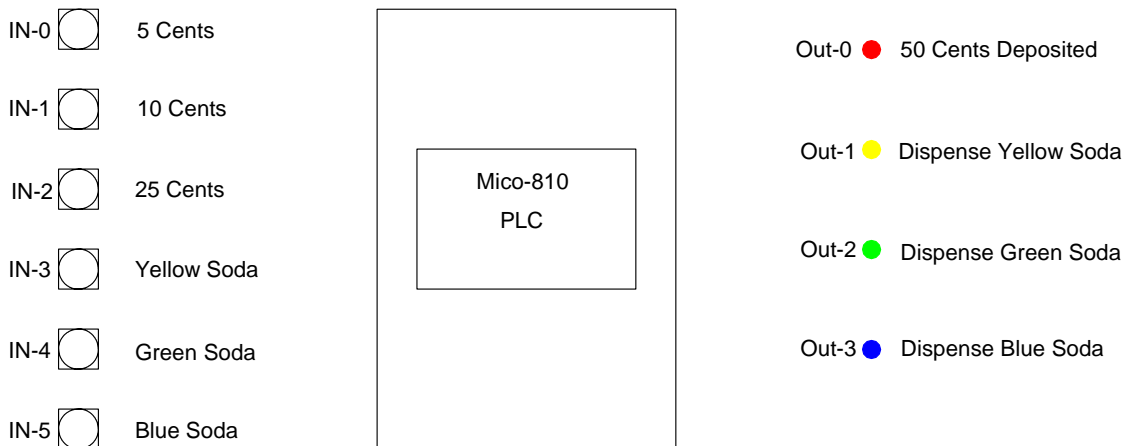# Solution to Homework #2: ECE 461 / 661

State Transitional Logic - Counters - Timers:. Due Wednesday, September 5th

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

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 the red light is turned on and you press a yellow / green / or blue button,
  - The corresponding light turns on for 2 seconds then turns off, indicating that a pop has been dispensed, and
  - The money counter is cleared (no change)

IN-0 ◯	5 Cents
IN-1 ◯	10 Cents
IN-2 ◯	25 Cents
IN-3 ◯	Yellow Soda
IN-4 ◯	Green Soda
IN-5 ◯	Blue Soda

Mico-810
PLC

Out-0 ●	50 Cents Deposited
Out-1 ●	Dispense Yellow Soda
Out-2 ●	Dispense Green Soda
Out-3 ●	Dispense Blue Soda

Problem 1) Write a ladder-logic program which holds OUT-1 to OUT-3 high for 2.00 seconds when the corresponding button is pressed.

Problem 2) Write a ladder-logic program which counts to 50 cents and turns on the red light when the total is 50 cents or more.

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

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

Rung 1..3: Rising edges are detected on buttons 00, 01, and 02. When these are detected, the money added (N) is incremented by

- IN_00   5 cents
- IN_01   10 cents
- IN_02   25 cents

Rung 4: When the total is 50 cents or more, the red light turns on.
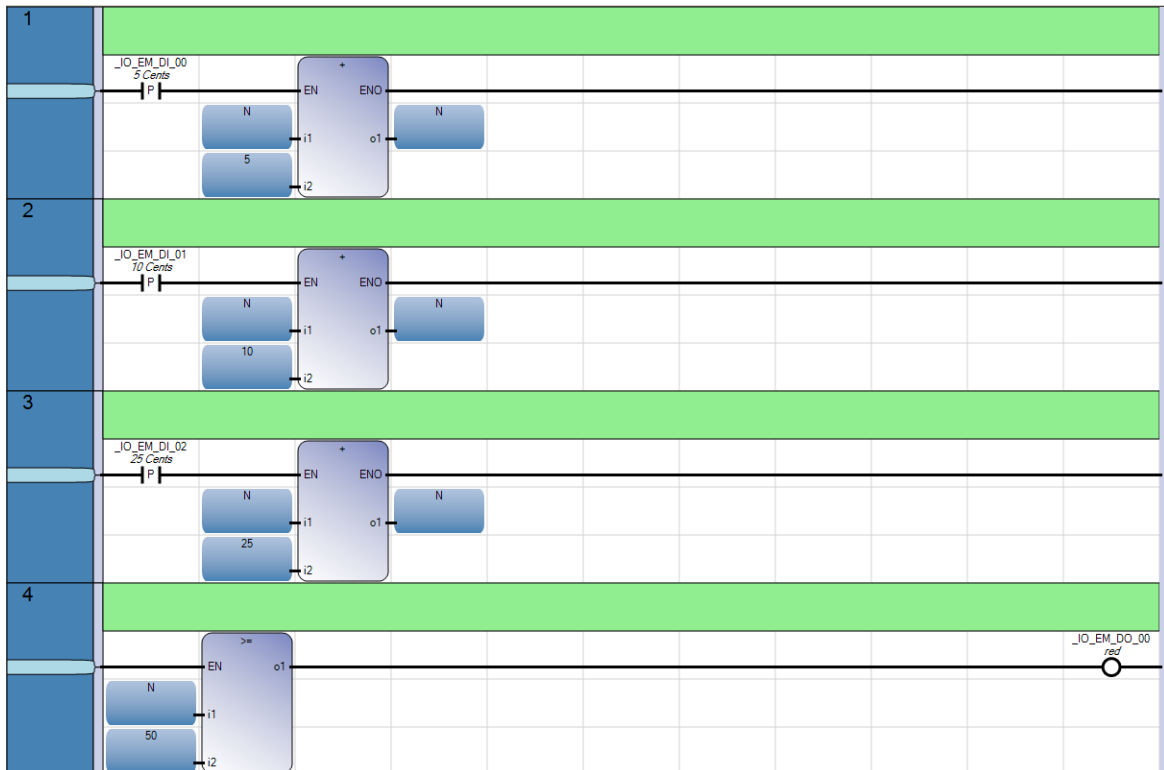
Rung 5 - 7: If the red light is on and you press one of the selector buttons, the corresponding relay turns on for 2 seconds.

Rung 8: If any pop is dispensed, the amount of money stored (N) is cleared.