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MULTIFUNCTION HAND DISPENSER WITH FOG AND TEMPERATURE SCANNER ENERGY

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ABSTRACT

Since the start of COVID pandemic it is been suggested to wash your hands multiple numbers of times per day. But can we afford to waste such huge amount of water. The problems that would be created by wastage of water would create a greater problem than the pandemic itself. To help solve this system we here design a system that provides handwashing while consuming over 95% less water. Disinfecting our hands from time to time is a very important factor in fighting the pandemic. But does it require so much water to disinfect your hands. Additionally, many people end up over washing their hands (over 15- 20 seconds with full tap released). Disinfection just requires that water reaches every millimeter of your hand along with a disinfectant or soap and it should be just enough to kill any infection or help it slide out of your hand. When we turn on a tap only 10 – 30% water touches our skin and rest just flows over this first layer of water.

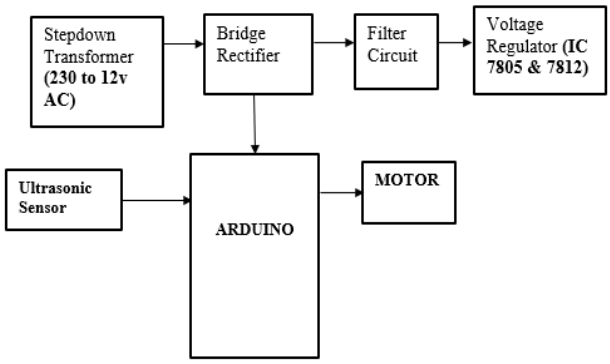
Keywords: Arduino, Temperature sensor, Pulse sensor, Ultrasonic sensor.

I. INTRODUCTION

Hand washing, also known as hand hygiene, is the act of cleaning one's hands with soap or handwash dispenser and water to remove viruses/ bacteria/ microorganisms, dirt, grease, or other harmful and unwanted substances stuck to the hands. Drying of the washed hands is part of the process as wet and moist hands are more easily recontaminated. If soap and water are unavailable, hand sanitizer that is at least 60% (v/v) alcohol in water can be used instead, unless hands are visibly excessively dirty or greasy. Hand hygiene is central to preventing the spread of infectious diseases in home and everyday life settings.

II. EXISTINGSYSTEM

The Ultrasonic sensor has an echo and trig pins which are receiver and transmitter respectively, by the algorithms the sensor is adjusted to get trigger within the distance, when the hand is placed in the required distance, the sensor sends the signals to the Arduino nano then the Arduino sends signal to the 5V relay board, which is triggered and activate the motor to pump sanitizer.



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III. PROPOSEDSYSTEM

We depict our proposed machine which comprises of a contactless internal heat level aspect module measure temperature with MLX90614 sensor associated with arduino module. The main hand sterilization unit works fabulous when one put palms under the ultrasound sensor then it apportions sanitizer fluid through 3mm standard spout as fog that can disinfect hand with broad spread. At the point when a singular necessity to sanitizer hand need to invest palms underneath sensor and the effort between fruition of disinfection the machine measure internal heat level and feel temperature.

Our machine goes on one more level to empower significantly more water saving utilizing a haze-based framework. The machine is coordinated with a tank underneath it. The tank is loaded up with water alongside any protected home-grown sanitizer fluid whenever required.

At the point when the client rubs cleanser on his/her hands and embeds it into the framework, this naturally sets off a water misting framework that converts water in the tank to haze and drives it in the handwash chamber.

Presently Fog can arrive at all sides of the hand in under 5 seconds for all intents and purposes in vaporous state (water fume). Following 5-15 seconds of water haze openness the cleanser on client's hand is washed down with the mist. This requires under 95% of water that would be expected in customary tap-based hand washing. The machine comprises of a fan to drive in air that is expected to drive the haze into handwash chamber.

IV. COMPONENTS REQUIRED

The components required for this project are categorized into two parts. The first one is the hardware requirement andthe next is the software requirement.

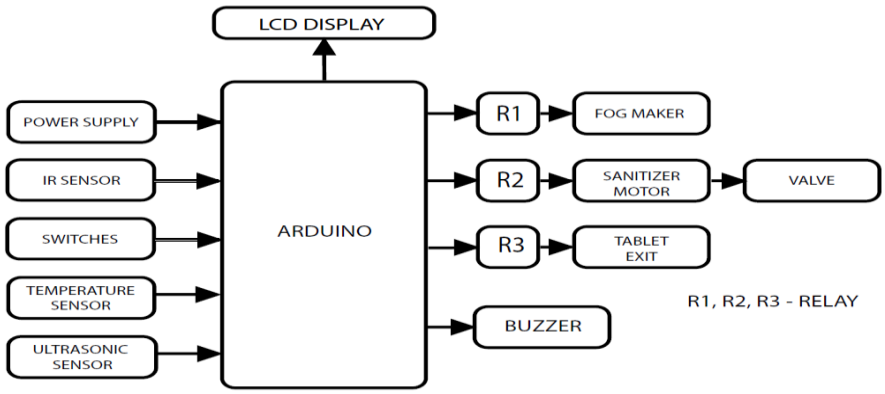
HARDWARE REQUIREMENT

- ARDUINO UNO
- BUZZER
- ULTRASONIC SENSOR
- LCD(16*02)
- L293D MOTOR DRIVER IC
- ESP8266 MODULE

SOFTWARE REQUIREMENT

- ARDUINO IDE SOFTWARE
- Proteus 1.2.1
- Android app
- PHP web page

BLOCKDIAGRAM



1. ULTRASONIC SENSOR

Water Level Monitoring

The Ultrasonic sensor is used to monitor the level of thewater. It is achieved by measuring the distances. The distancecan be calculated using the given formula

Distance=(speed of sound*time taken)/2 objects

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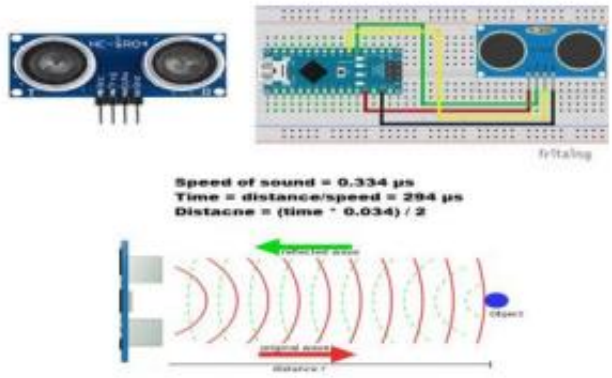
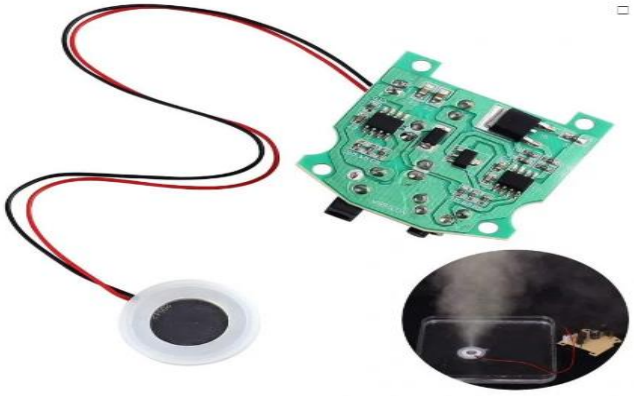


2. FOG GENERATOR

This DC 5V Ultrasonic Humidifiers Power Circuit Board with Atomizing Chip Moisture Film Humidification atomization machine is suitable for the atomization plate tablet with a diameter of 20mm. This Ultrasonic Humidifier Piezoelectric Transmitter module works on the principle of cavitation produced by sound waves. Just provide the DC3-12V power supply it will turn into a mini ultrasonic atomizer. As sound waves contain compression and rarefaction. Due to extremely rapid movement, water droplets can no longer sustain their liquid state and gets converted into vapor immediately. This vibration is produced by a piezoelectric filament.



3. Buzzer

Buzzer or beeper is an audio signaling device. Buzzer will automatically turn on when alcohol is detected.

4. MOTOR

Micro DC 3-6V Micro Submersible Pump Mini water pump For Fountain Garden Mini water circulation System DIY project. This is a low cost, small size Submersible Pump Motor which can be operated from a 3 ~ 6V power supply. It can take up to 120 liters per hour with very low current consumption of 220mA. Just connect tube pipe to the motor outlet, submerge it in water and power it.

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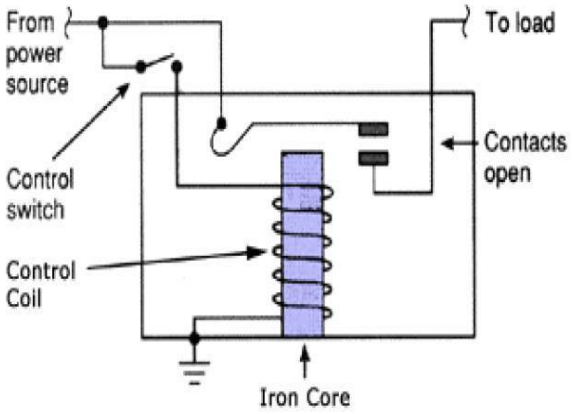
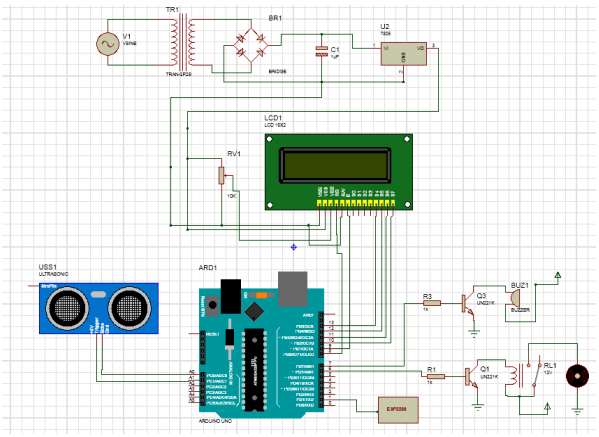
5. RELAY

We understand that most of the excessive quit industrial utility units have relays for their fine working. Relays are easy switches which are operated each electrically and mechanically. Relays consist of a n electromagnet and additionally a set of contacts. The switching mechanism is carried out with the assist of the electromagnet. There are additionally different running standards for its working. But they fluctuate in accordance to their applications. Most of the gadgets have the software of relays. The principal operation of a relay comes in locations the place solely a low-power sign can be used to manipulate a circuit. It is additionally used in locations the place solely one sign can be used to manage a lot of circuits. The excessive give up purposes of relays require excessive electricity to be pushed by way of electric motors and so on. Such relays are referred to as contactors.



6. CIRCUIT DIAGRAM



7. MICROCONTROLLER ARDUINO

Arduino Uno is primarily based on AVR microcontroller referred to as Atmega328. This controller comes with 2KB SRAM, 32KB of flash memory, 1KB of EEPROM. Arduino Board comes with 14 digital pins and 6 analog pins. ON-chip ADC is used to pattern these pins. A sixteen MHz frequency crystal oscillator is geared up on the board. Following parent indicates the pinout of the Arduino Uno Board.

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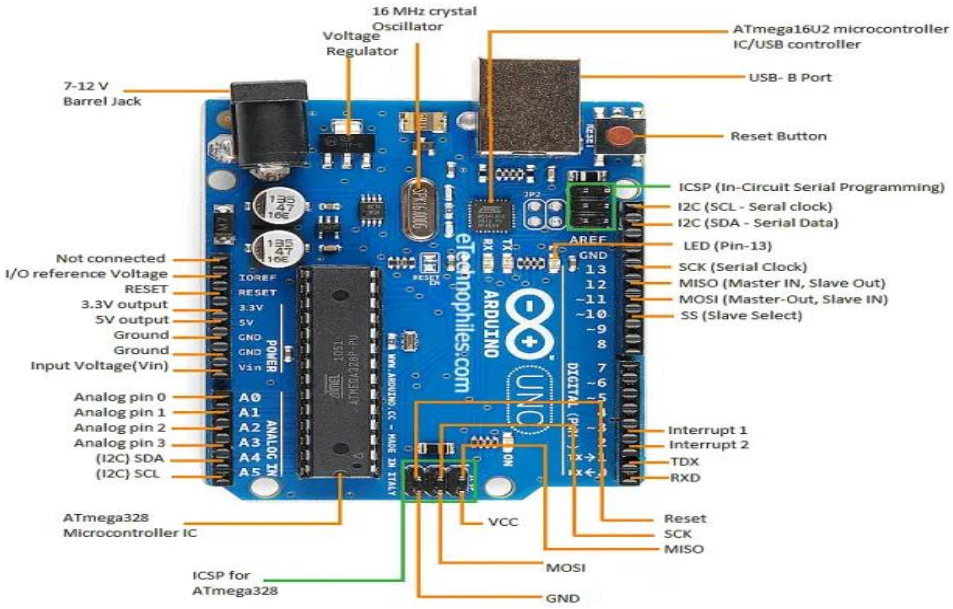
Pin description

There are various I/O digital and analog pins positioned on the board which operates at 5V. These pins come with fashionable running scores ranging between 20mA to 40mA. Internal pull-up resistors are used in the board that limits the modern-day exceeding from the given running conditions. However, too lots enlarge in present day makes these resisters vain and damages the device. LED. Arduino Uno comes with built-in LED which is related thru pin thirteen Providing HIGH price to the pin will flip it ON and LOW will flip it OFF. Vin. It is the enter voltage supplied to the Arduino Board. It is unique than 5 V provided via a USB port. This pin is used to grant voltage. If a voltage is supplied via electricity jack, it can be accessed thru this pin.5V. This board comes with the capability to grant voltage regulation. 5V pin is used to furnish output regulated voltage. The board is powered up the usage of three approaches i.e., USB, Vin pin of the board or DC energy jack.USB helps voltage round 5V whilst Vin and Power Jack guide a voltage stages between 7V to 20V. It is endorsed to operate the board on 5V. It is vital to notice that, if a voltage is furnished thru 5V or 3.3V pins, they result in bypassing the voltage law that can injury the board if voltage surpasses from its limit. GND. These are floor pins. More than one floor pins are supplied on the board which can be used as per requirement. Reset. This pin is integrated on the board which resets the application walking on the board. Instead of bodily reset on the board, IDE comes with a characteristic of resetting the board via programming. IOREF. This pin is very beneficial for supplying voltage reference to the board. A protect is used to examine the voltage throughout this pin which then pick the applicable strength source PWM. PWM is furnished via 3,5,6,9,10, 11pins. These pins are configured to provided 8-bit output PWM.SPI. It is acknowledged as Serial Peripheral Interface. Four pins 10(SS), 11(MOSI), 12(MISO), 13(SCK) grant SPI verbal exchange with the assist of SPI library.AREF. It is referred to as Analog Reference. This pin is used for imparting a reference voltage to the analog inputs. TWI. It is known as Two-wire Interface. TWI verbal exchange is accessed via Wire Library. A4 and A5 pins are used for this purpose.Serial Communication. Serial conversation is carried out via two pins known as Pin zero (Rx) and Pin 1 (Tx).Rx pin is used to acquire information whilst Tx pin is used to transmit data, External Interrupts. Pin two and three are used for imparting exterior interrupts. An interrupt is known as by means of offering LOW or altering value.



V. RESULT

Hardware setup of our multifunction hand dispenser with fog and temperature scanner system took various levels for attaining the final stage. The materials that required for making our fog maker, sanitizer spryer, temperature sensor, and pulse sensor system was purchased partially from both online and nearby stores. Initially we started designing of

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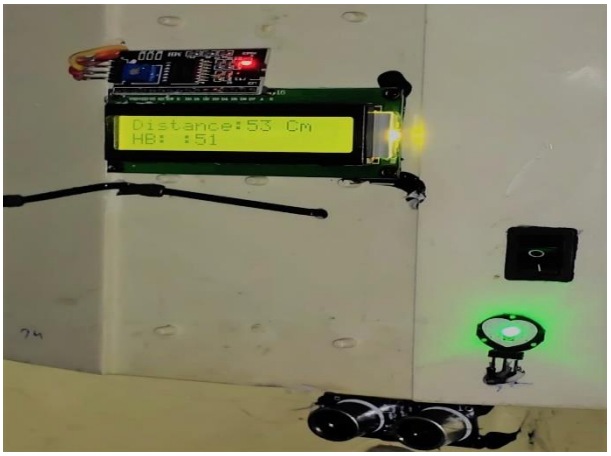
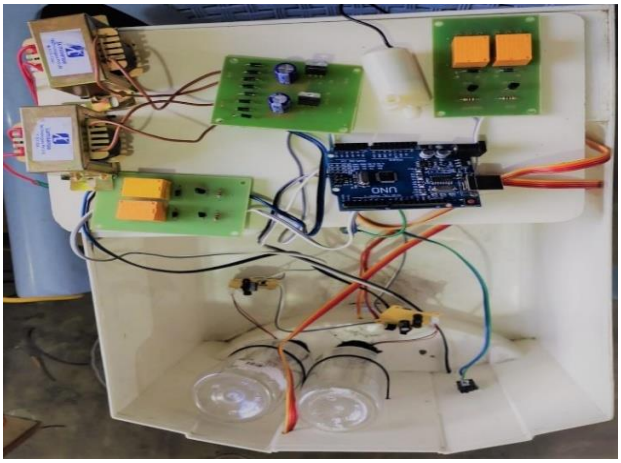
framework and then we purchased from water purifier shop. After completing the framework with the guidance of some our friends we assembled the other such as fog generator and with sanitizer inbuilt motor set, then temperature scanner, and pulse scanner to set by one by one. Finally, the painting was done in a different works to project where the works our fog maker, sanitizer spryer, temperature sensor, and pulse sensor system of got completely done.





VI. FUTURE ENHANCEMENT

In future, the proposed we can implement this project in the various functions used for human's health like handwash using fog, sanitizer, heartbeat, temperature. So, in future project will made good development. In future this implementation is applied to all multifunction applied AI based method. The future implementation of this system will give a high accurate output compare to this proposed system.

VII. CONCLUSION

The technique and innovation utilized in the examination work is to help to decrease and stop the transmission of spreading COVID-19 infection and can likewise notice a few vital boundaries like individual's internal heat level utilizing contact less infrared temperature senor, and in the event that high temperature, create caution, data with respect to wellbeing status of framework like sanitizer fluid level status, To settle this, transfers should be introduced to drive the shower siphons/sub siphons, guaranteeing that the sensors, lcd, and other moment modules get sufficient power from the Arduino microcontroller's inbuilt 5 V and 3.3 V ports. It could be made at home for an extremely minimal expense and introduced all over, including workplaces, instructive foundations, public transportation, and customary organizations. To conclude the undertaking, the gadget can be depicted as a weapon for endurance despite an undetectable adversary in a pandemic circumstance.

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