Help

```
* @brief
* @details
* @par History NO
*/
#include <Arduino.h>
#include "Adafruit_PWMServoDriver.h"
#include "Adafruit_NeoPixel.h"
#include "IRremote.h"
#include "RGBLed.h"

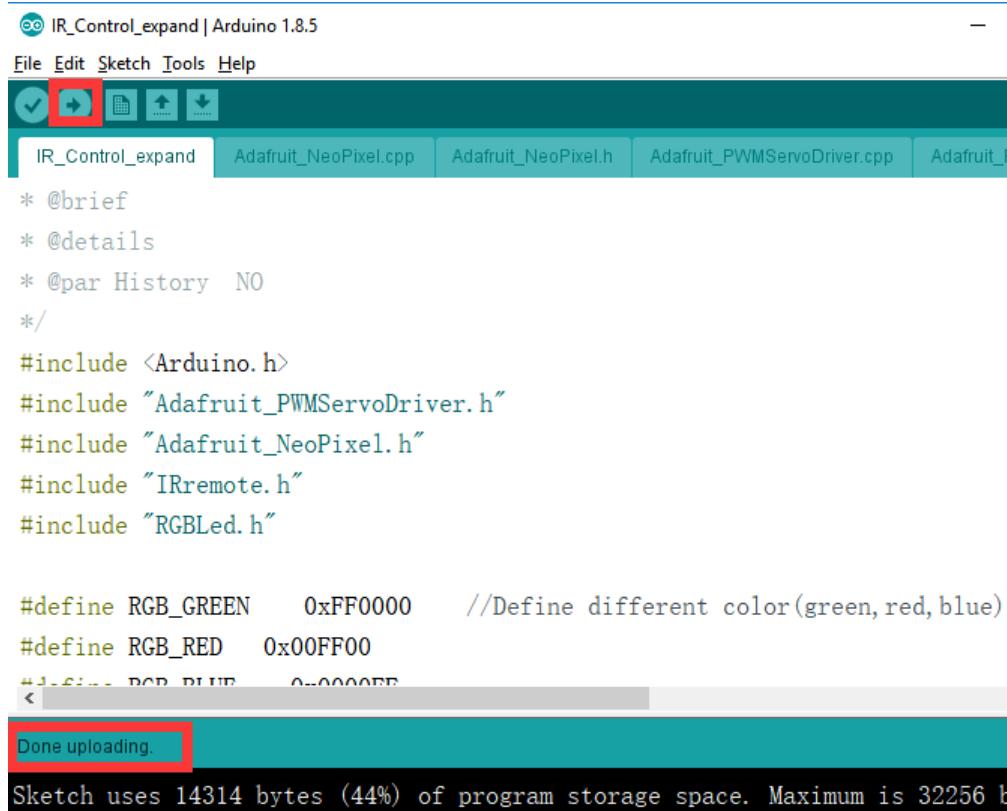
#define RGB_GREEN 0xFF0000 //Define different color(green)
#define RGB_RED 0x00FF00
#define RGB_BLUE 0x0000FF
< Done compiling.
```

5.2 In the menu bar of Arduino IDE, we need to select 【Tools】---【Port】--- selecting the port that the serial number displayed by the device manager just now, as shown in the figure below.



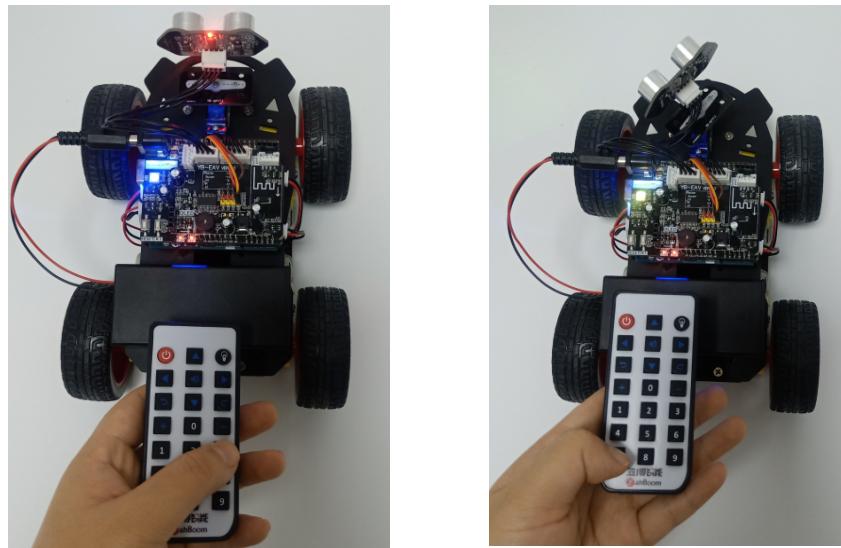


5.3 After the selection is completed, you need to click "→" under the menu bar to upload the code to the UNO board. When the word "**Done uploading**" appears in the lower left corner, the code has been successfully uploaded to the UNO board, as shown in the figure below.



6. Experimental phenomena

After the program is downloaded, we can control robot car by infrared controller. As shown below.



The following functions are controlled by the infrared remote controller.

