

Assessment

You must demonstrate that you can follow the programming language rules, by designing, writing, storing and running a PLC program.

You are required to design a PLC control circuit for an electric roller door in a factory. The program must comply with the following functional description.

Functional description of the garage door controller.

- a) When the Up Push Button(N/O) is pressed the door must raise until the Upper Limit Switch(N/O) is reached. When Upper Limit switch closes the door must stop.
- b) When the Down Push Button(N/O) is pressed the door must lower until the Bottom Limit Switch(N/O) is reached. When Bottom Limit switch closes the door must stop.
- c) The door is to complete raising or lowering to the limit switch if the up or down button is released. An interlock should prevent the roller door attempting to open and close at the same time.
- d) The door is to stop if the Stop Push Button(N/C) is pressed.
- e) Motor Up or Down LEDs, showing motor direction, must come on if the motor is running.
- f) The door only takes 15 seconds to complete operation. The door must stop if it runs for more than 20seconds without activating one of the limit switches and a Buzzer must come on to indicate a fault
- g) The buzzer must be reset when an up or down control is activated.

To use the roller door model use the following I/O:

No		Comment	
01	I1	up button	
02	I2	bottom limit	
03	I3	top limit	
04	I4	down button	
05	I5		
06	I6		
07	I7		
08	I8		
09	I9		
10	IA	Stop Button	
11	IB		

No						Comment
01	Q1	[	]	S	R	
02	Q2	[	]	S	R	
03	Q3	[	]	S	R	
04	Q4	[	]	S	R	
05	Q5	[	]	S	R	
06	Q6	[	]	S	R	
07	Q7	[	]	S	R	
08	Q8	[	]	S	R	
09	Q9	[	]	S	R	
10	QA	[	]	S	R	
11	QB	[	]	S	R	Up LED
12	QC	[	]	S	R	
13	QD	[	]	S	R	Down LED
14	QE	[	]	S	R	
15	QF	[	]	S	R	Motor
16	QG	[	]	S	R	Buzzer

The completed program must be downloaded to an operational PLC, tested, and then uploaded and placed in the moodle dropbox as evidence.