

Homework #2: ECE 461 / 661

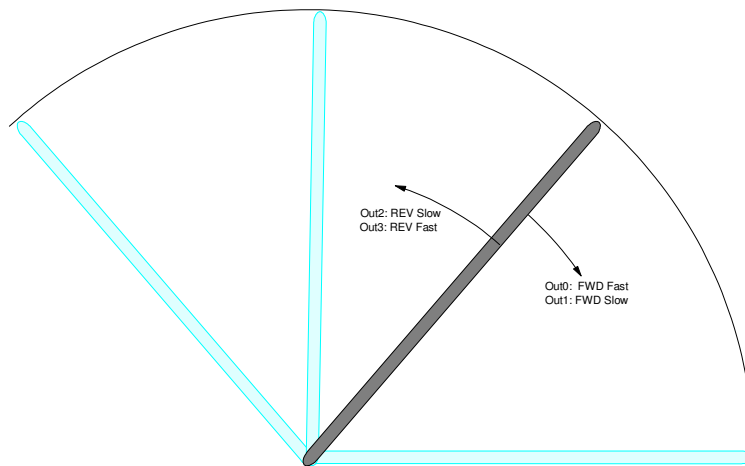
Timers & Counters. Due Monday, September 8th
(will accept any time before December 1st so you can use the Micro810 PLC's)

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/>)

Windshield Wiper

Write a ladder logic program to control a windshield wiper



Outputs:

- Out0: Forward
- Out1: Reverse
- Out2: Fast (1) or Slow (0)
- Out3: Wiper Fluid On (1) and off (0)

Inputs:

- In0: Stop (all outputs off)
- In1: Intermittant
- In2: Slow
- In3: Fast
- In4: Clean Windshield

Problem 1: Write a PLC program to control a windshield wiper in intermittent mode

- When IN0 is pressed, the wipers turn off
- When IN1 is pressed, the wipers start a sequence
 - OUT2 = off (slow)
 - Forward for 2 seconds (OUT0 = 1, OUT1 = 0)
 - Reverse for 2 seconds (OUT0 = 0, OUT1 = 1)
 - Pause for 2 seconds (OUT0 = 0, OUT1 = 0)
 - Repeat

Problem 2: Add Slow mode

- When IN2 is pressed, the wipers start a sequence
 - OUT2 = off (slow)
 - Forward for 2 seconds
 - Reverse for 2 seconds
 - Repeat

Problem 3: Add fast mode

- When IN3 is pressed, the wipers start a sequence
 - OUT2 = on (fast)
 - Forward for 1 seconds
 - Reverse for 1 seconds
 - Repeat

Problem 4: Add a clean mode (assumes wipers were turned off)

- OUT3 remains on while IN4 is pressed (sprays cleaning fluid on the windshield)
- While IN4 is pressed, the wipers go back and forth in the slow mode (2 seconds forward, 2 seconds in reverse, repeat).
- When IN4 is released,
 - The spray turns off (OUT3 = off),
 - The wipers complete 3 more cycles (forward then reverse)
 - Then the wipers turn off