Project creation

The tutorial demonstrates how to create a new STM32F103RCT6 standard library project.

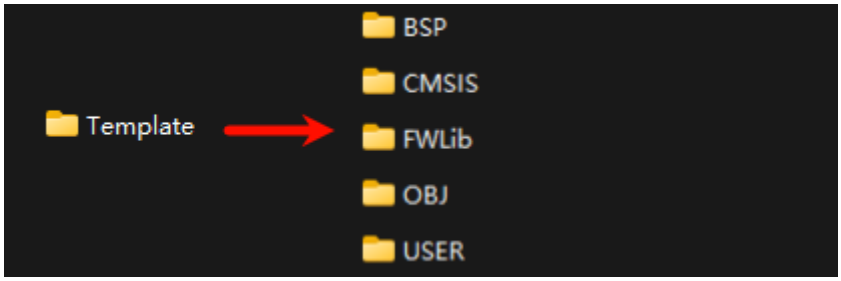
Project directory

Before using MDK-ARM to create a new project, we need to operate the folders under the project: the operation includes creating a new folder and copying the official standard library firmware package file to the specified folder.

Folder framework

Create a new folder according to the following directory:

- Template: Project name
- CMSIS: Kernel driver and startup file
- FWLib: Standard library function source code file
- USER: Project file and user file
- BSP: Development board peripheral driver file
- OBJ: Compile and generate file

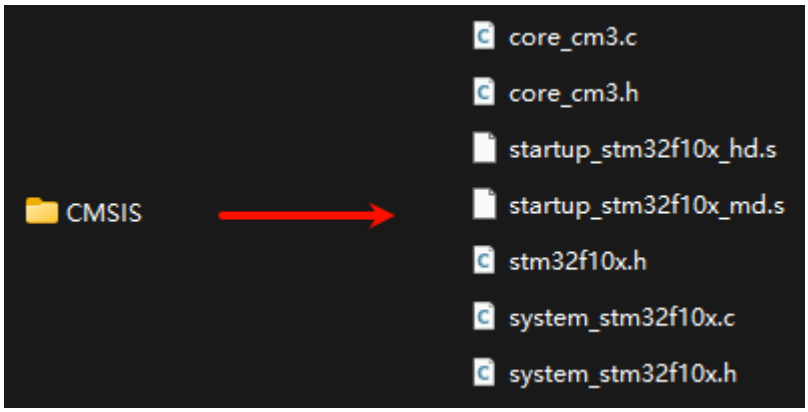


CMSIS

- core_cm3.c
- core_cm3.h
- stm32f10x.h
- system_stm32f10x.c
- system_stm32f10x.h
- startup_stm32f10x_hd.s: can be used with STM32F103RCT6
- startup_stm32f10x_md.s: can be used with STM32F103C8T6

Note: startup_stm32f10x_hd.s and startup_stm32f10x_md.s cannot be imported into the project directory at the same time, otherwise an error will be reported!

```
The kernel driver and startup files correspond to the path of the STM32 standard
firmware library (STM32F10x_StdPeriph_Lib_V3.6.0):
STM32F10x_StdPeriph_Lib_V3.6.0\Libraries\CMSIS\CM3\CoreSupport
STM32F10x_StdPeriph_Lib_V3.6.0\Libraries\CMSIS\CM3\DeviceSupport\ST\STM32F10x
STM32F10x_StdPeriph_Lib_V3.6.0.zip\STM32F10x_StdPeriph_Lib_V3.6.0\Libraries\CMSIS
\CM3\DeviceSupport\ST\STM32F10x\startup\arm
```

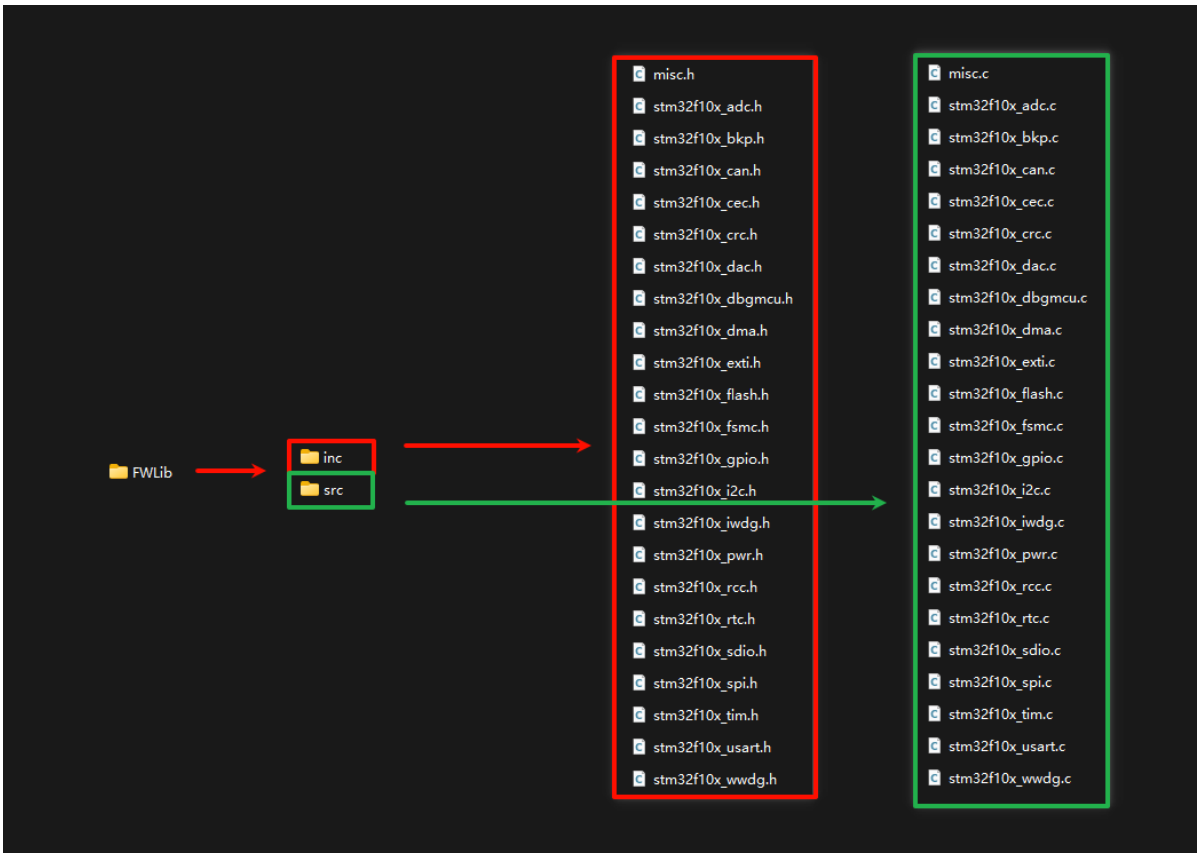


FWLib

- inc
  - misc.h
  - stm32f10x_adc.h
  - stm32f10x_bkp.h
  - stm32f10x_can.h
  - stm32f10x_cec.h
  - stm32f10x_crc.h
  - stm32f10x_dac.h
  - stm32f10x_dbgmcu.h
  - stm32f10x_dma.h
  - stm32f10x_exti.h
  - stm32f10x_flash.h
  - stm32f10x_fsmc.h

    - stm32f10x_gpio.h
    - stm32f10x_i2c.h
    - stm32f10x_iwdg.h
    - stm32f10x_pwr.h
    - stm32f10x_rcc.h
    - stm32f10x_rtc.h
    - stm32f10x_sdio.h
    - stm32f10x_spi.h
    - stm32f10x_tim.h
    - stm32f10x_usart.h
    - stm32f10x_wwdg.h
- src
    - misc.c
    - stm32f10x_adc.c
    - stm32f10x_bkp.c
    - stm32f10x_can.c
    - stm32f10x_cec.c
    - stm32f10x_crc.c
    - stm32f10x_dac.c
    - stm32f10x_dbgmcu.c
    - stm32f10x_dma.c
    - stm32f10x_exti.c
    - stm32f10x_flash.c
    - stm32f10x_fsmc.c
    - stm32f10x_gpio.c
    - stm32f10x_i2c.c
    - stm32f10x_iwdg.c
    - stm32f10x_pwr.c
    - stm32f10x_rcc.c
    - stm32f10x_rtc.c
    - stm32f10x_sdio.c
    - stm32f10x_spi.c
    - stm32f10x_tim.c
    - stm32f10x_usart.c
    - stm32f10x_wwdg.c

```
The path of the standard library function source code file corresponding to the
STM32 standard firmware library (STM32F10x_StdPeriph_Lib_V3.6.0):
STM32F10x_StdPeriph_Lib_V3.6.0\Libraries\STM32F10x_StdPeriph_Driver\inc
STM32F10x_StdPeriph_Lib_V3.6.0\Libraries\STM32F10x_StdPeriph_Driver\src
```



USER

新建工程时，会将工程放在该目录下。

- main.c
- stm32f10x_conf.h
- stm32f10x_it.c
- stm32f10x_it.h

```
The path of the user file corresponding to the STM32 standard firmware library
(STM32F10x_StdPeriph_Lib_V3.6.0):
STM32F10x_StdPeriph_Lib_V3.6.0\Project\STM32F10x_StdPeriph_Template
```

BSP

When creating a new project, store the peripheral driver files of the development board

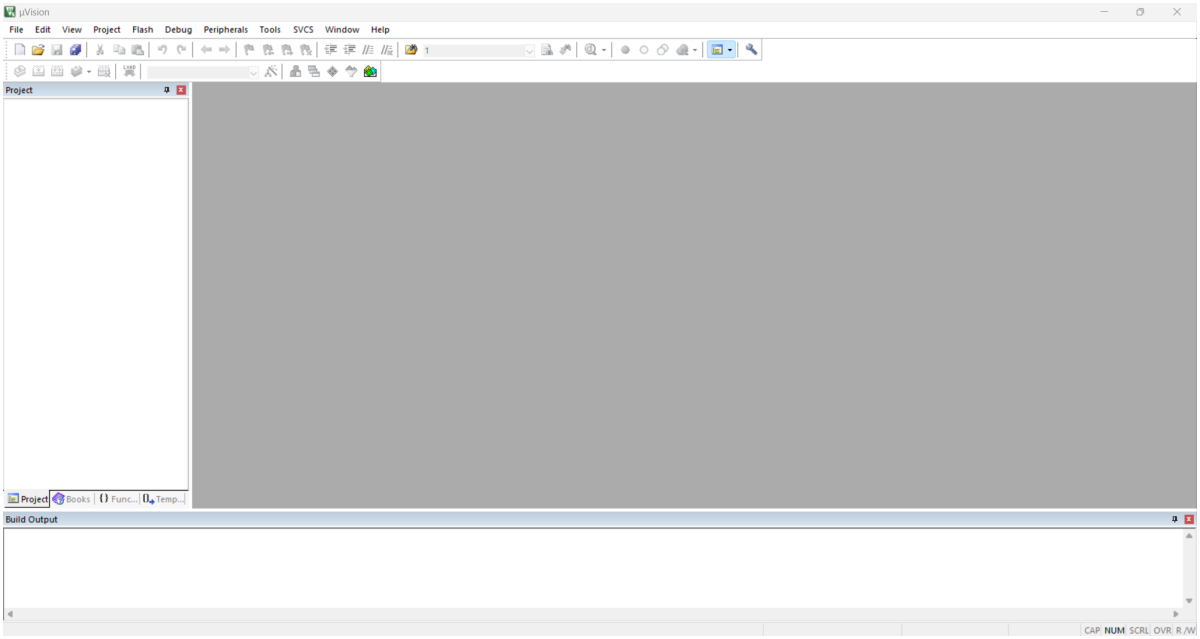
OBJ

When creating a new project, store the compiled files

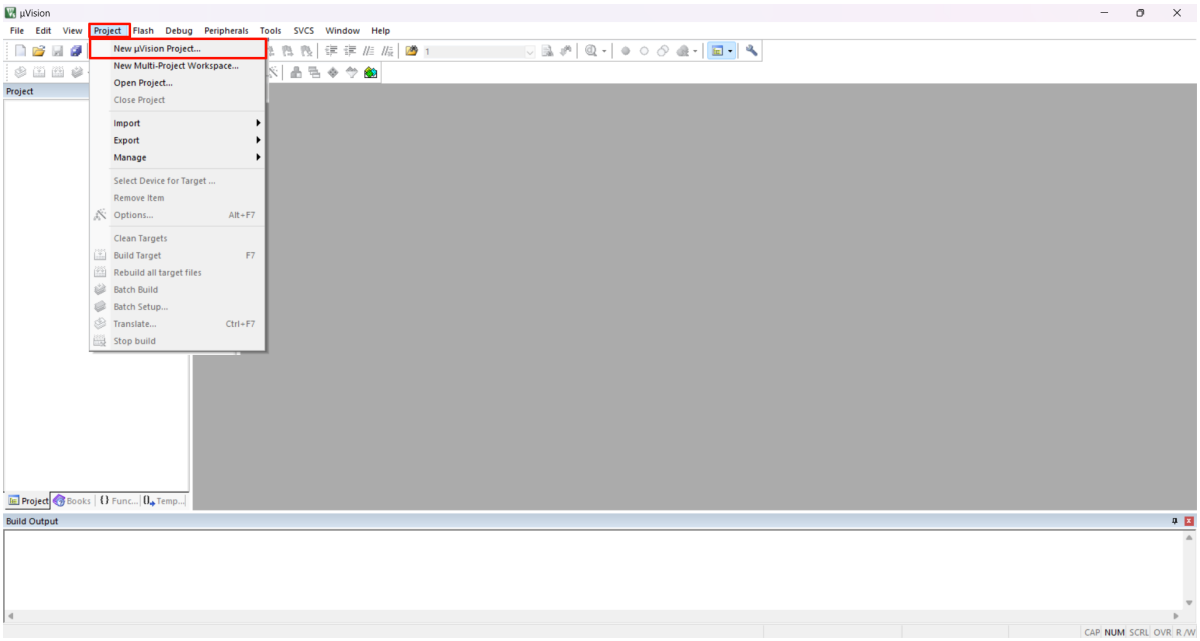
Configure the project

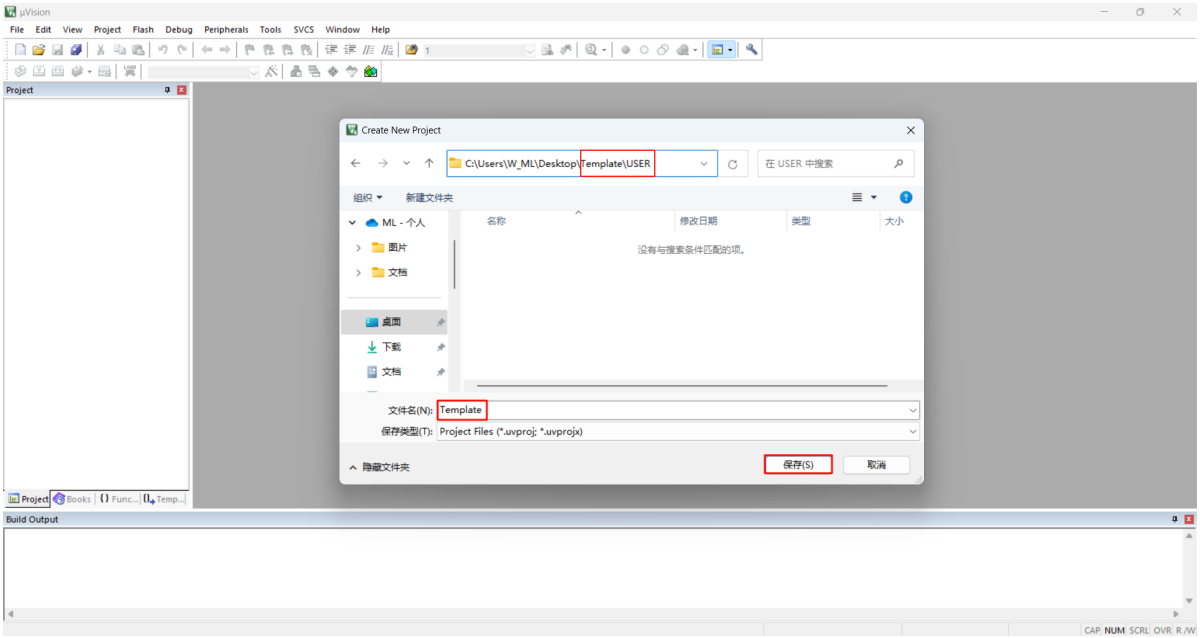
Create a new project

Double-click to open the Keil uVision5 software on the desktop



New project: Select the newly created USER folder as the project path, and you can define the project file name yourself

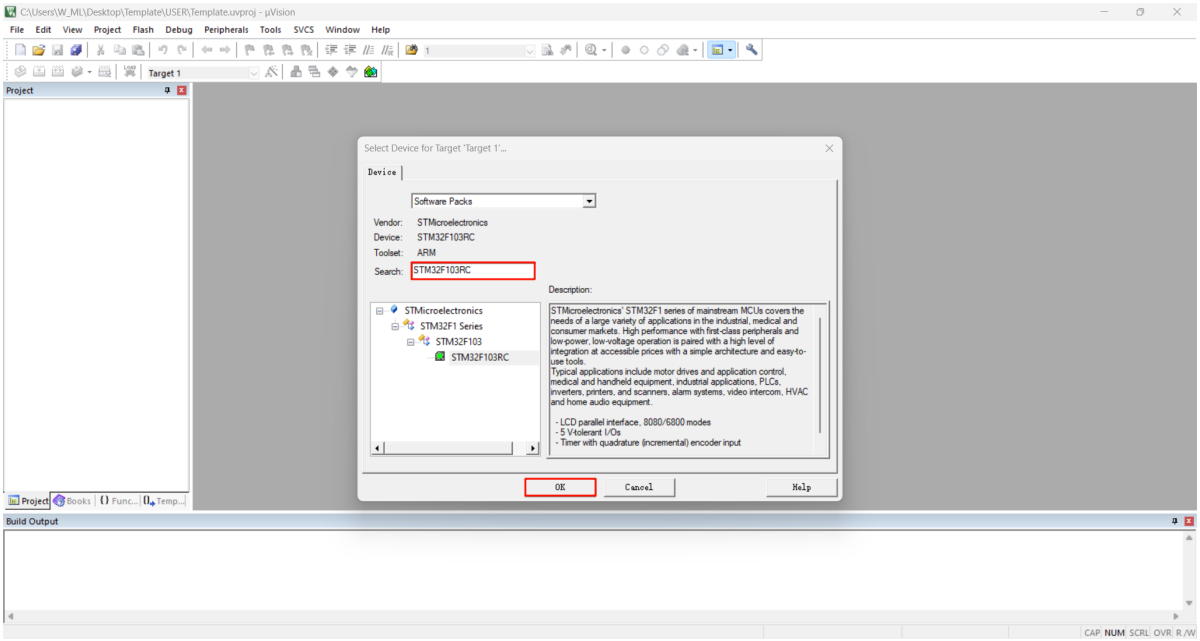


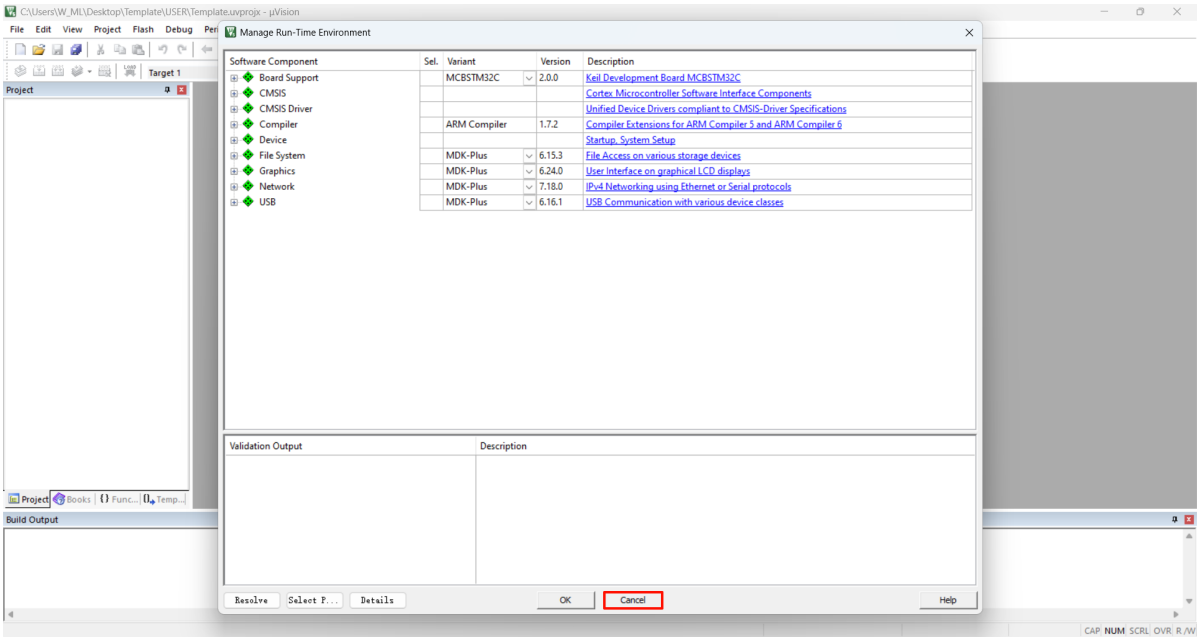


Chip selection

Search in the chip search bar: STM32F103RC

```
If you don't have a chip, you can install the STM32F1 series firmware package yourself
```





Project file management

It is recommended to add according to the project folder framework

②: Modify according to the project name

③: Modify according to the subfolder name

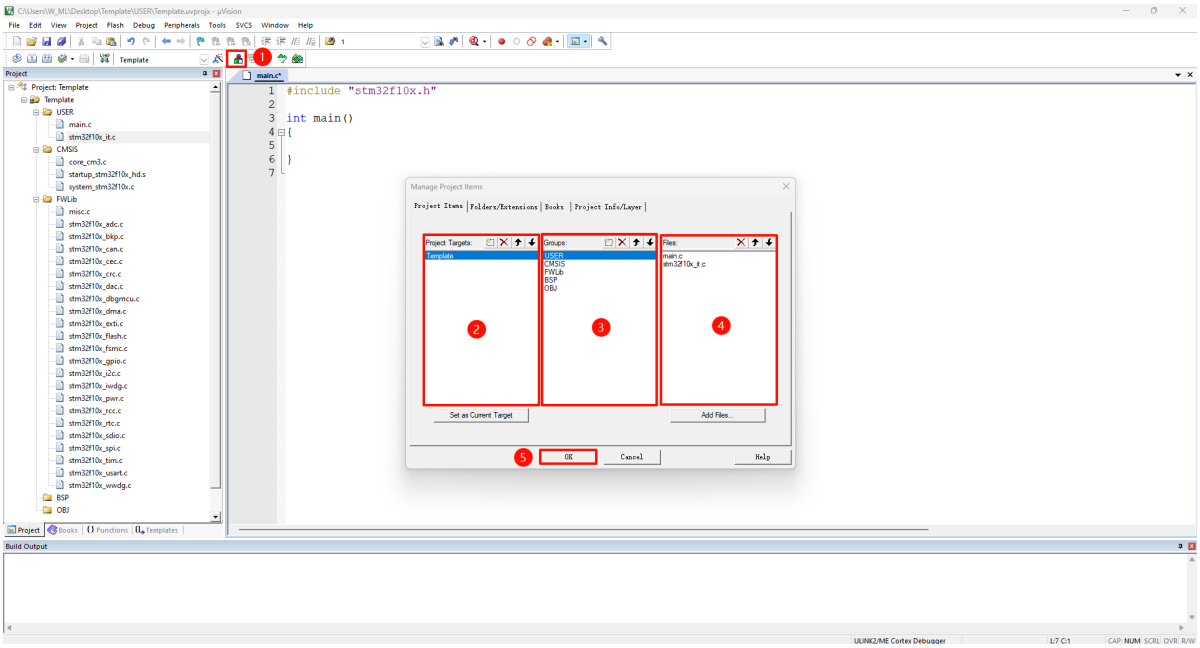
④: Add the .c and .s files in the corresponding folder

```
Note:

1. Only one startup file can be added. We use STM32F103RCT6 here, so import the
startup_stm32f10x_hd.s file

2. Since the main.c file is copied from the STM32 standard firmware library, we
need to delete the content inside and fill in the following content
```

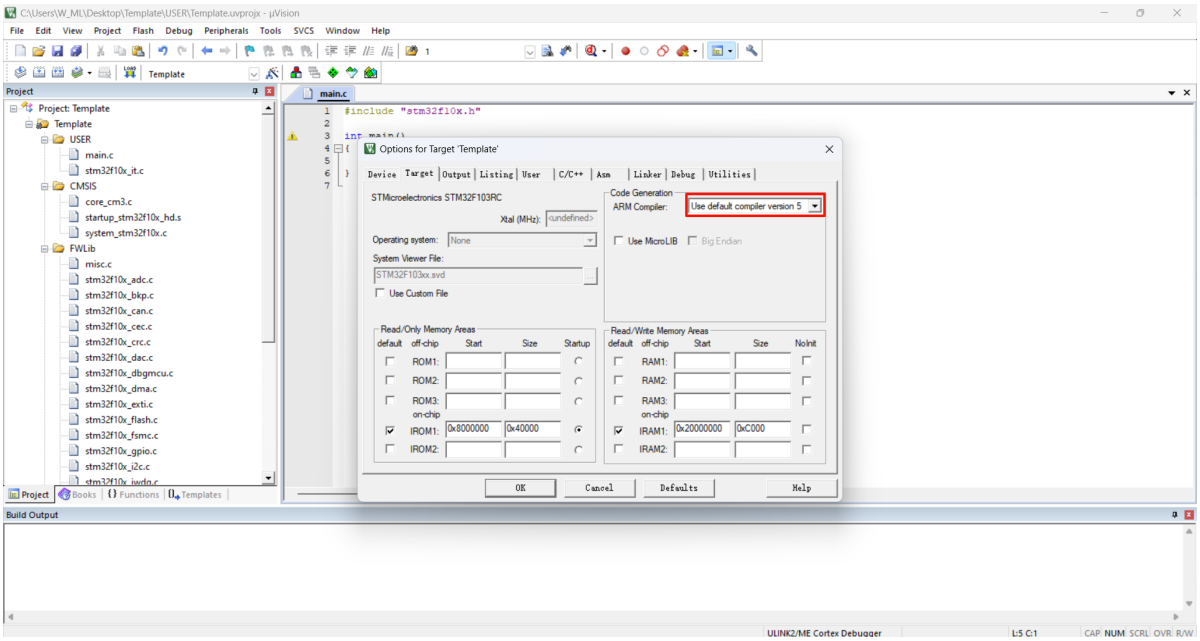
Click OK and it will be like the directory on the left of the picture. Users can compare it by themselves!



Project target options

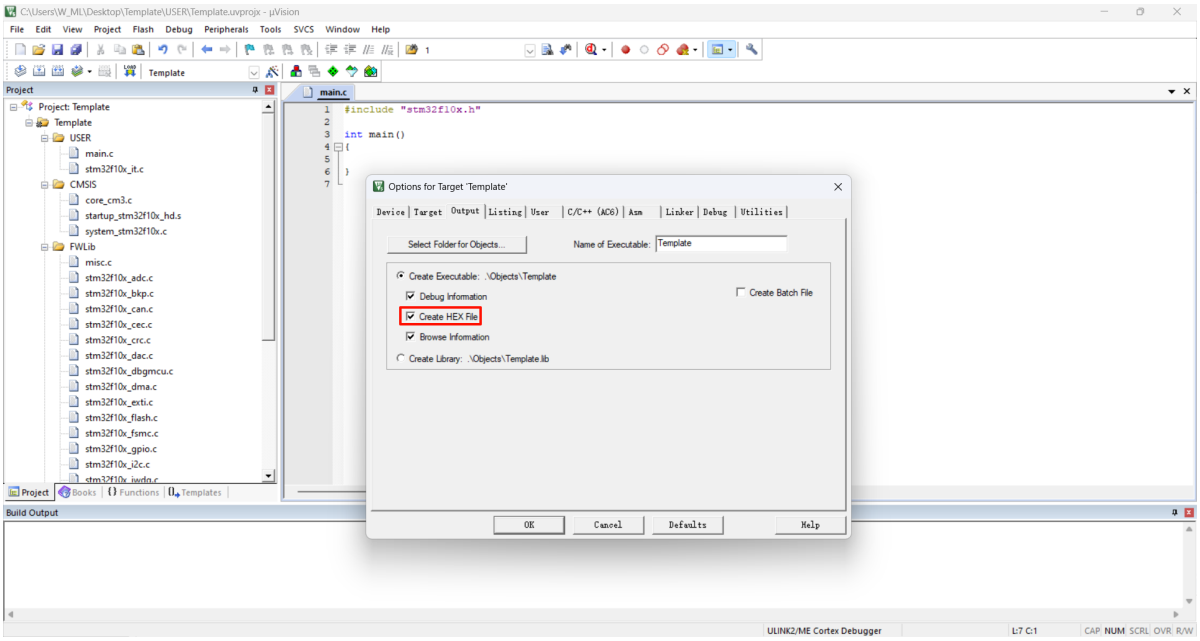
Target

Select the `AC5` compiler

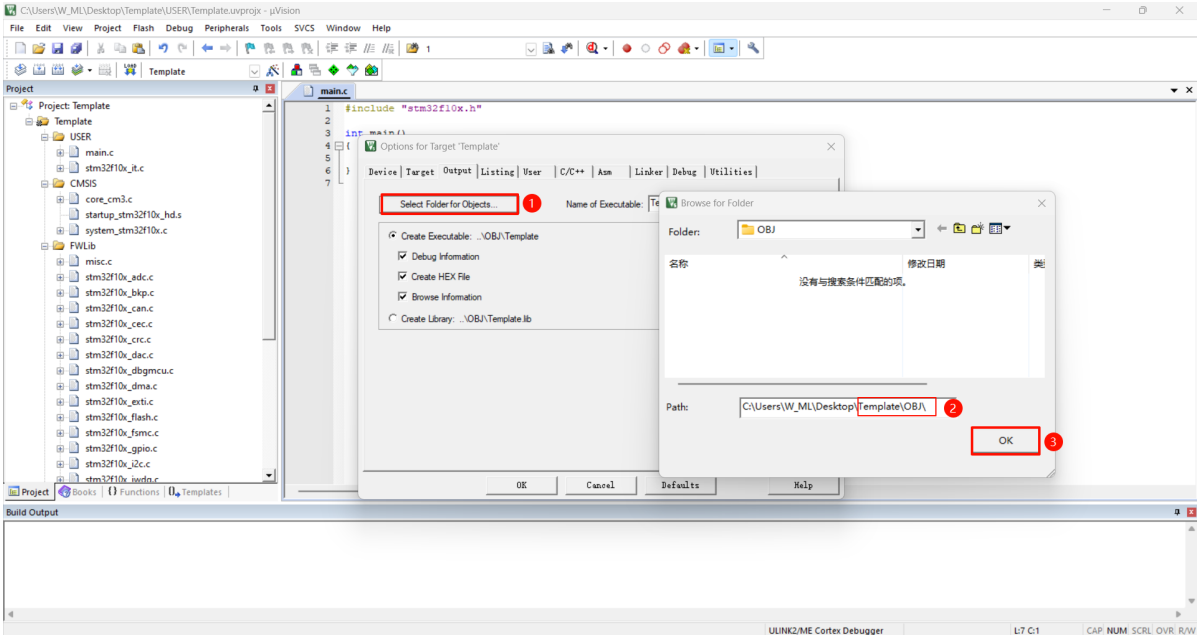


Output

Check the option `Create HEX File`

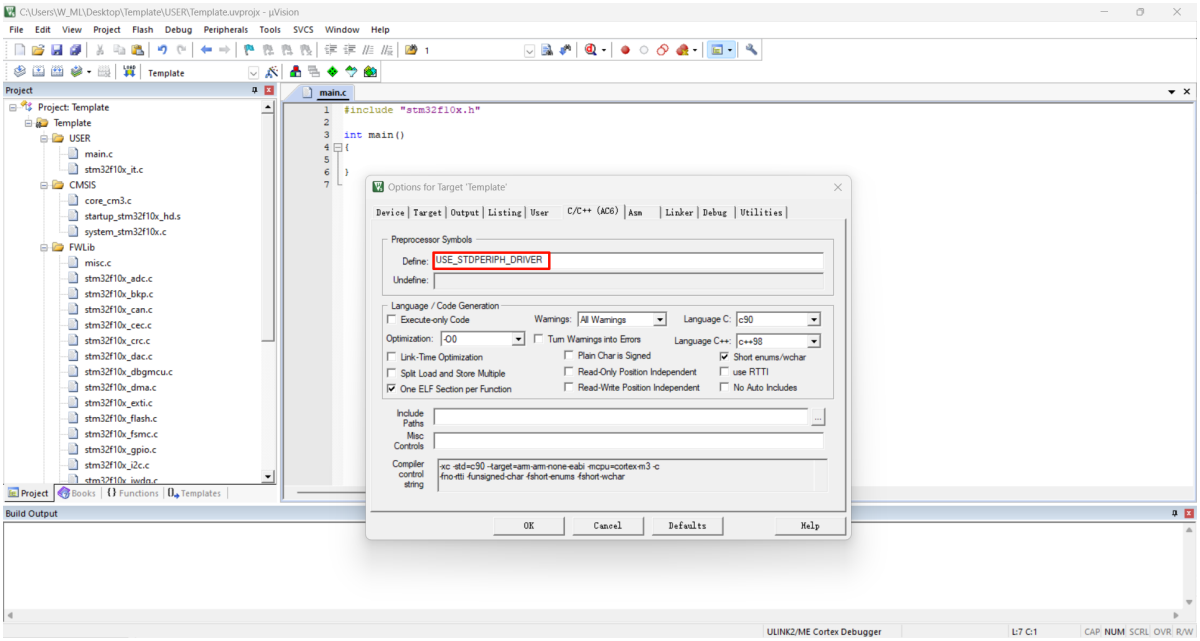


Select the location to store the compiled files: Template\OBJ

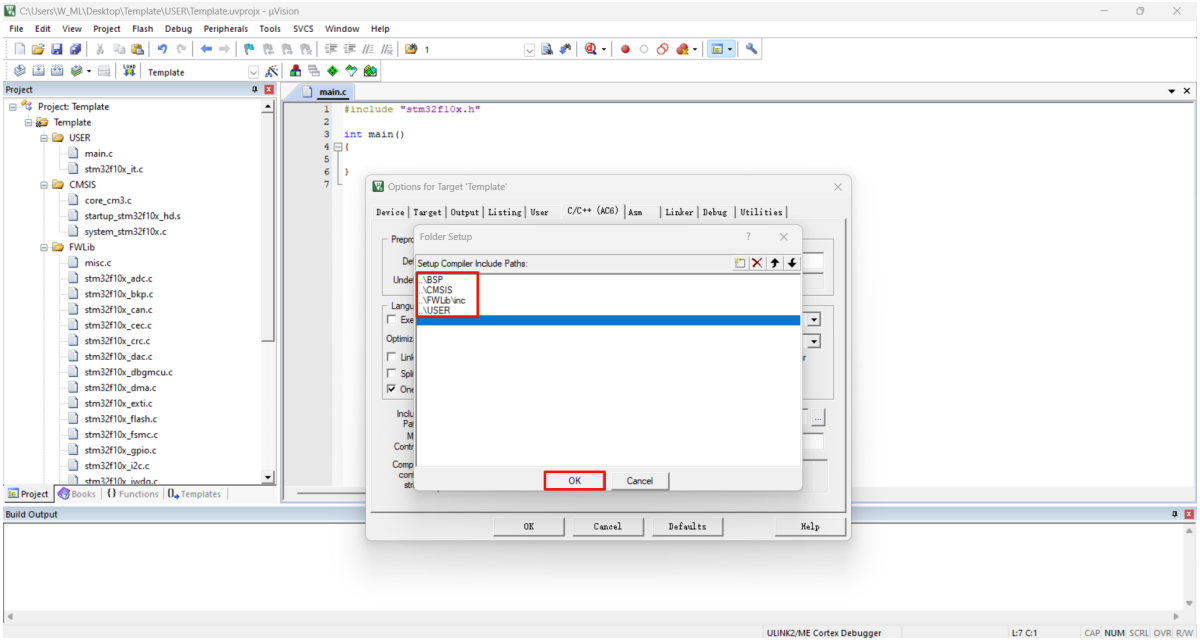


C/C++

Define: add USE_STDPERIPH_DRIVER



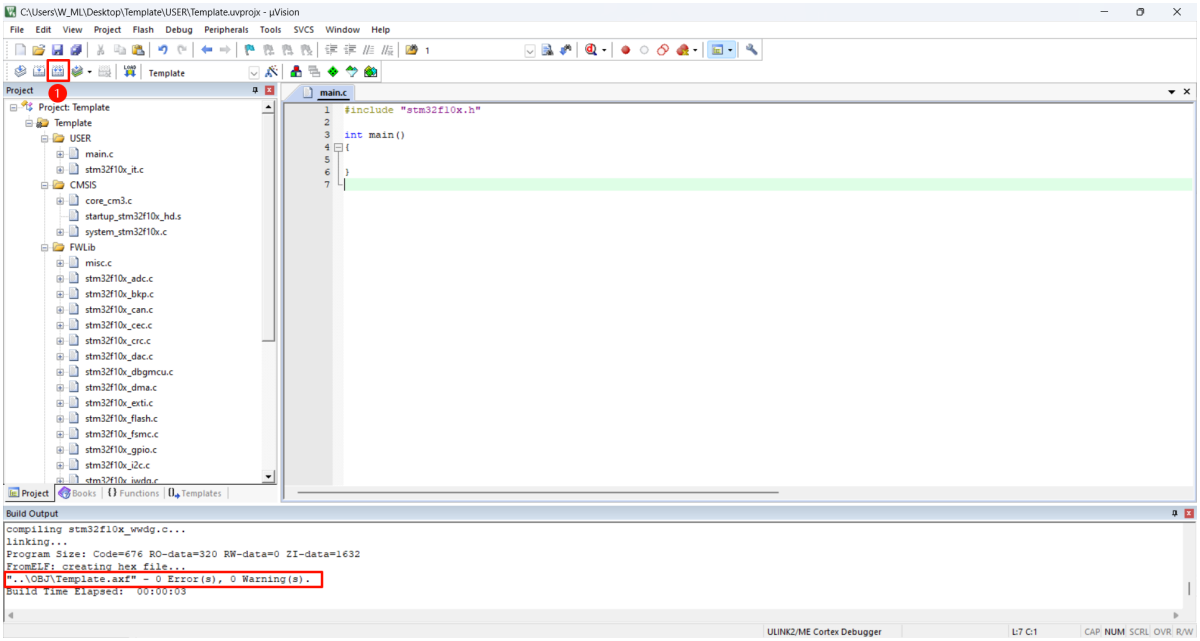
Include Paths: Add all folder paths containing .h files in the project



> If you are not sure which folders need to be added, you can add all the folder paths under this project.

Compile the project

Click `rebuild` to compile the project:



If `"0 Error(s), 0 Warning(s)` appears, it means the project template is created successfully!

Template.hex

Template.hex is the file generated after the project is compiled. You can use the serial port burning program to burn this file into the development board and run it!

```
Template.hex is generated in: Template\OBJ
```