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Smart Covid Protection System

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ABSTRACT - During the ongoing COVID-19 epidemic, Internet-based substance health monitoring (IoT-) programs can be of great benefit to COVID-19 patients. This study presents an IoT-based system that is a real-time health monitoring system that uses patients' average body temperature and pulse rate, which are the most important measurements needed for critical care. The system has a liquid crystal display (LCD) that indicates moderate temperature and pulse rate. The IoT-based proposed method uses an Arduino Uno-based system, which was tested and validated in five human experimental studies. The results obtained from the program were promising. The results obtained from the system were found to be accurate compared to other devices available for sale. IoT-based tools may be useful during the COVID-19 violence in saving lives.

KEYWORDS: IoT, COVID-19, Arduino, Social distancing, Temp detection

I. INTRODUCTION

Currently, the COVID-19 epidemic is one of the major global health problems facing organizations. As of November 19, 2020, the number of people worldwide confirmed to have SARS-COV-2 is over 56.4 million, and the number of deaths due to corona virus is over 1.35 million, which confirms that COVID-19 cases they are increasing worldwide[1]. IoT technology has evolved into an important new feature in many applications. In particular, it refers to any system of mobile devices that receive and exchange information on wireless systems without human intervention[2]. A person's internal temperature depends on a variety of factors, such as ambient temperature, gender, and eating pattern, and the temperature is between 97.8 ° F (36.5 ° C) and 99 ° F (37.2 ° C) in healthy adults [9] -11]. Various factors, such as the flu, low-grade fever, and other illnesses, may contribute to fluctuations in body temperature. In many diseases, including COVID-19, fever is a common symptom; therefore, it is important to measure body temperature regularly[3]. The main objective of this study was to develop and implement an IoT-based COVID-19-based immune system based on human body temperature, heart rate and display, which has been improved so that the patient can seek immediate medical attention[3].

II. METHODS

The block diagram and flowchart were used as visual aids to plan the steps to be followed throughout the system management process. Due to the spread of Covid desease, first we analyse the importance of environment needed for automatic hand sanitizer. The second step we make the literature study about the related article. We design the hardware, examine the product and report the result.

Figure 1 shows a block diagram of the proposed system. The block diagram shows that when the system power is turned on, the sensor begins to take values. Sensors measure biological data in the human body and transfer analog values to Arduino, converting them to digital data. The server displays data via LCD display simultaneously.

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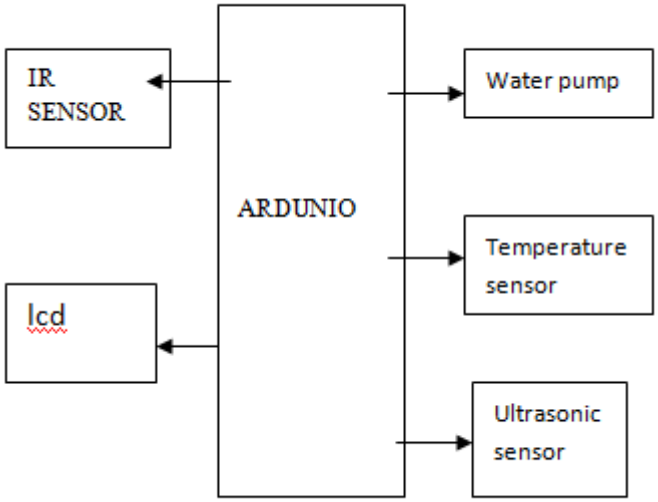

Fig.1 Block diagram of smart covid protection system

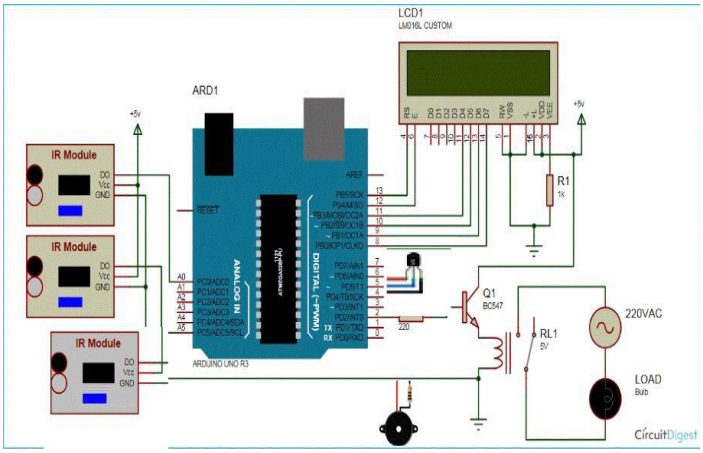

Fig.2 Circuit diagram of smart covid protection system

First step will be the temperature testing section to check the body temperature. The temperature assessment system built on Arduino Uno with LM35 sensor. The commuters pass one at a time. Considering average human body temperature 37 °C, if a person's body temperature overdoes this level, then a signal would be generated by Arduino Uno to stop that person from entering the room. Otherwise, our proposed system allows people to enter the room.

III. HARDWARE USED

To make the program a success, project implementation plays an important role. The components required to use this system are briefly described below.

1. Arduino Uno

The Arduino Uno has 20 I/O pins, 14 digital I/O pins, and six analog I/O pins. To implement the system, we used the Arduino Uno because the pin configuration of this module fulfills the requirements of our system and is the main controller of the system. It is one of the most famous open-source microcontroller boards based on ATmega328p. This microcontroller is programmable using an Arduino IDE. In this system, it plays a crucial role and works as an interface between the sensors and the other IoT gadgets[5].

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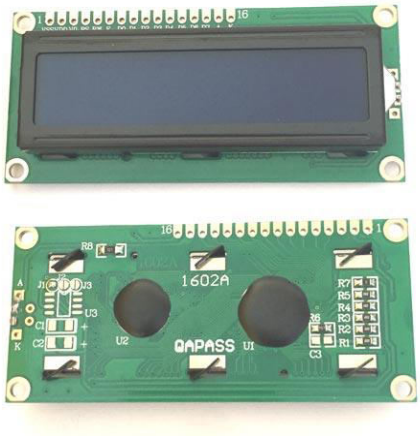
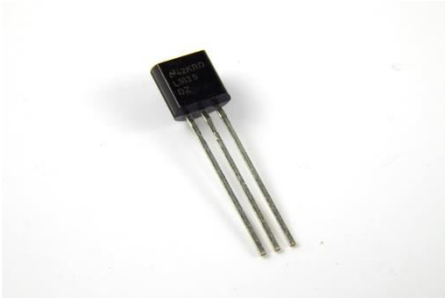
2. LCD Display

The liquid crystal display (LCD) is a well-known alphanumeric LCD display module, that is, it can display both letters and numbers. It has 16 columns and two useful lines for various programs. We used this indicator to indicate the approximate temperature[6].



3. LM35 Sensor

This sensor is used for the precise measurement of temperature. The temperature measured by the sensor will be absent in a 2-byte register inside the sensor. These data can be examined through the 1-wire procedure by sending them in an arrangement of data.



4. IR Sensor

Infrared sensors are used to monitor the number of people entering and leaving a room. The operating voltage of the IR sensor is 5VDC, and the I / O PINs are 5V and 3.3V respectively. Comes with a variety of options. The IR sensor incorporates a built-in ambient light sensor with an ascending hole, and an adjustable sensor width of up to 20cm.

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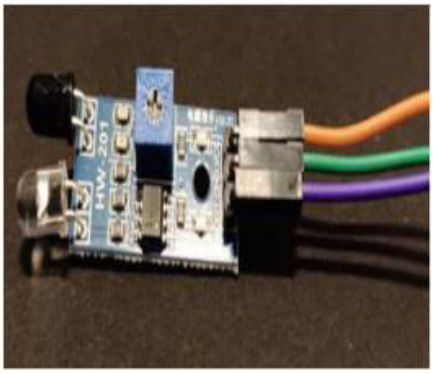

IV. RESULTS

This system was built by the circuit diagram and flow chart as shown in Figures above. Here, the Arduino Uno, LCD display, buzzer, pulse sensor, temperature sensor and water pump were added to implement the system. In the display of the system, the measured pulse rate and body temperature are shown; if the measured pulse rate go out of range, the buzzer rings. This system prototype is simple and easy to use. Because all of the components are precisely positioned, the overall result is satisfactory.

After examining the system separately, it was observed that the system worked adequately. This means that the system design and implementation process for the project were correct; thus, the user's data were satisfactorily measured.

V. CONCLUSIONS

The COVID-19 pandemic has resulted in a global health crisis as thousands of people die from the disease every day. The fatality rate can be minimized if proper treatment is administered at the right time. Manual process of determining temperature could be another source for spreading infection and virus of COVID-19. In our lifetime this virus will remain alive, and we have no other choice then live without it. So, we have to maintain precautions precisely to break down the sequence of this virus. Our research intends to control the transmission of COVID-19 by stopping and reducing local spreading carriers. Various steps, including regular monitoring of pulse rate and temperature, have been taken to ensure proper treatment.Considering the above mentioned facts, an IoT-based smart covid protection system was developed for COVID-19 patients. Advanced features can be added in the future because the entire system is IoT-based.

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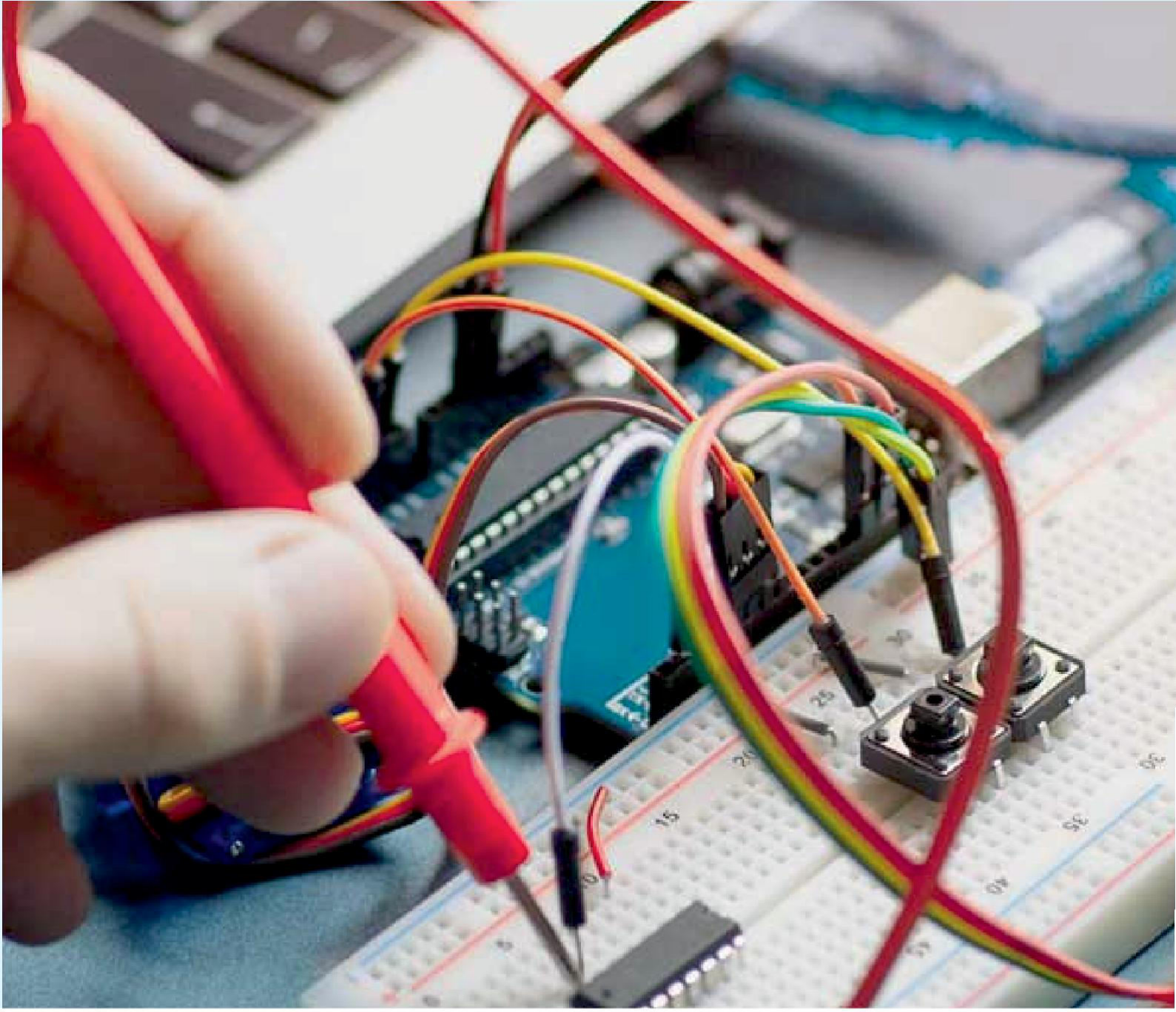

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