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SASSY INOCULATION CRATE

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ABSTRACT:

The sassy inoculation crate aims to make a smart medicine box for those who regularly take medicines. This work mainly helps the old age people who are suffering from permanent diseases like diabetes, blood pressure, cancer, heart problems and several other health issues. This cabinet will be connected to phone application that can cause multiple warnings when the medication is about to finish. It also provides a warning signal when the patient fails to take the medication in time to the caretaker. Additionally an information will be sent to the medical store through GPS system when the medications are to be ordered.

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INTRODUCTION

This proposed system is a microcontroller based smart medicine box. The smart medicine box is having separate sub-boxes. So that the caretaker or the users will have the information of medicine. As the box is programmable, the user can set information of timing and the name of medicine to take at a particular time. When the quantity of the pills and time to take it have been set, this medicine box will remind patients to take pills using signals of sound and light. The desired explicit pill to be taken will be exposed on the LED segment. As compared with the traditional box which is required to load the box every day or every week. Our smart medicine box would provide comfort to nurses or users, as they are not required to load the kit frequently for users.

Keywords – Arduino, Old age people, Mobile Application, Warning signal.

I. PROBLEM STATEMENT

As pills intake place such an important role in everyday life. In today's life compared to the past years, there is an increase in the number of medical disdain cases related to incorrect reparation given to patients, such as the case of the nurse who gave a patient a persecution prescript that was not designated by the doctor, leading to the patient's health issues or may be death .Various wrong pills being confirmation through patients be realized by patients themselves, particularly by old refined people, since the senior people needs to take unmistakable prescript at different events. Penetrating medicine confirmation can alter into a troublesome observation for the status of people. This may be a direct result of low vision, memory concern or consequent absence of capacity which make them crucial to recall which pill is to be taken at what time .After wary such countless. It is important so as to the right capsule be in use by the perfect diacritic at the opportune time, else it may stimulate authentic restorative issues, going from smooth medicinal issues up to death.

II. SURVEY

According to the World Health Organization, over 80% of the people above the age of 60 years are on arbitrary medicines that are to be rendered 2 - 4 times a day. With the increase in Cardiovascular diseases and Diabetes among the peer group regular medicine agency has become an essential one. But among this another 40-60% are having the issues related to forgetting the taking of medicines at the right time. The current common techniques used in the market for the reminder comprise the methodical alarm with a pill box. But this does not check for overdosageor wrong dosage among the patients.It only uses a clock, which on passage of a set time accomplishes an alarm. Moreover the timely alerting for the refilling of the pill box to the user is also absent resulting often in breaks in the course of remedy. The sensing of slots of the pill box can be done by both Load Sensing technique and by Light based sensing. The advantages of the slot based sensing is that entity moment sensing is possible for revealing over dosage problems and incorrect dosage issues. The survey for various modes of sensing the slots has been implemented both analytically and practically and comparisons between the modes have been performed.
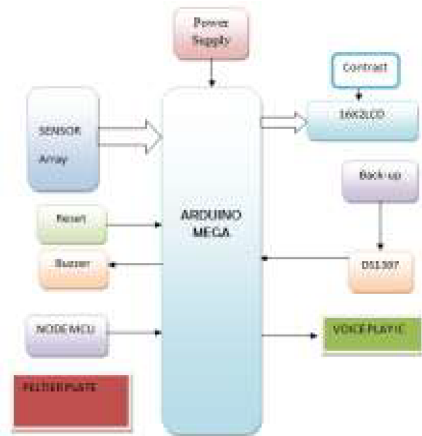
III.   METHODOLOGY

Fig 1. Block Diagram

The block diagram shows the overall working of the system. Power supply is applied to the Arduino module.RTC, LCD, Buzzer, LED,IR Sensor, GSM module are connected with Arduino . Real time clocks can be worked even without a power supply because it is a battery backup power clock, it keeps track of the current time whether external power supply is applied to it or not. Certain medicine box is connected in which the user will load the pills. When the system gets started time and date will show on the LCD module. At the time set by the user, the buzzer will ring and LED will blink in the desired box notifying the user to take the pill from the box. Buzzer and LED will continuously notify until the user takes the pills from that desired box. If the medicine is about to finish, it sends a message to the medical store to place the order of the particular medicine and also it sends a message to the caretaker to notify whether the patient has taken the medicine or not through the GPS system.

IV.   HARDWARE COMPONENTS

1.   The following are the hardware components used.

2. ARDUINO - UNO

3. LED

4. BUFFER

5. RESISTORS

6. BRIDGE RECTIFIER

7. DOTTED BOARD

8. 12V STEP DOWN TRANSFORMER

9. BERRY STICK – MALE AND FEMALE

10. SERVO MOTOR

11. 7809/7812 IC

12. IR SENSOR

13. LCD

1)   ARDUINO - UNO

Arduino Uno is a microcontroller board, which is completely based on an 8-bit ATmega328P microcontroller. Along with ATmega328P, it consists of some other components to support the microcontroller such as crystal oscillator, serial communication, voltage regulator, and so on. The board has 14 digital input/output pins (out of which six of them can be used as PWM outputs), six as analog input pins, a USB connection, A Power barrel jack, a reset button and an ICSP header.

Fig 2. ARDUINO-UNO

2)   REAL TIME CLOCK

RTC or Real Time Clock is a system that helps to keep track of the current time and hence it can be used in any device or system which needs to keep accurate time. It also keeps track of the exact time without using any RTC systems.

Fig 3.RTC MODULE

3)   LCD:

An LCD or Liquid Crystal Display is normally a display unit built using a technology named as Liquid Crystal technology. It is one of the most basic forms of electronic display that is available as a seven Segment display – which has its own limitations. The most commonly used LCD is 16×2 LCD Module which is capable of displaying 32 ASCII characters in two seperate lines (16 characters in one line). It is used to display the time and date.

Fig 4. LCD

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4)   BUZZER:

A buzzer is a device which was designed for audio signaling. It can also be called a beeper. The audio signalling may be mechanical, electromechanical, or piezoelectric. There are some typical uses of buzzers and also the beepers, which include alarm devices, timers, and confirmation of system user's input such as a mouse click or keystroke. It indicates the patient when time is over to take medicine.

Fig 5.BUZZER

5)   IRSENSOR:

An IR sensor is designed in such a way that it is capable enough to measure the heat of an object. And also it can detect the motions. This type of sensor measures only infrared radiation, rather than emitting it. Hence it is called a 'passive IR sensor'

Fig 6.IR SENSOR

6)   SERVO MOTOR:

A servo motor is nothing but a simple electric motor,which is controlled with the help of servomechanism. If the servo motor as a controlled device, gets to associate servomechanism with a DC supply, then it is commonly known as a DC servo motor. If AC power operates the controlled motor,it is known as AC servo motor.

Fig 7.SERVO MOTOR

Servo motor applications are too common to be seen in toy cars that are remote-controlled, for the purpose of controlling the direction of motion of that toy, and it is also very widely used as the motor which is used to move the tray of a CD or DVD player. Besides these, there are numerous servo motor applications that we can witness in our daily life.

The main reason behind using a servo motor is that it provides angular precision, i.e. it will rotate only as much as we want and then will stop and wait for the next upcoming signal to take further action. The servo motor is unlike a standard electric motor which starts to turn as we apply power to it, and the rotation will continue until we switch off the power. We cannot control the rotational progress of an electrical motor, but we can only control the speed of rotation and can turn it

ON and OFF. There are also small servo motors. It includes many beginner Arduino starter kits, since they are very easy to operate as part of small electronics projects.

7) ESP8266 WIFI MODULE:

The ESP8266 is nothing but a name of a micro controller designed by Espressif Systems. The ESP8266 is a self-contained WiFi networking solution that acts as a bridge between existing microcontrollers and WiFi. It is also capable enough for running self-contained applications. This module has an additional feature, it comes with a built in USB connector and a rich assortment of pin-outs. Just with the help of a micro USB cable, you can connect NodeMCU devkit to your own laptop and you can flash it without any trouble, just like an Arduino. It is also exclusively breadboard friendly.
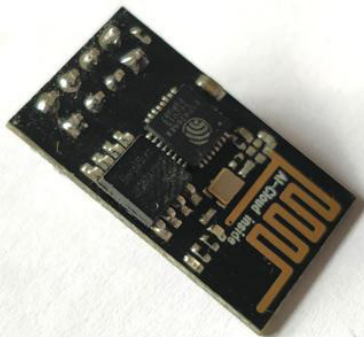
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Fig 8:ESP8266 WIFI MODULE

As specified earlier the **ESP8266** WiFi Module is one of the self-contained SOC's with integrated IP/TCP protocol that can give access to any microcontroller to utilise your WiFi network. The **ESP8266** WiFi Module is capable enough of either hosting an application or offloading all of the Wi-Fi networking functions with the help of another application processor.

RESULT AND CONCLUSION:

To improve safety in medication and also to avoid confusion among the elderly in taking tablets, this paper proposed a smart pillbox in the name of sassy inoculation crate with reminder functions. The proposed pill box can reduce the responsibility of family member's like ensuring the correct and timely consumption of medicines by the elders in their home. Because the proposed system is designed with an alert sound that indicates the user for a specified time and the real-time clock gives continuous time as an output.
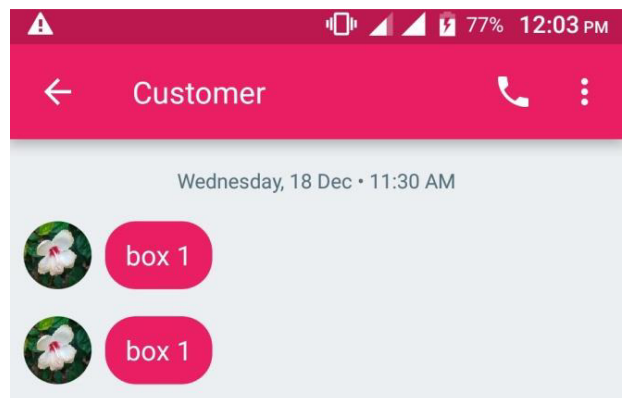

Fig 8.HARDWARE SETUP

Fig 9.COMMUNICATE TO PHARMACY VIA SMS

Adding further more alarm systems and sensors as the ones listed in the safety system section for the detection of the size of the pills and alsoto make sure that whether the user has taken the medication or not. Compression of the size of the box is required to make it compatible and more flexible for usage. Addition of more slides will also be helpful for an application, which can be used for multiple medications.

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