FINGERPRINT ATTENDANCE SYSTEM

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ABSTRACT

A fingerprint recognition-based attendance system for students developed using ESP32 NodeMCU and R307 fingerprint scanner.

COURSE

Advanced Operating System

COURSE TEACHER

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Project Idea: We are making a Biometric Attended System through which students can give their attendance using their finger prints. Attendance become hazier when it appears middle of the class. So, students can give their attendance at any time of the class (whenever the faculty opens a session for attendance). For saving class time and to operate a sound classroom it is going to be a helping hand for both students and faculties. In this idea students are going to give attendance through finger print & end of the term the system will going to count for how many classes the student was present.

Component List: The components are going used in this project-

- ESP32 NodeMCU
- R307 Fingerprint Scanner
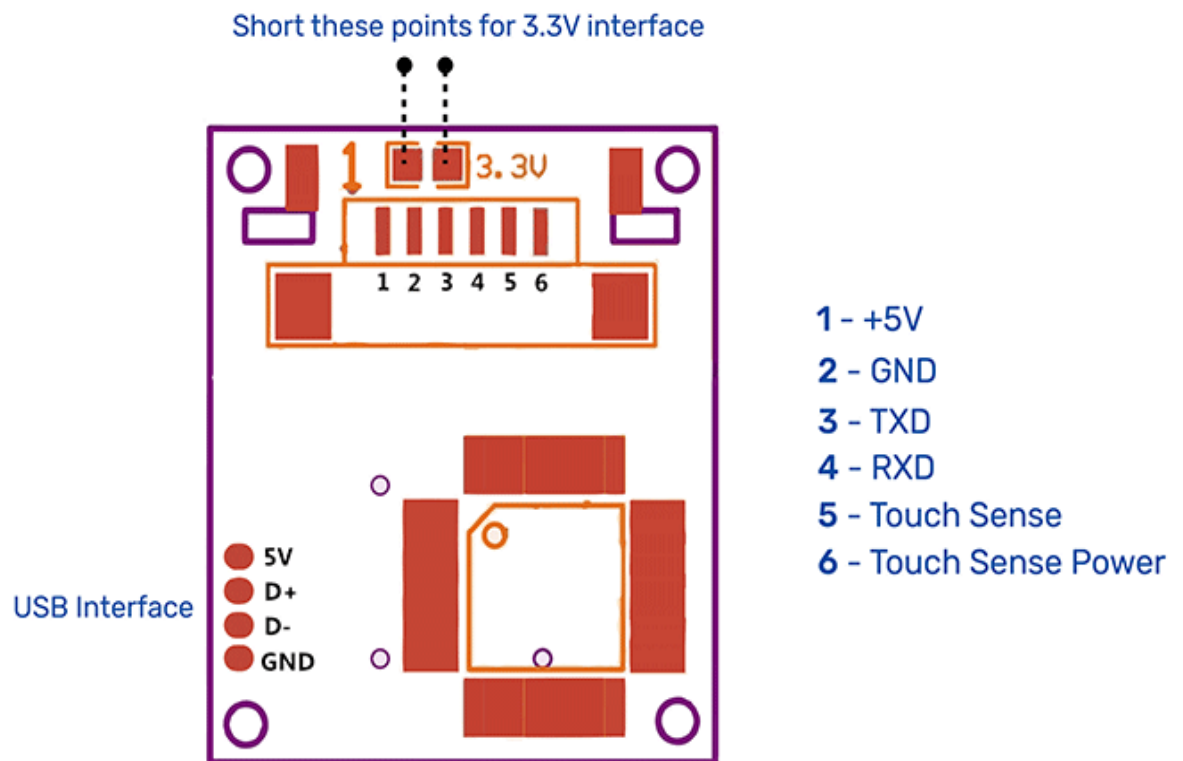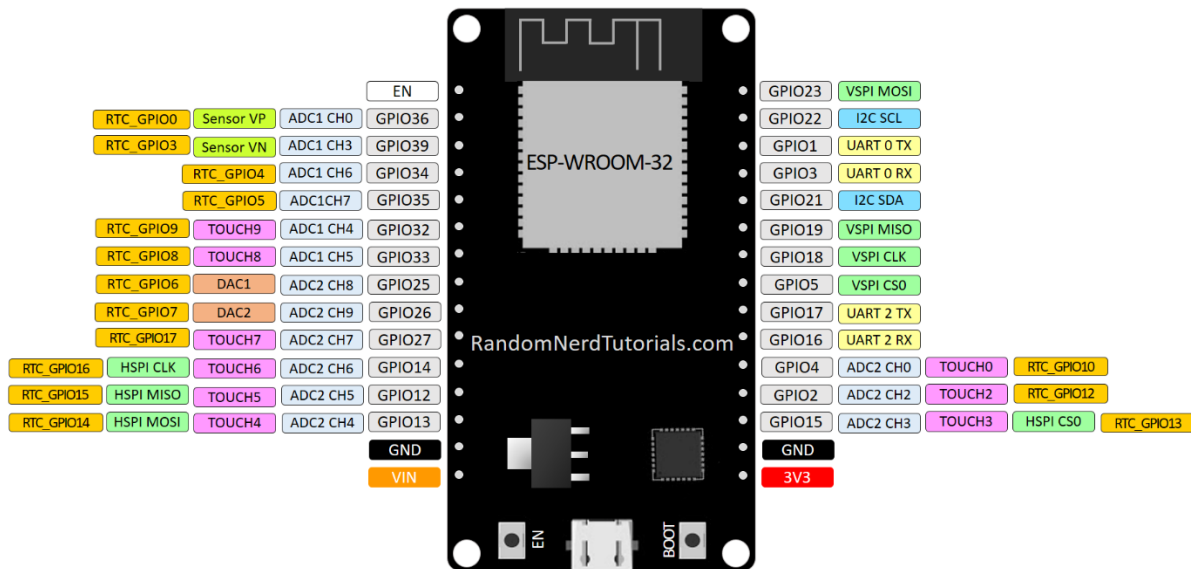- Breadboard
- Jumper Wire
- 5V DC Adapter

Short these points for 3.3V interface

3. 3V

USB Interface
- 5V
- D+
- D-
- GND

1 2 3 4 5 6

1 - +5V
2 - GND
3 - TXD
4 - RXD
5 - Touch Sense
6 - Touch Sense Power

Fig. R307 Fingerprint Scanner Pinout

ESP32 DEVKIT V1 – DOIT
version with 30 GPIOs

			EN
RTC_GPIO0	Sensor VP	ADC1 CH0	GPIO36
RTC_GPIO3	Sensor VN	ADC1 CH3	GPIO39
	RTC_GPIO4	ADC1 CH6	GPIO34
	RTC_GPIO5	ADC1CH7	GPIO35
RTC_GPIO9	TOUCH9	ADC1 CH4	GPIO32
RTC_GPIO8	TOUCH8	ADC1 CH5	GPIO33
RTC_GPIO6	DAC1	ADC2 CH8	GPIO25
RTC_GPIO7	DAC2	ADC2 CH9	GPIO26
RTC_GPIO17	TOUCH7	ADC2 CH7	GPIO27
RTC_GPIO16	HSPI CLK	TOUCH6	ADC2 CH6	GPIO14
RTC_GPIO15	HSPI MISO	TOUCH5	ADC2 CH5	GPIO12
RTC_GPIO14	HSPI MOSI	TOUCH4	ADC2 CH4	GPIO13
			GND
			VIN

ESP-WROOM-32

RandomNerdTutorials.com

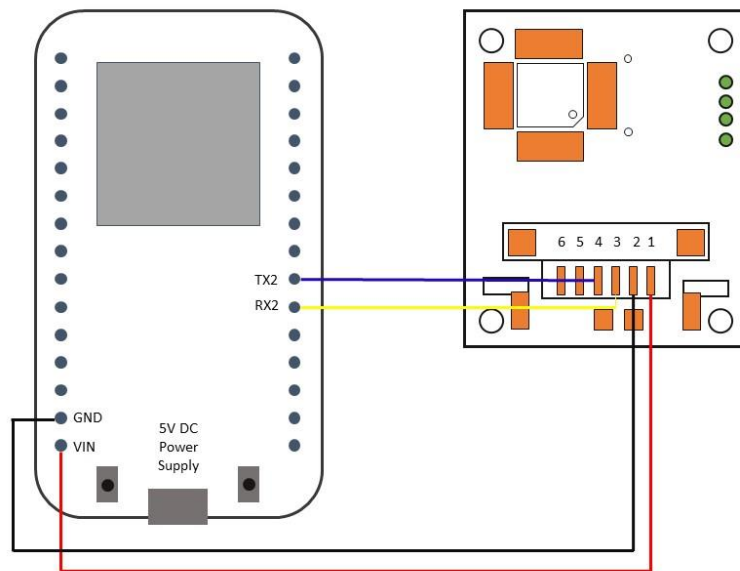| GPIO23 | VSPI MOSI |
GPIO22	I2C SCL
GPIO1	UART 0 TX
GPIO3	UART 0 RX
GPIO21	I2C SDA
GPIO19	VSPI MISO
GPIO18	VSPI CLK
GPIO5	VSPI CS0
GPIO17	UART 2 TX
GPIO16	UART 2 RX
GPIO4	ADC2 CH0	TOUCH0	RTC_GPIO10
GPIO2	ADC2 CH2	TOUCH2	RTC_GPIO12
GPIO15	ADC2 CH3	TOUCH3	HSPI CS0	RTC_GPIO13
GND
3V3

EN BOOT

Project Implementation Description: This system will facilitate instructions organization to make attendance individual in time along with data information fingerprint impression will be taken as a signature for the system entry. The aim of this system is to implement in C set of reliable techniques for fingerprint image enhancement and minutiae extraction. The performance of these techniques will be evaluated on a fingerprint data set. In combination with these development techniques, statistical experiments can then be performed on the fingerprint data set. The results from these experiments can be used to help us better understand what is involved in determining the statistical uniqueness of fingerprint minutiae. The main aim that this system would test whether attendance by fingerprint is enough for identification. It is expected that the work in this system will reach the stage of being able to fully test hypothesis. Fingerprints are the idlest form of biometric identification. Modern fingerprint-based identification is used in forensic science, and in biometric systems. Despite the widespread use of fingerprints, there is little statistical theory and the uniqueness of fingerprint minutiae. A fingerprint is formed from an impression on a surface of composite curve segments. R307 Fingerprint Module consists of optical fingerprint sensor, high-speed DSP

processor, high-performance fingerprint alignment algorithm, high-capacity FLASH chips and other hardware and software composition, stable performance, simple structure, with fingerprint entry, image processing, fingerprint matching, search and template storage and other functions. NodeMCU is an open source Lua based firmware for the ESP32 and uses an on-module flash-based SPIFFS file system. NodeMCU is implemented in C and is layered on the Espressif ESP-IDF. We are going to use ESP32 NodeMCU with R307 Fingerprint Scanner. The pin no.1 from R307 fingerprint scanner is connected with the pin VIN of ESP32 NodeMCU. The GND pin from ESP32 is connected with the pin no.2. The RX2 and the TX2 is connected with the pin no.3 and pin no.2 respectively. The power will be going to flow from the 5V DC Adapter to ESP32.

Circuit Diagram:

Reference:

1. https://www.vishnumaiea.in/projects/hardware/interfacing-r307-optical-fingerprint-scanner-with-arduino
2. https://circuits4you.com/2018/12/31/esp32-devkit-esp32-wroom-gpio-pinout/
3. https://github.com/brianrho/FPM