Guide for building API examples

Oct. 2020

Overview

This document is a guide to aid developers starting with the DWS3000 Arduino Shield. It includes an example to build one of the DW3000 API example using an IDE. It can be utilized for starting to build user applications on a target micro-controller board. It does not cover every details, please refer to the reference documents for more details.

Building an API example code:

- **Setup a AC6 tools**
- **Compile the example**
- **Debugging via OpenOCD and GDB on a target NUCLEO-F429ZI development board**

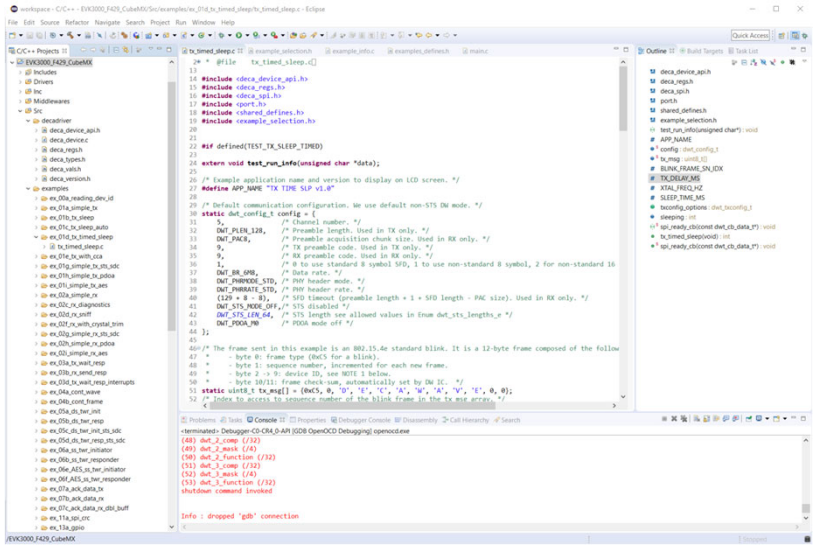
1: Build an API example code (1 of 5)

This example covers the NUCLEO-F429ZI from ST.

a. Setup an AC6 tools
   - Install a Eclipse-based IDE (System Workbench for STM32)
   - Prepare another MicroUSB data cable and connect to top USB port in NUCLEO-F429 (install a driver if needed)

b. Install GNU toolchain
   - Make an empty directory (example, C:/GnuToolsArmForEmbedded) then, install here
   - GNU Arm Embedded Toolchain
   - Q2 Update

❖ NOTE: Do not place space, special characters in the path of the source code + GNU toolchain folders



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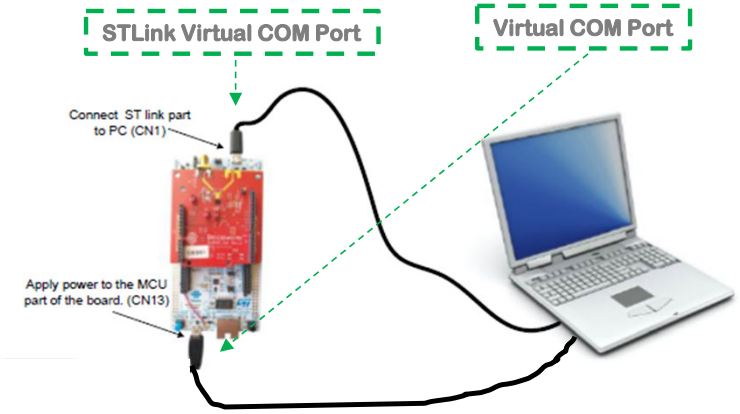
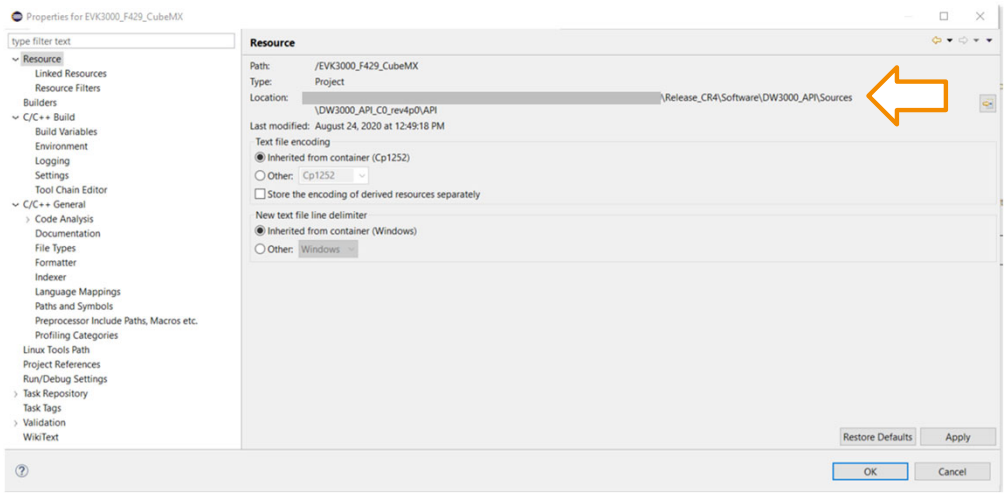


Both VCOM ports can be recognised from your PC

2: Build an API example code (2 of 5)

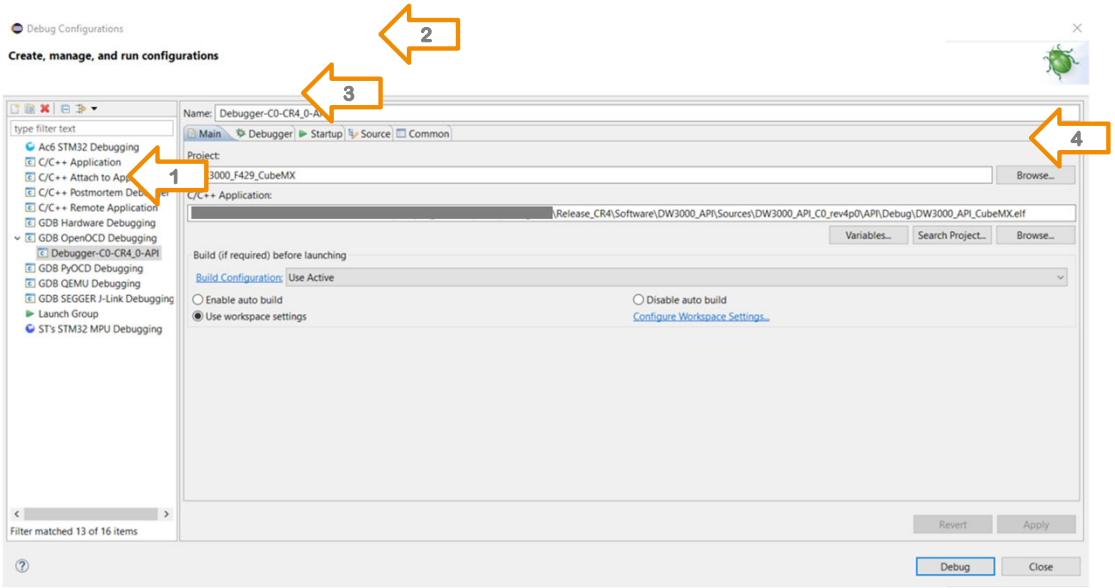
Place source code where there are no special char and spaces.
Import an existing project
- **Setup IDE for a project: import > General > Existing Projects into Workspace**
  - **Select root directory: path in your source code for API (example in the below)**
- **Check 'NUCLEO_F429.cfg' file is under the project folder, then Build a project**
  - **NUCLEO_F429.cfg**
    - **Config for NUCLEO-F429ZI board with a single STM32F429ZITx chip generated by System Workbench for STM32**

Example view: property of project



3: Build an API example code (3 of 5)

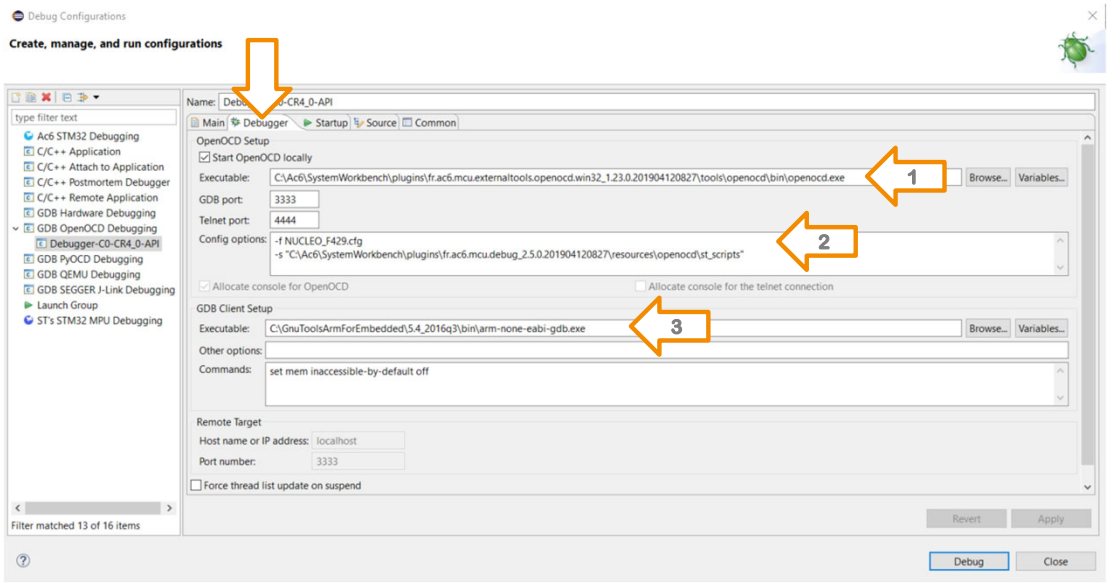
Create OpenOCD Debugging
Run > Debug Configurations > Create config: double-click GDB OpenOCD Debugging



1. If you don't have GDB Plug-in, install 'GNU ARM C/C++ OpenOCD Debugging'
   - https://gnu-mcu-eclipse.github.io/debug/install/
2. Make name
3. Browse your project
4. Find application file (Debug folder in this project)

4: Build an API example code (4 of 5)

Setup Debugger

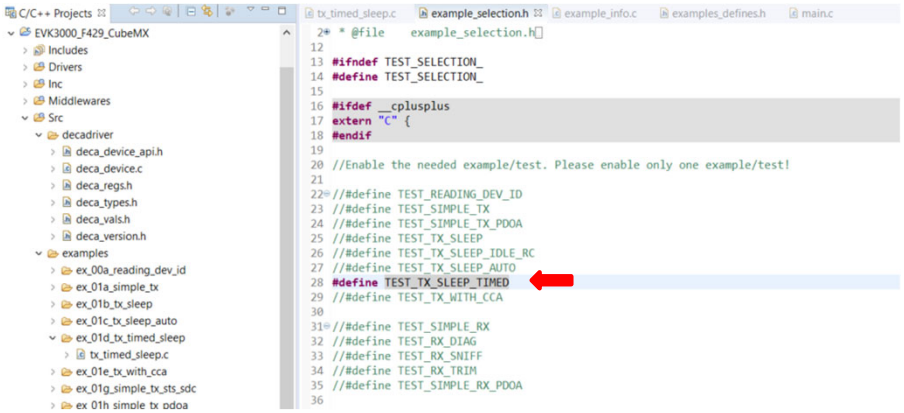


1. **Find OpenOCD executable**
   - **C:\Ac6\SystemWorkbench\plugins\fr.ac6.mcu.externaltools.openocd.win32_1.23.0.201904120827\tools\openocd\bin\openocd.exe**
2. **Config options**
   - **-f NUCLEO_F429.cfg -s "C:\Ac6\SystemWorkbench\plugins\fr.ac6.mcu.debug_2.5.0.201904120827\resources\openocd\st_scripts"**
3. **Find GDB executable**
   - **C:\GnuToolsArmForEmbedded\5.4_2016q3\bin\arm-none-eabi-gdb.exe**

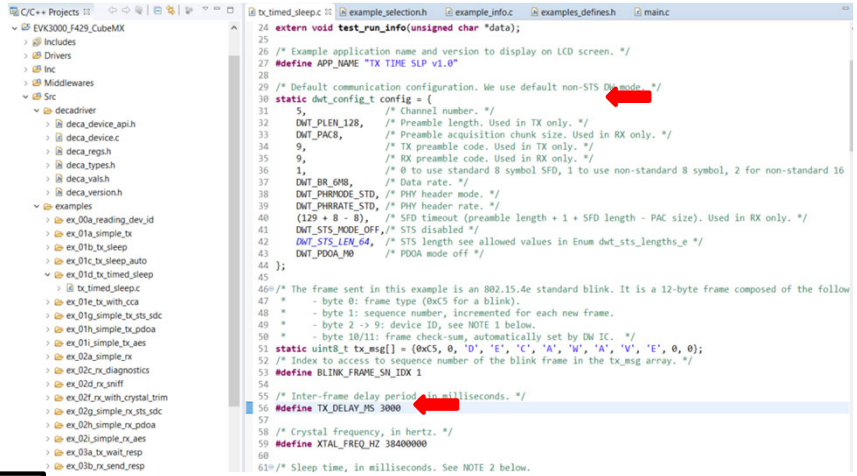
5: Build an API example code (5 of 5)

Build code, run/debug

1. Select an example: TX_SLEEP_TIMED



2. Modify UWB config and blink interval: tx_timed_sleep.c



3. Run debug: It will build a project and download a firmware to the target