

Badge My IoT Life – PreWork

What to Bring

There will be a limited number of soldering stations provided at the session. **If you have your own soldering iron, you are strongly encouraged to bring it.** Soldering irons should be the pen style, not the gun/pistol style.

- Required: Fully-charged laptop. See below for required and suggested software.
- Required: MicroUSB cable that works with your laptop.
- Optional: Smartphone (as if you'd go anywhere without it)
- Optional: Soldering iron, tools, stand/helping hands, magnifier, fan, etc.
- Optional: Any 3v3 I2C sensors or peripherals that you have that you might want to use with your badge

Please mark or label anything you bring with your name!

Software

In an effort to minimize the amount of group time spent waiting for large downloads and installs to complete, please install the following items before arriving at the workshop. You'll need either VS Code with the PlatformIO extension *or* the Arduino IDE. You'll also need the ESP32 device toolchain for your selected IDE.

Arduino IDE

Download and install the Arduino IDE from <https://www.arduino.cc/en/Main/Software>

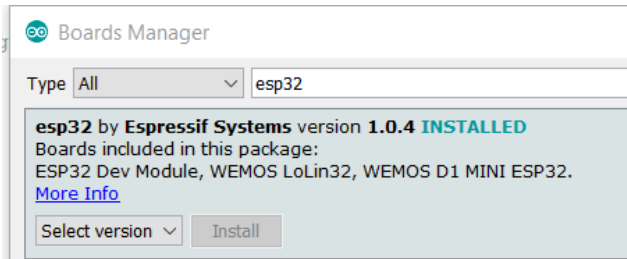
You can also download this from the Windows App Store, but there are some implications/limitations of using the Windows store version that you may run into down the road. Any current version will work fine for the session.

Under File->Preferences, in the "Additional Boards Manager URLs" add:

https://dl.espressif.com/dl/package_esp32_index.json

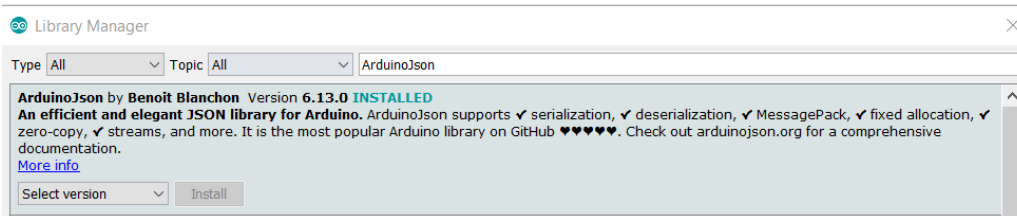
https://arduino.esp8266.com/stable/package_esp8266com_index.json

Under Tools->Board->Board manager, search for "esp32" and install the esp32 toolchain:



Under Tools->Manage Libraries..., search for and install:

- Adafruit GFX Library
- Adafruit ILI9341
- ArduinoJson



Download the XT_DAC_Audio library 4.2.1 or higher:

<https://www.xtronical.com/the-dacaudio-library-download-and-installation/>

Under Sketch->Include Library->Add .ZIP Library, select the downloaded zip file to import it.

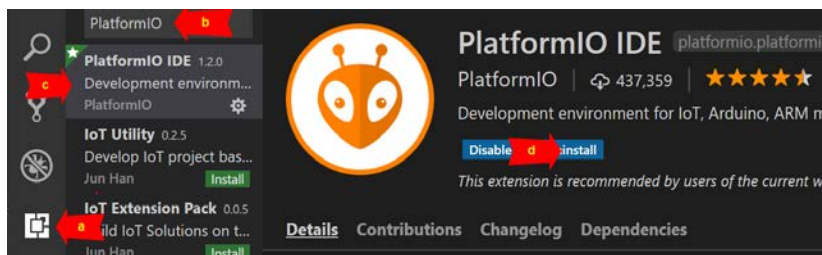
VS Code

Download and install from <https://code.visualstudio.com/>

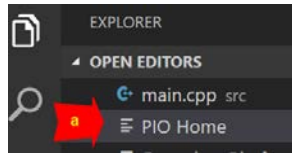
If you have VS Code already installed, please check for updates (Help -> Check for Updates) and install any that are available.

1. PlatformIO

- Launch VS Code and click the Extensions icon on the left
- Enter "PlatformIO" in the search box
- Select "PlatformIO IDE" from the results
- Click the [Install] button



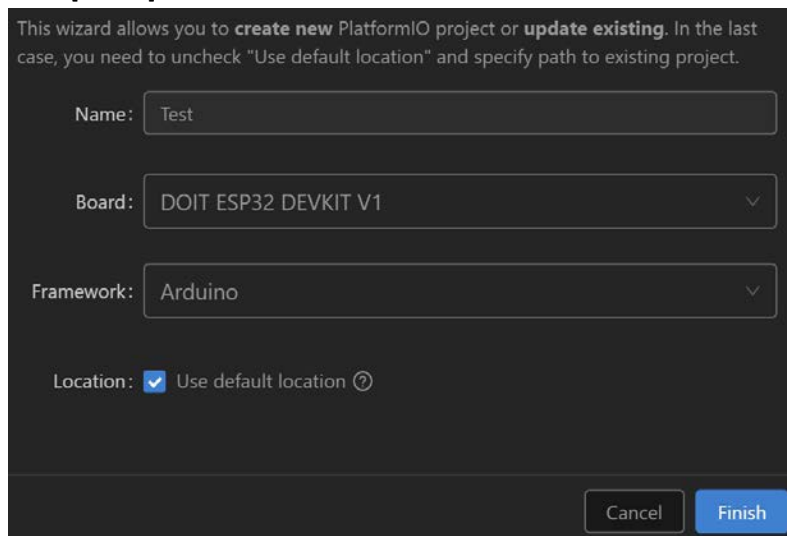
2. **The device toolchain** (linker, hardware abstraction layer, base libraries, etc.)
- Click on the PIO Home link (if you just installed PlatformIO, you may need to click Reload to get this to show up)



- Click on the [New Project] button



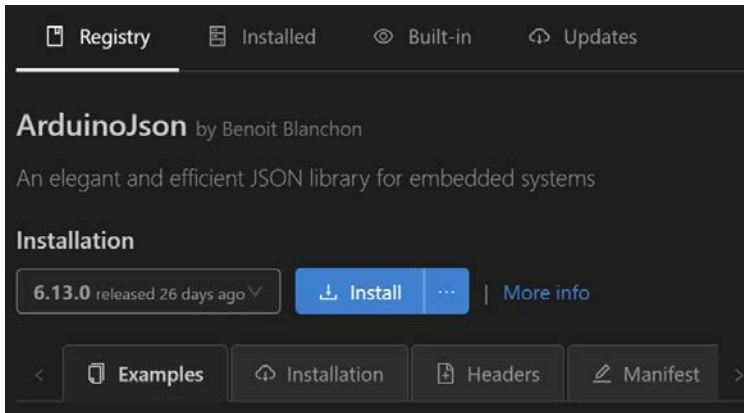
- Enter any random name for the project
- Select **DOIT ESP32 DEVKIT V1** from the board dropdown (this is critical) and **Arduino** for the Framework.
- Click [Finish]



- The IDE will then download and install all the needed files. This will probably take a few minutes the first time you do it. Subsequent new projects for this device will be considerably faster

- Click on PIO Home under Open Editors
- Click the Libraries icon and search for the "ArduinoJson" library.

- Click the [Install] button

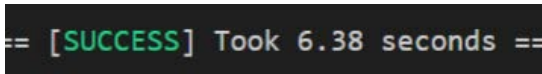


- Also search for and install the “Adafruit GFX Library” and “Adafruit ILI9341” libraries.

Click the Build button on the lower left.



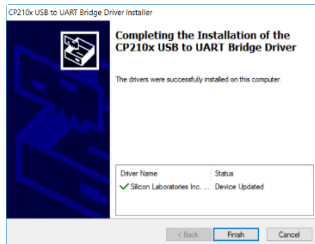
If all goes well, you should see a Success message.



CP210x USB to UART Bridge Driver (Windows Only)

<https://www.silabs.com/products/development-tools/software/usb-to-uart-bridge-vcp-drivers>

Extract files and run the **CP210xVCPInstaller** file



Recommended Utilities

These are not strictly required for the session, but will enhance your experience and allow some additional options for personalizing and interacting with your badge.

- Git client (any will do)
- Image editor (Paint, GIMP, PhotoShop, Paint.NET, etc.)
- Audacity (or other similar audio file processing software)
- QR Code reader (on your smartphone)
- Bluefruit, LightBlue, or other similar Bluetooth Low Energy smartphone app