

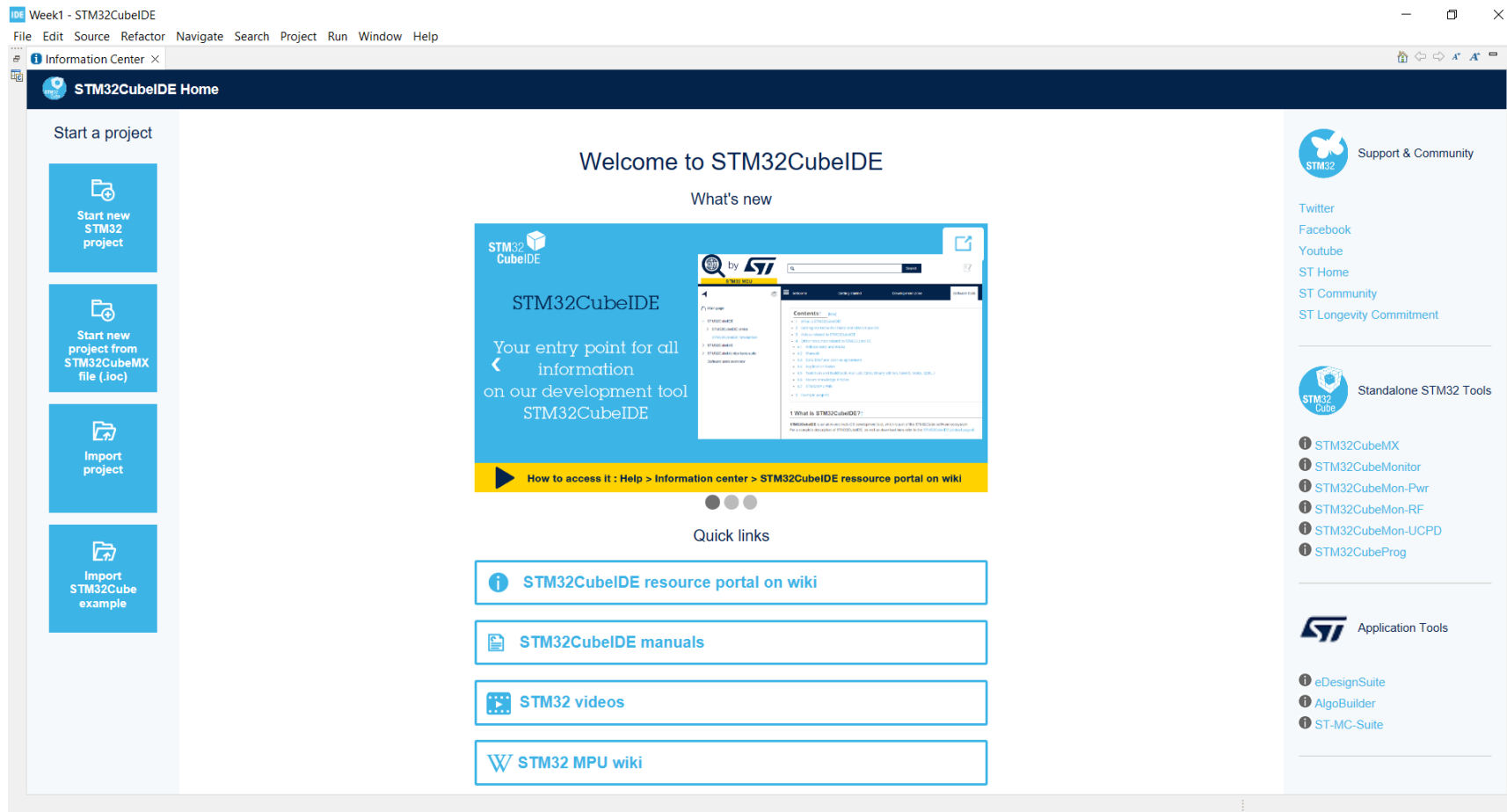
UCSD Embedded C Assignment 1

By

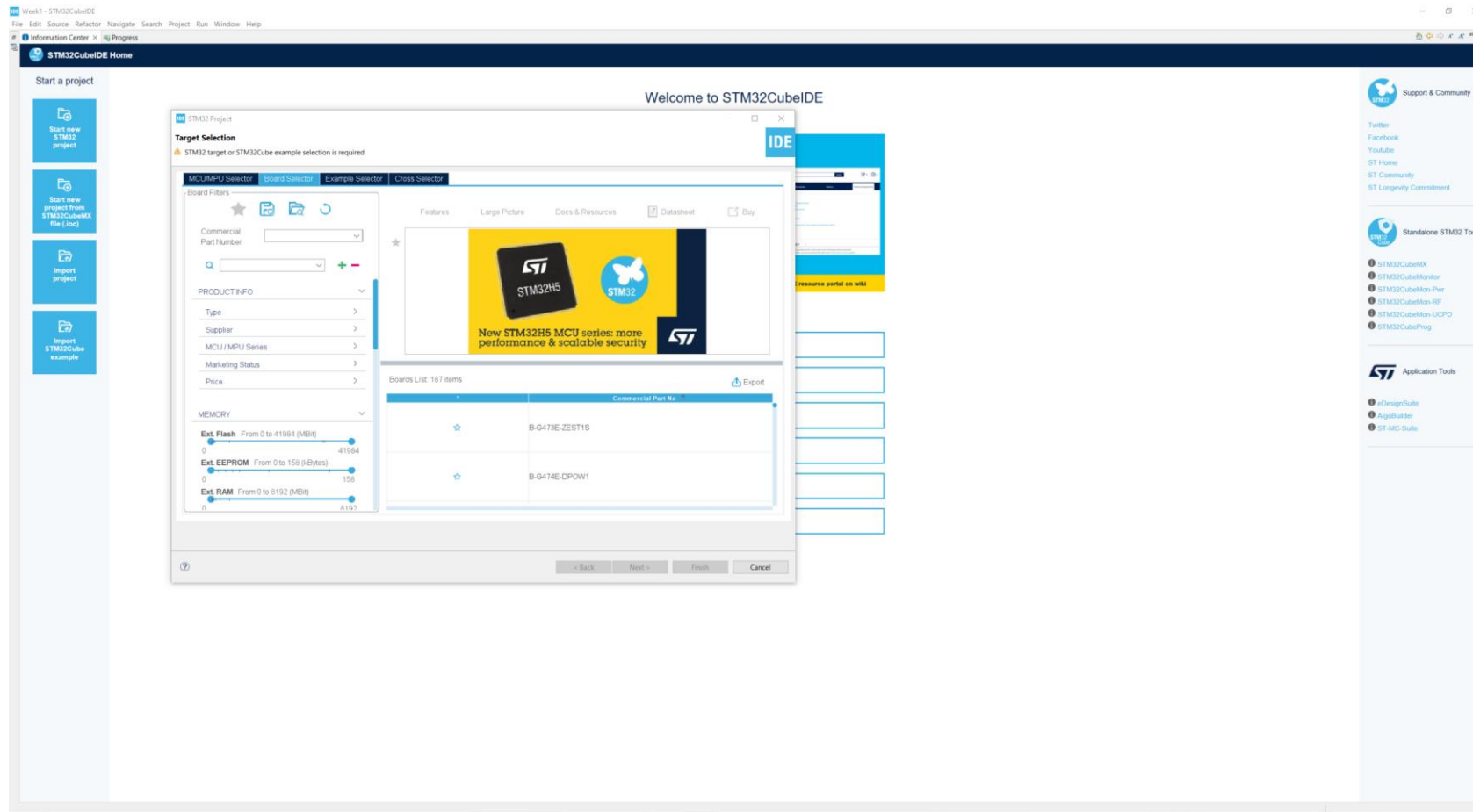
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Step 1. Startup STM32CubeIDE



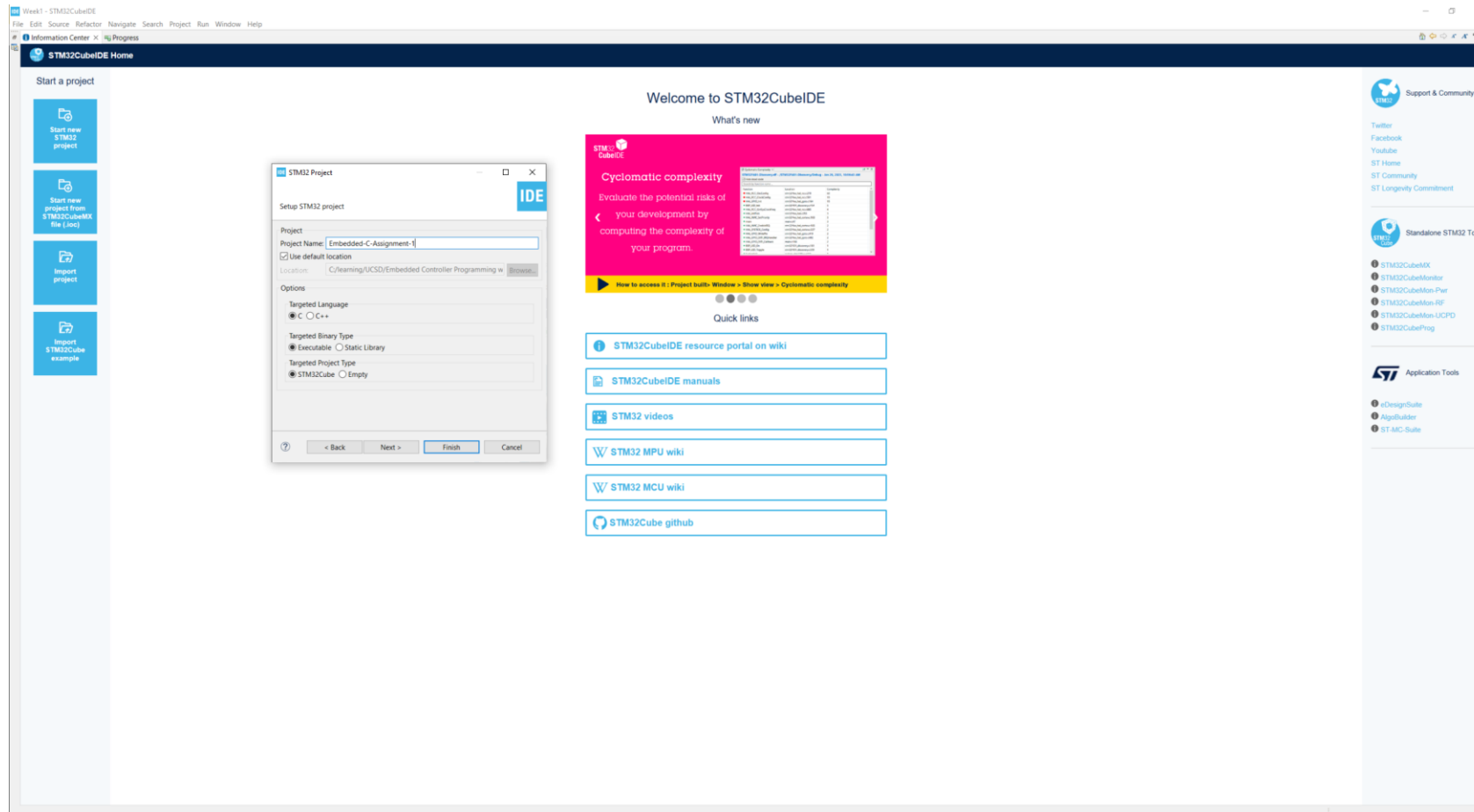
Step 2. Click Start new STM32 Project



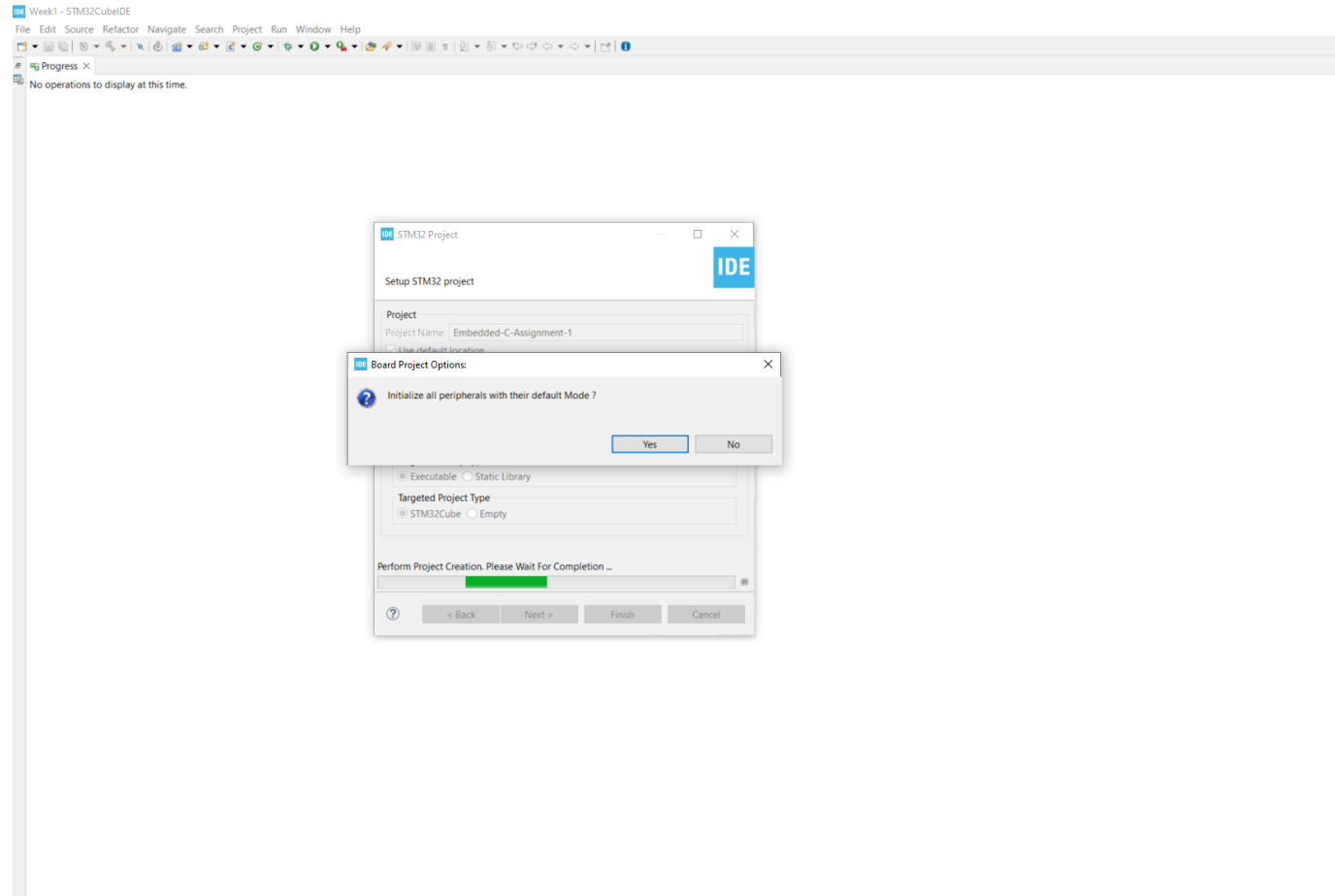
Step 3. Type in the board you use, click Next



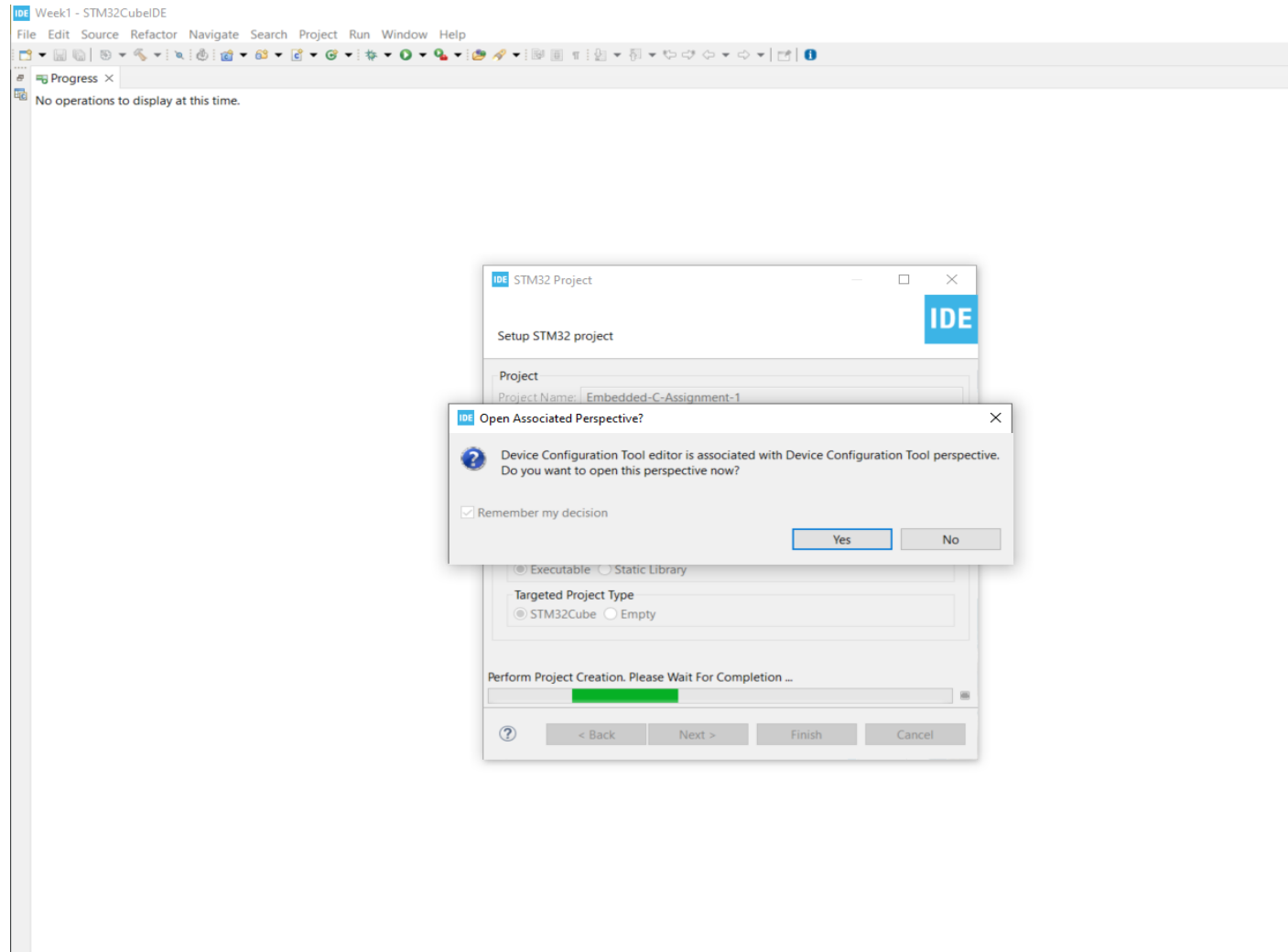
Step 4. Enter the project name then click Finish



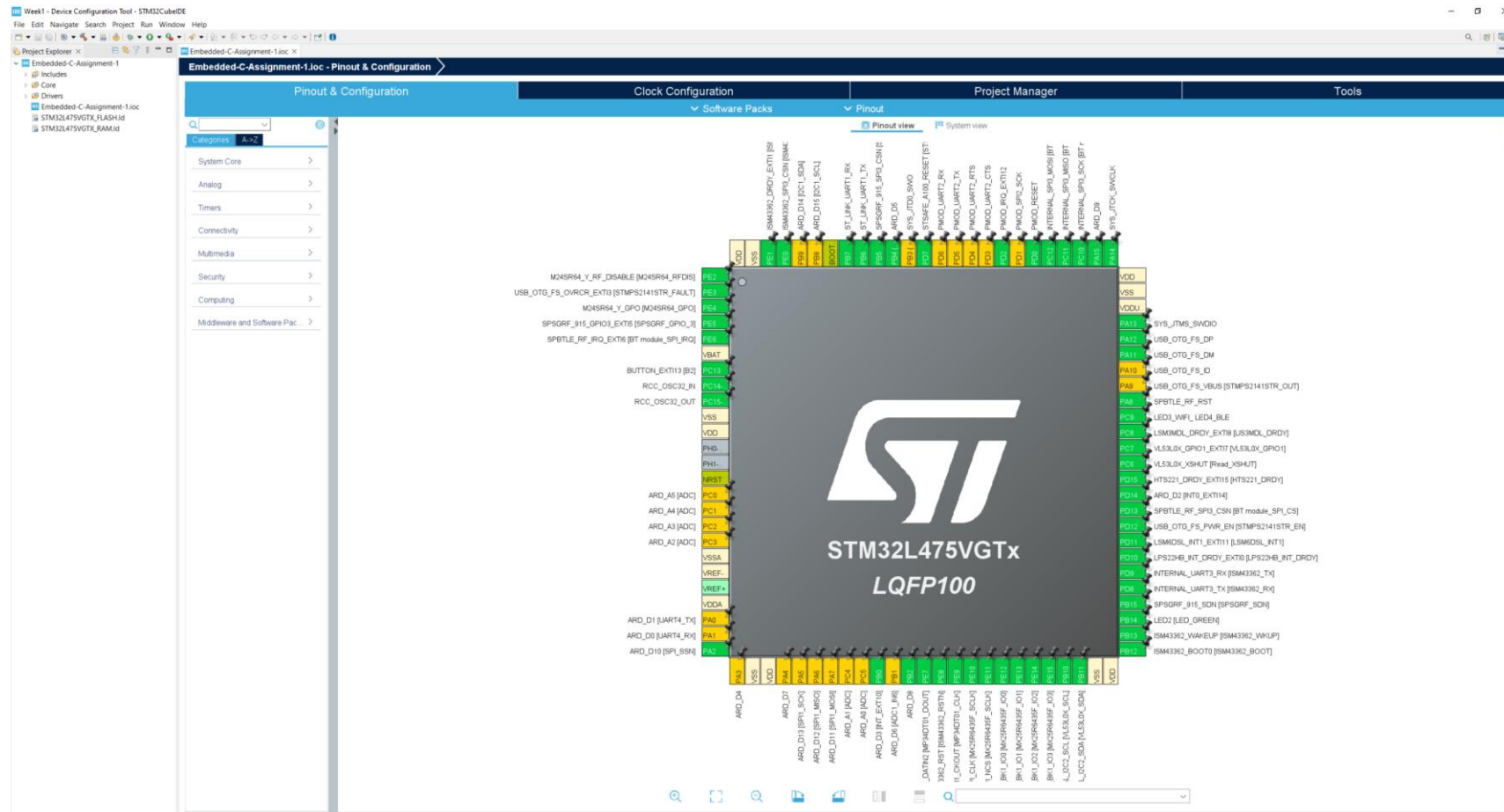
Step 5. Click yes to initialize all peripherals to default



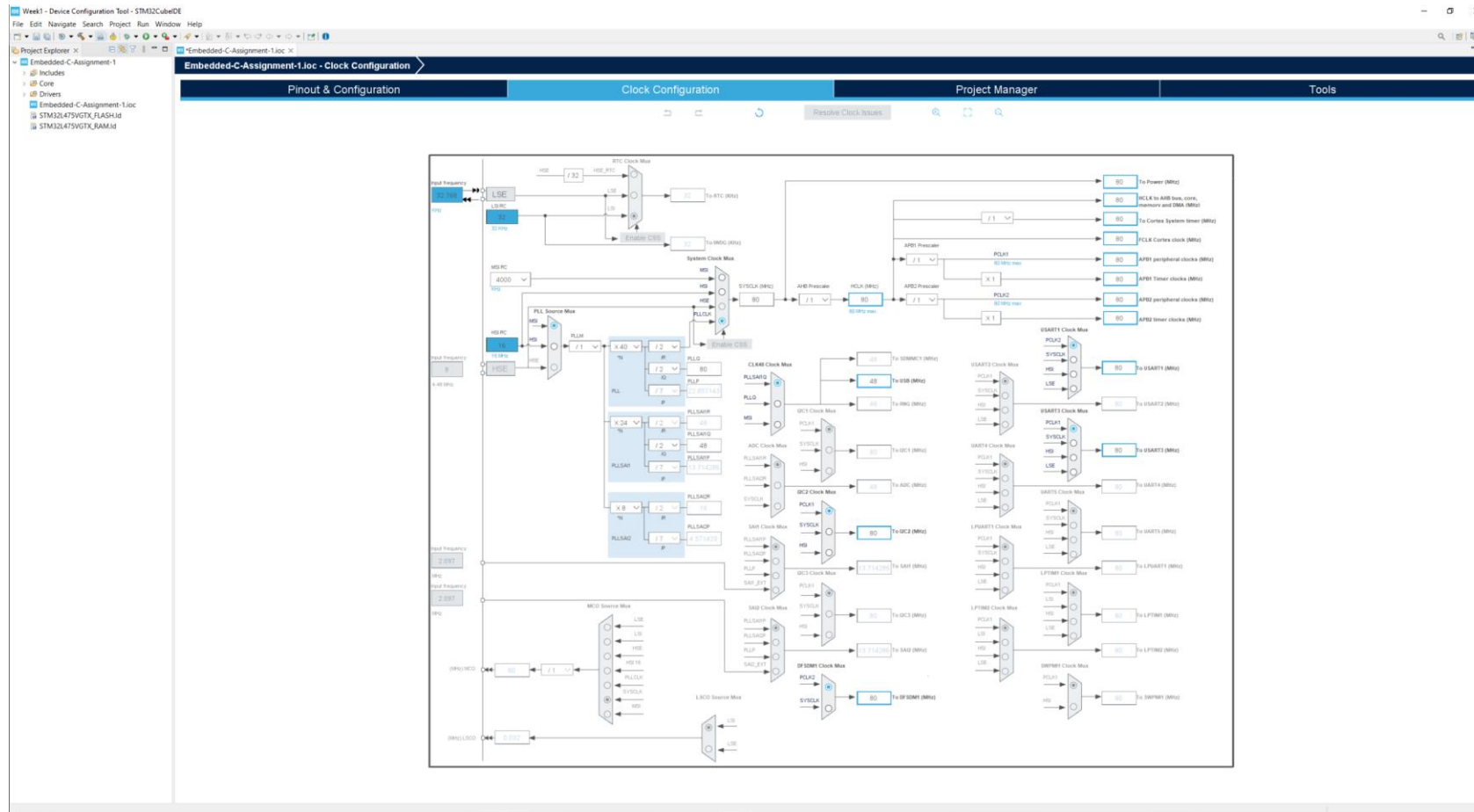
Step 6. Click yes to open perspective



Step 7. Observe results in the .ioc file



Step 8. Review the clock configuration



Step 9. Save the .ioc file

The screenshot shows the STM32CubeIDE interface with the 'Embedded-C-Assignment-1.ioc - Tools' window open. The window is divided into several tabs: Pinout & Configuration, Clock Configuration, Power, Project Manager, and Tools. The 'Power' tab is active, showing the 'Sequence Generator' configuration.

Sequence Generator Configuration:

- Sequence Type: Default
- Typ. Average Current: 1.07 mA
- DMIPS: 100
- Sequence Configuration: RUN Consumption 10.7 mA, STOP2 Consumption 1.18 μ A
- High Power Mode: RUN
- CPU Frequency: 80 MHz
- Low Power Mode: STOP2
- RUN Step: 0.1 ms / STOP2 Step: 0.9 ms
- Sequence Time: 1 ms
- Auto Refresh ON (automatically update sequence table display and results in the right panel)

Default Sequence Table:

Step	Mode	Vdd	Range/Scale	Memory	CPU/Mcu Freq	Clock Config	Peripherals	Step Current	Duration
1	RUN	3.0	Range L: High	SRAM2	80 MHz	HSE PLL		10.7 mA	0.1 ms
2	STOP2	3.0	No Range		0 Hz	ALL CLOCKS OFF		1.18 μ A	0.9 ms

Consumption Profile by Step Graph:

The graph shows Consumption (mA) on the Y-axis (0.0 to 11.5) and Time (ms) on the X-axis (0.00 to 1.05). The profile shows a sharp increase in consumption at 0.1 ms (RUN) and a sharp decrease at 0.9 ms (STOP2). A 'Save Embedded-C-Assignment-1.ioc?' dialog box is overlaid on the graph.

Sequence Time / Ta Max: 1 ms / 103.65 °C

Battery Life Estimation: 4 months, 10 days, 3 hours

Average Consumption: 1.07 mA

Average DMIPS: 100 DMIPS

Step 10. Click yes to generate code

The screenshot displays the STM32CubeIDE interface for the 'Embedded-C-Assignment-1.ioc' project. The left sidebar shows the Project Explorer with the 'Core' and 'Drivers' sections expanded. The main workspace is divided into several panels: 'Pinout & Configuration', 'Clock Configuration', 'Project Manager', and 'Tools'. The 'Pinout & Configuration' panel shows the device 'STM32L475VGTx' and the 'Sequence Generator' settings. The 'Clock Configuration' panel shows the 'Default Sequence Table' with two steps: '1: RUN' and '2: STOP2'. The 'Project Manager' panel shows the 'Display Selection' dialog box with the question 'Do you want generate code?'. The 'Tools' panel shows the 'Consumption Profile by Step' graph, which plots 'Consumption (mA)' against 'Time (ms)'. The graph shows a high consumption level for the '1: RUN' step and a low consumption level for the '2: STOP2' step. The 'Do you want generate code?' dialog box is a small window with a 'Yes' button and a 'No' button. The 'Yes' button is highlighted, indicating the user's choice to generate the code.

STM32L475VGTx

T_A 25°C / V_{DD} 3.0V

Sequence Generator

Why Use Sequence Generator?

Sequence Generator allows to quickly generate 2 steps in high and low power modes in typical conditions without creating each step manually using New Step button.

What is the Default Sequence?

Default Sequence gathers a 0.1 ms step in RUN at max CPU frequency getting highest performance and consumption, and a 0.9 ms step in STOP with the lowest consumption in typical conditions with V_{DD} 3.0V at T_A 25°C.

*Generator

Generate RUN + STOP2

Back To Default Sequence

Disable Auto Refresh Auto Refresh ON

Results at T_A 25°C / 3.0V

Sequence Type Default

Typ. Average Current 1.07 mA

DMPs 100

*Sequence Configuration

RUN Consumption 10.7 mA

High Power Mode RUN

CPU Frequency 80 MHz

STOP2 Consumption 1.18 μ A

Low Power Mode STOP2

RUN Step 0.1 ms / STOP2 Step 0.9 ms

Sequence Time 1 ms

Auto Refresh ON automatically update sequence table, display and results in the right panel

Li-SOCL2(A3400) (1x1)

Information Notes

Help

Sequence Information Notes

1) Manual change in Sequence Table will disable the Auto Refresh of the Sequence Generator

2) Default sequence is RUN at max CPU frequency + STOP with the lowest consumption

3) Default sequence is an example which does not match any pinout, configuration nor clock settings and can be directly edited for reuse or removed

4) PCC sequence has no impact on code generation

Display Selection

Select your Preferred Display [Plot All Steps] [Question]

Do you want generate code?

☐ Remember my decision

Yes No

Consumption Profile by Step

Consumption (mA)

Time (ms)

1: RUN

2: STOP2

Legend: Add by Step Average Current

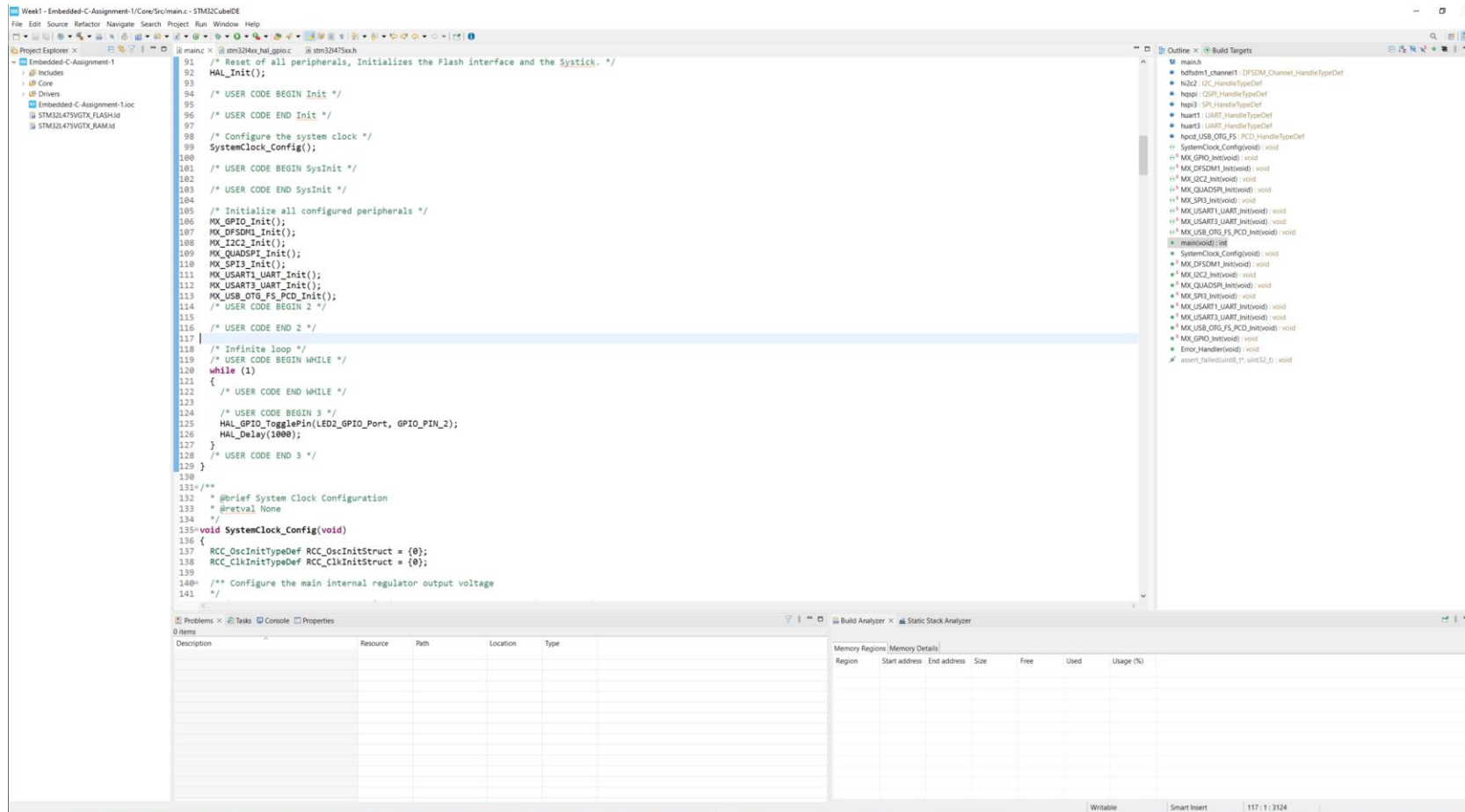
Sequence Time / T_A Max 1 ms / 103.65 °C

Battery Life Estimation 4 months, 10 days, 3 hours

Average Consumption 1.07 mA

Average DMPS 100 DMPS

Step 11. Add LED toggle and delay code



Step 12. Right click on the project name and build it, test the .elf file

