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Cabin Visitors Priority Resolver Management System Using Bluetooth

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Abstract: ***The purpose and goal of this project is to developed a cabin visitors priority resolver management system using Bluetooth. The system will be used to manage the flow of visitors to cabins in order to prioritize those who have the most urgent need to enter. The system will use Bluetooth Low Energy (BLE) beacons to detect the presence of visitors near cabins and then use a priority queue to determine who should be allowed to enter first. This project aims to develop a Visitor Priority Resolver Management System for an HOD (Head of Department) cabin using Bluetooth technology. The system leverages Bluetooth-enabled devices to streamline visitor prioritization based on predefined criteria. It enhances efficiency by automating the check-in process, ensuring a seamless experience for both visitors and the HOD. The Cabin Visitors Priority Resolver Management System aims to streamline visitor prioritization in cabins using Bluetooth technology. By leveraging Bluetooth-enabled devices, the system will automatically detect and categorize visitors based on predefined priority levels. This enhances security and efficiency, allowing for seamless access control and prioritized handling of guests.***

Keyword: STM32 bit microcontroller, Bluetooth technology, Security, Priority Resolver, Real time communication, User interface.

I. INTRODUCTION

The purpose of the project is to provide proper disciplined acknowledged queueing system to attained HODs. Here the person (Student, Parent or staff) needs to meet with HOD has to intimate with electronics means to HOD cabin by pressing proper request button. The same request is displayed on HOD desk with alarm upon which by availability of work and time HOD will response to request with permission is granted to meet or wait for some time and same will be displayed on person dash board. Due to this the communication is very easy with time management.

This Cabin Visitors Priority Resolver Management System aims to streamline visitor prioritization in cabins using Bluetooth technology. By leveraging Bluetooth-enabled devices, the system will automatically detect and categorize visitors based on predefined priority levels. This enhances security and efficiency, allowing for seamless access control and prioritized handling of guests. The current system for managing visitors to cabins is inefficient and can lead to long wait times for those who need to enter urgently. The current system is based on a first-come, first-served basis, which does not take into account the urgency of the visitor's needs to enter. This can lead to frustration and delays for those who need to enter urgently, such as medical personnel or emergency responders [1].

II. RELATED WORK

The cabin visitor’s resolver management system mainly invented by considering the importance of the priorities. There are many load and visiting systems invented by the great peoples by taking care and knowing the importance of this system. It invented by acknowledging, to reduce the risk of unauthorized access, to improve the security, accessing the control, maintaining the discipline. The Cabin Visitors Priority Resolver Management System utilizing STM32 bit microcontroller, works upon Bluetooth technology in the field of the disciplined queueing system.

Numerous studies have explored the use of STM32 bit microcontroller for the interfacing and programming of the communication is low cost, better and efficient as compared to other components. Additionally, the Bluetooth technology provides the better communication range, smooth interaction between both sides. While buzzer plays the important role, it creates sound when there will be the communication between the both the fields.

Both the sections are transmitter and receiver, is the main thing of this project. This project helps to beat the traditional method of visiting anyone’s cabin.

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III. COMPONENTS REQUIRED

A. STM32 Bit Microcontroller

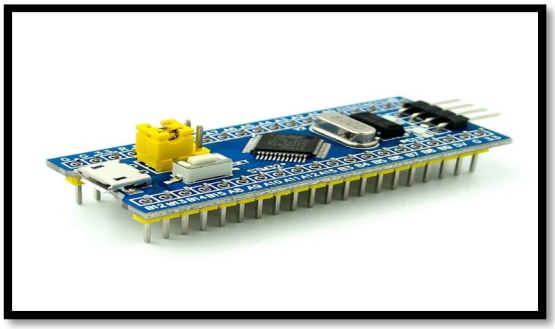


Figure: STM32 Bit Microcontroller

The board based on STMicroelectronics' STM32F103C9T6 microcontroller that has an ARM CORTEX M-3 core that runs at 72MHz max. It has software libraries which allows user to program the chip using the Arduino IDE. From the onboard regulator it has 3.3V regulated output voltage (drawing current is not recommended). To supply the chip, it can also be used. It has flash memory of 64KiB and SRAM about 20KiB.

B. Bluetooth HC-05

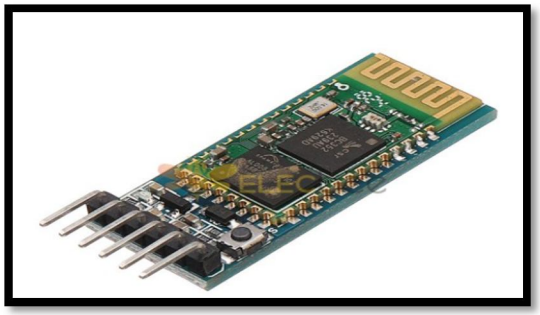


Figure: Bluetooth HC-05

It is used for the communication purpose. It uses serial communication rather than parallel communication. Basically, it replaces the cable connections and it used for the wireless communication. It has 10-meter range for the communication. The rate of transfer of data varies up to 1Mbps and 2.45GHZ frequency band is used by this Bluetooth.

C. LCD Display

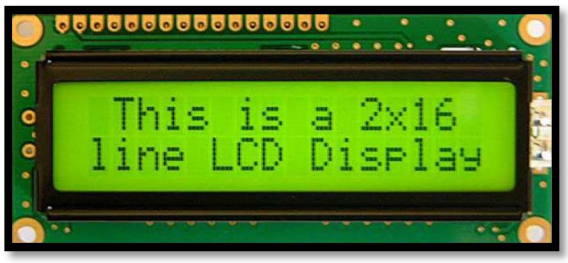


Figure: LCD Display

LCD is nothing but 'Liquid Crystal Display'. This is 16x2 display which used to display the message. It is used in a wide range of electronic components such as circuits and devices like cellphones, personal computers, calculators etc. It has operating voltage 4.7v to 5.3v. It has 2 registers like command register and data register. It has two rows; both the rows can produce 16 characters.

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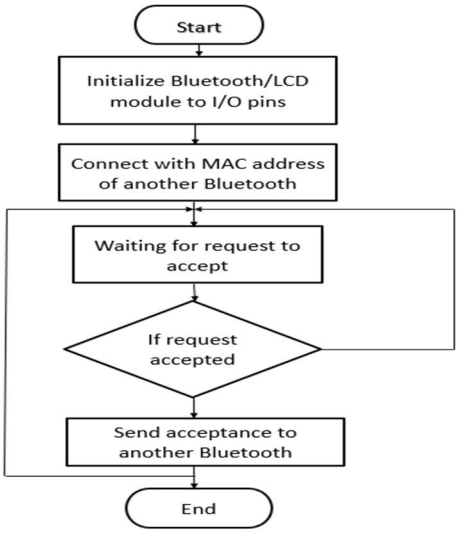
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IV. PROPOSED ALGORITHM

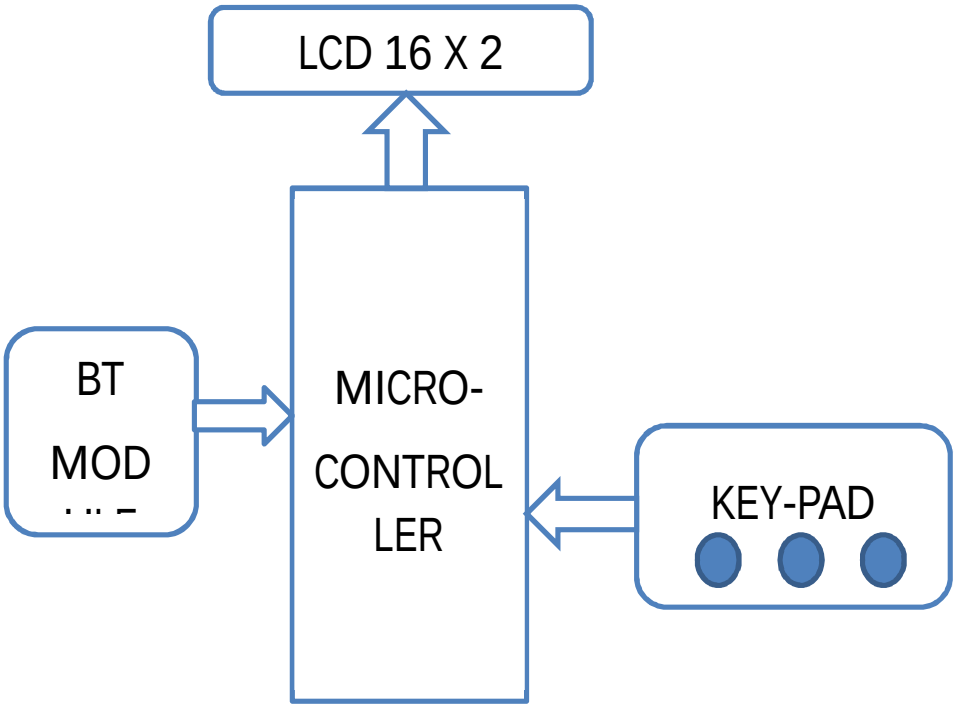
A. *Algorithm Used*

1) Step 1: start
2) Step 2: Initialize the Bluetooth /LCD module to I/O pins.
3) Step 3: After initializing connect the I/O pins with MAC address.
4) Step 4: If the request is accepted then it sends acceptance to another Bluetooth.
5) Step 5: Otherwise, if request is not accepted, it will wait for request to accept.
6) Step 6: END

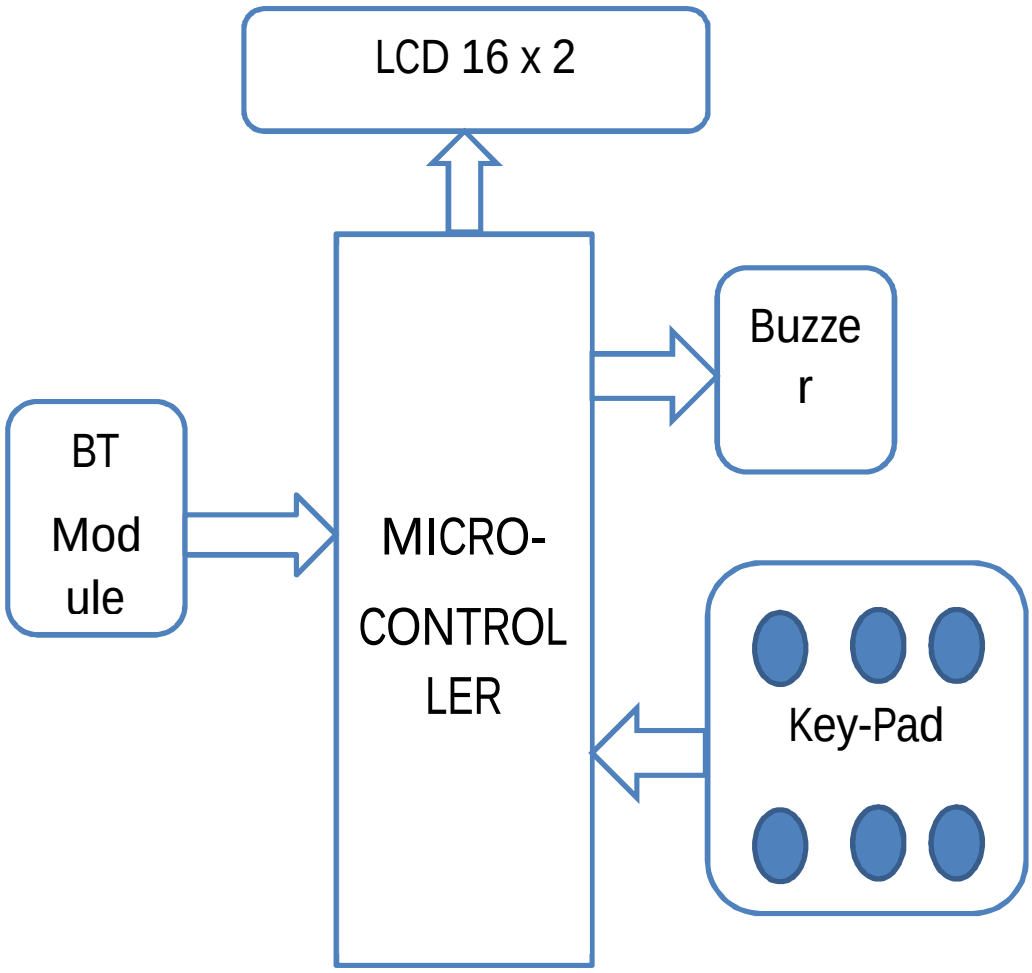
B. *Flowchart*



V. METHODOLOGY

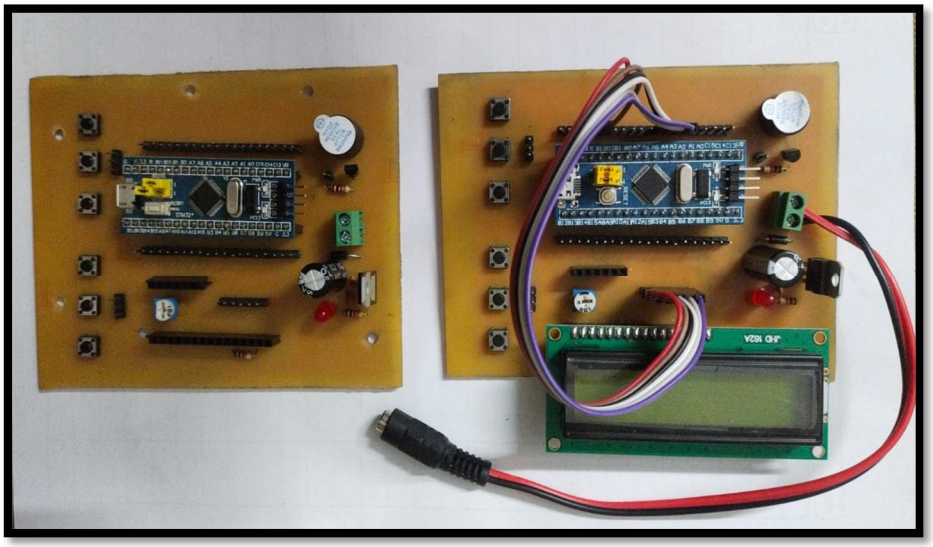


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VI. EXPERIMENTAL AND ACTUAL RESULTS

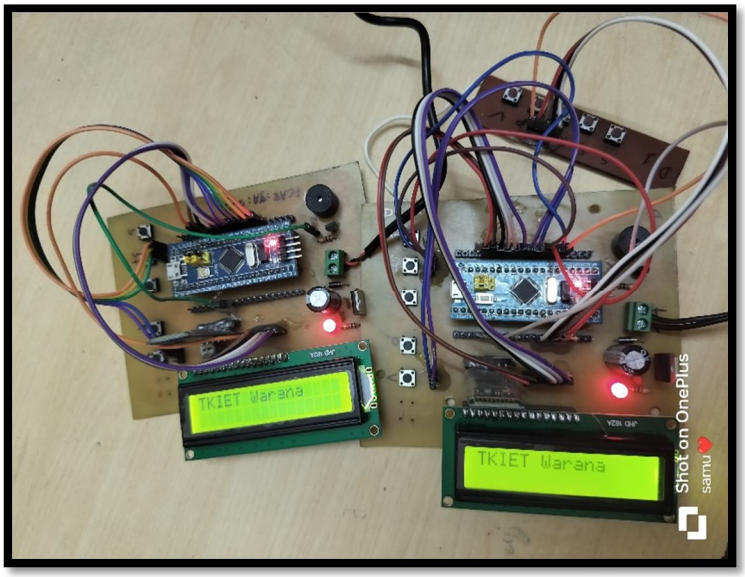
Figure (A) shows the basic connections.



Figure(A): Basic connections

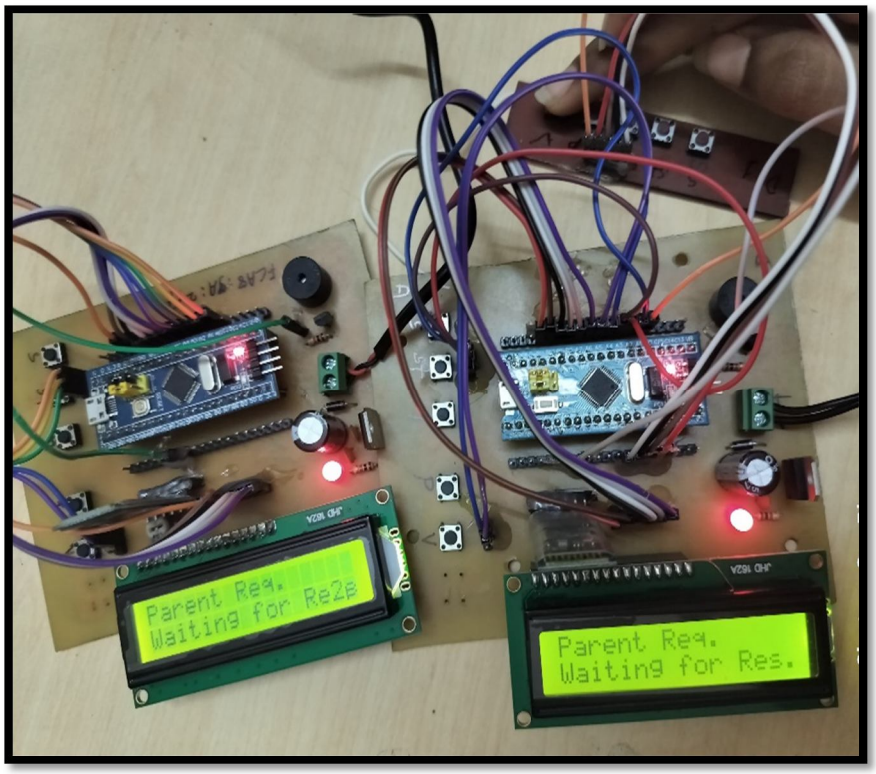
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Figure (B) shows the initialisation of the system. Now the figure (C and D) shows the request sent to the person (HOD) inside the cabin and how the request is permitted or declined.



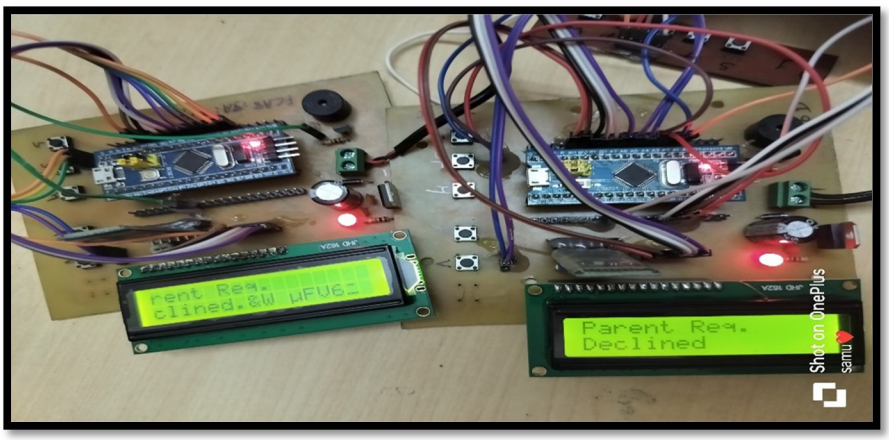
Figure(B)

Fig. (C) shows the request sent to the HOD by the parent by pressing the pushbutton, and waits for the response and figure (D) gives the result of that request sent to the HOD as the request is permitted.

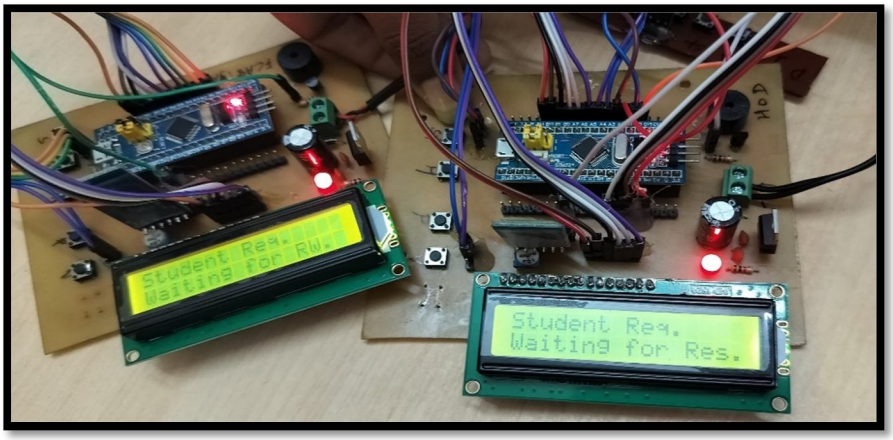


Figure(C)

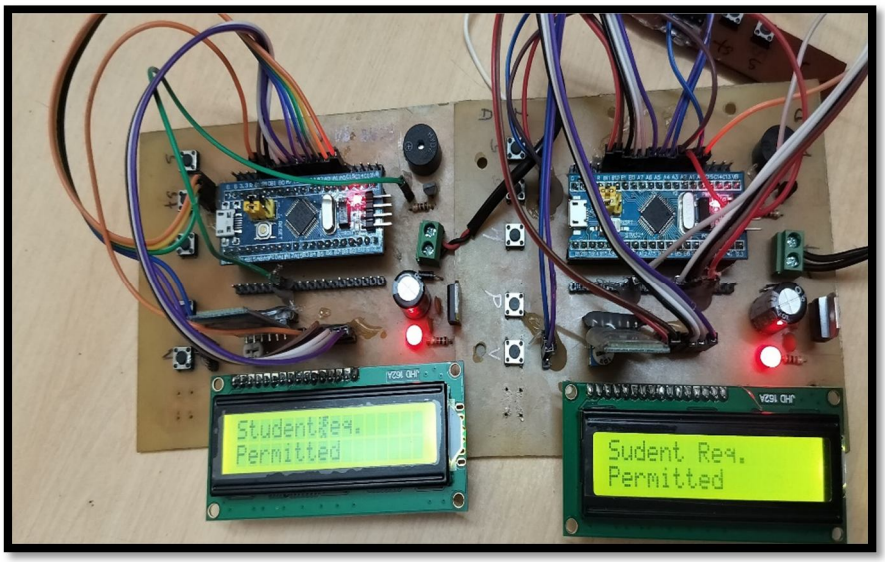
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Figure(D)



Figure(E)



Figure(F)

Above Fig. E shows the request sent to the HOD by the student by pressing the pushbutton, and waits for the response and figure F gives the result of that request sent to the HOD as the request is permitted.

VII. APPLICATIONS

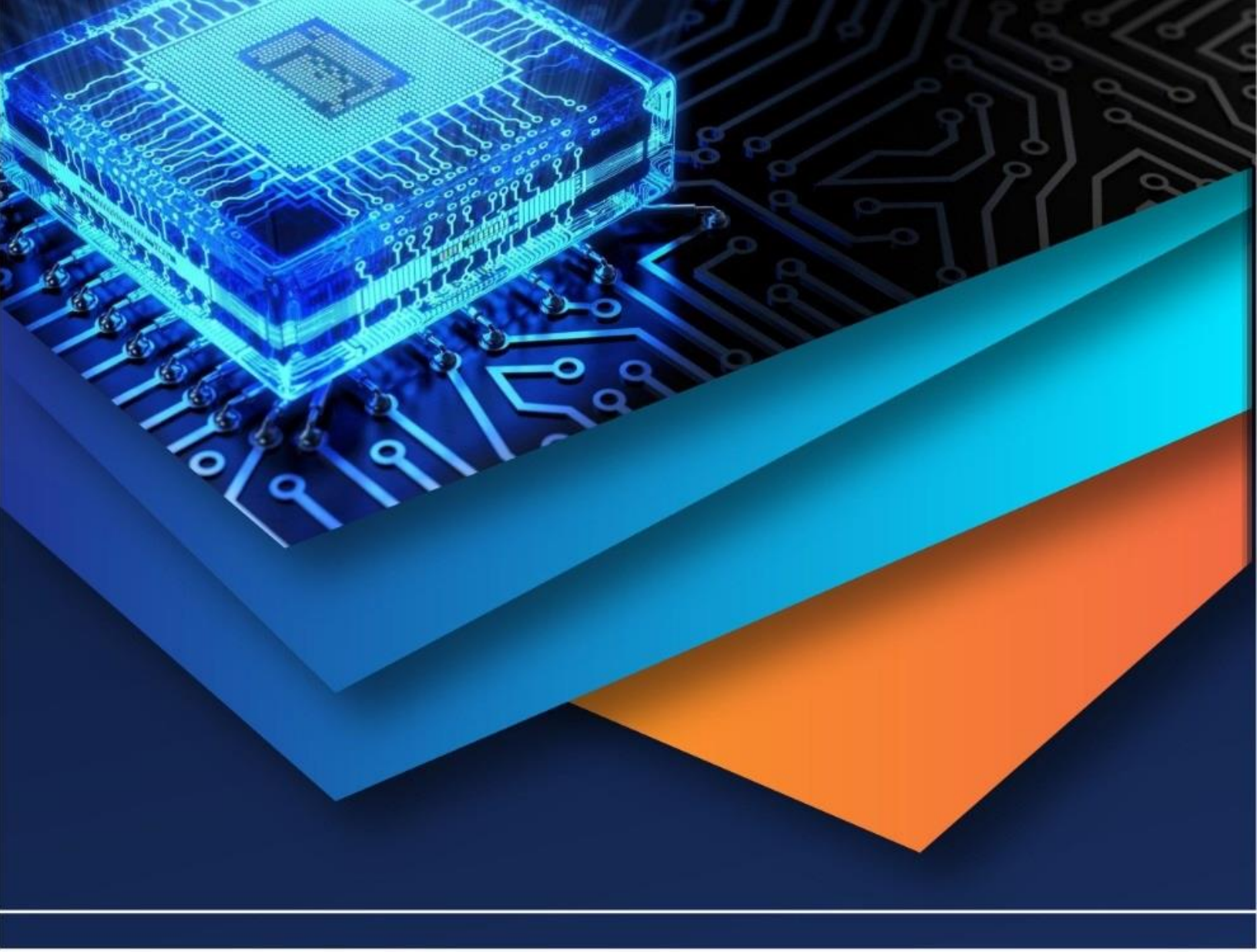
1) It can be used in HOD's cabin.
2) Any high-profile person's cabin.
3) Healthcare facilities.
4) Institute's cabins.

VIII. CONCLUSION

We have implemented a Cabin Visitors Priority Resolver Management System. Our algorithm and system successfully detect, sends and receives the request. We have applied our system to the HOD's cabin and it successfully worked.

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