LAB 09

Develop the logic for tablet filling station using Statement List

OBJECTIVE:

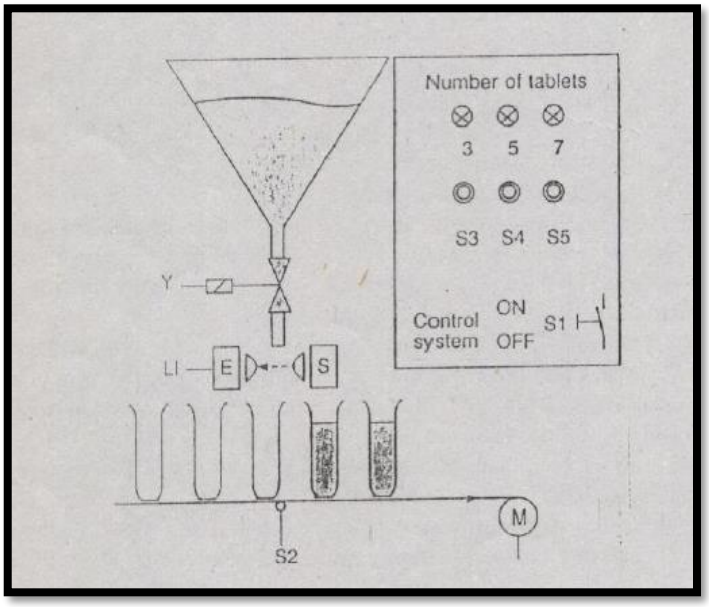
- To practice the programing operations in STL
- To develop the logic in STL
- To simulate the logic
- To download the program in PLC and check the results in real time

TASK:

Tubes are to be filled with a specific number of tablets from a large container.

FUNCTIONAL SEQUENCE:

The control system ON through S1 the operator must select the number of tablets to be filled into each tube. Conveyor motor M drives the belt conveyor until a tube has reached the filling position (which is signaled by sensor S2). Valve Y then opens the container and light barrier L1 counts the tablets. When the tube has been filled with the prescribed number of tablets, valve Y closes & the conveyor motor is started. This procedure is then repeated. If a different number of tablets is selected by actuating the relevant momentary contact button, the tube that is at the filling position is to be filled with the old number of tablets. When the control system is shut down, the filling procedure currently in progress is terminated before all the actuators are switch off.



```
Network 1 : SYSTEM START
      A(
      O     "SYSTEM START BY S1"        I124.0
      O     M      0.1
      O     M      0.5
      O     M      0.7
      )
      S     M      0.0
      A(
      O     "TUBE SENSED BY S2"         I124.1
      O     "SYSTEM OFF"                I124.6
      )
      R     M      0.0
      A     M      0.0
      =     "MOTOR START"               Q124.0
```

```
Network 2 : FILLING OF THE TUBE
      A     "TUBE SENSED BY S2"         I124.1
      S     M      1.2
      A(
      O     "SYSTEM START BY S1"        I124.0
      O     M      0.1
      O     M      0.5
      O     M      0.7
      O     "SYSTEM OFF"                I124.6
      )
      R     M      1.2
      A     M      1.2
      =     "VALVE Y"                   Q124.1
```

```
Network 3 : COUNTING OF THE TABLETS
      A     "L1 - LIGHT SENSOR"         I124.2
      CU    C      0
      A     "S3 - 3 TABLETS"            I124.3
      S     M      0.2
      A     "TUBE SENSED BY S2"         I124.1
      R     M      0.2
      A     M      0.2
      O
      A     "S5 - 5 TABLETS"            I124.4
      S     M      0.4
      A     "TUBE SENSED BY S2"         I124.1
      R     M      0.4
      A     M      0.4
      O
      A     "S7 - 7 TABLETS"            I124.5
      S     M      0.6
      A     "TUBE SENSED BY S2"         I124.1
      R     M      0.6
      A     M      0.6

      L     C#0
      S     C      0
      A     I    124.7
      A     "TUBE SENSED BY S2"         I124.1
      O     "SYSTEM OFF"                I124.6
      R     C      0
      L     C      0
      T     MW     50
```

```
Network 4 : COMPARTORS FOR 3,5,7 MODES
      A(
      A     "S3 - 3 TABLETS"            I124.3
      S     M      1.4

      A(
      O     "TUBE SENSED BY S2"         I124.1
      O     "SYSTEM OFF"                I124.6
      )
      R     M      1.4
      A     M      1.4
      )
      A(
      L     MW     50
      L     3
      >=I
      )
      =     M      0.1

      A(
      A     "S5 - 5 TABLETS"            I124.4
      S     M      1.6
```

```
A(
O     "TUBE SENSED BY S2"               I124.1
O     "SYSTEM OFF"                      I124.6
)
R     M      1.6
A     M      1.6
)
A(
L     MW     50
L     5
>=I
)
=     M      0.5


A(
A     "S7 - 7 TABLETS"                  I124.5
S     M      1.7
A(
O     "TUBE SENSED BY S2"               I124.1
O     "SYSTEM OFF"                      I124.6
)
R     M      1.7
A     M      1.7
```

VARIABLE TABLE

I	124.0	"SYSTE	BOOL	true
I	124.1	"TUBE	BOOL	true
I	124.2	"L1 - LI	BOOL	false
I	124.3	"S3 - 3	BOOL	false
I	124.4	"S5 - 5	BOOL	false
I	124.5	"S7 - 7	BOOL	false
I	124.6	"SYSTE	BOOL	false
Q	124.0	"MOTO	BOOL	false
Q	124.1	"VALV	BOOL	false
C	0		COUNTER	C#0

	Address	Symbol	Display format	Status value	Modify value
1	I 124.0	"S1"	BOOL	false	
2	I 124.1	"S2 for tube detect"	BOOL	false	
3	I 124.2	"L1"	BOOL	true	
4	I 124.3	"S3 for 3 tablets"	BOOL	false	
5	I 124.4	"S4 for 5 tablets"	BOOL	true	
6	I 124.5	"S5 for 7 tablets"	BOOL	false	
7	I 124.6	"SHUTDOWN"	BOOL	false	
8	Q 124.0	"CONEYOR MOTOR"	BOOL	true	
9	Q 124.1	"Y"	BOOL	false	
10					
11	C 1		COUNTER	C#5	
12	MW 10		HEX	W#16#0005	
13					