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UPI Based Smart Water Dispensing System

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ABSTRACT:The UPI-based Smart Water Dispenser project aims to revolutionize the water dispensing industry by integrating digital payment technology using UPI QR codes. This project utilizes an Arduino Uno microcontroller as the central control unit, along with components such as an LED display, SIM800L module for SMS communication, DC water pump with relay modules, buck converter for power regulation, and a QR code scanner module. The system allows users to make payments for water dispensing services by scanning a QR code displayed on the dispenser, initiating payment through UPI, and receiving payment confirmation via SMS. This report provides a comprehensive overview of the design, implementation, and functionality of the UPI-based Smart Water Dispenser with QR code payment integration.

KEYWORDS:UPI, Dispensing, Transactions, Payments

I. INTRODUCTION

The increasing demand for an efficient and accessible water supply system has led to the development of the UPI based water dispensing system. Nowadays people prefer to use digital payments options instead of cash to avoid hassles associated with carrying cash. Access to clean drinking water is a fundamental necessity, and the goal of this project is to enhance the accessibility and convenience of water dispensing services through the integration of digital payment solutions. By leveraging UPI QR code technology, users can make payments securely and efficiently using their smartphones, eliminating the need for physical currency or card-based transactions.

II. COMPONENTS OF USED

1. **Arduino Uno:** Central control unit responsible for processing user input, controlling dispenser mechanisms, and interfacing with other components.
2. **LED Display:** Provides visual feedback to users regarding payment status, dispenser availability, and other relevant information.
3. **SIM800L Module:** Enables communication via SMS, receiving payment confirmation messages from Google Pay Business.
4. **DC Water Pump:** Dispenses water, controlled by relay modules. - **Relay Modules:** Control the operation of the DC water pump based on commands from the Arduino Uno.
5. **Buck Converter:** Regulates voltage supply to components, ensuring stable operation.
6. **QR Code Scanner Module:** Scans QR codes displayed on the dispenser to initiate payment.

III. SYSTEM ARCHITECTURE/ WORKING

The system architecture consists of the following components and their interactions:

- **User Interface:** Users interact with the system by scanning the displayed QR code using their smartphones.
- **Arduino Uno:** Processes QR code scanning, initiates payment processing, controls dispenser mechanisms, and communicates with the SIM800L module.
- **LED Display:** Provides real-time feedback to users regarding payment status, dispenser availability, and other relevant information.
- **SIM800L Module:** Receives payment confirmation messages via SMS from Google Pay Business and communicates this information to the Arduino Uno.
- **DC Water Pump and Relay Modules:** Dispense water upon successful payment confirmation, controlled by the Arduino Uno.

- Buck Converter: Regulates voltage supply to ensure stable operation of components.

IV. IMPLEMENTATION

The implementation of the UPI-based Smart Water Dispenser with QR code payment integration involves the following steps-

-Hardware Setup: Connect the Arduino Uno, LED display, SIM800L module, DC water pump, relay modules, buck converter, and QR code scanner module according to the circuit diagram.

-Software Development: Write code for the Arduino Uno to control system behaviour, process QR code scanning, initiate payment processing, and control dispenser mechanisms.

-Integration: Integrate hardware components and upload software code to the Arduino Uno.

-Testing: Conduct thorough testing to ensure proper functionality of the system under various scenarios, including QR code scanning, payment success, and failure.

V. FUNCTIONALITY

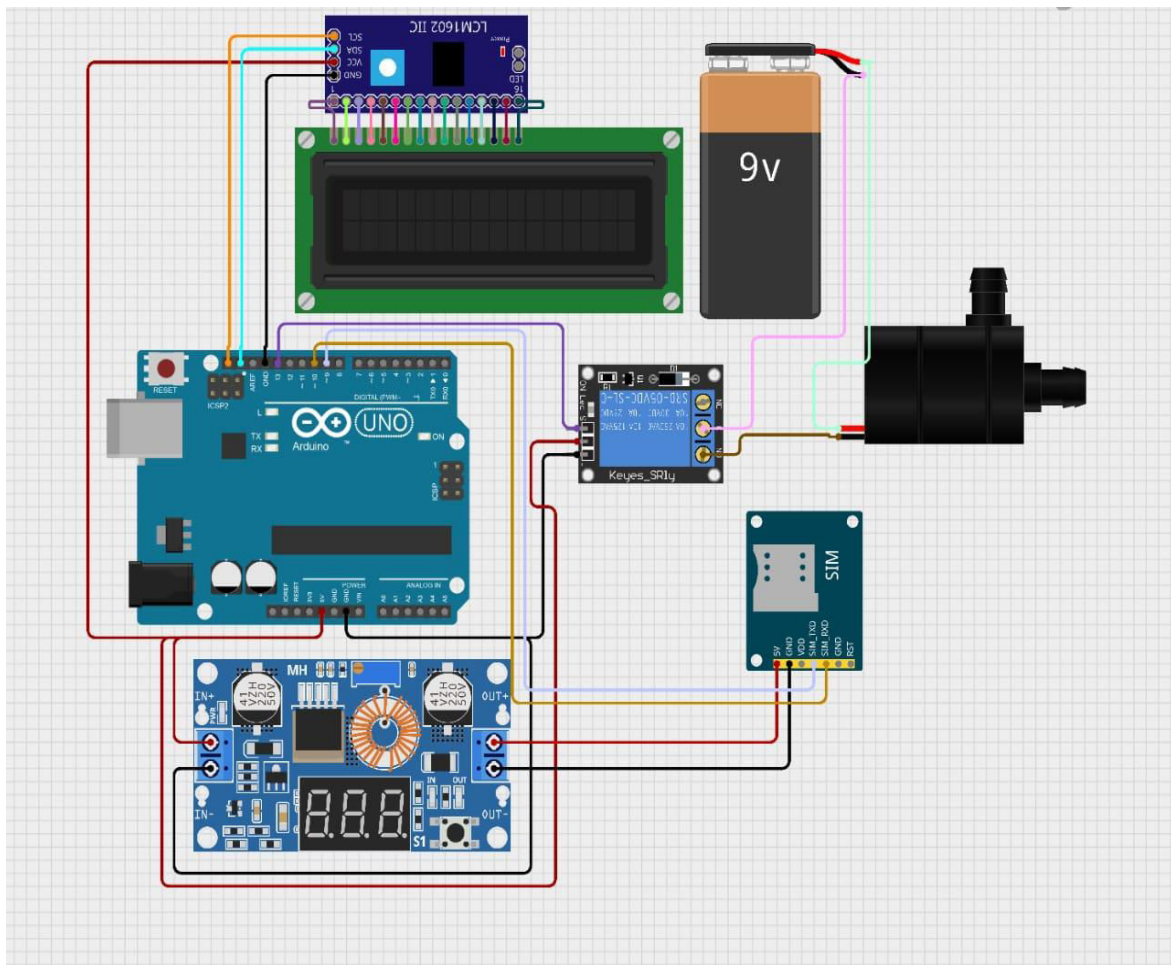
Users scan the displayed QR code using their smartphones to initiate the payment process. Upon scanning the QR code, the Arduino Uno initiates the payment process through UPI.

After successful payment, Google Pay Business sends a confirmation message to the SIM800L module, which is received by the Arduino Uno.

Upon receiving payment confirmation, the Arduino Uno activates the water dispenser mechanism, allowing the user to collect dispensed water.

The buck converter ensures stable power supply to components, enhancing system reliability.

VI. BLOCK DIAGRAM



VII. CONCLUSION

The UPI-based Smart Water Dispenser with QR code payment integration represents a significant advancement in the water dispensing industry, offering a convenient and efficient payment solution for users. By leveraging UPI QR code technology and integrating it with dispenser systems, this project enhances accessibility and user experience. Further enhancements could include remote monitoring and maintenance capabilities, as well as integration with additional digital payment platforms.

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REFERENCES

- [1](PDF) Smart Water Dispenser (researchgate.net).
- [2](PDF) Smart Water Management System (researchgate.net).
- [3]Multifunctional Intelligent Water Dispenser System | IEEE Conference Publication | IEEE Xplore.
- [4](PDF) Design and Implementation of Automatic Control System for Intelligent Water Dispenser (researchgate.net).
- [5](PDF) WATER DISPENSER: A UNIQUE INNOVATIVE DESIGN THAT MATTERS (researchgate.net).
- [6]Intelligent water dispenser system based on embedded systems | IEEE Conference Publication | IEEE Xplore.



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