Deliverable G - Prototype 2
&
Customer Feedback

GNG 1103 – Engineering Design

Faculty of Engineering – University of Ottawa

Ibrahim Sleiman (300251255)
John Kasabri (300287984)
Max Ripperyoung (300119899)
Ryan Musa (300233935)
Ricardo Feng Peng(300196548)

-2022-

Feedback from client:

- The main concern from the client was how we would use the compression fittings in our design, with regards to the cables going into the tank.

→ Our Solution: Look into compression fittings and how they can be implemented and why he might suppose they are useful. (Are they necessary? Could be costly and we kinda cheap)

Extenuating Circumstances:

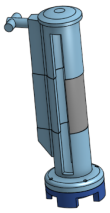
- Max: Midterm coming up this thursday and a lot of work in a couple of my others.

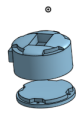
What has been done so far:

- Max:
    - Completed:
        - The foundation of the arduino code
    - Next Steps:
        - Implementing conversion of distance to specific gravity
        - Code for the temperature sensor.
        - 3D printing pieces for the main body

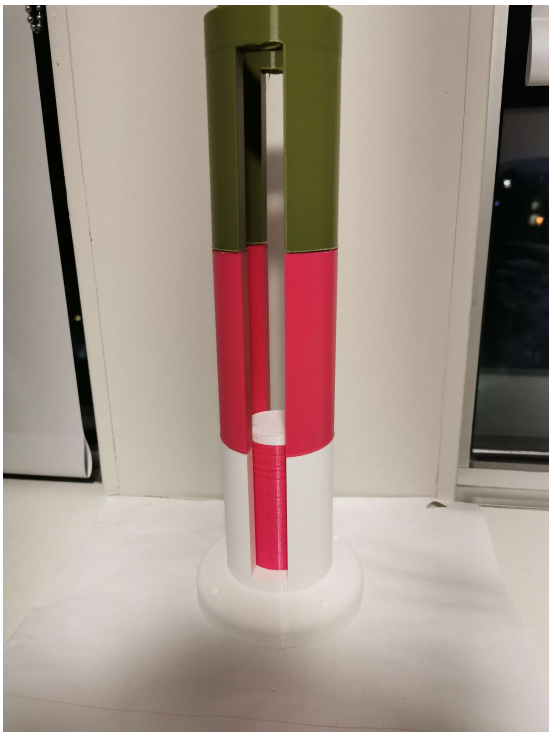
```
#define trigPin 10
#define echoPin 13
#define hour 3.6e+6 //hour in miliseconds
#define c 0.149 //speed of sound in beer according to
                //https://hypertextbook.com/facts/2000/BlairElefant.shtml

void setup() {
  // put your setup code here, to run once:
  Serial.begin (9600);
  pinMode(trigPin, OUTPUT);
  pinMode(echoPin, INPUT);
  }

void loop() {
  // put your main code here, to run repeatedly:
  float duration, distance;

  digitalWrite(trigPin, LOW);
  delayMicroseconds(2);

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

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

  if (distance>=400 || distance <=2){
    Serial.print("Distance = ");
    Serial.println("Out of range");
  }
  else{
    Serial.print("Distance = ");
    Serial.print(distance);
    Serial.print(" cm");
    delay(500);
  }
  delay(hour);
}
```

- Ricardo





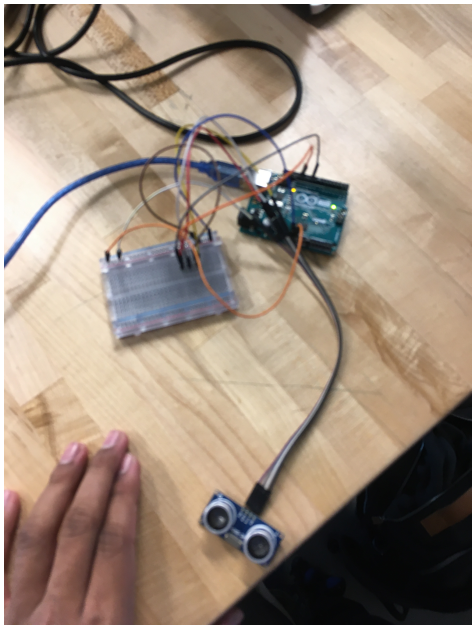
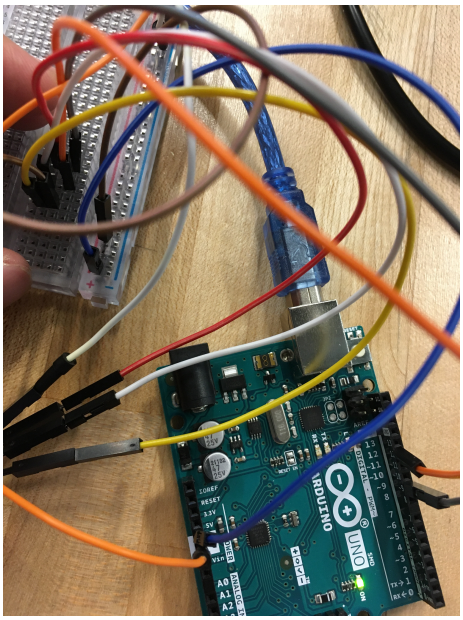
https://cad.onshape.com/documents/8a90d2533028d9594649f9da/w/152c3a468d70160414763d36/e/06b1e1c1acd59efa5eb219eb?renderMode=0&leftPanel=false&uiState=637186d333f5595edf2a8f44



    - Completed:
        - OnShape Model finished.
    - In progress
        - Redesign some parts and print parts of the final model of our prototype..
- Ibrahim:
    - Completed:

        - Housing for the Arduino, Breadboard and Wiring : Link
        - Wiring for the Ultrasonic Sensor (Joint with Ryan)
    - In progress:
        - 3D Printing parts of the Main Body
        - 3D printing parts of the Housing
        - Wiring for the Bluetooth Module (Joint with Ryan)
        - Changes to the Housing may be necessary

- Ryan Musa:
    - Completed:
        - The wiring of the Ultrasonic sensor (joint with Ibrahim)

    - In progress:
        - The wiring of the temperature sensor (joint with Ibrahim)
        - 3-D printing parts of the main body
        - The wiring of the bluetooth sensor (joint with Ibrahim)
        - Research on compression fittings (3-inch)
    - Canceled
        - I was able to complete a code that worked with the ultrasonic sensor to detect the distance of an object. However, it did not compensate for all the other sensors so it was canceled.

- John Kasabri:
    - Completed:
        - Research on how the bluetooth module works.
        - How to connect it from the arduino circuit to a computer.
    - In Progress:
        - 3-D printing parts of the main body.

        - Code on how to implement a module and arduino to the computer.
    - Canceled:
        - Wifi Module → Has become Bluetooth Module HC-05 → Has become Bluetooth module Bluefruit LE

Bill of material :

	Source	Cost ($)
Arduino UNO R3	Makerstore	9.00
Bluetooth Module (Bluefruit LE)	Makerstore	12.99
Ultrasonic sensor	Makerstore	4.00
Jumper Cables (pack of 40)	Makerstore	4.00
Breadboard (4.6x3.6 cm)	Makerstore	1.50
USB Cable (A to C)	Makerstore	7.00
screws (using 4)	https://www.homehardware.ca/en/10-pack-6-x-12-pan-head-self-drilling-tap-screws/p/2166882	2.59
PLA material	Makerlab	10.00
Temperature Sensor	Makerstore	10.66
Total	----------	61.74
Limit	----------	100