



## Smart Bluetooth Scanner

status active

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### Smart Bluetooth Scanner

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#### About

This repo contains

- WebApp
- Firmware
- Detailed instructions

for Smart Bluetooth Scanner.

## Getting Started

These instructions will get you a copy of the project up and running on your system.

### Prerequisites

Things you need to install the FW.

- Arduino IDE

## Installing

A step by step series that tell you how to get the Firmware and Backend running

### ESP32 Configuration

You should have Arduino IDE Installed

1. Add ESP32 Board to your Arduino IDE
2. In your Arduino IDE, go to File> Preferences Installing ESP32 Add-on in Arduino IDE Windows, Mac OS X, Linux open preferences
3. Enter [https://dl.espressif.com/dl/package\\_esp32\\_index.json](https://dl.espressif.com/dl/package_esp32_index.json) into the "Additional Board Manager URLs" field then, click the "OK" button: Note: if you already have the ESP32 boards URL, you can separate the URLs with a comma(each board will go to new line) as follows:  
[https://dl.espressif.com/dl/package\\_esp32\\_index.json](https://dl.espressif.com/dl/package_esp32_index.json),\n  
[http://arduino.esp8266.com/stable/package\\_esp8266com\\_index.json](http://arduino.esp8266.com/stable/package_esp8266com_index.json)
4. Open the Boards Manager. Go to Tools > Board > Boards Manager...
5. Search for ESP32 and press install button for the ESP32 by Espressif Systems":
6. That's it. It should be installed after a few seconds.
7. In your Arduino sketchbook directory, create tools directory if it doesn't exist yet.
8. Unpack the tool into tools directory(present in libs/ESP32FS-1.0.zip) (the path will look like <home\_dir>/Arduino/tools/ESP32FS/tool/esp32fs.jar).
9. Close and re-open the Arduino IDE.
10. Now copy the contents of the libs folder to the libraries directory of your Arduino
  1. If you are using windows, the libraries directory will be Documents/Arduino/libraries

### ESP32 WiFi Node FW Uploading

1. Select ESP32 Dev Module from Tools->Board->ESP32
2. Select the correct port from Tools->Port
3. Then open WiFiDevice.ino file from Firmware/WiFiDevice folder,
4. Select Tools > ESP32 Sketch Data Upload menu item. This should start uploading the files into ESP32 flash file system.
5. Now Upload the Code to your ESP32 Dev Module.
6. Your ESP32 is now ready to be used.

### ESP32 BLE Node FW Uploading

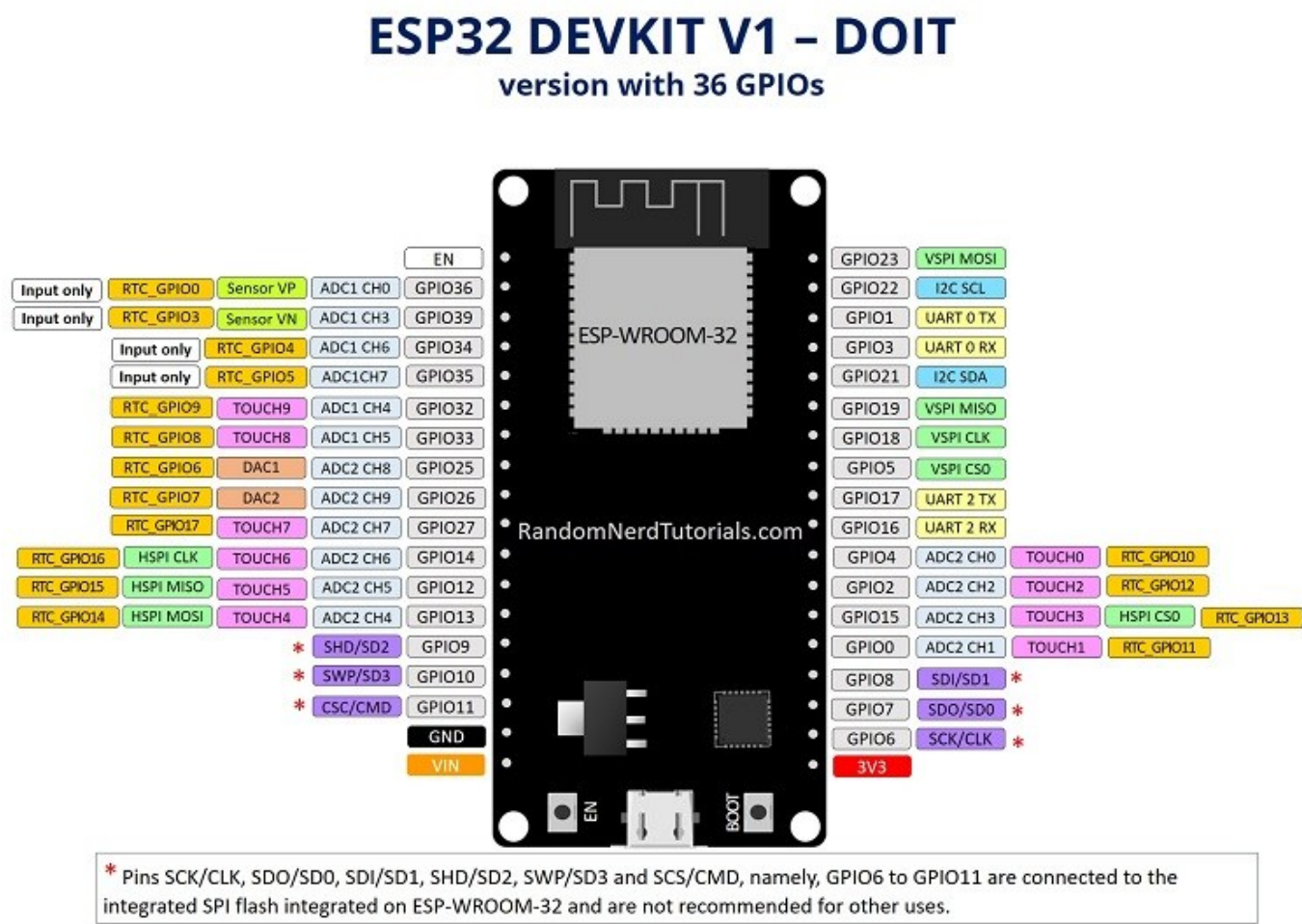
1. Select ESP32 Dev Module from Tools->Board->ESP32
2. Select the correct port from Tools->Port
3. Then open BLEScannerDevice.ino file from Firmware/BLEScannerDevice folder,

- 4. Now Upload the Code to your ESP32 Dev Module.
- 5. Your ESP32 is now ready to be used.

Circuit

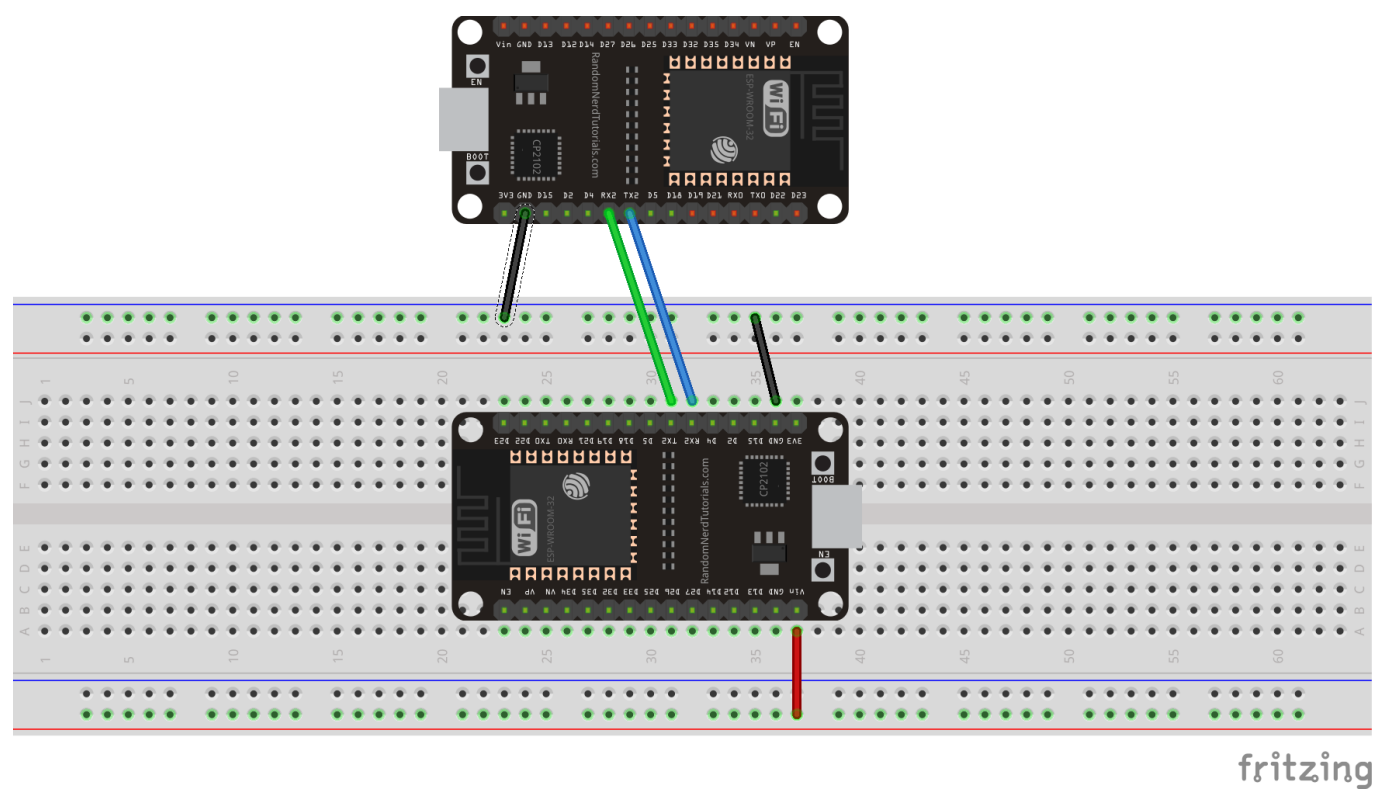
ESP32 Dev Module Pinout

Follow the pinout diagram given below to connect different components to your ESP32 Dev Module board.



Complete Circuit Diagram

Here's the complete circuit diagram of the system.



Other Components

Other components pin connection details

ESP32 Connections

TWO ESP32 Device Connections

ESP32 BLE	ESP32 WiFi
TX2	RX2
RX2	TX2
GND	GND

Note: If the scanning process does not start, press EN button on both ESP32 devices.

Usage

- 1. Upload the code to your ESP32.
- 2. Power on your ESP32, it will present you with an AP named SBS-abc (while SBS can be changed in the portal and abc is a unique id for each esp32)
- 3. Default captive portal password 123456789AP which can be changed in captive portal.
- 4. Connect to the ESP32 access point and open the web-browser and navigate to the link [http://esp32.local/\\_ac](http://esp32.local/_ac). This link will work on most of the operating systems but if your operating system is not allowing to open it, you may want to check the captive portal IP Address from the serial monitor and can use that IP address inplace of the above mentioned URL.

- The default access IP Address is [http://192.168.4.1/\\_ac](http://192.168.4.1/_ac)
- You will be presented with a main dashboard as shown below(based on your device)

BLE Scanner		Connect to WiFi	Saved WiFi Networks	Disconnect	Reset...	Settings	HOME
Established connection	hotspot2						
Mode	AP_STA(3)						
IP	192.168.115.49						
GW	192.168.115.181						
Subnet mask	255.255.255.0						
SoftAP IP	192.168.4.1						
AP MAC	24:0A:C4:AF:D0:C1						
STA MAC	24:0A:C4:AF:D0:C0						
Channel	6						
dBm	-40						
Chip ID	49360						
CPU Freq.	240MHz						
Flash size	4194304						
Free memory	244288						

- Go to Connect to WiFi tab and put your WiFi credentials to connect the ESP32 to the server.
- Once connected to a WiFi network, you can again access the captive portal using same URL or the IP Address from the Serial monitor.
- You can open settings page with following default credentials
  - User: **SBS**
  - Password: **admin**
- Dashbaord Link: <https://nodered-proxy.production.wrapdrive.tech/ui/#!/2>

BluetoothScanner						
BLE Scanner						
REFRESH						
240AC4AFD8D820						
ID	Timestamp	MAC	Name	Address	RSSI	
1	2022-01-11 03:09:44	240AC4AFD8D820	Unknown	11:bacdf6a36c34	-56	
2	2022-01-11 03:09:44	240AC4AFD8D820	Mi Note 10 Lite	5b:28:82:8cf5db	-76	

## List of Components

Following components are used to make this project

- 2x ESP32 Dev Module ○ [https://www.amazon.com/ESP32-WROOM-32-Development-ESP-32S-Bluetooth-Arduino/dp/B084KWNMM4/ref=sr\\_1\\_3?dchild=1&keywords=esp32+devkit&qid=1635342032&sr=8-3](https://www.amazon.com/ESP32-WROOM-32-Development-ESP-32S-Bluetooth-Arduino/dp/B084KWNMM4/ref=sr_1_3?dchild=1&keywords=esp32+devkit&qid=1635342032&sr=8-3)

## Demo Video

- [BLEScanner Demo](#) - BLE Scanner Demo Video

## Built Using

- [Arduino](#) - Embedded Framework and IDE - For Sensor Node Design

## Authors

- [@Nauman3S](#) - Development and Deployment