



```

const int triggerPin = 9; // Pin for HC-SR04 trigger
const int echoPin = 10;  // Pin for HC-SR04 echo
const int ledPin = 13;   // Pin for the LED

void setup() {
  pinMode(triggerPin, OUTPUT); // Set trigger pin as an OUTPUT
  pinMode(echoPin, INPUT);    // Set echo pin as an INPUT
  pinMode(ledPin, OUTPUT);    // Set LED pin as an OUTPUT
  Serial.begin(9600);         // Initialize serial communication
}

void loop() {
  // Send a signal to the trigger pin
  digitalWrite(triggerPin, LOW);
  delayMicroseconds(2);
  digitalWrite(triggerPin, HIGH);
  delayMicroseconds(10);
  digitalWrite(triggerPin, LOW);

  // Read the duration of the pulse from the echo pin
  long pulseDuration = pulseIn(echoPin, HIGH);
  // Convert the pulse duration to distance in centimeters
  float measuredDistance = (pulseDuration / 2.0) * 0.0344;

  // Display the measured distance on the Serial Monitor
  Serial.print("Measured Distance: ");
  Serial.print(measuredDistance);
  Serial.println(" cm");

  // Determine if the measured distance is approximately 113.4 cm
  if (abs(measuredDistance - 113.4) < 1.0) { // Acceptable error margin of 1 cm

```

```

// Activate the LED with a blink pattern

digitalWrite(ledPin, HIGH);

delay(500); // LED on for 500 milliseconds

digitalWrite(ledPin, LOW);

delay(500); // LED off for 500 milliseconds

} else {

    // Ensure the LED is turned off if distance does not match

    digitalWrite(ledPin, LOW);

}

delay(100); // Short pause before the next measurement

}

```

<https://www.tinkercad.com/things/3zGsQHWVJj0-stunning-jaban/editel?tenant=circuits>
<https://github.com/s223200581/module315>

Setup Details:

Ultrasonic Sensor (HC-SR04):

- VCC (Power Supply): Connect to the 5V pin on the Arduino to power the sensor.
- GND (Ground): Connect to one of the GND pins on the Arduino.
- Trig (Trigger Pin): Connect to Digital Pin 9 on the Arduino. This pin sends the trigger signal to initiate the ultrasonic pulse.
- Echo (Echo Pin): Connect to Digital Pin 10 on the Arduino. This pin receives the echo signal returned by the sensor.

LED (Indicator):

- Positive Leg (Longer): Connect to Digital Pin 13 on the Arduino.
- Negative Leg (Shorter): Connect to one end of a 220-ohm resistor, and then connect the other end of the resistor to a GND pin on the Arduino.

Code Functionality:

- The Arduino sends a pulse to the HC-SR04's Trig pin to initiate measurement.
- The HC-SR04 emits an ultrasonic pulse and measures the time it takes for the echo to return to the Echo pin.
- The Arduino calculates the distance based on the duration of the echo and prints this distance to the Serial Monitor.
- If the measured distance is approximately 113.4 cm, the LED connected to Pin 13 will blink on and off. If the distance is not within this range, the LED will remain off.

- This configuration allows for effective distance measurement and visual feedback via the LED, making it clear when the specified distance is detected.

