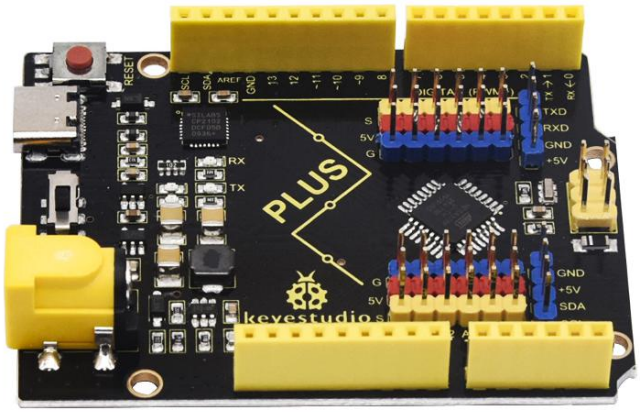
Keyestudio PLUS Control Board (Black and Eco-friendly)



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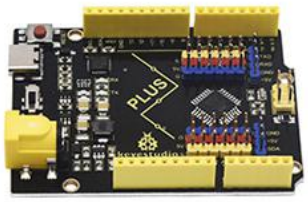
1. Description

Doing experiment with electronic products, we often program on the Arduino IDE development environment by arduino series microcontrollers.

Keyestudio PLUS control board is fully compatible with Arduino IDE development environment. It contains all the functions of the Arduino UNO R3 board. Moreover, some improvements we made highly strengthen its function(as shown below). In order to wire efficiently, we equip with a 1m USB cable of type-c interface for you.



Keyestudio PLUS

VS

UNO R3

1. USB serial chip: CP2102, more stable and compatible		1. USB serial chip:16U2, poor compatible
2. 3.3V or 5V, can be connected with 3.3V sensors		2. only 5V, can't be connected with 3.3V sensors
3. more IO ports:A6,A7		3. No 2 IO ports
4. extend serial communication and I2C interface, wire easily		4. Not too many interfaces, wire difficultly
5. special DC-DC design, 5V 2A, can drive high current loads, such as servos and motors		5. 5V, 1A, can't drive high current devices
6. extend 6 PWM and 6 analog ports, can connect with sensors directly		6. extend no ports, connect difficultly
7. input voltage: 6-15V, the wide range of voltage , more choices		7. input voltage: 7-12V, the option of power supply is limited
8. type-c interface, artistic and fashionable , transmission speed is more fast		8. traditional USB port, ordinary

2. Specifications

Microcontroller：ATMEGA328P-AU

USB to serial chip: CP2102

Working voltage: 5V or 3.3V (DIP switch control)

External power: DC 6-15V (recommend 9V)

Digital I / O pins: 14 (D0-D13)

PWM channel: 6 (D3 D5 D6 D9 D10 D11)

Analog input channel (ADC): 8 (A0-A7)

Each I / O Port of DC output capability : 20 mA

Output capability of 3.3V port: 50 mA

Flash Memory: 32 KB (of which 0.5 KB is used by the bootloader)

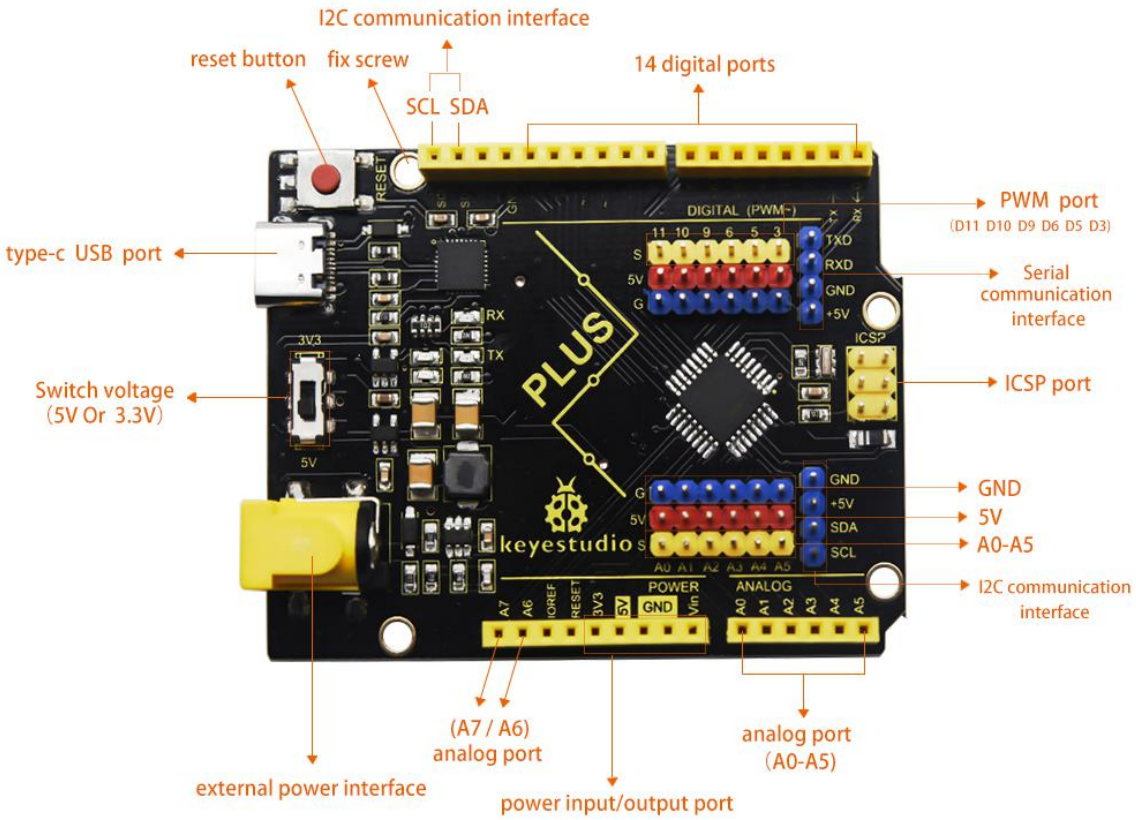
SRAM: 2 KB (ATMEGA328P-AU)

EEPROM: 1 KB (ATMEGA328P-AU)

Clock speed: 16MHz

On-board LED pin: D13

3. Interfaces Description



Serial communication interface: D0 is RX, D1 is TX

PWM interface (pulse width modulation): D3 D5 D6 D9 D10 D11

External interrupt interface: D2 (interrupt 0) and D3 (interrupt 1)

SPI communication interface: D10 is SS, D11 is MOSI, D12 is MISO, D13 is SCK

IIC communication port: A4 is SDA, A5 is SCL

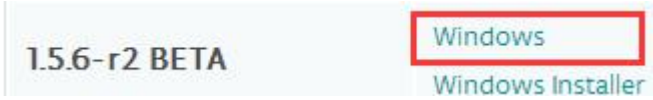
4. Instruction

Programming the control board, we need to download Arduino IDE.

You could download from the official website:

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

There are various versions of the IDE in the official link, here we download a Windows system, version 1.5.6.

click 

to download software directly,you don't need to install，click

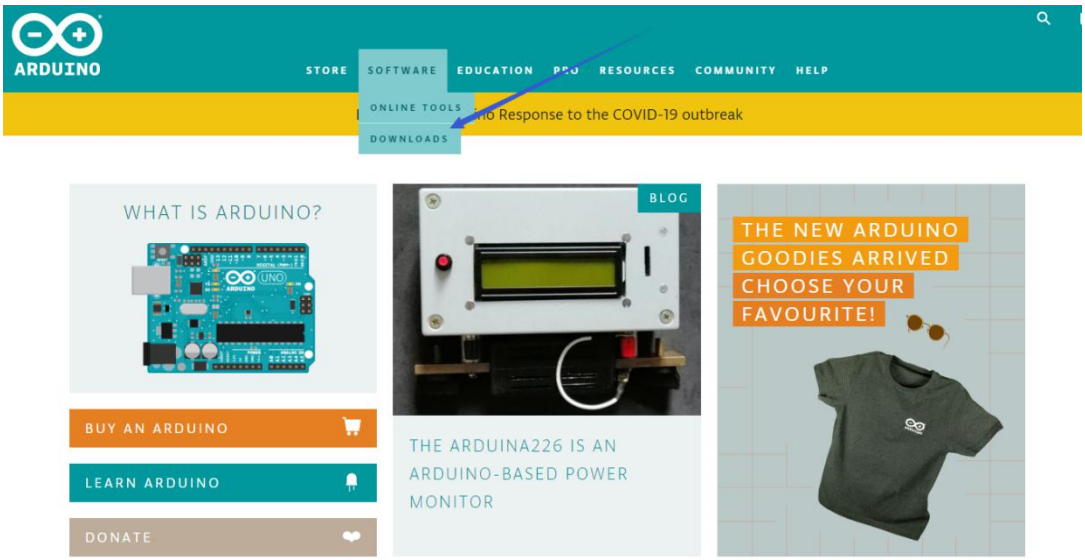
to download installation file, need to install IDE,

click

to download.

4.1 Installing Arduino IDE

We enter the ARDUINO official website: https://www.arduino.cc, click "SOFTWARE"----"DOWNLOADS", we'll see the following page.



There many versions for Arduino software, we only need to download the version suitable for system. Here, we take WINDOWS system as example to introduce how to download and install Arduino IDE.

For WINDOWS system, There are also two options under Windows system, one is

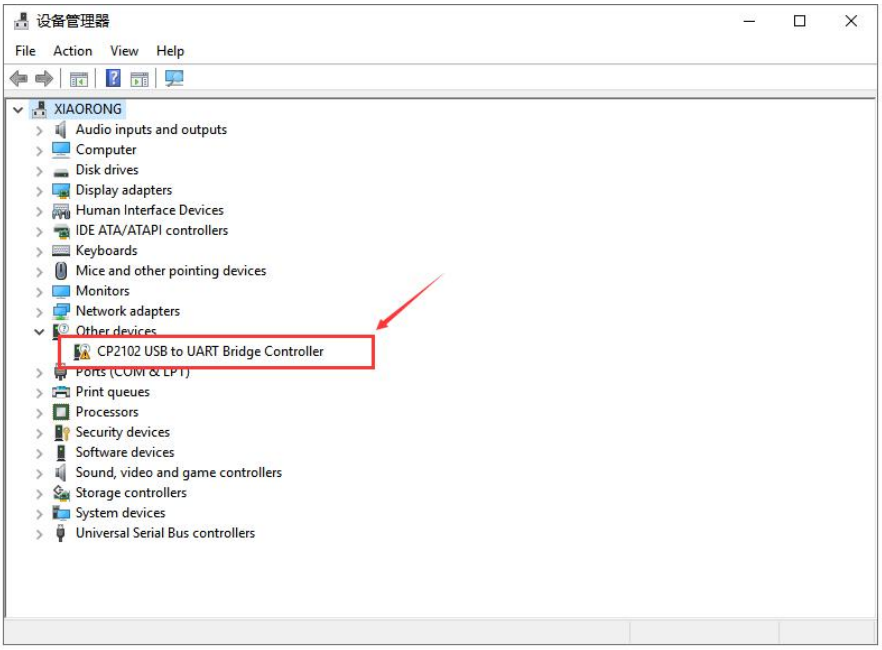
installed version, the other is non-installed version(directly download it in the computer, unzip it). The two versions can be used normally, you could choose a versions based on personal preferences. Just click”JUST DOWNLOAD”

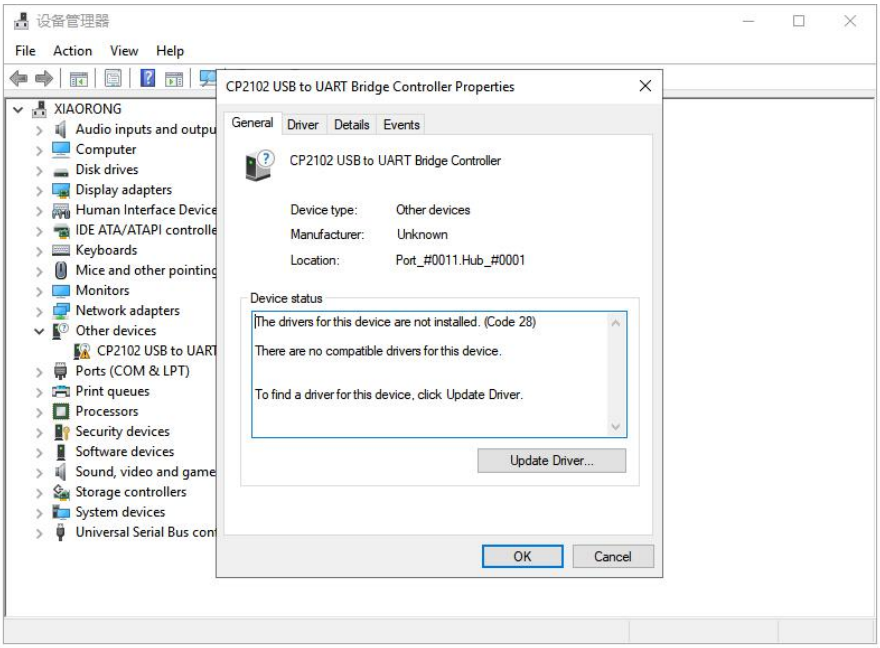
4.2 Installing Driver

Finish the download. Now, let’s install the driver of keyestudio PLUS control board. Its chip is CP2102 serial chip. In general, the driver of CP2102 serial chip is included in ARDUINO version 1.8 and above. The driver will be recognized and installed as long as you connect board to computer with USB.

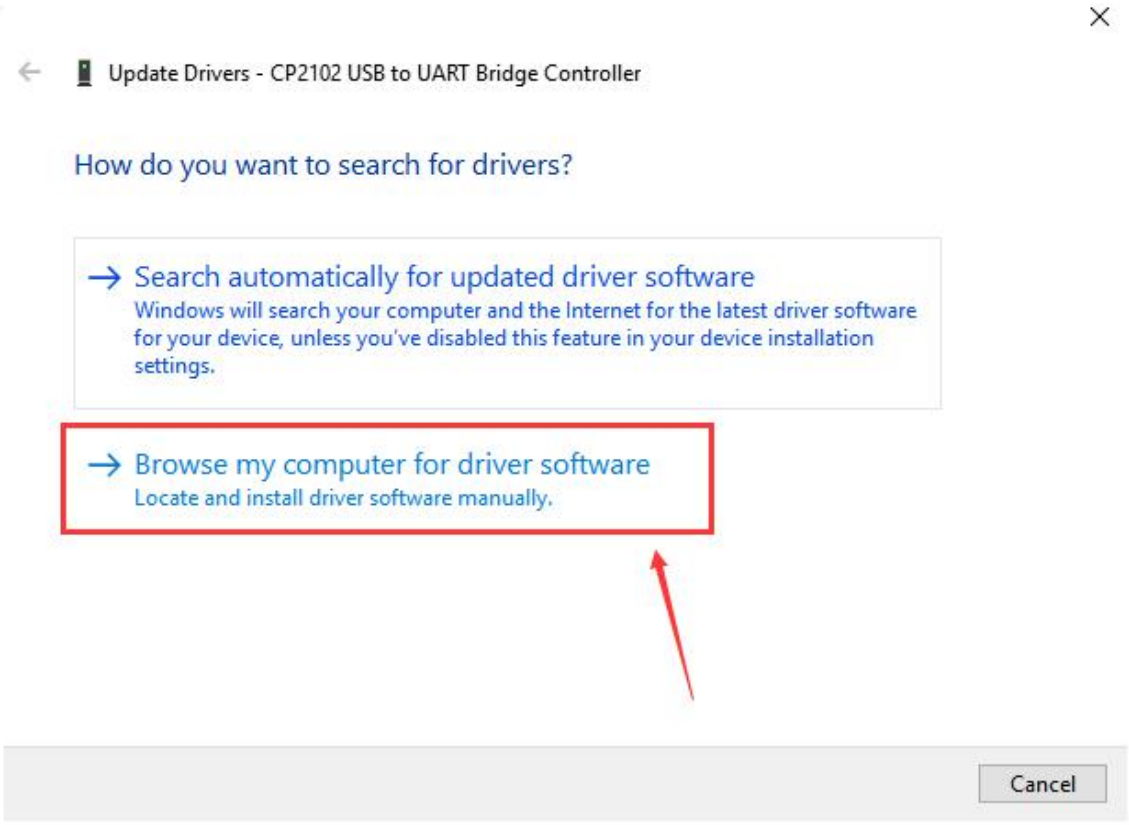
Some system can’t install automatically driver, you could install by hand. Open the device manager of computer and you will see a yellow exclamation mark which means the driver of CP2102 isn’t installed successfully.

double-click the “Cp2102 USB to UART Bridge Controller” and a window pops up, click “update driver”, as shown below:



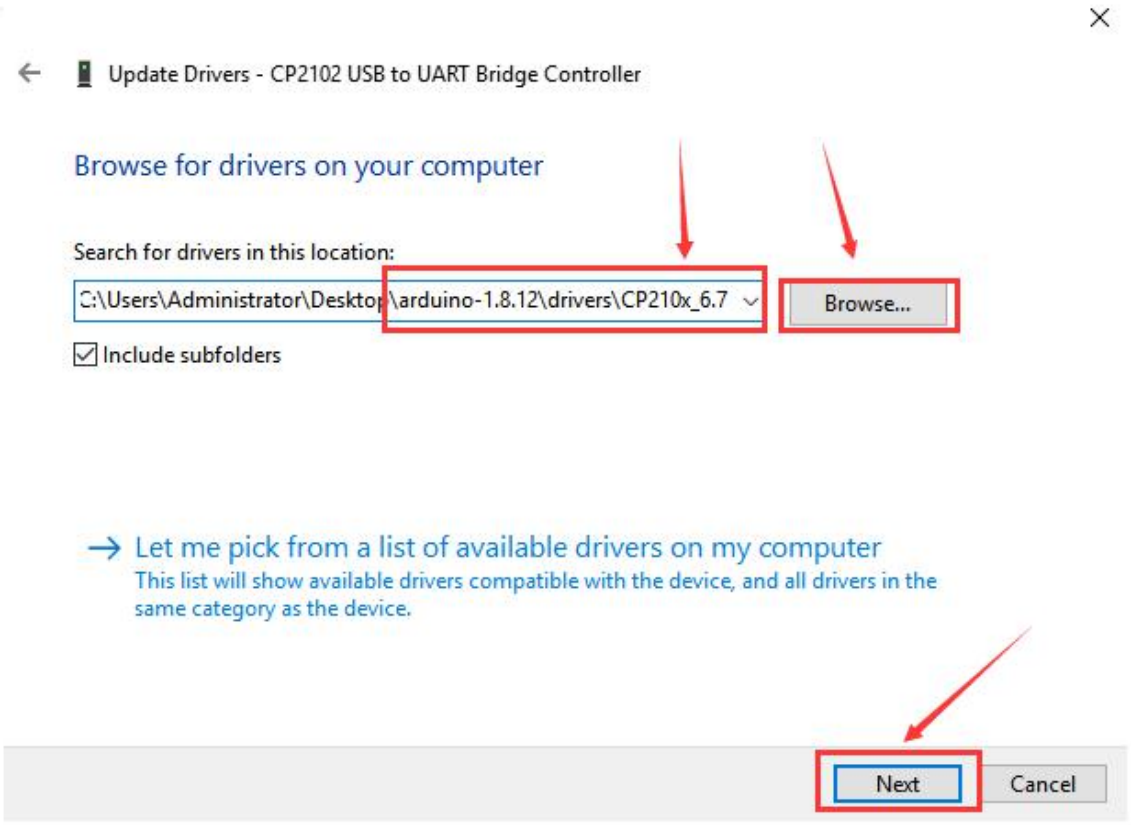


Click "Browse my computer for driver software" to find out the ARDUINO software to be installed.

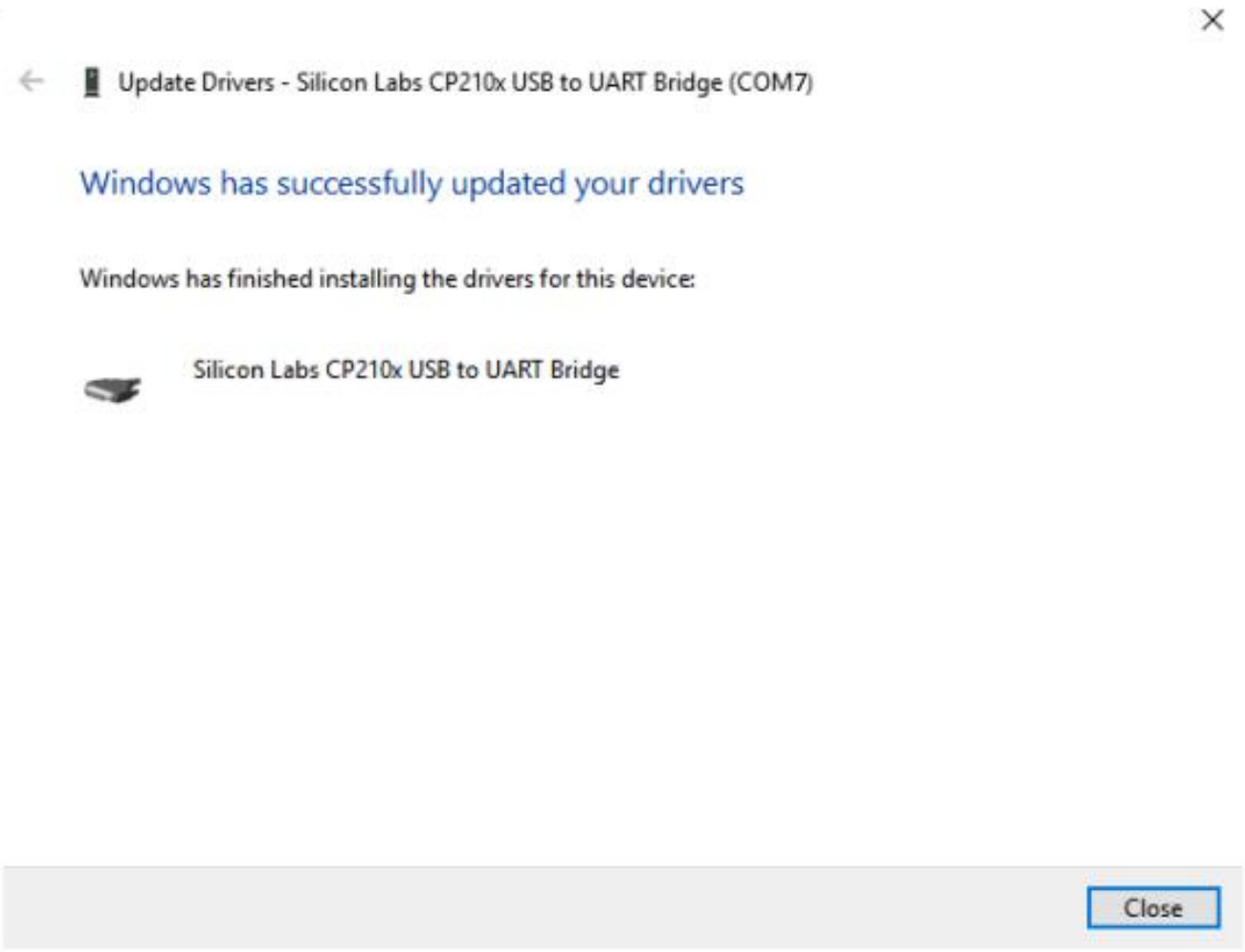


There is a **DRIVERS** folder inside, enter it and the driver of CP210X series chip

is shown.

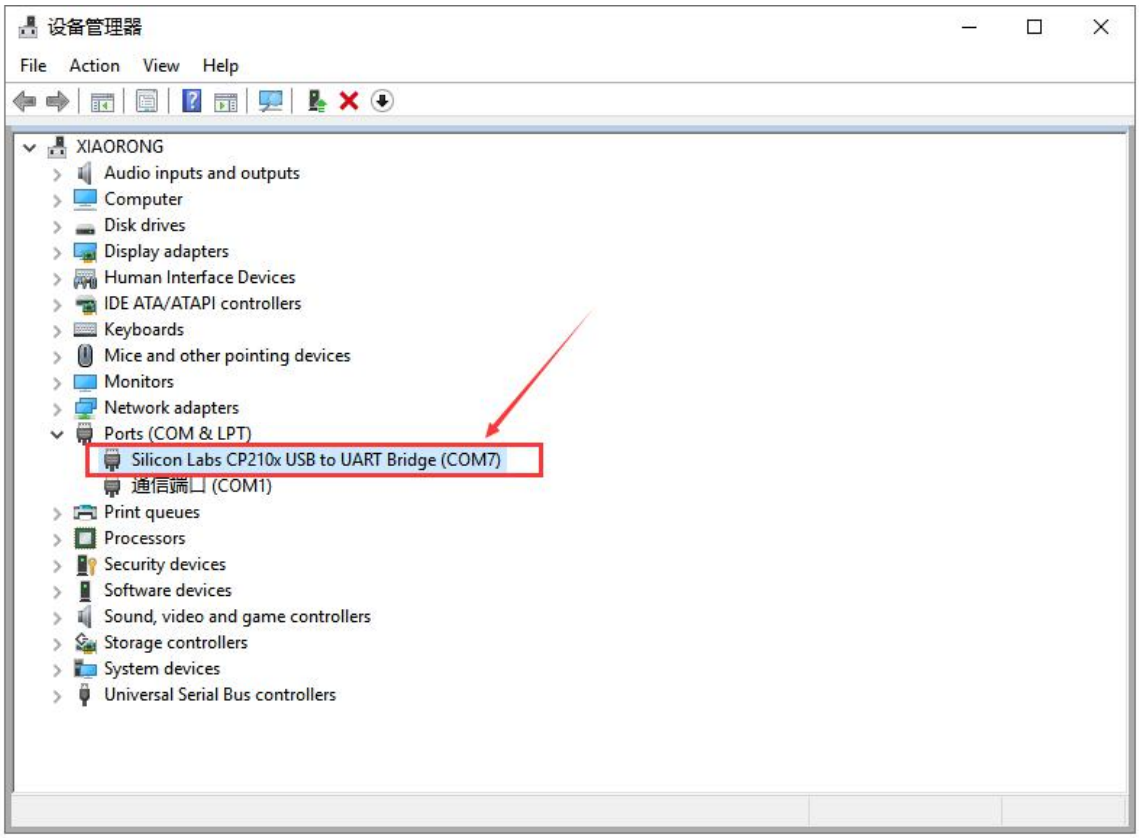


Choose the folder to be installed, click "Next", the driver of CP2010 is installed successfully.



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

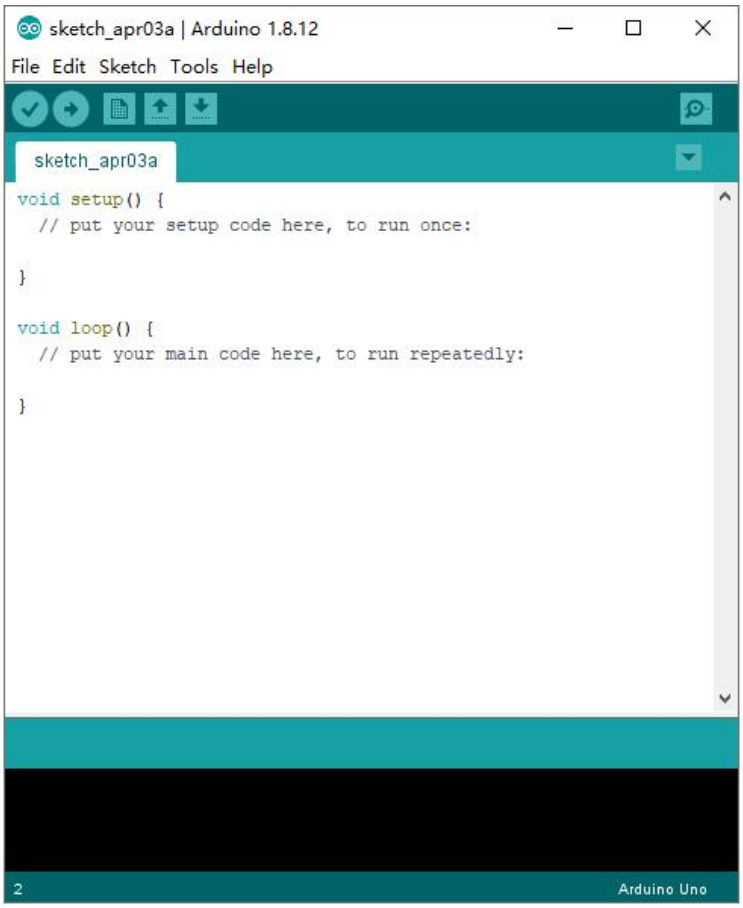
The driver is installed successfully and the yellow exclamation mark is gone.



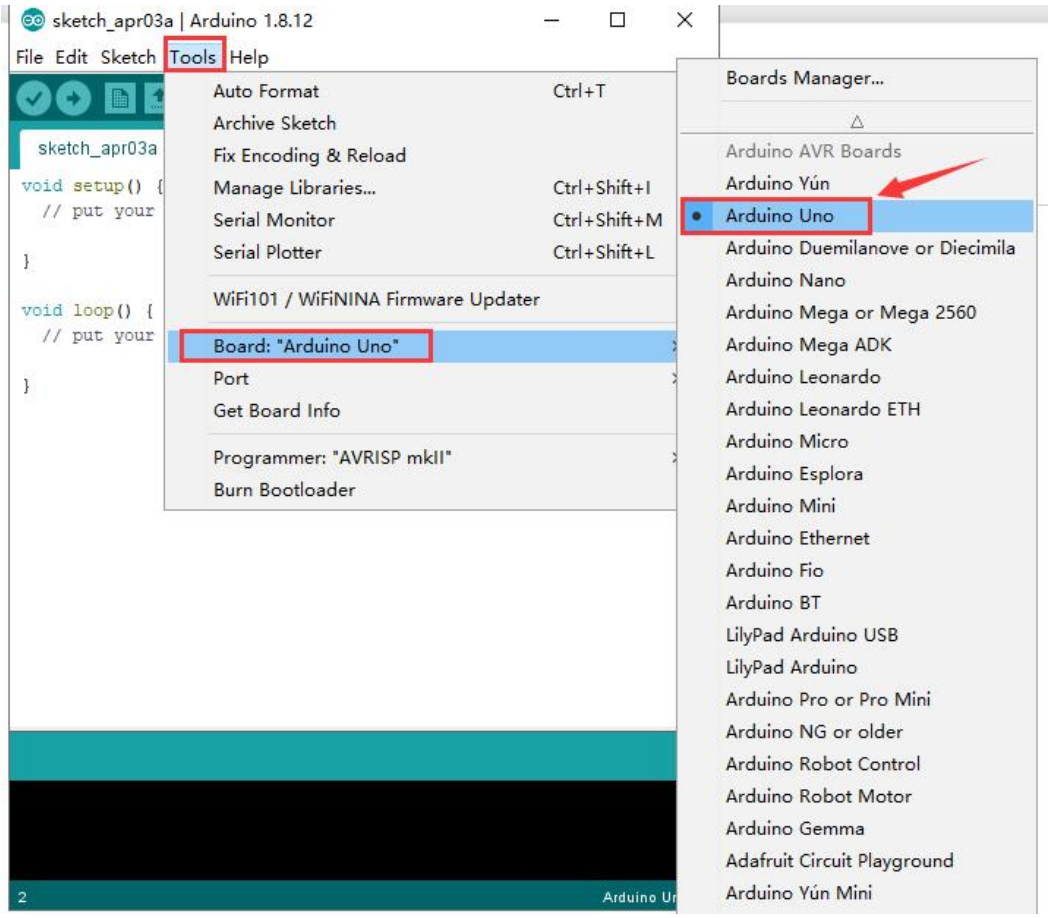
4.3 Arduino IDE Setting

Click

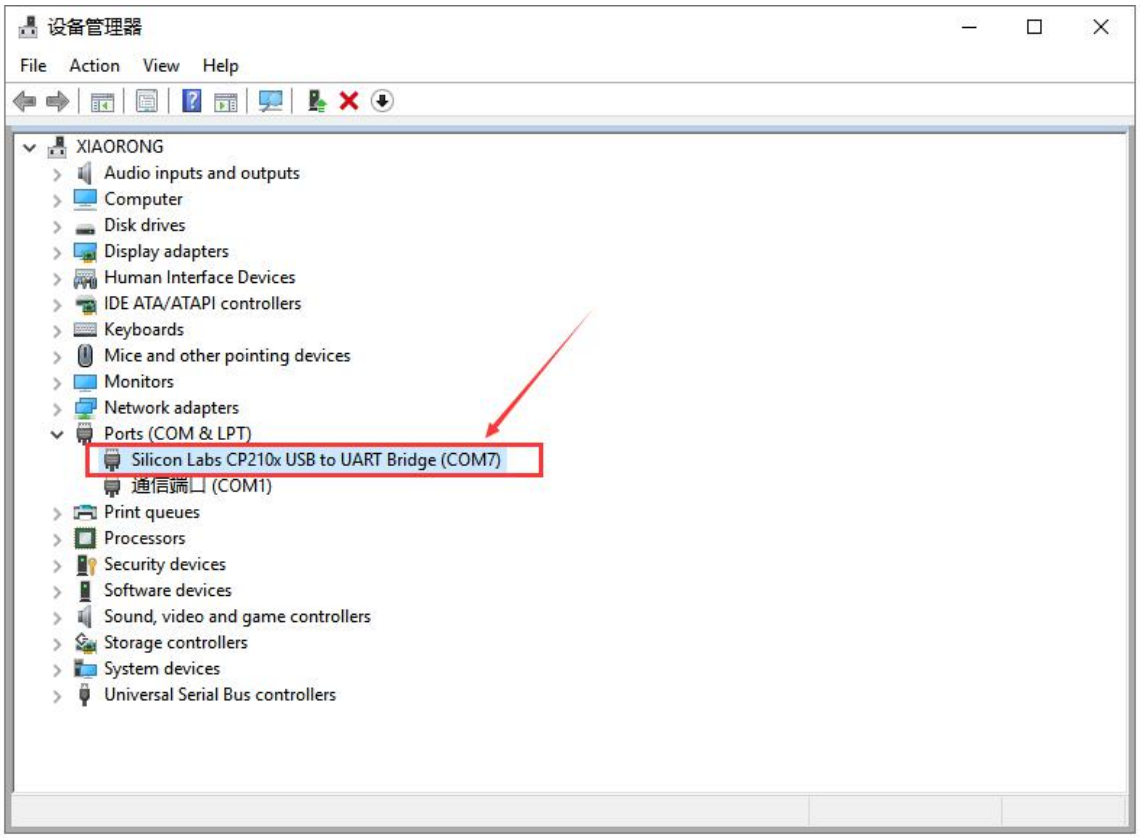
icon，open Arduino IDE.

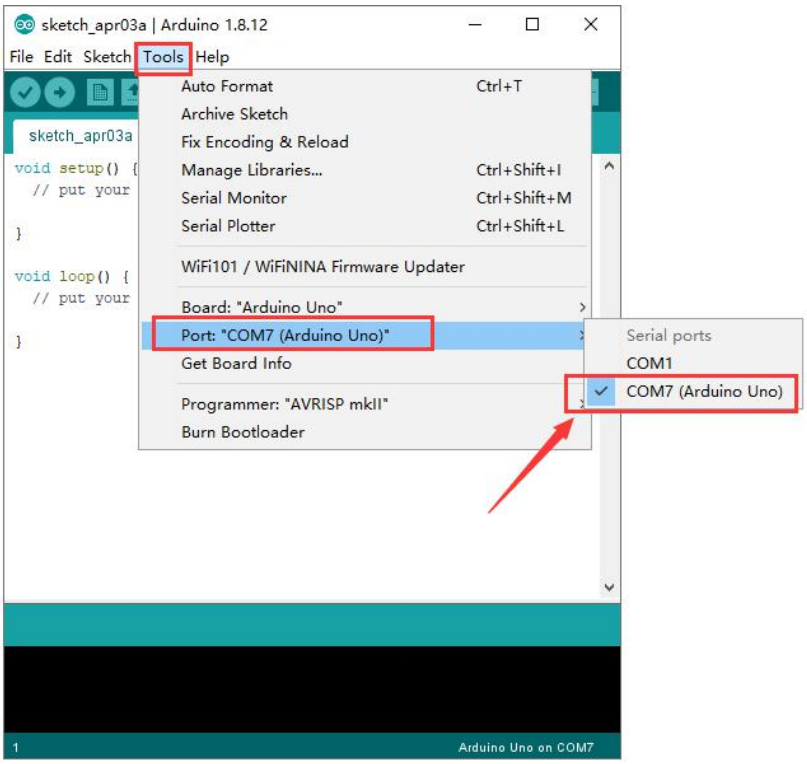


To avoid the errors when uploading the program to the board, you need to select the correct Arduino board that matches the board connected to your computer. Then come back to the Arduino software, you should click Tools→Board, select the board. (as shown below)



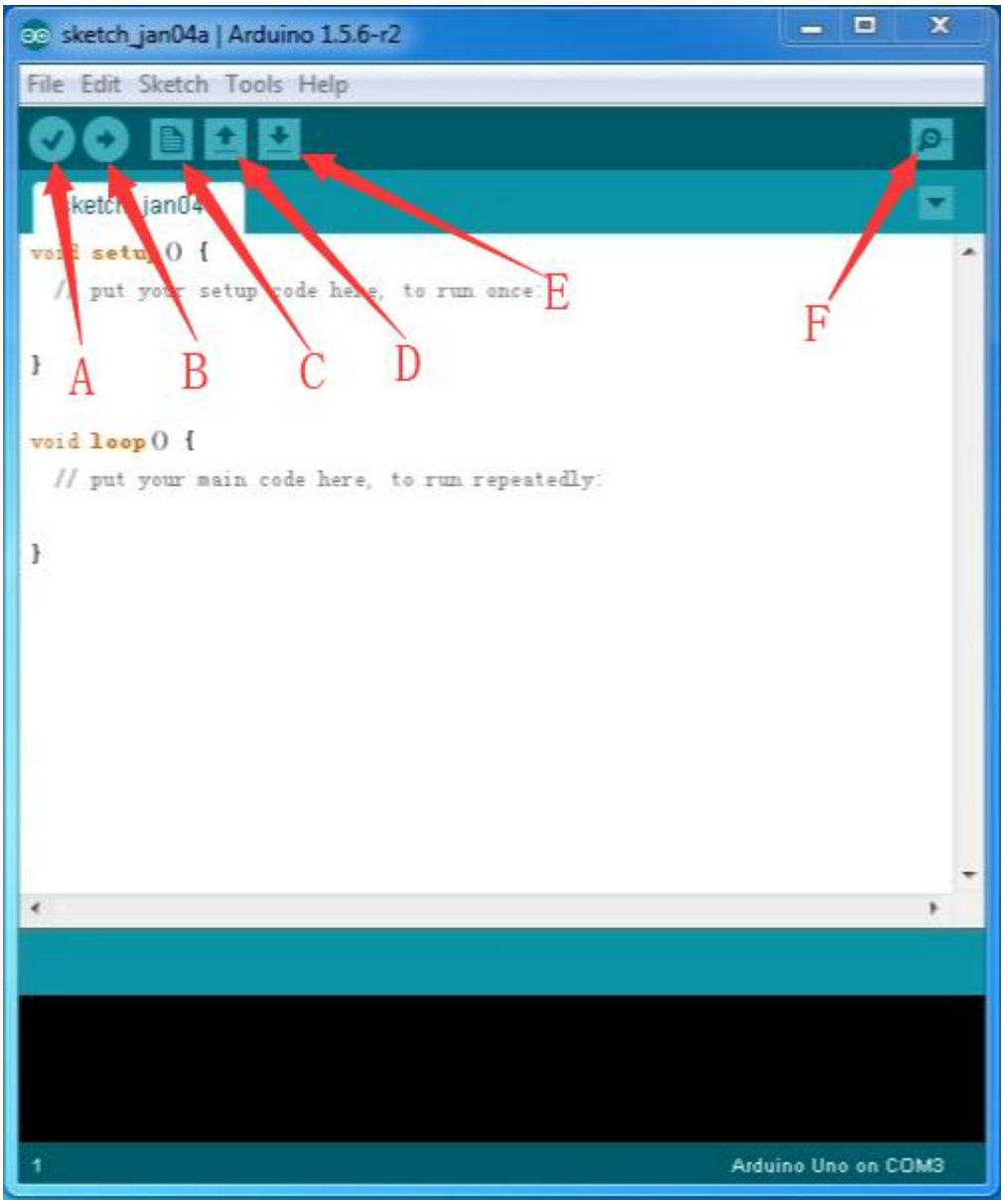
Then select the correct COM port (you can see the corresponding COM port after the driver is successfully installed)





Before uploading the program to the board, let's demonstrate the function of

each symbol in the Arduino IDE toolbar.



A- Used to verify whether there is any compiling mistakes or not.

B- Used to upload the sketch to your Arduino board.

C- Used to create shortcut window of a new sketch.

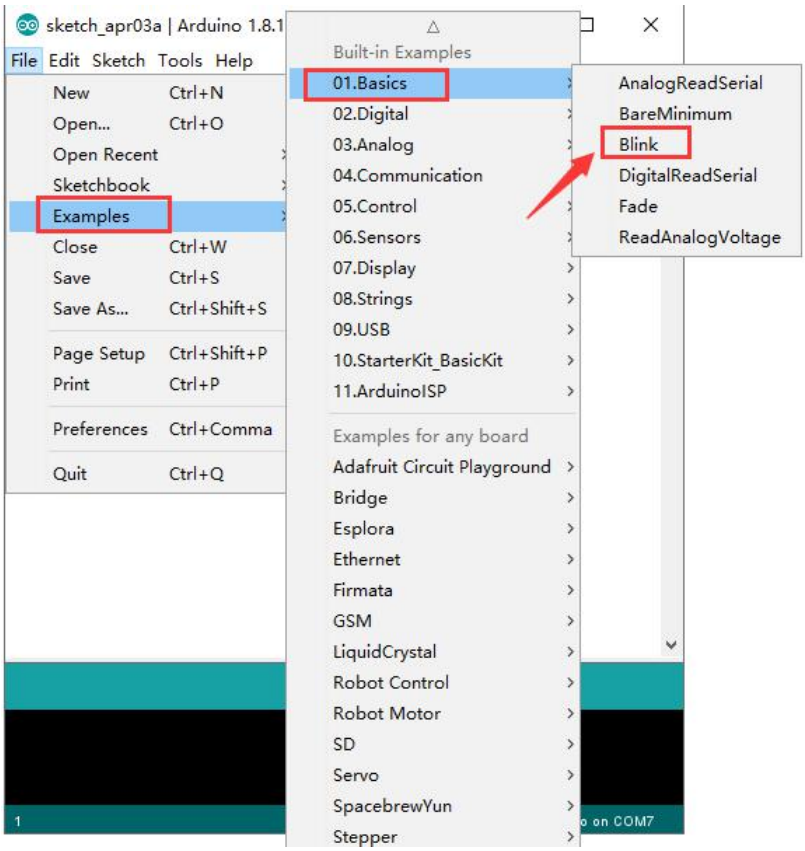
D- Used to directly open an example sketch.

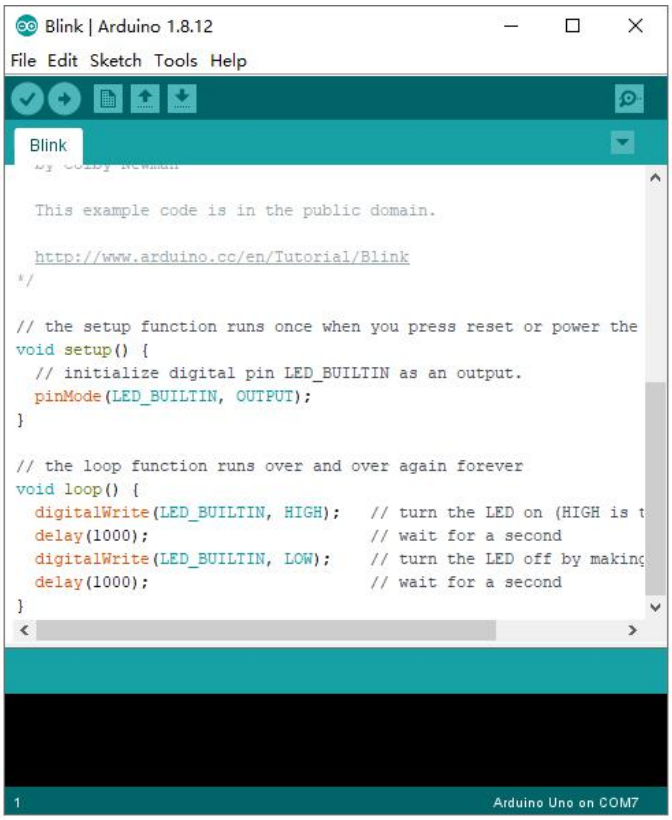
E- Used to save the sketch.

F- Used to send the serial data received from board to the serial monitor.

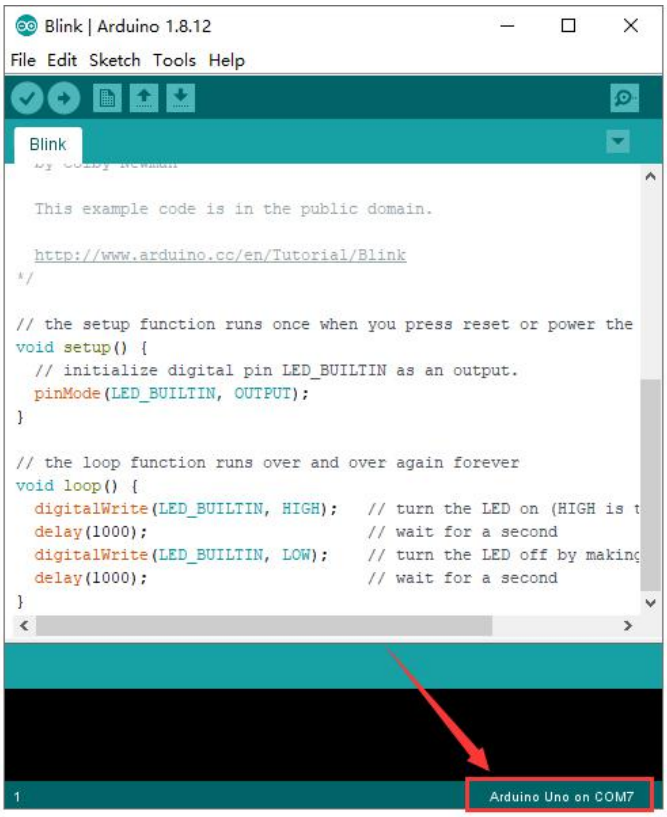
4.4 Start the first program

Open file to choose Examples—>BASIC—>BLINK

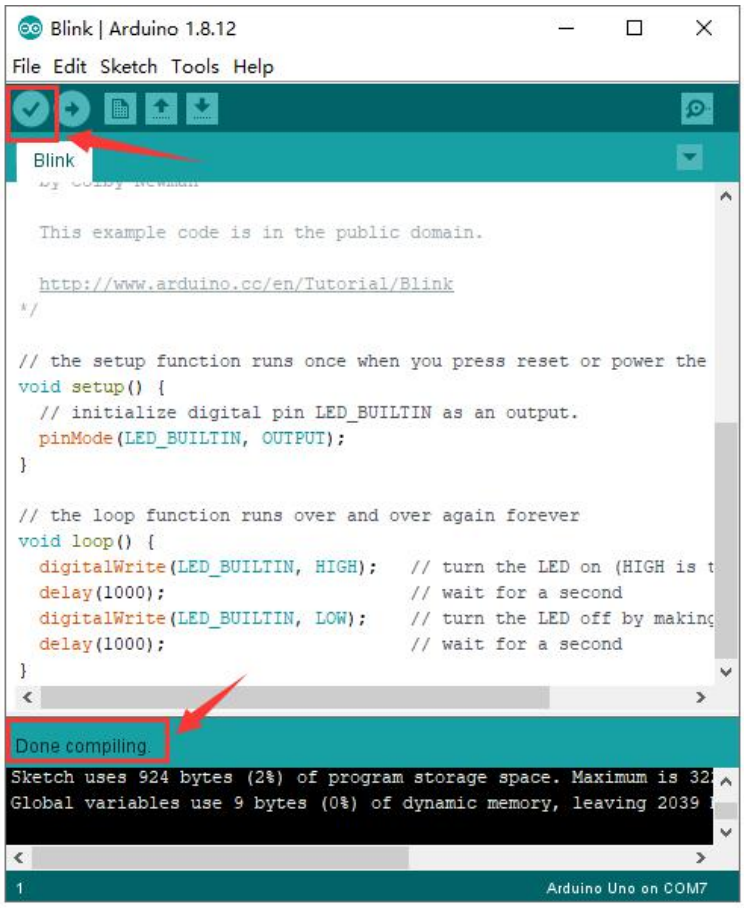




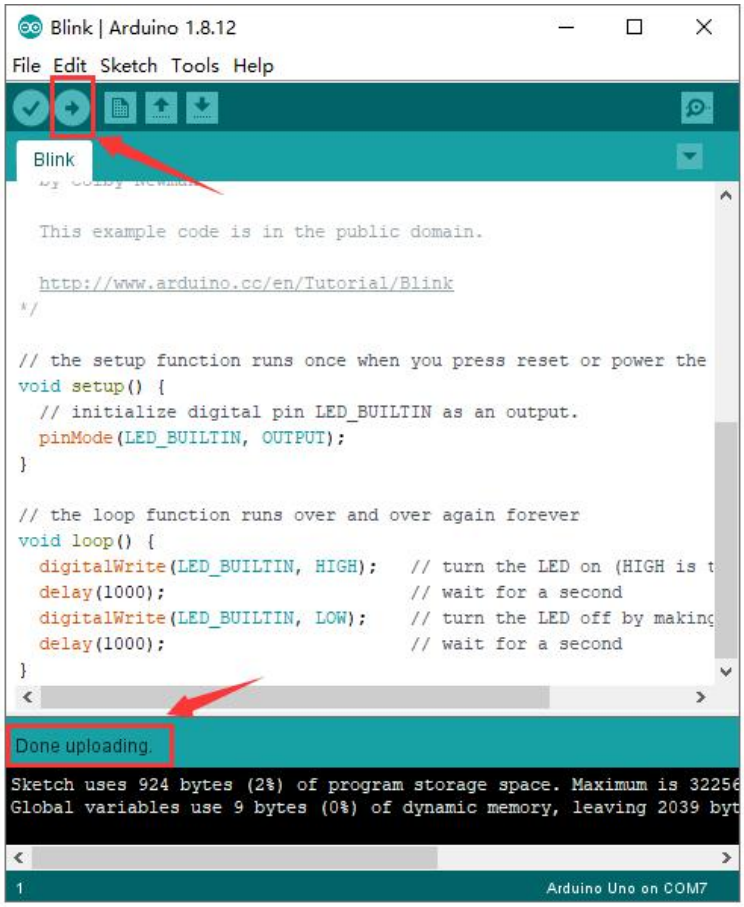
Set board and COM port, the bottom right corner of the IDE displays the corresponding board and COM port


Blink | Arduino 1.8.12
File Edit Sketch Tools Help
Blink
This example code is in the public domain.
http://www.arduino.cc/en/Tutorial/Blink
*/
// the setup function runs once when you press reset or power the
void setup() {
// initialize digital pin LED_BUILTIN as an output.
pinMode(LED_BUILTIN, OUTPUT);
}
// the loop function runs over and over again forever
void loop() {
digitalWrite(LED_BUILTIN, HIGH); // turn the LED on (HIGH is t
delay(1000); // wait for a second
digitalWrite(LED_BUILTIN, LOW); // turn the LED off by making
delay(1000); // wait for a second
}
1
Arduino Uno on COM7

Click icon to start compiling the program, check errors.



Click icon to start upload the program, upload successfully.



The program is uploaded successfully, LED of board lights on for 1s, and lights off for 1s.

5. Resource

Wiki page: https://wiki.keyestudio.com/Main_Page

Official website: https://www.keyestudio.com/