



Implementation Of Heart Rate And Temperature Monitoring Device Using Wireless System

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Abstract:

Any persistent can be identify our body sickness by a Hardware gadget. They don't go to for everyday work-out and eat unfortunate food varieties. So by this reason human heart doesn't work as expected and happened numerous issues like diabetes, hypertension, low pulse and low Oxygen level..We realize that cardiovascular kinds infection is definitely not a little illness, this is extremely perilous for any individuals. In this venture a hardware gadget which has an Oxygen Level estimating sensor ,beat estimating sensor (Max30100) and for internal heat level Thermistor gives the right perusing and with the assistance of information base like BLYNK versatile application.

Index Terms – Max30100sensor, pulsesensor, NodeMCU board, Arduino Nano board etc.

I. INTRODUCTION

Today individuals is turning out to be more lethargic and apathetic because of lethargy numerous illness produces. They are, for example, greasiness ,low BP and high BP, plaque testimony in coronary conduit so because of this heart issue create, because of radiation skin disease produces, for utilizing of tobacco mouth and cellular breakdown in the lungs produces. There are a few positive circumstances to using IoT in human associations, running from further developing design figure out to supporting far off understanding checking and telemedicine. After a certified long time, IoT continues to show its impetus in therapeutic associations. Both IT and clinical experts are amped up for the use of IoT in healing associations and the open passages it gives to the table.

The business Place offers different related devices to analyze that can screen patients' vitals logically and give alarms or responsibility on their condition. This sort of data works on calm outcomes. So on the off chance that individuals will have a gadgets gadget, they can quantify their heart and oxygen immersion level and heartbeat rate. We are living in gadgets age so every individual need to save our time. It works all life from birth to work the human demise. Cardio vascular sort's sickness are additionally related with heart. The no of pulse is same as heartbeat rate so the patient can check our pulse which is connected with stream of human blood Thump each Moment (BPM) and oxygen level in any spot like in home, in clinic and so on. Since pulse is the power of any person blood traveling through any individual veins. An ordinary human's

heartbeat rate is 60 - 100 bpm and heartbeat rate changes as indicated by individuals exercises like dozing, working out, playing any games and typical condition. Age factor is additionally separated of changing oxygen level and heartbeat pace, everything being equal.

II. PROBLEM STATEMENT

a) Empower interoperability with other medical services frameworks or gadgets, for example, wellness trackers or electronic wellbeing records, to work with consistent information sharing and joining into existing medical care foundation

b) Execute vigorous safety efforts to shield the sent information from unapproved access or altering. Guarantee consistence with security guidelines and norms to keep up with client privacy.

c) The gadget ought to be wearable or effectively append able to the body, guaranteeing negligible obstruction with everyday exercises.

III. OBJECTIVES

a) The objective of this research paper is to analyse the patient Oxygen level ,heart rate or pulse rate (bpm)and body temperature by using an electronics device.

b) mobile has many free of cost application is available for handling health problems.

c) In this project a node MCU is used for sending patient heart reading like heart beat graph and heart reading.

d) we can say the doctor cannot handle all heart's patient without electronics devices. So main object is which type programming, which types sensors and which type microcontroller can give an accurate reading, so when reading will be accurate then patient get a good treatment on time.

IV. IMPLEMENTATION

Hardware and Software Requirements

a) Hardware Requirements:

- 16x2LCD Display
- I2CSerial InterfaceAdapter
- PowerSupply
- ArduinoNano
- 16x2 LCD Display

Block Diagram

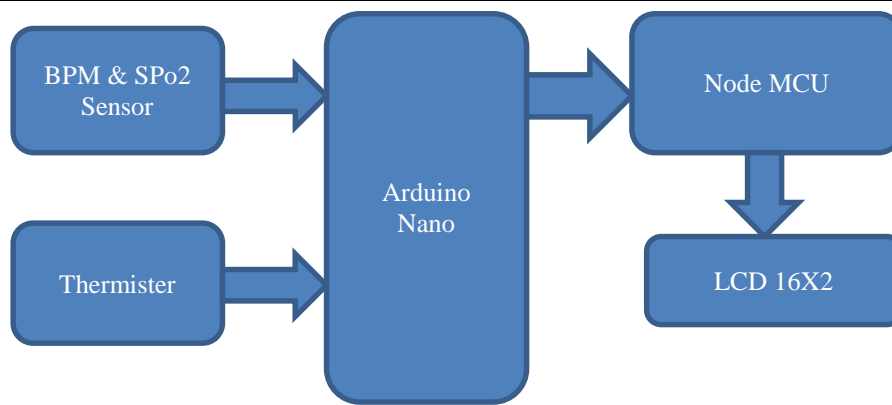


Fig1,Block diagram of Implementation of heart rate and Temperature monitoring device using wireless system

a) Max30100 Sensor:

Max30100 is a pulse and Oxygen measuring sensor. So it is called Pulse Oximeter. In this sensor there are two LED glow during measuring pulse and Oxygen level one is Red LED and other is IR LED. The wavelengths of both LED'S are around 640nm of Red LED and 940nm of IR LED. The main work of this sensor detect the pulse rate. We know that human body's blood color is Red so when we put our finger, wrist and other body part on Red LED then it detect the pulse rate and Oxygen saturation level.

b) Arduino Nano board:

Arduino Nano board is the latest Microcontroller kit which is similar Arduino Uno board but main difference is its size. There are 30 pins are available in this board 14 pins are digital. 8 pins are analog and 6 pins are power pins.

c) Node MCU board:

For the transmission of signals and wave from arduino to mobile or database in this times IoT based technology is popular for transferring data one place to another place because it is an open platform. ESP8266 is an ESP-12E module and it is a chip, there are 30 pins available and it operate at 80 to 160 MHz adjustable frequency and it has 128 KB Ram and 4MB of Flash memory. The most thing is that supply power, its need 3.3V which is Minimum voltage for operating this. On top side there are two button is available for Reset or upgrading. One micro USB Controller is available for giving supply power. We can operate it by mobile charger or by laptop. On that time a medium is required to sending the data. In this type board has 30 pins. It is an open source platform using for all users. It is a Wi-Fi module it means it sends data one place to other place through database

d) Pulse Sensor:

pulse sensor measure the pulse rate. In this sensor there are three pins are available one is ground, second is Vcc and last one is signal pin. Its operating voltage is +5V or +3.3V. One

side the LED placed along with ambient light sensor and other side is circuitry. When LED emits light which will fall on the vein directly. Because blood flow in vein so when LED light emits then it detect the pulse rate.

e) Blynk Mobile IoT application:

With the help of this patient sensor data can be sent our heart reading through Wi-Fi module. Blynk mobile application is also a free medium for sending our reading to the doctor. We know that this time every person use Android mobile. So this mobile application is available on Google Play store

f) Thermistor:

A thermistor is a resistance thermometer, or a resistor whose resistance is dependent on temperature. The term is a combination of “thermal” and “resistor”. It is made of metallic oxides, pressed into a bead, disk, or cylindrical shape and then encapsulated with an impermeable material such as epoxy or glass. There are two types of thermistors: Negative Temperature Coefficient (NTC) and Positive Temperature Coefficient (PTC). With an NTC thermistor, when the temperature increases, resistance decreases. Conversely, when temperature decreases, resistance increases. This type of thermistor is used the most. A PTC thermistor works a little differently. When temperature increases, the resistance increases, and when temperature decreases, resistance decreases. This type of thermistor is generally used as a fuse.

b) software requirements

Arduino IDE

The Arduino coordinated improvement climate (IDE) (Fig 2) is a cross-stage application for Windows, macintosh, operating system, and Linux that is written in the programming language Java. It is utilized to compose and transfer projects to Arduino-viable sheets, yet in addition, with the assistance of outsider centers, other merchant improvement sheets is displayed in Fig 4.6. The Arduino IDE upholds the dialects C and C++ utilizing extraordinary principles of code organizing. It is an authority Arduino programming, creating code gathering too simple that even a typical individual with no earlier specialized information can consider going all in with the growing experience.

The principal code, otherwise called a sketch, made on the IDE stage will at last produce a Hex Document which is then moved and transferred to the regulator on the board. The IDE climate is primarily conveyed into three segments:

- MenuBar
- TextEditor
- OutputPanel

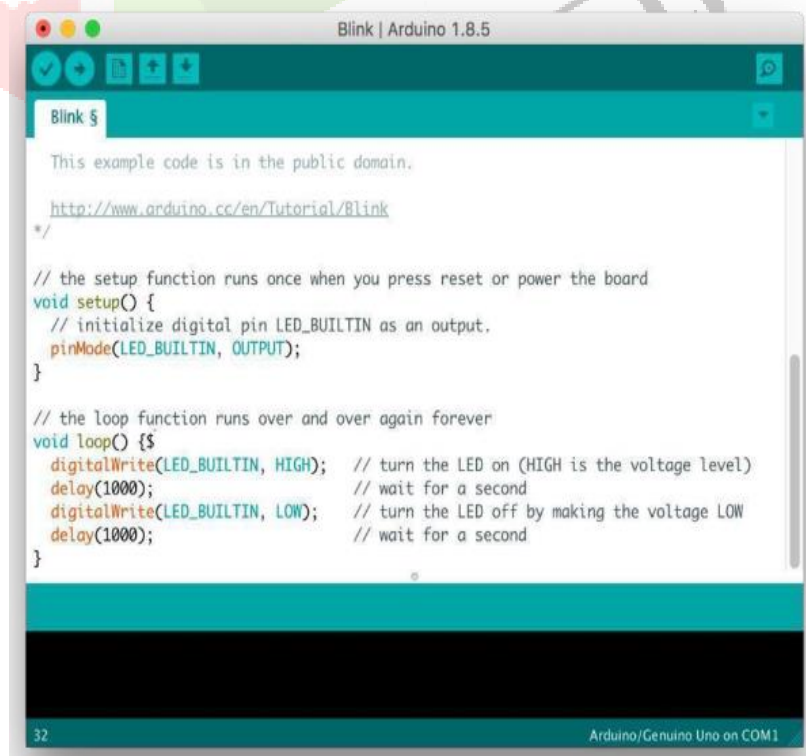


Fig.2 Arduino IDE

V. RESULT AND DISCUSSION

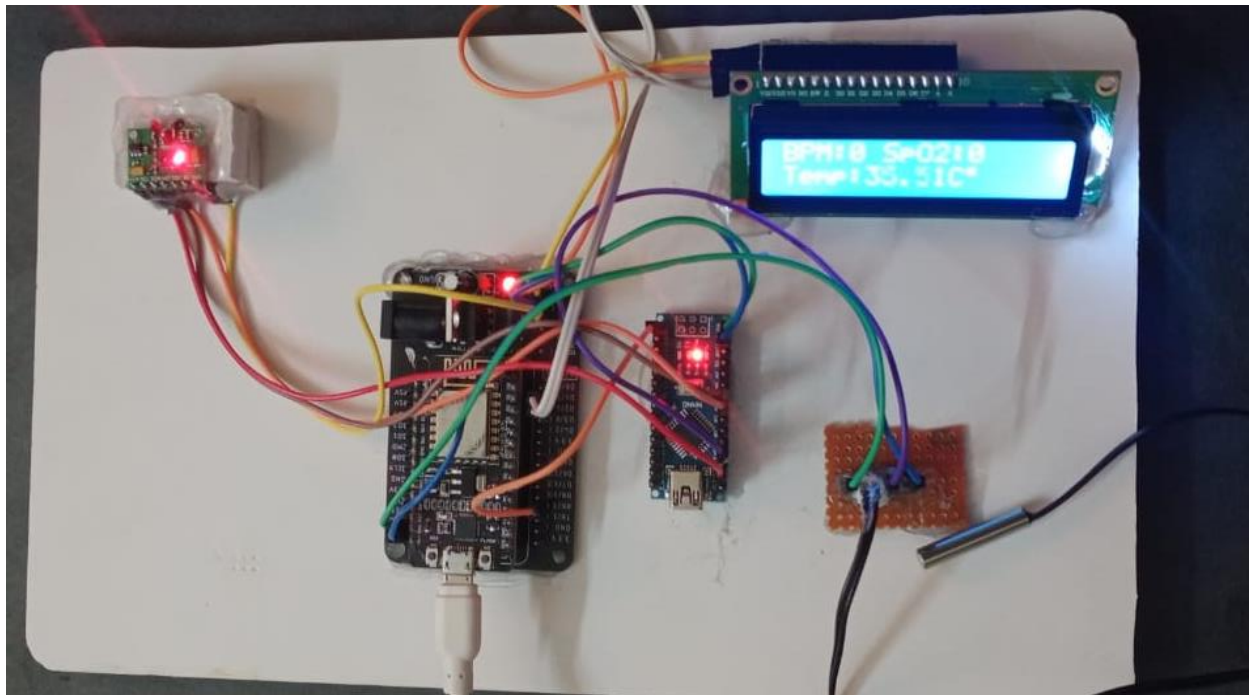


Fig3.project Proto Type

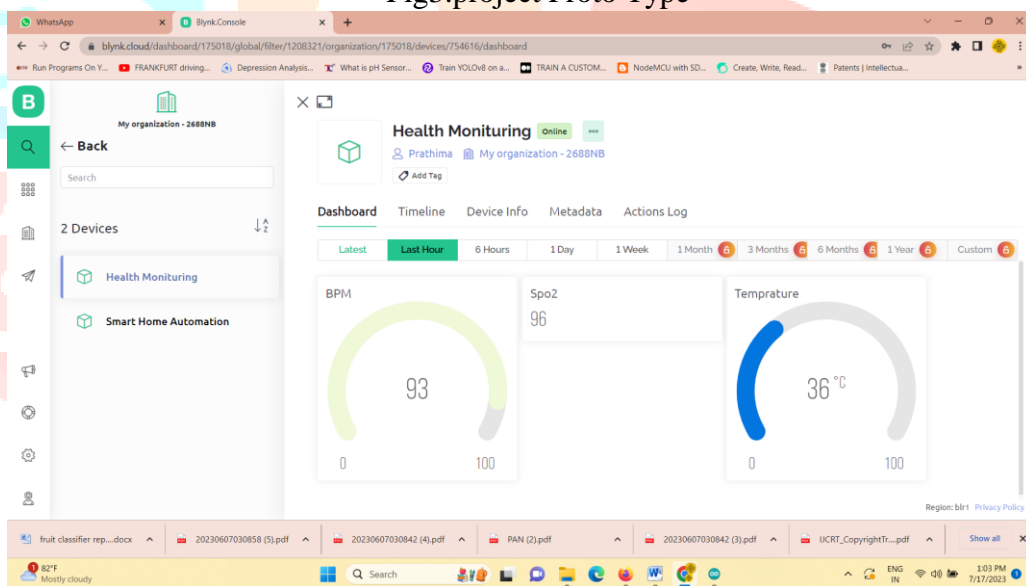


Fig4.Web application Monitoring



Fig5.Android Application

The Proposed design shows the real time data of heart rate of the patient, body temperature , oxygen saturation of the patient, sends the data over internet and also when the heart rate goes below a certain threshold the buzzer make sound as well as send an emergency alert on registered registered email address.

VI. CONCLUSION AND FUTURE ENHANCEMENT

a) CONCLUSION

Overall, the implementation of a heart rate and temperature monitoring device using a wireless system offers numerous advantages in healthcare and personal monitoring applications. It provides real-time and continuous monitoring, enhances mobility and comfort, and enables remote monitoring and data analysis. As wireless technology continues to advance, we can expect further improvements in the accuracy, range, and functionality of these devices, leading to better healthcare outcomes and improved quality of life.

b) FUTURE ENHANCEMENT

The wireless connectivity of these devices will be enhanced to provide more reliable and faster data transmission. Future devices may utilize advanced wireless technologies such as Bluetooth Low Energy (BLE) or even 5G to ensure seamless connectivity with smartphones, tablets, or other monitoring systems. Future devices may incorporate advanced algorithms and machine learning techniques to analyze the collected data in real-time. This would enable the identification of patterns or anomalies in heart rate and temperature readings, providing early warnings for potential health issues. Integration with Telemedicine would enable remote patient monitoring, allowing healthcare professionals to monitor patients' vital signs remotely and provide virtual care when necessary.

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