

## **Medication Alerts and Supervisory of Health**

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### **Abstract**

*Medicines plays an vital in the medical fields.Medicines are used to prevent or cure and even to diagnose the diseases.Nowadays due to rapid increasing of the people and pollution the outburst of the diseases is more.So one must take the medications to prevent those diseases and viruses.Most of the people are suffering from blood pressure and diabetes.These people should take the prescribed amount of medicine in prescribed time intervals if not it may cause severe health issues.*

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### **I. Introduction:**

Most of the dangerous and high risk diseases can be healed by taking the appropriate medication.Binding towards an irregular medication will be a severe problem in most of the countries making the people life tough than normal.There is a ramp up in the mortality rate.After a thorough research for a period of 3 years,it has been observed that there is no alteration in particularly following the medication.And moreover, the results are excellent if the patients are taking up the medicines by the help of reminders.

To assist people through home health care,we can make use of television,mobile phones etc.Nowadays everyone are using tablets and syrups for the duration of six months or a year.This may lead to forgetting or repeting the medication .These days nearly 80% of the people are taking the medication on the year course basis.

Health specialists have developed better system with low price care observation for folks with several diseases victimization techniques.This project concentrates the present health observance system victimization.The main objective of the project is to make people self-reliant and prevents them from wrong dosage.So we are introducing an android application to remind the patients of the dosage timings through the alarm system.And through the sensors the patient can easily store the temperature and pulse readings for further use.This application focuses on people to take medicines on time.It allows users to set an alarm along with fields of date , time and the type of medication.The system will send a notification after setting an alert,the user can activate or deactivate the notification accordingly.This medication remainder helps in decreasing medication dispensing error and wrong dosages.This application is designed by using IOT.It can be helpful in the emergency condition and it can spread health care awareness.

### **II. Related Models:**

The studies and experiments related to medicine intake are as follows:

In early days many medication intake reminders are introduced for children and independently living patients etc.using a smart application which means through email or SMS but not in the form of audio and visual. The main drawback is that it doesn't give any update of medicine intake i.e whether the person taken the medicine or not.Usually it provides the remainder to the people.

Later pillboxes are introduced.Pillbox contains different compartments to store different pills in each compartments.It includes twelve compartments and those are formed in the shape of a ring.The pillbox has a limitation because it can hold the pills only for 24 hours.However,it can allow only some particular pills and does not certain pills.This pillbox is designed for the old people in order to take care of their health.

Later the Internet of things (IOT) is being widely used by the developers.it is the booming technology which can relate to many fields like safety,health and security.In 2018,the medication adherence using a hybrid automatic machine is introduced.It is mainly focussed for the memory degrading patients.It sends the alert message through audio & visual signals to the patient's or caretaker's smartphone.It also sends the notification whether the medication is taken in the prescribed time or any problem occurs.

In 2020 the IOT based monitoring system is introduced which is helpful as medication alert as well as the medicine storage.It checks the temperature surrounded and checks with the medicine storage temperature for matching.If it fails the cooling system produces heat or cold depending on the temperature.It also calculate or measure the temperature pulse of the people using sensors and stores the data in the cloud.But it is not portable in nature .

This drawback is eliminated with our proposed system. Our proposed system is portable and monitors the temperature and pulse of the patients. It can also store the medicines under different temperatures.

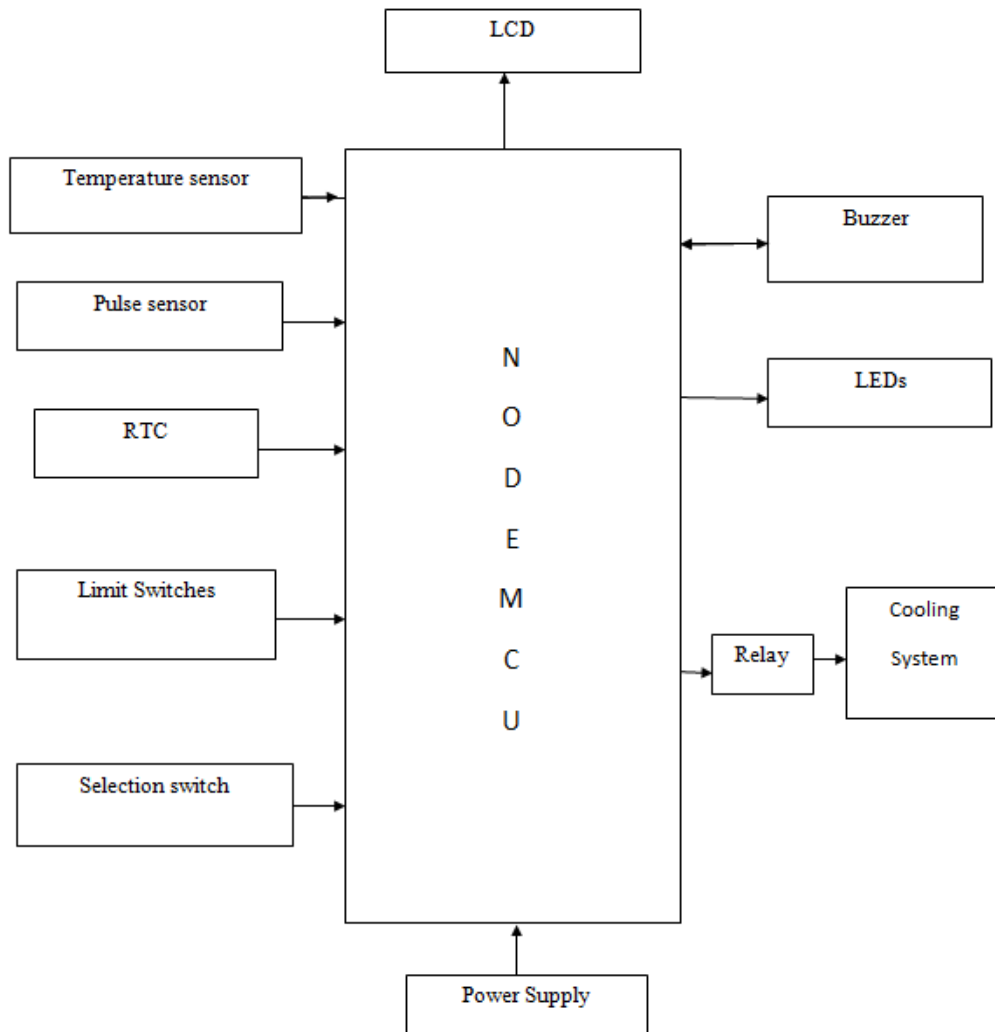
### III. Proposed Method:

The main reason behind the proposed design is to provide a user-friendly interface for independently living people to use this gadget as a reminder alert for taking their medicines daily in the meantime.

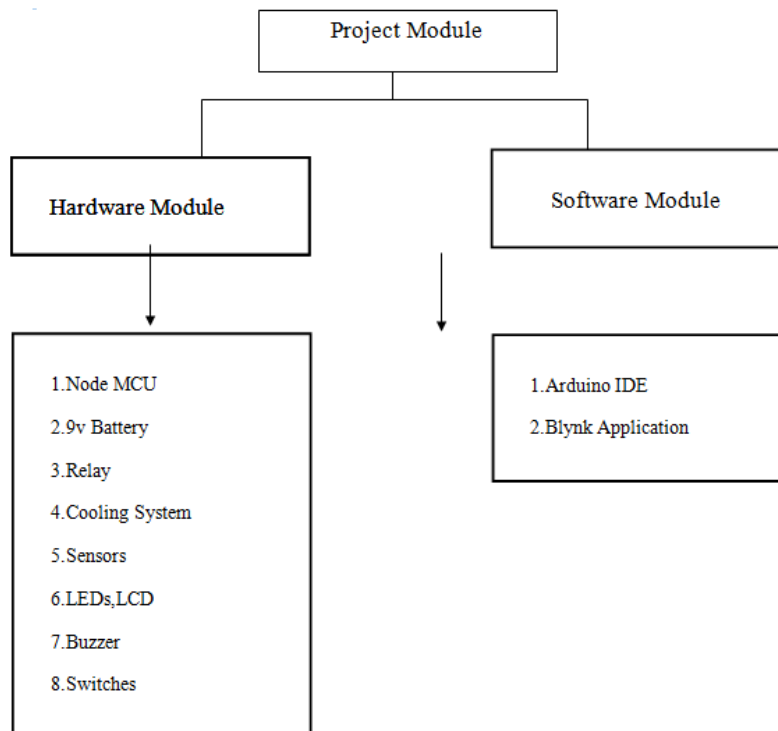
The proposed design comprises four main parts: circuitary, cooling system, battery and pulse sensor and the various components used.

The circuitary is incorporated with simple sensors in the hardware modules. The Peltier cooling system comprises of the cooling module along with heat dissipation units. The rechargeable battery is used for the power supply to all the components in the gadget. The pulse sensor and a Wi-Fi module are used to calculate the pulse and store for future uses.

#### Block Diagram:

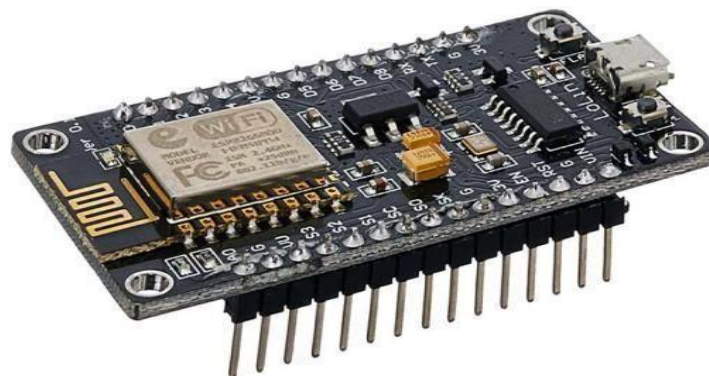


**Project Layout:**



**Hardware And Software Requirements:**

**Node MCU**



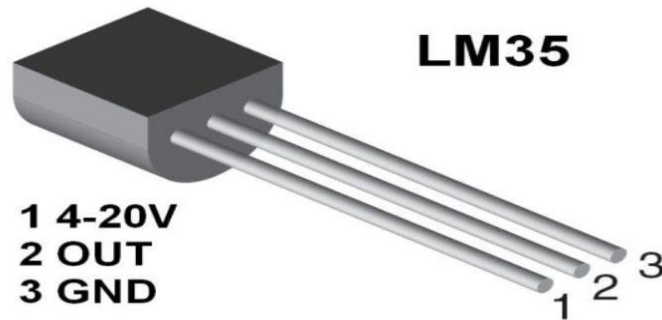
Node MCU is an open-source Lua based firmware and development board specially targeted for IoT based applications. It includes firmware that runs on the ESP8266 Wi-Fi SoC from Espressif Systems, and hardware which is based on the ESP-12 module.

**RELAYS**



Relay is one kind of electro-mechanical component that functions as a switch. The relay coil is energized by DC so that contact switches can be opened or closed. A single channel 5V relay module generally includes a coil, and two contacts like normally open (NO) and normally closed (NC).

### Temperature Sensor



Temperature sensor is a device which is designed specifically to measure the hotness or coldness of an object. LM35 is a precision IC temperature sensor with its output proportional to the temperature (in °C). With LM35, the temperature can be measured more accurately than with a thermistor. It also possesses low self-heating and does not cause more than 0.1 °C temperature rise in still air.

### Pulse Sensor (or) Heart Rate Sensor



A pulse sensor provides a simple way to study the function of the pulse which can be measured based on the principle of psycho-physiological signal used as a stimulus for the virtual-reality system. The amount of blood in the finger changes with respect to time.

### Buzzers:



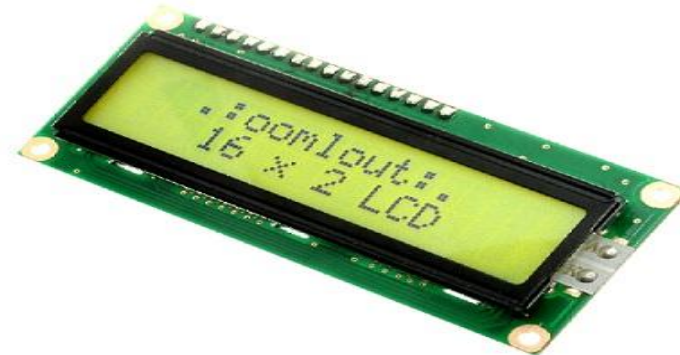
An audio signaling device like a beeper or buzzer may be electromechanical or piezoelectric or mechanical type. The main function of this is to convert the signal from audio to sound. Generally, it is powered through DC voltage and used in timers, alarm devices, printers, alarms, computers, etc. Based on the various designs, it can generate sounds like alarm, music, bell and siren.

## JUMPER CABLES



A jump wire is an electrical wire, or group of them in a cable, with a connector or pin at each end, which is normally used to interconnect the components of a breadboard or other prototype or test circuit, internally or with other equipment or components of a breadboard or other prototype or test circuit, internally or with other equipment or components, without soldering.

## LCD Display



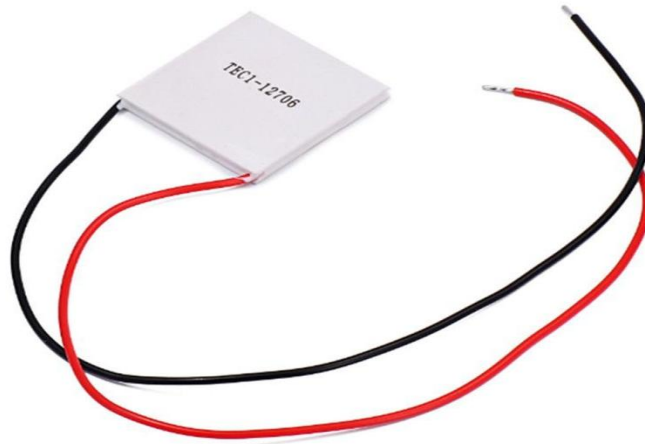
Nowadays, we always use devices that are made up of LCDs such as CD players, DVD players, digital watches, computers etc. These are commonly used in the screen industries to replace the utilization of CRTs. Cathode Ray Tubes use huge power when compared with LCDs, and CRTs are heavier as well as bigger. These devices are thinner as well as power consumption is extremely less. The LCD 16x2 working principle is, that it blocks the light rather than dissipates it. This article discusses an overview of LCD 16x2, pin configuration, and its working.

## 9V Battery

The nine-volt battery, or 9-volt battery, is an electric battery that supplies a nominal voltage of 9 volts, actually 7.2 to 9.6 volts, depending on technology. Batteries of various sizes and capacities are manufactured, a very common size is known as PP3, introduced for early transistor radios.



## THERMOELECTRIC COOLER (PELTIER MODULE) - TEC1-12706:



It is the cooling system used in this design. The cooler has 2 heat sinks: the bigger one is for the hotter side and the smaller one is for the cooler side used to keep the medications under temperature. The fan included in this kit acts as a radiator.

#### **Future work:**

As future work, we are planning to improve our medication reminder system by additional features using a mobile app and include other medical services such as providing liquid doses and measuring Blood Pressure, Blood Glucose meter and insulin injection.

#### **IV. Conclusion:**

The proposed design of medicine box consists of separate draw boxes to store regular tablets like sugar and pressure tablets in separate draws and an separate container to store medication like insulin, eyedrop. The cooling system gets switched on whenever the temperature gets above the fixed reading. At the mean time to take medication, the LCD and Buzzer.

#### **References**

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