FIRST TERM PROJECT

Pressure Detection| Learn In Depth| Mohamed Elgohary

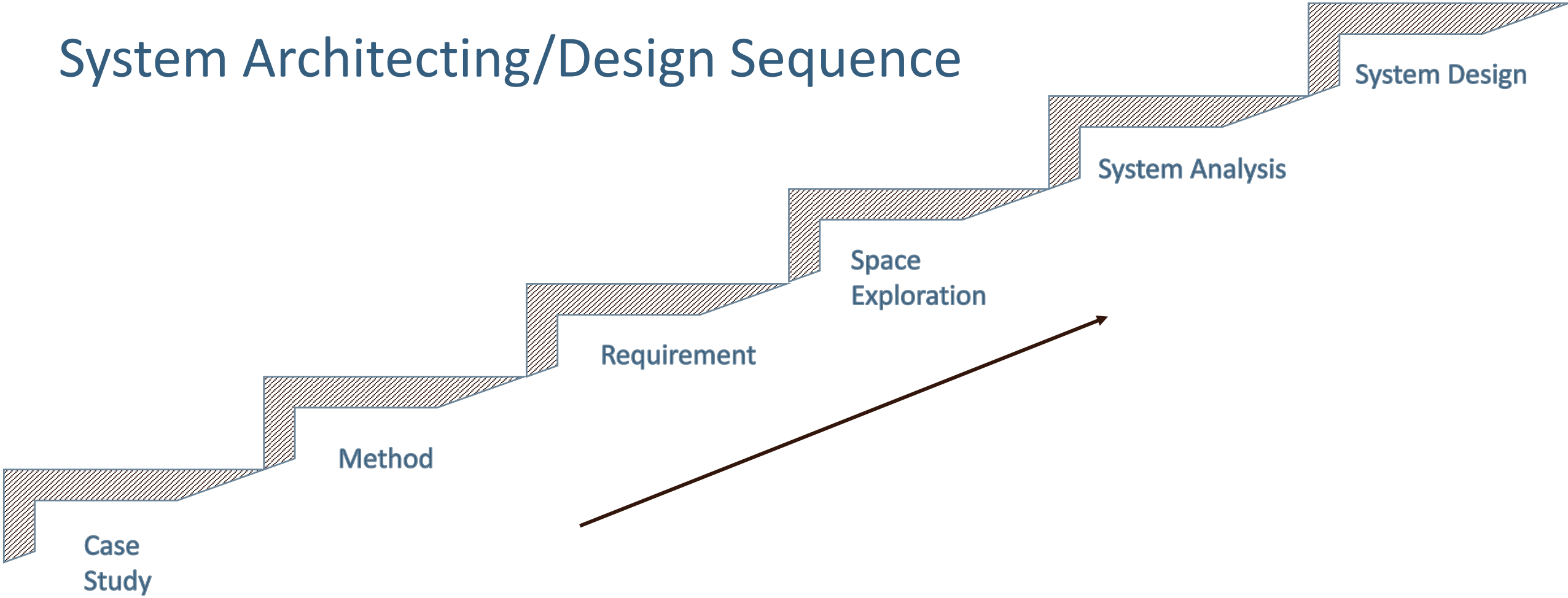
First term project

- Final project 1
- Eng: Mohamed Ayman Abd ElAziz Elgohary
- Project name: Pressure Sensor

Description

- A pressure controller informs the crew of a cabin with an alarm when the pressure exceeds 20 bars in the cabin

System Architecting/Design Sequence

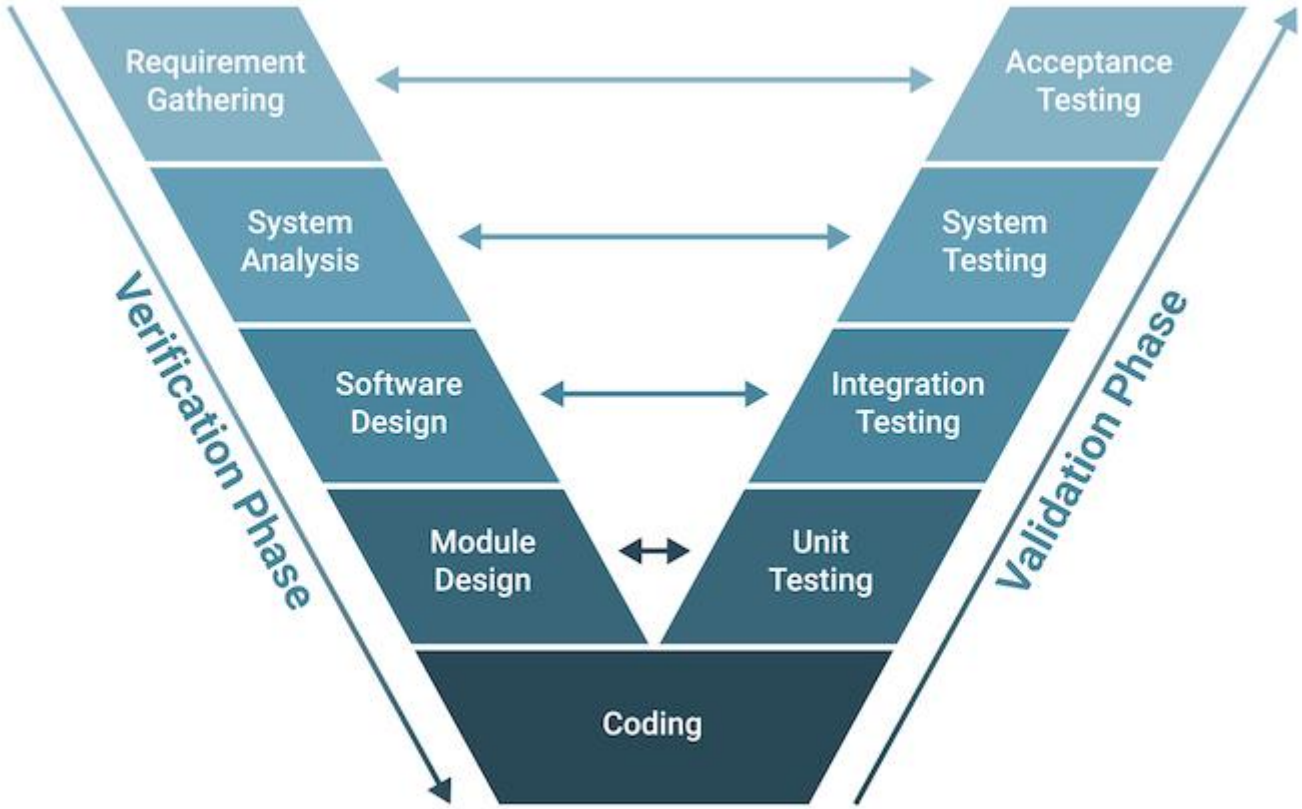


Case Study: a Pressure Controlling System

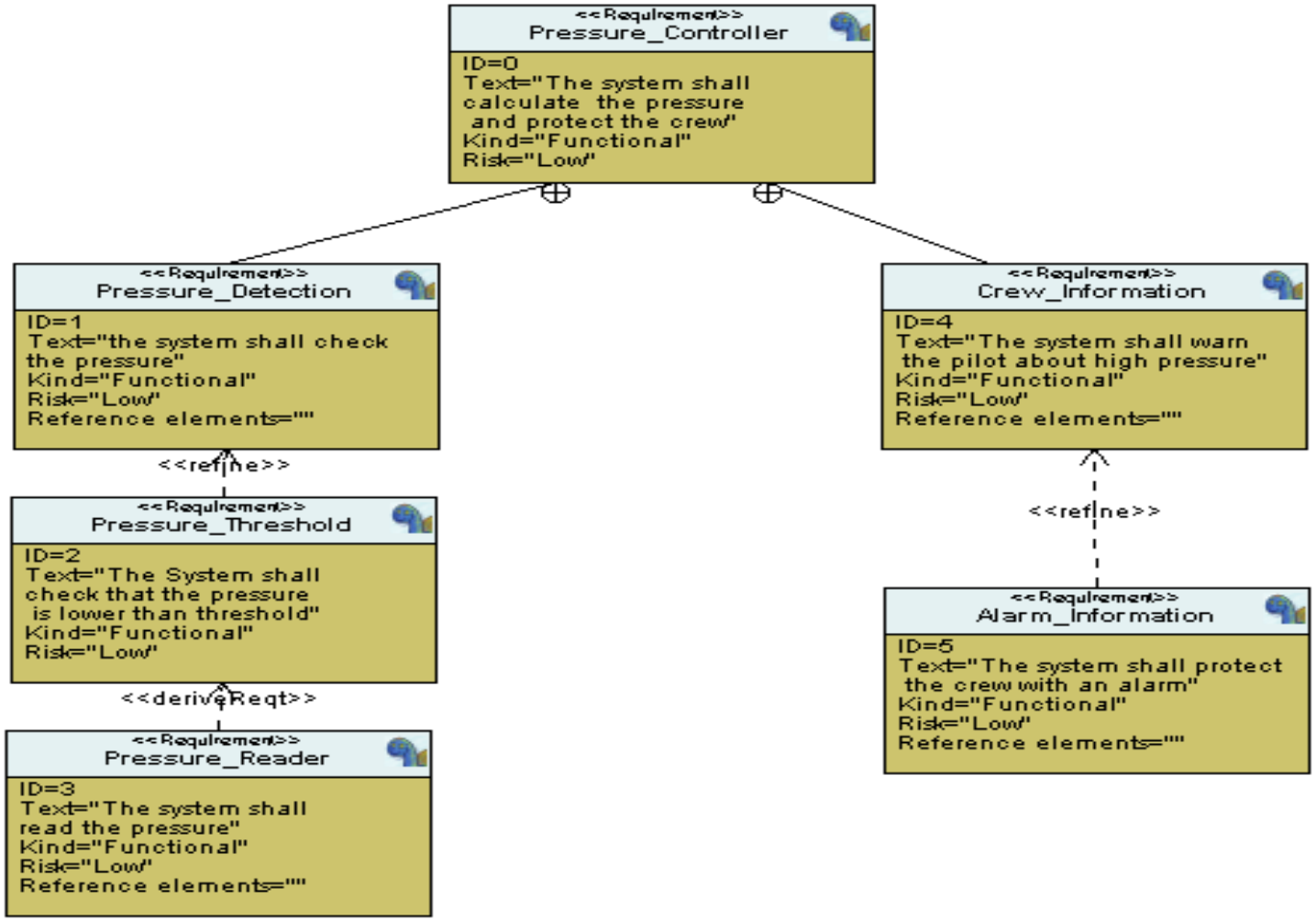
- A pressure controller informs the crew of a cabin with an alarm when the pressure exceeds 20 bars in the cabin
- The alarm duration equals 60 seconds.

Method

- V-Model

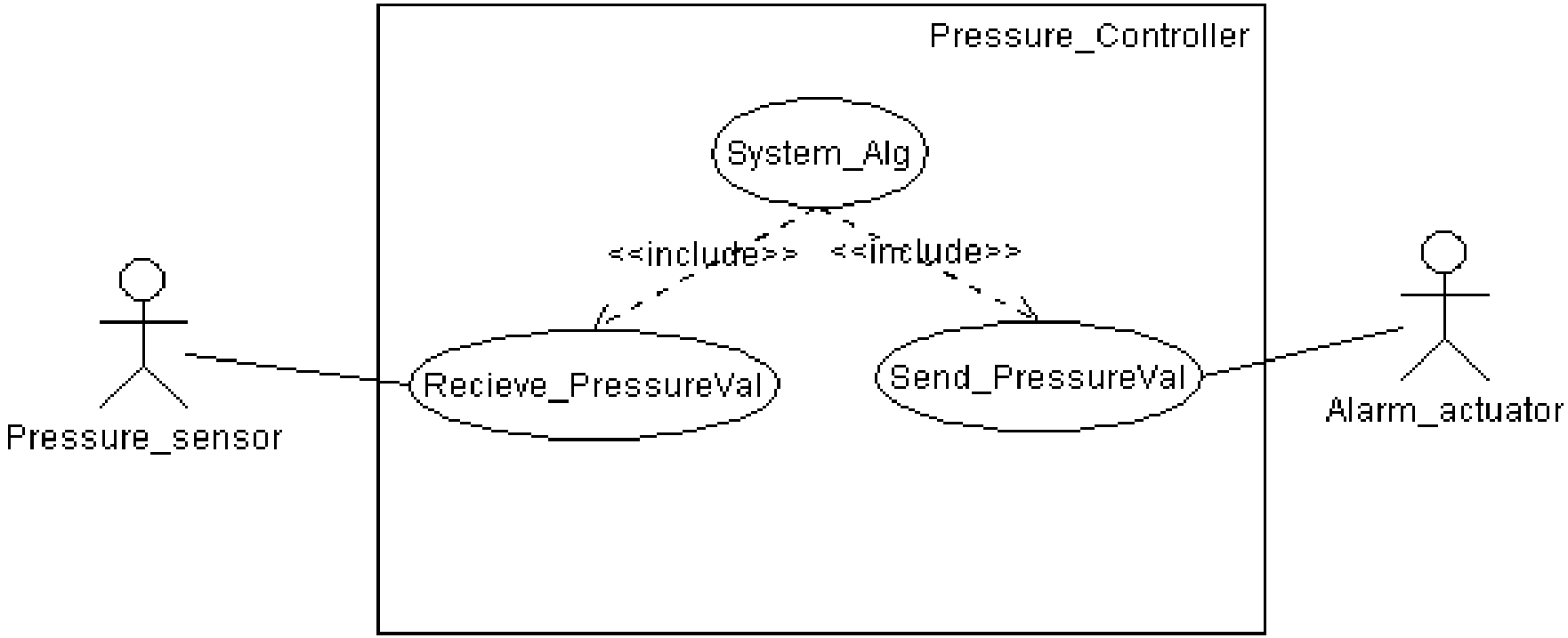


System Requirements



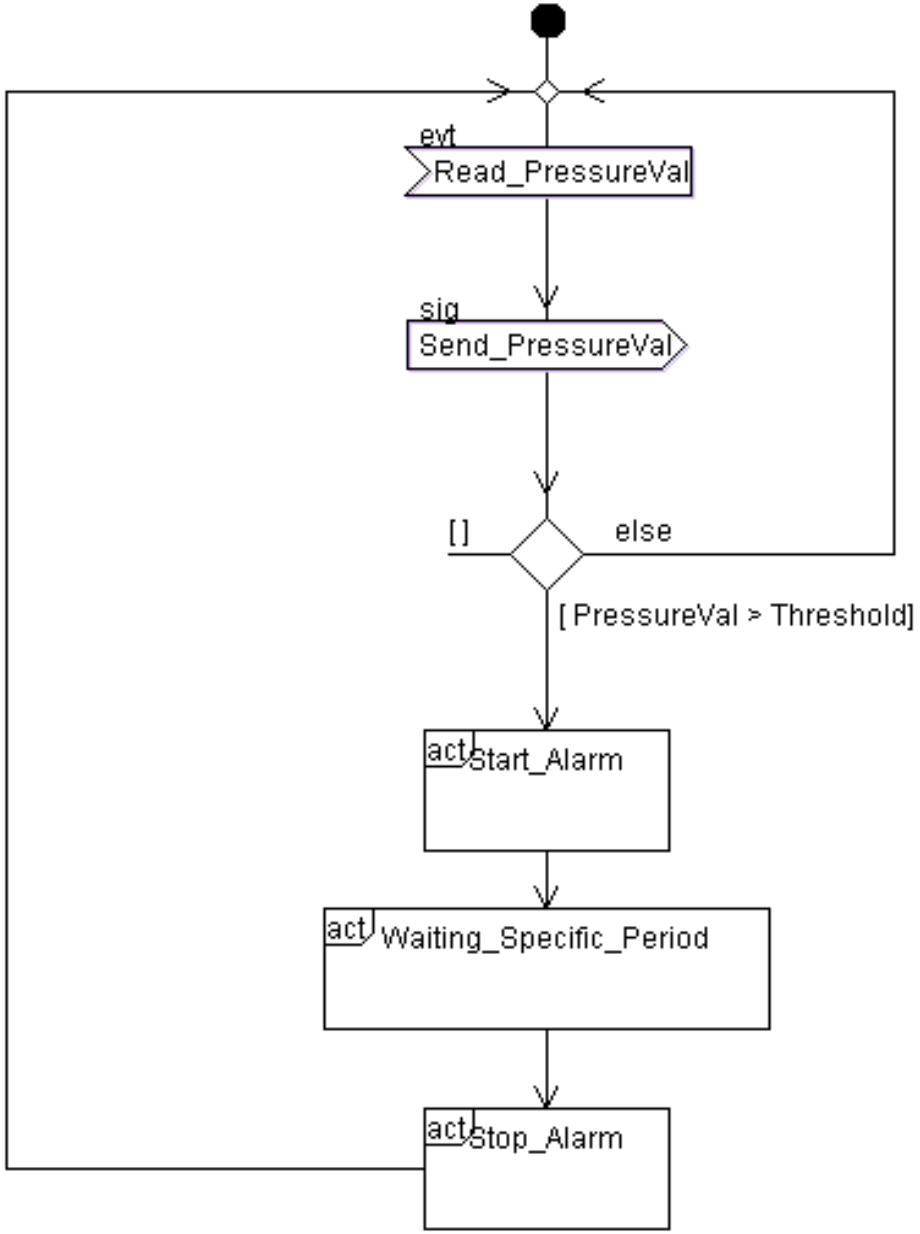
System Analysis

1- Use Case Diagram



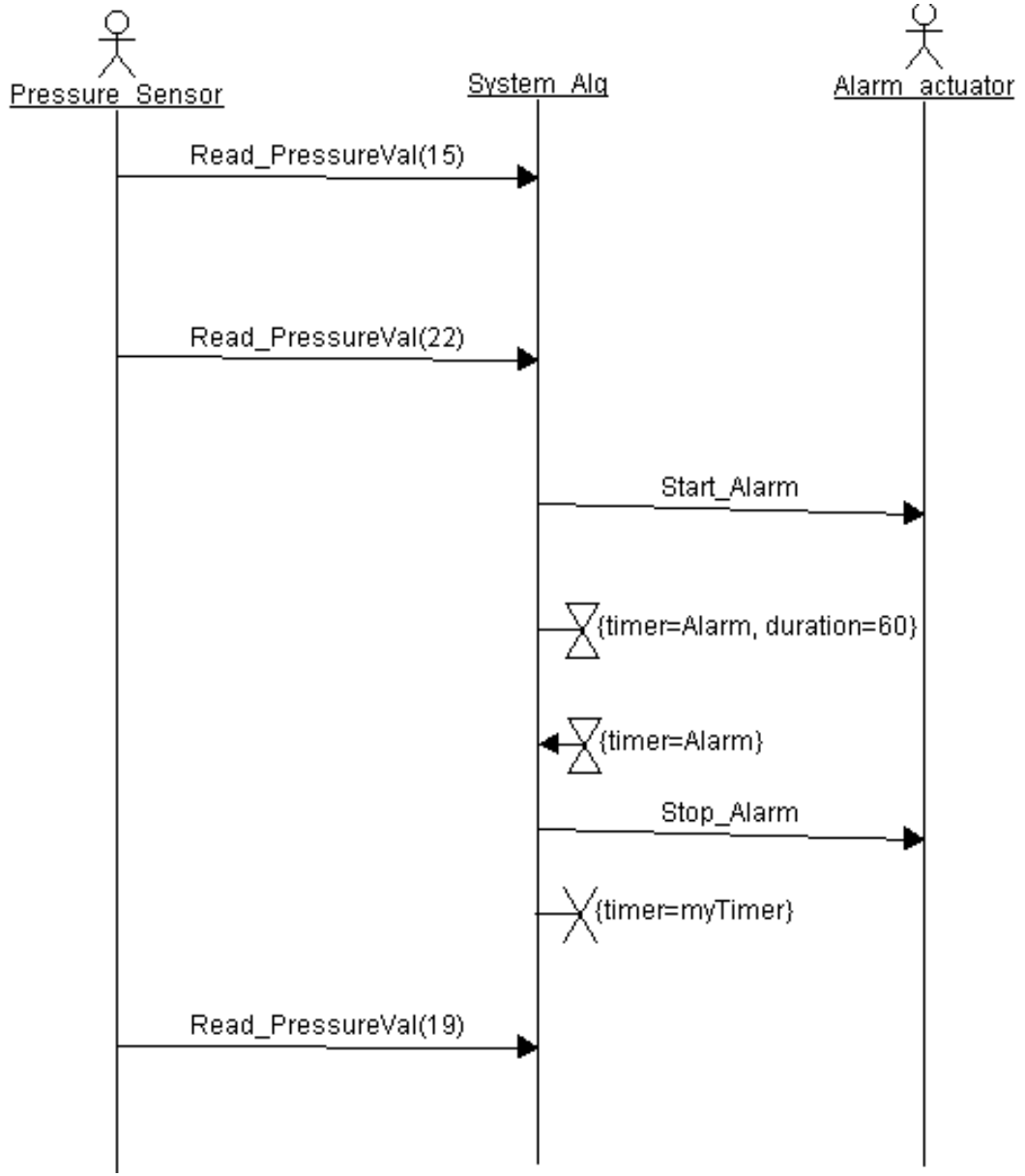
System Analysis

2- Activity Diagram



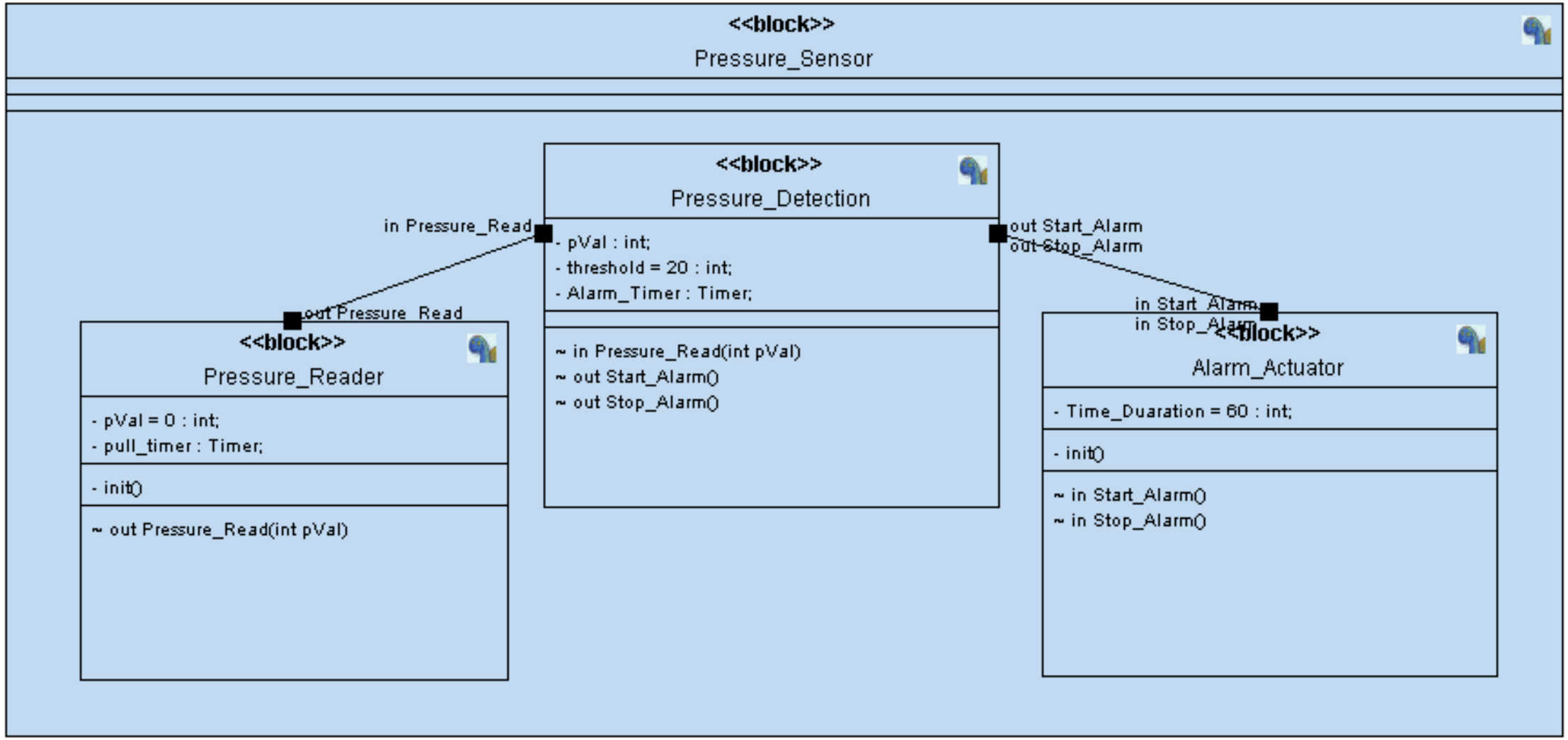
System Analysis

3- Sequence Diagram



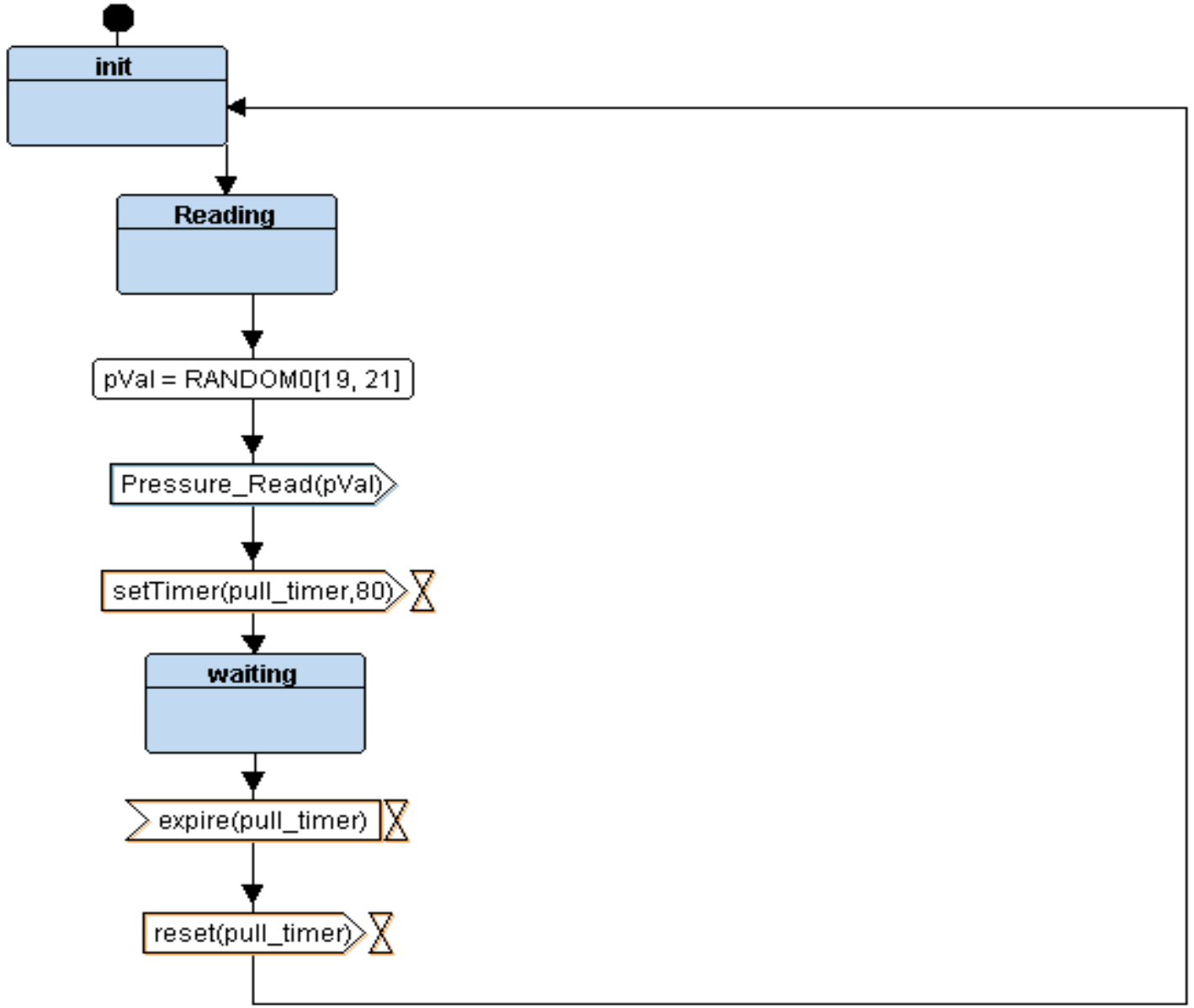
System Design

- Blocks



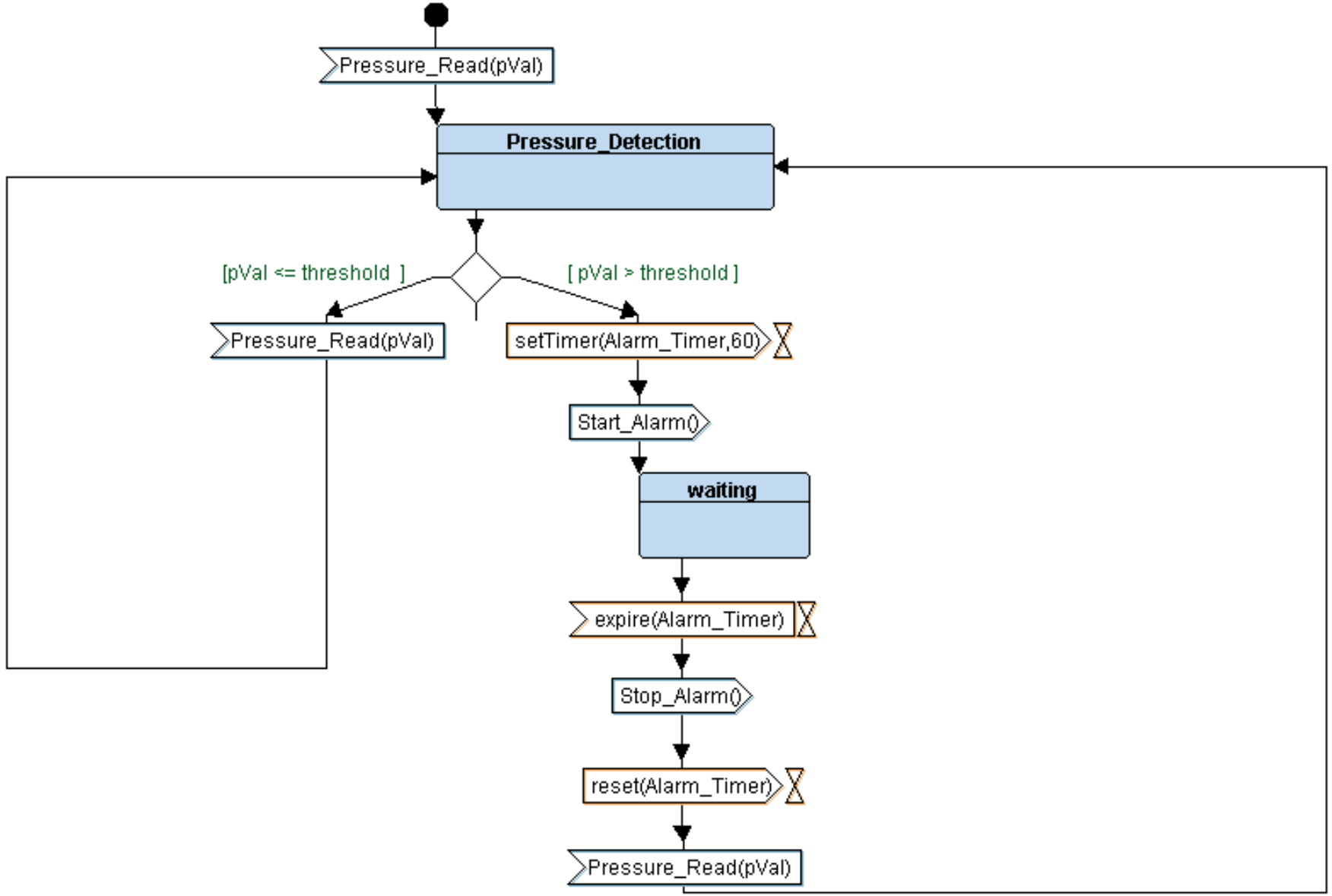
System Design

- Pressure Reader

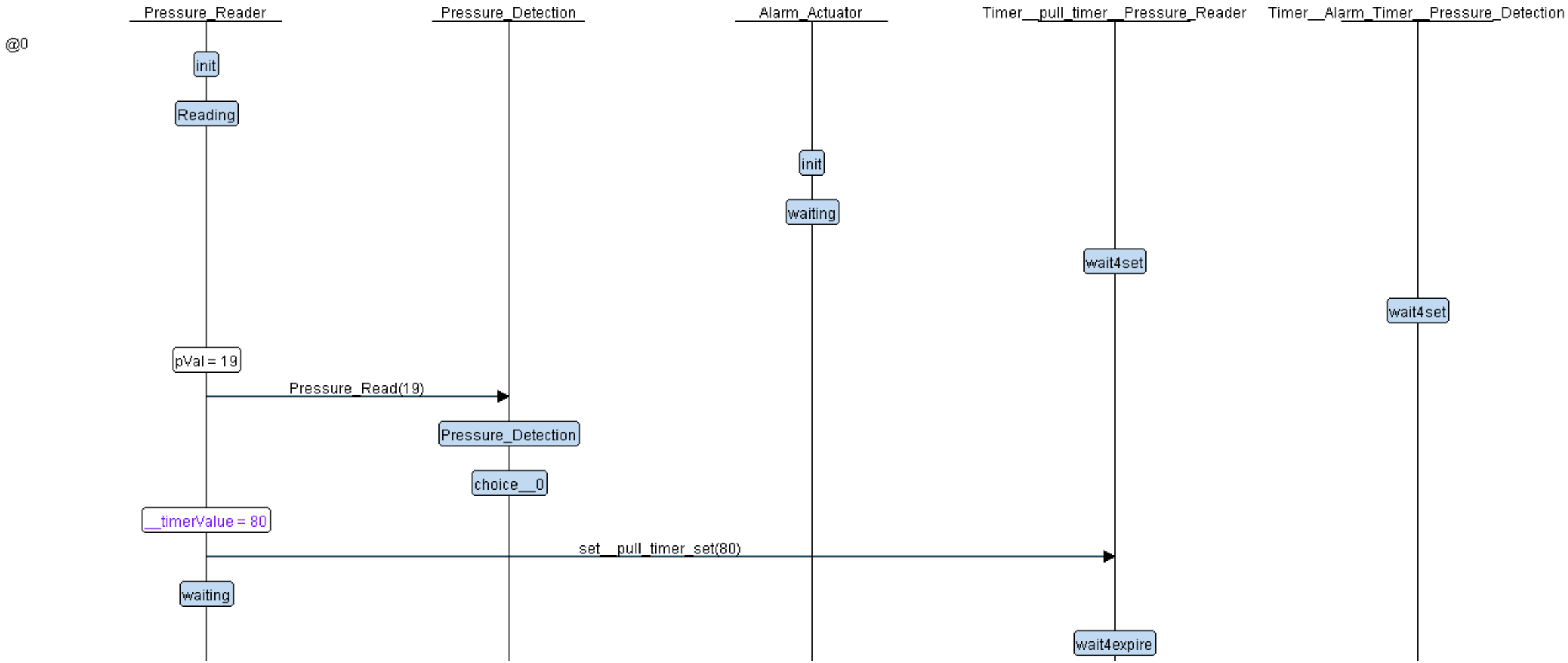


System Design

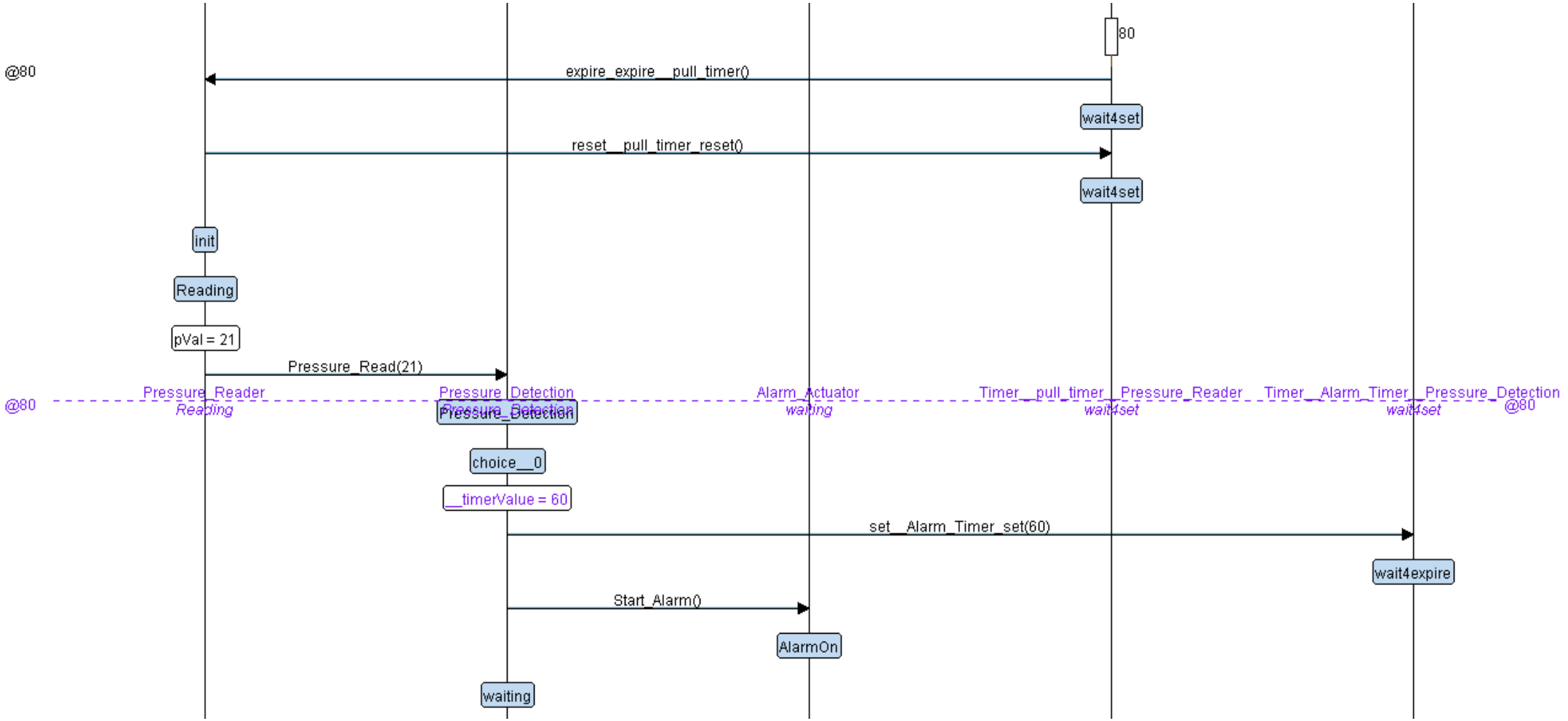
- Pressure Detection



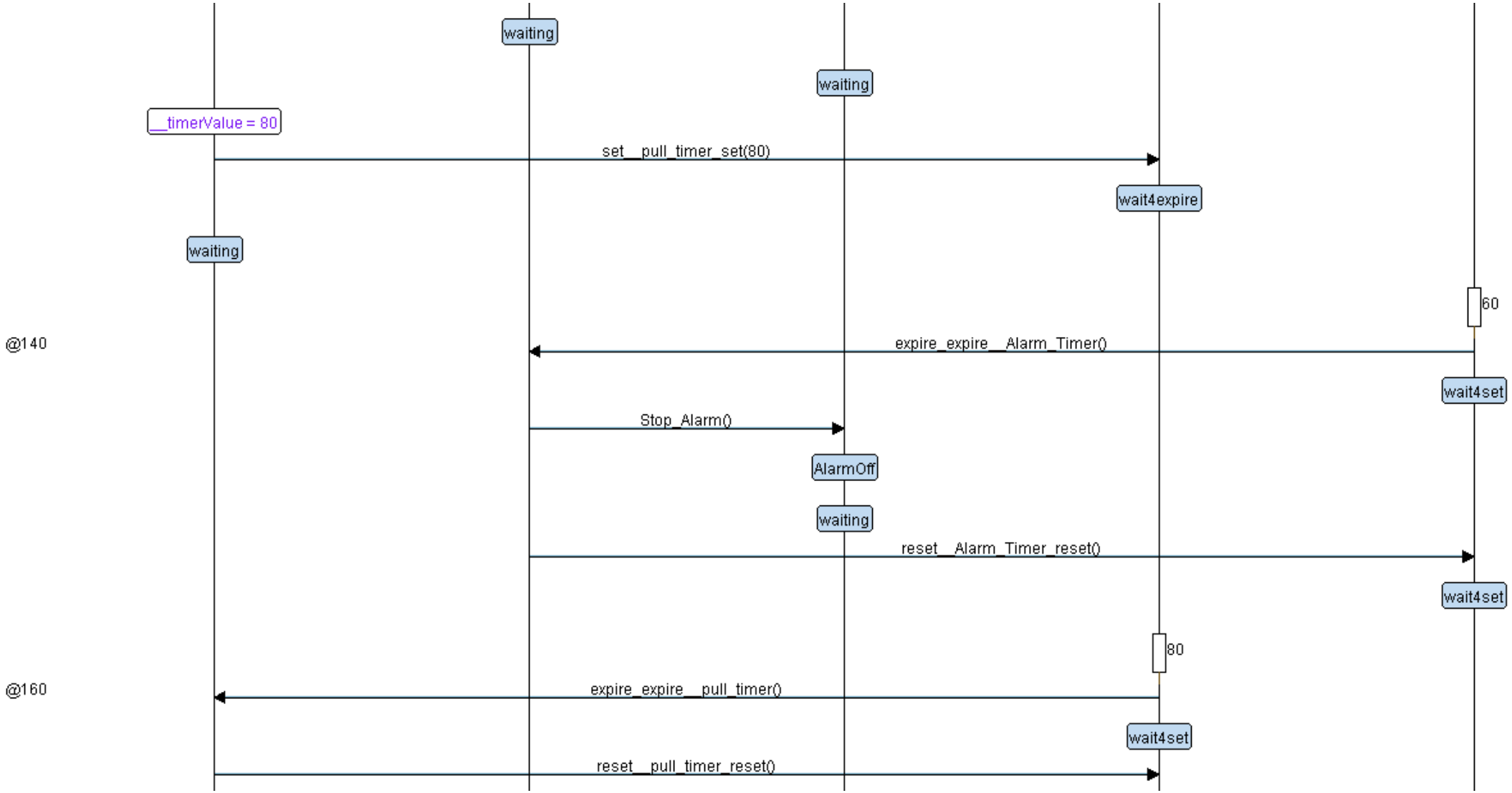
Logic Design



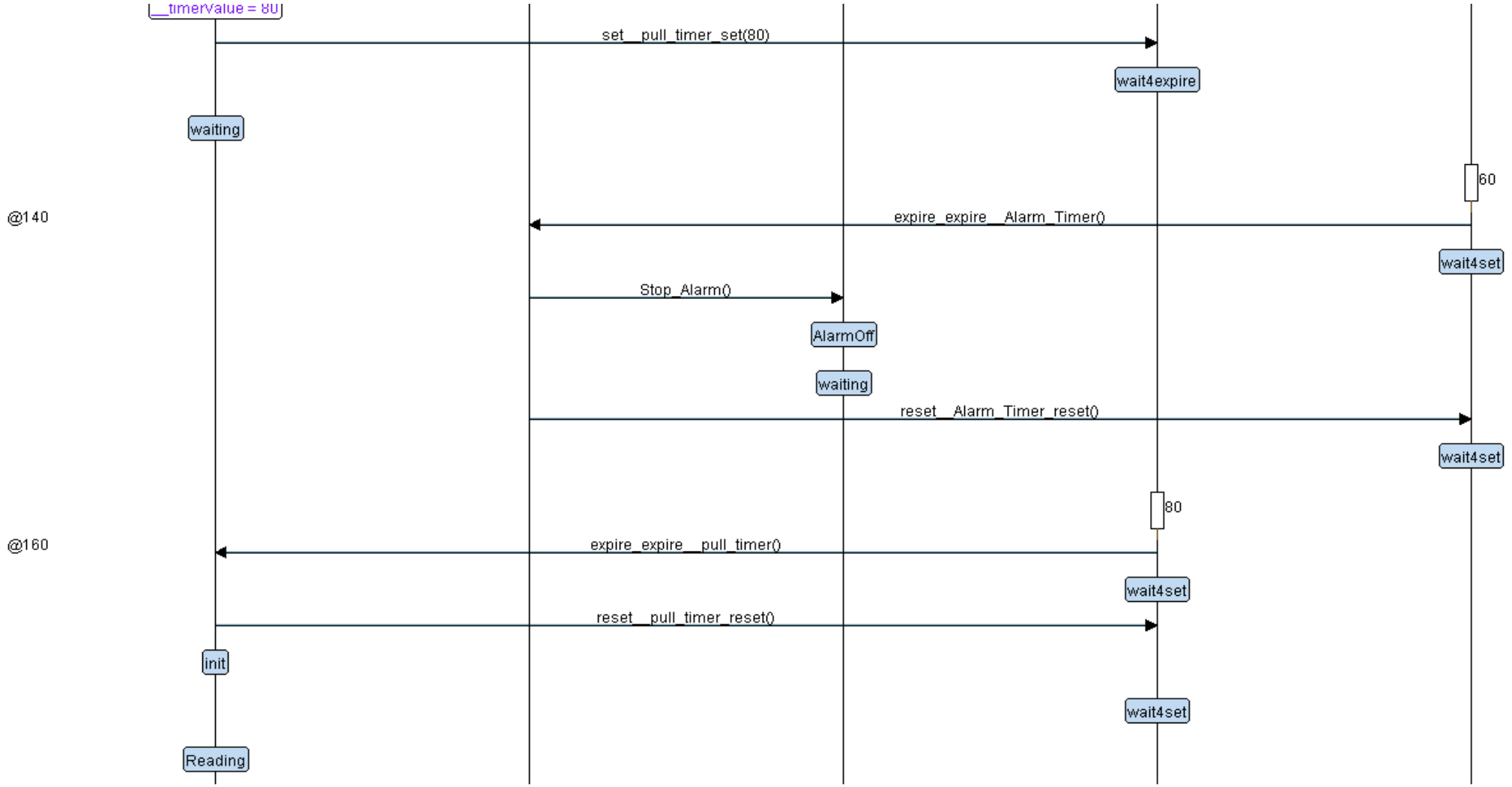
Logic Design



Logic Design



Logic Design



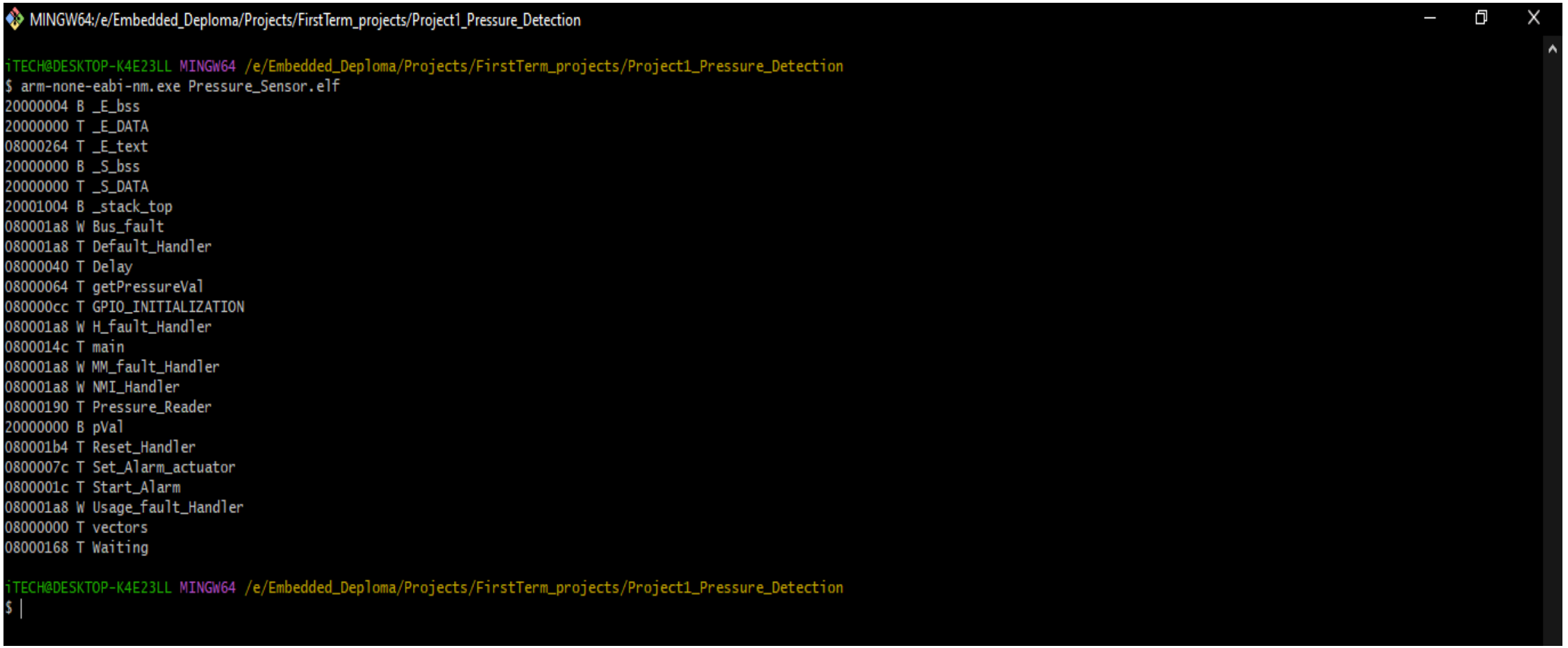
Program implementation

- .c&.h Files.
  - After system anlysis and system design it is time to write the code
- .o Files.
  - And then execute the (.o) files
- .map&.elf Files.
  - And execute (.map), (.elf) and (. hex) files
- Section & Symbol tables.

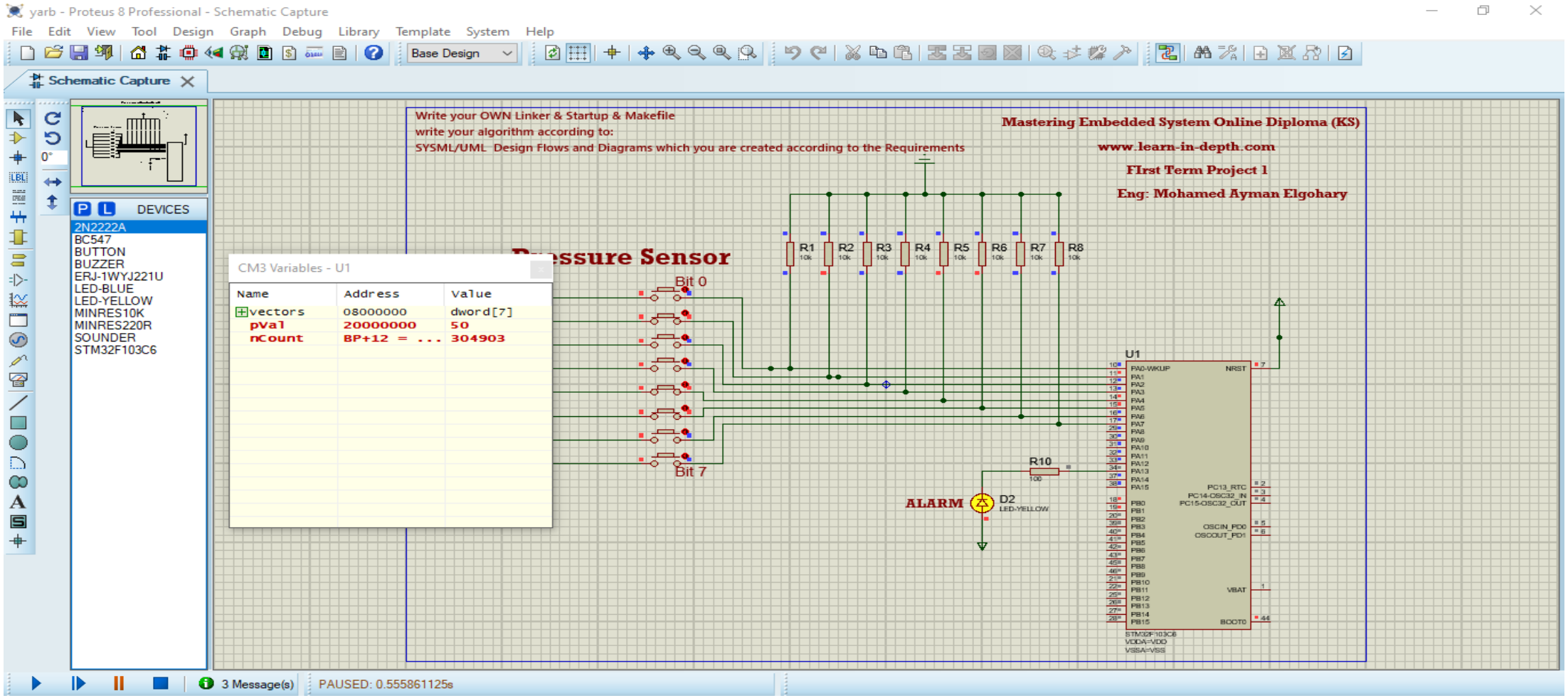
Section table

```
MINGW64:/e/Embedded_Deploma/Projects/FirstTerm_projects/Project1_Pressure_Detection

iTECH@DESKTOP-K4E23LL MINGW64 /e/Embedded_Deploma/Projects/FirstTerm_projects/Pr
oject1_Pressure_Detection
$ arm-none-eabi-objdump.exe -h Pressure_Sensor.elf

Pressure_Sensor.elf:     file format elf32-littlearm

Sections:
Idx Name          Size      VMA       LMA       File off  Algn
  0 .text         00000264  08000000  08000000  00008000  2**2
                  CONTENTS, ALLOC, LOAD, READONLY, CODE
  1 .bss          00001004  20000000  08000264  00010000  2**2
                  ALLOC
  2 .debug_info   000004e2  00000000  00000000  00008264  2**0
                  CONTENTS, READONLY, DEBUGGING
  3 .debug_abbrev 000002a0  00000000  00000000  00008746  2**0
                  CONTENTS, READONLY, DEBUGGING
  4 .debug_loc    000001dc  00000000  00000000  000089e6  2**0
                  CONTENTS, READONLY, DEBUGGING
  5 .debug_aranges 000000c0  00000000  00000000  00008bc2  2**0
                  CONTENTS, READONLY, DEBUGGING
  6 .debug_line   0000025a  00000000  00000000  00008c82  2**0
                  CONTENTS, READONLY, DEBUGGING
  7 .debug_str    000001d8  00000000  00000000  00008edc  2**0
                  CONTENTS, READONLY, DEBUGGING
  8 .comment      00000011  00000000  00000000  000090b4  2**0
                  CONTENTS, READONLY
  9 .ARM.attributes 00000033  00000000  00000000  000090c5  2**0
                  CONTENTS, READONLY
 10 .debug_frame  00000174  00000000  00000000  000090f8  2**2
                  CONTENTS, READONLY, DEBUGGING

iTECH@DESKTOP-K4E23LL MINGW64 /e/Embedded_Deploma/Projects/FirstTerm_projects/Pr
oject1_Pressure_Detection
$
```

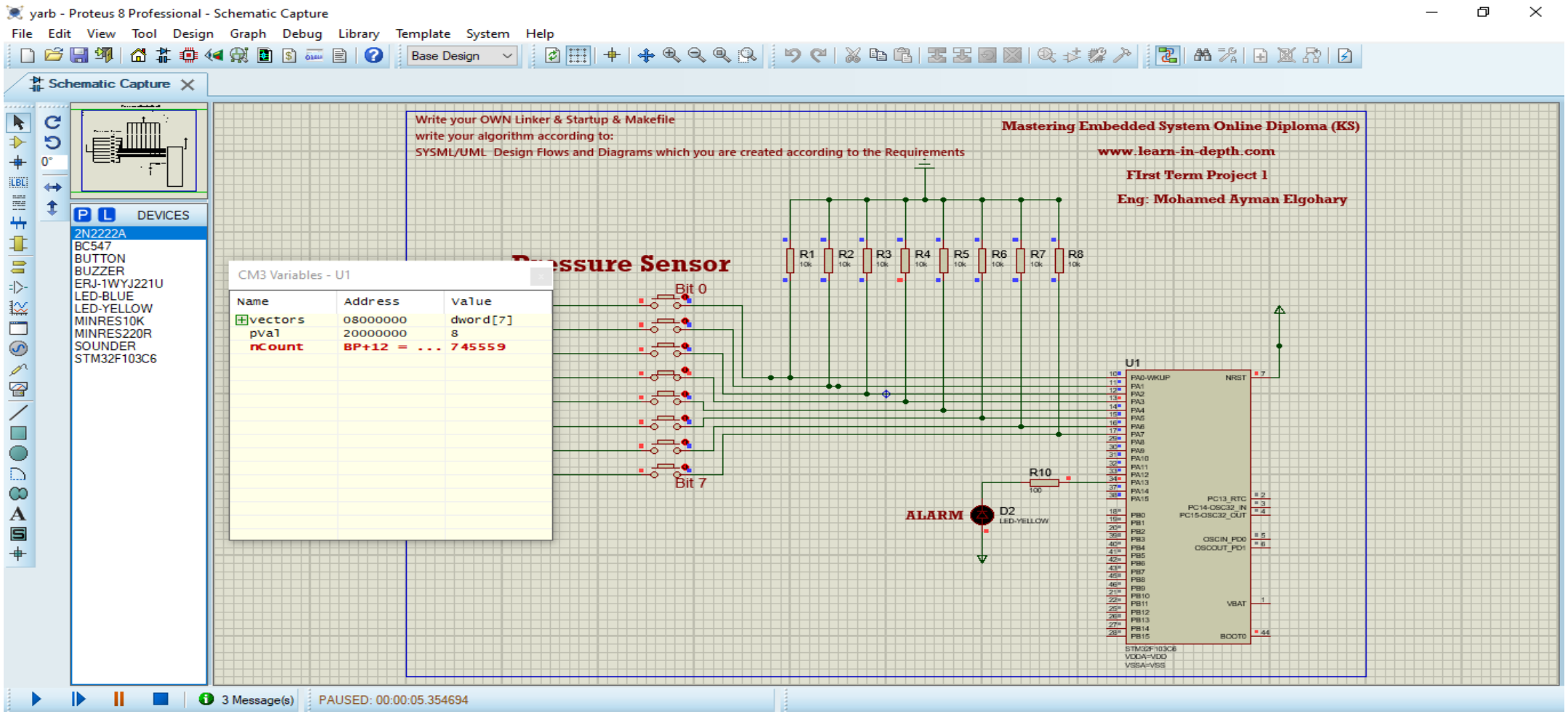
Symbol table



Proteus Run


yarb - Proteus 8 Professional - Schematic Capture
File Edit View Tool Design Graph Debug Library Template System Help
Base Design
Schematic Capture
DEVICES
2N2222A
BC547
BUTTON
BUZZER
ERJ-1WYJ221U
LED-BLUE
LED-YELLOW
MINRES10K
MINRES220R
SOUNDER
STM32F103C6
Write your OWN Linker & Startup & Makefile
write your algorithm according to:
SYSML/UML Design Flows and Diagrams which you are created according to the Requirements
Mastering Embedded System Online Diploma (KS)
www.learn-in-depth.com
FIrst Term Project 1
Eng: Mohamed Ayman Elgohary
Pressure Sensor
CM3 Variables - U1
Name Address Value
vectors 08000000 dword[7]
pVal 20000000 50
nCount BP+12 = ... 304903
Bit 0
Bit 7
R1 R2 R3 R4 R5 R6 R7 R8
R10
ALARM
D2
LED-YELLOW
U1
3 Message(s)
PAUSED: 0.555861125s

Proteus Run


yarb - Proteus 8 Professional - Schematic Capture
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www.learn-in-depth.com
FIrst Term Project 1
Eng: Mohamed Ayman Elgohary
CM3 Variables - U1
Name Address Value
vectors 08000000 dword[7]
pVal 20000000 8
nCount BP+12 = ... 745559
Bit 0
Bit 7
R1 R2 R3 R4 R5 R6 R7 R8
R10
ALARM
D2
LED-YELLOW
U1
3 Message(s)
PAUSED: 00:00:05.354694