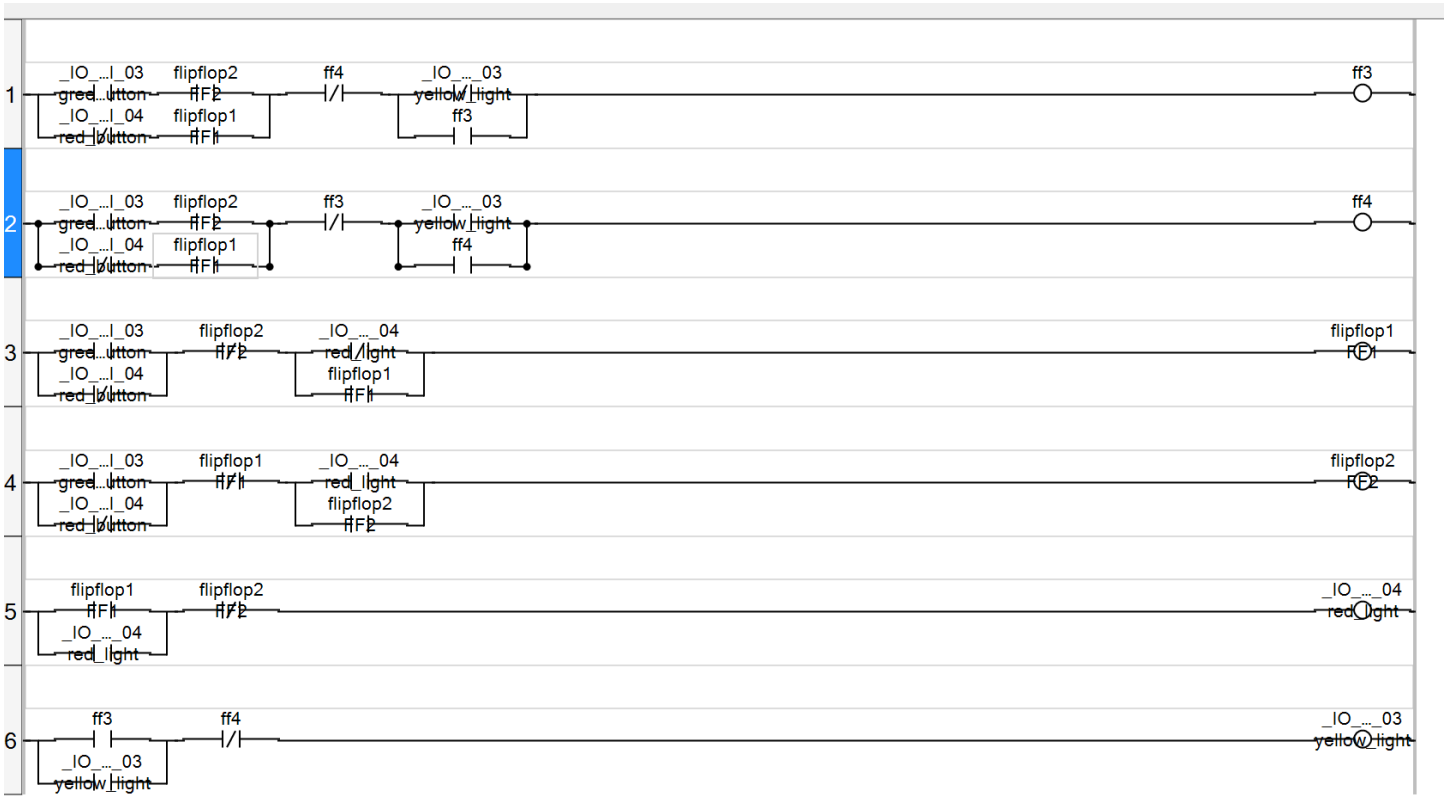
MICS Lab 06 Outline

1. Create a new project where you write the ladder logic program to toggle a single light output with a single pushbutton actuation. That is, whenever the button is pressed, if the light is OFF, it will turn ON, but if it is ON it will turn OFF.

2. Extend this program to make a two-bit counter, where the GREEN button will cause the count to go up by one (00 -> 01 -> 10 -> 11 -> 00 -> 01 …). But the RED button will cause it to decrement (00 -> 11 -> 10 -> 01 -> 00 -> 11 …). You can reference this diagram below for one potential solution. Here FF1 will be true when the RED light (Output 4) is on and FF2 high when it is off which is bit[0] of the counter. Similarly, FF3/FF4 are tied to the state of the YELLOW light (Output 3) which is bit [1] of the counter.



3. Extend the two-bit counter to make a three bit counter that can cycle through values 000 to 111 in both directions. Upload a screenshot of your final LL to the completion form.

4. Following the directions shown in this video (https://www.youtube.com/watch?v=QISbZC6uCvc), create a program that will display the internal variables of a TON timer with a 5 second Preset Time.

5. Repeat for a TOF timer.