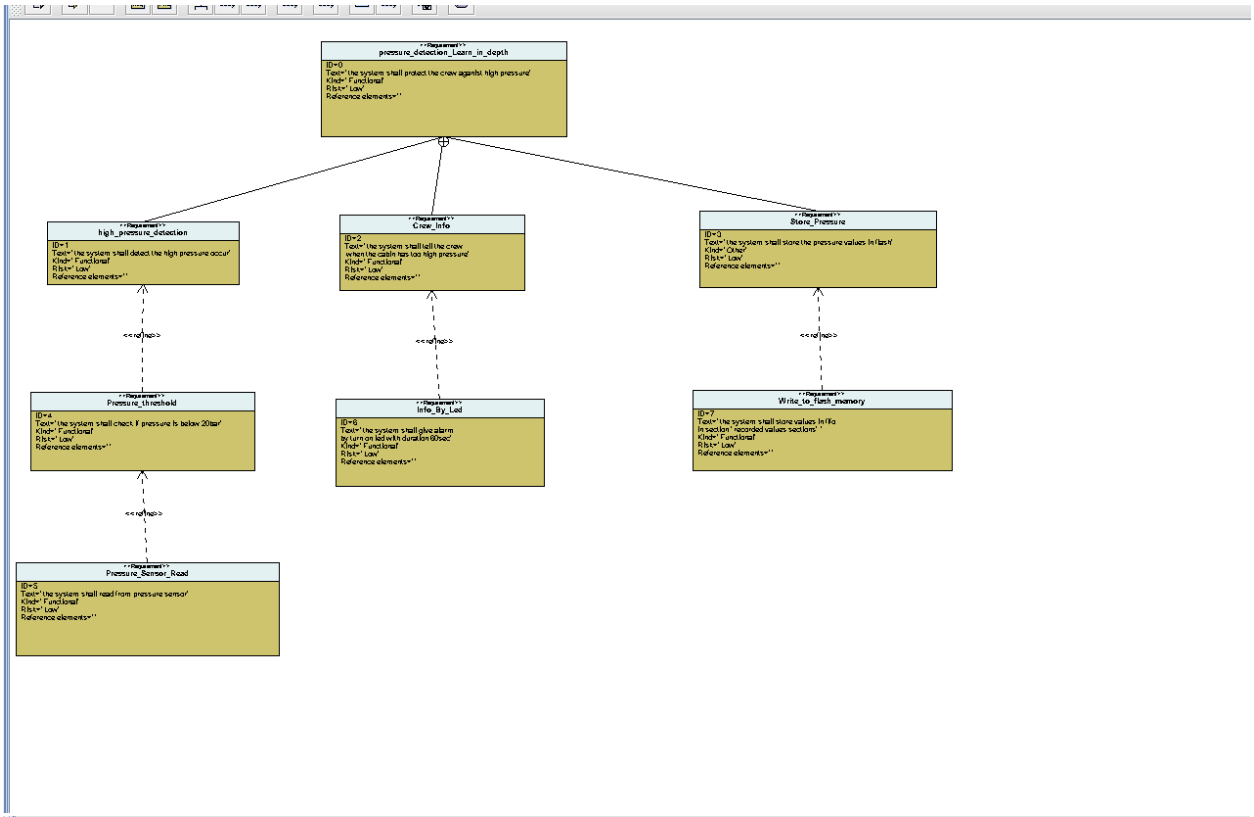
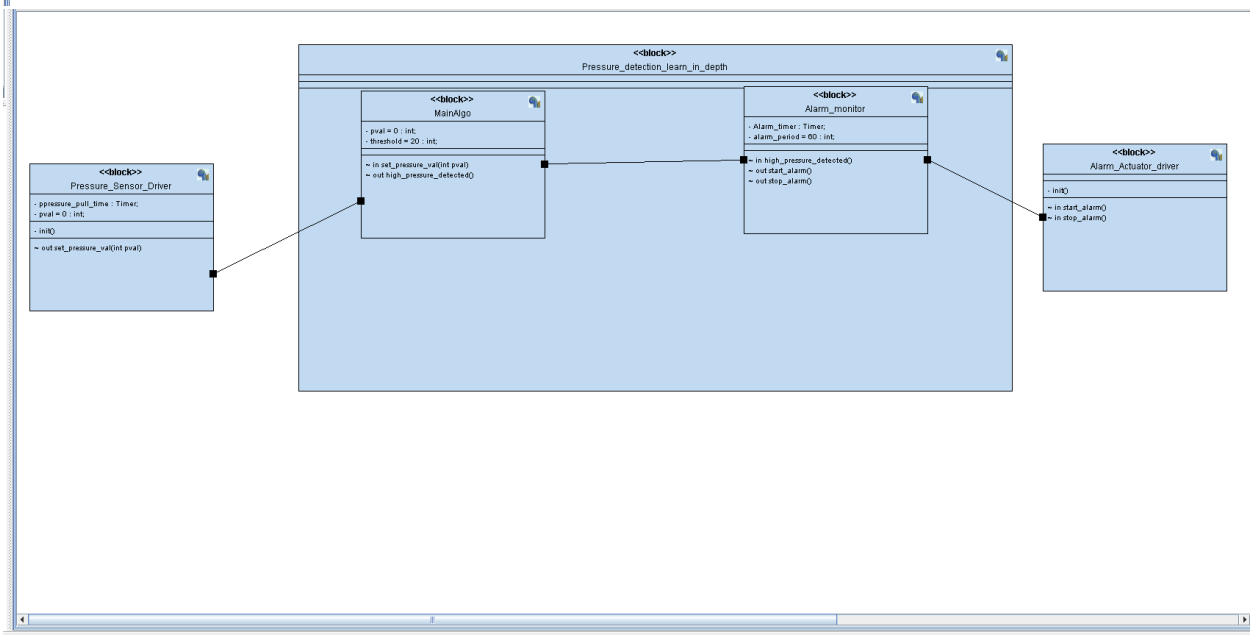
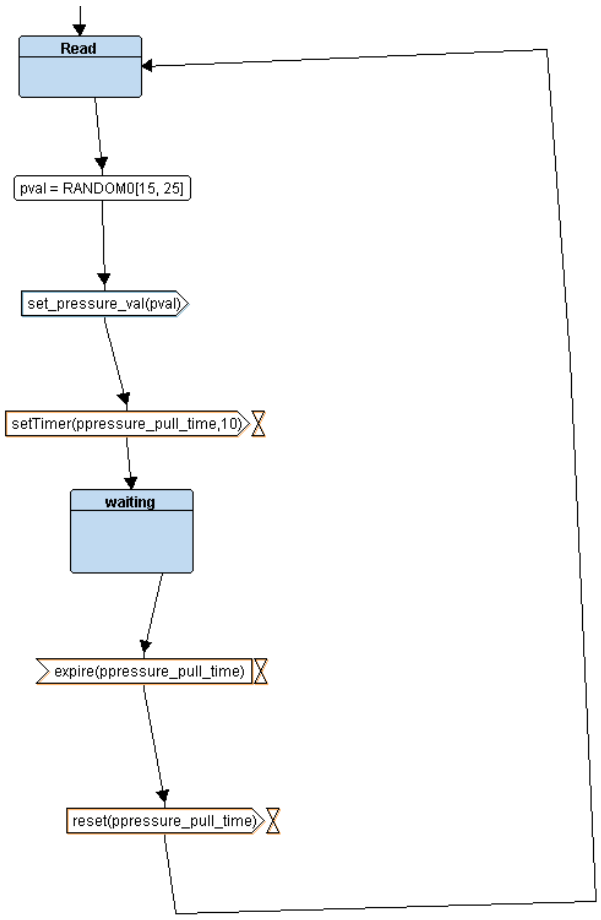
Report

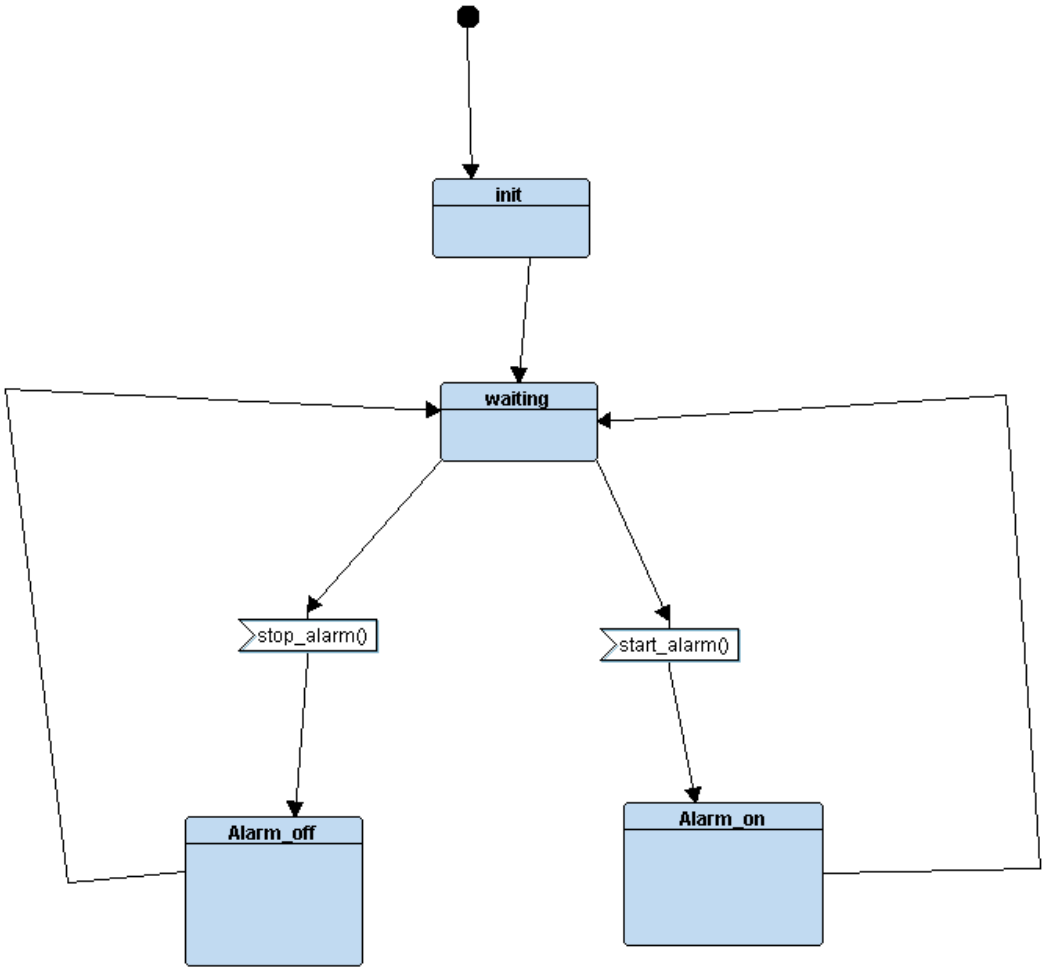
FIRST_TERM_PROJECT_1

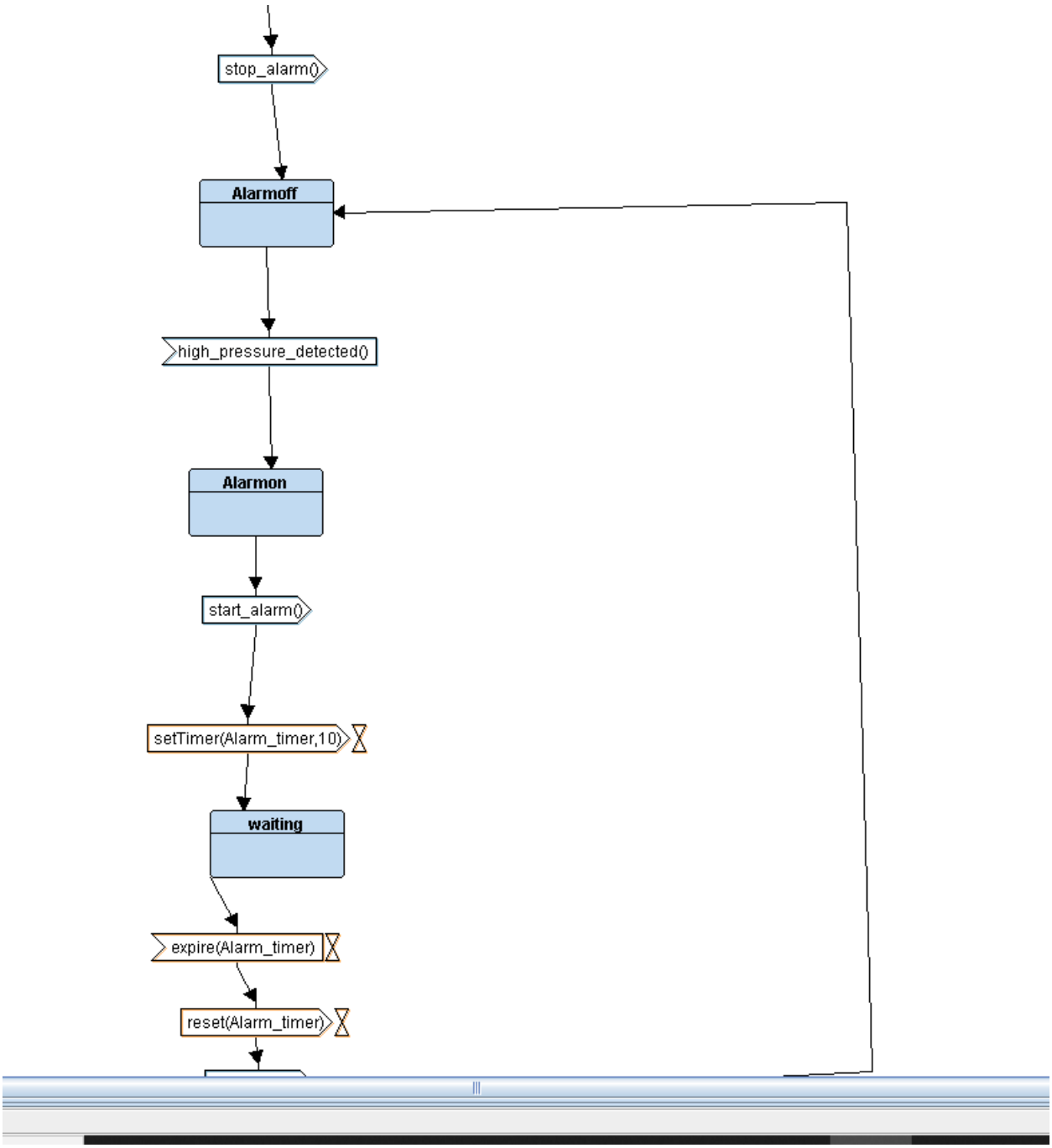
Mamoud Mohamed Ali Elkot

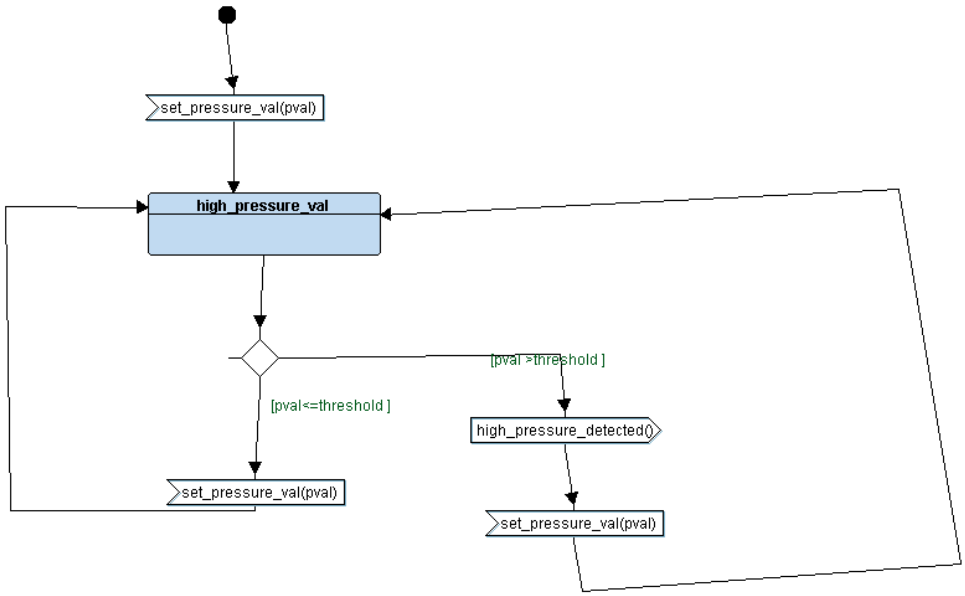


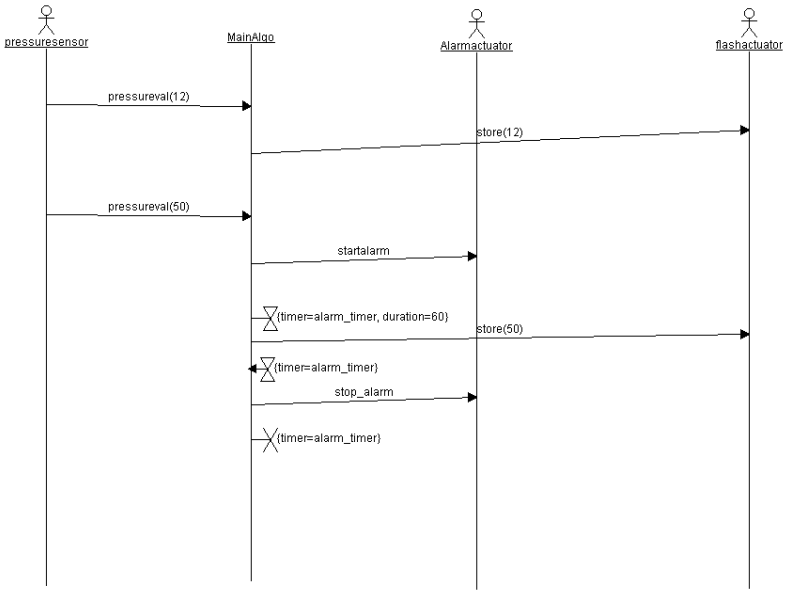


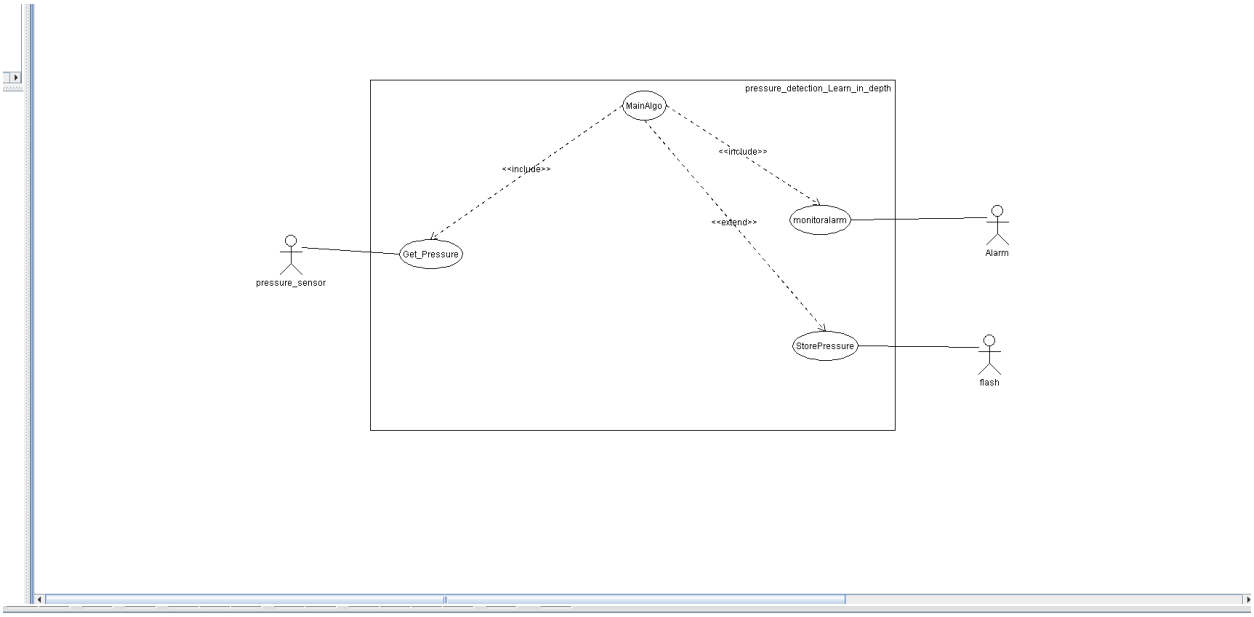

Read
pval = RANDOM0[15, 25]
set_pressure_val(pval)
setTimer(ppressure_pull_time,10)
waiting
expire(ppressure_pull_time)
reset(ppressure_pull_time)

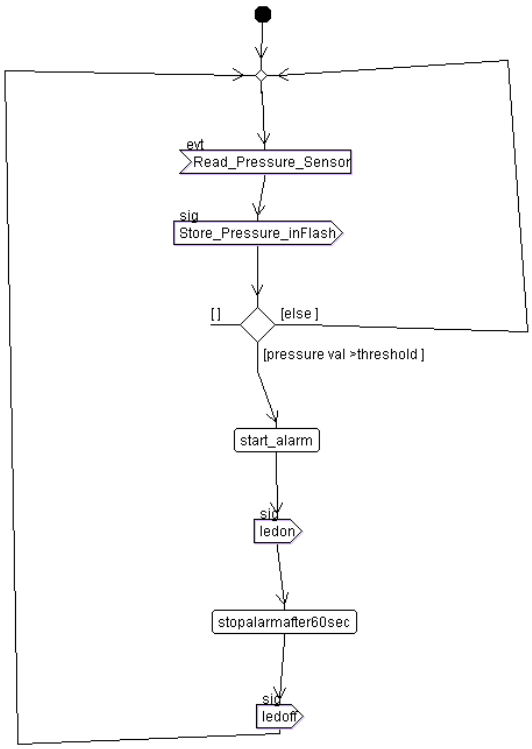

init
waiting
stop_alarm()
start_alarm()
Alarm_off
Alarm_on


stop_alarm()
Alarmoff
high_pressure_detected()
Alarmon
start_alarm()
setTimer(Alarm_timer,10)
waiting
expire(Alarm_timer)
reset(Alarm_timer)


set_pressure_val(pval)
high_pressure_val
[pval >threshold]
[pval<=threshold]
high_pressure_detected()
set_pressure_val(pval)
set_pressure_val(pval)


pressuresensor
MainAlgo
Alarmactuator
flashactuator
pressureval(12)
store(12)
pressureval(50)
startalarm
(timer=alarm_timer, duration=60)
store(50)
(timer=alarm_timer)
stop_alarm
(timer=alarm_timer)


pressure_detection_Learn_in_depth
MainAlgo
<<include>>
<<include>>
<<extend>>
Get_Pressure
monitoralarm
StorePressure
pressure_sensor
Alarm
flash


evt
Read_Pressure_Sensor
sig
Store_Pressure_inFlash
[]
[else]
[pressure val >threshold]
start_alarm
sig
ledon
stopalarmafter60sec
sig
ledoff

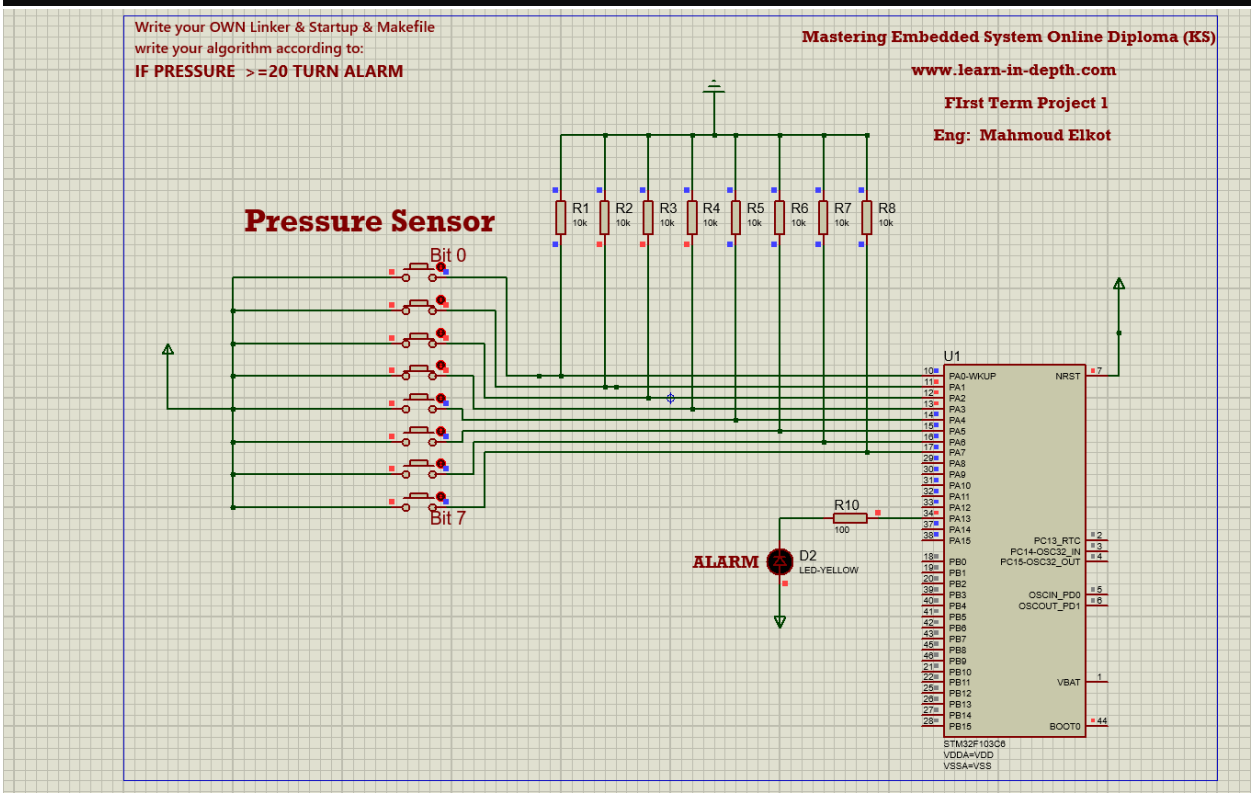
Name	Date modified	Type	Size
driver	10/22/2021 8:07 PM	File folder	
Alarmactuatordriver.c	10/22/2021 6:44 PM	C File	1 KB
Alarmactuatordriver.h	10/22/2021 5:52 PM	H File	1 KB
AlarmMonitor.c	10/22/2021 6:44 PM	C File	1 KB
AlarmMonitor.h	10/22/2021 5:51 PM	H File	1 KB
linker_script.ld	10/2/2021 3:05 PM	LD File	1 KB
main.c	10/22/2021 6:04 PM	C File	1 KB
main_algo.c	10/22/2021 6:43 PM	C File	1 KB
main_algo.h	10/22/2021 5:56 PM	H File	1 KB
Makefile	10/22/2021 8:08 PM	File	1 KB
pressure_sensir_driver.c	10/22/2021 7:21 PM	C File	1 KB
pressure_sensor_driver.h	10/22/2021 5:55 PM	H File	1 KB
Startup.c	10/2/2021 2:57 PM	C File	2 KB
state.h	10/22/2021 5:47 PM	H File	1 KB

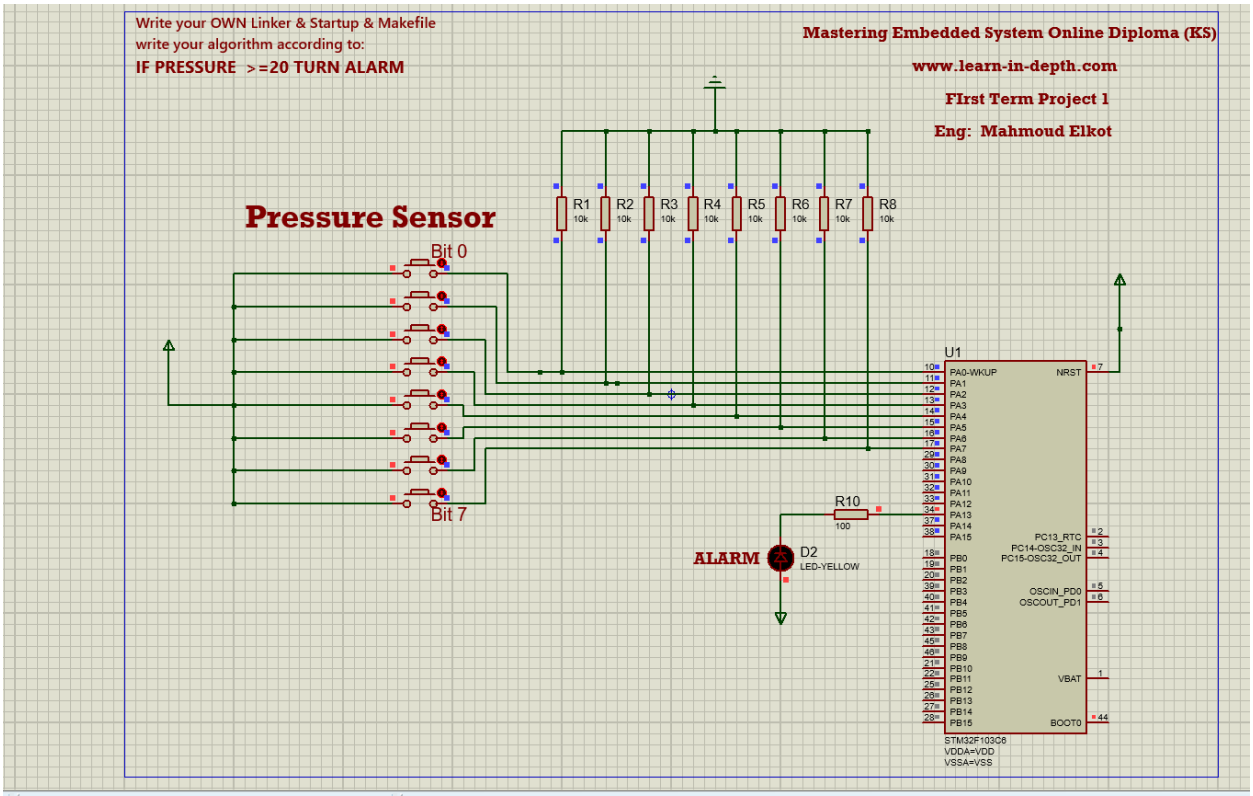
```
$ arm-none-eabi-nm.exe Learn-in-depth-first_term_project_1.elf
20000029 B _E_bss
20000004 D _E_data
080003dc T _E_text
20000004 B _S_bss
20000000 D _S_data
20001029 B _stack_top
20000004 B alarm_actuator_states
20000010 B alarm_monitor_states
08000348 W Bus_fAULT_handler
08000348 T Default_handler
08000144 T Delay
08000166 T getPressureVal
080001b8 T GPIO_INITIALIZATION
08000348 W H_fault_handler
08000128 T high_pressure_detected
20000008 B id_alarm_actuator
2000000c B id_alarm_monitor
2000001c B id_main_algo_states
20000028 B id_pressure_driver_states
080002dc T init
08000018 T inti
0800024c T main
20000014 B main_algo_states
08000348 W MM_Fault_handler
08000348 W NMI_Handler
20000020 B pressure
20000024 B Pressure_state
20000018 B pval
08000354 T Reset_handler
0800017c T Set_Alarm_actuator
080002b0 T set_pressure_val
08000208 T Setup_main
08000110 T st_alarm_monitor_alarm_off
080000ec T st_alarm_monitor_alarm_on
080000c4 T st_alarm_monitor_waiting
0800004c T st_alarm_off
08000024 T st_alarm_on
08000284 T st_high_pressure_decide
080002e8 T st_pressure_driver_read
08000320 T st_pressure_driver_waiting
08000074 T st_waiting
0800008c T start_alarm
080000a8 T stop_alarm
20000000 D threshold
08000000 T vectors

ALBORAQ@DESKTOP-LM0EBQ2 MINGW64 /e/Embedded System Diploma/Diploma Repo/Embedded-System-Diploma-/first_term_project_1 (main)
```

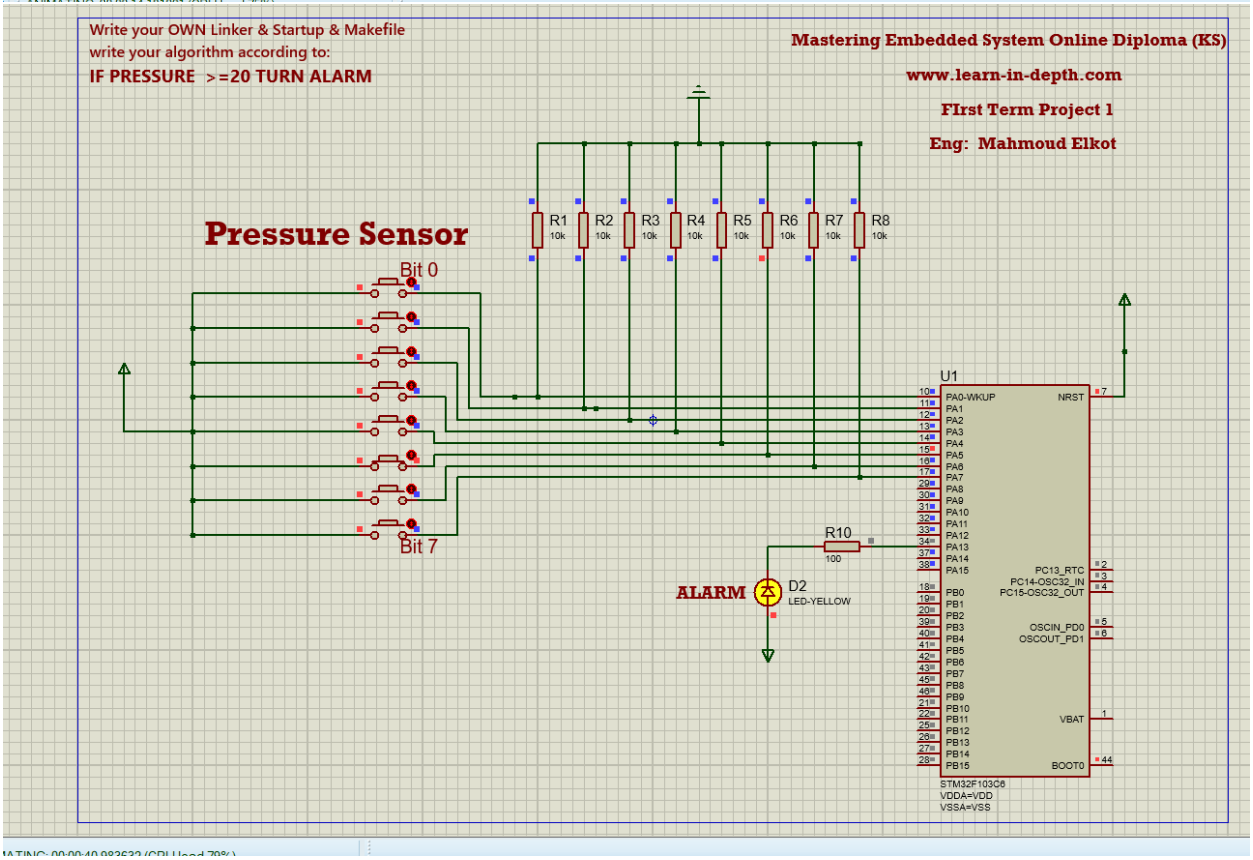
```
ALBORAQ@DESKTOP-LM0EBQ2 MINGW64 /e/Embedded System Diploma/Diploma Repo/Embedded-System-Diploma-/first_term_project_1 (main)
$ arm-none-eabi-nm.exe main.o
         U alarm_actuator_states
         U alarm_monitor_states
         U GPIO_INITIALIZATION
00000044 T main
         U main_algo_states
         U Pressure_state
00000000 T Setup_main
         U st_alarm_monitor_alarm_off
         U st_high_pressure_decide
         U st_pressure_driver_read
         U st_waiting
```

```
LBORAQ@DESKTOP-LM0EBQ2 MINGW64 /e/Embedded System Diploma/Diploma Repo/Embedded-System-Diploma-/first_term_project_1 (main)
$ arm-none-eabi-objdump.exe -h Learn-in-depth-first_term_project_1.elf

learn-in-depth-first_term_project_1.elf:     file format elf32-littlearm

Sections:
Idx Name          Size      VMA       LMA       File off  Algn
  0 .text         000003dc  08000000  08000000  00010000  2**2
                  CONTENTS, ALLOC, LOAD, READONLY, CODE
  1 .data         00000004  20000000  080003dc  00020000  2**2
                  CONTENTS, ALLOC, LOAD, DATA
  2 .bss          00001025  20000004  080003e0  00020004  2**2
                  ALLOC
  3 .debug_info   00000883  00000000  00000000  00020004  2**0
                  CONTENTS, READONLY, DEBUGGING, OCTETS
  4 .debug_abbrev 0000053e  00000000  00000000  00020887  2**0
                  CONTENTS, READONLY, DEBUGGING, OCTETS
  5 .debug_loc    00000580  00000000  00000000  00020dc5  2**0
                  CONTENTS, READONLY, DEBUGGING, OCTETS
  6 .debug_aranges 000000e0  00000000  00000000  00021345  2**0
                  CONTENTS, READONLY, DEBUGGING, OCTETS
  7 .debug_line   00000693  00000000  00000000  00021425  2**0
                  CONTENTS, READONLY, DEBUGGING, OCTETS
  8 .debug_str    000003ed  00000000  00000000  00021ab8  2**0
                  CONTENTS, READONLY, DEBUGGING, OCTETS
  9 .comment      00000049  00000000  00000000  00021ea5  2**0
                  CONTENTS, READONLY
 10 .ARM.attributes 0000002d  00000000  00000000  00021eee  2**0
                  CONTENTS, READONLY
 11 .debug_frame  00000344  00000000  00000000  00021f1c  2**2
                  CONTENTS, READONLY, DEBUGGING, OCTETS

LBORAQ@DESKTOP-LM0EBQ2 MINGW64 /e/Embedded System Diploma/Diploma Repo/Embedded-System-Diploma-/first_term_project_1 (main)
```

```
LBORAQ@DESKTOP-LM0EBQ2 MINGW64 /e/Embedded System Diploma/Diploma Repo/Embedded-System-Diploma-/first_term_project_1 (main)
$ arm-none-eabi-size.exe Learn-in-depth-first_term_project_1.elf
   text    data     bss     dec     hex filename
    988       4    4133    5125    1405 Learn-in-depth-first_term_project_1.elf
```




Write your OWN Linker & Startup & Makefile
write your algorithm according to:
IF PRESSURE >=20 TURN ALARM
Mastering Embedded System Online Diploma (KS)
www.learn-in-depth.com
FIrst Term Project 1
Eng: Mahmoud Elkot
Pressure Sensor
Bit 0
Bit 7
R1 10k
R2 10k
R3 10k
R4 10k
R5 10k
R6 10k
R7 10k
R8 10k
R10 100
ALARM
D2 LED-YELLOW
U1
PA0-WKUP
NRST
PC13_RTC
PC14-OSC32_IN
PC15-OSC32_OUT
OSCIN_PD0
OSCOUT_PD1
VBAT
BOOT0
STM32F103C6
VDDA=VDD
VSSA=VSS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R5 10k
R6 10k
R7 10k
R8 10k
R10 100
ALARM
D2 LED-YELLOW
U1
PA0-WKUP
NRST
PC13_RTC
PC14-OSC32_IN
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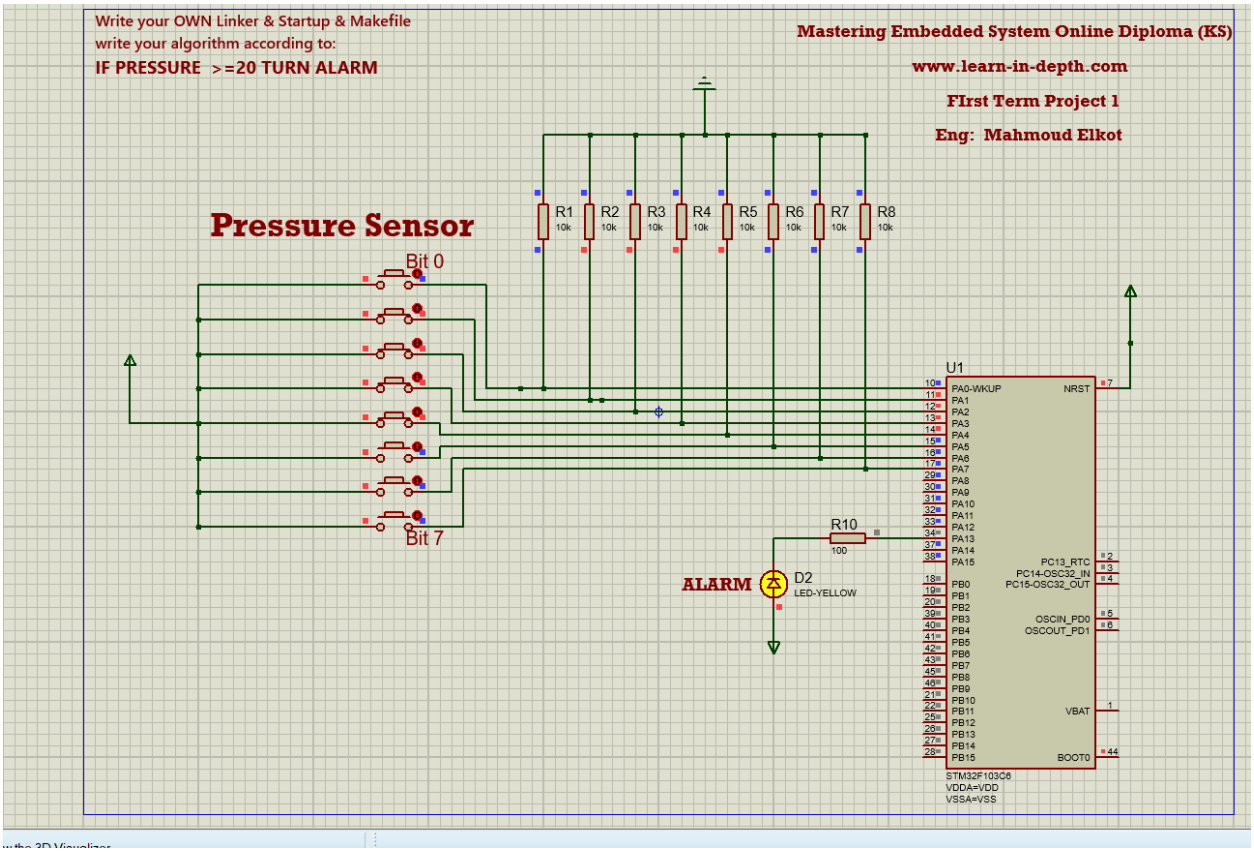
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R2 10k
R3 10k
R4 10k
R5 10k
R6 10k
R7 10k
R8 10k
Bit 0
Bit 7
U1
R10
100
ALARM
D2
LED-YELLOW
PA0-WKUP
NRST
PC13_RTC
PC14-OSC32_IN
PC15-OSC32_OUT
OSCIN_PD0
OSCOUT_PD1
VBAT
BOOT0
STM32F103C6
VDDA=VDD
VSSA=VSS