Pressure Detection System Architecture

1-Case Study

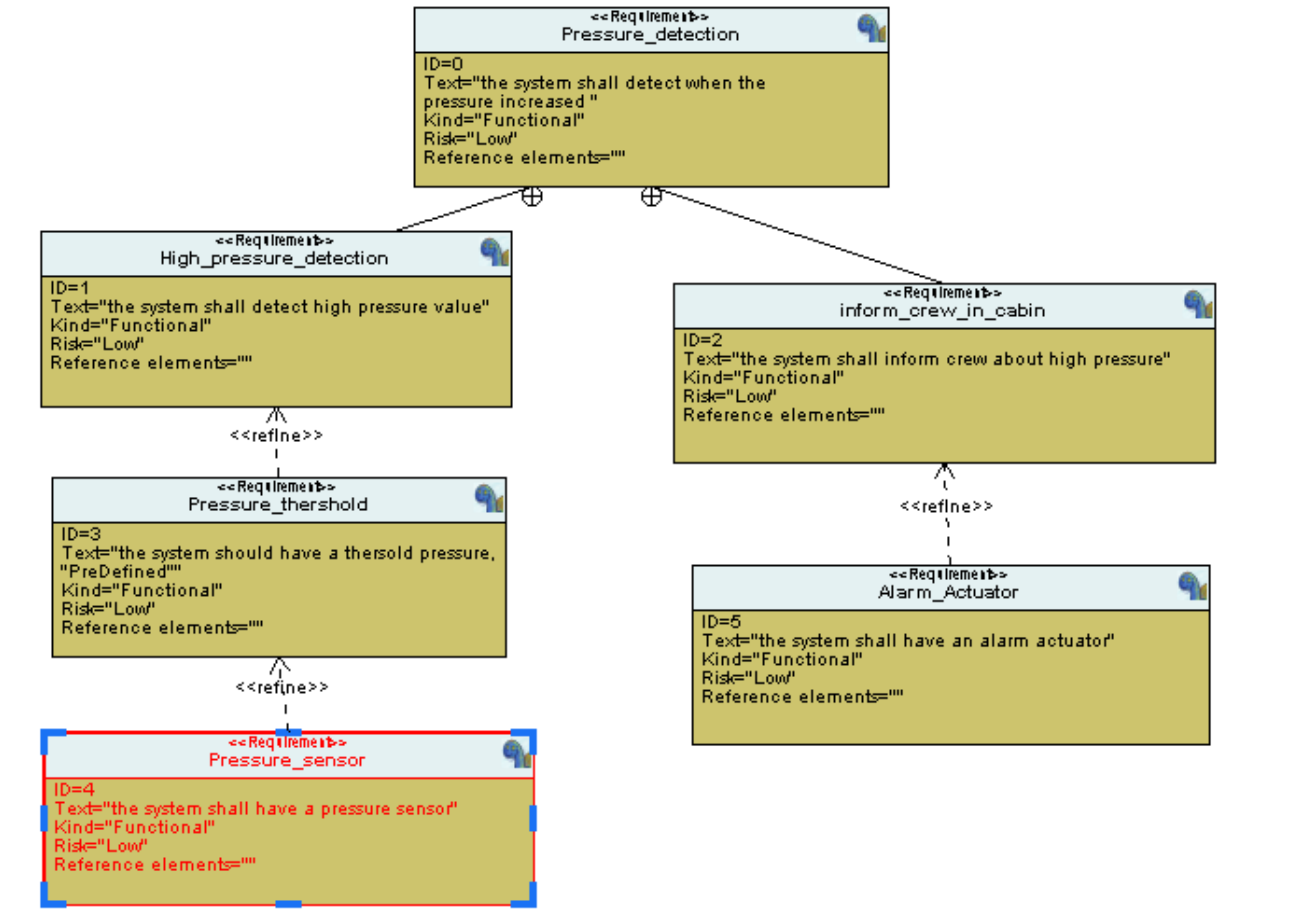
- Requirements :
    1. A pressure controller informs the crew of a cabin with an alarm when the pressure exceeds 20 bars in the cabin
    2. The alarm duration equals 60 seconds
- Assumptions :
    1. Pressure sensor never fails
    2. Alarm actuator never fails
    3. Detector set up and shut down are not modeled
    4. System maintenance us not modeled

2-Method

V-Model -SDLC

3-Requirements

- Requirement Diagram

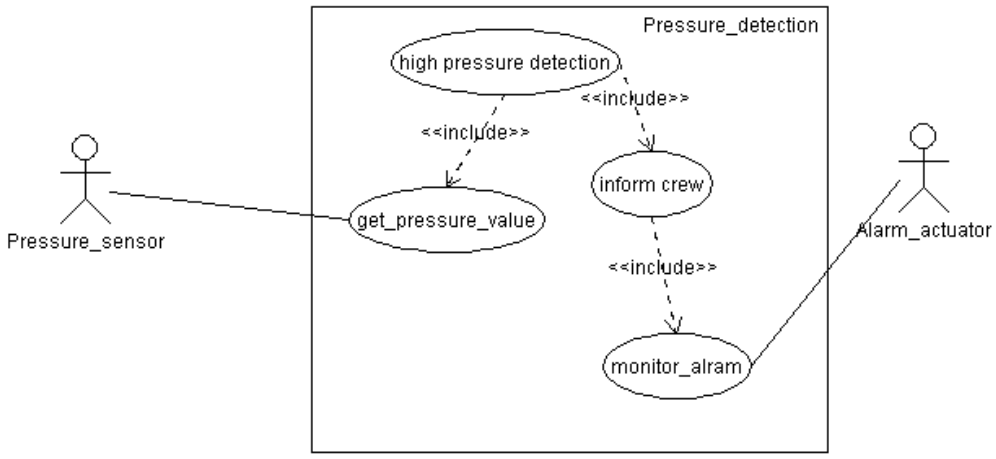


4-space Exploration

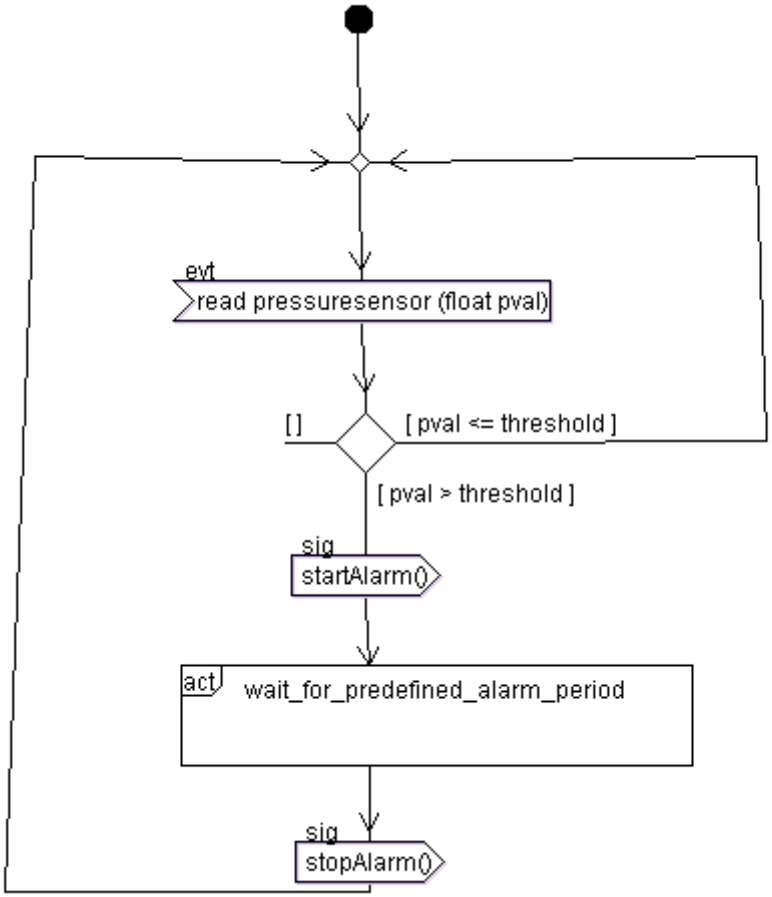
Pressure detector is simple application , so the implementation is based on STM32F10C3 ARM_CORTEX m3 microcontroller

5- system analysis

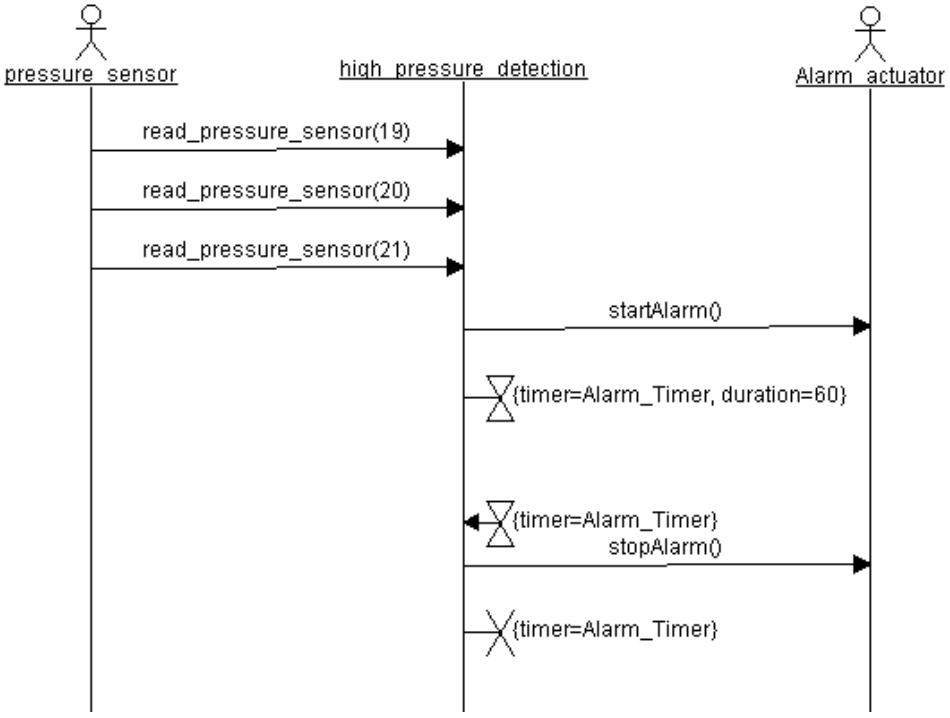
1. USE CASE Diagram



2. Activity diagram

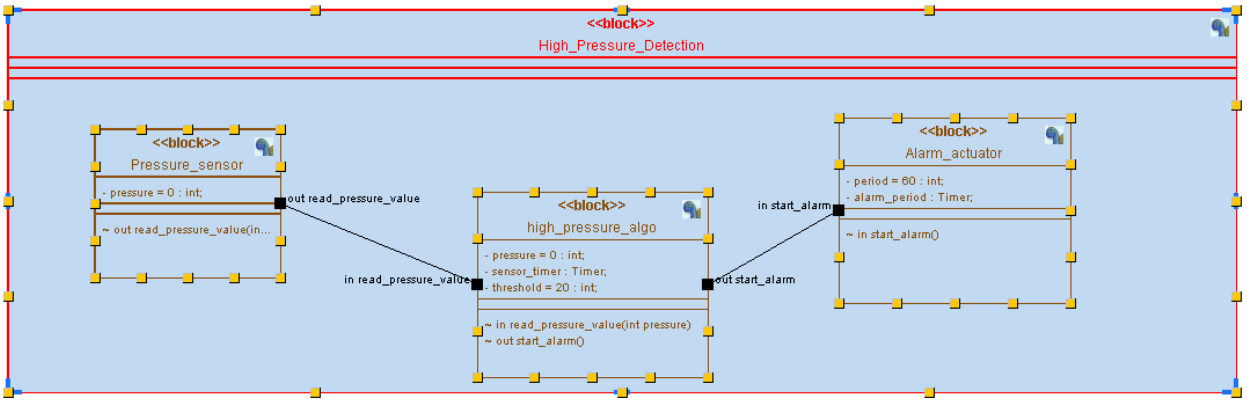


3. Sequence diagram

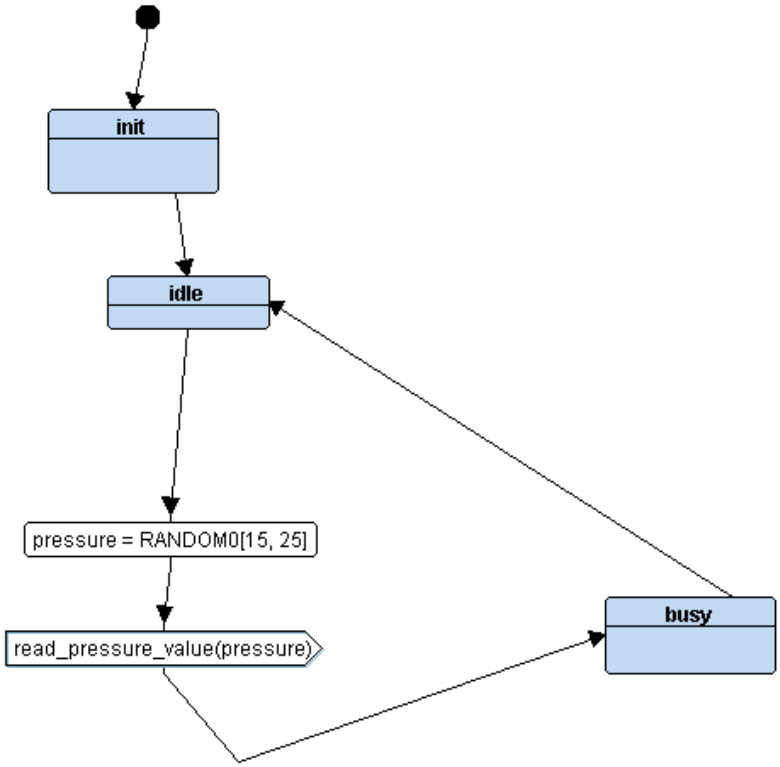


6- system design

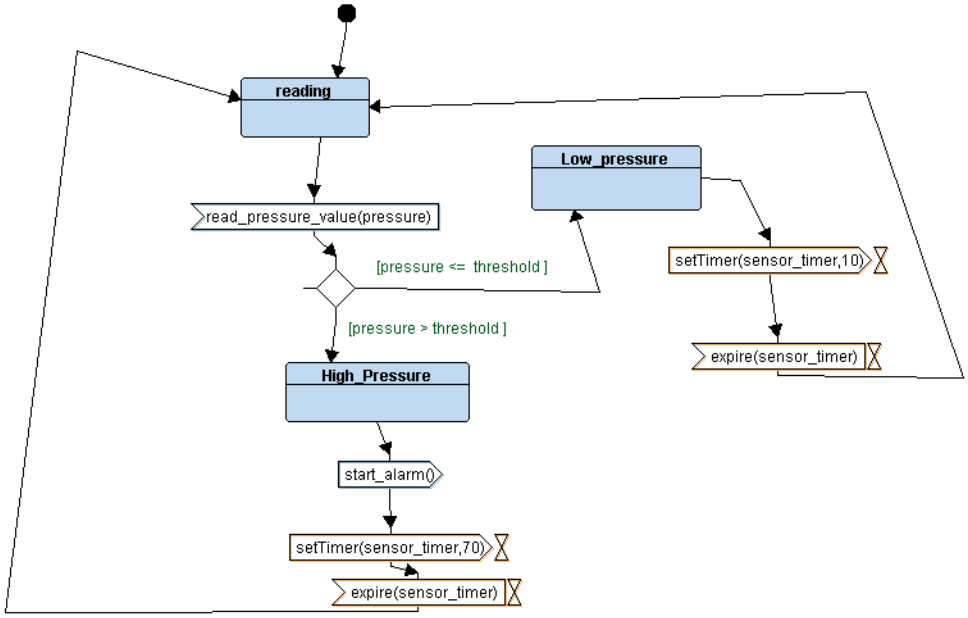
- Block diagram



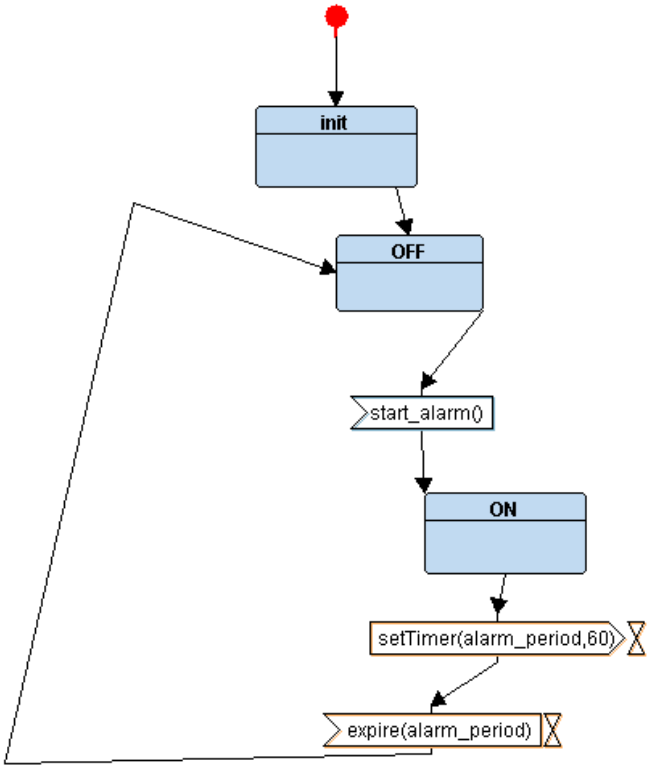
- **Pressure Sensor** State diagram



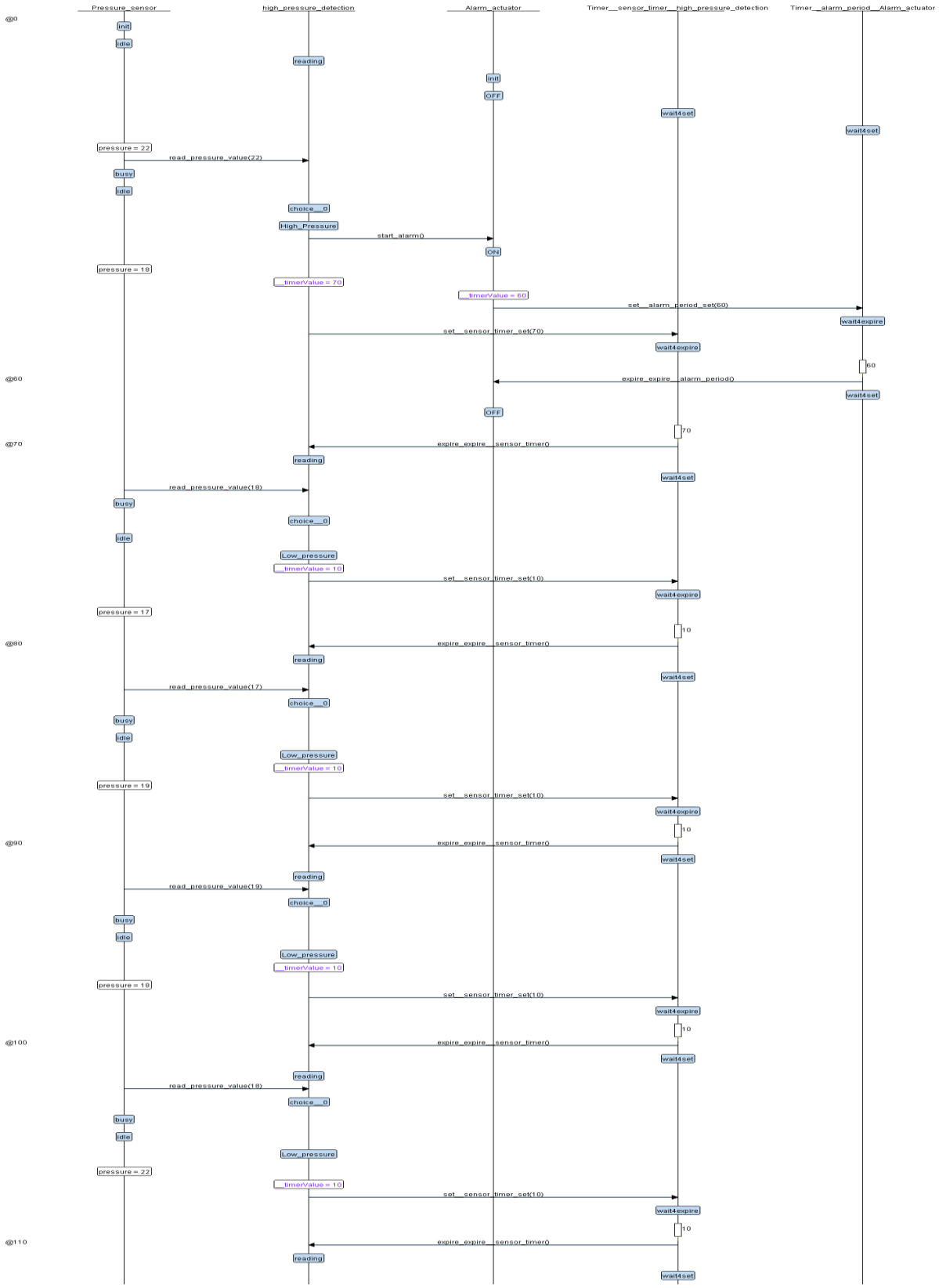
- **Pressure Detector_ALGORITHM** State diagram



- **Alarm actuator** state diagram

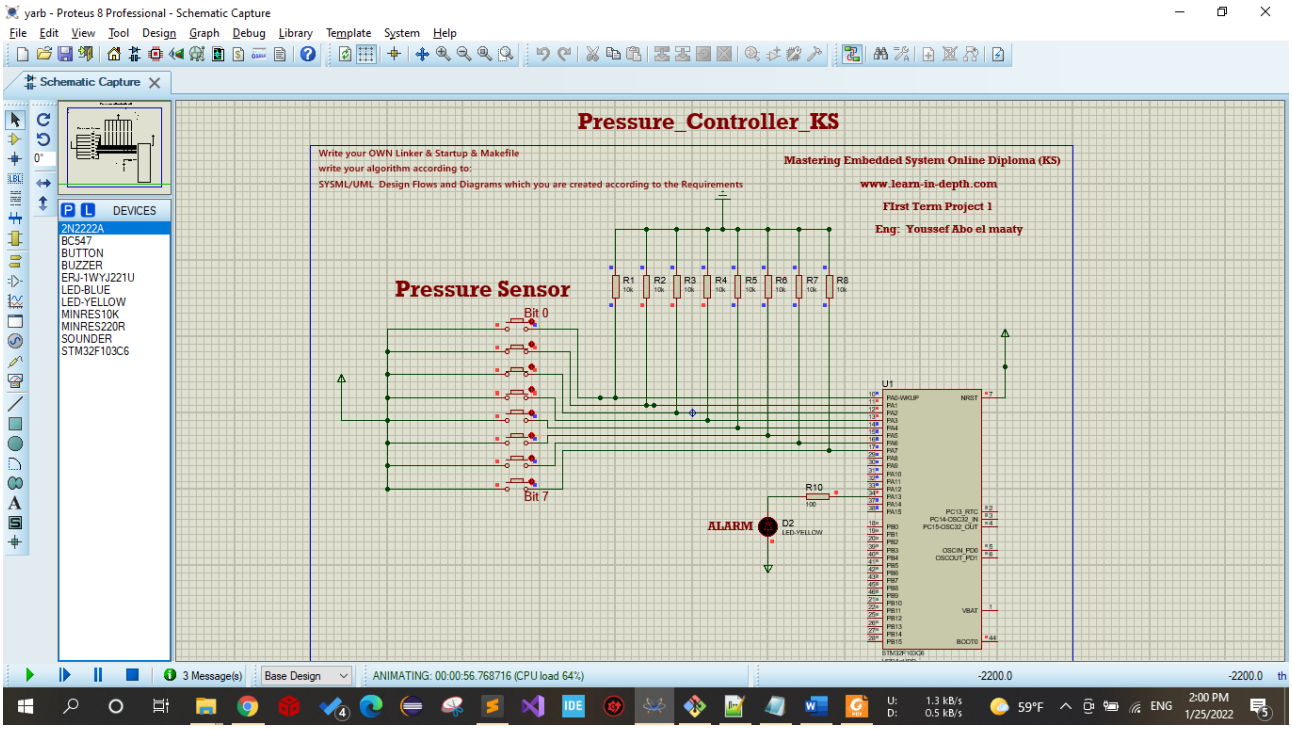


- **Simulation trace**



Simulation Result :

- Pressure =16 < 20 , alarm is off



- Pressure = 32 > 20 , Alarm is enabled for 60 sec