Homework #3: ECE 461 / 661

Analog Inputs, Flow Control - Due Monday, September 10th

You may work in groups of 1-3 if you like.

Homework can be turned in in class, in my office, or emailed to jacob_glower@yahoo.com

Problem 1: Write a ladder logic program for a traffic light where the Red / Green times depend upon traffic. Assume sensors detect the traffic each direction (0 = no traffic, 1000 = 10V = heavy traffic)

- Analog Input 03 = E/W traffic   (0 to 1000)
- Analog Input 04 = N/S traffic   (0 to 1000)

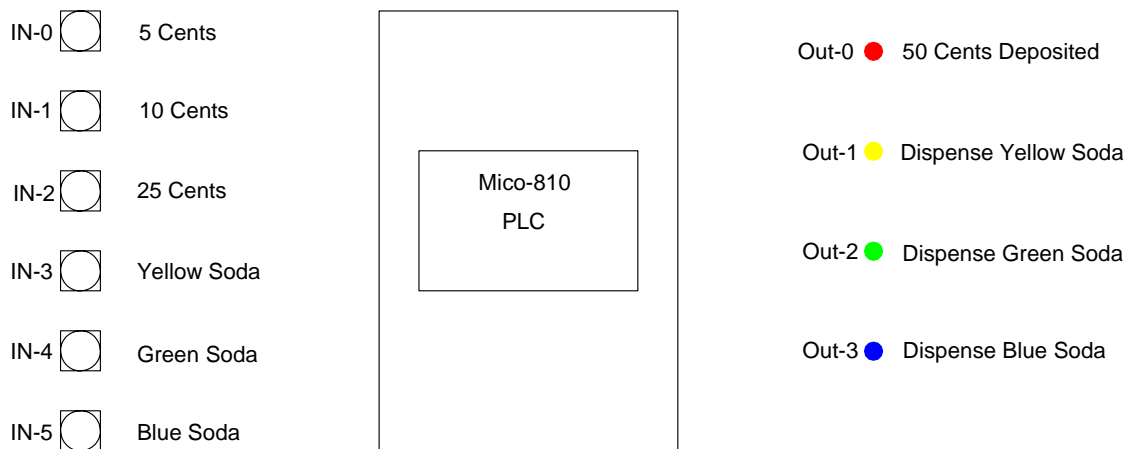The green times should be related to the traffic:

- if NS - EW = 1000,

  - Green = 7 seconds
  - Yellow = 2 seconds (fixed)
  - Red = 3 seconds
- If (NS - EW) = 0

  - Green = 5 seconds
  - Yellow = 2 seconds
  - Red = 5 seconds
- If (NS - EW) = -1000,

  - Green = 3 seconds
  - Yellow = 2 seconds
  - Red = 7 seconds

Problem 2: Demonstate your program (in person or with a video)
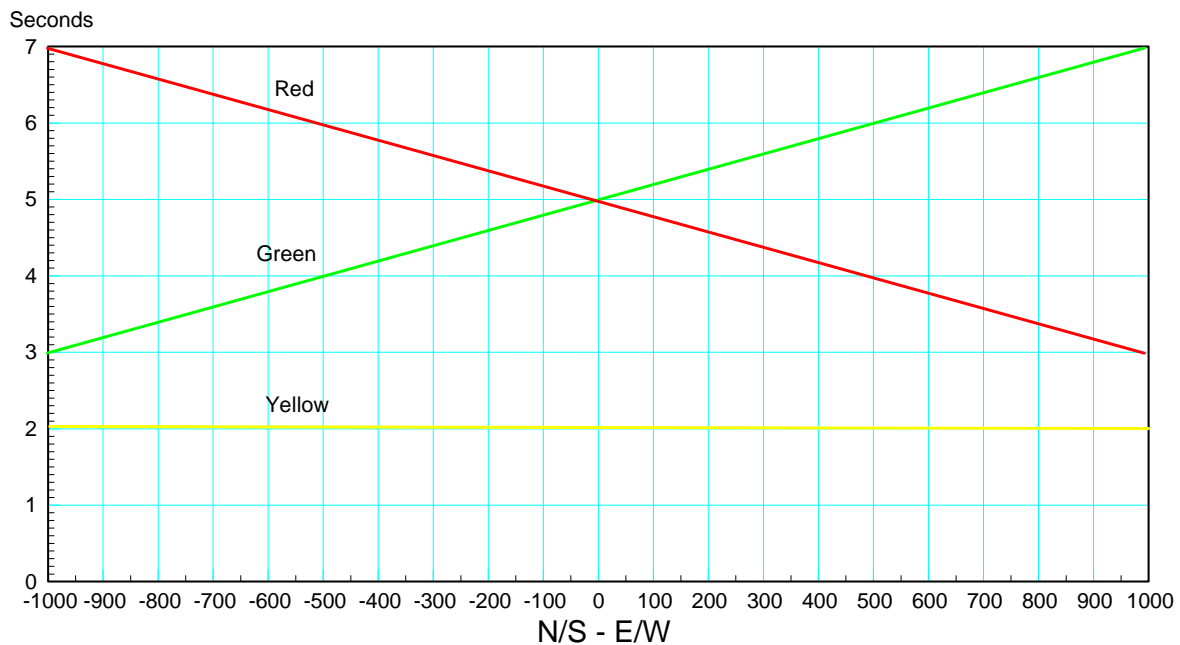
A PLC is to control a pop machine. The coin slot can accept either nickles, dimes, or quarters.

- When you add 50 cents or more, the red light turns on indicating that you have enough money to buy a pop.
- If there is more than 50 cents in the machine when you press a select button (yellow, green, blue), then
  - The corresponding light turns on for 2 seconds then turns off, indicating that a pop has been dispensed, and
  - If you added more than 50 cents, change is given. The red light is turned off for 2 seconds.
  - If change is due, the red light turns back on for 2 seconds indicating that a nickle was returned
  - Change continues to be given until you have no change due.

IN-0	5 Cents		Out-0 ●	50 Cents Deposited
IN-1	10 Cents		Out-1 ○	Dispense Yellow Soda
IN-2	25 Cents	Mico-810 PLC	Out-2 ●	Dispense Green Soda
IN-3	Yellow Soda			
IN-4	Green Soda		Out-3 ●	Dispense Blue Soda
IN-5	Blue Soda			

Problem 3) Wite a ladder-logic program to implement the soda pop controller that gives change.

Problem 4) Demonstrate that your program works (video or in-person demo is OK)