

## 4.4 Serial port Input and output

### 1. Learning goal:

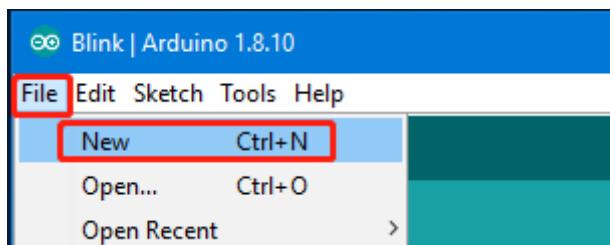
Learn about serial port input and output.

### 2. Experimental phenomena:

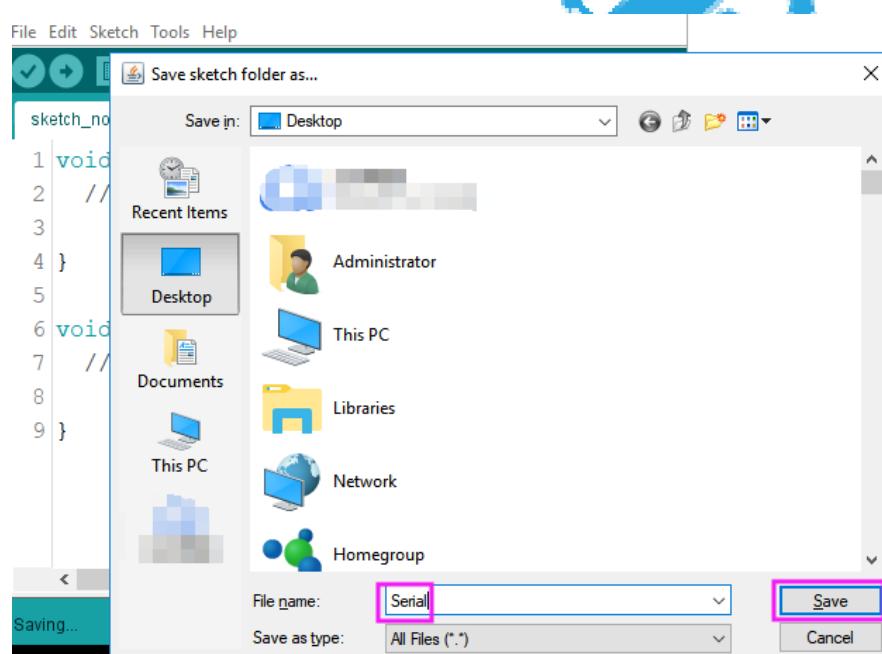
After the power is turned on, serial port will output “Helloworld”, the information input from the serial port will be displayed on the serial port assistant from the serial port output.

### 3. Create new project

3.1 Click 【File】-->【New】.



3.2 Press **Ctrl+S** to save and rename Serial. As shown below.



3.3 We can see that there is a **Serial** folder with **Serial.ino** on the computer desktop.

3.2 We will **Serial.ino** as shown below.

```

void setup() {
    // put your setup code here, to run once:
}

void loop() {
    // put your main code here, to run repeatedly:
}

```

The **setup()** function only runs once when the car is turned on or when the reset button is pressed, and the program for initializing the relevant content can be written;

The loop() function is the main loop function of the car and most of the data processing and logic processing are done in this function.

## 4. Programming

4.1 setup() function Initialize the serial port, the baud rate is 9600

```
void setup() {
    //put your setup code here, to run once:
    //Initialize the serial port, the baud rate
    Serial.begin(9600);
    Serial.println("Hello World!");
}
```

4.2 In the loop () main loop function to read the serial input data, and output to the serial port assistant display

```
void loop() {
    // put your main code here, to run repeatedly:
    while (Serial.available())
    {
        Serial.print((char)Serial.read());
    }
}
```

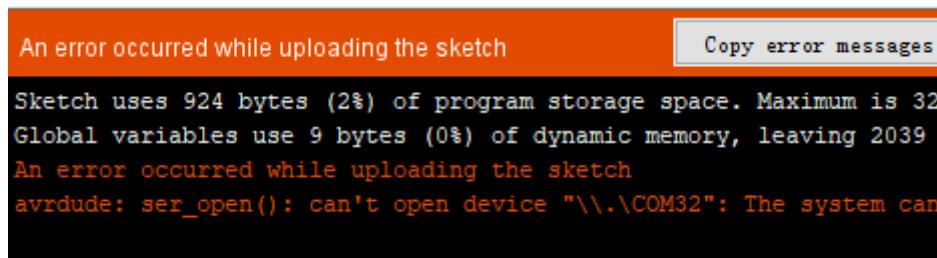
## 5. Compiling and downloading code

5.1 After the code is written, press Ctrl+S to save, then click the “√” button to compile. If there is no problem, click “→” to upload (the car must be connected to the computer via the USB cable).

```
File Edit Sketch Tools Help
[Checkmark] [Upload]
LED
10 */
11 //Define LED light(D9)pin
12 #define LED_PIN 5
13
14 void setup() {
15     // put your setup code here, to run once:
16     // set LED pin to output mode
17     pinMode(LED_PIN, OUTPUT);
18 }
19
20 void loop() {
21     // put your main code here, to run repeatedly:
22     digitalWrite(LED_PIN, LOW);           //LED is on
23     delay(500);
24     digitalWrite(LED_PIN, HIGH);         //LED is off
25     delay(500);
26 }
```

5.2 If the compilation passes normally, but the following error occurs during uploading, the

reason may be that the wrong serial port or the serial port is occupied.



**Solution:** Open the device manager to see if there is a serial port with CH340 tag. If not, please restart the Omniduino car, then, re-plug the USB cable or replace a USB cable; If there is a serial port number, we need to close the other serial port or assistant software, avoid serial port occupation, and then re-select the serial port to ArduinoIDE [Tool] --> [Port].

### 5.3 Open the serial port assistant

Set the baud rate to 9600 and the corresponding in the program.

```

15 int brightness = 0;
16 int fadeAmount = 5;
17
18 void setup() {
19     //put your setup code here
20     //set LED pin to output
21     pinMode(LED_PIN, OUTPUT);
22
23     //Initialize the serial port
24     Serial.begin(9600);
25 }
26
27 void loop() {
28     //put your main code here
29     //Write analog value to LED
30     analogWrite(LED_PIN, brightness);

```

Serial Monitor Screenshot:

```

Serial | Arduino 1.8.10
File Edit Sketch Tools Help
Serial
6 * @date 2023-09-12 14:45:21
7 * @brief Yahboom
8 * @details Hello World!
9 * @param
10 */
11 void setup() {
12     // initialize serial communication at 9600 bits per second
13     Serial.begin(9600);
14 }
15 void loop() {
16     // print a message to the Serial monitor every 5 seconds
17     if (millis() % 5000 == 0) {
18         // set brightness to 10% of maximum
19         brightness = map(sin((millis() / 1000.0) * PI), -1, 1, 0, 255);
20         // write brightness to the LED pin
21         analogWrite(LED_PIN, brightness);
22     }
23 }

```

Serial | Arduino 1.8.10

File Edit Sketch Tools Help

Serial

```
6 * @dat COM61
7 * @bri
8 * @det
9 * @par
10 */
11 void s
12 //pu
13 //In
14 Seri
15 Seri
16 }
17
18 void l
19 // p
20 whil
21 {
22 Se
23 }
24 1
```

Send

Hello World!  
Yahboom

Autoscroll Show timestamp

Newline 9600 baud Clear output

