# CoderDojo Bray : Ultrasonic Sushi

The basic Arduino program to start you off with the LED Dojo Sushi challenges is provided: ultrasonicranging.

“ultrasonicranging” is a simple program which controls a HC-SR04 Ultrasonic sensor, and prints out some raw numbers which are a function of the distance to the nearest object in front of the distance sensor.

Using this “ultrasonicranging” program as a base, we have a series of challenges to go deeper into controlling the sensor and learning some programming techniques.

If you can complete these Challenges, then you have mastered using the HC-SR04 sensors to measure distance with your Arduino. Congratulations!

## Challenge #0 – Getting Started

### Level

Beginner : You need to complete this challenge to get started with working with the HC-SR04 and your Arduino.

### Challenge

* Get the Arduino IDE installed on your computer
* Build the “ultrasonicranging” sketch
* Build a circuit on your breadboard with the HC-SR04 sensor connected to the Arduino
* Download the sketch to your Arduino, open up the Serial Monitor and observe the numbers printing out from the monitor
* Point your distance sensor at different targets: does the number printed out change?

### Extra Credit

* Draw a graph showing the sensor reading for different ranges to the target
* For extra super credit, use Excel to make a chart of the sensor reading vs distance
* Look up the special Arduino function calls made in the Arduino Reference Guide

### Aims

Get the Arduino IDE installed on your computer and correctly communicating with an Arduino board connected to it over USB, with the HC-SR04 sensor working correctly.

When you have this working, your environment is up and running and you are ready for the rest of the Ultrasonic Sushi challenges.

### Resources

An Arduino, USB cable, breadboard, sensor and some wires, and a laptop.

### Notes for Mentors

See the coderdojobray site for troubleshooting information, if the Arduino IDE will not communicate with the Arduino board.