

PLC 1 Lesson 6 Lab 1 – Counters

Count Up Counters

Your manager asks you to set up a PLC to do each of the following exercises. His instructions may be a little confusing at times. You may have to interpret carefully what is required.

Program Name: PLC 1 L6-1

Create a New program and name your program “PLC 1 L6-1”.

Programming Guidelines:

Design a RSLogix 500 ladder logic program that will perform the functions described for each exercise. Adhere to the following guidelines:

- Use the provided/simulated pushbuttons, lamps, and other available I/O.
- Plan your input and output assignments before you start programming.
- **RUNG TITLES**: Place only one rung title on the top rung of your program. Make sure it is assigned to the rung and not the output. Place the name of the exercise here (e.g.: Logic Exercise 3, Motor Exercise 2, Counter Exercise 1, etc.). Do not place titles on remaining rungs as this will cause the start of a new page when printing.
- **RUNG COMMENTS**: In rung comment area, place your name then hit enter and add any comments related to the project. Add comments without titles to other rungs as needed to explain the intended function of that rung.
- **INSTRUCTION SYMBOLS**: Utilize instruction symbols that are given. If there are none noted, please create your own. [E.g.: SW3, LP2, LS7, CR4, etc.]
- **INSTRUCTION DESCRIPTIONS**: Insert instruction descriptions whenever possible. [E.g.: “capacitive sensor”, Conveyor Limit Switch, Motor Control Relay, Master Control Relay, etc.]
- **Save and verify** your program before downloading! Then download your program to the PLC trainer and test to see that it works as intended.

Functional Specification:

- Develop a program that controls a bottle filling machine. When the machine is started, bottles enter the machine on a conveyor and are counted.
- When 3 are in position for filling the bottles are filled with soda simultaneously for 7.4 seconds.
- When filling is complete, there is a pause of 3.4 seconds for foam to subside.
- 3 caps are then put on and counted as they are installed.
- Once the caps are in place, a robot is triggered to pick up the three bottles and place them in a carton which takes 5 seconds.
- More bottles can then be filled and when 24 bottles have been placed in the carton by the robot the carton is to be released to the output conveyor.
- The system is reset for a new carton cycle by a limit switch that indicates that the carton is out of the fill position and on the conveyor.
- A total count of bottles, caps and cartons must be kept for reporting purposes.

Type of Device	Description	Address
NO PB	Start PB	I:0/0
NC PB	Stop PB	I:0/1
Sensor	Bottle Count Sensor	I:0/2
Sensor	Cap Present Sensor	I:0/3
LS NO	Carton Limit Switch	I:0/4
IND LT	Machine Running	O:1/0
CR Coil	Conveyor Motor	O:1/1
CR Coil	Filler head Control Relay	O:1/2
CR Coil	Robot Move to carton output	O:1/3