IoT – Tutorial 0

ESP32 Installation Guide

Mouli Sankaran

Ref: All about ESP32

Focus: ESP32 Board Bring up
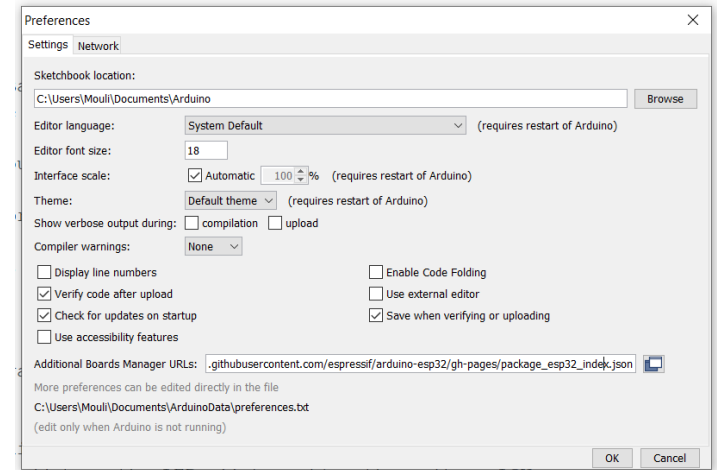
- Bring up the ESP32 Board with Arduino IDE

Bring up the Board
with
Arudino IDE

Ref: Link: Steps to install

1. Arduino Genuino IDE for ESP32
Link: Steps to install

- Download the latest version (1.8 or higher) Arduino IDE and install it on your machine.
- Before using the Arduino IDE with an ESP32 board, need to add the ESP32 boards using the Arduino IDE Board Manager.


- Follow the instructions below to install the board manager for ESP32 boards.

1. Open the Arduino IDE. Make sure that you are at version 1.8 or higher, if not then update your IDE with the latest version.
2. Click on the *File* menu on the top menu bar.
3. Click on the *Preferences* menu item. This will open a Preferences dialog box.
4. You should be on the *Settings* tab in the Preferences dialog box by default.
5. Look for the textbox labeled "*Additional Boards Manager URLs*".
6. If there is already text in this box add a coma at the end of it, then follow the next step.
7. Paste the following link into the text box –
   https://raw.githubusercontent.com/espressif/arduino-esp32/gh-pages/package_esp32_index.json
8. Click the OK button to save the setting.

2. Arduino Genuino IDE for ESP32
Link: Steps to install

- Next, you will need to use the new entry to actually add the ESP32 boards to your Arduino IDE. You do that by following this procedure:
- In the Arduino IDE click on the Tools menu on the top menu bar.
  1. Scroll down to the Board: entry (i.e. Board: Arduino/Genuino Uno).
  2. A submenu will open when you highlight the Board: entry.
  3. At the top of the submenu is Boards Manager. Click on it to open the Boards Manager dialog box.
  4. In the search box in the Boards Manager enter "esp32".
  5. You should see an entry for "esp32 by Espressif Systems". Highlight this entry and click on the Install button.
  6. This will install the ESP32 boards into your Arduino IDE.
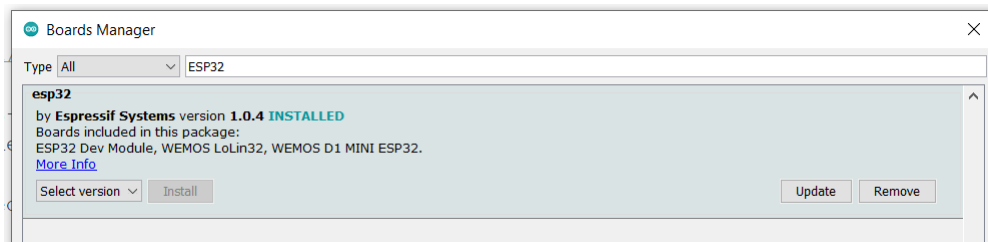
If you go back into the Boards: submenu you should now see a number of ESP32 boards.
You'll need to select the board that matches (or is equivalent to) the ESP32 board you have purchased.
In our case

3. Arduino Genuino IDE for ESP32
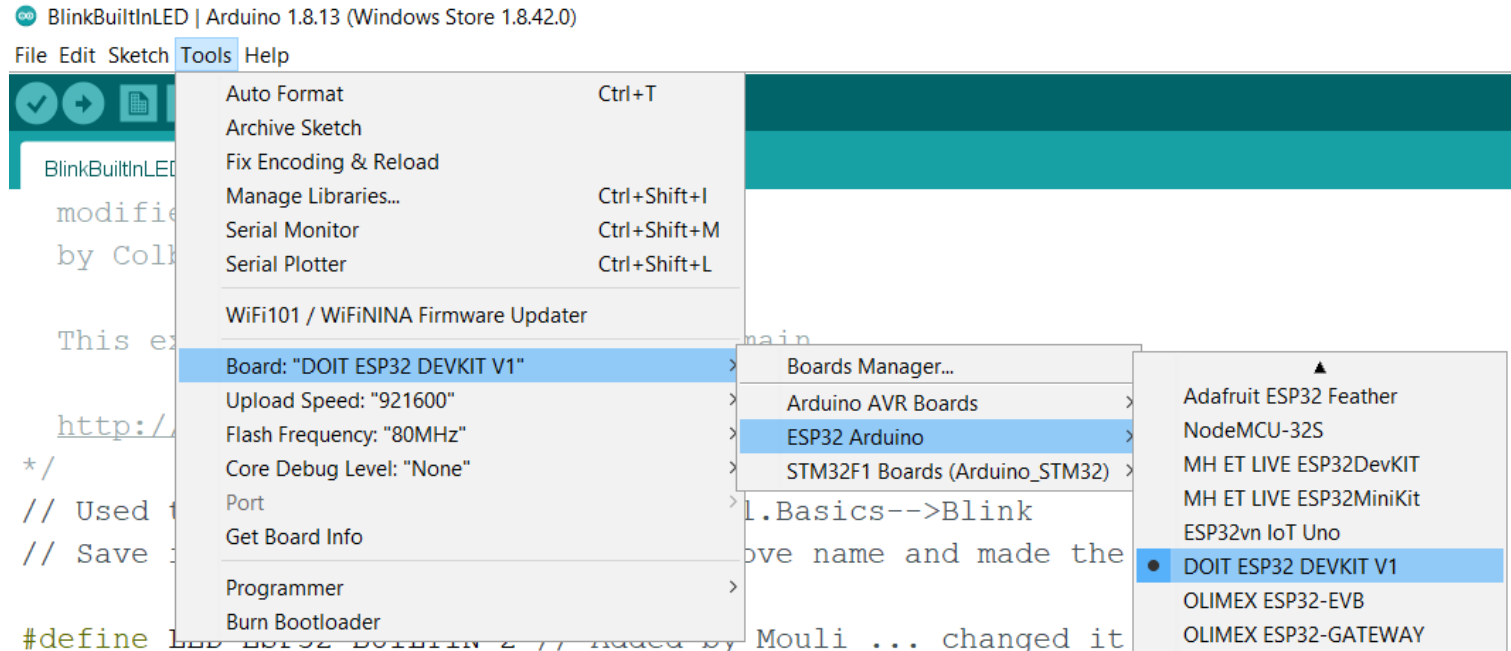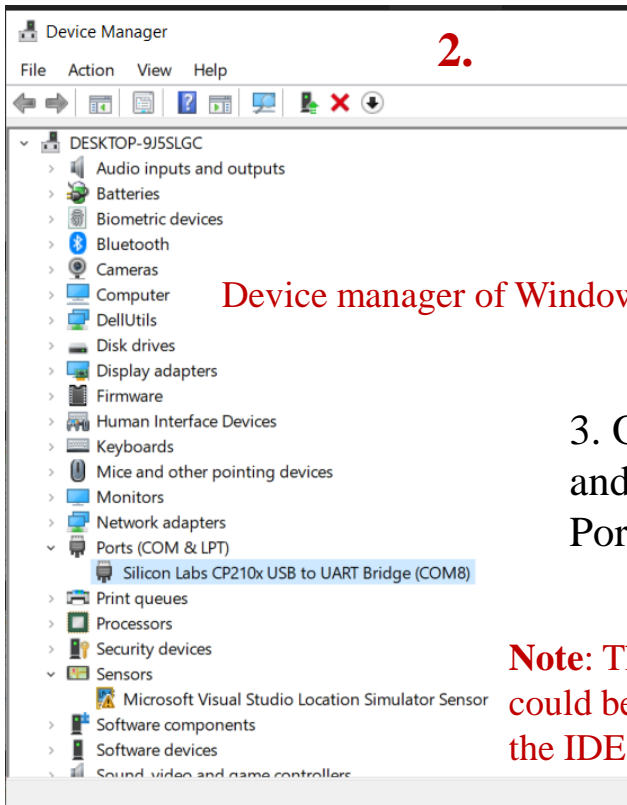
Link: Steps to install

- If you go back into the Boards: submenu you should now see a number of ESP32 boards.
- You'll need to select the board that matches (or is equivalent to) the ESP32 board you have purchased.
- In our case, it is **DOIT ESP32 DIVKIT V1**.
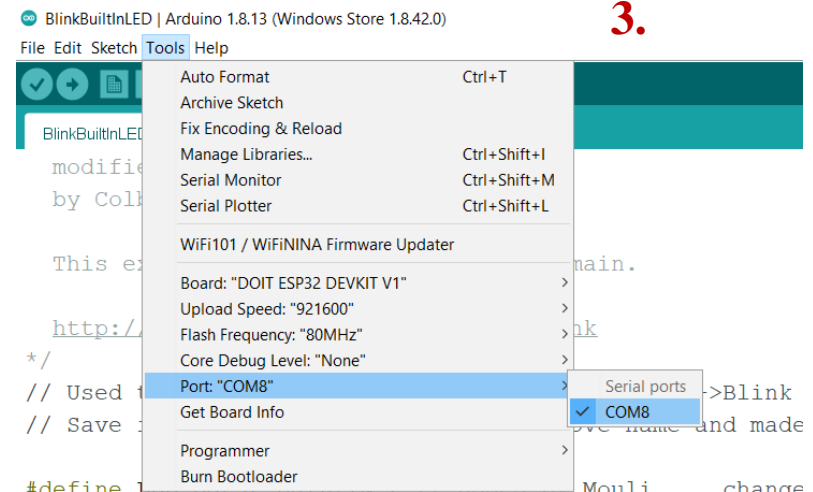
4. Arduino Genuino IDE for ESP32

1. Connect the ESP32 board with the Laptop USB port with a micro-USB cable.

2. Check whether the laptop recognizes the board connected through USB and assigns a COM port to it.

1.

make / Eclipse

ESP-IDF
Toolchain
Project
BUILD → Application → UPLOAD

PC

2.

Device manager of Windows

3. Open Genuino IDE and select the COM Port appearing there.

3.

BlinkBuiltInLED | Arduino 1.8.13 (Windows Store 1.8.42.0)

File Edit Sketch Tools Help

Auto Format	Ctrl+T
Archive Sketch	
Fix Encoding & Reload	
Manage Libraries...	Ctrl+Shift+I
Serial Monitor	Ctrl+Shift+M
Serial Plotter	Ctrl+Shift+L
WiFi101 / WiFiNINA Firmware Updater	
Board: "DOIT ESP32 DEVKIT V1"	▸
Upload Speed: "921600"	▸
Flash Frequency: "80MHz"	▸
Core Debug Level: "None"	▸
Port: "COM8"	▸
Get Board Info	
Programmer	▸
Burn Bootloader	

Serial ports
✓ COM8

Note: The port number could be different every time the IDE is started.
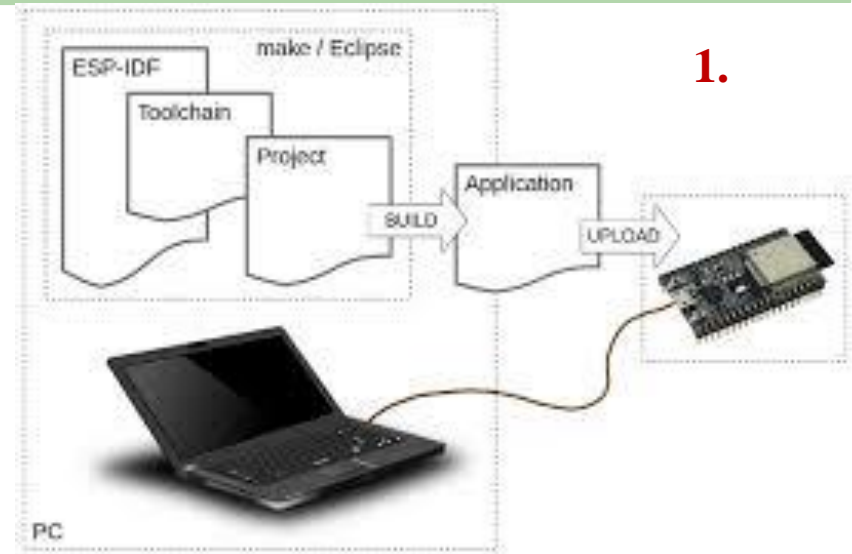
4. You should see a Red LED in the board switching ON.

5. Arduino Genuino IDE for ESP32
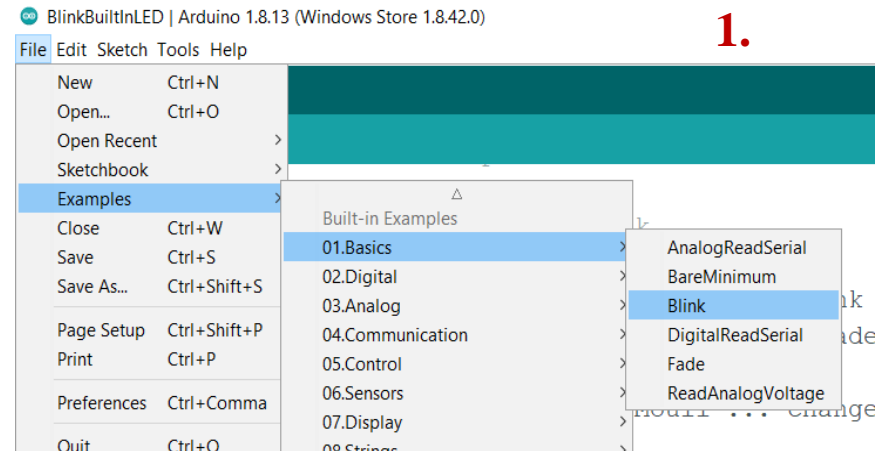
Link: Steps to install

1. Running a blink LED program from the **Examples**.

2. Select the program Blink from
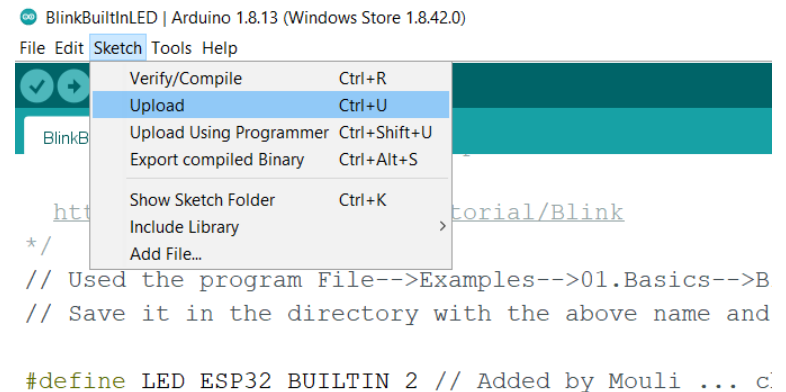   *Examples →01.Basics →Blink*

3. Make the following changes to the program.

- Add the below line before the setup()
- **#define LED_ESP32_BUILTIN 2**

- Replace the constant **LED_BUILTIN** occurring at three places with the constant that you have defined, **LED_ESP32_BUILTIN**.

- Give the below command to compile and build the sketch (program)
  ◦ *Sketch →Verify/Compile*

- Give the below command to upload it on the board.
  ◦ *Sketch →Upload*

1.

BlinkBuiltInLED | Arduino 1.8.13 (Windows Store 1.8.42.0)

File Edit Sketch Tools Help

New	Ctrl+N
Open...	Ctrl+O
Open Recent	
Sketchbook	
Examples	
Close	Ctrl+W
Save	Ctrl+S
Save As...	Ctrl+Shift+S
Page Setup	Ctrl+Shift+P
Print	Ctrl+P
Preferences	Ctrl+Comma
Quit	Ctrl+O

Built-in Examples
01.Basics
02.Digital
03.Analog
04.Communication
05.Control
06.Sensors
07.Display
08.Strings

AnalogReadSerial
BareMinimum
Blink
DigitalReadSerial
Fade
ReadAnalogVoltage

BlinkBuiltInLED | Arduino 1.8.13 (Windows Store 1.8.42.0)

File Edit Sketch Tools Help

Verify/Compile	Ctrl+R
Upload	Ctrl+U
Upload Using Programmer	Ctrl+Shift+U
Export compiled Binary	Ctrl+Alt+S
Show Sketch Folder	Ctrl+K
Include Library	
Add File...	

```
htt                    torial/Blink
*/
// Used the program File-->Examples-->01.Basics-->B
// Save it in the directory with the above name and

#define LED_ESP32_BUILTIN 2 // Added by Mouli ... c
```

Now, you should see a blue LED blinking on the board every one second!!!! ☺

Summary: ESP32 Board Bring up

- Bring up the ESP32 Board with Arduino IDE