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Smart Car Parking System Using FX1U PLC

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***Abstract:** Smart car parking using PLC, obtain information about space for parking. Now a day vehicle parking is an important issue and day by day its importance is increasing. Even now some places using manual car parking system we are facing problems like wastage of fuel for finding free space around the parking ground, when we need to park our car which requires good amount of lightning is required otherwise it leads to damaging of vehicles while moving out or moving in the parking slot. Security is also another issue. In order to solve these problems, we use smart car parking system by using FX3U PLC software.*
***Keywords:** FX3U PLC software, smart car IR sensors, buzzers, DC motors.*

I. INTRODUCTION

A car parking system is a mechanical device that multiplies parking capacity inside a parking lot. Parking systems are generally powered by electric motors or hydraulic pumps that move vehicles into a storage position.

Car parking systems may be traditional or automated. Automatic multi-storey automated car park systems are less expensive per parking slot, since they tend to require less building volume and less ground

area than a conventional facility with the same capacity. In the long term, automated car parking systems are likely to be more cost effective than traditional parking garages. Both automated car parking systems and automated parking garage systems reduce exhaust gas — cars do not drive around in search of parking spaces.

II. WORKING

When car is came to the parking basement at ground level our lift sensor is cut due to sense the car and give command to plc.it has already some program for this mechanism and controller given command after some time to motors relay and lift motor works at that time PLC operator given command to empty space location and due to this signal our lift slide to this area and slowly down motor operate and due to zigzag pattern our car is placed at those area of parking. When driver come to the PLC operator give command to PLC and lift take car from parking and put at exit gate. Dimension of one slot car parking basement is length*width*height is respectively 5000mm*2000mm*2000mm. Wheelbase distance for zigzag pattern is 2500mm-3500mm.

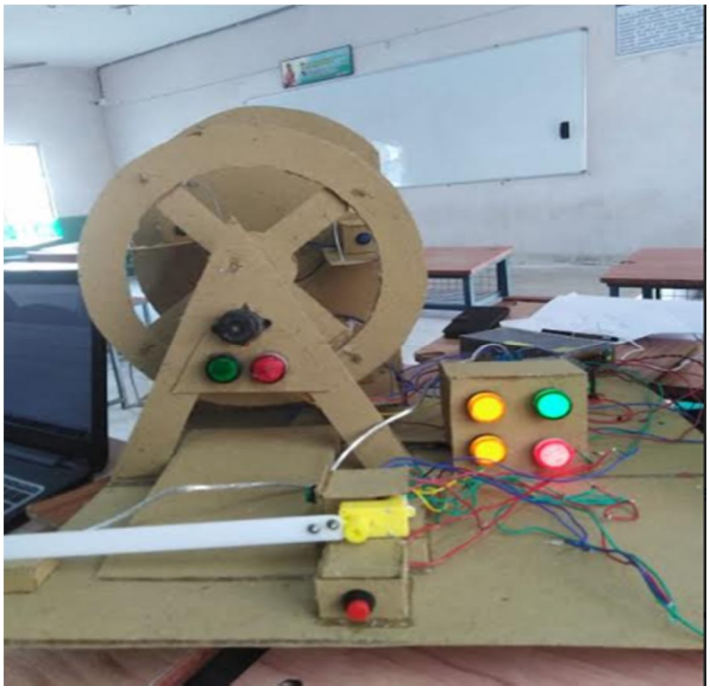

Fig (i). Layout of car parking system

A. Input Addressing Chart

S. No.	Input Address	Description
1	X0	Car entry sensor 1
2	X1	Car entry sensor 2
3	X2	First car entry sensor
4	X3	Second car entry sensor
5	X4	Third car entry sensor
6	X5	Fourth car entry sensor
7	X6	Call push button for car
8	X7	Car exit sensor push button

Table (i). Input pin chat description

B. Output Addressing Pin Chart

S. No.	Output Address	Description
1	Y0	led1 to indicate occupancy of 1st car
2	Y1	led2 to indicate occupancy of 2nd car
3	Y2	Led3 to indicate occupancy of 1st car
4	Y3	Led4 to indicate occupancy of 2nd car
5	Y4	Buzzer
6	Y5	Wheel Motor
7	Y6	Red LED to indicate No vacancy
8	Y7	Green LED to indicate vacancy
9	Y10	reverse motor relay3
10	Y11	reverse motor relay4
11	Y12	forward motor relay1
12	Y13	forward motor relay2

Table (ii). Output pin chart description

C. Block Diagram of Smart Car Parking System

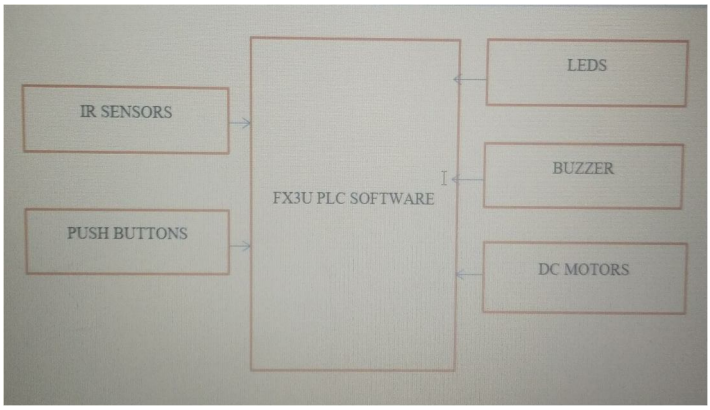

Fig (ii). Block diagram of car parking system

D. Sample Programming

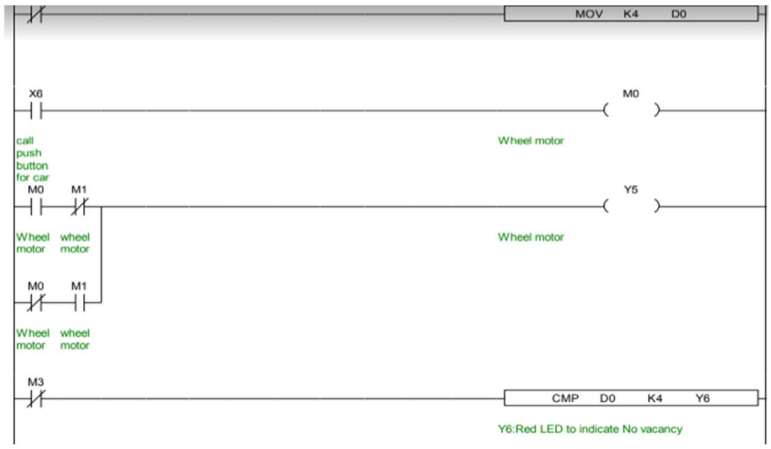

Fig (iii). Sample programming code

III. BENEFITS OF CAR PARKING SYSTEM

A. Reducing traffic jam.
B. Time saving.
C. Safety in the parking.
D. Fuel saving.
E. Operating cost saving.

IV. CONCLUSION

Hence, we can conclude that by using multilevel car parking we park more cars with less area required and save time and money from solving problem of traffic and parking also save fuel. The system design is very precise and very easy in handling. This system is advantageous for commercial as well as residential purpose. All component of this system is easily available in market

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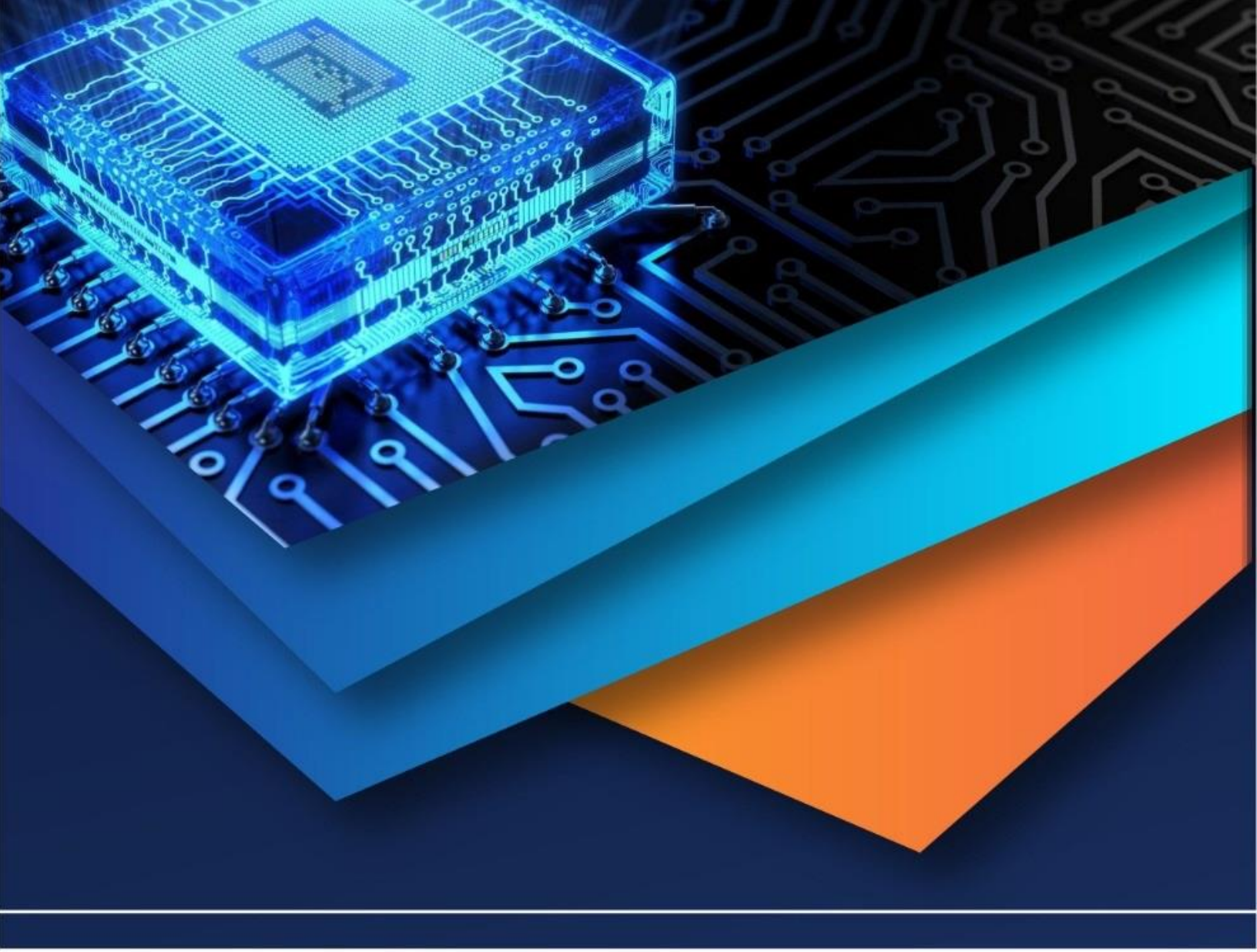

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