AUTOMATIC HAND SANITIZER AND TEMPERATURE MONITOR USING ARDUINO

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Abstract - In this corona time hand sanitizer and monitoring of temperature is an essential one. Because it could kill the Covid -19 virus. But the use of normal sanitizer bottle become very danger. When an infected person uses this bottle, the virus may spread from this hand to sanitizer bottle trigger. To solve this use Automatic hand sanitizer bottle. Automatic means, no need to touch with our hand (contactless). Just place your hand near the bottle and then the bottle will automatically release sanitizer. We can build our own room and body temperature monitor using an Arduino board. The circuit is a combination of an Arduino UNO board, LM35 temperature sensor, and a 16×2 compatible LCD. It will display the temperature on the LCD screen in degree Celsius. It can be powered from any standard Arduino with AC mains adaptor (12VAC), or from a suitable battery.

Key Words: ARDUINO – TEMPERATURE MONITOR- LCD DISPLAY- HAND SANITIZER

1.INTRODUCTION

A. Arduino Board

Arduino boards are able to convert analog or digital input signals from different sensors and turn it into an output to turn on or off led, activate a motor, connect to the cloud .One can control arduino board functions by sending a set of commands to the microcontroller on the board via Arduino Integrated Development Environment.Unlike most previous programmable circuit boards, Arduino does not need an extra piece of hardware (called a programmer) in order to load a new code ontothe board. You can simply use a USBcable. Arduino is an open source electronic platform consists of hardware and software. Arduino Uno is based on ATmega328P Processor. It operates on 16MHz quartz crystal frequency. It has 14 digital input/ output and 6 analog input pins and operates at +5votls. It has 32KB flash memory. Fig 1 shows the Arduino board diagram with input and output pins.

Fig 1: Arduino Board

B. Temperature Sensor LM35

LM 35 is a precision integrated-circuit temperature sensor, whose output voltage is linearly proportional to the Celsius (Centigrade) temperature (Linear + 10.0 mV/°C scale factor).In this circuit LM35's output is connected to the Arduino's A0 pin, which converts the available output voltage value to a float value of temperature, and then, displays it on the LCD screen. The 10K potentiometer (P1) adjusts the contrast of the LCD readout, and the 100R (R1) fixed resistor limits the operating current of the LCD backlight unit.Fig 2 shows temperature sensor LM35 symbol diagram

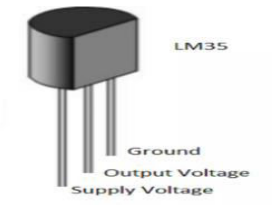

Fig 2: LM35 symbol diagram

C. Hand Sanitizer:

Hand sanitizer is less effective at killing certain kinds of germs, such as virus and Clostridium difficult and unlike soap and water, it cannot remove harmful chemicals. People may incorrectly wipe off hand sanitizer before it has dried, and some are less effective because their alcohol concentrations are too low.Fig 3 shows Hand sanitizer stage diagram.

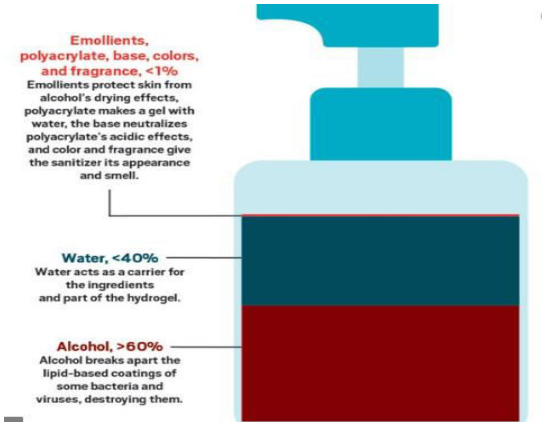

Fig 3: Hand sanitizer

2. HARDWARE BLOCK DIAGRAM:

In our project we are mainly using IRSensor, motor driver,LCD display,buzzer,dc submerisble mini water pump and Arduino Uno Board. When we place our hand in front of the IR sensor, it will helpthe Arduino to recognize the distance from the sensor to the object (hand). If the object is within the desired range, Arduino will run the dc motor for limited time which is submerged on the hand sanitizer bottle. And the tube of bottle is directly connected to the dc water pump. When dc water pump get spins, the liquid moves from the bottle tothe object(hand) .Fig 4 shows the block diagram of the project.

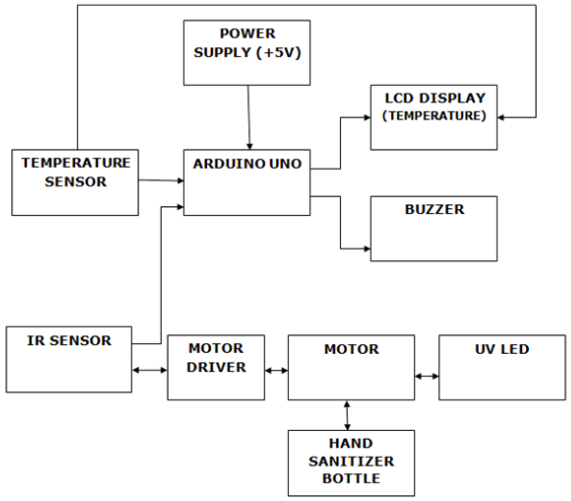

Fig 4: Block Diagram

FLOW DIAGRAM

A.Temperature Monitoring System

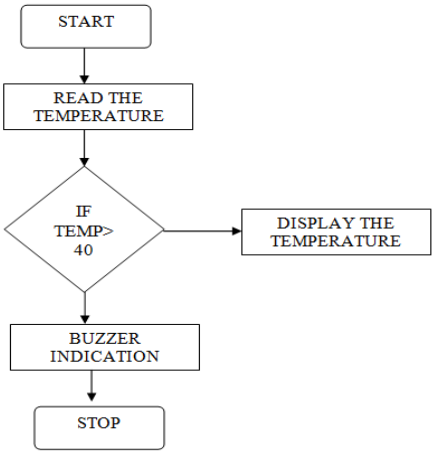

Fig 5: Temperature Monitoring

LM35 temperature sensor is used for identification of temperature value.First read the value of temperature and then using conditional statement temperature value is displayed.If temperature value below 40 degree it displays the value of temperature in LCD display.If it exceeds 40 degree,buzzer identification is provided for indication.

B.Hand Sanitizer System

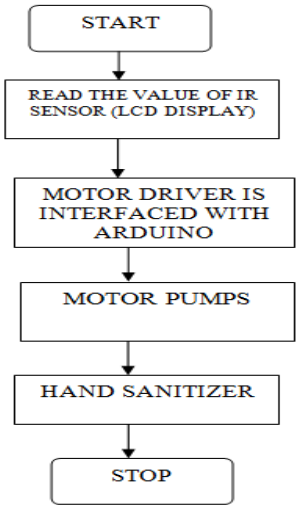

Fig 6 : Automatic Hand Sanitizer

For this project we have include the "LiquidCrystal_I2C.h" library for better communication between arduino and dc water pump. Then we define the IR input to arduino digital pin2 this gives command for the dc water pump to run which is connected to motordriver . Declare twovariables, First one is "delay". This is for the total time for the motor in "on" condition. And another is "range", for storing the calculated distance . First set the pin of dc water pump to the digital pin 9 .we need to write the dc water pump in "on" condition only when the distance is less than or equal to 2 cm. Else the dc water pump remains in "off" condition. Fig 6 shows Automatic Hand sanitizer. Without touching the nozzle of the bottle, it will sense our hand and bottle will automatically release the sanitizer.

3. CONCLUSIONS:

From our project we could able to identify the 80% accuracy of feverish body temperature then, with this project it's 100% safe to use hand sanitizer and temperature monitor with easy ways that anyone could operate this. Fig 7(a) & (b) shows the temperature monitoring and Hand sanitizer Hardware output.

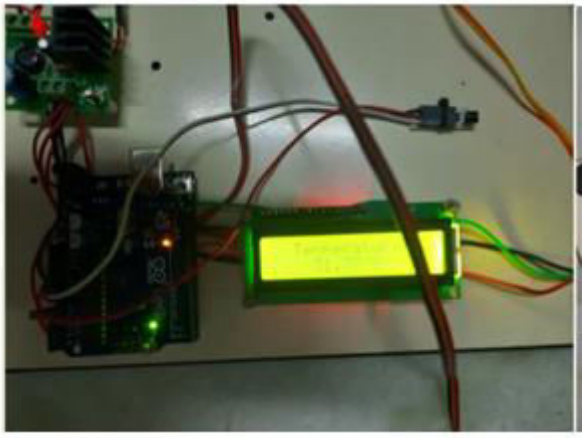

Fig 7(a): Temperature Monitor

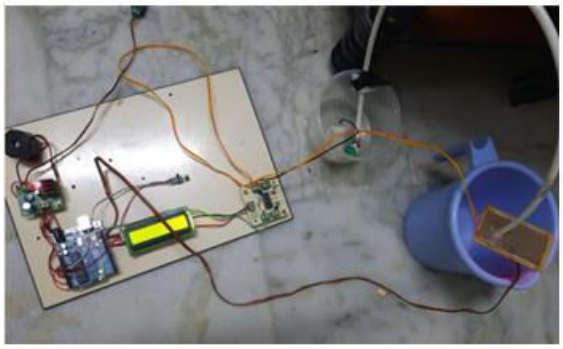

Fig 7(b): Hand sanitizer

4. FUTURE SCOPE:

In future we can make this to be in fully moving condition and also by adding some stuffs .We can make this as more initiative by modifying it also a social distancing alarm.

REFERENCES

[1] Yang Cao, Chaochao Zhong, Kaiwen Qiu, "Design and Experiment About Temperature Control System Of Sealing Machine Based On Fuzzy PID", 8 th International Conference on Intelligent Human-Machine Systems and Cybernetics, pp. 308-311, 2016 IEEE.

[2] Hitu Bansal, Dr. Lini Mathew, Ashish Gupta, "Controlling of Temperature and Humidity for an Infant Incubator Using Microcontroller", International Journal of Advanced Research in Electrical and Electronics and Instrumentation Engineering, vol. 4, no. 6, pp. 4975-4982, June 2015.

[3] Nwankwo Nonso Prince , Alumona Theophilus , Onwuzulike Daniel .A., Nwankwo Vincent, "Design and Implementation of Microcontroller based Automatic Fan Speed Regulator" International Journal of Engineering Research and Management (IJERM), vol. 01, no.5, pp. 202-208, August 2014.