

CS266 - Formal Specification and Verification
HW #5 -- Winter 2009
ASLAN Specifications and Proof Obligations

Due: Thursday 12 FEB 09

Exercise to Modify Existing Specification and to Write a New Specification

1. Modifying an Existing Single-Level ASLAN Specification

The purpose of this problem is to get you familiar with the ASLAN specification language and the ASLAN specification processor. Your assignment is to modify the Traffic_Light specification that was handed out in class.

The modification that you are to make is to add a left turn sensor. The traffic light should sequence from Red to LeftTurn if there is a car waiting to make a left turn in the appropriate direction. Otherwise the light should sequence from Red to Green.

2. Writing a Single-Level ASLAN Specification

In class we reviewed the Soda_Machine specification. Your task is to write an ASLAN specification for a chocolate machine.

The chocolate vending machine that you are to specify should accept nickels and dimes and dispense large and small bars of chocolate. The small bars cost ten cents and the large bars cost fifteen cents. The customer selects the desired size. The customer can also request that all of his/her unused money be returned by the machine at any time.

The transitions are Insert_Coin, Selec_Choc, Return_Change, and Dispense.

The invariant condition that should hold in every state is that the amount of money in the machine is always nonnegative. One would also like a large candy bar to be dispensed only if there were fifteen or more cents in the machine and a small bar to be dispensed only if there were ten or more cents in the machine.

Extra: You may want to make your specification more realistic by allowing the dispense operation to sometimes take the customer's money without giving any candy.

What you are to turn in to me for questions 1 and 2 of Part I are the listings of the .out files corresponding to each of the questions.

Note: You should be able to access the ASLAN specification processor on the linux machines without adding anything to your path.