

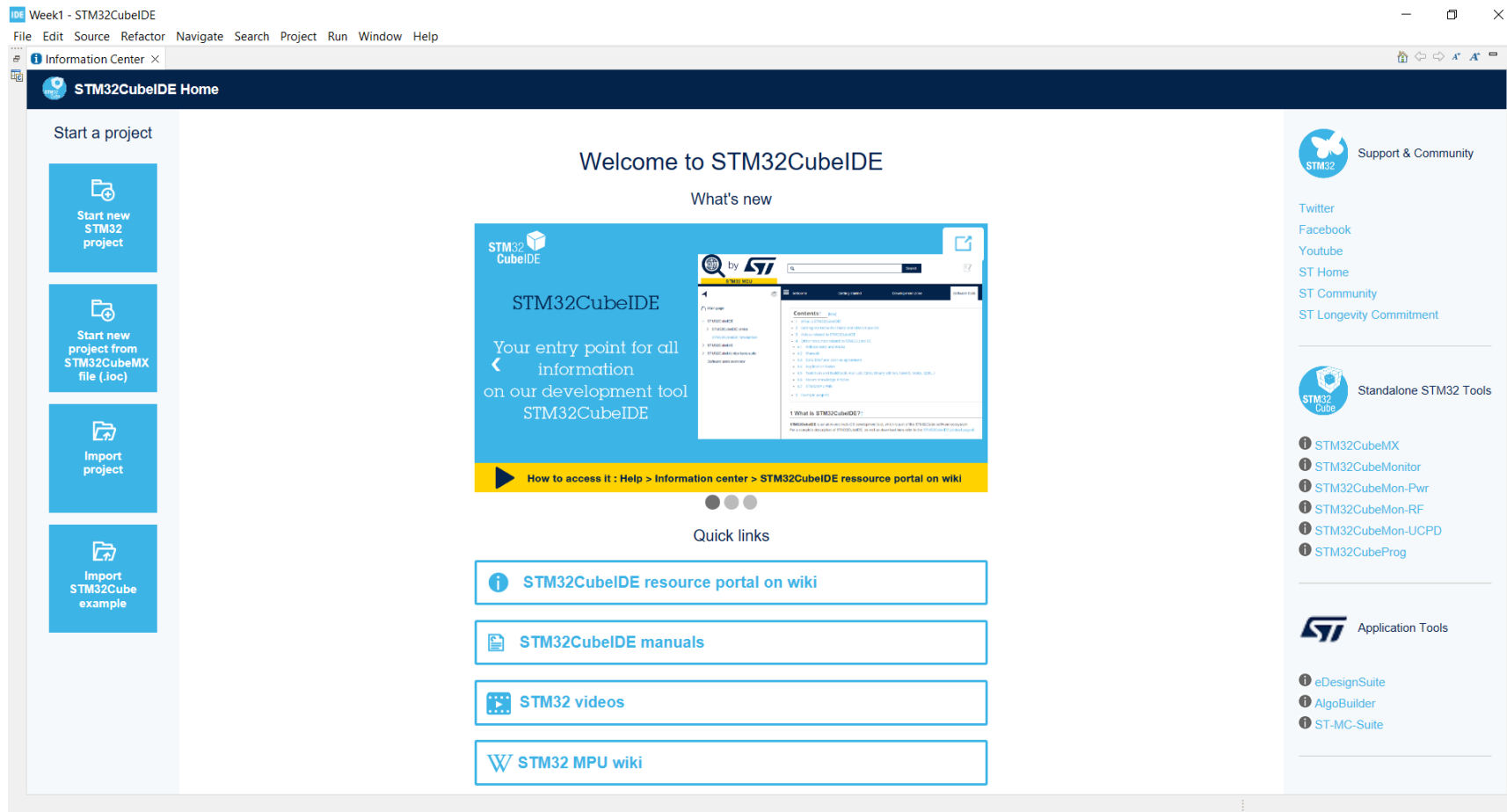
USCD Embedded C Assignment 1

By

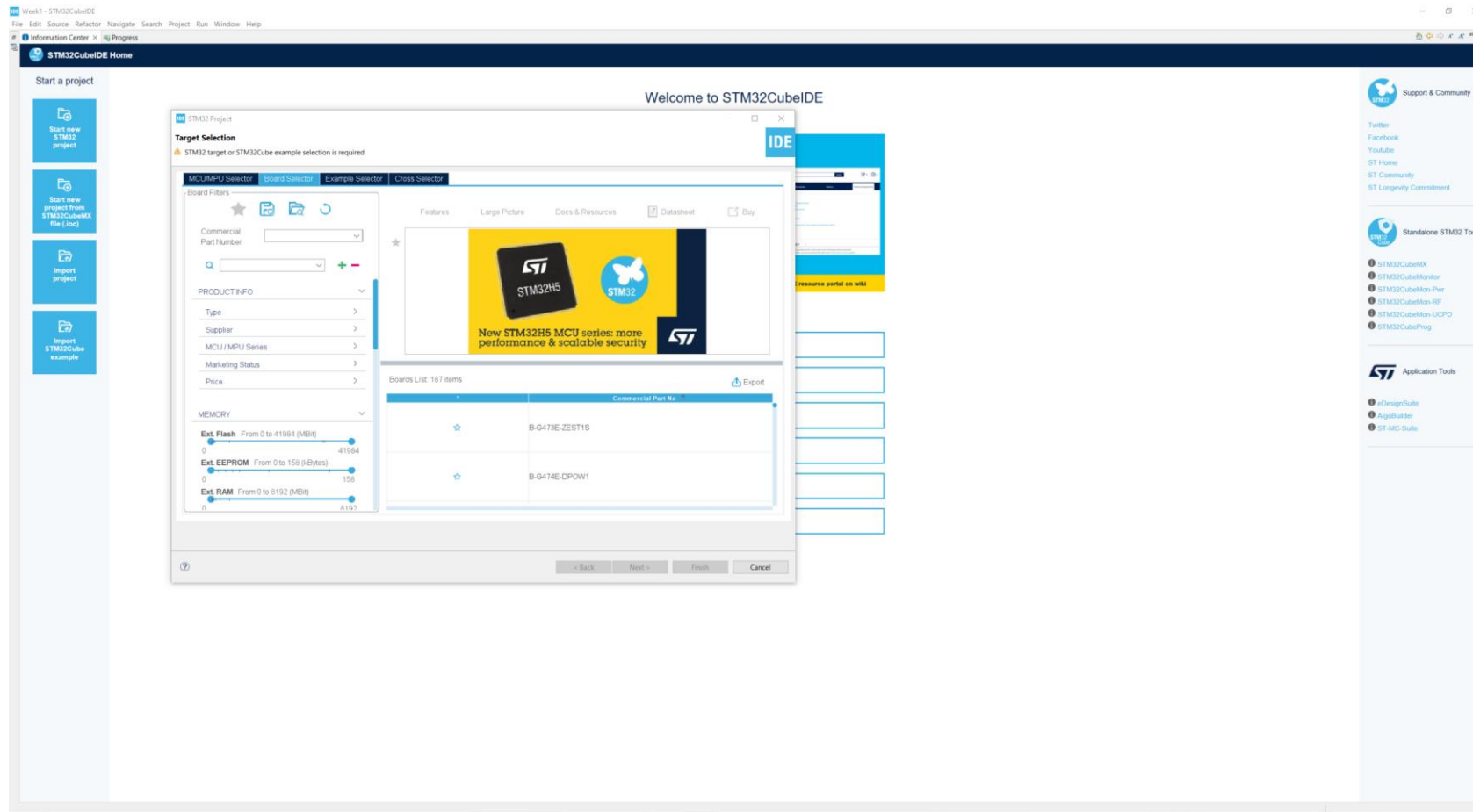
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Step 1. Startup STM32CubeIDE



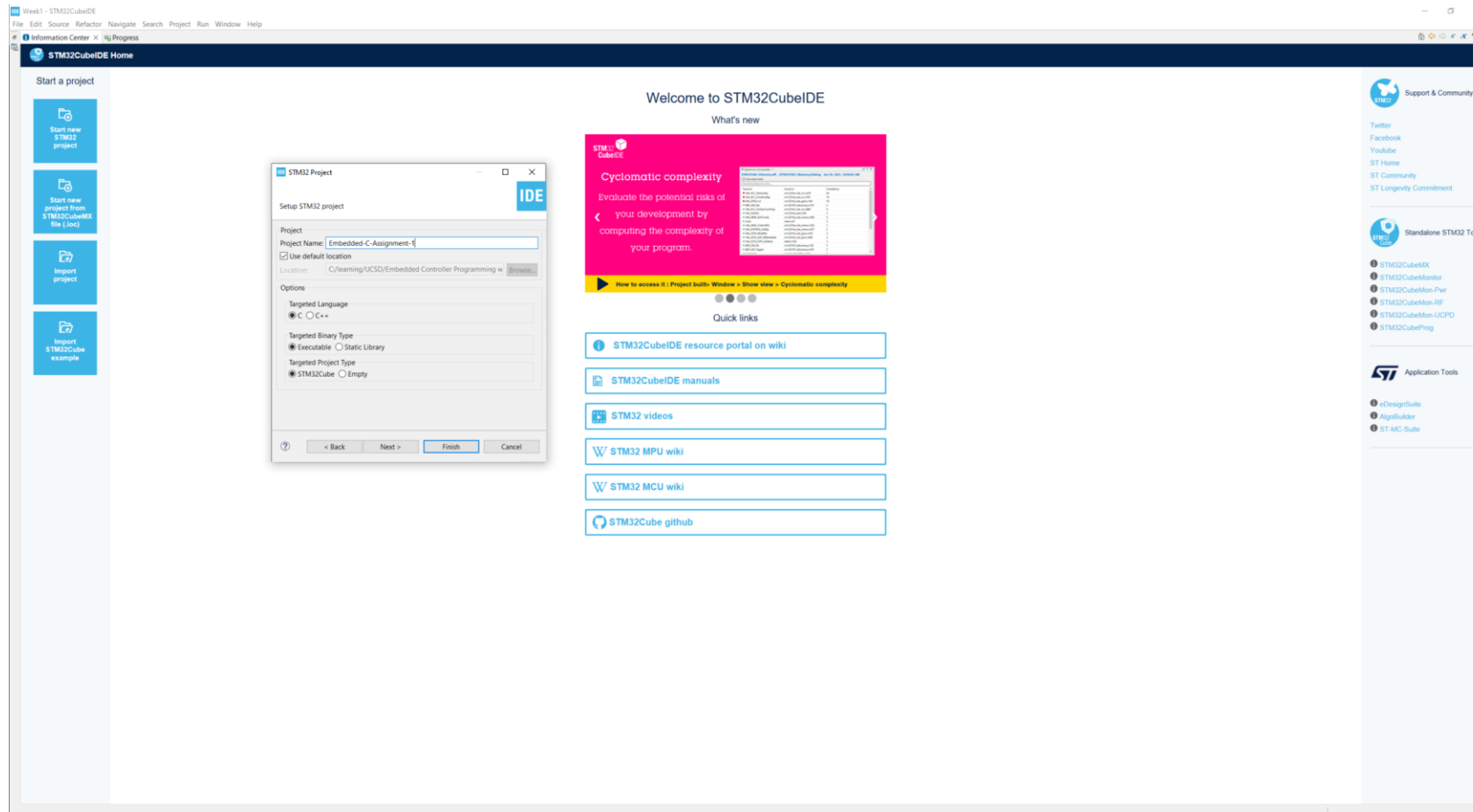
Step 2. Click Start new STM32 Project



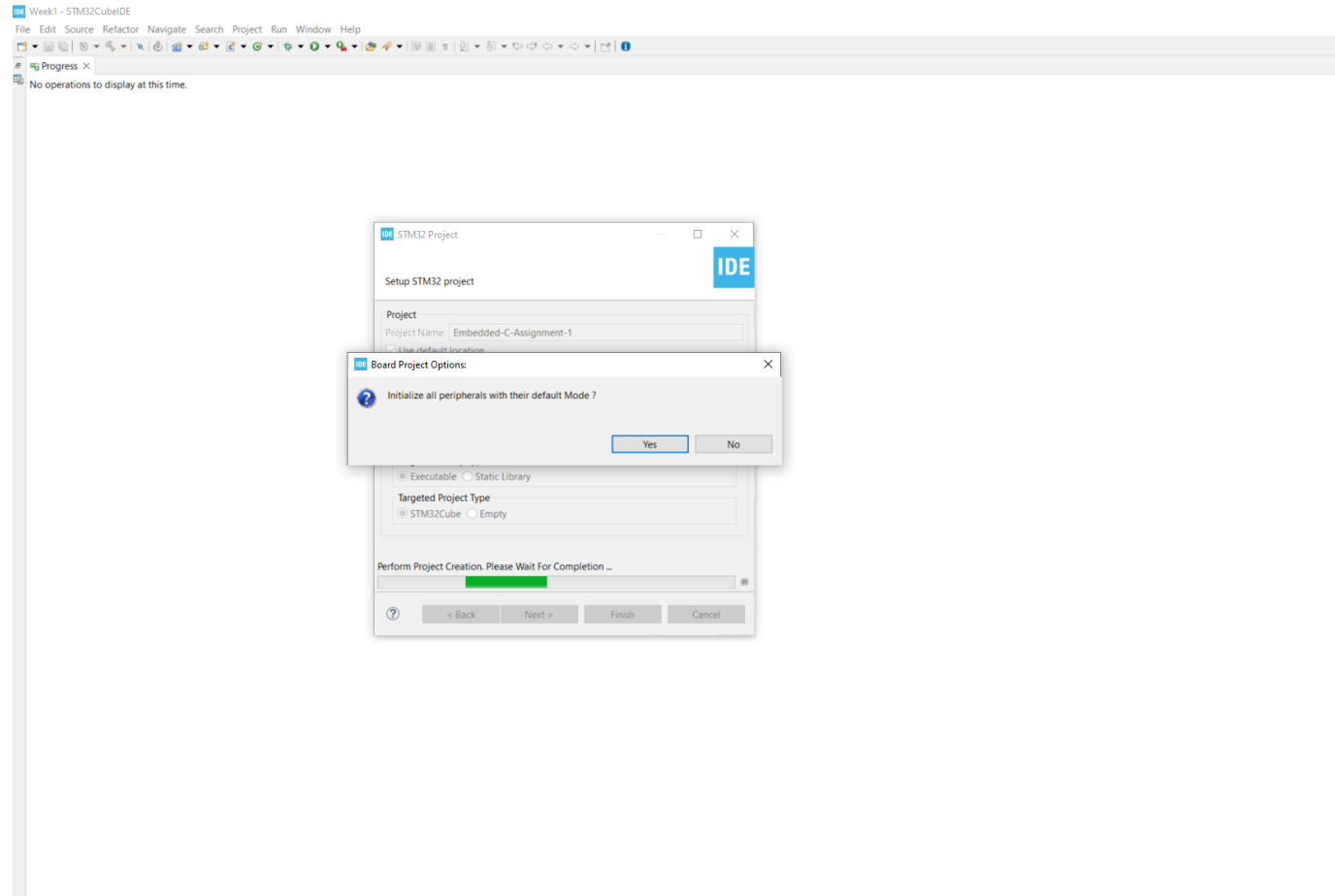
Step 3. Type in the board you use, click Next



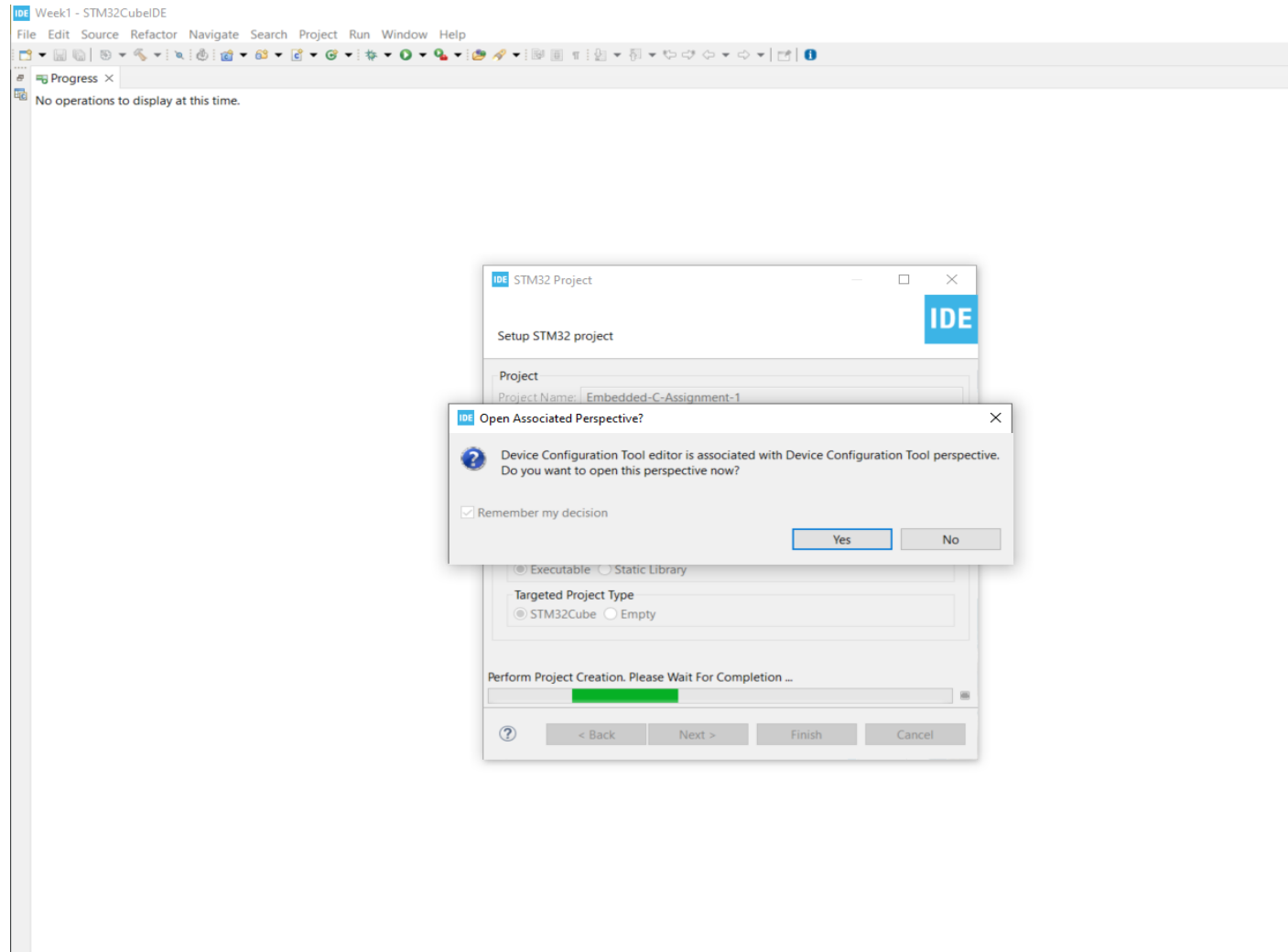
Step 4. Enter the project name then click Finish



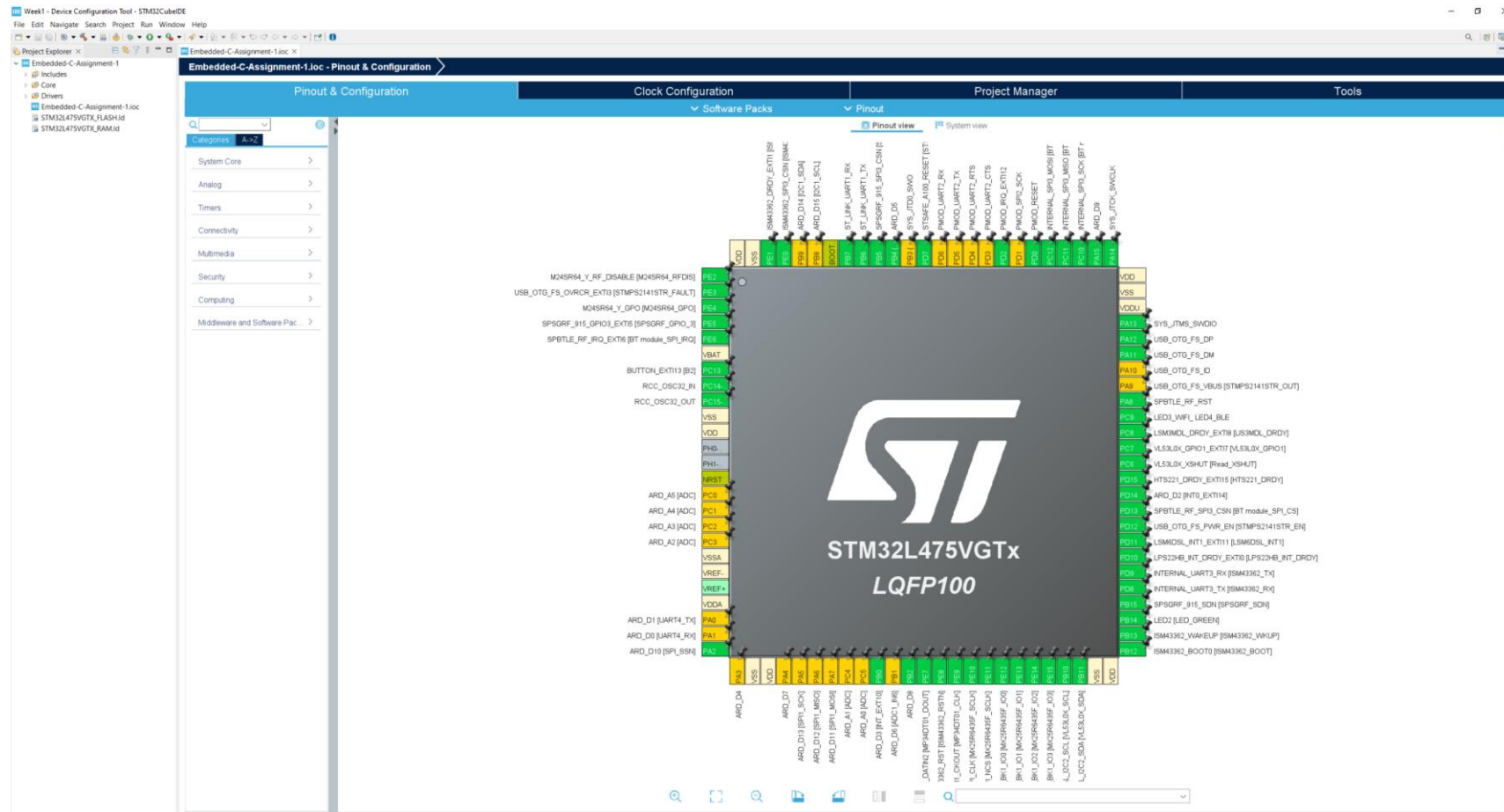
Step 5. Click yes to initialize all peripherals to default



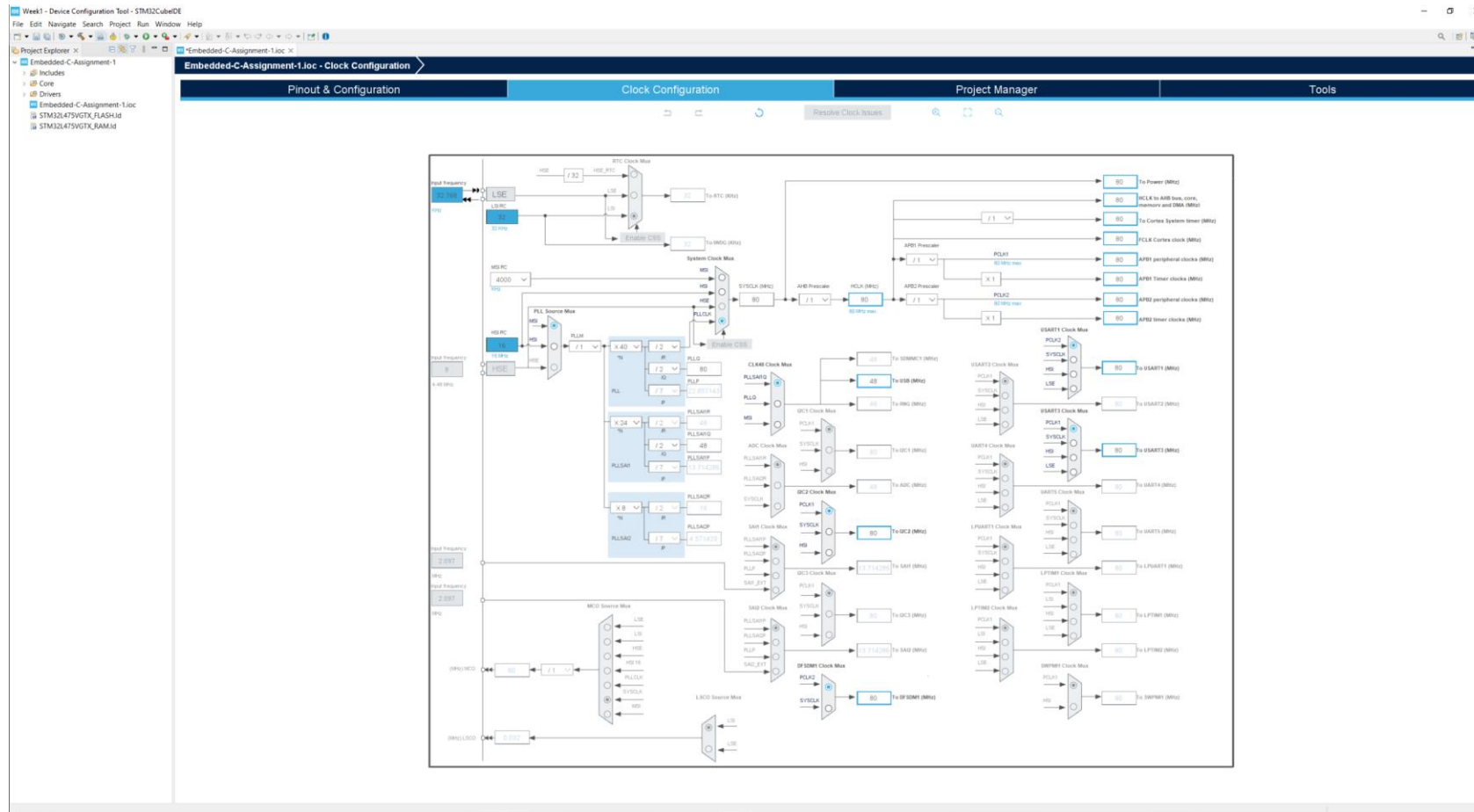
Step 6. Click yes to open perspective



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 'Sequence Generator' tab is active, displaying a table of sequence steps and a graph of consumption profile by step.

Sequence Table:

Step	Mode	Vdd	Range/Scale	Memory	CPU/Misc 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 µA	0.9 ms

Consumption Profile by Step:

The graph shows consumption (mA) on the Y-axis (0.0 to 11.5) versus Time (ms) on the X-axis (0.00 to 1.05). The profile shows a sharp increase in consumption at 0.1 ms (Step 1: RUN) and a sharp decrease at 0.55 ms (Step 2: STOP2).

Sequence Configuration:

- Sequence Type: Default
- Typ. Average Current: 10.7 mA
- DMIPS: 100
- Sequence Configuration: RUN Consumption 10.7 mA, STOP2 Consumption 1.18 µA
- 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.

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

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 'Sequence Generator' panel is active, showing the 'Default Sequence Table' and the 'Display Selection' dialog.

The 'Default Sequence Table' is as follows:

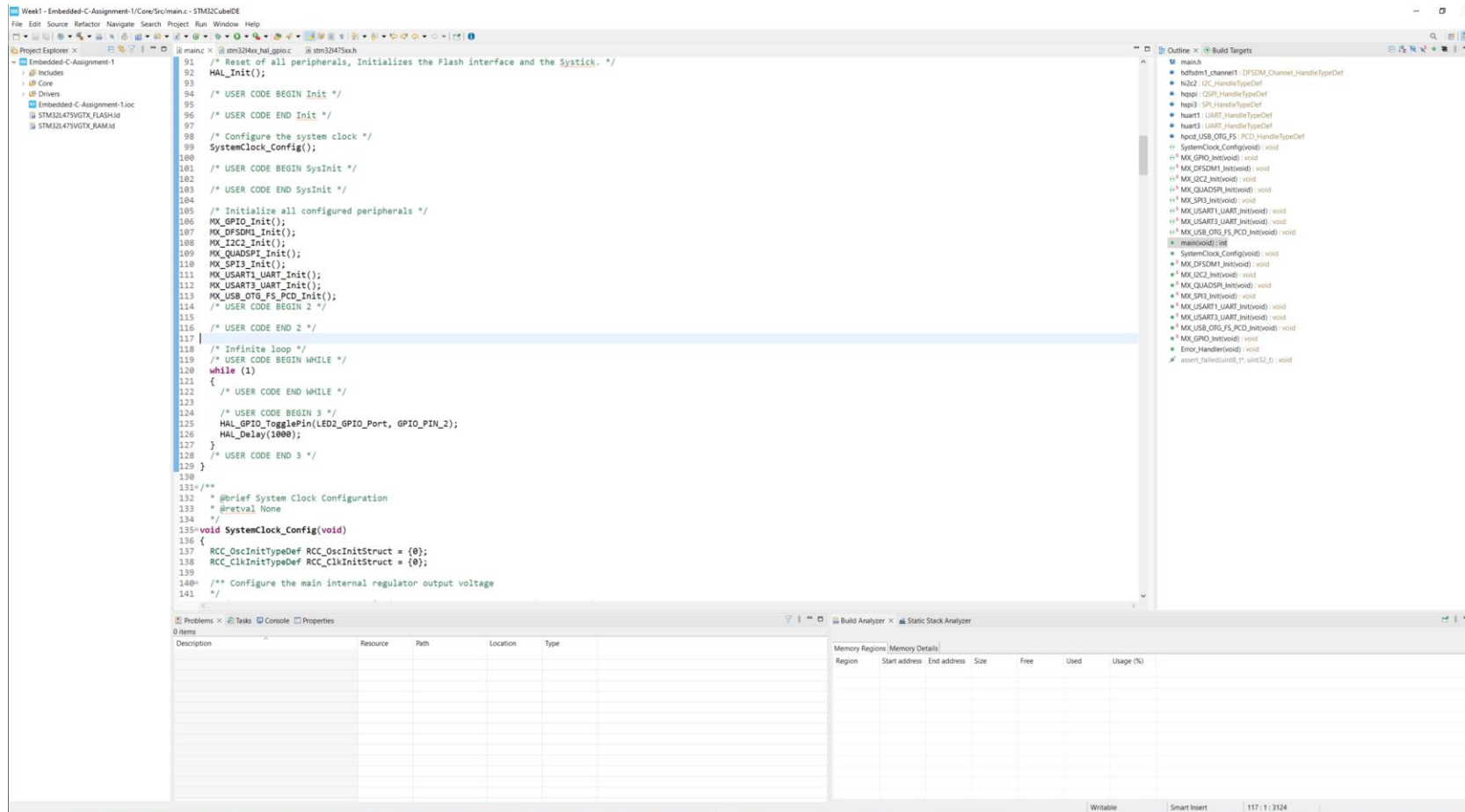
Step	Mode	Vdd	Range/State	Memory	Cpu/Bus Freq	Clock Config	Peripherals	Step Current	Duration
1	RUN	3.0	Range1-High	SRAM2	80 MHz	HSE PLL		10.7 mA	0.1 ms
2	STOP2	3.0	NoRange	nil	0 Hz	ALL CLOCKS OFF		1.18 µA	0.9 ms

The 'Display Selection' dialog is open, asking 'Do you want generate Code?'. The 'Yes' button is highlighted.

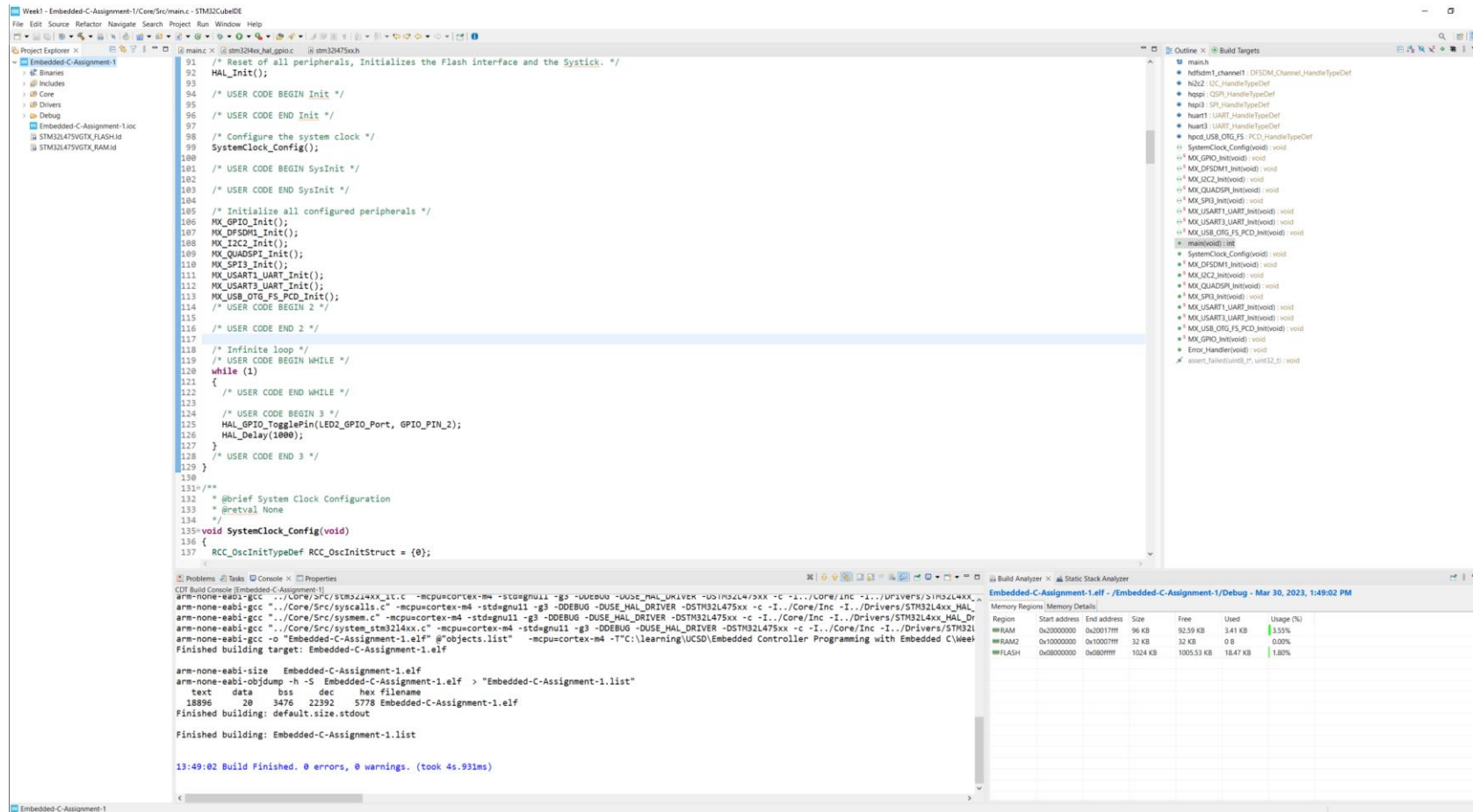
The 'Consumption Profile by Step' graph shows the current consumption over time. The y-axis is 'Consumption (mA)' ranging from 0.0 to 11.5. The x-axis is 'Time (ms)' ranging from 0.00 to 1.05. The graph shows a sharp spike at 0.1 ms (Step 1: RUN) and a lower, steady consumption at 0.55 ms (Step 2: STOP2).

At the bottom, the 'Sequence Time / Ta Max' is 1 ms / 103.65 °C, and the 'Battery Life Estimation' is 4 months, 10 days, 3 hours. The 'Average Consumption' is 1.07 mA and the 'Average DMIPS' is 100 DMIPS.

Step 11. Add LED toggle and delay code



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



Additional: Step 13. Setup for debug configuration, select SWD as debugger

