Automatic Medicine Vending machine

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ABSTRACT
Access to basic health-care is a critical component of growth towards a healthier future. Medicines play an essential role in humans' lives. The "Automatic vending machine for medicinal drugs" is one of the inventions that demonstrates the rapid advancement of technology. The machine will distribute over-the-counter pharmaceuticals, including medications for pain, cough and cold cures. This IOT-based project uses an Atmega16 controller, ESP8266, DC motor, motor driver IC (L293D), and a container to deliver medicine. The system will use an automatic process to allow users to select the medicines and pay for their needed medication. This project aims to provide a quick and accessible manner for individuals to acquire prescriptions, especially during off-hours or when a pharmacy is not nearby. Medicine Vending machines are convenient, cost-effective, promote health and wellness, provides easy, quick access and require less maintenance.
KEYWORDS— IOT, Medicine, vending Machine, Technology, pharmacy.

I. INTRODUCTION
In India, many people die due to inadequate diagnosis and delayed access to medicine. This type of problem occurs when there is an urgent need for medication and medical stores are closed, particularly at night. In isolated areas and rural areas where population is less, the patients have to face issue for a shortages of medicines. These are some of the problems that are faced by the society to deal with this problems we introduced ─automatic vending machine for medicines which provides the medicines 24*7.Since medical supplies aren't always available, we can set up this AVM anywhere like hospitals, colleges, schools, rural areas, Near Doctors clinic etc. It provides a user-friendly environment for the user to have contactless payment method and delivery of medicines. This automatic medication vending machine has a medicine distribution mechanism and storage for large amounts of tablets to meet consumer needs. It's an easy-to-use system in which the user inputs the medication they want—for example, "a" or "b"—and the medication is dispensed following that input after payment, These devices improve the efficiency of medicine dispensing. Automated dispensing machines improve patient safety.

II. LITERATURE SURVEY
This paper highlights the importance of medicine in all aspects of human life and discusses the benefits of implementing an automated medical system, which operates similarly to an ATM and is suitable for dispensing various medications and first-aid supplies. Users can access the system by inserting an RFID card, which displays their details, and then select and pay for the medications they need before receiving them.[1]

Sarika Oundhakar shared information about the machinery and technology used in vending machines found worldwide, which reduces the need for human intervention and increases efficiency. The machines are able to dispense medicines based on user requirements, making it convenient for people to access medication without waiting in long lines. Additionally, we gained knowledge about how different instruments within the machines operate.[2]

A prototype called "All Time Medicine and Health Device" was created to provide medication and healthcare to those in need. It is a vending machine that dispenses doctor recommended drugs to anyone who requests them. The vending machine is powered by a Raspberry Pi, a small computer. The system includes a physical vending machine and an online interface that allows doctors to send prescriptions electronically and store patient information. Users must authenticate themselves before receiving medication by entering their user credentials. The system has both an Android app and a website interface for users to access their details.[3]

The author suggests developing a medical vending machine with a touchscreen interface for remote areas. This machine would provide basic medications based on symptoms and also offer information about nearby hospitals, doctors, and ambulances. The design and implementation of the machine would involve using IR touch technology and a cost-effective motor for dispensing medications. The software used would be similar to Visual Basic and would be programmed to cater to patients' specific needs. The vending machine would also include features for ambulance and first aid services.[4]

The author suggests creating a touchscreen medical vending machine that provides basic drugs based on symptoms in remote locations. The vending machine would offer popular prescription drugs without the need for a pharmacist, allowing users to select and purchase medication with coins. The goal is to provide convenient access to prescription drugs, particularly in situations where a pharmacy is not readily available. Health Care Vending machines are efficient, cost-effective, and promote health and wellness.[5]

In this paper, To solve the problem of long pharmacy lines in hospitals, we are implementing an automated system for dispensing medication. Patients receive an RFID card before seeing a doctor, which is scanned by the doctor to input the prescribed medicine count into a web app. This information is stored in a database and accessed by the patient when they scan their RFID card at the automated medicine vending machine in the pharmacy. This eliminates the need for waiting in line and reduces the risk of human error..[6]

This project aims to enhance vending machines by integrating smart technology, specifically through the use of the internet of things. The paper details the development and utilization of a secure cashless payment system in vending machines using IoT technology. The proposed method involves storing information in a server database, allowing users to access the vending machine through a screen or a web page to make purchases. The machine dispenses items using DC motors and a spring based mechanical structure, with the process being facilitated by wireless communication. Data storage and access can be achieved through Wi-Fi or an internet connection.[7]

This research seeks to provide a convenient solution for medical treatment by offering online diagnosis, consultations with medical professionals, and access to generic medication through an ATM like machine available in public places 24/7. The project aims to make basic medical services more accessible to those who may have trouble accessing traditional healthcare services, such as people in remote locations or those who are elderly or physically challenged. The focus is on treating minor health issues and providing first aid.[8]

This paper proposes the design of an automatic vending machine with the objective of introducing a more efficient technology to society. Vending machines dispense products to customers after they insert currency or credit. This microcontroller based vending machine dispenses various types of chocolates and aims to address issues present in coin-based machines. The machine includes features such as coin insertion and detection, returning of coins, display of information, and product delivery. It is portable and can be easily moved to different locations. The model is implemented using the Microcontroller 89S52.[9] This paper suggests creating a vending machine that uses Arduino technology to sell different chocolates. The aim is to introduce new technology to society by implementing a system that uses RFID for cashless payments. Once an RFID card is scanned, the user can choose a product and retrieve it from the machine. The machine does not give change for cash transactions. It consists of three main parts: scanning the RFID card, programming with Arduino, and displaying information and dispensing products. The main focus is on solving the issue of vending machines that do not provide change.[10]

III. PROBLEM STATEMENT

Medical facilities available in metropolitan cities and towns are much reachable by the people compared to the people in the rural areas and villages. Due to insufficient transport facilities in many places people are not easily approachable to the hospitals. Senior citizens and physically challenged person find difficult to travel and also feel exhausted to wait in the queue for a long time to consult a doctor.

IV. PROPOSED SYSTEM

The project aims to build an Arduino based medicine dispenser that dispenses medicine according to the doctor's prescriptions. The dispenser is comprised of both hardware, software.

The system will be reliable in the sense that it will dispense the correct medicine.

The Automatic Drug Dispenser is a sophisticated design that helps people with taking their medication directly from the machine without any human interventions. people can get medicines directly from that machines . Major advantage is that people would be able to access the drugs via patient kiosks in public places such as drug stores, malls, bus, railway stations, on highways, areas where medical stores are limited to overcome this issues we created Automated drug dispensary machine in which Initially the user will give their input as per their need and after their required input he/she will be directed to the payment option, once the payment is done the medicine dispensed from that machine .
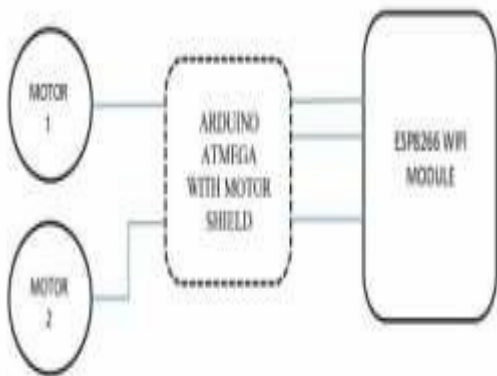
V. METHEDOLOGY

Fig1.Block Diagram

The above block diagram shows the main input and output components interfaced to the Arduino microcontroller. It shows the ATmega2560 controller driving the medicine cabinet with motor drivers. These motor drivers regulate the rotation of the motor that dispenses drugs from the cabinet. ESP8266 Wi-Fi module facilitates connection between controller and web-page. The user chooses the appropriate medication based on their symptoms after reviewing the list of medications and their uses beneath the medication slot. The system will immediately provide the requested medication after payment.

Flow of Website
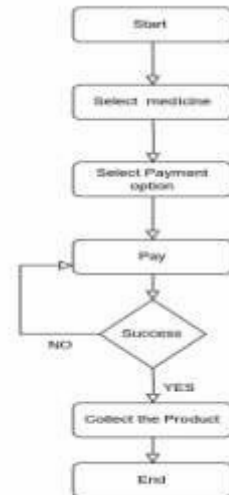
The above figure is about the work flow of our website :
1. User's Input: Start the automated vending machine. Enter the user's choice. Medicine A or Medicine B
2. Medicine Selection Procedure If the user chooses Medicine A. Redirect the user to the payment method. Once the payment is done, dispense Medicine A. If the user chooses Medicine B. Redirect the user to the payment method. Once the payment is done, dispense Medicine B.
3. Payment Procedure Choose the payment method. UPI, GPAY Complete the transaction.
4. Medicine Dispense Procedure Dispense the medicine. End the process.
5.

VI. RESULTS

We prepared a model for automated vending machines. This is the external view of the machine.

The machine's internal structure includes DC motors, an Arduino mega, and spirals.

VII. FUTURE SCOPE

1. Simple medical disorders will be diagnosed with ease thanks to the implementation of medical vending machines. Using machine learning, this system can increase its ability to diagnose health problems. A central platform may connect patients with specialists in various disciplines, and users can receive appropriate medications based on their symptoms.

2. By implementing this system, we will dispense medications based on the user's needs, and users will be able to check whether the medicine is present or not, whereas in the current system, users have just two drug options.

VIII. CONCLUSION

We conclude that automatic medicine vending machines are technically viable for individuals. It is based on the ATmega2560 controller and offers service. It ensures consistent access to medicines, including in rural locations. It's incredibly useful. These machines can enhance patient convenience, promote drug adherence, and minimize the burden for pharmacists and health care providers. Automated medical vending machine are widely used in hostels, railway terminals, airports, and rural locations. Implementing this approach eliminates the need for 24-hour availability and access time.

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