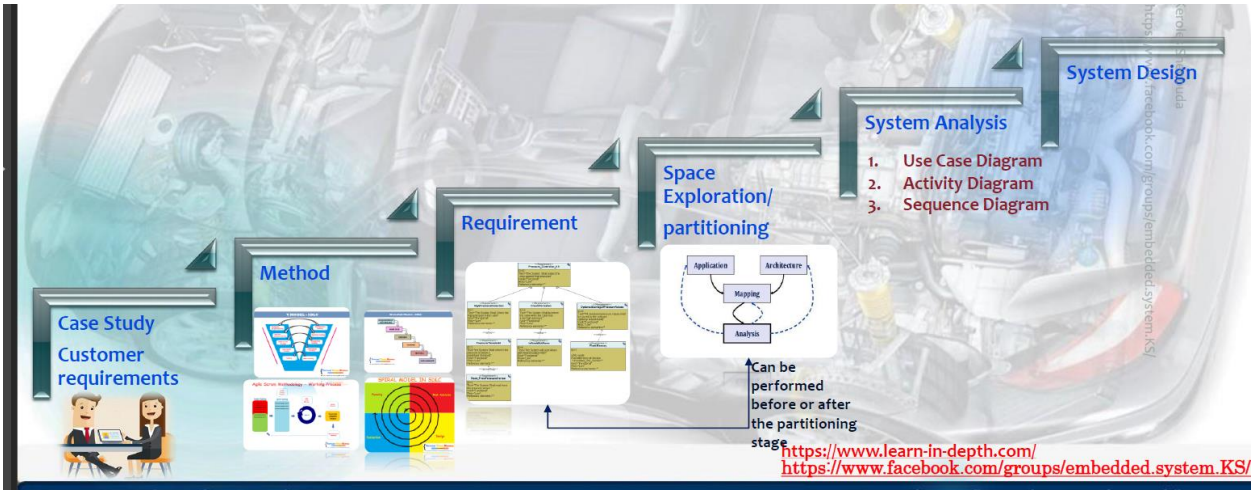
High pressure detection



Case study customer requirements :

A system senses the pressure in a plane if it above a threshold equal 20 an alarm lights which is a led lights on for 60 seconds then lights off

Method :

V-model

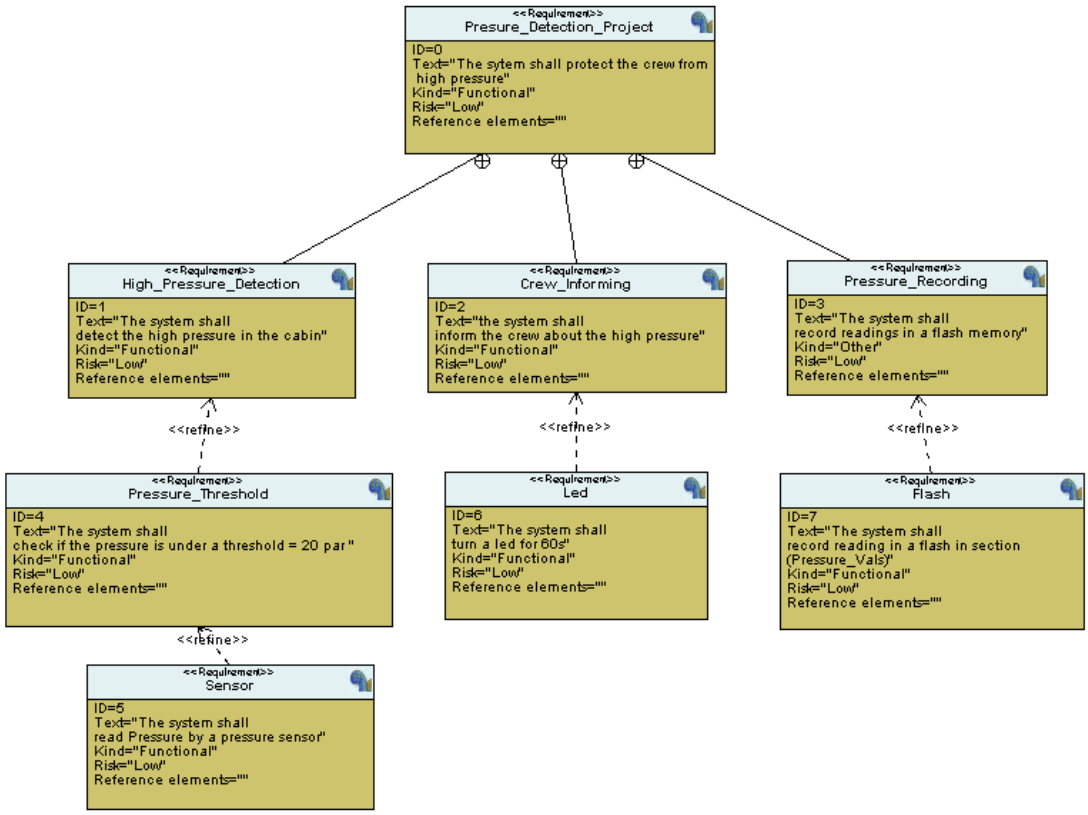
Assumptions :

- Non of the components may break down

Requirements :

Pressure sensor – led – flash memory (optional)

Requirements diagram



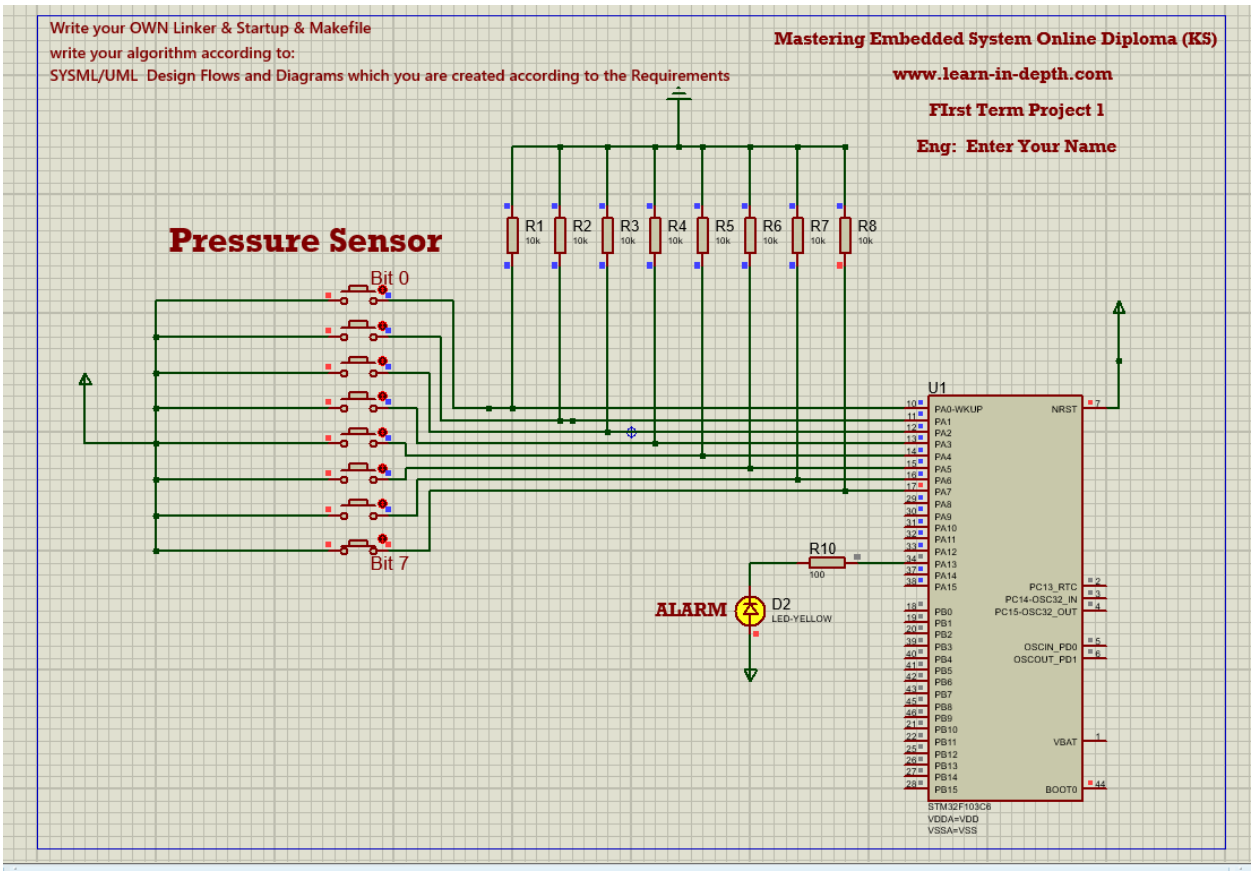
Space exploration / partitioning :

- Using one stm32f103c6 microcontroller
- One Biby led
- One Pressure sensor
- Two Timer
- One Flash memory (optional)

Pressure sensor reads pressure

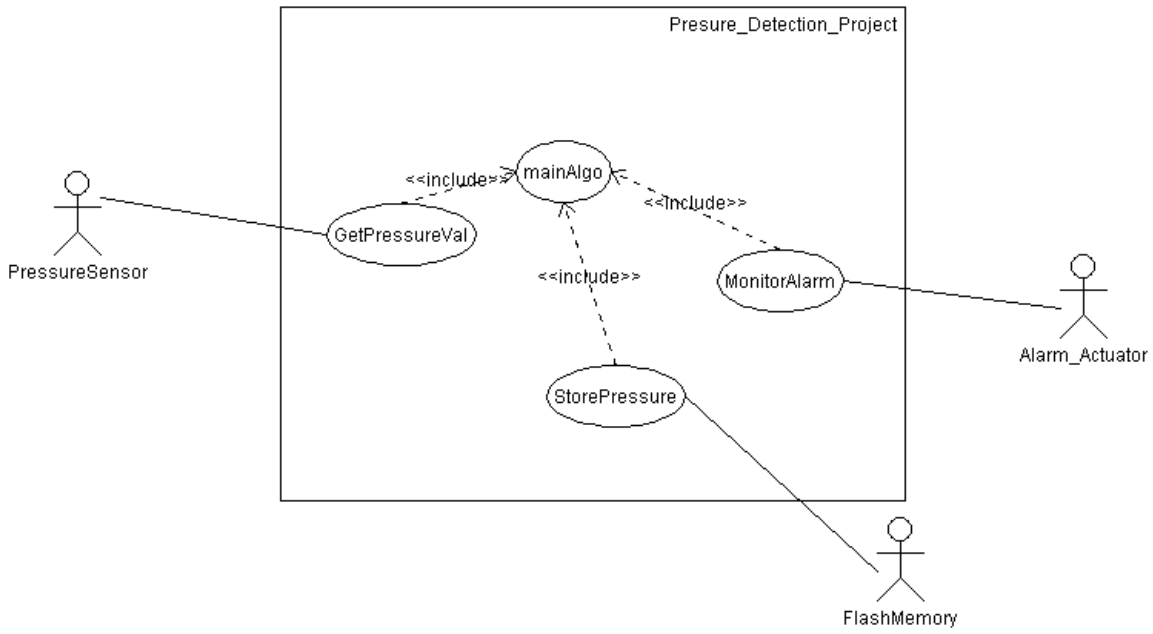
Sends it to microcontroller which stores it in a flash

If the reading above 20 bar the microcontroller sends a signal to the alarm to be on for 60 seconds

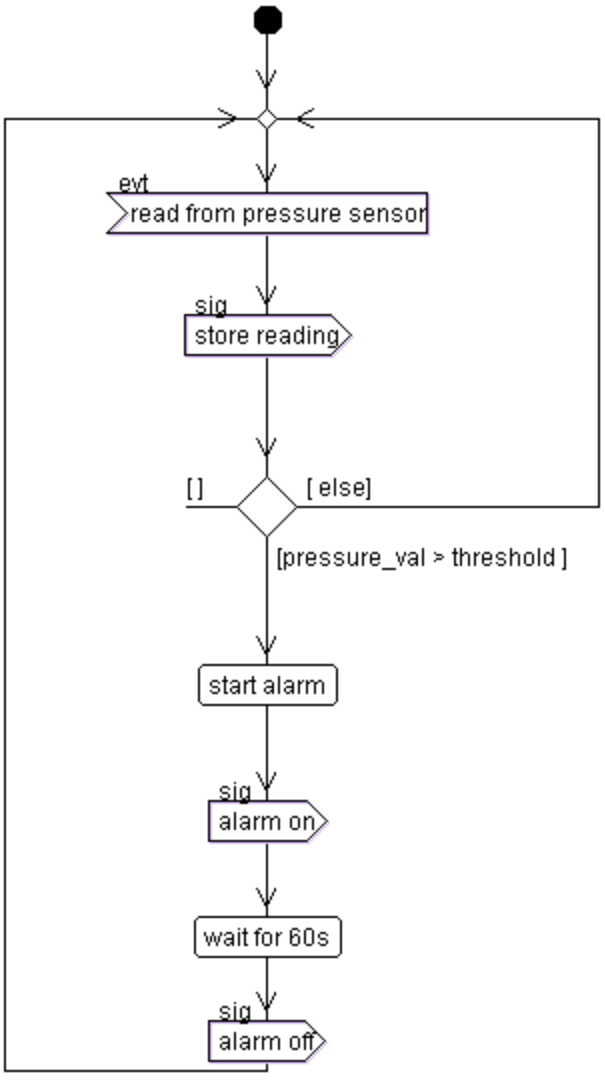


System analysis :

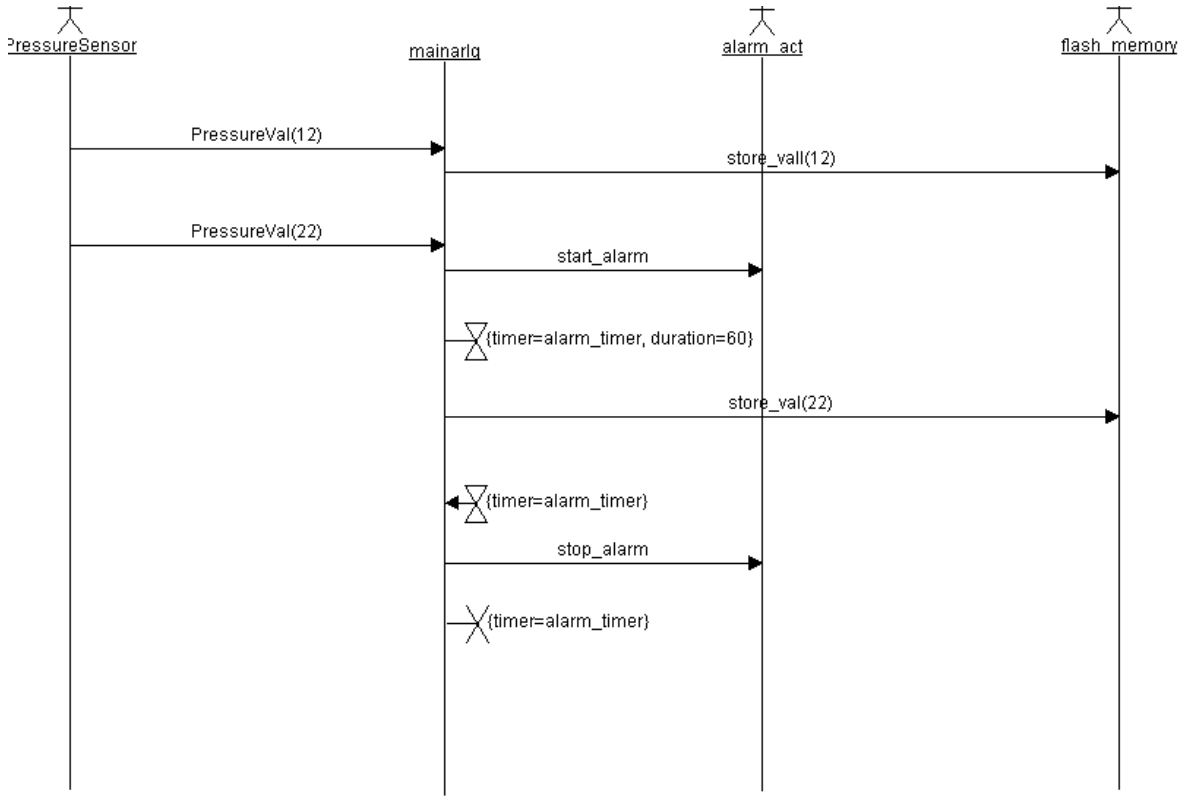
Use case diagram



Activity diagram

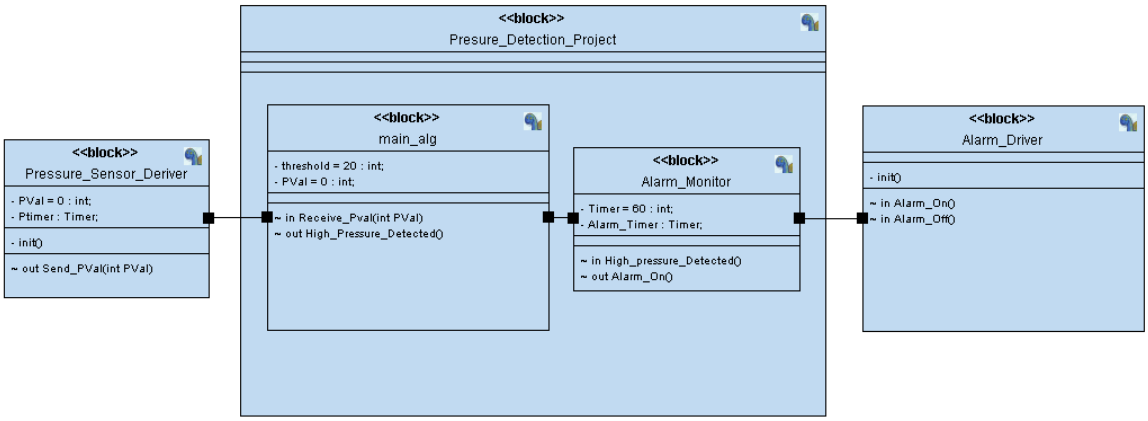


Sequence diagram

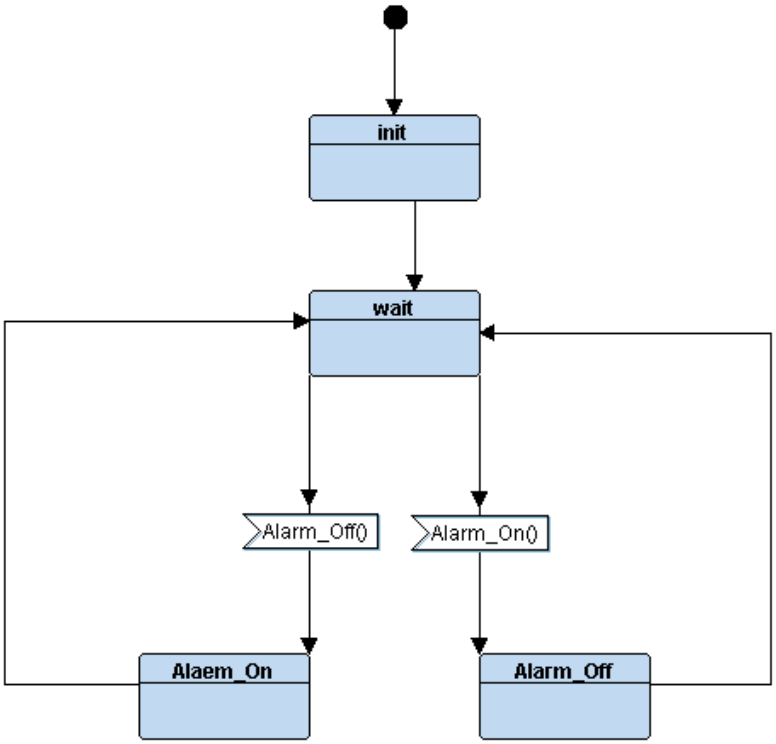


Design :

Block diagram

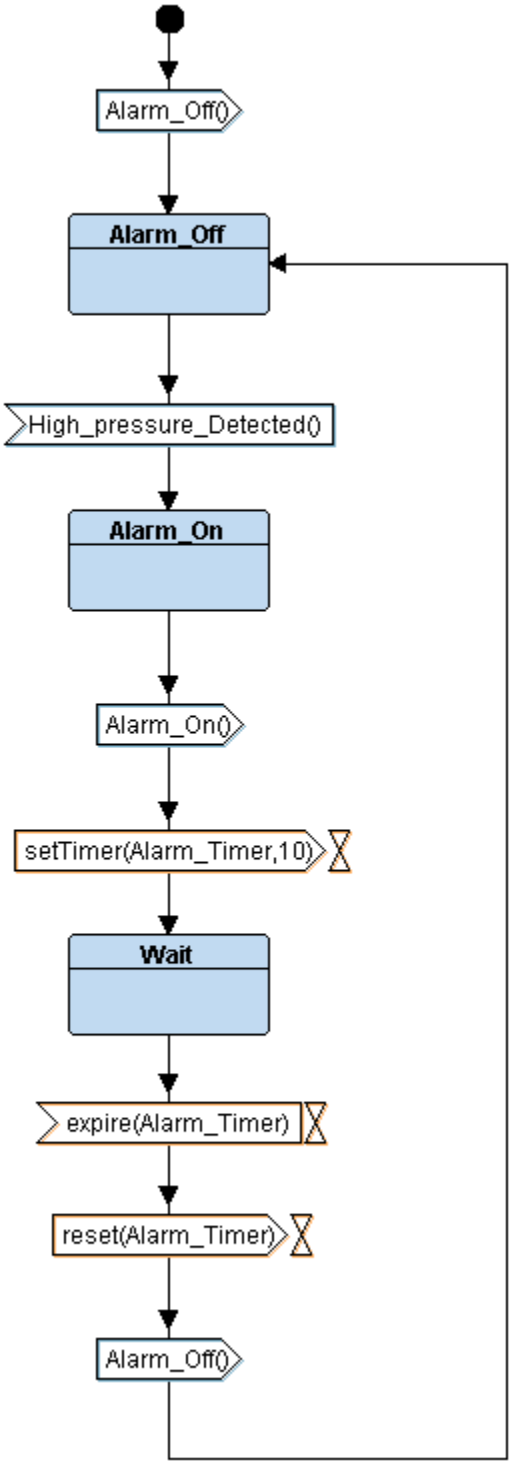


Alarm driver state machine

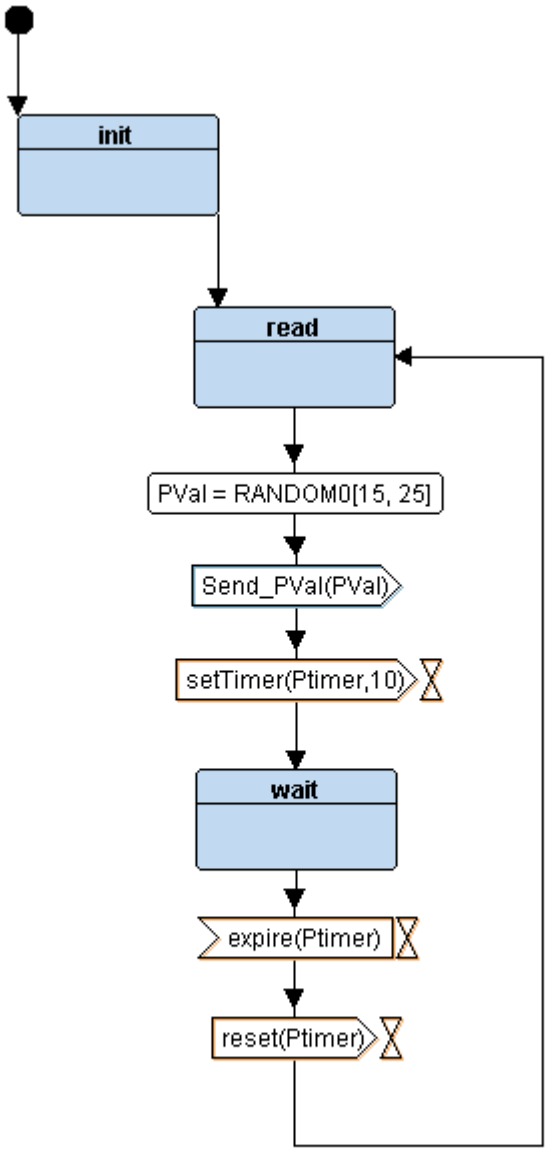


Alarm monitor

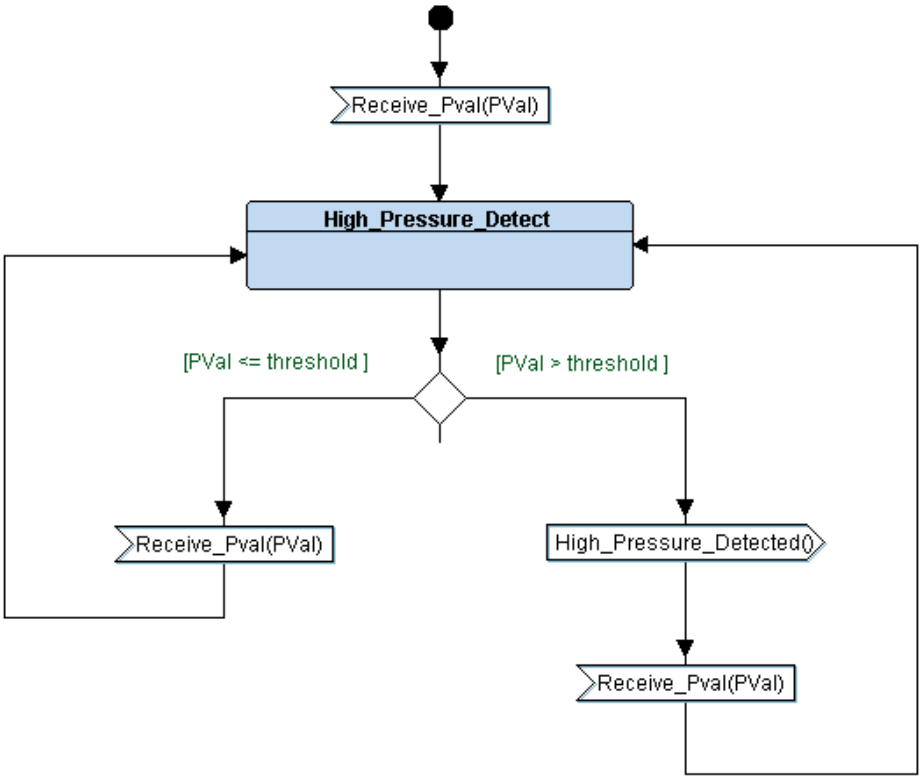
State machine



sensor state machine



Main alg


Receive_Pval(PVal)
High_Pressure_Detect
[PVal <= threshold]
[PVal > threshold]
Receive_Pval(PVal)
High_Pressure_Detected()
Receive_Pval(PVal)