CIS 4930/6930 Principles of Cyber-Physical Systems
Project #1: Due: Feb. 28th, 2014

Problem Description

In this project, you will build a FSM model that represents the smart traffic control as described in the project slides, which is available at `http://www.csee.usf.edu/~zheng/teaching/PrinciplesCPS/proj/proj1.pdf`. The project slides only give a general idea. You will have to understand this design more concretely to accomplish this project successfully.

What to do

1. Create the diagram showing the connections of actor models representing the traffic controller and the traffic flows from all *four* directions.

2. Build a FSM model for each actor created in the above step.

3. Implement the FSM models built in the above step in Promela.

4. Formulate relevant correctness requirements about this design in LTL.

5. Run SPIN to show if your model satisfies all correctness requirements. In case your model violates any of the correctness requirements, give a detailed explanation on why such violations occur, and your proposal to fix these violations.

The successful completion of this project requires you create a `readme` file with sufficient comments on the results from each of the above steps, and necessary assumptions you make about your design. Loss of credits may occur if your solutions are difficult or not clear to understand and evaluate.

Note: this is a group project. Each group should have no more than two members. Names of group members must be shown on the first line of the `readme` *file. A single grade will be assigned to both group members.*

What to Submit

A single zip file containing the the results from step $1 - 5$ and a `readme` file with necessary comments/explanations. Specifically, the submitted file should include

- A *single* file that includes the models for the traffic control system and all LTL formulas for correctness requirements. The file should be sufficiently commented including the meaning for variables used and LTL formulas specified.

- A *single* `readme` file that includes all the other information created for step $1 - 5$.

Requirements

- Your file name must be in the format **proj1-{last name of a group member}** to help me recognize the owner of the file.

- This project is for groups of two members.

- All writings and figures must be created using some text/graphics editors. Otherwise, substantial loss of points may be incurred if your documents are unreadable.