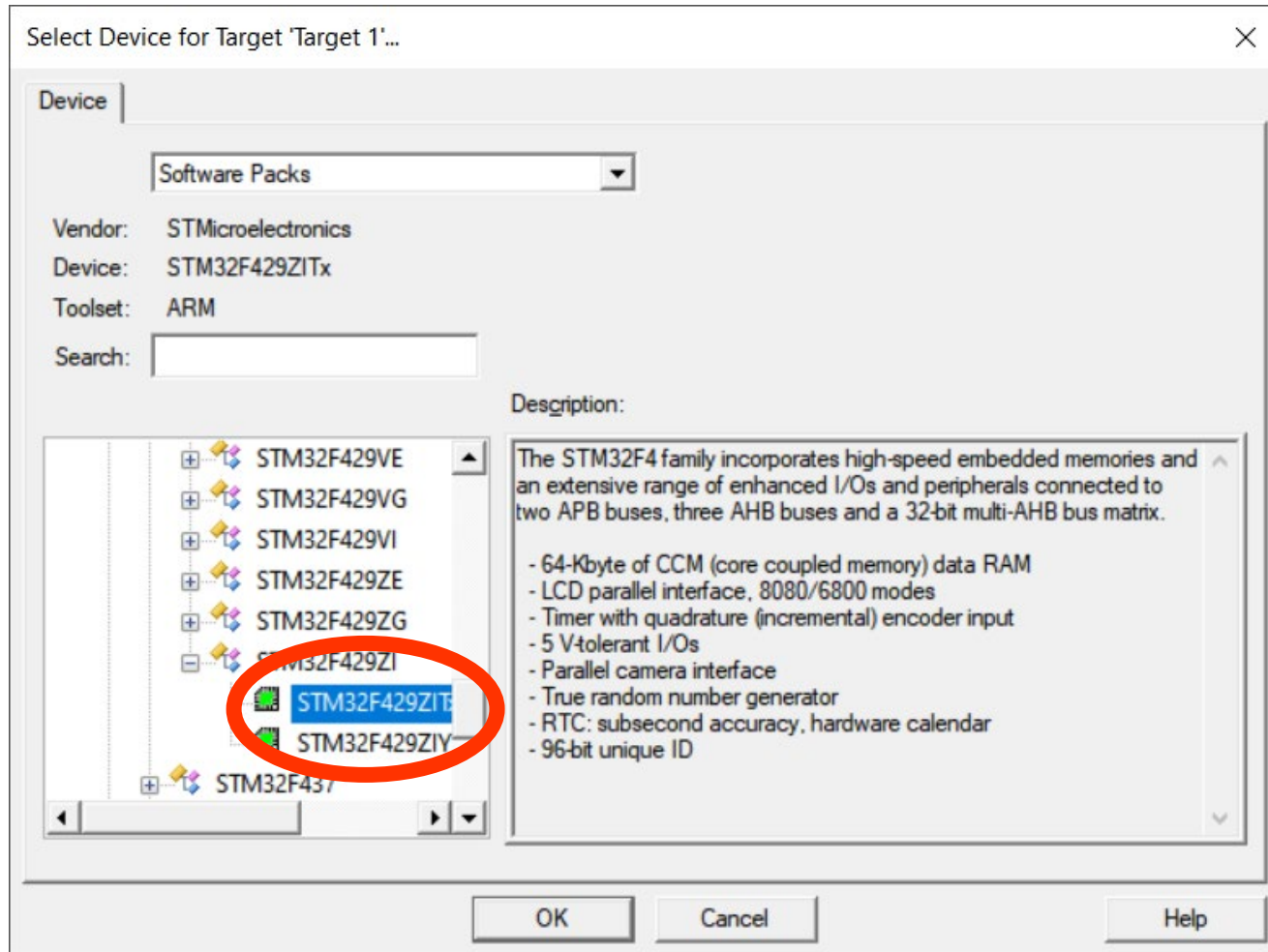


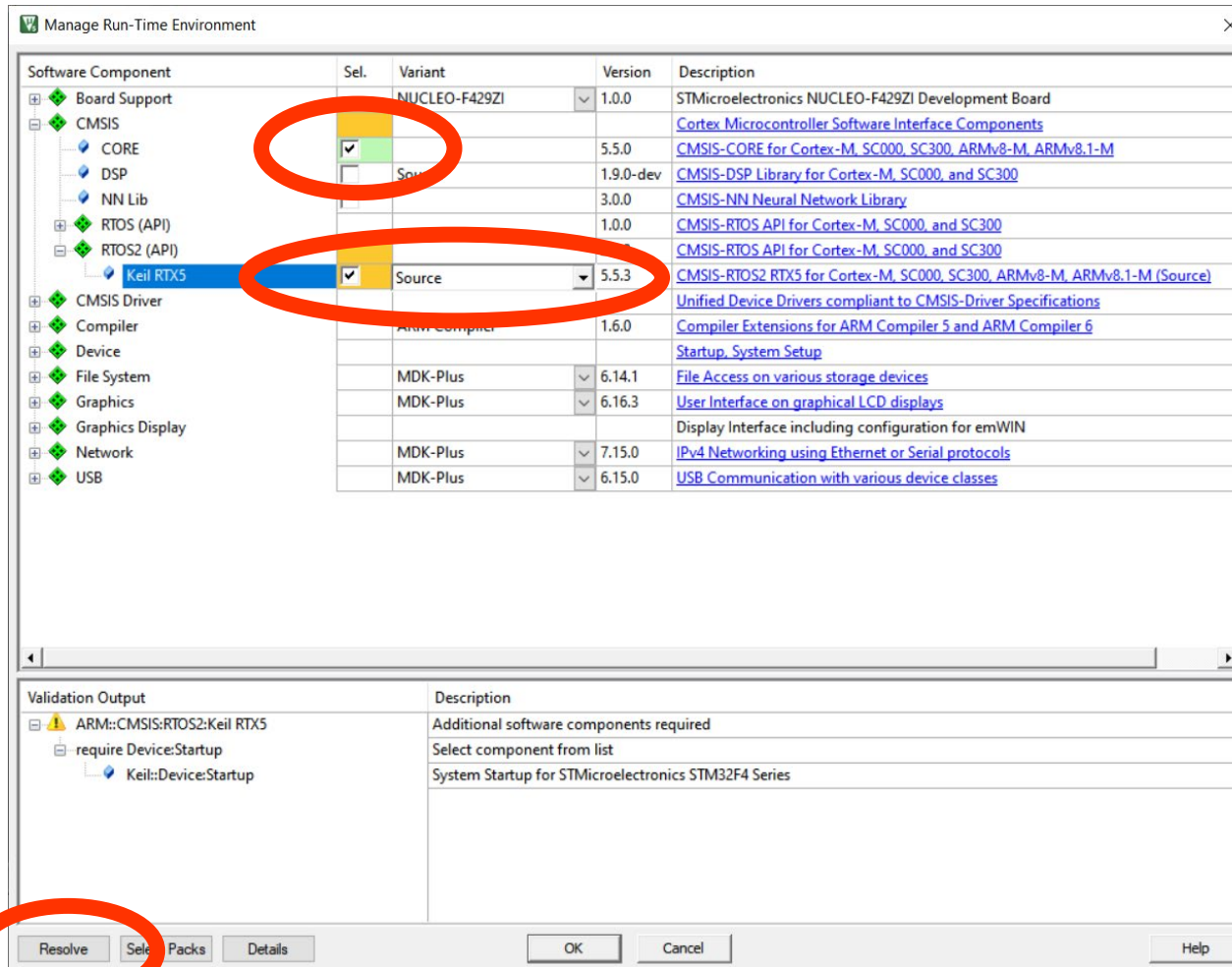
Sistemas Basados en Microprocesador

B2 RTOS2 (Pasos para crear un proyecto desde cero)

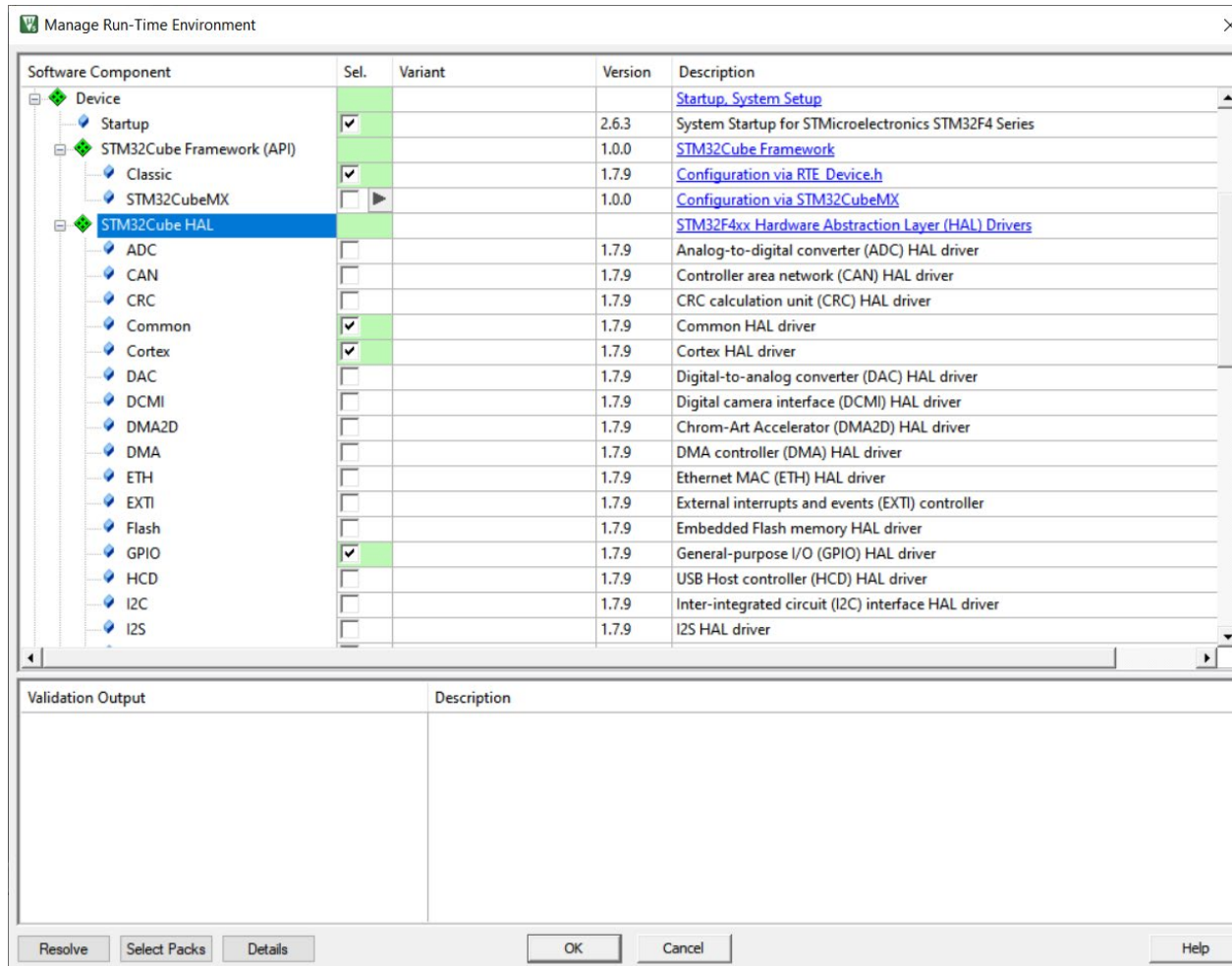
1 – Selección del dispositivo



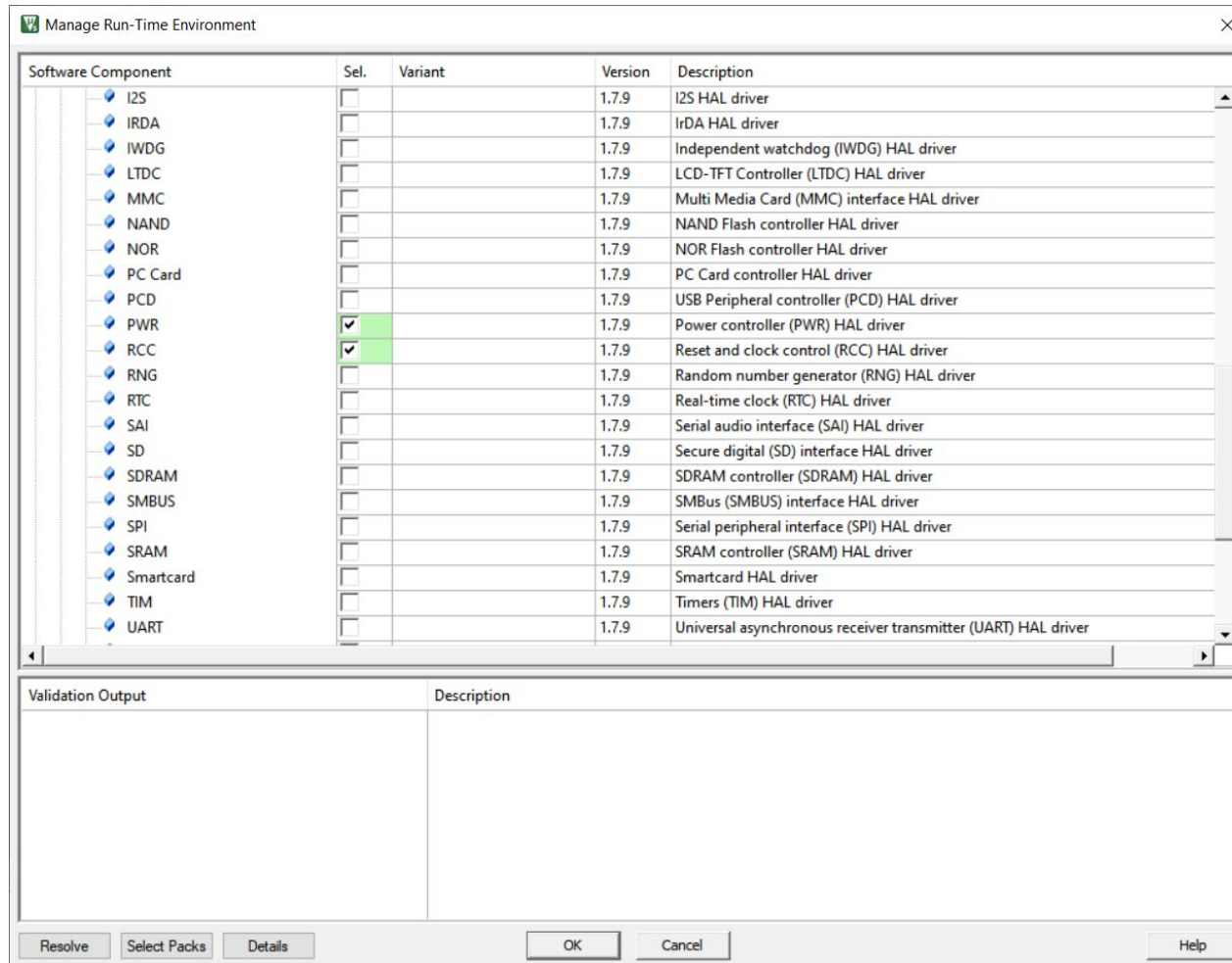
2 – Añadir componentes RTE



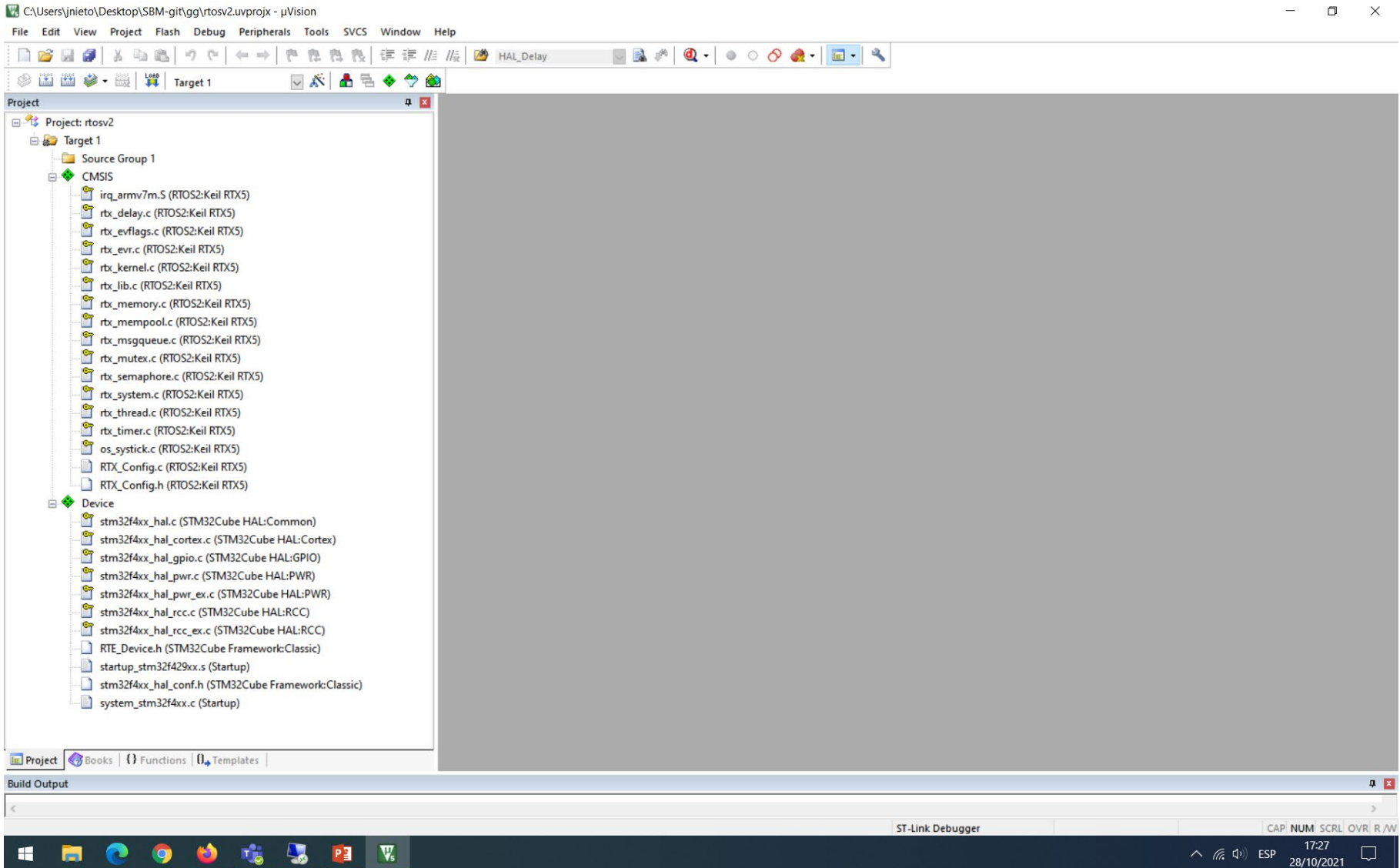
2 – Añadir componentes RTE



2 – Añadir componentes RTE



3 – Elementos del proyecto



4 – Opciones del proyecto



Options for Target 'Target 1'

Device: STM32F439ZIT

Crystal (MHz): 8

Operating system: RTX Kernel

System Viewer File: STM32F439x.svd

☐ Use Custom File

Code Generation: ARM Compiler: Use default compiler version 6

☐ Use Cross-Module Optimization

☐ Use MicroLIB ☐ Big Endian

Floating Point Hardware: Not Used

Read/Only Memory Areas

default	off-chip	Start	Size	Startup
<input type="checkbox"/>	ROM1:			<input type="radio"/>
<input type="checkbox"/>	ROM2:			<input type="radio"/>
<input type="checkbox"/>	ROM3:			<input type="radio"/>
	on-chip			
<input checked="" type="checkbox"/>	IROM1:	0x8000000	0x200000	<input checked="" type="radio"/>
<input type="checkbox"/>	IROM2:			<input type="radio"/>

Read/Write Memory Areas

default	off-chip	Start	Size	NoInit
<input type="checkbox"/>	RAM1:			<input type="checkbox"/>
<input type="checkbox"/>	RAM2:			<input type="checkbox"/>
<input type="checkbox"/>	RAM3:			<input type="checkbox"/>
	on-chip			
<input checked="" type="checkbox"/>	IRAM1:	0x20000000	0x30000	<input type="checkbox"/>
<input type="checkbox"/>	IRAM2:	0x10000000	0x10000	<input type="checkbox"/>

OK Cancel Defaults Help

4 – Opciones del proyecto



Options for Target 'Target 1'

Device | Target | Output | Listing | User | C/C++ (AC6) | Asm | Linker | Debug | Utilities

Preprocessor Symbols

Define: HSE_VALUE=8000000

Language / Code Generation

☐ Execute-only Code Warnings: AC5-like Warnings Language C: c99

Optimization: -O0 ☐ Turn Warnings into Errors Language C++: c++11

☐ Link-Time Optimization ☐ Plain Char is Signed ☒ Short enums/wchar

☐ Split Load and Store Multiple ☐ Read-Only Position Independent ☐ use RTTI

☒ One ELF Section per Function ☐ Read-Write Position Independent ☐ No Auto Includes

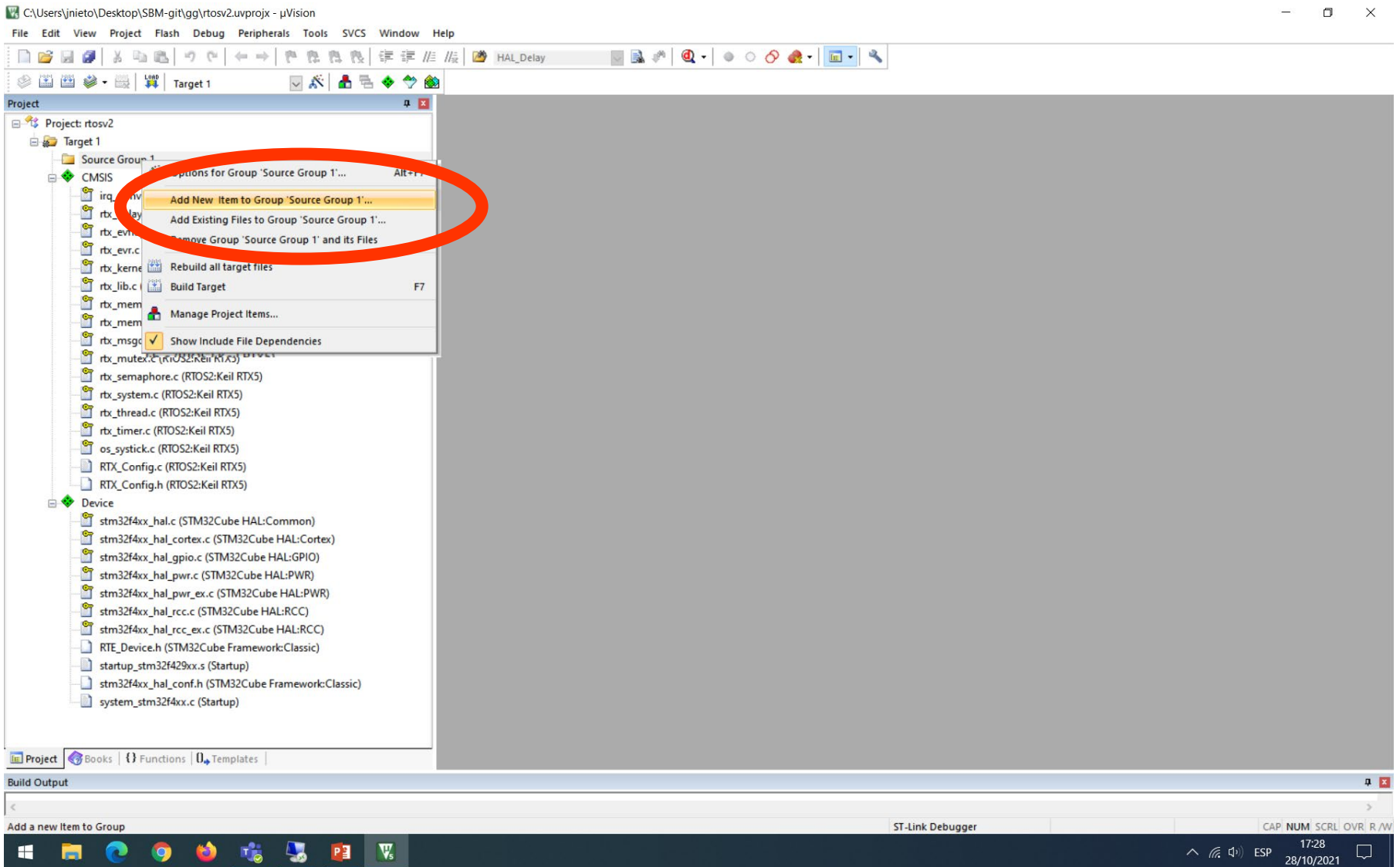
Include Paths

Misc Controls

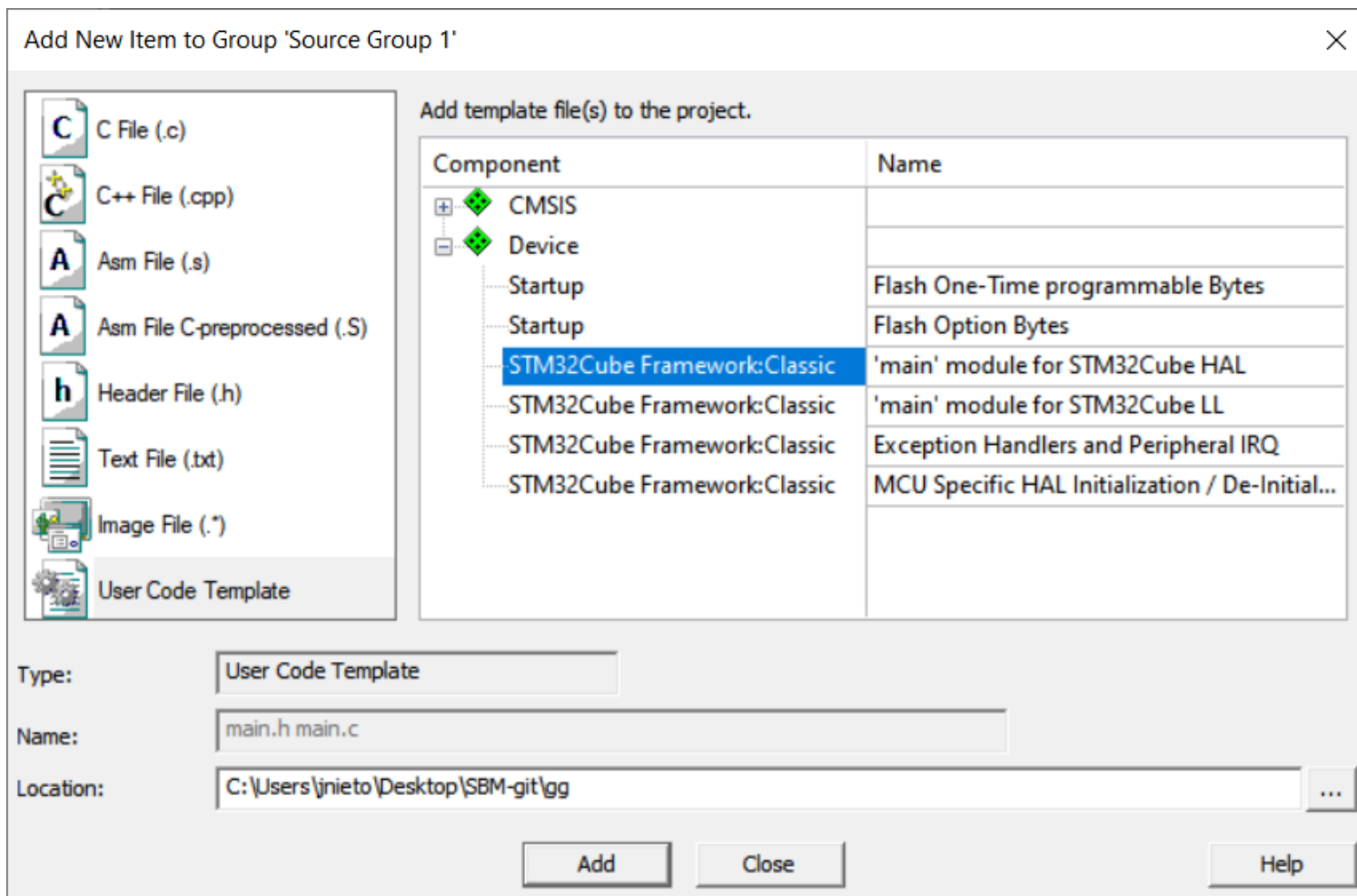
Compiler control string
-xc -std=c99 -target=arm-arm-none-eabi -mcpu=cortex-m4 -mfpv=none -mfloat-abi=soft -c
-fno-rtti -funsigned-char -fshort-enums -fshort-wchar

OK Cancel Defaults Help

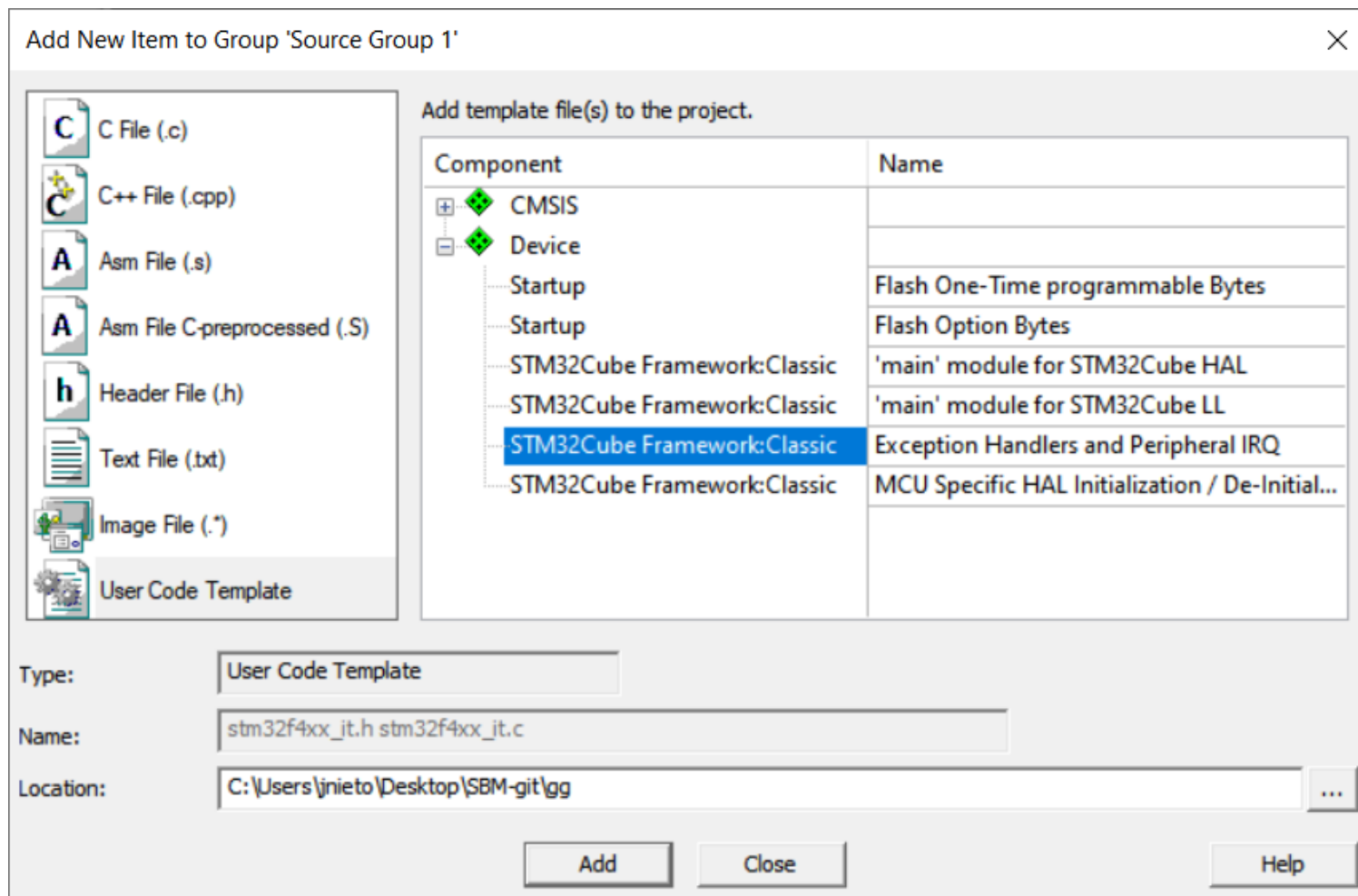
5 – Añadir ficheros de código utilizando plantillas



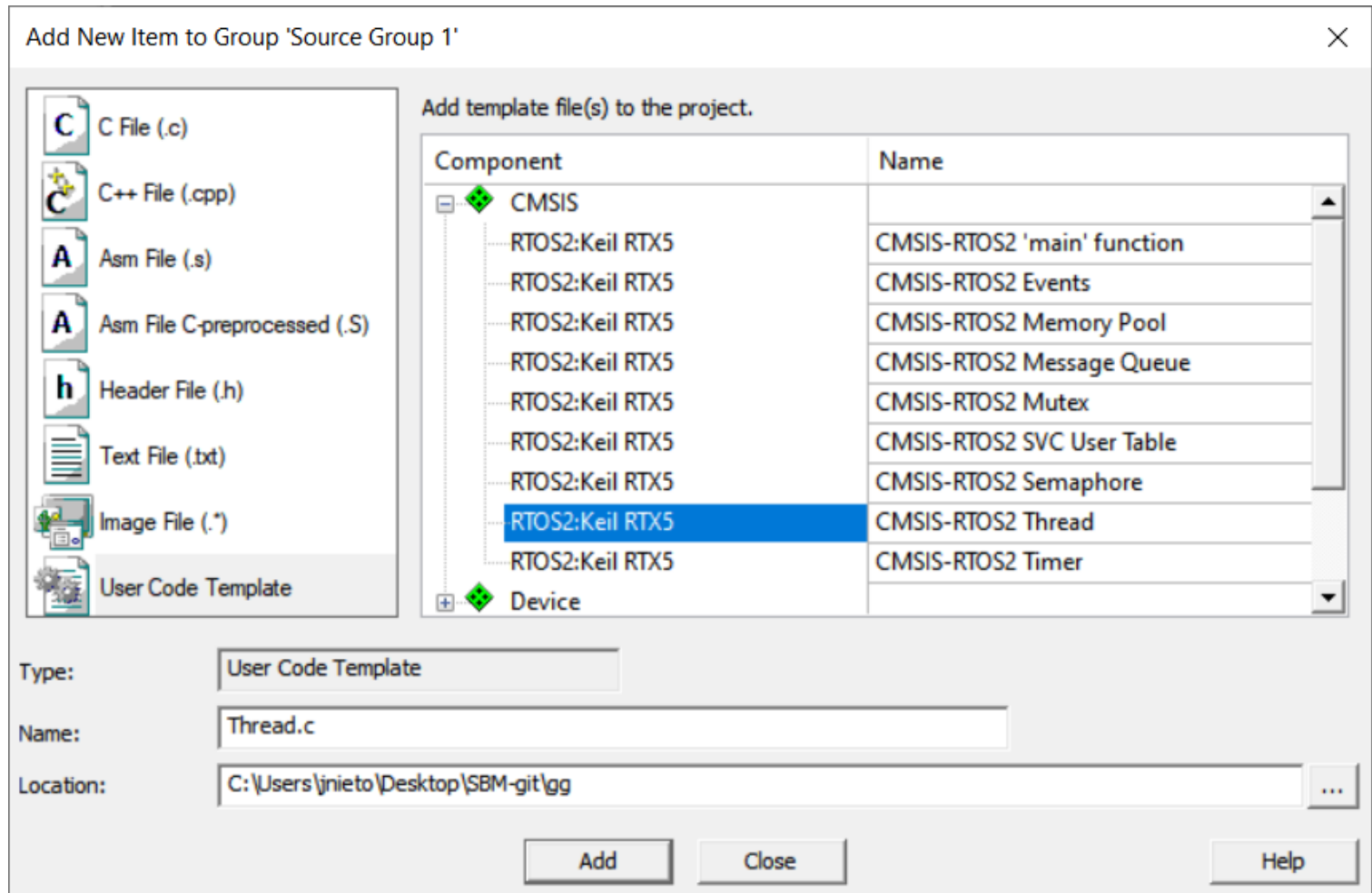
5 – Añadir ficheros de código utilizando plantillas



5 – Añadir ficheros de código utilizando plantillas



5 – Añadir ficheros de código utilizando plantillas



6 – Proyecto final

C:\Users\jnieto\Desktop\SBM-git\gg\rtosv2.uvprojx - µVision

File Edit View Project Flash Debug Peripherals Tools SVCS Window Help

HAL_Delay

Target 1

Project

Project: rtosv2

Target 1

Source Group 1

- main.c
- stm32f4xx_it.c
- Thread.c

CMSIS

Device

main.c

```
1 1
2 2
3 * @file   Templates/Src/main.c
4 * @author MCD Application Team
5 * @brief  STM32F4xx HAL API Template project
6 6
7 * @note   modified by ARM
8 *         The modifications allow to use this file as User Code Template
9 *         within the Device Family Pack.
10 10
11 * @attention
12 *
13 * <h2><center>&copy; COPYRIGHT(c) 2017 STMicroelectronics</center></h2>
14 *
15 * Redistribution and use in source and binary forms, with or without modification,
16 * are permitted provided that the following conditions are met:
17 * 1. Redistributions of source code must retain the above copyright notice,
18 *   this list of conditions and the following disclaimer.
19 * 2. Redistributions in binary form must reproduce the above copyright notice,
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24 *   without specific prior written permission.
25 *
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29 * DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE
30 * FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
31 * DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR
32 * SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER
33 * CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY,
34 * OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
```

Build Output

compiling stm32f4xx_hal_pwr_ex.c...
compiling stm32f4xx_hal_pwr.c...
assembling startup_stm32f429xx.s...
compiling stm32f4xx_hal_rcc.c...
compiling system_stm32f4xx.c...
compiling stm32f4xx_hal_rcc_ex.c...
linking...
Program Size: Code=13736 RO-data=772 RW-data=34316 ZI-data=1636
".\Objects\rtosv2.axf" - 0 Error(s), 0 Warning(s).
Build Time Elapsed: 00:00:36

ST-Link Debugger

L1 C:1

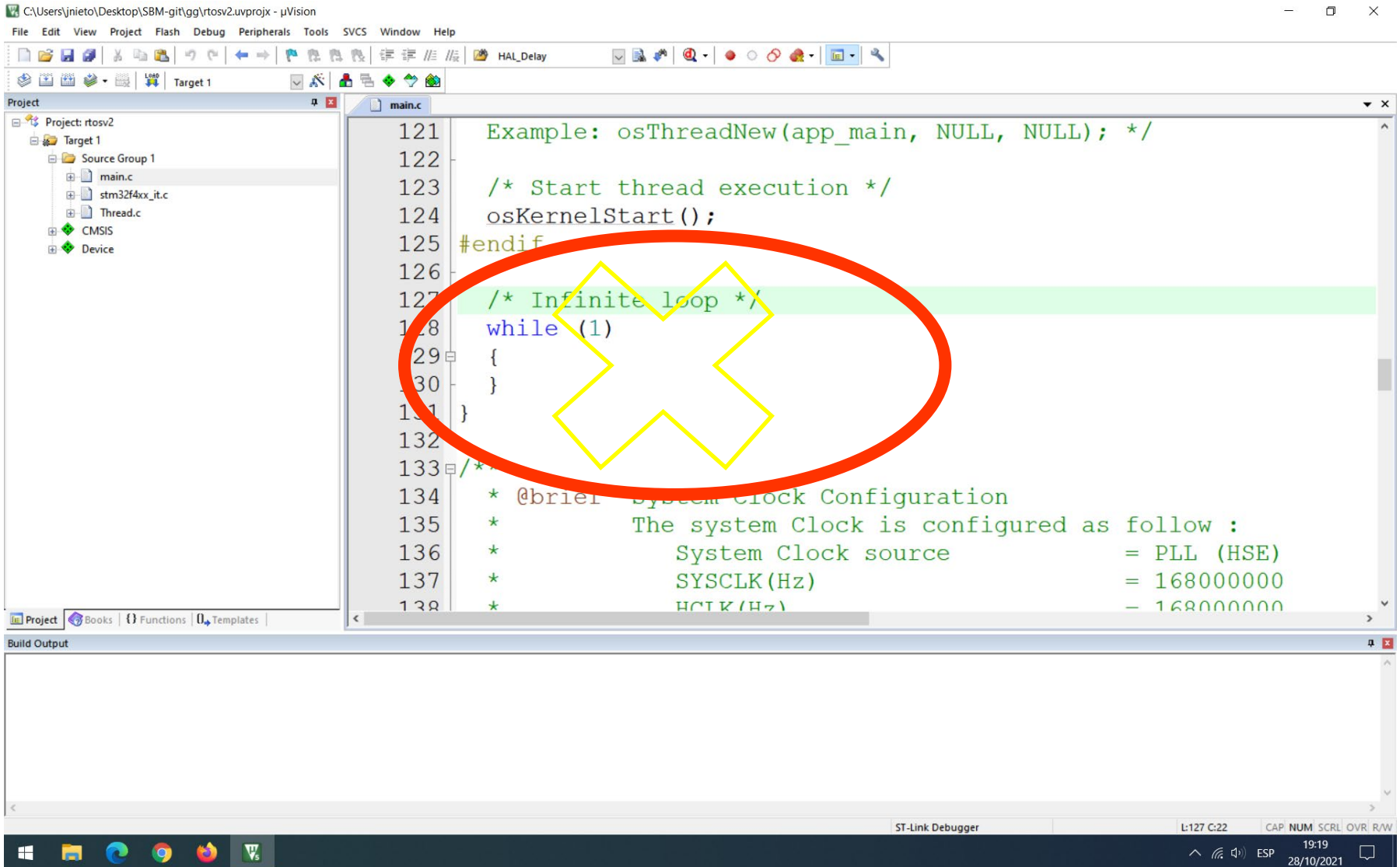
CAP NUM SCRL OVR R/W

18:03

28/10/2021

6 – Proyecto final

No añadir código después de osKernelStart()!!



```
121  Example: osThreadNew(app_main, NULL, NULL); */
122
123  /* Start thread execution */
124  osKernelStart();
125  #endif
126
127  /* Infinite loop */
128  while (1)
129  {
130  }
131 }
132
133 /*
134  * @brief System Clock Configuration
135  * The system Clock is configured as follow :
136  * System Clock source            = PLL (HSE)
137  * SYSCLK(Hz)                     = 168000000
138  * HCLK(Hz)                       = 168000000
```