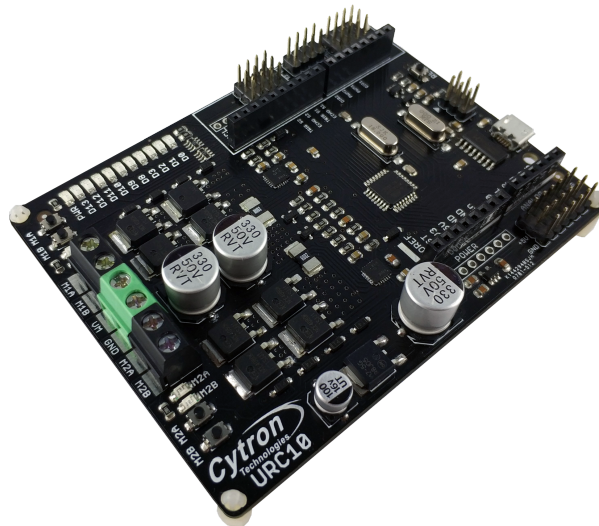




## SUMO ROBOT CONTROLLER CODE: URC10



## User's Manual V1.2

April 2019

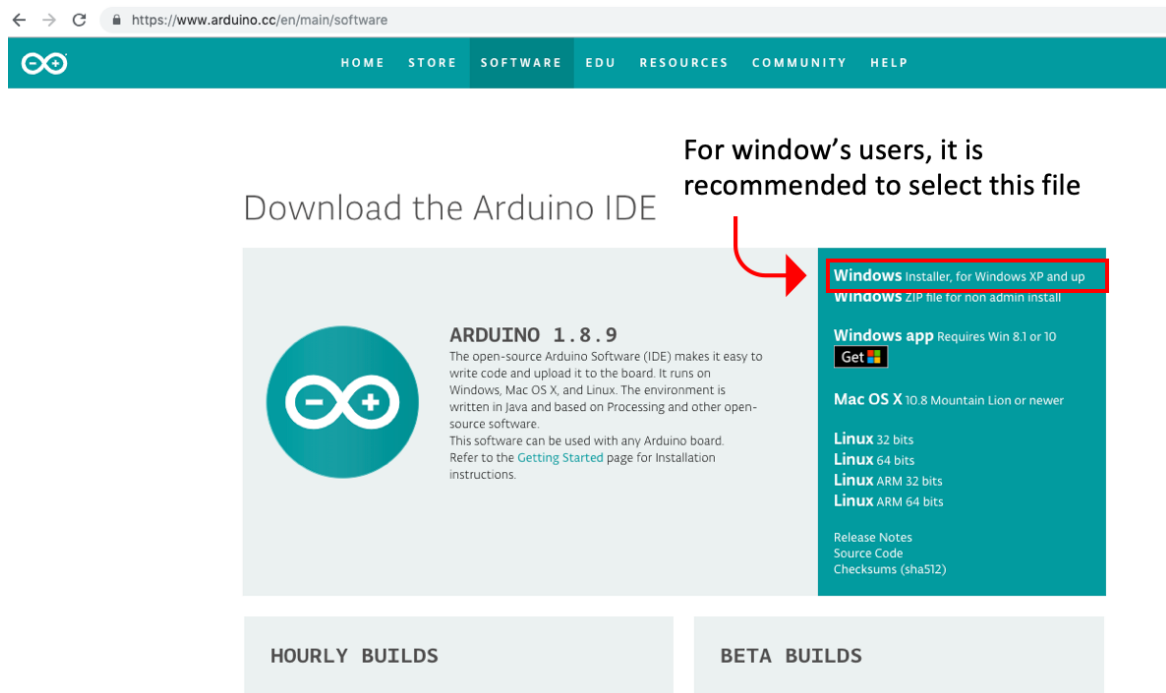
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## 1.0 Download & Install Arduino IDE

If this is your first time using Arduino board, you need to install Arduino IDE where you can write your code, compile and download it into your Arduino boards. You can skip this step if you already have Arduino IDE installed in your PC.

Step 1: Log on to <https://www.arduino.cc/en/main/software>.

Step 2: Choose your OS



The screenshot shows the Arduino IDE download page. The browser address bar displays <https://www.arduino.cc/en/main/software>. The navigation menu includes HOME, STORE, SOFTWARE, EDU, RESOURCES, COMMUNITY, and HELP. The main heading is "Download the Arduino IDE". Below this, the Arduino logo is shown next to the text "ARDUINO 1.8.9". A red arrow points from the text "For window's users, it is recommended to select this file" to a red box around the "Windows installer, for Windows XP and up" option in the download list. The download list also includes "Windows app", "Mac OS X 10.8 Mountain Lion or newer", and "Linux 32 bits", "Linux 64 bits", "Linux ARM 32 bits", and "Linux ARM 64 bits". At the bottom, there are buttons for "HOURLY BUILDS" and "BETA BUILDS".

For window's users, it is recommended to select this file

Download the Arduino IDE

**ARDUINO 1.8.9**  
The open-source Arduino Software (IDE) makes it easy to write code and upload it to the board. It runs on Windows, Mac OS X, and Linux. The environment is written in Java and based on Processing and other open-source software.  
This software can be used with any Arduino board. Refer to the [Getting Started](#) page for Installation instructions.

- Windows installer, for Windows XP and up  
Windows ZIP file for non-admin install
- Windows app Requires Win 8.1 or 10  
Get
- Mac OS X 10.8 Mountain Lion or newer
- Linux 32 bits
- Linux 64 bits
- Linux ARM 32 bits
- Linux ARM 64 bits

Release Notes  
Source Code  
Checksums (sha512)

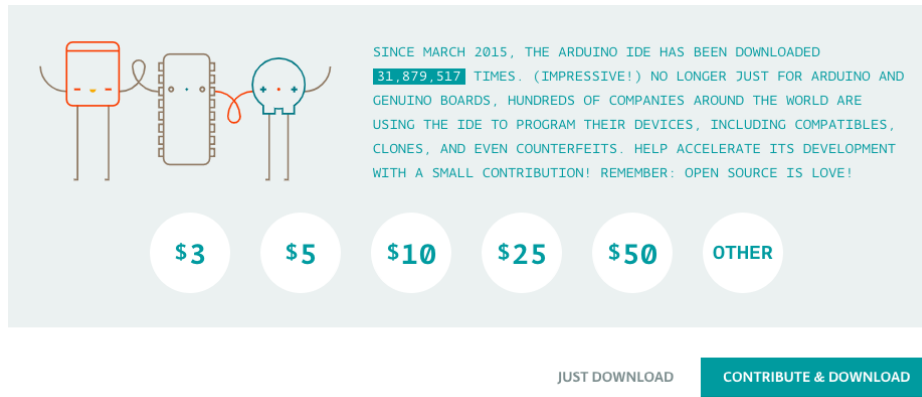
HOURLY BUILDS      BETA BUILDS

Step 3: Arduino IDE is an open source software that allows you to download and use it for free.

However, you are encouraged to make a monetary contribution to help them to continue funding their development. Anyway, you are free to click “JUST DOWNLOAD”.

## 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.](#)

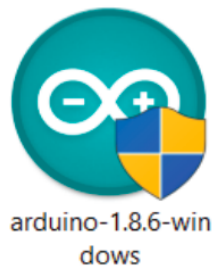


SINCE MARCH 2015, THE ARDUINO IDE HAS BEEN DOWNLOADED **31,879,517** TIMES. (IMPRESSIVE!) NO LONGER JUST FOR ARDUINO AND GENUINO BOARDS, HUNDREDS OF COMPANIES AROUND THE WORLD ARE USING THE IDE TO PROGRAM THEIR DEVICES, INCLUDING COMPATIBLES, CLONES, AND EVEN COUNTERFEITS. HELP ACCELERATE ITS DEVELOPMENT WITH A SMALL CONTRIBUTION! REMEMBER: OPEN SOURCE IS LOVE!

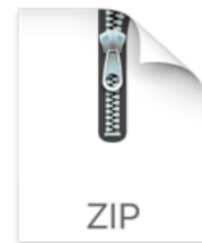
\$3 \$5 \$10 \$25 \$50 OTHER

JUST DOWNLOAD CONTRIBUTE & DOWNLOAD

Step 4: Double click on the downloaded file to proceed.



For Window



185.7 MB

For Mac

Step 5: Once installation is completed, the Arduino’s icon will appear. Double click the icon to launch the Arduino IDE.



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## 2.0 Install Driver for CH340

This board uses CH340 USB to UART converter. To use it, we need to install the CH340 driver at our PC on the first time. You can skip this step if you have installed this driver before.

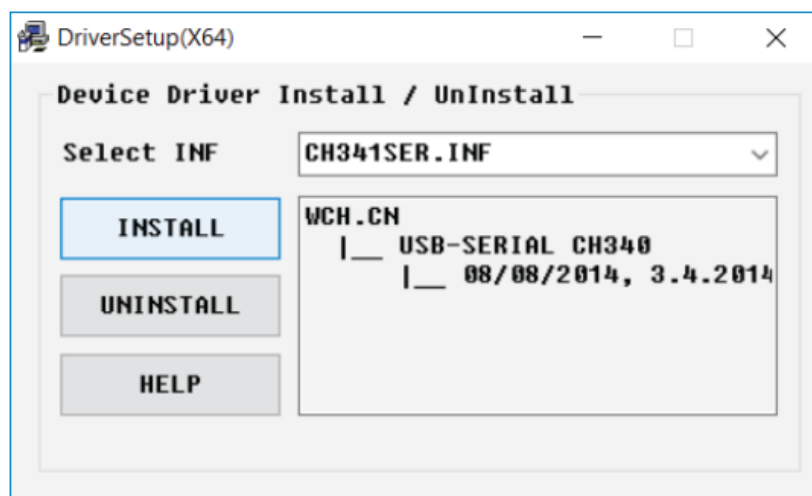
### 2.1 For Window Users

Step 1: Download the driver [here](#).

Step 2: Double click the “CH341SER” file to begin installation.

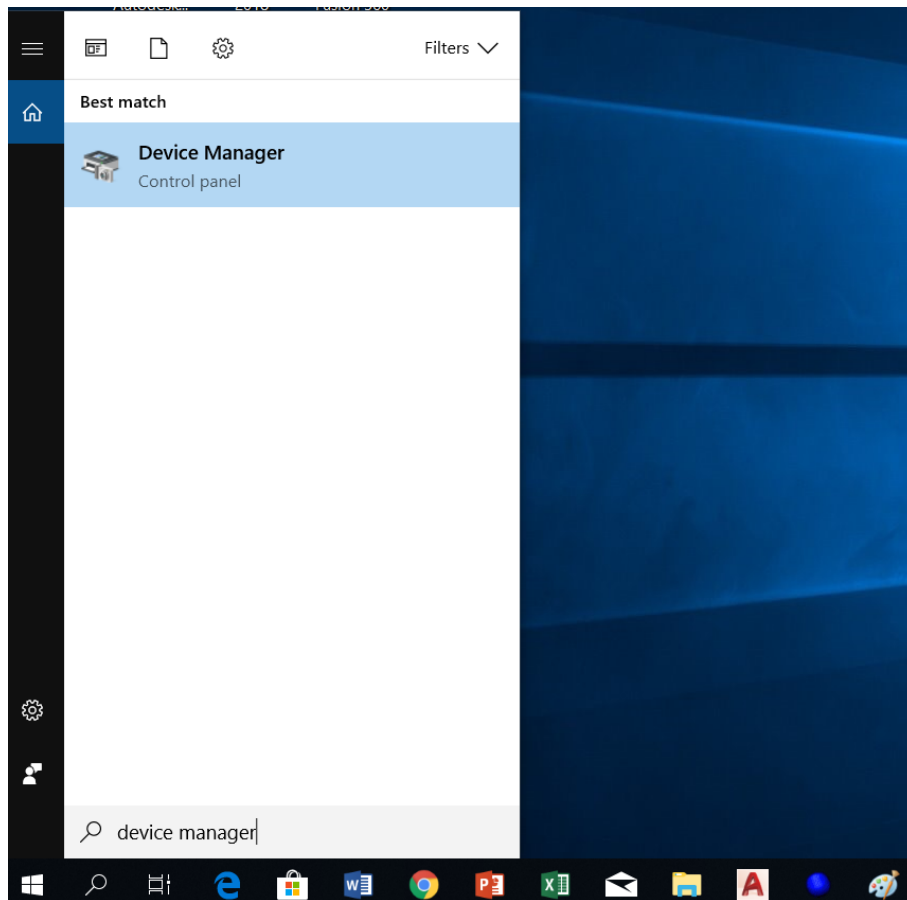


Step 3: Click “INSTALL”.



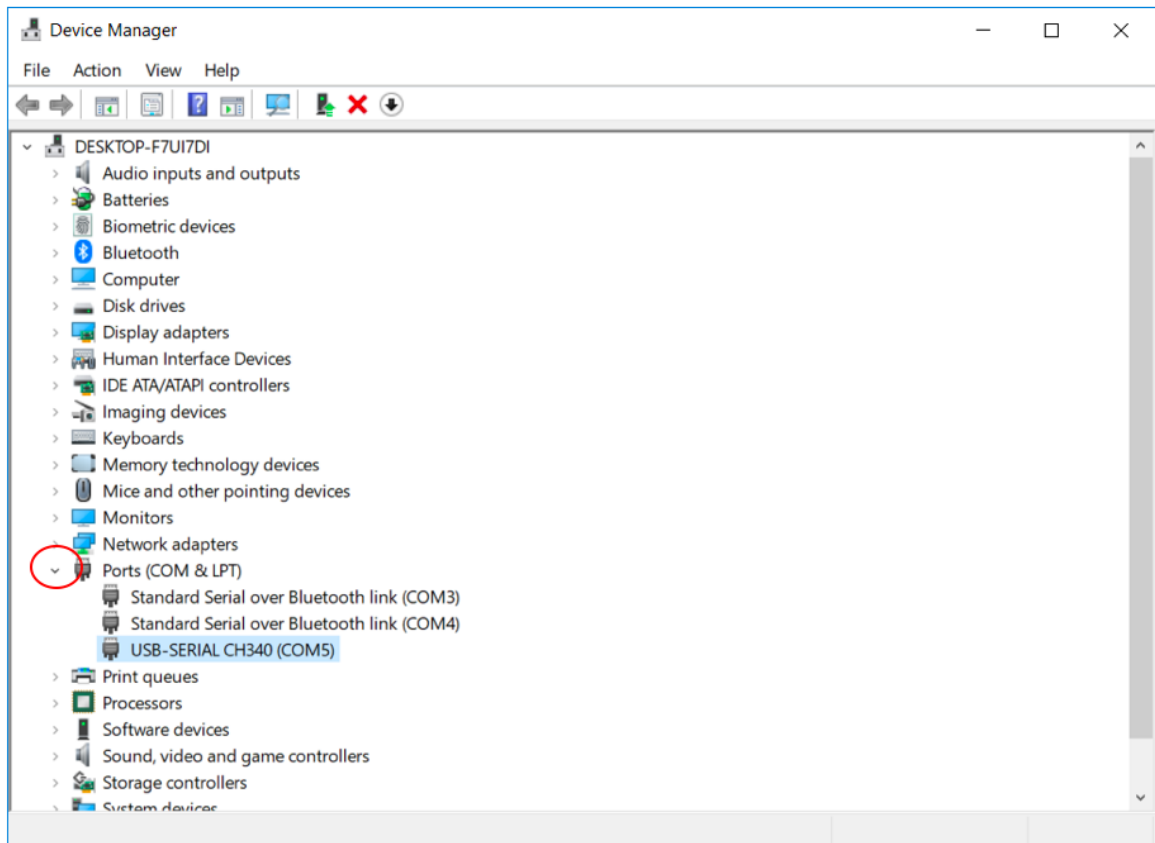
---

Step 4: Go to window search, search for “device manager”.

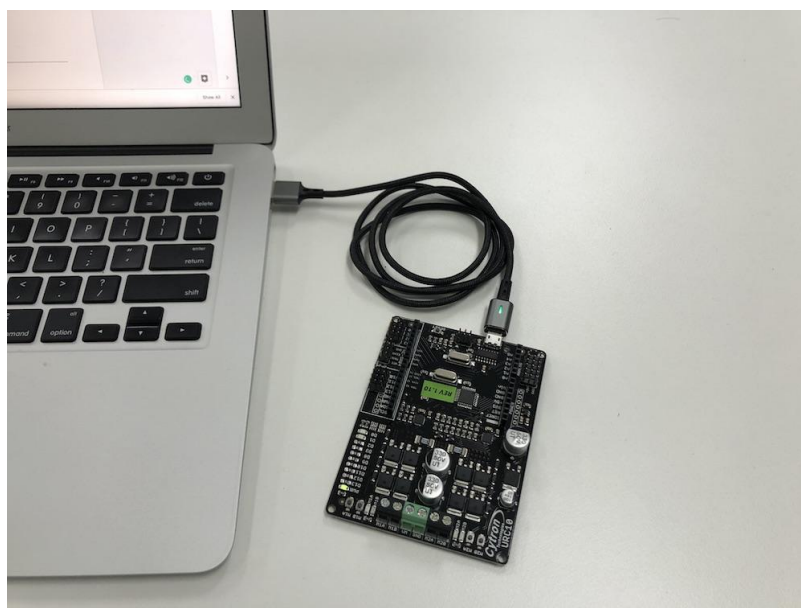


Step 5: At “device manager”, click the down arrow to expand “Ports (COM & LPT)”.

Check which port the CH340 driver is being assigned to. Remember the com number. (For this example, the com number is com 5)



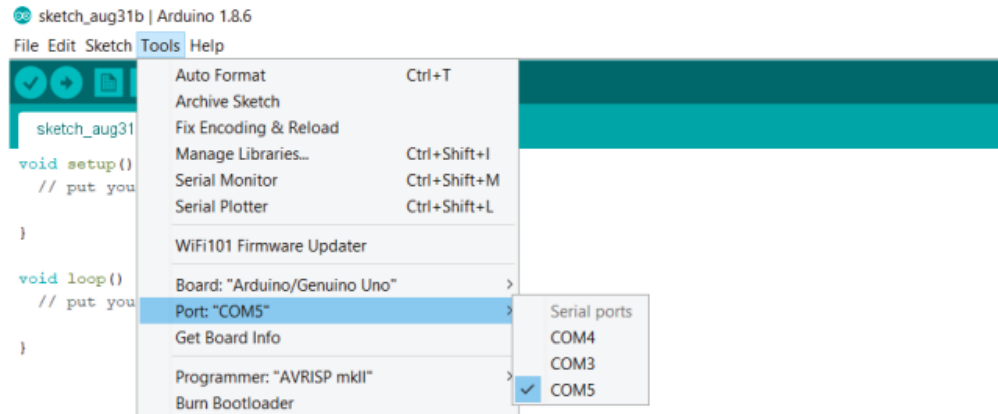
Step 6: Connect the board to your PC using a micro USB cable.



---

Step 7: Launch Arduino IDE. Select the right com port. Tools >Ports >COM X

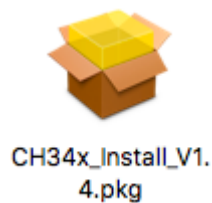
The CH340 driver is assigned to this COM port, remember to select this COM port everytime you want



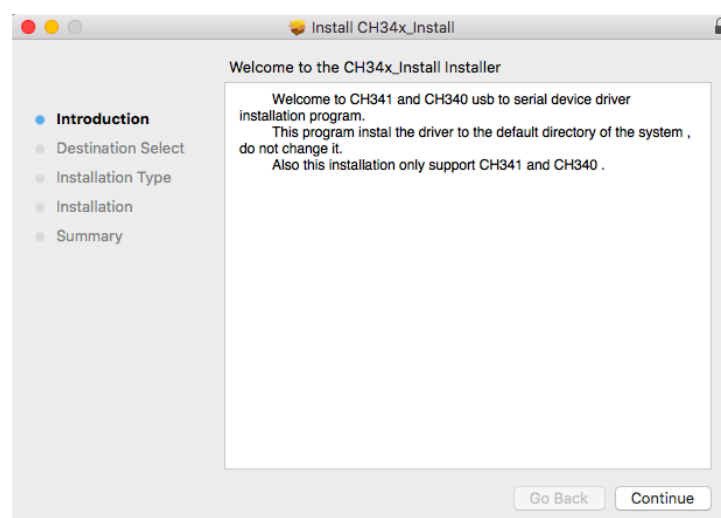
## 2.2 For Mac Users

Step 1: Download the driver [here](#).

Step 2: Double click the zip file, open the unzip folder then double click the pkg file.

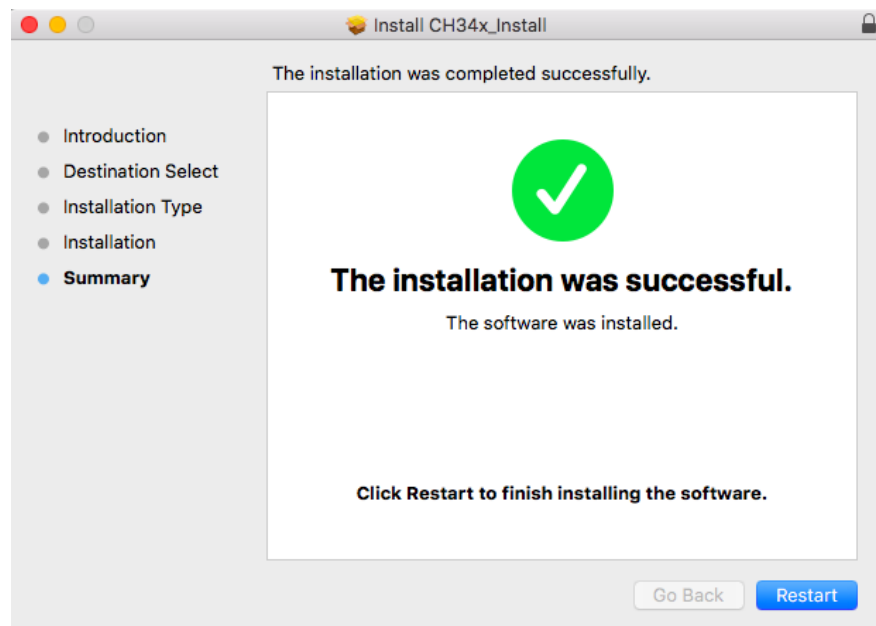


Step 3: Click "Continue" to begin installation.

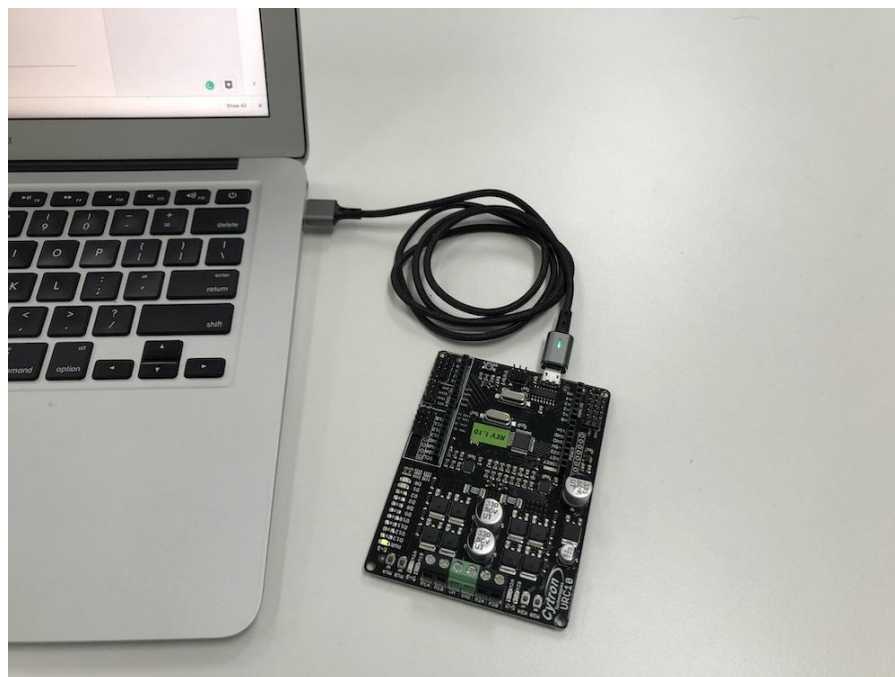


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Step 4: Once complete installing, click “Restart” to restart your Mac.



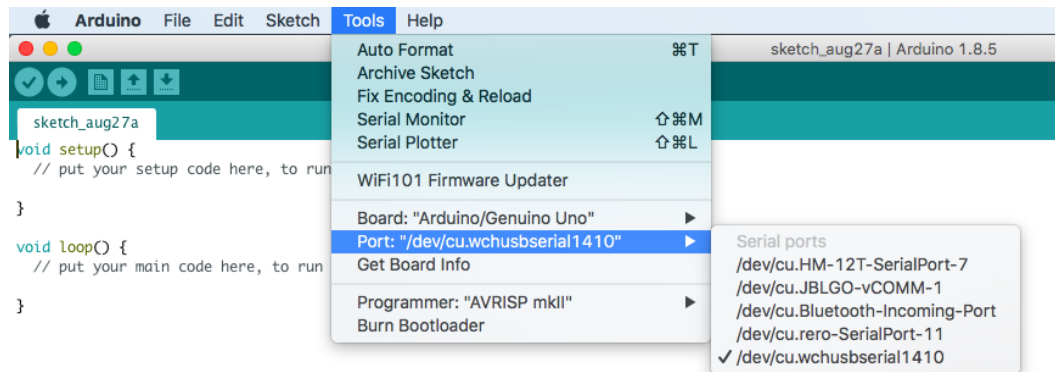
Step 5: After you have restarted your Mac, connect the board to your Mac using a micro USB cable.





Step 6: Launch “Arduino IDE” then choose the right port at Tools > Port > /dev/cu.wchusbserial1410

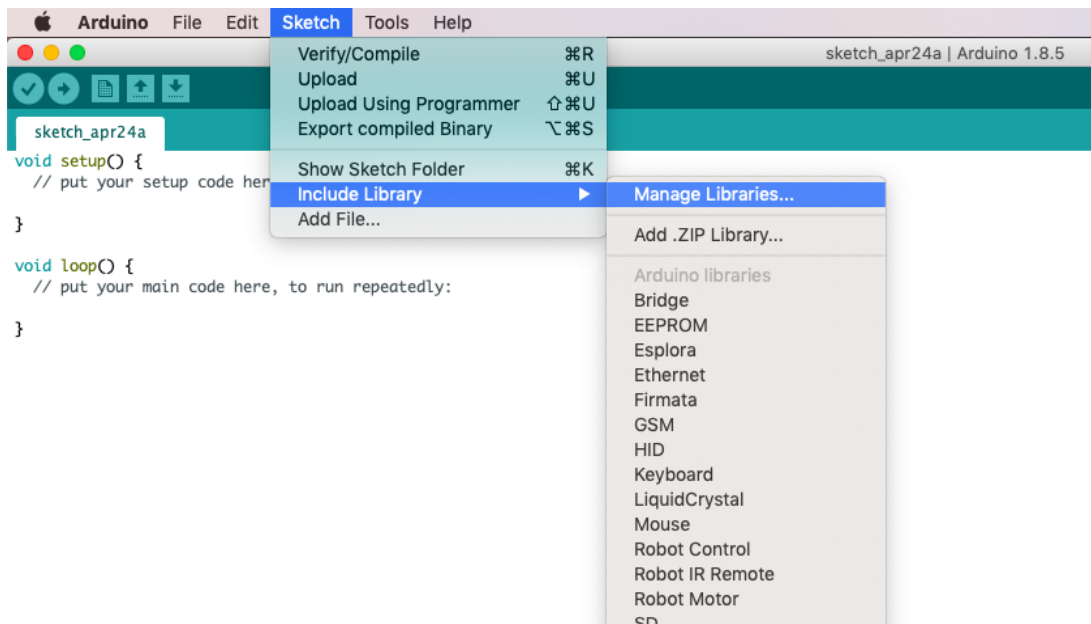
You need to repeat this step every time you want to program a CH340 board.



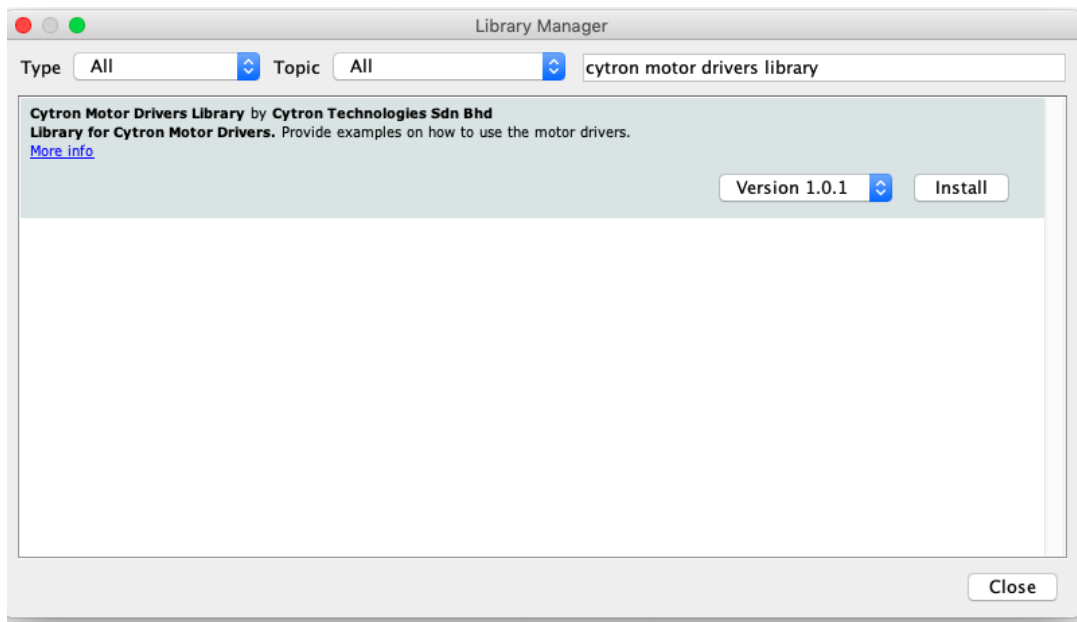
### 3.0 Uploading Sample Code

The sample program involved *Cytron motor driver library*, it is easier to include the library before we load the program.

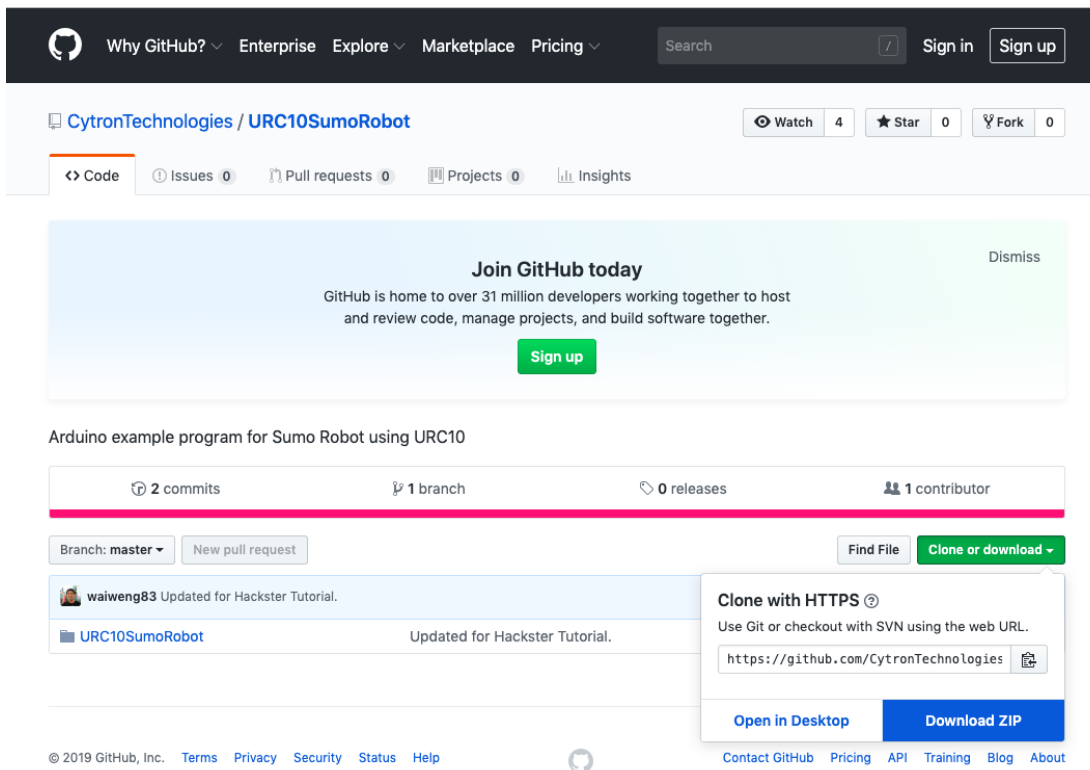
Step 1: Launch Arduino IDE. Go to Sketch > Include Library > Manage Libraries



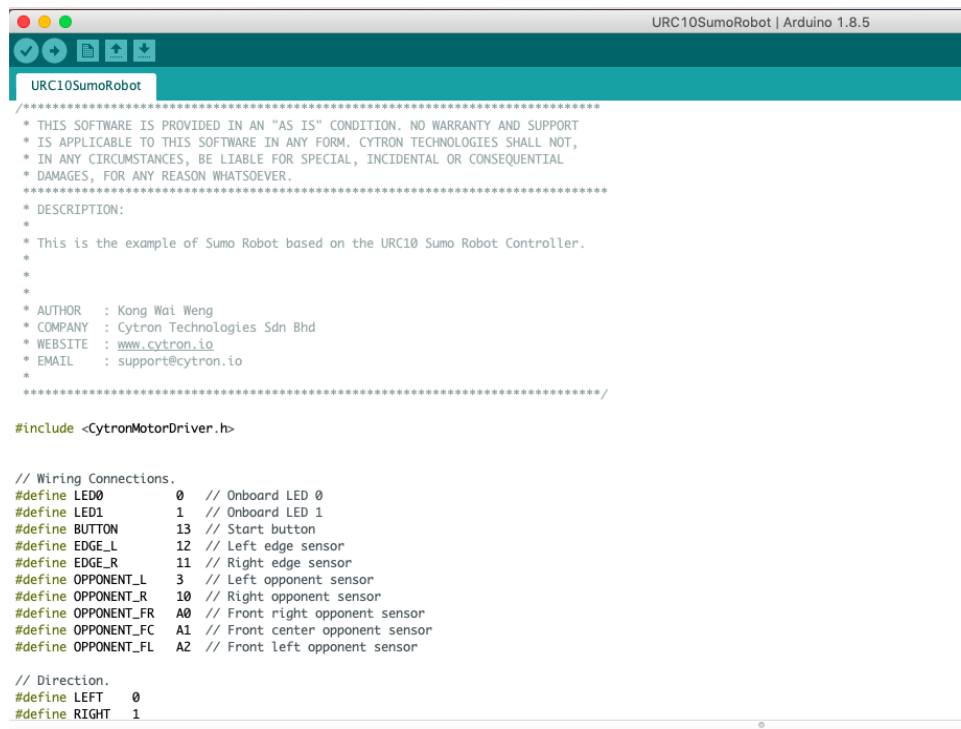
Step 2: Type “cytron motor drivers library” at the search bar. Click the selection then click “install”.



Step 3: Download the sample code [here](#). Click “Clone or download” then “Download ZIP”.



Step 4: Unzip the file, double-click the unzipped file. You will see the sample code as shown below.



```
URC10SumoRobot | Arduino 1.8.5
URC10SumoRobot
/*****
 * THIS SOFTWARE IS PROVIDED IN AN "AS IS" CONDITION. NO WARRANTY AND SUPPORT
 * IS APPLICABLE TO THIS SOFTWARE IN ANY FORM. CYTRON TECHNOLOGIES SHALL NOT,
 * IN ANY CIRCUMSTANCES, BE LIABLE FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL
 * DAMAGES, FOR ANY REASON WHATSOEVER.
 *****/
* DESCRIPTION:
*
* This is the example of Sumo Robot based on the URC10 Sumo Robot Controller.
*
*
* AUTHOR   : Kong Wai Weng
* COMPANY  : Cytron Technologies Sdn Bhd
* WEBSITE  : www.cytron.io
* EMAIL    : support@cytron.io
*****/

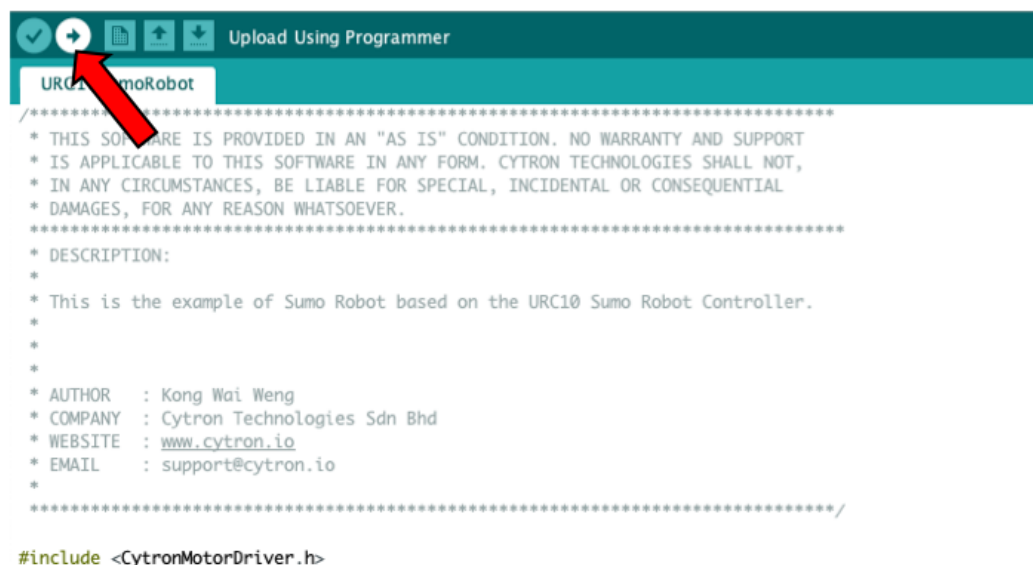
#include <CytronMotorDriver.h>

// Wiring Connections.
#define LED0 0 // Onboard LED 0
#define LED1 1 // Onboard LED 1
#define BUTTON 13 // Start button
#define EDGE_L 12 // Left edge sensor
#define EDGE_R 11 // Right edge sensor
#define OPPONENT_L 3 // Left opponent sensor
#define OPPONENT_R 10 // Right opponent sensor
#define OPPONENT_FR A0 // Front right opponent sensor
#define OPPONENT_FC A1 // Front center opponent sensor
#define OPPONENT_FL A2 // Front left opponent sensor

// Direction.
#define LEFT 0
#define RIGHT 1
```

Step 5: Click the arrow pointed icon to upload the sample code to your board.

You will see the LED at D0 and D1 (on the board) blinking while the code is uploading. Once completed, you will see a message “Done Uploading” appeared at the bottom of the sketch.



```
URC10SumoRobot | Arduino 1.8.5
URC10SumoRobot
/*****
 * THIS SOFTWARE IS PROVIDED IN AN "AS IS" CONDITION. NO WARRANTY AND SUPPORT
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* AUTHOR   : Kong Wai Weng
* COMPANY  : Cytron Technologies Sdn Bhd
* WEBSITE  : www.cytron.io
* EMAIL    : support@cytron.io
*****/

#include <CytronMotorDriver.h>
```

---

## 4.0 Building The Robot

The earlier steps are merely assist you to setup the Arduino IDE and upload the sample code to the board. You still need to construct the robot and connect all the motors and sensors to the board for it to work.

If you are a beginner, you are advised to follow [this post](#) where we shared how to construct the sumo robot in more details.



*Prepared by*  
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