A
PROJECT REPORT
ON

AUTOMATIC
HAND SANITIZER MACHINE

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Introduction:

In the wake of several pandemics , maintaining hand hygiene has become crucial. This project aims to design and implement an **Automatic Hand Sanitizer Machine** using Arduino, which dispenses hand sanitizer automatically when a user places their hands in front of the device. This contactless mechanism minimizes the risk of germ transmission and promotes hygiene.

Objectives:

- To design a contactless hand sanitizer dispenser.
- To utilize Arduino for controlling the dispensing mechanism.
- To implement an ultrasonic sensor for hand detection.
- To create a user-friendly and efficient sanitizer dispensing system.

Components:

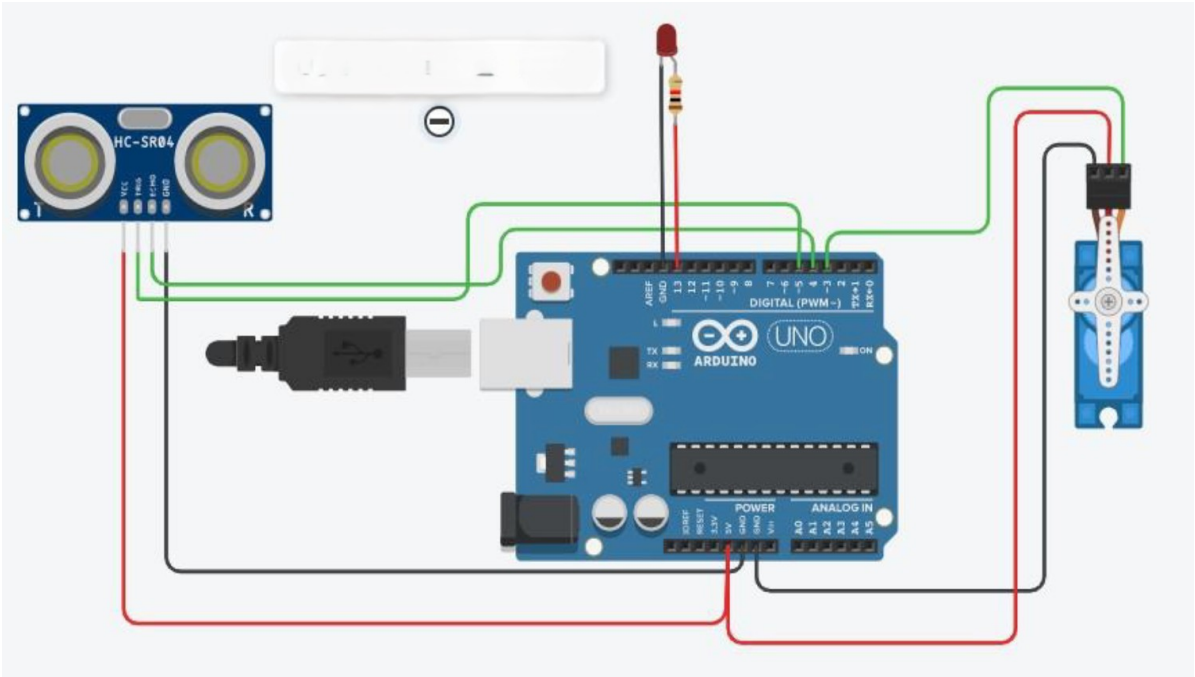
- Arduino Uno: The microcontroller that will control the entire system.
- Ultrasonic Sensor (HC-SR04): To detect the presence of hands.
- Servo Motor: To control the dispensing mechanism.
- Power Supply: To power the Arduino and the servo motor.
- Breadboard and Jumper Wires: For making connections.
- Container for Hand Sanitizer: To hold the sanitizer.

Program:

```
#include <Servo.h>

const int servoPin = 9;
const int trigPin = 10;
const int echoPin = 11;

Servo myservo;
long duration;
```

```
int distance;

void setup() {
  myservo.attach(servoPin);
  myservo.write(0);
  Serial.begin(9600);
  pinMode(trigPin, OUTPUT);
  pinMode(echoPin, INPUT);
}

void loop() {
  digitalWrite(trigPin, LOW);
  delayMicroseconds(2);
  digitalWrite(trigPin, HIGH);
  delayMicroseconds(10);
  digitalWrite(trigPin, LOW);

  duration = pulseIn(echoPin, HIGH);
  distance = duration * 0.034 / 2;

  Serial.print("Distance: ");
  Serial.println(distance);

  if (distance < 10) {
    myservo.write(90); // Dispense sanitizer
    delay(1000); // Wait for a second
    myservo.write(0); // Reset servo
    delay(2000); // Wait before next detection
  }
}
```

CircuitDiagram:



APPLICATIONS:

- Public Places
- Workplaces
- Transportation Hubs
- Events and Gatherings
- Residential Use
- Food Industry
- Healthcare Facilities
- Research and Development
- Smart Cities

Conclusion:

The Automatic Hand Sanitizer Machine using Arduino is an effective solution for promoting hand hygiene in public places. The project demonstrates the integration of sensors and actuators with microcontrollers, providing a practical application of electronics and programming. Future improvements could include adding a display for instructions, integrating a refill alert system, or using a more sophisticated sensor for better accuracy.