

Homework #1 ECE 461 / 661

Ladder Logic. Due Monday, August 31st

(will accept any time before December 1st so you can use the Micro810 PLC's)

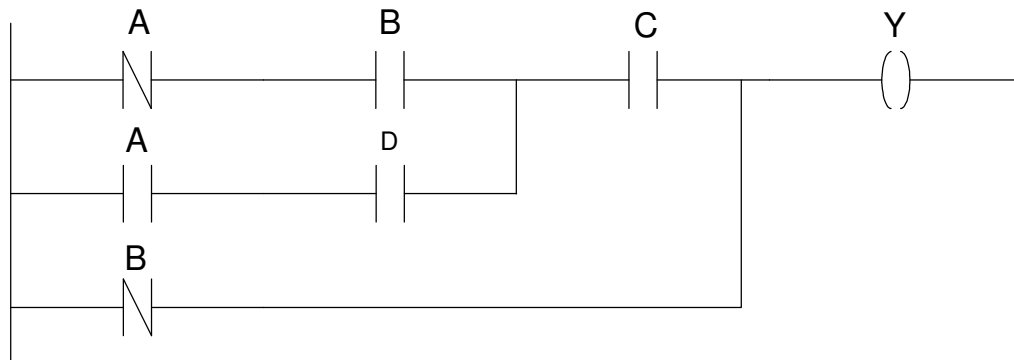
Note: For this assignment, you may use

- Allen Bradley Micro810 PLCs (ECE room 211 or check one out), or
- PLC Fiddle (<https://www.plcfiddle.com/>)

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

	00	01	11	10
00	1	0	1	1
01	0	1	1	0
11	x	x	x	x
10	1	1	x	x

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 number is less than 6 { 0, 1, 2, 3, 4, 5 }
- The yellow light turns on if the binary number is equal to 7 { 7 }
- The green light turns on if the binary number is prime { 2, 3, 5, 7, 11, 13 }