

**Assignment 2: Nucleo-F401RE**



**Assignment Objectives:**

- Using Nucleo-F401RE.
- Modeling an embedded system



**Theoretical aspects**

Modeling an embedded system



**Assignments**

**Problems**

- Study the existing systems with the subjects (air humidifier, intruder detection, gardener, conveyor object detection).
  - Smart Air Humidifier (temperature, photodiode, distance, etc)
  - Smart Intruder Detection (pir motion, photodiode, etc)
  - Smart Gardner (soil moisture, temperature, photodiode, etc)
  - Smart Conveyor Object Detection (distance, buzzer, etc)
- Problem description: Describe your selected (only one) system in natural language.

**Remark: Work in team of 4 members.**

**Prerequisite**

- Study examples from
  - Laboratory 2

**What to do**

1. Implement one of the problems stated above using Nucleo-F401RE.
  - 1.a. Without FSM model
  - 1.b. With FSM model
2. Implement one of the problems stated above using LabVIEW.
  - 2.a. With FSM model



**Turn in:**

- Zip archive containing:
  - Project files for Problem description
  - The project created in Nucleo-F401RE containing the results from steps 1, 1.a and 1.b. a readme file with necessary comments/explanations. Specifically, the submitted archive should include:
    - The Nucleo-F401RE projects (noFSM and withFSM)
      - 2 screen shots (red led on and green led on) of the running implemented system (your project using the Nucleo-F401RE board).
  - The project created in LabVIEW containing the results from steps 2, 2.a.

**Assignment and Delivery date:**

1. Assignment date: laboratory 2
2. Delivery date (first): laboratory 6 (maximal grade 450XP: 50 XP for noFSM, 150XP for with FSM, 250 XP for with FSM in LabVIEW)
3. Delivery date (last): laboratory 7 (maximal grade 220: 25 XP for noFSM, 70 XP for with FSM, 125 XP for with FSM in LabVIEW) **if time available.**



Remark: The solutions must be presented in class.