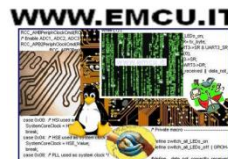
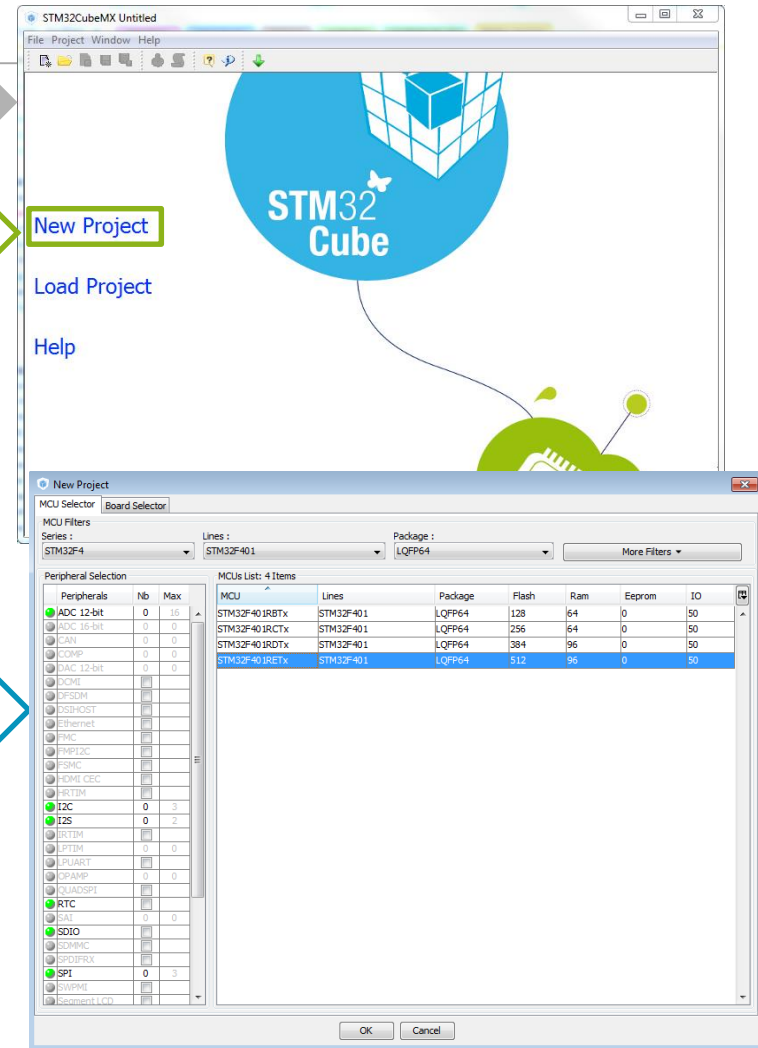
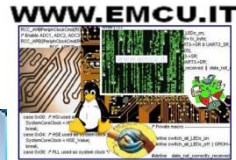


Create new project using CubeMX

- Run CubeMX tool
- Start **new project**
 - Click “New Project” desktop shortcut, or
 - Go to “Menu->File->New Project”
- Filter:
 - Series: STM32F4
 - Line: STM32F401
 - Package: LQFP64
- Select: **STM32F401RE**



Configure debug interface



STM32CubeMX Untitled*: STM32F401RETx

File Project Pinout Window Help

Pinout Clock Configuration Configuration Power Consumption Calculator

Go to Pinout settings

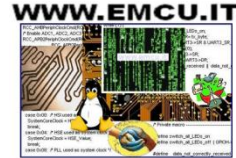
Under SYS peripheral select **SWD interface**

Debug: Serial Wire Debug (SWD)

System Wake-Up

Series	Lines	Mcu	Package	Required Peripherals
<input type="checkbox"/> STM32F4	STM32F401	STM32F401RBTx	LQFP64	None
<input type="checkbox"/> STM32F4	STM32F401	STM32F401RCTx	LQFP64	None
<input type="checkbox"/> STM32F4	STM32F401	STM32F401RDTx	LQFP64	None
<input checked="" type="checkbox"/> STM32F4	STM32F401	STM32F401RETx	LQFP64	None

Configure LSE resonator (32,768 KHz)



STM32CubeMX Untitled*: STM32F401RETx

File Project Pinout Window Help

Pinout Clock Configuration Configuration Power Consumption Calculator

ADC1
CRC
I2C1
I2C2
I2C3
I2S2
I2S3
IWDG
RCC
RTC
SDIO
SPI1
SPI2

High Speed Clock (HSE) Disable
Low Speed Clock (LSE) Crystal/Ceramic Res...

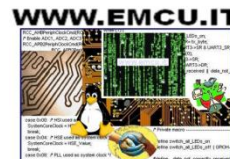
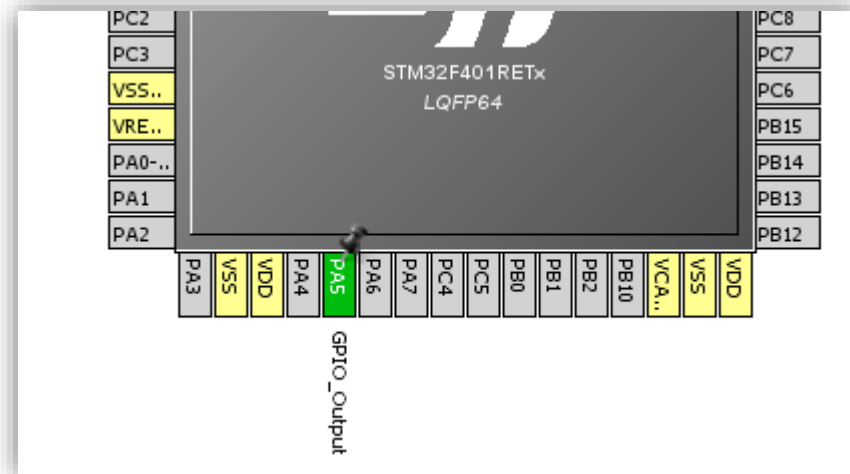
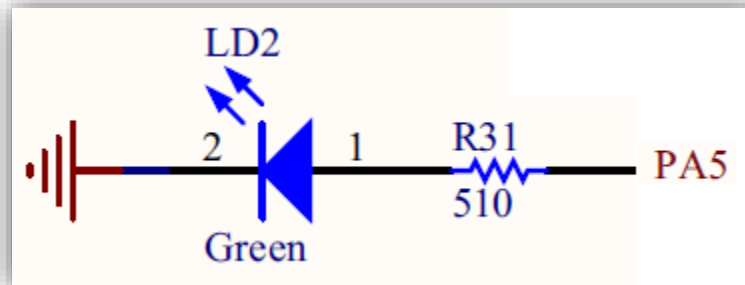
Master Clock Output 1
Master Clock Output 2
Audio Clock Input (I2S_CKIN)

MCUs Selection Output

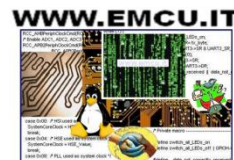
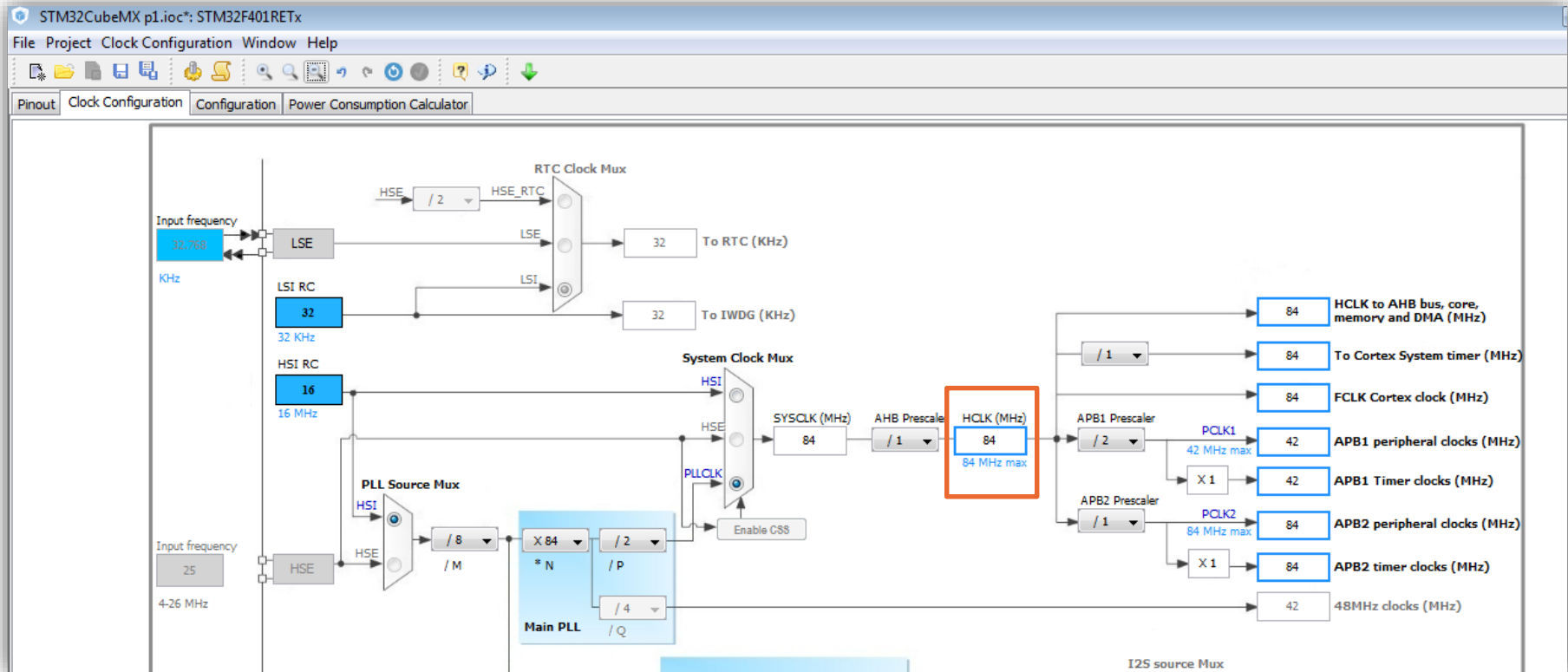
Series	Lines	Mcu	Package	Required Peripherals
<input type="checkbox"/> STM32F4	STM32F401	STM32F401RBTx	LQFP64	None
<input type="checkbox"/> STM32F4	STM32F401	STM32F401RCTx	LQFP64	None
<input type="checkbox"/> STM32F4	STM32F401	STM32F401RDTx	LQFP64	None
<input checked="" type="checkbox"/> STM32F4	STM32F401	STM32F401RETx	LQFP64	None

Configure GPIO for LED toggling

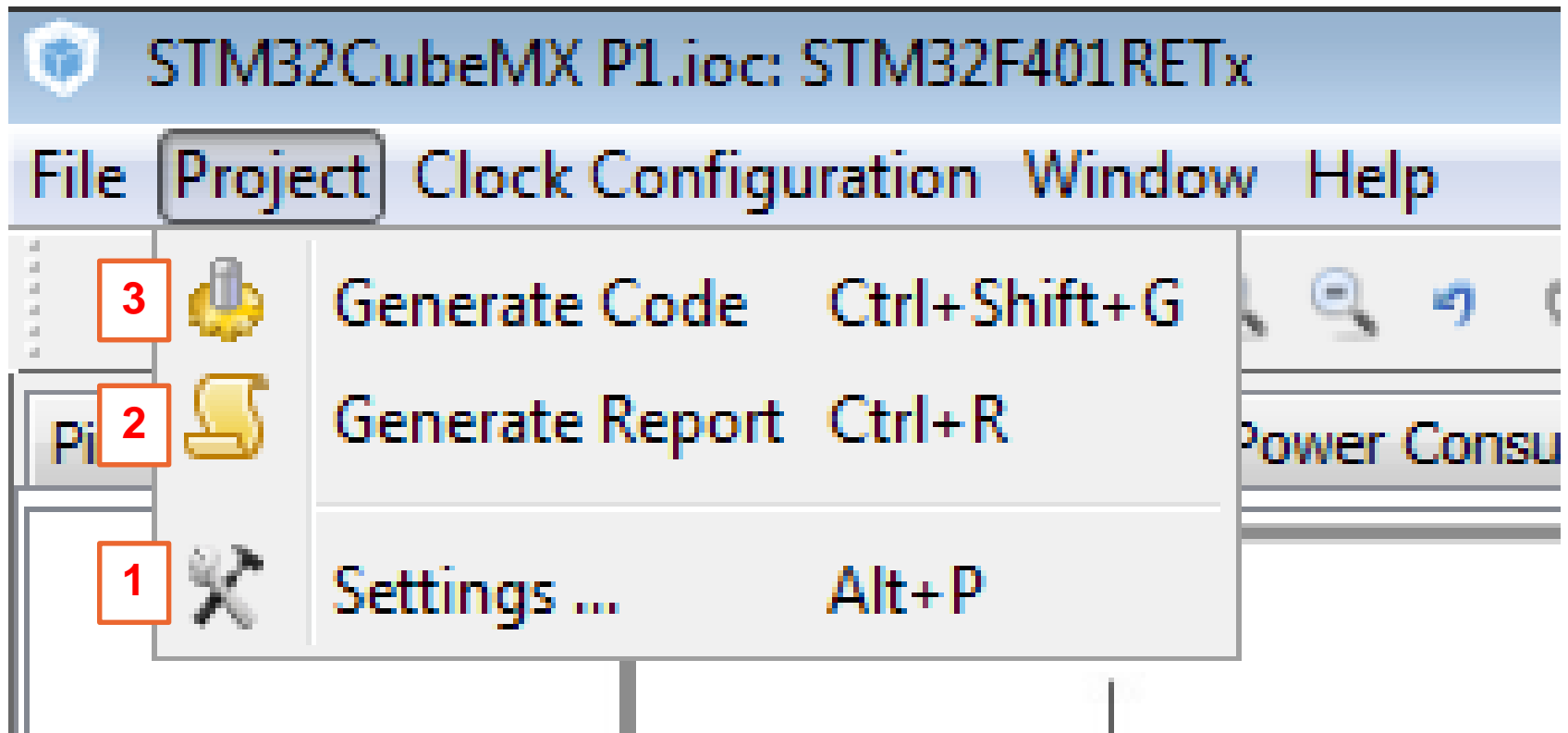
Configure LED pin as GPIO_Output



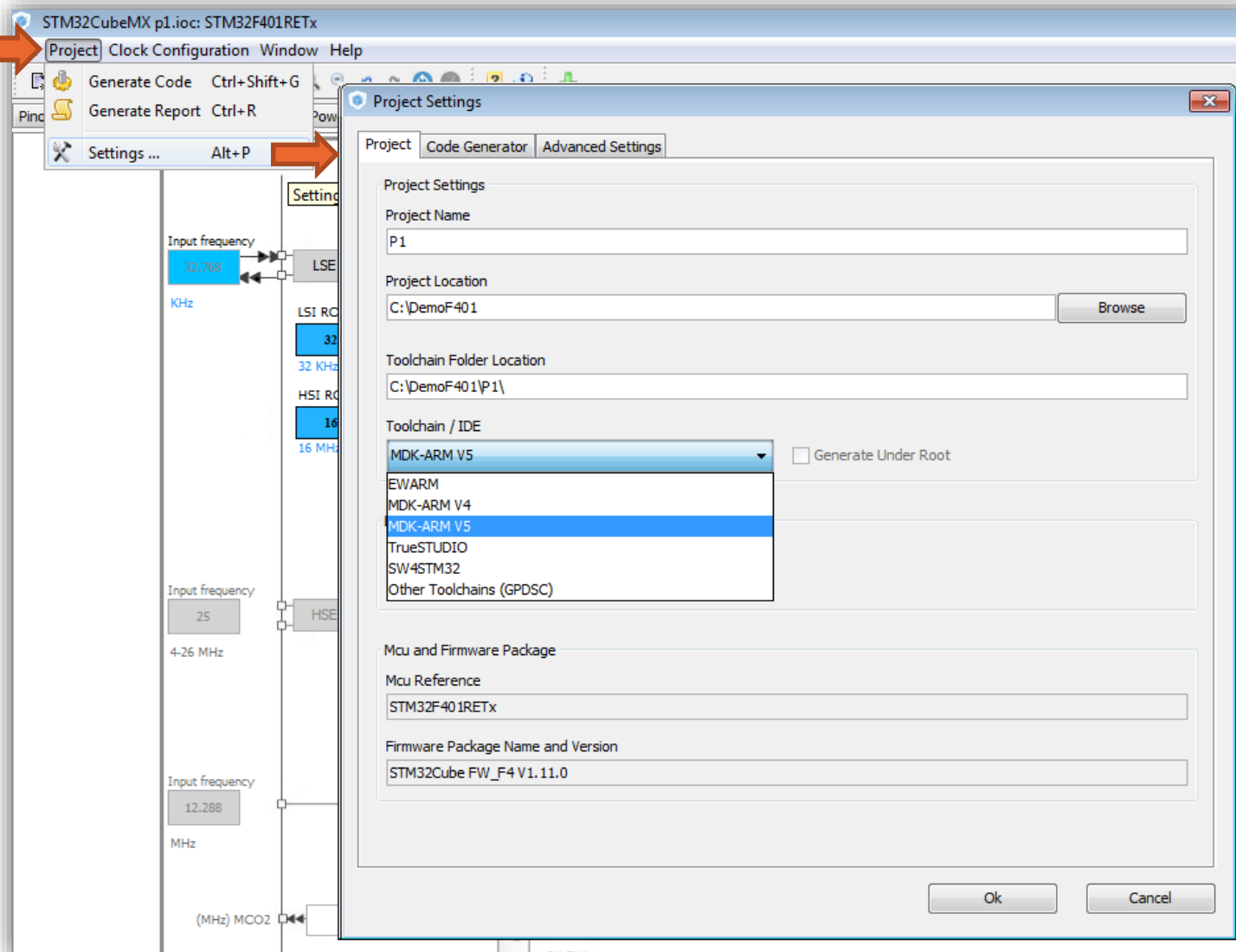
Clock configuration



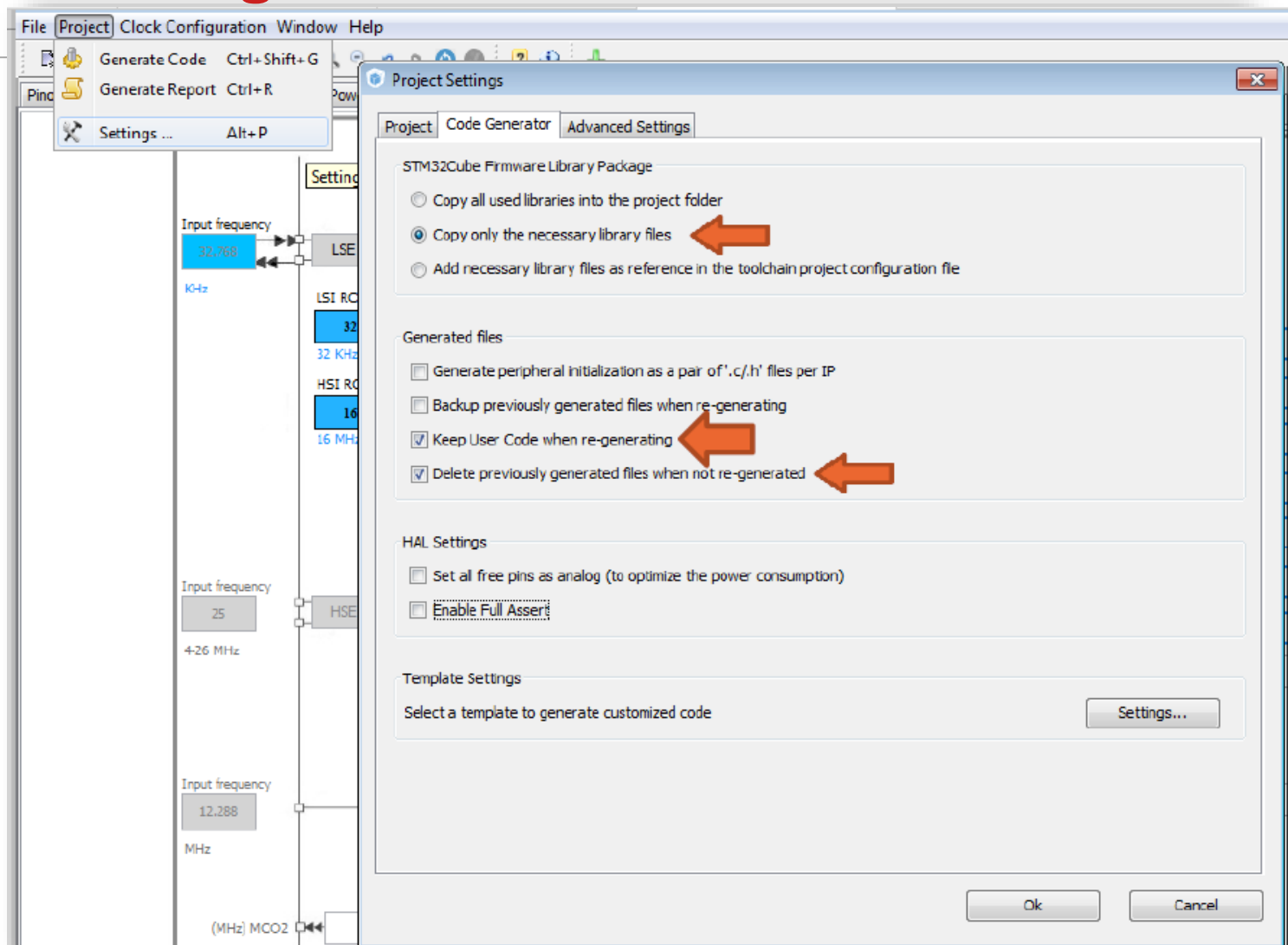
CubeMX generate the code for some GUI 1/3



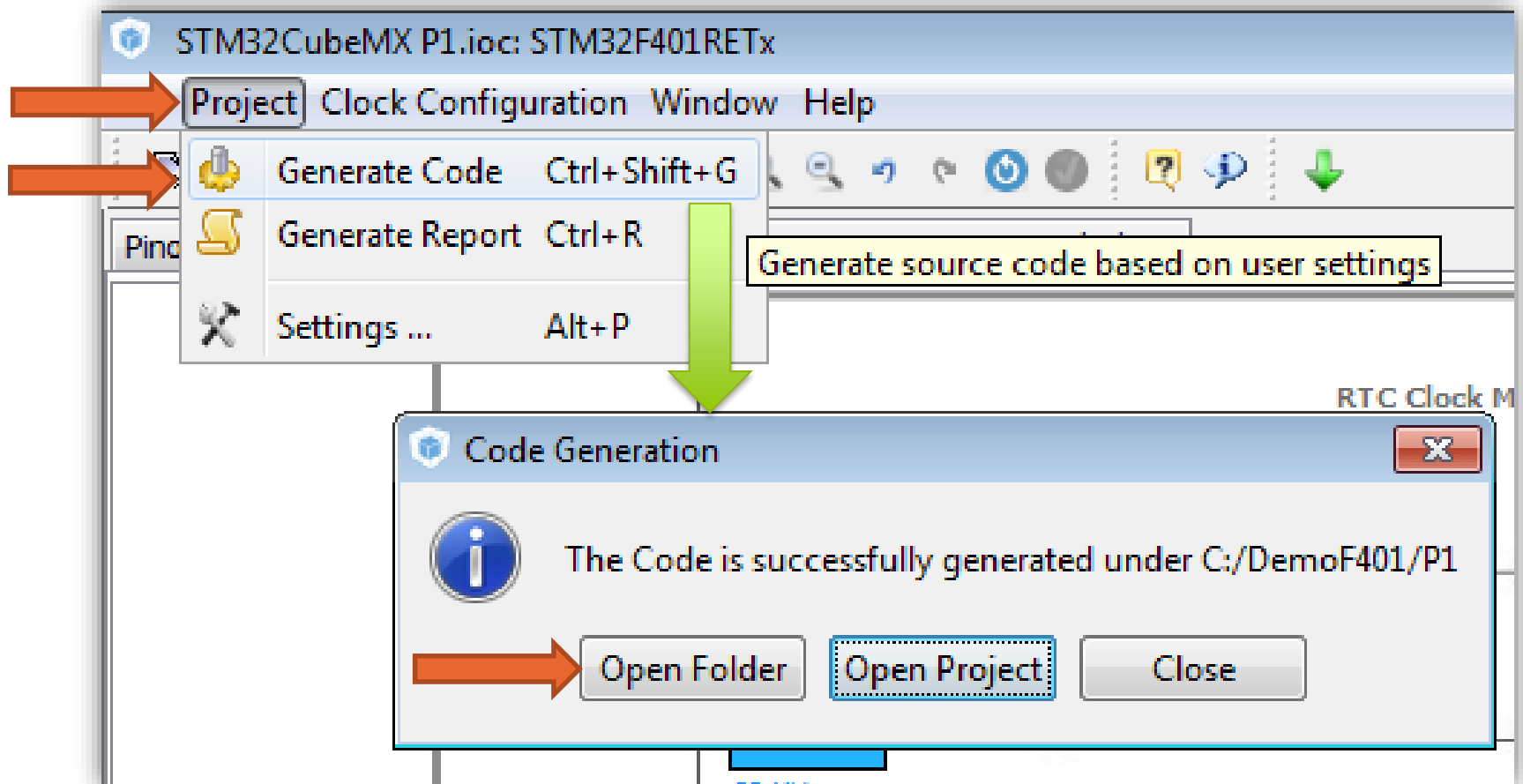
CubeMX generate the code for some GUI 2/3



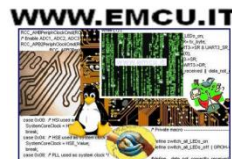
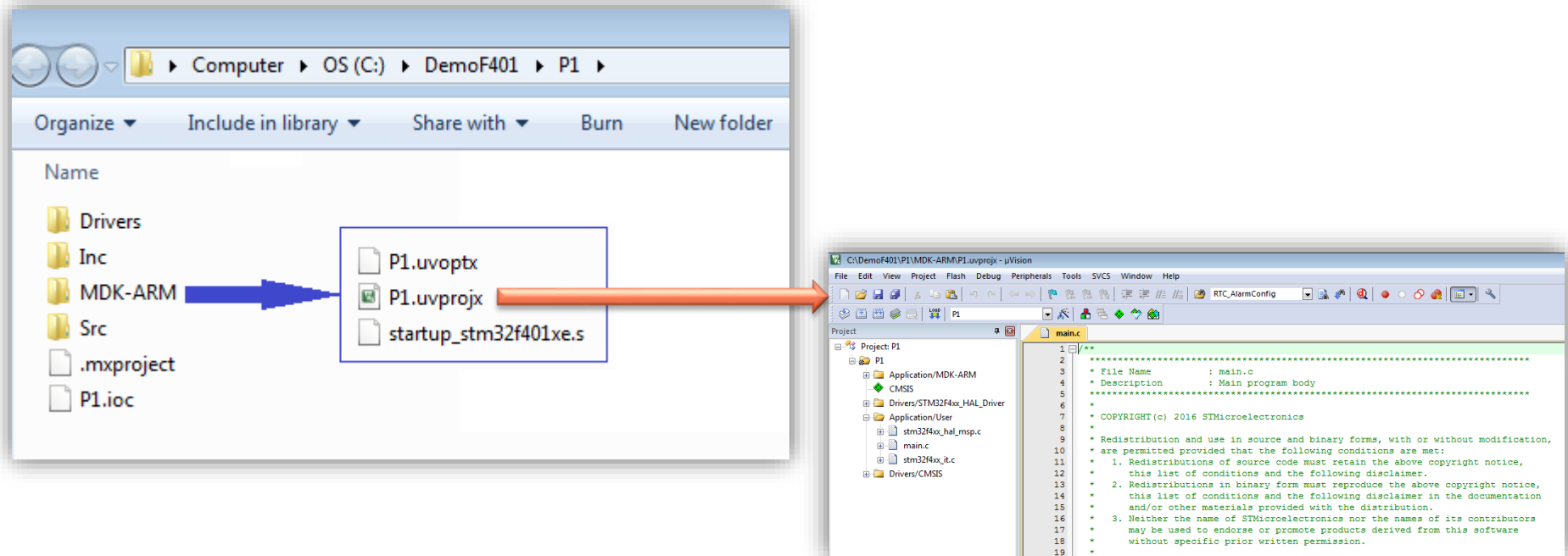
CubeMX generate the code for some GUI 3/3



CubeMX generate the code 1/3



CubeMX generate the code 2/3

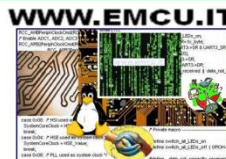


CubeMX add code for flashing LEDs

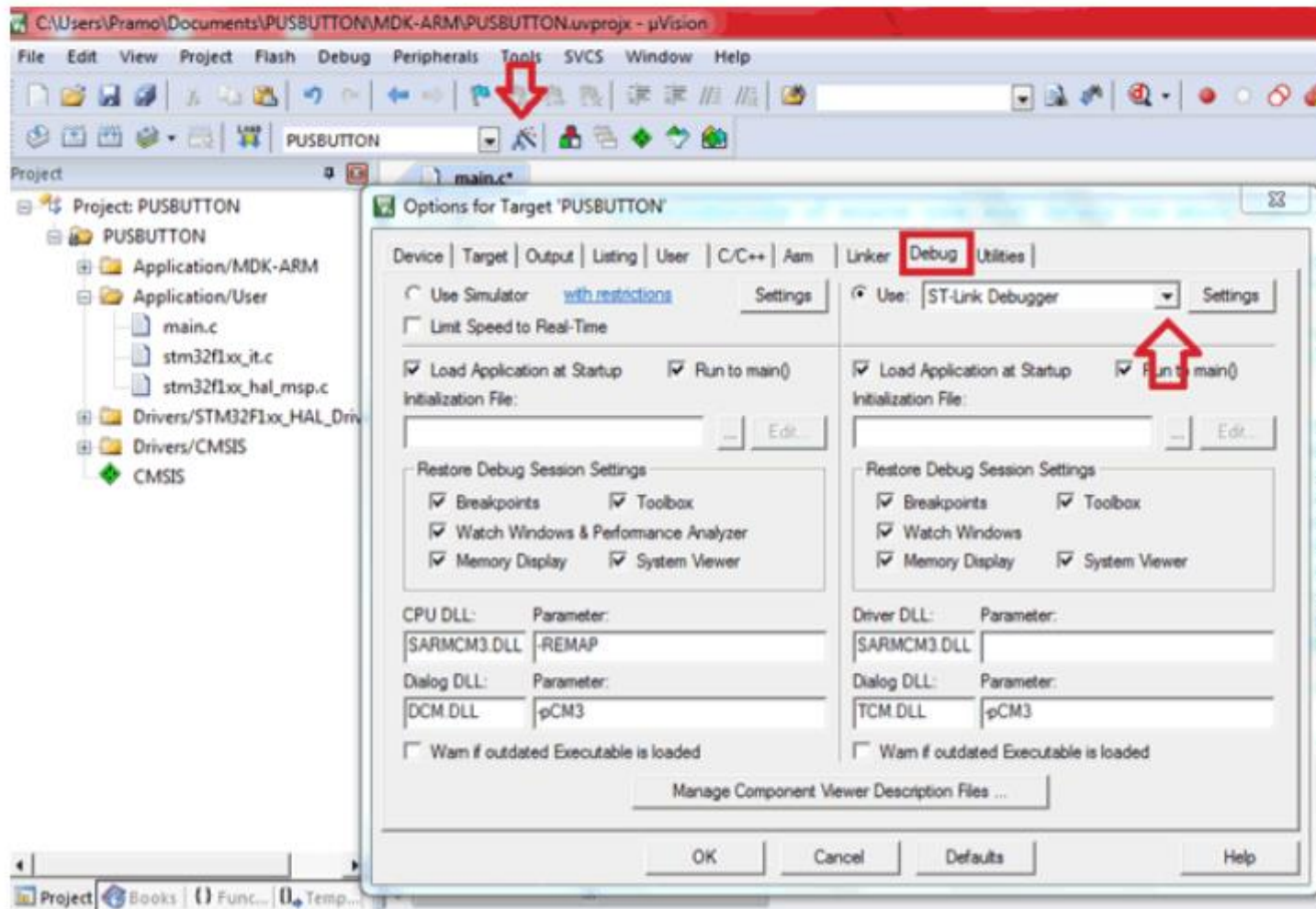
```
68
69  /* Reset of all peripherals, Initializes the Flash interface and the Systick. */
70  HAL_Init();
71
72  /* Configure the system clock */
73  SystemClock_Config();
74
75  /* Initialize all configured peripherals */
76  MX_GPIO_Init();
77
78  /* USER CODE BEGIN 2 */
79
80  /* USER CODE END 2 */
81
82  /* Infinite loop */
83  /* USER CODE BEGIN WHILE */
84  while (1)
85  {
86    /* USER CODE END WHILE */
87
88    /* USER CODE BEGIN 3 */
89    HAL_GPIO_TogglePin(GPIOA, GPIO_PIN_5);
90    HAL_Delay(200);
91  }
92  /* USER CODE END 3 */
93
94 }
```

The C code generated by CubeMX provides user sections as illustrated here. They allow user C code to be inserted and preserved at next C code generation. So add your code in these dedicated sections so as to be kept by CubeMX upon regeneration.

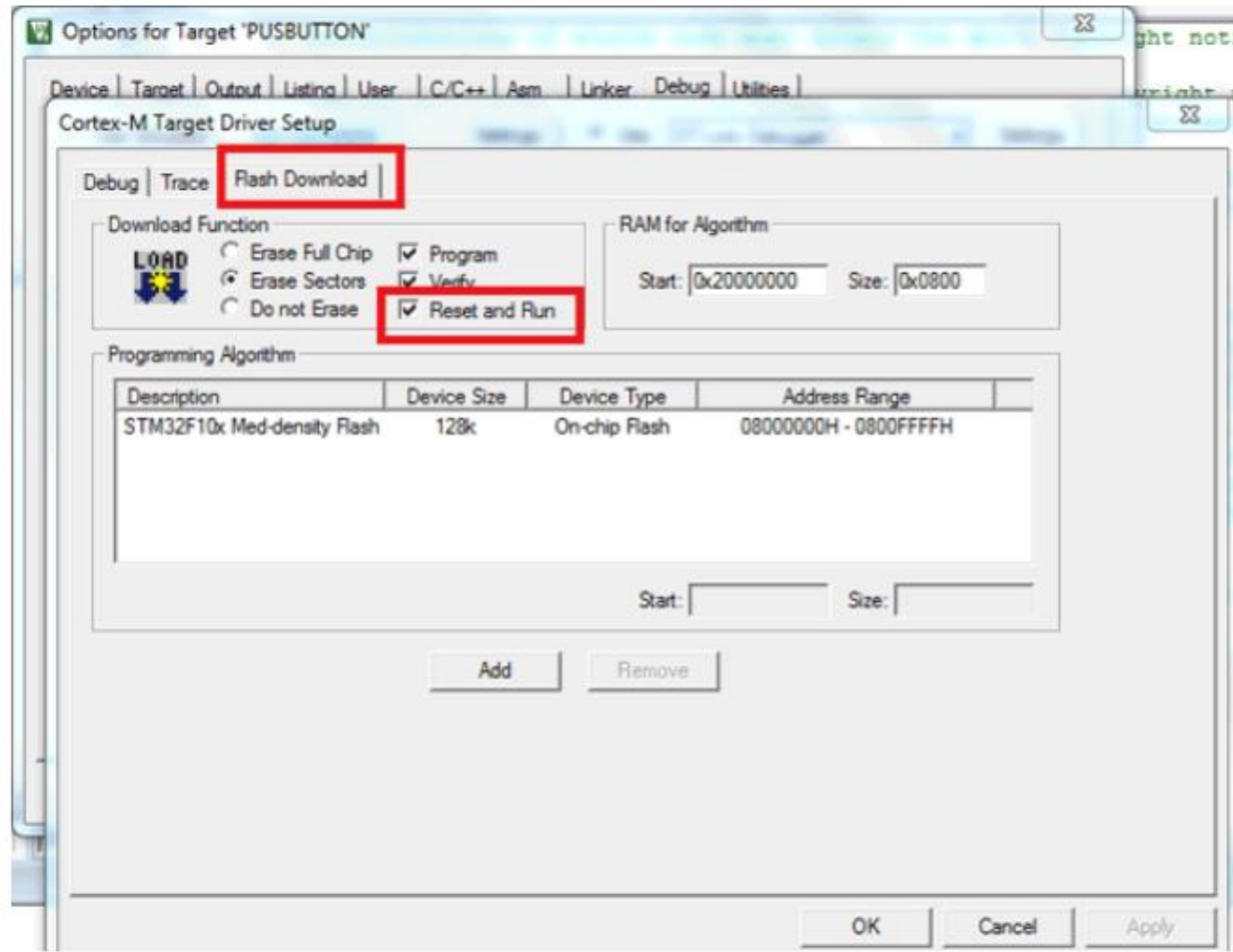
See the:
UM1725 - Description of STM32F4 HAL drivers



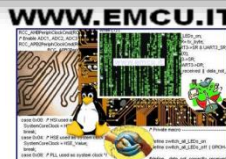
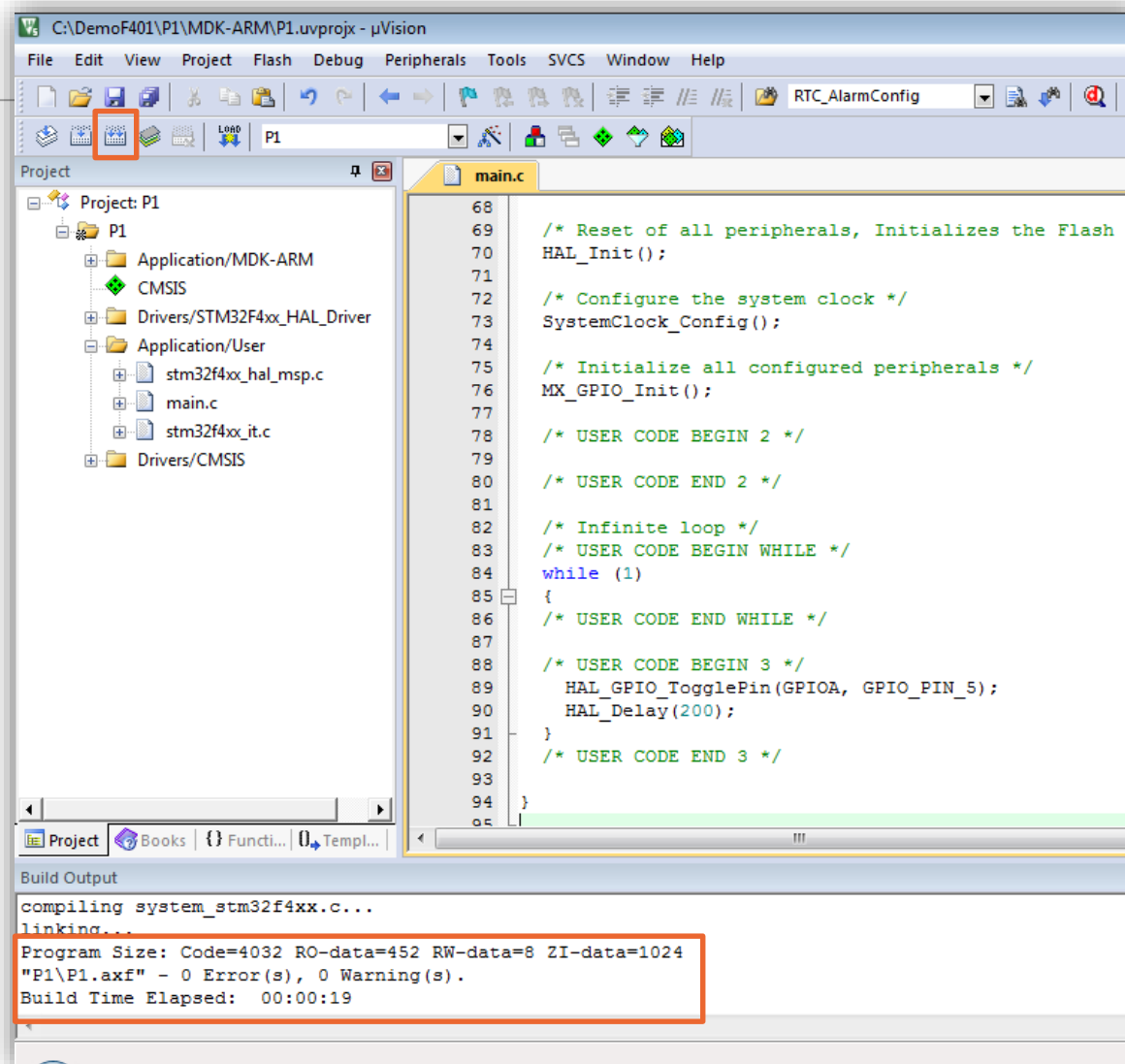
After finish editing the code, click the **Options for Target** icon under the **debug** tab select ST-LINK Debugger



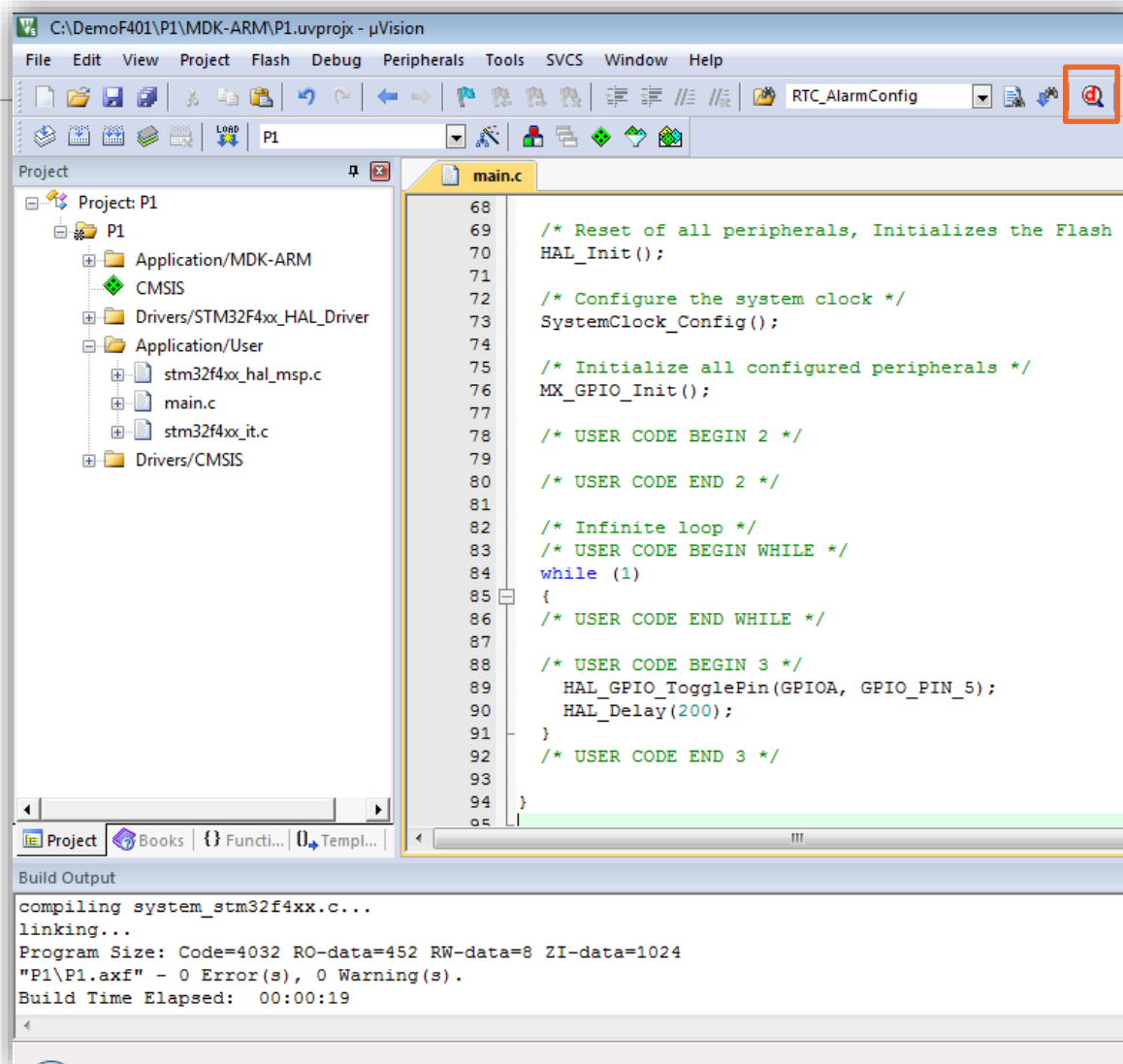
Also, click on **Settings** button and then under **Flash Download** tab tick the **Reset and Run** check box and click 'ok'.



CubeMX compile and debug – 1/3



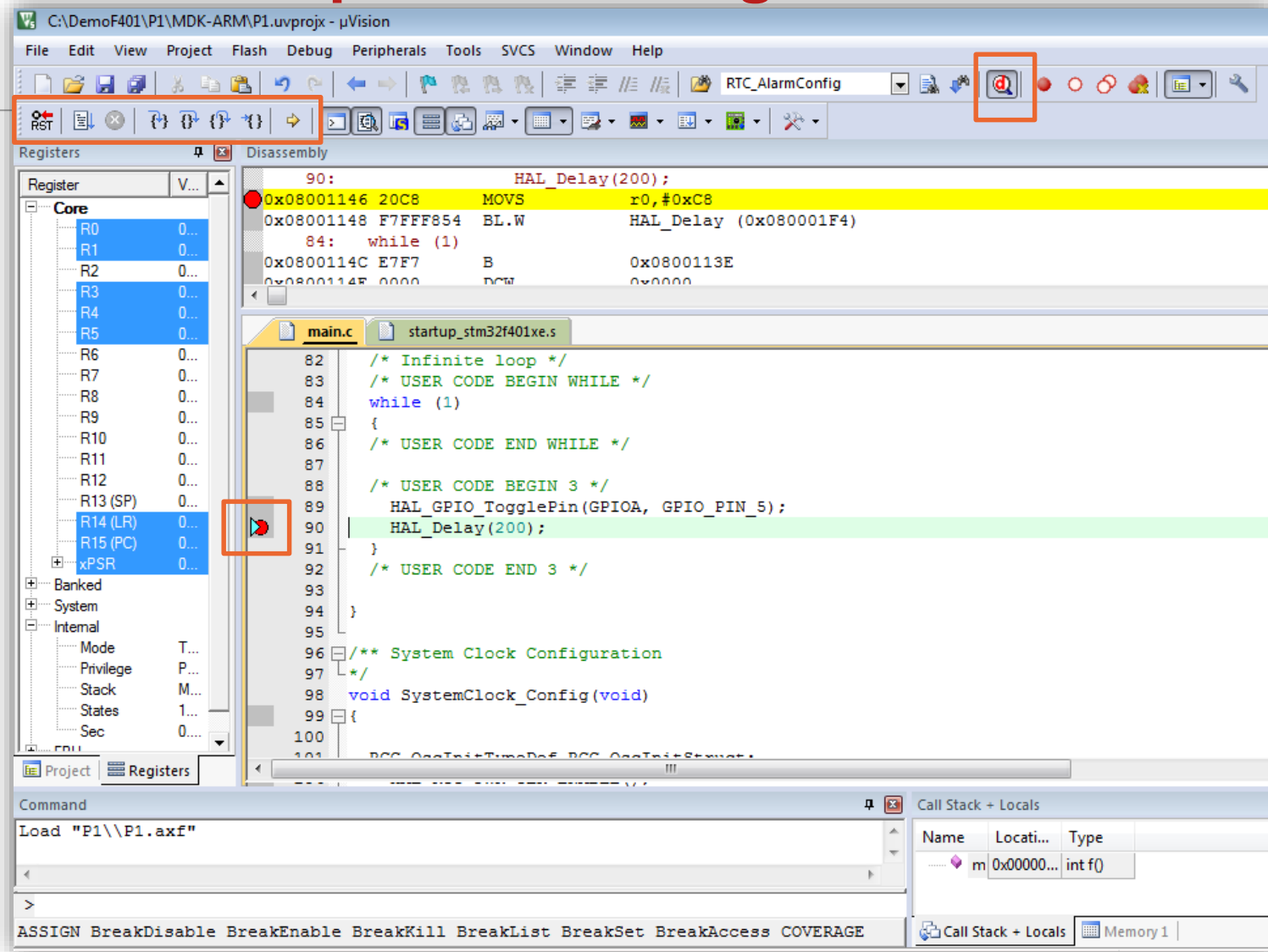
CubeMX compile and debug – 2/3



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CubeMX compile and debug – 3/3



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