Homework #1 ECE 461 / 661

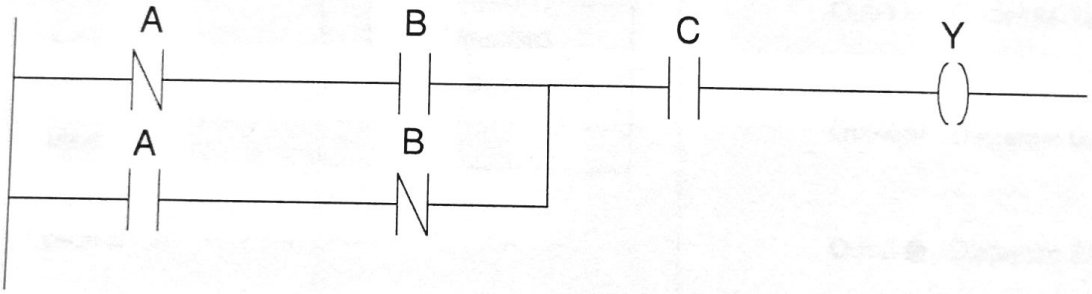
Ladder Logic. Due Monday, August 27th

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

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

$Y = B'C'D' + CD + BD + AD$

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



$Y = (A'B + AB)CC$

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

I/O:

- Input: Button 1, 2, 3, 4
- Output: 1 (red) and 3 (green)

How they relate:

- If no buttons are pressed, both lights are off. Otherwise,
- If an even number of buttons are pressed, the red light turns on and the green light is off.
- If an odd number of buttons are pressed, the green light is on and the red light is off.

$R = 12 + 13 + 14 + 23 + 24 + 34 + 1234$ (others)

$G = 12'34' + 21'3'4' + 31'24' + 41'23' + 1234' + 123'4 + 12'34 + 1'234$