

STM32_NUCLEO_F446RE_REGISTER_APPROACH

1. Getting Started:

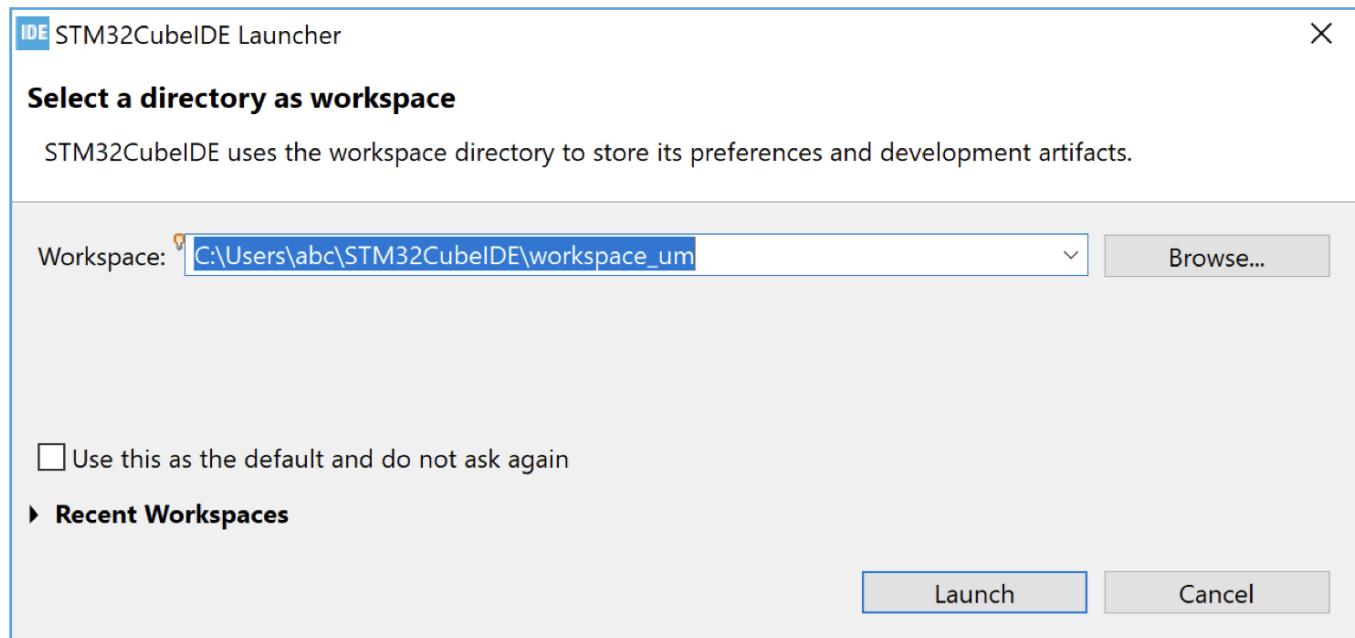
Cooking Things ready for work:

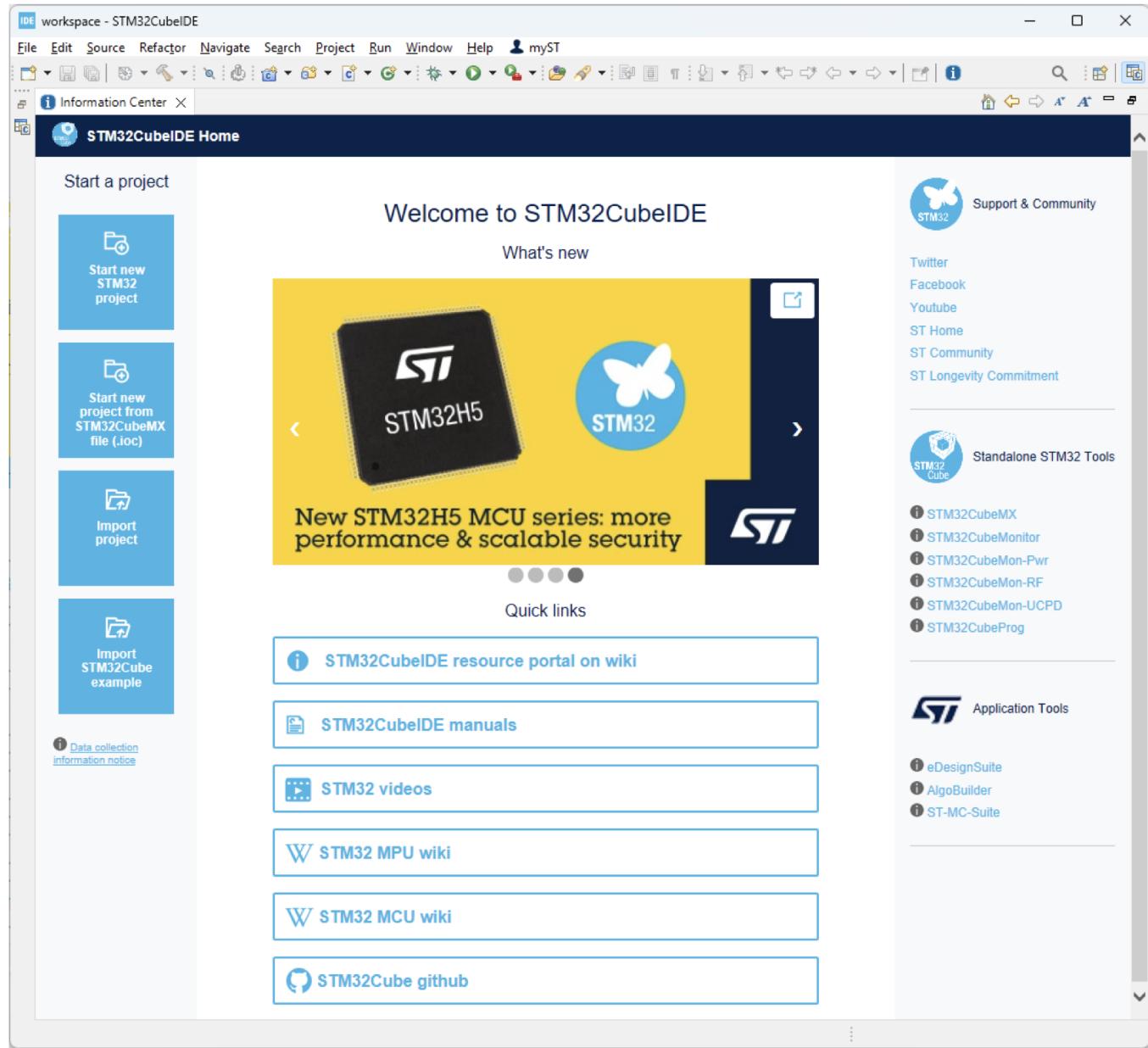
Initial steps to follow for wiring the code and uploading into the microcontroller (NUCLEO-F446RE)

Step 1: Download and install the "STMCUBE IDE" from the official website by ST microcontrollers.

Step 2: While Installing the Software allow the drivers binaries if prompted.

Step 3: Once everything is done open the IDE.





alt text

2. Creating a Project

Step 1: select "Strat new STM32 project" from the home page or go to File -> New -> STM32 Project. This will take some time validate all the information to open the Target Selector.

Start a project

Start new STM32 project

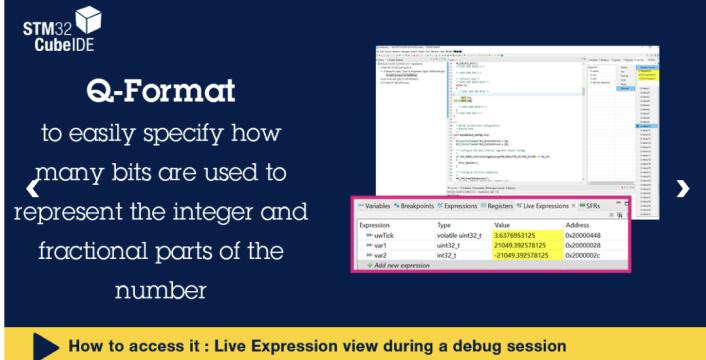
Start new project from STM32CubeMX file (.ioc)

Import project

Import STM32Cube example

Welcome to STM32CubeIDE

What's new



Q-Format
to easily specify how many bits are used to represent the integer and fractional parts of the number

How to access it : Live Expression view during a debug session

Quick links

[STM32CubeIDE resource portal on wiki](#)

[STM32CubeIDE manuals](#)

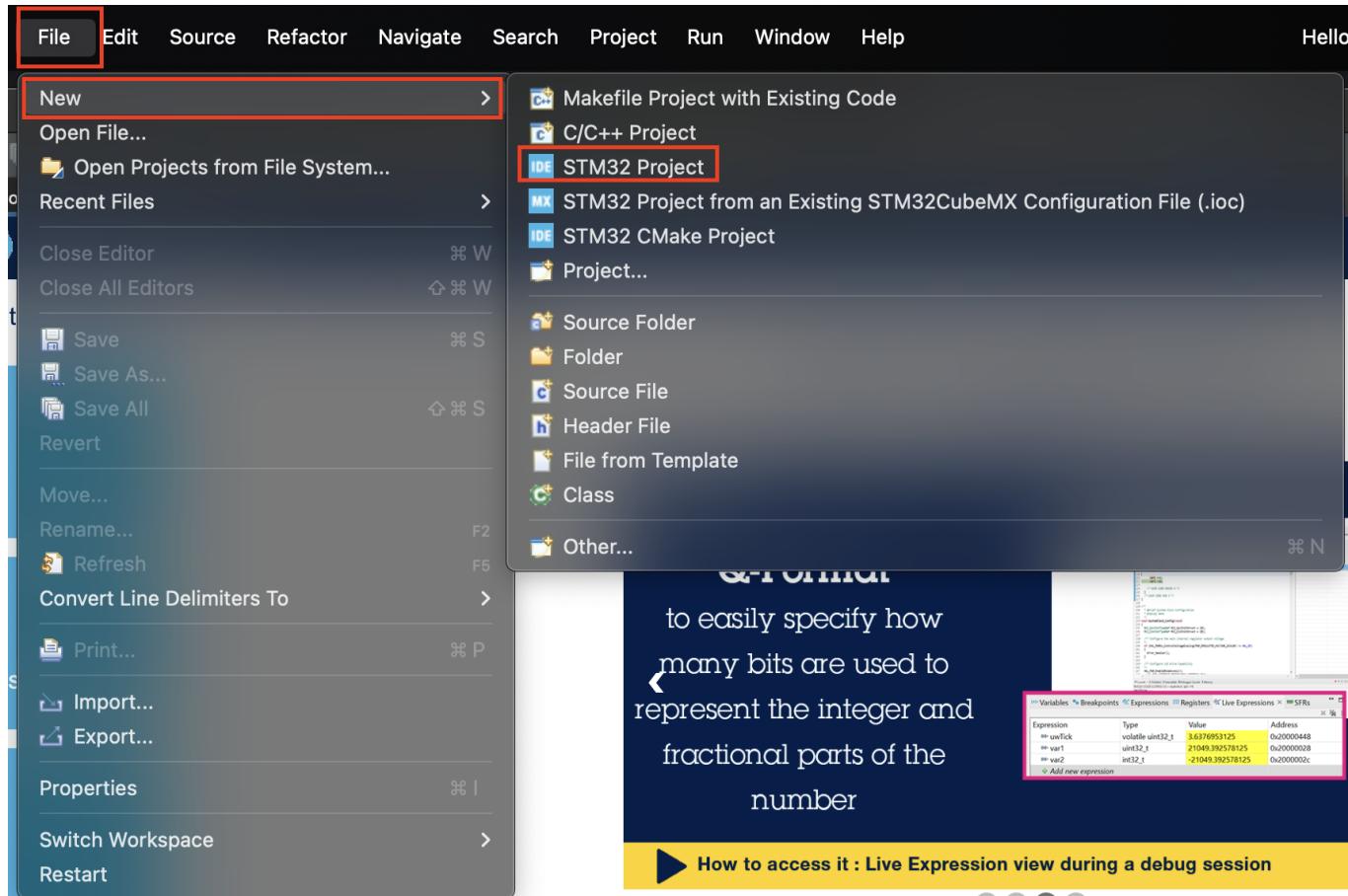
[STM32 videos](#)

[STM32 MPU wiki](#)

[STM32 MCU wiki](#)

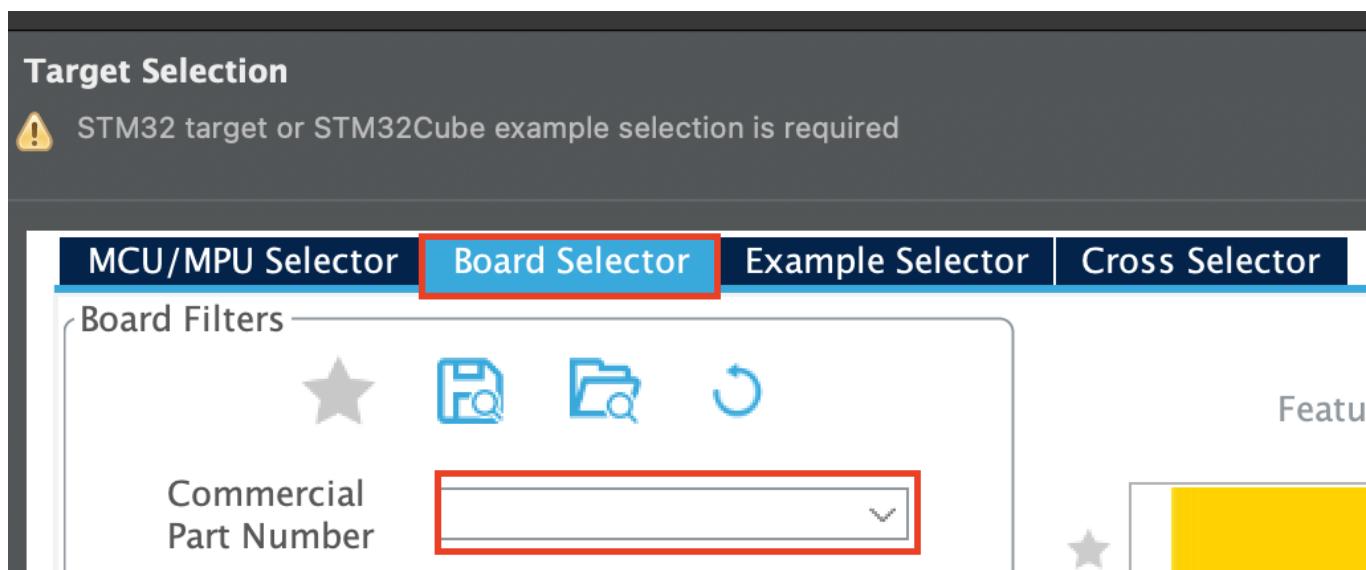
[STM32Cube github](#)

(a)



(b)

Step 2: On selector Window select "Board Selector". under the Board selector search for "NUCLEO-F446RE" in "Commercial Part Number" search field.



Step 3: Select the Target Board from the 'Boards List' and click 'Next'. This opens STM32 Project Window.

Commercial Part Number: NUCLEO-F446RE

PRODUCT INFO

- Type
- Supplier
- MCU / MPU Series
- Marketing Status
- Price

MEMORY

- Ext. Flash = 0 (MBit)
- Ext. EEPROM = 0 (kBytes)
- Ext. RAM = 0 (MBit)

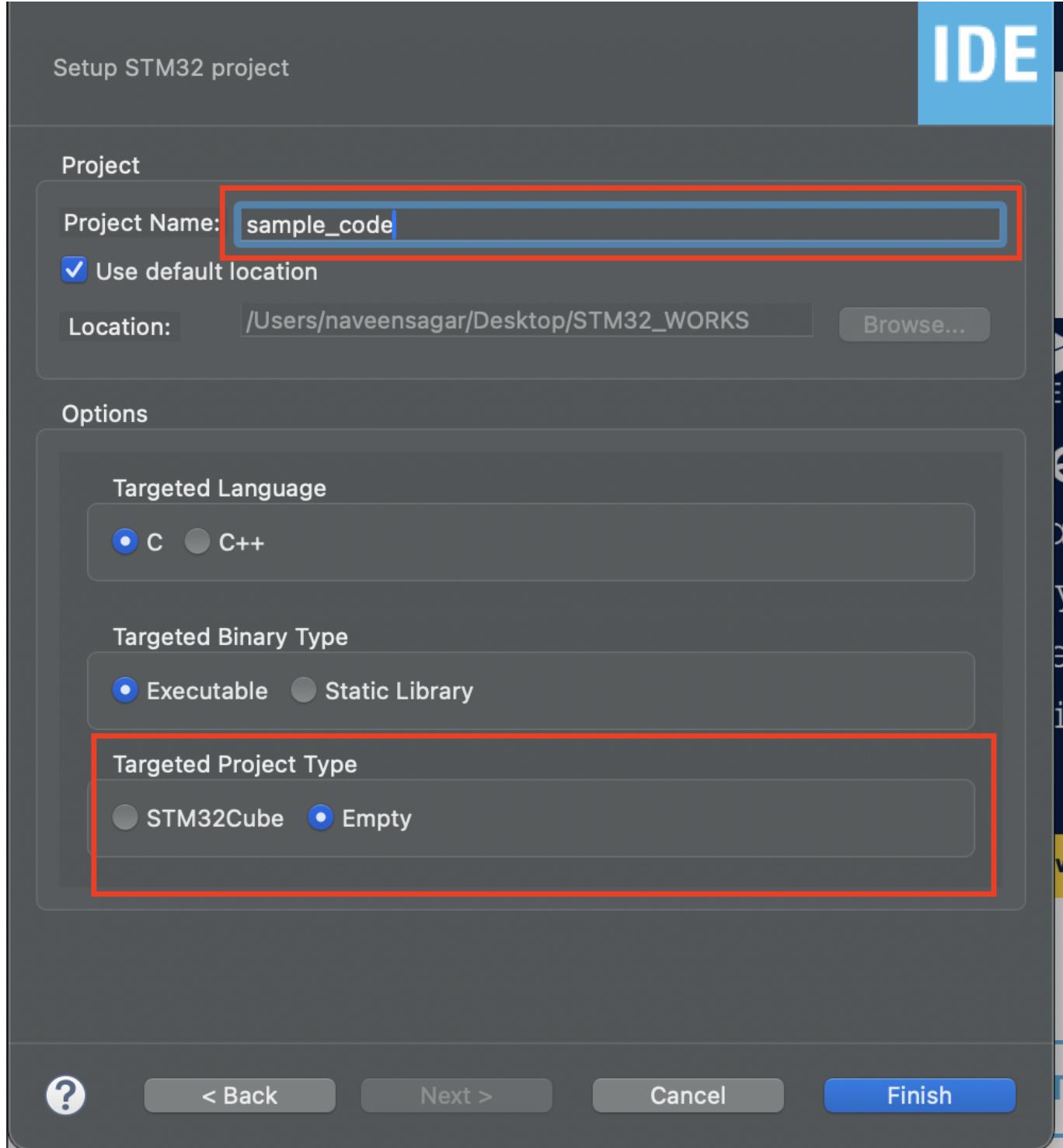
FEATURES

- Embedded Sensor
- User Button
- Camera
- CAN
- Connector

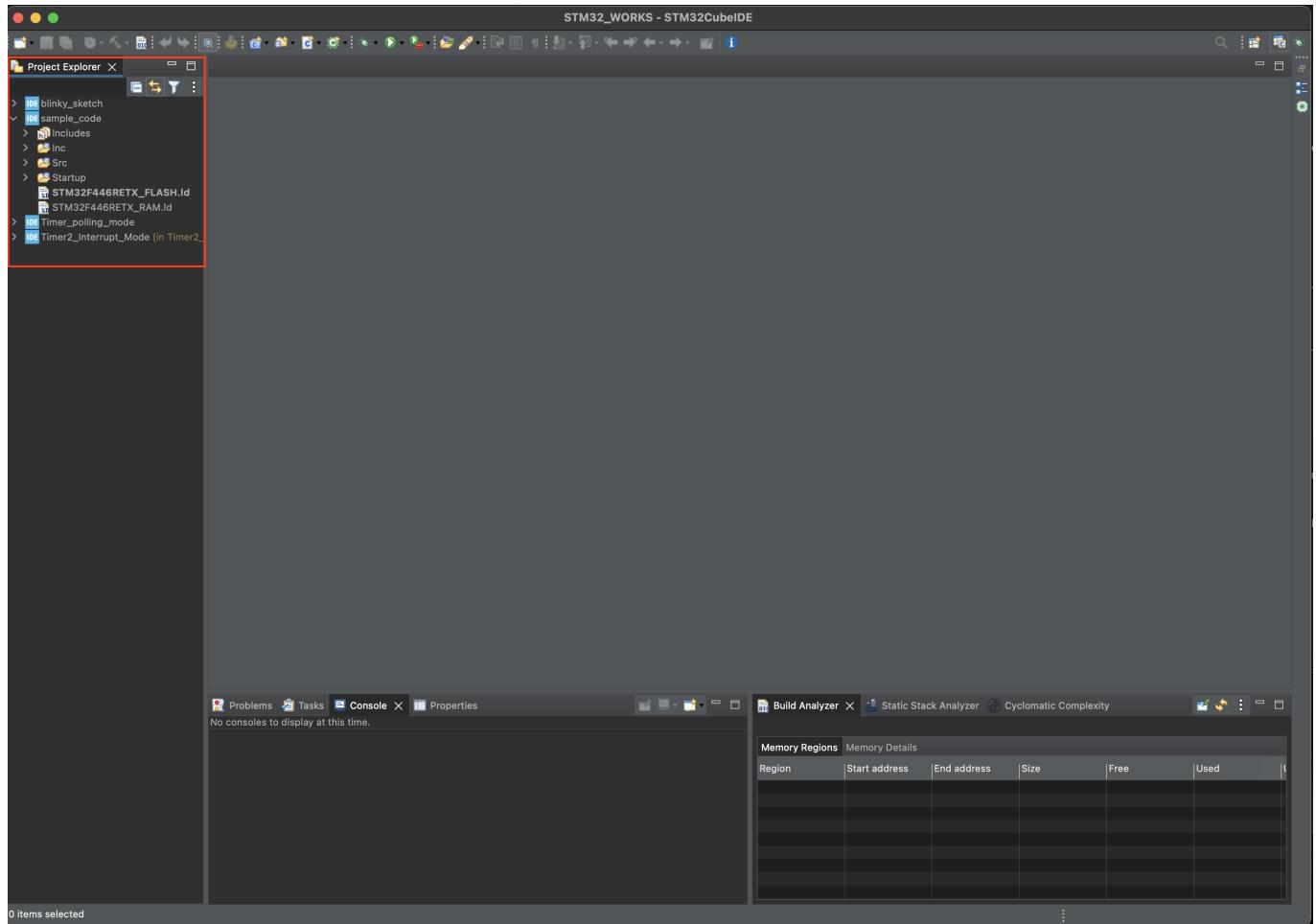
Boards List: 1 item

*	Overview	Commercial Part No	Type	Marketing Status	Unit Price (US\$)	Mounted Device
☆		NUCLEO-F446RE	Nucleo-64	Active	14.0	STM32F446RET6

Step 4: Give Project Name in the field given. in the same window check for the option "Target Project Type", check the "Empty" box. and press "Finish".



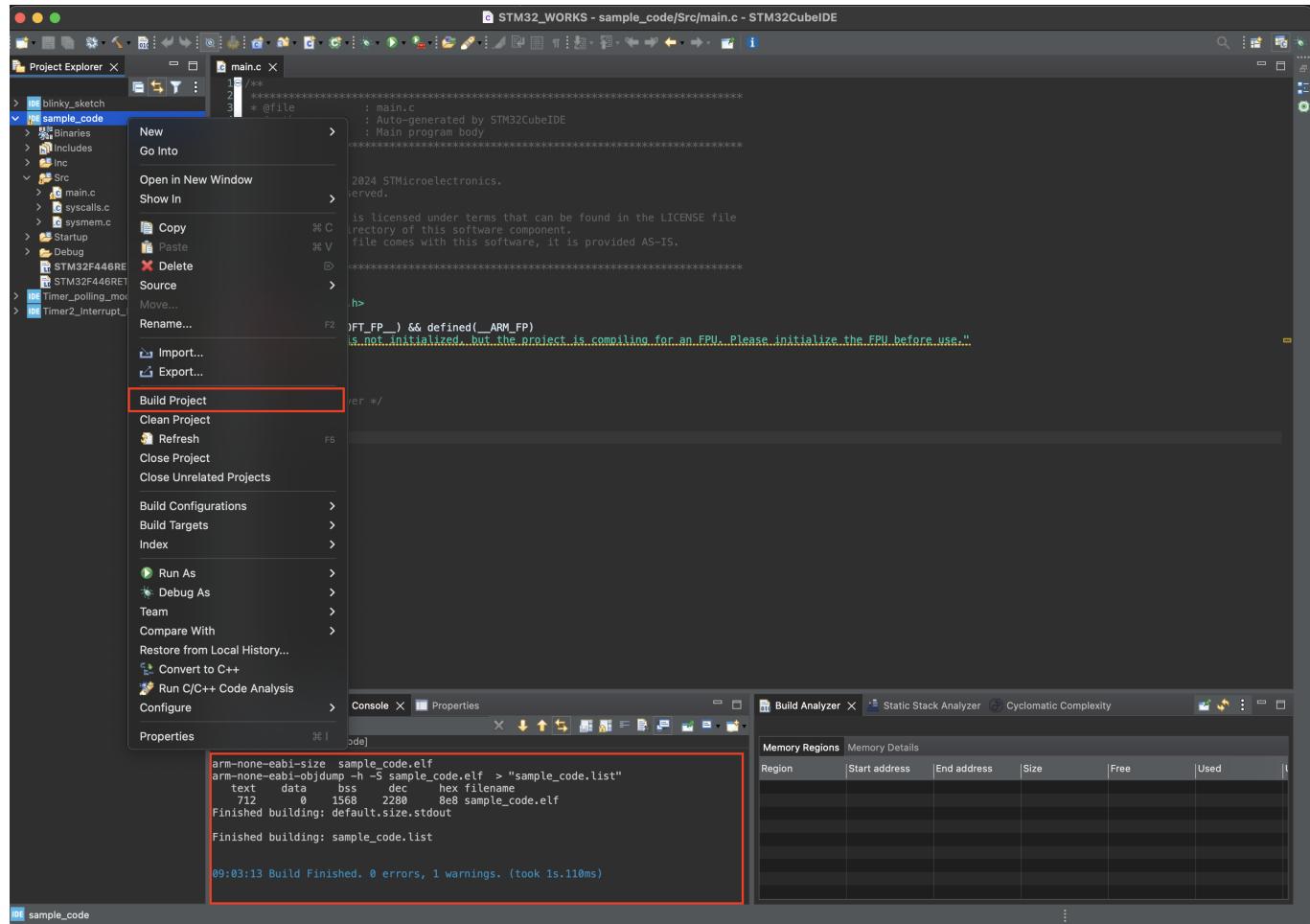
Step 5: This open the workspace, on the Left Side of the Window we can see the "Project Explorer" window under that shows the list of project applications created.



3. Building a Project

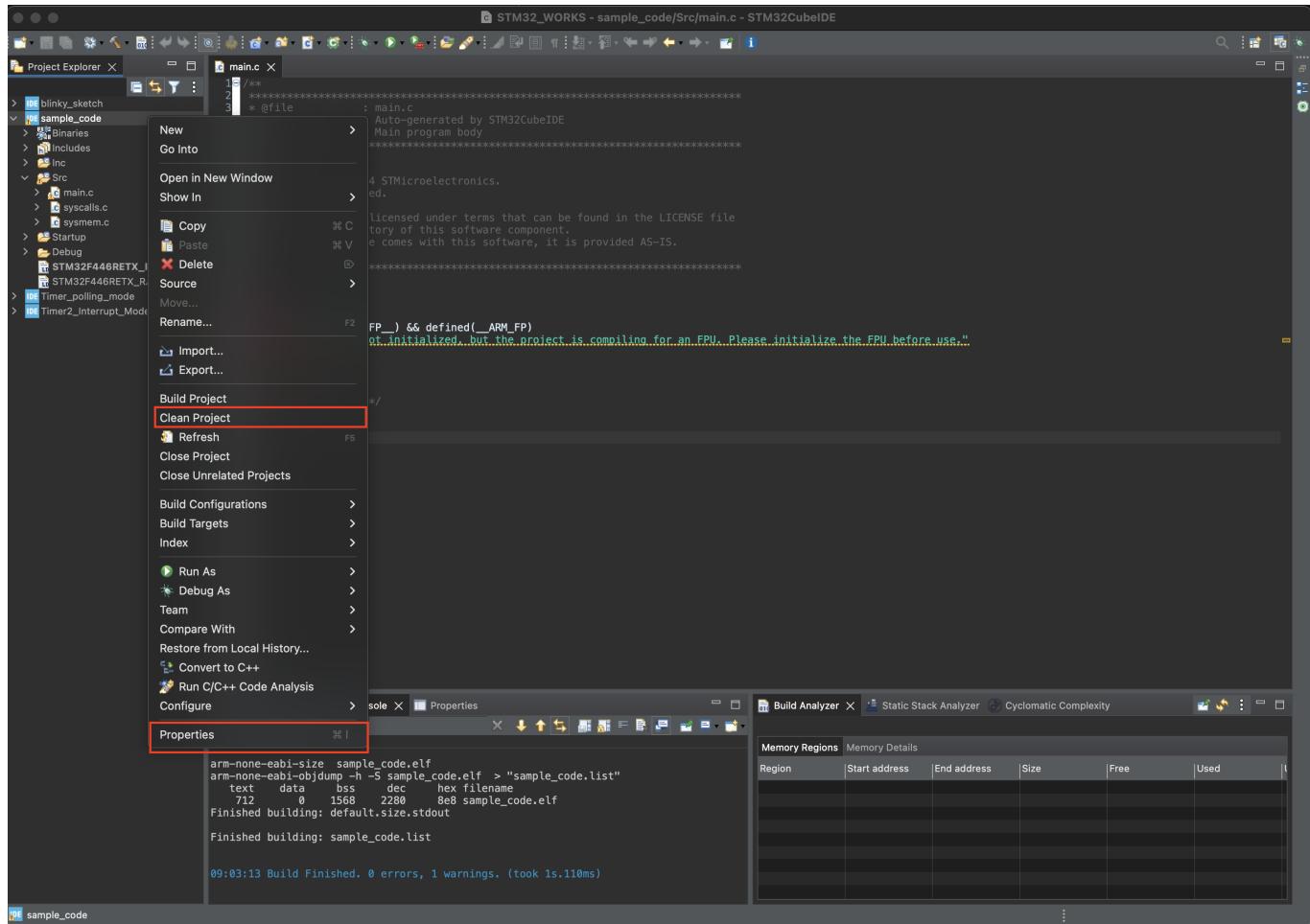
Once all the required applications are downloaded and installed, do the following steps to build the project.

Step 1: Right click on the <|Project Name> look for the "Build Project" option; select it to build the current project workspace. after successful build check for the build results on the consle under the editor window.

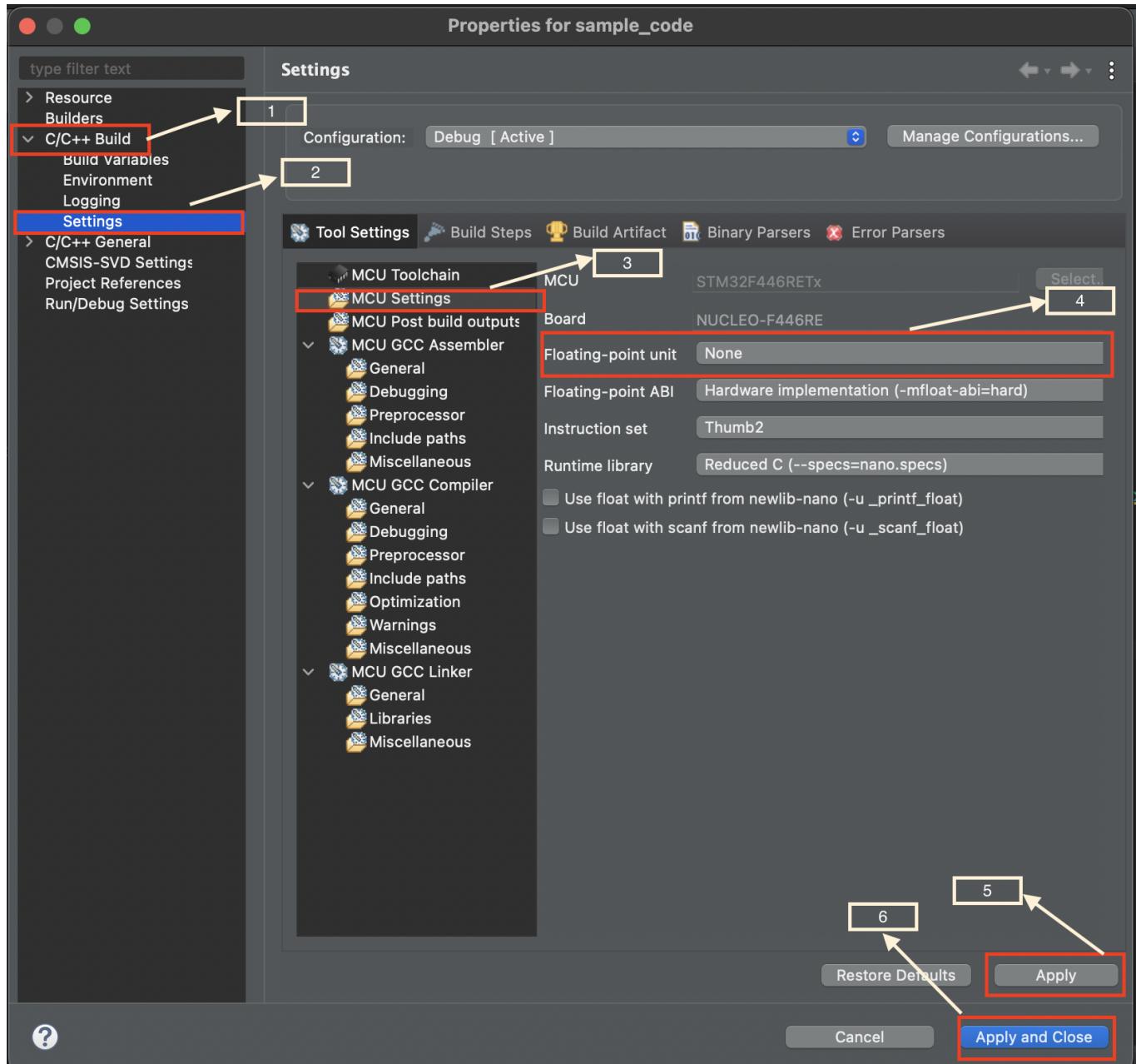


Step 2: Copy the provided files into the src directory within the workspace.

Step 3: Again Right Click on the project Workspace and select the "Clean Build" option; right click on the project workspace and select "Properties".

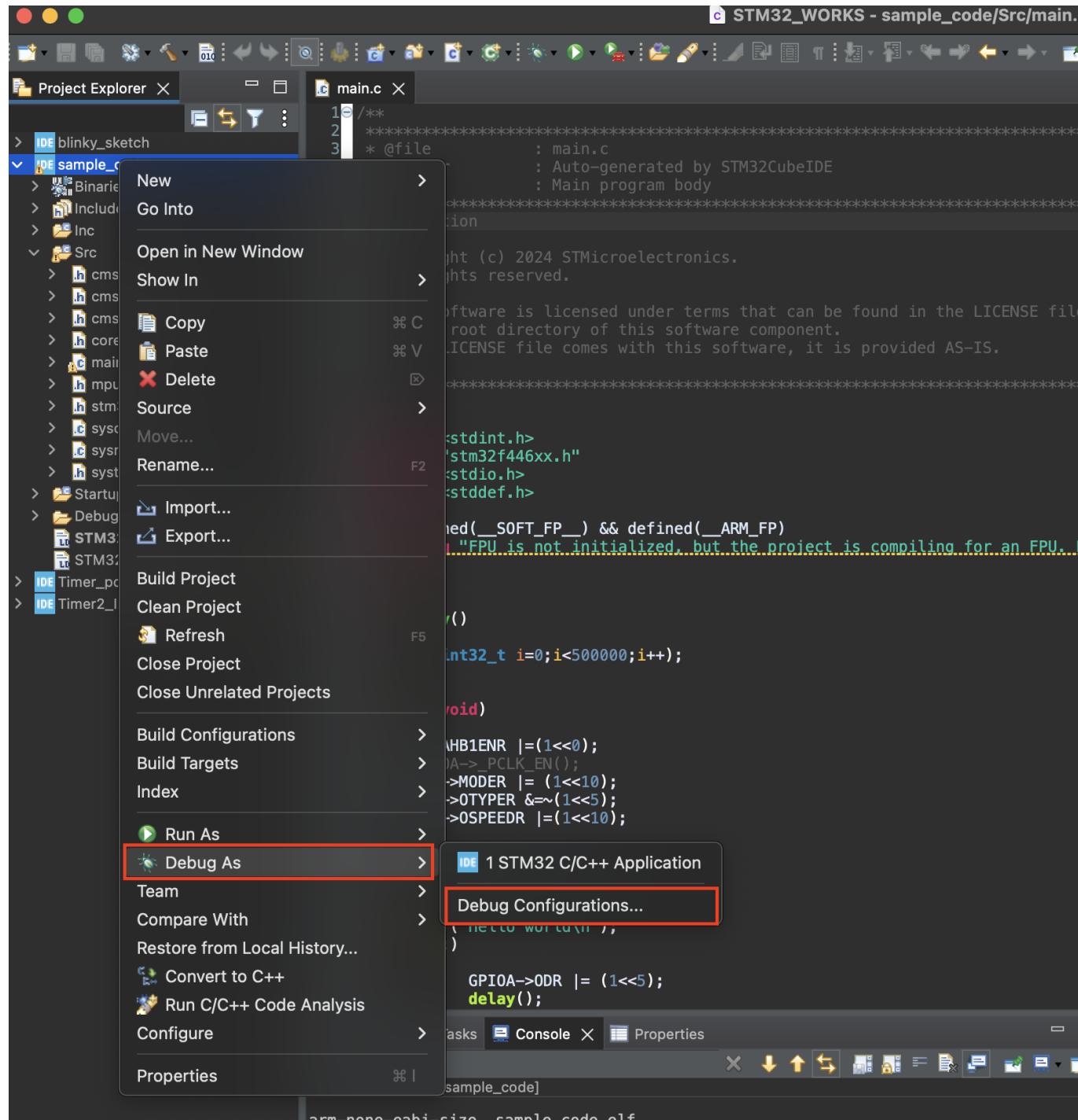


Step 4: On Properties window navigate to the "C/C++ Build" click the arrow button shows a list. within the list goto "Settings", on next to this a list of options are poped. In that list goto "MCU Settings" and change "Floating-point Unit" to "None". select "Apply" When prompts to rebuild select "Rebuild Index".



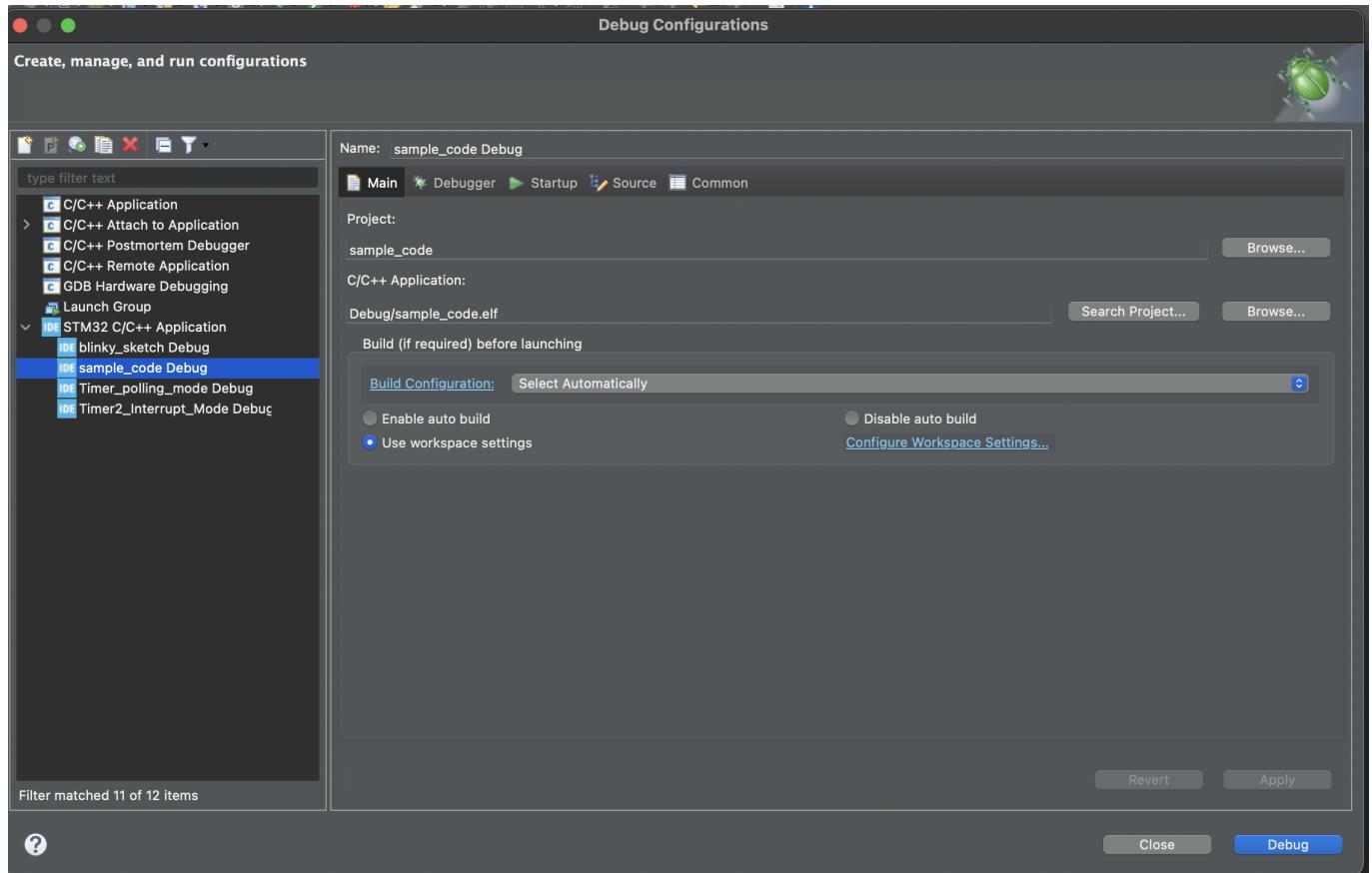
4. Debugging the Project.

Step 1: Once build is successful got the project Workspace; right click on it and select option "Debug As" and select "Debug Configurations".

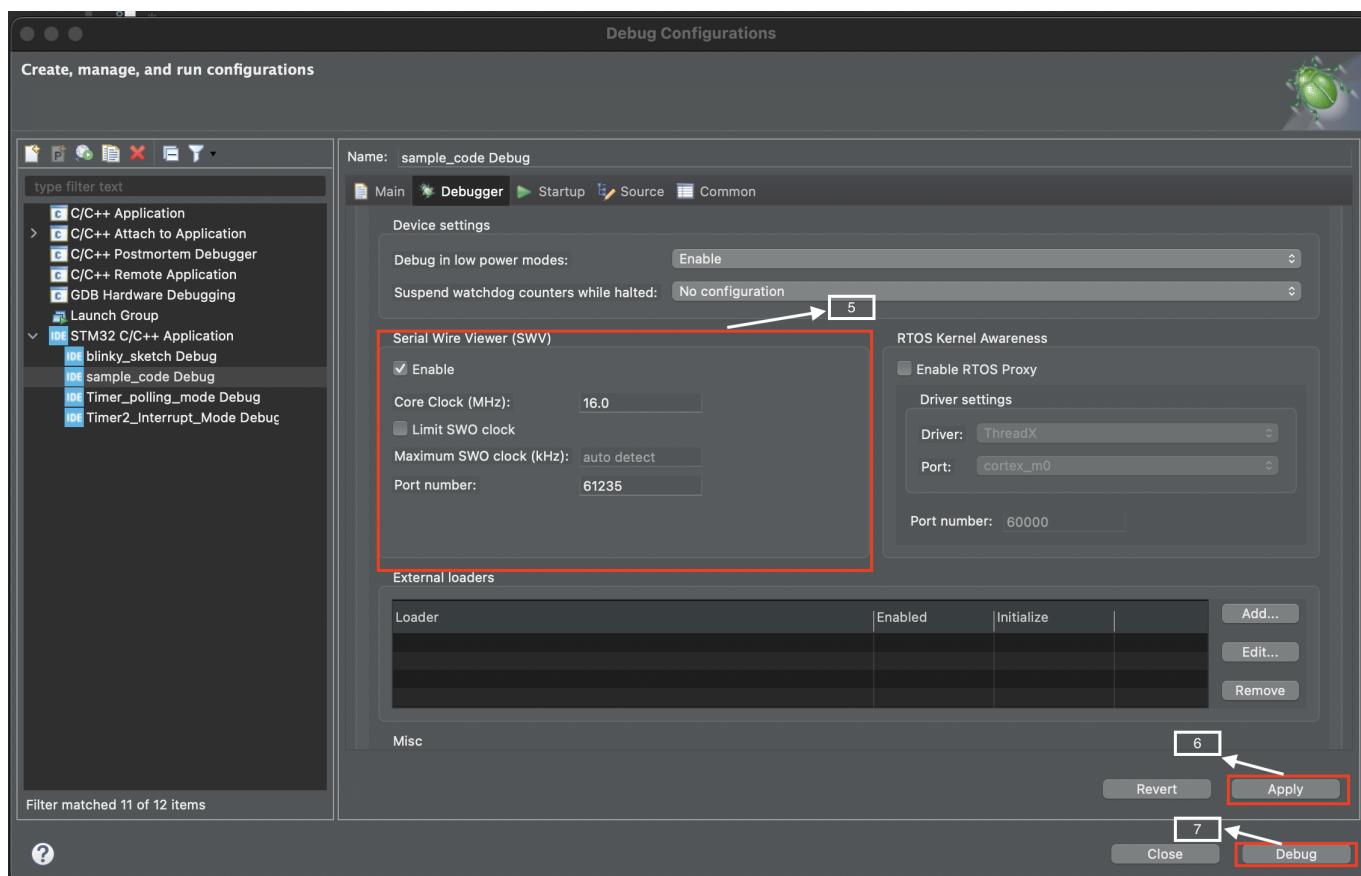
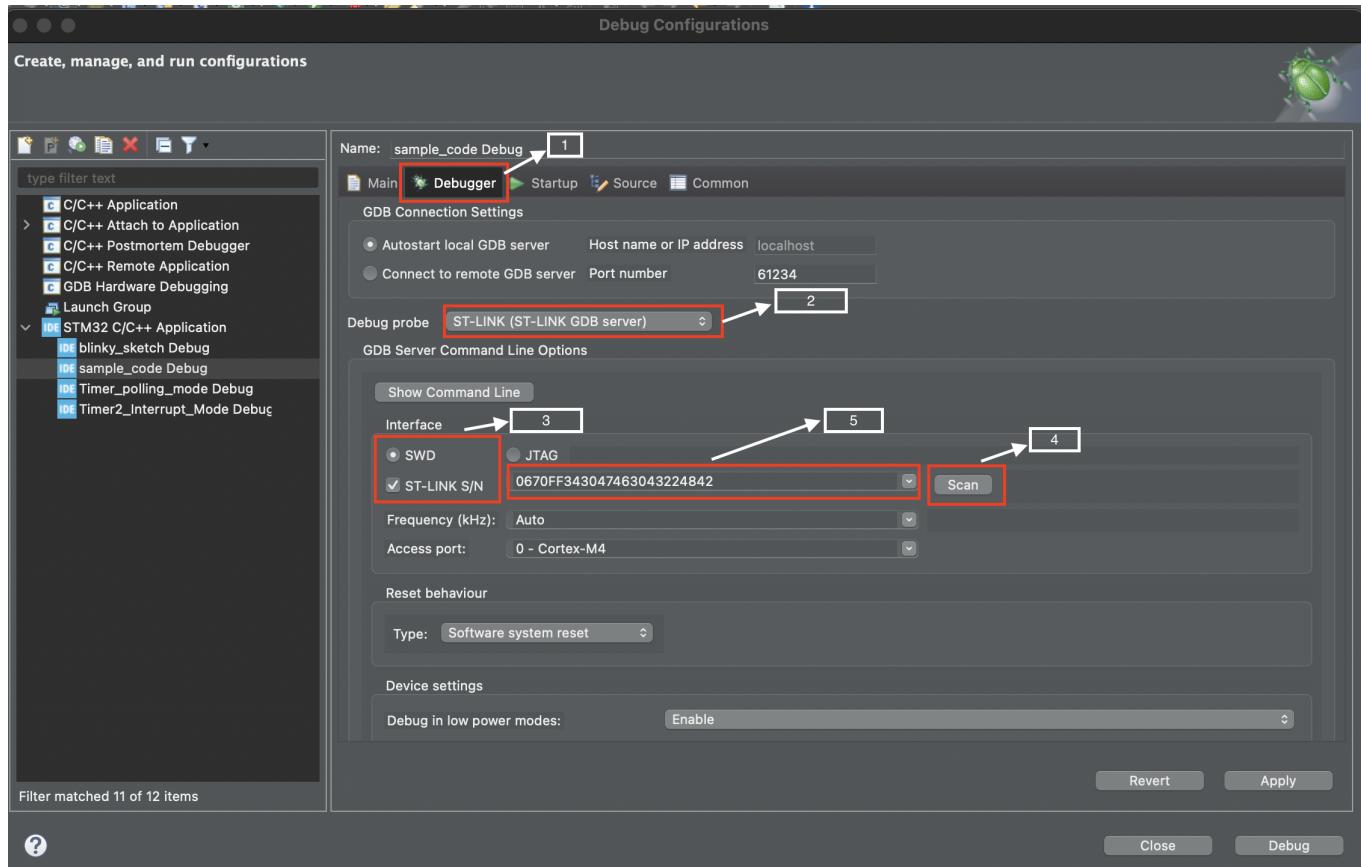


Step 2: connect the Nucleo-F446RE board to the Desktop/Laptop and look for whether driver is detected in the Device Manager. if not listed than install the necessary drivers.

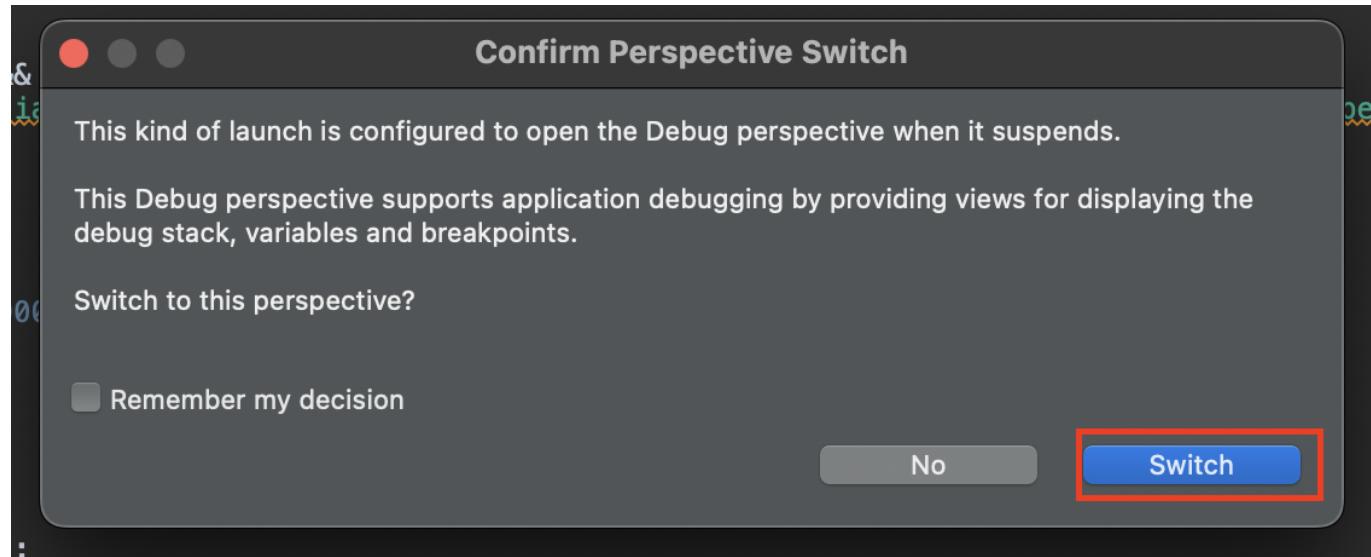
Step 3: on the Debug Configurations window double click on the "STM32 C/C++ Applications" option; pops the newly created project workspace select the current project. Verify all the Project name is same as the project application.



Step 4: on the Debug Configurations select "Debugger" option and do the following changes. keeping the Board is connected.

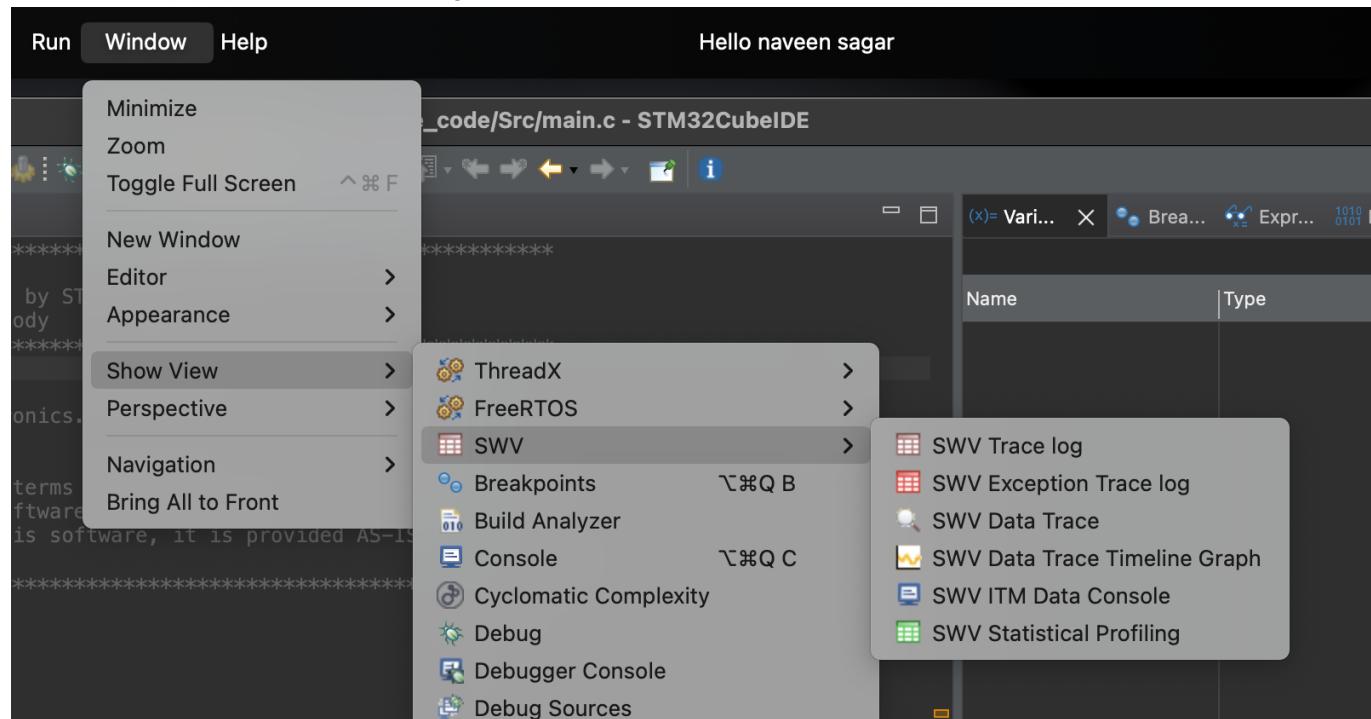


Step 5: when a window pops to switch debug perspective select "Switch" allowing to take into debug mode.

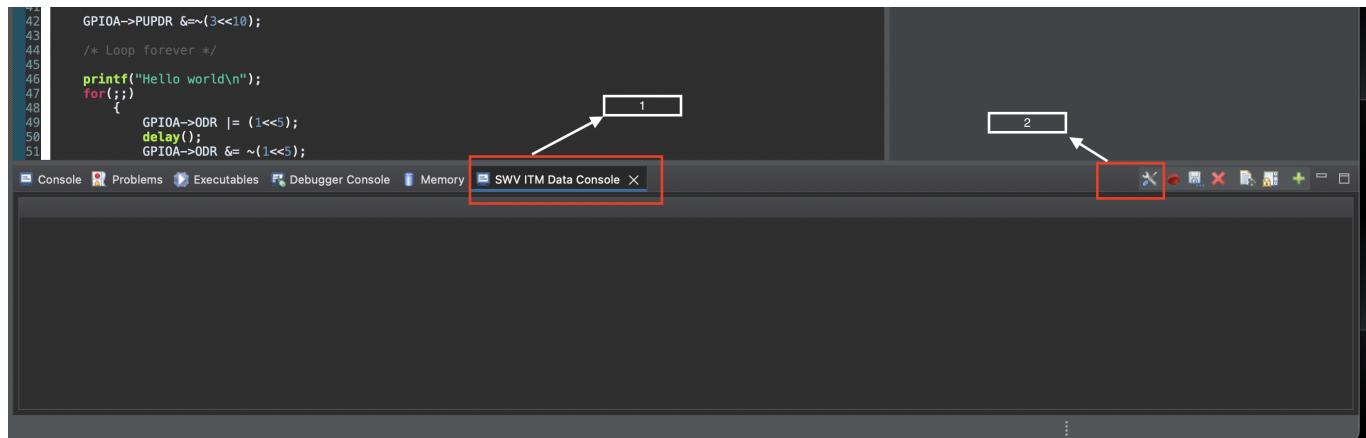


5. Adding SWV console to the window.

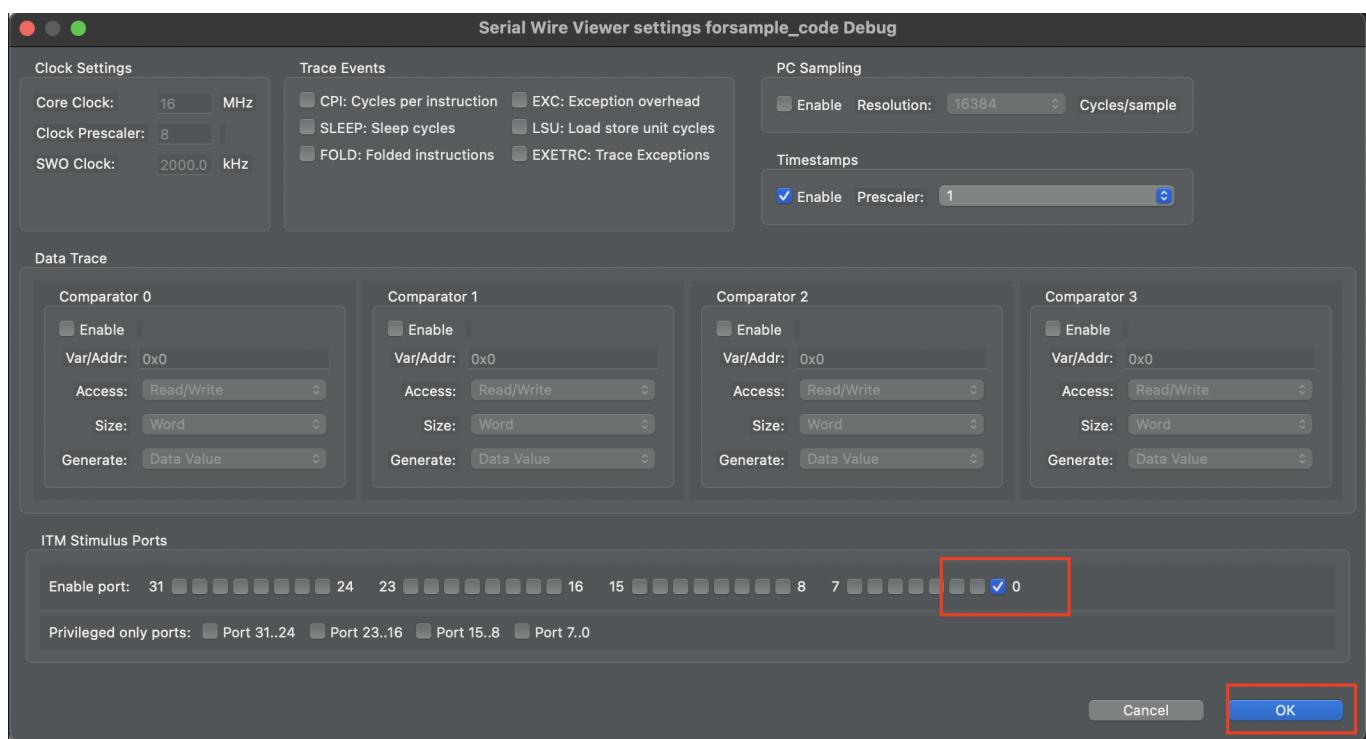
Step 1: From the file menu goto Window -> Show View -> SWV -> SWV ITM Data Console. this add the SWV consoler to the window manager, under the Editor window.



Step 2: on the SWV ITM Data Console navigate to "Configure Trace" select it; that's open an window of configurable options.



Step 3: on the configurator window navigate to "ITM Stimulus Ports" and check the port 0 from the "Enable Port"; click "OK" after configuring; click on the "start Trace" which is right next to the "Configure Trace".



Step 4: under the File menu navigate to the "Resume" button. this starts the code; in the SWV ITM consoler the logs are printed.

The screenshot shows the STM32CubeIDE interface. The left pane displays the project structure for 'STM32_WORKS - sample_code/Src/main.c'. The main editor window shows the 'main.c' source code. A yellow warning marker is present on line 25, indicating: '#warning "FPU is not initialized, but the project is compiling for an FPU. Please initialize the FPU before using it."'. The right pane contains a variable viewer and registers. Below the editor is a toolbar with various icons. At the bottom, there are tabs for 'Console', 'Problems', 'Executables', 'Debugger Console', 'Memory', and 'SWV ITM Data Console'. The 'Debugger Console' tab is active, showing the output 'hello world'.

Step 5: To terminate from the debug mode click the "STOP" button which is adjacent to Resume button.