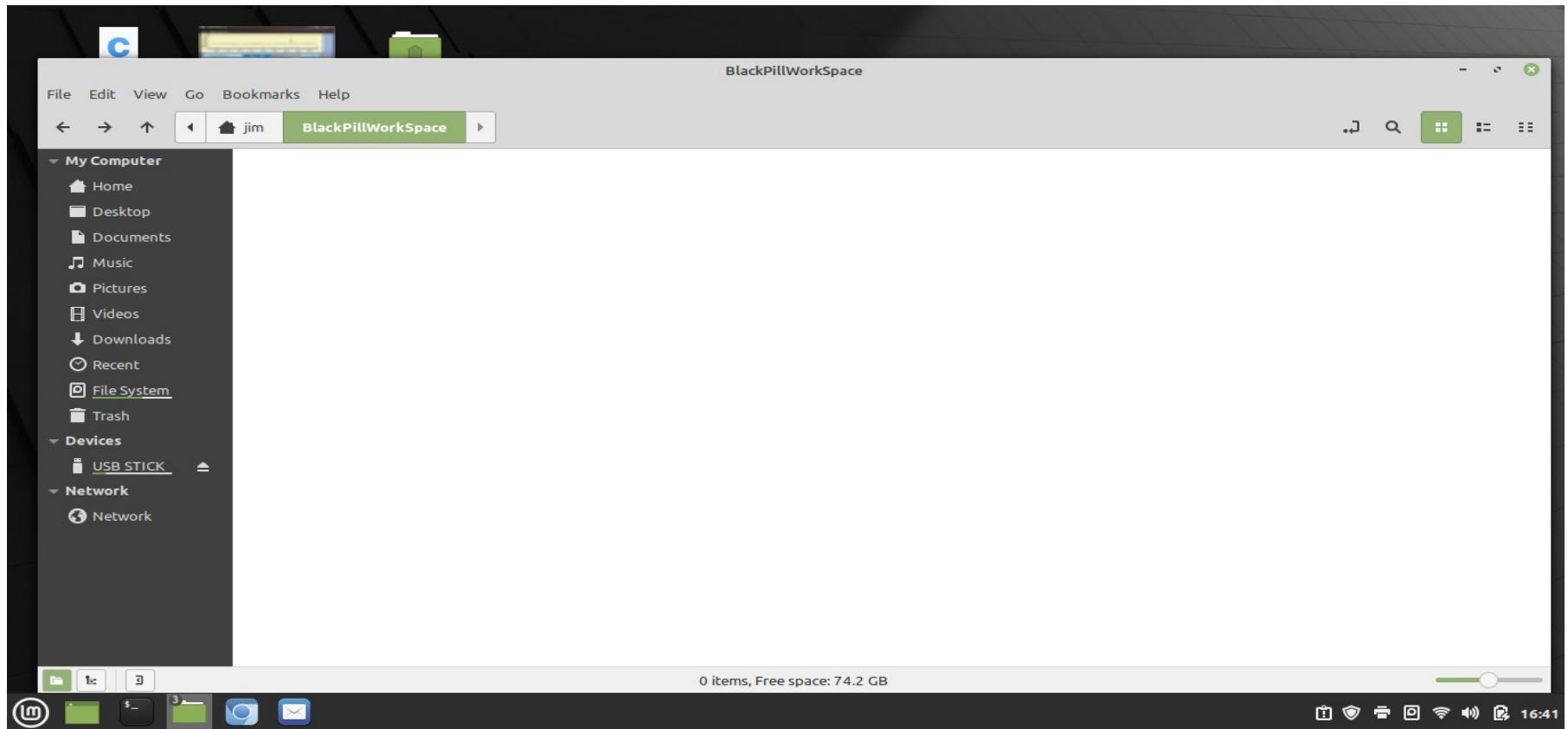


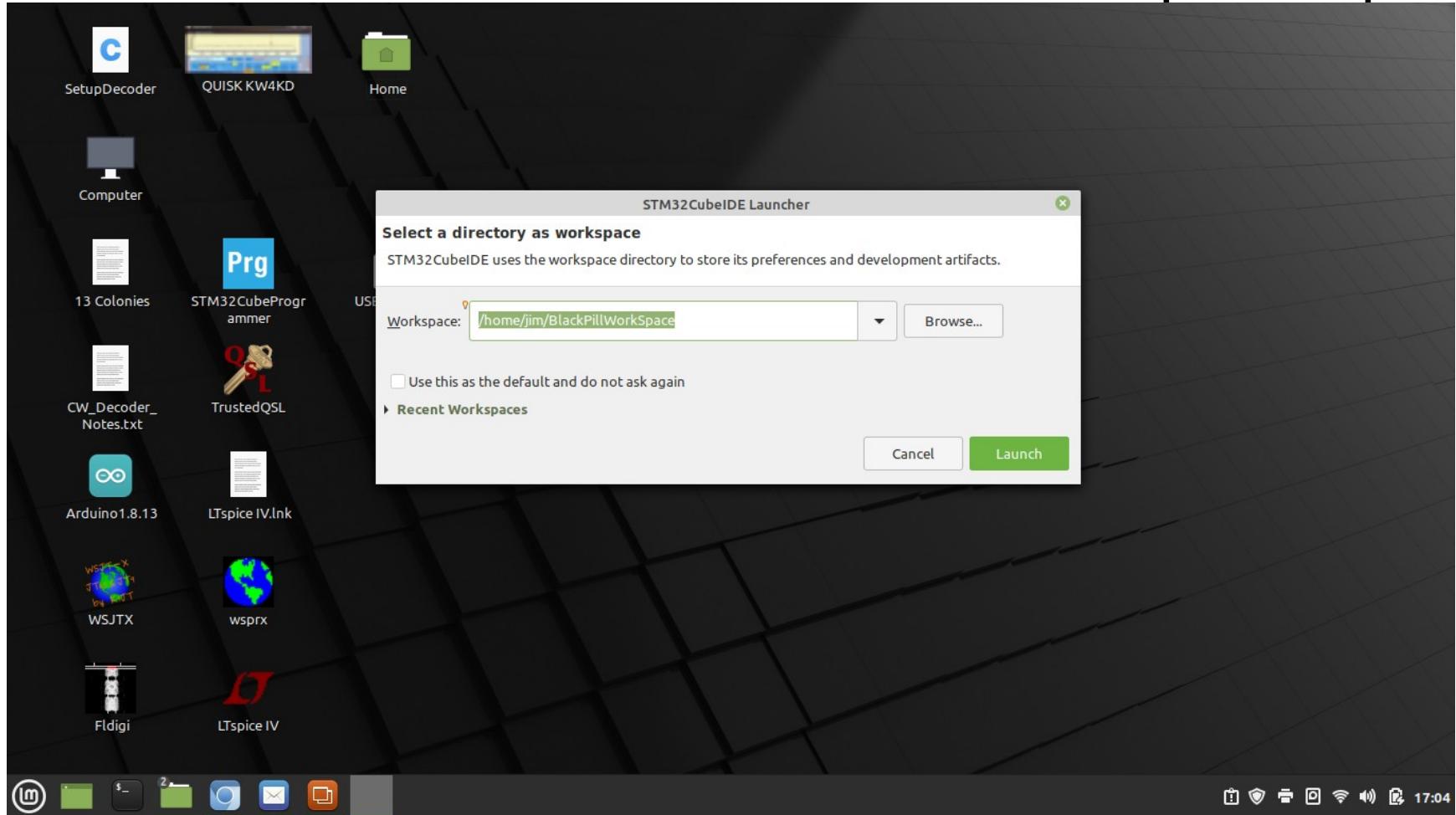
GitHub F411 CW Decoder Project

Import Steps

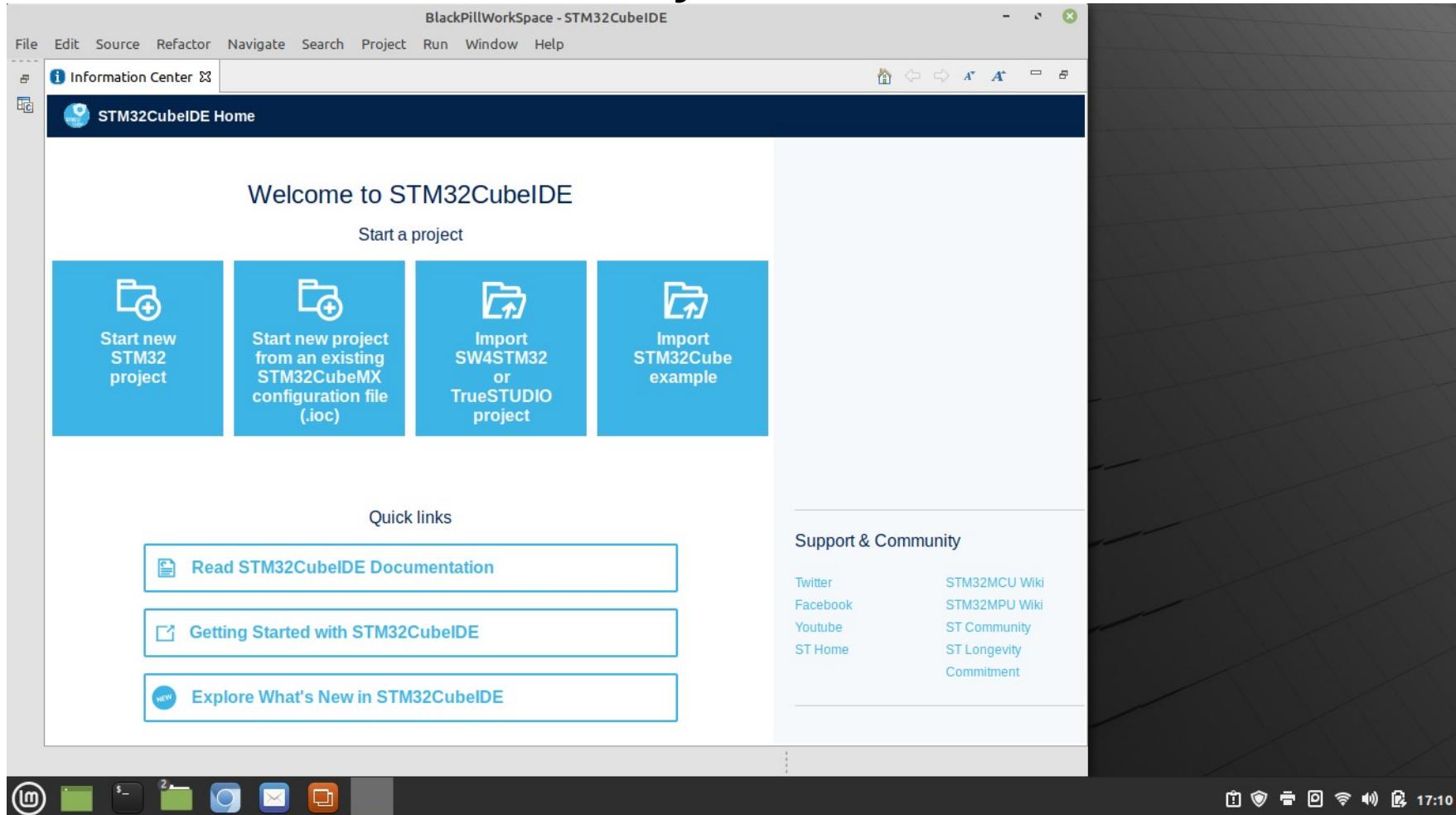
1. Using file manager, Create new blank workspace/folder



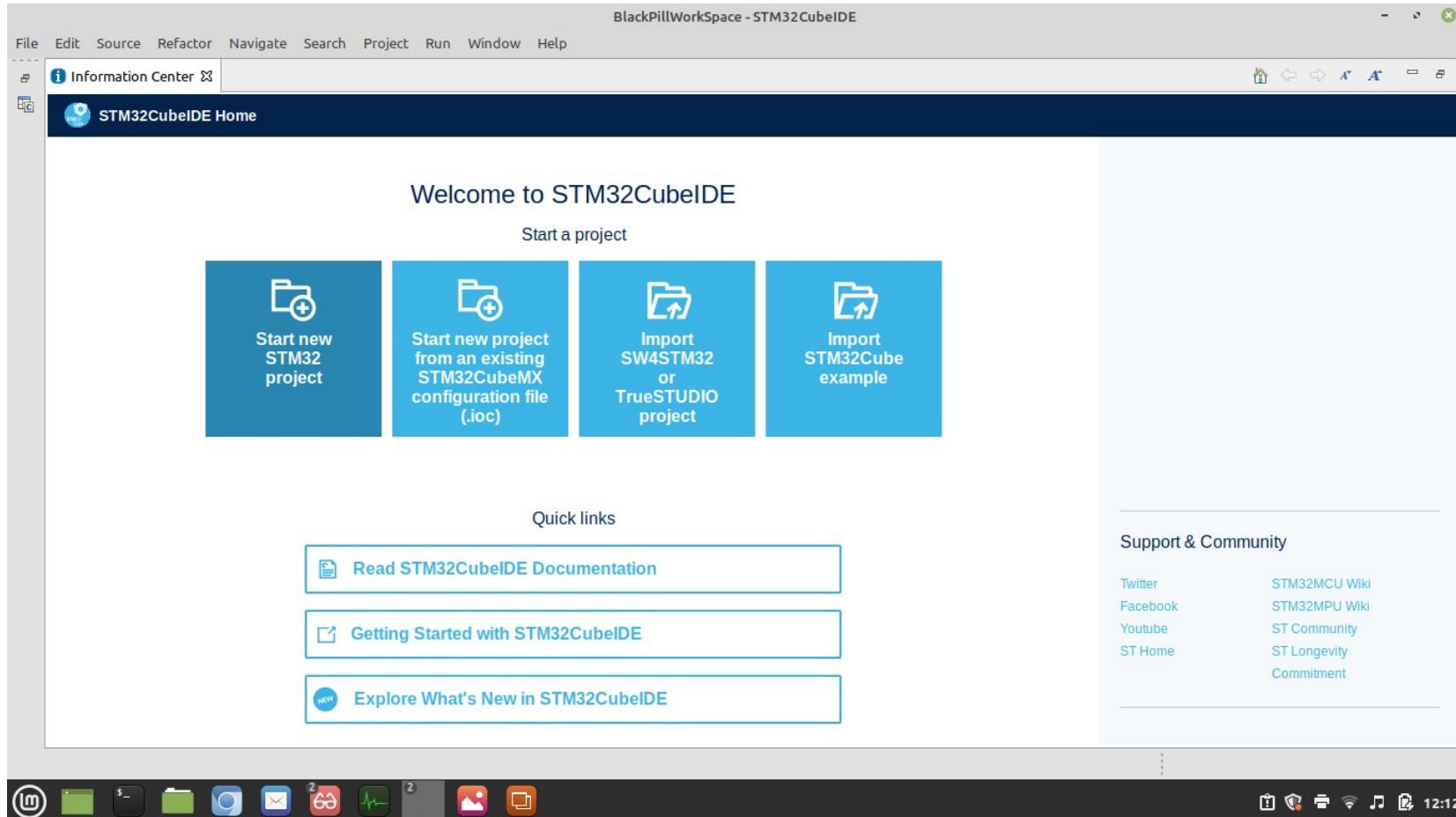
3. Start CUBEIDE & select the folder setup in step 1



4. After some moments you should see this screen:



5. Select “Start New STM32 Project”



6. After some moments you should see this:

STM32 Project

IDE

Target Selection

⚠ STM32 target or STM3Cube example selection is required

MCU/MPU Selector | Board Selector | Example Selector | Cross Selector

MCU/MPU Filters

- Part Number
- Core >
- Series >
- Line >
- Package >
- Other >
- Peripheral >

Features | Block Diagram | Docs & Resources | Datasheet | Buy

★  ST MCU Finder
All STM32 & STM8 MCUs in one place

MCUs/MPUs List: 1826 items + Display similar items Export

*	Part No	Reference	Marketin... X	Unit Price... X	Board X	Package X	Flash X	RAM X	IO X	Freq. X
★	STM32F03...	STM32F03...	Active	0.597		LQFP48	32 kBytes	4 kBytes	39	48 MHz
★	STM32F03...	STM32F03...	Active	0.722		LQFP48	64 kBytes	8 kBytes	39	48 MHz
★	STM32F03...	STM32F03...	Active	1.1		LQFP48	256 kBytes	32 kBytes	37	48 MHz
★	STM32F03...	STM32F03...	Active	0.424		TSSOP20	16 kBytes	4 kBytes	15	48 MHz
★	STM32F03...	STM32F03...	Active	0.518		LQFP32	32 kBytes	4 kBytes	25	48 MHz
★	STM32F03...	STM32F03...	Active	0.754	NUCL STM3...	LQFP64	64 kBytes	8 kBytes	55	48 MHz

?

< Back | Next > | Cancel | Finish

12:17

7. Enter “STM32F411CE” in the “Part Number” box.
Select the “UFQFPN48” Package, & click the “Next” button.

STM32 Project IDE

Target Selection
Select STM32 target or STM32Cube example

MCU/MPU Selector | Board Selector | Example Selector | Cross Selector

MCU/MPU Filters

- Part Number
- Core
- Series
- Line
- Package
- Other
- Peripheral

Features | Block Diagram | Docs & Resources | Datasheet | Buy

STM32F4 Series

STM32F411CE High-performance access line, Arm Cortex-M4 core with DSP and FPU, 512 Kbytes of Flash memory, 100 MHz CPU, ART Accelerator

ACTIVE Active Product is in mass production

Unit Price for 10kU (US\$) : 2.795

UFQFPN48

MCUs/MPUs List: 2 items

+ Display similar items | Export

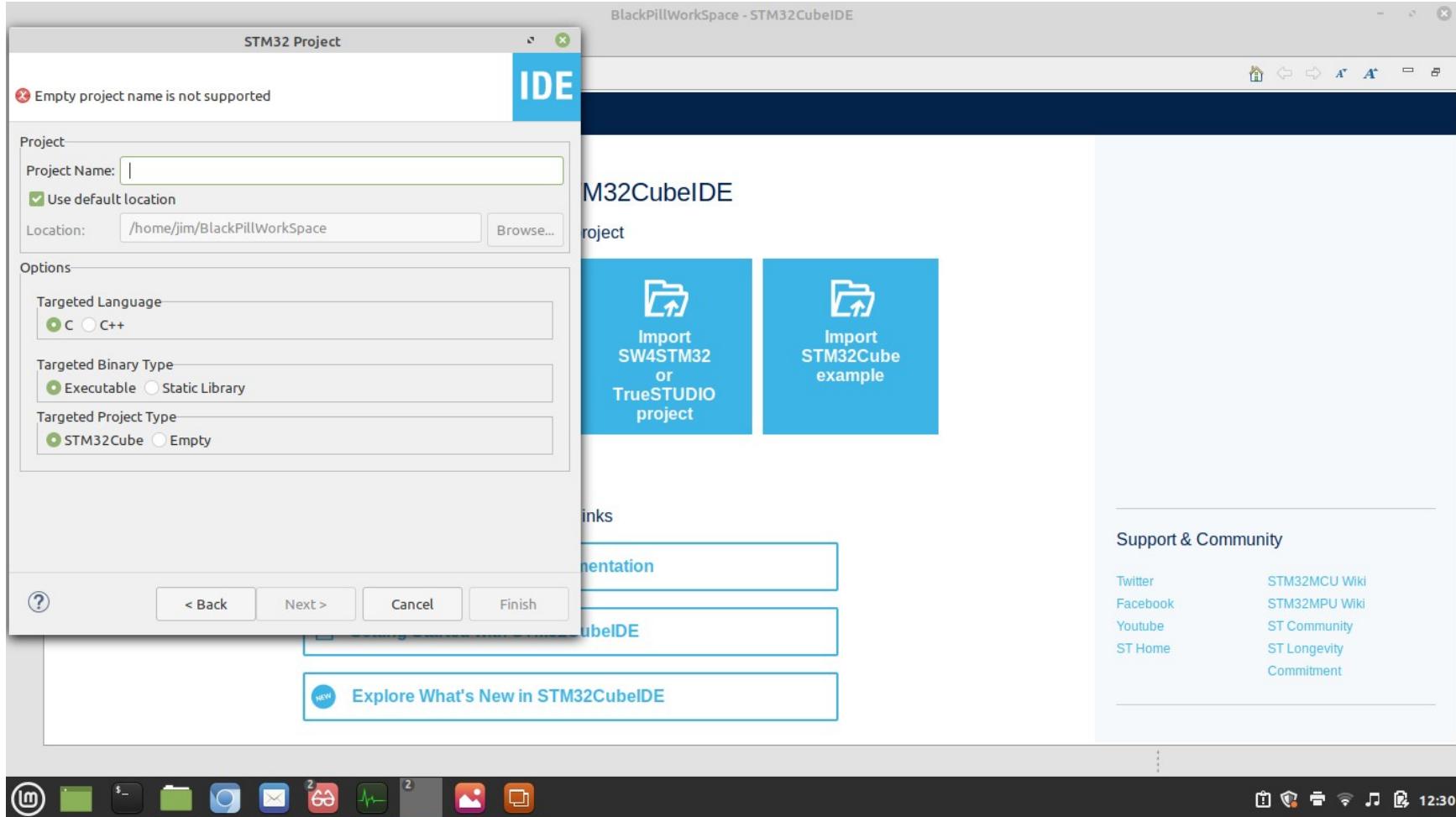
*	Part No	Reference	Marketin...	X	Unit Price...	X	Board	X	Package	X	Flash	X	RAM	X	IO	X	Freq.	X
★	STM32F41...	STM32F41...	Active		2.795				UFQFPN48		512 kBytes		128 kBytes		36		100 MHz	
★	STM32F41...	STM32F41...	Active		2.795				WLCSP49		512 kBytes		128 kBytes		36		100 MHz	

< Back | Next > | Cancel | Finish

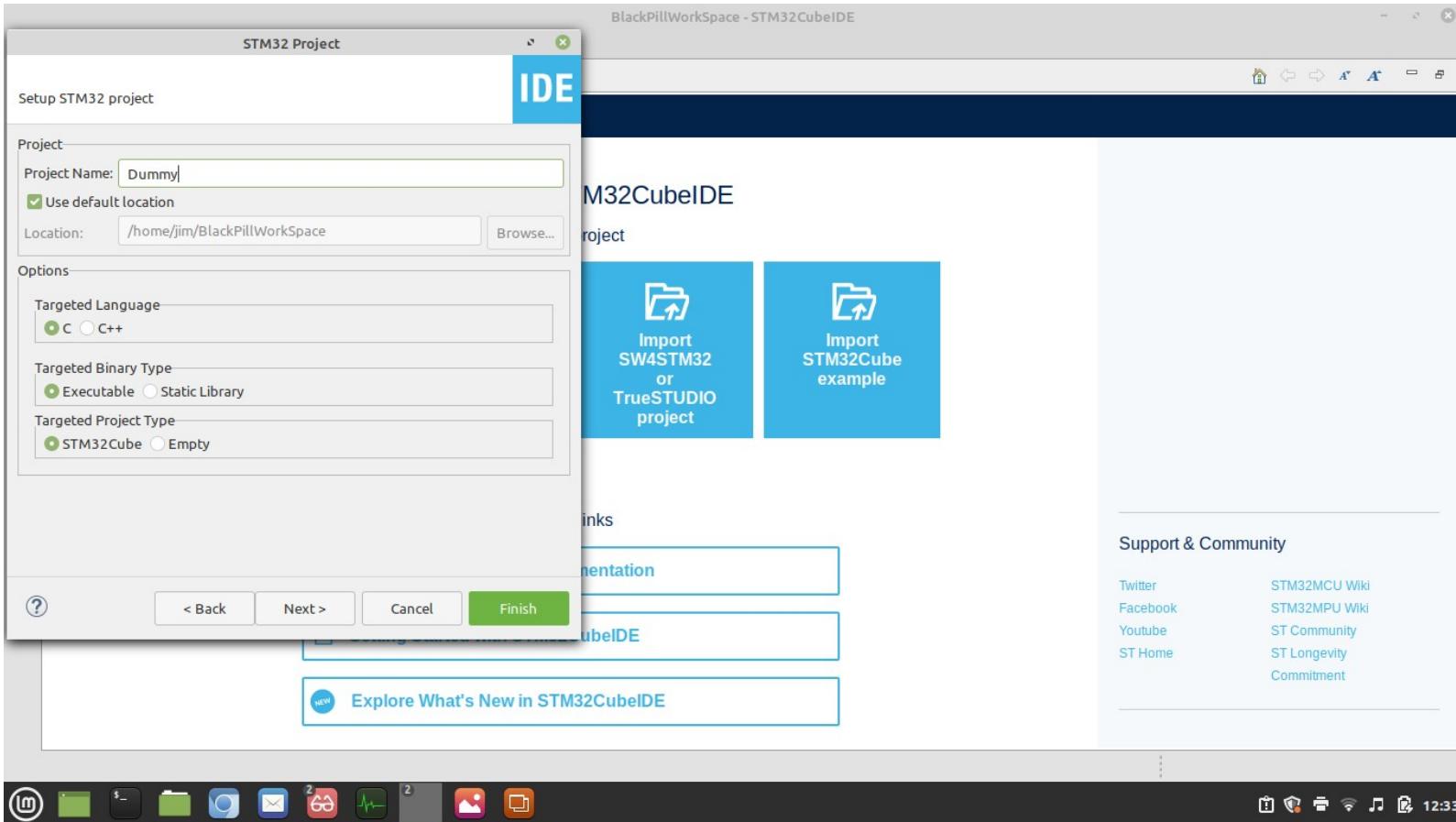
?

12:22

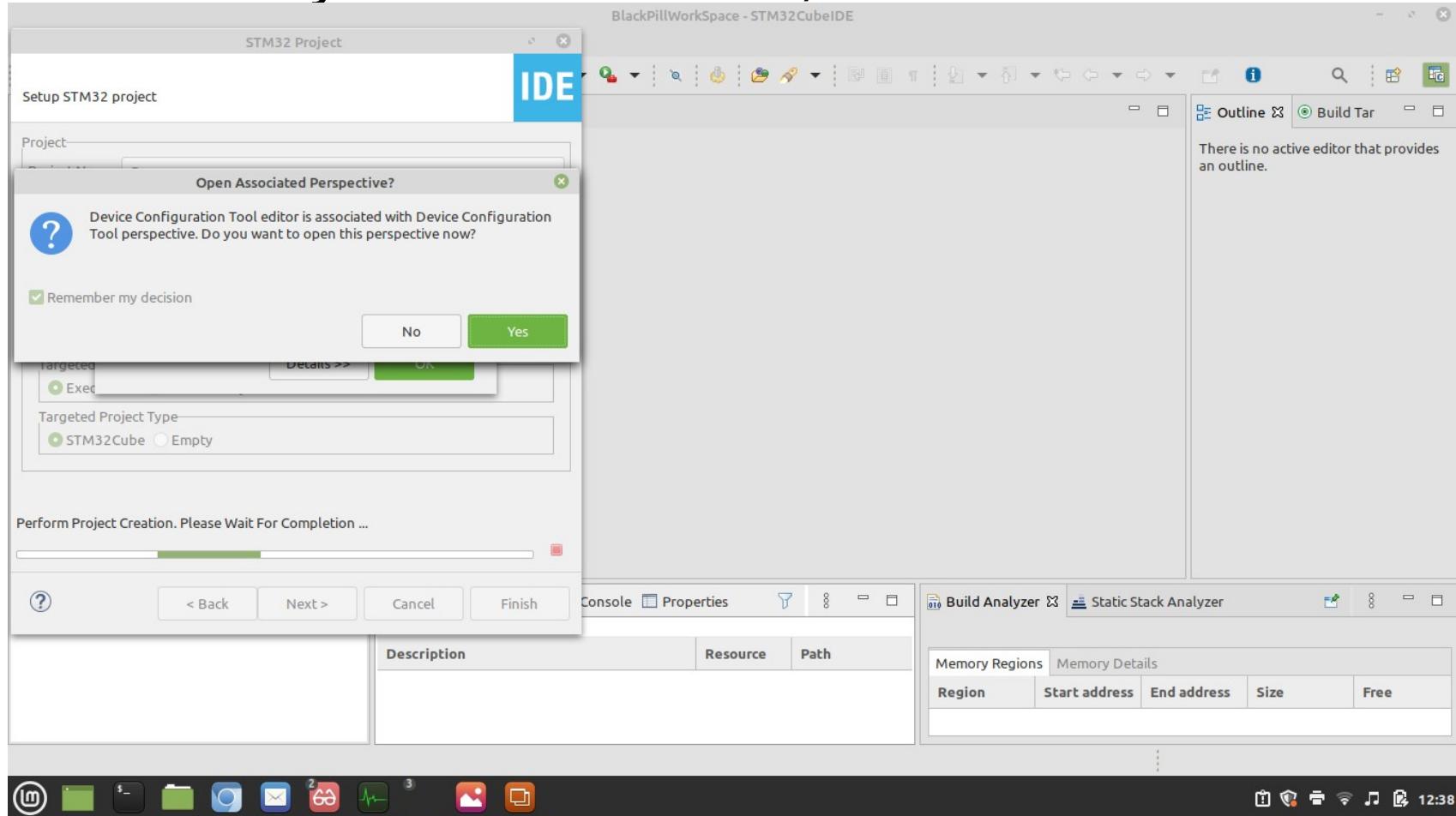
8. You should see this form.



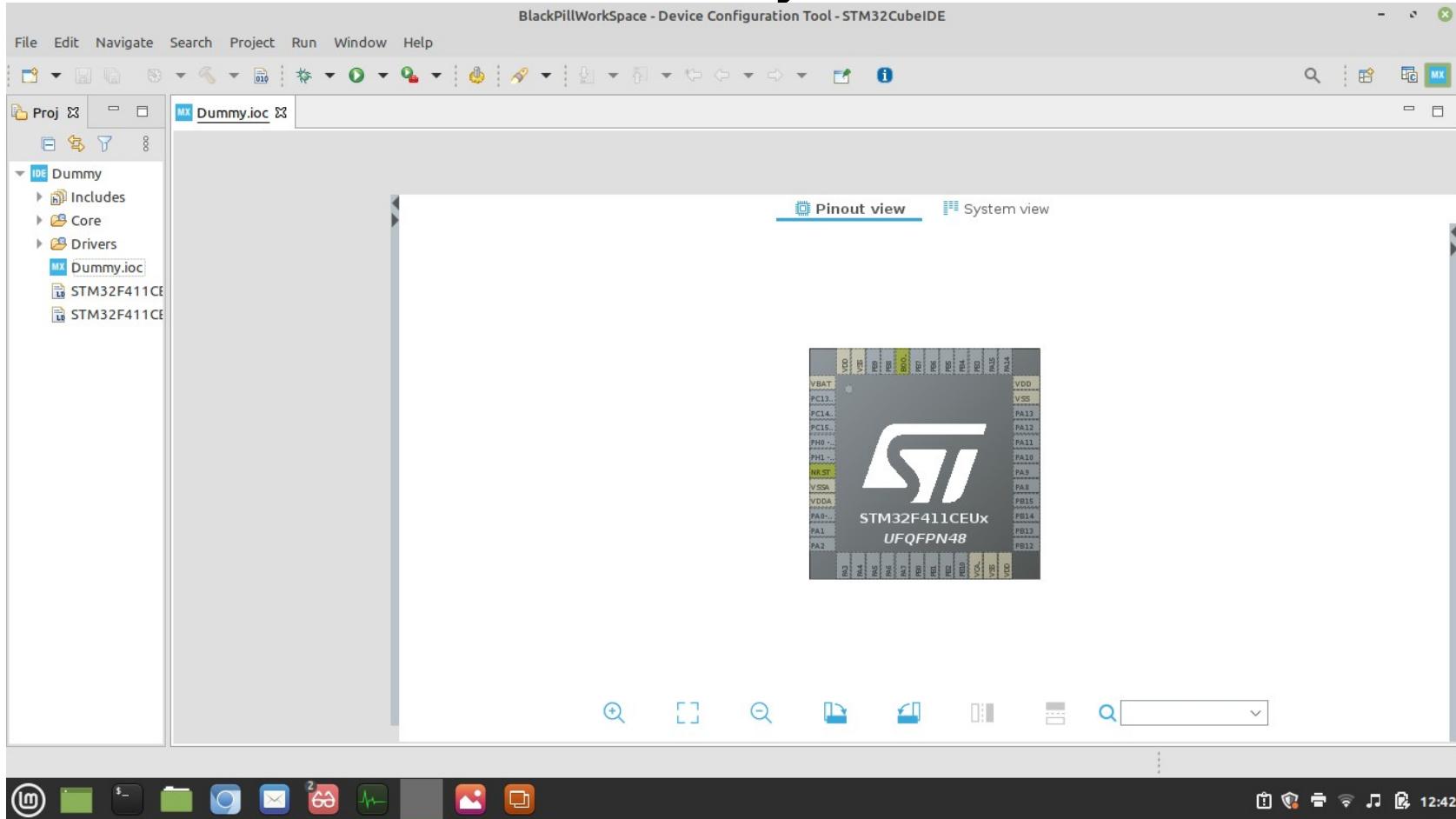
9. Enter any name in the “Project Name” box, & then click the “Finish” button.



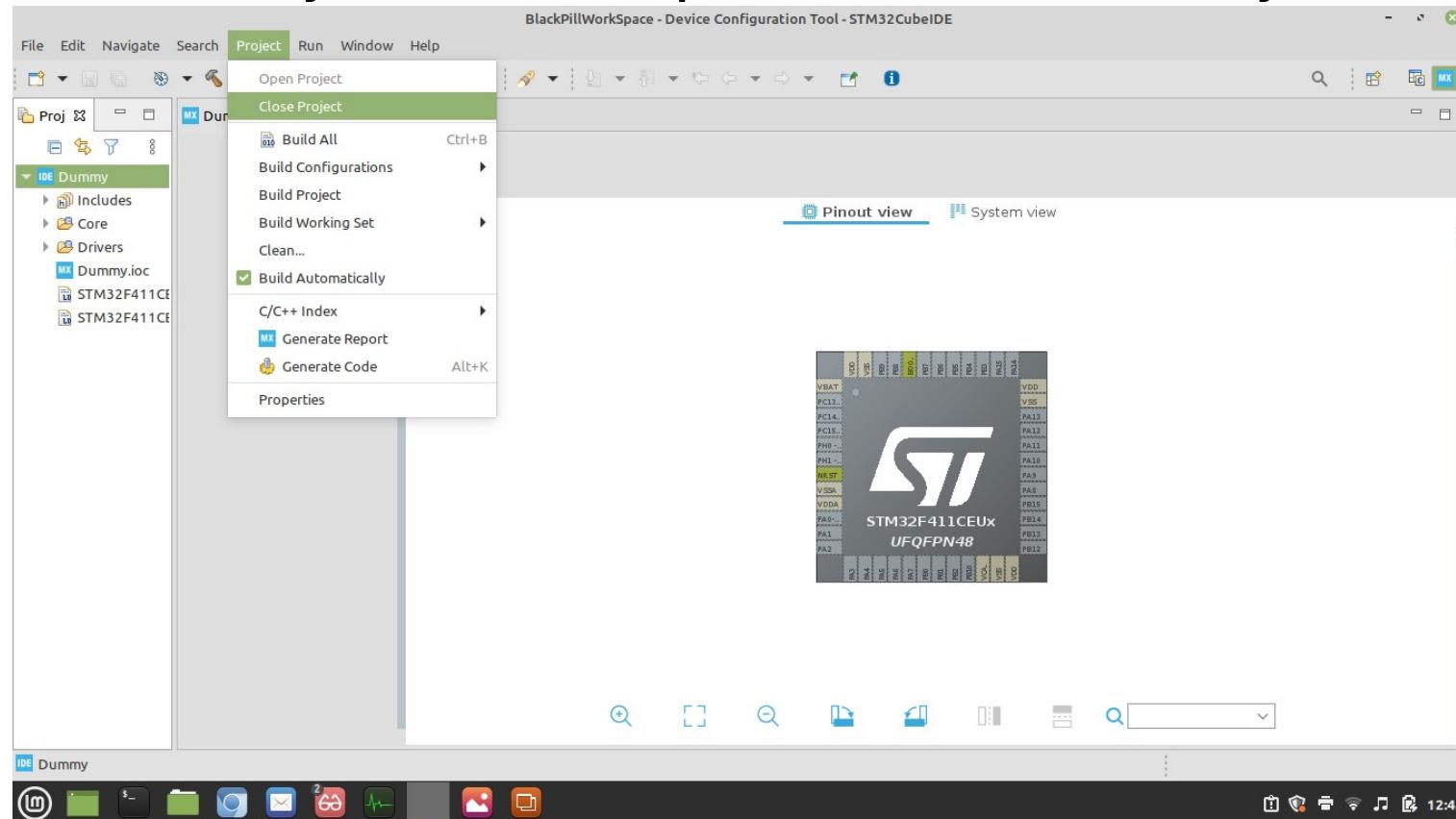
10. When you see this form, click the “Yes” button



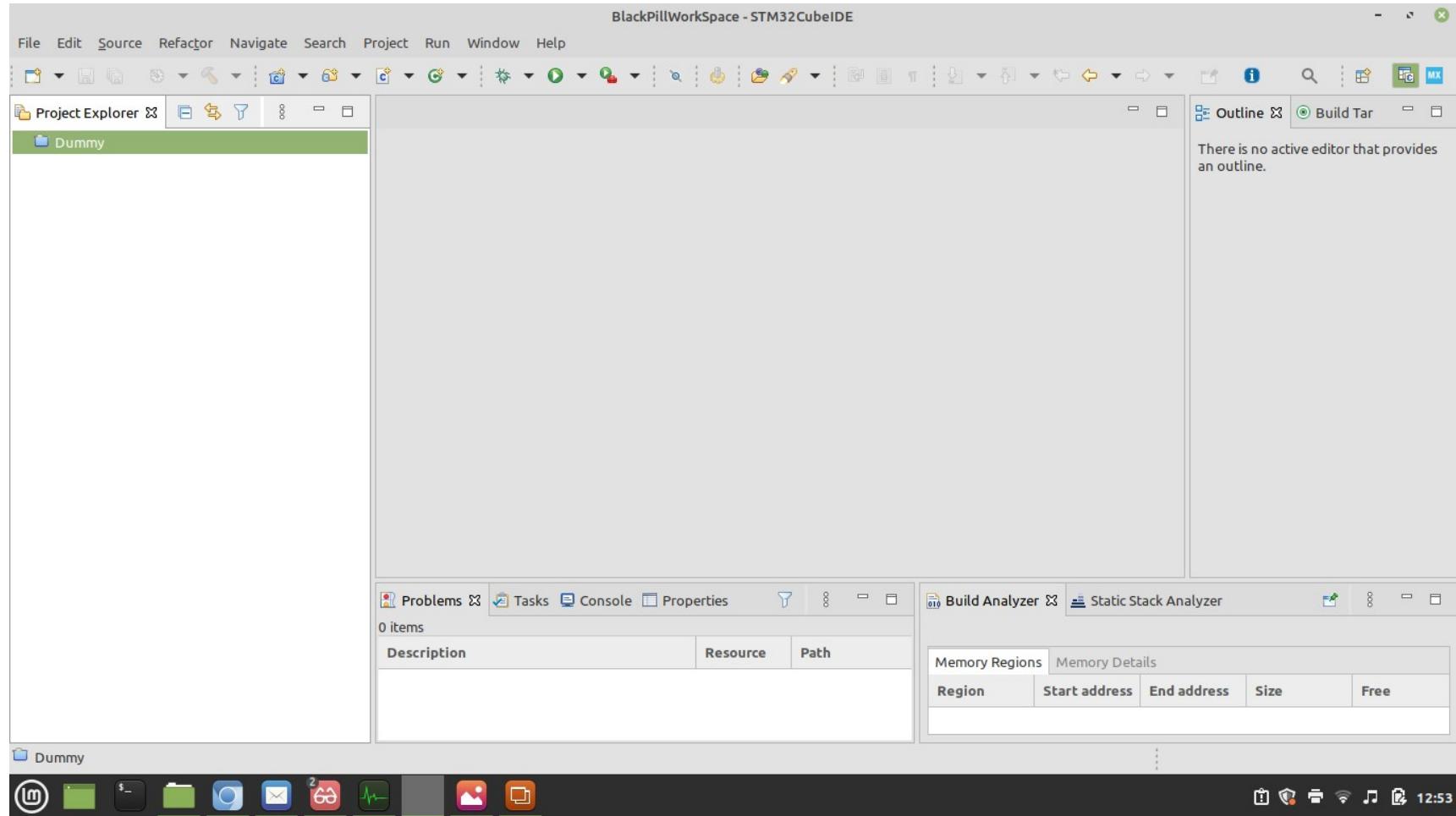
11. After some moments you should see this.



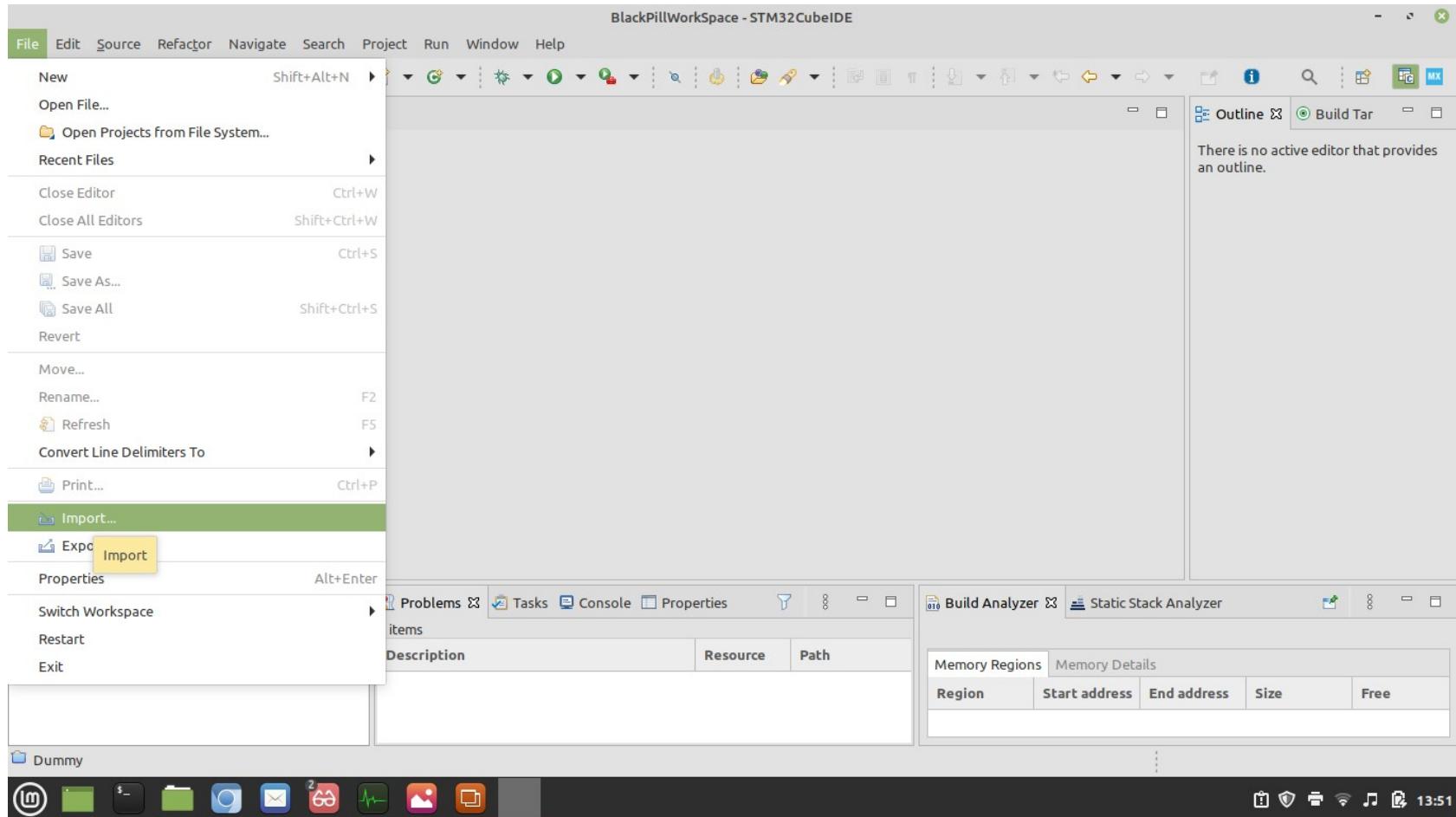
12. In the project tree select the “Dummy” project. Then use the “Project” menu options to “Close Project”



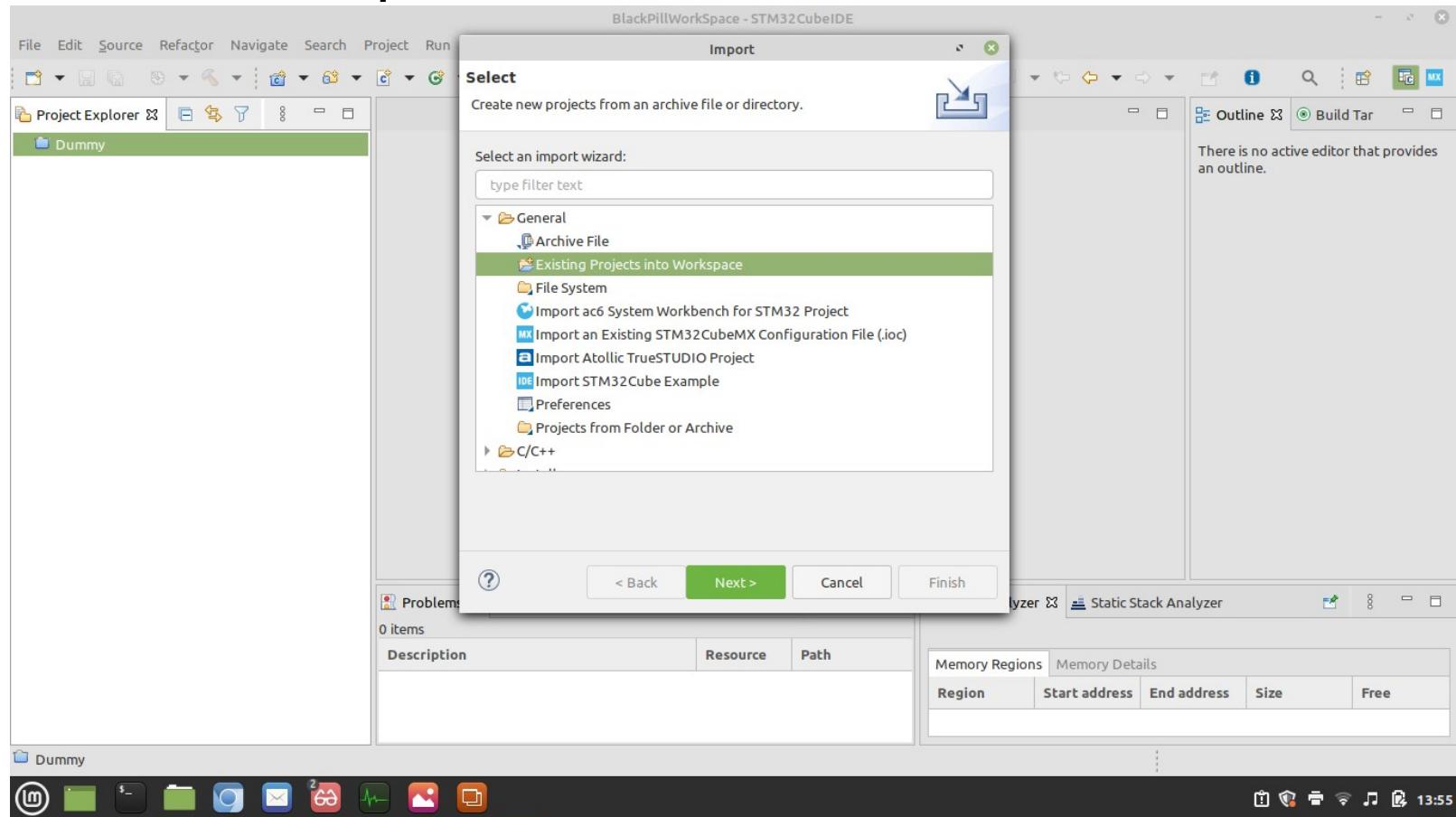
13. After some moments the CUBIDE should look like this.



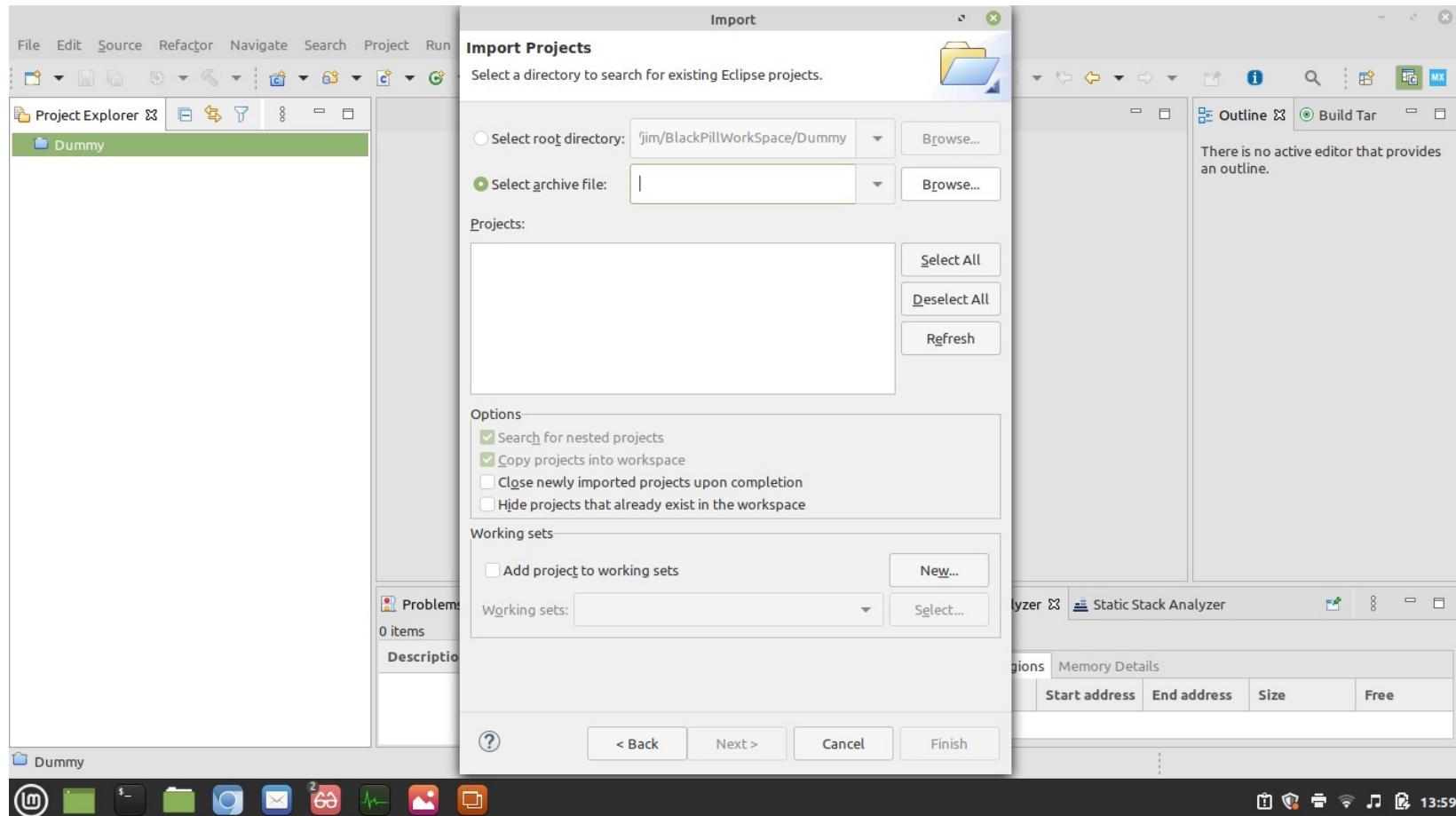
14. Use the “File” menu option “Import”



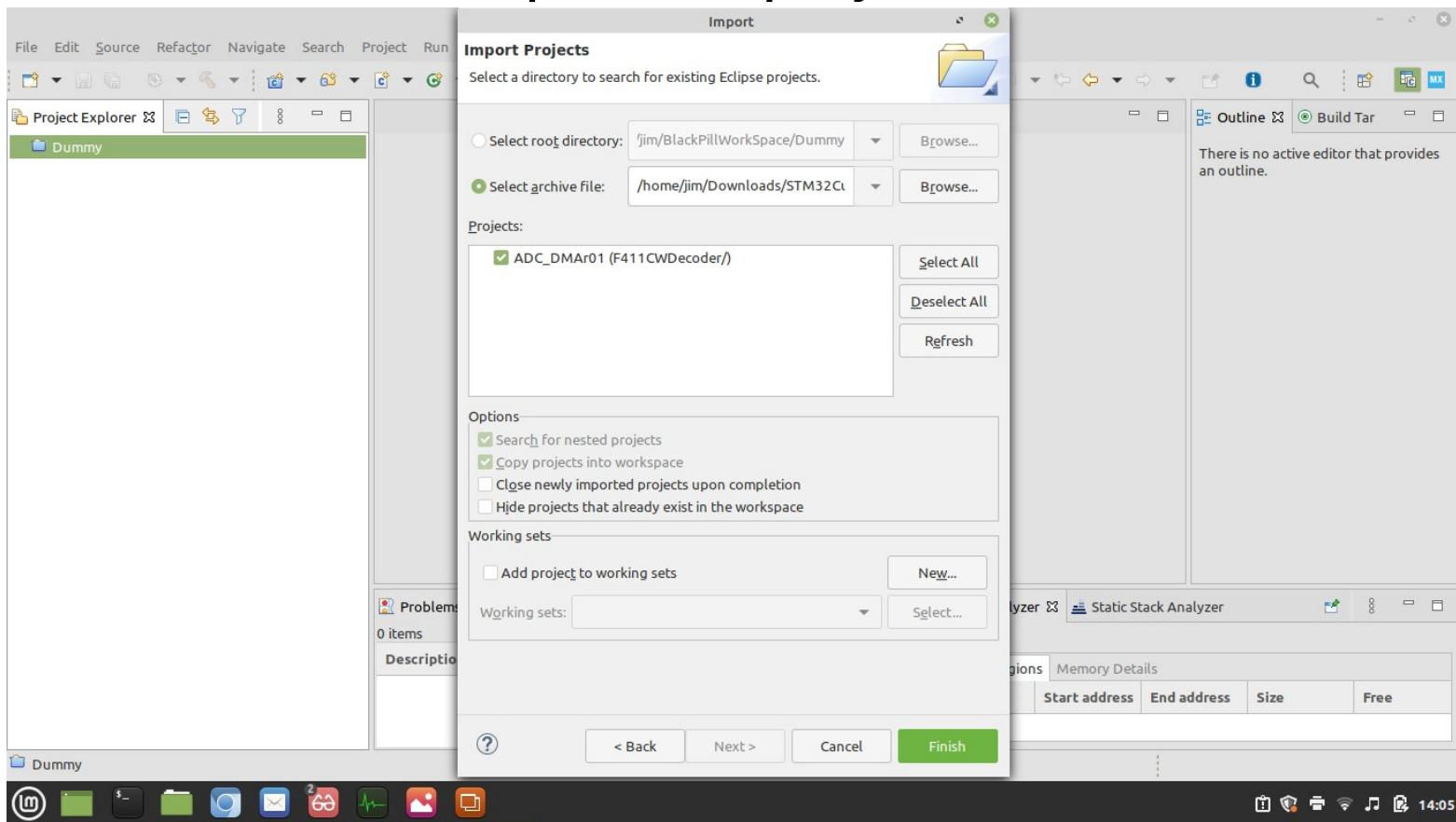
15. Expand the “General” option, & select “Existing Projects into Workspace”, & then click “Next” button



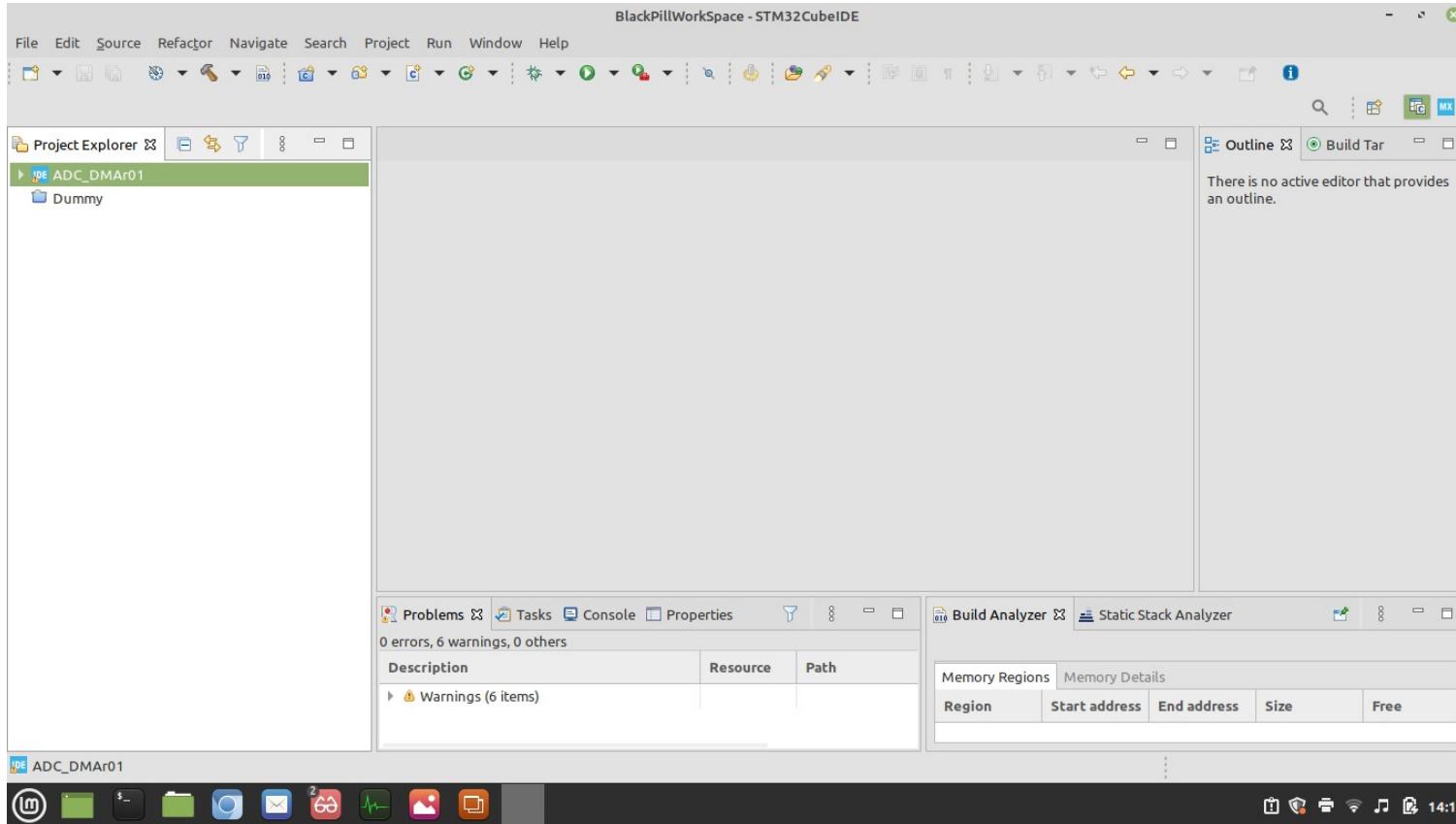
16. Select the “Select archive File”, & use the “Browse” button to navigate/select the “zip” file downloaded from GitHub



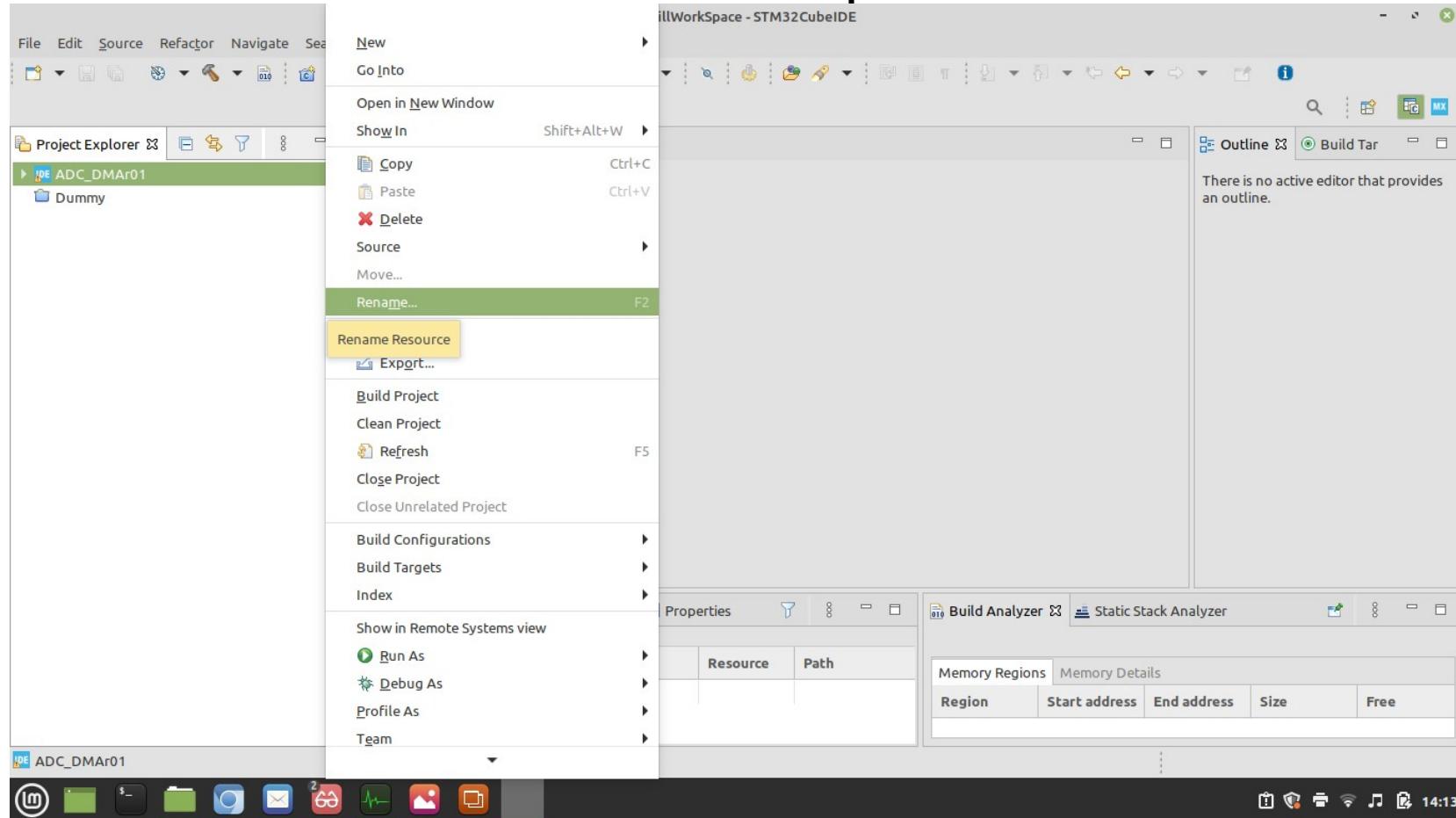
17. When the form looks like this, click the “Finish” button to import the project



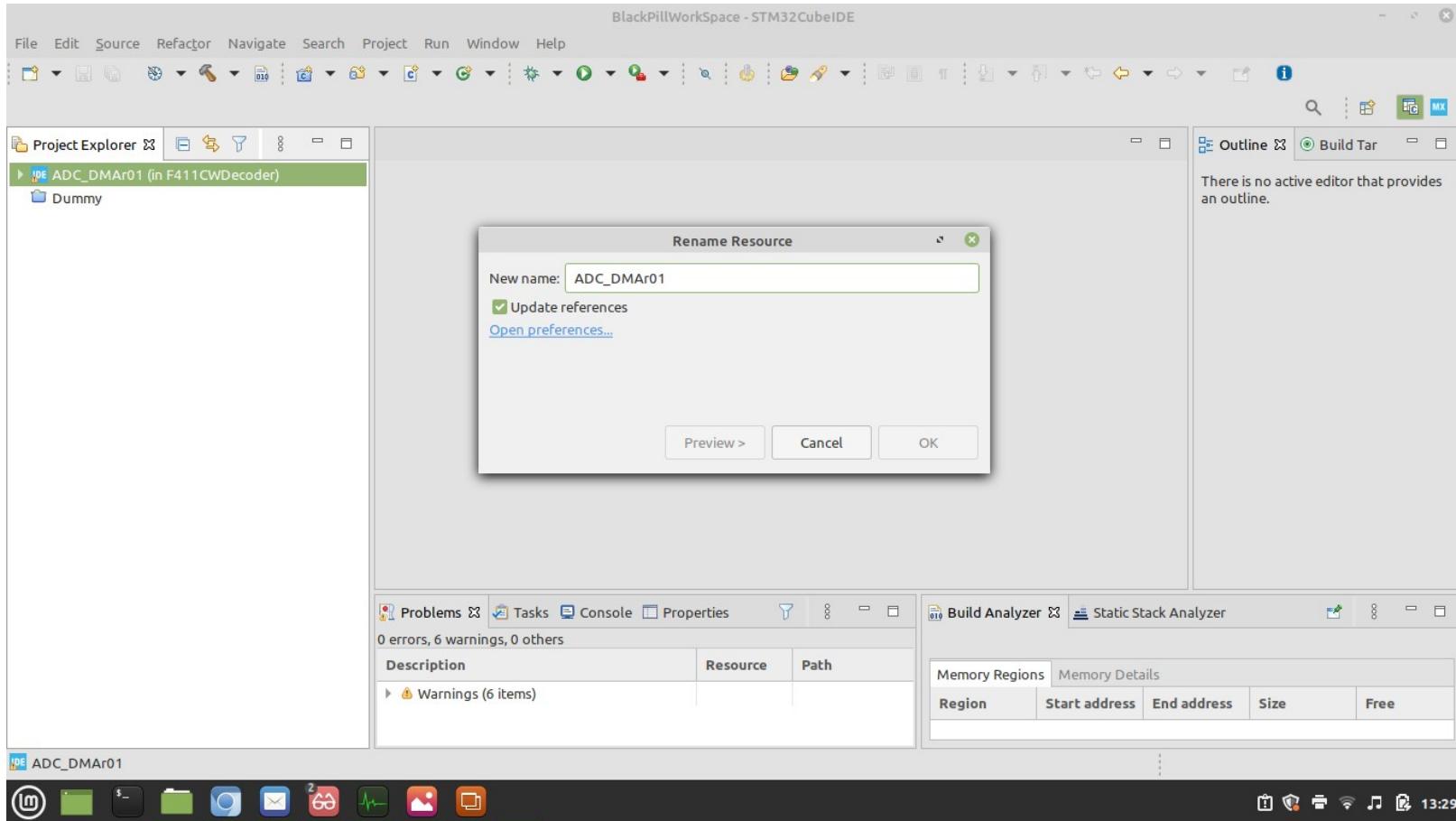
18. You should now see the imported project in the project tree. Wait for it to complete the import process before moving to the next step.



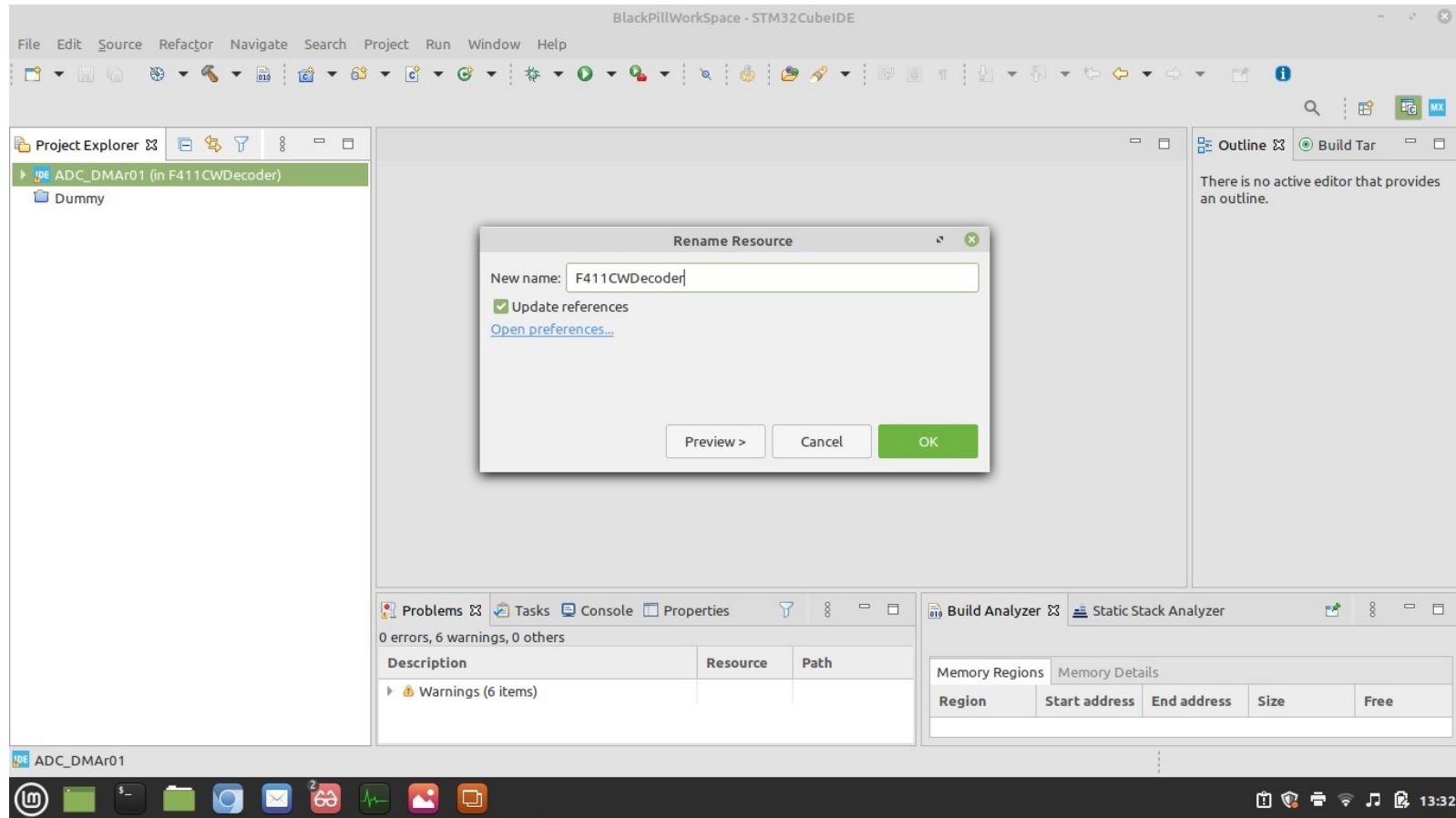
19. Highlight the new project, & right click to expose/select the “Rename” option.



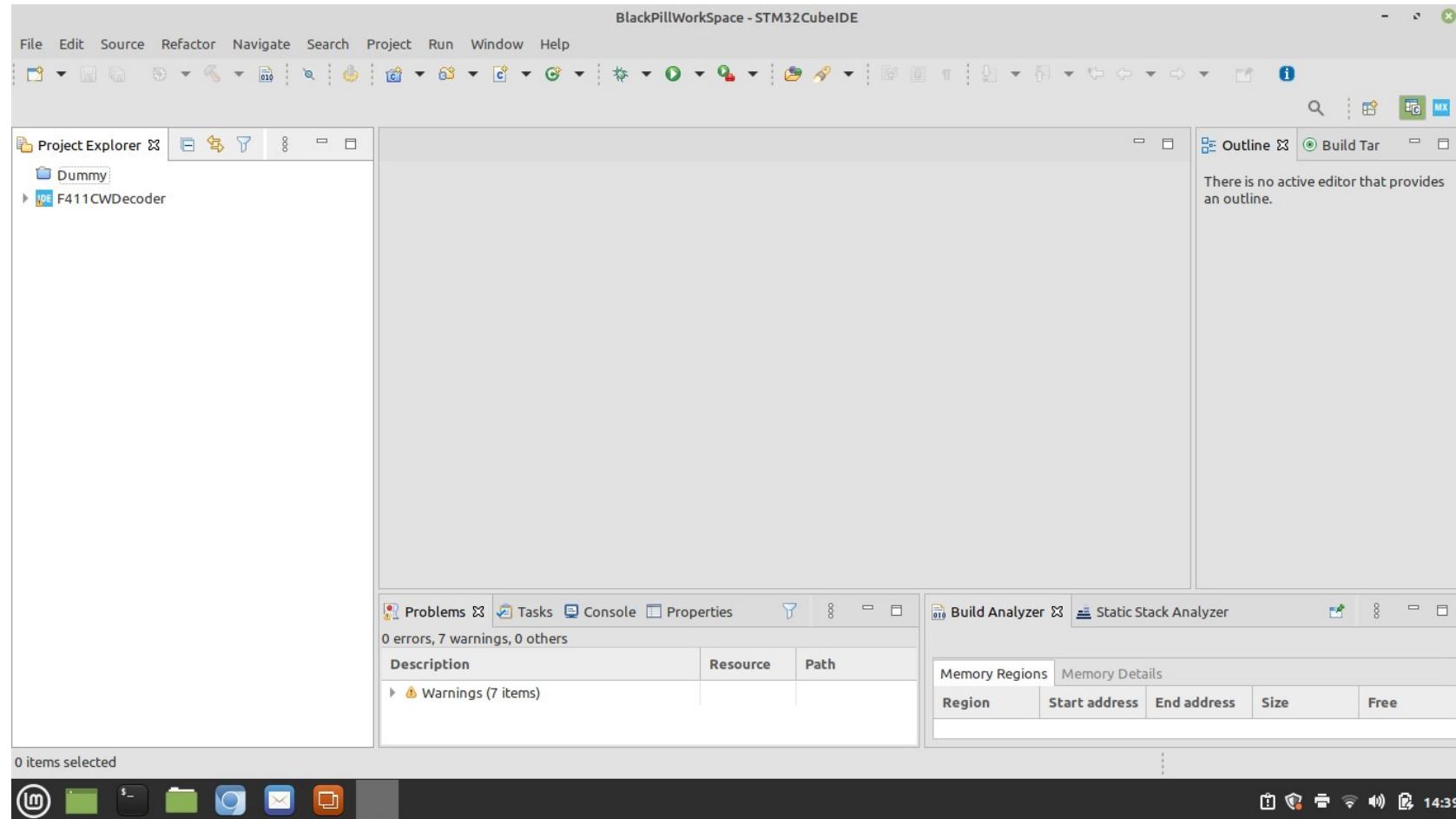
18. You should see this form.



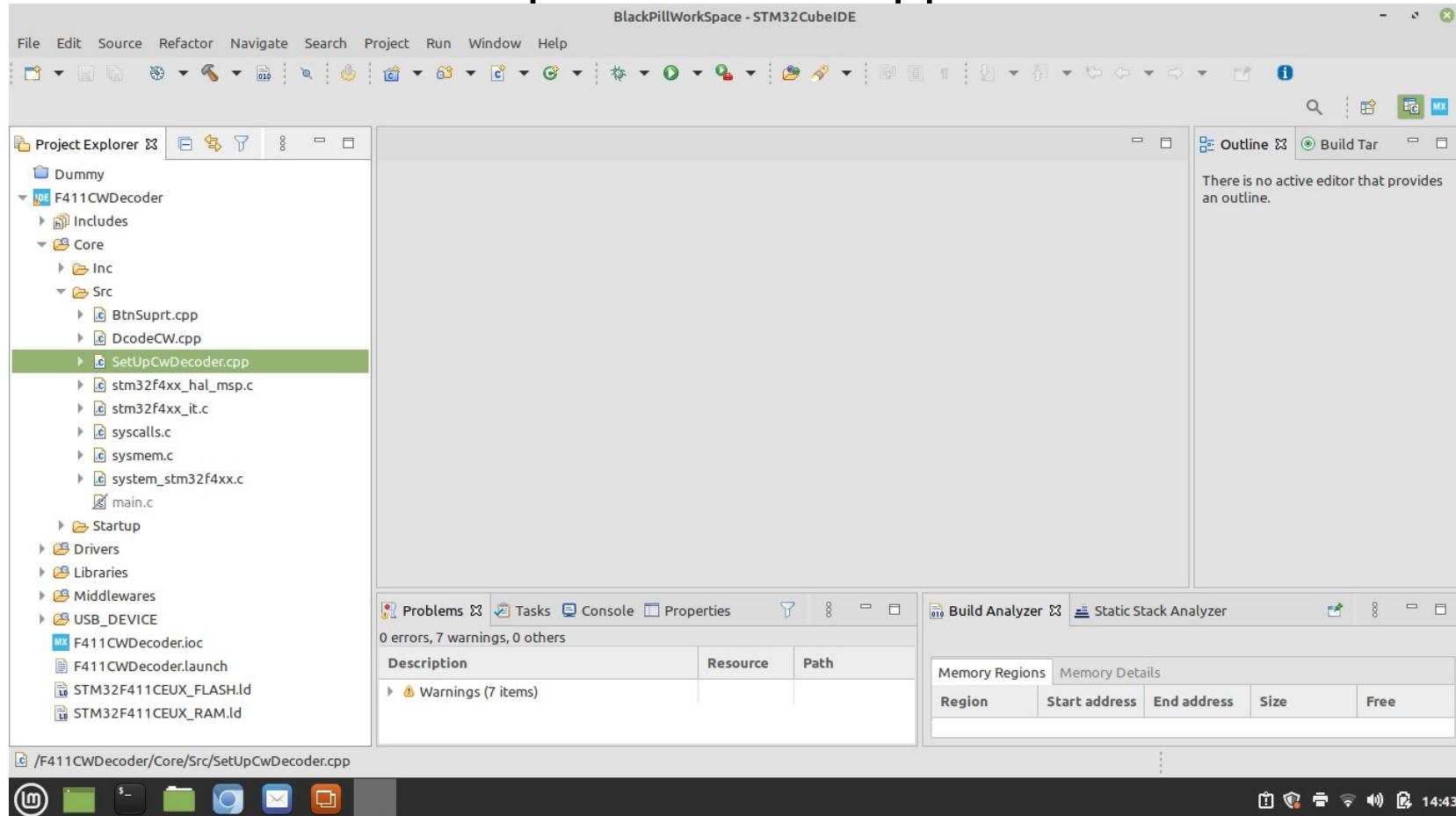
19. Replace original project Name with “F411CWDecoder”, & then click “OK” button



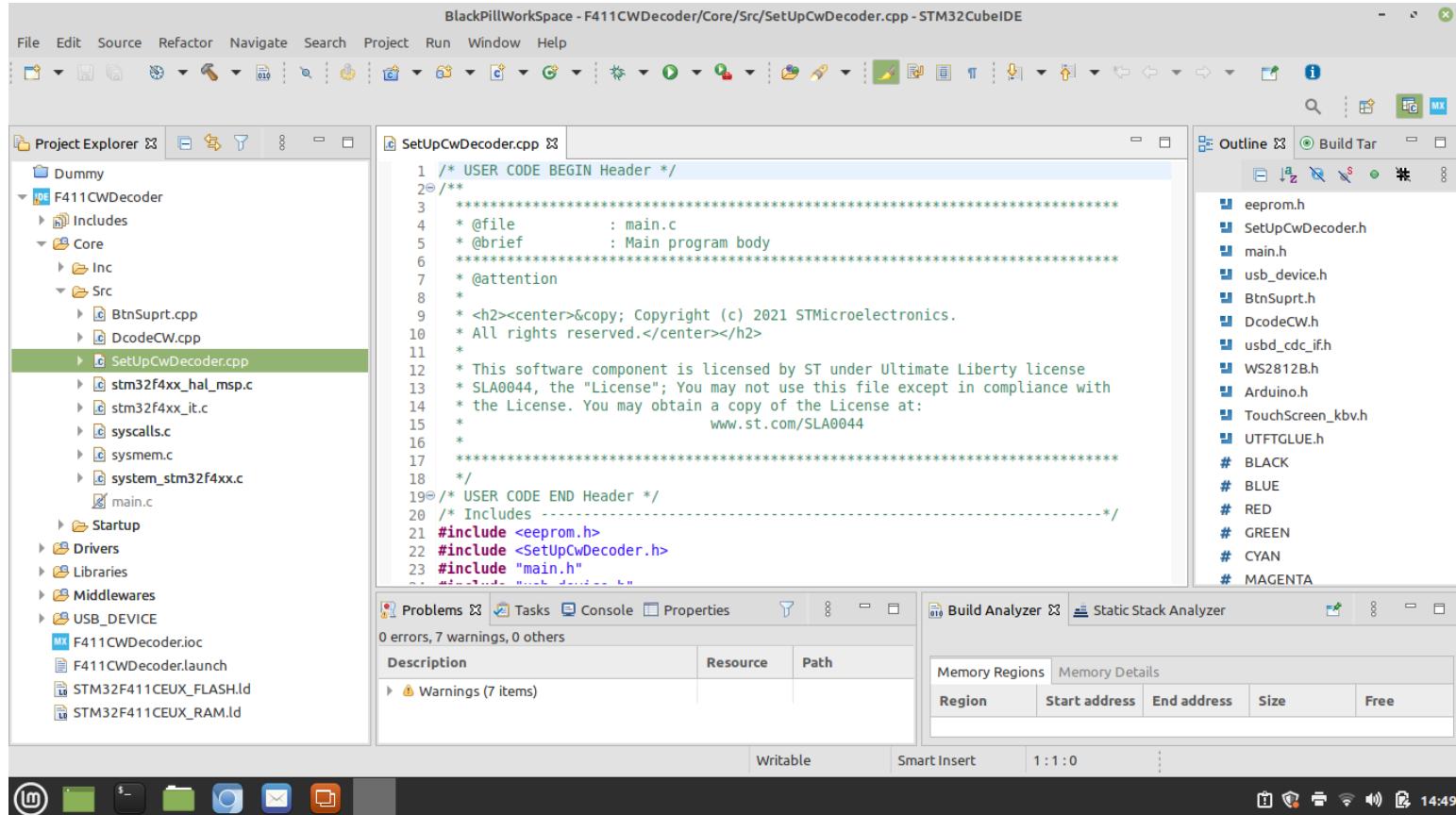
22. After some moments you should see this



23. Select & drill down into the “F411CWDecoder” project to select “SetUpCwDecoder.cpp” file



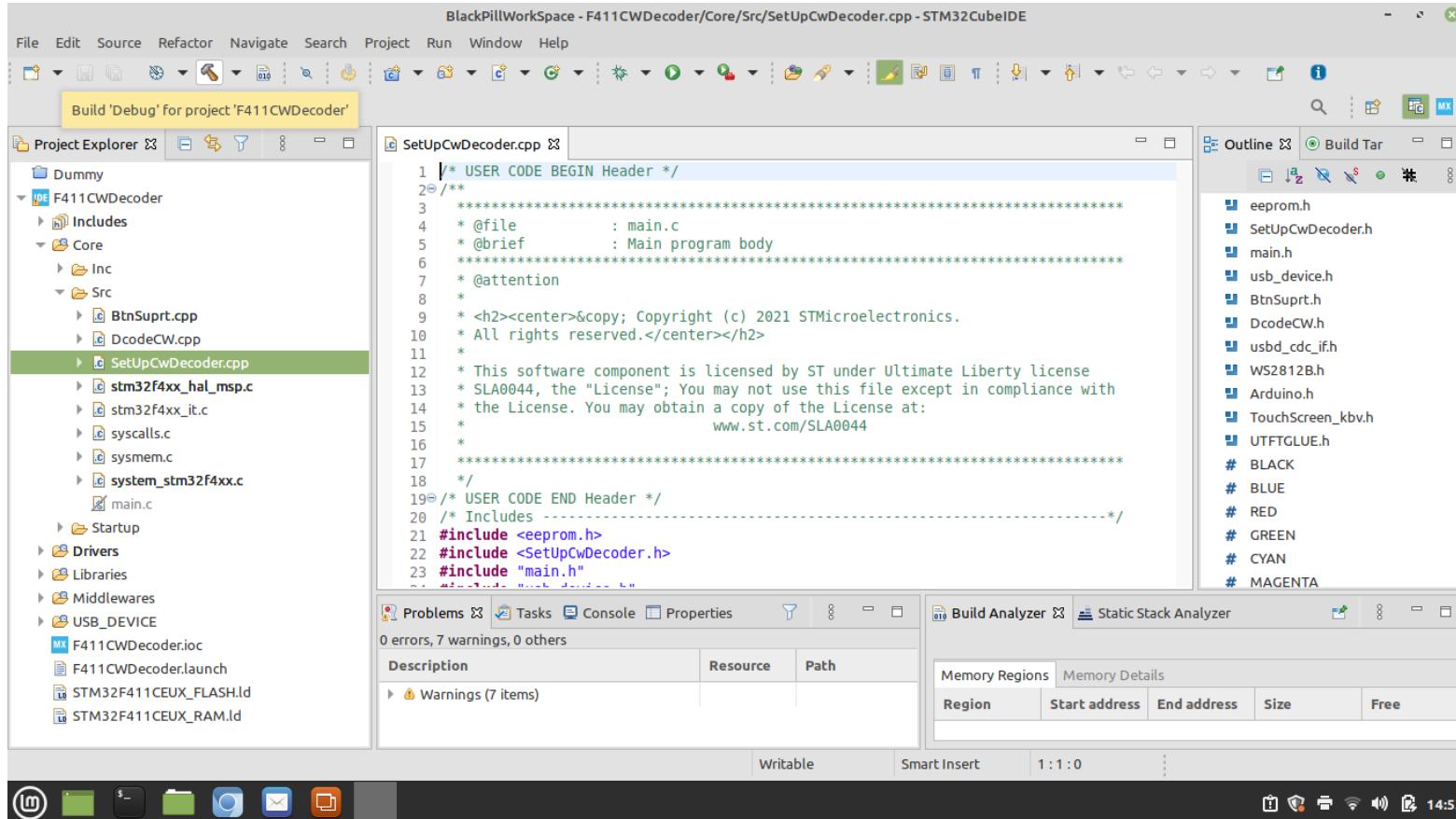
24. Double Clicking the ““SetUpCwDecoder.cpp” entry should look like this.



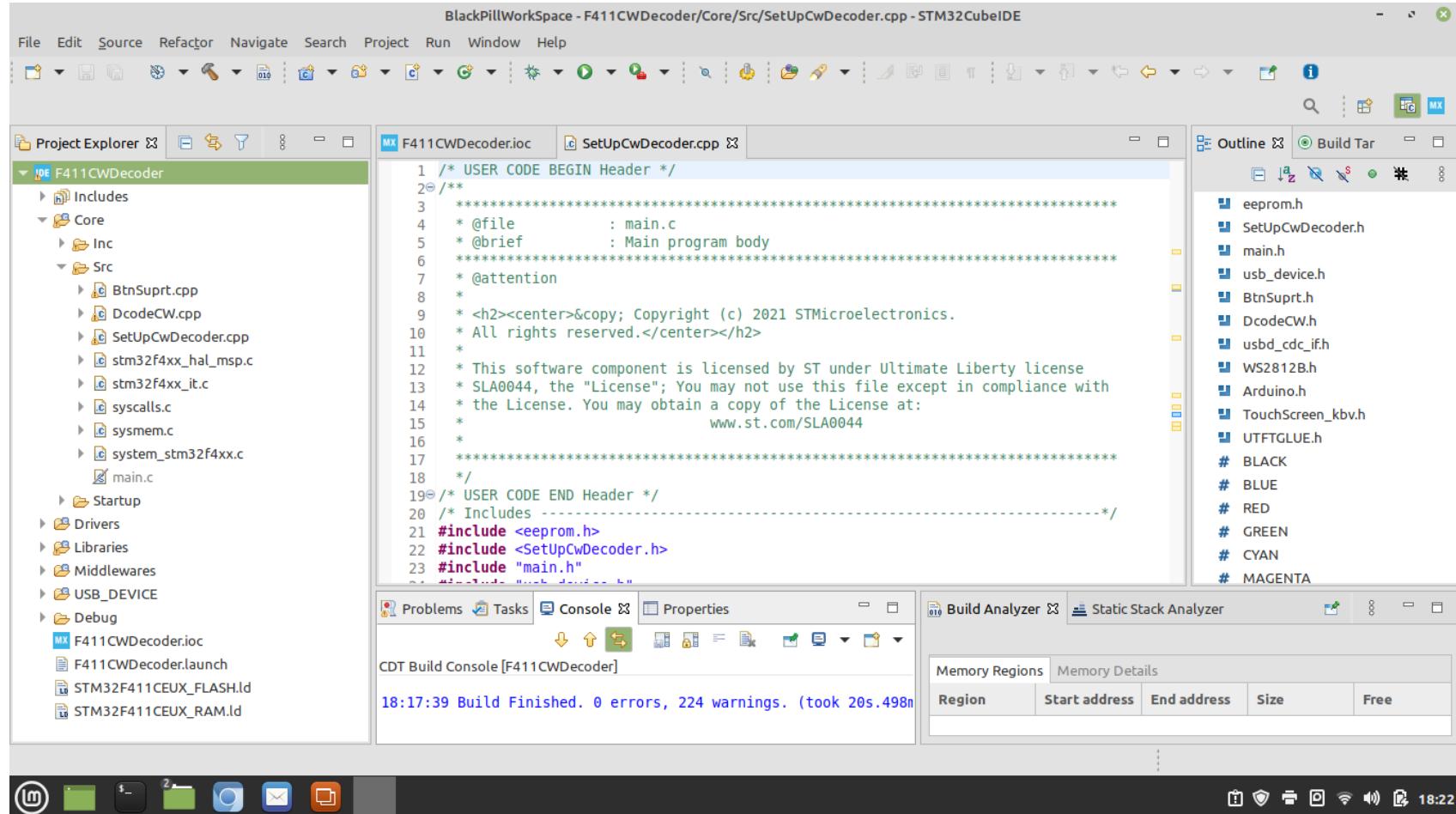
The screenshot shows the STM32CubeIDE interface with the following details:

- Project Explorer:** Shows the project structure under "F411CWDecoder". The file "SetUpCwDecoder.cpp" is selected and highlighted in green.
- Code Editor:** Displays the content of "SetUpCwDecoder.cpp". The code includes a header guard, copyright notice, license information (SLA0044), and include statements for "eeprom.h", "SetUpCwDecoder.h", and "main.h".
- Outline View:** Shows a list of included files and symbols: eeprom.h, SetUpCwDecoder.h, main.h, usb_device.h, BtnSuprt.h, DcodeCw.h, usbd_cdc_if.h, WS2812B.h, Arduino.h, TouchScreen_kb.h, UTFGLUE.h, and color definitions for BLACK, BLUE, RED, GREEN, CYAN, and MAGENTA.
- Build Analyzer:** Shows memory regions and stack details.
- Bottom Bar:** Includes standard operating system icons and a status bar showing the time as 14:49.

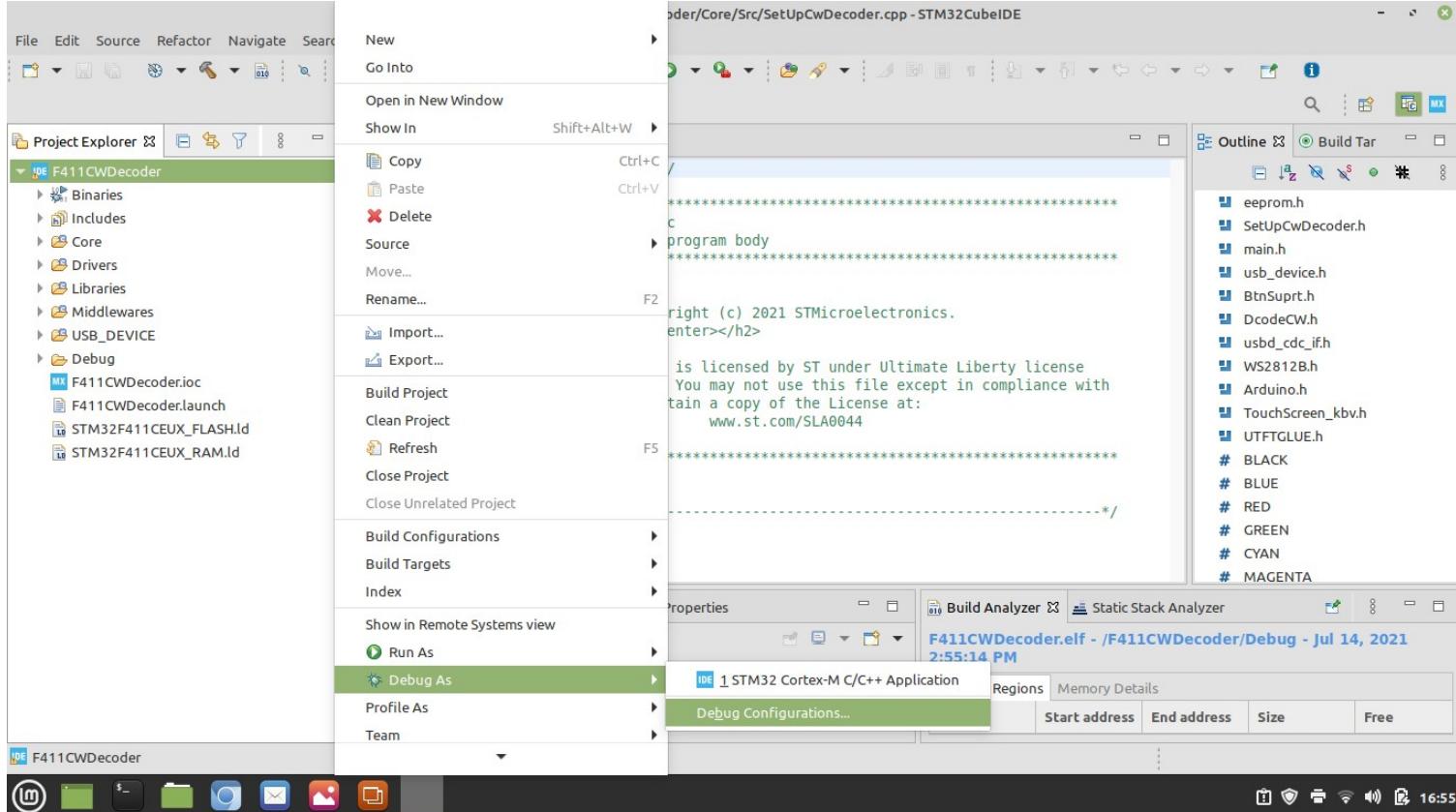
25. Click the “Hammer” icon to build the project



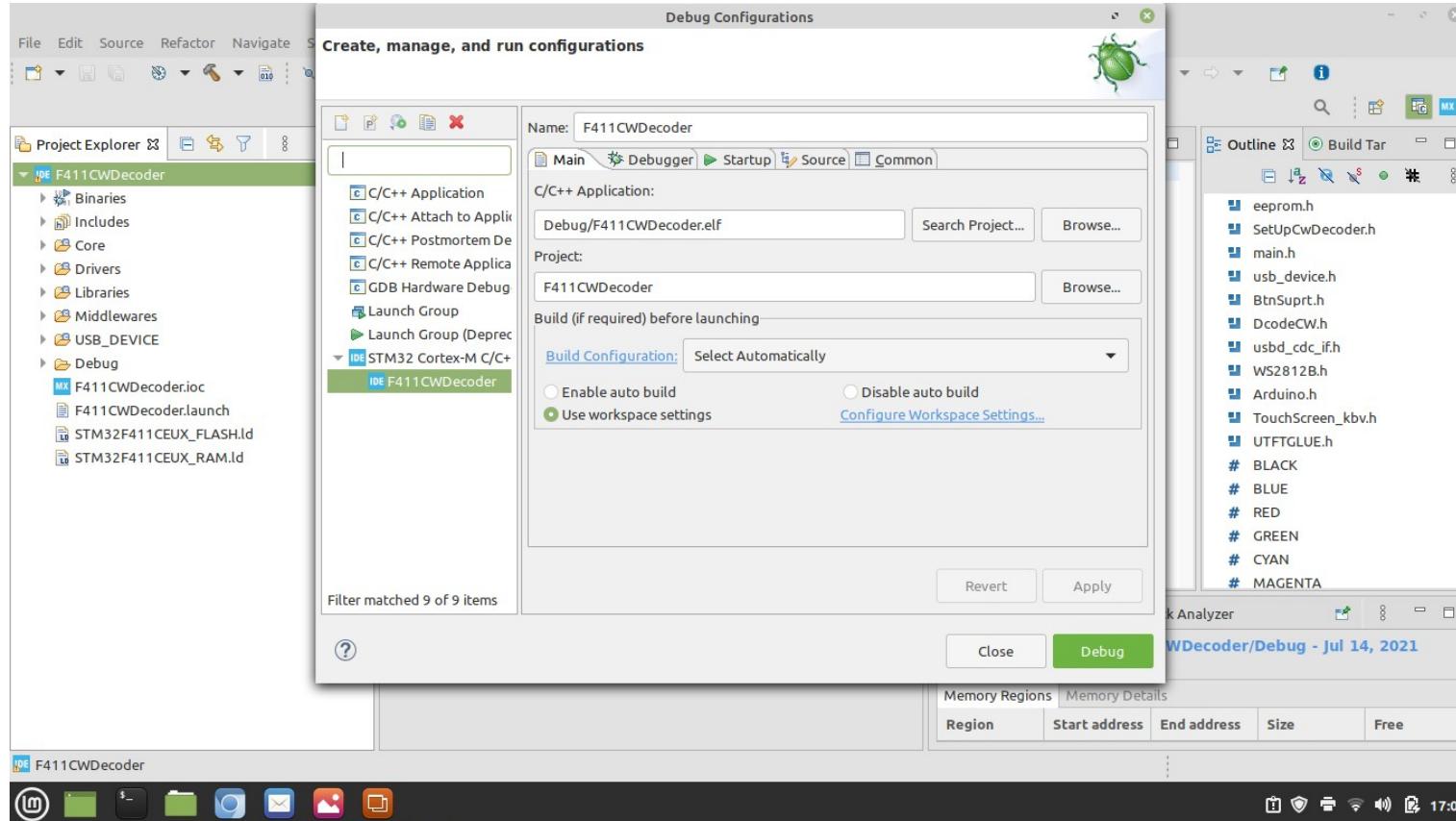
26. Note, when the “Build” process completes, the Console window reads “0 errors”



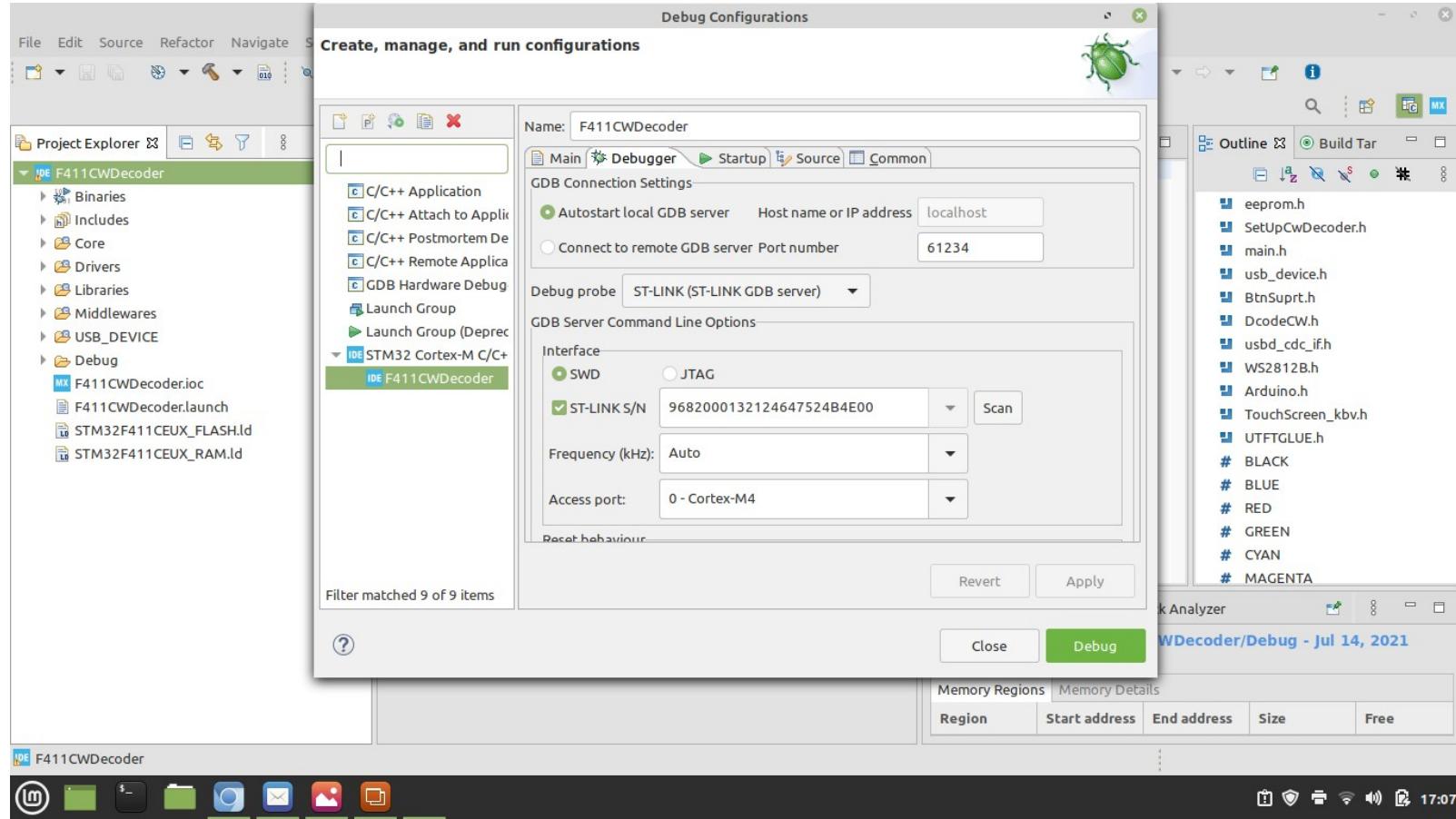
27. Select Project from Project tree. Right click to expose project menu options. And select “Debug Configurations...”, as shown here:



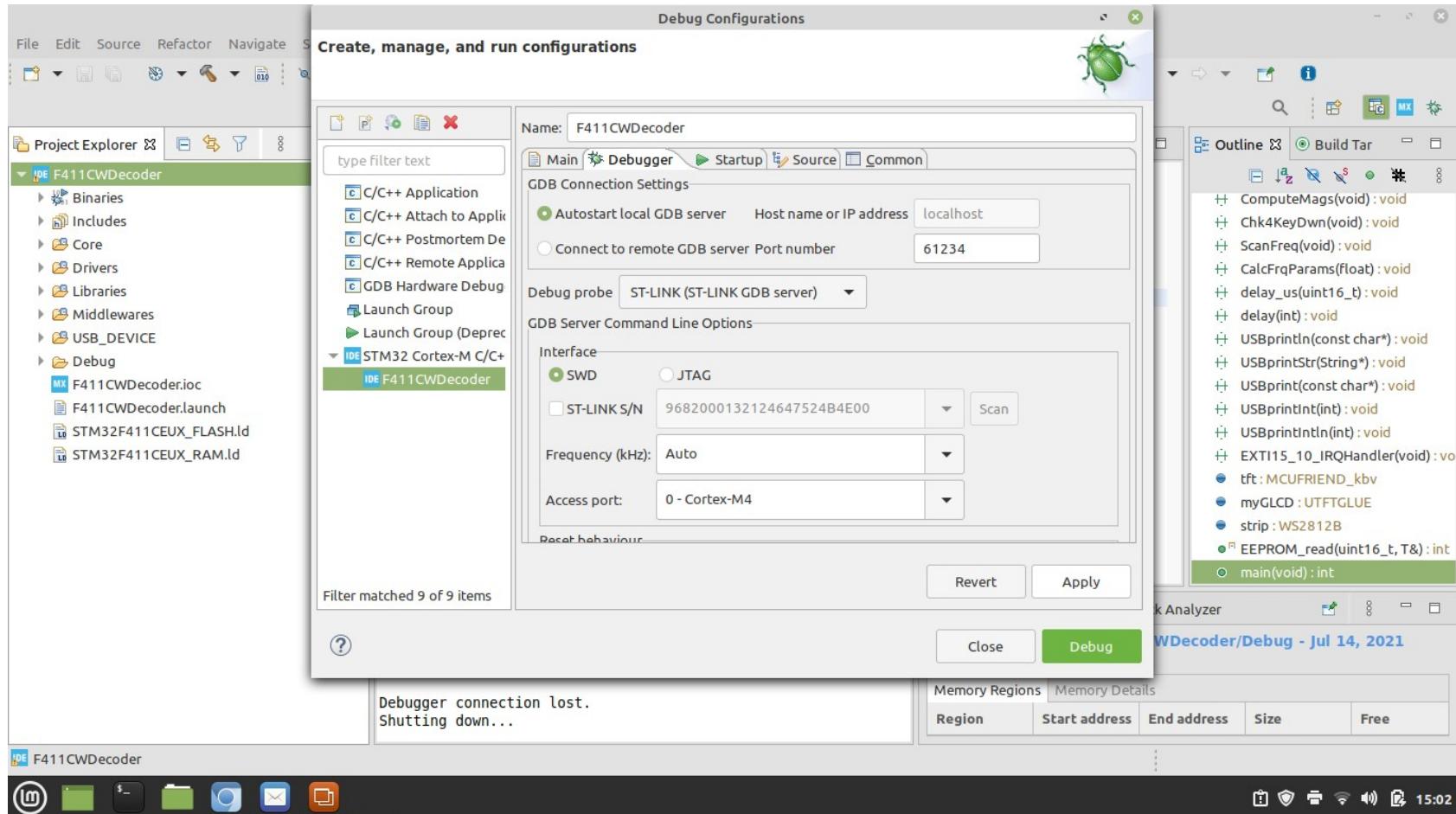
28. Performing step 27 should expose this form



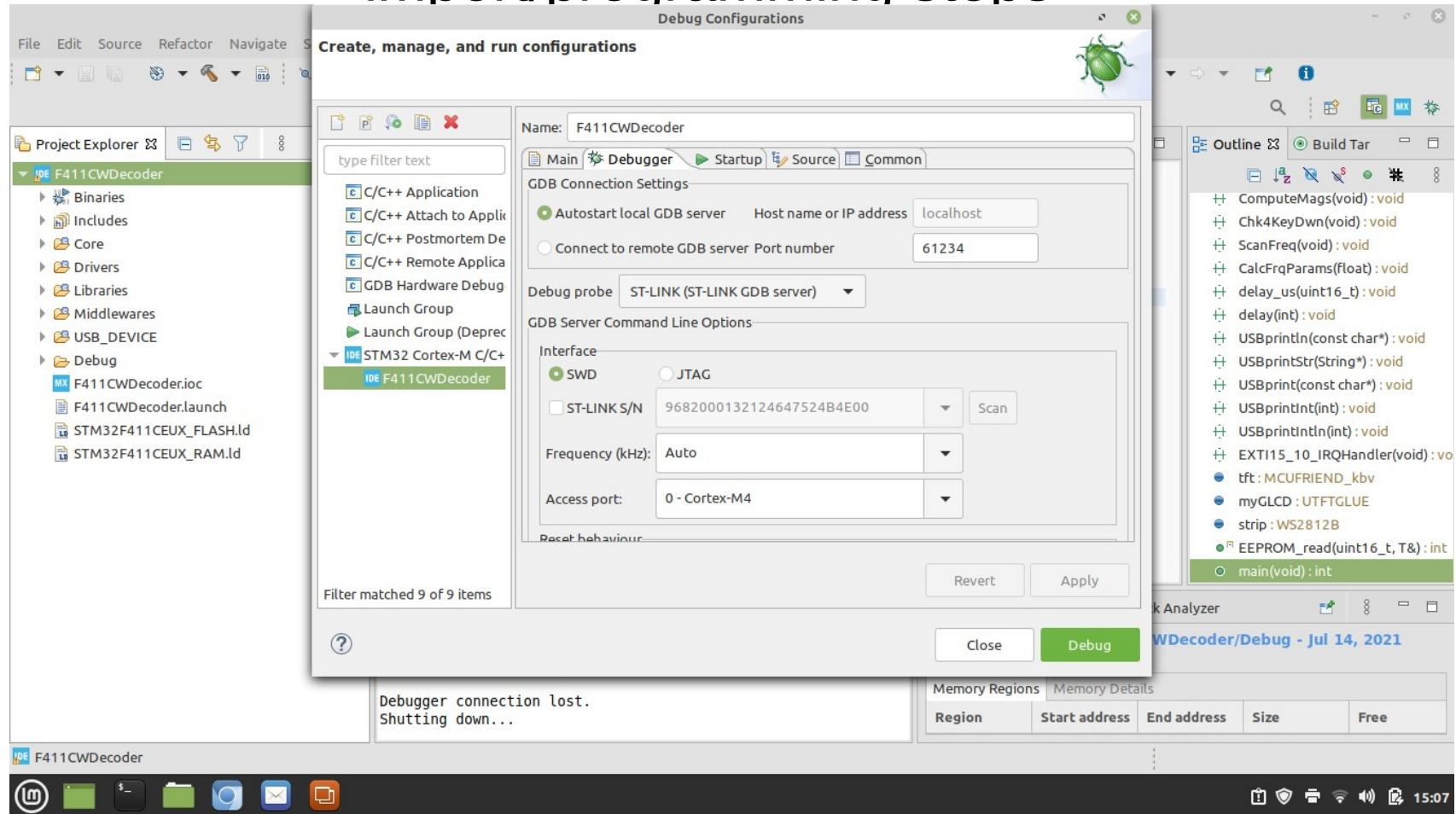
29. Select the “Debugger” tab to see this set of options



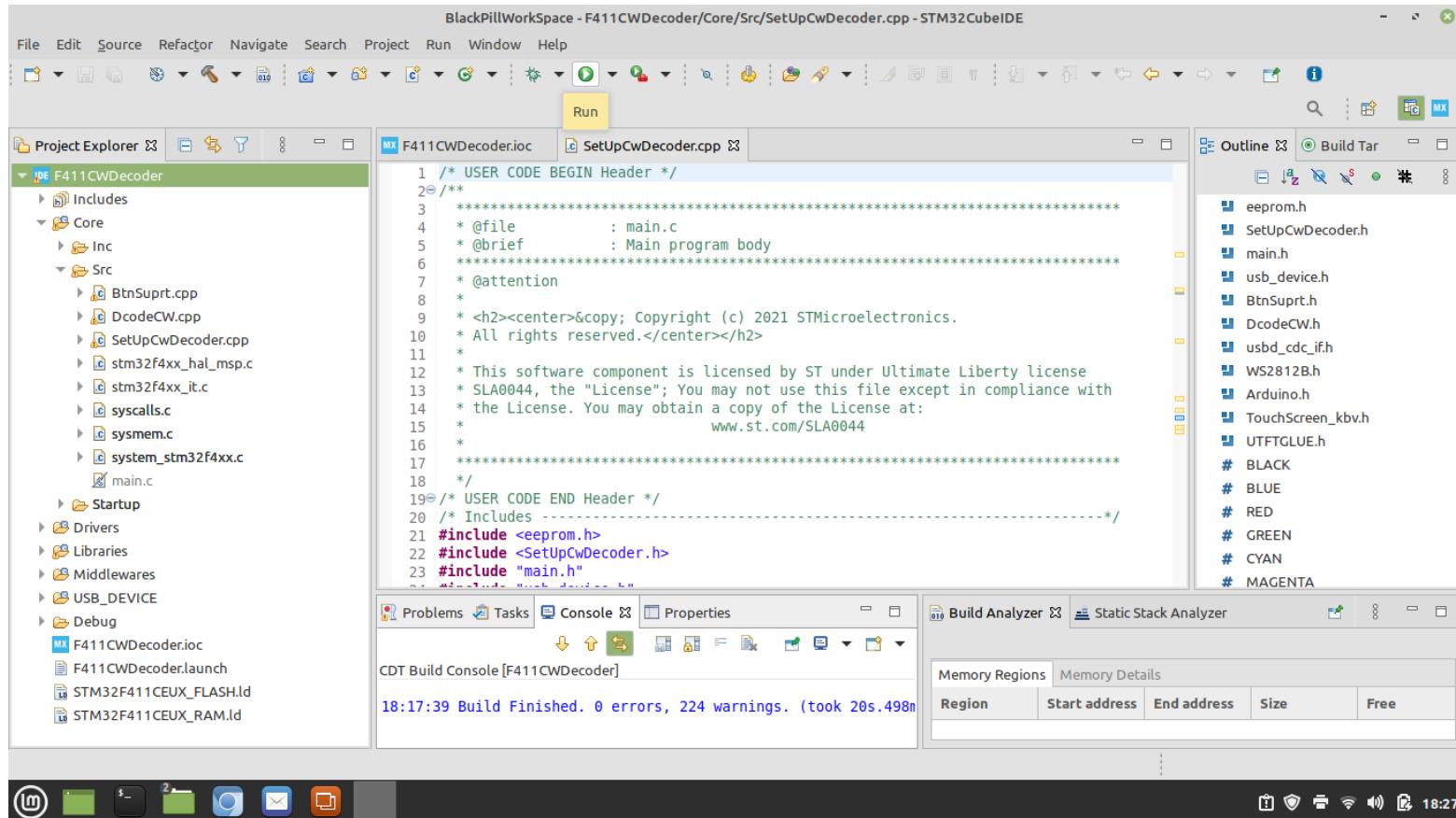
30. “UN-check” the “ST-LINK S/N” box, then click the “Apply” button.



31. Click the “Close” button, & proceed with the remaining import/programming steps



32. Now with the Black Pill connected to the computer via the STLink dongle, click the “Run” icon:



33. When performing Step 32 you may need to simultaneously press the Black Pill's "Boot" Button. The "Console" window on a successful "load" should read as shown here:

The screenshot shows the STM32CubeIDE interface with the following details:

- Project Explorer:** Shows the project structure under "F411CWDecoder". The file "SetUpCwDecoder.cpp" is selected and highlighted in green.
- Code Editor:** Displays the content of "SetUpCwDecoder.cpp". The code includes comments like "/* USER CODE BEGIN Header */" and "main.c".
- Console Window:** Shows the output of the build and flash process:

```
<terminated> F411CWDecoder [STM32 Cortex-M C/C++ Application] ST-LINK (ST-LIN)
Erasing internal memory sector 0
Erasing memory corresponding to segment 1:
Erasing internal memory sectors [4 5]
Download in Progress:

File download complete
Time elapsed during download operation: 00:00:03.620

Verifying ...

Download verified successfully

Debugger connection lost.
Shutting down...
```
- Build Analyzer:** Shows the memory regions and details for the F411CWDecoder.elf binary.

Region	Start address	End address	Size	Free
RAM	0x20000000	0x20020000	128 KB	111.8 KB
VECTOR	0x08000000	0x08008000	32 KB	31.6 KB
EEPROM	0x08008000	0x08010000	32 KB	32 KB
FLASH	0x08010000	0x08080000	448 KB	348.5 KB

34. If hardware is connected & working you should now have Display that looks like this:



35. On first time Startup, long press the Decoder's "Clear" button to access the "Settings" screen. Load & Save the "FACTORY VALS". Once done the decoder should be ready to decode.

