

IoT Based Health Monitoring System using Blynk App



R.Priyanka, M.Reji

Abstract: The common healthcare benefits with crafty decisions, execute brilliant communications technologies that can produce resourceful communities. Health plays a major role in our daily routine. Real-time health monitoring for initial detection of life alarming diseases through advanced sensing and communication technology usually contribute advance treatment to save the lives of patients. The main aim of this project is to develop a system which will give body temp, heart rate using DS18B20 and pulse sensor as well. Plus the Controller ESP32 Dev board is interfaced with the sensors. Wireless data transmission is processed using Arduino through the Wi-Fi module. The controller ESP32 is utilized for Wireless data transmission on IOT technique using an android app BLYNK. Visually digitalizing the data on a Blynk Android App. Patient's record of data will be stored over a period of time. The information is stored using an Android app in order to control the device using the app.

Keywords: Real time health Monitoring, Controller ESP32, heart rate DS18B20, Blynk App.

I. INTRODUCTION

Wireless healthcare is playing a major role with the upcoming rate of senior citizens, these technologies are commercially available for physical and personal health care, fitness and activity awareness. Plus in addition to that researches have also claimed that applications of such technologies are also used in remote health care for a long term data and to access the medical data of patients. Currently wireless technology is playing a major role for sustaining various requirements. At present IOT has hijacked multiple industries specifically in the area of automation and control. Recently biomedical has become the trend in order to nurture the health care. IOT technology is working simultaneously in personal health care and in hospitals as well. With concern to smart system it deals with the following parameters for instance cost, power consumption and increase efficiency. Based on this category i.e smart system this paper is cross-checked. Traditionally in health check-up Doctors play a major role. As concern to this technique it'll consume a huge time for the process that deals with registration, appointment and check-up and later on reports are generated.

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The major drawback of this process is patients will mostly ignore or postpone the appointment because of the prolong process. So the overcome that the smart system is designed to reduce the time consumption. [3] Medical scientists are concern for the study and research in order to increase the standard of health care for the benefit of patients, and which will make their life easy and effortless. Recent automation design is developed with reference to old inventions this acts like a root for the engineers. Adding to this point, the early we detect the sign of cause the soon patient will be treated. The major factors used to detect the data of patients are body temperature, heart rate, blood pressure. This paper will deal with the information using the source of IOT and blynk app. [4]

II. EXISTING SYSTEM

- The smart system contains the required materials such as pulse sensor, temperature sensor (LM 35) , Bluetooth module and Arduino Uno board.
- Telecontrolling system through WBAN is developed for the requirement of personalised medicine healthcare. WBAN can accumulate the data from sensor also stores the Information of a patient. The stored output information is shared to controller through the source IOT. Zigbee is utilised in communication and also in WBAN technologies due to its warranty delay condition in health telecontrolling.

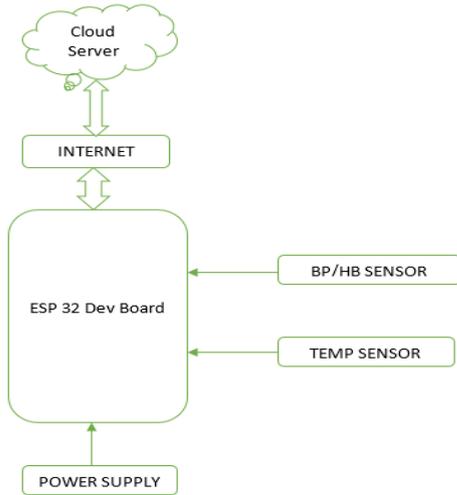
III. SCOPE

- The purpose of various parameter: system "wearability", task of android device, employed sensor, classification of the recognizing algorithms.
- Measuring devices for instance blood pressure attached with glucose will be the advanced version to control the health of a patient.

IV. SYSTEM OVERVIEW OBJECTIVE

Basically to enhance the health monitoring system, we will be using the following sensors like temperature and heart rate. A system is designed in order to accumulate the data of a patient over a period of time using a technique database management. At the end the stored data is analysed.

V. BLOCK DIAGRAM OF HARDWARE



Hardware Requirements

- Microcontroller (ESP 32)
- Power Supply
- Temperature Sensor (DS18B20)
- Blood Pressure Sensor
- Internet

1. Microcontroller (ESP 32)

Controller (ESP32) is developed and designed for wearable electronics, mobile phones and internet of things (IOT) functions. It details the entire modern attributes of low consumption chips, which counts fine grained clock gating, multiple power modes, dynamic power scaling etc.. For example assume the low power IOT sensor hub function. ESP32 controller is awoken every so often when a particular condition is recognised. Low duty cycle is utilised to reduce the consumption of energy that the chip dissipate. The out turn of the power amplifier is also adjustable. Hence offering to an optimal trade mark ranging in the middle of data rate, communication Range and energy consumption. Microcontroller ESP32 is a combination of Bluetooth attached chip and a single 2.4 GHz WI-Fi developed with the TSMC ultra low consumption 40nm technology. It is basically developed to reach the better power and RF production and performance robustness, power consumption, reliability in a huge basis of Acquisition, power scenes and versatility.

2. Power Supply

It is defined as an electronic device which segregates electrical power to the electrical load. The basic parameter of a power supply is to transform from an origin to the recent electric current to the proper voltage, frequency, current to reach the load in order to generate a power. Other application's that power supplies may work consist limiting the current strains the load to protect the levels. Shutting of the power in the program of electrical fault, current conditions are used to secure electric noise and voltage surges from reaching the load, power ratio correction, accumulating energy so that the power can be resumed in Terms of temporary interruption.

3. Temperature Sensor (DS18B20)

The DS18B20 temperature sensor which is also known as

thermometer ranges between 9-12 bit Celsius temperature measurements and also has an additional application alarm convertible user programmable, upper and activate points. The DS18B20 connects around 1 wire bus that interpreter's one data line (earthen) in order to contact the main microprocessor. Plus this also passes through the power directly from the data line by excluding the requirements of external power supply. Every DS18B20 has an exclusive serial code of 64-bit, that allows varies DS18B20 to operate simultaneously. Hence it is easy to monitor multiple thermistors dispersed over a huge area to practice one microprocessor. Applications that has a profit from which a parameter counts in advantage which consist of HVAC environmental controls , temperature control systems , Apparatus , and process controlling and monitoring systems.

4. Blood Pressure Sensor

Modern pulse or Ox meters acts a major role in modern medicine .This device is basically designed and developed to check the level of glucose. Blood pressure sensor is unviable sensor which is also used to maintain the crucial statistics with the specified parameters like pulse and oxygen level in haemoglobin.

5. Internet

IOT is a modern technology which is implemented in every field in order to improve the lifestyle which makes easy and effortless. The classification of internet of things are QR Codes, Wireless technology, sensor technology which is detected with the term RFID. IOT plays a major role on monitoring a device.

Create all the required variables. After creating variables need to create a dielectric substance (FR4 is the dielectric substance).

VI. BLOCK DIAGRAM FOR SMART PHONE

Software Requirements

1. Open source Android app
2. Embedded C
3. Arduino IDE

1. Open Source Android App (Blynk)

Blynk is an open source android app which is designed and developed in order to control the hardware via internet of things (IOT). This digitally displays sensor data, it can accumulate and visualize the data. Plus it can also do other parameters such as:

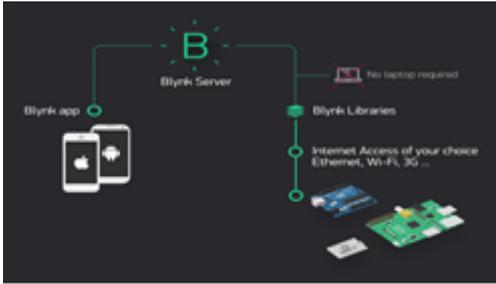
Blynk App –this app gives us to create amazing interfaces for a project using multiple widgets which is an in build app.

Blynk Server – It acts as an interface between the smartphone and hardware which is responsible for the communication. We can also use blynk cloud or compile our private blynk server .It's an open source that can control any number of devices plus can also be launched on Raspberry Pi.

○ **Blynk Libraries** – for all the standard hardware platforms, supports

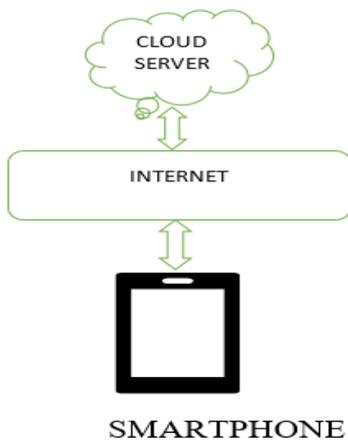
- communication with the server and the complete progression of incoming and outgoing instructions.

2. Embedded C



It is mainly used for the purpose of real time response. RTS (real time response) is designed and developed as a device which corrects based on the time of response. The advanced version of RTS (real time response) follows the concept of responding with delay is fine. For instance this includes railway platform which displays schedule system.

3. Arduino IDE



Arduino IDE where IDE (Integrated Development Environment). This is basically a open source app where one can code, compile, and upload a file in an Arduino device. In fact any Arduino modules are adapted by this software, which has in build features by default .It is available for operating systems for instance MAC, Windows, Linux, and runs on the java software. A range of Arduino modules, consist of Arduino Uno, Arduino Mega, Arduino Leonardo, Arduino Micro etc. Every module contains a microcontroller on the board which is in build by default.

VII. PROPOSED SYSTEM

- To examine whether elimination of fatal diseases will increase healthcare costs.
- The report for tie up system, trackers, sensors, telecontrolling, and wireless technology and also traces the real time device and their applications.
- By developing smart wearable sensor in order to maintain the relationship between physician and patient more health care is maintained. To develop the liberty and participation of the patient in regard to their maintain their health chart and will provide for basic remote controlling technique.

- The important technological development in mobile communication has a inbuilt feature of high speed internet service and makes our life comfortable to detect an object based on real time image, which is a huge advantage of smartphones.
- The unique blood pressure is represented in terms of diastolic/stolic. For instance 120/80.
- The top range of blood pressure in terms of systolic symbolise the pressure of arteries, as walls of heart attracts the pulse and the heart is pumped.
- Similarly the bottom range of blood pressure in terms of systolic, of a arteries as walls of heart loses its contraction and pulse is relaxed.

VIII. RESULTS

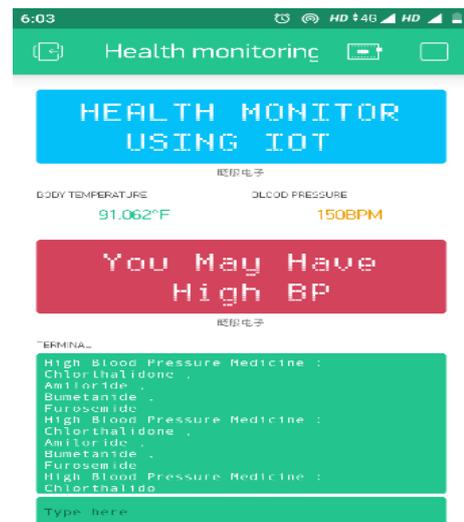


Fig 1: Case 1

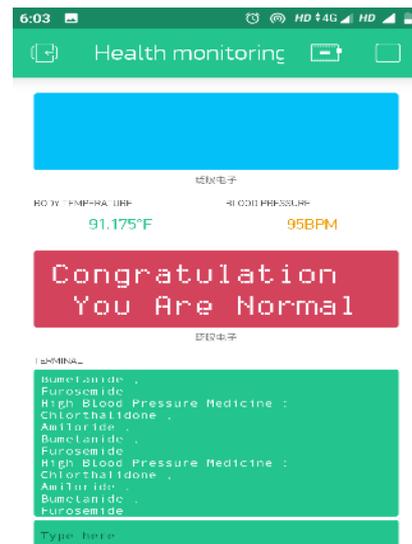


Fig 2: Case 2



Fig 3: Case 3

The above outputs describes about the different specified conditions :-

1. When the sensors are not connected they blynk software throws an output saying “ **kindly connect** ”.
2. **The BLOOD PRESSURE SENSOR** works for two conditions .
 - **Low Blood Pressure**
 - **High Blood Pressure**

This project also shows the precaution in order to cure the BP Level .

2.1 LOW BLOOD PRESSURE

When the patients BP level is less than 80.

Precautions to cure BP and this may actually

reduce their time in case of emergency state.

- Fludrocortison
- Midodrine
- Levodopa
- Amantadine

2.2 HIGH BLOOD PRESSURE

When the patients BP level is more than 120.

Precautions to cure High BP .

- Chlorthalidone
- Amiloride
- Bumetanide
- furosemide

3. **For TEMPERATURE SENSOR** also works for two conditions.

3.1 HYPERTHERMIA

If fahreheit is less than 93 .

Precautions for this state.

Cyproheptadine
Bromocriptine
Levodopal
Amantadine

3.2“TEMP IS HIGH “ “YOU HAVE FEVER “

If fahreheir is more than 99.

Precautions for this condition.

- Fever medicine
- Acetaminophen
- Aspirin

Perhapes when the patients temperature is between 93 & 99 and 80 & 120.The patient is considered to the normal.Therefore the blynk software throws an output saying

“ CONGRAGULATIONS YOU ARE NORMAL”

IX. CONCLUSION

This paper proposes a merit of health care application for easy and effortless life plus demonstrated using a low power wearable IOT system. We have described the major parameters of the designed system and briefed their implementation data. Plus we have constructed to develop the various performances of the designed system regardless of low cost. This system is implemented using a wearable sensor. The improved version of this project will work on the security and encryption of the data accumulated from the patient by using a android Blynk app.

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