Computational Models for Embedded Systems
Laboratory Assignment 02

Assignment 2: Finite State Machine

Theoretical aspects
Model checking

Assignment Objectives
Verification using model checking.
JSpin

Assignments
LabVIEW Tool

Assignment 2a. – as part of the lab activities
Assignment 2b. – as part of the final exam

Assignment 2a. - UBB-Goes-Green – problem/solution

- Implement the problem described in Assignment 1a using LabVIEW and FSM.
- Create your own Problem Statement - related to UBB-Goes-Green – but this time model the behavior using FSM.
- Work in teams of 2 members.

Assignment 2b. - Embedded systems – problem/solution

- 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)
- Create your own Problem Statement – Describe your selected (only one) system in natural language
- Work in teams of 2 members.

LabVIEW installation (use your university email account)

- https://www.ni.com/ro-ro/support/downloads/software-products/download.labview.html#346254

LabVIEW documentation
http://www.ni.com/academic/students/learn-labview/

Watch the following 2 videos

- LabVIEW Environment
  - http://www.ni.com/academic/students/learn-labview/environment/
- Loops and Execution Structures
  - http://www.ni.com/academic/students/learn-labview/execution-structures/

Practice - Create in LabVIEW the SM using the steps provided in the following tutorials:

- Module 7 Exercise_State Machines.pdf
- Tutorial_ State Machines_VendingMachine.pdf

Turn in (for each Assignment 2a., 2b.):

(a) The project created in LabVIEW using FSM.
(b) An archive with all the above files must be submitted in Teams, under the Assignment 2 (the name of the archive: Name1Name2_FSM_2a.zip, Name1Name2_FSM_2b.zip

Assignment and Delivery date for Assignment 2a:

1. Assignment date: laboratory 3
2. Delivery date (first): laboratory 5 (maximal grade 300XP)
3. Delivery date (last): laboratory 7 (maximal grade 150) if time available.

Remark: The solutions must be presented in class (during lab hours).

Assignment and Delivery date for Assignment 2b:

1. Assignment date: laboratory 3
2. Delivery date: Date of the final exam (maximal grade 300XP)