

Arduino Fingerprint Scanner with R307 Module

The R307 is a fingerprint scanner module that can be integrated with Arduino for biometric authentication projects. Here's a comprehensive guide to using it:

Hardware Requirements

- Arduino board (Uno, Nano, Mega, etc.)
- R307 Fingerprint Sensor Module
- Jumper wires
- Breadboard (optional)

Wiring Connections

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R307 Module | Arduino

VCC | 5V

GND | GND

TX | RX (Digital Pin 2 for software serial)

RX | TX (Digital Pin 3 for software serial)

Library Installation

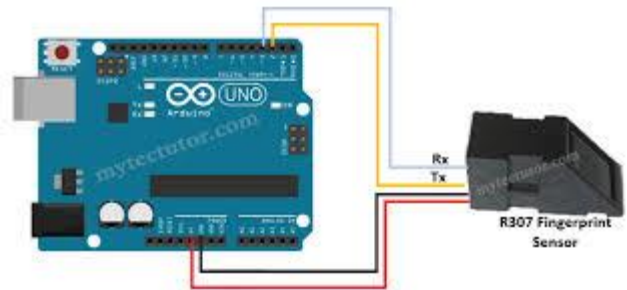
You'll need the Adafruit Fingerprint Sensor Library:

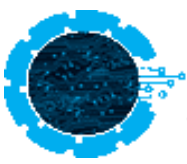
1. Open Arduino IDE
2. Go to Sketch > Include Library > Manage Libraries
3. Search for "Adafruit Fingerprint Sensor"
4. Install the library

Basic Code Example

cpp

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```
#include <Adafruit_Fingerprint.h>
```

```
#include <SoftwareSerial.h>
```

```
// Pin setup for software serial
```

```
SoftwareSerial mySerial(2, 3); // RX, TX
```

```
Adafruit_Fingerprint finger = Adafruit_Fingerprint(&mySerial);
```

```
void setup() {
```

```
  Serial.begin(9600);
```

```
  while (!Serial); // For Leonardo/Micro/Zero
```

```
  Serial.println("\n\nAdafruit Fingerprint sensor enrollment");
```

```
// Set the data rate for the sensor serial port
```

```
  finger.begin(57600);
```

```
  if (finger.verifyPassword()) {
```

```
    Serial.println("Found fingerprint sensor!");
```

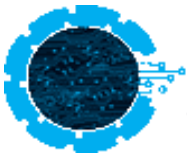
```
  } else {
```

```
    Serial.println("Did not find fingerprint sensor :(");
```

```
    while (1);
```

```
  }
```

```
}
```



```
void loop() {  
  
    Serial.println("Ready to enroll a fingerprint!");  
  
    Serial.println("Please type in the ID # (from 1 to 127) you want to save this finger as...");  
  
  
    int id = 0;  
  
    while (true) {  
  
        while (!Serial.available());  
  
        char c = Serial.read();  
  
        if (!isdigit(c)) break;  
  
        id *= 10;  
  
        id += c - '0';  
  
    }  
  
  
    Serial.print("Enrolling ID #");  
  
    Serial.println(id);  
  
  
    while (!getFingerprintEnroll(id));  
  
}  
  
  
uint8_t getFingerprintEnroll(int id) {  
  
    int p = -1;  
  
    Serial.print("Waiting for valid finger to enroll as #"); Serial.println(id);  
  
    while (p != FINGERPRINT_OK) {  
  
        p = finger.getImage();  
  

```



ARDUINO FINGER SCANNER R307

```
switch (p) {  
  
    case FINGERPRINT_OK:  
  
        Serial.println("Image taken");  
  
        break;  
  
    case FINGERPRINT_NOFINGER:  
  
        Serial.println(".");  
  
        break;  
  
    case FINGERPRINT_PACKETRECEIVEERR:  
  
        Serial.println("Communication error");  
  
        break;  
  
    case FINGERPRINT_IMAGEFAIL:  
  
        Serial.println("Imaging error");  
  
        break;  
  
    default:  
  
        Serial.println("Unknown error");  
  
        break;  
  
}  
  
}
```

// Other steps would follow for image conversion, template creation, etc.

// Full code would be longer than this example

```
}
```

Common Functions

1. Enrolling a fingerprint:

- Capture fingerprint image



- Convert to feature template
- Store template with ID

2. Searching for a fingerprint:

- Capture fingerprint
- Compare against stored templates
- Return matching ID or confidence score

3. Deleting a fingerprint:

- Remove template by ID

Troubleshooting

1. Sensor not detected:

- Check wiring connections
- Verify power supply (5V required)
- Ensure baud rate matches (usually 57600)

2. Poor image quality:

- Clean sensor surface
- Ensure finger is placed flat on sensor
- Apply consistent pressure

3. Communication errors:

- Check RX/TX connections are correct
- Try different baud rates
- Ensure no other devices are using the serial port

Advanced Features

- You can store multiple fingerprints (capacity depends on model, typically 1000 templates)
- The sensor can perform 1:1 verification or 1:N identification