



서울시립대학교

Applied Microprocessor Lab VS Code Env Setting

전력전자연구실

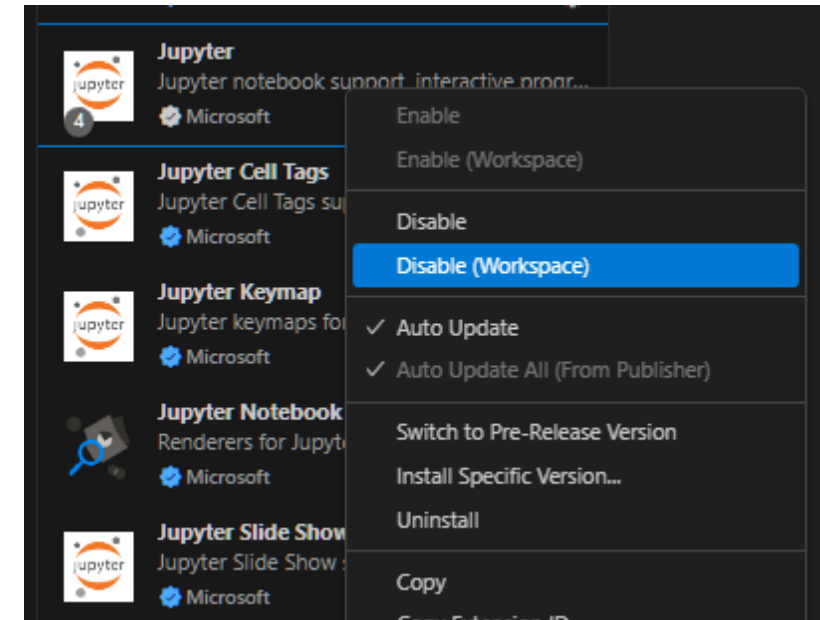


- ✓ CubeSTM32 into VS Code
- ✓ Make a Project with CubeMX
- ✓ Build and Download into MCU

- ✓ Launch VS Code
 - Do not use Onedrive / Gdrive / 한글 in Project Path to avoid permission issues.
 - Turn off extensions you will not use

```

선택 Windows PowerShell
PS C:\Users\W5B00X2\Projects> code .
PS C:\Users\W5B00X2\Projects>
    
```



✓ Pros and Cons

✓ Pros

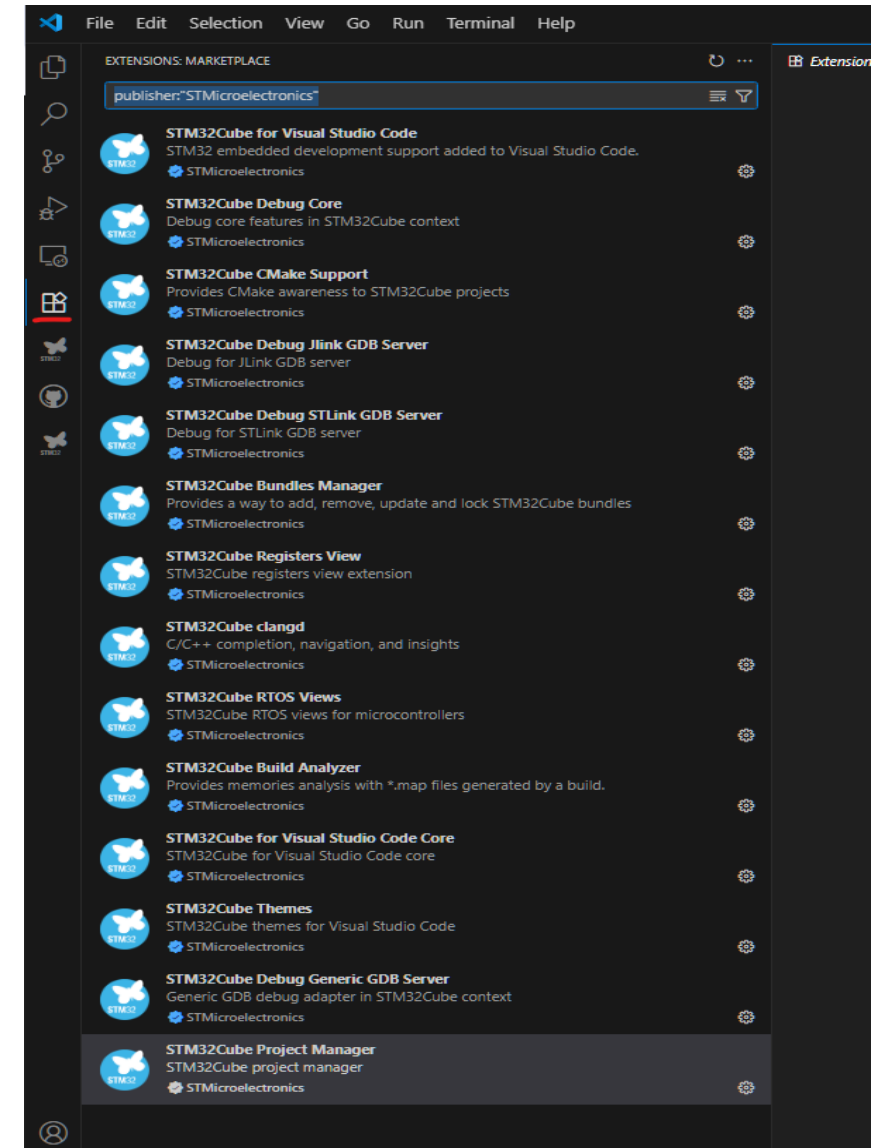
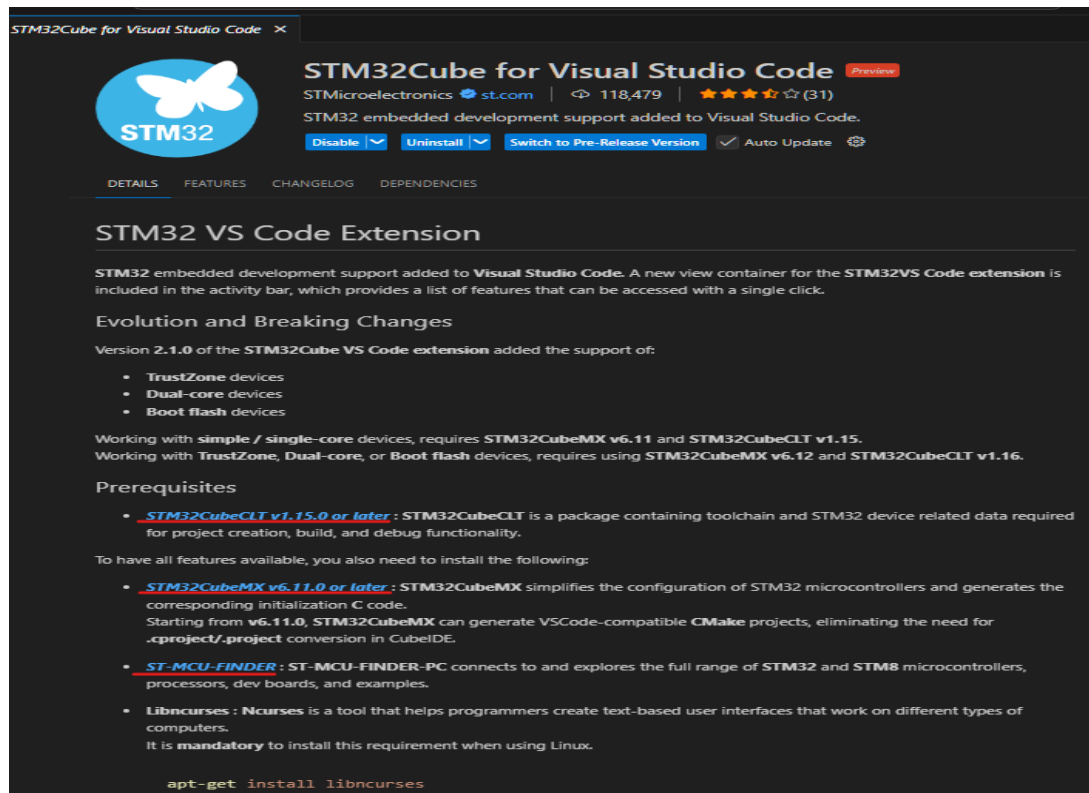
- Can use VS Code
- Works on all OS (Windows / Mac / Linux)
- Free to use / Opensource

✓ Cons

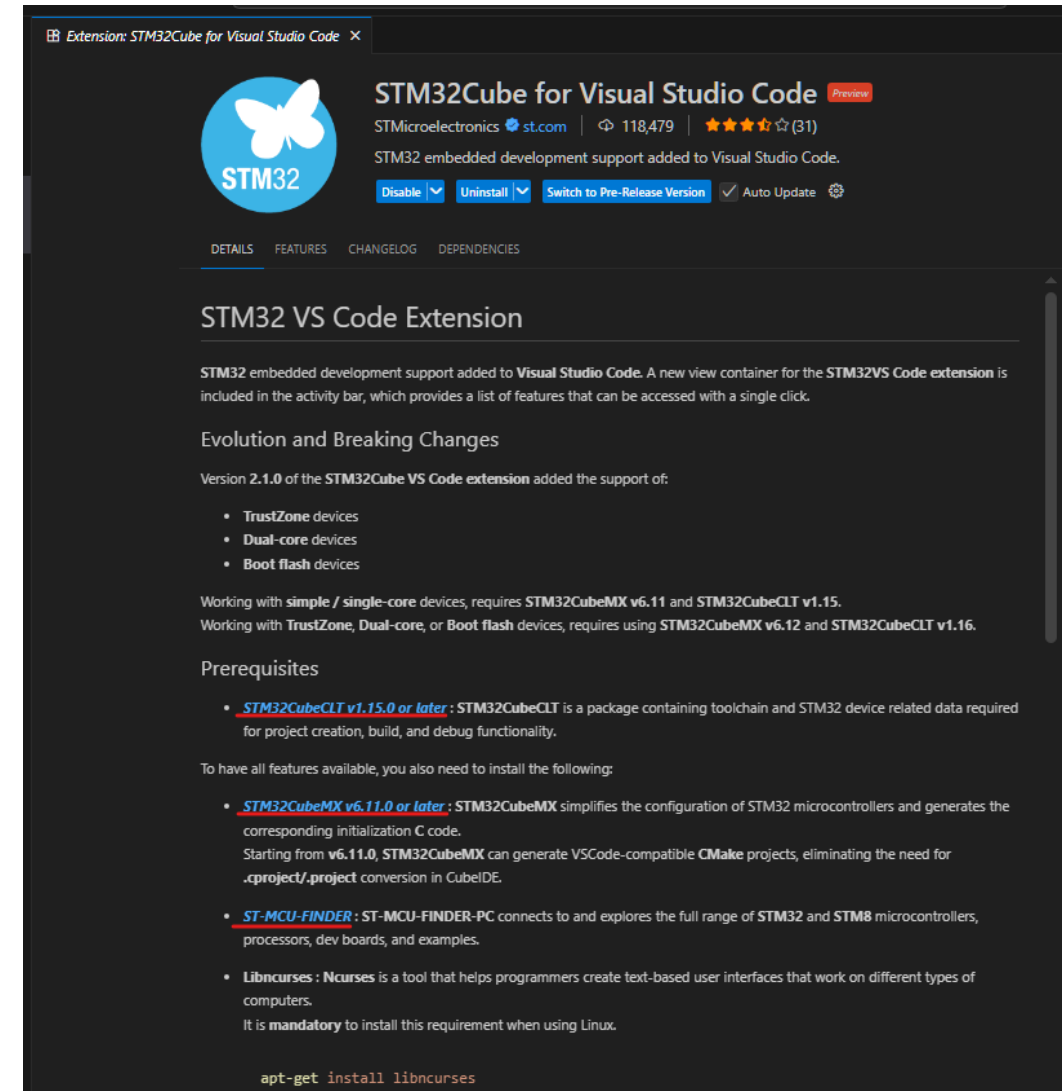
- No official technical support or warranty
- Many companies prefer paid tools with professional support

✓ Install extensions

- Search 'stm' in extension menu in VS Code
- Install Prerequisites

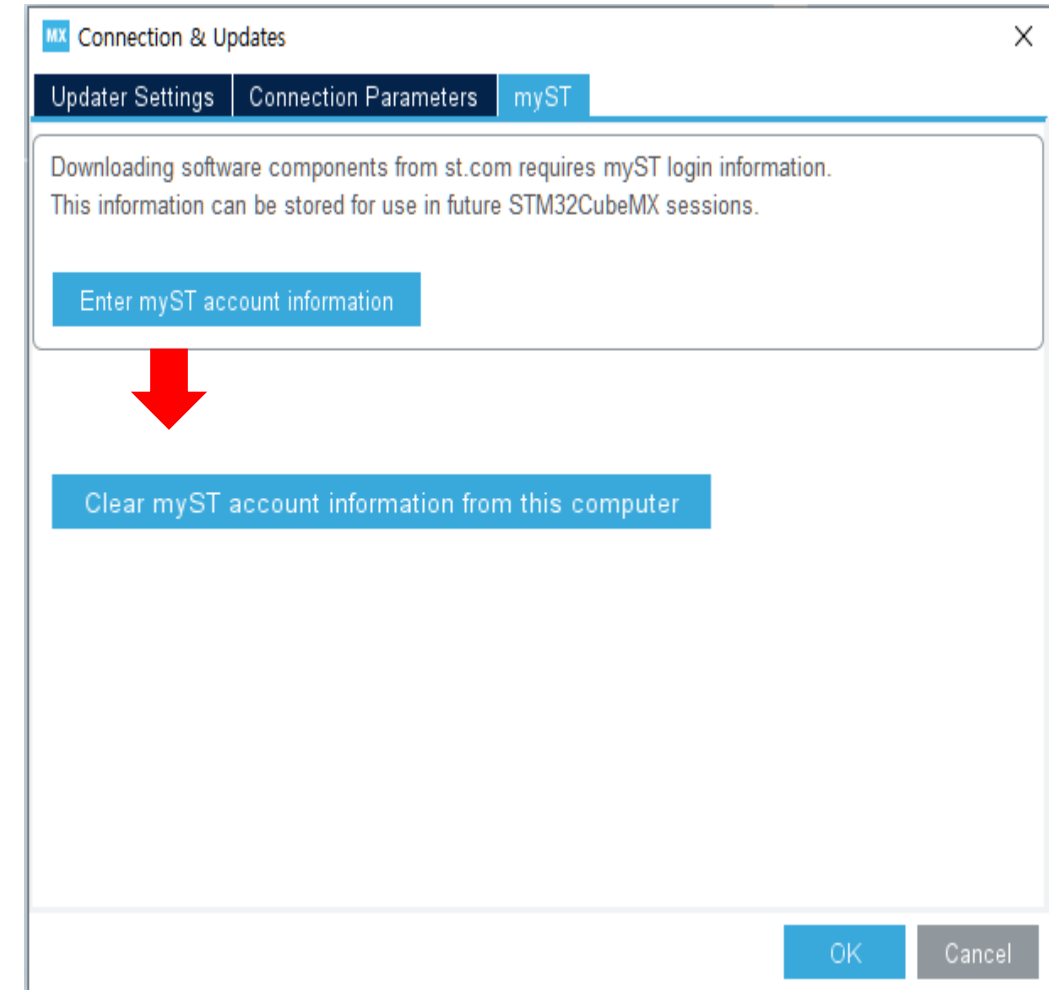
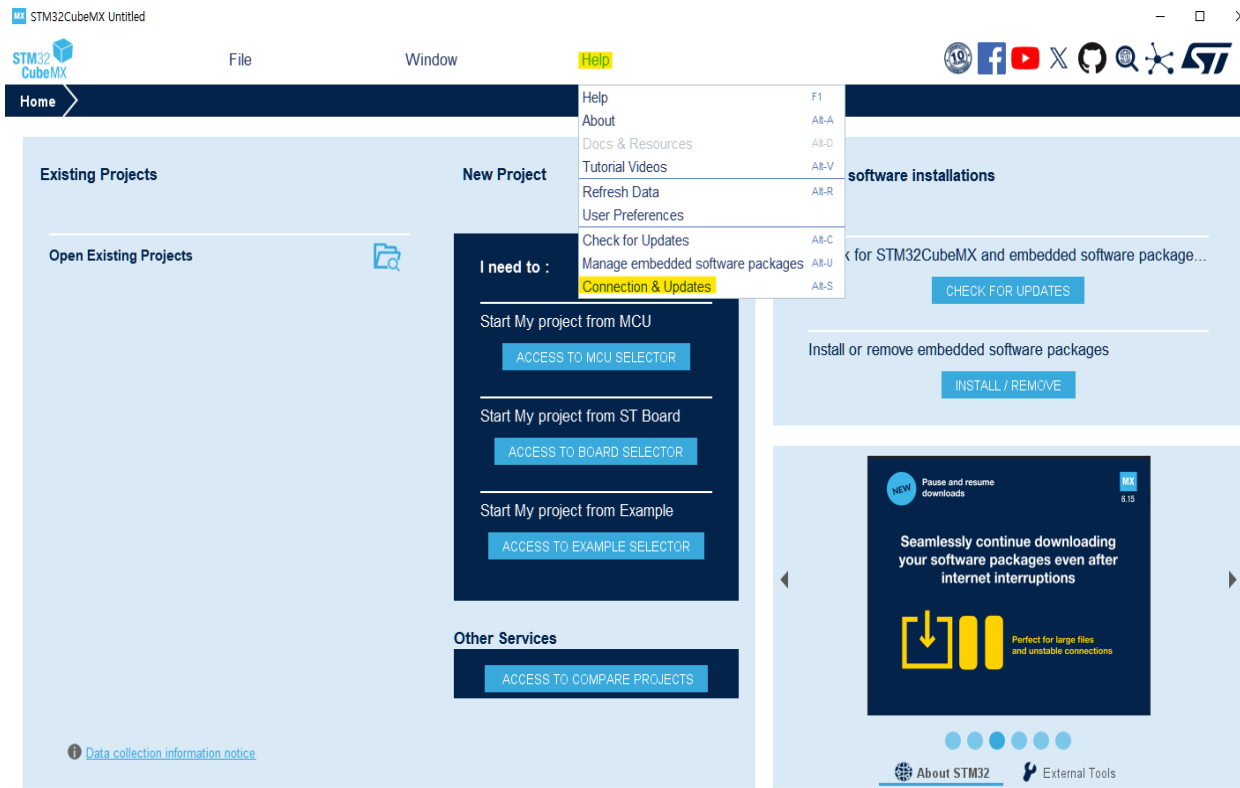


- ✓ Install extensions
 - STM32CubeCLT : ARM C Compiler, Debugger, Library
 - STM32CubeMX : Help you make STM Projects
 - STMCUFinder : Find and Download into mcu board



Make a Project with CubeMX

- ✓ Make a new C Project with CubeMX
 - Login first myST



Make a Project with CubeMX

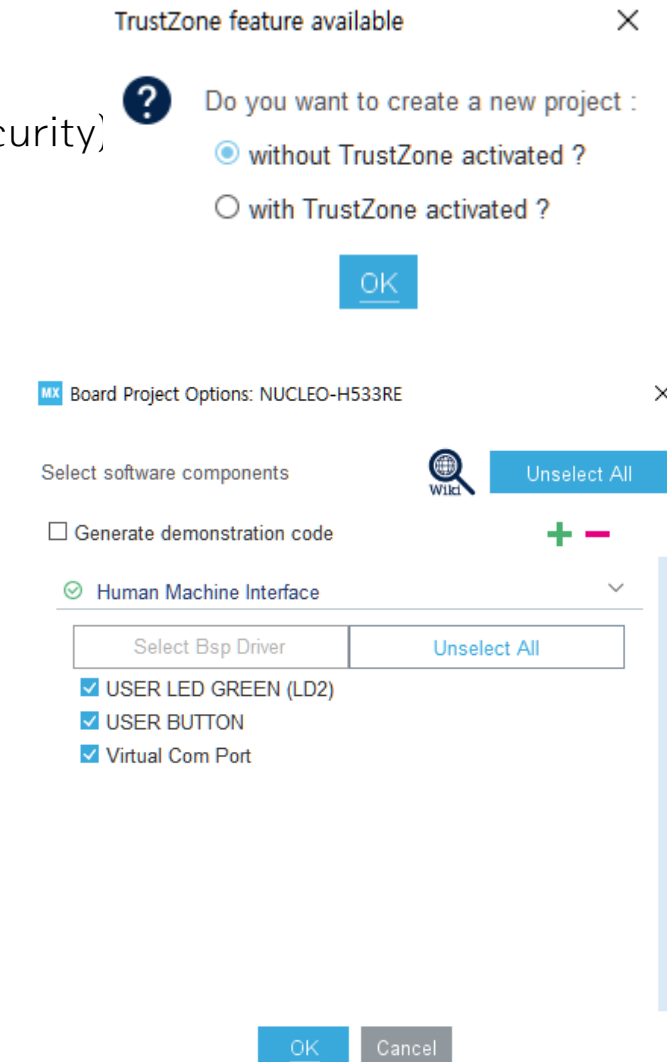
- ✓ Make a new C Project with CubeMX
 - Select the right board (check model number of your board)

The screenshot shows the STM32CubeMX software interface. The 'New Project' dialog is open, asking if the user wants to create a new project 'without TrustZone activated' (selected) or 'with TrustZone activated'. The 'Board Selector' tab is active, showing a list of boards. The 'Boards List' table has one item: 'NUCLEO-H533RE' (Nucleo-64). A red arrow points to the board name, with the text 'Double click here' below it.

	Overview	Commercial Part No	
★		NUCLEO-H533RE	Nucleo-64

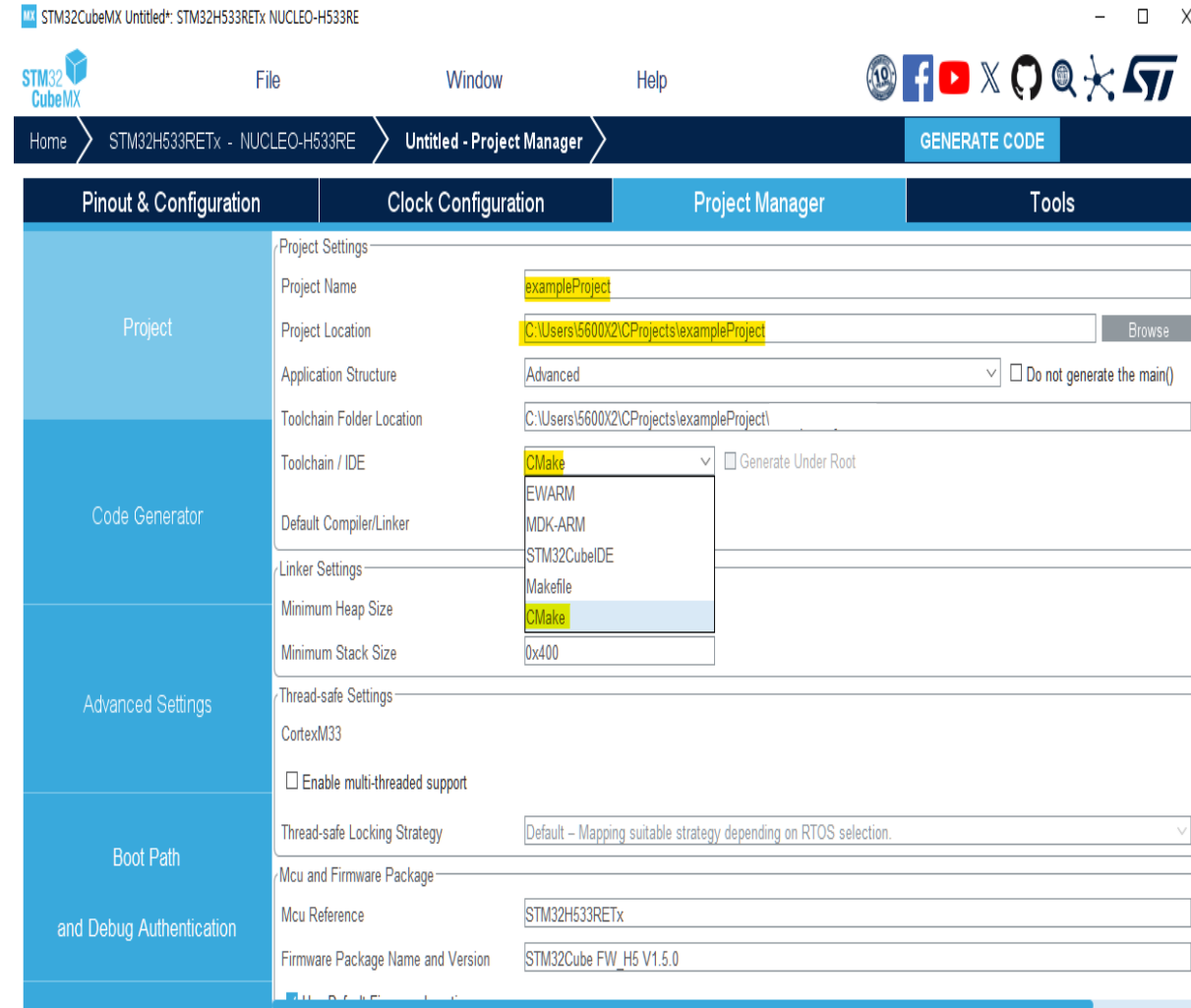
Make a Project with CubeMX

- ✓ Make a new C Project with CubeMX
 - TrustZone is not covered in this class (need for product-level security)
(It may not appear depending on the board)
- Press OK if no error occurs
- LED and Button, useful for build testing



Make a Project with CubeMX

- ✓ Make a new C Project with CubeMX
 - Use the exact path and select Cmake toolchain
- Pinout and clock configuration will be covered later



Make a Project with CubeMX

✓ Make a new C Project with CubeMX

- This option increases

Project Manager Settings



The Firmware Package (STM32CubeFW) is not installed.
Do you want to download this package?

- Click this button to generate code

STM32CubeMX Untitled*: STM32H533RETx NUCLEO-H533RE

File

STM32CubeMX

MX Licensing Agreement

CubeFw H5 1.5.0 License Agreement

Please read and accept the following agreement carefully to finish the installation:

[Click here to open the license agreement](#)

☒ I have read, and I agree to the terms of this license agreement

☐ I do not accept the terms of this license agreement

GENERATE CODE

Window Help

ed - Project Manager

GENERATE CODE

Configuration Project Manager Tools

and embedded software packs

the project folder

brary files

as reference in the toolchain project configuration file

✕

le in your STM32CubeMX Repository.

(to optimize the power consumption)

Browse

Browse

Template Settings

Make a Project with CubeMX

- ✓ Make a new C Project with CubeMX
 - Press OK if no error occurs

Project Manager Settings



The Firmware Package (STM32Cube FW_H5 V1.5.0) or one of its dependencies required by the Project is not available in your STM32CubeMX Repository.
Do you want to download this now ?

Yes

No

MX Downloading selected software packages



Download File stm32cube_fw_h5_v150.zip

194.3 MBytes / 271.0 MBytes (a few seconds left)

Download and Unzip selected Files

OK

Cancel

Pause

MX Licensing Agreement

CubeFw H5 1.5.0 License Agreement

Please read and accept the following agreement carefully to finish the installation:

[Click here to open the license agreement](#)

☒ I have read, and I agree to the terms of this license agreement

☐ I do not accept the terms of this license agreement

MX Warning: Code Generation



WARNINGS:

- The instruction cache (ICACHE) must be enabled to reach the maximum performance.
The ICACHE can be enabled from the Pinout tab under ICACHE.

Do you still want to generate code ?

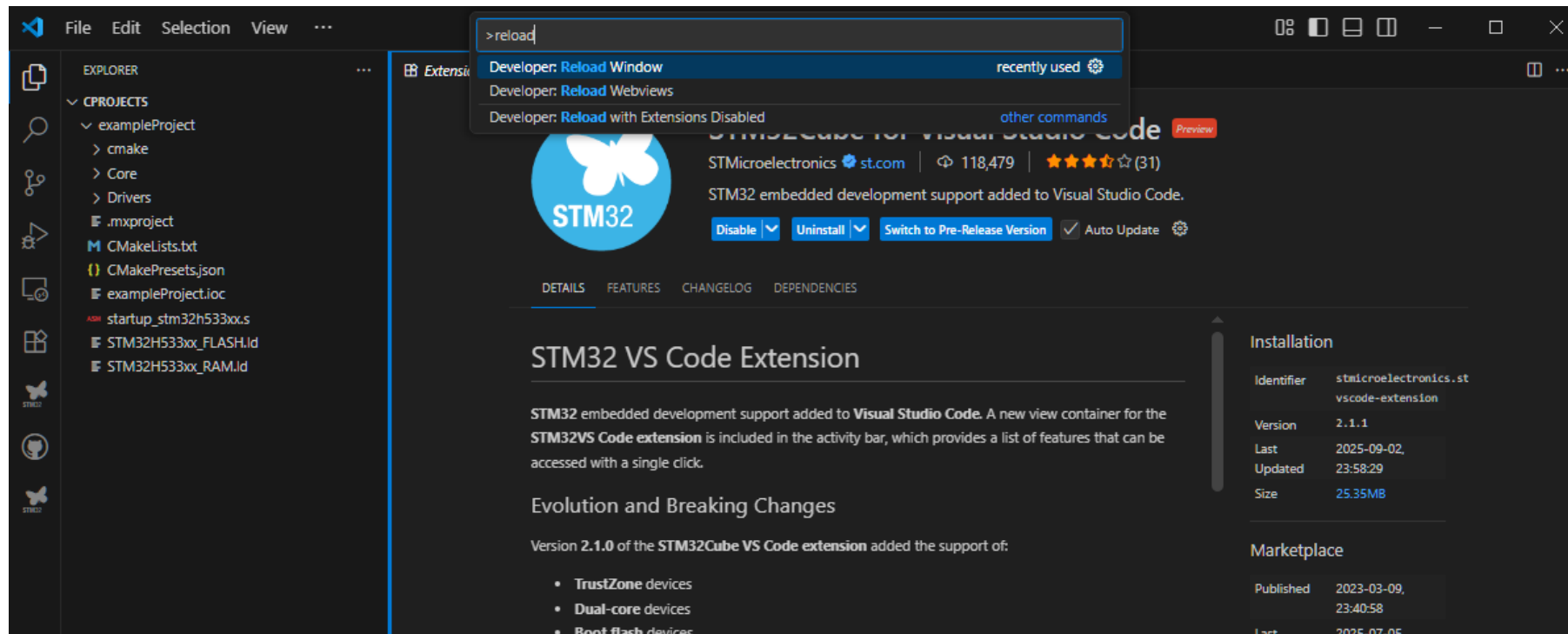
Yes

No



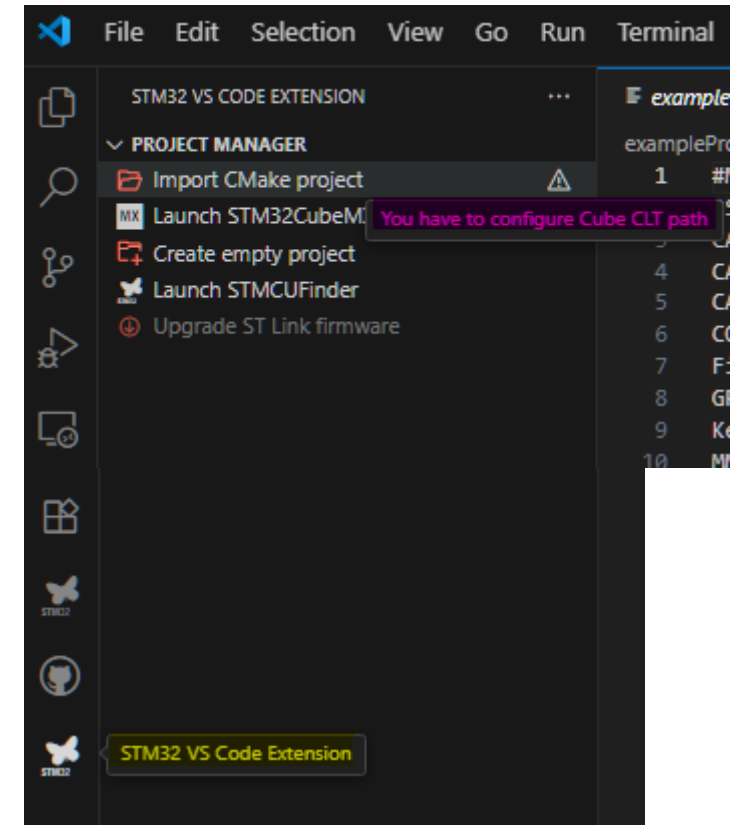
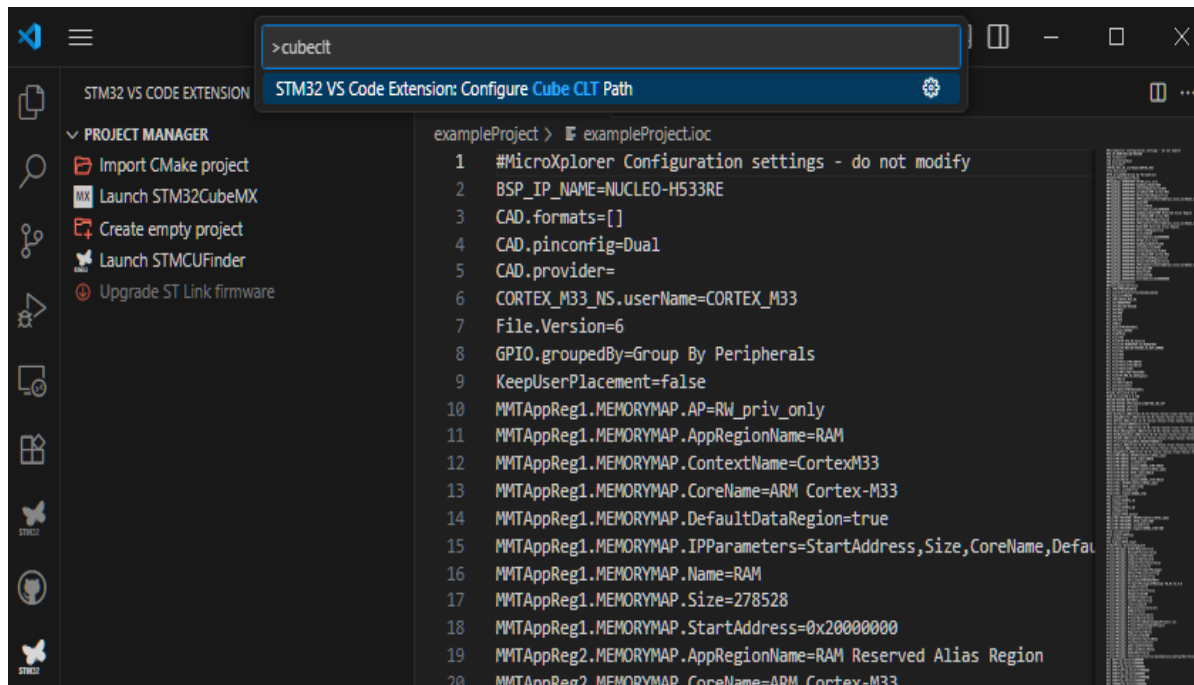
Make a Project with CubeMX

- ✓ Return to VS Code
 - Always reload VS Code when something new is installed
 - Type >reload or press Ctrl + Shift + P and search for “reload



Make a Project with CubeMX

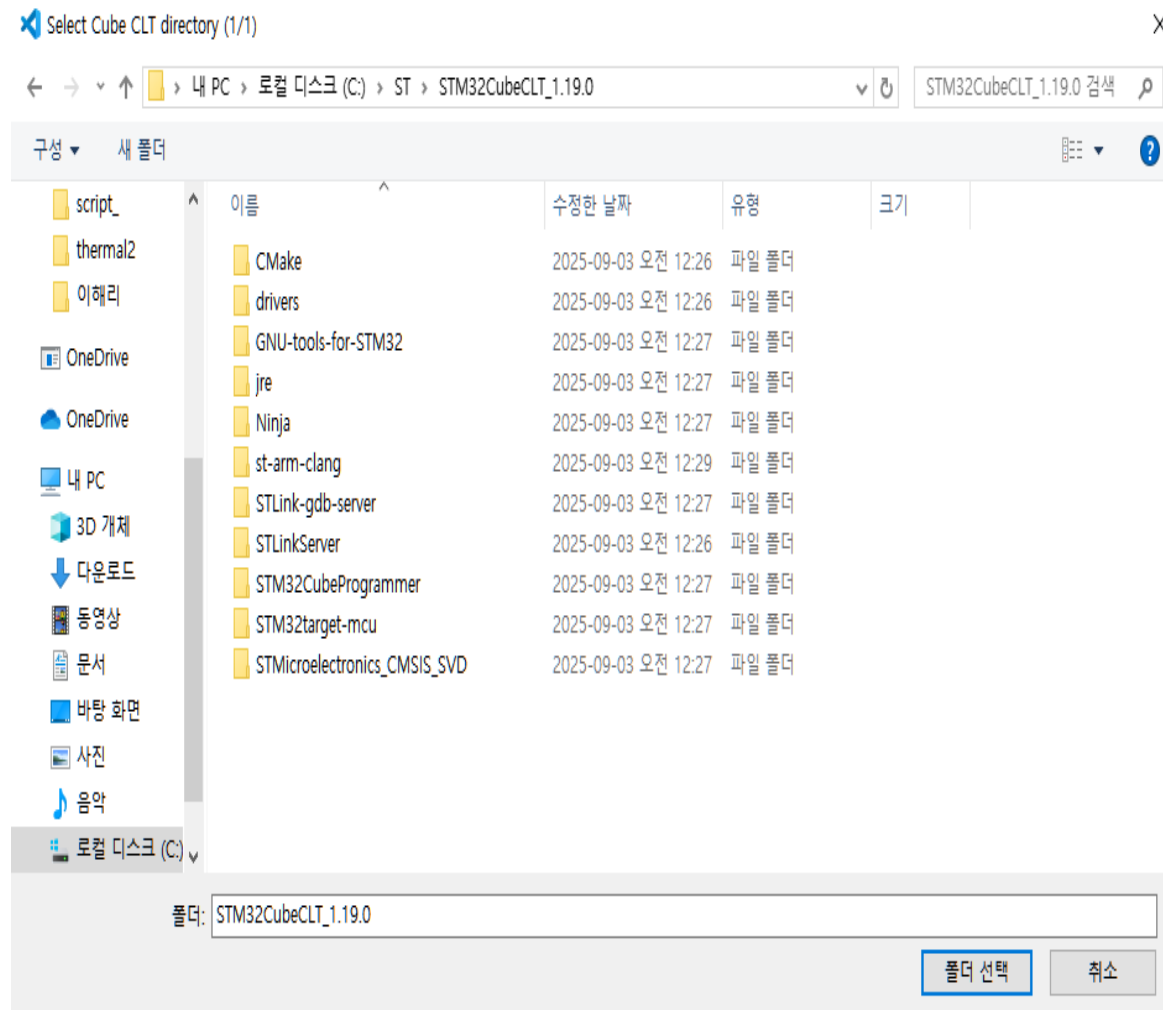
- ✓ In VS Code
 - In menu “STM32 VS Code Extension” Extension, we have to import CMake project but sometimes it does not work at first
 - Similar to reload, search for >cubeclt and configure the path



Make a Project with CubeMX

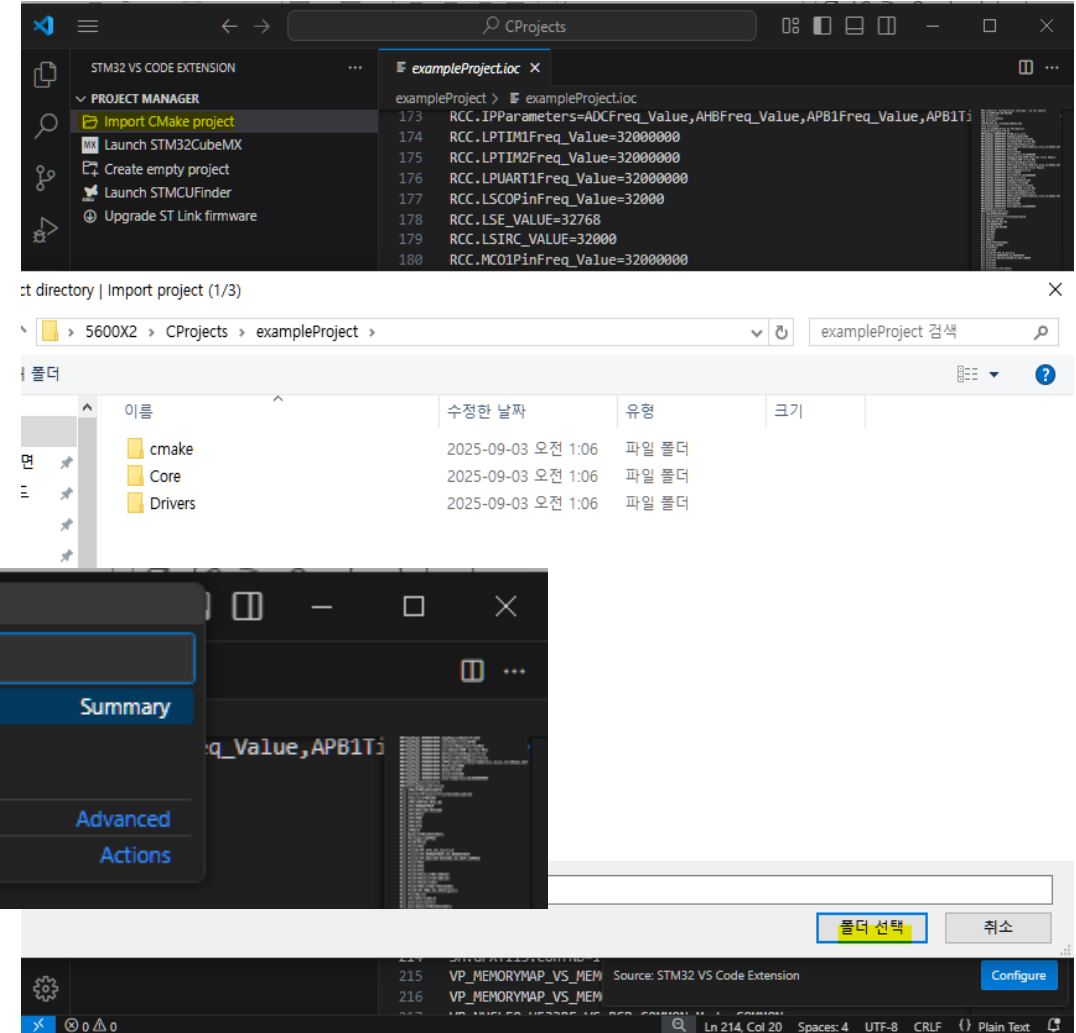
✓ In VS Code

- If you installed CubeCLT successfully, you can select C:/ST/STM32CubeCLT_X.XX.X (Linux/MacOS : auto-detected)



Make a Project with CubeMX

- ✓ CubeCLT Configured
 - Now you can import your project and VS Code will complete the remaining setup that CubeMX did not



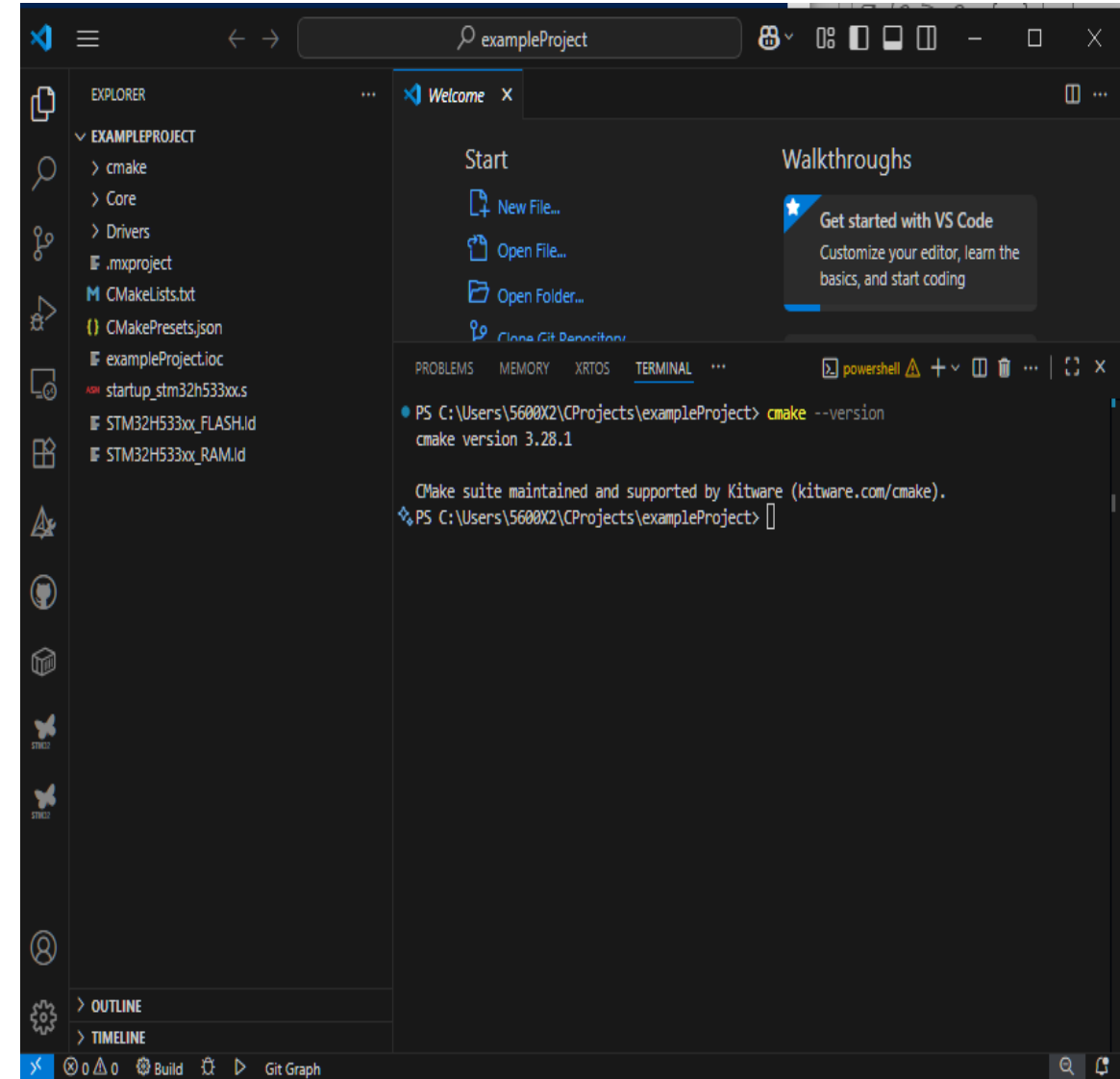
Make a Project with CubeMX

- ✓ Import CMake Project
 - If “cmake --version” command not works, quit and re-open vscode

```

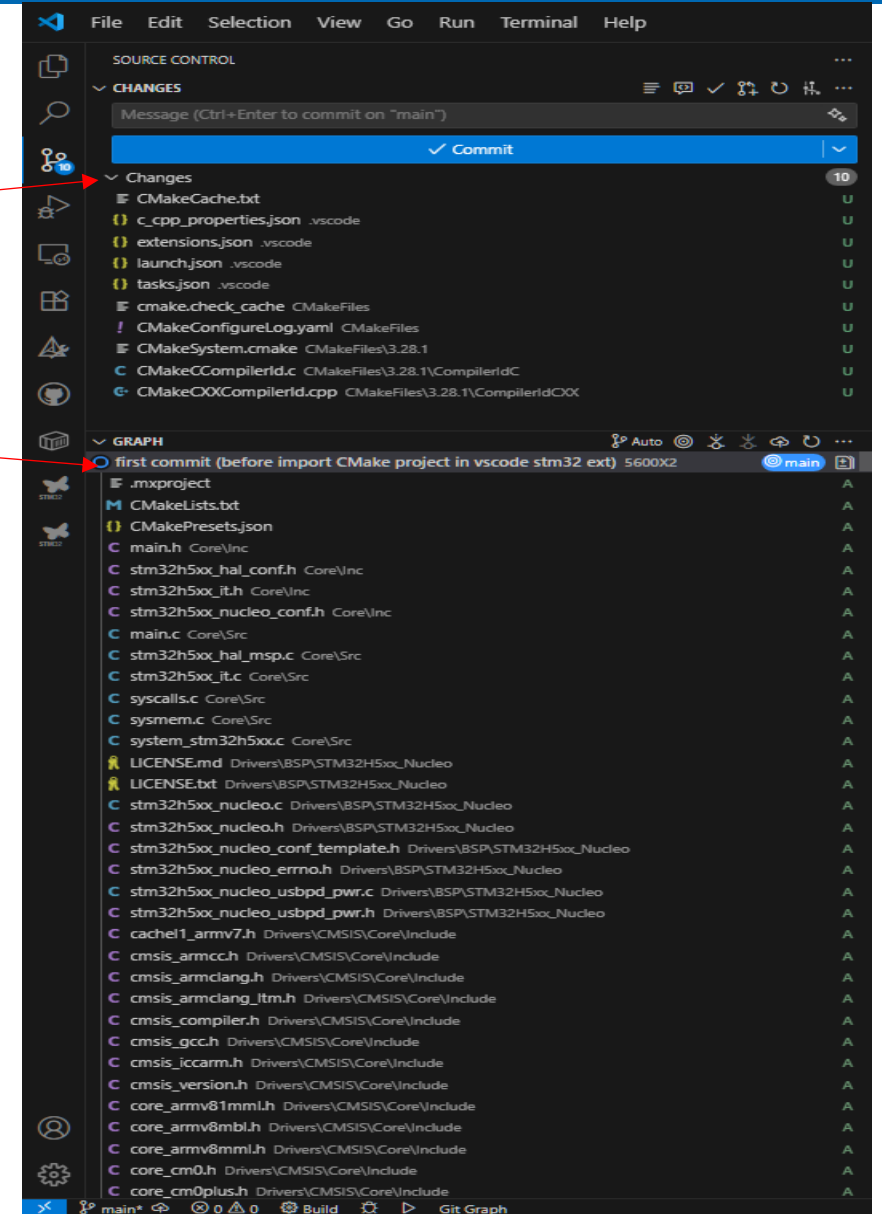
PROBLEMS MEMORY XRTOS TERMINAL ... powershell
PS C:\Users\5600X2\CProjects\exampleProject> cmaje --version
cmaje : 'cmaje' 용어가 cmdlet, 함수, 스크립트 파일 또는 실행할 수 있는 프로그램 이름으로 인식되지 않습니다. 이름이 정확한지 확인하고 경로가 포함된 경우 경로가 올바른지 검증한 다음 다시 시도하십시오.
• 위치 줄:1 문자:1
+ cmaje --version
+ ~~~~~
+ CategoryInfo          : ObjectNotFound: (cmaje:String) [], CommandNotFoundException
+ FullyQualifiedErrorId : CommandNotFoundException

❖ PS C:\Users\5600X2\CProjects\exampleProject>
    
```



Build and Download into MCU

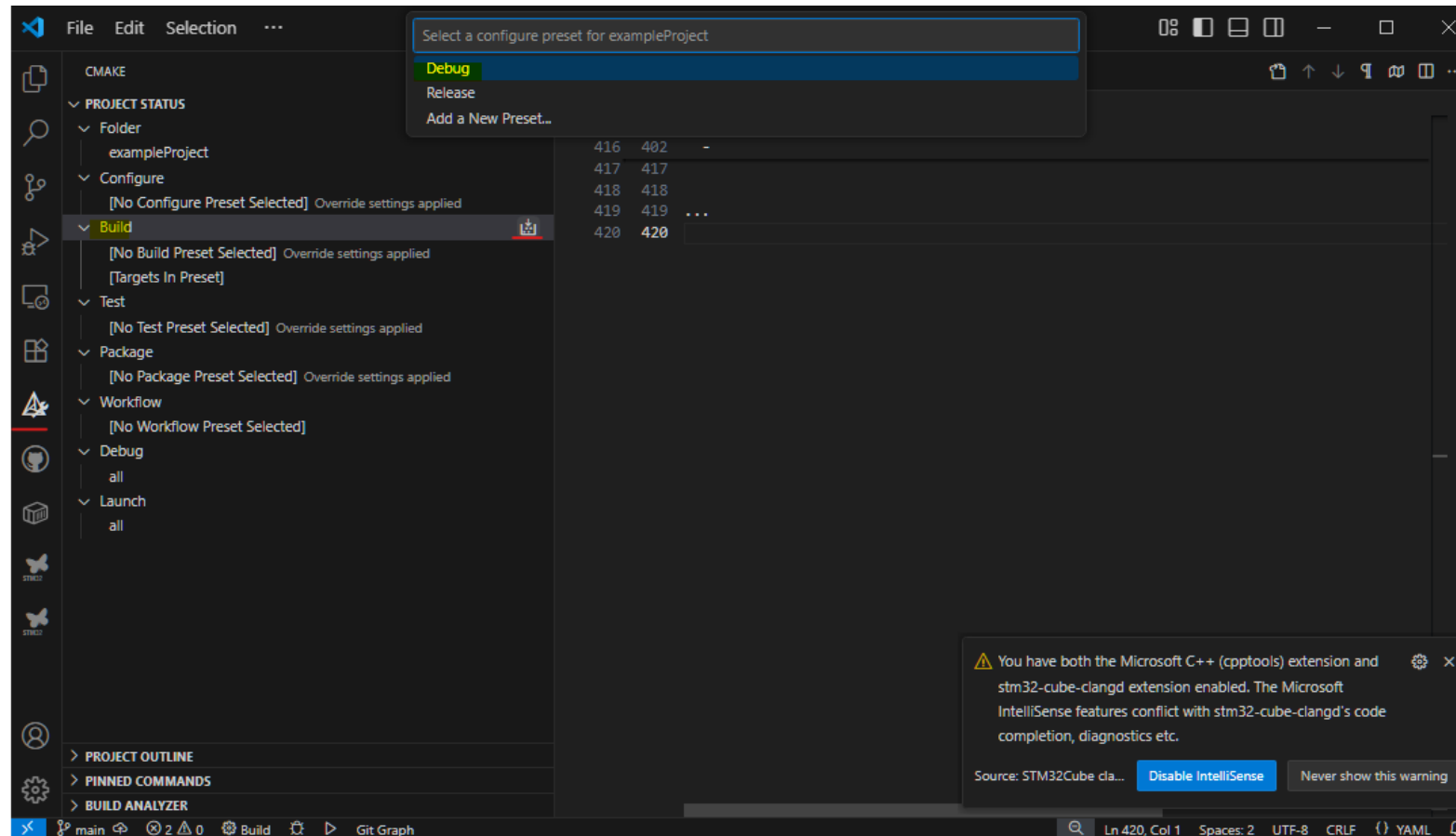
- ✓ CMake Project Imported
 - This is made by VS Code Ext
 - This is made by CubeMX



Build and Download into MCU

✓ Build Test

- Now you can compile whole .c source codes and get .elf binary



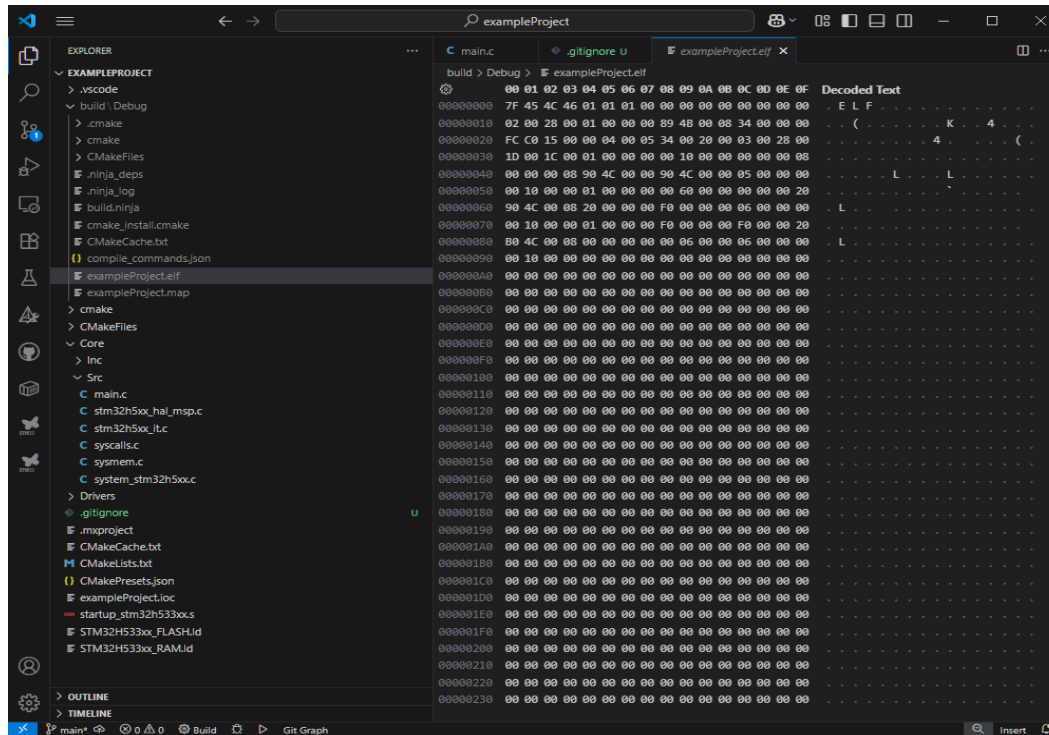
- ✓ Build Test
 - (Compiling messages)
 - They want to disable something, let them do it

```

[cmake] -- Check for working CXX compiler: C:/ST/STM32CubeCLT_1.19.0/GNU-tools-for-STM32/bin/arm-none-eabi-g++.exe - skipped
[cmake] -- Detecting CXX compile features
[cmake] -- Detecting CXX compile features - done
[cmake] Build type: Debug
[cmake] -- The ASM compiler identification is GNU
[cmake] -- Found assembler: C:/ST/STM32CubeCLT_1.19.0/GNU-tools-for-STM32/bin/arm-none-eabi-gcc.exe
[cmake] -- Configuring done (1.7s)
[cmake] -- Generating done (0.0s)
[cmake] -- Build files have been written to: C:/Users/5600X2/CProjects/exampleProject/build/Debug
[main] Building folder: C:/Users/5600X2/CProjects/exampleProject/build/Debug
[build] Starting build
[driver] NOTE: You are building with preset Debug, but there are some overrides being applied from your VS Code settings.
[proc] Executing command: chcp
[proc] Executing command: C:\ST\STM32CubeCLT_1.19.0\CMake\bin\cmake.EXE --build C:/Users/5600X2/CProjects/exampleProject/build/Debug --
[build] [1/25] Building ASM object CMakeFiles/exampleProject.dir/startup_stm32h533xx.s.obj
[build] [2/25] Building C object CMakeFiles/exampleProject.dir/Core/Src/systemem.c.obj
[build] [3/25] Building C object CMakeFiles/exampleProject.dir/Core/Src/syscalls.c.obj
[build] [4/25] Building C object CMakeFiles/exampleProject.dir/Core/Src/stm32h5xx_it.c.obj
[build] [5/25] Building C object cmake/stm32cubemx/CMakeFiles/STM32_Drivers.dir/_/_/Drivers/STM32H5xx_HAL_Driver/Src/stm32h5xx_hal_cortex.c.obj
[build] [6/25] Building C object cmake/stm32cubemx/CMakeFiles/STM32_Drivers.dir/_/_/Drivers/STM32H5xx_HAL_Driver/Src/stm32h5xx_hal_flash_ex.c.obj
[build] [7/25] Building C object cmake/stm32cubemx/CMakeFiles/STM32_Drivers.dir/_/_/Core/Src/system_stm32h5xx.c.obj
[build] [8/25] Building C object cmake/stm32cubemx/CMakeFiles/STM32_Drivers.dir/_/_/Drivers/STM32H5xx_HAL_Driver/Src/stm32h5xx_hal_gpio.c.obj
[build] [9/25] Building C object CMakeFiles/exampleProject.dir/Core/Src/main.c.obj
    
```

Windows notification: You have both the Microsoft C++ (cpptools) extension and stm32-cube-clangd extension enabled. The Microsoft IntelliSense features conflict with stm32-cube-clangd's code completion, diagnostics etc. [설정]으로 이동하여 Windows를 정품 인증합니다. Source: STM32Cube cl... [Disable IntelliSense](#) Never show this warning

- ✓ Build completed messages
 - [build] Build finished with exit code 0
 - You can also check the compiled binary (.elf)



```

PROBLEMS  MEMORY  XRTOS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

[build] [8/25] Building C object cmake/stm32cubemx/CMakeFiles/STM32_Drivers.
[build] [9/25] Building C object cmake/stm32cubemx/CMakeFiles/STM32_Drivers.
[build] [10/25] Building C object cmake/stm32cubemx/CMakeFiles/STM32_Drivers
[build] [11/25] Building C object cmake/stm32cubemx/CMakeFiles/STM32_Drivers
[build] [12/25] Building C object CMakeFiles/exampleProject.dir/Core/Src/mai
[build] [13/25] Building C object cmake/stm32cubemx/CMakeFiles/STM32_Drivers
[build] [14/25] Building C object cmake/stm32cubemx/CMakeFiles/STM32_Drivers
[build] [15/25] Building C object cmake/stm32cubemx/CMakeFiles/STM32_Drivers
[build] [16/25] Building C object cmake/stm32cubemx/CMakeFiles/STM32_Drivers
[build] [17/25] Building C object cmake/stm32cubemx/CMakeFiles/STM32_Drivers
[build] [18/25] Building C object cmake/stm32cubemx/CMakeFiles/STM32_Drivers
[build] [19/25] Building C object cmake/stm32cubemx/CMakeFiles/STM32_Drivers
[build] [20/25] Building C object cmake/stm32cubemx/CMakeFiles/STM32_Drivers
[build] [21/25] Building C object cmake/stm32cubemx/CMakeFiles/STM32_Drivers
[build] [22/25] Building C object cmake/stm32cubemx/CMakeFiles/STM32_Drivers
[build] [23/25] Building C object cmake/stm32cubemx/CMakeFiles/STM32_Drivers
[build] [24/25] Building C object cmake/stm32cubemx/CMakeFiles/STM32_Drivers
[build] [25/25] Linking C executable exampleProject.elf
[build] Memory region      Used Size  Region Size  %age Used
[build]      RAM:          1776 B      272 KB      0.64%
[build]      FLASH:        19632 B     512 KB      3.74%
[driver] Build completed: 00:00:01.374
[build] Build finished with exit code 0
    
```

- ✓ Download .elf binary into your board
- ✓ (사진추가예정)

- ✓ You can find my source code and installation video on his [Github](#)