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Disinfected Automated Sanitizer Dispenser

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ABSTRACT: Because of the pandemic situation, everyone must be aware of the pandemic and the covid-19 virus, and we must take precautions before moving somewhere. Everywhere we go, such as schools, colleges, and shopping malls, we are reminded to use hand sanitizer. In our system, we are implementing a device called automated sanitizer dispense with temperature sensor, which can help to find the temperature of the human automatically by using the thermal sensor and the result will be displayed on the screen, if the temperature is higher than the assigned temperature, a beep sound will be held for further precautions, and when they place their hands in the device for sanitizer, the sanitizer will be dispensed automatically.

Using the IoT concept to build a better project in the real world is the best way to easily automate the system. The Arduino IDE platform combined with physical devices is the better option for making the process sufficient. This automated sanitizer device is known as a disinfected device, and it can assist people in using it without physical contact. This method can be used in a variety of settings, including malls, schools, colleges, and offices.

KEYWORDS: IoT, sanitizer, automation, sensors.

I. INTRODUCTION

Nowadays, everyone relies on the internet. When technologies improve, it can reduce manual labour and make it easier to automate some tasks. In terms of this concept, IoT is the major thing that is currently leading in every sector. IoT is a concept that describes internet-connected things that can collect and transfer data over a wireless network without the assistance of a human. The Internet of Things, or "IoT," is a concept that involves extending the capabilities of the internet beyond computers and smartphones to a wide range of different objects, processes, and environments.

The main goal of this project is to raise awareness among people about the importance of taking safety precautions in places such as schools and colleges. Good sanitation can help to reduce and contain the spread of Covid-19[1,2,3,4].

The importance of reminding people to take precautions when entering certain areas is emphasised. Because it is impossible to predict human body temperature, we will propose an Intelligent safety supervision system with temperature sensor and automated Sanitization[5,6,7, 8].

The proposed system includes a thermal sensor that allows employees to easily determine their body temperature without requiring any interaction (human). The thermal sensor will be integrated into the automated sanitising device to identify the human body temperature, and the IR sensor will sense the placed hand and dispense a fixed amount of sanitizer.

When the sensor detects the presence of human hands and the temperature of the human exceeds the fixed or normal temperature range, the sanitizer is dispensed instantly. The user can then collect the dispensed sanitizer volume in his hollow hand. The gate will automatically open once human hands have been sanitised.

This device can also detect body temperature and display it on the LCD screen in Fahrenheit or Celsius. If the temperature of the human body exceeds the assigned temperature, it will be displayed on the screen and a beep sound will be heard. If the human body temperature is less than or equal to the assigned temperature, the temperature will be displayed. After that, the person must place their hand in the sanitizer device, which will automatically dispense the sanitizer. This method is applicable anywhere.

II. RELATED WORK

In [9], the paper focuses on hospital-acquired infections, which affect approximately 2 million patients per year and are the eighth leading cause of death in the United States. It also states that hand washing is important and effective when done correctly, but washing with soap and water takes time during peak hours in hospitals. This study also demonstrated the effectiveness of alcohol-based hand sanitizers, which reduced infection rates by a whopping 30%. They used hand sanitizers containing 60 to 70% ethanol or isopropanol to kill a large number of pathogens. Along with

their beds, the patients were given 4.25 ounce containers of hand sanitizer. A 10 month period of using hand sanitizers resulted in a 36.1 percent reduction in infection.

The paper [10] discusses the infection caused by drug resistant microorganisms, which causes an increase in death rate and complications; multidrug resistant bacteria include Methicillin Resistant Staphylococcus aureus (MRSA), Extended Spectrum Beta-lactamase (ESBL) producing bacteria, and Multidrug Resistant Pseudomonas aeruginosa (MDRP), all of which are very common worldwide. Several antibiotics have increased the isolation rate of multidrug bacteria; however, personal protection equipment (PPE) is ineffective in increasing the isolation rate of MSRA. As a result, they emphasise the use of alcohol-based hand sanitizers because they had a negative association with MRSA isolation rate, implying that hand hygiene is critical in hospitals.

In [11], the paper discusses the emergence of a novel Coronavirus (SARS-CoV-2), which has caused unexpected challenges to the health of people around the world. The paper also aims to reduce the disease's transmission rate. The paper describes the virus structure and how it differs from the bacterial structure, which means that viruses have single or double stranded RNA or DNA encapsulated in a 'capsid' and can replicate only in the presence of a host and are described as 'living entities.' Bacteria have a similar structure, including DNA or RNA as well as a 'Cell Membrane,' and can replicate without a host. The paper also compares hand sanitizers to soap, foam vs gel, and claims that a high concentration of ethanol can reduce the amount of virus particle present in the hand, proving the effectiveness of alcohol-based hand sanitizer.

III. PROBLEM STATEMENT

In the current system, separate employees are usually assigned to inform and sanitise people who enter the gate. Sometimes people flee or forget to follow the protocol that has been laid out for them. Manually assigning employees to this work is also risky and ineffective. This process is a little difficult to manage efficiently.

IV. PROPOSED MODEL

To avoid the aforementioned issues, we will implement a thermal sensor integration system. The system, which includes a thermal sensor for detecting human body temperature and an automated sanitizer dispenser, will aid in the dispensing of sanitizer without the need for employee interaction. This project is primarily integrated with a thermal sensor for determining human body temperature.

The below diagram shows the working flow of the automated sanitizer dispenser.
Step1: Collecting the information in temperature sensor.
Step2: Temperature of the object will be displayed on the screen.
Step3: The buzzer make the sound, if the temperature is max than the assigned temperature.
Step4: Then the IR sensor collect the information.
Step5: Sanitizer will be dispensed.
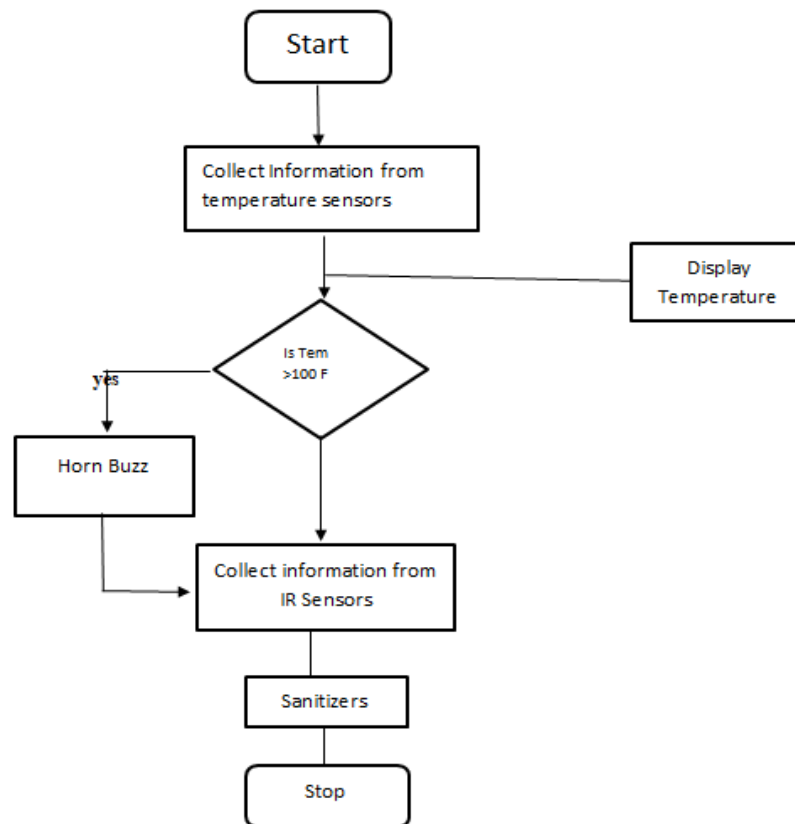We can adjust the sanitizer container according to the model.
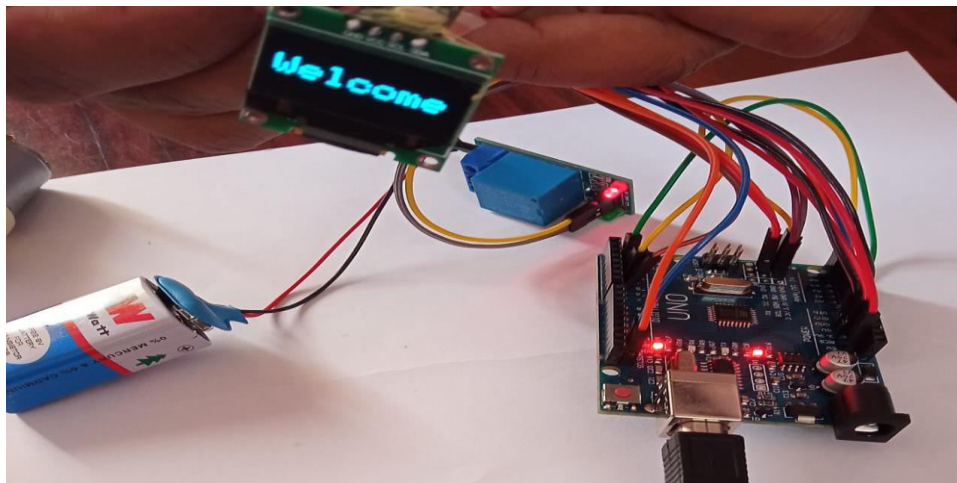
Figure 1: Flow Chart

Figure 2: Abstract model

V. CONCLUSION

In the world of electronics and pandemic situations, it is critical to develop new technology to at least awaken people to the importance of taking precautions to maintain protocols to avoid pandemics in some places. The integration of a thermal sensor for measuring human body temperature and an automated sanitizer dispensing device will help to avoid the spread of the disease by different people touching the same device in some places, or else avoiding appointing people to inform and dispense the sanitizer.

This automated sanitizer device, also known as a disinfected sanitizer device, can help to prevent the spread of the pandemic.

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