USCD Embedded C Assignment 3

By
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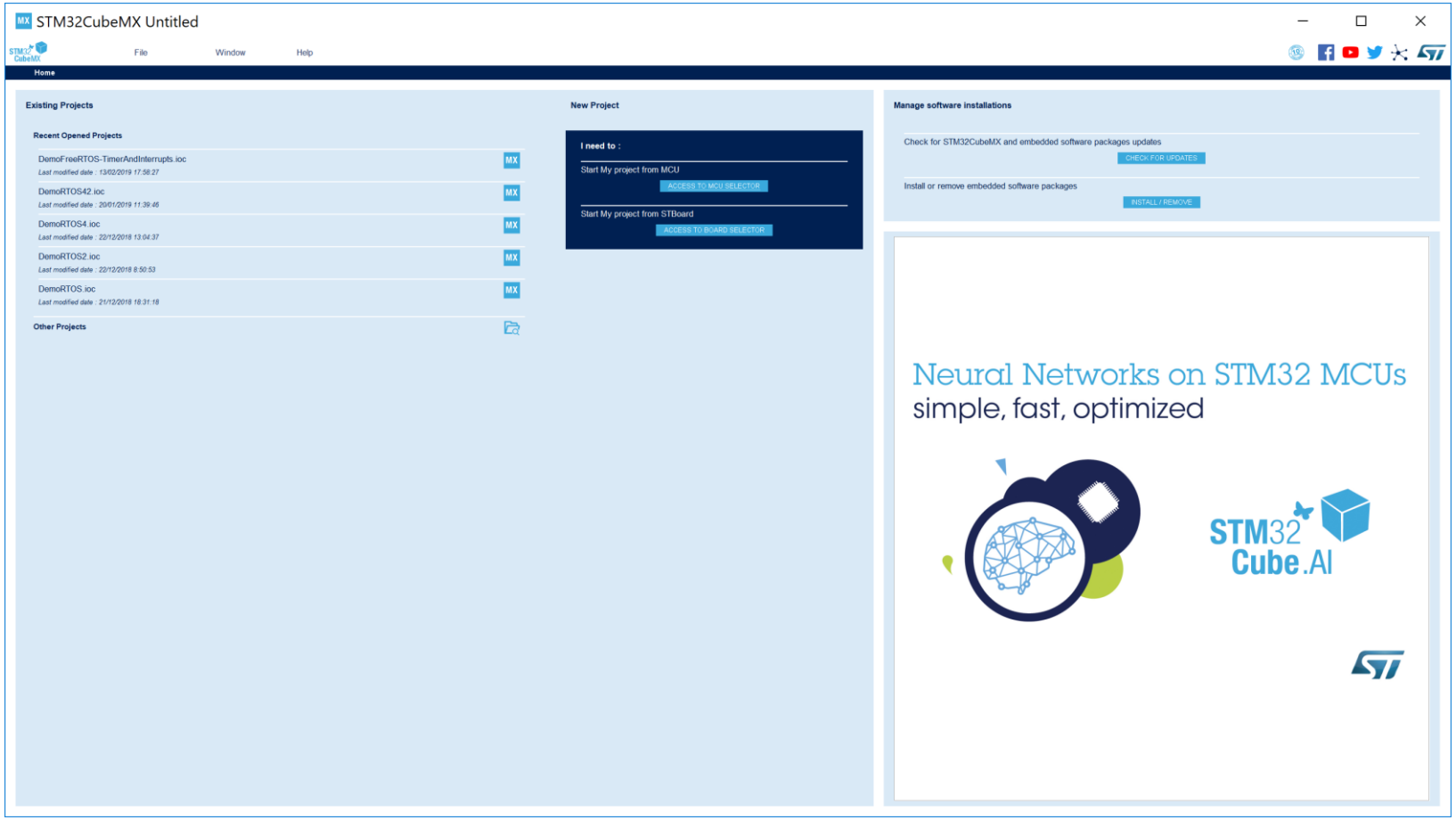
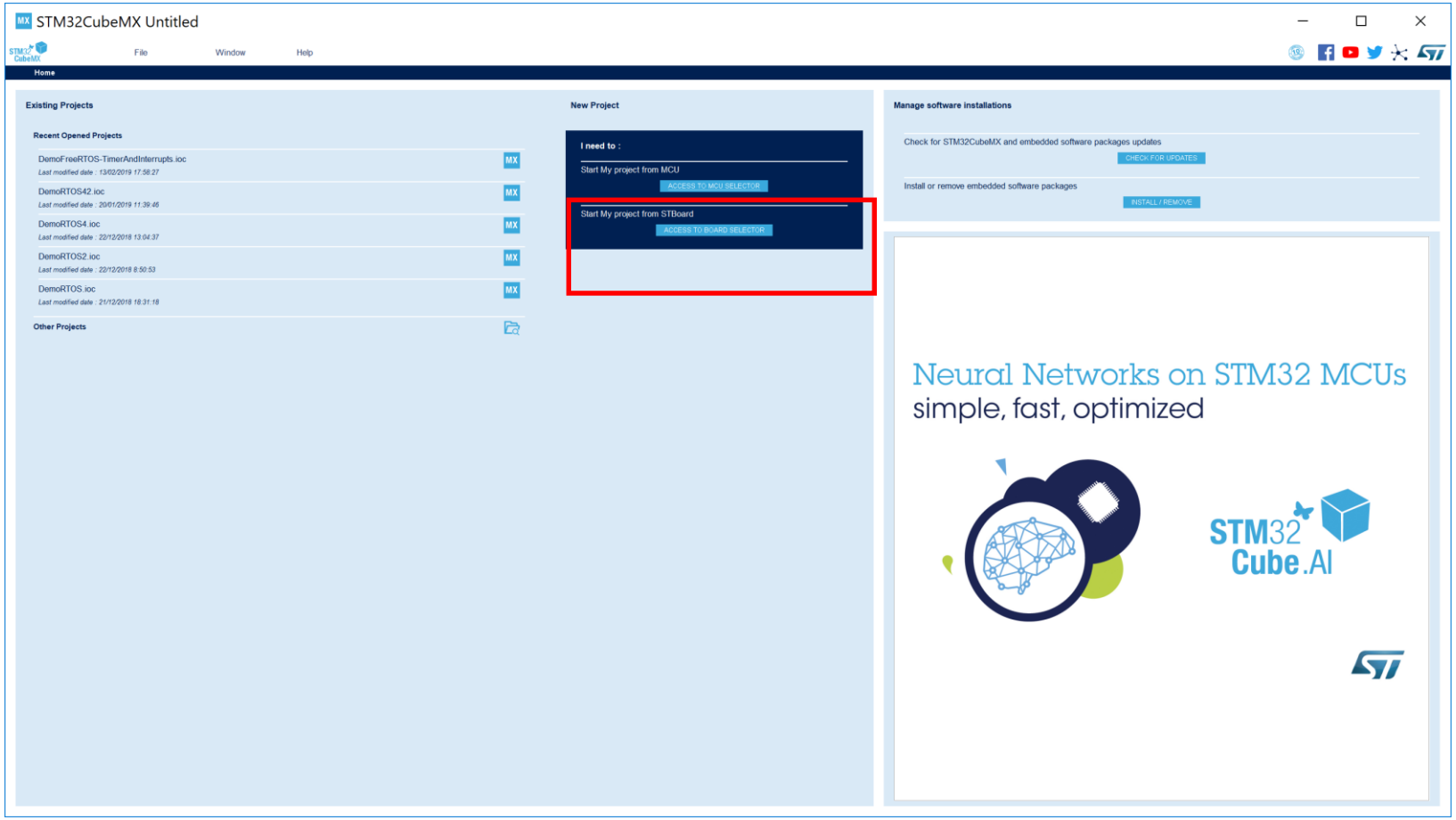
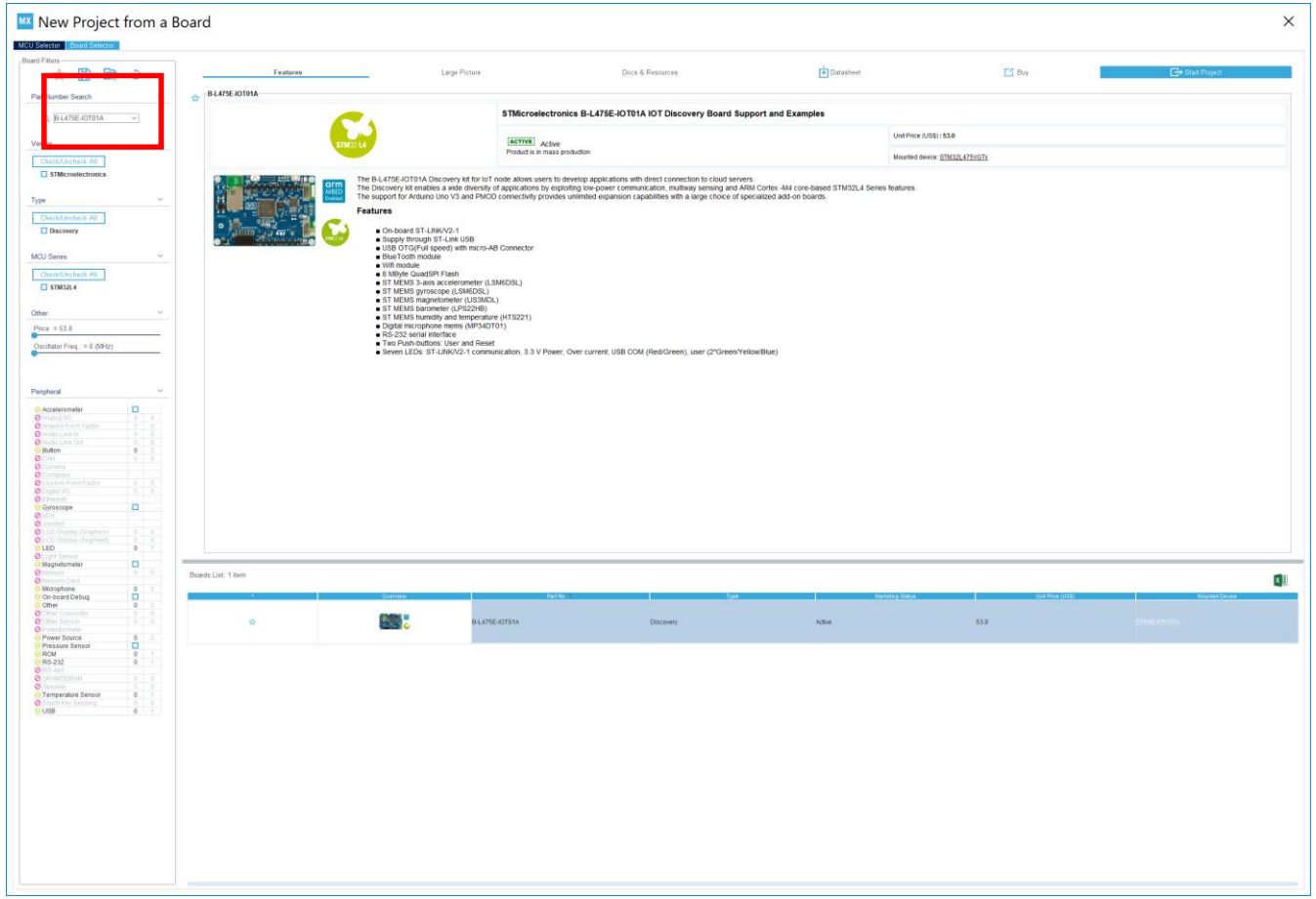
Step 1. Startup STM32CubeMX



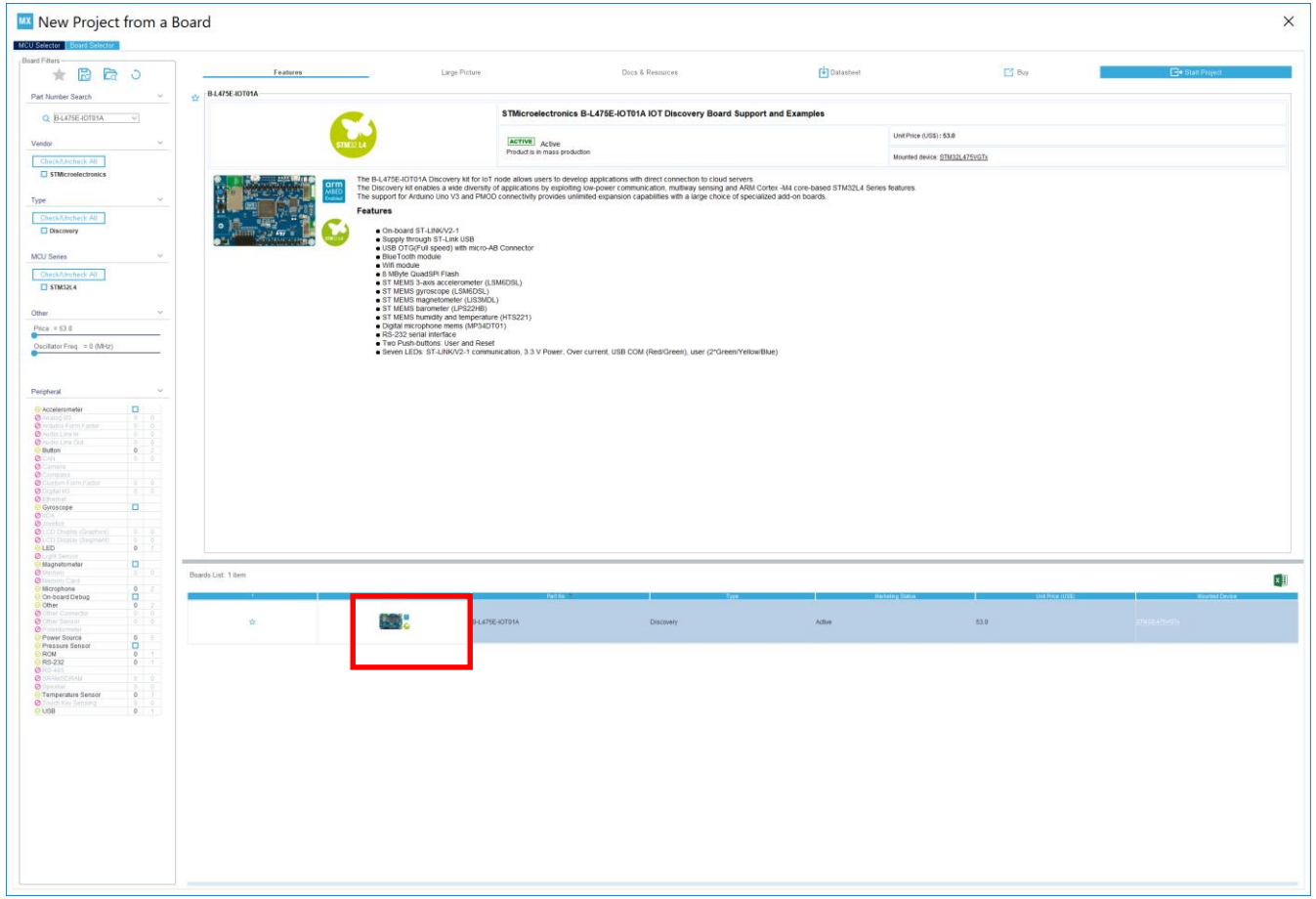
Step 2. Access Board Selector



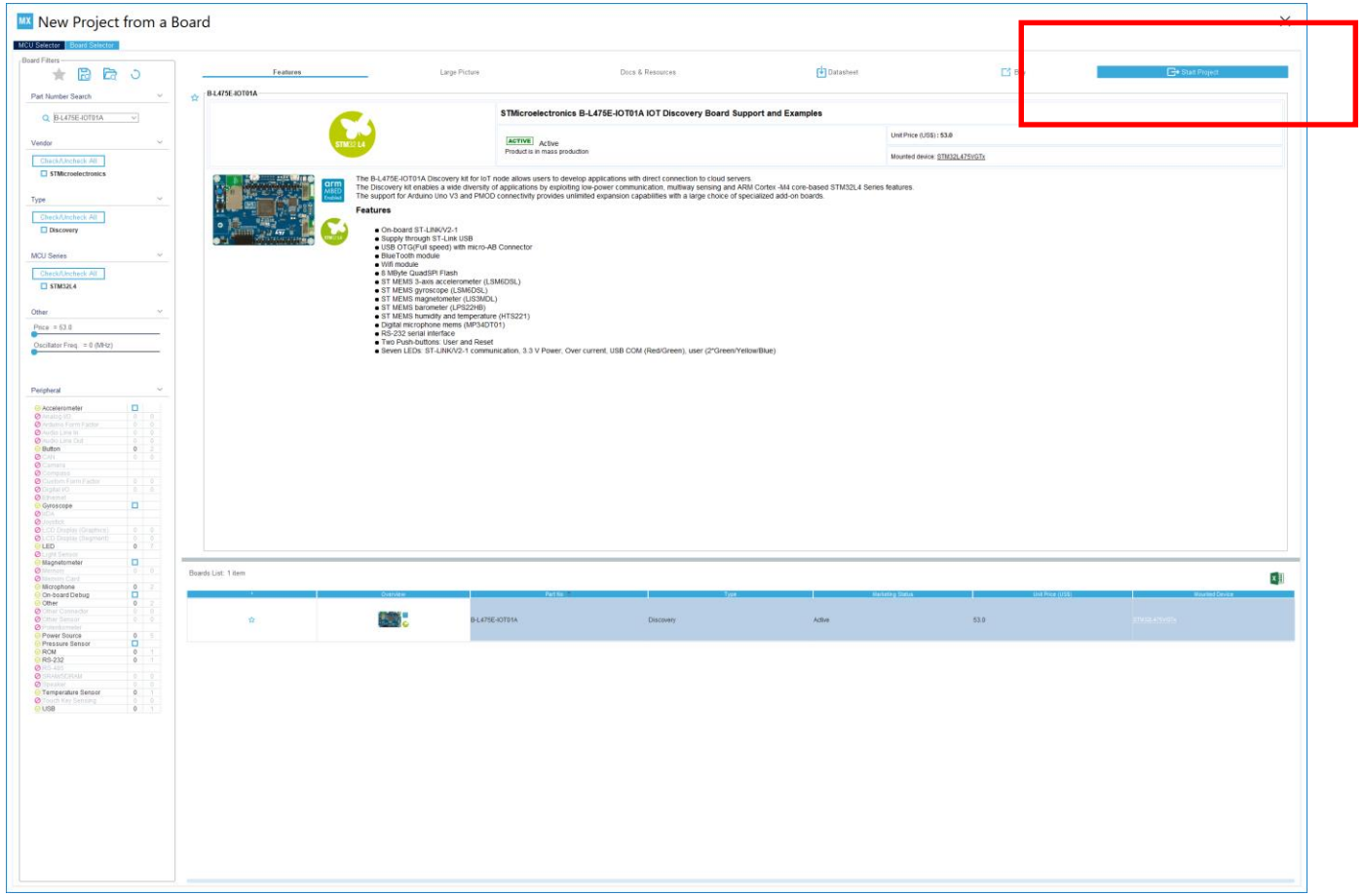
Step 3. Enter “B-L475E-IOT01A” Board



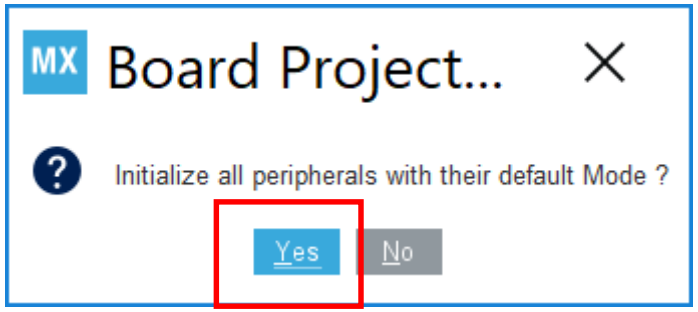
Step 4. Select Board Photo



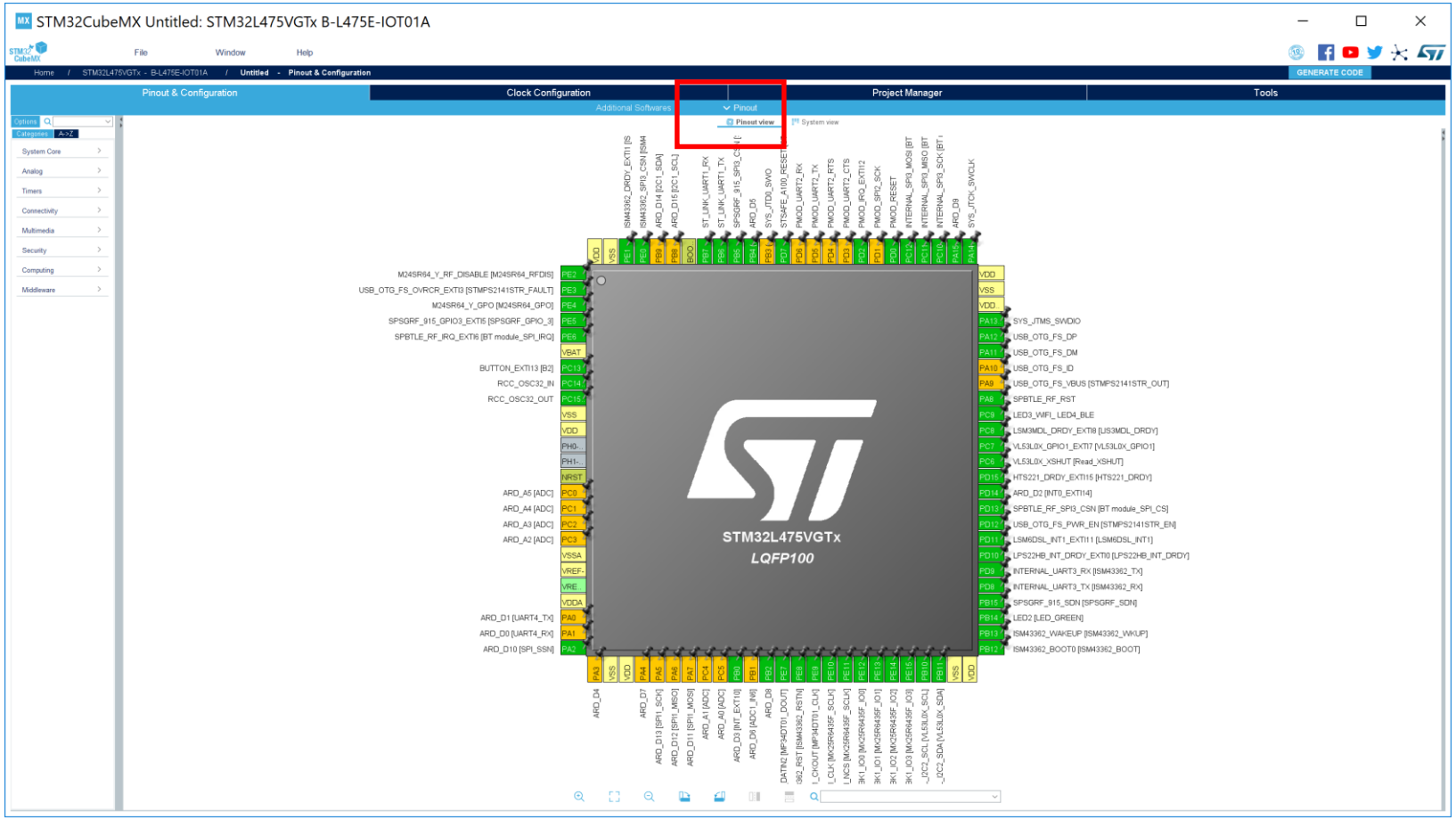
Step 5. Select “Start Project”



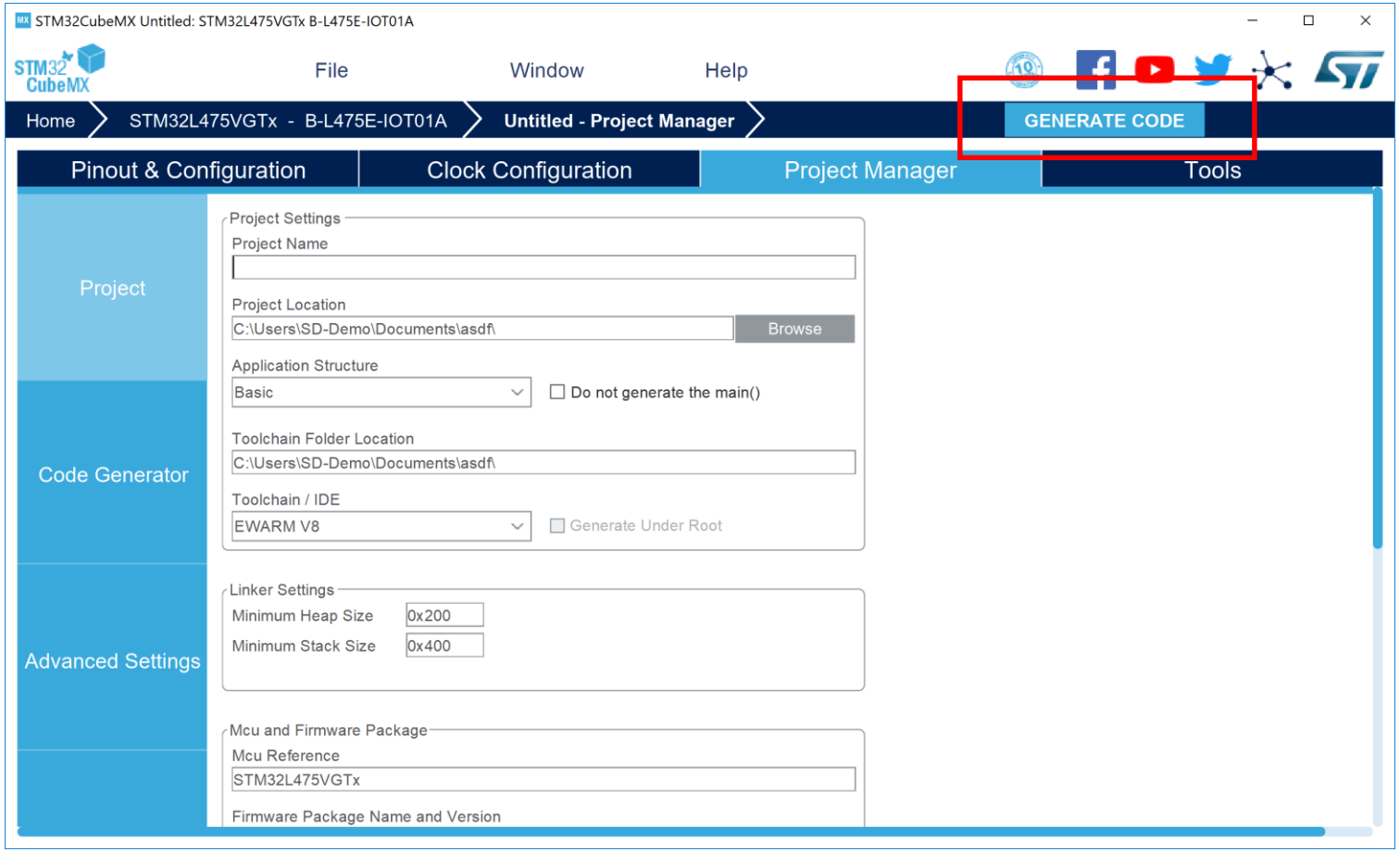
Step 6. Select **YES** (initialize all peripherals with the default mode)



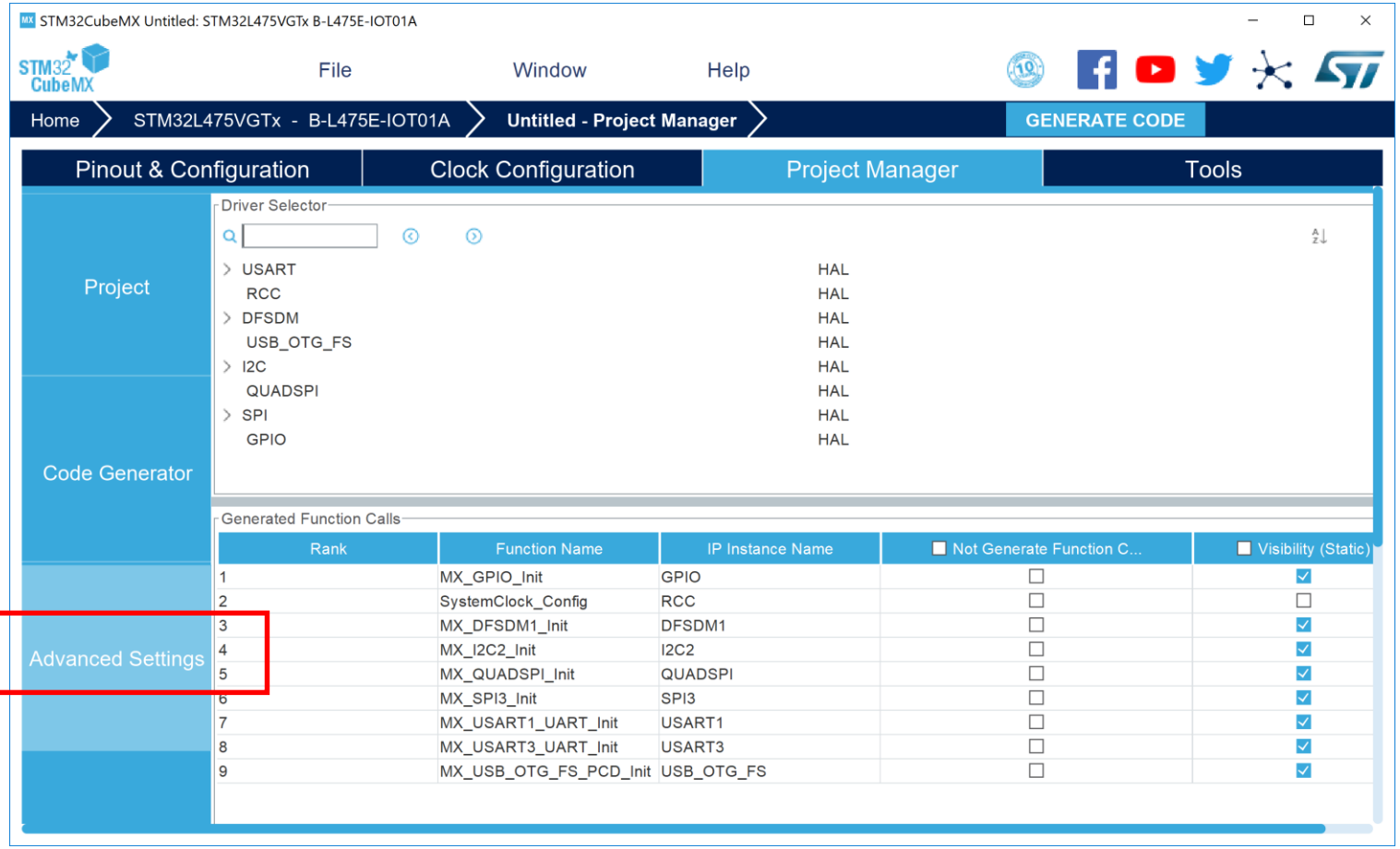
Step 7. Observe Results (Pinout View)



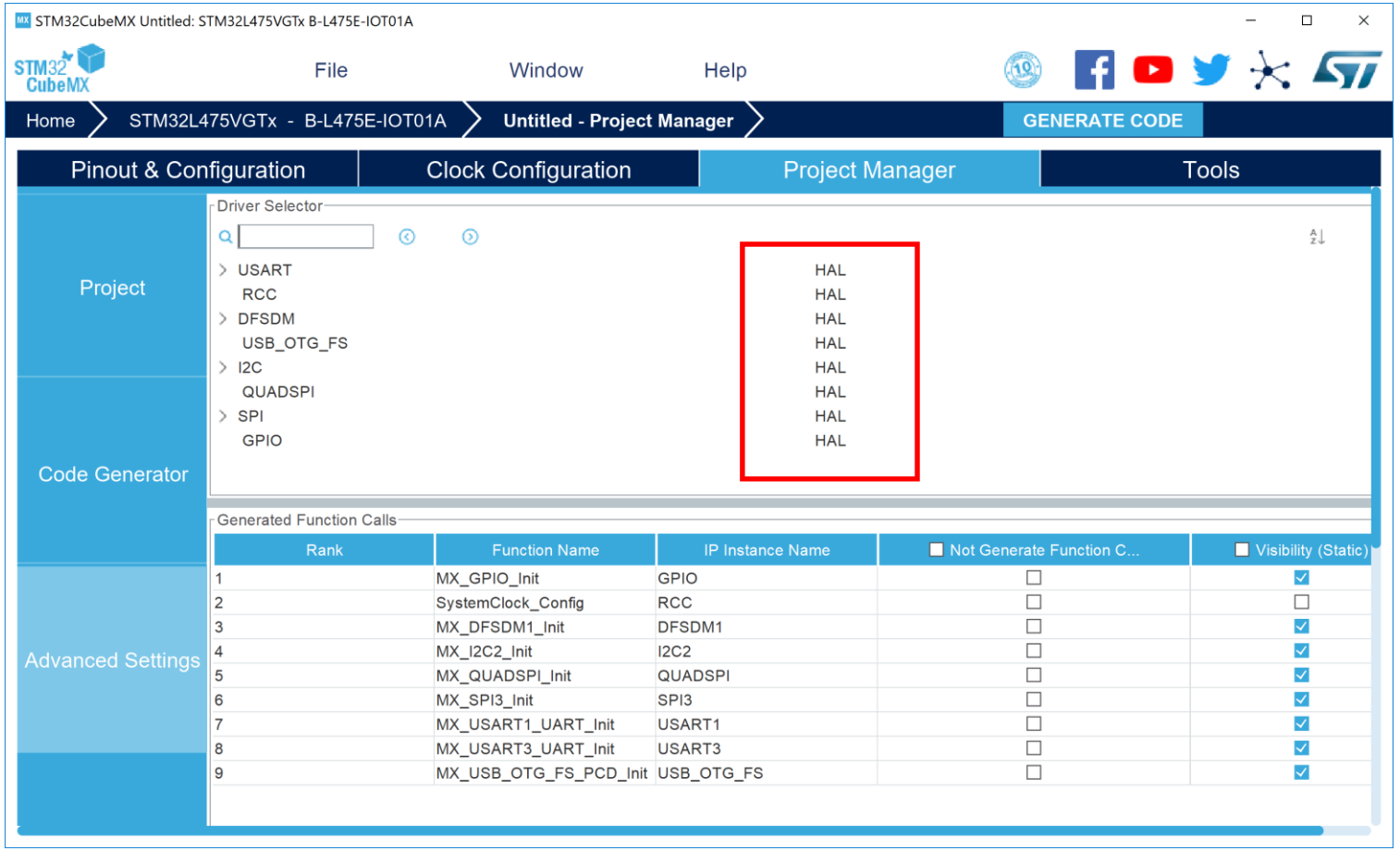
Step 8. Select Project Manager Tab



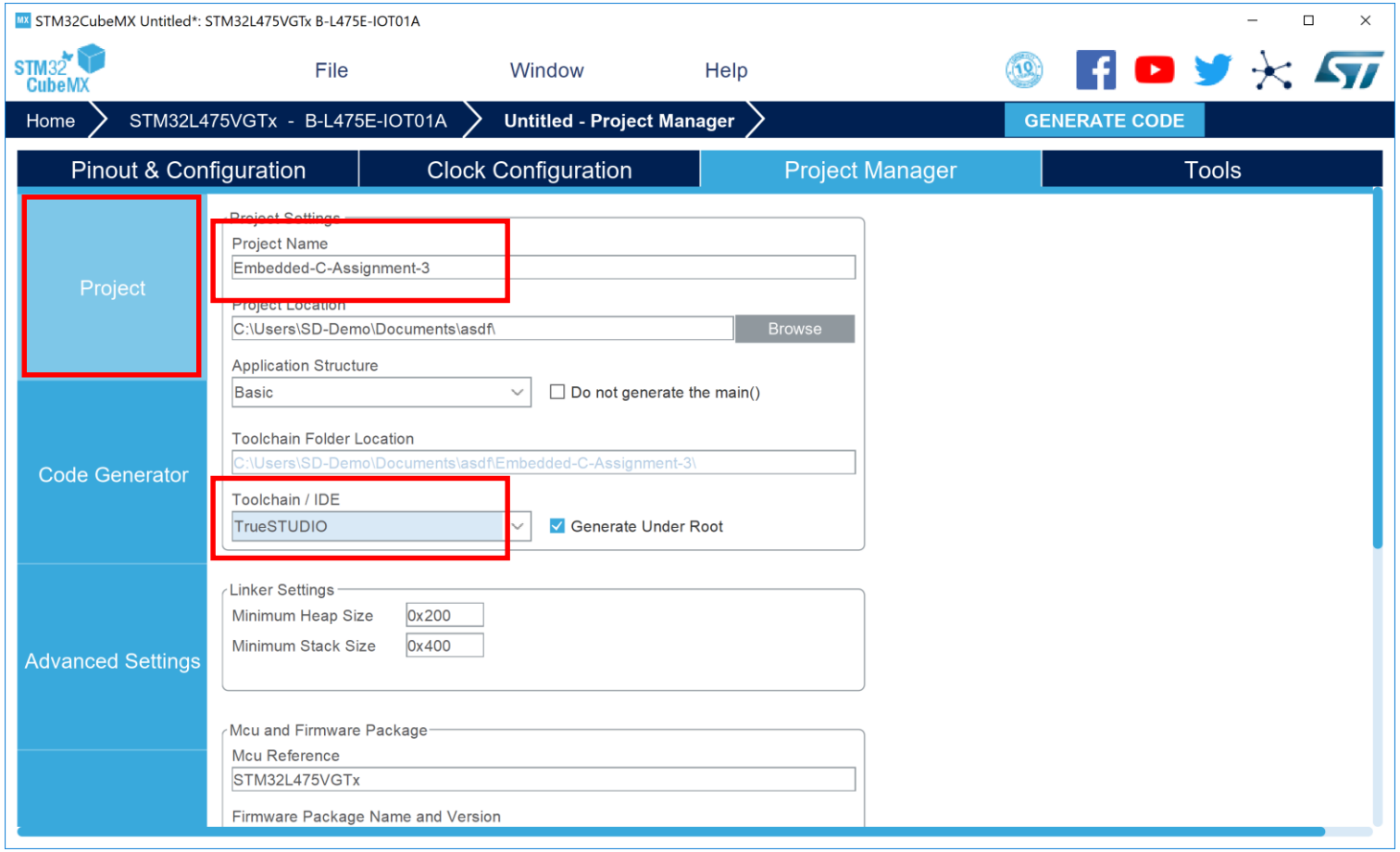
Step 9. Select Advanced Settings



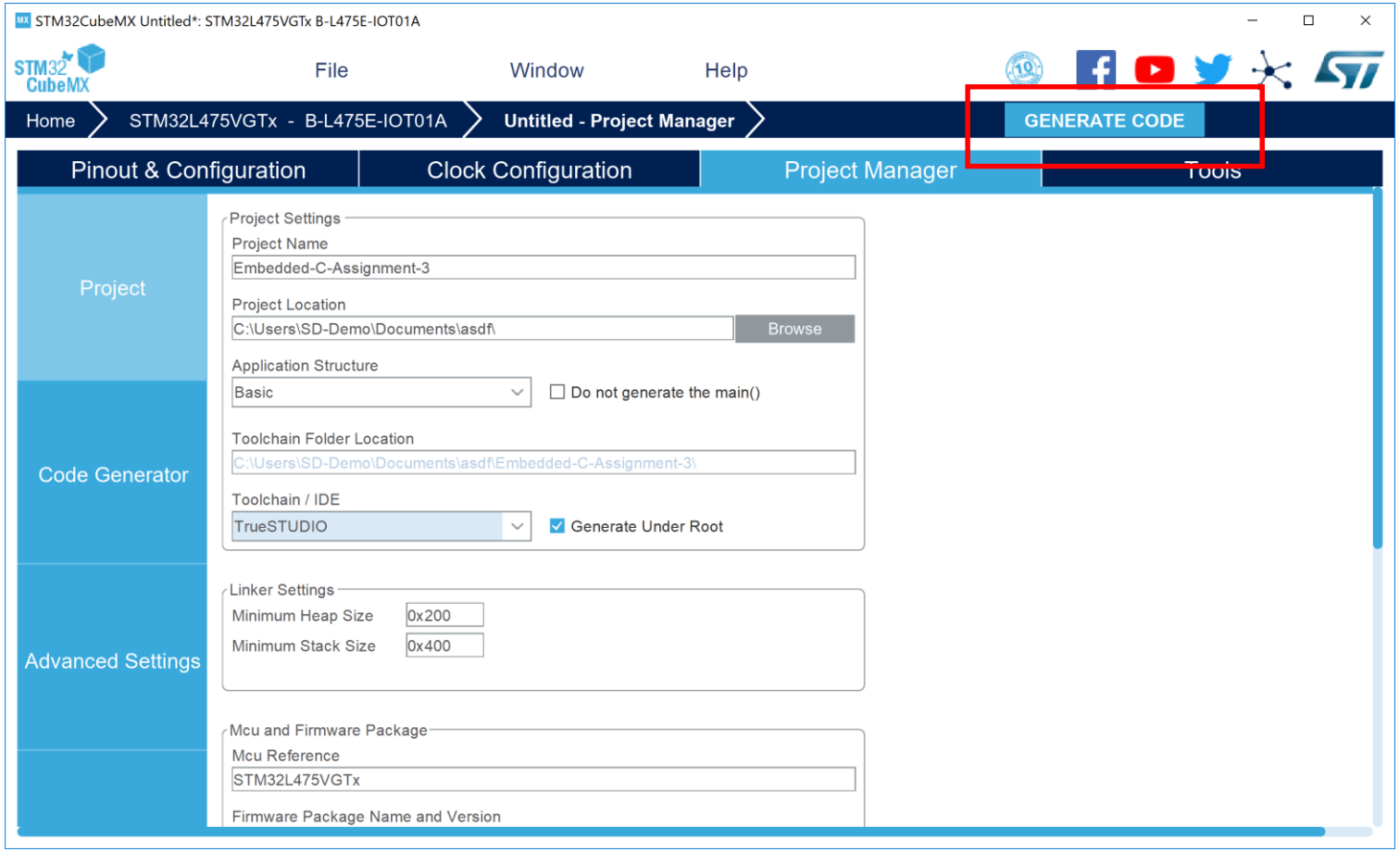
Step 10. Observe the HAL is the default option for Driver Selector



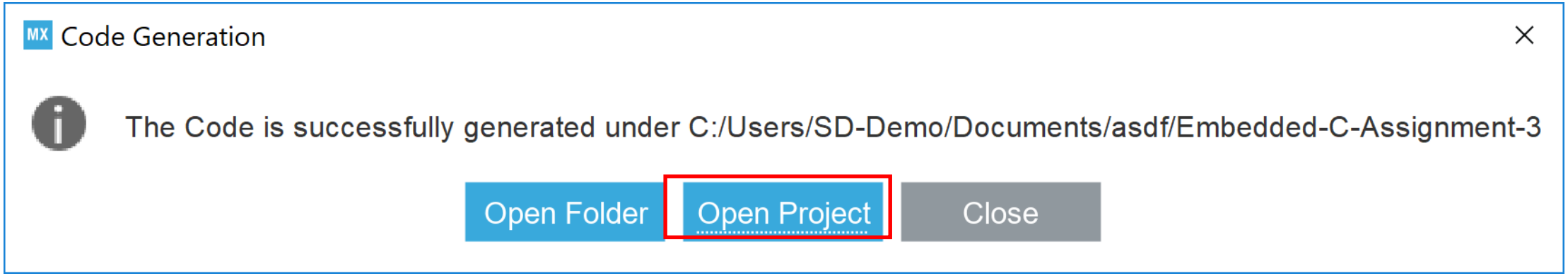
Step 11. Enter “Embedded-C-Assigment-3” and select TrueStudio as IDE



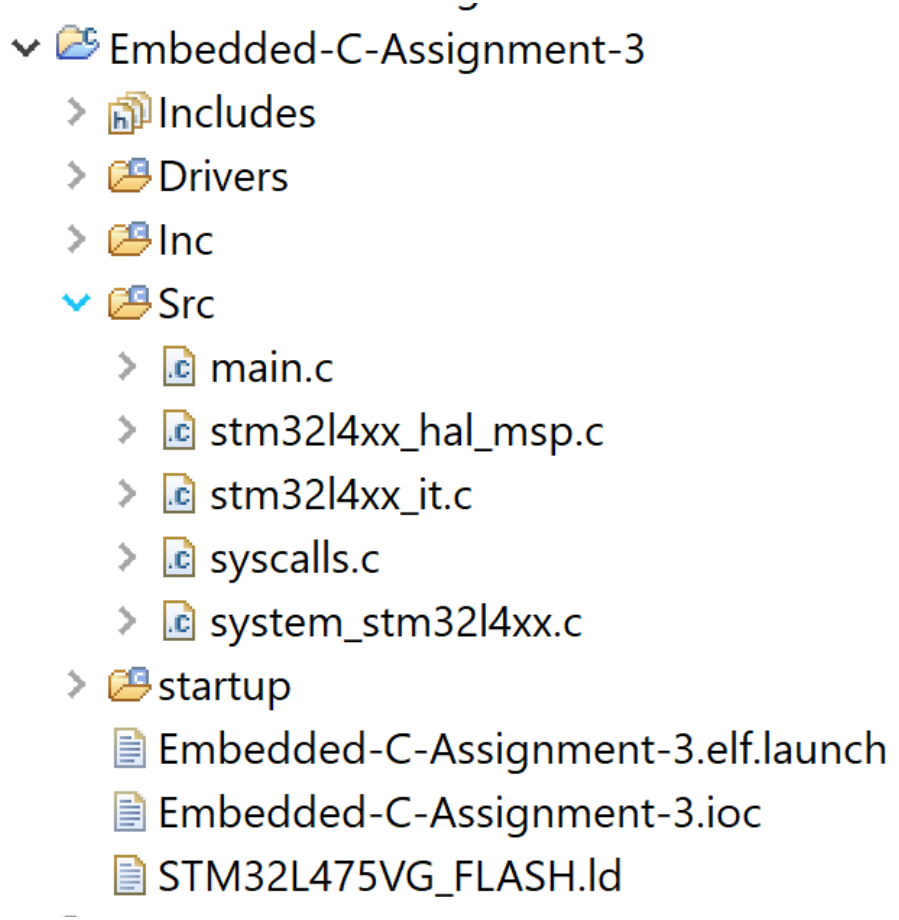
Step 12. Select “Generate Code”



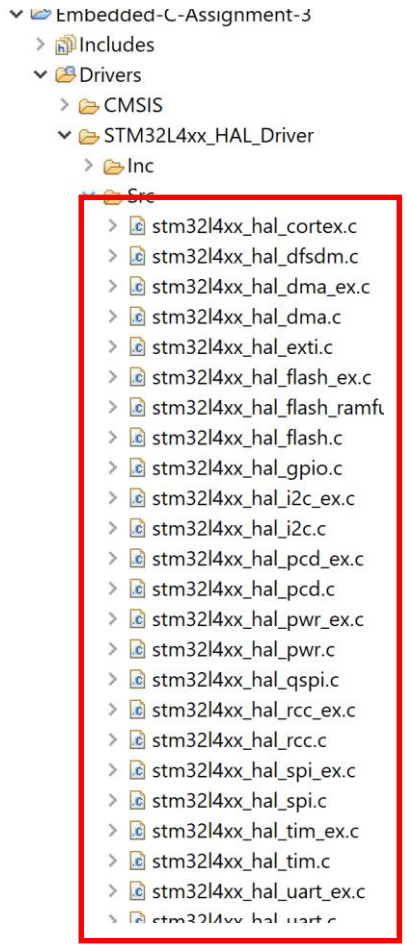
Step 13. Select “Open Project”



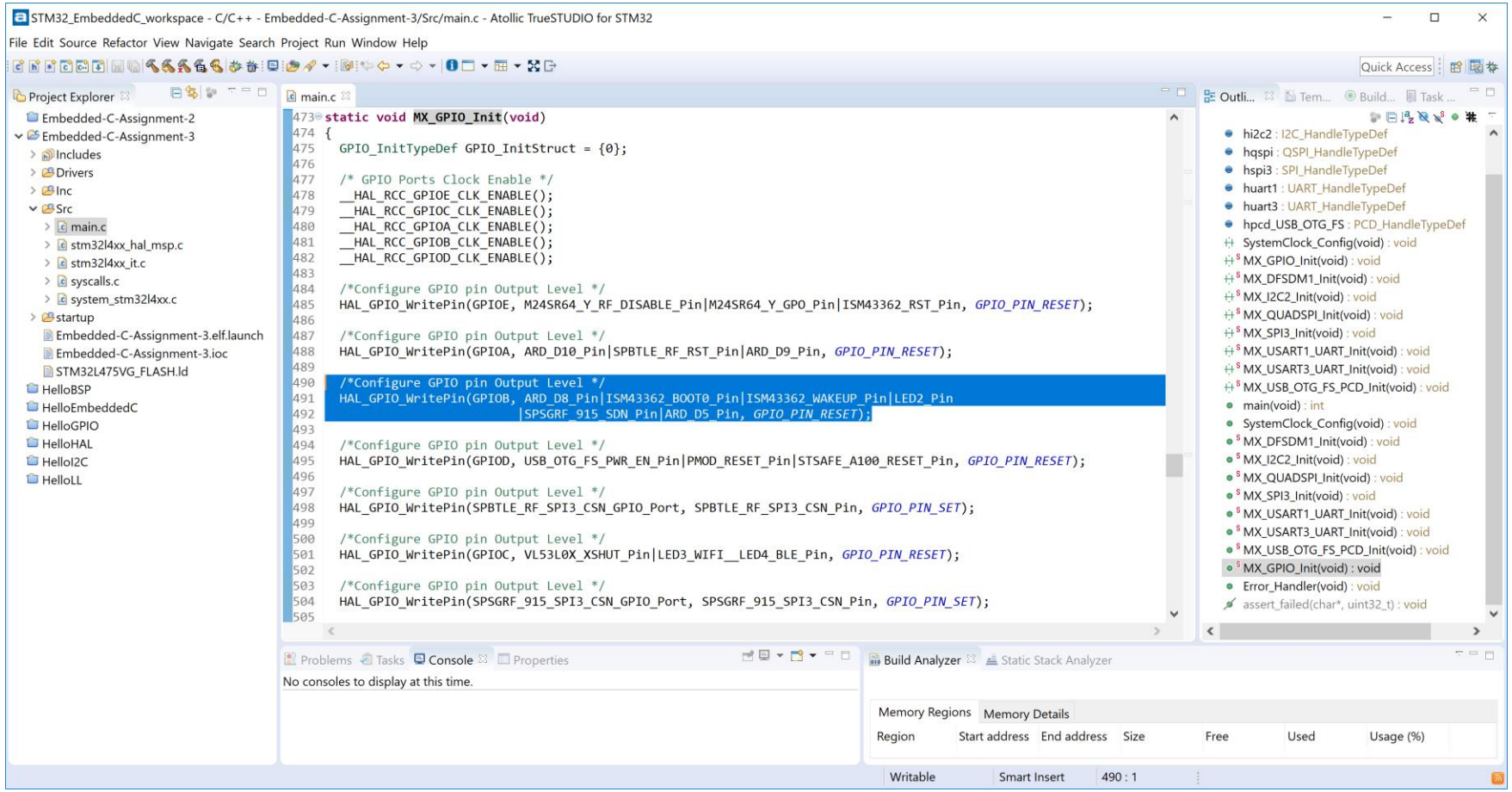
Step 14. Resulting Project



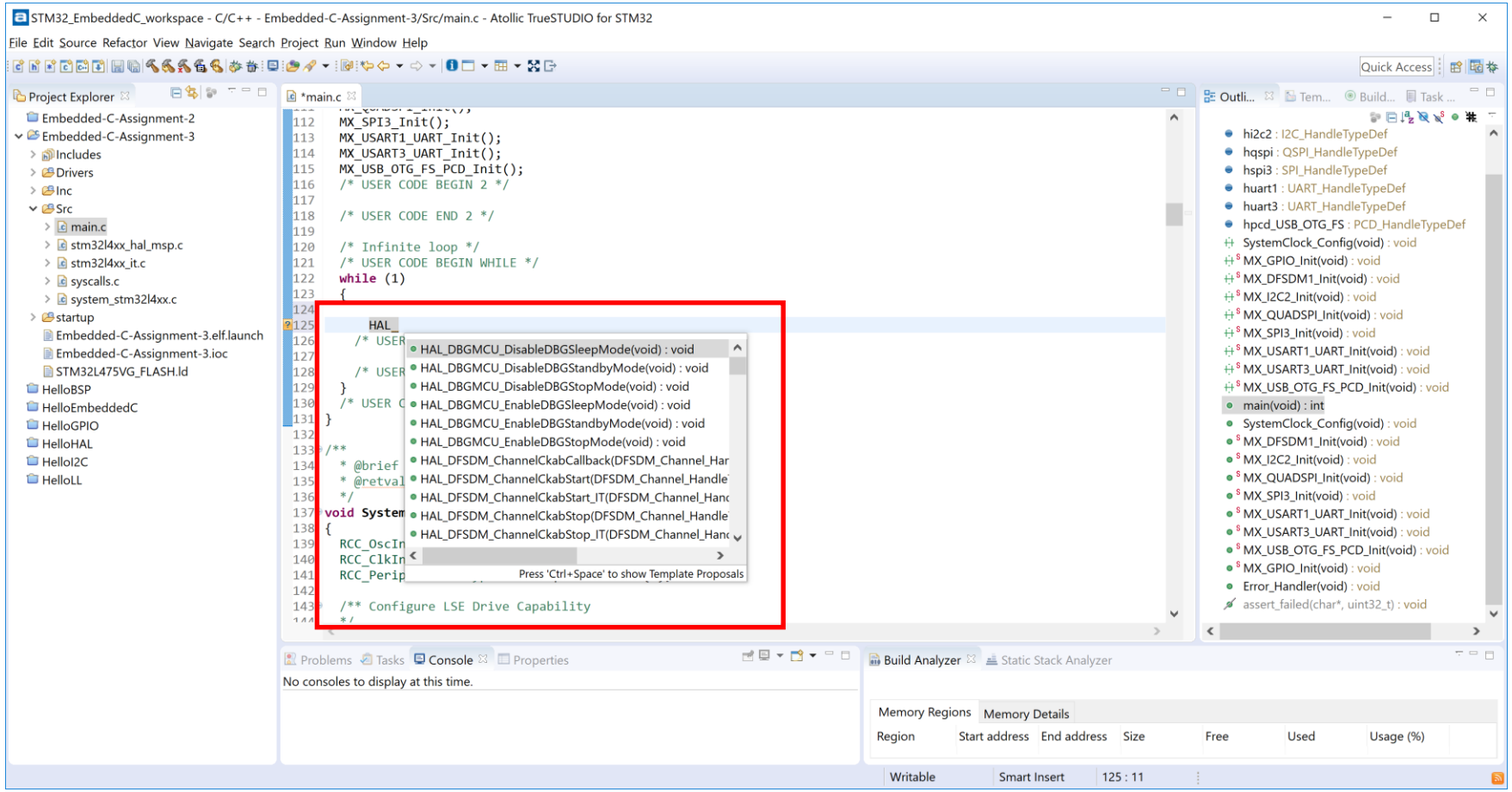
Step 15. Confirm that HAL drivers added to project



Step 16. Find GPIO Init code that initializes the LED2 using HAL (highlighted in blue below)



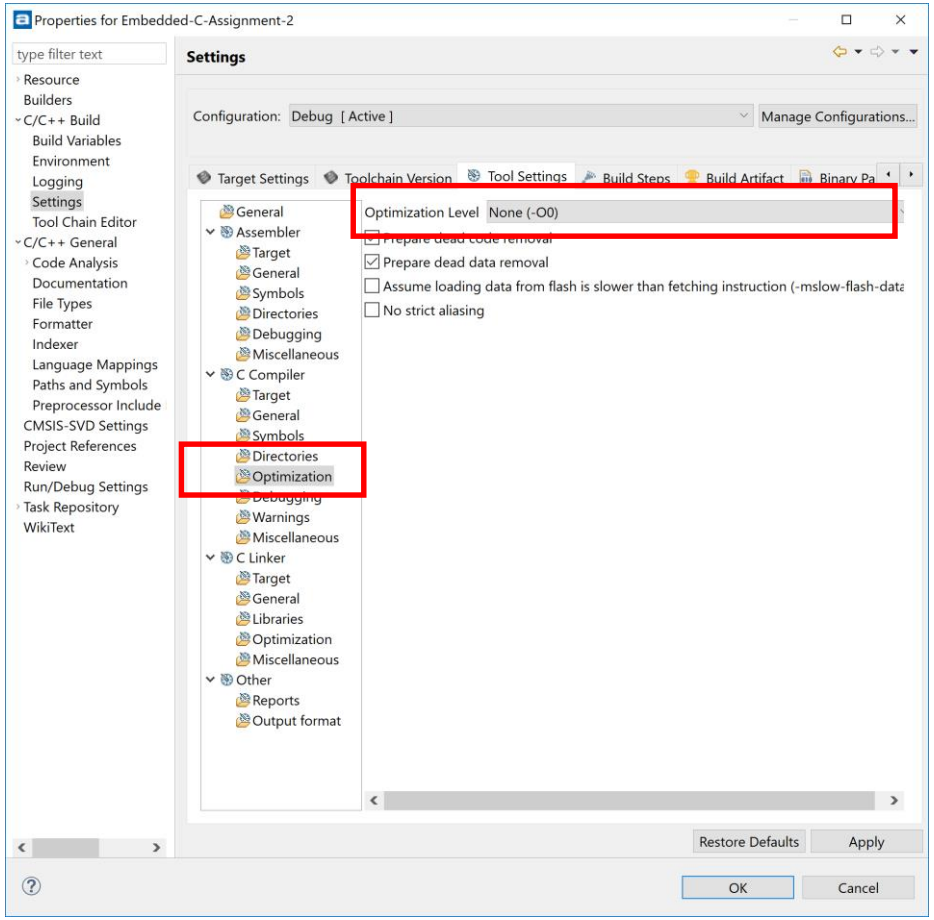
Step 17. In main.c, inside the “while(1)” loop, enter “HAL_” then press Ctrl+SpaceBar to observe HAL_ APIs



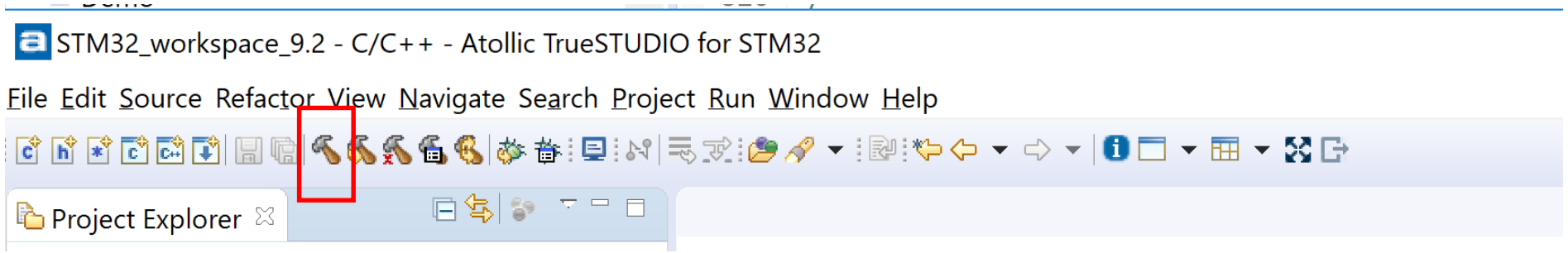
Step 18. In main.c, enter HAL related code shown below

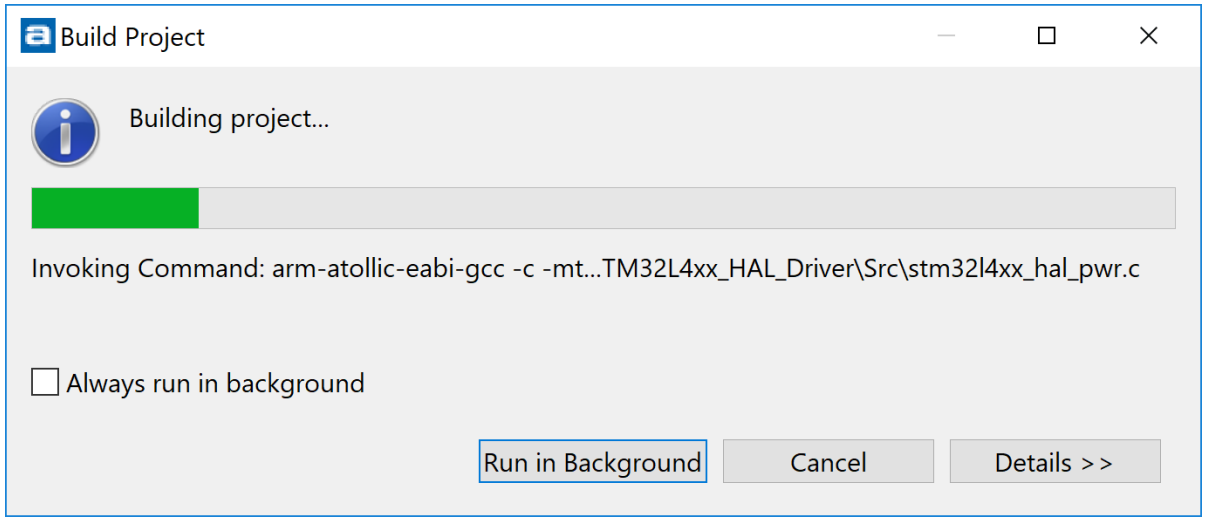
```
117
118   /* USER CODE BEGIN 2 */
119
120   uint32_t devid = HAL_GetDEVID();
121   printf("devid: 0x%x\n", devid);
122
123   uint32_t uid[3];
124   uid[0] = HAL_GetUIDw0();
125   uid[1] = HAL_GetUIDw1();
126   uid[2] = HAL_GetUIDw2();
127   printf("uid: 0x%x 0x%x 0x%x\n", uid[0], uid[1], uid[2]);
128
129   /* USER CODE END 2 */
130
131   /* Infinite loop */
132   /* USER CODE BEGIN WHILE */
133
134   while (1)
135   {
136
137       HAL_GPIO_TogglePin(GPIOB, LED2_Pin);
138       HAL_Delay(1000);
139
140     /* USER CODE END WHILE */
141
142     /* USER CODE BEGIN 3 */
143   }
```

Step 19. Properties, C/C++ Build, Settings, Tool Settings, C Compiler, Optimization, None



Step 20. Build Project





Step 21. Results of Build – Part 1

Problems Tasks Console Properties

CDT Build Console [Embedded-C-Assignment-3]

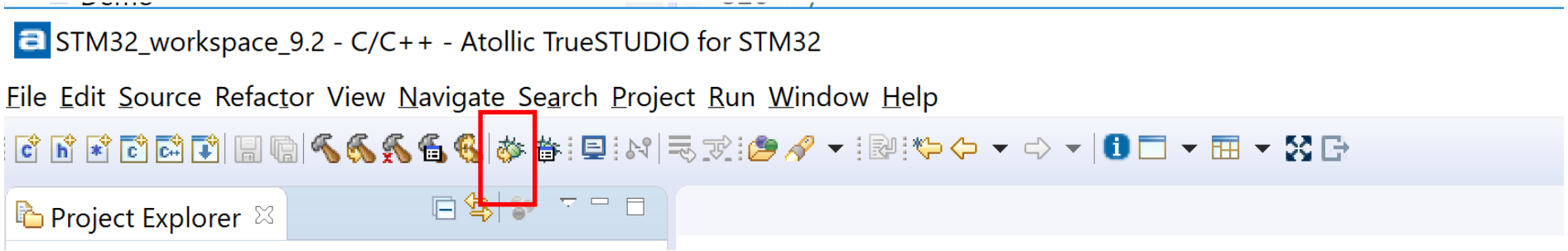
```
arm-atollic-eabi-gcc -c -mthumb -mcpu=cortex-m4 -mfloat-abi=hard -mfpu=fpv4-sp-d16 -g -Wa,--no-warn -x assembler
arm-atollic-eabi-gcc -c -mthumb -mcpu=cortex-m4 -mfloat-abi=hard -mfpu=fpv4-sp-d16 -std=gnu11 -D__weak=__attribu
arm-atollic-eabi-gcc -c -mthumb -mcpu=cortex-m4 -mfloat-abi=hard -mfpu=fpv4-sp-d16 -std=gnu11 -D__weak=__attribu
arm-atollic-eabi-gcc -c -mthumb -mcpu=cortex-m4 -mfloat-abi=hard -mfpu=fpv4-sp-d16 -std=gnu11 -D__weak=__attribu
arm-atollic-eabi-gcc -c -mthumb -mcpu=cortex-m4 -mfloat-abi=hard -mfpu=fpv4-sp-d16 -std=gnu11 -D__weak=__attribu
arm-atollic-eabi-gcc -c -mthumb -mcpu=cortex-m4 -mfloat-abi=hard -mfpu=fpv4-sp-d16 -std=gnu11 -D__weak=__attribu
arm-atollic-eabi-gcc -c -mthumb -mcpu=cortex-m4 -mfloat-abi=hard -mfpu=fpv4-sp-d16 -std=gnu11 -D__weak=__attribu
arm-atollic-eabi-gcc -c -mthumb -mcpu=cortex-m4 -mfloat-abi=hard -mfpu=fpv4-sp-d16 -std=gnu11 -D__weak=__attribu
arm-atollic-eabi-gcc -o Embedded-C-Assignment-3.elf Drivers\STM32L4xx_HAL_Driver\Src\stm32l4xx_hal.o Drivers\STM
C:\Program Files (x86)\Atollic\TrueSTUDIO for STM32 9.2.0\ide\jre\bin\java -jar C:\Program Files (x86)\Atollic\T
Generate build reports...
Print size information
   text    data     bss     dec     hex filename
  22652     112    3196   25960    6568 Embedded-C-Assignment-3.elf
Print size information done
Generate listing file
Output sent to: Embedded-C-Assignment-3.list
Generate listing file done
Generate build reports done
arm-atollic-eabi-objcopy.exe -O ihex Embedded-C-Assignment-3.elf Embedded-C-Assignment-3.hex

09:21:10 Build Finished (took 11s.495ms)
```

Step 22. Results of Build – Part 2

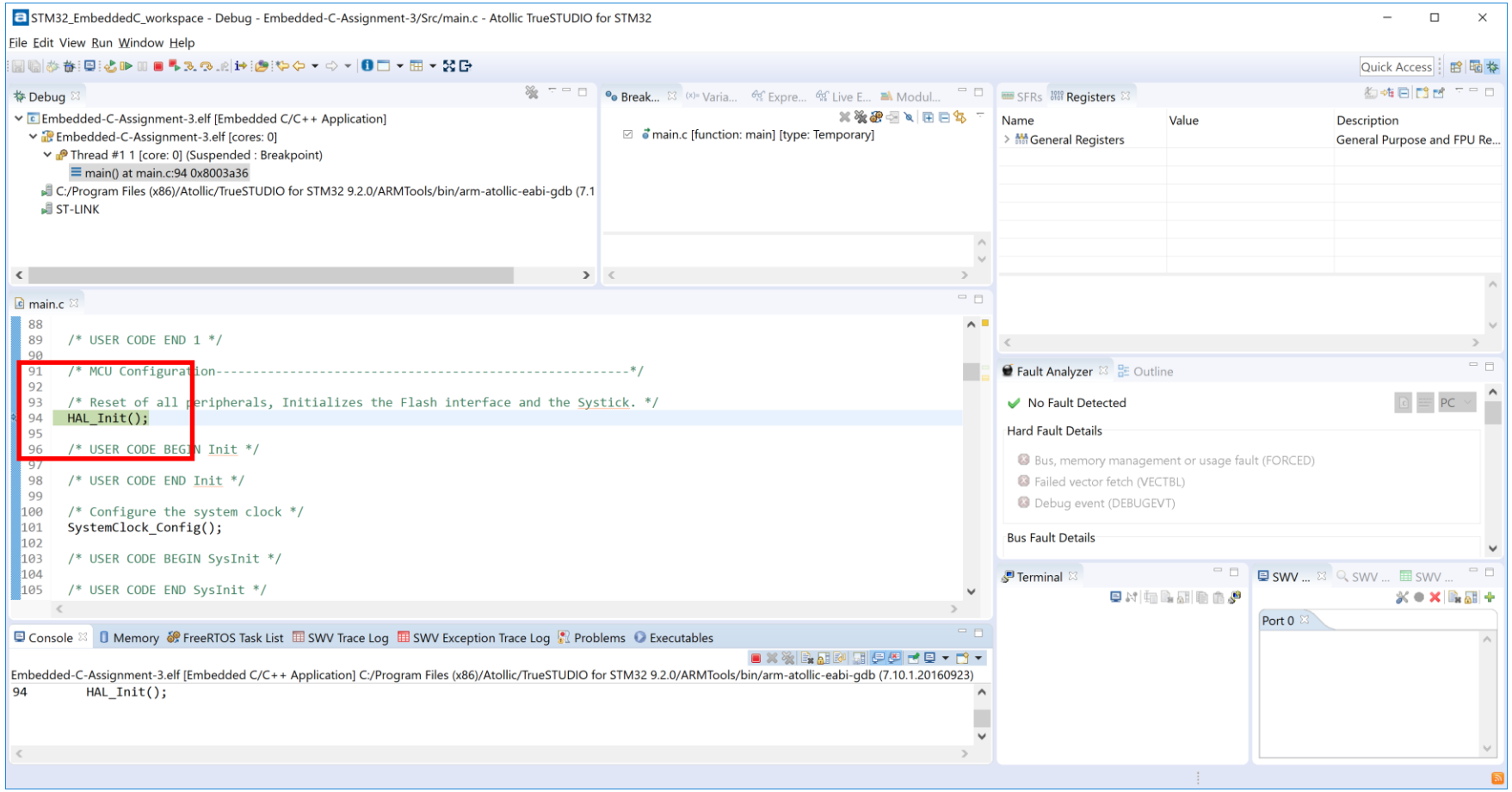
Memory Regions | Memory Details

Region	Start address	End address	Size	Free	Used	Usage (%)
RAM	0x20000000	0x20018000	96 KB	92.78 KB	3.22 KB	3.36%
RAM2	0x10000000	0x10008000	32 KB	32 KB	0 B	0.00%
FLASH	0x08000000	0x08100000	1024 KB	1001.77 KB	22.23 KB	2.17%

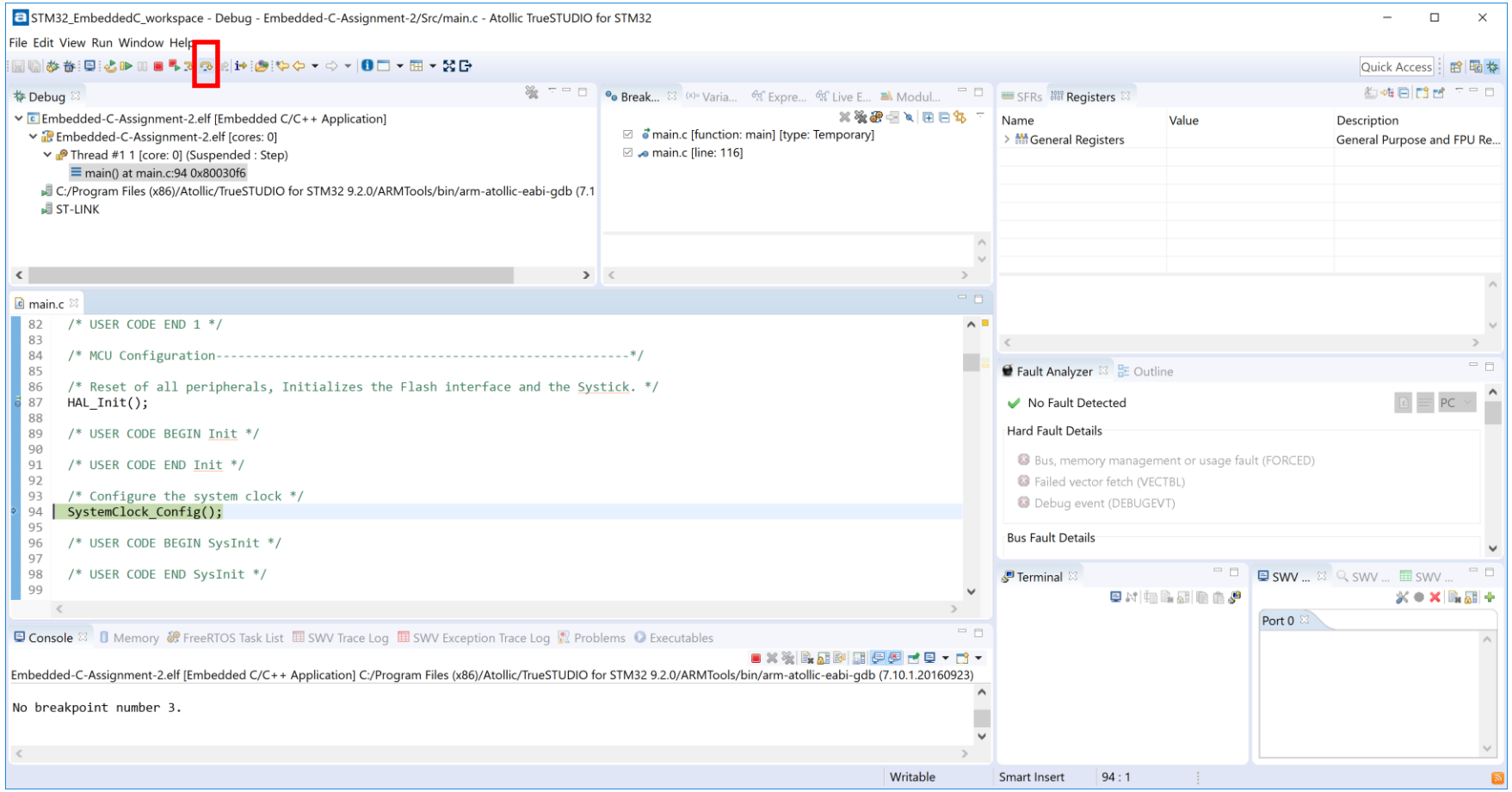
Step 23. Run in Debug



Step 24. Hit Breakpoint



Step 25. Click “Step Over”.



Step 26. Click “Step Over”. Repeat as needed. Confirming that the LED toggles on/off using HAL