DIAGRAMS

SOFTWARE DESIGN

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Formación dual
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INTRODUCTION

A very important phase in the life cycle of a project is the Software Design.
It is a fundamental stage and in many occasions the most important in the development of Software. It is the moment when professionals have to contribute their knowledge, experience and creativity to reach a solution that meets the functional and non-functional requirements established in the requirements phase.
The design of the Software has a direct impact on the ability of the system to meet or not the total requirements established. A design error in this phase can cause problems throughout the project and cause it to fall into a spiral of continuous changes and constantly redoing the work.
If we were to summarize in one word the importance of software design, this would be "Quality".
We can say that for the software development to be carried out with quality, it is worth striving for a good Software Design.
The design is important and should be done every day, this will allow us to have an overview before launching to coding and construction.

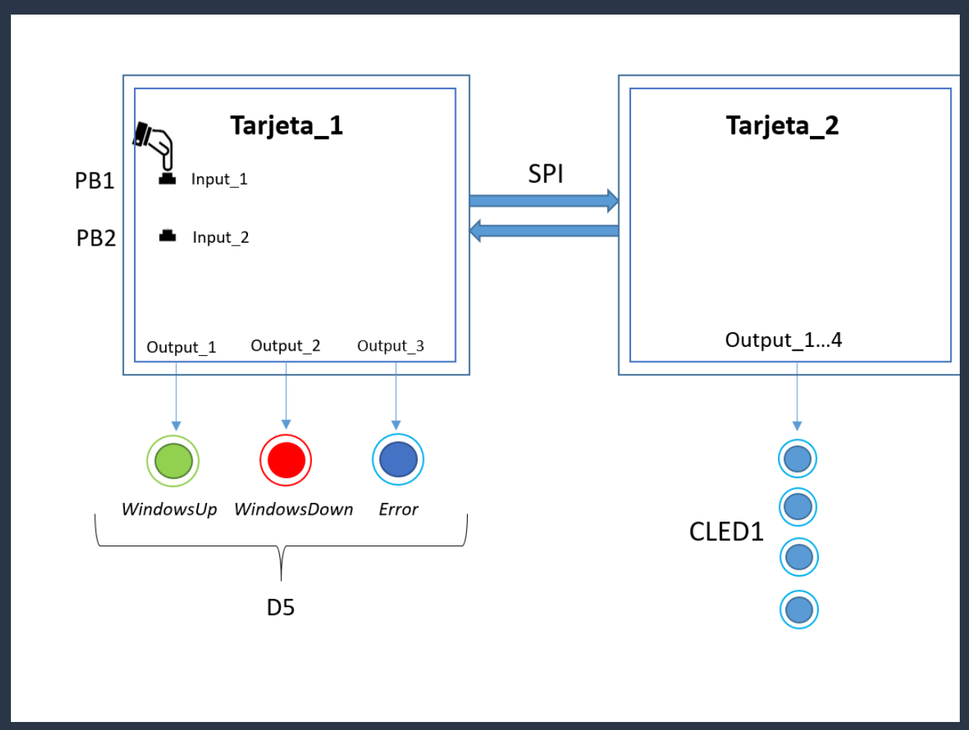
METHODOLOGY

Various diagrams were made for this software design.
State machine diagrams, electrical diagrams and general diagrams of the structure of our SPI communication project were made. Each diagram was thought and structured in sessions within the company.
Like the requirements that were created for this same project, the diagrams presented went through a series of modifications based on the feedback that was made after the review sessions with the Continental Support Team: after each session it was necessary to perform modifications to all the diagrams. In these sessions, congruence and the correct development of all the diagrams shown here were reviewed.
Here are the final results of the diagrams made.

RESULTS & DISCUSSION

The diagrams were a great reference while making the relevant codes for our project. Most electrical diagrams were necessary since it is required to know the operation of the card used.
The diagrams are usefull to quickly observe the operation of our project, and during the verification of the operation, the diagrams are a very useful reference.

GENERAL DIAGRAM



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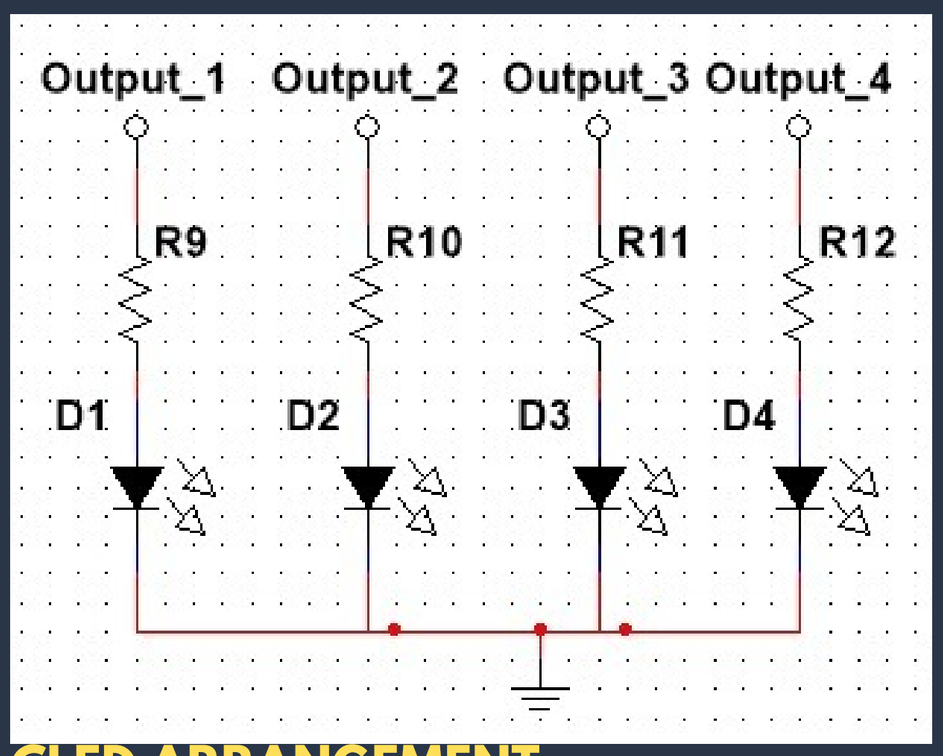
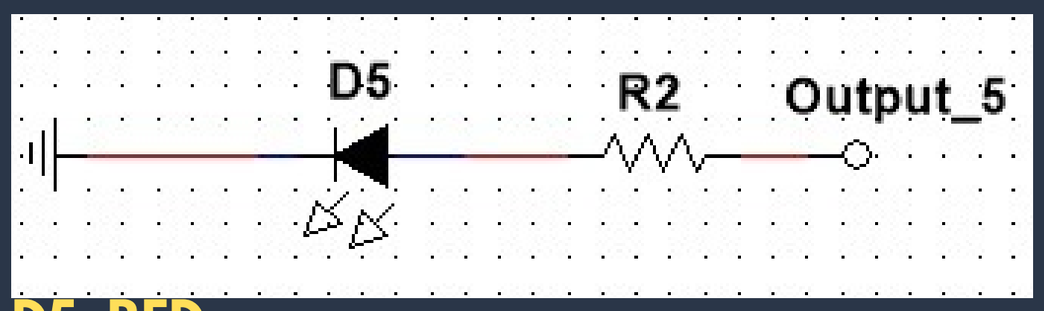
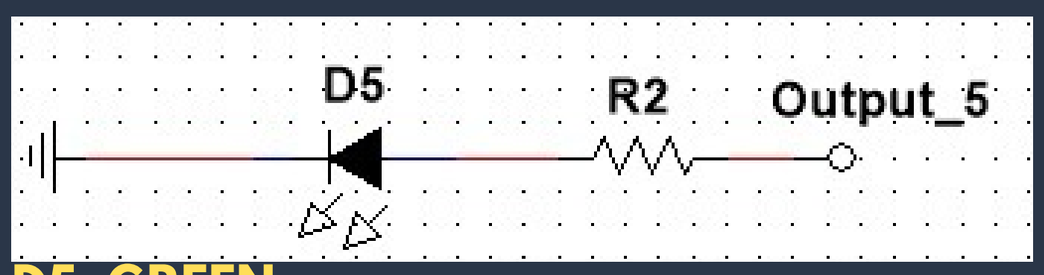
ELECTRICAL DIAGRAMS



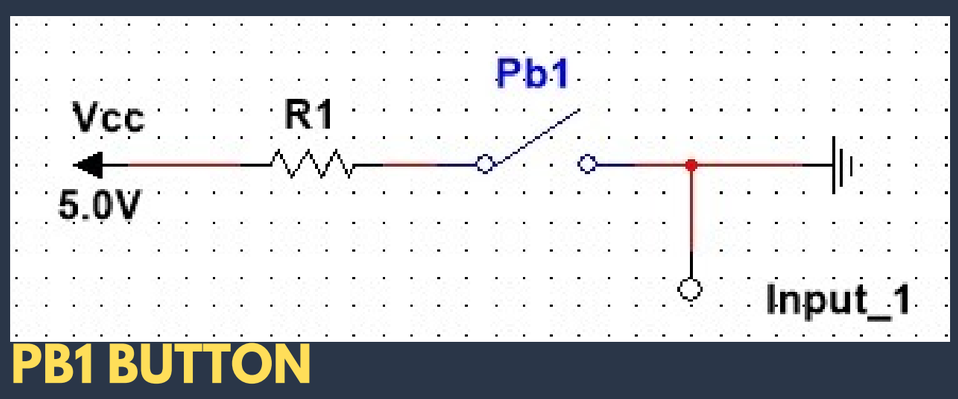
CLED ARRANGEMENT



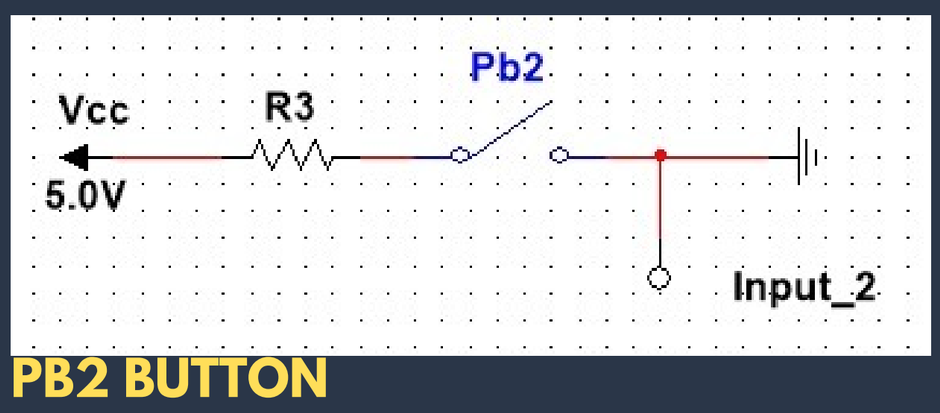
D5, RED



D5, GREEN



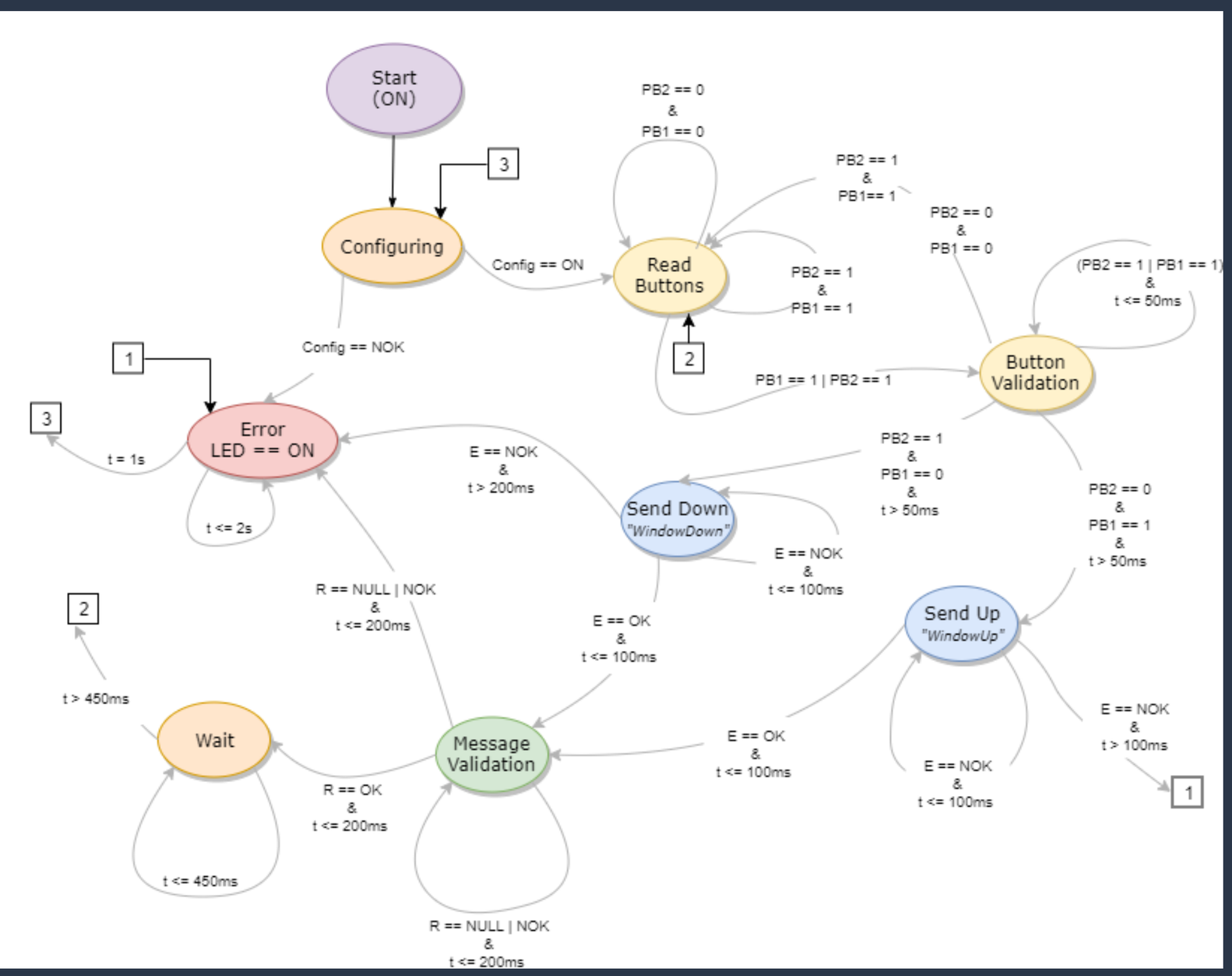
PB1 BUTTON



PB2 BUTTON

STATE MACHINE DIAGRAM

Nomenclature	
PB1	Push Button 1
PB2	Push Button 2
t	Time (s = seconds)
R	Receive message
E	Transmission Status of the SPI
NOK	No correct
OK	Correct
NULL	No answer
config	Configuration



MASTER

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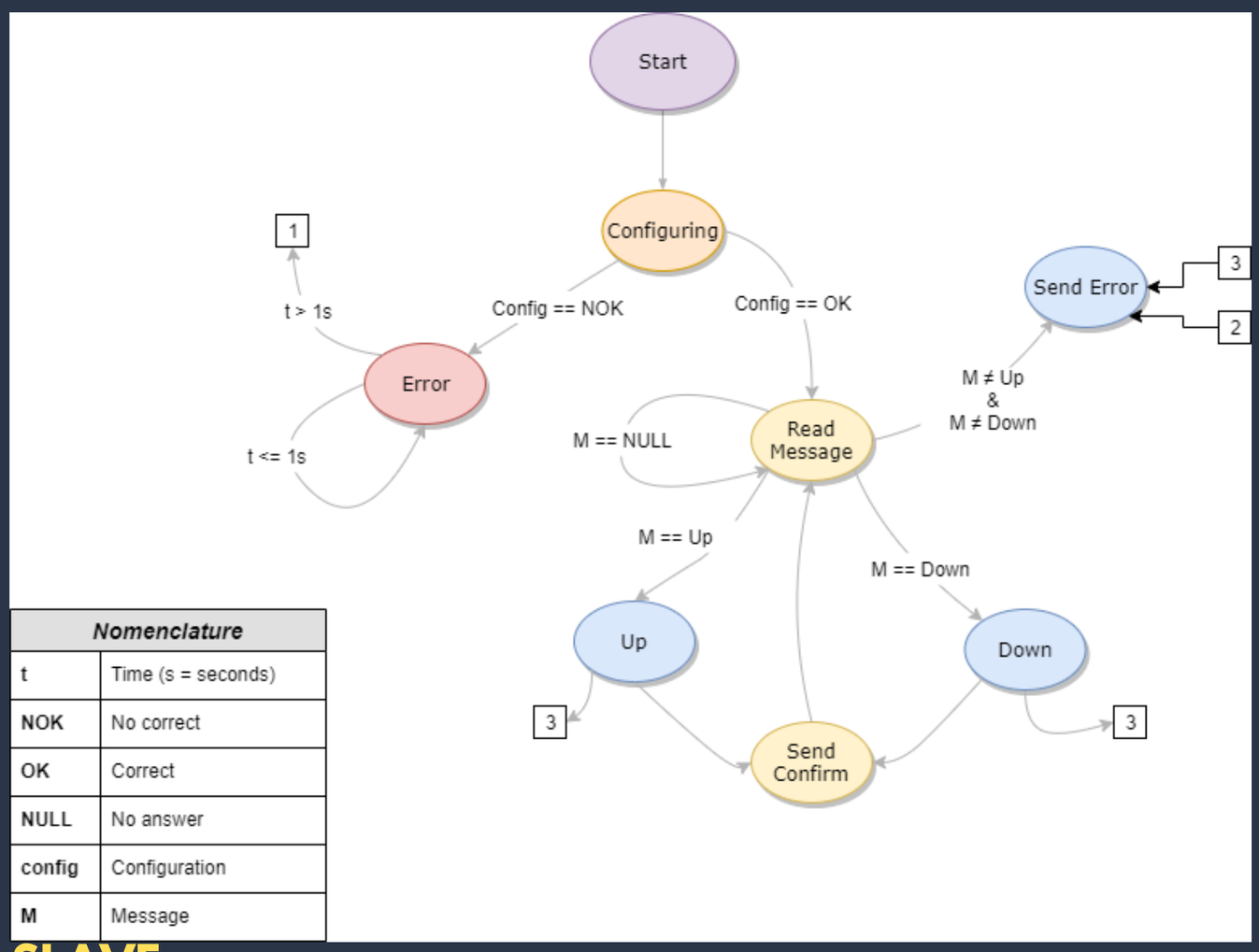
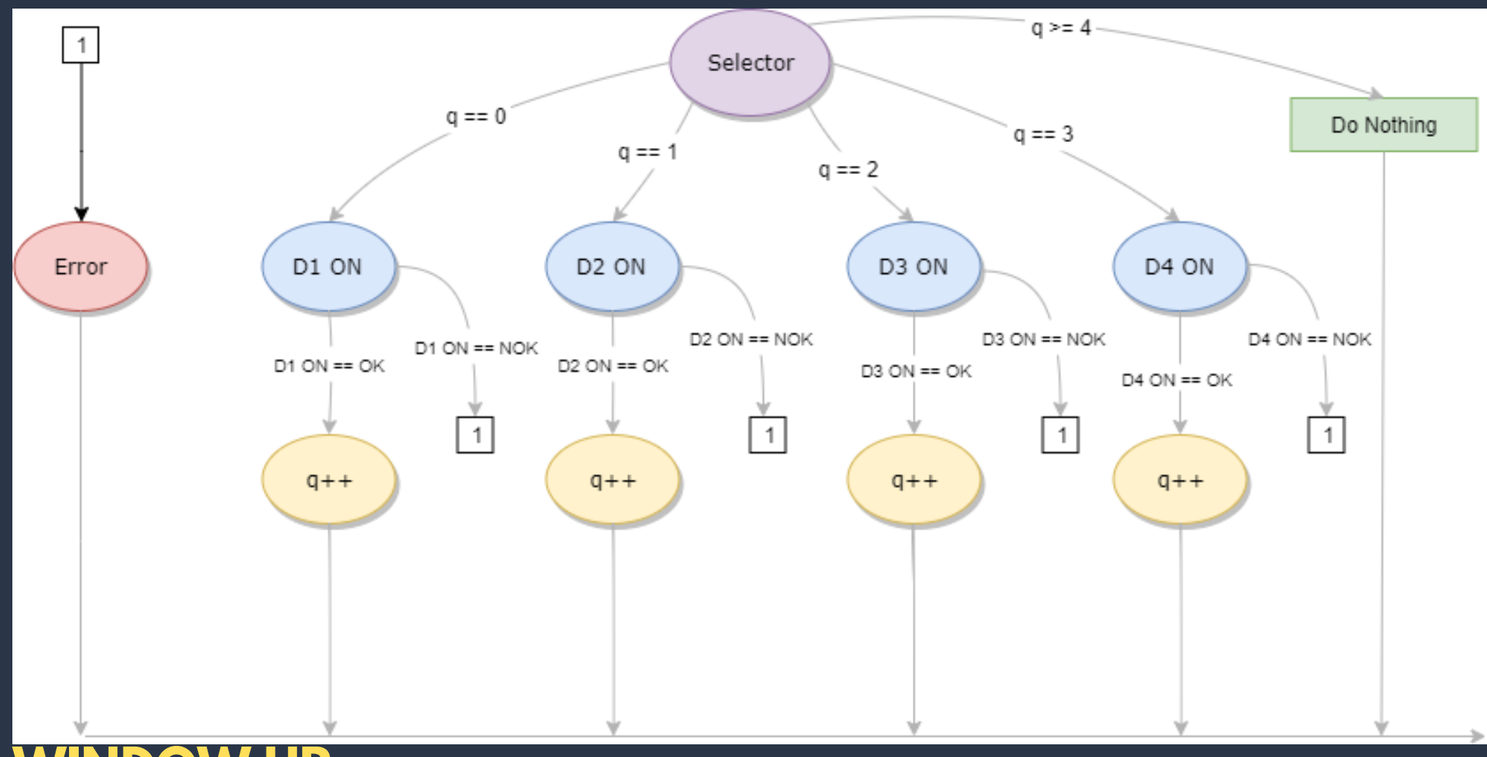


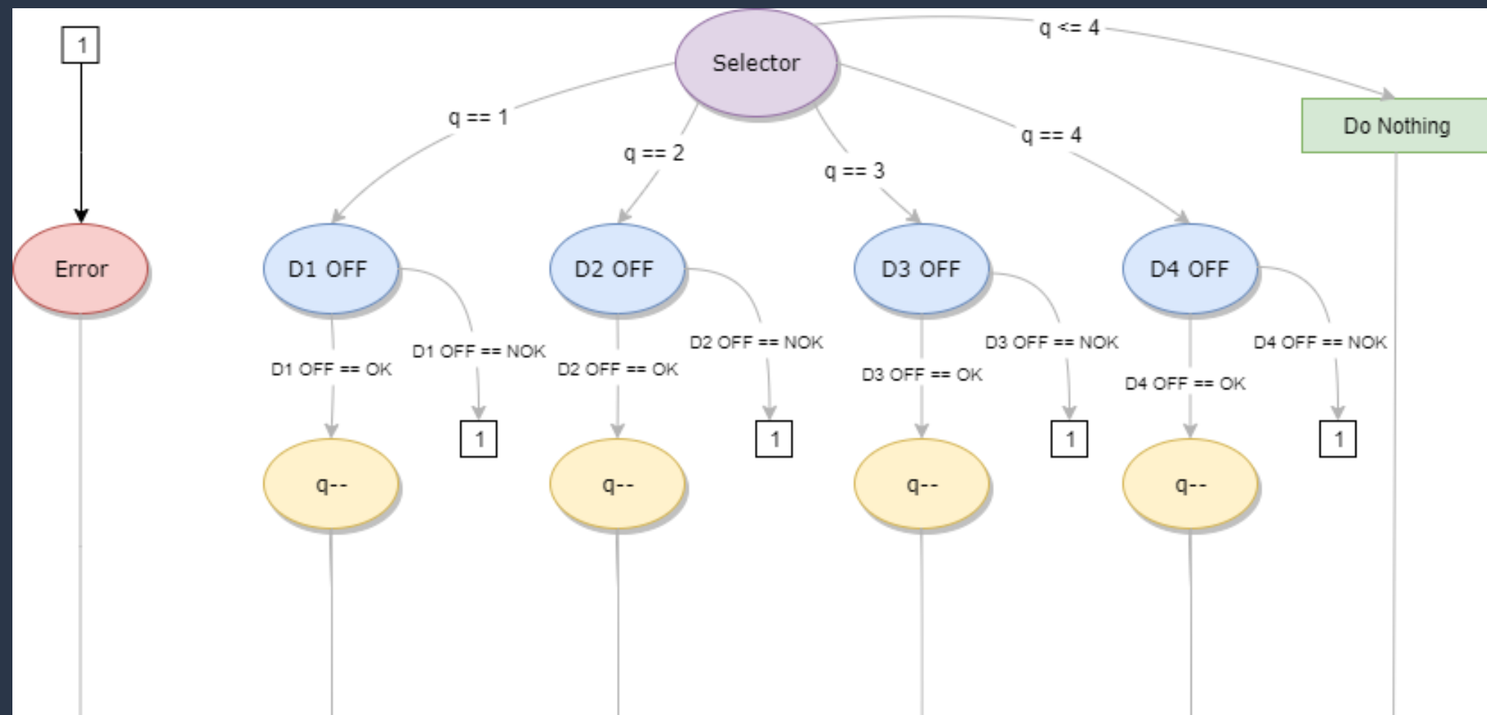
Nomenclature	
t	Time (s = seconds)
NOK	No correct
OK	Correct
NULL	No answer
config	Configuration
M	Message

SLAVE



Nomenclature	
NOK	No correct
OK	Correct
q	Count variable
D1 ON	Led #1 turned on
D2 ON	Led #2 turned on
D3 ON	Led #3 turned on
D4 ON	Led #4 turned on

WINDOW UP



Nomenclature	
NOK	No correct
OK	Correct
q	Count variable
D1 OFF	Led #1 turned off
D2 OFF	Led #2 turned off
D3 OFF	Led #3 turned off
D4 OFF	Led #4 turned off

WINDOW DOWN