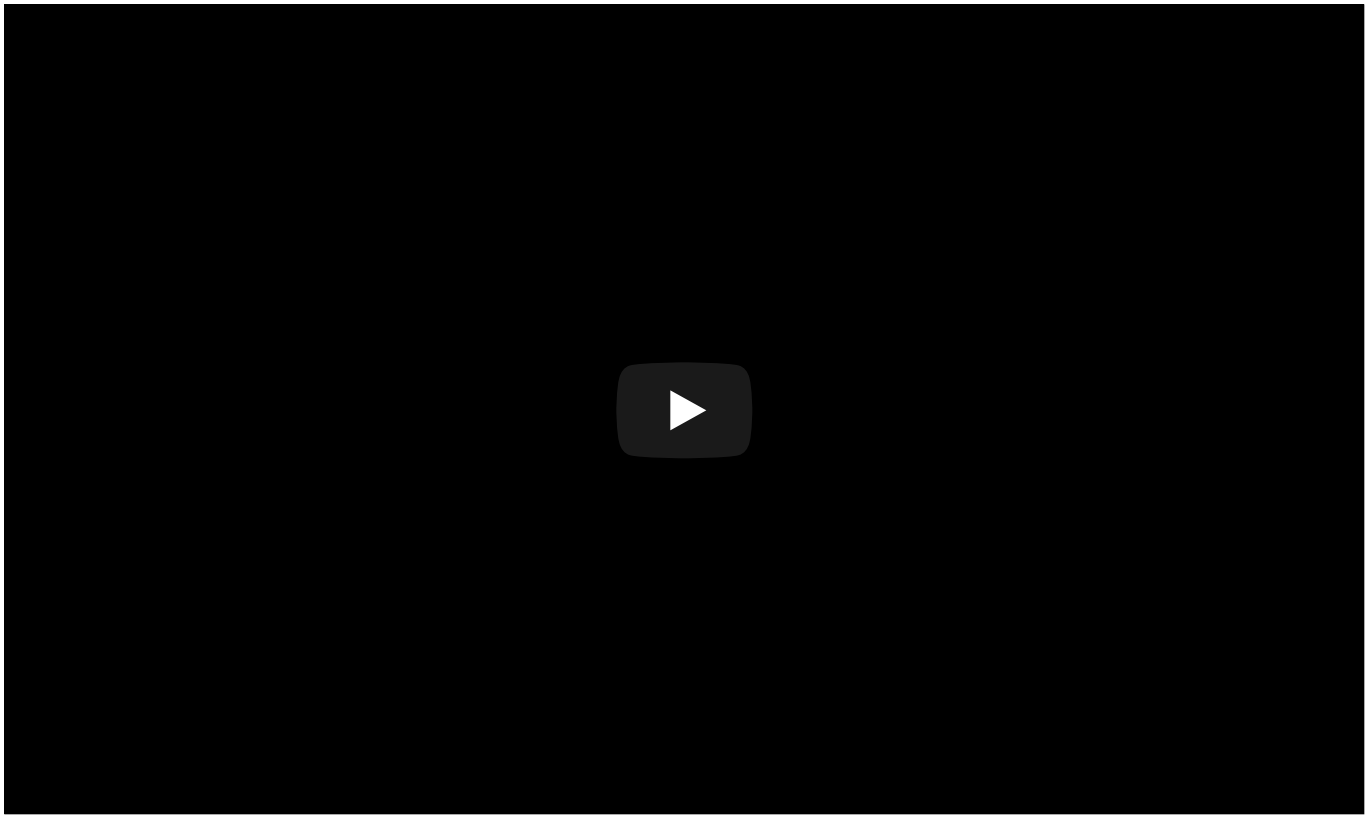
Installing the ESP32 Board in Arduino IDE (Windows, Mac OS X, Linux)

There's an add-on for the Arduino IDE that allows you to program the ESP32 using the Arduino IDE and its programming language. In this tutorial we'll show you how to install the ESP32 board in Arduino IDE whether you're using Windows, Mac OS X or Linux.

Watch the Video Tutorial

This tutorial is available in video format (watch below) and in written format (continue reading this page).



If you have any problems during the installation procedure, take a look at the ESP32 Troubleshooting Guide.

If you like the ESP32, enroll in our course: Learn ESP32 with Arduino IDE.

Prerequisites: Arduino IDE Installed

Before starting this installation procedure, make sure you have the latest version of the Arduino IDE installed in your computer. If you don't, uninstall it and install it again. Otherwise, it may not work.

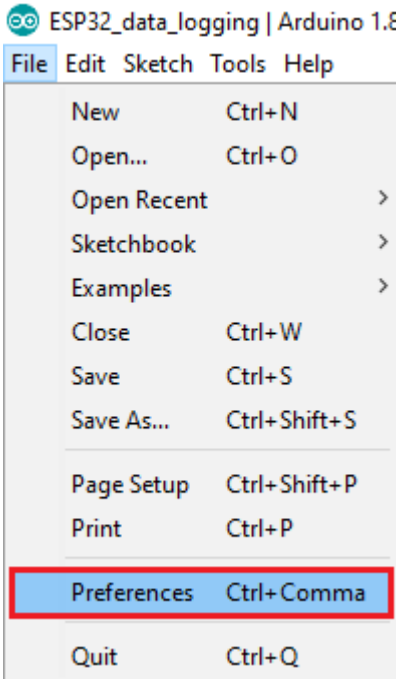
Having the latest Arduino IDE software installed from arduino.cc/en/Main/Software, continue with this tutorial.

Do you need an ESP32 board? You can buy it here.

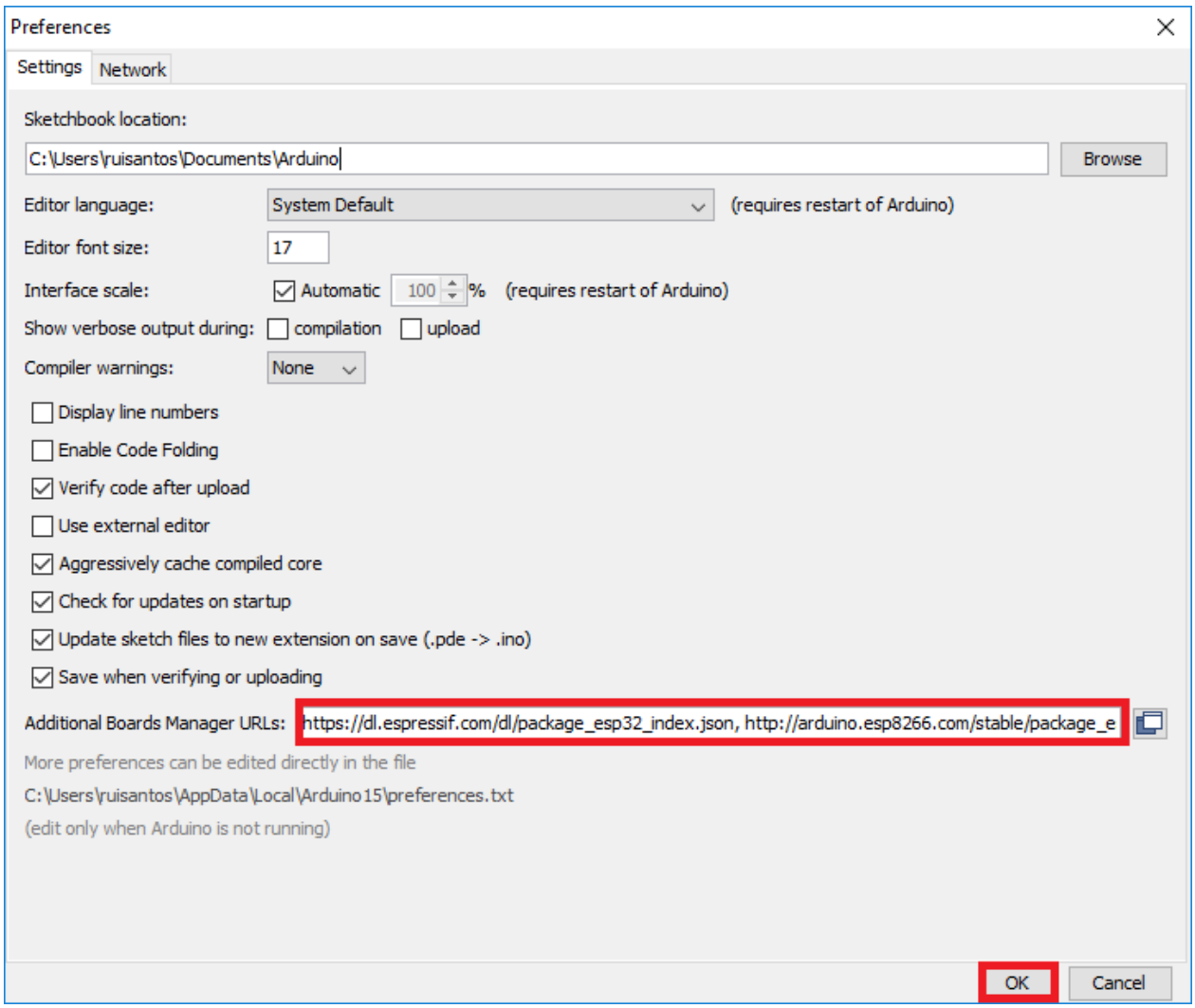
Installing ESP32 Add-on in Arduino IDE

To install the ESP32 board in your Arduino IDE, follow these next instructions:

1. In your Arduino IDE, go to **File**> **Preferences**



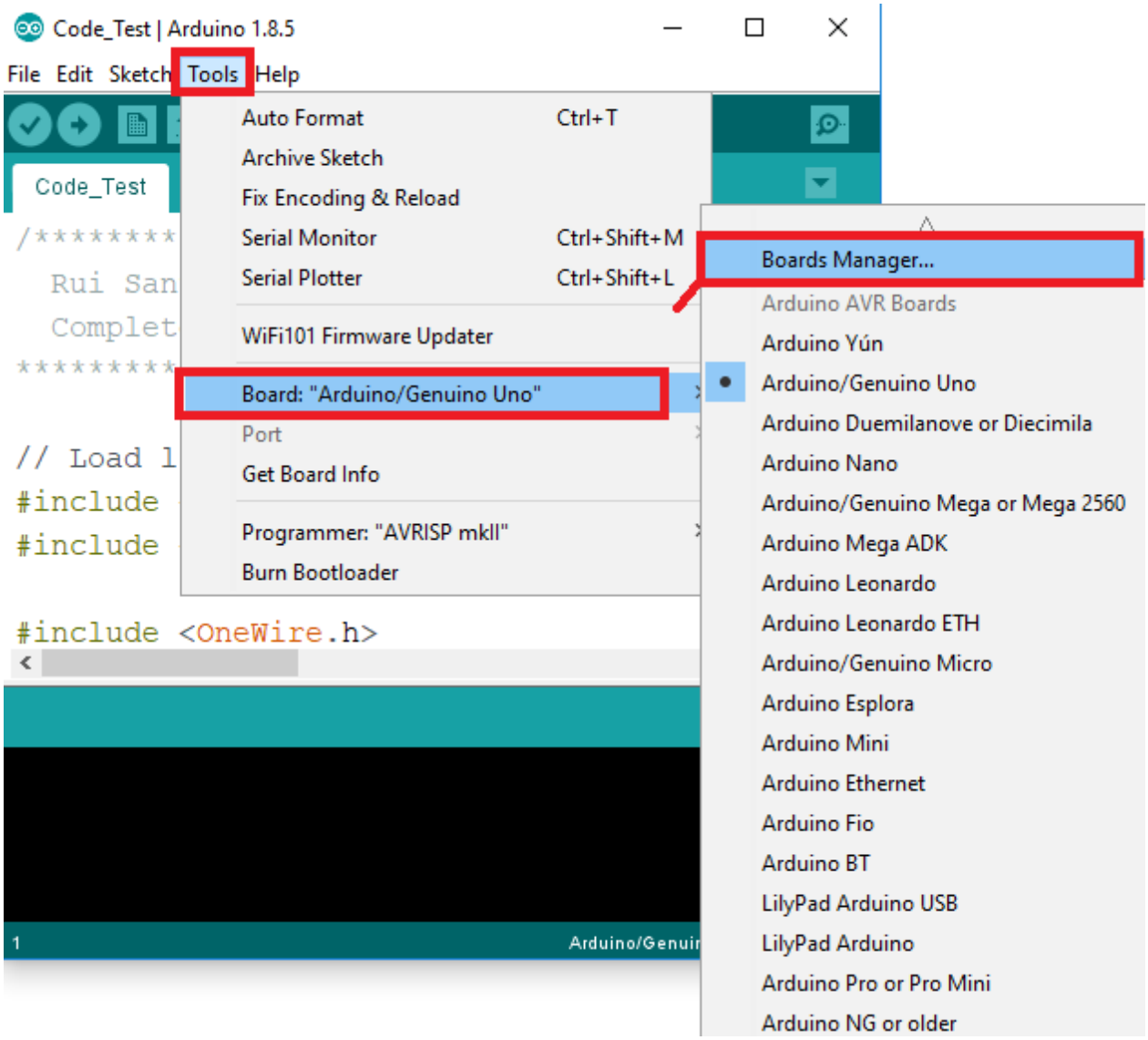
2. Enter **https://dl.espressif.com/dl/package_esp32_index.json** into the "Additional Board Manager URLs" field as shown in the figure below. Then, click the "OK" button:



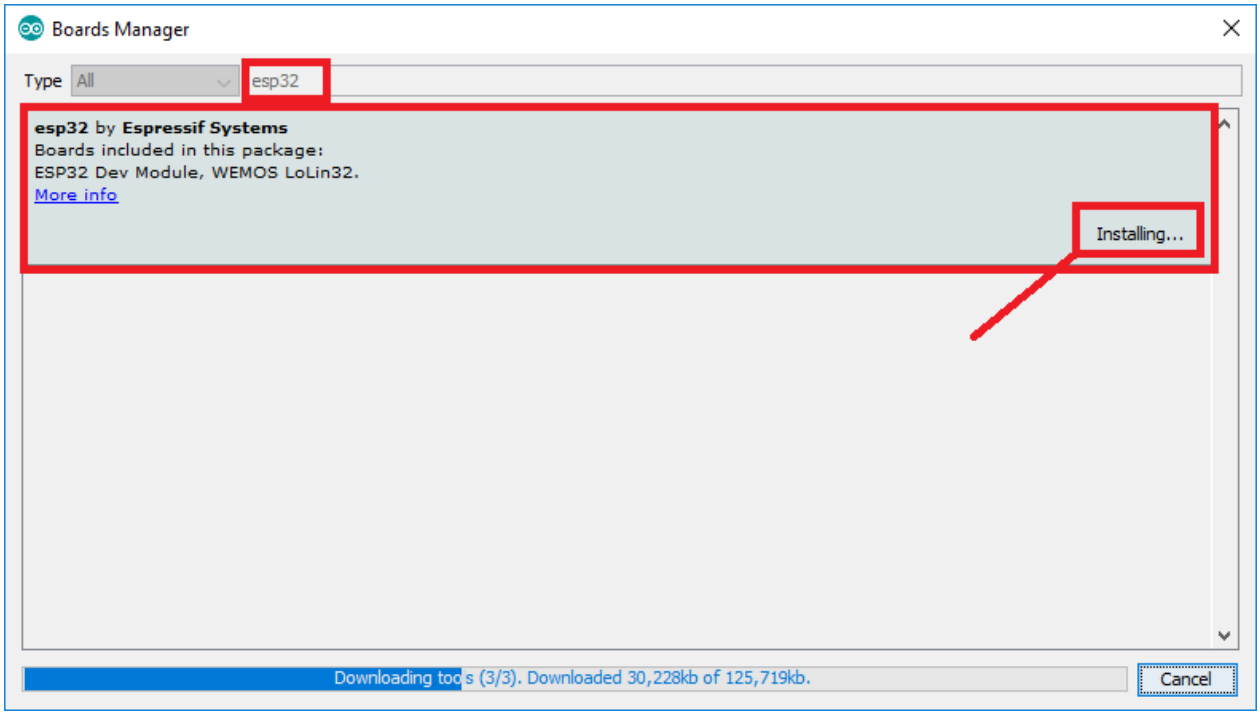
Note: if you already have the ESP8266 boards URL, you can separate the URLs with a comma as follows:

```
https://dl.espressif.com/dl/package_esp32_index.json, http://a
```

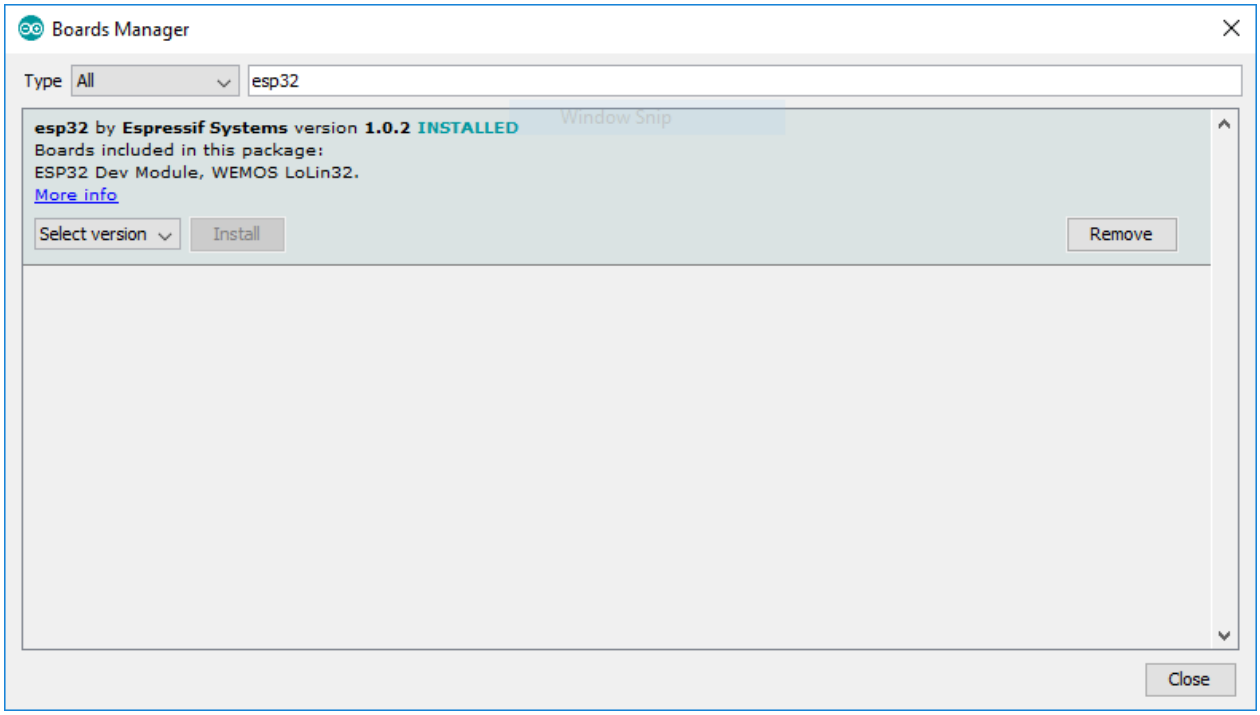
3. Open the Boards Manager. Go to **Tools** > **Board** > **Boards Manager…**



4. Search for **ESP32** and press install button for the "**ESP32 by Espressif Systems**":



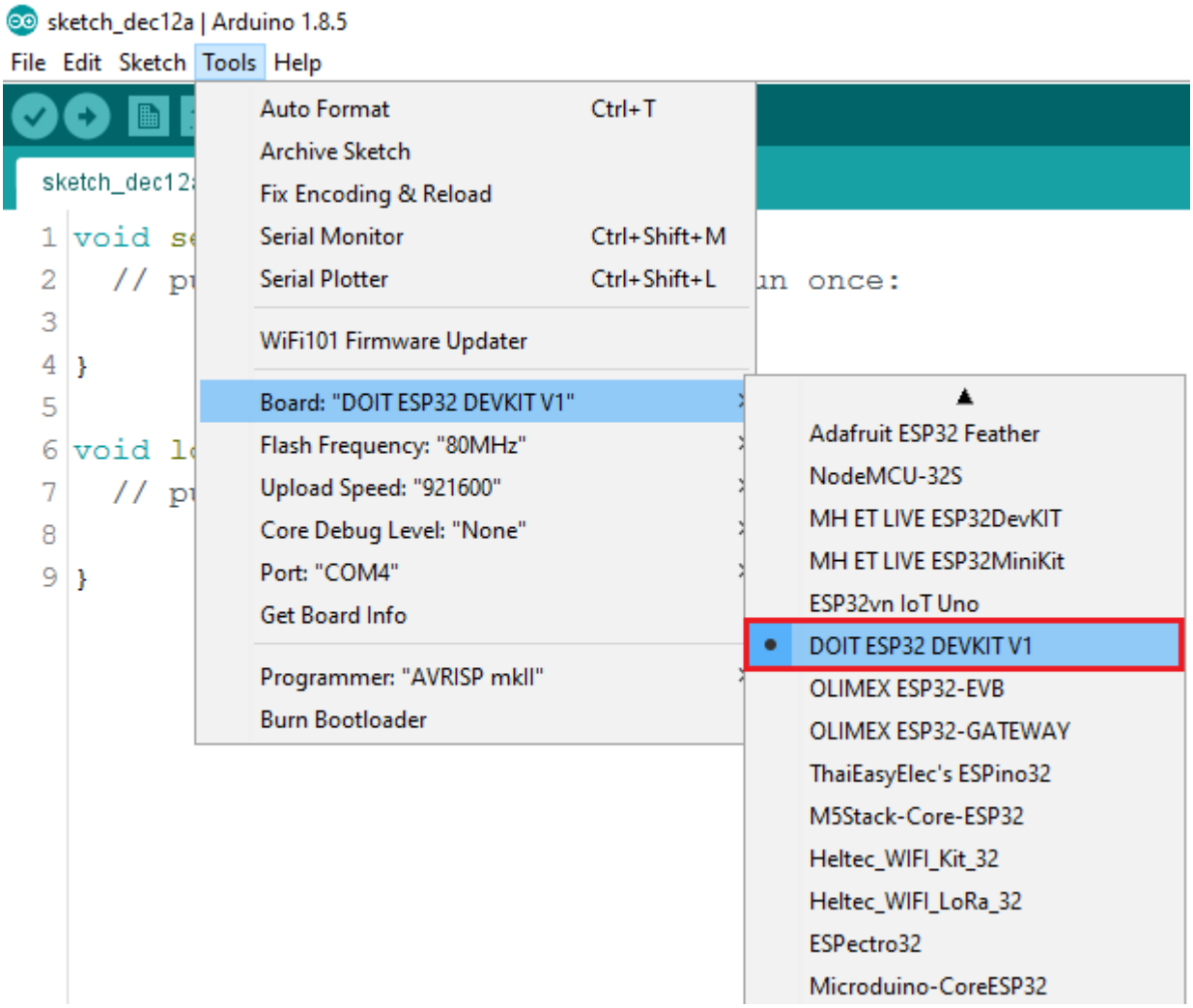
5. That's it. It should be installed after a few seconds.



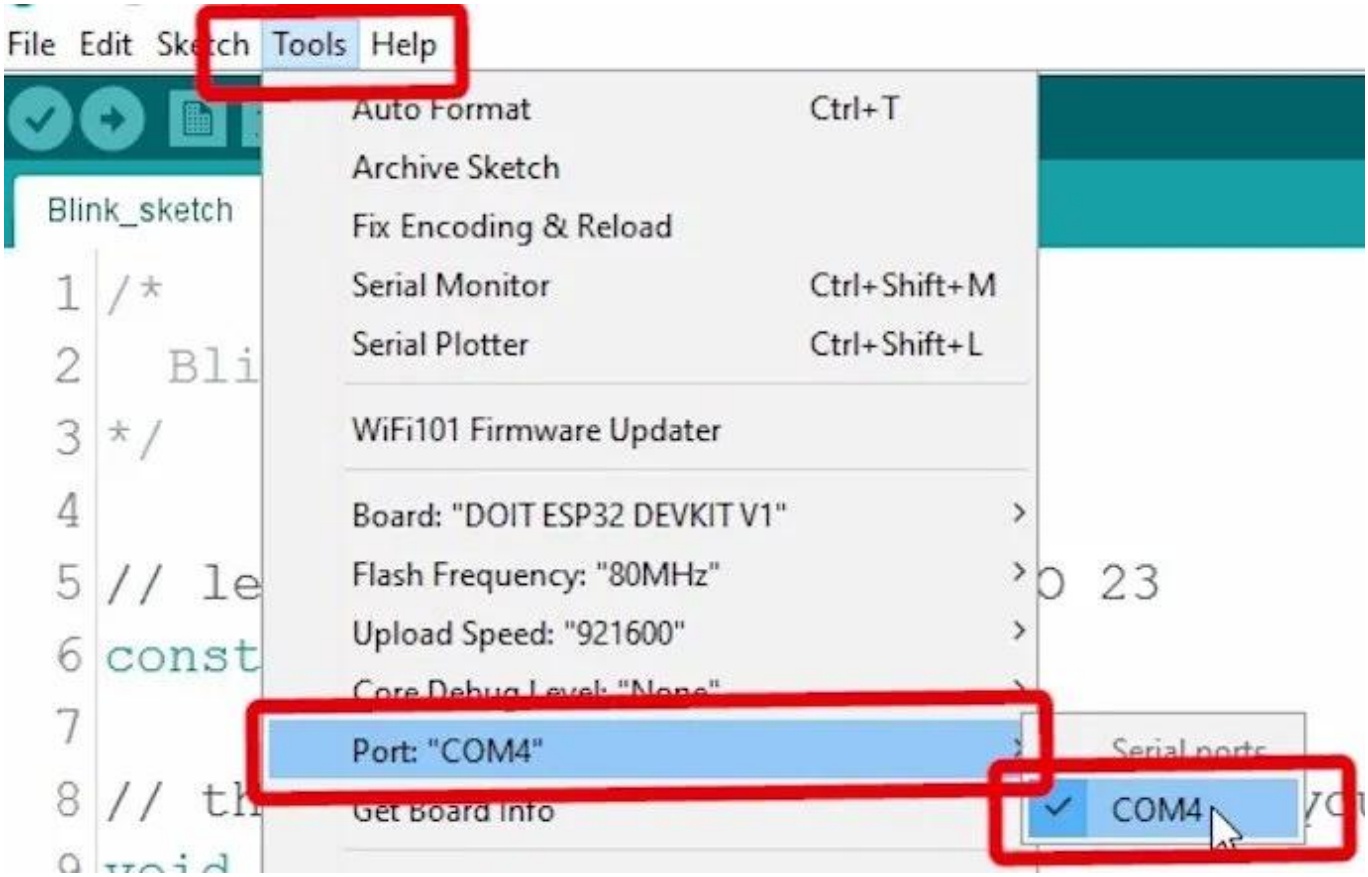
Testing the Installation

Plug the ESP32 board to your computer. With your Arduino IDE open, follow these steps:

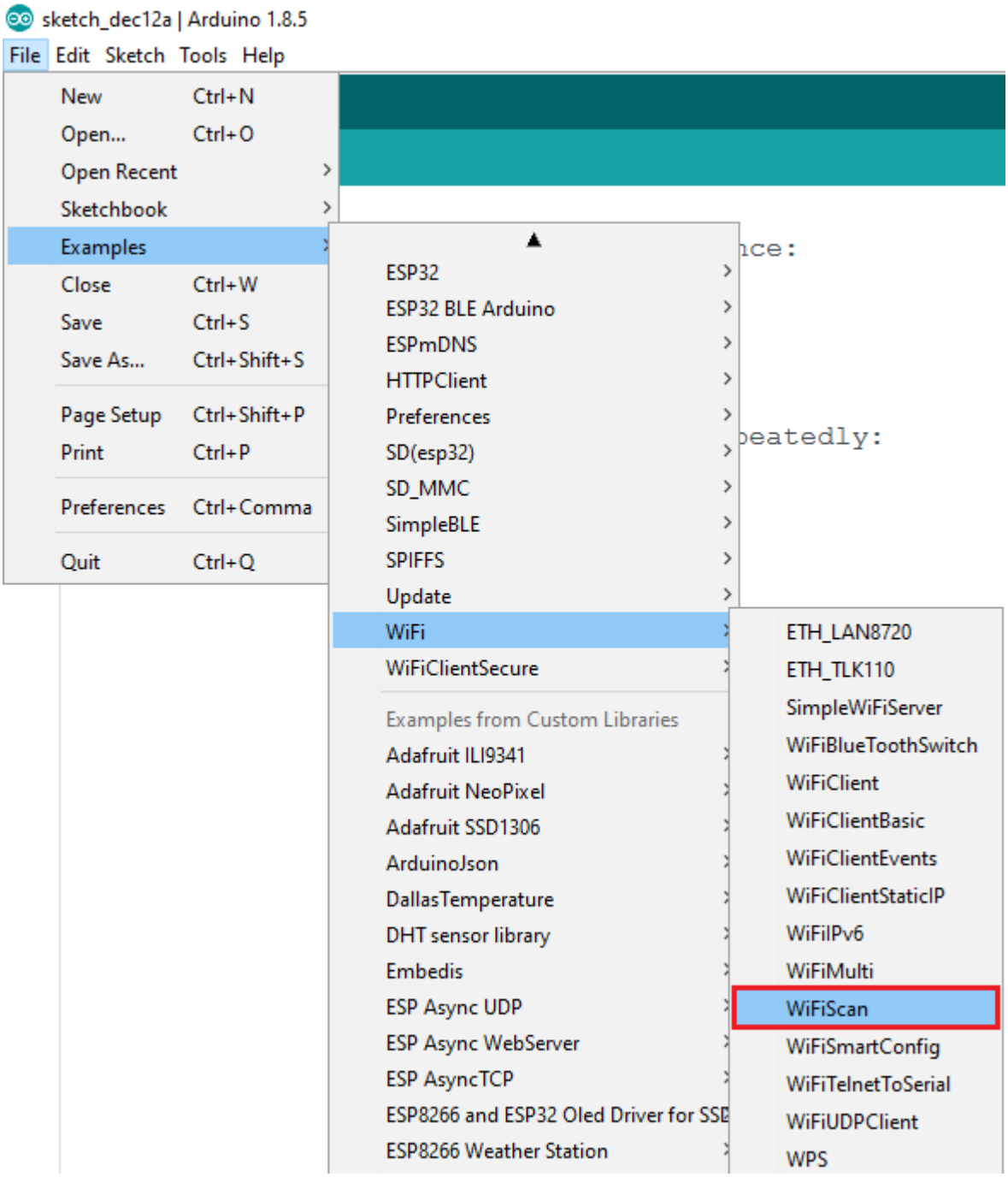
1. Select your Board in **Tools** > **Board** menu (in my case it's the **DOIT ESP32 DEVKIT V1**)



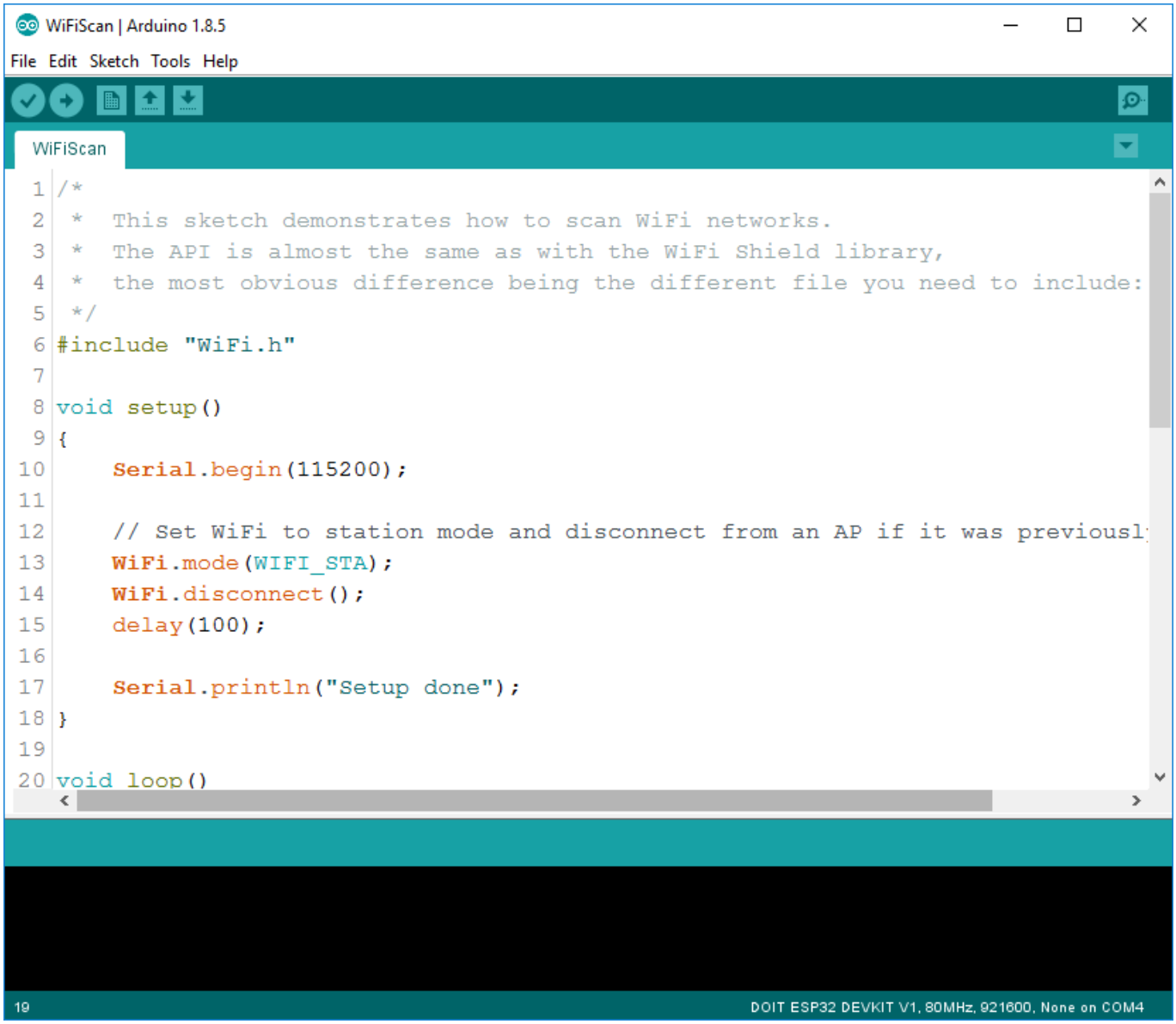
2. Select the Port (if you don't see the COM Port in your Arduino IDE, you need to install the CP210x USB to UART Bridge VCP Drivers):



3. Open the following example under **File** > **Examples** > **WiFi (ESP32)** > **WiFiScan**

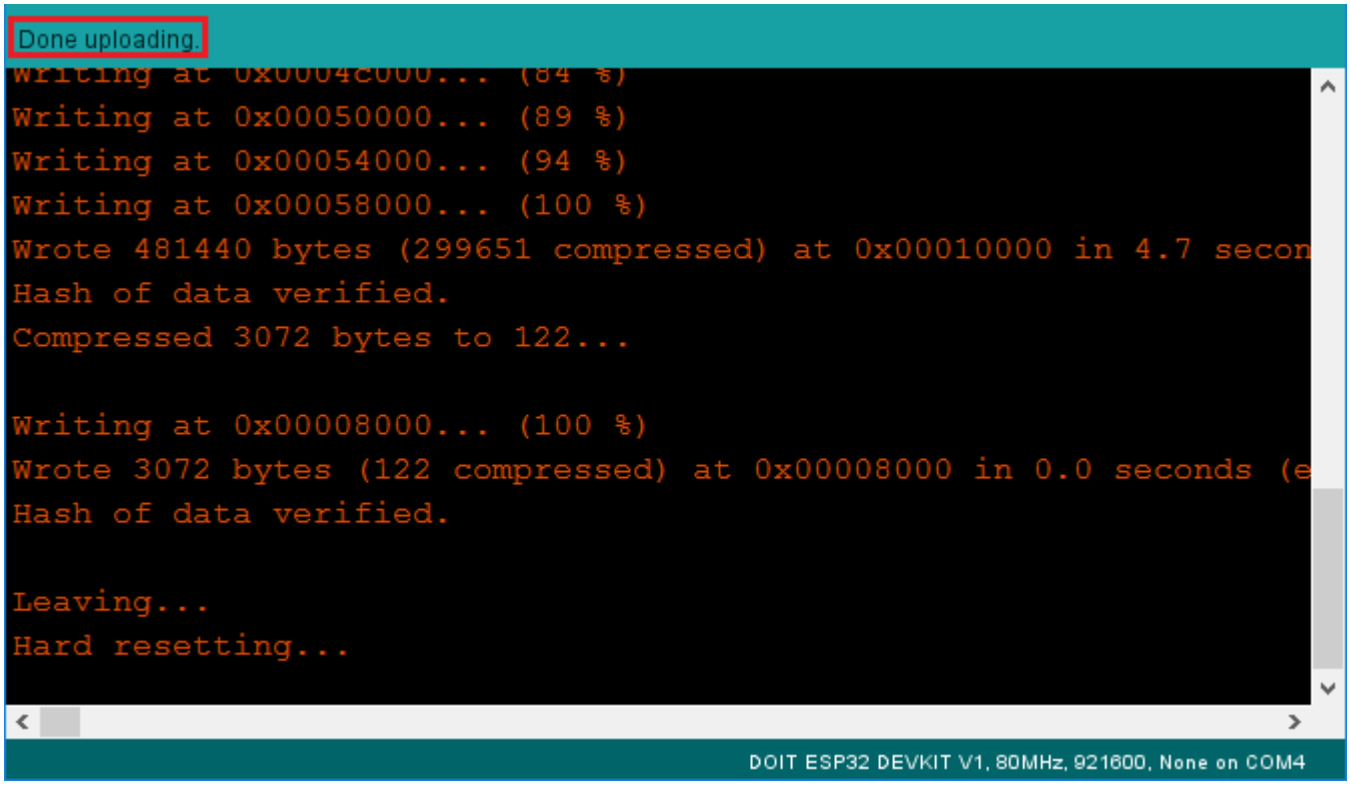


4. A new sketch opens in your Arduino IDE:



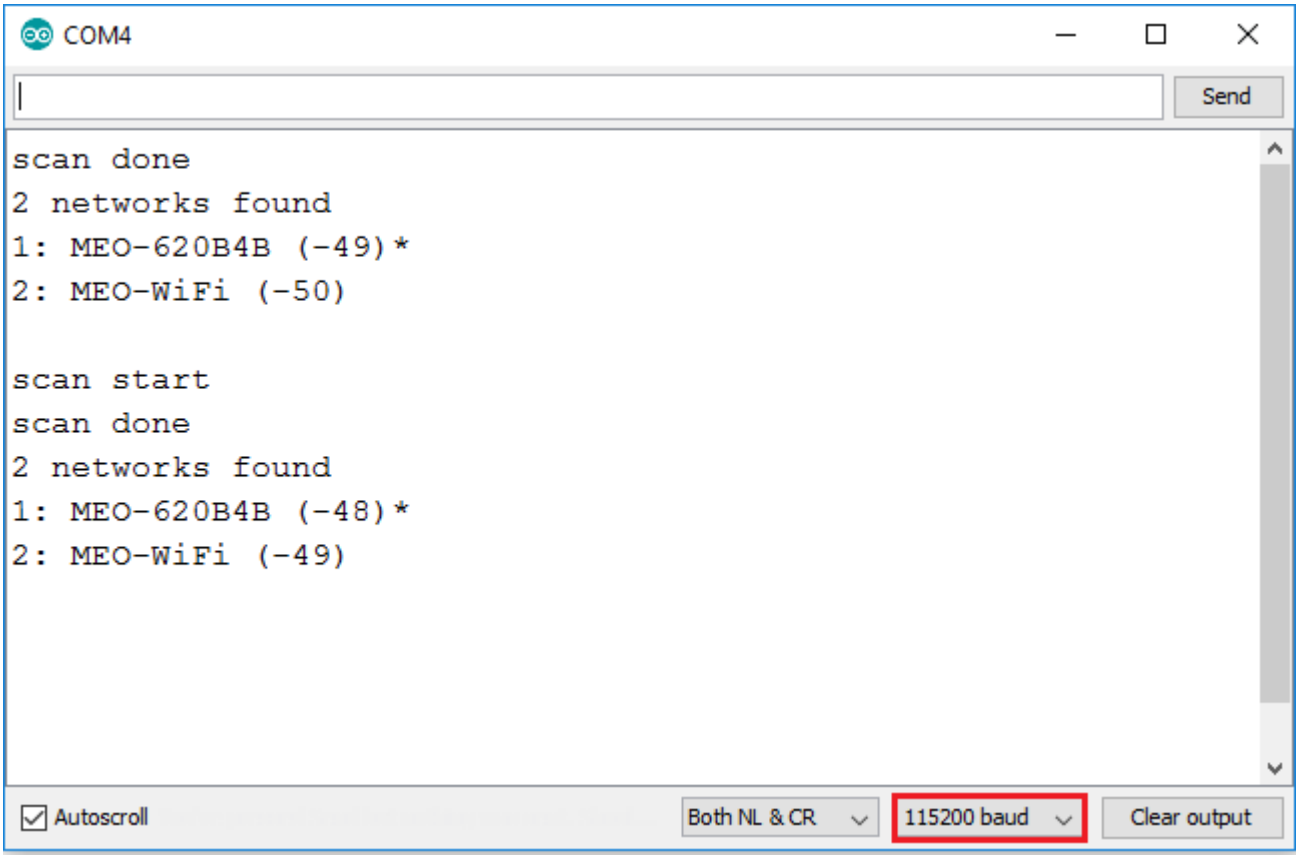
5. Press the **Upload** button in the Arduino IDE. Wait a few seconds while the code compiles and uploads to your board.

6. If everything went as expected, you should see a “**Done uploading.**” message.



7. Open the Arduino IDE Serial Monitor at a baud rate of 115200:

8. Press the ESP32 on-board **Enable** button and you should see the networks available near your ESP32:

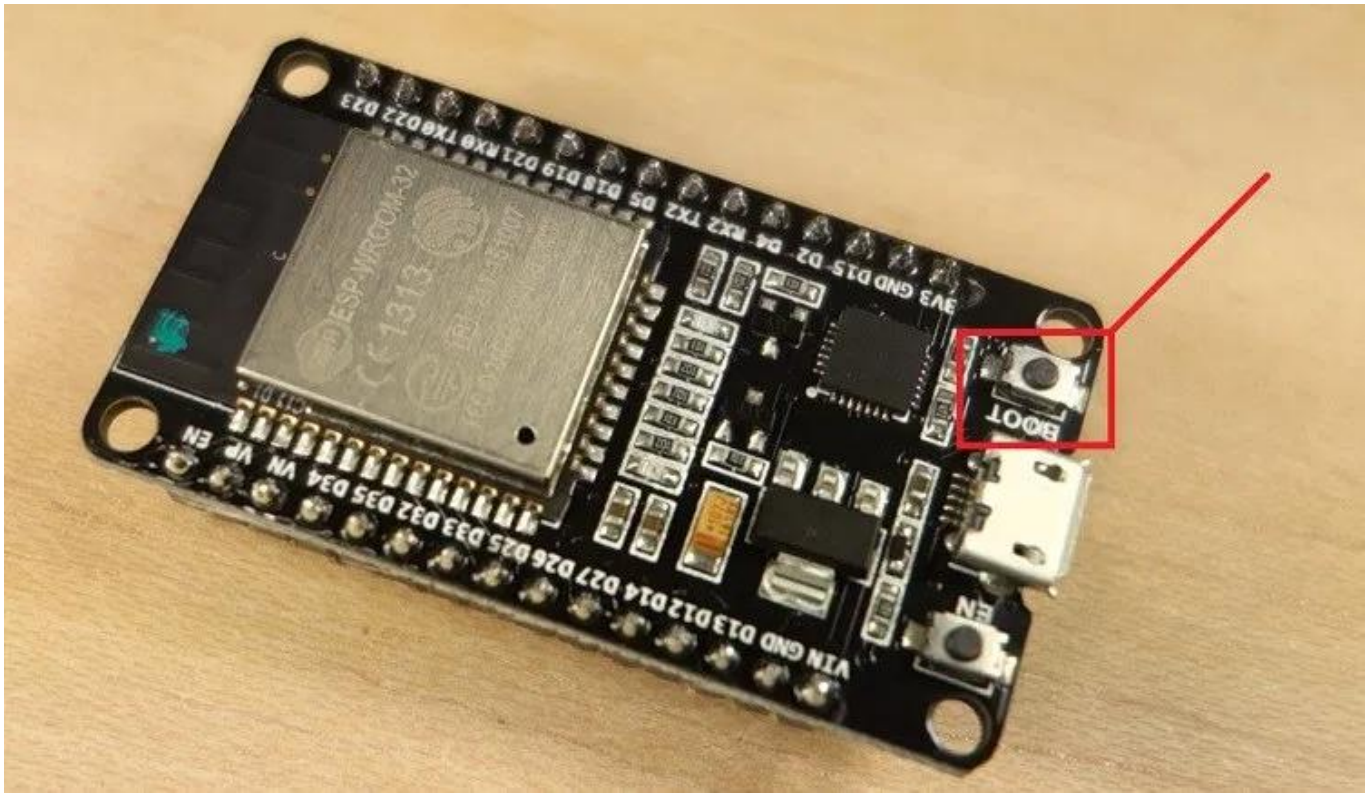


Troubleshooting

If you try to upload a new sketch to your ESP32 and you get this error message "*A fatal error occurred: Failed to connect to ESP32: Timed out… Connecting…*". It means that your ESP32 is not in flashing/uploading mode.

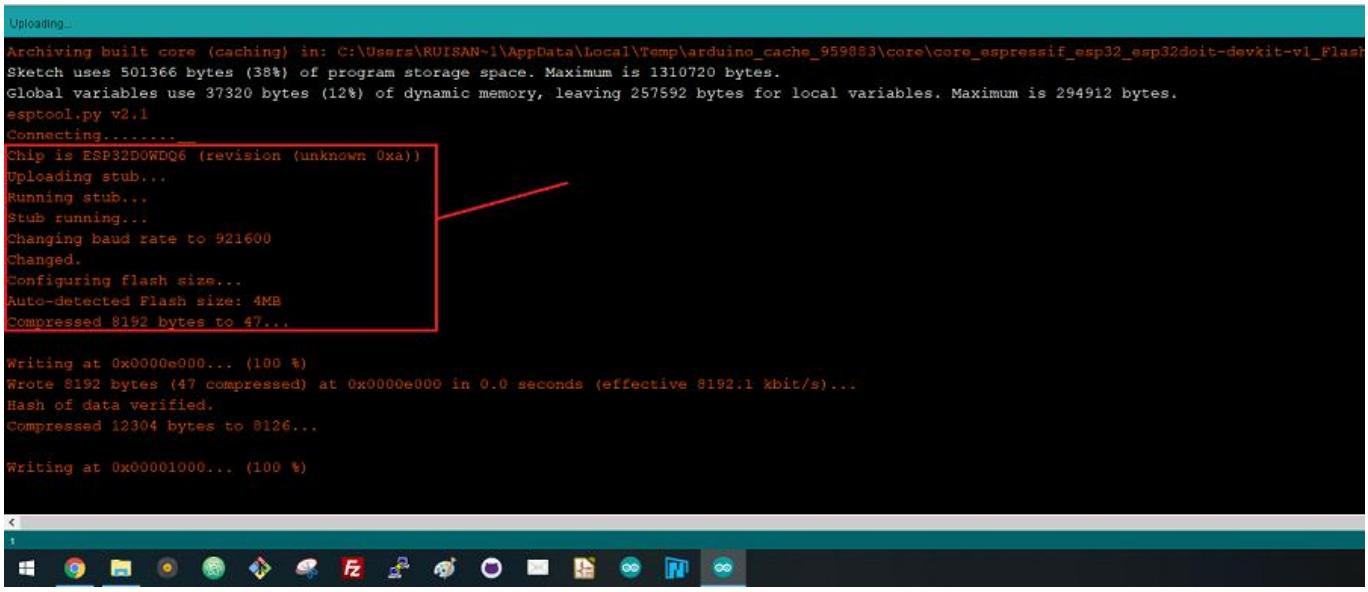
Having the right board name and COM por selected, follow these steps:

- Hold-down the "**BOOT**" button in your ESP32 board



- Press the “**Upload**” button in the Arduino IDE to upload your sketch:

- After you see the “**Connecting….**” message in your Arduino IDE, release the finger from the “**BOOT**” button:



- After that, you should see the “**Done uploading**” message

That's it. Your ESP32 should have the new sketch running. Press the "**ENABLE**" button to restart the ESP32 and run the new uploaded sketch.

You'll also have to repeat that button sequence every time you want to upload a new sketch. But if you want to solve this issue once for all without the need to press the **BOOT** button, follow the suggestions in the next guide:

- [SOLVED] Failed to connect to ESP32: Timed out waiting for packet header

If you experience any problems or issues with your ESP32, take a look at our in-depth ESP32 Troubleshooting Guide.

Wrapping Up

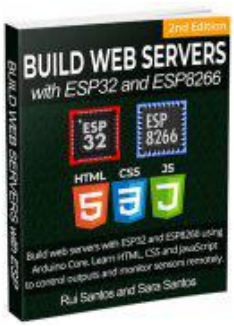
This is a quick guide that illustrates how to prepare your Arduino IDE for the ESP32 on a Windows PC, Mac OS X, or Linux computer. If you encounter any issues during the installation procedure, take a look at the ESP32 troubleshooting guide.

Now, you can start building your own IoT projects with the ESP32!

- **Learn ESP32 with Arduino IDE [eBook + Video Course]**
- ESP32 vs ESP8266 – Pros and Cons
- Free ESP32 Projects and Tutorials
- Build an ESP32 Web Server with Arduino IDE
- ESP32 DHT11/DHT22 Web Server with Arduino IDE

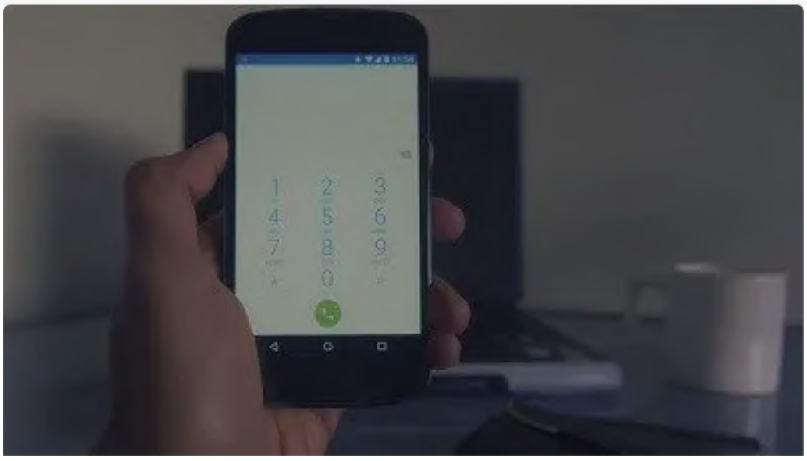
Thanks for reading.

> **[eBook] Build Web Servers with ESP32 and ESP8266 (2nd Edition)**

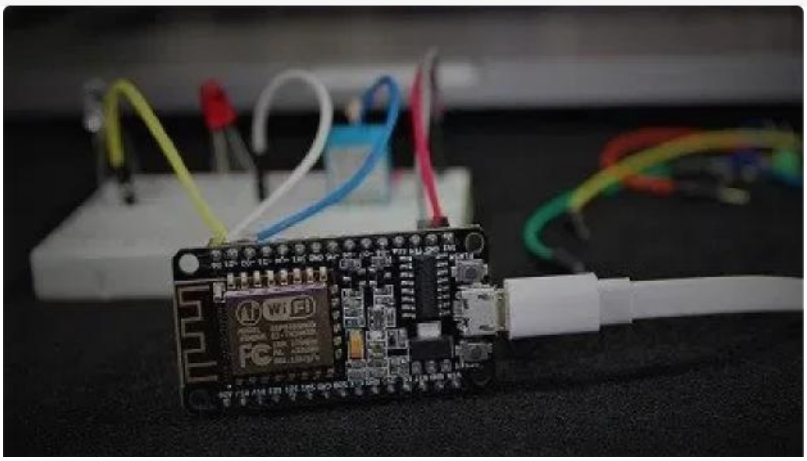


Build Web Server projects with the ESP32 and ESP8266 boards to control outputs and monitor sensors remotely. Learn HTML, CSS, JavaScript and client-server communication protocols **DOWNLOAD »**

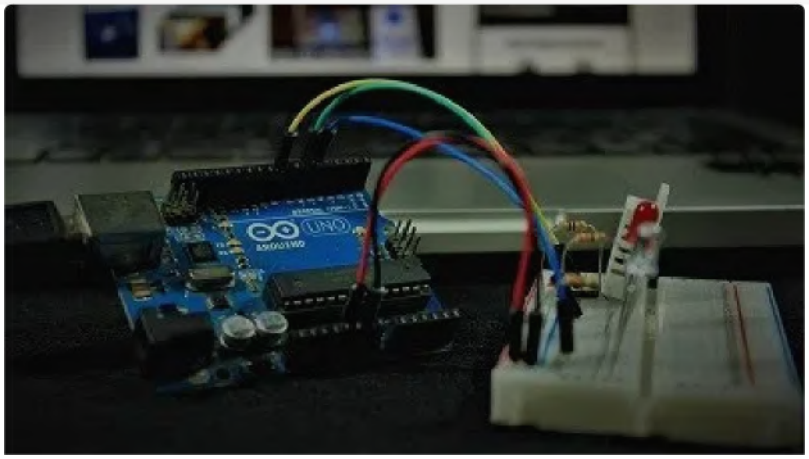
Recommended Resources



Build a Home Automation System from Scratch » With Raspberry Pi, ESP8266, Arduino, and Node-RED.

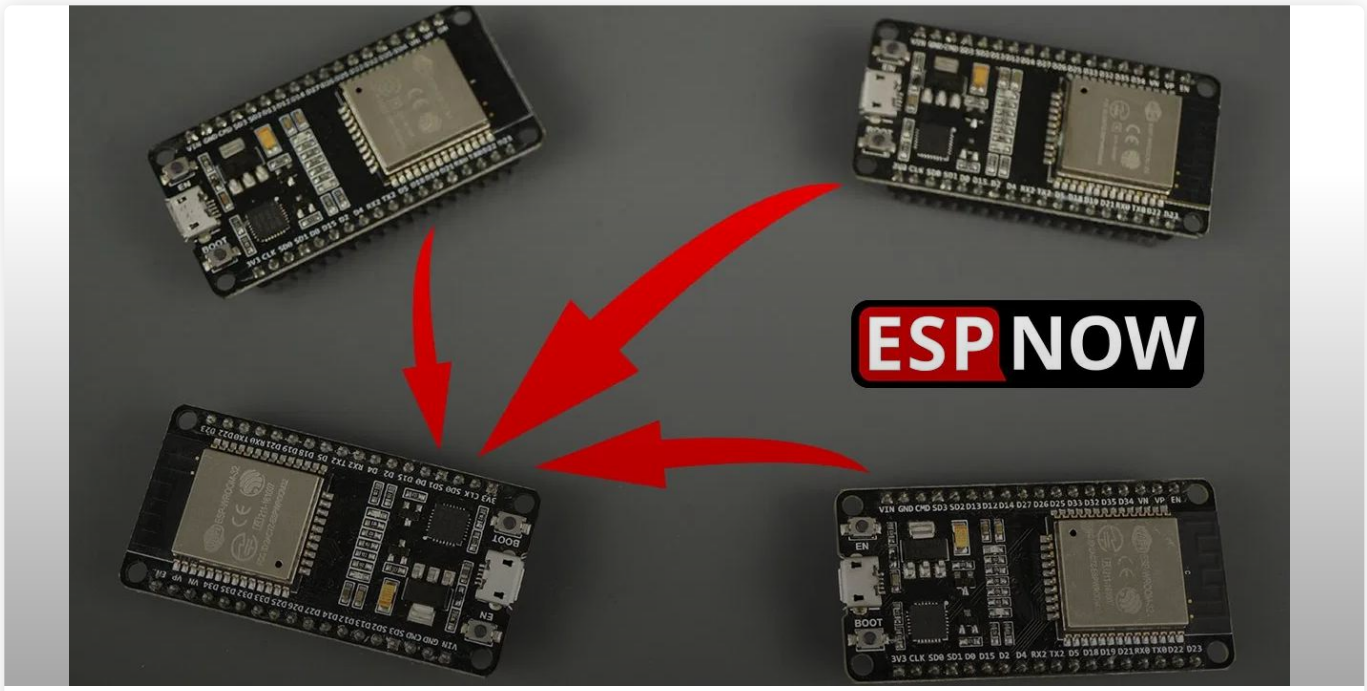


Home Automation using ESP8266 eBook and video course » Build IoT and home automation projects.

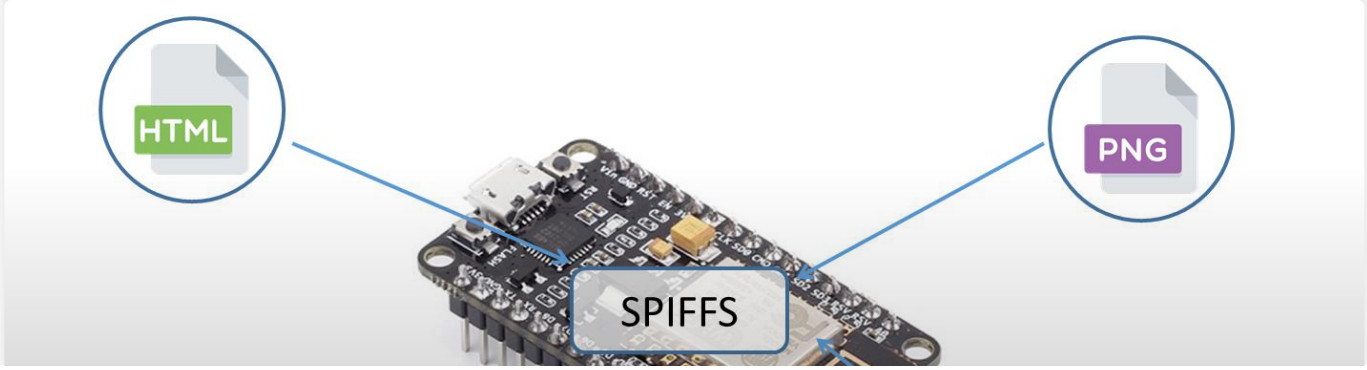


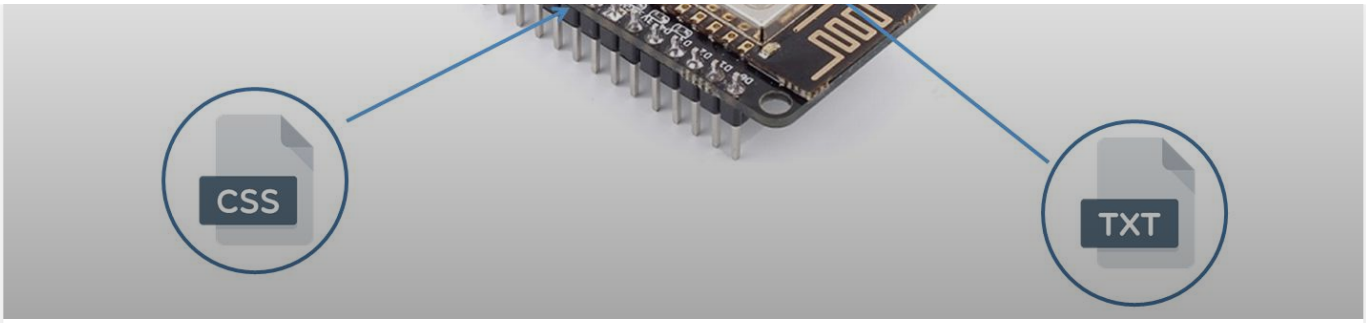
Arduino Step-by-Step Projects » Build 25 Arduino projects with our course, even with no prior experience!

What to Read Next…

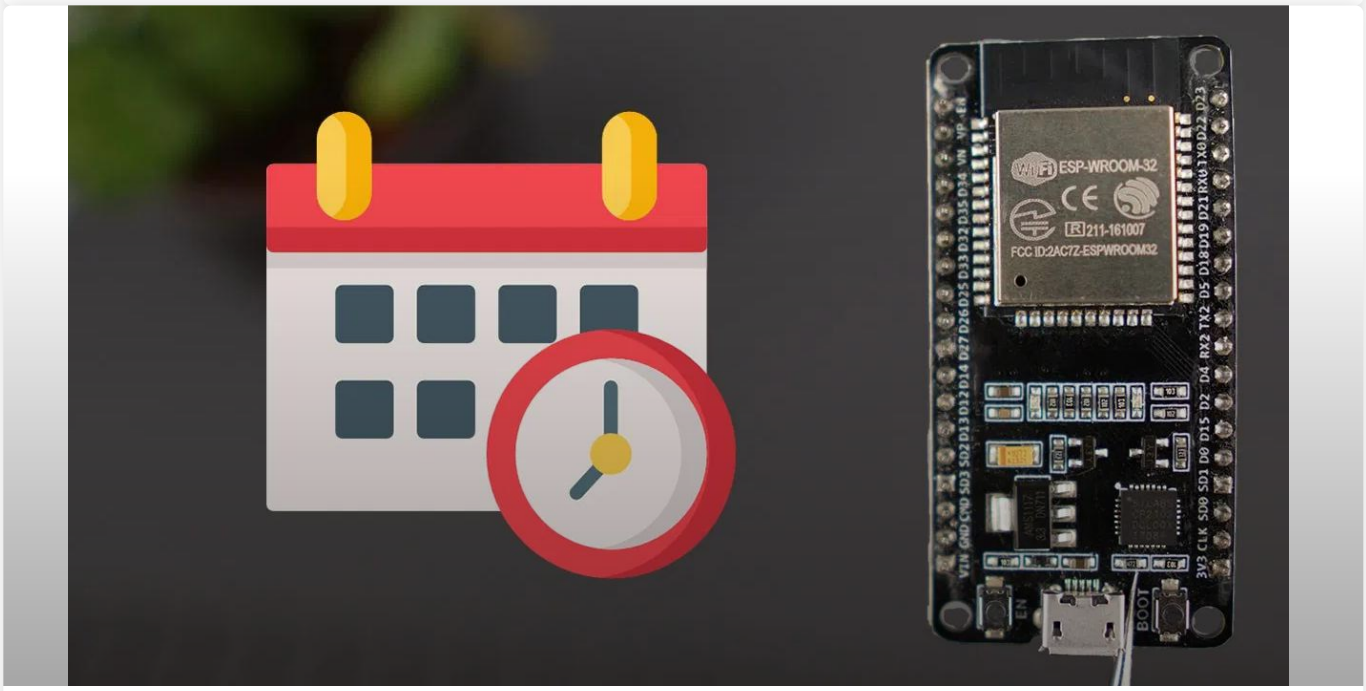


ESP-NOW with ESP32: Receive Data from Multiple Boards (many-to-one)

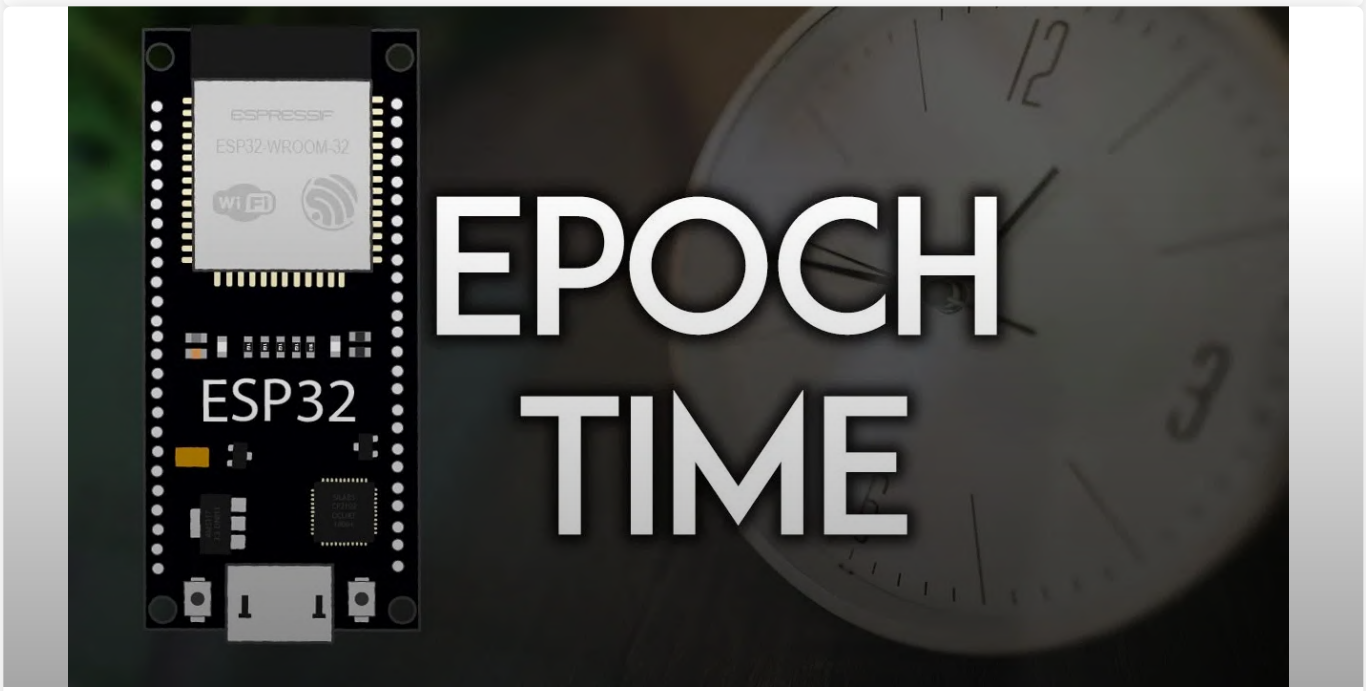




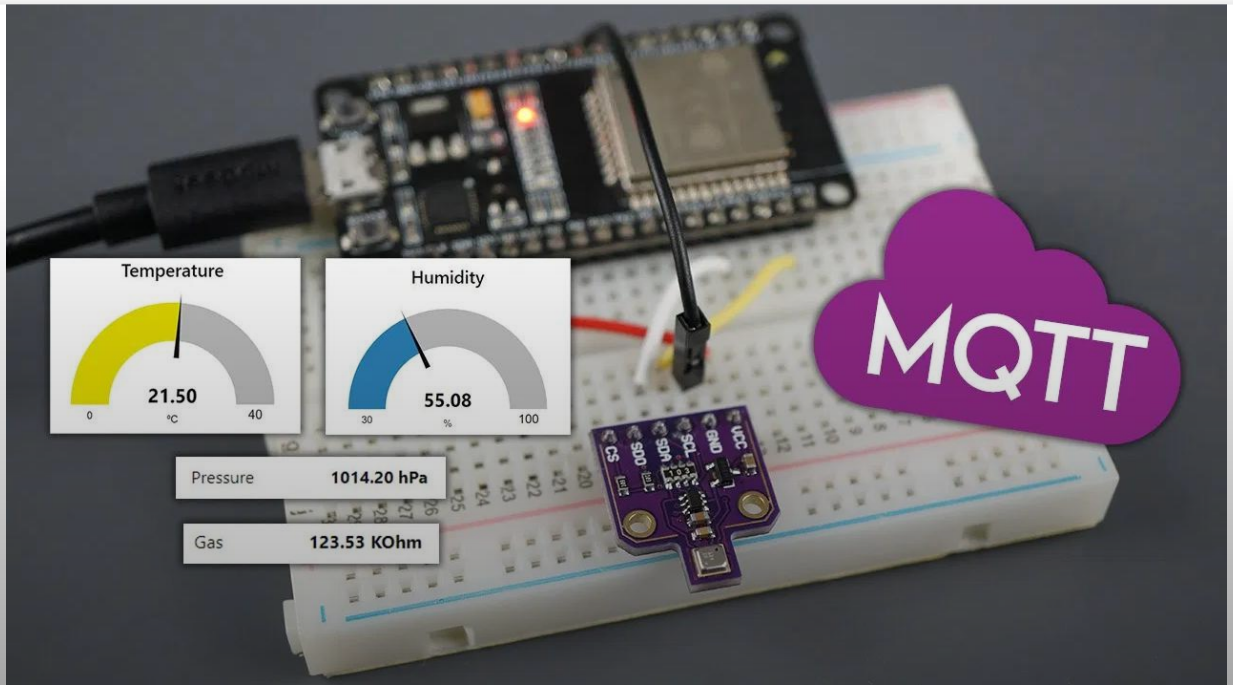
Install ESP8266 Filesystem Uploader in Arduino IDE



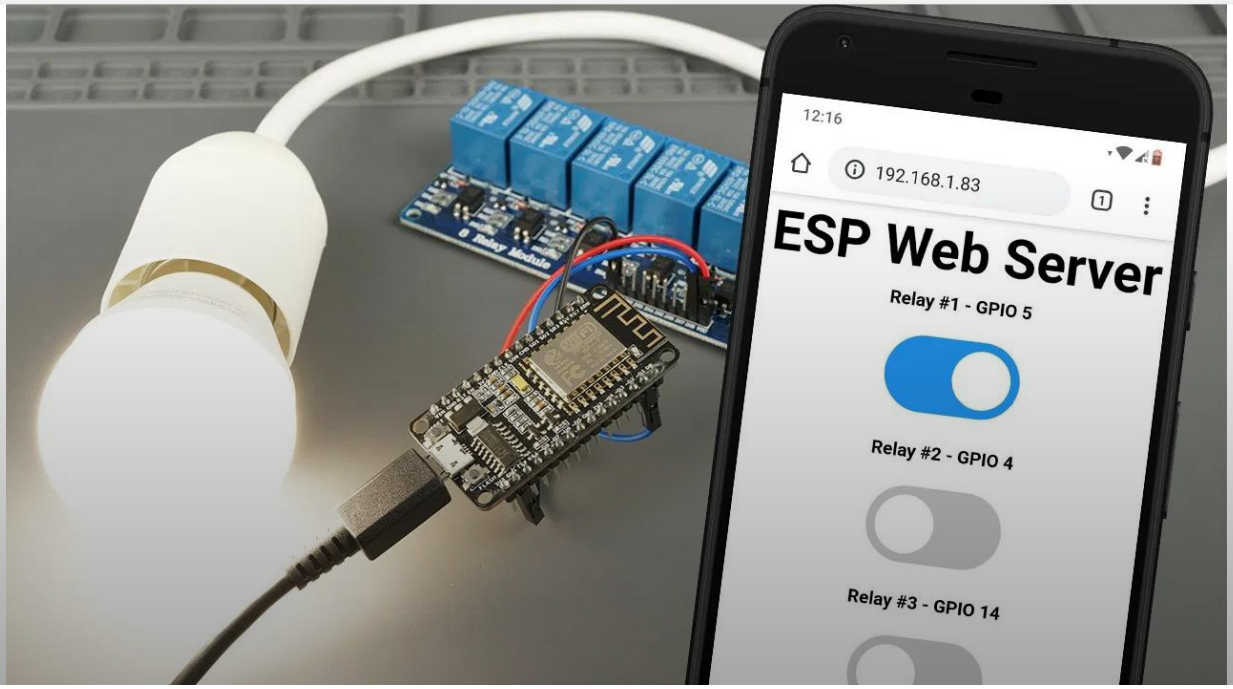
ESP32 NTP Client-Server: Get Date and Time (Arduino IDE)



Get Epoch/Unix Time with the ESP32 (Arduino)



ESP32 MQTT – Publish BME680 Temperature, Humidity, Pressure, and Gas Readings (Arduino IDE)



ESP8266 NodeMCU Relay Module – Control AC Appliances (Web Server)

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112 thoughts on “Installing the ESP32 Board in Arduino IDE (Windows, Mac OS X, Linux)”

Duncan

December 17, 2016 at 1:38 am

Can you explain why Python and a whole load of command line stuff is required?

It wasn’t necessary for the ESP8266, installing that into the Arduino IDE was just a case of entering an address into the additional boards manager URLs box under the preferences tab and it all happened.

I thought ESP 32 was the same…

Reply

Rui Santos

December 21, 2016 at 11:59 am

Hi Duncan,
At the moment the Arduino IDE requires Python to communicate with the ESP32.
It’s not currently able to do upload scripts exclusively from the Arduino IDE, but it should work like it did for the ESP8266 in a near future.

Thanks for asking,
Rui

Reply

M.T.Mendis
December 17, 2016 at 11:46 am

Thank you very much. I learn something from you.

Mendis.

Reply

Rui Santos
December 21, 2016 at 11:56 am

You're welcome,
Rui

Reply

James Cullins
December 19, 2016 at 3:44 pm

I keep getting the compile error below

File "C:\Users\Engineering\Documents\Arduino-1.6.13\hardware\espressif\esp32/tools/esptool.py", line 183

print ‘%s’ % inst.CHIP_NAME

^

SyntaxError: Missing parentheses in call to ‘print’

Multiple libraries were found for “WiFi.h”
Used: C:\Users\Engineering\Documents\Arduino-1.6.13\hardware\espressif\esp32\libraries\WiFi
Not used: C:\Users\Engineering\Documents\Arduino-1.6.13\libraries\WiFi
Using library WiFi at version 1.0 in folder: C:\Users\Engineering\Documents\Arduino-1.6.13\hardware\espressif\esp32\libraries\WiFi
exit status 1
Error compiling for board ESP32 Dev Module.

Reply

CobRce
February 15, 2019 at 6:58 pm

That’s because it’s executing python3 which requires parenthesis for “print”, to solve this:
– install python 2.7 (in c:\python27 for example)
– add the it’s directory (c:\python27) to PATH environment variable
– rename the python.exe located in the python 3 directory (c:\python36) to python3.exe

Reply

James Cullins
December 19, 2016 at 4:58 pm

Found my error, I had both 2.7 and 3.6 Python versions. I unloaded 3.6 and made sure 2.7 and in path. Thanks

Reply

Rui Santos

December 21, 2016 at 11:55 am

I'm glad you found the solution, thanks for sharing it with us!

Rui

Reply

Ton

December 24, 2016 at 10:33 pm

Thanks for this interesting item, i made it working in the IDE.
Now i have to wait for an ESP 32.

Happy New Year and Merry Chrismas.

Reply

Rui Santos

December 26, 2016 at 7:54 pm

You're welcome,
More tutorials with this board very soon.

Rui

Reply

Stefan Ludwig
December 29, 2016 at 10:03 pm

Hi Rui,

I'm not very familiar with Arduino IDE so far. But I have installed the ESP8266-board-definitions.
I don't remember the exact process. Your tutorial misses how to add the ESP32-board definitions. I'm using Arduino IDE V1.6.12 which does not include ESP32. As a newbee I would have to re-install the newest Arduino-IDE. This would require a lot of additional adjustments.

please add to this tutorial how the board -definition of the ESP32 can be added.

best regards

Stefan

Reply

Rui Santos
January 2, 2017 at 3:58 pm

Hi Stefan,
This post describes the exact process adding the ESP32 board to your Arduino IDE installation.

Reply

Stefan
December 29, 2016 at 10:08 pm

Same thing with your link
“The ESP32 is currently being integrated with the Arduino IDE just like it was done for the ESP8266, but not everything is working at the moment (see here).”

linking right in the middle of github does newbees like me not help at all.
I’m also a newbee to github.
maybe you wait with your tutorial until the standard integration is done. Or at least add a first block of info telling what knowledge somebody should have to use your tutorial.

I mean something like that:
If you are familiar with Github and git and are not afraid of installing python you could already play with the ESP32

best regards

Stefan

Reply

Rui Santos
January 2, 2017 at 4:00 pm

I agree with you Stefan, the ESP32 is not as easy as the ESP8266 to integrate with the Arduino IDE, but if you follow this exact tutorial you should be able to prepare your Arduino IDE with the ESP32 boards.
When new instructions are available, I'll update this tutorial.

Thanks,
Rui

Reply

JDavis
February 22, 2017 at 2:37 am

Everything up to last get.py was smooth.
On windows machine it seems to be missing a file named 'requests'

jim@maximus MINGW64 /c/Program Files (x86)/Arduino/hardware/espressif/esp32/tools (master)
$ python get.py
Traceback (most recent call last):
File "get.py", line 25, in
import requests
ModuleNotFoundError: No module named 'requests'

Reply

Karanja Mutahi
October 28, 2018 at 7:55 pm

pip install requests

Reply

Stefan Ludwig

March 10, 2017 at 2:05 pm

Hi Rui,

what are the steps that the arduino-IDE-developers have to take until the ESP32-support reaches the stage as described in the following:

I'm not very familiar with the Arduino-IDE and specific terms and words. I hope it is still understandable what I want to ask

1.) Download the ESP32-"plugin" (or is it called "board-manager-entry"?)
2.) start arduino-IDE new
3.) write code for the ESP32-based board
4.) upload code to the board – code is running.

I would like to use the Arduino-IDE like it is meant to be:
choose your arduino-board from a list write and upload code.

Maybe I sound like I want to make everybody to hurry up. I don't mean so. I'm very thankful for all the coders that took great effort to make coding a µC-board through the Arduino-IDE so easy. It is just that I would like to have some information about this: What is your ESTIMATION

will it take 6 weeks or maybe 3 months or will it take 24 months until ESP32-boards are fully supported by the Arduino-IDE?

best regards

Stefan

Reply

Mike Jupp

April 14, 2017 at 9:58 am

Fails with error:
“C:\\Program Files (x86)\\Arduino\\hardware\\espressif\\esp32/tools/xtensa-esp32-elf/bin/xtensa-esp32-elf-g++”: file does not exist

Reply

pableitor

April 14, 2018 at 9:51 am

Follow the steps as Rui says , just run GET as admin in Windows , it worked for me.

Reply

peter

April 14, 2017 at 12:19 pm

thanks ru very interested at the this time I’m using my phone?, a android s6 Samsung witch I use to switch my lid lighting on & off so very interested in this technology and as you know I like making projects like guitar pedals + I’m a radio am thanks again pete

Reply

Rui Santos

April 16, 2017 at 6:02 pm

Thanks for reading. You could apply to that project, but I don't have any information on that specific requirement.
Regards,
Rui

Reply

Mckenzie Gibson

February 26, 2018 at 10:59 am

Hi Thanks for the information. i am having problems cloning Git Gui. Something to do with permissions. Any suggestions how I fix this or cam I copy the relevant files?

Reply

Mckenzie Gibson

February 27, 2018 at 10:49 am

After a bit of fairly random key presses I got everything (well the program you demonstrate) to work. thank you. The pleasure on success far out-ways the frustration when everything fails

Reply

Alan

February 27, 2018 at 9:31 pm

I got the espressif library put in the hardware directory for the Arduino, but the BLE directory is empty. Is it the same for the 8266, and/or where can I find it?

Thanks

Reply

Duncan Amos

February 27, 2018 at 10:04 pm

The ESP8266 doesn't have BLE (or Classic Bluetooth).

Reply

Joel

March 9, 2018 at 9:26 pm

I followed the instructions for Installing the ESP32 Board in Arduino IDE, but it doesn't communicate with the board. The port option is grayed out and I can't select the port to use. I have this dev board: ezsbc.com/index.php/featured-products-list-home-page/wifi01-32.html#.WqL5pnXwblM

When I try to upload, I get:
"Failed to execute script esptool the selected serial port Failed to execute

script esptool
does not exist or your board is not connected”

Reply

Rui Santos
March 14, 2018 at 6:03 pm

Hi Joel,
As we’ve discusses in the Facebook group, if your board doesn’t appear in your Arduino IDE it’s a problem with your drivers.
I would uninstall the drivers for your ESP32 built-in serial converter chip and try to install them again…

Reply

Ken McNabb
May 26, 2018 at 8:40 am

OK Found a solution that is currently working, although I’m not sure yet if anything else broke implementing it. I found when running the GET.EXE it added another sub-directory /arduino-esp32 under the espressif/esp32 directory path, and moved all the files into this subdirectory. Moving all the files back up to the esp32 directory has got it working, and I can load and run the suggested example. Not sure why the sub-directory is added, but it did it again after un-installing everything and starting again too.

Reply

Nomad

June 1, 2018 at 12:43 am

You d'man, unless of course you are a girl, then you d'girl! I have had two of these in my parts box now since they came out, and never could get them running. I have been to dozens of sites with step-by-step instructions and although I can build a computer from scratch, and have done so, on a dare, and I have beat lawayers in court when acting as a paralegal, I could not get the blasted things to work. This one has guided me, and works great. The first unit I tried, both brand new, failed to work at all, and I thought, well just like the rest of the instructions, but just for shits and giggles, I grabbed my second unit, and IT WORKS!!!! Thanks a billion now I can have fun with my ESP32 as well as my ESP8266's (I have about a dozen doing chores around my house and reporting back) and my Arduinos that are serving several devices I made for our RV to use when on the road, such as my home built GPS, my leveling device since the built in one only works once in awhile, and other little toys that make my wife of 48 years giggle when I press the buttons on my remotes.

Reply

Rui Santos

June 11, 2018 at 4:42 pm

Me (Rui Santos) I'm a guy. But, if Sara Santos answers a question (she's a girl).

I'm glad this tutorial worked out for you! Thanks for letting me know!
Regards,
Rui

Reply

Pim Kaethoven

June 22, 2018 at 1:27 am

When I open the get.exe it opens a commandscreen and then it doesn't do anything anymore. Do I just have to wait a very long time or did I do something wrong?

Reply

Rui Santos

June 23, 2018 at 8:42 am

After that, can you see the ESP32 boards available in the Arduino IDE after closing the get.exe file?

Reply

George

July 18, 2018 at 3:55 pm

I followed this excellent how-to to the end and everything appeared to be ok. Went into IDE and selected COM6 (the ESP chose that), I'm using the ESP module you used above.

But when I try to download a sketch I get

onnecting……._____…..._____…..._____…..._____…..__…..._____…..._____
…..._____

A fatal error occurred: Failed to connect to ESP32: Timed out waiting for packet header

Any suggestions

Reply

Sara Santos

July 30, 2018 at 9:20 am

Hi George.
When that happens, you need to hold-down the “BOOT” button in your ESP32 board while the code is uploading.
After you see the “Connecting….” message in your Arduino IDE, release the finger from the “BOOT” button.
This should solve your problem.
You may also want to take a look at the ESP32 troubleshooting guide: https://randomnerdtutorials.com/esp32-troubleshooting-guide/
I hope this helps.
Regards,
Sara 🙂

Reply

tony

July 31, 2018 at 4:36 pm

Edit the “Sketchbook location” with forward slashes, so it looks as follows:

C:/Users/ruisantos/Documents/Arduino

how do i do that? sorry if it is a dumb question

Reply

Rui Santos

August 4, 2018 at 4:17 pm

Simply replace it manually, if it looks like this:
C:\Users\ruisantos\Documents\Arduino
Remove those \ and replace with /

C:/Users/ruisantos/Documents/Arduino

I hope that helps.
Regards,
Rui

Reply

Hotz

August 11, 2018 at 9:05 am

Thanks to your tutorial I finally got it working again – my Arduino IDE and the ESP32. Before I was really lost even I followed some other instructions in the Web. Your tutorials are so clearly clear and you never forget any step. And your layout earns an award!

Reply

Sara Santos

August 12, 2018 at 10:38 am

Thanks. We're glad it works.
Many users struggle to get the Arduino IDE working with the ESP32.
We try to make the instructions as clear as possible, so that anyone can get it working.
Regards,
Sara 🙂

Reply

Mr.Chawanwit

September 27, 2018 at 4:04 am

Hi Rui,

I have a problem

A fatal error occurred: Failed to connect to ESP32: Timed out waiting for packet header

From doing that to you. What is it? Installed the library? Or the board.

Reply

Rui Santos

September 27, 2018 at 10:03 am

Make sure you hold down the BOOT button to force your ESP32 into flashing mode

Reply

Dzandaa

October 23, 2018 at 5:36 pm

Hi,

I'v got this board:
banggood.com/Goouuu-ESP-32F-Development-Board-ESP32-Kit-Bluetooth-WiFi-IoT-Control-Module-For-Arduino-p-1357920.html?rmmds=search&ID=557197&cur_warehouse=CN

I don't have any specification for the TFT, Speaker output and the RGB Led.
I was able to use the RGB led with trial and error, using the "ESP32 Wrover module" 😉
I didn't find a ESP-32F manager, just using the ESP-32 manager.

Any idea for the rest?

Thank you.

Reply

Sara Santos

October 24, 2018 at 11:19 am

Hi Dzandaa.
I've never used that board. So, I don't have any information about that.
Maybe the best thing to do is trying to get some documentation or information from the vendor.
I'm sorry that I can't help.
Regards,
Sara 🙂

Reply

Ray
October 31, 2018 at 6:21 am

Rui,

You also have to PUSH THE BOOT BUTTON while UPLOADING (at least on the DEVKIT V1) else you get an error:
.
"Failed to connect to ESP32: Timed out waiting for packet header"
.
Thanks!

Reply

robert LIEVIN
November 12, 2018 at 4:16 pm

Bonjour. j'ai utiliser votre sketch WiFi Scan avec l'Esp32.la compilation dure 5 Minutes et le CPU de W7 tourne à 100%.pourquoi? à vous lire.salutations.

vos cours m'interesse,existet-ils en verion livres? car étant souvent en déplacement il m'est difficille de regarder les videos

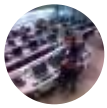
Reply

Sara Santos

November 14, 2018 at 10:49 am

Hi Robert.
I don't understand french. I used the translator but didn't understand your first question.
Our ESP32 course is available both in video and eBook. When you buy the course, you get both versions.
Regards,
Sara 🙂

Reply



Suren

November 18, 2018 at 1:02 am

..if anybody still have trouble uploading sketches to their WEMOS D1R1 or similar after CH341SER driver install & even with latest arduino
ide with the ESP8266 PLATFORM downloaded connected to proper port in device manager Windows Xp or higher, with error message cxxabi_tweaks.h not present do this….copy cxxabi_tweaks.h from{ your drive]C:\Documents and Settings\{your pc name}\Local Settings\Application Data\Arduino15 \packages\esp8266\tools\xtensa-lx106-elf-gcc\1.20.0-26-gb404fb9-2\xtensa-lx106-elf\include\c++\4.8.2\xtensa-lx106-elf\bits to C:\Documents and Settings
\{your pc name}\Local Settings\Application

Data\Arduino15\packages\esp8266\tools\xtensa-lx106-elf-gcc\1.20.0-26-gb404fb9-2\xtensa-lx106-elf
\include\c++\4.8.2\bits ….it took me a week to figure it out…finally the blink sketches worked…so i have a renewed my spirit for a wifi radio

Reply

Michael Neff
December 9, 2018 at 8:34 pm

Thank you this is an excellent guide and help. I only want to inform about a key item from my point of view:
CP210x Driver Issue v10.1.4 on Windows 10 1809 : currently I did not found any solution for installing this driver working correctly with Arduino IDE; you do not will find the port ! Any solution ?

Reply

Sara Santos
December 14, 2018 at 5:22 pm

Hi Michael.
I've never faced that error and I haven't find much information about that.
Only the following link:
https://www.silabs.com/community/interface/forum.topic.html/cp210x_driver_issue-DhIE
If anyone knows a solution for this, please share with us.
Regards,
Sara 🙂

Reply

Mckenzie Gibson

December 28, 2018 at 1:39 pm

Hi Rui,
Thanks for the instructions. I was having difficulties installing but when I wrote exactly what I had done I realised my mistake. Wow Do I feel stupid. I suggest to all those having difficulties that they write down exactly what they are doing and perhaps the problem will solve itself.

Reply

Peter

January 7, 2019 at 10:44 pm

For those getting the error: “A fatal error occurred: Failed to connect to ESP32: Timed out waiting for packet header”

I ran into the same issue and couldn’t resolve for the life of me. Turns out I have been shipped (twice, now) an ESP8266 in an ESP32 packaging. Configuring for the ESP8266 solved my issue, naturally. Throwing this out there in case this same thing happened to others.

Reply

Sara Santos

January 7, 2019 at 11:23 pm

Hi Peter.
I'm sorry for that issue. Where did you order your "ESP32" boards?

Reply

Sara Santos
February 16, 2019 at 11:34 am

You can solve that issue by following this tutorial:
https://randomnerdtutorials.com/solved-failed-to-connect-to-esp32-timed-out-waiting-for-packet-header/
Regards,
Sara

Reply

John
May 8, 2019 at 2:54 am

I finally got an ESP32. (Better late than never). I tried using this instructional to get it up and running. The board is a Node32s. I can see the port in the IDE; but when I try it upload the example sketch, I get an error that says it failed to connect to ESP32: Timed out waiting for packet header. Any thoughts?

Reply

Sara Santos

May 8, 2019 at 8:55 am

Hi John.
Please describe the instructions in this tutorial to be able to upload code: https://randomnerdtutorials.com/solved-failed-to-connect-to-esp32-timed-out-waiting-for-packet-header/
Regards,
Sara

Reply

Stephen Mann

May 16, 2019 at 5:08 pm

My Boards Manager says that I have the “ESP32 by Expressif Systems” version 1.0.2 installed.
But I don’t see the ESP32 *anything in the boards manager.

Any tips? Do I need to go back to version 1.0.1 in my Boards Manager?

Reply

Daniel Fernandes

May 26, 2019 at 5:23 pm

Cumprimentos Sara e/ou Rui. Primeiramente, obrigado pelo tutorial; no entanto, tenho uma questão um tanto diferente:
Qualquer sketch feito para a plataforma Arduino, é possível usá-lo com o esp32 ou esp8266? Se não, o que deve ser mudado e/ou acrescentado no código para tal? Muito obrigado

Reply

Duncan Amos
May 27, 2019 at 1:22 pm

And for those of us (I suspect, the majority) who don't read Portuguese???

Reply

Sara Santos
May 27, 2019 at 6:10 pm

Hi Daniel.

Next time, try to post your questions in English so that all our readers can understand.

An Arduino sketch can be used for the ESP32 with some changes. There are a few things that you need to be aware of:
– if you're using libraries, they should be compatible with the ESP32
– the pins used in Arduino are different in the ESP32
– there are some functions in the Arduino that are different on the ESP32. For example, analogWrite() doesn't work with the ESP32
– the input range of analogRead() of Arduino UNO is 0 to 1023, while on the

ESP32 is 0 to 4095
There are also other small details you need to take into account when adapting an Arduino code to work with the ESP32.

I hope I've answered your question.

Thank you for following our work.

Regards,
Sara

Reply

JOSHUA A/L JAMES ANDREW
July 15, 2019 at 3:57 pm

Hi I just read this excellent tutorial but I have a problem where in the board manager it says "error: can't download https://dl.espressif.com/dl/package_esp32_index.json" and can't search for the esp32 in the search bar there… Please help

Reply

Sara Santos
July 16, 2019 at 8:50 am

Hi.
That happened to me a few days ago.
The solution was to unnistall Arduino IDE and install again.
Then, install the ESP32 add-on.

Regards,
Sara

Reply

BobbyMac99
August 23, 2019 at 3:01 am

Installing 1.8.9 resolved the problem. Make sure you put the new library source under your preferences, Additional Boards Manager box (shown above in blue, if you have a 8266 one already there separate by commas). So it should read “https://dl.espressif.com/dl/package_esp32_index.json, http://arduino.esp8266.com/stable/package_esp8266com_index.json” – without the double quotes.

Reply

Joel
August 23, 2019 at 6:09 pm

Hi Sara and Rui,

The sketch uploads but I keep getting this repeating message in the Serial Monitor:

rst:0x10 (RTCWDT_RTC_RESET),boot:0x13 (SPI_FAST_FLASH_BOOT)
configsip: 0, SPIWP:0xee
clk_drv:0x00,q_drv:0x00,d_drv:0x00,cs0_drv:0x00,hd_drv:0x00,wp_drv:0x00
mode:DIO, clock div:1
load:0x3fff0018,len:4

load:0xffffffff,len:-1
ets Jun 8 2016 00:22:57

rst:0x10 (RTCWDT_RTC_RESET),boot:0x13 (SPI_FAST_FLASH_BOOT)
configsip: 0, SPIWP:0xee
clk_drv:0x00,q_drv:0x00,d_drv:0x00,cs0_drv:0x00,hd_drv:0x00,wp_drv:0x00
mode:DIO, clock div:1
load:0x3fff0018,len:4
load:0xffffffff,len:-1
ets Jun 8 2016 00:22:57

I am using the latest Arduino IDE version 1.8.9. and I am using a Node MCU ESP 32. I am using I2C the serial protocol and have wired correctly to the CLK and SDI pins. I am using a MacBook Pro.

When I loaded your code to my Arduino Uno, the code ran fine.

Reply

Niekie
September 12, 2019 at 11:10 am

Hi Sara,

So I have the ESP32 DEVKIT V1 30 pin development board. I selected the ESP32 DEVKIT V1 board and when I plugged it into the PC COM28 popped up. So I selected it.

“esptool.py v2.6
Serial port COM28
Connecting……._____…..._____…..._____…..._____…..._____…..._____…..._
___An error occurred while uploading the sketch
_

A fatal error occurred: Failed to connect to ESP32: Timed out waiting for packet header”

This is the error message that I received. I then tried holding the BOOT button down until I saw the “Connecting…” message and released the BOOT button, but the same error then popped up.

Any further suggestions?

Reply

BobbyMac99

September 13, 2019 at 9:36 am

If that fix doesn’t work – I always hold the rst and boot button together, then release the rst, wait 1 second, and release the boot – all after the Connecting prompt and as the ….____ part comes up.

Reply

Niekie

September 12, 2019 at 1:02 pm

Nevermind. Hardware problem in my circuit. Thanks 🙂

Reply

Rainer

December 1, 2019 at 5:41 pm

Hi Rui,
Thanks for your great work and website, for me the best tutorials on Arduino, an ESP. Clear, and complete and working, you ebook too, the best I gave seen on the net and I'am in the electronic business about 50 years now.
Have some ESP32 devices since a log time, but had troubles on my mac when compiling, like many others. I'am now on 10.14.6 and tried once agin, it works 🙂 I followed your tutorial Above. But one thing, the DOITESP32 DEVKIT V1 ist not shown. I Installed the same board library as you and even newer ones. I than the ESP 32 Dev Module. The WiFi Scan sample works.
Will I be able to get all out of my ESP32 even when there is an other board selected or how can I get the right board.

Rainer

Reply

cyberdie

December 13, 2019 at 7:49 pm

Hi. i've followed all the steps and all went fine.
BUT my AI Tinker ESP32-Cam doesn't hace a ENABLE button!!!
Only the RESET one!

Some clue?

Reply

Sara Santos

December 14, 2019 at 11:57 am

Hi.
It's the same. Some boards have a label as "RST" and others as "EN". So, it's the same thing.
Regards.
Sara

Reply

cyberdie

December 14, 2019 at 7:56 pm

Hi Sara, ok but when i upload the sketch all goes fine ending with the text you can see bellow. The i push the reset button and the serial console shows:

rst:0x1 (POWERON_RESET),boot:0x3
(DOWNLOAD_BOOT(UART0/UART1/SDIO_REI_REO_V2))
waiting for download

and nothing more…

SKETCH LOAD:
Writing at 0x00008000… (100 %)
Wrote 3072 bytes (119 compressed) at 0x00008000 in 0.0 seconds (effective 1068.5 kbit/s)…
Hash of data verified.

Leaving…
Hard resetting via RTS pin…

Reply

Sara Santos

December 16, 2019 at 9:49 am

Hi.
The “Leaving…
Hard resetting via RTS pin…” message indicates that the code was successfully uploaded to your board.
Just press the RST/EN button to restart the ESP32 and run the code.
Regards,

Sara

Reply

cyberdie

December 16, 2019 at 10:29 am

Thank you Sara!

moses

February 6, 2020 at 1:52 pm

Very useful website , very useful sharings

thank you very much

Reply

Terry Drummond

March 13, 2020 at 3:06 pm

Ihave successfully installed the ESP32 to the arduino IDE. When uploading the test sketch, I get the following error:

Arduino: 1.8.12 (Windows 10), Board: “ESP32 Dev Module, Disabled, Default 4MB with spiffs (1.2MB APP/1.5MB SPIFFS), 240MHz (WiFi/BT), QIO, 80MHz, 4MB (32Mb), 921600, None”

Traceback (most recent call last):

File “esptool.py”, line 2959, in

File “esptool.py”, line 2952, in _main

File “esptool.py”, line 2725, in main

File “esptool.py”, line 2244, in elf2image

File “esptool.py”, line 1783, in __init__

IOError: [Errno 2] No such file or directory: ‘C:\\Users\\tdrummon\\AppData\\Local\\Temp\\arduino_build_568222/WiFiScan.ino.elf’

Failed to execute script esptool

Multiple libraries were found for “WiFi.h”
Used: C:\Users\tdrummon\AppData\Local\Arduino15\packages\esp32\hardware\esp32\1.0.4\libraries\WiFi

Not used: C:\Program Files (x86)\Arduino\libraries\WiFi
exit status -1
Error compiling for board ESP32 Dev Module.

This report would have more information with
“Show verbose output during compilation”
option enabled in File -> Preferences.

Also, must the COM port bve COM Port 4? All see available is COM Port 5.

Reply

Sara Santos
March 15, 2020 at 4:47 pm

Hi Terry.
The port can be different. It is the port that shows in your Arduino IDE.
Regards,
Sara

Reply

Sentekin Can
May 17, 2020 at 11:11 pm

Try to change baud rate to 115200 from 921600.

Reply

Chidananda HM

March 23, 2020 at 7:14 am

Thank you so much, i was able to connect

Reply

kostas

March 25, 2020 at 1:02 pm

Hi
I try to install esp32 and esp8266 in arduino ide, i follow your instuctions, my laptop is a lenovo g580 with ubuntu 18.04 but i have a problem with esp32 when i try to run the wifi scan sketch from the examples. The esp8266 is running whithout any problem.
This is the message from arduino ide
Arduino: 1.8.12 (Linux), Board: “ESP32 Dev Module, Disabled, Default 4MB with spiffs (1.2MB APP/1.5MB SPIFFS), 240MHz (WiFi/BT), QIO, 80MHz, 4MB (32Mb), 921600, None”

Multiple libraries were found for “WiFi.h”
Used:
/home/leonidas/snap/arduino/5/.arduino15/packages/esp32/hardware/esp32/1.0.4/libraries/WiFi
Not used: /snap/arduino/5/libraries/WiFi
exec: “python”: executable file not found in $PATH
Error compiling for board ESP32 Dev Module.

This report would have more information with
“Show verbose output during compilation”
option enabled in File -> Preferences.
What can i do?

Reply

Sara Santos

March 28, 2020 at 12:24 pm

Hi.
Take a look at this discussion and see if any of the suggestions solve your issue: https://www.esp32.com/viewtopic.php?t=7616#p33322
Regards,
Sara

Reply

kostas

March 29, 2020 at 7:19 pm

Thank you Sara for your kind and quick responce.
I was tried all these thinks but nothing was happen. The most odd fact is that before 3 months i set up two ESP8266 (WEMOS D1 & NODE MSU) and an ESP32 (i don't know witch board) and all of them works until now with my wifi settings, but i cant change anything after the blocking of arduino IDE.
I am really tired with this situation and i think that i will quit of these boards.
Thanks again

Reply

Sara Santos

April 3, 2020 at 9:50 am

Hi.
I'm sorry for that issue.
I usually don't work with ubuntu, so I'm not familiar with the problems when using Arduino IDE.
Many times, new problems appear when one updates to a newest version of Arduino IDE that happens to have some bugs. The solution is to get back to the previous working version.
I'm not sure if that's the case.
Everything always worked fine for me on a Windows computer.
Regards,
Sara

Reply

C Munque
March 31, 2020 at 6:24 pm

Two possibly related questions:
1 – I'm using a ESP32 WROOM and am unable to find it represented in Arduino IDE > Menu Bar > Tools > Board listing. There are plenty of ESP32 boards there represented (thanks to your installation instructions), just not the ESP32 WROOM.

2 – I'm wondering if that explains why I'm suddenly unable to run any sketches after flashing ESP32s using Arduino IDE. There's no problem flashing, but on completion no sketches run. The Serial Monitor Output is pasted below. I've been testing a bunch of boards, but I'm always getting the same output:

rst:0x1 (POWERON_RESET),boot:0x13 (SPI_FAST_FLASH_BOOT)
configsip: 0, SPIWP:0xee
clk_drv:0x00,q_drv:0x00,d_drv:0x00,cs0_drv:0x00,hd_drv:0x00,wp_drv:0x00
mode:DIO, clock div:1

```
load:0x3fff0018,len:4
load:0x3fff001c,len:1216
ho 0 tail 12 room 4
load:0x40078000,len:9720
ho 0 tail 12 room 4
load:0x40080400,len:6352
entry 0x400806b8
```

Reply

C Munque

March 31, 2020 at 6:40 pm

Answering my own question here: Solution was to change one line of my Arduino code:

I'd had all my sketches showing
Serial.begin(9600);
and wasn't able to find the equivalent baud rate in the Serial Monitor (it was simply hidden by a the scroll of the pulldown — dumb oversight on my part)
Changing that to
Serial.begin(115200);
or even leaving at 9600 — just making sure to match the baud rate of the Serial Monitor solved the problem.

I'm not 100% sure of the following: I would expect a mismatch would only affect whether or not the Serial Monitor displays anything and not affect whether or not the sketch runs, but my impression is that sketches that previously weren't working are now working just fine.

Reply

Sentekin Can

May 17, 2020 at 11:05 pm

C Munque, if baud rated does not much, you will see strange characters on the Serial Monitor.
Today I received two ESP32 DEVKITV1 from Amazon and, like you , I tried all different boards. My problem was that the board would not be uploaded with sketch. Then, here, I read troubleshooting section and about BOOT P.B. (See my comment). Closes I could come in board selection, was DOIT ESP32 DEVKIT V1, and so magically it worked.

Reply

James Pattinson
February 3, 2021 at 9:17 pm

WHAT BOARD DID YOU END UP CHOOSING FOR THE WROOM?

Reply

Sara Santos
February 6, 2021 at 11:48 am

Hi.
You can choose ESP32 Dev Module or ESP32 Wrover Module.
Regards,
Sara

Reply

Robert Fujita

February 8, 2021 at 10:55 pm

Is there a good solution to the ESP32 board issue with MacOS Big Sur?

Reply

Sara Santos

February 9, 2021 at 12:16 pm

Hi.
Read this: https://rntlab.com/question/macintosh-big-sur-macos-11-0-1-breaks-esp32-programming-on-arduino-ide/
Regards,
Sara

Sentekin Can

May 17, 2020 at 10:56 pm

Thank you very much for the tutorial. I had wrestled with upload error problem almost a day before I saw your troubleshooting section and pushing BOOT push button. It was a relief, an now I am ready to start.
Thanks again.

Reply

Sara Santos

May 18, 2020 at 2:01 pm

Great!

Reply

joel

May 21, 2020 at 1:40 am

Hello, I have problems including
#include “soc / soc.h” // Disable brownour problems
#include “soc / rtc_cntl_reg.h” // Disable brownour problems
#include “driver / rtc_io.h”
Could you tell me what the libraries are called that I should download?

Reply

Sara Santos

May 21, 2020 at 3:07 pm

Hi.
You don’t need to install anything.
It comes by default when you install the ESP32 boards in your Arduino IDE.
Regards,
Sara

Reply

joel
May 22, 2020 at 9:40 pm

Sorry my question was for another of your posts, precisely for the ESP-CAM. I'll do it in the right place.

Reply

Alfred
May 30, 2020 at 3:36 am

Very useful website,

i made everything like you indicated.

until the final message shown:
The "Leaving…
Hard resetting via RTS pin…"

then when i looked the COM monitor should show me the neighbors wifi, but it is show me this:
□□-□□:□
□□□□□□6□8□ D□□□□□□□□4□□□B□□□M□]□□2□□□□CĞ□□
^□□□□□□□/□ □□□ע□-□□□ □□□□□4□
□□□□M□□>□□□□□□□□□□□□□6□ע□□□□□□□Á0□:□
□□□□□□□□R□□□eF¿□□□j□□□□□□t□□□□□Á□□8□H□@□□□ע□□□
t□□□□□C-□:□2□□□□δ□□□□□□□□□B□□□□□^□□□
□□□□□□□□
□□□w□t□□□□□□□□□h□□□

What could it be?? please help me!!

Reply

Sara Santos

May 30, 2020 at 9:17 am

Hi.
Make sure you have the right baud rate selected on the Serial Monitor.
On the bottom right corner, double-check that you have 115200 baud rate.
Regards,
Sara

Reply

Alfred

May 30, 2020 at 3:44 pm

Thank you so much, that's was the issue. I love this site.

Reply

Jonathan

June 27, 2020 at 8:39 pm

Very good, I purchased your ESP32 course and the only time I have had problems is due to me missing a vital point early on. All the information is there but you need to actually read and absorb every bit; rushing through it will leave you frustrated. If you have a problem then slow down and go through line by line. Keep up the good work, you are saving people lots of

time by pointing them to resources that can take a long time find among all the information on the internet.

Reply

Sara Santos

June 29, 2020 at 9:50 am

Hi.
Thank you for your feedback Jonathan.
If you need any help following the course, you can use the forum on the RNTLAB: https://rntlab.com/forum/ (exclusive for members)
Regards,
Sara

Reply

alex harijanto

July 16, 2020 at 3:23 am

Hi,

Thank you very much. I learn alot of ESP8266 and ESP32 from you.

Reply

Sara Santos

July 17, 2020 at 9:12 am

Great! 🙂

Reply

Robert Fujita

August 27, 2020 at 10:34 pm

Hello,

I'm experiencing problems loading files to my sketch, but first I wanted to ensure my board is installed properly. The ESP32 Add-on in the Arduino IDE is installed correctly. When I go to the board manager, the 'ESP32 by Espressif Systems' is not available. Am I missing a step or something else that needs to be performed to get that installed?

Thanks for providing all your ESP tutorials.

Reply

Mark

August 28, 2020 at 4:53 am

I was having problems installing my ESP32 with IDE with my hobby room computer so I tried it on my office computer and it worked! I think I may have had A typo in the Espressif address but I have both computers working now.

Reply

Robert Fujita

August 28, 2020 at 8:28 pm

Thanks for your response. I double checked my spelling for URL's and they are ok.

Reply

Richard Cavallaro

August 28, 2020 at 11:05 am

Not sure if this helps, but I'm programming an ESP32 through the arduino IDE and I don't see the option for "ESP32 by Espressif Systems". Mine is the ESP32 NodeMCU. And I select the board "Node32s". Works fine for me.

Reply

Obediah Mckay

October 25, 2020 at 7:29 pm

hi i used the troubleshoot it worked but im just getting garbage though in the com

Reply

Obediah Mckay

October 25, 2020 at 7:38 pm

nvm i fixed it i had my baud rate set wrong on system monitor

Reply

Gianfranco

November 16, 2020 at 4:33 pm

Hallo…
PLEASE HELP MEEEE… (me not only)

I have upgrade my macos to BIG SUR…
Arduino works but not esp32 and esp8266…
I tried the CH*** install but doesn't work…

How much time we have to wait that esp32 and/or esp8266 and/or CH*** and/or Arduino and/or Mac help us to upgrade???

Thank and have a nice week!

@}-,-'———
Gianfranco

Reply

Sara Santos

November 17, 2020 at 3:59 pm

Hi.
I still don't know how to solve the problem.
https://rntlab.com/question/macintosh-big-sur-macos-11-0-1-breaks-esp32-programming-on-arduino-ide/
Regards,
Sara

Reply

Gianfranco
November 17, 2020 at 10:30 pm

Thank…
I have found the same this morning too.
https://www.silabs.com/community/interface/forum.topic.html/vcp_driver_for_macosbigsur110x-SWJK
We must wait… I hope little little time…
Bye bye!

Reply

saranya
January 18, 2021 at 11:02 pm

I've downloaded the ESP32 successfully but I have a problem with connecting to the board. I've tried this on two different computers with different combinations of connecting cables and two different ESP32s and it wont work. For one of the computers I'm using (Mac), the COM port won't even show up. Here's the error message I've gotten:

A fatal error occurred: Failed to connect to ESP32: Timed out waiting for packet header

Thank you so much!

Reply

Sara Santos

January 20, 2021 at 11:57 am

Hi.
Make sure you press the on-board BOOT button when you start seeing a lot of dots on the debugging window.
https://randomnerdtutorials.com/solved-failed-to-connect-to-esp32-timed-out-waiting-for-packet-header/
Regards,
Sara

Reply

saranya

January 27, 2021 at 12:21 am

Hi, thank you so much! I've tried pressing the BOOT button many times but I still can't see the COM port, which worked a few days ago but is now gone, and I'm not sure what to do.

Reply

Antonio PEREZ

February 10, 2021 at 6:26 pm

Thanks a lot.

Easy an clear to understand!!

Reply

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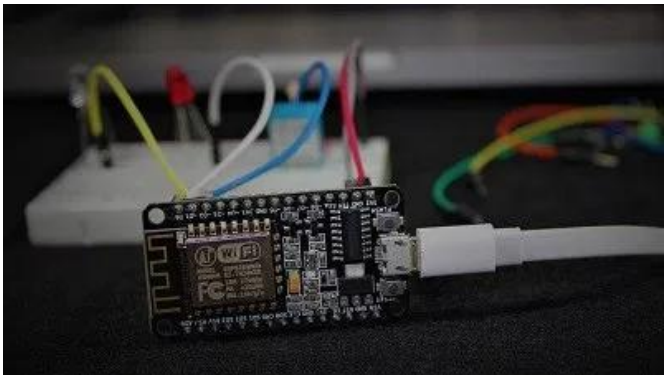

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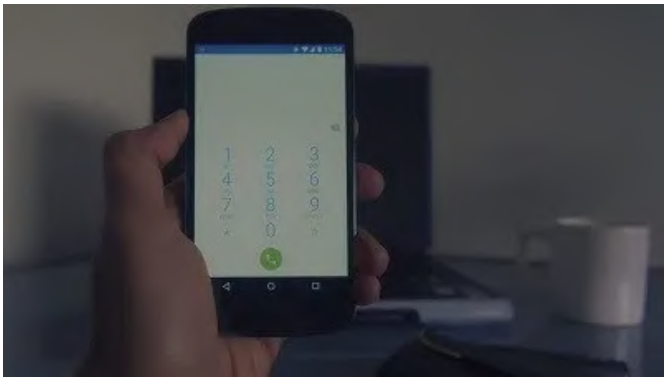

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