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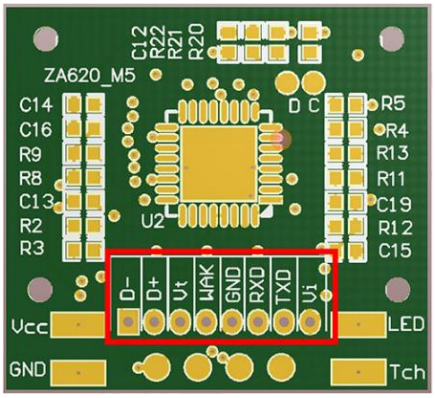
BIOMETRIC FINGERPRINT SENSOR



Introduction:

These modules are typically used in safes. There's a high powered DSP chip that does the image rendering, calculation, feature-finding, and searching. Connect to any microcontroller or system with TTL serial, and send packets of data to take photos, detect prints, hash, and search.

Specification:

Fingerprint Storage Capacity	300
Supply / Operating Voltage	3.3V – 6.5V (Typical = 3.3V Stable)
Operating Current	30mA – 60mA
Working Environment Temperature	-20°C – 60°C
Image Processing Time	<0.4s
USB Communication	2.0 Full Speed
UART Speed / Baud Rate	(9600 × N) N=-12, default N=6, bps 57600 (Data bits: 8 Stop Bits: 1 Check bit: none TTL level)

Preparation:

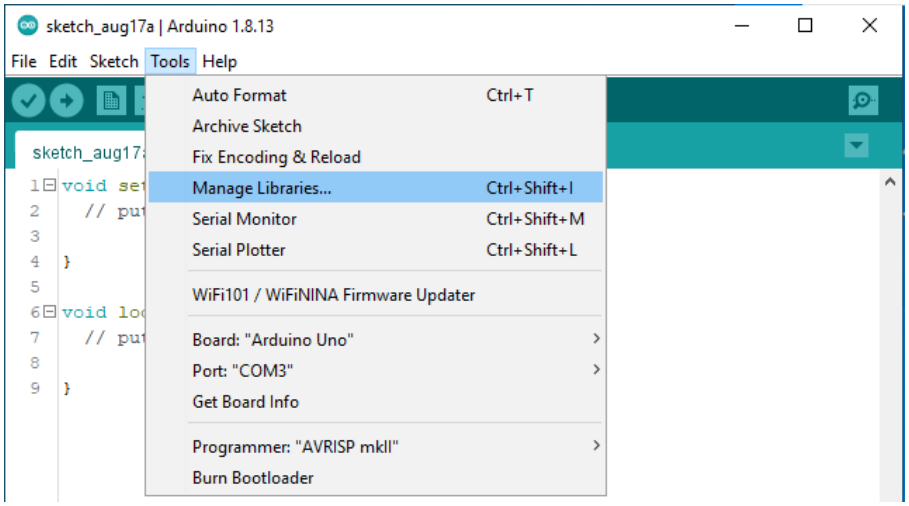
1. Arduino (UNO / Nano / Mega)
2. Fingerprint Module
3. Jumper Wire
4. Breadboard

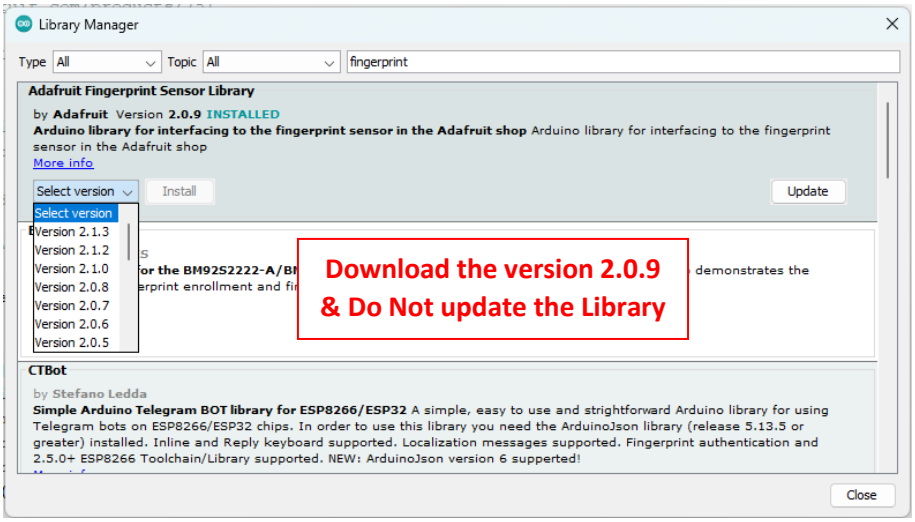
Objective:

To register fingerprint, test the fingerprint accuracy & delete the fingerprint database.

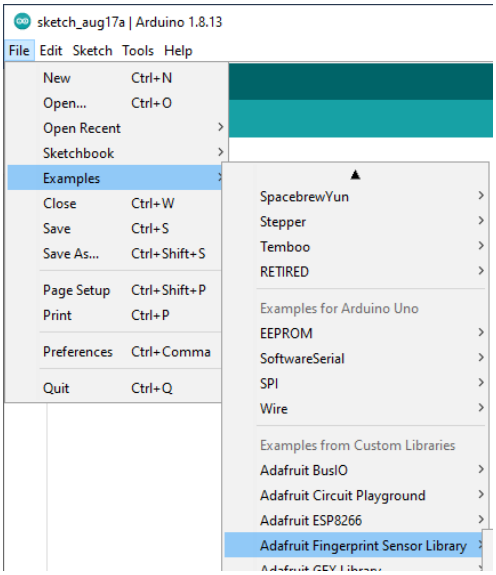
A. Installing Library

1. Navigate to **Tools> Manage Libraries…**. Search for **'Adafruit Fingerprint Sensor Library'** and Install the latest version of Library.



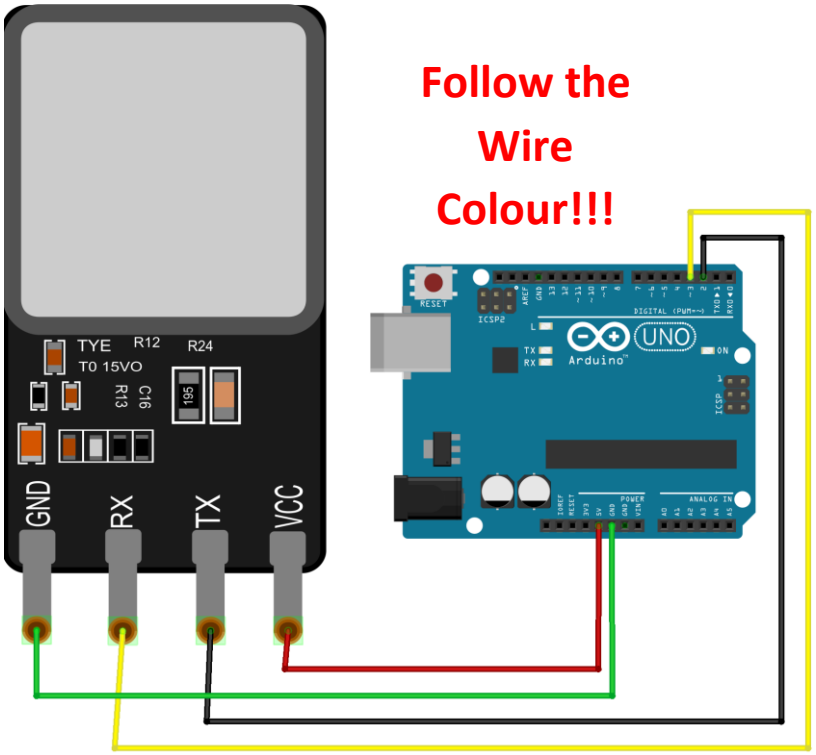


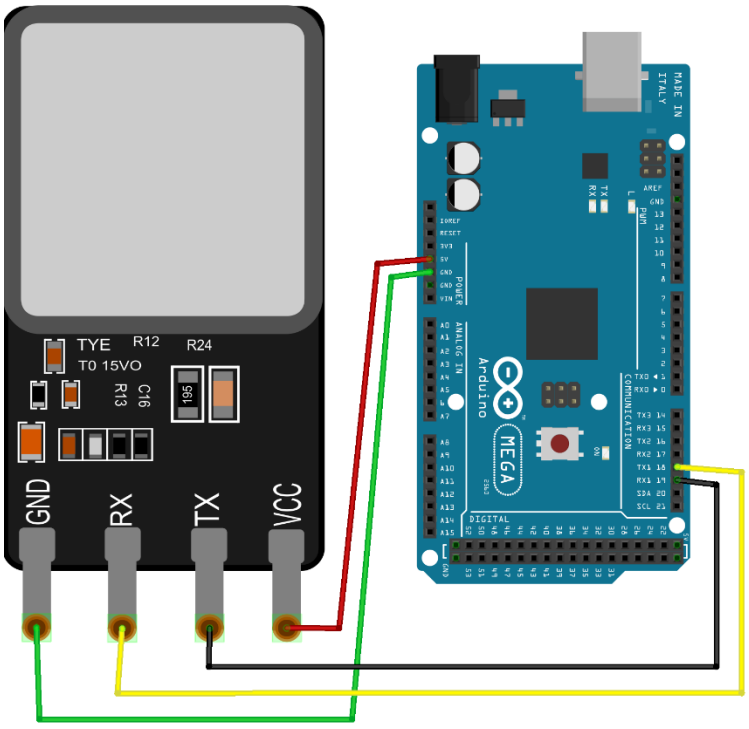
2. Once **Library** installed it will show up program examples as below. (**File > Example**)



B. Hardware Setup / Connection

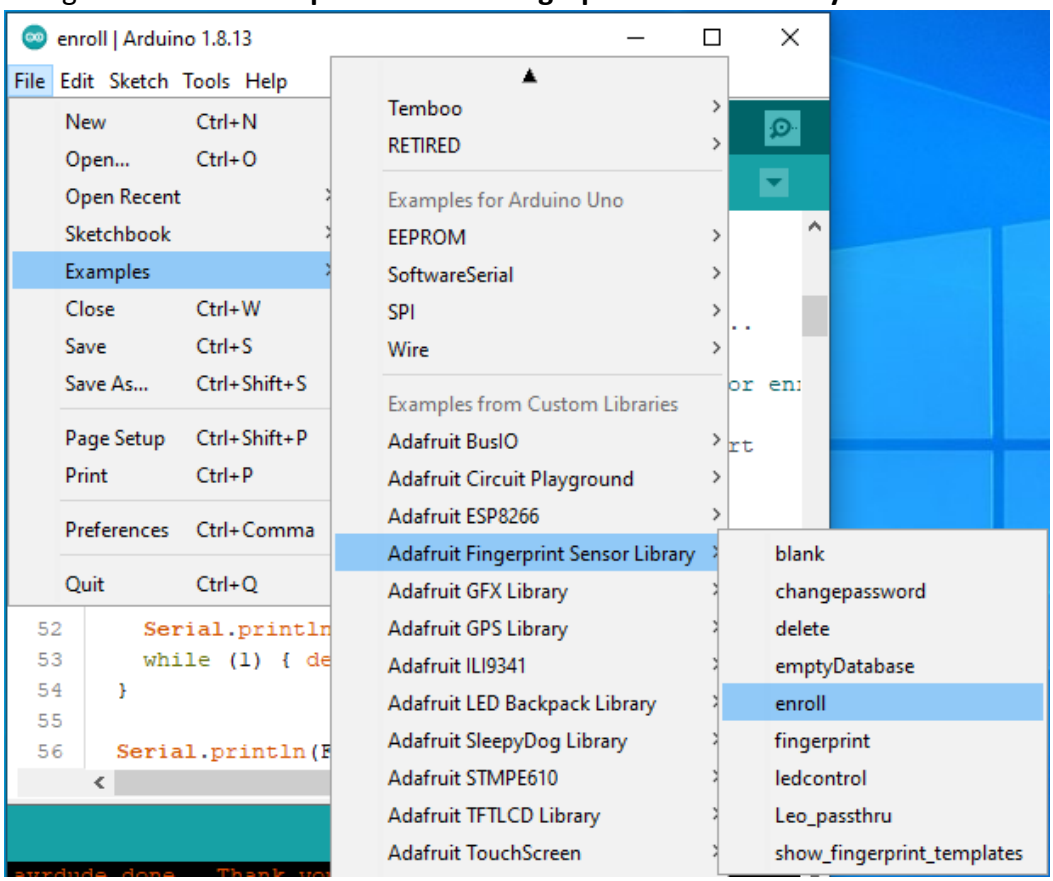
Fingerprint Module	Arduino UNO	Arduino MEGA
VCC (**Red**)	3.3v	3.3v
GND (**Green**)	GND	GND
TX (**Black**)	D2	19 (Rx1)
RX (**Yellow**)	D3	18 (Tx1)



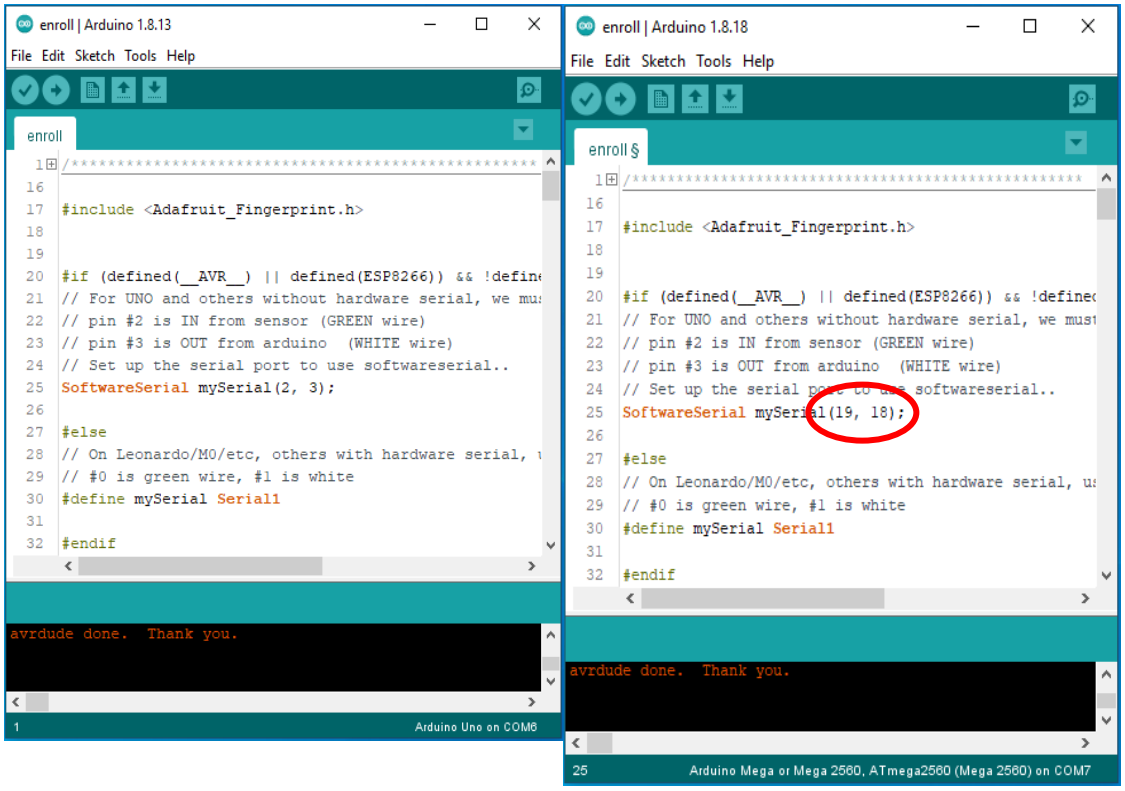


C. Registering Fingerprint.

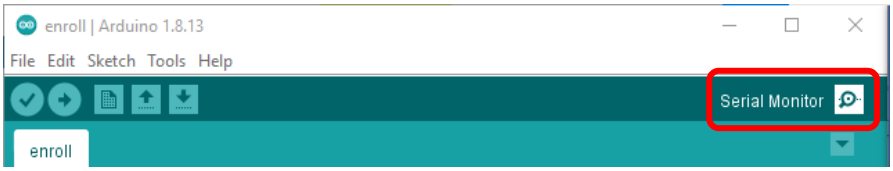
1. Navigate to **File > Example > Adafruit Fingerprint Sensor Library > Enroll**.



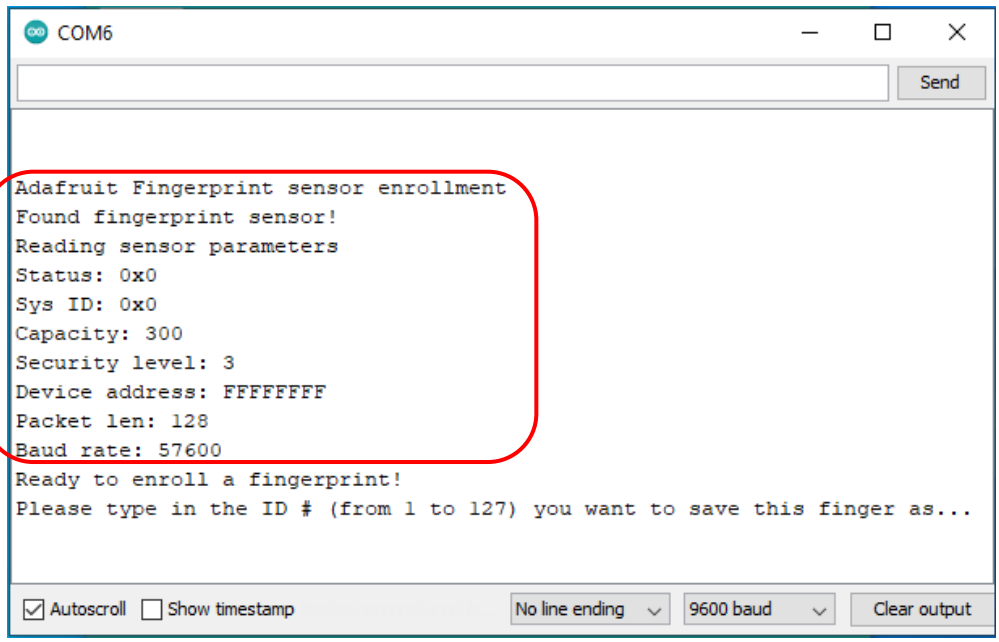
2. New windows of code will pop-out. Make sure correct Board type & port selected. Then **Upload** the code to Arduino. If using **Arduino MEGA** make sure to **change Pin**.



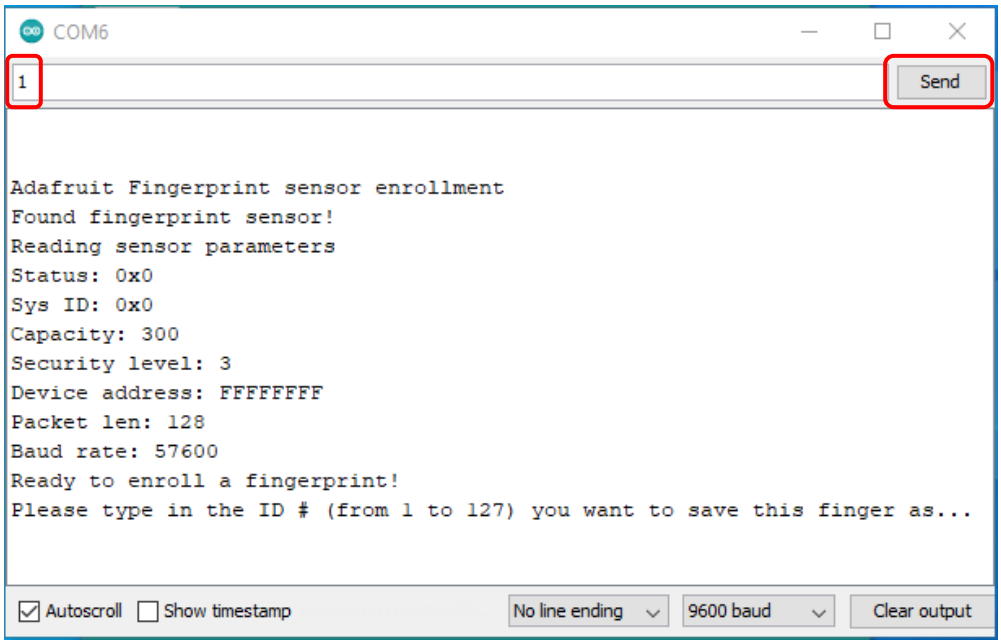
3. Once code uploaded, open **Serial Monitor** to interact with module.



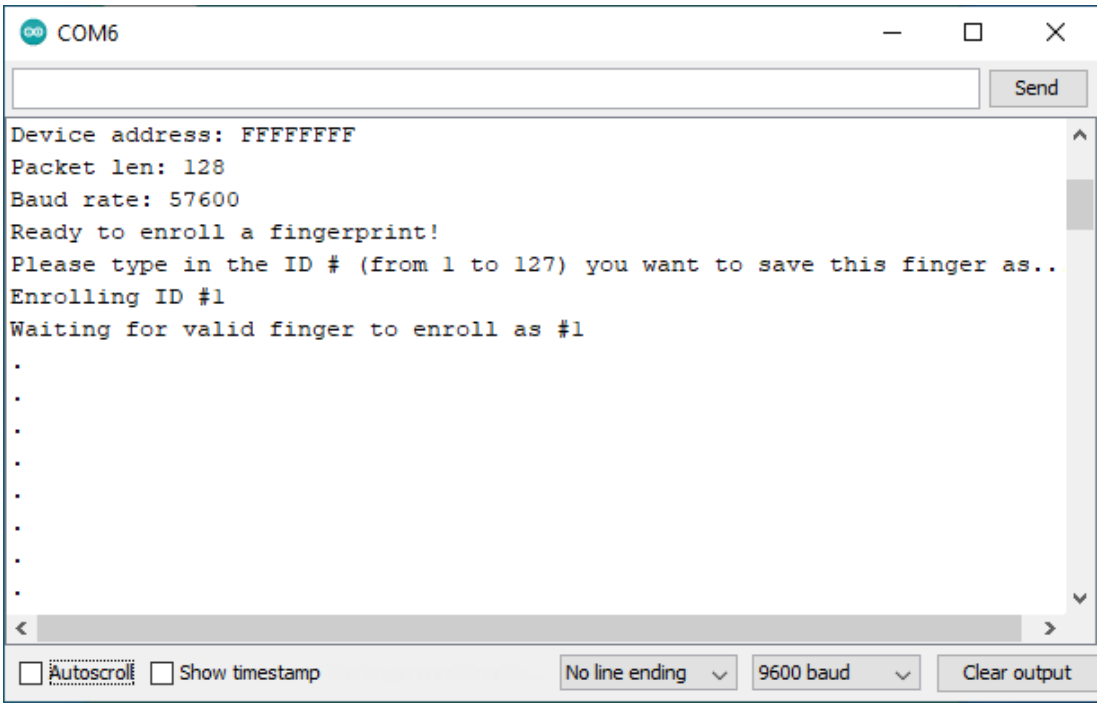
4. At first serial will display the connected sensor Parameter. These will include the Capacity of fingerprint supported, Security Level, Baud Rate & etc. (as picture below).

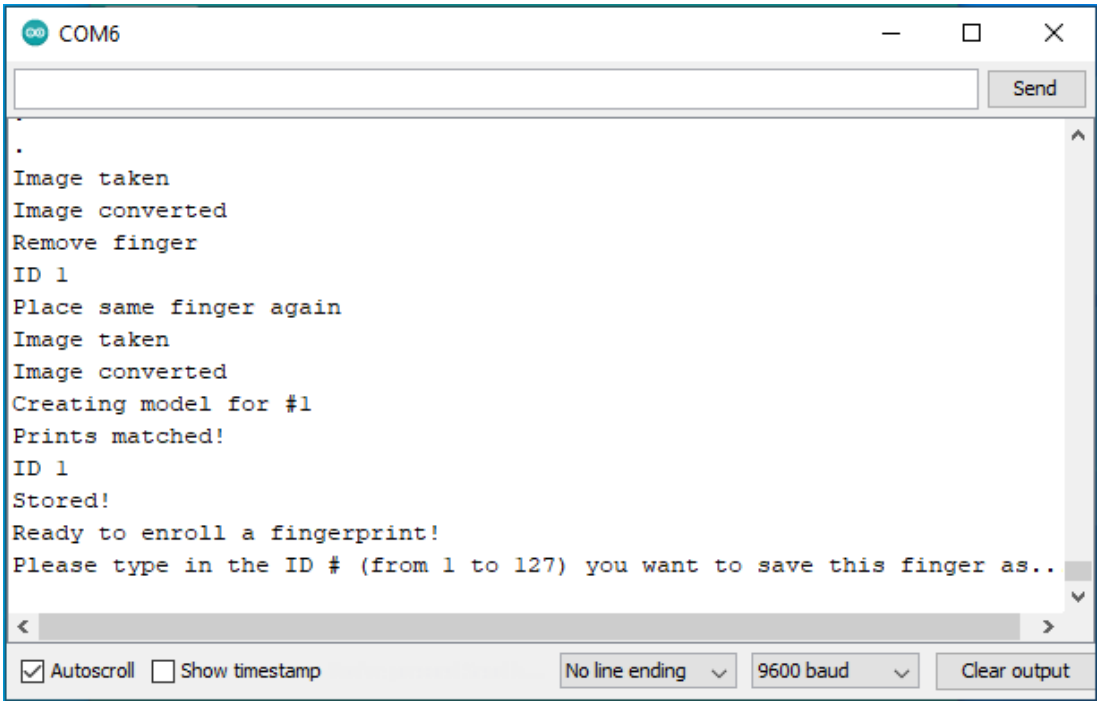


5. To register fingerprint user will need to input an ID which is a Number. Input random number from 1 to 127 into serial monitor, as an example number '1' was entered in these guide. (Example: Input number 1 + Enter key / Send)



6. Once number 1 was entered, the module will start scanning for Fingerprint. Place your Finger on the Module. Follow the further instruction from the serial monitor. (Normally this code will ask user to place an index finger twice per ID)



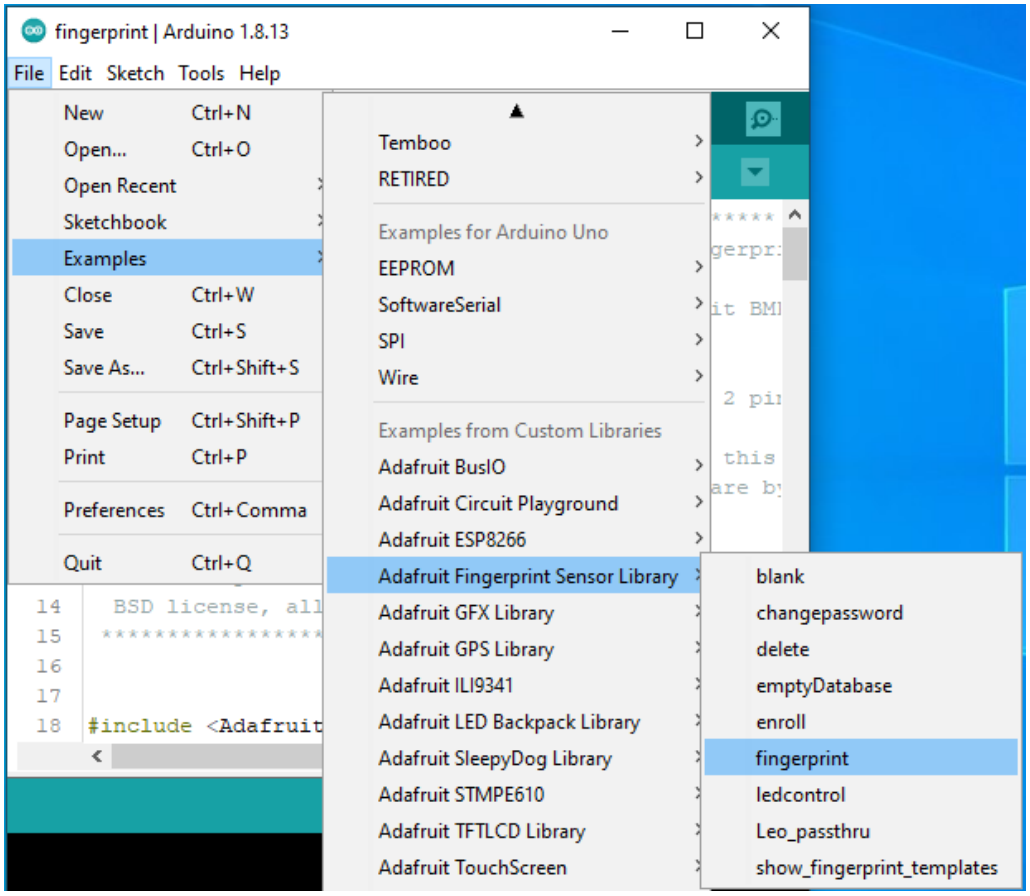


7. Once the Fingerprint successfully stored, the serial motor reply Stored!

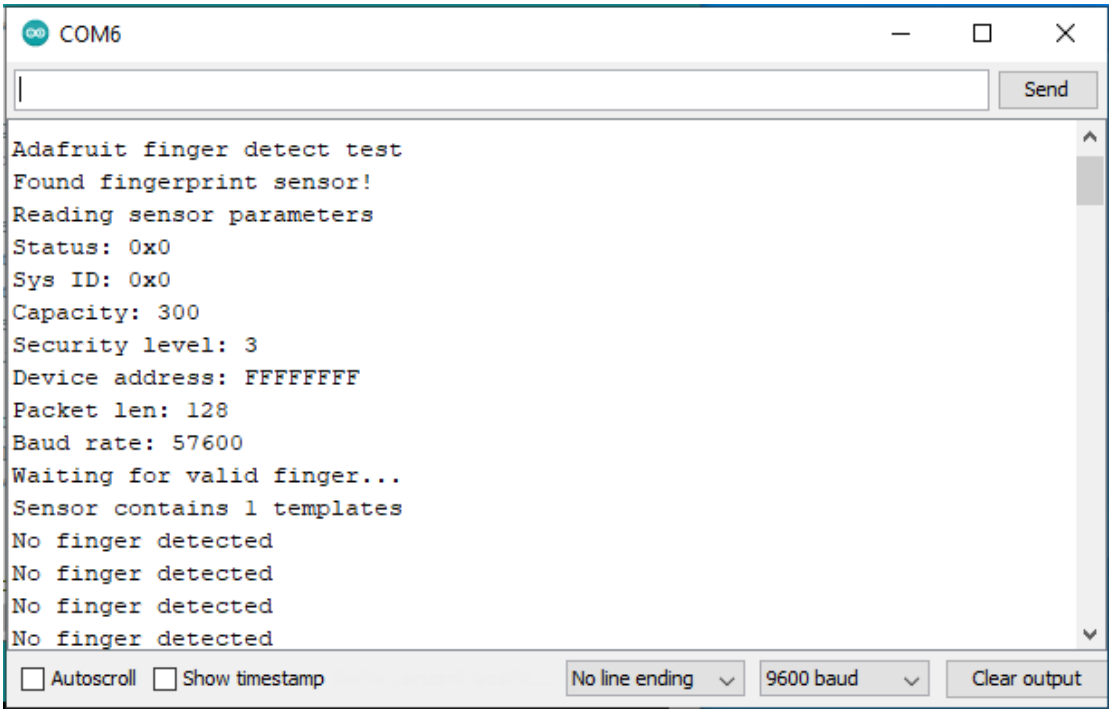
8. The program will restart to Enrolment process as before, user can register other ID.

D. Scanning The Fingerprint

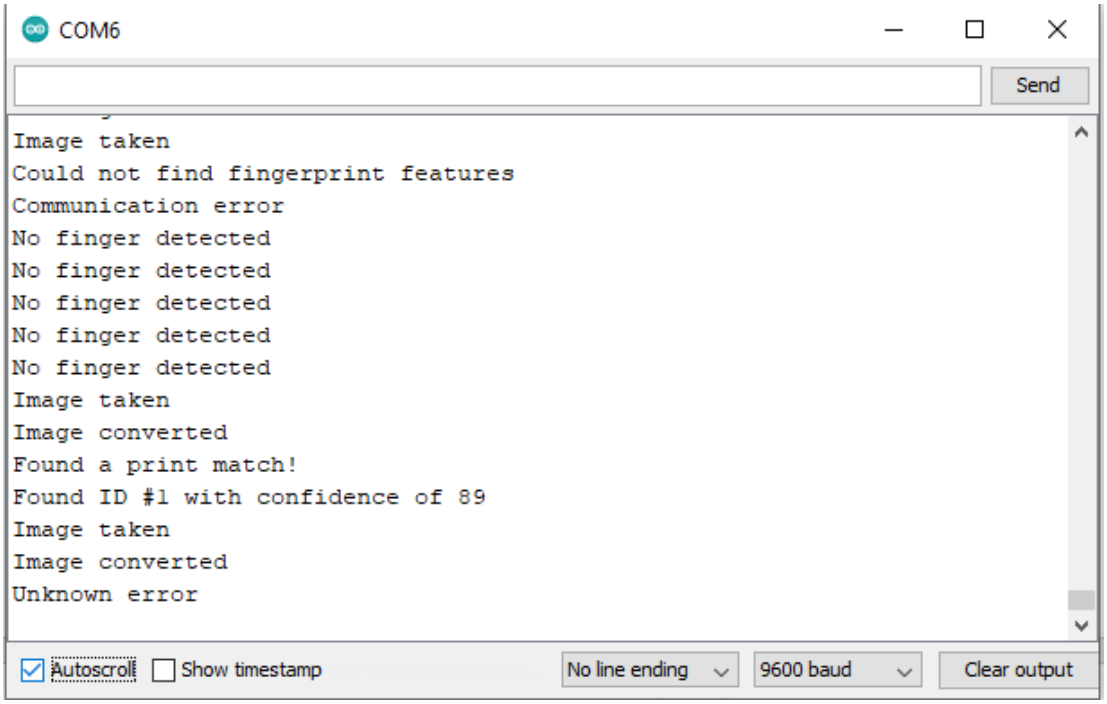
1. Navigate to **File > Example > Adafruit Fingerprint Sensor Library > Fingerprint.** Then **Upload** the code. If using **Arduino MEGA** make sure to **change Pin**.



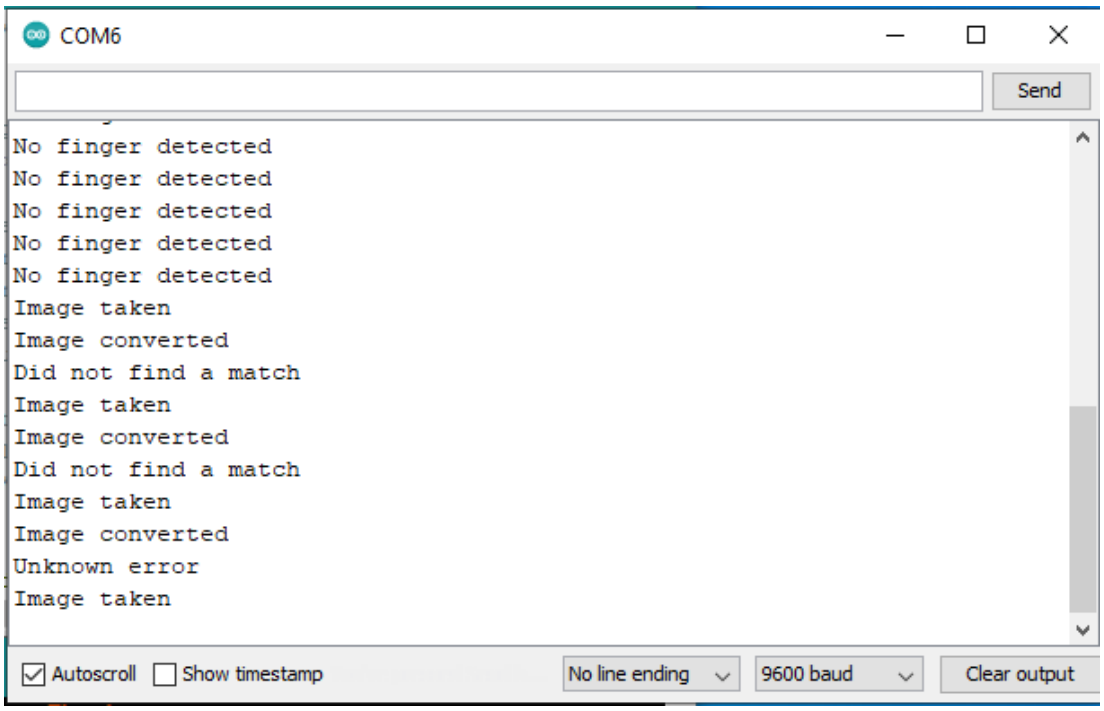
2. Once code uploaded open **Serial Monitor** to start fingerprint scanning.



3. Place the registered finger on sensor, **Serial Monitor** will display the result. If the result is match It will show the ID number.

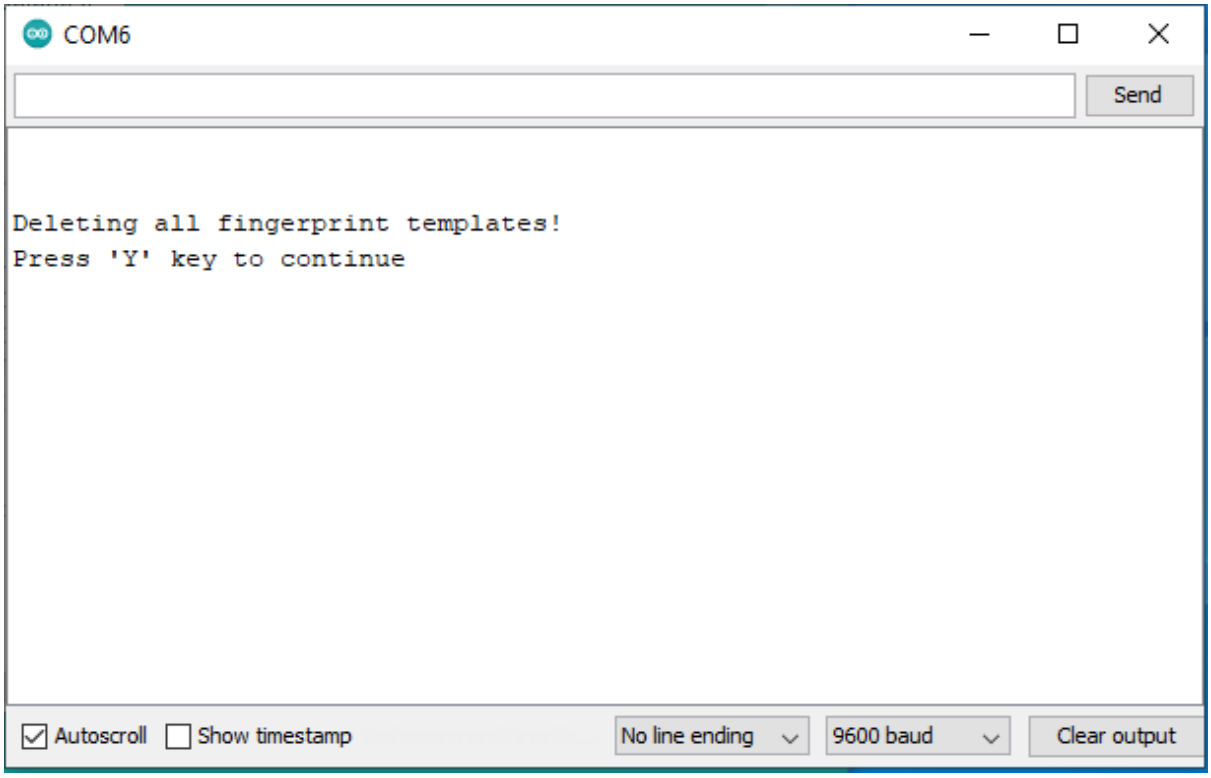


4. If place other unregistered Finger the result will be shown as below.



E. Deleting The Registered Fingerprint

1. Navigate to **File > Example > Adafruit Fingerprint Sensor Library > EmptyDatabase.** Then **Upload** the code. If using **Arduino MEGA** make sure to **change Pin**.
2. Once code uploaded open **Serial Monitor** to start Fingerprint deletion.



3. Input key ‘Y’ to delete all database.