



Install ArduinoIDE and PlatformIO



List of Topics:

-  Blue header for ArduinoIDE document
-  Orange header for PlatformIO document

Each document will contain:

- how to install each program
- setup uploading sketch
- libraries installation

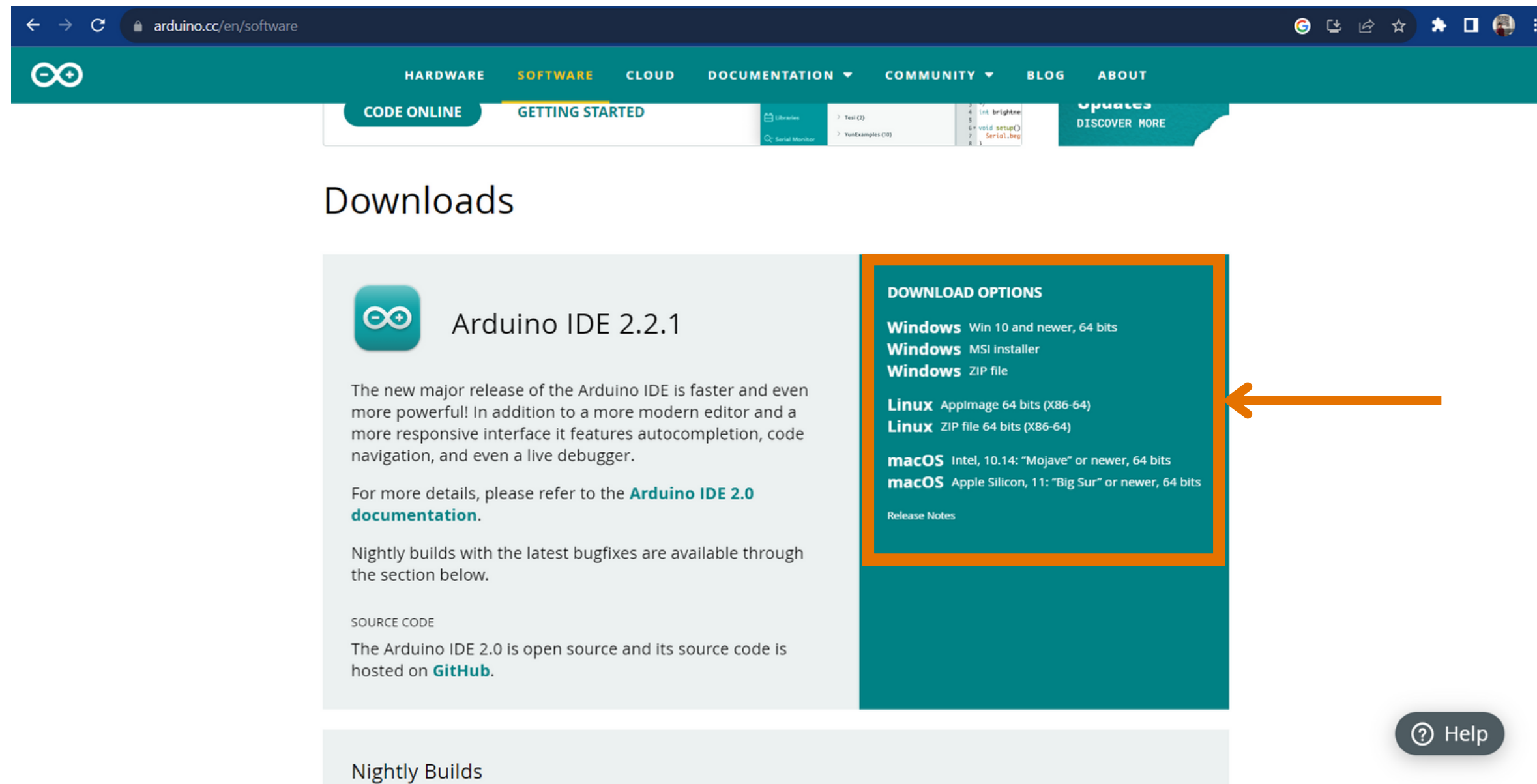


ArduinoIDE

The Arduino IDE (Integrated Development Environment) is a software application that is used for programming Arduino boards. Arduino is an open-source hardware and software platform that allows users to create interactive electronic projects.

Starting install ArduinoIDE

Visit <https://www.arduino.cc/en/software>
and choose the appropriate download option for your OS from the picture below.




The screenshot shows the Arduino IDE 2.2.1 download page. The page has a teal header with navigation links: HARDWARE, SOFTWARE, CLOUD, DOCUMENTATION, COMMUNITY, BLOG, and ABOUT. Below the header, there are tabs for CODE ONLINE and GETTING STARTED. The main content area is titled "Downloads" and features a large card for Arduino IDE 2.2.1. The card includes the Arduino logo, the version number, and a description of the new major release. It also mentions that for more details, users should refer to the Arduino IDE 2.0 documentation. A section for "Nightly Builds" is visible at the bottom. On the right side of the card, there is a "DOWNLOAD OPTIONS" section with a teal background and an orange border. This section lists download options for Windows (Win 10 and newer, 64 bits), Linux (ApplImage 64 bits (X86-64) and ZIP file 64 bits (X86-64)), and macOS (Intel, 10.14: "Mojave" or newer, 64 bits and Apple Silicon, 11: "Big Sur" or newer, 64 bits). An orange arrow points to the "DOWNLOAD OPTIONS" section. A "Help" button is located in the bottom right corner of the page.

arduino.cc/en/software

HARDWARE SOFTWARE CLOUD DOCUMENTATION COMMUNITY BLOG ABOUT

CODE ONLINE GETTING STARTED

Downloads



Arduino IDE 2.2.1

The new major release of the Arduino IDE is faster and even more powerful! In addition to a more modern editor and a more responsive interface it features autocompletion, code navigation, and even a live debugger.

For more details, please refer to the [Arduino IDE 2.0 documentation](#).

Nightly builds with the latest bugfixes are available through the section below.

SOURCE CODE

The Arduino IDE 2.0 is open source and its source code is hosted on [GitHub](#).

Nightly Builds

DOWNLOAD OPTIONS

Windows Win 10 and newer, 64 bits
Windows MSI installer
Windows ZIP file

Linux ApplImage 64 bits (X86-64)
Linux ZIP file 64 bits (X86-64)

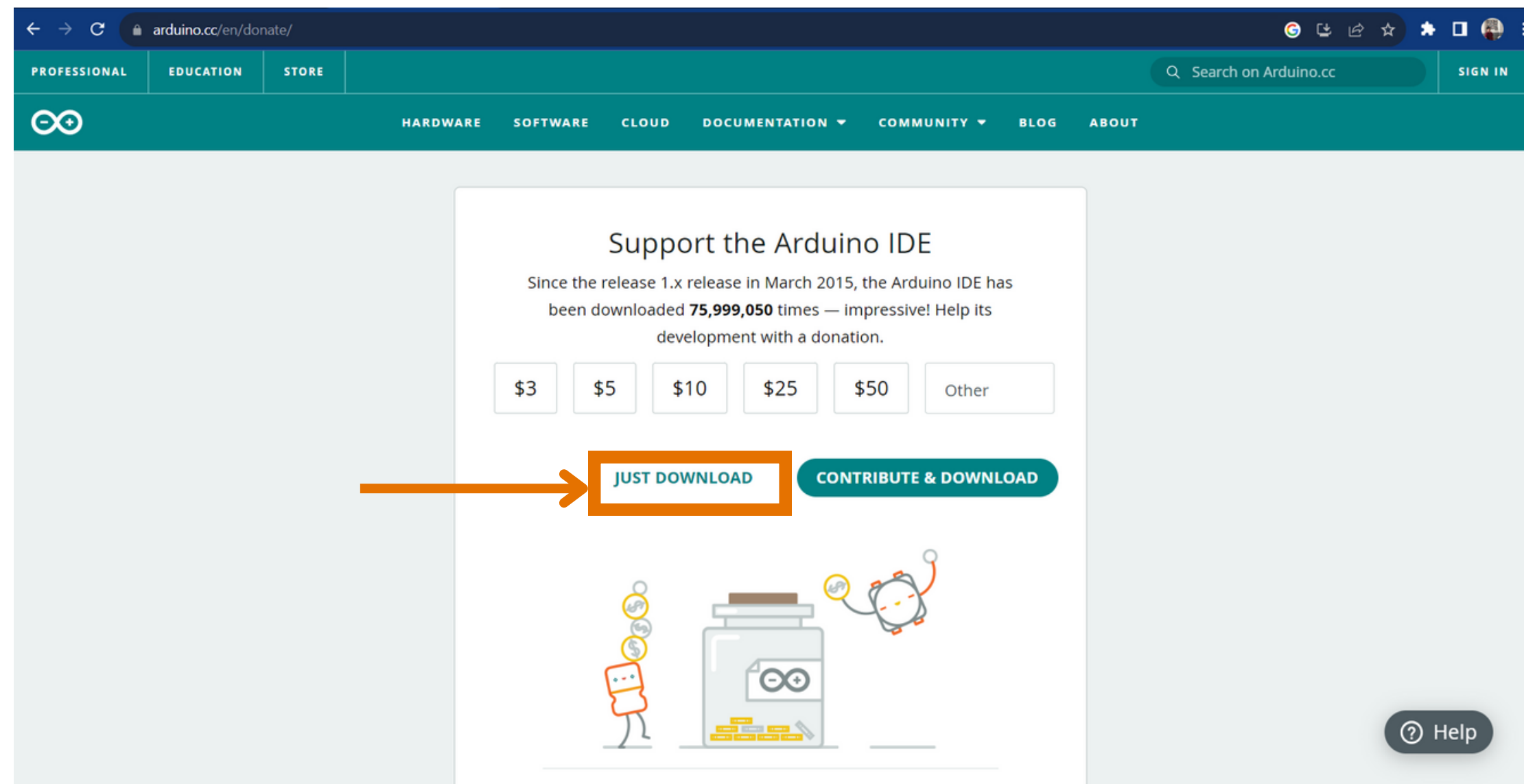
macOS Intel, 10.14: "Mojave" or newer, 64 bits
macOS Apple Silicon, 11: "Big Sur" or newer, 64 bits

[Release Notes](#)

Help

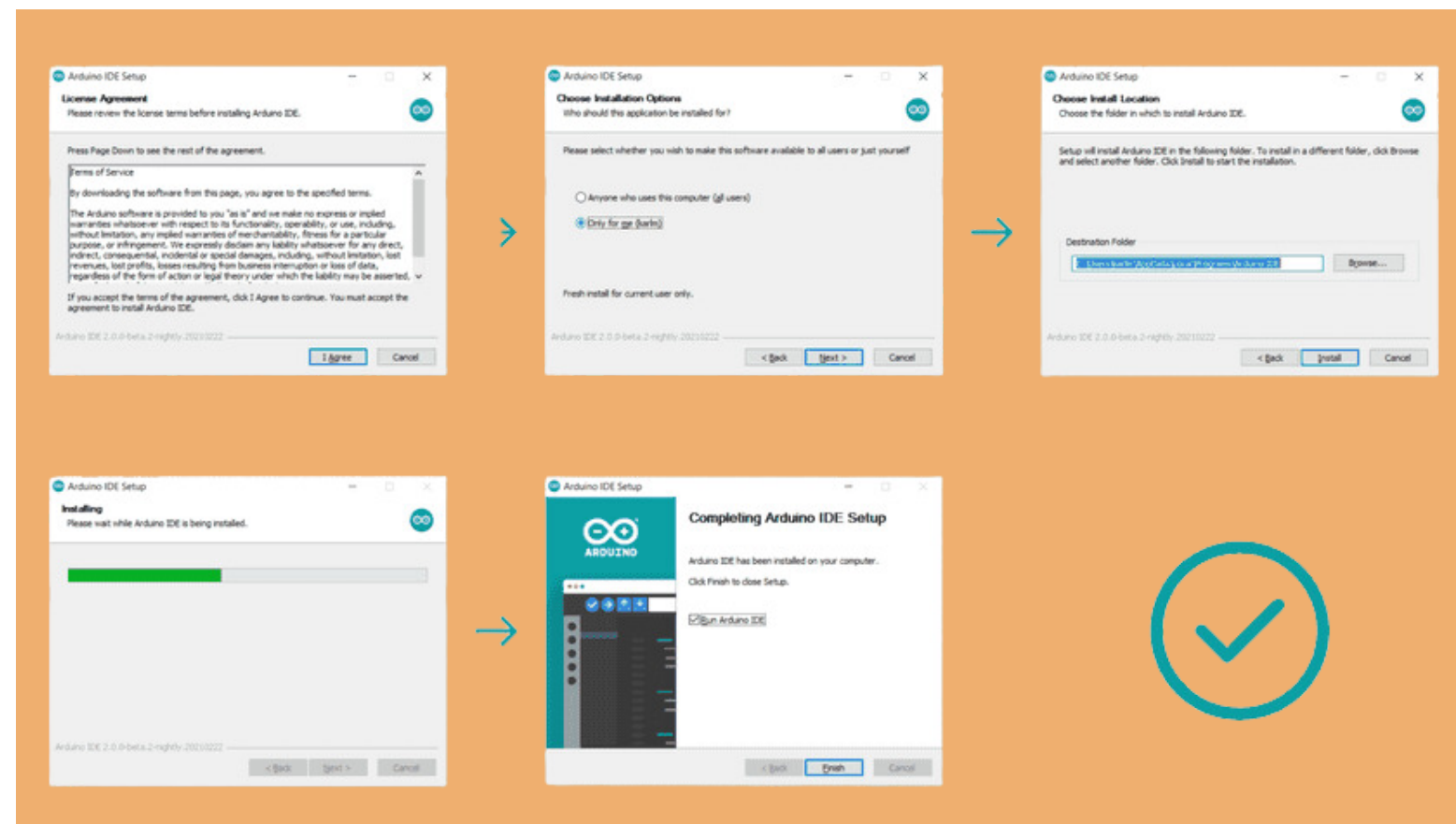
Starting install ArduinoIDE

Click “Just Download”. This slide will serve as an example of free download. If you'd like, you can donate.

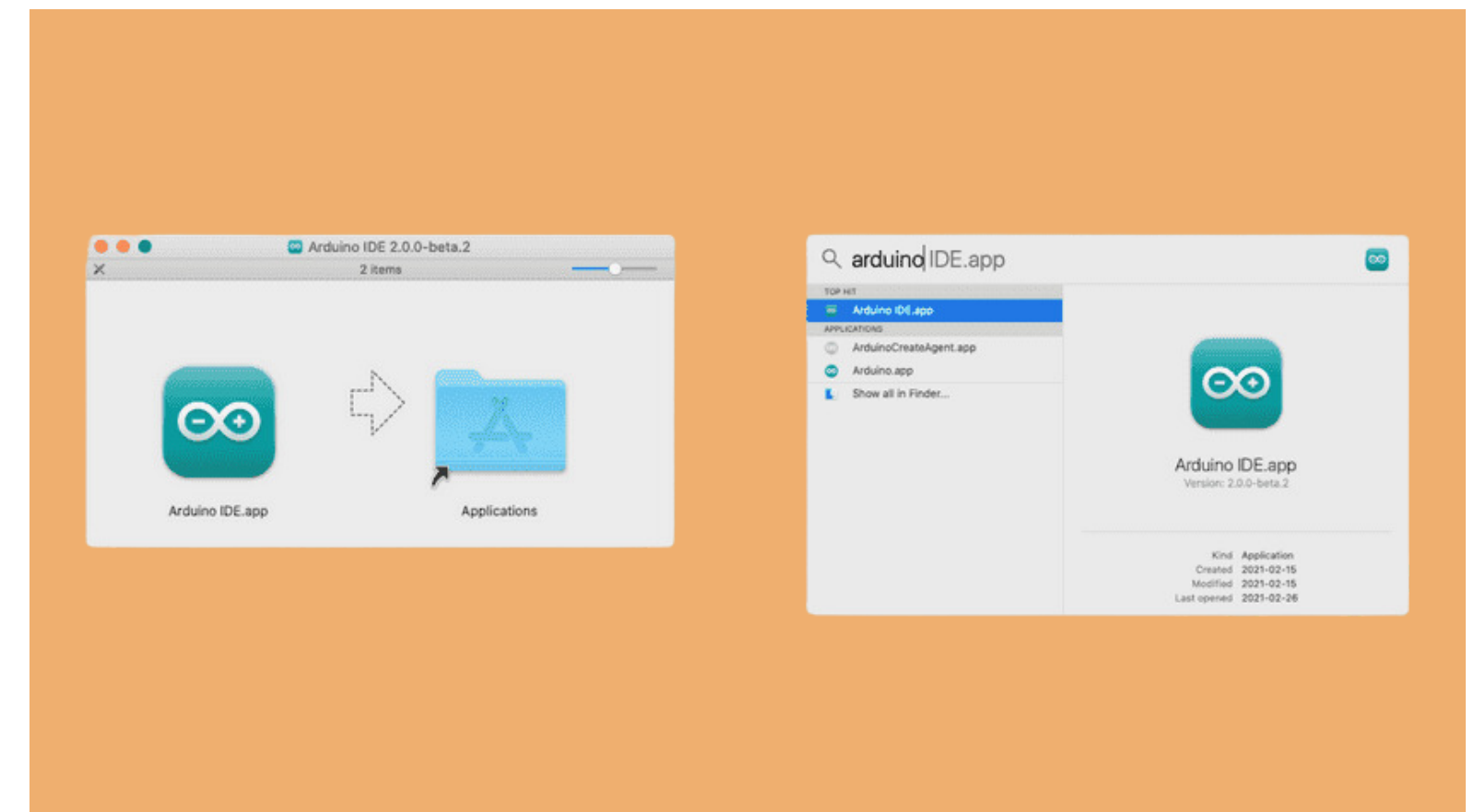


Install ArduinoIDE For Windows/MacOS

while downloaded from a website. Follow the instructions in the installation guide. The installation may take several minutes.
more detail: <https://docs.arduino.cc/software/ide-v2/tutorials/getting-started/ide-v2-downloading-and-installing#installation>



Windows

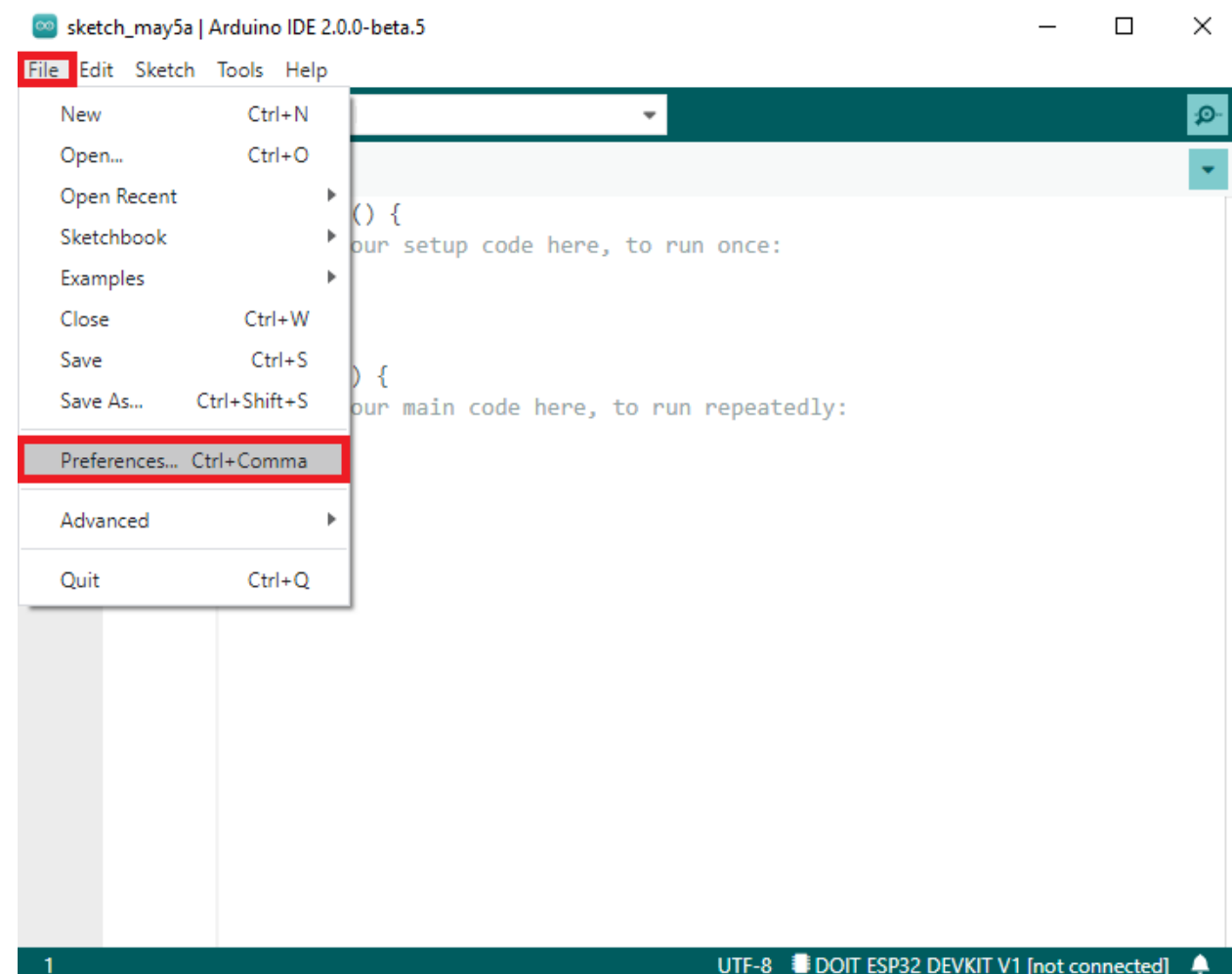


MacOS

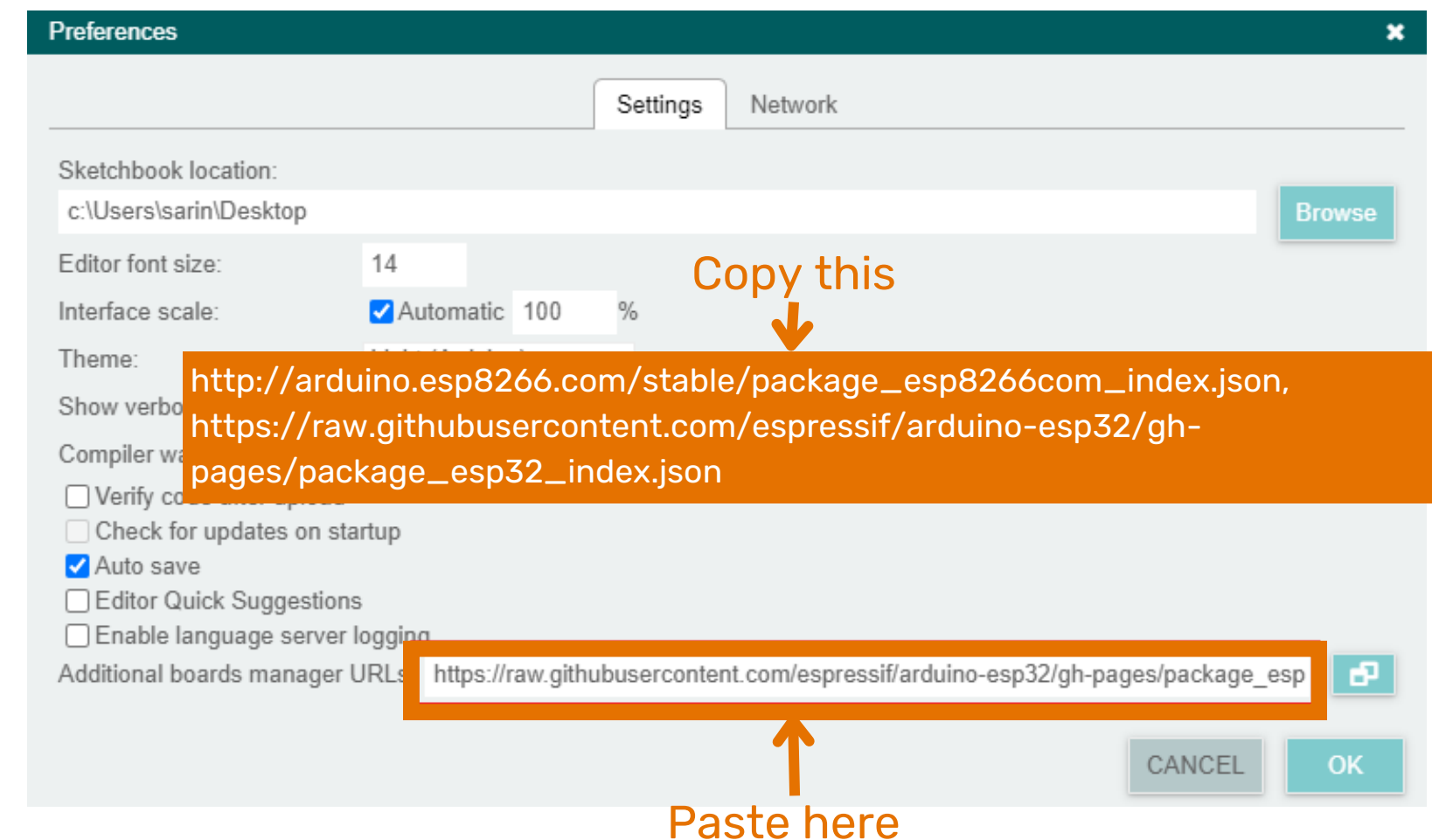
Installing ESP32 Board in Arduino IDE

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

1. In your Arduino IDE 2.0, go to File > Preferences.



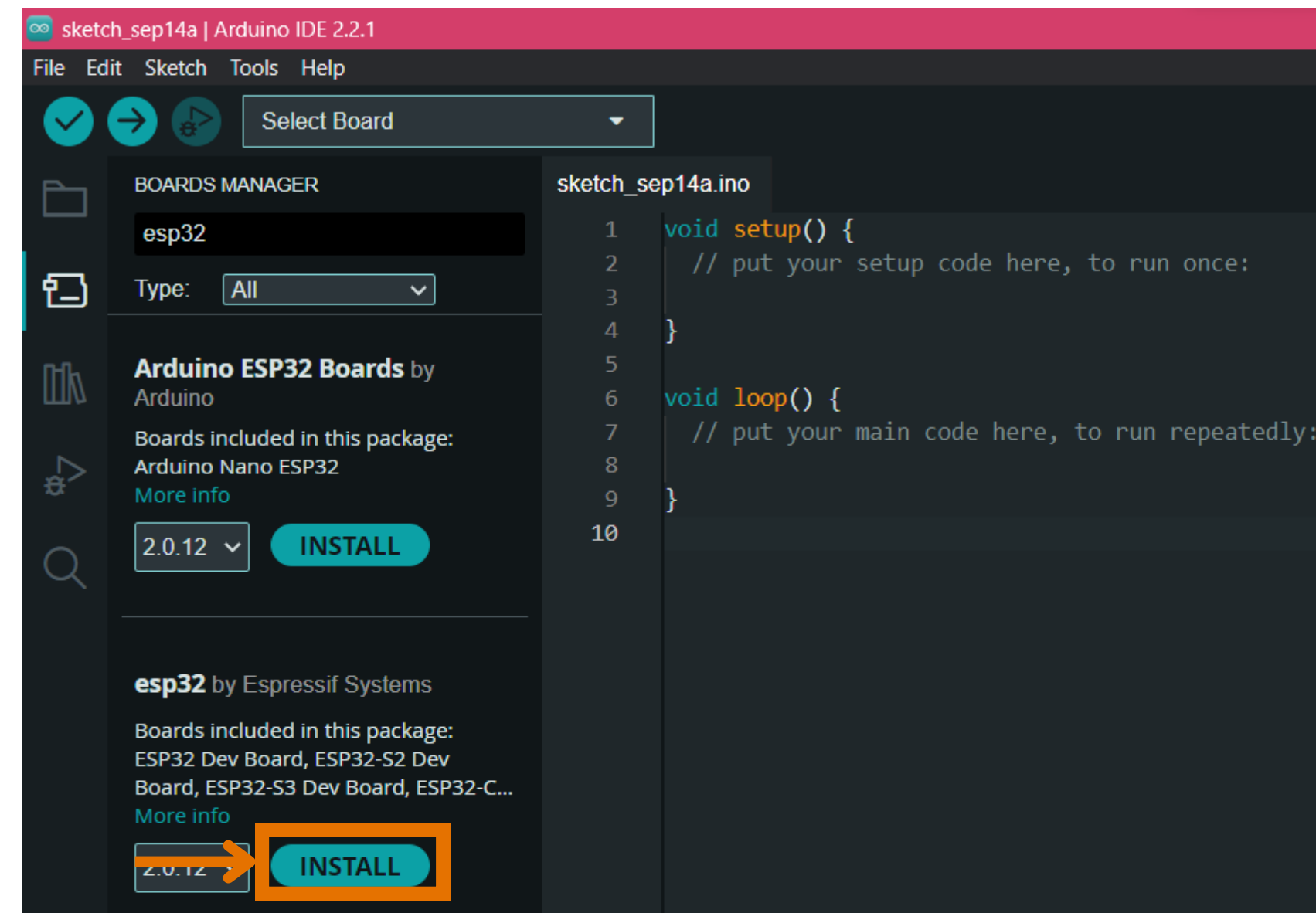
2. Copy and paste the following line to the Additional Boards Manager URLs field.



Installing ESP32 Board in ArduinoIDE

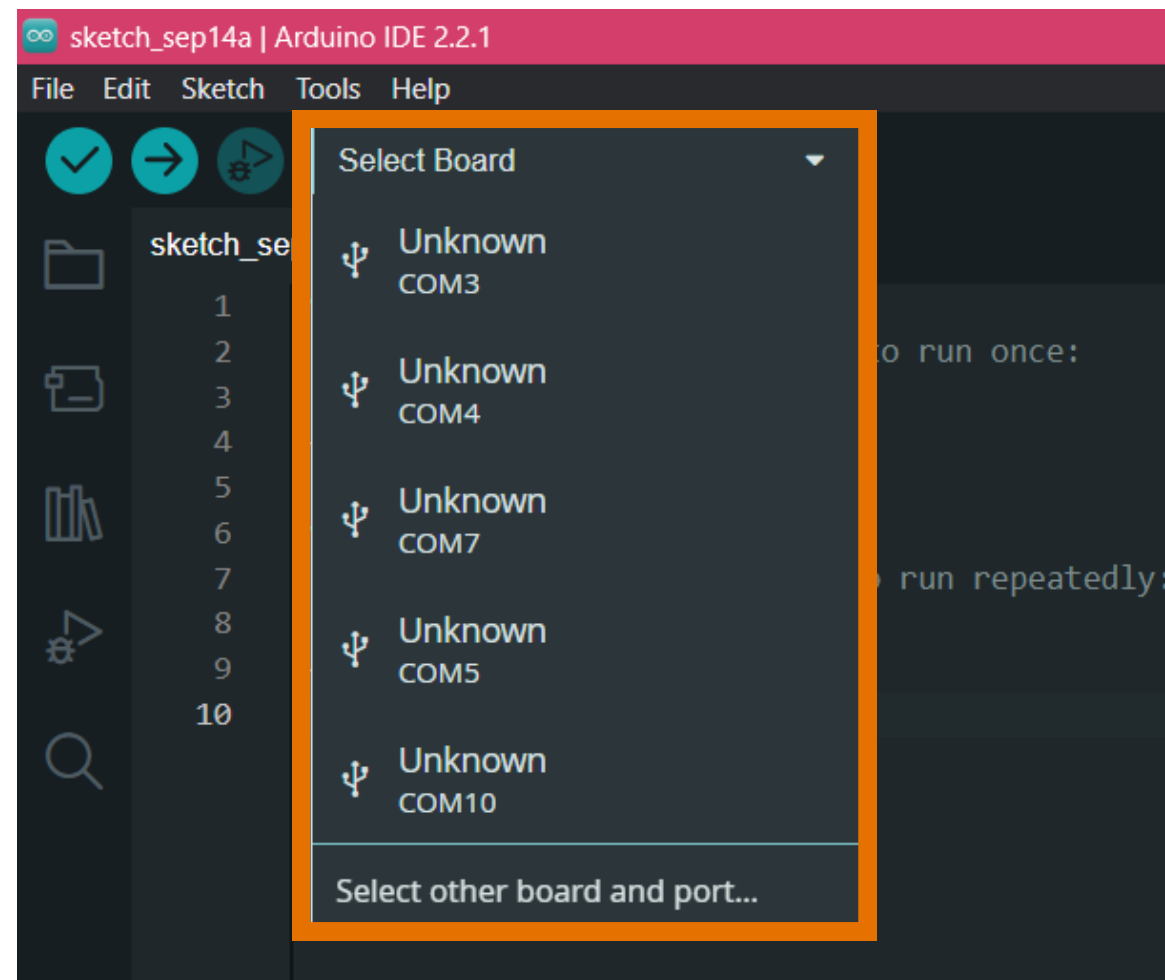
3. Open the Boards Manager. You can go to Tools > Board > Boards Manager... or you can simply click the Boards Manager icon in the left-side corner.

4. Search for ESP32 and press the install button for esp32 by Espressif Systems.

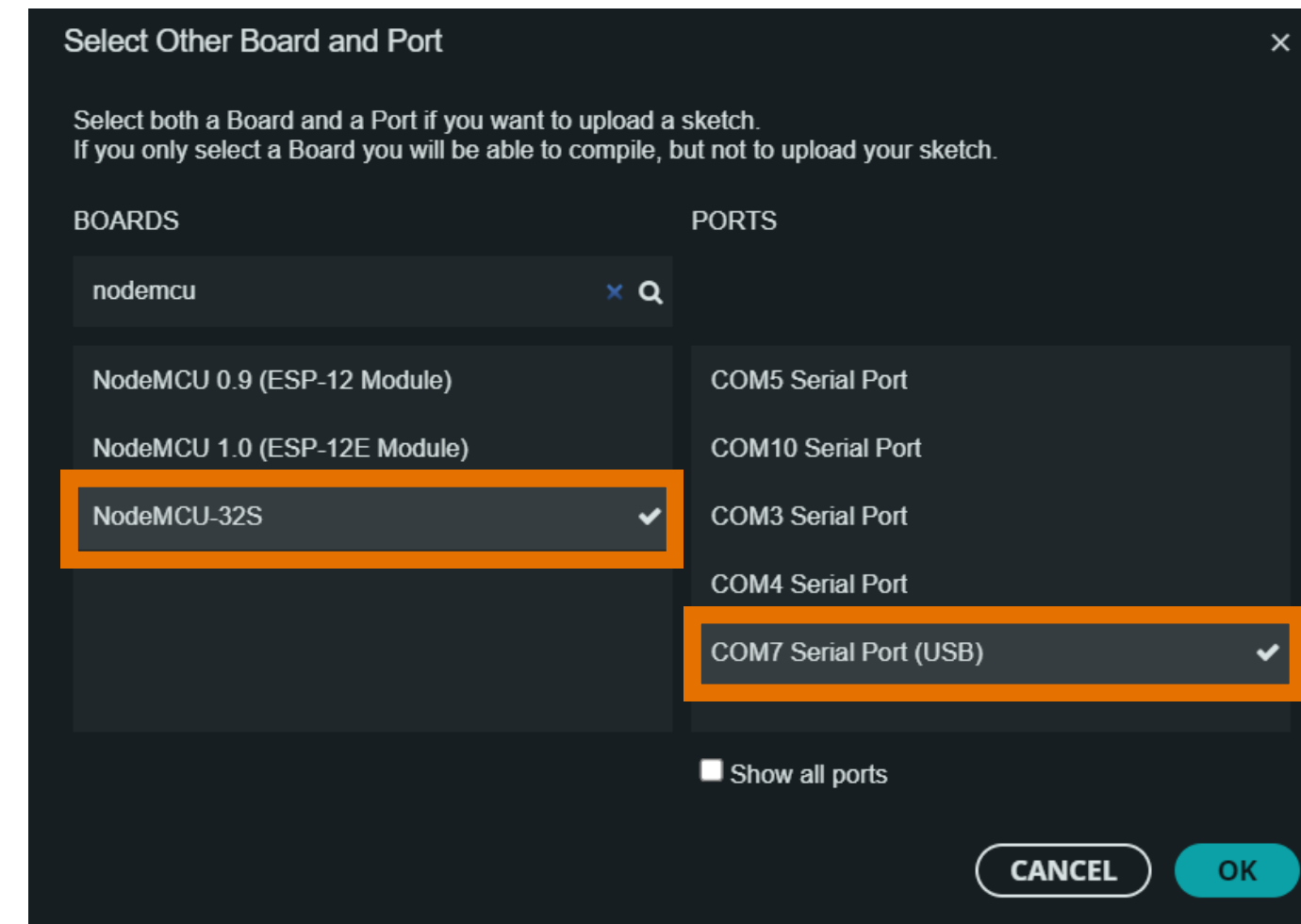


Uploading the Sketch

When you coding in Lab1. Before uploading code, On the top drop-down menu, select the “unknown” board.
A new window, as shown below, will open.



Select which one



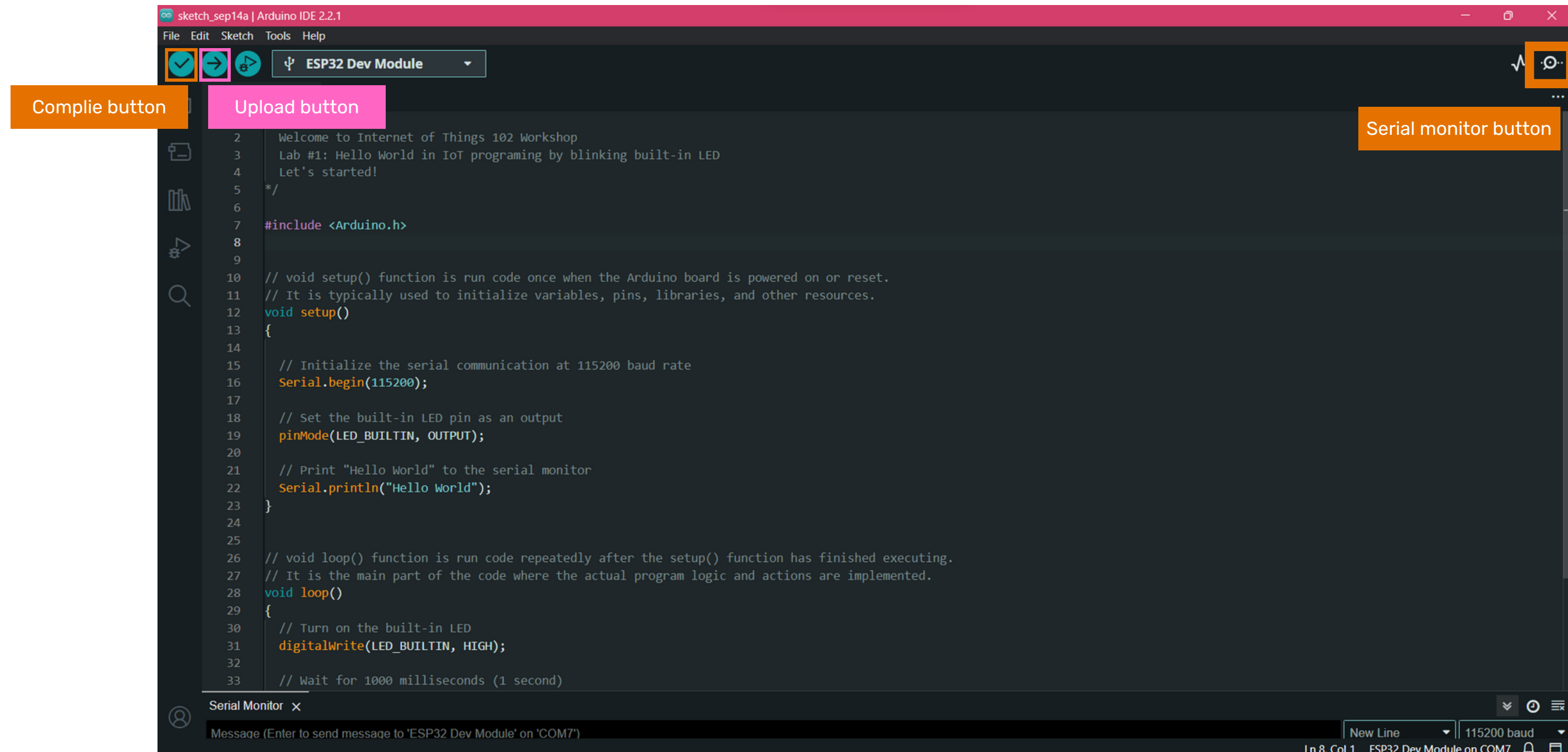
Search “NodeMCU-32S” and select it.
(If you connected esp32 with USB cable).
It’ll show Serial port in following picture.

Uploading the Sketch

Compile button: To verify your code and check error code.

Upload button: To run your code.

Serial monitor: To display your output. (If you coding for begin serial monitor).

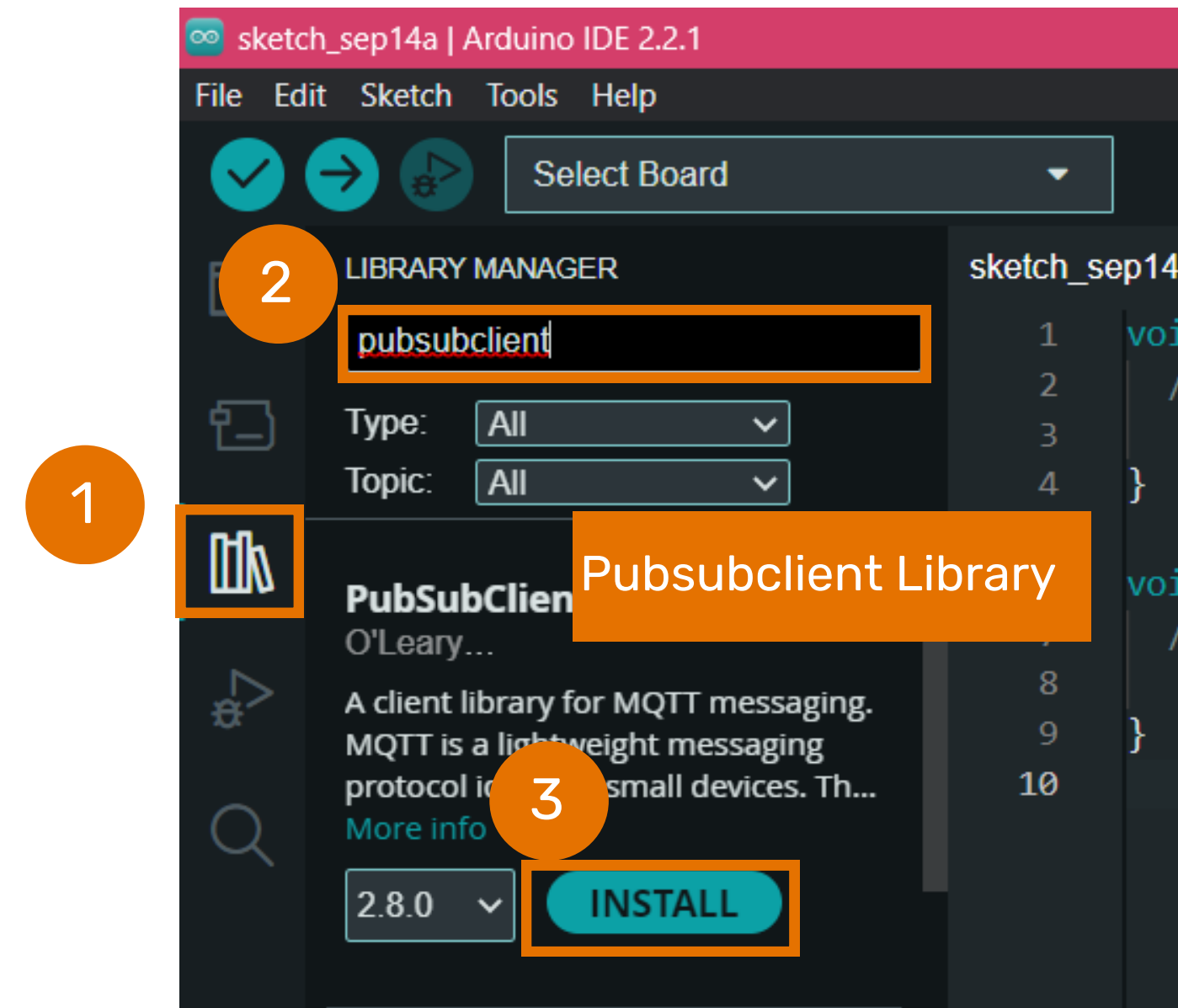
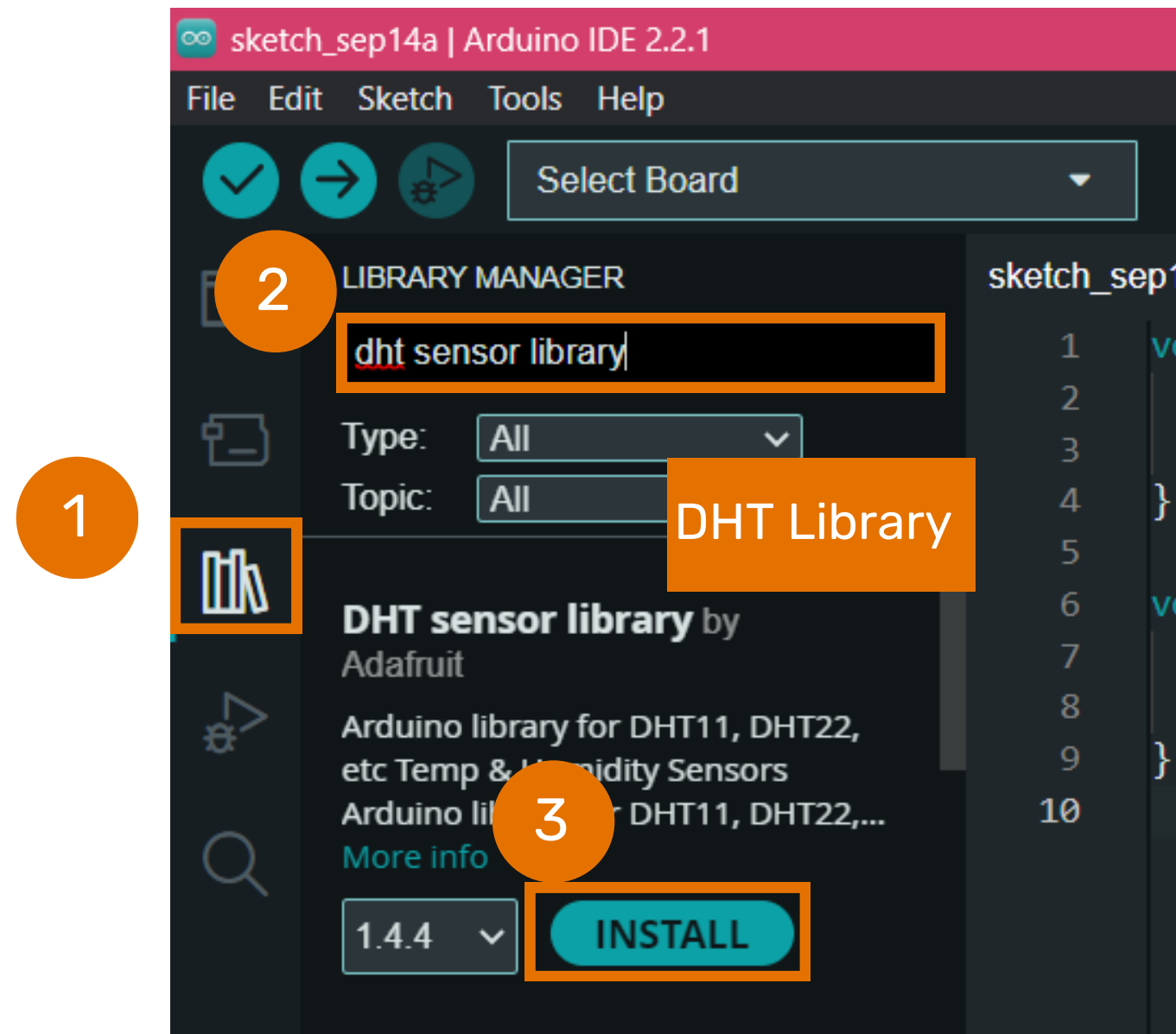


Install

Dht.h and PubSubclient.h libraries

In our workshop use 2 libraries: dht and pubsubclient. Following this instruction to install:

1. Go to Library icon
2. Search "DHT sensor library" for dht.h and PubSubClient for PubSubClient.h
3. Click install.



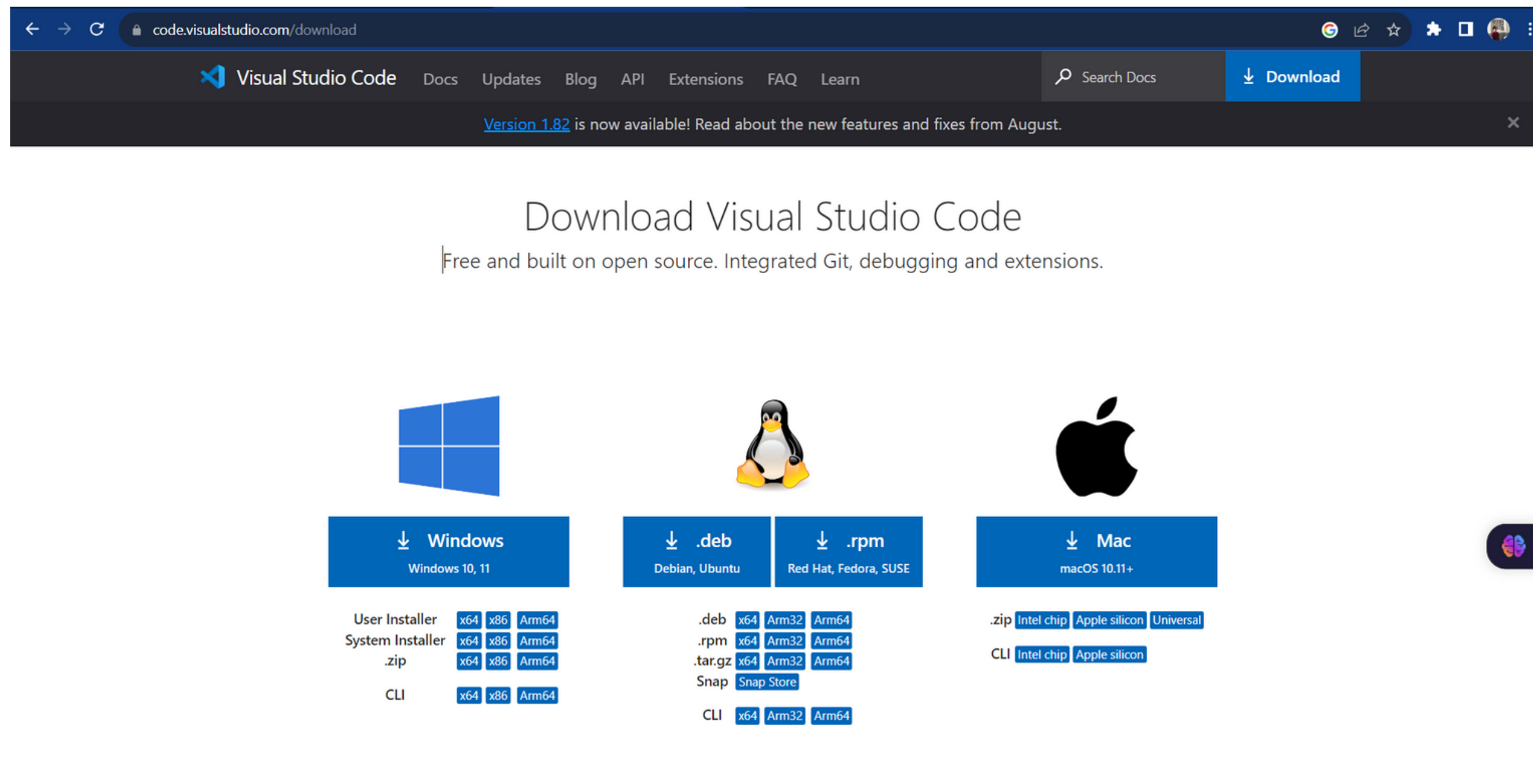


PlatformIO

PlatformIO is a cross-platform, cross-architecture, multiple framework, professional tool for embedded systems engineers and for software developers who write applications for embedded products.

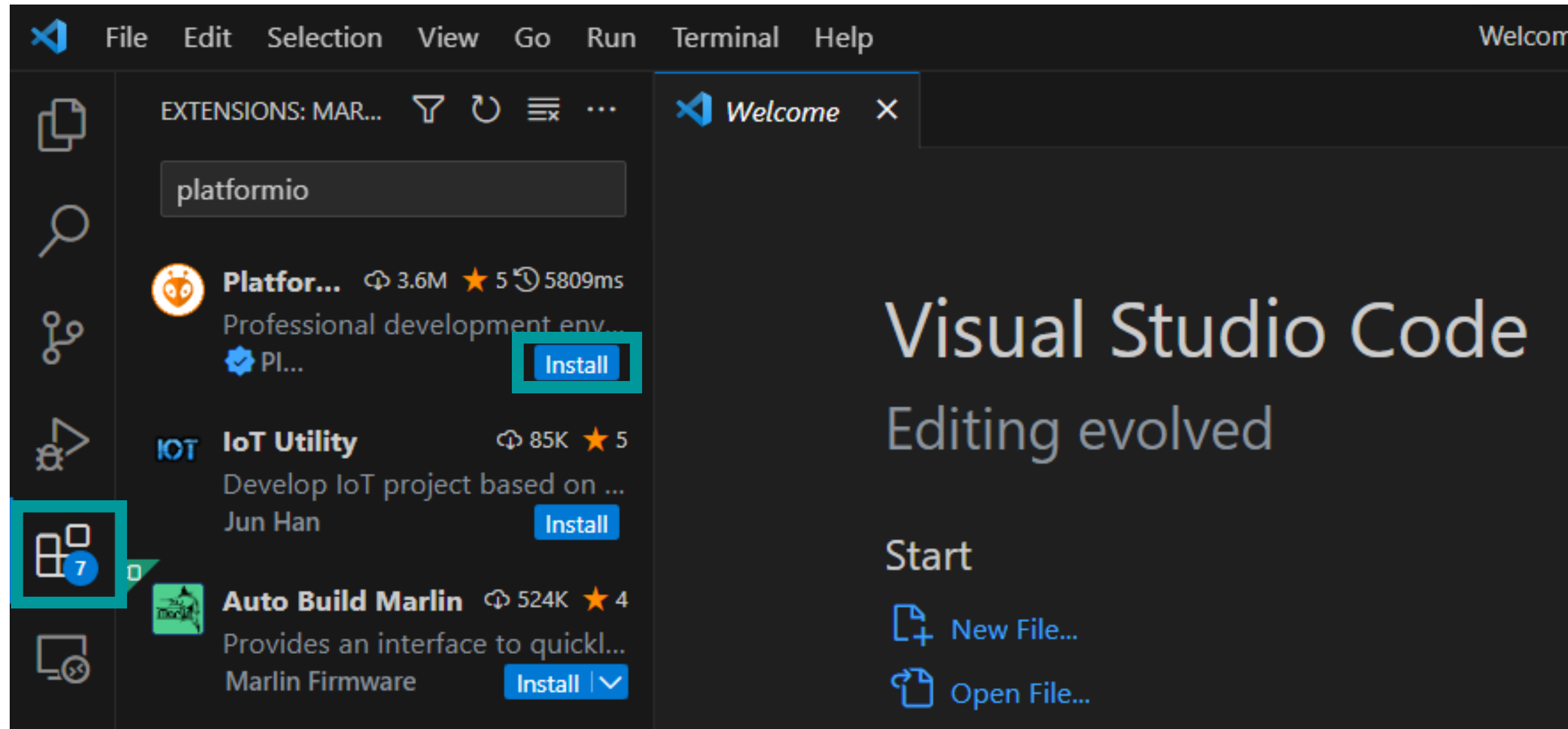
Starting install Visual Studio

Visit <https://code.visualstudio.com/download>
and choose the appropriate download option for your OS from the picture below.



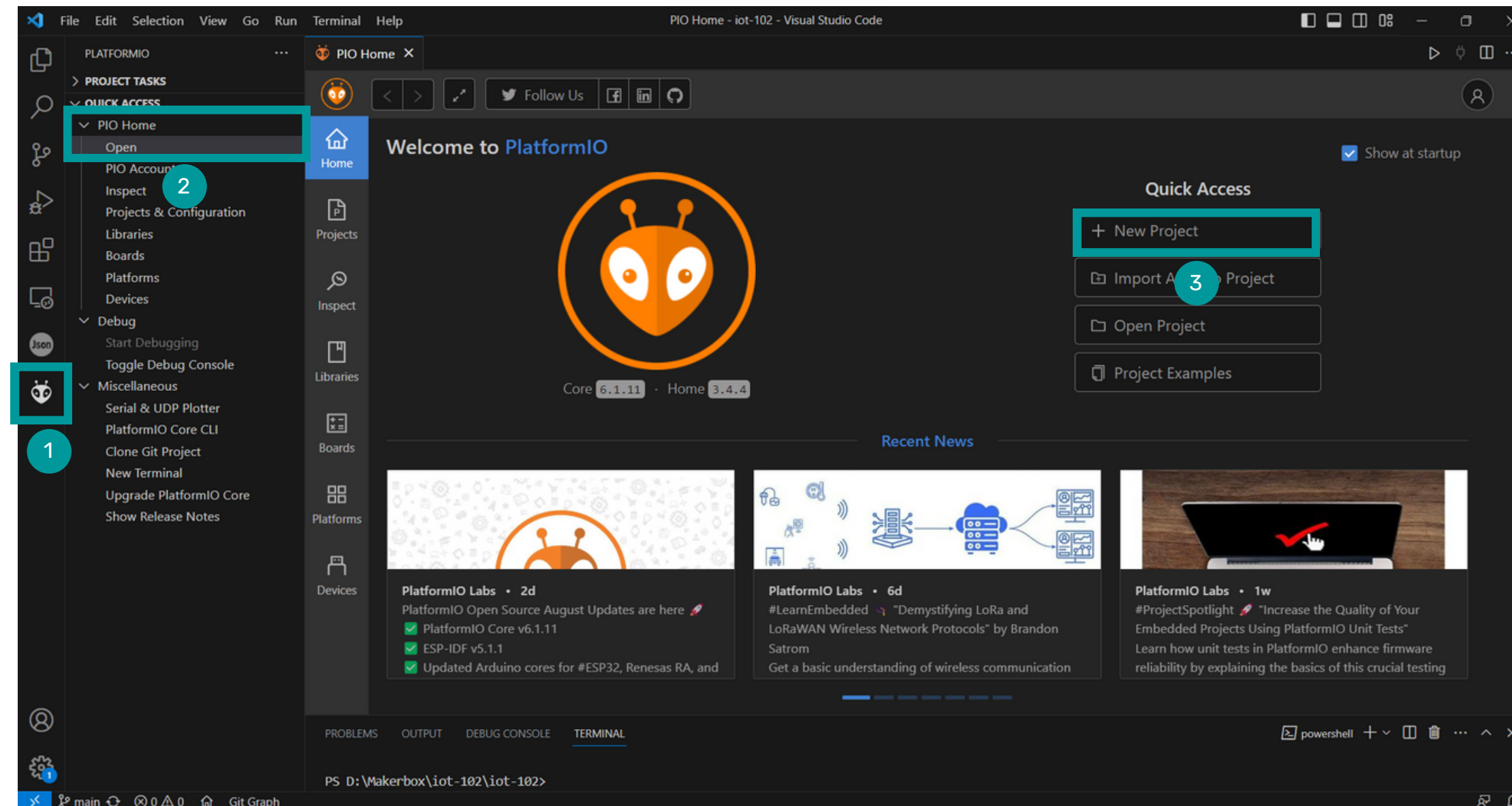
Starting install PlatformIO

Open visual studio -> Go to extension -> Search platformIO -> Click Install



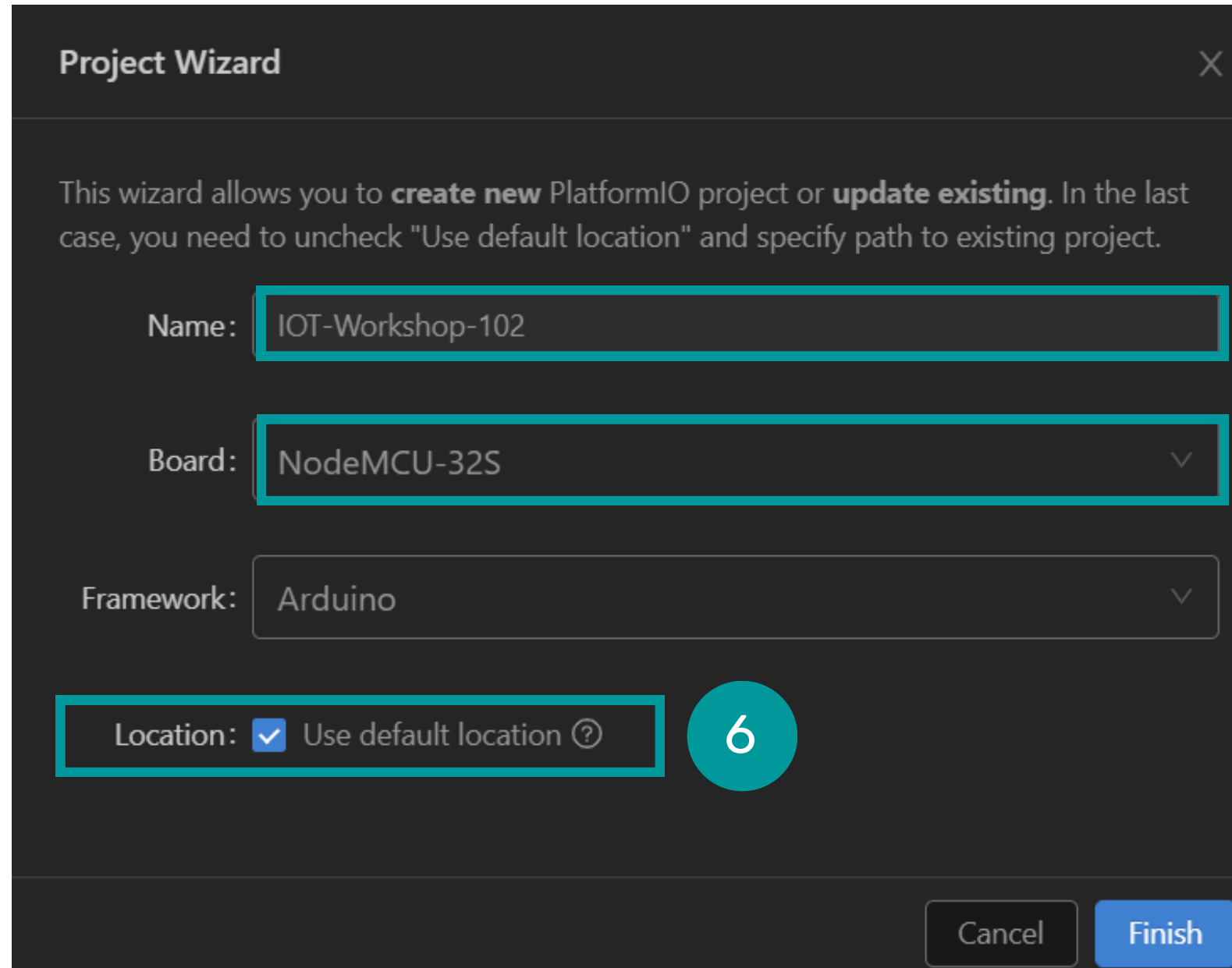
Starting project in PlatformIO

1. Go to platformIO extension.
2. Go to PIO Home -> Open.
3. Click "New Project".



Starting project in PlatformIO

4. Fill in project name.
5. Select board (The NodeMCU-32S will be used in our workshop).
6. Select your location of project file. (If you want to customize your location. remove tik).



Project Wizard

This wizard allows you to **create new** PlatformIO project or **update existing**. In the last case, you need to uncheck "Use default location" and specify path to existing project.

Name: IOT-Workshop-102

Board: NodeMCU-32S

Framework: Arduino

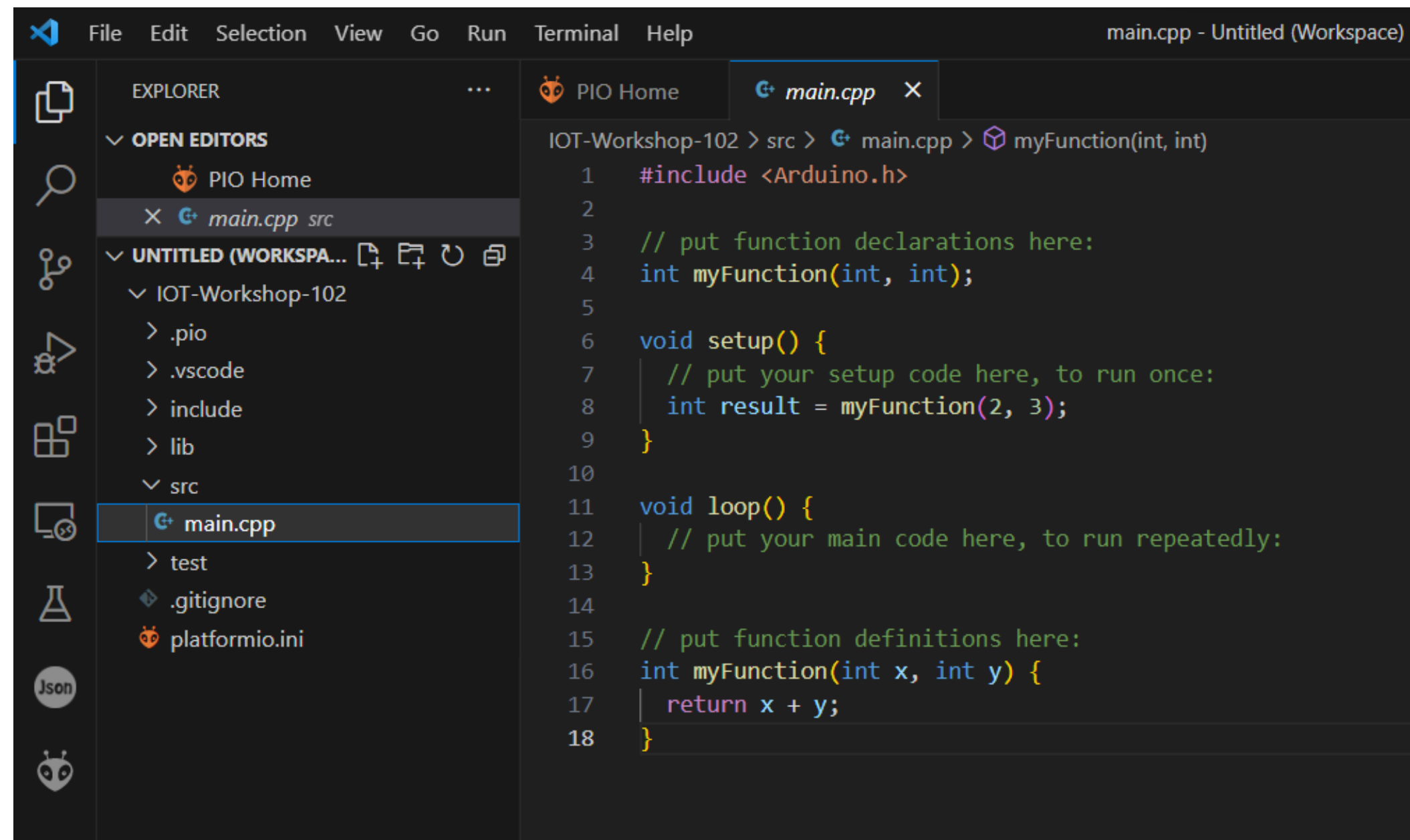
Location: ☒ Use default location ?

Cancel Finish

If you finish the setup. Clicking the finish button.

Starting project in PlatformIO

When you setup completely. Go to src folder -> main.cpp -> Put your code in this file



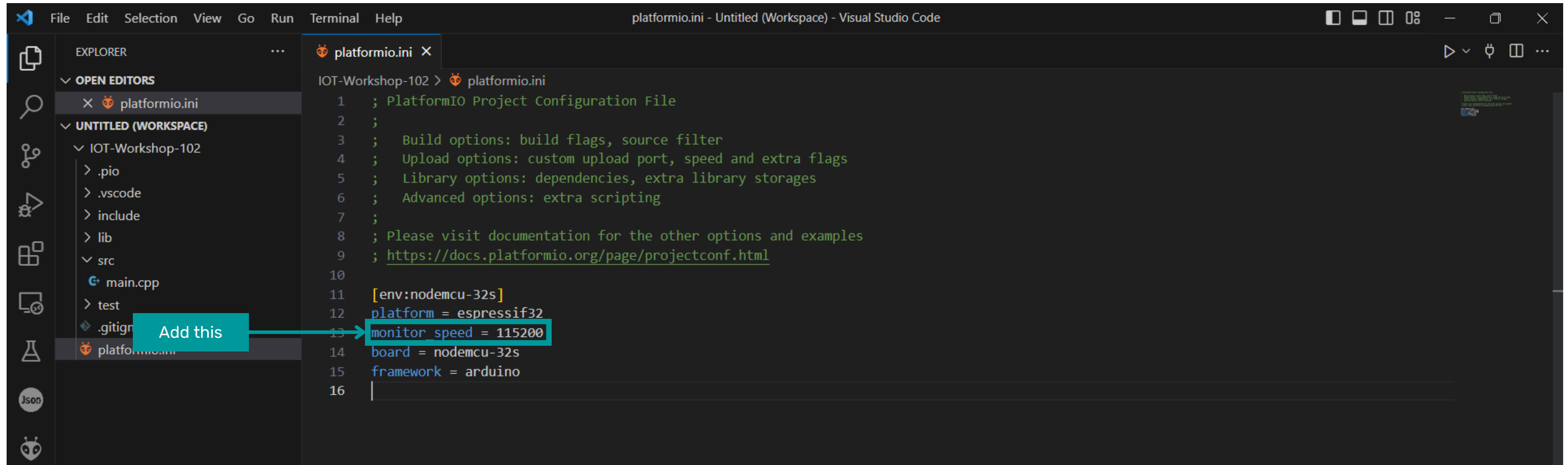
```
File Edit Selection View Go Run Terminal Help
main.cpp - Untitled (Workspace) -

EXPLORER
OPEN EDITORS
PIO Home
main.cpp src
UNTITLED (WORKSPA...
IOT-Workshop-102
.pio
.vscode
include
lib
src
main.cpp
test
.gitignore
platformio.ini

IOT-Workshop-102 > src > main.cpp > myFunction(int, int)
1  #include <Arduino.h>
2
3  // put function declarations here:
4  int myFunction(int, int);
5
6  void setup() {
7      // put your setup code here, to run once:
8      int result = myFunction(2, 3);
9  }
10
11 void loop() {
12     // put your main code here, to run repeatedly:
13 }
14
15 // put function definitions here:
16 int myFunction(int x, int y) {
17     return x + y;
18 }
```

platformIO.ini

platformIO.ini: This file is a configuration file (select board, framework, libraries, etc.)
In our workshop will add monitor speed to initialize serial monitor.



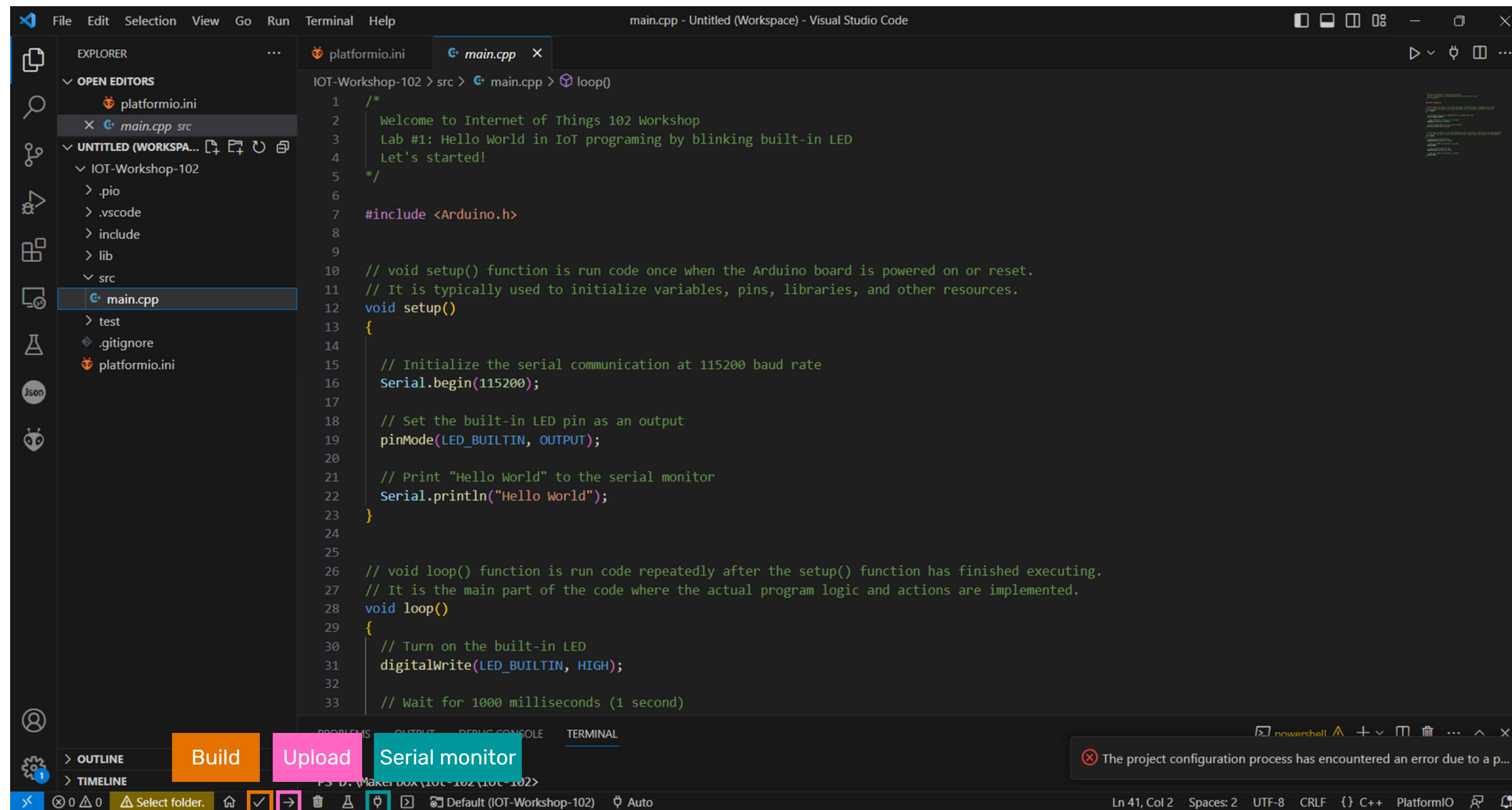
```
1 ; PlatformIO Project Configuration File
2 ;
3 ; Build options: build flags, source filter
4 ; Upload options: custom upload port, speed and extra flags
5 ; Library options: dependencies, extra library storages
6 ; Advanced options: extra scripting
7 ;
8 ; Please visit documentation for the other options and examples
9 ; https://docs.platformio.org/page/projectconf.html
10
11 [env:nodemcu-32s]
12 platform = espressif32
13 monitor speed = 115200
14 board = nodemcu-32s
15 framework = arduino
16
```

Uploading the Sketch

Build: To verify your code and check error code.

Upload: To run your code.

Serial monitor: To display your output. (If you coding for begin serial monitor).

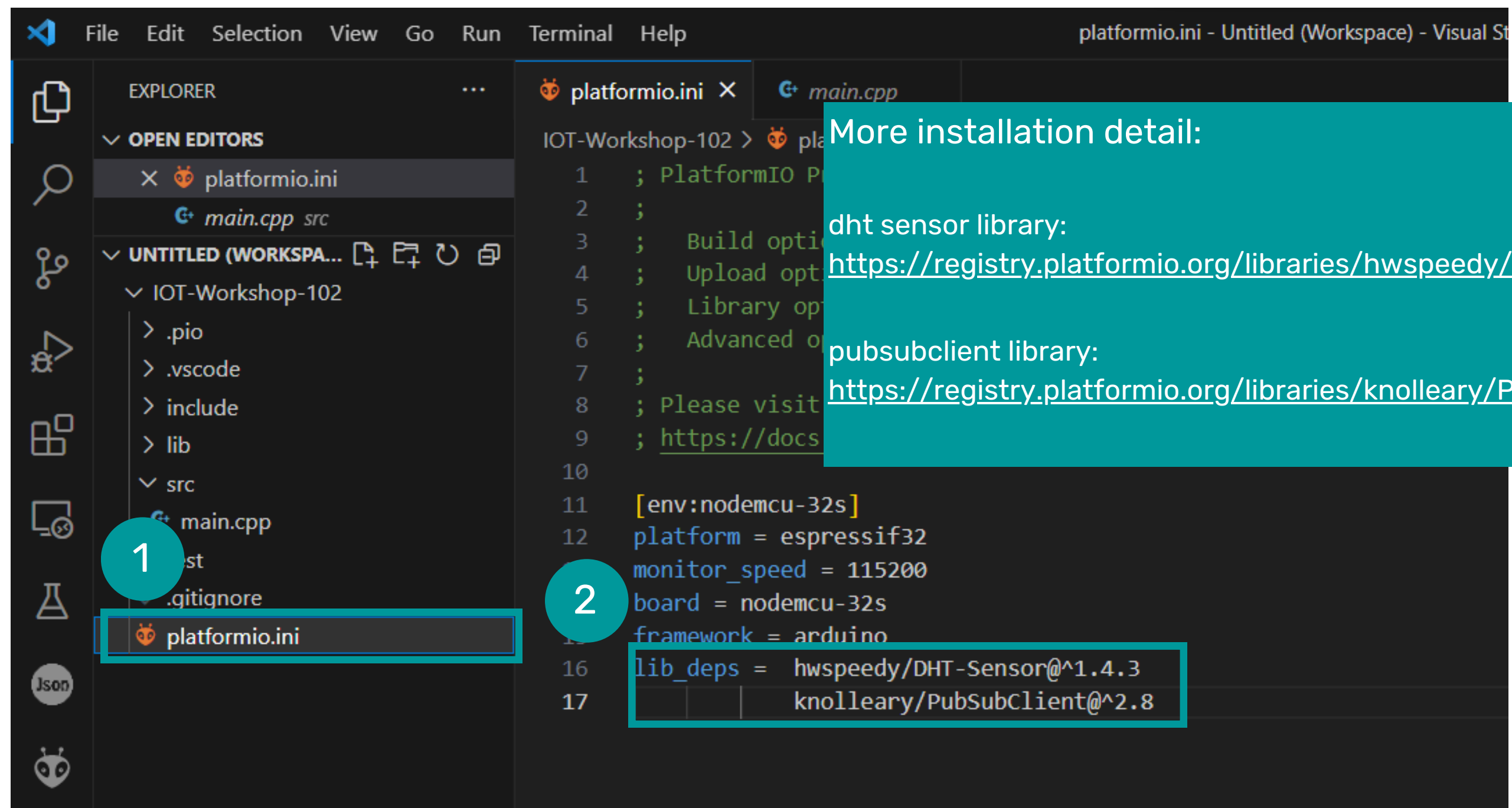


Install

Dht.h and PubSubclient.h libraries

In our workshop use 2 libraries: dht and pubsubclient. Following this instruction to install:

1. Go to platformio.ini
2. add lib_deps





Thank You