Lab #4 (Due 10/13/09)

http://www.personal.kent.edu/~asamba/tech43550/

Garage Door: Exercise 2

In this exercise you will apply your knowledge of relay logic instructions to modify your PLC Assignment 01 program so as to maintain the appropriate door movement once initiated by the operator. The opening or closing operation of the door will continue to completion even if the operator releases the pushbutton which initiated the movement. The program should adhere to the following criteria:

- Door movement will halt immediately when the STOP pushbutton is initially pressed, and will remain halted if the pushbutton is released.
- Pressing the OPEN_PB switch will cause the door to open if not already fully open. The opening operation will continue to completion even if the switch is released.
- Pressing the CLOSE_PB switch will cause the door to close if not already fully shut. The closing operation will continue to completion even if the switch is released.
- If the Door is already fully opened, pressing the OPEN_PB switch will not energize the motor.
- If the Door is already fully closed, pressing the CLOSE_PB switch will not energize the motor.
- Under no circumstance will both motor windings be energized at the same time.
- The AJAR lamp will be illuminated if the door is NOT in either the fully closed or fully opened position.
- The OPEN lamp will be illuminated if the door is in the fully open position.
- The SHUT lamp will be illuminated if the door is in the fully closed position.

Note that limit switches LS1 and LS2 should be considered to be normally open. When the door is shut both of these switches will be closed. When the door is open both of these switches will be open. When the door is partially open LS2 will be open and LS1 will be closed.

It is your responsibility to fully design, document, debug, and test your program. Avoid the use of OTL or OTU latching instructions, and make a concerted effort to minimize the number of rungs employed. Ensure that you have made effective use of both instruction and rung comments to clearly document your program. All I/O components referenced within your program should be clearly labeled, and rung comments should be employed to add additional clarity as required.
Your program should be named "<Group Members Last Name>""Lab4".

Submit, via email, a screen shot of your ladder logic program. Use the "PRTSC" button on your keyboard to capture the screen, then copy the image to a Word file, and email the Word file to asamba@kent.edu

Hint:

- To begin operation, turn both maintained contact switches (LS1 and LS2) to the right. This simulates the door being closed.
- Press the OPEN_PB (left green button), the MOTOR_UP light should come on
- Simulate the door opening by switching LS2 to the left - The SHUT light should go out
- Simulate the door being completely open by switching LS1 to the left – The MOTOR_UP light should go out and the OPEN light should come on

Adapted from thelearningpit.com