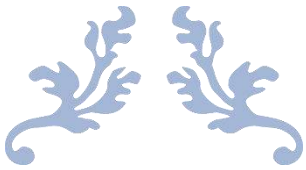
Tunisia Polytechnic School



SMART IRRIGATION SYSTEM

SPECIFICATIONS

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1. Context and definition of the problem

Big amount of water is wasted nowadays due to overwatering caused by inefficiencies in the traditional irrigation system. Thus, looking for a new way to execute this task automatically is being highly recommended in order to avoid such huge problem.

2. Objective of the project

This project aims to build a Smart Irrigation System using information about temperature, level of humidity, level of luminosity, level of water in the reservoir… The desired embedded system should be able to take correct decisions about planning irrigation's slot times.

3. Project requirements

- **Irrigation automation:**

The project should automate the irrigation process based on sensors values such as temperature, humidity…

- **User interaction:**

The embedded system communicates with the user via a touch screen that used to display the state of the existing sensors (temperature, humidity…) and allow setting up the initial configuration of the system by indicating specific parameters about type of plants and their approximative number and the type of soil in order to meet specific landscape needs.

4. Project design

Hardware: STM32F469 Discovery/ pump/ power supply/ set of sensors (temperature, humidity, luminosity, level of water)/ SD card/ GSM module

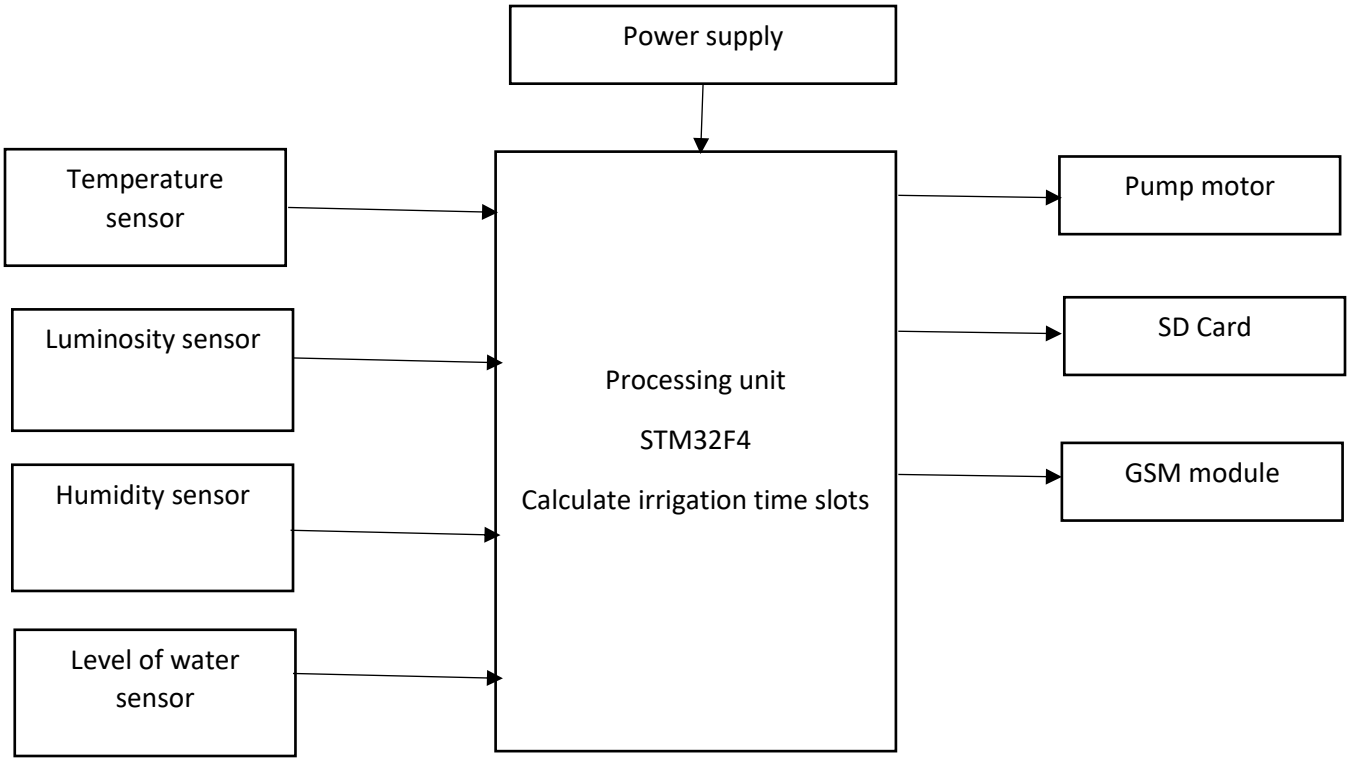

Figure 1: Block diagram of smart irrigation system

Grafcet:

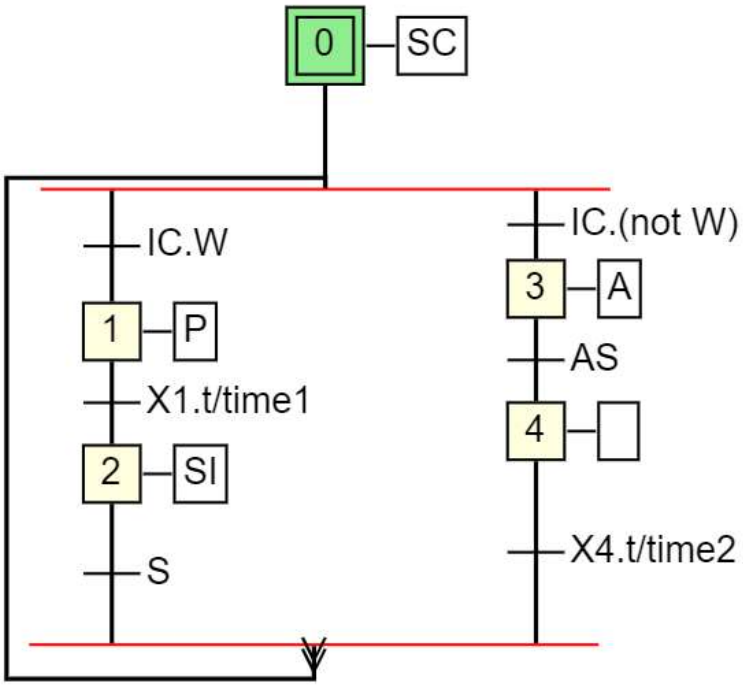

Figure 2: Grafcet

Table 1: Elements descriptions

Symbol	Designation	Description
SC	System configuration	Plants' type and number and soil type
IC	Irrigation conditions	It is determined by temparature, humidity and lumonisity values.
W	Water level	Water availability in the reservoir
P	Pump activation	-
SI	Send information	Send information about the completed irrigation
S	Information sent	-
A	Alert	Send a message to alert the user about the lack of water in the reservoir
AS	Alert sent	-