Embedded Systems Professional Track

(Final Project 1)

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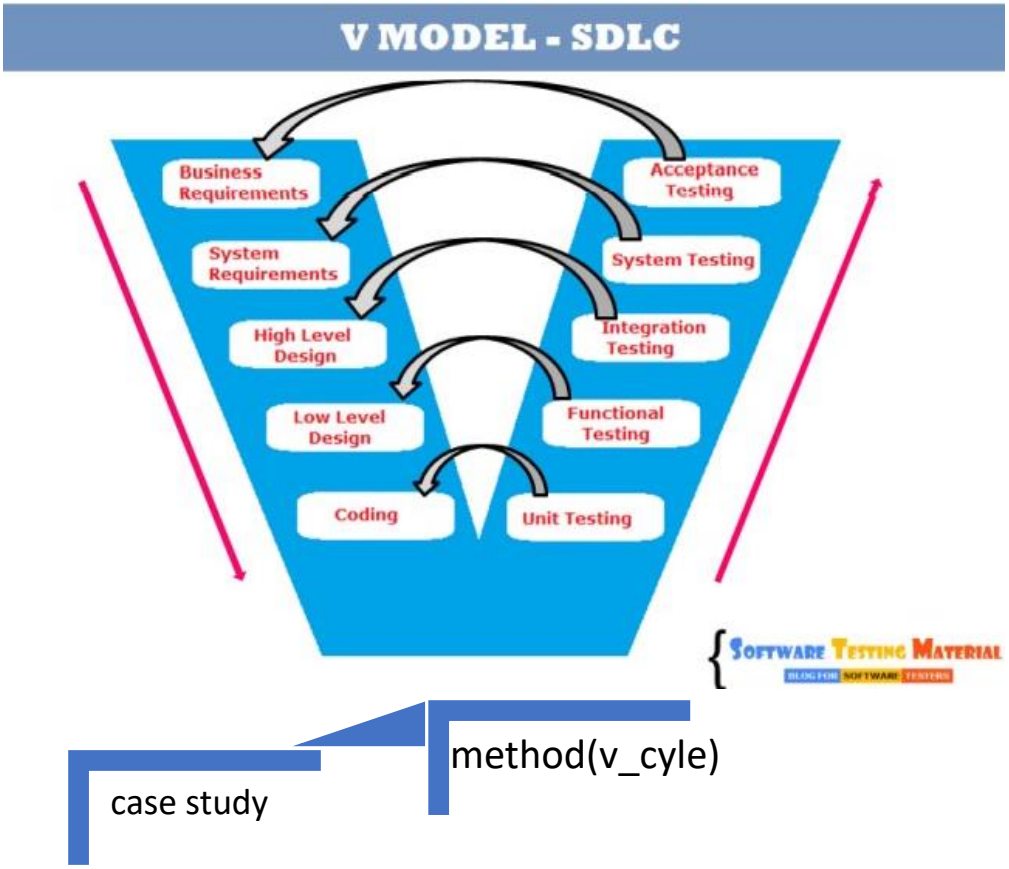
Abstract: in this report project as the requirement is to make a traffic light alarm, first it's important to make our case study: meeting with the customer and take his requirements take caring of some assumptions. Then in this report the V-CYCLE is used as model shape. Then make final decisions about requirements table with the customer, atmega32 board is the hardware used to load the SW on it for this project, then the system analysis should be obvious to the customer. then we can implement the system by SW APP, finally the testing and validation tests for the system.

A) customer meeting: informs that he need a SW of the following system.

1- normal traffic mode.

2- pedestrian traffic mode if press a button.

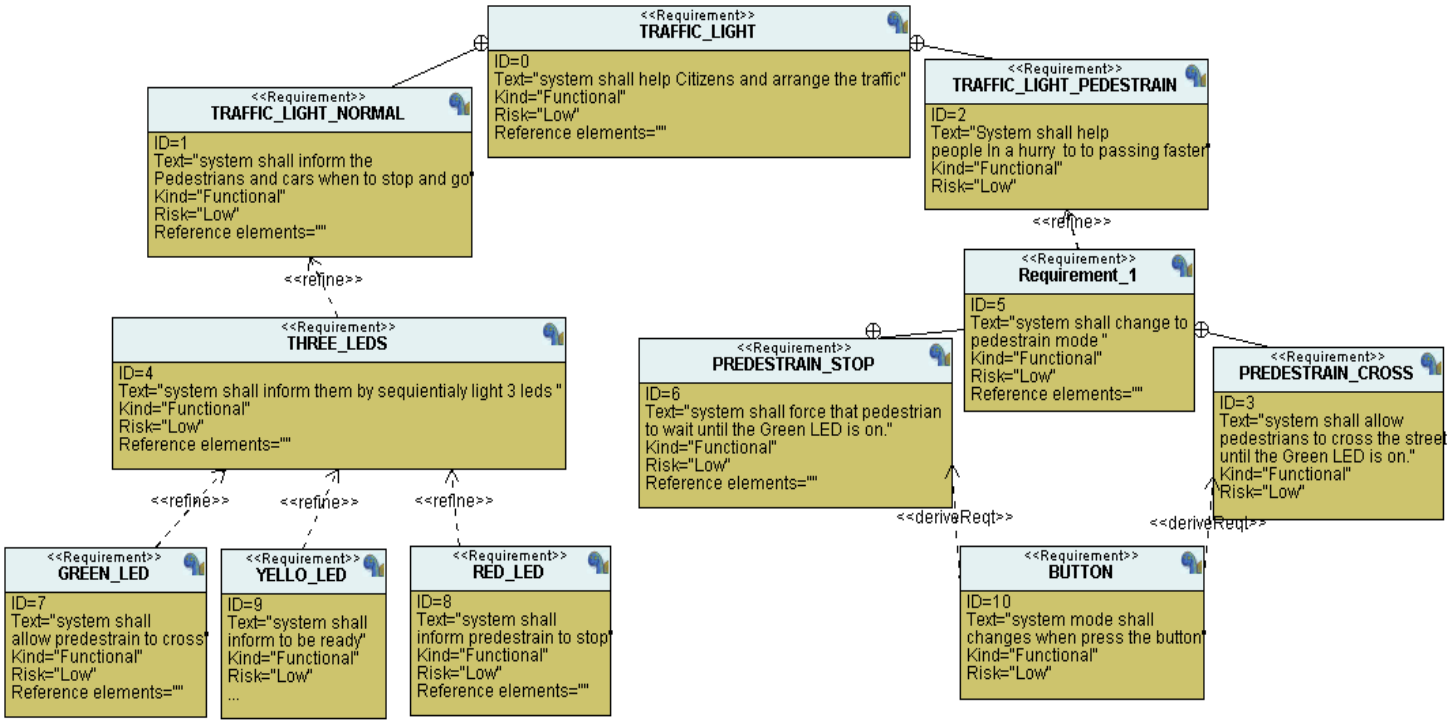
B) Method: V-CYCLE:

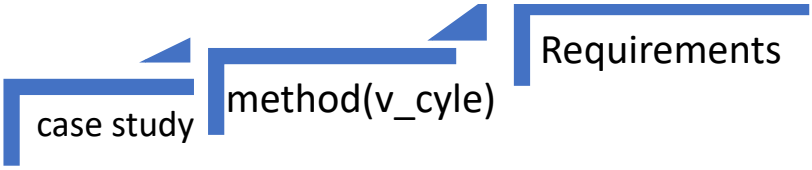


case study

method(v_cyle)

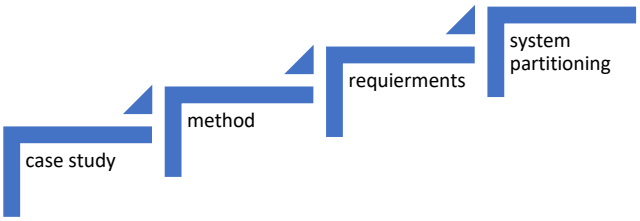
C) REQUIRMENTS ANALYSIS:





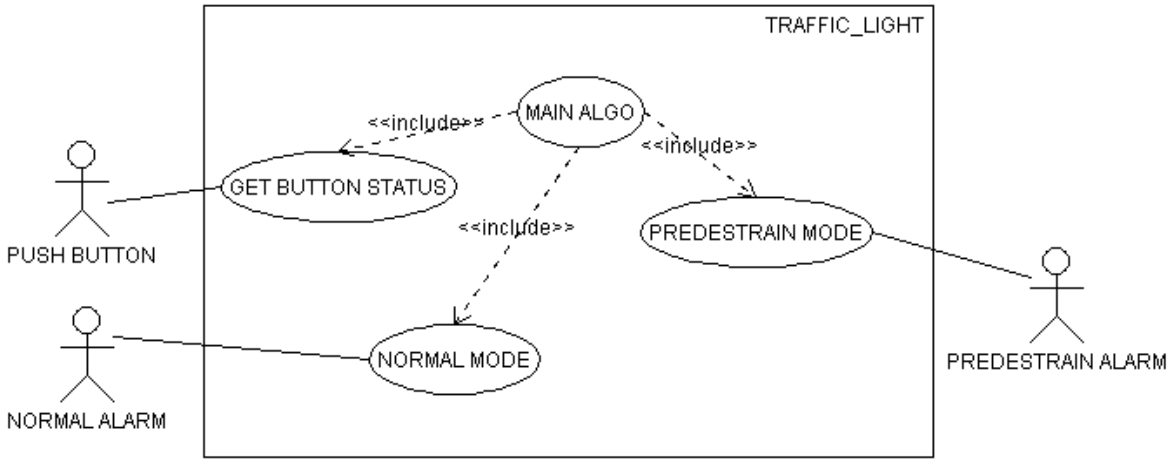
Normal mode?	✓
Pedestrian two modes?	✓
Use a 6 leds as an alarm?	✓
Use avr atmega32 as the MCU?	✓
Mode change when a button is pressed?	✓

D) S.W: consists of 6 modules to follow SOLID PRINCIPLES will be loaded on ATAMEGA32 soc AVR

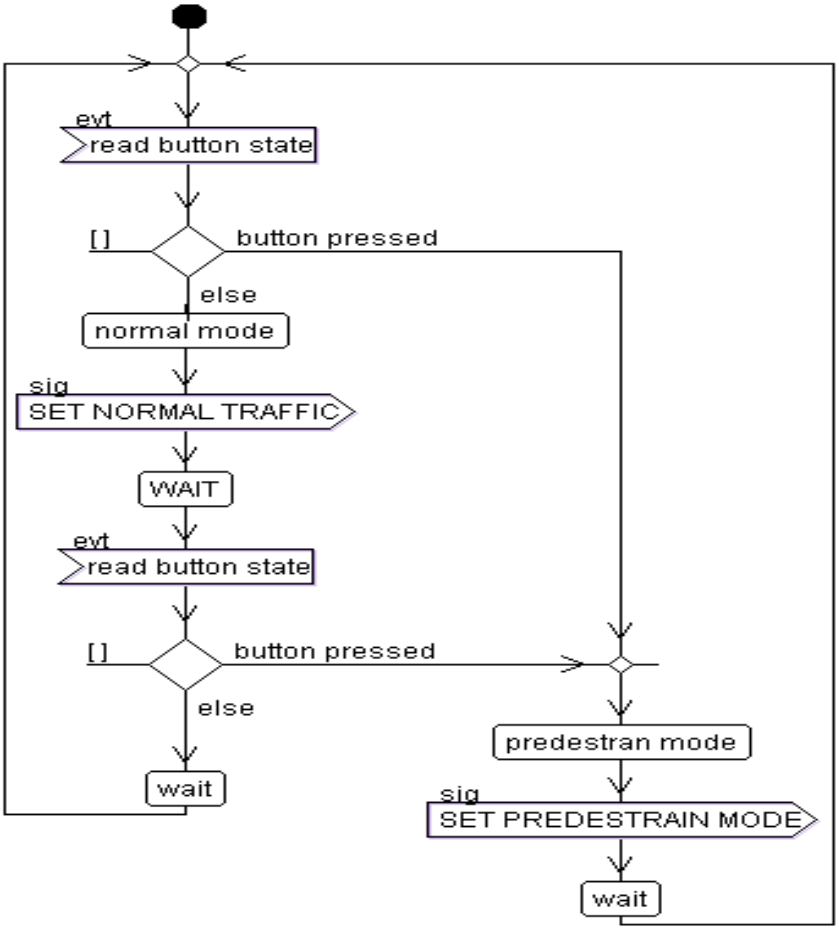


E) system analysis:

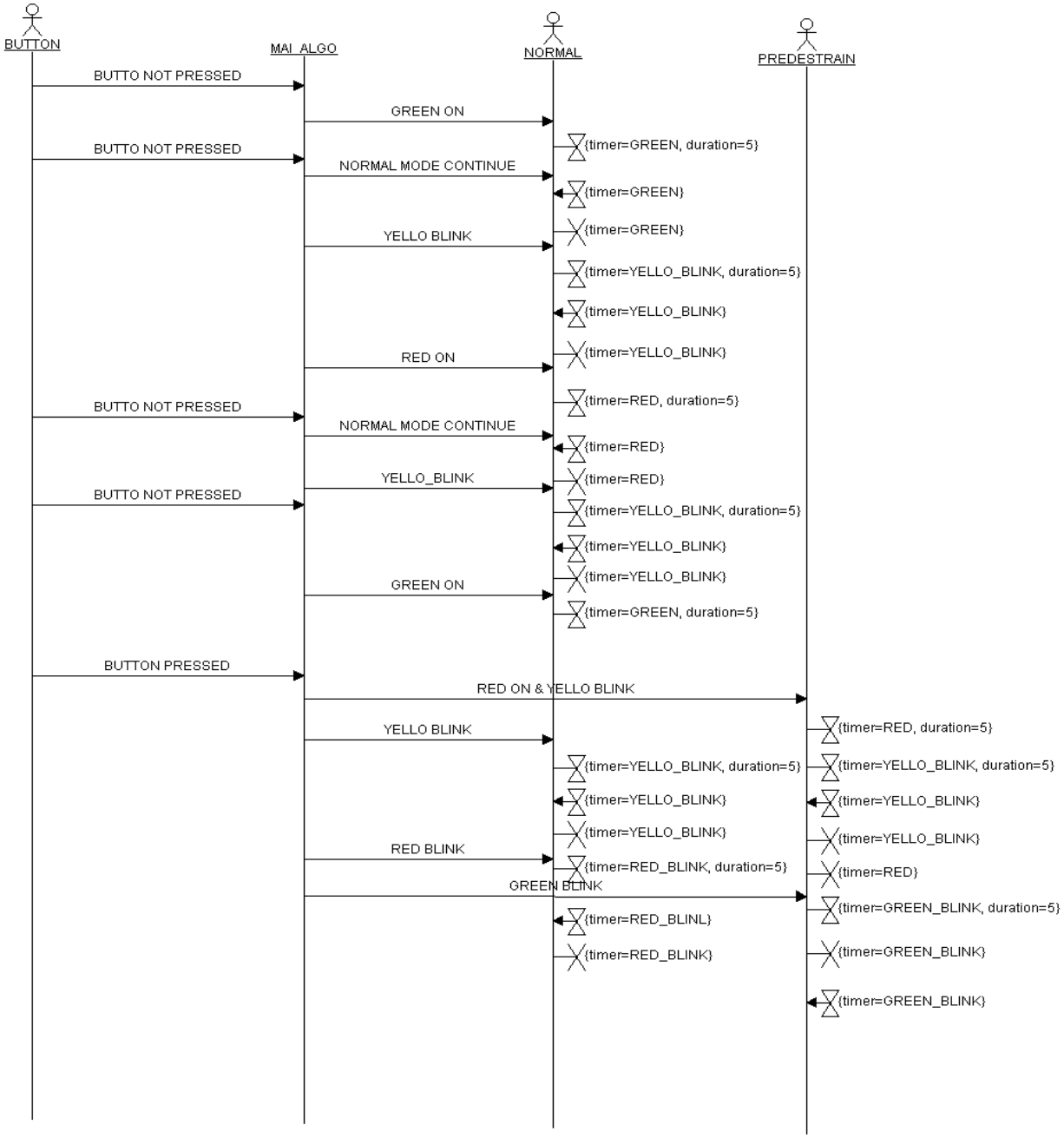
1- USE CASE DIAGRAM: system boundary & main functions content.

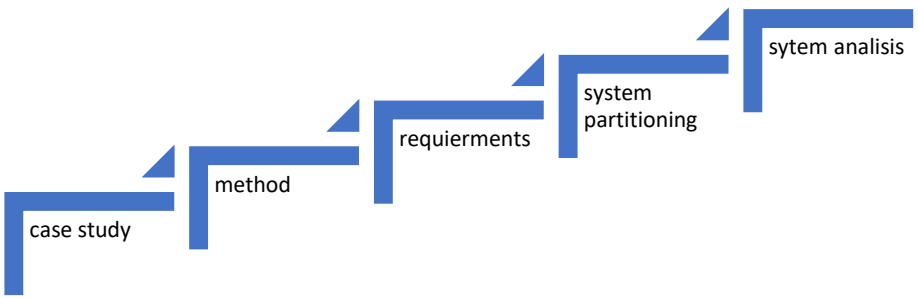


2- ACTIVITY DIAGRAM: relation between the main functions and it's connection between actors . "what main algorithm functions can do."

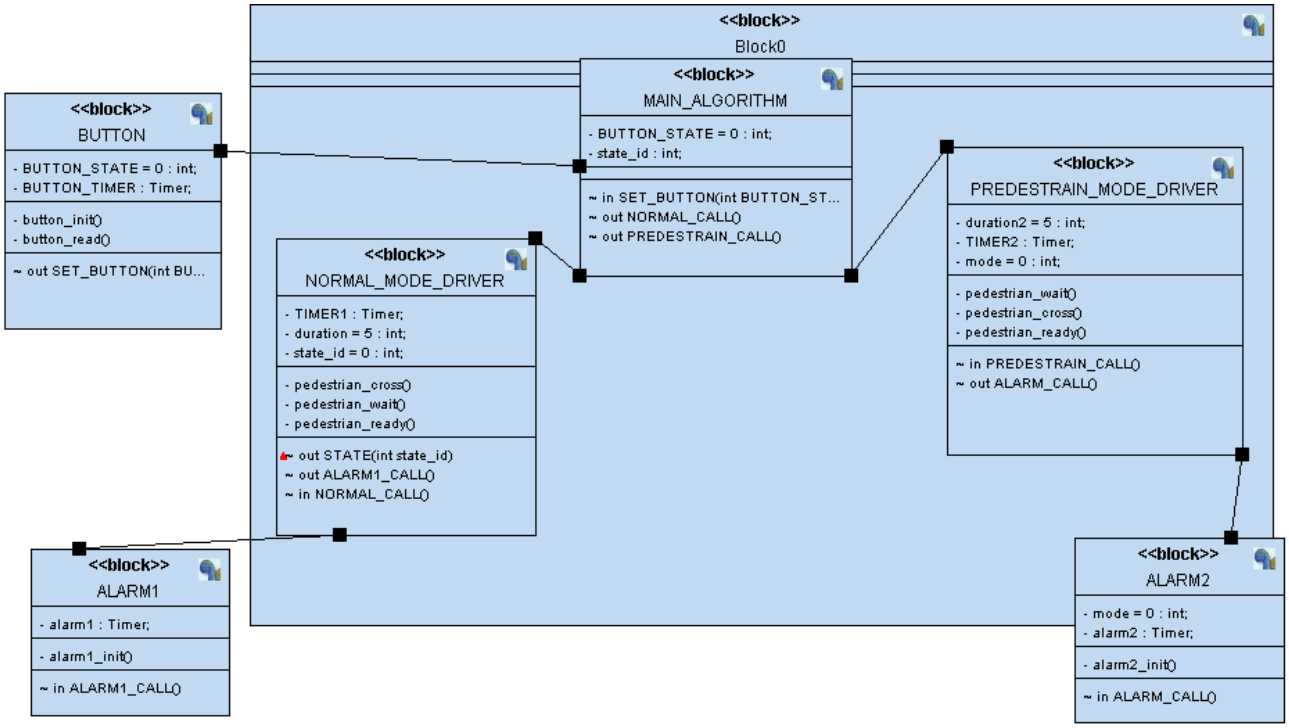


3- SEQUENCE DIAGRAM: communication between system and actors.

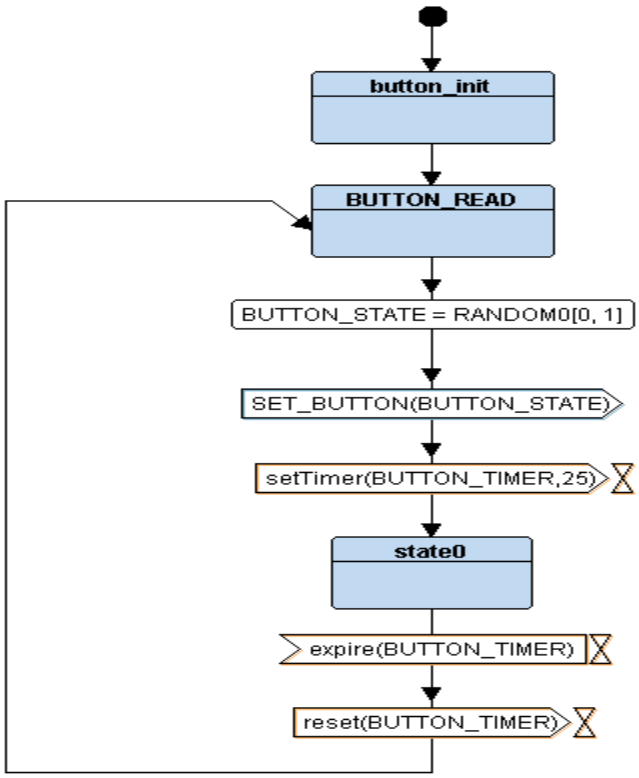




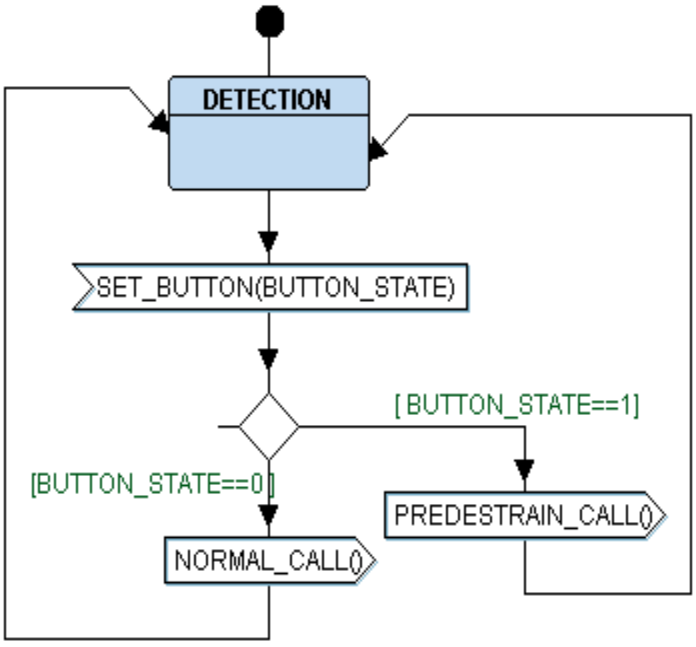
F) SYSTEM DESIGN: BLOCK DIAGRAM.



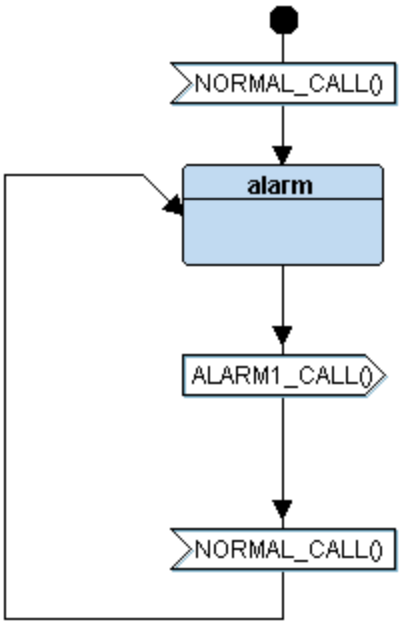
1- BUTTON:



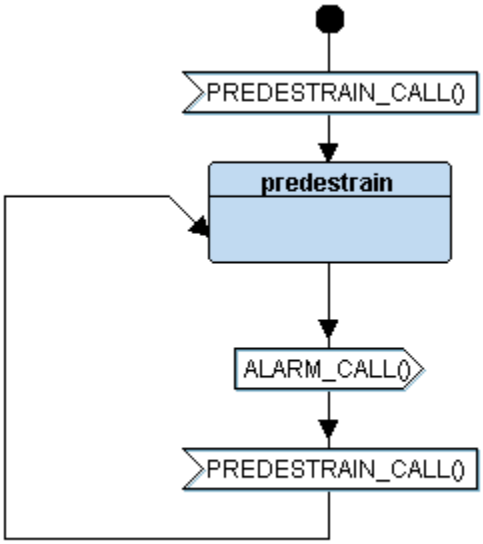
2- MAIN_ALGORITHM:



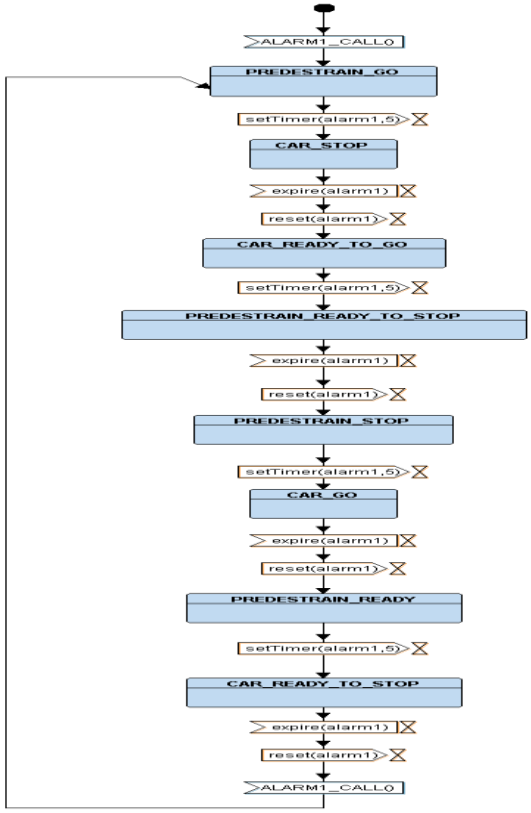
3- PEDESTRAIN DRIVER:



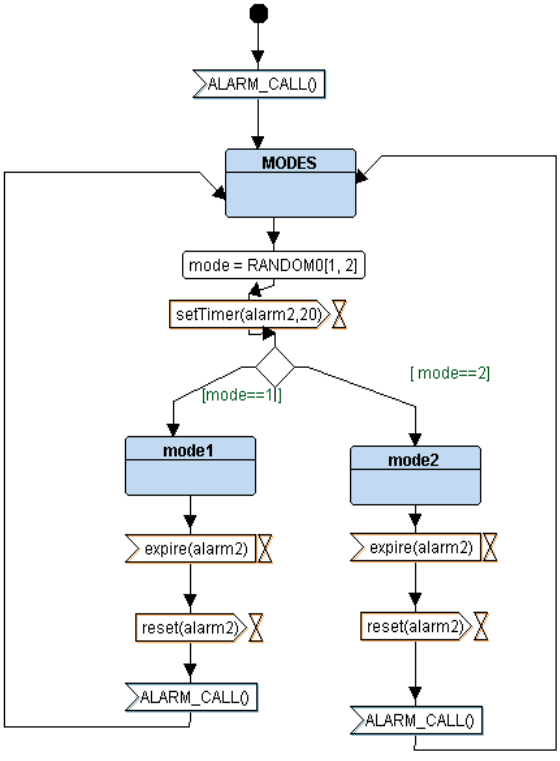
4- NORMAL MODE DRIVER:

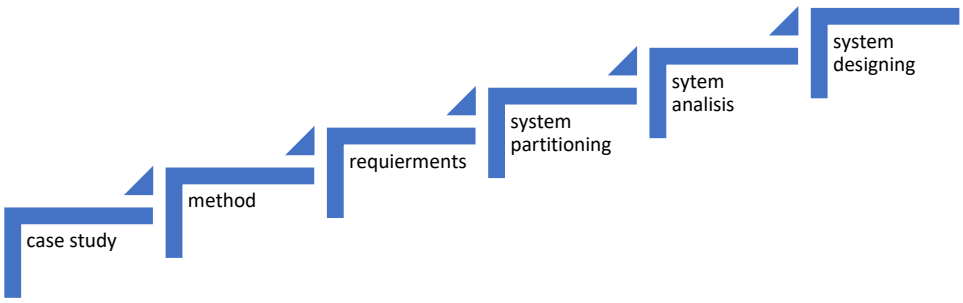


5- ALARM1:



6- ALARM2:




case study
method
requierments
system
partitioning
sytem
analisis
system
designing