



Cashless Vending Machine

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Objective

To build a Vending Machine that can be used in institutions, offices or workplaces that can be used at any time by the users just by RFID tags and be a part in the growth of digital India.

RFID Scanner	Frequency
MFRC522	13.56 MHz
RFID tag	Frequency
MFRC522	13.56 MHz

Table 1. Scanner Details

Introduction

Depending on departmental stores for our needs at any point of time throughout the day is quite not possible. Then came the advent of **Vending Machines** which serve us all throughout the day. But the interaction of these machines with the customers has become tough. Like some machines work slow, some don't accept coins, while some play with our patience. So we thought of coming up with a cashless vending machine i.e., EHC Easy Hunger Can that vends products without physical cash.

Drawbacks of current Machines:

- 1) No proper monitoring system to know which items are sold out and which are not.
- 2) Non availability of Digital Payments.
- 3) No proper detecting and input reading.
- 4) Centralized system of Payment.
- 5) Efficient product delivery method.
- 6) Non-acceptability of coins.

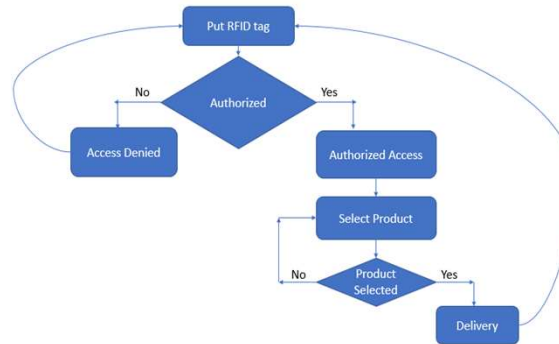


Figure 2. Flow Chart

Working

User Interface: User gets a RFID tag upon registration with the network. With this user can easily interact with the machine to avail the product.

Mechanism: Products are arranged within the slots of a spring. With the help of motor they could be delivered upon user request.

Database Management: User can credit some amount in his card initially and can avail the services. Every time the user takes a product it automatically updates the database.

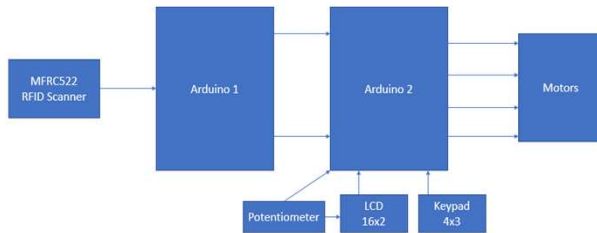


Figure 1. Block diagram of the system .

Methodology

Building a machine which delivers product for registered users. It has a smart management network to take care of transactions. Any registered user can pay using an ID card or an unique QR code generated with their account.

Hardware used in the project:

- Power Bank(36000mAh)
- Keypad
- 2 Arduino boards
- 16x2 LCD
- MFRC522 RFID Tag Scanner
- Stepper Motors
- DC Motors
- Potentiometer

Software used in the project:

- Arduino programming
- Balance will be deducted automatically thereby delivering the product



Figure3.Outer CAD Diagram



Figure4.Internal CAD Diagram

Future Works

- 1) A sensor based monitoring system to alert the vendor when to refill, also to tell him which products are not selling.
- 2) A personalized app which shows user his transactions , usage and can also fund his wallet for payments.
- 3) An option to pay using famous mobile wallets like paytm, and also a trusted gateway for adding balance into card directly from bank etc..

Conclusions

Through this project, we have used already existing technology i.e. Authorising Access through RFID Tags to solve a common problem of denomination issue at vending machines. This technology is not only permitted to this application alone it can be used any where especially at places where unique identification plays a key role. This is a product of portable size that could fit through doors easily and ease of shifting from place to place.

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References

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