

# NuMicro® Family

## VSCode

## Quick Start Guide

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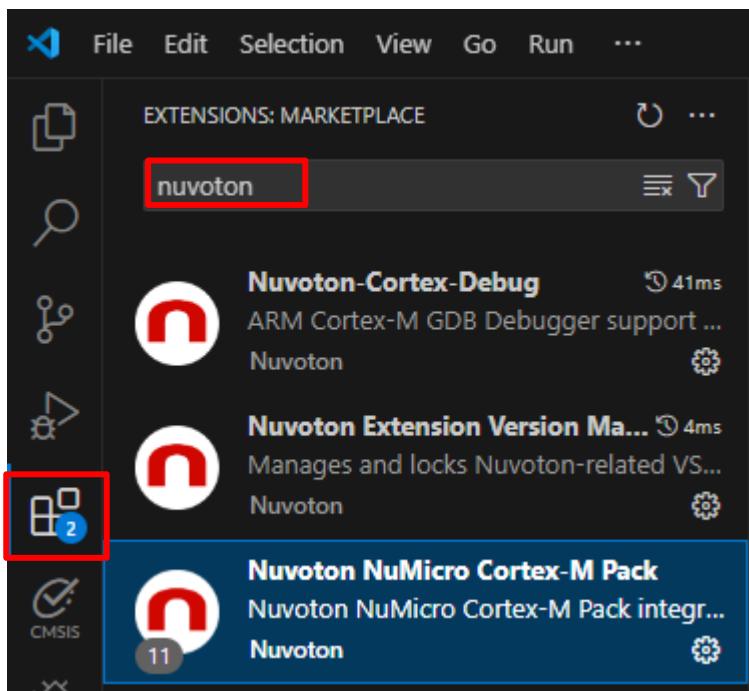
[www.nuvoton.com](http://www.nuvoton.com)

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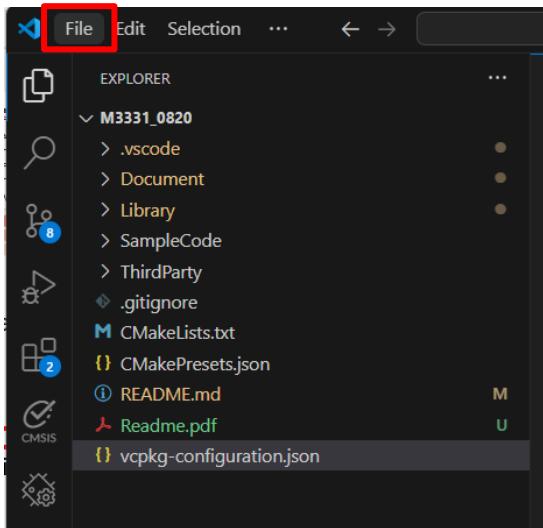
## 1 INSTALLATION VS CODE AND EXTENSIONS

1. Download VSCode from <https://code.visualstudio.com> and install it.
2. Launch VSCode and click Extensions in the Activity Bar.
3. Text “Nuvoton NuMicro Cortex-M Pack Extension” in search bar. Click install it.

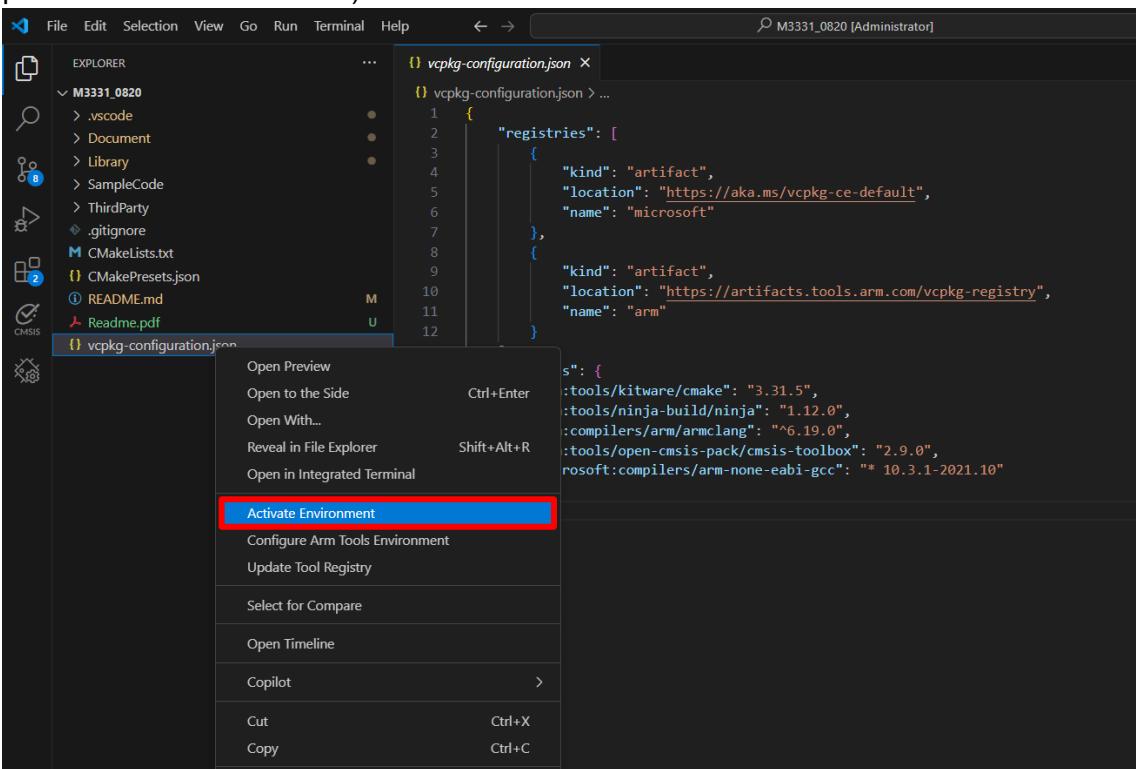


## 2 GET STARTED WITH AN EXAMPLE PROJECT

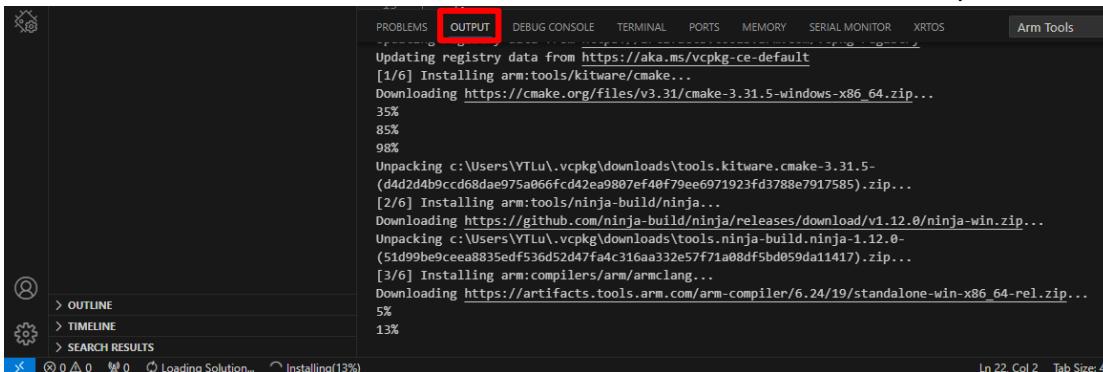
1. Click **File** and select "Open Folder" in the toolbar. Then select the path of the example project as below.



2. Right-click vcpkg-configuration.json and select **Activate Environment**. (Please use private network connection)

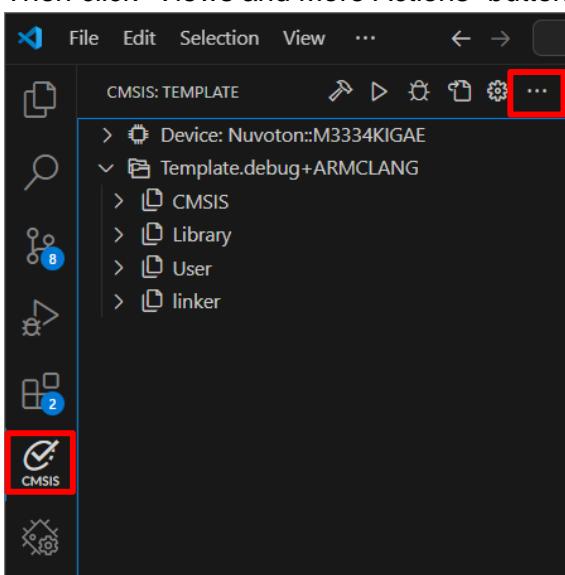


3. Check OUTPUT terminal at the bottom. It will download and install the requires tools.

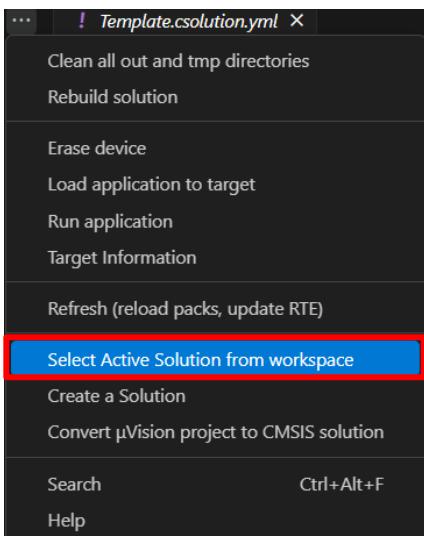


4. Click CMSIS in the Activity Bar.

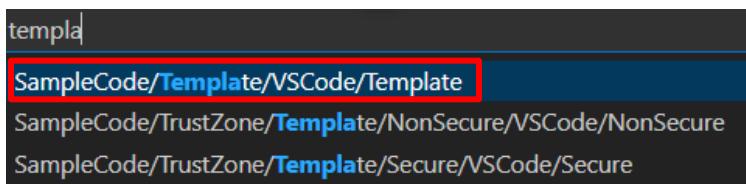
Then click “Views and More Actions” button.



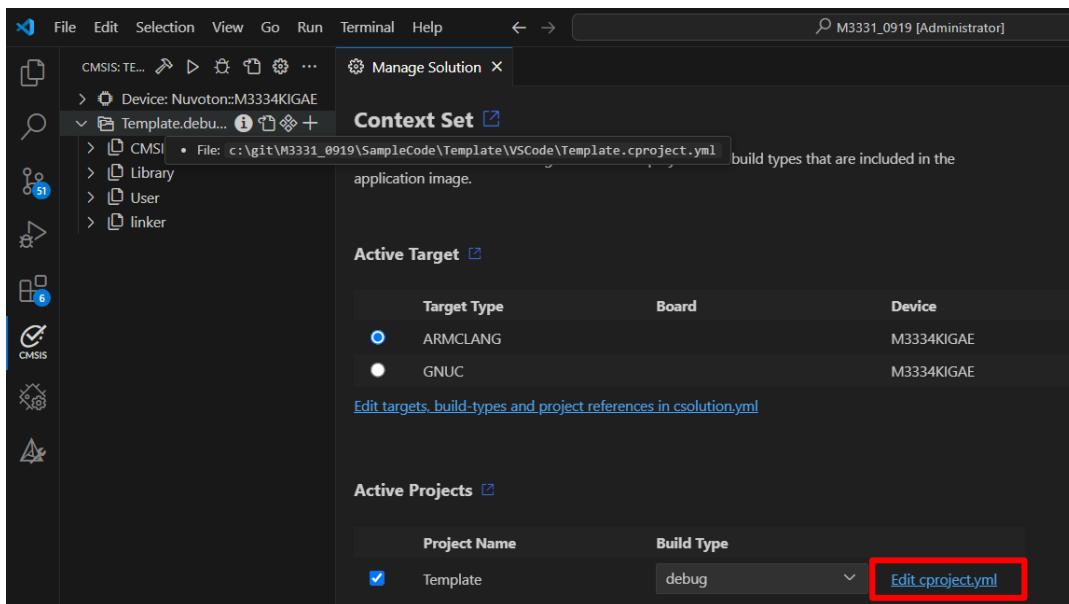
5. Select Active solution from workspace.



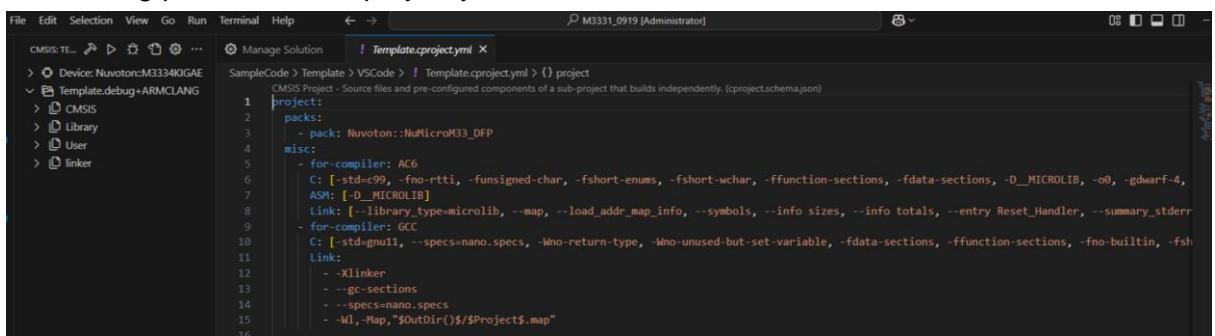
6. Select an example code to active it.



7. Click “Edit cproject.yml” to open project settings.

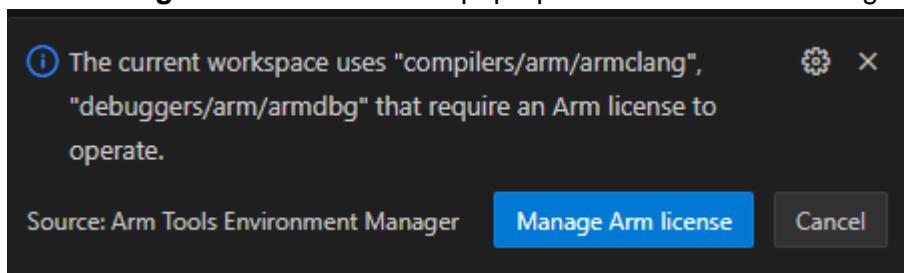


Add setting parameters in cproject.yml.

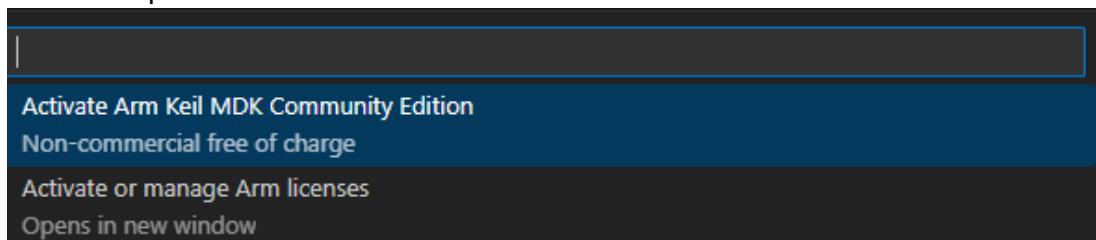


### 3 MANAGE ARM LICENSE

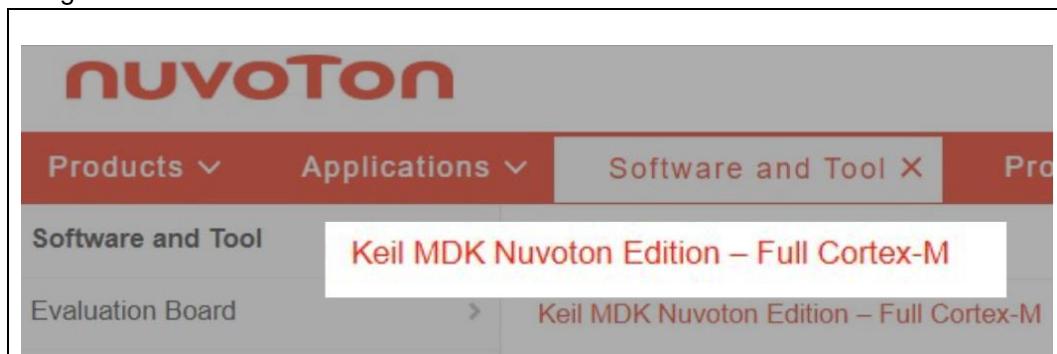
- Click Manage Arm License in the pop-up window at the bottom right.



- In the search bar at the top, select "Activate or manage Arm licenses" from the available options.



- Get Keil MDK License ID code
  - Navigation to Official Website



- Fill Out the Form

Apply for Keil MDK Nuvoton Edition – Full Cortex-M

First Name*	Email *
Last Name*	Phone*
Company / Organization *	Industry
Job Title *	Application*
Region / Country or region *	Series*
State / Province	Part No

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NUVOTON Privacy Policy  
Last modified June 01, 2020

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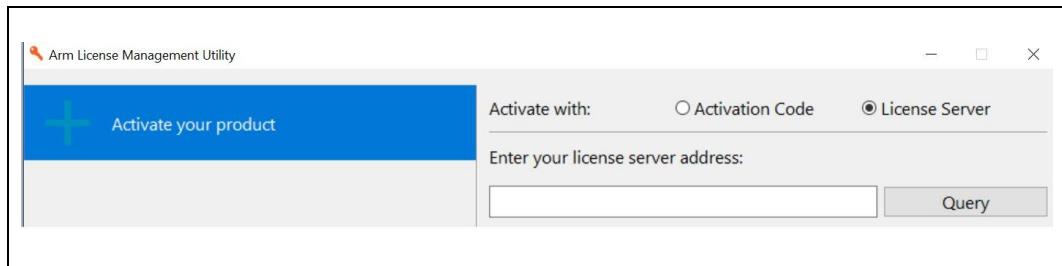
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I have read and I accept Nuvoton's Privacy Policy

\*Indicates required field

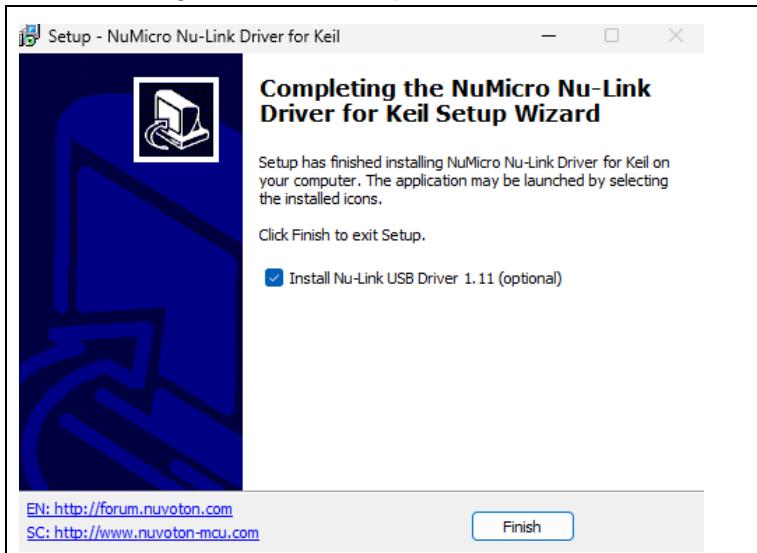
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## c. Check Mailbox and Fill in the License Server

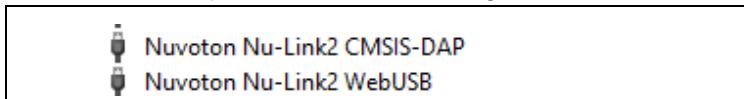


## 4 CONFIGURE THE DEVICE

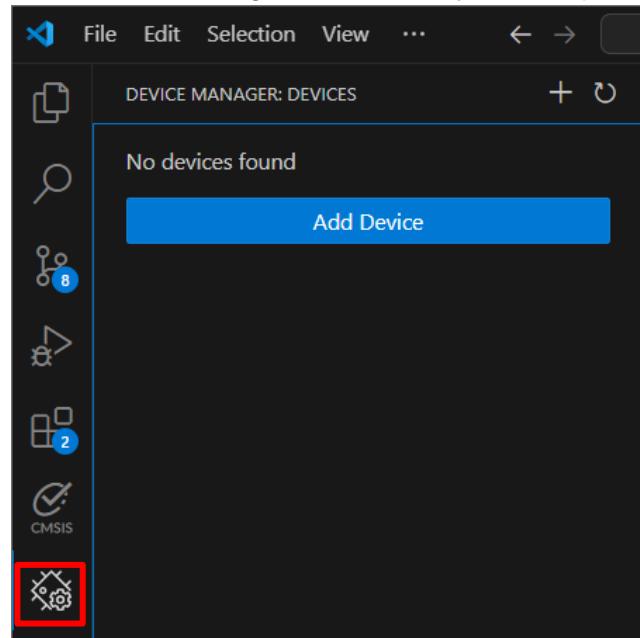
1. Install Nuvoton Nu-Link Keil Driver
2. After installing the Keil driver, please check the box to install the Nu-Link USB Driver.



3. Installation complete in Device Manager

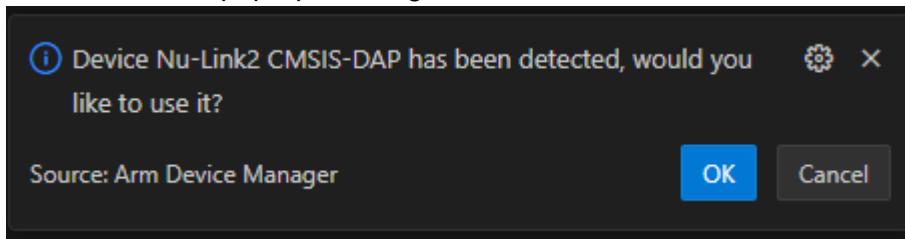


4. Click Device Manager in the Activity Bar to open the Device Manager.

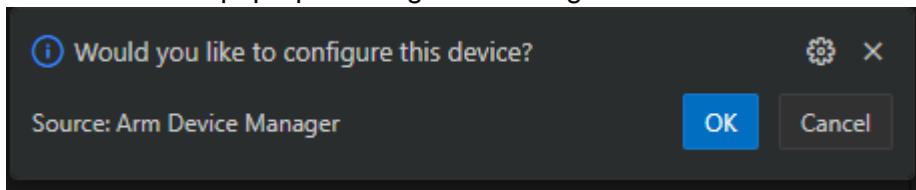


5. Connect device to your computer over USB.

The Device Manager detects the board and displays a pop-up message. Press OK in the pop-up message and use it.



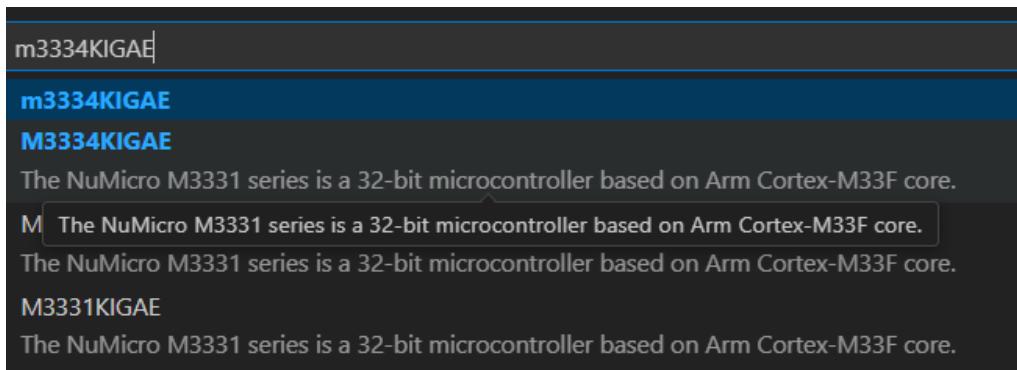
6. Press OK in the pop-up message and configure this device.



7. Text “nuvoton” in search bar and select CMSIS pack for the device.

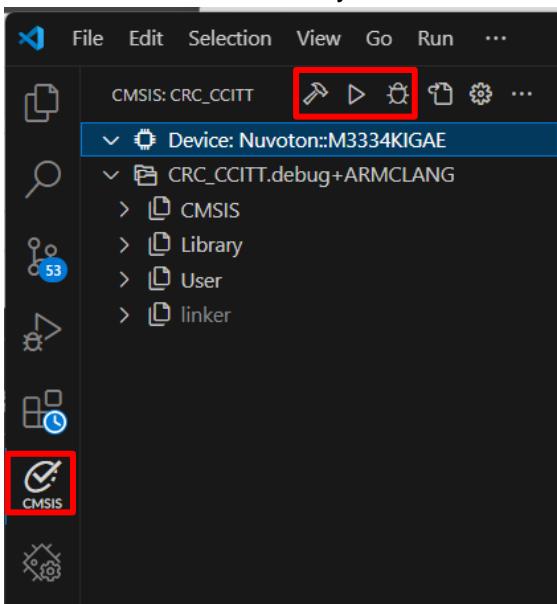


8. Text “device model number” in search bar.



## 5 RUN THE EXAMPLE PROJECT

1. Click CMSIS in the Activity Bar



2. Click Build



```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS MEMORY XRTOS SERIAL MONITOR COMMENTS

0001875 I Loading C:\git\M3331_0919\SampleCode\StdDriver\CRC_CCITT\VSCode\out\CRC_CCITT\ARMCLANG\debug\CRC_CCITT.axf [load_cmd]
[=====] 100%
0002427 I Erased 7168 bytes (7 sectors), programmed 7168 bytes (7 pages), skipped 0 bytes (0 pages) at 12.75 kB/s [loader]
* Terminal will be reused by tasks, press any key to close it.

* Executing task: cmsis-csolution.build: Build

Execute: cbuild c:\git\M3331_0919\SampleCode\StdDriver\CRC_CCITT\VSCode\CRC_CCITT.csolution.yml --context-set --packs
+-----+
(1/1) Building context: "CRC_CCITT.debug+ARMCLANG"
Using AC6 V6.24.0 compiler, from: 'c:/Users/ytlu/.vcppkg/artifacts/2139c4c6/compilers.arm.armclang/6.24.0/bin/'
Building CMake target 'CRC_CCITT.debug+ARMCLANG'
ninja: no work to do.
+-----+
Build summary: 1 succeeded, 0 failed - Time Elapsed: 00:00:02
+-----+
Completed: cbuild succeed with exit code 0
Build complete
* Terminal will be reused by tasks, press any key to close it.

```

3. Click Load & Run



```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS MEMORY XRTOS SERIAL MONITOR COMMENTS

Build complete
* Terminal will be reused by tasks, press any key to close it.

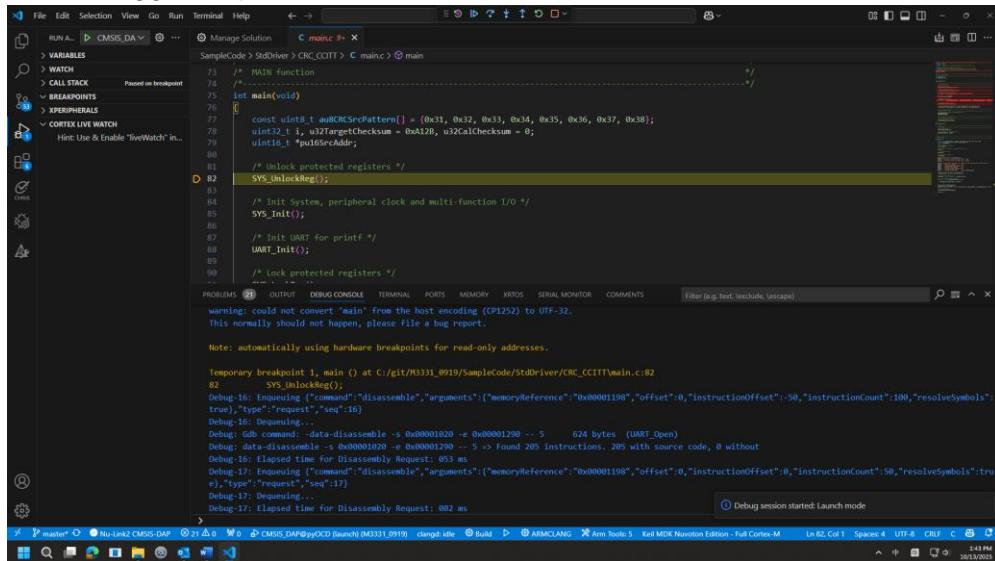
* Executing task: pyocd load --probe cmsisdap: --cbuild-run c:\git\M3331_0919\SampleCode\StdDriver\CRC_CCITT\VSCode\CRC_CCITT+ARMCLANG.c
l

Exception in thread load-svd:
Traceback (most recent call last):
  File "threading.py", line 1045, in _bootstrap_inner
  File "pyocd\debug\svd\loader.py", line 72, in run
  File "pyocd\debug\svd\loader.py", line 48, in load
  File "pyocd\debug\svd\parser.py", line 74, in for_xml_file
  File "xml\etree\ElementTree.py", line 1219, in parse
  File "xml\etree\ElementTree.py", line 581, in parse
xml.etree.ElementTree.ParseError: reference to invalid character number: line 157007, column 107
0001359 I Loading C:\git\M3331_0919\SampleCode\StdDriver\CRC_CCITT\VSCode\out\CRC_CCITT\ARMCLANG\debug\CRC_CCITT.axf [load_cmd]
[=====] 100%
0001903 I Erased 7168 bytes (7 sectors), programmed 7168 bytes (7 pages), skipped 0 bytes (0 pages) at 12.92 kB/s [loader]
* Terminal will be reused by tasks, press any key to close it.

```

## 4. Click Load & Debug

The debugger stops at the main function.



The screenshot shows the Keil MDK-Plus IDE interface. The code editor displays the main.c file with the following content:

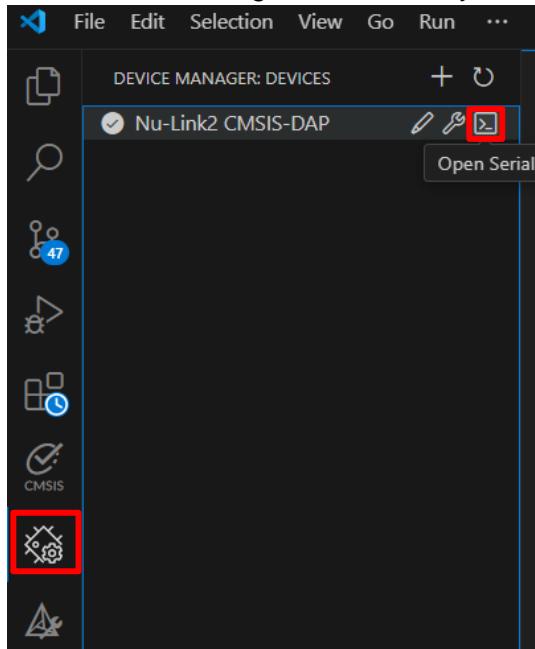
```

73 /* MAIN Function
74 */
75 int main(void)
76 {
77     const uint8_t auCRC8cPattern[] = {0x31, 0x32, 0x33, 0x34, 0x35, 0x36, 0x37, 0x38};
78     uint32_t i, u2TargetChecksum = 0xA12B, u32CalChecksum = 0;
79     uint16_t *pu16SrcAddr;
80
81     /* Unlock protected registers */
82     SYS_UnlockReg();
83
84     /* Init System, peripheral clock and multi-function I/O */
85     SYS_Init();
86
87     /* Init UART for printf */
88     UART_Init();
89
90     /* Lock protected registers */

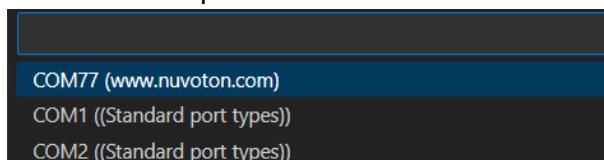
```

The assembly code window shows the assembly representation of the C code. A temporary breakpoint is set at the start of the main function. The status bar indicates "Debug session started: Launch mode".

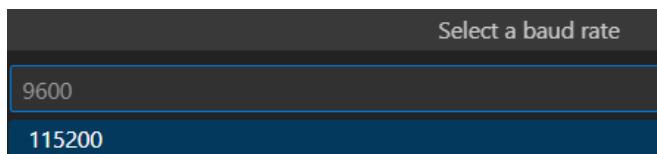
## 5. Click Device Manager in the Activity Bar and open serial port.



Select a serial port: COM77



Select a baud rate: 115200



Display Terminal window as below

```

PROBLEMS (21) OUTPUT DEBUG CONSOLE TERMINAL PORTS MEMORY XRTOS SERIAL MONITOR CC

Opened with baud rate: 115200

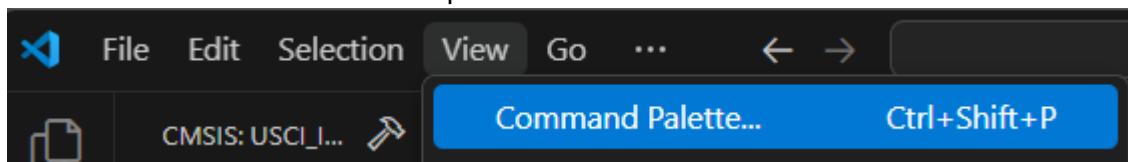
CPU @ 160000000 Hz
+-----+
|   CRC-CCITT Polynomial Mode Sample Code   |
+-----+

# Calculate [0x31, 0x32, 0x33, 0x34, 0x35, 0x36, 0x37, 0x38] CRC-CCITT checksum value.
- Seed value is 0xFFFF
- CPU write data length is 16-bit
- Checksum complement disable
- Checksum reverse disable
- Write data complement disable
- Write data reverse disable
- Checksum should be 0xA12B

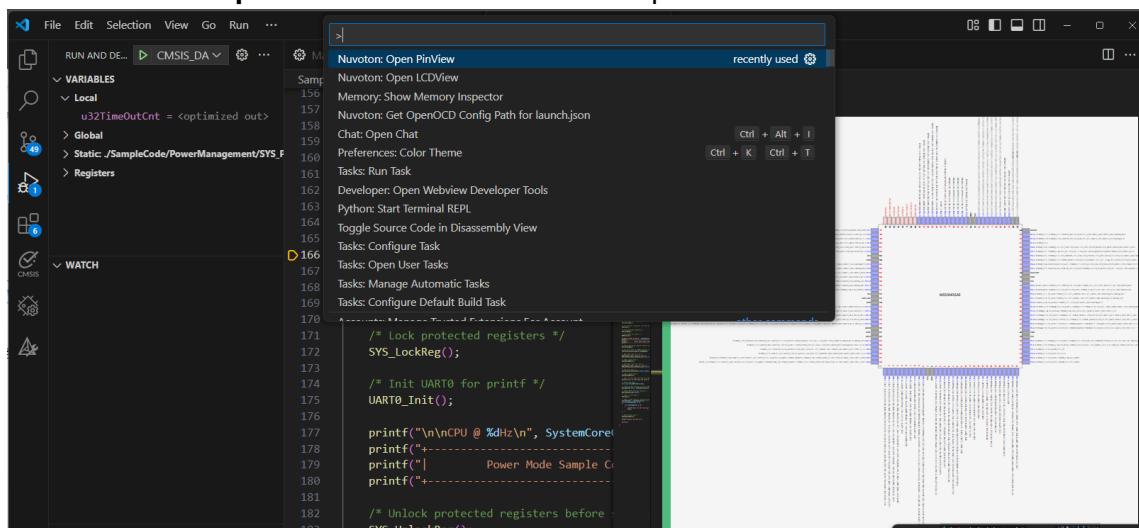
CRC checksum is 0xA12B ... PASS.

```

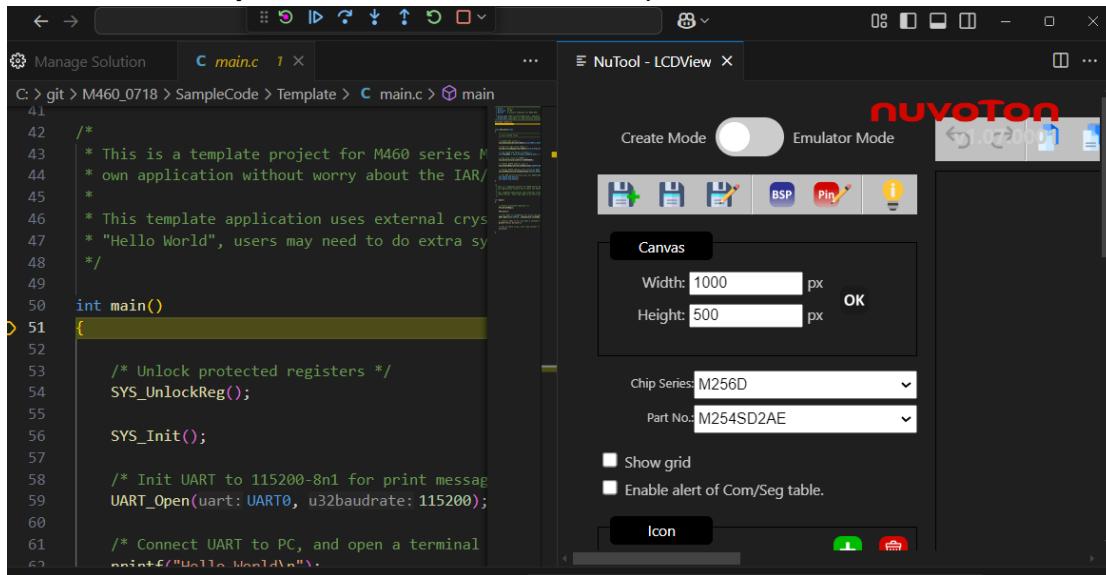
- Click View and select “Command palette” in the toolbar.



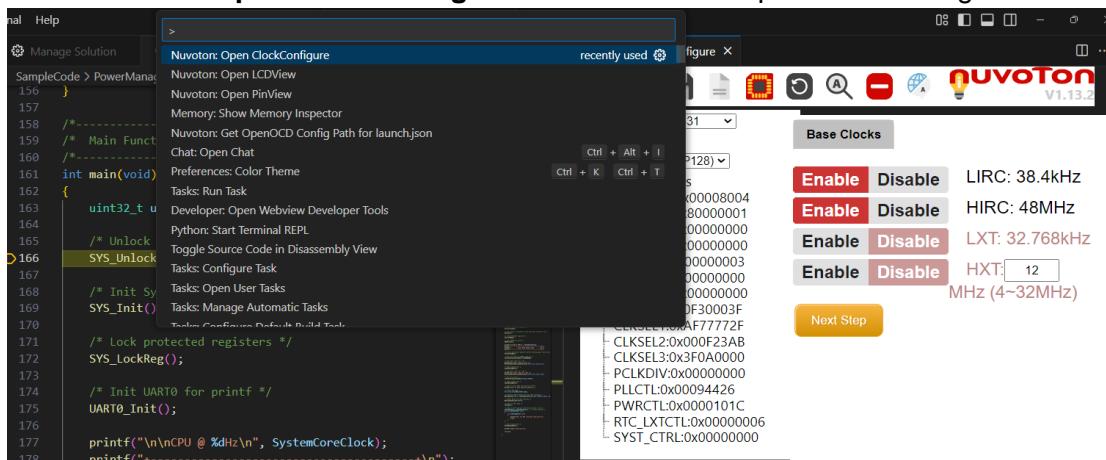
- Text “Nuvoton:Open PinView” in search bar to open PinView tool.



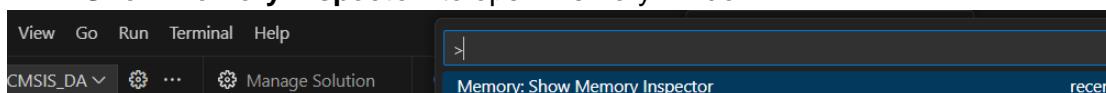
8. Text “Nuvoton:Open PinLCD” in search bar to open PinLCD tool.



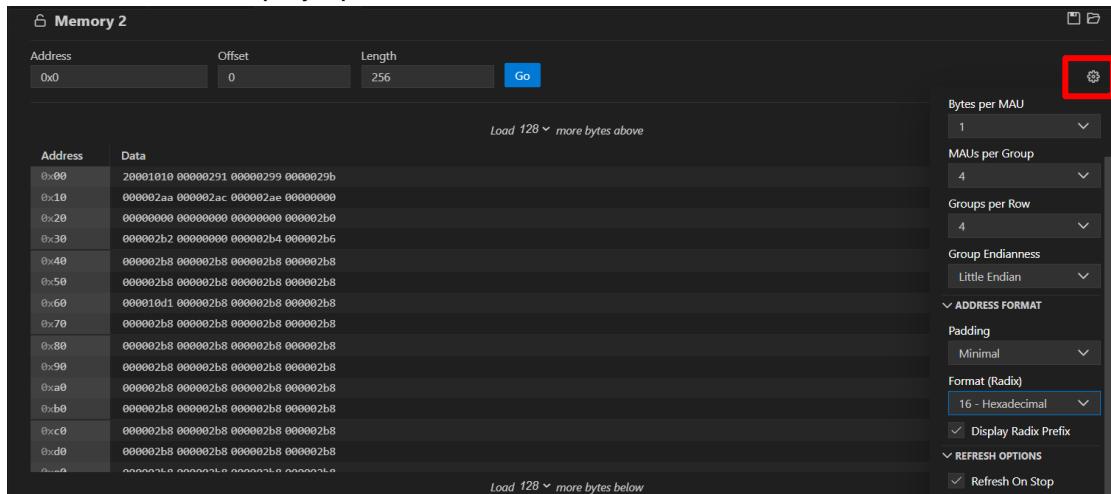
9. Text “Nuvoton:Open ClockConfigure” in search bar to open ClockConfigure tool.



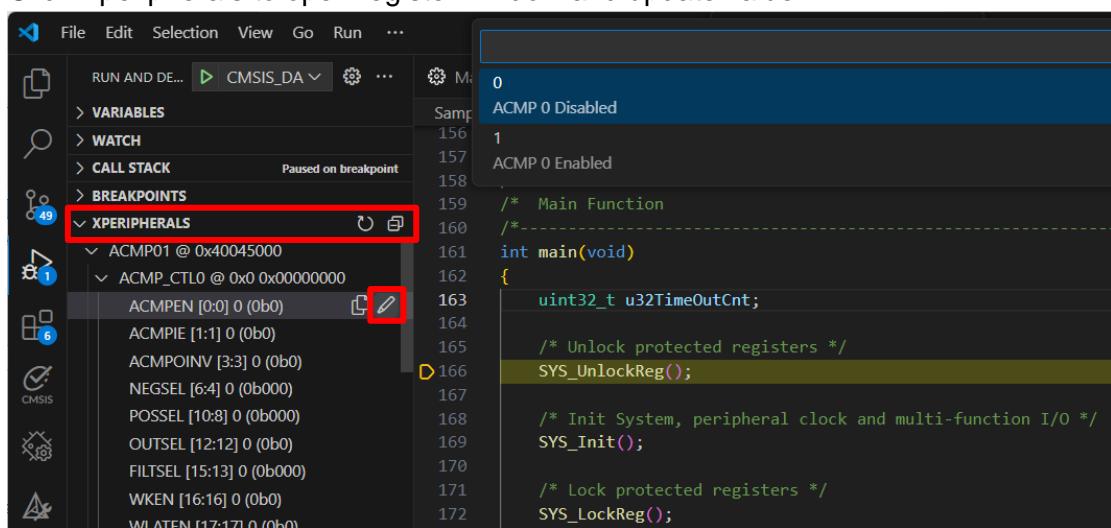
10. Text “Show Memory Inspector” to open memory window.



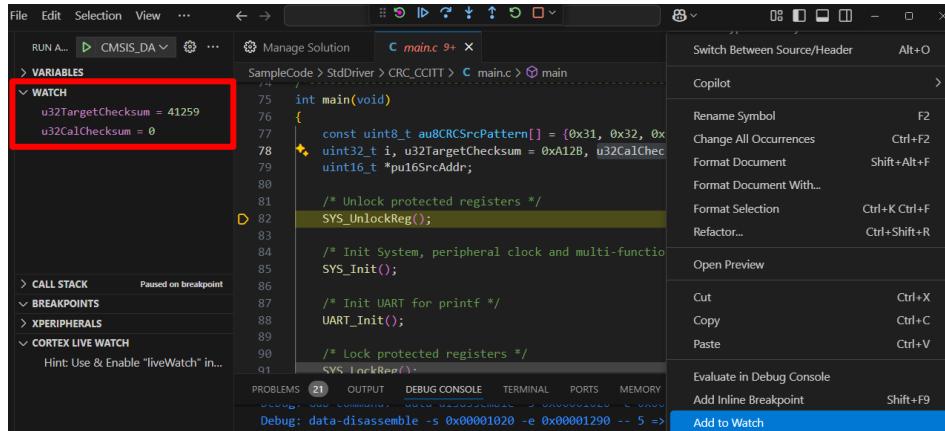
Click “advanced display options” button to set address format.



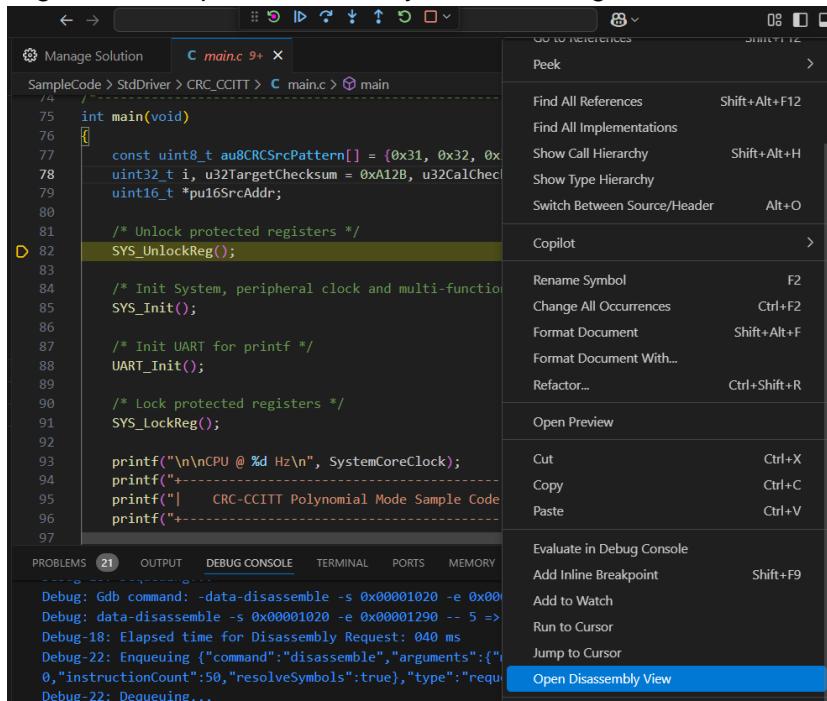
11. Click Xperipherals to open register window and update value.



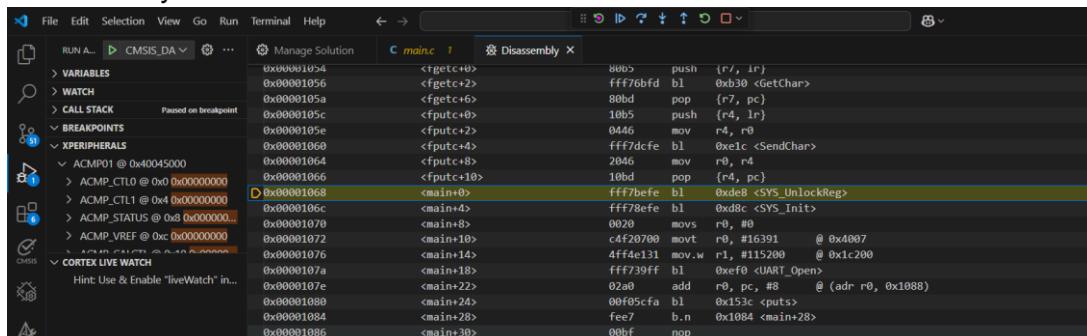
## 12. Right-click on variable u32CalChecksum to open add to watch.



## 13. Right-click to open disassembly view in debug mode.



## 14. Disassembly view as below.



## REVISION HISTORY

Date	Revision	Description
2025.10.17	3.02	1. Add command to open window.
2025.08.20	3.01	1. Initially version.

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