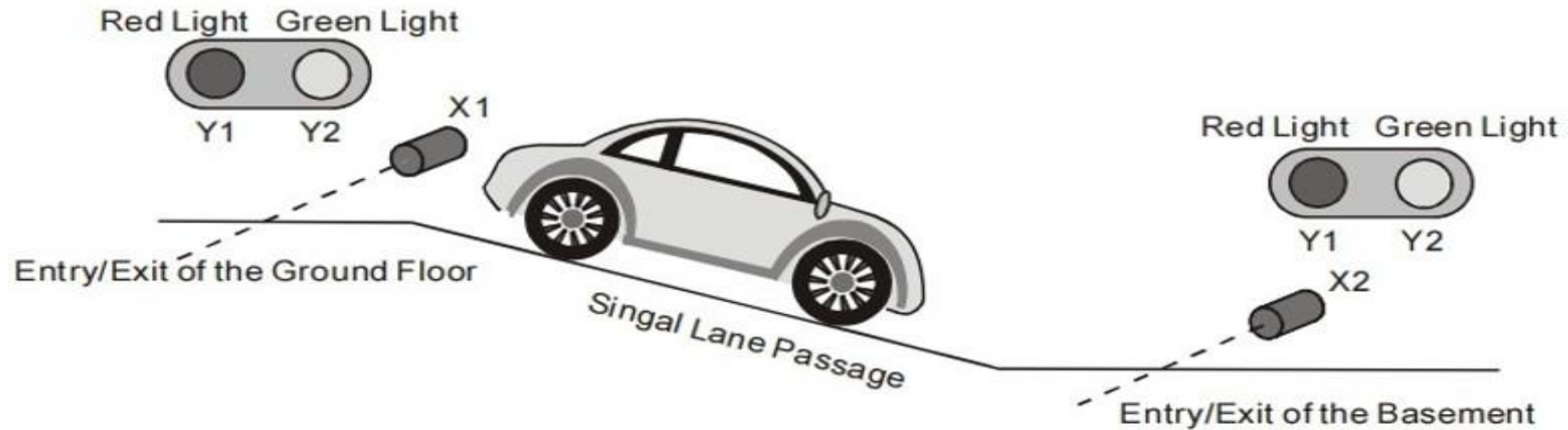


❏ Project Name:

❖ **ENTRY/EXIT CONTROL OF THE UNDERGROUND CAR PARKING:**



✓ Project Guide:

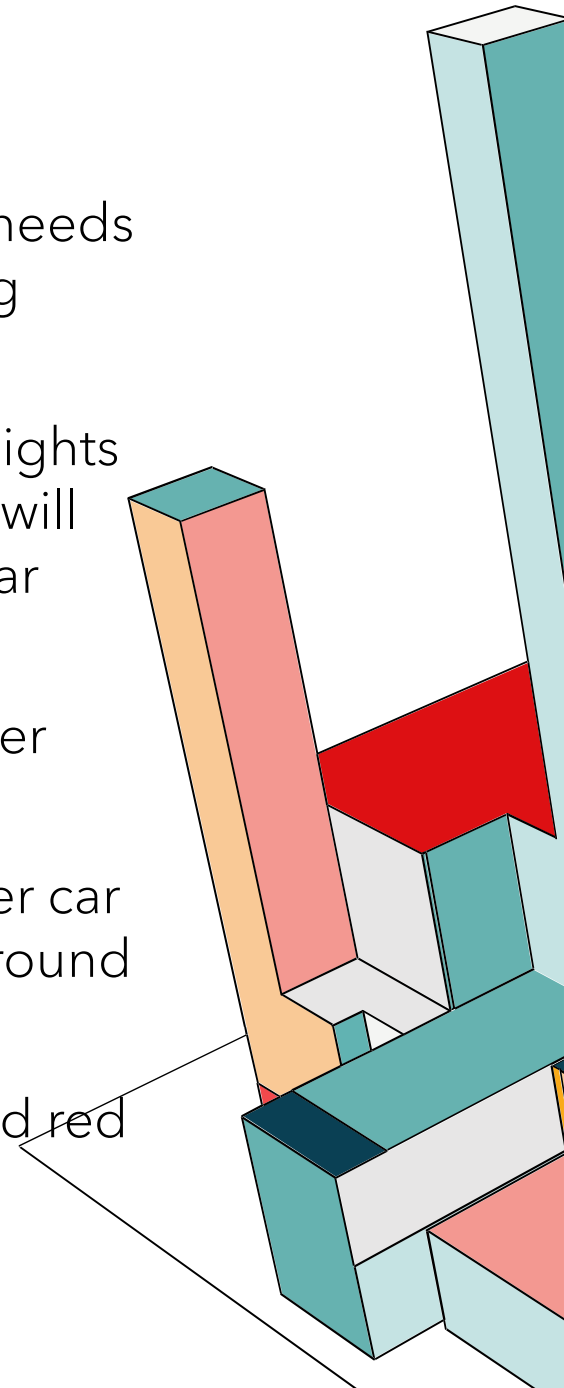
1. Mahin Islam.

✓ Student Details:

1. Sajib Kumar.

## ➤ **CONTROL PURPOSE:**

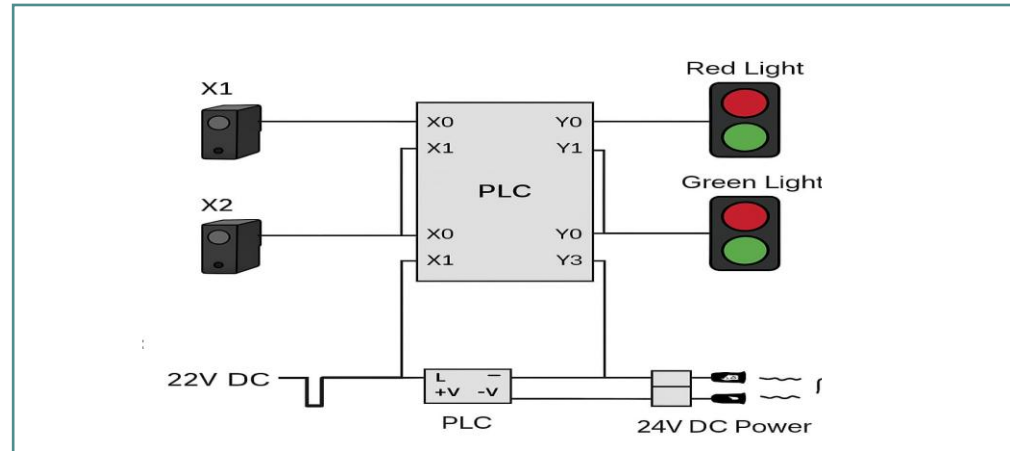
- ❖ The entry/exit of the underground car park is a single lane passage which needs the traffic lights to control the cars. Red lights prohibit cars entering or leaving while green lights allow cars to enter or leave.
- ❖ When a car enters the passage from the entry of the ground floor, the red lights both on the ground floor and the basement will be ON, and the green lights will be OFF. Any car entering or leaving is prohibited during the process till the car passes through the passage completely.
- ❖ When the passage is clear, the green lights will be ON again and allow other cars entering from the ground floor or the basement.
- ❖ Similarly, when a car leaves the basement and enters the passage, any other car entering or leaving is prohibited till the car passes from the passage to the ground completely.
- ❖ When PLC runs, the initial setting of traffic lights will be green lights ON and red lights OFF.



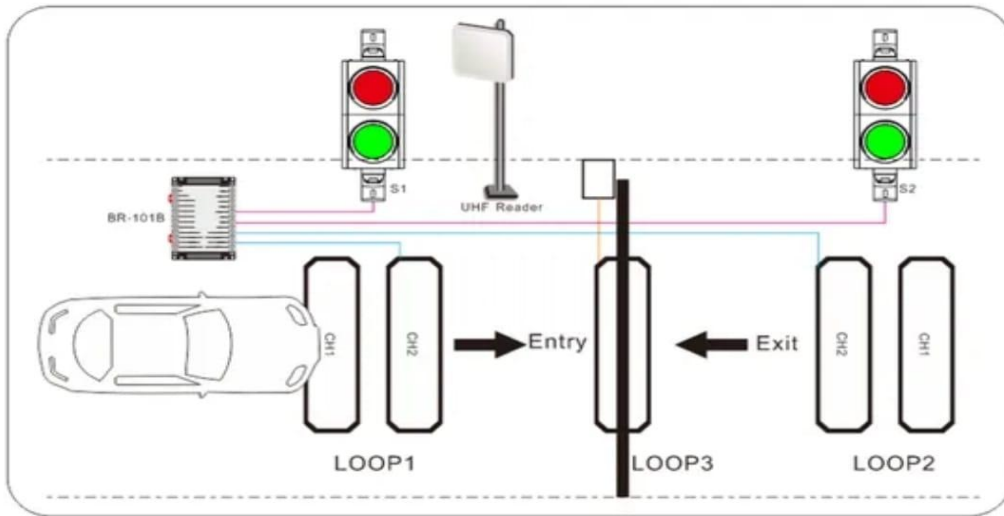
## □ **DEVICES:**

X1	Photoelectric switch at the ground floor entry/exit. X1 will be ON when a car passes.
X2	Photoelectric switch at the basement entry/exit. X2 will be ON when a car passes.
M1	M1 M1 will be ON for one scan cycle when a car from the ground floor passes X1.
M2	M2 M2 will be ON for one scan cycle when a car from the basement passes X1.
M3	M3 M3 will be ON for one scan cycle when a car from the basement passes X2.
M4	M4 M4 will be ON for one scan cycle when a car from the ground floor passes X2
M20	M20 M20 = ON during the process of a car entering the passage from the ground floor.
M30	M30 M30 = ON during the process of a car entering the passage from the basement.
Y1	Y1 Red lights at the entry/exit of the ground floor and the basement .
Y2	Y2 Green lights at the entry/exit of the ground floor and the basement.

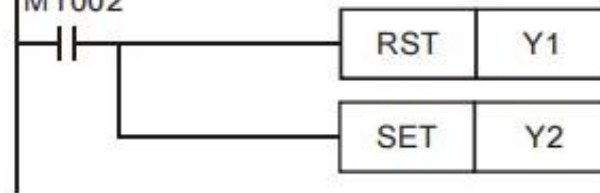
# ☐ DEVICES:



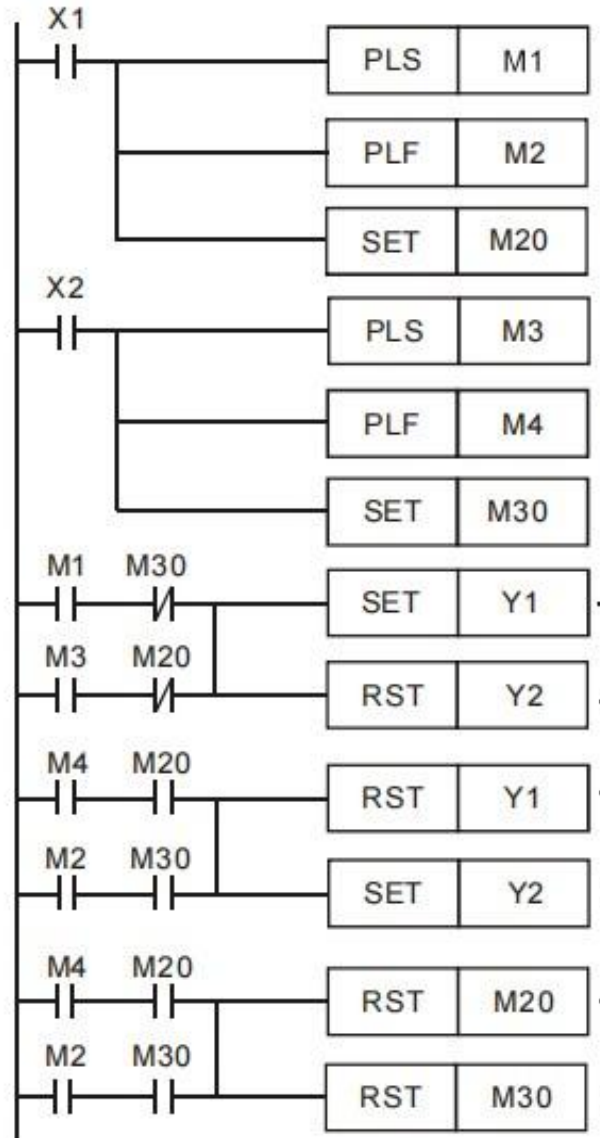
# ➤ CONTROL PROGRAM:



M1002



The green lights will be ON and the red lights will be OFF when the program is started



M1 will be ON for one scan cycle when a car from the ground floor passes X1.

M2 will be ON for one scan cycle when a car from the basement passes X1.

M20=ON during the process of a car entering the passage from the ground floor.

M3 will be ON for one scan cycle when a car from the basement passes X2.

M4 will be ON for one scan cycle when a car from the ground floor passes X2.

M30=ON during the process of a car entering the passage from the basement.

When a car runs in the passage, the red lights will be ON and green lights will be OFF.

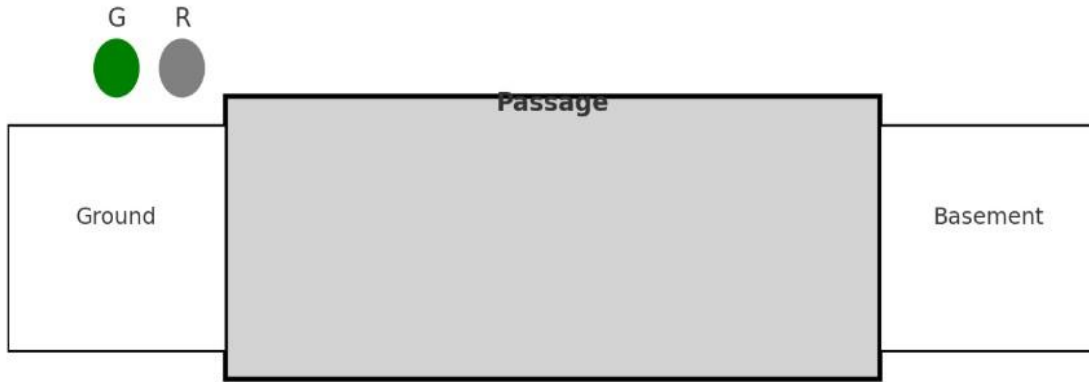
When a car leaves the passage, the red lights will be OFF and green lights will be ON.

When a car leaves the passage, M20 and M30 will be reseted.

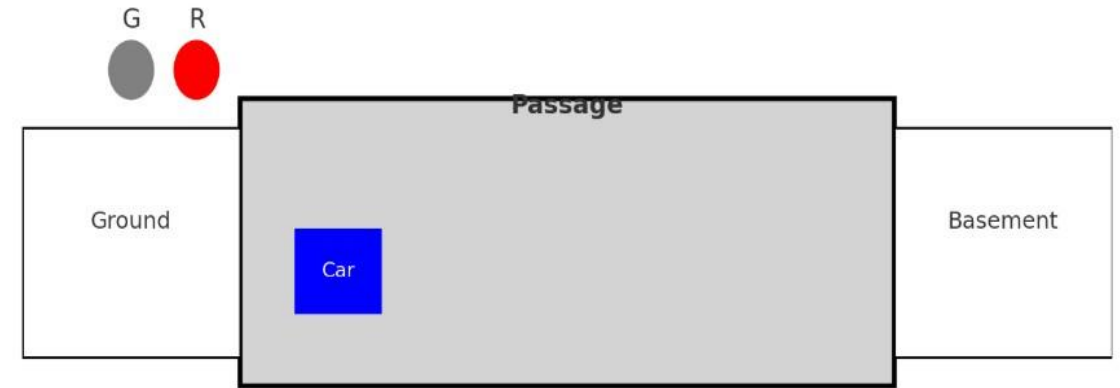


# STEP-BY-STEP SIMULATION DIAGRAM:

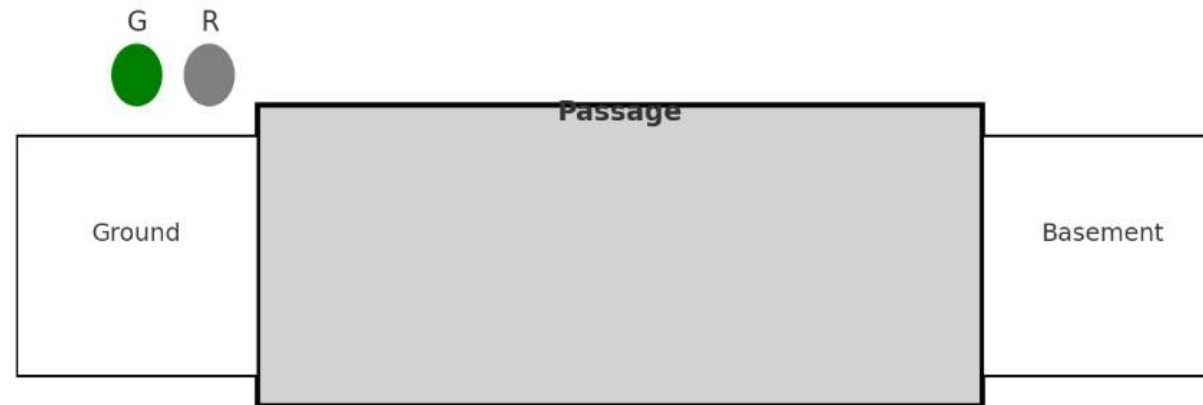
Step 0: Passage Simulation



Step 1: Passage Simulation

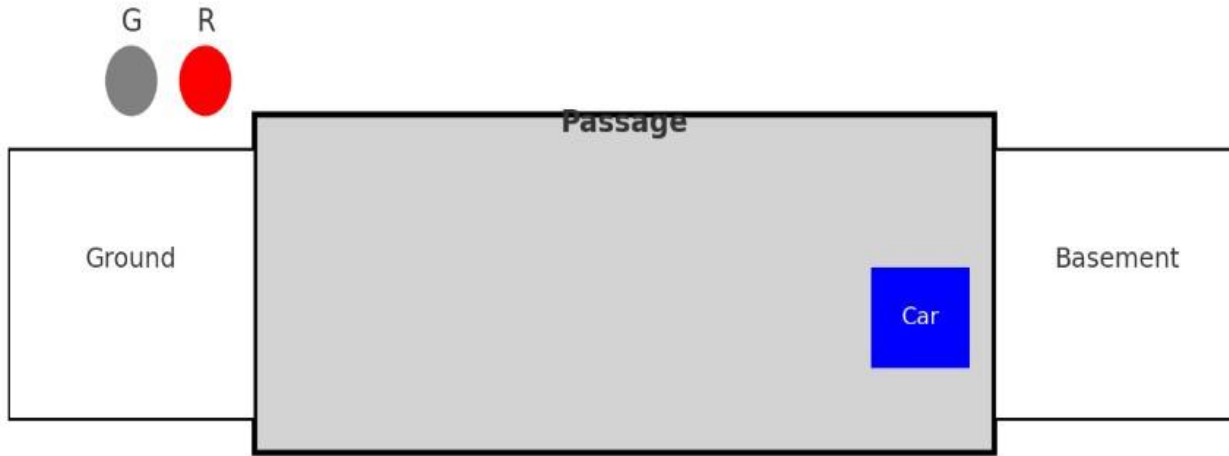


Step 2: Passage Simulation

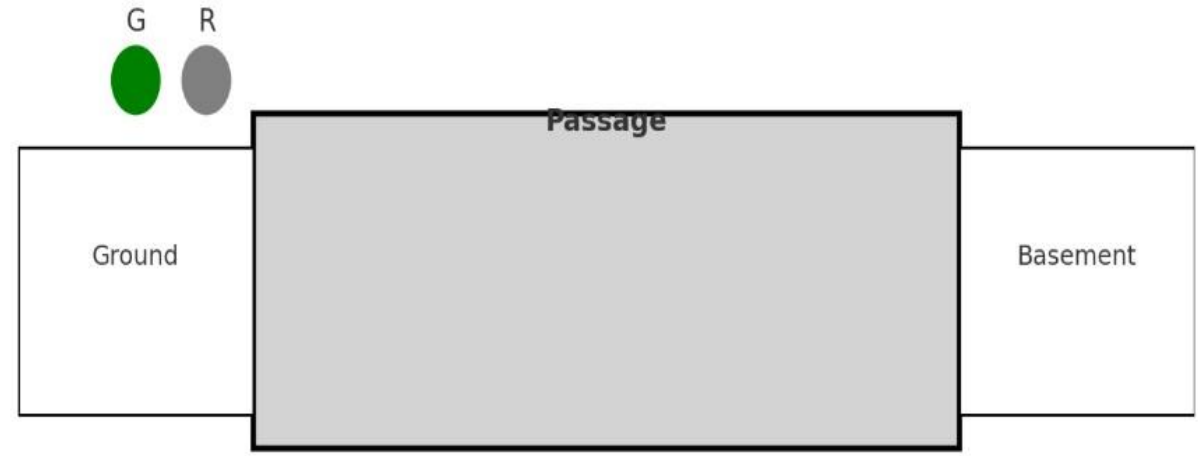


# ➤ STEP-BY-STEP SIMULATION DIAGRAM:

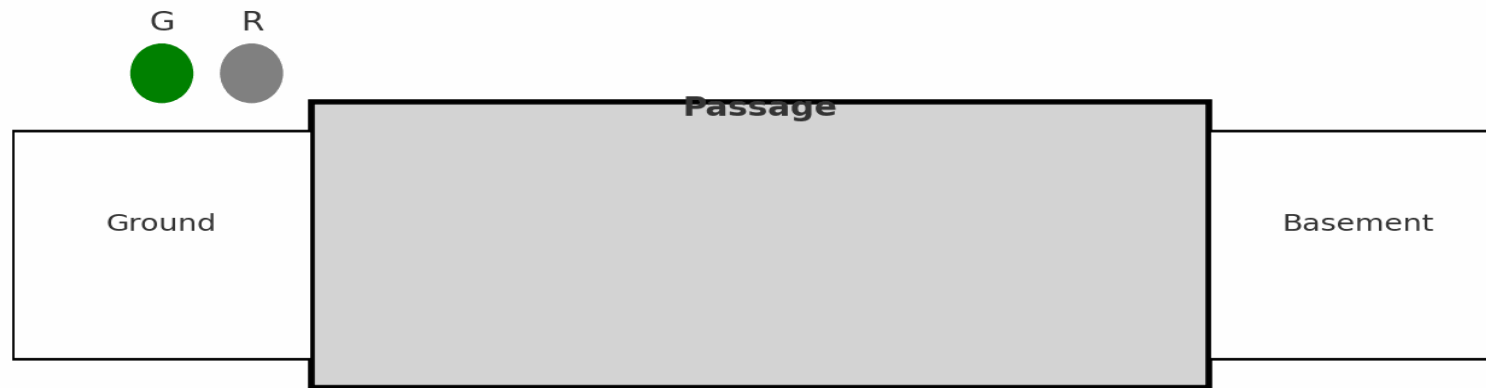
Step 3: Passage Simulation



Step 4: Passage Simulation



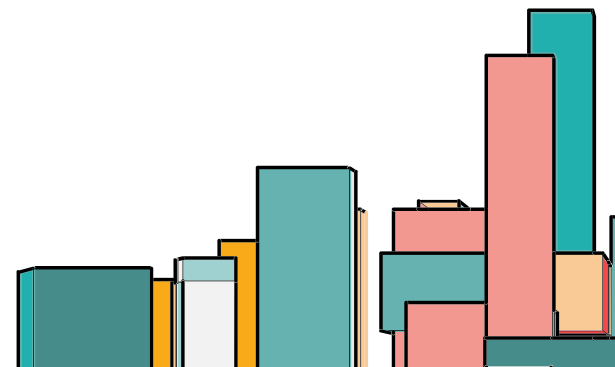
Step 0: Passage Simulation





## ➤ **PROGRAM DESCRIPTION:**

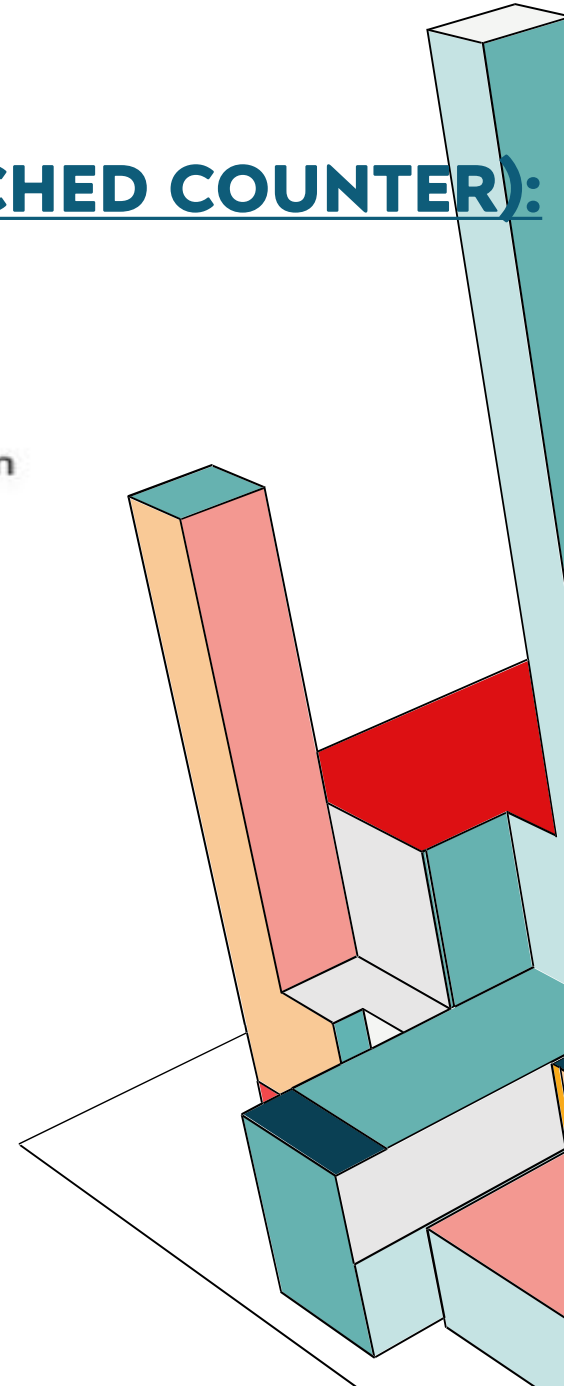
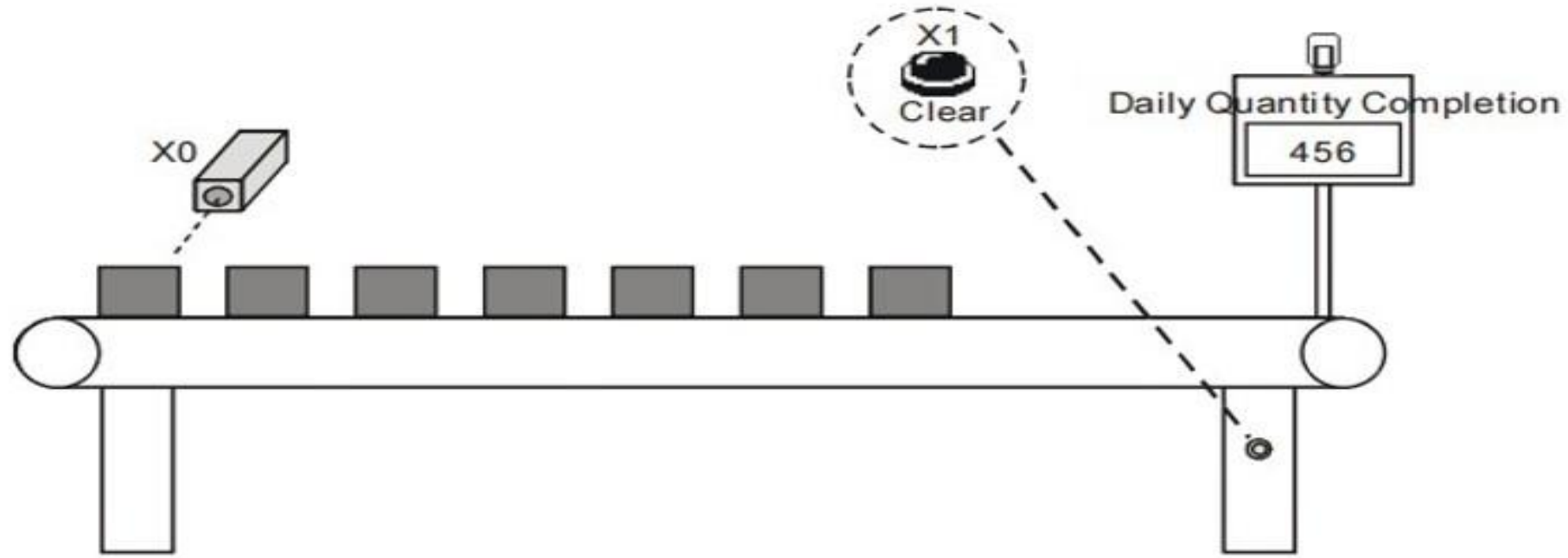
- The ground floor and the basement share the same red light signal Y1 and green light signal Y2.
- The key of the program is to identify that the car is entering or leaving the passage at the ground floor entry/exit when M1 is ON to activate Y1 because [PLS M1] will be executed in both entering and leaving conditions.
- Therefore, the confirming signal M20 is required for confirming that the car is entering the passage from the ground floor.
- Also, it needs to identify that the car is entering or leaving the passage at the basement entry/exit when M3 is ON because [PLS M3] will be executed in both entering and leaving conditions. Therefore, the confirming signal M30 is required for confirming that the car is entering the passage from the basement.



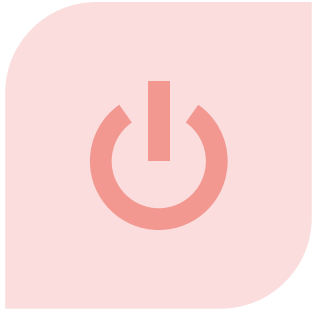


# ❖ Project Name:

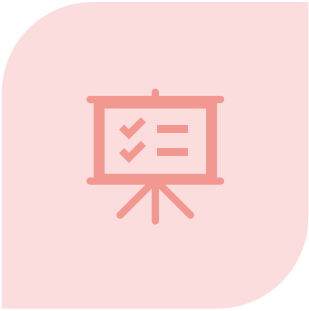
## ➤ DAILY PRODUCTION RECORD (16-BIT COUNTING UP LATCHED COUNTER):



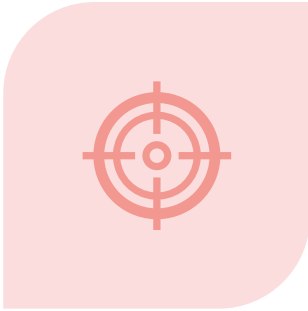
➤ **CONTROL PURPOSE:**



1: THE PRODUCTION LINE MAY BE POWERED OFF ACCIDENTALLY OR TURNED OFF FOR NOON BREAK.



2: THE PROGRAM IS TO CONTROL THE COUNTER TO RETAIN THE COUNTED NUMBER AND RESUME COUNTING AFTER THE POWER IS ON AGAIN.



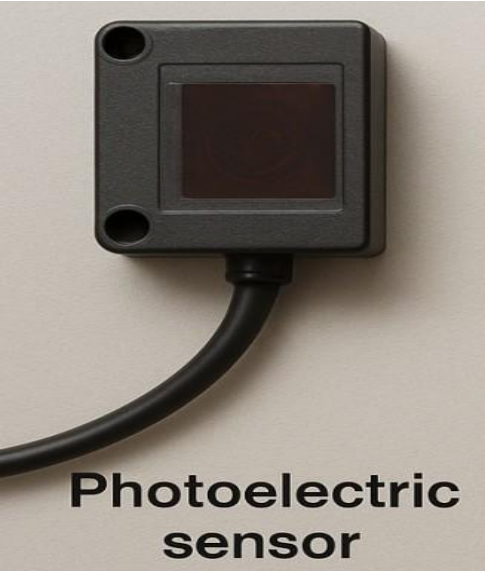
3: WHEN THE DAILY PRODUCTION REACHES 500, THE TARGET COMPLETED INDICATOR WILL BE ON TO REMIND THE OPERATOR FOR KEEPING A RECORD.



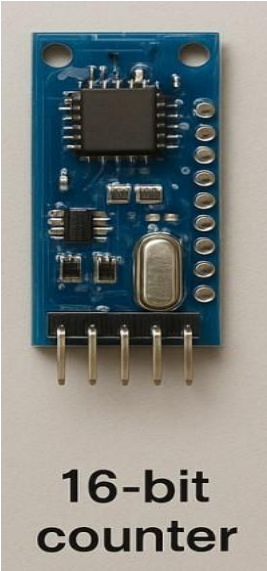
4: Press the Clear button to clear the history records. The counter will start counting from 0 again.

**Devices:**

10



**Photoelectric sensor**



**16-bit counter**

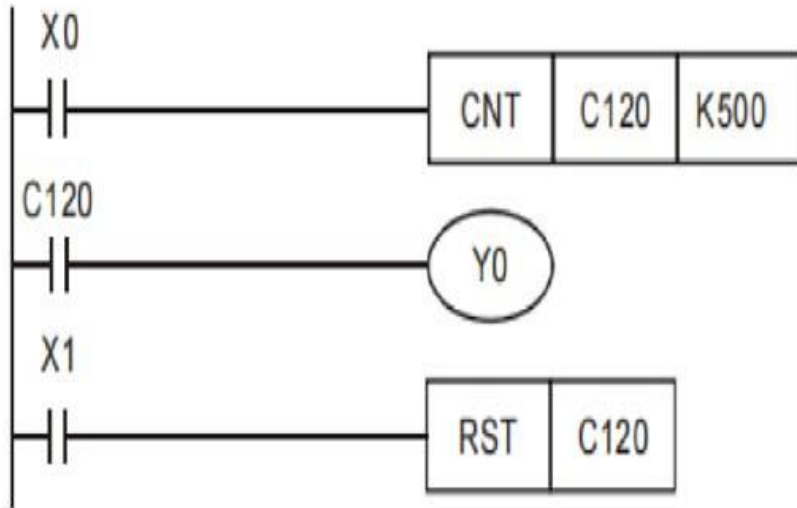


**Clear button**



**Target completed indicator**

## ➤ CONTROL PROGRAM:



X0 Photoelectric sensor. Once detecting the products, X0 will be ON.

X1 Clear button .

C120 Counter: 16-bit counting up (latched).

Y0 Target completed indicator.

### Program Description:

- 1:The latching counter is demanded for the situation of retaining data when power-off.
- 2: When a product is completed, C120 will count for one time. When the number reaches 500, target completed indicator Y0 will be ON.
- 3:For different series of DVP-PLC, the setup range of 16-bit latching counter is different. C112 ~ C127 for ES/EX/SS series, C96 ~ C199 for SA/SX/SC series and C100 ~ C199 for EH series.

# ➤ Step-By-Step Simulation Diagram:

Daily Production Record - Steps (small)

Initial - ready

Product detected - C120=1

Product detected - C120=2

C120 = 0

C120 = 0

C120 = 1

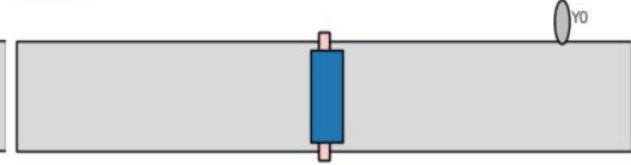
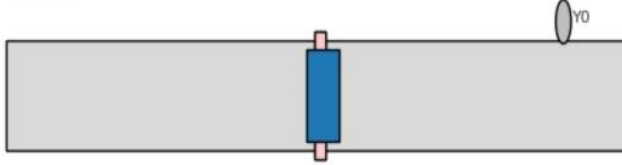
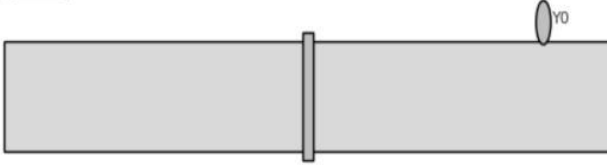
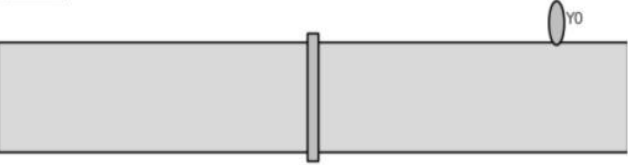
C120 = 2

X1 Clear

X1 Clear

X1 Clear

X1 Clear



Power OFF - C120 retained

Power ON - resume C120=3

Near target - C120=498

Next product - C120=499

C120 = 3

C120 = 3

C120 = 498

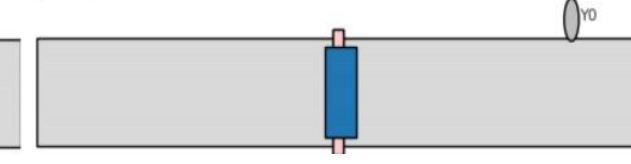
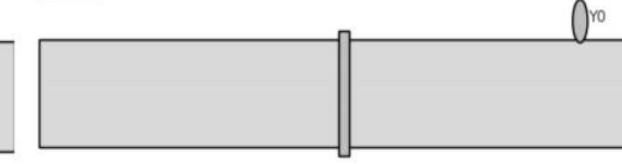
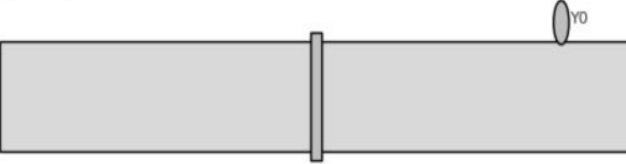
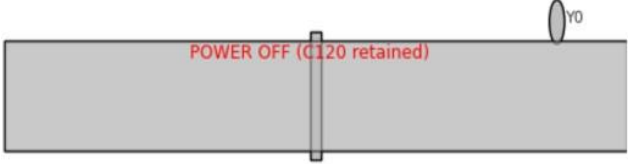
C120 = 499

X1 Clear

X1 Clear

X1 Clear

X1 Clear



Target reached - C120=500 -> Y0 ON

Clear pressed - X1 -> C120=0

Initial - ready

C120 = 500

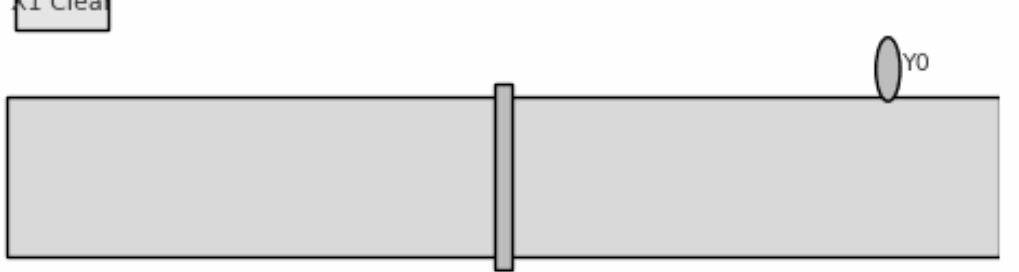
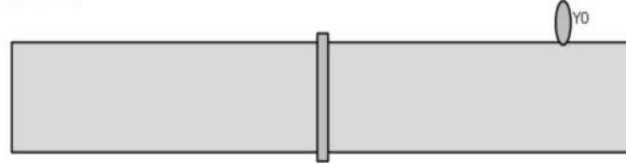
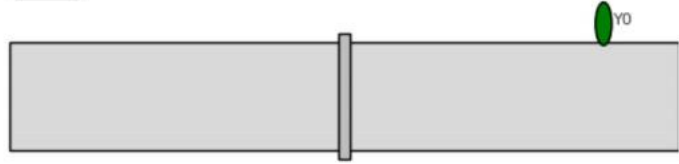
C120 = 0

C120 = 0

X1 Clear

X1 Clear

X1 Clear



# THANK YOU

Sajib kumar

+919398-312025

sajibh298@gmail.com

