



B-HYGIENE

Hand Sanitizer Dispenser

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1000ml



500ml



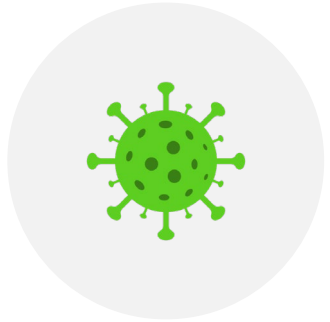
Research

Hand Sanitizer was my chosen project to focus on for project 02, the reason why I was interested in this because I want to give a frugal system to the public due to avoid COVID-19.



I am aiming to design an automatic hand sanitizer dispenser for public. Such as placing the dispenser for few streets/mall/airport. Since there's not much hand sanitizer stand supplied in the public. It'll be very useful for those who sometimes forget to bring their hand sanitizer.

The Problem



Corona Virus spread

A virus we're facing nowadays since 2020



Lockdown occurred

Due to the covid-19 pandemic, we have experiencing lockdown



Follow the protocols

Wear mask, wash hand, & keep a distance of 1m with others



Public starts to open

Open due to the decreasing of covid-19 cases



Lack of health supplies for public

Not much health supplies provided in the public especially hand sanitizer

The Solution



Supplying Hand Sanitizer

A useful product to stay hygiene wherever we go however some people may forget to bring them



Automatic Hand Sanitizer

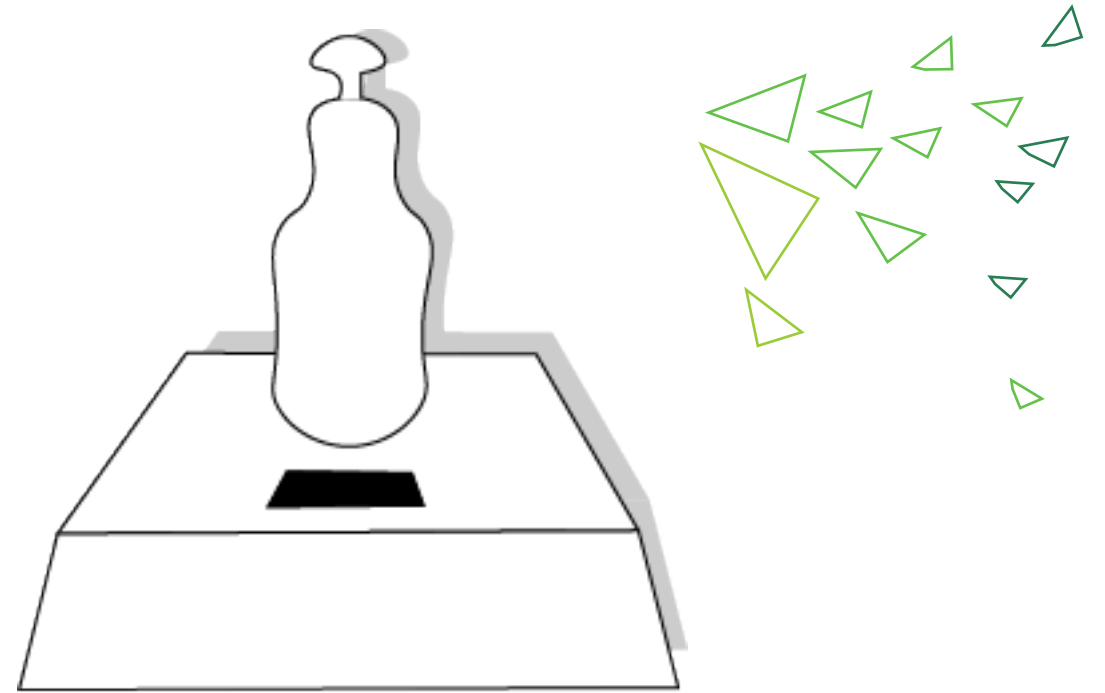
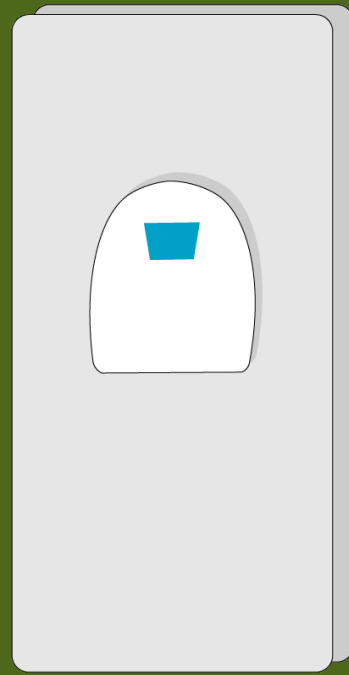
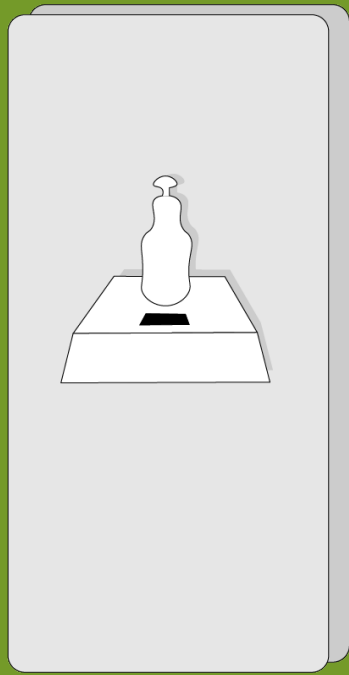
Designing an automatic hand sanitizer dispenser to avoid any contact with others



Hygiene Stand for Public

Supplying the dispenser for public & homeless people who needs to stay hygiene too





B-HYGIENE

Designed an automatic hand sanitizer dispenser for public.

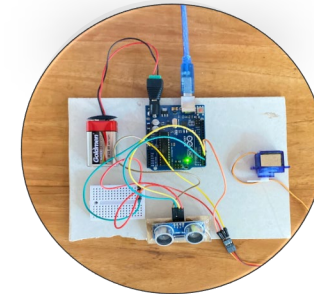
When we're start to use the sanitizer, we can easily put our hands under the dispenser WITHOUT touching and then it will automatically pour the liquid down. It will stop once we place our hand far from the sensor. In this prototype, I am designing the house for the hand sanitizer dispenser along with all of its components.

Ideas



Prototype

Plywood
Paper Board
Bottle Pump
Rubber
Nylon Strings / Thin Rope



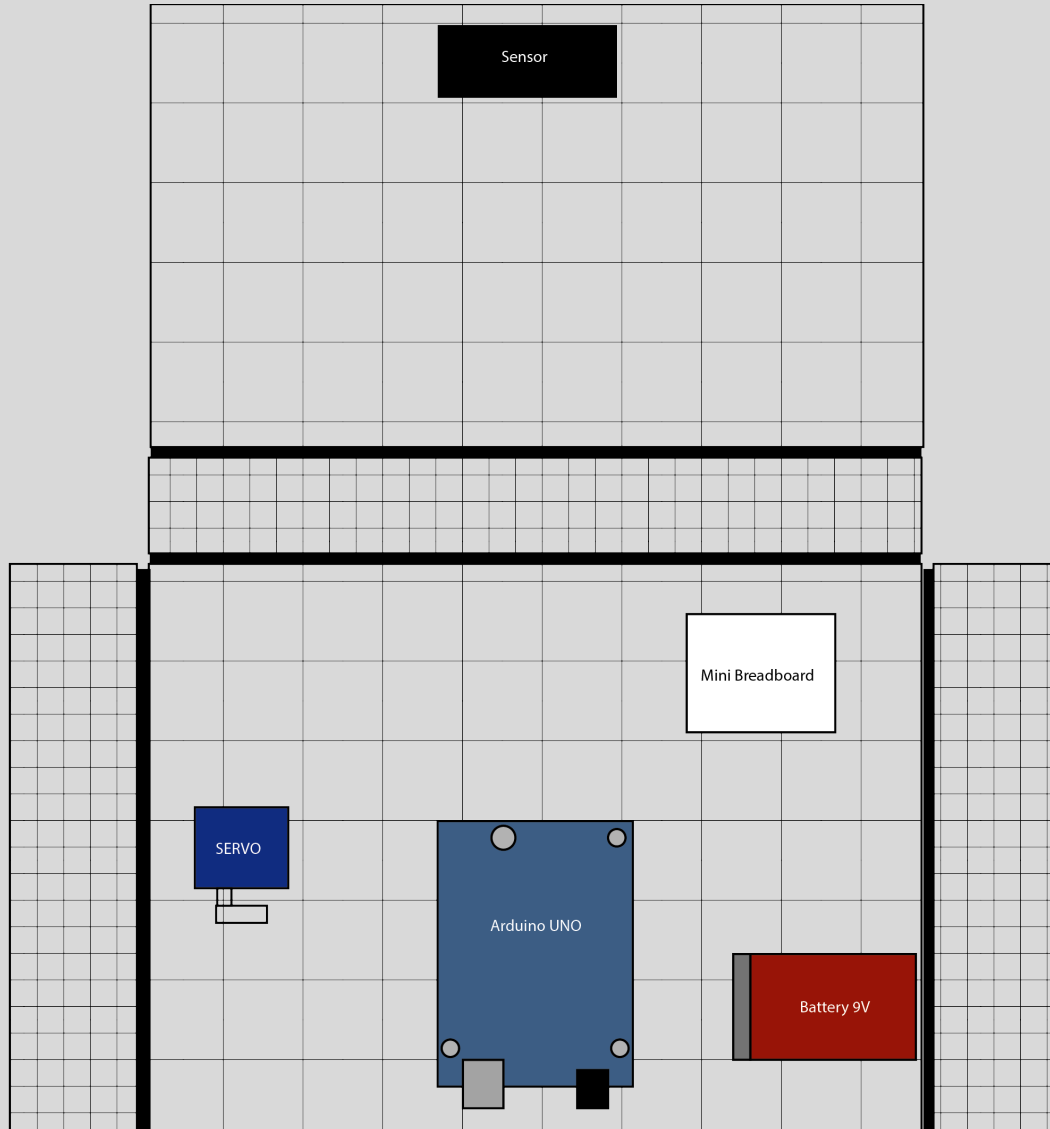
9V of Battery

Battery to strengthen
the servo



Process

Double Tape
Screws
Hot Glue Gun



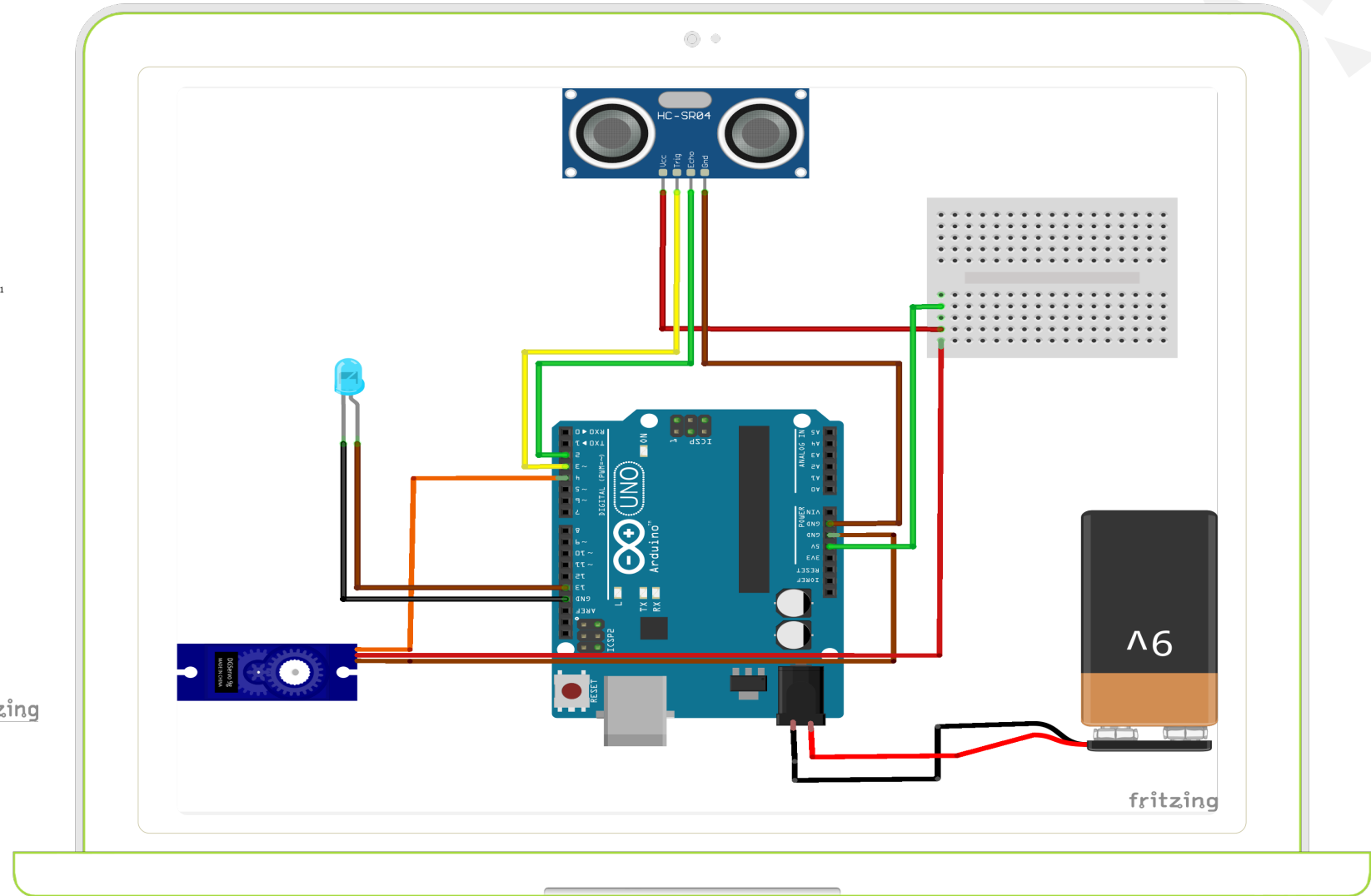
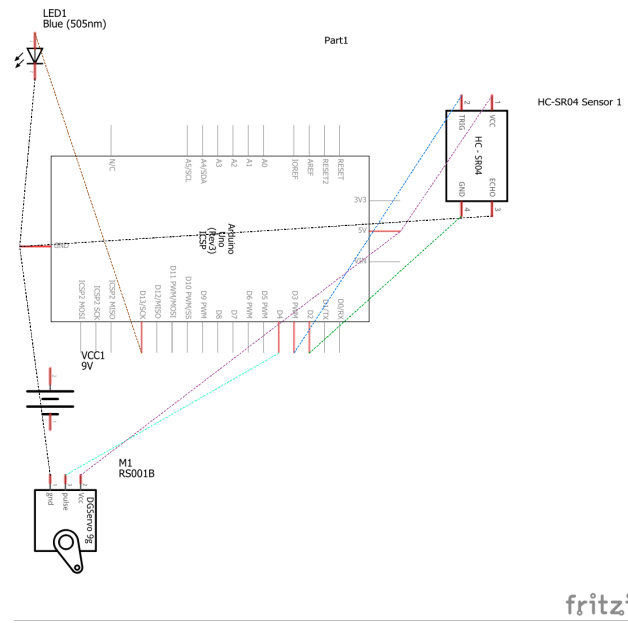
Features & Benefits

- Bottle Hand Sanitizer – Carrying liquid
- Thin Rope – Pull down the pump
- Rubber – Strengthen the pump
- Sensor by UltraSonic – Sensoring Hands
- MicroServo 90s – Pull down the rope by rotating to 270°
- 9V Battery – Power up the energy
- Mini Breadboard – Connections between components
- Arduino UNO – activating other components



Circuit Diagram

Combine all components




```
#include <Servo.h>
#define trigPin 3
#define echoPin 2
Servo servo;

long duration, distance;
int sound = 250;
int ledPin = 13;

void setup() {
  Serial.begin (9600);
  pinMode(trigPin, OUTPUT);
  pinMode(echoPin, INPUT);
  //ledpin is output
  pinMode (ledPin, OUTPUT);
  servo.attach(4);
}

void loop() {

  digitalWrite(trigPin, LOW);
  delayMicroseconds(5);
  digitalWrite(trigPin, HIGH);
  delayMicroseconds(10);
  digitalWrite(trigPin, LOW);

  // Measure the response of the echo pin

  duration = pulseIn(echoPin, HIGH);

  // Calculating the distance from duration and use 343 metres per second

  distance = (duration/2) * 0.0343;

  // Print the result to the Serial Monitor

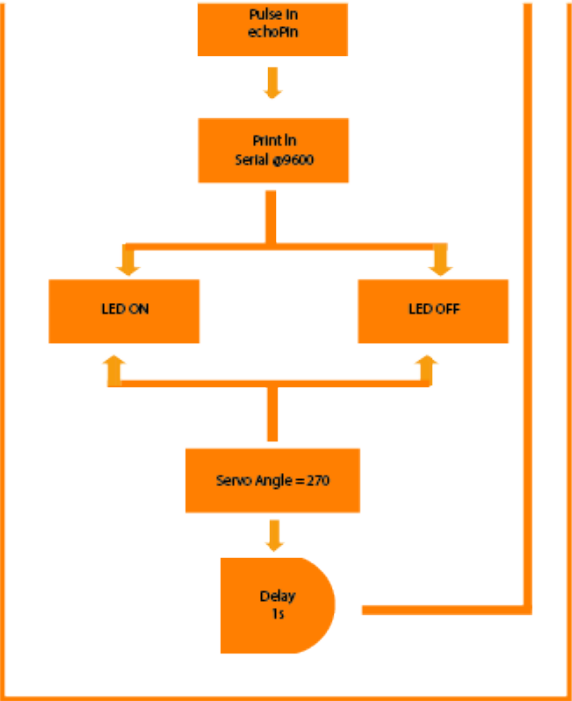
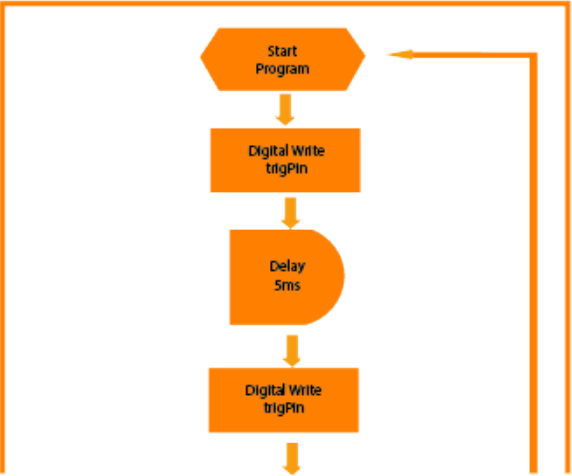
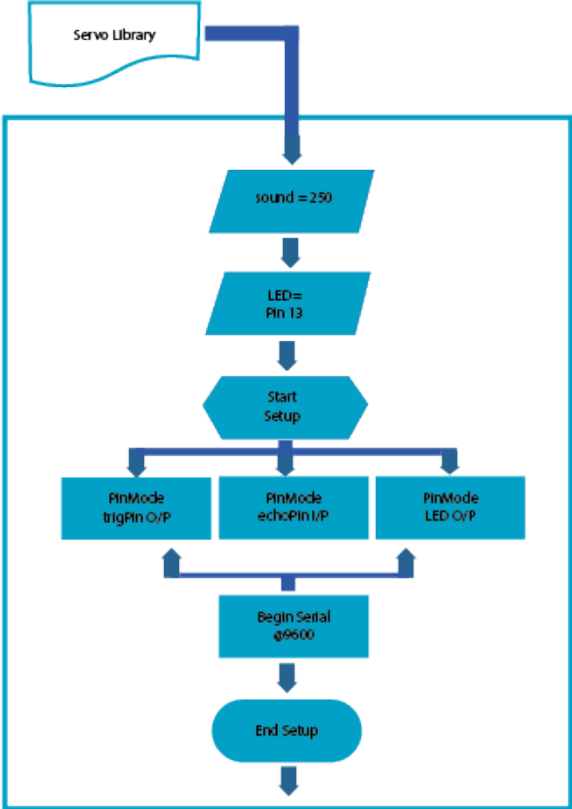
  Serial.print("Distance = ");
  if (distance <= 10 || distance >= 0){ // please light up the LED
    digitalWrite(ledPin, HIGH);
    // please wait for a second
    if (distance >=10 || distance <=0) { // // please turn it off
      digitalWrite(ledPin, LOW);
      // please turn it off for a second
      Serial.println("Out of range");
      servo.write(270);
    }

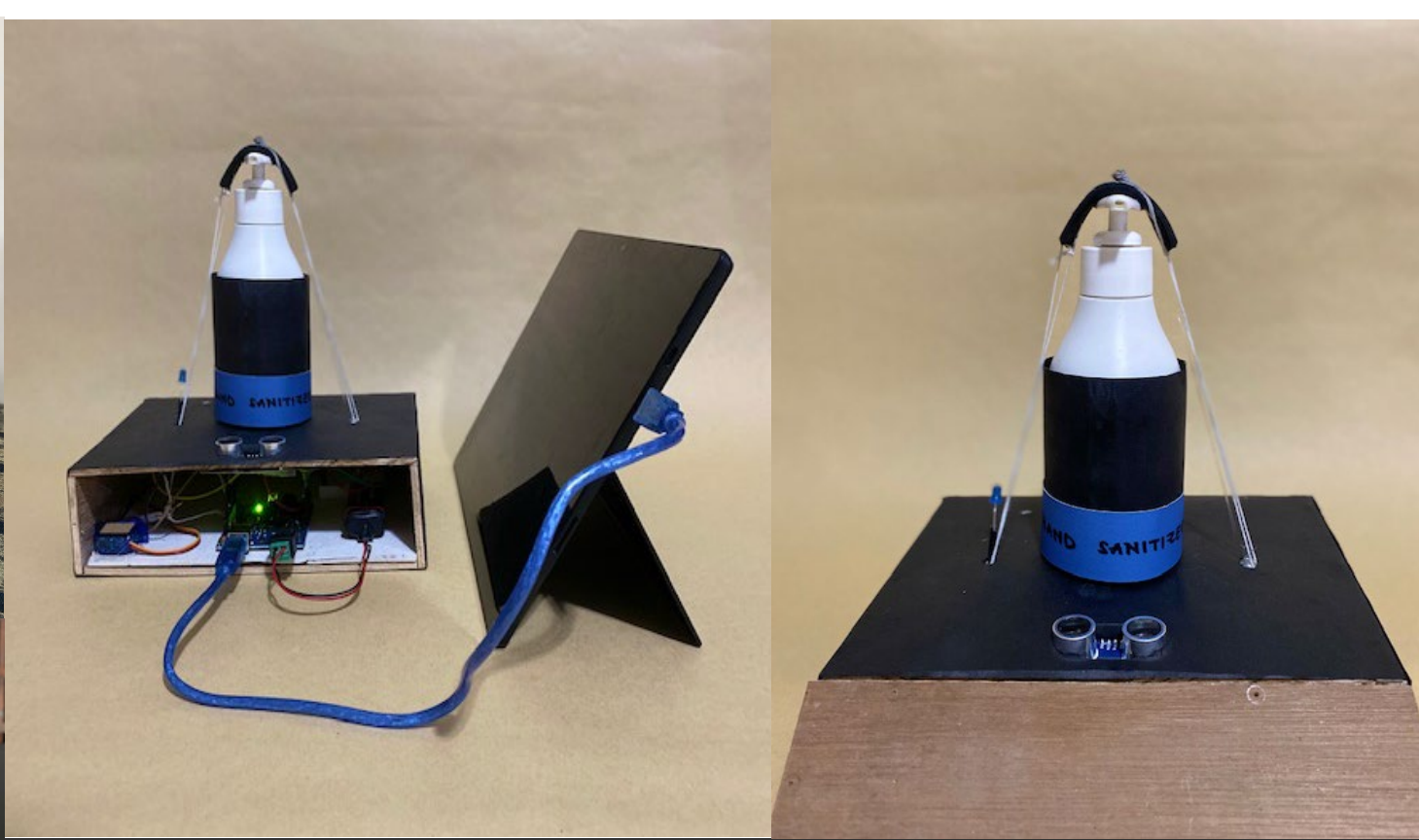
    if (distance > 60 || distance <= 0){
      Serial.println("Distance is more than 60");
    }
  } else {
    Serial.print(distance);
    Serial.println(" cm");
  }
  delay(500);
}
```

Code Link

<https://create.arduino.cc/editor/nicoleadinata/f712e9b5-372b-4b0d-81f2-bcf963de1633/preview>

Pseudo Code





Prototype Model

This prototype will be placed on a stand

Final Video Link



SEMIFINAL

- <https://drive.google.com/file/d/1Af3-1e8-f3bS6p16f9GacvemlP2yPzBf/view?usp=sharing>

FINAL

- <https://drive.google.com/file/d/1oLzL8IMa-4XNovUWMgzPK4VR-jYkK49I/view?usp=sharing>

*The semifinal was still not aesthetically presentable, and it didn't pump much of alcohol.
In this case, I have changed the strings to thin rope and tighten to have a better pump.*



Summary


The Journey and Lesson of
Making B-Hygiene


- In this journey of making hand sanitizer, at first it was easy to make each of the components to function also combining all the components but then, I struggled when putting it into the prototype. The fact that we must think where to place the components, so it stays neatly and especially when it comes to pumping. In order to pump, we have to use the appropriate strings to pull down the pump and ensuring that the servo was located in the right place.
- The servo that I used was only 1 component which was MicroServo SG90, to make it efficiently works in the future 2 servo will be needed or a bigger servo that has higher voltage. But due to the time of submission, I have to use the component that I have in stock.
- The materials I used for prototype was plywood that was supposed to be design in 3D Printer however, I do not have the access to use it and also didn't own one. 3D Printer enables to give a better curvy edge with elegant looks, while plywood makes it easier to put the components in place.
- Lesson learned : how to make an automatic hand sanitizer, how to set up and allocate the components physically, how much force and weight it will need in order to make it works and ordering the code to make it function.


Thank You



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<https://wordpress.com/posts/uwearduino.wordpress.com> 

Reference Links

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<https://create.arduino.cc/projecthub/aakash11/automatic-hand-sanitizer-using-arduino-2924ad>

<https://www.youtube.com/watch?v=5F2ofDjZ4Rc>

<https://www.instructables.com/DIY-Easy-Non-Contact-Automatic-Hand-Sanitizer-Disp/>

<https://www.instructables.com/DIY-Automatic-Hand-Sanitizer-Dispenser/>