

ELEGOO Nano Board User Instruction V1.0

V1.0.23.05.06

Preface

Our Company

Established in 2011, Elegoo Inc. is a thriving technology company dedicated to research & development, production, and marketing of open-source hardware. Located in Shenzhen, the Silicon Valley of China, we have grown to over 150+ employees with a 10,763+ square ft.factory.

Our product lines include DuPont wires, UNO R3 boards and complete starter kits designed for customers of any level to learn Arduino knowledge. In addition, we also sell Raspberry Pi accessories like TFT touch screens. Additionally, we plan to expand our offerings to include other technologies, including products related to 3D printing. All of our products comply with international quality standards and have been praised by our customers in a variety of different marketplaces throughout theworld.

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http://www.amazon.es/shops/A1780XYQ9DFQM6

Amazon Italy storefront:

http://www.amazon.it/shops/A1780XYQ9DFQM6

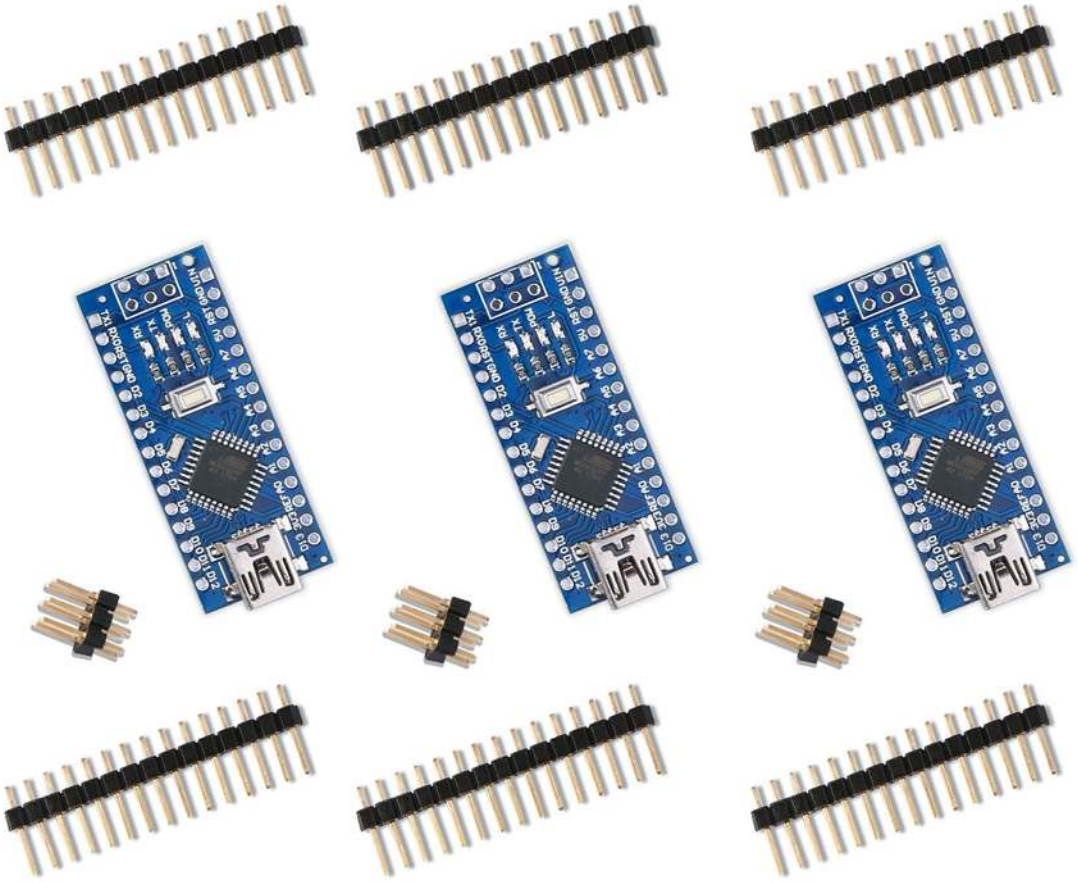
Our Tutorial

This tutorial is designed for beginners. You will learn all the basic information about how to use the Arduino controller board, sensors and components. If you want to study Arduino in more depth, we recommend that you read the book "Arduino Cookbook" by Michael Margolis.

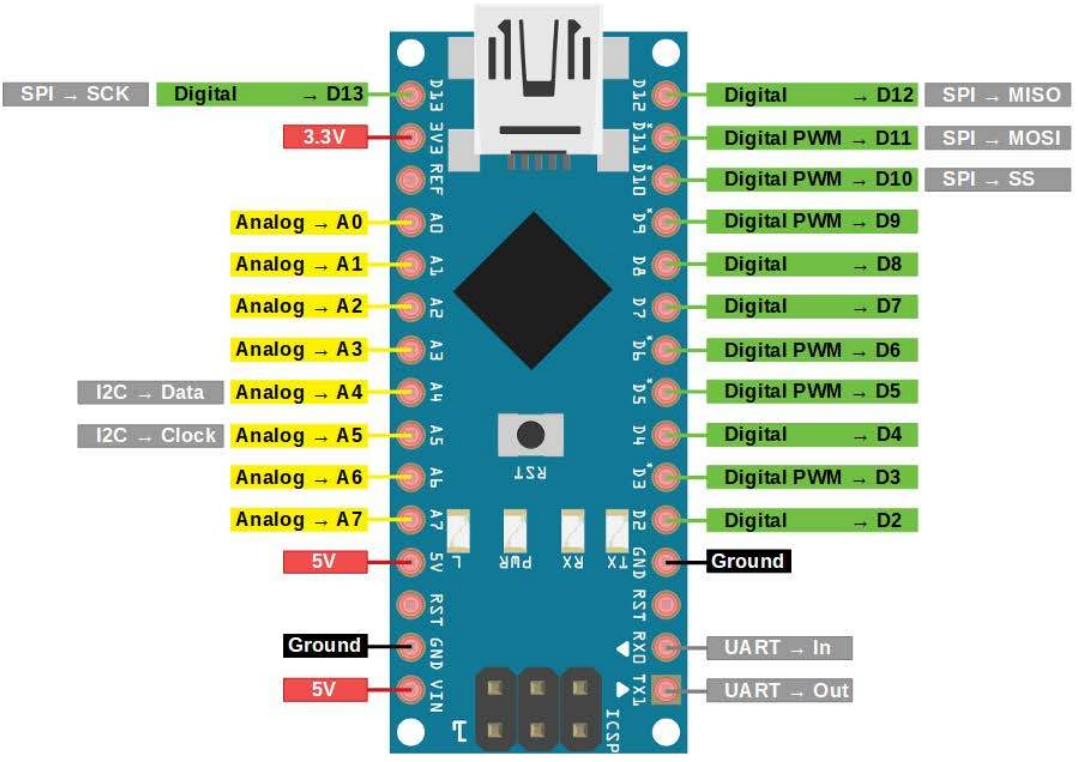
Some code in this tutorial has been edited by Simon Monk. Simon Monk is the author of a number of books relating to Open Source Hardware. Some of his works include "Programming Arduino", "30 Arduino Projects for the Evil Genius" and "Programming the Raspberry Pi" and can be found on Amazon

Customer Service

As a continuously and quickly growing technology company, we strive to offer you excellent products and quality service. You can reach out to us by email at service@elegoo.com or EUservice@elegoo.com. We look forward to hearing from you and any comments or suggestions are of great value to us.



Nano R3 Pinout



Source: Fritzing

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Lesson 0 Installing IDE

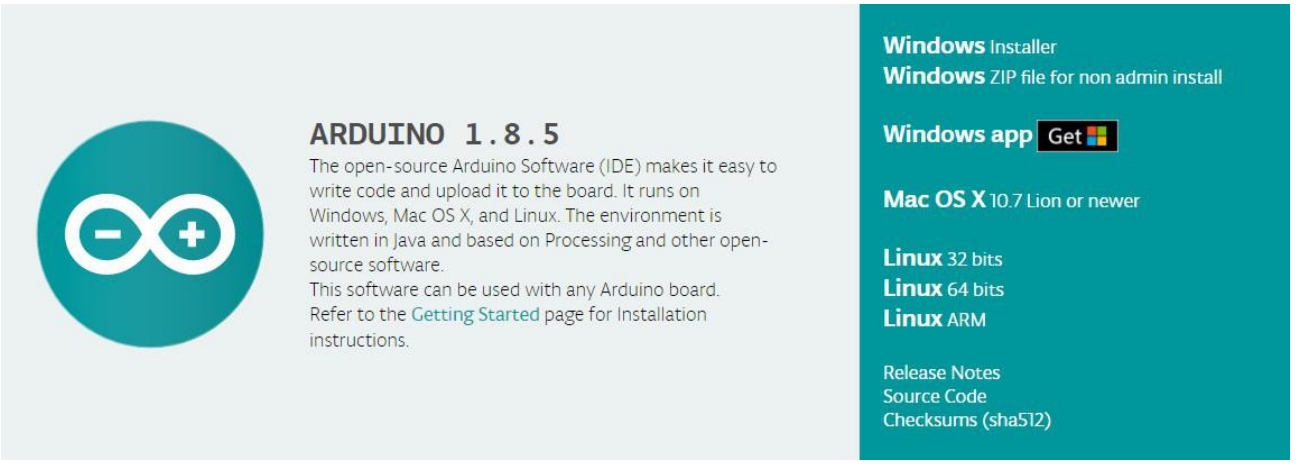
Introduction

The Arduino Integrated Development Environment (IDE) is the software sideof the Arduino platform.

In this lesson, you will learn how to setup your computer to use Arduino and how to set about the lessons that follow.

The Arduino software that you will use to program your Arduino is available for Windows, Mac and Linux. The installation process is different for all three platforms and there is a certain amount of manual work to install the software.

STEP 1: Go to https://www.arduino.cc/en/Main/Software and find the page below.



The version available at this website is usually the latest version, and the actual version may be newer than the version in the picture.

STEP2： Download the development software that is compatible with the operating system of your computer. Take Windows as an example here.



Click *Windows Installer*.



Click *JUSTD OWNLOAD*.

At the same time, you also could download the Arduino IDE from our official website-https://www.elegoo.com/pages/arduino-kits-support-files

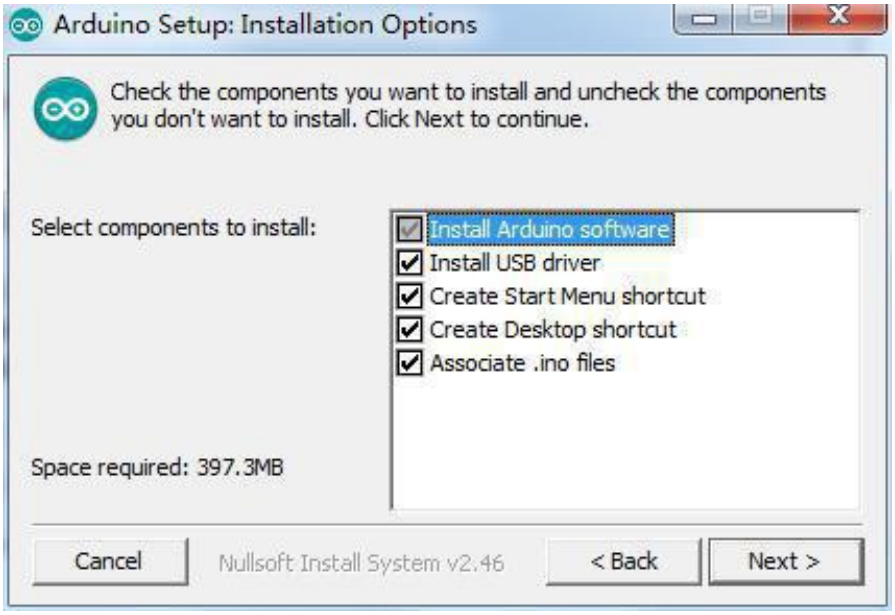
Installing Arduino(Windows)

Install Arduino with the exe Installation package.

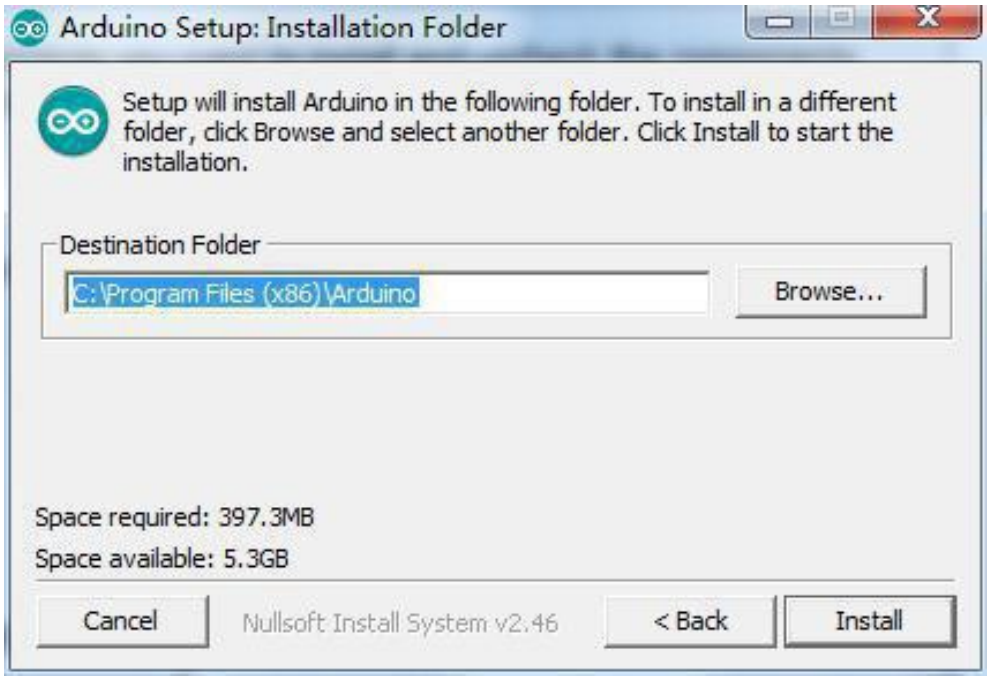




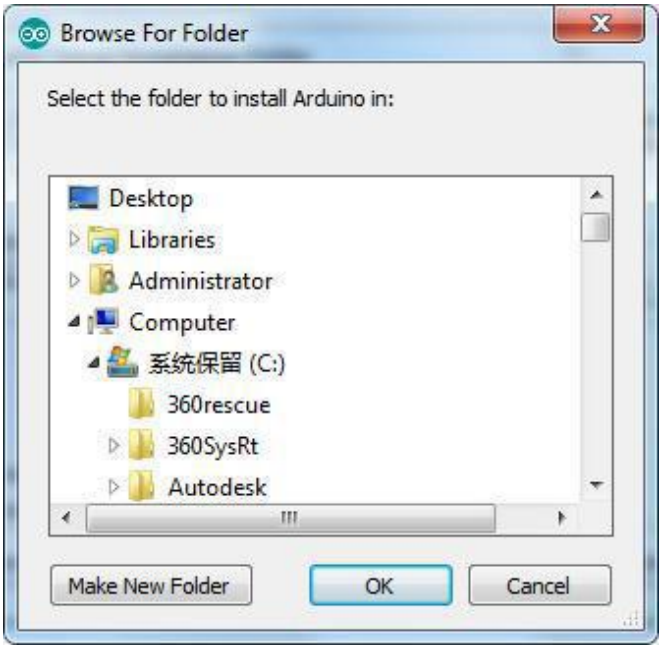
Click *I Agree* to see the following interface



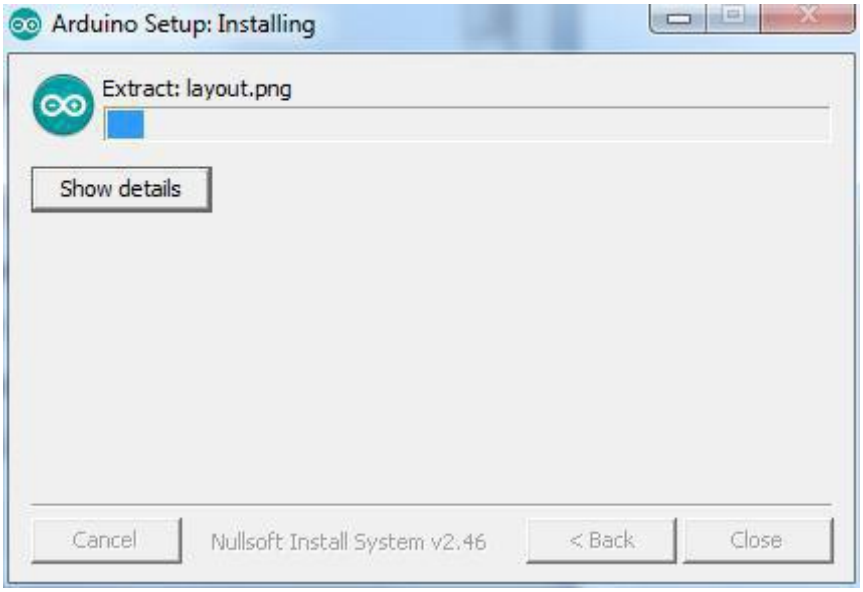
Click *Next*



You can press Browse… to choose an installation path or directly type in the directory youwant.



Click *Install* to initiate installation



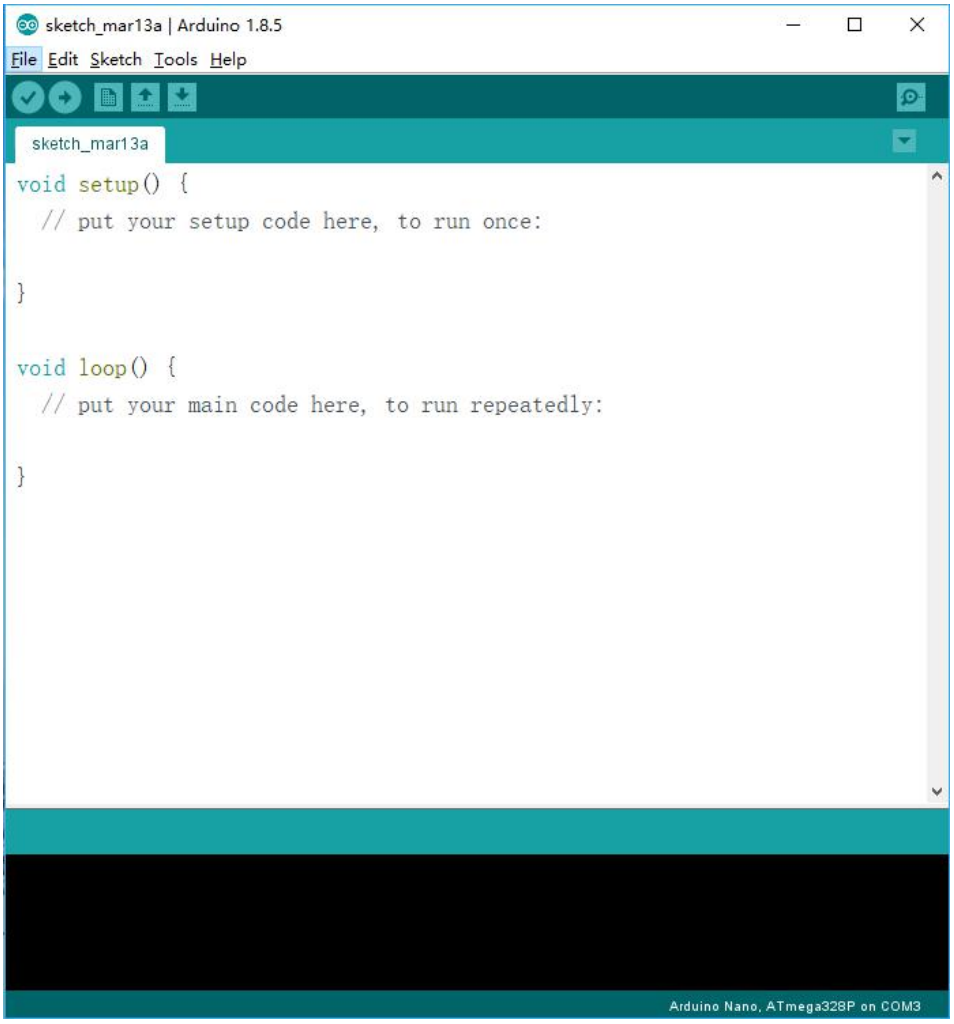
Finally, the following interface appears, click *Install* to finish the installation.



Next, the following icon appears on the desktop

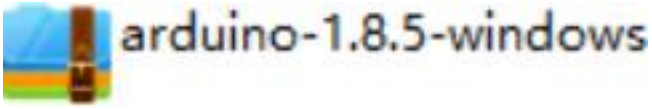


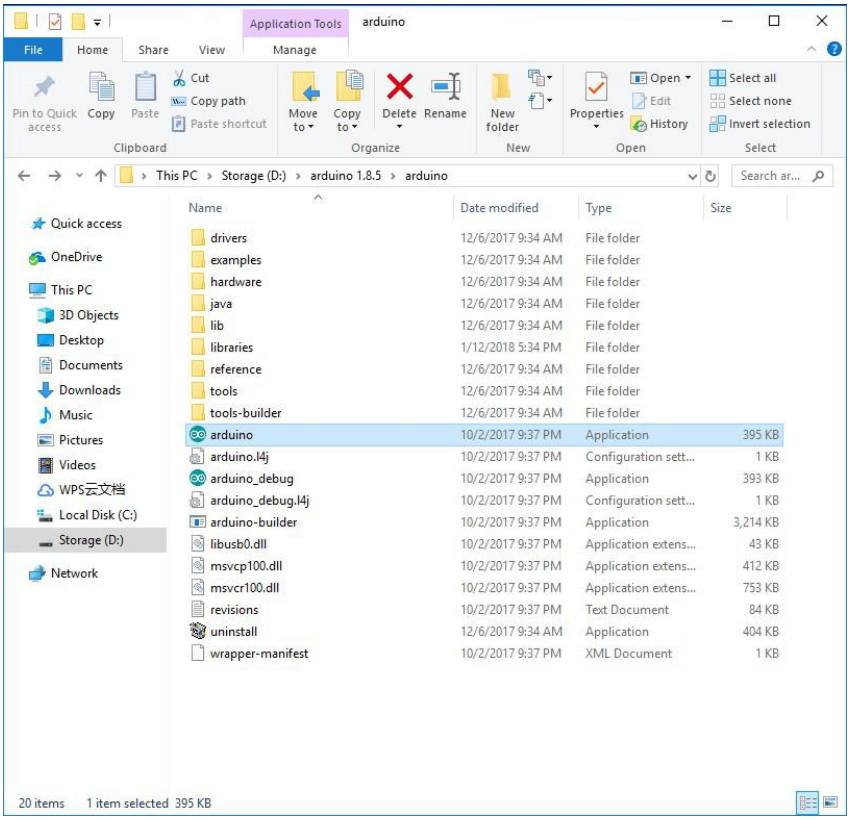
Double-click to enter the desired development environment



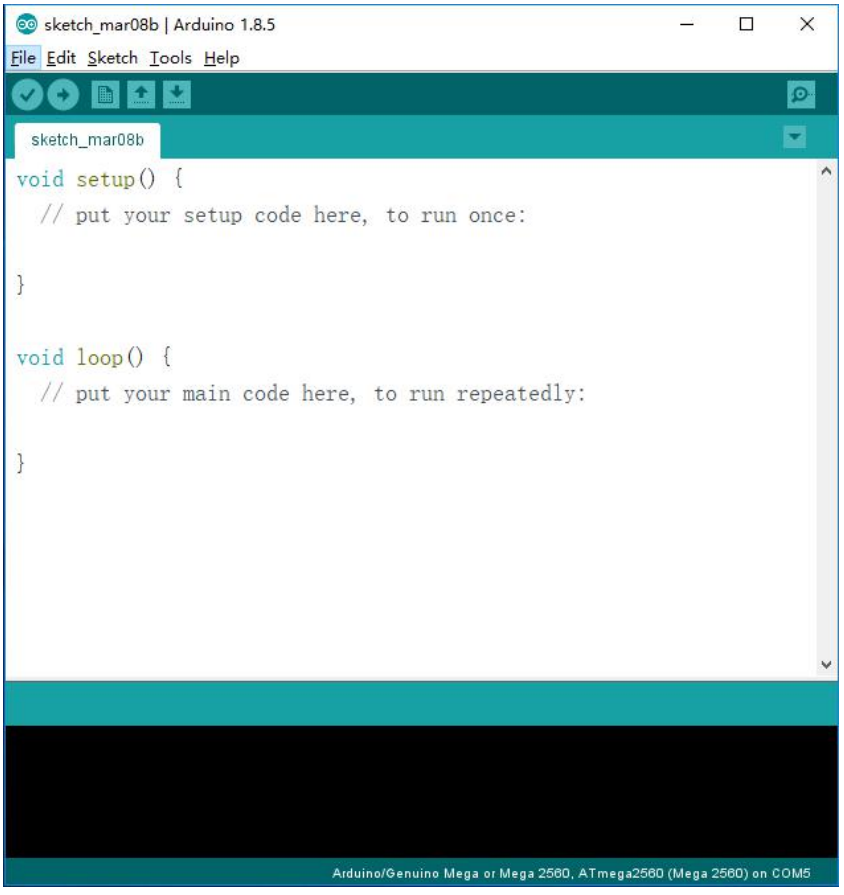
You may directly choose the installation package for installation and skip the contents below and jump to the next section. But if you want to learn some methods other than the installation package, please continue to read the section.

Unzip the zip file downloaded, Double-click to open the program and enter the desired developmentenvironment




Application Tools
arduino
File
Home
Share
View
Manage
Cut
Copy path
Paste shortcut
Pin to Quick access
Copy
Paste
Move to
Copy to
Delete
Rename
New folder
Properties
Open
Edit
History
Select all
Select none
Invert selection
Clipboard
Organize
New
Open
Select
This PC › Storage (D:) › arduino 1.8.5 › arduino
Search ar...
Quick access
OneDrive
This PC
3D Objects
Desktop
Documents
Downloads
Music
Pictures
Videos
WPS云文档
Local Disk (C:)
Storage (D:)
Network
Name
Date modified
Type
Size
drivers 12/6/2017 9:34 AM File folder
examples 12/6/2017 9:34 AM File folder
hardware 12/6/2017 9:34 AM File folder
java 12/6/2017 9:34 AM File folder
lib 12/6/2017 9:34 AM File folder
libraries 1/12/2018 5:34 PM File folder
reference 12/6/2017 9:34 AM File folder
tools 12/6/2017 9:34 AM File folder
tools-builder 12/6/2017 9:34 AM File folder
arduino 10/2/2017 9:37 PM Application 395 KB
arduino.l4j 10/2/2017 9:37 PM Configuration sett... 1 KB
arduino_debug 10/2/2017 9:37 PM Application 393 KB
arduino_debug.l4j 10/2/2017 9:37 PM Configuration sett... 1 KB
arduino-builder 10/2/2017 9:37 PM Application 3,214 KB
libusb0.dll 10/2/2017 9:37 PM Application extens... 43 KB
msvcp100.dll 10/2/2017 9:37 PM Application extens... 412 KB
msvcr100.dll 10/2/2017 9:37 PM Application extens... 753 KB
revisions 10/2/2017 9:37 PM Text Document 84 KB
uninstall 12/6/2017 9:34 AM Application 404 KB
wrapper-manifest 10/2/2017 9:37 PM XML Document 1 KB
20 items
1 item selected 395 KB

arduino.exe


sketch_mar08b | Arduino 1.8.5
File Edit Sketch Tools Help
sketch_mar08b
void setup() {
// put your setup code here, to run once:
}
void loop() {
// put your main code here, to run repeatedly:
}
Arduino/Genuino Mega or Mega 2560, ATmega2560 (Mega 2560) on COM5

Lesson 1 Add Libraries and Installing the CH340 driver

Install other Arduino libraries

Once you are comfortable with the Arduino software and using the built-in functions, you may want to extend the ability of your Arduino with additional libraries.

What are Libraries?

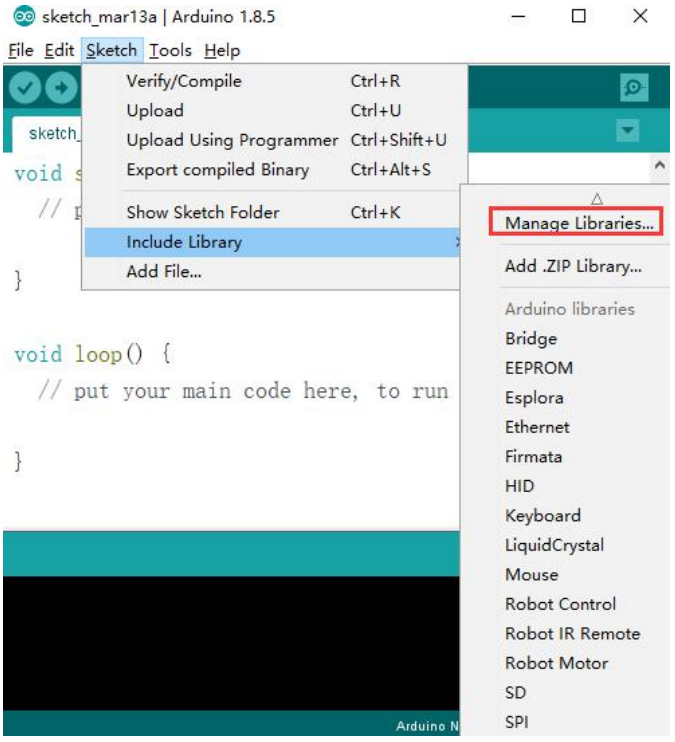
Libraries are a collection of code that makes it easy for you to connect to a sensor, display, module, etc. For example, the built-in Liquid Crystal library makes it easy to talk to character LCD displays.

There are hundreds of additional libraries available on the Internet for download. The built-in libraries and some of these additional libraries are listed in the reference. To use the additional libraries, you will need to install them.

How to Install a Library

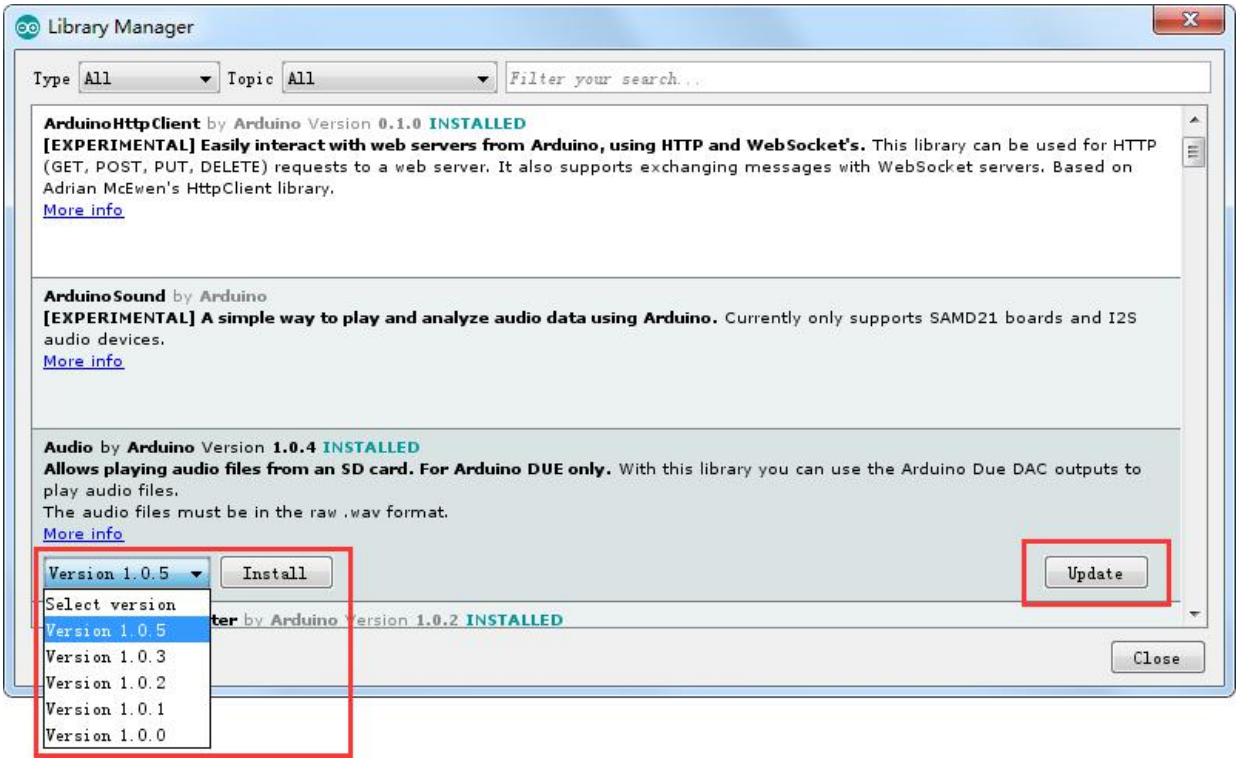
Using the Library Manager

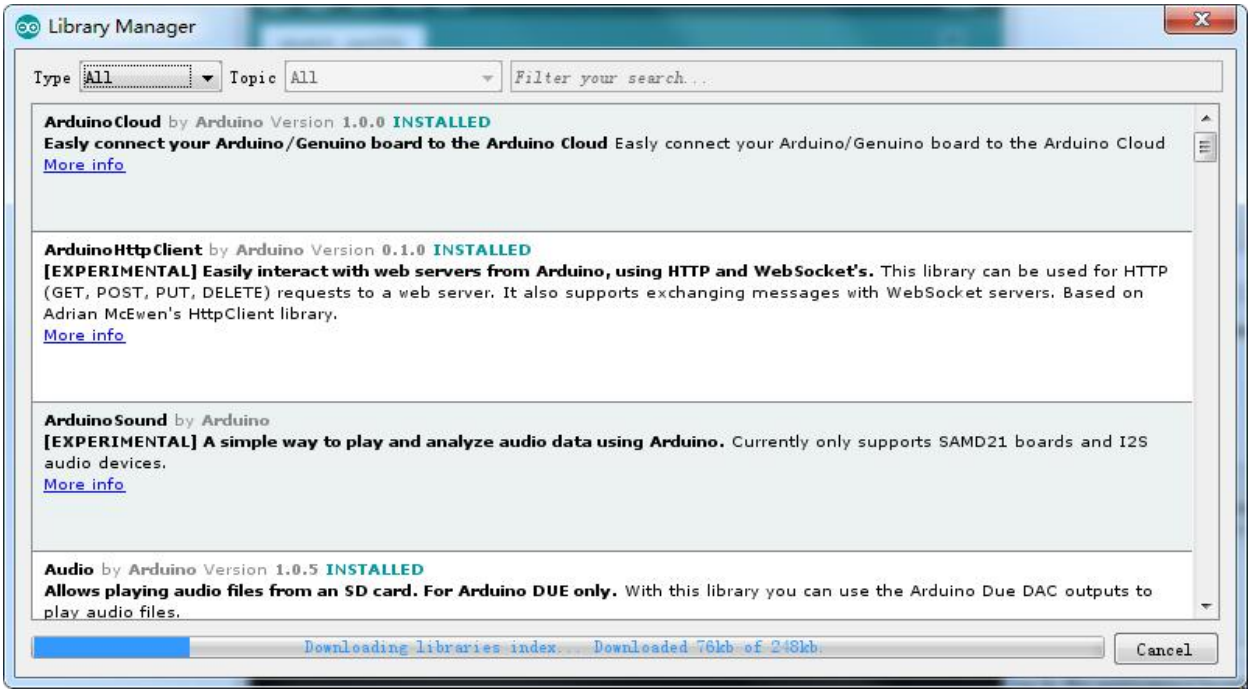
To install a new library into your Arduino IDE you can use the Library Manager (available from IDE version 1.8.5). Open the IDE and click to the "Sketch" menu and then Include Library > Manage Libraries.



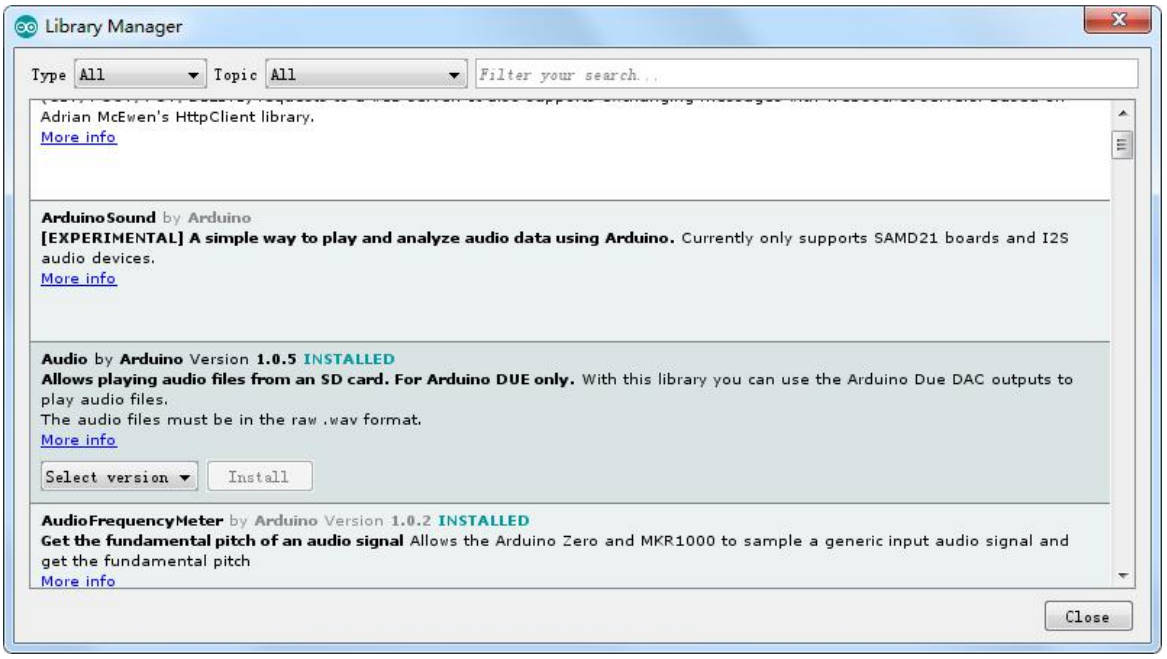
Then the library manager will open and you will find a list of libraries that are already installed or ready for installation. In this example we will install the Bridge library. Scroll the list to find it, then select the version of the library you want to install. Sometimes only one version of the library is available. If the version selection menu does not appear, don't worry: it isnormal.

There are times you have to be patient with it, just as shown in the figure. Please refresh it and wait.





Finally click on install and wait for the IDE to install the new library. Downloading may take time depending on your connection speed. Once it has finished, an Installed tag should appear next to the Bridge library. You can close the library manager.

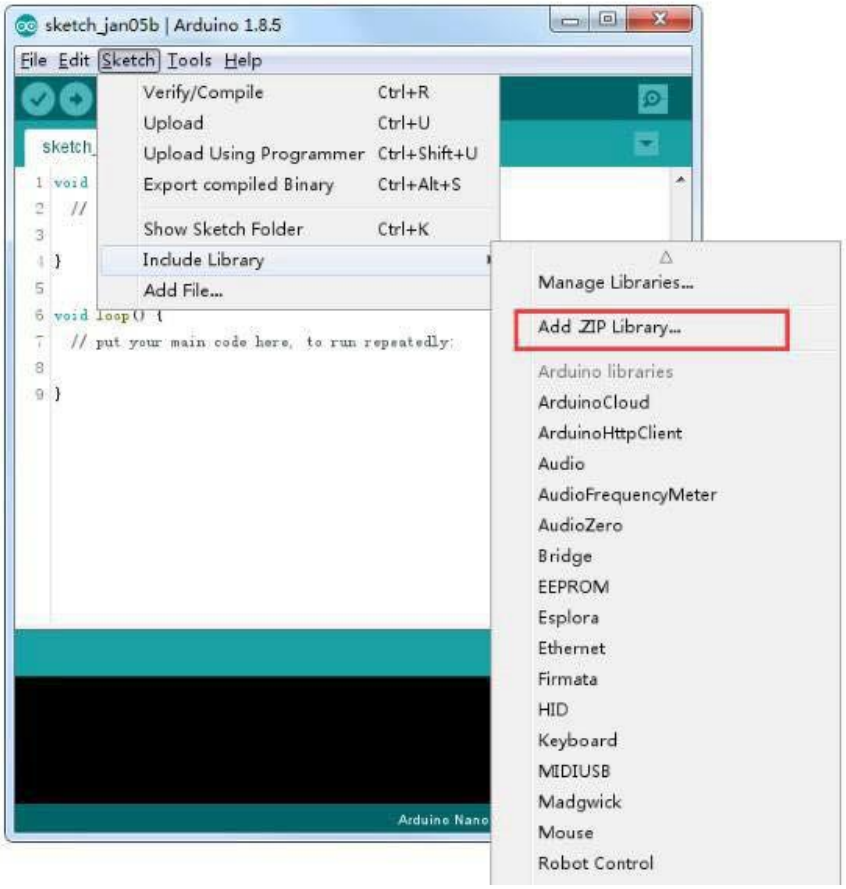


You can now find the new library available in the Include Library menu. If you want to add your own library open a new issue on **GitHub**.

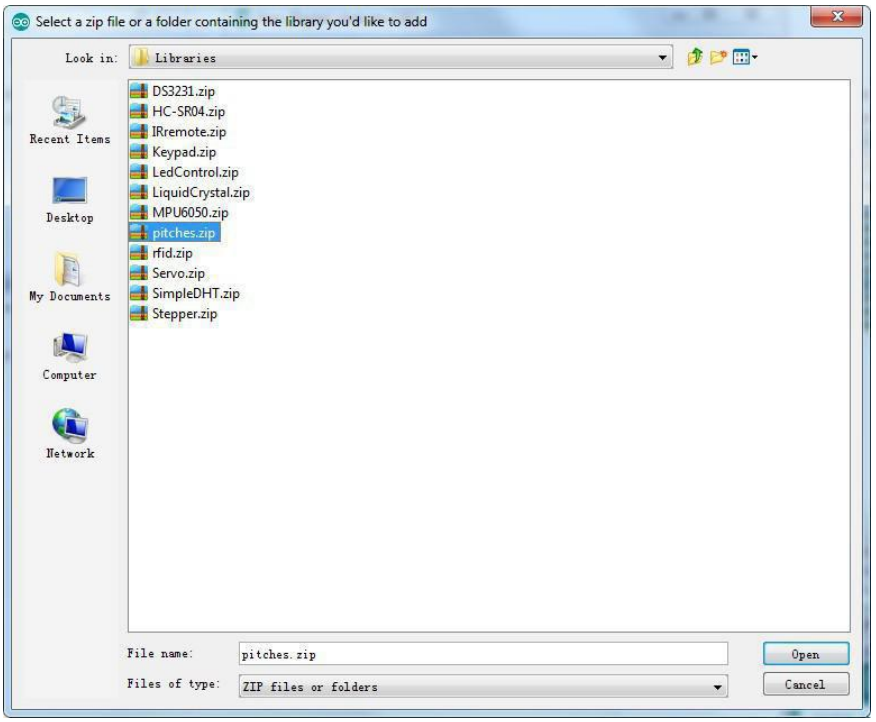
Importing a .zip Library

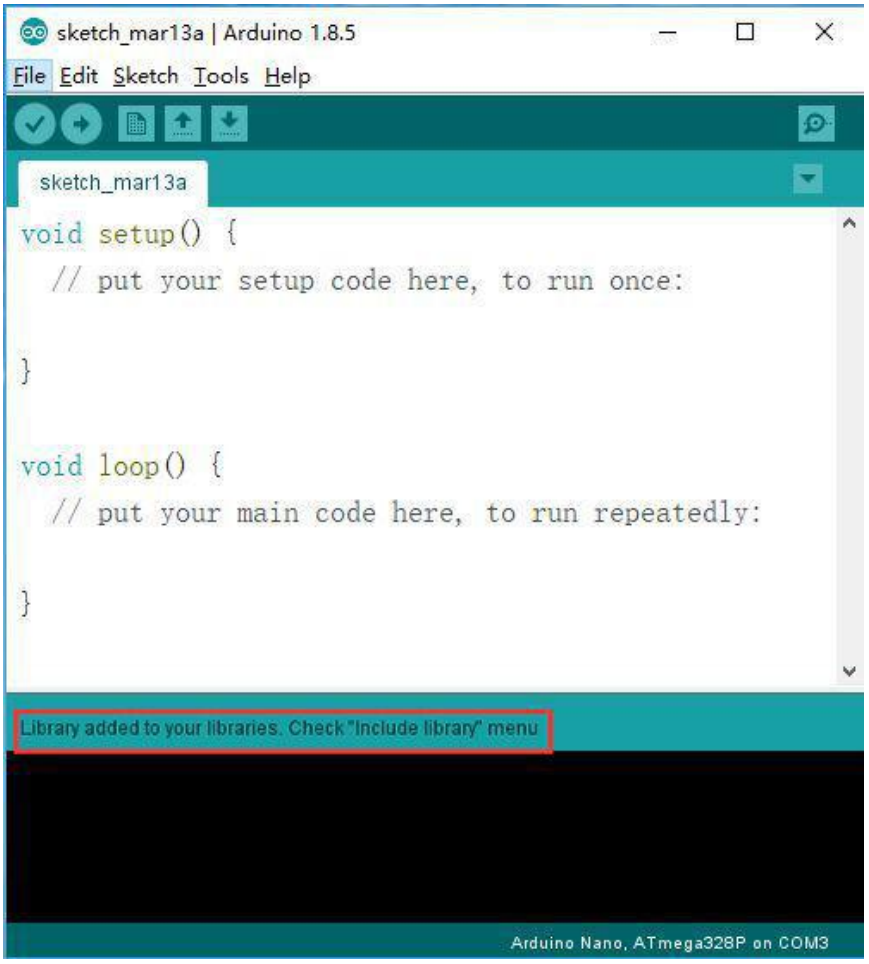
Libraries are often distributed as a ZIP file or folder. The name of the folder is the name of the library. Inside the folder will be a .cpp file, a .h file and often a keywords.txt file, examples folder, and other files required by the library. Starting with version 1.0.5, you can install 3rd party libraries in the IDE. Do not unzip the downloaded library, leave it asis.

In the Arduino IDE, navigate to Sketch > Include Library. At the top of the drop down list, select the option to "Add .ZIP Library''.



You will be prompted to select the Librariesyou would like to add. Navigate to the .zip file's location and open it.



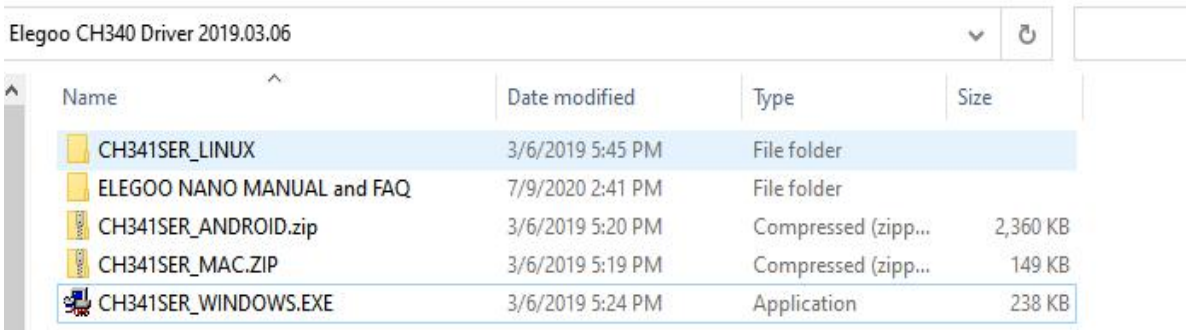


Install CH340 driver software

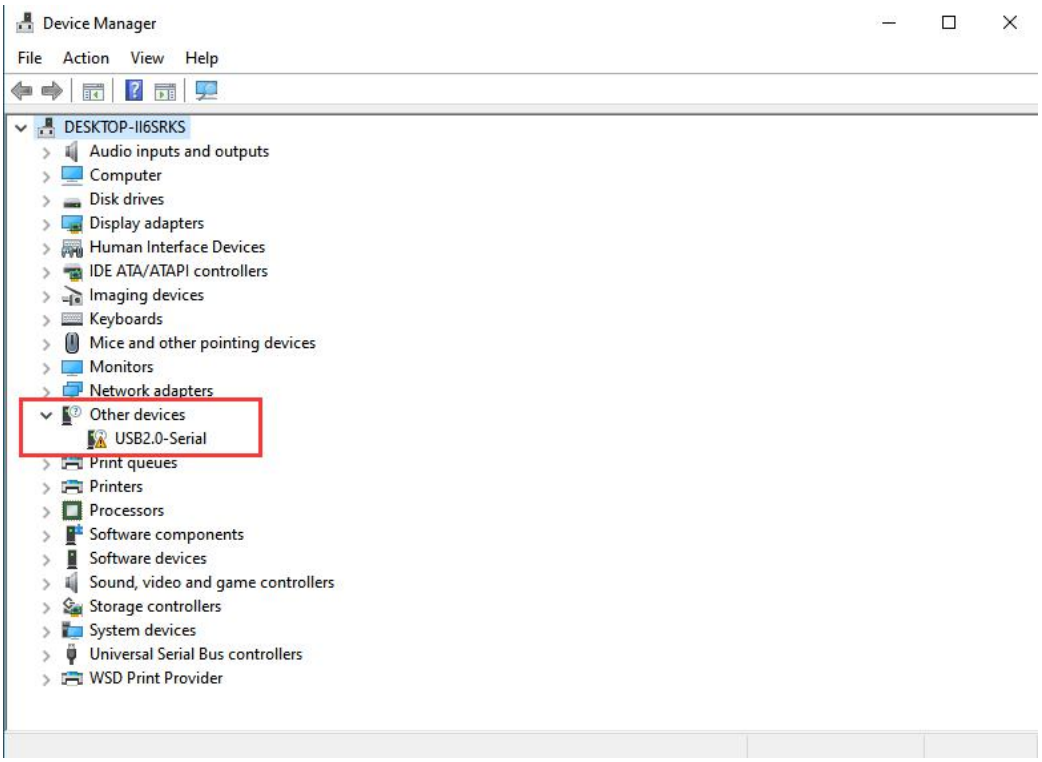
You can download the CH340 driver software from this link:

https://download.elegoo.com/?t=Nano3.0

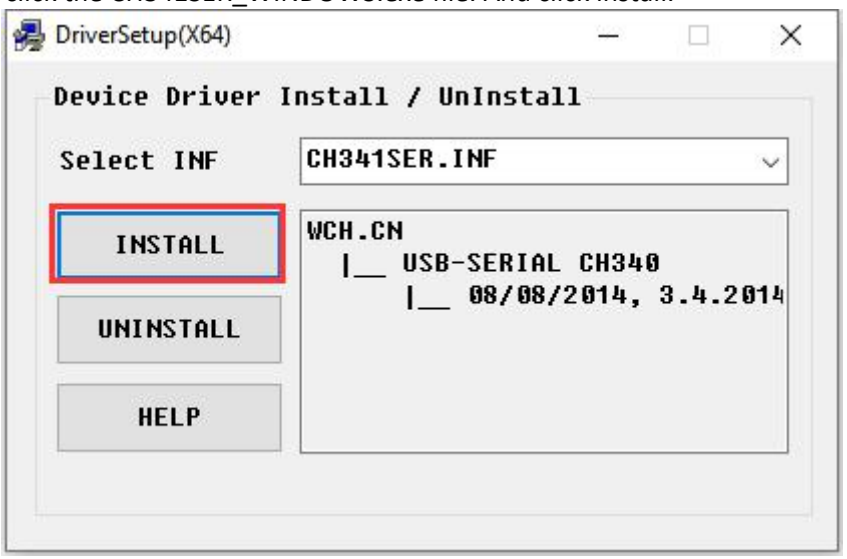
After you open the tutorial file, you can find CH341SER_LINUX,CH341SER_MAC, and CH341SER_WINDOWS.exe file.



Please connect the Nano board to your computer and open the device manager. You will see the window below



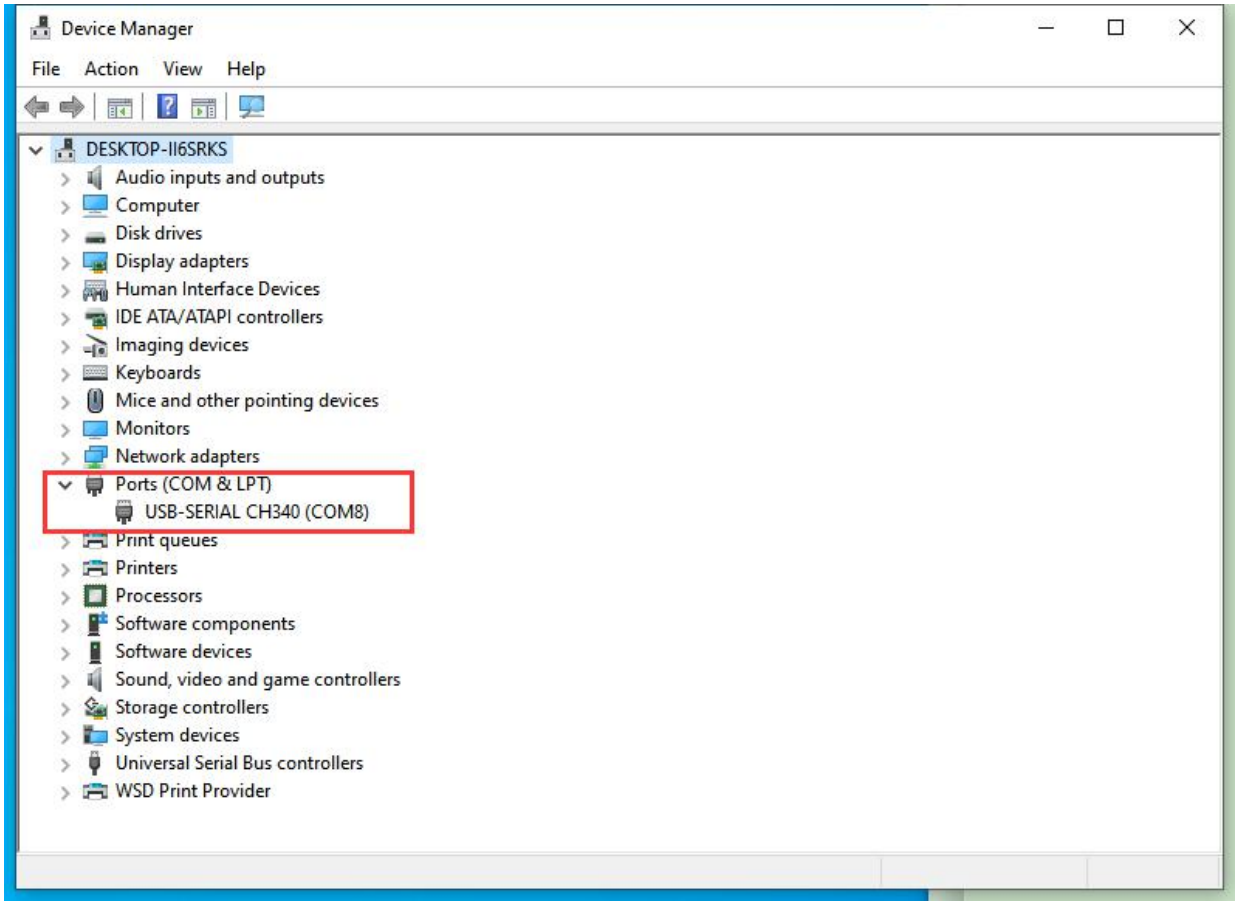
Please double click the CH341SER_WINDOWS.exe file. And click install.



After you install the CH340 driver, please check the Nano board on the device manager again.

If it shows as “USB-SERIAL CH340(COM)”, it means you install the driver successfully. Note:

the com number in different computer is different.

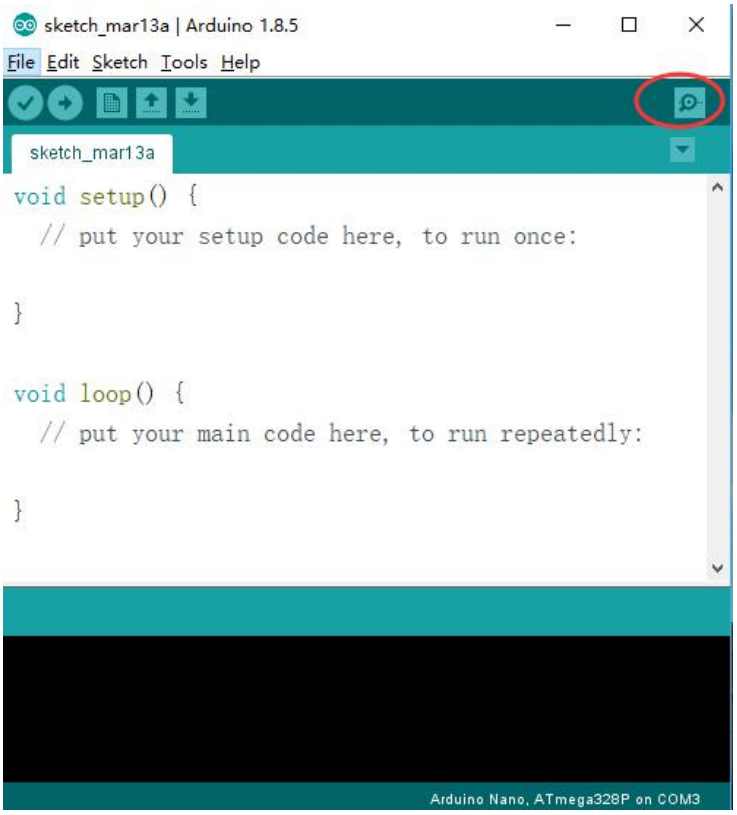


Lesson 2 Open Arduino Serial Monitor

The Arduino Integrated Development Environment (IDE) is the software side of the Arduino platform. And, because using a terminal is such a big part of working with Arduinos and other microcontrollers, they decided to include a serial terminal with the software. Within the Arduino environment, this is called the Serial Monitor.

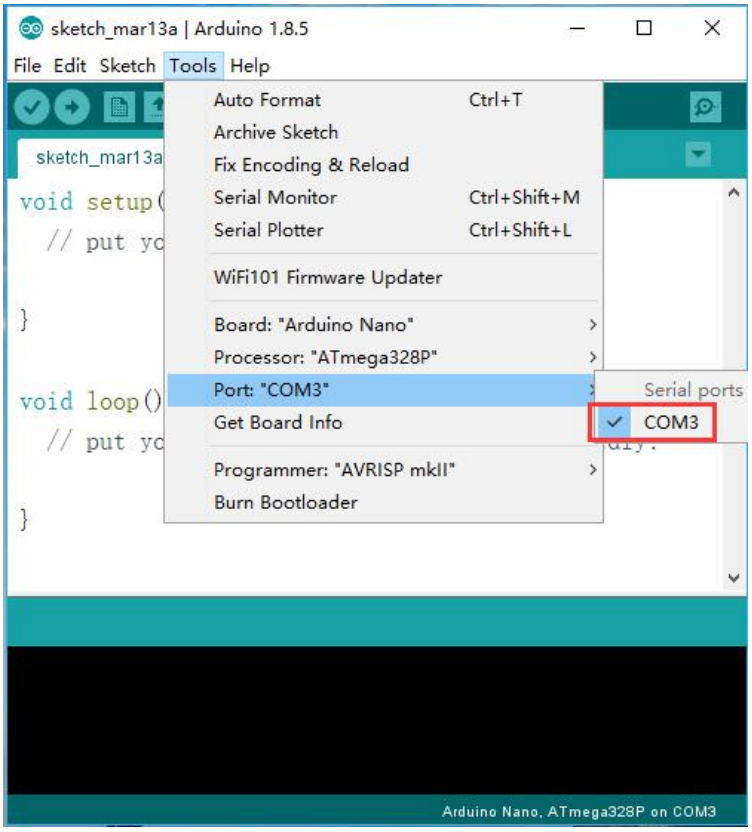
Making a Connection

The serial monitor comes with any and all versions of the Arduino IDE. To open it, simply click the Serial Monitor icon.

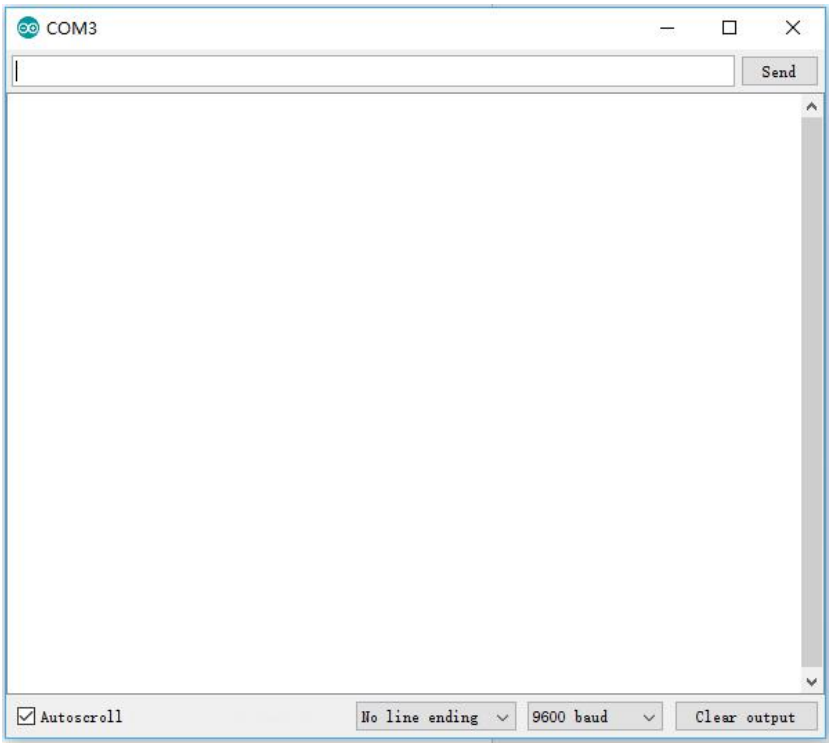


Selecting which port to open in the Serial Monitor is the same as selecting a port for uploading Arduino code. Go to Tools -> Serial Port, and select the correct port.

Tips: Choose the same COM port that is shown in Device Manager.

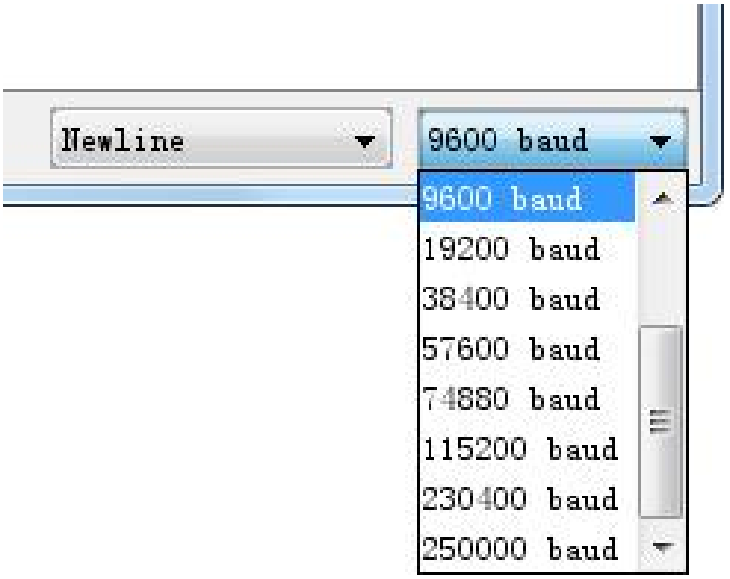


Once open, you should see something like this:



Settings

The Serial Monitor has limited settings, but enough to handle most of your serial communication needs. The first setting you can alter is the baud rate. Click on the baud rate drop-down menu to select the correct baud rate. (9600 baud)



Last, you can set the terminal to Auto scroll or not by checking the box in the bottom left corner.



Pros

The Serial Monitor is a great quick and easy way to establish a serial connection with your Arduino. If you're already working in the Arduino IDE, there's really no need to open up a separate terminal to displaydata.

Cons

The lack of settings leaves much to be desired in the Serial Monitor. And for advanced serial communications, it may not do the trick.

Lesson 3 Upload Code To The Nano Board

Overview

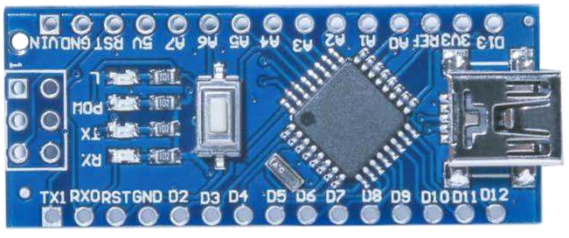
In this lesson, you will learn how to program your Nano R3 controller board to blink the Arduino's built-in LED, and how to download programs by basic steps.

Component Required:

(1) x Elegoo Nano

Principle

The Nano R3 board has rows of connectors along both sides that are used to connect to several electronic devices and plug-in 'shields' that extends its capability. It also has a single LED that you can control from your sketches. This LED is built onto the Nano R3 board and is often referred to as the 'L' LED as this is how it is labeled on the board.



You may find that your Nano R3 board's 'L' LED already blinks when you connect it to a USB plug. This is because the boards are generally shipped with the 'Blink' sketch pre-installed.

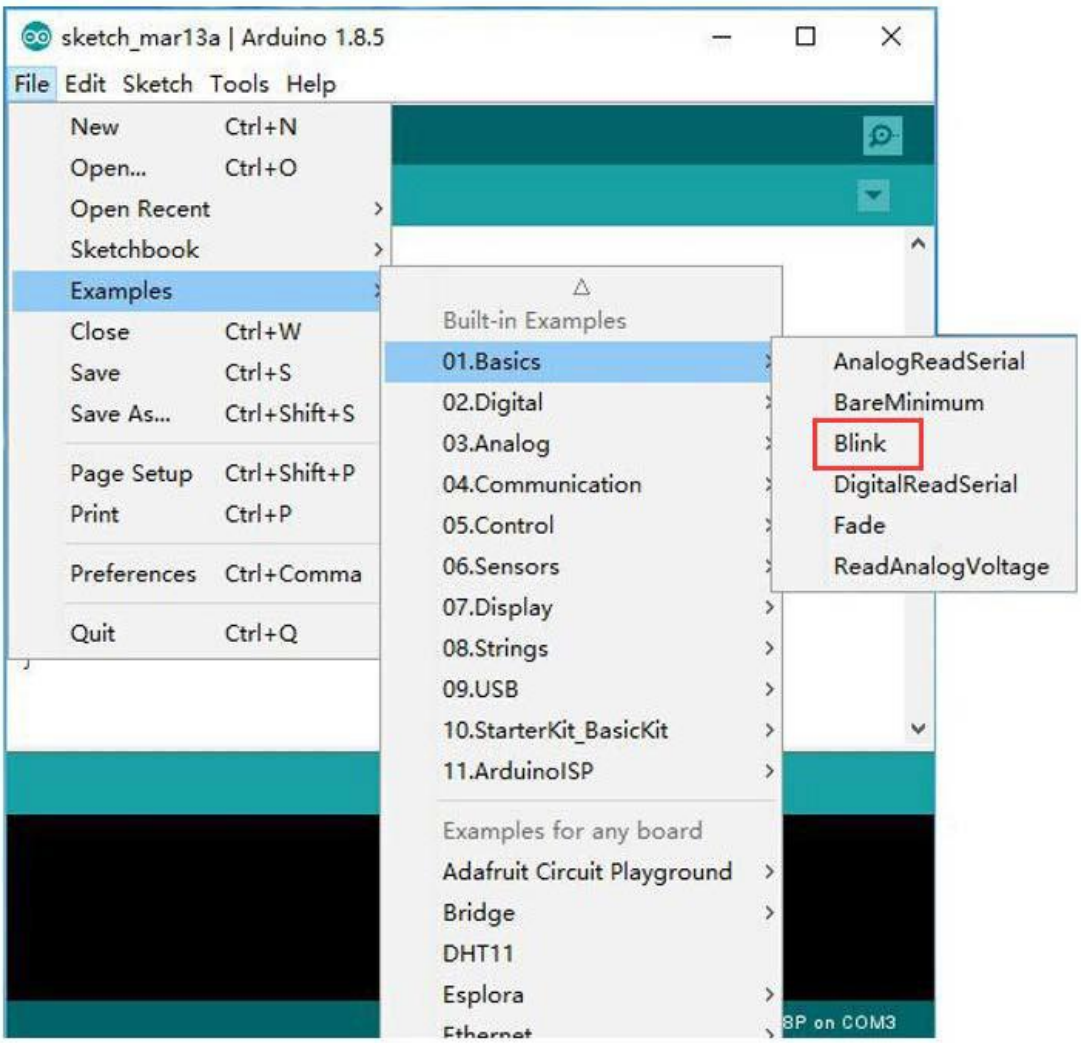
In this lesson, we will reprogram the Nano R3 board with our own Blink sketch and then change the rate at which itblinks.

In Lesson 0, you set up your Arduino IDE and made sure that you could find the right serial port for it to connect to your Nano R3 board. The time has now come to put that connection to the test and program your Nano R3 board.

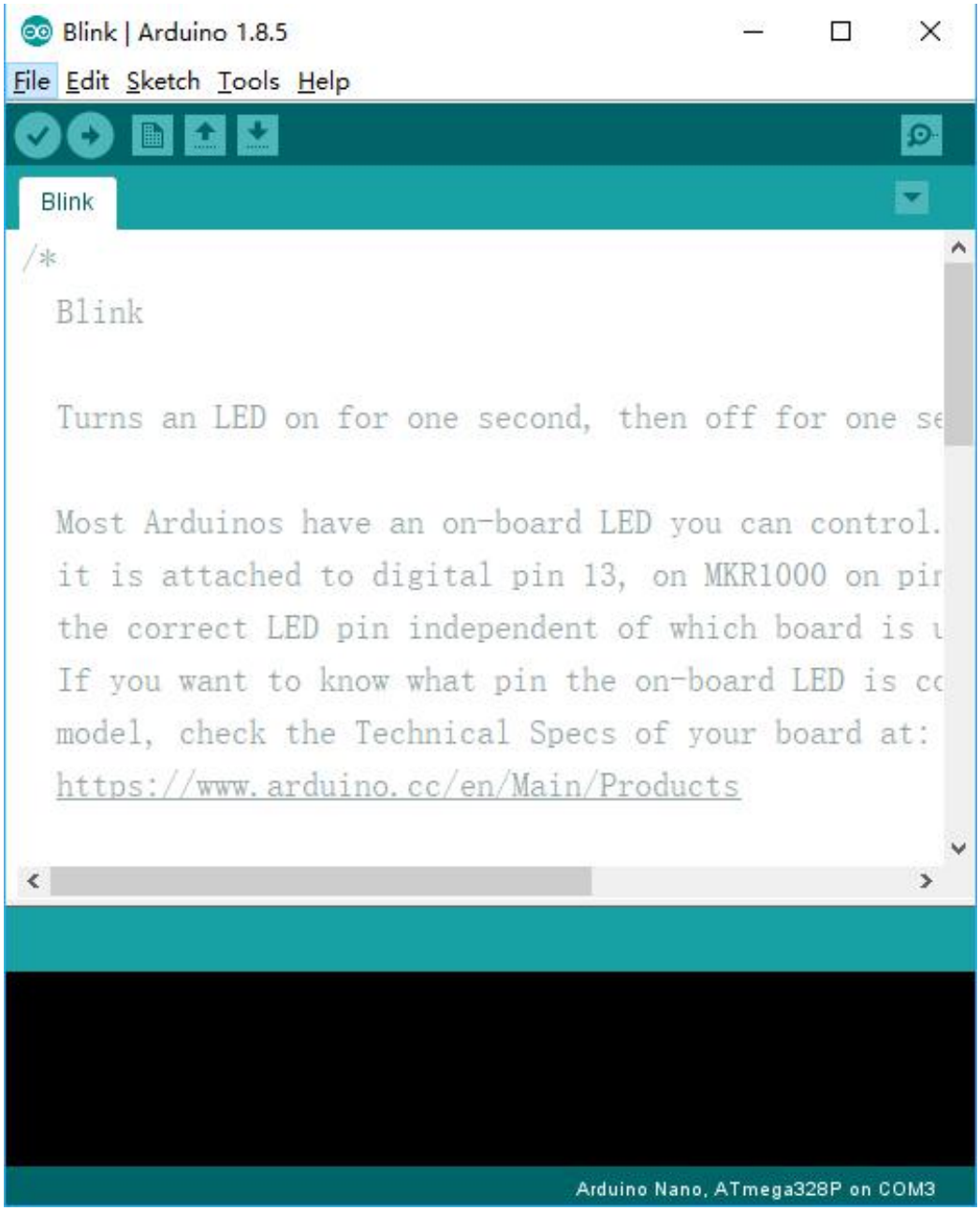
The Arduino IDE includes a large collection of example sketches that you can load up and use. This includes an example sketch for making the 'L' LED blink.

Load the 'Blink' sketch that you will find in the IDE's menu system under File

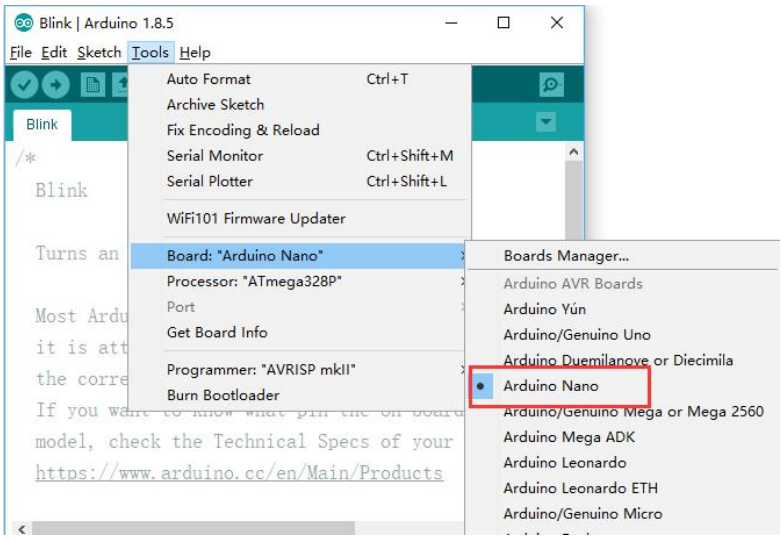
> Examples > 01.Basics

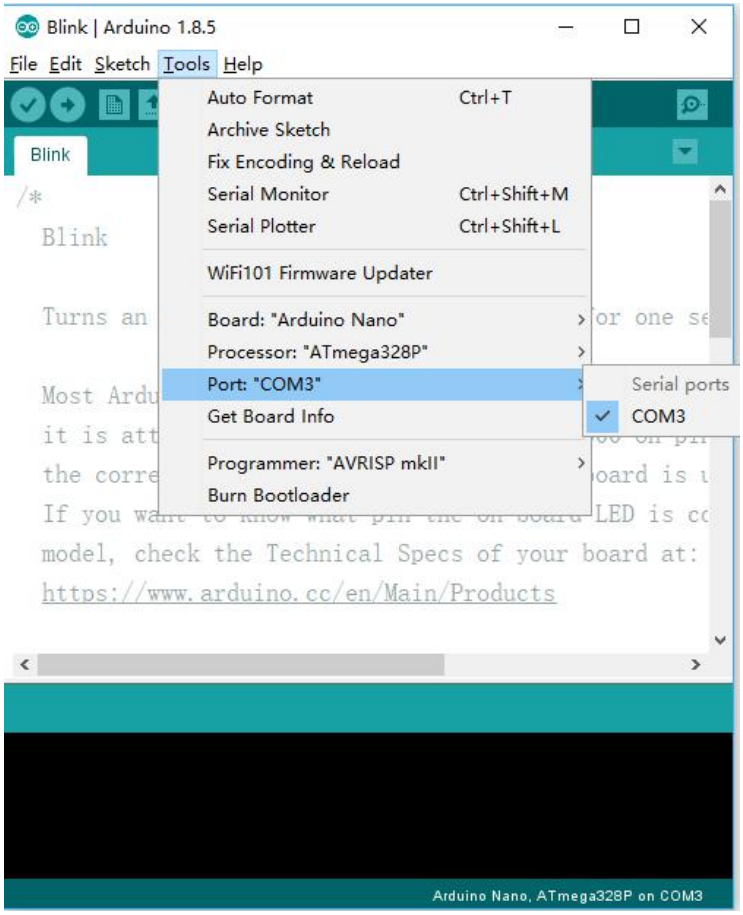


When the sketch window opens, enlarge it so that you can see the entire sketch in the window.

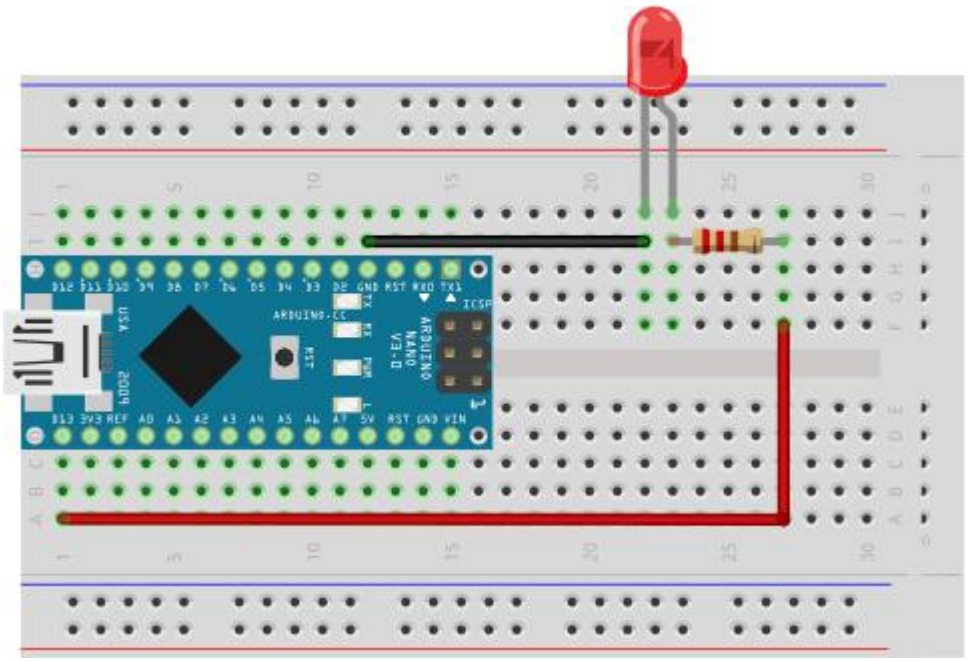


Attach your Arduino board to your computer with the USB cable and check that the 'Board Type' and 'Serial Port' are set correctly.





Wiring diagram



Code

```
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 the voltage level) delay(1000);
                                        // wait for a second digitalWrite(LED_BUILTIN, LOW);
                                       // turn the LED off by making the voltage LOW delay(1000);
                                        // wait for a second
}
```