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# Contactless sanitizer dispensing and temperature reading

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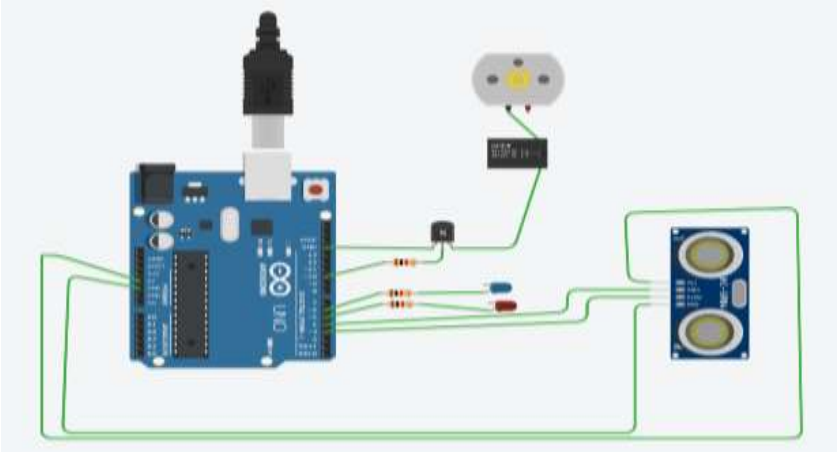
**ABSTRACT**

***In the recent times with the rapid spread and chaotic effect of the Covid-19 pandemic, avoiding any exposure to the viruses should be evaded, which has become a compulsion. The basic concept of this project is to make an approach to make the process contactless and hassle free. 'Automated hand sanitizer dispenser' was our mini project which used Arduino Uno as the microcontroller, Ultrasonic sensor as the automated sensor interface to check the presence of the hand and other relative components to make a circuit system pump a certain quantity of sanitizer every time a hand is sensed beneath the set up. Certain plug-ins and switch connections are added to monitor the usage period. Once the circuit is switched ON the Arduino UNO which functions with respect to the code and relative to the relay, which processes the motor to accelerate the pump which will the dispense a certain amount of sanitizer from the container automatically. The 'Contactless Temperature Reading' is an extension to our mini project. The purpose of this project in its entirety is to dispense sanitizer and to read human temperature in a contactless manner. In order to realize the human body temperature fast and noncontact mode an infrared human body temperature sensor is mainly used to convert the human body's infrared into voltage signal, which is then converted into electrical signal that is passed to Arduino NANO, which is the microcontroller in this case. The signal is then passed to OLED to display the temperature on the screen. The ultrasonic sensor is used to know the distance at which the object is placed. It detects the object with the help of reflected echo signal. The power generated on the Arduino NANO board is enough for the proper functioning the thermometer. The detected temperature is displayed on the OLED display along with a buzz note from the buzzer.***

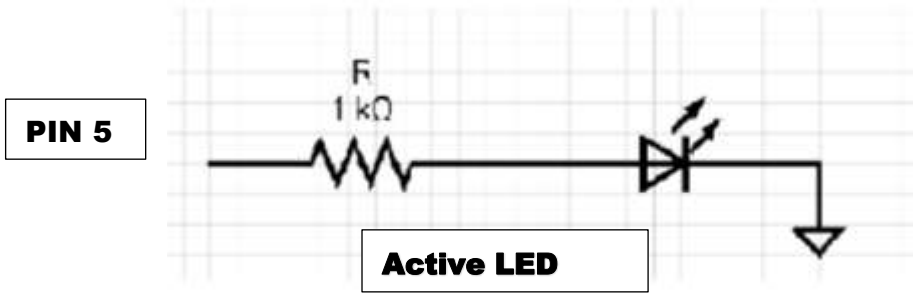
***Keywords—*** Arduino UNO, Arduino Nano, Ultrasonic Sensor, IoT

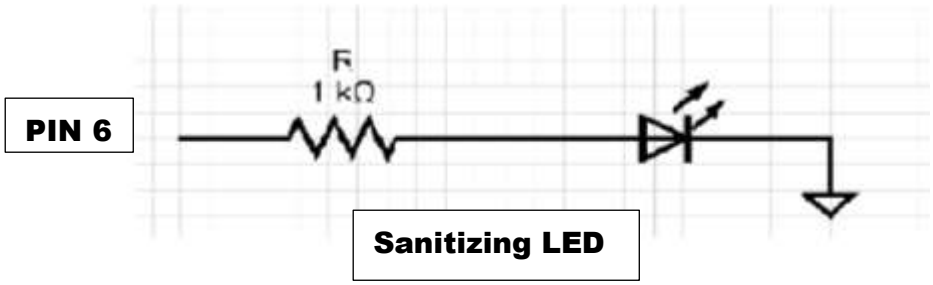
## 1. CIRCUITRY AND WORKING

### 1.1 Contactless Sanitizer Dispensing



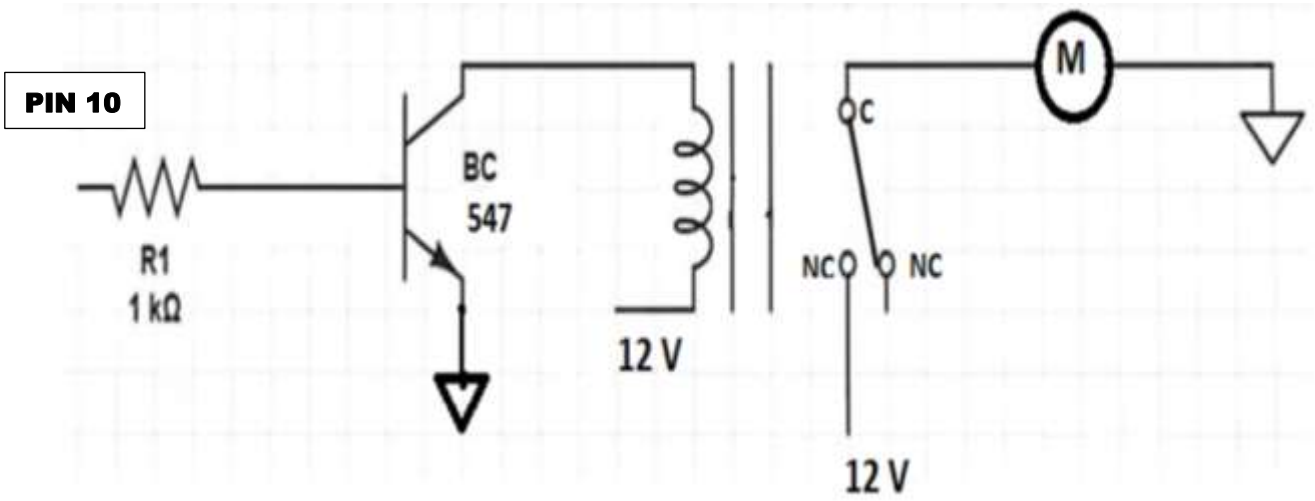
 




**2. WORKING**

Relay Connections



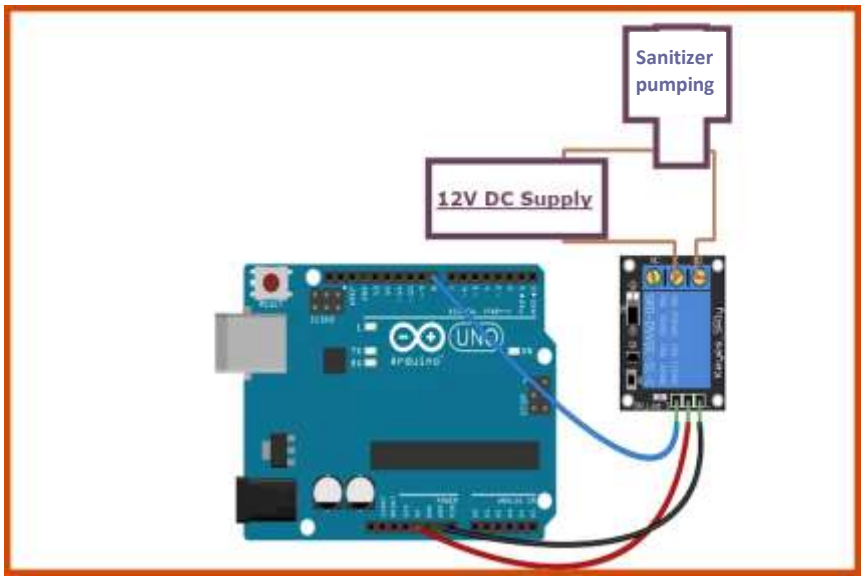

The working depends on two main components in the circuit; Arduino and the Ultrasonic sensor with respect to the code dumped in the Uno board. Hence, the instantiation starts from then sensor attached when hands are placed in front of it while the circuit is powered using the adapter.

Initially when we put our hand in front of the sensor and a certain distance is detected. The ultrasonic sensor in the machine which detects it has two terminals; one is a transmitter and another is a receiver. The transmitter transmits the ultrasonic waves and the receiver receives the signal when it comes back and then it will calculate the distance of the object by the ultrasonic sensor distance calculation formula. Then the distance sent to the Arduino and there is some database for comparison with the present value and according to the threshold the Arduino will send the command to the water pump. So, if there any person put their hand then the water pump gets on and sanitizer release to that hand. And when the person pulls back their hand the sanitizer gets to stop according to the conditions given in the code.

Here we have a 12V DC adapter that is connected to the Vin of Arduino and to the Positive terminal of the pump. D3 and D4 are connected to Echo and Trigger pin respectively. And D10 is connected to the Transistor. When the transistor switches On, the pump will get turned on. Here, one end of the pump is connected to the tube that goes inside the sanitizer bottle and the other end is held free.

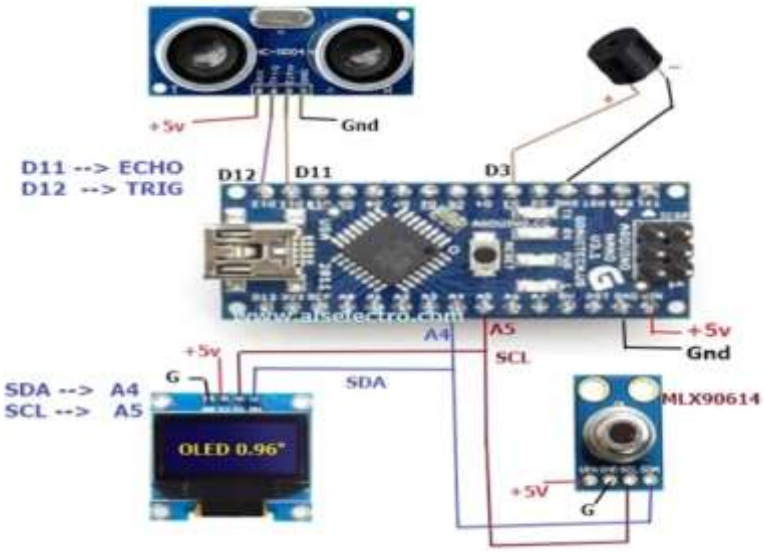
The whole system is powered through Arduino's power output — its regulator along with the transistor amplification on the relay board can fulfil the power requirements for the whole circuit. This is important because the DC motor can be power-hungry. But, since we're not loading any weight, its power usage will not reach the critical limit of the circuit. The pumping part is done by the relay and motor connection of the circuit.



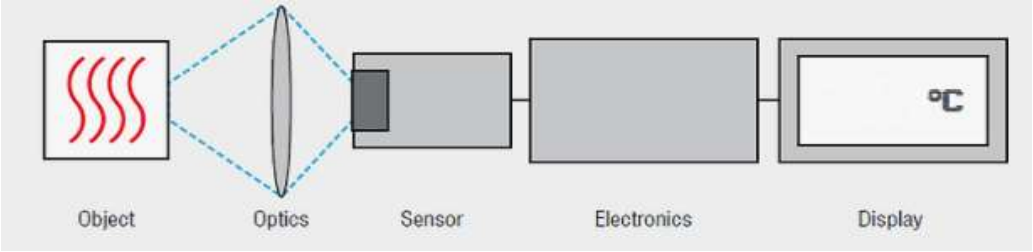

Relay and motor pumping

## 3. CONTACTLESS TEMPERATURE READING




An infrared thermometer may be called for anytime the surface temperature of an object needs to be determined. Obviously, since the infrared beam is only bouncing off of the surface, this is not a suitable method of measurement when the interior temperature of an object needs to be found. There are nearly countless applications, and this technology is already used in a wide range of industries. Checking the level of heat coming from a piece of equipment, for instance, is a good way to check for trouble that may be occurring on the inside. If the equipment is hotter than it should be on the surface, there is a good chance that something is going wrong internally. Considering how many various infrared thermometer models are available today, and how accurate they have become, it is easy to see why they are a popular choice in a number of industries.

Since there is heat being emitted by any object, an infrared thermometer can use the difference between the IR rays coming off of the object and the surrounding environment to determine the surface temperature of the object itself. The IR thermometer works by focusing light that is coming from the object in the form of IR rays and funnelling that light into a detector - which is also known as a thermopile. It is in the thermopile that the IR radiation is turned into heat which is then turned to electricity, which is then measured. It is ultimately the amount of electricity that is generated by the rays being put out by the object in question that will provide a reading that is displayed on the thermometer. The reading will be generated in a manner of seconds, meaning an infrared thermometer is a quick way to gather a temperature reading in a number of different scenarios.




**Infrared system**

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[5] https://www.tinkercad.com/
[6] https://novatech.ind.in/
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