Lab 1C Pre-lab

Ethan Wong

Ultrasonic sensor

For the next lab we will be using an ultrasonic sensor. This works by emitting a sound wave from a speaker and bouncing it off an object. The delay between the sending and retrieval of this sound wave allows us to determine the distance to the object. Assuming a speed of sound of 343m/s, answer the questions below

How far in centimeters does a sound wave travel in 3000 microseconds?
102.9 cm

How long in microseconds does it take a sound wave to travel 30 cm? Truncate your answer to the first decimal place.
874.6 microseconds

How long in microseconds does it take for a sound wave to bounce off of an object 50 cm away?
1458 microseconds

Ultrasonic sensor code

To the right is the code you will be using to send out the sound pulse. Below, paste a plot of the signal as a function of time with the time axis in microseconds. This plot may be hand-drawn.

```
//------- UltraSound -------
digitalWrite(trigPin, LOW);
delayMicroseconds(2);
digitalWrite(trigPin, HIGH);
delayMicroseconds(10);
digitalWrite(trigPin, LOW);
```