EMBEDDED SYSTEMS
learn in depth

First term project 1 : pressure detection system

System architecture design and Embedded-c implementation

the system detects pressure value and informs if the pressure value exceeds the threshold and also store the pressure values in the flash memory (the flash memory of the soc.) .

target soc : arm cortex m3
board : STM32F103C6

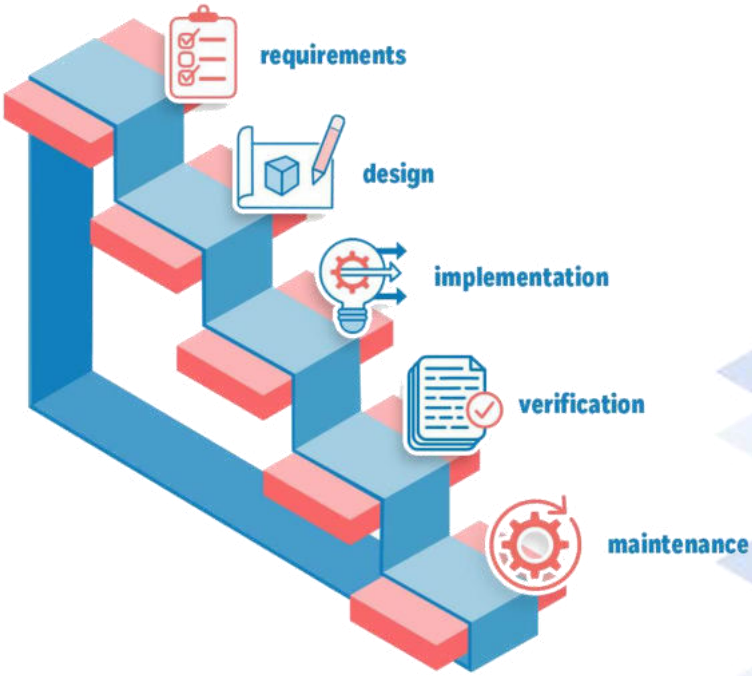
eng. omar samy

Key features :
- system architecture design
- embedded c implementation

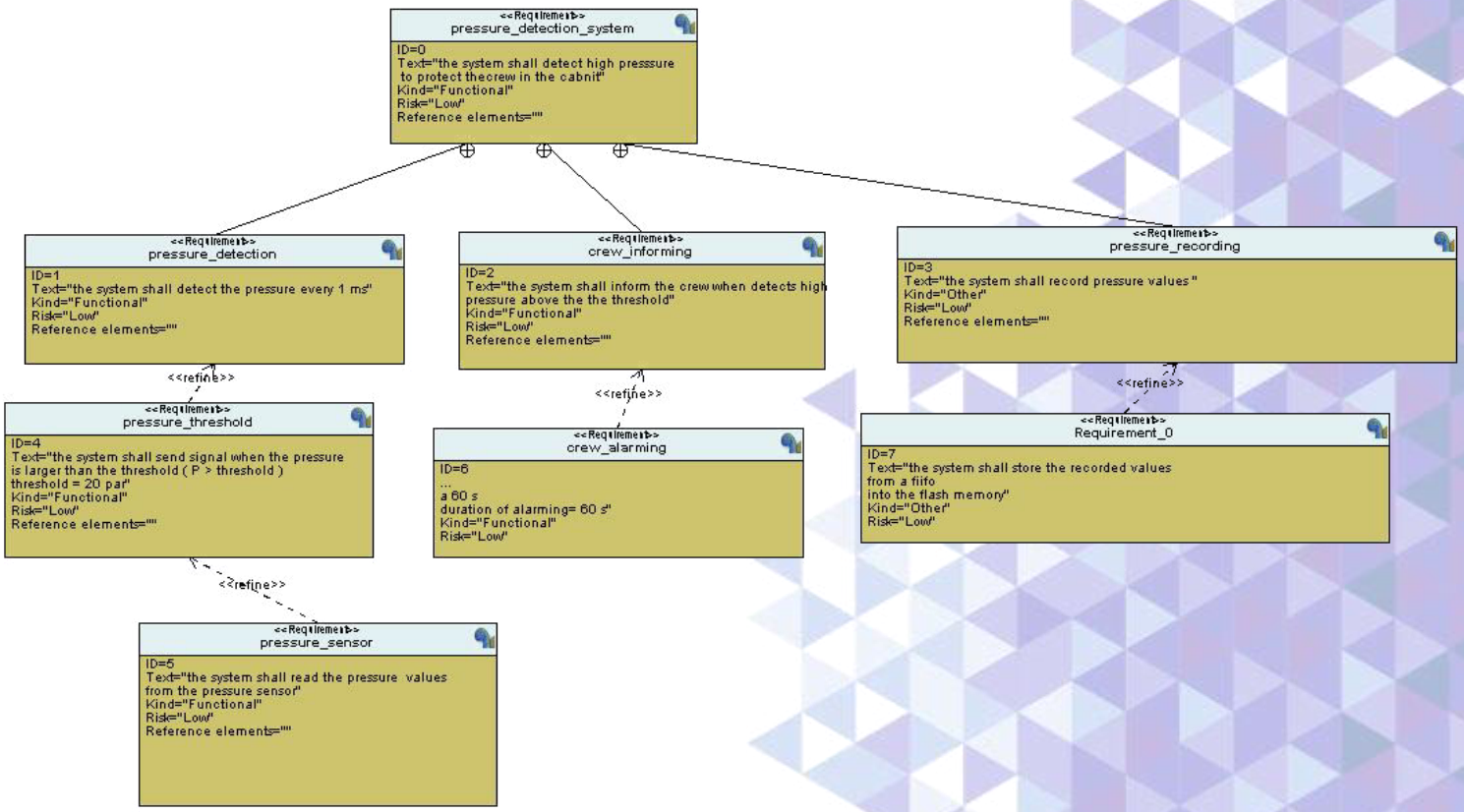
Tools :
Visual code studio
Ttool : uml
Note++
Proteus

System design : system that detects pressure value and informs if the pressure value exceeds the threshold and also store the pressure values in the flash memory (the flash memory of the soc.)
Case study : the system consists of four modules and

Method : waterfall model

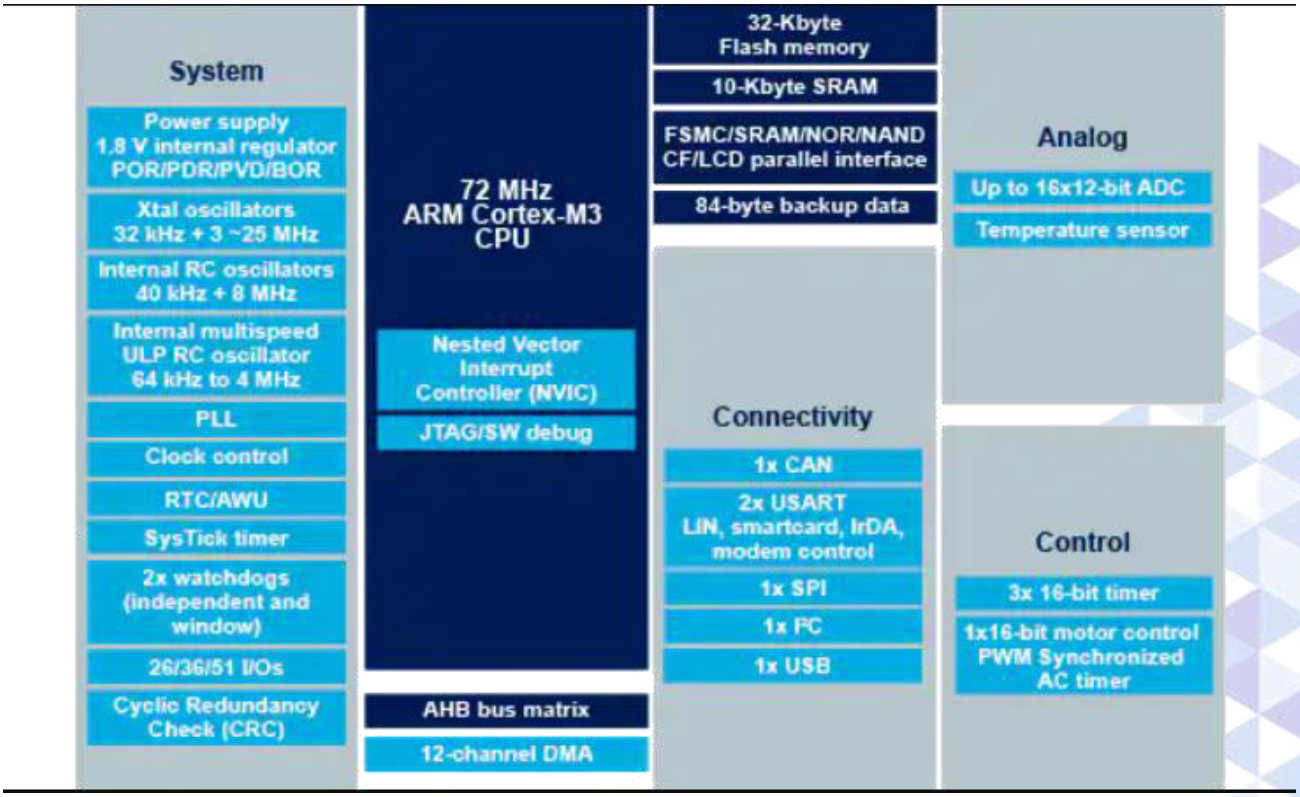


Requirements diagram :



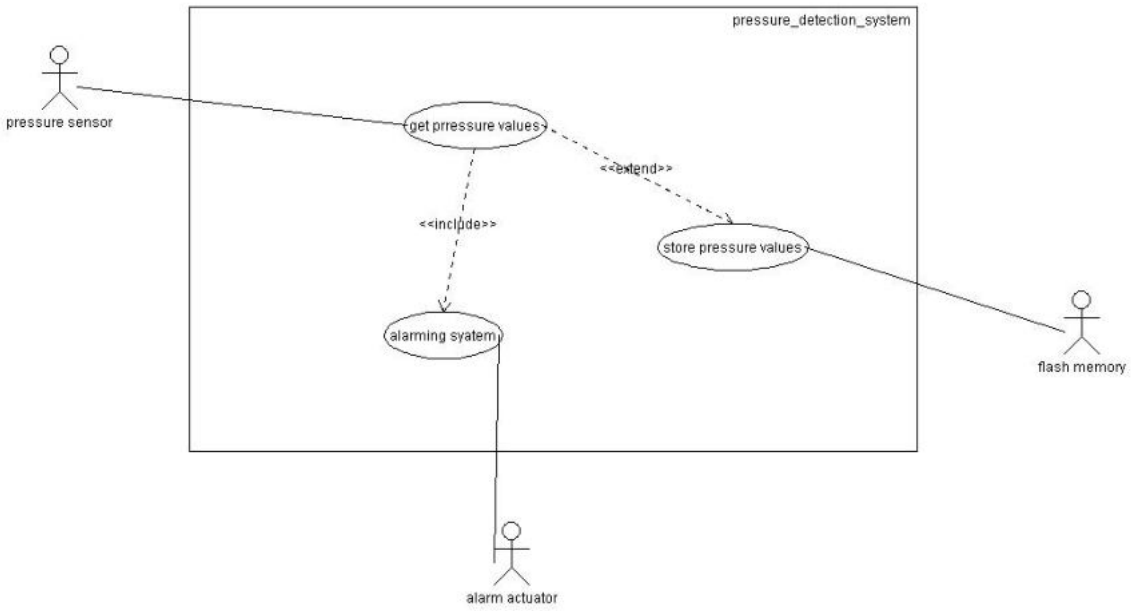
Space exploration / partitioning:

- target soc : arm cortex m3
- board : STM32F103C6

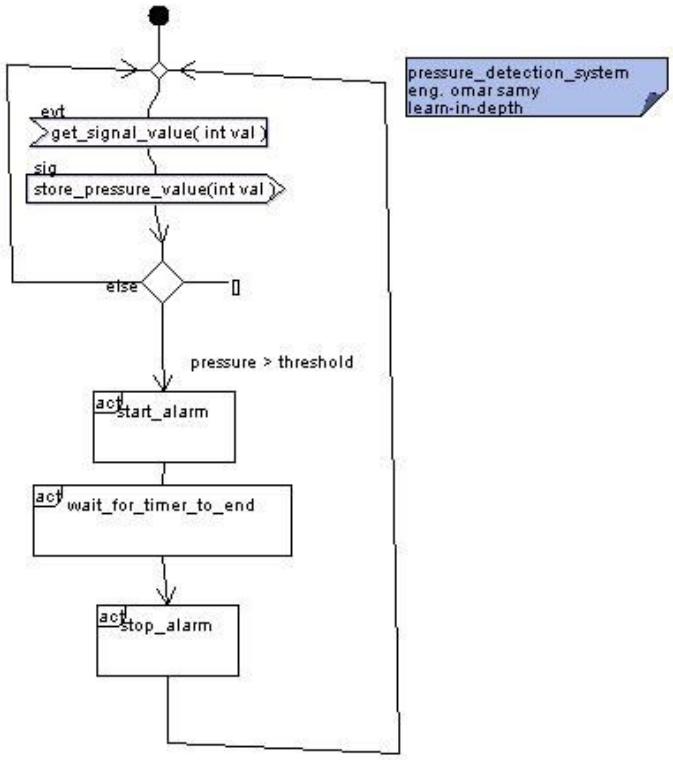


System analysis (UML) :

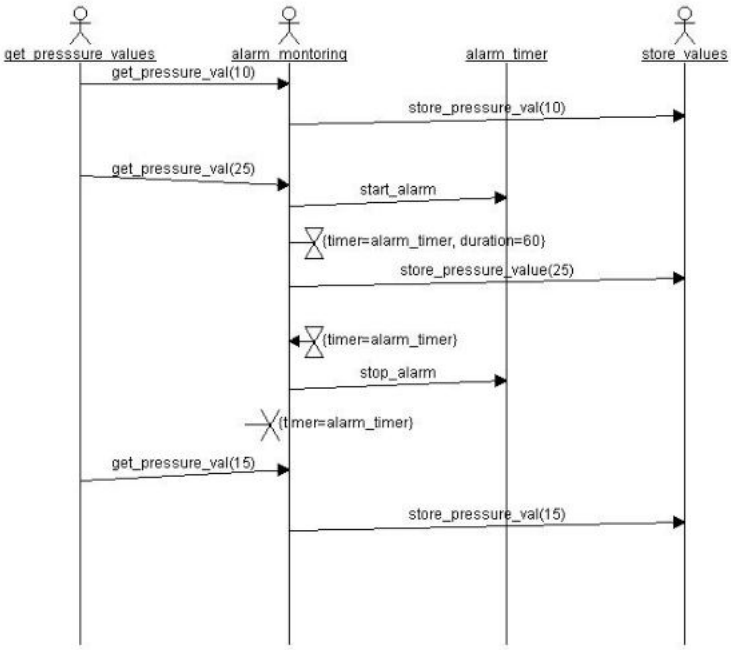
-use case diagram



- **activity diagram**

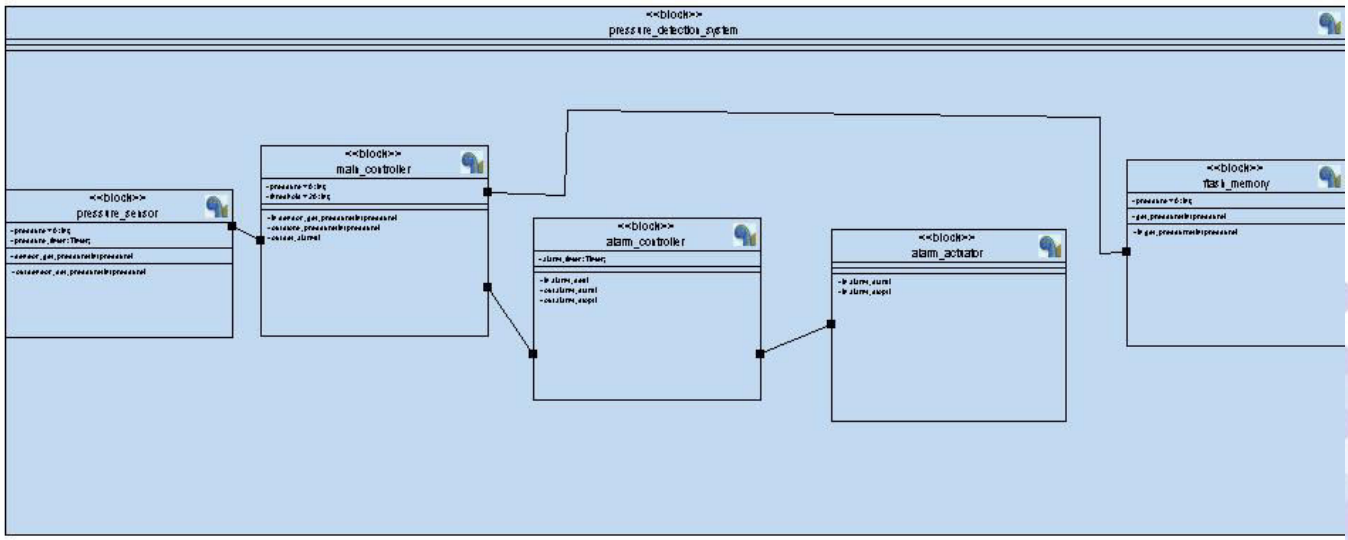


- **sequence diagram**



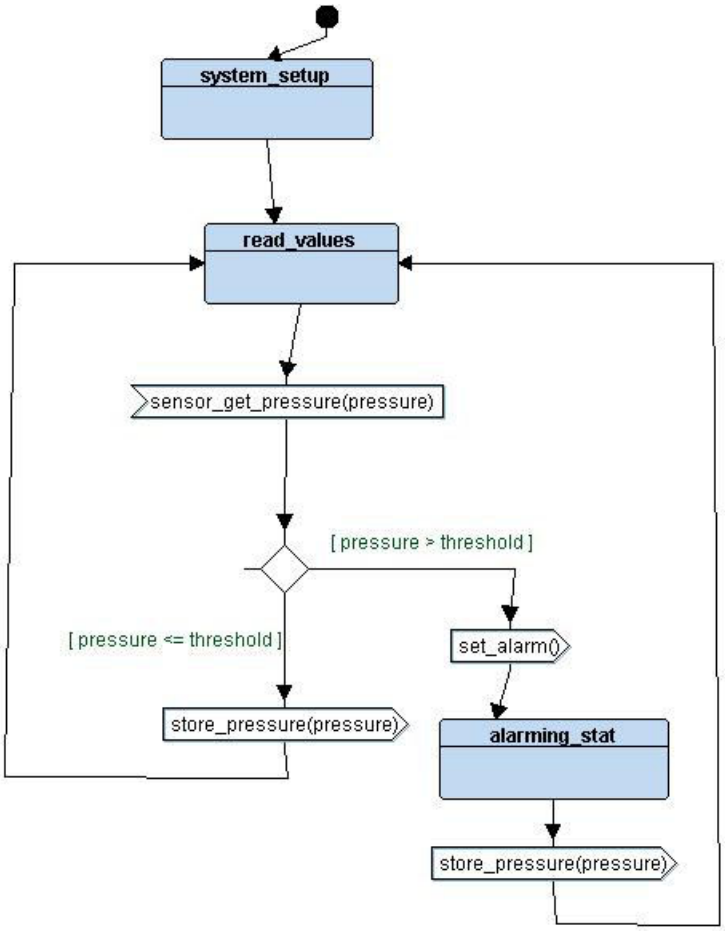
System design :

- Block diagram :

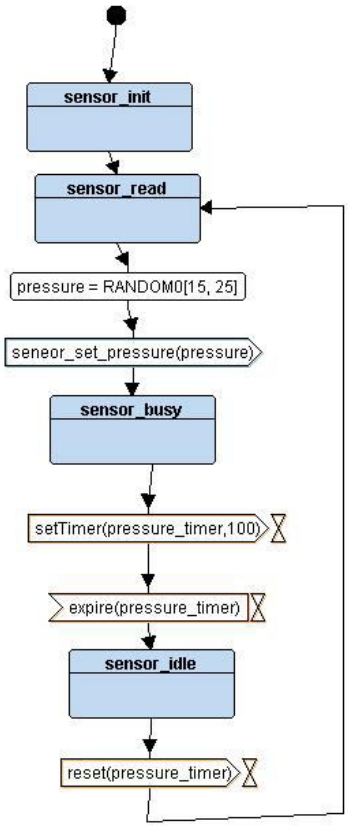


- stat machine : 4 blocks (modules) + 2 timers

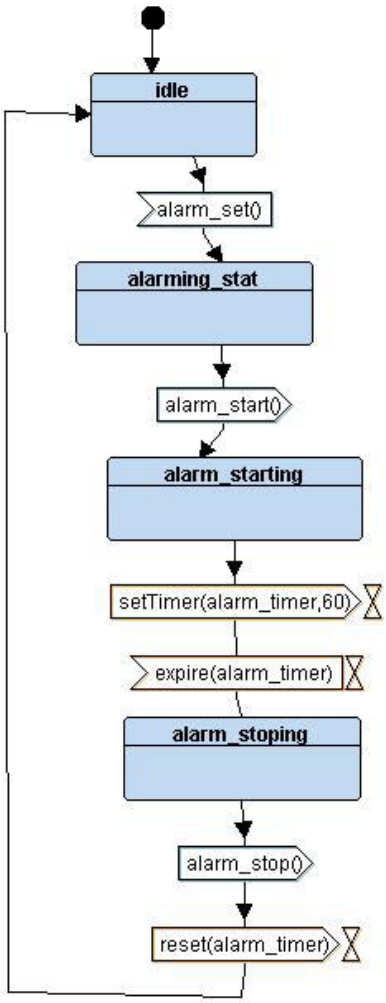
- main controller stat machine :



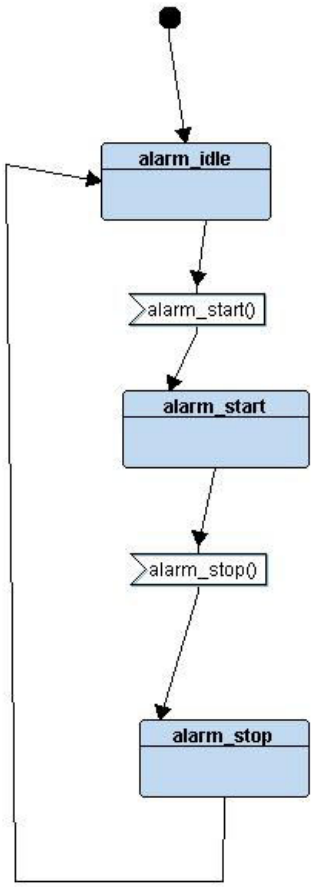
- pressure sensor stat machine :



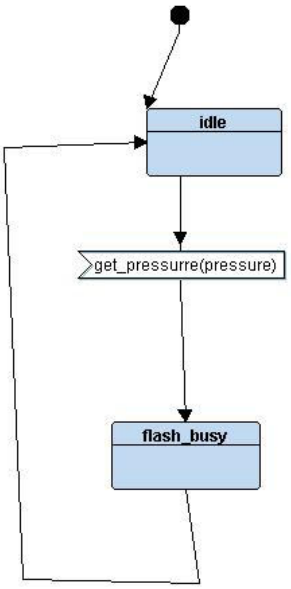
- alarm controller stat machine :



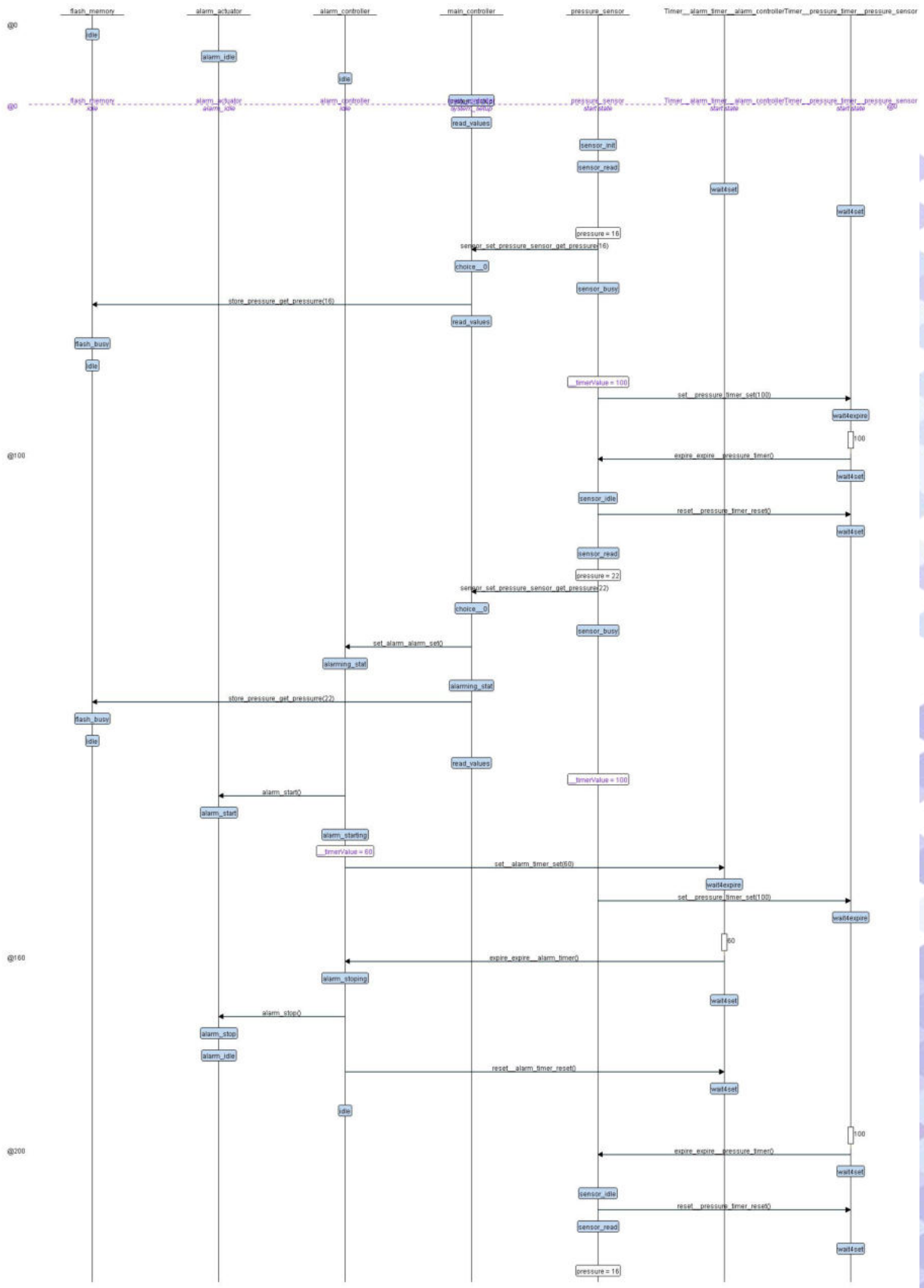
- alarm actuator stat machine :



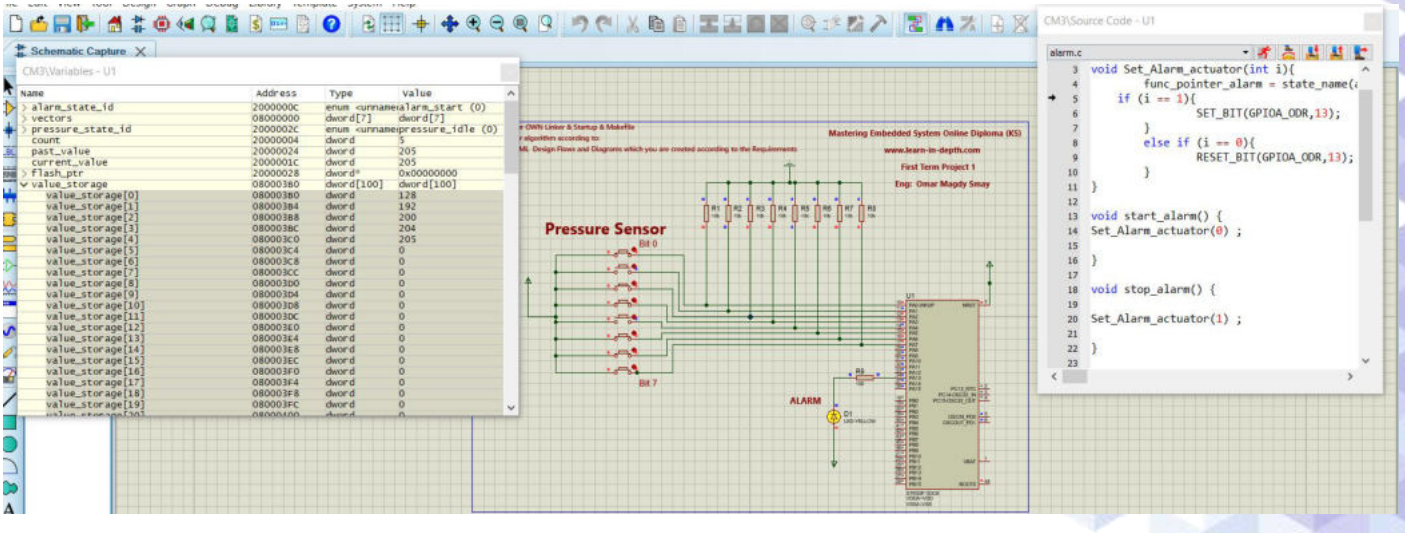
- flash memory stat machine:



- Simulation trace:



Proteus snapshot :



embedded c implementation :
-Make files
-Linker script
- Startup code
4 modules + main file

All included in the project markdown report :
https://github.com/omarsamy289/ES-omar-samy/tree/main/first-term-projects/pressure-detection

GitHub repository

Linkedin