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Medicine Alert System for Elderly Patient

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Abstract: *In present days all of us are living in modern society and are full of pressure from all kinds of environment every day. With the changing dining habits, people are prone to many chronic diseases [1]. Most chronic diseases like Alzheimer, diabetes etc. need special care from nursing staff to remind the patient, when to have the correct medicine. Patients usually forget to punctually have medicine once they leave the hospital and reach their homes. This situation of neglecting or forgetting to have medicine according to doctor's instruction often causes many un-fortunate deaths of patients. The research work done on this study includes a medicine box as the main part of product which includes GSM module, voice module, control panel displaying all information related to the patient, medicine detecting mechanism, and a microcontroller to operate the monitoring function. Microcontroller in patient medicine box is responsible for scanning the condition of sensor that detects the status whether the medicine was had by patient on time or not. A message sent to the patient and another family member those numbers is save in GSM module, if patient is not present at home or don't take medicine at prescribed time.*

Keywords: *GSM communication module, voice module, Intelligent monitoring (LCD), Microcontroller, Interface, push button.*

I. Introduction

In our modern society the importance of health care has greatly increased [2]. Very often people forget to take medicines on prescribed time which can lead to serious complications in health. Uneducated people face a lot of problems like how to take medicine at prescribe time and which medicine by using voice module [3].

The complete system-structure consists of the medicine box for certain individual patient, in which an intelligent monitoring system is designed and whole circuit is laid in the box. This system also used mobile application to remind the patient to take medicine on prescribed time by using GSM communication module that collected patient's information of having medicine.Moreover a mobile application will be easy to use and hardware is also limited.

II. Inspiration

The motivation for building such a product came from the observing the elderly in the family having to suffer from the hazard of missing out medicine in absence of regular supervision. Public hospitals also display reduction of supervision at times, which medicate the situation. All these happenings inspired us to come up with an easy solution for the aged and the sick [4].

III. Proposed Model

The whole structure of the medicine box for certain individual patient, in which an intelligent monitoring system was designed and whole circuits was PCB-layout in the box. The system included GSM communication module that collected patient's information of having medicine.

Some old aged peoples don't know how to set alarm in mobile for their medicine, so here is a voice module which speaks about the medicine name at the prescribed time.

System control microcontroller in patient's medicine-box was responsible for scanning the condition of sensors that detected the status whether the medicine was had by patient on prescribed time or not[1]. If we don't take medicine bottle at prescribed time then limit sensor sensed position of bottle and buzzer will continuously beeped out otherwise off. The LCD module would display the information of patient medicine. Also display the name of the patient medicine, prescribed time. Simultaneously message will be send to the family member those number is saved in GSM module.

If some time patient is busy in work there is a push button which reminds us to take medicine after 10 sec.

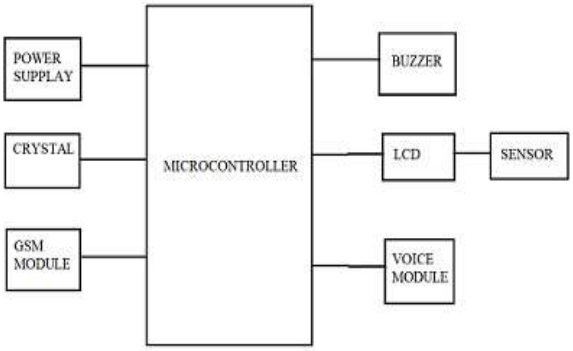

Fig 1. Block Diagram of Medicine-Box

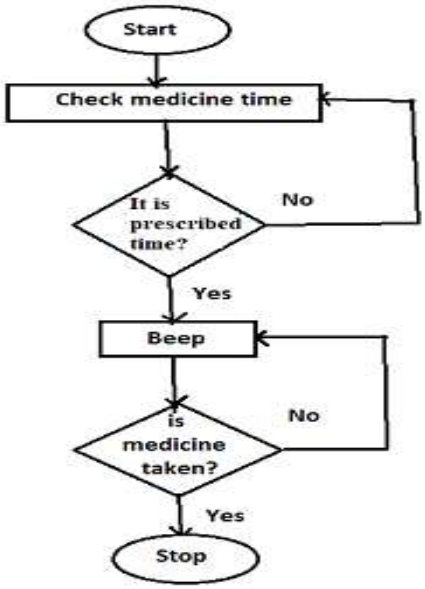

Fig 2. Process Control Flow Chart

IV. Major Components Used

The project contains a simple and smart electronic reminder system comprising of the following components: Microcontroller, GSM Module, LCD Display, Voice Module, Limit sensor, Buzzer, push button, connecting wires.

A. GSM

Global System for Mobile Communication is a standard developed by the European Telecommunications Standards Institute (ETSI).It was created to describe the protocols for second-generation (2G) digital cellular networks used by mobile phones. It requires a SIM card just like mobile phone to communicate with the network. It needs AT commands for interacting with controller through serial communication. Frequency range for Uplink 880-915 MHz and for Downlink 925-960 MHz.

B. LCD

Liquid-crystal display is a flat panel display, electronic visual display. It uses the light modulating properties of liquid crystals. Liquid crystals do not emit light directly. In our project 16x4 LCD is used to display the information about medicine box such as the name of medicine and prescribed time.

C. MICROCONTROLLER

The name of big family of microcontrollers is 8051. The device we used in our project is the 'AT89S52 '. It is a typical 8051 microcontroller manufactured by Atmel. In this, the 89S52 has 4 different ports, each one having 8 input or output lines, providing a total of 32 I/O lines. These ports can be used as output data and orders do other devices, to read the state of a sensor/switch. Most of the ports have 'dual function' that means they can be used for two different functions. The first function is to perform input/output operations and the second function is used to implement special features of the microcontroller such as counting external pulses, interrupting the execution of the program, performing serial data transfer. Each port has 8 pins, and it will be treated as software point of view with 8-bit variable called 'Resister', each bit is connected to a different input/output pin.

D. VOICE MODULE

The Voice module is based on version ISD-1820, which is a single-chip device and it's record single message. It is playback device and recording are stored into one chip non-volatile memory, providing zero-power storage message. The recording time of ISD-1820 is 8-20 sec.

V. Result

This device helps for keeping track of regular medicine taking activities and decreases human stress and effort[4]. It is simple circuitry and effort, the easy to use and cheap device. It is a simple solution for family member to care of old aged and suffering patients. It can use in every household problem and can be marketed as an efficient solution to us. The desired output results are shown in the below Fig 3,4,5,6.

Fig 3. Indication of Crocin Medicine

Fig 4. Indication of Aspirin Medicine

Fig 5. Indication of Reflux Medicine

Fig 6. Message received on Patient & Relatives Mobile

VI. Conclusion

In this paper, we make this model for chronic and old aged people[4]. For easy detection and remind, buzzer and LCD display has been attached with controller so that the person takes his medicines at the prescribed time. Family members get message through the GSM module, if medicines are taken by patient and also medicine name is spoken by the voice module at prescribed time. This easy-to-use device can be a convenient option for households where family members have work-hour compulsions.

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