

Submitted By
(Group – 08)

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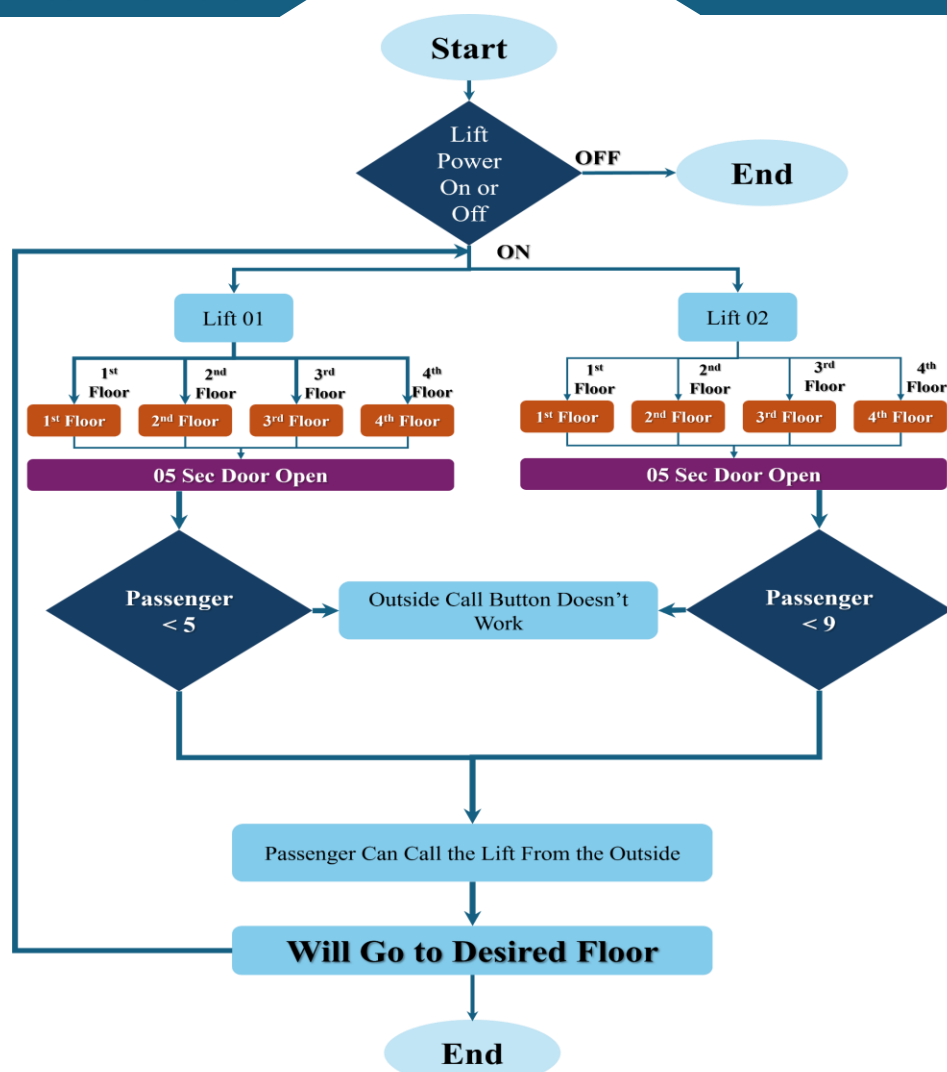
Objective

The objective of designing an elevator controller using a Programmable Logic Controller (PLC) is to create a reliable, efficient, and flexible system that manages the operation of an elevator within a building.

Logic Input & Output

| Address | Name | Address | Name |
|---------|--|---------|--|
| I1 | Lift Outside 1 st FL Call Button | I13 | Inside Lift#1 3 rd FL Call Button |
| I2 | Lift Outside 2 nd FL Call Button | I14 | Inside Lift#1 4 th FL Call Button |
| I3 | Lift Outside 3 rd FL Call Button | I15 | O/P Passenger for CO22 |
| I4 | Lift Outside 4 th FL Call Button | I16 | O/P Passenger for C001 |
| I5 | Power On | I17 | O/P Passenger for C027 |
| I6 | Power Off | I18 | O/P Passenger |
| I7 | I/P Passenger (max 04) | I19 | |
| I8 | I/P Passenger Max 9 | I20 | Off Counter O/P |
| I9 | I/P Passenger Max 8 | I21 | Inside Lift#2 1 st FL Call Button |
| I10 | I/P Passenger (max 05) | I22 | Inside Lift#2 2 nd FL Call Button |
| I11 | Inside Lift#1 1 st FL Call Button | I23 | Inside Lift#2 3 rd FL Call Button |
| I12 | Inside Lift#1 2 nd FL Call Button | I24 | Inside Lift#2 4 th FL Call Button |
| Q1 | Lift#1 1 st Floor Light | Q5 | Lift#1 1 st Floor Light |
| Q2 | Lift#1 2 ND Floor Light | Q6 | Lift#1 2 nd Floor Light |
| Q3 | Lift#1 3 rd Floor Light | Q7 | Lift#1 3 rd Floor Light |
| Q4 | Lift#1 4 th Floor Light | Q8 | Lift#1 4 th Floor Light |

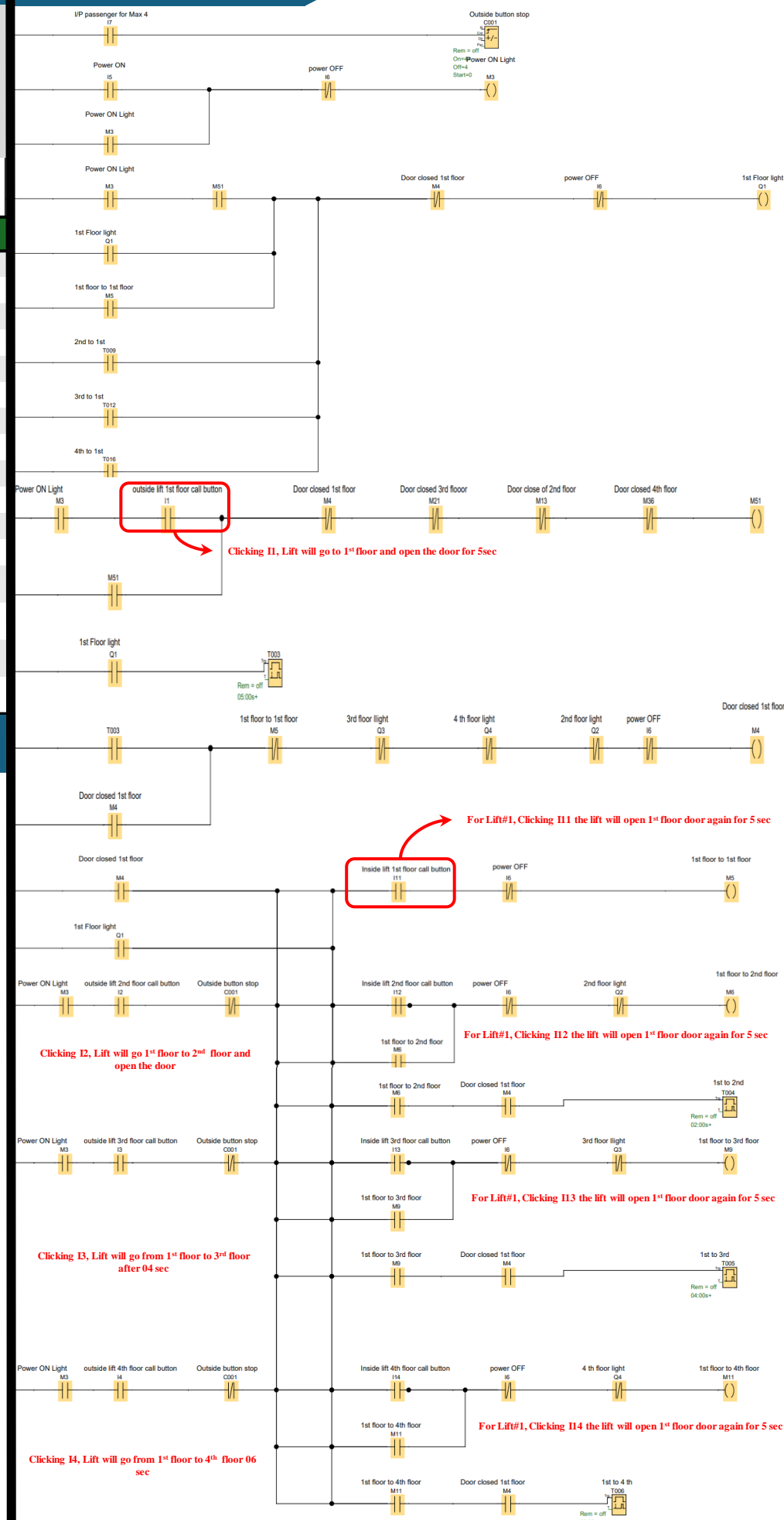
Flow Chart



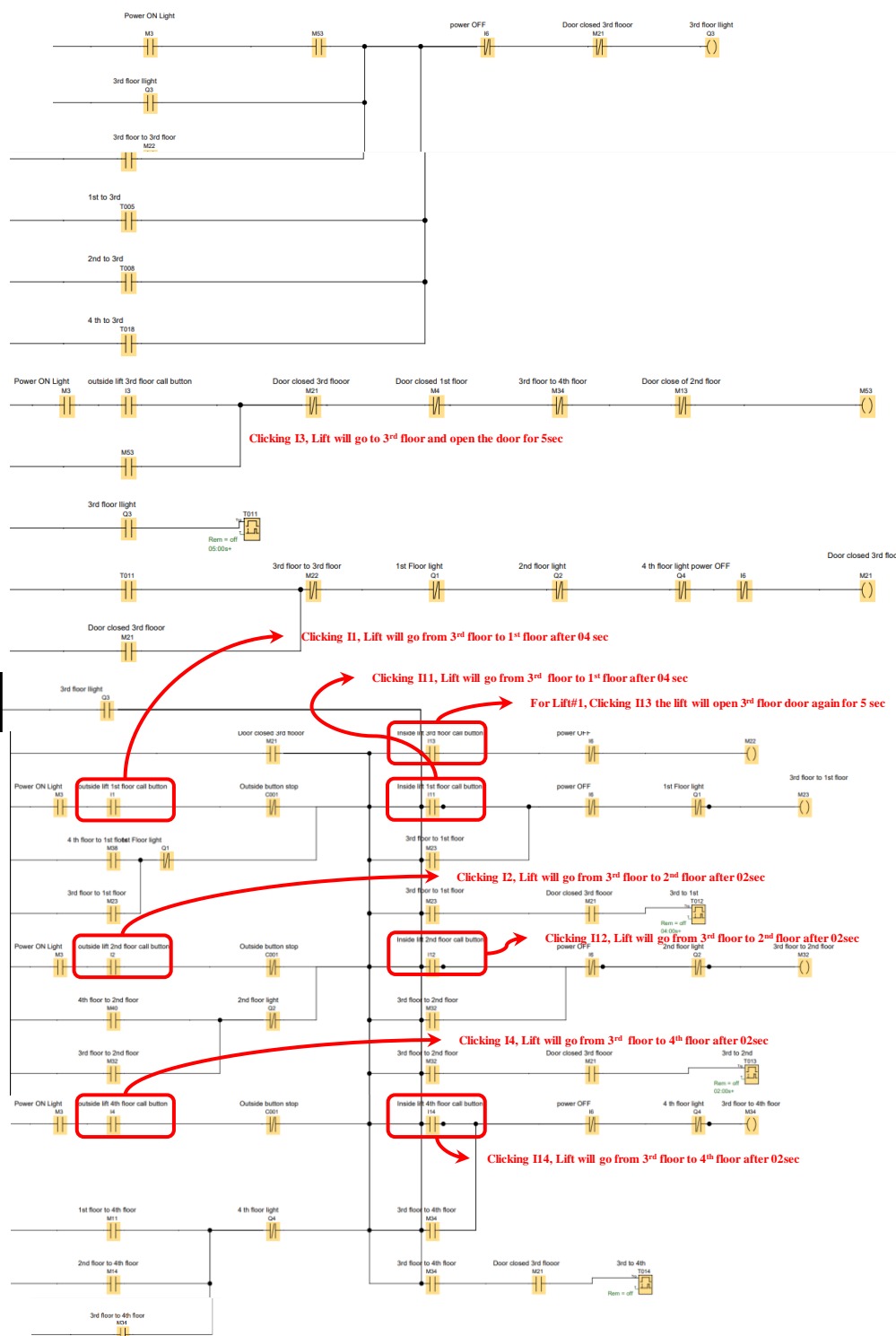
Solution - 1

Ladder Diagram

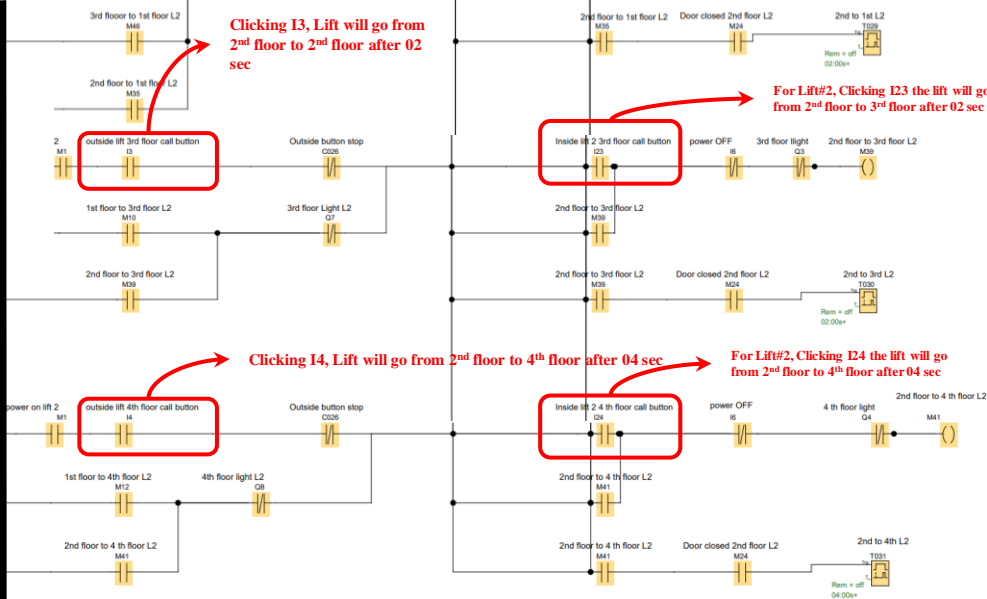
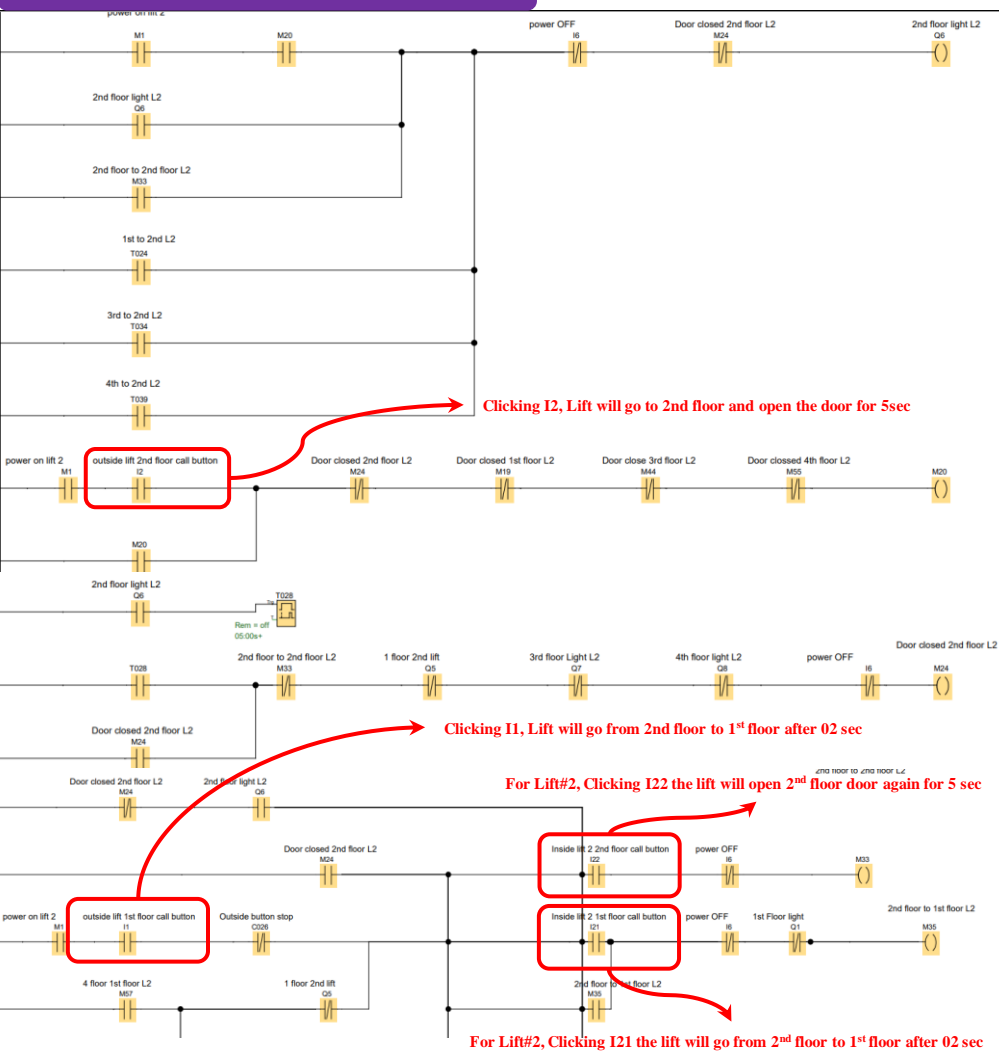
Lift#1 From 1st Floor to Other Floors



Lift#1 From 3rd Floor to Other Floors



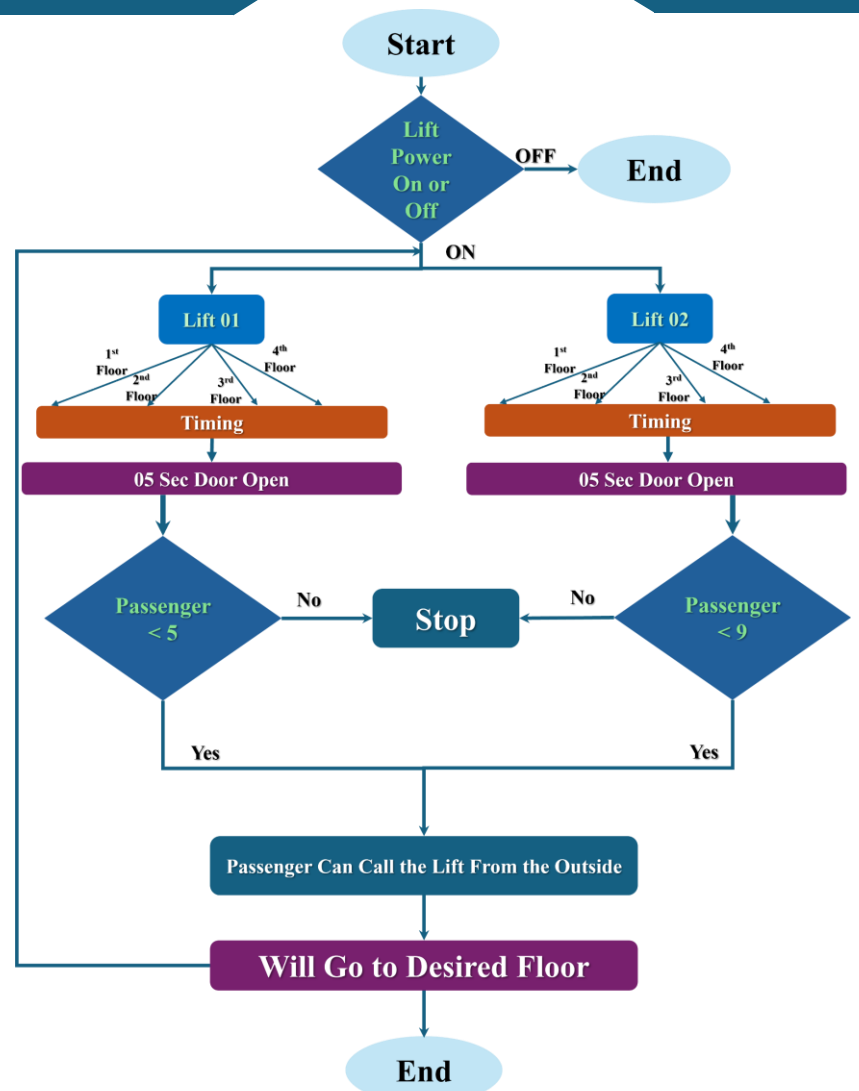
Lift#2 From 2nd Floor to Other Floors



Drawback

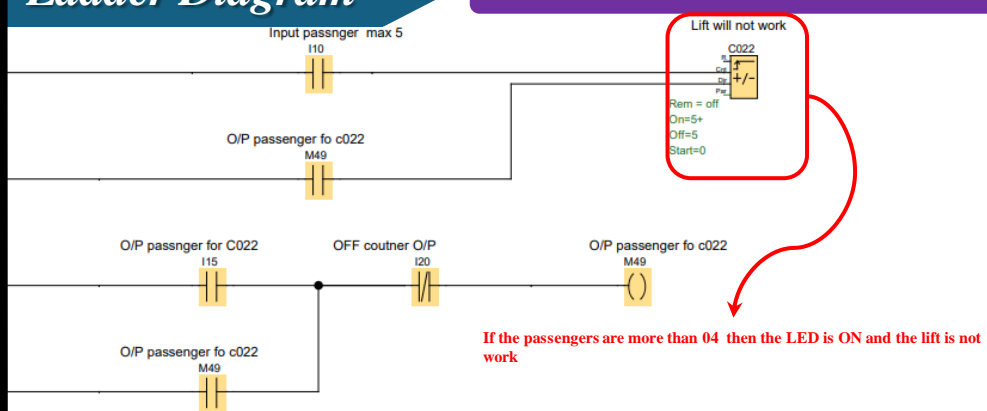
- After turning “ON” the controller of the elevator, if the elevator is on the 1st floor and if the passenger calls the elevator from the 4th floor or 3rd floor or 2nd floor, the elevator turns “ON” immediately.
- If more than 04 or 05 passengers board on the elevator, the elevator continues without turning “OFF”

Flow Chart



Ladder Diagram

Lift#1 From 1st Floor to Other Floors



Conclusion

After doing this project, we have learned how to implement a elevator using a PLC ladder diagram. We also learned how we could draw a ladder diagram using logo soft software. In this project we have shown two methods. In solution 01 there was some weakness for this reason, we have made solution 02 where we fix those weaknesses and a give some extra features. So this project helps us a lot in gaining knowledge about the elevator working processes.

Solution Selection

We are choosing “**Solution-02**”, because

- ❑ This method can stop lift when passenger is more than 4 in the lift#1 and more than 8 in lift#2. if the passengers become less or equal to 4 or 8, lift can go again in desired floor.
- ❑ Another advantage is when the lift’s power is turned ON and a passenger calls from using outside lift button, it will go to the wanted floor according to time.
- ❑ The time variations are for the lifts

| From | TO | Time (sec) |
|-----------------------|-----------------------|------------|
| 1 st Floor | 1 st Floor | 0 |
| 1 st Floor | 2 nd Floor | 2 |
| 1 st Floor | 3 rd Floor | 4 |
| 1 st Floor | 4 th Floor | 6 |
| 2 nd Floor | 1 st Floor | 2 |
| 2 nd Floor | 2 nd Floor | 0 |
| 2 nd Floor | 3 rd Floor | 2 |
| 2 nd Floor | 4 th Floor | 4 |
| 3 rd Floor | 1 st Floor | 4 |
| 3 rd Floor | 2 nd Floor | 2 |
| 3 rd Floor | 3 rd Floor | 0 |
| 3 rd Floor | 4 th Floor | 2 |
| 4 th Floor | 1 st Floor | 6 |
| 4 th Floor | 2 nd Floor | 4 |
| 4 th Floor | 3 rd Floor | 2 |
| 4 th Floor | 4 th Floor | 0 |

Discussion

In modern buildings, elevators are essential for efficient vertical transportation, managed by a sophisticated control system. This system comprises a motor, floor call buttons, and destination buttons inside each elevator car. The motor, typically located at the top of the building, drives a pulley system to move the elevator car through the shaft. Users press call buttons on each floor or destination buttons inside the car, prompting the motor to adjust direction and speed to transport them to the desired floor. In buildings with multiple elevators, a central controller coordinates the movement to optimize efficiency, reduce wait times, and minimize wear.