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A Systematic Review on Any Time Medicine Vending Machine

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ABSTRACT—

The capacity to access basic healthcare is a crucial step in the development of a stable future. Prescriptions are assumed to be a big part of life. From microelectronics to nanotechnology, innovation is advancing swiftly. The availability of basic medical care is a crucial building block for progress toward creating a stable future. Prescriptions are assumed to be a big part of life.

The use of vending machines is intended to deliver such healthcare in locations where a medical supply shops may not be practical or possible. It enables the user to choose medication, pay the necessary amount, then confirm the amount received before dispensing the medication. It offers a comprehensive remedy to people seeking prompt symptomatic relief for minor medical issues. It can totally eliminate presenteeism and absenteeism in the workplace by treating minor symptoms while employees are at work. Workplaces without clinics or pharmacies can gain from greater work productivity and avoid the underperformance of sick personnel by installing an over-the-counter vending machine. Additionally, it saves time that might otherwise be spent standing in line at clinics for unimportant issues like colds and headaches.

Keywords — Medicine Vending Machine, RFID Reader, Raspberry pi, LCD, Stepper Motor.

I. INTRODUCTION

The use of medications is crucial for maintaining health, preventing illness, managing chronic diseases, and treating disease. A machine that can automatically retrieve medications for the most common and basic symptoms is known as an anytime medication vending machine. The medications delivered by the machine are only intended for use in urgent situations where a patient must see a doctor for further treatment. The current invention relates to an automatic medication dispenser, particularly one that may dynamically take input from the user and subsequently dispense the appropriate medication type. Here, the term "input" refers to the prescription that the user received from the doctor. The system includes a device that can process all types of prescriptions. The prevalence of both infectious and non-communicable diseases has significantly increased in recent years, and the healthcare sector has experienced significant growth as a result of people becoming more health-conscious. Digitalized services, digital technology, and enhanced cloud system are anticipated to play a important role in enhancing healthcare delivery in the coming years, most importantly in rural areas. Some businesses are now developing profitable, yet affordable technology and digital solutions to address health problems and enhance the provision of healthcare. However, there aren't many businesses investing in this field, and the available technology isn't very advanced.

II. LITERATURE SURVEY

Abdallah Kassem [1], Medication adherence is an increasing worry among doctors, healthcare institutions, and other stakeholders in the healthcare sector since aged or senior individuals frequently misuse their medication. . They frequently neglect to take their medication as prescribed. especially those who use many medications at once. They might also mistakenly give the wrong dosage, which could have tragic consequences including death. In this study, they created an Android app that is in charge of managing the entire system. It is the main method of connecting with the system, the program synchronizes its data with the cloud upon login. The phone will automatically establish a Bluetooth connection with the Arduino and starts sending commands informing which container and stepper motor has to be rotated in order to distribute the pills. The android application serves as the system's user interface, controls the medication dispenser, and handles user schedules and usage information. The major goal of the Smart Medicine Dispenser system is to make it easier for patients, particularly the elderly, to take their prescriptions on schedule and without the risk of forgetting to take a dose. Additionally, it can lower the chance of unintentional over- or underdosing. Such issues could be resolved by the smart medicine dispenser (SMD), which would inform and remind patients to take the right dose at the right time.

Dragon S.Jankovic [2], It is a motor and microcontroller- based device for dispensing medications, When the user accesses the machine through an input event, the information concerning to the storage of the medications may be obtained from the distant region, and using that informatory details, refilling of the machine can be completed with ease. Since it can process input and deliver output via the motor mechanism, the Arduino microcontroller was selected as the system's main part. Programming the microcontroller allowed for the creation of the entire system's intelligence, which included all

functions for detecting, processing, operating motors, and dispensing medications. The system is pre-loaded with medications and will dispense them according to the users' request. When a particular medication is selected with precise steps at a particular step angle, the

stepper motor will spin the entire system to transfer the medications in order to place them close to the vent, The proposal's other goal is to inform the organizer in a remote location about medicines available in stock. The microcontroller was programmed with AT commands to start the GSM module, which sends an SMS, in order to achieve this purpose.

Muhammad Niswar [3], This study aims to assess the efficacy of a wireless sensor network based on Zigbee for tracking patient pulse status so that medical staff can continually track patient health and treat the patient in accordance with the severity of his or her illness. Here They created an electronic triage that uses a wireless sensor network based on Zigbee to remotely track patients' pulse state. The system consist of number of SNs, a CN that uses a ZigBee wireless interface to gather the pulse rate from SNs, and a web interface that shows a graph of the patient's pulse rates. This electronic system, which is essentially an SN, is made up of pulse sensors, an Atmega 328P microcontroller, and a ZigBee wireless interface. The pulse sensor is connected to the patient's finger and the electronic triage is attached to the patient's wrist. The micro controller uses a pulse sensor to read the patient's pulse before classifying it into three (three) severity levels, namely major, minor, and normal status. On a 1 6x2 LCD, the patient's pulse rate is shown in beats per minute (BPM). Three LED colours indicate the patient's condition's severity level . If the pulse rate is between 60 and 100 BPM, the green LED light will turn ON, indicating that the patient is in excellent health and is thought to be in a normal condition. If the patient's pulse rate is between 45 and 61 BPM or between 102 and 117 BPM, the yellow LED indication will turn ON to indicate that the patient is in a minority status and is on the verge of going into a critical situation. If not, red LED light will switch on to indicate that the patient is in a critical situation and has a serious medical condition.The technique to categorize the severity level of patients is displayed in pseudo-code I, which is embedded in a microcontroller.

Karat Thanaboonkong[4] In this project, the idea of drug delivery using intelligent systems—including information systems, autonomous guided vehicles (AGVs), and robot dispensing—is expressed. to use robotics and technology to enhance an automation, robotics, and information technology-based dispensing system. The robotic system and the drug delivering system, both of these are covered by the information system, make up the entire system. An administrator who is a pharmacist can manage all the components with the aid of an information system. Just one pharmacist is needed to oversee the procedure and grant prescriptions. Visual Basic was used to operate the robot. The software was created to be operated by scanning barcodes. The conveyor would stop operating when an end effector of the robot moved to it, allowing an infrrared sensor to detect the package. The end effector will be moved there by the robot. A bar code scanner to find the package is at the edge of the end effector. The barcode will be scanned by the barcode reader. To determine a place on the shelves that is available, the data will be transferred to the database. Bar codes have been employed throughout the entire information system to track and monitor drug status, identify individuals, and identify people. By streamlining the procedure to increase productivity, this technique is intended to eliminate error and boost drug storage effectiveness. The system can track all procedures, reduce errors, and shorten the time required to train new employees by implementing it in a medium-sized hospital.

Rajdeep Roy[5], Here, an IoT-based smart healthcare system has been developed that includes a medicine box with intelligence linked to sensors and a server for ongoing health tracking. The wireless internet connectivity of this smart medicine box enables easy communication between the doctors and pateint even when they are not in the same physical location. Along with an email that will assist the patient in taking the medication, the suggested medicine box aids the patient in taking the proper medication at the appropriate time. In this project, a patient will benefit from a smart medicine box that will remind them to take their medication when the time comes. Suppose a patient has a medication dose at 6 a.m. The box will alert him in the morning and play a sound to remind him. If he forgets the precise time to take his medication and opens the medicine box at any other moment, a servo motor will lock the box and prevent it from opening. When it is time to take the medication, the box will sound and notify the user until the user takes the medication or opens the drawer. Additionally, the medication box uses the Wi-Fi module to send an alert to the user's email address if they are away from home. The device has a temperature sensor as well to detect the user's temperature because it can be an important factor in determining how well a patient is doing. The two primary parts of this project are an Arduino UNO and a Node MCU Wi-Fi module, and they are connected to one another via serial communication. The medication box's three main compartments are controlled by an Arduino board, and a Node MCU is used to manage a temperature sensor, send emails to patients' mobile devices, and store temperature and medication time information on a server. This project's goal is to concentrate on giving them the right medication. Through this project, older persons who require ongoing medication monitoring will gain.

Knewron [6], Narcotic dispensing devices are always broadly used in numerous healthcare institutions, and yet their own effectiveness in lowering narcotic disbursement has been provocative as well as depends on several factors. He had said that the absence of each round of medical services in rural locations as well as the lack of clinical at bus terminals, stations, and major roads inspired us to undertake this work. With us, the proposal itself could not be such an envelope concept, but it can be beneficial. A Transceiver is indeed one type of wireless router which it acknowledges a Local sim and appears to work using the same lan as their mobile phone. Economic inequality would be a downward spiral wherein poor people are falling into the iterations and sick, going to leads to poverty. Vending machines were used to serve a wide range of customers with a variety of products, from groceries to processed goods. This is a vendor's less service based on smart cards. The goal of this prototype is to dispense temporary medicines that make people more likely to resist health deprivation. Our project as a whole may not be a box idea, but it can still be useful. We can mainly supply OTC medicines and pain relievers, and are useful to society. Humans could indeed primarily provide Prescription medications as well as pain medications, as being useful to society. This same cube keypad is indeed a device that it attaches to DE2 such as through JP1 as well as JP2 through a 40-pin ribbon. This same 20x4 Sky-like color backlit Large lcd subsystem could really display four words x 20 personalities with high contrast. A Transceiver is just one type of device that acknowledges but also appears to work with SIM cards.

ZhardEM [7] A goal of the research would have been to enforce an idea that would provide a compromise of using embedded microcontrollers. One of the constantly neglected troubles at the University Of Dhaka is the lack of a twenty- four-hour medicine provider. Its number of items made available

could become tiny as well as composed just among the most regularly used medicines. Software for just a suggested dispensing system designed to distribute prescription drugs and first assistance means. It's also predicated just on Node MCU M0 Arduino with a Motor drive, control electronics, transistor, 9V battery packs, upgrading of existing, icons, and several resistors. Inside this research project, its device has been directed at distributing prescription drugs such as basic products but also quickly serious influenza and cold medications for input money. A pair of IR LED and phototransistors are used to count the coins while a motor is connected to a spring which drops them one by one into an outlet. Again for the configuration of the Dc motor drive, a BJT transformer was used. Electricity falls atop gray major equipment have been resolved by attaching 1kΩ resistors between both components. This can be applied to show virtual tracking and supervision via the Internet. A prototype of a dispenser would include just 2 types of medication, but really the quantity could be further increased. In relation to it, water supply can be offered to customers. Again for the designed prototype, an Arduino UNO was selected, because it is the greatest hit and easiest to program.

Hsieh, J.C [8] A has suggested an Unparalleled Drug (ATM) device that carries drugs throughout emergency situations and insures connectivity of medications 24x7. The machine consists of an Innovative Reduced instruction set Device (ARM) processing unit, Rfid, Filesystems (Global system for mobile), pharma aggregator, and stock control. The tag identifies a customer; Mobile signals to inventory levels whenever the remedies should be refilled. An automated teller machine is a gadget that could also have sent out generic drugs. A machine could really obtain medications auto for such basic common signs free of cost. People in various locations often get access to medications that are provided to people openly by the federal govt. A device could even express mainly Over- the-Counter (OTC) prescription medications, pain and torture persecutors, 1st items, and so forth. Provides full day and night medicine facility. To enhance security, we utilize check cards to get the machine. Prescriptions sold or provided from a candy machine ought to fulfill this condition set by the Medical Council of India. Meds that these confinements apply are basically headache medicine and paracetamol. Because of the online exchange, there was no point in theft and the client can likewise observe what drug is accessible in this machine (ATM) before going by an IoT application. The venture aims to build up a framework to convey prescription 24x7 to the general population.

James Lim [9] A scanning to encapsulate input from the user, an automotive to discharge the therapy, and a substantial removable tray to hang equipment. The utilization of drugs to maintain or recover one's personal condition has already been expanding quickly. At least another sort of drug now is intended each day at periodic intervals. A numerical survey indicates that around 21 percent of the total patient population doesn't ever obey one‘s prescribed medication as well as 6percent of the patient population is not able to notice their own medicines. The inappropriate drug has been revealed as being the most likely cause of why certain service users need not react correctly to medical treatment. An idea is based on simplification and the utilization of reduced parts and equipment which can be readily accessible. The usability is ergonomically correct so even the least untaught users will be willing to easily find the infrastructure on their own. The prescribing is ready employing a special machine that's also deliberately made to have the title of a drug from the physician. A payment processing system is available to accept funds from the consumer through a bank card or credit card. The above port inside the disk drive tends to help inside the length to which the signal of the pill. The amount of slot machines could be risen to decrease this same functioning time by increasing efficiency. Any of the delicate medications are not to be supplied to the consumer without the need for a doctor's prescription. This same user requires to manually enter a moment of the day in which even the drug is being prescribed. The robot is programmed to assemble all the drugs in a periodic manner. Therefore the particular drug is decided picked by preference according to the request. A dispenser could be further enhanced by increasing the dataset and going to add more functionality. The operator's accuracy can be improved and it is coded to operate like a doctor.

Sarika Oundhakar [10] There really are still many waiting in long lines to choose the most prevalent drugs. Also, there are a lot of errors, which could become a big issue. Humans made the decision to simplify the process of Drug Vending which is much quicker and less error-prone. The general practitioner searches the Passive tags of a Service user through his Electronic tag something that is linked to a microcontroller. The above device tries to push the benefit to a software application in which the health care professional supplied the drug number inside the corresponding text boxes. Now, so the prescribing is trying to push here to the dataset from the app. t The focus of this report would be to distribute drugs given a prescription upon that official site either by a health care professional or the customer who utilizes the RFID. If such a person attempts to publish so many capsules, the structure would not accept or would prove a squeeze notification. The initiative includes 4 medicines that really are accessible as a conclusion although not a prescription. The majority of the public necessitates the four medicines frequently. The device is made of oppression-reduced metal sixteen millimeters thick (1.62 mm). 6 generators are used which seem to be 12 Volt dc motors of 60 rev/min. The device serves as the micro-controller- controller. The healthcare dispensing device is made up of a metal sheet 1.6 millimeters thick and Medicinal products have been deposited inside the machine. The span of the wire is 120mm as well as the pitch distance, pitch distance is 20mm. To protect a passage modern in the early summer it really is generally insulated.

III. CONCLUSION

The Anytime medicine vending machine offers an adaptable and straightforward option for extending basic healthcare to all locations at a very affordable price. The device will distribute the medication as directed. When the quantity of medicine strips drops below a predetermined level, the system adds an intelligent medicine unit that notifies the closest pharmacy that a refill is needed. Technically speaking, everyone can use an intelligent pillbox. It offers accessibility and will be very useful. The RFID-based service won't require any salespeople. It is critical to take into account how technology might impact the effectiveness of drug delivery and use.

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