

# Homework #1 ECE 461 / 661

Ladder Logic. Due Wednesday, September 4th

(will accept any time before December 13th so you can use the Micro810 PLC's)

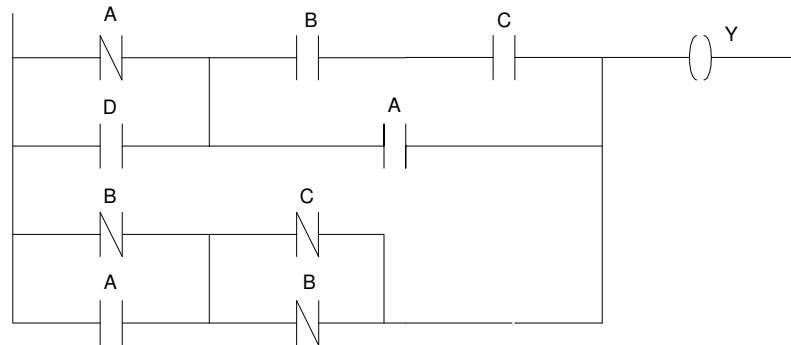
Note: For this assignment, you may use

- Allen Bradley Micro810 PLCs ( check one out from EE 201 ), or
- PLC Fiddle ( <https://www.plcfiddle.com/> )

1) Write a Ladder Logic program to implement the following logic function:  $Y = f(A,B,C,D)$

		CD			
		00	01	11	10
AB	00	1	1	0	1
	01	0	1	0	x
	11	1	1	0	1
	10	1	x	1	0

2) Determine the logic function which corresponds to the following ladder logic program:



3) Write a ladder logic program to meet the following requirements:

I/O:

- Input: Button 1, 2, 3, 4 (binary number from 0000 to 1111 with the MSB being button 1)
- Output: 1 (red), 2 (yellow), and 3 (green)

How they relate:

- The red light turns on if the binary value is less than five {0, 1, 2, 3, 4}
- The yellow light turns on if the binary value is in the range of [5, 10] {5, 6, 7, 8, 9, 10}
- The green light turns on if the binary value is in the range of [11, 15] { 11, 12, 13, 14, 15 }