Water Dispenser System ;

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***Abstract*—This project aims to develop an automatic water dispenser system that utilizes RFID technology to allow access only to authorized persons. The system is designed to dispense water only when an RFID card is presented, ensuring that only those who are authorized can use it. Additionally, the system is integrated with the IFTTT website, which sends messages or acknowledgments when the dispenser is used. The proposed system is expected to enhance the convenience and efficiency of water dispensing while maintaining security and minimizing water wastage.**

Keywords— Arduino, Arduino IDE,RFID Reader, RFID Card, IFTTT Cloud Platform, IFTTT App, Triggering Signal, ESP 32 Module,

I. Introduction (*Heading 1*)

Water is a fundamental requirement for the human body, and it is essential to keep the body hydrated for maintaining good health. To fulfill this requirement, conventional water dispensers have been widely used, which are operated manually. However, with the advancements in technology, we have developed a modern approach to water dispensing, which reduces human effort and provides a convenient and efficient solution.

In this project, we have developed an automatic water dispenser system that utilizes RFID technology to allow access only to authorized persons. With the simple act of placing their unique RFID card on the sensor, the dispenser automatically releases a predetermined amount of liquid into a glass or bottle, minimizing the need for manual operation. To prevent wastage, the outflow pipe of the dispenser is set for a certain amount of time, dispensing only the required amount of liquid. The system is integrated with the IFTTT website, which sends a message to the user along with the timestamp of usage, ensuring accountability and easy tracking. Furthermore, the type of liquid dispensed is also customizable according to the requirements. For instance, in households, the dispenser can be filled with water, while in petrol bunks, it can be filled with petrol or diesel, providing fuel to the users and saving their valuable time. Overall, this automatic water dispenser system is an innovative and efficient solution that simplifies the process of water dispensing, ensures accountability, and reduces wastage, making it a valuable addition to modern-day living.

II. Background

Water pollution is a significant issue in India, with around 80% of the country's water being severely contaminated due to improper disposal of waste in rivers and lakes. This has made it difficult for the population to obtain clean drinking water, and many have to resort to illegal and expensive sources. Waterborne diseases are a major concern, affecting approximately 37.7 million people each year, with more than 1.5 million children dying from diarrhoea.

In addition, petrol stations in India are often crowded, and people can spend up to 15 minutes waiting to fill their vehicles with fuel. This leads to air pollution, which can cause health issues like asthma, lung problems, and breathing difficulties.

Furthermore, water wastage due to forgetting to turn off the tap is also a common problem. To address these issues, we have developed an automatic water dispenser system that utilizes RFID technology.

This system is a small but significant step towards conserving water resources and reducing air pollution, making it a valuable addition to modern-day living in India.

III. Problem Statement & Objective

The problem we are addressing is the issue of water wastage due to human error, as well as the difficulties in obtaining clean drinking water in India. Additionally, the waiting time and air pollution at petrol stations are also problems that need to be addressed.

The objective of our project is to design and implement an automatic water dispenser system that utilizes RFID technology to provide access only to authorized persons, reducing the wastage of water. The system is integrated with the IFTTT website to send a message to the user along with the timestamp of usage, ensuring accountability and easy tracking.

The system is designed to be user-friendly, requiring minimal effort from the user. The water dispenser system can also be used in other liquid dispensing scenarios, such as petrol stations, to reduce waiting time and air pollution. Overall, our objective is to conserve water resources and reduce air pollution while improving access to clean drinking water and providing a convenient solution for liquid dispensing scenarios.

IV. METHODOLOGY

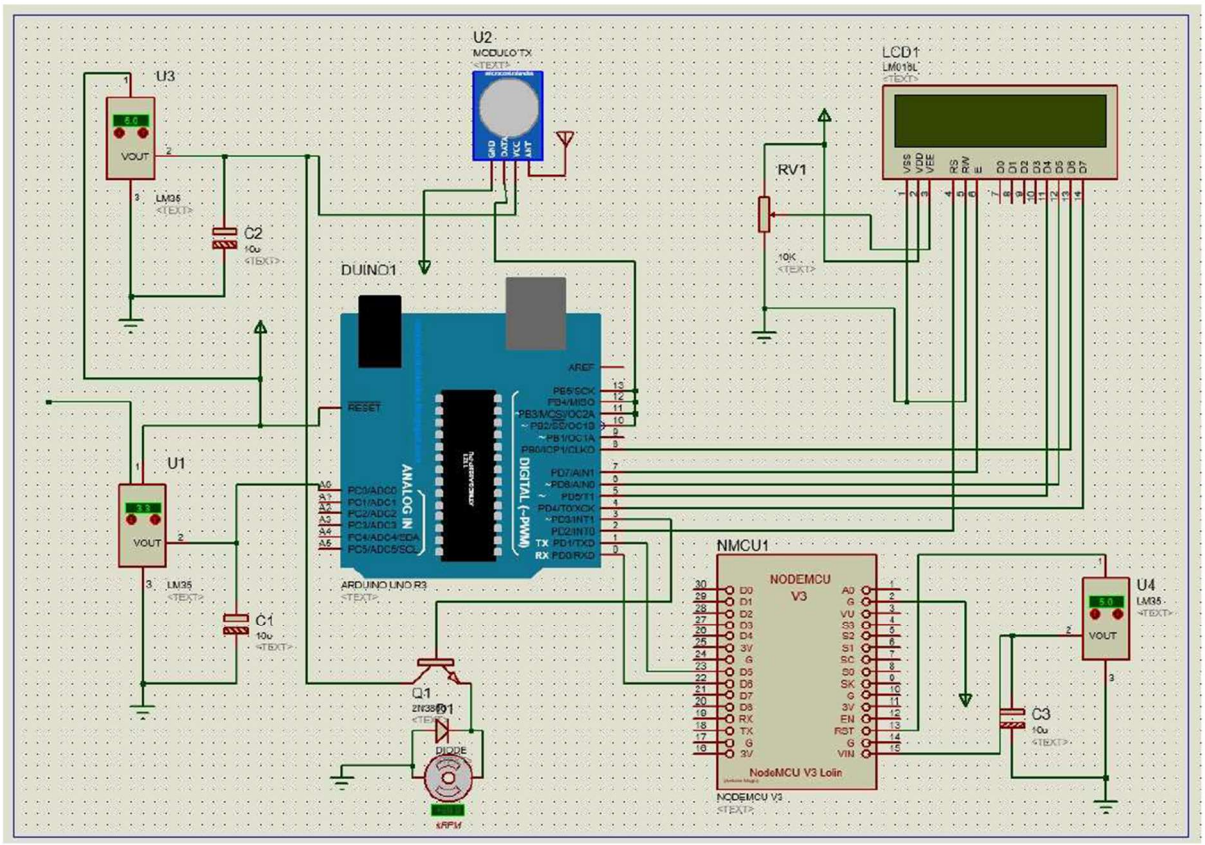
The methodology for the water dispenser system can be divided into the following steps:

- The water dispenser system uses an RFID card reader to detect and authorize the user.
- When an RFID card is placed near the sensor, the LCD screen displays a message confirming the card is authenticated.
- If the card is authorized, the system activates the water pump to dispense water from the container.
- The water pump operates for a certain period of time, typically 10 seconds, to fill the cup or bottle.
- A flow sensor monitors the water flow and stops the pump automatically when the desired amount of water is dispensed.
- An ESP32 module is used to connect the dispenser to the internet and send notifications to the user.
- The module sends an IFTTT trigger to the user's mobile app with a message indicating that the card was used at a specific time.
- The message includes a timestamp to inform the user about the usage of the card.
- In case of any unauthorized or fraudulent use of the RFID card, the user can be immediately notified of the same through the mobile app notification.

The water dispenser system is designed to be energy-efficient and environmentally friendly by reducing water wastage, ensuring clean drinking water and decreasing the need for plastic bottles.

In backend, trigger link should be generated in IFTTT platform and communicate with desired app in owner mobiles. Connect ESP 32 module to WIFI and enable trigger in that module when Arduino performed task or project completes its resources.it communicates with owner.

Three Set on codes are need ,one for determining RFID Card Number, another for Arduino, last one for ESP 32 Module to communicate with Cloud platform.



Schematic Diagram

V. Results and Discussion

The system operates as follows:

- RFID Access Control: Whenever an RFID card is placed onto the RFID sensor, the LCD display will show the access status of the user. If the card is authorized, the LCD will display "Access authorized" and a green LED will glow to indicate the start of the dispensing process. If the card is not authorized, the LCD will display "Access denied" and a red LED will glow to indicate that the user is not authorized.
- Water Dispensing: Once access is authorized, the water from the container is dispensed into the bottle using a servo motor. The user simply needs to place the bottle under the dispenser and the water will flow for up to 10 seconds before automatically closing the valve.
- Usage Notification: After the water has been dispensed, the system sends a notification to the user via an ESP32 module. This notification includes a default message along with a timestamp to inform the user that their card has been used.

All goals are successfully accomplished in the project.

VI. Conclusion

In conclusion, the proposed system provides a simple and secure way for users to access water. The RFID access control ensures that only authorized users are able to dispense water, while the water dispensing mechanism is both efficient and effective. The usage notification feature provides an additional layer of security and transparency by informing users of their card usage.

Overall, this system is a reliable and user-friendly solution that can be implemented in a variety of settings, from public spaces to private offices. Its components and features have been carefully designed to ensure that users are able to access water quickly and easily while maintaining the security and privacy of the system. With its many benefits and advantages, this system is a valuable addition to any environment where access to water is necessary.

VII. Future works & Upgrade

Water is not the only liquid that we need to dispense in our daily lives. There are various other liquids, such as juices, milk, and soft drinks, that we consume regularly. In addition, in certain settings like petrol bunks and industrial plants, the dispensing of liquids like petrol, diesel, and chemicals is critical.

For implementation of this slight changes in hardware is necessary like motors and power supply. Moreover for acknowledgement GSM Module can be use directly. Save all necessary details in cloud platform to make this application as An IOT application and enable to user to change or effect from user/client comfort zone.

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