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Chapter 1

Introduction

This is the ETAG RFID reader Version1 (Distrubted at the American Ornithological Society Meeting, Lansing, MI, August 2017) guide to set up the software and hardware. This guide will give directions to obtain the Eagle design files for the circuit board, Arduino software, Arduino circuit board code, and an introduction to upload the code to the board for use.

Chapter 2

Software Installation

This section will direct to download the Ardunio software, RFID code, and RFID data files that are necessary to make the RFID board operational and enable changes to RFID code. This guide will begin by obtaining and installing the Ardunio software then downloading RFID code and data files. The RFID code and data files must be placed in certain Arduno's directory, this will be further explained in detail.

2.1 Ardunio Software

First, go to the Ardunio website to obtain the installer by using the following link as provided, https://www.arduino.cc/en/Main/Software. The website should appears as Figure 2.1. Click on "Windows Installer" that is located on the mid-right side of the website. This will redirect you to the next page,

Ardunio's donation page, click "JUST DOWNLOAD" as shown in Figure 2.2 to begin downloading the executable file.

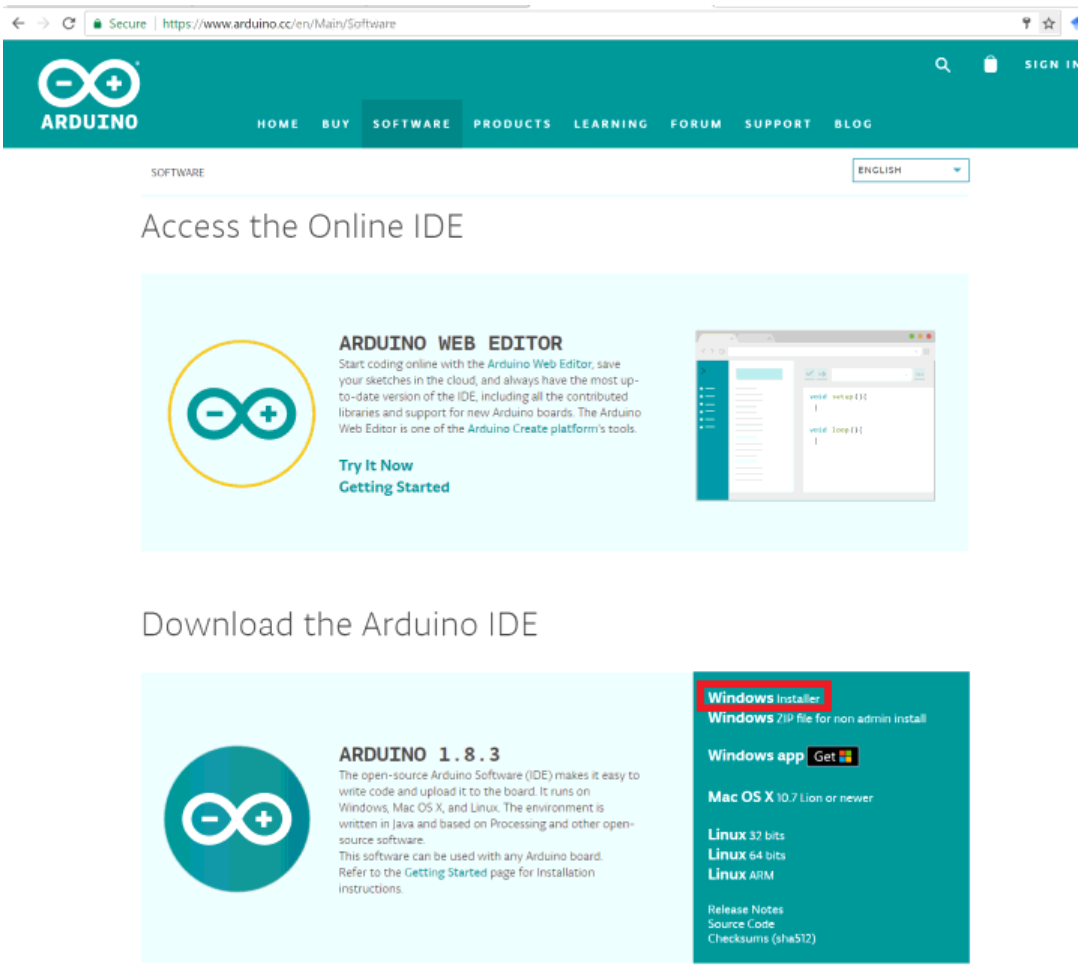


Figure 2.1: The Arduino Software page to access the correct Ardunino version for your computer. Windows computer should click on "Windows Installer" to proceeding towards obtaining the Arduino software.

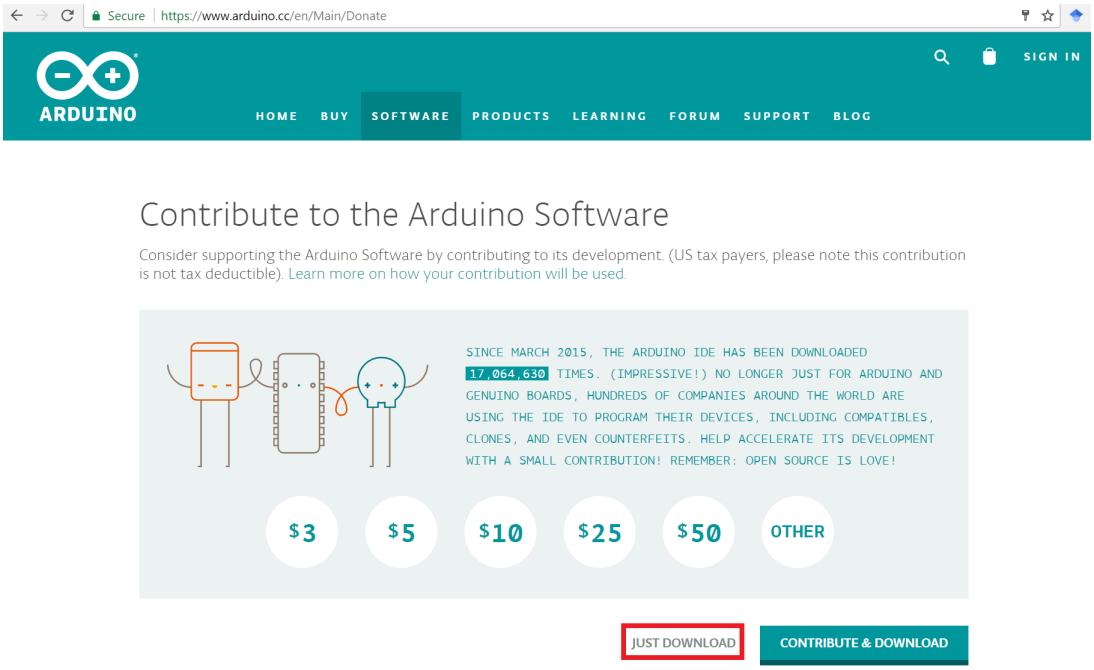


Figure 2.2: The redirected donation page after clicking ”Windows Installer”. Click on ”JUST DOWNLOAD” to begin downloading the executable file.

Locate and double click on the executable file, this will prompt the installer to begin. The initial installer's title is Arduino Setup: License Agreement window. Read the terms and agreement then click "I Agree" to begin the installation as shown in Figure 2.3. The installer's title changes to Arduino Setup: Installation Options, as shown in Figure 2.4, click "Next".

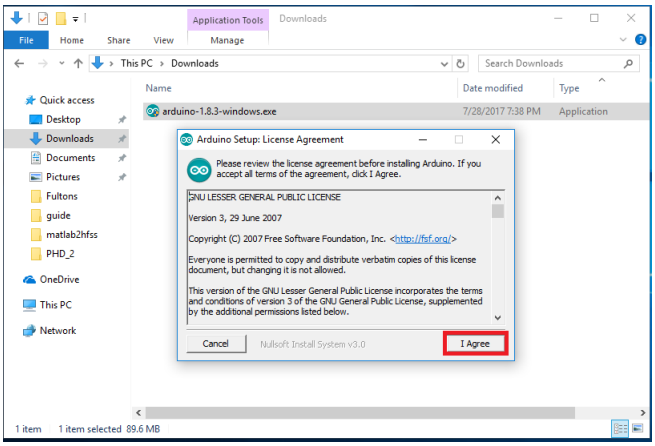


Figure 2.3: Installer window, displaying the terms and agreements. Click "I Agree" to continue.

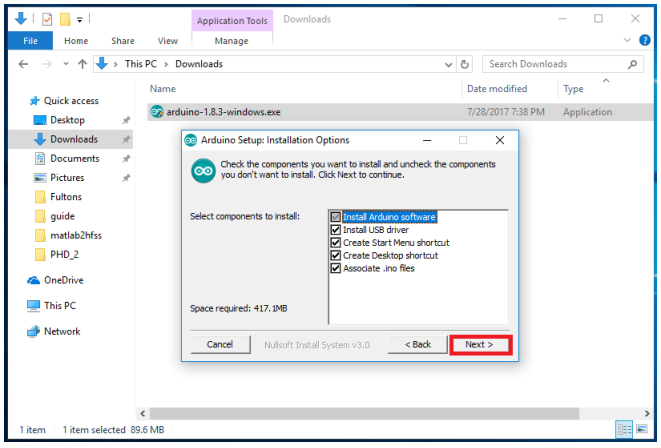


Figure 2.4: Installer options, click "Next" to continue.

The installer's title is change to Arduino Setup: Installation Folder, the Default location to install the software will be automatically set. Install location can be changed by clicking "Browse...". Click "Install" as shown in Figure 2.5 to begin but highly recommend to default location. The window will display a progress bar, once completed it state "Completed" as shown in Figure 2.6, click "Close".

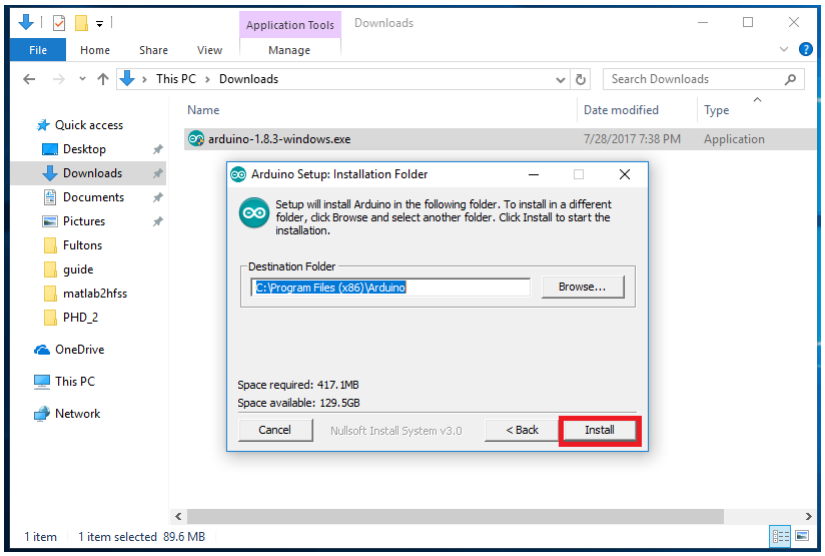


Figure 2.5: Installer allowing the user to choose destination location for software. Click "Install" to continue.

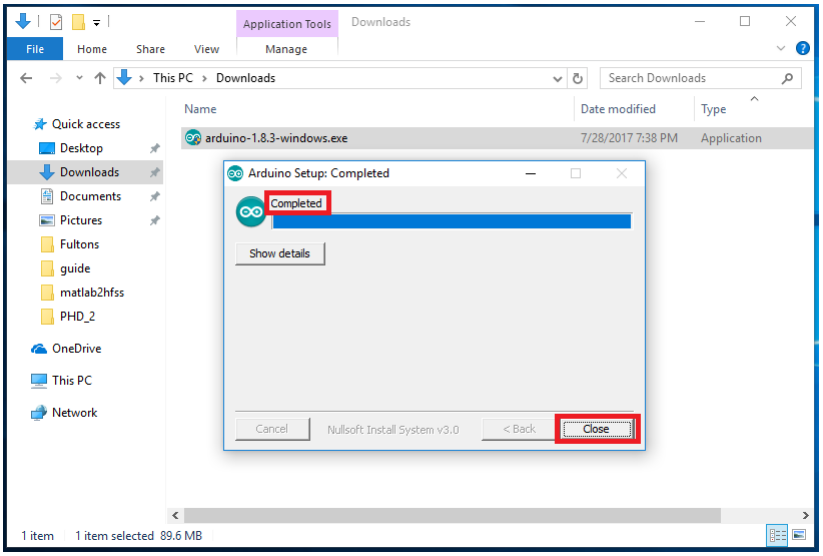


Figure 2.6: Installer displaying an example of when the installer is completed. click ”Close” to finish.

Accessing the software, click the Windows button on the keyboard prompting the start menu, search ”Arduino”, click on Arduino to run the software. The Arduino software should be successfully installed and running, it will appear as in Figure 2.7

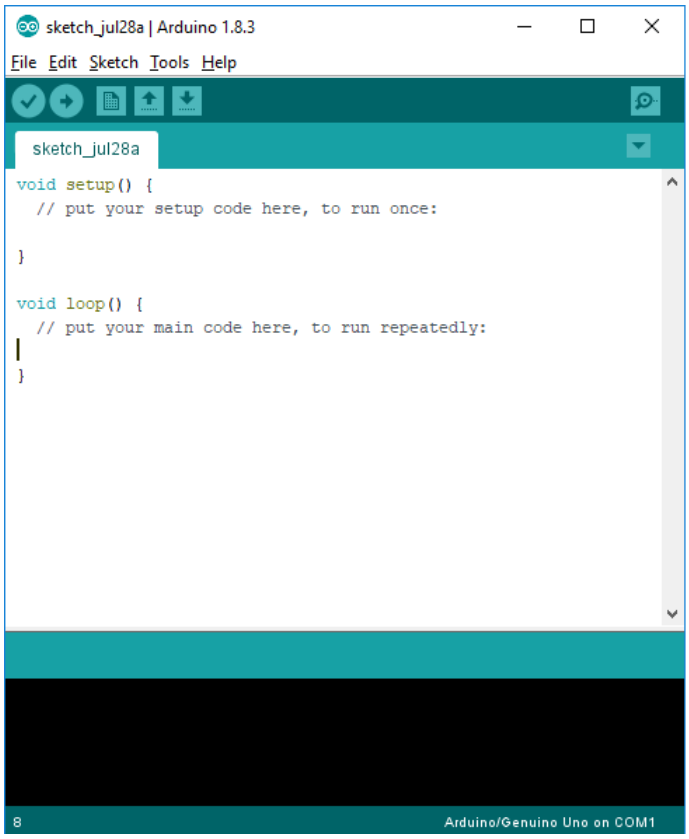
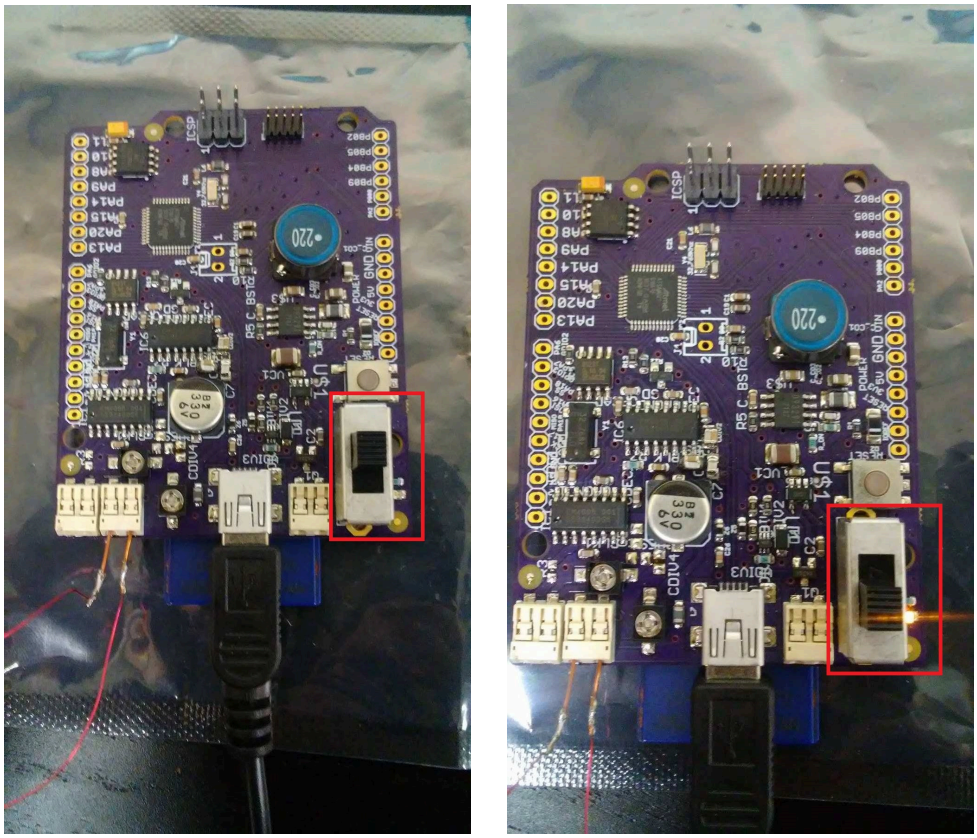

sketch_jul28a | Arduino 1.8.3
File Edit Sketch Tools Help
sketch_jul28a
void setup() {
// put your setup code here, to run once:
}
void loop() {
// put your main code here, to run repeatedly:
}
8
Arduino/Genuino Uno on COM1

Figure 2.7: a

Next connect your Arduino board to the computer via USB cable, as shown in Figure 2.8. Once the Arduino board is connected to your computer use the switch on the lower right side near the USB port to turn it on, once on the yellow LED light to the side of the switch will light as shown in Figure 2.8(b).



(a) (b)

Figure 2.8: Use the switch on the bottom right of the Ardunio board near the USB port to turn on the board off and on. A yellow LED to the side of the switch will indicate if the ON or OFF. (a) Yellow LED OFF indicating that Arduino is OFF (b) Yellow LED ON indicating that Arduino is ON.

Once the Arduino board turns on the Arduino software will prompt for updates in the lower left corner as shown in Figure 2.9. Click on this prompt, a new window will open as shown in Figure 2.10. Click on ”Install”, the software will automatically install the files required and will proceed as shown in Figure 2.11, and wait a moment until the window is completed as shown in Figure 2.12.

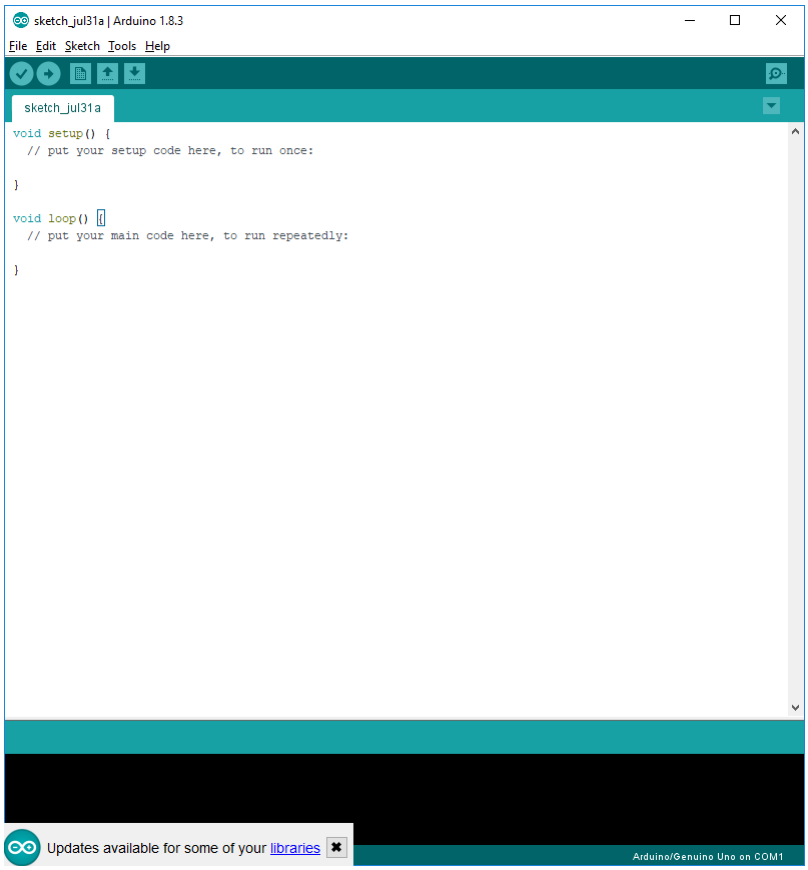


Figure 2.9: Arduino software prompting for updates after the Arduino board has been turned when connected to the computer. Click on the prompt to install the required updates

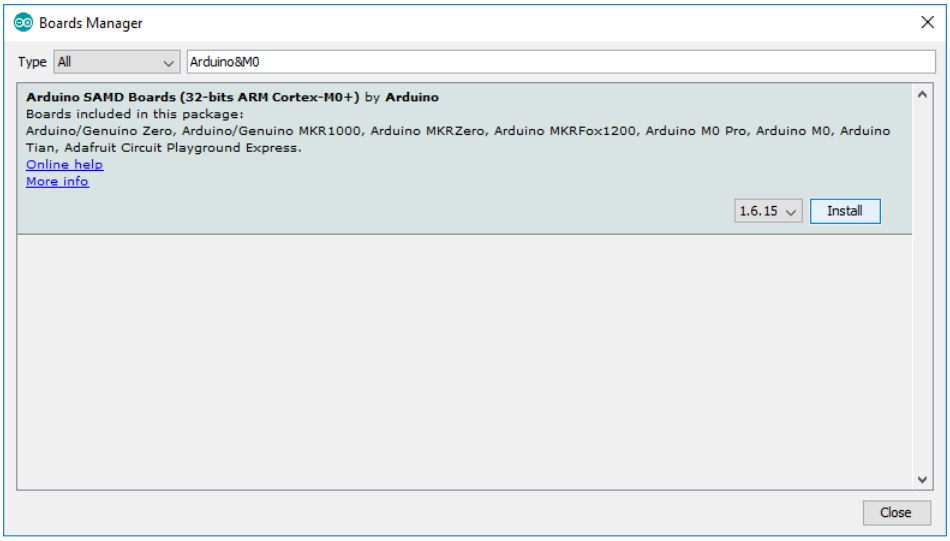


Figure 2.10: Window prompt to install the required files for Arduino board. Click on the ”Install” button to install required files.

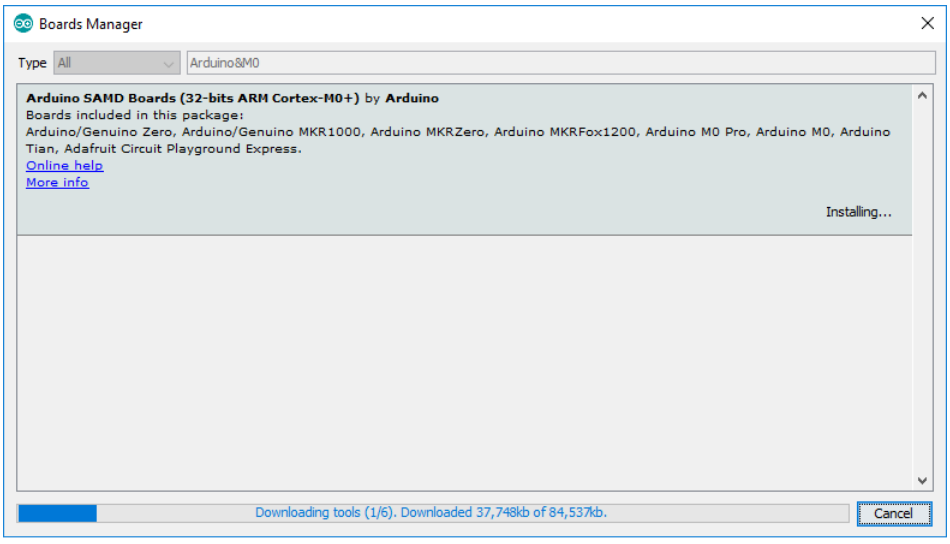


Figure 2.11: The window prompt in progress during installation. Allow a few moments until it is done installing files.

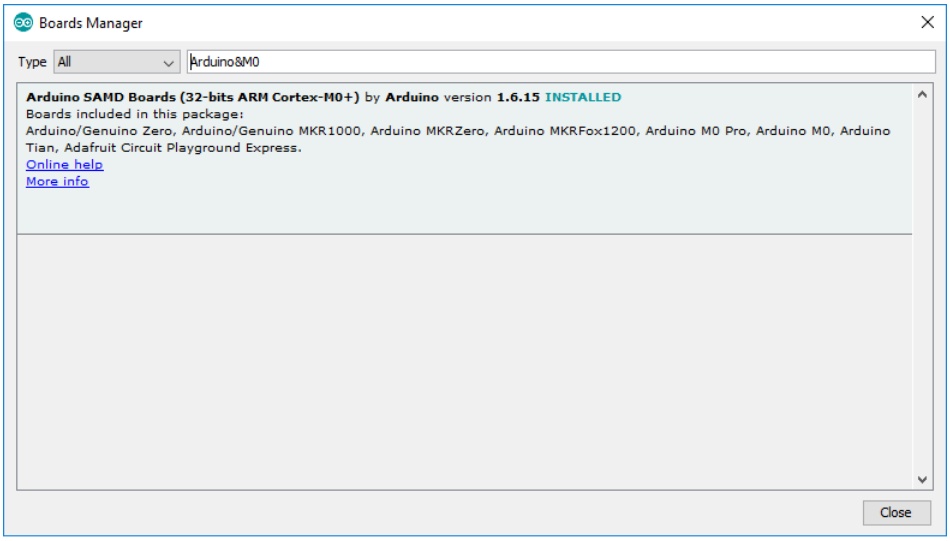


Figure 2.12: The Arduino software has successfully installed the required files. Click on ”Close”.

Once installation is completed close all Arduino software to prepare for the procedures steps. In the next section there will be directions to obtain our code and files required in utilizing the RFID board.

2.2 Circuit Board Code and Files

The circuit board code and files can be downloaded from the following url link, https://github.com/Eli-S-Bridge/ETAG_AOS2017. The web page should appear as in Figure 2.13. Click on ”Clone or download”, a menu box will appear then click ”Download ZIP”. Download the Zip file onto your computer. Once download is complete, locate the Zip file, right click, a window prompt should appear similar to Figure 2.14, and unzip(extract) the files onto your computer.

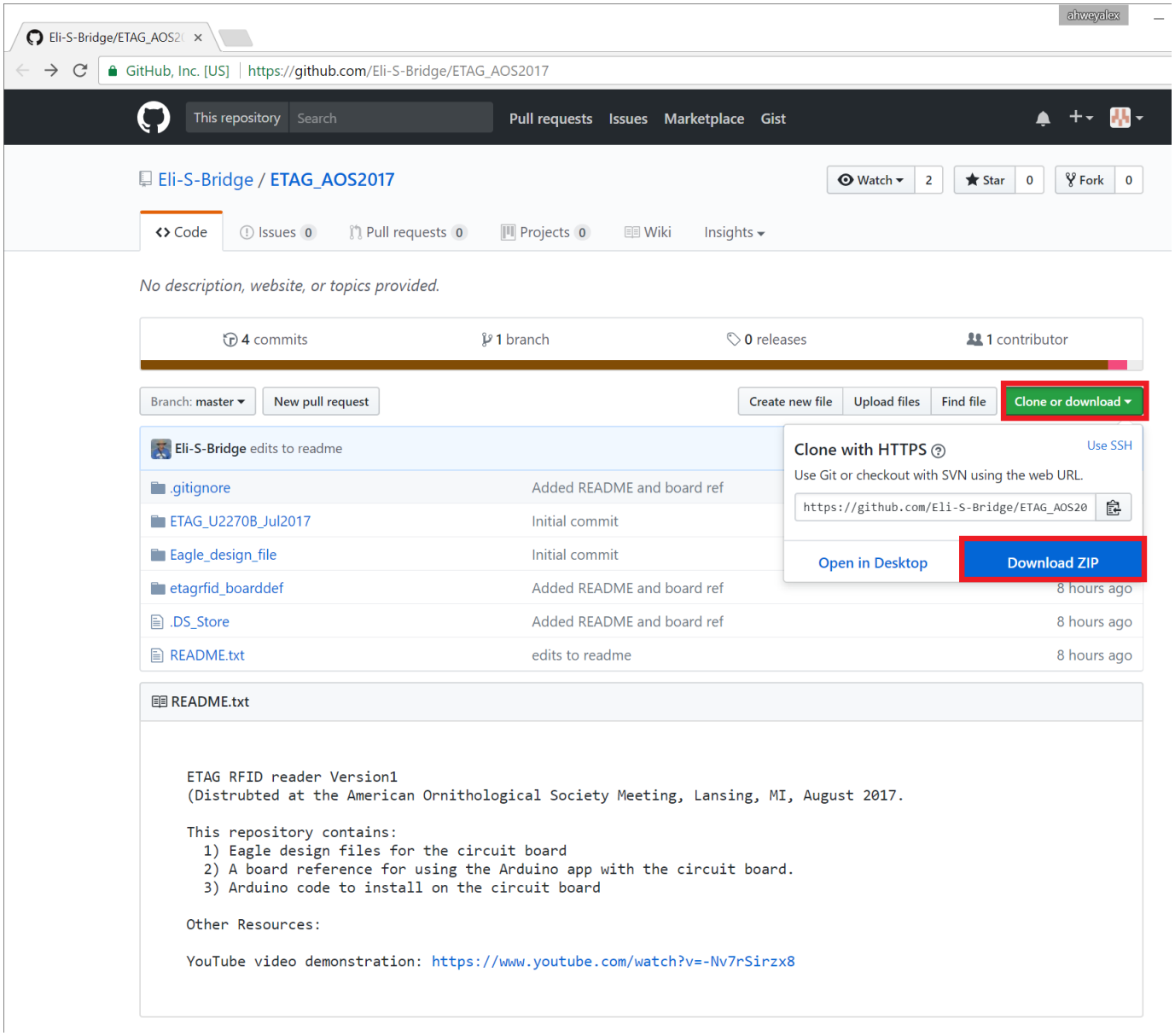


Figure 2.13: The GitHub web page to download the circuit board code and files. Click on ”Clone or download” then click on ”Download ZIP”.

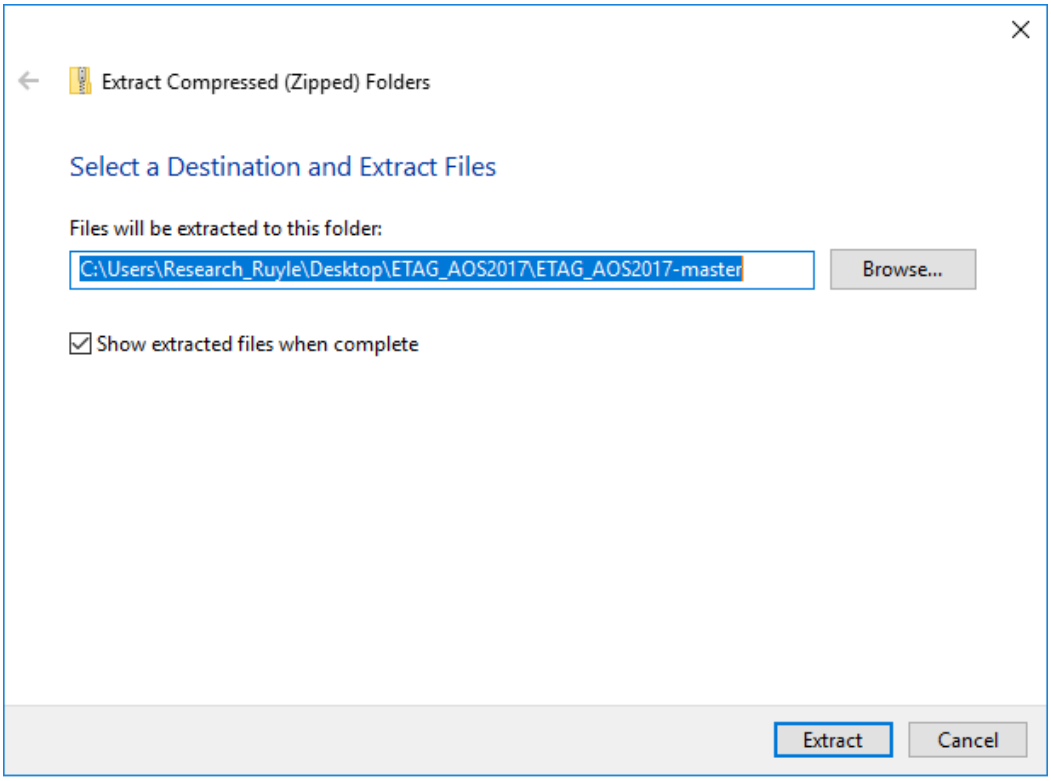


Figure 2.14: Right click on the zip file that was

Open the folder that has just been extracted(unzipped) until you reached a folder that shows the same contents as in Figure 2.15. There are three items(the ”ETAG_U2270B” folder,”etagfid” folder, and board.txt file) in this folder that need to be relocated. Open the folder ”etagfid_boarddef” and copy ”board.tx” to `C:\Users\USERNAME\AppData\Local\Arduino15\packages\arduino\hardware\samd\1.6.15` this will prompt a window, click ”Replace the file in the destination”, as shown in Figure 2.16. The USERNAME refers to your computer’s user name.

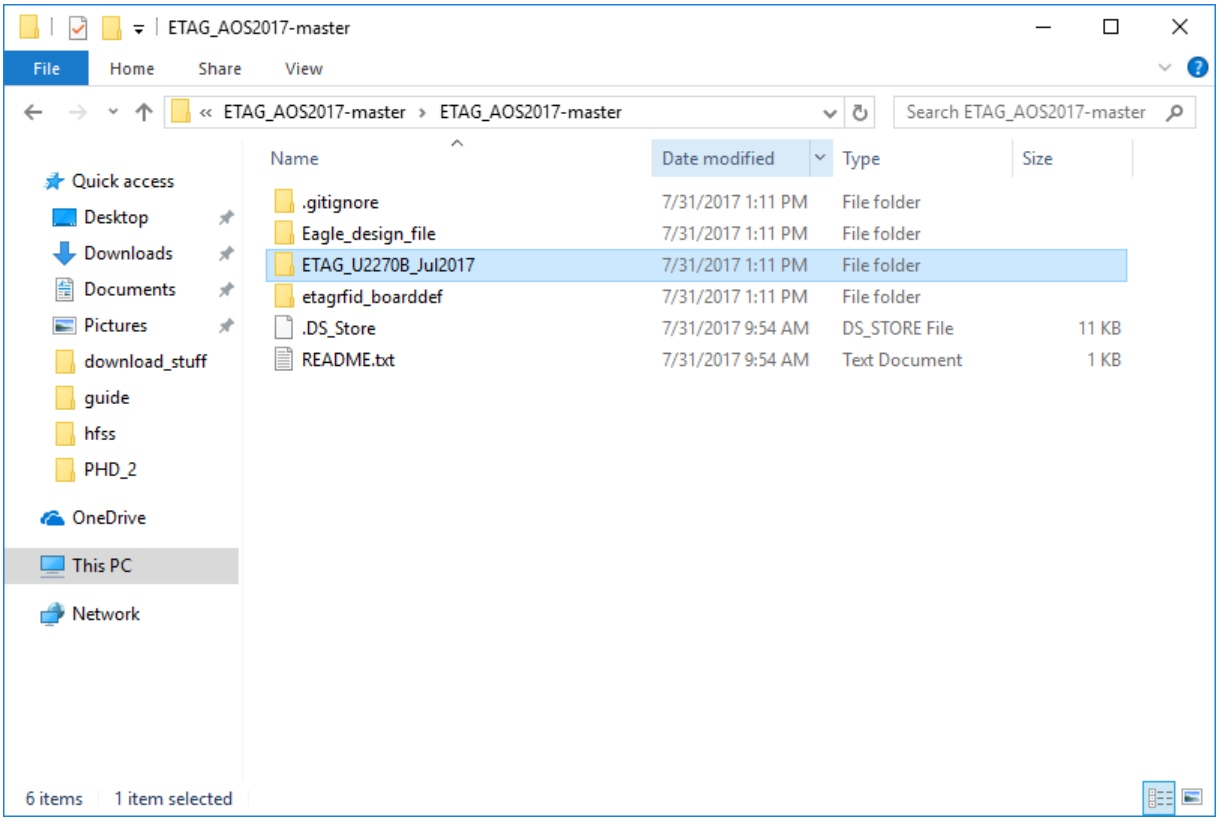


Figure 2.15: The contents of the unzipped folder.

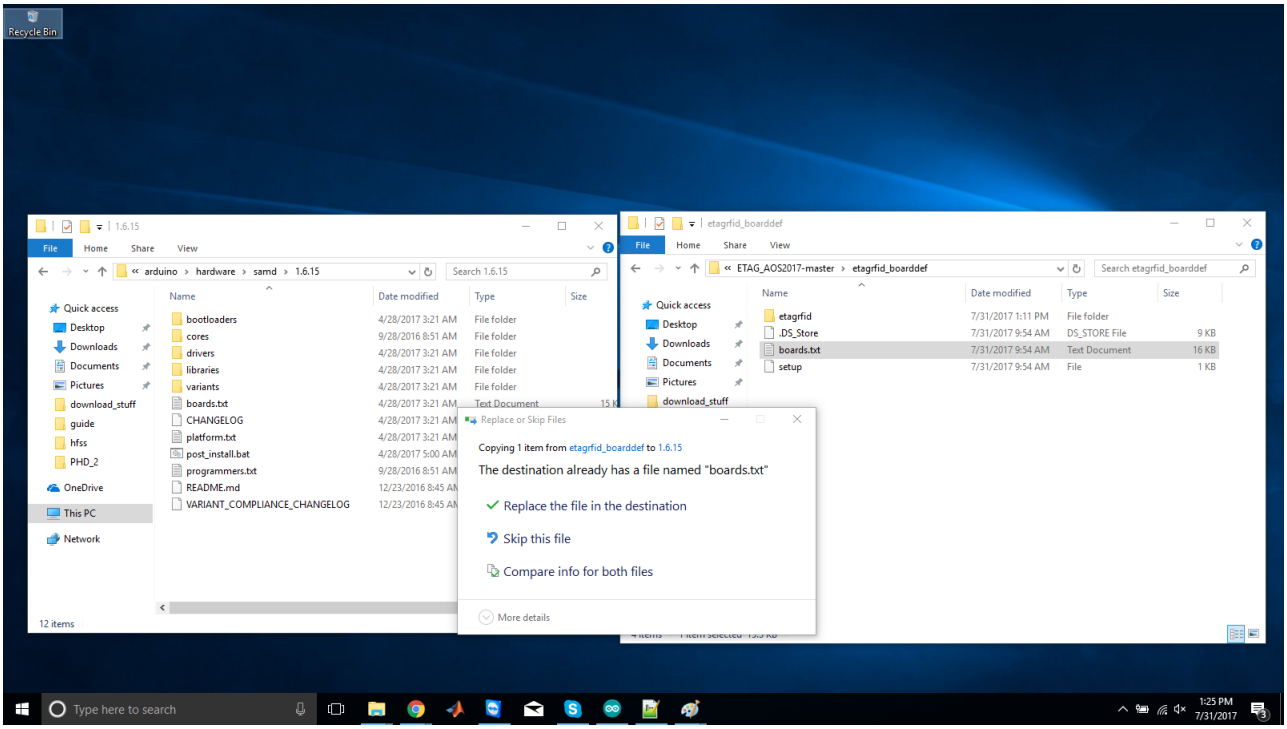


Figure 2.16: Copying the ”board.txt” file from the unzipped folder into to the path. Click ”Replace the file in the destination”.

Next, copy the ”etagfid” folder to the following path,
`C:\Users\USERNAME\AppData\Local\Arduino15\packages\arduino\hardware\samd\1.6.15\variants/` as shown in Figure 2.17.

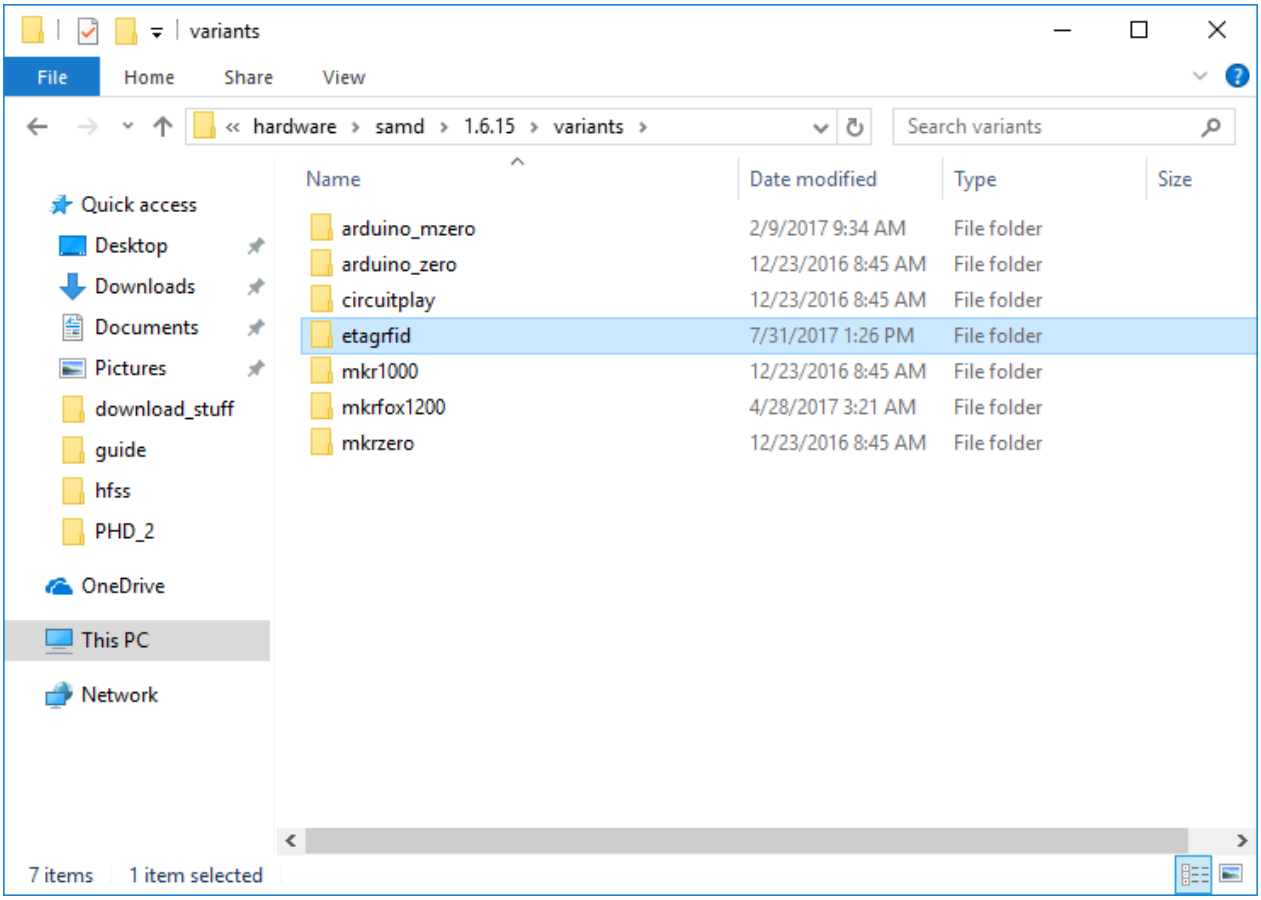


Figure 2.17

Finally, copy the ”ETAG_U2270B_Jul2017” folder to your Arduino folder located in your Documents folder. This will allow Arduino software easy access to the code.

Open the folder ”ETAG_U2270B_Jul2017” in your documents, click on ”ETAG_U2270B_Jul2017.ino” file this will open it in the Arduino software. Then click ”Tools”, scroll down to ”Broad:BOARDNAME”, scroll down and click ”ETAG RFID”. This will ensure compiler to take into account the custom board parameters.

Connect your Arduino board to your computer, turn the board via switch, click on the check mark symbol to verify(compile) the code as shown in Figure 2.18. Once the it completes verifying it will appear as shown Figure 2.19. Then click on the arrow symbol to upload the code into the board. Turn the board off (insert an SD card into the board, if it does not have one) and back on. Next, click on ”Tools”, scroll down to ”Port” and choose ”COM XX”. Finally, Click ”Tools” then scroll down and click on ”Serial Monitor” to prompt the console. Near the tag to the antenna connected to the board to read the tag’s information. The information will be displayed on the console and written onto the SD card.

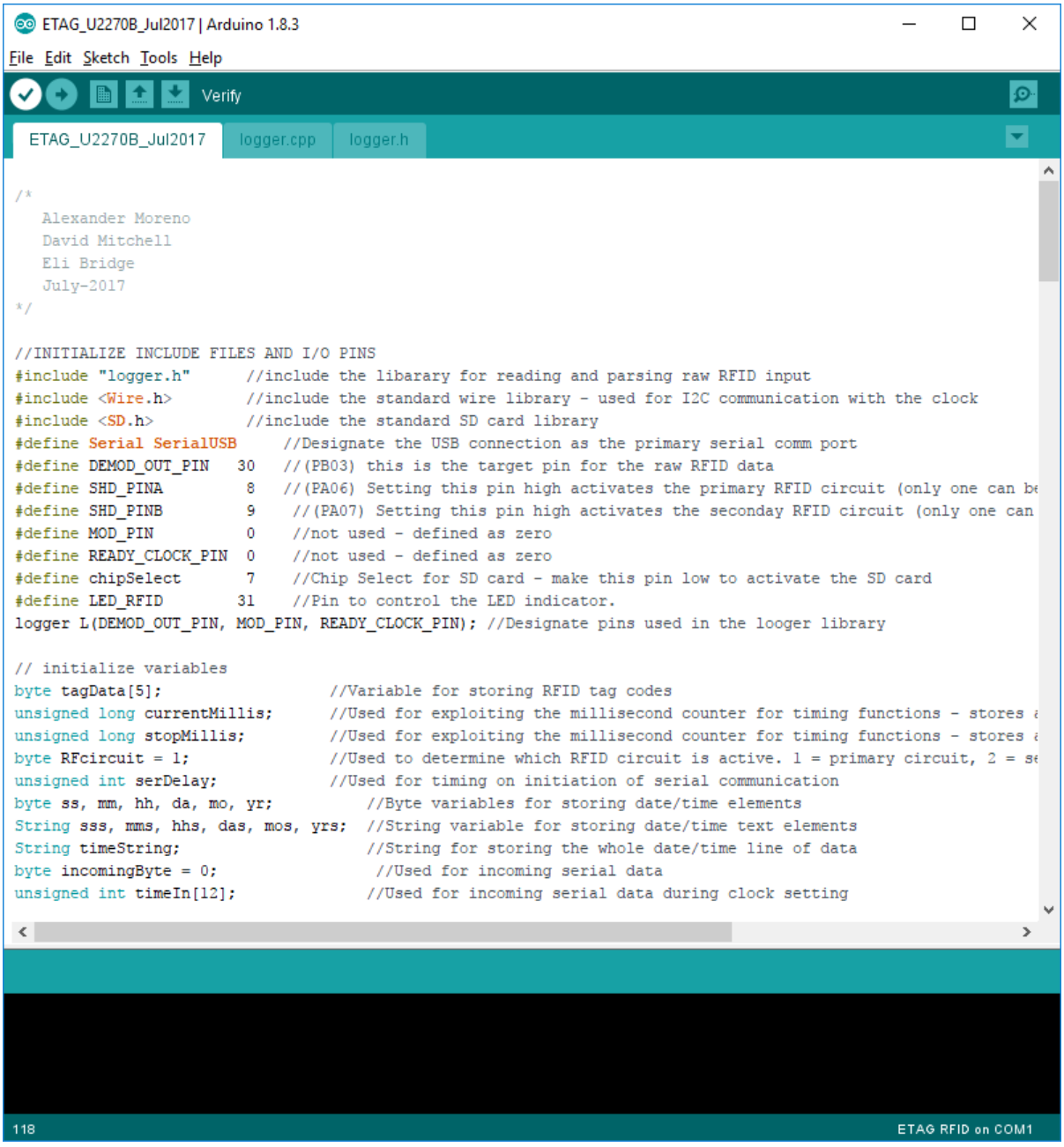


Figure 2.18: Board code to the RFID.

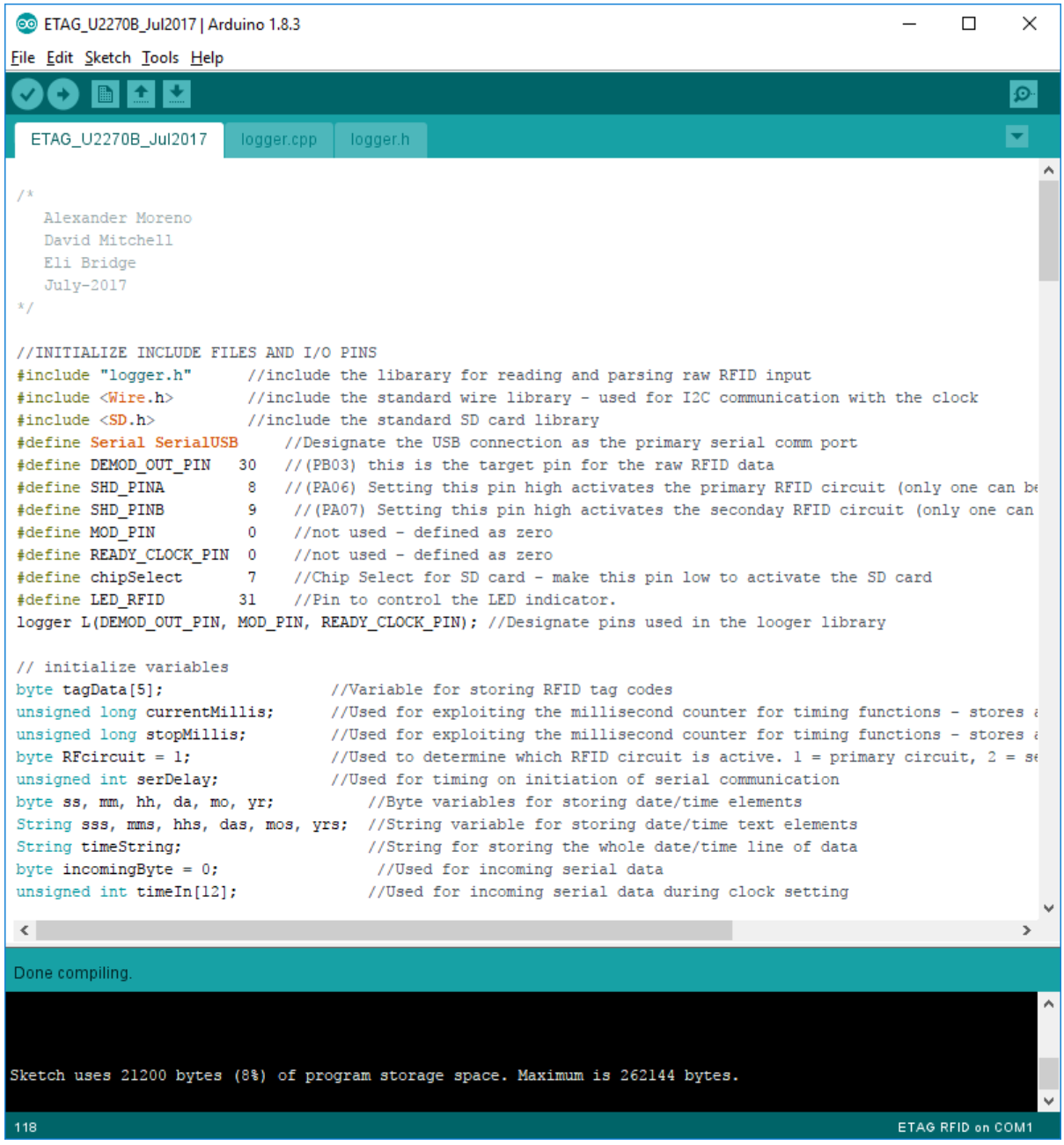


Figure 2.19: Board code has completed being complied ready to be uploaded to the board.