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A hand is shown from the bottom, holding a glowing, semi-transparent globe of the Earth. The globe is surrounded by various digital data overlays, including bar charts, line graphs, and text boxes. The background is dark with a blue and purple color scheme, suggesting a high-tech or futuristic environment.

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# Automatic Soap Dispenser

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**ABSTRACT:** Demand for hand sanitizers has surged since the corona-virus broke out and spread around the world. Hand sanitizers are usually applied by squirting the sanitizer liquid when one presses a pump with one's hand. This causes many people to come into contact with the pump handle, which increases the risk of viral transmission. Therefore, this paper suggests the design of an automatic hand sanitizer system which will spray the sanitizing liquid without direct contact with the container.

## I. INTRODUCTION

In ordinary method the sanitizing machine will be in direct contact with the person. But virus such as covid -19 will spread through via touching the container which had contact with the effected person. Here we proposed our plan as a dispenser "The automatic soap dispenser" will sanitize the object (hand) by sensing the presence with an ultrasonic proximity sensor. When ultrasonic sensor is detecting the presence, it stimulates the controller and which spray out the sanitizing liquid. An automatic soap dispenser is a device that dispenses a controlled amount of soap solution (or a similar liquid such as a hand sanitizer). They function to conserve the amount of soap used and stem infectious to operate it simply place the hand under the dispenser and it will automatically pump the perfect amount of soap without the need to touch any buttons. William Sheppard patented liquid soap on August 22, 1865. Minnetonka Corporation introduced the first modern liquid soap and cornered the market by buying up the entire supply of the plastic pumps needed for the liquid soap dispensers. One of the biggest advantages of an automatic hand sanitizer dispenser machine is that it offers a standard amount that is enough to clean both hands. These standardized doses are usually sprayed on the hands, which causes minimum to no wastage, unlike manual ones, which releases extra sanitizer at times. An automatic soap dispenser is a device that dispenses a controlled amount of soap solution (or a similar liquid such as a hand sanitizer). They are often used in conjunction with automatic faucets in public restrooms. They function to conserve the amount of soap used and stem infectious disease transmission.

## II. LITERATURE SURVEY

John M. Boyce, M.D. and Didier Pittet, M.D talked about the significance of hand washing with individual cleanliness. For ages, hand washing with cleanser and water has been viewed as a proportion of individual cleanliness. The idea of purging hands with a germicide specialist most likely rose in the mid nineteenth century. As ahead of schedule as 1822, a French drug specialist exhibited that arrangements containing chlorides of lime or soft drink could destroy the foul smells related with human bodies and that such arrangements could be utilized as disinfectants and sterilizers. In a

paper distributed in 1825, this drug specialist expressed that doctors and different people going to patients with infectious illnesses would profit by soaking their hands with a fluid chloride arrangement. [1]

Hand hygiene is a core element of patient safety for the prevention of healthcare-associated infections and the spread of antimicrobial resistance. Its promotion represents a challenge that requires a multi-modal strategy using a clear, robust and simple conceptual framework. The World Health Organization First Global Patient Safety Challenge 'Clean Care is Safer Care' has expanded educational and promotional tools developed initially for the Swiss national hand hygiene campaign for worldwide use. Development methodology involved a user-centered design approach incorporating strategies of human factors engineering, cognitive behavior science and elements of social marketing, followed by an iterative prototype test phase within the target population. This research resulted in a concept called 'My five moments for hand hygiene'. It describes the fundamental reference points for healthcare workers (HCWs) in a time-space framework and designates the moments when hand hygiene is required to effectively interrupt microbial transmission during the care sequence. The concept applies to a wide range of patient care activities and healthcare settings. It proposes a unified vision for trainers, observers and HCWs that should facilitate education, minimize inter-individual variation and resource use, and increase adherence. 'My five moments for hand hygiene' bridge the gap between scientific evidence and daily health practice and provides a solid basis to understand, teach, monitor and report hand hygiene practices. [2]

R. Monina Kleven's, et al., used a multi-step approach and three data sources. The main source of data was the National Nosocomial Infections Surveillance (NNIS) system, data from 1990-2002, conducted by the Centers for Disease Control and Prevention. Information from the National Hospital Discharge Survey (for 2002) and the American Hospital Association. [3]

### III. PROPOSED SYSTEM

#### Block Diagram

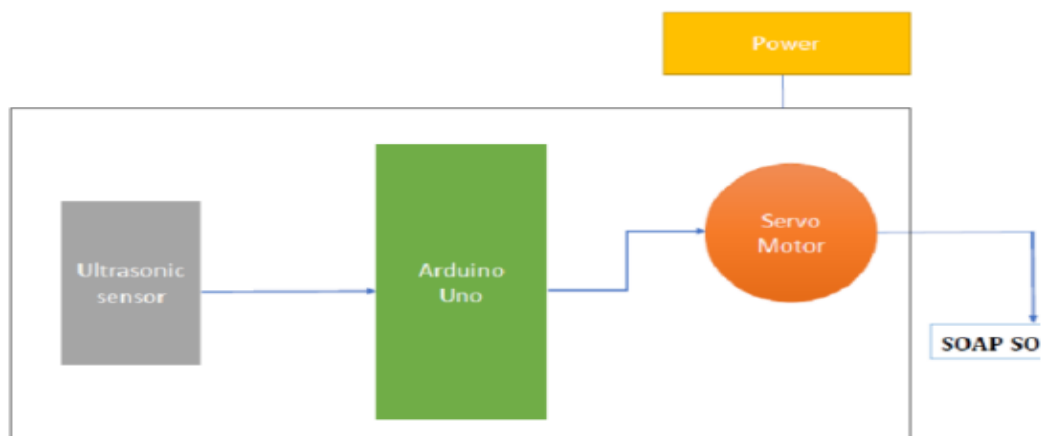


Fig: 3.1 Block Diagram

#### Working

1. Hand is detected by ultrasonic proximity sensor. 2. The ultrasonic proximity sensor. Pin's Trig and echo is connected to Arduino. 3. Arduino calculate distance with respect to duration of sound waves received by the eco pin. 4. Arduino chip is already programmed that calculate the

distance.5. If calculated distance is  $\geq 5$  servo motor rotates 180-degree, else servo motor rotates 0 degree.6. A horizontal lead is connected the top of the sanitizer bottle.7. A vertical lead is connected between the servo motor and horizontal lead. 8.when servo rotate 180-degree vertical lead comes down then vertical lead also come down spray the sanitizing liquid when vertical lead comes down.

### Circuit Diagram

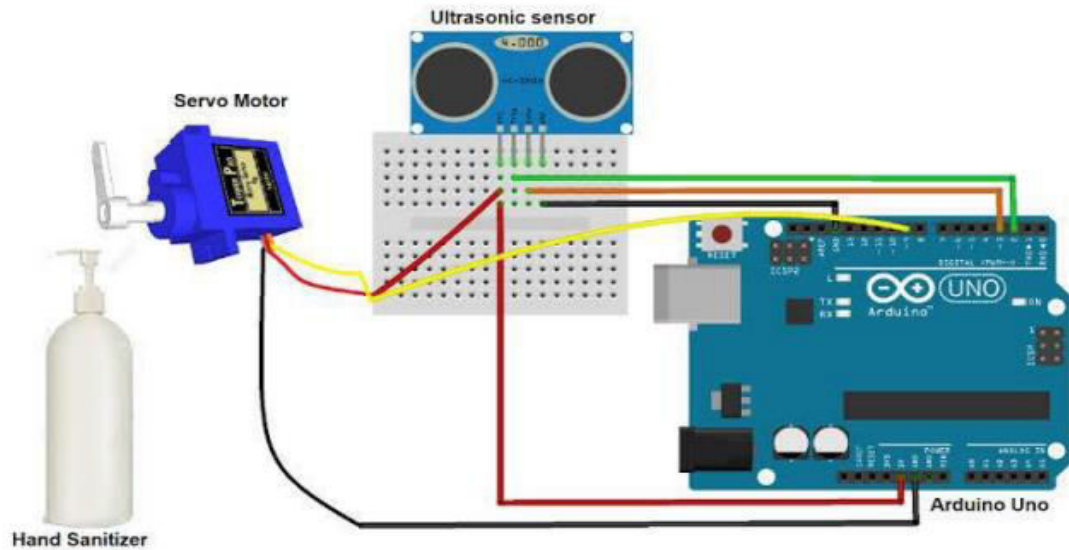


Fig: 3.2 Soap Dispenser Circuit

### Advantage

1. It is more safe and secure when compared to manual dispenser.2. Easy to use.3. non-touchable equipment so preventing the spreading of virus.

### Disadvantage

Continuous use may result in technical failure in future.

### ALGORITHM

Step 1: First of all, we defining the pins Echo pin-3 Trig pin -2 Servo motor - my servo Actually echo pin receiving the sound duration.Step 2: Ultrasonic sensor is trig pin is transmitting a pulse wave. A pulse contains low value and high value. Low value duration is 2 microseconds and low value high value duration is 10 microseconds.Step 3: Echo pin receive positive voltage or high value (that is the duration of receiving sound wave).Step 4: When high value at echo pin microcontroller calculates the distance. Distance = (duration \*0.034/2).Step 5: Calculated duration is  $\geq 100$  servo rotates 30. If the calculated distance  $\geq 100$  servo rotates -30 (servo back to its initial stage).

#### IV. SIMULATION RESULT

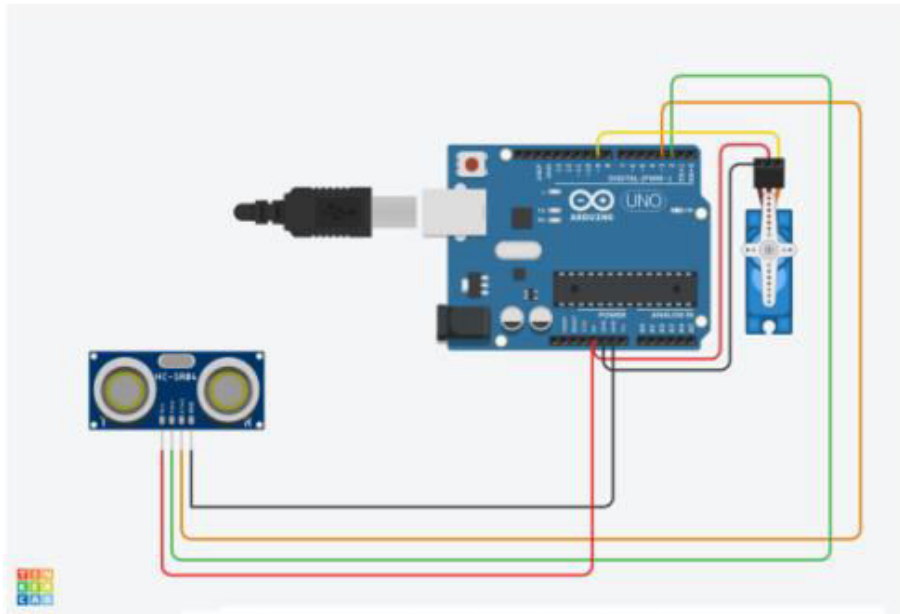


Fig: 3.3 Simulated Circuit

#### V. CONCLUSION

1. There will be a notable change in market in this pandemic situation.2. It is technologically developed equipment which can use easily and safely.3. It will help to 'break the chain' between one Person to another.4. the effectiveness of the solution and dispenser was surveyed.5. Although the particular alcohol antiseptic was disliked due to the skin-drying effect that the alcohol solution had caused,the hand sanitizer dispenser was advised for greater use throughout the healthcare facilities.6. The automatic hand sanitizer device proposed in this project is ultimately expected to contribute to contactless hand disinfection in public places and virus infection prevention.7. Additionally, it is economical and eco-friendly by decreasing waste emissions.

#### VI. ACKNOWLEDGMENT

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