

# Health Monitoring for Covid-19 Asymptomatic Patients

Ameya Bhalerao

Department of Electronics and  
Telecommunication Engineering  
Thakur College of Engineering and  
Technology  
Mumbai, India

Vighnesh Hegde

Department of Electronics and  
Telecommunication Engineering  
Thakur College of Engineering and  
Technology  
Mumbai, India

Yadnesh Mestry

Department of Electronics and  
Telecommunication Engineering  
Thakur College of Engineering and  
Technology  
Mumbai, India

**Abstract:-** Lately it has been observed that so much manpower is being consumed for doing simple tasks like monitoring temperature and heart rate of quarantined people. So this project solves this problem via a circuit that will help the quarantined people so that they can check the temperature themselves and enter it into a database that will alert them according to the entered values. This will definitely save a lots of time and manpower. The project consists of Arduino UNO for implementing the circuit and MySQL and Java programming for the database to store the values of different patients. The result that should be expected is a very well managed database and some parameters like temperature, heart rate, etc. that are entered by patients. The main thing is that the patients should be taught to check the parameters properly which is not a difficult task. The application is basically that the project helps to save the time of the people who are monitoring the parameters of quarantined patients. This project wants to convey the fact that IOT is a very interesting field and is going to be used very extensively in near future. Also IOT products help to reduce manpower and the same can be made in an affordable price. The extension of the project can be the monitored values can directly be entered into database, the patient doesn't need to do it manually.

**Keywords:-** IOT, Health Monitoring, Oximeter, Web Application, Temperature, Sensors.

## I. INTRODUCTION

IOT is the most widely used technology to design interactive circuits since last decade. It's based on Arduino Uno system that uses different sensor and powerful C programming language to execute actions. While there is no denying that simple sensors are is efficient and easy to use but it cannot meet the needs and requirements of modern technology. JavaScript has emerged as powerful tool that enables developers to build highly responsive web applications while simultaneously giving them access to powerful libraries to customize their application and help them interact with the users. Hence, it's important to develop web applications using JavaScript, HTML 5 and CSS so that website can meet the need of changing technology and user requirements. The main importance of using HTML 5 is its efficient and simple that opens the possibility to

develop powerful websites when combined with CSS and JavaScript.

### ➤ Problem Definition

To create the front end of the and fully capable patient monitoring device with the help of some small Arduino circuits and sensors. The front end should have simple and easy to use system which provides the client to choose to login in to the system. Next it would lead the client to input page where the user would enter the readings from the sensors. The sensor will take real time readings and will the readings will have to be inputted in to page. Then after submitting the client will be directed to the final page where the condition of his/her health is seen. The last page is linked to both the pages that are The Login page should ask client for username and password provide facility to authentication which will keep the data secure. There is also an option to add another input in the database.

### ➤ Motivation

As the pandemic situation is increasing day by day, many people are kept home quarantined. The main motive of this project, is to help those people, to ensure their proper wellbeing, our project would be helpful. High fever and low oxygen level are the main symptoms of COVID. This project allows for the accurate collection of data thus preventing the loss of data due to mishandling of files etc. The project is simple and efficient thus making the chances of error minimal. With this project, patient monitoring can be done in real-time, drastically cutting down the need for doctors going out and making visits. It will allow patients to be monitored in the comfort of their own homes. COVID has infected a lot of patients but the exposure is far greater for old age people has they have the risk of developing severe illness thus this project makes it easier to test.

## II. LITERATURE SURVEY

In the first research paper, i.e. Live healthcare system using Arduino, the authors have said that, the outdoor health monitoring system which is effectively used in real time medical applications is developed. This system monitors the vital signs of the patient in the home and there is no need to visit hospital often. It uses the ARDUNIO UNO controller to receive input and transmit to external devices. It uses the GSM 900A modem which transmits the messages and when

it receives the text as check it automatically monitors the respective parameters to transfer. This system is designed to reduce the work and it can be implemented with the low cost and for the daily usage to save life in emergency condition. The main gap identified is, there is possible lack of available memory. IoT sensors and devices can general colossal amounts of data, all of which is important and needs to be analyzed. This poses a question of huge data repositories that must hold all those volumes of info for indefinite terms.(1)

In the second research paper, i.e. IOT based smart healthcare monitoring system, authors said that, the prototypes provide the real time solution of observing the patient heart pulse rate with reliability. This system can be adopted in the general wards of the hospital to help the patients understand its performance and utilization. The processes of storing the data can be further used in many ways such as predicting the diseases, analyzing etc. using this system can reduce the adverse emergency for a patient to occur with the heart disease. The main gap identified is, difficulties in regular updates has been found.(2)

In the third research paper, i.e. IOT base health monitoring system, the Internet of Things is considered now as one of the feasible solutions for any remote value tracking especially in the field of health monitoring. It facilitates that the individual prosperity parameter data is secured inside the cloud, stays in the hospital are reduced for conventional routine examinations and most important that the health can be monitored and disease diagnosed by any doctor at any distance. In this paper, an IoT based health monitoring system was developed. The system monitored body temperature, pulse rate and room humidity and temperature using sensors, which are also displayed on a LCD. These sensor values are then sent to a medical server using wireless communication. These data are then received in an authorized persons smart phone with IoT platform. The main gap identified is that the privacy can be potentially undermined.(3)

**III. PROPOSED DESIGN**

The proposed design is based on simple approach to interact and feasibility. The front end is designed in such a manner that users won't face any kind of difficulty in understanding.

It incorporates CSS design and HTML 5 features to provide aesthetic to the web application. While the project will be designed on database storage that is offered by MYSQL but to transfer it into the database, a client will be required to post the data.

The basic approach was to design the front end in such a manner that it supports good. This project would also incorporate simple circuits with the help of the ArduinoUno. The sensor each with a different objective in mind was picked. The sensors were the LM35 and MAX30100. The LM35 a temperature sensor and the MAX30100 an industry leading oximeter. Cost of project increases when a more accurate reading is required which depends on the sensor. This was taken care by using efficient sensors such as the LM35 and the MAX30100 that helps in providing fast and real-time readings such as the heart rate and oxygen level (SpO2) in percentage. The Arduino Uno eliminates the cost of creating complex circuits for connecting the sensor.

The major objectives involved in project planning are listed as follows -

- The front end should be designed in a minimalistic approach such that client should not have to waste time in understanding and the data is showed properly.
- The circuits constructed should such that anybody would be able to make it with proper equipment.
- The front end should be efficient to handle user interaction with backend.

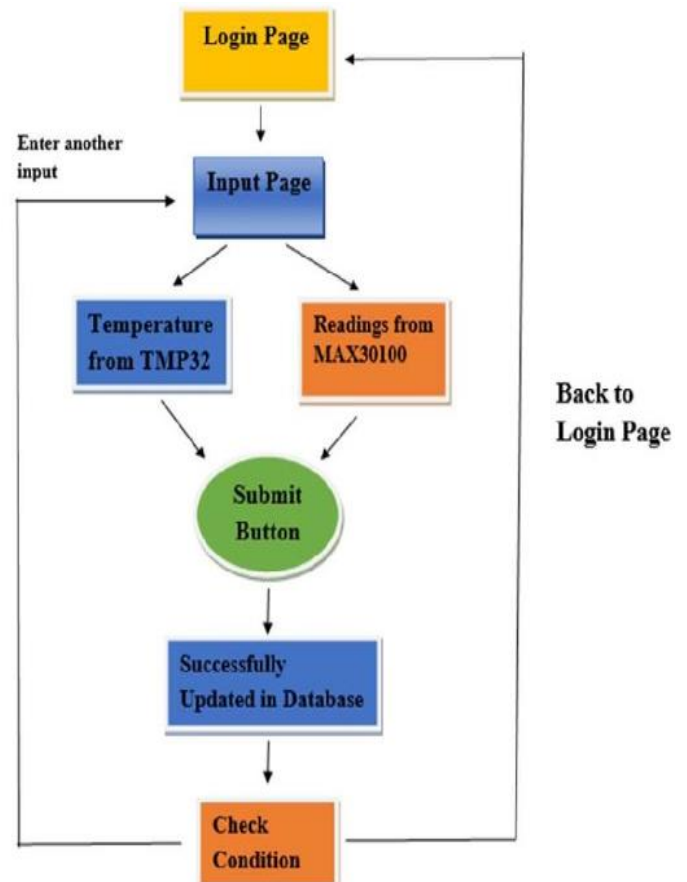


Fig 1. Data flow diagram

**IV. RESULT & DISCUSSIONS**

Firstly, user needs to sign in through the login page and then enter the checked parameters. After using Arduino for taking readings of the required parameters for fever checking and entering them into database created using MySQL, it was seen all the regularly monitored readings were properly shown. A table was also provided indicating to which values and specific measures to be taken corresponding to those values. So, by observing those values, quarantined patients can take the necessary actions needed. Three parameters were measured namely heart rate, temperature and oxygen level. The final page is of database of a patient and a table of the parameters and the range for various conditions.



Fig 2. Home Page

The Login Page shown in figure 2, is the default page of the web application. It will allow the client to enter the username and password to enter the inputs in the next page.

The next webpage is Input page. It's the first page with which user interaction begins. Every user that enters will be required to see the data from the sensors. These inputs will be the base of the project which will be used for checking the conditions at later stage. While developing this page we have taken care of providing sufficient space for inputting the data by user. Our code takes the inputs entered to store and saves them in the database. The Input process is deemed successful only when all the inputs are entered and none of them can be left void or it will not proceed forward.

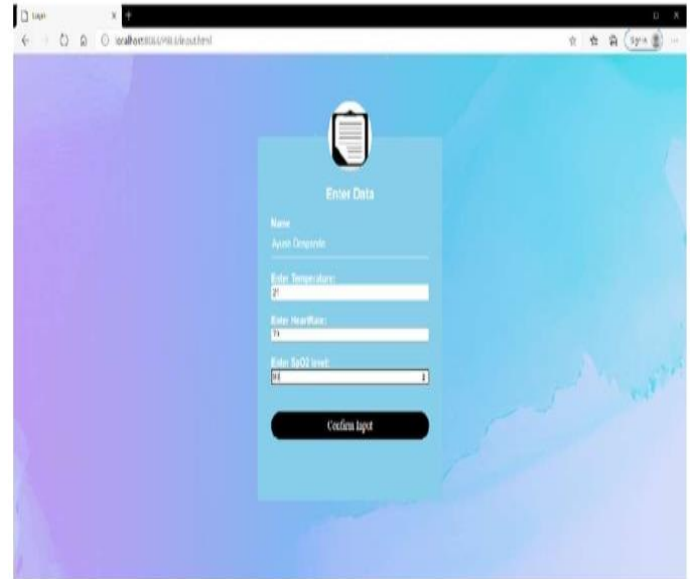


Fig 3. Input Page

The next web page that we have created is Display page. It will act as an intermediate between database and user input page. It will help in knowing the condition of the patient.

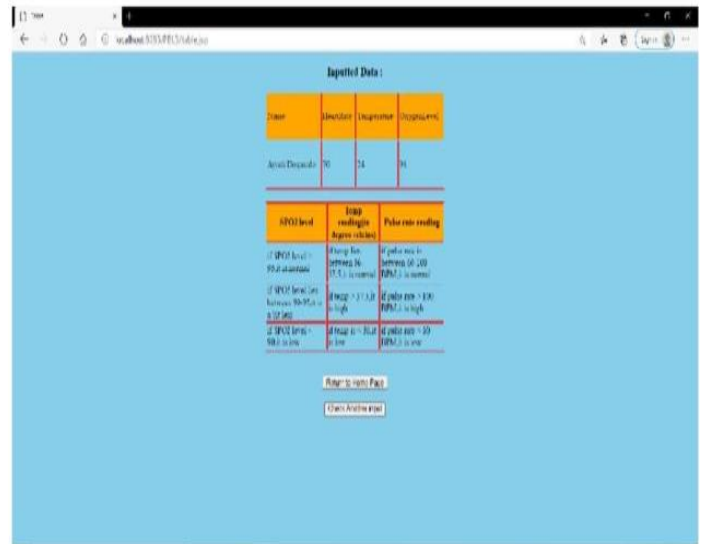


Fig 4. Login Page

It is connected with help of Tomcat Server and the MYSQL database which is created for storing all the inputs. Here we have two tables one is the input table which gives the inputs entered by the user and the second is the condition table where the client can refer to know his/her condition.

## V. SCOPE OF PROJECT

With the help of this project, one can check their temperature, their heart rate, SPO2 level. In this pandemic situation, it can be very dangerous to go to the hospital for checking. One can do so at their home itself. There are many benefits of this project in the future as the pandemic situation due to which cases are increasing day by day. Many people as false positives and are mostly home quarantined and to ensure their proper wellbeing this project would be helpful in keeping the check on the important vitals. The challenges that can be faced are that sometimes there may not be proper readings and the setup could be sophisticated. But through trial and error these problems can be solved.

## VI. CONCLUSION

This project helps to reduce the manpower that is recently being consumed for some minor tasks like checking temperature and heart rate, etc. of quarantined patients. This project tries to reduce the manpower used for checking temperature, heart rate, oxygen level, etc. of a quarantined patient. Using Arduino UNO and database created using MySQL, this project which will store the regularly monitored values and advice for the necessary steps to be taken. The conclusion is that IOT can be used to reduce the manpower required for many minor tasks. Also, by a little bit of research, IOT products can be developed in minimum cost possible. This project is not very difficult to use and IOT can be very useful in near future technologies. The project was successfully implemented using Arduino, Java programming and MySQL database used for storing monitored values. Still there is a scope of improvement in the project like auto-entering values, etc.

## REFERENCES

- [1]. <https://www.irjet.net/archives/V6/i2/IRJET-V6I2133.pdf>
- [2]. <https://www.ijitee.org/wpcontent/uploads/papers/v8i6s/F60430486S19.pdf>
- [3]. <http://www.jcreview.com/fulltext/197-1585663661.pdf>