

**SMARTBRIDGE SUMMER INTERNSHIP
PROJECT**

**SMART MEDICINE REMINDER FOR ELDERLY
PEOPLE.**

A project by

Irene Cresencia (Karunya University)
Jemimah Rinsy (Karunya University)

Under the guidance of
Mr. Sandeep Doodigani

INTRODUCTION

ABSTRACT:

Our project's main aim is to make a Smart medicine box for those elderly users who regularly take medicines and the prescription of their medicine is very long as it is hard to remember to patients and also for their care giver. Also old age patients suffer from problems where they forget to take pills at the proper time which causes certain health issues for patients having Permanent diseases like diabetes, blood pressure, breathing problem, heart problems, cancer diseases etc.

The objectives of this project are to:-

- (i) Develop a prototype of a smart medicine reminder for elderly people that helps them consume the medicines right on time.

PROJECT BACKGROUND:

In the recent times, the rate of consumption of medicines has highly increased due to the wide spreading different diseases and illness across the globe. While some diseases are temporary, many diseases have a toll on the human health for a lifetime. In the pursuit of maintaining a healthy lifestyle, we often find ourselves to be sick. This could be threatening if not properly treated. A visit to the doctor and consumption of the medical prescription becomes a necessity. Nevertheless failing to consume the medicine on a regular basis could cause a lot of problems. Keeping in mind this problem, the idea of creating a smart device that alerts the patient to take medicines right on time, so that they would recover soon and stay healthy without any issues in the body.

COMPONENTS

HARDWARE COMPONENTS USED:

- NODE-MCU
- RTC MODULE
- LED
- JUMPER WIRES

SOFTWARES USED:

- ARDUINO IDE
- NODE-RED
- MIT APP INVENTOR

HARDWARES

- **NODEMCU:**



NodeMCU is an open source IoT platform. It includes firmware which runs on the ESP8266 Wi-Fi SoC from Espressif Systems, and hardware which is based on the ESP-12 module. The term “NodeMCU” by default refers to the firmware rather than the DevKit. The firmware uses the Lua scripting language. It is based on the eLua project, and built on the Espressif Non-OS SDK for ESP8266. It uses many open source projects, such as lua-cjson, and spiffs.

Features:

Version : DevKit v1.0 Breadboard Friendly Light Weight and small size.

3.3V operated, can be USB powered.

Uses wireless protocol 802.11b/g/n.

Built-in wireless connectivity capabilities.

Built-in PCB antenna on the ESP-12E chip.

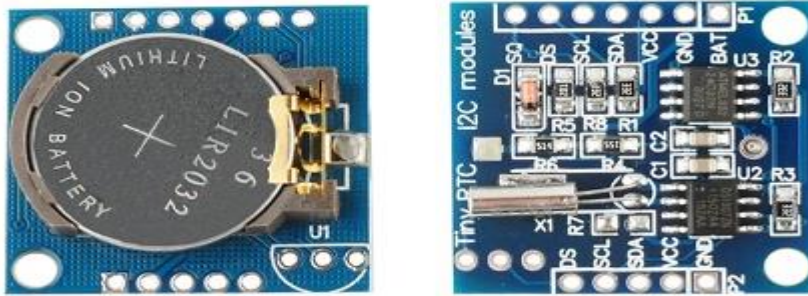
Capable of PWM, I2C, SPI, UART, 1-wire, 1 analog pin.

Uses CP2102 USB Serial Communication interface module.

Arduino IDE compatible (extension board manager required).

Supports Lua (alike node.js) and Arduino C programming language.

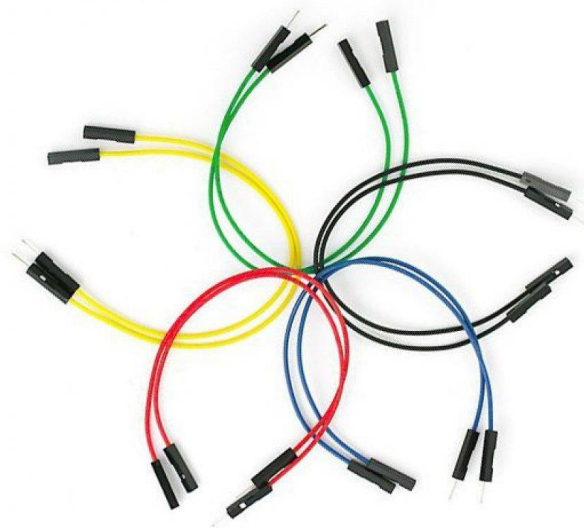
- **RTC DS1307**



Real time clocks (RTC) are clock modules. (RTC) IC is an 8 pin device using an I2C interface. The DS1307 is a low-power clock/calendar with 56 bytes of battery backup SRAM. The clock/calendar provides seconds, minutes, hours, day, date, month and year qualified data. They are available as integrated circuits (ICs) and supervise timing like a clock and also operate date like a calendar. The main advantage of RTC is that they have an arrangement of battery backup which keeps the clock/calendar running even if there is power failure. We can find these RTCs in many applications like embedded systems and computer mother boards, etc.

- **JUMPER WIRES**

Jumper wires are simply wires that have connector pins at each end, allowing them to be used to connect two points to each other without soldering. Jumper wires are typically used with breadboards and other prototyping tools in order to make it easy to change a circuit as needed.



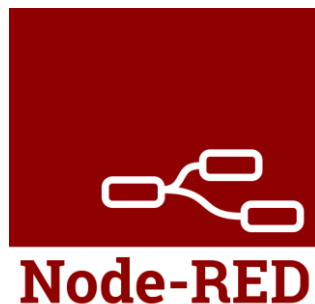
SOFTWARES

- **ARDUINO IDE:**



The open-source Arduino Software (IDE) makes it easy to write code and upload it to the board. It runs on Windows, Mac OS X, and Linux. The environment is written in Java and based on Processing and other open-source software. This software can be used with any Arduino board.

- **NODE RED:**



Node-RED is a flow-based development tool for visual programming developed originally by IBM for wiring together hardware devices, APIs and online services as part of the Internet of Things.

Node-RED provides a web browser-based flow editor, which can be used to create JavaScript functions. Elements of applications can be saved or shared for re-use. The runtime is built on Node.js. The flows created in Node-RED are stored using JSON. S

- **MIT APP INVENTOR:**



App Inventor is a free, cloud-based service that allows you to make your own mobile apps using a blocks based programming language. You access App Inventor using a web browser (Chrome, Firefox, Safari). With these beginner-friendly tutorials, you will learn the basics of programming apps for Android devices.

PROJECT WORKING

In this project the NodeMcu and the RTC modules are the most important components.

PIN Connections:

NODEMCU	RTC	BASIC SHEILD
D0	-	-
D1	SCL	-
D2	SDA	-
D3	-	-
D4	-	LED 1
3.3V	VCC	-
GND	GND	-
D5	-	LED 2
D6	-	LED 3
D7	-	LED 4
D8	-	-
RX	-	-
TX	-	-
3.3V	-	VCC
GND	-	GND

The project begins by setting the time in the app created by MIT App Inventor. The App has an opening screen that has 2 buttons.

Button 1: Set Alarm

Button 2: Select Medicines

On clicking **BUTTON 1**, a new screen opens which enables the user to set the alarms for the three times of the day namely Morning, Afternoon, Night. This screen has

TIMEPICKER 1

SET ALARM 1 //MORNING

TIMEPICKER 2

SET ALARM 2 //AFTERNOON

TIMEPICKER 3

SET ALARM 3 //NIGHT

On selecting the time from the timepicker, the user has to press the button SET ALARM just below it. In the same manner all the three alarms can be set. The time chosen by the user is then sent to the NodeMcu through Wifi. The RTC keeps ticking as the module is given the power supply. When the alarm time matches with the real time, the buzzer blows and the LED corresponding to the time of the day glows for an interval of 1 second. In the same way, the alarms for the afternoon and night also rings along with the glowing of the LED, indicating the user that its time for medicine.

On clicking BUTTON 2, the user is directed to a online pharmacy website, where the user can make the purchase of the necessary medicines on just a click of the button.

OPERATION OF SCHEMATIC:

Firstly we add all part from library of ESP8266 and RTC module. Power supply is applied to ESP8266. All modules including RTC, LED, etc are connected with ESP8266. RTC works irrespective of the power supply. RTC module contains a 3V CMOS cell. The setup also consists of three compartments in a box in which user can load the pills. When the system is powered up, the 3 alarms set by the user through the app, will be displayed on the Serial monitor. At the time set, LED will blink in the corresponding box notifying the user to open that box and take out pills from that box in which LED blinks.

PROJECT HIGHLIGHTS

ADVANTAGES:

Cost Efficient

Needs no prior technical knowledge

Sound reminder enables user to take medicines in regular times.

Easy to maintain.

Provide comfort and health.

Reusable

WORKING PROTOYPE

SMART MEDICINE REMINDER FOR ELDERLY PEOPLE



RESULTS AND FUTURE SCOPE

RESULT:

Our project's objective is to help the elderly people. We conclude the results that our project is useful for those elderly people who take pills regularly and whose course of prescription is very long and difficult to remember. This device will notify them at the right time, the right medicine to be taken. This in turn helps them to stay fit and healthy without any issues.

FUTURE SCOPE:

A button on the device, which on pressed can send an alert call/text to the caregiver, if the user is ill or is in need of help.

A button, which when not pressed after the notification, sends a message to the user and the caregiver an alert prompt

“MEDICINE NOT TAKEN. PLEASE TAKE.”