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COVID DISINFECTION BOX

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ABSTRACT

Covid-19 changed all humanity in 2020. Its rapid and efficient spread forced us to use face masks and gloves to protect ourselves from what we touch. The masks are used to protect ourselves from Covid-19, however, the Covid-19 can be infected from the other sources like touching the surfaces of things which consists of virus. Now, we are solving a big problem by proposing a smart electronics system with Arduino to disinfect the Covid-19. In this work, we used UV (ultra-violet) sterilization 360 degree-disinfection box. This system uses eight UV-C tubes to kill all virus in seconds.

Keywords-Covid-19, Arduino, IR Sensor

I. INTRODUCTION

Sanitization implication maintenance or sterilizing an article or frame components be fond of fingers and frame .Sanitization may be achieved in loads of approaches together with UV sanitization, maintenance soap sanitization, alcohol sanitization etc. Of the above strategies alcohol become located to be greater beneficial for human beings. Since it's miles innocent on pores and skin surface, vaporizes effortlessly and kills maximum of the viruses, micro organism and additionally gets rid of dust from our hand. Alcohol additionally makes fingers dry, because it absorbs moisture, and additionally desires addition of moisturizers .so on this mission we use covid disinfection container to get included from covid. Here's what we recognise approximately the virus that become first detected in Wuhan, China, in overdue 2019 and has spark off a worldwide pandemic. The virus first seemed on a small scale in November 2019 with the primary big cluster acting in Wuhan, China in December 2019. It become first notion SARS-CoV-2 made the soar to human beings at one in all Wuhan, China's open-air "moist markets." Later theories voiced subject that it could have originated as a organic weapon in a lab in China. The virus mainly spreads among human beings via near touch and through aerosols and respiration droplets which can be exhaled whilst talking, breathing, or in any other case exhaling, in addition to the ones constructed from coughs or sneezes. Emergence.COVID-19 become recognized in Wuhan, China in December 2019. COVID-19 is as a result of the virus intense acute respiration syndrome coronavirus 2 (SARS-CoV-2), a brand new virus in human beings inflicting respiration contamination which may be unfold from character-to-character. Early withinside the outbreak, many sufferers have been said to have a hyperlink to a big seafood and live animal marketplace; however, later instances with out a hyperlink to the marketplace showed nature-to-nature transmission of the syndrome. as well, travel-coupled exportation of instances occurred. 6,272,208 human beings have died up to at this moment from the corona virus COVID-19 out breaks as of MAY06,2022,06:22GMT.

There are three main ways that COVID-19 can spread:

1. By inhalation in air affecting droplets or aerosol particles that surround the SARS-CoV-2 virus when lock to an unhygienic someone or in inadequately ventilated places with infected persons
2. By having droplets and particles that restrain the SARS-CoV-2 virus land on the eyes, nose, or mouth – principally throughout splashes and sprays be fond of a cough or sneeze
3. By pitiful the eyes, nose, or mouth with hands that have the SARS-CoV-2 virus particles on them.

Here are 10 steps you could take to assist save you the unfold of the corona virus:

1. Stay calm. Think cautiously approximately how you could assist your network and cherished ones.
2. Wash your hands. A lot. Use cleaning soap and water for as a minimum 20 seconds and wash often.
3. keep away from touching your eyes, nostril, and mouth. This enables minimize the potential of you being paid sick.
4. Cover your nostril and mouth while you sneeze. Make certain you operate tissues and throw them away in a covered trash can.
5. Stay at domestic in case you're sick. We have to every body to survive as good for your health as achievable.
6. If you understand as proper with you had been revealed to COVID-19, or enclose a eagerness, cough, or succinctness of inhalation, name your healthcare band instantaneously.

- 7. circumvent allotment family things. This applies to cups, ingesting utensils, bedding, and towels.
- 8. Disinfect items and surfaces in your house and at work. Use an alcohol-primarily based totally sanitizer that incorporates as a minimum 60% alcohol
- 9. Sleep well. Your immune device is operating excellent in case you are well-rested.
- 10. Get a flu shot. It’s nonetheless flu season so it’s excellent to live at complete fitness and assist guard others, too.
- 11. Wear mak, foremost social distances ,constantly sanitize your hands. 12. Moniter symptoms. 13. Cleaning surfaces and items at risk of excessive touch

II. PROBLEM STATEMENT

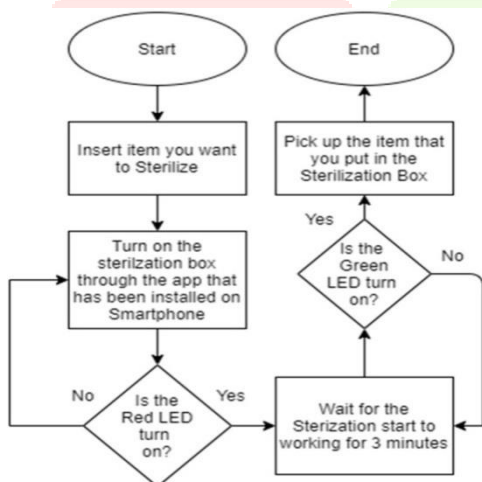
Due its pandemic situation peoples are effected and deaths because of spreading the virus .so using covid disinfection box we are not touch the sanitizer directly spreads to all surfaces .Covid Infection box is used in total areas in our humanity similar to shopping malls hospitals ,colleges ,offices, Public Areas etc...

In this paper we are discussed about covid prevention, in section I explained introduction of the covid disinfection box .where and when and how spread the covid and how to control the covid 19.In section II problem statement is explained and section III is methodoly of covid 19.section IV working principle of the covid disinfection box is explained and and section V results diagram are shown.

III. METHODOLOGY

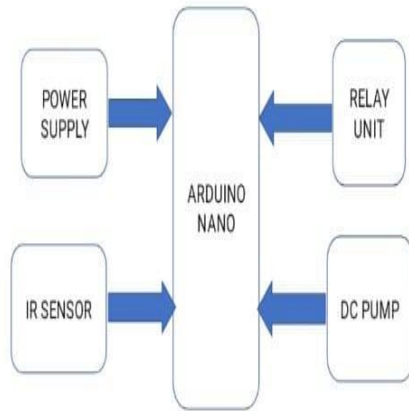
Based on our problem statement, we have create a prototype to implement a device called covid disinfection box .The major things of the application is Arduino ,power supply ,jumper wires ,relay ,IR sensor ,water pump .Here we apply Arduino nano connector to IR sensor .Arduino nano will takes the from the people hands and things and effects and sends result to the arduino pin .Here the arduino pin is high ,the D5 pin of arduino is connected which gives output to the relay .Relay is connected to LED .When the hands or objects are keep in front of IR sensor.IR sensor detects from transmitter-receiver .such that sensor detects and gives the indicator to the led. The LED Highlights and sanitizer expanded to all surfaces.

Figure1: Methodology flow chart



BLOCK DIAGRAM

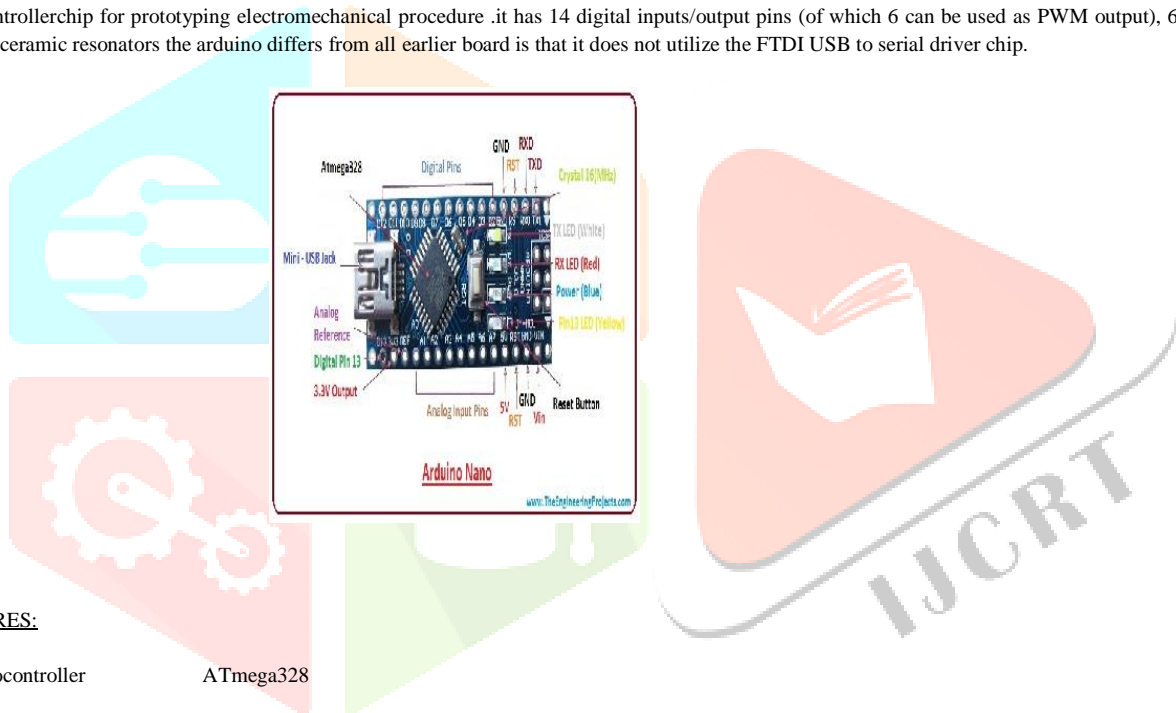
The block diagram represents the covid disinfection box which make components used to make this device and relation between them .Further as per the code relay turns ON\OFF the led and sanitizer spreads and the block diagram consists of Arduino nano board, relay, power supply, IR sensor, relay unit .The power supply is used to supply electrical power and IR sensor it sense the signals and signals are passing through relay unit.LED shows ON(green color) and sanitizer is spreads from dc pump.



COMPONENTS USED

A: ARDUINO NANO

The arduino board is the main unit of the structure. The arduino nano is the microcontroller board based on the ATmega 328. It is a programmable microcontrollerchip for prototyping electromechanical procedure .it has 14 digital inputs/output pins (of which 6 can be used as PWM output), 6 analog inputs , a 16 MHz ceramic resonators the arduino differs from all earlier board is that it does not utilize the FTDI USB to serial driver chip.



FEATURES:

Microcontroller	ATmega328
Operating Voltage	5Volts
Input Voltage	7-12Volts
Input Voltage (limits)	6-20Volts
Digital I/O Pins	14
Analog Input Pins	6
DC Current per I/O Pin	40 MilliAmpier
DC Current for 3.3V Pin	50 MilliAmpier
Flash Memory	32 KiloBytes (ATmega328)

B: RELAY

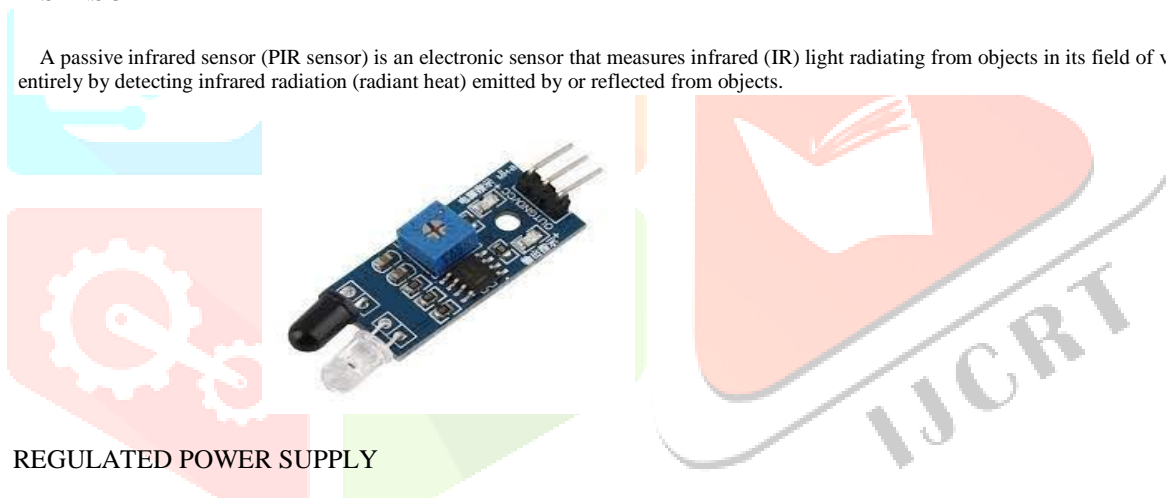
Relays is used for interfacing and control various appliances, its operating voltage and current is 5V, 10A. It is controlled from a microcontroller (Arduino, 8051, DSP, ARM, TTL logic) directly with 3.3V or 5V logic signals. It consists of a set of input terminals .The switch may have any number of contacts in multiple contact forms, such as make contacts, break contacts, or combinations.

**C: DC WATER PUMP**

DC powered pumps use direct current from motor, battery, or solar power to move fluid in a variety of ways. Motorized pumps typically operate on 6, 12, 24, or 32 volts of DC power. Solar-powered DC pumps use photovoltaic (PV) panels with solar cells that produce direct current when exposed to sunlight.

**D: IR SENSOR**

A passive infrared sensor (PIR sensor) is an electronic sensor that measures infrared (IR) light radiating from objects in its field of view. ... They work entirely by detecting infrared radiation (radiant heat) emitted by or reflected from objects.

**E: REGULATED POWER SUPPLY**

A **regulated power supply** is an embedded circuit; it converts unregulated AC (Alternating Current) into a fixed DC. With the be of assistance of a rectifier it changes AC supply into DC. Its function is to supply a stable voltage (or less often current), to a circuit or device that have to be operated within certain power supply restrictions. The output from the regulated power supply may be discontinuous or unidirectional, but is just about always The type of stabilization old may be restricted to ensuring that the output remains within certain limits under various load conditions, or it may also include compensation for variations in its own supply source.

Parts of a power supply:

A typical Power supply unit consists of the following.

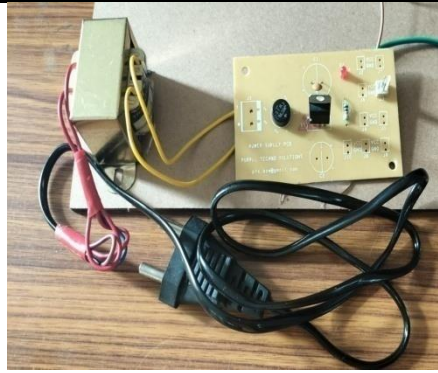
Transformer – It is a device that transfers energy from one alternating-current circuit to one or more other circuits, The input transformer for the stepping down of the 230volts power .

Rectifier – A Rectifier circuit to translate the Alternating Current components present in the signal to Direct Current components

Smoothing – A filtering circuit to smoothen the variations nearby in the rectified output.

Regulator – A voltage regulator provides a fixed output voltage and it transfers to circuit in order to control the voltage to a desired output level.

Load – The load which uses the pure Direct Current output from the regulated output.



IV: WORKING PRINCIPLE

Sanitization means cleaning or sterilizing an object or body parts like hands and body. Sanitization can be done in many ways including UV sanitization, soap sanitization, alcohol sanitization etc. of the above methods alcohol was found to be more useful for human beings. Since it is harmless on skin surface, vaporizes easily and kills most of the viruses, bacteria and also removes from our hand. Alcohol also makes hands dry, since it absorbs moisture, and also needs addition of moisturizers. So in this Application we use covid disinfection box to get confined from covid. In this system we utilize an family Arduino nano with IR sensor beside with an dc water pump and relay to demonstrate the impression. So the sensor is used to monitor user and send signals to the Arduino nano.

The arduino nano on encountering high signals from the sensor the sanitizer in the water pump will spray the sanitizer.

ADVANTAGES

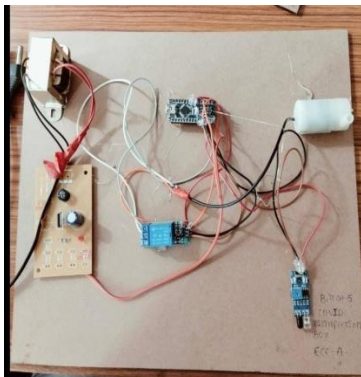
1. Customer Confidence
2. worker efficiency
3. improved moment in time executive
4. Certified Preventative Cleaning
5. Property-Wide Mitigation

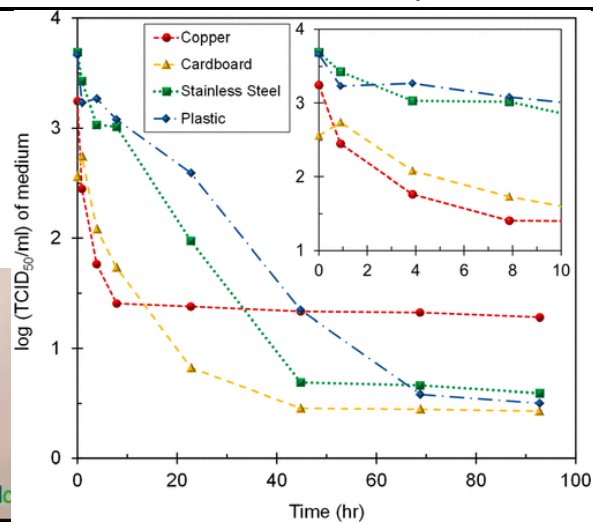
APPLICATIONS

1. Covid disinfection box used in various public places like shopping malls, Hospitals, educational places, railway stations, bus stations etc..
2. Is a automatic machine covid disinfection box used in bank and schools.
3. This project is very much useful to avoid contact with other person.

V: RESULTS

When properly used, disinfection and sterilization can ensure the safe use of invasive and non-invasive medical devices. However, current disinfection and sterilization guidelines must be strictly followed.





CONCLUSIONS

We have provided a very useful and effective solution in covid time to overcome the problem of sanitizing everything especially fruits,vegetables,mobiles etc.,This is very useful and depending instrument to overcome the infection of virus.This study along with the provided illustrations will play an essential role in the design an fabrication of effective,reliable and safe uv disinfection systems.This is applicable to preventing viral contagion in the current COVID-9 pandemic, as well as potential future epiemics .

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