Experiment 1

Title: Introduction to STM32Cube IDE

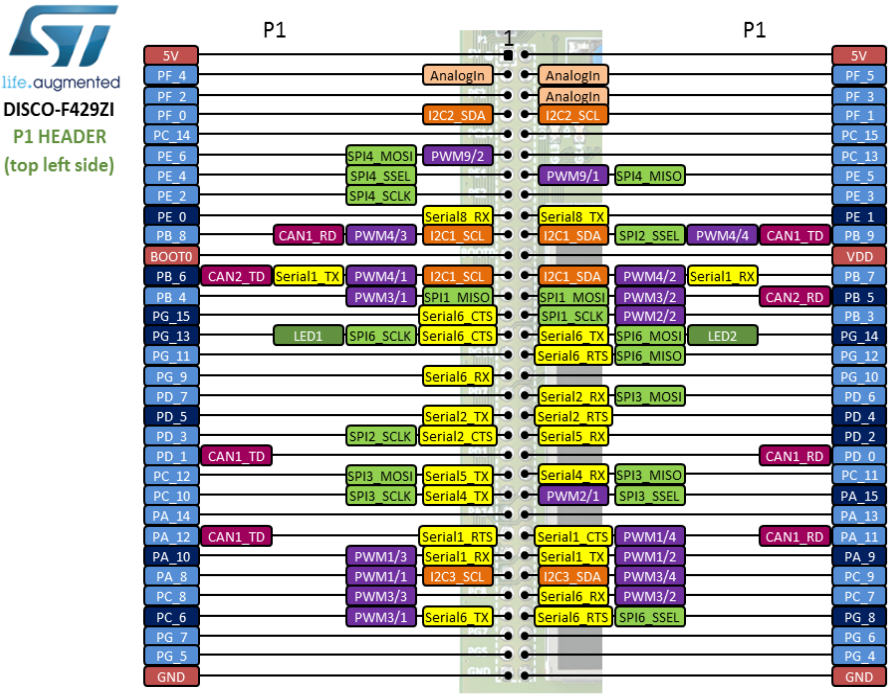
Aim: Features of STM32 Cortex M4 Discovery Board and using STM32CubeIDE.

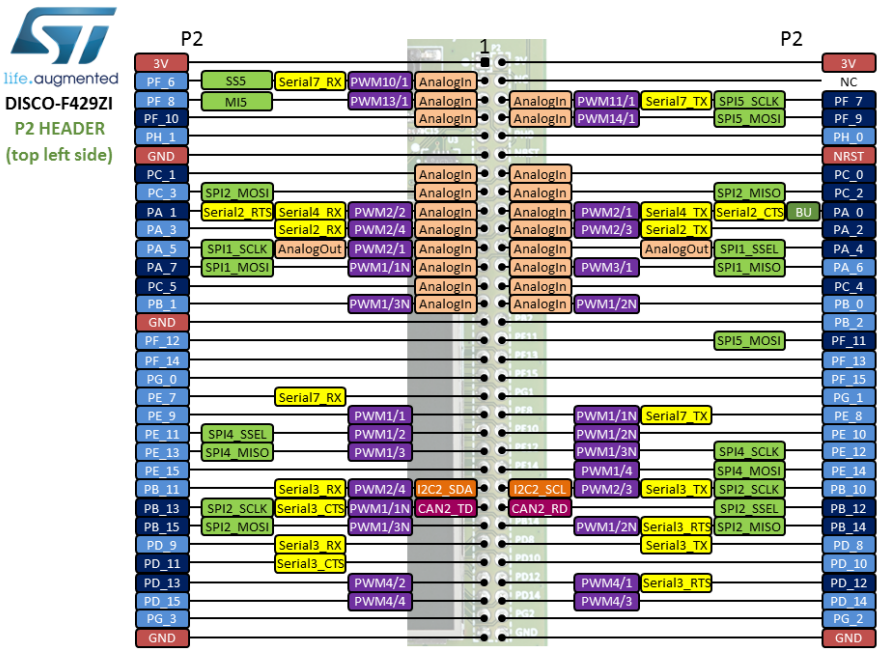
Theory: STM32CubeIDE is an all-in-one multi-OS development tool. It is part of the STM32Cube software ecosystem. It is an advanced C/C++ development platform with peripheral configuration, code generation, code compilation, and debug features for STM32 microcontrollers and microprocessors. It is based on the Eclipse®/CDT™ framework and GCC toolchain for the development, and GDB for the debugging.

STM32CubeIDE integrates STM32 configuration and project creation functionalities from STM32CubeMX in order to offer all-in-one tool experience which saves installation and development time. In the IDE after the selection of an empty STM32 MCU from the selection of a board, the project is created and initialization code is generated. At any time during the development, the user can return to the initialization and configuration of the peripherals or middleware and regenerate the initialization code with no impact on the user code.

STM32CubeIDE also includes standard and advanced debugging features including views of CPU core registers, memories, and peripheral registers, as well as live variable watch, Serial Wire Viewer interface, or fault analyzer.

PIN DIAGRAM:



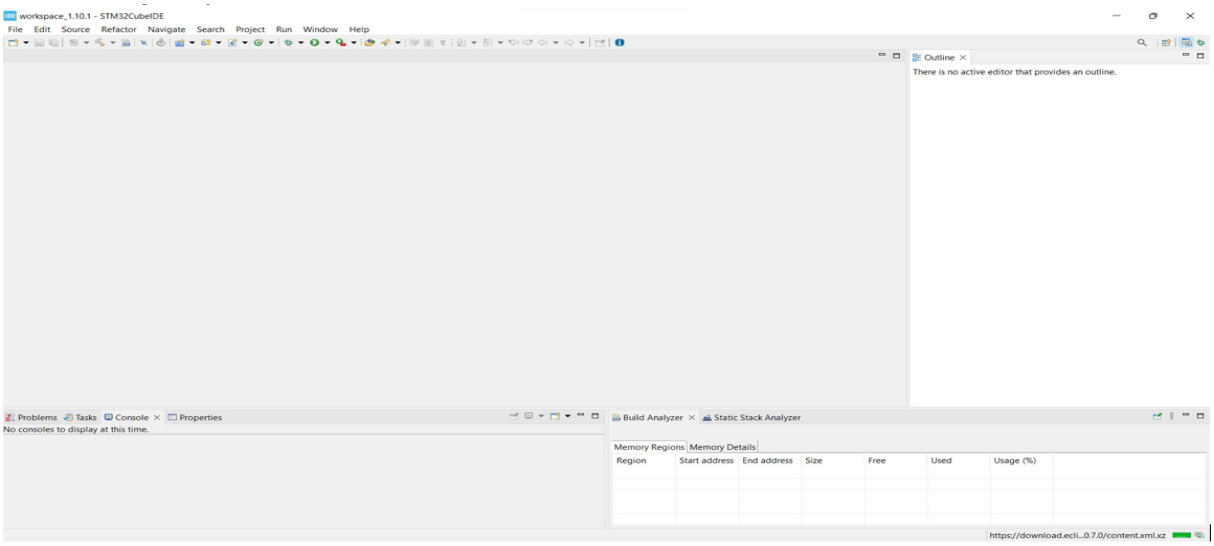


Tool used: The tool used for this assignment is**: STM32Cube IDE.**

Procedure:

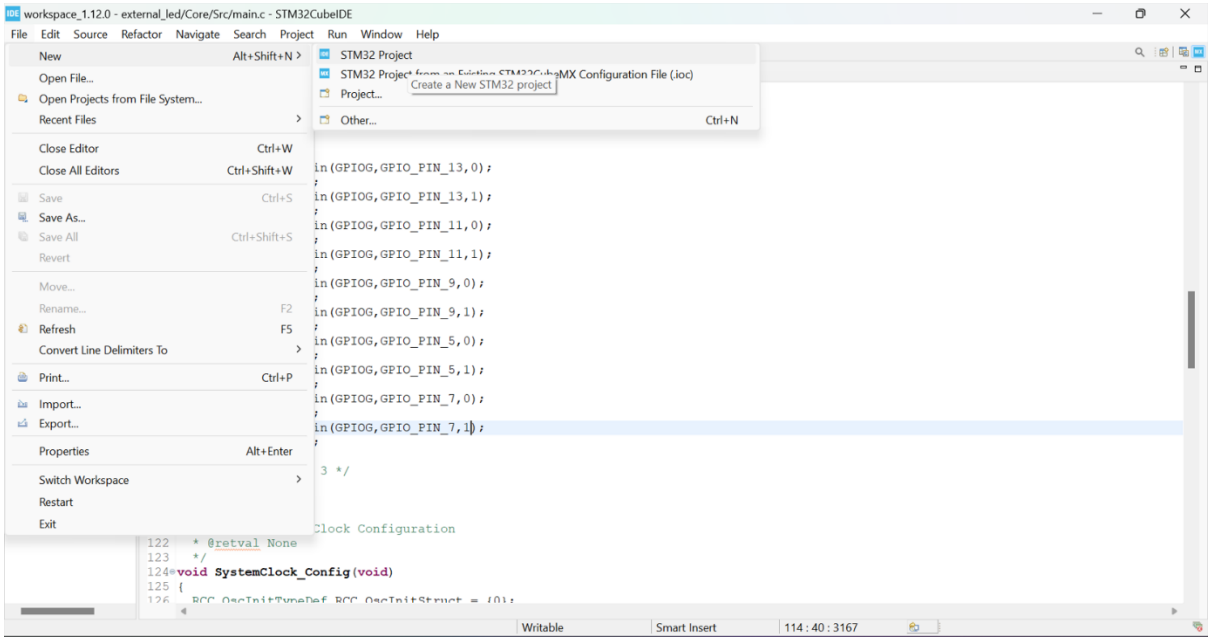
Step1:

Open STM32Cube IDE.

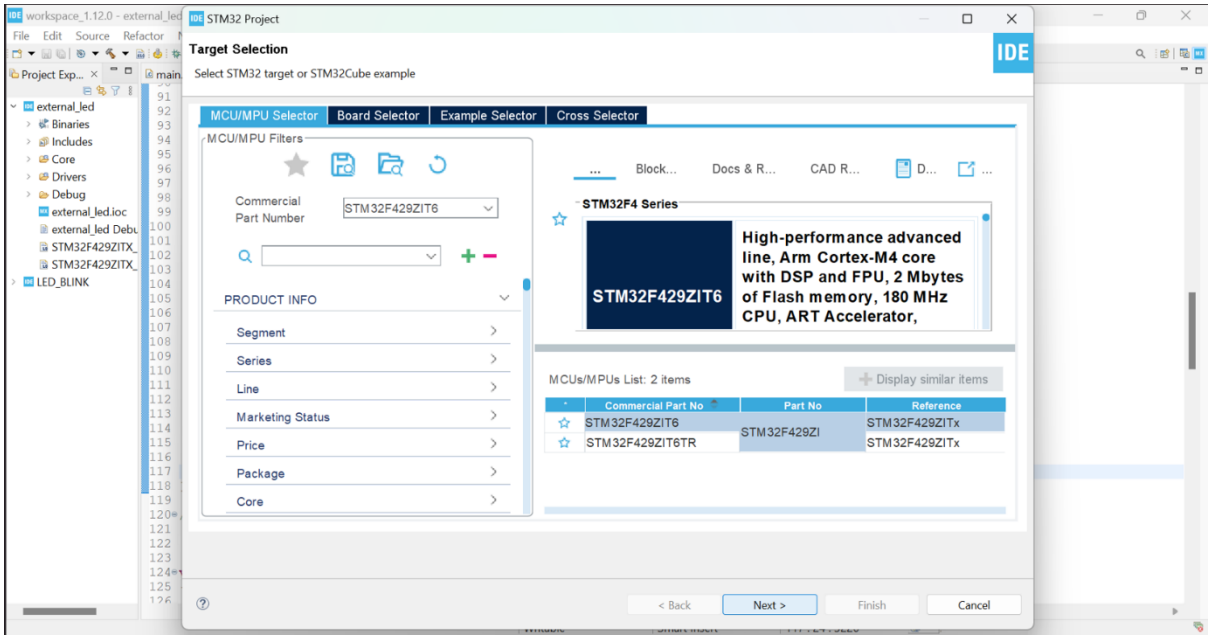


Step2:

Goto File>New>STM32 Project

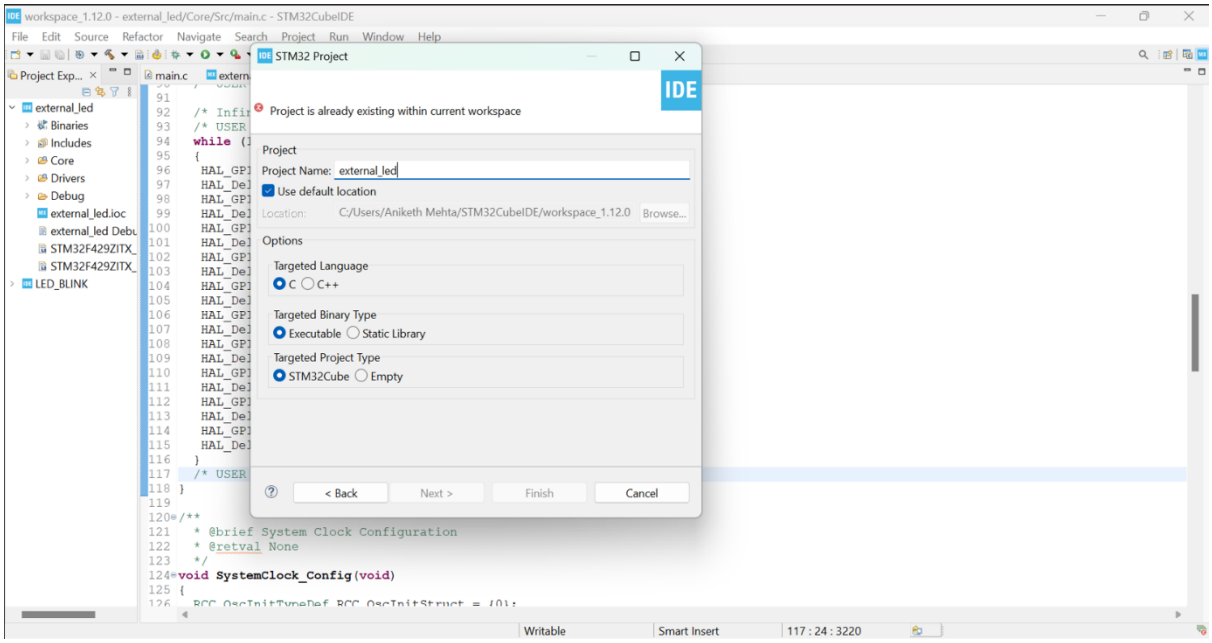


Step3: Put the commercial part number of the MCU and select the respective MCU from the features tab and click NEXT



Step4:

Give suitable project name and select project type as “STM32Cube” and then click Finish.



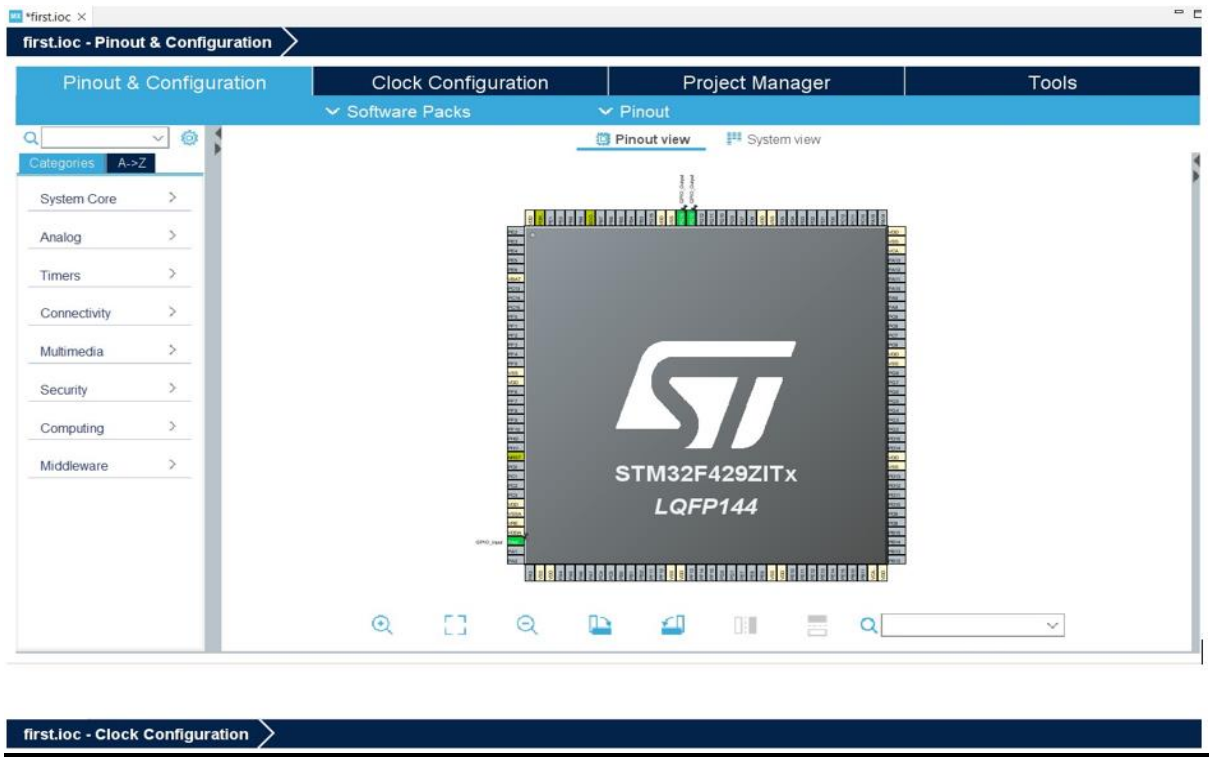
Step5:

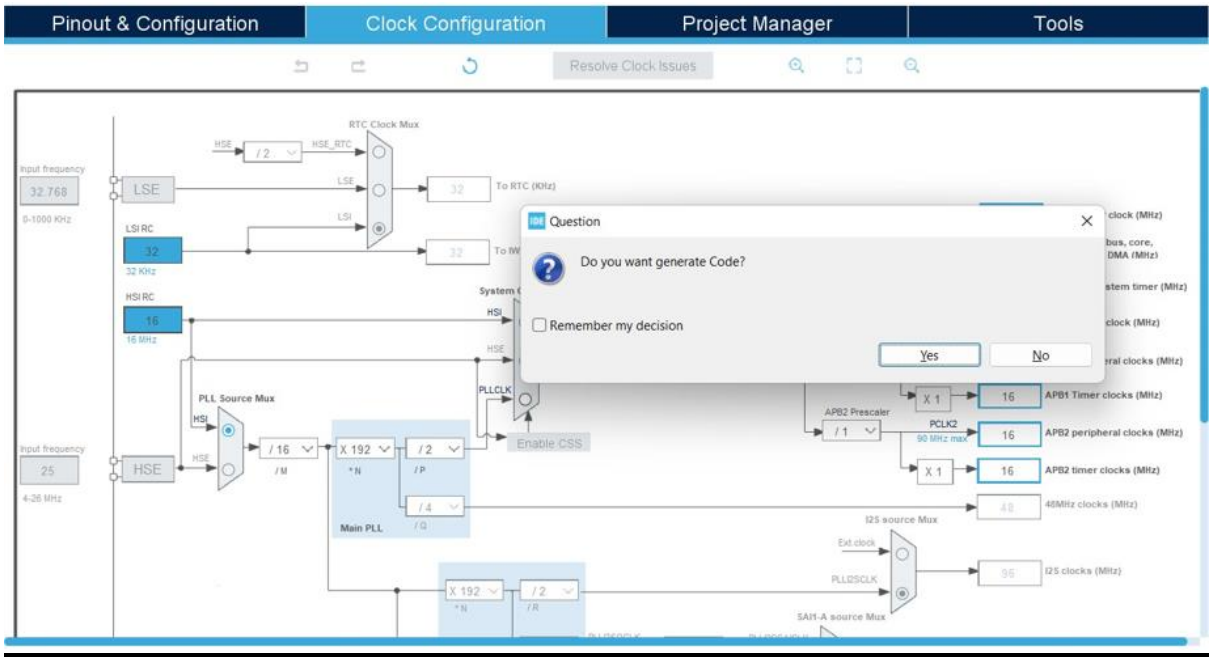
Under PINOUT configuration select whichever pins need to be configured as

INPUT/OUTPUT and set them to GPIO_INPUT/OUTPUT. Under Categories>System

Core>SYS set Debug to Serial Wire. Activate Timers if needed. You can also change Clock settings under the Clock Configuration tab. After doing the necessary changes

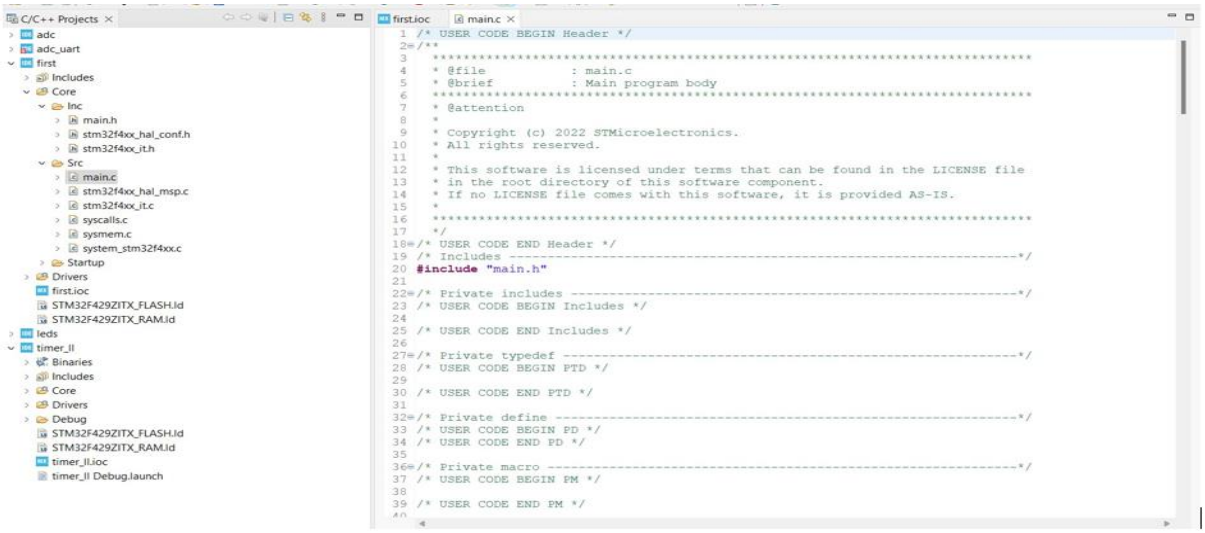
press Ctrl+S and click Ok to Generate Code.





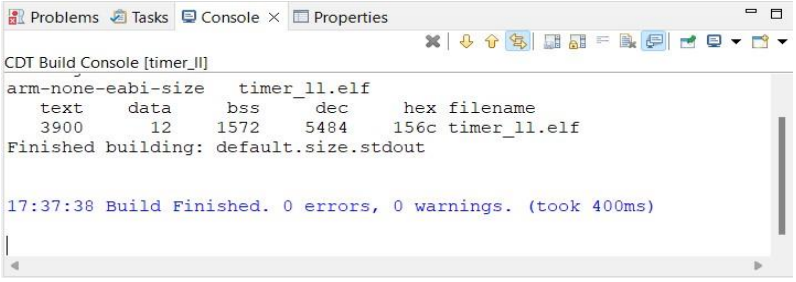
Step6:

Under C/C++ projects click the drop down button of your file name and then goto Core> Src> main.c , Here you can put the necessary code.



Step7:

After editing the main.c file press Ctrl+B to build all



Step8:

After building you can connect the MCU development board and goto Run> Run To upload the code to the board.

Result:

Basic STM32Cube project was built using STM32Cube IDE.