Ultrasonic Sensor Test

Time required: 10 minutes

Please read all the directions carefully before beginning the assignment.

1. Comment your code as shown in the tutorials and other code examples.
2. Follow all directions carefully and accurately.
3. Think of the directions as minimum requirements.

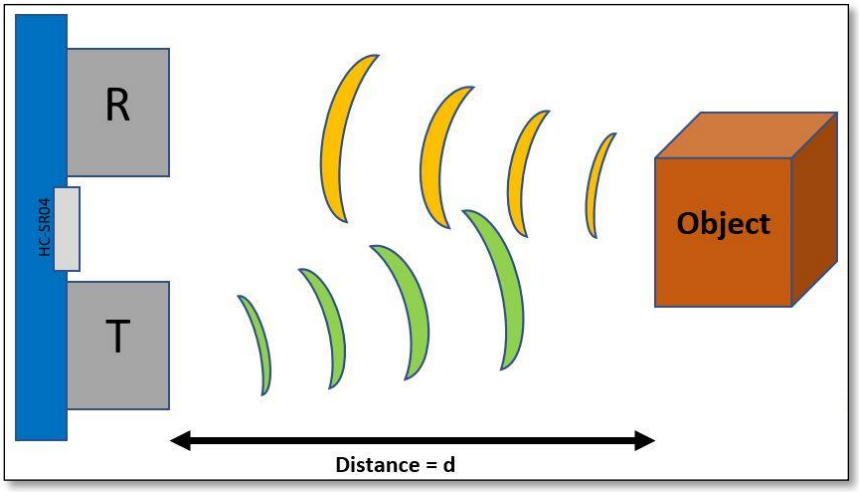
Understanding

Demonstrate understanding of:

ultrasonic sensor, serial monitor

Knowledge Points

The robot has an ultrasonic sensor on the front that detects objects and how far away they are. One "eye" emits ultrasonic sound waves while the other receives the signals bounced back. The distance is calculated based on how long it takes for the sound to return, much like a sonar



Tutorial Assignment

Test the ultrasonic sensor in inches or cm. Go to **Tools → Serial Monitor** to view the feedback.

1. Start the Arduino IDE. Save the sketch as **UltrasonicSensorTest**.
2. Complete and test the program as shown.

Assignment Submission

1. All students: Zip up the sketch folder. Attach the zip file to the assignment in Blackboard.
2. The assignment is demonstrated in class.
3. Online students: A link to a YouTube video recording showing your robot going through its motions is placed in the submission area in BlackBoard.

```
/**
   @file    UltrasonicSensorTest.ino
   @author  William A Loring
   @version V1.0.0
   Revised: 06/07/2017  Created: 12/06/2016
   @Description: Sample code for mBot ultrasonic sensor
   The measured value range from 1in to 180in, or 3cm to 400cm.
   Closer than 1in or 3cm or farther than 180in or 400cm measurement
   will appear as 180in or 400cm, it is not possible to distinguish between the two.
*/
#include <MeMCore.h>                    // Include mBot library
MeUltrasonicSensor ultrasonic(PORT_3);  // Setup the ultrasonic sensor object
const int SENSOR_DELAY = 100;           // Delay between sensor readings

void setup() {
  Serial.begin(9600); // Setup the serial monitor
}

void loop() {
  Serial.print("distance(in) = ");            // Print the inch results to the serial monitor
  Serial.print(ultrasonic.distanceInch());    // Distance value from 1in - 180in
  Serial.print("\t\t");                       // Print tabs to separate the values
  Serial.print("distance(cm) = ");            // Print the cm results to the serial monitor

  // println prints a linefeed
  // which moves the display to the next line after printing to the screen
  // Otherwise, your display scrolls to the right
  Serial.println(ultrasonic.distanceCm());    // Distance value from 3cm - 400cm

  delay(SENSOR_DELAY);                        // Wait before next measurement
}
```