Universidad de los Andes

ISIS-1106 Lenguajes y máquinas
TP 6
Fecha: December 2, 2021

Task 1. For this exercise we are going to model a train crossing. Train crossings are controlled by a controller station in charges of moving the gate down to block the road as trains approach the crossing. Once the train passes, the gate must be put up again to enable cars to go through the crossing. As the gate does not go down immediately, the train track has a set of sensors to alert the controller about the train, and give enough time to go through.

The first sensor $S1$ is used to recognize whenever the train enters the crossing area. At this point the controller should trigger the light and bell to alert cars about the incoming train. After the alert has been on for 10 seconds, the controller should signal the gate to go down. The gate should stay down for as long as the train is passing through, to be on a safe state.

As the gate is down, the controller must send a signal to the track semaphores to indicate to the train that it is safe to go. There are two semaphores in our system $L1$ and $L2$ which have to be synchronized with respect to their state. That is, if one semaphore goes to the open state, the other one should do so as well. Semaphores can be in one of two states, open or closed.

Finally, when the last point of the train passes through a second sensor $S2$, then this should send a signal to the controller that it is safe to open the road. At this moment, the controller should stop the light and alarm, signal the gate to go up, and close the semaphore lights.

Your task is to build a Petri net to model the train crossing taking into account all the elements interacting in the problem. Give good names to your places and transitions to verify that indeed you are modeling the system correctly.

You may use HPSim or HSim to solve the problem. Hand in a unique file of the Petri net model (program) saved by the tool (images do not execute!).