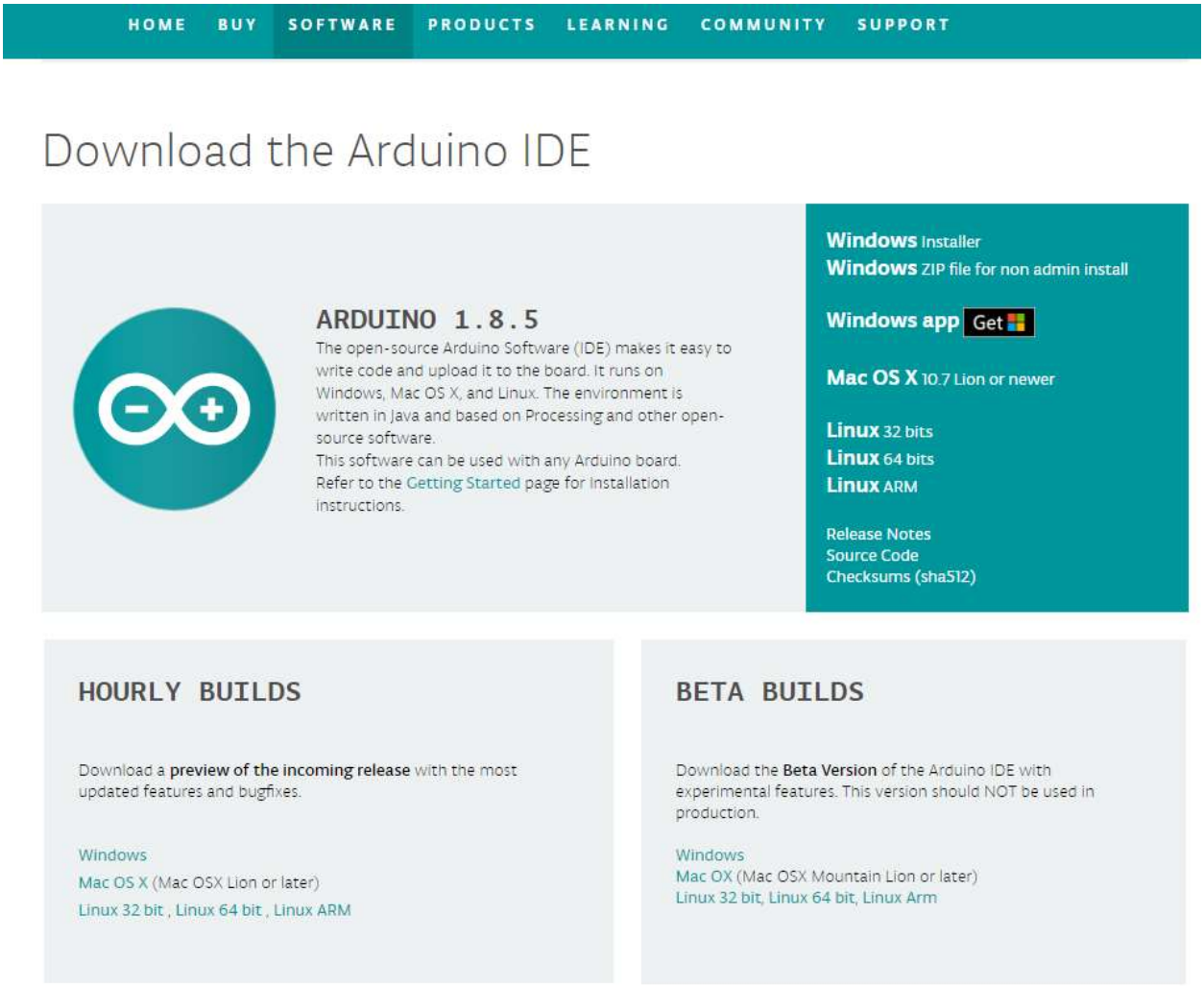
How to Flash the Marlin Firmware

by Brian Minor for the TEVO Tornado Owner's Facebook group

STEP 1 - Download the Arduino software

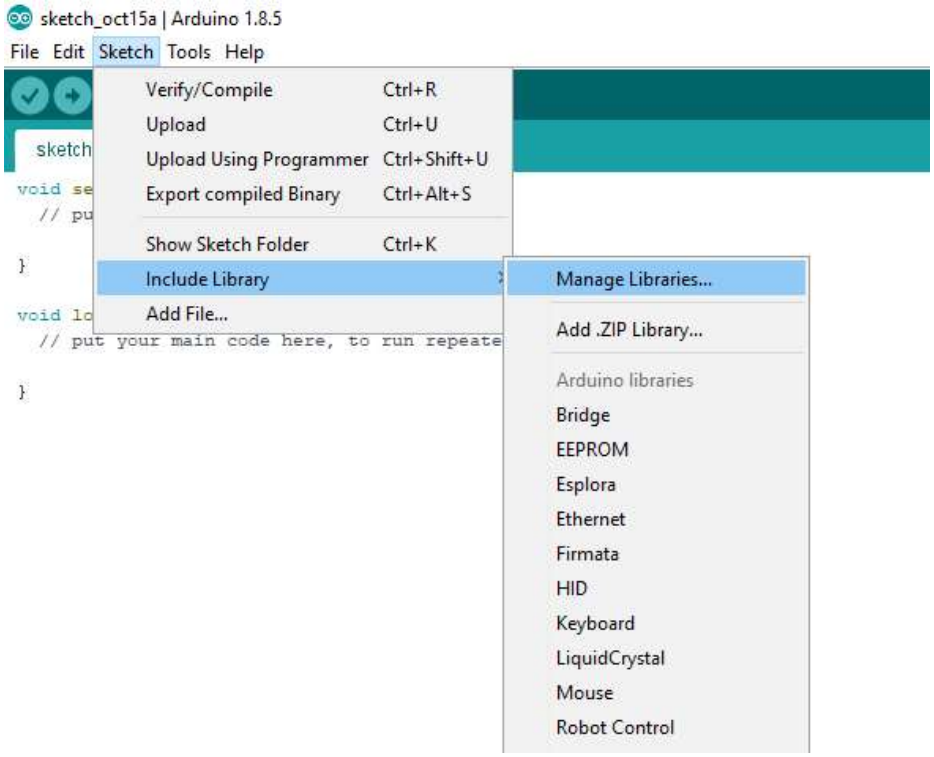
You need to have the Arduino IDE installed (https://www.arduino.cc/en/main/software). I am using version 1.8.5 as it is the latest currently available. Download it from the website and install the software. This will add in the required USB drivers and other components to prepare the firmware (compile it) and install it on the printer (flash it).



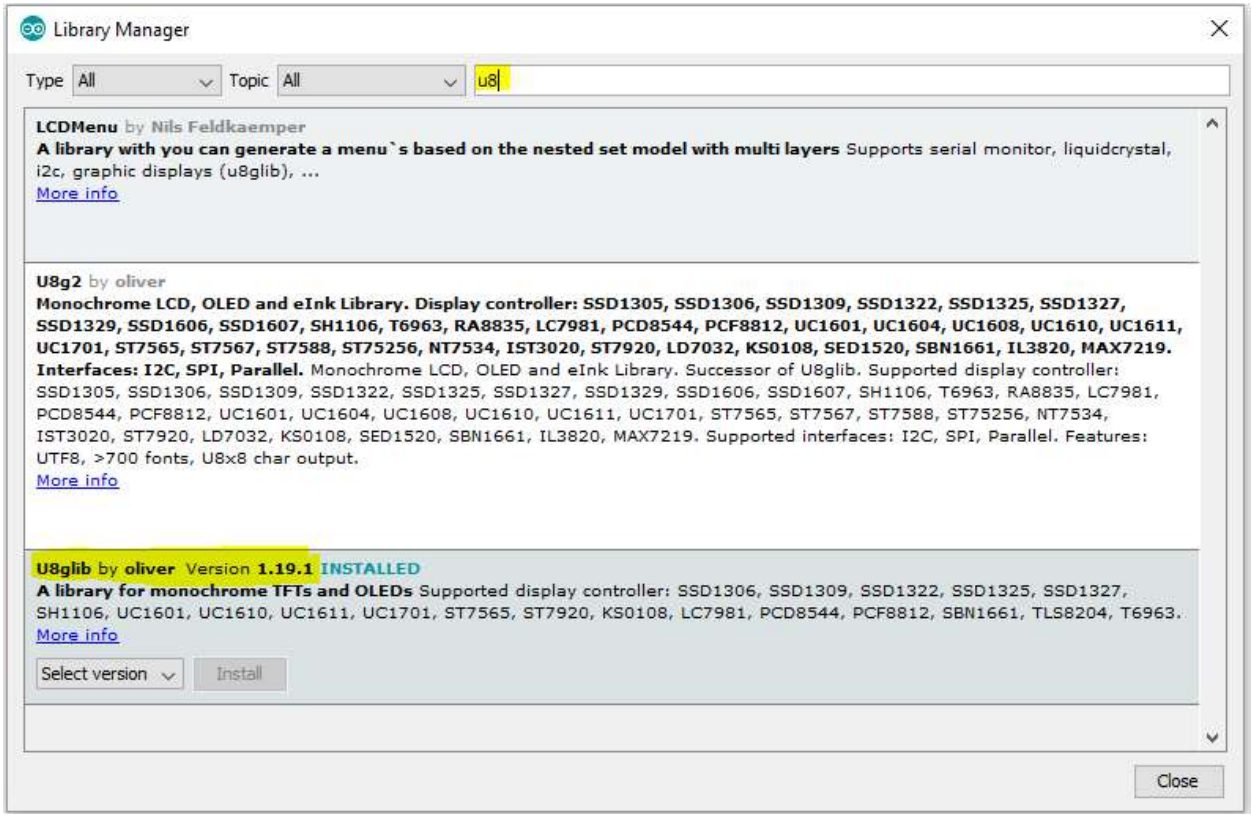
STEP 2 – Install the Arduino software

Once you have the Arduino software installed, you need to add some components required to prepare and use Marlin. Otherwise you will get errors.

(a) You must install the U8glib library.
    a. I installed this through the UI from the menus... Go to Sketch> Include library> Manage libraries... and left click



(b) In the top of the Manage libraries menu you will see a search bar. Type in U8



(c) In the search results, you should see the U8glib library by oliver. Select and install. I am using version 1.19.1. I already have it installed but you will need to click it and select Install.

(d) Once complete, you may click Close to close out this window.

(e) Exit out of the Arduino software for now.

STEP 3 – Download the firmware code

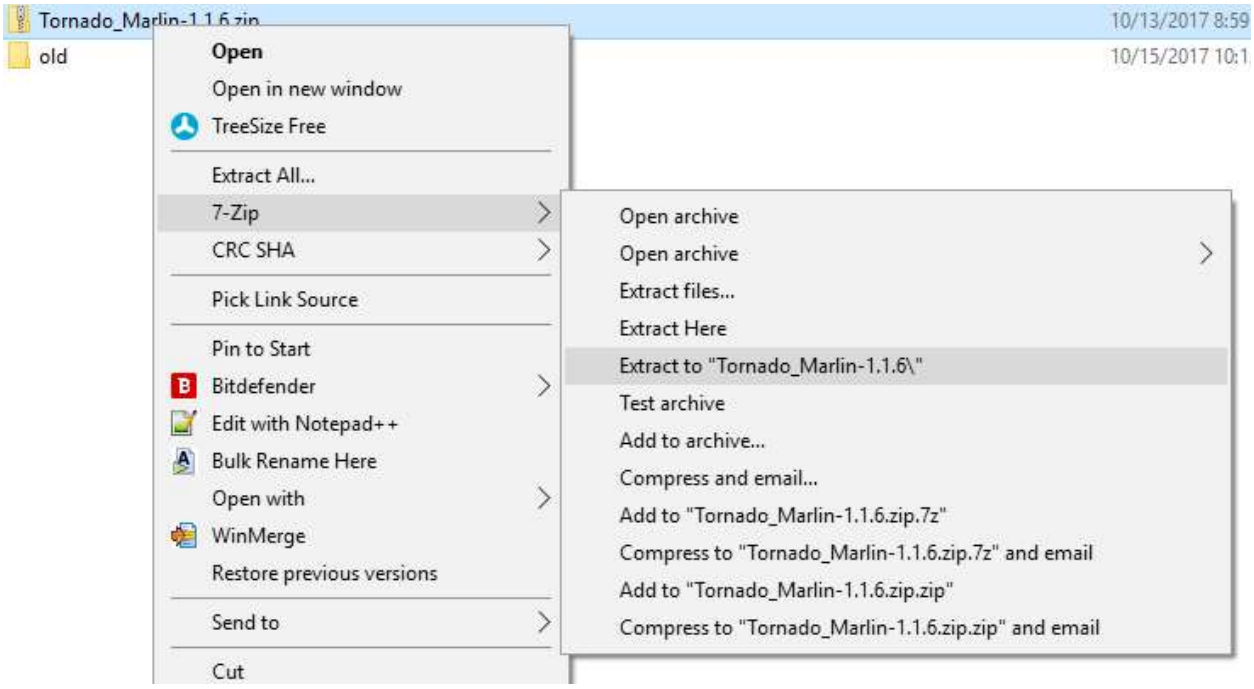
a) Go to the TEVO Tornado Owner's group on Facebook.com

b) Click on Files on the left

c) I have two versions of my firmware currently available. If you are using a BLtouch, then select **Tornado_Marlin-1.1.6_BLtouch.zip** file and download it.

d) If you have a stock Tornado, then select the **Tornado_Marlin-1.1.6.zip** file and download it.

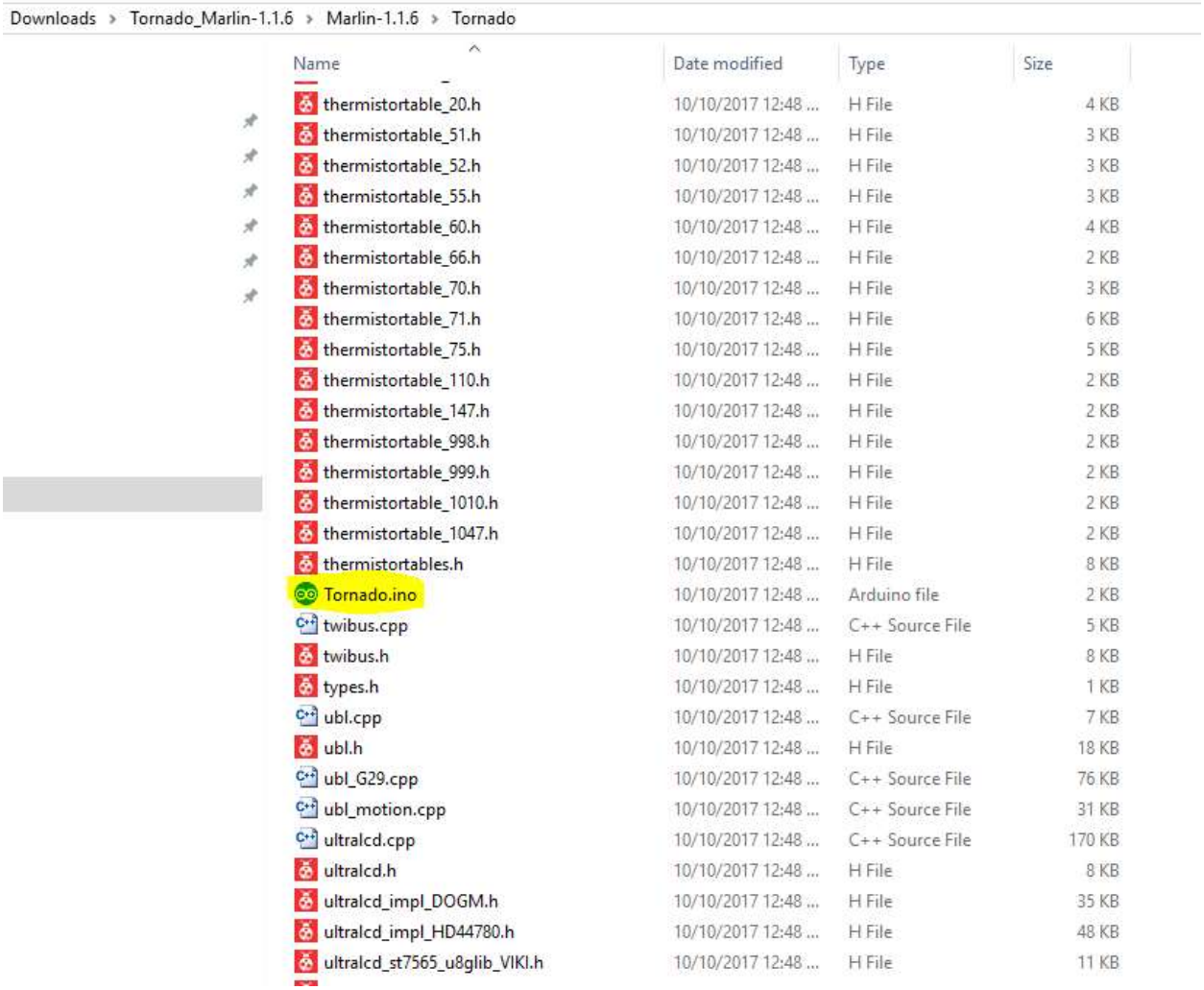
e) Find the zip file you just downloaded and extract it. I am using 7zip but you can use your Zip archiver of choice.



f) Find the folder where the software extracted to. In my example I am using the stock printer. It should be called "Tornado_Marlin-1.1.6" in your Downloads folder or where ever you told the zip file to extract

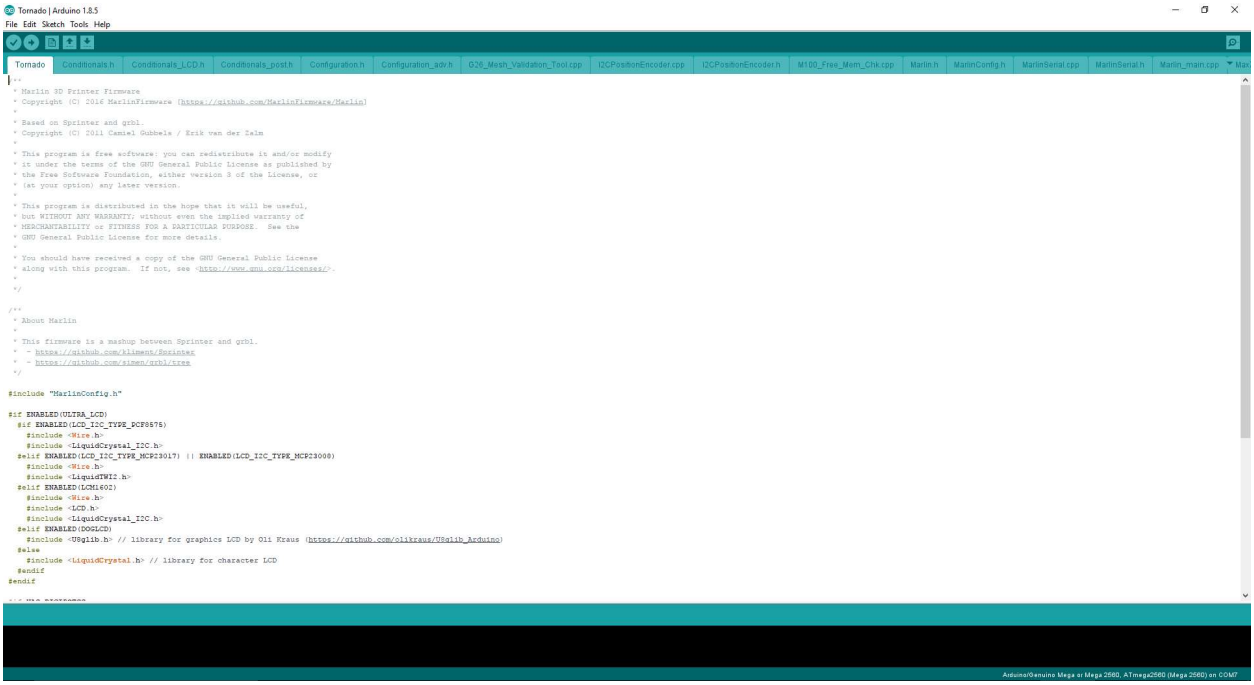
g) Open the Marlin-1.1.6 sub folder

h) Open the Tornado sub folder. Scroll down and you should see a file named Tornado.ino



i) Double-Click on Tornado.ino.

j) The Arduino software should launch and should now have the correct packages loaded.

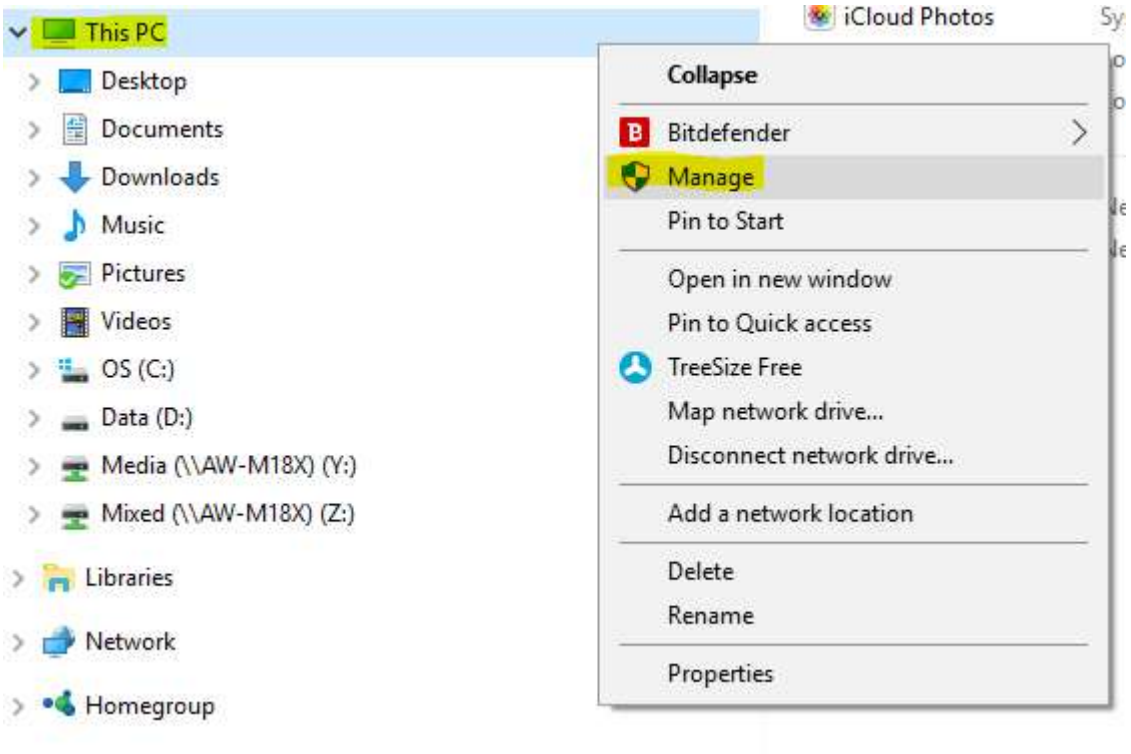


STEP 4 – Connect your Tornado to your computer

a) Get a USB cable to connect your computer to your Tornado. Use the one that came with the printer.

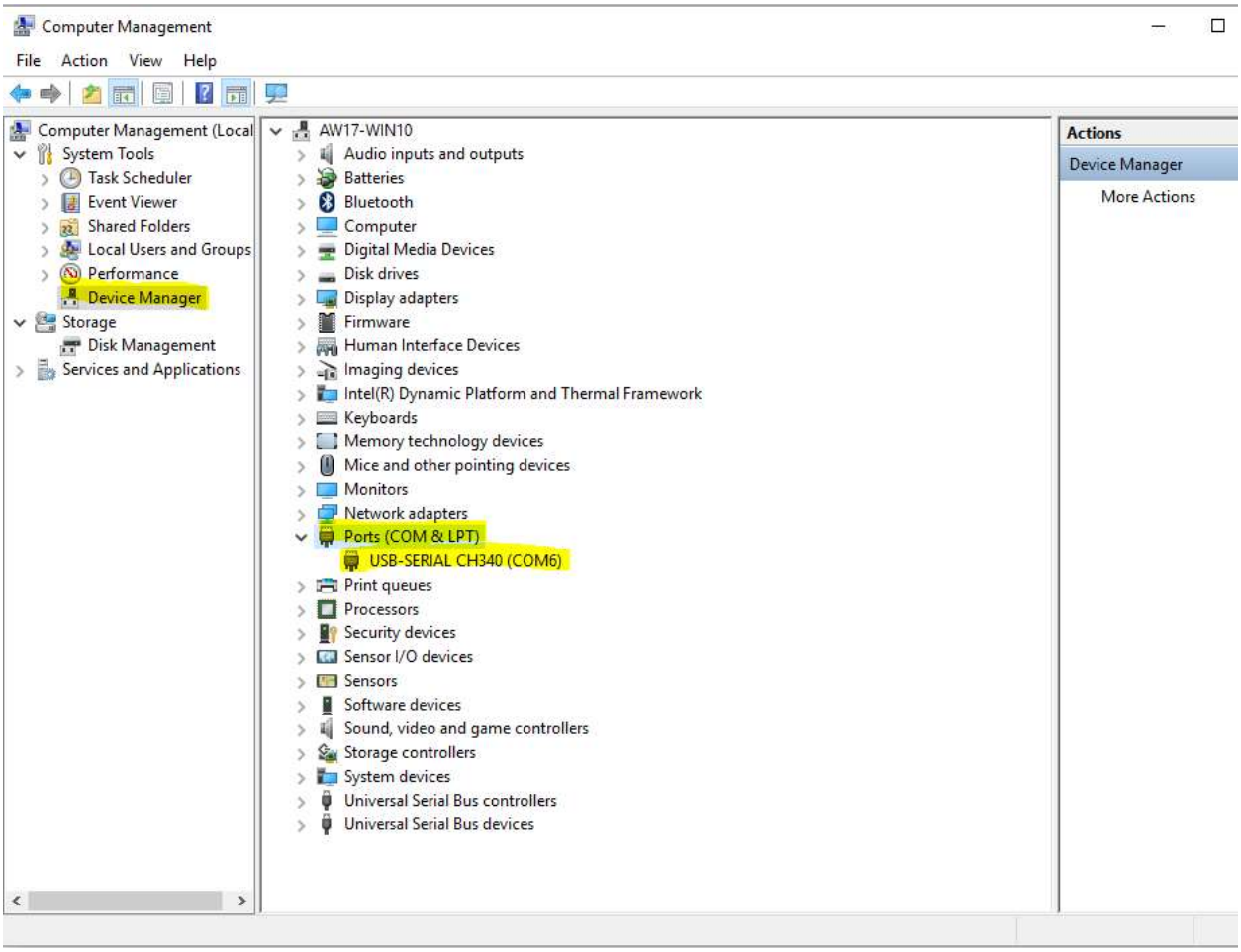
I have instructions for Windows users, Mac users or Linux users will vary

b) Verify your 3D printer is connected and the port. Easiest way is to open **My Computer** or **This PC** from a file explorer window.



c) Right-click and Select **Manage**

d) **Computer Management** should now open



e) Expand Device Manager

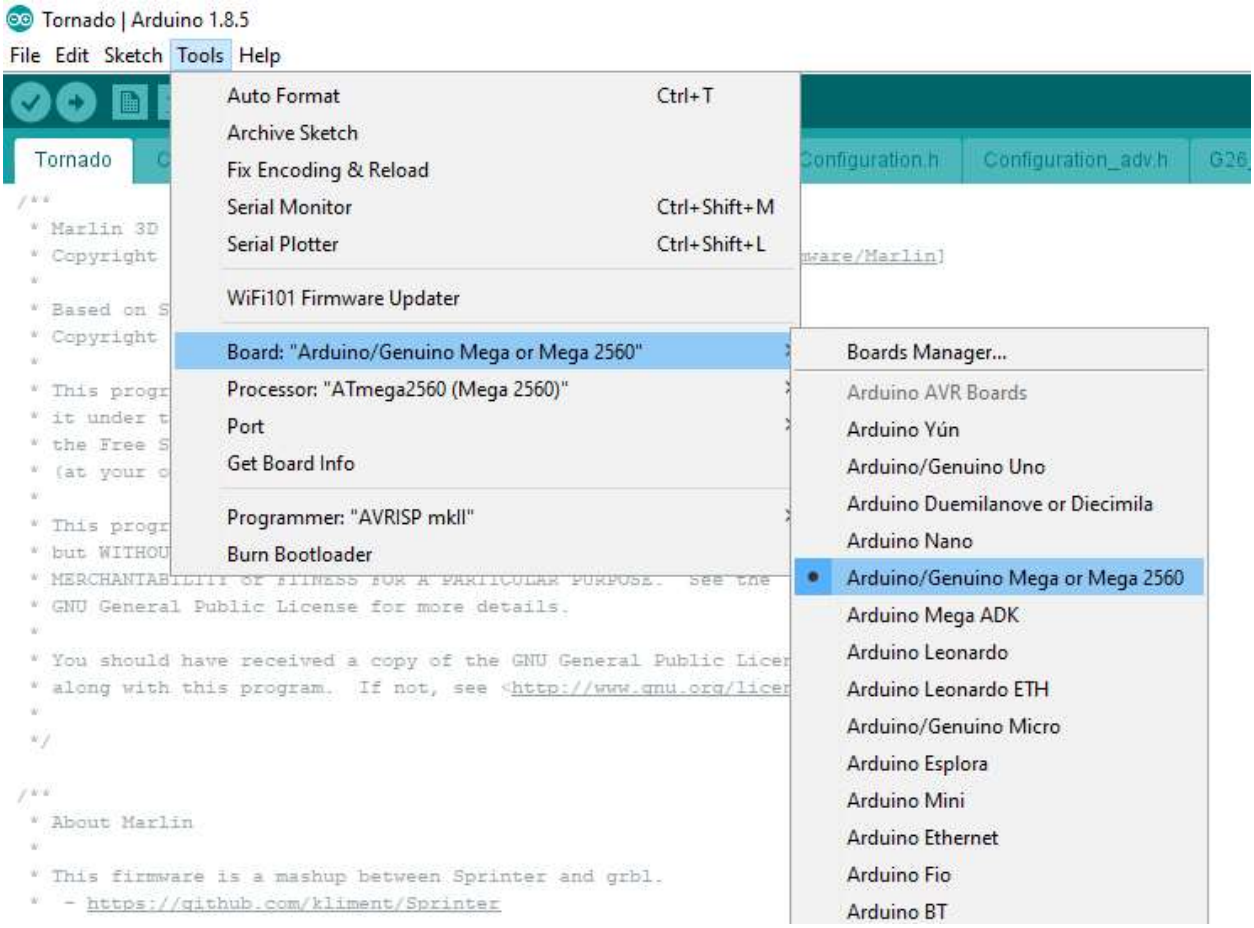
f) Expand Ports (COM & LPT)

You should see a new USB Serial device with a COM port number next to it. The exact name may vary. This should be the Tornado you just connected. You can unplug the printer and reattach the USB to confirm you have the correct device if you wish. Take note of which COM port your printer is connected to.

STEP 5 – Configure the Arduino software for your Tornado

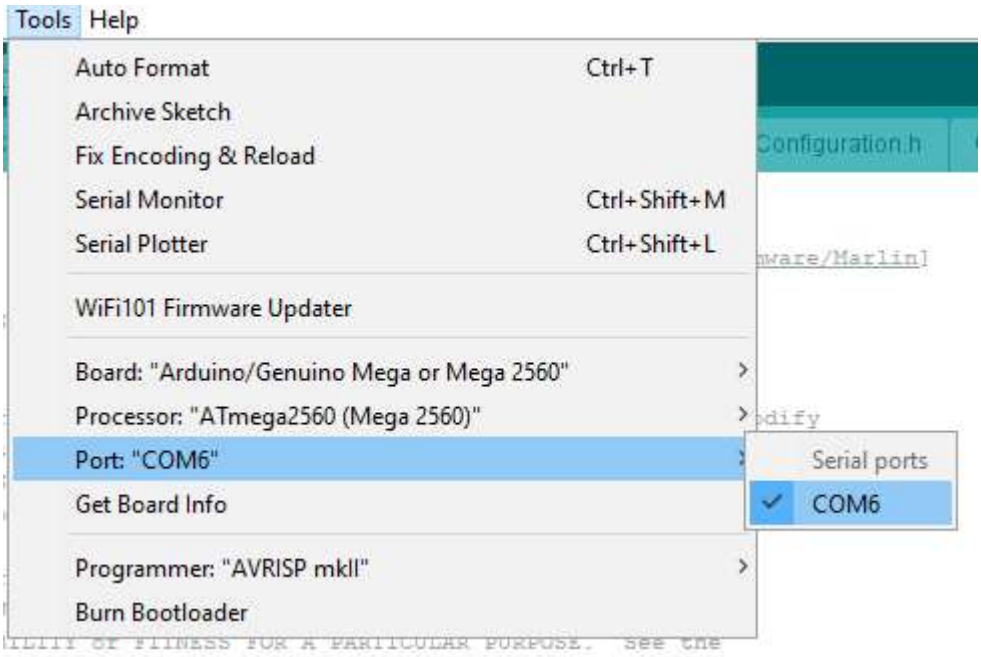
Go back into the Arduino software. This should be the new window that opened when you clicked on the Tornado.ino file

a) Go to Tools > Board
b) Select Arduino/Genuino Mega or Mega 2560

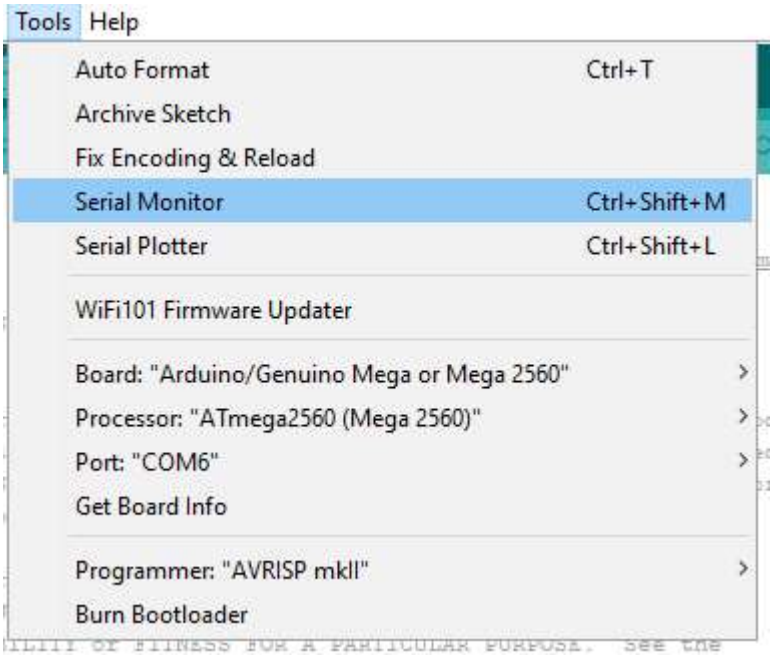


c) Go to Tools > Port

d) Make sure the Port you previously identified for your Tornado is selected

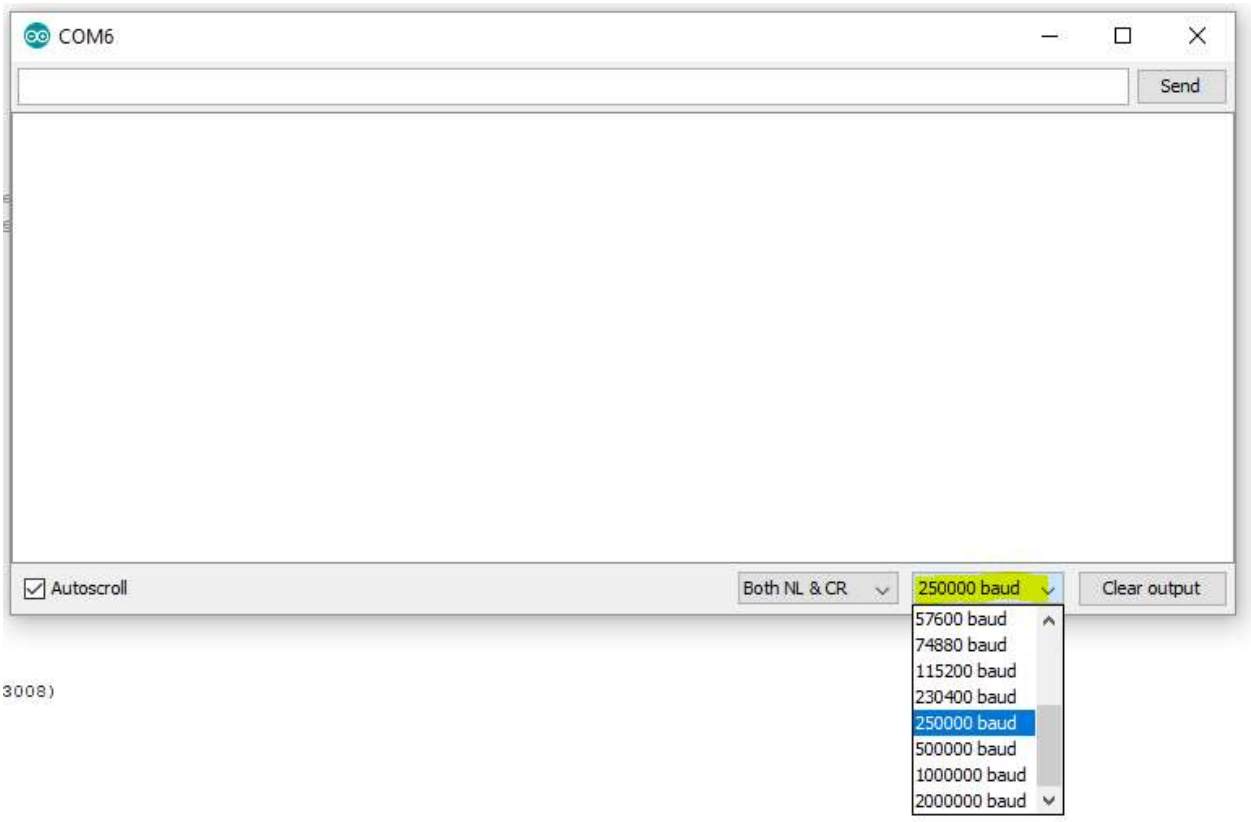


e) Now to go Tools > Serial Monitor



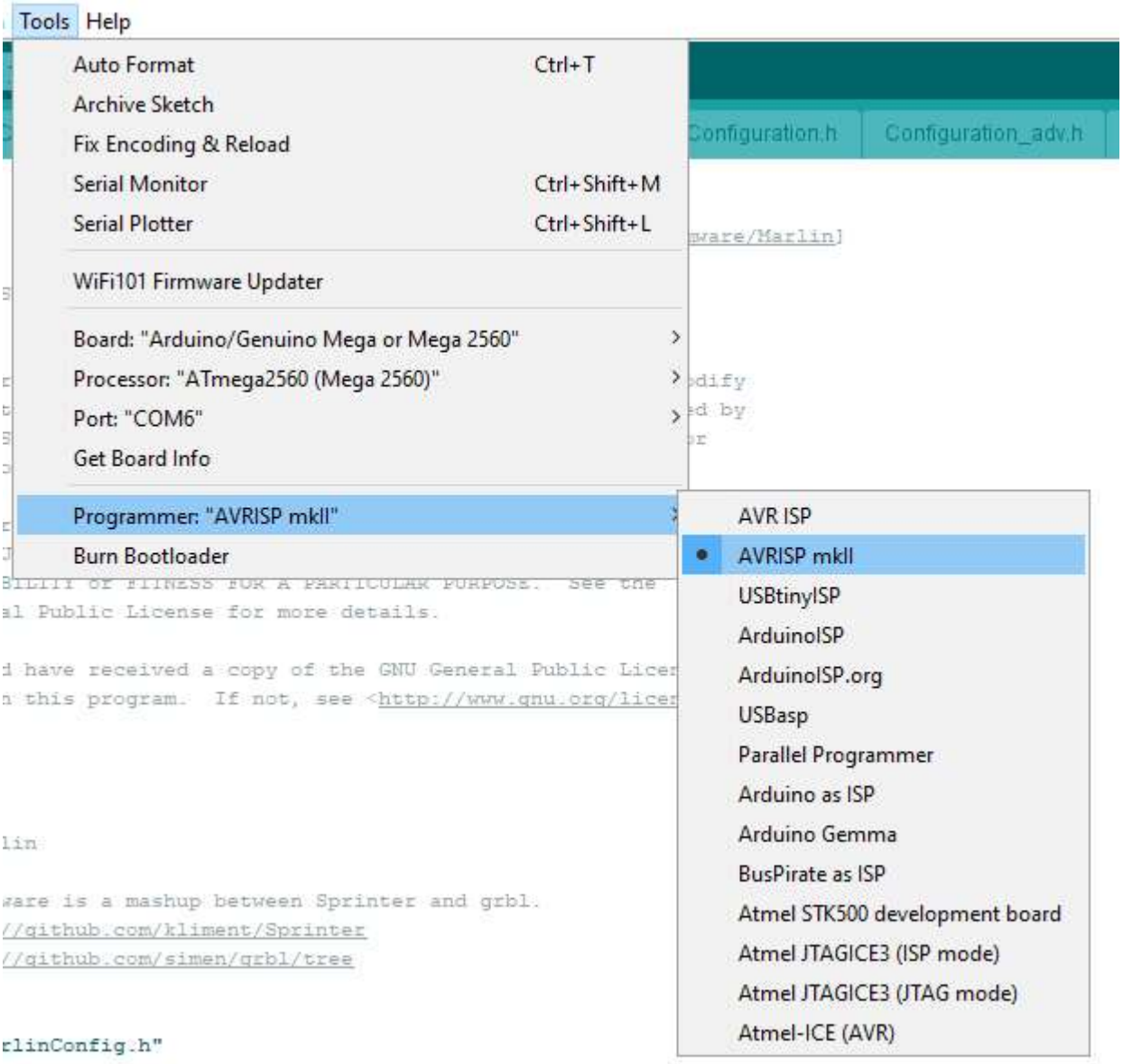
f) The Serial Monitor window should appear

g) From here I want you to select the drop down shown and pick the 250000 baud connection speed. This will be important so that the software will know what speed to try and connect to your printer. The Arduino software may pick this up automatically, but I want to make sure it is set.



h) Once set, you may exit out of this window.

i) Go to Tools > Programmer. Confirm it is set to AVRISP mkII. This should be automatically set, but I want to confirm.

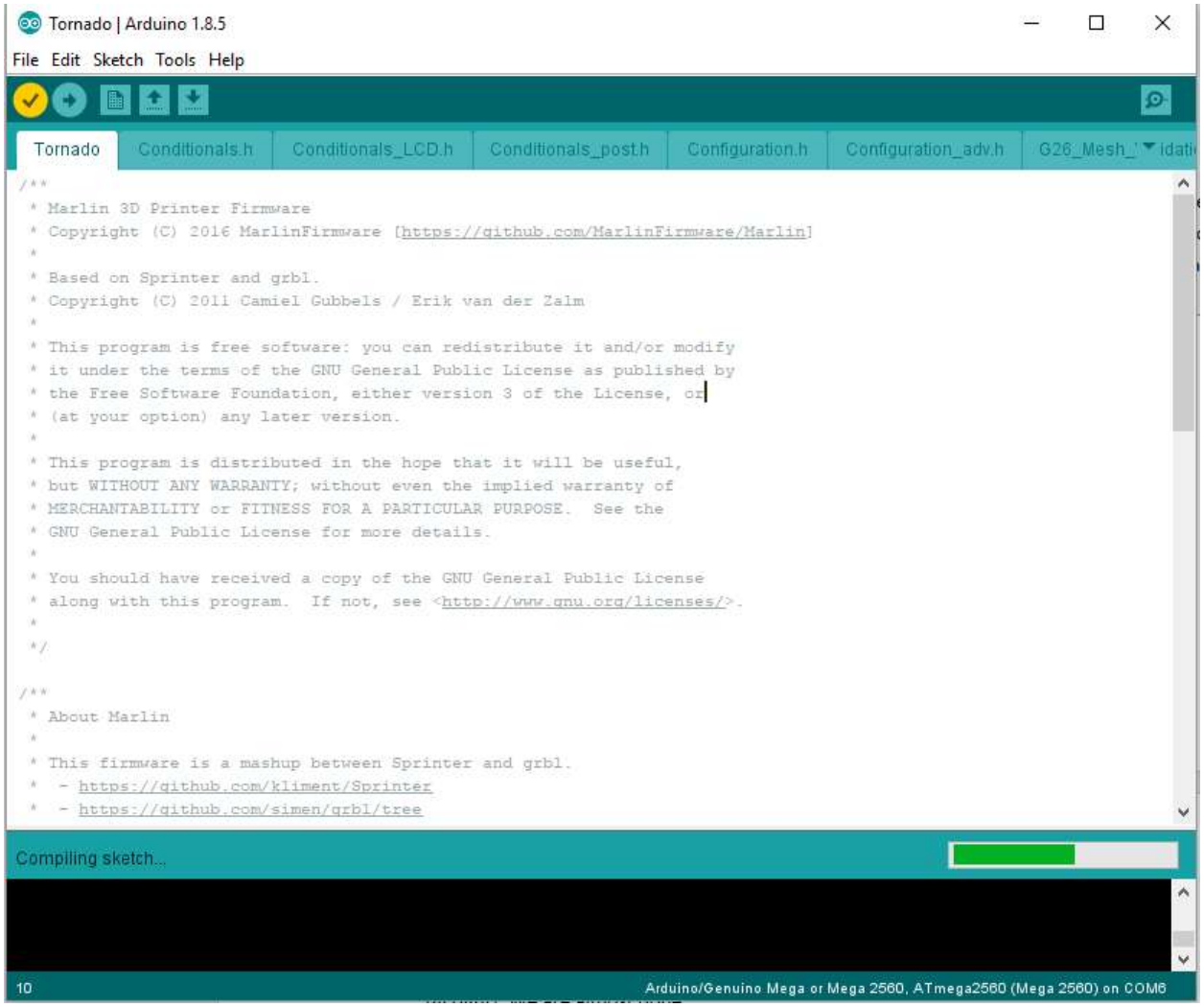


STEP 6 – Compile and flash your firmware

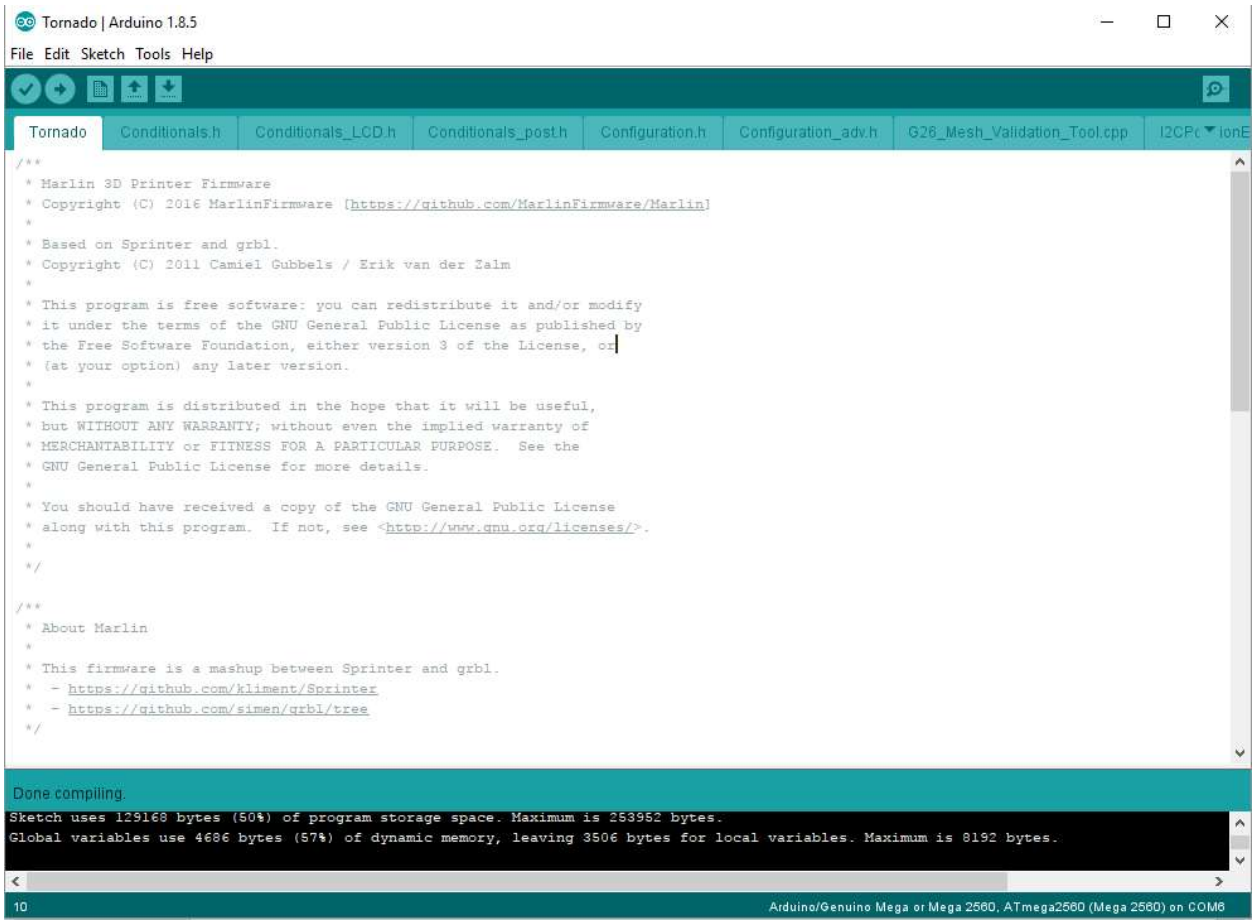
All right! We are almost done.

a) At the top Left of your screen you will see a series symbols.

b) Select the check mark to Verify that the package you downloaded will work.



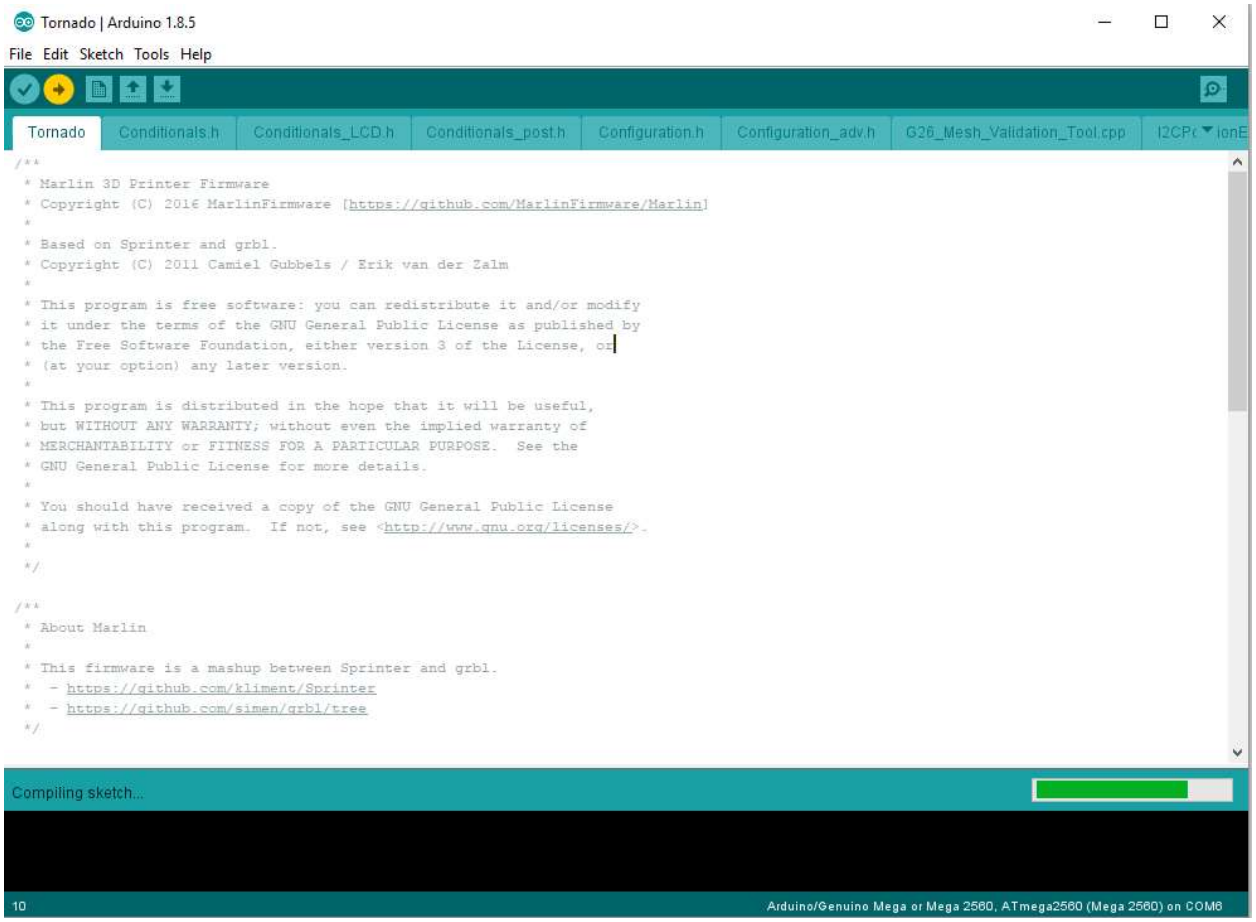
c) The check mark will turn yellow. You should see a progress bar at the bottom of the screen and it will say “Compiling sketch…”



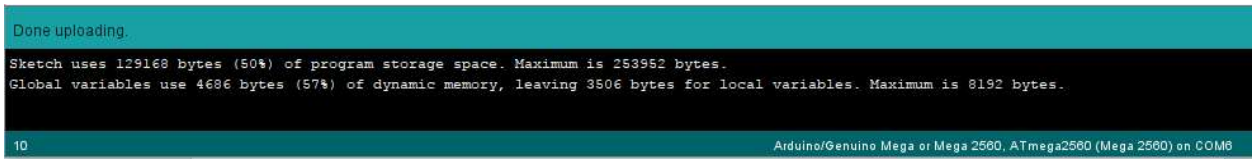
d) Once it is complete, the output window should show some details on bytes used, maximum bytes and the bottom window should say “Done compiling.”

e) At the top of your screen, now select the right arrow icon. It should be the second one and should be labeled Upload when you mouse over it.

f) The arrow should turn yellow to let you know it is in progress. The progress window will change at the bottom and report the overall status.



g) Once complete and successful, the yellow icon should return to normal. The status window at the bottom should look like this.



h) Your Tornado should now reboot. Once it comes back up, it should report the Marlin firmware screen with the updated V1.1.6 software version.

CONGRATS! You are complete!