

## How to create a File System on a SD card using STM32CubeIDE



**ST AME Support NF**

ST Employee

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# How do I Create a File System on a SD card using STM32CubeIDE?

## Introduction

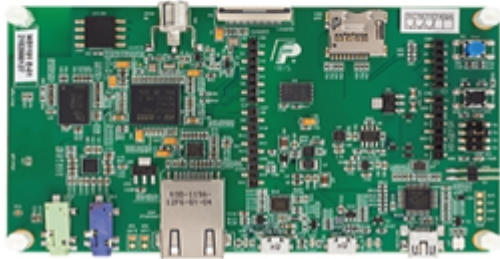
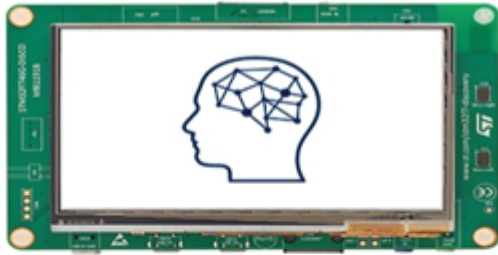
Data logging applications require storing large amounts of data over a period of time. SD cards are a convenient solution for storing data and many STM32 products include the proper hardware interface. Using a standard file system to write data on an SD card ensures that the data is easily accessible on another device or computer. Adding a file system along with an SD card driver is easy to do using the various ST tools available for the STM32 family of microcontrollers.

This article shows you how to create a file system on a SD card using STM32 and ST Toolsets.

## Pre-requisites

STM32 Discovery Kits as well as evaluation boards include an SD card socket. While this example uses the STM32F746G-DISCO board, any other STM32 board with an SD card socket can be used along with appropriate changes made in the software configuration for a different target board.

- Hardware: STM32F746G-DISCO



- Software: STM32CubeIDE

## Steps

1. Open STM32CubeIDE
2. Create a new STM32 project and select the STM32F746G-DISCO template

STM32 Project

**Target Selection**  
Select STM32 target or STM32Cube example

MCU/MPU Selector **Board Selector** Example Selector Cross Selector

Board Filters

Commercial Part Number

Vendor

Type

[Check/Uncheck All](#)

☒ Discovery Kit

☐ Evaluation Board

☐ Evaluation Kit

☐ Nucleo USB Dongle

☐ Nucleo-144

☐ Nucleo-32

☐ Nucleo-64

☐ Nucleo-RF Kit

☐ Nucleo64

MCU/MPU Series

[Check/Uncheck All](#)

☐ STM32F0

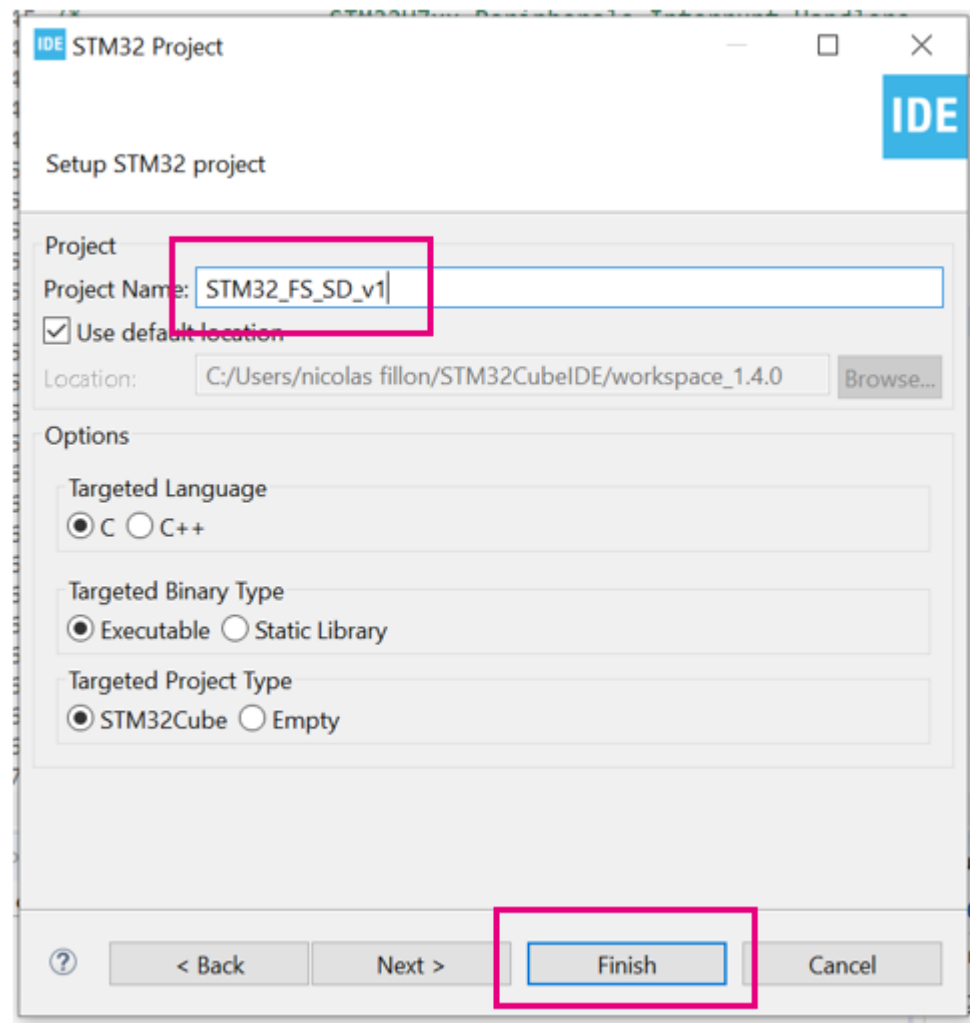
Features Large Picture Docs & Resources Datasheet Buy

Boards List: 6 items

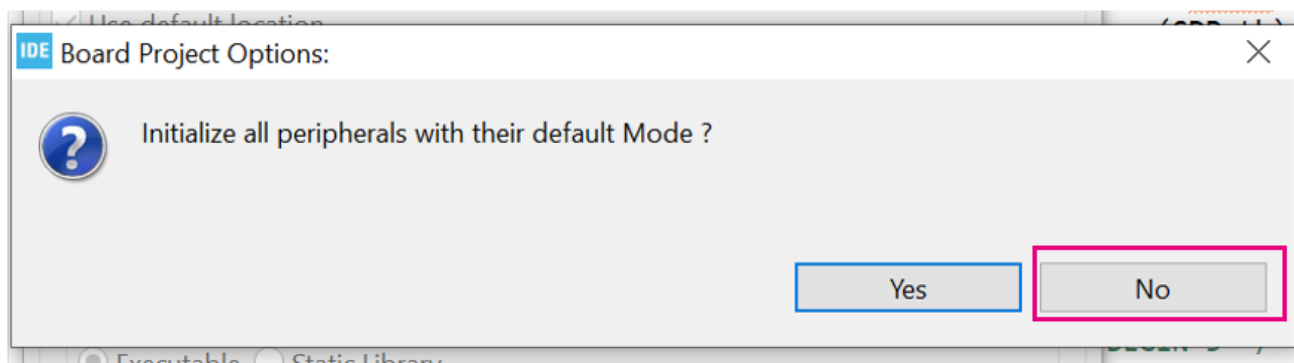
	Overview	Commercial Part No.	Type	Marketing Status	Unit Price (US\$)	Mounted Device
☆		STM32F723E-DISCO	Discovery Kit	Active	39.0	<a href="#">STM32F723IEKx</a>
☆		STM32F7308-DK	Discovery Kit	Obsolete	NA	<a href="#">STM32F7308Kx</a>
☆		STM32F746G-DISCO	Discovery Kit	Active	54.0	<a href="#">STM32F746NGHx</a>
☆		STM32F7508-DK	Discovery Kit	Active	54.0	<a href="#">STM32F7508Kx</a>
☆		STM32F7691-DISC1	Discovery Kit	NA	NA	<a href="#">STM32F7691Kx</a>

< Back **Next >** Finish Cancel

3. Give a name to your project and then click finish

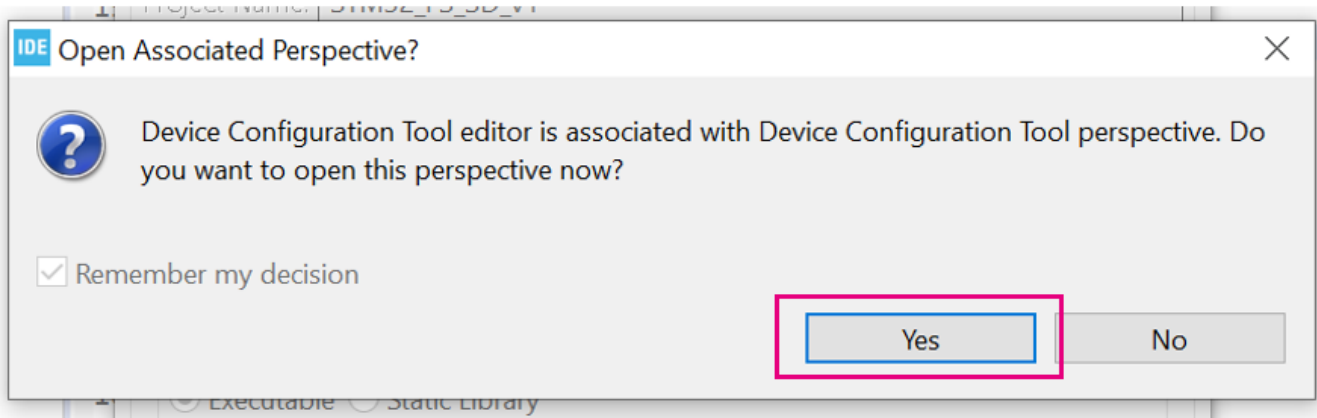


4. Select No for the Board Project Options



We will use pre-set peripheral configuration from the board configuration file.

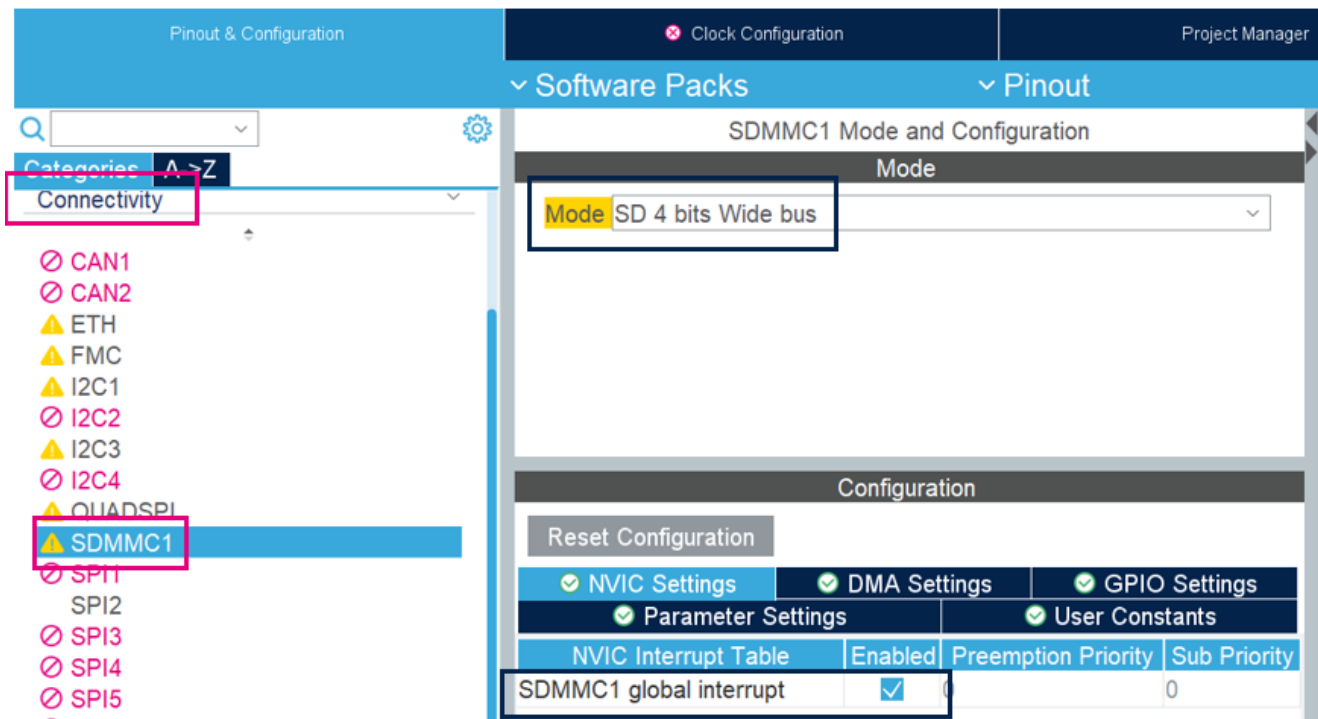
5. Open Associated Perspective, click Yes



## 6. SDMMC configuration

SDMMC is a peripheral that can be used to interface to a SD card.

- Enable “SD mode” in “SDMMC1” in “Connectivity” and enable the global interrupt



## 7. FatFs configuration

FatFs is an open-source file system middleware. This is integrated in STM32 Cube Libraries.

- Configure FatFs as SD Card mode in “MiddleWare”
- Select PC13 as Detect\_SDIO in Platform Settings

Pinout & Configuration

⌵ Software Packs

⌵ Pinout

Categories A->Z

- ❌ SPI6
- ❌ UART4
- ❌ UART5
- ❌ UART7
- ❌ UART8
- ⚠️ USART1
- ❌ USART2
- ❌ USART3
- ⚠️ USART6
- USB\_OTG\_FS
- ⚠️ USB\_OTG\_HS

Multimedia >

Security >

Computing >

Middleware >

✓ FATFS

FREERTOS

LIBJPEG

### FATFS Mode and Configuration

#### Mode

- ☐ External SDRAM
- ☐ External SRAM
- ☒ SD Card
- ☐ USB Disk
- ☐ User-defined

#### Configuration

Reset Configuration

- ✓ User Constants
- ✓ Platform Settings
- ✓ Set Defines
- ✓ Advanced Settings

Platform proposal

BSP

Name	IPs or Components	Found Solutions
Detect_SDIO	GPIO:Input	PC13 [uSD_Detect]

- Add DMA for TX and RX with default settings

This will permit to achieve best performance.

### Configuration

Reset Configuration

- ✓ Set Defines
- ✓ Advanced Settings
- ✓ User Constants
- ✓ Platform Settings

Configure the below parameters :

Search (Ctrl+F)

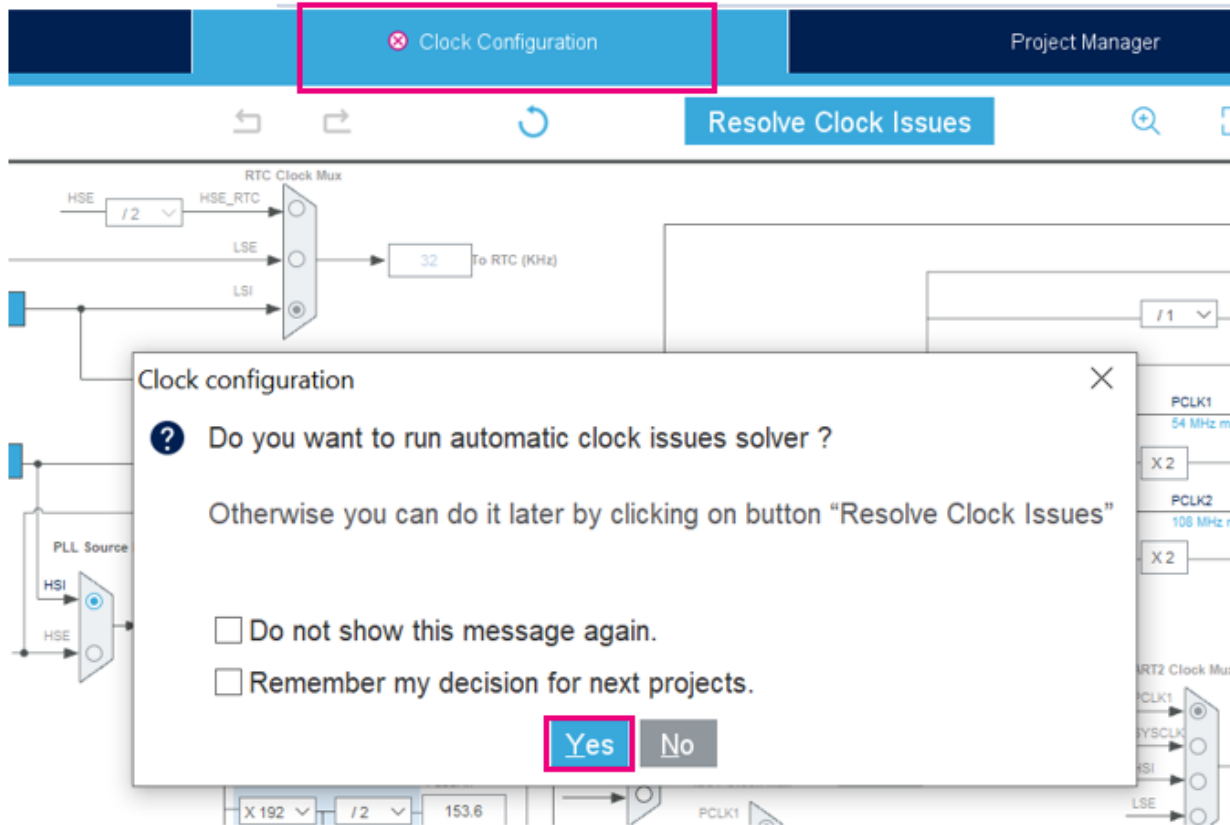
⏪ ⏩ ⓘ

⌵ SDIO/SDMMC

SDMMC instance	SDMMC1
Use dma template	Enabled
BSP code for SD	Generic

## 8. Clock Configuration

- Go to Clock Configuration Tab and Press Yes to resolve the clock issues



## 9. Project Manager Settings:

- In the Project Manager Tab, increase the Heap and Stack size because we are using FatFs Middleware that requires more memory:

Pinout & Configuration      Clock Configuration      **Project Manager**

**Project**

**Code Generator**

**Advanced Settings**

**Project Settings**

Project Name  
STM32\_FS\_SD\_v1

Project Location  
C:\Users\nicolas fillon\STM32CubeIDE\workspace\_1.5.0

Application Structure  
Advanced      ☐ Do not generate the main()

Toolchain Folder Location  
C:\Users\nicolas fillon\STM32CubeIDE\workspace\_1.5.0\STM32\_FS\_SD\_v1\

Toolchain / IDE  
STM32CubeIDE      ☒ Generate Under Root

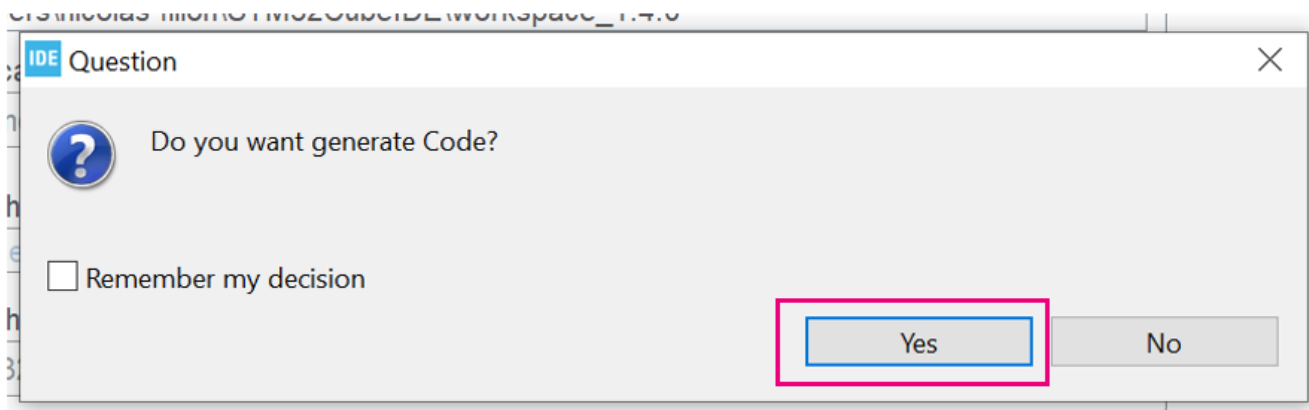
**Linker Settings**

Minimum Heap Size      0x400

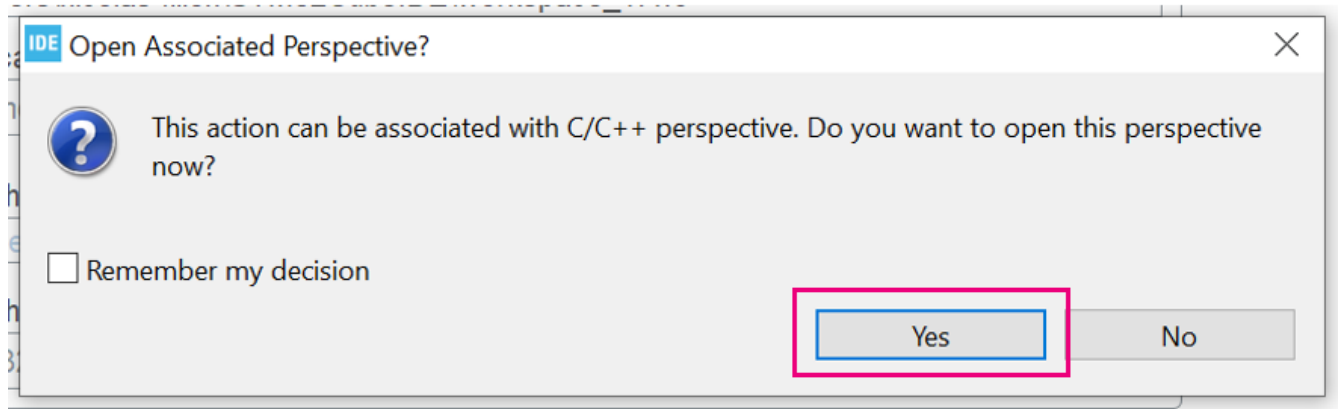
Minimum Stack Size      0x800

## 10. Code generation

- Now Save the project to generate the code:



## 11. Open Associated Perspective



12. Add code



```

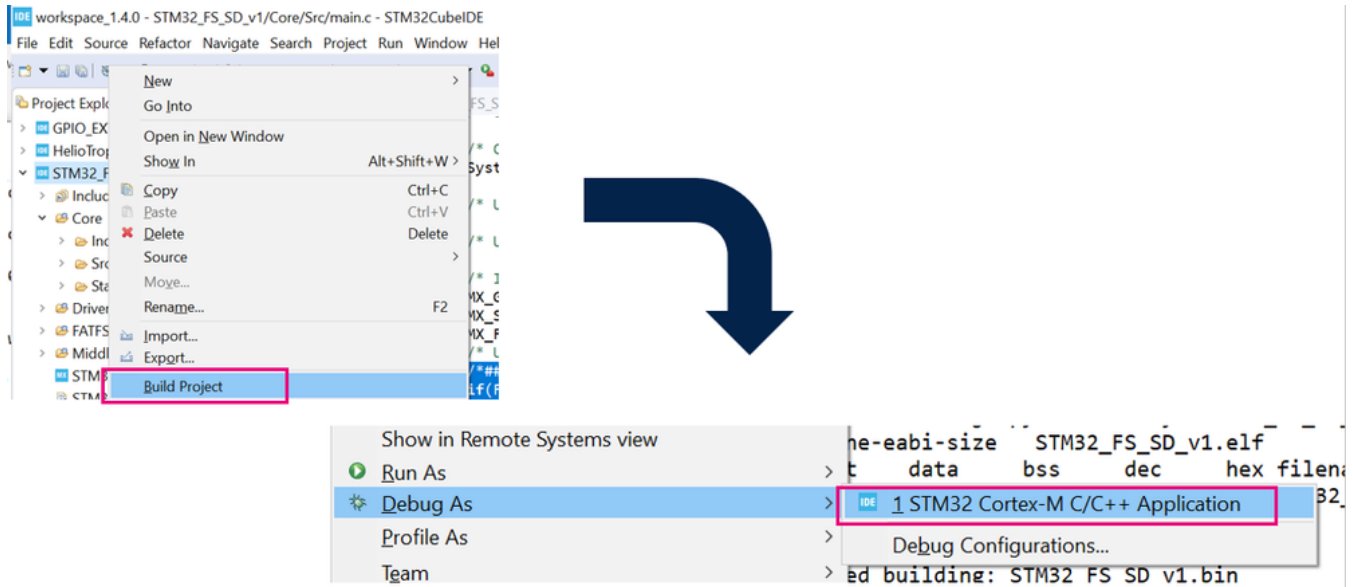
/* USER CODE BEGIN 1 */
FRESULT res; /* FatFs function common result code */
uint32_t byteswritten, bytesread; /* File write/read counts */
uint8_t wtext[] = "STM32 FATFS works great!"; /* File write buffer */
uint8_t rtext[_MAX_SS]; /* File read buffer */
/* USER CODE END 1 */

...
/* USER CODE BEGIN 2 */
    if(f_mount(&SDFatFS, (TCHAR const*)SDPath, 0) != FR_OK)
    {
        Error_Handler();
    }
    else
    {
        if(f_mkfs((TCHAR const*)SDPath, FM_ANY, 0, rtext, sizeof(rtext)) != FR_OK)
        {
            Error_Handler();
        }
        else
        {
            //Open file for writing (Create)
            if(f_open(&SDFile, "STM32.TXT", FA_CREATE_ALWAYS | FA_WRITE) != FR_OK)
            {
                Error_Handler();
            }
            else
            {
                //Write to the text file
                res = f_write(&SDFile, wtext, strlen((char *)wtext), (void *)0);
                if((byteswritten == 0) || (res != FR_OK))
                {
                    Error_Handler();
                }
                else
                {
                    f_close(&SDFile);
                }
            }
        }
    }
}

```

```
f_mount(&SDFatFS, (TCHAR const*)NULL, 0);  
/* USER CODE END */
```

### 13. Build and flash the code



When the code is executed, the SD card will be formatted and a file will be written, you can check the content with an SD card reader.

## Links

STM32CubeIDE:

[STM32CubeIDE - Integrated Development Environment for STM32 - STMicroelectronics](#)

FatFs

[FatFs - Generic FAT Filesystem Module \(elm-chan.org\)](#)

## Video

This is the video that explains how to create a File System on SD card using STM32CubeIDE as explained in this article.

[STM32 – Creating a File System on a SD card - YouTube](#)

STM32 MCU Products

STM32CubeIDE



1 Kudo