



TESA TOPGUN Getting Started

B-L475E-IOTO1A (Discovery Kit for IoT Node, STM32L) STM32CubeIDE (IDE for STM32)

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Documents and Software Tools





B-L475E-I0T01A

Documents & Software Downloads:



https://www.st.com/en/evaluation-tools/b-l475e-iot01a.html



Hardware Block Diagram

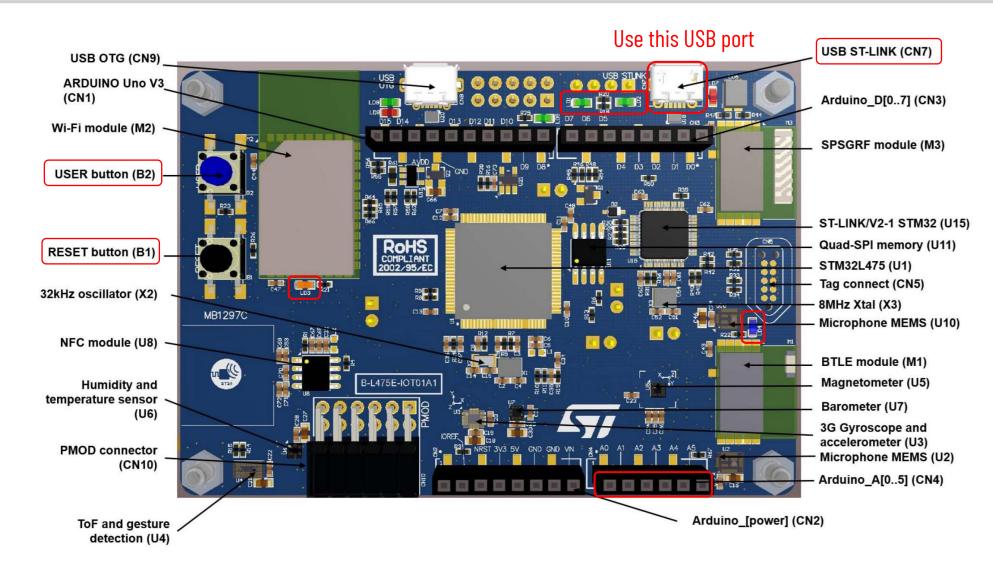


3.3V Power Supply 32KHz Crystal RTC ISM43362-M3G-L44 **GPIOs and UART3** Wi-Fi module SPBTLE-RF **GPIOs** and VCP SPI3 Bluetooth module UART1 SPSGRF Sub-GHz MicroB USB ST-LINK / SWD (Spirit) module connector V2-1 M24SR NFC PMOD (2A) connector GPIOs and SPI2 module PMOD (4A) connector **GPIOs and UART2** LIS3MDL GPIOs and I2C2 3-axis magnetometer LSM6DSL STM32L475VGT6 3D gyroscope LPS22HB LEDs. **GPIOs** digital barometer reset and wake-up buttons HTS221 humidity and temperature HS PHY and OTG VL53L0X MicroAB USB connector FS ToF and gesture detection STSAFE-A100 GPIOs and Arduino Uno Shield authentication and security **UART4** and SPI1 connectors MP34DT01 digital 64-Mbit QSPI Flash DFSDM QSPI microphone (MX25R6435F) MP34DT01 digital

microphone

Top View (LEDs and Connectors)



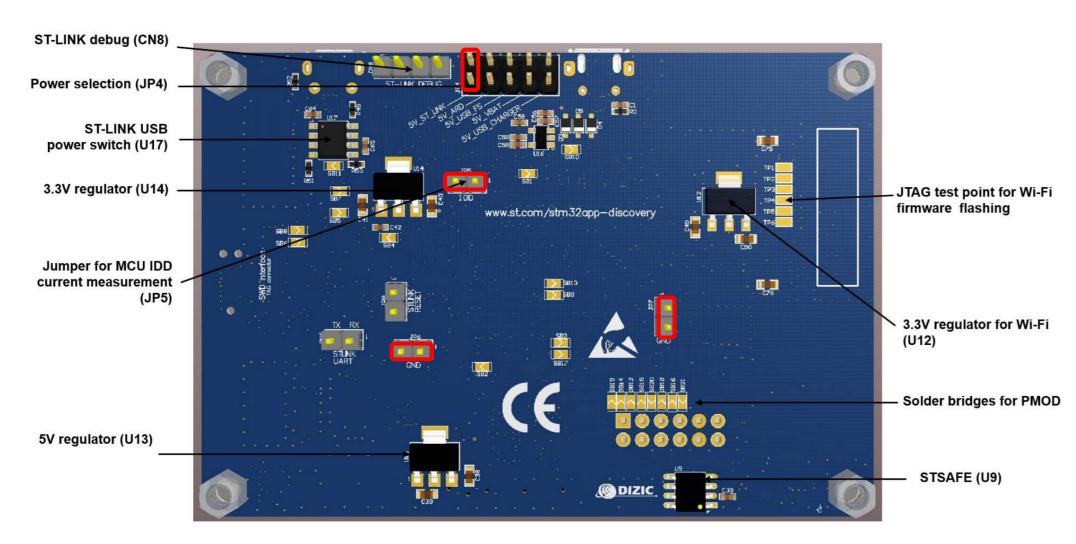




Bottom View (Jumpers)



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Note: Check the position of jumper



Required Software Tools



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STM32CubeIDE Integrated Development Environment (IDE) for STM32



STSW-LINK007 ST-LINK/V2-1, STLINK-V3 Boards Firmware Upgrade



STSW-LINK009 ST-LINK/V2, ST-LINK/V2-1 USB Driver

Update Board Firmware



1) Extract the STSW-LINK007 a new directory, stsw-link007, will be created)

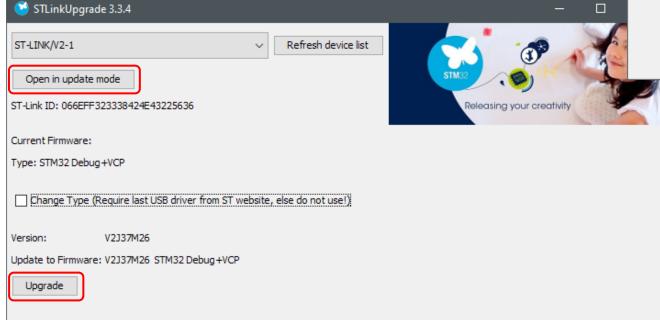
2) Connect the MCU board to the USB port (USB 2.0 or USB 3.0 port is recommended)

3) Run the STLinkUpgrade.jar located in the stsw-link007/AllPlatforms

Windows: Run the ST-LinkUpgrade.exe located in stsw-link007/Windows

Linux/Mac: Run the STLinkUpgrade.jar located in stsw-link007/AllPlatforms

STLinkUpgrade.jar



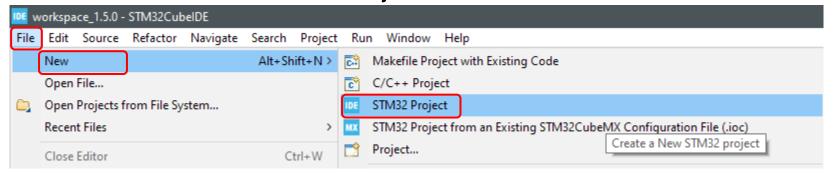


ST-LinkUpgrade.exe

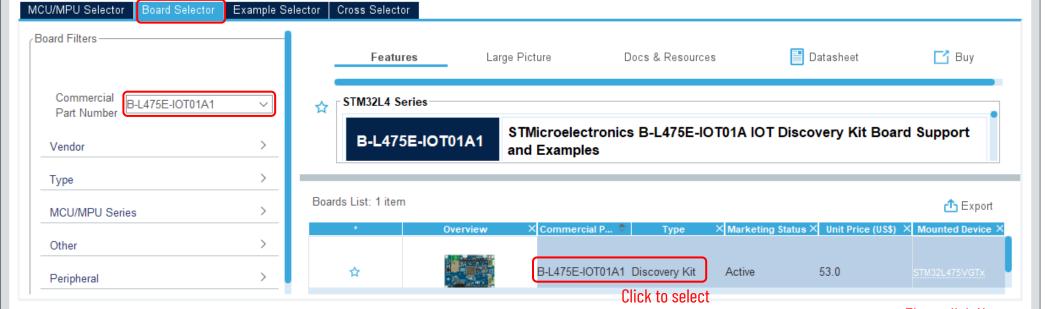


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1) Run the STM32CubeIDE and Create a **STM32 Project**



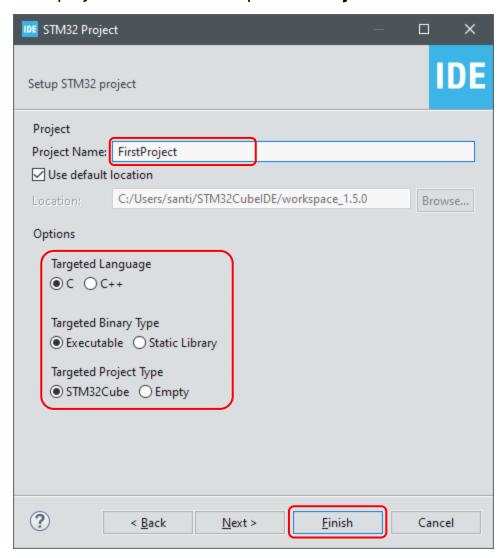
2) Select a target board and (B-L475E-IOTO1A1)



Then, click Next

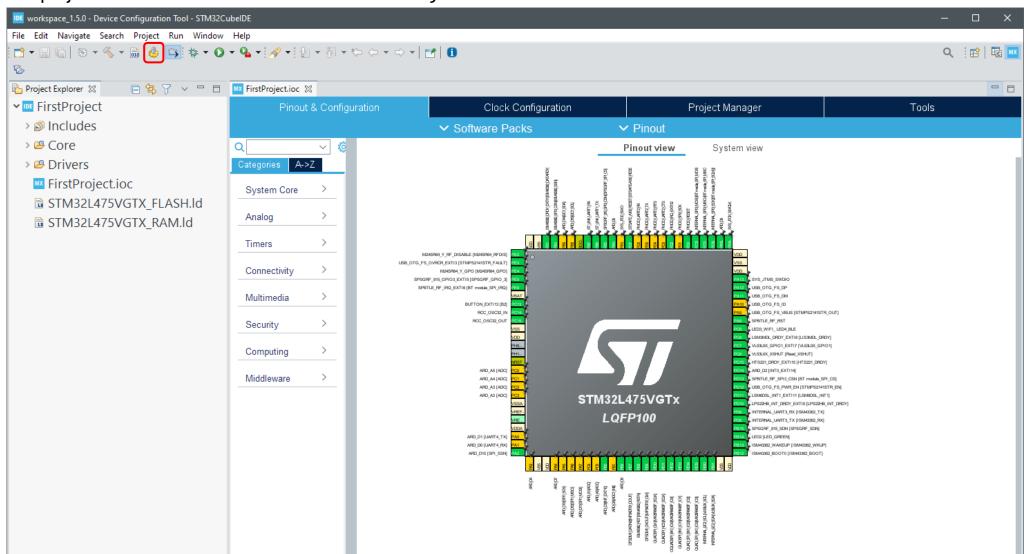


3) Give it a project name, for example, FirstProject, and click Finish button





4) The project is created. Click the **Code Generation** to generate source code





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5) Open the **main.c** and add two lines of code

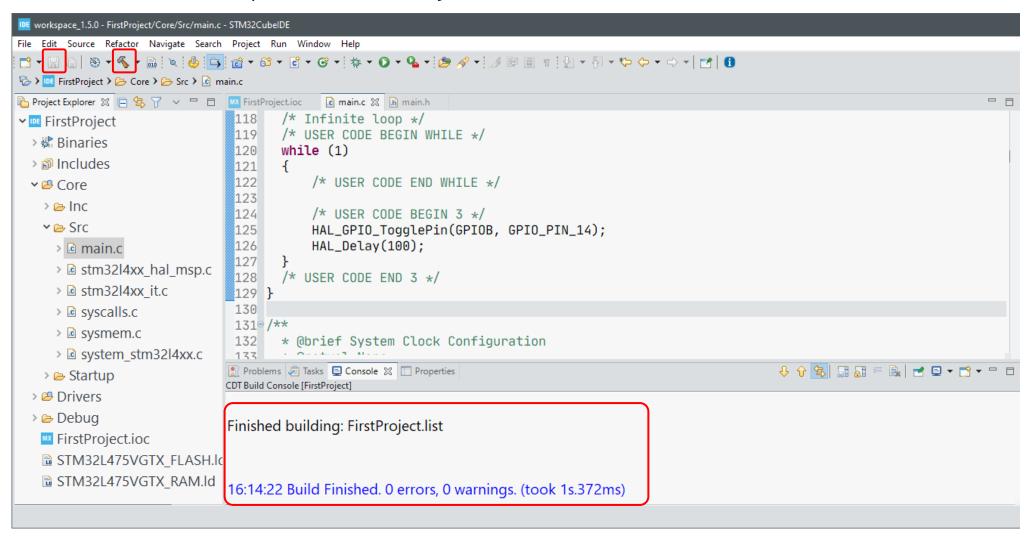
workspace_1.5.0 - FirstProject/Core/Src/main.c - STM32CubelDE File Edit Source Refactor Navigate Search Project Run Window Help FirstProject > ☼ Core > ☼ Src > ⓒ main.c Project Explorer ⋈ 🕒 🥞 🥜 ∨ 🖳 🗇 ic main.c ⋈ in main.h MX FirstProject.ioc MX_USART3_UART_Init(); ▼ InstProject MX_USB_OTG_FS_PCD_Init(); 113 > 🕸 Binaries 114 /* USER CODE BEGIN 2 */ → 🛍 Includes 115 116 /* USER CODE END 2 */ ✓

Core 117 → Inc 118 /* Infinite loop */ **v** <u>⊜</u> Src Double-click to open 119 /* USER CODE BEGIN WHILE */ 120 while (1) > @ main.c 121 → la stm32l4xx hal msp.c 122 /* USER CODE END WHILE */ → Is stm32l4xx it.c 123 Add these two lines 124 /* USER CODE BEGIN 3 */ > i syscalls.c 125 HAL_GPIO_TogglePin(GPIOB, GPIO_PIN_14); > @ sysmem.c 126 HAL_Delay(100); > @ system_stm32l4xx.c 127 128 /* USER CODE END 3 */ > 🗁 Startup 129 } >

Drivers 130 > 🗁 Debug 1319 /** 132 * @brief System Clock Configuration FirstProject.ioc 133 * @retval None ■ STM32L475VGTX FLASH.lc 134 ☐ STM32L475VGTX RAM.ld 135 void SystemClock_Config(void)



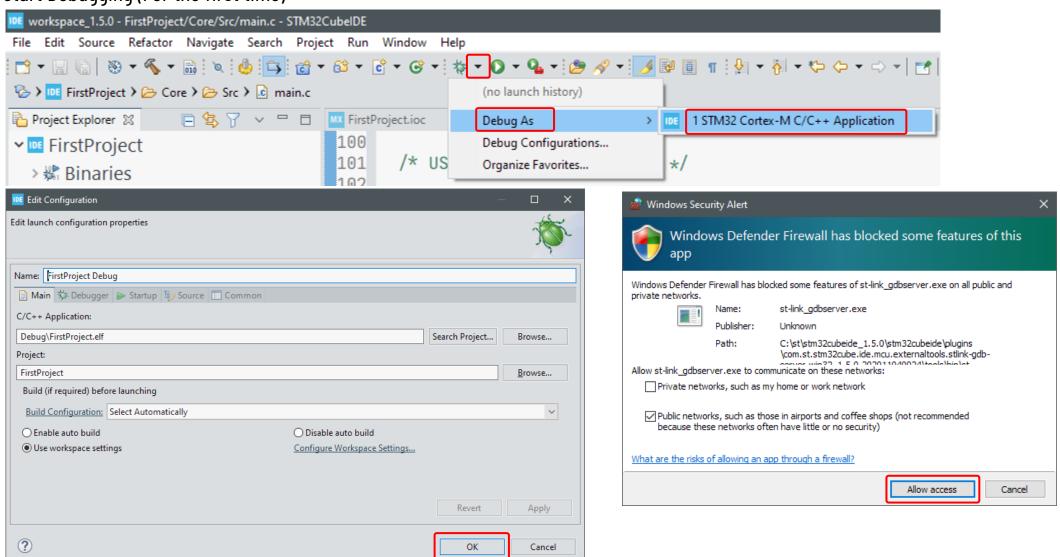
6) Save and Build. Check the output window (no warning, no error).





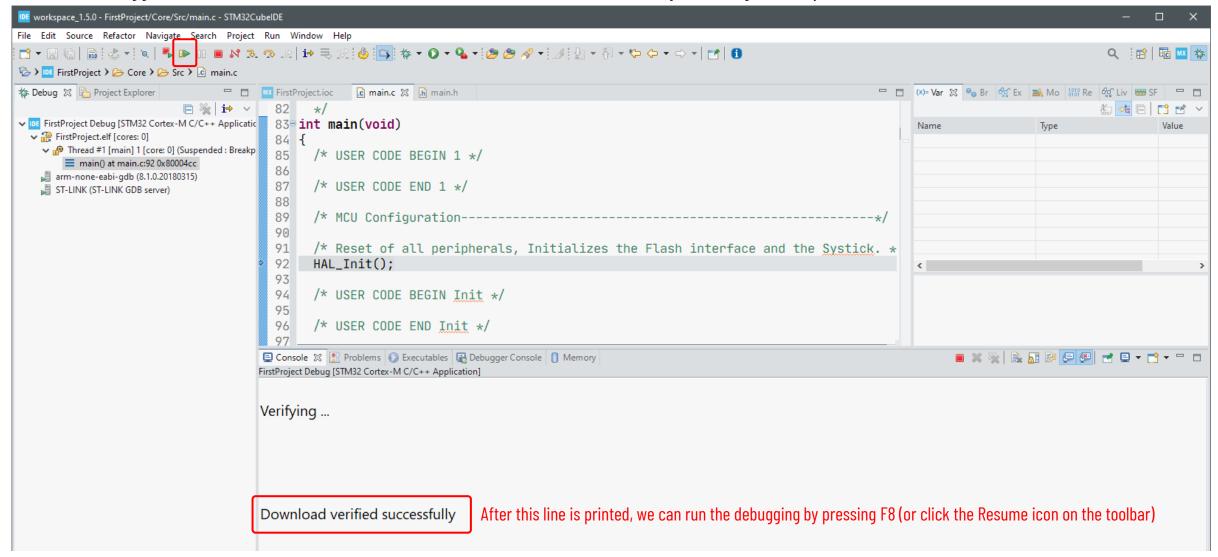
7) Start Debugging (For the first time)

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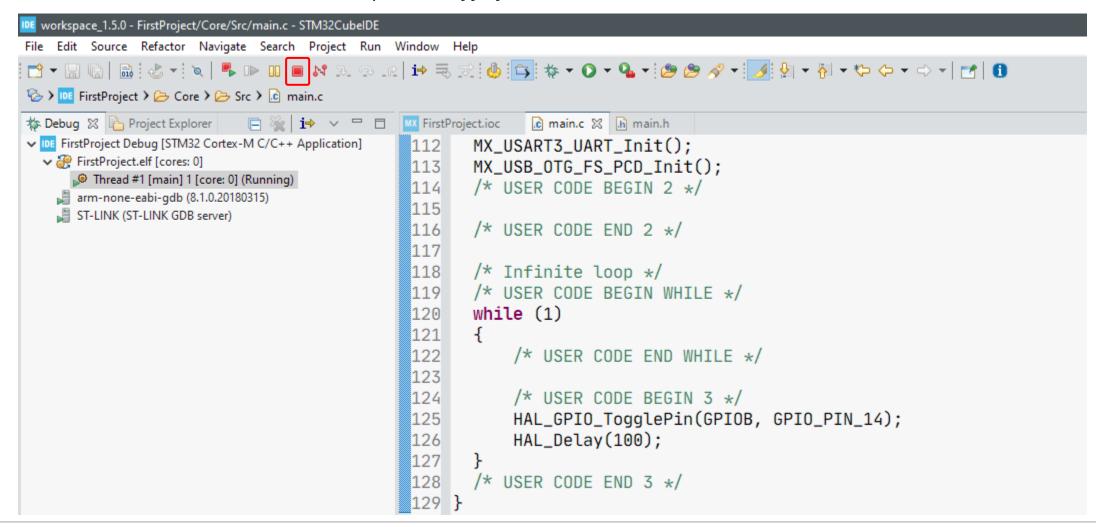


8) After the debugger is started, we have to wait the "Download verified successfully" message, then press F8 (or click the Resume button)





- 9) Check the **LED2** on the board. It is now blinking.
- 10) Click the Terminate button or **CTRL+F2** to stop the debugging





11) Modify the code, Save, Build and then click the **Debug** button

```
workspace_1.5.0 - FirstProject/Core/Src/main.c - STM32CubelDE
File Edit Source Refactor Navigate Search Project Run Window Help
 > Interpret > Core > Core > Interpret > In
Project Explorer 🛭

□ □ □ FirstProject.ioc

                                                                                                                                                                     .c main.c ⊠ h main.h

▼ InstProject

                                                                                                                         118
                                                                                                                                                /* Infinite loop */
       > & Binaries
                                                                                                                                                /* USER CODE BEGIN WHILE */
                                                                                                                         119
       > 🛍 Includes
                                                                                                                         120
                                                                                                                                                while (1)
                                                                                                                         121

✓ 

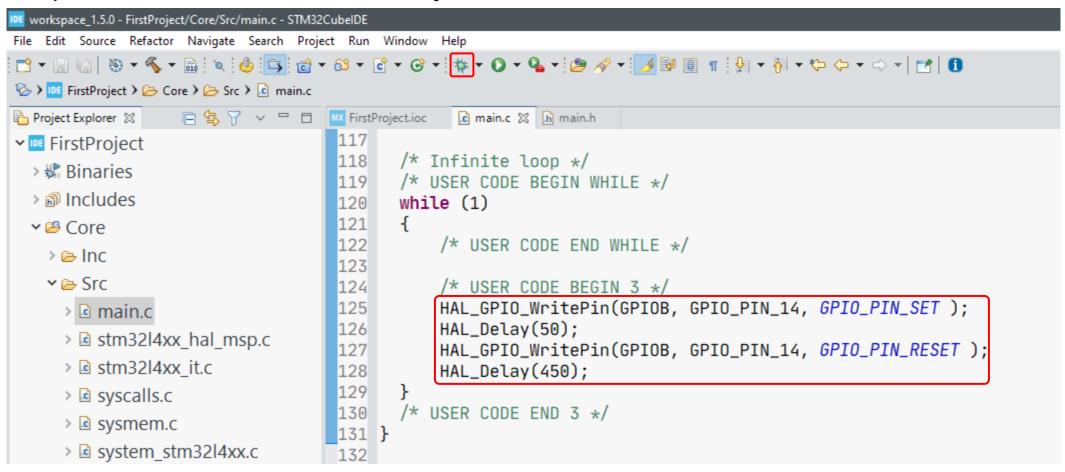
Core

                                                                                                                         122
                                                                                                                                                               /* USER CODE END WHILE */
            → Inc
                                                                                                                         123
            124
                                                                                                                                                                /* USER CODE BEGIN 3 */
                                                                                                                                                              HAL_GPIO_WritePin(GPIOB, GPIO_PIN_14, GPIO_PIN_SET );
                                                                                                                         125
                  > 🖻 main.c
                                                                                                                         126
                                                                                                                                                              HAL_Delay(50);
                  > @ stm32l4xx hal msp.c
                                                                                                                                                               HAL_GPIO_WritePin(GPIOB, GPIO_PIN_14, GPIO_PIN_RESET );
                                                                                                                         127
                  > @ stm32l4xx it.c
                                                                                                                         128
                                                                                                                                                              HAL_Delay(450);
                                                                                                                         129
                  → Syscalls.c
                                                                                                                         130
                                                                                                                                                 /* USER CODE END 3 */
                  > le sysmem.c
                                                                                                                         131 }
                  > @ system stm32l4xx.c
                                                                                                                         132
```



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12) Modify the code, Save, Build and then click the **Debug** button



STM32CubeIDE Documents and Tutorials



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