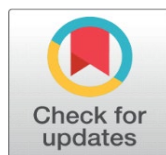# PERSONAL ASSISTANT FOR MEDICATION REMINDER SYSTEM FOR SELF-RELIANT SENIORS CITIZENS

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ABSTRACT

An automatic alert call system is implemented by the Android application MEDICINE REMINDER. Patient-doctor interactions are highlighted. To relieve patients of the burden of remembering when to provide their medications, alarms can be programmed to remind patients at specific times. It is possible to set alarms for various drugs and times, as well as for the day, time, and description of the medication. The system was developed using an agile software engineering process. NODE-RED process was used to develop the back end, and MIT APP inventor was used to implement the front end. IBM Cloud ant DB will house these particulars. The system prioritizes a user-friendly design and simple navigation. We have worked to create medical reminder systems that are affordable, time-efficient, and promote prescription adherence, even though many of these systems need new technology.

Keywords: Automatic Alarm, Reminder System, Notification System, Medication Adherence, Medicine Scheduler.

1. INTRODUCTION

Everyone falls into the patient category; we are all busy people with jobs, kids, housewives, teachers, and businesses. Stress and obligations abound in modern life. People are therefore vulnerable to a wide range of ailments, so it is important that we maintain our health. It is easier for family members to call the patient while they are not at home, out of town, or out of state, but you can have someone take care of them if they are at home. reminds you every time of the administration time. We depend on devices, particularly cellphones, in our increasingly technologically advanced and reliant lives. All people have smartphones these days. This presents a chance for us to make greater use of technology for our own benefit. It also has a significant impact on our day-to-day activities and in many ways promotes our health. Patients forgetting to take the prescribed prescription at the prescribed time, in the prescribed amount, is a significant issue. According to numerous studies, patients who do not take their prescribed medications as directed by their doctors

may face severe effects. Medication adherence is the extent to which a patient takes the proper medication at the right time. According to reports, it has become a significant issue lately. The expense of healthcare goes up as a result. A prevalent, intricate, and expensive issue that squanders health care resources and leads to subpar treatment results is medical non-compliance.

1.1 OVERVIEW OF WORK

With the use of cutting-edge Internet of Things technologies like radio frequency identification, wearable electronics, wireless sensor networks, and artificial intelligence, this study offers a versatile and widely used digital platform for smart homes. Thus, the primary innovation of this work is its description, at the system level, of the platform's flexibility, which permits various smart devices to work together. This study draws from the "HABITAT" project (Home Assistance Based on the Internet of Things for Autonomy for Everyone), which was created under the auspices of the This lowers healthcare costs, improves quality of life for senior users, and aims to develop and incorporate smart devices to support elderly people both at home and in nursing homes.

1.1.1 PURPOSE

Medication reminder services are a common component of non-medical home care for those who use prescription medicines. Even while having a medicine cabinet labeled with the days of the week and other information may seem odd, having a reminder is crucial to happiness. Because of their trauma-related dementia or cognitive impairment, some patients struggle to remember to take their medications on time. Taking medications at a specific time, with or without food, in a specific liquid, or at a specific temperature are just a few of the crucial directions that are frequently included with medications. To ensure that the medication is utilized as prescribed, each of these needs to be followed. to reduce the potential for negative effects or to be effective.

REMINDERS VS. ASSISTANCE VS. ADMINISTRATION: A medication reminder is a notification that someone has sent to you or a loved one to let them know when it's time to take a dose or pill. As an example of a skilled service, consider "medication assistance, where a nurse or other appropriately trained person gives someone a medication." If you are unable to do it yourself, this may entail placing the medication on your tongue. An untrained caretaker at home cannot assist because administering the drug starts with opening the container.

SAFETY & MEDICATION REMINDERS: Between 2011 and 2014, 48.9% of Americans reported using at least one prescription medication within the previous 30 days, according to the U.S. Centers for Disease Control and Prevention (CDC). Twenty percent of Americans, according to a Mayo Clinic research, use five or more drugs. According to other data, 8 out of 10 senior citizens in the United States take at least one medication daily to treat a chronic illness. Your health may not improve or you may experience negative side effects if you take your prescription improperly or not at all. Even for brief hospital stays, you will frequently need to take critical medications after being released from the hospital. Completing these tasks on time might make the difference between your recovery at home and a readmission. If you have regular reminders to take your prescription, you can remain safe at home.

2. LITERATURE SURVEY

2.1 Sharma, A., Choudhury, T. And Kumar, P., 2018, June. Health monitoring & management using iot devices in a cloud-based framework. In the 2018 international conference on advances in computing and communication engineering (ICACCE) (pp. 219-224). IEEE.

This exploration investigates material based wearable framework innovation, cautious biosensors, smart clinical boxes, among different innovations and advances that will push the clinical business to unrivaled levels with regards to proficiency and patient solace. A distributed computing engineering structure has been proposed. This paper proposes to reform the business through constant information trade to give consistent and proactive forecast, determination, and remediation. The structure this paper proposes, appropriately called the Internet of Medical Things (IoMT), opens up totally new roads for patient-provider interfaces (PHI) and wearable health technologies (WHT).

ADVANTAGE

Assuming the wellbeing record surpasses typical qualities, alarms are shipped off crisis contacts and their individual medical care suppliers, further developing anticipation and forestalling illnesses before they arrive at outrageous side effects. Continuous information is given to hospice care experts, empowering them to settle on informed choices and give prescient consideration.

LIMITATIONS
Notwithstanding, an impediment connected with this study is security, with information robbery actually being an issue even subsequent to including exceptional Programming API keys. Likewise, with additional patients, enormous information handling might be expected to deal with the immense measure of information produced. For IoMT to turn out to be economically and freely accessible, an easier to use UI is required.

2.3 EXISTING PROBLEM
Assuming you're assisting a more seasoned grown-up with their wellbeing and medical services, odds are individual is taking essentially a few, in the event that not different, physician recommended prescriptions. Have you at any point contemplated whether the person is taking the right drug? Could it be said that you are stressed over secondary effects or connections? These are substantial worries. Despite the fact that prescriptions frequently assist with keeping up with wellbeing and prosperity, research over and over shows that numerous more established grown-ups wind up experiencing issues connected with their meds. Thus, I might want to share a rundown of familiar ways of running 3D/G5.

It is very uncommon for elderly individuals to overlook taking their medications on schedule. It's also possible that you won't remember which medication to take when. Keeping an eye on patients all the time can be challenging for medical professionals and caregivers. This problem led to the creation of this drug reminder system. The intended time and medication can be set by the caregiver via an app that will be developed.

2.4 PROBLEM STATEMENT DEFINITION
Assuming a country's populace has a quickly expanding extent of more seasoned individuals contrasted with youngsters, there are different social and monetary issues that can influence the nation or the typical lifestyle of that specific country. may happen. A maturing society is inexactly characterized as a country whose residents beyond 60 years old make up over 10% of the all-out populace of the country. One of the principal issues looked by more seasoned grown-ups is expanded neglect, particularly with regards to taking their drugs reliably and on time. The possibility that the Internet of Things (IoT) can be utilized to take care of issues looked by more established grown-ups is upheld by different sorts of examinations. Tackling the issue of medicine updates will empower most more seasoned grown-ups to live freely and lessen their reliance on other relatives to remind them to take their meds.
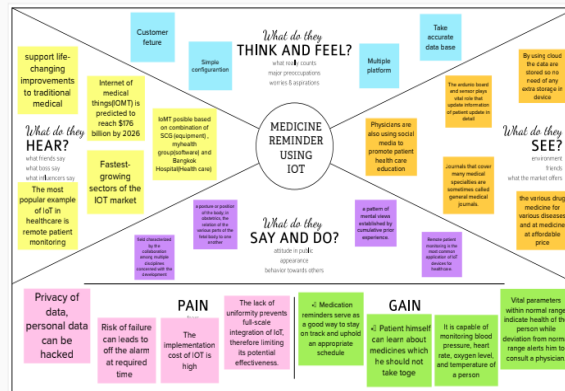
3. IDEATION & PROPOSED SOLUTION
3.1 EMPATHY MAP CANVAS
An empathy map is a collaborative visualization used to articulate what we know about a particular type of user. It externalizes knowledge about users to create a shared understanding of user needs and aid in decision-making.

WHY USE EMPATHY MAPS

Sympathy guides ought to be utilized all through any UX cycle to lay out shared conviction between colleagues and to comprehend and focus on client needs. Client focused plan is best done utilizing compassion maps from the very start of the plan cycle. Both the method involved with making a sympathy map and the completed item give critical advantages to your organization.

Know who your clients or people are. The compassion planning process helps remove and classify the information about the client in one spot. Classify and figure out subjective exploration (research notes, study reactions, and client interview records) Find holes in ebb and flow information and recognize the kinds of examination expected to address them. Assuming the sympathy map is meager, it demonstrates that further examination is required. Create personas by aligning and grouping empathy maps covering individual users Communicate **a user or persona to others:**

Sympathy maps are a speedy method for demystifying your clients' perspectives and conduct. Once made, it should act as a wellspring of truth all through the undertaking, shielding it from inclination and unwarranted suppositions.

3.2 IDEATION & BRAINSTORMING

Thought age frequently remains inseparable with the act of conceptualizing, a particular strategy used to create groundbreaking thoughts. The fundamental distinction among ideation and conceptualizing is that ideation is by and large viewed as a singular pursuit, though conceptualizing is most frequently a gathering movement. Conceptualizing is an extraordinary method for producing numerous thoughts that you wouldn't have the option to create by simply plunking down with a pen and paper. Brainstorming is intended to outfit the aggregate reasoning of a gathering by having them connect with, tune in, and expand on different thoughts. Conceptualizing likewise makes unmistakable sections of time in which the creating some portion of the cerebrum is deliberately turned up and the assessing part is turned down. Conceptualizing can be utilized all through any plan and working cycle. Obviously, it tends to be utilized not exclusively to create thoughts for plan arrangements, yet in addition while you're attempting to create thoughts, for example, arranging where to accomplish compassion work or contemplating items and administrations connected with your undertaking.

3.3 PROPOSED SOLUTION

Proposed Solution means the product, equipment, different items or hardware, and any administrations (counting establishment, execution, preparing, upkeep, and backing administrations) essential for Merchant to carry out the Arrangement depicted in the Proposition and It implies a mix.

PROBLEM STATEMENT: Old individuals who live alone in void homes are in danger of wellbeing, like taking drugs mistakenly, neglecting to take them, and having mold in the medication. Simultaneously, the framework will screen the drug status of old individuals, give measurements and criticism, and give reference data to specialists and drug stores.

In this way, they need to rely upon others, and therefore, feeling subject to others is simple. It is a ton of challenge for a clinical expert to watch out for her patients all day, every day.

IDEA / SOLUTION DESCRIPTION: To keep away from these confusions, drug update frameworks have been created. A web application is made for the client (guardian) that permits the person in question to choose the ideal times and drugs. IBM Cloud securely stores and safeguards generally your client or client data. At the point when the medication is expected, the web application utilizes the IBM IoT stage to send the medication's name to her IoT gadget. The gadget gets the medication's name and tells the client by means of voice order. Social Effect/Consumer loyalty: It additionally assists with supporting the old all the more actually and is utilized to work on day to day existence concerning drug utilization. Our frameworks advance protected, autonomous living, bringing about more free and better focused on people. Families can mind their friends and family's security from anyplace on the world.

SOCIAL IMPACT/CUSTOMER SATISFACTION: The proposed application is more convenient to use in both Android and IOT-based systems. The user can customize the timing of the intakes and update his medical records. This solution is provided with Cloud storage with needed space. Extra storage space can be provided with the subscription.

IMPLEMENTATION: Plan a UI utilizing MIT Application Creator: UIs ought to be planned with an accentuation on effortlessness and usability. The application ought to permit clients to enter medicine subtleties, set updates for various dosing times, and view drug plans.

Design the back-end using Node-RED: The backend ought to be intended to handle the information entered by the client and save it to the data set. Node RED allows you to make the streams you really want to process and store your information in IBM Cloudant DB. Incorporate the front end and back end: Whenever you have planned your front end and back end, you really want to coordinate them. This can be achieved by making a Serene Programming interface that associates the frontend and backend.

Test the system: The framework should be entirely tried to guarantee that it capabilities true to form. This should be possible by directing client acknowledgment and utilitarian tests.

System Deployment: When the framework is tried and approved, it very well may be sent to research Play Store or other application stores for Android gadgets.

4. PROBLEM SOLUTION FIT

Critical thinking Fit Material depends on the standards of Lean Startup, LUM (Lazy User Model), and Client Experience Plan. It helps business visionaries, advertisers, and corporate trend-setters distinguish standards of conduct and perceive what works and why. This is a layout that assists you with recognizing arrangements that are probably going to be embraced, diminish the time you spend testing, and better figure out your ongoing circumstance

4.1. IOT DEVICE TO ALERT

This IoT gadget depends on an ESP32 microcontroller and is associated with a LCD, a ringer, and a Drove light. This gadget is intended to recover medicine data from the IBM Watson IoT stage and show it on a LCD screen. Bells and Driven lights are utilized to give sound and visual alarms to patients when now is the right time to take their medicine. ESP32 microcontrollers are strong and flexible stages that can be modified utilizing the Arduino IDE or other programming devices. Inherent WiFi and Bluetooth abilities make interfacing with different gadgets and organizations simple.

The LCD gives an unmistakable, simple to-peruse interface for showing prescription data like the medicine's name, measurement, and when it ought to be taken. A ringer and LED bulb give a discernible and visual caution to the patient when the time has come to take the prescription.

The gadget is associated with the IBM Watson IoT stage, which considers simple incorporation with Medication Update Android-based applications. The stage gives secure and solid correspondence among gadgets and applications to guarantee that drug data is communicated precisely and dependably..
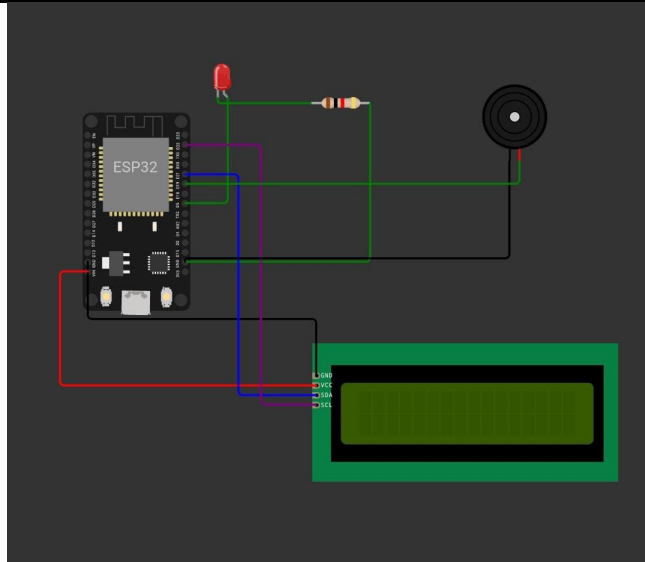
4.2 DATA FLOW DIAGRAMS

A data flow diagram (DFD) portrays the progression of data in a cycle or framework. Show information input, yield, capacity focuses, and courses between every objective utilizing predefined images like squares, circles, and bolts, and short text names. Information flowcharts can go from straightforward, hand-attracted process synopses to nitty gritty, staggered DFDs that dive dynamically more profound into how the information is handled. You can utilize these to examine existing frameworks or model new frameworks. Like every great graph and diagrams, DFDs can outwardly "impart" things that are challenging to make sense of in words, and they can be utilized by both specialized and non-specialized individuals, from the designer to his President. That is the reason DFDs stay well known after such a long time. Albeit these function admirably for information stream programming and frameworks, they are presently not entirely appropriate to perception of intelligent, ongoing, or data set situated programming and frameworks.

FUTURE SCOPE: There is need for enhancement and development of the drug reminder system. Future development could focus on the following areas::

Integration with wearable devices: Wearable technology can be combined with this approach to help with medication compliance even further.

Medication tracking and monitoring: This system can possibly be improved to follow medicine use and give knowledge into prescription adherence designs.

Personalized medication management: The system could be personalized to each patient's medication needs and preferences.

Integration with electronic health records: Incorporating this system with electronic clinical records gives a more complete perspective on a patient's medication history.

Support for multiple languages: The system can be extended to help multiple languages and arrive at a more extensive patient populace.

GAMIFICATION: The system can be gamified to make medicine consistence really captivating and a good time for patients. Make Wellbeing Initially Forestall falls by eliminating possible outing and fall dangers for your adored one. Add handrails to corridors and steps, and handrails to restrooms for additional help. On the off chance that you'll be separated from everyone else for a drawn-out timeframe, consider introducing an individual crisis reaction framework so you can call for assist with a basic press of a caution button.
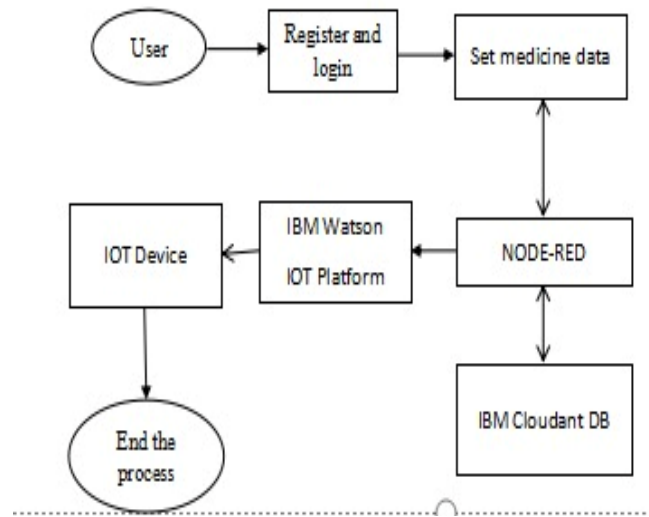
Fig 4.1: DATA FLOW DIAGRAM

5. CONCLUSION

Based on the results of the research, one of the most crucial things that needs to be addressed for the elderly is medication intake. In this instance, a prescription reminder app is suggested to assist older individuals who are unable to remember to take their medication on their own. A thorough analysis and explanation of each of the suggested modules for the medication reminder application was conducted, and the advantages, disadvantages, opportunities, and threats that the suggested smart medication reminder application faced were noted. There was also a thorough explanation of the anticipated results of the suggested IoT-based smart medication reminder application.

CONFLICT OF INTERESTS

None.

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