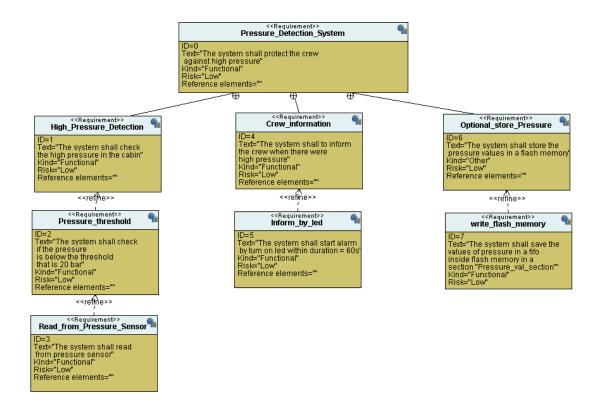
# **Pressure Detection Project**

First Project – First Term

By: Eng. Ahmed Samy

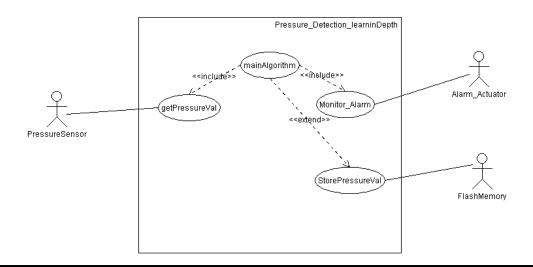
### **❖** System Architecture & Design

### > Requirements

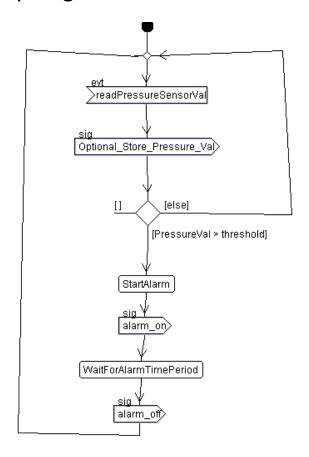


## **❖** System Analysis

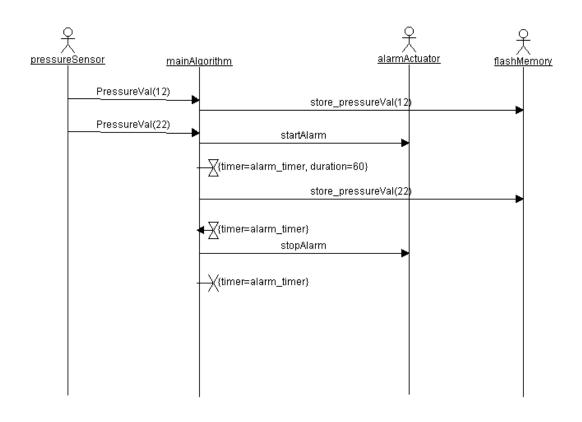
## ➤ Use Case Diagram



## > Activity Diagram

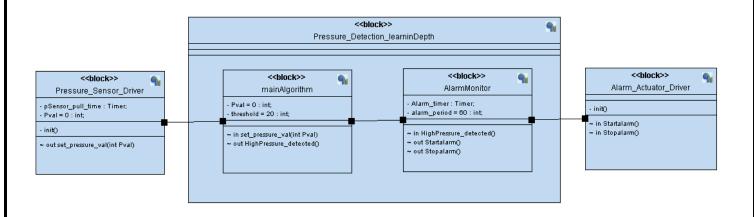


## ➤ Sequence Diagram

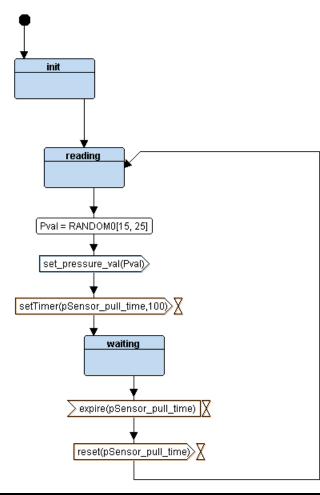


## **❖** System Design

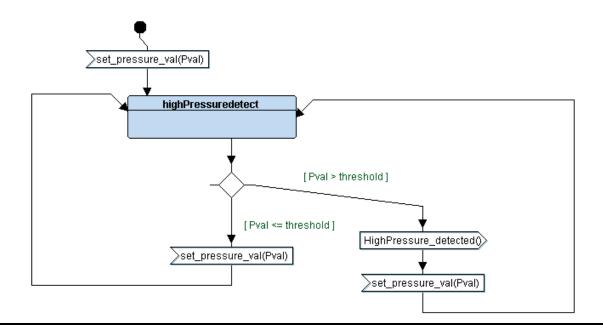
## ➤ Block Diagram



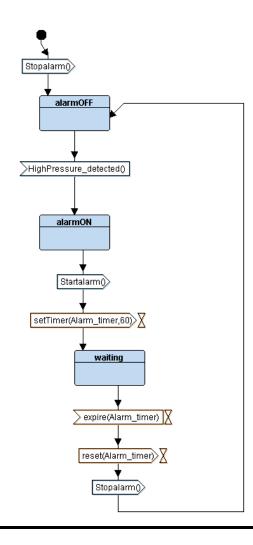
#### > pressure\_sensor



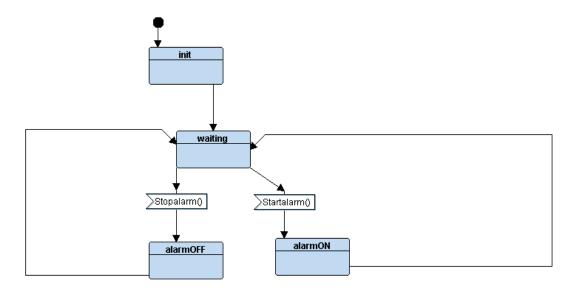
## ➤ main\_algorithm



## ➤ alarm\_monitor



## ➤ alarm\_actuator

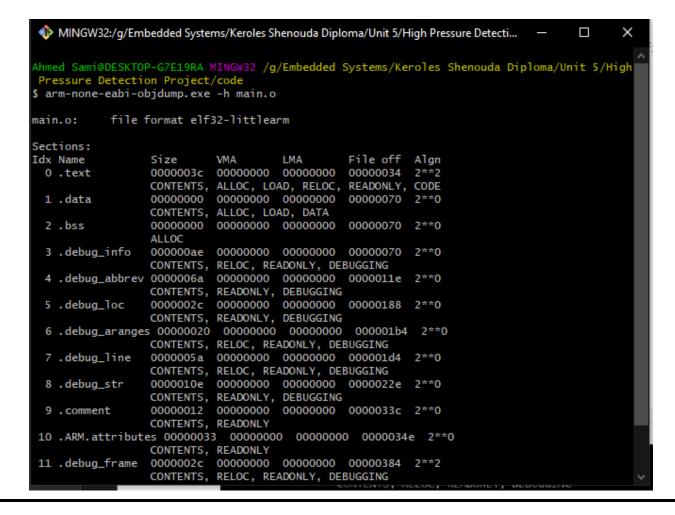


#### Header Sections of files

```
🦚 MINGW32:/g/Embedded Systems/Keroles Shenouda Diploma/Unit 5/High Pressure Detecti...
                                                                                         ×
Ahmed Sami@DESKTOP-G7E19RA MINGW32 /g/Embedded Systems/Keroles Shenouda Diploma/
Unit 5/High Pressure Detection Project/code
$ arm-none-eabi-objdump.exe -h pressure_detected_project.elf
                                  file format elf32-littlearm
pressure_detected_project.elf:
Sections:
Idx Name
                 Size
                           VMA
                                     LMA
                                               File off
                                                         Alan.
                 000001f4
 0 .text
                           08000000
                                     08000000
                                               00008000
                 CONTENTS, ALLOC, LOAD, READONLY, CODE
                 0000000c 20000000 080001f4 00010000
 1 .bss
                 ALLOC
  2 .debug_info
                 00000348 00000000 00000000
                                               000081f4
                                                         2**0
                 CONTENTS, READONLY, DEBUGGING
  3 .debug_abbrev 000001e2 00000000 00000000 0000853c
                 CONTENTS, READONLY, DEBUGGING
                 000001a4 00000000 00000000 0000871e 2**0
  4 .debug_loc
                 CONTENTS, READONLY, DEBUGGING
                                                000088c2 2**0
  5 .debug_aranges 00000080 00000000 00000000
                 CONTENTS, READONLY, DEBUGGING
  6 .debug_line
                 00000189 00000000 00000000 00008942 2**0
                 CONTENTS, READONLY, DEBUGGING
  7 .debug_str
                 00000190 00000000 00000000 00008acb 2**0
                 CONTENTS, READONLY, DEBUGGING
  8 .comment
                 00000011 00000000 00000000 00008c5b 2**0
                 CONTENTS, READONLY
  9 .ARM.attributes 00000033 00000000 00000000 00008c6c 2**0
                 CONTENTS, READONLY
 10 .debug_frame
                 00000134
                           00000000
                                     00000000 00008ca0 2**2
                 CONTENTS, READONLY, DEBUGGING
```

```
🦚 MINGW32:/g/Embedded Systems/Keroles Shenouda Diploma/Unit 5/High Pressure Detecti...
 hmed Sami@DESKTOP-G7E19RA MINGW32 /g/Embedded Systems/Keroles Shenouda Diploma/Unit 5/High A
 Pressure Detection Project/code
 arm-none-eabi-objdump.exe -h main_algorithm.o
                     file format elf32-littlearm
nain_algorithm.o:
Sections:
Idx Name
                  Size
                            VMA
                                     LMA
                                               File off
                                                         Alan
                           00000000 00000000
 0 .text
                 00000068
                                               00000034
                                                          2**2
                  CONTENTS,
                           ALLOC, LOAD, RELOC,
                                               READONLY,
                                                          CODE
                 00000000 00000000 00000000
                                                         2**0
 1 .data
                                               0000009c
                 CONTENTS,
                           ALLOC, LOAD, DATA
 2 .bss
                  00000004
                           00000000 00000000
                                               0000009c 2**2
                  ALLOC
 3 .debug_info
                 000000d4
                           00000000 00000000 0000009c
                                                          2**0
                           RELOC, READONLY, DEBUGGING
                  CONTENTS,
 4 .debug_abbrev 00000075
                           00000000 00000000 00000170
                                                          2**0
                  CONTENTS,
                           READONLY, DEBUGGING
 5 .debug_loc
                  00000058 00000000
                                     00000000 000001e5 2**0
                 CONTENTS, READONLY, DEBUGGING
 6 .debug_aranges 00000020
                            00000000
                                     00000000
                 CONTENTS, RELOC, READONLY, DEBUGGING
 7 .debug_line
                 00000051 00000000 00000000 0000025d
                                                          2**0
                  CONTENTS,
                           RELOC, READONLY, DEBUGGING
 8 .debug_str
                  00000138
                           00000000 00000000 000002ae
                 CONTENTS,
                           READONLY, DEBUGGING
                                     00000000 000003e6 2**0
 9 .comment
                  00000012
                           00000000
                 CONTENTS, READONLY
 10 .ARM.attributes 00000033 00000000 00000000 000003f8 2**0
                  CONTENTS, READONLY
 11 .debug_frame
                 00000048 00000000 00000000 0000042c 2**2
                  CONTENTS, RELOC, READONLY, DEBUGGING
```

```
MINGW32:/g/Embedded Systems/Keroles Shenouda Diploma/Unit 5/High Pressure Detecti...
                                                                                  ×
Ahmed Sami@DESKTOP-G7E19RA MINGW32 /g/Embedded Systems/Keroles Shenouda Diploma/Unit 5/High
 Pressure Detection Project/code
$ arm-none-eabi-objdump.exe -h Alarm_monitor.o
Alarm_monitor.o:
                    file format elf32-littlearm
Sections:
Idx Name
                 Size
                           VMA
                                     LMA
                                               File off
                                                         Alan
                 00000044
                           00000000 00000000
 0 .text
                                               00000034
                                                         2**2
                 CONTENTS,
                           ALLOC, LOAD, RELOC,
                                               READONLY, CODE
 1 .data
                 00000000
                           00000000 00000000
                                               00000078
                                                         2**0
                 CONTENTS, ALLOC, LOAD, DATA
 2 .bss
                 00000000
                           00000000 00000000
                                               00000078
                                                         2**0
                 ALLOC
  3 .debug_info
                 000000c3 00000000 00000000
                                               00000078
                 CONTENTS, RELOC, READONLY, DEBUGGING
 4 .debug_abbrev 00000066 00000000 00000000
                                               0000013b
                                                         2**0
                 CONTENTS, READONLY, DEBUGGING
                 00000058 00000000 00000000 000001a1 2**0
 5 .debug_loc
                 CONTENTS, READONLY, DEBUGGING
  6 .debug_aranges 00000020 00000000 00000000
                                                000001f9
                                                          2**0
                  CONTENTS, RELOC, READONLY, DEBUGGING
  7 .debug_line
                 00000045
                           00000000 00000000 00000219
                 CONTENTS, RELOC, READONLY, DEBUGGING
                           00000000 00000000 0000025e
  8 .debug_str
                 00000127
                 CONTENTS, READONLY, DEBUGGING
  9 .comment
                 00000012 00000000 00000000 00000385
                                                         2**0
                 CONTENTS, READONLY
 10 .ARM.attributes 00000033 00000000 00000000 00000397
                 CONTENTS, READONLY
 11 .debug_frame
                 00000048 00000000 00000000 000003cc 2**2
                 CONTENTS, RELOC, READONLY, DEBUGGING
```

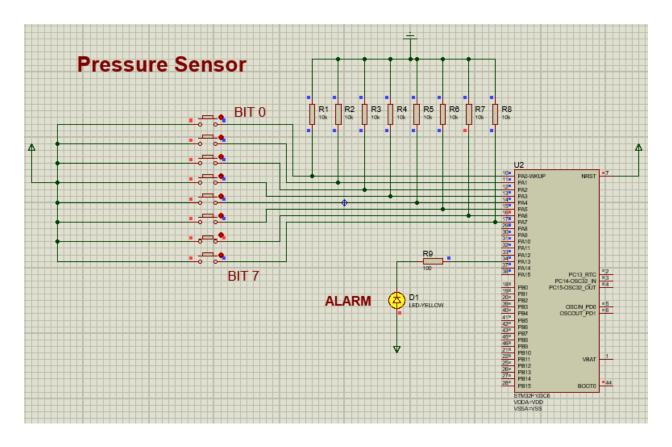


#### Symbols table of files

```
🥎 MINGW32:/g/Embedded Systems/Keroles Shenouda Diploma/Unit 5/High Pressure Detecti...
                                                                                                        ×
 Ahmed Sami@DESKTOP-G7E19RA MINGW32 /g/Embedded Systems/Keroles Shenouda Diploma/Unit 5/High
 Pressure Detection Project/code
$ arm-none-eabi-nm.exe pressure_detected_project.elf
2000000c B _E_bss
20000000 T _E_DATA
080001f4 T _E_text
20000000 B _S_bss
20000000 T _S_DATA
2000100c B _stack_top
20000008 B alarmPtr
080000a4 T Delay
080000c8 T getPressureVal
08000130 T GPIO_INITIALIZATION
08000088 T High_pressure_detected
08000000 T main
20000004 B P_main_ptr
20000000 b P_val
080000e0 T Set_Alarm_actuator
080001b0 T Start_alarm
080001e4 T Stop_alarm
0800003c T waiting
Ahmed Sami@DESKTOP-G7E19RA MINGW32 /g/Embedded Systems/Keroles Shenouda Diploma/Unit 5/High
 Pressure Detection Project/code
$
 🥎 MINGW32:/g/Embedded Systems/Keroles Shenouda Diploma/Unit 5/High Pressure Detection Project/code
                                                                                                             hmed Sami@DESKTOP-G7E19RA MINGW32 /g/Embedded Systems/Keroles Shenouda Diploma/Unit 5/High
$ arm-none-eabi-nm.exe main_algorithm.o
        U getPressureVal
0000004c T High_pressure_detected
00000004 C P_main_ptr
00000000 b P_val
        U Start_alarm
000000000 T waiting
 hmed Sami@DESKTOP-G7E19RA MINGW32 /g/Embedded Systems/Keroles Shenouda Diploma/Unit 5/High
 Pressure Detection Project/code
$ arm-none-eabi-nm.exe main.o
        U Delay
U GPIO_INITIALIZATION
00000000 T main
        U P_main_ptr
        U Set_Alarm_actuator
Nhmed Sami@DESKTOP-G7E19RA MINGW32 /g/Embedded Systems/Keroles Shenouda Diploma/Unit 5/High Pressure Detection Project/code
$ arm-none-eabi-nm.exe driver.o
000000000 T Delay
00000024 T getPressureVal
0000008c T GPIO_INITIALIZATION
0000003c T Set_Alarm_actuator
Ahmed Sami@DESKTOP-G7E19RA MINGW32 /g/Embedded Systems/Keroles Shenouda Diploma/Unit 5/High
Pressure Detection Project/code
$ arm-none-eabi-nm.exe Alarm_monitor.o
00000004 C alarmPtr
U Delay
U Set_Alarm_actuator
000000000 T Start_alarm
 lhmed Sami@DESKTOP-G7E19RA MINGW32 /g/Embedded Systems/Keroles Shenouda Diploma/Unit 5/High
 Pressure Detection Project/code
```

#### **❖** Proteus

➤ Alarm ON: when pressure value is above 20 par



## ➤ Alarm OFF: when pressure value is under 20 par

