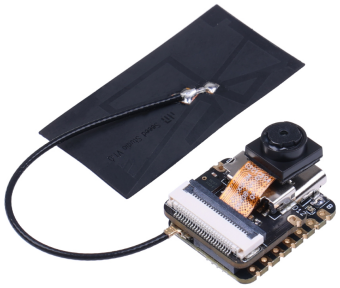
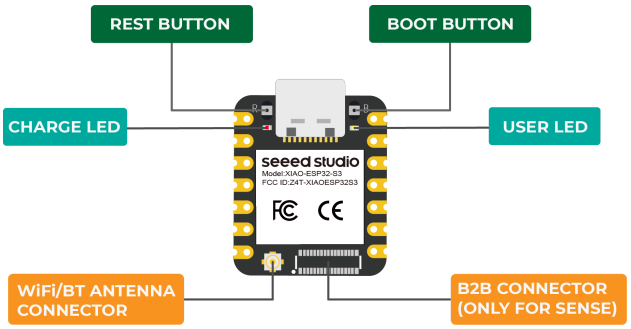
EECS 690/700 EmbeddedML Lab #1

Introduction

In this lab, you will set up the board and the necessary software for programming.

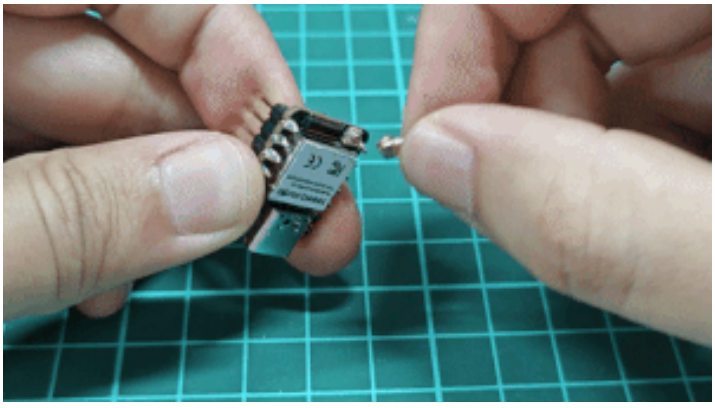
Hardware Platform: XIAO ESP32S3 Sense

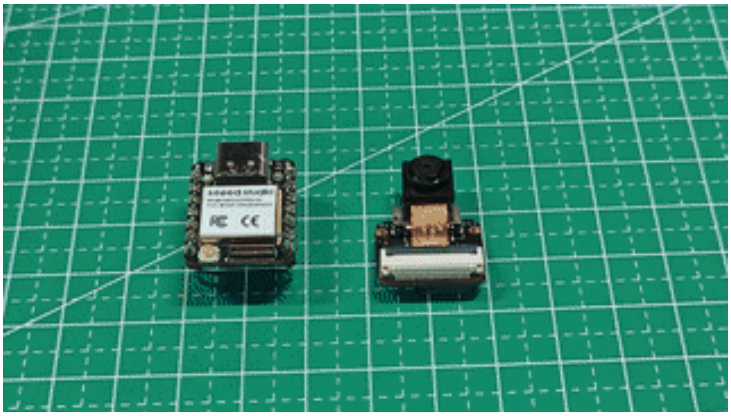




Part 0: Setup the hardware platform

https://wiki.seeedstudio.com/xiao_esp32s3_getting_started/

Connect the antenna 

Connect the camera 

Part 1: Setup development environment

For software development on the microcontroller, we will use Visual Studio Code (VSCode) and PlatformIO IDE combination. VSCode is already installed on your computer but you will need to install the PlatformIO IDE and other extensions.

(Note that the following installation instructions are based on the PlatformIO IDE for VSCode documentation at: https://docs.platformio.org/en/latest/ide/vscode.html#installation)

Task 1.1: Take a look at Visual Studio Code

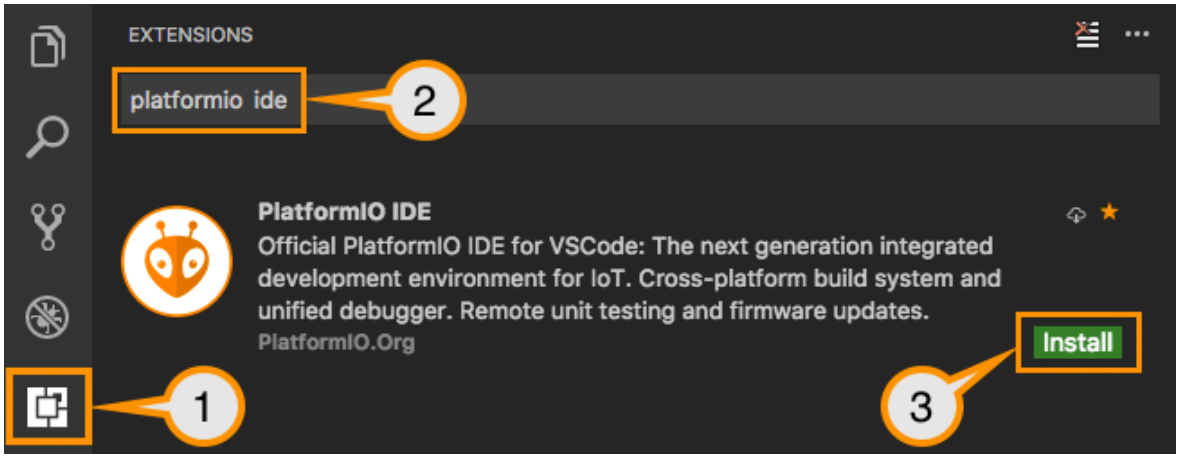
Launch the Visual Studio Code program from the command line as follows.

```
$ code
```

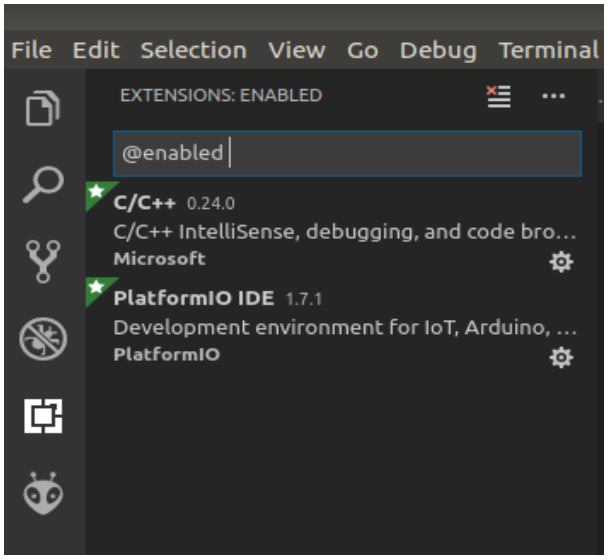
Task 1.2: Install PlatformIO extensions

Next, Install the PlatformIO IDE extension for VSCode as follows.

1. **Open** VSCode Package Manager
2. **Search** for official "`platformio ide`" extension
3. **Install** PlatformIO IDE



After the installation is completed, check if you have both '`PlatformIO IDE`' and '`C/C++`' extensions installed as follows. Optionally, installing `'vscode-icons'` and `'vscode-pdf'` extensions are also recommended.



Task 1.3. Connect the board to your PC

Next, connect your board to one of your PC's USB ports.

Part 2: Run your first program on the XIAO ESP32S3 board

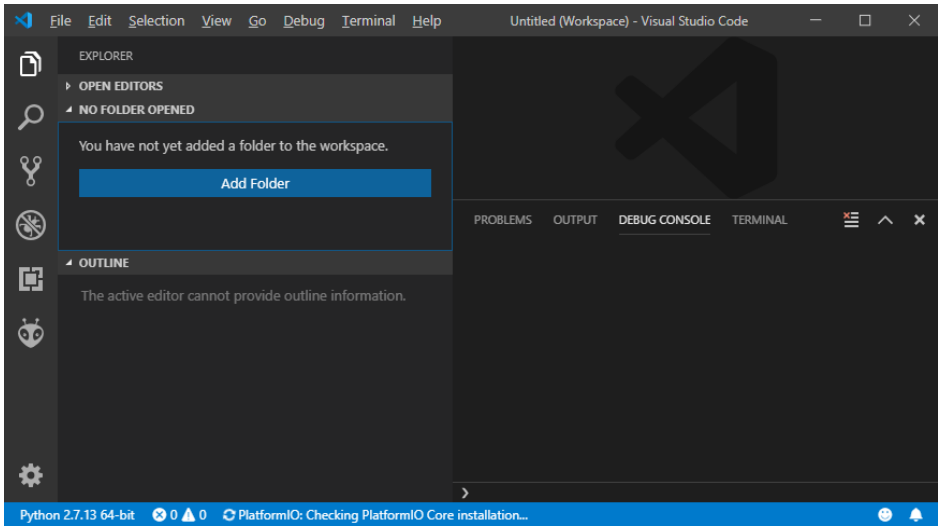
Task 2.1. Setup a project.

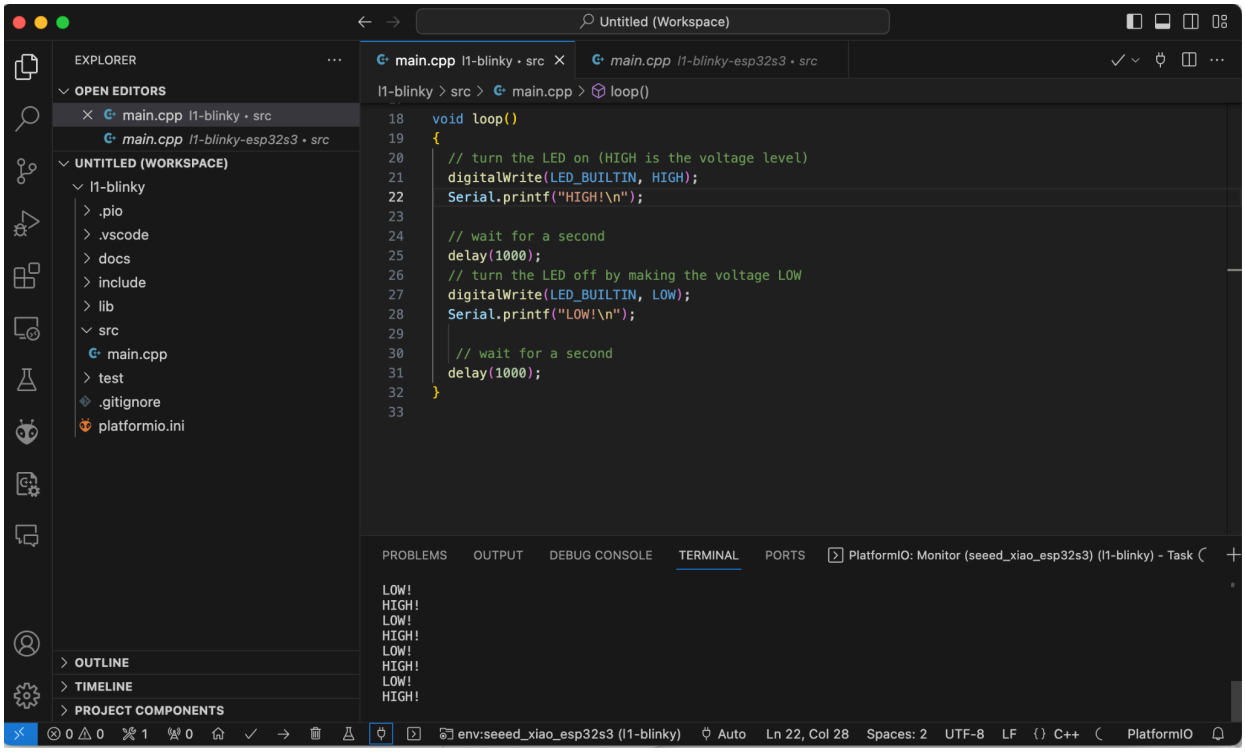
Download the sample project as follows.

```
$ mkdir -p ~/Documents/PlatformIO
$ cd ~/Documents/PlatformIO
$ git clone https://github.com/heechul/EmbeddedML
```

Task 2.2. Add the project folder

Add the l1-blinky folder in VSCode.





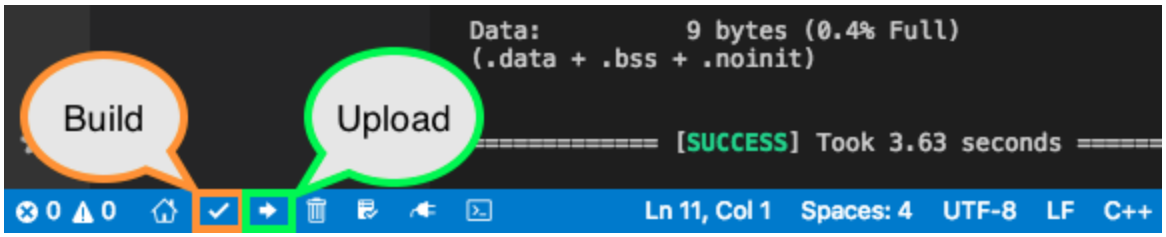
You should be able to see the screen above.

Task 2.3. Build and Deploy.

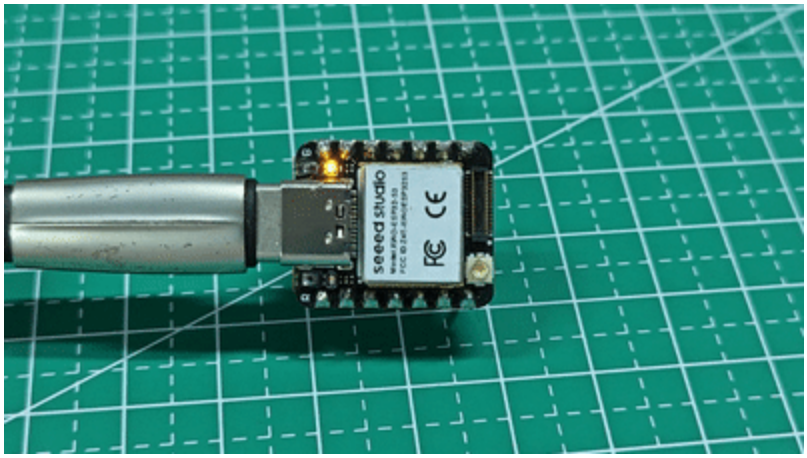
You are now ready to build the code and deploy it on the target board.

First build the program by clicking the build button in the toolbar as shown below or with `ctrl+alt+b` hotkey.

If it is successful, you can now upload the compiled program binary to the board by clicking the upload button or with `ctrl+alt+u` hotkey.



If it was successful, you should see the orange LED on the board blinking.



Take a picture (or video) of your ESP32S3 board blinking the LED and upload it on canvas to demonstrate that you completed the lab.

Appendix

PlatformIO Keybindings

- ctrl+alt+b / cmd-shift-b / ctrl-shift-b Build Project
- cmd-shift-d / ctrl-shift-d Debug project
- ctrl+alt+u Upload Firmware
- ctrl+alt+s Open Serial Port Monitor

PlatformIO Toolbar

1. PlatformIO Home
2. PlatformIO: Build
3. PlatformIO: Upload
4. PIO Remote
5. PlatformIO: Clean
6. PIO Unit Testing
7. Run a task… (See “Task Runner” below)
8. Serial Port Monitor
9. PIO Terminal

PlatformIO documentation
https://docs.platformio.org/en/latest/ide/vscode.html#installation

XIAO ESP32S3 Getting Started (Arduino IDE)
https://wiki.seeedstudio.com/xiao_esp32s3_getting_started/