Other IDEs

ESP32 Open IoT and IIoT Gateways (P01 & P02)

The device can be programmed also in other development environments. Programming gateways is supported on every popular operating systems like Windows, Linux or MAC OS. This document was prepared in reference to Windows.

ESP-IDF framework

The main tool is ESP-IDF framework provided by Espressif. To get more information about installation, visit manufacturer's

website: Get Started - ESP32 - — ESP-IDF Programming Guide latest documentation.

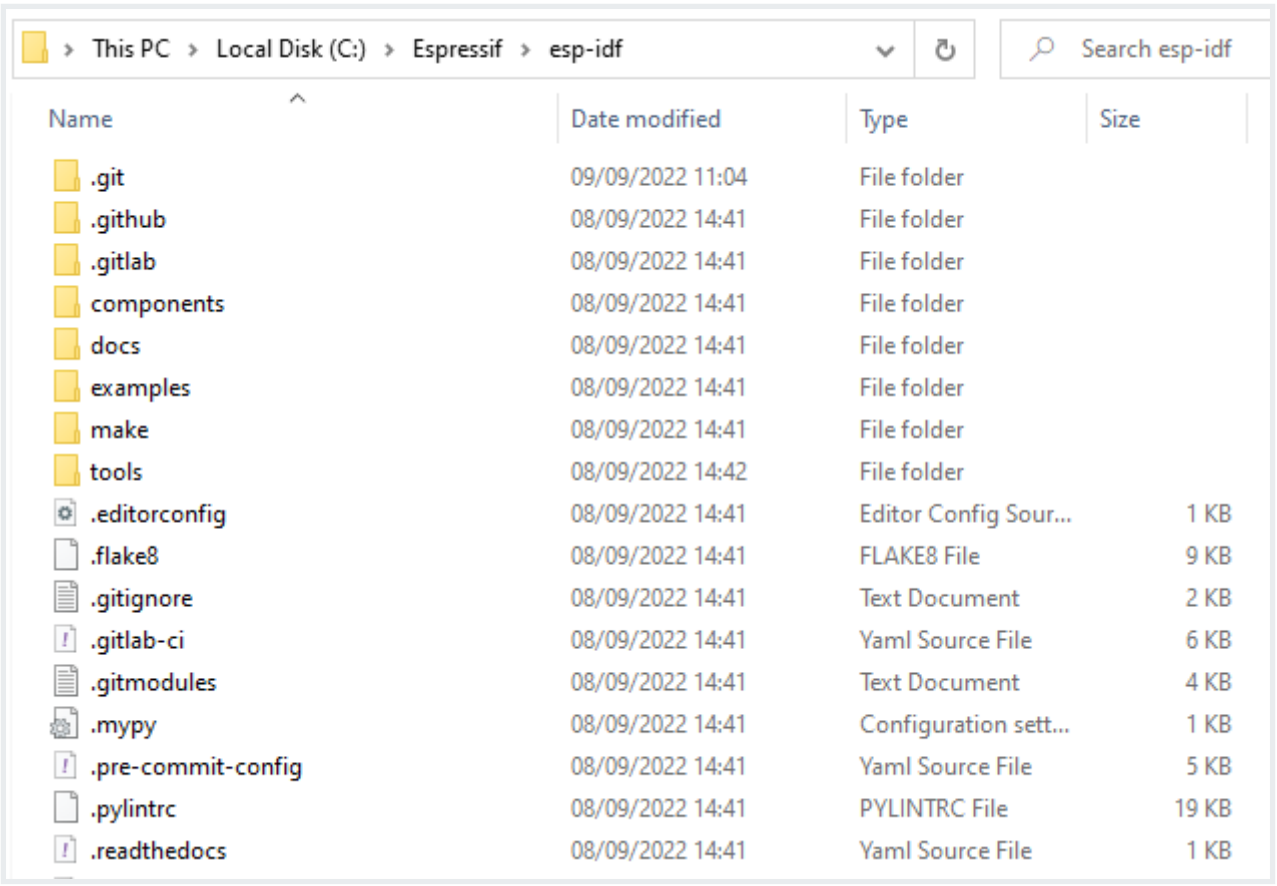
Manual Installation of ESP-IDF: Standard Setup of Toolchain for Windows - ESP32 - — ESP-IDF Programming Guide latest documentation.

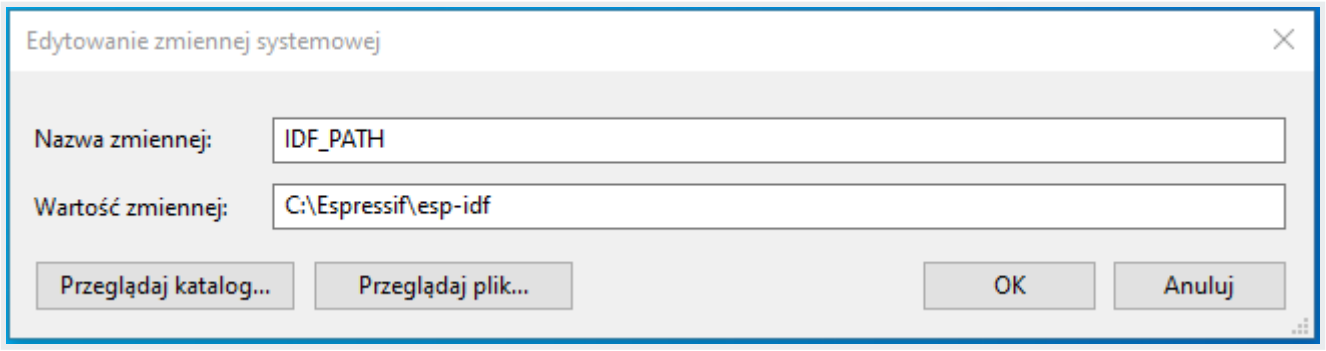
During the ESP-IDF installation you might be asked for install Eclipse additionally.

After successful process it is necessary to add new enviroment variables.

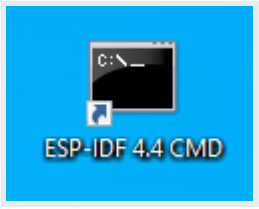
Variables names:

- IDF_PATH - paste the path of the directory with ESP-IDF framework
- IDF_TOOLS_PATH - paste the path of the directory with ESP-IDF tools





Finally you can run ESP-IDF CMD and start to manage your project. There should be an icon on the desktop or easy access to ESP-IDF.



Create new project

idf.py create-project -p <name>

Build project

idf.py -p <port> build

Flash project

idf.py -p <port> flash

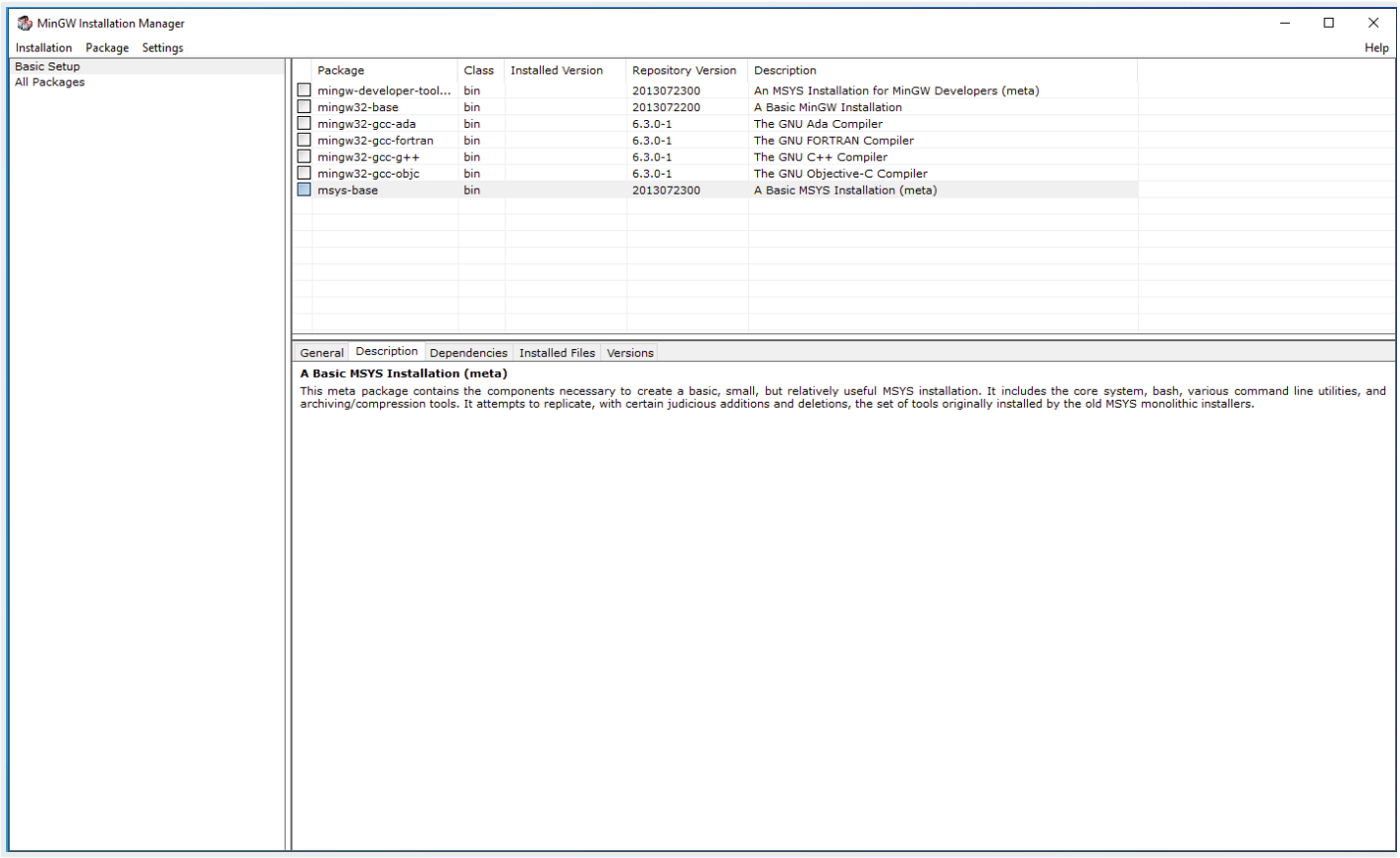
idf.py -p <port> flash monitor

Erase flash

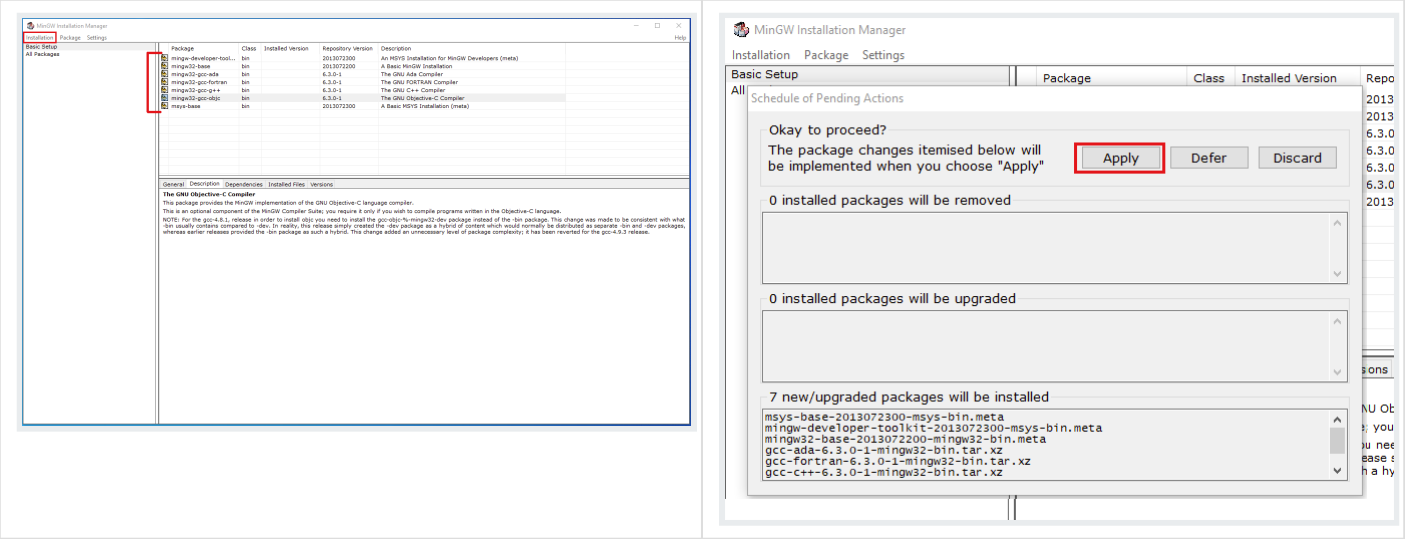
esptool.py --port <port> erase_flash

MinGW

Download MinGW with GUI from MinGW - Minimalist GNU for Windows and install on your PC. After a successful installation run MinGW Installation Manager (GUI).



Now we need to install Basic Setup. Right click on every square fields in “Package” tab, then “Mark for Installation”. Next, in “Installation” tab click on “Apply Changes” and then “Apply”.



To check if the installation is successful, open Command line and type:

```
gcc --version
```

```
C:\Users\ad>gcc --version
gcc (MinGW.org GCC-6.3.0-1) 6.3.0
Copyright (C) 2016 Free Software Foundation, Inc.
This is free software; see the source for copying conditions.  There is NO
warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.


C:\Users\ad>
```

IDE

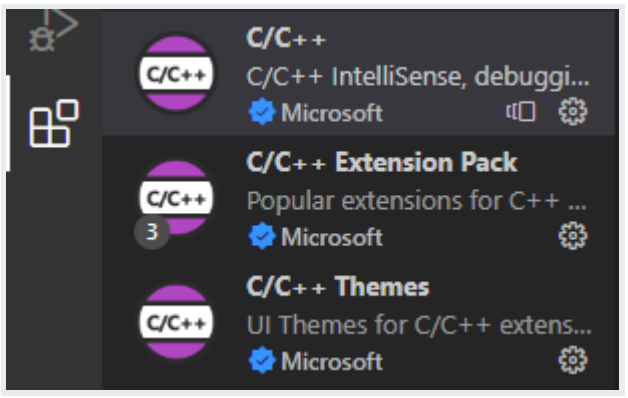
You can edit code in your preferred IDE as ESP-IDF is handling the final build and flash.

Recommanded IDEs:

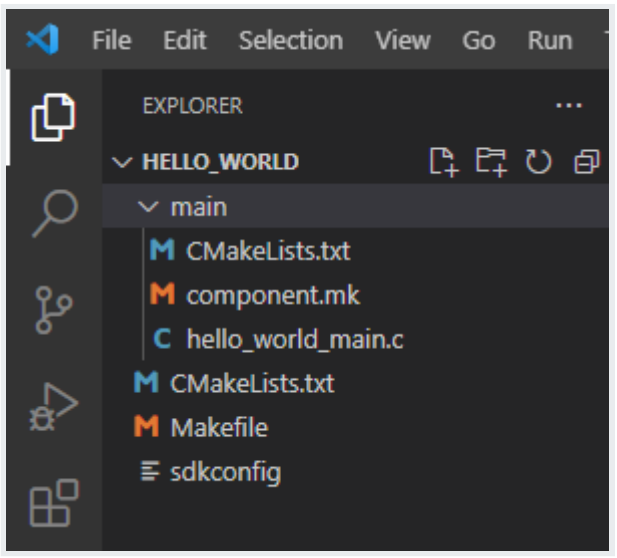
- CodeBlocks
- Visual Studio Code
- Eclipse
- Thonny IDE

Visual Studio Code

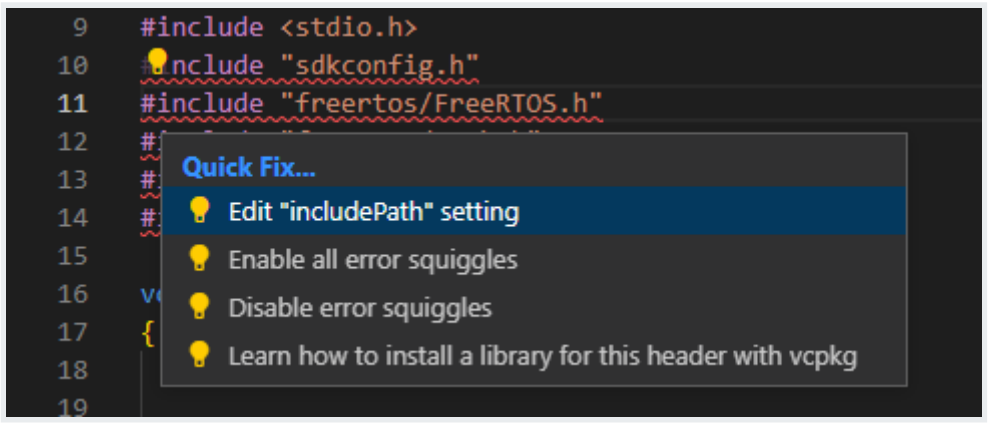
- Download the package with example projects for IoT Gateway.
- Select one of the demos and copy it to a new directory.
- Open Visual Studio Code and click on the extension tab.
- Install and configure C/C++ extensions.



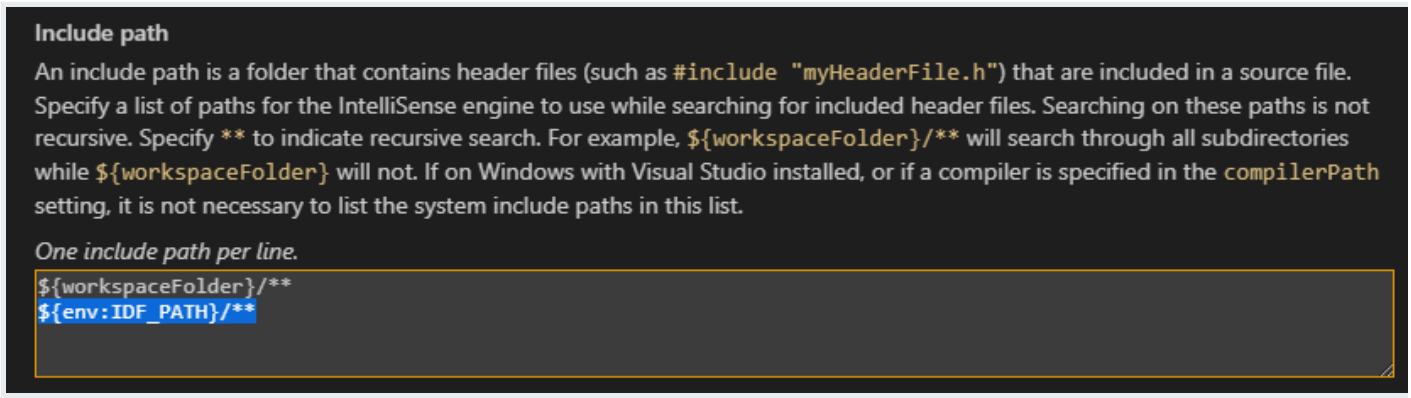
- Open directory in VS Code.



- If errors occur, edit “includePath” settings.



- Add the line "${env:IDF_PATH}/**".



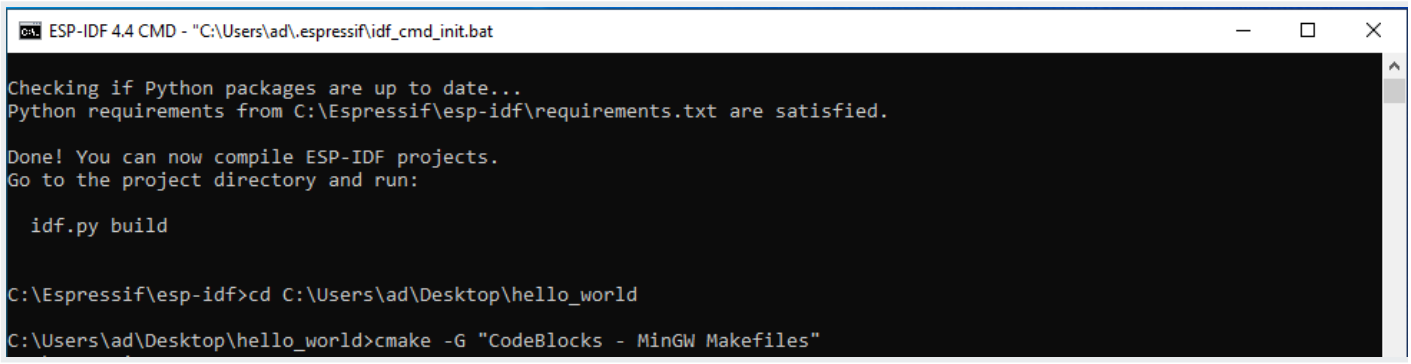
- Now code is ready to be modified.
- To build or flash project, use ESP-IDF CMD.

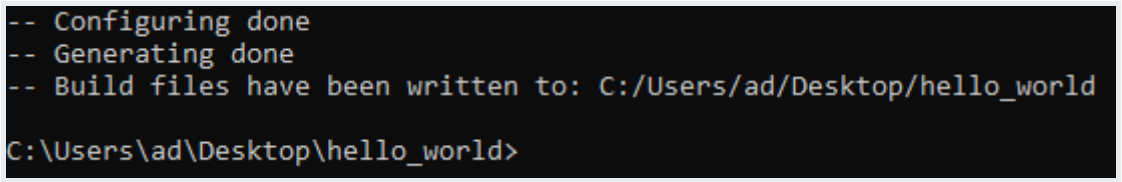
Visual Studio Code provides an extension “Espressif IDF” which has some issues at this moment. However it is not essential for editing code.

CodeBlocks

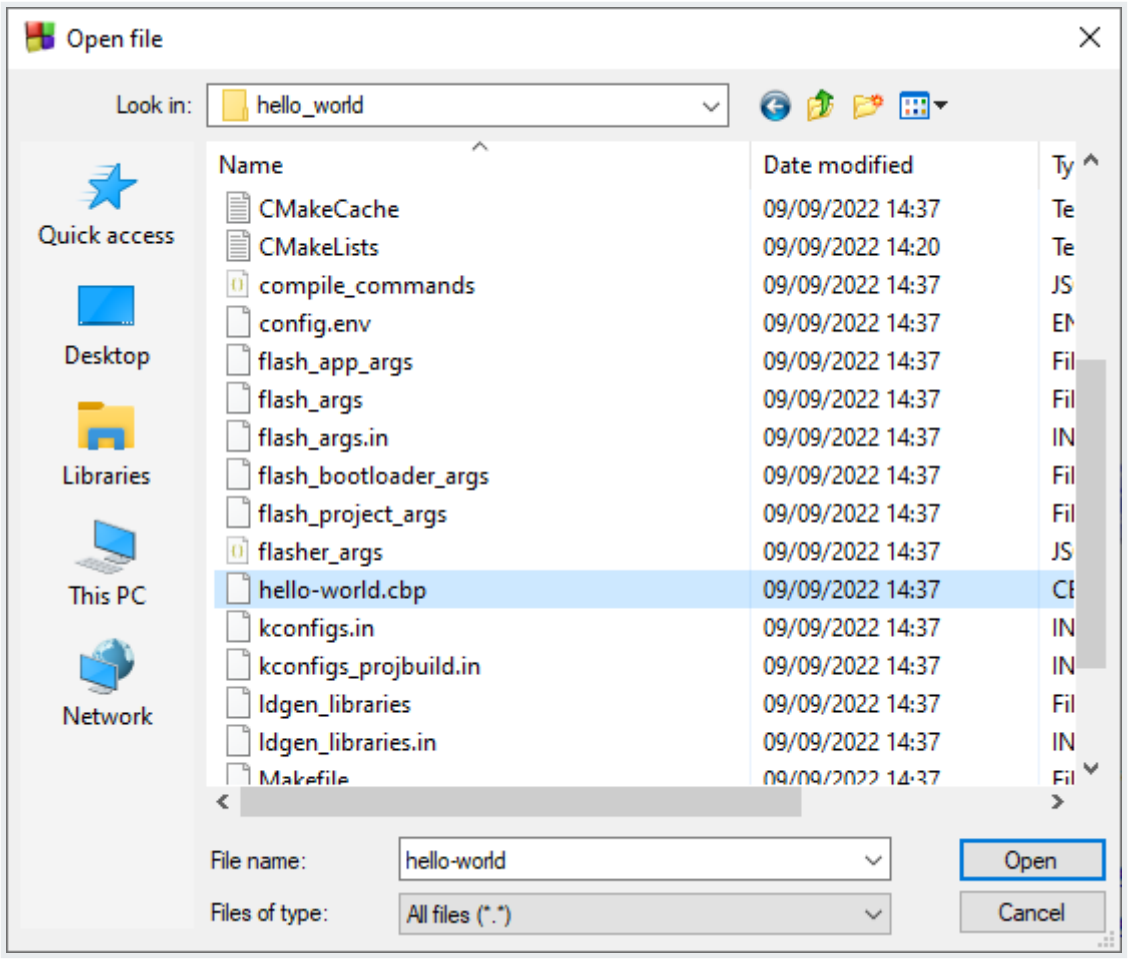
- Download the package with example projects for IoT Gateway.
- Select one of the demos and copy it to a new directory.
- Run ESP-IDF CMD, set the path to your project and then generate project for CodeBlocks:

```
cmake -G "CodeBlocks - MinGW Makefiles"
```

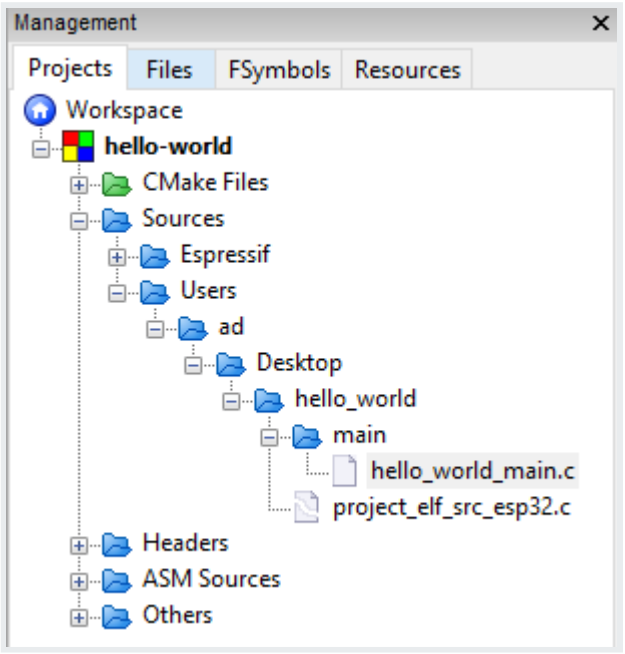




- Run CodeBlocks. Click on "File → Open...", find .cbp type file and click on “Open”.



- After this, there should be a project tree available and code is ready to be modified.



- To build or flash project, use ESP-IDF CMD.

Thonny IDE

- Download and install Python interpreter.

- Download the package with example projects for IoT Gateway.
- Select one of the demos and copy it to a new directory.
- Run ESP-IDF CMD, erase flash using:

```
esptool.py --port <COMX> erase_flash
```

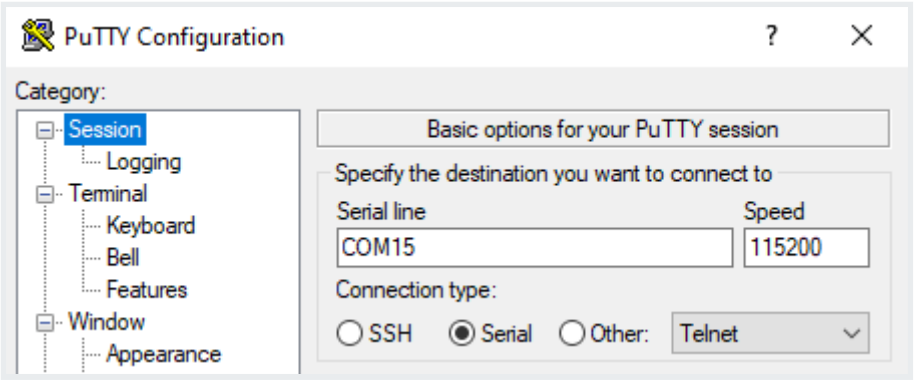
```
C:\Users\ad\Desktop\hello_world>esptool.py --port COM15 erase_flash
esptool.py v3.3.2-dev
Serial port COM15
Connecting.....
Detecting chip type... Unsupported detection protocol, switching and trying again...
Connecting.....
Detecting chip type... ESP32
Chip is ESP32-D0WD (revision 1)
Features: WiFi, BT, Dual Core, 240MHz, VRef calibration in efuse, Coding Scheme None
Crystal is 40MHz
MAC: b4:e6:2d:fb:b8:1d
Uploading stub...
Running stub...
Stub running...
Erasing flash (this may take a while)...
Chip erase completed successfully in 4.1s
Hard resetting via RTS pin...
```

- Download firmware which allows to run microPython.
- Flash .bin file using:

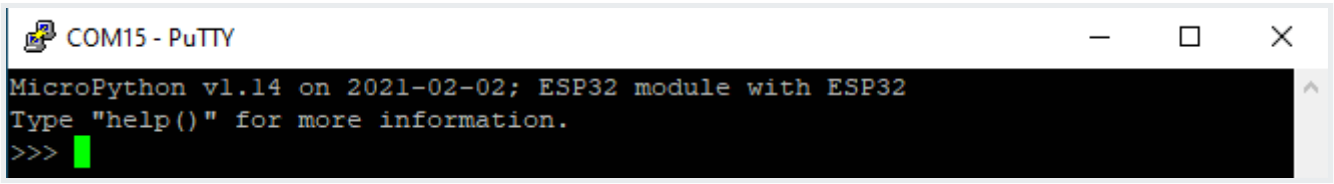
```
esptool.py --port <COMX> write_flash -z 0x1000 <name_of_the_bin_file>
```

```
C:\Espressif\esp-idf>cd c:\users\ad\desktop

c:\Users\ad\Desktop>cd micropython

c:\Users\ad\Desktop\microPython>esptool.py --port COM15 write_flash -z 0x1000 esp32-idf4-20210202-v1.14.bin
esptool.py v3.3.2-dev
Serial port COM15
Connecting.....
Detecting chip type... Unsupported detection protocol, switching and trying again...
Connecting.....
Detecting chip type... ESP32
Chip is ESP32-D0WD (revision 1)
Features: WiFi, BT, Dual Core, 240MHz, VRef calibration in efuse, Coding Scheme None
Crystal is 40MHz
MAC: b4:e6:2d:fb:b8:1d
Uploading stub...
Running stub...
Stub running...
Configuring flash size...
Flash will be erased from 0x00001000 to 0x0016bfff...
Compressed 1484624 bytes to 951640...
Wrote 1484624 bytes (951640 compressed) at 0x00001000 in 84.6 seconds (effective 140.3 kbit/s)...
Hash of data verified.

Leaving...
Hard resetting via RTS pin...

c:\Users\ad\Desktop\microPython>
```

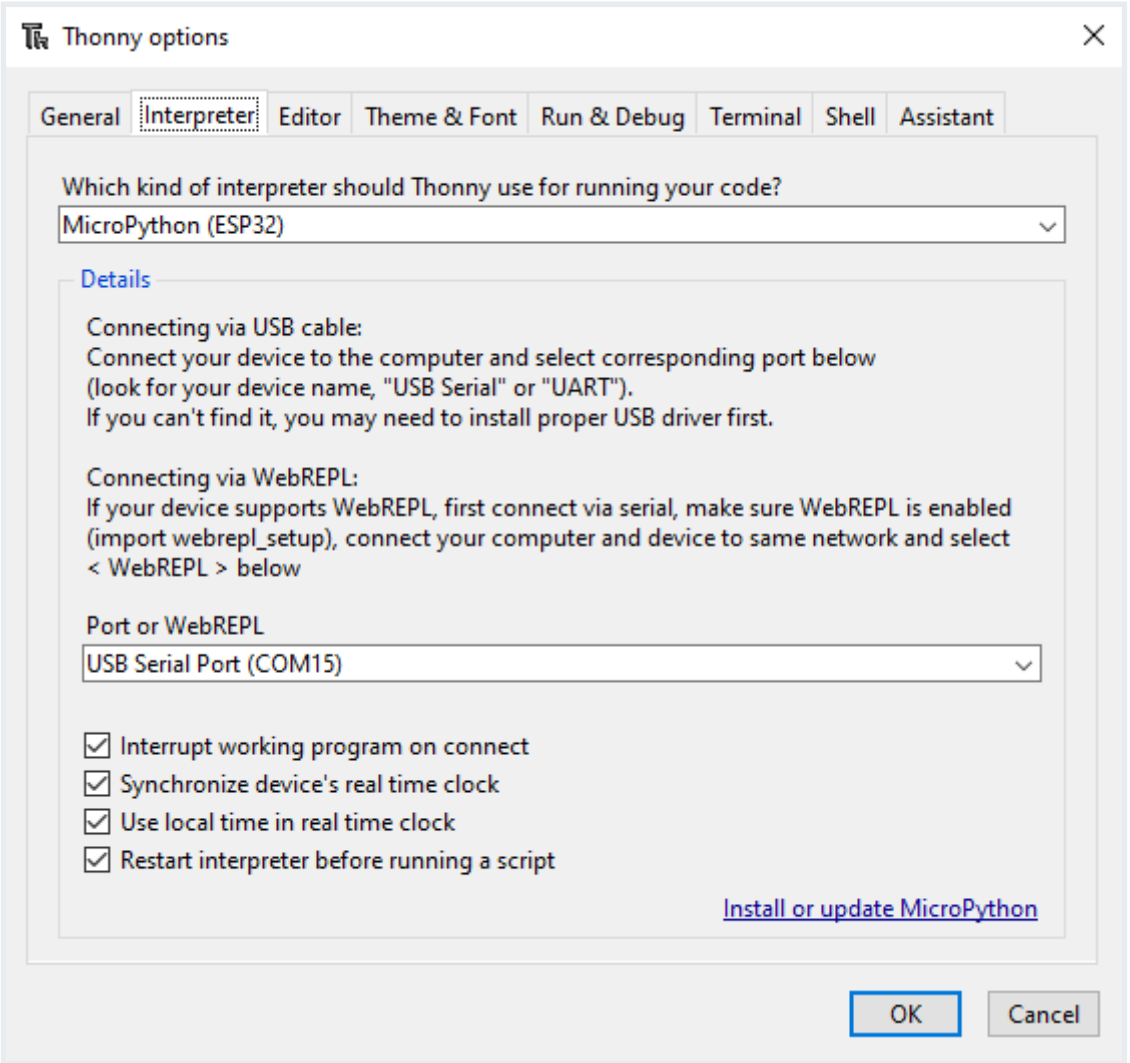
- Open serial port monitor like “Putty”, set COM port, baudrate, connection type to serial and click on “Open”.



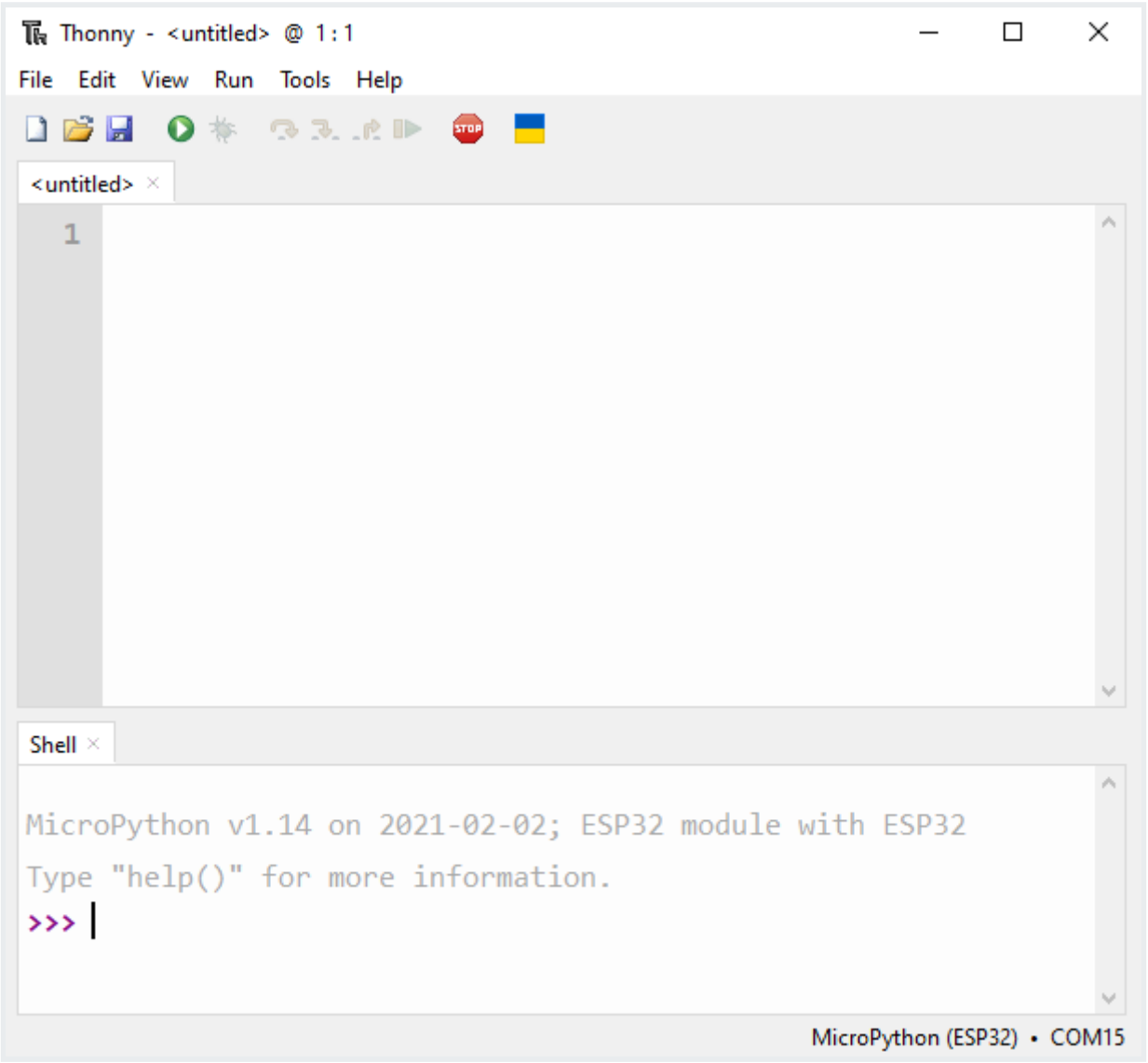
- Now you can run Python console on ESP32.



- Download and install Thonny IDE.
- Click on "Tools → Options → Interpreter". In this tab you can choose an interpreter and COM port.



- After all the process Thonny IDE is ready to work.



- To flash the demo, open file in Thonny IDE. Next click on green button to run the current script.

Uploading firmware

To upload firmware, you need to use external programmer with Tag-connect.

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Updated 20 June 2024 13:28:31