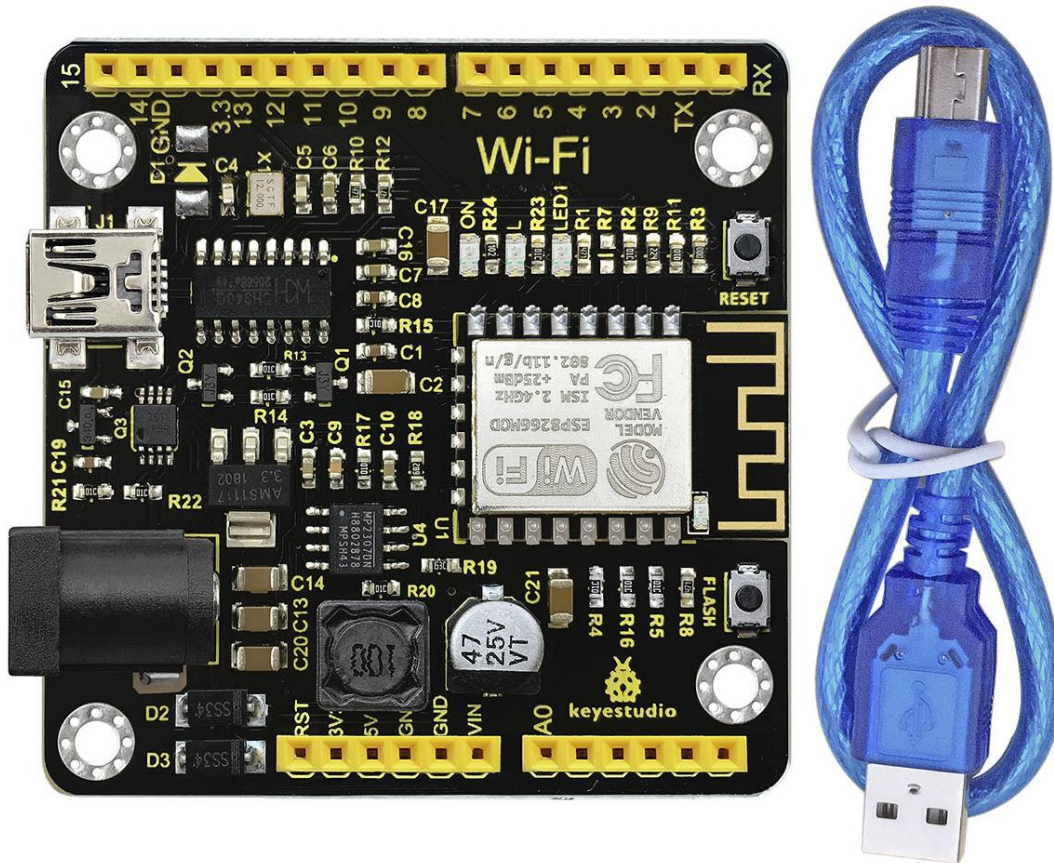


Keystudio ESP8266 WI-FI Development Board



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Description:

This keyestudio ESP8266 WI-FI development board is based on the ESP8266-12FWIFI module developed by Ai-Thinker.

The processor ESP8266 integrates the industry-leading Tensilica L106 ultra-low-power 32-bit micro MCU in a smaller package, with 16-bit Lite mode. The main frequency supports 80MHz and 160 MHz.

It supports RTOS, integrated with Wi-Fi MAC/BB/RF/PA/LNA. Onboard comes with curved antenna.

This development board is a standalone network controller, which can add networking function to those existing devices.

It has 11 I/O ports (4 of which can be used as PWM output), and all I/O ports operate at 3.3V. It also comes with an AD input interface, supporting the voltage range of 0-3.3V.

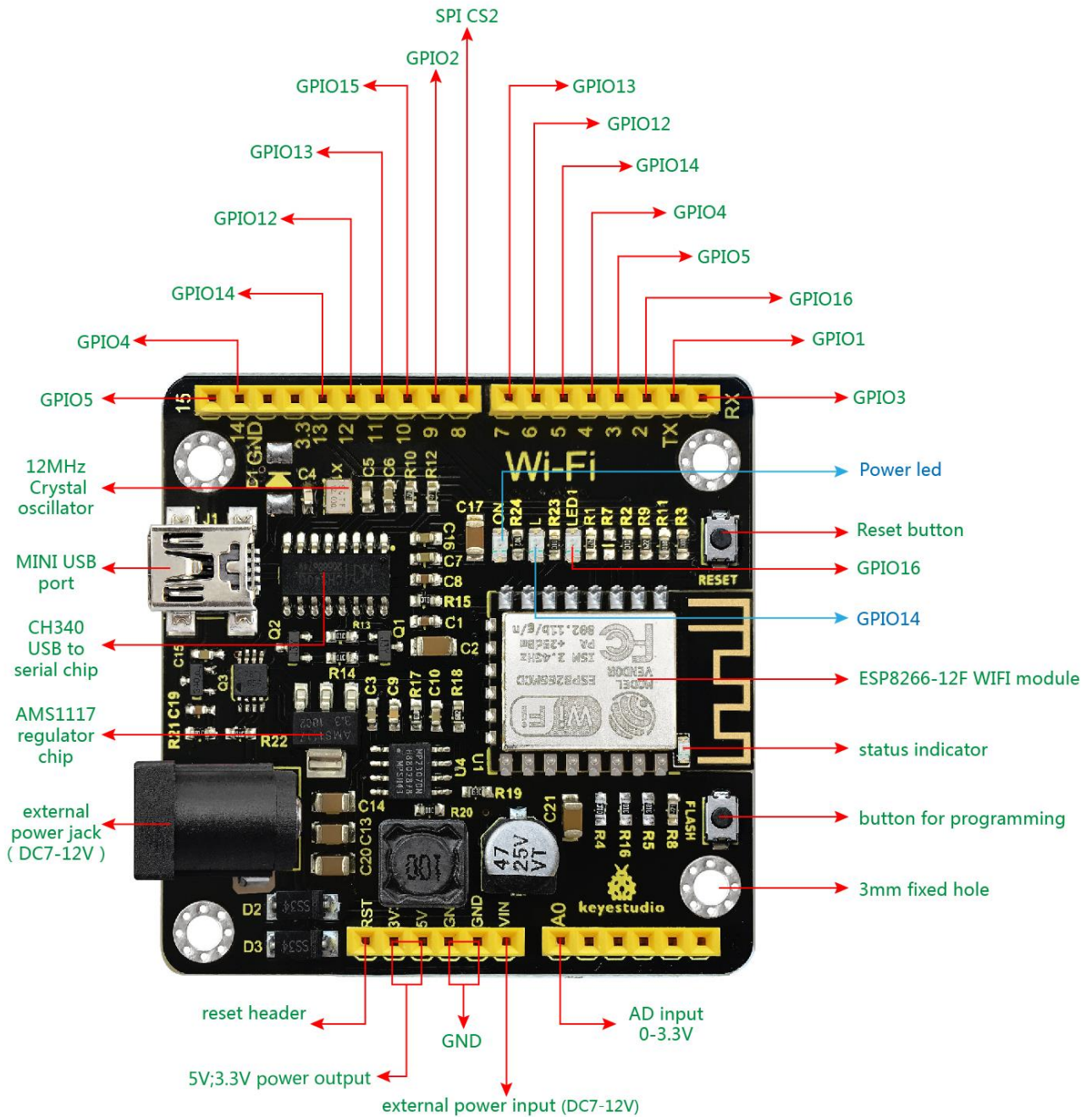
The board can be powered via the USB port, or with an external power supply (DC 7-12V), or powered by the female headers Vin/GND (DC 7-12V).

Technical Details:

- Microcontroller: ESP8266-12F
- Operating Voltage: 3V3
- Input Voltage (recommended): DC 7-12V
- Digital I/O Pins: 8
(GPIO2, GPIO4, GPIO5, GPIO12, GPIO13, GPIO14, GPIO15, GPIO16)
- Analog Input Pins: 1 (A0)
- IO output maximum current: 12 mA
- Main frequency supports 80 MHz and 160 MHz
- LED_BUILTIN: GPIO 14
- Comes with an external power jack (DC 7-12V)
- Dimensions: 54mm*56mm*15mm

Element and Interfaces:

Here is an explanation of what every element and interface of the board does:



Specialized Functions of Some Pins:

- Serial communication: GPIO3 (RX) and GPIO1 (TX).
- PWM Interfaces (Pulse-Width Modulation): GPIO 4, GPIO 12, GPIO 14, GPIO 15.
- IIC communication: GPIO2(SDA); GPIO14(SCL)
- IR Remote Control Interface: GPIO5(IR RX); GPIO14(IR TX)

Detailed Using Method as follows:

Step1 | Install the Arduino IDE

When programming the control board, first you should install the Arduino software and driver.

You can download the different versions for different systems from the link below:

<https://www.arduino.cc/en/Main/OldSoftwareReleases#1.5.x>

NOTE: this control board is only compatible with Arduino 1.6.5 version or latest. In the following, we will download the Arduino 1.6.5 version.

HOME	BUY	SOFTWARE	PRODUCTS	EDU	RESOURCES	COMMUNITY	HELP
		Windows Installer				Linux ARM	on Github
1.6.10		Windows Windows Installer		MAC OS X		Linux 32 Bit Linux 64 Bit Linux ARM	Source code on Github
1.6.9		Windows Windows Installer		MAC OS X		Linux 32 Bit Linux 64 Bit Linux ARM	Source code on Github
1.6.8		Windows Windows Installer		MAC OS X		Linux 32 Bit Linux 64 Bit	Source code on Github
1.6.7		Windows Windows Installer		MAC OS X		Linux 32 Bit Linux 64 Bit	Source code on Github
1.6.6		Windows Windows Installer		MAC OS X		Linux 32 Bit Linux 64 Bit	Source code on Github
1.6.5		Windows Windows Installer		MAC OS X		Linux 32 Bit Linux 64 Bit	Source code on Github
1.6.4		Windows Windows Installer		MAC OS X		Linux 32 Bit Linux 64 Bit	Source code on Github
1.6.3		Windows Windows Installer		MAC OS X		Linux 32 Bit Linux 64 Bit	Source code on Github

In this Windows system page, there are two options. One is Windows version, the other is Windows Installer.

For Windows Installer, you can download the installation file, this way you need to install the arduino IDE.

1.6.5	Windows Windows Installer	MAC OS X	Linux 32 Bit Linux 64 Bit	Source code on Github
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For simple Windows version, you can download the software directly, do not need to install, just directly use the software after unzip the file.

1.6.5	Windows Windows Installer	MAC OS X	Linux 32 Bit Linux 64 Bit	Source code on Github
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Next, we click the Windows, pop up the interface as below.

Contribute to the Arduino Software

Consider supporting the Arduino Software by contributing to its development. (US tax payers, please note this contribution is not tax deductible). [Learn more on how your contribution will be used.](#)

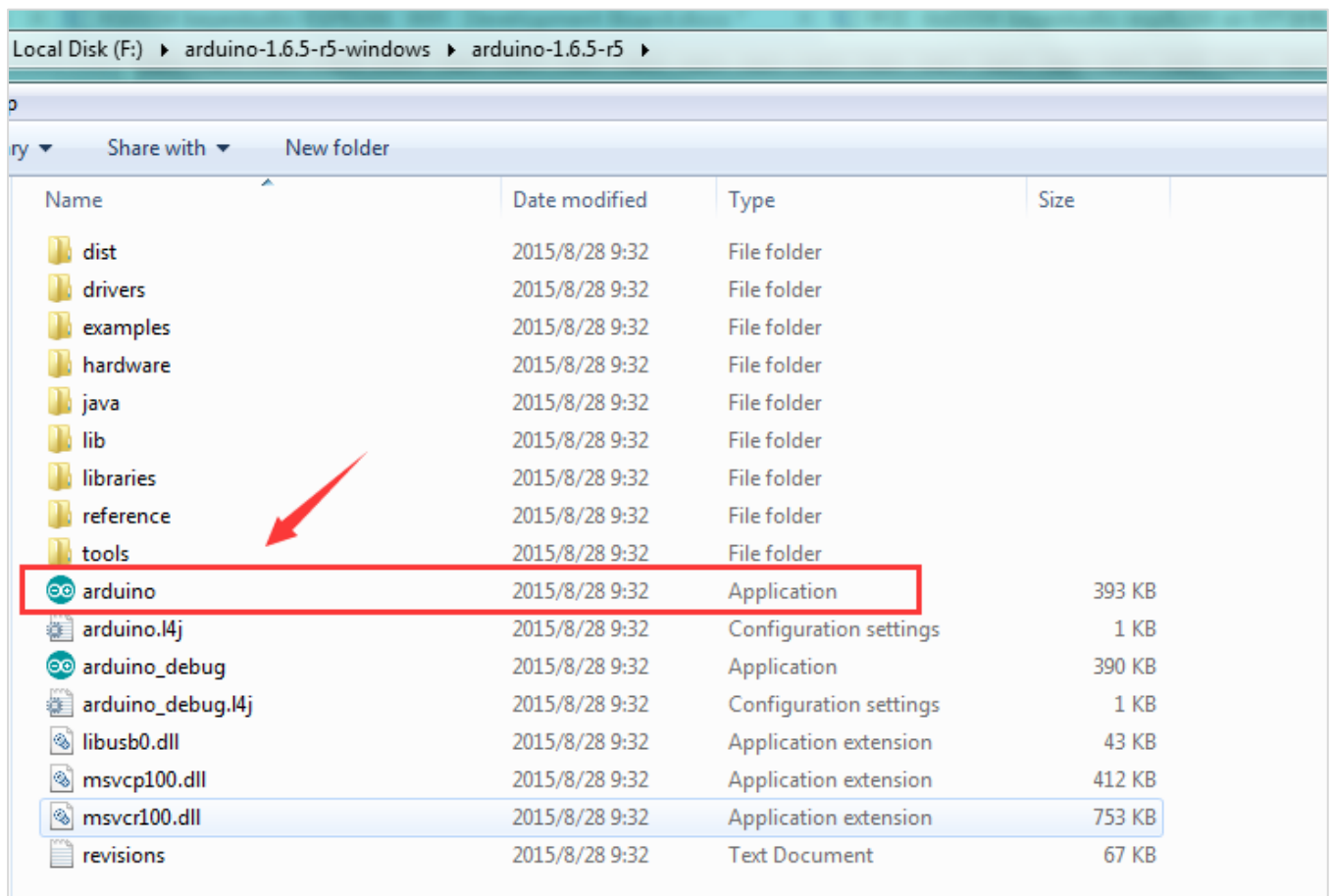
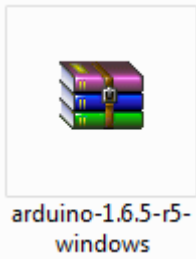


SINCE MARCH 2015, THE ARDUINO IDE HAS BEEN DOWNLOADED **24,353,248** TIMES. (IMPRESSIVE!) NO LONGER JUST FOR ARDUINO AND GENUINO BOARDS, HUNDREDS OF COMPANIES AROUND THE WORLD ARE USING THE IDE TO PROGRAM THEIR DEVICES, INCLUDING COMPATIBLES, CLONES, AND EVEN COUNTERFEITS. HELP ACCELERATE ITS DEVELOPMENT WITH A SMALL CONTRIBUTION! REMEMBER: OPEN SOURCE IS LOVE!

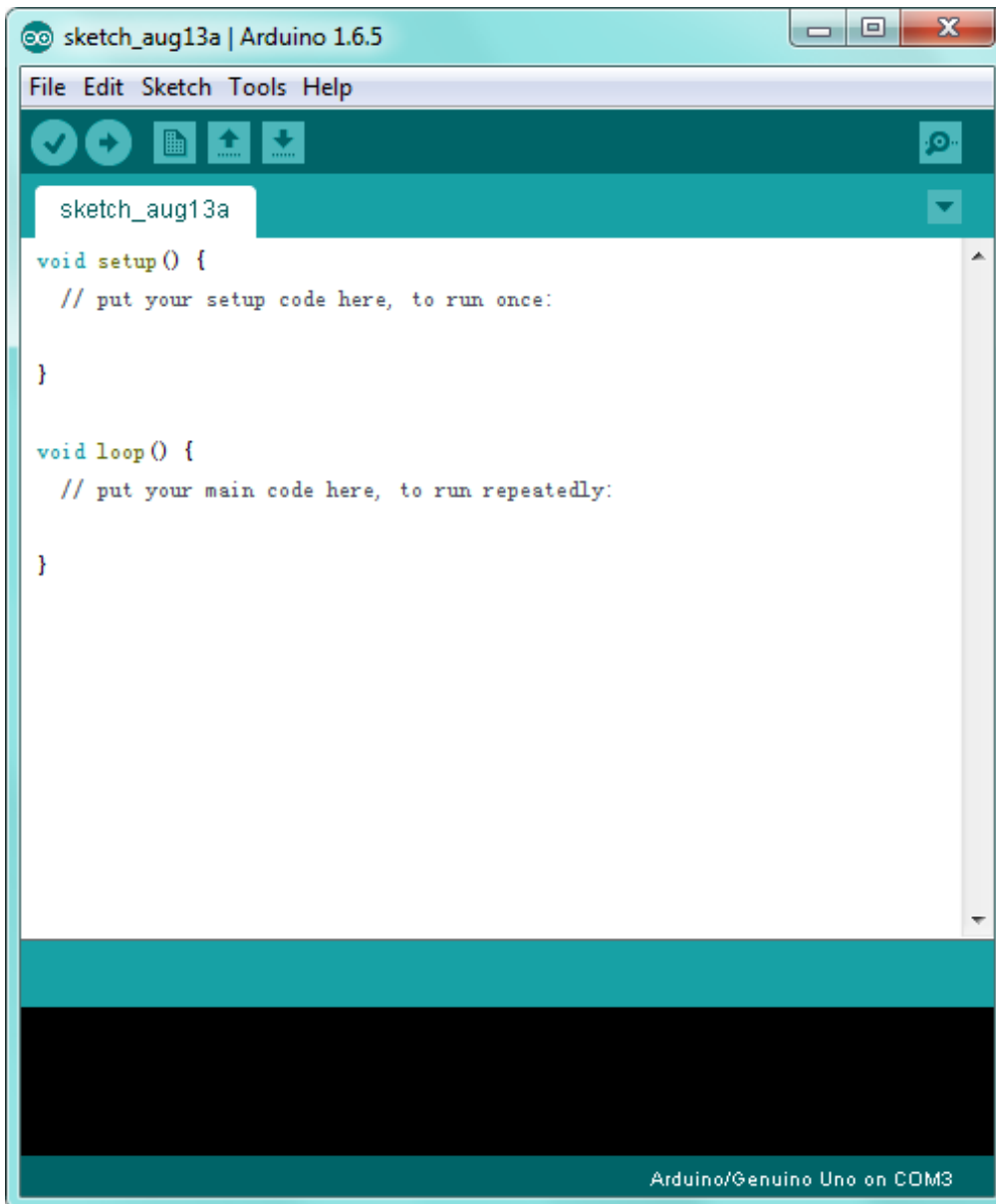
\$3 \$5 \$10 \$25 \$50 OTHER

JUST DOWNLOAD **CONTRIBUTE & DOWNLOAD**

Click **JUST DOWNLOAD**. When the ZIP file is downloaded well to your computer, you can directly unzip the file. Open the Arduino-1.6.5-r5 folder, you should get it as follows.



Click the icon of ARDUINO software to open it. This is your Arduino.



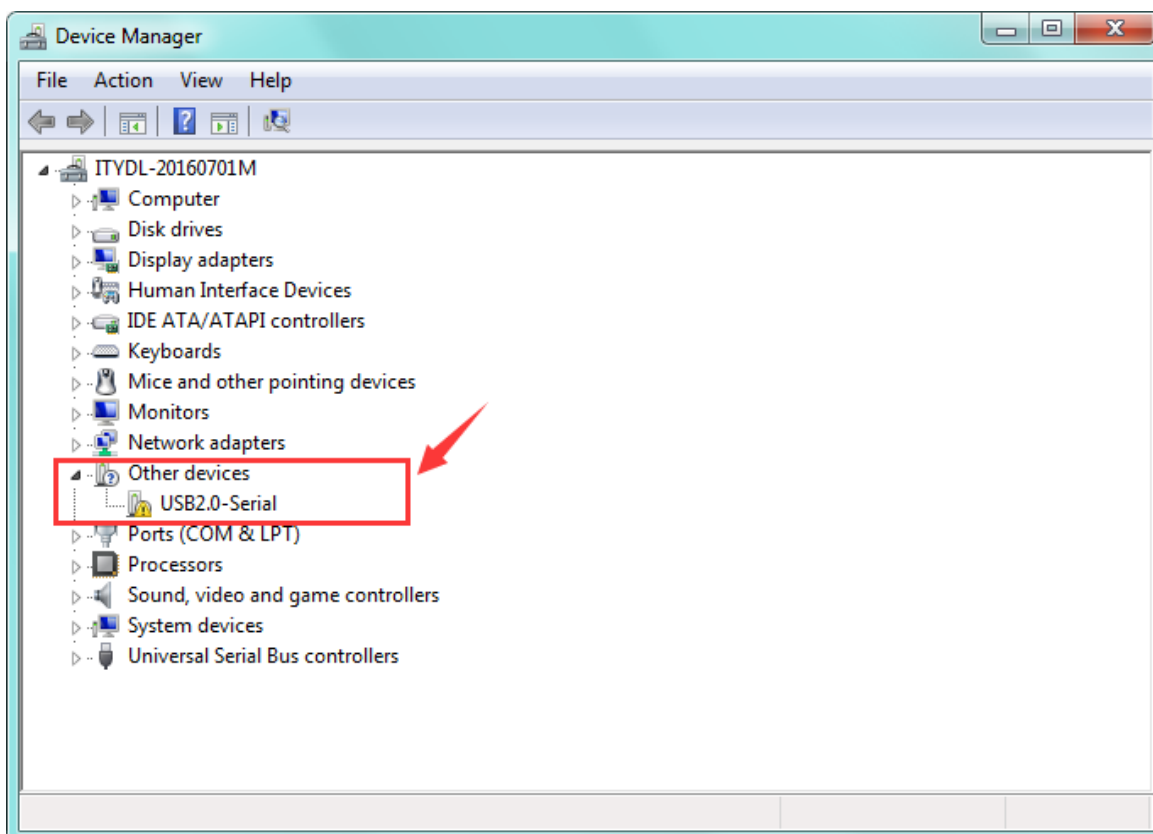
Step2| Installing the Driver

The USB to serial port chip of this control board is CH340G. So you need to install the driver for the chip. You can click the driver file here [usb_ch341_3.1.2009.06](#) to download it.

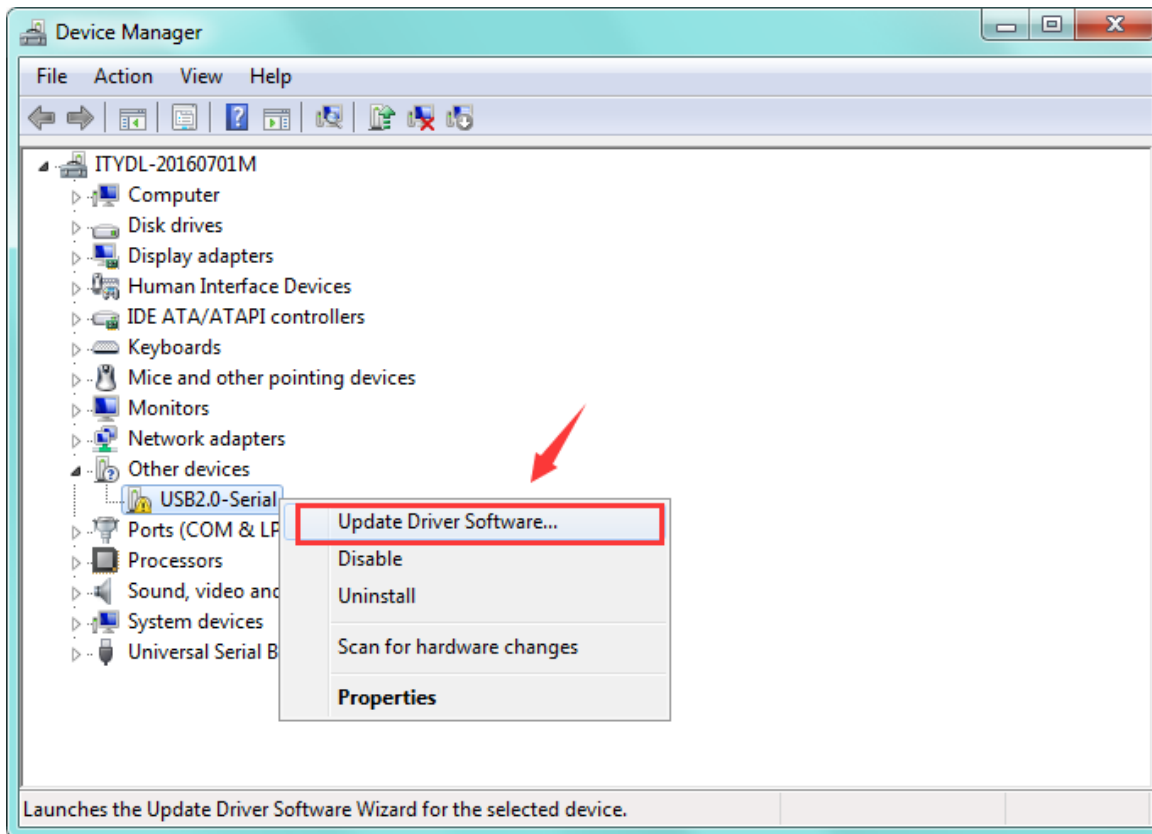
In different systems, the driver installation is similar. Here we start to install the driver on the Win7 system.

Plug one end of your USB cable into the Keyestudio ESP8266 WI-FI board and the other into a USB socket on your computer.

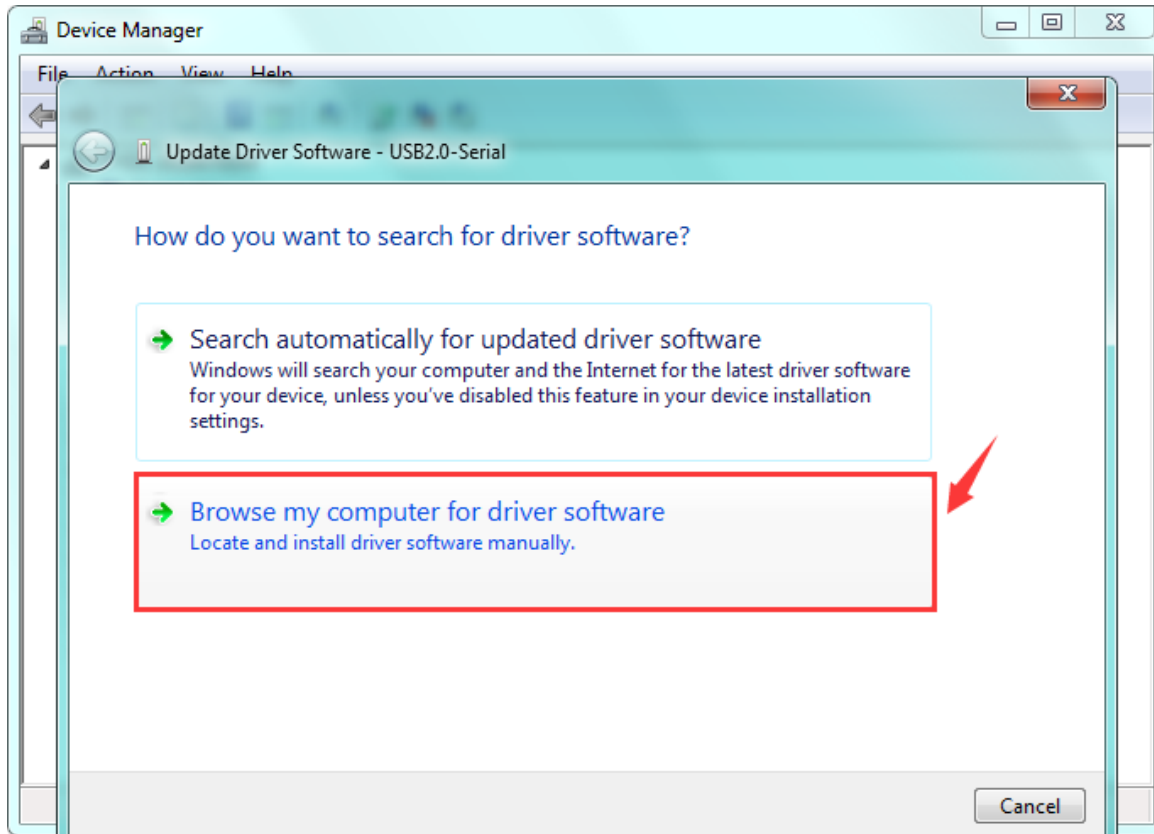
When you connect the ESP8266 WI-FI board to your computer at the first time, right click your "Computer" —>for "Properties"—> click the "Device manager", under Other devices, you should see the "USB2.0-Serial".



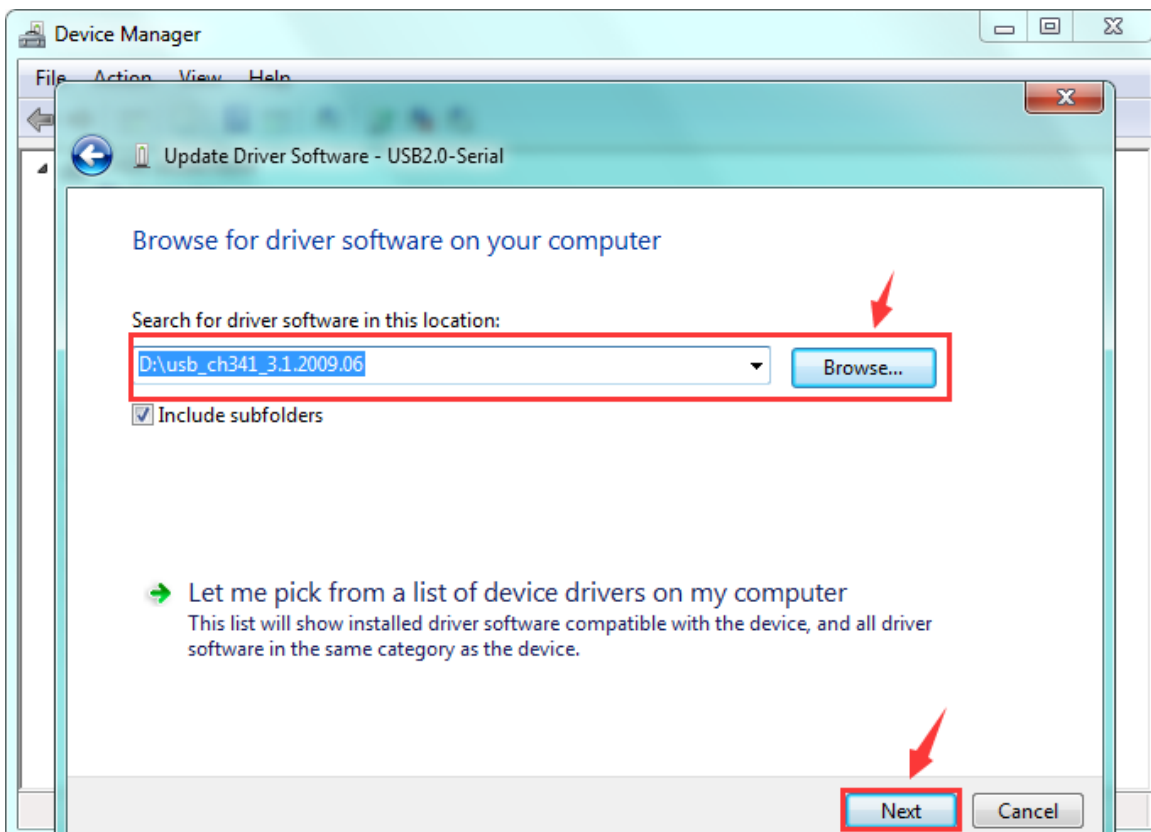
Then right-click on the USB2.0-Serial and select the top menu option (Update Driver Software...) shown as the figure below.



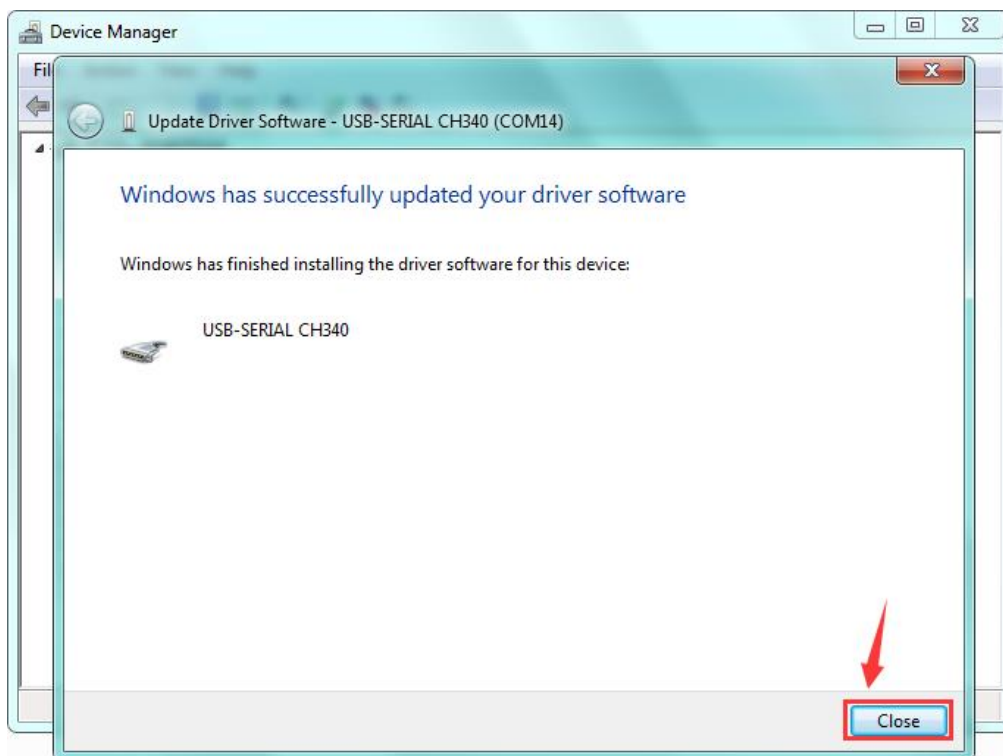
Then it will be prompted to either "Search Automatically for updated driver software" or "Browse my computer for driver software". Shown as below. In this page, select "Browse my computer for driver software".



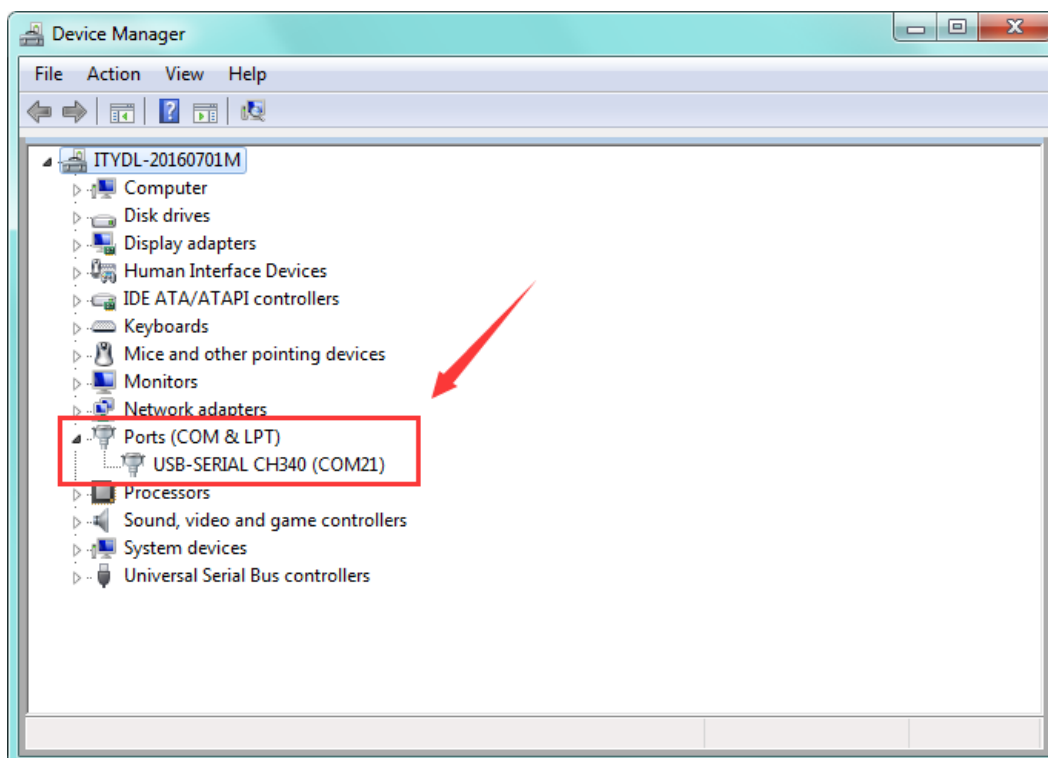
After that, select the option to browse and navigate to the "drivers" folder of usb-ch341 installation.



Once the software has been installed, you will get a confirmation message. Installation completed, click "Close".



Up to now, the driver is installed well. Then you can right click "Computer" —>"Properties"—>"Device manager", you should see the device as the figure shown below.

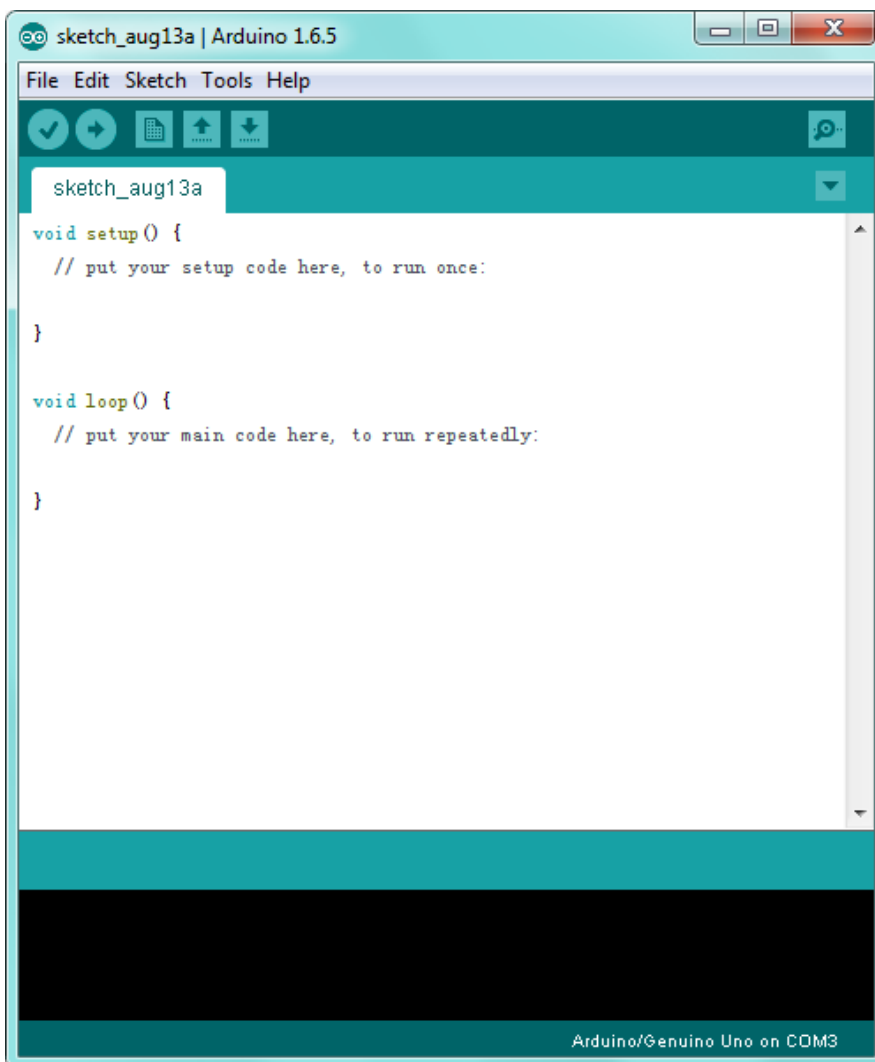


Step3| Installing the ESP8266 with Arduino

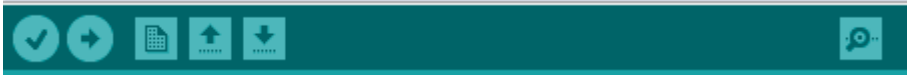
Double-click the icon of Arduino software downloaded well, you will get the interface shown below.








(**Note:** if the Arduino software loads in the wrong language, you can change it in the preferences dialog. See [the environment page](#) for details.)

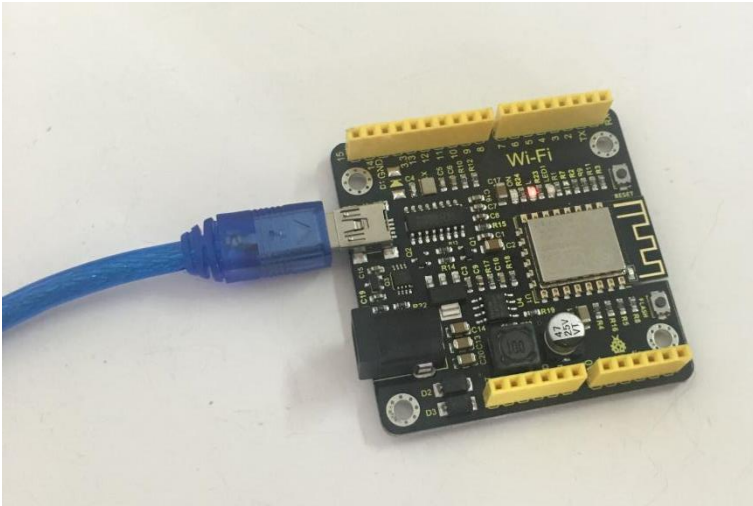


The functions of each button on the Toolbar are listed below:

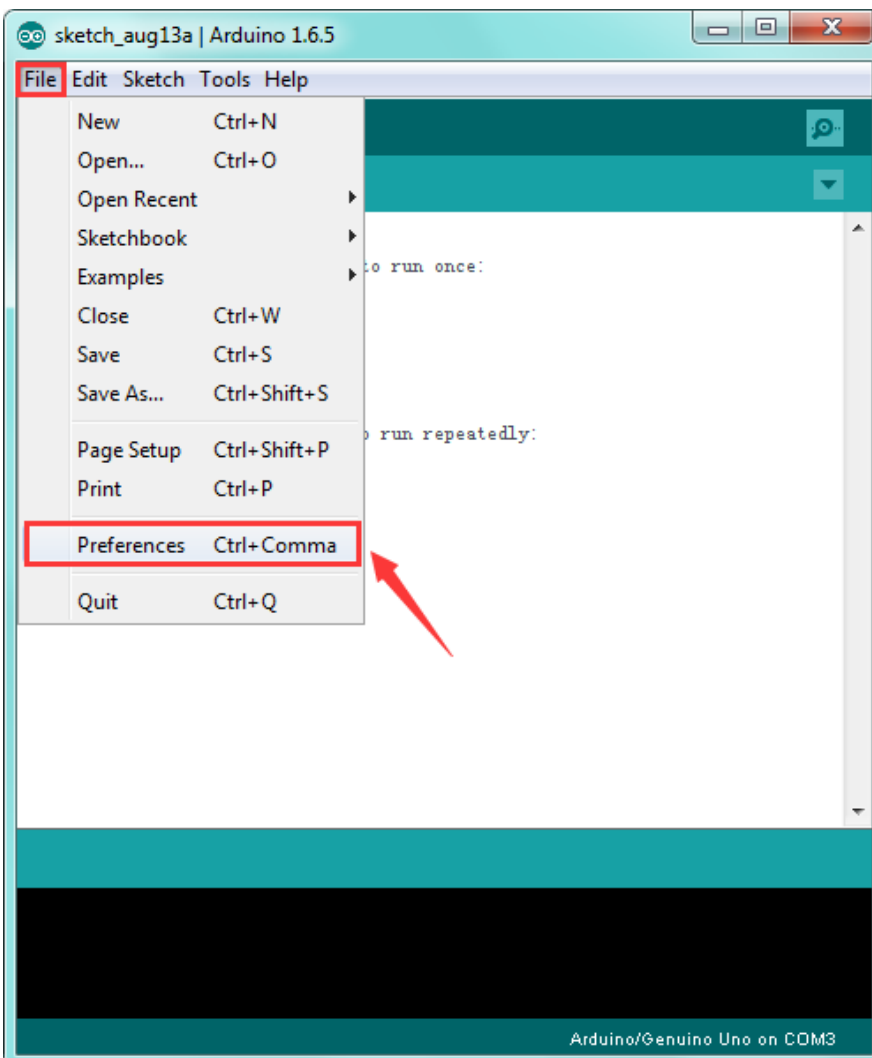


 Verify/Compile	Check the code for errors
 Upload	Upload the current Sketch to the Arduino
 New	Create a new blank Sketch
 Open	Show a list of Sketches
 Save	Save the current Sketch
 Serial Monitor	Display the serial data being sent from the Arduino

First, plug one end of your USB cable into the Keystudio ESP8266 WI-FI board and the other into a USB socket on your computer.



Then open the Arduino IDE, click the "File" to select the "Preferences".

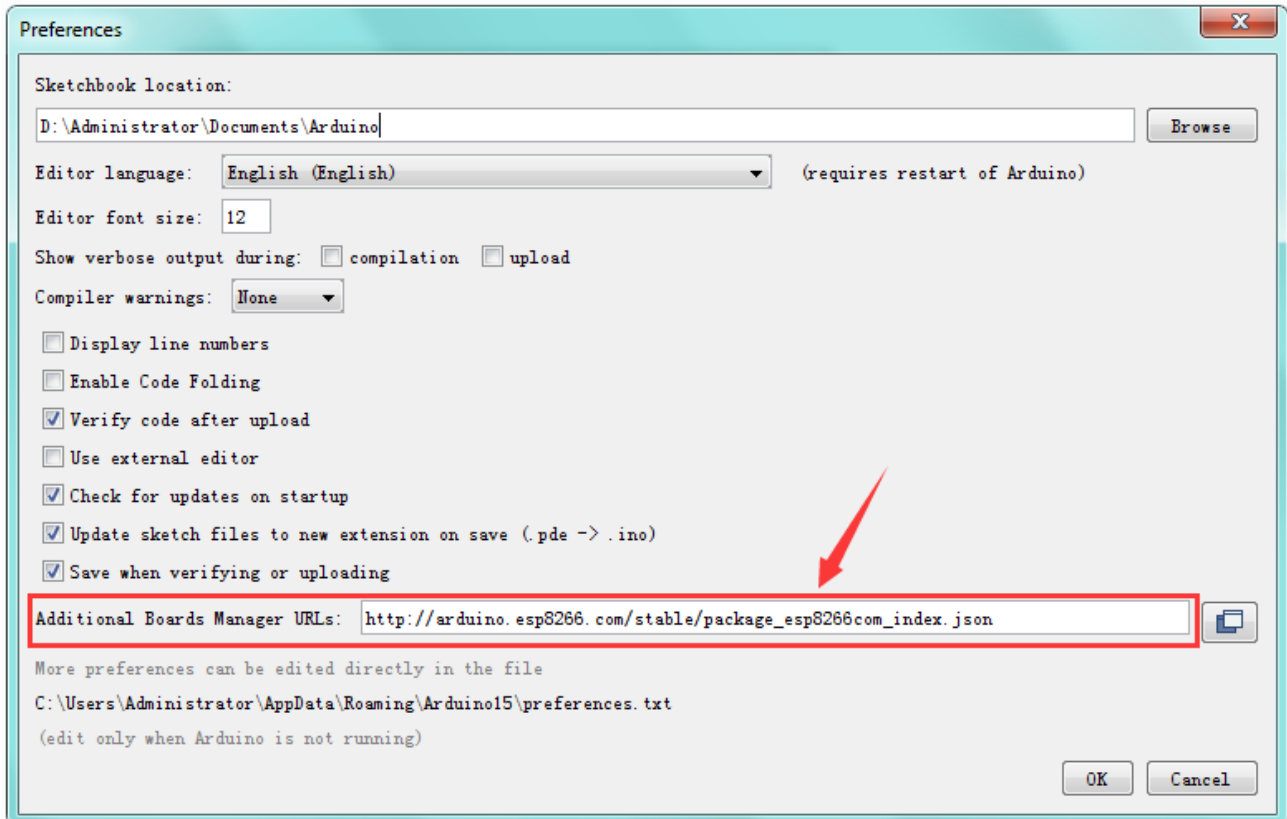


The pop-up interface is shown below.

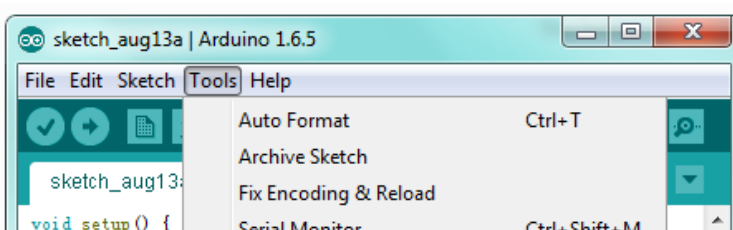
See the “Additional Boards Manager URLs”, copy and paste the link below:

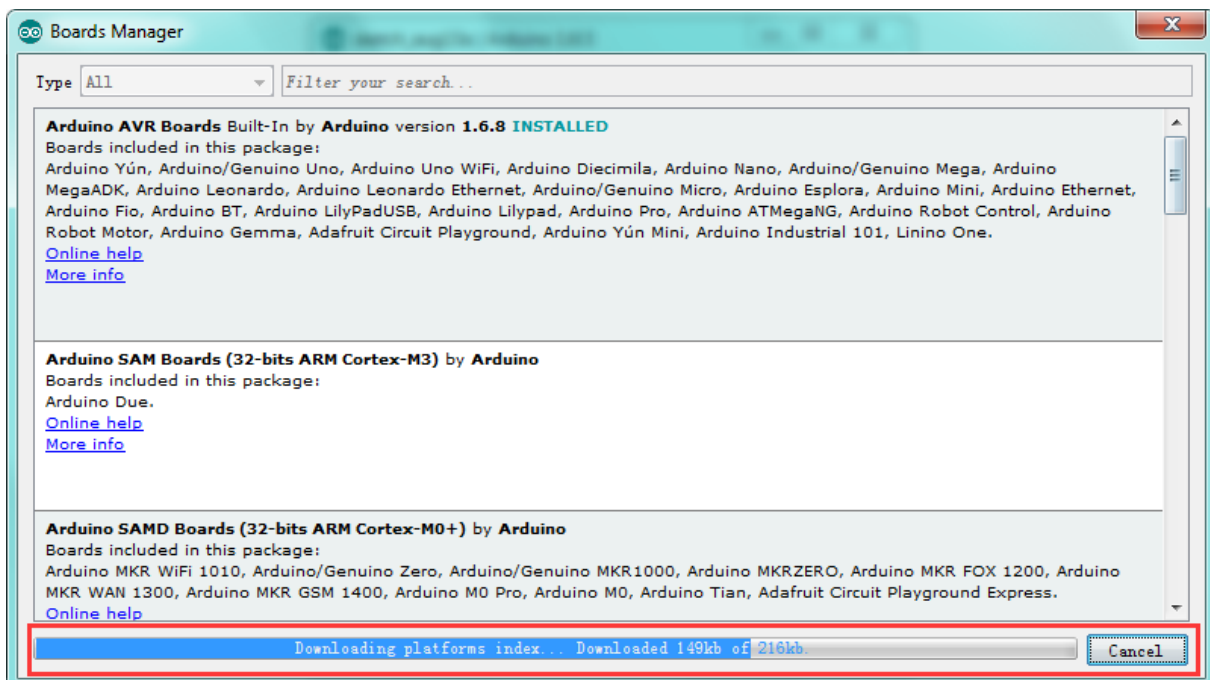
http://arduino.esp8266.com/stable/package_esp8266com_index.json

and then click OK.

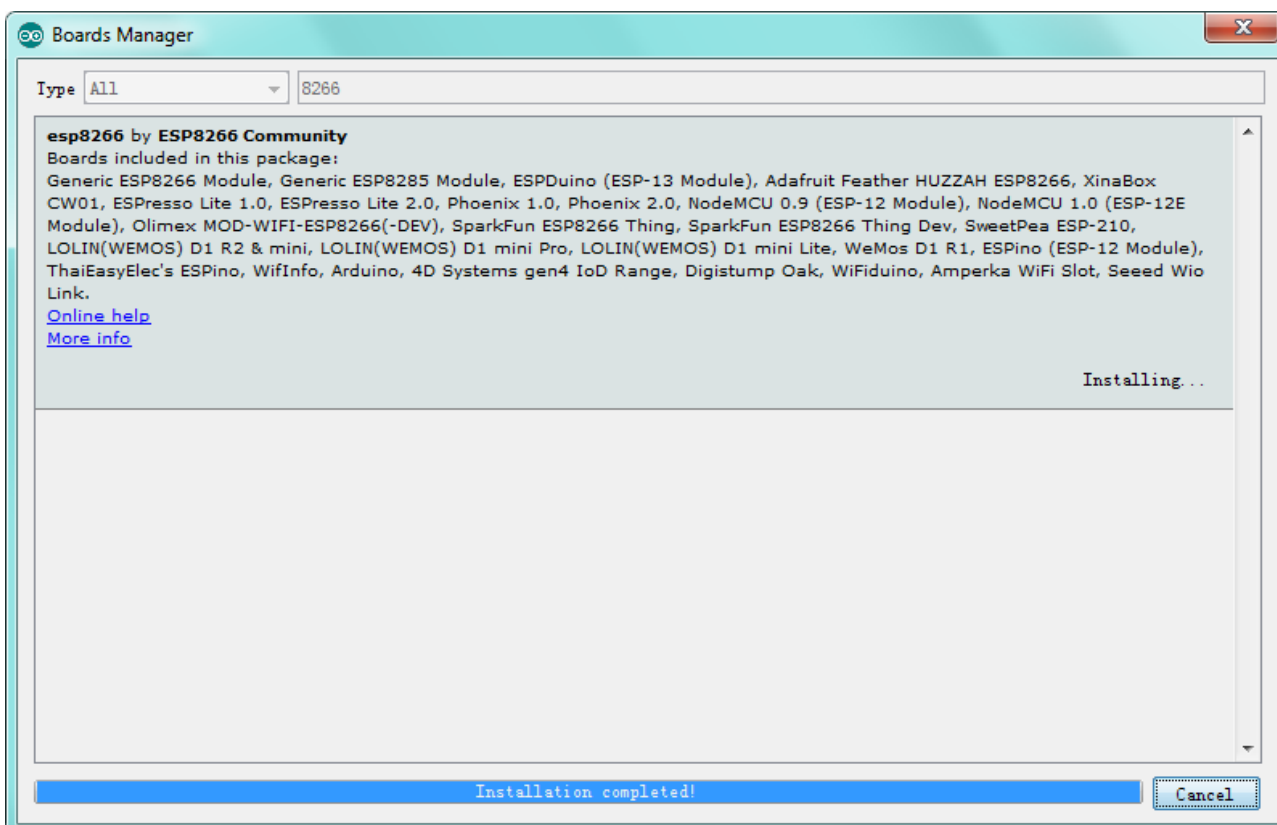
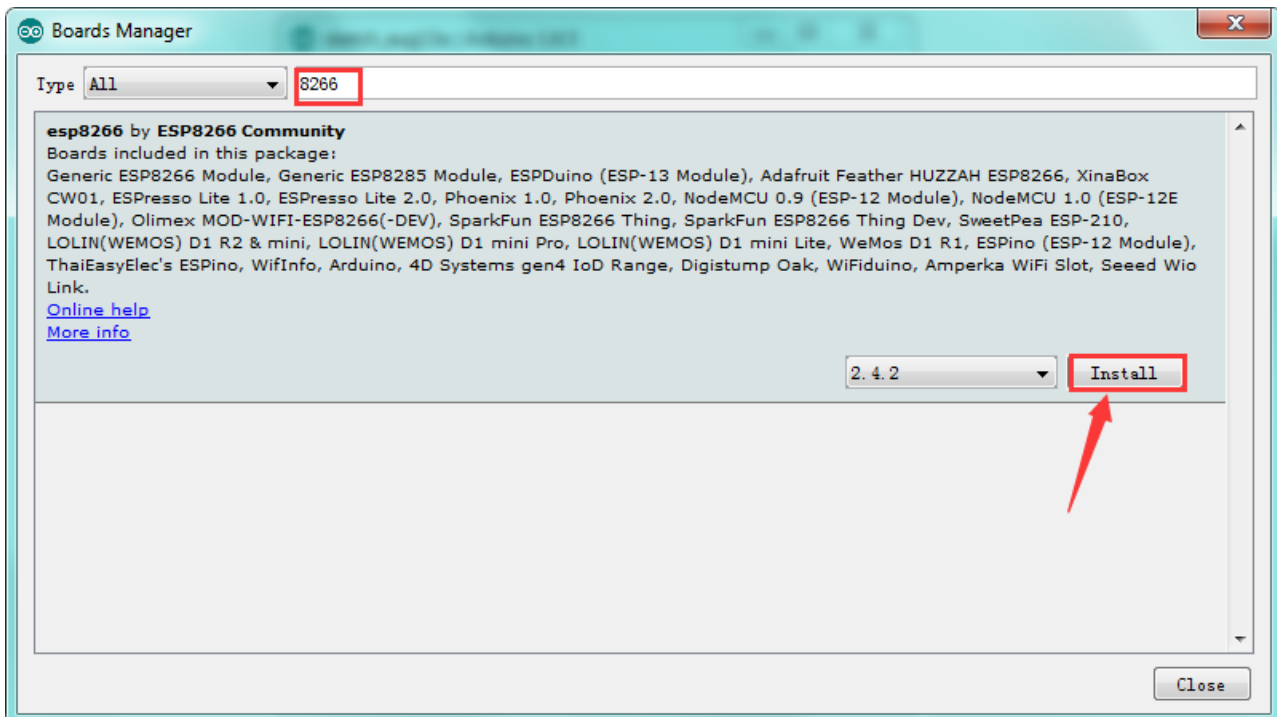


After that, click “Tools”, for “Board”, enter the Boards Manager, it will automatically download the relevant file. Shown below.

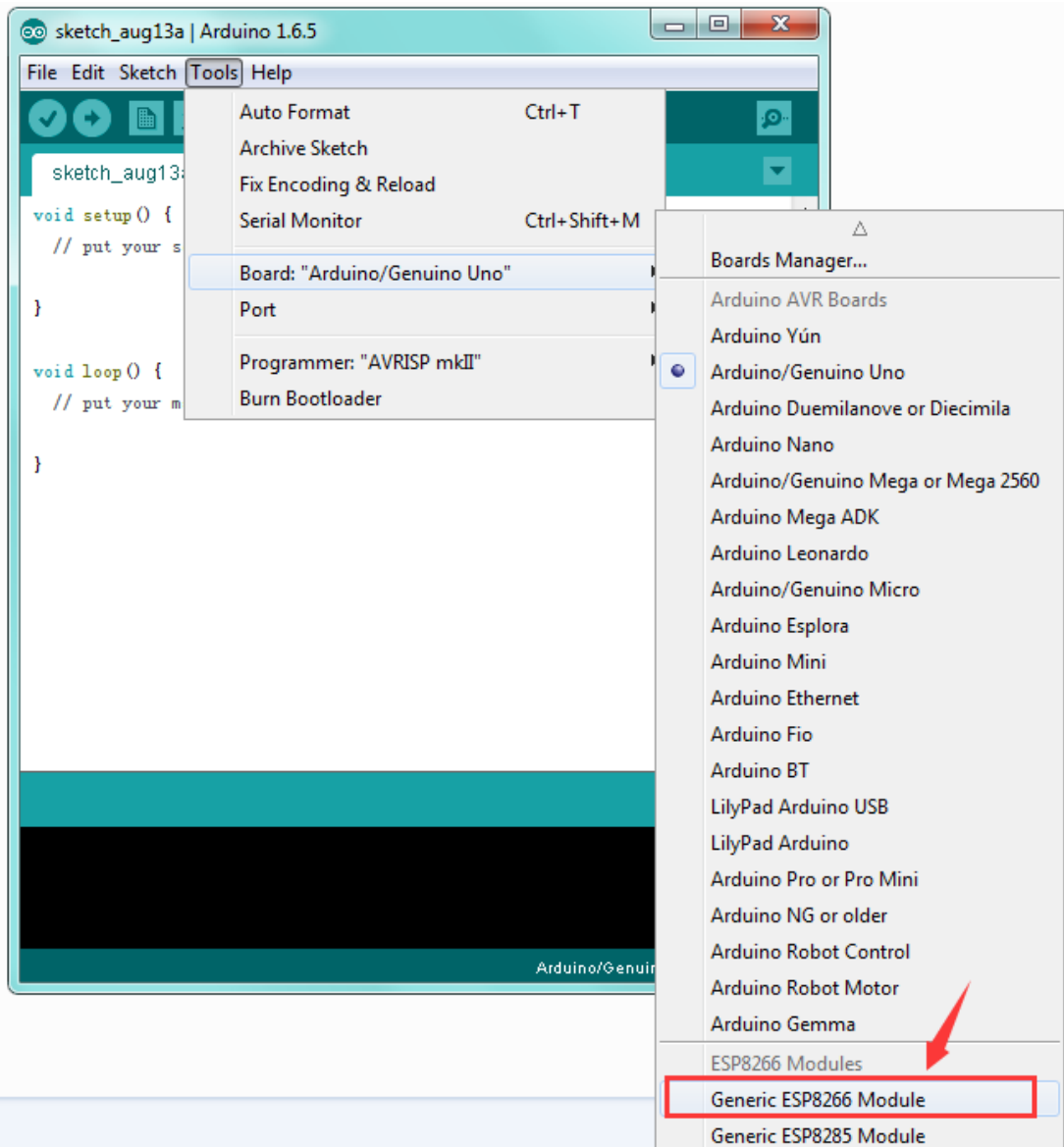




Done downloading the relevant file, it will pop up the window below. Then enter the 8266 on the blank bar and click Install.



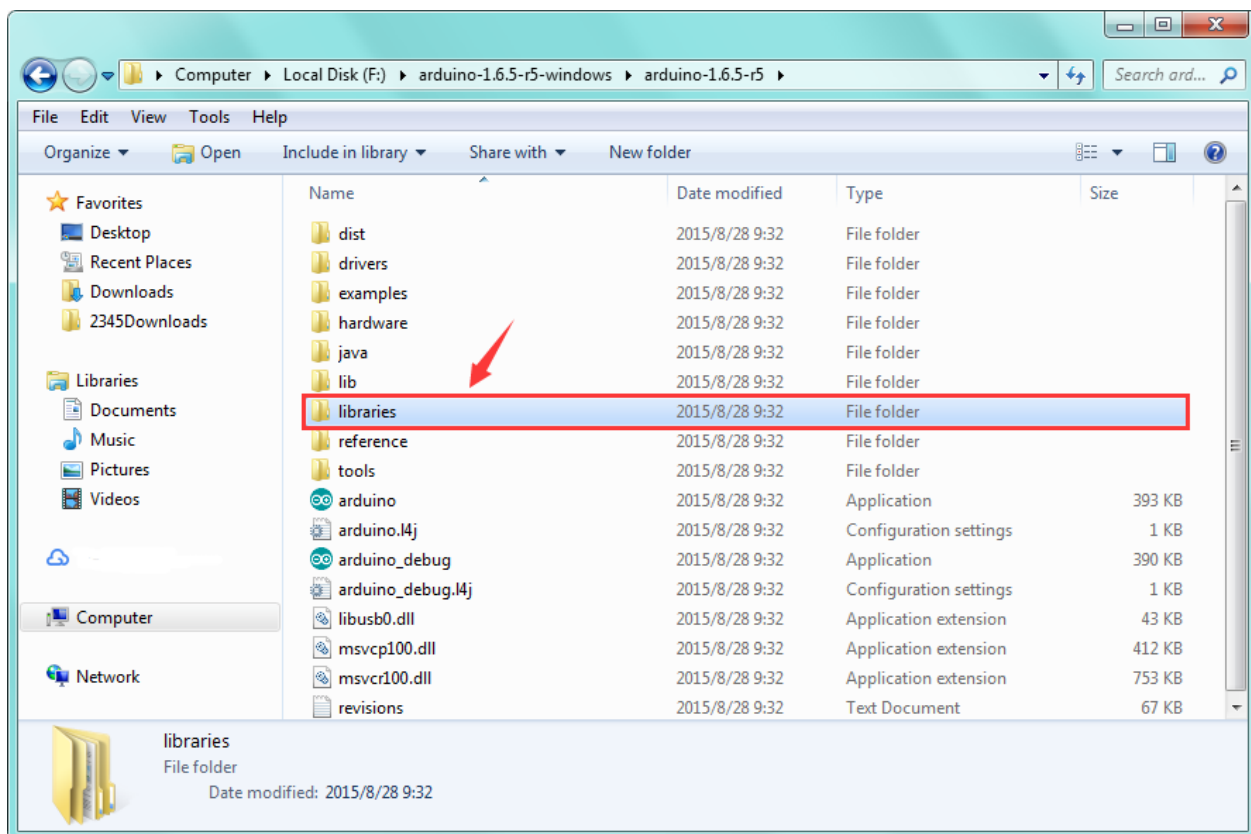
Installation completed, click Close, then click "Tools", for "Board", you should see the Generic ESP8266 Module. Shown below.



Step4 | Add the Libraries

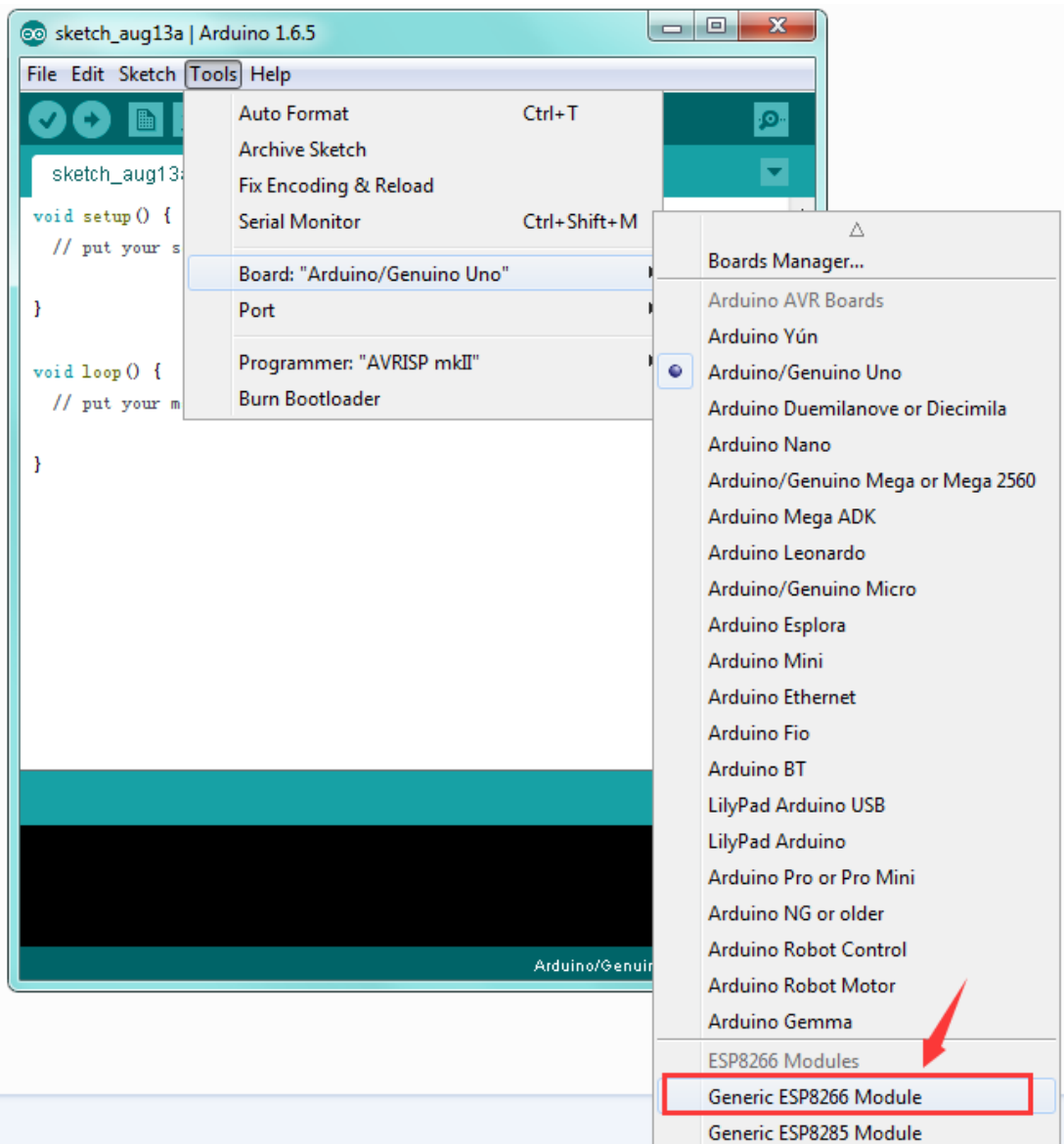
Before upload the code to test your board, you should first add all the libraries into the libraries folder of Arduino-1.6.5-r5. You can click the link to download all the libraries needed.

https://drive.google.com/open?id=11mTs_DbCIx-PQHPjfZOekBZ7IL8a13D

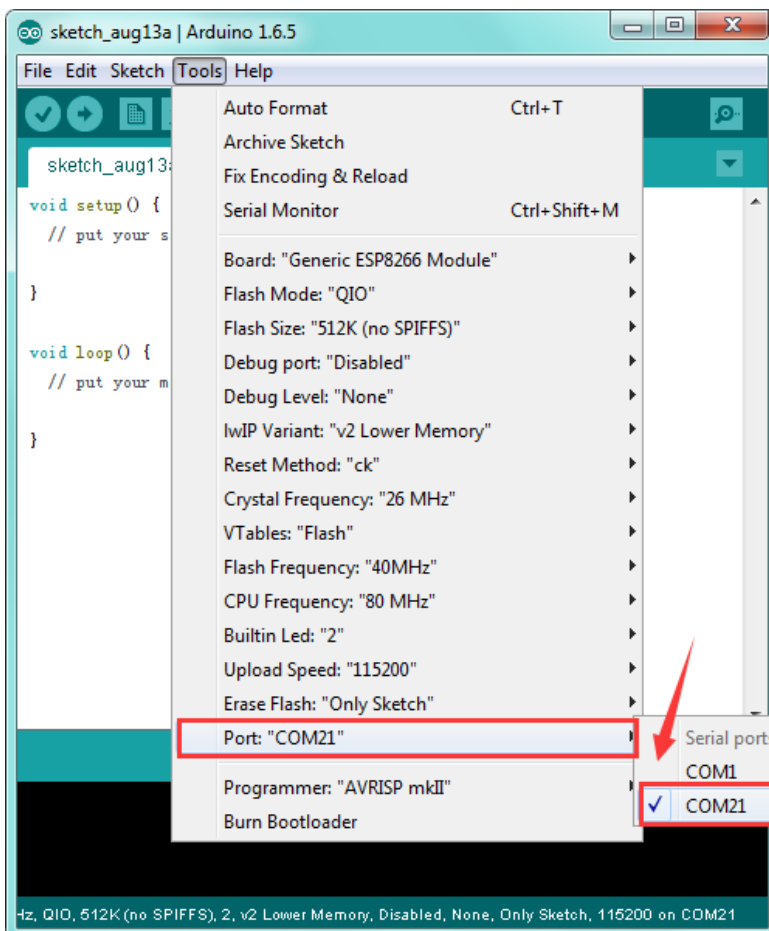
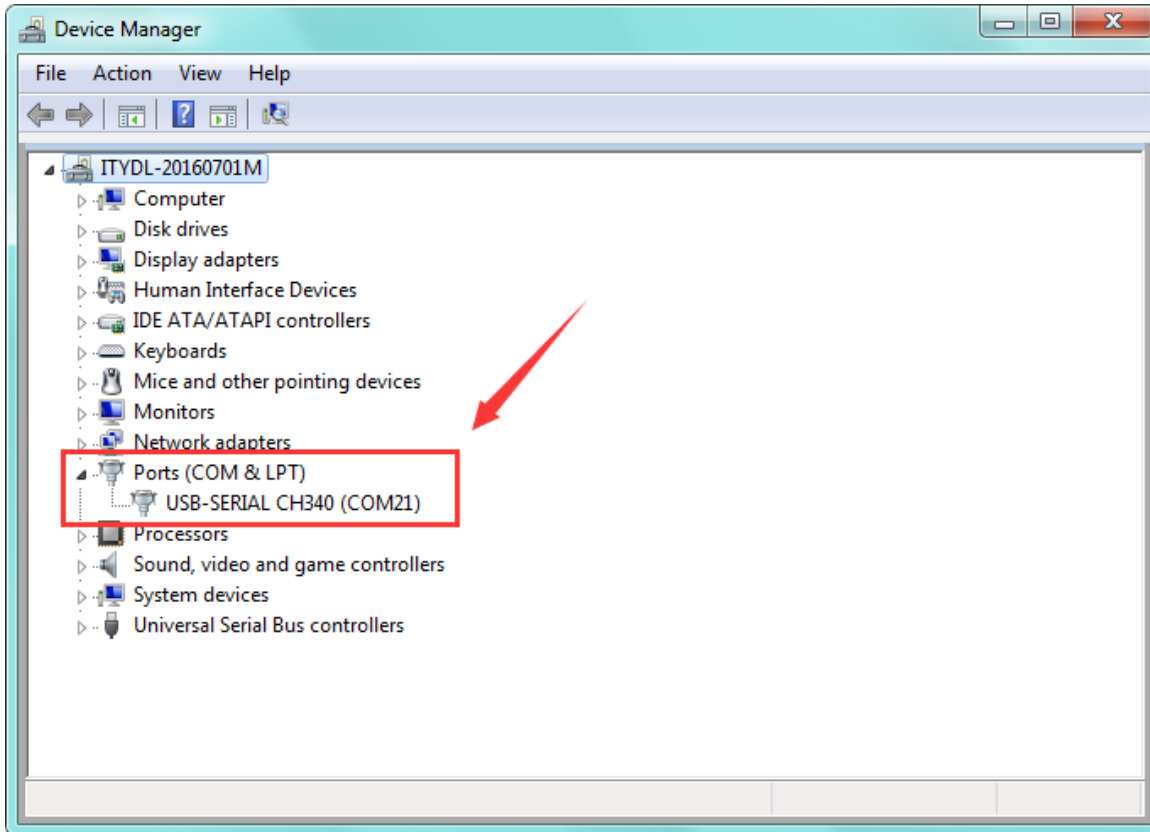


Step5 | Select the Board and Serial Port

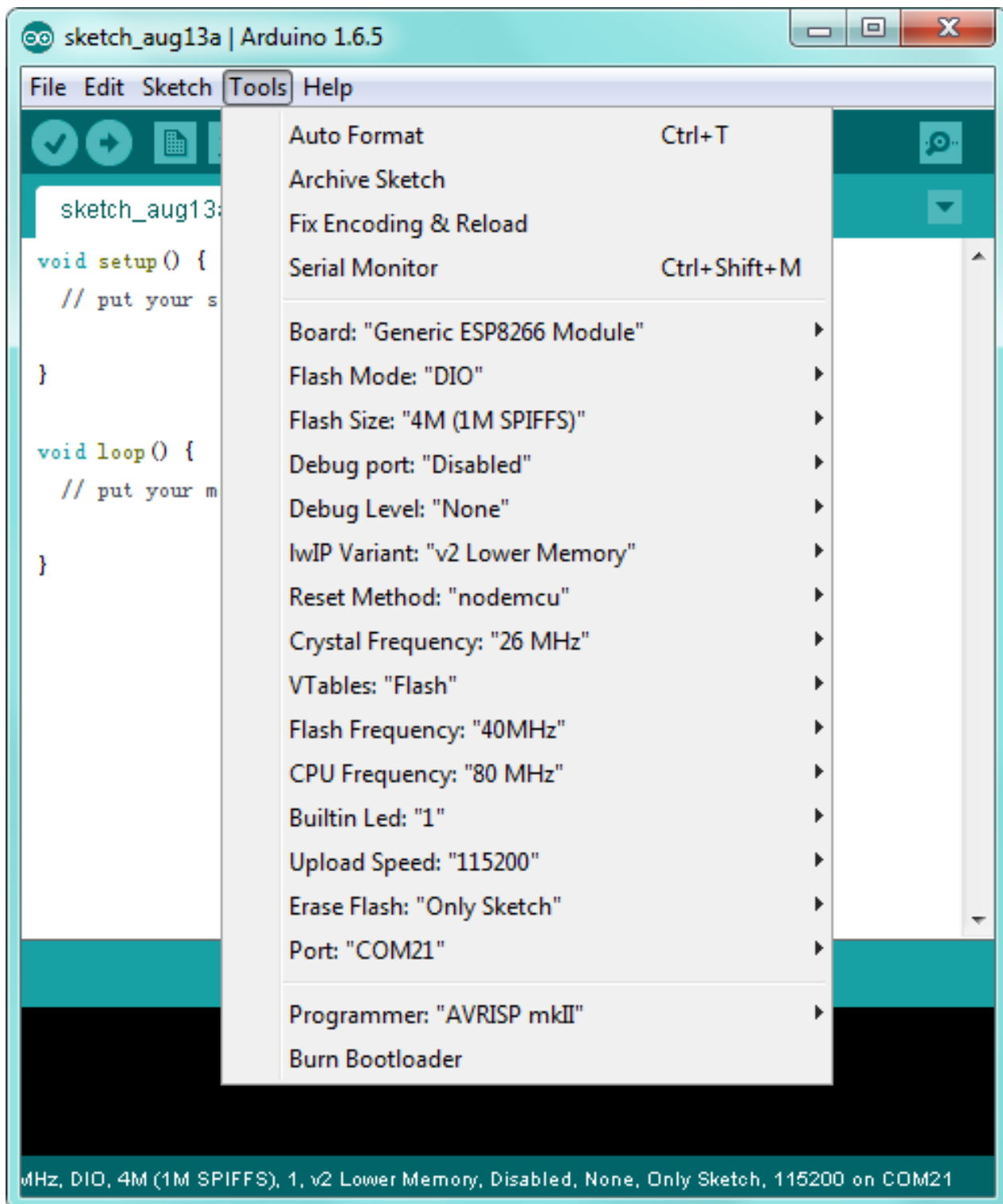
Open the Arduino IDE, you'll need to click the "Tools", then select the Board and the Serial Port.



You can check the Serial Port on your computer's Device Manager.



Below is the complete settings you should refer to:



Step6 | Upload the Code

```
*****  
#include "ESP8266WiFi.h"  
  
void setup() {  
  Serial.begin(115200);  
  
  // Set WiFi to station mode and disconnect from an AP if it was previously connected  
  WiFi.mode(WIFI_STA);  
  WiFi.disconnect();  
  delay(100);  
  
  Serial.println("Setup done");  
  
}  
  
void loop() {  
  Serial.println("scan start");  
  
  // WiFi.scanNetworks will return the number of networks found  
  int n = WiFi.scanNetworks();  
  Serial.println("scan done");  
  if (n == 0)  
    Serial.println("no networks found");  
  else  
  {  
    Serial.print(n);  
    Serial.println(" networks found");  
    for (int i = 0; i < n; ++i)  
    {  
      // Print SSID and RSSI for each network found  
      Serial.print(i + 1);  
      Serial.print(": ");  
      Serial.print(WiFi.SSID(i));
```

```
Serial.print(" ");
Serial.print(WiFi.RSSI(i));
Serial.print(" ");
Serial.println((WiFi.encryptionType(i) == ENC_TYPE_NONE)? " ":"*");
delay(10);
}
}
Serial.println("");

// Wait a bit before scanning again
delay(5000);
}
*****
```

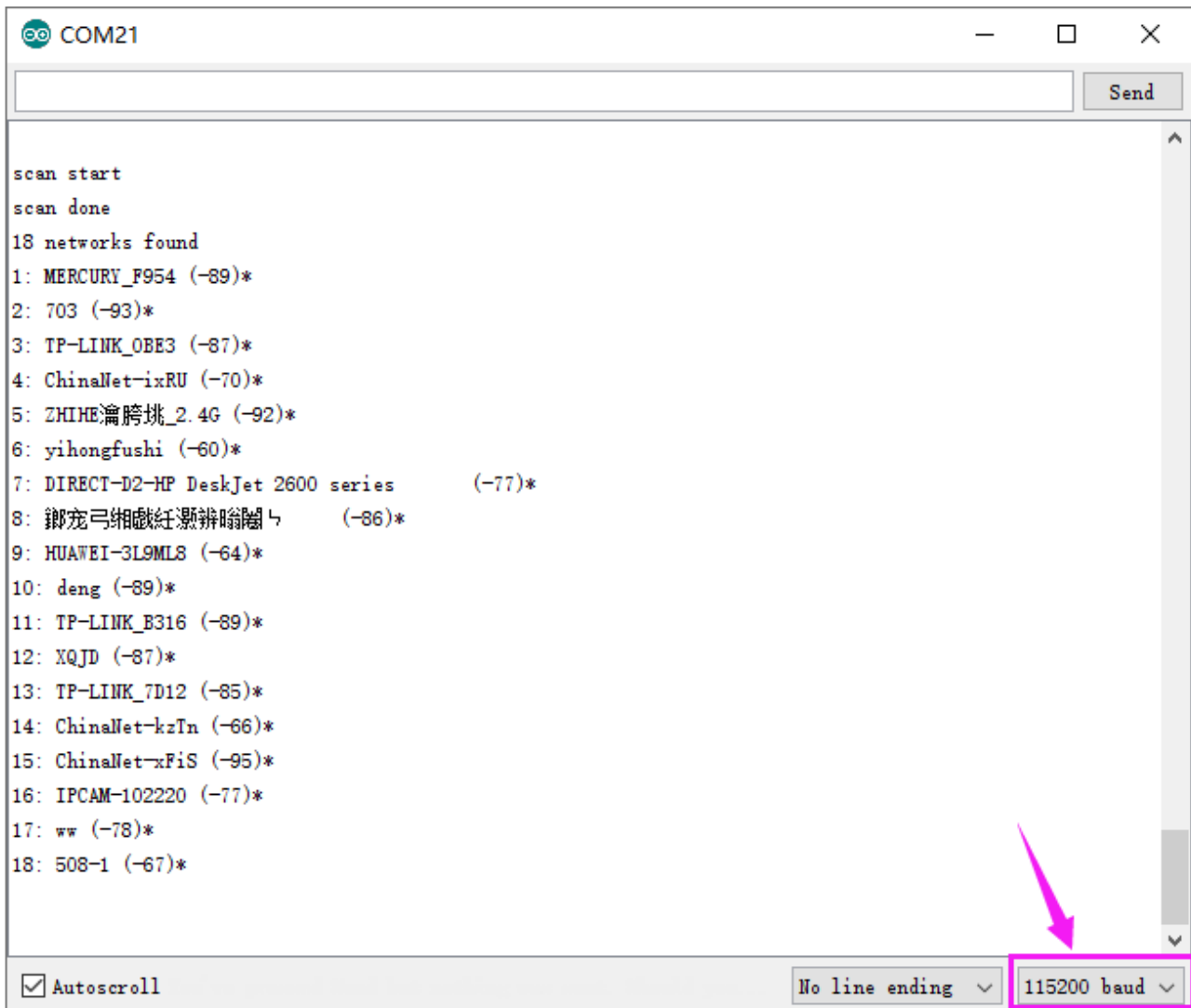
After copy and paste the code on IDE, click the compile button, if compiling successfully, the message "Done compiling." will appear in the status bar. Then click the "Upload" button, if the upload is successful, the message "Done uploading." will appear in the status bar.

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WeMos D1 (Rev2), 80 MHz, Serial, 921600, 4M (3M SPIFFS) on COM21

Step7 | What Should You See

Done uploading the code, open the serial monitor and set the baud rate to 115200, it can search the WIFI name nearby.



The screenshot shows a serial monitor window titled "COM21". The main area displays the following text:

```
scan start
scan done
18 networks found
1: MERCURY_F954 (-89)*
2: 703 (-93)*
3: TP-LINK_OBE3 (-87)*
4: ChinaNet-ixRU (-70)*
5: ZHIME瀚腾姚_2.4G (-92)*
6: yihongfushi (-60)*
7: DIRECT-D2-HP DeskJet 2600 series (-77)*
8: 鄉宠弓緝戲紅灑辨喻器 (-86)*
9: HUAWEI-3L9MLS (-64)*
10: deng (-89)*
11: TP-LINK_B316 (-89)*
12: XQJD (-87)*
13: TP-LINK_7D12 (-85)*
14: ChinaNet-kzIn (-66)*
15: ChinaNet-xFiS (-95)*
16: IPCAM-102220 (-77)*
17: ww (-78)*
18: 508-1 (-67)*
```

At the bottom of the window, there are three controls: a checked "Autoscroll" checkbox, a "No line ending" dropdown menu, and a "115200 baud" dropdown menu. A pink arrow points to the "115200 baud" dropdown menu.

More Resources:

ARDUINO Software:

<https://www.arduino.cc/en/Main/OldSoftwareReleases#1.5.x>