0617-470 and 870 Controls for Manufacturing Automation

Department of MMET-PS

Rochester Institute of Technology

Laboratory Exercise #1

10 Points

<u>**Objective:**</u>
The objective of this laboratory exercise is to create a PLC program to understand the use of NO and NC contacts, when using Selector and Momentary Push Button switches, to turn ON and turn OFF outputs.

<u>**Tasks to be accomplished:**</u>
1. Turn the DC motor ON and OFF using a NO Selector Switch.
   o The DC motor should turn ON when the switch is turned ON
   o The DC motor should turn OFF when the switch is turned OFF.
2. Turn the Light ON and OFF using two NO Momentary Push Button switches.
   o The Light should turn ON when one of the NO Momentary Push Button switches is pressed
   o The Light should turn OFF when the other NO Momentary Push Button switch is pressed.
3. Turn the Fan ON and OFF using a NO and NC Momentary Push Button switches respectively.
   o The Fan should turn ON when the NO Momentary Push Button switch is pressed
   o The Fan should turn OFF when the NC Momentary Push Button switch is pressed.

<u>**Input/Output Listing for the Experiment:**</u>

	Inputs/Outputs	**PLC**
Inputs	NO Momentary Push Button Switch 1	Local:5:I.Data.16
	NO Momentary Push Button Switch 2	Local:5:I.Data.17
	NC Momentary Push Button Switch 1	Local:5:I.Data.18
	NO Selector Switch 1	Local:5:I.Data.20
Outputs	Motor	Local:6:O.Data.30
	Light	Local:6:O.Data.27
	Fan	Local:6:O.Data.18

Hand Written Program: (Write the ladder rung that will perform each task given below –Use one or two rungs for each application)

1. Turn the DC motor ON and OFF using a NO Selector Switch.
   o The DC motor should turn ON when the switch is turned ON
   o The DC motor should turn OFF when the switch is turned OFF.

2. Turn the Light ON and OFF using two NO Momentary Push Button switches.
   o The Light should turn ON when one of the NO Momentary Push Button switches is pressed
   o The Light should turn OFF when the other NO Momentary Push Button switch is pressed.

3. Turn the Fan ON and OFF using a NO and NC Momentary Push Button switches respectively.
   o The Fan should turn ON when the NO Momentary Push Button switch is pressed
   o The Fan should turn OFF when the NC Momentary Push Button switch is pressed.

What needs to be submitted?

1. Test the program and show the demo to the instructor in the lab.
   (Only for on-campus students)
2. A well documented functional PLC program (RsLogix File), containing all tasks should be submitted with title, your name and rung comments, in the drop box within MyCourses. (You should have tested the program before submission)
3. Use the table as a reference to understand the use of NO contact symbol for the Selector Switch used in this program.

Physical switch or sensor used on the experiment setup	Is the physical switch or sensor NO or NC?	Value recorded in the memory for the switch or sensor when PLC is powered (1 or 0)	User Changing Physical State (Switch can be Closed or Opened by user)	Value recorded in the memory, for the switch or sensor when the user changes its physical state	Switch or sensor programmed as a NO or NC contact	Logical State of contact (1 or 0)
Selector Switch	NO	0	Not Activated (Open)	0	─┤├─ (NO)	0
					─┤/├─ (NC)	1
			Activated (Closed)	1	─┤├─ (NO)	1
					─┤/├─ (NC)	0
Momentary Push Button Switch	NO	0	Not Activated (Open)	0	─┤├─ (NO)	0
					─┤/├─ (NC)	1
			Activated (Closed)	1	─┤├─ (NO)	1
					─┤/├─ (NC)	0
Momentary Push Button Switch	NC	1	Not Activated (Closed)	1	─┤├─ (NO)	1
					─┤/├─ (NC)	0
			Activated (Open)	0	─┤├─ (NO)	0
					─┤/├─ (NC)	1