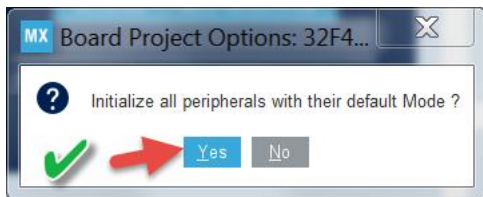
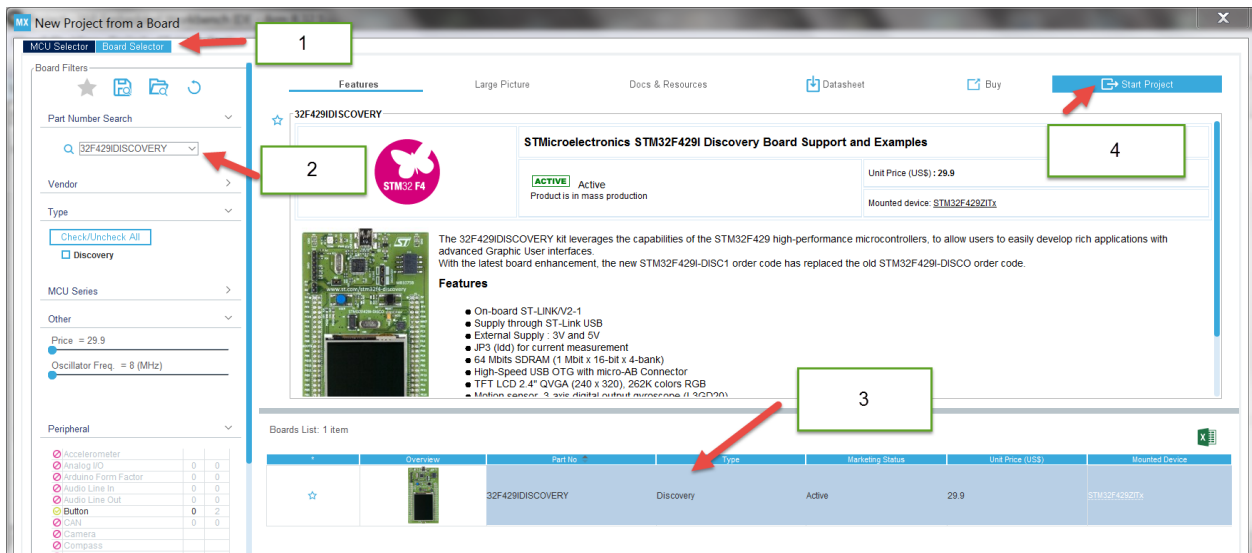
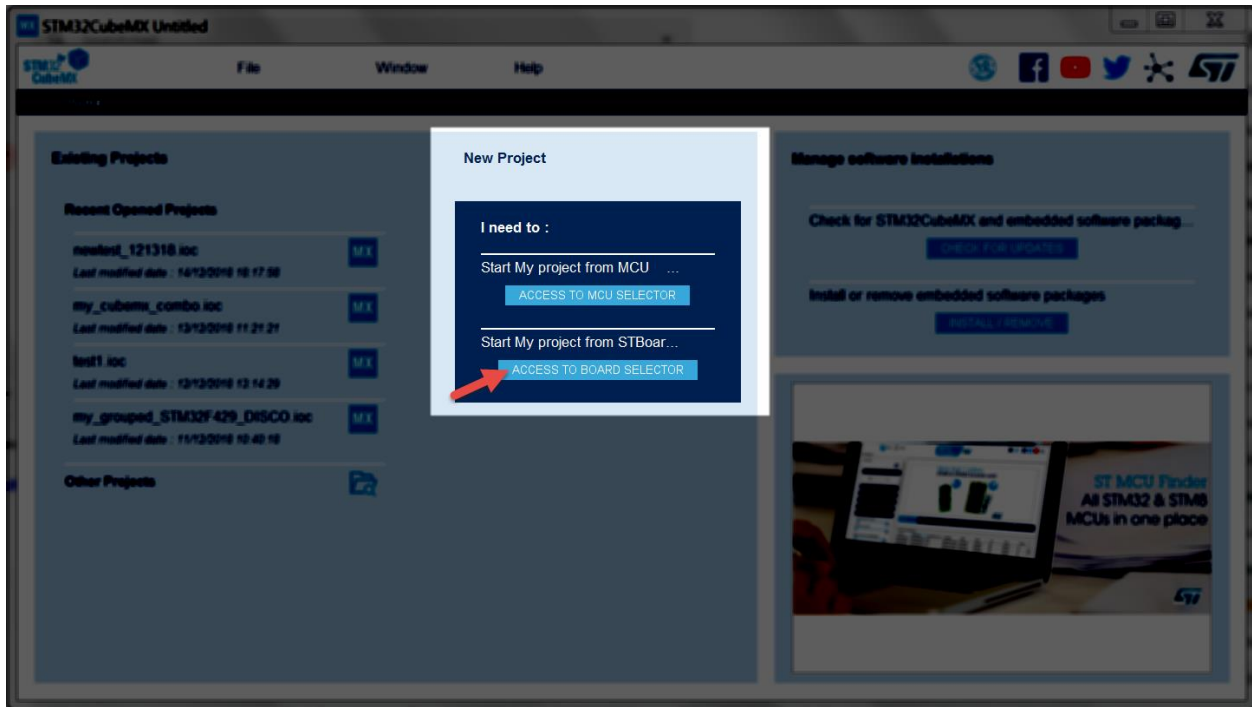


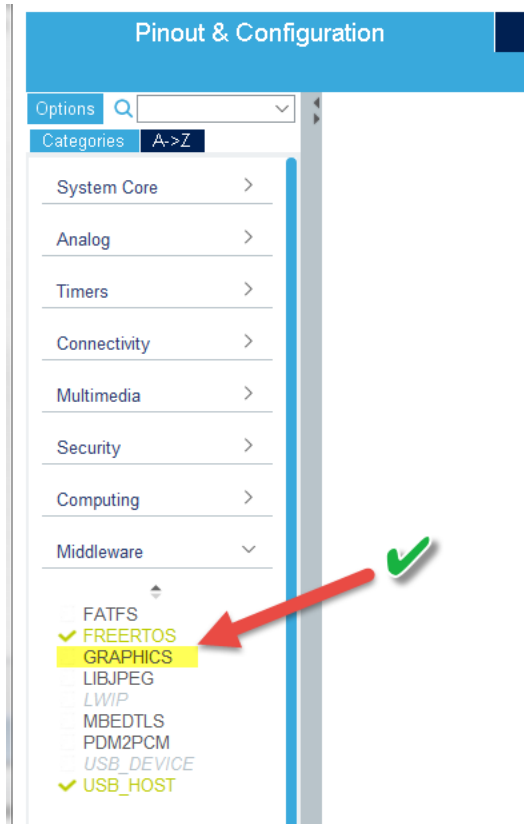
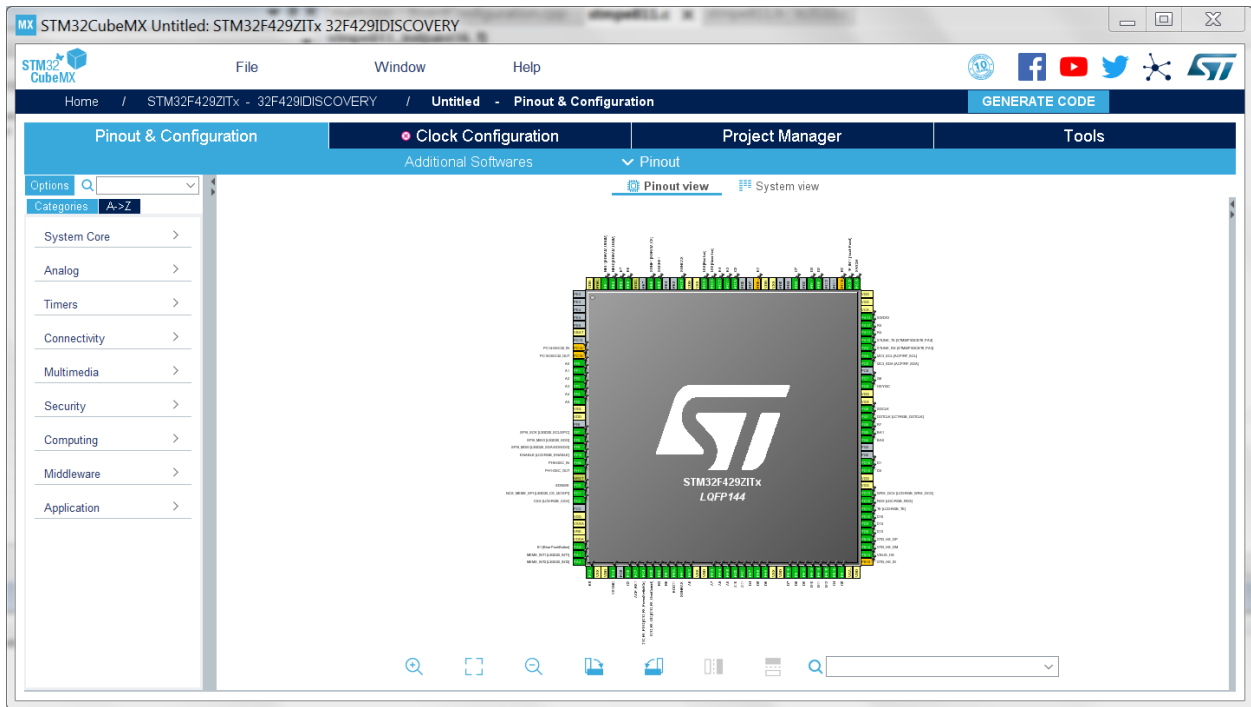
SW4STM32 CubeMX 5.0 & TouchGFX 4.10 Integration

For STM32F429i-DISC1 Target Document by Mon2 version 1.0 12-22-2018

Credits: Thanks to Zhi Pang for your great posts that helped tremendously







Pinout & Configuration | Clock Configuration | Additional Softwares | Pin

Options [Search] Categories A-Z

- System Core >
- Analog >
- Timers >
- Connectivity >
- Multimedia >
- Security >
- Computing >
- Middleware >
 - FATFS
 - ✓ FREERTOS
 - ✗ GRAPHICS
 - LIBJPEG
 - LWIP
 - MBEDTLS
 - PDM2PCM
 - USB_DEVICE
 - ✓ USB_HOST
- Application >

GRAPHICS Mode and Configuration

Mode

Graphics Framework: TouchGFX

Display Interface: Display Parallel Interface using LTDC

Configuration

Reset Configuration

✗ TouchGFX | ✓ User Constants | ⚠ Platform Settings

✓ Parameter Settings

Platform proposal

BSP

Name	IPs or Components	Found Solutions
Chip Select	GPIO:Output	Undefined
WRX High	GPIO:Output	Undefined
SPI_PIN	Undefined	No solution
RDX High	GPIO:Output	Undefined

Configuration

Reset Configuration

✗ TouchGFX | ✓ User Constants | ✓ Platform Settings

✓ Parameter Settings

Platform proposal

BSP

Name	IPs or Components	Found Solutions
Chip Select	GPIO:Output	PC2 [CSX [LCD-RGB_CSX]] ✓
WRX High	GPIO:Output	PD13 [WRX_DCX [LCD-RGB_WRX_DCX]] ✓
SPI_PIN	Undefined	No solution
RDX High	GPIO:Output	PD12 [RDX [LDC-RGB_RDX]] ✓

Home / STM32F429ZITx - 32F429DISCOVERY / Untitled - Pinout & Configuration

Pinout & Configuration | **Clock Configuration** | Additional Softwares

Options Categories A->Z

Analog > Timers > **Connectivity**

- CAN1
- CAN2
- ETH
- FMC
- I2C1
- I2C2
- I2C3
- SDIO
- SPI1
- SPI2
- SPI3
- SPI4
- SPI5**
- SPI6
- UART4
- UART5
- UART7
- UART8
- USART1
- USART2
- USART3
- USART6
- USB_OTG_FS
- USB_OTG_HS

SPI5 Mode and Configuration

Mode: Half-Duplex Master (1)

Hardware NSS Signal: Disable (3)

Configuration

Reset Configuration

NVIC Settings |
 DMA Settings |
 GPIO Settings |
 Parameter Settings |
 User Constants

Configure the below parameters :

Search (Ctrl+F)

Basic Parameters
 Frame Format: Motorola
 Data Size: 8 Bits
 First Bit: MSB First

Clock Parameters
 Prescaler (for Baud Rate): 16

Computing > Middleware > **GRAPHICS**

- FATFS
- FREERTOS**
- GRAPHICS**
- LIBJPEG
- LWIP
- MBEDTLS
- PDM2PCM
- USB_DEVICE
- USB_HOST**

Application >

Configuration

Reset Configuration

TouchGFX |
 User Constants |
 Platform Settings |
 Parameter Settings

Platform proposal

BSP

Name	IPs or Components	Found Solutions
Chip Select	GPIO:Output	PC2 [CSX [LCD-RGB_CSX]]
WRX High	GPIO:Output	PD13 [WRX_DCX [LCD-RGB_WRX_DCX]]
SPI_PIN	SPI:Half-Duplex Master	SPI5 ✓
RDX High	GPIO:Output	PD12 [RDX [LDC-RGB_RDX]]

FATFS
✓ FREERTOS
✗ GRAPHICS
LIBJPEG
LWIP
MBEDTLS
PDM2PCM
USB_DEVICE
✓ USB_HOST

Application >

Configuration

Reset Configuration

Parameter Settings ✗ TouchGFX User Constants Platform Settings

Configure the below parameters :

Search (Ctrl+F) Execute ⓘ

External application info

Name	TouchGFX Designer
Version	V4.10.0

✗ Location

Executable full name	✗ TouchGFXDesigner.exe not found. Please select it. ✓
----------------------	-------------------------------------------------------

Inputs

Physical Display X Size	320
Physical Display Y Size	240

GRAPHICS Mode and Configuration

Mode

Graphics Framework TouchGFX
Display Interface Display Parallel Interface using LTDC

MX Open

Look In designer

- Resources
- Skins
- TouchGFXDesigner-4.10.0.exe

File Name TouchGFXDesigner-4.10.0.exe
Files of Types *.TouchGFXDesigner.*exe

Open Cancel

Reset Configuration

Parameter Settings TouchGFX User Constants Platform Settings

Configure the below parameters :

Search (Ctrl+F) Execute

External application info

Name	TouchGFX Designer
Version	V4.10.0

Location

Executable full name	TouchGFXDesigner.exe not found. Please select it.	🔍
----------------------	---------------------------------------------------	---

Inputs

Physical Display X Size	320
Physical Display Y Size	240

Configuration

Reset Configuration

Parameter Settings TouchGFX User Constants Platform Settings

Configure the below parameters :

Search (Ctrl+F) Execute

External application info

Name	TouchGFX Designer
Version	V4.10.0

Location

Executable full name	hGFX\4.10.0\designer\TouchGFXDesigner-4.10.0.exe	🔍
----------------------	--------------------------------------------------	---

Inputs

Physical Display X Size	320
Physical Display Y Size	240

Configuration

Reset Configuration ✔

✔ Parameter Settings
✔ TouchGFX
✔ User Constants
✔ Platform Settings

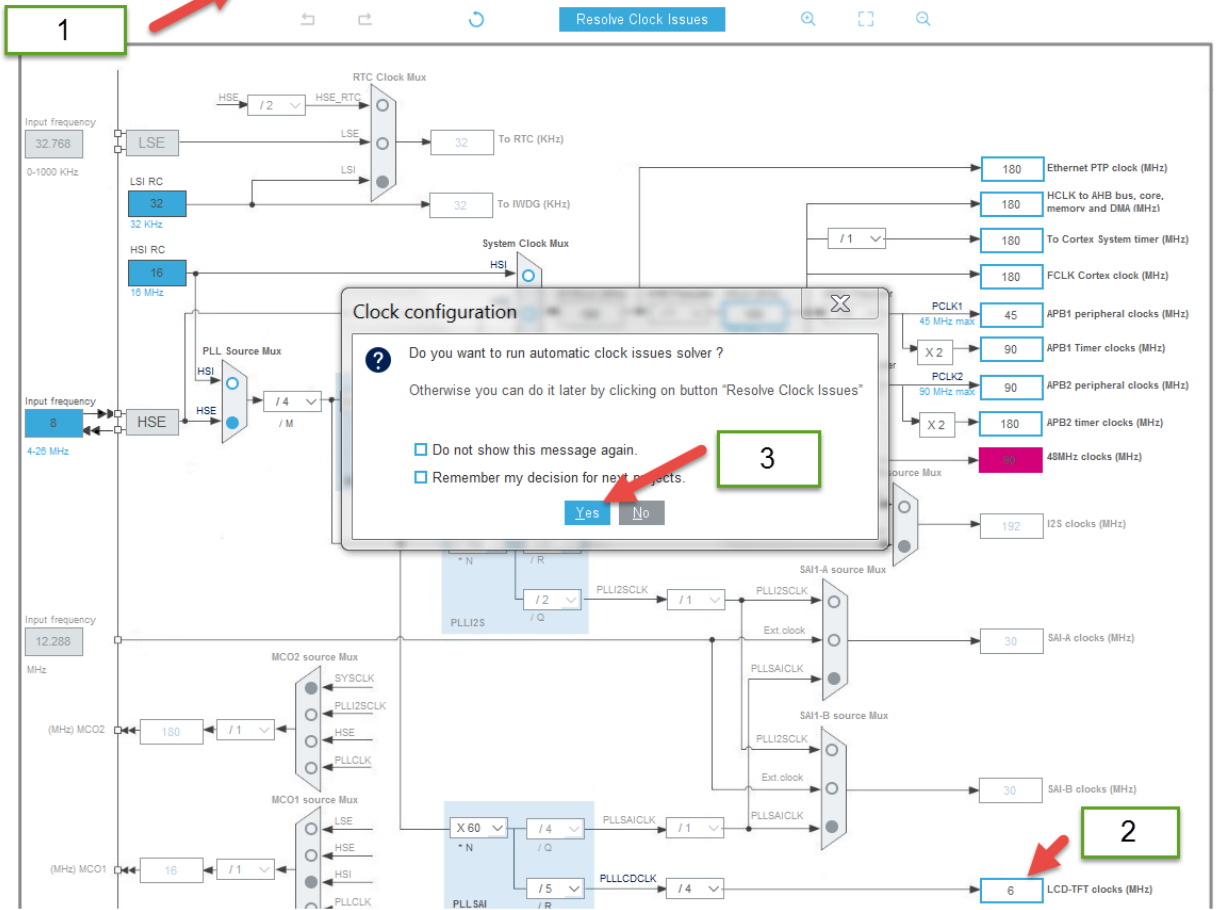
Platform proposal

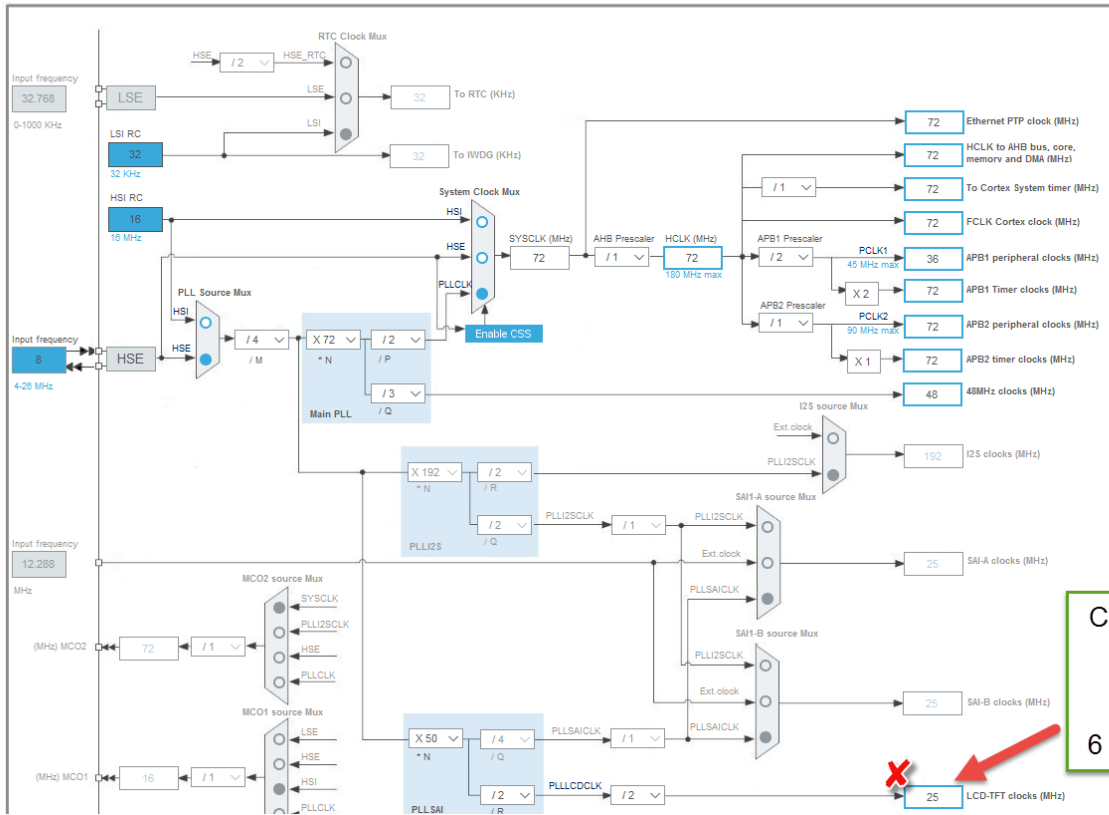
BSP

Name	IPs or Components	Found Solutions	BSP API
Chip Select	GPIO:Output	PC2 [CSX [LCD-RGB_CSX]]	Unknown
WRX High	GPIO:Output	PD13 [WRX_DCX [LCD-RGB_WRX_DCX]]	Unknown
SPI_PIN	SPI:Half-Duplex Master	SPI5	Unknown
RDX High	GPIO:Output	PD12 [RDX [LDC-RGB_RDX]]	Unknown

✔

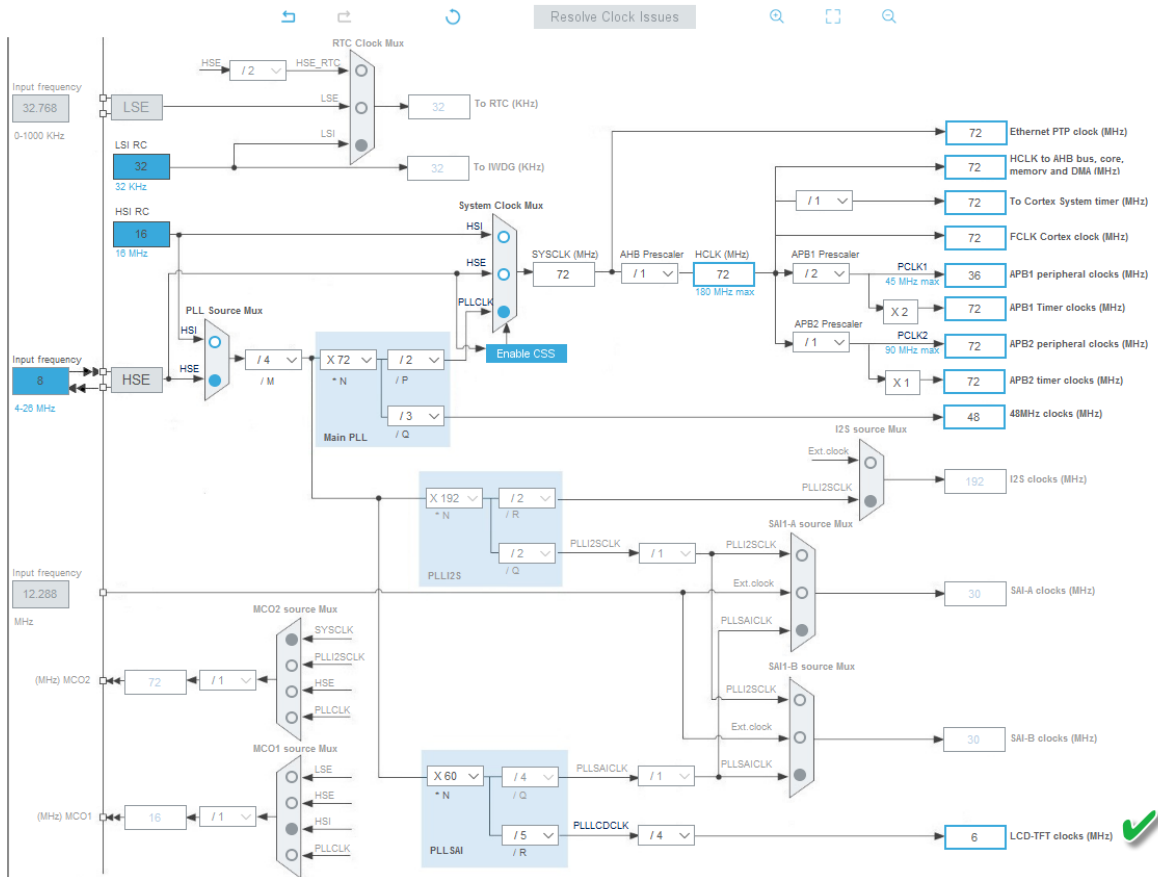
Clock Configuration Project Manager





Change to 6 Mhz !!





Pinout & Configuration | Clock Configuration | Additional Softwares | Pinout

GRAPHICS Mode and Configuration

Mode

Graphics Framework: TouchGFX
 Display Interface: Display Parallel Interface using LTDC

Configuration

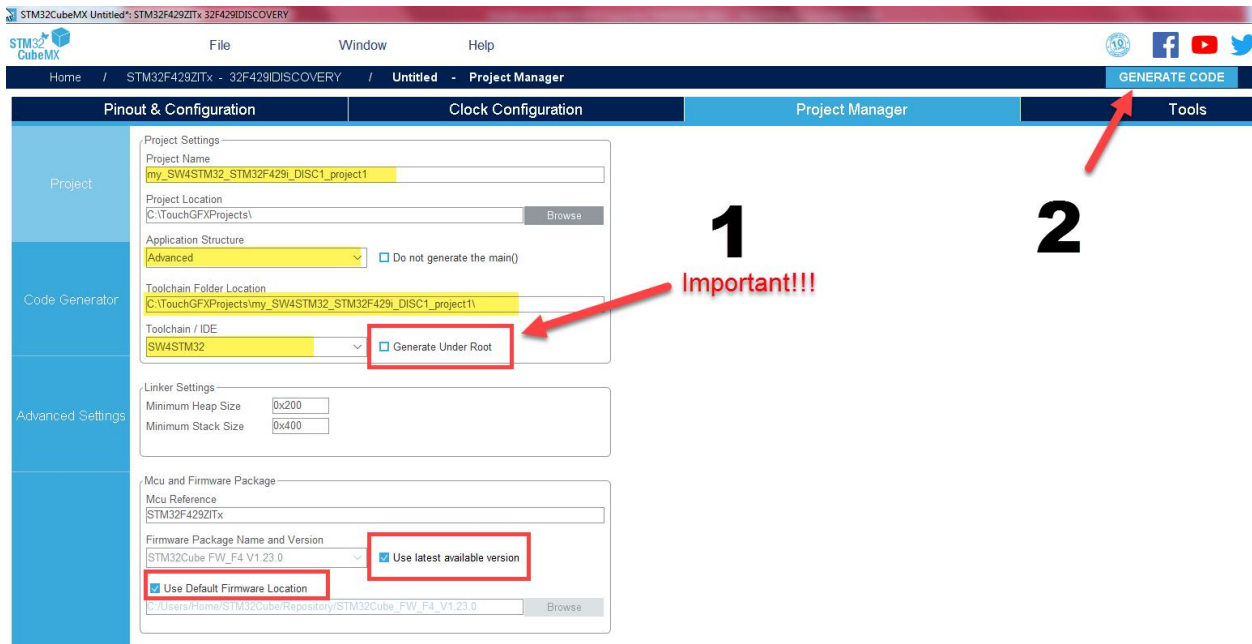
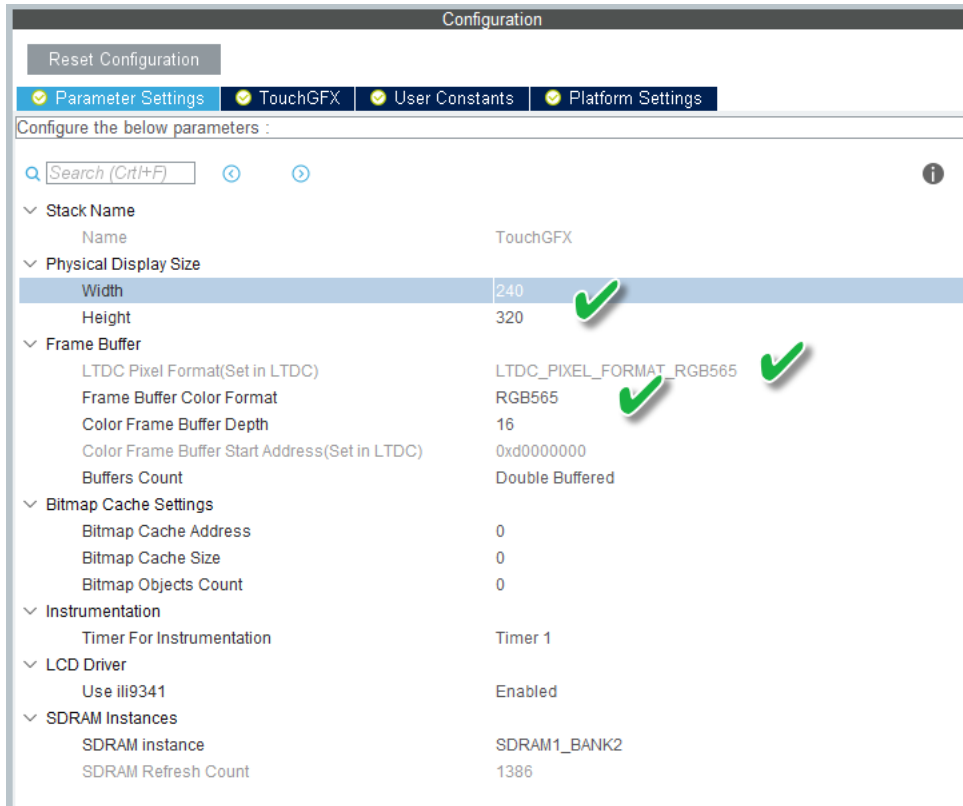
Reset Configuration

Parameter Settings | TouchGFX | User Constants | Platform Settings

Configure the below parameters :

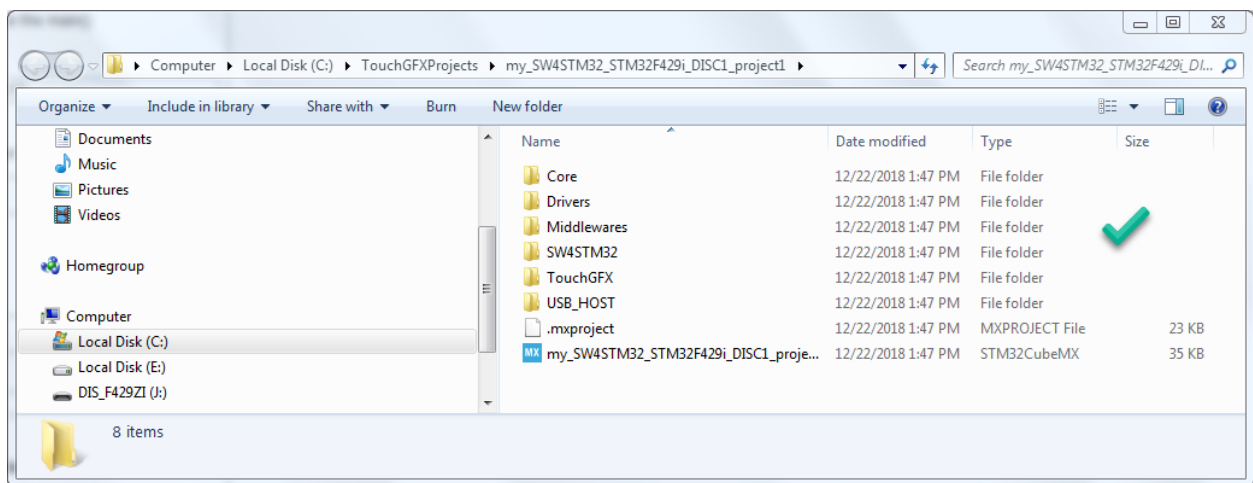
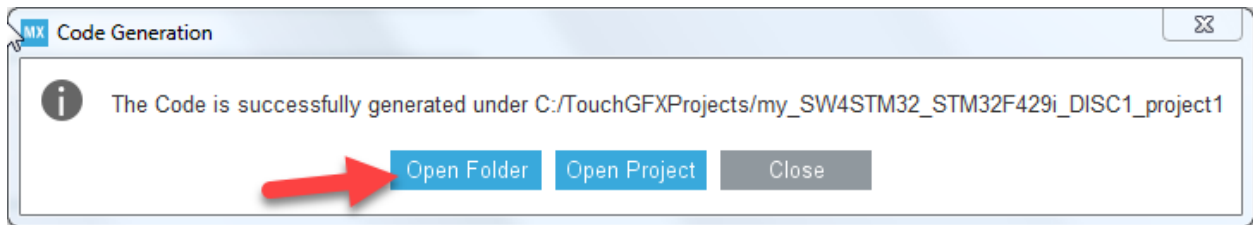
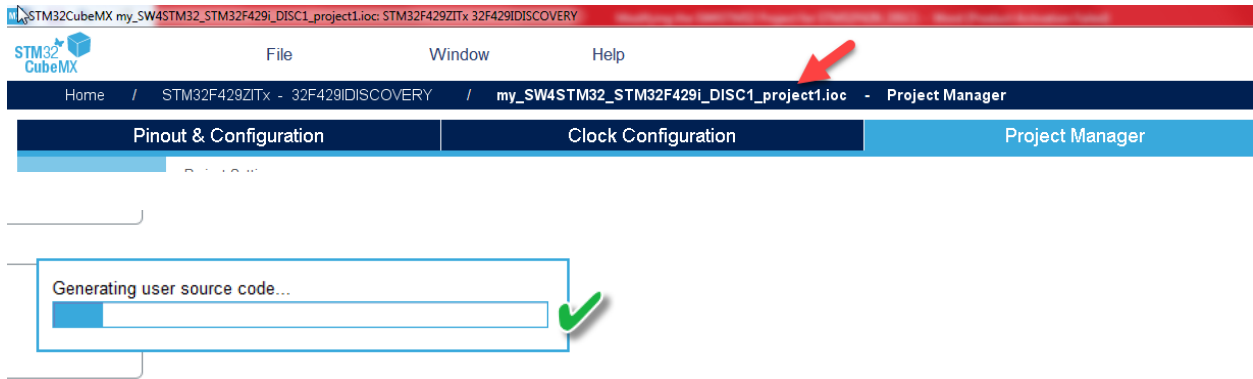
Search (Ctrl+F)

Stack Name	Name	TouchGFX	240
Physical Display Size	Width	320	320
	Height	240	
Frame Buffer	LTDC Pixel Format(Set in LTDC)	LTDC_PIXEL_FORMAT_RGB565	
	Frame Buffer Color Format	RGB565	
	Color Frame Buffer Depth	16	



Use a fresh workspace for this tutorial.

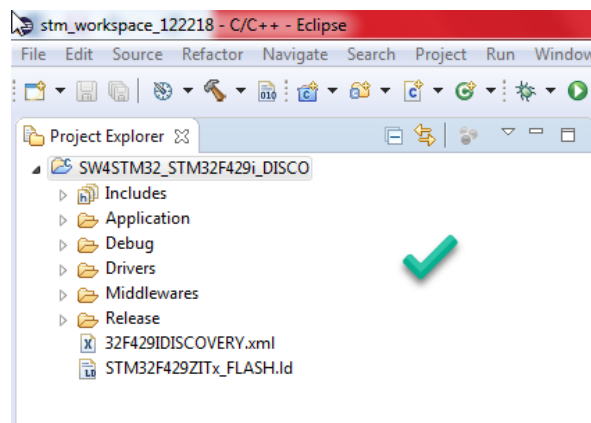
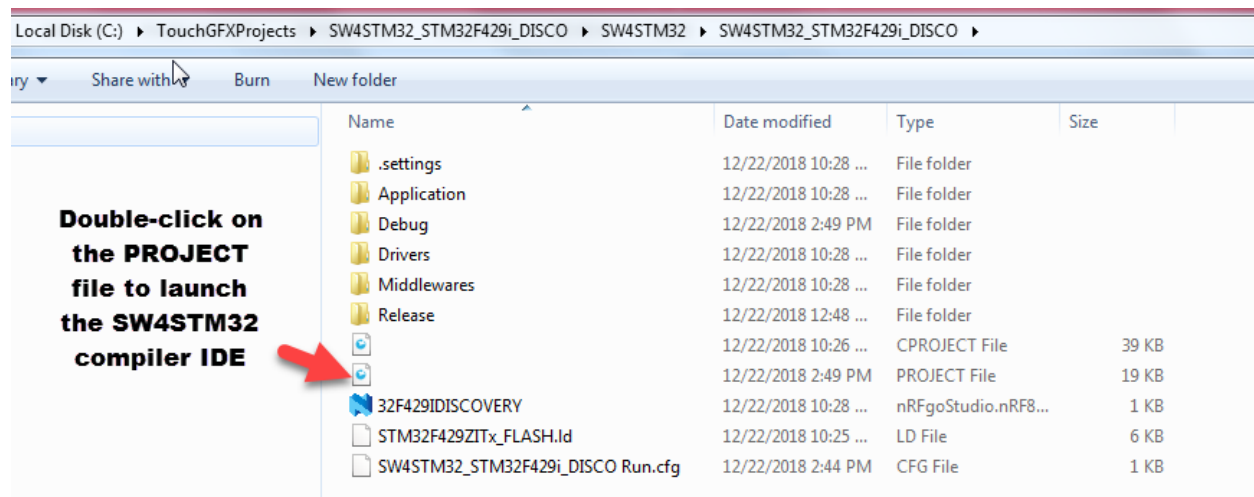
File -> Save Project (CTRL+S)



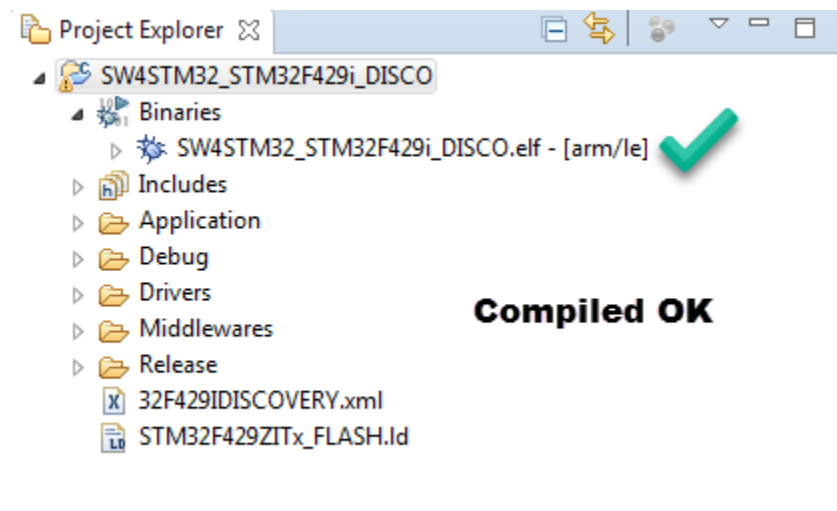
Enter SW4STM32 -> my_SW4STM32_STM32F429i_DISC1_project1 folder

Enter the SW4STM32 folder

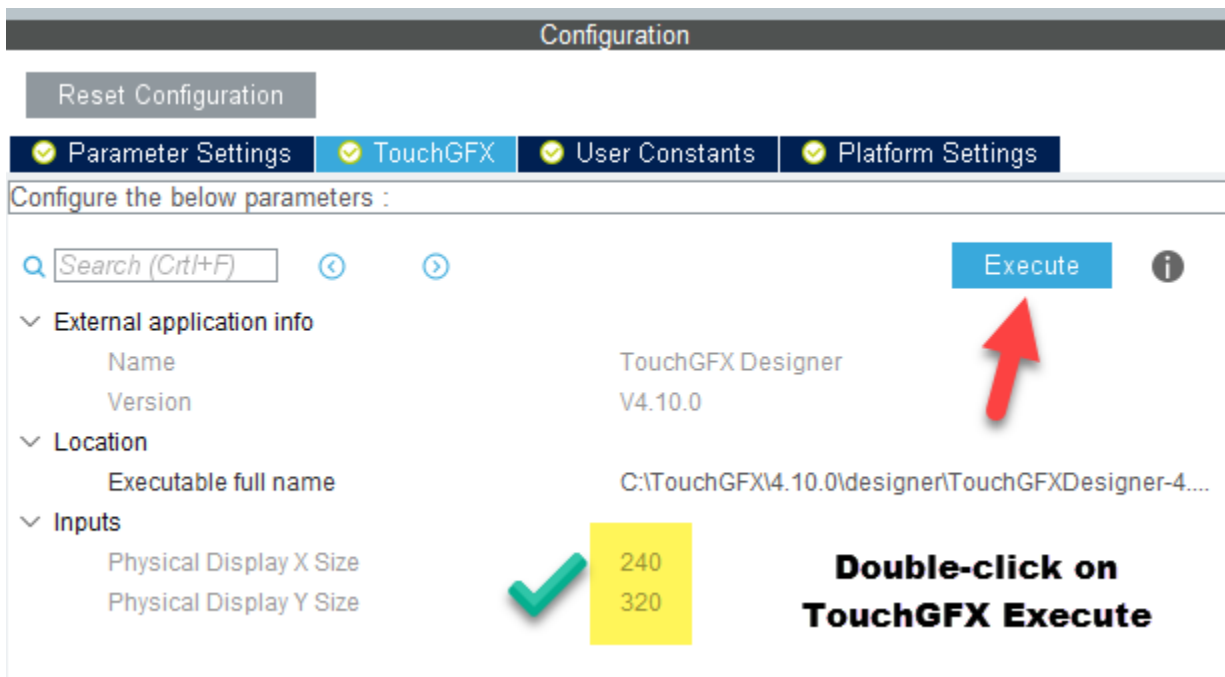
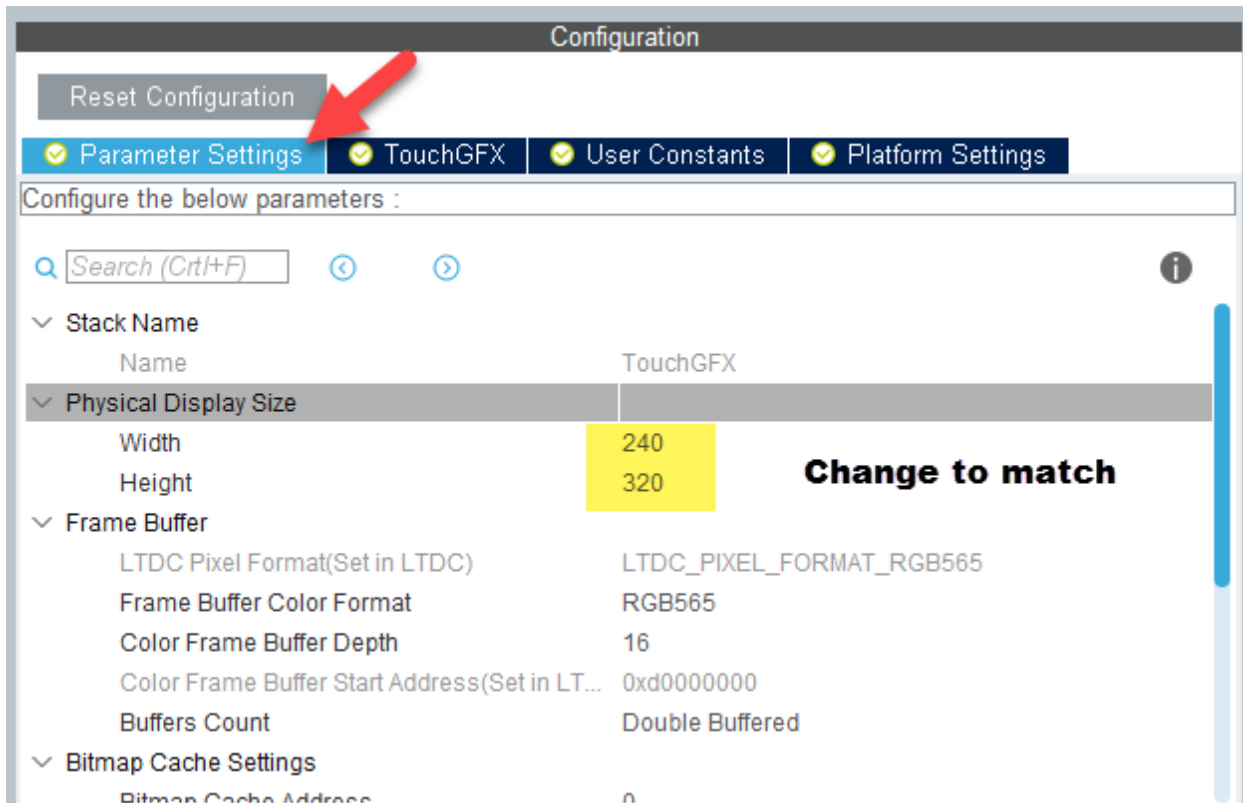
Enter the SW4STM32_STM32F429i_DISCO (your project name) folder



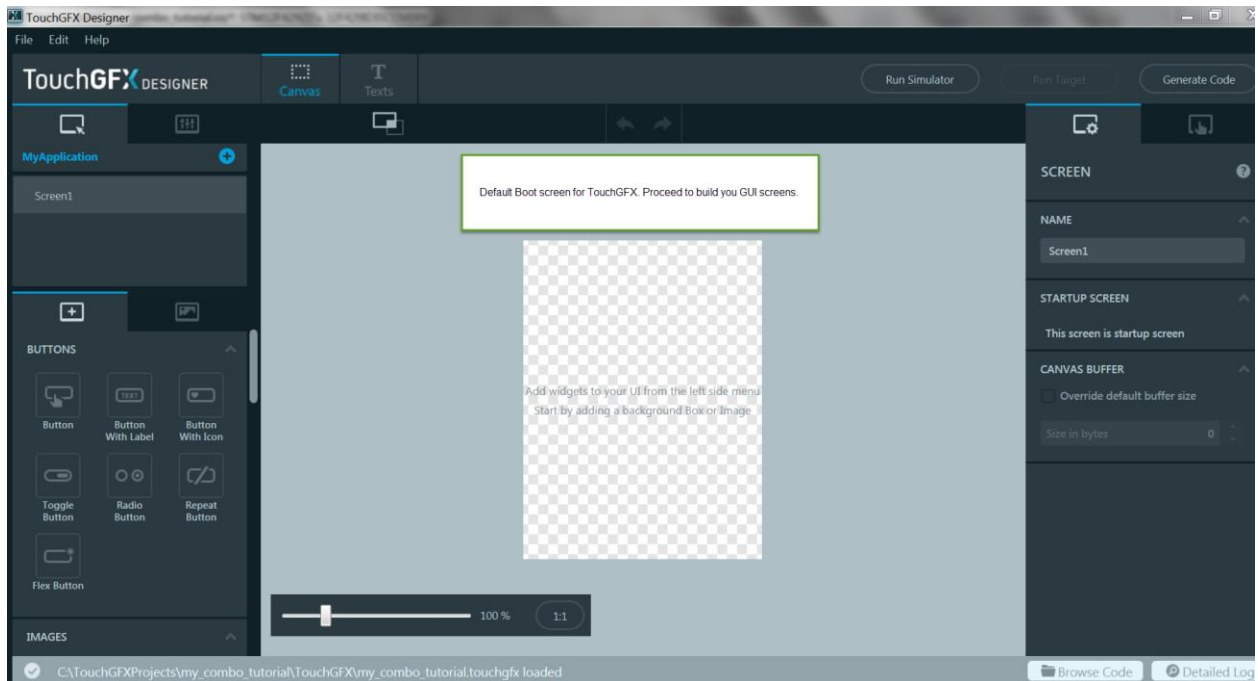
Test the wizard generated code by selecting Project -> Clean -> Build All



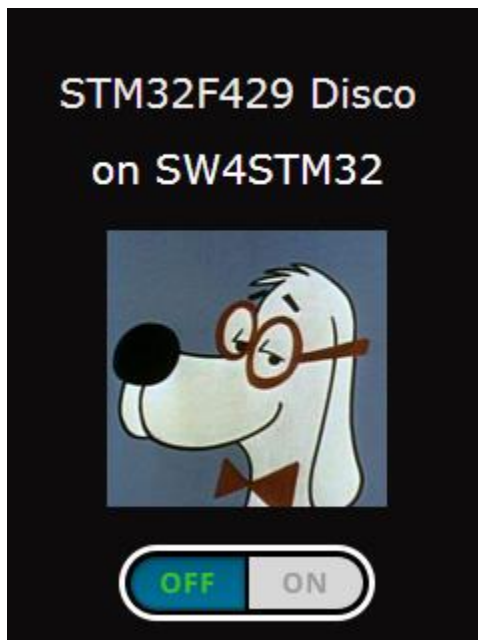
Leave the SW4STM32 window open and return to STM32CubeMX window..



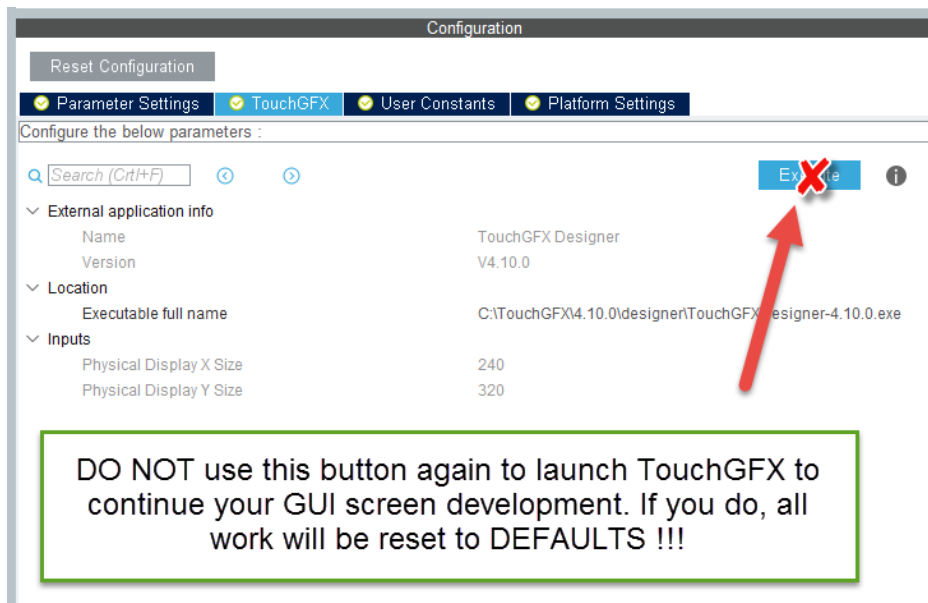
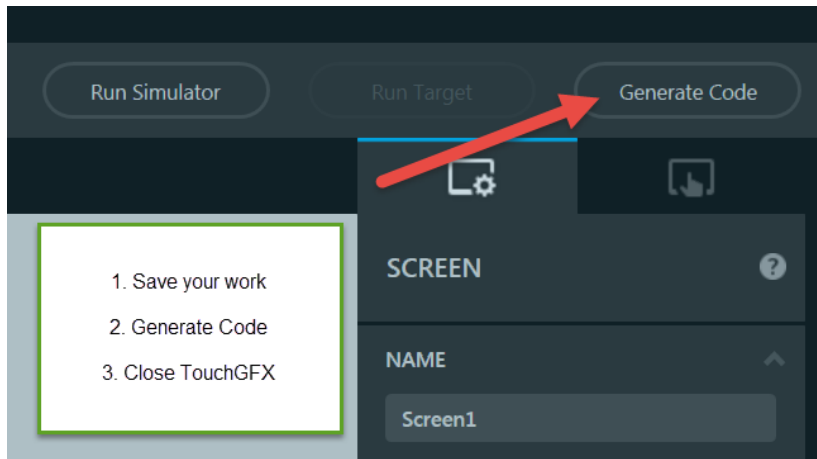
Launch the TouchGFX tool – remember – do this ONLY ONCE from the STM32CubeMX tool. If you repeat this launch, all of your GUI development will be reset to defaults. It is ok to continue the GUI development using the folder view for this project to launch the TouchGFX project as required.



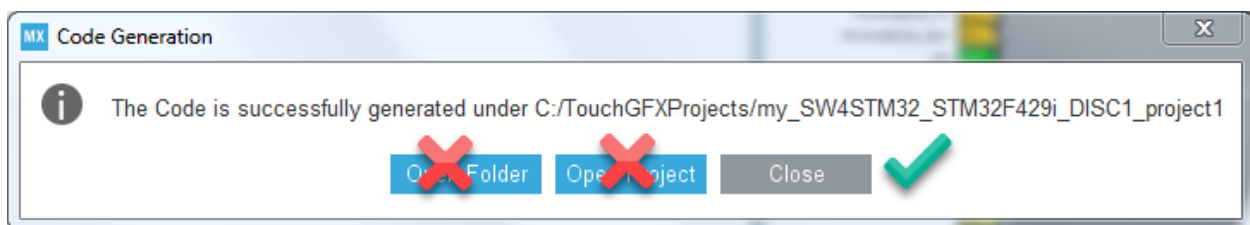
Build your GUI as desired



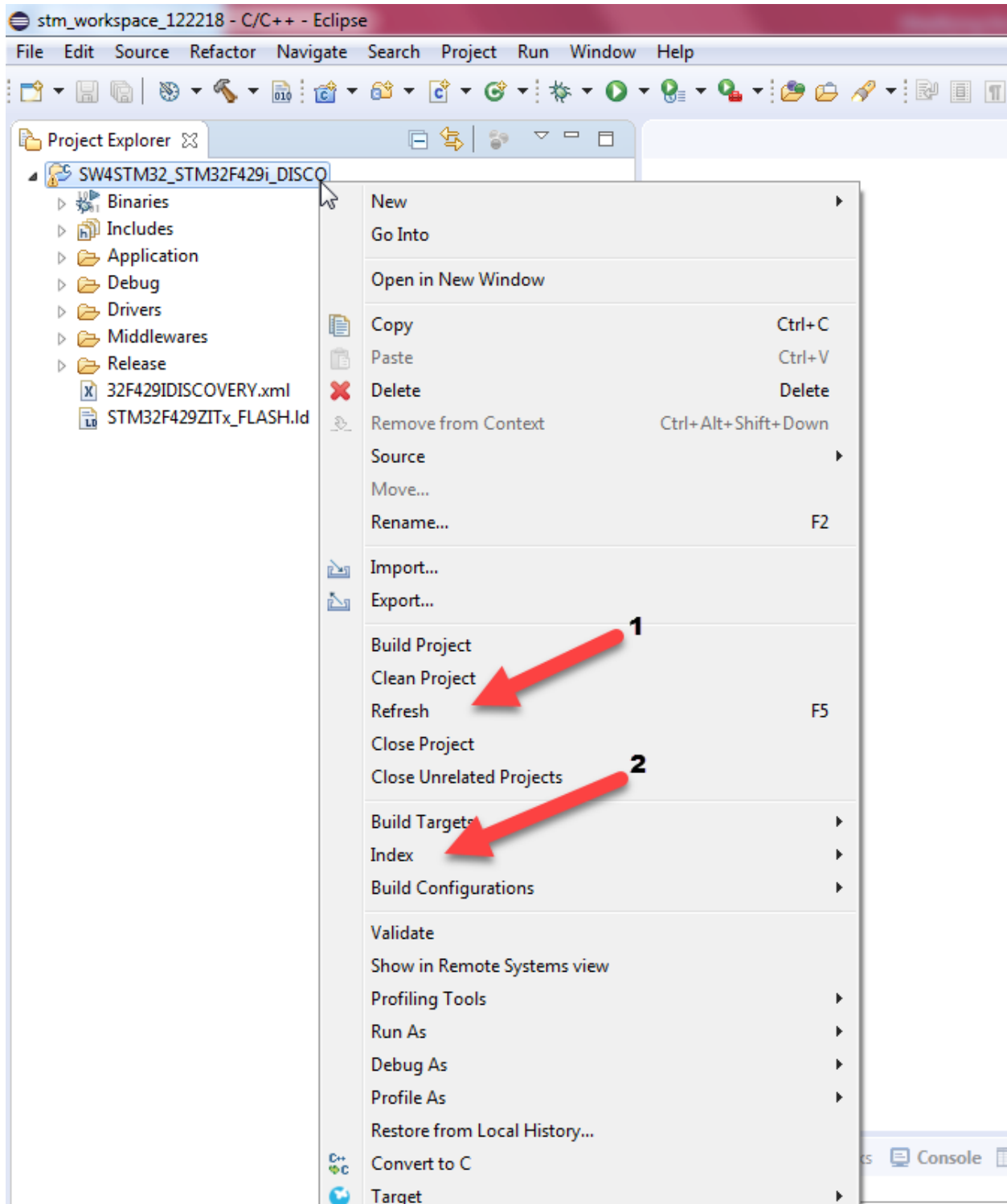
Handsome self-portrait with a touch button

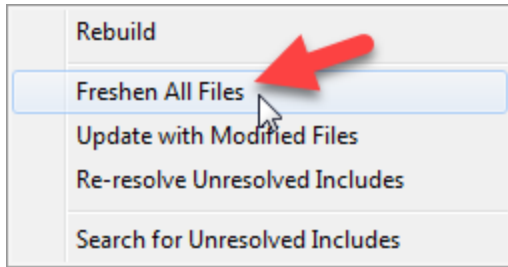


STM32CubeMX -> Generate code



Goto SW4STM32 compiler window and refresh the new generated code and links.



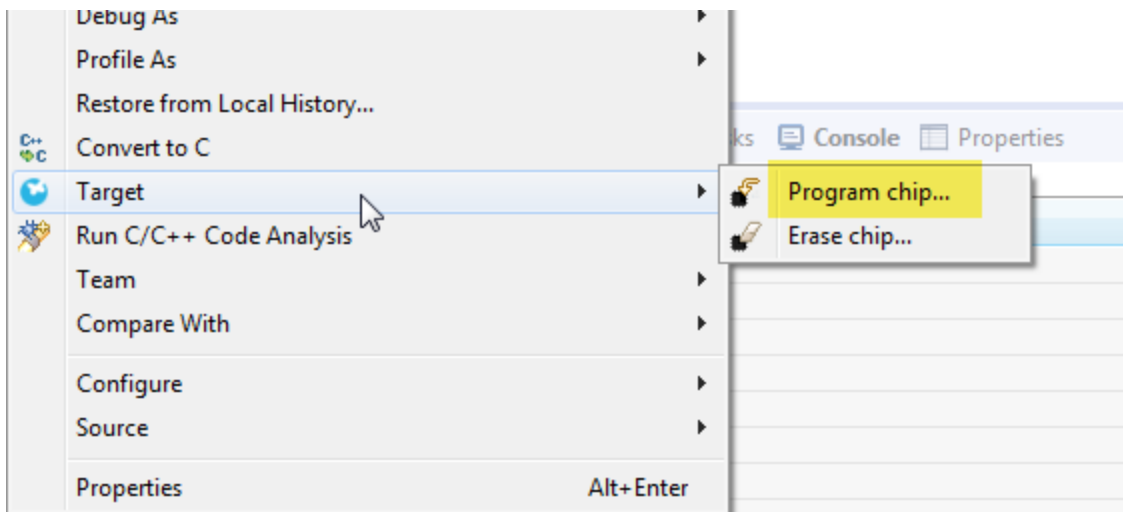


Project -> Clean

Project -> Build All

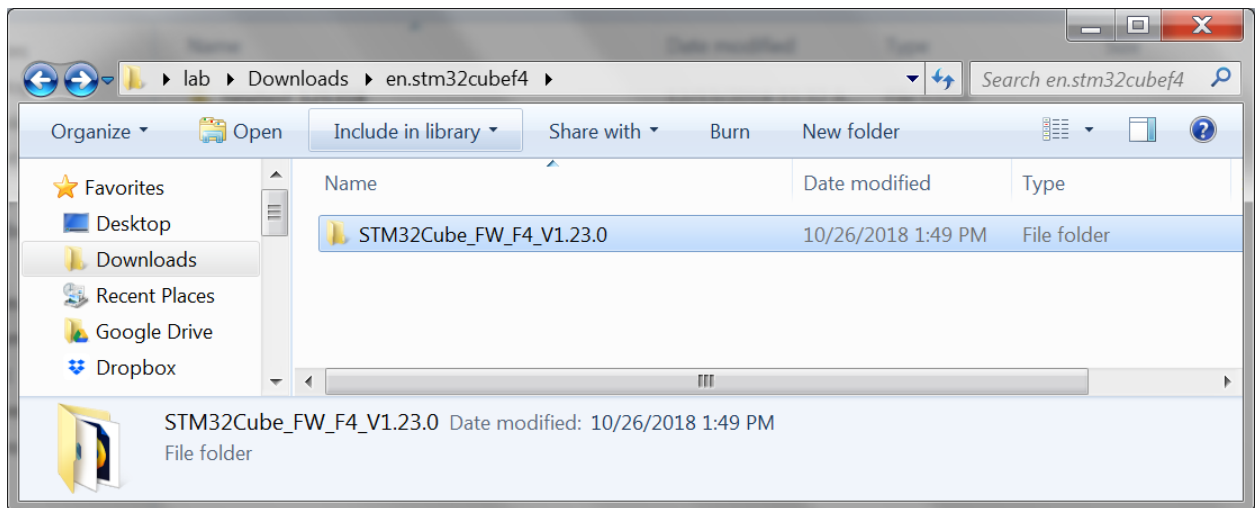
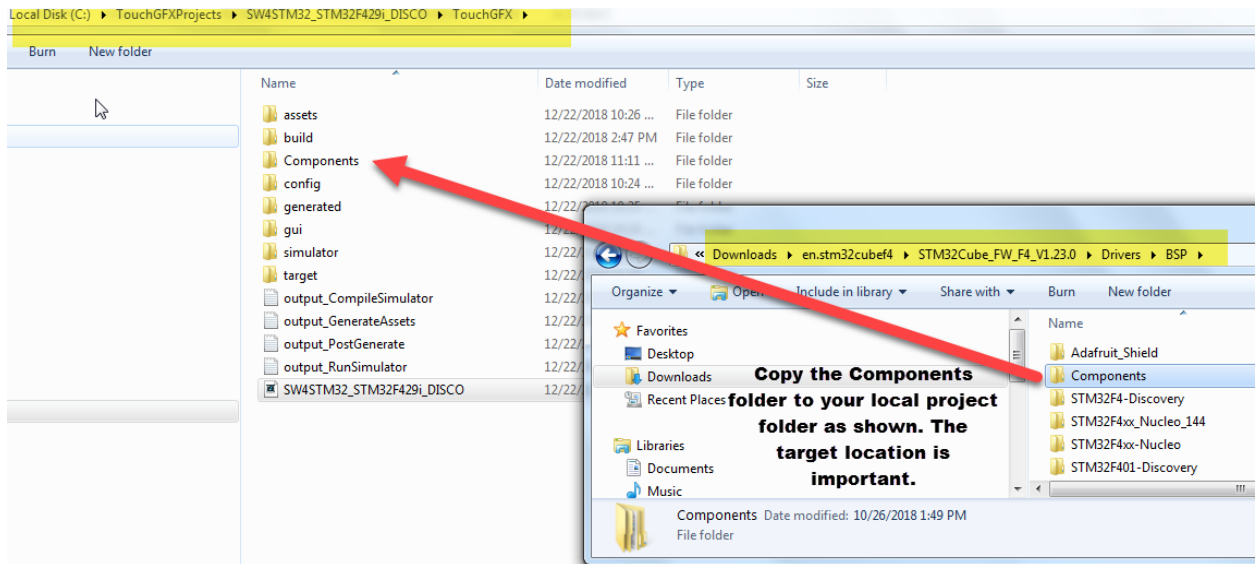
Code can now be uploaded to your target kit and the GUI should appear correctly on the kit but will be without a TOUCH PANEL.

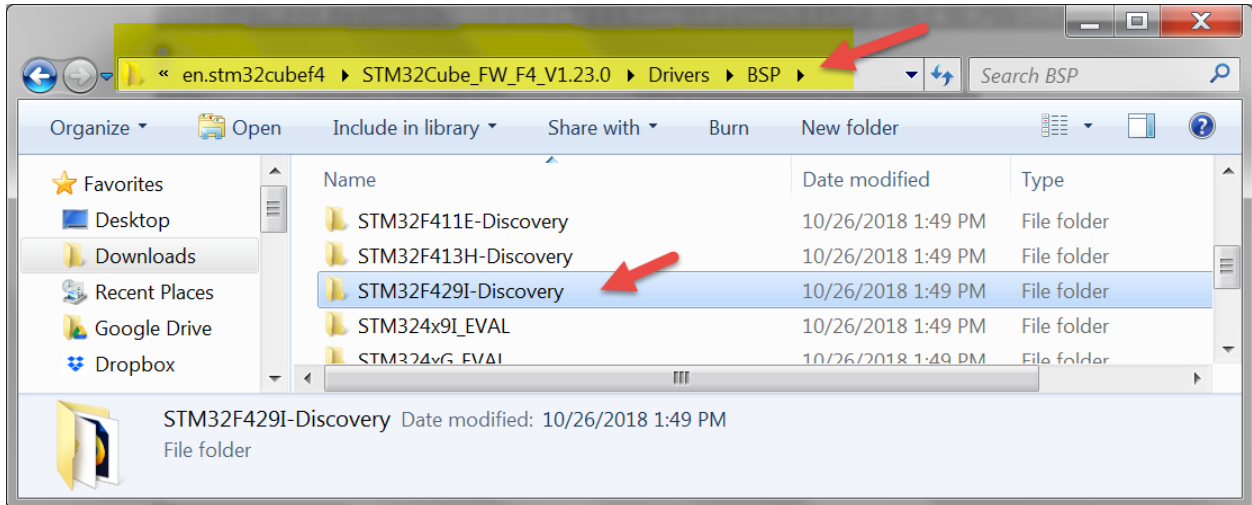
To upload code to target kit -> Project -> Right mouse click -> Target -> Program chip -> Press RESET on kit



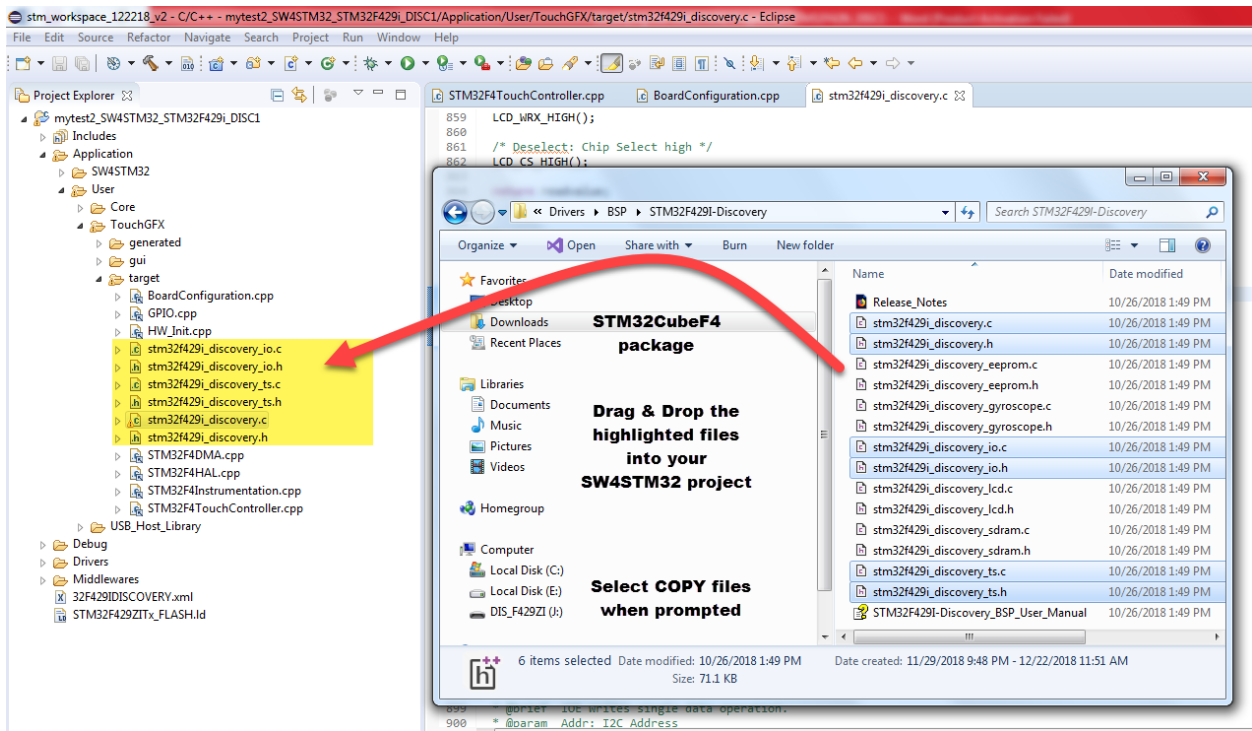
Modifying the SW4STM32 Project for Touch Panel Support

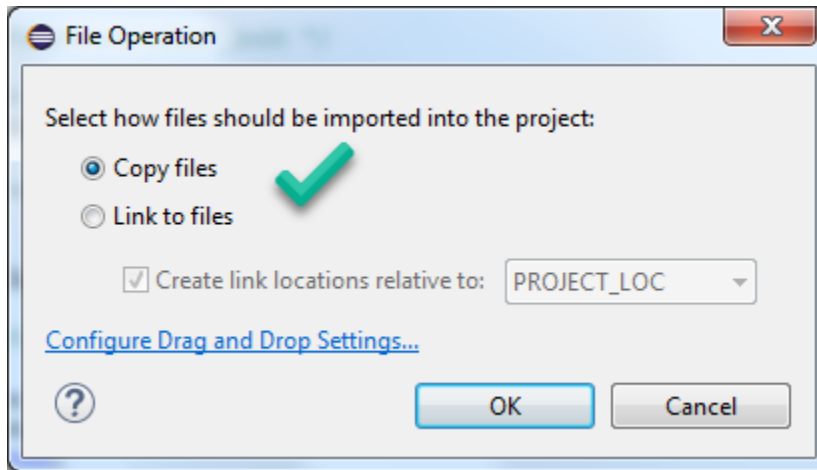
1. Download and extract the latest STM32CubeF4 package from ST website. Version 1.23.0 was used for this tutorial.
2. Copy the **Components** folder from STM32CubeF4 package to your project folder as shown. The folder structure is important. NB: The wizard does not generate a **Components** folder.



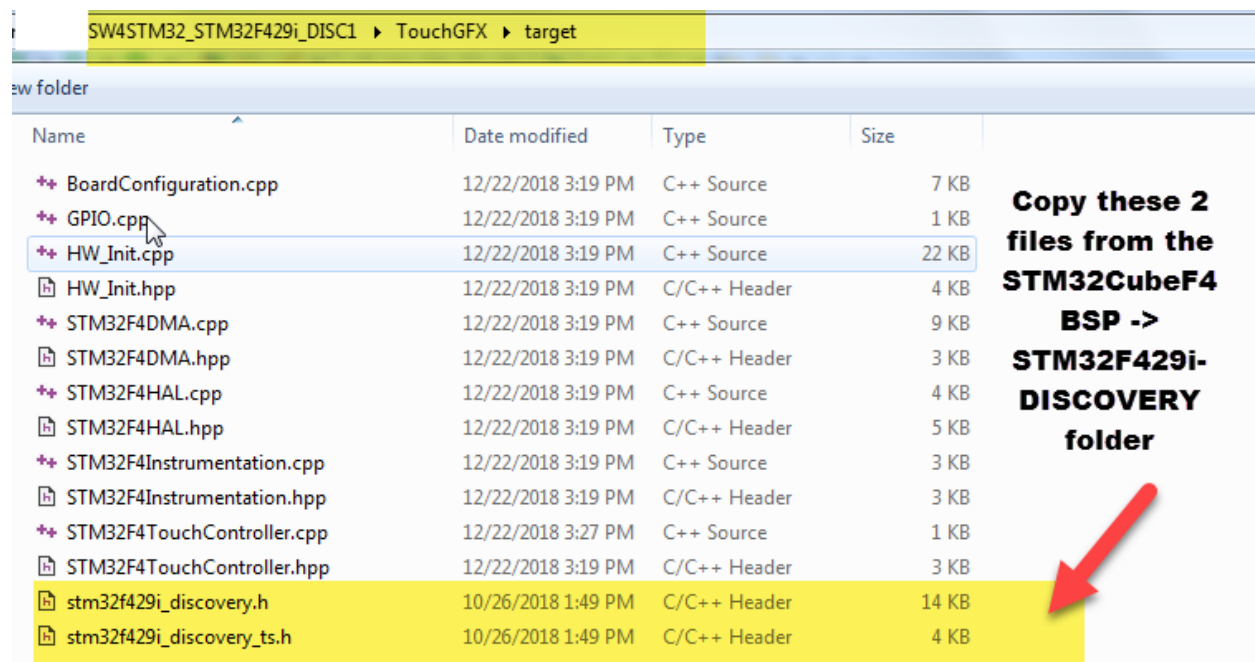


Drag & Drop the highlighted files from the STM32CubeF4 folder to your project:



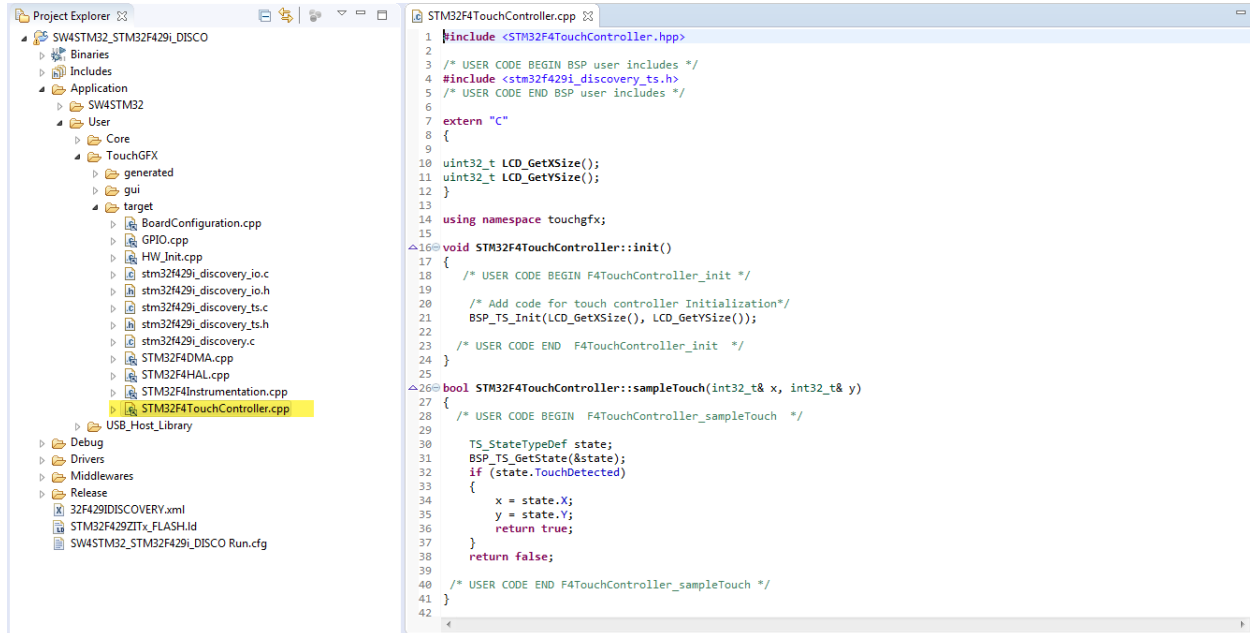


Select COPY FILES when prompted



Inside the **target** sub-folder of your project, copy the shown 2 files from the STM32CubeF4 download

Edit STM32F4TouchController.cpp and change as shown:



Or copy and paste the following working code changes and delete the original wizard code:

```
#include <STM32F4TouchController.hpp>

/* USER CODE BEGIN BSP user includes */
#include <stm32f429i_discovery_ts.h>
/* USER CODE END BSP user includes */

extern "C"
{

uint32_t LCD_GetXSize();
uint32_t LCD_GetYSize();
}

using namespace touchgfx;

void STM32F4TouchController::init()
{
    /* USER CODE BEGIN F4TouchController_init */

    /* Add code for touch controller Initialization*/
    BSP_TS_Init(LCD_GetXSize(), LCD_GetYSize());

    /* USER CODE END F4TouchController_init */
}

bool STM32F4TouchController::sampleTouch(int32_t& x, int32_t& y)
```

```

{
  /* USER CODE BEGIN F4TouchController_sampleTouch */

  TS_StateTypeDef state;
  BSP_TS_GetState(&state);
  if (state.TouchDetected)
  {
    x = state.X; // Note this change
    y = state.Y; // Note this change
    return true;
  }
  return false;

  /* USER CODE END F4TouchController_sampleTouch */
}

```

The screenshot shows a code editor with three files open: STM32F4TouchController.cpp, BoardConfiguration.cpp, and stm32f429i_discovery.c. The code in stm32f429i_discovery.c is as follows:

```

859 LCD_WRX_HIGH();
860
861 /* Deselect: Chip Select high */
862 LCD_CS_HIGH();
863
864 return readvalue;
865 }
866
867 /**
868  * @brief Wait for loop in ms.
869  * @param Delay in ms.
870  */
871 //void LCD_Delay(uint32_t Delay)
872 //{
873 //  HAL_Delay(Delay);
874 //}
875

```

A yellow highlight is under the file name 'stm32f429i_discovery.c'. A text overlay on the right side of the code reads: **Comment out the duplicate LCD_Delay function**.

Remove the duplicate LCD_Delay routine using the // (comments tags).

Recompile All -> Upload to your target kit to test. Now Touch Panel should be functional ☺

Reminder WARNING: If you wish to revise your TouchGFX project, you may do so but must be done through the File Manager -> TouchGFX folder for this project. Otherwise, if you do select the EXECUTE button (after the initial launch) from the STM32CubeMX tool then your GUI screens will be reset to DEFAULT.

Known Issues

- This documentation is only a work-around till the respective tools are properly integrated
- Current SW4STM32 project appears to only properly DEBUG build, the RELEASE build settings raises an error. If known, please email or post a solution in the ST user forum on how to create a RELEASE build

Comments / Suggestions / Compliments / Error reports / Dog Biscuits to: Kumar[at] softio.com



Full project may be downloaded from here (hosted on our company server):

https://axxonshare.s3.amazonaws.com/my_combo_tutorial.zip