HEALTH ALERT AND MEDICINE REMINDER USING IOT

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ABSTRACT-In today's life, human beings face difficulty to keep in mind the medicines they required to take. This paper proposes a model of automatic medicine reminder and apothecary system. This system can relieve unevenness in taking recommended dosage of medicine on time prescribed by the doctor and switch from ways primarily reliant with the memory of the human being insignificant regulation; hence people can be freed doing wrong things due to human error like taking medicine at different time with incorrect dosage. Various medicine boxes exist in the market. The proposed medicine box would help people who are under medication mainly for old persons to take correct medicine on time without forgetting. It also continuously monitors the patient health condition like Blood pressure, ECG through the sensors attach to the system and acknowledge to the doctor. If the patient or elder people take the medicine at time that picture will be capture by the camera and send it to the doctor.

I.INTRODUCTION

At present the number of elder people as well as middle age people forget to take the medicines on time. The medicines prescribed by doctors are given using a written prescription and most of the times elder people forget to take the medicines. This not only causes serious health issues in some cases but can also become a habit of forgetting to take medicines. Applications are being developed which will remind the medicine dosage but this requires a mobile handset which is not practical to be present with the elder people each and every time or some of them don't know how to use. There are cases where people forget to take the medicine even after reminding. Thus, this is a serious issue and in spite of advancements in technology the issue yet remains unhandled.Elder people are also left alone at home and in some worst cases they can be left unattended if they face serious health problems which require immediate attention. Therefore, there needs to be device which can not only remind the elder people to take medicine but also acknowledge doctors or family members that they have taken the medicine. The people who live alone or have medication time during the period of the day when family member's aren't home for supervision may lead to two main problems; the wrong medication and the improper dosage or timing. This may cause serious health problems to the patient and worsen their health conditions. Sometime when all the family members go to work will also have a risk of being unattended immediately if their health condition gets critical and may even lead to loss of life.

II. PROBLEM STATEMENT

This is a simple IOT device using a Micro controller to receive inputs and send outputs. The proposed system IOT were used to intimate the patients to take medicine on time by using a buzzer sound and the name of the medicine is displayed on the LCD screen.This system consist of a camera interfaced to the hardware and checks if the patients has take the medicine after medicine remainder system has informed the patient to take the medicine and that picture will acknowledge to the doctor. It also continuously monitors the patient health conditions like Blood pressure, ECG through the sensors attach to the system and acknowledge to the doctor.

III.PROPOSED SYSTEM

The system consists of a web app as well as android application which has the details of the all the patients visiting the doctor. The medicine along with the medication time is saved. The medicine reminder IOT system will communicate with the server and check for medication timing. If medicine is present the system will alert the patient to take the medicine. The system also consists of health monitoring system which will monitor the health of the patient and if it is found to be critical, will inform the doctors immediately.

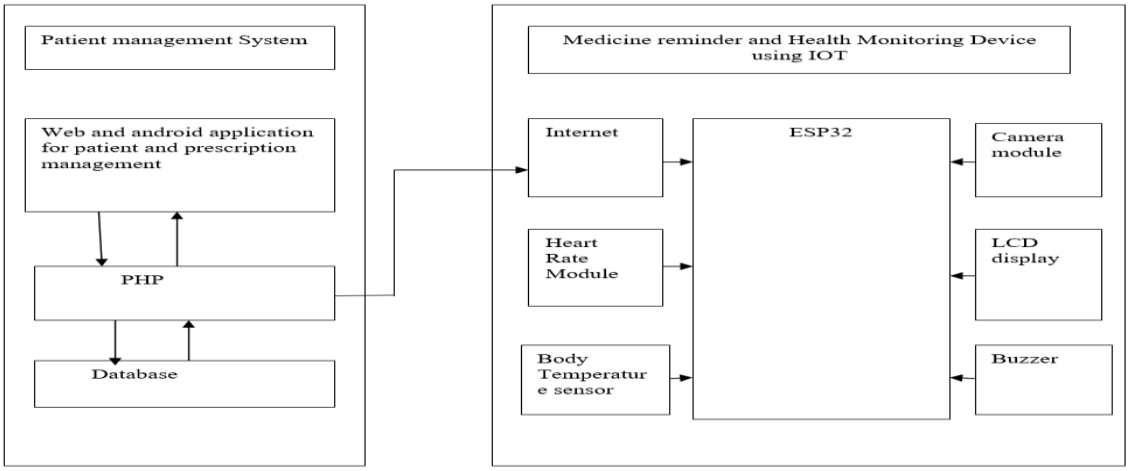


Figure.1. System Architecture

1. The Patient management CRUD: The patient management crud is web/android application based patient management system developed using PHP backend and HTML boot strap front end. The system consists of a web application where the doctor can login and prescribe the medicine as well as medication time to each and every patient. This module involves development of CRUD system for reading and Updating patient medicine details and prescription details.

2.The IOT medicine Reminder and Health monitoring system: This module consists of development of hardware part of the project. The system consists of an power WiFi Soc which will connect to the internet. The system is so developed the it will keep a track of time as well as medicines of the patient by fetching the data from the database of PHP CRUD system developed. Whenever medicine is present the system alerts the patient using buzzer and displays the medicine to be taken. The system also consists of interfacing the Heart rate sensors and Body temperature sensors to monitor the health status of the patient

3.Smart Cam based Medicine Acknowledge system: This system consists of development of innovative system for medicine acknowledgement to the doctors. This system consists of a camera interfaced to the hardware and checks if the patient takes medicine after the medicine reminder has informed the patient to take the medicine. If the person has not taken the medicine the smart camera will inform the doctor regarding the same.

IV.HARDWARE DESCRIPTION

Arduino Nano: The high-performance Atmel 8-bit AVR RISC-based microcontroller combines 32KB ISP flash memory with read-while-write capabilities, 1KB EEPROM, 2KB SRAM, 23 general purpose I/O lines.

Figure 2 Arduino Nano

MAX30100 Pulse Oximeter Sensor:MAX30100 is an integrated pulse oximetry and heart-rate monitor sensor solution. It integrates two LEDs (IR and Red), a photodetector (Red), optimized optics, and low-noise analog signal processing to detect pulse oximetry and heart-rate signals

Figure 3 MAX30100 pulse oximeter sensor

Buzzer: Buzzers can be both fun and useful in electric circuits. We'll use them a lot in Make Crate projects, so let's take a look at what is going on inside a buzzer to produce sound.

Figure 4. Buzzer

I2C module: To connect LCD display 16×2 or 20×4 to Arduino you know you'll need at least 6 wires to connect, it means sacrificing some IO's that could be used for connecting other components such as sensors or motors.

Figure 5. I2C module

LCD display: The liquid-crystal display has the distinct advantage of having a low power consumption than the LED. It is typically of the order of microwatts for the display in comparison to the some order of milliwatts for LEDs.

Figure 6.LCD display

The ESP32 Cam board: The ESP32-CAM is an Ai-Thinker's Original ESP32 CAM WiFi+Bluetooth withOV2640 Camera Module based on the ESP32 chip with the additional facility of using a camera. It is ideal for various IoT applications.

Figure 7. ESP32 Cam Board

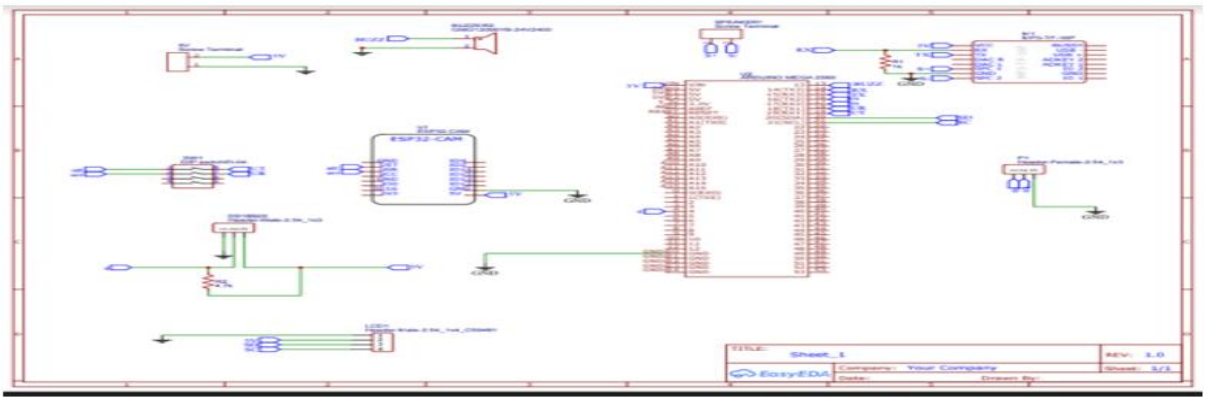


Figure 8. Schematic Diagram

V. SYSTEM IMPLEMENTATION

The doctor will set the medicine name and time for the patient to take the medicine. At correct time the medicine reminder system will give a audio call for the patient that he/she has to take the medicine. When the patient come near to the system to take the medicine the camera will capture the image of the patient and acknowledge to the doctor. Along with it when the patient touch the system the body parameters will measure and send it to doctor.

Pseudo Code: Medicine Reminder and Health Alert

Function setup()

{

Set all Sensors are Inputs

Set LCD Output

Enable WiFi

Connect to Internet

Initialize Camera

Initialize Speakers

End

}

Function loop()

{

HIT a webservice every second

Fetch JSON response

Parse JSON

If "Medicine Available":

Make Audio call for medicine present

Display Medicine On LCD

Capture photo

Send it to doctor

Measure Body Parameters

}

VI. SCREEN IMAGES

1. LOGIN PAGES: This is the first page that opens as soon as you click on run command. Here doctor will login and check the update of patient. While login doctor will give his own credentialslike username and password and then the doctor can login into the system.

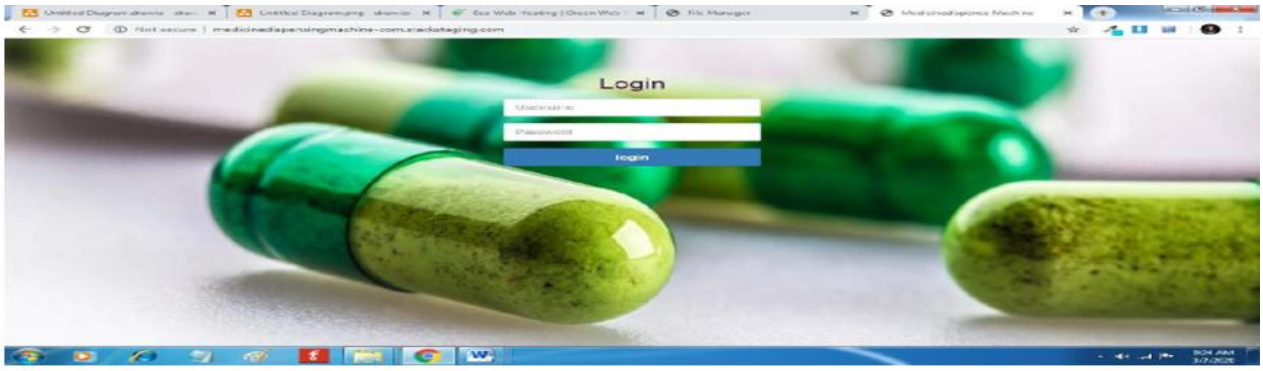


Figure.9. Login Page

2. CREATE MEDICATION; After login doctor can add patient name with medication time and medicine. Once doctor creates the entry for patient it will be stored in database.

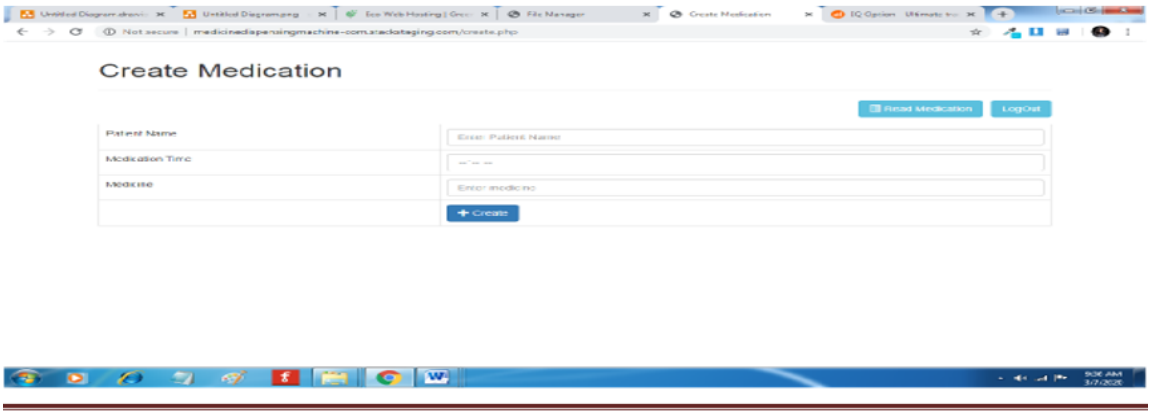


Figure.10. Create Medication Page

3. MEDICINE LIST: After create medication for patient the doctor can read medication of the patients, edit or he can logout.

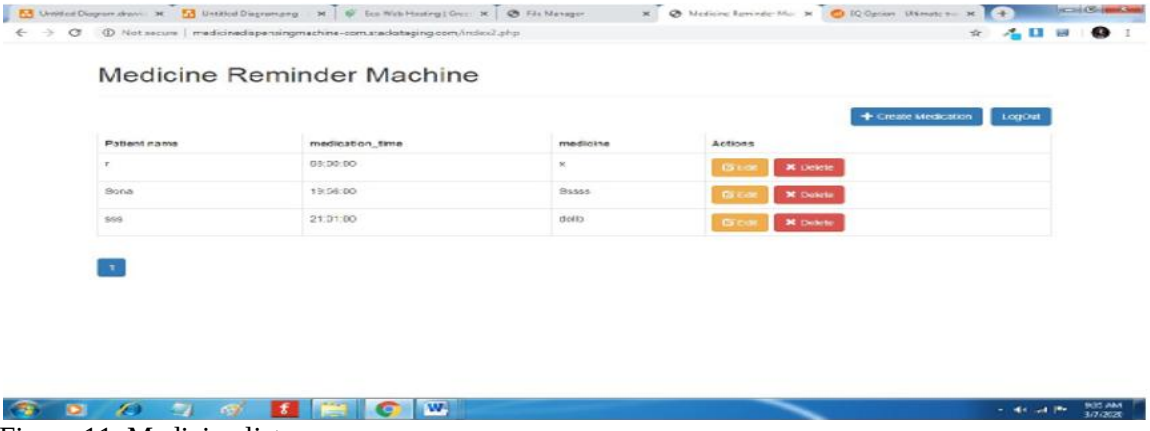
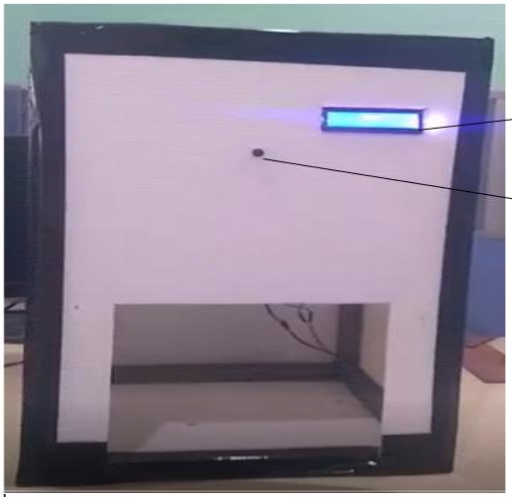
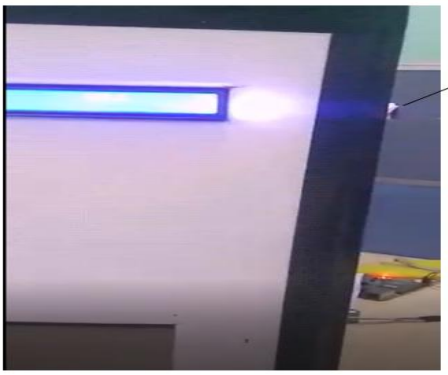


Figure 11. Medicine list page

4. COMPLETE PROJECT: Here is the image of whole system of medicine reminder and health alert using.





Android App Layout:

VII. CONCLUSION AND FUTURE WORK

The proposed project deals with the concept of smart medicine reminding machine and health alert using internet of things. From the above project we can conclude that the project can help the patients take medicine on time without forgetting and thus will keep them health by reminding them to take the requisite medicines on time. The Project is based on IOT which helps to update the medicines remotely using Internet of things. The project also implemented medicine acknowledgement system which will keep doctor acknowledged regarding the medication of the patients using camera. The project can also measure the health parameters of the patients and send them to the doctor. Thus we can conclude that the project can not only help the patients to take the medicine on time but also help them to stay safe by informing their body parameters to the doctor. The proposed project has wide scope for future enhancement.

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