Lab #3 (Due 10/07/10)

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

Garage Door: Exercise 1

In this exercise you will apply your knowledge of relay logic instructions to design a program which will control a garage door. The door system includes a reversible motor, a pair of limit switches and a control panel, all connected to your PLC. You will simulate these Input/Output devices with the light box. The program you create will monitor and control this equipment while adhering to the following criteria:

- In this exercise the OPEN_PB and CLOSE_PB pushbuttons will be used to control the movement of the door. Movement will not be maintained when either switch is released and therefore the STOP switch is neither required nor used in this exercise. You will also not utilize the ADJAR lamp in this exercise.
- Pressing the OPEN_PB switch will cause the door to move upwards (open) if not already fully open. The opening operation will continue as long as the switch is held down. If the switch is released, or if limit switch LS1 opens, the door movement will halt immediately.
- Pressing the CLOSE_PB switch will cause the door to move down (close) if not already fully closed. The closing operation will continue as long as the switch is held down. If the switch is released, or if limit switch LS2 closes, the door movement will halt immediately.
- 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 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 (on or true). When the door is open both of these switches will be open (off or false). 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 “YOURLASTNAME>Lab3”.
Adapted from http://learningpit.com